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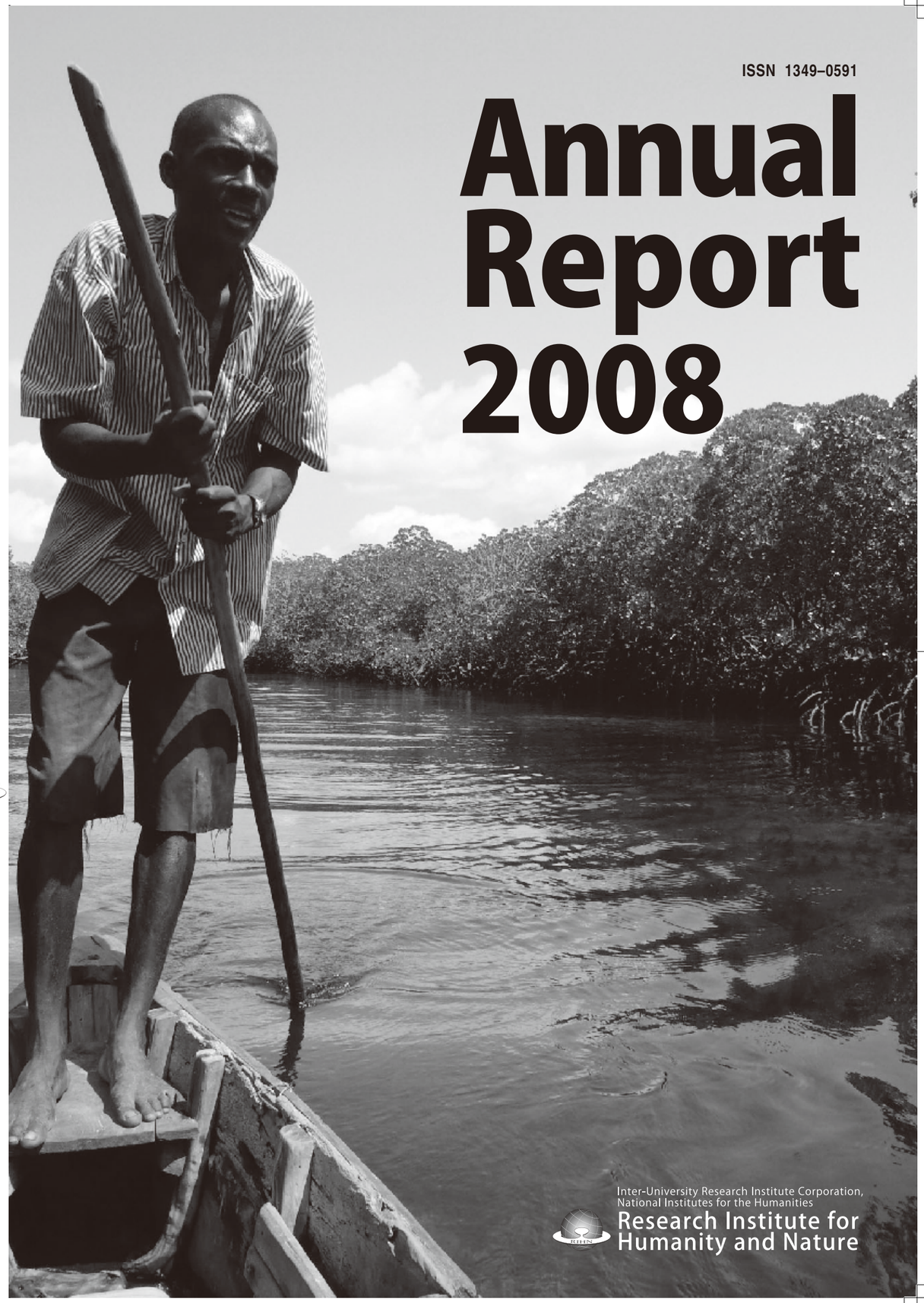

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Stage: FR

Project No.: C-04

Project Name: Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean

Abbreviated Title: Amur-Okhotsk Project

Project Leader: SHIRAIWA, Takayuki

Research Axis: Circulation

URL: http://www.chikyu.ac.jp/AMORE/

Key Words: fish-breeding forest, land-use, land surface disturbance, material circulation, dissolved iron, phytoplankton, Sea of Okhotsk, Amur river, Oyashio current, Asian dust

■Research Objectives and Topics

The objective of the project is to elucidate the role of the Amur River in primary productivity in the Sea of Okhotsk and Oyashio region and then evaluate possible human impacts such as land surface disturbances in the Amur River basin on the marine ecosystem of the ocean. In this study, we attempt to answer 1) how the dissolved iron is transported from the Amur River basin to the Sea of Okhotsk and Oyashio region, 2) to what extent the supply of dissolved iron regulates the primary production in these open waters, 3) how the land surface disturbances affect the material circulation in the Amur-Okhotsk system, 4) how human activity will change the system in the future, and 5) how we can conserve this transboundary system. By answering these five questions, we will propose a new global environmental concept, the GFBF, in which materials recycle between upstream and downstream, and determine a way to conserve the system as collaborative efforts among China, Russia, Mongolia and Japan.

■Progress of Project

1) Validationof the GFBF Hypothesis

Average annual fluxes of total and dissolved iron were estimated in various parts of the GFBF and they confirmed the continuity of iron transport starting from the land surfaces of the Amur River basin and attaining at the surface water of the Oyashio region. $1.1\pm0.7\times10^{11}$ g/yr of dissolved iron is transported to the estuarial area from the Amur River annually. Approximately 95% of the dissolved iron coagulates at Amur-Liman (the estuarial area) and Sakhalin Bay. There are two pathways of iron transport from the estuarial area to the Oyashio region: 1) surface transport of total iron and 2) transport with the NPIW. The former supports primary production in the Sea of Okhotsk while the latter supports that in the Oyashio region. It was estimated that approximately $1.2\text{-}1.5\times10^{8}$ g/yr of dissolved iron was provided from the atmosphere and NPIW, respectively, in the Oyashio region. Among the iron used for the spring bloom in the Oyashio region, 40% was provided by the NPIW and 60% was recycled through microbial processes. We are not yet certain about the importance of atmospherically derived iron to primary production in the Oyashio region because of its sporadicity and spatial unevenness. It was also found by our observation that the iron controls phytoplankton growth in the Oyashio region because phytoplankton growth ceases under iron limitation in spite of a high nitrate concentration.

2) Human impact on the GFBF

Impacts due to land-use changes on the concentration of dissolved iron were clear in our in-situ observations of soil interstitial water in wetlands, paddy fields and upland fields. It was also clear that burnt forest provided a lower concentration of dissolved iron than natural forest did. On the Sanjiang plain, the time series of the iron concentration in the Naori River, a tributary of the Ussuri River, shows the iron concentration has decreased with the increasing area of agricultural fields since 1964. The collected information indicates human activity does reduce the iron concentration in the water body of the related area.

It was, however, difficult to find evidence of a decrease in the iron concentration in the main channel of the Amur River. The time series of the iron concentration at Khabarovsk indicated the iron concentration has “increased” since the mid-1990s. This contradicts our finding that the wetlands on the Sanjiang plain were significantly reclaimed after the 1980s. We speculate this might have been caused by excessive pumping of groundwater on the Sanjiang plain during the 1990s followed by abnormal flooding of the Songhua River in 1997-1998. Groundwater contains a much higher concentration of dissolved iron and the paddy fields on the Sanjiang plain were mostly irrigated by groundwater after 1990. This action accumulated the dissolved iron at the surface and it might have been flushed by the flooding. According to our sociological field study on the Sanjiang plain, the groundwater level is continuously lowering; therefore, the paddy field farming on the plain is supposed to be unsustainable in the near future if it continues to use the groundwater.

3) Conservation of the GFBF

The forests in the Russian Far East are degrading owing to unsustainable forest development, forest fires and poor management systems.The rapid increase in timber exports to China and confusion of forest policy in Russia are other causes of accelerated forest degradation. Chinese farming in the Amur River basin became stable after rapid development in the latter half of the 20th century, but the lack of water resources for irrigation has caused rapid lowering of the groundwater table on the Sanjiang plain. On the basis of the current situation for the GFBF, we have (1) decided to set the agenda for the conservation of this system, (2) realized that this will be in the form of a package deal combining an ideal or general framework including an international legal system or policy with a realistic or specific framework that reflects the political or economic situation in each country and (3) begun presenting the theoretical and sophisticated idea of the forest as an academic outcome, not just a political tool.

4) Unexpected result

The Amur-Okhotsk Project proposed the importance of the Amur River on the marine ecosystem in the Sea of Okhotsk and Oyashio region at a Japan-Russia meeting during the G8 Summit held at Toya Lake, Hokkaido, in July 2008. The leaders of both countries agreed to begin a joint ecological research program that focuses on the Amur-Okhotsk dissolved iron transport system. This may be the first example of the results from an RIHN project being used in international policymaking.

The importance of the conservationof the GFBF was noted in a policy making paper published by the Economic Research Institute for Northeast Asia and submitted to the Ministry of Foreign Affairs of Japan.

○Co-Researchers

Project leader

◎ SHIRAIWA, Takayuki (Research Institute for Humanity and Nature,Associate Professor,Organization of the project)

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○ OHSHIMA, Kay I. (Institute of Low Temperature Science, Hokkaido Univ.,Professor,Physical oceanographic analysis on the north pacific intermediate water)

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FUKAMACHI, Yasushi (Institute of Low Temperature Science, Hokkaido Univ.,Assistant Professor,Physical oceanographic analysis on the north pacific intermediate water)

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Group 2: Geochemical and biological conditions.

○ NAKATSUKA, Takeshi (Graduate School of Environmental Studies, Nagoya University,Professor,Transport of materials by dense shelf water and north pacific intermediate water)
○ KUMA, Kenshi (Graduate School of Fisheries Science, Hokkaido Uni.,Professor,Analysis of iron of open waters)
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Group 3: Transport of biogeochemical materials.

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KODAMA, Hiroki (Analytical Research Center for Experimental Sciences, Saga University,Associate Professor,analysis on organic matter in the river water)
TERASHIMA, Motoki (Japan Atomic Energy Agency,Researcher,experimental study on dynamics of organic matter and iron)

Group 4: Biochemical transport from terrestrial ecosystem.

○ SHIBATA, Hideaki (FieldScienceCenter for Northern Biosphere, HokkaidoUniv.,Associate Professor,biogeochemical characteristics of river waters from different land surfaces)
○ YOH Muneoki (Environmental Conservation, Tokyo Univ. of Agriculture & Technology,Associate Professor,biogeochemical characteristics of river waters from different land surfaces)

Group 5: Background of the anthropogenic impacts.

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IWASHITA, Akihiro (Slavic Research Center, Hokkaido Univ.,Professor,politics between russia and china)
PAKU, Kou (Graduate School of Agriculture, Hokkaido Univ.,Associate Professor,background analysis on Chinese agricultural sociology)
SAKASHITA, Akihiko (Graduate School of Agriculture, Hokkaido Univ.,Professor,background analysis on Chinese agricultural sociology)
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Group 6: Spatial and historial monitoring of land-use changes.

○ HARUYAMA, Shigeko (Graduate School/Faculty of Bioresources, Mie University,Professor,landform classification in the Amur river basin)
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HIMIYAMA, Yukio (Hokkaido Univ. of Education,Professor,land-use changes and its background analysis)

Group 7: Estimate of atmospheric transports of terrestrial materials.

○ UEMATSU, Mitsuo (Ocean Research Institute, Univ. of Tokyo,Professor,deposition of various materials from atmosphere)

○ MATOBA, Sumito (Institute of Low Temperature Science, Hokkaido Univ.,Assistant Professor,historical changes of iron deposition by means of ice core analysis)

NARITA, Hideki (Institute of Low Temperature Science, Hokkaido Univ.,Former Project leader (retired),real-time monitoring of atmospheric deposition of various materials)

NAKAWO, Masayoshi (national Institutes for the humanities,the board of directors,ice core analysis)

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YASUNARI, Teppei J. (Researhch Institute of human and nature,Researcher,meteorology, glaciology, climatology)

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Group 8: Natural variability of the hydro-metrological and hydro-chemical conditions.

○ ONISHI, Takeo (Research Institute for Humanity and Nature,Senior Researcher,numerical modelling of hydrological as well as geochemical transports in the amur river basin)

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TAKAHARA Hikaru (Kyoto Prefectural Univ.,Professor,reconstruction of paleoenvironment in the amur river basin by pollen analysis)

Group 9: Modeling of biomass production.

○ MATSUDA, Hiroyuki (Graduate School of Environment and Information Sciences, Yokohama National Univ.,Professor,theoretical consideration on management of “giant” fish-breeding forest)

○ KISHI, Michio (GraduateSchool of Fisheries Science, Hokkaido Univ.,Professor,numerical modelling of phytoplankton production in the Sea of Okhotsk and Oyashio region)

○ MITSUDERA, Fumio (Institute of Low Temperature Science, Hokkaido Univ.,Professor,numerical modelling of north pacific intermediate water)

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SAITO, Seiichi (Graduate School of Fisheries Science, Hokkaido Univ.,Professor,satellite observation on primary production)

SUGIMOTO, Takashige (School of Marine Science and Technology, Tokai Univ.,Professor,assessment of terrestrial impact on estuary ecosystem)

Group 10: conservation strategy for the GFBF.

○ HANAMATSU, Yasunori (Researhch Institute of human and nature,Researcher,International law)

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ENDOU, Takahiro (Research Institute for Humanity and Nature,Assistant Professor,regional and international water managements)

International Researchers

SERGIRNKO, Valentine.(RussianAcademy of Sciences, Far Eastern Branch,Chairman,organization of

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SHAMOV, Vladimir V. (Institute of Water and Ecological Problems, FEBRAS,The scientific Coodinator,ground water monitoring in the Amur river basin)

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BAKLANOV, Peter Ya. (Pacific Institute of Geography, FEBRAS,Director,economic geographical analysis on Amur river basin)

GANZEI, Sergry S. (Pacific Institute of Geography, FEBRAS,Deputy Director,land-use changes in the Amur river basin and its transboudary problems)

MISHINA, Natalia. (Pacific Institute of Geography, FEBRAS,Scientific Researcher,land-use changes and the analysis on material flows in the far east)

ISHONIN, Mikhail. (ROSHYDROMET,Director,aerosol monitoring in Kamchatka)

GAVRILOV, Alexandr V.(ROSHYDROMET,Head of administration,hydro-geochemical monitoring in the Amur river)

VOLKOV, Yuri N. (Far Eastern Hydrometeorogical Research Institute,Director,oceanographic observations in the Sea of Okhotsk)

YAROSLAV, D. Muravyev.(Institute of Volcanology Seismology,Directore of the Institute,ice core drilling in Kamchatka)

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YAN, Baixing (Northeast Institute of Geography and Agricultural Ecology, CAS,Professor,geochemical analyses of waters in sanjiang plain)

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CHEN, Lijun (Institute of Applied Ecology, Chinese Academy of Sciences,Professor,geochemical analysis of soils at Heilongjiang province)

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GUO qingxi (Northeast Forest Univ.,Professor,hydrogeochemical anlysis on waters from Chinese forests)

HU Haiqing (Northeast Forest Univ.,Professor,reconstruction of forest fire in the northeast of China)

GU Jinfeng (Northeast Forest Univ.,Researcher,reconstruction of forest fire in the northeast of China)

SHI, Fuchen (Nankai Univ.,Professor,forest ecology in the northeast of China)

XU, Xiaoniu (Anhui Agricultural University,Professor,geochemical analysis on waters from Chinese forest)

■Research Plan

The final year of the project will be devoted to the following five outstanding tasks.

1) Complete understanding of the physical part of the GFBF system

a) direct and indirect linkages between the temporal variability in the Amur River iron flux and primary productivity in the Pacific Ocean will be analysed "spatially" by satellite remote sensing and "historically" using a dataset of the seasonal nutrient variability in the Oyashio region;

b) the relative importance of riverine and atmospheric iron to primary productivity in the Sea of Okhotsk and the northern North Pacific will be estimated both horizontally and vertically by iron isotopic analyses of ocean suspended, sinking and sedimentary particles;

c) seasonal and yearly variations in the dissolved iron concentration will be evaluated by focusing on the relationship among the water level and characteristics and concentrations of dissolved organics and dissolved iron;

d) land-use change impacts on dissolved iron productivity will be assessed by running numerical experiments under different land-use scenarios.

e) the long-term trend of dissolved iron dynamics will be analysed along with increasing agricultural activities on the Sanjiang plain;

f) the impact of land-cover conservation on dissolved iron productivity will be evaluated by numerical modelling;

g) an ocean general circulation model including iron circulation will be constructed to simulate the impact of iron on primary production.

2) Qualitative understanding of the socio-economical part of the GFBF system

a) implementation of forest policy reform and its effect on forest management including forestfire will be completed;

b) change of timber trade structure of Russian Far East and its effect on forest management and industry will be completed;

c) relationship between irrigation system and ground water pumping will be clarified for Sanjiang plain.

3) Agenda Setting for the Conservation of the GFBF

a) a new framework "North-Eastern Asia GFBF Partnership" will be constructed to motivate stakeholders to conserve the GFBF;

b) a package proposal "Agenda for the conservation of GFBF" will be presented.

4)An international symposium entitled "Dilemma of Boundaries" will be held in Kyoto, October, 2009 to discuss conservation of the linked land and ocean water resources on the basis of GFBF system.

5)An international symposium will be held at Sapporo to launch "Amur Okhotsk Consortium" which unites scientist living in Japan, China and Russia to discuss the transboundary environmental problems occurring in the Amur Okhotsk region.

6) A closing international symposium of the project will be held in Kyoto in January 2010 and set "Agenda for the conservation of the GFBF" as a collaborative result of the project.

The result of the project will be published and announced by various ways including books, a project report, academic papers and oral and poster presentations in academic as well as public medium.

■Problems for implementation or points need to change plan

1. Exporting samples from Russia

It was difficult to export samples that we collected in the Amur River basin until the end of 2007. We have since solved the problem by 1) exporting samples through Vladivostok customs with the help of the

Russian Academy of Sciences, Far Eastern Branch, and 2) analyzing samples at Russian institutes by exporting analysis apparatus (a total organic carbon analyzer) from Japan to Russia and contracting a new institute (V. N. Sukachev Institute of Forest, Siberian Branch, Russia Academy of Science) for analysis of organic matters by fluorescence spectroscopy and atomic absorption spectroscopy.

2. Field Research by Foreign Scientists in Russia and China

It has been becoming more difficult for Japanese scientists to conduct field campaigns in both Russia and China. China prohibited foreign scientists from carrying out any hydrological observations without permission from the State Council of the People's Republic of China (PRC Hydrological Law, established on May 1, 2007). In Russia, it became impossible for Japanese scientists to install any mooring system in the Sea of Okhotsk in 2007, which caused serious problems for physical oceanographic observations. These political problems are difficult for scientists to solve; therefore, we hope for ongoing negotiations between the Japanese and Chinese/Russian governments to promote international collaboration in solving our transboundary environmental problems.

Papers

【Original Articles】

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・Saitoh, Y., K. Kuma, Y. Isoda, H. Kuroda, H. Matsuura, T. Wagawa, H. Takata, N. Kobayashi, S. Nagao and T. Nakatsuka Dec,2008 Processes influencing iron distributions in the coastal waters of the Tsugaru Strait, Japan.. *J. Oceanogr* 64 :815-830. DOI:10.1007/s10872-008-0068-3.(reviewed).

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・Tachibana, Y., Oshima, K. and Ogi, M. Aug,2008 Seasonal and interannual variations of Amur River discharge and their relationships to large-scale atmospheric patterns and moisture fluxes. *Journal of Geophysical Research* 113(D16102). DOI:10.1029/2007JD009555.(reviewed).

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・Onishi, T., Shibata, H., Yoh, M. And Nagao, S. 2008 Mechanism for the production of dissolved iron in the Amur River basin - a modeling study of the Naoli River of the Sanjiang Plain. M. Taniguchi, Y. Fukushima, W.C. Burnett, M. Haigh & Y. Umezawa (ed.) *From Headwaters to the Ocean: Hydrological Change*

and Watershed Management. Taylor & Francis, pp.355-360.(reviewed).

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・Mizue Murooka, Shigeko Haruyama and Yoshitaka Masuda 2008 Land Cover Detected by Satellite Data in the Agricultural Development Area of the Sanjiang Plain, China.. *Jounal of Rural Planning* 26 :197-202.

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・ Mitsudera, H 2008 Environmental problems in the Pan Pkhotsk Region. *Slavic Eurasian Studies* 19 :137-166.

・ Ohshima, Kay I., Nakanowatari, T. and Wakatsuchi, M. 2008 Weakening of overturning in the Sea of Okhotsk and the northern North Pacific by global warming. . *Monthly "Chikyu"* 30(3) :127-133. (in Japanese) (reviewed).

Stage: FR
Project No.: C-05
Project Name: Human Impacts on Urban Subsurface Environments
Abbreviated Title: Urban Subsurface Environment
Project Leader: TANIGUCHI, Makoto
Research Axis: Circulation
URL: http://www.chikyu.ac.jp/USE/
Key Words: subsurface environment, groundwater, urbanizatiomn, heat island, contamination, subsurface thermal anomaly, development stage of the city

■Research Objectives and Topics

1. Research Objectives

Securing water resources and preventing contamination of water caused by human activities in urban areas are global environmental issues in the 21st century. Heat island phenomena caused by human activities is also a big environmental problem in addition to global warming. These global environmental issues which are caused by urbanization, should be addressed strongly and prevented as population and density increases occur rapidly in urban areas.

Most global environmental studies have long been focused on the environmental issues above ground, such as air pollution, global warming, seawater pollution, and decrease in biodiversity. Subsurface environmental issues are also important for human life in the present and future, but have been largely ignored because of the invisibility of the phenomena and difficulty of evaluations.

Subsurface environmental problems such as subsidence due to excessive pumping and groundwater contamination, have occurred repeatedly in Asian major cities with a time lag depending on the development stage of urbanization. Therefore, we may be able to assess future scenarios if we can evaluate the relationships between subsurface environmental problems and the development stage of the city.

2. Research Content

This project deals with; (1) Relationships between the development stages of the cities and subsurface environmental problems which will be assessed by socio-economic analyses and reconstructions of urban areas using historical records; (2) Serious problems in subsurface environments and changes in reliable water resources which will be studied after evaluations of groundwater flow systems and changes in groundwater storage using hydrogeochemical data and in-situ/satellite-GRACE gravity data; (3) Evaluation of accumulation of materials (contaminants) in subsurface and their transport from land to ocean including groundwater pathways using chemical analyses of subsurface water, sediments and tracers; and (4) Subsurface thermal contamination due to the “heat island” effect in urban areas by reconstruction of surface temperature history and urban meteorological analyses.

Tokyo, Osaka, Bangkok, and Jakarta are targeted as main study cities, and Taipei, Manila and Seoul are selected as secondary study cities, depending on the four sub-themes. The project will focus on the urban subsurface environments however, we will treat the problems on a basin scale, because subsurface water, heat, and material transports are interconnected on this scale. We will assess the relationships between subsurface environmental changes and human activities during the past 100 years.

■Progress of Project

Outline of results

(1) Field surveys on subsurface environment in targeted cities have been made, and monitoring of

subsurface environments at 7 cities (Bangkok, Jakarta, Manila, Seoul, Taipei, Tokyo and Osaka) has been going on.
(2) Assessments of natural and social data in each city, and a database based on GIS have been made. Land cover/use maps based on GIS with 0.5 km mesh have been made at three development stages (1930's, 1970's, and 2000's) of seven cities.
(3) International Symposium, HydroChange2008, has been organized by RIHN, with IAHS and GWSP, and the book "From Headwater to the Ocean" has been published by CRC press (679 pp).
(4) Studies on cross cutting theme such as religion-groundwater relationships have been made in Bangkok and Jakarta. The relationships between groundwater discharge and elevation of the religious facilities and soil have been investigated.
(5) Interim results of the project have been published by special issue of STOTEN (Science of the Total Environment, Elsevier) including one overview and 15 original papers.
(6) Newsletter of the project Vol. 5 (April, 2008) and Vol.6 (October, 2008) have been published.

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■Research Plan

A new cross cutting Working Group of Law/institution and religion/groundwater will be launched. The integrated indicators of the subsurface environment will be evaluated. Inter-calibration by uses new techniques such as CFC, KR, gravity meter will be made.

■Problems for implementation or points need to change plan

In addition to six sub groups (Social economy G, Urban Geography G, Groundwater G, Gravity G. Material G, and Subsurface heat G), cross cutting working groups, Model WG, GIS/Database WG and Law/Religion WG have been established to integrate the project results.

Books

【Chapters/Sections】

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・Takahiro Hosono, Reo Ikawa, Jun Shimada, Takanori Nakano, Mitsuyo Saito, Shin-ichi Onodera, Kang-Kun Lee and Makoto Taniguchi 2008 Human impacts on groundwater flow and contamination deduced by multiple isotopes in Seoul City, South Korea. *Science of The Total Environment* .(reviewed).

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・H. Tanikawa, R. Inadu, S. Hashimoto, S. Kaneko 2008 Estimation of historical / spatial changes in subsurface Material Stock related to the construction sector of urban areas in Japan. M. Taniguchi, W.C. Burnett, Y. Fukushima, M. Haigh, Y. Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.591-597.(reviewed).

Research Presentations

【Oral Presentation】

・T. Hosono Comparative study on water quality among Asian megacities based on major ion concentrations. HydroChange2008, October 2008, Kyoto, Japan.

・A. Yamashita Urbanization and the change of water use in Osaka City - Spatio-temporal analysis with data maps. HydroChange2008, October 2008, Kyoto, Japan.

・T. Imai, A comparative study on history of sewage works construction between Bangkok and Tokyo. HydroChange2008, October 2008, Kyoto, Japan.

・Y. Kagawa Urbanization in Asian Metropolis and the Changes of hydrological environment in and around Bangkok. HydroChange2008, June 2008, Kyoto, Japan.

・Makoto Taniguchi Human Impacts on Subsurface Environment in Asian Mega Cities. IGS-TH2009, February 2009, Bangkok、Thailand.

・Hideki Hamamoto Estimation of the Past Ground Surface Temperature Change form Borehole Temperature Date in Bangkok. IGS-TH2009, February 2009, Bangkok、Thailand.

・Tsutomu Yamanaka Assessment of Enhanced Recharge of Confined Groundwater in and around the Bangkok Metropolitan Area: Numerical Experiments and Multiple Tracer Studies. IGS-TH2009, February 2009, Bangkok、Thailand.

・ Rachmat Fajar Lubis Assessment of Urban Groundwater Heat Contaminant in Jakarta, Indonesia. IGS-TH2009, February 2009, Bangkok、Thailand.

・Tsuyoshi Imai Historical Comparisons of Technology Development on Sewage in Asian Megacities : Bangkok and Tokyo. IGS-TH2009, February 2009, Bangkok、Thailand.

・Chung-Ho Wang Correlation Between Groundwater Level Variations and Land Subsidence in the Choshuichi Alluvial Fan, Taiwan. IGS-TH2009, February 2009, Bangkok、Thailand.

・ Tomomasa Taniguchi The restoration of Historical Hydro-environment from Historical Materials and Topographical Maps in Tokyo, Japan. HydroChange2008, October 2008, Kyoto, Japan.

・Keiko Yamamoto Improvement of JLG terrestrial water storage model using GRACE satellite gravity data. HydroChange2008, October 2008, Kyoto, Japan.

・Hideki Hamamoto Estimation of the past ground surface temperature change from borehole temperature data in the Bangkok area. HydroChange2008, October 2008, Kyoto, Japan.

・ R. F. Lubis Reconstructions of climate change and surface warming at Jakarta using borehole temperature data. HydroChange2008, October 2008, Kyoto, Japan.

・Takeshi Hayashi Land expansion with reclamation and groundwater exploitation in a coastal urban area: A case study from the Tokyo Lowland, Japan. HydroChange2008, October 2008, Kyoto, Japan.

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・Karen Ann B. JAGO-ON Long-term urban growth and water demand in Asia. HydroChnage2008, October 2008, Kyoto, Japan.

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・Akio Yamashita Urban development and its influences dor water and thermal environment in Asian mega cities. 31st International Geographical Congress, August 2008, Tunis .

・Takahiro Endo Hard" Solutions and "Soft" Solutions: Institutional Response to Urban Water Problems. KRIHS and RIHN Joint International Symposium on Urban Sustainability in Asia, June 2008, Seoul, Korea.

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・Makoto Taniguchi Human Impacts on Subsurface Environment in Asian Mega Cities. AOGS2008, June 2008, Busan, Korea.

・Fernando SiringanI Metal Pollution History of Metro Manila, Philippines from Depth Profiles of Sediments from Three Water Bodies. AOGS2008, June 2008, Busan, Korea.

・Takahiro Hosono Vertical variation of the heavy metal concentrations in the sediment core collected from the Osaka Bay, Jakarta Bay, and Manila Bay. AOGS2008, June 2008, Busan, Korea.

・Keiko Yamamoto Study of terrestrial water storage in Africa using GRACE satellite gravity data and JLG terrestrial water storage model. Groundwater & Climate in Africa - an international conference, June 2008, Kampala, Uganda.

【Poster Presentation】

・K. Yamamoto Validation of JRA-JCDAS LDA and GRiveT Terrestrial Water Storage Model Using GRACE Satellite Gravity Data. WCRP International Conference on Reanalysis, February 2009, Tokyo, Japan.

・Y. KAGAWA The Distribution of Temples along the Canal and the Changes of Hydrological Environment in Bangkok.. IGS-TH2009, February 2009, Bangkok、Thailand.

・K. Yamamoto Study of Sub-basin Scale Groundwater Variations in Asia Using GRACE, Satellite Altimetry and in-situ Data. 2008 AGU Fall Meeting, December 2008, San Francisco, USA.

・M. Kagabu Groundwater flow system determined by multiple age tracers and stable isotopes in Jakarta area. 2008 AGU Fall Meeting, December 2008, San Francisco, USA.

・Y. Shiraki Effect of the heat island on subsurface temperature. 2008 AGU Fall Meeting, December 2008, San Francisco, USA.

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・J. Yasumoto Evaluation of submarine groundwater discharge in coastal aquifers at Osaka Bay, Japan by numerical simulation. 2008 AGU Fall Meeting, December 2008, San Francisco, USA.

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・H. Tanikawa Estimation of historical / spatial changes in subsurface Material Stock related to the

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・M. Aichi Simulation of the ground movement caused by groundwater extraction using a nested modeling scheme to integrate regional groundwater flow and local groundwater flow/land subsidence; an example from Tokyo. EGU General Assembly 2008, April 2008, Vienna, Austria.

Stage: FR

Project No.: C-06

Project Name: Effects of Environmental Change on the Interactions between Pathogens and Humans

Abbreviated Title: Environmental Diseases

Project Leader: KAWABATA, Zen'ichiro

Research Axis: Circulation

URL: http://www.chikyu.ac.jp/z/

Key Words: Freshwater ecosystem, Environmental alterations, Koi herpes virus (KHV) disease, Human life, Interactions, Model

■Research Objectives and Topics Research Objectives and Topics

Research Objectives andbackground

The rapid spread of emerging infectious diseases is a serious globalenvironmental problem that is threatening humans, wildlife, and livestockworldwide (Dazac,et al.,2000; Jones, 2008).

The objectives of this study are to clarify anthropogenicenvironmental changes, pathogens that emerge under these environmental changesand the effects of diseases caused by these pathogens on humans. The study willhelp experts respond toemerging infectious diseases proactively, before they become a major healththreat, through an understanding of environment-pathogen-human linkages. Bydoing so, the study will contribute to the safe coexistence of humans withpathogens to realize long-term societal security.

Since 1998, KHV has caused outbreaks of mass mortality in carp,which have long been part of the human food chain and culture. These outbreaksare a global problem. We will focus on the relationships between environmentalchanges in a freshwater ecosystem, KHV, common carp (Cyprinus carpio carpio),KHV disease, and humans.

We will follow three steps to reach this goal: (1) We will analyzethe human -modified littoral area of the aquatic ecosystem-koi herpes virus (KHV)-carp-humanlinkage, in which parameters common to other diseases are involved. (2) We willextrapolate KHV disease to other infectious diseases to explain howenvironmental changes induce these diseases, to find common structure amongthese diseases, and to establish a general model for the emergence and spreadof disease. (3) We will propose a model for the safe coexistence of humans withpathogens to realize long-term societal security.

Research sites andmethods

We will focus on the relationships between environmental changes ina freshwater ecosystem, KHV, common carp (Cyprinus carpio carpio), KHV disease,and humans. We regard this system as a relevant model of interactions betweenpathogens and humans, because it involves parameters common to other diseases.The system will also allow us to conduct experiments to verify theinteractions. We will then establish a general model for the emergence andspread of disease. We have beenconducting intensive field surveys at Lake Biwaand its satellite lakes. We will propose a method for predicting the outbreakof KHV disease, environments that prevent the outbreak and spread of KHV, andhow to facilitate the coexistence of KHV and humans. Ourenvironment-pathogen-human model derived from LakeBiwa will be applied to Lake Erhaiin Chinaand to other infectious diseases. We will then establish an environmentalmedical science model that aims to proactively prevent the outbreak of infectious disease.

We will develop anenvironment-pathogen-human linkage model, and will obtain the following finalproducts. In our intensive study site, Lake Biwa, we will (1) map thedistribution of KHV, (2) map the distribution of carp behavior, (3) mapstressors of carp, (4) visualize the potential occurrence of KHV disease anddiagnose the occurrence of KHV by usinglandscape observation, (5) predict the emergence of KHV disease by combiningsteps 1-3 here, (6) apply our KHV-human linkage model derived from Lake Biwa toother

aquatic ecosystems and otherinfectious diseases, (7) generate conceptual models for the interactionsbetween humans and environments that induce infectious disease, (8) recommend waysin which humans and pathogens can coexist, and (9) contribute to thedevelopment of the basic sciences.

Research groups andtheir roles

Our project is organized into five research groups, an executivegroup, and an advisory group. The roles of each group are as follows:
Environmental alteration by humans (Group1): revealing the effects of anthropogenic environmental alteration on theemergence and spread of a pathogen (KHV) and on the behavior of its host,common carp (Cyprinus carpio carpio).
Ecology of pathogens and their hosts (Group 2): clarifying the dynamicsof KHV and its host (common carp) in relation to environmental factors, therebydefining the environmental factors involved in KHV infection.
Infection process and ecosystem effects(Group 3): revealing the process of infection and the spread of KHVdisease, and the effects of KHV diseaseon ecosystem functions such as material cycling.
Economics and culture (Group 4): clarifyinglosses in terms of ecosystem services, economics, and culture as a result ofthe increased occurrence of disease and the compensation process for thoselosses.
Feedback (Group 5): clarifying the effectsof losses on subsequent environmental alteration by humans.
Executive Group: coordinating theactivities of each group to connect the research subjects to attain our objective;applying our model to other infectious diseases.
Advisory Group: providing suggestions forhow to improve the project from the viewpoint of international experts.

Perception andcontribution to global environmental problems

Field surveys are being conducted primarilyat Lake Biwa, Japan,where researchers from various disciplines and fishermen have accumulated muchdata, and at Lake Erhai, China. China is responsible for almost theentire global carp production. Lake Erhai is an inland lake in China that has never experienced anoutbreak of KHV. We will create a model to predict the outbreak and spread ofKHV in Lake Biwaby accumulating and synthesizing both new and existing data from Lake Biwa. The model will be applied to Lake Erhaito provide suggestions for how to manage the lake to lessen the probability ofan outbreak of KHV disease. The practical application of this model to such animportant region is critical to attenuating the global problem of KHV disease. The Lake Biwa model will bemodified to apply to other infectious diseases in other areas, to suggestenvironments that might prevent the outbreak and spread of infectious disease, and todemonstrate how to facilitate the safe coexistence of humans and pathogens.

■Progress of Project Progress of Project

Progress up to Now

We have established a method for detecting KHV in natural waters(Minamoto et al., 2008, in press). Weinitially did not know where and when KHV existed other than on and in theinfected carp. Using our detection method, we were the first in the world toreveal that KHV remains in both lakes and rivers long after the outbreak period(Minamoto et al., 2008, in press; Honjo et al., submitted). Spatial andtemporal changes in water temperature in the human -degraded littoral zone aremore homogenous than those in natural zones (Yamanaka et al., submitted). Thishas the potential to affect carp behavior, immunity to KHV, and stress. We alsodiscovered that only carp larger than 30 cm in length are immune to KHV (Uchiiet al., submitted). This indicates thatcarp behavior due to size is a key factor in determining the site and spread ofan outbreak. We established a method for quantifying stress material in thewater without causing stress to living carp. This will enable us to conduct experiments to discover the

relationshipbetween water temperature and stress in carp.
An encounter between KHV and carp is thefirst event leading to an outbreak of KHV disease.
Visualization of the place and time of apossible outbreak is one of our scheduled outputs. According to our findingthat KHV can exist anywhere, research on visualization should focus on placesinfected by KHV and the environmental effect on it.
We organized the international symposium "Environmental Change, Pathogens, and Human Linkages" at RIHN in June 2008,which was supported by freshwater BIODIVERSITY/DIVERSITAS, an internationalprogram of biodiversity science. We concluded that many infectious diseases maybe caused by environmental degradation by humans. Scientific papers by allsymposium speakers are being prepared for submission to an internationaljournal. Several follow -up workshopsare in progress, and we have begun international collaborations with thespeakers.

○Co-Researchers

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■Research Plan

「Points changed from PR and FR1」

Nothing has changed in the researchmethods, organization, or plan for the Full-Research 2nd (2008) proposal fromthe Pre-Research (2006) and Full- Research 1st (2007) proposals.

■Problems for implementation or points need to change plan Problems for inplementation or points need to change plan

1.It is necessary to collect more data to establish “interactions between pathogens and humans”.
2.Collaboration between researchers and local administrative agencies are needed for further survey in Lake Eahai, China.
3.To construct the model of “interactions between pathogens and humans”,it is important to have close contacts and frequent discussion between researchers of each group.

■ Results in 2008

1) We surveyed the topology, bottom quality, andwater quality of six satellite lakes of Lake Biwa that seemed to beimportant habitat for common carp. We found heterogeneous environmentsin these lakes. It was revealed that spatial and temporal changes inwater temperature in the human-degraded littoral zone are morehomogenous than those in natural zones. This has the potential toaffect carp behavior, immunity to KHV and stress of carp. Amathematical model, based on the hypothesis that common carp migratebetween the satellite lakes seeking better habitats, predicted thatlower connectivity among satellite lakes increases the carp stresslevel and accelerate the spread of KHV disease.
2)With Chinese collaborators we conducted a pre-survey on spatial and temporal changes in water temperature in Lake Erhai, China.
3) We invented a method to detect KHV in naturalwaters and so were the first in the world to reveal that

KHV remains inlakes and rivers long after outbreak.
4)We collected 528 carp from seven sites in Lake Biwa to obtain materialsfor stable isotope analysis and to identify their behavioral range.
5) We installed breeding tanks with controlledwater temperatures and established a method for quantifyingstressor-induced substances in the water to discover the relationshipbetween water temperature and stress in carp.
6) We discovered that only carp larger than 30 cmin length are immune to KHV. This indicates that carp behavior due toage is a key factor in determining the site of outbreak and spread ofKHV diseases.
7) We began our study of the effect of common carp extinction on ecosystem functions and human economy and culture.
8) We studied the legionella infection process to discover common parameters of legionella and KHV diseases.
9) We organized the international symposium "Environmental Change, Pathogens, and Human Linkages" at RIHN in June2008. We concluded that many infectious diseases may be caused byenvironmental degradation by humans.

■ Scheduled Research Activities in 2009

1) Survey the spatial and temporal distribution of water temperature in Lake Erhai, China.
2) Reveal the distribution of infective KHV in Lake Biwa.
3) Develop a micro device to measure the quantity and infectivity of KHV in situ.
4) Determine the environmental factors involved in KHV dynamics.
5) Use radio telemetry to document C. carpio range and behavior.
6) Clarify the behavior of C. carpio infected with KHV to reveal the locations where the infection likely occurs.
7) Conduct controlled experiments to reveal the relationship between environmental factors and stress in carp.
8) Describe the environmental characteristics of the places where KHV and carp interact.
9) Begin assessment of the economic impact of carp die-offs.
10)Create a preliminary model of the interactions between environmental change, KHV and humans.
11)Describe common parameters of KHV and other infectious diseases.
12)Develop set of recommendations to prevent or minimize the emergence and spread of infectious diseases.
13)Promote collaboration with the international program of biodiversity science DIVERSITAS.

Books

【Authored/Co-authored】

・Yao Zhihong, Kong Hainan, Jin Zhicheng, Wang Chen, Pan Wei 2008 Improved Genetic Neural Network and Its Application in Forecasting of Rich Nourishment of Water and Blue-Green Algae. JOURNAL OF SHANGHAI JIAOTONG UNIVERSITY, 42. , 262-265 (in Chinese)

Papers

【Original Articles】

・Minamoto T, Honjo M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Iida, T. and Kawabata, Z. Mar,2009 Detection of cyprinid herpesvirus 3 DNA in river water during and after an outbreak. *Vet. Microbiol.* 135(3-4) :261-266. DOI:10.1016/j.vetmic.2008.09.081.(reviewed).

・Matsui, K., Honjo, M., Kohmatsu, Y., Uchii, K., Yonekura, R. and Kawabata, Z. Jun,2008 Detection and significance of koi herpesvirus (KHV) in freshwater environments. *Freshwater Biology* 53(1262) :1272.

・Kondoh, M. 2008 Building trophic modules into a persistent food web. *Proceedings of the National Academy of Sciences of the United States of America* 105 :16631-16635.

・Chen Xuechu, Kong Hainan. 2008 Seasonal variation of mixing depths and its influence on phytoplankton

dynamics in Zeya Reservoir, southeast China.. *Ecologic Science* 27(414-417). (in Chinese)

・Huang Yingying ,Chen Xuechu ,Kong Hainan ,Li Chunjie,Ding Wei ,Wang Yan. 2008 The effect on algae decay by aeration under light-shading condition. . *Environmental Pollution & Control* 30(44-47). (in Chinese)

・Wang YH, Inamori R, Kong HN, Xu KQ, Inamori Y, Kondo T, Zhang JX. 2008 Influence of plant species and wastewater strength on constructed wetland methane emissions and associated microbial populations.. *Ecological Engineering,* 32 :22-29.

・Ichijo, T., Yamaguchi, N. , Tani, K. amd Nasu. M. 2008 16S rRNA sequence-based rapid and sensitive detection of aquatic bacteria by on-chip hybridization following multiplex PCR. J. . *Health Sci.* 54(123) :128.

Research Presentations

【Oral Presentation】

・Minamoto T., Honjo M. N., Kawabata Z. Seasonal distribution of cyprinid herpesvirus 3 in Lake Biwa.. Workshop on CyHV-3 disease in an environment-human linkage, -Apr 08,2009, Kyoto.

・Minamoto T., Honjo M. N.. and Kawabata Z. Distribution of koi herpesvirus in Lake Biwa. . The 56th Annual Meeting of The Japanese Society of Ecology, Mar 17,2009-Mar 21,2009, Takizawa Village, Iwate. (in Japanese)

・ Inoue,N., Ichijo,T., Hiramatsu,A., Baba,T., Kenzaka,T. and M. Nasu. Genetic diversity of membrane protein gene sequences in Legionella pneumophila isolated from natural and artificial environments. Forum2008: Pharmaceutical Health Science & Environmental Toxicology, Oct 17,2008-Oct 18,2008, Kumamoto.

・Uchii, K., Ishihara, T., Asano, K. and Kawabata,Z Invasion of cyprinid herpesviru s 3 and its impact on the economy and industry involved in koi and common carp. 73rd Annual Meeting of Japanese Society of Limnology, Oct 11,2008, Sapporo, Japan. (in Japanese)

・Honjo, N. M., , Minamoto, T., Mastui, K., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y. Iida, T., Kawabata, Z. Quantification of Koi herpesvirus in environmental water. 73th Annual Meeting of The Japanese Society of Limnology, Oct 11,2008, Hokkaido. (in Japanese)

・Tanaka, N., Itayama, T., Honjo, M., Minamoto, T., Kawabata, Z. Development of a Rapid Concentration System for Virus in Environmental water. 12th International Conference on Integrated Diffuse Pollution Management (IWA DIPCON 2008), Aug 27,2008, Khon Kaen, Thailand.

・ Kawabata Z., Minamoto T., Honjo M. N., Uchii K.,Yamanaka H., Suzuki A. A.. and Kohmatsu Y. KHV-carp-human linkages: a case study in Lake Biwa, Japan. . International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto.

【Poster Presentation】

・Baba,T., Inoue,N., Yasui,M., Ichijo,T. ,Kenzaka,T. and M. Nasu Genetic Diversity of Membrane Protein Gene Sequences in Legionella pneumophila Isolated from Natural and Artificial Environments.. 12th International Symposium on Microbial Ecology, 20081708-20082208, Cairns, Australia.

・Matsui, K., Honjo, N. M., Kawabata, Z., Uchii, K. Evaluation of environmental characteristics in freshwater by using horizontal gene transmission rote as indicator. 24th the Japanese Society of Microbial Ecology Annual Meeting, Nov 25,2008-Nov 28,2008, Hokkaido, Japan. (in Japanese)

・Ichijo,T., Yamaguchi,N., Tani,K. and M. Nasu Bead Assay Based Simultaneous Detection of Pathogenic Bacteria in Aquatic Environment. 12th International Symposium on Microbial Ecology, Aug 17,2008-Aug 22,2008, Cairns, Australia.

・Minamoto T., Honjo M. N., Uchii K., Yamanaka H., Suzuki A. A., Kohmatsu Y. and Kawabata Z. Detection of koi herpesvirus DNA from natural river water.. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto, Japan.

・Itayama, T., Yanaka, N., Honjo, N. M., Minamoto, T., Kawabata, Z. Development of an on site rapid concentration system for virus in environmental water. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto, Japan.

・Yamanaka, H., Sogabe, A., Kohmatsu, Y., Minamoto, T., Honjo, N. M.,Uchii, K., Suzuki, A. A., Omori, K., Kawabata, Z. Relationship of lake morphometry and shore configuration to the temperature distribution inlagoons, and implications for its effect on fish health. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008, Kyoto.

・Uchii, K., Matsui, K. and Kawabata,Z. Distribution of cyprinid herpesvirus 3 in a wild population of common carp (Cyprinus carpio). International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto,Japan..

・Honjo, N. M., Minamoto, T., Matsui, K., Uchii, K., Yamanaka, H., Suzuki,A. A., Kohmatsu, Y., Iida, T., Kawabata, Z. Quantification method of Koi herpesvirus (KHV) in environmental water using cation-coated filtermethod and external standard virus. International Symposium on Environmental Change, Pathogens, and Human Linkages , Jun 11,2008, Kyoto, Japan.

・Suzuki, A., Kohmatsu, Yonekura, R. Measuring cortisol in the water as an indicator of stress caused by environmental change in common carp(Cyprinus carpio). International Symposium, Environmetal Change, Pathogens, and Human Linkages, Jun 11,2008, Kyoto.

・Ichijo, T., Yamaguchi, N., Nasu, M. , Diversity of eukaryotic-like gene sequences in l egionella pneumophila isolated from aquatic environment in Asian countries by using molecular microbial ecological methods. International Symposium, Environmetal Change, Pathogens, and Human Linkages, Jun 11,2008, Kyoto.

・T. Kenzaka, M. Yasui, T. Ichijo, T. Baba, M. Nasu Diversity of Eukaryotic-Like Gene Sequences in Legionella pneumophila Isolated from Natural Environment. . 108th American Society for Microbiology General Meeting,, Jun 01,2008-Jun 05,2008, Boston, MA, USA..

【Invited Lecture / Honoronary Lecture / Panelist】

・Kawabata, Z. KHV-Carp-Human Linckages: case study in Lake Biwa, Japan. Seminar on Environmental Diseases. Lecture at Graduate School of Pharmaceutical Sciences, Osaka University, Oct 29,2008, Osaka. (in Japanese)

Stage: FR

Project No.: D-02

Project Name: A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago

Project Leader: YUMOTO, Takakazu

Research Axis: Diversity

URL: http://www.chikyu.ac.jp/retto/retto.htm

■Research Objectives and Topics

ResearchObjectives

TheJapanese Archipelago has been extremely densely populated since the NeolithicAge, and most of the natural environment has been strongly influenced by humanactivities. The life patterns of humans have, in turn, been shaped by their useof biological resources, by their fauna and flora. Moreover, although theJapanese biota is derived from life forms which migrated from the continentalmainland during periods when sea levels were lower, it has been furtheraugmented by human beings, who have introduced additional species at varioustimes. However, in spite of the intensive intervention by humans in the naturalenvironment, there is still a rich biota in the Japanese Archipelago, whichincludes, for example, an abundance of indigenous species of angiosperm andfreshwater fish. Because of this, it has been widely assumed that human-naturerelations in pre-modern Japan were governed by some kind of traditional wisdomthat prevented people from exhausting biological resources; or even that it wasthe moderate human activity itself that preserved the abundant biota andsustainability of biological resources in Japan.

However, the question of exactly howstable the coexistence between the nature and humans was in the past has notbeen resolved. Could it be that even in the Japanese Archipelago there has beena history of exhausting biological resources? If the wisdom and will to usebiological resources in a sustainable way existed, how common were they?Moreover, could there have been any major social changes that occurred as aresult of exhausting certain biological resources?

Although each of these questions has beentackled within the limits of one historical period, region, or one academicdiscipline, they have not been researched using a trans-disciplinary approach,over an area that would represent the whole Japanese Archipelago, or over atime span that encompasses the whole period from the earliest human habitationof Japan to modern times. The objective of the present project is toreconstruct as historical processes. It will examine, first, how the naturalenvironment has been changed since the late Paleolithic Age, when human beingsare first known to have existed in the Japanese Archipelago; second, how thebiota has changed during that process; and third, what kind of perceptions,knowledge and skills the humans possessed, concerning both nature in general,and specific life forms. Our aim is to present a foundation for contemplatinghow human-nature relations should be developed, and to suggest concretemeasures for preventing mass extinction of species in the near future.

Background

The Japanese Archipelago extends over3000 km from North to South, and includes subarctic, cool temperate, warmtemperate and subtropical climatic zones. It is evident that, even during theglobal environmental changes that have taken place over the past 100 000years, these various climatic zones were present. As a result, thecharacteristics of the natural environment and the human subsistence activitieswithin the Japanese Archipelago varied greatly, as did the relationshipsbetween nature and human activity. Under the influence of climatic change andhuman activities, the distributions of individual species of plants and animalsin the Japanese Archipelago and its surrounding landmasses have been constantlychanging. Populations have repeatedly divided, expanded and diminished inresponse to changes in the availability of suitable habitat. Where suitablehabitat was not available, the species became extinct.

Theknowledge and skills that humans have developed concerning individual speciescan be considered to contain both the idea that biological resources should beused in sustainable way, and the desire to harvest without fear of exhaustingthe resources. Although ethnological research has highlighted phenomena such aspublic management of lands and resources, and environmental preservationthrough limited harvest, it is still unclear when, in which region and amongwhom the philosophy of preservation was put into practice, or under whichsocial conditions it became an influential way of thinking. Throughout theperiod of human habitation, the Japanese Archipelago has been blessed with awarm climate and abundant rainfall, and consequently abundant biologicalresources. But what is the history of overuse and exhaustion of thoseresources? And how did individual species fare in this historical process?These are the central issues of the present project.

Significance as a RIHN project

1) Reconstructing Japanese historyfrom an unprecedented point of view in the following three respects.

(a) Taking the climaticchanges over the last tens of thousands of years as an axis, the project willexamine both the history of the living organisms and human history,interpreting history as the sum total of all human-nature relationship vectorsin all the periods (for example, the *Satoyama,*a traditional rural agro-ecosystem which has established in early modernJapan).

(b) By comparativeanalysis of the social and economic factors that shaped and supported thehuman-nature relationships in each of six climatically and historicallydifferent regions of the Japanese Archipelago, the project will explicate theconnections between those regions. At that we understand the present-day biotain each of the regions as a result of the history of the division, relocationand local or overall extinction of species.

(c) From the point ofview of human ecology and using materials such as archaeological remains,historical records, and oral tradition, we will attempt to reconstruct thenetwork of natural resource usage in each of the regions in each period. Basedon the results of this analysis, we aim to identify the main cause of change inhuman-nature relationships, and to verify the extent to which the concept ofusing biological resources in sustainable ways existed in each period.

2) Building atheoretical method for reconstructing the history of human beings based on theinteraction with the environment using a trans-disciplinary approach. Theproject attempts to establish a new research method, which can be applied inother regions, by explicating the mechanisms underlying human culture andenvironmental issues through an approach which is wide, both in its time andspace scale, and which takes into account both the impact that naturalenvironment has on the formation and change of human cultures, and theinfluence that human activities exert on the natural environment.

3) Proposingsome guidelines for avoiding future threats to the environment. Byunderstanding the long-term impact that human activities have on the naturalenvironment through the change in subsistence/economic systems, it is possibleto predict the future environmental dangers, e.g. the loss of biologicaldiversity, and to propose a realistic policy for handling them. A special effortwill be made to explain the mechanisms by which species or populations havebecome extinct in the past, and to provide a policy to avoid the extinction ofspecies taking place at present.

■Progress of Project

Progress as a whole project

1) A series ofchronological charts of environmental history for each district is beingcompiled from epoch-making events on environmental issues and policy changes onresource managements. It will be completed by adding data of estimatedvegetation changes (based on pollen analysis) and population change (based onhistorical demography).

2) The word “wise use” hasbeen examined from various aspects in a workshop. Consequently, it is definedas knowledge and skills which have been enable to use the regenerable naturalresources without exhausting, and to obtain ecosystem services (provisioning,regulating, cultural, and supporting, *insensu*

Millennium Ecosystem Assessment (2005)) in sustainable ways. Examplesof “wise use” and “unwise use” from each district are being sorted out andcategorized by identifying which governance (e.g. community, local government,national government, international organization) took an initiative role, andaccording to what kind of incentive it concerned to.
3) Paleo-ecosytem WG andPlant geography WG held a cooperative workshop to combine each achievement. Oneof their outcomes is to identify the refugees for warm temperate plants andcold temperate plants in Last Glacial Maximum. The results were presented in asymposium of Japanese Society of Botany. Based on the discussion then, anestimated vegetation map in Last Glacial Maximum in Japan Archipelago(including Sakhalin) is now preparing for publication.
4)Analyses on old bones have been conducted, focusing to the comparison amongJomon period (high self-sufficiency, by hunting and gathering), Edo period(high self-sufficiency, by developed agriculture with national-wide trade) andPresent (low self-sufficiency, food supported by international trade).

Progress in each working group
1) Paleo-ecosystem WG: Data of pollen analysis in Japanfrom various authors are being compiled to register in Global Pollen Database.Comparative pollen analysis is undergoing dated back to Last Inter-glacialPeriod in Lake Biwa, Kamiyoshi Basin, and the Osaka Group in Kinki region, andrevealing the human activities and vegetation changes. Symposia were held inthe annual meetings of Ecological Society of Japan andof The Japanese Association of Historical Botany.
2) Plant geography WG: Plants from various climate zoneswere selected and analyzed by DNA makers. Especially, nuclear DNA markers havesuccessively developed on *Perseathunbergii* as a climax species and *Zanthoxylumaianthoides* as a pioneer species in warm temperate zone where lessinformation is available.
3) Old humanbone WG: Stable isotope analysis on present human based on hair was conductedto reveal the more-dependency on meats than on fish, and the extreme vegetarianlifestyle for some subjects. Also, stable isotope analysis of the collagen fromold human bone of Edo Period revealed the considerable regional variations offood intake: from coastal fish to millets which produced in slash-and-burntcultivation.
4) Sakhalin WG: The locality known as Cyurui where molarteeth of Naumann’s elephants (*Palaeoloxodonnaumanni*) were excavated 30 years ago was re-excavated to obtainenvironmental proxy as pollen and tephra.
5) Hokkaido WG: Documents, either official and private,in Shiribeshi region were examined to study the history of herring catch anddestruction of forests owing to firewood and boiling fish. Governmental policyon resource managements in historical context is being analyzed.
6) Tohoku WG: The local extinction of large mammals,wolves, boars, monkeys and deer was studied based on old documents to revealthe year of extinction and its presumed reason. The present-absent map ofmonkeys in Edo Period, Meiji-Taisho Era, Showa 30s, the beginning of Heisei,and present in whole Tohoku region has completed.
7) Chubu WG: Documents in Edo Period were analyzed on themanagements of *Osutaka-yama* (a areaof the protected forest for rearing young hawks which provide to lords used forhunting birds). A lot of letters, which shows the conflicts between people whoobtained the benefits from young hawks and people who wanted to log trees, was discovered.
8) Kinki WG: History of forests which have been providingtimbers to old capitals (Nara, Kyoto, Osaka and others) were studied, and theexhausting of large trees, conflicts between lords and villagers, and thedevelopments of transportation were related to each other. Domestic use oftimber as housing in a village was studied by breaking down an old house, andthe size and species of each timber were analyzed intensively to reveal theforest use surrounding the village.
9) Kyushu WG: Fire which maintains grassland in Aso andKuju was analyzed by documents which recorded the ceremony of lord’s hunting byfiring. Also, a boring core analysis on pollen, tephra, plant opal revealedthat the fire and grassland was observed before Akahoya tephra (ca.BP 6300).
10) OkinawaWG: Excavation of bone accumulation and documental works revealed that theextinction of dugong (*Dugong dugong*)in Yaeyama Islands was occurred by over-killed in Meiji Era, after the end

ofsustainable managements by Shuri Dynasty which monopolized the resource use.

○Co-Researchers

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■Research Plan

Fiscal year 2008

Paleo-ecosystem WG: Completing thevegetation map in Last Glacier Maximum. Conducting paleo-environmental analysison each region where District-based WGs are studying, especially for recent 1,000 years.
Plant geographyWG: Completing the genetic variation map of plants so far studied. Beginningthe DNA analysis on human-planted plants in historical period (e.g. chestnuts,some species of oak trees).
Old bone WG:Continuing the stable isotope analysis on the materials in Jomon Period, EdoPeriod, and present.
District-basedWGs: Continuing to compile chronologicalcharts of environmental history from epoch-making events on environmentalissues and policy changes on resource managements. Elucidating the examples of "wiseuse" and "unwise use", and analyzing which "environmental governance" led "wiseuse" or "unwise use".
Conceptualization WG:Generalizing the evidences and ideas from each WG, and proposing a tentativepolicy and guidelines for better human-nature relation.

Fiscal year 2009

Paleo-ecosystem WG: Publishing thevegetation map in Last Glacier Maximum. Completing paleo-environmental analysison each region to provide District-based WGs.
Plant geographyWG: Publishing the genetic variation map of plants sofar studied. Completing the DNA analysis on human-planted plants in historicalperiod.
Old bone WG:Completing the stable isotope analysis on the materials in Jomon Period, EdoPeriod, and present, and making comparisons among them.
District-basedWGs: Completing to compile chronologicalcharts of environmental history from epoch-making events on environmentalissues and policy changes on resource managements. Completingto elucidate the examples of "wise use" and "unwise use", and analyzingwhich "environmental governance" led "wise use" or "unwise use". Preparing aseries of books
Conceptualization WG:Continue to generalize the evidences and ideas from each WG, and proposing atentative policy and guidelines for better human-nature relation.
Preparingan international conference on "Biodiversity and Sustainable Use of NaturalRegenerable Resources and Ecosystem Services" for 2010 COP10 Biodiversity Convention in Nagoya.

■Problems for implementation or points need to change plan

1) Each district-based WG has already identified thetarget matter to be solved, but the synthesis of them is in a just beginningphase. We will make every effort to conduct it, mainly based on two ideas:“wise use” and “environmental governance”. As for chronological charts of environmental history foreach district, the progress in each district is much different. So we willcompile them, by adding standardized data of estimated vegetation changes(based on pollen analysis) and population change (based on historicaldemography).

2) The collaboration between Paleo-ecosystem WG and Plantgeography WG is satisfactory one. Before this project, there has been nodiscussion between them on the same topics they are studying from differentapproaches (e.g. refugia in Last Glacial Maximum). They will publish theresults in the next fiscal year on vegetation map and estimated refugia in LastGlacial Maximum.

3) To makeup a policy and guidelines for better human-nature relations, more concentratedefforts and strategy are needed. Especially, for public communication, aninternational symposium should be designed as a satellite meeting of COP onBiodiversity Convention which will be held in 2010, the last year of theproject, in Nagoya, Japan.

Stage: FR

Project No.: D-03

Project Name: Human Life, Aging, and Disease in High-Altitude Environments:Physio-medical, Ecological and Cultural Adaptation in the Three Great "Highland Civilizations"

Project Leader: OKUMIYA, Kiyohito

Research Axis: Diversity

■Research Objectives and Topics

Research Objectives:

We intend to explore new perspectives regarding how people live in high-altitude environments. We focus on aging problems and lifestyle-related diseases because we regard these as manifestations of global environmental issues in the human body. We will clarify the ecological and cultural adaptations to high-altitude environments that can collectively be called "highland civilization," as well as physiological adaptations, and how recent changes in lifestyle have affected quality of life (QOL) amongst the elderly. We also propose a model of human-nature interactions in "highland civilization."

Background:

When the supply of oxygen to the human body stops, irreversible brain damage occurs within five minutes (Cara 1981). In highlands, such essential oxygen is thin and food can be scarce. Humans have adapted to such environments physiologically, ecologically and culturally over many years. We call such ecological and cultural adaptations "highland civilization" and have previously reported that elderly highlanders have a high subjective quality of life. In recent years, however, the wave of rapid change has also reached the highlands. It is true that life in the highlands is becoming more convenient in some ways, but it is estimated that lifestyle-related diseases such as myocardial infarction or diabetes will increase. From the aspect of adaptations to thin air, such phenomena can be a countercurrent because these diseases affect the circulation of oxygen in the human body. The changing lifestyle in highlands cut both ways (Okumiya 2007). In this project, we will study the influence of these lifestyle changes over several decades on quality of life among elderly highlanders.

Significance for "Global Environmental Issues":

Global environmental problems are currently actualized problems on a global scale caused by environmental changes brought about by human activities. These problems, such as global warming and glacier retreat, are said to be the result of relatively recent human activities. These activities have resulted not only in serious changes to the environment, but also to the internal environment of the human body. One prominent phenomenon is the increase in lifestyle-related diseases. Lifestyle-related diseases depend on lack of exercise, excess caloric intake, etc., as risk factors (Okumiya 2008), in part because of a strong trend of increased consumption related to a more convenient lifestyle. There are concerns that these lifestyle-related diseases may reach a global scale. The study of expanding lifestyle-related diseases in extreme environments, in this case, from the perspective of highland civilizations, is crucially important.

■Progress of Project

In 2008, field surveys were conducted in the Ladakh region in India, Qinghai Province in China and Arunachal Pradesh State in India. In the Ladakh region, we described changes in lifestyle and environment, and the well-being of the elderly in the Domkhar area. Although the incidence of diabetes among the local people was low, it is likely that monks have a high incidence of diabetes. The well-being of some elderly highlanders was worsened by diseases that could be treated if the necessary equipment was provided. In the Haiyan County, Qinghai Province, we found a clear difference between Han people and Tibetan people in terms of physiological adaptations to a highland environment, lifestyle-

related diseases and well-being of the elderly. Our results showed the high possibility of diabetes incidence according to lifestyle change in highlands, which suggested the importance of preventing this disease in highlands. Although ADL of the elderly in Qinghai Province was lower than in Tosa, Japan, the subjective satisfaction of daily life, with the exception of health, was higher in Qinghai Province than in Tosa. In Arunachal Pradesh State, we recorded the altitudinal gradients of vegetation and land-use systems from the valley bottom at 2000 m to the hilltop at 4000 m, and described characteristic subsistence of local communities. Relationships between the natural environment and subsistence systems, and the health status of the local community will be studied in the following year.

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■Research Plan

Forming hypotheses to cope with manifestations of environmental problems in the human body

To cope with manifestations of environmental problems in the human body, we will test two hypotheses using a multidisciplinary approach. First, lifestyle-related diseases in the highlands, such as obesity, diabetes, high blood pressure and chronic mountain sickness are caused by the excessive function of adaptive mechanisms to hypoxia and limited nutrition. Second, the current disease and aging patterns of the elderly in highland areas result from a loss of local knowledge in “highland civilization” for ecological and cultural adaptation that is essential for a sustainable livelihood with limited resources in the highlands.

Study agendas

To test the above hypotheses, we have set the following three agendas for this study:
(1) How have humans adapted to high-altitude environments physiologically, ecologically and culturally?
(2) What is the health status of elderly highlanders, especially with respect to aging and lifestyle-related diseases? What are the background factors associated with health status in this population?
(3) What kinds of changes occur in lifestyle and environment at high-altitudes? How do these changes affect the QOL of elderly highlanders?

Subjects of study

The study sites are selected from three areas with different ecological and socio-economic conditions in the Himalaya-Tibet region: the Ladakh region in India where people live in oases in the desert under the increasing influence of a market economy (2900 m - 4600 m asl), Arunachal Pradesh State in India where the villages are surrounded by forest and under less influence of a market economy (200 m - 4000 m asl)

and Qinghai Province in China where living on highland grasslands is regulated by government policy (3000 m - 3700 m asl). For the comparative study within the Himalaya-Tibet region, a field survey will also be conducted in Bhutan and Nepal where several members have experience with field surveys. Villages composed of 150-200 households (1000-1500 people) are selected within the study sites.

Study organization

The project is composed of three groups: the medical, cultural and ecological groups, including a total of 42 researchers that collaborate with local researchers at each study site. To facilitate the multidisciplinary approach, the project also includes three regional study groups: the Ladakh, Qinghai, and Arunachal groups. Data collected from the different sites using various methods are shared and integrated by an integrating committee consisting of the core project members.

Research items for each group

Medical group:

1) Health status associated with lifestyle-related diseases and hypoxia adaptation

Blood pressure, oxygen saturation, hematology, oxidative stress, glucose tolerance test, electrocardiogram, chest X-ray, echocardiogram, carotid ultrasound, spirometer, arterial sclerosis, ankle brachial pressure index (ABI), Geriatric Depression Scale, bone density, Visual Analogue Scale, weight, height, functional reach, button test, diagnosis of lifestyle related diseases and chronic mountain sickness.

2) Evaluation of aging in elderly

Comprehensive geriatric functions: ADL (Activities of daily living), history of diseases, depression, cognitive function, neuro-behavioral functions and subjective QOL (quality of life).

Cultural group:

ADL (Activities of daily living), diet and nutrition, energy consumption, trading and market products, economic status, irrigation and water use, and agriculture and livestock farming, and natural resources use as described during interviews and by direct observation.

Ecological group:

Current status and changes in land use system and the natural environment are analyzed by field interviews and remote sensing methods. Meteorological data including temperature, precipitation, humidity, atmospheric pressure, solar insolation and wind speed are measured by monitoring devices.

Integration for the multidisciplinary study

Data collected from different sites using various methods are shared and integrated by the integrating committee based on the following agendas:

How have humans adapted to high-altitude environments physiologically, ecologically and culturally?

The association among hypoxia adaptation, health status associated with lifestyle-related diseases, and aging phenomena will be examined by multivariate analysis to disclose the mechanisms of physiological adaptation.

Agricultural practices, use of natural resources, economic status and meteorological data are surveyed to investigate the characteristics of ecological and cultural adaptation.

What is the health status of elderly highlanders, especially with respect to aging and lifestyle-related diseases?

What are the background factors associated with health status in this population?

To clarify the reason for the increase in lifestyle-related diseases, physiological information, dietary intake and energy consumption, and economic status are analyzed at the individual level, while land use systems and market products are described at the community level.

What kinds of changes occur in lifestyle and environment at high-altitudes? How do these changes affect the QOL of elderly highlanders?

Information on changes in lifestyle and environment are checked against data on comprehensive geriatric functions including ADL (activities of daily living), which is regarded as objective QOL (quality of life) and subjective QOL of the elderly.

