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Message from the Director-General

The Research Institute for Humanity and Nature was established in April 2001 by the Government of Japan to promote integrated research in the field of global environmental studies. As a national institute, RIHN solicits, develops, hosts, and funds fixed-term research projects on pressing areas of interaction between humanity and nature. RIHN thus promotes coordinated, problem-centered, context-specific, and multi-dimensional science. RIHN projects can last from three to five years; they are always multidisciplinary and employ multiple methodologies, and they are supposed to offer solutions to the problems under through trans-disciplinary approach with various stakeholders of the society.

As of the end of FY2014 RIHN has completed twenty-six research projects, each of which has established extensive research networks in order to make important contributions in its area of specialization. FY2014 is the final year of the phase II of the interim plan of RIHN, and we overviewed the overall activities of the institute and published the report of the external review. Based on this report we have been planning the new structure of the institute, including the research strategy, project styles, supporting center etc. for the phase III of the interim plan of RIHN starting from FY2015.

As part of RIHN's international activities, RIHN has established the Asian Regional Centre for Future Earth, which is expected to promote the overall research and capacity buildings of Future Earth in Asia.

This annual report describes the updated outcome of these activities of RIHN for the FY2014. I do hope this annual report will help you to understand the overall activity within the FY2014.

With best regards,

YASUNARI Tetsuzo
Director-General
Research Institute for Humanity and Nature

Research Activities

● Full Research

| | | |
|---------------------|---|--------------|
| Project No. | C-08 (Project leader: MURAMATSU Shin) | p. 5 |
| Project Name | Megacities and the Global Environment | |
| Project No. | C-09-Init (Project leader: KUBOTA Jumpei) | p. 12 |
| Project Name | Designing Local Frameworks for Integrated Water Resources Management | |
| Project No. | D-05 (Project leader: ISHIKAWA Satoshi) | p. 21 |
| Project Name | Coastal Area Capability Enhancement in Southeast Asia | |
| Project No. | R-07 (Project leader: TANAKA Ueru) | p. 29 |
| Project Name | Desertification and Livelihood in Semi-Arid Afro-Eurasia | |
| Project No. | E-05-Init (Project leader: SATO Tetsu) | p. 36 |
| Project Name | Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge | |
| Project No. | R-08 Init (Project leader: TANIGUCHI Makoto) | p. 50 |
| Project Name | Human-Environmental Security in Asia-Pacific Ring of Fire: Water-Energy-Food Nexus | |
| Project No. | R-09 (Project leader: HABU Junko) | p. 57 |
| Project Name | Long-term Sustainability through Place-Based, Small-scale Economies: Approaches from Historical Ecology | |
| Project No. | H-05 (Project leader: NAKATSUKA Takeshi) | p. 71 |
| Project Name | Societal Adaptation to Climate Change: Integrating Palaeoclimatological Data with Historical and Archaeological Evidences | |

● Pre Research

1. OKUDA Noboru (RIHN)
Biodiversity-driven Nutrient Cycling and Human Well-being in Social-ecological Systems

● Individual Collaboration FS

1. UBUKATA Fumikazu (Okayama University)
Understanding “Securitization of Nature”: History, Mechanism and Impact to Society and Nature
2. ONISHI Masayuki (RIHN)
Biocultural Diversity in the Asia-Pacific: Towards Dynamic Transmission of Traditional Ecological Knowledge
3. KAJITANI Shinji (The University of Tokyo)
Rebuilding Local Communities through the Creation of Local Standards and Reconstruction of the Theory of *Fudo*
4. KANEKO Nobuhiro (Yokohama National University)
Designing Sustainable Agriculture and Forestry after Fukushima Accident
5. TANAKA Masakazu (Kyoto University)
A Transdisciplinary Study of Military Environmental Problems

6. FUNAKAWA Shinya (Kyoto University)
Integrating Environmental Wisdom in Local Agriculture: Overcoming Environmental Degradation Associated with the Rapid Expansion of Global Agriculture

●Institutional Collaboration FS

1. MIZUNO Kosuke
Toward the Regeneration of Tropical Peat Land Societies: Establishment of an International Research Network and Proposal of its Future

●Initiative-based FS

1. HANDOH Itsuki C. (RIHN)
Co-development of Environmental Perception-Yielding Omniform Network towards Living with Chemical Imbalance Manifested as Environmental Risks in the Anthropocene in Peace
2. MCGREEVY, Steven Robert (RIHN)
Lifeworlds of Sustainable Food Consumption: Agrifood Systems in Transition

●Incubation Studies

1. ICHIE Tomoaki (Kochi University)
Study on the system for conservation and use of tropical forest

●Completed Research (CR) Follow-up Grants

1. SHIRAIWA Takayuki (Hokkaido University / RIHN)
Operation of the Amur Okhotsk Consortium as a multilateral academic network p. 81
2. MOJI Kazuhiko (Nagasaki University)
Co-hosting of the 8th National Health Research Forum of Lao P.D.R., and the 2nd Xepon Workshop p. 81
3. KUBOTA, Jumpei (RIHN)
Network Development for establishing an integrated management model of R. Syr Darya with special emphasis on environmental preservation p. 81
4. OKUMIYA Kiyohito (Kyoto University)
The establishment of the occasion on opinion and information exchange aimed for rural development, environmental conservation and health promotion in highland mountainous village p. 82
5. KADA Ryohei (Shijonawate Gakuen University)
Evaluation of Social Experiment for Sustainable Risk Management p. 82
6. NAWATA Hiroshi (Akita University)
Developing a new framework for forest resource management in semi-arid land: by seeking an appropriate way of utilization of indigenous and alien species in eastern Sudan p. 82

Stage: Full Research

Project No.: C-08

Project Name: Megacities and the Global Environment

Abbreviated Title:

