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## Research Activities

### ● Full-Research

<b>Project No.</b>	<b>C-06 (Project leader: KAWABATA Zen'ichiro)</b>	<b>p. 4</b>
<b>Project Name</b>	Effects of Environmental Change on the Interactions between Pathogens and Humans	
<b>Project No.</b>	<b>C-07 (Project leader: HIYAMA Tetsuya)</b>	<b>p. 10</b>
<b>Project Name</b>	Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments	
<b>Project No.</b>	<b>C-08 (Project leader: MURAMATSU Shin)</b>	<b>p. 15</b>
<b>Project Name</b>	Megacities and the Global Environment	
<b>Project No.</b>	<b>C-09-Init (Project leader: WATANABE Tsugihiko)</b>	<b>p. 21</b>
<b>Project Name</b>	Designing Local Frameworks for Integrated Water Resources Management	
<b>Project No.</b>	<b>D-03 (Project leader: OKUMIYA Kiyohito)</b>	<b>p. 25</b>
<b>Project Name</b>	Human Life, Aging and Disease in High-Altitude Environments: Physio-Medical, Ecological and Cultural Adaptation in "Highland Civilizations"	
<b>Project No.</b>	<b>D-04 (Project leader: YAMAMURA Norio)</b>	<b>p. 29</b>
<b>Project Name</b>	Collapse and Restoration of Ecosystem Networks with Human Activity	
<b>Project No.</b>	<b>E-04 (Project leader: UMETSU Chieko)</b>	<b>p. 36</b>
<b>Project Name</b>	Vulnerability and Resilience of Social-Ecological Systems	
<b>Project No.</b>	<b>H-03 (Project leader: OSADA Toshiki)</b>	<b>p. 43</b>
<b>Project Name</b>	Environmental Change and the Indus Civilization	
<b>Project No.</b>	<b>H-04 (Project leader: UCHIYAMA Junzo)</b>	<b>p. 51</b>
<b>Project Name</b>	Neolithisation and Modernisation: Landscape History on East Asian Inland Seas	
<b>Project No.</b>	<b>R-03 (Project leader: KUBOTA Jumpei)</b>	<b>p. 60</b>
<b>Project Name</b>	Historical Interactions between Multi-Cultural Societies and the Natural Environment in a Semi-Arid Region in Central Eurasia	
<b>Project No.</b>	<b>R-04 (Project leader: MOJI Kazuhiko)</b>	<b>p. 66</b>
<b>Project Name</b>	Environmental Change and Infectious Disease in Tropical Asia	
<b>Project No.</b>	<b>R-05 (Project leader: NAWATA Hiroshi)</b>	<b>p. 71</b>
<b>Project Name</b>	A Study of Human Subsistence Ecosystems in Arab Societies : To Combat Livelihood Degradation for the Post-oil Era	
<b>Project No.</b>	<b>R-06 (Project leader: KADA Ryohei)</b>	<b>p. 81</b>
<b>Project Name</b>	Managing Environmental Risks to Food and Health Security in Asian Watersheds	

### ● Pre-Research

- Project No.** PR (Project leader: TANAKA Ueru)  
**Project Name** Desertification and Livelihood in Semi-Arid Afro-Eurasia

### ● Feasibility Studies

- Project No.** FS (FS Proposer: ISHIKAWA Satoshi)  
**Project Name** Coastal Area Capability Enhancement in Southeast Asia

- Project No.** FS (FS Proposer: OKUDA Toshinori)  
**Project Name** The Effect of Local Governance on Incentive Programs for Forest Ecosystem Service Conservation

- Project No.** FS (FS Proposer: SATO Tetsu)  
**Project Name** Formation of Local Environmental Knowledge Systems for Creation and Sustainable Governance of New Commons

- Project No.** FS (FS Proposer: SATO Yo-Ichiro)  
**Project Name** Scenario for Environment-conscious “Mature Society” in East Asia

- Project No.** FS (FS Proposer: NAGAO Seiya)  
**Project Name** Water-and Food-Sheds in the Noto Peninsula: New Scales of Analysis in Global Environmental Studies

- Project No.** FS (FS Proposer: NAKATSUKA Takeshi)  
**Project Name** Historical Adaptation to Climate Change in Japan: Integrating Palaeoclimatological Data and Archaeological Evidence

- Project No.** FS (FS Proposer: FUKUSHIMA Takehiko)  
**Project Name** Lakes as Sources and Sinks: Social and Ecological Dynamics Affecting Downstream/ Pollution-Accumulating Lakes

- Project No.** FS (FS Proposer: MATOH Toru)  
**Project Name** Designing Agriculture in the Era of Petroleum Scarcity

- Project No.** FS (FS Proposer: MURAMATSU Koichi)  
**Project Name** The History of Human-Water Interactions in East Asian Livelihood Complexes

- Project No.** FS (FS Proposer: YOKOYAMA Satoshi)  
**Project Name** Survivability and Autonomy in Southeast Asia: Perspectives from Land Use Changes and Resource Chains

- Project No.** FS (FS Proposer: WATANABE Hisami)  
**Project Name** Environmental Change and Immunological Adaptation in the Mekong River Region

**●Incubation Studies****p. 86**

KUBOTA Jumpei (Research Institute for Humanity and Nature)

Risk management and mitigation strategies for catastrophic disasters

ISHIKAWA Mamoru (Graduate School of Environmental Science, Hokkaido University)

Hierarchical organization of environmental literacy for ecosystem services on permafrost

HABU Junko (University of California, Berkeley)

Reevaluating Advantages of Small-Scale Societies: An Alternative Strategy to Overcome Vulnerability in Large-Scale Societies

**Stage: Full Research**

**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 Subject and Objectives Research Objectives and Topics**

### **Objectives**

Infectious disease has become a significant global environmental problem. This study investigates the emergence and spread of Koi HerpesVirus (KHV) in Lake Biwa, Japan. KHV is a pathogen responsible for episodic mass mortality of common carp (*Cyprinus carpio carpio*) since the late 1990s. The common carp is the original domesticated aquaculture species, and an important source of protein today.

This study has three main objectives: (1) To describe Koi Herpes Virus disease ecology, including: the specific links between anthropogenic changes to freshwater ecosystems and the emergence and spread of KHV disease; the impacts of KHV disease on local ecosystem services; the social and cultural attempts to address KHV disease; and the environmental changes associated with human adaptation; (2) To describe a general model of linkage between environments, pathogens and humans; (3) To suggest how interactions between pathogen and humans may be modified in order to mitigate the human and environmental damages associated with infectious diseases.

### **Research Methods and Organization**

Field surveys are conducted at Lake Biwa, Japan, and Lake Erhai, China. Laboratory work is undertaken at RIHN. Our project is organized into five research groups, plus executive and advisory groups, as follows: The Human Alterations Group investigates the effects of anthropogenic environmental alteration on the emergence and spread of KHV and the behavior of its host *Cyprinus carpio carpio*. The Pathogen and Host Ecology Group defines the biology and ecology of KHV and carp, and so describes the environmental factors involved in KHV infection and transmission. The Ecosystem Impacts Group examines the process of infection and the effects of KHV disease on ecosystem functions such as material cycling. The Economics and Culture Group investigates the losses associated with KHV disease, including of ecosystem services or other economic and cultural phenomena, and describes the social attempts to redress those losses. The Feedback Group examines the human response to losses caused by KHV disease, and the environmental change associated with this response. The Executive Group coordinates the activities of each group and develops the model of pathogen-human interactions. Finally, an Advisory Group composed of recognized experts in relevant fields makes suggestions in order to improve the research.

### **Perception and contribution to global environmental problems**

Field surveys are being conducted primarily at Lake Biwa, Japan, where researchers from various disciplines and fishermen have accumulated much data, and at Lake Erhai, China. China is responsible for almost the entire global carp production. Lake Erhai is an inland lake in China that has never experienced an outbreak of KHV. We will create a model to predict the outbreak and spread of KHV in Lake Biwa by accumulating and synthesizing both new and existing data from Lake Biwa. The model will be applied to Lake Erhai to provide suggestions for how to manage the lake to lessen the probability of an outbreak of KHV disease. The practical application of this model to such an important region is critical to attenuating the global problem of KHV disease. The Lake Biwa model will be modified to apply to other infectious diseases in other areas, to suggest environments that might prevent the

outbreak and spread of infectious disease, and to demonstrate how to facilitate the safe coexistence of humans and pathogens.

## ○ Progress and Results in 2010

### Main results to date

- 1) We found that gentle gradient lakeshores provide a wide range of thermal conditions, suggesting that fish can choose temperatures to alleviate stress associated with unfavorable water temperatures, and thus reduce susceptibility to KHV (Yamanaka et al., 2010).
- 2) We established an innovative method to quantitatively detect KHV in natural environments (Minamoto et al., 2009; Honjo et al., 2010). The method revealed that since it was first detected in 2003, KHV is now found throughout the Lake Biwa ecosystem, including in plankton and sediment, lagoons and ponds, and now in almost all the rivers in Japan. We demonstrated that it is impossible to eliminate KHV, but that precautionary environmental management can eliminate "fertile" disease environments.
- 3) We have developed a preliminary break-through method allowing determination of the number and location of carp in their natural environments.
- 4) We found that breeding habitats can become hot spots for transmission of infectious diseases if hosts aggregate for mating and pathogen activation occurs during the host breeding season (Uchii et al., 2011).
- 5) We developed a non-invasive method (i.e. a method that does not require handling fish) to quantify how water conditions stress carp. Using this method we found that changes in water temperature do induce stress.
- 6) Based on our assessment of KHV disease in Lake Biwa, we applied our conceptual model of linked environment-pathogen-human interactions to Lake Erhai, China, schistosomiasis in Kenya, fish diseases in the Ping River at Chaing Mai, Thailand, and Legionella disease (Yamaguchi et al., 2010), MRSA, Norovirus disease, and nontuberculous mycobacteria disease (Ichijo et al., 2010) in Japan. These applications helped us understand how pathogens interact with humans and suggested environmental conditions that might prevent disease outbreaks and spread as well as strategies for safe coexistence of humans with pathogens.
- 7) By combining the results from each work group, ranging from molecular biology to environmental sciences to human society, we are providing evidence to support the hypothesis that anthropogenic environmental changes promote disease outbreaks.
- 8) We have presented our findings at national and international conferences of the linkages between the environment, pathogens and humans, emphasizing their significance to prevention and control of infectious disease.

### ○ Project Members

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- ASANO, Kota (Graduate School of Human and Environmental Studies, Kyoto University, Professor, Model for Economical Effects)
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- OKUDA, Noboru (Center for Ecological Research, Kyoto University, Associate Professor, Food Web Analysis)
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- YONEKURA, Ryuji ( Gifu Prefectural Research Institute for Freshwater Fish and Aquatic Environments,Researcher,Stress on Fish )
- TELSCHOW, Arndt ( Westfalian Wilhelms University, Muenster, Germany,Postdoctoral Research Fellow,Mathematical Model )
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- RAPPORT, David J. ( EcoHealth Consulting, Canada,Director,Eco Health )
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MARAKKALE, Manage	( University of Sri Jayewardenepura University, Sri Lanka, Senior Lecturer, Eutrophication )

## ○ Future Themes

### Research objectives in 2011

- 1) Refine a method to quantify carp spatially and temporally and innovative method to describe our conceptual model of environment-pathogen-human linkages including a development of micro-device capable of in-situ measurement of KHV incidence and infectivity.
- 2) Determine the environmental factors involved in KHV abundance and its infectivity, and in carp population density and its susceptibility.
- 3) Conduct controlled experiments to reveal the relationship between water temperature, carp stress and susceptibility to KHV.
- 4) Assess the economic and cultural impacts of carp die-offs.
- 5) Apply the conceptual model of environment-pathogen-human linkage to other infectious diseases; KHV disease in Lake Erhai, China, Schistosomiasis in Kenya, fish diseases in the Ping River at Chaing Mai, Thailand, and Legionella disease, MRSA, Norovirus disease, and nontuberculous mycobacteria disease in Japan, and then describe the common parameters of KHV disease and other infectious diseases.
- 6) Continue to explore evidence that anthropogenic environmental changes can mediate disease outbreaks.
- 7) Synthesis of results of the work groups in order to develop a set of recommendations designed to minimize the emergence and facilitate the safe coexistence of humans with pathogens.
- 8) Publish our results in international journals and books in order to disseminate the concepts and practical measures that can aid the control of "fertile" disease environments.
- 9) Organize a national and international symposium on environment-pathogen-human linkage to develop a network for this field of study.

### Scheduled Research Activities in 2010

- 1) Develop a method to quantitatively detect KHV in sediment, organisms and other elements in aquatic ecosystems.
- 2) Clarify the distribution of infectious 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 and infectivity.
- 5) Use outdoor experimental tanks to define optimum water temperature for carp.
- 6) Describe the environmental characteristics of the places where KHV and carp interact, and clarify the behavior of the KHV-infected carp in order to reveal the locations where infection likely occurs .
- 7) Conduct controlled experiments to reveal the relationship water temperature and carp stress and susceptibility to KHV.
- 8) Demonstrate the ecological effects of carp on species composition in experimental ponds.
- 9) Evaluate the cultural and nutritional value of carp as a human food.
- 10) Assess the economic and cultural impacts of carp die-offs.
- 11) Create a preliminary model of the interactions between environmental change, KHV and humans.
- 12) Survey the spatial and temporal distribution of water temperature in Lake Erhai in order to establish the applicability of Lake Biwa findings to Lake Erhai.
- 13) Describe the common parameters of KHV and other infectious diseases.
- 14) Promote collaboration with the DIVERSITAS program of international biodiversity science.

15) Develop a set of recommendations to prevent or minimize the emergence and spread of infectious diseases.

## ● Achievements

### ○ Books

#### 【Chapters/Sections】

- Uchii K, Oct, 2011 Use and damage of an alien species in fisheries. Nishikawa U, Miyashita T, (ed.) Influence - on alien species-biodiversity and human society . Shokabo, Tokyo, Japan. (in Japanese)
- Meitei H, Manishankar K, Kakehashi M, Rao ASRS, 2011 Estimating AIDS Related Deaths in India: A Back Calculation Approach. Somayajulu UV, Prakasam CP, Audinarayana N, Vaidyanathan KE (ed.) Health, Poverty and Human Development Perspectives and Issues. Global Research Publications, New Delhi, pp. 235-244. Chapter 11

### ○ Papers

#### 【Original Articles】

- Honjo M N, Minamoto T, Kawabata Z, Mar, 2012 Reservoirs of Cyprinid herpesvirus 3 (CyHV-3) DNA in sediments of natural lakes and ponds. *Veterinary Microbiology* 155(2-4) :183-190. DOI:10.1016/j.vetmic.2011.09.005. (reviewed).
- Baba T, Inoue N, Yamaguchi N, Nasu M, Feb, 2012 Rapid Enumeration of Active *Legionella pneumophila* in Freshwater Environments by the Microcolony Method Combined with Direct Fluorescent Antibody Staining. . (reviewed).
- Zhang R, Ichijo T, Hu YY, Zhou HW, Yamaguchi N, Nasu M, Chen GX, Jan, 2012 A ten years (2000-2009) surveillance of resistant Enterobacteriaceae in Zhejiang Province, China. *Microbial Ecology in Health and Disease* . DOI:10.3402/mehd.v23i0.11609. (reviewed).
- Zhang R, Ichijo T, Huang YL, Cai JC, Zhou HW, Yamaguchi N, Nasu M, Chen GX, Dec, 2011 High Prevalence of *qnr* and *aac(6')-Ib-cr* Genes in Both Water-Borne Environmental Bacteria and Clinical Isolates of *Citrobacter freundii* in China. *Microbes and Environments* . DOI:10.1264/jsme2.ME11308. (reviewed).
- Takahara T, Yamanaka H, Suzuki A A, Honjo M N, Minamoto T, Yonekura R, Itayama T, Kohmatsu Y, Ito T, Kawabata Z, Oct, 2011 Stress response to daily temperature fluctuation in common carp *Cyprinus carpio* L. *Hydrobiologia* 675(1) :65-73. DOI:10.1007/s10750-011-0796-z. (reviewed).
- Kawabata Z, Minamoto T, Honjo M N, Uchii K, Yamanaka H, Suzuki A A, Kohmatsu Y, Asano K, Itayama T, Ichijo T, Omori K, Okuda N, Kakehashi M, Nasu M, Matsui K, Matsuoka M, Kong H, Takahara T, Wu D, Yonekura R, Oct, 2011 Environment-KHV-carp-human linkage as a model for environmental diseases. *Ecological Research* 26(6) :1-6. DOI:10.1007/s11284-011-0881-9. (reviewed). Special feature.
- Fuma S, Kawaguchi I, Kubota Y, Yoshida S, Kawabata Z, Polikarpov GG, Sep, 2011 Effects of chronic  $\gamma$ -irradiation on the aquatic microbial microcosm: equi-dosimetric comparison with effects of heavy metals. *Journal of Environmental Radioactivity* . DOI:10.1016/j.jenvrad.2011.09.005. (reviewed).
- Iwamoto T, Nakajima C, Nishiuchi Y, Kato T, Yoshida S, Nakanishi N, Tamaru A, Tamura Y, Suzuki Y, Nasu M, Jul, 2011 Genetic diversity of *Mycobacterium avium* subsp. *hominissuis* strains isolated from humans, pigs, and human living environment. *Infection, Genetics and Evolution* . DOI:10.1016/j.meegid.2011.06.018. (reviewed).
- Minamoto T, Honjo M N, Yamanaka H, Tanaka N, Itayama T, Kawabata Z, Jun, 2011 Detection of cyprinid herpesvirus-3 DNA in lake plankton. *Res. Vet. Sci* 90(3) :530-532. DOI:10.1016/j.rvsc.2010.07.006. (reviewed).

## ○Research Presentations

### 【Oral Presentation】

- Takahara T, Doi H, Minamoto T, Kawabata Z, The biomass of fishes is presumed from the fragment of DNA dissolved all over the lake. The 59th Ecological Society of Japan, Mar 17,2012–Mar 21,2012, Otsu, Japan. (in Japanese)
- Honjo M N, Minamoto T, Kawabata Z, Seasonal and spatial distribution of Cyprinid herpesvirus 1 and Cyprinid herpesvirus 2 in Lake Biwa, Japan. The 59th Ecological Society of Japan, Mar 17,2012–Mar 21,2012, Shiga, Japan. (in Japanese)
- Minamoto T, Kawabata Z, Ecological analysis of infection: Koi herpes is made into an example. The forum of the infection by a youngman, Feb 02,2012–Feb 04,2012, Nagasaki, Japan. (in Japanese)
- Abe A, The ethical problem of the infection of an animal. The 30th Japanese Association for Philosophical and Ethical Researches, Nov 05,2011–Nov 06,2011, Tokyo, Japan. (in Japanese)
- Uchii K, Kawabata Z, The mechanism of propagation by the host of new pathogenic organ carp herpesvirus. The 27th Japanese Society of Microbial Ecology, Oct 08,2011–Oct 10,2011, Kyoto, Japan. (in Japanese)

### 【Poster Presentation】

- Ichijo T, Izumi Y, Nakamoto S, Yamaguchi N, Nasu M, Dynamics of nontuberculous mycobacteria in residential environments determined by culture-independent methods. International Union of Microbiological Societies 2011 Congress (IUMS2011), Sep 06,2011–Sep 10,2011, Hokkaido, Japan.
- Kato T, Ichijo T, Izumi Y, Nakamoto S, Yamaguchi N, Nasu M, Distribution of culturable Mycobacterium avium and its subspecies in residences. International Union of Microbiological Societies 2011 Congress (IUMS2011), Sep 06,2011–Aug 10,2011, Hokkaido, Japan.
- Minamoto T, Honjo M N, Kawabata Z, Dynamics of Cyprinid herpesvirus 3 in natural environments in Japan. 4th Congress of European Microbiologists, FEMS 2011, Jun 26,2011–Jun 30,2011, Geneva, Switzerland.
- Ichijo T, Izumi Y, Nakamoto S, Yamaguchi N, Nasu M, Dynamics of Mycobacterium avium complex in residential environments determined by culture-independent methods. 32nd Annual Congress of the European Society of Mycobacteriology, Jun 26,2011–Jun 29,2011, Lübeck, Germany.
- Ichijo T, Izumi Y, Nakamoto S, Yamaguchi N, Nasu M, Dynamics of Mycobacteria in Housing Environment Determined with Culture-independent Approach. 111th General Meeting American Society for Microbiology, May 21,2011–May 24,2011, New Orleans, USA.

### 【Invited Lecture / Honorary Lecture / Panelist】

- Minamoto T, Environmental change and illness of a fish. 10th RIHN inter-regional association seminar - Possibility of preservation of the waterside, and the future of Lake Biwa -, Jan 14,2012, Shiga, Japan. (in Japanese)
- Minamoto T, and the members of RIHN C-06 project Koi herpesvirus disease as a model of environmental disease. The 6th RIHN International Symposium, Oct 26,2011–Oct 28,2011, Kyoto, Japan.
- Uchii K, Telschow A, Okuda N, Minamoto T, Yamanaka H, Honjo MN, Matsui K, Kawabata Z, Transmission dynamics of KHV and its impact on the genetic structure of the host population. International Symposium on Emergence of Viral Diseases: Evolution and Ecology of Koi Herpes Virus, Jul 04,2011–Jul 05,2011, Munster, Germany.
- Minamoto T, Honjo M N, Yamanaka H, Uchii K, Kawabata Z, KHV dynamics in natural freshwater environments. Emergence of Viral Diseases: Ecology and Evolution of Koi Herpes Virus, Jun 04,2011–Jun 05,2011, Muenster, Germany.

**Stage: Full Research****Project No.: C-07****Project Name: Global Warming and the Human-Nature Dimension in Siberia : Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments****Abbreviated Title: RIHN Siberia Project****Project Leader: HIYAMA, Tetsuya****Research Axis: Circulation****URL: <http://www.chikyu.ac.jp/siberia/>****Key Words: Global Warming, Water Cycle, Carbon Cycle, Permafrost, Former Inhabitant, Reindeer, Social Adaptation**

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**○ Research Subject and Objectives**

Global warming will likely transform Siberian environments. Early evidence indicates that the water and carbon cycles are undergoing rapid change, with potentially grave impact on Siberian flora and fauna. The Lena River Basin in Eastern Siberia is covered by larch forest but receives little precipitation. Permafrost provides moisture to the forest. The area is thus an ideal setting in which to study the effects of climate warming, as the forest-permafrost symbiosis is extremely susceptible to abnormal variations in temperature. Temperature risings have been recorded in the region in recent years, and changes in the ecosystem such as forest degradation and frequent flooding are evident. Human inhabitants, who have adapted to great changes in social structure and environment in the past, will be forced to adapt again, but to a cascading series of environmental changes whose dimensions are understood only in outline.

This research project takes natural and social science perspectives on three aspects of climate-associated environmental change in the region. These are 1) to describe current variation in water and carbon cycles and predict likely variation in the near future, 2) to make field observations of the effect of carbon and hydrologic variability in Eastern Siberian landscapes, and identify key exchanges or driving forces, and 3) to examine the capability of the multi-ethnic Siberian peoples, and their distinct social economies, to adapt to predicted change in their climate and terrestrial ecosystems.

Three research groups are thus organized in order to realize these three goals. The Siberia bird's-eye group (Group 1) uses climatic and satellite remote sensing data to describe change in climate and in principal patterns of human adaptation. The Water cycle and ecosystem interaction group (Group 2) uses dendrochronology, isotope-analysis, flux monitoring, and hydrological analysis in order to examine interaction between climate and vegetation. The Human ecology group (Group 3) elucidates the impact of climate and ecological change described above on the residential life in urban and agricultural districts in Eastern Siberia and the cultural practices and social systems of local minority peoples related to their capacities for adaptation. The project is jointly conducted by Japanese and Russian universities and research institutes.

**○ Progress and Results in 2010**

Regional climate predictions in Eastern Siberia are dependent on energy and water cycles, surface reflectance change from snow, ice and vegetation coverage processes in the region. The understandings of these processes in the region are still insufficient. There must be a unique water cycle system which is due to the existence of permafrost. The ecosystem, which is adapting to the cold climate with little precipitation, is sensitive to global warming. The minorities and city residents here depend on agriculture, stockbreeding and on the fragile infrastructure such as traffic, building and drinking water supply. It can be said that the acquiring of survival skills and the ability to adapt to the changes of their environment including accidents and disasters strongly depend on their social structures, history and culture, which have undergone Russian socialistic modernization. This process has therefore resulted in the construction of a special social system in comparison to other arctic and subarctic regions.

Based on these backgrounds, precise field observations in conjunction with the natural - social changes were carried out in this fiscal year. After getting these observation data, integrated researches using several satellite remote sensing data were done. Special emphases on the following five points were focused: 1) to revise surface soil freezing - thawing processes in our ecosystem models in order to better represent heat, water, and carbon fluxes in the permafrost ecosystems, 2) to detect tracking routes of wild reindeers and to find some relationships of the routes with topography and vegetation condition, 3) to classify spring ice-jam floods into "benefit floods" or "hazard floods", using archived newspaper articles and satellite remote sensing data, 4) to assemble social-cultural adaptation ways of local minority peoples against environmental and social changes, and 5) to elucidate backgrounds of folkloristic understanding against environmental changes using their myths, legends, and fairy tales.

The activities of each group are as follows:

[Research topic No.1]

A terrestrial ecosystem model was revised in order to represent heat, water, and carbon fluxes for the application to permafrost ecosystems. Especially, freezing - thawing processes of surface permafrost layer were revised. The model parameters were established based on our two flux tower sites. As the results, annual maximum thawing depth (annual maximum depth of active layer) correlated with surface soil moisture inter-annually. The net primary production (NPP) also co-responded with the soil moisture. Additionally, it was detected that the annual maximum thawing depth showed gradual increase (deepening) in decadal scale.

[Research topic No.2]

We could detect tracking routes of eight wild reindeers using ARGOS satellite system. Based on MODIS satellite data, it was found that the wild reindeers have moved along rivers and around better vegetation conditions without forest fires. It was also found that the migration distance of the reindeers was similar to those in North America and North Europe. It was detected from the interview that the recent climate change has not been severe damages to the keeper of the domestic reindeers. This might be due to some flexible adaptation systems of the keepers and domestic reindeers themselves against the environmental change. Additionally, although furbearer hunting in Eastern Siberia is a minor subsistence activity, we carried out interviews for furbearer hunters in order to detect adaptive strategies against climate change. As the result, it was found that many hunters don't recognize the global warming as practical problem. They felt severe impacts from social changes in hunting activity.

[Research topic No.3]

In order to clarify how the previous spring ice-jam floods of the Lena River affect to the villages and towns, we analyzed newspaper articles published for the past five years. We detected the time and place of the floods, and made a map to indicate the flooded places. Additionally we clarified movement of the ice-jams and flood damage patterns by using satellite remote sensing data. In conjunction with this, we chose the "increase of remoteness and difficulties of access" as an important keyword to think about social influence by the global warming. We then started a study from the viewpoint of the disaster prevention, adaptation, and vulnerability of such areas. Using this keyword, now we are studying Siberian local situations, such as decrease of the available period of winter river road, stoppage of the traffic by the flood in Eastern Siberia, comparing with the case in 2011 Tohoku earthquake and tsunami.

[Research topic No.4]

On studying adaptation, we unified the understanding in the project by the following method: we decided that the main objective of our research is to find the way of recognition and action of the local community (individuals and groups). Its theoretical issue is the mechanism which maintenances/ changes the structure of culture and society. In addition, we prescribed that it is better to consider a social change (particularly market economization) when we study a climate change in the region. Based on paper reviews, it became clear that the factors to decide ability for adaptation to climate change are

"traditional knowledge", "social network", "a fund", and "technology" in case of North America. In case of Eastern Siberia, additional adaptation ways are found such as "to spend labor earnestly" and "to just endure lack". Interestingly, there was a tendency that public network was replaced to personal networks in case of Siberia.

[Research topic No.5]

In order to clarify the background of folkloristic understanding for the environmental change, we started to collect and analyze folklore documents (myths, legends, fairy tales, prayers, incantations and others) written from the 19th century to the early 20th century by the indigenous people. As the result it became clear that in indigenous Siberian culture, there is an idea of original oneness of nature and human beings, and that indigenous people might consider a disaster to be "revenge of nature" by such a worldview.

### ○Project Members

- ◎ HIYAMA Tetsuya ( Research Institute for Humanity and Nature, Associate Professor, Management of Project, Analysis of permafrost and groundwater )
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- KANZAWA Hiroshi ( Nagoya University, Professor, Scenario of global warming in Siberia )
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- TAKAKURA Hiroki ( Tohoku University, Associate Professor, Related analysis of freezing water environmental use and an occupation in the rural society of the Lena middle region; Relational analysis of an occupation pattern and environmental change in East Siberia )
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- YOSHIDA Atsushi ( Chiba University, Professor, Analysis in Relationship between Subsistence System Patterns and Environmental Changes in West Siberia )
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- IKEDA Tohru ( Hokkaido University, Professor, Animal resource use and environmental analysis in Eastern Siberia )
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- SASAKI Shiro ( National Museum of Ethnology, Professor, Analysis in Relationship between Subsistence System Patterns and Environmental Changes in Yakutia )
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- SARDANA Boyakova ( Humanitarian Research Institute, Sakha Republic Science Academy, Professor, History of Infrastructure and Transportation System in East Siberia )
- FUJIWARA Junko ( Research Institute for Humanity and Nature, Researcher, Cultural anthropology focusing to shamanism )
- NAGAYAMA Yukari ( Hokkaido University, Assistant Professor, Environmental recognition of native people in Eastern Siberia )

### ○ Future Themes

In the next fiscal year 2012, it is necessary to analyze vegetation conditions around the migration route of wild reindeer precisely using several satellite data. On the contrary, it was detected from the interview that the recent climate change has not been severe damages to the keeper of the domestic reindeers. This might be due to some flexible adaptation systems of the keepers and domestic reindeers themselves against the climate change. Thus we need to find such local resilient systems based on the field observations and interviews.

Five collaborative research topics, namely “modeling and revising water / carbon fluxes in the permafrost ecosystems”, “interaction between reindeers and vegetations”, “spring ice-jam floods and its impacts to the local peoples”, “adaptation and vulnerability of the local peoples”, and “backgrounds of folkloristic understanding against environmental changes” will be investigated in the next fiscal year continuously. Especially “adaptation and vulnerability of the local peoples” is the

most important topics in this project so that it is necessary to develop adaptation strategy and policies to propose to the local government.

## ● Achievements

### ○ Books

#### 【Chapters/Sections】

- Nagayama, Y. 2011 Grammatical sketches from the field: Concise grammatical descriptions based on primary data. Yamakoshi, Y. (ed.) Linguistic Dynamics Science Project Publication Series. , Research Institute for Languages and Cultures of Asia and Africa.
- Park, H., Yamazaki, T. and Ohta, T. 2011 Responses of energy budget and evapotranspiration to climate change in eastern Siberia. Evapotranspiration. InTech.

### ○ Papers

#### 【Original Articles】

- Suzuki, R., Kobayashi, H., Delbart, N., Asanuma, J. and Hiyama, T. Nov,2011 NDVI responses to the forest canopy and floor from spring to summer observed by airborne spectrometer in eastern Siberia. Remote Sensing of Environment 115 :3615-3624. (reviewed).
- Xue BL, Kumagai T, Iida S, Nakai T, Matsumoto K, Komatsu H, Otsuki K, Ohta T. 2011 Influences of canopy structure and physiological traits on flux partitioning between understory and overstory in an eastern Siberian boreal larch forest.. Ecological Modeling (222) :1479-1490.
- Kim, H.-S., Maksyutov, S., Glagolev, M. V., Machida, T., Patra, P. K., Sudo, K. and Inoue, G. 2011 Evaluation of methane emissions from West Siberian wetlands based on inverse modeling. Environmental Research Letters 6. DOI:10.1088/1748-9326/6/3/035201.. (reviewed).
- Zhang N, Yasunari T, Ohta T. 2011 Dynamics of the larch taiga - permafrost coupled system in Siberia under climate change.. Environmental Research Letters 6. DOI:024003.
- Miyahara M, Tanenaka C, Tomioka R, Ohta T. 2011 Root responses of Siberian larch to different soil water conditions.. Hydrological Research Letters. 5 :93-97.
- Park H, Iijima Y, Yabuki H, Ohta T, Walsh J, Kodama Y, Ohata 2011 The application of a coupled hydrological and biogeochemical model (CHANGE) for modeling of energy, water, and CO2 exchanges over a larch forest in eastern Siberia.. Journal of Geophysical Research. (116). DOI: 10.1029/2010JD015386. 2011.

### ○ Research Presentations

#### 【Oral Presentation】

- Oshima, K. and Hiyama, T. Seasonal and interannual variations of the Lena River discharge and those relationships with atmospheric water cycle. 1st International Conference on "Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments", Mar 07,2012-Mar 09,2012, RIHN, Kyoto.
- Hiyama, T., Asai, K., Kolesnikov, A., Gagarin, L. and Shepelev, V. Residence time estimation of permafrost groundwater at Yakutsk region, eastern Siberia. 1st International Conference on "Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments", Mar 07,2012-Mar 09,2012, RIHN, Kyoto.
- Sakai, T., Hiyama, T., Fujiwara, J., Gotovtsev, S. and Gagarin, L. Flood disaster caused by permafrost degradation in the far north of Siberia. 1st International Conference on "Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments", Mar 07,2012-Mar 09,2012, RIHN, Kyoto.



**Stage: Full Research**

**Project No.: C-08**

**Project Name: Megacities and the Global Environment**

**Abbreviated Title:**

**Project Leader: MURAMATSU, Shin**

**Research Axis: Circulation**

**URL:**

**Key Words: Megacity, developing country, built environment, natural environment, social environment, city sustainable index, scenarios**

## ○ Research Subject and Objectives

### a) Research objectives and background

Cities are basically defined as the places in which people congregate. As human-made phenomena, they feature human-built-environments alongside the natural environment and develop their own unique socio-economic environment distinct from the non-urban environment. While cities have been a major force in promoting the progress of human civilization, they have also served as breeding grounds for human disaster and discontent in the form of environmental degradation, epidemics, famine and riots and problems of the built environment. Faced with such challenges, humans have repeatedly demonstrated their ability to overcome adversity through intervention in the urban and non-urban natural environment, the built-environment and socio-economic environment. However, a population of seven billion currently lives in the world, half of which live in cities. Environmental problems and complications are largely attributable to human activities in urban areas, including global warming and declining biodiversity on the earth. (Figure 1) This project will focus on the city, especially on the megacity, as both a major site in which human action create environmental problems that in recent years have become the centre of attention of many of international organizations and researchers.

The objectives of this project are: (1) to reduce environmental impacts attributable to megacities which support huge populations in developing tropical countries that are vulnerable to the effects of global warming; and (2) to provide methods of intervening in the local environment, which is directly related to the lives of people in the environment, with a view to enhancing people's general satisfaction with life and their surroundings. The focus of this study is Jabodetabek, the metropolitan area of Jakarta, Indonesia's capital, which at present has a robust economy and growing population. In the course of our study, 1) we will take measurements and engage in observations and analyses through a cognitive science approach from the perspective of different academic fields of study at different levels (micro and macro) of a megacity, and 2) we will present a scenario of a megacity by the year 2050 from the perspective of design science. Essentially, we intend to develop methods for making scenarios and to show knowledge we have gained in the course of our research in a form that may be applicable to studies of other megacities. In so doing, we hope to link this single study of megacities to global cities, the various problems that plague cities in general, and the global environment in order to resolve the problems.

We have considered the following outcomes: (1) to present a 2050 megacity scenario; (2) to hold a Megacity Scenario 2050 workshop; (3) to provide a framework and an Urban Information Database that can be publicly accessible; (4) to publish one volume in English; and (5) to publish a series of about eight volumes under the title of Megacities and Earth's Environment (provisional title). We also present research findings at international conferences, develop a website presenting results of the project and continue to develop international researchers working in this field.

### b) Research methods and organization

1) The study is divided into two broad areas: clarification of mechanisms (cognitive science) and creation of an urban sphere model (design science). (Figure 2)

Cognitive science-1: Through measurements and observations of megacities from different perspectives (micro and macro), the study will quantitatively and qualitatively determine conditions of the built-environment (building structures, area, types and styles of dwellings including quality of materials),

the natural environment (heat environment, biodiversity, flood risk), and the social environment (values, lifestyle) and will conduct historical analyses of restrictive aspects to elucidate the mechanisms of megacities. Then, we can understand how they negatively affect the global environment, the local environment, and people's values.

Cognitive science-2: Observing the way in which people adjust themselves to the changing built-, natural and social environments, we will develop methods of making a proposal of an "urban sphere model with future potential."

Design Science-1: We will comprehensively consider all existing intervention methods in megacities on both a micro and macro scale, and we will actually hold workshops on these methods. In the workshops, we can clarify and assess methods of intervention and adaptation.

Design Science -2: We intend to hold a Megacity Scenario 2050 workshop to present the Megacity Scenario 2050 and determine how we should present it to the public and how we can receive feedback regarding it. In the workshop, we will analyze various processes and present results including an evaluation.

2) Research framework: We have streamlined the work groups into five according to the research framework as follows: (1) the Supervisory Group which oversees the project as a whole, (2) the Megacity History Group which researches the history of megacities and Jabodetabek, (3) the Lifestyle Group which undertakes measurements, observations, and analyses of people's values and lifestyles, (4) the Environment Group which undertakes measurements, observations, and analyses of the natural environment and the built-environment, and (5) the Urban Policy Group which implements design science including the formulation and verification of the Megacity Scenario 2050. (Figure 3)

## ○ Progress and Results in 2010

Below we describe outcomes achieved to date during the current fiscal year according to the following four categories.

### 1. Results concerning methodology

(1) To analyze megacities in high resolution, we have developed a framework defining "land environment types" based on the built-environment and various indicators for categorizing these (density of dwellings, ground coverage, height and planning). On the basis of these indicators, we proposed four types for Jabodetabek: farming village areas, urban settlement areas (Kampung), high-rise residential areas and planned residential areas which are the subject of ongoing research. (Figure 4)

(2) Using the methodology above, we examined the possibility of applying this framework to other megacities.

### 2. Results concerning cognitive science

(1) In two area types under investigation, farming village areas (low density, interspersed with rice fields, low height, unplanned; Tangerang) and urban settlement areas (high density, building structures, low height, unplanned; Cikini), we have collected local environment measurements (heat surveys, biodiversity surveys, measurement surveys of distance between dwellings) and conducted surveys on lifestyle and environmental awareness (survey on dietary habits, questionnaire survey on awareness and values, survey on daily activities).

(2) Based on results of the above, we have made calculations relevant figures on the following 12 indicators in the three categories below and showed a cobweb chart to make comparison between the research areas.

1) Global environmental impact: the three carbon footprint indicators that can be traced back to three sources: dwellings, food and transportation

2) Local environment conditions: five indicators relating to the heat environment, biodiversity, calories consumed, the area of dwellings, and income

3) Awareness or level of satisfaction: four indicators relating to the natural environment, dwellings, foods, and the community.

(3) Macro study of Jabodetabek: We conducted assessments of the Ciliwung-Cisadane River basin regarding flood risk. We also conducted a questionnaire survey on values in Jabodetabek as a whole (about 1500 subjects). We collected and organized data on urban information infrastructure development. In addition, we organized population data (1680-1789) and made historical ground coverage maps.

### 3. Results concerning design science

(1) In the urban settlement area of Cikini, we held a joint student workshop with students and faculty from the University of Indonesia and Japanese university students. Students presented design intervention regarding how intervention should take place at a micro level and exchanged views with residents of the local community. We published a booklet on the results of this workshop in both English and Indonesian and distributed it.

(2) In our development of new local technology to strengthen fragile buildings, we conducted a demonstration experiment on the construction of a dwelling utilizing bamboo reinforced concrete (batako).

#### 4. Organizational improvement

Outcomes due to improvement in the organizational framework: The holding of monthly meetings with core members contributed to unifying their interests in the project and consolidating data that had been decentralized. The thoughtful advice and abundant suggestions from Professor Terry McGee (British Columbia University from Canada), who joined the project at our invitation, and Visiting Professor Tsuyoshi Kato also enlivened the project.

#### ○ Project Members

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## ○ Future Themes

### Research Plan

#### FR3 (2012)

##### 1. Research concerning cognitive science:

- 1) Investigate the remaining two “land environment types” : high-rise residential areas (high density, built-up areas, high-rise buildings, planned) and planned residential areas (low density, built-up areas, low-rise buildings, planned)
- 2) Undertake a supplementary study of the two “land environment types” studied prior to FR3: farming village areas and urban settlement areas.
- 3) Examine logic that will link the micro and macro aspects of megacities.
- 4) Engage in methodological research of methods for integrating data obtained through cognitive science and the importance therein. Further analyze data by considering the complementary relationship among indicators and the trade-off.
- 5) Obtain data concerning megacities other than Jabodetabek, and conduct comparison study.

##### 2. Research concerning design science

- 1) Following on from workshops in urban settlement areas in fiscal 2011, hold workshops with a small number of people to study ways of linking the results obtained in cognitive science with an appropriate scenario.
- 2) Proceed with research on design proposals for dense residential areas.
- 3) Undertake surveys and engage in research for the presentation of the Megacity Scenario 2050

##### 3. Other

- 1) Engage in discussion concerning the publication of the project research, one of the final outcomes of the project, taking into consideration matters such as its purport, content and authors, among others.
- 2) Examine the framework and content of the Urban Information Database

#### FR4 (2013)

##### 1. Research concerning cognitive science

- 1) Consider the possibility of studying other types of categorized areas in addition to the existing four and engage in research of these.
- 2) Conduct supplementary surveys of the four types of areas.
- 3) In addition to the above, continue FR3.

## 2. Research concerning design science

- 1) Undertake surveys and engage in research to present a Megacity Scenario 2050.

## 3. Other

- 1) Engage in discussion concerning the publication of the project research, one of the final outcomes of the project, taking into consideration matters such as its purport, content and authors, among others.
- 2) Examine the framework and content of the Urban Information Database

## ● Achievements

### ○ Books

#### 【Authored/Co-authored】

- AMI, M. 2011 La Tahzan for Student. Lingkar Pena Publishing House, Jakarta (Other)
- FUKAMI, N. 2011 World history in Islamic Architecture. Iwanami Shoten (in Japanese)

#### 【Chapters/Sections】

- TANIGAWA, R. 2011 The History of Modern Architecture and City in East Asia. Iwanami modern and contemporary history of East Asia series Separate volume. Iwanami-shoten, pp.177-202.
- KURIHARA, S. 2011 Theoretical Study on the Fieldworker's eyes (2-1), The Positions of the Fieldworker (chapter 4), The Methods of Drawing Maps (Technical part 3), and Introduction of Literature (6 books). Architectural Institute of Japan (ed.) Let's go to Fields! -Fieldwork on dwellings and life. Fukyosha.
- TANIGAWA, R. 2011 The History of Modern Architecture and City in East Asia. Iwanami modern and contemporary history of East Asia series Separate volume. Iwanami-shoten, pp.177-202.
- KIMURA, T. 2011 Mythical Difference and Social Oppression. SHINODA, C. (ed.) Mythes, Symboles et Images. Librairie Rakuro, pp.157-171.