■Problems for implementation or points need to change plan

We originally chose three major highlands, Ethiopia, Himalaya-Tibet and the Andes, as our research zones, but the PRT suggested that we focus on the Himalaya-Tibet region as a first step. Based on their suggestion, we decided to carry out a thorough investigation of this region. To promote cooperation among the medical, cultural and ecological research groups, we set three main agendas as described above. Our members match the information at both the village and individual levels. To integrate the information, we organized an integrating committee consisting of the community-based and methodology-based group leaders. We also placed long-term members in the area to promote collaboration with local residents.

Papers

【Original Articles】

・Ishine M, Okumiya K, Hirosaki M, Sakamoto R, Fujisawa M, Hotta N, Otsuka K, Nishinaga M, Doi Y, Matsubayashi K. 2008 Prevalence of hypertension and its awareness, treatment, and satisfactory control through treatment in elderly Japanese . *J Am Geriatr Soc.* 56(2) :374-375.(reviewed).

・Okuyama Y, Pellmyr O, Kato M. 2008 Parallel floral adaptations to pollination by fungus gnats within the genus Mitella (Saxifragaceae). *Molecular Phylogenetics and Evolution* 46 :560-575.(reviewed).

・Kawai A. 2008 Harmonizing agricultural development with the preservation of forest in the southern slope of Bhutan Himalaya. *Himalayan Study Monographs* 9 :54-83. (in Japanese) (reviewed).

・Ishine M, Okumiya K, Hirosaki M, Sakamoto R, Fujisawa M, Hotta N, Otsuka K, Nishinaga M, Doi Y, Matsubayashi K. 2008 Prevalence of hypertension and its awareness, treatment, and satisfactory control through treatment in elderly Japanese. *J Am Geriatr Soc.* 56(2) :374-375.(reviewed).

・Fujisawa M, Okumiya K, Maysubayashi K, Hamada T, Endo H, Doi Y. 2008 Factors associated with carotid atherosclerosis in the oldest elderly over 80 years in the community. *Geriatrics & Gerotology International* 8(1) :12-18.(reviewed).

・Kameda Y, Kato M. 2008 Systematic revision of the subgenus Luchuhadra (Pulmonata: Camaenidae: Satsuma) occurring in the central Ryukyu Archipelago. *Venus* 65 :291-297.(reviewed).

・Suetsugu K, Kawakita A, Kato M. 2008 Host range and selectivity of the hemiparasitic plant *Thesium chinense* (Santalaceae). *Annals of Botany* 102 :49-56.(reviewed).

・Miyamoto S. 2008 The issues of natural disaster of the high altitude mountains area, Himalaya. *Himalayan Study Monographs* 9 :49-53. (in Japanese) (reviewed).

・Yatagai A, Xie P, Alpert P. 2008 Development of a daily gridded precipitation data set for the Middle East. *Advance in Geosci.* 12 :165-170.(reviewed).

Stage: FR

Project No.: D-04

Project Name: Collapse and Restoration of Ecosystem Networks with Human Activity

Abbreviated Title: Ecosystem Networks

Project Leader: YAMAMURA, Norio

Research Axis: Diversity

URL: http://www.chikyu.ac.jp/yamamura-pro/

Key Words: Biodiversity, Complex adaptive system, Ecosystem networks, Minimization of uncertainty, Simulation, Social networks

■Research Objectives and Topics

Research Objectives

The project aims to clarify the mechanisms resulting in the collapse and deterioration of ecosystems, and then pave the way to restore and maintain healthier ecosystems with high biodiversity and ecological functions while minimizing instability and uncertainty in the long term over a wide area.

The most important concept of this project is the "ecosystem network," which has a nested structure involving interactions among and within subsystems, including human societies. We will conduct fieldwork in two regions: tropical rainforests in Southeast Asia and grassland in Central Asia. First, we will describe the existing ecosystem network structure in both regions using information obtained from fieldwork and the literature. Because relatively large amounts of information on biological interactions within subsystems have already accumulated, the ecological surveys will focus mainly on material flow and the movements of organisms between subsystems, especially the movements of pollinators, predators, and parasitoids related to ecosystem function. For the networks of human societies, we will investigate which actors are responsible for the changes in the ecosystems, the intention of the change, how other actors control these activities, and the historical transition of actors driving the ecosystem changes. Based on our results, we will construct models for making projections and evaluating the ecosystem networks in the two regions. Further, we will generalize the results to determine the critical network characteristics likely to result in environmental problems.

Background

Degradation of ecosystems, which has led to the loss of biodiversity and ecosystem function, is widely accepted as one of the most serious global environmental problems. Nevertheless, most researches on the problem have focused only on the direct consequences. The collapse and deterioration of ecosystems by human activities via interactions within the ecosystem network, including indirect and cascade effects, have rarely been considered. In addition, few studies take a social science perspective, although environmental problems are one of the consequences of the interactions between nature and human society.

The recent boom in theoretical studies on complex networks (complex system sciences, complex adaptive systems) and the remarkable progress in computer performance have dramatically increased our capacity to deal with complex systems such as ecosystems and social interactions. Complex system sciences are now a practical, important tool in various fields of sociology, economics, and ecology.

This project takes advantage of the interdisciplinary nature of network sciences to consider environmental problems, especially the problem of ecosystem deterioration, by linking sociology, economics, and ecology.

How the project will contribute to solving environmental problems

The goals of the project are not only to investigate and solve individual environmental problems, but also to demonstrate new approaches in the environmental sciences globally by generalizing the results obtained in Mongolia and Sarawak from the perspective of network theory. Therefore, the goal of

the project will contribute to solving environmental problems, building academic “knowledge” to further contribute to resolving problems and to drive the global environmental sciences.

■Progress of Project

In 2008 FY, the first year of our project, we established infrastructure of observation and survey in intensive study areas in Sarawak and Mongolia, and collected satellite data and statistical data with making their GIS. We have started ecological and social surveys with making projection models based on their surveys.

Association between modeling and surveys is developed more in Mongolia than in Sarawak. This is because the land cover in Mongolia is simpler and thus the modeling is easier. As we could make clear subjects for modeling and structure of problems in the last year, we will proceed modeling for changes in Sarawak land use. In both areas, Mongolia and Sarawak, we will model dynamics of plant biomass and rough division of land use, whose spatial data are available for the test. Biodiversity is used for an index of land cover and land use.

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■Research Plan

■Problems for implementation or points need to change plan

Results of each work group

Modeling work group

(a) We started construction of models predicting biomass in Mongolia grassland using satellite and climate data.
(b) We started construction of agent-based models examining relationship between vegetation changes and migration patterns.
(c) We constructed GIS database of population and livestock with SUM (an administrative division) units. We showed recent rapid increase in goats and the more concentrating distribution near Ulaanbaatar.

Mongolia work group

(a) We set up automating weather systems at three points, Ulaanbaatar in the forest step, Mandalgobi in the step and Hanhongor in the desert step.
(b) We examined migration patters of nomadic people by setting GPS on livestock, and surveyed grass production and livestock grazing pressure by making experimental fences.
(c) We conducted questionnaire surveys on factors of migration patterns of nomadic people and causes of migration to grassland near Ulaanbaatar.

Sarawak work group

(a) We established survey plots at primary and secondary forests in Lambir National Park, and surveyed inhabiting biological species and ecosystem services.
(b) We conducted intensive social surveys on a few selected villages and extensive questionnaire surveys on many villages over all Sarawak.
(c) We examined status and causes of expansion of oil palm plantation, and socio-ecological systems of

utilizing biological resources as forest certification.

Problems and possible solutions

A most challenging matter in our project is the modeling of effects of human activities on ecosystems. In Mongolia, we will abstract the rule of movements of houses and livestock from GPS data and questionnaire surveys. In Sarawak, we have to determine the unit and the rule of decision-making. As the final goal of our project, future projection and evaluation of ecosystem network under several scenarios, we have to elaborate settlement of concrete scenarios immediately.

Stage: FR

Project No.: E-02

Project Name: Interaction between the Environmental Quality of a Watershed and the Environmental Consciousness: With Reference to Environmental Changes Caused by the Human Use of Land and Water Resources

Project Leader: SEKINO, Tatsuki

URL: http://www.chikyu.ac.jp/idea/

■Research Objectives and Topics

Research Objectives

People's intensions to natural environments must be adequately taken into consideration when human impacts will affect to natural environments. What kinds of values are recognized in natural environments? It is difficult to determine items in nature to be conserved without people's value judgment on natural environment. What kinds of environmental qualities are perceived as values? Since people may not share the same natural scientific information about the natural environment and the value judgment, people's decision may not be always rational. Clarifying the relationship between people's environmental consciousness and environmental quality and estimating the environmentalchanges occurred by human actions may provide more suitable action plan toward natural environments. In this project, a methodology using both natural andhumane-sociological ways will be tested.

Background

I. Basic concept of the project

When people are placed in an environment, one may use it to get some benefits, another may conserve it because of existence of endangered organisms and another may ignore it. Why do these differences in attitudes among people occur toward the same environment? Understanding this question is one of the objectives for elucidating relationships between humans and the nature. People's perception of the environment affects their value judgments on the environment as a basis to determine their attitudes toward it. We define this value judgment system as the "environmental consciousness". To clarify the relationship between the value judgment of environment and the environmental quality would be an essential to solve global environmental issues.

II. Contribution of the project to the global environmental issues

Forest ecosystem is one of the most important ones under the global environmental change. How does the forest logging change the forest environment? How do people evaluate such environmental changes and the implication of the logging? The aim of the project is relating to the public involvement, which is thought to be the most important in the environmental impact assessment to reach the relevant decision-making.

III. Fitness of the project in the framework of the RIHN

Although natural scientific information about the environment is thought to be important, its application to the public involvement in the environmental impact assessment process has been still immature, particularly in Japan. The project will contribute to make the public involvement being more substantial through the collaboration between the natural science, which analyzes environmental changes, and the social science, which analyzes the environmental consciousness and human activities. The project matches with the main framework of the RIHN, in which the interactive cycle between humans and nature is one of the most important targets.

IV. Relationship between study area and global environmental issues

Various kind of environmental plans have been implemented worldwide. It is very important to assess

the environmental impact before the implementation.However, the inadequacies of the environmental impact assessment have been recognized. Although the public involvement (PI) is an important measure for the relevant decision-making and consensus building in the environmental policy, the procedure for the PI in the environmental impact assessment and in the strategic environmental assessment has been still ambiguous. The result of the project will be applicable to the PI procedure.

Significance as an RIHN Project

Analyses on environmental valuation and the relationship between humans and nature have been studied in academic fields, such as environmental economics and environmental sociology. Although natural scientific information about the environment is thought to be important, its application has been still immature, particularly in Japan. The project has been conducted under the basic understanding of the RIHN that “the root of the so-called global environmental problems lies behind the human culture”. The project has been planned to elucidate the interactive cycles between humans and nature, which is a main framework of the RIHN. The project will contribute to make the public involvement being more substantial through the collaboration between the natural science which analyzes environmental changes and the social science which analyze the environmental consciousness and human activities. The project matches with the main framework of the RIHN, in which the interactive cycle between humans and nature is one of the most important targets.

It is very important to assess the environmental impact before the implementation. However, the in adequacies of the environmental impact assessment has been recognized. Although the public involvement (PI) is an important measure for the relevant decision-making and consensus building in the environmental policy, the procedure for the PI in the environmental impact assessment and in the strategic environmental assessment has been still ambiguous. The number of researches on environmental planning, in which simulation models of environmental changes are applied, has been increasing (cf. Kaga 2006, Takamura2007). In some researches on the environmental restoration and conservation,the techniques based on the environmental economics such as contingent valuation method (CVM) have been applied (Takamura 2007). Although they are resemble our project, their main contribution is not the construction of the substantial PI, but the evaluation of the environmental policies. Relationship between environmental qualities and people’s environmental consciousness has been less considered in these research. Various kind of environmental plans have been implemented worldwide. The result of the project will be applicable to the PI procedure.

■Progress of Project

Outcomes of the project as a whole

I.Development of a response-prediction model of a watershed environment to thechanges in land and water resource uses

The PnET-CN model developed by the US forest scientists was applicable to simulate material cycling and vegetation dynamics in the study areas. An hydrologic model (HYCYMODEL, Fukushima 1988) was used for estimating nutrient and water loads from forest to river. Lake water flow model and biogeochemical simulation model have been developed for Lake Shumarinai. Virtual impacts of tree-cutting plans were introduced into the models and assessed their impacts to the watershed environment. Such virtual impacts were used for preparing the scenario questionnaire.

II. Elucidation of the relationship between the environmental quality and the sense of value for environments in the environmental consciousness

Questionnaire on people’s interests in a forest-agricultural-aquatic system was conducted to determine ranges of type and scale of virtual impact to the environment. Factor analyses of the questionnaire revealed that people seemed to evaluate environments similarly, with respect to the categories such as direct use value, indirect use values and environmental functions. Assuming several parameters based on direct and indirect use values, we can analyze people’s interests in the watershed environment from the viewpoints of environmental values and people’s attitude. There were differences in preferences of

objectives and plans of forest loggings among people. Agriculturists tended to prefer larger logging at adjacent areas. Among environmental changes caused by tree-cutting plans in the forested watershed, deteriorations of water quality in rivers and lake was the most disreputable one. Diversity and uniqueness of people's environmental value judgment have, thus, been elucidated.

Results of each work group

I. RPM group

Review papers (the Japanese Journal of Limnology, vol.67, 2006) and summary report have been published (Katsuyama and Yoshioka 2006).Research results of each subgroups are as follows.

(1) Carbon and nitrogen cyclings in forest environments

To estimate material cycles and vegetation dynamics, we chose and run the PnET-CN model developed by US forest scientists, using measured data as an input.

The model simulated well the patterns of the biomass increment and leaf nitrogen concentration, and the variations in stream NO_3^-concentrations observed in the forested watershed with different forest ages in Wakayama and Nara prefectures. It suggested that the PnET-CN model could be applicable to our project. Recovery processes of forest biomass were different among type of vegetation (broad leaf and conifers) logged (Fig. 2). Temporal changes in NO_3^- loading to streams were also different.The model was also applicable to other type of environmental changes. It suggested that the effect of the increase in atmospheric nitrogen deposition on the stream NO_3^- concentration was compensated by the increase in atmospheric CO_2 concentration (Fig. 3).

(2) Rainfall-run off model The simulation using the hydrologic cycle model developed for the Japanese forested watershed(HYCYMODEL) was able to reproduce the seasonal pattern of the monthly NO_3^-concentration. Monthly water and nutrient loads from forests calculated by the PnET-CN model were distributed into streams using the HYCYMODEL.(3) Lake model Simulation model of the water flow and biogeochemical cycling in a lake has been completed. The model suggested that the increase in NO_3^- loading from the forest would cause an increase in abundance of phytoplankton (Chl.*a* concentration) in are stricted area of the lake.(4) Other results relating to the response-prediction model· Effects of soil-scarification on early vegetation establishment: At the scarification site, light intensity showed a negative effect on the demography of tall-tree species, such as *Abiessachalinensis*.· Reconstruction of the past environment: From the densitometric analyses the past summer temperature and precipitation in the northern Hokkaido were reconstructed back to A.D. 1651. It was suggested that the Uryu-dam (or, Lake Shumarinai) construction did not affect themicro-meteorological condition in the watershed. Pollen and biogenic silicate analyses have elucidated regional and local climatic and vegetation changes for more than 7000 years (Kawano et al. 2007). The long-term climate change is not only useful for validating the response-prediction model, but it is also used in the questionnaire to the examinees as environmental information.· Japan-Wide Stream Monitoring: This survey is practically the first comprehensive survey on the stream chemistry in Japan(Konohira et al. 2006). Spatial distributions of ionic composition in Japanese natural streams (1278 streams in total) were obtained. Atmospheric nitrogen deposition, annual precipitation, annual air temperature, slope of catchment area and direction of the slope contributed to the stream NO_3^-concentration. The most effective factor was the atmospheric deposition (Shindo et al.2005). On the other hand, dissolved inorganic phosphorus concentration in natural streams seemed to be controlled by the geology of the catchments(Wakamatsu et al. 2006).· Microbial characteristics of Lake Shumarinai: Bacterial biomass ($6.83x10^7$ cells ml^{-1})was higher than that in eutrophic lakes, although the cell size was rather small in Lake Shumarinai. Picophytoplankton was also abundant ($3.8x10^4$cells ml^{-1}) in the lake. Data set obtained in this survey will be introduced in the biogeochemical model.

II. Social survey group

(1) Survey on people's interests in a forest-agricultural-aquatic system Questionnaire on people's

interests in a forest-agricultural-aquatic system was conducted to determine ranges of type and scale of virtual impact to the environment. Factor analyses of the questionnaire revealed that people seemed to evaluate environments similarly, with respect to the categories such as direct use value, in directuse values and environmental functions (Matsukawa et al.). Assuming parameters of direct use values (DUV) and indirect use values (IDUV), we can analyze people's interests in the watershed environment from the viewpoints of environmental values.

(2)Preferences on tree-cutting plans

Tree-cutting for conservation of forest environment and for preventing global warming were approved more (>90%) than that for enlargement of national wood production (ca. 70%). Using the choice experiment(a conjoint analysis), variations in people's preference on plans of forest loggings were surveyed. Plantation after logging was preferred more than strength and area of logging. Farmers tended to prefer larger logging at adjacent areas. Farmer's preferences on tree-cutting plans might be relating to their perception of the surrounding forest environment.

(3) Scenario questionnaire

Five environmental qualities (forest landscape, amount and diversity of plant species, recreational use in the forest environment,turbidity of water, and deterioration of water quality in river and lake) were selected as a result of the analysis of keywords expressing images on forest,river and lake environments collected in the questionnaire on people's interests in a forest-agricultural-aquatic system. Environmental changes in these five environmental qualities caused by artificial impact(tree-cutting) scenarios to the forested watershed were estimated using the response-prediction model applied in the project and observational data. Choice experiment was conducted to determine the importance of these environmental qualities to the people's value judgment of plans. Among environmental changes caused by tree-cutting plans in the forested watershed, the deterioration of water quality in river and lake was the most disreputable one(Fig. 4). Although local residents in Horokanai town also firstly minded the water quality, they showed a significant concern with the occurrence of turbid water. Inter view survey at the town suggested that their value judgments on environmental changes would be related with the past experience on the severe tree cutting at the national forest in the town.

(4) Scenario workshop(SW)

In Horokanai town, a scenario workshop has been conducted in July 2007. Based on selected future scenarios about Horokanai town and surrounding environments, residents discussed on their future society. Research members acted as interpreters of scenario and environmental changes expected in scenarios. Although bilateral communication between residents and researchers was not yet enough, researchers could facilitate the people's discussion.Finally, residents have planned some future visions, including opportunities developments on recreational uses and environmental education there.

(5) Other results relating to the social survey Conceptual consideration of the project: The methodology to be developed in the project has been considered from the viewpoint of the system control theory. It was suggested that the system control theory was applicable to the systematic environmental education(Fujihira et al. 2008).

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■Research Plan

I. Changes from the previously proposed plan

The project was evaluated at the interim evaluation committee in March 2006. Some changes have been made in the project. Project leader has been changed twice in May 2007 and April 2008.

II. Research methods

(1) Outline of the methods

The methodology to be developed in this project must include several functions, as follows:

1) Quantitative prediction of changes in environmental elements caused by virtual environmental modifications, such as logging and dairy farming,

2) Informing people of the environmental changes in an appropriate manner,

and

3) Analysis of relationships between changes in the people's value judgment and in the environmental qualities.

(2) Subject areas

The Lake Shumarinai watershed is selected as a main study area, which is located in the northern Hokkaido, Japan. Since the university forest (Hokkaido University) is located in the watershed, we can use abundant data for simulation models and facilities for field surveys. We will also study in a university forest (Kyoto University) and a private forest in Wakayama and Nara Prefectures. In the private forest, the 90-yr cycle of clear cutting and plantation has been repeated at a small watershed level. Therefore,long-term changes in forest environments after forest cutting can be traced.The surveys in this forest are applicable to validate the simulation models.

Social surveys will be conducted not only for the residents in these watersheds, but also nationwide in Japan, in order to elucidate relationships between people's environmental consciousness and their physical and mental distances to subject environments.

III. Organization

The project is composed of two research work groups and liaison

Work Group 1: Development of a response-prediction model (RPM) of a watershed environment to the changes in land and water resource uses (RPM group)

Several existent simulation models have been considered their application to the project. Observational data obtained in the project are used to modify and validate the models. The range of specialties of the group members is wide such as ecology, hydrology, biogeochemistry and so on. Followings are the list of research items in the Group 1.

*Application of the process-based model for biogeochemical material cycling in the forested watershed in northern Hokkaido, Japan (Dr. Hideaki Shibata)

*Long-term assessment of the effect of forest disturbance (Dr. Naoko Tokuchi)

*Hydrological processes in forest and riverine systems (Dr. Nobuhito Ohte andDr. Mitsuo Yamashita)

*Connection between forest biogeochemical model and hydrological model (Dr.Masanori Katsuyama)

* Water quality and plankton dynamics in the Lake Shumarinai watershed (Dr. Shuji Hino)

*Development of biogeochemical model coupled with hydrodynamic model of LakeShumarinai (Dr. Kisaburo Nakata)
*Factors influencing early vegetation establishment following soil-scarificationin a mixed forest of northern Japan (Dr. Toshiya Yoshida)
*Reconstruction of past environmental changes in the Lake Shumarinai watershedusing pollen and dendrochronologicalanalyses (Dr. Hikaru Takahara and Dr. Koh Yasue)
*Nation-wide survey of the stream hydrochemistry (Dr. Eiichi Konohira)

Work Group 2: Elucidation of the relationship between the environmental quality and the sense of value for environments in the environmental consciousness (Social survey group)

This group conducted several social surveys elucidating the environmental consciousness. Since natural scientific information should be included in the questionnaire, natural scientists as wellas social scientists were participated in this group.

* Surveys on the interest in the watershed environment(Dr. Nagata)
* Design of the interest questionnaire (Dr. Zheng)
* Keyword analysis (Mr. Matsukawa and Dr. Sekino)
* Conjoint analyses for sample surveys (Mr. Matsukawaand Dr. Kuriyama)
* Relationship between environmental consciousness and action toward environmental conservation (Dr. Hayashi)
* Application of the system control theory to environmental education (Mr. Fujihira)
* Design of the scenario questionnaire and coordination of the project (Dr. Yoshioka)

Liaison (Dr. Tateno and Dr. Katsuyama)

Liaison facilitates the collaboration between two groups. Liaison participates discussions in the Group1 and grasps the procession of the response-prediction model.

IV. Research plan

(1) RPM group:Development of a response-prediction model of a watershed environment to the changes in land and water resource uses. The response-prediction model simulates the environmental changes caused by the virtual impacts to the environment. Specifically, physical, chemical and biological characteristics are predicted quantitatively. In this project, theimpacts on changes in land and water resource uses will be applied to the watershed environment. The response-prediction model is composed of following sub-models.

1.Carbon and nitrogen cyclings in forest environments

PnET model is applied for simulating material cycles in a forest environment. The model can evaluate effects of logging, acid deposition and so on. Since the model has been developed for North American forests, some modification will be needed for its application to Japanese forests.

2.Rainfall-runoff model

For simulating quality and quantity of stream and river waters supplied from forests, runoffs from small catchment areas should be integrated. For this purpose, a rainfall-runoff model based on a distributed model will be developed.

3.Nutrient loading from agricultural fields

Supplies of nutrients from agricultural fields in the watershed are estimated using a generator method.Data from the field survey are used for calculation of the nutrient loads.

4.Flow model of lake water

To develop a lacustrine model on biogeochemical material cycle, flow of lake water should be simulated first. Applying three-dimensional hydrodynamic model, the flow model of lake water is constructed. Since the model includes thermal balance, water temperature is also formulated in the model.

5.Biogeochemical material cycling in a lake environment

Biogeochemical model is needed to analyze the material cycles in an ecosystem. Materials and water inputs from a watershed to a lake generated by the forest and river models are the input to the flow model and the lacustrine biogeochemical model.

The performance of the response-prediction model will be validated with observational data sets

including the nationwide survey on the stream chemistry.

(2) Social survey group:Elucidation of the relationship between the environmental quality and the sense of value for environments in the environmental consciousness

The social survey group implements and analyzes attitude surveys.

1)Interviews to residents in the Lake Shumarinai watershed and nearby city andt own

In order to elucidate the social and environmental situations from the viewpoints of the ordinary sense of residents, interview surveys are conducted in and around the Lake Shumarinai watershed. Collected scripts from residents are analyzed with the evaluation grid method.

2)Survey on people's interests in a forest-agricultural-aquatic system

Interests in the watershed environment are studied based on the interviews and questionnaires. Questionnaire should be carefully developed in such a way that the preparation procedure is traceable, in order to assure the universal applicability of this method to other environments and stakeholders. Results of the analyses are used for selecting and scoping virtual impacts applied for the scenario questionnaire. The questionnaire is also analyzed using factor analyses to verify a model that assumes the relationships between people's interests in the environment and their environmental valuation.

3)Keyword analysis

Many changes in environmental qualities will be caused by the virtual impact. Since people cannot recognize too many information about environmental changes, it is important to winnow the environmental change information for designing the scenario questionnaire. For accomplishing this purpose, keywords on forest and freshwater environments will be collected from people. Keywords, such as "clean water" and "beautiful green colour", are collected in the questionnaire mentioned in 2), and are put together with respect to their meanings, in order to select environmental qualities, which are noted by people. Selected environmental qualities are candidates to be used in the scenario questionnaire.

4) Scenario questionnaire

Relationships between people's environmental consciousness and environmental change are analyzed using the responses to the questionnaires regarding the environmental change scenarios generated by the response-prediction model(Fig. 1). When the project was planned, we intended to conduct questionnaires with methods used in environmental economics, such as a contingent valuation method (CVM). In the feasibility study of the project, it was suggested that the economic valuation would not be always needed for our purpose. Therefore, we will consider a wider range of the methods for scenario questionnaires, for example the conjoint analysis.Questionnaire will be conducted not only to the residents who have some connection to the watershed considered,but also to the residents who do not have any connection to the watershed, in order to elucidate the general features of the relationship between environmental qualities and environmental consciousness.

■Problems for implementation or points need to change plan

Although the scenario questionnaire is a powerful survey to understand the relationship between environmental qualities and people's environmental consciousness, we recognized difficulties to prepare the scenario questionnaire based on the choice experiment. For future applications of the methodology, a manual of the social survey using environmental scenarios will be published. During the project term, we have recognized the critical importance of the collaboration between natural scientist and social scientist to investigate people's environmental consciousness. However, it took much time for mutual communication, because of differences in terminology and concepts on researches between them. As project was proceeding, the framework of the project method had been getting clearer.We have to regret that more concrete framework was not established at the beginning of the project term. Various kinds of frameworks of the method for collaborating researches on global environmental issues should be proposed and vigorously argued in the RIHN.

Social and economic analyses have not been included in the project scope. As pointed out by many colleagues of the RIHN, people's judgment for environmental measures is affected by the socio-economic valuation as well as scientific environmental valuation. The Environmental Valuation Project will be expanded to such areas in the new project conducted by the Field Science Education and Research Center

(FSERC),Kyoto University, for which core members engaged in the Environmental Valuation Project are working. Fortunately, the project has been accepted as a cooperative study of the MEXT in December 2008. The project will be implemented in the Niyodo River (Kochi) and the Yura River (Kyoto) systems. Results and experiences obtained in the environmental valuation project of the RIHN will be very useful for the new research project. The project will be endorsed in the network on region study and environmental sciences led by the RIHN.

Papers

【Original Articles】

- Katsuyama, M., Fukushima, K. and Tokuchi, N. 2008 Comparison of rainfall runoff characteristics in forested catchments underlain by granitic and Sedimentary rock with various forest age. *Hydrological Research Letters* 2 :14-17.
- Takano, K., Ishikawa, Y., Mikami, H., Igarashi, S., Hino, S. and Yoshioka, T. 2008 Fungal infection for cyanobacterium Anabaena smithii by two chytrids in eutrophic region of large reservoir Lake Shumarinai, Hokkaido, Japan. *Limnology* 9 :213-218.
- Christopher, S.F., Shibata, H., Ozawa, M., Nakagawa, Y. and Mitchell, M.J. 2008 The effect of soil freezing on N cycling: Comparison of two headwater subcatchments with different vegetation and snowpack conditions in the northern Hokkaido Island of Japan. *Biogeochemistry* 88(1) :15-30.

Research Presentations

【Oral Presentation】

- Katsuyama, M., Fukushima, K. and Tokuchi, N. Effects of various rainfall-runoff characteristics on streamwater stable isotope variations in forested headwaters. HydroChange 2008, October 2008, Kyoto, Japan.
- Yoshioka, T. Environmental Consciousness, Inner and Outer. The Futurability of Islands: Beyond Endemism and Vulnerability. The 3rd RIHN International Symposium, October 2008, Kyoto, Japan.
- Yoshioka, T. Linkages in forested watershed environments. Adaptive Management of Biodiversity in the International Conference on Sustainability on Food, Energy and Industry 2008 (ICSA2008), International Council of Sustainable Agriculture (ICSA), July 2008, Sapporo, Japan.
- Zheng, Y. Comparability and Equivalence in Cross-cultural Survey. International Conference on Survey Methods in Multinational, Multiregional, and Multicultural Contexts, June 2008, Berlin, Germany.
- Shibata, H. Land Use Dynamics and Terrestrial Ecosystrem Processes. Dynamics and Pathways of Land Systems Change, Pre G8 Summit Symposium, June 2008, Sapporo, Japan.

【Poster Presentation】

- Katsuyama, M., Fukushima, K., Tokuchi, N, Ohte, N and Tani, M. Geological influences on hydrological and isotopic characteristics in forested headwaters. GU Fall Meeting, December 2008, San Francisco, USA.
- Tokuchi, N., Fukushima, K. and Katsuyama, M. Factors controlling stream water chemistry in ten small forested watersheds with plantation forests of various proportions and ages in central Japan. HydroChange 2008, October 2008, Kyoto, Japan.
- Fukushima, K., Tokuchi, N., Tateno, R. and Katsuyama, M. Water yield and nitrogen loss during regrowth of Japanese cedar forests after clearcutting. HydroChange 2008, October 2008, Kyoto, Japan.
- Katsuyama, M., Nishimoto, S., Ohte, N. and Tani, M. Relationship between rainfall-runoff processes and mean residence times of stream and groundwater in weathered granite catchments. WPGM2008, July 2008, Cairns, Australia.

Stage: FR
Project No.: E-03
Project Name: Interactions between Natural Environment and Human Social Systems in Subtropical Islands
Project Leader: TAKASO, Tokushiro
Research Axis: Ecosophy
URL: http://iriomote.chikyu.ac.jp/
Key Words: forests, Iriomote, island econoics, mangrove plants, subtropical, water balance

■Research Objectives and Topics

Islands are faced with various environmental problems including water shortages, loss of topsoil, disappearing biodiversity, waste disposal issues, and those caused by the factors outside the islands including air and oceanic pollutions. The main purposes of this project awere to understand the multifacetness of these environmental problems and to indicate their solutions. We focused on the case of Iriomote Island in Okinawa Prefecture as a typical subtropical island but also intend to apply our research data and results to the cases of other islands. We strongly believe that economical independence of the local residents of the island is essential for creating a society in which the residents could hope for a better future. We also conducted various activities for conservation of the natural environment and the succession of the unique cultures of Iriomote Island

■Progress of Project

In the research of water balance and water quality, we have collected precious data concerning those of the rain and the rivers, which will be applicable to our research on the usages of water for everyday life, agriculture, and tourism. In the research of the forests, we deepened our understanding of the transitional processes of the broad-leaved forests and the Ryukyu pine forests. We also revealed an important role of typhoons in the death and growth of trees in the forests and understood that especially giant typhoons require a longer-term investigation because of their force that could devastate the forests. The research of island economy that was an important aspect of our project as a basis of everyday life of the islanders has not progressed as much as we first planned since our request to employ a specialist researcher was rejected. However, we continued to consider how the circulatory economy could contribute to the development of island economy and how it would be possible to introduce an environmental tax. In the research of the decision-making process, we reassured of the complexity of each local community on the island and the importance of its community centres through our close contacts with the local residents. In addition, we realised how important it is for us to introduce our research results to the subject areas. We also made a good progress in other research themes. This project had a large collection of photographic materials concerning Iriomote wildcats and local events, which are most useful for further research and activities.

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■Research Plan

In order to identify and contribute to solve the environmental problems of the island, we divided our project into several themes as below. In this project, we first conducted various research programs such as monitoring and then integrated their results to grasp the current conditions of the island. In the first half of the project, we learned the importance of local communities in the decision-making processes; therefore we spent a considerable amount of time to create good relations with the local communities. Halfway in the project, we added a new theme concerning the promotion of local industry, because we realized how important it is to establish the basis of everyday life before solving any communal problems. The research group working under the theme of the coral reef eco-system was granted a separate source of funding and consequently completed its research for this project in 2005.

Water Balance and Water Quality (Land and Ocean)

1) To estimate precipitation, the amount of river flow, and the level of evaporation and transpiration and build a model showing incomings and outgoings of water in Iriomote Island as a guide to water usage in the future.

To show a chronological transition of the amount of topsoil loss at the time of overflow and its mechanism.

2) To understand acidic rain in quality and quantity to consider its influence on the natural environment.

3) To examine the water quality of the ocean in view of assessing the influence of the river water on it.

Functions and Maintenance Mechanisms of the Forestry Eco-system, and the Interactions between the Organisms in the Forest

1) To set up guidelines for the usage and management of forests by examining the dynamics of evergreen broad-leaved forests, mangrove forests, and Ryukyu pine forests, including the aspect of biomass production.

To consider the influence of typhoons upon the forests.

2) To reveal the dynamics of the colonies of seagrasses and to better understand the life cycle of seagrasses..

3) To conduct a research on the movement of Iriomote wildcats.

4) To examine the current condition of foreign plants on the island, the pollination mechanism of mangrove plants, and the relations between flowers and insects.

Functions and Maintenance Mechanism of Coral Reef (completed in 2005)

1) To monitor the biodiversity in the coral reef around the island.

2) To examine the manner of propagation of fish inhabiting the coral reef.

Economy and the Decision-Making Process on the Island

1) To examine the transition of industry and demography on the island and link our findings to administration policies.

To overview the circulatory economy on the island.

To explore possibility of introducing an environment tax.

2) To conduct interviews concerning the decision-making processes and rules of the island communities by attending various local events, and to consider how different local organizations could cooperate with each other toward the solution of environmental problems.

Promoting Local Industries

1) To analyse the composition of kaolin from the island and consider how it could be used in the best possible way.

2) To experiment on natural dyes extracted from the local plants on the island and conduct interviews on dyeing techniques

■Problems for implementation or points need to change plan

In the past, some researchers maintained that all the islanders should move out of the island in order to protect Iriomote wildcats. Many researchers would not report the results of their researches to the islanders in return for their interviews and plant-animal-collecting on the island. In addition, on conducting fieldwork there, some researchers simply persisted on their own ideas that they had already developed and fixed beforehand and did not consider the actual conditions on the island at all. These facts led to antipathy to researchers shared among many local residents. It may not be as strong as hostility; but the researcher and the local resident still tend to conflict with each other. In such circumstances, it requires patience and careful consideration to solve the environmental problems. We attempted to contact with the local residents as frequently as possible. We also took up the issues that particularly concern the islanders into our research project. It was particularly effective in establishing good relations between the project and the local resident to introduce our research results at elementary and junior-high schools. The core members of the project have deeply understood that continuous introduction of research results to the local school and society is essential to build the society with prospective future. At least the reader continues to communicate with the islanders.

Papers

【Original Articles】

・Takaso, T and J.N. Owens. 2008 Significance of exine shedding in Cupressaceae-type pollen. *J. Plant Res* 121 :83-85.

Research Presentations

【Oral Presentation】

・Masato Nakagawa, Yukitoshi Kimoto, Tokushiro Takaso Seed structure of Enhalus acoroides: An evaluation on the adaptive mechanism for hydrochory. The 8th Annual Meeting of The Japanese Society for Plant Systematics Sendai, Mar 13,2009-Mar 15,2009, Sendai-shi, Miyagi. (in Japanese)

Stage: FR

Project No.: E-04

Project Name: Vulnerability and Resilience of Social-Ecological Systems

Abbreviated Title: Resilience Project

Project Leader: UMETSU, Chieko

Research Axis: ECOSOPHY

URL: http://www.chikyu.ac.jp/resilience/

Key Words: resilience, poverty, social-ecological system, resource management, environmental variability, vulnerability, human security, semi-arid tropics

■Research Objectives and Topics

<Research Objectives>

The objective of this research is 1) to consider impacts of environmental variability on vulnerability and resilience of human activities in the semi-arid tropics; 2) to study factors affecting social-ecological systems and their recovery from shocks; 3) to analyse factors determining ability of households and communities to recover from environmental shocks and the roles of institutions in improving household resilience; and 4) to identify the factors affecting resilience of social-ecological systems and ways in which the resilience of subsistence farmers in the semi-arid tropics to environmental variability can be strengthened.

<Background>

A vicious cycle of poverty and environmental degradation, such as forest degradation and desertification, is a major cause of global environmental problems. This is especially the case in the semi-arid tropics (SAT) including Sub-Saharan Africa and South Asia, where a majority of the world's poor are concentrated. Within the SAT, communities' livelihoods depend critically on fragile and poorly endowed natural resources, and poverty and environmental degradation are widespread. People in these regions depend largely on rain-fed agriculture, and their livelihoods are vulnerable to environmental variability. Environmental resources such as vegetation and soil are also vulnerable to human activities. To surmount these environmental challenges, human society and ecosystems must be resilient to (recover quickly from) environmental shocks. Thus in this project we consider society and ecology as one social-ecological system and empirically analyse its resilience.

<How do you utilize the results of the project to help solving "global environmental issues"?>

Through data collection, observation and analysis, our research will identify key resilience indicators able to provide ecosystem and resource management options for communities in the SAT. These results will be disseminated through workshops, conferences, working papers and peer-reviewed publications to share information with concerned governmental and non-governmental agencies and groups.

■Progress of Project

During the FY2006 (PR) we focussed on establishing research collaborations with various institutions in Zambia. During the FY2007 (FR1) we prepared experimental field sites and installed monitoring equipment such as weather stations, on-farm rain gauges and soil moisture measurement devices. Comprehensive household surveys and monitoring of rainfall and crop growth commenced in November 2007. The surveys of the first cropping season of 2007/2008 were completed. In Kyoto, Japan, data were compiled into historical tables, the Resilience Alliance workbook was translated into Japanese, and methods were discussed for integrating the research outputs to meet the project's objectives.

Theme I.

A field experiment in Eastern Province, Zambia, commencing in 2007, showed significantly higher maize yield in tree-burnt areas (comprising 10% of total cultivated area) compared with non-burnt areas. Field trials at several sites in Southern Province showed that topography significantly influenced maize yield through water availability. Farmers responded to serious floods by shifting crops from maize to sweet potato and beans.

Theme II.

In October 2007, at the beginning of the rainy season (2007/08) we commenced weekly household interviews, body measurements, and rainfall measurements. These continued throughout the 2008 dry season and into the 2008/09 rainy season. We collected and analyzed rain gauge data from each sampled household's field during the 2007/08 rainy season and 2008 dry season. Data collected from the household interviews are under preparation for quantitative analysis.

From September 2007, local meteorological conditions were monitored at our study sites in Sinazongwe District. Daily precipitation data at three sites showed distinct seasonal variations, and we defined the 2007/2008 rainy season as being between early December and mid March.

Precipitation varied according to topography, with highest rainfall at a lowland site (1600 mm), followed by a mid elevation site (1586 mm) and lowest at an upland site (1426 mm). There were evening precipitation peaks at the lowland and mid elevation sites, but the upland site showed little diurnal variation. The mid elevation and lowland sites had high evening precipitation compared with the upland site, contributing to higher total daily precipitation.

There were differences in rainfall ranges between observation points: 176 mm at the upland site, 190 mm at the mid elevation site, and 140 mm at the lowland site. Also precipitation distribution at each site showed systematic patterns. Precipitation minima were concentrated at the upland site at the centre of the village, medium values were measured at the mid elevation site, and precipitation maxima were measured at the southeastern part of the lowland site.

Theme III. Mr. Nakamura, Ms. Ito, Mr. Ishimoto, and Dr. Okamoto conducted field surveys in Zambia. Mr. Nakamura studied destructive lumbering activities, Ms. Ito investigated migration patterns, Mr. Ishimoto researched kinship networks, and Dr. Okamoto focused on interrelationships between people and cattle to elucidate the complex relationship between social vulnerability and ecological resilience. Prof. Hanzawa and Prof. Kodamaya continued their study in village C. on the impact of political change on agricultural production. Prof. Shimada reviewed geographical, political and ecological studies, and emphasized the importance of textual and historical analysis. Shimada participated in a seminar at Oxford University, U.K. on "Resilience, realities and research in African environment", and collated research on resilience and vulnerability and their application to development assistance.

Theme IV.

IV-1 We installed meteorological observation robots and rain gauges to monitor atmospheric conditions in Southern Province, Zambia in September 2007. We started analysis of objective analysis data and observational data obtained from the Zambia Meteorological Department.

IV-2 Satellite imagery was obtained from the internet in FY2006. In FY2007, we purchased additional satellite images, which were captured before and after the agricultural and meteorological drought conditions in order to identify and quantify land use/coverage. In FY2008 we investigated agricultural land use in some principal study sites to collaborate with the investigations in Theme I. In addition, we collected documents and statistical data. Land use analysis using aerial photographs and GPS observations is currently underway.

IV-3 We collected documents on food security policies of the Zambian government and donors, and conducted research on the food relief program in Sinazongwe District in Southern Province. The distribution of food relief itself also can be considered as a shock to the farm households.

IV-4 During the field survey in September 2007, we visited some sample households surveyed earlier in the year. The 2008 extensive survey results showed that the dominant coping strategy in times of drought for farm households in Southern Province was skipping meals, and engaging in part-time work in Eastern Province. We also reviewed Geographic Information System (GIS) analysis methods for socio-economic data using various land-use modelling approaches.

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■Research Plan

Research Plan until the next PEC Meeting in FY2010

For the next two years of research (FR3, FR4), we plan to conduct the following:

For the entire project
1. While refining the theoretical aspects of resilience, we need to consider the practical applicability of the resilience approach based on the field research.
2. For FY2009 and FY2010 weather monitoring, plot experiments, household surveys, and the accumulation, compilation and analysis of data sets will be continued.
3. The first monitored 2007/2008 cropping season was an abnormal flood year, against which the 2008/2009 cropping season should be compared.
4. Coping strategies of farm households for environmental changes will be analysed and assessed qualitatively and quantitatively.
5. To provide feedback to the local community we started to provide rainfall information for the last cropping season 2007/2008 to local farmers. We will continue to do so.
6. We will organize sessions at the 7th Open Meeting of the Human Dimensions of Global Environmental Change Research Community “Social Challenges of Global Change”, April 26-30, 2009, World Conference Center, Bonn, Germany.

For research themes
I. The field experiment in Eastern Province is expected to reveal the dynamics of ecological resilience, while farmers’ responses to variable environments will be understood in the context of Southern Province ecosystems.
II. Data quality of household interviews should be improved. Delays in data entry and data quality control (including consistency checks) need to be minimized. In parallel with data collection we are starting quantitative and qualitative analysis.
III. Prof. Hanzawa and Prof. Shimada will continue field studies at C. village in Central Province, and other research team members will continue their studies in Southern Province. One new researcher is expected to start a long-term field study in a village in the Gwembe Tonga area.
IV. In addition to the baseline satellite and meteorological data acquired so far, we need to obtain further data sets of different spatial and temporal scales. Satellite imagery and aerial photographs are now partially available, and we plan to utilize this information together with land use surveys to characterize land use dynamics and natural resources near Lake Kariba. The study of the institutional aspects of emergency food distribution is underway. Based on extensive household survey data, more analysis will be conducted. The collaborative research of other team members should be accelerated for data integration.

■Problems for implementation or points need to change plan

1. Further integration of the data project outputs are expected. In the context of local history and the physical environment, the long-term participatory field study is essential for understanding the resilience of social-ecological systems.
2. The possible application of resilience concept and theories need to be considered from the field study.
3. Data collection should be continuted while improving the quality of data from household and anthropometric survey.
4. Weather monitoring, field experiments, household survey are continued and data is compiled and analyzed.
5. The first cropping season 2007/2008 was a flood year. Thus comparison with other years is necessary. The data and observation from 2008/2009 cropping season is going to be compared with the previous year.

Books

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- Chihiro Ito The Role and Importance of Labour Migration in Rural Area in Zambia:Labour Migration as One Means for Securing the Lives of Small-scale Farmers. 45th Japan African Congress, May 24,2008-May 25,2008, Kyoto. (in Japanese)

【Invited Lecture / Honoronary Lecture / Panelist】

・Chieko UMETSU Vulnerable society against drought: conditions for building resilience for social-ecological systems. “A new relationship between ecology and sustainability science”, the 56th Annual Meeting of Ecological Society of Japan (ESJ56), Mar 17,2009-Mar 21,2009, Morioka. (in Japanese)

・Chieko UMETSU Vulnerability and Resilience of Social-Ecological Systems in Zambia. Seminar on Vulnerability and Resilience of African Rural Societies in Semi-arid Areas, May 01,2008, Tokyo, Japan.

Stage: FR

Project No.: H-02

Project Name: Agriculture and Environment Interactions in Eurasia: Past, Present and Future -The ten-thousand-year History

Project Leader: SATO, Yo-Ichiro

Research Axis: Ecohistory

URL: http://www.chikyu.ac.jp/sato-project/

■Research Objectives and Topics

Aim of research

The objective of the project is to clarify the influence of environmental changes to agricultural activities and vice versa, over a long period of time (Reconstruction of the history of interactions between agriculture and environment).

Background

We aim at reconstructing "Ten-thousand-year history of interactions between agriculture and environment". The term "agriculture" here includes farming, animal husbandry, forestry and fisheries. Previously, it was generally accepted that climatic and environmental changes were determining factors for agricultural styles in various times and regions. This project, on the other hand, attempts to reconstruct dynamic mutual interactions between agriculture and environment through the past ten thousand years, focusing on issues such as how agriculture and human activity led environmental changes, and how those changes were related to, or led to, the collapse of agricultural activity.

How our Project can contribute to global environmental issues

For acknowledging that there were frequent collapses of agricultural production in history, a paradigm shift is required from the generally accepted "developmental view of history", and will no doubt leave a large impact not only on environmental history but also on other fields of human history. Especially in today's world where globalization is progressing rapidly, in order to solve regional agricultural problems, it is essential to reconstruct substantial "histories of interactions between agriculture and environment" on regional basis with different climate conditions, such as the Monsoon and Mugi zones. In the past, although there were interests in agricultural issues from a range of different points of view, there was little research on the subject connected to global environmental issues. There has been little critical research on the history of agricultural activities from the origin as the key factors for environmental changes. In this respect, the significance of our project, which presents agriculture as the central global environmental issue, is evident.

■Progress of Project

The initial plan formulated at the beginning of our project has been more or less fulfilled. The Monsoon Zone Group has done analyses on botanical remains from several archaeological sites of Aomori prefecture, Japan, to draw diagrams of interactive history of environment and agriculture in Japanese prehistory. The Mugi Zone Group has conducted interdisciplinary research on the Xiaohe Tombs Site in Xinjiang Uygur Autonomous Region, China, to find our how desertification there happened in connection with human agricultural activities. The Vegeculture Group made general survey at Kokoda Valley, Papua New Guinea, in collaboration with Australian and New Zealand universities, to study how human started domesticating tubers in interactions with various types of environment. The Swidden Agriculture Group has carried out ethnographic research at several places in Japan to collect data on modern swidden techniques. The group has also organized annual 'Yakihata Summit' symposium.

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■Research Plan

I. Research methods and system

Out of the ten thousand years of history, we will focus on periods when agricultural production or society experienced major change, and will conduct research on the environment and agricultural systems, notably on genetic diversity and environmental change surrounding that period. We will use written records if available, otherwise proxy data such as DNA in order to make hypotheses on the climate and vegetation of the particular periods. We will evaluate genetic diversity employing various cultivated plants and accompanying weed species, such as rice, wheat, pulses, gourds etc., and genetically analyzing their DNA polymorphism and mutation of seed size.

In order to achieve these goals, we have established five research groups. Three of them, namely the Monsoon Zone, Mugi Zone and Tuber crop Zone Groups, cover regions corresponding to the three climate zones proposed by Tetsuro Watsuji, and focus on past events. The Slash-and-burn Agriculture Group will

provide materials that will assist addressing future issues, based on the research results of the first three groups and by focusing also on cultural and ideological issues surrounding agricultural heritage. The Research Results Promotion Group was established in order to publicize the achievements of the other four groups. All groups cover the period from ten thousand years ago, when the Last Ice Age ended, until the present. We will now turn to the research methods used by each group.

1. The Monsoon Zone Group:

Its research covers East, Southeast and South Asia. Each research area will be about the size of a Japanese province and would include a few archaeological sites. So far, we have selected the Tian-luo-shan site in Zhejiang Province, China, the Ikeshima Fukuman-ji Site in Osaka Prefecture (Late Jomon Period to Modern Period), the Shimonosato Site in Shiga Prefecture (Middle Yayoi Period) and the Sannai Maruyama Site in Aomori Prefecture (Late Jomon Period), all therefore mainly in East Asia. We are currently selecting archaeological sites in Thailand, Cambodia, Indonesia and Philippines, with whom we have concluded research agreements (MOU). We will progressively begin research in the whole of the Monsoon zone, including the tropical zone. The analytical methods employed for this research will be from both micro and macro perspectives, including the identification of plant seeds, DNA, pollen, phytolith and soil property analysis. We will reconstruct ancient environments of each period and, by comparison with historical records if possible, try to understand the interrelations of environmental change and agricultural activity throughout Asia.

2. The Mugi Zone Group:

This group conducts research to achieve two goals described below. Analytical methods adopted by this group are similar to those of the Monsoon Zone Group. For the identification of crops and fauna and the analysis of genetic diversity, we will use DNA analysis.

a. First goal: As mentioned earlier, the impact of agricultural activity on environmental change has received little attention until now. Desertification is a serious environmental issue and there are several theories explaining its cause. Xinjiang Uygur Autonomous Region in China is a large and very dry desert area, but there are traces of rivers and archaeological sites, which demonstrate that people used to live here. The first goal of our group is to reconstruct the ancient environment of this region, and especially the agricultural production and animal husbandry system. We seek to clarify the process of desertification and to supply information for understanding the history of interactions between environmental change and agricultural production.

b. Second goal: Yasuda (2001) reports that ten thousand years ago when the Last Ice Age ended, the quantity of tree pollens decreased, and animal husbandry and agricultural activity developed in addition to hunting and gathering activities, showing that there was environmental change. From the decrease in the quantity of tree pollen, we can assume that people settled down, enjoying a more stable life resulting in population increase. In the initial stages of agriculture, people probably used wild plants, which they improved and domesticated. It is therefore important to figure out when and where wild plants were domesticated, in order to place this information in the history of interrelations between agricultural activity and environmental change. It seems that the speed of wheat domestication was slower than had been considered previously (Tanno and Willcox, 2006; reference 6) and the beginning of agriculture was therefore a very gradual process. As our second goal, we will try to discover the time and location of wheat domestication and clarify the relationship between changes in agricultural production and environment during that period. Research will be conducted mainly in West Asia, where the Fertile Crescent is located.

3. The Vegeculture Zone Group:

Rootcrop cultivation developed in tropical Asia and the Western Pacific islands. But compared to the prehistory of grain cultivation, relatively little is known, since botanical, ethnological or folkloric studies are far less developed. Our group aims to clarify where and when rootcrop cultivation began and how it expanded and influenced the environments in which it was practiced. Methods will include species identification of starch grains, DNA analysis and ethnological and botanical methods. Our research area covers, apart from archaeological sites in the Philippines with whom we have concluded MOU agreements, also sites ranging from Papua New Guinea to Australia, where we will conduct research in cooperation

with the Australian National University.

4. The Swidden Agriculture Group:

Under the influence of environmentalist ideology and policy, the agricultural use of fire methods such as slash-and-burn and open burning has been condemned widely as environmentally destructive. But after the cessation of such fire practices, mountains were covered by old growth forests and many uncontrollable fires occurred (e.g. Australia), and wild animals made increasingly frequent appearance in "sato" (e.g. Japan). Such effects have had serious consequences on livelihoods. Although practices such as slash-and-burn and open burning do destroy forests in the short term, they need to be understood in the context of fifty to hundred year-scale of time and its 'improvement' of the environment (called "sato" in our project). In the longer term, these practices appear to have acted to conserve forest and mountains, and the livelihoods of people occupying these environments. Fire, as part of agriculture, was a significant component supporting the balance between human ecosystem and environment. Our group will study these technologies and the ideologies supporting these practices, reevaluate biological, cultural and ideological aspects of environmental diversity, and investigate sustainable ways for agriculture for the future.

II. Changes from previous proposal

The Project started originally with three research groups, i.e. the Monsoon Zone, Mugi Zone and Tuber crop Zone Groups. Following requests from researchers within and outside the Project, we subsequently established the Slash-and-burn Agriculture Group and the Research Results Promotion Group. The original three groups aim mainly at understanding events of the past, but in order to demonstrate clearly the goal of the Project to contribute to current global environmental issues, we added the Slash-and-burn Agriculture Group. The Research Results Promotion Group was established in order to disseminate research results to the public more effectively, while allowing the researchers to concentrate on their research. Through their activity, there will hopefully be an active exchange of information not only with outside researchers but also amongst members of different groups, leading eventually to wider regional researches. Details of the promotion methods to be adopted are still under discussion.

■Problems for implementation or points need to change plan

I. Results in 2007

a) Achievement of the Project as a whole

1) During two years of FR, we organized the Slash-and-burn Agriculture Forum in November 2006, the first Slash-and-burn Agriculture Summit in November 2007 and the First International Symposium "Recent advancements of archaeobotany in Eurasia" in August 2007. During this symposium, it was decided to create a database of ancient seeds.

2) Considering the origins of rice agriculture and wheat agriculture in their respective climatic zones, it seems increasingly likely that they occurred over a long period of time, instead of resulting from a short-term 'event,' as was formerly thought. It is therefore unlikely that the beginning of agriculture was triggered by a single event, such as climatic change or population pressure.

3) Even in the Monsoon zone where high productivity was generally assured, there seem to have been frequent collapses at the community level. There are many possible reasons for these collapses. But it seems that there have been two ways to solve the problem. One is to acquire new means of subsistence by increasing the types of cultivated plants or by changing location and the other is to devise ways to recover the circulation system of materials.

b) Achievements of different research groups

1. The Monsoon Zone Group

a) Ikeshima Fukuman-ji site: In this site that existed from the middle Yayoi Period to the Modern Age, we have reconstructed several aspects of the ancient environment. Firstly, we discovered traces of multiple floods. The flood which occurred at the end of the Ancient Age seems to have been of larger scale than the others, judging from the thick layer of sand. Subsequently, vegetation around this site

was simplified, but plant species diversity increased. In addition, we discovered many plant seeds of species rarely seen today (probably weeds), from the Middle Age layer. Until the end of the Ancient Age, various types of rice, in general closer to tropical Japonica that is well suited to extensive cultivation, coexisted, but after the flood, we can observe breed change and decreases of both diversity and yield. Secondly, we recovered a structure called 'shimabata (ridge field)' just beneath the layer of the flood that happened through during the Medieval to Pre-Modern periods. This is a temporary structure constructed by heaping soil and sand. It is considered that dry field crops were planted on the 'shimabata' ridge, whereas rice was planted in-between them. Thirdly, we estimated the frequency of rice cultivation during all the periods of the site based on phytolith analyses. As the result, it was discovered that there were intermission periods of rice cultivation: three years out of every four years during the Medieval, and every other year in the Pre-Modern period. This probably maintained high ecological diversity.

b) Long-que-zhuang site, Jiangshu Province, China: Research is conducted here in order to examine the relationship between agriculture and environment in the period of initial rice cultivation. This site seems to have been occupied without interruption for two thousand years, from seven thousand years ago to five thousand two hundred years ago (Fig. 6). Through time, rice cultivation progressed and seed size increased. There is evidence that dependence on hunting-and-gathering economy declined at the same time. This period is contemporary to the hypsithermal period, which means that it is inappropriate to associate the beginning of agriculture with decreasing temperature.

2. The Mugi Zone Group

This group conducts research in two regions, namely west Asia and northwest China. In west Asia, we focus on the period when wheat cultivation began, and examine its relationship to environmental change. In northwest China, we focus on the relationship between desertification and agriculture.

a) West Asia: Focusing on the cultivation of wheat species, proxy data (e.g. pollens) and animal domestication, we examined how they evolved through time and interacted with each other. Both wheat cultivation and animal domestication evolved over three thousand years, and there is no evidence to specify when they actually began. Nor was there any notable change in vegetation during that time, compared to other periods. These facts do not agree with traditional hypotheses suggesting climatic change as a reason for the origin of agriculture.

b) Northwestern China: A research agreement was concluded with Xinjiang Cultural Relics and Archaeology Institute, Xinjiang Uygur Autonomous Region, China, to conduct joint research for four years until 2010. As we already reported last year, in the Xiaohe site, we have discovered the remains of common wheat (bread wheat) dating from three thousand years ago. For understanding water requirement of wheat then, we experimentally planted four types of domesticated wheat and gave them a draught stress in the seeding season. As the result, it turned out that the weight of bread wheat seed was most affected by the stress. This year, for a further developed experiment, we cultivated the same four types of domesticated wheat in water-rich environment (Kyoto, Japan) and arid environment (Syria), to examine the relationship between water quantity requirements and harvest volume. The results showed that bread wheat was most affected by water availability: the harvest volume was four times as much in the water-rich environment, whereas with other types of wheat the harvest volume was only twice as much. In short, bread wheat requires a much larger quantity of water to produce a rich harvest. This suggests that, in the region of the Xiaohe site, there was either enough rainfall (400 mm/year) or an irrigation system. In the Xiaohe site, we have also found remains of cattle skin and sculls, and succeeded in extracting DNA from eight cattle skulls discovered in the site (currently undergoing analysis for species identification). Based on assumptions about the estimated harvest volume per unit area, the genetic variety of wheat species and the population size of Loulan, at the time of the site there must have been at least 17,000 ha of wheat cultivated. Similarly, if there were 2,000 cows, 11,000 ha of pasture land would have been needed. We are still analyzing how and why agricultural production eventually collapsed in the period of the Xiaohe Tombs, using proxy analysis of sediment cores. For this, we could refer to the case of the Kingdom of Loulan (400 B.C.-400 A.D.). Although it is not yet known why agricultural production collapsed in Loulan, salt damage caused by excessive irrigation seems the most likely

explanation. We will need to undertake diatom analysis to verify this in the future.
In August 2007, the Monsoon Zone and Mugi Zone Groups successfully co-organized the first International Symposium on "Recent Advancements of Archaeobotany in Eurasia" and hosted fourteen speakers from seven countries.

3. The Tuber crop Zone Group

This group was established together with the Monsoon and Mugi Zone Groups, but began its activities much later, due to delayed research agreement negotiations with Australian institutions. Research agreement with the University of Philippines has already been concluded and we plan to conduct the first field research in Philippines in February 2008.

4. The Slash-and-burn Agriculture Group

This group was newly established this year to focus on evaluating the impact of slash-and-burn agriculture concerning global environmental issues, mainly in Japan. As the first stages of this work, bibliographical research was carried out on its history in Japan, and comparative study of the practice in Southeast Asia and Japan has been commenced. In addition, research on land utilization with the slash-and-burn method, its productivity, and the significance of food produced through this practice was also begun. Since the aim of this group is to provide useful suggestions for the future concerning the relationship between agriculture/man and nature, below six seminars on environmental ideology were organized at the RIHN and we will continue this seminar series next year.
(1) "The life and view of nature of Buddhist priest Myoe" by Prof. Harumichi Ishizuka (honorary professor of Hokkaido University)
(2) "Forest and Minakata Kumagusu" by Prof. Ryugo Matsui (associate professor of Ryukoku University)
(3) "The Ideology of the sacred tree and the creation of the sacred statue" by Dr. Mitsunobu Horikoshi (Senior researcher and curator of Yokkaichi Municipal Museum)
(4) "Shugendo and nature" by Prof. Toji Kamata (professor of Kyoto University of Arts and Design)
(5) "The view of nature in Eurasia seen by the Celts - 'water' and 'fire' in mythology, art and popular beliefs" by Prof. Mayumi Tsuruoka (professor of Tama Art University)
(6) "The view of nature and lifestyle in folkloric movement, through Bernard Leach" by Prof. Sadahiro Suzuki (associate professor of Ochanomizu Women's University).

II. Activities in the future

a) Achieving our goal before the term of next evaluation

Until next evaluation in 2009, we will conduct research following the research plan below.

[2008 (FR3)]

We will select more sites where we will conduct research, while continuing analytical studies. Each group will create a database of botanical remains. Activities of each sub group will be as follows:

The Monsoon Zone Group:

This group will integrate the Ikeshima-Fukumanji site data of plant seeds, pollens and phytoliths that have been collected to date, check them in relation to historical documents and reconstruct the ancient environments at different time periods. The region of this site suffered from regular floods of the ex-Yamato River until the end of the 17th century. However, the river route was changed by large-scale construction work in 1703, which reduced flood frequency and probably affected the post-flood activities. We can thus study how the construction work of 300 years ago influenced the local environment based on both scientific and literature analyses, and make suggestions for modern construction works. In addition, the group will also select sites from Japan (Kyushu), China and the Philippines in order to assemble data from different regions and time periods.

The Mugi Zone Group:

This group will conduct research on the following topics.
i. Xiaohe Tombs, Xinjiang Uygur Autonomous Region, China: Establish an appropriate method for pollen analysis in desert areas. Establish a method for DNA analysis from artifacts, in cooperation with the Monsoon Zone Group.
ii. West Asia and North Africa: Conclude research cooperation agreement in order to conduct

archaeological excavation. Continue research at different sites, especially those of West Asia. Continue wheat yield test in the setting of assumed initial agriculture.

Tuber crop Zone Group:

We will begin archaeological excavation in the Philippines and Papua New Guinea, as well as select local research collaboratos. We will establish methods for species identification using starch grain and conduct pollen analysis, if necessary. Apart from taro that we have selected previously as a research subject, we will try to select other types of rootcrop for study.

Slash-and-burn Agriculture Group:

This group will conduct research on the following topics.

i. Research on whether it is socially acceptable to use nature with the help of fire

ii. Research on the diversity of slash-and-burn agriculture and its legacy in the contemporary world

iii. Practical research on the potentialof slash-and-burn agriculture for the future

Research Results Promotion Group:

This group will conduct the following activities.

i. Organize a regional seminar on the Ikeshima Fukuman-ji site, Osaka, where the Monsoon Zone Group conducts research, to promote research results.

ii. Organize a symposium at Xinjiang Uygur Autonomous Region, China, which is the Monsoon Zone Group's research area, and at RIHN, to promote research results. Publish "A Natural History of Wheat" (planned for spring 2008), as a synthesis of research by group members.

iii. Publish the results of the International Symposium "Recent Advances of Archaeobotany in Eurasia," which was organized last year.

iv. Organize, as last year, the Slash-and-burn Agriculture Summit (subtitle: Slash-and-burn Agriculture of the North) in Tsuruoka on 15th - 16th November and promote research results and exchange opinion with citizens.

[2009 (FR4)]

Integrate the databases of botanical remains created by each group and allow access firstly to group members. Activities of each group will be as follows:

Monsoon Zone Group:

Integrate data on archaeological sites selected the previous year and earlier. Create a map demonstrating vegetation distribution, using the archaeobotanical database.

Mugi Zone Group:

This group will conduct research on the following topics.

i. Xiaohe Tombs, Xinjiang Uygur Autonomous Region, China: Check the results of pollen and DNA analyses of fauna and flora with historical facts, and try to reconstruct the environment of the period when the site was inhibited.

ii. West Asia and North Africa: Integrate analytical data from different sites and compare their ancient environments.

Tuber crop Zone Group:

Following results from previous year, we will select research areas in the region ranging from the Philippines to Australia, through negotiations with the ANU and the University of the Philippines.

Slash-and-burn Agriculture Group:

We will continue to conduct research on the topics from previous year. However, when it is judged necessary, research on further topics will be conducted also.

Research Results Promotion Group: This group will conduct the following activities.

i. Organize an International Symposium on Wild Rice, focusing on both ancient and modern rice, together with research institutions with whom the Monsoon Zone Group has concluded agreements in the past, and promote the research results internationally.

ii. Integrate research results of the Monsoon Zone Group and the Tuber crop Zone Group and organize an international symposium, in order to inform public about ancient environments of the Pan-Pacific Region and make suggestions on environmental change caused by agricultural activity.

iii. Organize a public dialogue between the project leader and members of each research group and

publish it as “A History of Agriculture in Eurasia: Interaction between ‘Fudo’ and agriculture (tentative title, publisher decided).”
By comparing the research results of the different groups, we will attempt to clarify ten thousand years of global history of interactions between agriculture and environment, and suggest forms of human activity, from an agricultural point of view, that are sustainable in environmental terms.

Stage: FR

Project No.: H-03

Project Name: Environmental Change and the Indus Civilization

Abbreviated Title: Indus Project

Project Leader: OSADA, Toshiki

Research Axis: Ecohistory

URL: http://www.chikyu.ac.jp/indus/Indus_project/index.html

Key Words: Indus civilization, human-environment interaction, Ghaggar-Hakra (Sarasvati) river, climate change, disintegration of Indus civilization networks

■Research Objectives and Topics

(1) Research objectives:

The Indus civilization spread over 680,000 sq. km. of the northwestern South Asia. Indus people established and maintained cities like Mohenjo-daro and Harappa from 2600 BC to 1900 BC (Mature Harappan).Our project aims to investigate the causes of the collapse of the Indus civilization – especially the process of the disintegration of its networks which connected regional societies and cultures. We will examine this process from the perspective of human-environment interaction. As for naturalenvironment, environmental change will be investigated through natural scientific approach, mainly using geological methods. The target of research includes climate change at the global level and local environmental changes such as river avulsion. As for human factors, the socio-cultural organizations of the Indus civilization and its historical relationships with other societies/cultures will be investigated through humanistic approach, using archaeological, anthropological and linguistic methods. They include collection and analysis of archaeological materials excavated from important sites,ethno-botanical analysis of agricultural systems, linguistic analysis of Vedic texts and Mesopotamian cuneiform texts, etc.By the end of our project, we will integrate the outcome of all these studies and present a possible scenario of the collapse of the Indus civilization.

(2) Background

The decline of the Indus civilization has been studied from two different perspectives. The first group of researchers proposed that the main causes for the decline of the Indus civilization were local. There have been several different theories based on this local hypothesis – e.g. Wheeler's Aryan invasion theory and Raikes' flood theory. The second group of scholars, on the other hand, has examined the issue from the global level. They focused their study on the global climate change observed during mid- and late Holocene. They claim that the Old World, especially Asia, witnessed a collapse of agriculture-based societies including the Indus society during mid- and late Holocene which was coincidental with an abrupt climate change.

The past decade has seen a revival of 'environmental determinism' in palaeo-environmental research, with palaeo-climate shifts implicated in the collapse of many past civilizations. We do not accept the environmental determinism proposed by many scholars engaged in global-level analysis, but we also consider that it is important to integrate the outcome of the palaeo-environmental research in northwestern South Asia into our project. Our standpoint is that we need to look at both local and global levels.

(3) Contribution to global environmental issues

Although the decline of the Indus civilization seems to have been a complex process, it is clear that climate change during that period was one of the important factors which made major impact on its collapse. We assume that global climate change also affected the courses of other ancient civilizations. The investigation of the history of climate change in the Indus civilization will thus contribute to the reconstruction of the environmental histories of other civilizations. Climate change is also a big

environmental issue which will determine the future of our global environment. Therefore it is important that we reconstruct its history using various proxy data over a large time-scale like the hundreds of years. Such data will be useful for the prediction of the future course of climate change.