Project Leader: MURAMATSU, Shin

Research Axis: Circulation

URL: <http://www.weuhrp.iis.u-tokyo.ac.jp/chikyuken/eng/index.html>

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

○ Research Subject and Objectives

a) Research objectives and background

Since the end of the 20th century we have seen a rapid increase in the size of urban populations in developing countries as these countries simultaneously experience high rates of economic growth. These two phenomena have unleashed a multitude of problems in these countries, such as waste and garbage issues, air pollution, traffic congestion, food shortages, and/or rampant consumerism. These problems afflicting the enormous cities in these countries have started to spill over and impact on the developed world and the planet as a whole. We do not necessarily have a detailed understanding, however, of how this emergence of supersized cities in developing countries, along with what is happening inside them, relates to global environmental problems; of which particular global environmental problems to which they relate; the damage being caused by those global environmental problems as a result; or what measures to take to deal with those problems. Many research institutions are currently taking tentative steps to conduct research into supersized cities in relation to global environmental problems. Much of this research, however, is focused on macro, indirect observations using remote sensing and similar methods, or alternatively is oriented to stereotypical solutions of the “low-carbon city” sort, which place disproportionate importance on the use of science and technology.

This was the background to start of this project towards the end of the last century, which had as its objectives the development and presentation to communities of reconciliatory proposals that enhance the futurability of both the global environment and the enormous megacities within some developing countries by promoting improvements to the local environments of the residents of those cities while helping to achieve solutions for global environmental problems.

b) Research methods and organization

In order to escape from the constrictive approach of looking for more of the existing sort of partial ‘optimal’ solutions for megacities, for this project we set two principal directions for our research. The first was to set a whole region (in this case, Jakarta) as our case study. The second was to start by building an awareness of the object of our research (the megacity), and then proceed to engaging in interventions in local communities using the findings from that process of building awareness - in sum an approach of engaging in “theoretical” science, followed by “practical” science, followed by interventions.

The first direction of our research was comprised of three aspects: 1) conducting specific research on a megacity itself (by conducting field work in Jakarta as our megacity case study); 2) understanding megacities in relation to the global environment (determining their CSI grouping); and 3) analyzing how the case study connected to issues at the global level (the All World Cities Whole History Group).

The second research direction involved: 1) analyzing the megacity from different angles (by a Natural Environment Group, Built Environment Group, Economy Group, and History Group); 2) integrating the findings of that analysis (by an Integration Group and a Scenario Group); and 3) developing and verifying methods for interventions in communities (by an Integration Group and a Scenario Group).

Nine years (IS-FS1-FS2-PR-F1-F2-F3-F4-F5) were spent on this project. These nine years were divided into four phases, and using the track and field sport of the triple-jump as an analogy, these phases could be described respectively as a running approach phase (IS-FS1-FS2), followed by a hop (PR-F1),

step (F2, F3, F4), and jump (F3, F4, F5) phase. In the running approach phase we undertook a broad discussion of the relationship between cities and the global environment; during the hop phase we focused on the problems of megacities; in the step phase we went on an exploration to achieve integration; and in the final jump phase we integrated the different findings in pursuit of the originality of this project.

○ Progress and Results in 2014

Already four years have passed since FR1 of this project. Here we detail the results we have achieved to date through research in this project and areas where we have yet to achieve results based on the four questions we stated at the beginning (in RESEARCH OBJECTIVES AND BACKGROUND).

0) Research Premises

To establish coherence throughout the project, we reviewed the (1) definition of a city as a premise for this research, and determined it to be an area having a population density of 2,000 or more per square kilometer. Because this definition of a city was based on a current population standard, however, we had to give further thought about the extent to which it could be historically

retrospective. As a unit for urban analyses, we also developed (2) residential environment types that classified urban built-up areas of 250m x 250m according to population density, building height, and planned/unplanned. This made it possible to analyze cities in greater detail than existing land use maps. Moreover, because the existing definition of a megacity as a city with a population of 10 million and over was not clear, we undertook the task of redefining what a (3) megacity signified. On the basis of this new definition, we found that in cities with populations of four million and over in comparison with cities with populations of less than four million, the diversity of residential environment types found in those cities varied. In addition to recognizing the 18 existing cities with populations of 10 million or more as megacities, we also found that 35 cities with populations of four million or more and not more than 10 million are similar in character to megacities.

1) What kinds of impacts do cities have on the global environment?

We began our research with the value judgment that whatever was beneficial for both cities and the global environment was desirable. Therefore, to consider beneficial measures, instead of simply considering research that shed light on global limitations attributable to cities, we established (1) a CSI (city sustainable index) for assessing the efficiency of cities by analyzing the impact of cities on the environment and the social and economic benefits from cities based on a number of indicators relating to the environment (global environment and urban environment), the economy and society. This CSI consists of two types of indicators: restricting indicators that restrict environmental impacts caused by cities, and maximizing indicators for strongly inducing social and economic benefits. At present we have already conducted 18 megacity assessments using five restricting indicators and seven maximizing indicators. We believe this research to be the most essential research in considering cities in relation to the global environment.

2) How varied are the world's cities in their stages of regional and economic development?

To answer this question, we undertook (1) a comparison of 18 megacities based on criteria such as topography, climate, city configuration, type of residential environment, and methods of communications, etc. As a result of this research, we found it was possible to classify the 18 megacities into about five types: 1) Monsoon Asia type (Tokyo, Shanghai, Jakarta, Dhaka, etc.); 2) Yellow Belt type (Beijing, Delhi, Cairo, etc.); 3) Euro-American type (New York, Los Angeles), 4) Tropical Africa type (Lagos); and 5) Latin American type (Mexico City, Sao Paulo, etc.)