### ○ Editing

#### 【Editing / Co-editing】

- MURAMATSU, S. (ed.) 2011 SEEDer: Measuring City, No. 5. Syowado,
- OKABE, A., UI, etc. (ed.) 2011 Sensible High DenCity: Megacity Design Studio Indonesia-Japan 2011. . ,

### ○ Papers

#### 【Original Articles】

- TANIGAWA, R. 2011 Colonial Structures Veiled in Publicity -Lighthouses, Bridges, and Dams Built by the Japanese Empire in Colonial Korea-. Our Living Heritage: Industrial Buildings and Sites of Asia, mAAN Seoul 2011 8th International Conference :77-87.
- AMI, A., MURAKAMI, A., and MURAMATSU, S. 2011 Development of Green Space as Public Space in Jakarta Metropolitan Area-Past, Present and Future-. World Delta Summit 2011 Abstract Book :161.
- FUKAMI, N. 2011 Medieval Mosques of Port Cities in Gujarat - Stylistic Analysis. Japan Society for Hellenistic-Islam Archaeological Studies 18 :186-206.
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- GUSEVA, A. 2011 Challenges for Infrastructural Provision in Post-socialist Moscow's Mega-urban Region: Housing and Communal Services. *The Network Industries Quarterly* 13(4) :3-6.
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- UCHIYAMA, Y. and OKABE, A. 2011 Study on Categorization of Mega-cities by Their Characteristics of Distribution of Population - Categorization of 35 Mega-cities -. *Journal of the City Planning Institute of Japan* 46(3) :883-888.
- KIMURA, T. 2011 Yamaguchi Daigaku Tetsugaku Kenkyu. (18). (in Japanese)
- HIROSUE, M. 2011 Symposium I Port States in Southeast Asia. *Tōhōgaku Kaihō*, 100 :11-13.
- MORI, K. 2011 How are infrastructures related to urban sustainability? . Energy, transportation, water and health. *Network Industries Quarterly* 13(4) :19-22.
- YAMADA, K 2011 Consideration on Unfolding of South Indian Merchant Activities and Formation of Port City Colombo: A Sketch of Organization and Transformation of Urban Space since the 18th Century. *The Japanese Association for South Asian Studies, Proceedings for the 24th National Meeting* :17-18.

## ○Research Presentations

### 【Oral Presentation】

- YAMADA, K. Urban Micro Activities as Driving Forces of Transformation of Colombo City and Indian Ocean: Urban Networks since the 17th Century. *JSPS Asia and Africa Science Platform Program Islam and Multiculturalism: Between Norms and Forms Seminar*, November 2011, Tokyo, Japan.
- GUSEVA, A. Is the Muscovite lifestyle a luxury?. *Open House*, Research Institute for Humanity and Nature, Aug 05, 2011, .
- GUSEVA, A. Second-home Settlements of the Moscow City Dwellers and its Role for the Post-Soviet Urbanization of the Region.. *180th Danwakai seminar*, Research Institute for Humanity and Nature, Kyoto, Jul 19, 2011, .
- ARATA, M. Food Culture and Business — Eating Habits, Religions and Recognition influencing Food Choice.. *Foodex Japan*, Jul 08, 2011, .
- MURAMATSU, S. Expressions of the Water Memories. the 10th RIHN Forums-Reflections on the Water Around Us., Jul 03, 2011, Kyoto International Conference Hall. (in Japanese)
- MEUTIA, A. Indonesia Water and Folk Knowledge. the 10th RIHN Forums-Reflections on the Water Around Us, Jul 03, 2011, Kyoto International Conference Hall,.
- HAYASHI, K. Discovering urban heritages in Kyoto-Wisdom for living better on the earth. *Press colloquium.*, Jul 01, 2011, Heartpia Kyoto,.
- ARATA, M. JOJOBA: Happy Singletons —Altered food habit and gender norm among career women in Jakarta.. the 85th Conference of Japan Society for South-East Asian Studies, Jun 11, 2011, .
- HAYASHI, K. Establishing the concept of "Urban Services" for Global Environmental Studies: Towards synthesis of Ecosystem Services and Urban Services. the *Asian Conference on Sustainability, Energy and the Environment 2011*, Jun 02, 2011-Jun 05, 2011, Osaka, Japan.

### 【Poster Presentation】

- AMI, A., MURAKAMI, A., and MURAMATSU, S. Development of Green Space as Public Space in Jakarta Metropolitan Area-Past, Present and Future-. *World Delta Summit 2011*, 2011, Jakarta.

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**Stage: Full Research**

**Project No.: C-09-Init**

**Project Name: Designing Local Frameworks for Integrated Water Resources Management**

**Abbreviated Title:**

**Project Leader: WATANABE Tsugihiro**

**Research Axis:**

**URL: <http://www.chikyu.ac.jp/P-C09/>**

**Key Words:**

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### ○ Research Subject and Objectives

World water and food resources are under pressure. Population growth and development will increase aggregate demand for freshwater just as climate change is predicted to affect the historical spatial and temporal patterns of water availability. Since hydrologic cycles and agricultural systems are so closely linked, human societies must plan for change in both in relation to increasing demand and predicted increases in water-related disasters such as flood and drought.

This project conducts extensive historical and contemporary evaluation of several local-scale agricultural water management regimes, seeking principles that promote, or blockages that hinder, efficient water-use. Combining best quantitative measures of water flow, use, and quality, and insights from irrigation engineering, historical description and institutional analysis, it evaluates and describes scenarios for culturally relevant and institutionally and economically feasible re-design of local water management regimes in several case-study sites. It seeks to improve the adaptability of the integrated water resources management (IWRM) framework to local cultural and economic contexts. The project then turns to fundamental re-design of local land- and water management systems in relation to the combined social, economic and environmental challenges of the future.

Many of global environmental problems are water-related and caused by inappropriate water management of local level. The integrated water resources management (IWRM) is proposed world widely to improve the situation. To date, however, IWRM has not achieved its potential. Local water management, or district level management, is a key component of IWRM, and its basic policy and framework are to be re-designed in the context of contemporary global environmental changes. This project research, based on several completed and ongoing projects of RIHN, entails interdisciplinary investigation of the merits and demerits in conventional regimes of local/distinct water management, especially related to irrigation, in several environmental contexts. Main research foci are agricultural productivity, water balance and environment, management institutions and organizations, and human behavior and consciousness. Field and modeling studies are integrated to develop an advanced description of the knowledge systems affecting water management; it will allow comprehensive analysis of the key elements in improved management of basin water resources and in human-water-land relationships more generally.

### ○ Progress and Results in 2010

Case studies are designed to illuminate water- and food related challenges in specific environmental and social contexts. To date, project objectives and research activities have been appreciated by national and international researchers and institutes, governments, and local user associations as highly significant and worthy of their participation. The project has exchanged Memoranda of Understanding with six universities and research institutes in Turkey, Indonesia and Egypt, conducted collaborative works with FAO and IWMI, and anticipates collaboration with the Water-Culture Institute (USA) and Turkish Water Institute.

In Southeastern Turkey, a large scale irrigation development project is underway. Farmers in newly irrigated areas often practice inappropriate water management that results in land degradation. Project research examines the sources and processes of the problems, including structure and function of the institutions and organizations related to irrigation development. In Bali, there is a famous local water management system 'subak', which has been elaborated historically, but is now challenged by contemporary issues related to expansion of cash crop production and agro-tourism.

On the other hand, in South Sulawesi, Indonesia, modern irrigation has been developed in order to provide irrigation in the dry season. Based on observation of actual water and crop conditions in this

area, project research establishes the necessity of modifying this management system in order to provide supplementary irrigation in the wet season. Project research also examines the processes of farmer participation organized by newly established NGOs. In Egypt, the long history of irrigation and cooperation in water use is to be reproduced with paleo-climate data, hydrological modeling, and historical proxies and references. Based on this historical review, current projects for participatory irrigation management are reviewed.

In the Echi-River Basin of Shiga, Japan, reformation and empowerment of local water management is an urgent issue caused by changes of farming system and the complicated system of water-use developed in the last decades. Here, research describes the impacts of management on water quality of Lake Biwa downstream

### ○Project Members

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### ○ Future Themes

The system of local water management in each location is to be examined according to the following three main themes: 1) environment, including soil and water-use, and hydrology; 2) socio-economy, including institutions, land holding system, agriculture and local industry, and development organizations; and 3) culture, including environmental consciousness, tradition and customs, and behavior. A dedicated sub-team will investigate each theme at each study site. Sub-teams are to share, integrate, communicate their findings, and propose improved scheme of local water management from community and district level up to region or basin. Cross-site integration is overseen by a central coordination group composed of researchers from each of the study sites as well as representatives of relevant international agencies. Such proposed modifications in local water management and basin hydrological models will establish the significance of, and necessity of improving, local water management within the global hydrological regime.

This research project will therefore contribute to the design of place-specific water policies and practices and to the concepts, models and theories that describe the multi-scale and linked nature of human-ecological systems. The models or method to be developed in the project can simulate and evaluate the impacts and implication of water management practices on agricultural production and hydrological conditions both qualitatively and quantitatively. They also can provide stakeholders with basic requirements of better management and guide selection of options available to improve their systems.

Expected outcomes, including the fundamental frame of cooperative water management, are to be disseminated to local communities, decision makers, and international aid organizations, so that they can be widely examined, debated, and applied to the significant water-agriculture problems and pressures faced in different areas in the world.

### ● Achievements

#### ○ Books

##### 【Chapters/Sections】

- Tsugihiko Watanabe Mar, 2012 Integrated Approach to Climate Change Impact Assessment on Agricultural Production Systems. V. Anbumozhi et al. (ed.) Climate Change in Asia and the Pacific. Asian Development Bank Institute and SAGE Publication, Tokyo, pp.138-155.
- Tsugihiko Watanabe Sep, 2011 Agriculture and Hydrological System. Shimizu, H. et. al, (ed.) Environmental Science of Water. University of Nagoya Press, pp.155-169. (in Japanese)

#### ○ Papers

##### 【Original Articles】

- Tsugihiko Watanabe and Shin Hirose Sep, 2011 Engineering in Wisdom on Land and Water. Journal of JSIDRE 79(9) :7-10. (in Japanese)

## ○Research Presentations

### 【Oral Presentation】

- Tsugihiko Watanabe Designing local frameworks for integrated water resources management. Workshop on collaborative research on themes relating to the humanities and the environment, Mar 22, 2012–Mar 23, 2012, University of East Anglia, Norwich, United Kingdom.
- Tsugihiko Watanabe Designing Framework of Local Water Management under the Context of Integrated Water Resources Management. 6th World Water Forum, Mar 12, 2012–Mar 17, 2012, Marseille, France.
- Hironori HAMASAKI, Ken'ichi NAKAGAMI New Paradigm' of Integrated Water Resources Management. The 6th World Water Forum, Mar 12, 2012–Mar 17, 2012, Marseille, France.
- Ulara TAMURA Introduction: Designing Framework of Local Water Management under the Context of Integrated Water Resources Management. the 6th World Water Forum, Mar 12, 2012–Mar 17, 2012, Marseille, France.
- Hisaaki Kato Rethinking of IWRM, from the Viewpoint of Management and Organization Theory. Workshop of the Research Project on "Wisdom of Land and Water Management", Nov 12, 2011–Nov 15, 2011, Kyoro, RIHN.
- Tsugihiko Watanabe Designing Local Framework of integrated Water Resources Management. International Symposium on "Long Term Vision for the Sustainable Water & Land Use, Linking Global Vision & Local Wisdom" , Sep 20, 2011–Sep 23, 2011, Adiyaman, Turkey.
- Ulara TAMURA Weaving Rural Lifeworld and Global Science; For the Better Use of Water as the Commons among the Locals. International Symposium of "Long Term Vision for the Sustainable Water & Land Use, Sep 20, 2011–Sep 23, 2011, Adiyaman, Turkey.
- Hisaaki Kato "Convivial Organization" for Renewal of Integrated Water Resources Management Framework: Focusing up on Collaborate Activities for Water Resources Management in the context of Modern Organizational Theory "Cooperative System" Revisited. International Symposium Long Term Vision For The Sustainable Water & Land Use, Sep 20, 2011–Sep 23, 2011, Turkey, Adiyaman University.

### 【Poster Presentation】

- Designing Local Frameworks for Interfrated Water Resources Management. the 6th World Water Forum, Mar 12, 2012–Mar 17, 2012, Marseille, France.
- Water Projects. The 6th World Water Forum , Mar 12, 2012–Mar 17, 2012, Marseille, France.

**Stage: Full Research****Project No.: D-03****Project Name: Human Life, Aging and Disease in High-Altitude Environments:Physio-Medical, Ecological and Cultural Adaptation in “Highland Civilizations”****Abbreviated Title:****Project Leader: OKUMIYA, Kiyohito****Research Axis: Diversity****URL:****Key Words:****○ Research Subject and Objectives****Research Objectives:**

We intend to explore new perspectives regarding how people live in high-altitude environments where oxygen levels are low and natural resources are limited. We focus on aging problems and lifestyle-related diseases because we regard these as manifestations of global environmental issues in the human body. We aim to clarify “highland civilization”, as defined by ecological and cultural adaptations to high-altitude environments, 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:**

In humans, acute lack of oxygen causes irreversible brain damage within five minutes. In highland areas, humans have adapted to the physiological, ecological and cultural challenges of high altitude environments, which include low oxygen levels and scarce food sources, over many generations (Aldenderfer 2003) (Baker 1978) (Beall 2006) (Rivera 2007). “Highland civilization” embodies both ecological and cultural adaptations and it has been reported that elderly highlanders have a high subjective QOL (Yamamoto 2008) (Matsubayashi 2009). In recent decades, modern lifestyle changes have impacted highland life. Whilst highland life has become more convenient with increased food supplies, it is estimated that lifestyle-related diseases such as myocardial infarction or diabetes will increase as a result. Any increase in cardio-respiratory disease may have greater impact in a low oxygen environment. In this project, we will study the influence of these lifestyle changes over several decades on QOL among elderly highlanders.

**Significance for “Global Environmental Issues” :**

Environmental changes associated with human activities are actualized on a global scale. Improvements in diet and medicine have increased the average life span, and with this, an increase in age-related diseases including lifestyle-related diseases. Lifestyle-related diseases are age-related diseases influenced by lifestyle, such as eating habits, activity level, sleep patterns, smoking and alcohol consumption. Reconsidering lifestyles that encourage lifestyle-related diseases may be incidentally coupled with rethinking lifestyles that impact the environment, such as activities that may contribute to pollution and global warming.

This research explores a fundamental message regarding global environmental problems based on aspects of lifestyle-related diseases and QOL in the elderly. Our project is compatible with RIHN’s mission to integrate the humanities and science by investigating QOL, lifestyle and environments within various disciplines, including geography, agriculture, anthropology, meteorology, ecology, economics and medicine. The Himalaya-Tibet area is the strategic investigation site. In 2007, the IPCC reported that this area exceeds the global average for temperature increase and the severe glacial retreat is globally important. Additionally, the decreasing water supply to the lower stream is an additional concern. We have set an automated weather station (AWS) in Ladakh and started providing information to the public.

**○ Progress and Results in 2010**

Research findings indicate the following.

- 1) Ecological and cultural adaptation in highlands is characterized as maximal and sustainable utilization of limited but diversified natural resources, flexible management for disasters and simple life with modest virtues.
- 2) The “Himalaya model of lifestyle-related diseases” hypothesis of diabetes acceleration was developed by the interaction among physiological adaptation in high-altitude and the effect of recent change of lifestyles with socio-economic globalization.

### **Ecological and cultural adaptation to the high-altitude environment and recent lifestyle change due to the globalization**

Subsistence lifestyle and economic conditions supporting the base of “highland civilizations” were studied in the three ecologically distinct zones in Himalaya-Tibet region: Arunachal Pradesh and Bhutan in the forest zone, Ladakh in the oasis zone, and Qinghai in the grassland zone. Vertical distribution of vegetation, ethnic groups, subsistence lifestyle and alien plant invasion were described from 200 to 4000 m in Arunachal Pradesh (Kosaka 2010). The detailed household interview and analysis of satellite image revealed the recent decrease in the number of livestock, the increasing use of chemical fertilizer, and the distribution pattern of spreading abandoned land at Domkhar village in Ladakh. Shortage of fodder, heavy snowfall, and less accessibility to social services were identified as the reasons for migration of pastoral people from Changthang highland to Leh city in Ladakh. Risk assessment of glacial lake collapsing, recording the restoration process from flooding damage (Yamaguchi 2011), and analysis of the climatic aspect of disaster occurrence have also been conducted in Ladakh.

#### **“Himalaya model of lifestyle-related diseases” : The interaction between long-term physiological high-altitude adaptation and recent lifestyle change.**

There was the association between physiological hypoxic adaptation and lifestyle-related diseases. Han people had higher hemoglobin concentration compared with Tibetans in Qinghai. Increasing prevalence of diabetes mellitus was strongly associated with increases in hemoglobin levels related to adaptation to hypoxia in Ladakh, Yushu, and Arunachal (Okumiya 2010) .

There was the association between high-altitude and lifestyle-related diseases. High blood sugar, pulmonary disorder by dust, sleep disorder (Ladakh), hypertension and hyperlipidemia (Arunachal) were more prevalent in higher-altitude dwelling people (Ishimoto 2011).

There was the association among ecological environment, globalization and food diversity. The food diversity score was highest in Arunachal (humid), moderate in Qinghai (semi rid) and lowest in Ladakh (arid). In Ladakh there was lower food diversity in people in rural area than urban one.

There was the association between settlement, livelihood change and lifestyle-related diseases. Lifestyle-related diseases were more prevalent in urban area of Yushu than rural area of Haiyan in Qinghai (Okumiya 2010) . Official workers and monks had more prevalence of obesity, hypertension and diabetes than agro-pastoral local people in urban areas of Yushu and Leh.

The prevalence of diabetes was low in the traditional lifestyle in pastoral people in Arunachal and Haiyan (3000 m) but the prevalence of prediabetes in Ladakh was high in Ladakh (2900–3800 m) where natural resource is lowest and they may be fragile to lifestyle change. There was more prevalence of high hemoglobin level and high blood sugar with obesity and hypertension in Yushu (3600 m) than in Ladakh. Change of lifestyle in hypoxia-adapted people may accelerate lifestyle-related diseases: ” Diabetes acceleration hypothesis” .

#### **Health care design for elderly people in highlands for successful aging with high QOL**

We started follow-up monitoring of blood pressure, body weight and amount of exercise with the collaboration of local health staffs in Ladakh. Comprehensive geriatric functional analysis in all elderly people in Khaling in Bhutan were assessed and we are developing geriatric care system by the collaboration with local health staffs including traditional medical staffs and monks to promote health, high spirituality and QOL (Sakamoto 2011).

**○Project Members**

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### ○ Future Themes

Manifestations of global environmental issues in the human body has been clarified in the changing highland civilizations under the twin influences of socioeconomic globalization and global warming. Verifying the difference of adaptation and maladaptation in “Himalaya model of lifestyle-related diseases” -diabetes acceleration hypothesis, the integration of medical and cultural/ecological team will be promoted. Pursuing culturally and ecologically fitted health care design with high QOL and presenting wisdom of the aged and wisdom of coexistence to deal with aging and disease, we will reconsider present lifestyles and the future of modern civilization.

**Stage: Full Research**

**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 Subject and Objectives

### Research Objectives

The goals of the project are to promote understanding of the environmental problems associated with ecological resources, and contribute to their solution using the concept of the ecosystem network. Although our project can be regarded as a study on social-ecological systems, we pay attention to the interactions among different subsystems and various actors in society by introducing the concept of an ecosystem network. By analyzing and integrating the case studies in the two research areas, we establish a theory of the ecosystem network, which is expected to contribute to the understanding and management of other ecosystems and ecological resources.

In this project, we address two concrete environmental problems under contrasting ecological settings: tropical rainforests in Southeast Asia (Sarawak, Malaysia) and grasslands in Central Asia (Mongolia). In both Sarawak and Mongolia, we are conducting research in three core steps: (1) identification of ecosystem network structures responsible for the problems, (2) scenario analyses, and (3) establishment of a general conservation theory.

#### <Background>

Most ecosystems on the planet have been seriously degraded by human activities and are now in critical condition. Although various approaches for dealing with social-ecological systems have been developed to understand environmental problems and explore better ways to make both ecosystems and human lives sustainable, we still do not have a clear perspective for solving the problems partly owing to the complexity and diversity of ecosystems and human societies.

To cope with this complexity and diversity, we propose the concept of an “ecosystem network,” which has a nested structure involving interactions among and within subsystems, including human societies. Most terrestrial ecosystems affected by human activities are a mosaic of different land covers. In the ecosystem network, the subsystems (e.g., primary forests, secondary forests, lands for shifting cultivation) form an interacting network. In addition, each subsystem consists of networks of biological interactions. Moreover, we identify different actors in a human society within the ecosystem network, and regard human activities as part of the interactions within the ecosystem network. Some actors do not directly interact with the ecosystem but indirectly through other actors.

#### <Need to conduct the project at Research Institute for Humanity and Nature (RIHN)>

The project contributes to the mission of the RIHN because the ecosystem network is an interdisciplinary concept. The clarification of ecosystem networks requires the close cooperation between natural and social scientists. In addition, the project aims to establish a generalized theory beyond case studies; rather, it will be a core of the research field of the global environmental study created by RIHN.

#### <Research methods>

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. Most terrestrial ecosystems affected by human activities are a mosaic of different land covers. In the ecosystem network, the subsystems (e.g., primary forests, secondary forests, lands for shifting cultivation) form an interacting network. In addition, each subsystem consists of networks of biological interactions.

Moreover, we place human society as a subsystem within the ecosystem network and regard human activities as part of the interactions within the ecosystem network.

The research areas for this project are a tropical rainforest in Southeast Asia (Sarawak, Malaysia) and a grassland in Central Asia (Mongolia). For a comparative investigation, it is essential to establish more than one research area to obtain generalizable results and discussion. In both study areas, terrestrial ecosystems are being devastated by the surge in Asian economies associated with the recent dramatic economic growth of China. Nevertheless, the lives of many people depend on natural ecosystems, and the destruction of these ecosystems results directly in dramatic changes in their lives. While the economies of both regions have similar frameworks, their ecological characteristics, such as the regeneration time of vegetation and the distribution of biomass in the ecosystems, differ.

For thousands of years, livestock have extensively grazed the grasslands of Mongolia. In recent decades, however, overgrazing by livestock, especially by the increased number of goats raised for the production of cashmere for export, has caused a serious problem in the region. Overgrazing results in excessive vegetation removal from the soil surface, alkalizes the soil, and facilitates the growth of inedible plant species.

In Sarawak, ecosystems have changed dramatically in the last 100 years; land use has shifted from extensive agriculture in forests by indigenous people to logging in natural forests as a source of timber for export, and then to oil-palm plantations. The expansion of these plantations is thought to have brought about a sharp decrease in biodiversity and caused a reduction in or loss of ecosystem components essential to the indigenous people.

In both Sarawak and the grasslands of Mongolia, we are conducting research in three core steps: (1) Identification of area-specific problems and hypothetical ecosystem network structures closely related to the problems; (2) confirmation and evaluation of the hypothetical links through field surveys, remote sensing, literature surveys, and modeling; and (3) scenario analyses by building a few scenarios with different network structures, and evaluation of predicted ecosystem and social status using various indices. By integrating these results, we will (4) establish a general conservation theory based on the concept of ecosystem networks. The core of the theory will indicate which network structures are likely to lead to environmental problems and how we can restore the network to mitigate the problems.

<Organization>

The project is composed of three groups: one for the theoretical and modeling study and one group each for the field studies in Mongolia and Sarawak. To facilitate cooperation and discussion irrespective of research field, we do not divide the members of the field teams into subgroups; instead we have supervisors with a background in the social sciences and ecology for each study site. See the attached list for core and other members and their roles in the project.

## ○ Progress and Results in 2010

(1) Identification of ecosystem network structures responsible for the problems

We finish most data collection and analysis for this step. In Mongolia, we develop a simulation model to investigate the effects of herders' movement on the conditions of the pastures. In Sarawak, we work on data collection and conduct preliminary analysis of the questionnaire survey.

(2) Scenario analyses

We identify core scenarios for Mongolia and Sarawak for evaluation.

(3) Establishment of a general conservation theory

By comparing Mongolia and Sarawak, we investigate relationships between network structures and sustainable use of ecological resources.

(2) Confirmation and evaluation of hypothetical links

**(1) We identified ecosystem network structures responsible for the problems.**

### Mongolia

Although the increase of goats for cashmere export have been regarded as the primary cause of pasture degradation, our results suggest that the distribution of livestock and decrease of mobility in nomadic herding are also important causes for pasture degradation. To evaluate the hypothesis we established a



simulation model based on the ecological and social data. The model demonstrated that in an unpredictable environment, nomadic pastoralism is more sustainable and profitable compared to a settled one.

### Sarawak

The loss of primary and secondary tropical forests in Sarawak is largely due to timber exploitation and plantation development by enterprises. Drastic changes in the land cover are considered responsible for many changes in the lives and society of indigenous peoples. To investigate the effects of such changes, we conducted interview surveys at more than 90 villages in the Baram and Rajang river basins. We also collected data on aspects of their environments; forest cover was evaluated based on the land cover maps based on the satellite data, and available infrastructures of the villages were recorded based on the interview to the village leaders. The data indicate that while the decrease of the forest areas does not directly cause the decrease in the population, it decreases the opportunities for group activities such as hunting and swidden agriculture, and the social capital of the village, which is related to depopulation.

### Comparison of ecosystem networks of Mongolia and Sarawak

An important difference in the ecosystem networks of Mongolia and Sarawak is the relationships between enterprises and local people. In Mongolia, ecological resource is used by local people, and sold to enterprises. In this manner, people and enterprises are mutually dependent. On the other hand, enterprises also directly exploit the ecological resources in Sarawak. Thus, people and enterprises are competitors using the same resource.

#### (2) We constructed three parallel scenarios for Mongolia and Sarawak

To deliver results of the project in an understandable way, we constructed three parallel scenarios for Mongolia and Sarawak, which are economically-, environmentally-, and local community-focused. In each scenario, we have a set of policies and institutions, based on which we estimate the land cover, and evaluate environmental, social and economic conditions 30 years from now using different indices.

#### (3) We developed a hypothesis to establish the general conservation theory

As mentioned above, we recognized a fundamental difference in the ecosystem networks in Mongolia and Sarawak. It suggests that necessary policies and institutions are also different in the two areas. In Mongolia, the network structure suggests that there is a potential for the sustainable management through the negative feedback that suppress the overuse of pastures, since the decrease of the ecological resource and other ecosystem services caused by the degradation directly affects the users. Therefore, for sustainable management, it is essential to identify what weakens the feedback and to implement policies and institutions that enhance the feedback. On the other hand, the structure in Sarawak suggests that the feedback does not suppress the overuse of the main users, enterprises. Therefore, policies for introducing a feedback or for restricting the intensity of the resource use are necessary for sustainable management.

We consider that the differences of the two ecosystems in productivity and biomass (or resource) distribution are one of the main factors for the differences in the structure between Mongolia and Sarawak.

### Project Members

◎ Yamamura, Norio ( Research Institute for Humanity and Nature (RIHN), Professor, General Supervision, Modelling Work Group Supervision, Mathematical Modelling )

#### Modelling Work Group

○ Ishii, Reiichiro ( Research Institute for Global Change (JAMSTEC), Research Fellow, Group Leader, Construction of Simulation Model )

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#### Sarawak Work Group

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- Ichikawa, Tetsu ( Rikkyo University Sightseeing Department, Program Coordinator, Sarawak Chinese-Society Surveys )
- Inoue, Yuta ( The United Graduate School of Agricultural Sciences, Ehime University, Graduate Student, Tree Physiological ecology )
- Onuma, Ayumi ( Faculty of Economics, Keio University, Professor, Sarawak Environmental Economy Surveys )
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- Mongolia Work Group**
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- Zamba, Batjargal ( Research Institute for Humanity and Nature (RIHN), Foreign researchers invited )
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- Kamimura, Akira ( Tokyo University of Foreign Studies, Lecturer, Mongolia Environmental Society Surveys )
- Koda, Ryosuke ( Research Institute for Humanity and Nature (RIHN), Researcher Fellow, Mongolia Biological Resource Surveys )
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- Mori, Shinichi ( IMG, NGO organizer, Mongolia local Economy Surveys )
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### ○ Future Themes

We have almost finished the step (1) identification of ecosystem network structures responsible for the problems. We need to work further on (2) scenario analyses and (3) establishment of a general conservation theory. For (2), we have already roughly evaluated the various aspects of each scenario. For the rest of the project term, we will use our data and secondary sources to carefully examine each aspect and add quantitative prospects whenever possible. For (3), we will verify the hypothesis obtained from the comparison between Mongolia and Sarawak by examining network structures for various ecological resources. In addition, using a mathematical model, we will investigate the flow and sustainability of resources with different network structures. The approaches that have been used for food web analysis can be applied to the model.

### ● Achievements

#### ○ Books

#### 【Chapters/Sections】

- Wasli ME, Tanaka A, Kendawang JJ, Abdu A, Lat J, Morooka Y, Long SM, Sakurai K. 2011 Soils and vegetation condition of natural forests and secondary forests within Batang Ai National Park Boundary, Sarawak, Malaysia.. *Kuroshio Science* 5 (1). , pp.67-76.

#### ○ Research Presentations

#### 【Oral Presentation】

- Kato Y. Dynamics of human activities and its impact on ecological resources in Malaysia. . RIHN-NTU Biodiversity Colloquium, December 2011, Taipei, Taiwan.
- Norio YAMAMURA Social-ecological network and sustainable use of ecological resources: implication from case studies in Mongolia and Malaysia.. RHIN-NTU Biodiversity Colloquium., December 2011, Taipei, Taiwan.
- Ikeda A, Hirose D, Matsuoka S, Osono T. Diversity and host-specificity of endophytic Xylariaceae in a subtropical forest in Japan inferred from rDNA sequence analysis. . XIII International Congress of Mycology (IUMS2011 Sapporo),, September 2011, Sapporo, Japan. .
- Sakaguchi C, Matsuoka S, Ito K, Hirose D, Yazawa S, Nishimura O, Osono T. 454 sequencing reveals the hyper-diversity of endophytic fungi associated with tree leaves in a subtropical forest in southern Japan.. XIII International Congress of Mycology (IUMS2011 Sapporo), September 2011, Sapporo, Japan.
- Matsuoka S, Hirose D, Osono T. Detection of mycorrhizal fungi associated with leaf litter in a subtropical forest in Japan assessed with an environmental DNA method. . XIII International Congress of Mycology (IUMS2011 Sapporo), , September 2011, Sapporo, Japan.
- Osono T, Hirose D Environmental DNA analysis reveals the fungal succession on *Camellia japonica* leaves and the functioning of ligninolytic endophytes. . XIII International Congress of Mycology (IUMS2011 Sapporo),, September 2011, Sapporo, Japan. .

- Koda R, Tsujino R, Agetsuma N, Agetsuma-Yanagihara Y, Fujita N Nonlinear responses of forest floor vegetation to deer density in forests with different forest managements . The 2011 ESA Annual Meeting. , August 2011, Austin, USA.
- Tanaka S Influences of burning practice of shifting cultivation on nutrient dynamics under different climates. 国際シンポジウム Land Degradation and Pedology, . Tsukuba, Japan Society of Soil Science and Plant Nutrition Conference 2011, August 2011, Tsukuba Japan.
- Matsuoka S, Hirose D, Osono T. Detection of mycorrhizal fungi associated with leaf litter in a subtropical forest in Japan assessed with an environmental DNA method. . The 5th International Symposium of the Biodiversity & Evolution gCOE, July 2011, Kyoto, Japan..
- Sakaguchi C, Matsuoka S, Ito K, Hirose D, Yazawa S, Nishimura O, Osono T. Next-generation sequencing reveals the hyper-diversity of endophytic fungi associated with tree leaves in a subtropical forest in southern Japan. The 5th International Symposium of the Biodiversity & Evolution gCOE, , July 2011, Kyoto, Japan.
- Nagao Y, Hirose D, Osono T. The diversity of fungi in ant-plants and a three-way symbiosis. The 5th International Symposium of the Biodiversity & Evolution gCOE, July 2011, Kyoto, Japan..
- Osono T. Metagenomics of hyper-diversity of tropical fungi.. Information discovery and genome diversity of the unknown” Kyoto Symposium 2011 Society of Evolutionary Studies, Japan, July 2011, Kyoto.
- Osono T, Hirose D Phylogenetic diversity and host specificity of Coccomyces in Asian forests. . The 5th International Symposium of the Biodiversity & Evolution gCOE, July 2011, Kyoto, Japan..
- Ikeda A, Hirose D, Matsuoka S, Osono T The diversity of Xylariaceous endophytes in a subtropical forest in Japan: comparison with different climate zones. The 5th International Symposium of the Biodiversity & Evolution gCOE,, June 2011, Kyoto, Japan..
- Norio YAMAMURA Different Social-Ecological Networks in Grassland and Forest Systems: Implication for their sustainable management. . European Congress of Mathematical and Theoretical Biology. , June 2011, Kurakow, Poland.
- Norio YAMAMURA Comparison of ecosystem networks in Mongolia grassland and Malaysia forests. Japan Geoscience Union convention in 2011, May 2011, Chiba, Japan.

**【Invited Lecture / Honorary Lecture / Panelist】**

- Kanako Kodoma Environmental, Economic, and Cultural Sustainability and China’ s Ecological Migration Policy: Changing Society and Culture in Ejene District, Inner Mongolia.. RCCPB colloquium, Nov 29, 2011-Dec 12, 2011, USA.
- Kanako Kodoma. Facing to urbanization: Perspective from case studies of Ejene banner, Inner Mongolia, China. . race foundation Lecture Series. , May 20, 2011-May 21, 2011, New York. .

**Stage: Full Research****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 Subject and Objectives**

&lt;Research Objectives&gt;

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 analyze 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.

&lt;Background&gt;

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 analyze its resilience.

&lt;How do you utilize the results of the project to help solving "global environmental issues" ?&gt;

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 and Results in 2010**

In FY2006 we established research collaborations with various institutions in Zambia.

In FY2007 we prepared experimental field sites and installed monitoring equipment such as weather stations, on-farm rain gauges and soil moisture measurement devices. Comprehensive weekly household surveys including body measurement and monitoring of rainfall and crop growth commenced in November 2007. Intensive field data for the 2007/2008, 2008/2009, 2009/2010 agricultural seasons were collected and data compiled completed for full analysis.

In FY2011, we organized a series of meetings for disseminating research outcomes to all stakeholders concerned.

**Findings to the objective 1) Rainfall variability and the impact to crop production**

· The seasonal pattern of rainfall varied across these three rainy seasons and farmers were facing not only annual variation but also seasonal variation of precipitation. In the last three cropping seasons

2007/2008, 2008/2009 and 2009/2010, our study site received more rainfall than the annual average. The December 2007 heavy rain (473 mm/week) caused significant damage to agricultural production and regional infrastructure such as roads and bridges. After the flooding, farmers responded quickly by replanting maize, and shifting to other crops.

· In agronomic field experiments in Eastern Province, the impacts of tree burning on soil nutrient status and maize yield varied according to the amount of tree biomass burnt. The field experiment in Southern Province suggested that maize yield was strongly influenced by topography and temperature. Cultivation under different topographic contexts partly mitigated climatic shocks.

#### **Findings to the objective 2) Impact of heavy rain on household consumption and factors affecting recovery**

· Resilience at the household level was quantitatively measured and factors affecting resilience were identified. A sharp decline in food consumption before harvest was observed after heavy rain in December 2007. After March 2008, food consumption gradually recovered, however the speed of recovery was very slow. Heavy rainfall in 2007 resulted in a sharp increase in maize prices in February 2009 affecting the ability of households to purchase food. It took more than one year for most households to recover food consumption to the level before December 2007 heavy rainfall. The recovery speed was high in lowland due to personal gift, public food aid and non-agricultural income. Cattle holdings helped household recovery in upper terrace. Some new activities for getting cash income, such as livestock sales, fishery and wage labor emerged to offset a shortfall of income. Flexibility in employing diverse strategies to successfully cope with climatic shocks is suggestive of household resilience.

#### **Findings to the objective 3) Coping strategies to recover food consumption and livelihoods**

· The level of vulnerability differs among different types of actors, such as farmers, households and rural societies. Rural households and communities in Africa are facing not only risks from natural disasters but also risks from social and economic changes, such as international price hikes of cash crops, political transitions, and changes in land tenure systems and agricultural policies. During the course of transitions from old systems to new systems, access to some resources decreased while other access to other resources expanded.

· We also revealed that vulnerability increased for various reasons and it could be attributable economic, socio-political and even cultural spheres and their interactions. With regards to social networks, communication tools such as cellular phones are recently playing an important role in helping farmers to cope with climatic as well as economic shocks for requesting goods in need.

#### **Findings to the objective 4) How to enhance resilience of households of food security**

· Resilience in SAT context can be defined as the short-run recovery of food consumption, food production and livelihoods. In the long-run, resilience is the adaptive capacity of household, community and region to absorb shocks, adapt to change and to learn, innovate and transform.

· Various assets including agricultural technology, livestock and land holdings and cash income opportunities/abilities are considered as crucial for recovery of households and communities. Diversified access to resource use help households to recover from shock quickly.

· The availability and the access to ecological services that supply wild food during the lean period to household is also important for consumption smoothing.

· Strengthening social safety net in different levels is necessary to increase adaptive capacity.

· Development of infrastructure that enable households to access market for crop sales and food purchase, as well as for stabilizing food prices in the region is also important.

· Social system and ecological system sometimes moved at a different speed. Comprehensive approaches and long-run observations are necessary to understand complex responses and feedbacks due to environmental and socio-economic factors affecting rural households.

· For enhancing adaptive capacity of individuals and households, long-term strategies are required to improve basic services such as education, medical services, public road and transport.

· In the long-run, not only is increasing specific resilience against climatic change and/or disaster risks but also increasing general resilience of the society required to prepare for uncertainty.

### ○Project Members

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- Mulenga, Chileshe ( University of Zambia, Senior Lecturer, Analysis of social behaviors )
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- Tom Evans ( Department of Economics, Indiana University, Associate Professor, Agent-based modelling )

## ○ Future Themes

### 【 Plan for CR1 and CR2 】

—Resilience is a wider concept that plays an important role in the discussion of sustainability. Resilience concept is applied to many research agenda of Global Environmental Change (GEC) including climatic change and disaster risk reduction (DRR) by providing analytical framework. In recent years, practical application and demand is increasing rapidly.

—Especially, after the Great East Japan Earthquake and Tsunami in 11 March 2011, the report submitted to the Prime Minister in June 2011 by the Reconstruction Design Council “Towards Reconstruction: Hope beyond the Disaster” incorporates many ideas of resilience thinking. We plan to utilize resilience concept for research and practices for disaster reconstruction.

—We plan to organize the 4th Lusaka Workshop in August 2013 for making resilience network within Southern Africa Region.

## ● Achievements

### ○ Books

#### 【 Authored/Co-authored 】

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##### **【Oral Presentation】**

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**Stage: Full Research**

**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](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**

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## ○ Research Subject and Objectives

1) Research objectives and background

[Research objectives]

The Indus civilization (2600BC–1900BC) is known for its cultural and technological achievements including its characteristic seals and scripts, fortified settlements and drain systems. Indus cities and cultures spread over 680,000 km<sup>2</sup> along the Indus and Ghaggar–Hakra River and into Gujarat in Western India, yet its urban phase lasted for only 700 years, much shorter than any of its contemporaries. This project aims to investigate the causes of this rapid decline of the civilization from the perspective of human–environment interaction. Drawing on various disciplines of both natural and human sciences, we compose social and environmental histories of key Indus civilization cities and their vicinities in order to determine whether and which environmental factors were the causes of their short life and rapid decline.

In order to fully grasp the causes of the decline, we find it important to look at the civilization in a wider context, both in space and time. For this reason we investigate diverse natural environment surrounding the civilization on one hand, and the history of the long-term climate change in South Asia on the other. The relationship of the societies and cultures of the Indus civilization with those of other ancient civilizations is also being investigated, side by side with their relationship with the post-Indus societies and cultures of South Asia.

[Significance of our project with regard to global environmental problems]

The investigation of the relationship between global climate change and the rise and fall of ancient civilizations attracted many scholars around the world. As mentioned below some scholars hypothesize that the impact of abrupt climate change caused the decline of the Indus civilization, but actually there has been no reliable data to test this hypothesis. In this regard our research is a pioneering work; we provide detailed data on long-term climate change in the whole of South Asia for the first time. In addition, we investigate some regional environmental changes which might have made a significant impact on the civilization. By putting together the outcomes of these researches we will enhance our understandings on the relationship between both long- and short-term environmental changes and human civilizations, and thus make a contribution towards solving some key issues of current global environmental problems.

[Background]

The supposed impact of environmental change on 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 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, 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 societies during mid- and late Holocene which was coincidental with the abrupt climate change mentioned above. The past decades have 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 outcomes of palaeo- environmental researches in South Asia into our project. Our standpoint is that we need to look at both local and global levels.

Furthermore, we consider that past theories, in general, are too simplistic and too narrow in scope. They failed to see the diversity of both natural and social environments of the Indus societies, and, as a result, failed to grasp the complexity of the process of the so-called decline in each region. This is why we emphasize the importance of looking at the process in a much more wider context on one hand, and much more in detail in the target regions on the other.

## 2) Research methods and organization

### [Research methods]

As mentioned in 1), we combine the research methods of various disciplines of both natural and human sciences. For each key issue we collaborate the research outcomes of different research groups.

As for the reconstruction of the natural environment of the Indus civilization, various geoscience methods are employed to investigate both long-term climate change and regional environmental changes. The subsistence systems, which may have been subject to the influence of global climate change as well as regional environment changes, are being studied through ethno-botanical and archaeo-botanical analysis.

As for the reconstruction of socio-economic and cultural aspects of the civilization, we employ various methods of humanities: 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. These methods are also useful to understand the relationship between Indus societies and other ancient civilizations.

### [Research organization]

We have five working groups; (1) palaeo-environment research group (PERG); (2) material culture research group (MCRG); (3) subsistence system research group (SSRG); (4) inherited culture research group (ICRG); and (5) DNA research group (DNAG).

(1) PERG aims to investigate: (a) long-term climate change in South Asia, using core samplings from Rara Lake in the Lesser-Himalayan region and reconstructing the Asian monsoon by chemical index of alteration and other proxies; (b) the palaeo-channel of the Ghaggar-Hakra River through the analysis of satellite imagery and field research including the dating of sand dunes; (c) sea-level change along the coastline of Gujarat during the Indus period through the analysis of satellite imagery, hydro-isostatic modeling and geological/topographical analysis; (d) local climate changes through the oxygen isotope analysis of otolith recovering from Indus sites in Gujarat; and (e) palaeo-seismological analysis for understanding the impact of earthquakes.

(2) MCRG excavated two sites in India, i.e., Kanmer (Kachchh, Gujarat) and Farmana (Rohtak, Haryana). The members uncovered a number of structures including a citadel with stone walls, a large burial ground, plant and animal remains, and diverse artefacts such as pottery, ornaments, and Indus seals/sealings with and without Indus scripts. They analyze these data to reconstruct the society and culture of each region, as well as trade and other networks which united these regions with other regions within and outside the civilization. They also gather supplementary data on other Indus sites both in India and Pakistan.

(3) SSRG reconstructs the subsistence systems of the Indus civilization by analyzing archaeo-botanical data obtained from Indus sites and ethno-botanical data found mainly in present-day Maharashtra and Karnataka. Their fieldwork focuses on the study of distribution and characteristics of emmer and Indian dwarf wheat, both of which were found in many Indus sites and must have been main winter crops during the Indus period.

(4) ICRG reconstructs the history of the Indus societies using linguistic methods. The members of the Indologist subgroup analyze Vedic and Mesopotamian cuneiform texts, while those of the linguistic subgroup use comparative methods to reconstruct the substratum cultures and languages of South Asia. They have produced Language Atlas of South Asia which shows the distribution of modern South Asian languages, and on the basis of this atlas they have started to make maps showing the distribution of key cultural vocabulary of the Indus civilization.

(5) DNAG was formed in 2009 when a huge amount of human bones were found in Farmana. The members have been working on cow and human bones in order to reconstruct the genetic histories.