The analysis of palaeo-environmental archives is a key to the understanding of human-environment interactions at the present day and in the future. Palaeo-environmental studies are a showcase for the 'learning from the past', as the past, as described through palaeo-environmental studies, can yield information about pre-impact states, trajectories of recent change, causation, complex system behavior, and provide the basis for developing and testing simulation models. Learning from the past in each of these epistemological categories may be exemplified by published case studies and our present research.

We would also like to strengthen our case by adding the following points. By reconstructing climate change using coral data, we will be able to accumulate data during different periods using the same methodology. Researchers in climate change normally focus their study on a short time-scale such as a few decades; our project, on the other hand, will collect data of a much larger time-span, in the order of the hundreds of years. Such data will be very useful for predicting the future climate change of global environment.

In addition to these contributions to global environmental issues from the perspective of natural science, our research aims to contribute to the solution of the problems concerning the collapse of past civilizations in more general terms. Past civilizations should be investigated from the perspective of human-environment interaction, i.e., how humans responded to climate change and environmental damage in the past. Only by learning the causes and processes of the collapse of the past civilizations from this perspective can our civilization find a way to survive unpredictable environmental hazards in the future. This is one of the reasons why we emphasize the perspective of human-environment interaction in our project.

■Progress of Project

We have four working groups; (1) palaeo-environment research group (PERG); (2) material culture research group (MCRG); (3) subsistence system research group (SSRG); and (4) inherited culture research group (ICRG).

So far we have achieved three major findings, one each from the work of MCRG, PERG and SSRG. MCRG found that there are both similarities and differences in the artefacts of the two regions where they have excavated. This seems to suggest the existence of strong regional differences as well as trading and other kinds of networks which united them. It is due to this finding that we have rephrased the objective of our project. The artefacts found from both excavated sites which show similarities include: Indus seals with Indus script, Harappan pottery, several kinds of beads made from carnelian, steatite, faience, lapis lazuli, etc. Significant difference, on the other hand, is observed in construction materials; i.e., at Kanmer we find local stone-made constructions, while at Farmana there are sun-dried brick-made constructions. In addition, we observe the existence of different kinds of local pottery at each site.

PERG found that the Ghaggar seems to have been rather a small river easily affected by the quantity of rainfall in the monsoon season. The Ghaggar-Hakra or the so-called Sarasvati river, which was described as a big river in the Rig-Veda, should be divided into two; the Ghaggar in India and the Hakra in Pakistan. This finding suggests that the Indus civilization may not have been fully dependent on a big river like the other three ancient civilizations.

SSRG has recovered many botanical and zoological remains from both excavated sites. At Kanmer they found the evidence of rice which had rarely been found from Mature Harappan sites. This finding suggests that the area of Kachchh may have been receiving much better precipitation during the Indus civilization than is the case today.

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■Research Plan

So far most scholars working on the archaeology of the Indus civilization have focused their study on the sites along the Indus river system; e.g., Mohenjo-daro and Harappa. Our project, on the other hand, will investigate wider contexts including the sites along the Ghaggar-Hakra river and in the coastal area of the Kachchh district in Gujarat.

For the reconstruction of the palaeo-environment of the Indus civilization, geological methods are employed to investigate tectonic movement and river avulsion. The subsistence system, on the other hand, is being studied through ethno-botanic and archaeo-botanic analysis. For understanding the human-environment interaction we also need to collect and analyze the socio-economic and cultural data. These data help us examine human responses to environmental changes in the Indus civilization. We employ various methods of humanities to collect these data: archaeological methods to recover cultural artefacts from the archaeological sites, and linguistic and anthropological methods to discover characteristics of the Indus societies at different levels. Our archaeological teams have already excavated sites at Kanmer (Kachchh, Gujarat, India) for three years and at Farmana (Rohtak, Haryana, India) for two years in collaboration with Indian archaeologists.

PERG aims: (a) to investigate the palaeo-channel of the Ghaggar-Hakrariver through the analysis of satellite photography and field research;(b) to reconstruct the coastline in Gujarat during the Harappan period through the analysis of satellite photography and core sampling from Lake Nal located in Gujarat; (c) to reconstruct climate change through the analysis of sea surface temperature using proxy data obtained from coral in Maldives; (d) to reconstruct environmental changes using core samplings from Lake Rara in the Sub-Himalayan region through pollen andphytolith analysis; (e) palaeo-seismological patterns for understanding the impacts of earthquakes on the Indus civilization.

MCRG excavates two sites in India, i.e., Kanmer and Farmana; they intend to recover cultural artefacts such as remains of Indussettlements, Indus seals, Harappan pottery, etc.

SSRG reconstructs the subsistence system of the Indus civilization; for this purpose they use both archaeo-botanical data found in Harappan sites,ethno-botanical data collected in field work and proxy data obtained from phytolith and pollen analysis.

ICRG reconstructs the Indus society using linguistic methods. Among them the Indologist subgroup analyzes Vedic and Mesopotamian cuneiform texts, while the linguistic subgroup uses linguistic comparative method to reconstruct the substratum cultures and languages in South Asia. They also have been building up a database of South Asian languages.

By the end of our project, we will integrate the outcome of all these studies and present a possible scenario of the collapse of the Indus civilization.

Modifications from the original plan:
In the previous proposal we set our objectives in general terms such as: investigation into the causes of the decline of the Indus civilization. However, as our project proceeds, it has become increasingly clear that the Indus civilization was a unity of diverse regional societies and cultures connected by networks. From this perspective, the collapse of the Indus civilization actually means the disintegration of such networks which connected diverse societies spreading over a very large area. Therefore this time we have changed the aim of our project to a more focused one, i.e., investigation into the causes of the disintegration of the Indus civilization networks. This does not mean that we have changed the general aim of our project, but we have rather rephrased it so that it can more aptly reflect the advanced stage of our research.

■Problems for implementation or points need to change plan

So far we have achieved three major findings, one each from the work of MCRG, PERG and SSRG.
(1) MCRG found that there are both similarities and differences in the artefacts of the two regions where they have excavated. This seems to suggest the existence of strong regional differences as well as

trading and other kinds of networks which united them. It is due to this finding that we have rephrased the objective of our project. The artefacts found from both excavated sites which show similarities include: Indus seals with Indus script, Harappan pottery, several kinds of beads made from carnelian, steatite, faience, lapis lazuli etc. Significant difference, on the other hand, is observed in construction materials; i.e., at Kanmer we find local stone-made constructions, while at Farmana there are sun-dried brick-made constructions. In addition, we observe the existence of different kinds of local pottery at each site.

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(3) SSRG has recovered many botanical and zoological remains from both excavated sites. At Kanmer they found the evidence of rice which had rarely been found from Mature Harappan sites. This finding suggests that the area of Kachchh may have been receiving much better precipitation during the Indus civilization than is the case today.

We published three volumes of Occasional Papers in 2008. The main contents of each volume are as follows: Volume 4 (a report of surface analysis of archaeological site in Sindh by Mallah, a report of excavation at Jaidak, Gujarat by Ajithprasad, etc.); Volume 5 (reports of the second season excavation at Kanmer by Kharakwal et. al., Goyal et. al. and Teramura et. al., including a report of a geomorphological survey by Rajaguru et. al., etc.); Volume 6 (A report on Excavations at Farmana 2007-08 by Shinde et. al.)].

We still have to collect data relevant to the reconstruction of the palaeo-environment; i.e., sampling and analysis of the core in Kachchh for investigating climate change, taking coral samples in the Maldives and analyzing them for reconstructing the history of monsoon weather in the Indian subcontinent. Apart from this we will carry out pollen and phytolithic analysis to reconstruct the vegetation of the Indus area. Therefore, we will spend our budget mainly for palaeo-environmental research in the next fiscal year.

As for the two sites in India, we completed the excavation works by March, 2009. We will concentrate on analysing and summarizing the data, which will be integrated into GIS by the end of our project.

Books

【Chapters/Sections】

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・Goyal, P., Joglekar, P.P. 2008 Report on the faunal remains recovered from Kanmer, Gujarat, during the second field seasons (2006-07). Osada, T. , A. Uesugi (ed.) Linguistics, Archaeology and the Human Past. Occasinal Paper, 50. RIHN, Kyoto, pp.25-43.

・Teramura, H., Y.Kondo, T. Uno, A. Kanto, T. Kishida, H. Sakai 2008 Archaeology with GIS in Indus Project. Osada, T, A. Uesugi (ed.) Linguistics, Archaeology and the Human Past. Occasinal Paper, 5. RIHN, Kyoto, pp.45-101.

・Shinde, V., T. Osada, M.M. Sharma, A.Uesugi, T. Uno, H. Maemoku, P. Shirvalkar, S. Deshpande, et al 2008 Exploration in the Ghaggar Basin and excavations at Girawad (Rohtak District) and Mitathal (Bhiwani District), Haryana, India. Linguistics, Archaeology and the Human Past. Occasional Paper , 3. RIHN, Kyoto, pp.77-158.

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・Goyal, P., P.P.Joglekar 2008 Report on the faunal remains recovered from Kanmer, Gujarat, during the second field season (2006-07). Osada, T., A. Uesugi (ed.) Linguistics, Archaeology and the Human Past. Occasional Paper, 5. RIHN, Kyoto, pp.25-43.

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Editing

【Editing / Co-editing】

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・Osada, T., A. Uesugi (ed.) 2008 Linguistics, Archaeology and the Human. Occasional Paper, 5. RIHN, Kyoto, 109pp.

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・Osada, T., A. Uesugi (ed.) 2008 Linguistics, Archaeology and the Human. Occasional Paper, 3. RIHN, Kyoto, 178pp.

・Indus Project (ed.) 2008 Annual Report of Indus Project 2007. RIHN, Kyoto, 230pp. (in Japanese)

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【Original Articles】

・Maekawa, K., W. Mori 2008 Dilmun, Magan and Meluhha in the Early Mesopotamian History. *Annual Report of Indus Project 2007* :155-167. (in Japanese)

・Miyahara, H., Y. Yokoyama and K. Masuda 2008 Possible link between multi-decadal climate cycles and periodic reversals of solar magnetic field polarity. *Earth and Planetary Science Letters* 272(1-2) :290-295.

・Gotō, T., T. Yamada, S. Eino 2008 Sarasvati River in the Vedic period. *Annual Report of Indus Project 2007* :115-140. (in Japanese)

・Kumahara, Y. 2008 Preliminary topographical analysis using CORONA satellite photographs in case of the western India. *Annual report of Indus Project 2007* :41-50. (in Japanese)

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Stage: FR

Project No.: H-04

Project Name: Neolithisation and Modernisation: Landscape History on East Asian Inland Seas

Abbreviated Title: NEOMAP

Project Leader: UCHIYAMA, Junzo

Research Axis: Ecohistory

URL: http://www.chikyu.ac.jp/neo-map/

Key Words: landscape change, inland seas, Neolithisation, Modernisation, cultural landscape, landscape preservation

■Research Objectives and Topics

1. Research Objectives

This project aims at reconsidering the notionof "cultural landscape protection" by way of reconstructing the historical landscape (hereinafter LS) change on East-Asian inland seas during the two mostnotable revolutionary periods in the history of human-nature relations, i.e.Neolithisation (hereinafter NLS) and Modernisation (hereinafter MDS), throughthe analyses of sustenance activities, trade and mental or cultural structures (political system, art, literature, festivals etc), climatic and topographica lanalysis in eight regions on the shores of East-Asian Inland Sea (Japan andEast China Sea). The primary goals of the project are to:

(1) Reconstruct the changes in the naturally and culturally conditioned spheres ofLS.

(2) Explicate the functioning of inland seas as a network creating cultural unityand diversity.

(3) Reconsider the idea of "cultural LS" in order to put the cultural LS protection policies into a new perspective. Comparing NLS and MDS processes can give us a better understanding of possible future developments and solutions to present environmental issues.

2. Background

Earlier, there has been an obvious tendency to see the environmental problems as caused by a complex set of natural processes, whereas the influence of human culture has often been reduced to a simplified "human factor". Unlike other animals, humans take action towards environment also for non-functional, philosophical, aesthetic or religious motives. Therefore, as has been understood by the academic community in recent years, any successful analysis of environmental problems has to deal with human cultures in all their richness and detail. The present project aims at investigating the environmental issues from the human culture's point of view through a holistic concept of "LS". LS as the stage of humans' everyday life, is a concept that includes both the visible/ physicalside of the natural environment and cultural/ intellectual side, making possible a holistic analysis of the environmental problems at the stage wherethey arise. On the other hand, LS is made up of elements that date back to different historical layers, thus allowing us to reconstruct the historical process of emergence of the environmental issues. Belonging to the Ecohistory program of RIHN, the NEOMAP project aims at deeper understanding of the historical formation of the global environmental issues from a very long-term perspective (including prehistory) and through a multidisciplinary and internationalresearch agenda provided by the concept of LS. The research is carried out oneight key regions on the shores of East Asian Inland Seas (East China Sea andthe Japan Sea), since historically, the inland sea coastal areas were densely populated and played a major role as worldwide trading spots and collisionspots for various cultures and civilizations. Therefore, it can be said thatthese are the most suitable fields for the observation of the interactions between culture and nature.

In addition, considering that the concept of "cultural LS" has become an important issue in government and international protection programs (e.g. the nomination ofnational LS treasures, UNESCO World Heritage sites), it is crucial to understand the cultural formation mechanisms of protected LS and the processes that sustain them.

3.Topics andMethodology

1) Research Areas

The project focuses mainly on the East Asian inland sea, i.e. the Japan Sea Rim and the East China Sea Rim. Historically, inland sea coastal areas were densely populated and played a major role as worldwide trading spots and collision spots for various cultures and civilizations. Throughout the duration of this research project, results will be compared to those of the LS research in the North European inland seas.

Eight research areas were chosen around the East Asian inland seas to represent the full variety of cultural and natural settings. The selected research areas are: 1. Hokuriku, 2. Biwako and 3.Northern Kyushu for mainland Japan, 4. Hokkaido and 5. Ryukyu for marginal Japan, 6. Southern Coast of Korea, 7. Northern Zhejiang for China, and 8.Primorye for Far-East Russia.

In order to foster interdisciplinarity, the work groups (hereinafter WG) are organised according to regions rather than by research subjects.

2) Research Methods

As a basis for studies on both NLS and MDS, ageographical database will be created for each region for both of the periodswith available cartographical data in the form of both historic and modem maps,information on the distribution and spatial structure of archaeological sites,and other related archaeological data. Land use, settlement patterns andpopulation dynamics will be mapped on the basis of cartographic data,historical documents, pollen analyses, and other environmental and ecologicaldatasets.

Since LS is a holistic phenomenon thatentails both a cultural and a natural side, and develops through the influenceof human practices and interactions of the natural environment, a large part ofLS research has to be based on qualitative rather than quantitative researchmethods. Specific research methods would depend on each discipline and on oneof the highlighted periods of study (NLS or MDS).

3)Project Organisation

Eight research areas were chosen around the East Asian inland seas to represent the full variety of cultural and naturalsettings: Hokuriku, Biwako,Northern Kyushu, Hokkaido, Ryukyu Islands, Northern Zhejiang, Southern Coast of Korea, Primorye. In order to foster interdisciplinarity, the work-groups (hereinafter: WG) are organised according to regions rather than by research subjects. Each regional WG includes NLS and MDS researchers carrying out research in the area. It is highly recommendable that each member belongs to at least two of the WGs, in order to facilitate the comparative discussion between the area groups. Information exchange inside the project is facilitated by frequent WG meetings, two general meetings per yearand other seminars and work groups. In some cases, the researchers carryout joint field work.

In addition, there are three database WGs that are responsible for the creation of the GIS database and the basic datacollection (Neolithisation WG, Modernisation WG and technical GIS WG).

This project has signed memoranda andresearch cooperation agreements with research institutes in Korea, Russia andUK in order to promote international integrative research.

4. Significance as an RIHN Project

Belonging to the Ecohistory program of RIHN, the NEOMAP project aims at a deeperunderstanding of the historical formation of the global environmental issues from a very long term-perspective (including prehistory) and through a multidisciplinary and international research agenda provided by the concept ofLS.

Using the multidisciplinary flexibility that RIHN can offer, the NEOMAP project will emphasise the role of socio-cultural systems in the functional cycle of human-nature relationships, considering that the understanding of the socio-cultural sphere is indispensable for building preservation strategies in the future. Because humans can act based on irrational motives (i.e. aesthetic,symbolic, or religious principles) in terms of their integration within a givenenvironment, it is extremely important to

analyse the role of culture regarding modern environmental issues without simplifying human behaviour. Focusing on two major periods in history (NLS and MDS) that can be considered direct roots of modern environmental problems, the NEOMAP project will offer new insights into the mutuality of nature-culture relationships that would enable us to make predictions for future developments and clarify the historical background of LS elements that have become an object of protection. Since LS is a holisticphenomenon, its analysis requires specialised knowledge of an extremely widepanorama of academic fields. Therefore only an interdisciplinary project of considerable scale can cover the development of human-nature relationships within a larger region, and throughout several historical periods. As a fully fundedand operational RIHN project, NEOMAP would have both the interdisciplinarity and the scale to offer a comprehensive analysis, uniting scholars from archaeology, modern history, geology, geography, LS engineering, anthropology,linguistics and biology.

Of the two areas targeted by the Ecohistory program of RIHN - The Asian Green Belt and YellowBelt -, the NEOMAP project research area is included in the former. Co-operating with the project H-02 "Agriculture and Environment Interactions in Eurasia: Past, Present and Future - A Ten-Thousand-Year History -", the projecthopes to contribute to a clearer understanding of the historical roots of the environmental problems in the area.

■Progress of Project

In the FR2, the project members have been engaged in full scale research activities and carried out thorough field work in their designated areas. The topics that are addressed by the individual researchers in all the research groups can be divided into four major common themes. (1) The birth andexpansion of agriculture; (2) LS change at waterfronts; (3) Migration and colonisation as a major force of LS change; (4) Travelling and creation of mental LS images.

In Fiscal Year 2008, the emphasis has been mainly on data collection and analysis.The preliminary results have been published in articles and monographs and presented at international and national congresses, workshops and seminars. Among the most important publications are "Neolithisation and Landscape -NEOMAP International Workshop-" and "NEOMAP Interim Report".

To discuss the use of the notion of NLS in the East-Asian context, sessions were held at the congress of Society for East Asian Archaeology (June 2008) and at Sixth World Archaeological Congress (July 2008); the project ideas and results have been presented at the Permanent European Conference for the Study of the RuralLandscape (September 2008). For a better understanding of the concept of LS andcommunication within RIHN, a monthly seminar series "Landscape seminar" hasbeen held. Wealso organized two lectures for Ecohistory Program Lecture at RIHN.

Concerning the database construction, data collection and input has been almost finished for the MDS database of Biwako and NLS Hokuriku areas and the GIS analyses onthe basis of the data, scanned historical maps and other cartographic data arebeing carried out to understand the composition, characteristics and relationships of the population, production, agriculture, fishing, land composition, landsize, land value and productivity data. First round of data insertion has been finished for the NLS database of the Biwako region and is in its final stage also in the other areas of the mainland Japan.

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■Research Plan

1.We have created new WGs. Three database WGs that are responsible for thecreation of the GIS database and the basic data collection (Neolithisation WG, Modernisation WG and technical GIS WG). Linguistic WG has been created to tackle the overarching question of landscape perception in language. To fosterinternational exchange and promote the project ideas abroad and at the sametime to carry out a comparison with the Northern European Inland Seas, the North European Inland Seas WG based in UK was created.
2.We have increased and changed the number of members according to necessity.

■Problems for implementation or points need to change plan

1.Outcomes in Fiscal Year 2008

Based on research carried out in each WG during FR1, detailed research plans were built by each of the groups and individual members. The topics that will be addressed by the individual researchers in all the eight research groups can be divided into the following four major common themes:
(1) The birth and expansion of the archetypal East Asian landscape: research on rice paddy system, migratory water fowl hunting, raised floor stock houses on one hand and archetypal urban planning and Feng Shui on the other.
(2) Waterfronts,i.e. the system of the inner/ outer sea, rivers and lakes as a source of livingand an object of worship, but also the function of water ways as a passage forthe trade of local produce.
(3) Migrationand colonisation as a major force of landscape change, including the change ofsettlement patterns in side one culture, as well as colonisation andimmigration as a forced landscape shift from indigenous/ traditional landscapesystems to introduced ones.
(4) Travellingand creation of mental landscape images: Eight Omi Landscapes, the landscape imports in colonisation (ghost sand spirits transferred to new areas) and therole of temples as a landscape axis.

Information exchange inside the project isfacilitated by frequent WG meetings, general meeting and other seminars andworkshops. In some cases, the researchers carry out joint field work. Each WGhas to set their own goals and research strategies, keeping in mind both thepeculiarity of the region and the four common topics that have surged duringthe first years of project research.

Project hasparticipated in, organized and co-organized several workshops and seminars inJapan (at Suita City Museum in Osaka and at Okinawa Archaeological ResearchCenter) and abroad (at the congress of Society for East Asian Archaeology inChina, Sixth World Archaeological Congress in Ireland and the PermanentEuropean Conference for the Study of the Rural Landscape in Portugal). NEOMAP InternationalLandscape Workshop “Neolithisation and Landscape” was held in October 31 andNovember 1, and nine members reported their research results. Inside theinstitute, the project has opened monthly seminar series, “Landscape Seminar”, and organizedlectures as “Ecohistory Program Lecture”.

2.Future Topics

The next fiscalyears should see the accent of the activities going from data collection andanalysis to the publication and presentation of the results to a broaderpublic, both in Japan and abroad. Fiscal year 2009 should see the publicationof the first two volumes of the NEOMAP publication series (in Japanese) thathave been prepared in 2008. As the data input of the NLS database has almostbeen completed, the project members would proceed to the GIS analysis of thedata in the next Fiscal year. Data input and analysis would continue also in the MDS database and also in the databases collected by overseas WGs. The projectout comes will be open to the general public through various occasions like publications, open seminars and a special exhibition at a museum (undernegotiation with the Suita City Museum, Suita city, Osaka).

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Research Presentations

【Oral Presentation】

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・MURAKAMI, Yumiko The wooden implements from Hemudu culture and landscape. Sixth Landscape Seminar, Jan 30,2009, Shimogyo-ku, Kyoto. (in Japanese)

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・ZEBALLOS VELARDE,Carlos; BORRÉ, Caroline Changes in Landscape During Modernization Period in Central Japan. A GIS Approach of the Case of Lake Biwa. “Landscape History and Landscape Heritage” Parallel Session C 4.2 at the Permanent European Conference for the Study of the Rural Landscape (PECSRL) 23rd Session - Landscapes, Identities and Developments, Sep 04,2008, Óbidos, Portugal.

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religious taboos. Third Landscape Seminar, Aug 22,2008, Shimogyo-ku, Kyoto. (in Japanese)

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- NAKAJIMA, Tsuneo A Method for Landscape Research. Second Landscape Seminar, Jul 25,2008, Shimogyo-ku, Kyoto. (in Japanese)
- NAKAMURA, Oki From Archaeology to Landscape Studies – The futurability of archaeology. Second Landscape Seminar, Jul 25,2008, Shimogyo-ku, Kyoto. (in Japanese)
- LIM, Sang-taek A socioeconomic shift in landscape during the Chulmun period in Southern Korea. Neolithic landscape in East Asia" session at Sixth World Archaeological Congress (WAC6), Jul 04,2008, Dublin, Ireland.
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- Zheng·G.Sun; NAKAMURA, Shin'ichi Expansion to the wetland around 5000 BC in the lower Yangtze region. Sixth World Archaeological Congress (WAC6), Jun 29,2008, Dublin, Ireland.
- SANO, Shizuyo Historical relations of Inner lakes and people – The inner lakes as satoumi. 6th Seminar at Lake Biwa Environmental Research Institute, Jun 24,2008, Otsu, Shiga. (in Japanese)
- Nakamura, Oki Linking the Past and Present: the Futurability of Archaeology. Danwakai Seminar, Jun 17,2008, Kita-ku, Kyoto. (in Japanese)
- SANO, Shizuyo The "secondary nature" of waterfronts and the environmental history of landscape change – Focus on the shores of Medieval Biwako. 10th General Meeting for the Rakuhoku Society of Historical Studies, Jun 07,2008, Sakyo-ku, Kyoto. (in Japanese)
- HOSOYA, Aoi Plant food subsistence strategy and the 'routine-scape' in Japanese and Chinese Prehistory. "Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.
- ITO, Shinji Cultural landscape shift of Prehistoric Okinawa Islands: Case study of Izena Island Group. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.
- KIM, Jong-il Topophilia with life and death: the formation of agricultural landscape in the Korean Bronze Age. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

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・NAKAMURA, Shin'ichi The formation of urban landscape in the lower Yangtze area: considerations on the Liangzhu archaeological sites. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

・POPOV, Alexander; TABAREV, Andrei Landscape shift and Neolithic remains of south-western Primorye in the middle Holocene. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

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・GILLAM, Christopher Modeling Cultural Landscapes: Examples from East Asia and the Americas. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

・BAUSCH, Ilona Changing Jomon Landscape Perception and Use, from the Perspective of Jadeite Exchange. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

・NAKAJIMA, Tsuneo Prehistoric Waterside Landscape in East Asia: the Usage and its Changes of Carp Family Fish Resources. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

・TAKAMIYA, Hiroto Long Distance Exchange and Food Stress in the Prehistory of Okinawa, Japan. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

・UCHIYAMA, Junzo Prehistoric landscape shifts as seen from human-wild boar relations in Jomon Japan. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

・MAKIBAYASHI, Keisuke Landscape in the Chinese Neolithisation period. First Landscape Seminar, May 26,2008, Shimogyo-ku, Kyoto. (in Japanese)

・NAKAI, Sei'ichi Dialect Research as External Linguistics. May meeting of the Japanese Linguistic Society, May 17,2008, Setagaya-ku, Tokyo. (in Japanese)

・TKACHEV, Sergey.; TKACHEVA, N.N. Prospects of energy policy of Russia in the Far East. XVI International conferences Cultural exchange between the countries of Northeast Asia and the Russian Far East, Apr 24,2008-Apr 28,2008, Vladivostok, Russia. (in Russian)

・LIM, Sang-taek New Perspectives on Socio-economic Interchanges between Southern Korean Peninsula and Japanese Kyushu Island during the Neolithic Period. Yongnam and Kyushu archaeological society., 2008, Korea. (in Hangeul)

・KIM, Jong-Il. Tradition and Change-a new perspective in the Korean Bronze Age. Archaeological conference in the autumn 2008 for The archaeological society for Seoul-Gyeongi province, 2008, Seoul, Korea. (in Hangeul)

・KIM, Jong-il Nationalism in Korea Archaeology. The summer workshop 2008 for the society of Korean Ancient History, 2008, Korea. (in Hangeul)

・KIM, Jangsuk Archaeology of Style. 32nd Annual Meeting of the Korean Archaeological Society, 2008, Chuncheon, Korea. (in Hangeul)

【Invited Lecture / Honoronary Lecture / Panelist】

・TAKAMIYA, Hiroto Magakigai - on food stress in the prehistory of Okinawa islands. The 62nd Annual

Meeting of the Anthropological Society of Nippon, Nov 02,2008, Chigusa-ku, Nagoya. (in Japanese)

- NAKAI, Sei'ichi Honorifics Behaviour and Regional Characteristics in Iga Ueno. The 131 meeting of the Variation Forum of Japan, Nov 02,2008, . DOI:Morioka, Iwate. (in Japanese)
- TORITANI, Yoshifumi Using GIS to depict language change: Follow-up Glottogram Survey of Hayakawatani. 87th Annual Meeting for Dialectological Circle of Japan, Nov 01,2008, Morioka, Iwate. (in Japanese)
- ITAKURA, Yudai On the Japanese-Korean relations as manifested through Jomon stone implements. Pusan Museum International Symposium 2008, Oct 30,2008, Pusan, Korea. (in Japanese)
- TAKAMIYA, Hiroto Okinawa and Hokkaido as seen from cultivated plants. Lecture at Hokkaido Archaeological Research Center, Oct 18,2008, Ebetsu, Hokkaido. (in Japanese)
- YASUMURO, Satoru Traditional wild duck hunting as a cultural asset and wise use. 112th Seminar for the Human Geographical Society of Japan, Sep 27,2008, Otsu, Shiga. (in Japanese)
- NAKAMURA, Oki Where the Jomon people inequal?. 3rd Lecture for Tokyo Metropolitan Archaeological Research Center, Sep 20,2008, Tama, Tokyo. (in Japanese)
- TAKAOKA, Hiroyuki Picture rolls of supernatural beings - When a human meets something suspicious. Odd Eye Seminar, Aug 31,2008, Kochi. (in Japanese)
- IIDA, Taku Scenery of living at the sea - Sekisei reef and Minami Daito island. Minami Daito Island Center, Jun 14,2008, . DOI:Minami Daito-mura, Okinawa. (in Japanese)
- TAKAOKA, Hiroyuki Curse, divine punishment, ghosts - Let's speak about the world of shadows with a folklorist. Cultural Lecture by Kochi Women's University., Jun 05,2008, Kochi. (in Japanese)
- KIM, Jangsuk Elite Strategy and the Spread of Technological Innovation: The Spread of Iron in the Bronze Age Societies of Denmark and Southern Korea. Special Lecture at Korea Institute at Harvard University, Apr 15,2008, Cambridge, USA.

Stage: FR

Project No.: R-03

Project Name: Historical Interactions between the Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia

Abbreviated Title: Ili Project

Project Leader: KUBOTA, Jumpei

Research Axis: Resources

URL: http://www.ilipro.com/index.html

Key Words: arid and semi-arid region Central Eurasia ethnic groups border agriculture nomadic pastoralism historical interactions

■Research Objectives and Topics

Background

Historically and geographically, Central Asia has been a key area of interaction, transit and exchange between East and West. While many Central Asian peoples are well recognized in historical records as skilled nomads, merchants and traders, it is more recently acknowledged that these peoples also assimilated the ideas and artifacts passing through their territories into their own cultures, often with material effect on landscapes and livelihoods. At the same time, Central Eurasia is an excellent location for tracing human reactions to both past climate changes and anthropogenic activities. In this climatically sensitive area, which alternates between semi-arid and arid conditions, human influence can be historically traced. The area with extended arid and semiarid deserts has potential agricultural plains along rivers, flowing from high mountains with many glaciers, which were actively cultivated far back in historical time. These border regions could record both natural environmental and anthropogenic changes very sensitively.

After the long transition marked by the rise and fall of various ethnic groups and countries, the Yuan Dynasty governed the whole of Eurasia as a loosely controlled unity during the 13th and 14th centuries. In 18th century, however, a tight and well-defined border divided the region between Russia and Qing. At the same time, the people of this area experienced a great change in their lifestyle, caused by the migration of farmers, settlement of nomads and development of agriculture in association with the expansion of Russia and Qing. For nomadic peoples living in semi-arid regions, relocation was one of the major means for adapting environmental changes, demographic expansion and political conflicts between groups. Settlement policies and borders prevented these people from following their way of adaptation. Finally, with the weakening of the Soviet Union, the Russian side was divided into many republics. Man-made trans-boundary issues, between countries or ethnic groups, religions, agriculture and nomadic pastoralism, or between cities and their surrounding areas, commonly lie behind the various environmental problems in the world. This is one of keys to understand present environmental problems.

Although interactions between environmental changes and human reactions have rarely been studied in Central Eurasia (Boroffka et. al, 2006), agricultural development in the Aral Sea basin has caused the severe lake-level regression that started in the 1960's. This regression has received considerable attention since the political opening of the former Soviet Union (e.g., Aral´skij krizis, 1991; Létolle and Mainguet, 1996; Micklin and Williams, 1996). This regression was clearly triggered by man, and its effects on the environment and the life of local populations have become a subject of discussion far beyond the scientific community. Recent agricultural development in arid to semi-arid regions, especially in the latter half of the 20th century associated with modern irrigation technology, has contributed to increasing agricultural production. However, considerable environmental issues have resulted. It is important, therefore, to balance resource development and preservation in arid and semi-arid regions.

Objectives

This project aims to study and clarify the historical interaction between human activities and natural systems in the semi-arid region of Central Eurasia, with particular emphasis on trans-boundary issues. In order to accomplish this purpose, the project attempts to clarify historical changes, the rise and fall of nomadic groups and countries, their removal, changes in subsistence, the use of natural resources, and climate change through the analysis of historical documents and archaeological investigations as well as various natural proxies such as ice cores, lake sediment samples, tree rings and wind-blown deposits. At the same time, we will investigate the present status of the area and the effects of human activities on the natural environment, with particular emphasis on their social, religious and cultural background. Finally we will compare both sides of the border within the context of historical changes and their current status, examining areas that were previously similar but that have subsequently developed differently, to understand the meaning of boundaries in the context of environmental issues. This project should provide important keys not only for evaluating the effects of projected human activities on ecosystems in arid to semi-arid regions, but also for elucidating fundamental perspectives to examine a desirable mode of living in multi-cultural regions.

Focus of the project as a RIHN project

Global environmental issues are recognized as a conflict or inconsistency between human activities or cultures and environments that form the basis of human survival. The causes and effects of problems have become more complex and widespread. This is especially apparent with the recent expansion of human activities. Historically, however, human beings have strived to adapt to changes in the environment. This projects aims not to search for a so-called historical understanding of the rise and fall of the ethnic groups of the semi-arid regions in Central Eurasia, but to find the history of adaptations by human beings in the context of man-made boundaries, which is one of the fundamental issues behind present environmental problems. It can be said that the study area has a variety of environmental problems caused by modern developments in both the former Soviet Union and China. We will try not only to investigate these visible environmental problems, but also to think about the significance of human activities or cultures, which are invisible, but essential to understand environmental problems.

The present project is placed within the framework of the programs in the RIHN, “Resources” and “Ecohistory” through investigating the historical interactions of human activities and the environment. The project plans to elucidate the evolution of the culture and the criteria for balancing natural resources development (agricultural development) and preservation of the environment, which should contribute to examining a desirable mode of living for the future. The project plans to cover the time period of about 1,000 years in the past, because written documents are available in the time period in general, without which detailed study is considered difficult. It also plans to concentrate the study in arid and semi-arid regions in Central Eurasia, because Central Eurasia is the region, where people have been most active historically and our present culture is considered attributed to those developed in the region.

How to organize interdisciplinary research

In keeping with our understanding of the present status, the project will attempt to clarify historical changes, the rise and fall of nomadic groups and countries, their removal, the change in their subsistence, the use of natural resources and climate change through the analysis of historical documents and archeological monuments as well as those of various natural proxies such as ice cores, lake sediment samples, and tree ring. Compared with other areas such as the eastern part of China, historical documents written by nomadic peoples are rare; hence, archaeological investigations will be one of the important research methods used in this project.

■Progress of Project

RESEARCH METHODS, ORGANISATION AND PLAN

1) Research area

The study area is the Ili River watershed, which flows from China to Kazakhstan, terminating at Lake Balkhash as well as the surrounding areas, including Kyrgyz and Uzbekistan. Fig-2 shows the map of the study area. Geographically, the Ili-Balkhash Basin is recognized as a fertile area with relatively high precipitation, lying to the north of the Tian Shan Mountains. Within a historical context, the Ili-Balkhash Basin and the surrounding areas have been a key area of East-West interaction, and in which many ethnic groups and countries have risen and fallen. The region also has areas that face current environmental issues because of modern development under planned-economy of socialism. The main reason why we choose the area is that Central Eurasia is an excellent location for tracing human reactions to both past climate changes and anthropogenic activities. In this climatically sensitive area, which alternates between semi-arid and arid conditions, human influence can be traced historically. The area with extended arid and semiarid deserts has potential agricultural plains along rivers, flowing from high mountains with many glaciers, which were actively cultivated far back in historical time. These border regions could record both natural environmental and anthropogenic changes very sensitively.

2) Research groups

The project consists of two research groups: one will clarify historical changes in both human activities and natural systems through the analysis of historical documents as well as a variety of natural proxies, and the other group is to investigate the current processes of human activities and natural systems for interpreting the historical information. Fig-2 shows the framework of the project.

3) International cooperation

We have been cooperating with various research institutions;

in Kazakhstan: Institute of Geography, Institute of Archaeology, Kazakhstan Scientific Research Institute on Problems of the Cultural Heritage on Nomads, Tethys Scientific Society, Institute of Geological Sciences, Institute of Soil Science, Institute of History and Ethnology

in China: Renmin University of China, Institute of Ethnology, Cold and Arid Region Environment and Engineering Institute, Xingjian Institute of Archeology,

Other: Central Asia Deep Ice-Coring Project (CADIP)

4) Time frame:

The project aims to clarify historical interactions during the past 1000 years, divided into two eras: a) the era prior to the 18th century or the time of the rise and fall of nomadic groups and countries, and b) the era following the 18th century, during which the area was divided by the border between Russia and Qing.

5) Contents:

A) To clarify historical changes, the rise and fall of nomadic groups and countries, their removal, changes in subsistence, the use of natural resources, and climate change analyzed by using historical documents and archaeological investigations as well as various natural proxies such as ice cores, lake sediment samples, tree rings and wind-blown deposits. We will compile the information obtained from archaeological investigations and from the analysis of historical documents into a GIS database with chronological segments. This will allow us to investigate historical human adaptation to external forcing caused by both natural environmental changes and political, socio-economical shifts. We will also develop a hydrological model for a tool to integrate the information analyzed by various proxies. The inputs for the model will be reconstructed series of precipitation and temperature revealed from tree-rings and ice cores. The energy and water balance calculation on various surface conditions

classified by using the chronological GIS information about land use will be taken into account. The model will be validated by lake level changes analyzed by lake sediment cores and geomorphological surveying. Reconstructed river flow will then give the capacity of water resources in the middle and lower reaches, which closely relates to the change in subsistence.

B) To investigate the present status of the area and the effects of human activities on the natural environment, with particular emphasis on their social, religious and cultural background. We will focus on the impact of agricultural development under planned economy of socialism. Both China and the former Soviet Union are recognized as countries which have exploited natural resources under planned economy of socialism, the initial conditions at the beginning of the modern development in each country, such as population density, were quite different. This should be taken into account when we investigate historical interactions between human and nature in both countries. Policies of settlement of nomadic peoples, change in subsistence from nomadic pastoralism to agriculture, collectivization, and their chronological order are key issues to understand current environmental problems in this area. The effect of these policies relating agricultural development on people's life will be recovered by interviews and analysis of various statistics. The impact of agricultural development on ecosystems in the area will be analyzed from various perspectives, such as ecology, soil science, and hydrology. This information will be complied into the GIS database.

C) To compare both sides of the border within the context of historical changes and their current status, examining areas that were previously similar but that have subsequently developed differently, to understand the meaning of boundaries in the context of environmental issues.

OUTCOMES UP TO NOW

a) Outcomes of the project as a whole

During these two years as the beginning of FR, we have focused on gathering materials necessary for historical reconstruction, including natural proxies such as ice cores, lake sediment samples, tree rings as well as historical documents and images. We have also collected data of the present status of the area. The analysis has just started in both groups; hence, integrated outcomes are still tentative. However, two major outcomes in both the historical analysis and the present status analysis are described below.

Tentative analysis of reconstructing the lake level of Lake Balkash indicated that there was a decreasing trend of lake level from the 10th century, and the lake level at the beginning of the 13th century was the lowest during past 2000 years, which is almost same as that of the present status. After this significant regression, the lake level showed rapid recovery, and remained relatively high until the modern regression that started in the 1960's (Fig-3). The regression in the medieval times corresponds to that of the Aral Sea (Boroffkka, et. al., 2006) and the Issyk-Kul Lake in Kyrgyz (Giral, et. al., 2004). Considering results from other proxies, such as the accumulation late at the Guliya ice-cap in China (Thompson et. al., 1995), the events of advance and retrieval of glaciers in Tian Shan Mountains (Narama and Okumura, 2006) and the reconstructed temperature trend (Esper et. al, 2002), we suppose that the so-called Medieval Warm Period (MWP) was warm and dry, and the Little Ice Age (LIA) was cold and wet. More detailed and precise analyses, including effects of human activities on lake level change, will be carried out by using results of our own materials.

After the division of the area by Russia and Qing, the balance between human capability and impacts of environmental change, such as climate change, drastically changed. Modern agricultural development under the planned economy of socialism had a significant impact on both ecosystems and social systems. In Kazakhstan, this process could be divided into several sub periods. After the expansion of Russia, the first attempt at changing subsistence from nomadic pastoralism to agriculture in association with the settlement of nomadic people started form the late 19th century. The collectivization of agricultural

sector from 1929 exerted the serious confusion to the society in the area, resulting in the loss of a large number of nomadic populations. In the Virgin Lands Programme of Khrushchev's Agricultural Policy, Kazakhstan was forced to be one of the major crop production areas in the Soviet Union, causing excessive development ignoring the environmental capacity and exerting significant impacts on the area. In addition, nature transformed by human activities (artificial nature) was fragile to climate and social changes. The collapse of the Soviet Union deteriorated terms of trade for agricultural sector. The amount of state purchase and subsidies were reduced. Consequently, many farms established during the planned economy were abandoned. This caused a drastic reduction in demand and reduced the pressure on natural resources, ironically resulting in the recovery of the ecosystem. In China, the commencement of modern development was delayed, starting until the 1950's. Recent development has been strong however, and increasing demand for natural resources is projected.

b) Results of each work group

- The ice-core research group drilled two ice core samples 85.35m and 63.1m in depth at the Gregoriev Glacier (4600m asl) in the Tian Shan Mountains of Kyrgyz in collaboration with CADIP (Central Asia Deep Ice-coring Project). The deeper drilling actually reached the bottom of the glacier. We recovered soil including organic materials under the 85 m core. The result of AMS carbon dating of the soil under the ice and dust particles included in the bottom layers of the core show that the 85 m core dates back more than 10,000 years. The potential time span of this core is greater than we expected. We suppose, tentatively at the moment, that the soil under the ice was formed in the Bølling-Allerød interstadial, indicating the possibility of the disappearance of glaciers up to this elevation.

- In collaboration with the Institute of Geological Sciences in Kazakhstan and the Cold and Arid Region Environment and Engineering Institute in China, a 6-m lake sediment core sample was obtained near the north shore of Lake Balkhash. This lake sediment core dates back around 2,000 years. A tentative analysis of level changes of Lake Balkash indicates that there was the decreasing trend from the 10th century, and the lake's level at the beginning of the 13th century was the lowest for 2,000 years.

- A comparative analysis of Corona images in 1971 and a Landsat image in 2002 exhibits significant glacier area reduction; 12 to 20 % in the northern side of the Tian Shan Mountains. This suggests that damage to water resources is possible in the area.

- Several research groups, including researchers with various kinds of disciplines, such as geography, hydrology, ecology, archaeology, sociology and anthropology, made field works to Kazakhstan, focusing on evaluating the impact of human activities, especially the use of natural resources on regional ecosystems, and its historical transition. A large amount of basic information concerning vegetation, soil, meteorological and hydrological conditions was gathered. This information is being complied into the GIS database.

- Various kinds of historical documents and images were collected through cooperative studies with research institutions in Kazakhstan, China and Russia. Especially, there are many historical documents and maps describing nomadic groups, including their locations, populations and numbers of animals written in Manchurian. These documents and maps have not been investigated before because few researchers can read; hence we are currently trying to analyze documents.

- We are trying to compile information obtained from archaeological investigations and the analysis of historical documents and images into the GIS database in chronological orderly.

○Co-Researchers

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Narama, Chiyuki (Research Institute for Humanity and Nature,Project researcher,Analysis of Glacier discharge, Glacier distribution using satellite images, GIS database)
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Zhulduzbek Abylkhozhin	(Institute of History and Ethnology,Professor,Analysis of agriculture development in Kazakhstan)
Roman Jashenko	(Institute of Zoology,Senior researcher,Evaluation of impacts of agricultural development in Kazakhstan)
Vladimir Aizen	(University of Idaho,Professor,Ice core analysis,)

■Research Plan

■Problems for implementation or points need to change plan

In fiscal year 2008, it was difficult to conduct field investigations because of high tension in Chinese side. The situation has improved recently. We will resume our activities in February 2009. It is possible to safely carry out the project with the cooperation of collaborating researchers in China. This social tension did not affect the activities of collecting historical documents and materials.

Editing

【Editing / Co-editing】

・Uyama, T (ed.) 2008 Perception of Regions: Structure and Perception in Multi-ethnic countries. Kodansha, 310pp. (in Japanese)

Papers

【Original Articles】

・Kadono A, Funakawa S and Kosaki T 2008 Factors controlling mineralization of soil organic matter in Eurasian steppe area. *Soil Biology and Biochemistry* 40(4) :947-955.

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・Narama, C., Kondo, R., Tsukamoto, S., Kajiura, T., Duishonakunov, M., Abdrakhmatov, K. 2008 Timing of glacier expansion during the Last Glacial in the inner Tien Shan, Kyrgyz Republic by OSL dating. *Quaternary International* .(reviewed).

Research Presentations

【Oral Presentation】

・M. Watanabe, Y. Konagaya, T. Akiyama and J. Kubota Socialist Modernization as the Environmental History in Almaty Region, Republic of Kazakhstan：A case study of the “Kazakhstan Sovkhoz”. . The Study Meeting of the Association of Japanese Geographers, Spring 2009, Mar 28,2009-Mar 29,2009, Teikyo Univ. Hachioji. (in Japanese)

・Mitsuko WATANABE, Yuki KONAGAYA, Tomohiro AKIYANA and Jumpei KUBOTA Legacies and Ruins of Socialist Modernization in Almaty Region, Republic of Kazakhstan. International Workshop “Reconceptualizing Cultural and Environmental Change in Central Asia:An Historical Perspective on the Future, Feb 01,2009-Feb 02,2009, RIHN, Kyoto.

・Jin NODA The History of Eastern Kazakhstan Written by a Tatar Imam: Beyond the Border of the Empires.. Central Eurasian Studies Society, Ninth Annual Conference, Sep 20,2008, Georgetown Univ., Washington, D.C..

・Narama, C Timing of glacier expansion during the Last Glacial in the Tien Shan mountains. Pamis-Germany 80th Symposium, Aug 21,2008, Tashkent, Uzbekistan.

Stage: FR

Project No.: R-04

Project Name: Environmental Changes and Infectious Diseases in Tropical Asia

Abbreviated Title: Ecohealth Project

Project Leader: MOJI, Kazuhiko

Research Axis: Resources

URL: http://www.chikyu.ac.jp/ecohealth/

Key Words: Environmental changes,Infectious Disease,Malaria,breakbone fever,Filaria,Leishmania,Clonorchiasis Thailand,water-borne diseases,Tropical Asia

■Research Objectives and Topics

Objectives:

This project is to clarify the relationship between various environmental changes and rise and fall of infectious diseases in tropical Asia. The project studies the effects of human societal and environmental changes on the ecology and epidemiology (or endemiology) of vector-borne diseases such as malaria, dengue fever, opisthorchiasis (liver fluke infection) in tropical monsoon Asia. Population increase, urbanization, deforestation, spread of wet rice cultivation, economic development, changes in life style or so-called modernization, and population migration are the factors changing the ecological relationships among human beings, pathogens, and vectors.

The project also investigates the relation among climate changes (temperature, rainfall, etc.), flood and drought and some infectious diseases (water-borne diseases such as cholera). The study aims at offering new disease-ecological insights for evaluating the relation of infectious diseases with local and global environmental changes.

Basic concept:

Incidence of human infectious diseases is a kind of biological interaction between pathogens and human beings. It is directly related to both the ecology of pathogens and the ecology of human beings. The ecology of pathogens is a part of the environment of human beings, while the ecology of human beings is a part of the environment of pathogens. Therefore, all the infectious disease, necessarily having links with environments, can be considered as environmental problems.

Moreover, incidence of many human infectious diseases is related with non-human reservoirs and/or vectors of the pathogens. Incidence of vector-borne diseases such as malaria, for example, is related to the ecology of pathogens, vectors, and humans (and of non-human reservoirs in some diseases). These ecological settings have been changing very rapidly in tropical Asia because of man-made environmental changes. How the environmental changes have effects on the rise and drop of the diseases is of interest of this project.

Background:

The Millennium Ecosystem Assessment (MA) was called for by United Nations Secretary-General Kofi Annan in 2000 in a report to the General Assembly entitled *We the Peoples: The Role of the United Nations in the 21st Century*. The MA should help to achieve the United Nations Millennium Development Goals (MDGs) and to carry out the Plan of Implementation of the 2002 World Summit on Sustainable Development. In MA reports, harmful effects of ecosystem change on human health was extensively studied. Infectious disease is one of the important health impacts. The present project is on the same direction. The project leader identifies the following three global problems for the present world:

1) health problems and starvation of poor people who have never been benefited by development (problems of failure; poor people in Sub-Saharan Africa and ethnic minorities in Southeast Asia),
2) health and environmental problems of sustainability in developing countries. They are creating

environmental problems and reducing future possibility (problems of success; many areas in China, ethinic majority of Southeast Asia and India), and
3) health and environmental problems in "developed" countries. They produce and reproduce the modern value system which is by no means sustainable. This modern value system creates the first and second problems above.

We need to tackle these problems of development in the modern era as common issues for all humanity. The project will address the challenges from the standpoint of human infectious diseases.

So far, modern human society has been studying and fighting with infectious diseases by applying the bio-medical approach. Nowadays, this tendency seems very strong. Human society depends heavily on biomedical measures in terms of control and management of infectious diseases. Ironically, however, this dependency itself makes mistrust of medical measures/services.

The project is thus aimed to provide a view of seeing an infectious disease as an environmental issue. Because human activities is expanding beyond national borders, problem of infectious diseases has become a global environmental issue, as well as a local or national environmental issue.

There has been a tendency that study of pathogens, vectors, and human behaviour was independently executed. Long-term integrated epidemiological study of infectious diseases has been rare. The project leader tried to integrate the studies of pathogens, vectors, and human behaviour for studying endemiology of malaria in Vietnam and Indonesia. This integration is important and necessary, but not sufficient. We need to collect more information from the viewpoints of area studies and history, geography and ecology, agricultural science and forestry, climatology, and so on. The project was thus launched at RIHN to realize this kind of comprehensive study.

Contributions to global environmental issues:

The project has no aim to provide a direct and practical solution to the global environmental issues. If we can control infectious diseases more effectively and efficiently, it would be possible to reduce the number of those affected. At the same time, however, that would reduce mortality and then create more development needs; there is no guarantee of orderly development.

Unlike medical control programs/projects which usually aim at short-term problem- solving approaches of infectious diseases, this project tries to understand the fundamental relations of human life and ecology of pathogens and vectors, by making trans-disciplinary and integrated approaches. If the project can provide a long-term view of human survival and health toward the future, the impact should be substantial not only for the tropical Asia, but also for the other parts of the world.

Research methods and area:

1) Long-term observation of a local population in Lahanam area, Songkhone district, Savannakhet province, Lao PDR by establishing Demographic Surveillance System (DSS). Since 2005 we are following about 4,500 residents. In Bangladesh, we use data from the Matlab DSS and others.

2) Collection and analyses of community-based information on environmental changes and health including infectious diseases.

3) Collection and analyses of national-based information on environmental changes and health including infectious diseases (analyses should be the district level and/or provincial level).

4) Discussion on global ecohealth concept.

Project Organization:

The project team can be divided into two groups; the field study group and the integration group.

Field group can be further divided into two major groups (Lao and Bangladesh) and small groups.

1) Lao team: with National Institute of Public Health and other institutions.
Site and theme: Savannakhet (DSS, MCH, liver fluke, malaria).
National level population health and policies.
Other small specific studies.

2) Bangladesh team: with ICDDR,B, IEDCR, NIPSOM and others.
Site and theme: Matlab, Dhaka, other area (climate and health on national level).
Filariasis, malaria, leishmaniasis.
National level infectious disease data base.

3) Small field teams: Vietnam, Myanmar, Indonesia (malaria).
Sri Lanka (diarrhoea and others).
China (HIV/AIDS).

Integration group

4) Integration team: Establishment of ecohealth view

In collaboration with other international project on ecohealth, the project tries to contribute to the establishment of concept of ecological health. At the same time, this concept must be reflected in the change of human behaviour, disease control and health promotion. Under the new concept, the project seeks to provide people with new measurements and/or tools to change the population health (like bednet score, HIV related ART-adherence score, etc.).

5) Study of regional environmental change and infectious diseases endemiology

After collecting and analyzing district-level information on environmental change and infectious diseases in Lao PDR and Bangladesh, the research possibility will be studied to develop the standard method to analyze the data through the tropical Asia. And the framework to do this should be sought out.

6) Historical study group

This group works on some episodes between environmental and societal changes and occurrence of infectious diseases during the war in the battle field. Other historical studies are also conducted by recruiting historians of the countries studied.

7) Demographic study group

Demographic transition and health transition are studied in Laos and other tropical Asian countries. The decrease of each infectious disease in the course of health transition must be studied.

8) Agro-forestry group

Information of changes in forest and agriculture are collected, and methodology to relate it with occurrence of infectious diseases is developed.

■Progress of Project

(1) The Integration Team concluded MOUs with the National Institute of Public Health, Ministry of Health (NIOPH), Lao PDR, and the International Centre for Diarrheal Disease Research, Bangladesh (ICDDR, B).

(2) The Lao study team conducted demographic and health research in Lahanam area, Savananakhet Province, focusing on maternal and child health. The team also initiated surveys on the health system, school health, and incidence of malaria among indigenous groups residing in remote areas of the Sepone district. This team also established the "Lao-Japan Consortium on Health Research" to facilitate

systematic and comprehensive health research in Lao. It co-organized the Second National Health Research Forum in September 2008, and invited the Health Minister of Lao PDR to the RIHN Special Meeting on "Ecohealth Promotion" in November, 2008.

(3) The agro-forestry study team start study focusing on changes in land-use and land-cover in Southeast Asia, using satellite images to establish GIS-based data on environmental change. Demographic study group continue study of child health and nutrition in Lahanam. They also try to introducing Paperless system for Demographic Severance System (DSS) in Lahanam.

(4) In Bangladesh, studies of relation between climate and infectious disease in Matlab were initiated in collaboration with ICDDR, B, Nagasaki University, and the London School of Hygiene and Tropical Medicine. An automated weather observation system (AWS) was installed in Matlab to collect climate data. We have also been working in collaboration with the Institute of Epidemiology, Disease Control and Research, Bangladesh, and Cambridge University to establish a national disease database.

(5) The historical study team collected and analyzed historical data on infectious diseases in East and Southeast Asia, held an international workshop in Taiwan, and has analyzed medical information in the British Parliamentary Papers (BPP).

(6) The China study team carried out survey on HIV/AIDS in cooperation with Kunming Medical College and the Yunnan Health and Development Research Association (a NGO), focusing on social change and population mobility. The team is to develop a research network of HIV/AIDS in the Greater Mekong Region.

(7) The health education study team developed an ecohealth questionnaire to be administered in communities and schools to collect information on environmental changes and lifestyle changes.

○Co-Researchers

◎ MOJI, Kazuhiko (Research Institute for Humanity and Nature,Professor,Project Leader)
○ MASCI-TAYLOR, Nicholas CG(Cambridge University,Professor,Bangladesh Filariasis and STH studies)
○ KOBAYASHI, Shigeo (Kyoto University, Graduate School of Asian and African Area Studies,Professor,Agro-forestry, Agro-forestry and human security)
○ IIJIMA, Wataru (Aoyama Gakuin University Faculty of Letters,Professor,History, History of diseases and their control policies)
○ KAMMURDIN, Ahmed (Oita University Institute of Scientific Research,Associate Professor,Infectious disease)
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○ YAMAMOTO, Taro (Nagasaki university institute of tropical medicine,Professor,Integration, Ecohealth concept)
○ OHBA, Tamotsu (Blue ecology research,Senior researcher,Demographic Transition and Lao Lahanam DSS)
○ BOUPHA, Boungnong (National Institute of Public Health, Lao PDR,Director/Professor,Lao Public Health)
○ KOUNNAVONG, Sengchanh(Nagasaki University Graduate School of Biomedical Sciences,Grad student,Maternal and child health, infectious diseases of children)
○ PONGVONGSA, Tiengkham(Savannakhet Malaria Centre, Lao PDR,Director,Malaria,Liver fluke of a sea bream)
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IMAI, Hideki (University of Miyazaki Faculty of Medicine,Associate professor,Environmental health)

■Research Plan

Objectives:

This project is to clarify the relationship between various environmental changes and rise and fall of infectious diseases in tropical Asia. The project studies the effects of human societal and environmental changes on the ecology, endemiology and epidemiology of infectious diseases. Main targets are 1) vector-borne diseases such as malaria, dengue fever, filariasis, leishmaniasis; 2) food-borne diseases such as opisthorchiasis (liver fluke infection) in Lao and Thailand; 3) water-borne diseases such as cholera and other diarrhoeal diseases; and 4) other diseases in tropical Asia (schistosomiasis, HIV/AIDS, etc.). Population increase, urbanization, deforestation, spread of wet rice cultivation, economic development, changes in life style or so-called modernization, and population migration are the factors changing the ecological relationships among human beings, pathogens, and vectors. The project also investigates the relation between climate changes (temperature, rainfall, etc.) and some infectious diseases (water-borne diseases such as cholera). The study aims at offering new disease-ecological insights for evaluating the relation of infectious diseases with local and global environmental changes. This research field has been recognized as "ecohealth."

Research Method:

1)Long-term observation of a local population in Lahanam area, Songkhone district, Savannakhet province, Lao PDR by establishing Demographic Surveillance System (DSS). Since 2005 we are following about 4500 residents. In Bangladesh, we use data from the Matlab DSS and others. And since 2008 we try to introduce Paperless system to DSS.

2)Collection and analyses of community-based information on environmental changes and health including infectious diseases.

3)Collection and analyses of national-based information on environmental changes (a. Land-cover, Land-use changes analysis using remote sensing data and GIS analysis, b. Climate change analysis) and health including infectious diseases (analysis should be the district level and/or provincial level.

4)Discussion on global ecohealth concept.

Project Organisation:

The project team can be divided into two groups; the field study group and the integration group. Field group can be further divided into two major groups (Lao and Bangladesh) and small groups.

1)Lao team: with National Institute of Public Health and other institutions Savannakhet (DSS, MCH, liver fluke, malaria) National level population health and policies Other small specific studies

2)Bangladesh team: with ICDDR,B, IEDCR, NIPSOM and others Climate and health: Matlab, Dhaka, other area, national level Filariasis, malaria, leishmaniasis
National level infectious disease data base

3)Small field teams: Vietnam, Myanmar, Indonesia (malaria), Sri Lanka (diarrhoea and others), China (HIV/AIDS, schistosomiasis), The Philippines (schistosomiasis)
Integration group (plus inter-regional groups)

4)Integration team: Establishment of ecohealth view

5)Study of regional environmental change and infectious diseases endemiology

6)Historical study group

7)Demographic study group

8)Agro-forestry group

■Problems for implementation or points need to change plan

Future activities

Lao PDR

1) Analysis of land-cover changes;
2) Study of child health and nutrition in Lahanam;
3) Demographic study in Lahanam;
4) Water quality study, mainly in Sepone, SVK;
5) Thai liver fluke study in Lahanam (including fish survey);
6) Malaria study using mobile phone in Sepone, SVK;
7) Health system strengthening using mobile phone network;
8) Promotion and education of ecohealth concept through folk-media;
9) Community-oriented development of ecohealth (CODE) in community and school;
10) Historical study of health transition (through database construction);
11) Comparative village study on human ecological transition;
12) Results of National Health Survey 2000 and environment.

Bangladesh and Sri Lanka

1) Study of relation between climate and diseases;
2) Constructing reporting system of the national disease surveillance system;
3) Lota-virus infection in Sri-Lanka;
4) Analysis of land-cover changes in Bangladesh.

China

1) Study on HIV transmission and the behavior of female commercial sex workers and their clients;
2) Collection of historical data on schistosomiasis control in southern China.

Problems for implementation or points need to change plan

Problems for implementation or points need to change plan

Books

【Chapters/Sections】

・Kobayashi, Shigeo, Yarwudhi, C., Puangchit, L., Thaiutsa, B. 2008 Thinning effects and coppices regeneration at the teak (Tectona grandis) plantation in Thong Pha Phum, Thailand. Proceedings of International Workshop on Thinning as an Essential Management Tool of Sustainable Teak Plantation.. Kasetsart University..

Editing

【Editing / Co-editing】

・Zhang Zhuo, Cai Guoxi, Moji Kazuhiko, Wu Xiaonan, Yamamoto Taro, et al. (ed.) Apr,2008 A practical handbook for preventing exposure to blood among health workers. Tianjin Science and Technology Press, Tianjin, (in Chinese) ISBN 978-7-5308-4521-9.

Papers

【Original Articles】

・Sato M, Sanguankiat S, Pubampen S, Kusolsuk T. 2008 Enterobiasis: a neglected infection in adults. *Southeast Asian J Trop Med Public Health* 39 :213-216.(reviewed).

・F.Murata, T.Terao, T.Hayashi, H.Asada, and J.Matsumoto 2008 Relationship between atmospheric conditions at Dhaka, Bangladesh, and rainfall at Cherrapunjee, India. *Natural Hazards* 44(3) :399-410.

・Terao, T., F. Murata, Md. N. Islam and T. Hayashi 2008 Characteristics of atmospheric disasters and rainfall in pre- and mature summer monsoon seasons over northeast India and Bangladesh. The Oxford-Kobe environment seminar: The environmental history of Europe and Japan. pp.209-218.

・T.Terao, M.N.Islam, F.Murata, T.Hayashi 2008 High temporal and spatial resolution observations of meso-scale features of pre- and mature summer monsoon cloud systems over Bangladesh. *Natural Hazards* 44(3) :341-351.

・Fujihara, Y., K. Tanaka, T. Watanabe, T. Nagano, T. Kojiri 2008 Assessing the Impacts of Climate Change on the Water Resources of the Seyhan River Basin in Turkey: Use of Dynamically Downscaled Data for Hydrologic Simulations. *Journal of Hydrology* 353(1-2) :33-48.

・Akca, E., M. Cimrin, J. Ryan, T. Nagano, M.Topaksu, S. Kapur 2008 Differentiating the natural and man-made terraces of Lake Van. *Lake and Reservoirs* 13(1) :83-93.

Research Presentations

【Oral Presentation】

・Tomo Ichikawa “Military Medicine and Bacteriology in Modern Japan”. International convention of Asian Scholars 6 Korea (Daejon) , “Dialogue between Past and Present: Historical and Contemporary Research on the Disease Environment”, 2009, .

・Hayashi, T, Wagatsuma Y., Terao T., and Faruque, A.S.G. Climate Change Impact on Health: Diarrhea Diseases in Bangladesh. International Workshop on Agriculture and Sustainable Development in Brahmaputra Basin, Assam, Dec 19,2008, Department of Geography, Gauhati University, Assam, India.

・Terao, T., Md. N. Islam, F. Murata, Y. Yamane and T. Hayashi Rainfall characteristics in northeastern Indian subcontinent during pre-monsoon and mature monsoon seasons. Workshop on agricultural ecosystem and sustainable development in Brahmaputra basin, Dec 19,2008-Dec 20,2008, Guwahati University, Guwahati, India.

・F.Murata An observational plan about raindrop-size distributionat Cherrapunjee. International workshop on agricultural ecosystem and sustainable development in Brahmaputra basin, December 2008, Assam,

India (Guwahati Univ.).

・Shigeo Kobayashi, Vilayphone, A., Ito, M., Kourouma, S. Human security of local communities related to the utilization of fuel woods and water: a comparative case study between Laos, Southeeast Asia and Guinea, West Africa. . FORTROP II International Conference "Tropical Forestry Changing World". , November 2008, Bangkok, Kasetsart University.

・M Sato, T Pongvongsa, M Keomoungkhoun, I Phimmayoi, S Sanguankiat, T Yoonuan, N Homsuwan, K Moji, J Waikagul Parasitic baseline data for implementing the control program in Lahanam village, Savannakhet province, Lao P.D.R.. 49th Meeting of Japanese Society of Tropical Medicine, Oct 25,2008-Oct 26,2008, International Medical Center of Japan, Shinjuku-ku, Tokyo.

・Toru Terao and Taiichi Hayashi Reviews on climate variability and river wter management over the Ganges, Brahmaputra and Meghna basin in norheastern Indian subcontinent. 2nd Kagawa University-Chiang Mai University Academic Symposium, Oct 16,2008-Oct 18,2008, Kagawa University, Takamatsu, Japan.

・Shigeo Kobayashi. Establishment of uneven Teak (Tectona grandis) plantation by thinning in Thom Pha Phun, Thailand.. 6th Workshop of "uneven-aged silviculture" IUFRO 1.05 group., October 2008, Shizuoka, Japan.

・Tomo Ichikawa “Military Medicine and Indigenous Society in Colonial Taiwan”. Workshop "Environmental Changes and Infectious Diseases: Historical Perspective and Contemporary Issues", September 2008, Academia Sinica, TAIWAN.

・Shigeo Kobayashi, Miho Ito, Sekor Kourouma, Gen Yamakoshi. Human security of villagers related with fuel woods in Guinea, West Africa.. 第18回日本熱帯生態学会年次大会, June 2008, 東京、東京大学.

・Shigeo Kobayashi. Strategic approach for the sustainable land-use as forest based on the secondary succession processes.. ATBC Asian Chapter on "towards sustainable land-use in tropical Asia", April 2008, Sarawak, Malaysia.

【Poster Presentation】

・M Sato, T Pongvongsa, M Keomoungkhoun, I Phimmayoi, S Pansansy, V Boutsyhalath, S Sanguankiat, T Yoonuan, N Homsuwan, K Moji, B Boupa, J Waikagul Parasitic baseline data for implementing the control program in Lahanam village, Savannakhet province, Lao P.D.R. 2nd National Health Research Forum to support the health research systems strengthening in Lao PDR, Sep 22,2008-Sep 23,2008, Vientiane, Laos.

Stage: PR

Project No.: C-07

Project Name: Global Warming and the Human-Nature dimension in Siberia - The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment

Project Leader: INOUE,Gen

Research Axis: Circulation

URL: http://www.chikyu.ac.jp/siberia/

■Research Objectives and Topics

Siberia is one of the areas where global warming will be most evident. Perceivable changes in the ecosystem and cryosphere, such as the increase of winter temperature, shift up of snow melting season, or, snow precipitation increase, are expected. They have already been reported in recent years. Such climate changes will cause the long-term change of permafrost, water cycle, carbon cycle, and consequently the positive feedback to the climate change. The impact of climate change appears drastically in regional scale. The damage to the agricultue, forestry and stock farming, the impact of socal infrastructure such as buildings and roads through the flood and sofning of ground. We observed the decline of forest due to the humidification of soil, the damage to the forest due to the insect pest as they come to serve through a winter, and the exposure of permafrost due to the grooving of landa by flood called as Ovlahgi.

This research seeks to elucidate three aspects from both the natural and the human social science perspectives. These three points are (1) the characteristics of the water and carbon cycles, including the driving forces of their annual variation and predictions into the near future, (2) the capability of multi-ethnic population to adapt to the changes who have the historically unique social systems, and (3) the feedback of water and carbon cycle changes and the people's activities to the climate.

■Progress of Project

Japanese researchers in the field of water-energy-carbon cycle research have started the observation in Siberia when the former Soviet Union start the Perestroika (1988), and continue their research still now getting the finantial support from many different soureces. Some PI's of this project are from GAME-Siberia group studing the water-energy clycle in Siberia, some are from IGBP Northern Eurasia Study focusing to the carbon cycle in Siberia, and some are from the cultural anthropology group supported NSF of Japan. They have started the preparation of this project in August, 2007. The remote sensing researchers joined to this project newly, and the satellite data use to see the environment of Siberia with the bird's eyes. During the pre-research period, several meetings, including one workshop with all members participated, were held. Some members visited Russia to discuss the cooperation and get information and data, in addition to preparing for research in each area of this project.