3) How varied should measures for mitigating impacts on the global environment be for each region?

From our field work in greater Jakarta, we found that the monsoon Asia type of megacity is characterized by its establishment in a rice-producing region that incorporates farmland and farming villages as it expands outwards to mildly undulating areas, is located in areas with high temperatures, high humidity and heavy rainfall, and has a strong sense of community. In the monsoon Asia type megacity, four types of residential environments exist simultaneously: rural village area, urban

village area, high-rise residential area, and planned residential area types). Unlike megacities in other areas, megacities at different stages of economic development exist in monsoon Asia type megacities. Therefore, we are beginning to believe that measures used in Tokyo may also be of assistance in greater Jakarta, and that research results in Jakarta may have applicability in cities such as Dhaka.

4) How can we simultaneously provide solutions for global environmental problems and benefits for residents of cities and other areas (including poverty, economies, and amenities)?

Using data resulting from research in greater Jakarta to date, we have been attempting to verify an urban configuration that will be compatible with the global environment for megacities of monsoon Asia, which are set to expand to areas including rice-producing areas in mildly undulating terrain. (1) In our preparation of Megacity Scenario 2050, we assessed the extent of the environmental impacts of the polycentric city, monocentric city, and city with urban sprawl respectively in efforts to contribute to the training of local administrators. Our research to date indicates that switching to a polycentric configuration with a historic core has relative advantages in terms of environmental and urban amenities. Furthermore, we are presenting (2) proposals for an eco-urban house for each of the four types of residential environments with a view to mitigating environmental impacts and improving comfort. In specific terms, we are currently formulating plans to i) actually build together with residents an urban village-type community center in a residential area of the poorest segment of the population. We are also planning ii) a new rural village residential model and iii) high-rise residential model that emphasize landscaping, as well as an open-space mid-rise complex residential model.

5) How can we return our research results to society?

Rather than confining the results of our research to the academic world, we perceive the scope of this project as extending to the development of methods for funneling the results back to the broader society itself. As noted earlier, local residents and local university students are involved in the (1) cooperative construction of an urban village-type community center, and we consider at present its role as a place of education. Moreover, in Jakarta at present we are also (2) conducting and analyzing urban environmental literacy education for elementary school students. In addition, after integrating collected data, we have also commenced the (3) development and installation of a megacity geographical information system (Megacity GIS) that can be accessed from anywhere.

○Project Members

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- Ayukawa, Kei (Institute of Industrial Science, the University of Tokyo, doctoral course)
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| Yamashita, Tsuguta | (London School of Economic and Political Science) |
| ○ Yamashita, Yuko | (Graduate School of Commerce and Management, Hitotsubashi University, Associate Professor) |
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| Yoshida, Mari | (College of Business Administration, Ritsumeikan University, Associate Professor) |
| Zenno, Yasushi | (Aoyama Gakuin Women's Junior College) |

○ Future Themes

Research Plan

FR5 (2014)

Since next fiscal year is the final year of the project, we will not only complete the objectives of the project, but also set new goals for the further development of the project in the future.

1. Completion of the project goals

1) Assessment of the burden of cities on the global environment and benefits from cities

(1) Completion of the CSI (city sustainability index): We will strive to make visible the efficiency of all 18 megacities so that they can be assessed according to approximately 20 indicators which people in general will be able to understand.

2) Diversity of cities

(1) Comparison of the 18 megacities: We will undertake field studies of Cairo and megacities in South America that have not yet been studied in efforts to clarify more exhaustively the characters of megacity types.

(2) Comparison of urban efficiency according to scale of population: The majority of the world's 290,000 cities have populations of approximately 20,000. Using the CSI for smaller cities, we will assess urban efficiency by making comparisons of cities with varying population sizes. In doing so, we hope to be able to arrive at a relatively better understanding of the meaning of megacities.

3) How varied should measures for mitigating impacts on global environment be for each region?

(1) We will clarify more exhaustively the commonalities and differences of megacities in monsoon Asia. We will continue to undertake field research in Tokyo and Osaka as we have until now, and we will clarify the characters of megacities in monsoon Asia such as Dhaka, Jakarta, Manila, Tokyo, and Osaka, as well as the logic linking these.

4) Measures for both the mitigation of global environmental problems and benefits for urban residents

(1) Completion of a "Megacity Scenario 2050" : In autumn 2014 we will hold a joint workshop based on the Megacity Scenario 2050 in greater Jakarta with the participation of a local university and government, and we will establish the direction of future cooperative measures with local communities.

(2) Realization of an eco-urban house for each type of residential environment: In Jakarta we will continue activities to realize new residential models with emphasis on landscaping as well as open-space mid-rise complex housing models.

5) Returning research results

- (1) University study program: We will create aneco-urban house design program for tertiary-level study.
- (2) Completion of a megacity geographical information system (Megacity GIS): We will complete the Megacity GIS which will come packaged with dataof greater Jakarta data, and commence use of it.
- (3) Publication of “Global Environment and Megacities” works: We will summarize and organize the results of the project and publish them as books.

2. New objectives for further development of the project

- 1) Exploring partnerships with megacities in monsoon Asia: We will create a platform for application of research results obtained in Jakarta to other megacities in monsoon Asia such as Dhaka, Manila, Bangkok, and Kolkata.
- 2) Efforts to disseminate eco-urban houses: We will promote efforts to disseminate eco-urban residential designs by holding an exhibition on eco-urban housing in greater Jakarta and later take this exhibition to other cities.