### ○ Progress and Results in 2010

For the first two years the central activities of our project were to excavate Kanmer and Farmana in India to collect archaeological data. Through this process we obtained a huge amount of data which helped us depict a detailed picture of the societies and cultures of the two contrasting regions – one along the coast of Gujarat and the other along the Ghaggar-Hakra River in Haryana – of the Indus civilization.

What have been uncovered from these sites include: a number of structures including a citadel with stone walls, plant and animal remains, and diverse artefacts such as pottery, ornaments and others. At Kanmer we have found three sealing like pendants with Indus scripts (reported in Science Vol. 328 on May 28, 2010) and other Indus seals with and without Indus scripts – which provide important data for continued efforts to decipher the Indus writing system. At Farmana, we discovered a large-scale burial ground which has rarely been found in Indus sites except at Harappa. Each of these findings has made a significant contribution to our understandings of the societies, cultures and subsistence systems of the Indus civilization. They show that there existed strong regional differences within the civilization, as well as trade and other networks which united different regions within and outside the civilization. Detailed analysis of these data has been conducted by the members of MCRG. Part of the outcome of their analysis was published in the final report on Farmana excavation in March 2011. The rest will be published in the final report on Kanmer by February 2012.

In the third and fourth years, our project members worked in collaboration to reconstruct: (1) long-term climate changes in South Asia; and (2) the history of regional environment surrounding Kanmer and Farmana where excavations were conducted. The objectives of these researches are to assess the impact of climate changes in South Asia, and of local environmental changes, on the societies and subsistence systems of these regions during the Indus period.

(1) As regard the reconstruction of long-term climate changes, PERG conducted coring from Rara Lake in the Lesser-Himalayan region in 2009. They have been analyzing the monsoon pattern of the last five thousand years by using chemical index of alteration and other proxies. The preliminary analysis has shown that: (a) 6 intervals of weak summer monsoon events during the Mid-Late Holocene centered at 0.7, 1.1, 1.5, 2.7, 3.3, and 4.3 cal ka BP ; and (b) the summer monsoon became stronger when the Indus civilization was on decline.

(2) Our research on regional environmental changes centers around two issues: (a) the avulsion of the Ghaggar-Hakra or the old Sarasvati River, and (b) the palaeo-coastline of Gujarat. The research on these issues have mainly been led by the members of PERG, but linguistic analysis of Vedic texts and Mesopotamian cuneiform texts conducted by ICRG have greatly assisted to put the outcomes of their researches in proper contexts.

(a) The first issue concerns the long-standing debate about the Ghaggar-Hakra River, identified as the mighty Sarasvati River in the Rig-Veda text. Many Indian scholars have thought that it was a big river as described in the Vedic text, and together with the Indus River it supported the agricultural systems of the civilization. Our PERG team, however, established through the dating of sand dunes that during the Indus period no part of the Ghaggar was much bigger than today's Ghaggar which is rather a small river highly affected by monsoon. Professor Maemoku presented a paper on this issue in the AGU Chapman conference in March 2011. His view was subsequently reported in Science Vol. 332 on April 1, 2011.

(b) The second issue concerns the history of trade networks within and outside the Indus societies. Sea trade between Indus regions and the west has been reconstructed to some extent by the study of Mesopotamian cuneiform texts. Furthermore, from the artefacts discovered at sites in Gujarat such as Lothal, we can clearly see that they functioned as centers of trade with Mesopotamia and Africa during the Indus period. PERG examined the sea level change of Lothal by means of hydro-isostatic modeling and geological/topographical analysis. They have found that due to the gradual fall of sea level, this important seaport became out of use in the first millennium BC. This suggests that regional environmental change was responsible, at least to some extent, for the decline of trade along the coast of Gujarat.

As regards networks between different Indus regions, our MCRG team has discovered ample examples for giving us a detailed picture of how such networks functioned at different levels. To supplement their findings, recent study by Dr. Randall Law of University of Wisconsin-Madison depicts complex trade

routes of different types of mineral resources such as limestone, steatite, carnelian, lapis lazuli, etc. from the places of origin to big cities like Mohenjodaro, Harappa, Dholavira and others. This clearly shows that inter-regional trade networks were highly active during the Indus period. Law's voluminous work has been published as part of our RIHN-Manohar series in August 2011.

The regional variation of the Indus societies and cultures is in part the reflection of the enormous diversity of natural environment across different regions of the civilization. The Indus civilization regions comprise the so-called Yellow Belt in the west where agriculture is largely dependent on irrigation systems, and the Green Belt on the northeast where agriculture depends on monsoon, dissected by the dry Thar Desert where the current annual rainfall is less than 100 mm. It seems that the climate during the Indus period was much the same as it stands now. Based on the analysis of archaeo-botanical data obtained from Indus sites SSRG has found that the Indus civilization could be divided into three regions in terms of crops – the winter crop region in the west, the summer crop region along the coast of Gujarat and the mixed crop region in the northeast. Furthermore, Dr. Mallah, a core member of our project in Pakistan, discovered new Indus sites in the western rim of the Thar Desert where the climate is very dry. This suggests that some pastoralists lived even in the desert area during the Indus period. In general, the decline of the Indus civilization seems to coincide with the shift of human habitation from the winter crop region to the mixed crop region.

The agricultural systems are highly dependent on main crops. Wheat and rice coexist in South Asia. The domestication of rice in India is still a matter for debate. We have found some rice remains both at Farmana and Kanmer but whether they belong to the Indus period or not has not yet been confirmed. Wheat, on the other hand, was clearly predominant at Harappa and other sites along the Indus River, i.e. in the winter crop region. Among different sub-species of wheat, (Indian dwarf wheat), the remains of which were found in several Indus sites, appears to be indigenous to the region and have been the main winter crop alongside of emmer wheat (which was probably brought from Africa) during the Indus period. The former sub-species was considered to have disappeared from India due to the green revolution in the late 1960's. The members of SSRG, however, discovered that it is still being cultivated in Maharashtra and Karnataka. It is fascinating to see that India has still retained this sub-species which provides us a key to understand the Indus subsistence systems. In this regard India could be called a (residual area), as it tends to retain her tradition for a long time even in the face of globalization. Residual areas are naturally areas of diversity, as opposed to spread areas which tend to be homogeneous (Nichols 1992:193).

To sum up, the achievements of our research teams have so far shown that there was an enormous diversity both in the natural environment and the societies/cultures of the Indus civilization, and as such, the causes of its decline are multi-dimensional. It is wrong to assume that all the Indus societies were dependent on the irrigation-based agriculture. It is natural to consider that the societies consist not only of agriculturalists but also traders, pastoralists, and even hunter-gatherers. The Indus societies must also have been multi-lingual, multi-ethnic and multi-cultural, as they had such complex and diverse trade and other networks within and outside themselves. The previous understandings of the Indus civilization were largely based on the assumption that it was analogous to the other ancient civilizations; they were also mainly based on the reports of excavations at Mohenjodaro and Harappa. Our project has presented an alternative picture of the civilization which is much more rich and diverse.

### ○Project Members

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## ○ Future Themes

### ACHIEVEMENTS IN FULL RESEARCH

Our research project examines the social character and environmental context of the Indus civilization and attempts to determine how they are related to the civilization's short life and rapid decline. In particular, we aim to evaluate the impact of environmental change on the subsistence economy and trade network that sustained the Indus civilization's urban system. Our research has also provided data on the long-term processes of climate change in South Asia. Such data help us develop historical perspective on, and practical understanding of, contemporary environmental problems in the region.

The distribution of Indus cities spans a vast area beyond the Indus valley. It covers both arid and humid areas, and mountainous and coastal areas. Annual rainfall is less than 100mm in the Indus River basin and Cholistan area whereas it is more than 800 mm in the Gujarat area (see Figure 11). As far as the water management is concerned Indus societies in the coastal area were not dependent on a large river. Thus the civilization's natural environment was not homogeneous but heterogeneous, and it is one of the key factors to understand the Indus civilization.

As Dr. Weber (2011) pointed out the agricultural system of the civilization, in terms of crop, was not homogeneous, either. It is a well-known fact for South Asianists that the Indian subcontinent has two types of crops; Kharif (summer) crops and Rabi (winter) crops. Kharif includes rice, millets, mung bean, sesame, grams etc. while Rabi is represented by wheat, barley, lentil, peas etc. According to Dr. Weber, the Indus region could be divided into three areas; the winter crop area (mainly the present Sindh and Punjab states of Pakistan), the summer crop area (the present Gujarat state of India), and the mixed crop area (the present Haryana state of India). Crops are dependent on climate. Different crop systems of the civilization must reflect different natural environments at that time.

As regards the study of the natural environment surrounding the Indus civilization, PERG produced a preliminary analysis of the sediment core samples obtained from the Rara Lake in Nepal in 2009. PERG has also established through the dating of sand dunes that, contrary to its description in the Rig-Veda text (which was transliterated by ICRG), the Ghaggar was not a large river, but a small one capable of providing water for agriculture only during the monsoon. Professor Maemoku of Hiroshima University presented a paper discussing the latter issue at the Chapman Conference on "Climates, Past Landscapes and Civilization" organized by the American Geophysical Union in March, 2011. His presentation was subsequently reported in Science Vol. 332 on April 1, 2011 (Figure 6).

Another PERG team investigating the palaeo-coast of Gujarat has collected geological and topographical field data and analyzed satellite imagery. Their findings coincide with the result of hydro-isostatic modelling, suggesting that the sea level during the Indus period was two meters higher than it is in present-day Gujarat. Thus the ancient seaport of Lothal, Gujarat, an important base for trade with Mesopotamia, would have become inaccessible by the end of the Indus period. The study of cuneiform texts conducted by ICRG members and archaeological data obtained at the Kanmer site help us establish the local evidence for this historical change.

Climate change is recently one of the most widely discussed issues - not only among environmental scientists but also among all kinds of people who are concerned about environmental problems. Staubwasser and Weiss (2006) suggest that there were abrupt climate change events such as the widespread droughts around 8200, 5200 and 4200 cal yr BP, and these events, especially the 4.2 ka event, led to the collapse of civilizations such as the Akkadian empire and the Indus cities, although "chronological imprecision for the transition from urban Harappan to post-urban remains a problem" (Staubwasser and Weiss 2006: 10). According to their scenario, the cereal agriculture was damaged by the precipitation diminution due to the 4.2 ka event, followed by the collapse of the politico-economic superstructure.

Our scenario is not as simple as this. As pointed out by Weber, there were three crop systems (winter, summer, and mixed) and different climate zones (arid areas as well as humid areas affected by summer monsoon) in the Indus civilization (Figure 10). The situation was quite complex, and we think it is too simplistic to conclude that an abrupt climate change event, such as 4.2 ka event, directly

caused the decline of the Indus civilization. We need to make clear precisely what kind of impact climate change had on the different regions and societies of the civilization.

As for the decline of the trade with Mesopotamia, our result on sea level change supports this hypothesis. According to PERG, the sea level during the Indus period in the coastal area of Gujarat was two meters higher than present. So during the Indus period, it must have been easy to secure ship transportation not only within Indus region but also to Mesopotamia, but this network must have been gradually out of use by the end of the Indus civilization.

It is clear now that the Indus civilization never collapsed due to the simple event such as abrupt climate change, natural disaster including earthquake and flood, Aryan invasion, etc.

The conclusion after our five years' research on the causes of decline of Indus civilization is that the case of the Indus Civilization should be seen as a transformation due to population migration from Indus river basin to monsoon affected areas, rather than a sudden collapse due to some drastic natural or social events. This conclusion sounds similar to a suggestion made by Possehl (2003), but some of the proposed causes for transformation in his theory are too abstract. For example, he claims nihilism is one of the causes for the decline of civilization, but I do not think that anybody can prove this. It seems that his theory is a set of speculation based on his long personal experiences associated with the Indus civilization. Rather than making any further comments along this line, I just summarize the outcome of our project in several points, and suggest a set of criteria which would help understanding the Indus civilization.

- (1) The natural environment of the Indus civilization is diverse. The Indus civilization is not simply dependent on a large river.
- (2) The crop system of the civilization could be divided into three types: winter, summer, and mixed.
- (3) Complex trade networks existed between diverse societies within the Indus regions, and also with outside regions such as Mesopotamia.
- (4) The decline of the civilization was not caused by a single event but by multi-dimensional factors.

From these points I propose the following criteria for understanding the Indus civilization.

(A) Continuity vs. Discontinuity. We tend to look at the Indus society by drawing an analogy with its contemporary civilizations such as Egypt and Mesopotamia. Instead of doing this, we should rather investigate the later Indian society. I think that an analogy can be drawn not with its contemporary societies at remote places but with the later societies at the same place.

(B) Multiplicity vs. homogeneity. The Indus society was a multi-ethnic, multi-linguistic, multi-cultural society just like the modern Indian society is. There coexisted people of diverse professions such as agriculturalists, pastoralists, merchants, artisans and so on.

(C) Regionalization vs. Centralization. When we talk about an ancient civilization we generally focus on its centralized system rather than on its regional hegemony. The Indus society, however, had no centralized power to govern the whole region. Thus we should rather look at the society as a network of highly diverse regional hegemony.

(D) Abrupt change vs. gradual change. General readers familiar with the literature on the ancient civilizations expect the causes of decline of civilizations to be abrupt change. Environment determinists tend to emphasize a natural collapse or disaster as a main factor while social determinists tend to think a conquest or an invasion as a prime factor. We should reconstruct the Indus society on the basis of facts. Thus we avoid putting forward a hypothesis based on environmental and social determinism.

## ● Achievements

### ○ Books

#### **【 Authored/Co-authored 】**

- Inagaki, Kazuya Feb, 2012 RIHN Descriptive Linguistics Series 4 [Chikyuken Kijutsu Gengo Ronshu 4]. RIHN, Kyoto (in Japanese)

**○Editing****【Editing / Co-editing】**

- Toshiki Osada, Masayuki Onishi (ed.) Mar,2012 Language Atlas of South Asia. Harvard Oriental Series, Opera Minora, 6. Department of South Asian Studies, Harvard University, Cambridge, Massachusetts, USA, 164pp.
- Jeewan Singh Kharakwal, Y. S. Rawat, Toshiki Osada (ed.) Mar,2012 Excavation at Kanmer : 2005-06-2008-09. RIHN, Kyoto, Japan, 844pp.
- Indus Project (ed.) Feb,2012 Annual Report of the Indus Project 2010-2011. RIHN, Kyoto, 204pp. (in Japanese)
- Toshiki Osada, Michael Witzel (ed.) Dec,2011 Cultural relations between the Indus and the Iranian plateau during the third millennium BCE. Harvard Oriental Series, Opera Minora, Vol.7. Department of South Asian Studies, Harvard University, Cambridge, Massachusetts, USA, 382pp.

**○Papers****【Original Articles】**

- Nicholas Evans, Toshiki Osada Aug,2011 Mundari reciprocals. Nicholas Evans, Alice Gaby, Stephen Levinson and Asifa Majid (ed.) Reciprocals and Semantic Typology.. John Benjamin, Amsterdam, (reviewed).

**Stage: Full Research**

**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 Subject and Objectives

### 1. Research objectives

This project aims at reconsidering the notion of “cultural landscape protection” by way of reconstructing the historical landscape change on East-Asian inland seas during the two most notable revolutionary periods in the history of human-nature relations, i.e. Neolithisation and Modernisation, through the analyses of sustenance activities, trade and mental or cultural structures (political system, art, literature, festivals etc), climatic and topographical analysis in eight regions on the shores of East-Asian Inland Sea (Japan and East China Sea). The primary goals of the project are to:

- (1) Reconstruct the changes in the naturally and culturally conditioned spheres of landscape.
- (2) Explicate the functioning of inland seas as a network creating cultural unity and diversity.
- (3) Reconsider the idea of “cultural landscape” in order to put the cultural landscape protection policies into a new perspective. Comparing Neolithisation and Modernisation 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 been often 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 “landscape”. Landscape as the stage of humans’ everyday life, is a concept that includes both the visible/ physical side of the natural environment and cultural/ intellectual side, making possible a holistic analysis of the environmental problems at the stage where they arise. On the other hand, landscape 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 international research agenda provided by the concept of landscape. The research is carried out on eight key regions on the shores of East Asian Inland Seas (East China Sea and the Japan Sea), since historically, the inland sea coastal areas were densely populated and played a major role as worldwide trading spots and collision spots for various cultures and civilisations. Therefore, it can be said that these are the most suitable fields for the observation of the interactions between culture and nature (Chase-Dunn and Hall 1997).

In addition, considering that the concept of a “cultural landscape” has become an important issue in government and international protection programs (e.g. the nomination of national landscape treasures, UNESCO World Heritage sites, European Landscape Convention), it is crucial to understand the cultural formation mechanisms of protected landscapes and the processes that sustain them.

### 3. Research methods and organisation

#### 1) Research methods

Since landscape is a holistic phenomenon that entails both a cultural and a natural side, and develops through the influence of human practices and interactions of the natural environment, a large part of landscape research has to be based on qualitative rather than quantitative research methods. Specific research methods would depend on each discipline (archaeology, anthropology, ethnology, human geography, physical geography, biology, literature etc) and on the period of study (Neolithisation or Modernisation). The research methodology is uniform for all research areas. As a basis for studies on both Neolithisation and Modernisation, a geographical database will be created in the regions where it is possible for both of the periods with available cartographical data in the form of both historic and modern maps, information on the distribution and spatial structure of archaeological sites, and other related data.

## 2) Organisation

Eight research areas were chosen around the East Asian inland seas to represent the full variety of cultural and natural settings: 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 Neolithisation and Modernisation 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. Also, Linguistic WG has been created to tackle the overarching question of landscape perception in language. Information exchange inside the project is facilitated by frequent WG meetings, general meetings (twice per year until FR3 and yearly in FR4 and FR5) and other seminars. In some cases, the researchers have carried out joint fieldwork.

In addition, there is a GIS-database WG at the RIHN project office that is responsible for the creation of the database concerning historical landscape in the research areas, aiming at promoting the integration of the research outcomes through GIS analysis. Further, the project office has hosted an open monthly seminar in order to communicate various topics related to cultural landscape to the members and public.

To foster international exchange and promote the project ideas abroad and at the same time to carry out a comparison with the Northern European Inland Seas (Baltic Sea and North Sea), the North European Inland Seas WG based in UK was created.

## ○ Progress and Results in 2010

The discussions based on fieldworks up to FR1 brought about the common recognition that the following themes are indispensable when understanding landscape history under the framework of the East Asian inland seas: (1) The birth and expansion of agriculture, (2) Landscape change at waterfronts, (3) Trades, migration and colonisation as a major force of landscape change, and (4) Travelling and creation of mental landscape images. On that basis, in FR2 and FR3, the research focus was mainly on the landscape changes in Neolithisation and Modernisation; while in FR4 and FR5 the emphasis has moved to the analysis and discussion of the historical dynamics from the perspective of integrative comparison between the two periods and the roles of the Inland Seas. The major discoveries are summarized into the following points:

(1) Neolithisation was not a revolutionary event marked by the appearance of technologies like pottery and cultivation, but a much longer process in millennia, which began with the spreading of sedentary lifestyle and came to an end when agriculture based system appeared and transformed the landscape fundamentally. Further, the worldview of nature-human dichotomy appeared through this process.

(2) Like Neolithisation, Modernisation is a long-term process in centuries that gradually started as the growing of the socio-economic dependence on inter-regional networks and the division of labour under pre-modern complex societal systems, and finally resulted in the modern industrialized landscape under the globalized market economy. Modernisation has brought about the overall loss of local landscape diversity and the concept that humans can dominate their natural surroundings through active exploitation of resources and areal development, which are the essential origin of the present environmental issues.

(3) Although the actual forms and time periods of Neolithisation and Modernisation vary depending on local socio-cultural and environmental conditions, they generally follow a similar course except in the case of colonisation: Starting with a long gradual development under a complex socio-cultural regime,

the process finally exceeds a threshold ( “landscape boiling point” ) marked by decisive events (i.e. the adoption of farming economy in Neolithisation, and market economy with industrialization in Modernisation) inducing a fundamental landscape shift ranging from physical to mental aspects in an irreversible way.

(4) Through frequent cultural exchange and trading networks, the East Asian Inland Seas have historically functioned as a cultural unit. Therefore, it is important to manage, develop and protect the landscapes beyond the present political divisions, considering the inland seas as a cultural unity and taking into account its historical landscape formation processes.

(5) Landscape history is extremely relevant for sustainable management of future landscapes, as it helps to avoid preserving too many “landscape mummies” (landscape heritage which has lost its original social context and functions, and thus needs considerable external financial and laboural investment for its maintenance) and creating “mock heritage” sites (false heritage without actual historical relevance to the area). Also, landscape history can be a source of inspiration for new development and technologies.

Based on the common understanding as mentioned above, the project has made proposals for future landscape management. The core points can be summarized as follows:

(1) Both Neolithisation and Modernisation have an impact on the formation of the present landscape and its future directions in both its physical and mental aspects. This proves the necessity of long-term historical perspective in landscape conservation policies.

(2) Considering the historical role of the East Asian Inland Seas creating diverse landscapes through intense interactions, it is necessary to pursue the possibility of international initiatives like the European Landscape Convention making the Inland Seas as a framework in East Asia ( “East Asian Landscape Convention” ).

(3) Meanwhile, it is also significant to raise public awareness in landscape topics and to develop protection policies through grass-root initiatives like NGOs, as landscape is tightly related to everyday life and any kind of environmental problems has its root in it.

The project outcomes have been published in academic journals/books and presented at various congresses/symposia in and outside Japan. Further, the project has been editing a special volume for Journal of World Prehistory for the academia and a three volume

In the FR3, 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 and expansion 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.

As the first volume of landscape series, Higashi Ajia Naikai bunka-ken no keikanshi to kankyouto: Mizube no tayousei (Landscape History and Environment on the East Asian Inland Seas: Versatile Waterfronts) was published. Monthly landscape seminar provided good opportunities for wide-ranging discussion. The project organized sessions at Society for American Archaeology (SAA), International Conference of Historical Geographers (ICHG), and some members had presentations at Centre of Excellence in Cultural Theory (CECT) in Estonia. For social activity, we collaborated with Suita city museum in Osaka for the special exhibition of natural history. Series of open class at Muromachi elementary school is an interesting educational outreach.

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- ◎ UCHIYAMA, Junzo ( RIHN, Associate Professor, Project Leader, Biwako WG Leader, Project Management, Analysis of resource use and LS change on the basis of animal bones )
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- YASUMURO, Satoru ( Department of Economics, Kanagawa University, Professor, Biwako WG, Ryukyu WG, N. Zhejiang WG, Analysis of subsistence complex and landscape use )
- ZEBALLOS VELARDE, Carlos Renzo ( RIHN, Senior Researcher, Modernisation Database WG, GIS WG, Methodology of GIS analysis and database construction )

## ○ Future Themes

## ● Achievements

### ○ Books

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- TEZUKA, Kaoru Archaeological and Historical Overview concerning Resource, Subsistence and Settlement in the Kuril Islands. Kuril Biocomplexity Project Synthesis Workshop, Oct 31, 2011, Seattle, USA.
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- ONISHI, Hideyuki Mountain landscape and its cosmology. The 8th Manyo Historical Research Institute Open Symposium “Manyoshu and Ethnology” , Sep 25, 2011, Manyo Historical Research Institute, Asuka, Nara. (in Japanese)
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- HOSOYA, Leo Aoi Traditional Raised-floor Granary in Bali and Its Meaning for Local Community: From the scope of past, present and future of Bali agriculture. The 12th International Conference on Quality in Research, Jul 06, 2011, Bali, Indonesia.
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**Stage: Full Research****Project No.: R-03****Project Name: Historical Interactions between 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**

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**○ Research Subject and Objectives****(1) Research objectives and background**

Historically, with the exception of those people who lived in oasis areas, people of the semi-arid region that extend across Central Eurasia once lived a predominately nomadic lifestyle. After a long transition marked by the rise and fall of various ethnic groups and countries, a tight and well-defined border divided the region between Russia and Qing China in the 18th century. At the same time, the people of this area experienced a great change in their lifestyle, caused by the migration of farmers, the settlement of nomads and development of agriculture. Settlement policies and borders prevented these people from following their way of adaptation. Finally, with the weakening of the Soviet Union, the Russian side of the political frontier was divided into many republics. Man-made trans-boundary issues, between countries or ethnic groups, religions, agriculture and nomadic pastoralism, commonly lie behind the various environment problems in the world. This is one of the keys to understanding the present environmental problems.

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. The project attempts to clarify historical changes, the rise and fall of nomadic groups and countries, their movements, changes in subsistence patterns, the use of natural resources, and climate change. 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 historical, social and cultural background.

**(2) Research methods**

The study area is the Ili River basin, which flows from China to Kazakhstan, terminating at Lake Balkhash as well as the surrounding areas, including Kyrgyz and Uzbekistan. Geographically, the Ili-Balkhash Basin is recognized as a fertile area with relatively high precipitation, lying to the north of the Tian Shan Mountains. Central Eurasia is an excellent location for tracing human reactions both to past climate changes and to anthropogenic activities. In this climatically sensitive area, which alternates between semi-arid and arid conditions, human influence can be traced historically. In the last two decades, many paleoclimatic records in this area were derived from ice cores, tree rings, lake sediments and glacier fluctuations (Thompson et. al., 1995; Marchenko and Gorbunov, 1997; Yao, 1997; Esper et. al., 2002, 2003; Narama, 2002a, b; Solomina and Alverson, 2004; Treydte et. al., 2006). These climate reconstructions provide a chance to describe and understand the full range of the natural climate system behaviour of this region. Also, there was an excellent research project, called "CLIMAN project", including the collaboration of archaeology, geomorphology and geology on the human adaptation to lake level change in the Aral Sea (Boomer et al., 2009). However, Interactions between environmental changes and human reactions have rarely been studied in multi-disciplinary manner in Central Eurasia. So, we would like to investigate the area as follows;

- a) Clarify historical changes, the rise and fall of nomadic groups and countries, their movements, 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 deposit.
- b) Investigate the present status of the area and the effects of human activities on the natural environment, including their social, religious and cultural background.
- c) Compare upstream and downstream areas in terms of historical changes and their present status, looking at both sides of the political border, which used to be the same but have developed differently, in order to understand the meaning of boundaries on environmental issues.

### (3) Research organizations

The project consists of two research groups: one has clarified historical changes in both human activities and natural systems and the other group has investigated the current processes of human activities and natural systems. In addition, we have been cooperating with various research institutions in overseas countries:

Kazakhstan: Institute of Geography; Institute of Archaeology; Kazakhstan Scientific Research Institute on Problems of the Cultural Heritage on Nomads; Tethys Scientific Society.

China: Cold and Arid Region Environment and Engineering Institute;

Others: Central Asia Deep Ice-Coring Project (CADIP); NESPI; CLAIMAN

### (4) Significance as a RIHN Project

Historically, 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, but to find the history of adaptations by human beings in semi-arid regions of Central Eurasia, focusing natural resources use. On the basis of historical analysis, we have tried to investigate the present environmental problems caused by modern developments in both the former Soviet Union and China with special emphasis on man-made boundaries, which is one of the fundamental factors behind present environmental problems.

### ○ Progress and Results in 2010

We reconstructed the change of the climate in the area by using various proxies during the past 1,000 years as the basis for understanding the historical interaction between human activities and the environment. At first, we reconstructed a series of air temperature variations from tree ring width records in Kyrgyz (Esper et. al, 2002) and precipitation from the accumulation date at the Guliya ice-cap in China (Thompson et. al., 1995). Reconstructed temperature and precipitation, and estimated river discharge, indicated that the period from AD1000 to AD1500 was warm and dry, while the Little Ice Age (LIA), from 1500 to 1850 was cold and wet. After the LIA, the climate became wet and warm. This long-term trend well corresponds to the reconstructed lake level of Lake Balkhash represented by the ratio of saline and planktonic diatoms, indicating that there was a trend of decreasing lake level from the 10th to 13th century, as well as those of the Lake Issyk-Kul (Giralt et. al., 2002) and the Aral Sea (Boroffkka, et. al., 2006). After this significant regression, the lake level showed rapid recovery, and remained relatively high. Results from other proxies, such as dust and retrieval of glaciers supported this long-term trend.

We developed a chronological database, showing the rise and falls of settlements. In the northern piedmont of the Tian Shan Mountains, oasis cities, which were the agricultural centres and trading bases in the Syr Darya basin of western Turkestan, flourished from the 7th century, while settlements

in the Ili River basin were the next to be blessed with prosperity. Most of the settlements were not agricultural bases, but nomadic and trading bases with military use. In medieval times, agricultural and nomadic peoples lived separately, making full use of eco-environment variations. Their interactions were a complementary relationship in terms of natural resources use. The climate change caused not only negative, but also positive effects for agricultural/nomadic production. The warm and dry climate in the early medieval times might have accelerated the development of agricultural and trading activities, consequently contribute to the flourishing of the area, especially oasis cities in the Syr Darya basin of western Turkestan. Also, the cold and wet climate in the early LIA, might have affected the declines of oasis cities and the increase of nomadic activities in the Ili river basin and Dzungaria. Relocations and changes of subsistence complex patterns were major ways of adaptation.

After the division of the area between Russia and Qing China, the balance between human capability and the impacts of environmental change, such as climate change, drastically altered. The establishment of a clear political border between Russia and Qing China shifted patterns of human-environmental interaction in the region.

In Kazakhstan, this process could be divided into several stages. 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 from the late 19th century. The collectivization of the agricultural sector from 1929 triggered serious social confusion in Kazakhstan, 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 become one of the major crop production areas in the Soviet Union, causing excessive development which ignored environmental capacity and exerted significant impact on the area. In addition, these development policies were applied while ignoring and destroying traditional social systems. Especially, newly applied production system including the division of labour, together with the migration of skilled peoples from other countries as leaders for collective farms, prevented the accumulation of agricultural knowledge, and also caused the loss of traditional knowledge of nomadic pastoralism. The collapse of the Soviet Union caused the deterioration of terms of trade in the agricultural sector. The amount of state purchase and subsidies was reduced. Consequently, many farmlands developed during the planned economy were abandoned. This reduced the pressure on natural resources, ironically resulting in the recovery of the ecosystem. At the same time, peoples labouring in divided systems were provided rather small farmlands as a result of privatization. But they could not manage their own privatized land because of their limited knowledge of subsistence. This caused a serious economic crisis, and made recovery to difficult.

In China, the commencement of modern development had been delayed, not starting until the 1950' s. Agricultural development led by the Chinese Qing Dynasty was limited. After the first development period in the 1960' s in which grassland in plain areas was converted into farmland for growing cereals, the traditional nomadic pastoral system was well preserved by using natural grassland in the mountains. The second development was made by converting cereals to other cash crops, causing no serious damage to natural resources, such as land and water. Recent development after 2000 including industrial development, however, has been very active. The increasing demand for natural resources and consequent pollutions is projected.

## ○Project Members

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### Historical reconstruction group (Humanities and Social Sciences)

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### ○ Future Themes

- Reconstruction of the climate changes and human activities concerning the use of natural resources such as land and water will be finalized. This work will be accomplished through quantitative validation using the hydrological model which includes anthropological processes such as irrigation. We plan to apply our model not only on the Ili-Balkhash basin, but also the Aral Sea basin.

- We plan to investigate decision making processes of the development plans in the Ili River basin and the Aral Sea under the planned economy in the USSR era using historical documents. Detailed analysis about these processes would contribute how we establish proper environmental governance.

- We will publish the outcomes of our researches as a book series in three or four volumes. Each volume will be collectively written by several authors. This work should contribute to knowledge not only by dispatching the results to academic societies, but also for integrating outcomes.

- We plan to hold a workshop/symposium in Almaty, Kazakhstan, inviting cooperative researchers from overseas countries. The main purpose of this workshop/symposium is to feed back our findings and outcomes to the public, and especially to local researchers, engineers and planners.

**Stage: Full Research**

**Project No.: R-04**

**Project Name: Environmental Change and Infectious Disease in Tropical Asia**

**Abbreviated Title: The RIHN Ecohealth Project**

**Project Leader: MOJI, Kazuhiko**

**Research Axis: Resources**

**URL: <http://www.chikyu.ac.jp/ecohealth/>**

**Key Words: ecohealth, environmental change, infectious disease, malaria, liver fluke, filariasis, water-borne diseases, tropical monsoon Asia**

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### **○ Research Subject and Objectives**

**Objectives:** The RIHN ecohealth project studies the effects of human societal and environmental changes on the ecology of diseases such as malaria, dengue fever, opisthorchiasis (liver fluke infection), diarrhea disease in tropical monsoon Asia. Population increase and migration, urbanization, deforestation, spread of wet rice cultivation, economic development, changes in livelihood and lifestyle, modernization and globalization are the factors transforming the ecological relationships. The project also investigates the relation between climate changes (temperature, rainfall, flood, etc.) and infectious diseases (water-borne diseases etc.).

**Basic concept:** Health, wellbeing and survival of human being in the long-run are the ultimate goal of mitigation of and adaptation to global environmental changes (at least from human points of view). Health is one of the key indicators of sound environment. Without sound environment for human life and survival, human health cannot be improved and sustained. Human health must be understood ecologically as well as medically as a part of the earth system. This view of health, ecohealth, is the basic concept of this project. Human health is global common asset sustained by many environmental and social factors.

**Background:** Human infectious disease is an outcome 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 has links with environments. 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 is related to the ecology of pathogens, vectors, and humans (and of non-human reservoirs in some species). Climate change, deforestation, expansion of wet rice fields, and other natural and social environmental changes must have a large impacts on epidemiology and endemiology of infectious diseases through their impacts on their ecology. The ecological settings of human being, vectors, and pathogens have been changing very rapidly in tropical monsoon Asia because of man-made environmental changes in this area. How the environmental changes in tropical monsoon Asia have effects on the endemiology and epidemiology of the diseases is of interest of the RIHN ecohealth project.

**Contributions to global environmental issues:** 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/livelihood and ecology of pathogens and vectors by making trans-disciplinary and integrated approaches. The project would provide a long-term view of human survival and health toward the future.

**Research methods and area:** 1) Long-term observation of a local population in Lahanam area, Songkhone district, Savannakhet province, Lao PDR by establishing Health and Demographic Surveillance System (HDSS). Since 2005 we are following about 4,500 residents there. We introduced paperless IT-HDSS in 2010 and expand the area covering 7500 residnets. In Bangladesh, we use data from the Matlab HDSS 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:** Several research groups comprise our project. The Lao Study Group is collaborating with the National Institute of Public Health (NIOPH), Savannakhet Provincial Health Department and other institutions. The main study sites are the Lahanam health zone of Songkhone district and Xepon district of Savannakhet province. The Lahanam Study Group's research examines patterns of liver fluke infection of *Opisthorchis viverrini* (Ov), a parasitic infection associated with consumption of raw freshwater fish. In 2010–2012, the principal objectives of this group are to: 1) Expansion and maintenance of the Lahanam Health and Demographic Surveillance System (HDSS) and analyse life expectancy and causes of death; 2) Study on parasitology and epidemiology of Ov; 3) Study the relation between modern irrigation/wet-rice cultivation and liver fluke infection; 4) Study fish and snail ecology, fishery ecology, and consumption of fish, and; 5) Determine feasible educational, behavioural, and/or environmental control of liver fluke infection. Studies on young child and school health and nutrition are also under way in this area. The Xepon Study Group is developing an integrated ecological and medical approach to malaria control in this malaria hot zone. This group established a mobile phone-based health information network system covering all 158 villages in Xepon. Land-cover studies and satellite image analysis (ALOS) were conducted in Lahanam and Xepon. In 2010 this group found the very high mortality of young children among farmers in mountain. The principal objectives of this group in 2011–2012 are to: 1) Maintain the Xepon Health Information Network in order to monitor monthly incidence and mortality of malaria and other diseases; 2) Analyze the relation of forest cover change, settlement, subsistence, mosquito population/ecology with malaria epidemiology/epidemiology; 3) Analyze the environmental and societal changes within the Banhiang River catchment area (a tributary of the Mekong River), including rainfall, flood, land-cover/use, and water quantity and quality; 4) Analyze the effects of the Vietnam War on the occurrence of malaria. The Xepon HDSS shall be introduced in 2011.

The Vietnam Study Group in collaboration with Nagasaki University Institute of Tropical Medicine, the Khanh Phu Malaria Center of Khanh Hoa Province, and others is focusing on transmission of new human malaria, *Plasmodium knowlesi* (Pk) in humans as well as in monkeys. The Group found a very high mixed infection of Pk with *P. vivax* in humans. The Group started the multi-disciplinary study of malariology, entomology, primatology, forestry, epidemiology and social science. The team also check the prevalence of Pk near the border to Lao and Sepone.

The Bangladesh Study Group in collaboration with the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) is studying the relationship between the effect of the Indian Ocean Dipole and the incidence of cholera in Dhaka. This group is also studying the long-term effects of flood on morbidity and mortality in Matlab. Another Bangladesh Study Group in collaboration with the Ministry of Health and Family Welfare is studying epidemiology of rabies nation-wide, and epidemiology of filariasis in the north-western part of the country.

The China Study Group investigates how social and environmental change affects vulnerability of health in the Greater Mekong Subregion. There are many vulnerable populations, including male and female commercial sex workers, IV drug users, migrant urban labourers, poor rural farmers, ethnic minorities, and international migrants. The Yunnan Health and Development Research Association (YHDRA) is conducting researches to improve ecohealth of the vulnerable population. Prevalence of HIV/AIDS among vulnerable peoples is studied. The China History Study Group is making database of control of malaria and schistosomiasis in the 20th Century. Disease profile of the colonial Indochina is also studied.

The Integration Group collaborates 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 into the change of human behaviour, disease control and health promotion. Under this new concept, the project seeks to provide people with new measurements and/or tools to improve the population health.

### ○ Progress and Results in 2010

(1) Establishing Health and Demographic Surveillance System (HDSS) and the integrated study on infection with liver fluke (*Opisthorchis viverrini*) in Lahanam area, Savannakhet Province, Lao PDR. The study team focuses on which effects the changes in lifestyle accompanied by the modernization of

paddy cultivation and the economic development have brought on infection with liver fluke in this area. The study team established HDSS for the first time in Laos in order to monitor the changes in the health profile of the local people for the long term. The target population reached 7,000 in 2008. The study team introduced a new data collecting method with the use of PDA in February 2010. The study team also conducted groundtruthing with reference to the satellite image of the area in 2009. The study team began to trace the daily activities of the local population with the use of the GPS and acceleration sensor along with interview. The study team also has conducted stool examination for several times to find out parasite eggs. Based on these researches, the study team proposed a hypothesis that the changes in water environment accompanied with modernization have affected the spacial distribution of both liver fluke and the vectors such as Bithynia snails and Cyprinidae fish. The study team started an ecological survey on the intermediate hosts in 2010 in order to validate the hypothesis. The project co-sponsored the fourth National Health Research Forum of Laos in October 2010.

(2) Study on the dynamics between malaria infection and the deforestation in Sepone district, Savannakhet Province, Lao PDR. The project aims to understand dynamic relation of malaria and deforestation in this area on the Vietnamese border. Malaria is endemic in this area. The project set up the mobile phone network which links the villages in remote mountainous area to the district hospital in order to effectively monitor the malaria infection cases in remote villages. The project is also analyzing the land coverage with the use of satellite imagery and groundtruthing. This land analysis put forward a hypothesis that a recent deforestation might affect the malaria infection dynamics among the local people. The project focused on the relationship between the ecology of vector mosquitoes and the forest vegetation in 2010, finding that the forest is much damaged by the bombing during the Vietnam War. Detail demographic anthropological study was also done finding very high young child mortality.

(3) The project conducted the study on the relation between climate and infectious disease in Matlab in collaboration with ICDDR, B, Nagasaki University, and the London School of Hygiene and Tropical Medicine. The project also collaborated with the Ministry of Health of Bangladesh. The Second International Symposium on Climate Change and Neglected Tropical Diseases was conducted in September 2010 in Dhaka, where the RIHN Ecohealth Project proposed the Bangladesh National Preparedness for Climate Change by campaigning public environmental hygiene to reduce the abundance of mosquitos and flies.

(4) The project studied the historical dynamics of infectious diseases in Yunnan Province. The historical study traces the demise of malaria and schistosomiasis with official records of the disease control. Field survey collecting oral history was made. The project also focuses in a current perspective on the effects of the mobile population increase accompanied with the market reform on the infectious diseases such as STD, HIV/AIDS and TB. The project collaborates with Yunnan University Center for Environmental Hsitory, Yunnan Health and Development Research Association (YHDRA), and Kunming Medical University in various field survey. The project conducted community ecohealth survey in 10 villages. The 5th Symposium on Chinese Environmental Issues "International Symposium on Development and Environment, Livelihood, and Health in Shouthwestern China" was held in Kunming on November 2010 .The symposium was organized by the RIHN Initiative for Chinese Environmental Issues in cooperation with Yunnan University.

### ○Project Members

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## ○ Future Themes

Activities scheduled in FY2011-12:

April

Lao Ecohealth Research Meeting (RIHN), 8: Bangladesh Ecohealth Research Meeting (Kyoto Univ.),

May

HIV field survey in Lao. and seminars in Yunnan, China and Laos

June-July

Ecohealth Education/Promotion Research Meeting (RIHN), Research in July-August:

HDSS meeting at Nagasaki

The Third International Conference on Lao Studies@Khon Kaen, Thailand;

Field survey in Xepon and Lahanam;

HIV/ AIDS survey in Savannakhet

August:

Field survey in Xepon and Lahanam

September-November

24 Bangkok Lao Ecohealth Research Meeting (Mahidol Univ.)

25-28 Parasitological Research in Lahanam, 29-30 The

29-30 The 5th Lao National Health Research Forum@Vientiane, Laos

December:

Project Annual Meeting@RIHN; RIHN Projects Workshop

Jan-Mar 2012:

Field survey in Laos, Bangladesh and China

Malaria meeting in Vietnam



**Stage: Full Research****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://arab-subsistence.jzz.jp/>****Key Words: Arab societies, Alien invasive species control, Environmental impact assessment, Human life support mechanisms, Post-oil era, Universal access to scientific data****○ Research Subject and Objectives****【 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 the oil-rich countries of the Middle East have put excessive pressures on the earth's energy, water, and food resources. In prioritizing economic prosperity, 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. This pattern of development has increased social and economic differences within the Middle East just as the region faces a turning point in modern oil-based industrial development. Fossil fuel-based interdependencies must now be transformed into new relations that can support viable future societies.

This project focuses on human subsistence ecosystems of the region: low energy-intensity life-support mechanisms and modes of production, such as hunting, gathering, fishing, herding, farming, and forestry. In doing so it also reflects on the role of advanced technologies in economic development, and measures adopted thus far to combat desertification. Field research investigates keystone species, ecotones, and traditional knowledge and examines the sustainability of subsistence economies under site-specific conditions.

**【 Research Methods 】**

Field surveys are conducted in semi-arid lands between the Nile River and the Red Sea in Sudan, with the Red Sea coast, Butana area, and Nile River areas as the main survey areas. Additional surveys will be conducted at 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.

We will develop and implement our study of human subsistence ecosystems around three main areas:

- 1) comprehensive measures to control the alien invasive species mesquite
- 2) assessment of the environmental effects of development programs in coastal zones of the arid tropics to prevent the emergence of new environmental problems
- 3) sharing of research results to support local decision making.

Our research method combines two main approaches:

- (1) analysis of subsistence ecosystems, focusing on keystone species such as camels, date palm, dugong, mangrove, and coral reefs

(2) examination of the sustainability and fragility of Arab societies, focusing on the ecotones such as wadi beds, riverbanks, mountainsides, and seashores.