The activities of each groups are as follows:

1) Siberia bird's-eye group

· The studies of carbon cycle has been started using the ASTER and MODIS satellite data, expected CO2 basedon GOSAT satellite, and CH4 concentration distribution data.

· The strategy to use GOSAT data to retieve the sink and source distribution in Siberia has been discussed, and a reseach scientist was assigned to do this job.

· Since forest fires are expected to increase in Siberia, the use of GOSAT data to identify the emission rate of CO2 and CH4 has been discussed.

2) Water cycles and ecosystem interaction process study group

· Past restoration sub G: understanding of the responses to the ecosystem following the restoration of

the environmental situation in the past (100 year schedule); process sub G: grasp the actual broad ecology and water situation phenomenon in Siberia; model sub G: the main problem of the estimation and change restoration of the water and carbon cycles in the past 100 year using a hydrological cycle model in which landsurface and distributed runoff models were coupled was agreed upon.

· The construction of new observation points (Ust-Maya) in the southern part of the Lena River Basin was confirmed, in addition to the Yakutsk area. IBPC is responsible for the observation and analysis of mainly carbon circulation. The material to construct the flux towere there was completed.

3) Human ecology group

· The main task of the first and third subgroup were discussed. Upon the analysis of the influence of global warming on the society that focus not on the urban or agricultural districts but on the local communities it was confirmed that the whole system could be made secure from main fields of production, infrastructure and international perspective. Especially, in the case of infrastructure, it displayed the estimation of the local adaptive technology, which is used as the main means of traffic on the river during the winter. .

·It was confirmed that it would be necessary to obtain the research support system, including research permission for the anthropological and sociological investigation, for estimating the impact of global warming.

4) Common research targets

· At the meeting in December, the discussions of whole groups were held and the common research targets were focused on the water and cryospheric environment changes related with the frequent flood.

○Co-Researchers

◎ Inoue, Gen (Research Institute for Humanity of Nature,Professor,Management of Project)
○ Yamaguchi, Yasushi (Nagoya Univ.,Professor,Analysis of the changes in the land cover using satellite data)
○ Sasai, Takahiro (National Institute of Advanced Industrial Science and Technology,Research Scientist,Analysis of carbon exchanges using the terrestrial biosphere model)
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Kanzawa Hiroshi (Nagoya Univ.,Professor,Scenario of global warming in Siberia)
○ Sakai Tohru (Research Institute for Humanity of Nature,Researcher,Remote sensing)
○ Kobayashi Nakako (Research Institute for Humanity of Nature,Researcher,Data analysis of GOSAT to evaluate CO2/CH4 emission from wild fire)
○ Kim Henonsook (Research Institute for Humanity of Nature,Researcher,Inverse model analysis of GOSAT data)
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○ Hiyama Tetsuya (Nagoya Univ.,Associate Professor,Analyses of sub-surface water and basin-scale water budget)
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Sugimoto Atsuko (Hokkaido Univ.,Professor,Reconstruction of past changes in environment and vegetation activity)
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Yamazaki Takeshi (Tohoku Univ.,Assistant Professor,Analysis of land surface processes using a land surface model)
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Hatta Shigemi (Tomakomai National College of Technology,Associate Professor,Runoff analyses for continental-scale river basin)

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○ Okumura,Makoto (Tohoku University, Center for Northeast Asian Studies,Professor,Survey and analysis of the history and technology of transportation in East Siberia)
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Sardana, Boyakova (Humanitarian Research Institute, Sakha Republic Science Academy,Professor,History of Infrastructure and Transportation System in East Siberia)
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Nagayama, Yukari (Research Institute for Languages and Cultures of Asia and Africa, Tokyo,Post-doctoral researcher,Environmental recognition of native people in Eastern Siberia)

■Research Plan

The research plans of three groups are as follows:

（1） Siberia bird’s-eye group (G1)

G1-a Carbon and water cycle sub-group

<Methods>

Analysis of the changes in the land cover of Siberia using satellite observation data (ASTER, MODIS)

Analysis of carbon, water and energy exchanges over Siberia using the terrestrial biosphere model (BEAMS; Sasai et al., 2005, 2007)

<Research Plan>

· Analysis of time variation of the land cover by medium-resolution satellite data (MODIS and NOAA/AVHRR) and by high-resolution satellite data (Landsat and ASTER) in particular of the area where the changes are most obvious.

· Calculation in carbon exchanges in Siberia using the terrestrial biosphere model (BEAMS)

· Validation in land cover types and carbon fluxes estimated from satellite data by using ground observation data (G2) such as land surface fluxes, eco-physiological data, and information on the land coverage provided by the field survey

· Analysis of seasonal and annual variations in carbon fluxes over Siberia. Comparison the carbon flux

estimations with GOSAT products and the field survey results of G2.
<Originality and expected achievements>
· Extracted functions and changes of the forest in Siberia from the inspected results of carbon level model and the changes in the land coverage
· Provided spatial variations in carbon fluxes to G2 and G3 as the input to the climate change model
G1-b Greenhouse gas sub-group
<Methods>
Analysis of the spatial and temporal variability of carbon budget in Siberia from the greenhouse gases observation technology satellite (GOSAT) data: Evaluation of the north/south and the east/west gradients. Emission rate from point sources such as the forest fires and natural gas leaks.
<Research Plan>
· Development of advanced land ecosystem carbon dioxide budget model (together with G1-a) , and database maintenance of the methane emission rate
· Development of high resolution Inverse Model
· Fire detection → GOSAT specific point mode observation → calculations of the emission rate of CO2/CH4. The validation experiments. The predictions of frequency of fires from the GCM results → feedback to the carbon cycle model.
<Originality and expected achievements>
· The first reliable carbon dioxide and methane budget estimation from the satellite observation data.
· Quantitative estimation and future predictions of the greenhouse gas emission rate including those from the forest fires and the natural gas leaks.
G1-c Siberia general information sub-group
<Methods>
Study, examination, maintenance and analysis of individual records and data, such as the global warming in Siberia and the development projects in Siberia by the Russian government.
<Research Plan>
Category classification according to the impact caused by the climate change. Pressure of the development to the region.
<Originality and expected achievements>
· The input data for G3 and others
· Measure of the signs of the global warming at Siberia
（2） Water cycle and ecosystem interaction process study group (G2)
Objective of G2
· To understand relation between the past climate change and the vegetation response
· To investigate consistency of that relation with the current vegetation response
· To elucidate the state of water budget, from a canopy scale to continental river basin through sub-catchment scale
· To reconstruct the past and present status of water cycle and ecosystem and to predict the future variability
G2-a: Reconstruction of the past environment
< Methods>
This subgroup carries out analysis of stable carbon isotope and tree growth at the forest area of Yakutsk and its surrounding region.
<Research plan>
The environmental variability, such as tree growth, water use efficiency and soil water content in the past 100-200 years, is reproduced with the knowledge of physiological response of trees. The past climate from the formation of the present vegetation also can be reconstructed.
<Originality and expected results>
These studies provide 1) past status of the soil moisture environment corresponding to water cycles, vegetation response, and human activity and 2) relationship between the variability of vegetation growth and the physiological response.

G2-b: Elucidation of current status of water cycle process
<Methods>
This subgroup carries out field observations and satellite and field data analyses to reveal individual processes of the water (/energy/carbon) cycle, such as land-atmosphere interaction, snow process, groundwater variability, and catchment-scale water budget.
<Research plan>
· Comparative observation at different precipitation conditions to reveal the connection of forest-permafrost formation system, and to verify the”potential” responses concept. (Corporation with IBPC, RAS)
· Snow survey to understand the ablation process and to evaluate the snow cover distribution.
· ABL survey to evaluate effect of the seasonal variability of surface condition including urban-rural contrast.
· Analyses of GRACE data to reveal the variability of groundwater storage over the east and west Siberia
· Analyses of catchment-scale water budget with intensive focus on ground water and spatial variability (corporation with RAS, PI)
<Originality and expected results>
These studies provide 1) elucidation of forest-permafrost formation system, 2) spatial characteristics of W/E/C cycling system, 3) evaluation of urbanization effects, 4) characteristics of under-permafrost groundwater and runoff system, and 5) improvement of evaluation of catchment-scale water budget and, especially, contribution of the ground water.
G2-c: Modelling for prediction of the future environment
<Methods>
This subgroup carries out improving land surface model and runoff model.
<Research plan>
· Advancement of land surface model by improving algorithms of soil water and frozen soil process and by including photosynthesis process
· Improvement of hydrological cycle model, which is coupled with the land surface model, by considering runoff process of longer time scale and icing process
<Originality and expected results>
These studies provide prediction of 1) variability in soil water and frozen soil and its relation to human activity such as grazing, and 2) variability of river discharge, which contributes to evaluation of the flood effectiveness to human activity and the frequency of disastrous event.
（３）Human ecology group (G3)
G3-a　Socio-cultural response to the freezing aqueous environment
＜Research Method＞
This subgroup adopts the field research methods of anthropology and civil engineering with related historical literature work, focusing on the urban and rural communities in the basin of the middle of Lena River.
＜Research Plan＞
· Provision of drinking water, firewood and haymaking and hunting and animal husbandry, and the related indigenous knowledge
· Local history of the regular spring flood and the social measures
· Traffic, the history of social infrastructure and actual condition from the survey (long term environmental data + infrastructure plan according to G1, correspondence to the design)
＜Originality and expected achievements＞
The characteristics of Sakha urban and rural communities make use of seasonal division according to the freezing and fusion process in the use of the frozen aqueous environment built during the historical experience of the traditional and socialistic Russia and the mechanisms of traffic infrastructure, food production and life-style. These points are clarified from the point of view of anthropology and civil engineering. By combining the natural observational data, the way of infrastructure and social culture harmonized with the seasonal changes will be clarified

G3-b　Subsistence activity pattern and conversion

＜Research Method＞

This subgroup adopts the field research methods of anthropology and conservation ecology, in the latter, the behaviour of the wild and domestic animals using the satellite telemetry system. The group compares the various environmental variations, such as mountain taiga, forest tundra, tundra, taiga and coastal area, with human ecological adaptation of hunting gathering and animal husbandry.

＜Research Plan＞

· Technology and indigenous knowledge of the subsistence activities such as hunting, stockbreeding, fishery and sea animal hunting

· Analysis of the composition percentage of the production and work structure in the past 100 years based on the aural and recorded documents.

· Environmental estimation of the points installed by trap for fur-bearers.

· Local administrative policies on the wildlife management

· Correlation analysis of the result of the action survey, obtaining the reindeer group size distribution (wild life and domestic), vegetation and land use survey from the in situ research area and the bird's eye group G1.

＜Originality and expected achievements＞

These studies provide 1) reasons of change of subsistence activity in a given local population and 2) range of ecological adaptation. In addition, the information on the behaviour pattern of wild reindeer is quite original and contributes to the local wild life management and the biological studies on the wild reindeer.

G3-c　Environment perception, practice and policy

＜Research Method＞

This subgroup adopts the field research methods of anthropology and sociology combing with the related historical study and environmental policies. The group covers the issue on the human perception and reaction against the global warming both in the local Siberian communities and Russian national levels, referring to the related international communities.

＜Research Plan＞

· Collection and analysis of the ethnographic data of the social norms and indigenous knowledge of the nature and environmental changes

· Social impact assessment of environment change with developing projects

· Analysis of environment discourse in mass media, movements, and policy

· Relation between local indigenous movement and environmental movement

· Relation of environment policies among local administration, Russian Federation and International governments and NGOs.

＜Originality and expected achievements＞

This study identifies the cultural concept of "disaster" or "abnormal" of the environment change, focusing on the indigenous knowledge, social norm, movements, and policies. Although the science defines and provide the influence of climate change, the local population may percept it differently. This subgroup can fill up this gap. In addition it provides the way that the local perception and reaction against the global warming are constructed in the complex contemporary social structure.

■Problems for implementation or points need to change plan

1. The problem of data collection and telemeter expense have been discussed with Russian partners. Although it is possible to use a satellite telemeter system to obtain near real-time information, service is very expensive. GPS telemeter systems are cheaper in comparison but since the information is collected after a fixed period of time, it is impossible to locate actual positions until the information has been acquired. Therefore, data collection via the satellite telemetry system is preferred. However, there is also a possibility for a compromise, whereby case by case, GPS telemetry is loaded on nomadic reindeer, whereas the satellite telemetry is used on one out of two nomadic reindeers.

2. The construction of flux observation tower is a heavy work; the transportation of materials has

been successfully done by Russian partners. But it was a very risky job because of unusal heavy show depth, and it was noiticed that the social security of both parties must be confirmed.

Stage: PR

Project No.: R-05

Project Name: A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-oil Era

Abbreviated Title: Arab subsistence project

Project Leader: NAWATA, Hiroshi

Research Axis: Resources

URL: http://www.chikyu.ac.jp/arab-subsistence/

Key Words: Arab societies, Alien invasive species control, Environmental impact assessment, Human life support mechanisms, Post-oil era, Universal access to scientific data

■Research Objectives and Topics

【Research Objectives】

This project will examine life support mechanisms and self-sufficient modes of production among Arab peoples who have survived in dryland environments for more than a millennium. Using the research results, we will propose a scientific framework to strengthen subsistence productivity and combat livelihood degradation in local Arab communities in preparation for the post-oil era.

【Background】

Japan and oil-rich countries of the Middle East have put excessive pressures on the Earth's energy, water, and food resources. In prioritizing economic prosperity for their own benefit, these countries have exploited irreplaceable resources,such as fossil fuel and fossil water. Schemes to plant alien species have also placed stress on local ecosystems. These practices have widened social differences among the people of the Middle East at a time when we are facing a turning point in modern oil-based civilization. Current inter dependencies based on the trading of fossil fuel must change drastically to a new form of interdependency through which we build viable future societies.

Our project will focus on human subsistence ecosystems, namely life-support mechanisms and self-sufficient modes of production (hunting, gathering,fishing, herding, farming, and forestry) with low energy resource consumption.We will also re-examine advanced technology, economic development, and comprehensive measures to combat desertification. Based on our research results, we will propose a scientific framework for strengthening subsistence productivity and rehabilitating daily life in Arab societies in the post-oil era.

【Research Methods】

Our research method consists of two main approaches: (1) analysis of subsistence ecosystems, focusing on keystone species (camels, date palm, dugong, mangrove,and coral [reef]); and (2) examination of the sustainability and fragility of Arab societies, focusing on ecotones (wadi beds, riverbanks, mountainsides, and seashores).

We will develop and implement our study of human subsistence ecosystems in Arab societies around three main areas: 1) comprehensive measures to control thealien invasive species mesquite; 2) assessment of the environmental effects of development programs in coastal zones of the arid tropics; and 3) sharing the research results to support local decision making.

Field surveys will be conducted in semi-arid lands between the River Nile and the Red Sea in Sudan, with the Red Sea coast, Butana area, and River Nile area as the main survey areas. Additional sub-survey sites will be the Sinai Peninsula in Egypt, the Red Sea coast in Saudi Arabia, and a Saharan oasis in Algeria. We will compare keystone species, ecotones, and traditional knowledge and examine differences in the sustainability of subsistence economies under site-specific conditions.

【Project Organization】

(1) Alien invasive species control group

In the1980s, mesquite (*Prosopis* spp.) was considered an ideal tree for combating desertification due to its high capacity to stabilize sand dunes, survive inhospitable environments, and provide fuel, timber, fodder, and edible pods. However, although mesquite seedlings failed to establish on sand dunes, they became well established within oases, where they lowered water tables and suppressed native vegetation. The invasion of mesquite has not only changed regional ecosystems, but has also led to livelihood degradation in local communities.

The interdisciplinary research teams will develop comprehensive measures to control this invasive species. These teams will be comprised of specialists from various backgrounds including scientists based at universities and institutions; members of nongovernmental organizations (NGOs); consultants;project managers of international organizations and development institutions; and local people with various social roles, including tribal leaders, technicians, and villagers.

(2) Coastal zone environmental impact assessment group

Mangrove ecosystems in the coastal zones of the arid tropics can be important sources of energy for surrounding terrestrial ecosystems. These areas are rich in biodiversity, and great potential exists for seafood and pastoral food production by reforesting mangroves to sustain fish nurseries and provide safe foraging sites. One of the most interesting aspects of food habits along the coastal zone of the arid tropics is the local dependence on hunting, gathering,and fishing of sea products (fish, shellfish, dugong, dolphin, and sea turtles). Therefore, in terms of arid land food production, we should consider the potential of sea product development as a principal element of future diets.

On the other hand, the conversion of sea water to fresh water in coastal zones presents a large development frontier. However, it may also lead to environmental degradation as highly concentrated saline water is released into the sea. Many coastal towns and cities have developed solar-powered desalination plants, which have made agriculture and forestation possible in remote areas.We will examine this issue and compile information to help guard against new environmental problems arising from development.

(3) Support for local decision making group

Researchers must widen the public domain for scientific findings and provide universal and equitable access to scientific data and documents. However,relatively few research results are accessible to local people in local languages, with the exception of some brochures and books published and distributed by international organizations.

This situation reduces the usefulness of research results in local decision making as well as in national policy development. Thus, to support local decision making, we plan to provide our research information through print and digital devices in Japanese (to create a bridge between Japanese and Arab societies), English (the common language of science communities), and Arabic (the common language of local communities in the study region).

(4) Local ecosystems comparative studies group

In human subsistence ecosystems (social ecosystems) in Arab societies, camels,date palm, dugong, mangrove, and coral (reefs) are assumed to be key stone species. These species support diverse communities, and their extinction could lead to the disappearance of other species, including even human communities.The survival of these species likely depends greatly on wise uses of combinations of environmental factors in ecotones, a socio-ecological niche in dryland environments of the Middle East.

The study group on human subsistence ecosystems in Arab societies will examine Arab communities and Islamic civilization from the viewpoint of energy flow.

■Progress of Project

【Field Survey Arrangements and Preparation for Full Research】

(1) Sudan

Sudan is the first-priority country for the field survey. On 27 November 2008, the RIHN and the Sudan University of Science and Technology (SUST) agreed to a joint Memorandum of Understanding and Implementation Agreement for collaboration on the RIHN project, "A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-oil Era." Vice-Chancellor Professor Dr. Ahmed Eltayeb Ahmed and Professor Abdel Gabar Babiker of SUST attended the meeting. The main objective of the joint research project between RIHN and SUST is to develop comprehensive measures to control the alien invasive species mesquite (*Prosopis* spp.).

Fifteen major research topics will be investigated as part of the alien invasive species control project:

1) Biological control, such as possible insect introduction,
2) Chemical control, such as the development of appropriate herbicides,
3) Manual and mechanical control, such as the use of fire and uprooting methods,
4) Identification of allelochemicals and evaluation of allelopathic activity,
5) Toxicity tests and detoxication for ruminants,
6) Nutritional strategies of ruminants and metabolites of gut bacteria,
7) Physiological adaptation, regeneration mechanism, and forest structure,
8) Root system and water uptake,
9) Utilization of pods and leaves as human food and livestock feed supplements,
10) Wood fuel and charcoal-making methods,
11) Mapping mesquite distributions using aerial photographs, remote sensing, and geographical information system (GIS) techniques,
12) Dispersal by livestock movement, flood water, and run off, and establishment of satellite foci from an initial population,
13) Socio-ecological impacts on daily life in local communities, examined by interviews with land owners and government officials,
14) Methods of sharing research results to support local decision making, such as organizing meetings and publishing handbooks in local languages,
15) Socio-ecological evaluation of ongoing eradication programs.

(2) Saudi Arabia

The project will also have a joint Memorandum of Understanding and Implementation Agreement with the National Commission for Wildlife Conservation and Development (NCWCD), the Kingdom of Saudi Arabia. We are waiting for the final approval of the Secretary General and a Board of Governors for our application, titled "A Study of Human Impacts on Mangrove and Dugong Habitats in the Northern and Southern Parts of the Red Sea in the Kingdom of Saudi Arabia."

The Project Leader H. Nawata and Core Members C. Miyamoto and K. Yoshikawa,visited the NCWCD in December 2008 to make arrangements after communicating through e-mails. Both parties may agree to undertake cooperative research on the Red Sea coast, especially on the Farasan Islands off the southern Red Seacoast in Saudi Arabia, starting July 2009.

We plan to examine mangrove forest structure and to measure stomatal conductance and transpiration rates of mangrove populations. In addition to these ecological analyses, we will conduct DNA analysis using thecetyl-trimethyl ammonium bromide (CTAB) method and measure DNA polymorphisms using the random amplified polymorhic DNA (RAPD) method. We will also under takean anthropological study of human-camel relationships and of the use of mangroves as fish nurseries to protect these environments from foraging.

(3) Egypt

We reached an agreement with the Islamic-Coptic Antiquities, the Supreme Council of Antiquities, Ministry of Culture, Egypt, to research and undertake conservation work on modern coral houses in the

al-Kilani port city, al-Tur, under permission for an archaeological survey of the Raya/al-Tur area by the Islamic Archaeological Mission, Research Institute for Islamic Archaeology and Culture, Tokyo, headed by Core Member M. Kawatoko.

In July and August 2008, Project Leader H. Nawata and project members S.Nishimoto and Y. Shindo began a general survey of coral buildings of al-Tur. Intensive work will begin in September 2009.

We will conduct architectural research using photographical records and drawings and undertake preliminary experimental trials of preservation measures to identify appropriate approaches to restoring these buildings.

(4) Algeria

Core Member I. Kobori and Project Leader H. Nawata have identified sites for the intensive field survey in In-Belbel oasis in central Algeria, to be conducted with Core Member A. Benkhalifa. We are discussing collaboration with the Centre National du Développement des Ressources Biologiques, Ministère del' Aménagement du Territoire de l' Environnement et du Tourisme, Algeria.

We will study total socio-economic and cultural complexes for sustainable future water use in the case study of In-Belbel oasis.

【Publications in English and Arabic】

(1) "A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems"

As a first step in our project, we produced a leaflet and booklet explaining the outline of the project. We compiled information from various areas of science and from researchers with diverse backgrounds; the publications include information on mangrove afforestation in drylands, especially pioneering research by Japanese researchers. We worked to connect scientific results and practical observations to build a platform for consolidating knowledge from a wide range of sources. The publications are printed in both English and Arabic so that we can share information with the international scientific community as well as with local people. Each version is 52 pages.

The booklet ("A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems") introduces the11 case studies and activities and contains one full article.

The booklet contains information on the following case studies:

- "Study and Activities on Mangrove Afforestation in Arabia," M. Kogo, C. Miyamoto, S.Suda,
- "An Inspection of the Status of Coastal Mangroves of the Southern Red Sea," C. Miyamoto,
- "Method for Mangrove Afforestation in Qatar," S. Suda,
- "The Master Plan for the Restoration, Conservation, and Management of Mangrove in the Sultanate of Oman," H. Onuma,
- "A Handbook for an *Avicenia marina* Nursery and Transplantation Technical Guidelines for Afforestation," T. Shoji,
- "Study of Gray Mangrove (*Avicenia marina*) Afforestation for Greening a Desert Coast: Gray Mangrove Afforestation on the Banks of an Artificial Channel across a Sabkha and Established Biotic Community," S. Tamaei,
- "A Conservation Plan for Dugong along the Northeastern Coast of the Red Sea in the Kingdom of Saudi Arabia," A. Kishi,
- "Long-term Maintenance of Arid Mangroves: Mangrove Distribution and Use in Iran and Pakistan," T. Miyagi,
- "Ecological and Genetical Studies of Mangrove (*Avicenia marina*) Forests in the Sultanate of Oman," K. Yoshikawa,
- "Local Mangrove Resource Use on Kilwa Island, Southern Swahili Coast," R. Nakamura,
- "Relationship between Humans and One-humped Camels in the Coastal Zones of the Arid Tropics: An

Anthropological Case Analysis of the Beja on the Red Sea Coast of Eastern Sudan," H. Nawata,

The article, "Coastal Resource Use by Camel Pastoralist: A Case Study of Gathering and Fishing Activities among the Beja in Eastern Sudan," was authored by Project Leader H. Nawata.

(2) Quantitative Response at the International Dryland Development Commission Conference, Egypt

Six project members, including the Project Leader, attended the ninth conference of the International Dryland Development Commission (IDDC) in Alexandria, Egypt, from 7-10 November 2008. The conference drew 472 participants from 55 countries.

We distributed our booklet to 188 participants from 26 countries (Middle East:Egypt, Iran, Tunisia, Oman, Jordan, Syria, Sudan, Morocco, and Yemen, Others:China, Mexico, Eritrea, Kenya, Ethiopia, Uganda, Sri Lanka, India, Nigeria, Italy, USA, Ghana, Tajikistan, Canada, Austria, UK, and Japan) and registered recipients' names, affiliations, and contact information to facilitate future communications. Of the recipients, 88% (163 persons) hoped to receive further publications on our project.

(3) Qualitative Responses from Individuals

By handing out our publication, we could interact with IDDC participants face to face. Recipients asked various questions, including which types of livestock can be fed mangrove and whether mangrove can be used as a bio-fuel. One recipient requested an extra copy to give to a colleague. A number of Egyptian students were also interested in discussing the project in Arabic and were pleased that the material was provided in Arabic.

The Project Leader, H. Nawata, also presented the booklet to the Japanese Ambassador in Cairo and to the Director of the Nature Conservation Sector,Ministry of State for Environmental Affairs, Egypt. Both showed great interest in the planned mangrove research and hoped to implement the results in the near future.

(4) Defining "Impact Factors" of the Project in the First Year

We defined the quantitative and qualitative responses to our publication as project "Impact Factors" for the first year.

As noted above, we initially distributed information to participants at the international conference. We have since worked to distribute material to members of local Arab societies. We will obtain their comments and views on the material through interviews and questionnaires and will then incorporate their input in our project targets and research activities. When we have finished the project, we hope to publish a revised booklet to share with local community members.

【Alien Invasive Species Control Group】

(1) Open Seminar: "Towards an integrated plan to control an exotic species mesquite (*Prosopis* spp.)"

On 12-13 May 2008, we held an open seminar titled "Towards an integrated plan to control an exotic species mesquite (*Prosopis* spp.)" and the third meeting for the Project. With Sudanese specialists, we discussed research plans to control this invasive species, focusing on the situation in Sudan.

Titles and summaries of the seminar presentations are as follows:

· "Introduction:Towards an integrated plan to control an exotic species mesquite," H. Nawata (RIHN). International organizations previously promoted the planting of mesquite,an exotic species. However, mesquite has become invasive, changing regional ecosystems and leading to livelihood degradation in local communities. The government of Sudan has realized the seriousness of the mesquite problem, and scientists have stressed the need to develop an integrated management system of this plant.

· "Physiology and ecology of root parasitic plants," Y. Sugimoto (Kobe University). There are 4,000

species of parasitic angiosperms, accounting for just over 1% of all flowering plants. Among parasitic angiosperms, which are present in most ecosystems from the equator to the poles, root parasitic plants belonging to *Striga* spp. and *Orobanche* spp. are economically most important. Sorghum genes responsive to *Striga hermonthica* parasitism were isolated and their expression was analyzed. Using the suppression subtractive hybridization strategy, 30genes, up-regulated in response to *S. Hermonthica* parasitism, were isolated from roots of the susceptible sorghum cultivar Abu 70. Advanced use and control of noxious weeds are targets of the study.

· "Mesquite (*Prosopis* spp.): Experience and lessons and the way forward in Sudan," A.G.T. Babiker (Sudan University of Science and Technology). Mesquite-related problems have spread through repeated introductions of this plant, deliberate distribution, prevailing drought, dispersal by livestock and wild animals, decreased land use, over exploitation of natural vegetation, and predisposal of the environment for invasion. Mesquite is an alien invasive plant, free of natural enemies; it is highly competitive, allelopathic, and hard to destroy. Part of the dilemma surrounding mesquite is that the plant is also underutilized. A sound approach would be to improve utilization.

· "Allelopathy of mesquite (*Prosopis juliflora*)," Y. Fujii (National Institute for Agro-Environmental Sciences). Allelopathy refers to the inhibitory or stimulatory interactions between a plant and insects or animals, caused by natural chemicals. We isolated and identified plant growth inhibitors as candidate allelopathic substances from aqueous leach ate from mesquite (*Prosopis juliflora*) leaves. We will apply "box" and "sandwich" methods to screen for useful metabolites produced by mesquite (*Prosopis* spp.), which may reveal novel resources for allelopathic control of mesquite in Sudan.

· "Approaches from comparative nutritional physiology," T. Sakata (Ishinomaki Senshu University). Previous local studies and knowledge highlight the negative effects of Prosopis ingestion by livestock and humans. Toxicity tests and detoxication methods are needed for ruminants. Samples of young and mature Prosopis leaves will be collected and then dried and transferred to Japan in sealed plastic bags. These samples will be used for toxicological experiments using mice in Japan. We will also sample Prosopis sprouts (regrowth) after cutting;these samples will be dried and transferred to Japan in sealed plastic bags. Asa feeding experiment, four adults goats will be fed four different levels of cut Prosopis leaves or sprouts, added to local feed (1 week per level);researchers will then observe their health. Macroscopic postmortem examination by a local veterinarian may also be requested. We will investigate whether a local scientist or veterinarian can take tissue samples for microscopic examination and ship the samples to Japan. Microscopic samples (either embedded in paraffin blocks or stained histological sections) can also be prepared locally and shared by both parties.

(2) Discussing the Research Framework for Alien Invasive Species Control with Members of Sudan University of Science and Technology

The Project Leader visited Khartoum, Sudan, to discuss the research framework for alien invasive species control with staff of Sudan University of Science and Technology (26 October-1 November 2008). He exchanged ideas with the university's Vice Chancellor, Prof. Dr. Ahmed Eltayeb Ahmed, as well as with the Dean of the College of Agricultural Studies, Dr. Yusuf Idris, and potential project members.

(3) Setting 15 Major Research Topics for Alien Invasive Species Control in the Implementation Agreement

As a result of discussions with project members, we have established a framework through which to target concrete topics from different but connected perspectives. We set 15 major research topics on alien invasive species control in the Implementation Agreement. Based on these research topics, 28 new members from Sudan University of Science and Technology specializing in agro-forestry, wood technology, plant ecology, plant taxonomy, tree physiology, socio-economics,development and rural women, environmental economics, extension education, food technology, nutritional physiology, and clinical pathology joined the project.

【Coastal Zone Environmental Impact Assessment Group】

(1) Open Seminar, "Mangroves in Drylands: Seeking ways to clarify social ecosystems and to strengthen subsistence productivities, Part 2" and Second Meeting of the Resource Program Members

We held an open seminar titled "Mangroves in Drylands: Seeking ways to clarify social ecosystems and to strengthen subsistence productivities, Part 2" on23-24 July 2008 following the first meeting under the same title held on 3-4November 2007.

Titles of the presentations are presented below:

· "The Master Plan for the Restoration, Conservation, and Management of Mangrove in the Sultanate of Oman," H. Onuma (Appropriate Agriculture International),
· "A Conservation Plan for Dugong along the Northeastern Coast of the Red Sea in the Kingdom of Saudi Arabia," A. Kishi (Shin-nippon Environmental Research Co.),
· "A Gap between Practitioners and Researchers on Mangrove from My Ten Years of Experience on the Ground," S. Baba (University of the Ryukyus),
· "Study and Activities on Mangrove Afforestation in Vietnam," C. Miyamoto (Action for Mangrove Reforestation),
· "Study and Activities on Mangrove Afforestation in Myanmar," M. Kogo (Action for Mangrove Reforestation),
· "Mangrove in Southern Thailand," T. Akimichi (RIHN),

(2) Gathering Information at the International Coral Reef Symposium

The Project Leader participated in the 11th International Coral Reef Symposium,"Reefs for the Future" (7-11 July 2008, Ft. Lauder dale, FL, USA) and presented his study entitled "Food Habitat in the Coastal Zones of the Arid Tropics." He assessed information from tropical coastal zones and found that a research team from the International Network on Water, Environment, and Health, United Nations University (UNU-INWEH) has begun environmental assessment and monitoring around the Palm Jumeirah Islands in the Gulf region. Further, a team from the National Coral Reef Institute and Khaled bin Sultan Living Oceans Foundation has started a coral reef study around the Farasan Islands, Saudi Arabia. The Project Leader realized the need to particularly focus on mangrove and dugong community studies in the Red Sea area.

(3) Publication of "A Study of Human Subsistence Ecosystems with Mangrove in Drylands"

Based on our discussions at two seminars on mangroves in drylands, we published "A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems." We compiled knowledge from various scientific disciplines and from researchers with different backgrounds, focusing on subsistence involving mangrove, afforestation of mangrove in dryland environments, and pioneering work conducted by Japanese researchers. We worked to connect scientific results and practical observations to build a platform on which to consolidate knowledge.

【Support for Local Decision Making Group】

(1) Sharing a Tribal Leader's Development-related Research Plan for Nomadic People with Project Members and College Students

Abdullah Abu Sin (trustee of Gezira University, agro-economics), a Core Member,will play an important role in bridging scientific and local knowledge. He has rich experience in social network building and a deep understanding of past and present problems and development-related research.

Mr. Abu Sin is the tribal leader of the Shukriyah (having a population of approximately 165,000) and has been the Vice Chairman of All Sudan Tribes Leaders Association since 1994. He earned a B.A. from the Faculty of Agriculture, University of Khartoum (1965) and an M.A. in agricultural economics from Stanford University (1968). His professional experience also includes a position as Manager of the New

Halfa Sugar Factory and Chairman Manager of the White Nile Cotton Scheme (1968-1983).

Mr. Abu Sin made an oral presentation titled "My research and development plan for nomadic people in Butana, central Sudan," to project members at the RIHN on 12 May 2008. In the presentation, he outlined his vision of a Trans-human Research Institute at Butana University, which would promote field-based research studies on water issues, pasture renovation, forest rehabilitation, poverty reduction, grain market improvement, and other local issues. We appreciated his deep insights and concrete plans for development-related research.

Mr. Abu Sin also gave a special guest lecture to Japanese college students in H. Nawata's "Development and Culture" class at Kobe University on 8 May 2008. The students learned about community-based development among pastoralists.

(2) Sharing Future Research Prospects on Dryland Mangrove Research with Scientists and Administrators

We published the booklet "A Study of Human Subsistence Ecosystems with Mangrovein Drylands: To Prevent a New Outbreak of Environmental Problems" both in English and Arabic and distributed it to 188 participants from 26 countries at the ninth conference of the International Dryland Development Commission (IDDC;Alexandria, Egypt, 7-10 November 2008). As noted above, by handing out the brochures personally, we could discuss the project with conference participants.

We also distributed the booklet at the 16th International Cosmos Prize Award Ceremony held at Kyoto on 2 November 2008 and in Tokyo on 7 November 2008. The prize winner, Dr. Phan Nguyen Hong (Emeritus Professor of Hanoi National University of Education, Vietnam), has collaborated with two of our project members, C. Miyamoto and M. Kogo; those project members contributed articles to the booklet and participated in a mangrove afforestation project in Vietnam.Thanks to an introduction by T. Yumoto (RIHN), a guest speaker at the Kyoto ceremony, we could give our booklet to Dr. Phan. We also distributed the publication to many other participants interested in mangrove research and afforestation and received kind requests to publish a Japanese version of the booklet.

【Local Ecosystems Comparative Studies Group】

Seven project members who have conducted work in Arab societies presented their research results at three international conferences held in the Middle East, Asia, and Africa; these conferences dealt with dryland development, island studies, and migration studies. On the basis of their communications with international researchers, we examined our research targets and analysis methods in regard to mangrove, livestock, resource use, and traditional knowledge studies.

(1) Presentations at an International Conference on Dryland Development

I. Kobori (United Nations University; Core Member), K. Yoshikawa (Okayama University; Core Member), Y. Shimada (Nagoya University; Project Member), K. Horie (Kokushikan University; Project Member), H. Nawata (RIHN; Project Leader), and R. Nakamura (RIHN; Project Researcher) participated in the Ninth conference of International Dryland Development Commission (IDDC) held in Alexandria, Egypt (7-10 November 2008).

Titles and summaries of their presentations are as follows:

· "New trends on qanat studies," I. Kobori and K. Horie. Studies of qanat water deliverysystems are not only of technological and historical interest; they can also help us understand socio-economic and cultural complexes for sustainable wateruse. Such knowledge is now considered important as part of wise water politics in countries such as Algeria.

· "Ecological and genetical studies of mangrove (*Avicennia marina*) forests in the Sultanate of Oman," K. Yoshikawa, Y. Yamaguchi, and S. Hayashi. This study examined forest structure and measured stomatal conductance and transpiration rates in seven *Avicennia marina* populations along the coastal region of the Sultanate of Oman. In addition to these ecological analysis, DNA analysis were conducted using the CTAB method, and DNA polymorphisms were measured using the RAPD method.

· “Reconsidering animal power as the basis of Afro-Eurasian dryland civilization,” Y. Shimada. The region seems to have forgotten the importance of animal power. Although we are in the age of oil and oil-powered machines, we must reconsider the use of animal power that served as the basis of early human civilization, especially in the Afro-Eurasian dryland region.

· “Mangroves as fish nursery and forage safekeeping in coastal zones of the arid tropics,” H. Nawata. Mangrove ecosystems in the coastal zones of the arid tropics can bean important source of energy for the surrounding terrestrial ecosystems. This area is rich in biodiversity and thus has great potential for seafood and pastoral food production through mangrove reforestation as fish nurseries and safe foraging sites.

· “Local mangrove-resource use of Kilwa Island in southern Swahili Coast,” R. Nakamura. Kilwa Island has eight species of mangrove. The mangrove environment is currently surviving local uses because the population density along the southern coast, including Kilwa, is low. Recently, however, infrastructure and tourism development has progressed in the area. Further study is needed to examine changes in the relationship between humans and the mangrove ecosystem under these changing social conditions.

(2) Presentation at the RIHN International Symposium “Futurability of Islands”

Project Researcher R. Nakamura (RIHN) participated in the third RIHN International Symposium, “The Futurability of Islands: Beyond Endemism and Vulnerability,” held at the RHIN in Kyoto on 22-23 October 2008. In his paper, “Multi-Ethnic Coexistence in Swahili Society: Multiple Ecological Sea Zones and Two Fishing Cultures in Kilwa Island, Tanzania,” he described how the descendants of Arab and Bantu people on Kilwa Island have coexisted in present times, emphasizing the relationship between fishing cultures and the island’s maritime environments.

(3) Presentation on Drought-related Migrations in Chad at an International Conference

Project Researcher S. Ishiyama (RIHN) participated the conference “40 ans derecherche japonaise au Nord Cameroun à la mémoire d’Eldridge Mohammadou et P.K. Eguchi” held in Muna Hall, Yaoundé, Cameroon, on 29 November 2008. In his presentation, “La migration ‘Kanemubu’ vers le sud a la region du Lac Tchad,” he analyzed the periods and causes of Kanemubu migration from the east coast to south coast of Lake Chad, concluding that the periods of migration corresponded to periods of drought. Dryland inhabitants often employ migration as a strategy to copy with drought.

(4) Invited Lecture at Inter-Civilization Dialogue between Japan and the Isalmic World held in Kuwait

The Global Agenda for Dialogue among Civilizations, adopted in 2001 by the United Nations, has prompted UNESCO to start various activities. The UN-sponsored Alliance among Civilizations Initiative is another new project. Japan has also been involved in increasing opportunities for dialogue, including through this forum and the Japan-Arab Dialogue Forum. This seminar has allowed for face-to-face interactions and mutual understanding through dialog among Japanese and Muslim intellectuals. The first seminar was held in Bahrain in 2002. The Ministry of Foreign Affairs of Japan has continued the seminars. This seminar was the seventh and was held in Kuwait on 11-12 March 2009. This year’s theme was Environment and Civilization.

Our project has been invited to give a poster presentation at the seminar. H. Nawata (RIHN; Project Leader) had an invied lecture “Japanese symbiotic relationship between human and nature, *Satoyama*”.

○Co-Researchers

◎ Nawata, Hiroshi (Research Institute for Humanity and Nature, Associate Professor, Cultural anthropology, Social ecology)
○ Kobori, Iwao (United Nation University, Senior Programme Adviser, Geography)
○ Kawatoko, Mutsuo (Director, Research Institute for Islamic Archaeology and Culture, Islamic archaeology)
○ Sugimoto, Yukihiro (Kobe University, Professor, Bio-chemistry)

○ Miyamoto, Chiharu (Action for Mangrove,Trustee,Plantation)
○ Sakata, Takashi (Faculty of Science and Engineering, Ishinomaki Senshu University,Professor,Nutrient physiology)
○ Yoshikawa, Ken (Graduate School of Environmental Science, Okayama University,Professor,Forest ecology)
○ Hoshino, Buhe (Faculty of Environment Systems, Rakuno Gakuen University,Associate Professor,Remote sensing and GIS)
○ Onuma, Hiroyasu (Appropriate Agriculture International Co.,Researcher,Village development)
○ Abdel Gabar E. T. BABIKER(Sudan University of Science and Technology,Professor,Bio-chemistry)
○ Abdalla M. A. ABU SIN(Gezira University,Trustee,Socio-economics)
○ ABDEL BAGI M. A. (Agricultural Research Cooperation, Sudan,Professor,Plant physiology)
○ ABDEL HADI A. W. M. (Agricultural Research Cooperation, Sudan,Associate Professor,Water management)
○ Pietro LAUREANO (Traditional Knowledge World Bank, Italy,Director,Architecture)
○ Abdrahmane BENKHALIFA(Centure National de Develipment des Ressources Biologiques, Algeria,Researcher,Fungology)
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Manger, Leif (Bergen University,Professor,Social anthropology)
Nagasawa, Ryota (Tottori University,Professor,Remote sensing)
Koga, Naoki (Appropriate Technology, Inc.,Researcher,Stock-breeding)
Ushida, Kazunari (Kyoto Prefectural University,Professor,Microbial ecology and physiology)
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Nasroun, Tageldin Hussein(Sudan University of Science and Technology,Professor,Forestry /Wood technology)
Mohamed, Abdel Hafeez Ali(Sudan University of Science and Technology,Associate professor,Plant Ecology)
ElKhalifa, Abdel Wadoud A.(Sudan University of Science and Technology,Associate professor,Forest/ products/ Charcoal)
Mohamed, Tagelsir Elnaiem(Sudan University of Science and Technology,Associate professor,Forest industries technology)
Ali, Khalid Ali (Sudan University of Science and Technology,Associate professor,Plant taxonomy)
Eldoma, Ahmed Mohamed Adam(Sudan University of Science and Technology,Associate professor,Tree physiology)
Alamin, Nawal Khidir Naser(Sudan University of Science and Technology,Associate professor,Environmental science/ Desertification)
Khalafalla, Awad (Sudan University of Science and Technology,Associate professor,Entomologist/ Biological control)
Khair, Seif Eldein Mohamed(Sudan University of Science and Technology,Associate professor,Entomologist/ Biological control)
Hashim, Luai Osman (Sudan University of Science and Technology,Associate professor,Pathologist/ Biological control(Seed bank).)
Khalifa, Khalifa Ahmed(Sudan University of Science and Technology,Associate professor,Agricultural Engineer/ Mechanical control)
Mirghani, Elshifa Ali(Sudan University of Science and Technology,Associate professor,Rural women development)
Mohamed, Fatima Omer Nabag(Sudan University of Science and Technology,Associate professor,Community

nutrition)
ElAmin, Hag Hamad Abd El Aziz Mohammed(Sudan University of Science and Technology,Associate professor,Agricultural Economist/ Socioeconomic)
Elrasheed, Mutasim Mekki Mahmoud(Sudan University of Science and Technology,Associate professor,Agricultural Economist/ Environmental economics)
Rahim, Hashim Mahgoub Abdel(Sudan University of Science and Technology,Associate professor,Agricultural Economist/ Environmental economics)
Hussin, Mohamed Badawi(Sudan University of Science and Technology,Associate professor,Agricultural Extension/ Extension education)
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Saad, Mahdi Abbas (Sudan University of Science and Technology,Associate professor,Meat technology)
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Alfaig, Ibrahim Alfaig Alnoor(Sudan University of Science and Technology,Assistant professor,Meat technology)
Ati, Shadia Abdel (Sudan University of Science and Technology,Assistant professor,Physiology of digestion and nutrition)
Barakat, Seifeldein (Sudan University of Science and Technology,Professor,Clinical pathology and toxicology)
El Tayeb, Nagat Mubarak(Ministry of Agriculture, Sudan,Manager of Plant Protection Directorate,Weed science)
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Miyagi, Toyohiko (Touhoku Gakuin University,Professor,Environmental topography)
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Tanada, Hirofumi	(Waseda University,Professor,Sociology)
Shindo, Yoko	(Research Institute for Islamic Archaeology and Culture,Researcher,Islamic archaeology)
Horie, Kyoko	(Kokushikan University,Lecturer,Literature)
Maruyama, Daisuke	(Kyoto University,Graduate students,Cultural anthropology)
Hutiyah, Muhammad	(Adrar University,Professor,History)
El-Hadj, Hamadi ahmad	(Aulef Junior High school,Teacher,Education)
Ozaki, Kikuko	(National Defense Academy of Japan,Lecturer,Islamic culture, History)
Sakamoto, Tsubasa	(Waseda University,Graduate student,Archeology)
Tokunaga, Risa	(Keio University,Part-time lecturer,Hisotry)
Kumagai, Mizue	(Kyoto University,Graduate student,Cultural anthropology)
Takayama, Haruo	(Kajima Technical Research Institute,Senior researcher,Plant ecology)
Nakashima, Atsushi	(Wakayama University,Professor,Plant ecology)
Matsuo, Naoko	(Mie University,Lecture,Forest hydrology)

■Research Plan

【Research Methods and Organization】

(1) Research Methods and Themes

Our research consists of two main approaches: (1) analysis of subsistence ecosystems focusing on keystone species (camels, date palm, dugong, mangrove,and coral [reef]) and (2) examination of the sustainability and fragility of Arab societies focusing on ecotones (wadi beds, riverbanks, mountainsides, and seashores).

The study of human subsistence ecosystems in Arab societies will encompass three main areas: 1) identifying comprehensive measures to control the alien invasive species mesquite; 2) assessing the environmental effects of development programs in coastal zones of the arid tropics; and 3) supporting local decision making by sharing the research results.

(2) Field Surveys

We will conduct field surveys in semi-arid areas between the River Nile and the Red Sea in Sudan. The main survey sites will be the Red Sea coast, the Butana area, and the River Nile area. We will compare keystone species, ecotones, and traditional knowledge and examine differences in the sustainability of subsistence economies under site-specific conditions. We will focus on the following at the three main field survey sites:

・Red Sea coast of Sudan (seashores with mangroves and coral reefs): fishing, forestry, and gathering
・Butana area of Sudan (wadi beds with camels): herding, hunting, and farming
・The River Nile area of Sudan (riverbanks with date palm): farming, herding, and fishing

We will conduct additional field surveys in Egypt, Saudi Arabia, and Algeria. In these sub-survey areas, we will examine not only differences in the sustainability of subsistence economies (particularly under site-specific conditions), but also local responses to and preparations for unexpected events such as changes in political situations, the social order, or peace. Features examined at the sub-survey sites will include the following:

・Red Sea coast of Saudi Arabia (seashores with mangroves and camels): integrated land management using traditional natural resource management (*hema*) and conservation of biodiversity
・Sinai Peninsula of Egypt (mountainsides with coral reefs): relationships of Arab material cultures and nature, focusing on coral buildings
・Saharan oasis in Algeria (wadi beds with date palm): rehabilitation of a wise, traditional method of water use (*foggara*) and redevelopment of oasis agriculture in the Sahara

Research on Theme 1 (comprehensive measures to control the alien invasive species mesquite) will be conducted in areas of mesquite invasion: the Red Sea coast of Sudan, Butana area in Sudan, River Nile area in Sudan, and Red Sea coast of Saudi Arabia. Research on Theme 2 (assessment of the environmental effects of development programs in coastal zones of the arid tropics) will be conducted in coastal zones in danger of experiencing new environmental problems: the Red Sea coast of Sudan, Red Sea coastal areas of Saudi Arabia, and the Sinai Peninsula in Egypt. We will investigate and apply Theme 3 (supporting local decision making by sharing research results) in three local communities located in the Butana area of Sudan, the Sinai Peninsula of Egypt, and a Saharan oasis in Algeria.

(3) Research Organization

The research teams (91 members) will bring together researchers with experience in long-term field surveys in the Middle East. The "Alien invasive species control group" consists of one Project Researcher, four Core Members, and 41additional members. The "Coastal zone environmental impact assessment group" consists of one Project Researcher, three Core Members, and 15 additional members. The "Support for local decision making group" has one Project Researcher, four Core Members, and four additional members. Finally, the "Local ecosystems comparative studies group" includes two Project Research Associates, three Core Members, and 11 additional members.

Since the pre-research stage, three Project Researchers have joined our project. These researchers will lead the "Alien invasive species control group" (Ishiyama), the "Coastal zone environmental impact assessment group" (Nakamura), and the "Support for local decision making group" (Iwatani). Two Project Research Associates (Jia and Ishii) will join the project beginning in the first year of the Full Research phase and will particularly support the "Local ecosystems comparative studies group."

Fourteen Core Members play key roles in the four research groups, as summarized below.

1) Comprehensive measures to control the alien invasive species mesquite (Alien invasive species control group)

Two co-chairs of the Japan Society for the Promotion of Science's (JSPS's) AA Science Platform Program "Eco physiological Aspects of the Root Parasitic Weeds *Striga* spp. and Development of Control Measures" (2008-2010), Y. Sugimoto (Kobe University) and A. G. T. Babiker (Sudan University of Science and Technology), will address issues not only as specialists in weed control and biochemistry, but also as experienced facilitators in integrating wisdom from different disciplines. T. Sakata (Senshu Ishimomaki University, nutrient physiology) and Abdullah Abu Sin (Gezira University, agro-economics) will also have important roles in creating a bridge between scientific and local knowledge.

2) Assessment of the environmental effects of development programs in coastal zones of the arid tropics (Coastal zone environmental impact assessment group)

K. Yoshikawa (Okayama University, plant eco-physiology) and C. Miyamoto (Action for Mangrove Reforestation, planting practices) made strong contributions to the Japan International Cooperation Agency (JICA) and National Commission for Wildlife Conservation and Development project "Marine wildlife of the northern Saudi Arabian coast of the Red Sea" (1997-2000) and to the JICA and Oman project "Rehabilitation, conservation and management plan for mangrove in Oman." With the support of B. Hoshino (Rakuno Gakuen University, Remote Sensing and GIS), these researchers will lead a group comparing research results.

3) Supporting local decision making by sharing research results (Support for local decision making group)

M. A. Abdelbagi (Agricultural Research Cooperation, Sudan, plant physiology) and A.W. Abdelhadi (Agricultural Research Cooperation, Sudan, water management) are skilled in Arabic, English, and Japanese and received their Ph.D. degrees from Tottori and Kobe universities, respectively. These researchers will take a leading role in examining biodiversity conservation and participatory development and in sharing the research results with local people. International consultants P. Laureano (Traditional Knowledge World Bank, UNESCO consultant) and Y. Onuma (Appropriate Agriculture International, agricultural development in the Middle East and North Africa, JICA consultant) will apply their experience and methods to academic fields.

4) Examining differences in the sustainability of subsistence economies in each local ecosystem (Local ecosystems comparative studies group)

I. Kobori (United Nations University, traditional water management) and A. Benkhalifa (Algeria University of Science and Technology, fungology) have more than half a century of experience conducting field research in Sahara oases. M.Kawatoko (Research Institute for Islamic Archaeology and Culture, material culture studies) has excavated Islamic cities and organized multidisciplinary research teams. These researchers will contribute to comparative studies of local ecosystems in the Middle East.

■Problems for implementation or points need to change plan

【Changes from the Previous Proposal】

(1) Decision on Research Sites in Sub-survey Areas

We have decided on research sites in the sub-survey areas of Saudi Arabia, Egypt, and Algeria through discussions with the National Commission for Wildlife Conservation and Development, the Kingdom of Saudi Arabia; Islamic-Coptic Antiquities, the Supreme Council of Antiquities, Ministry of Culture, Egypt; and Centre National du Développement des Ressources Biologiques, Ministère de l' Aménagement du Territoire de l' Environnement et du Tourisme, Algeria.

The study sites chosen are al-Tur in the southern Sinai Peninsula of Egypt, the Farasan Islands near the southern Red Sea coast in Saudi Arabia, and In-Belbel oasis in central Algeria.

(2) Addition of 32 Members from Sudan and Saudi Arabia

In line with the 15 major research topics on alien invasive species control listed in the Implementation Agreement with the Sudan University of Science and Technology (SUST), 28 new project members joined from SUST. Their specialties include agro-forestry, wood technology, plant ecology, plant taxonomy, tree physiology, socio-economics, rural women and development, environmental economics, extension education, food technology, nutritional physiology, and clinical pathology.

At least four new members from Saudi Arabia's National Commission for Wildlife Conservation and Development will be joining the study of coastal zones of the arid tropics.

(3) A Small Change in the Project Title

We changed the project title from "A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation for the Post-oil Era" to "A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-oil Era." Some Arab researchers had suggested that the phrase "among Arab societies" in the previous title implied a social gap and a degree of livelihood degradation among the study countries of Sudan, Saudi Arabia, Egypt, and Algeria. Therefore, we modified the title, considering their suggestions.

【Memorandum of Understanding and Implementation Agreement only Established with the First-priority Country】

We established a Memorandum of Understanding and Implementation Agreement only with the first-priority country, Sudan, in the Pre-Research stage. At the beginning of the Full-Research years, we will establish Memorandums of Understanding and Implementation Agreements with the sub-survey countries.

【Project Management and Division of Labor among Project Researchers】

In the Pre-Research stage, the Project Leader and three project researchers divided the labor of project management. However, the quantity of work began to exceed their capacity. Thus, two research associates will join the project in the first year of Full Research to help with the project management.

【Sharing Information among Members through the Project Homepage】

Project members still have very limited opportunities to exchange research plans or results with other members, except during project meetings. Therefore,we have developed an Internet homepage for the project (http://www.chikyu.ac.jp/arab-subsistence/). This page is still under construction. One important issue in the construction is enabling project members to share information. We may use the web application platform XOOPS, which gives administrators the ability to grant specific groups of users certain access rights to content and features (e.g., edit, delete, and publish features). The platform supports the Latin alphabet as well as Japanese and Arabic. Thus, project members will be able to use the project website for daily communication.

Books

【Chapters/Sections】

・Nawata, H. Nov,2008 Environmental Conservation with Foreign Workers: A Case Analysis on Herding in and around the Raydah Nature Reserve in the South-western Saudi Arabia. Kusano, T. (ed.) *Local Development and Nature Conservation: Views from Local People*. Kokon, Tokyo, pp.119-134. (in Japanese)

Editing

【Editing / Co-editing】

・Nawata, H. (ed.) Oct,2008 *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, 457-4 Motoyama, Kamigamo, Kita-ku, Kyoto, 603-8047 JAPAN, 104pp. in English and Arabic.

Papers

【Original Articles】

・Nawata, H. Nov,2008 "Mangroves as Fish Nursery and Forage Safekeeping in Coastal Zones of the Arid Tropics". *Abstracts of Oral Presentations, The Ninth Conference of International Dryland Development Commission (IDDC) held at Alexandria, Egypt*. pp.137.

・Kobori, I and K. Horie Nov,2008 "New trends in Qanat Studies". *Abstracts of Oral Presentations, The Ninth Conference of International Dryland Development Commission (IDDC) held at Alexandria, Egypt*. pp.29.

・Nakamura, R. Nov,2008 "On the Local Mangrove Resource Use of Kilwa Island in Southern Swahili Coast". *Abstracts of Oral Presentations, The Ninth Conference of International Dryland Development Commission (IDDC) held at Alexandria, Egypt*. pp.120-121.

・Shimada, Y. Nov,2008 "Reconsidering the Animal power as the Basis of Afro-Eurasian Driland Civilization". *Abstracts of Oral Presentations, The Ninth Conference of International Dryland Development Commission (IDDC) held at Alexandria, Egypt*. pp.116-117.

・Tamaei, S. Oct,2008 "Study of Gray Mangrove (*Avicenia marina*) Afforestation for Greening a Desert Coast: Gray Mangrove Afforestation on the Banks of an Artificial Channel across a Sabkha and Established Biotic Community". H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove*

in Drylands: To Prevent a New Outbreak of Environmental Problems. RIHN, Kyoto, Japan, pp.18-19.

・Miyagi, T. Oct,2008 “Long-term Maintenance of Arid Mangroves: Mangrove Distribution and Use in Iran and Pakistan”. H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.22-23.

・Nawata, H. Oct,2008 “Relationship between Humans and One-humped Camels in the Coastal Zones of the Arid Tropics:An Anthropological Case Analysis of the Beja on the Red Sea Coast of Eastern Sudan”. H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.28-31.

・Nakamura, R. Oct,2008 “Local Mangrove Resource Use on Kilwa Island, Southern Swahili Coast”. H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.26-27.

・Yoshikawa, K. Oct,2008 “Ecological and Genetical Studies of Mangrove (*Avicenia marina*) Forests in the Sultanate of Oman”. H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.24-25.

・Kishi, A., A. Z. Sambas, Oct,2008 ″A Conservation Plan for Dugong along the Northeastern Coast of the Red Sea in the Kingdom of Saudi Arabia”. H. (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.20-21.

・Shoji, T. Oct,2008 “A Handbook for an Avicenia marina Nursery and Transplantation Technical Guidelines for Afforestation”. H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.16-17.

・Kogo, M. , C. Miyamoto, S. Suda, Oct,2008 “Study and Activities on Mangrove Afforestation in Arabia”. H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.8-10.

・Miyamoto, C. Oct,2008 ″An Inspection of the Status of Coastal Mangroves of the Southern Red Sea”. H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.11.

・Onuma, H. Oct,2008 “The Master Plan for the Restoration, Conservation, and Management of Mangrove in the Sultanate of Oman”. H. NAWATA (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.14-15.

・Suda, S. Oct,2008 “Method for Mangrove Afforestation in Qatar”. *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.12-13.

・Nawata, H. Jul,2008 ″Camel Racing in Saudi Arabia: Modern Networks of Arab Societies″. *Kikan-Minzokugaku* 125 :44-59. (in Japanese)

・Nakamura, R. 2008 ″Two Episodes concerning the UNESCO World Cultural Heritage in Kilwa Island, Tanzania″. Shimada, Y. (ed.) *Grass Root Development and Environmental Protection in Africa by the Revitalization for Traditional Knowledge and Techniques*. Nagoya University, Aichi, Japan, pp.109-122. (in Japanese)

・Ishiyama. S. 2008 ″Lessons from the prevention for Desertification: For whom desertification?″. Shimada, S. (ed.) *Grass Root Development and Environmental Protection in Africa by the Revitalization for Traditional Knowledge and Techniques*. Nagoya University, Aichi, Japan, pp.119-122. (in Japanese)

・Nakamura, R. 2008 ″Coexistence of the Residence Place between the Bantu and the Arab in Kilwa Island, Southern Swahili Coast″. *Islamic Africa Studies* 4 :153-162. (in Japanese)

・Nakamura, R. 2008 ″Multi-ethnic Coexistence in Swahili Society: Multiple Ecological Sea Zones and Two Fishing Cultures in Kilwa Island, Tanzania″. *The 3rd RIHN International Symposium. The Futurability of*

Islands: Beyond Endemism and Vulnerability. Program & Abstracts. RIHN, Kyoto, Japan, pp.18.

Research Presentations

【Oral Presentation】

- Nawata, H. *Getting along with Arab Ordinary Peoples: Muslim Societies form Anthropological Perspectives*. Meeting of Iwate Islamic Archaeology, Feb 07,2009, Kitakami. (in Japanese)
- Nawata, H. *Human-Camel Relationships and World-View with Livestock on the Coastal Zone of the Arid Tropics*. Meeting for Human and Livestock Study, Dec 07,2008, Obirin University, Tokyo. (in Japanese)
- Babiker, A.G.T. *Mesquite (Prosopis spp.): Experience and lessons and the way forward in Sudan*. 150th Meeting of African Area Studies, Center for African Area Studies, Kyoto University, Dec 01,2008, Kyoto.
- Ibrahim, Ahmed Eltayeb Ahmed *Sudan University of Science and Technology: Past, Present and Future*. 150th Meeting of African Area Studies, Center for African Area Studies, Kyoto University, Dec 01,2008, Kyoto.
- Ishiyama, S. *La migration 'Kanemubu' vers le sud a la region du Lac Tchad*. 40 ans derecherche japonaise au Nord Cameroun à la mémoire d'Eldridge Mohammadou et P.K. Eguchi, Nov 29,2008, Muna Hall, Yaoundé, Cameroon. (in French)
- Kobori, I. and K. Horie *New Trends on Qanat Studies*. the ninth conference of International Dryland Development Commission (IDDC), Nov 07,2008-Nov 10,2008, Alexandria, Egypt.
- Shimada, Y. *Reconsidering Animal Power as the Basis of Afro-Eurasian Dryland Civilizations*. the ninth conference of International Dryland Development Commission (IDDC), Nov 07,2008-Nov 10,2008, Alexandria, Egypt.
- Nakamura, R. *Local Mangrove Resource Use of Kilwa Island in Southern Swahili Coast*. the ninth conference of International Dryland Development Commission (IDDC), Nov 07,2008-Nov 10,2008, Alexandria, Egypt.
- Nawata, H. *Mangroves as Fish Nursery and Forage Safekeeping in Coastal Zones of the Arid Tropics*. the ninth conference of International Dryland Development Commission (IDDC), Nov 07,2008-Nov 10,2008, Alexandria, Egypt.
- Onuma, H. *The Master Plan for the Restoration, Conservation, and Management of Mangrove in theSultanate of Oman*. Mangroves in Drylands: Seeking ways to clarify social ecosystems andto strengthen subsistence productivities,, Jul 23,2008-Jul 24,2008, RIHN, Kyoto, Japan.
- Miyamoto, C. *Study and Activities on Mangrove Afforestation in Vietnam*. Mangroves in Drylands: Seeking ways to clarify social ecosystems and to strengthen subsistence productivities, Jul 23,2008-Jul 24,2008, RIHN, Kyoto, Japan.
- Akimichi, T. *Mangrove in Southern Thailand*. Mangroves in Drylands: Seeking ways to clarify social ecosystems and to strengthen subsistence productivities, Jul 23,2008-Jul 24,2008, RIHN, Kyoto, Japan.
- Kogo, M. *Study and Activities on Mangrove Afforestation in Myanmar*. Mangroves in Drylands: Seeking ways to clarify social ecosystems and to strengthen subsistence productivities, Jul 23,2008-Jul 24,2008, RIHN, Kyoto, Japan.
- Baba, S. *A Gap between Practitioners and Researchers on Mangrove from My Ten Years of Experience on the Ground*. Mangroves in Drylands: Seeking ways to clarify social ecosystems and to strengthen subsistence productivities, Jul 23,2008-Jul 24,2008, RIHN, Kyoto, Japan.
- Kishi, A. *A Conservation Plan for Dugong along the Northeastern Coast of the Red Sea in the Kingdom of Saudi Arabia*. Mangroves in Drylands: Seeking ways to clarify social ecosystems and to strengthen subsistence productivities, Jul 23,2008-Jul 24,2008, RIHN, Kyoto, Japan.
- Nawata, H. *Introduction:Towards an integrated plan to control an exotic species mesquite*. Towards an integrated plan to control an exotic species mesquite (*Prosopis* spp.), May 12,2008-May 13,2008, RIHN,

Kyoto, Japan.

・Sugimoto, Y. *Physiologyand ecology of root parasitic plants*. Towards an integrated plan to control an exotic species mesquite (*Prosopis* spp.), May 12,2008-May 13,2008, RIHN, Kyoto, Japan.

・Babiker, A.G.T. *Mesquite (Prosopis spp.): Experience and lessons and the way forward in Sudan*. Towards an integrated plan to control an exotic species mesquite (*Prosopis* spp.), May 12,2008-May 13,2008, RIHN, Kyoto, Japan.

・Abdalla M. A. Abu Sin *My research and development planfor nomadic people in Butana, central Sudan*. Towards an integrated plan to control an exotic species mesquite (*Prosopis* spp.), May 12,2008-May 13,2008, RIHN, Kyoto, Japan.

・Fujii, Y. *Allelopathyof mesquite (Prosopis juliflora)*. Towards an integrated plan to control an exotic species mesquite (*Prosopis* spp.), May 12,2008-May 13,2008, RIHN, Kyoto, Japan.

・Sakata, T. *Approachesfrom comparative nutritional physiology*. Towards an integrated plan to control an exotic species mesquite (*Prosopis* spp.), May 12,2008-May 13,2008, RIHN, Kyoto, Japan.

・Abdalla M. A. Abu Sin *Development and Culture*. , May 08,2008, Kobe University, Kobe, Japan.

【Poster Presentation】

・Nawata, H. *A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-oil Era*. Seventh Seminar of Inter-Civilization Dialogue between Japan and the Islamic World, Eighth Seminar of Development of Islamic Ideology, “Harmonization of Civilization with Environments”, Mar 11,2009-Mar 12,2009, Kuwait.

・Yoshikawa, K., Y. Yamaguchi and S. Hayashi *Ecological and Genetical Studies of Mangrove (Avicennia marina) Forests in the Sultanate of Oman*. the ninth conference of International Dryland Development Commission (IDDC), Nov 07,2008-Nov 10,2008, Alexandria, Egypt.

・Nawata, H. *Food Habitat in the Coastal Zones of the Arid Tropics*. the 11th International Coral Reef Symposium “Reefs for the Future”, Jul 07,2008-Jul 11,2008, Fort Lauderdale, Florida,USA..

【Invited Lecture / Honoronary Lecture / Panelist】

・Nawata, H. *Japanese symbiotic relationship between human and nature, Satoyama*. Seventh Seminar of Inter-Civilization Dialogue between Japan and the Islamic World, Eighth Seminar of Development of Islamic Ideology, “Harmonization of Civilization with Environments”, Mar 11,2009, Kuwait.

・Nawata, H. *Adaptive Mechanisms and Survival Strategies of Afician Pastoralists A Case of the Beja in Eastern Sudan*. Open Seminar “Grassland Ecosystems and Pastoralist Grassland Use in the World”, Global COE Program “Animal Global Health”, Jan 29,2009, Obihiro University of Agriculture and Veterinary Medicine, Obihiro.. (in Japanese)

Stage: FS
Project No.: C-FS
Project Name: Megacities and the Global Environment
Project Leader: MURAMATSU, Shin
Research Axis: Circulation

■Research Objectives and Topics

Objectives: This project aims topropose new urban sphere models by finding answers to the question of how tolessen the global environmental problems caused by mega cities in developingcountries while, at the same time, preserving the benefits that cities canoffer to humanity.

Background: The world's urban population has beenincreasing at an alarming speed in recent years, with the trend toward megacities getting stronger. It is predicted that, by 2020,the number of mega cities with a population of 10 million or more, most ofwhich being in developing countries, will reach more than twenty. In such megacities, due to the lack of infrastructure and environmental management, variousurban problems-such as encroachment of natural resources caused by urbansprawl, heat island phenomena, urban flooding, and traffic congestion-willoccur in the wake of development and population concentration. These localproblems, together with global-scale problems of resource depletion and climatechange, are expected to bring great risks to the humanity at large in the 21stcentury. Given this situation, people working in various sectors such asadministration, academia, international aid, and NGOs have started to act. Their approaches, however,are relying on the solutions that have been devised vis-à-vis the 19th and 20thcentury urban growth in Western Europe, the US and Japan where situations weredifferent from today's in terms of climate, size of population, and historicalpatterns of development. Thus, these solutions are not always applicable to theenvironmental problems of today's mega cities in developing countries, and caneven worsen them in some cases.

Recognizing Global Environmental Problems: Urban populationgrowth and area expansion have the following impacts: 1) a great impact uponthe global environment by mass consumption of natural resources both in thevicinity of and far from cities; 2) an impact upon the earth due toaccumulating degradation caused by urban sprawl, which includes farming andfishing communities as well as urban spheres; and 3) a great impact upon theglobal environment from wastes discharged by cities both in the vicinity of andfar from cities. Thus thisproject monitors the totality of urban and global environments by focusing onfishing and timber resources (related to 1 described above), urban amenities(2), and construction waste (3).