●Achievements

○Books

【Authored/Co-authored】

- Fukami N., John Pile (joint translation) 2014 A history of Interior design. Kashiwa Shobo (in Japanese)

【Chapters/Sections】

- Kurihara S. 2014,07 Living Space and Identity. National Museum of Ethnology (ed.) World ethnic encyclopedia. Maruzen, pp.458-459. (in Japanese)

○Papers

【Original Articles】

- Fukami N. 2015 Historic Coral Mosques in Maldives: A Comparative Architectural Study along the Indian Ocean. The 21th Annual Meeting of Japan Society for Hellenistic-Islam Archaeological Studies : 152-172.
- Kurihara S. 2015 THE CHANGE OF THE SPATIAL REPRESENTATION AND ITS MEANING OF COURTYARD SPACES IN A CHINESE TRADITIONAL COURTYARD- STYLE HOUSE “SI-HE-YUAN” AS INTERPRETED FROM THE CHINESE MOVIE “SUNFLOWER” (accepted). AIJ Journal of Technology and Design .
- Abe, R., Kato, H. 2014,12 The impact of built environment on gasoline consumption in a developing megacity: Evidence from the Jakarta Metropolitan Area, Transportation Research Record: . Journal of the Transportation Research Board . (accepted)..
- Henny, C. and A.A. Meutia. 2014,10 ‘Urban lake in megacity Jakarta: Risk and management for future sustainability’ . Procedia Enironmental Sciences (20) :737-746.
- Hayashi R. 2014 A Perspective on International Migration - Is there any Japanese model?. Journal of Population Problems 70(3) :192-206. (in Japanese)
- FUKAMI N. 2014 History of Medieval Islamic Architecture in South Asia: Digital Archive, Institute for Advanced Studies on Asia, the University of Tokyo, Diversity of Islam and India: NIHU Program. Collaboration Studies between IAS and INDAS, Kyoto University .
- Hayashi R. 2014 International Comparison of Migration - A construction of Model-mobility Using Japanese Indicators. Journal of Population Problems 70(1) :1-20. (in Japanese)
- Murakami A., Kurihara S. and Harashina K. 2014 Relationships between thermal environment and residents’ usage of outdoor spaces in a kampung in Jakarta, Indonesia. Journal of the City Planning Institute of Japan 49(1) :65-70.

- Fukami N. 2014 The beauty of Islamic Architecture and the formation of living spaces. *Journal of Islamic Sciences* (10) :83-92.

○Research Presentations

【Oral Presentation】

- FUKAMI, Naoko ‘Cultural Relations of along Indian Ocean from the mosque architecture’ , . Human migration and Habitat culture, , 2015,03,07, Architectural Institute of Japan Building .
- FUKAMI, Naoko ‘Islamic Architecture on Silk Road’ ,. “Culture and Architecture on Silk Road” , 2015,02,28, the Industry Club of Japan.
- FUKAMI, Naoko ‘Conservation of Cultural Property in Maldives’ . “ SE Asia and South Asia session meeting, Japan Consortium for International Cooperation in Cultural Heritage” ,, 2015,02,06, National Research Institute for Cultural Properties, Tokyo .
- Takada, Y., Abe, R., Kato, H. Relationship between built environment and resident gasoline consumption in the Jakarta Metropolitan Area: Residential self-selection and the Structural Equation Modeling approach,. *Proceedings of the Transportation Research Board 2015 Annual Meeting, Washington DC (U.S.)*, January 2015, .
- FUKAMI, Naoko ‘The Gardens as a Paradise in Arid zone: From the vision of Persian Architecture’ . “Workshop of Turkish Culture, Mukogawa Women’ s University” , 2014,12,19, Koshien Hall.
- HAYASHI, Reiko “Long-term care of older persons – The case of Japan”,. UN ESCAPRegional expert consultation on long-term care of older persons, , 2014,12,09-2014,12,10, Bangkok, Thailand.
- FUKAMI, Naoko ‘Historical Islamic Architecture in Danger’ . “ The Convulsion and the Calm of Islam: Serious Chaos or predawn?” , 2014,11,30, Waseda University .
- FUKAMI, Naoko ‘The Study for the living diversity in historical cities: Penang and Malacca as the World Heritage city’ . “Workshop of The Kajima Foundation” , 2014,11,27, Kajima KI Bldg. .
- Y.Uemura “Trade and Shipping in Batavia in the late colonial era”. “Urban Development and Social Integration: Long Term Perspective” , 2014,11,24, Faculty of Engineering, Univeritas Indonesia, Depok, Indonesia.
- FUKAMI, Naoko ‘Habitation and Livelihood of Muslim’ ,, . Extension lecture of Kanazawa University, 2014,11,15, Satellite Plaza.
- HAYASHI, Reiko “Demographic changes and social impact – The case of Japan”. Joint Research Network Forum on Ageing and Health in Asia, , 2014,11,11, Ito International Research Center.
- FUKAMI, Naoko ‘ The information of Islamic Architecture in Cairo-The Database of OIAS, Waseda University. “The 3rd seminar of Coptic and Islamic Material Culture” , 2014,11,08, the University of Tokyo .
- Takada, Y., Abe, R., Kato, H. How does built environment influence household energy consumption in a developing megacity?: Evidence from the Jakarta Metropolitan Area,. *Proceedings of the 1st International Conference of IASUR*, October 2014, .
- Yamashita, T., Mori K., Uchiyama Y., Mimura Y., Hayashi K., and Fujii T. Development and Visualization of City Sustainability Index: How can we measure urban sustainability?. *Environmental Economics and Policy Studies*, 2014,09,13-2014,09,14, Hosei University. (in Japanese)
- FUKAMI, Naoko ‘Islamic cities and Megacities: Studying regions and history’ , . RIHN 9th International Symposium:Living in the Megacity, , 2014,06,25, .
- FUKAMI, Naoko ‘Rehabilitation from the disasters based on the Cultural heritage: Western Indian Earthquake in 2001 and Hadramaut Flood in 2008’ . Forum of the overseas scientific research coordination, 2014,06,18, Tokyo University of Foreign Studies.