### **【 Project Organization 】**

The members of this project include social and natural scientists, members of local NGOs and project managers, who are divided into four study groups: 1) Alien invasive species control group, 2) Coastal zone environmental impact assessment group, 3) Support for local decision making group, and 4) Local ecosystems comparative studies group.

#### **(1) Alien invasive species control group**

In the 1980s, 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 and Results in 2010

### Major Achievements:

#### Assessing the environmental effects of development programs in coastal zones of the arid tropics

The local people have historically depended on sea products (fish, shellfish, dugong, dolphin, and sea turtles) for their diet in unique coastal ecosystem of the arid tropics: coexistence of mangrove forests (dominant species: *Avicennia marina*) and coral reefs and complex relationship of the both.

By mangrove afforestation, production of mangrove branches and leaves as feed for domesticated animals such as camels and regeneration and expansion of mangrove forest as fish nursery can be expected. Therefore, it has potential to support recovery of natural environments and stable supply of human diet in coastal zones of the arid tropics.

On the other hand, the coastal zones presents a large development frontier, therefore, it may also lead to environmental degradation such as destruction of mangrove forests, coral reefs, and seagrass beds and releasing highly concentrated saline water into the sea. In order to suggest frameworks for a new environmental assessment with community participating for prevention of global environmental problems, which differ from pardoner-like assessment based on convicted development plan, we have conducted multi-principal studies focusing on mangroves in the coastal areas of Sudan, Egypt, and Saudi Arabia, surrounding the Red Sea.

Based on studies on the forest structure, the morphological adaptation to environmental stresses, and the water-use characteristics determined by isotope analysis of *Avicennia marina*, we found the tree height gradient along soil salinity and the negative effect of soil salinity on the growth in leaf dry weight, inter node length and shoot length. We also found in some forests that appropriate camel feeding might promote the growth of leaves and shoots in *A. marina*.

We have collected 3100 leaf samples along the Red Sea Coast (417 leaves from 13 forests in Egypt; 1228 leaves from 25 forests in Sudan; 1455 leaves from 24 forests in Saudi Arabia) and started DNA analysis by using the micro satellite method. We expect to clarify the mangrove forest dynamics and the process of distribution changes in the coast by analyzing genetic diversity in a large regional scale in the Red Sea.

Under the harsh environmental conditions in the arid land, seeds of *A. marina* were people's emergency food and its branches and leaves were important feed for camels during the long distance caravan trade. By studying on the mangrove use and the historical human interaction indicated by boats' structures, functions, and names, we can argue concretely the human subsistence ecosystems on the Red Sea.

By concluding MOU between the Red Sea University, a principal institution of marine science in Sudan, and the RIHN in 2011, full-scale field survey: behavioral studies of dugongs in seagrass beds using biologging; study on grazing area and browsing pressure of camels by GPS in *A. marina* forests; anthropological study on fishing culture at fishing villages, are now underway.

## ○ Project Members

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- Kishi, Akira ( Shin-nippon Environmental Research Co. Ltd., President, Marine biology )
- Ichikawa, Kotaro ( Research Institute for Humanity and Nature, Project researcher, Bioacoustics )
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- Suda, Seiji ( Action for Mangrove Reforestation, Researcher, Plantation )
- Takayama, Haruo ( Kajima Technical Research Institute, Chief Research Engineer, Plant ecology )
- Nakashima, Atsushi ( Wakayama University, Professor, Plant ecology )
- Nakamura, Ryo ( Research Institute for Humanity and Nature, Project researcher, Cultural anthropology )
- Hori, Nobuyuki ( Nara University, Professor, Geography )
- Matsuo, Naoko ( Mie University, Associate professor, Forest hydrology )
- Miyagi, Toyohiko ( Tohoku Gakuin University, Professor, Environmental topography )
- Teraminami, Tomohiro ( Graduate School of Environmental Science, Okayama University, Graduate student, Plant physiology )
- Al-Wetaid, Abdullah H. ( National Commission for Wildlife Conservation and Development, Saudi Arabia, Manager of Department of Plant Studies, Plant ecology )
- Sambus, Anas Zubeir ( National Commission for Wildlife Conservation and Development, Saudi Arabia, Manager of Marine Research, Marine biology )

- Tarik, Al-Abbasi ( National Commission for Wildlife Conservation and Development, Saudi Arabia, Director of Terrestrial Researches, Plant ecology )
- Khushaim, Omar ( National Commission for Wildlife Conservation and Development, Saudi Arabia, Director of Marine Research, Marine biology )
- Mohamed, Abbas Tahoon ( Wadi El Gemal National Park, Egypt, General Manager, Geology )
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- Tamer, Mahmoud ( Wadi El Gemal National Park, Egypt, Assistant General Manager, Botany )
- Abdelwahab, Afefe Abdelwahab ( Egyptian Environmental Affairs Agency, Egypt, Environmental Researcher, Agronomy )
- Laureano, Pietro ( Traditional Knowledge World Bank, Italy, Director, Architecture )
- Abu Sin, Abdalla M. A. ( Gezira University, Trustee, Socio-economics )
- Shinoda, Kenichi ( National Museum of Nature and Science, Head of the Division & Curator of the Center for Molecular Biodiversity Research, Physical Anthropology )
- Watanabe, Tsuguihiro ( Research Institute for Humanity and Nature, Professor, Agricultural engineering )
- Manger, Leif ( Bergen University, Professor, Social anthropology )
- Abdel Hadi A, W. M. Mohamed ( Agricultural Research Cooperation, Sudan, Associate Professor, Water management )
- Onuma, Hiroyasu ( Appropriate Agriculture International Co., Researcher, Village development )
- Kodama, Kanako ( Chiba University, Associate professor, Cultural anthropology )
- Takaki, Keiko ( Obirin University, Professor, Cultural anthropology )
- Meziani, Rim ( Abu Dhabi University, Assistant professor, Urban planning )
- Abdel Bagi M. Ali ( Agricultural Research Cooperation, Sudan, Professor, Plant physiology )
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- Wan, Na ( Research Institute for Humanity and Nature, Project research associates, Humanity )
- Mizuma, Sakiko ( Research Institute for Humanity and Nature, Project research associates )
- Kawatoko, Mutsuo ( Research Institute for Islamic Archaeology and Culture, Director, Islamic archaeology )
- Benkhalifa, Abdrahmane ( Ecole Normale Supérieure de Kouba Algérie, Lecturer, Fungology )
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- Kume, Takashi ( Faculty of Agriculture, Ehime University, Hydrology )
- Nagasawa, Ryota ( Tottori University, Professor, Remote sensing )
- Kubota, Junpei ( Research Institute for Humanity and Nature, Professor, Forest hydrology )
- Suzuki, Hideaki ( The Toyo Bunko, Research fellow, Graduate student, History )
- Nishimoto, Shin'ichi ( Cyber University, Professor, Architecture )
- Ota, Keiko ( University of Tokyo Center for Philosophy, Research fellow, History )
- Ozaki, Kikuko ( National Defense Academy of Japan, Lecturer, Islamic culture, History )
- Kikuchi, Hiroko ( Kitakami City Archaeological Operation Center, Research fellow, Archaeology )
- Sakamoto, Tsubasa ( Waseda University, Graduate student, Archeology )
- Shimada, Yoshihito ( Nagoya University, Professor, Religious anthropology )
- Shindo, Yoko ( College of Literature, Aoyama Gakuin University, Part-time lecturer, Islamic archaeology )
- Takahashi, Nobuo ( Hanamaki City Museum, Director, Archaeology )
- Maruyama, Daisuke ( Kyoto University, Graduate student, Cultural anthropology )
- Yasuoka, Yoshifumi ( Vienna University of Technology, Graduate student, Architectural History )
- Ishikawa, Hiroki ( Tokyo University of Foreign Studies, Assistant professor, History )
- Shinoda, Ken'ichi ( Department of Anthropology, Division of Human Evolution, National Museum of Nature and Science, Head of the Division, Natural taxonomy )
- Sekihiro, Naoyo ( Kyoto Prefecture Research Center for Archaeological Properties, Researcher, Archeology )
- Seo, Akihiro ( Graduate School of Science, Kyoto University, Academic affairs assistant, Plant taxonomy )
- Endo, Hitoshi ( Research Institute for Humanity and Nature, Visiting researcher, Archeology )

- El-Hadj, Hamadi ( Aulef Junior High school, Teacher, Education )  
ahmad
- Hutiyah, Muhammad ( Adrar University, Professor, History )
- Wassila, Benslimane ( Ecole Normale Supérieure Kouba Algérie, Part-time teacher, Biology )
- Tamoud, Benfetima ( Centre National de développement des Ressources Biologiques,  
Algérie, Researcher, Biology )

### ○ Future Themes

In the next year, we will present a persuasive contention by connecting the particular factual data and integrate the result of analysis for “Human subsistence ecosystems in Arab societies”. For example, by comparing trees (wild species: *A. marina*, domesticated species: date palm, and alien invasive species: *Prosopis spp.*), we will reevaluate them as new resources for energy and food. Also we will compile books “How do we live without oil? (RIHN book series, in Japanese)”, “Human subsistence ecosystems in Arab societies (9 volumes, in Japanese)” to conclude the study results.

### ● Achievements

#### ○ Books

##### 【Chapters/Sections】

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#### ○ Papers

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- Ozaki, K. Mar, 2012 “Pans in the Medieval Islamic World”. Journal of Islamic Area Studies, Organization for Islamic Area Studies, Waseda University (vol.4) :25-33. (in Japanese)
- Nawata, H. Mar, 2012 “Relationship between Human and One-humped Camels in the Coastal Zones of Arid Tropics: An Anthropological Case Analysis of the Beja on the Red Sea Coast of Eastern Sudan”. Afro-Eurasian Inner Dry Land Civilisation 1 :67-73. (reviewed).
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- Yoda, K., Hoshino, B., Ahmed Eldoma and Yasuda, H. Dec, 2011 "Comparative study of growth pattern of Mesquite (*Prosopis* sp.) seedlings among different soil water resumes". R. Kimura et al (ed.) Annual Report, Tottori University Arid Land Research Center, 2010–2011. Tottori University Arid Land Research Center, Hamasaka, Tottori, pp.55.
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- Hoshino, B., Yonemori, M., Karina Manayeva, Abdelaziz Karamalla, Yoda, K., Mahgoub Suliman, Mohamed Elgamri, Nawata, H., Mori, M., Yabuki, S., Aida, S. 2011 "Remote sensing methods for the evaluation of the mesquite tree (*Prosopis juliflora*) environmental adaptation to semi-arid Africa". *IEEE IGARSS (1)* :1910–1913. (reviewed).

## ○Research Presentations

### 【Oral Presentation】

- Yoda, K., Tsuji, W., Inoue, T., Saito, T., Mohamed Abd Elbasit, Ahmed M.A. Eldoma, Magzoub K.M. Ali, Hoshino, B., Nawata, H. and Yasuda, H. Evaluation of initial growth properties of Mesquite (*Prosopis juliflora* (Swartz) DC) in rapid expansion. R&D in Dry Lands, DRI & DLRC Joint Seminar, Feb 22, 2012, National Center for Research, Sudan.
- Komiyama, S., Ichikawa, K. and Arai, N. Development of software for extracting contours of animal vocalization. The 8th International Symposium on SEASTAR2000 and Asian Bio-logging Science (The 12th SEASTAR2000 Workshop), Feb 20, 2012–Feb 21, 2012, Bangkok, Thailand., "Development of software for extracting contours of animal vocalization" . , Feb 20, 2012–Feb 21, 2012, .

- Ishiyama, S., Nawata, H., Mutasim Mekki M. E., Mussab Hassan A. Agriculture in Islamic Area of Republic of the Sudan –A Study of Regional Socio-Ecosystem, Local Agricultural Practice, and Traditional Knowledge To Manage Root Parasitic Weed in Rain-Fed Agricultural System of Semi-Arid Zone, Gadarif State, Sudan. 5 th International Symposium on “Religious Dynamics of Contemporary Africa concerning the destruction of Traditional Life Mode and New Religious Movement, Nov 27, 2011–Nov 28, 2011, . (in Japanese)
- Damiani, G., Ichikawa, K., Lanyon, J. Acoustic characteristics of dugong vocalizations and vocal behaviour of herds in southern Queensland, Australia. Fifth International Sirenian Symposium 2011, Nov 27, 2011, Tampa, Florida, USA.
- Ichikawa, K., Adulyanukosol, K., Akamatsu, T., Arai, N., Ando-Mizobata, N., Shinke, T. Spatial distribution patterns of solitary, cow-calf pairs and vocalizing dugongs around Talibong Island, Thailand. 19th biennial conference on the biology of marine mammals, Nov 27, 2011–Dec 02, 2011, Tampa, Florida, USA.
- Ichikawa, K., Akamatsu, T., Adulyanukosol, K., Damianni, G. and Lanyon, J. Intraspecific variation in vocal repertoire among dugong populations. The Fifth International Sirenian Symposium 2011, Nov 27, 2011, Tampa, Florida, USA.
- Ishiyama, S. Interactive relations between an environmental NGO and inhabitants in the southern fringe of the Sahara. 22th Annual meeting of Japan Society for International Development, Nov 26, 2011–Nov 27, 2011, Nagoya Univ. Nagoya, Japan. (in Japanese)
- Inoue, T., Yamauchi, Y., Eltayeb, A.H., Samejima, H., Ueno, K., Babiker, A.G., Sugimoto, Y. Gas exchange and stomatal response of root hemi-parasite *Striga hermonthica* and sorghum under soil water stress. The 46th Meeting of the Japanese Society for Chemical Regulation of Plants, Nov 01, 2011–Nov 02, 2011, Utsunomiya, Japan. (in Japanese)
- Hakoyama, F. Provision of Drinking Water in Rural Areas in Burkina Faso. the International Symposium on Sustainable Water Management, Oct 28, 2011, Hokkaido University.
- Yoda, K., Tsuji, W., Inoue, T., Mohamed Abd Elbasit, Ahmed M.A. Eldoma, Magzoub K.M. Ali, Hoshino, B., Nawata, H. and Yasuda, H. Evaluation of the response of Mesquite seedlings to dry conditions. International Symposium–Mesquite invasion and land degradation in Sudan, Oct 13, 2011, Arid Land Research Center, Tottori University.
- Nawata, H. Understanding the Mesquite Issues at the Village Level in Sudan: To Combat a Negative Heritage of “Combating Desertification”. International Symposium “Mesquite invasion and land degradation in Sudan: Overview”, Oct 13, 2011, Arid Land Research Center, Tottori.
- Yoshikawa, K. Eco-physiological Study on Mangroves along the Red Sea Coast (tentative). RIHN/RSU MOU Symposium – RED SEA STUDIES: Retrospect and Prospect, Oct 04, 2011, RIHN.
- Nawata, H. Red Sea Studies in RIHN ‘Arab Subsistence’ Project. RIHN/RSU MOU Symposium “Red Sea Studies: Retrospect & Prospect”, Oct 04, 2011, RIHN.
- Nawata, H. and Abdel Gabar BABIKER RIHN/SUST Research Cooperation on Comprehensive Measures to Manage the Alien Invasive Species Mesquite in Sudan. Present State and Issues of Cooperation between International Academic Research and Development Assistance in Eastern Sudan: Focusing on Agriculture, Livelihood, and Environmental Sector, Sep 19, 2011, RIHN.
- Ishiyama, S., Nawata, H., Mutasim Mekki, and Mussab Hassan Study on Rain-fed Agricultural System of Semi-arid Zone, Gadarif State, Sudan, through SATREPS: Towards Local-to-local Technology Transfer. Present State and Issues of Cooperation between International Academic Research and Development Assistance in Eastern Sudan: Focusing on Agriculture, Livelihood, and Environmental Sectors, Sep 19, 2011, RIHN.
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- Yoshikawa, K. Summaries of Eco-physiological Study on Mangroves along the Red Sea Coast. Annual Meeting of RIHN Arab-Subsistence Project, Sep 10, 2011–Sep 11, 2011, RIHN. (in Japanese)
- Yoshimori, I. Prompt report for analysis of Genetic variation of gray mangrove in the Red Sea Coast of Egypt. Annual Meeting of RIHN Arab-Subsistence Project, Sep 10, 2011–Sep 11, 2011, RIHN. (in Japanese)



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- Nawata, H. Introduction: How Will You Live without Oil? Part 3. The 45th RIHN Public Seminar, Sep 09, 2011, RIHN. (in Japanese)
- Sakata, T. Changes in the importance of camels. Project Meeting for "A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-Oil Era", Sep 09, 2011-Sep 11, 2011, RIHN.
- Hoshino, B. & Nawata, H. Remote sensing methods for the evaluation of the mesquite tree (*Prosopis juliflora*) environmental adaptation to semi-arid Africa. IEEE IGARSS, Jul 24, 2011-Jul 29, 2011, Vancouver, Canada. DOI:10.1002/ece3.9.
- Hoshino, B. CLASSIFICATION OF CASI-3 HYPERSPECTRAL IMAGE BY SUBSPACE METHOD. IEEE IGARSS, Jul 24, 2011-Jul 29, 2011, Vancouver, Canada.
- Nawata, H. Possibilities and problems of foreign workers for environmental conservation in Saudi Arabia: Participation of refugees in development assistance. IUAES/AAS/ASAANZ Conference 2011, Knowledge and Value in a Globalising World: Disentangling Dichotomies, Querying Unities, Jul 05, 2011-Jul 08, 2011, Perth, Australia.
- Nawata, H. What I learned from Professor Iwao Kobori: In China, Tunisia, Egypt, and Algeria. The 1st International Conference on Arid Land "Desert Technology X", May 24, 2011-May 28, 2011, Narita, Tokyo.
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- Nawata, H. Arid Land Civilization focusing on Coastal Zone of the Arid Tropics: A View point for Red Sea Societies. Meeting of Red Sea Societies Research, May 15, 2011, Tokyo University of Foreign Languages. (in Japanese)
- Ishikawa, H. Natural environment and agriculture in northern Ethiopia found in historical papers of the Society of Jesus. Meeting of Red Sea Societies Research, May 15, 2011, Tokyo University of Foreign Languages, Tokyo.
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- Shindo, Y. Study on the Islamic Glass Trade Based on the Finds from Raya Site in the Sinai Peninsula. Meeting of Red Sea Societies Research, May 15, 2011, Tokyo University of Foreign Languages, Tokyo. (in Japanese)
- Nawata, H., Ishiyama, S., and Mutasim Mekki Subsistence of farmers from western Sudan and West Africa in Gadarif State at eastern edge of Sahel zone, Sudan. Meeting of Red Sea Societies Research, May 15, 2011, Tokyo University of Foreign Languages.
- Nawata, H. 'Egyptian Revolution' from the view point of global environmental studies. The 17th Resource Program Meeting, Apr 26, 2011, RIHN. (in Japanese)

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- Nawata, H., Ishiyama, S., and Mutasim Mekki Some issues of sorghum-centered rain-fed agricultural systems in the Gadarif state, eastern Sudan. The 20th Annual Meeting, Japan Association for Nilo-Ethiopian Studies, Apr 23, 2011-Apr 24, 2011, Nagasaki University. (in Japanese)
- Ishiyama, S. Changes of Oasis Life in Algerian Sahara -Water Supply, Farm Expansion and Habitations Movement, A Case Study of In Belbel. Colloque International sur La Foggara, Apr 09, 2011-Apr 11, 2011, Adrar, Algeria.
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#### **【Poster Presentation】**

- Ishihara, A., Yoshimori, I, Seo, A. and Yoshikawa, K. Genetic diversity of gray mangrove *Avicennia marina*(Forssk.) Vierh. in the Red Sea Coast. The 123th Japanese Forest Society, Mar 26, 2012-Mar 29, 2012, Utsunomiya University. (in Japanese) HerAnnouncement.
- Damiani, G., Ichikawa, K. and Lanyon, J. Acoustic characteristics of dugong vocalizations and vocal behaviour of herds in southern Queensland, Australia. 19th biennial conference on the biology of marine mammals, Nov 27, 2011-Dec 02, 2011, Tampa. Florida.
- Ando-Mizobata, N., Ichikawa, K., Arai, N. and Adulyanukosol, K. Daily patterns of vocal characteristics of dugongs in Thailand. 19th biennial conference on the biology of marine mammals, Nov 27, 2011-Dec 02, 2011, Tampa, Florida, USA.

#### **【Invited Lecture / Honororary Lecture / Panelist】**

- Hakoyama, F. Sustainability of water and sanitation situation in the Sahel Region. World Water Forum, Mar 12, 2012, Marseille, France.
- Horie, K. A Woman of Inberber lived in Sahara. , March 2012, The Embassy of Algeria in Tokyo.
- Yoshikawa, K. Ecology and physiology of gray mangrove a long Red Sea coast. Open seminar of Arid Land Research Center, Tottori University, Jan 24, 2012, Arid Land Research Center, Tottori. (in Japanese)
- Ozaki, K. Food and Medicine in the Arab Islamic World. Public Lecture on Islamic Culture held by the Institute of Oriental Philosophy, Sep 27, 2011, Tokyo. (in Japanese)
- Horie, K. A Woman of Islamic World. , May 2011, Tokyo SHIGAKU KAIKAN.
- Ozaki, K. Diffusion of Arabic Food in the Medieval Europe. Research Meeting on Medieval Islamic held by the Institute of Oriental Philosophy, Apr 16, 2011, Tokyo. (in Japanese)

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**Stage: Full Research**

**Project No.: R-06**

**Project Name: Managing Environmental Risks to Food and Health Security in Asian Watersheds**

**Abbreviated Title:**

**Project Leader: KADA Ryohei**

**Research Axis: Resources Program**

**URL:**

**Key Words:**

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### ○ Research Subject and Objectives

The main purpose of this study organized by both Japanese and Philippines researchers is to critically examine the issues of how the resource degradation or pollution occurs, from where the pollution originates and the way in which the pollution stresses aquatic life, food, and subsequently, the public health in the watershed area, which involves heavy social and medical costs. A special attention would be focused on how ecological risks impact the sustainable linkage between agricultural & fishery products and food and health security, from social and natural science perspectives, in the watershed area of Lake Laguna region.

Food related issues, closely linked with environmental issues have become an important issue in the 21st century. However, due to recent ecological degradation, sedimentation, water quality degradation, frequent flood occurrence, have affected food supply and food safety leading to public health problems. Conceptually, the term food security or food risk treated in this research refers to the risks or the issues related to food supply as well as food safety. Health security refers to that of humans, mainly affected by the impacts of ecological issues.

This research project has four principal objectives shown as follows: (i) it documents the current levels of heavy metals (lead, mercury, and cadmium) in the aquatic resources of Lake Laguna, the routes of this pollution and its impact on public health; (ii) it investigates the health condition of people and the perception of food risks among those people; (iii) it analyses the effects of chemical inputs on agricultural fields and their impact on food production and relation to subsequent ecosystem deterioration; and finally (iv) it analyses the land use change in Lake Laguna area and the impact of these changes on material cycle (groundwater level and water quality, sedimentation).

This research combines the social, medical and physical sciences in order to develop strategies of ecological risk management for sustainable food, health security and watershed planning in Lake Laguna region which can also be expanded for other Asian watersheds. The current research is conducted solely in the Laguna Lake region since it represents a good model for Asian case studies and also due to its importance for its ecosystem services being threatened by ecological risks in line with rapid urbanization and land use changes.

### ○ Progress and Results in 2010

Although still at its early stage of implementation, major outputs of the research can be summarized as follows:

- One of the major environmental issues in the lake is the contamination of toxic and hazardous substances from the industrial and agricultural sectors. Heavy metals such as Lead, Chromium, Cadmium, Arsenic, and Mercury, at one time or another, have been found in concentrations exceeding the prescribed safe levels in the Lake water column.
- Lead has increased to toxic levels in tilapia as seen from market and open water samples; same holds true for some local crop plants such as kangkong (*Ipomoea aquatica*) and kamote (*Ipomoea batatas*).
- While heavy metals are a concern, it only represents one component of total water pollutants. The bulk of the pollutants are found to mainly belong to human waste. In this light, the realm of infectious diseases, particularly that which causes water-borne illnesses is of great importance.
- The continuing degradation of the terrestrial and aquatic resources has led to reduction of their current resource base. The combined effects of the Environment-Human as well as Human-Environment-Human

types of risks had led to the reduction of household income, food insecurity and health deterioration of the inhabitants in the area.

- The major issue facing the respondents in the three study sites is how they would be able to improve, protect and expand their current resource base or level of acquirement given: (1) risk and uncertainty in upland agriculture and fishing activities as sustainable means of livelihood; (2) experience of household food insecurity; and (3) probable health risk due to unsafe or an unhealthy environment

- GIS-based risk mapping has been started to construct spatially defined human and environmental health risks to serve as common tool for integrating relational data and information for site resources, health, food and ecological risks as well as for unforeseen transboundary ecological risks to current and future land use changes in the target areas.

### ○Project Members

- ◎ KADA Ryohei ( Research Institute for Humanity and Nature, Professor, Environmental Economics )
- RAZAFINDRABE Bam H.N ( Research Institute for Humanity and Nature, Senior Researcher, Disaster Risk Management )
- YUMOTO Takakazu ( Research Institute for Humanity and Nature, Professor, Forest Ecology )
- NAKANO Takanori ( Research Institute for Humanity and Nature, Professor, Isotopic Environmental Science )
- ARIMA Makoto ( Graduate School of Environment and Information Sciences, Yokohama National University, Professor, Earth Science )
- MASUNAGA Shigeki ( Graduate School of Environment and Information Sciences, Yokohama National University, Professor, Environmental Chemistry )
- MIZUSHIMA Shunsaku ( Graduate School of Medical Sciences, Yokohama City University, Professor, Preventive Epidemiology )
- TANAKA Katsuya ( Research Center for Sustainability and Environment, Shiga University, Associate Professor, Resource Economics )
- MASUDA Tadayoshi ( Research Institute for Humanity and Nature, Senior Researcher, Agricultural Resource Economics )
- YAOTA Kiyoyuki ( Research Institute for Humanity and Nature, Researcher, Spatial Econometrics, GIS, Remote Sensing )
- SAITO Satoshi ( Research Institute for Humanity and Nature, Researcher, Stable Isotope Earth Science )
- NAKAI Satoshi ( Graduate School of Environment and Information Sciences, Yokohama National University, Professor, Environmental Risk Epidemiology; Epidemiological Evaluation of Chemicals )
- NAGAI Takashi ( National Institute of Agro-Environmental Sciences, Researcher, Organic Chemistry Risk Analysis )
- TAN, J. Galvez ( Medical School, University of the Philippines at Manila, Professor, Public Health )
- RANOLA, R. F. ( College of Agriculture, University of the Philippines at Los Banos, Professor, Resource Economics )
- CONCEPCION, R. N. ( College of Agriculture, University of the Philippines at Los Banos, Visiting Professor, Environmental & Resource Economics )
- BORJA, A. C. SANTOS ( Research Department, Lake Laguna Development Authority, Director, Biological Limnology )
- MOLINA, V. B. ( Medical School, University of the Philippines at Manila, Associate Professor, Public Health )
- PANGANIBAN L. C. R. ( Medical School, University of the Philippines at Manila, Associate Professor, Environmental Epidemiology )
- ZAFARALLA Macrina T. ( College of Agriculture, University of the Philippines at Los Banos, Professor, Biology, Water Quality Assessment )
- MACANDOG Damasa ( College of Agriculture, University of the Philippines at Los Banos, Professor, Plant Ecology, Evaluation of Soil Erosion )

### ○ Future Themes

During the Full Research period, the following main activities will be conducted by eah research team:

Team 1. Environmental Risk Assessment: (i) a geochemical proposal on the environmental study of human-nature interaction: use of multiple elements and their stable isotopes for water, soil, and organisms which will provide invaluable information on human-nature interaction; (ii) water quality assessment

based on the applicable water quality criteria combined with trophic state parameters and phytoplankton communities, then through aquatic macrophyte biosorption system (AMBS), address the stream turbidity issues, eutrophication, and heavy metal pollution

Team 2. Socio-Economic Evaluation: (i) characterization of other critical watersheds surrounding Laguna lake; (ii): food risk assessment; (iii): a bioeconomic model for evaluating the effects of land use patterns on lake water quality and commercial fish productivity in the region; (iv): household and community vulnerability to environmental risks induced by changing land uses in the Dampalit Subwatershed, Los Baños.

Team 3. Health Risk Evaluation: (i) baseline Evaluation: in order to clarify the degree and type of environmental exposure(s) affecting human health; (ii) health assessment on environmental pollutant exposure among community residents near the Laguna Lake area; (iii) assessment of health risks from heavy metals via fish consumption and on other local food products such as shellfish, duck eggs, etc.

Team 4. Payment for Ecosystem Services: estimation of the difference between farmer's benefits from conversion to non-agricultural land use and agricultural conservation based on municipality-level socio-economic statistics; GIS data; other data on streamflow, water quality, and historical weather information.

Team 5. GIS-based Risk Mapping: (i) GIS-assisted transboundary flood risk and vulnerability mapping and assessment for water-related disasters; (ii) GIS-assisted risk-based comprehensive land use plans (CLUP) of selected municipalities in Laguna region.

## ● Achievements

### ○ Editing

#### 【Editing / Co-editing】

- Satoru Sadohara, Fumio Koike, Ryohei kada and Yuichi Sato (ed.) Nov, 2011 Satoyama Revitalization - Challenges of Yokohama City and Kanagawa Prefecture, Japan—. Soshinsha, Tokyo, 256pp. (in Japanese)

### ○ Papers

#### 【Original Articles】

- Yaota K. R. Kada, et al. Oct, 2011 The construction of Spatial data map as a tool for linking Environmental risk to food and health security in Laguna Lake Watersheds. . 11th ISSAAS Philippine National and International Forum Proceeding .Pampanga, Philippines, .
- Kada, R., Ranola R.F.J., Tan J.Z.G. 2011 Impacts of ecological risks on food and health security in Laguna Lake Watersheds. . Food Security and Health Risk Eradication. Journal of Scientific Paper Abstract 1(1) :2-7.

#### 【Review Articles】

- Saito, S. and Nakano, T. Jul, 2011 Water quality mapping of Laguna Lake Watersheds. Managing environmental risks to food and health security in Southeast Asian watersheds. Progress Report. : 275-280. Ryohei Kada (ed.) Managing environmental risks to food and health security in Southeast Asian watersheds. .

### ○ Research Presentations

#### 【Oral Presentation】

- Bam H.N. Razafindrabe, Kiyoyuki Yaota, Satoshi Saito, Tadayoshi Masuda, Ryohei Kada EcoHealth: How Changing Environment and Climate affect Human Health and Livelihood Security in the Philippines. the Planet Under Pressure Conference: New Knowledge Towards Solutions, Mar 26, 2012–Mar 29, 2012, London, UK, .
- Ryohei KADA Impact of Increasing Flood Risk on Food & Health Security in Southeast Asia. Impact of Increasing Flood Risk on Food & Health Security in Southeast Asia, Mar 01, 2012, Research Institute for Humanity and Nature, Kyoto, .

- Bam H.N. Razafindrabe, Satoshi Saito, Kiyoyuki Yaota, Tadayoshi Masuda, Ryohei Kada Impacts of Ecological Risks to Food and Health Security in Laguna Lake Region, Philippines. . Global Risk Forum Davos One Health Summit 2012, Feb 19,2012–Feb 23,2012, Davos, Switzerland.
- Ryohei Kada, Victorio Molina, Allison Gocotano, Bam Razafindrabe, Adelina Santos-Borja, Tadayoshi Masuda, Environmental Risks, Food Security and Health in Laguna Lake Watershed, The Philippines.. 14th World Lake Conference Lakes, Rivers, Groundwater, and Coastal Areas: Understanding Linkages,, Oct 31,2011–Nov 04,2011, Austin, Texas USA.
- Bam H.N. Razafindrabe, Ryohei Kada Understanding Flood Resilience in the Laguna Lake Region, Philippines. the 14th World Lake Conference on Lakes, Rivers, Groundwater and Coastal Areas, Understanding Linkages, Oct 31,2011–Nov 04,2011, Austin, Texas, USA..
- Masuda, Tadayoshi, Fuwa, N., and R. Kada. Consumer Behavior and Perception of Food & Health Security: The Case of Tilapia and Drinking Water Consumption in the Santa Rosa Sub-Watershed, Laguna, the Philippines. 14th World Lake Conference, Oct 31,2011–Nov 04,2011, Austin, TX.
- Kiyoyuki YAOTA, Satoshi SAITO, Rogelio N. CONCEPCION, Ryohei KADA The Construction of Spatial Data Map as a Tool for Linking Environmental Risk to Food and Health Security in Laguna Lake Watersheds.. 11th International Society for Southeast Asian Agricultural Sciences (ISSAAS) , Oct 25,2011–Oct 26,2011, Philippine National Convention and International Forum, Clarkfield, Angeles City..
- Bam H.N. Razafindrabe, Michael Cuesta, Rogelio Concepcion, Ryohei Kada Assessing Flood Risks in Laguna Lake Region, Philippines–Implications to Food and Health Security. the 11th International Society for Southeast Asian Agricultural Sciences (ISSAAS) Philippine National Convention and International Forum, Oct 25,2011–Oct 26,2011, Clarkfield, Angeles City, Philippines.
- Bam H.N. Razafindrabe, Ryohei Kada Impacts of Ecological Risks to Food and Health Security in Laguna Lake Region, Philippines--Focus on Flood Risks Assessment.. the 7th ASAE International Conference on Meeting the Challenges Facing Asian Agriculture and Agricultural Economics Toward a Sustainable Future, Oct 13,2011–Oct 15,2011, Hanoi, Vietnam.
- YAOTA Kiyoyuki, KADA Ryohei, SAITO Satoshi Analysis of Factors Affecting Water Quality Degradation in Laguna Lake Watersheds, Philippines, for Ecological Risk Management. Kinki Branch of Ecological Society of Japan (Annual meeting), Jun 25,2011, Nara Women' s University, Nara. (in Japanese)
- Masuda, Tadayoshi, Yanagida, J.F., Bittenbender, H.C., Fleming, K.D., and V. Easton-Smith. Marketing Strategies Contributing Regional Welfare: Evidence from the Kona Coffee Industry in Hawaii. Selected Paper prepared for presentation at the International Food and Agribusiness Management Association (IFAMA) 21st. Annual World Forum and Symposium, Jun 20,2011–Jun 23,2011, Frankfurt, Germany.Masuda, Tadayoshi.
- Ryohei Kada Empirical Analysis of Food and Health Risk Expansion in the Philippines (Special Session Program) . Program of the 12th Spring Conference, The Japan Society for International Development, Jun 04,2011, JICA Research Institute.
- Bam H.N. Razafindrabe, Ryohei Kada Flood Resilience in a changing Climate and Environment –A Case-Study of the Laguna Lake Region, Philippines.. the 2nd World Congress on Cities and Adaptation to Climate Change, Jun 03,2011–Jun 05,2011, Bonn, Germany..
- Masuda, T., and R. Kada Agricultural Revival by Utilizing Biofuel Crops: How to Rehabilitate the Farmland Contaminated with Radioactive Materials or Damaged from Seawater After the 3/11 East Japan Earthquake and Tsunami?. The17th Annual International Sustainable Development Research Conference, May 10,2011–May 12,2011, Alfred J. Lerner Hall, The Earth Institute, Columbia University.
- Bam H.N. Razafindrabe, Ryohei Kada Interlinkage between Ecological Risks and Food and Health Security in a Fast-Growing Environment –A Case-Study of the Laguna Lake Region, Philippines. the 17th Annual International Sustainable Development Research Conference on Moving Toward a Sustainable Future, May 08,2011–May 10,2011, New York, USA..
- Masuda, Tadayoshi and R. Kada. Agricultural Revival by Utilizing Biofuel Crops: How to Rehabilitate the Farmland Contaminated with Radioactive Materials or Damaged from Seawater After the 3/11 East Japan Earthquake and Tsunami?. Selected Paper prepared for presentation at the 17th Annual Conference of the International Sustainable Development Research Society (ISDRS), May 08,2011–May 10,2011, Columbia University, New York, NY.

- Razafindrabe B.H.N., R. Kada Understanding flood resilience in the Laguna Lake Region, Philippines.. 14th World Lakes Conference, 2011, Austin, Texas USA.
- Saito, S. Water Quality Mapping of Laguna Lake Watersheds: Case Study of Marinig and Santo Domingo Watersheds, Philippines. International Workshop on EcoHealth: Linking Ecological Risks to Human Health - A Philippine Case Study-, JST-Young Researchers Feasibility Study Project, Feb 11,2012, Research Institute for Humanity and Nature, Kyoto, Japan.
- Saito, S. Water Quality Mapping of Laguna Lake and its Watersheds. LAKEHEAD project joint meeting, Aug 05,2011, University of the Philippines at Los Baños, Philippines.
- Saito S. Water Quality Mapping of Laguna Lake Watersheds. LAKEHEAD project meeting at LLDA, Jun 21,2011, Laguna Lake Development Authority, Taytay, Philippines.

#### **【Poster Presentation】**

- Bam H. N. Razafindrabe, Kiyoyuki Yaota, Satoshi Saito, Tadayoshi Masuda, Ryohei Kada EcoHealth: How Changing Environment and Climate affect Human Health and Livelihood Security in the Philippines. Planet Under Pressure, Mar 26,2012-Mar 29,2012, ExCel Centre East International Conference Centre, London, U. K. .
- Saito, S., Nakano, T., Shin, K.-C., Maruyama, S., Miyakawa, C., Yaota, K. and Kada, R. Water quality mapping of Laguna de Bay and its watershed, Philippines.. American Geophysical Union, Fall Meeting Abstract H53K-1558, Dec 09,2011, San Francisco, CA, USA.
- Saito, S., Nakano, T., Shin, K.-C., Maruyama, S., Miyakawa, C., Yaota, K. and Kada, R. Water quality mapping of Laguna de Bay and its watershed, Philippines. (3P-23). Annual Meeting of GSJ 2011, Nov 16,2011, Hokkaido University . (in Japanese)
- Kiyoyuki YAOTA, Satoshi SAITO, Bam H.N. Razafindrabe, Ryohei KADA The Integration of Spatial Information for Management of Food and Health Security - The Case of Laguna Lake, Philippines. . PNC2012(Pacific Neighborhood Consortium) Annual Conference and Joint Meetings, Oct 19,2011-Oct 22,2011, Sasin Graduate Institute of Business Administration of Chulalongkorn University.
- Saito S. Various granitoid plutons in an ongoing arc-arc collision zone, the Izu collision zone, central Japan: implications for transformation from juvenile arc crust to continental crust. Hutton symposium VII : The Origin of Granites and Related Rocks, Abstracts p.128-129, Jul 08,2011, Avila, Spain.

#### **【Invited Lecture / Honorary Lecture / Panelist】**

- Saito, S. and Nakano, T. Evaluation of water quality of Laguna Lake Watersheds. The 1st International Symposium on Managing Environmental Risks to Food and Health Security in the Laguna Lake Watersheds, Philippines, Abstract P28-30, Jun 03,2011, Research Institute for Humanity and Nature, Kyoto, Japan (Oral presentation and panelist).
- Saito, S., Ishikawa, M., Arima, M and Tatsumi, Y. Influence of dry pore-spaces on the Vp, Vs, Vp/Vs, and Poisson's ratio of crustal rocks. Canadian Geophysical Union Annual meeting, Abstract p 136-137, May 18,2011, Banff Park Lodge, Banff, Alberta, Canada (Invited talk).

## Incubation Study

### Risk management and mitigation strategies for catastrophic disasters

KUBOTA Jumpei (Research Institute for Humanity and Nature)

Recent developments of scientific prediction of natural phenomena and engineering countermeasures have significantly reduced risks of ordinary natural disasters. However, extreme events, such as the 2011 Tohoku earthquake and tsunami, cause severe disasters, consequently resulting in unexpected and human-induced disasters like Fukushima Daiichi nuclear accident. Highly complex social systems, as well as interdependency under the economic globalization, have decreased social redundancy and increased risks on basic lifelines and production systems, not only on early rescuing stages, but also in long-term recovering processes. For example, on the 2011 Tohoku earthquake and tsunami disasters, some evacuation facilities, which were set right outside projected hazardous zones, were attacked by big tsunami waves, resulting in serious damages of people followed “evacuation plans”. This example clearly shows lack of communication between scientific communities and governmental planners. It was also revealed that constructive countermeasures for a projected impact based on experiences in the past could not cope with unexpected phenomena. Only transdisciplinary investigations and well-organized planning, so-call contingency planning could solve the problems. The framework for mitigating damages of disasters were discussed, focusing on gaps between scientific knowledge and societal perception.

### Hierarchical organization of environmental literacy for ecosystem services on permafrost

ISHIKAWA Mamoru (Graduate School of Environmental Science, Hokkaido University)

The global environmental issues are mostly originated from the informative heterogeneity between the stakeholders. This heterogeneity could be resolved by improving their environmental literacy. Environmental literacy is the ability to appropriately seek, read and utilize environmental information to direct future action to solve the environmental issues. In the incubation research, we mainly argued the conceptual elaboration of the environmental literacy, and contemplated the applicability of environmental literacy matrix which potentially shows the direction of the societies suffered from degradation of permafrost ecosystem. In order to understand environmental literacy, the reality of stakeholder’s environmental issues should be clarified in the scientific disciplinary of human, society and nature (material substances and their circulative manner). For this mutual interaction between scientific researchers and society as their environmental literacy should be evolved.

### Reevaluating Advantages of Small-Scale Societies: An Alternative Strategy to Overcome Vulnerability in Large-Scale Societies

HABU Junko (University of California, Berkeley)

The objective of this project is to reexamine the benefits inherent in 1) small-scale societies, 2) small-scale communities within large-scale societies, and 3) small-scale economies associated with the former two. By doing so, this project will explore future possibilities for incorporating these practices as alternative strategies to mitigate vulnerabilities created in large-scale operations. The regional focus of this project is on the North Pacific Rim, including the arc from the Japanese archipelago to the West Coast of North America. Large-scale production of food and goods for mass consumption associated with globalization resulted in the loss of food diversity and homogenization of production methods. Furthermore, large-scale economies are quite vulnerable to changes such as global warming, earthquakes and radical shifts in political and social structure. Archaeological examples from the past also indicate that



subsistence specialization often resulted in similar vulnerability even though it increased short-term carrying capacity of the population. Accordingly, in order to increase diversity, flexibility and resilience of future societies, appropriate practices of small scale-societies, past and present, need to be promoted. During the 2011/2012, the project team examined archaeological and ethnographic data from northern Japan and other parts of the North Pacific Rim and developed research networks.

## The Center for Coordination, Promotion and Communication (CCPC)

The Center for Coordination, Promotion and Communication (CCPC) is responsible for crossproject, cross-domain investigation, research and support that concerns the entire institute. It has three divisions. The **Division of Coordination** maps out RIHN's mid- and long-term research trajectory and facilitates the cooperative arrangements necessary for its realization in domestic and international domains. The **Division of Promotion** develops and maintains the laboratory facilities necessary for research and fieldwork, particularly in staple isotope and DNA analyses, and builds the databases and archives of past and ongoing research. The **Division of Communication** decides how the new findings and outcomes of research may be best communicated in appropriate academic and public fora. Several recent activities are described in the pages on Research Communication. The CCPC also collaborates with the research department and administrative office to coordinate the task forces, working groups and administrative units involved in RIHN's ordinary operation and special events.

### • Key Research Tasks

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In RIHN's second phase, the Core Research Hub has been established within the CCPC. It focuses on the realization of the Futurability Initiatives by conjoining the existing RIHN Domain Programmes through a set of cross-cutting initiatives towards transdisciplinary field of Environmental Humanics of the Earth System. At present it has nurtured an Initiative-based Research Project, "Designing Local Frameworks for Integrated Water Resources Management".