Relationship Between Research Subject and "Global Environmental Problems": The subject of this research is existing and emergingmega cities in developing countries whose population is rapidly increasing butthat are not necessarily sensitive about global environmental problems. Theseare the cities that pose an increasing risk of further burdening the globalenvironment. On the other hand, they could be holding the wisdom of lowenvironmental burdens, compared to the mega cities in developed countries thatare producing greater environmental burdens. Studying cities presenting boththese positive and negative aspects can help us contribute to a solution ofglobal environmental problems caused by cities worldwide.

Significance as an RIHN project: In recent years,solutions to urban problems have been studied in relation to issues ofsustainability, not only in Japan but also worldwide. However, most of thesesolutions 1) are not clearly aware of the relationship between globalenvironmental issues and urban problems; 2) have adopted singular techniquesdespite the fact that, in order to investigate the relationship between globalenvironmental issues and urban problems, it is necessary to create a researchsystem that is not just interdisciplinary a harmonization of the humanities andnatural sciences; and 3) have not confronted urban issues that, from theviewpoint of the Research Institute for Humanity and Nature, are significantcauses of global environmental problems. In short, we believe that this

projectis a necessary one within the structure of the Research Institute for Humanityand Nature project, as compared with other outside projects

■Progress of Project

1. Research framework: While our FSgoal of last year was to investigate urban systems and their dynamic changes,this year we have decided to concentrate on global environmental problemscaused by mega cities, with Jakarta, a typical mega city, as our main focus. Wehave also gained a new point of view that allows us to observe notonly urbanized zones but the surrounding farmlands as well as village lands,mountains, and seas that sustain villagers' lives, all of which constitute awhole of urban sphere, and we now regard this entirety as a city. Furthermore,this new point of view has enabled us to assume the spheres of urban influenceexisting in Indonesia, Southeast Asia, China as well as in India, which allinfluence Jakarta as a mega city.

2. Researchcontent: We have conducted preliminary research in Jakarta regarding its urban andnatural resources, especially marine and forest resources. As a result, we haveconfirmed that local phenomena occurring within a city are chain-linked tourban influence spheres beyond the city limits as well as the whole globalenvironment through consumption of resources (marine products from both coastal and open seas as well as timber, etc.). Also, thespatial change study team studied temperature and wind direction in Jakarta's suburbs and also conducted interview research there, which allowed us toconfirm the impact of uncontrolled urban sprawl on people's living environmentin the form of rising indoor temperatures, urban floods, and wind directionchanges, etc. All this has given us confidence to gain good results bycontinuing this research project.

3. Gaining a real understanding of Jabodetabek: We interviewed four people(from the Jakarta city office, an NGO, and academia) specializing inJabodetabek; we also conducted a preliminary sense-of-value survey with eightJakarta residents from different social classes, ages, and residentiallocations, which illuminated the core of Jabodetabek's urban problems (urbanhistorical restrictions, issues of governance) as well as its value systems andlifestyles. This has helped us to set a research framework and made us certainthat future surveys should bring concrete results.plan and methods. This also allowed us to hold discussion with the researchers of the Institute, which has been reflected in our research

○Co-Researchers

◎ Muramatsu, Shin (Research Institute for Humanity and Nature)
○ Fukami, Naoko (Institute of Oriental Culture, the University of Tokyo)
○ Kato, Hironori (Institute for Research in Kyoto University)
○ Kimura, Takeshi (Graduate School of Humanities and Social Science, University of Tsukuba)
○ Kinoshita, Tetsuya (RIHN)
○ Widodo, Johaness (School of Design and Environment, National University of Singapore)
○ Yamasaki, Sekino (Dentsu Communication Institute)
○ Yamashita, Yuko (Graduate School of Commerce and Management, Hitotsubashi University)
○ Taniguchi, Makoto (Research Institute for Humanity and Nature)
○ Muramakami, Akinobu (Graduate School of Systems and Information Engineering, University of Tsukuba)
○ Kurihara, Shinji (College of Bioresource Sciences, Nihon University)
○ Harashina, Koji (Iwate University)
○ Hayashi, Reiko (Ministry of Health and Prevention, Republic of Senegal)
○ Mori, Koichiro (Institute of Industrial Science, the University of Tokyo)
○ Torigoe, Keiko (School of Cultural & Creative Studies, Aoyama Gakuin University)
○ Nao, Nobuhide (Graduate School of Engineering, the University of Tokyo)
○ Kitagaki Ryoma (Graduate School of Engineering, the University of Tokyo)
○ Takeuchi, Wataru (Institute of Industrial Science, the University of Tokyo)
○ Shima, Norihisa (Department of Civil Engineering, School of Engineering, the University of Tokyo)

○ Endo, Takahiro (Research Institute for Humanity and Nature)
○ Okabe, Akiko (Graduate School of Engineering, Chiba University)
○ Ota, Hiroshi (Institute of Industrial Science, the University of Tokyo)
○ Ito, Kaori (Department of Architecture, Faculty of Science and Technology, Tokyo University of Science)
○ Tanigawa, Ryuichi (Institute of Industrial Science, the University of Tokyo)
○ Hayashi, Kengo (Research Institute for Humanity and Nature)
○ ANDERSEN, Hans Thor (Department of Geography & Geology, the University of Copenhagen)

■Research Plan

Research Plan :

PR (Fiscal Year 2009) kickoff; Phase 1: investigation of mechanism (1)

1) A “kickoff” conference in Jakarta,organized together with the University of Indonesia, will be held, wheredirections, contents, and schedule of future research and surveys will bediscussed. MOU will also be concluded. 2) Jakarta fieldwork research (i)conducted by each research team; preliminary fieldwork for Copenhagen research;Tokyo fieldwork (i). 3) Establishing a cooperative research system to studyJakarta with Delft University of Technology and Leiden University in Holland.4) “City and Global Environment Study Meeting” held regularly (approximatelyfive times a year). 5) Replenishing each team with new members; regular study meetings;general research conferences (the “kickoff” meeting in Jakarta, a generalmeeting to be held in Kyoto); exchanging and examining research outcomes.

FR1(Fiscal Year 2010) Phase 1: investigation ofmechanism (2)

1) Cooperative Jakarta fieldwork (ii)conducted by all the teams; Copenhagen fieldwork (i), Tokyo fieldwork (ii). 2)“City and Global Environment Study Meeting” held regularly. 3) Regular studymeetings held by each team; general study meetings held twice; exchanging andexamining research outcomes.

FR2 (Fiscal Year 2011) Phase 1: investigation ofmechanism (3); Phase 2: database construction and utilization (1)

1) Cooperative Jakarta fieldwork (iii);Copenhagen fieldwork (ii); Tokyo fieldwork (iii). 2) Creating policy database(i). 3) Constructing Jakarta geographic spatial information system andexamination of its usage (i). 4) “City and Global Environment Study Meeting”held regularly. 5) Regular study meetings held by each team; general studymeetings held twice; exchanging and examining research outcomes 6) Examiningand coordinating midterm research outcomes.

FR3 (Fiscal Year 2012) midterm; Phase 1supplementation; Phase 2: database construction and utilization (2)

1) fieldwork in the cities other thanJakarta and Copenhagen conducted by each team (i); Copenhagen fieldwork (ii).2) Creating policy database (ii). 3) Constructing Jakarta geographic spatialinformation system and examination of its usage (ii). 4) “City and GlobalEnvironment Study Meeting” held regularly. 5) Regular study meetings held byeach team; general study meetings (including an international symposium inJakarta); exchanging and examining research outcomes.

FR4 (Fiscal Year 2013) Phase 2: database constructionand utilization (3); Phase 3: urban sphere model and policy proposals (1)

1) fieldwork in the cities other thanJakarta and Copenhagen conducted by each team (ii). 2) Creating policy database(iii). 3) Constructing Jakarta geographic spatial information system andexamination of its usage (iii). 4) Proposing urban sphere models and policies(i). 5) “City and Global Environment Study Meeting” held regularly. 6) Regularstudy meetings held by each team; general study meetings held twice; exchangingand examining research outcomes. 7) Coordinating project outcome publications(i).

FR5 (Fiscal Year 2014) summary; Phase 3: urban spheremodel and policy proposals (2)

1) Conductingsupplementing fieldwork research. 2) Proposing urban sphere models and policies(ii). 3)

Coordinating project outcome publications (ii). 4) “City and GlobalEnvironment Study Meeting” held regularly (approximately six times a year). 5)Regular study meetings held by each team; general study meetings (including aninternational symposium in Kyoto); exchanging and examining research outcomes.

■Problems for implementation or points need to change plan

1. Recruitmentof project participants and cooperation with other projects: We dofind it necessary to recruit specialists and build cooperative relationships inthe fields of Indonesian socio-economics, studies of how development and wastesaffect natural environmental conditions and ecosystems, and data integrationand database construction. Therefore, it is one of out tasks next year torecruit new participants who specialize in Indonesian economic history,political science, spatial information systems, and ecology. It is also ourgoal to work with Jakarta study specialists in Holland. At the same time, wewould like to cooperate with other projects within the Research Institute forHumanity and Nature while seeking outside support as well.

2. International Cooperation: It remains evident thatoutcomes of many projects and studies concerning mega cities and urban/globalenvironmental correlations are not well shared. Therefore, we are planning tostrengthen our cooperation with international organizations such as UGEC(Urbanization and Global Environmental Change) and have their endorsement.

Books

【Authored/Co-authored】

- KIDOKORO, T. OKATA, J. MATSUMURA, S. and SHIMA, N. Aug,2008 Vulnerable Cities: Realities, innovations and strategies. cSUR-UT : Library for sustainable urban regeneration, 7. Springer, 330pp.
- HARA, Y., TAKEUCHI, K., PALIJON, A. and, MURAKAMI, A. 2008 Landfill Development in the Urban Fringe of Metro Manila. Springer Netherlands

【Chapters/Sections】

- ANDERSEN, H.T. 2008 Metropolis and Periphery in Denmark.. GÜLDENBERG, E. (ed.) Europäische Raumentwicklung: Metropolem und Periphere Regionen. Environmental University of Hannover, pp.119-129.
- ANDERSEN, H.T. 2008 Renovasión urbana en Dinamarca de la demolición de los barrios probes al desarrollo urbano sostenible.. LEAL, J.M. (ed.) Rehabilitición de veveindas y renovasión urbana en las grandes ciudades europeas. Ciudad de Madrid, Madrid, pp.67-91. (Other)

Papers

【Original Articles】

- ANDERSEN, H. T. 2008 Copenhagen Denmark: Urban Regeneration at Economic and Social Sustainability.. KIDOKORO, T. HARATA, N. SUBANU, L.P. JESSEN, J. MOTTE, A. And SELTZER, E.P. (ed.) Sustainable City Regions: Space, Place and Governance.. Springer, Tokyo, pp.203-206.

Research Presentations

【Poster Presentation】

- POJECT MURAMATSU FOR F.S. OF RIHN The Whole Earth Urban Historical Research Project,2008.. the Institute of Industrial Science, the University of Tokyo, Open Campus, May 2008, the Institute of Industrial Science, the University of Tokyo, Tokyo. (in Japanese)

Incubation Studies

An Environmental History of Nomads and Farmers in Central Asia

UNO Takao (Professor, International Research Center For Japanese Studies)

Central Asia is the crossroads of Eurasia. This project investigates the still unknown origins of Central Asian nomads and describes environmental change in the region over the last ten thousand years. In clarifying the activities of and interactions between nomads and farmers, and their relation to the environmental changes of Central Asia we hope to compose a unique environmental history, and so to inform future interaction between humanity and nature in the region.

We created detailed Digital Elevation Model of Central Asia and tried topographical analysis. We also mapped Archaeological sites of nomads and farmers on the DEM based on field survey using GPS. We started excavation of the Dabusya Silk Road urban site in Middle Zeravshan valley, and we excavated not only archaeological remain structures and remain objects but also a lot of animal bones and pollen remains.

Development of Global Hunger Index

MATSUMURA Kanichiro (Associate Professor, Department of Applied Informatics, School of Policy Studies, Kwansei Gakuin University)

The constraints of maintaining sustainable food production are closely linked to the relationship between the distribution patterns of human activity on the planet and economic growth occurring on the landscape. To develop “Global Hunger Index”, we collected various datasets such as socio economic datasets, light data, vegitation and gridded population datasets. As one of previous study, we focused on “ Mapping the Global Supply and Demand Structure of Rice”. Rice plays a major role in the global supply and demand for sustainable food production. Global patterns of rice production can be mapped by using various criteria linked to domestic income, population patterns, and associated satellite brightness data of rice producing regions. Prosperous regions have more electric lighting. There are documented correlations between Gross Domestic roduct (GDP) and nighttime lights. Nominal value of GDP is used. We thought that it would be advisable to look at the global rice production pattern on a geographical basis. We used gridded spatial population distribution data overlain by nocturnal light imagery derived from satellite imagery.

We also developed “Sharing Information Web-site” to share those information and also collect information from all over the world efficiently.

Alleviating Depopulation to Protect the Global Environment from the Viewpoint of the Cyclical-family Model, Community, and Value

YAMAGHISHI Haruo (Professor, The Faculty of Education and Welfare Science, Oita University)

Humans have been expanding their inhabitable areas by regulating relationships with environment. In Japan many people have settled down and formed communities in mountains or on islands. Since 1965, however, those communities have depopulated with the rapid growth of economy in urban areas, creating “marginal hamlets”, where it is difficult to maintain social functions. The following problems are expected to arise when the communities are dissolved: (1) the upset of the ecosystem, (2) the repetitive occurrence of natural disasters, and (3) the decrease of domestic food production. It is necessary to counter the depopulation to prevent those problems. In this study we investigated the actual situation of a depopulating community in Bungo-ono City from the multiple viewpoints of production, distribution, consumption, getting-together, purpose in life, welfare, education, and culture. We suggest the following as necessary for the improvement of the situation: (1) the cyclical-family model. (2) community, and (3) value which stresses coexistence with nature.

Interaction of human activity and nature in Changjiang basin, China.

TANAKA Hiroki (Research fellow, Nagoya University)

Economic development is rapidly changing land use in China after 1978, and is enhanced especially after 1992. Change in land cover and climate change associate local environmental problems including flooding and drought in the basin. The local issues in the Changjiang basin affect Japan not only through international economy but also the atmosphere and the seas. This study investigates human-environmental interactions in the Changjiang basin, with emphasis on the environmental problems associated with interactions between agriculture and the hydrologic cycle. Change in the response properties of the region to the hydrological change has been detected in 1992 using the datasets of precipitation, river discharge, rice cropping area, natural disaster areas in Poyang Lake basin. In order to clarify the mechanisms to change the regional sensitivity, we prepared to investigate the actual conditions of local communities or societies, and to quantify the hydrological components at each region.

Ecosystem and Social Sustainability in the Coastal Area, Southeast Asia.

ISHIKAWA Satoshi (Associate Professor, School of Marine Science and Technology, Tokai University)

As being affected both from land and sea, a complicated ecosystem with high biodiversity is formed in coastal area. And many kinds of people live in the coastal area, who utilized various kinds of living resources in various ways for their life. Having high biodiversity means each resource magnitude is generally small and fragile. Besides, existence of various stakeholders makes grasping the resource status and doing management of resources difficult. In this study, we try to compile existing data and information. And we will conduct inter-disciplinal field survey in the Southeast Asian coastal area, in order to create multidisciplinary database. Using this database, concrete figures of resource status and utilization will be well understood, and a practical countermeasures of resource utilization, that could be acceptable for local people, politician and scientists, will be made. We already contacted with some responsible organizations, e.g. Department of Fishery of Thailand and Philippines, and Southeast Fisheries Development Center. And, we have held some dialogues with fishermen living in the coastal area.

Developments, environmental changes and flowing local populations: Their interactions and the people's adaptive strategies

SUDA Kazuhiro (Professor, Faculty of Humanities, Hokkai-Gakuen University)

In these days, developments, which are closely related to the economic globalization, compel many peoples to change their life styles drastically all over the world. These developments, along with flowing local populations, have caused serious disturbances of natural environments to which the residents have accessed, modifications of their social environments, and various environmental hazards. People may make different responses to the disturbances of environments caused by developments. Some may remain in their home regions to actively take part in the developments, while the other may migrate to other regions or nations to maintain their life styles. Moreover, some people who intend to take economic advantages might migrate into the region where the developments advance. Developments could cause frictions between original occupants and newcomers, which will concern in environmental disruptions such as a shrink of tropical forest or haze. We have developed the method to evaluate the changes of natural and social environments, which are accompanied with developments and population flow, and to quantitatively access their impacts on people's life.

Pollution and destabilization of farming ecosystems and new energy crops—a case study of biofuel crops in islands around Wallace area

SATO Tadashi (Associate Professor, Graduate School of Life Sciences, Tohoku University)

Introduction of cereal cultivars during the *Green Revolution* and of biofuel crops have caused new global environmental problems in Southeast Asian farming villages; they have undermined sustainability of farming. The objective of this research project was to suggest sustainable modes of future crop production in tropical areas. We investigated the following subjects preliminarily: 1) selection of a research area exhibiting a transition from a traditional farming system to a modern farming system, 2) the sociocultural infrastructure, biological diversity, and genetic diversity of those areas. We visited the Sulawesi area during May 2009 and the Laos area during November 2009. Through these field studies, we confirmed the rapid expansion of biofuel plantations such as those for oil palms and maize in the Sulawesi area, and the introduction of improved rice cultivars in the Laos area. Furthermore, we observed the modernization of the sociocultural infrastructure in these areas. We selected the Sulawesi and Laos areas for this research project based on these observations.

A Millennium Capital: Integrated Study on Ecosophy of Heian-kyo and Design of World Peace and Sustainable City

KAMATA Toji (Professor, Kokoro Research Center, Kyoto University)

We explored the reason why Heian-kyo had been a capital city in Japan for more than a thousand years by ecosophical approach. We targeted on the four aspects of the city: 1) capital of water, 2) capital of pray, 3) capital of crafts, and 4) capital of bio-culture of *Satoyama*, and studied on material bases (water, food, fuel, timber, garbage, human resource), spiritual basis (religion, symbolism, magical power, soul), and technological basis (arts, craftsman ship, scholarship). During the study, we discovered that ecosophy of Heian-kyo can be defined as a balance-maintenance system of nature and artifact for securing both creative and sustainable situation. We hypothesized that this ecosophy has been well-adapted to ecological and geological features of Kyoto Basin by having been developed during a millennium history of Heian-kyo. These examinations prepared several concepts for designing future Kyoto as World Peace and Sustainable City based on resources, industry, political system, religious function, cultural creativity, tourism, environment conscious, etc. Comparing the differences in the resource availability and material flows between Heian-kyo and Heijo-kyo, we considered the importance of the hinterland, networks, and dedicating culture to the Tennoh Emperor Family and influential Temples and Shrines.

Scope for establishing a new networked watershed- coastal society on the basis of demographic analysis

OMORI Koji, (Associate Professor, Center for Marine Environmental Studies, Ehime University)

Global economic dynamics and global climate changes including its ice age cycle may have large effects on our society and our life itself. In this study, we try to find a new networked coastal-watershed societies, which can be against these obstacles, with the optimum population size acceptable for various types of life style. This way may be the main route for solving the global environmental problems.

In 2008, our research leads to the following results:

- the establishment of demographic model, water movement model and material flow model of watershed ecosystems.
- the construction of a flow chart for the integrated model of material cycle and human society.
- selection of a platform software for cording the integrated model, that is, the general balanced dynamic economic model.
- selection of a computer software for constructing forecasting ways, which become fore settings of model

calculation.
· selection of the core study area of this study.

On the basis of these results, we constructed the flow chart of the integrated model, and we are at the stage of cording it.

Our Endangered Coastal Ecosystems:- an Eco-climatic and Risk Analysis over the Maritime Continent using GIS and Remote Sensing –

SANGA-NGOIE, Kazadi (Professor, Ritsumeikan Asia Pacific University)

Coastal ecosystems are those highly diversified and extremely active ecosystems spanning over the global *coastal zone*. This fuzzy concept is meant to define the portion of the earth that encompasses the *coastal ocean* and the portion of lands adjacent to the coast (*backshore*), including the intertidal zone (*foreshore*). Estuaries, intertidal flats, mangroves forests, lagoons and salt ponds, sea grass, rocks and sand beaches, coral reefs, the continental shelf, as well as the scenic shoreline cities, ports and resort beaches, are all parts of this rich ecosystem. However, these coastal ecosystems are enduring nowadays deep, and often irreversible, sudden or progressive, changes due to both natural and human activities-related causes. And this is especially true over the highly populated and natural disaster-prone Maritime Continent (Southeast Asia and Oceania).

Focusing on the Negros Island in The Philippines as a case study, we used GIS and remote-sensing as tools for assessing the state of, and the risks to, the coastal ecosystems, based on climatic and ecological data collected in situ together with satellite remote sensing data. Our preliminary findings show that: (1) Negros island is characterized by highly fragmented ecosystems with less than 30,000 ha of land forests (compared to 700,000 ha in 1940), (2) Most of the mangrove forests have been developed into either fishponds or human settlements, leaving only a few sites along the coasts, (3)The island is still endowed with very rich land and marine biodiversity, with several endemic species, (4) Strong rainfall variability, in both the amount and distribution, is observed, together with frequent storm surges, floods and landslides, (5) Noticeable coastal land erosion and salt water intrusion, probably due to sea level increase, were also observed.

These findings will be used as new inputs for more accurate hazard maps and appropriate awareness, mitigation or prevention scenarios.

The Center for Coordination, Promotion and Communication (CCPC)

The Research Promotion Center that engaged in specific activities to promote RIHN's research and "global environmental studies" since 2001 was re-organized in October 2007 as the Center for Coordination, Promotion and Coordination (CCPC). The CCPC aims to build the basis of a new research perspective, one beyond the scope of the existing disciplinary framework. More practically, the CCPC supports RIHN's research projects, integrates and disseminates their results, and determines strategies for creating new research. To perform these important functions, three divisions have been newly implemented, namely the (1) Coordination Division, (2) Promotion Division, and (3) Communication Division.

(1) Coordination Division

This division researches and defines RIHN's theoretical and practical approach to global environmental studies, establishes academic guidelines for the evaluation of research projects, and promotes research coordination with academic institutions and universities in Japan and overseas. Furthermore, it is responsible for supporting the professional development of doctoral and post-doctoral students and junior scholars. The Coordination Division is in charge of RIHN's annual meeting on the progress of on-going research projects, as well as several other important meetings.

(2) Promotion Division

This division acts to support RIHN research. It collects and analyses RIHN research outcomes, and relates these to the wider body of global environmental studies scholarship. At RIHN it also manages the institute databases and archives, oversees selection of library books, journals and maps, maintains and manages laboratory and field instruments, conducts analysis of water and biological samples, and supports RIHN's researcher national and international fieldwork. In line with these routine works, the Promotion Division emphasizes the integration of accumulated research materials and data for dissemination to academic societies and the general public.

(3) Communication Division

This division engages in various extensive activities for the dissemination of RIHN's research outcomes and their implications to academic societies and the general public. The division plans and implements RIHN's seminar series, public seminars and numerous workshops and symposia, and publishes their result. It also publishes RIHN's Humanity and Nature Newsletter as well as several books such as "Chikyuken Sosho" (RIHN's global environmental studies series), "Chikyuken Library" (RIHN's monograph series) in Japanese. The division has also introduced RIHN research outcomes through regularly published articles in a public newspaper for one year. This division is also involved in environmental education, holding special lectures and tours for primary and senior high school students. The division is now preparing a retrospective publication for RIHN's tenth anniversary in 2012.

Each division has a full-time head and a number of task forces in which practical works are conducted in close cooperation with the staff of the Research Department and Administrative Department. For the effective progress of the CCPC's work, the three division heads and CCPC director hold routine meetings. CCPC staff and institute-wide meetings are also held a few times a year.

Outreach Programs and Events

1. International Symposium

In order to diffuse the findings of the two FR projects concluding in March 2009, the RIHN 3rd International Symposium 'The Futurability of Islands: Beyond Endemism and Vulnerability' was held on the 22nd and 23rd of October 2008 at Lecture Hall, RIHN. The details of the symposium are as follows.

The 3rd RIHN International Symposium "The Futurability of Islands: Beyond Endemism and Vulnerability"

<22 October, 2008>

Opening Session

Chair: ENDO Takahiro (RIHN)

- Opening Remarks: TACHIMOTO Narifumi (Director-General, RIHN)
- Objectives of the Symposium: YUMOTO Takakazu (RIHN)
- Keynote Address: Implementing the Madrid Action Plan: UNESCO Island Biosphere Reserves
  CLÜSENER-GODT, Miguel (Division of Ecological and Earth Sciences, UNESCO, France)

Session 1　Conceptualizing and Acting in Island Environments, Past and Present

Chair: SEKINO Tatsuki (RIHN)

- Environmental Consciousness, Inner and Outer
  YOSHIOKA Takahito (Field Science Education and Research Center, Kyoto University)
- Environmental Attitudes and Behaviors among Jeju Islanders, South Korea
  JEONG, Dai-Yeun (Cheju National University, South Korea)
- The Palaeoecology of Initial Polynesian and European Impacts on Remote Pacific Islands
  PREBBLE, Matthew and HABERLE, Simon (Research School of Pacific and Asian Studies, Australian National University)
- Discussant: HABERLE, Simon (Research School of Pacific and Asian Studies, Australian National University)

Session 2　Conservation, Livelihood, and Culture in Island Parks and Reserves

Chair: SATO Yo-Ichiro (RIHN)

- Linking Livelihoods and Conservation: Challenges Facing Galapagos Islands
  GARDENER, Mark (Terrestrial Research, Charles Darwin Foundation, Ecuador)
- Biosphere Reserves as Laboratories for Sustainable Development: The Case of Vietnam
  NGUYEN, Hoang Tri (Center for Environmental Research Education, Hanoi University of Education, Vietnam)
- Ngaremeduu Biosphere Reserve, Palau
  RIDEP-MORRIS, Alma (Ministry of Resources and Development, Palau)
- Linking Conservation Biodiversity and Culture Diversity at Komodo National Park, Indonesia
  SITORUS, Tamen (Komodo National Park, Indonesia)
- The Future of Traditional Culture: Preservation and Transmission of the Performing Arts and Cultural Landscape on Taketomi Island, Okinawa, Japan
  UESEDO Yoshinori (Kihoin Folklore Museum, Taketomi Island) and YUMOTO Takakazu (RIHN)
- Sustainability Concerns on Iriomote Island, Japan
  TAKASO Tokushiro (RIHN)
- Discussant
  NAGASHIMA Shunsuke (Kagoshima University Research Center for the Pacific Islands)

<23 October, 2008>

Session 3　Island Development in Local and Global Contexts

Chair: NAWATA Hiroshi, RIHN

- Multi-Ethnic Co-existence in Swahili Society: Multiple Ecological Sea Zones and Two Fishing Cultures in Kilwa Island, Tanzania
  NAKAMURA Ryo (RIHN)
- Managing Environmental Diversity for Sustainable Human Communities: Lessons from East Maui, Hawai'i
  CUSICK, John (Environmental Center, University of Hawaii at Manoa, USA)
- A Tikopia in the Global Era: Using Mediation to Empower Coffee Growing Communities in East Timor
  ABE Ken-ichi (RIHN)
- SIDS Version 2.0: A Fresh Consideration of Development Strategies for Smaller Island States and Territories
  BALDACCHINO, Godfrey (Island Studies Programme, University of Prince Edward Island, Canada)
- Discussant: NILES, Daniel (RIHN)

Session 4　Discussion and Conclusion

Chair: SHIRAIWA Takayuki (RIHN)

- Closing Keynote: IWATSUKI Kunio (The Museum of Nature and Human Activities, Hyogo)
- Concluding Comment: WATANABE Tsugihiro (RIHN)
- Symposium Closing: AKIMICHI Tomoya (RIHN)
- BUSINESS MEETING: Moderator NILES, Daniel (RIHN)

2. RIHN Forum

"What are global environmental problems?" "What are integrated global environmental studies?" "What will be the outcomes of such studies?" "What is the future of global environmental problems?" "Will it be possible to solve such problems?"

The RIHN Forum is intended to help us to address such fundamental questions and to animate discussion of up-to-date environmental topics. The seventh forum was held in fiscal 2008 as below.

The 7th RIHN Forum

Date: 5 July, 2008

Theme: Global Environmental Problems: Our Responsibilities toward Unseen People and Unborn Generations

Venue: Kyoto International Conference Center

3. Public Seminar

In order to present RIHN research activity in a manner that accessible to the general public, since November 2004, RIHN has offered public lectures. Seven seminars were held in 2008 at the RIHN lecture hall and the Heartpia Kyoto.

RIHN staff offer accessible explanations of global environmental problems, and the Public Seminars have stimulated engrossing discussions of contemporary environmental concerns.

The 25th Public Seminar	18 April, 2008 Nature and Environmental Disruption in Tropical Forest in Malaysia and Grassland in Mongolia. SAKAI Shoko (Associate Professor, RIHN), FUJITA Noboru (Assistant Professor, Center for Ecological Research, Kyoto University), YAMAMURA Norio (Professor, RIHN)

The 26th Public Seminar 16 May, 2008
Global Environmental Change and Health: How should we change our lifestyles?
MOJI Kazuhiko (Professor, RIHN) and OKUMIYA Kiyohito (Associate Professor, RIHN)

The 27th Public Seminar 19 September, 2008
Whaling Eco-Politics: A new horizon of human interactions with wildlife in the 21st century
HOSHIKAWA Jun (Executive Director, Greenpeace Japan) and AKIMICHI Tomoya (Deputy Director-General, Professor, RIHN)

The 28th Public Seminar 17 October, 2008
Dendrochronology – From the past to the future
MITSUTANI Takumi (Visiting Professor, RIHN) and SATO Yo-Ichiro (Professor, RIHN)

The 29th Public Seminar 21 November, 2008
People in Siberia's extremely cold region and global warming
INOUE Gen (Professor, RIHN) and TAKAKURA Hiroki (Associate Professor, Center for Northeast Asian Studies, Tohoku University)

The 30th Public Seminar 23 January, 2009
From "里山・里海" to "Satoyama, Satoumi"
MCDONALD, Anne (Director, USU-IAS Operating Unit Ishikawa/Kanazawa) and ABE Ken-ichi (Professor, RIHN)

The 31th Public Seminar 13 March, 2009
Antarctic Research and the Global Environment
NAKAWO Masayoshi (Professor, RIHN), SAITO Kiyoaki (Professor, RIHN) and SHIRAIWA Takayuki (Professor, RIHN)

4. RIHN Area Seminar

The RIHN Area Seminars offer an opportunity for RIHN research staff to gather with regional intellectuals and local citizens to consider problems related to the environment and culture of each area of Japan. The first seminar was held in 2005. In fiscal year 2008, two seminars were held as fellows.

The 4th RIHN Area Seminar

"Strategies to Avoid Natural Disaster: The History of Environment-Agriculture Interactions at the Ikeshima Fukumanji Site"
Date: 8 November, 2008
Venue: Osaka Prefectural Museum of Yayoi Culture (Izumi City, Osaka)

The 5th RIHN Area Seminar (Joint Plan with Faculty of Tourism Sciences and Industrial Management, University of the Ryukyus)

"For the Better Human Life in Yambaru: Conservation of Nature, Culture and Landscape and the Role of Tourism"
Date: 13-14 February, 2009
Venue: Nago Civic Hall (Nago City, Okinawa), Hiji Community Center (Kunigami Village, Okinawa)

5. RIHN Annual Open Meeting

Each December, RIHN research and office staff and outside research collaborators gather to review the year's

progress. All project leaders present their research findings and accomplishments and receive questions from the floor. Attracting over 500 attendees in its three-day duration, the annual meeting generates dialogue between RIHN researchers and improves general awareness of RIHN's progress and evolution within the larger fields of environmental research.

Date: 10-12 December, 2008
Venue: Co-op inn Kyoto

6. RIHN Seminars

RIHN Seminars are invited talks by esteemed Japanese or foreign researchers. The seminars provide opportunities for RIHN scientists to learn of the latest topics and research directions in a variety of fields; they also often are a first step toward future research collaborations between RIHN researchers and those of other institutions. Seminars are held several times a year.

The 32th	29 September, 2008 The Evolution of Scientific Research and Science Magazine JASNY, Barbara R. (Deputy Editor for Commentary, Science/AAAS)
The 33th	28 October, 2008 Satoyama woodlands in Japan and outlands in Europe - a historical perspective of traditional farming landscapes BERGLUND, Björn E. (Department of Geology/Quaternary Geology, GeoBiosphere Science Centre, Lund University Sweden)
The 34th	16 March, 2009 The Global Precipitation Climatology Centre (GPCC)- Raingauge based precipitation analyses for the land areas of the Earth in support of climate research and water resources management FUCHS, Tobias (Director, Global Precipitation Climatology Centre, Germany)
The 35th	26 March, 2009 Constructing Sustainability Studies TAKEUCHI Kazuhiko (Vice-Rector, United Nations University, Professor, Laboratory of Landscape Ecology and Planning, Department of Ecosystem Studies)

7. Lunchtime Meetings (Danwakai)

Lunchtime meetings allow all RIHN research staff, including visiting professors, part-time researchers, foreign researchers and so on, to freely present their individual research to their colleagues in an informal and supportive forum. As these meetings promote creative thinking and constructive debates, they are held on a biweekly basis.

May 2008-March 2009

No.125	20 May, 2008 ISRR: Institute of Strategic Rural Reorganization HAYASHI Naoki (Project Researcher)
No.126	3 June, 2008 Efforts of field medicine: Go out from hospitals to see patients in places to live SAKAMOTO Ryota, KOSAKA Yasuyuki (Project Researchers)
No.127	17 June, 2008 Past and Present : Futurability in Archaeology

NAKAMURA Oki (Project Researcher)

No.128 1 July, 2008
The Position of the Land-Use and Land-Cover Change Study in an Area Studies / Environmental Issue Research
TOJO Bunpei (Project Researcher)

No.129 15 July, 2008
Study on landwater mass variation using GRACE satellite gravity data
YAMAMOTO Keiko (Project Researcher)

No.130 29 July, 2008
The Beginning and Development of the Tea Culture in Japan
KIMURA Emi (Project Researcher)

No.131 2 September, 2008
Development of use of animal resource -Identification of origin offaunal remains by stable isotope analysis-
ISHIMARU Eriko (Project Researcher)

No.132 16 September, 2008
Biological invasions and infectious diseases
UCHII Kimiko (Project Researcher)

No.133 30 September, 2008
Seasonal variations of temperature inversion layers in the lower troposphere over the Indochina Peninsula
NODZU Masahito (Senior Project Researcher)

No.134 7 October, 2008
History of Infectious Disease Prevention in Japanese Treaty-ports: Yokohama as Modern City?
ICHIKAWA Tomo (Project Researcher)

No.135 29 October, 2008
Cashmere as a “cash crop” in the Mongolian pastoral nomadism and its distribution
MAEKAWA Ai (Project Researcher)

No.136 4 November, 2008
A complex relationship between vulnerability and resilience
KUME Takashi (Senior Project Research)

No.137 18 November, 2008
The Groundwater that connects land and ocean
YASUMOTO Jun (Project Researcher)

No.138 2 December, 2008
Simulation of evolutionary process of tree shape using Cubic Module Model
HASEGAWA Shigeaki (Senior Project Researcher)

No.139 20 January, 2009
Recent glacier changes and glacier lake hazards in Central Asian mountains
NARAMA Chiyuki (Project Researcher)

No.140 3 February, 2009
The effect of heat island phenomenon on urban environment
SHIRAKI Yohei (Project Researcher)

No.141 17 February, 2009
What is icecore? - exploring materials in stratosphere

YASUNARI Teppei (Project Researcher)

No. 142 3 March, 2009
Detecting flood deposits
SAITO Yu (Technician)

No. 143 17 March, 2009
On cuneiform documents
MORI Wakaha (Senior Project Researcher)

8. Publications

8-1. RIHN Series

These are books introducing RIHN's research results to the general public. The following title was published in fiscal year 2008:

The Futurability of Water and Humankind: Looming Water Crisis. Edited by RIHN. Showado, March 2009 (in Japanese).

8-2. RIHN News: Humanity & Nature Newsletter

This periodical communicates RIHN identity and latest news to specific research communities. The newsletter is published in an A4 format with all-color, easy-to read content. Issues 13-18 were published in fiscal year 2008. In 2008, the editorial office was enhanced and the format and content of newsletter have been improved.

9. Press Conference

RIHN periodically holds official press conferences in order to release information on its academic activities, research projects, symposia, publications and latest environmental findings. As a public institution with a public mandate, such activities provide an important link between RIHN and the citizenry. Four press conferences were held in fiscal 2008.

Institutional and External Joint Research

An Integrative Study on Water and People in Humid Asia

Leader: AKIMICHI Tomoya (RIHN)

Under the general theme of "Interdisciplinary Research on Exchange between Japan and Eurasia" of the National Institutes for the Humanities (NIHU), this research aims to explore human's interactions with water in humid Asia where people have experienced both benefits and disasters caused by water over a long period of time. Particularly, we examine history, culture, local knowledge and practices, and cosmology borne in the interactions between humans and water, and challenge to synthesize a theory on water and people in Asia in the human history.

Major research members include staffs of Research Institute for Humanity and Nature (RIHN), National Museum of Ethnology (NME), National Museum of Japanese History (NMJH), International Research Center for Japanese Studies (IRCJS), and National Institute of Japanese Literature (NIJL), all belong to the NIHU, and those from National, Public and Private Universities in Japan.

1. Joint Research Meeting

The first meeting

Date: 2008.6.27

Venue: RIHN

1. "Dam problems among the global citizens: Report on Narmada" ABE Ken-ichi (RIHN)
2. Research progress report by HARA Shoichiro (Kyoto University)
3. Report in Fiscal 2007 by AIDA Mitsuru (NIJL)
4. "'Sacred water' among the mountain societies in Southeast Asia –Lahfu's purification rites using the water" SHIMIZU Ikuro (Daido Institute of Technology)
5. About publishing the third volume of "Water and People" by AKIMICHI Tomoya (RIHN)
6. About World Water Forum (Turkey, March 2009) ABE Ken-ichi (RIHN)
7. Panel discussion

2. Symposia

①Ministry of Education, Culture, Sports, Science and Technology, Institutional and external joint research with National Institutes for the Humanities, "Water and People" Symposium

Date: 2008.9.15

Venue: Saijo city synthesis culture hall (Saijo, Ehime)

"Think about our relationship with water –save the tasty water in Saijo for the future-"

1. "Thinking about the relationship between water and people" AKIMICHI Tomoya (RIHN)
2. "Global groundwater problems" TANIGUCHI Makoto (RIHN)
3. "Study the tasty water in Saijo scientifically" NAKANO Takanori (RIHN)
4. "Water and the life in Asia" ABE Ken-ichi (RIHN)
5. "History of people and water in Saijo" SASAKI Takatsugu (Head, Life Environment Division, Saijo city)
6. Panel discussion "To protect the tasty underground water in Saijo"

Chair: AKIMICHI Tomoya (RIHN)

Panelists: TANIGUCHI Makoto (RIHN), NAKANO Takanori (RIHN), ABE Ken-ichi (RIHN), SASAKI Takatsugu (Head, Life Environment Division,Saijo city)

②University reform symposium

Date: 2008.11.15

Venue: Chokai shizen bunka kan "YURARI"

"Area and the livelihoods seen in Mt. Chokaizan area"

1. "From Jomon to Heisei period" AKIMICHI Tomoya (RIHN)
2. "Geology and spring water in Mt. Chokaizan" HOSONO Takahiro (Akita University)
3. "Water linking geology and the living things in Chokai" NAKANO Takanori (RIHN)
4. "Spring water in Chokai" TANIGUCHI Makoto (RIHN)
5. "Various kinds of plants in Chokai" SAITO Takashi (Editorial member of the history of Yuza)
6. "Spring water and living things" MORI Seiichi (Gifu Keizai University)
7. "Rice cropping and the spring water conservation" SATO Hideaki (JA Shonai Midori)
8. "Even Sandfish and Crassostrea nippona need the spring water"
   SUGIYAMA Hideki (Akita Prefectural Institute for Fisheries and Fisheries Management)
9. Panel discussion "To save the spring water in Chokai for the future"
   Chair: AKIMICHI Tomoya (RIHN), MORI Seiichi (Gifu Keizai University)
   Panelists: ONODERA Kiichiro (Yuza town mayor), KATO Yuetsu (Mansakuno Kai), GO Naohiro (Tohoku University of Community Service and Science), SUGIYAMA Hideki (Akita Prefectural Institute for Fisheries and Fisheries Management), HATANAKA Hiroyuki (Nature part counselor), HONMA Masaaki Fishesin Gakkogawa river publisher)

③Institutional and external joint research, "Water and People" Symposium

Date: 2009.2.11

Venue: Hitotsubashi Conference Hall

"Water and civilization"

1. "Water and civilization" AKIMICHI Tomoya (RIHN)
2. "Civilization and water in Thailand – Implication of canal, groundwater, and people"
   TANIGUCHI Makoto (RIHN)
3. "Is the Indus civilization really the river civilization?" OSADA Toshiki (RIHN)
4. "Water and ancient Egyptian civilization" TAKAMIYA Izumi (Kinki University)
5. "The story of water in West African Savanna" TAKEZAWA Shoichiro (NME)
6. "Water and Maya-Aztec civilization" YASUGI Yoshiho (NME)
7. Panel discussion "Water and civilization of the 21st century"
   Chair: AKIMICHI Tomoya (RIHN)
   Panelists: TANIGUCHI Makoto (RIHN), OSADA Toshiki (RIHN), TAKAMIYA Izumi (Kinki University), TAKEZAWA Shoichiro (NME), YASUGI Yoshiho (NME)

3. Publications

[Research Journal]

2008.10 Water and People. Vol.5. Special Issue: Water and scenery - the beloved water scenery
Publisher: Showado
Authors: SHIRAHATA Yozaburo, TABATA Minao, OZAKI Hiromasa, HAYAKAWA Monta, SUZUKI Jun, KAMIGAITO Ken'ichi, ABE Ken-ichi, WATANABE Tsugihiro, MORI Seiichi, KUBOTA Jumpei

2009.3 Water and People. Vol.6. Special Issue: Water and animals - Unforeseen relationship with humans)
Publisher: Showado

Authors: IKEYA Kazunobu, SENDA Minoru, UNE Yutaka, KOJIMA Junichi, EDO Hideo, OHASHI Atsuko, NAKAI Senjo, NOJI Tsuneari, ISHIKAWA Satoshi, IKEGUCHI Akiko, SASAKI Ken, TANIGUCHI Makoto

4. Others

2009.3.16-22 The 5th World Water Forum (Istanbul, Turkey)

1. Panel exhibition at Japan pavilion
2. Topic 6.5 “Water and culture”
   Organize of Session 6.5.3
   “Fostering Socio-cultural Perspectives in Water Sciences and Management : Identifying Bridges and Barriers”
   Date: March 20 Venue: EYÜP, Sutluce Organizer: RIHN, ISKI, and TURKKAD
   Chair: ABE Ken-ichi (RIHN), KUBOTA Jumpei (RIHN)
   Presentation on Session 6.5.3
   “Regulating unknown common resources:community-science collaboration around groundwater”
   Presenter: TANIGUCHI Makoto (RIHN), SASAKI Takatsugu (Head, Life Environment Division, Saijo city)

Individual Achievements

A	ABE Ken-ichi	Professor
	AKIMICHI Tomoya	Deputy Director-General, Professor
B	BAUSCH, Ilona Renate	Visiting Research Fellow
C	CAI, Guoxi	Project Researcher
	Chengzhi (Kicengge)	Senior Project Researcher
E	ENDO Takahiro	Assistant Professor
	EVANS, Tom	Visiting Research Fellow
H	HANAMATSU Yasunori	Project Researcher
	HAYASAKA Tadahiro	Professor
	HONJO Mie	Project Researcher
	HOSOYA Aoi	Project Researcher
I	ICHIJO Tomoaki	Project Researcher
	ICHIKAWA Masahiro	Associate Professor
	ISHIMARU Eriko	Project Researcher
	ISHIMOTO Yudai	Project Researcher
	ISHIYAMA Shun	Project Researcher
K	KATO Yuzo	Assistant Professor
	KATSUYAMA Masanori	Senior Project Researcher
	KAWABATA Zen'ichiro	Professor
	KAWAMOTO Haruko	Project Researcher
	KAWASE Daiju	Project Researcher
	KIMOTO Yukitoshi	Senior Project Researcher
	KINOSHITA Tetsuya	Professor
	KISHIMOTO Keiko	Project Researcher
	KOHMATSU Yukihiro	Assistant Professor
	KOIZUMI Miyako	Project Researcher
	KUBOTA Jumpei	Associate Professor
	KURATA Takashi	Senior Project Researcher
L	LEKPRICHAKUL, Thamana	Senior Project Researcher
M	MAEKAWA Ai	Project Researcher
	MAKIBAYASHI Keisuke	Project Researcher
	MINAMOTO Toshifumi	Senior Project Researcher
	MIYAZAKI Hidetoshi	Project Researcher
	MOJI Kazuhiko	Professor
	MORI Wakaha	Senior Project Researcher
	MURAKAMI Yumiko	Project Researcher
	MURAMATSU Shin	Professor
N	NAITO Daisuke	Visiting Researcher
	NAKAGAWA Masato	Project Researcher
	NAKAMURA Oki	Project Researcher
	NAKAMURA Ryo	Project Researcher
	NAKANO Takanori	Professor
	NARAMA Chiyuki	Project Researcher
	NAWATA Hiroshi	Associate Professor
	NODZU Masato	Senior Project Researcher
O	OKUMIYA Kiyohito	Associate Professor
	ONISHI Akio	Visiting Researcher
	ONISHI Takeo	Senior Project Researcher
	OSADA Toshiki	Professor
P	POPOV, Alexander Nikolaevich	Visiting Research Fellow

	POTTENYAVIDA, Ajithprasad	Visiting Research Fellow
S	SAEKI Tazu	Assistant Professor
	SAITO Kiyoaki	Professor
	SAKAI Shoko	Visiting Researcher
	SAKAMOTO Ryota	Project Researcher
	SASAKI Naoko	Project Researcher
	SEKINO Tatsuki	Associate Professor
	SEO Akihiro	Project Researcher
	SHIRAIWA Takayuki	Associate Professor
	SHIRAKI Yohei	Project Researcher
T	TACHIMOTO Narifumi	Director-General
	TAKASO Tokushiro	Professor
	TANIGUCHI Makoto	Professor
	TERAMURA Hirofumi	Project Researcher
	TOJO Bumpei	Project Researcher
	TSUJI Takashi	Project Researcher
	TSUJINO Riyou	Project Researcher
U	UCHII Kimiko	Project Researcher
	UCHIYAMA Junzo	Associate Professor
	UESUGI Akinori	Project Researcher
	UMETSU Chieko	Associate Professor
W	WATANABE Mitsuko	Project Researcher
	WATANABE Tsugihiro	Professor
Y	YAMAMOTO Keiko	Project Researcher
	YAMAMURA Norio	Professor
	YAMANAKA Hiroki	Project Researcher
	YASUMOTO Jun	Project Researcher
	YASUNARI Teppei	Project Researcher
	YATAGAI Akiyo	Assisitant Professor
	YUMOTO Takakazu	Professor
Z	ZEBALLOS VELARDE, Carlos Renzo	Project Researcher
	ZHENG, Yuejun	Associate Professor

※Job titles listed above are as of March 31st, 2009.
(For those who retired in the middle of fiscal 2008, the job titles of that time are listed.)

ABE, Ken-ichi

Professor

Born in 1958.

[Academic Career]

Department of Tropical Agriculture, Graduate School of Agriculture, Kyoto University, D. Course(1989)
Department of Agriculture Biology, Faculty of Agriculture, Kyoto University(1984)

[Professional Career]

Professor, Research Institute for Humanity and Nature(2008)
Associate Professor, Center for Integrated Area Studies, Kyoto University(2006)
Adjunct Associate Professor, School of Advanced Sciences, The Graduate University of Advanced Studies(2000)
Associate Professor, Japan Center for Area Studies, National Museum of Ethnology(1999)
Assistant Professor, Japan Center for Area Studies, National Museum of Ethnology(1996)
Assistant Professor, Center for Southeast Asian Studies, Kyoto University(1989)

[Higher Degrees]

M. Agr. (Kyoto University, 1987)

[Fields of Specialization]

Area Study
Environmental Anthropology

[Academic Society Memberships]

The Japan Society of Tropical Ecology
The International Society of Volunteer Studies in Japan
The Japan Society for Southeast Asian Studies
The Society of the Biosophia Studies

—Achievements—

[Books]

[Chapters/Sections]

・ABE Ken-ichi May,2008 Alchemy and border of forest: Unnan and southeast Asian continent section mountain region (Mori no Renkinjutsu to Kokkyou: Unnan to Tounanajiatairikubusanchi) . Akimichi Tomoya・Ichikawa Masahiro (ed.) Witnessing Forest in Southeast Asia: A Report from Asian Tropical and Monsoon Forests(Tonan ajia no mori ni naniga okotteiruka). Jinbun shoin, Fushimiku, Kyoto, pp.153-176. (in Japanese)

[Editing]

[Editing / Co-editing]

・James Nickum (ed.) Mar,2009 GOOD EARTHS: Regional and Historical Insight into China's Environment. Kyoto University Press, sakyo-ku, Kyoto, 318pp.

[Research Presentations]

[Oral Presentation]

・ABE Ken-ichi Ideology over Ecology: anticipating ecological degradation in independent Kazakhstan. Chinese Southwestern Culture & Environmental Research Forum, Mar 26,2009, China Three Gorges

University , Yichang, Hubei province, P.R. China.

・ ABE Ken-ichi Calm before the storm: the legacy of ideology-driven agricultual development in kazakhstan. Reconceptualizing Cultural and Environmental Change in Central Asia: An Historical Perspective on the Future, Feb 01,2009-Feb 02,2009, Lecture Hall, RIHN Kyoto.

・ABE Ken-ichi Japanese Food Life: a convenience store. 3rd Symposium on Chinese Environmental Issues: International Symposium on Food and Environmental Problems, Nov 01,2008, Jiangsu Academy of Agricultural Sciences Nanjing, China.

・ABE Ken-ichi A Tikopia in the Global Era: Using Mediation to Empower Coffee Growing Communities in East Timor. 3rd RIHN International Symposium: The Futurability of Islands: Beyond Endemism and Vulnerability, Oct 22,2008-Oct 23,2008, Lecture Hall, RIHN Kyoto.

・ABE Ken-ichi Towards Sustainable Land-use in Tropical Asia. Scientific Committee, Apr 23,2008-Apr 26,2008, Hilton Hotel, Kuching, Sarawak, Malaysia.

[Invited Lecture / Honoronary Lecture / Panelist]

・ ABE Ken-ichi Fostering Socio-cultural Perspectives in Water Sciences and Management: Identifying Bridges and Barriers. The 5th World Water Forum ISTANBUL 2009, Mar 17,2009-Mar 22,2009, .

・ ABE Ken-ichi Assessing 30 Years' Reform and Opening-up in China . NIHU Network of Contemporary Chinese Studies 2nd Symposium, Feb 07,2009-Feb 08,2009, Waseda University, Tokyo. (in Japanese)

・ABE Ken-ichi From 里山・里海 to SATOYAMA／SATOUMI. 30th RIHN Public Seminar, Jan 23,2009, Heart Pia Kyoto, Kamigyo-ku Kyoto. (in Japanese)

・ABE Ken-ichi Beyond the "Green Revolutions": Exploring the Links between Food and Security. The Fourth Afrasian International Symposium: The Question of Poverty and Development in Conflict and Conflict Resolution, Nov 15,2008-Nov 16,2008, Ryukoku University, Kyoto.

・ABE Ken-ichi Connecting: Environmental preservation type coffee cultivation in East timor. 7th RIHN Forum: Global Environmental Problems: Our Responsibilities toward Unseen People and Unborn Generations, Jul 05,2008, yoto International Conference Center (ICC Kyoto) , Sakyo-ku, Kyoto. (in Japanese)

AKIMICHI, Tomoya

Deputy Director-General, Professor

Born in 1946.

[Academic Career]

Department of Anthropology, Faculty of Science, The University of Tokyo, D. Course (1977)

Department of Anthropology, Faculty of Science, The University of Tokyo, M. Course (1974)

Department of Zoology, Faculty of Science, Kyoto University (1968)

[Professional Career]

Professor, Research Institute for Humanity and Nature (2002)

Head of Department, Department of Cultural Research, National Museum of Ethnology (1999)

Adjunct Professor, School of Advanced Sciences, The Graduate University of Advanced Studies (1998)

Professor, Department of Cultural Research, National Museum of Ethnology (1995)

Professor, 1st Research Department, National Museum of Ethnology (1992)

Adjunct Associate Professor, Faculty of Cultural Research, The Graduate University of Advanced Studies (1988)

Associate Professor, 1st Research Department, National Museum of Ethnology (1987)
Assistant Professor, 2nd Research Department, National Museum of Ethnology (1977)

[Higher Degrees]

D.Sc. (The University of Tokyo, 1986), M.Sc. (The University of Tokyo, 1974)

[Fields of Specialization]

Ecological Anthropology, Ethno-Biology

[Academic Society Memberships]

The Society of the Bio-Sophia Studies, The Society of Human and Animal Relations, The Society of the Environ-mental Sociology, The Society of Ecological Anthropology, The Japanese Society of Coral Reef Studies, The So-ciety of Tropical Ecology

[Awards]

Daido-Seimei Chiiki-Kenkyu Shorei-Sho in 1998 (Award for Promotion of Area Studies by Daido Life Insurance Company in 1998)

—Achievements—

[Books]

[Authored/Co-authored]

・Akimichi Tomoya Jan,2009 *Who owns the Whales? (Kujira wa dareno monoka)*. Chikuma Shinsho. Chikuma Shobo, Taitoku, Tokyo, 231pp. (in Japanese)

[Translations / Joint Translations]

・Akimichi Tomoya Jul,2008 The Spread of Agriculture into Southeast Asia and Oceania(Higashi ajia, oseania eno noko kakusan). Osada Toshiki, Sato Yoichiro (ed.) *Noko Kigen no Jinruishi*. Kyoto University Press, Sakyoku, Kyoto, pp.199-255. (in Japanese) Translation of Peter Bellwood *First Farmers: The Origins of Agricultural Societies*. Blackwell Publishing , pp.128-145.

[Editing]

[Editing / Co-editing]

・SEEDer Editorial Board(Chief Editor: Akimichi Tomoya) (ed.) Mar,2009 *SEEDer*. Showado, Sakyo, Kyoto, 64pp. (in Japanese)

[Papers]

[Original Articles]

・Akimichi Tomoya Mar,2009 Who owns Water? : For Water Governance and Ecological History(Mizu wa dareno monoka: Mizu no Kyochi to Weitaishi no Kochiku ni mukete). Research Institute for Humanity and Nature (ed.) *Futurability of Water and People: Against Water Crisis (Mizu to hito no miraikanosei: Shinobiyori mizu kiki)*. Chikyuken sosho. Showado, Sakyoku, Kyoto, pp.143-176. (in Japanese)

・Akimichi Tomoya Mar,2009 The Malacca-Singapore Regional Community: Claiming New Property Regime in the Malacca Singapore Straits. Institute for Transport Policy Studies (ed.) *Cooperation Mechanism Verification for Malacca-Singapore Straits(Marakka singaporu kaikyo no kyoryoku mekanizumu no kensho-kaikyo riyo gyokai to kigyo no shakaiteki sekinin(CSR)no kanten kara)*. Institute for Transport Policy Studies, Minatoku, Tokyo, pp.113-122.

・Akimichi Tomoya Feb,2009 (Fu eiyoka to hukugoteki kankyo mondai-chugoku unnansho jikai no jirei). Nakawo Masayoshi, Qian Xin, Zheng Yuejun (ed.) *Water Environmental Problem in China: Water Deplete by Development(Chugoku no Mizu kankyo mondai: Kaihatsu no motarasu mizubusoku)*. Bensei Shuppan, Chiyodaku, Tokyo, pp.129-142. (in Japanese)

・Akimichi Tomoya Nov,2008 Global Commons of Ocean Creatures(Kaiyo seibutsu no global commons). Ikeya

Kazunobu, Hayashi Yoshihiro (ed.) *Wild Life and Environment(Yasei to Kankyo)*. (Hito to Dobutsu no Kankeigaku), 4. Iwanami Shoten, Chiyodaku, Tokyo, pp.218-242. (in Japanese)

・Akimichi Tomoya Oct,2008 Changing Property Regimes in Aquatic Environments of the Lower Mekong Basin in Southern Laos and Northern Thailand. *TROPICS* 17(4) :285-294.(reviewed).

・Akimichi Tomoya Sep,2008 Paddy field and Reservoir(Suiden to Tameike). Sato Yo-Ichiro (ed.) *Rice and Fish(Kome to Sakana)*. Shoku no Bunka Forum, 26. Domesu Shuppan, Teshimaku, Tokyo, pp.20-40. (in Japanese)

・Akimichi Tomoya Jun,2008 Exploring Ethnic Knowledge(Minzokuchi wo saguru). *Ecosophia* 20 :9-15.

・ Akimichi Tomoya Jun,2008 Fishery(Gyogyo). Momoki Shiro, et al. (ed.) *Cyclopedia of Southeast Asia(Tonan ajia wo shiru jiten)*. Heibonsha, Bunkyoku, Tokyo, pp.119-121.

・Akimichi Tomoya Jun,2008 Declaration for Immortal Ecological Knowledge(Seitaichi no Fumetsu sengen). *Ecosophia* 20 :1.

・Akimichi Tomoya May,2008 Coral Trade and Tibetan Culture(Sango Koeki to chibetto bunka). Iwasaki Nozomu (ed.) *Coral Ethnography: Science, Culture and History of Jewel Coral(Sango no bunkashi: Hoseki Sango wo meguru Kagaku, Bunka, Rekishi)*. Tokai University Press, Hatano, Kanagawa, pp.181-196. (in Japanese)

・Akimichi Tomoya May,2008 The Importance of Ordinary Creature. The Coalition of Local Government for Environmental Initiative(Kankyo Jichitai Kaigi) (ed.) *Yuza Conference (Yuza Kaigi)*. The Coalition of Local Government for Envitonmental Initiative(Kankyo Jichitai Kaigi), Chiyodaku, Tokyo, pp.8-10.

[Review Articles]

・ Akimichi Tomoya Mar,2009 Meaning of creating a place to discuss for Information on Region and Environment (Chiiki to Kankyo no Joho nituiteno giron no ba wo tachiageru kotono imi: Atarashii gakuchi no sousei ni mukete). *SEEDer (chiiki kankyo joho kara kangaeru chikyu no mirai)* 0 :20-23.

・ Akimichi Tomoya Mar,2009 Ecosystem and Economical Network (Seitaikei to Keizai Network). Onishi Fumihide (ed.) *(GIS de manabu nihon no hito, shizenkei)*. Kobundo, Chiyodaku, Tokyo, pp.42.

・Akimichi Tomoya Mar,2009 Verifying the Ocean and Islands Drama:To Integrate the Information (Umi to shima no drama wo kensho suru: umi joho no togo ni mukete). Akimichi Tomoya and Yamagata Toshio (ed.) *For Symbiosis of People and Ocean(Hito to Kaiyo no Kyosei wo mezashite: 150 nin no opinion IV)*. Ocean Policy Research Foundation (Kaiyo Seisaku Kenkyu Zaidan), Minatoku, Tokyo, pp.148-149.

[Research Presentations]

[Oral Presentation]

・ Akimichi Tomoya "Themes and Overview of the Eco-Historical Study". Cultural and Environmental High-level Forum of China(Kokyu Gakujutsu Rondan), Mar 30,2009, Sanxia University.

・ Akimichi Tomoya "Water as a Super-Medium to Link Nature with Culture". 'Culture, History and Sustainability' session at the 5th World Water Forum, Mar 18,2009, Citizens House of Water, Istanbul, Turkey.organized by UNESCO-IHP.

・ Akimichi Tomoya Objectives of the Workshop . International Workshop 'Regional Public Sphere and Environment in Slavic Eurasia and Japan', Feb 28,2009-Mar 01,2009, Lecture Hall, Research Insitute for Humanity and Nature.

・ Akimichi Tomoya "Possibility of Commons of ecology (Eko komonzu no Kanousei: jizoku to hokai no hazama)". Global COE Program 'In Search of Sustainable Humanosphre in Asia and Africa' Society, Feb 16,2009, Center for Southeast Asian Studies, Kyoto University. (in Japanese)

・ Akimichi Tomoya Objectives "Water and Civilization" and Chair for Panel Discussion "Water and Civilization of the 21st century". Water and People Symposium 'Water and Civilization', Feb 11,2009, Hitotsubashi Memorial Hall, Center for National University Finance anc Management, Chiyodaku, Tokyo. (in Japanese)

・Akimichi Tomoya "Message from Dust and sandstorm (Tabi suru Kosa karano messseji)". Asahi Universities partners symposium 'Dust and Sandstorm, Trip of Transition (Kosa, Henka no tabi: Noto wa taiki kansoku no saizensen)', Nov 24,2008, Ishikawa Prefectural Center for Women, Kanazawa.

・Akimichi Tomoya "Utilization of Jewel Coral in China and Tibet (Chugoku, chibeto ni okeru hoseki sango no riyou)". 'Ethnography of Jewel Coral,' The Society of Biosophia Studies (Hoseki sango no bunkashi, Ikimono bunkashi gakkai), Nov 22,2008, Kochi University. (in Japanese)

・Akimichi Tomoya Objectives "From Jomon to Heisei Era" (Jomon kara Heisei made) and Chiar of Panel Discussion. (Chokaizan kara kangaeru Chiiki to Kurashi), Nov 15,2008, Yurari, Choaki Shizen Bunkakan, Yamagata Prefecture. (in Japanese)

・Akimichi Tomoya "Governance of Coastal Marine Resources and Common Property (Engan iki no suisan shigen kanri to koukyouzai)". (wagakuni ni okuru sougouteki na suisan shigen,gyogyo no kanri hosaku no arikata), Oct 20,2008, Conference Room, Queen's Forum, Yokohama minato mirai 21. (in Japanese) Organized by Fisheries Research Agency, Nataional Reserach Institute of Fisheries Science.

・Akimichi Tomoya "Whaling Eco-politics (Hogei ronso: shachi mo kujira)". 'Whaling Eco-Politics: A New Horizon of Human Interaction with Wildlife in the 21st century' The 27th RIHN Public Seminar, Sep 19,2008, Heartpia Kyoto.

・Akimichi Tomoya "Linkage of People and Water(Hito to mizu no tsunagari wo kangaeru)" and panel discussion (Saijo no oishii chikasui wo mamoru niha). Water and People Symposium (Mizu no tusnagari wo kangaeru: Furusato Saijo no oishii mizu wo mirai e), Sep 15,2008, Small Hall, Saijo-city sogobunkakaikan, Ehime. (in Japanese)

・Akimichi Tomoya "Objectives of the Stugy". Ecological History of Southern Asia (Tonan ajia no seitaishi kenkyukai), Jul 04,2008, Lecture Hall, Research Institute for Humanity and Nature. (in Japanese)

・Akimichi Tomoya Chiar, Panel Discussion "Global Environmental Problem and Japan"(Chikyu Kankyo Mondai to Nihon). Symposium (Sansensomoku no shiso: Chikyu kankyo mondai wo nihon bunka kara kangaeru), Jun 21,2008, Silk Hall(Kyoto Sangyo Kaikan), Kyoto. (in Japanese)

・Akimichi Tomoya "Depopulation and Wild Life(Kaso gensho to Yasei no Ikimono)". Dai 12 kai gakusei sozo kenkyu seminar, Oita University, Jun 02,2008, Seminar Room, Venture Business Laboratory, Oita University. (in Japanese)

・Akimichi Tomoya Keynote Speech "The Importance of Ordinary Creature(Tada no ikimono no taisetsu sa)". Dai 16 kai Kankyo jichitai kaigi, Yuza kaigi, zentaikai, May 28,2008, Chuo Kominkan, Yuza, Yamagata. (in Japanese)

・Akimichi Tomoya Keynote Speech "Eco-history and changing Life in Tropical Asia". The Asia-Pacific chapter of The Association for Tropical Biology and Conservation, 'Towards Sustainable Land-use in Tropical Asia', Apr 23,2008-Apr 26,2008, Hilton Kuching, Malaysia.

BAUSCH, Ilona Renate

Visiting Research Fellow

Born in 1969.

[Academic Career]

Department of East Asian Studies, Durham University, UK, Ph.D Course (2005)

Faculty of Humanities (Languages and Cultures of Japan), Leiden University (1994)

[Professional Career]

Visiting Research Fellow, RIHN (2008)
Lecturer, Faculty of Archaeology, Leiden University (2007)
Visiting Research Fellow, RIHN (2006)
Lecturer, the Department of Japanese and Korean Studies, Leiden University (2004)

[Higher Degrees]

Ph.D (Archaeology) (Durham University, 2005)

[Fields of Specialization]

Archaeology

—Achievements—

[Research Presentations]

[Oral Presentation]

- BAUSCH, Ilona Prehistoric Exchange and the Hokuriku Region. NEOMAP Landscape Workshop, Mar 12,2009-Mar 13,2009, RIHN. Research Institu for Humanity and Nature. Kyoto.
- BAUSCH, Ilona Jomon Material Culture, Exchange and Identity in Jomon Japan. ″Materiality, Languages and Identity ″ Workshop, organised by Prof. C. Damm & CAS (Centre for Advanced Study at the Norwegian Academy of Science & Letters), Sep 30,2008-Oct 03,2008, Oslo, Norway.
- BAUSCH, Ilona Changing Jomon landscape perception and use, from the perspective of jadeite exchange. “Prehistoric Landscape Shifts in the East Asian Inland Seas” Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

CAI, Guoxi

Project researcher

Born in 1970.

[Academic Career]

Graduate School of Biomedical Sciences, Nagasaki University, PH.D. course(2007)
Fujian Medical University,Bachelor of Medical Sciences(1993)

[Professional Career]

Project researcher,Research Institute for Humanity and Nature(2008)
Research fellow,Nagasaki University Institute of Tropical Medicine(2007)
Doctor-in-charge, Center for Disease Control and Prevention, Ningde city,China(2002)
Medical doctor, Center for Disease Control and Prevention, Ningde city,China(2000)

[Higher Degrees]

PH.D.(Nagasaki University,2007)

[Fields of Specialization]

Public health
International health

[Academic Society Memberships]

Japanese Society of Tropical Medicine
Chinese Academy of Science and Engineering in Japan

—Achievements—

[Papers]

[Original Articles]

・Zhang Z, Moji K, Cai GX, Ikemoto J, Kuroiwa C. 2008 Risk of sharps exposure among health science students in northeast China. . *BioScience Trends.* 2008 ;2((3)) :105-111.(reviewed).

Chengzhi(Kicengge)

Senior Project Researcher

Born in 1968.