【Poster Presentation】

- Itagawa, S., Ichinose, T. The study of the relation between land use elements composition and Odonates diversity.. The 6th EAFES International Congress, Poster Presentations,, 2014,04,10, HUANDAO TIDE Hotel, Haikou, China..the Standing Poster Award).

Stage: Full Research

Project No.: C-09-Init

Project Name: Designing Local Frameworks for Integrated Water Resources Management

Abbreviated Title: C-09-Init

Project Leader: KUBOTA Jumpei

Research Axis: Circulation

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

Key Words: Integrated Water Resources Management (IWRM), local water resources governance, pro-humanistic water resources assessment, Water Consilience

○ Research Subject and Objectives

The concept of Integrated Water Resources Management (IWRM) was first proposed in the 1990s, at the time of worldwide growing environmental awareness and has been recognized as a fundamental principle for comprehensive water resources management, where in various sectors and many stakeholders are involved. However, challenges still remain in the implementation of IWRM in local communities and effective assessment of the influence of human activities on the water environment. IWRM has focused on integrating sectors and organizations that govern various resources, such as surface water and groundwater. However, there appears to be a lack of systematic flexibility, because they have insisted on water allocation plans of the demand side rather than various requests by the users' side, and historical and cultural backgrounds sometimes have not been considered well. Further, local water resources have been under joint management by water users, but there has been a switch to top-down management by public organizations with their increasing involvement, which follows modernization and expansion of irrigation systems. Moreover, qualitative changes are occurring within the structure of society, such as hastening of private assignment of water management. Therefore, new frameworks/guidelines have been requested for local to regional water resources management (e.g. Biswas 2004). Furthermore, the target of IWRM is to focus on "quantity" over "quality." Water management must consider domestic and industrial water quality in addition to assessing water quantity for agricultural use when assessing global water resources dynamics.

The goal of C-09-Init is to present water resources management at the local level, which is the foundation of IWRM, to be a social implemented, and to develop the knowledge structure and ability to implement this management among the concerned parties. In particular, C-09-Init considers a management structure that reflects the relationship among various water users. Based on such specific content and necessary conditions for establishing the management structure, the aim is to suggest desirable local water resources management guidelines through the co-creation of "Wisdom of Land and Water Management" by co-operation between science and society. The tools to implement the techniques for a more proactive discussion and to achieve specific goals will also be developed. Based on such research results, information grounded in scientific evidence for a future study will be presented to various stakeholders from policy makers to local end water users.

Finally, C-09-Init will present implementable resolutions to the following problems of various stakeholders: **a.** changes in water resources dynamics because of changes in local water usage, **b.** environmental problems of agricultural land (soil salinization and ecosystem changes), **c.** development of new water resources for increase in water demand, and **d.** water resources management to maximize and guarantee ecological services in targeted environments. Further, water resources governance will be co-created by scientific and societal practices to achieve these goals. The following results will be returned to local communities, and will be instrumental in working toward a solution for the environmental problems: **a.** efficacy evaluation for local water resources management; **b.** assessment of the relationship between local water resources management and water usage/environment; **c.** necessary conditions for desirable local water resources management; **d.** contents and rules of wisdom that support

desirable local water resources management; e. assessment of the influence of local water resources management on global water resources dynamics.

○ Progress and Results in 2014

Overall progress

We established several study sites in Indonesia, Turkey, Egypt, and Japan to accomplish the goals of C-09-Init. Among these study sites, the cases in Indonesia and Turkey provided a geographical and hydrological contrast between humid and semi-arid to arid regions under the growing demand in the presence of water resources associated with rapid economic growth, whereas the Japanese case was considered because of a steady or decreasing demand for water resources. According to the comments provided by the Project Evaluation Committee (PEC) in FY2012 (the interim review, FR2→FR3), we changed our research direction to focus more on the cases in Indonesia and Turkey, with special emphasis on conducting co-creation studies with various stakeholders, because Indonesia and Turkey provide a simple hydrological contrast between humid and arid regions and their differences in history and culture provide for a comparative study in terms of water management structure. We held stakeholders meetings in these areas to re-identify problems and seek new ways of establishing proper water resources management and solving associated problems. Through these activities, we analyzed changes in stakeholder's behaviors and decision-making processes to evaluate the methodology for a transdisciplinary study. Furthermore, in response to the PEC's comments in FY2013 (FR3→FR4), we concentrated more on field studies such as basic surveys on human and social sciences and collaborative work with various stakeholders, rather than the assessment by the global hydrological modeling. In FY2014, we archived the improvement of water management in South Sulawesi, Indonesia by a series of collaborative meetings with stakeholders, establishment of a new "Forum DAS" (river committee) preparatory committee in Bali, Indonesia; and success of a pilot project of "night irrigation" for saving water and achieving higher production.

Through these activities, C-09-Init aims at an assessment of the influence of man-made changes in the hydrological cycle of the environments as well as a response to problems that have risen because of environmental impacts. This is an essential topic in the Circulation Program. Moreover, with respect to local water and land management, C-09-Init aims to concretely work on the plans drafted in the Gaia Initiative as an Initiative-based Project. This states that "As human societies design their futures, they require best understandings of the Earth's natural dynamism and the significance of human action within it. Therefore, the Gaia Initiative investigates of the physiospheric bases of humanity at multiple spatiotemporal scales; and it emphasizes on the description of physical standards related to boundaries and thresholds in order to allow the analysis of and best eco-technological adaptations to dynamic Earth environments."