### • Building Research Data Networks

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The CCPC plays a key role in facilitating RIHN's environmental networking and communication, especially between academic institutions, cultural institutions, and the general public. It is involved in the creation and maintenance of Asian environmental databases and project archives. It also supports the development of environmental studies curricula in Japan's public elementary, junior high and high schools.

The CCPC promotes cooperation between RIHN and research institutes both at home and abroad. One such activity is the repository for the global environmental studies (tentative name), a project to create environmental information networking nodes among a number of research institutes.

### • Facilities and Equipment

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The Division of Promotion maintains eighteen laboratories in the ground level of its main building, including specialized facilities for DNA and stable isotope analysis and mass spectrometry, as well as several rooms for chemical and biochemical analysis, microscopy, incubation, hazardous materials, fieldwork preparation, sample preparation and cold storage.

## Outreach Programs and Events

### 1. RIHN International Symposium

#### RIHN 6th International Symposium

In order to diffuse the findings of the five FR projects concluding in March 2012, the RIHN 6th International Symposium “Beyond Collapse: Transformation of human-environmental relationships, past, present and future” was held on 26-28 October 2011 at Lecture Hall, RIHN. The details of the symposium are as follows.

<Wednesday October 26>

#### Opening Session

Chair: UYAR, Aysun (RIHN)

- Opening Remarks: TACHIMOTO Narifumi (Director-General, RIHN)
- Objectives of the Symposium: NILES, Daniel (RIHN)
- Keynote Address: The Archaeology of Innovation: Lessons for the Sustainability of Our Times  
VAN DER LEEUW, Sander (Arizona State University, USA)

#### Session 1 : New ecologies of disease: Observing and theorizing human-pathogen interactions

Chair: KAWABATA Zen'ichiro (RIHN)

- Ecosystem Dynamics, Biological Diversity and Their Impacts on Zoonotic Infectious Diseases  
GUÉGAN, Jean-François (UMR IRD-CNRS-Universities of Montpellier I and II, France)
- Koi Herpesvirus Disease as a Model of Environmental Disease  
MINAMOTO Toshifumi (RIHN)
- The Impact of Anthropogenic Environmental Influences on Freshwater Snails and the Implications for Snail-borne Disease Transmission Risks in Kenya  
LANGE, Charles N. (National Museums of Kenya, Kenya)
- Discussion

<Thursday October 27>

#### Session 2 : Beyond collapse: The case of Indus Civilization

Chair: ONISHI Masayuki (RIHN)

- Paleoclimate During the Last 20,000 Years in Asia-Pacific Region  
YOKOYAMA Yusuke (University of Tokyo, Japan)
- Decline of the Indus Civilization and the Role of Agriculture  
WEBER, Steven (Washington State University Vancouver, USA)
- Observations about Arrival of the Āryas  
GOTŌ Toshifumi (Tohoku University, Japan)
- Collapse or Transformation?: Beyond Environmental Determinism for the Indus Civilization  
OSADA Toshiki (RIHN)
- Discussion

#### Session 3 : Transformation of human society and environment in Central Eurasia

Chair: KUBOTA Jumpei (RIHN)

- ‘No One can be Separated from the Other’: The Curse of Relatedness and Ethnopolitics in Contemporary China  
BULAG, Uradyn E. (University of Cambridge, UK)
- Typology of Agro-Pastoral Complex in Inner-most Eurasia under the Light of Geo-History  
OHJI Toshiaki (Kyoto University, Japan)
- Agricultural Development and Transformation of Nature in Soviet Central Asia: Theoretical Background and Reality  
CHIDA Tetsuro (Hokkaido University, Japan)

- Socialist Modernization and Transformation of Natural Resource Use in Central Eurasia  
WATANABE Mitsuko (RIHN)
- Discussion

<Friday October 28>

Session 4 : Building resilient communities in the semi-arid tropics

Chair: LEKPRICHAKUL, Thamana (RIHN)

- Social-Ecological Regime Shifts: Collapse, Traps, and Transformations  
PETERSON, Garry (Stockholm University, Sweden)
- Ingredients for Social-Ecological Resilience, Poverty Traps, and Adaptive Social Protection in Semi-Arid Africa  
TSCHAKERT, Petra (Pennsylvania State University, USA)
- Trajectories of Adaptation: A Retrospectus for Future Dynamics  
NELSON, Donald (University of Georgia, USA)
- Dynamics of Social-Ecological Systems: The Case of Farmers' Food Security in Semi-Arid Tropics  
UMETSU Chieko (RIHN)
- Discussion

Session 5 : Synthesis

Chairs: NILES, Daniel (RIHN) & SATO Yo-Ichiro (Deputy Director-General, RIHN)

- Beyond Pandemics and Global Instability: Cultivating Peripheral Vision for Transformation  
WALTNER-TOEWS, David (University of Guelph, Canada)
- Synthesis of Session 1  
KAWABATA Zen'ichiro (RIHN)
- Synthesis of Session 2  
OSADA Toshiki (RIHN)
- Synthesis of Session 3  
KUBOTA Jumpei (RIHN)
- Synthesis of Session 4  
UMETSU Chieko (RIHN)
- Comments: VAN DER LEEUW, Sander (Arizona State University, USA)
- Roundtable Discussion
- Closing Remarks  
WATANABE Tsugihiko (Deputy Director-General, RIHN)

**2. RIHN Forum** 

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“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 tenth forum was held in fiscal 2011 as below.

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**The 10<sup>th</sup> RIHN Forum**

Date: 3 July, 2011

Theme: Reflections on the Water Around Us

Venue: Kyoto International Conference Center

### 3. RIHN Public Seminars

In order to present RIHN research activity in a manner that accessible to the general public, since November 2004, RIHN has offered public lectures. Three seminars were held in 2011 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 43 <sup>rd</sup> Public Seminar	19 May, 2011 Recovery from the Great East Japan Earthquake: The Importance of Including Survivors Perspective MUROSAKI Yoshiteru (Institute for the Research of Disaster Area Reconstruction, Kwansai Gakuin University) KUBOTA Jumpei (RIHN)
The 44 <sup>th</sup> Public Seminar	5 August, 2011 Invitation to Global Environmental Studies: Behind the Scenes TANIGUCHI Makoto (RIHN) WATANABE Mitsuko (RIHN) MAKIBAYASHI Keisuke (RIHN)
The 45 <sup>th</sup> Public Seminar	9 September, 2011 How Will You Live after Finishing Oil Resources? Part3 ONUMA Hiroyasu (Appropriate Agriculture International Co., Ltd.) NAKANISHI Akio (Nakanishi Mokuzai Co. Ltd.) NAWATA Hiroshi (RIHN) ISHIYAMA Shun (RIHN)

### 4. RIHN Area Seminars

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 2011, two seminars were held as follows.

#### The 9th RIHN Area Seminar

“People and Nature in Eastern Eurasia: Twenty years After the Soviet Union”

Date: 12 June, 2011

Venue: Conference Hall, Hokkaido University (Sapporo City, Hokkaido)

#### The 10th RIHN Area Seminar

“Waterfront Conservation and Futurability of Lake Biwa”

Date: 14 January, 2012

Venue: Piazza Hall, Piazza Omi (Otsu City, Shiga)

### 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 427 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: 30 November, 1-2 December, 2011

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 50 <sup>th</sup>	1 April, 2011 The Library of Babel is burning EVANS, Nicholas (School of Culture, History & Language, The Australian National University)
The 51 <sup>st</sup>	12 April, 2011 Self introduction and research plan during invited period YAHYA, Andi Saputra (RIHN / Betawi Cultural Institute) HONG, Sungheup (RIHN / Chonnam National University) TKACHEV, Sergey (RIHN / Maritime State University named after admiral G. I. Nevelskoi) ZAMBA, Batjargal (RIHN / World Meteorological Organization)
The 52 <sup>nd</sup>	21 April, 2011 Society, Infectious Diseases and Natural Environment: What do we learn YAMAMOTO Taro (Institute of Tropical Medicine, Nagasaki University)
The 53 <sup>rd</sup>	12 May, 2011 Self introduction and research plan during invited period AJITHPRASAD, Pottentavida (RIHN / The Maharaja Sayajirao University of Baroda) JORDAN, Peter David (RIHN / University of Aberdeen) MCCAULEY, Stephen Michael (RIHN / Clark University) PONGVONGSA, Tiengkham (RIHN / Center of Malariology, Parasitology and Entomology, Savannakhet Province, Lao P.D.R)
The 54 <sup>th</sup>	19 May, 2011 “Soundscapes” and Urban Environmental Culture TORIGOE Keiko (Aoyama Gakuin University)
The 55 <sup>th</sup>	30 May, 2011 Noble gases in the pore water of unconsolidated sediments: A growing research field of noble-gas geochemistry TOMONAGA Yama (Swiss Federal Institute of Aquatic Science & Technology, Dept. of Water Resources and Drinking Water)
The 56 <sup>th</sup>	30 May, 2011 Qanat an Ancient Technique for Adapting to New Climate Changes SEMSAR, Yazdi (International Center on Qanats and Historic Hydraulic Structures (ICQHS))
The 57 <sup>th</sup>	7 June, 2011 Formulation of Environmental Policy towards Low-Carbon Economy MOROTOMI Toru (Graduate School of Economics and Faculty of Economics, Kyoto University)
The 58 <sup>th</sup>	9 June, 2011 Environment and Design NAITO Hiroshi (Architect)
The 59 <sup>th</sup>	28 June, 2011 The Change of Local Knowledge in Jakarta YAHYA, Andi Saputra (RIHN / Betawi Cultural Institute)

- The 60<sup>th</sup> 12 July, 2011  
Oasis Eco-system and Date palm Diversity  
BENKHALIFA, Abderrahmane (RIHN / Ecole Normale Supérieure Kouba)
- The 61<sup>st</sup> 13 July, 2011  
Health impacts by disasters in the world and East Japan Earthquake - Challenges and perspectives of emergency and long-term response  
KUNII Osamu (Child Survival and Development, UNICEF Somalia Support Center, Nairobi, Kenya)
- The 62<sup>nd</sup> 2 August, 2011  
Landscape Transformation during the Modernisation and Regional Identity in Kyoto  
HONG, Sungheup (RIHN / Chonnam National University)
- The 63<sup>rd</sup> 2 August, 2011  
Understanding Climate Change and Cultural Innovation in Long-Term Perspective  
JORDAN, Peter David (RIHN / University of Aberdeen)
- The 64<sup>th</sup> 4 August, 2011  
Malaria situation and related factors in a Central Border Areas of Laos and Vietnam  
PONGVONGSA, Tiengkham (RIHN / Center of Malariology, Parasitology and Entomology, Savannakhet Province, Lao P.D.R)
- The 65<sup>th</sup> 4 August, 2011  
In Search of the First Farmers of Gujarat  
AJITHPRASAD, Pottentavida (RIHN / The Maharaja Sayajirao University of Baroda)
- The 66<sup>th</sup> 13 September, 2011  
Self introduction and research plan during invited period  
MCGEE, Terence Gary (RIHN / The University of British Columbia)
- The 67<sup>th</sup> 29 September, 2011  
Molecular characterization of date palm clones from Algerian Sahara: Efficiency of SSR technique and Chloroplast DNA sequencing  
BENKHALIFA, Abderrahmane (RIHN / Ecole Normale Supérieure Kouba)
- The 68<sup>th</sup> 12 October, 2011  
Self introduction and research plan during invited period  
SINHA, Deb Ranjan (RIHN / Michigan Technological University)
- The 69<sup>th</sup> 12 October, 2011  
Self introduction and research plan during invited period  
BRUTSAERT, Wilfried Hendrik (RIHN / Cornell University)
- The 70<sup>th</sup> 22 October, 2011  
Productin Urban Space: Megacities and Sustainability in China's Urban Future  
MCGEE, Terence Gary (RIHN / The University of British Columbia)
- The 71<sup>st</sup> 8 November, 2011  
Self introduction and research plan during invited period  
TSERING, Norbu (RIHN / Ladakh Institute of Prevention)
- The 72<sup>nd</sup> 5 December, 2011  
A Transdisciplinary Approach to Energy Sustainability  
MCCAULEY, Stephen Michael (RIHN / Clark University)
- The 73<sup>rd</sup> 20 December, 2011  
Water Use and Management in Asia-Proerspective from Inter-Civic Studies  
NAKAMURA Hisashi (Ryukoku University)

- The 74<sup>th</sup> 12 January, 2012  
Epidemiology of Hypertension and non-communicable diseases in Ladakh; and its relevance to High altitude adaptation and life style changes  
TSERING, Norbu (RIHN / Ladakh Institute of Prevention)
- The 75<sup>th</sup> 12 January, 2012  
The determination of permafrost thawing from long-term streamflow measurements: The case of eastern Siberia  
BRUTSAERT, Wilfried Hendrik (RIHN / Cornell University)
- The 76<sup>th</sup> 19 January, 2012  
Transdisciplinarity Discussions on the Future of Global Environmental Change and Sustainability Research  
MONFRAY, Patrick (ANR Environment & Biological Resources Department Earth System, Environment and Risks)  
HACKMANN, Heidi (International Social Science Council)
- The 77<sup>th</sup> 27 January, 2012  
On the Japan Satoyama-Satoumi Assessment, 2010 and Expected New Commons  
DURAIAPPAH, Anantha Kumar (International Human Dimension Programme on Global Environmental Change (IHDP))  
BRONDIZIO, Eduardo S. (Department of Anthropology, Indiana University Bloomington, Indiana, USA)
- The 78<sup>th</sup> 28 January, 2012  
Diverse responses observed in the recent development of oil palm cultivation in Southeast Asia  
YANAGISAWA Masayuki (Kyoto University)  
HOANG, Nguyet Thi Minh (Kyoto University)  
KATO Tsuyoshi (RIHN)
- The 79<sup>th</sup> 14 February, 2012  
Thinking about Environmental Sustainability - Lessons from the USA and Japan  
SINHA, Deb Ranjan (RIHN / Michigan Technological University)
- The 80<sup>th</sup> 2 March, 2012  
2 types of colonization: Hokkaido and South-Ussuri area (late XIX - early XX cent.)  
TKACHEV, Sergey (RIHN / Maritime State University named after admiral G. I. Nevelskoi)
- The 81<sup>st</sup> 16 March, 2012  
Mongolia's dilemma with its development paradigm  
ZAMBA, Batjargal (RIHN / World Meteorological Organization)

## 7. Lunch Seminars (Danwakai)

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Lunch Seminars 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 seminars promote creative thinking and constructive debates, they are held on a biweekly basis.

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- No.173 19 April, 2011  
Toward improving emission estimates of methane from fires  
KOBAYASHI Nakako (Project Researcher)
- No.174 10 May, 2011  
Resilience of the Indian Ocean Tsunami's Affected Farmers in Tamil Nadu, India  
LEKPRICHAKUL, Thamana (Senior Project Researcher)



- No.175 17 May, 2011  
Fine-scale habitat use of vocalizing and feeding dugongs in Thailand  
ICHIKAWA Kotaro (Project Researcher)
- No.176 24 May, 2011  
Dealing with the juggernaut: Restoring ecosystem services in a rubber monoculture  
HARRISON, Rhett D. (Xishuangbanna Tropical Botanic Garden, Chinese Academy of Science)
- No.177 31 May, 2011  
Futurability of peat swamp forest in Sumatra, Indonesia: CO<sub>2</sub>, Water and Livelihood  
ABE Ken-ichi (Professor)
- No.178 7 June, 2011  
A Ethnoarchaeological study on South Asia: a case of agate-carnelian beads production  
ENDO Hitoshi (Project Researcher)
- No.179 21 June, 2011  
Medical checkup for the elderly in Khaling, Druk Yul  
SAKAMOTO Ryota (Project Researcher)
- No.180 19 July, 2011  
Second-home settlements of the Moscow-city dwellers and its role for the post-Soviet urbanization of the region  
GUSEVA, Anna (Project Researcher)
- No.181 30 August, 2011  
Understanding Livelihood Security to better address Climate Change Adaptation in East Central Madagascar  
RAZAFINDRABE, Bam H.N (Senior Project Researcher)
- No.182 4 October, 2011  
What kind of science for 'sustainability'?  
NILES, Daniel (Assistant Professor)
- No.183 18 October, 2011  
Transformation of Urban-Rural Relationship and the Characteristics of "labour migration" in Zambia  
ITO Chihiro (Project Research Associates)
- No.184 1 November, 2011  
A Critique of Normative Social Theory  
ABE Akira (Project Researcher)
- No.185 15 November, 2011  
Who cares, as long as the chemicals are not toxic!  
HANDOH, Itsuki C. (Associate Professor)
- No.186 29 November, 2011  
The environmental thought in the 14<sup>th</sup> Dalai Lama  
TSUJIMURA Masahide (CCPC)
- No.187 6 December, 2011  
Shanghai Plague Riot (1910): Diversity of ideas and social relation over "Health"  
FUKUSHI Yuki (Project Researcher)
- No.188 20 December, 2011  
Pollination mutualism between Colocasiomyia flies and Araceae plants  
TAKANO Takenaka Kohei (Project Researcher)

- No.189      7 February, 2012  
Exploring the point at the intersection of Environmental Humanics of the Earth System with ontology engineering  
KUMAZAWA Terukazu (Assistant Professor)
- No.190      21 February, 2012  
Large-N questionnaire survey in Sarawak, Malaysia: Quantitative analysis of social and environmental factors  
SAKAI Shoko (Associate Professor)

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**8. Publications**

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**8-1. RIHN Series**

RIHN Series are books introducing RIHN's research results to the general public. The following titles were published in fiscal year 2011.

Seibutsutayousei Douikasuka? – Hozen-Riyou-Bunpai wo Kangaeru (How to Utilize Biodiversity?: A Study for Preservation, Use and Distribution)

Edited by YAMAMURA Norio, Showado, October 2011 (in Japanese).

Shoku to Nou no Mirai – Eurasia Ichimannen no Tabi (The Future of Human Food: 10000 years history of Eurasia)

Written by SATO Yo-Ichiro, Showado, March 2012 (in Japanese).

**8-2. RIHN Book Series (in English)**

This series introduce the fruit of research findings by RIHN to the International science community. The following title was published in fiscal year 2011.

Island Futures: Conservation and Development Across the Asia-Pacific Region

BALDACCHINO, Godfrey, NILES, Daniel (Eds.) , Springer, 2011

**8-3. 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 easy-to read content. Issues 31-35 were published in fiscal year 2011.

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**9. Press Conference**

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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. Three press conferences were held in fiscal 2011.

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## Individual Achievements

A	ABE Akira	Project Researcher	
	ABE Ken-ichi	Professor	
	AJITHPRASAD, Pottentavida	Visiting Research Fellow	
B	AKIMICHI Tomoya	Professor	
	BENKHALIFA, Abderrahmane	Visiting Research Fellow	
	BRUTSAERT, Wilfried Hendrik	Visiting Research Fellow	
C	CAI, Guoxi	Project Researcher	
	CHANG, Yu-Hui	Visiting Researcher	
	CHENGZHI	Senior Project Researcher	
E	ENDO Hitoshi	Project Researcher	
F	FUJITA Noboru	Visiting Associate Professor	
	FUJIWARA Junko	Senior Project Researcher	
	FUKUSHI Yuki	Project Researcher	
	FUKUSHIMA Takehiko	Visiting Professor	
G	GOTO Tamon	Visiting Professor	
	GUSEVA, Anna	Project Researcher	
H	HAFIZ KOURA, Hafiz Mohamed Fathy	Project Research Associate	
	HANDOH Itsuki C.	Associate Professor	
	HAYASHI Kengo	Project Researcher	
	HIMIYAMA Yukio	Visiting Professor	
	HIYAMA Tetsuya	Associate Professor	
	HON, Jason	Visiting Researcher	
	HONG, Sungheup	Visiting Research Fellow	
	HONJO Mie	Project Researcher	
	HOSOYA Aoi	Project Researcher	
	I	IBUKI Naomi	Project Research Associate
		ICHIKAWA Kotaro	Project Researcher
		IEDA Osamu	Visiting Professor
		ISHII Yume	Project Research Associate
ISHIKAWA Satoshi		Visiting Associate Professor	
ISHIMARU Eriko		Visiting Researcher	
ISHIMOTO Yudai		Project Researcher	
ISHIYAMA Shun		Project Researcher	
ITO Chihiro		Project Research Associate	
IWASAKI Shinpei		Visiting Researcher	
J		JIANG, Hongwei	Project Researcher
		JORDAN, Peter David	Visiting Research Fellow
K		KADA Ryohei	Professor
	KAMURA Nozomi	Project Research Associate	
	KATO Hisaaki	Project Research Associate	
	KATO Satoshi	Project Researcher	
	KATO Tsuyoshi	Visiting Professor	
	KATO Yumi	Visiting Researcher	
	KAWABATA Zen'ichiro	Professor	
	KAWASAKI Masahiro	Visiting Professor	
	KIHIRA Tomoe	Project Research Associate	
	KIMURA Emi	Visiting Researcher	
	KINOSHITA Tetsuya	Guest Professor	
	KITAMURA Naoko	Project Research Associate	
	KOBAYASHI Nakako	Project Researcher	

	KODA Ryosuke	Project Researcher
	KOHMATSU Yukihiko	Assistant Professor
	KOMURA Yohei	Visiting Researcher
	KOSAKA Yasuyuki	Project Researcher
	KOYAMA Masami	Project Research Associate
	KOYAMA Shuzo	Visiting Professor
	KUBOTA Jumpei	Associate Professor
	KUMAZAWA Terukazu	Assistant Professor
	KUME Takashi	Associate Professor
	KURATA Takashi	Associate Professor
L	LEKPRICHAKUL, Thamana	Senior Project Researcher
M	MAKIBAYASHI Keisuke	Senior Project Researcher
	MASUDA Tadayoshi	Senior Project Researcher
	MASUDA Yoshie	Project Research Associate
	MATOH Toru	Visiting Professor
	MATSUDA Hiroko	Project Researcher
	MATSUNAGA Kohei	Research Fellow, NIHU Center for Area Studies
	MCCAULEY, Stephen Michael	Visiting Research Fellow
	MCGEE, Terence Gary	Visiting Research Fellow
	MEUTIA, Ami Aminah	Project Researcher
	MINAMOTO Toshifumi	Senior Project Researcher
	MIYAZAKI Hidetoshi	Project Researcher
	MIZUMA Sakiko	Project Research Associate
	MOJI Kazuhiko	Professor
	MORI Wakaha	Senior Project Researcher
	MURAMATSU Koichi	Visiting Associate Professor
	MURAMATSU Shin	Professor
N	NAGAO Seiya	Visiting Professor
	NAITO Daisuke	Assistant Professor
	NAKAJIMA Tsuneko	Visiting Professor
	NAKAMURA Oki	Project Researcher
	NAKAMURA Ryo	Project Researcher
	NAKANO Takanori	Professor
	NAKATSUKA Takeshi	Visiting Professor
	NAOE Shoji	Visiting Researcher
	NARAMA Chiyuki	Project Researcher
	NAWATA Hiroshi	Associate Professor
	NILES, Daniel Ely	Assistant Professor
	NISHIMOTO Futoshi	Project Researcher
	NOSE Mitsuhiro	Project Researcher
O	OGAWA Haruka	Visiting Researcher
	OKUDA Toshinori	Visiting Professor
	OKUMIYA Kiyohito	Associate Professor
	ONISHI Masayuki	Senior Project Researcher
	OSADA Toshiki	Professor
	OSHIMA Kazuhiro	Project Researcher
	OTANI Megumi	Project Research Associate
P	PONGVONGSA, Tiengkham	Visiting Research Fellow
R	RAZAFINDRABE, Bam Haja Nirina	Senior Project Researcher
S	SAITO Satoshi	Project Researcher

	SAKAI Shoko	Associate Professor
	SAKAI Toru	Senior Project Researcher
	SAKAMOTO Ryota	Project Researcher
	SASAKI Naoko	Visiting Researcher
	SATO Tetsu	Visiting Professor
	SATO Yo-Ichiro	Professor
	SEKINO Tatsuki	Associate Professor
	SEO Akihiro	Visiting Researcher
	SHIBAYAMA Mamoru	Visiting Professor
	SHIMIZU Hiromi	Project Research Associate
	SHIRAIWA Takayuki	Visiting Associate Professor
	SINHA, Deb Ranjan	Visiting Research Fellow
T	TACHIMOTO Narifumi	Director-General
	TAKAHARA Teruhiko	Project Researcher
	TAKANO Takenaka Kohei	Project Researcher
	TAMURA Ulara	Project Researcher
	TANAKA Ueru	Associate Professor
	TANIGUCHI Makoto	Professor
	TKACHEV, Sergey	Visiting Research Fellow
	TOJO Bumpei	Project Researcher
	TOMITA Shinsuke	Project Researcher
	TSERING, Norbu	Visiting Research Fellow
	TSUJINO Riyou	Senior Project Researcher
U	UCHIBORI Motomitsu	Visiting Professor
	UCHIKADO Megumi	Project Research Associate
	UCHIYAMA Junzo	Associate Professor
	UESUGI Akinori	Visiting Researcher
	UMETSU Chieko	Associate Professor
	UYAR, Aysun	Assistant Professor
W	WANG, Na	Project Research Associate
	WATANABE Hisami	Visiting Professor
	WATANABE Mitsuko	Project Researcher
	WATANABE Tsugihiko	Professor
	WEYGANDT, Mayumi Kanzaki	Project Research Associate
Y	YAHYA, Andi Saputra	Visiting Research Fellow
	YAMAMURA Norio	Professor
	YAOTA Kiyoyuki	Project Researcher
	YASUTOMI Natsuko	Assistant Professor
	YODEN Makoto	Project Research Associate
	YOKOYAMA Satoshi	Visiting Associate Professor
	YOSHINAGA Kazumi	Project Researcher
	YUMOTO Takakazu	Professor
Z	ZAMBA, Batjargal	Visiting Research Fellow
	ZEBALLOS VELARDE, Carlos Renzo	Senior Project Researcher

※Job titles listed above are as of March 31st, 2012.

(For those who retired in the middle of fiscal 2011, the job titles of that time are listed.)

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**ABE, Ken-ichi**


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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—****[Research Presentations]***[Oral Presentation]*

- ABE Ken-ichi Dialogue for water: from local to international - Water and Culture: Creative mediation. The 6th World Water Forum, 2012, 03, 12-2012, 03, 17, Marseille, France.

*[Poster Presentation]*

- ABE Ken-ichi•NILES Daniel Asia: Proving ground for global sustainability. Planet Under Pressure 2012, 2012, 03, 26-2012, 03, 29, London.

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**AKIMICHI, Tomoya**


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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 Environmental Sociology, The Society of Ecological Anthropology, The Society 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]**

#### *[Chapters/Sections]*

- Tomoya Akimichi 2011 Changing Coastal Commons in a Sub-Tropical Island Ecosystem, Yaeyama Islands, Japan. *Island Futures: Conservation and Development Across the Asia-Pacific Region*. Global Environmental Studies. Springer, Chiyoda-ku, Tokyo, pp.125-137.

### **[Papers]**

#### *[Original Articles]*

- Matsui Akira, Sato Yo-ichiro, Yumoto Takakazu, Ishige Naomichi and Akimichi Tomoya 2011, 11 The 13th Symposium of the National Institutes of Humanities (NIHU) Food- A cross-point of Biological and Cultural Diversities. (Panel Discussion). *Ningen-Bunka* 12 :44-57. (in Japanese)

### **[Research Presentations]**

#### *[Oral Presentation]*

- Akimichi Tomoya Forest and Culture in Asia. International Symposium Shrine Forest (Mori) Culture in East Asia and Sustainable Conservation, 2011, 12, 23, Council of Agriculture Executive Yuan Forestry Bureau, International Conference Hall, Taipei, Taiwan.
- Akimichi Tomoya Fish Conservation and Protected Areas as Effective Means for the Goal of Sustainable Ocean Initiatives in Asia and the Pacific. The 2nd East Asian Anthropology and Ethnology Forum, 2011, 11, 09-2011, 11, 10, RIHN.

#### *[Invited Lecture / Honoronary Lecture / Panelist]*

- Akimichi Tomoya From the Living Wisdom of Ocean. Japanese Culture Research Seminar, 2011, 08, 25, Makami Community Center, Takatsuki, Osaka.

- Akimichi Tomoya Panelist on "Satoumi: Rebuilding Fisheries and Coastal Communities". Great East Japan Earthquake Rebuilding Symposium -Exploring Integrative Approaches from Land to Sea-, 2011, 08, 05-2011, 08, 05, United Nations University Headquarters, Shibuya-ku, Tokyo.
- Akimichi Tomoya Thinking Sanriku Sea and Environment from Kyoto. Asnii Golden Age Academy, 2011, 07, 01, Kyoto Asnii, Kyoto.

## Chengzhi(Kicengge)

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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)

Department 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—**

#### **[Papers]**

##### *[Original Articles]*

- Chengzhi(Kicengge) 2011 The Illusion of the Nerchinsk Treaty Boundary-stone: The Map of the Amur Region in Manchu. The National Palace Museum Research Quarterly 29(1) :147-236. (in Chinese) (reviewed).

## FUKUSHI Yuki

---

Project Researcher

#### **[Academic Career]**

Department of education, Faculty of social studies, Tokyo Gakugei University, M. Course(2000)

Department of sociology, faculty of social sciences, Hitotsubashi University, D. Course(2007)



**[Professional Career]**

Research fellow of JSPS(2007)

**[Higher Degrees]**

D. Social Sciences(Hitotsubashi University, 2007)

M. Arts(Tokyo Gakugei University, 2000)

**[Fields of Specialization]**

History(Modern and Contemporary China)

**[Academic Society Memberships]**

The Socio-Economic History Society

The Historical Sciences Society of Japan

The Japan Association for Modern China Studies

Asian Society for Social History of Medicine

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Yuki FUKUSHI Public Health and Modern Urban Society :focusing on Shanghai Plague Riot(1910). International W.S. on Epidemics and Pandemics in Historical Perspective, 2011,10,28, dusseldorf, Germany.
- Yuki FUKUSHI Control of Human Feces and Schistosomiasis Prevention in Yunnan, 1950s-60s. International W.S. on the History of Schistosomiasis in China, 2011,10,08, Shanghai, China.
- Yuki FUKUSHI Shanghai Plague Riot(1910). Annual Conference of Political Economy and Economic History Society, 2011,06,25, Tokyo, Japan. (in Japanese)

HANDOY, Itsuki C.

Associate Professor

**Born in 1974.****[Academic Career]**

School of Environmental Sciences, University of East Anglia, D. Course (2000)

Department of Marine Science and Technology, Tokyo University of Fisheries (1996)

**[Professional Career]**

Associate Professor, Research Institute for Humanity and Nature (2011)

Assistant Professor, Center for Marine Environmental Studies, Ehime University (2007)

Visiting Researcher, Research Institute for Humanity and Nature (2007)

Senior Project Researcher, Research Institute for Humanity and Nature (2006)

Consultant, Department of Applied Mathematics, University of Sheffield, Sheffield, United Kingdom (2005)

Research Associate, Department of Applied Mathematics & Sheffield Centre for Earth Observation Science, University of Sheffield, Sheffield, United Kingdom (2004)

Senior Research Associate, School of Environmental Sciences, University of East Anglia, Norwich, United Kingdom (2001)

Teaching Assistant, School of Environmental Sciences, University of East Anglia, Norwich, United Kingdom (1998)

Research Assistant in Physics and Environmental Modelling, Department of Ocean Sciences, Tokyo University of Fisheries (1996)

**[Higher Degrees]**

Ph.D. (University of East Anglia, 2002)

**[Fields of Specialization]**

Earth Systems Science

Transdisciplinary Mathematical Modelling

**[Academic Society Memberships]**

American Geophysical Union

—Achievements—

**[Papers]**

*[Original Articles]*

- Nakayama, K., Sei, N., Handoh, I.C., Shimasaki, Y., Honjo, T., and Oshima, Y. 2011 Effects of polychlorinated biphenyls on liver functions and sexual characteristics in Japanese medaka (*Oryzias latipes*). *Marine Pollution Bulletin* 63(5-12) :366-369.

**[Research Presentations]**

*[Poster Presentation]*

- Handoh, I.C., and Onishi, T. Humanity Boundaries as humanity-oriented regional counterparts to Planetary Boundaries. *Planet Under Pressure 2012*, 2012, 03, 26-2012, 03, 29, London.
- Handoh, I.C., and Kawai, T. An integrated environmental risk assessment framework to define Planetary Boundaries for chemical pollution. *Planet Under Pressure 2012*, 2012, 03, 26-2012, 03, 29, London.

**HIYAMA Tetsuya**

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Associate Professor

**Born in 1967.**

**[Academic Career]**

1986-1990: College of Natural Sciences, University of Tsukuba

1990-1995: Graduate School of Geoscience, University of Tsukuba

**[Professional Career]**

1995-1995: JSPS Research Fellow, Institute of Geoscience, University of Tsukuba

1995-2001: Assist. Prof., Institute for Hydrospheric-Atmospheric Sciences, Nagoya Univ.

2001-2001: Assist. Prof., Hydrospheric Atmospheric Research Center, Nagoya Univ.

2002-2010: Assoc. Prof., Hydrospheric Atmospheric Research Center, Nagoya Univ.

2010- : Assoc. Prof., Research Institute for Humanity and Nature

**[Higher Degrees]**

Ph.D. (Science), University of Tsukuba, 1995

**[Fields of Specialization]**

Ecohydrology, Hydrometeorology

**—Achievements—****[Papers]***[Original Articles]*

- Liu, Y., Hiyama, T., Yasunari, T. and Tanaka, H. 2012,02 A nonparametric approach to estimating terrestrial evaporation: Validation in eddy covariance sites. *Agricultural and Forest Meteorology* 157 :49-59. (reviewed).
- Suzuki, R., Kobayashi, H., Delbart, N., Asanuma, J. and Hiyama, T. 2011,11 NDVI responses to the forest canopy and floor from spring to summer observed by airborne spectrometer in eastern Siberia. *Remote Sensing of Environment* 115 :3615-3624. (reviewed).
- Hossen, M.S., Mano, M., Miyata, A., Baten, A. and Hiyama, T. 2011,08 Seasonality of ecosystem respiration in a double-cropping paddy field in Bangladesh. *Biogeosciences Discussion* 8 :8693-8721. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Sakai, T., Hiyama, T., Fujiwara, J., Gotovtsev, S. and Gagarin, L. Flood disaster caused by permafrost degradation in the far north of Siberia. 1st International Conference on "Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments", 2012,03,07-2012,03,09, Lecture Hall, Research Institute for Humanity and Nature (RIHN), Kyoto.
- Hiyama, T., Asai, K., Kolesnikov, A., Gagarin, L. and Shepelev, V. Residence time estimation of permafrost groundwater at Yakutsk region, eastern Siberia. 1st International Conference on "Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments", 2012,03,07-2012,03,09, Lecture Hall, Research Institute for Humanity and Nature (RIHN), Kyoto.
- Oshima, K. and Hiyama, T. Seasonal and interannual variations of the Lena River discharge and those relationships with atmospheric water cycle. 1st International Conference on "Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments", 2012,03,07-2012,03,09, Lecture Hall, Research Institute for Humanity and Nature (RIHN), Kyoto.

*[Invited Lecture / Honorary Lecture / Panelist]*

- Hiyama, T. Global Warming and the Human-Nature Dimension in Siberia - Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments -. Reflections on Russian "Center-Periphery" Relationships, Institute of Russia-CIS Studies, Korea University, Humanities Korea (HK) Project, "Studies on Russia: Time and Space of Risks and Opportunities", 2011,05,28, Conference Room 6, Inchon Memorial Hall, Korea University, Seoul, Korea.

**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, School of Environmental Science, The University of Shiga Prefecture (1999)

**[Professional Career]**

Research Fellow, Research Institute 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]**

American Society for Microbiology

Ecological Society of Japan

The Japanese Society of Limnology

**—Achievements—****[Papers]***[Original Articles]*

- Honjo M. N., Minamoto T., Kawabata Z. 2012,03 Reservoirs of Cyprinid herpesvirus 3 (CyHV-3) DNA in sediments of natural lakes and ponds. *Veterinary Microbiology* 155 :183-190. DOI:10.1016/j.vetmic.2011.09.005. (reviewed).
- Kawabata, Z., Minamoto, T., Honjo, M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Asano, K., Itayama, T., Ichijo, T., Omori, K., Okuda, N., Kakehashi, M., Nasu, M., Matsui, K., Matsuoka, M., Kong, H., Takahara, T., Wu, D., Yonekura, R. 2011,11 Environment-KHV-carp-human linkage as a model for environmental diseases.. *Ecological Research* 26(6) :1011-1016. DOI:10.1007/s11284-011-0881-9. (reviewed).
- Takahara, T., Yamanaka, H., Suzuki, A. A., Honjo, M. N., Minamoto, T., Yonekura, R., Itayama, T., Kohmatsu, Y., Ito, T., Kawabata, Z. 2011,10 Stress response to daily temperature fluctuation in common carp *Cyprinus carpio* L. *Hydrobiologia* 675 :65-73. DOI:10.1007/s10750-011-0796-z. (reviewed).
- Minamoto, T., Honjo, M. N., Yamanaka, H., Tanaka, N., Itayama, T., Kawabata, Z. 2011,06 Detection of cyprinid herpesvirus-3 DNA in lake plankton.. *Research in Veterinary Science* 90 :530-532 . DOI:doi:10.1016/j.rvsc.2010.07.006. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Honjo M N, Minamoto T, Kawabata Z, Seasonal and spatial distribution of Cyprinid herpesvirus 1 and Cyprinid herpesvirus 2 in Lake Biwa, Japan. . The 59th Ecological Society of Japan, 2012, 03, 17-2012, 03, 21, Shiga, Japan.

## HOSOYA, Aoi

Project Researcher

Born in 1967.

## —Achievements—

## [Papers]

## [Original Articles]

- Aoi Hosoya 2012,03 Rice Farming in the Landscape of “Manyo-shu”. Annual Gazette of Man’yo Historical Research Institute 10 :59-71. (in Japanese)
- Leo Aoi Hosoya 2012,03 Reconstruction of Ritual by Archaeobotany. A. Abe (ed.) Material and Mind Reconstructed at Ritual Sites . Kokugakuin University, (in Japanese)
- Aoi Hosoya 2011,08 Analyses of Carbonised Remains from the Izumi Saka Shita Site Celamic Jars. M. Suzuki (ed.) Research of the Izumi Saka Shita Site: Middle Yayoi Reburial Grave with pottery of human face design. Rokuichi Shobo. pp.96-97. (in Japanese)
- Leo Aoi Hosoya 2011,04 Staple or Famine Food?: Ethnographic and archaeological approaches to nut processing in East Asian prehistory. Archaeological and Anthropological Sciences 3(1) :7-17. DOI: 10.1007/s12520-011-0059-y. (reviewed).
- Y.I. Sato, L.A. Hosoya, E. Kimura, T. Kurata, C. Muto & K. Tanaka 2011,04 Sustainable Agriculture: The lessons from history. SANSAI: An Environmental Journal for the Global Community 5 :69-81.

## [Research Presentations]

## [Oral Presentation]

- Leo Aoi Hosoya Early Rice Farmers’ Routine-Scape: Food processing and social value of food. FY2011 NEOMAP Landscape Workshop, 2011,10,07-2011,10,09, Research Institute for Humanity and Nature, Kyoto, Japan. (in Japanese)
- Leo Aoi Hosoya Rice Farming in the Landscape of “Manyo-shu”. The 8th Manyo Historical Research Institute Open Symposium “Manyo-shu & Ethnography”, 2011,09,25, Manyo Historical Research Institute, Nara, Japan. (in Japanese)
- Leo Aoi Hosoya Traditional Raised-floor Granary in Bali and Its Meaning for Local Community: From the scope of past, present and future of Bali agriculture. The 12th International Conference on Quality in Research, 2011,07,04-2011,07,06, Bali, Indonesia.
- Leo Aoi Hosoya Exploring the Broad Resource Base of Early Rice Farmers: Processing experiments of peach and apricot kernels. Early Rice Cultivation & Its Weed Flora Symposium, 2011,05,30-2011,05,31, Beijing University, China.
- Leo Aoi Hosoya Processing of Wild Food Plants in Neolithic Yangtze Area Ethnographic and experimental approaches for reconstructing diversity in early rice farmers’ subsistence strategy. Hemudu Culture International Forum: In Global Perspective, 2011,05,26-2011,05,28, Yuyao city, Zhejiang, China.

## [Invited Lecture / Honorary Lecture / Panelist]

- Leo Aoi Hosoya Early Rice Farmers’ Routine-scape in East Asia: Archaeobotanical reconstruction. Faculty of Arts, University of Ljubljana, Slovenia, 2011,11,22, Ljubljana, Slovenia.
- Leo Aoi Hosoya Surviving Tradition and Disappearing Tradition: ‘Old days’ landscape with raised-floor granaries in Amami Oshima, Japan. Anton Melik Geography Institute, Slovenia, 2011,11,21, Ljubljana, Slovenia.

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**ICHIKAWA Kotaro**


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Project researcher

**Born in 1978.****[Academic Career]**

Faculty of Agriculture, Kyoto University (B.S. 1999-2003)

Biosphere Informatics, Graduate School of Informatics, Kyoto University (M.S. 2003-2005)

Biosphere Informatics, Graduate School of Informatics, Kyoto University (Ph. D. 2005-2007)

**[Professional Career]**

2005.4-2007.9. Research fellow of the Japan Society for the Promotion of Science (DC1)

2007.10.-2008.3 Research fellow of the Japan Society for the Promotion of Science (PD)

2008.4-2010.9 Research fellow of the Japan Society for the Promotion of Science (PD)

2010.10- Project researcher at Research Institute for Humanity and Nature

**[Higher Degrees]**

Bachelor of Agriculture (Kyoto University, 2003)

Master of Informatics (Kyoto University, 2005)

Doctor of Philosophy of Informatics (Kyoto University, 2007)

**[Fields of Specialization]**

Bioacoustics

**[Academic Society Memberships]**

Japanese Society of Fisheries Science

Acoustical Society of America

Advanced Marined Science and Technology

Japanese Society of Biologging Science

**[Awards]**

1. TOP 10 ARTICLES PUBLISHED IN THE SAME DOMAIN SINCE YOUR PUBLICATION (2010), BioMedLib, Ichikawa K, Akamatsu T, Shinke T, Sasamori K, Miyuchi Y, Abe Y, Adulyanukosol K, Arai N: Detection probability of vocalizing dugongs during playback of conspecific calls. J Acoust Soc Am; 2009 Oct;126(4):1954-9, September 10, 2010.
2. 海洋理工学会平成 19 年度業績賞 (2008), 海洋理工学会, 5 月 16 日 (京都大学情報学研究科バイオテレメトリーチームの一員として受賞)
3. Poster award (2004): Kotaro Ichikawa, Tomonari Akamatsu, Tomio Shinke, Nobuaki Arai, Chika Tsutsumi & Kanjana Adulyanukosol, Acoustical monitoring of dugong, OCEANS' 04/TECHNO-OCEAN, November 10-12, 2004

**—Achievements—****[Papers]***[Original Articles]*

- Ichikawa, K., Akamatsu, T., Arai, N., Shinke, T., and Adulyanukosol, K., 2011,06 "Callback response of dugongs to conspecific chirp playbacks". Journal of Acoustical Society of America 129(6) : 3623-3629. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Sakura Komiyama, Kotaro Ichikawa and Nobuaki Arai, "Development of software for extracting contours of animal vocalization". The 8th International Symposium on SEASTAR2000 and Asian Bio-logging Science (The 12th SEASTAR2000 Workshop), 2012, 02, 20-2012, 02, 21, Bangkok, Thailand.
- Ichikawa, K., Adulyanukosol, K., Akamatsu, T., Arai, N., Ando-Mizobata, N., Shinke, T., "Spatial distribution patterns of solitary, cow-calf pairs and vocalizing dugongs around Talibong Island, Thailand". 19th biennial conference on the biology of marine mammals, 2011, 11, 27-2011, 12, 02, Tampa, Florida, USA.
- Ichikawa K., Akamatsu, T., Adulyanukosol, K., Damianni, G., Lanyon, J., "Intraspecific variation in vocal repertoire among dugong populations". The Fifth International Sirenian Symposium 2011, 2011, 11, 27, Tampa, Florida, USA.
- Damiani, Giovanni, Ichikawa, Kotaro, Lanyon, Janet, "Acoustic characteristics of dugong vocalizations and vocal behaviour of herds in southern Queensland, Australia". Fifth International Sirenian Symposium 2011, 2011, 11, 27, Tampa, Florida, USA.
- Ichikawa, K., Mitamura, H., Shinke, T., Shida, Y., Watanabe, H., Yokota, T., Shoji, J., and Arai, N., "Development of a fine-scale acoustic positioning and telemetry system". 1st International Conference on Fish Telemetry, 2011, 2011, 06, 12-2011, 06, 18, Sapporo, Japan.
- Mitamura, H., Ichikawa, K., Shida, Y., Watanabe, H., Yokota, T., Shoji, J., Shinke, T., and Arai, N., "A brand-new acoustic positioning telemetry system monitors movements of a site-specific fish, the black rockfish *Sebastes inermis*". 1st International Conference on Fish Telemetry, 2011, 06, 11-2011, 06, 18, Sapporo, Japan.