[Academic Career]

Department of Oriental History, Graduat school of Letters, Kyoto University, D. Course (2003)

Department of Oriental History, Graduat school of Letters, Kyoto University, M. Course (2000)

Deparment of Chinese language literature, Ili Normal University, China(1990)

[Professional Career]

Docent, Kyoto University,(1997～1998)

Docent,Kyoto Women's University,(2000～2004)

Foreigner co investigator, Kyoto University(2004～2004)

JSPS Research Fellow,Research Institute for Humanity and Nature(2005

[Higher Degrees]

Litt. D.(Kyoto University, 2004)

Litt. M.(Kyoto University, 2000)

[Fields of Specialization]

Oriental History, History of Qing Empire, Manchu Philology

[Academic Society Memberships]

Tōyōshi Kenkyūkai(The Society of Oriental), Shigaku Kenkyūkai(The Society of Historical Research), Manzokushi kenkyūkai(The Japanese Association for Manchu and Qing studies)

—Achievements—

[Books]

[Authored/Co-authored]

・Chengzhi(Kicengge) Feb,2009 Daicing gurun to sono jidai: teikoku no keisei to hakki shakai(The Great Qing Empire and its historical background) [in Japanese]. The University of Nagoya Press, 1 Furo-cho, Chikusa-ku Nagoya, 464-0184, 632p. (in Japanese)

[Editing]

[Editing / Co-editing]

・ Kubota Jumpei And Kicengge, Inoue Mituyuki (ed.) Mar,2009 Ili kawa rūiki rekishi chiri ronshū－yūrashiya shinokubu kara no nagame(Historical and Geographical Studies of Ili River Basin: The View from Innermost Eurasia). Shokadoh Press, 146 Nishiojicho Kamigyo-ku Kyoto 602-8048, 315p (in Japanese)

[Research Presentations]

[Oral Presentation]

・Chengzhi(Kicengge) The Manchu Language “Of the Ula region Map”. New Perspectives on Geographic Space: International Symposiun on Historical Cartography, Nov 06,2008-Nov 07,2008, Taipei National Palace Museum. DOI:http://www.npm.gov.tw/hotnews/9711seminar/. (in Chinese)

ENDO Takahiro

Assistant Professor

Born in 1974.

[Academic Career]

Department of Political Science, Faculty of Law, Keio University, D. Course (2002)

Department of Political Science, Faculty of Law, Keio University, M. Course (1999)

Department of Political Science, Faculty of Law, Keio University (1997)

[Professional Career]

Assistant Professor, Research Institute for Humanity and Nature (2004)

Part-Time Lecturer, Department of Political Science, Faculty of Law, Keio University (2004)

[Higher Degrees]

Ph.D (Law) (Keio University, 2002)

Master (Law) (Keio University, 1999)

[Fields of Specialization]

Political Science

[Academic Society Memberships]

The Japan Public Choice Society

Japanese Political Science Association

Public Policy Studies Association

The Japanese Association of Law and Political Science

Japanese Association for Water Resources and Environment

Groundwater Resource Association of California

—Achievements—

[Books]

[Chapters/Sections]

・Mikiyasu Nakayama, Takahiro Endo 2008 Tigris-Euphrates River Basin. Kengo Sunada (ed.) Water Issues in Asian River Basin. Gihoudou, pp.126-146 (In Japanese).

・Takahiro Endo 2008 Governance of international river (1) Conflicts and Possibility of Cooperatrion on Euphurates River (in Japanese). Koichiro Kuraji (ed.) Water Governance. Toshindo, pp.126-142 (In Japanese).

[Papers]

[Original Articles]

・Takahiro Endo 2008 A Comparative Policy Analysis of Headwater Management . M. Taniguchi, Y. Fukushima, W.C. Burnett, M. Haigh and Y. Umezawa (ed.) From Headwaters to the Ocean: Hydrological Changes and

Watershed Management. (UK: Taylor & Francis Ltd), pp.131-135 .

[Research Presentations]

[Oral Presentation]

・Takahiro Endo ”Hard” Solutions and “Soft” Solutions: Institutional Response to Urban Water Problems. KRIHS and RIHN Joint International Symposium on Urban Sustainability in Asia: Urban Planning, Environment and Transportation, June 2008, Korea Research Institute for Human Settlements, Seoul,Korea.

EVANS, Tom

Visiting Research Fellow

[Academic Career]

University of North Carolina at Chapel Hill (1998)

Pre-Doctoral Trainee, Carolina Population Center(1998)

Virginia Polytechnic Institute (1989)

[Professional Career]

Co-Director, Center for the Study of Institutions, Population, and Environmental Change (CIPEC), Indiana University (2006-)

Associate Professor, Department of Geography, Indiana University(2005)

Associate Director, Center for the Study of Institutions, Population, and Environmental Change (CIPEC), Indiana University (2002)

Assistant Professor, Department of Geography, Indiana University (1999)

Post-Doctoral Fellow in GIS, Center for the Study of Institutions, Population, and Environmental Change (CIPEC), Indiana University(1998)

[Higher Degrees]

B.A. (Virginia Polytechnic Institute, 1989)

Ph.D.(University of North Carolina, 1998)

[Fields of Specialization]

Geography

—Achievements—

[Papers]

[Original Articles]

・Tucker CM, Randolph JC, Evans TP, Andersson KP, Persha L, and Green GM. 2008 An approach to assess relative degradation in dissimilar forests: Toward a comparative assessment of institutional outcomes. *Ecology and Society* 13(1).

・Rindfuss R, Entwisle B, Walsh SJ, An L, Badenoch N, Brown DG, Deadman P, Evans TP, Fox J, Geoghegan J, Gutmann M, Kelly M, Linderman M, Liu J, Malanson GP, Mena CF, Messina J, Moran E, Parker DC, Parton W, Prasartkul P, Robinson DT, Sawangdee Y, VanWey LK, and Verburg P. 2008 Land use change: Complexity and comparisons. *Journal of Land Use Science* 3(1) :1-10.

・Parker DC, Entwisle B, Rindfuss RR, VanWey LK, Manson SM, Moran E, An L, Deadman P, Evans TP, Linderman M, Mussavi SM, and Malanson G. 2008 Case studies, cross-site comparisons, and the challenge

of generalization: Comparing agent-based models of land-use change in frontier regions. *Journal of Land Use Science* 3(1) :41-72.

・Messina J, Evans T, Manson S, Shortridge AM, Deadman P, and Verburg P. 2008 Complex systems models and the management of error and uncertainty. *Journal of Land Use Science* 3(1) :11-25.

・Donnelly S, and Evans TP. 2008 Spatial patterns of ownership parcelization in south-central Indiana, 1928-1997. . *Landscape and Urban Planning* 84 :230-240.

・Evans TP, and Kelley H. 2008 Exploring historical dynamics of reforestation with an agent-based model for south-central Indiana. *Geoforum* 39(2) :819-832.

HANAMATSU, Yasunori

Project Researcher

Born in 1977.

[Academic Career]

Faculty of Law, Hokkaido University (2000)

Department of Public Law, School of Law, Hokkaido University, M.Course(2004)

Department of Public Law, School of Law, Hokkaido University, D.Course(2008)

[Professional Career]

Project Researcher, RIHN (2008)

[Higher Degrees]

Master (Law) (Hokkaido University) 2004

[Fields of Specialization]

Public International Law

[Academic Society Memberships]

Japanese Society of International Law

The International Human Rights Law Association

—Achievements—

[Research Presentations]

[Oral Presentation]

・HANAMATSU, Y. The “Giant” Fish-Breeding Forest as Global Environmental Public Goods. International Workshop “Regional Public Sphere and Environment in Slavic Eurasia and Japan”, Feb 28,2009-Mar 01,2009, RIHN, Kyoto, Japan.

HAYASAKA, Tadahiro

Professor

Born in 1959.

[Academic Career]

Tohoku University, B. Sc. (1982)

Tohoku University, M. Sc. (1984)
Tohoku University, Dr. Sc. (1988)

[Professional Career]

Post Doctoral Fellow, JSPS (1988)
Assistant Professor, Tohoku University (1990)
Associate Professor, Tohoku University (1994)
Professor, Tohoku University (1999)
Professor, National Institute of Polar Research (1999)
Professor, Research Institute for Humanity and Nature (2001)

[Higher Degrees]

Dr.Sc(Tohoku University, 1988)
M.Sc (Tohoku University,1984)

[Fields of Specialization]

Atmospheric Physics

[Academic Society Memberships]

Meteorological Society of Japan
Japan Association of Aerosol Science and Technology

—Achievements—

[Books]

[Authored/Co-authored]

・Shi, G.-Y., T. Hayasaka, A Ohmura, Z.-H. Chen, B. Wang, J.-Q. Zhao, H.-Z. Che, and L. Xu Apr,2008 Data quality assessments and the long-term trend of ground solar radiation in China. J 47, 1006-1016.. J. Appl. Meteor. Climatology, 47,1006-1016..

[Research Presentations]

[Invited Lecture / Honoronary Lecture / Panelist]

・Hayasaka, T., K. Kawamoto, and G.-Y. Shi Shortwave Absorption Properties of Atmosphere over China. International Radiation Symposium 2008, Aug 03,2008-Aug 08,2008, Iguassu, Brazil.

HONJO, Mie

Project Researcher

[Academic Career]

Department of Zoology, Division of Biological Science, Graduate School of Science, Kyoto University, D. Course (2006)
Department of Zoology, Division of Biological Science, Graduate School of Science, Kyoto University, M. Course (2001)
Department Ecosystem Studies, Shool of Environmental Science, The University of Shiga Prefecture (1999)

[Professional Career]

Research Fellow, Research Institule for Humanity and Nature(2006)

[Higher Degrees]

D.Sc.(Kyoto University,2006)

M.Sc.(Kyoto University,2001)

[Fields of Specialization]

Aquatic Microbial Ecology

Viral Ecology

Limnology

[Academic Society Memberships]

The Japanese Society of Limnology

—Achievements—

[Papers]

[Original Articles]

・Minamoto, T., Honjo, M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Iida, T., Kawabata, Z. Mar,2009 Detection of cyprinid herpesvirus 3 DNA in river water during, after an outbreak.. *Veterinary Microbiology* 135 :261-266. DOI:10.1016/j.vetmic.2008.09.081.(reviewed).

・Matsui, K., Honjo, M., Kohmatsu, Y., Uchii, K., Yonekura, R., Kawabata, Z. Jun,2008 Detection and significance of koi herpesvirus (KHV) in freshwater environments.. *Freshwater Biology* 53 :1262-1272. DOI:10.1111/j.1365-2427.2007.01874.x.(reviewed).

[Research Presentations]

[Oral Presentation]

・Minamoto, T., Honjo, M. N., Kawabata, Z. Distribution and seasonal variation of cyprinid herpesvirus 3 in Lake Biwa. The 56th Annual Meeting of the Ecological Society of Japan, Mar 17,2009-Mar 21,2009, Morioka, Iwate prefecture. (in Japanese)

・Honjo, M. N., Minamoto, T., Matsui, K., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Kawabata, Z., Quantification of cyprinid herpesvirus 3 in environmental water.. 73th Annual Meeting of The Japanese Society of Limnology, Oct 11,2008-Oct 13,2008, Sapporo, Hokkaido Prefecture. (in Japanese)

・Tanaka, N., Itayama, T., Honjo, M., Minamoto, T., Kawabata, Z. Development of a Rapid Concentration System for Virus in Environmental water. 12th International Conference on Integrated Diffuse Pollution Management (IWA DIPCON 2008), Aug 27,2008, in Khon Kaen, Thailand.

・Kawabata, Z., Minamoto, T., Honjo, M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y. KHV-Carp-Human linkages: Case study in Lake Biwa, Japan. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, in Kyoto, Japan.

[Poster Presentation]

・Yamanaka, H., Kohmatsu, Y., Minamoto, T., Honjo, M. N., Uchii, K., Suzuki, A. A., Kawabata, Z. Lakeside stracture and distribution of water temperature: discussion about effect on fish. The 56th Annual Meeting of the Ecological Society of Japan, Mar 17,2009-Mar 21,2009, Morioka, Iwate prefecture. (in Japanese)

・Matsui, K., Honjo, M. N., Kawabata, Z., Uchii, K.. Evaluation of environment characterization in freshwater using route of horizontal gene transfer of *Escherichia coli*. 24th Annual Meeting of the Japanese Society of Microbial Ecology, Nov 25,2008-Nov 28,2008, Sapporo, Hokkaido prefecture. (in Japanese)

・Honjo, M. N., Minamoto, T., Matsui, K., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Iida, T., Kawabata, Z. Quantification method of Koi herpesvirus (KHV) in environmental water using cation-coated filter method and external standard virus. International Symposium on Environmental Change,

Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, in Kyoto, Japan.

・Minamoto, T., Honjo, M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Kawabata, Z. Detection of koi herpesvirus DNA from natural river water. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, in Kyoto, Japan.

・Itayama, T., Tanaka, N., Honjo, M. N., Minamoto, T., Kawabata, Z. Development of an on site rapid concentration system for virus in environmental water. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, in Kyoto, Japan.

・Yamanaka, H., Sogabe, A., Kohmatsu, Y., Minamoto, T., Honjo, M. N., Uchii, K., Suzuki, A. A., Omori, K., Kawabata, Z. Relationship of lake morphometry and shore configuration to the temperature distribution in lagoons, and implications for its effect on fish health. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, in Kyoto, Japan.

HOSOYA, Aoi

Project Researcher

Born in 1967.

—Achievements—

[Books]

[Chapters/Sections]

・Leo Aoi Hosoya Feb,2009 Landscape of 'Old Days'- Spatial distribution of traditional Takakura (=Raised-floor granary) in the Amami Oshima island. J. Uchiyama, K. Lindstrom, C. Zeballos, O. Nakamura (ed.) Neolithisation and Modernisation: Landscape History on East Asian Inland Seas. Neomap Interim Report 2008. Research Institute for Humanity and Nature, Kyoto, Japan, pp.171-184. (in Japanese)

[Papers]

[Original Articles]

・D. Fuller, L. Qin, Y. Zhang, Z. Zhao, X. Chen, L.A. Hosoya, G. Sun Mar,2009 The Domestication Process and Domestication Rate in rice: Spikelet bases from the Lower Yangtze . *Science* 323 :1607-1610. (reviewed).

・Leo Aoi Hosoya Mar,2009 Sacred Commonness: Archaeobotanical approach to Yayoi social stratification- The 'Central Building Model' and Osaka Ikegami Sone site. *Senri Ethnological Studies* 73 :99-177. (reviewed).

・Aoi Hosoya Nov,2008 Storage Systems and Subsistence Cycles- Ethnoarchaeology of Bali rice agriculture and Papua New Guinean swidden agriculture. Japan Archaeological Association 2008 Aichi Meeting Organization Committee (ed.) Japan Archaeological Association 2008 Aichi Meeting Proceedings. Japan Archaeological Association, Tokyo, pp.309-324. (in Japanese)

・Aoi Hosoya Sep,2008 Rice and Granary- Ethnoarchaeological research on Bali Rice agricultural society. T. Ebisawa (ed.) Bali Paddy Rice Culture and Rituals. Study on Paddy Rice Culture, IV. Waseda University Paddy Rice Culture Research Centre, Tokyo, pp.87-111. (in Japanese)

[Research Presentations]

[Oral Presentation]

・Aoi Hosoya Storage Systems and Subsistence Cycles- Ethnoarchaeology of Bali rice agriculture and Papua New Guinean swidden agriculture. Japanese Archaeological Association, Nov 08,2008-Nov 09,2008, Nanzan

University, Nagoya, Japan. (in Japanese)

・L.A. Hosoya, I. Nakamura, Y.-I. Sato Japonica Rice was Carried to, not from, Southeast Asia: Genetic approach to the origin of rice cultivation. Workshop on the Origin of Rice Agriculture- The 3rd International Rice Festival of Wan-Nian, Oct 27,2008-Oct 29,2008, Wannian, Jiangxi, China.

・Leo Aoi Hosoya Storing food, for what?: Ethnoarchaeology of storage and agricultural cycles in Bali, Indonesia and Yabam Island, PNG. The 6th World Archaeology Congress, Jun 29,2008-Jul 04,2008, Dublin, Ireland.

・Leo Aoi Hosoya Plant food subsistence strategy and the 'routine-scape' in Japanese and Chinese prehistory. The 4th Worldwide Conference of the Society for East Asian Archaeology, Jun 02,2008-Jun 05,2008, Beijing, China.

ICHIJO, Tomoaki

Project Researcher

Born in 1980.

[Academic Career]

Environmental Pharmaceutical Sciences, Graduate School of Pharmaceutical Sciences, Osaka University, Doctoral Course (2008)

Environmental Pharmaceutical Sciences, Graduate School of Pharmaceutical Sciences, Osaka University, M. Course (2005)

Department of Comprehensive Pharmacy, School of Pharmaceutical Sciences, Osaka University (2003)

[Professional Career]

Research Assistant, Osaka University (2005, 2007)

Research Fellow, Research Institule for Humanity and Nature (2008)

[Higher Degrees]

Ph. D. (Osaka University, 2008)

M. Sc. (pharmacy) (Osaka University, 2005)

[Fields of Specialization]

Environmental Microbiology

[Academic Society Memberships]

The Pharmaceutical Society of Japan

Japanese Society of Microbial Ecology

Japanese Society for Bacteriology

American Society for Microbiology

International Society for Microbial Ecology

[Awards]

Best poster of 30th Annual Congress European Society of Mycobacteriology (2009)

—Achievements—

[Research Presentations]

[Poster Presentation]

・T. Baba, N. Inoue, M. Yasui, T. Ichijo, T. Kenzaka, M. Nasu Genetic Diversity of Membrane Protein Gene

Sequences in Legionella pneumophila Isolated from Natural and Artificial Environments. 12th International Symposium on Microbial Ecology, Aug 17,2008-Aug 22,2008, Cairns, Australia.

・T. Ichijo, N. Yamaguchi, K. Tani, M. Nasu Bead Assay Based Simultaneous Detection of Pathogenic Bacteria in Aquatic Environment. 12th International Symposium on Microbial Ecology, Aug 17,2008-Aug 22,2008, Cairns, Australia.

・T. Kenzaka, M. Yasui, T. Ichijo, T. Baba, M. Nasu Diversity of Eukaryotic-Like Gene Sequences in *Legionella pneumophila* Isolated from Natural Environment. 108th American Society for Microbiology General Meeting, Jun 01,2008-Jun 05,2008, Boston, MA, USA.

ICHIKAWA, Masahiro

Associate Professor

Born in 1962.

[Academic Career]

Graduate School of Human and Environmental Studies, Kyoto University, D. Course (2002)
Graduate School of Human and Environmental Studies, Kyoto University, M. Course (1997)
Environmental Studies for Open Space, Faculty of Horticulture, Chiba University (1984)

[Professional Career]

Associate Professor, Research Institute for Humanity and Nature (2003)
Environmental Department, Pacific Consultants Co. Ltd. (1989)
Japan Overseas Cooperation Volunteers in Dominican Rep. (1987)
Development and Planning Department, Pacific Consultants Co. Ltd. (1984)

[Higher Degrees]

D. Human and Environmental Studies (Kyoto University, 2002)
M. Human and Environmental Studies (Kyoto University, 1997)

[Fields of Specialization]

Area Studies in Southeast Asia

[Academic Society Memberships]

The Japan Society of Tropical Ecology
Japanese Society for Tropical Agriculture

[Awards]

Kira Price in the Japan Society of Tropical Ecology (2004)
Oze Price from Oze Preservation Foundation (2005)

—Achievements—

[Books]

[Chapters/Sections]

・Ichikawa, M. 2008 100 year history of changing forests in Sarawak. Akimichi, T. & Ichikawa, M (ed.) Examining forests in Southeast Asia: a report from tropical rain forests and monsoon forests. Jinbun Shoin, kyoto. (in Japanese) in press

・Ichikawa, M. & Kono, Y. 2008 Introduction, Chapter 2. Akimichi, T. & Ichikawa, M (ed.) Examining forests in Southeast Asia: a report from tropical rain forests and monsoon forests. Jinbun Shoin,

kyoto. (in Japanese) in press

・Akimichi, T. & Ichikawa, M. 2008 What is happening in forests in Southeast Asia. Akimichi, T. & Ichikawa, M (ed.) Examining forests in Southeast Asia: a report from tropical rain forests and monsoon forests. Jinbun Shoin, kyoto. (in Japanese) in press

・Ichikawa, M. 2008 Mosaic forest landscape created by indigenous people. Yumoto, T (ed.) Prescriptions for the Earth. . (in Japanese) in press

・ Ichikawa, M. 2008 Society created in forests with rich living in Borneo. Yumoto, T. (ed.) Prescriptions for the Earth. . (in Japanese) in press

・ Ichikawa, M., Koizumi, M., Niiyama, K., Kitayama, K, Nakagawa, M., Tsujino, R., Hatada, A. and Yamamashita, S. 2008 What are impacts of human activities on biodiversity?. Hatada, A., Ichikawa, M. & Nakashizuka, T. (ed.) Toward the future of biodiversity. (Teaching material for presentation) . Showado, kyoto. (in Japanese) in press

・Hatada, A., Ichioka, T., and Ichikawa, M. 2008 Why livings on the Earth are so diverse?. Hatada, A., Ichikawa, M. & Nakashizuka, T. (ed.) Toward the future of biodiversity. (Teaching material for presentation) . Showado, kyoto. (in Japanese) (in press)

・Akao, K., Onuma, A., Hasegawa, H., Fujita, W., Ichikawa, M., Sakai, S., and Hatada. A. 2008 How can we conserve biodiversity? From economic viewpoints. Hatada, A., Ichikawa, M. & Nakashizuka, T. (ed.) Toward the future of biodiversity. (Teaching material for presentation) . Showado, kyoto.(in press)

・Fujita, W., Ichikawa, M., Kanazawa, K., and Hatada, A 2008 How can we conserve biodiversity? From social viewpoints. Hatada, A., Ichikawa, M. & Nakashizuka, T (ed.) Toward the future of biodiversity. (Teaching material for presentation). Showado, kyoto. (in Japanese) (in press)

・Nakashizuka, T., Ichikawa, M., and Hatada, A. 2008 How do we deal biodiversity?. Hatada, A., Ichikawa, M. & Nakashizuka, T. (ed.) Toward the future of biodiversity. (Teaching material for presentation) . Showado, kyoto. (in Japanese) (in press)

[Editing]

[Editing / Co-editing]

・Akimichi, T. & Ichikawa, M (ed.) 2008 Examining forests in Southeast Asia: a report from tropical rain forests and monsoon forests. Jinbun Shoin, kyoto, (in Japanese) (in press).

・Hatada, A., Ichikawa, M. & Nakashizuka, T. (ed.) 2008 Toward the future of biodiversity. (Teaching material for presentation). Showado), kyoto, (in Japanese) in press.

[Papers]

[Original Articles]

・ Ichikawa, M. 2008 Rules of inheritance and transfer of land by the Iban of Sarawak: Land as an intergenerational resource.. *Borneo Research Bulletin* 38.(reviewed).(in press).

・ Ichikawa, M 2008 Changes and diversity in rules of natural-resource tenure by the Iban of Sarawak, East Malaysia: An evaluation from the viewpoint of biodiversity conservation. *Asian and African Area Studies* 8 (1) :1-21.

・Nakashizuka, T. and Ichikawa, M 2008 How is the assessment of forest-biodiversity conducted?. *Overseas forest and forestry* 72 :9-14.

・ Ichikawa, M. 2008 Rules of inheritance and transfer of land by the Iban of Sarawak: Land as an intergenerational resource. *Borneo Research Bulletin* 38 :148-158.

・ Ichiakwa, M. 2008 Hirbside use in swidden agriculture and their background in Sarawaku, Malaysia. *Technology and culture in agriculture* .(in press) .

[Research Presentations]

[Oral Presentation]

・Ichikawa, M. A comparison of anthropogenic forest-based landscapes between Satoyama in Japan and Pemakai Menua in Malaysia. International workshop on local forest knowledge and culture, Mar 12,2009, MokpoUniversity, Mokpo.

・Ichikawa, M. Significance and roles of anthropogenic forest-based land-use in tropical rain forests of Southeast Asia. Nature conservation and cultural background. The Kadota fund international forum 2008, Dec 14,2008, Kyoto International Conference Centre, Kyoto.

・Ichikawa, M. A comparison of anthropogenic forest-based landscapes between Satoyama in Japan and Pemakai Menua in Malaysia. The 1st International Conference on Forest Related Traditional Knowledge and Culture, Oct 06,2008, Korea Forest Research Institute, Seoul.

・Ichikawa, M Satoyama (anthropogenic forests-based landscape) in Borneo and its significance for biodiversity conservation. Seminar on landuse change and societal adaptation under global climate change in Asian tropical rain forests, Aug 04,2008, Kota Kinabaru, UMS.

ISHIMARU, Eriko

Project Researcher

Born in 1967.

[Academic Career]

Graduate School of Human and Environmental studies,Kyoto University,D Course(2007)
Graduate School of Letters,Hiroshima University,M Course(2001)
Faculty of Letters,Hiroshima University(1999)
Faculty of Agriculture,Ehime University(1990)

[Professional Career]

THE NIKKA WHISKY DISTILLING CO.,LTD(1991)
project researcher,Research Institute for Humanity and Nature(2008)

[Higher Degrees]

M.Lit.,Hiroshima University(2001)

[Fields of Specialization]

Zoo-archaeology
Isotope Zoo-archaeology
Environmental archaeology

[Academic Society Memberships]

Japanese Society for Scientific Studies on Cultural Property
Society of Archaeological Studies
Japanese Zoo-archaeogical Society
International Council for Archaeo-Zoology

[Awards]

The second Japanese Society for Scientific Studies on Cultural Property Encouragement thesis prize(2009)
Honourable Mention International Council for Archaeozoology 2006 Poster Competition student category(2006)
Mishima Kaiun Memorial Foundation Science encouragement prize(2005)

—Achievements—

[Papers]

[Original Articles]

・Hiroki KIKUCHI,Eriko ISHIMARU and Akira MATSUI Mar,2009 The animal remains of the Dazaifu jyoubo from the 224th excavation. the Dazaifu municipal board of education (ed.) Dazaifu jyoubo remain 40. cultural property of Dazaifu city, 107. pp.179-185. (in Japanese)

・Eriko ISHIMARU and Mitsuo KOIZUMI Mar,2009 The shell artifacts excavated at Nakagou shell mound in Yamaguchi City, Yamaguchi Prefecture. Yamaguchi museum (ed.) Bulletin of the Yamaguchi Museum. pp.33-40. (in Japanese)

・Eriko ISHIMARU Mar,2009 The animal remains of Bancho site from the second excavation. The Ehime Research Center for Buried Cultural Properties (ed.) The second excavation of Bancho site. pp.206-220. (in Japanese)

・Eriko ISHIMARU,Tetsuya UMINO,Minoru YONEDA,Yasuyuki SHIBATA,Takakazu YUMOTO and Ichiro TAYASU Jan,2009 Expansion in the distribution of marine products revealed by the identification of marine fish origins : a new perspective from carbon and nitrogen stable isotope data from Chugoku and Shikoku. *MANABU, Journal of Manabu YOSHIDA memorial foundation for scientific studies on cultural property* (2) :109-134. (in Japanese)

[Research Presentations]

[Oral Presentation]

・Eriko ISHIMARU A possibility of stable isotope zoo-arhaeology for occupation, excange and distribution studies. The 183th meeting of society for Oomi shell mound, Jan 31,2009, Siga, Ootsu. (in Japanese)

・Eriko ISHIMARU,Souichiro KUSAKA, Takanori NAKANO and Takakazu YUMOTO The study for reconstruction of hunting erea by strontium analysis of wild boar and dear tooth. The 12th meeting of Japanese Zoo-archaeological Society, Nov 29,2008-Nov 30,2008, Shimane, Matsue. (in Japanese)

[Poster Presentation]

・Eriko ISHIMARU The study for use of natural resources in Jomon period by the analysis on butchering process of animal and manufacture of bone tools. THe 25th meeting of Japan society for scientificc studies on cultural properties, Jun 14,2008-Jun 15,2008, Kagoshima. (in Japanese)

ISHIMOTO Yudai

Project Researcher

Born in 1979.

[Academic Career]

Department of Agriculture, Tottori University(2001)

Graduate School of Asian and African Area Studies, Kyoto University (2008)

[Professional Career]

Teaching assistant at Kyoto University (2003)

[Higher Degrees]

Master degree of area study(Kyoto University,2008)

[Fields of Specialization]

Ecological anthropology

[Academic Society Memberships]

Japan Association for African Studies
The Japanese Association for Arid Land Studies
The Society for Ecological Anthropology

—Achievements—

[Research Presentations]

[Oral Presentation]

・Yudai Ishimoto Commencement and Diffusion of Labor Migration in Sahelian Area. the Japanese Society of Regional and Agricultural Development Spring Study Meeting, Jun 14,2008, Okinawa. (in Japanese)

[Poster Presentation]

・Yudai Ishimoto The Introduction of Labor migration and Solution for its Impacts by Sahelian Agropastoralists: Case study of a village in northeastern part of Burkina Faso. Conference of Japan Association for African Studies, May 24,2008-May 25,2008, Kyoto. (in Japanese)

ISHIYAMA, Shun

Project Researcher

Born in 1965.

[Academic Career]

Graduate School of Letters(Comparative Studies of Humanities and Social Sciences), Nagoya University, D. Course (2006)
Graduate School of Humanities and Social Sciences, Shizuoka University,M.A.Cource(2000)
Tokyo University of Agriculture (1989)

[Professional Career]

Staff, NGO Action for Greening Sahel(1993)
Staff, NPO Mori no Enerugi Foramu (2004)
Lecturer(Part-time), Fukui Prefectural University (2006)
Staff, NPO Echizen(2007)
Project researcher, Research Institute for Humanity and Nature (2008-)

[Higher Degrees]

M.A.(Shizuoka University, 2000)
B.A.(Tokyo University of Agriculture, 1989)

[Fields of Specialization]

Cultural Anthropology
Development Anthropology

[Academic Society Memberships]

Japan Association for African Studies
Japanese Society of Cultural Anthropology
The Japanese Association for Arid Land Studies
Japan Association for Nilo-Ethiopian Studies

—Achievements—

[Books]

[Chapters/Sections]

・Ishiyama, Shun, Uchiyama, Hideki and Sugimura, Kazuhiko Mar,2009 Organisation and mechanisation of the urban-rural exchange. Sugimura, Kazuhiko (ed.) Rural studies of 21th century. Sekai Shiso Sha, Kyoto, pp.147-186. (in Japanese)

[Papers]

[Original Articles]

・Ishiyama, Shun 2008 "Lessons from the prevention for Desertification: For whom desertification ?". Shimada, Yoshihito (ed.) *Grass Root Development and Environmental Protection in Africa by the Revitalization for Traditional Knowledge and Techniques*. Nagoya University, Aichi, Japan, pp.119-122. (in Japanese)

[Research Presentations]

[Oral Presentation]

・Ishiyama, Shun *La migration 'Kanemubu' vers le sud a la region du Lac Tchad*. 40 ans de recherche japonaise au NOrd Cameroun pour le memoire d'Eldridge Mohammadou et P. K. Eguchi, Nov 29,2008, Muna Hall, Yaoundé, Cameroon. (in French)

KATO, Yuzo

Assistant Professor

Born in 1971.

[Academic Career]

Graduate School of Law, Kyoto University, Doctor's program(2000)
Graduate School of Law, Kyoto University, Master's program(1996)
Faculty of Law, Kyoto University(1994)

[Professional Career]

Assistant Professor, Research Institule for Humanity and Nature(2001)
Junior Research Fellow, Institute for Research in Humanities, Kyoto University(2001)
Research Associate, Graduate School of Law, Kyoto University(2000)
JSPS Research Fellow(DC2)(1997)

[Higher Degrees]

LL.M.(Kyoto University, 1996)

[Fields of Specialization]

Legal History

[Academic Society Memberships]

Japan Legal History Association

—Achievements—

[Books]

[Chapters/Sections]

・Nurlan Kenjeahmet wrote, Kato Yuzo translated Mar,2009 Archaeology of Sujab. Kubota Jumpei, Kicengge, Inoue Mitsuyuki (ed.) Historical and Geographical Studies on Ili River Basin. Shokodo, Kamigyo-ku, Kyoto, pp.217-301. (in Japanese)

・Kato Yuzo Aug,2008 North End and South End of "Japan". Kimura Takeshi (ed.) Sennen Zizokugaku no Kochiku. Mirai wo Hiraku Jimbun Shakai Kagaku, 13. Toshindo, Bunkyo-ku, Tokyo, pp.82-94. (in Japanese)

[Papers]

[Original Articles]

・Shiraishi Noriyuki,Sohma Hidehiro,Kato Yuzo,Enkhtör Mar,2009 A survey of Khünkhüree Sites in Mongolia and Their Significance:A Basic Study on the "Konggulie Granary" of the Yuan Dynasty. *Bulletin of the National Museum of Ethnology* 33(4) :599-638. (in Japanese) (reviewed).

KATSUYAMA, Masanori

Senior Project Researcher

Born in 1975.

[Academic Career]

Division of Environmental Science and Technology, Graduate School of Agriculture, Kyoto University, D. Course (2002)

Division of Environmental Science and Technology, Graduate School of Agriculture, Kyoto University, M. Course (1999)

Faculty of Agriculture, Kyoto University (1997)

[Professional Career]

Senior Researcher, Research Institute for Humanity and Nature (2006)

Technician, Research Institute for Humanity and Nature (2005)

Postdoctoral Fellow, Japan Society for the Promotion of Science, (2002)

Research Fellow, Japan Society for the Promotion of Science, (2000)

[Higher Degrees]

Ph. D. (Agr.) (Kyoto University, 2002)

M, Agr. (Kyoto University, 1999)

B, Agr. (Kyoto University, 1997)

[Fields of Specialization]

Forest Hydrology

[Academic Society Memberships]

The Japanese Forest Society, Japan Society of Hydrology and Water Resource, Japanese Association of Hydrological Sciences, International Association of Hydrological Sciences, American Geophysical Union

—Achievements—

[Papers]

[Original Articles]

・Katsuyama, M., Fukushima, K. and Tokuchi, N. 2008 Comparison of rainfall runoff characteristics in forested catchments underlain by granitic and Sedimentary rock with various forest age. *Hydrological*

Research Letters 2 :14-17.(reviewed).

[Research Presentations]

[Oral Presentation]

・Katsuyama M. Applications of a model for environmental change predictions in a forest-river-lake ecosystem. Evening Seminar ES06 in Annual Meeting of the Japanese Forest Society, Mar 27,2009, Kyoto University, Kyoto.. (in Japanese)

・Katsuyama, M., Fukushima, K. and Tokuchi, N. Effects of various rainfall-runoff characteristics on streamwater stable isotope variations in forested headwaters. HydroChange 2008, Oct 01,2008-Oct 03,2008, Kyoto.

・Yoshioka, T., Matsukawa, T., Kuriyama, K. and Katsuyama, M. Choice experiment on the environmental changes by tree cutting in a forested watershed. Annual Meeting of Society of Environmental Science, September 2008, Sapia Tower, Tokyo. (in Japanese)

[Poster Presentation]

・Katsuyama, M., Fukushima, K., Tokuchi, N, Ohte, N and Tani, M. Geological influences on hydrological and isotopic characteristics in forested headwaters. AGU Fall Meeting, December 2008, San Francisco, USA..

・Tokuchi, N., Fukushima, K. and Katsuyama, M. Factors controlling stream water chemistry in ten small forested watersheds with plantation forests of various proportions and ages in central Japan. HydroChange 2008, Oct 01,2008-Oct 03,2008, Kyoto.

・Fukushima, K., Tokuchi, N., Tateno, R. and Katsuyama, M. Water yield and nitrogen loss during regrowth of Japanese cedar forests after clearcutting. HydroChange 2008, Oct 01,2008-Oct 03,2008, Kyoto.

・Katsuyama, M., Ohte, N., Fukushima, K., Shibata, H. and Yoshioka, T. Applications and hydrological modifications of a biogeochemical model in Asian monsoon regio. Annual Meeting of Japan Society of Hydrology and Water Resources, August 2008, University of Tokyo, Tokyo.. (in Japanese)

・Fujimoto, Y., Tebakari, T., Sato, K., Shibata, H. and Katsuyama, M. . Annual Meeting of Japan Society of Hydrology and Water Resources, August 2008, University of Tokyo, Tokyo.. (in Japanese)

・Katsuyama, M., Nishimoto, S., Ohte, N. and Tani, M. Relationship between rainfall-runoff processes and mean residence times of stream and groundwater in weathered granite catchments. WPGM2008, July 2008, Cairns, Australia..

KAWABATA, Zen'ichiro

Professor

Born in 1946.

[Academic Career]

Department of Biology, Graduate School of Science, Tohoku University, unfinished D Course (1975)

Department of Biology, Graduate School of Science, Tohoku University, M. Course (1973)

Department of Biology, Faculty of Science, Tohoku University (1971)

[Professional Career]

Professor, Research Institute for Humanity and Nature(2005)

Professor(Concurrent), Center for Marine Environmental Studies, Ehime University(1999)

Professor, Center for Ecological Research, Kyoto University (1998)

Professor, Department of Environmental Conservation, Ehime University(1996)

Associate Professor, Department of Environmental Conservation, Ehime University(1983)
Lecturer, Department of Environmental Conservation, Ehime University(1981)
Assistant Professor, Faculty of Science, Biological Institute, Tohoku University (1977)
Technician, Faculty of Science, Biological Institute, Tohoku University (1975)

[Higher Degrees]

Dr. Sci. (Tohoku University, 1977)
Ms. Sci. (Tohoku University, 1973)

[Fields of Specialization]

Microbial Ecology, Aquatic Ecosystem Ecology

[Academic Society Memberships]

The Ecological Society of Japan
The Japanese Society of Microbial Ecology
The Japanese Society of Limnology
Japanese Society of Water Treatment Biology
Japanese Society for Environmental Biotechnology
The Japanese Society of Fisheries Sciences
Japan Society on Water Environment
Society of Environmental Science, Japan
International Association for Theoretical and Applied Limnology.
The Nature Conservation Society of Japan

[Awards]

Ehime Publication and Culture Prize, 2000(with coauthors)(2000)

—Achievements—

[Books]

[Authored/Co-authored]

・Kawabata, et al. 2008 Encyclopedia of Environment. The Japan Scientists' Society(ed.). Jyunposha, Tokyo

[Papers]

[Original Articles]

・Minamoto T, Honjo M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Iida, T. and Kawabata, Z. Mar,2009 Detection of cyprinid herpesvirus 3 DNA in river water during and after an outbreak. *Vet.Microbiol* 135(3-4) :261-266.(reviewed).

・Matsui, K., Honjo, M., Kohmatsu, Y., Uchii, K., Yonekura, R. and Kawabata, Z. Jun,2008 Detection and significance of koi herpesvirus (KHV) in freshwater environments. *Freshwater Biology* 53 :1262-1272-1272. DOI:Doi: 10.1111/j.1365-2427.2007.01874.x.(reviewed).

[Research Presentations]

[Oral Presentation]

・Matsui, K., Honjo, N. M., Kawabata, Z. and Uchii, K. Evaluation of environmental characteristics in freshwater by using horizontal gene transmission rote as indicator. 24th the Japanese Society of Microbial Ecology Annual Meeting , Nov 25,2008-Nov 28,2008, Hokkaido. (in Japanese)

・Uchii, K., Ishihara, T., Asano, K. and Kawabata,Z Invasion of cyprinid herpesviru s 3 and its impact on the economy and industry involved in koi and common carp. 73rd Annual Meeting of Japanese Society

of Limnology, Oct 11,2008, sapporo. (in Japanese)

・Honjo, N. M., , Minamoto, T., Mastui, K., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y. Iida, T. and Kawabata, Z .Quantification of Koi herpesvirus in environmental water. 73th Annual Meeting of The Japanese Society of Limnology , Oct 11,2008, Hokkaido.

・Tanaka, N., Itayama, T., Honjo, M., Minamoto, T. and Kawabata, Z. Development of a Rapid Concentration System for Virus in Environmental water. 12th International Conference on Integrated Diffuse Pollution Management (IWA DIPCON 2008) , Aug 27,2008, Khon Kaen, Thailand.

・ Kawabata Z., Minamoto T., Honjo M. N., Uchii K.,Yamanaka H., Suzuki A. A., and Kohmatsu Y. KHV-carp-human linkages: a case study in Lake Biwa, Japan. . International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto.

[Poster Presentation]

・Minamoto, T., Honjo, N. M., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Kawabata, Z. Detection of koi herpesvirus DNA from natural river water. International Symposium on Environmental Change, Pathogens, and Human Linkages , Jun 11,2008, Kyoto.

・Yamanaka, H., Sogabe, A., Kohmatsu, Y., Minamoto, T., Honjo, N. M.,Uchii, K., Suzuki, A. A., Omori, K., Kawabata, Z. Relationship of lake morphometry and shore configuration to the temperature distribution inlagoons, and implications for its effect on fish health. International Symposium on Environmental Change, Pathogens, and Human Linkages , Jun 11,2008, International Symposium on Environmental Change, Pathogens, and Human Linkages . DOI:Kyoto.

・Uchii, K., Matsui, K. and Kawabata,Z. Distribution of cyprinid herpesvirus 3 in a wild population of common carp (Cyprinus carpio)" . International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008, Kyoto.

・Itayama, T., Tanaka, N., Honjo, N. M., Minamoto, T., Kawabata, Z. Development of an on site rapid concentration system for virus in environmental water. International Symposium on Environmental Change, Pathogens, and Human Linkages , Jun 11,2008, Kyoto.

・Honjo, N. M., Minamoto, T., Matsui, K., Uchii, K., Yamanaka, H., Suzuki,A. A., Kohmatsu, Y., Iida, T. and Kawabata, Z. Quantification method of Koi herpesvirus (KHV) in environmental water using cation-coated filtermethod and external standard virus"International Symposium on Environmental Change, Pathogens, and Human Linkages . International Symposium on Environmental Change, Pathogens, and Human Linkages , Jun 11,2008, Kyoto.

KAWAMOTO, Haruko

Project Researcher

Born in 1974.

[Academic Career]

Hokkaido University (1997)

Hokkaido University, M.Course (1999)

[Professional Career]

Japan Radio Co., Ltd. (1999)

Research Institute for Humanity and Nature(2007)

[Higher Degrees]

M.Eng

[Fields of Specialization]

Radar Meteorology

Low Temperature Physics

[Academic Society Memberships]

Meteorological Society of Japan

Society of Atmospheric Electricity of Japan

—Achievements—

[Papers]

[Original Articles]

・"Kawamoto, H. Yatagai, A." 2008 Quality check of a gauge-based daily precipitation dataset: Using maximum rain rate given in the standard product 2A25 of TRMM/PR . Guy Delrieu (ed.) WRaH2008 . pp.P2-018-4ページ.Weather Radar and Hydrology2008のExtended Abstracts のCDとして配布。 .

[Review Articles]

・Yatagai, A., and H. Kawamoto 2008 Quantitative estimation of orographic precipitation over the Himalayas by using TRMM/PR and a dense network of rain gauges. *Proc. SPIE* 7148(11). DOI:10.1117/12.811943.(reviewed).

[Research Presentations]

[Oral Presentation]

・Kawamoto, H. , A.Yatagai, K.Kamiguchi, O.Arakawa and Masato I. Nodzu Comparison of daily precipitation using gauge-based data and estimated rain rate from 2A25 of TRMM/PR within 31.5 - 36.0°N, Asia. International Symposium of IAHS-PUB and the 2nd International Symposium of China-PUB, IAHS-PUB-CHINA 2008, Nov 07,2008-Nov 09,2008, Seito, China.

・Kamiguchi, K., A.Yatagai, O.Arakawa, H. Kawamoto, Masato I. Nodzu and A. Kitoh Introduction of APHRO_EA, High-Resolution Daily Precipitation Data in East Asia. International Symposium of IAHS-PUB and the 2nd International Symposium of China-PUB, IAHS-PUB-CHINA 2008, Nov 07,2008-Nov 09,2008, Seito, China.

[Poster Presentation]

・Kamiguchi,K., A. Yatagai, O. Arakawa, H. Kawamoto, M. I. Nodzu, and A. Kitoh, Precipitation Characteristics of APHRO_PR, High-Resolution Daily Precipitation Data.. AGU 2008 Fall Meeting, Dec 15,2008-Dec 19,2008, San Francisco.

・Yatagai, A.., H.Kawamoto, M. I.Nodzu, T.Watanabe, J.Kubota, A.Kitoh, K.Kamiguchi, O.Arakawa, and S. Kanae Asian Precipitation-Highly-Resolved Observational Data Integration Towards Evalution of the Water Resources(APHRODITE's Water Resources). Conference of APHW in Beijing, 2008, Nov 03,2008-Nov 06,2008, Beijing.

・Takashima,H. , A.Yatagai, H.Kawamoto, O.Arakawa and K.Kamiguchi Hydrological balance over northern Eurasia form gauge-based high-resolution daily precipitation data. Hydrochange 2008 in Kyoto, Oct 01,2008-Oct 03,2008, Kyoto.

KAWASE, Daiju

Project Researcher

Born in 1981.

[Higher Degrees]

D. Sc (The University of Kyoto, 2008)

[Fields of Specialization]

population genetics

plant phylogeny

serpentine plant

—Achievements—

[Research Presentations]

[Oral Presentation]

・Daiju Kawase, Takakazu Yumoto, Kazuhiko Hayashi, Ken Sato Phylogenetic analysis of the infraspecific taxa, Erigeron thunbergii, distributed in ultramafic rock sitesOral presentation. The Sixth International Conference on Serpentine Ecology, Jun 16,2008-Jun 19,2008, Maine in USA.

KIMIOTO, Yukitoshi

Senior Project Researcher

Born in 1973.

[Academic Career]

Department of Botany, Graduate School of Science, Kyoto University, D.Course (2004)

Division of Human and Environmental Studies, Graduate School of Human and Environmental Studies, Kyoto University, M. Course (2001)

[Professional Career]

Research Fellow, Research Institute for Humanity and Nature (2004)

Senior Researcher, Reserch Institute for Humanity and Nature (2006)

[Higher Degrees]

Ph. D. (Science, Kyoto Univ. 2004)

M. of Human and environment (Kyoto Univ. 2001)

[Fields of Specialization]

Plant systematics

Plant morphology

Plant anatomy

[Academic Society Memberships]

Japan Society of Plant Systematics

Botanica Society of Japan

Botanical Society of America

—Achievements—

[Papers]

[Original Articles]

・Yukitoshi Kimoto and Hiroshi Tobe Oct,2008 Embryology of Hortonioideae and Monimioideae (Monimiaceae, Laurales): characteristics of ‘lower’ monimioids. *Botanical Journal of the Linnean Society* 158

:228-241. DOI:10.1111/j.1095-8339.2008.00847.x.(reviewed).

・Kimoto Y. and H. Tobe 2008 Embryology of Illigera and Sparattanthelium (Hernandiaceae, Laurales): a summary statement of characteristics and relationships.. *International Journal of Plant Sciences.* 169(3) :391-408.(reviewed).

[Research Presentations]

[Oral Presentation]

・Yukitoshi Kimoto and Tokushiro Takaso Flowering phenology of Enhaus acoroides (Hydrocharitaceae) in Iriomote Island. The 8th Annual Meetng of Japanese Soiciety for Plant Systematics, Mar 12,2009-Mar 15,2009, Tokyo Electron Hall Miyagi, Sendai City. (in Japanese)

[Poster Presentation]

・Masato Nakagawa, Yukitoshi Kimoto and Tokushiro Takaso Seed coat structure of Enhalus acoroides: adaptation for seed dispersal by sea water. The 8th Annual Meetng of Japanese Society for Plant Systematics, Mar 12,2009-Mar 15,2009, Tokyo Electron Hall Miyagi, Sendai city. (in Japanese)

KINOSHITA, Tetsuya

Professor

Born in 1950.

[Academic Career]

Department of Philosophy, Graduate School of Literature, Kyoto University, D. Course (1979)
Department of Philosophy, Graduate School of Literature, Kyoto University, M. Course (1976)
Faculty of Literature, Kyoto University (1974)

[Professional Career]

Guest Professor, Research Institute for Humanity and Nature (2009.10)
Professor, Research Institute for Humanity and Nature (2003)
Professor, Faculty of Literature, Okayama University (2001)
Assistant Professor, Faculty of Literature, Okayama University (1984)
Instructor, Faculty of Literature, Okayama University (1981)
Research Assistant, Faculty of Literature, Kyoto University (1979)

[Higher Degrees]

M.Sc. (Kyoto University, 1976)

[Fields of Specialization]

Chinese philosophical history

[Academic Society Memberships]

The Sinological Society of Japan
the Institute of Eastern Culture
the Society of Oriental Researches
the Society for the Study of Chinese Societies and Cultures

—Achievements—

[Books]

[Authored/Co-authored]

・Kinoshita.T Jan,2009 Zhuzi(Shushi)--A philosophy of the operation and the task. Iwanami Shoten, Chiyodaku, Tokyo, 191pp. (in Japanese)

KISHIMOTO, Keiko

Project Researcher

[Academic Career]

Received Bachelor of Agriculture from Faculty of Agriculture, Tokyo University of Agriculture, in March 2001

Received Master of Agriculture from Graduate School of Nagoya University in March 2003

Received Doctorate of Human and Environmental Studies from Graduate School of Kyoto University in May 2008

[Professional Career]

Research Institute for Humanity and Nature

[Higher Degrees]

Dr

[Fields of Specialization]

Insect Ecology, Community Ecology, Tropical Ecology

—Achievements—

[Papers]

[Original Articles]

・Kishimoto-Yamada, K. and T. Itioka 2008 Survival of flower-visiting chrysomelids during non general-flowering periods in Bornean dipterocarp forests. *Biotropica* 40 :600-605.(reviewed).

・Kishimoto-Yamada, K. and T. Itioka 2008 Consequences of a severe drought associated with El Niño-Southern Oscillation on a light-attracted leaf-beetle (Coleoptera, Chrysomelidae) assemblage in Borneo. *Journal of Tropical Ecology* 24 :229-233.(reviewed).

[Research Presentations]

[Oral Presentation]

・K. Kishimoto-Yamada Population fluctuation patterns of anthophilous insects in Lambir Hills National Park, Sarawak, Malaysia, determined by light-trapping over 6 years. The Association for Tropical Biology and Conservation and Asia-Pacific Chapter, April 2008, Kuching, Malaysia.

KOHMATSU, Yukihiro

Assistant Professor

Born in 1973.

[Academic Career]

Department of Zoology, Faculty of Science, Kyoto University, D. Course (2001)

Department of Zoology, Faculty of Science, Kyoto University, M. Sc. (1998)

Department of Geography, Faculty of Science, Ritsumeikan University (1996)

[Professional Career]

Assistant Professor, Research Institute for Humanity and Nature (2003)

Technical Assistant, Research Institute for Humanity and Nature (2002)

Postdoctoral Scientist, Center for Ecological Research, Kyoto University (2001)

[Higher Degrees]

D.Sc. (Kyoto University, 2001)

M.Sc. (Kyoto University, 1998)

[Fields of Specialization]

Animal Ecology

Geography

—Achievements—

[Papers]

[Original Articles]

- Takahara T. et al. 2008 Length-weight Relationships in Six Amphibian Species of Japan.. *Current Herpetology* 27(1) :43-45.(reviewed).
- Sato M. et al. 2008 Population genetic differentiation in three sympatric damselfly species in a highly fragmented urban landscape (Zygoptera: Coenagrionidae) . *Odonatologica* 37(2) :131-144.(reviewed).
- Takahara T. et al. 2008 Benefit of suites of defensive behavior induced by predator chemical cues on anuran tadpoles, Hyla japonica. . *Behavioral Ecology and Sociobiology* 63(2) :235-240.(reviewed).
- Takahara T. et al. 2008 Predator-avoidance behavior in anuran tadpoles: a new bioassay for characterization of water-soluble cues. . *Hydrobiologia.* 607(1) :123-130.(reviewed).

KOIZUMI, Miyako

Project Researcher

Born in 1974.

[Academic Career]

Graduate School of Asian and African Area Studies, Kyoto University (2007)

Faculty of Science, Kyoto University (1998)

[Professional Career]

Project Researcher, Research Institule for Humanity and Nature (2008)

[Higher Degrees]

Doctor of Area Studies (Kyoto University, 2007)

[Fields of Specialization]

Anthropology (Ethnobiology)

[Awards]

Student Paper Prize, 10th International Congress of Ethnobiology (International Society of Ethnobiology, 2006)

—Achievements—

[Research Presentations]

[Oral Presentation]

・Koizumi, Miyako. “How the Penan Benalui learn and understand diversity of plants”. The annual conference of the Association for Tropical Biology and Conservation Asia-Pacific chapter, Apr 23,2008-Apr 26,2008, Kuching.

KUBOTA, Jumpei

Associate Professor

Born in 1957.

[Academic Career]

Department of Forestry, Faculty of Agriculture, Kyoto University, D. Course (1987)
Department of Forestry, Faculty of Agriculture, Kyoto University, M. Course (1983)
Department of Forestry, Faculty of Agriculture, Kyoto University (1981)

[Professional Career]

Associate Professor, Research Institute for Humanity and Nature (2002)
Associate Professor, Faculty of Agriculture, Tokyo University of Agriculture and Technology (1997)
Assistant Professor, Faculty of Agriculture, Tokyo University of Agriculture and Technology (1989)
Assistant Professor, University Forest, Kyoto University (1987)

[Higher Degrees]

D. Agr. (Kyoto University, 1987)
M. Agr. (Kyoto University, 1983)

[Fields of Specialization]

Hydrology
Forest Hydrology
Erosion Control Engineering

[Academic Society Memberships]

The Japanese Forestry Society
The Japan Society of Hydrology and Water Resources
The Japan Society of Erosion Control Engineering

—Achievements—

[Books]

[Chapters/Sections]

・Jumpei Kubota Feb,2009 Water resources problem in the arid and semi-arid region as the global environmental issues: Case study on the agricultural development in the Heihe river basin. Masayoshi Nakawo,Qian Xin and Zheng Yue Jun (ed.) Water environmental issues in China: Water shortage caused by development. Bensei Publishing Inc., Tokyo, Chiyoda-ku, pp.15-30. (in Japanese)

[Editing]

[Editing / Co-editing]

・Jumpei Kuboa, Chengzhi and Mitsuyuki Inoue (ed.) Mar,2009 History and geography in the Ili river basin: The view from inner Eurasia. Syoukadoh, Kyoto, Kamigyo-ku , 315pp. (in Japanese)

[Papers]

[Original Articles]

・Jumpei Kubota 2008 Impacts of human activities on water resources in arid and semi-arid region: Case study on Heihe River basin, Northwestern China. *Desert Monograph* 5 :39-43. (in Japanese)

[Research Presentations]

[Oral Presentation]

・Jumpei Kubota Globalization and Unevenly Distributed Water, Land and Food. International Symposium on Food and Environmental Problems, November 2008, Nanjing, China.

KURATA, Takashi

Senior Project Researcher

Born in 1970.

[Academic Career]

Graduate School of Human and Environmental Studies, Kyoto University, D.Course(2000)
Graduate School of Human and Environmental Studies, Kyoto University, M.Course(1997)
Department of Philosophy, Faculty of Letters, Kyoto University(1994)

[Professional Career]

Senior Project Researcher, Research Institute for Humanity and Nature (2009)
Project Researcher, Research Institute for Humanity and Nature (2006)
Research Fellow of the Japan Society for the Promotion of Science (PD) (2001)
Research Fellow of the Japan Society for the Promotion of Science (DC 2) (1999)

[Higher Degrees]

Ph.D.(Kyoto University, 2001)
M.A.(Kyoto University, 1997)
B.A.(Kyoto University, 1994)

[Fields of Specialization]

Philosophy
Environmentalism(Ecosophy)

—Achievements—

[Books]

[Chapters/Sections]

・Takashi Kurata Dec,2008 'Watsuji Tetsuro To Fudo: Fudoron No Knosei Wo Motomete (Watsuji Tetsuro And His Thoght on Milieu)'. Yo-Ichiro Sato, Takashi Kurata (ed.) "Yurashia Nokoshi (Agricultural History in Eurasia) 1". Chikyu-ken Library, 7-1. Rinsen-shoten, Sakyo-ku, Kyoto, pp.208-221. (in Japanese)

・Takashi Kurata Mar,2009 'Kozanji To Myoe-shonin (Kozanji Temple and Myoe)'. Chie Ogawa, Sawako Agawa (ed.) "Kozanji". Shinban Koji-junrei, 32. Tankosha, Kita-ku, Kyoto, pp.91-101. (in Japanese)

[Editing]

[Editing / Co-editing]

・Sato Yoichiro, Takashi Kurata (ed.) Dec,2008 "Yurashia Nokoshi (Agricultural History in Eurasia) 1". Chikyu-ken Library, 7-1. Rinsen-shoten, Sakyo-ku, Kyoto, 274pp. (in Japanese)

[Research Presentations]

[Invited Lecture / Honoronary Lecture / Panelist]

・Takashi Kurata 'Seikatsu No <Katachi>: Art To Ecology No Taiwa No Yukue (New Ecosophy in Collaboration with Art)'. "21 Seiki Bunka-ron (New Waves in 21st Century), Sep 27,2008, Lecture Hall, Tama Bijustu Daigaku (Tama Art University). (in Japanese)

LEKPRICHAKUL, Thamana

Senior Project Researcher

Born in 1959.

[Academic Career]

Department of Economics, University of Hawaii, USA (2001)

Faculty of Economics, Thammasat University, Thailand (1987)

[Professional Career]

Senioor Researcher, Research Institute for Humanity and Nature (2006-Present)

Post-doctoral fellow, Social Science Research Institute, University of Hawaii (2006)

Research Assistant, Energy Technology Department, Asian Institute of Technology, Thailand (1898)

[Higher Degrees]

Ph.D.(University of Hawaii, 2001)

B.A., Honors (Thammasat University,Thailand,1987)

[Fields of Specialization]

Health-Demographic Economics

Labor Economics

Development Economics

[Academic Society Memberships]

Member of American Economic Association

Member of Thai Economic Association

[Awards]

BA in Economics with honored (equivalent to summa cum laude in the USA) and a recipient of the King Bhumipol's Outstanding Student Award

King Bhumipol's first place award for an essay on "The King Bhumipol and His Contributions to Social Development" in 1986

Second place award from the United Nations for an essay on "Zimbabwe" in 1987

First place award from the department of economics, Thammasat University, for an essay on "International Trade and Protectionism" in 1987

—Achievements—

[Books]

[Translations / Joint Translations]

・Lekprichakul, T. (2008) translated from . (1911) , Thai language. 2008 Science of Getting Rich. Doris & Son Publishing, Nontaburi, Thailand, (Other) Translation of Wattles, W Science of Getting Rich. , 112pp.

[Papers]

[Review Articles]

・Taro Yamauchi, Thamana Lekprichakul, Takeshi Sakurai, Hiromitsu Kanno, Chieko Umetsu, Sesele Sokotela Dec,2008 Training Local Health Assistans for a Community Health Survey in a Developing Country: -Longitudinal Monitoring of the Growth and Nutrition of Children in Zambia-. *J. Higher Education and Lifelong Learning* 16 :67-75.

MAEKAWA, Ai

Project Researcher

—Achievements—

[Research Presentations]

[Oral Presentation]

・Ai Maekawa The struggle for the establishment of Mongolian "National Design" in the architecture?: case study interviews with Mongolian architects. International symposium. Oral Histories of Socialist Modernities: Memories and Lived Experiences in Central and Inner Asia, Dec 16,2008-Dec 17,2008, The Mond Building, Free School Lane, Cambridge, UK.

MAKIBAYASHI, Keisuke

Project Researcher

Born in 1972.

[Academic Career]

Department of Literature, Hiroshima University, Ph.D Course (2004)

Postgraduate, Department of Archaeology, Beijing Universiy (2000)

Postgraduate, Department of Literature, Hiroshima University (1998)

Department of Literature, Hiroshima University, M.Course (1997)

Department of History, Kumamoto University (1995)

[Professional Career]

Assitant, Archaeological Research Center, Hiroshima University (2007)

Assistant Professor, Archaeological Research Center, Hiroshima University (2005)

Assistant, Archaeological Research Center, Hiroshima University (2004)

Teaching Assistant, Hiroshima University (2001)

[Higher Degrees]

Ph.D (Literature) (Hiroshima University, 2004)

[Fields of Specialization]

Archaeology

[Academic Society Memberships]

Japanese Archaeological Association

Society of Archaeological Studies

Jpananese Society for Chinese Archaeology

Study Group of Furnace

—Achievements—

[Editing]

[Editing / Co-editing]

・UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; MAKIBAYASHI, Keisuke (ed.) Jan,2009 NEOMAP Interim Report 2008. NEOMAP, Kita-ku, Kyoto, 174pp. (in Japanese)

[Papers]

[Original Articles]

・MAKIBAYASHI, Keisuke Jan,2009 Cultivation System and Harvest-Processing System of Chinese Neolithic Agriculture and Their Transformation. UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; NAKAMURA, Oki (ed.) NEOMAP Interim Report 2008. NEOMAP, Kita-ku, Kyoto, pp.85-94. (in Japanese)

[Research Presentations]

[Oral Presentation]

・MAKIBAYASHI, Keisuke The formation and change of the Chinese Neolithic style of agriculture. Annual Meeting for the Society of Japan for Chinese Archaeology, Nov 22,2008, Kanazawa, Ishikawa. (in Japanese)

・MAKIBAYASHI, Keisuke China. First the beer! World Beer Landscapes, Nov 15,2008, Suita, Osaka. (in Japanese)

・MAKIBAYASHI, Keisuke Landscape in the Chinese Neolithisation period. First Landscape Seminar, May 26,2008, Shimogyo-ku, Kyoto. (in Japanese)

MINAMOTO, Toshifumi

Senior Project Researcher

Born in 1973.

[Academic Career]

Division of Biological Science, Graduate School of Science, Kyoto University, D. Course (2003)

Division of Biological Science, Graduate School of Science, Kyoto University, M. Course (1999)

Faculty of Science, Kyoto University (1997)

[Professional Career]

Senior Researcher, Research Institute for Humanity and Nature (2007)

Postdoctoral Researcher, Institute for Biological Resources and Functions, National Institute of Advanced Industrial Science and Technology (2005)

COE Research Fellow, Center for Ecological Research, Kyoto University (2003)

[Higher Degrees]

D. Sc (Kyoto University, 2003)

M. Sc (Kyoto University, 1999)

[Fields of Specialization]

Molecular Ecology

Microbial Ecology

Animal Physiology

Chronobiology

[Academic Society Memberships]

The Zoological Society of Japan

Japanese Society for Chronobiology

Ecological Society of Japan

The Japanese Society of Limnology

—Achievements—

[Papers]

[Original Articles]

・Minamoto, T., Honjo, M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Iida, T., Kawabata, Z. Mar,2009 Detection of cyprinid herpesvirus 3 DNA in river water during and after an outbreak. *Vet. Microbiol.* 135(3-4) :261-266. DOI:10.1016/j.vetmic.2008.09.081.(reviewed).

[Research Presentations]

[Oral Presentation]

・Minamoto, T., Honjo, M. N., Kawabata, Z. Distribution of koi herpesvirus in Lake Biwa. The 56th Annual Meeting of The Japanese Society of Ecology, Mar 17,2009-Mar 21,2009, Takizawa Village, Iwate, Japan. (in Japanese)

・Tanaka, N., Itayama, T., Honjo, M., Minamoto, T., Kawabata, Z. Development of a Rapid Concentration System for Virus in Environmental Water.. 12th International Conference on Integrated Diffuse Pollution Management (IWA DIPCON 2008), Aug 27,2008, Khon Kaen Cuty, Thailand..

・Kawabata, Z., Minamoto, T., Honjo, M. N., Uchii, K.,Yamanaka, H., Suzuki, A. A., Kohmatsu, Y. KHV-carp-human linkages: a case study in Lake Biwa, Japan. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto, Japan.

[Poster Presentation]

・Minamoto, T., Honjo, M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Kawabata, Z. Detection of koi herpesvirus DNA from natural river water. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto, Japan.

・Honjo, M. N., Minamoto, T., Matsui, K., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Iida, T., Kawabata, Z. Quantification method of Koi herpesvirus (KHV) in environmental water using cation-coated filter method and external standard virus. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto, Japan.

・Yamanaka, H., Sogabe, A., Kohmatsu, Y., Minamoto, T., Honjo, M. N., Uchii, K., Suzuki, A. A., Omori, K., Kawabata, Z. Relationship of lake morphometry and shore configuration to the temperature distribution in lagoons, and implications for its effect on fish health. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto, Japan.

・Itayama, T., Tanaka, N., Honjo, M. N., Minamoto, T., Kawabata, Z. Development of an on site rapid

concentration system for virus in environmental water. International Symposium on Environmental Change, Pathogens, and Human Linkages, Jun 11,2008-Jun 12,2008, Kyoto, Japan.

MIYAZAKI, Hidetoshi

Project Researcher

Born in 1975.

[Academic Career]

Depertment of Soil Science, Graduate School of Agriculture, Kyoto University, D.Course(2007)
Division of Environmental Dynamics, Environmental Science Graduate School, The University of Shiga Prefecture, M.Course(2001)
Department of Biological Resources Management, School of Environmental Science, The University of Shiga Prefecture(1999)

[Professional Career]

Researcher, Research Institute for Humanity and Nature(2007)
JSPS Research Fellow(2003)

[Higher Degrees]

M.Environmental Science.(The University of Shiga Prefecture,2001)

[Fields of Specialization]

Soil Science

[Academic Society Memberships]

Japanese Society of Soil Science and Plant Nutrition
Japanese Society of Regional and Agricultural Development
The Japanese Agricultural Systems Society

—Achievements—

[Research Presentations]

[Poster Presentation]

・Tazu Saeki, Hiromitsu Kanno, Hidetoshi Miyazaki, Hitoshi Shinjo Meteorological Observation in Southern Province, Zambia.. Meteorological Society of Japan 2008 Fall meeting, Nov 19,2008-Nov 21,2008, Sendai.

MOJI, Kazuhiko

Professor

Born in 1953.

[Academic Career]

Department of Human Ecology, Graduate School of Medicine, The University of Tokyo,D.Course(1983)
Department of Human Ecology, Graduate School of Medicine, The University of Tokyo,M.Course(1980)
Faculty of Medicine, The University of Tokyo(1976)

[Professional Career]

Professor, Research Institute for Humanity and Nature(2007)
Visiting Professor, Research Institute for Humanity and Nature(2006)
Head, Research Center of Tropical Infectious Diseases, Nagasaki University Institute of Tropical Medicine(2006)
Professor, Research Cener of Tropical Infectious Diseases, Nagasaki University Institute of Tropical Medicine(2002)
Professor, School of Health Sciences, Nagasaki University School of Medicine(2001)
Professor, School of Allied Medical Sciences, Nagasaki University(1999)
Associate Professor, Department of Public Health, Nagasaki University School Medicine(1987)
Instructor, Department of Human Ecology, School of Health Science, Faculty of Medicine, University of Tokyo(1983)

[Higher Degrees]

D. (The University of Tokyo,1983)
M. (The University of Tokyo,1980)

[Fields of Specialization]

Human Ecology,Population Health in the Tropics

[Academic Society Memberships]

The Japanese Society of Tropical Medicine,The Japanese Society of Health and Human Ecology

—Achievements—

[Papers]

[Original Articles]

- Abe T, Honda S, Nakazawa S, Tuong TD, Thieu NQ, Hung le X, Thuan le K, Moji K, Takagi M, Yamamoto T. Jan,2009 Risk factors for malaria infection among ethnic minorities in Binh Phuoc, Vietnam.. *Southeast Asian J Trop Med Public Health* 40(1) :18-29.(reviewed).
- Kagawa M, Tahara Y, Byrne NM, Moji K, Tsunawake N, Hills AP. Oct,2008 Are Japanese criteria for obesity useful for screening at risk Japanese? Consideration from anthropometric indices-percentage body fat relationships.. *Asia Pac J Public Health* 20(Suppl.) :102-110.(reviewed).
- Tahara Y, Moji K, Honda S, Nakao R, Tsunawake N, Fukuda R, Aoyagi K, Mascie-Taylor N. May,2008 Fat-free mass and excess post-exercise oxygen consumption in the 40 minutes after short-duration exhaustive exercise in young male Japanese athletes.. *J Physiol Anthropol* 27(3) :139-143. DOI:10.2114/jpa2.27.139.(reviewed).

MURAKAMI, Yumiko

Project Researcher

Born in 1972.