Individual results of survey and research

The following three points are described as basic results to the end of FR4. 1) We reorganized the project design according to PEC's comments and focused on the cases in Indonesia and Turkey as major target areas for transdisciplinary studies. 2) Based on the results of our observational survey, we have started collaborative studies, such as meetings, workshops and participatory monitoring in South Sulawesi, Bali and Turkey in collaboration with various stakeholders. 3) Through these collaborative studies, we archived the improvement of water management in South Sulawesi, Indonesia by a series of collaborative meetings with stakeholders, establishment of a new "Forum DAS" preparatory committee in Bali, Indonesia, and the success of a pilot project of "night irrigation" for saving water and achieving higher production.

(1) Clarification of conventional water resources management systems in humid areas and attempts to co-creation of knowledge between science and society (Indonesia):

We further conducted hydrological observations and land use surveys of targeted watersheds in Bali and South Sulawesi, beginning in 2011, and clarified water use and balance in rice cultivation during the dry season. These studies revealed that water users cultivated paddy during the dry season

considering their respective geographical conditions while empirically utilizing limited water resources. Moreover, we have established systems in South Sulawesi to realize “co-creation by science and society” supported by various stakeholders, including farmers, local municipalities, and a NGO. In Bali, we implemented a fact-finding survey on water governing structures whose basis is Subak and found that managing communities regarded as autonomous had changed into co-operative associations organized under public policies; and that public-financing systems prompted such dynamics. We have also started surveys on recent land use change under globalization and mass tourism. Subak is widely recognized as an ideal autonomous irrigation system (Geertz 1972, Lansing 1991, 2006; Ostrom 1992); however, we confirmed recent changes in the functions and roles of Subak. As outcomes of natural scientific surveys, isotopic analysis on various water origins in the whole watershed exhibited the importance of deep groundwater flow maintaining stable river flow during the dry period. The effects of the introduction of cash crops, such as clove and banana, on water balance and soil erosion were quantified by the field experiments. These results supported the people’s perception and recognition of recent problems because of land use change.

(2) Outcomes of the collaboration work with various stakeholders in Indonesia

1) Bali: The first stakeholders meeting in Bali was held in September 2013. Over 50 leaders of Subak in the Saba River watershed in the north of Bali Island and related government officials from various sections attended the meeting. Most participants described problems that had recently arisen between Subak members and outsiders, such as illegally dumped waste associated with water pollution and illegal construction on irrigation canals. Because Subak comprises farmers, it was difficult to solve these problems beyond the governance of Subak. Participants realized the necessity for communication beyond the Subak governance; therefore, we are now preparing comprehensive meetings on watershed management involving other stakeholders outside Subak. The second stakeholders meeting was held on October 2014. Based on the recognition of recent problems raised by rapid land use change with urbanization and cash-crop introduction, the Forum DAS (river committee) preparatory committee were established, comprising heads of Subaks, officials and engineers in local governments, scientists and NGO workers. One preparatory meeting was held in December 2014 and another will be held in February 2015” and revise accordingly.

2) South Sulawesi: The lack of proper communication among water managers (gate operators on irrigation canals), who are employed by both the government and water users’ associations, was clearly identified in the stakeholders’ meeting in Sulawesi, wherein almost 100 leaders of farmers, water managers, and government supervisors participated. After this meeting, we supported the autonomous discussion among water managers. All meetings, including the small ones, were recorded to trace changes in awareness and behavior and to describe our actions to stakeholders. Through these meetings, a detailed schedule of water allocation was established and shared with water managers and farmers, improving the performance of water allocation and consequently rice production. We are planning to have an other action-meeting series in collaboration with stakeholders, expanding to other irrigation districts.

(3) Integrated understanding of the impacts of institutions, technologies and outlook on natural resources of water users related to water resources management (Turkey):

Since decentralization in the 1990s, Turkey has had governance problems such as an information division and unclear attribution of responsibility. In particular, excessive use of water and fertilizers has increased soil salinity in the government-initiated irrigation project in the Harran Plain. We have continued to observe water quality including salinity, hydrology, and land use changes; and have found that increasing numbers of farmers are growing citrus in the Seyhan Basin, owing to increased price. This crop requires more water, and government subsidies are changing crop patterns in the Harran Plain. We have conducted a questionnaire survey of the willingness to pay and farmers’ behaviours and their recognition of water use. The results revealed that most farmers are dissatisfied with the new water law and government policies. This law prevents farmers from communicating and building mutual trust with public sectors. In the first stakeholders meeting in March 2014, we tried promoting mutual understanding among various stakeholders and stimulating them to proactively co-operate for better water management. After the meeting, a water users’ association (WUA) consulted us on how to avoid over irrigation and a resulting decrease in production. We proposed a night irrigation system. The WUA conducted a pilot project with the governmental financing with the support of an NGO.

The pilot project was very successful, achieving both the reduction of irrigation water use and 30% higher production. This pilot study was reported in the second stakeholders meeting in October 2014. We expect that more WUAs will employ the night irrigation system.

(4) Development of tools for sharing information among stakeholders

We have been developing a GIS system (tentatively called “Atlas of water resources”), including land use change analyzed by satellite data, various statistics, and areas devastated by past flooding and drought. Both the hydrological model and GIS system are being utilized as tools in workshops to share water resources management information among various stakeholders.