*[Poster Presentation]*

- Damiani, Giovanni, Ichikawa, Kotaro, Lanyon, Janet, "Acoustic characteristics of dugong vocalizations and vocal behaviour of herds in southern Queensland, Australia". 19th biennial conference on the biology of marine mammals, 2011, 11, 27-2012, 12, 02, Tampa, Florida, USA.
- Noriko Ando-Mizobata, Kotaro Ichikawa, Nobuaki Arai, Kanjana Adulyanukosol, "Daily patterns of vocal characteristics of dugongs in Thailand". 19th biennial conference on the biology of marine mammals, 2011, 11, 27-2011, 12, 02, Tampa, Florida, USA.

**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]**

Doctor degree of area studies(Kyoto University, 2011)

Master degree of area studies(Kyoto University, 2008)

**[Fields of Specialization]**

Ecological anthropology

Area Studies

**[Academic Society Memberships]**

Japan Association for African Studies  
 The Japanese Association for Arid Land Studies  
 The Society for Ecological Anthropology

**—Achievements—****[Books]***[Authored/Co-authored]*

- Yudai Ishimoto 2012,03 A Livelihood System in Sahel: Adaptation and Coping Behavior for Drought and Insect Damage. Kyoto University African Study Series, 006. The Center for African Area Studies of Kyoto University, Sakyo, Kyoto, 179pp. (in Japanese)

**[Papers]***[Original Articles]*

- Yudai ISHIMOTO and Hidetoshi MIYAZAKI 2012,03 Historical Change of Neighborhood Community and Marriage Range of Gwembe Tonga in Southern Zambia. Working Paper on Social-Ecological Resilience Series 2012(016) :1-19.
- Hidetoshi MIYAZAKI, Yudai ISHIMOTO and Ueru TANAKA 2012,03 The Importance of Sweet Potatoes in Rural Villages in Southern Province, Zambia. Working Paper on Social-Ecological Resilience Series 2012(15) :1-18.

**[Research Presentations]***[Oral Presentation]*

- Yudai Ishimoto, Mitsunori Yoshimura, Megumi Yamashita, Keiichiro Matsumura, Hidetoshi Miyazaki Adaptation and Coping Behavior for Food Security in Southern Province. Resilience International Symposium "Building Social-Ecological Resilience in a Changing World", 2011,06,18-2011,06,20, Kyoto, Japan.

*[Poster Presentation]*

- Yudai Ishimoto A Preliminary Study on Reciprocity via Mobile Phones: A Case Study of Small Scale Farmer in Southern Province of Zambia. Resilience International Symposium "Building Social-Ecological Resilience in a Changing World", 2011,06,18-2011,06,20, Kyoto, Japan.

**ISHIYAMA, Shun**


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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. Course(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—

#### [Papers]

##### [Original Articles]

- Ishiyama, S. 2012, 03 Human mobility in the drylands of sub-Saharan Africa: The southward migration of the Kanemubu and drought in the Lake Chad region. *AFRO-EURASIAN Inner Dry Land Civilisation 1* : 85-97. (reviewed).
- Ishiyama, S. 2011, 10 Change of Human Subsistence in the Sahara Oasis—Water supply, farm expansion and habitation movements through a case study of In Belbel oasis in Algerian Sahara. *Journal of Arid Land studies 21*(2) :67-69. (reviewed).

#### [Research Presentations]

##### [Oral Presentation]

- Ishiyama, S., Nawata, H., Mutasim Mekki Mahmoud Elrasheed, Mussab Hassan Abbass Agriculture in Islamic Area of Republic of the Sudan -A Study of Regional Socio-Ecosystem, Local Agricultural Practice, and Traditional Knowledge To Manage Root Parasitic Weed in Rain-Fed Agricultural System of Semi-Arid Zone, Gadarif State, Sudan. 5 th International Symposium on “Religious Dynamics of Contemporary Africa concerning the destruction of Traditional Life Mode and New Religious Movement, 2011, 11, 27-2011, 11, 28, Nagoya University, Nagoya, Japan. (in Japanese)
- Ishiyama, S. Interactive relations between an environmental NGO and inhabitants in the southern fringe of the Sahara. 22th Annual Meeting of Japan Society for International Development, 2011, 11, 26-2011, 11, 27, . (in Japanese)
- Ishiyama, S., Nawata H., Mutasim Mekki Mahmoud Elrasheed, Mussab Hassan Abbass Study on rain-fed agricultural system of semi-arid zone, Gadarif state, Sudan, through SATREPS: Towards local-to-local technology transfer. International Symposium “Present State and Issues of Cooperation between International Academic Research and Development Assistance in Eastern Sudan: Focusing on Agriculture, Livelihood, and Environmental Sectors, 2011, 09, 19-2011, 09, 19, RIHN, Kyoto, Japan.
- Ishiyama, S. Changes of Human Subsistence in Sahara Oasis -Water Supply, Farm Expansion and Habitations Movement, A Case Study of In Belbel. “Desert Thchnology”The International Conference on Arid Land, , 2011, 05, 24-2011, 05, 28, Tokyo University of Agriculture, Tokyo, Japan.
- Ishiyama, S. Cereals Agriculture and Domestic Animals in the southern fringe of the Sahara - A case study of Cereal Cultivator, Gourmantche people in North-East of Burkinafaso. 48th Annual Meeting of Japan Association for African Studies, 2011, 05, 21-2011, 05, 22, Hirosaki University, Aomori, Japan. (in Japanese)

- Ishiyama, S. Changes of Oasis Life in Algerian Sahara –Water Supply, Farm Expansion and Habitations Movement, A Case Study of In Belbel. Colloque International sur La Foggara, 2011, 04, 09–2100, 04, 11, Algeria, Adrar.

## KADA, Ryohei

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Professor

### **Born in 1949.**

#### **[Academic Career]**

Graduated from Graduate School of Agriculture, Kyoto University  
Graduate School of Agricultural and Life Sciences, University of Wisconsin-Madison

#### **[Professional Career]**

Professor of Kyoto University  
Policy Research Coordinator, Policy Research Institute of the Ministry of Agriculture, Forestry and Fisheries  
President, AMITA Research Institute for Sustainable Economies  
Visiting Professor, Graduate School of Environment and Information Sciences, Yokohama National University  
Professor, RIHN

#### **[Higher Degrees]**

Ph.D. (Univ. of Wisconsin-Madison)

#### **[Fields of Specialization]**

Agricultural Policy  
Environmental Economics  
Food Risk Management

#### **[Academic Society Memberships]**

Ecological Society of Japan  
Society of Environmental Science, Japan  
Japan Society on Water Environment  
The Association of Rural Planning  
The Food System Research Association of Japan  
International Sustainable Development Research Society  
International Association for Agricultural Economists  
Asian Association for Agricultural Economists

#### **[Awards]**

Best Publication Award from Japanese Association of Agricultural Economics by “Part-time Family Farming” (in English) (1980)  
Policy Research Memorial Award from NIRA (National Institute for Research Advancement) by the publication of “Environmental Conservation and Sustainable Agriculture” (in Japanese) (1991)

**—Achievements—****[Editing]***[Editing / Co-editing]*

- Satoru Sadohara, Fumio Koike, Ryohei kada and Yuichi Sato (ed.) 2011,11 Satoyama Revitalization - Challenges of Yokohama City and kanagawa Prefecture, Japan—. Soshinsha, Tokyo, 256pp. (in Japanese)

**[Papers]***[Original Articles]*

- Yaota K. R. Kada, et al. 2011,10 he construction of Spatial data map as a tool for linking Environmental risk to food and health security in Laguna Lake Watersheds.. 11th ISSAAS Philippine National and International Forum Proceeding .(Pampanga, Philippines) .
- Kada, R., Ranola R.F.J., Tan J.Z.G. 2011 Impacts of ecological risks on food and health security in Laguna Lake Watersheds. . Food Security and Health Risk Eradication. Journal of Scientific Paper Abstract 1(1) :2-7.

*[Review Articles]*

- Saito, S. and Nakano, T. 2011,07 Water quality mapping of Laguna Lake Watersheds. . Managing environmental risks to food and health security in southeast Asian watersheds. Progress Report. : 275-280.Ryohei Kada (ed.) Managing environmental risks to food and health security in southeast Asian watersheds..

**[Research Presentations]***[Oral Presentation]*

- Bam H.N. Razafindrabe, Kiyoyuki Yaota, Satoshi Saito, Tadayoshi Masuda, Ryohei Kada EcoHealth: How Changing Environment and Climate affect Human Health and Livelihood Security in the Philippines. the Planet Under Pressure Conference: New Knowledge Towards Solutions, 2012,03,26-2012,03,29, London, UK, .
- Bam H.N. Razafindrabe, Satoshi Saito, Kiyoyuki Yaota, Tadayoshi Masuda, Ryohei Kada Impacts of Ecological Risks to Food and Health Security in Laguna Lake Region, Philippines. . Global Risk Forum Davos One Health Summit 2012, 2012,02,19-2012,02,23, Davos, Switzerland.
- Bam H.N. Razafindrabe, Ryohei Kada Understanding Flood Resilience in the Laguna Lake Region, Philippines. the 14th World Lake Conference on Lakes, Rivers, Groundwater and Coastal Areas, Understanding Linkages, 2011,10,31-2011,11,04, Austin, Texas, USA. .
- Kiyoyuki YAOTA, Satoshi SAITO, Rogelio N. CONCEPCION, Ryohei KADA The Construction of Spatial Data Map as a Tool for Linking Environmental Risk to Food and Health Security in Laguna Lake Watersheds.. 11th International Society for Southeast Asian Agricultural Sciences (ISSAAS) , 2011,10,25-2011,10,26, Philippine National Convention and International Forum, Clarkfield, Angeles City..
- Bam H.N. Razafindrabe, Michael Cuesta, Rogelio Concepcion, Ryohei Kada Assessing Flood Risks in Laguna Lake Region, Philippines—Implications to Food and Health Security. the 11th International Society for Southeast Asian Agricultural Sciences (ISSAAS) Philippine National Convention and International Forum, 2011,10,25-2011,10,26, Clarkfield, Angeles City, Philippines.
- Bam H.N. Razafindrabe, Ryohei Kada Impacts of Ecological Risks to Food and Health Security in Laguna Lake Region, Philippines--Focus on Flood Risks Assessment.. the 7th ASAE International Conference on Meeting the Challenges Facing Asian Agriculture and Agricultural Economics Toward a Sustainable Future, 2011,10,13-2011,10,15, Hanoi, Vietnam.
- YAOTA Kiyoyuki, KADA Ryohei, SAITO Satoshi Analysis of Factors Affecting Water Quality Degradation in Laguna Lake Watersheds, Philippines, for Ecological Risk Management. Kinki Branch of Ecological Society of Japan (Annual meeting), 2011,06,25, Nara Women' s University, Nara. (in Japanese)

- Ryohei Kada Empirical Analysis of Food and Health Risk Expansion in the Philippines (Special Session Program) . Program of the 12th Spring Conference, The Japan Society for International Development, 2011,06,04, JICA Research Institute.
- Bam H.N. Razafindrabe, Ryohei Kada Flood Resilience in a changing Climate and Environment –A Case-Study of the Laguna Lake Region, Philippines.. the 2nd World Congress on Cities and Adaptation to Climate Change, 2011,06,03–2011,06,05, Bonn, Germany.
- Masuda, T., and R. Kada Agricultural Revival by Utilizing Biofuel Crops: How to Rehabilitate the Farmland Contaminated with Redioactive Materials or Damaged from Seawater After the 3/11 East Japan Earthquake and Tsunami?. The17th Annual International Sustainable Development Research Conference, 2011,05,10–2011,05,12, Alfred J. Lerner Hall, The Earth Institute, Columbia University..
- Bam H.N. Razafindrabe, Ryohei Kada Interlinkage between Ecological Risks and Food and Health Security in a Fast-Growing Environment –A Case-Study of the Laguna Lake Region, Philippines. the 17th Annual International Sustainable Development Research Conference on Moving Toward a Sustainable Future, 2011,05,08–2011,05,10, New York, USA..
- Razafindrabe B.H.N., R. Kada Understanding flood resilience in the Laguna Lake Region, Philippines.. 14th World Lakes Conference, 2011, Austin, Texas USA.

*[Poster Presentation]*

- Bam H.N. Razafindrabe, Kiyoyuki Yaota, Satoshi Saito, Tadayoshi Masuda, Ryohei Kada EcoHealth: How Changing Environment and Climate affect Human Health and Livelihood Security in the Philippines. Planet Under Pressure Conference:, 2012,03,26–2012,03,26, London.
- Saito, S., Nakano, T., Shin, K.-C., Maruyama, S., Miyakawa, C., Yaota, K. and Kada, R. Water quality mapping of Laguna de Bay and its watershed, Philippines. . American Geophysical Union, Fall Meeting Abstract H53K-1558, 2011,12,09, San Francisco, CA, USA..
- Saito, S., Nakano, T., Shin, K.-C., Maruyama, S., Miyakawa, C., Yaota, K. and Kada, R. Water quality mapping of Laguna de Bay and its watershed, Philippines. (3P-23). Annual Meeting of GSJ 2011, 2011,11,16, Hokkaido University . (in Japanese)
- Kiyoyuki YAOTA, Satoshi SAITO, Bam H.N. Razafindrabe, Ryohei KADA The Integration of Spatial Information for Management of Food and Health Security – The Case of Laguna Lake, Philippines. . PNC2012(Pacific Neighborhood Consortium) Annual Conference and Joint Meetings, 2011,10,19–2011,10,22, Sasin Graduate Institute of Business Administration of Chulalongkorn University.

**KATO, Yumi**

Visiting Researcher

**[Academic Career]**

Faculty of Letters Arts and Sciences, Waseda University (2003)

Graduate School of Human and Environmental Studies, Kyoto University (2006)

Graduate School of Asian and African Area Studies, Kyoto University (2009)

**[Professional Career]**

JSPS Research Fellow (DC, 2008)

JSPS Research Fellow (PD, 2010)

**[Higher Degrees]**

Master (Kyoto University, 2006)

Ph. D. (Kyoto University, 2011)

**[Fields of Specialization]**

Cultural Anthropology

Ecological Anthropology

Ethnobiology

**[Academic Society Memberships]**

International Society of Ethnobiology (ISE)

Malaysian Social Science Association (PSSM)

Japanese Society of Cultural Anthropology

The Society for Ecological Anthropology

Japan Society for Southeast Asian Studies

Japan Society of Tropical Ecology

—Achievements—

**[Papers]**

*[Original Articles]*

- Kato, Y. 2012,02 Expansion of oil palm plantations and its effect on local people' s subsistence activities.. Collapse and Restoration of Ecosystem Networks with Human Activity. Research Institute for Humanity and Nature. :178-184.
- Sakai, S., Choy, Y.K., Koizumi, M., Kishimoto-Yamada, K., Ichikawa, M., Kato, Y., Takano, T. K., Itioka, T., Soda, R., Samejima, H., Nakashizuka, T. 2012,02 Changes in the lives of indigenous people and their environments in Sarawak. . Collapse and Restoration of Ecosystem Networks with Human Activity. Research Institute for Humanity and Nature. :185-189.
- Hon, J., Sakai. S., Choy, Y. K., Koizumi, M., Kishimoto-Yamada, K., Ichikawa. M., Kato, Y., Takano, T.K., Itioka, T., Soda, R., Samejima, H. 2012,02 Distribution and trend of animal abundance in the Rajang and Baram regions, Sarawak, based on questionnaire survey. . Collapse and Restoration of Ecosystem Networks with Human Activity. Research Institute for Humanity and Nature. :158-165.

**[Research Presentations]**

*[Oral Presentation]*

- Kato, Y., Samejima, H., Ichikawa, M., Soda, R., Alternatives of Local People' s Subsistence Activity in Kemena and Anap River Basin.. Annual Meeting on “Planted Forests in Equatorial Southeast Asia: Human-nature Interactions in High Biomass Society” , 2012,01,27-2012,01,28, Kyoto University.
- Soda, R., Kato, Y. Oil Palm Smallholder in Tubau, Bintulu.. Annual Meeting on “Planted Forests in Equatorial Southeast Asia: Human-nature Interactions in High Biomass Society” , 2012,01,27-2012,01,28, Kyoto University.

*[Invited Lecture / Honoronary Lecture / Panelist]*

- Kato Y. Dynamics of human activities and its impact on ecological resources in Malaysia.. RIHN-NTU Biodiversity Colloquium., December 2011, Taipei, Taiwan.

**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—****[Papers]***[Original Articles]*

- Honjo M N, Minamoto T, Kawabata Z, 2012,03 Reservoirs of Cyprinid herpesvirus 3 (CyHV-3) DNA in sediments of natural lakes and ponds. *Applied and Environmental Microbiology* 155 :183-190. DOI: 10.1016/j.vetmic.2011.09.005. (reviewed).
- Perrings C, Naeem S, Ahrestani F, Bunker D E, Burkill P, Ganziani G, Elmqvist T, Ferrati R, Fuhrman J, Jaksic F, Kawabata Z, Kinzig A, Mace G M, Milano F, Mooney H, Prieur-Richard A H, Tschirhart J, and Weisser W, 2011,11 Ecosystem services, targets and indicators for the conservation and sustainable use of biodiversity. *Frontiers in Ecology and the Environment* 9 :512-520. DOI: 10.1890/100212. (reviewed).
- Kawabata Z, Minamoto T, Honjo MN, Uchii K, Yamanaka H, Suzuki AA, Kohmatsu Y, Asano K, Itayama T, Ichijo T, Omori K, Okuda N, Kakehashi M, Nasu M, Matsui K, Matsuoka M, Kong, H, Takahara T, Wu D, and Yonekura R, 2011,10 Environment-KHV-carp-human linkage as a model for environmental diseases. *Ecological Research* . DOI:10.1007/s11284-011-0881-9. (reviewed). Special feature.
- Kawabata Z, 2011,10 Environmental change, pathogens, and human linkages. Part 2: concepts and perspectives. *Ecological Research* 26(6) :1009. DOI:10.1007/s11284-011-0885-5. (reviewed). Special future.

- Kawabata Z, 2011,09 Environmental change, pathogens, and human linkages. Part 1: ecological case studies. *Ecological Research* 26(5) :863-864. DOI:10.1007/s11284-011-0875-7. (reviewed). Special Feature.
- Fuma S, Kawaguchi I, Kubota Y, Yoshida S, Kawabata Z, Polikarpov GG 2011,09 Effects of chronic  $\gamma$ -irradiation on the aquatic microbial microcosm: equi-dosimetric comparison with effects of heavy metals. *Journal of Environmental Radioactivity* . DOI:1016/j.jenvrad.2011.09.005. (reviewed).
- Takahara T, Yamanaka H, Suzuki A A, Honjo M, Minamoto T, Yonekura R, Itayama T, Kohmatsu Y, Ito T, Kawabata Z, 2011,07 Stress response to temperature fluctuation during a day of common carp *Cyprinus carpio* L. *Hydrobiologia* 675(1) :65-73. DOI:10.1007/s10750-011-0796-z. (reviewed).
- Minamoto T, Honjo M N, Yamanaka H, Uchii K, and Kawabata Z, 2011,07 Nationwide Cyprinid herpesvirus 3 contamination in natural rivers of Japan. *Research in Veterinary Science* . DOI:10.1016/j.rvsc.2011.06.004. (reviewed).
- Minamoto T, Honjo M N, Yamanaka H, Tanaka N, Itayama T, Kawabata Z, 2011,06 Detection of cyprinid herpesvirus-3 DNA in Lake Plankton. *Research in Veterinary Science* 90(3) :530-532. DOI:10.1016/j.rvsc.2010.07.006. (reviewed).
- Kawabata Z, 2011 Ecosystem conservation to attenuate environmental diseases. *Japanese Journal of Zoo and Wildlife Medicine* 16(2) :83-88. (reviewed). In Japanese with English summary.
- Minamoto T, Yamanaka H, Takahara T, Honjo M N, Kawabata Z, 2011 Surveillance of fish species composition using environmental DNA. *Limnology* . DOI:10.1007/s10201-011-0362-4. (reviewed). in press.

### [Research Presentations]

#### [Oral Presentation]

- Kawabata Z, Environments-Pathogen-Host Linkage, Symposium on Interactions of Pathogen-Host with Environments. The East Asian Federation of Ecological Societies, 2012,03,21, Otsu, Japan.
- Kawabata Z, Summary and perspectives, Symposium on Interactions of Pathogen-Host with Environments. The East Asian Federation of Ecological Societies, 2012,03,21, Otsu, Japan.
- Takahara T, Doi H, Minamoto T, Yamanaka H, and Kawabata Z, Estimation of aquatic vertebrate biomass using environmental DNA. The 59th Annual Meeting of Ecological Society of Japan, 2012,03,17-2012,03,21, Otsu, Japan.
- Honjo N M, Minamoto T, and Kawabata Z, Seasonal and spatial distribution of Cyprinid herpesvirus 1 and Cyprinid herpesvirus 2 in Lake Biwa, Japan. The 59th Annual Meeting of Ecological Society of Japan, 2012,03,17-2012,03,21, Otsu, Japan.
- Takahara T, Doi H, Minamoto T, Yamanaka H, and Kawabata Z, Detection and Quantification of Fish Presence/Biomass using Environmental DNA to Monitor. Population SustainabilityHiroshima International Symposium on Sustainability Sciences, 2012,03,08, Hiroshima.
- Kawabata Z, Environment-pathogen-human linkage: Observing and conceptualization. Ecological Seminar, 2012,01,13, Center for Ecological Research, Kyoto University, Otsu.
- Kawabata Z, Synthesis, Beyond Collapse: Transformation of human-environmental relationships, past, present and future. RIHN 6 th International Symposium, 2011,10,28, Kyoto.
- Kawabata Z, Linkage of environmental alteration, pathogen and human. Symposium on Emergence of viral Diseases: Ecology and Evolution of Koi Herpes Virus, 2011,06,04-2011,06,06, Muenster, Germany.

**KODA Ryosuke**

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Project Researcher

**Born in 1983.****[Higher Degrees]**

PhD. (Kyoto University, 2011)

**[Fields of Specialization]**

Forest Ecology

Mammalogy

**—Achievements—****[Papers]***[Original Articles]*

- Koda R, Fujita N. 2011,08 Is deer herbivory directly proportional to deer population density? Comparison of deer feeding frequencies among six forests with different deer density. *Forest Ecology and Management* 262(3) :432-439. DOI:10.1016/j.foreco.2011.04.009. (reviewed).
- Matsui K, Horii A, Yanagi T, Morino S, Imamura A, Koda R, Tsujino R, Yumoto T, Takada K. 2011,05 The status of forest vegetation and sika deer in the Zenki region, Mt. Ohmine. *Japanese Journal of Conservation Ecology* 16(1) :111-119. (in Japanese) (reviewed).

**[Research Presentations]***[Poster Presentation]*

- Koda R, Amartuvshin N, Amartuvshin S, Fujita N. Soil alkalization by overgrazing can delay the recovery of pastureland in Mongolia.. The 2012 international Planet Under Pressure conference, 2012,03,26-2012,03,29, London International Convention Centre, Excel, London, UK.
- Koda R, Amartuvshin S, Amartuvshin N, Fujita N. Estimating method of livestock density in a small-scale and estimation of consumption rate of livestock in Mongolia.. The 5th EAFES International Congress, 2012,03,17-2012,03,21, Ryukoku University, Otsu, Shiga, Japan.
- Koda R, Tsujino R, Agetsuma N, Agetsuma-Yanagihara Y, Fujita N. Nonlinear responses of forest floor vegetation to deer density in forests with different forest managements.. The 2011 ESA Annual Meeting, 2011,08,07-2011,08,12, Austin Convention Center, Austin, Texas, USA.



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**KOSAKA, Yasuyuki**


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Project Researcher

**—Achievements—****[Papers]***[Original Articles]*

- Kosaka, Y., Riba, T., Riba, B., Riba, J., Saikia, B., Tag, H., Ando, K. 2012,03 Use and management of a diversity of plant resources in Arunachal Pradesh, India. Himalayan Study Monographs 13. (in Japanese) (reviewed).in press.

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**KUMAZAWA Terukazu**


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Assistant Professor

**Born in 1974 年.****[Higher Degrees]**

Dr of Engineering

**[Fields of Specialization]**

Environmental planning

Regional informatics

**—Achievements—****[Books]***[Chapters/Sections]*

- Terukazu Kumazawa, Takanori Matsui, Riichiro Mizoguchi 2011,04 Structuring Knowledge on a Resource-circulating Society. Tohru Morioka, Keisuke Hanaki and Yuuichi Moriguch (ed.) Establishing a Resource-circulating Society in Asia: Challenges Opportunnities. Sustainability Science, 3. United Nations University Press, New York, NY, USA, pp.37-51.
- Riichiro Mizoguchi, Kouji Kozaki, Osamu Saito, Terukazu Kumazawa, Takanori Matsui 2011,04 Structuring Knowledge Based on Ontology Engineering. Hiroshi Komiyama, Kazuhiko Takeuchi, Hideaki Shiroyama and Takashi Mino (ed.) Sustainability Science: A Multidisciplinary Approach. Sustainability Science, 1. United Nations University Press, New York, NY, USA, pp.47-68.

**[Research Presentations]***[Poster Presentation]*

- Terukazu Kumazawa, Takanori Matsui, Michinori Kimura Development of Ontology System towards Implementing a Knowledge Platform for Utilizing Natural Resources in a Regional Community. Pacific Neighborhood Consortium Annual Conference (PNC 2011), 2011,10,19-2011,10,21, Bangkok , Thailand. [Poster Competition Award 受賞].

- Yasuyo Fujii, Yuuki Daitoku, Ayasa Imamura, Masahiko Wada, Ryo Sekiya, Terukazu Kumazawa, Akira Shibata, Hidehiko Kanegae The Effects of Biochar on Cultivated Plants - in Case of Kameoka Field -. 2nd Asia Pacific Biocha Conference(APBC KYOTO 2011, 2011,09,15-2011,09,18, Nakagyou-ku, Kyoto, Japan.

## MAKIBAYASHI, Keisuke

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Senior Project Researcher

### **Born in 1972.**

#### **[Academic Career]**

Department of Literature, Hiroshima University, Ph.D Course (2004)  
 Postgraduate, Department of Archaeology, Beijing University (2000)  
 Postgraduate, Department of Literature, Hiroshima University (1998)  
 Department of Literature, Hiroshima University, M.Course (1997)  
 Department of History, Kumamoto University (1995)

#### **[Professional Career]**

Assistant, 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)  
 Researcher, RIHN(2008)

#### **[Higher Degrees]**

Ph.D (Literature) (Hiroshima University, 2004)

#### **[Fields of Specialization]**

Archaeology

#### **[Academic Society Memberships]**

Japanese Archaeological Association  
 Society of Archaeological Studies  
 Japanese Society for Chinese Archaeology  
 Study Group of Furnace

### **—Achievements—**

#### **[Papers]**

##### *[Original Articles]*

- MAKIBAYASHI Keisuke 2011,07 Diversity and Unity in the Transformation of Chinese Culture. Things Talk: Culture from the Perspective of Mingu and Material Culture. International Center for Folk Culture Studies, Kanagawa city, pp.51-60. (in Japanese)

#### **[Research Presentations]**

##### *[Oral Presentation]*

- MAKIBAYASHI, Keisuke Rice Farming Culture in Lower and Middle Yangtze is not One but Diverse. Hemudu Culture International Forum, 2011,05,27-2011,05,28, Yuyao, China.

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**MASUDA Tadayoshi**


---

Senior Project Researcher

**[Higher Degrees]**

Ph.D. in Agricultural and Resource Economics (University of Hawaii, 2007)

M.A. in Food Research / International Development Policy (Stanford University, 1997)

B.A. in Agricultural and Forestry Economics (Kyoto University, 1989)

**[Fields of Specialization]**

Agricultural and Resource Economics

**[Academic Society Memberships]**

International Association of Agricultural Economics

International Food &amp; Agribusiness Management Association

Agricultural and Applied Economics Association

Western Agricultural Economics Association

**[Awards]**

Best Paper Award. (2012) International Food and Agribusiness Management Association (IFAMA) 22nd Annual World Forum and Symposium, Shanghai, China.

Graduate Student Teaching Award of Merit. (2003) North American College and Teachers of Agriculture and the University of Hawaii College of Tropical Agriculture &amp; Human Resources.

Gamma Sigma Delta (Honor Society of Agriculture). (2002)

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Bam H.N. Razafindrabe, Satoshi Saito, Kiyoyuki Yaota, Tadayoshi Masuda, Ryohei Kada. Impacts of Ecological Risks to Food and Health Security in Laguna Lake Region, the Philippines.. Global Risk Forum Davos One Health Summit 2012, 2012, 02, 19–2012, 02, 23, Davos, Switzerland.
- Masuda, Tadayoshi, Fuwa, N., and R. Kada. Consumer Behavior and Perception of Food & Health Security: The Case of Tilapia and Drinking Water Consumption in the Santa Rosa Sub-Watershed, Laguna, the Philippines. 14th World Lake Conference, 2011, 10, 31–2011, 11, 04, Austin, TX.
- Masuda, Tadayoshi, Yanagida, J.F., Bittenbender, H.C., Fleming, K.D., and V. Easton-Smith. Marketing Strategies Contributing Regional Welfare: Evidence from the Kona Coffee Industry in Hawaii. Selected Paper prepared for presentation at the International Food and Agribusiness Management Association (IFAMA) 21st. Annual World Forum and Symposium, 2011, 06, 20–2011, 06, 23, Frankfurt, Germany.
- Masuda, Tadayoshi and R. Kada. Agricultural Revival by Utilizing Biofuel Crops: How to Rehabilitate the Farmland Contaminated with Radioactive Materials or Damaged from Seawater After the 3/11 East Japan Earthquake and Tsunami?. Selected Paper prepared for presentation at the 17th Annual Conference of the International Sustainable Development Research Society (ISDRS), 2011, 05, 08–2011, 05, 10, Columbia University, New York, NY.

*[Poster Presentation]*

- Bam H. N. Razafindrabe, Kiyoyuki Yaota, Satoshi Saito, Tadayoshi Masuda, Ryohei Kada EcoHealth: How Changing Environment and Climate affect Human Health and Livelihood Security in the Philippines. Planet Under Pressure, 2012, 03, 26–2012, 03, 29, ExCel Centre East International Conference Centre, London, U.K..

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**MINAMOTO, Toshifumi**

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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]*

- Honjo, M. N., Minamoto, T., Kawabata, Z. 2012,03 Reservoirs of Cyprinid herpesvirus 3 (CyHV-3) DNA in sediments of natural lakes and ponds. *Vet. Microbiol.* 155(2-4) :183-190. DOI:10.1016/j.vetmic.2011.09.005. (reviewed).
- Minamoto, T., Wada, T., Shimizu, I. 2012,01 A new method for random mutagenesis by error-prone polymerase chain reaction using heavy water. *J. Biotech.* 157(1) :71-74. DOI:10.1016/j.jbiotec.2011.09.012. (reviewed).
- Kawabata, Z., Minamoto, T., Honjo, M. N., Uchii, K., Yamanaka, H., Suzuki, A. A., Kohmatsu, Y., Asano, K., Itayama, T., Ichijo, T., Omori, K., Okuda, N., Kakehashi, M., Nasu, M., Matsui, K., Matsuoka, M., Kong, H., Takahara, T., Wu, D., Yonekura, R 2011,11 Environment-KHV-carp-human linkage as a model for environmental diseases. *Ecol. Res.* 26(6) :1011-1016. DOI:10.1007/s11284-011-0881-9. (reviewed).
- Takahara, T., Yamanaka, H., Suzuki, A. A., Honjo, M. N., Minamoto, T., Yonekura, R., Itayama, T., Kohmatsu, Y., Ito, T., Kawabata, Z. 2011,10 Stress response to daily temperature fluctuation in common carp *Cyprinus carpio* L. *Hydrobiologia* 675(1) :65-73. DOI:10.1007/s10750-011-0796-z. (reviewed).

- Minamoto, T., Honjo, M. N., Yamanaka, H., Tanaka, N., Itayama, T., Kawabata, Z. 2011,06 Detection of cyprinid herpesvirus-3 DNA in lake plankton. Res. Vet. Sci. 90(3) :530-532. DOI:10.1016/j.rvsc.2010.07.006. (reviewed).

### [Research Presentations]

#### [Oral Presentation]

- Uchii, K., Minamoto, T., Kawabata, Z. Persistence of an emerging Cyprinid herpesvirus 3 in a wild host population. Joint Meeting of The 59th Annual Meeting of ESJ and The 5th EAFES International Congress, 2012,03,17-21,02,03,21, Otsu City, Shiga, Japan. (in Japanese)
- Honjo, M. N., Minamoto, T., Kawabata, Z. Seasonal and spatial distribution of Cyprinid herpesvirus 1 and Cyprinid herpesvirus 2 in Lake Biwa, Japan. Joint Meeting of The 59th Annual Meeting of ESJ and The 5th EAFES International Congress, 2012,03,17-2012,03,21, Otsu City, Shiga, Japan.
- Takahara, T., Doi, H., Minamoto, T., Yamanaka, H., Kawabata, Z. Estimation of aquatic vertebrate biomass using environmental DNA. Joint Meeting of The 59th Annual Meeting of ESJ and The 5th EAFES International Congress, 2012,03,17-2012,03,21, Otsu City, Shiga, Japan. (in Japanese)
- Minamoto, T., Kawabata, Z. Ecological analysis of infectious diseases. Young Scientist Forum on Infectious Diseases, 2012,02,02-2012,02,04, Nagasaki, Japan. (in Japanese)

#### [Poster Presentation]

- Minamoto, T., Honjo, M. N., Kawabata, Z. Dynamics of Cyprinid herpesvirus 3 in natural environments in Japan. 4th Congress of European Microbiologists, FEMS 2011, 2011,06,26-2011,06,30, Geneva, Switzerland.

#### [Invited Lecture / Honororary Lecture / Panelist]

- Minamoto, T. Dynamics of koi herpesvirus and related factors in freshwater environments. Joint Meeting of The 59th Annual Meeting of ESJ and The 5th EAFES International Congress, 2012,03,17-2012,03,21, Otsu City, Shiga, Japan.
- Minamoto T. and the members of RIHN C-06 project Koi herpesvirus disease as a model of environmental disease. The 6th RIHN International Symposium, 2011,10,26-2011,10,28, Kyoto, Japan.
- Minamoto, T., Honjo, M. N., Yamanaka, H., Uchii, K., Kawabata, Z. KHV dynamics in natural freshwater environments. Emergence of Viral Diseases: Ecology and Evolution of Koi Herpes Virus, 2011,07,04-2011,07,06, Muenster, Germany.

## MIYAZAKI, Hidetoshi

Project Researcher

### Born in 1975.

#### [Academic Career]

Department 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—****[Papers]***[Original Articles]*

- Hidetoshi MIYAZAKI, Yudai ISHIMOTO and Ueru TANAKA 2012,03 The Importance of Sweet Potatoes in Rural Villages in Southern Province, Zambia. Working Paper on Social-Ecological Resilience Series 15 : 1-18.
- Yudai ISHIMOTO and Hidetoshi MIYAZAKI 2012,03 Historical Change of Neighborhood Community and Marriage Range of Gwembe Tonga in Southern Zambia.. Working Paper on Social-Ecological Resilience Series 2012-16 :1-19.

**[Research Presentations]***[Oral Presentation]*

- H. Miyazaki, Masako Miyashita, Jungo Nishio, Ueru Tanaka and Hitoshi Shinjo Ecological Resilience of the Farms under Various Agro-Ecosystems in Southern Province of Zambia.. Resilience International Symposium Building Social-Ecological Resilience in a Changing World, 2011,06,18-2011,06,20, Kyoto Japan.
- Hitoshi Shinjo, Kaori Ando, Yoko Noro, Hajime Kuramitsu, Shotaro Takenaka, Reiichi Miura, Ueru Tanaka, Shozo Shibata, Hidetoshi Miyazaki, Sesele Sokotela Ecological Resilience under Slash-and-Burn Agriculture and Fallowing in a Miombo Ecosystem in Eastern Province of Zambia.. Resilience International Symposium Building Social-Ecological Resilience in a Changing World, 2011,06,18-2011,06,20, Kyoto Japan.
- Hiroyuki Shimono, Hidetoshi Miyazaki, Hitoshi Shinjo, Hiromitsu Kanno and Takeshi Sakurai Effects of Planting Date on Maize Productivity in Zambia.. Resilience International Symposium Building Social-Ecological Resilience in a Changing World, 2011,06,18-2011,06,20, Kyoto Japan.
- Mitsunori Yoshimura, Megumi Yamashita, Keiichiro Matsumura, Hidetoshi Miyazaki, Yudai Ishimoto Adaptation and Coping Behavior for Food Security in Southern Province.. Resilience International Symposium Building Social-Ecological Resilience in a Changing World, 2011,06,18-2011,06,20, Kyoto Japan.

*[Poster Presentation]*

- Hiroyuki Shimono, Hidetoshi Miyazaki, Hitoshi Shinjo, Hiromitsu Kanno, Takeshi Sakurai Is the optimal planting date for high maize productivity chosen by Zambian smallholders?. 7th Asian Crop Science Conference, 2011,09,27-2011,09,30, Bogor, Indonesia..
- H. Miyazaki, Y. Ishimoto, M. Yamashita, H. Shinjo, U. Tanaka Adaptive and Coping Behaviors with Rainfall Fluctuation by Small-Scale Farmers in Southern Province of Zambia. Resilience International Symposium Building Social-Ecological Resilience in a Changing World, 2011,06,18-2011,06,20, Kyoto Japan.

## 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 Center 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 of 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]*

- Minamoto K, Mascie-Taylor CG, Karim E, Moji K, Rahman M. 2012,03 Short- and long-term impact of health education in improving water supply, sanitation and knowledge about intestinal helminths in rural Bangladesh.. *Public Health* . DOI:10.1016/j.puhe.2012.02.003.
- Kaneko S, K'opiyo J, Kiche I, Wanyua S, Goto K, Tanaka J, Changoma M, Ndemwa M, Komazawa O, Karama M, Moji K, Shimada M. 2012,02 Health and Demographic Surveillance System in the Western and Coastal Areas of Kenya: An Infrastructure for Epidemiologic Studies in Africa.. *J Epidemiol* .
- Milojevic A, Armstrong B, Hashizume M, McAllister K, Faruque A, Yunus M, Kim Streatfield P, Moji K, Wilkinson P. 2012,01 Health effects of flooding in rural Bangladesh.. *Epidemiology* 23(1) :107-115. DOI:10.1097/EDE.0b013e31823ac606.
- Kounnavong S, Sunahara T, Hashizume M, Okumura J, Moji K, Boupha B, Yamamoto T. 2011,12 Anemia and Related Factors in Preschool Children in the Southern Rural Lao People's Democratic Republic.. *Trop Med Health* 39(4) :95-103. DOI:10.2149/tmh.2011-13.
- Kounnavong S, Sunahara T, Mascie-Taylor CG, Hashizume M, Okumura J, Moji K, Boupha B, Yamamoto T. 2011,11 Effect of daily versus weekly home fortification with multiple micronutrient powder on haemoglobin concentration of young children in a rural area, Lao People's Democratic Republic: a randomised trial.. *Nutr J* 10 :129. DOI:10.1186/1475-2891-10-129.

- Pongvongsa T, Nonaka D, Kobayashi J, Mizoue T, Phongmany P, Moji K. 2011,09 Determinants of monthly reporting by village health volunteers in a poor rural district of Lao PDR.. Southeast Asian J Trop Med Public Health 42(5) :1269-81.
- Maswanya ES, Moji K, Aoyagi K, Takemoto T. 2011,06 Sexual behavior and condom use in female students in Dar-es-Salaam, Tanzania: differences by steady and casual partners.. East Afr J Public Health 8(2) :69-76.
- Kagawa M, Tahara Y, Moji K, Nakao R, Aoyagi K, Hills AP. 2011 Secular changes in growth among Japanese children over 100 years (1900-2000).. Asia Pac J Clin Nutr 20(2) :180-180.

## MORI Wakaha

---

Senior Project 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

Linguistics

Cuneiform Studies

### **[Academic Society Memberships]**

The Linguistic Society of Japan

The Society for Near Eastern Studies in Japan

## —Achievements—

### **[Books]**

#### *[Chapters/Sections]*

- Maekawa, K. and M. Mori 2012,01 "Dilmun, Magan, and Meluhha in Early Mesopotamian History: 2500-1600 BC".. Witzel, M. and T. Osada (ed.) Cultural Relations between the Indus and the Iranian Plateau during the Third Millennium BCE . Harvard Oriental Series. Opera Minora Vols. 7.. Harvard University Press, Boston, pp.237-262.



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**NAITO, Daisuke**


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Assistant Professor

**Born in 1978.****[Academic Career]**

Graduate School of Asian and African Area Studies, Kyoto University, PhD Course (2008)

Graduate School of Asian and African Area Studies, Kyoto University, M. Course (2005)

Faculty of Agriculture, Kyoto University (2003)

**[Professional Career]**

Visiting Fellow, Program in Agrarian Studies, Yale University (2010–11)

Research Fellow (Junior Specialist), University of California, Santa Cruz (2010)

Research Fellow, The Japan Society for the Promotion Science / Kyoto University, Center for Integrated Area Studies (CIAS) (2008–11)

Project Researcher, Research Institute for Humanity and Nature (2007)

**[Higher Degrees]**

M. Sc. Area Studies (Kyoto University, 2005)

Ph.D. Area Studies (Kyoto University, 2010)

**[Fields of Specialization]**

Southeast Asian Area Studies

Political Ecology

**[Academic Society Memberships]**

Japanese Forest Society

The Japan Society of Tropical Ecology

**[Awards]**

Matsushita Asia Scholarship (2006)

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Naito, D. Environmental Audit as Ritual Practice. The 2012 Annual Meeting of Association of American Geographers, 2012, 02, 24–2012, 02, 28, New York, USA.

*[Invited Lecture / Honorary Lecture / Panelist]*

- Naito, D. “Auditing Sustainability and the Rural Community: Social Impacts of Forest Certification in East Malaysia.”. Yale Agrarian Studies Colloquium, April 2011, Yale Program in Agrarian Studies, Yale University.

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**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 University, 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—**

**[Research Presentations]**

*[Oral Presentation]*

- NAKAMURA, Oki Diversity and Change in Jomon Cultural Landscapes of Toyama Bay, Japan. Inland Seas in a Global Perspective: International Conference on the Archaeology, History and Heritage Management of Coastal Landscapes, 2012, 03, 16–2012, 03, 17, Leiden, Netherland.