[Academic Career]

Department of Archaeology,Graduate School of Literature, Kyoto University,D.Course(2005)
Department of Archaeology,Graduate School of Literature, Kyoto University,M.Course(1997)
Department of Archaeology,Faculty of Literature, Kyoto University(1994)

[Higher Degrees]

M.Litt.(Kyoto University,1997)

[Fields of Specialization]

Archaeology

Historical Botany

[Academic Society Memberships]

Society of Archaeological Studies

Japanese Society for Scientific Studies on Cultural Property

Japanese Association of Historical Botany

—Achievements—

[Books]

[Translations / Joint Translations]

・Murakami, Y. Jul,2008 Higashi-Asia ni okeru Noukou no Hajimari [Chapter 6]. Osada,T. Sato,Y.(ed.) Noukou kigen no Jinruishi. Kyoto University Press, Kyoto, pp.173-197 (in Japanese) Translation of Bellwood, Peter First Farmers: The Origin of Agricultural Societies. Blackwell , Oxford (England),

[Papers]

[Original Articles]

・Murakami, Y. Aug,2008 Pestles and Morters. *Archaeology Quaterly* (104) :72-76. (in Japanese)

MURAMATSU, Shin

Professor

—Achievements—

[Books]

[Chapters/Sections]

・ Shin Muramatsu Jan,2009 Why and How We Should Inherit Urban Environment Cultural Resources:Identifying,Listing,Evaluating,and Making Good Use of Urban Environmental Cultural Resources in Asia. Y.Fujio・T.Noguchi (ed.) Stock Management for Sustainable Urban Regeneration. cSUR-UT Series: Library for Sustainable Urban Regeneration. Springer, pp.57-65.

[Editing]

[Senior/Supervisory Editorships]

・mAAN INDONESIA Shin Muramatsu (superviseor) May,2008 rumaha silaban silaban’s house. mAAN Publishing,

[Papers]

[Review Articles]

・ Shin Muramatsu Apr,2008 I WISH THAT YOU HAVE MANY SILABA. *Sketsa* 24 :66-67.ARCHITECTURE FOR DIFFERENTLY ABLED.

NAITO, Daisuke

Visiting Researcher

Born in 1978.

[Academic Career]

Graduate School of Asian and African Area Studies, Kyoto University, M. Course (2005)

Faculty of Agriculture, Kyoto University (2003)

[Professional Career]

Project Researcher, Research Institute foe Humanity and Nature (2007)

Research Fellow of the Japan Society for the Promotion Science (2008- Present)

[Higher Degrees]

M. Sc. (2005): Area Studies (South Asia)

[Fields of Specialization]

Southeast Asian Area Studies

[Academic Society Memberships]

Japanese Forest Society

The Japan Society of Tropical Ecology

—Achievements—

[Papers]

[Original Articles]

・Naito, D. 2008 Implementation of Forest Certification in Sabah, Malaysia. *The proceedings of the 119th Annual meeting of the Japanese Forest Society*. (in Japanese) Japanese Forest Society.

[Research Presentations]

[Oral Presentation]

・Naito, D. International Network on Eco-Cultural Diversities. The Change of forest use of local communities in Sabah, Malaysia, March 2009, Mokpo University, Korea.

・Naito, D. Balancing Forest Sustainability: Forest Certification and Local Community in Malaysia. Forest Policies for a Sustainable Humanosphere, February 2009, Inamori Memorial Hall, Kyoto University.

・Naito,D. Forest Certification and its impacts on local community in Malaysia. Forest Protection Schemeand its impact on local communities in Asia, December 2008, RIHN, Kyoto. (in Japanese)

・Naito, D. Forest Certification and Local Community, Sabah, Malaysia. Certified Sustainability in Forestry, Timber Industry and Agriculture, September 2008, TUM Germany.

NAKAGAWA, Masato

Project Researcher

Born in 1975.

[Academic Career]

Department of Botany, Faculty of Science, Kyoto University(1999)

Department of Botany, Graduate School of Science, Kyoto University, M.Course(1999)

Department of Botany, Graduate School of Science, Kyoto University, D.Course(2005)

[Professional Career]

Researcher,Research Institule for Humanity and Nature(2006)

[Higher Degrees]

D.Sc(Kyoto University, 2005)

M.Sc(Kyoto University, 1999)

[Fields of Specialization]

Plant ecology

Plant taxonomy

[Academic Society Memberships]

Ecological Society of Japan

The Botanical Society of Japan

Japanese Society for Plant Systematics

—Achievements—

[Papers]

[Original Articles]

・ Masato Nakagawa May,2008 Allozyme diversity and geographical differentiation of Parasenecio adenostyloides (Asteraceae), an endemic forest herb in Japan. *International Journal of Plant Science* 169(4) :557-565.(reviewed).

[Research Presentations]

[Poster Presentation]

・Masato Nakagawa, Yukitoshi Kimoto, Tokushiro Takaso Seed structure of *Enhalus acoroides*: An evaluation on the adaptive mechanism for hydrochory. The 8th Annual Meeting of The Japanese Society for Plant Systematics Sendai, 2009, Mar 13,2009-Mar 15,2009, Sendai-shi, Miyagi Pref.. (in Japanese)

NAKAMURA, Oki

Project Researcher

Born in 1967.

[Academic Career]

Department of Japanese History, Kokugakuin University, Ph.D Course (1997)

Department of Japanese History, Kokugakuin University, M.Course (1992)

Department of Literature, Faculty of History, Kokugakuin University (1990)

[Professional Career]

Guest Researcher, Open Research Center, Kokugakuin University (2006)

Part-time Lecturer, Department of Literature, Kokugakuin University (2005)

Handa Archaeology Fellow, Sainsbury Institute for the Study of Japanese Arts and Cultures, UK (2003)

Part-time Lecturer, Department of Literature, Kokugakuin University (2002)

Assistant Professor, Department of Literature, Kokugakuin University (1997)

[Higher Degrees]

MA(Kokugakuin Universiy, 1992)

[Fields of Specialization]

Archaeology

[Academic Society Memberships]

Society for American Archaeology(SAA)
Japanese Archaeological Association
Japanese Association of Ritual Archaeology
Paleological Association of Japan

—Achievements—

[Books]

[Chapters/Sections]

・NAKAMURA, Oki Nov,2008 Prehistory (Paleolithic, Jomon, Epi-jomon, Yayoi and Kofun Period). Editorial Committee of The History of Noshiro City (ed.) The History of Noshiro City - Prehistory, Ancient and Medieval Period. Noshiro City, Noshiro, Akita, pp.3-88. (in Japanese)

・NAKAMURA, Oki Jun,2008 Meanings of Projection Numbers and Motifs in Jomon Pottery. Kobayashi, Tatsuo (ed.) Handbook of Jomon Pottery. Amu Promotion, Minato-ku, Tokyo, pp.1162-1167. (in Japanese)

・NAKAMURA, Oki Apr,2008 Social Stratification. Kosugi Yasushi; Taniguchi; Yasuhiro; Nishida Yasutami; Mizunoe Kazutomo; Yano Kenichi (ed.) Human and Society. Jomon Archaeology, 10. Doseisha, Chiyoda-ku, Tokyo, pp.145-155. (in Japanese)

[Editing]

[Editing / Co-editing]

・UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; NAKAMURA, Oki (ed.) Jan,2009 NEOMAP Interim Report 2008. NEOMAP, Kita-ku, Kyoto, 260pp.

[Papers]

[Original Articles]

・NAKAMURA, Oki Jan,2009 Ritual Landscape in Northern Jomon Japan: An Outline. UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; NAKAMURA, Oki (ed.) NEOMAP Interim Report 2008. NEOMAP, Kita-ku, Kyoto, pp.115-122.

[Research Presentations]

[Oral Presentation]

・NAKAMURA, Oki From Archaeology to Landscape Studies - The futurability of archaeology. Second Landscape Seminar, Jul 25,2008, Shimogyo-ku, Kyoto. (in Japanese)

・NAKAMURA, Oki Linking the past and present: the Futurability of Archaeology. Danwakai Seminar, Jun 17,2008, Kita-ku, Kyoto. (in Japanese)

[Invited Lecture / Honoronary Lecture / Panelist]

・NAKAMURA, Oki Where the Jomon People Inequal?. 3rd Lecture for Tokyo Metropolitan Archaeological Research Center, Sep 20,2008, Tama, Tokyo. (in Japanese)

NAKAMURA, Ryo

Project Researcher

Born in 1976.

[Academic Career]

Comparative Studies of Humanities and Social Sciences (Cultural Anthropology), Nagoya University, D. Course (2008)

Comparative Studies of Humanities and Social Sciences (Cultural Anthropology), Nagoya University, M.A. Course (2003)

Shizuoka University, B.A. Course (2000)

[Professional Career]

Project researcher, Research Institute for Humanity and Nature (2008-)

Part-time stuff, Graduate School of Letters, Nagoya University(2008)

Tutor, Graduate School of Letters, Nagoya University(2006)

Teaching Assistant, Graduate School of Letters, Nagoya University(2003-2007)

[Higher Degrees]

Ph.D. (Nagoya University, 2008)

M.A. (Nagoya University, 2003)

B.A. (Shizuoka University, 2000)

[Fields of Specialization]

Cultural Anthropology

Environmental Anthropology

Comparative Study on Swahili Societies

[Academic Society Memberships]

Japan Association for African Studies (2003-)

Association for International Research Initiatives for Environmental Studies (2007-)

Japanese Society of Cultural Anthropology (2008-)

Japan Association for Religious Studies (2008-)

—Achievements—

[Books]

[Chapters/Sections]

・NAKAMURA, Ryo 2008 "Songs of Boys' Circumcision at Kilwa Island on Southern Swahili Coast". SHINODA, C. (ed.) *MYTHES・SYMBOLES・CULTURES 3*. Rakuro Shoin, pp.185-206. (in Japanese)

[Papers]

[Original Articles]

・NAKAMURA, Ryo Nov,2008 "On the Local Mangrove Resource Use of Kilwa Island in Southern Swahili Coast". *Abstracts of Oral Presentations, The Ninth Conference of International Dryland Development Commission (IDDC) held at Alexandria, Egypt*. pp.120-121.

・NAKAMURA, Ryo Oct,2008 "Local Mangrove Resource Use on Kilwa Island, Southern Swahili Coast". NAWATA, H. (ed.) *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. RIHN, Kyoto, Japan, pp.26-27.

・NAKAMURA, Ryo 2008 "Coexistence of Residence Place of the Arab and the Bantu in Kilwa Island, Southern Swahili Coast". Shimada, Yoshihito (ed.) *Islamic Africa Studies*. Nagoya University, Aichi, Japan, pp.153-162. (in Japanese)

・NAKAMURA, Ryo 2008 "Multi-ethnic Coexistence in Swahili Society: Multiple Ecological Sea Zones and Two Fishing Cultures in Kilwa Island, Tanzania". *The 3rd RIHN International Symposium. The Futurability of*

Islands: Beyond Endemism and Vulnerability. Program & Abstracts :18.

・NAKAMURA, Ryo 2008 "Two Episodes concerning the UNESCO World Cultural Heritage in Kilwa Island". Shimada, Y. (ed.) Grass Root Development and Environmental Protection in Africa by the Revitalization for Traditional Knowledge and Techniques.. Nagoya University, Aichi, Japan, pp.109-122. (in Japanese)

[Research Presentations]

[Oral Presentation]

・NAKAMURA, Ryo *Local Mangrove Resource Use of Kilwa Island in Southern Swahili Coast*. INTERNATIONAL DRYLAND DEVELOPMENT COMMISSION (IDDC), Ninth International Conference on the Development of Drylands, Nov 07,2008-Nov 10,2008, Bibliotheca Alexandrina, Alexandria Egypt.

・NAKAMURA, Ryo *Multi-Ethnic Coexistence in Swahili Society: Multiple Ecological Sea Zones and Two Fishing Cultures in Kilwa Island, Tanzania*. The 3rd RIHN International Symposium, The Futurability of Islands: Beyond Endemism and Vulnerability, Oct 22,2008-Oct 23,1008, RIHN, Kyoto, Japan.

[Poster Presentation]

・NAKAMURA, Ryo *Fish Culture in Swahili Maritime Society: Inland Sea Fishery originated in the Bantu and Open Sea Fishery originated in the Arab in Kilwa Island, Southern Tanzania Coast*. The 46th Research Meetings of Japan Association for African Studies, May 23,2008-May 24,2009, Tokyo University of Agriculture, Tokyo, Japan. (in Japanese)

NAKANO, Takanori

Professor

Born in 1950.

—Achievements—

[Books]

[Chapters/Sections]

・Nakano, T 2008 Trace of material circulation on global scale. Research Institute for Humanity and Nature (ed.) Chikyu no Shohousen. Chikyu-ken Sousho. Shouwado, Sakyo-ku, Kyoto, pp.148-151. (in Japanese)

・Nakano, T 2008 Lesson from decayed leaves from abondoned mine. Research Institute for Humanity and Nature (ed.) Chikyu no Shohousen. Shouwa-do, Sakyo-ku, Kyoto, pp.152-155. (in Japanese)

[Papers]

[Original Articles]

・Hosono, T., Nakano, T., Shin K. and Murakami, H. Sep,2008 Assimilation of lower to middle crust by high alumina basalt magma as an explanation for the origin of medium-K volcanic rocks in southern Kyushu, Japan. . *Lithos* 105 :51-62.(reviewed).

・Nakano, T., Tayasu, I., Yamada, Y., Hosono, T., Igeta, A., Hyodo, F., Ando, A., Saitoh, Y., Tanaka, T., Wada, E. and Yachi, S. 2008 Effect of agriculture on water quality of Lake Biwa tributaries, Japan. *Science of the Total Environment* 389 :132-148.(reviewed).

・Morishita, Y. and Nakano, T, 2008 Role of basement in epithermal deposits: the Kushikino and Hishikari gold deposits, southwestern Japan.. *Ore Geology Reviews* 34 :597-609.(reviewed).

・Hosono, T., Ikawa, R., Shimada, J., Nakano, T., Saito, M., Onodera, S., Lee, K-K. and Taniguchi, M. 2008 Human impacts on groundwater flow and contamination deduced by multiple isotopes in Seoul City,

South Korea. *Science of the Total Environment,* doi:10.1016/j.scitotenv.2008.04.014..(reviewed).

・Kitano, J., Bolnick, D., Beauchamp, D.A., Mazur, M. M., Mori, S. and Nakano, T. 2008 Reverse Evolution of Armor Plates in the Threespine Stickleback. *Current Biology* 18, :769-774.(reviewed).

NARAMA, Chiyuki

Project Researcher

Born in 1972.

[Academic Career]

Department of Geography, Tokyo Metropolitan University, D.Course(2002)

[Professional Career]

JSPS fellow PD (2004-2007)

Project researcher, RIHN(2007)

[Higher Degrees]

D.Sc(Tokyo Metropolitan University,2002)

[Fields of Specialization]

Physical geography

[Academic Society Memberships]

The Association of Japanese Geography

The Japanese Society of Snow and Ice

Tokyo Geographical Society

International Glaciological Society(IGS)

Japan Society for Natural Disaster Science

[Awards]

Nakaya Ukichiro Science Award(2007)

—Achievements—

[Research Presentations]

[Oral Presentation]

・C. Narama Timing of glacier expansion during the Last Glacial in the Tien Shan mountains. Pamis-Germany 80th symposium, Aug 16,2008-Aug 18,2008, Uzbekistan, Tashkent.

[Poster Presentation]

・Narama, C. Kääb, A., Moholdt, G., Abdrakhmatov, K. Recent change of glacier volume in the Chon-Kyzylsuu river basin, Teskey Ala-Too range, Tien Shan mountains, using airphotos, topographic maps, and ALOS PRISM satellite stereo data . EGU, Apr 13,2008-Apr 18,2008, Austria, Vienna.

・Narama, C., Kääb, A., Severskiy, I., Abdrakhmatov, K. Remote-sensing based analysis of glacier lake hazards in the Tien Shan mountains associated with recent glacier shrinkage. EGU, Apr 13,2008-Apr 18,2008, Austria, Vienna.

・Narama, C., Kondo, R., Tsukamoto, S., Kajiura, T., Duishonakunov, M., Abdrakhmatov, K. The glacial history during the Last Glacial in Fergana and Kungoy Ala-Too ranges in the Tien Shan mountains, Kyrgyz Republic by OSL dating. EGU, Apr 13,2008-Apr 18,2008, Austria, Vienna.

NAWATA, Hiroshi

Associate Professor

Born in 1968.

[Academic Career]

Human and Environmental Studies (Cultural Anthropology), Kyoto University, D. Course (2003)
Human and Environmental Studies (Cultural Anthropology), Kyoto University, M. A. Course (1997)
African and Asian Studies (Folklore), University of Khartoum, Sudan, Diploma Course (1994)
Letters, Arts and Sciences (Asian History), Waseda University, B. A. Course (1992)

[Professional Career]

Associate Professor, Research Department, Research Institute for Humanity and Nature (2008-present)
Associate Professor, Socioeconomics Division, Arid Land Research Center, Tottori University (2007)
Assistant Professor, Division of Comprehensive Measures to Combat Desertification, Arid Land Research Center, Tottori University (2004-2007)
Part-time Lecturer, Faculty of Foreign Studies, Osaka University of Foreign Studies (2004-2005)
Part-time Lecturer, College of Economics, College of Business Administration, and College of Letters, Ritsumeikan University (2004-2005)
Part-time Lecturer, School of Humanities and Social Sciences, Osaka Prefecture University (2004-2005)
Part-time Lecturer, School of Policy Studies, Kwansei Gakuin University (2003-2004)
Teaching Assistant, Graduate School of Human and Environmental Studies, Kyoto University (1998-1999)
Research Fellow, Japan Society for the Promotion of Science (1997-2000)

[Higher Degrees]

Ph. D. (Kyoto University, 2003)
M. A. (Kyoto University, 1997)
Diploma (University of Khartoum, Sudan, 1994)
B. A. (Waseda University, 1992)

[Fields of Specialization]

Cultural Anthropology
Social Ecology
Middle Eastern and African Area Studies
Arid Land Studies
Human-livestock Relationship Studies

[Academic Society Memberships]

The Japanese Association for Arid Land Studies
Japanese Coral Reef Society
Japanese Society of Cultural Anthropology
Japan Association for African Studies
Japan Association for Middle East Studies
Japan Association for Nilo-Ethiopian Studies

[Awards]

Encouragement Award of the Japanese Association for Arid Land Studies (2003)

—Achievements—

[Books]

[Chapters/Sections]

・Hiroshi NAWATA Mar,2009 A Role of Foreign Researchers as Foreign Workers: A Case Analysis of Social Actors Engaging in Nature Conservation around Rayda Nature Reserve, Southwestern Saudi Arabia. Inja LEE and Miwa KANETANI (ed.) *Possibility of Self-mentioned Ethnography*. Center for Northeast Asia Studies, Tohoku University, Sendai, pp.73-93. (in Japanese)

・Hiroshi NAWATA Nov,2008 Environment Conservation by Cooperative Operations with Foreign Workers: A Case Analysis of Herding around Rayda Nature Reserve in Saudi Arabia. Takahisa KUSANO (ed.) *Village Development and Environment Conservation: Thinking from a Viewpoint of Inhabitants*. Kokon Syoin, Tokyo, pp.119-134. (in Japanese)

[Editing]

[Editing / Co-editing]

・Hiroshi NAWATA (ed.) Oct,2008 *A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems*. Research Institute for Humanity and Nature, Kyoto, 104pp. in English and Arabic.

[Papers]

[Original Articles]

・Buho HOSHINO, Hiroshi NAWATA, Ryota NAGASAWA, Ren'ya SATO, Norikazu YAMANKA, and S. GANZORIG Feb,2009 Evaluate the Eco-Effectiveness of Grain for Green Project of China Using a Satellite-Derived Land Surface Parameter. *Bulletin of Faculty of Environment Systems, Rakuno Gakuen University* Feb., 2009 :143-158.

・Hiroshi NAWATA Jul,2008 Camel Racing in Saudi Arabia: Modern Networks of Arab Societies. *Kikan-Minzokugaku* (125) :44-59. (in Japanese)

[Research Presentations]

[Oral Presentation]

・Hiroshi NAWATA *Getting along with Arab Ordinary Peoples: Muslim Societies form Anthropological Perspectives*. Meeting of Iwate Islamic Archaeology, Feb 07,2009, Kitakami. (in Japanese)

・Hiroshi NAWATA *Human-Camel Relationships and World-View with Livestock on the Coastal Zone of the Arid Tropics*. Meeting for Human and Livestock Study, Dec 07,2008, Obirin University, Tokyo. (in Japanese)

・Hiroshi NAWATA *Mangroves as Fish Nursery and Forage Safekeeping in Coastal Zones of the Arid Tropics.*. The Ninth Conference of International Dryland Development Commission (IDDC) held at Alexandria, Nov 09,2008, Egypt.

[Poster Presentation]

・Hiroshi NAWATA *A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-oil Era*. Seventh Seminar of Inter-Civilization Dialogue between Japan and the Islamic World, Eighth Seminar of Development of Islamic Ideology, "Harmonization of Civilization with Environments", Mar 11,2009-Mar 12,2009, Kuwait.

・Hiroshi NAWATA *Food Habit in the Coastal Zones of the Arid Tropics: A Case of the Beja in Eastern Sudan*. The 11th International Coral Reef Symposium, Jul 11,2008, Florida, U.S.A.

[Invited Lecture / Honoronary Lecture / Panelist]

・Hiroshi NAWATA *Japanese Symbiotic Relationship between Human and Nature, Satoyama*. Seventh Seminar of Inter-Civilization Dialogue between Japan and the Islamic World, Eighth Seminar of Development of Islamic Ideology, "Harmonization of Civilization with Environments", Mar 11,2009, Kuwait.

・Hiroshi NAWATA *Adaptive Mechanisms and Survival Strategies of Afician Pastoralists A Case of the Beja in Eastern Sudan*. Open Seminar "Grassland Ecosystems and Pastoralist Grassland Use in the World",

Global COE Program “Animal Global Health”, Jan 29,2009, Obihiro University of Agriculture and Veterinary Medicine, Obihiro. (in Japanese)

NODZU, Masato

Senior Project Researcher

Born in 1979.

[Academic Career]

The School of Science, Osaka University(2001)

Master course in the School of Science and Technology, Kobe University(2003)

Doctoral course in the School of Science and Technology, Kobe University(2008)

[Professional Career]

Kinki regional survey department, Geographical Survey Institute, Ministry of Land, Infrastructure, Transport and Tourism (2006)

Project Researcher of Research Institute of Humanity and Nature(2008)

[Higher Degrees]

Ph.D(Kobe University,2008)

[Fields of Specialization]

Meteorology

[Academic Society Memberships]

Meteorological Society of Japan

American Meteorological Society

—Achievements—

[Research Presentations]

[Oral Presentation]

・Nodzu. I. Masato, A. Yatagai Relationship between the precipitation and the relative wind speed to geographical slope. MSJ (Meteorological Society of Japan) Fall Meeting 2008, Nov 19,2009-Nov 21,2008, Sendai. (in Japanese)

[Poster Presentation]

・ Kamiguchi,K., A. Yatagai, O. Arakawa, H. Kawamoto, M. I. Nodzu, and A. Kitoh Precipitation Characteristics of APHRO_PR, High-Resolution Daily Precipitation Data.. AGU 2008 Fall Meeting, Dec 15,2008-Dec 19,2008, San Francisco.

・Yatagai, A., H. Kawamoto, M. I. Nodzu, T. Watanabe, J. Kubota, A. Kitoh, K. Kamiguchi, O. Arakawa, S. Kanae Asian Precipitation-Highly-Resolved Observational Data Integration Towards Evalution of the Water Resources(APHRODITE's Water Resources). Asian Precipitation-Highly-Resolved Observational Data Integration Towards Evalution of the Water Resources(APHRODITE's Water Resources), Nov 07,2008-Nov 09,2008, Beijing.

OKUMIYA, Kiyohito

Associate Professor

Born in 1961.

[Academic Career]

Kochi Medical School (Kochi) (1986)

[Professional Career]

Associate professor, Research Institute for Humanity and Nature (2004)

Visitting clinical and research fellow, Division of Geriatrics, Department of Medicine, University of British Columbia, Canada (2002-2003)

Assistant professor (Lecturer), Department of Medicine and Geriatirics, Kochi Medical School(1999)

Assistant professor, Department of Medicine and Geriatirics, Kochi Medical School (1992)

Research resident, Department of Anatomy, Shiga University of Medical Science (1992)

Medical Staff , Department of Neurology in Sumitomo Hospital(1990)

Resident, Department of Circulatory Medicine, Tokyo Metropolitan Geriatric Hospital (1988)

Resident in Department of Medicine and Geriatirics, Kochi Medical School Hospital (1986)

[Higher Degrees]

Ph.D. (Kochi Medical School, 1996)

M.D. (Kochi Medical School, 1986), Japanese Medical License Registration (No. 299199)

[Fields of Specialization]

Field Medicine

Geriatrics and Gerontology

Neurology

Internal Medicine

[Academic Society Memberships]

Japanese Society of Neurology

Japanese Society of Geriatrics

Japanese Society of Internal Medicine

Japanese Society of Hypertension

[Awards]

Awards of Novartis foundation for Gerontological Research, Japan Geriatrics Society.

—Achievements—

[Papers]

[Original Articles]

・Ishine M, Okumiya K, Hirosaki M, Sakamoto R, Fujisawa M, Hotta N, Otsuka K, Nishinaga M, Doi Y, Matsubayashi K 2008 Prevalence of hypertension and its awareness, treatment, and satisfactory control through treatment in elderly Japanese. *J Am Geriatr Soc* 56(2) :374-375.(reviewed).

・Fujisawa M, Okumiya K, Maysubayashi K, Hamada T, Endo H, Doi Y 2008 Factors associated with carotid atherosclerosis in the oldest elderly over 80 years in the community. *Geriatrics & Gerotology International* 8(1) :12-18.(reviewed).

Visitng Researcher

Born in 1974.

[Academic Career]

Graduate School of Environmental Studies, Nagoya University, D. Course (2006)
Graduate School of Environmental Studies, Nagoya University, M. Course (2003)
School of the Environment and Natural Resources, University of Wales, Bangor, M. Course (2000)
Scholl of Agriculture, Kinki University (1997)

[Professional Career]

Senior Project Researcher, RIHN(2006)

[Higher Degrees]

D.Sc. (Nagoya University, 2006)
M.Sc. (Nagoya University, 2003)
M.Sc. (University of Wales, Bangor, 2000)

[Fields of Specialization]

Environmental System Engineering

[Academic Society Memberships]

Japan Society of Civil Engineers
Center of Environmental Information Science
The Japan Society of Hydrology and Water Resources
The Japanese Association for Arid Land Studies
Research Institute of Environmental Management

—Achievements—

[Books]

[Chapters/Sections]

・A. Onishi 2008 chapter 2.3~2.5. Y. Fukushima and M. Taniguchi (ed.) Water environmental issues in Yellow River basin—Understanding from dry-up phenomena—. Gakuho press.

[Papers]

[Original Articles]

・A. Onishi, M. Morisugi, H. Imura, F. Shi, T. Watanabe and Y. Fukushima 2008 Study on the efficiency of agricultural water use in Yellow River basin. *Journal of Arid Land Studies* . (in Japanese) (reviewed). (in printing).

・A. Onishi, M. Morisugi, H. Imura, F. Shi, T. Watanabe and Y. Fukushima 2008 Study on the efficiency of agricultural water use in the Yellow River basin. *Journal of Global Environment Engineering* .(reviewed).(in printing).

ONISHI,Takeo

Senior Project Researcher

Born in 1972.

[Academic Career]

Division of Environmental Science and Technology,Graduate School of Agriculture, Kyoto University, M.Course (1998)
Division of Environmental Science and Technology,Graduate School of Agriculture, Kyoto University, D.Course (2004)

[Professional Career]

Research Fellow of Core Research for Evolutional Science and Technology(CREST) Project, Public Works Research Institute(2006)
Senior Researcher, Research Institute for Humanity and Nature(2009)

[Higher Degrees]

D.Agr.(Kyoto University, 2004)
M.Agr.(Kyoto University, 1998)

[Fields of Specialization]

Hydrology

[Academic Society Memberships]

Japanese Society of Irrigation Drainage,and Rural Engneering
Japanese Society of Civil Engineering
Japanese Association of Groundwater Hydrology
Japan Geoscience Union
Society for Studies on Entropy
Americal Geophysical Union
International Association of Hydrological Science

—Achievements—

[Papers]

[Original Articles]

- Takeo Onishi, Hideaki Shibata, Muneoki Yoh, Seiya Nagao Jan,2009 Mechanism for the Production of Dissolved Iron in the Amur River Basin - a modeling study of the Naoli River of the Sanjiang Plain. . From Headwaters to the Ocean: Hydrological Change and Watershed Management. (reviewed).
- Nagano Takanori, Takeo Onishi, Tsugihiro Watanabe, Keisuke Hoshikawa, Sevgi Donma, Takashi Kume Jan,2009 Long-term changes of water and salinity management in Lower Seyhan Plain, Turkey. . From Headwaters to the Ocean: Hydrological Change and Watershed Management. (reviewed).

OSADA, Toshiki

Professor

Born in 1954.

—Achievements—

[Editing]

[Editing / Co-editing]

- Toshiki Osada, Akinori Uesugi (ed.) 2008 Occasional Paper 3: Linguistics, Archaeology and the Human Past. Research Institute for Humanity and Nature, Kyoto, Kita-ku, 178pp.

POPOV, Alexander Nikolaevich

Visiting Research Fellow

Born in 1966.

[Academic Career]

Department of History, Far Eastern National University (1988)

[Professional Career]

Researcher, Museum of Archaeology and Anthropology, Far Eastern National University (1990)
Curator, Museum of Archaeology and Anthropology, Far Eastern National University (1994年)
Assistant Director, Museum of Archaeology and Anthropology, Far Eastern National University (1999年)
Director, Museum of Archaeology and Anthropology, Far Eastern National University (2003年)
Visiting Research Fellow, RIHN (2008)

[Higher Degrees]

Ph.D (Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia 1996)

[Fields of Specialization]

Archaeology
Anthropology

—Achievements—

[Papers]

[Original Articles]

- POPOV, Alexander; TABAREV, Andrei 2008 Neolithic cultures of the Russian Far East: technological evolution cultures sequence. *Turkish Academy of Sciences Journal of Archaeology* (11) :41-63. (reviewed).
- POPOV, Alexander 2008 Burial complexes at the multilayered site Boisman-2 in southern Primorye. *Archaeology, Ethnography and Anthropology* 34(2) :68-75. (in Russian) (reviewed).

[Research Presentations]

[Oral Presentation]

- POPOV, Alexander Landscape Changes and Ancient Cultures of Holocene in the Continental Fare East of Russia. NEOMAP Landscape Workshop at General Meeting, Mar 12,2009-Mar 13,2009, Kita-ku, Kyoto.
- POPOV, Alexander Neolithisation and Landscape in Primorye, Far Eastern Russia. Ecohistory Program Lecture, Mar 05,2009, Kita-ku, Kyoto.
- TKACHEV, Sergei; BAZAROV, Kiril; POPOV, Alexandr; TABAREV, Andrei; BELUSHKIN, Mikhail Developing of natural landscapes at settlements in southern Primorye (mid. XIX - beg. XX centuries). "Neolithisation and Landscape" NEOMAP Landscape Workshop 2008, Oct 31,2008-Nov 01,2008, Kita-ku, Kyoto.
- POPOV, Alexander; TABAREV, Andrei Landscape shift and Neolithic remains of south-western Primorye in the middle Holocene. Prehistoric Landscape Shifts in the East Asian Inland Seas" Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

POTTENTAVIDA, Ajithprasad

Visiting Research Fellow

Born in 1957.

[Academic Career]

Department of Chemistry, University of Calicut(1978)

Department of Archaeology & Ancient History, Faculty of Arts, The Maharaja Sayajirao University of Baroda, M. Course(1981)

Department of Archaeology & Ancient History, Faculty of Arts, The Maharaja Sayajirao University of Baroda, D. Course(1990)

[Professional Career]

Lecturer, Department of Archaeology & Ancient History, Faculty of Arts, The Maharaja Sayajirao University of Baroda(1990)

[Higher Degrees]

M. A.(The M. S. University of Baroda, 1981)

Ph. D(The M. S. University of Baroda, 1990)

[Fields of Specialization]

Archaeology

—Achievements—

[Papers]

[Original Articles]

・P. Ajithprasad 2008 Jaidak (Pithad): A Sorath Harappan site in Jamnagar District, Gujarat and its Architectural Features. Toshiki Osada and Akinori Uesugi (ed.) Occasional Paper 4 Linguistics, Archaeology and Human Past.

[Research Presentations]

[Oral Presentation]

・P. Ajithprasad The Palaeolithic Remains and the Spread of Hominine Ancestors in the Orsang and the Sabarmati Valleys in Gujarat. Plio-Pleistocene Environment and Hominine Adaptations in India, Dec 01,2008-Dec 05,2008, Bhopal.

・P. Ajithprasad Cultural Patterns and the Early Harappan Interactions in Gujarat. Cultural Relations Between the Indus and the Iranian Plateau During the Third Millennium BCE, Jun 07,2008-Jun 08,2008, Kyoto.

SAEKI, Tazu

Assistant Professor

[Academic Career]

Department of Geophysics, Faculty of Science, Tohoku University, D. Course (1998)

Department of Geophysics, Faculty of Science, Tohoku University, M. Sc. (1995)

Division of Natural Science, The College of Liberal Arts, International Christian University (1993)

[Professional Career]

Assistant Professor, Research Institute for Humanity and Nature (2002)

Assistant Professor, Information Synergy Center, Tohoku University (2001)
Assistant Professor, Computer Center, Tohoku University (1998)

[Higher Degrees]

M. Sc.

[Fields of Specialization]

Atmospheric Physics

[Academic Society Memberships]

Meteorological Society of Japan,
American Geophysical Union (AGU)

—Achievements—

[Research Presentations]

[Poster Presentation]

・Tazu Saeki, Hiromitsu Kanno, Hidetoshi Miyazaki, Hitoshi Shinjo Meteorological Observation in Southern Province, Zambia. Meteorological Society of Japan 2008 Fall meeting, Nov 19,2008-Nov 21,2008, Sendai. (in Japanese)

SAITO, Kiyoaki

Professor

Born in 1945.

[Academic Career]

Department of Education, Faculty of Education, Kyoto University (1971)
Department of Agricultural Biology, Faculty of Agriculture, Kyoto University (1969)

[Professional Career]

Professor, Research Institute for Humanity and Nature (2004)
Senior Staff Writer, Staff Writer, The Mainichi Newspaper (2003～1971)

[Fields of Specialization]

Study of Nature
Journalism

[Academic Society Memberships]

The International Society of Volunteer

—Achievements—

[Papers]

[Original Articles]

・Saito, K 2008 From 'The Study of Nature' to Tibetan Civilization. *Himalayan Study Monographs* 9 :135-140. (in Japanese)

・Saito, K 2008 Field-science of post Dr.Kinji Imanishi. *Eco-sophia* 20 :52-57. (in Japanese)

SAKAI, Shoko

Associate Professor

Born in 1971.

—Achievements—

[Papers]

[Original Articles]

・Ushimaru, A., Ishida, C., Sakai, S., Shibata, M, Tanaka, H., Niiyama, K. and Nakashizuka, T. 2008 The effects of human management on spatial distribution of two bumble bee species in a traditional agro-forestry Satoyama landscape. *Journal of Apicultural Research and Bee World* 47 :296-303. (reviewed).

・Sakai, S., Wright, S. J. 2008 Reproductive ecology of 21 coexisting Psychotria species (Rubiaceae): When is heterostyly lost? . *Biological Journal of Linnean Society* 93 :125-134.(reviewed).

SAKAMOTO, Ryota

Project Researcher

—Achievements—

[Papers]

[Original Articles]

・Sakamoto R, et al. Dec,2008 Potential sources of Legionnaires' disease.. *IASR* 29 :331-332. (in Japanese)

・Ohno A, Kato N, Sakamoto R, Kimura S, Yamaguchi K. Jul,2008 Temperature-dependent parasitic relationship between *Legionella pneumophila* and a free-living amoeba (*Acanthamoeba castellanii*). *Appl Environ Microbiol* 74 :4585-4588.(reviewed).

・Satomura K, Iwanaga S, Noami M, Sakamoto R, Kusaka K, Nakahara T. Jun,2008 The Framework Convention on Tobacco Control (FCTC) and Japanese anti-tobacco measures.. *Tob Induc Dis* 4 :3.(reviewed).

SASAKI, Naoko

Project Researcher

[Academic Career]

Department of Forest and Biomaterials Science, Graduate School of Agriculture, Kyoto University, D. Course (2005)

Department of Bio-resources, Graduate School of Agriculture, Ehime University, M. Course (2001)

Faculty of Agriculture, Ehime University (1997)

[Professional Career]

Visiting Fellow, The Australian National University (2009)

Project Research Fellow, Research Institute for Humanity and Nature (2006)
Technical Assistant, Research Institute for Humanity and Nature (2005)

[Higher Degrees]

D.Agr. (Kyoto University, 2006)
M.Agr. (Ehime University, 2001)

[Fields of Specialization]

Vegetation History
Forest History
Palaeoecology

[Academic Society Memberships]

The Ecological Society of Japan
Japanese Association of Historical Botany
Palynological Society of Japan
American Quaternary Association

—Achievements—

[Research Presentations]

[Oral Presentation]

・Sasaki, N., Nakano, N., Tamura, N. and Takahara, H. Late Holocene history of semi-natural grassland in south-western Japan based on pollen and charcoal records. 12th International Palynological Congress (IPC-XII 2008) and 8th International Organisation of Palaeobotany Conference (IOPC-VIII 2008), Aug 30,2008-Sep 05,2008, Bonn, Germany.

SEKINO, Tatsuki

Associate Proffesor

Born in 1969.

[Academic Career]

Department of Zoology, Faculty of Science, Kyoto University, D. Course (1998)
Department of Biology, Faculty of Science, Shinshu University, M. Sc. (1993)
Department of Biology, Faculty of Science, Shinshu University (1991)

[Professional Career]

Associate Professor, Research Promotion Center, Research Institute for Humanity and Nature (2002)
Researcher, Research Division, International Lake Environmental Committee Foundation (2001)
COE Scientist, Center for Ecological Research, Kyoto University (1999)

[Higher Degrees]

D. Sc. (University of Kyoto, 1998)
M. Sc. (University of Shishu, 1993)

[Fields of Specialization]

Information Science
Limnology

Ecology

[Academic Society Memberships]

Information Processing Society of Japan
Japanese Society of Limnology
Ecological Society of Japan

—Achievements—

[Books]

[Chapters/Sections]

・Sekino, T. 2008 Diel vertical migration of zooplankton. Shimizu, I and Oishi, T. (ed.) Rhythm Ecology . Tokai Univ Press, Hadano, Japan, pp.25-46. (in Japanese)

[Papers]

[Original Articles]

・ Sekino T., M. Nakamura, T. Ballatore, V. Muhandiki 2008 Knowledge-Base System for Lake Basin Management. *Proceedings of 12Th World Lake Conference* :2263-2268.

・Sekino, T. 2008 An information analysis tool based on temporal data. *AJIA YU GAKU* 113 :140-148. (in Japanese) (reviewed).

[Research Presentations]

[Oral Presentation]

・Sekino, T. Information analysis of various type of information based on temporal data. PNC 2008 Annual Conference in Conjunction with ECAI and JVGC, Dec 04,2008-Dec 06,2008, Ha Noi, Vietnam.

SEO, Akihiro

Project Researcher

Born in 1972.

[Academic Career]

Department of Botany, Graduate School of Science, Kyoto University (2002)
Department of Biology, Graduate School of Science, Kagoshima University (1998)
Faculty of Science, Kagoshima University (1996)

[Professional Career]

Research Fellow, Research Institute for Humanity and Nature (2006)
Postdoctoral Scientist, Kyoto University (2002)

[Higher Degrees]

D.Sc(Kyoto University, 2002)
M.Sc(Kagoshima University, 1998)

[Fields of Specialization]

Plant Taxonomy
Biogeography

[Academic Society Memberships]

The Botanical Society of Japan

The Japanese Society for Plant Systematics
The Society for the Study of Species

—Achievements—

[Research Presentations]

[Oral Presentation]

・Akihiro Seo, Kyoko Aoki, Saneyoshi Ueno, Yoshiyuki Tsumura, Noriaki Murakami, Takakazu Yumoto Comarison of genetic structure of Machilus thunbergii and Castanopsis sieboldii in Japan using EST-SSR analysis. The 72th Annual meeting of the Botanical Society of Japan, Sep 25,2008-Sep 27,2008, Kochi University, Kochi.

SHIRAIWA, Takayuki

Associate Professor

Born in 1964.

[Academic Career]

Division of Environmental Structure, Graduate School of Environmental Sciences, Hokkaido University, D. Course (1990)
Division of Environmental Structure, Graduate School of Environmental Sciences, Hokkaido University, M. Course (1989)
Department of Geography, Faculty of Education, Waseda University (1987)

[Professional Career]

Associate Professor, Research Institute for Humanity and Nature (2005)
Associate Professor, Institute of Low Temperature Science, Hokkaido University (2004)
Assistant Professor, Institute of Low Temperature Science, Hokkaido University (1990)

[Higher Degrees]

D. in Environmental Sci. (Hokkaido University, 1993)
M. in Environmental Sci. (Hokkaido University, 1989)

[Fields of Specialization]

Glaciology, Physical Geography, Sougou-Chikyu-Kankyogaku

[Academic Society Memberships]

The Japanese Society of Snow and Ice, The Association of Japanese Geographers, Japan Association for Quaternary Research, Japanese Geomorphological Union, International Glaciological Society

—Achievements—

[Papers]

[Original Articles]

・Santibanez, P., Kohshima, S., Scheihing, R., Jaramillo, J., Shiraiwa, T., Matoba, S., Kanda, D., Labarca, P. and Casassa, G. 2008 Glacier mass balance interpreted from biological analysis of firn cores in the Chilean lake district. *Journal of Glaciology* 54(186) :452-462.(reviewed).

・Yamaguchi, S., Naruse, R., Shiraiwa, T. 2008 Climate reconstruction since the Little Ice Age by modelling Koryto glacier, Kamchatka Peninsula, Russia. *Journal of Glaciology* 54(184) :125-130.

(reviewed).

・Kanamori, S., Benson, C.S., Truffer, M., Matoba, S., Solie, D.J., Shiraiwa, T. 2008 Seasonality of snow accumulation at Mount Wrangell, Alaska, USA. *Journal of Glaciology* 54(185) :273-278.(reviewed).

[Review Articles]

・Nakatsuka, T., Nishioka, J. and Shiraiwa, T. 2008 Linkage between inland and open ocean ecosystems by material transport through river, shelf and intermediate water layer-Background of 2006/2007 research expedition in the Sea of Okhotsk-. *Monthly "Kaiyo"* Special Issue 50 :68-76. (in Japanese) (reviewed).

[Research Presentations]

[Oral Presentation]

・Sasaki, H., Matoba, S. and Shiraiwa, T. Fe flux to the northern North Pacific estimated from the ice-core of Mt. Wrangell, Alaska. JSSI & JSSE Joint Conference on Snow and Ice Research 2008/Tokyo, Sep 24,2008-Sep 27,2008, Tokyo, Bunkyo-ku, The University of Tokyo. (in Japanese)

[Poster Presentation]

・Matoba, S., Sasaki, H., Shiraiwa, T. and Muravyev, Y.D. Chemical compositions of an ice-core obtained from Mount Ichinsky, Kamchatka, Russia. JSSI & JSSE Joint Conference on Snow and Ice Research 2008/Tokyo, Sep 24,2008-Sep 27,2008, Tokyo, Bunkyo-ku, The University of Tokyo. (in Japanese)

・Sasaki, H., Okamoto, S., Shiraiwa, T., Matoba, S., Sugiyama, S., Fukuda, T., Solie, D.J., Yoshikawa, K. and Benson, C.S. Preliminary report on ice-core analysis at Aurora Peak, Alaska Range. JSSI & JSSE Joint Conference on Snow and Ice Research 2008/Tokyo, Sep 24,2008-Sep 27,2008, Tokyo, Bunkyo-ku, The University of Tokyo. (in Japanese)

・Shiraiwa, T., Matoba, S., Sugiyama, S., Sasaki, H., Okamoto, S., Fukuda, T., Solie, D.J., Yoshikawa, K. and Benson, C.S. Report on ice-core drilling at Aurora Peak, Alaska Range. JSSI & JSSE Joint Conference on Snow and Ice Research 2008/Tokyo, Sep 24,2008-Sep 27,2008, Tokyo, Bunkyo-ku, The University of Tokyo. (in Japanese)

・Fukuda, T., Sugiyama, S., Shiraiwa, T. and Matoba, S. Glacier flow measurement and ice thickness sounding at Aurora Peak, Alaska in 2008. JSSI & JSSE Joint Conference on Snow and Ice Research 2008/Tokyo, Sep 24,2008-Sep 27,2008, Tokyo, Bunkyo-ku, The University of Tokyo. (in Japanese)

SHIRAKI, Yohei

Project Researcher

Born in 1979.

[Academic Career]

Master of Science, Graduate courses in Environment Systems, Graduate School of Geo-environmental Science, Rissho University, Japan(2005)

Doctor of Science, Geosystem and Biosystem Sciences Division, Graduate School of Science and Technology, Chiba University, Japan(2008)

[Professional Career]

Project Researcher, Research Institute for Humanity and Nature(2008)

[Higher Degrees]

D.Sc (

[Fields of Specialization]

Environmental Dynamics
Geographic Information System
Remote Sensing

[Academic Society Memberships]

Japan Society of Photogrammetory and Remote Sensing
Society of Environmental Science, Japan
American Geophysical Union
Japan Geoscience Union

—Achievements—

[Papers]

[Original Articles]

・Hirano, Y., T. Ichinose, H. Imura, Y. Shiraki 2008 Simulation evaluation of mitigation effect on urban heat island by watering. *Journal of Hydroscience and Hydraulic Engineering* 53 :307-312.(reviewed).

[Research Presentations]

[Oral Presentation]

・ Shiraki, Y Attempt to evaluate thermal environment in the area with a lack of urban spatial information database,. 5th Japanese-German Meeting on Urban Climatology, October 2008, Freiburg, German.

[Poster Presentation]

・Shiraki. Y. Effect of the heat island on subsurface temperature. 2008AGU fall meeting, December 2008, San Francisco., USA.

・Shiraki, Y The effect of an urban environment on the precipitation. 5th Japanese-German Meeting on Urban Climatology, October 2008, Freiburg, German.

TACHIMOTO, Narifumi

Director-General

Born in 1940.

[Professional Career]

Director-General, Research Institute for Humanity and Nature (2007-)
Dean, Graduate School of Global Humanics, Chubu University (2003)
Dean, Graduate School of International Studies and Colege of International Studies, Chubu University (2001)
Professor, College of International Studies, Chubu University (2001)
Director, Center for Southeast Asian Studies, Kyoto University (1998)
Professor, Center for Southeast Asian Studies, Kyoto University (1980)
Cultural Attaché, Embassy of Japan, Jakarta (1977)

[Higher Degrees]

Ph.D., Anthropology (University of Chicago, 1974)
M.A., Sociology (Kyoto University, 1967)

[Fields of Specialization]

Humanics; Anthropology; Sociology; SEA Area Studies

[Awards]

The Purple Ribbon Medal (2003)

—Achievements—

[Research Presentations]

[Oral Presentation]

・TACHIMOTO, Narifumi Global Humanics of the Environment to tackle with global and local environmental problems in Asia. EML Program International Center for Human Resource Development in Environmental Management 1st Symposium, Mar 05,2009, Inamori Hall in Shiran Kaikan, Kyoto University, Kyoto.

TAKASO, Tokushiro

Professor

Born in 1954.

[Academic Career]

Department of Biology, Graduate School of Science, Tokyo Metropolitan University, D. Course (1981)
Department of Biology, Graduate School of Science, Chiba University, M. Course (1978)
Faculty of Agriculture, Shizuoka University (1976)

[Professional Career]

Professor, Research Institute for Humanity and Nature (2003)
Professor, Tropical Biosphere Research Center, University of the Ryukyus (1997)
Postdoctoral Fellow, Department of Biology, University of Victoria (1990)
Postdoctoral Fellow, Harvard Forest, Harvard University (1988)
Postdoctoral Fellow, Harvard Forest, Harvard University (1986)
Research Fellow, Japan Society for Promotion of Science (1985)
Research Fellow, Japan Society for Promotion of Science (1981)

[Higher Degrees]

Ph.D. (Tokyo Metropolitan University, 1982)
M.Sc. (Chiba University, 1978)

[Fields of Specialization]

Plant morphology

[Academic Society Memberships]

Botanical Society of Japan

—Achievements—

[Papers]

[Original Articles]

・Takaso, T and J.N. Owens. 2008 Significance of exine shedding in Cupressaceae-type pollen.. *J. Plant Res.* 121 :83-85.

TANIGUCHI, Makoto

Professor

Born in 1959.

[Academic Career]

University of Tsukuba, Japan Ph.D. Hydrology (1987)
University of Tsukuba, Japan M.S. Hydrology (1984)
University of Tsukuba, Japan B.S. Geosciences (1982)

[Professional Career]

Research Institute for Humanity and Nature, Associate Professor (2003 - 2007)
Department of Earth Sciences, Nara University of Education, Professor (2000 - 2003)
Department of Earth Sciences, Nara University of Education, Associate Professor (1993 - 2000)
Department of Earth Sciences, Nara University of Education, Research Associate (1988 - 1990)
Division of Water Resources, CSIRO, Australia, Visiting Scientist (1987 - 1988)

[Higher Degrees]

D.Sc (The University of Tsukuba,1987)
M.Sc.(The University of Tsukuba,1984)

[Fields of Specialization]

Environmental dynamic analysis
Hydrology/Weather/Oceanic physics

[Academic Society Memberships]

American Geophysical Union
International Association of Hydrological Sciences
International Association of Hydrogeology
Japanese Association of Groundwater Hydrology
Japanese Association of Hydrological Science
Japan Society of Engineering Geology
The Japan Society of Hydrology and Water Resources
The Association of Japanese Geographers
The Japanese Society of Limnology

[Awards]

Award of 7th Japanese Association of Limnology (Yoshimura Prize, 2005)
Research award from the Association of Japanese Geographers (1987)

—Achievements—

[Papers]

[Original Articles]

・Taniguchi, M., Stieglits, T, and Ishitobi, T 2008 Temporal variability of SGD quality in Ubatuba coastal area. *Estuarine, Coastal and Shelf Science* 76 :484-492..(reviewed).

・Stieglits, T, M. Taniguchi, and S. Neylon 2008 Spatial variability of submarine groundwater discharge in Ubatuba coastal area. *Estuarine, Coastal and Shelf Science* 76 :493-500.(reviewed).

・Bokuniewcz, H., M. Taniguchi, T. Ishitobi, M. Charrette, M. Allen, E. Kontor 2008 Temporal seepage rate variability in Ubatuba coastal area associated with fractured crystalline rock aquifer.

Estuarine, Coastal and Shelf Science 76 :466-472..(reviewed).

・Taniguchi, M., W.C. Burnett, H. Dulaiova, F. Siringan, J. Foronda, G. Wattayakorn, S. Rungsupa, E. Kontor, and T. Ishitobi 2008 Groundwater discharge as an important land-sea pathway into Manila bay, Philippines. *J. Coastal Res* 24(1a) :15-24.(reviewed).

・Taniguchi, M., T. Ishitobi, J. Chen, S. Onodera, K. Miyaoka, W.C. Burnett, R. Peterson, G. Liu, and Y. Fukushima 2008 Submarine groundwater discharge from the Yellow River Delta to the Bohai Sea, China. *J. Geophys. Res* 113. DOI:10.1029/2007JC004498.

・Peterson, R., W.C. Burnett, M. Taniguchi, J. Chen, Santos, I.R., T. Ishitobi 2008 Radon and radium isotope assessment of submarine groundwater discharge in the Yellow River delta, China. *J. Geophys. Res* 113. DOI:10.1029/2008JC004776.(reviewed).

・Peterson, R., W.C. Burnett, M. Taniguchi, J. Chen, Santos, I.R., and Misra, S 2008 Determination of transport rate in the Yellow River-Bohai Sea mixing zone via natural geochemical tracers. *Continental Shelf Research* 28 :2700-2707.(reviewed).

・W.C. Burnett, R. Peterson, M. Taniguchi, G. Wattayakorn, S. Chanyotha, F. Siringan 2008 Importance of groundwater discharge in developing urban centers of Southeast Asia. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. pp.289-294.(reviewed).

・T.Hosono, Y. Umezawa, S. Onodera, C-H. Wang, F. Siringan, S. Buapeng, R. Delinom, T. Nakano, M. Taniguchi 2008 Comparative study on water quality among Asian megacities based on major ion concentrations. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.295-300.(reviewed).

・J. Chen, Y. Fukushima, M. Taniguchi 2008 Surface and groundwater interactions in the lower reach of the Yellow River. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.301-305 .(reviewed).

・K. Miyaoka, M. Taniguchi, T. Ishitobi, Y. Fukushima, S. Onodera, J. Chen, G. Liu 2008 Saline Groundwater flow in the Yellow River delta, China. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.307-312.(reviewed).

・K. Yamamoto, T. Hasegawa, Y. Fukuda, T. Nakaegawa, M. Taniguchi 2008 Improvement of JLG terrestrial water storage model using GRACE satellite gravity data. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.369-374 .(reviewed).

・T. Ishitobi, M. Taniguchi, Jianyao Chen, S. Onodera, K. Miyaoka, T. Tokunaga, Y. Fukushima 2008 Investigation of fresh and salt water distribution by resistivity method in Yellow River Delta. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management,. Taylor & Francis Group, pp.387-392.

・H. Hamamoto, M. Yamano, S. Kamioka , J. Nishijima, V. Monyrath, S. Goto, M. Taniguchi 2008 Estimation of the past ground surface temperature change from borehole temperature data in the Bangkok area. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.535-539.(reviewed).

・R. F. Lubis, A. Miyakoshi, M. Yamano, M. Taniguchi, Y. Sakura, R. Delinom 2008 Reconstructions of climate change and surface warming at Jakarta using borehole temperature data. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.541-545.(reviewed).

・M. Taniguchi, J. Shimada, Y. Fukuda, S. Onodera, M. Yamano, A. Yoshikoshi, S. Kaneko, Y. Umezawa, T. Ishitobi, K. Jago-on 2008 Degradation of subsurface environment in Asian coastal cities. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes

and Management. Taylor & Francis Group, pp.605-610.(reviewed).

・M. Taniguchi, T. Ishitobi, W. C. Burnett 2008 Global assessment of submarine groundwater discharge. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.613-617.(reviewed).

・M. Saito, S. Onodera, K. Okada, M. Sawano, K. Miyaoka, M. Taniguchi 2008 Evaluation of denitrification potential in coastal groundwater using simple in situ injection experiment. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management,. Taylor & Francis Group, pp.653-658.(reviewed).

・N. Peterson, W.C. Burnett, I.R. Santos, M. Taniguchi, T. Ishitobi, J. Chen 2008 Bohai Sea coastal transport rates and their influence on coastline nutrient inputs. M. Taniguchi, W.C. Burnett, Y Fukushima, M. Haigh, Yu Umezawa (ed.) From Headwater to the Ocean-Hydrological Changes and Management. Taylor & Francis Group, pp.659-664.(reviewed).

・W.C. Burnett, P.K. Aggarwal, A. Aureli, H. Bokuniewicz, J.E. Cable, M.A. Charette, E. Kontar, S. Krupa, K.M. Kulkarni, A. Loveless, W.S. Moore, J.A. Oberdorfer, J. Oliveira, N. Ozyurt, P. Povinec, A.M.G. Privitera, R. Rajar, R.T. Ramessur, J. Scholten, T. Stieglitz, M. Taniguchi, J.V. Turner Chen 2008 Quantifying submarine groundwater discharge in the coastal zone via multiple methods. *Nuclear and Isotopic Techniques for the Characterization of Submarine Groundwater Discharge in Coastal Zones IAEA* :9 -66 .(reviewed).

・M.Taniguchi 2008 Evaluations of submarine groundwater discharge and saltwater-freshwater interface by uses of automated seepage meters and resistivity measurements. *Nuclear and Isotopic Techniques for the Characterization of Submarine Groundwater Discharge in Coastal Zones IAEA* :169-184.(reviewed).

[Research Presentations]

[Oral Presentation]

・Makoto Taniguchi Urban subsurface environment in Asian coastal megacities. KRIHS and RIHN joint international symposium on Urban Sustainability in Asia, June 2008, KRIHS, Seoul, Korea..

・Makoto Taniguchi Effects of submarine groundwater discharge on ecosystem in the coastal area of Yuza, Japan. AOGS2008, June 2008, Bussan, Korea.

・Makoto Taniguchi Groundwater resources assessment under the pressures of humanity and climate changes. An international Conference on Groundwater & Climate in Africa,, June 2008, Kampala, Uganda.

TERAMURA Hirofumi

Project Researcher

Born in 1977.

[Academic Career]

Department of Archaeology, Faculty of Letters, Okayama University (2000)

Graduate School of Humanities and Social Sciences (Master's Course), Okayama University (2002)

Graduate School of Humanities and Social Sciences (Doctor's Course), Okayama University (2005)

[Professional Career]

Instructor, Faculty of Culture and Information Science, Doshisha University (2005)

Project Researcher, Research Institule for Humanity and Nature (2007)

[Higher Degrees]

D. Lit (Okayama University, 2005)

M. Lit (Okayama University, 2002)

[Fields of Specialization]

Archaeology

[Academic Society Memberships]

Society of Archaeological Studies
Japan Society for Archaeological Information
GIS Association of Japan

—Achievements—

[Papers]

[Original Articles]

・Teramura, H., Y. Kondo, T. Uno, A. Kanto, T. Kishida, and H. Sakai Aug,2008 Archaeology with GIS in the Indus Project.. Osada, T. and A. Uesugi (ed.) Linguistics, Archaeology and the Human Past.. Occasional Paper, 5. RIHN, Indus Project, Kyoto, pp.45-102.

TOJO, Bumpei

Project Researcher

—Achievements—

[Papers]

[Original Articles]

・Bumpei, TOJO Feb,2009 Reconsideration of the "Deforestation by Local Resident" Problem in Developing Countries: The Case Study of Madhupur Tract, Bangladesh. *AJIA KEIZAI* Vol.L(No.2) :2-25. (in Japanese) (reviewed).

[Research Presentations]

[Oral Presentation]

・Bumpei, TOJO Importance of Secondary Forest Conservation by the Local Participation in Developing Countries. The Japanese Forest Society Congress 120, Mar 25,2009-Mar 28,2009, Kyoto Univ. Kyoto. (in Japanese)

TSUJI, Takashi

Project Researcher

Born in 1973.

—Achievements—

[Research Presentations]

[Oral Presentation]

・Takashi Tsuji Ecological Anthropological Study about Gathering and Utilization of Forest Biological

Resources in Lao PDR.. 11th Meeting of The Japan NGO Society, March 2009, Nagoya University (Aichi). (in Japanese)

・Takashi Tsuji Morray as A Local Resource: A Case Study of Morray Fishing in Mactan Island, Philippines.. 26th Meeting of The Japan Oceania Society, March 2009, Hotel New Tsuruta (Oita). (in Japanese)

・Takashi Tsuji Fishing Activity and Life Style in Lahanam.. 1st Seminar on Ecohealth Project 2009 under Health Development Project in Lahanam, Songkhone District, Savannakhet Province , January 2009, National Institute of Public Health (Vientiane, Lao PDR).

・Takashi Tsuji Co-Existence Relationship Arranged by Subsistence Activities: A Case Study of The Indigenous Fishing Activities in Palawan Island, Philippines.. Annual Meeting of The Japan Archaeological Association, November 2008, Nanzan University (Aichi). (in Japanese)

・Takashi Tsuji An Ecological and Anthropological Study of Subsistence Complex in Lao PDR: Possibility for Application for Research on Public Health.. RIHN Kyoto Special Meeting on "Lao-Japan Leadership on Study of Global Environmental Change and Health in Tropical Asia", November 2008, Research Institute for Humanity and Nature (Kyoto).

・Takashi Tsuji Fishing Activities at A Farming Village of The Mekong Basin in Southern Laos.. 2nd Seminar of The Study Group of Ethnohistory, October 2008, Research Institute for Humanity and Nature (Kyoto). (in Japanese)

TSUJINO, Riyou

Project Researcher

Born in 1976.

[Higher Degrees]

D.Sc (Kyoto University, 2006)

[Fields of Specialization]

Forest Ecology

Plant-Animal Interaction Ecology

[Academic Society Memberships]

Ecological Society of Japan

Mammalogical Society of Japan

Mycological Society of Japan

—Achievements—

[Books]

[Chapters/Sections]

・Tsujino R, Agetsuma N, Agetsuma-Yanagihara Y 2008 Effects of sika deer and conifer plantations on the density and diversity of current-year tree seedlings in lowland forests on Yakushima Island, Japan. Masahiro Ichikawa, Satoshi Yamashita, Tohru Nakashizuka (eds) (ed.) Sustainability and Biodiversity Assessment on Forest Utilization Options,Research Institute for Humanity and Nature Project 2-2. Project 2-2, Research Institute for Humanity and Nature, Kyoto, Kyoto, pp.147-151.

・Yamauchi T, Aiba S, Tsujino R, Yumoto T 2008 Changes in insect assemblages with conversion from old-growth evergreen broadleaf forests to Cryptomeria japonica plantations on Yakushima Island, Japan.

Masahiro Ichikawa, Satoshi Yamashita, Tohru Nakashizuka (eds) (ed.) Sustainability and Biodiversity Assessment on Forest Utilization Options,Research Institute for Humanity and Nature Project 2-2. Project 2-2, Research Institute for Humanity and Nature, Kyoto, Kyoto, pp.152-158.

[Papers]

[Original Articles]

・Tsujino R, Yumoto T 2008 Seedling establishment of five evergreen tree species in relation to topography, sika deer (Cervus nippon yakushimae) and soil surface environments. *Journal of Plant Research* 121 :537-546.(reviewed).

・Koda R, Noma N, Tsujino R, Umeki K, Fujita N 2008 Effects of sika deer (Cervus nippon yakushimae) population growth on saplings in an evergreen broad-leaved forest. *Forest Ecology and Management* 256 :431-437.(reviewed).

UCHII, Kimiko

Project Researcher

Born in 1978.

[Academic Career]

Ph.D., Center for Ecological Research, Kyoto University (2007)

M.Sc., Center for Ecological Research, Kyoto University (2004)

B.Sc., Faculty of Science, Kyoto University (2002)

[Professional Career]

Postdoctoral Researcher, Research Institute for Humanity and Nature (2007)

Research Assistant, Center for Ecological Research, Kyoto University (2006)

Research Assistant, Center for Ecological Research, Kyoto University (2005)

Research Assistant, Center for Ecological Research, Kyoto University (2004)

[Higher Degrees]

D.Sc.(Kyoto University, 2007)

M.Sc.(Kyoto University, 2004)

[Fields of Specialization]

Ecology

Microbial Ecology

[Academic Society Memberships]

Ecological Society of Japan

Japanese Society of Microbial Ecology

[Awards]

The 8th Ecological Research Award (2008)

—Achievements—

[Papers]

[Original Articles]

・Kazuaki Matsui, Mie Honjo, Yukihiro Kohmatsu, Kimiko Uchii, Ryuji Yonekura, Zen'ichiro Kawabata 2008 Detection and significance of koi herpesvirus (KHV) in freshwater environments. *Freshwater Biology*

53(6) :1262-1272. DOI:10.1111/j.1365-2427.2007.01874.x.(reviewed).

[Research Presentations]

[Oral Presentation]

・Kimiko Uchii, Takeshi Ishihara, Kohta Asano, Zen'ichiro Kawabata Invasion of cyprinid herpesvirus 3 and its impact on the economy and industry involved in koi and common carp. 73rd Annual Meeting of Japanese Society of Limnology, Oct 10,2008-Oct 13,2008, Sappro. (in Japanese)

[Poster Presentation]

・Kimiko Uchii, Kazuaki Matsui, Zen'ichiro Kawabata Distribution of cyprinid herpesvirus 3 in a wild population of common carp (*Cyprinus carpio*). International Symposium on Environmental Change, Pathogens, and Human Linkage, Jun 11,2008-Jun 12,2008, Kyoto, Japan.

UCHIYAMA, Junzo

Associate Professor

Born in 1967.

[Academic Career]

Graduate School of Human and Environmental Studies, Kyoto University, D. Course (1997)
Department of Archaeology, Durham University, M.A. Course (1996)
Graduate School of Human and Environmental Studies, Kyoto University, M. Course (1993)
Department of Archaeology, Faculty of Literature, The University of Tokyo, B.A. Course (1991)

[Professional Career]

Associate Professor, Research Institute for Human and Nature (2003)
Associate Professor, Faculty of Humanities, University of Toyama (2001)
Lecturer, Faculty of Humanities, University of Toyama (1998)

[Higher Degrees]

Ph.D. (The Graduate University for Advanced Studies, 2002)
M.A.(Environmental Archaeology) (Durham University, 1996)
M.A.(Human-environmental Studies) (Kyoto University, 1993)

[Fields of Specialization]

Prehistoric Anthropology
Zooarchaeology

[Academic Society Memberships]

The Society of Bio-Sophia Studies

—Achievements—

[Books]

[Chapters/Sections]

・UCHIYAMA, Junzo Dec,2008 Vertical or Horizontal Landscape? The prehistoric Long- Term Perspectives on the History of the East Asian Inland Seas. SCHOTTENHAMMER, Angela (ed.) The East Asian Mediterranean: Maritime Crossroads of Culture, Commerce and Human Migration. East Asian Economic and Socio-cultural Studies: East Asian Maritime History, 6. Harrassowitz, Wiesbaden, Germany, pp.25-52.

[Editing]

[Editing / Co-editing]

・UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; MAKIBAYASHI, Keisuke (ed.) Jan,2009 Neolithisation and Landscape: NEOMAP International Workshop. NEOMAP, Kita-ku, Kyoto, 174pp.

・UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; NAKAMURA, Oki (ed.) Jan,2009 NEOMAP Interim Report 2008. NEOMAP, Kita-ku, Kyoto, 260pp.

[Papers]

[Original Articles]

・UCHIYAMA, Junzo Jan,2009 Resource Management and Landscape Diversity in Jomon Japan. UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; MAKIBAYASHI, Keisuke (ed.) Neolithisation and Landscape: NEOMAP International Workshop. NEOMAP, Kita-ku, Kyoto, pp.3-24.

・UCHIYAMA, Junzo Jan,2009 Jomon Style and Yayoi Style: The Worldview Transition in the Central Japanese Archipelago with Neolithisation, as Seen from the Representations in Pottery and Settlement. UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; NAKAMURA, Oki (ed.) NEOMAP Interim Report 2008. NEOMAP, Kita-ku, Kyoto, pp.139-154. (in Japanese)

[Research Presentations]

[Oral Presentation]

・UCHIYAMA, Junzo Reluctant Neolithisation? Resource management and landscape diversity in Jomon Japan. The international workshop “Sedentism: Worldwide research perspectives for the shift of human societies from mobile to settled ways of life” hosted by the German Archaeological Institute, Oct 24,2008, Berlin, Germany.

・UCHIYAMA, Junzo; LINDSTRÖM, Kati Landscape History in Fight with Global Environmental Problems: a Report on a Multidisciplinary Research Project on East Asian Inland Seas. “Landscape History and Landscape Heritage” Parallel Session C 4.2 at the Permanent European Conference for the Study of the Rural Landscape (PECSRL) 23rd Session - Landscapes, Identities and Developments, Sep 05,2008, Óbidos, Portugal.

・UCHIYAMA, Junzo Prehistoric landscape shifts as seen from human-wild boar relations in Jomon Japan. Prehistoric Landscape Shifts in the East Asian Inland Seas” Session at the 4th worldwide conference of Society for East Asian Archaeology (SEAA), Jun 03,2008, Bejing, China.

UESUGI, Akinori

Project Researcher

Born in 1971.