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○ Future Themes

The following issues were raised in the PEC Interim Review for FY 2012: 1) there is no clear rational explanation for selecting the present four sites; 2) the field study was not designed to collect data on human aspects, and only few anthropological studies have been conducted during this project; and 3) the research methods are not clear, and it is particularly difficult to understand the role of the global model. Considering these objections, we changed our research direction to focus more on the cases in Indonesia and Turkey, with special emphasis on conducting co-creation studies with various stakeholders, because Indonesia and Turkey provide a simple hydrological contrast between humid and arid regions; their differences in history and culture allow a comparative study in terms of water management structure. Moreover, we held stakeholders meetings in these areas to re-identify problems and seek new ways of establishing proper water resources management and solving associated problems. Through these activities, we analyzed changes in stakeholders' behaviors and decision-making processes for evaluating the methodology for a transdisciplinary study. According to the PEC's following comments in FY2013 (FR3→FR4): 1) it is hard to understand what the added value of the global model is. It might be better to skip this altogether and concentrate on the field-based aspects of the research; . 2) there is a strong need for a conceptual framework that enables comparison and synthesis of the cases. This includes clarifying the guiding question for the research and the meaning and relevance of IWRM; and 3) the quality of the fieldwork will also be of key importance for ensuring true participation and transdisciplinarity. Keeping anthropologists in the field for extended periods will contribute to this, we concentrated more on field studies such as basic surveys on human and social sciences and collaborative work with various stakeholders, than on assessment by the global hydrological modeling.

Overall plan

In FR5, we will further transfer the knowledge and methods related to land and water management, which are clearly specified by co-creating "Wisdom of Land and Water Management" into cross-sectional practice in science and society. We will propose and implement local water resources governance as a social outcome while proposing pro-humanistic global water resources assessment for implementing IWRM as an academic goal.

Individual survey and research plans

(1) Indonesia: We will attempt to integrate users' land and water management actions and behaviors and the governing mechanism that has been organized while promoting further analysis of the realities surrounding water resources through hydrology and land use observations in the target basins. We will further deepen our analysis of water users' associations in South Sulawesi while emphasizing the

analysis of Subaksin Bali. Moreover, we will practice “co-creation of science and society” in South Sulawesi, which has established well-organized systems, and develop the local water governance that we experimentally produced in FR2 in co-operation with stakeholders.

(2)Turkey: We aim to integrate the hydrology and land cover results from the targeted basins and the outcomes of socioeconomic analysis based on questionnaire surveys of SHs. We will conduct stakeholders meetings and workshops to share the experience of the pilot study on the night irrigation for promoting the dynamics of decision making on the basis of scientific knowledge. Furthermore, we will identify institutional/policy elements that act as external factors as well as the behavioral patterns of individual stakeholders.

(3)Japan (Echi River Basin): Based on the findings obtained up to FR4 and questionnaires that conducted at the end of FR4, we will extract some communities and tertiary blocks that have problems associated with water use as well as those that manage water well as reference areas for clarifying water utilization characteristics and knowledge of land and water management. These surveys will enable us to identify the relationships between water management modes and hydrological environment as well as factors for establishing proper water management.

(4)Integration: We focused on people’s behaviors and decision-making process in land and water management for integrating the outcomes from each study site. We will analyze these actions and will try to model these processes. Further, we will evaluate our methodologies for co-creating “Wisdom of Land and Water Management” as a result of co-operation between science and society. Based on the research results, data grounded in scientific evidence for the study of futurability will be presented to various stakeholders from policymakers to local end water users.

●Achievements

○Books

【Chapters/Sections】

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○Editing

【Editing / Co-editing】

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Stage: Full Research

Project No.: D-05

Project Name: Coastal Area Capability Enhancement in Southeast Asia

Abbreviated Title:

Project Leader: ISHIKAWA Satoshi

Research Axis: Diversity

URL: <http://www.chikyu.ac.jp/CAPABILITY/>

Key Words: Southeast Asia, Coastal Area, Fisheries Resource Management, Rural Development, QoL

○ Research Subject and Objectives

In recent years, there is a growing concern about the deterioration of marine ecosystems and resources. Especially, coastal area ecosystems have rapidly been worsening and destroyed, as they are affected from global environmental changes and intensive human activities in both land and sea areas. Many of those coastal areas holding high biological production supported by high biodiversity are located in tropical zones in developing countries, such as Southeast Asia. In Southeast Asia, coastal ecosystem services have fostered high cultural diversity. Hence, coastal areas are characterized by the close linkage between ecosystem and local people. The coastal area serves as bases of the livelihood of local people, and human intervention is deeply embedded in ecosystem. This linkage enhances the complexity and affects the vulnerability of the ecosystem in the region. However, conservation and management activities originated in temperate zone usually focus particular ecologies and commercial resources with little consideration of how multiple ecologies and livelihood strategies overlap in culturally diverse contexts, and so they cannot be easily applied to tropical coastal areas and there are no alternative theory and method to harmonize ecosystem conservation and rural livelihoods based on their complex intervention importance.

In this project, we are going to investigate the linkage between livelihoods and ecosystem health in coastal areas through holistic field surveys, in order to clarify the environmental problems and its causes based on chemical, biological, ecological, social and human science view points. Then, we conduct several collaborative action researches with local community to solve the environmental problems based on our data and research result. Impact assessments and feedback practices to improve our action researches are performed through town seminars and discussion among researchers and local community.

Although community based participatory research and management actions have been highlighted as alternative trials of top-down management and rural development tool in developing countries, these activities are usually evaluated performance improvement, e.g., income generation, productivity, and cost efficiency. We try to identify key potential factors which enable the performance improvements through details of information and changes of livelihoods, behaviours and minds of collaborating community members and other stake holders.

We call an integral of the potential factors as “Area-Capability” that will be a new concept of evaluation and target for rural development. And our activities can provide how to conduct and evaluate “Area-Capability” in research and participatory actions as new approach. Spreading the use and understanding of “Area-Capability” may lead us to good relationship between humanity and nature.