**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 staff, 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 Maritime Societies

**[Academic Society Memberships]**

Japan Association for African Studies (2003-)

Japanese Society of Cultural Anthropology (2008-)

Japan Association for Religious Studies (2008-)

Japan Association for Middle East Studies (2009-)

Japan Association for Nilo-Ethiopian Studies (2011-)

**—Achievements—**

**[Books]**

*[Chapters/Sections]*

- NAKAMURA, Ryo 2011 "Seafood Preservation and Economic Strategy of the Dried Fish Trade in Kilwa Kisiwani, Southern Swahili Coast, Tanzania". Sam Maghimbi, Isaria N. Kimambo, and Kazuhiko SUGIMURA (ed.) Comparative Perspectives on Moral Economy: Africa and Southeast Asia. Dar es Salaam University Press, Dar es Salaam, Tanzania, pp.273-291.
- NAKAMURA, Ryo 2011,05 "Spirits in the Swahili Maritime Society: Case of Kilwa Island, Tanzania". SHIMADA, Yoshihito (ed.) Aspects of Shamanism. Asia Yugaku, 141. Bensey Publishing Inc., Tokyo, pp. 168-192. (in Japanese)

**[Papers]**

*[Original Articles]*

- NAKAMURA, Ryo 2012,03 "Maritime Environments of Swahili Civilizations: The Mangrove Inland Sea of Kilwa Island, Tanzania". Afro-Eurasian Inner Dry Land Civilizations 1 :81-89. (reviewed).
- NAKAMURA, Ryo 2011,04 "Multi-ethnic Coexistence in Kilwa Island, Tanzania: The Basic Ecology and Fishing Cultures of a Swahili Maritime Society". SHIMA: The International Journal of Research into Island Cultures 5(1) :44-68. (reviewed).

**[Research Presentations]**

*[Oral Presentation]*

- NAKAMURA, Ryo "Multi-ethnic Coexistence in a Swahili Maritime Society: Basic Ecology and Fishing Culture on Kilwa Island, Tanzania". AA Science Platform Program: The 4th International Symposium, 50th Anniversary of Africa Nation State as Renaissance, 2011,10,08-2011,10,10, Nagoya University, Aichi, Japan.

NAKANO, Takanori

Professor

**Born in 1950.**

**[Academic Career]**

Department of Geology, Faculty of Science, University of Tsukuba, D.Course(1982)

Department of Geology, Faculty of Science, Tokyo University of Education, M.Course(1977)

Department of Geology, Faculty of Science, Tokyo University of Education(1974)

#### **[Professional Career]**

Professor, Research Institute for Humanity and Nature(2004)

Associate Professor, Institute of Geoscience, University of Tsukuba(1992)

Assistant Professor, Institute of Geoscience, University of Tsukuba(1982)

#### **[Higher Degrees]**

D.Sc(University of Tsukuba, 1982)

M.Sc.(Tokyo University of Education, 1977)

#### **[Fields of Specialization]**

Environmental Resource Geology

Isotope Geochemistry

#### **[Academic Society Memberships]**

The Society of Resource Geology

The Geological Society of Japan

Japanese Association of Hydrological Sciences

The Society of Economic Geologist

#### **[Awards]**

Ecological Research Award(2009)

### **—Achievements—**

#### **[Books]**

##### *[Chapters/Sections]*

- Nakano Takanori 2012,03 Community-building network by researchers and regional groundwater collaboration research. HUMAN -Invitation to the forest of knowledge-. Heibonsha Ltd., Bunkyo-ku, Tokyo city, pp.92-96. (in Japanese)
- Nakano Takanori 2011,05 Treceability analysis of groundwater by the water quality component. Makoto Taniguchi (ed.) Groundwater flow Resources and circulation of Monsoon Asia. Kyoritu shuppan, Bunkyo-ku, Tokyo, pp.142-162. (in Japanese)

#### **[Papers]**

##### *[Original Articles]*

- Pankaj Kumar, Maki Tsujimura M., Nakano, T. and Tokumasu M. 2012,02 The effect of tidal fluctuation on ground water quality in coastal aquifer of Saijo plain, Ehime prefecture, Japan. Desalination 286 :166-175. DOI:10.1016/j.desal.2011.11.017. (reviewed).
- Ohta T., Mahara, Y., Kubota, T., Saito, Y., Furutani, S., Fujii, T., Ando, A., Nakata, E., Nakano, T. and Abe, Y 2011 Radionuclides in ancient relicts obtained from the Matsusaki site and the Hirohara shellmound on the Pacific coast of Japan. RADIOCARBON 52(2-3) :526-533. (reviewed).
- Kusaka, T. Nakano, T. Yumoto, M. Nakatsukasa 2011 Strontium isotope evidence of migration and diet in relation to ritual tooth ablation : A case study from the Inariyama Jomon site, Japan. Journal of Archaeological Science.. Journal of Archaeological Science 38(1) :166-174. (reviewed).
- Ando, A., Khim, B-K., Nakano, T., Takata, H. 2011 Chemostratigraphic documentation of a complete Miocene intermediate-depth section in the Southern Ocean :Ocean Drilling Program Site 1120, Campbell Plateau of New Zealand. Marine Geology 279 :52-62. (reviewed).
- Hosono, T., Delinom, R., Nakano, T., Kagabu, M., Shmada, J. 2011 Evolution model of  $\delta^{34}\text{S}$  and  $\delta^{18}\text{O}$  in dissolved sulfate in volcanic fan aquifers from recharge to coastal zone and through the Jakarta urban area, Indonesia. Science of the Total Environment 409 :2541-2554. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Nakano Takanori Groundwater diagnosis - Citizen collaborative type by water quality map about many items. 2011 autumn lecture meeting of Japanese association of groundwater hydrology, 2011,10,20, Hiroshima Grand Intelligent Hotel. (in Japanese)
- Takanori Nakano Network for town planning starting from water quality diagnosis; toward a new collaboration between researchers and regions . Sit-in-a-circle meeting for thinking about the past, present and future of Otsuchi, 2011,10,10, Otsuchicyo central public hall . (in Japanese)
- Nakano Takanori Water and biological qualitative diversity Geo-diversity produces. Geo-diversity research meeting, 2011,10,07-2011,10,08, JAMSTEC Tokyo office. (in Japanese)
- Nakano Takanori Isotope analysis facilities of RIHN and Environmental traceability research. 1st Isotope Environmental Studies Symposium , 2011,09,29-2011,09,30, Research Institute for Humanity and Nature. (in Japanese)
- Takanori Nakano Summary analysis of water samples surveyed in March. , 2011,04,15, Yokohama National University. (in Japanese)
- Takanori Nakano Report of water health team. Moji project research meeting, 2011,04,01, RIHN Lecture Hall. (in Japanese)

*[Invited Lecture / Honorary Lecture / Panelist]*

- Takanori Nakano Use of the JaSPA system; Examine living things from the diversity of water quality. Diverse environment and living things hiding in Chugoku and Shikoku area - Epitome of the global environment [JaSPA system], 2011,05,14, Kagawa University Saiwai kita Campus. (in Japanese)

**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—****[Papers]***[Original Articles]*

- Ukita, J., Narama, C., Tadono, T., Yamanokuchi, T., Tomiyama, N., Kawamoto, S., Abe, C., Uda, T., Yabuki, H., Fujita, K., Nishimura, K. 2011 Glacial Lake Inventory of Bhutan using ALOS Data: Part I: Methods and Preliminary Results. *Annals of Glaciology* 52(58) :65-71. (reviewed).

**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—

**[Papers]**

*[Original Articles]*

- Ren'ya SATO, Ruichen JIA, Kohei MATSUNAGA and Hiroshi NAWATA 2012,03 Villages and rural economy in Loess Plateau where ten years have passed since the Grain for Green Project started: Present conditions and regional differences. *Bulletin of the Graduate School of Social and Cultural Studies, Kyushu University* 18 :55-70. (in Japanese) (reviewed).
- Hiroshi NAWATA 2012,03 "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". *Afro-Eurasian Inner Dry Land Civilisation* 1 :67-73. (reviewed).
- Hiroshi NAWATA 2011,09 Water Study for Peace: What I Learned from Professor Iwao Kobori in China, Tunisia, Egypt, and Algeria (2005-2010). *Journal of Arid Land Studies* 21(2) :63-66. (reviewed).
- Buho HOSHINO, Maino YONEMORI, Karina MANAYEVA, Abdelaziz Karamalla GAIBALLA, Kiyotsugu YODA, Mahgoub SULIMAN, Mohamed ELGAMRI, Hiroshi NAWATA, Yusuke MORI, Shunsuke YABUKI, Shigeto AIDA 2011,07 Remote sensing methods for the evaluation of the mesquite tree (*Prosopis juliflora*) environmental adaptation to semi-arid Africa. *IEEE IGARSS 2011(1)* :1910-1913. (reviewed).
- Buho HOSHINO, Hiroshi NAWATA, Ruichen JIA, Karamalla ABDELAZIZ, and Kiyotsugu YODA 2011,04 Remote Sensing Methods of Vegetation and Surface Run-off Change in Eastern Sudan Area. *Journal of Rakuno Gakuen University* 35(2) :33-43.

**[Research Presentations]**

*[Oral Presentation]*

- Hiroshi NAWATA Visiting Kiriwina, Trobriand Islands. 2011 Field Research Report for Grant-in-Aid B "Comparative studies on early agriculture and pastoralism in Afro-Eurasia", 2012,03,12, Kyoto. (in Japanese)
- Hiroshi NAWATA Textualization of the 48th field note in Mongolia by Tadao Umesao. Archives in Future: Academic use of field research resources in Mongolia by Tadao Umesao, 2012,02,11-2012,02,12, Tokyo.
- Hiroshi NAWATA Understanding the Mesquite Issues at the Village Level in Sudan: To Combat a Negative Heritage of "Combating Desertification". International Symposium "Mesquite invasion and land degradation in Sudan: Overview", 2011,10,13, Arid Land Research Center, Tottori, Japan.
- Hiroshi NAWATA Red Sea Studies in RIHN 'Arab Subsistence' Project. RIHN/RSU MOU Symposium "Red Sea Studies: Retrospect & Prospect", 2011,10,04, RIHN, Kyoto, Japan.
- Hiroshi NAWATA and Abdel Gabar BABIKER RIHN/SUST Research Cooperation on Comprehensive Measures to Manage the Alien Invasive Species Mesquite in Sudan. Present State and Issues of Cooperation between International Academic Research and Development Assistance in Eastern Sudan: Focusing on Agriculture, Livelihood, and Environmental Sectors, 2011,09,19, RIHN, Kyoto, Japan.
- Shun ISHIYAMA, Hiroshi NAWATA, Mutasim Mekki, and Mussab Hassan Study on Rain-fed Agricultural System of Semi-arid Zone, Gadarif State, Sudan, through SATREPS: Towards Local-to-local Technology Transfer. Present State and Issues of Cooperation between International Academic Research and Development Assistance in Eastern Sudan: Focusing on Agriculture, Livelihood, and Environmental Sectors, 2011,09,19, RIHN, Kyoto, Japan.
- Hiroshi NAWATA Introduction: How Will You Live without Oil? Part 3. The 45th RIHN Public Seminar, 2011,09,09, RIHN, Kyoto. (in Japanese)

- Hiroshi NAWATA Possibilities and problems of foreign workers for environmental conservation in Saudi Arabia: Participation of refugees in development assistance. IUAES/AAS/ASAANZ Conference 2011, Knowledge and Value in a Globalising World: Disentangling Dichotomies, Querying Unities, 2011,07,05-2011,07,08, Perth, Australia.
- Hiroshi NAWATA What I learned from Professor Iwao Kobori: In China, Tunisia, Egypt, and Algeria. The 1st International Conference on Arid Land "Desert Technology X", 2011,05,24-2011,05,28, Narita-Tokyo, Japan.
- Hiroshi NAWATA To combat a negative heritage of combating desertification: Developing comprehensive measures to control the alien invasive species mesquite (*Prosopis juliflora*) in Sudan. The 1st International Conference on Arid Land "Desert Technology X", 2011,05,24-2011,05,28, Narita-Tokyo, Japan.
- Hiroshi NAWATA Arid Land Civilization focusing on Coastal Zone of the Arid Tropics: A View point for Red Sea Societies. Meeting of Red Sea Societies Research, 2011,05,15, Tokyo University of Foreign Languages, Tokyo, Japan. (in Japanese)
- Hiroshi NAWATA, Shun ISHIYAMA, and Mutasim Mekki Subsistence of farmers from western Sudan and West Africa in Gadarif State at eastern edge of Sahel zone, Sudan. Meeting of Red Sea Societies Research, 2011,05,15, Tokyo University of Foreign Languages.
- Hiroshi NAWATA 'Egyptian Revolution' from the view point of global environmental studies. The 17th Resource Program Meeting, 2011,04,26, RIHN, Kyoto, Japan. (in Japanese)
- Hiroshi NAWATA My sketch for future design: Solve the Sagrada Familia by Arabic science. The 30th Shusen Salon, 2011,04,26, RIHN, Kyoto, Japan. (in Japanese)
- Hiroshi NAWATA, Shun ISHIYAMA, and Mutasim Mekki Some issues of sorghum-centered rain-fed agricultural systems in the Gadarif state, eastern Sudan. The 20th Annual Meeting, Japan Association for Nilo-Ethiopian Studies, 2011,04,23-2011,04,24, Nagasaki University, Nagasaki, Japan. (in Japanese)

## NISHIMOTO, Futoshi

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Project Researcher

### **Born in 1972.**

#### **[Academic Career]**

Graduate School of Social Sciences, Hitotubashi University, D.Course(2009)

Graduate School of Social Sciences, Hitotubashi University, M.Course(1998)

Faculty of Social Sciences, Hitotubashi University(1996)

#### **[Professional Career]**

Researcher, Research Institute for Humanity and Nature(2009)

Researcher, Center for Southeast Asian Studies, Kyoto University(2008)

Part-time Lecturer, Ritsumeikan University(2007)

Researcher, Research Institute for Humanity and Nature(2005)

Part-time Lecturer, Shibaura Institute of Technology(2004)

#### **[Higher Degrees]**

M.Soc. (Hitotsubashi University, 1998)

#### **[Fields of Specialization]**

Social Anthropology

Ethnography of Mainland Southeast Asia

Japan Society for Southeast Asian Studies



**[Academic Society Memberships]**

Japanese Society of Cultural Anthropology

Population Association of Japan

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Nishimoto, Futoshi et al. Use and perception of mosquito nets in a rural area of Laos. JSPS Asia Africa Science Platform Program The 2nd International Symposium on Human and Monkey Malaria, 2012, 03, 06–2012, 03, 07, Nha Trang City, Vietnam.
- Nishimoto, Futoshi et al. Long-term trend in fertility and infant mortality among the Tri people of Xepon: Implications for a coming livelihood transition. NAFRI International Symposium on Rethinking Ecosystem Services in the Context of Montane Region in Mainland Southeast Asia, 2011, 06, 19–2011, 06, 20, Vientiane, Lao PDR.

*[Poster Presentation]*

- Nishimoto, Futoshi et al. Reproductive histories of Phutai women in rural Laos. The 5th Laos National Health Research Forum, 2011, 09, 29–2011, 09, 30, Vientiane, Lao PDR.

**ONISHI, Masayuki**

Senior Project Researcher

**[Academic Career]**

Completed PhD Course, Department of Linguistics, Faculty of Arts, The Australian National University (1994)

Completed Graduate Diploma Course (TESOL), Faculty of Education, The University of Canberra (1989)

Completed Diploma Course (Bengali Language and Literature), Department of Bengali, Jadavpur University (1979)

Completed BA Course (English Language and Literature), Faculty of Arts, Tokyo University (1975)

**[Professional Career]**

Senior Research Fellow, Indus Project, RIHN (2007)

Visiting Fellow, Department of Linguistics, Max-Planck Institute (Evolutionary Anthropology) (2005)

Visiting Fellow, Department of Linguistics, RSPAS, The Australian National University (2003)

Professor, Faculty of International Studies, Meio University (1998)

Associate Professor, Faculty of International Studies, Meio University (1997)

Research Assistant, RCLT, The Australian National University (1995)

**[Higher Degrees]**

PhD (The Australian National University, 1995)

Graduate Diploma (The University of Canberra, 1989)

**[Fields of Specialization]**

Linguistic Typology

Descriptive Linguistics

**[Academic Society Memberships]**

Australian Linguistic Society

The Linguistic Society of Papua New Guinea

Okinawa Center of Language Study

—Achievements—

**[Books]**

*[Chapters/Sections]*

- Kazuya Inagaki, Nozomi Kodama, Masayuki Onishi, Toshiki Osada, Yoshinobu Takahashi, Hirofumi Teramura 2012, 03 § § 1.1-1.2, § 2, § 3.1.1, § § 3.1.4-3.1.9, § 3.1.11, all tables. Toshiki Osada, Masayuki Onishi (ed.) Language Atlas of South Asia. Harvard Oriental Series, Opera Minora, 6. Department of South Asian Studies, Harvard University, Massachusetts, USA, pp.i-164.

**[Editing]**

*[Editing / Co-editing]*

- Toshiki Osada, Masayuki Onishi (ed.) 2012, 03 Language Atlas of South Asia. Harvard Oriental Series, Opera Minora, 6. Department of South Asian Studies, Harvard University, Cambridge, Massachusetts, USA, 164pp.

**[Research Presentations]**

*[Invited Lecture / Honorary Lecture / Panelist]*

- Masayuki Onishi The Language and culture of Rajbansis from a global perspective (keynote speech). International workshop on Koch-Rajbansi language and culture, 2011, 09, 24-2011, 09, 25, Kokrajhar, Assam, India.
- Masayuki Onishi Documentation of endangered languages and cultures. Special Lecture, 2011, 09, 22, North Bengal University, Siliguri, West Bengal, India.

**RAZAFINDRABE, Bam Haja Nirina**

Senior Project Researcher

**Born in 1971.**

**[Academic Career]**

Doctor of Philosophy, United Graduate School of Agricultural Sciences, Ehime University, Japan (2007)

M. Sc., Ehime University, Japan (2004)

M. Sc., Antananarivo University, Department of Water and Forests, Madagascar (2002)

Eng. in Water and Forests, Antananarivo University, Department of Water and Forests, Madagascar (1997)

**[Professional Career]**

Research Institute for Humanity and Nature, Senior Project Researcher (2010)

Yokohama National University, Global Center of Excellence Research Fellow (2009)

Kyoto University, JSPS Postdoctoral Fellow (2007)

Geographical Information and Environmental Sciences Training Center, Madagascar, Chief of Project (1999)

Antananarivo University, Department of Water and Forests, Madagascar, Teaching and Research Assistant (1997)

**[Higher Degrees]**

PhD (Ehime University, Japan, 2007)

**[Fields of Specialization]**

Disaster Risks and Watershed Management

**—Achievements—****[Research Presentations]***[Oral Presentation]*

- Bam H.N. Razafindrabe, Kiyoyuki Yaota, Satoshi Saito, Tadayoshi Masuda, Ryohei Kada EcoHealth: How Changing Environment and Climate affect Human Health and Livelihood Security in the Philippines. the Planet Under Pressure Conference: New Knowledge Towards Solutions, 2012, 03, 26–2012, 03, 29, London, UK, .
- Bam H.N. Razafindrabe, Satoshi Saito, Kiyoyuki Yaota, Tadayoshi Masuda, Ryohei Kada Impacts of Ecological Risks to Food and Health Security in Laguna Lake Region, Philippines. the Global Risk Forum Davos One Health Summit 2012, 2012, 02, 19–2012, 02, 23, Davos, Switzerland.
- Bam H.N. Razafindrabe, Ryohei Kada Understanding Flood Resilience in the Laguna Lake Region, Philippines. the 14th World Lake Conference on Lakes, Rivers, Groundwater and Coastal Areas, Understanding Linkages, 2011, 10, 31–2011, 11, 04, Austin, Texas, USA. .
- Bam H.N. Razafindrabe, Michael Cuesta, Rogelio Concepcion, Ryohei Kada Assessing Flood Risks in Laguna Lake Region, Philippines–Implications to Food and Health Security. the 11th International Society for Southeast Asian Agricultural Sciences (ISSAAS) Philippine National Convention and International Forum, 2011, 10, 25–2011, 10, 26, Clarkfield, Angeles City, Philippines.
- Bam H.N. Razafindrabe, Ryohei Kada Impacts of Ecological Risks to Food and Health Security in Laguna Lake Region, Philippines--Focus on Flood Risks Assessment.. the 7th ASAE International Conference on Meeting the Challenges Facing Asian Agriculture and Agricultural Economics Toward a Sustainable Future, 2011, 10, 13–2011, 10, 15, Hanoi, Vietnam.
- Bam H.N. Razafindrabe, Ryohei Kada Flood Resilience in a changing Climate and Environment –A Case-Study of the Laguna Lake Region, Philippines.. the 2nd World Congress on Cities and Adaptation to Climate Change, 2011, 06, 03–2011, 06, 05, Bonn, Germany..
- Bam H.N. Razafindrabe, Ryohei Kada Interlinkage between Ecological Risks and Food and Health Security in a Fast-Growing Environment –A Case-Study of the Laguna Lake Region, Philippines. the 17th Annual International Sustainable Development Research Conference on Moving Toward a Sustainable Future, 2011, 05, 08–2011, 05, 10, New York, USA. .

*[Poster Presentation]*

- Bam H.N. Razafindrabe, Kiyoyuki Yaota, Satoshi Saito, Tadayoshi Masuda, Ryohei Kada EcoHealth: How Changing Environment and Climate affect Human Health and Livelihood Security in the Philippines.. ‘Planet Under Pressure’ Conference, 2012, 03, 26–2012, 03, 29, London, UK, .

**SAITO, Satoshi (Tetsu)**

Project Researcher

**[Academic Career]**

Doctor of Environment Science (Graduate School of Environment and Information Sciences, Yokohama National University, Japan, 2004). Thesis title: Petrogenesis of the Miocene Kofu Granitic Complex; Syn-tectonic granitoids in the Izu collision zone, central Japan.

Master of Education (Graduate School of Education, Yokohama National University, Japa, 2004). Thesis title: Petrogenesis of the Miocene Kofu Plutonic Complex, central Japan (in Japanese).

Bachelor of Education (Faculty of Education, Yokohama National University, Japan, 1999). Thesis title: Petrological studies of the southern Kofu Plutonic Complex (in Japanese).

#### **[Professional Career]**

Research Assistant, Graduate School of Environment and Information Sciences, Yokohama National University, Japan (2004)

Research Assistant, Faculty of Education and Human Sciences, Yokohama National University, Japan (2005)

Lecturer, Hosei University Daini Junior High School, Japan (2005)

Part-time lecturer, Faculty of Education and Human Sciences, Yokohama National University, Japan (2005, 2006)

Research Assistant, Graduate School of Environment and Information Sciences, Yokohama National University, Japan (2006)

Research Associate, Department of Geology, University of Maryland, USA (2007)

Postdoctoral Researcher, Institute for Research on Earth Evolution (IFREE), Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan (2008)

Part-time lecturer, Faculty of Engineering, Yokohama National University, Japan (2009, 2010)

#### **[Higher Degrees]**

Doctor of Environment Science (Yokohama National University, Japan, 2004)

Master of Education (Yokohama National University, Japan, 2001)

Bachelor of Education (Yokohama National University, Japan, 1999)

#### **[Fields of Specialization]**

Geology

Igneous and metamorphic petrology

Isotope geochemistry

#### **[Academic Society Memberships]**

Japan Geoscience Union

The Geological Society of Japan

Japan Association of Mineralogical Sciences

The Geochemical Society of Japan

American Geophysical Union

### **—Achievements—**

#### **[Research Presentations]**

##### *[Oral Presentation]*

- Saito, S. Water Quality Mapping of Laguna Lake Watersheds: Case Study of Maring and Santo Domingo Watersheds, Philippines. International Workshop on EcoHealth: Linking Ecological Risks to Human Health - A Philippine Case Study-, JST-Young Researchers Feasibility Study Project, 2012,02,11, Research Institute for Humanity and Nature, Kyoto, Japan.
- Saito, S. Water Quality Mapping of Laguna Lake and its Watersheds. LAKEHEAD project joint meeting, 2011,08,05, University of the Philippines at Los Baños, Philippines.
- Saito S. Water Quality Mapping of Laguna Lake Watersheds. LAKEHEAD project meeting at LLDA, 2011,06,21, Laguna Lake Development Authority, Taytay, Philippines.

##### *[Poster Presentation]*

- Saito, S., Nakano, T., Shin, K.-C., Maruyama, S., Miyakawa, C., Yaota, K. and Kada, R. Water quality mapping of Laguna de Bay and its watershed, Philippines. American Geophysical Union, Fall Meeting Abstract H53K-1558, 2011,12,09, San Francisco, CA, USA.

- Arima, M. and Saito, S. Neogene granitoid plutons in the Izu Collision Zone, central Japan: transformation of juvenile oceanic arc into mature continental crust. American Geophysical Union, Fall Meeting, Abstract V21D-2529, 2011,12,06, San Francisco, CA, USA.
- Saito S. Various granitoid plutons in an ongoing arc-arc collision zone, the Izu collision zone, central Japan: implications for transformation from juvenile arc crust to continental crust. Hutton symposium VII : The Origin of Granites and Related Rocks, Abstracts p.128-129, 2011,07,08, Avila, Spain.

*[Invited Lecture / Honorary Lecture / Panelist]*

- Saito, S. and Nakano, T. Evaluation of water quality of Laguna Lake Watersheds. The 1st International Symposium on Managing Environmental Risks to Food and Health Security in the Laguna Lake Watersheds, Philippines, Abstract P28-30, 2011,06,03, Research Institute for Humanity and Nature, Kyoto, Japan (Oral presentation and panelist).
- Saito, S., Ishikawa, M., Arima, M and Tatsumi, Y. Influence of dry pore-spaces on the Vp, Vs, Vp/Vs, and Poisson's ratio of crustal rocks. Canadian Geophysical Union Annual meeting, Abstract p 136-137, 2011,05,18, Banff Park Lodge, Banff, Alberta, Canada (Invited talk).

## SASAKI, Naoko

Visiting 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—****[Papers]***[Original Articles]*

- Sasaki, N. and Takahara, H. 2011,06 Late-Holocene human impact on the vegetation around Mizorogaike Pond in northern Kyoto Basin, Japan: a comparison of pollen and charcoal records with archaeological and historical data. *Journal of Archaeological Science* 38(6) :1199–1208. DOI:10.1016/j.jas.2010.12.013. (reviewed). in press.

**SATO, Yo-Ichiro**

Deputy Director-General, Professor

**Born in 1952.****[Academic Career]**

Faculty of Agriculture, Kyoto University (1977)

Department of Agronomy, Kyoto University, M. Course (1979)

**[Professional Career]**

Assistant at Faculty of Agriculture, Kochi University (1981)

Research Associate at National Institute of Genetics (1983)

Associate Professor at Shizuoka University (1994)

Professor, Research Institute for Humanity and Nature (2004)

Deputy Director-General, Research Institute for Humanity and Nature (2008)

Director, Center for Coordination, Promotion and Communication (2011)

**[Higher Degrees]**

D. Agr. (Kyoto University, 1986)

**[Fields of Specialization]**

Plant genetics

**[Academic Society Memberships]**

Japan Society of Breeding

Society of Evolutionary Studies, Japan

Japan Society for Scientific Studies on Cultural Properties

Society of Tropical Ecology

The Society of Biosophia Studies

Japanese Society for DNA Polymorphism Research

The Society for the Study of Phytogeography and Taxonomy

The Japanese Forest Society

**[Awards]**

Ninth Matsushita Konosuke “Hana to midori no hakuran-kai kinen shorei-sho” (2001)

Seventh NHK Shizuoka broadcasting station “Akebono-sho” (2001)

Seventeenth Hamada Seiryō-sho (2004)

## —Achievements—

**[Papers]***[Original Articles]*

- Sato, Y.-I., Leo Aoi Hosoya, Emi Kimura, Takashi Kurata, Chiaki Muto, Katsunori Tanaka 2011,04 Sustainable agriculture: the lessons from history. *Sansai* 5 :69–81. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- "Rice: grown in China" . Early Rice Cultivation & Its Weed Flora, 2011,05,30–2011,05,31, Beijing, China.

## SEO, Akihiro

Visiting 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]*

- I. Yoshimori, K. Yoshikawa, and A. Seo. Microsatellite Markers for *Avicennia marina*.. RIHN Satellite Symposium for IAS International Conference 2010 at Kyoto Keystone Species of Human Subsistence Ecosystems in Arab Societies., December 2011, RHIN, Kyoto.

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**TACHIMOTO, Narifumi**


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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 College 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]***[Invited Lecture / Honorary Lecture / Panelist]*

- TACHIMOTO, Narifumi Keynote Speech: Islam and Multiculturalism: Between Norms and Forms. JSPS Asia and Africa Science Platform Program, 2011, 11, 26-2011, 11, 27, Waseda University, Tokyo.

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**TAKANO Takenaka Kohei**


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Project Researcher

**Born in 1977.****[Academic Career]**

BA, Faculty of Agriculture, Tokyo University of Agriculture and Technology (2001)

MA, Grad. Sch. of Environmental Earth Sci., Hokkaido University (2003)

PhD, Grad. Sch. of Environmental Earth Sci., Hokkaido University (2006)

**[Professional Career]**

PD, Institute of Tropical Medicine, Nagasaki University (Apr 2006-July 2009)

Assistant Professor, Institute of Tropical Medicine, Nagasaki University (Aug 2009-Mar 2010)

Academic affair staff, Grad. Sch. of Biomedical Sci., Nagasaki University (Apr 2010-Mar 2011)

**[Higher Degrees]**

Ph.D. (Hokkaido University, 2006)



**[Fields of Specialization]**

Plant and insect ecology

Ecological genetics

Molecular phylogeny

Molecular evolution

**[Academic Society Memberships]**

Ecological Society of Japan

The Society for the Study of Species Biology

**—Achievements—****[Books]***[Chapters/Sections]*

- TAKANO Takenaka Kohei. 2012,03 Pollination mutualism between Araceae plants and Colocasiomyia flies. Kawakita A and Okuyama U (ed.) Biology of species interactions. Syuseibutugaku Kenkyu, 35. Bun-ishi Sogo Shuppan Co., pp.195–216. (in Japanese) (Refreed)

**[Papers]***[Original Articles]*

- Takano KT, Repin R, Mohamed MB, Toda MJ. 2012,01 Pollination mutualism between Alocasia macrorrhizos (Araceae) and two taxonomically undescribed Colocasiomyia species (Diptera: Drosophilidae) in Sabah, Borneo. Plant Biology . DOI:10.1111/j.1438-8677.2011.00541.x. (reviewed).Early View (Online Version of Record published before inclusion in an issue).

**[Research Presentations]***[Poster Presentation]*

- Takano, K. T., M. Nakagawa, K. Kishimoto-Yamada, S. Yamashita, H. O. Tanaka, Y. Tokumoto, T. Matsumoto, D. Fukuda, H. Nagamasu, M. Ichikawa, K. Momose, S. Sakai, T. Itioka and T. Nakashizuka Changes in land use, biodiversity, ecosystem services and local livelihoods in tropical forests of Malaysian Borneo. Planet under Pressure, 2012, 03, 25–2012, 03, 30, London, UK.
- Takano, K. T., K. Kishimoto-Yamada and T. Itioka Diversity of beetles using wood-decay in different land uses in and around Lambir Hills National Park, Sarawak, Malaysian Borneo. The 5th EAFES (East Asian Federation of Ecological Societies) International Congress, 2012, 03, 17–2012, 03, 20, Ootsu, Japan.

**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—**

#### **[Books]**

##### *[Authored/Co-authored]*

- Gissen, N., Bardsley, E., Seyler, F., Pail, R., Taniguchi, M. 2011, 06 GRACE, Remote Sensing and Ground-based Methods in Multi-Scale Hydrology. IAHS Publication, 196pp

#### **[Editing]**

##### *[Editing / Co-editing]*

- Taniguchi, M. (ed.) 2011 Groundwater and Subsurface Environments - Human Impacts in Asian Coastal Cities. Springer, 312pp.

#### **[Papers]**

##### *[Original Articles]*

- Nakada, S., Umezawa, Y., Taniguchi, M., Yamano, H. 2011, 10 Groundwater Dynamics of Fongafale Islet, Funafuti Atoll, Tuvalu. Ground Water. DOI:10.1111/j.1745-6584.2011.00874. (reviewed).
- Green, T. R., Taniguchi, M., Kooi, H., Gurdak, J. J., Allen, D. A., Hiscock, K. M., Treidel, H., Aureli, A. 2011, 08 Beneath the surface of global change: Impacts of climate change on groundwater. Journal of Hydrology. DOI:10.1016/j.jhydrol.2011.05.002.. (reviewed).
- Taniguchi, M., Yamamoto, K., and Aarukkalige, P. R. 2011, 07 Groundwater resources assessment based on satellite GRACE and hydrogeology in Western Australia. GRACE, Remote Sensing and Ground-based Methods in Multi-Scale Hydrology (Proceedings of Symposium J-H01 held during IUGG2011 in Melbourne, Australia, July 2011) 343 :3-8. (reviewed).

- Glesson, T., Alley, W. M., Allen, D. M., Sophocleous, M. A., Zhou, Y., Taniguchi, M., VanderSteen, J. 2011,05 Towards Sustainable Groundwater Use: Setting Long-Term Goals, Backcasting, and Managing Adaptively. *Ground Water* . DOI:10.1111/3.1745-6584.2011.00825.. (reviewed).
- Uemura, T., Taniguchi, M., and Shibuya, K. 2011,04 Submarine groundwater discharge in Lützow-Holm Bay, Antarctica. *Geophysical Research Letters* VOL. 38(L08402). DOI:10.1029/2010GL046394. (reviewed).
- Taniguchi, M., Yamamoto, K., and Aarukkalige, P. R. 2011 Groundwater resources assessment based on satellite GRACE and hydrogeology in Western Australia. *GRACE, Remote Sensing and Ground-based Methods in Multi-Scale Hydrology* 343 :3-8. (reviewed).
- Kagabu, M., Shimada, J., Delinom, R., Tsujimura, M., Taniguchi, M. 2011 Groundwater flow system under a rapidly urbanizing coastal city as determined by hydrogeochemistry. *Journal of Asian Earth Sciences* 40 :226-239. (reviewed).
- Hosono, T., Nakano, T., Shimizu, Y., Onodera, S., and Taniguchi, M. 2011 Hydrogeological constraint on nitrate and arsenic contamination in Asian metropolitan groundwater. *Hydrological Processes* . DOI:10.1002/hyp.8015. (reviewed).
- Nakada, S., Yasumoto J., Taniguchi, M., Ishitobi, T. 2011 Submarine groundwater discharge and seawater circulation in a subterranean estuary beneath a tidal flat. *Hydrological Processes* . DOI:10.1002/hyp.8016. (reviewed).
- Hosono, T., Su, C-C., Delinom, R., Umezawa, Y., Toyota, T., Kaneko, S., Taniguchi, M. 2011 Decline In Heavy Metal Contamination In Marine Sediments In Jakarta Bay, Indonesia Due To Increasing Environmental Regulations. *Estuarine, Coastal and Shelf Science* 92 :297-306. (reviewed).

### **[Research Presentations]**

#### *[Oral Presentation]*

- Taniguchi, M. " Human Impacts on Urban Subsurface Environment" . Consortium on urban subsurface environment management in Asia, 2011,10,17, Metro Manila, Philippines.
- Taniguchi, M. " Effects of urbanization and groundwater flow on subsurface warming, China-Japan" . Joint workshop on Subsurface Warming, 2011,09,27, Xi'an, China.
- Taniguchi, M. "Impact of Coastal Disasters on Water Security in Japan". World Water Week, side event,, 2011,08,22, Stockholm, Sweden.
- Taniguchi, M. " Groundwater resources assessment based on satellite GRACE and hydrogeology in Western Australia". *GRACE, Remote Sensing and Ground-based Methods in Multi-Scale Hydrology*, 2011,07,02, Melbourne, Australia.
- Taniguchi, M. " Distrobution of submarine groundwater discharge investigated by 222Rn survey along the coastal line of Mt. Chokai, North Japan" , . *JHW02 Freshwater ecosystem interaction in the coastal zone*, 2011,07,02, Melbourne, Australia.
- Taniguchi, M. *Uncontrolled Practices and Resources Use : Natural resources capacities and social capabilities for water, material and heat issues in Asian 7 coastal cities*. ACSEE, 2011,06,05, Ramadan Hotel, Osaka.
- Taniguchi, M. *Evaluation of natural capacity and social capability for sustainable use of subsurface environment in Asian cities*. JpGU, 2011,05,22, Makuhari, Chiba.
- Taniguchi, M. . *IASS, Global Urban Change-From Concepts to Integrated Scenarios*, 2011,04,30, Potsdam, Germany .

#### *[Invited Lecture / Honoronary Lecture / Panelist]*

- Taniguchi, M. *Asian Vision on Transdisciplinary Sustainability Development and Environmental Research Day 2, Theme: Transforming our Way of Living" . Planet under Pressures-New Knowledge towards Solutions*, 2012,03,27, London, England.
- Taniguchi, M. *Water: Integrated assessment, governance and management in changing conditions at global, regional and transboundary levels Day 2 Theme: Meetings Global Needs. Planet under Pressures-New Knowledge towards Solutions*, 2012,03,27, London, England..

- Taniguchi, M., Yamamoto, K., Sarukkalgige, R. P., Fukuda, T. Tracing recent climate and environmental impacts on groundwater storage using GRACE. H74 AGU 2011 Fall meeting, 2011,12,05–2011,12,09, Moscone Center, SF, USA.
- Taniguchi, M. Water security and services in the ocean-aquifer system. H33M-01, AGU 2011 Fall meeting, 2011,12,05–2011,12,09, Moscone Center, SF, USA.
- Taniguchi, M. Human and Climate Impacts on Groundwater. UNESCO-GRAPHIC training course "Methods for assessing impacts of climate change and human activities on groundwater resources", 2011,11,02, Sun Yat-Sen University, Guangzhou, China.
- Taniguchi, M. Ground Water Resource Management and Planning. International Conference on Green Urbanism 2011-Planning Greener Cities-, 2011,10,18–2011,10,20, Metro Manila, Philippines.

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## TSUJINO, Ryou

Senior 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—**

#### **[Papers]**

##### *[Original Articles]*

- Koda R, Agetsuma N, Agetsuma-Yanagihara Y, Tsujino R, Fujita N 2011 A proposal of the method of deer density estimate without fecal decomposition rate: a case study of fecal accumulation rate technique in Japan. *Ecological Research* 26 :227-231. (reviewed).
- Hanya G, Ménard N, Qarro M, Tattou MI, Fuse M, Vallet D, Yamada A, Go M, Takafumi H, Tsujino R, Agetsuma N, Wada K 2011 Dietary adaptations of temperate primates: comparisons of Japanese and Barbary macaques. *Primates* 52 :187-198. (reviewed).

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## 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(0 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—****[Papers]***[Original Articles]*

- K.Palanisami, C.R.Ranganathan and Chieko Umetsu. 2011,04 “Groundwater Over-exploitation and Efficiency in Crop Production in South India: Application of Data Envelopment Analysis”. Journal of Applied Operational Research 3(1) :13-22. (reviewed).

**[Research Presentations]***[Oral Presentation]*

- Umetsu, C., Shinjo H., Sakurai T., Shimada S., Yoshimura M., Lekprichakul T. Dynamics of social-ecological systems: Farmers’ resilience and food security in Southern Zambia. Planet Under Pressure 2012, 2012,03,25–2012,03,29, Excel London, UK. Theme A: Meeting Global Needs, Session “Food security: challenges to closing yield, economic and nutritional gaps in sustainable food systems”.

*[Invited Lecture / Honorary Lecture / Panelist]*

- Organized Session: “Building resilience to Tsunami disaster in Asian coastal regions”. World Water Week 2011 Side Event, 2011,08,22, Stockholm International Fairs & Congress Center. Co-organized with IWMI-TATA Water Policy Program, Resilience Project, Futurability Initiatives, RIHN Mega City Project.

**UYAR, Aysun**

Assistant Professor

**Born in 1980.****[Academic Career]**

B.Sc., Department of International Relations, Faculty of Economics and Administrative Sciences, Middle East Technical University, Ankara, Turkey (2001)

M.Sc., Institute of Social Sciences, Middle East Technical University, Ankara, Turkey (2004)

Ph.D., Graduate School of East Asian Studies, Yamaguchi University, Yamaguchi, Japan (2008)

**[Professional Career]**

Research assistant, Department of International Relations, Faculty of Economics and Administrative Sciences, Hacettepe University, Ankara, Turkey (2001-2005)

Project assistant, Graduate School of East Asian Studies, Yamaguchi University, Japan (2005-2008)

Post-doc research fellow, Afrasian Centre for Peace and Development Studies, Ryukoku University, Kyoto, Japan (2008-2010)

Part-time lecturer, Faculty of Intercultural Communication, Ryukoku University (2009-)

Part-time lecturer, Faculty of Social Studies, Doshisha University (2010-)

Part-time lecturer, Institute for International Education, Doshisha University (2011-)

**[Higher Degrees]**

Ph.D. (Yamaguchi University, 2008), Yamaguchi, Japan

M.Sc. (Middle East Technical University, 2004), Ankara, Turkey

B.Sc. (Middle East Technical University, 2001), Ankara, Turkey

**[Fields of Specialization]**

International Relations

International Political Economy,

Regionalism, Regional Integration

**[Academic Society Memberships]**

International Studies Association (ISA)

International Political Science Association (IPSA)

The Japan Association of International Relations (JAIR)

Japan Association for Asian Studies (JAAS)

European Association for Japanese Studies (EAJS)

Association for the Study of Political Society (ASPOS)

Japan-Turkey Friendship Association

**[Awards]**

The First Prize (Paper Contest), Institute for International Monetary Affairs (2005)

Yamaguchi University President Award (2008)

**—Achievements—****[Books]***[Chapters/Sections]*

- Aysun Uyar, 2011, 10 Japonya' nın Entegre Çevre Çalışmalarında Kadın Araştırmacıların Rolü (The Role of Women Researchers in Japan' s Integrated Environmental Studies). A. Mete Tuncoku (ed.) Toplumsal Gelişmede Türk ve Japon Kadınının Eğitimi (Women' s Education in Turkey and Japan for Social Development). Ankara: Pozitif Matbaa, pp.229-247. (in Turkish)

- Aysun Uyar and Tosei Sano 2011,06 Minami Ajia, Chuo Ajiato Nihonno Kouryu (Japan' s Interaction with West and Central Asia). Matsubara Hiroshi, Sudou Mamoru, Sano Tosei (ed.) Bunka Kouryuno Eria Sutadi-zu (Area Studies of Cultural Interaction). Minerva, Kyoto, pp.213-243. (in Japanese)
- Aysun Uyar, 2011,05 21.Yüzyılda Türkiye ve Japonya İlişkileri: Karşılıklı İşbirliğinde Stratejik Kültürel Etkileşme (Turkey and Japan Relations in the 21st Century: Stratejic Cultural Interaction in Bilateral Cooperation). Yelda Demirag and Ozlen Celebi (ed.) 21. Yüzyılda Türk Dış Politikası: Son On Yıl (Turkish Foreign Policy in the 21st Century: The Last Ten Years). Palme Yayınevi (Turkey), Ankara, pp.303-322. (in Turkish)

#### *[Translations / Joint Translations]*

- Aysun Uyar, 2011,09 “Takeshita Ken, Kindaikano Yukue to Nihon Fashizumu: Hasimoto Kingorou no Atatyuruku zouwo Tegakaritoshite (Haşimoto Kingorou' nun Atatürk İmajı' na İstinâden Japon Faşizmi ve Modernizasyonun Seyri)” . (ed.) A. Mete Tuncoku. Japon Araştırmacıların Gözünden Türkiye Sempozyumu. Ankara: Çanakkale Onsekiz Mart Üniversitesi Yayınları (ISBN:978-605-4222-13-1), pp. 29-36. (in Turkish) Translation of Takeshita Ken . , .