—Achievements—

[Editing]

[Editing / Co-editing]

・Toshiki Osada and Akinori Uesugi (ed.) 2008 Occasional Paper 4: Linguistics, Archaeology and the Human Past. Indus Project, Research Institute for Humanity and Nature, Kyoto,

・Toshiki Osada and Akinori Uesugi (ed.) 2008 Occasional Paper 5: Linguistics, Archaeology and the Human Past. Indus Project, Research Institute for Humanity and Nature, Kyoto,

UMETSU, Chieko

Associate Professor

[Academic Career]

Ph.D. (Agricultural and Resource Economics, University of Hawaii at Manoa, Honolulu Hawaii USA 1995),
M.A. (International Relations, International University of Japan, Niigata, Japan, 1989)

[Professional Career]

Science & Math Teacher(O level), Kiriani High School, Meru, Kenya, Japan Overseas Cooperation Volunteers, JICA. (1979)
Training Co-ordinator, Tohoku Branch Office, Japan International Cooperation Agency (JICA)(1982)
Visiting Fellow, Program on Environment, East-West Center, Honolulu, Hawaii. U.S.A.(1995)
Assistant Professor, The Graduate School of Science and Technology, Kobe University, Japan(1997)
Visiting Scholar, Environmental Studies, Research Program, East-West Center, Honolulu, Hawaii, U.S.A. (2001)
Associate Professor, Research Institute for Humanity and Nature, Inter-University Research Institute Corporation, National Institutes for the Humanities, Kyoto, Japan(2002)

[Higher Degrees]

Ph.D.(University of Hawaii, 1995)
M.A.(International University of Japan, 1989)

[Fields of Specialization]

Environmental and Resource Economics
Development Economics
Agricultural and Rural Development
Applied Microeconomics

[Academic Society Memberships]

International Association of Agricultural Economists,
American Agricultural Economics Association (AAEA),
International Society for Ecological Economics (ISEE),
Agricultural Economics Society of Japan (AESJ), 1998-2009.
Society for Environmental Economics and Policy Studies (SEEPS),
Japan Society for International Development (JASID),
Japanese Society of Irrigation, Drainage and Rural Engineering (JSIDRE)

[Awards]

IAAE-JB Research Award(2001)
Best Article Award from the Agricultural Economics Society of Japan (2003)

—Achievements—

[Books]

[Translations / Joint Translations]

・Toshiki Osada, Yoichiro Sato 長田俊樹・佐藤洋一郎監訳 Jul,2008 Nokokigen no Jinruishi「農耕起源の人類史」. (ed.) Chpater 5: Africa: An Independent Focus of Agricultural Development? ５章「アフリカの農耕―もう一つの起源」. Kyoto Univ. Academic Press, Kyoto, . (in Japanese) Translation of Bellwood, Peter. First Farmer: The Origin of Agricultural Societies. . Blackwell , .

[Editing]

[Editing / Co-editing]

・K. Palanisami, C. Ramasamy, C. Umetsu eds. (ed.) 2008 Groundwater Management and Policies. MACMILLAN Advanced Research Series. Macmillan India Ltd., New Delhi, 284pp. ISBN 13: 978-0230-63491-6.

[Papers]

[Original Articles]

・Ujjayant Chakravorty, Eithan Hochman, Chieko Umetsu and David Zilberman Feb,2009 Water Allocation Under Distribution Losses: Comparing Alternative Institutions. *Journal of Economic Dynamics and Control* 33(2) :463-476. DOI:10.1016/j.jedc.2008.04.014.(reviewed).

・V. Geethalakshmi, Akiyo Yatagai, K. Palanisamy, Chieko Umetsu. Feb,2009 Impact of ENSO and the Indian Ocean Dipole on northeast monsoon rainfall of Tamil Nadu State in India. *Hydrological Processes* 23(4) :633-647. DOI:10.1002/hyp.7191.(reviewed).

・Taro Yamauchi, Thamana Lekprichakul, Takeshi Sakurai, Hiromitsu Kanno, Chieko Umetsu, Sesele Sokotela. Dec,2008 Training Local Health Assistants for a Community Health Survey in a Developing Country: Longitudinal Monitoring of the Growth and Nutrition of Children in Zambia. *Journal of Higher Education and Lifelong Learning, (高等教育ジャーナル)* (16) :67-75.(reviewed).

・K. Palanisami, C.R. Ranganathan, and Chieko Umetsu. 2008 "Returns to Groundwater Management in hard rock regions of South India". M.V.Rangaswami, K.Palanisami and C.Mayilswami eds. (ed.) Groundwater Resources Assessment, Recharge and Modelling. MACMILLAN Advanced Research Series. MacMillan India Ltd., New Delhi, pp.241-262.(reviewed).ISBN: 978-0230-63492-3.

・K. Palanisami, Ziya Coşkun, Sevgi Donma, Takanori Nagano, Yoichi Fujihara, Kenji Tanaka. 2008 "Climate Change and Alternative Cropping Patterns in Lower Seyhan Irrigation Project: A Simulation Analysis". K. Palanisami, C. Ramasamy, C. Umetsu eds. (ed.) Groundwater Management and Policies . MACMILLAN Advanced Research Series. Macmillan India Ltd., New Delhi, pp.191-202.(reviewed).ISBN 13: 978-0230-63491-6 .

[Research Presentations]

[Oral Presentation]

・Chieko Umetsu Climate change and alternative cropping patterns in lower Seyhan irrigation project: a regional simulation analysis with MRI-CGCM and CCSR-CGCM. The IARU International Scientific Congress "Climate Change: Global Risks, Challenges and Decisions, Mar 10,2009-Mar 12,2009, Bella Center, Copenhagen, Denmark.

・Chieko Uemtsu Why Farmers Still Invest in Wells in Hard-rock Regions When the Water-table is fast Declining?. HydroChange 2008: Hydrological changes and management from headwater to the ocean, Oct 01,2008-Oct 03,2008, Kyoto Garden Palace, Kyoto.

[Invited Lecture / Honoronary Lecture / Panelist]

・Chieko Umetsu Vulnerable society against drought: conditions for building resilience for social-ecological systems. organized session by Shigeo Yachi, "A new relationship between ecology and sustainability science", at the 56th Annual Meeting of Ecological Society of Japan (ESJ56), Mar 17,2009-Mar 21,2009, Morioka, Japan. (in Japanese)

・Chieko Umetsu Farmers in developing countries who live under variable environment. Seika University Lecture Series on Global Environment No. 3, "Field study from Asia and Africa, Jun 24,2008, Kyoto. (in Japanese)

Senior Researcher

[Academic Career]

Department Linguistics, Graduate School of Letters, Kyoto University, D. Course (2002)
Department Linguistics, Graduate School, Kyoto University, M. Course (1996)
Department Linguistics, Faculty of Letters, Kyoto University (1993)

[Professional Career]

Senior Researcher, Research Institute for Humanity and Nature (2006-)
Lecturer (part-time), Kyoto University (2004-2005, 2008-)
Researcher (part-time), Center for Eurasian Cultural Studies (2005-2006)
Lecturer (part-time), Doshisya Women's College (2004-)
Research Fellow of the Japan Society for the Promotion of Science (DC 1) (1996)

[Higher Degrees]

D.L(Kyoto University, 2005)
M.L (Kyoto University, 1996)

[Fields of Specialization]

Sumerian
Lingusitics
Cuneiform Studies

[Academic Society Memberships]

The Liguistic Society of Japan
The Society for Near Eastern Studies in Japan

—Achievements—

[Books]

[Translations / Joint Translations]

・Mori, W. Jun,2008 Gozoku-ha jinrui-no senshi-nitaishite donoyoona imi-wo motsunoka [Chapter 9], Noko-no kakusan [Chapter 10]. Osada,T. Y. Sato (ed.) Nokokigen-no Jinruishi. Kyoto University Press, Kyoto, pp.279-397. (in Japanese) Translation of Bellwood, P. First Farmers: The Origins of Agricultural Societies. Blackwell , Oxford (England), pp.180-251.

[Papers]

[Original Articles]

・Mori, W. Feb,2009 Sumerian through Babylonians' eyes. Maekawa, K. (ed.) Cultural Contact between Ancient Syria and Mesopotamia. Kokushikan University, Machida, Tokyo, pp.10-19. (in Japanese)

・Maekawa, K. and W. Mori 2008 Dilmun, Magan and Meluhha in the Early Mesopotamian History. *Annual Report of Indus Project 2007* :155-167. (in Japanese)

[Research Presentations]

[Oral Presentation]

・Mori, W., K.. Maekawa Dilmun, Magan and Meluhha in Early Mesopotamian History: 2500-1600 BC. Cultural Relations between the Indus Valley and the Iranian Plateau during the Third Millennium BC, Jun 07,2008-Jun 08,2008, RIHN, Kyoto.

・Mori, W. Exotic things in the Sumerian literarure - the periphery of Sumer and Akkad. The 51th Japanese Sumerological meeting, May 24,2008-May 25,2008, Kyoto University (Kyoto) . (in Japanese)

WATANABE, Mitsuko

Project Researcher

Born in 1977.

[Academic Career]

School of Integrated Sciences, Graduate School of Humanities and Sciences, Nara Women's University, D. Course (2005)

Department of International Studies for History, Sociology and Geography, Graduate School of Humanities and Sciences, Nara Women's University, M. Course (2002)

Faculty of Letter, Nara Women's University (2000)

[Professional Career]

Project Researcher, Research Institute for Humanity and Nature (2006)

Technical Assistant, Research Institute for Humanity and Nature (2005)

Postdoctoral Research Fellow, Graduate School of Humanities and Sciences, Nara Women's University (2005)

Research Assistant, Nara Women's University, 21st century COE Program (2004)

Research Assistant, Graduate School of Humanities and Sciences, Nara Women's University (2002)

[Higher Degrees]

D.Sc. (Nara Women's University, 2005)

M.Litt. (Nara Women's University, 2002)

[Fields of Specialization]

Physical geography

[Academic Society Memberships]

Association of Japanese Geographers

Japan Association for Quaternary Research

Japanese Association for Arid Land Studies

Japanese Geomorphological Union

Seismological Society of Japan

—Achievements—

[Research Presentations]

[Oral Presentation]

・M. Watanabe, Y. Konagaya, T. Akiyama and J. Kubota Socialist Modernization as the Environmental History in Almaty Region, Republic of Kazakhstan：A case study of the "Kazakhstan Sovkhoz". The Study Meeting of the Association of Japanese Geographers, Spring 2009, Mar 28,2009-Mar 29,2009, Teikyo Univ. Hachioji. (in Japanese)

・M. Watanabe, Y. Konagaya, T. Akiyama and J. Kubota Legacies and Ruins of Socialist Modernization in Almaty Region, Republic of Kazakhstan. International Workshop "Reconceptualizing Cultural and Environmental Change in Central Asia:An Historical Perspective on the Future", Feb 01,2009-Feb 02,2009, RIHN, Kyoto. (in Japanese,in English,in Russian)

WATANABE, Tsugihiro

Professor

Born in 1953.

[Academic Career]

Department of Agricultural Engineering, Graduate School of Agriculture, Kyoto University, D. Course (1983)

Department of Agricultural Engineering, Graduate School of Agriculture, Kyoto University, M. Course (1979)

Department of Agricultural Engineering, Faculty of Agriculture, Kyoto University (1977)

[Professional Career]

Professor, Research Institute for Humanity and Nature (2003)

Associate Professor, Research Institute for Humanity and Nature (2001)

Associate Professor, Arid Land Research Center, Tottori University (2001)

Associate Professor, College of Agriculture and Bioscience, Osaka Prefecture University (1995)

Associate Professor, Faculty of Agriculture, Kyoto University (1989)

Research Assistant, Faculty of Agriculture, Kyoto University (1984)

Research Fellow, Japan Society for Promotion of Science (1983)

[Higher Degrees]

D.Agr. (Kyoto University, 1989)

M.Sc. (Kyoto University, 1979)

[Fields of Specialization]

Irrigation and Drainage Engineering

[Academic Society Memberships]

Japanese Society of Irrigation

Drainage and Reclamation Engineering

Japan Society of Hydrology and Water Re-sources

Japanese Association for Water Resources and Environment

Japan Society of Civil Engineers

The Japa-nese Society for Arid Land Studies

International Commission on Irrigation and Drainage

International Water Re-sources Association

The Association of Rural Planning

—Achievements—

[Papers]

[Original Articles]

・Akio Onishi・Masafumi Morisugi・Hidefumi Imaura・Feng Shi・Tsugihiro Watanabe・Yoshihiro Fukushima 2008 STUDY ON THE EFFICIENCY OF AGRICULTURAL WATER USE IN THE YELLOW RIVER BASIN. *Journal Global Environment Engineering* 13 :51-67.

・YOICHI FUJIHARA・SLOBODAN P. SIMONOVIC・FATIH TOPALOGLU・KENJI TANAKA・TSUGIHIRO WATANABE 2008 An inverse-modeling approach to assess the impacts of climate change in the Seyhan River basinTurkey. *Hydrological Sciences* 53(6) :1121-1136.

・・A.Onishi・ Y.Sato・T.Watanabe・ Y.Fukushima・ X.Cao, H.Imura・ M.Matsuoka・M.Morisugi 2008 Study on sustainable agricultural production and agricultural water use efficiency in the Yellow River Basin

of China . M. Taniguchi・ W.C. Burnett・ Y. Fukushima・ M. Haigh ・ Y. Umezawa (ed.) From Headwaters to the Ocean: Hydrological Changes and Watershed Management.. CRC Press, pp.465-470.

・・T.Nagano・ T.Onishi・ T.Kume・T.Watanbe・ K.Hoshikawa・ S.Donma 2008 Long-term changes in water and salinity management in Lower Seyhan Plain, Turkey. M. Taniguchi・ W.C. Burnett・ Y. Fukushima・ M. Haigh ・ Y. Umezawa (ed.) From Headwaters to the Ocean: Hydrological Changes and Watershed Management.. CRC Press, pp.313-319.

・Y.Fujihara・ T.Watanabe・ T,Nagano, K.Tanaka・ and T.Kojiri 2008 Adapting to climate change on the water resources systems of the Seyhan River Basin in Turkey.. . M. Taniguchi,・W.C. Burnett・ Y. Fukushima・ M. Haigh ・ Y. Umezawa (ed.) From Headwaters to the Ocean: Hydrological Changes and Watershed Management. CRC Press, pp.257-263.

[Review Articles]

・Yuki Konagaya,Shin Hirose,Tsugihiro Watanabe 2008 Sanninn yoreba suido no chi Dai1kai [suido]to sono chi. *Tochikairyo* 260 :28-33. (in Japanese)

・Yuki Konagaya,Shin Hirose,Tsugihiro Watanabe 2008 Sanninn yoreba suido no chi Dai3kai suiri ha suiri ka ~ chiiki no mizu wo kangaeru. *Tochikairyo* (262) :28-33. (in Japanese)

・ Yuki Konagaya,Shin Hirose,Tsugihiro Watanabe 2008 Sanninn yoreba suido no chi Dai4kai kouun na kouun~tahata no tsuti wo totonoeru. *Tochikairyo* (263) :32-37.

・ Yuki Konagaya,Shin Hirose,Tsugihiro Watanabe 2008 Sanninn yoreba suido no chi Dai2kai yousui ha yousui ka ~ tahata no mizu wo totonoeru. *Tochikairyo* (261) :30-35. (in Japanese)

YAMAMOTO, Keiko

Project Researcher

Born in 1974.

—Achievements—

[Papers]

[Original Articles]

・Yamamoto K, Fukuda Y, Doi K, Motoyama H Dec,2008 Interpretation of the GRACE Mass Trend in Enderby Land, Antarctica. *Polar Science* 2(4) :267-276. DOI:10.1016/j.polar.2008.10.001.(reviewed).

・ Yamamoto, K., T. Hasegawa, Y. Fukuda, T. Nakaegawa, Taniguchi, M. Oct,2008 Improvement of JLG terrestrial water storage model using GRACE satellite gravity data, in Headwaters to the Ocean. Taniguchi, M., Burnett, W.C., Fukushima, Y., Haigh, M., Umezawa, Y. (ed.) From Headwaters to the Ocean. London, pp.369-374.(reviewed).

・Hasegawa, T., Fukuda, Y., Yamamoto, K., Nakaegawa, T. Oct,2008 The 2006 Australian drought detected by GRACE. Taniguchi, M., Burnett, W.C., Fukushima, Y., Haigh, M., Umezawa, Y. (ed.) From Headwaters to the Ocean. Tayor & Francis Group, London, pp.363-367.(reviewed).

[Research Presentations]

[Oral Presentation]

・Yamamoto, K., T. Nakaegawa, T. Hasegawa, Y. Fukuda, Taniguchi, M. Study of terrestrial water storage in Africa using GRACE satellite gravity data and JLG terrestrial water storage model. Groundwater & Climate in Africa, Jun 24,2008-Jun 28,2008, Kampala, Uganda.

・Yamamoto, K., T. Hasegawa, Y. Fukuda, T. Nakaegawa, Taniguchi, M. Improvement of JLG terrestrial water storage model using GRACE satellite gravity data. HydroChange 2008, Oct 01,2008-Oct 03,2008, Kyoto,

Japan.

・Yamamoto, K., T. Hasegawa, Y. Fukuda, T. Nakaegawa, Taniguchi, M. Improvement of JLG terrestrial water storage model using GRACE satellite gravity data. GRACE Science Team Meeting, Dec 12,2008-Dec 13,2008, San Francisco, USA.

・Hasegawa, T., Fukuda, Y., Yamamoto, K., Nakaegawa, T. and Tamura, Y. 2006 Australian drought detected by GRACE. Gravity, Geoid and Earth Observation, Jun 23,2008-Jun 27,2008, Crete, Greece.

・Hasegawa, T., Fukuda, Y., Yamamoto, K., Nakaegawa, T. The 2006 Australian drought detected by GRACE. HydroChange 2008, Oct 01,2008-Oct 03,2008, Kyoto, Japan.

・Hasegawa, T., Fukuda, Y., Sun, W., Fu, G., Okuno, J., Yamamoto, K. Co-seismic and Post-seismic Gravity Changes caused by the 2004 Sumatra- Andaman earthquake: comparison of GRACE data with SNREI Model. GRACE Science Team Meeting, Dec 12,2008-Dec 13,2008, San Francisco, USA.

[Poster Presentation]

・Yamamoto, K., T. Nakaegawa, Y. Fukuda, Taniguchi, M. Recovery of basin-scale landwater variations using GRACE data for the correction of groundwater monitoring with in-situ gravimetry. XXXVI IAH Congress, Oct 26,2008-Nov 01,2008, Toyama, Japan.

・Yamamoto, K, Fukuda, Y., Doi, K Antarctic Ice Sheet Mass Variation Using GRACE Satellite Gravity Data-Removal of Atmospheric Correction Error and Recalculation of the Interannual Mass Trend-. AGU Fall Meeting, Dec 15,2008-Dec 19,2008, San Francisco, USA.

・Taniguchi, M, Yamamoto, K, Sarukkalige, P R, Regional assessments of groundwater resources by uses of satellite GRACE and GRAPHIC network in Western Australia. AGU Fall Meeting, Dec 15,2008-Dec 19,2008, San Francissco, USA.

・Hasegawa, T., Fukuda, Y., Fu, G., Sun, W., Okuno, J., Yamamoto, K. Coseismic and Postseismic Gravity Changes Associated with the 2004 Sumatra Earthquake: Comparison between GRACE and SNREI model. AGU Fall Meeting, Dec 15,2008-Dec 19,2008, San Francisco, USA.

[Invited Lecture / Hononorary Lecture / Panelist]

・Yamamoto, K, Y. Fukuda, M., Taniguchi, M Study of Sub-basin Scale Groundwater Variations in Asia Using GRACE, Satellite Altimetry and in-situ Data. AGU Fall Meeting, Dec 15,2008-Dec 19,2008, San Francisco, USA.

YAMAMURA, Norio

Professor

Born in 1947.

[Academic Career]

Faculty of Science, Kyoto University, B. Course (Graduated, 1969)

Graduate School of Science, Kyoto University, M. Course (Graduated, 1971)

Graduate School of Science, Kyoto University, D. Course (Accomplised credits for doctoral program, 1975)

[Professional Career]

Associate Professor, Saga Medical School, Faculty of Medicine, Saga University (1978)

Professor, Saga Medical School, Faculty of Medicine, Saga University (1995)

Professor, Center for Ecological Research, Kyoto University (1996)

Professor,Research Institule for Humanity and Nature (2007)

[Higher Degrees]

D.Sc (Kyoto University, 1977)
M.Sc.(Kyoto University, 1971)

[Fields of Specialization]

Mathematical Ecology
Evolutionary biology

[Academic Society Memberships]

Ecological Society of Japan
The Society of Population Ecology
Socity of Evolutionary Studies Japan
Japanese Society for Mathematical Biology
International Union for the Study of Social Insects
Japan Ethological Society

[Awards]

Ecological Society of Japan Award (2007)

—Achievements—

[Papers]

[Original Articles]

- Nakazawa, T., Ohgushi, T. and Yamamura, N Jan,2009 Food-dependent reproductive adjustment and stability of consumer-resource dynamics. *Population Ecology* 51(1) :105-113. DOI:10.1007/s10144-008-0101-9.(reviewed).
- Nakazawa, T. and Yamamura, N Jan,2009 Theoretical considerations for the maintenance of interspecific brood care by a Nicaraguan cichlid fish: behavioral plasticity and spatial structure. *Journal of Ethology* 27(1) :67-73. DOI:10.1007/s10164-008-0085-0.(reviewed).
- Miki, T., Yokokawa, T., Nagata, T. and Yamamura, N Aug,2008 Immigration of prokaryotes to local environments enhances remineralization efficiency of sinking particles: A metacommunity model. *Marine Ecology Progress Series* 366 :1-14. DOI:10.3354/meps07597.

YAMANAKA, Hiroki

Project Researcher

Born in 1979.

[Academic Career]

Center for Ecological Research, Kyoto University, Ph.D.Course (-2007)
Center for Ecological Research, Kyoto University, M.Course (-2004)
Faculty of Bioresources, Mie University, B.Course (-2002)

[Professional Career]

Postdoctoral Researcher, Research Institule for Humanity and Nature(2007-)
Research Assistant, Center for Ecological Research, Kyoto University (2004, 2005, 2006)

[Higher Degrees]

Ph.D. (Center for Ecological Research, Kyoto university, 2007)
M.Sc. (Center for Ecological Research, Kyoto university, 2004)

[Fields of Specialization]

Ecology

Fisheries Science

[Academic Society Memberships]

Ecological Society of Japan

The Ichthyological Society of Japan

The Japanese Society of Limnology

—Achievements—

[Papers]

[Original Articles]

・Toshifumi Minamoto, Mie N. Honjo, Kimiko Uchii, Hiroki Yamanaka, Alata A. Suzuki, Yukihiro Kohmatsu, Takaji Iida, Zen'ichiro Kawabata Mar,2009 Detection of cyprinid herpesvirus 3 DNA in river water during and after an outbreak. *Veterinary Microbiology* 135 :261-266. DOI:doi:10.1016/j.vetmic.2008.09.081.(reviewed).

YASUMOTO, Jun

Project Researcher

Born in 1977.

[Academic Career]

Faculty of Agriculture, Kochi University(2001)

Graduate School of Agriculture, Kochi University(2003)

Ph. D. in The United Graduate School of Agricultural Sciences, Ehime University, Japan(2006)

[Professional Career]

Postdoctoral fellow, Kyushu University(2007)

Postdoctoral fellow, Research Institute for Humanity and Nature(2008)

[Higher Degrees]

Doctor of Agriculture

[Fields of Specialization]

Agricultural engineering, Groundwater Hydrology

[Academic Society Memberships]

Japanese Association Of Groundwater Hydrology

The Japanese Society of Irrigation, Drainage and Rural Engineering

Japan Society of Civil Engineers

Japan Geoscience Union (JPGU)

American Geophysical Union (AGU)

[Awards]

The prize of excellence lecture in young researchers, Japanese Association Of Groundwater Hydrology(2008)

—Achievements—

[Papers]

[Original Articles]

・Mamoru Katsuki, Jun Yasumoto, Yoshinari Hiroshiro & Kenji Jinno, 2008 Estimation of groundwater discharge to the sea using a distributed recharge model. From Headwaters to the Ocean -Hydrological Change and watershed management. Taylor & Francis Group, pp.625-630.(reviewed).

[Research Presentations]

[Oral Presentation]

・Jun Yasumoto Estimation of submarine groundwater discharge in coastal area of Choukai-Mountain using Radon. Fall meeting of Japanese Association of Groundwater Hydrology, November 2008, Kyushu, Japan. (in Japanese)

・Jun Yasumoto Development of the groundwater flow model to estimate submarine groundwater discharge in Ariake Bay,,Japan. Geoscience Union Meeting 2009,, May 2008, Chiba, Japan. (in Japanese)

・Jun Yasumoto Estimation of nutrient loads with submarine groundwater discharge to Aeiake Bay, Japan. Spring meeting of Japanese Association of Groundwater Hydrology, May 2008, Tokyo, Japan. (in Japanese)

[Poster Presentation]

・Jun Yasumoto Evaluation of submarine groundwater discharge in coastal aquifers at Osaka Bay, Japan by numerical simulation. 2008 AGU Fall Meeting, December 2008, San Francisco, USA.

・Jun Yasumoto idal effect on submarine groundwater discharge in coastal aquifers at Osaka Bay. IAH2008, October 2008, Toyama, Japan.

[Invited Lecture / Honoronary Lecture / Panelist]

・Jun Yasumoto Nutrient transport with submarine groundwater discharge. The Japanese Forest Society Workshop of Forest Hydlorogy, March 2009, Kyoto, Japan. (in Japanese)

YASUNARI, Teppei

Project Researcher

Born in 1979.

[Academic Career]

Earth System Science, Hokkaido University, Ph.D.Course(2008)

Geoscience, Hokkaido University, M.Course(2005)

Earth Science, Hirosaki University, BS (Science and Technology)(2003)

[Professional Career]

Researcher, Research Institute for Humanity and Nature(2008)

Research Assistant, Institute of Low Temperature Science, Hokkaido University(2007)

The 21st COE Research Assistant, Institute of Low Temperature Science (Graduate School of Environmental Science), Hokkaido University (2005)

[Higher Degrees]

D.Sc(Hokkaido University,2008)

M.Sc(Hokkaido University,2005)

[Fields of Specialization]

Meteorology
glaciology
climatology

[Academic Society Memberships]

American Geophysical Union(AGU)
International Glaciological Society(IGS)
Meteorological Society of Japan(MSJ)
Japanese Society of Snow and Ice(JSSI)

[Awards]

The Nakaya Ukichiro Science Incentive Award (Kaga city, Japan)(2009.2)
Half-exemption from repayment upon graduation for graduate school students with outstanding results (JASSO, Japan)(2008)

—Achievements—

[Papers]

[Original Articles]

・ Yasunari, T. J. and Yamazaki, K. Feb,2009 Impacts of Asian dust storm associated with the stratosphere-to-troposphere transport in the spring of 2001 and 2002 on dust and tritium variations in Mount Wrangell ice core, Alaska. *Atmos. Environ.* 43 :2582-2590. DOI:10.1016/j.atmosenv.2009.02.025. (reviewed).

[Research Presentations]

[Oral Presentation]

・Yasunari, T. J., Shiraiwa, T., Matoba, S., Sasaki, H., and Goto-Azuma K. Dust variations in the past three decades in the North Pacific refion “The deposition amount of Asian dust in April 2001 was large”. Spring meeting of Meteorological Society of Japan in 2009, November 2008, Sendai, Japan. (in Japanese)

[Poster Presentation]

・Yasunari, T. J., Yamazaki, K., Shiraiwa, T., and Hondoh, T. Importance of spring cyclonic activities in East Asia on Asian dust storm and the Stratosphere-to-Troposphere transport. First International Conference: From Deserts to Monsoons, June 2008, Crete, Greece.

[Invited Lecture / Honoronary Lecture / Panelist]

・ Teppei J. Yasunari What is the ice core? “To know Asian dust and stratospheric materials”. Commemorative lecture on the Nakaya Ukichiro Science Incentive Award 2009, February 2009, Kaga, Japan. (in Japanese)

・ Teppei J. Yasunari Alaskan ice core tells us the information of Asian dust and the stratosphere-troposphere transport in the past three decades. special lecture in devision of Earth and Planetary Science in Graduate School of Science, October 2008, Kyoto University. (in Japanese)

・Yasunari,T.J., Shiraiwa, T., Matoba, S., and Sasaki, H. Comment on deposition monitoring “Dust variations in the free troposphere in the North Pacific region from case studies to seasonal and interannual variations”. Workshop on elucidating the movement of dust, September 2008, Nagoya, Japan. (in Japanese)

YATAGAI,Akiyo

Assistant Professor

Born in 1968.

[Academic Career]

Department of Geoscience,Unibersity of Tsukuba,D.Course(1996)

Department of Geoscience,University of Tsukuba,M.Course(1992)

Department of Natural Sciences,1st cluster of colleges,University of Tsukuba(1990)

[Professional Career]

Assitant Professor,Research Institute for Humanity and Nature(RIHN)(2002) - present

Lecturer(temporary),Meiji University(2003) - present

COE Research Fellow,Disaster Prevention Research Institute,Kyoto Univesity(2001)

Research Fellow,National Space Debelopment Agency of Japan/Earth Observation Research Center(NASDA/EORC)(1995)

[Higher Degrees]

Ph.D(Science)(Unibersity of Tsukuba,1996)

M.Sc.(University of Tsukuba,1992)

[Fields of Specialization]

Atomospheric science

Climatology

Hydrology

Satellite Remote Sensing

Geography

[Academic Society Memberships]

Meteorological Society of Japan

The Japan Society of Hydrology and Water Resources

The Association of Geographers

The American Meteorological Society

American Geophysical Union

—Achievements—

[Papers]

[Original Articles]

- Yatagai, A., P. Xie and P. Alpert 2008 Development of a daily gridded precipitation data set for the Middle East. *Advance in Geosci* 12 :165-170.(reviewed).
- Kitoh, A., A. Yatagai and P. Alpert 2008 First super-high-resolution model projection that the ancient “Fertile Crescent” will disappear in this century. *Hydrological Research Letters* 2 :1-4. DOI:10.3178/HRL.2.1.(reviewed).
- Yatagai, A., H. Kawamoto and P. Xie 2008 Products and validation of GAME re-analyses and JRA-25: Precipitation. *Extended abstract for Third WCRP International Conference on Reanalysis* .
- Kitoh, A., A. Yatagai and P. Alpert 2008 Reply to comment by Ben-Zvi and Givati on 'First super-high-resolution model projection that the ancient "Fertile Crescent" will disappear in this century.'. *Hydrological Research Letters* 2 :46. DOI:10.3178/hrl.2.46.(reviewed).
- Yatagai, A., and H. Kawamoto 2008 Quantitative estimation of orographic precipitation over the Himalayas by using TRMM/PR and a dense network of rain gauges. *Proc. SPIE* 7148-11.

DOI:10.1117/12.811943.(reviewed).

[Research Presentations]

[Oral Presentation]

・Yatagai, A. A quantitative estimate of orographical precipitation over Himalayas by TRMM/PR and dense rain-gauge network. SPIE, Nov 17,2008-Nov 21,2008, New Caledonia.

・Takashima, H., A. Yatagai, H. Kawamoto, O. Arakawa and K. Kamiguchi Hydrological balance over northern Eurasia form gauge-based high-resolution daily precipitation data. Hydrochange 2008 in Kyoto, Oct 01,2008-Oct 03,2008, Kyoto.

・Yatagai, A. The Isotopic Composition of Water Vapor and the Concurrent Meteorological Condition over the Northern Part of the Tibetan Plateau. AMS Mountain Meteorology, Aug 11,2008-Aug 15,2008, Vancouver, Canada.

[Poster Presentation]

・Yatagai, A. Interannual Variation of Summertime Precipitation around the Northern Part of the Tibetan Plateau in China. AGU 2008 Fall Meeting, Dec 15,2008-Dec 19,2008, San Francisco.

・Yatagai, A., H. Kawamoto, M. I. Nodzu, T. Watanabe, J. Kubota, A. Kitoh, K. Kamiguchi, O. Arakawa, S. Kanae Asian Precipitation-Highly-Resolved Observational Data Integration Towards Evalution of the Water Resources(APHRODITE's Water Resources). Conference of APHW in Beijing, Nov 07,2008-Nov 09,2008, Beijing.

・ Yatagai, A., A. Sugimoto, and M. Nakawo Isotopic Composition of Water Vapor and Concurrent Meteorological Conditions Around the Arid Regions of China and the Tibetan Plateau. First International Conference: From Deserts to Monsoons, Jun 01,2008-Jun 06,2008, Crete, Greece.

・Yatagai, A. Interannual Variation in the Atomospheric Branch of the Hydrological Cycle Over the Fertile Crescent. First International Conference: From Deserts to Monsoons, Jun 01,2008-Jun 06,2008, Crete, Greece.

YUMOTO, Takakazu

Professor

Born in 1959.

[Academic Career]

Faculty of Science, Kyoto University (1982),
Department of Botany, Graduate School of Science, Kyoto University, M. Course (1984),
Department of Botany, Graduate School of Science, Kyoto University, D. Course (1987)

[Professional Career]

Research Fellow, Japan Society for the Promotion of Science (1987),
Assistant Professor, College for Liberal Arts, Kobe University (1989),
Lecturer, College for Liberal Arts, Kobe University (1992),
Lecturer, Faculty of Science, Kobe University (1992),
Associate Professor, Center for Ecological Research, Kyoto University (1994),
Professor, Research Institute for Humanity and Nature (2003)

[Higher Degrees]

D. Sc (Kyoto University, 1987)
M.Sc (Kyoto University, 1984)

[Fields of Specialization]

Ecology

[Academic Society Memberships]

The Ecological Society of Japan,
The Botanical Society of Japan,
The Japan Society of Tropical Ecology,
Japan Society for African Studies,
The Society for the Study of Plant Species,
Japanese Association of Historical Botany,
Wildlife Conservation Society

—Achievements—

[Books]

[Authored/Co-authored]

・Yumoto, T. & Isono, H. 2008 Tropical Rainforests as Living Forests. Yumoto, T. & Isono, H. , 152pp. (in Japanese)

[Chapters/Sections]

・Yumoto, T. & Yoneda, M. 2008 What have been eaten by humans in the Japanese Archipelago ?. Yumoto, T. (ed.) Global Environment Viewed from Foods: Sustainability of Foods and Agriculture. Showa-do, Kyoto, pp.25-60. (in Japanese)

・Yumoto, T. 2008 Let's consider natural resources around us. RIHN (ed.) Prescription to the Earth: Roots of Global Environmental Issues. Showa-do, Kyoto, pp.72-75. (in Japanese)

[Editing]

[Editing / Co-editing]

・Yumoto, T. (ed.) 2008 Global Environment Viewed from Foods- Sustainability of Foods and Agriculture. Showa-do, Kyoto, (in Japanese)

[Papers]

[Original Articles]

・Kitamura, S., Yumoto, T., Poonswad, P., Suzuki ,S., & Wohande, P. 2008 Rare seed predating mammals determine seed fate of Canarium euphyllum, a large-seeded tree species in a moist evergreen forest, Thailand. . *Ecological Research* 23 :169-177.(reviewed).

・ Imamura, A. & Yumoto, T. 2008 Dynamics of fruit-body production and mycorrhiza formation of ectomycorrhizal ammonia fungi in warm temperate forests in Japan. *Mycoscinece* 49 :42-55.(reviewed).

・Yamagiwa, J., Basabose, A. K., Kaleme, K. & Yumoto, T. 2008 Phenology of fruits consumed by a sympatric population of gorillas and chimpanzees in Kahuzi-Biega National Park, Democratic Republic of Congo. *African Study Monographs (Supplementary Issue)* 39 :3-22.(reviewed).

・Kitamura, S., Yumoto, T., Noma, N., Chuailua, P., Maruhashi, T., Wohandee, P., & Poonswad, P. 2008 Aggregated seed dispersal by wreathed hornbills at a roost site in a moist evergreen forest of Thailand. *Ecological Research* 23 :943-952.(reviewed).

・Kusaka, S., Ikarashi, T., Hyodo, F., Yumoto, T. and Katayama, K. 2008 Variability in stable isotope ratios in two Late-Final Jomon communities in the Tokai coastal region and its relationship with sex and ritual tooth ablation. *Anthropological Science* 116 :171-181.(reviewed).

・Tsujino, R. & Yumoto, T. (2008) 2008 Seedling establishment of five evergreen tree species in relation to topography, sika deer (Cervus nippon yakushimae) and soil surface environments. *Journal of Plant*

Research 121 :537-546.(reviewed).

・Terakawa, M., Matsui, K., Hamada, T., Noma, N. & Yumoto, T. 2008 Reduced seed dispersal effectiveness in the large-seeded tree Myrica rubra in the absence of the Japanese macaque on Tanegashima Island, Japan. *Japanese Journal of Conservation Ecology* 13 :161-167. (in Japanese) (reviewed).

・Ishimaru, E., Umino, T., Yoneda, M., Shibata, Y., Yumoto, T. & Tayasu, I. 2008 Expansion in the distribution of marine products revealed by the identification of marine fish origins: a new perspective from carbon and nitrogen stable isotope data from Chugoku and Shikoku. *Archaeology and Natural Science* 57 :1-20. (in Japanese) (reviewed).

[Research Presentations]

[Invited Lecture / Hononorary Lecture / Panelist]

・Yumoto, T. Satoyama in the Future: Bio- and Cultural Diversity. Public Lecture in Annual Meeting of Japanese Society of Forestry, Mar 26,2009, Kyoto. (in Japanese)

・Yumoto, T. Ecosystem service provided by Satoyama and its sustainable use. International Symposium "Satoyama: Nature as Culture", Dec 13,2008, Kyoto. (in Japanese)

・Yumoto, T. Loss of diversity is a global environmental issue. International Conference on Science and Technology for Sustainability 2008, Sep 12,2008, Tokyo.

ZEBALLOS VELARDE, Carlos Renzo

Project Researcher

Born in 1968.

[Academic Career]

Bachelor in Architecture. National University of San Agustín, Arequipa, Peru, 1992

Professional Degree of Architect. National University of San Agustín, Arequipa, Peru, 1996

Master in Urban Planning and Environmental Management. National University of San Agustín, Arequipa, Peru, 2002

Master in Sustenaible Development. National University of Lanus, Buenos Aires, Argentina, 2003

PhD. Urban Environmental Planning. Kyoto University, Kyoto, Japan. 2007

[Professional Career]

ARQUICAD EIRL, General Manager (1996-2002)

SENCICO, Instructor (1997-2002)

Faculty of Architecture, National University of San Agustin . Associate Professor (1999-2002)

Faculty of Architecture, Santa Maria Catholic University. Associate Professor (2002

Project Research Associate, Research Institute for Humanity and Nature (2006-2007)

Project Researcher, Research Institute for Humanity and Nature (2008)

[Higher Degrees]

PhD (Kyoto University, Japan. 2007)

MSc. (Lanus University, Argentina. 2003)

MSc. (San Agustin University, Peru, 2002)

[Fields of Specialization]

Architectural Design

Urban Environmental Planning

GIS management
3D modeling

[Academic Society Memberships]

Japan Institute of Architects

[Awards]

Wiese Bank Award to best Architectural Thesis Project. Peru.(1996)

—Achievements—

[Editing]

[Editing / Co-editing]

・UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; MAKIBAYASHI, Keisuke (ed.) Jan,2009 Neolithisation and Landscape: NEOMAP International Workshop. NEOMAP, Kita-ku, Kyoto, 174pp.

[Papers]

[Original Articles]

・ZEBALLOS, Carlos Jan,2009 Changes in Landscape During the Modernization Period in Central Japan: A GIS Approach in the Case of Lake Biwa. UCHIYAMA, Junzo; LINDSTRÖM, Kati; ZEBALLOS, Carlos; NAKAMURA, Oki (ed.) NEOMAP Interim Report 2008. NEOMAP, Kita-ku, Kyoto, pp.257-260.

[Research Presentations]

[Oral Presentation]

・ZEBALLOS VELARDE,Carlos; BORRÉ, Caroline Changes in Landscape During Modernization Period in Central Japan. A GIS Approach of the Case of Lake Biwa. “Landscape History and Landscape Heritage” Parallel Session C 4.2 at the Permanent European Conference for the Study of the Rural Landscape (PECSRL) 23rd Session - Landscapes, Identities and Developments, Sep 04,2008, Óbidos, Portugal.

ZHENG, Yuejun

Associate Professor

Born in 1962.

[Academic Career]

D. Sc. (The University of Tokyo, 1995)

[Professional Career]

Associate Professor, Research Institute for Humanity and Nature (2003)
Assistant Professor, The Institute of Statistical Mathematics (1995)

[Higher Degrees]

Ph.D

[Fields of Specialization]

Environmental Statistics
Environmental Economics
Social Survey Research

[Academic Society Memberships]

The Behaviormetric Society of Japan

Japan Statistical Society
Society for Environmental Economics and Policy Studies
Japanese Society of Forest Planning
International Institute of Sociology.

—Achievements—

[Books]

[Authored/Co-authored]

・ Zheng Yuejun 2008 Statistical Social Research: Theory and Method for Measuring People's Consciousness. Bensey Press, Tokyo, 323pp. (in Japanese)

・Zheng Yuejun 2008 An Integrated Research on International Harmony for Global environmental Issues. RIHN, Kyoto, 627pp.

[Chapters/Sections]

・Zheng Yuejun 2008 Social Transition of the Traditional values. Shinotsuka E. and Nagase N. (ed.) Decling Birth Rate and Economics in Asia: An Overview of Family, Occupation and Household Economy Based on A Panel Survey in Chin, South Korea and Japan. Sakuhin Press, Tokyo, pp.209-225. (in Japanese)

[Papers]

[Original Articles]

・ heng Yuejun 2008 Cross-national comparison of environmental consciousness on construction of harmonious society in East Asia. *Proc. of 3rd East Asian Symposium on Environmental and Natural Resource Economics* :80-81.

・ Zheng Yuejun 2008 Norm Consciousness and Pro-environmental Behavior: Focusing on Environmental Consciousness Conducted in Four Largest Cities in East Asia. *The 36 Conference of The Behaviormetric Society of Japan* :269-270. (in Japanese)

・Zheng Yuejun 2008 Cross-national Comparison on Consideration of Country: Focusing on Attitudes towards Politics in East Asia. *The 36 Conference of The Behaviormetric Society of Japan* :61-62. (in Japanese)

Appendix 1 Number and Affiliation of Project Members

Project Number	Title of the project	Total	RIHN	University / College			Inter-University Research Institute	Public Institution	Private Institution	Post doctoral/ Graduate Student	Others	Overseas institution
				National	Public	Private						
C-04 (FR4)	Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean	81	6	31	1	4	1	3	1	5	1	28
C-05 (FR3)	Human Impacts on Urban Subsurface Environments	81	6	33	2	8	0	8	0	9	0	15
C-06 (FR2)	Effects of environmental change on the interactions between pathogens and humans	41	11	12	0	2	0	3	1	3	0	9
C-07 (PR)	Global Warming and the Human-Nature dimension in Siberia —The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment	41	3	20	0	1	1	4	2	4	0	6
C-FS1	Urban Circularity and Diversity: Future Possibilities for a Great Complex System to Bridge the Human Race and Global Environment	27	2	15	0	2	0	0	1	4	0	3
C-FS2	Study of regional diversity of water quality: toward water management based on circulation	39	3	23	2	4	0	3	0	4	0	0
D-02 (FR3)	A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago	132	8	37	10	29	4	20	5	18	1	0
D-03 (FR1)	Human Life, Aging, and Disease in High-Altitude Environments: Physio-medical, Ecological and Cultural Adaptation in the Three Great "Highland Civilizations"	42	8	16	2	4	0	2	1	6	2	1
D-04 (FR1)	Collapse and Restoration of Ecosystem Networks with Human Activity	71	9	26	0	5	3	6	2	18	0	2
R-03 (FR2)	Historical Interactions between Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia	98	10	33	5	16	5	2	2	23	1	1
R-04 (FR1)	Environmental Changes and Infectious Diseases in Tropical Asia	64	6	20	0	5	0	4	5	10	0	14
R-05 (PR)	A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation for the Post-Oil Era	54	9	7	0	10	0	3	7	5	2	11
H-02 (FR3)	Agriculture and Environment Interactions in Eurasia: Past, Present and Future —A ten-thousand-year history	95	14	30	3	9	5	12	7	0	1	14
H-03 (FR2)	Environmental Change and the Indus Civilization	54	10	25	2	4	3	1	0	0	0	9
H-04 (FR2)	Neolithisation and Modernisation: Landscape History on East Asian Inland Seas	58	8	7	3	10	5	8	0	0	1	16
H-FS	Interactions between man and the environment in Mesopotamia	21	1	0	0	4	0	1	0	0	0	15

Project Number	Title of the project	Total	RIHN	University / College			Inter-University Research Institute	Public Institution	Private Institution	Post doctoral/ Graduate Student	Others	Overseas institution
				National	Public	Private						
E-02 (FR5)	Interaction between Environmental Quality of the Watershed and Environmental Consciousness: With Reference to Environmental Changes Caused by the Use of Land and Water Resource	22	5	10	1	2	0	2	2	0	0	0
E-03 (FR5)	Interactions between Natural Environment and Human Social Systems in Subtropical Islands	41	8	16	3	5	0	1	1	4	1	2
E-04 (FR2)	Vulnerability and Resilience of Social-Ecological Systems	40	8	11	0	2	0	2	2	7	0	8
	Total	1102	135	372	34	126	27	85	39	120	10	154

As of March 31, 2009

Appendix 2 Research Fields of Project Members

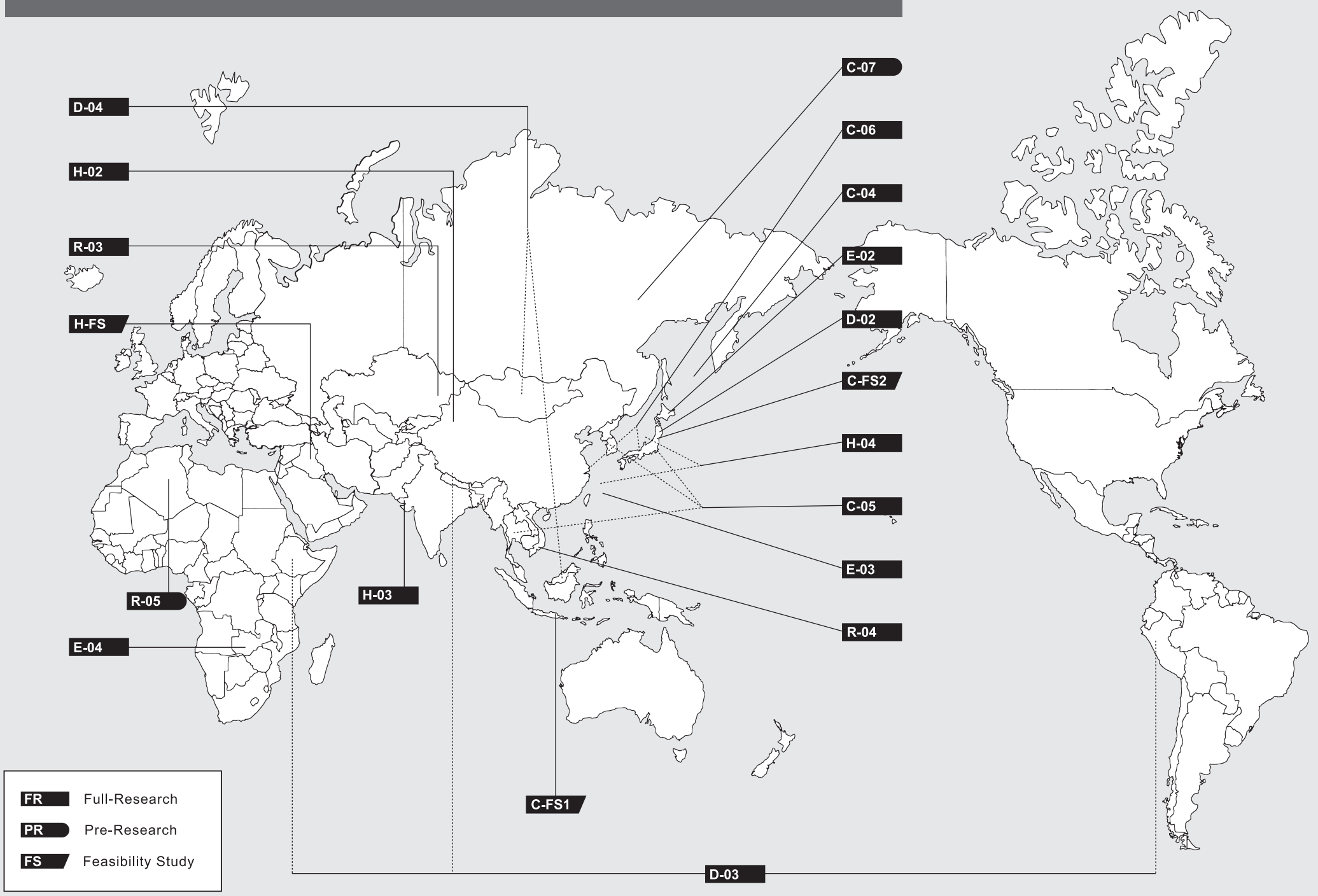
Projeect Number	Title of the Project	The number of projects members				Research background of project members
		Natural Science	Humanities and Social Science	Multidisciplinary	Total	
C-04 (FR4)	Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean	54	13	14	81	(Natural Sciences) Paleoenvironmental reconstruction, Physical oceanology, Chemical oceanology, Biogeochemical oceanology, Meteorology, Marine technology, Marine biology, Environmental chemistry, Plant ecology, Forest hydrology, Forest ecology, Silviculture, Hydrology, Numerical modelling, Snow and ice chemistry, Glacial hydrology, Glacial biology, Glacial physics, Atmospheric chemistry, Geochemistry, Environmental sciences, Geoenvironmental analytical chemistry, Geology, Pedology, Soil ecology, Soil geochemistry, Glacial climatology, Plankton science, Analytical chemistry, Surface coloidal science, Volcanology, Seismology, Paleo oceanology, Organic geochemistry, Paleo ecology, Forest science, Water resource engineering (Humanities and Social Sciences) Economic geography, Human geography, Economics, Politics, Agroeconomy, Archeology, International law (Multidisciplinary) GIS modelling, Geography, Marine mammal resources, Ecological management, Remote sensing
C-05 (FR3)	Human Impacts on Urban Subsurface Environments	44	23	14	81	(Natural Sciences) Hydrology, Volcanology, Groundwater analysis, Earth system science, Geochemistry, Gravity satellite analysis, Seismology, Environmental analysis, Biogeochemistry, Meteorology, Isotope hydrology, Geothermics, Engineering geodegy, Hydrogeomorphology, Hydraulics, Oceanography, Physical hydrology, Geology, Marine geology, Isotope science, Geoscience (Humanities and Social Sciences) Social development study, Environmental economics, Geography, Politics, Environmental engineering, Urban geography, Cultural geography・Urban study, Socio-economics analysis, Material flow analysis, Historical geography, Analysis of urban environmental, Environmental policy, GIS, City planning, Demography, Analysis of subsurface environment, Analysis of water recources (Multidisciplinary) Environment conservation study, Analysis of urban climate, Regional environment study, Analysis of subsurface temperature, Analysis of trace metals, Geography, Dwelling study, Analysis of subsurface environment, Groundwater analysis, Analysis of water resources
C-06 (FR2)	Effects of environmental change on the interactions between pathogens and humans	28	5	8	41	(Natural Sciences) Nanotechnology, Ecology, Fish ecology, Molecular biology, Molecular ecology, Environmental conservation, Plant breeding, Sanitary, Mathmatical ecology, Aquatic ecology, Plant ecology, Sciences, Animal ecology, Agricultural sciences, Ecosystem ecology, Microbial ecology, Environmental resource geology, Isotope geoscience, Toxicology, Bioinformatics, Medical science (Humanities and Social Sciences) Economics, Food culture, Environmental economics, Sociology (Multidisciplinary) Ecology, Health science, Sanitary, Medical science, Environmental conservation, Environmental medicine
C-07 (PR)	Global Warming and the Human-Nature dimension in Siberia —The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment	27	11	3	41	(Natural Sciences) Forestry, Limnology, Remote sensing, Modeling, Ecohydrology, Earth science, Forest meteorology, Plant physiology ecology, Conservation ecology, Ecosystem impact, Civil engineering, Meteorology, Atomospheric model, Water and energy cycle, Ecological model, Isotope hydrology, Ecology, Ethology, River engineering, Hydrology, Climatology, Marine physics・Limnology, Forestry, Ecology, Environmental conservation, Dendrochronology (Humanities and Social Sciences) Civil engineering, Social anthropology, International relations, Sociology, Politics, Cultural anthropology, Russian economy, Descriptive linguistics, History (Multidisciplinary) Atmospheric chemistry, Meteorology, Ecohydrology
C-FS1	Urban Circularity and Diversity: Future Possibilities for a Great Complex System to Bridge the Human Race and Global Environment	5	9	13	27	（Natural Sciences) Transportation planning, Material engineering, Remote sensing, Hydrology, Urban landscape planning （Humanities and Social Sciences) Asian economy, Chinse intellectual history, Study of religion, Axiology, Marketing and distribution, Soundscape studies, Cultural anthropology, Regional resources management, Geographic information system, Environemtal economics （Multidisciplinary) Architectural history, Urban history, Studies of culture and representation, City planning, Studies of colonial architecture, Historical demograpy, Economic geography, Studies of China-towns
C-FS2	Study of regional diversity of water quality: toward water management based on circulation	26	4	9	39	(Natural Sciences) Resource geology, Geology, Isotope ecology, Hydrology, Geochronology of groundwater, Forest hydrology, Organic geochemistry, Soil biology, Sustainable environmental studies, Plant physiological ecology, Minor element mineralogy, Biogeochemistry, Marine geochemistry, Petrography, Glaciology, Geochemistry, Geological research, Agricultural chemistry, Analytical geochemistry, Physical limnology, Coastal oceanography, Cosmochemistry, Atmospheric chemistry （Humanities and Social Sciences) Political science, Social psychology, Public finance, Local government finance, Environmental sociology （Multidisciplinary) Sedimentary geology, Aquatic ecology, Resource education, Environmental education, Environmental information, Resource science, Environmental design
D-02 (FR3)	A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago	70	54	8	132	(Natural Sciences) Ecology, Forest ecology, Physical anthropology, Animal ecology, Stable isotope ecology, Theoretical ecology, Plant phylogeny, Anthropology, Plant taxonomy, Plant genetic resources, Paleoenvironmental science, Primatology, Zooarchaeology, Reproductive ecology, Ecological anthropology, Environmental design, Botany, Chronology, Isotopic-geochemical study, Paleoecology, Plant ecology, Forest biology, Natural geography, Vegetation history, Molecular ecology, Wood anatomy, Genetics, Tephro-chronology, Paleo-biology, Population genetics, Animal phylogeny, Primate ecology, Molecular phylogeny, Molecular phylogenetics, Historical botany, Volcano geology, Natural history, Wood research (Humanities and Social Sciences) Philosophy, Cultural anthropology, Environmental history, Ethnology, Archeology, History, Historical economics, Linguistic ethnology, Folklore, Geography, Ecological anthropology, Japanese medieval history, Cultural geography, Environmental economics, Environmental sociology, Paleo-lithic archeology, Japanese modern history (Multidisciplinary) Conservation ecology, Crop sciences, Paleo-environmental sciences, Ecological anthropology, Primatology
D-03 (FR1)	Human Life, Aging, and Disease in High-Altitude Environments: Physio-medical, Ecological and Cultural Adaptation in the Three Great "Highland Civilizations"	19	7	16	42	(Natural Sciences) Forest resource management, Public health, Geoecology, Field medicine, Nursing, Cardiology, Chrono-medicine, Ecology of water resource, Physical geography, Ecology, Primatology, Nutritional science, Forest science, Physical geography, Glaciology, Agrology, Pastoral ecology, Meteorology, Climatology, Animal husbandry, Geriatrics, Epidemiology (Humanities and Social Sciences) Ethnobotany, Resource economics, Anthropology, African area studies, History of chinese thought, Study of nature, Tibetan Buddhism, Archaeology (Multidisciplinary) Field medicine, Geriatrics, Agroecology, Cultural anthropology, Agricultural economics, Ethnobotany, Human geography, Area studies, Agricultural management, Grassland science, Neurology, Primatology, Environmental history, Forest ecology, Mountain anthropology
D-04 (FR1)	Collapse and Restoration of Ecosystem Networks with Human Activity	49	19	3	71	(Natural Sciences) Theoretical ecology, Interaction ecology, Grassland ecology, Forest ecology, Ecology, Tree phyisiological ecology, Entomology, Remote sensing, Environmental ecology, Environmental sciences, Physical environmental science, Mathematical ecology, Soil science, Soil science, Isotope ecology, Forest soil animals, Systematic botany, Environmental sociology, Biogeochemistry (Humanities and Social Sciences) Cultural anthropology, Sociology, Environmental ecomony, Agricultural economy, Anthropology, Environmental sociology, Ethnobotany, Geography, Theoretical sociology, Entomology, Area study, Area development study, Policics, Economics, GIS (Multidisciplinary) Area environmental science, Global environmental sciences
R-03 (FR2)	Historical Interactions between Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia	53	38	7	98	(Natural Sciences) Hydrology, Glacier biology, Glaciology, Soil science, Climate change, Forest ecology, Remote sensing analysis, Groundwater hydrology, Ice core analysis, Sedimentology, Landscape ecology, Physical geography, Modeling of soil organic matter, Agricultural land planning, Hydrological modeling, Dendrochronology, Irrigation planning, Tectonic landform, Isotope hydrology, Irrigation agriculture, Irrigation system, Synthesis of natural proxies and historical documents, Isotope hydrology, Water circulation, Risk analysis of ecosystem, Irrigation system planning (Humanities and Social Sciences) Politics, Ethnology, Pastoral nomadism, Chinese history, Archaeology, International relations on water resources, Oriental studies, Central Eurasian history, Social anthropology, Persian documents, Manchurian documents (Multidisciplinary) Ethnology, Area studies, Archaeology, Geogpraphical studies, History of Kazakhstan agricultural economy
R-04 (FR1)	Environmental Changes and Infectious Diseases in Tropical Asia	44	10	10	64	(Natural Sciences) Infectious disease epidemiology, Demography, Forest ecology, Parasitology, Environmental epidemiology, Climate change and diseases, Infectious disease epidemiology, Biological anthropology, Public health, Environmental microbiology, Microbiology, Clinical chemistry, Infectious diseases and immunology, Environmental health, Malariology, International health, Health promotion, Tropical environmental health, Disaster information studies, International school health, Primary health care, Epidemiology and bio-stat, Laboratory medicine, Insect ecology, Spatial epidemiology, Nursing, Medical entomology, Epidemiology, Meteorology, Tropical medicine, International health, Health and environmental health, Agricultural science, Environmental toxicology, Human ecology, Immunology (Humanities and Social Sciences) Medical sociology, Literary representation, Ecological anthropology, History of medicine, Cultural anthropology, Medical anthropology, International cooperation, Area studies, Forestry, Social anthropology, International health, International medical cooperation, Project management (Multidisciplinary) Human ecology, Population health, Health planning, Environmental epidemiology, Health informatics, International health & public health, Behavioral epidemiology, International nursing, Public health, International agriculture, Social research, Health policy, Public health nutrition, International community health
R-05 (PR)	A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation for the Post-Oil Era	22	19	13	54	(Natural Sciences) Nutrient physiology, Bio-chemistry, Forest ecology, Fungology, Plant physiology, Water resource management, Plant ecophysiology, Forest hydrology, Soil hydrology, Information engineering, Afforestation, Agricultural chemistry, Natural geography, Hydrology, Tree physiology, Tree environmental physiology, Irrigation and drainage, Urban planning (Humanities and Social Sciences) Archaeology, Agro-economics, Cultural anthropology, Development sociology, Religious anthropology, History, Sociology, Developmental study, Education (Multidisciplinary) Cultural anthropology, Rural development, Geography, Remote sensing, Afforestation, Architectonics, Ecological anthropology, Animal science, Landscape ecology, Architectural history, Environmental topography, Social anthropology
H-02 (FR3)	Agriculture and Environment Interactions in Eurasia: Past, Present and Future—A ten-thousand-year history	43	43	9	95	(Natural Sciences) Plant genetics, Breeding, Plant breeding, Anthropology, Archaeobotany, Plant cytogenetics, Plant molecular genetics, Molecular genetics, Agronomy, Plant genetic resources, Tame plant origins, Palynology, Crop science, Genetics, Genetic evolution, Genetic ecology, Glacial biology, Weed ecology, Geochemistry, Isotonic biological earth science, Botany, Cell biology, Plant ecology, Environmental archaeology, Applied zoological genetics, Genetic resources, Ethnobotany, Natural science, Plant breeding and exploration of plant genetic resources (Humanities and Social Sciences) Cultural anthropology, Japanese culture history, History of tea culture, Philosophy, Folklore, Japanese culture, Archaeology, Chinese ancient history, Loulan history, Ethnology, Linguistics, Business management for the middle mountains area, Human geography, Geography, Southeast asian archaeology, Pre-modern farming history, Regional planning, Chinese literature and Silk road, Japanese archaeology, Assyriology, Art history, Oriental history (Multidisciplinary) Environmental archaeology, Ethnobotany, Mountainous-area anthropology, Jomon archaeology, Hunter-gatherer archaeology, Historical ecology, Archaeobotany, Architecture
H-03 (FR2)	Environmental Change and the Indus Civilization	22	24	8	54	(Natural Sciences) Agriculture, Physical geography, Archaeology, Earth science, Seismology, Civil engineering, Hydrology, Earth science, Glacial biology, Earthphysics, Geochronology, Resource geography, Geology, Geomorphology, Genetics, Tectonic geomorphology, Ecology, Climatology (Humanities and Social Sciences) Linguistics, Archaeology, Indology, Linguistics (Kinnauri), Economics, Cultural anthropology, History of west Asia （Multidisciplinary) Archaeology, DNA archaeology, Ethnology, Plant genetics and evolution, Archaeo-zoology, Archaeo-botany
H-04 (FR2)	Neolithisation and Modernisation: Landscape History on East Asian Inland Seas	4	46	8	58	(Natural Sciences) Ichthyology, Landscape engineering, Social engineering, Micropaleontology (Humanities and Social Sciences) Prehistoric anthropology, Ethnology, Landscape archaeology, Sociolinguistics, Trade history, Japanese history, Archaeobotany, Folklore, Landscape history, Euro-Japan archaeology, Archaeology, Japanese archaeology, Cultural anthropology, Chinese archaeology, English literature, Japanese linguistics, Food science, Prehistoric archaeology, Historical geography, Chinese folklore, Korean archaeology, Medieval history, Ethology, Political science, Historical science, Computer engineering, Medieval archaeology (Multidisciplinary) Ecological anthropology, Religious folklore, Prehistoric anthropology, Information culture, Archaeobotany, Linguistic informatics, GIS archaeology
H-FS	Interactions between man and the environment in Mesopotamia	6	12	3	21	(Natural Sciences) Petrology, Mineralogy, Petrology and economic geology, Microalgae, Agricultural civil engineering, Geochemistry, Physics (Humanities and Social Sciences) Assyriology, Sumerology, Archaeology (Ancient near east), Mesopotamian archaeology, Hittitology (Multidisciplinary) Landscape archaeology, Human ecology, Anthropology, Archaeology

Projeect Number	Title of the Project	The number of projects members				Research background of project members
		Natural Science	Humanities and Social Science	Multidisciplinary	Total	
E-02 (FR5)	Interaction between Environmental Quality of the Watershed and Environmental Consciousness: With Reference to Environmental Changes Caused by the Use of Land and Water Resource	14	4	4	22	(Natural Sciences) Forest hydrology, Environmental dynamic analysis, Biogeochemistry, Forest ecology, Forest soil science, Environmental sciences, Hydrology, Limnology, Plant ecology (Humanities and Social Sciences) Social psychology, Environmental economics, Rural planning, Sociology (Multidisciplinary) Informatics, Environmentology, Social statistics
E-03 (FR5)	Interactions between Natural Environment and Human Social Systems in Subtropical Islands	28	7	6	41	(Natural Sciences) Hydrology, Ecology, Chemistry, Botany, Ethology, Taxonomy, Morphology, Entomology, Oceanography, Phisiology (Humanities and Social Sciences) Economics, History, Ethnology, Sociology (Multidisciplinary) Environmental study, Agriculture, Forestry, Tourism, Ceramics, Textile
E-04 (FR2)	Vulnerability and Resilience of Social-Ecological Systems	17	15	8	40	(Natural Sciences) Atmospheric physics, Soil environmental science, Agronomy, Remote sensing, Soil science, Agricultural meteorology, Forest ecology, Crop science, Botany, Meteorology, Mathematical ecology, Isotopic soil hydrology (Humanities and Social Sciences) Resource & environmental economics, Development economics, Agricultural economics, Development study, Anthropology, Human geography, Gender anthropology, Cultural anthropology, Sociology, Geography, Economics (Multidisciplinary) Environmental geography, Environmental & health economics, Ecological anthropology, Palliative medicine, Human ecology, Geographic information, Mathematics, Area study, African area study
	Total	575	363	164	1102	

As of March 31, 2009

Field of the Research Project (Country which is called in commonly)

Appendix 3



Full-Research

C-04 **Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean**
○The Amur River basin, Russia, China; the Sea of Okhotsk; northern North Pacific Ocean

C-05 **Human Impacts on Urban Subsurface Environments**
○Tokyo; Osaka; Seoul; Bangkok; Jakarta; Taipei; Manila

C-06 **Effects of environmental change on the interactions between pathogens and humans**
○Lake Biwa, Japan; Shanghai, China

D-02 **A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago**
○Japanese Archipelago

D-03 **Human Life, Aging, and Disease in High-Altitude Environments: Physio-medical, Ecological and Cultural Adaptation in the Three Great "Highland Civilizations"**
○The Andes; The Himalaya; Tibet; The Ethiopian Highlands

D-04 **Collapse and Restoration of Ecosystem Networks with Human Activity**
○Tropical rainforests in Southeast Asia; Central Asian Plateau

R-03 **Historical Interactions between Multi-cultural Societies and the Natural Environment in a Semi-arid Region in Central Eurasia**
○The Ili River and its surroundings, Central Eurasia

R-04 **Environmental Changes and Infectious Diseases in Tropical Asia**
○Tropical Asia (Laos; Bangladesh; Oceania)

H-02 **Agriculture and Environment Interactions in Eurasia: Past, Present and Future — A ten-thousand-year history**
○Eurasian Continent and Oceania

H-03 **Environmental Change and the Indus Civilization**
○Northwestern India

H-04 **Neolithisation and Modernisation: Landscape History on East Asian Inland Seas**
○The Japan Sea rim; the East China Sea rim

Full-Research

E-02 **Interaction between Environmental Quality of the Watershed and Environmental Consciousness: With Reference to Environmental Changes Caused by the Use of Land and Water Resource**
○Shumarinai drainage basin, Hokkaido, and Wakayama, Japan

E-03 **Interactions between Natural Environment and Human Social Systems in Subtropical Islands**
○Iriomote Island, Okinawa, Japan

E-04 **Vulnerability and Resilience of Social-Ecological Systems**
○Zambia; Sub-Saharan Africa

Pre-Research

C-07 **Global Warming and the Human-Nature dimension in Siberia — The social adaptation to the changes of the terrestrial ecosystem with an emphasis on the water environment**
○Lena River basin, East Siberia

R-05 **A Study of Human Subsistence Ecosystems among Arab Societies: To Combat Livelihood Degradation for the Post-Oil Era**
○Algeria; Egypt; Saudi Arabia

Feasibility Study

C-FS1 **Urban Circularity and Diversity: Future Possibilities for a Great Complex System to Bridge the Human Race and Global Environment**
○Jakarta; Southeast Asia

C-FS2 **Study of regional diversity of water quality: toward water management based on circulation**
○Japan

H-FS **Interactions between man and the environment in Mesopotamia**
○Mesopotamia (Iraq)