#### **[Papers]**

##### *[Review Articles]*

- Aysun Uyar (ed), 2012,03 . RIHN News (Newsletter) 1(2) :1-2.
- Aysun Uyar (ed), 2011,10 . RIHN News (Newsletter) 1(1) :1-2.

#### **[Research Presentations]**

##### *[Oral Presentation]*

- Makoto Taniguchi and Aysun Uyar, (Conference paper) Global Environmental Chang-Japan Initiative for Sustainability Development and Environmental Research in Asia. Planet under Pressure Conference, 2012,03,26-2012,03,29, London, UK.
- Aysun Uyar, (Conference paper) Regional Environmental Cooperation from the Perspective of International Relations: Functional Cooperation for Environment. The 2nd ASPOS Conference, 2011,09,18-2011,09,19, Doshisha University, Kyoto. (in Japanese)
- Aysun Uyar, (Conference paper) Rage of Environmental Regionalism in East Asia: Japan' s Prospective Regional-Economic Partnership Agreements. 13th International Conference of EAJS, 2011,08,24-2011,08,28, Tallinn, Estonia.
- Aysun Uyar, (Conference paper) Environmental Regionalism in Southeast Asia: Green Encounter of the ASEAN Community. WISC-Third Global International Studies Conference, 2011,08,17-2011,08,20, Porto, Portugal.
- (MC) . 10th RIHN Forum, 2011,07,03, KICC, Kyoto. (in Japanese)
- Aysun Uyar, (Conference paper) Changing Dynamics of Human Security: From International Relations to Environmental Human Security. IAFOR-ACSEE, 2011,06,03-2011,06,05, Japan, Osaka.

##### *[Invited Lecture / Honororary Lecture / Panelist]*

- (Panel organizing committee member) . Planet under Pressure Conference, 2012,03,26-2012,02,29, London, UK.
- (Boot organizer) RIHN Booth . The 6th World Water Forum, 2012,03,12-2012,03,17, Marseille, France.
- (Steering committee member/Chair) . Boğaziçi University-Ryukoku University Afrasian Research Center First International Workshop, 2012,03,02-2012,03,03, Istanbul, Turkey.
- (MC) . The Third Kyoto Earth Forum Special Session, 2012,02,13, KICC, Kyoto.
- (Host country steering committee member) . The 5th Belmont Forum, 2012,01,17-2012,01,18, RIHN, Kyoto.
- (Lecturer) International Environmental Politics. Doshisha University “Stay in Kyoto” Program, 2012,01,13, Doshisha University, Kyoto.

- (Part-time Lecturer) Introduction to International Politics”, Faculty of Intercultural Communication, Ryukoku University; “Japan and Asia” and “International Cooperation Policy”, , Institute for Liberal Arts, “Special Issues in Social Studies I: Turkish Foreign Policy”, Faculty of Social Studies, Doshisha University . , 2012, .
- (Lecturer) International Relations and Global Environmental Issues. Gate to Global Environmental Studies, Hokuryo High School-RIHN Lecture Series, 2011,11,22, RIHN, Kyoto. (in Japanese)
- (Steering committee member) . STS Forum-RCC Meeting, 2011,10,01, RIHN, Kyoto.
- (Research project member) Environmental Regionalism: Practice of EU’ s Regional Environmental Policies. RIHN Director-General Special Research Fund, RIHN, 2011,09,01-2012,03,31, .
- (Research project member) Research into the Possibilities of Establishing Multicultural Societies in the Asia Pacific Region: Conflict, Negotiation, and Migration. Afrasia Research Center, Ryukoku University, 2011,07,15-2014,03,31, .
- (Lecturer) Global Environmental Politics and International Relations. Doshisha University ILA-RIHN Visit, 2011,07,01, RIHN, Kyoto.
- (Lecturer) Global Environmental Issues within International Relations . Concepts of Environmental Systems Course, Faculty of Science and Engineering, Doshisha University, 2011,05,27, Kyoto, Japan. (in Japanese)
- (MC) . The 10th Anniversary Symposium of RIHN, 2011,04,20, KICC, Kyoto. (in Japanese)
- (Steering committee member) . RIHN Open House, 2011, RIHN, Kyoto. (in Japanese)

## WATANABE, Tsugihiko

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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 Resources



Japanese Association for Water Resources and Environment  
 Japan Society of Civil Engineers  
 The Japanese Society for Arid Land Studies  
 International Commission on Irrigation and Drainage  
 International Water Resources Association  
 The Association of Rural Planning

### —Achievements—

#### [Books]

##### [Chapters/Sections]

- Tsugihiko Watanabe 2012,03 Integrated Approach to Climate Change Impact Assessment on Agricultural Production Systems. V. Anbumozhi et al (ed.) Climate Change in Asia and the Pacific. Asian Development Bank Institute and SAGE Publication, Tokyo, pp.138-155.
- Tsugihiko Watanabe 2011,11 Agriculture and Hydrological System. Shimizu, H. et. al (ed.) Environmental Science of Water. University of Nagoya Press, pp.155-169. (in Japanese)

#### [Papers]

##### [Original Articles]

- Tsugihiko Watanabe and Shin Hirose 2011,09 Engineering in Wisdom on Land and Water. Journal of JSIDRE 79(9) :7-10. (in Japanese)
- Junya Hasegawa, Katsuyuki Fujinawa, Seiichiro Ezawa, Tomiharu Toyoda and Tsugihiko Watanabe 2011,04 The influence of soil and water hysteresis on a saturated-unsaturated flow. Journal of Japanese Association of Groundwater Hydrology 53(1) :25-39. (in Japanese)
- Junya HASEGAWA, Katsuyuki FUJINAWA, Seiichiro EZAWA, Tomiharu TOYODA and Tsugihiko WATANABE 2011 The influence of soil water hysteresis on a saturated-unsaturated flow. Journal of Japanese Association of Groundwater Hydrology 53(1) :25-39. (in Japanese)

##### [Review Articles]

- Tsugihiko Watanabe and Chihiro Ito 2012,03 Establishing consilience for local water management. Humanity & Nature 35 :4-5. (in Japanese)
- Tsugihiko Watanabe 2012,03 Review of the RIHN Project Report Meeting 2011. Humanity & Nature 35 : 10-11. (in Japanese)
- Tsugihiko Watanabe 2011,12 Radicalizing the knowledge of land and water to tackle with the climate change. Preface of Journal of JSIDRE 79(12) :907-908. (in Japanese)

#### [Research Presentations]

##### [Oral Presentation]

- Tsugihiko Watanabe Designing Local Framework of integrated Water Resources Management. International Symposium on “Long Term Vision for the Sustainable Water & Land Use, Linking Global Vision & Local Wisdom” , 2011,09,20-2011,09,23, Adiyaman, Turkey.
- Tsugihiko Watanabe Closing remarks. The 1st Symposium of the Food and Health Risk Project “Managing Environmental Risks to Food and Health Security in the Laguna Lake Watersheds Philippines” , 2011,06,30-2011,06,30, Kyoto.
- Tsugihiko Watanabe Agriculture is the art of managing uncertainty. Session IV: Ecological Resilience for Stakeholder Farming System in the Semi-Arid Tropics. Comments in Resilience International Symposium “Building Social- Ecological Resilience in a Changing World” , 2011,06,18-2011,06,20, Kyoto.

*[Invited Lecture / Honorary Lecture / Panelist]*

- Tsugihiko Watanabe Designing local frameworks for integrated water resources management. Workshop on collaborative research on themes relating to the humanities and the environment, 2012, 03, 22–2012, 03, 23, University of East Anglia, Norwich, United Kingdom.
- Tsugihiko Watanabe Designing Framework of Local Water Management under the Context of Integrated Water Resources Management. 6th World Water Forum, 2012, 03, 12–2012, 03, 17, Marseille, France.
- Tsugihiko Watanabe Role of Irrigation and Agriculture in Lake Basin Management. JICA / ILEC Integrated Basin Management for Lake Environment Course, 2012, 01, 25, Kusatsu, Shiga. (in Japanese)
- Tsugihiko Watanabe Chair:Global Climate Change and Hydrologic Linkages.. 14th World Lake Conference, 2011, 10, 31–2011, 11, 04, Austin Texas USA.
- Tsugihiko Watanabe Wise use of water in semi-arid regions. Symposium on “Agro-sciences contributing to conservation and restoration of environment” . Association of Japanese Agricultural Scientific Societies, 2011, 10, 08, Yayoi Hall of the University of Tokyo. (in Japanese)
- Tsugihiko Watanabe Introduction of RIHN. Third Conference of Regional Climate Change for 8th STS forum, 2011, 10, 03, RIHN, Kyoto.
- Tsugihiko Watanabe Integrated Approach to Climate Change Impact Assessment on Agricultural Production System.. Session F3, 8th STS forum, 2011, 10, 03, Kyoto International Conference Hall, Kyoto.
- Tsugihiko Watanabe Role of Irrigation and Agriculture in Lake Basin Management. JICA / ILEC Integrated Basin Management for Lake Environment Course, 2011, 08, 11, Kusatsu, Shiga.

**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 (Accomplished 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 Institute 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

Society 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]*

- Hsieh, C., Sakai, Y., Ban, S., Ishikawa, K., Ishikawa, T., Ichise, S., Yamamura, N. and Kumagai, M. 2011 Eutrophication and warming effects on long-term variation of zooplankton in Lake Biwa. . *Aquatic Biogeosciences* 8 :1383-1399. (reviewed).
- Yamamura, N., Telschow, A., Uchii, K. and Kawabata, Z. 2011 A basic equation for population dynamics with destruction of breeding habitats and its application to outbreak of cyprinid herpesvirus 3 (CyHV-3). . *Ecological Research* 26 :181-189. (reviewed).
- Nakazawa, T., Kuwamura, M. and Yamamura, N. 2011 mplications of resting eggs of zooplankton for the paradox of enrichment. . *Population Ecology* 53 :341-350. (reviewed).

**[Research Presentations]**

*[Oral Presentation]*

- Norio YAMAMURA. Social-ecological network and sustainable use of ecological resouces: implication from case studies in Mongolia and Malaysia. . HIN-NTU Biodiversity Colloquium. , December 2011, Taipei, Taiwan..
- Norio YAMAMURA Different Social-Ecological Networks in Grassland and Forest Systems: Implication for their sustainable management.. European Congress of Mathematical and Theoretical Biology., June 2011, Kurakow, Poland..
- Norio YAMAMURA Comparison of ecosystem networks in Mongolia grassland and Malaysia forests.. 日本地球惑星科学連合 2011 年大会., May 2011, 千葉, 日本.

YAOTA Kiyoyuki

Project Researcher

**Born in 1970.**

—Achievements—

**[Research Presentations]**

*[Oral Presentation]*

- Bam H.N. Razafindrabe, Satoshi Saito, Kiyoyuki Yaota, Tadayoshi Masuda, Ryohei Kada Impacts of Ecological Risks to Food and Health Security in Laguna Lake Region, Philippines. . Global Risk Forum Davos One Health Summit 2012, 2012, 02, 19-2012, 02, 23, Davos, Switzerland.
- Kiyoyuki YAOTA, Satoshi SAITO, Rogelio N. CONCEPCION, Ryohei KADA The Construction of Spatial Data Map as a Tool for Linking Environmental Risk to Food and Health Security in Laguna Lake Watersheds.. 11th International Society for Southeast Asian Agricultural Sciences (ISSAAS) Philippine National Convention and International Forum, 2011, 10, 25-2011, 10, 26, Clarkfield, Angeles City.

*[Poster Presentation]*

- Bam H.N. Razafindrabe, Kiyoyuki Yaota, Satoshi Saito, Tadayoshi Masuda, Ryohei Kada EcoHealth: How Changing Environment and Climate affect Human Health and Livelihood Security in the Philippines. Planet Under Pressure Conference:, 2012, 03, 26-2012, 03, 26, London.
- Saito, S., Nakano, T. Shin, K.-C., Maruyama, S., Miyakawa, C., Yaota, K. and Kada, R. Water quality mapping of Laguna de Bay and its watershed, Philippines.. American Geophysical Union, Fall Meeting, 2011, 12, 09, CA, USA.
- Kiyoyuki YAOTA, Satoshi SAITO, Bam H.N. Razafindrabe, Ryohei KADA The Integration of Spatial Information for Management of Food and Health Security - The Case of Laguna Lake, Philippines. PNC2012(Pacific Neighborhood Consortium) Annual Conference and Joint Meetings, 2011, 10, 19-2011, 10, 22, Sasin Graduate Institute of Business Administration of Chulalongkorn University.

**YASUTOMI, Natsuko**

Assistant Professor

**Born in 1973.****[Academic Career]**

Department of Earth and Planetary Science, Graduate School of Science, The University of Tokyo, D. Course(2003)

Department of Earth and Planetary Science, Graduate School of Science, The University of Tokyo, M. Course(1998)

Faculty of Science, Kyoto University(1997)

**[Professional Career]**

Assistant Professor, Research Institute for Humanity and Nature (2010)

Senior Project Researcher, Research Institute for Humanity and Nature(2010)

Project Researcher, Research Institute for Humanity and Nature(2009)

Researcher, Core Research for Evolutional Science and Technology (CREST), Japan Science and Technology Agency(2003)

**[Higher Degrees]**

D. Sc. (The University of Tokyo, 2003)

M. Sc. (The University of Tokyo, 1998)

**[Fields of Specialization]**

Meteorology

Climatology

**[Academic Society Memberships]**

Meteorological Society of Japan

Japan Geoscience Union

American Geophysical Union

American Meteorological Society

**—Achievements—****[Papers]***[Original Articles]*

- M. Inatsu, Y. Satake, M. Kimoto, N. Yasutomi 2012,03 GCM bias of the Western Pacific summer monsoon and its correction by two-way nesting system. Journal of the Meteorological Society of Japan 90B : 1-10. DOI:10.2151/jmsj.2012-B01. (reviewed).
- N. Yasutomi, A. Hamada, A. Yatagai 2011,12 Development of a Long-term Daily Gridded Temperature Dataset and Its Application to Rain/snow Discrimination of Daily Precipitation.. Global Environmental Research 15(2) :165-172. (reviewed).

YUMOTO, Takakazu

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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]***[Chapters/Sections]*

- Yumoto, T. & Uesedo, Y. 2011 A future for tradition: cultural preservation and transmission on Taketomi Island, Okinawa, Japan. Baldacchino, G. & Niles, D. (ed.) *Island Futures*. Springer, Tokyo, pp.139-152.

**[Papers]***[Original Articles]*

- Yumoto, T. 2011 Historical perspectives on the relationships between humanity and nature in the Japanese Archipelago. Hong, S.K., Wu, J., Kim, J.E., Nakagoshi, N. (ed.) *Landscape Ecology in Asian Culture*. Ecological Research Monographs. Springer, Tokyo, pp.3-10. (reviewed).
- Kusaka, S., Nakano, T., Yumoto, T. & Nakatsukasa, M. 2011 Strontium isotope evidence of migration and diet in relation to ritual tooth ablation: a case study from Inariyama Jomon site, Japan. *Journal of Archaeological Science* 38 :166-174. (reviewed).
- Yumoto, T. 2011 The future of islands. *Ogasawara Research* 37 :97-102. (reviewed).

**ZEBALLOS VELARDE, Carlos Renzo**

Senior 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 Sustainable 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 Agustín. 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 Agustín 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—****[Research Presentations]***[Oral Presentation]*

- ZEBALLOS, Carlos Modernisation and Landscape Perception: A comparative Study of Otsu, Japan and Vladivostok, Russia.. International Seminar of Urban Form, 20112608-20112908, .





**Appendix1 Number and Affiliation of Project Members**

Project Number	Title of the project	Total	RIHN	University / College			Inter-University Research Institute	Public Institution	Private Institution	Others	Overseas institution
				National	Public	Private					
C-06 (FR5)	Effects of Environmental Change on the Interactions between Pathogens and Humans	47	8	19	0	3	0	2	1	1	13
C-07 (FR3)	Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments	60	6	27	0	1	2	4	1	1	18
C-08 (FR2)	Megacities and the Global Environment	34	6	17	0	5	0	0	1	1	4
C-09-Init (FR1)	Designing Local Frameworks for Integrated Water Resources Management	41	3	14	2	5	0	1	0	0	16
D-03 (FR4)	Human Life, Aging and Disease in High-Altitude Environments: Physio-Medical, Ecological and Cultural Adaptation in "Highland Civilizations"	46	5	24	1	7	0	1	2	4	2
D-04 (FR4)	Collapse and Restoration of Ecosystem Networks with Human Activity	79	11	50	1	6	1	6	1	0	3
R-03 (FR5)	Historical Interactions between Multi-Cultural Societies and the Natural Environment in a Semi-Arid Region in Central Eurasia	109	7	55	5	19	4	2	1	3	13
R-04 (FR4)	Environmental Change and Infectious Disease in Tropical Asia	83	11	36	1	9	0	1	0	3	22
R-05 (FR3)	A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-oil Era	91	9	17	1	8	0	3	5	8	40
R-06 (FR1)	Managing Environmental Risks to Food and Health Security in Asian Watersheds	21	7	4	1	0	0	1	0	0	8
H-03 (FR5)	Environmental Change and the Indus Civilization	60	10	27	2	3	5	1	0	0	12
H-04 (FR5)	Neolithisation and Modernisation: Landscape History on East Asian Inland Seas	67	13	7	3	12	4	6	1	2	19
E-04 (FR5)	Vulnerability and Resilience of Social-Ecological Systems	38	5	19	0	2	0	2	2	1	7
PR (TANAKA)	Desertification and Livelihood in Semi-Arid Afro-Eurasia	7	1	3	1	0	0	0	2	0	0
FS (ISHIKAWA)	Coastal Area Capability Enhancement in Southeast Asia	49	1	27	0	13	0	1	0	1	6
FS (OKUDA)	The Effect of Local Governance on Incentive Programs for Forest Ecosystem Service Conservation	11	1	8	0	1	0	1	0	0	0
FS (SATO Tetsu)	Formation of Local Environmental Knowledge Systems for Creation and Sustainable Governance of New Commons	18	2	10	1	2	0	1	1	0	1

Project Number	Title of the project	Total	RIHN	University / College			Inter-University Research Institute	Public Institution	Private Institution	Others	Overseas institution
				National	Public	Private					
FS (SATO Yo-Ichiro)	Scenario for Environment-conscious "Mature Society" in East Asia	14	10	1	0	3	0	0	0	0	
FS (NAGAO)	Water-and Food-Sheds in the Noto Peninsula: New Scales of Analysis in Global Environmental Studies	35	0	30	3	2	0	0	0	0	
FS (NAKATSUKA)	Historical Adaptation to Climate Change in Japan: Integrating Palaeoclimatological Data and Archaeological Evidence	31	0	23	0	2	2	4	0	0	
FS (FUKUSHIMA)	Lakes as Sources and Sinks: Social and Ecological Dynamics Affecting Downstream/Pollution-Accumulating Lakes	22	0	14	0	2	0	3	0	3	
FS (MATOH)	Designing Agriculture in the Era of Petroleum Scarcity	9	0	6	0	1	0	1	0	1	
FS (MURAMATSU)	The History of Human-Water Interactions in East Asian Livelihood Complexes	24	3	5	0	11	0	0	0	5	
FS (YOKOYAMA)	Survivability and Autonomy in Southeast Asia: Perspectives from Land Use Changes and Resource Chains	17	5	6	1	2	0	1	0	2	
FS (WATANABE)	Environmental Change and Immunological Adaptation in the Mekong River Region	11	1	8	0	1	0	0	0	1	
	Total	1024	125	457	23	120	18	42	18	26	195

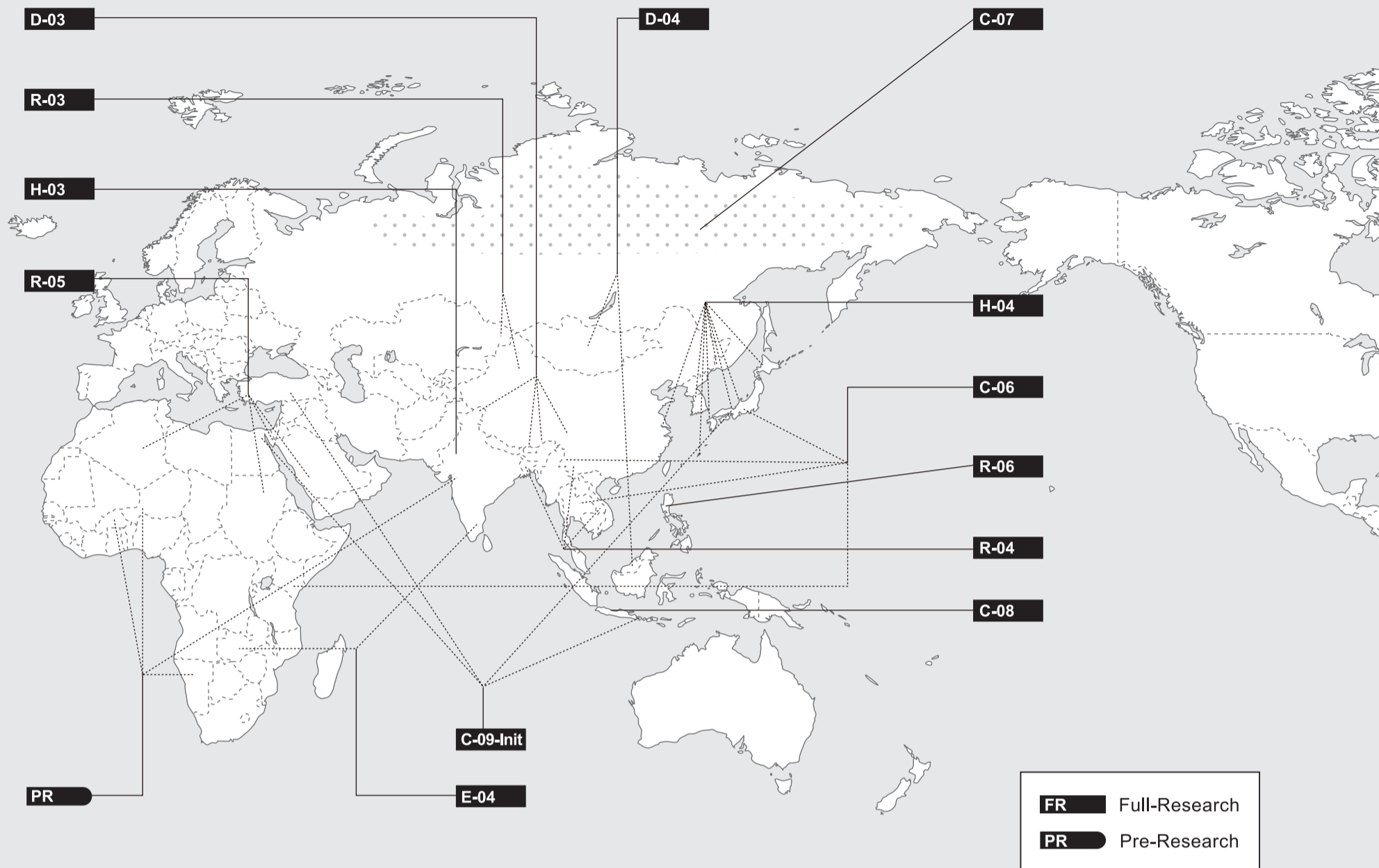
As of March 31, 2012

**Appendix 2 Research Fields of Project Members**

Project Number	Title of the Project	The number of projects members				Research Background of Project Members
		Natural Sciences	Humanities and Social Sciences	Multidisciplinary	Total	
C-06 (FR5)	Effects of Environmental Change on the Interactions between Pathogens and Humans	30	9	8	47	(Natural Sciences) Nanotechnology, Ecology, Fish ecology, Molecular ecology, Environmental conservation, Plant breeding, Fisheries biology, Environmental science and microbiology, Mathematical ecology, Aquatic ecology, Legionella ecology, Behavioral ecology, Stable isotope ecology, Animal ecology, Ecosystem ecology, Microbial ecology, Environmental resource geology, Isotope geosciences, Toxicology, Environment assessment and ecopoly, Environmental fate analysis, Molecular biology, Bioinformatics, Medical science (Humanities and Social Sciences) Economics, Sociology, Ethics, Food culture, Law, Geoenvironmental science, Environmental economics (Multidisciplinary) Ecology, Health science, Sanitary, Medical science, Environmental medicine, Environmental conservation
C-07 (FR3)	Global Warming and the Human-Nature Dimension in Siberia: Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments	46	12	2	60	(Natural Sciences) Ecohydrology, Forestry, Remote sensing and modeling, Atmospheric model, Atmospheric physics, Plant physiological ecology, Terrestrial ecosystems modeling, Conservation ecology, Forest hydrology, Ecosystem impact, Atmospheric chemistry, Meteorology, Water and energy cycle, Ecological model, Isotope hydrology, Ethology, River engineering, Hydrology, Forest meteorology, Marine physics, Limnology, Ecology, Environmental conservation, Dendrochronology, Forest science, Earth science, Geochemistry, Animal physiological ecology, Frozen ground science, Cryosphere landscape, Groundwater analysis (Humanities and Social Sciences) Civil engineering, Social anthropology, Cultural anthropology, International relations, Sociology, Politics, Russian economy, Descriptive linguistics, History, Religious folklore, Mythology (Multidisciplinary) Atmospheric chemistry, Ecohydrology
C-08 (FR2)	Megacities and the Global Environment	7	11	16	34	(Natural Sciences) Infrastructure planning and management, Hydrology, Urban landscape planning, City sustainability, Remote sensing (Humanities and Social Sciences) Japanese economic history, Marketing and distribution, Economic history of Dutch East Indies, Religion, Soundscape studies, Regional resources management, Geographic information system, Environmental economics, Axiology (Multidisciplinary) Architectural history, Urban history, Urban policy planning, Studies of colonial architecture, Urban history in southeast Asia, Islamic architecture and architectural history, City planning and spatial information science, Urban redevelopment, City planning, Western urban history, Historical demography, Economic geography, Studies of China-towns
C-09-Init (FR1)	Designing Local Frameworks for Integrated Water Resources Management	21	13	7	41	(Natural Sciences) Hydrospheric atmospheric system, Environmental fate analysis, Natural disaster science, Water control science, Regional planning, Irrigation and drainage, Irrigation engineering, Environmental informatics, Agricultural engineering, Hydrology for Environmental engineering, Rural planning, Theoretical ecology, Environmental studies, Agricultural meteorology, Soil science, Drainage engineering, Agricultural economics, Land resource science (Humanities and Social Sciences) Cultural anthropology, Geography, History of Islamic art and culture, Archaeology, Social development study, Environmental policy, Policy science, Economic geography, Sociology, Environmental science, Agricultural economics (Multidisciplinary) Global environmental studies, Agricultural engineering, Rural planning, Marketing, Regional development planning, Regional information, Water resources and environmental engineering
D-03 (FR4)	Human Life, Aging and Disease in High-Altitude Environments: Physio-Medical, Ecological and Cultural Adaptation in "Highland Civilizations"	22	8	16	46	(Natural Sciences) Forest resource management, Public health, Pastoral ecology, Psychosomatic medicine, Field medicine, Cardiology, Chrono-medicine, Ecology of water resource, Physical geography, Ecology, Primatology, Neurology, Forest science, Food microbiology, Glaciology, Agrology, Geoecology, Meteorology, Animal husbandry, Geriatrics, Epidemiology (Humanities and Social Sciences) Ethnobotany, Resource economics, History of Indian and Tibetan buddhism, Anthropology, African area studies, History of Chinese thought, Study of nature, Tibetan Buddhism, Archaeology (Multidisciplinary) Field medicine, Cultural anthropology, Agricultural economics, Ethnobotany, Human geography, Area studies, Agricultural management, Grassland science, Primatology, Environmental history, Mountain anthropology, Forest ecology, Agroecology
D-04 (FR4)	Collapse and Restoration of Ecosystem Networks with Human Activity	57	18	4	79	(Natural Sciences) Theoretical ecology, Entomology, Isotope ecology, Grassland ecology, Remote sensing, Forest ecology, Environmental studies, Ecology, Physical geography, Geocryology, Interaction ecology, Insect ecology, Forest mensuration, Environmental ecology, Environmental sciences, Mathematical ecology, Soil science, Systematic botany, Resources and environment (Humanities and Social Sciences) Environmental sociology, Environmental economics, Agro-economics, Anthropology, Ecological anthropology, Cultural anthropology, Area studies, Geography, Theoretical sociology, Politics, GIS (Multidisciplinary) Regional planning, Global environmental studies, Nomad ecology
R-03 (FR5)	Historical Interactions between Multi-Cultural Societies and the Natural Environment in a Semi-Arid Region in Central Eurasia	58	40	11	109	(Natural Sciences) Hydrology, Glacier biology, Glaciology, Soil science, Climate change, Forest ecology, Remote sensing analysis, Ice core analysis, Sedimentology, Landscape ecology, Physical geography, Modeling of soil organic matter, Agricultural land planning, Remote sensing, Hydrological modeling, Glacier biology, Dendrochronology, Irrigation system, Landscape development, Quaternary research, Tectonic landform, Isotope hydrology, Water circulation, Archaeology, Satellite analysis, Risk analysis of ecosystem, Environmental architecture design, Landscape ecology, Irrigation system planning, Snow and ice chemistry, Geochemistry, Synthesis of natural proxies and historical documents, Botany & entomology, Climatology, Snow/ice hydrology, Forest science, Natural environmental changes, Geology (Humanities and Social Sciences) Politics, Ethnology, Pastoral nomadism, Archaeology, International relations on water resources, Folklore of religion, Social anthropology, Silla history, Silla agricultural history, Oriental studies, Archaeological survey, History of central Asia development, Modern Kazakhstan history, Agricultural history of Kazakhstan, Chinese history, Central Eurasian history, Manchurian documents, Environmental politics, Western and southern Asian history, Cultural anthropology, History, History of religious art (Multidisciplinary) Ethnology, Area studies, Archaeology, Geographical studies, Geoarchaeology, Geography, Environmental Studies
R-04 (FR4)	Environmental Change and Infectious Disease in Tropical Asia	48	16	19	83	(Natural Sciences) Epidemiology, Microbiology and immunology, Forest ecology, Insect ecology, Medical entomology, Environmental epidemiology, Climate change and diseases, Infectious disease epidemiology, Biological anthropology, Public health, Parasitology, Environmental microbiology, Microbiology, Clinical chemistry, Environmental health, Demography, Malariaology, Tropical environmental health, International school health, Laboratory medicine, Helminthology, Spatial epidemiology, Meteorology, Tropical medicine, Isotope environmental studies, Regional planning, Agriculture, Ecology, Environmental toxicology, Human ecology, Immunology, Health statistics, Socio-epidemiology, Limnology, Fish ecology, Animal ecology (Humanities and Social Sciences) Health and Medical Sociology, History of medicine, Area studies, Forestry, Social anthropology, Public system programming, Cultural anthropology, Medical anthropology, Modern Chinese history, International health, International medical cooperation, Geography, Postwar economic history and medical history, GIS (Multidisciplinary) Human ecology, Population health, Social healthcare survey, International agriculture, Social research, Health planning, Public health, Commons studies, Informatics, Regional information, Community health nursing, Health policy, Southeast Asian area studies, Public health nutrition, Nursing science, Health education, International health, Geoinformatics
R-05 (FR3)	A Study of Human Subsistence Ecosystems in Arab Societies : To Combat Livelihood Degradation for the Post-oil Era	48	25	18	91	(Natural Sciences) Nutrient physiology, Forest ecology, Fungology, Bio-chemistry, Aquatic biological informatics, Bioacoustics, Plant ecophysiology, Animal physiology, Biological oceanography, Forest hydrology, Soil hydrology, Plant ecology, Revegetation technology, Agricultural chemistry, Natural geography, Hydrology, Tree environmental physiology, Irrigation and drainage, GIS, City planning, Water resource management, Forestry, Tree physiology, Entomology, Food science, Weed science, Biology, Geology, Oceanography, Botany (Humanities and Social Sciences) Archaeology, Agricultural economics, Information science, Cultural Anthropology, History, Islamic culture, Folklore, Religious anthropology, Development study, Education, Agricultural education (Multidisciplinary) Cultural Anthropology, Remote sensing, Afforestation, Architectonics, Landscape ecology, Architectural history, Environmental topography, Social anthropology, Agro-economics, Forestry, GIS, Fisheries, Marine mineral resources, Agriculture, Genetics, Seed
R-06 (FR1)	Managing Environmental Risks to Food and Health Security in Asian Watersheds	13	5	3	21	(Natural Sciences) Environmental chemistry, Plant ecology, Isotope environmental studies, Earth science, Environmental risk, Organic chemistry, Preventive medicine, Isotopic-geochemical study, Environmental medicine, Biology, Lake environmental studies, Public health (Humanities and Social Sciences) Environmental economics, Environmental resource economics, Spatial econometrics, Resource economics (Multidisciplinary) Disaster management, Public health, Resource economics
H-03 (FR5)	Environmental Change and the Indus Civilization	24	26	10	60	(Natural Sciences) Agriculture, Archaeology, Biological science, Seismology, Genetics, Hydrology, Earth science, Glacial biology, Earth physics, Resource geography, Geology, Geomorphology, Ecology, Climatology, Physical geography, Geochronology, Tectonic geomorphology (Humanities and Social Sciences) Linguistics, Archaeology, Indology, Linguistics (Kinnauri), Economics, Cultural anthropology, History of west Asia (Multidisciplinary) Archaeology, DNA archaeology, Folklore, Plant genetics and evolution, Archaeo-zoology, Archaeo-botany
H-04 (FR5)	Neolithisation and Modernisation: Landscape History on East Asian Inland Seas	8	37	22	67	(Natural Sciences) Ichthyology, Landscape engineering, Diet, Archaeology, Human geography, Social engineering, Micropaleontology, Computer engineering (Humanities and Social Sciences) Japanese archaeology, Sociolinguistics, Euro-Japan archaeology, Trade history, Japanese history, Archaeology, Landscape history, Cultural anthropology, Folklore, Philosophy, English language, Religious folklore, Chinese archaeology, English literature, Japanese linguistics, Historical geography, Chinese folklore, Korean archaeology, Prehistoric anthropology, Medieval history, Environmental sociology, Linguistic informatics, Politics, History, Medieval archaeology, Human historical geography (Multidisciplinary) Theory of landscape, Ecological anthropology, Ethnology, Landscape archaeology, Archaeology, Archaeobotany, Folklore, GIS archaeology, Japanese archaeology, Cultural anthropology, Jomon and western archaeology, Prehistoric anthropology, Information culture, Landscape engineering, Landscape history, Environmental anthropology, Historical ecology, East Asian archaeology
E-04 (FR5)	Vulnerability and Resilience of Social-Ecological Systems	16	12	10	38	(Natural Sciences) Soil environmental science, Agronomy, Remote sensing, Soil science, Geography, Atmospheric physics, Forest ecology, Crop science, Botany, Meteorology, Mathematical ecology, Agricultural meteorology (Humanities and Social Sciences) Resource & environmental economics, Development economics, Agricultural economics, African area studies, Cultural anthropology, Sociology, Geography (Multidisciplinary) Ecological anthropology, Environmental geography, Geographic information, Environmental & health economics, Soil hydrology, Palliative medicine, Human ecology, Mathematics
PR (TANAKA)	Desertification and Livelihood in Semi-Arid Afro-Eurasia	3	1	3	7	(Natural Sciences) Soil ecology, Weed science, Environmental soil science, Ecotourism (Humanities and Social Sciences) Development sociology (Multidisciplinary) Terrestrial ecosystems management, Climate architecture, Regional development
FS (ISHIKAWA)	Coastal Area Capability Enhancement in Southeast Asia	27	8	14	49	(Natural Sciences) Study of tropical forest, Coastal ecology, Population genetics, Genetics, Fisheries science, Ichthyology, Molecular biology, Marine planktology, Robotics, Environmental resource geology, Fishing method, Water analysis, Seedling production, Marine engineering, Telemetry, Beach ecosystem, Coral reef ecology, Environmental science (Humanities and Social Sciences) Regional development, Economics, Fisheries economics, Regional economics, Resource management, Traditional technique, Area study (Multidisciplinary) Conservation ecology, Fisheries science, Cultural Anthropology, Global fisheries science, Area study, Satoyama Satoumi, Software engineering, Regional development, Village development
FS (OKUDA)	The Effect of Local Governance on Incentive Programs for Forest Ecosystem Service Conservation	8	3	0	11	(Natural Sciences) Ecology, Animal ecology (Humanities and Social Sciences) Sociology, International law, Agricultural economy
FS (SATO Tetsu)	Formation of Local Environmental Knowledge Systems for Creation and Sustainable Governance of New Commons	6	4	8	18	(Natural Sciences) Ecology, Resource management, Statistical physics, Soil hydrology, Aquatic resource management, Satoyama management (Humanities and Social Sciences) Environmental sociology, Folklore, Rural sociology (Multidisciplinary) Regional environment study, Natural energy, African studies, Residential research, Satoumi Satoyama, Coastal environment management, Conservation of nature

Project Number	Title of the Project	The number of projects members				Research Background of Project Members
		Natural Sciences	Humanities and Social Sciences	Multidisciplinary	Total	
FS (SATO Yo-Ichiro)	Scenario for Environment-conscious "Mature Society" in East Asia	5	5	4	14	(Natural Sciences) Plant genetics, Forest hydrology, Insect ecology, Molecular ecology, Fish ecology (Humanities and Social Sciences) Sociology ethics, Medical social history, Philosophy, Modern Chinese history, Economics (Multidisciplinary) Social healthcare survey, Human ecology, Demography, Public health, Population health
FS (NAGAO)	Water-and Food-Sheds in the Noto Peninsula: New Scales of Analysis in Global Environmental Studies	21	2	12	35	(Natural Sciences) Nuclear and radiochemical sciences, Ecology, Public health, Microbial technology, Atmospheric science, Neuropsychiatry, Neurology and neurobiology of aging, Sedimentology, Geochemistry, Hydrology, Forest ecology, Soil science, Organic geochemistry, Marine Environmental chemistry, Coastal oceanography, Biogeochemistry, Algal physiological ecology, Laboratory medicine (Humanities and Social Sciences) Cultural anthropology, Japanese history (Multidisciplinary) Epidemiology, Geography, Food science, Organic geochemistry, Health science, Remote sensing, Environmental protection engineering, Hydrology, Landscape architecture, Restoration ecology, Mathematical ecology, Global environmental studies
FS (NAKATSUKA)	Historical Adaptation to Climate Change in Japan: Integrating Palaeoclimatological Data and Archaeological Evidence	20	6	5	31	(Natural Sciences) Isotopic-geochemical study, Climatology, Wood science, Dendrochronology, Wood histology, Glaciology, Paleoclimatology, Earth system dynamics, Climate modeling, Geochronology, Geodynamics, Geochemistry, Isotope meteorology (Humanities and Social Sciences) Archaeology, Japanese modern history, Regional social history, Preserving historical materials, Japanese archaeology, Theoretical archaeology, Japanese medieval history, Prehistoric archaeology (Multidisciplinary) Paleoclimatology, Dendrochronology, Chronology, Plant ecology, Historical climatology
FS (FUKUSHIMA)	Lakes as Sources and Sinks: Social and Ecological Dynamics Affecting Downstream/Pollution-Accumulating Lakes	16	3	3	22	(Natural Sciences) Environmental earth science, Hydrology, Drainage and rural engineering, Geochemistry, Earth recovery, Water environment science, Isotope science, Environment engineering, Remote sensing, Conservation ecology, River engineering, Phycology, Limnology (Humanities and Social Sciences) Politics, Environmental sociology, River policy (Multidisciplinary) Water environment science, Water environment management, Area environmental science
FS (MATOH)	Designing Agriculture in the Era of Petroleum Scarcity	6	2	1	9	(Natural Sciences) Plant nutrition, Genetic ecology, Soil fertility, Breeding (Humanities and Social Sciences) Agricultural economics, Food science (Multidisciplinary) General science
FS (MURAMATSU)	The History of Human-Water Interactions in East Asian Livelihood Complexes	5	19	0	24	(Natural Sciences) Arid land revegetation, Geography, Environmental studies, Forest hydrology, Botany (Humanities and Social Sciences) Oriental history, Environmental law and policy, Historical geography, History, Cultural anthropology
FS (YOKOYAMA)	Survivability and Autonomy in Southeast Asia: Perspectives from Land Use Changes and Resource Chains	4	6	7	17	(Natural Sciences) Ecology, Agricultural ecology, Animal ecology, Environmental biophysics (Humanities and Social Sciences) Resource study, Social anthropology, Area study, Forestry, International relations, Area Study, Forestry (Multidisciplinary) Geography, Human ecology, Population health, Regional information, Geoinformatics, Area study
FS (WATANABE)	Environmental Change and Immunological Adaptation in the Mekong River Region	7	0	4	11	(Natural Sciences) Microbiology and Immunology, Nutritional Immunology, Mangrove forest ecology, Coral Reef Ecology, Biodiversity, Environmental change analysis, Oceanography (Multidisciplinary) Population on health in the tropics, Human ecology, Mangrove environment, International health
	Total	526	291	207	1024	

As of March 31, 2012



## Full-Research

- C-06** Effects of Environmental Change on the Interactions between Pathogens and Humans  
 ◦Lake Biwa, Japan; Erhai in Dali, Yunnan, China; Pin River, Chiang Mai, Thailand; Kenya
- C-07** Global Warming and the Human-Nature Dimension in Siberia : Social Adaptation to the Changes of the Terrestrial Ecosystem, with an Emphasis on Water Environments  
 ◦Lena River Basin, East Siberia
- C-08** Megacities and the Global Environment  
 ◦Jakarta Mega-Urban Region
- C-09-Init** Designing Local Frameworks for Integrated Water Resources Management  
 ◦Turkey; Egypt; Indonesia; Shiga, Japan
- D-03** Human Life, Aging and Disease in High-Altitude Environments: Physio-Medical, Ecological and Cultural Adaptation in "Highland Civilizations"  
 ◦The Himalaya, Tibet and the other highlands in the world
- D-04** Collapse and Restoration of Ecosystem Networks with Human Activity  
 ◦East-Asia Tropical Rainforest (Malaysia, Sarawak) and Central-Asian Grasslands (Mongolia)

## Full-Research

- R-03** Historical Interactions between Multi-Cultural Societies and the Natural Environment in a Semi-Arid Region in Central Eurasia  
 ◦Ili River basin and its surrounding areas in semi-arid regions of Central Eurasia (Kazakhstan, China)
- R-04** Environmental Change and Infectious Disease in Tropical Asia  
 ◦Tropical Asia (Lao PDR; Bangladesh; Yunnan, China; Vietnam)
- R-05** A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-oil Era  
 ◦Semi-arid lands in Sudan, the Sinai Peninsula in Egypt, the Red Sea coast in Sudan, Saudi Arabia and Egypt, and Saharan oasis in Algeria
- R-06** Managing Environmental Risks to Food and Health Security in Asian Watersheds  
 ◦Laguna Lake area Philippines; Malaysia
- 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
- E-04** Vulnerability and Resilience of Social-Ecological Systems  
 ◦Rural societies in Southern and Eastern Provinces of Zambia in Semi-arid tropics where environmental variability such as rainfall is large

## Pre-Research

- PR** Desertification and Livelihood in Semi-Arid Afro-Eurasia  
 ◦Niger, Namibia, India, Burkina Faso