Project Framework

To establish Area Capability concept and guideline, we treat three aspects; 1) Ecosystem production mechanisms and dynamics, 2) Development process of local community and environmental governance, and 3) Adaptive Technology and managements. In order to elucidate these three aspects, we conduct the **holistic field researches** on the southeast Asian coastal areas in order to grasp the linkage between nature and human, and we also conduct **participatory action researches** in collaboration with local communities to verify the feasibility and acceptability of new concept and approach to local societies in Rayong(Thailand), Panay Is. (Philippines) and Ishigaki Is., (Japan). We also conduct reference surveys in Bandon bay (Thailand), Hue (Viet Nam), Mikawa bay(Japan). All data, information and progresses of the action researches are compiled into the database and reports for subsequent discussions. New concept and approach might be denied from existing academic disciplines as illogical and/or

unscientific, however, without new concept that can be recognized by ordinal people based on their ordinal sensuous and those can change human behaviours toward good interactions between human and nature, global environmental problems would be never solved.

The holistic researches comprise of five components; 1) Environmental survey, 2) Biodiversity survey, 3) Coastal resources survey, 4) Utilization of resources survey and 5) Social survey. Ecosystem production mechanisms and dynamics with identification of the biological and ecological important areas and species for local ecosystem are examined based on the results of Environmental, Biological and Coastal resource surveys using statistical, chemical, stable isotope, and molecular analyses in collaboration with taxonomic study and acoustic survey. Development process of local community, environmental governance and importance of the coastal resources for the local people are examined based on the results of utilization and social surveys carried out through interview/questionnaire surveys and anthropologic surveys. In the social survey, we treat economic condition, time allocation, food supply, education, health condition, participation to the community activities, indigenous knowledge, religious importance, and information gathering situation. Three participatory action researches are conducted; 1) Community-based set-net fishery installation in Rayong, 2) Community-based re-stocking program in Batan bay in Panay Is., 3) Collaboration action among fishery, ecotourism and education in Ishigaki Is. and Mikawa Bay. In these areas, there are local people's groups which already collaborated with some of our members and several researches on natural resources and livelihood have been conducted. All data and results of analyses were shared among members and local groups through workshops, seminar and meetings and database in internet.

72 researchers from 17 universities and research institute (12 in Japan, 2 in Thailand, 2 in Philippines, one regional research center "Southeast Asian Fisheries Development Center: SEAFDEC") are participating in this project. They have different expertise and academic backgrounds of oceanography, biology, social science, agricultural sciences, civil engineering, economy, policy study, anthropology and area study.

The concept of "Area Capability" will be concretized and the guideline of its approach will be compiled based on the all experiences and achievements. And the guidelines will be informed and disseminated through ASEAN-SEAFDEC mechanisms and International Symposiums.

Future tasks

FR3:

In the third year of full research, we continue the interdisciplinary field surveys and collaborative action researches and analyses for collecting data and information of the linkage between human and nature.

Around Rayong beach in Thailand, we evaluate the negative impacts of oil spill accident on environment and livelihoods of local people. To do this, material flows and nutrient concentration along the Rayong beach will be conducted. We collect water, soil and biological samples from the beach and analyse them in RIHN. Biodiversity and food web survey will be performed based on the stable isotope and genetic analyses using the biological samples. Livelihoods and fishery activity survey including trading and marketing will be also conducted through interview and observation surveys of Set-net fishermen group and other villagers using the questionnaire and GPS. Statistic data and information, aerial photographs will be collected in recent 10 years for understanding the land use and demographic changes. All data and information including the analytical results are compared with former data that we had obtained in FR1 and 2. Besides, behaviour and minds changes of Set-net fishery group members will be examined to identify the effects from community based activity on social capitals, interests of environment, livelihoods, and management of natural resources.

Around Batan bay in Philippines, we investigate the extent of damage from super typhoon on ecosystem, buildings, infrastructure, health and minds, sense of values, community and businesses.

We will collect water, soil, mangrove, and aquatic organisms' samples around Batan Bay for nutrients and pollution evaluation. We will conduct chemical and stable isotope analyses of them in RIHN. We will record the extent of damages on mangrove forests, paddy fields, buildings, infrastructure, fishing gears, aquaculture ponds around Batan Bay and we will evaluate the relationships between geographical situation and damages concerning with the typhoon path. And we conduct interview with local people to get some information of evacuation actions and assistance each other and from governments. We will

conduct stock evaluation of shrimp in the bay and conduct stock enhancement through community based intermediate aquaculture with local community. We record the attitude, comments and behaviour the participants to the stock enhancement in order to identify the key factors of their collaborative activity.

In Ishigaki Island, Japan, we will make underwater map and material flow analyses of the island using stable isotope analysis. And we evaluate the food web and population structure of fish around the island to evaluate the linkage of materials between land and sea. These results will be informed to local people through town seminar and other workshops, to facilitate the conservation activity and future develop planning of the town.

We will elucidate the population structure of fishery important fish in South China Sea using genetic analysis to identify the management units of them, and grasp biodiversity of this area. In addition, we try to improve acoustic survey system which can be used in shallow sea area and to disseminate this system for ASEAN countries through workshops and publication of manuals.

○ Progress and Results in 2014

Achievements of holistic surveys

1) Environmental survey:

To grasp environmental conditions, we measured temperature, Dissolved Oxygen, pH, chlorophyll a Particulate organic matter (POM), Sedimentary organic matter (SOM), and nutrients (NO₃, NH₄), Acid volatile sulphide (AVS), ignition loss, Phytoplankton and mangrove biomasses at Rayong and Bandon in Thailand, Batan in Philippines, Mikawa in Japan during both rainy and dry seasons. Land use changes we reexamined by satellite image analyses have been conducted at Batan in Philippines and Bandon in Thailand. Concentration of 52 microelements of water and soil samples collected from Batan and Rayong, were measured by Inductively Coupled Plasma Mass Spectrometry (ICP-MS), 7500cx (Agilent Technologies Inc.) in RIHN. All results were put on the GIS to identify biological ecological important areas. Food webs and material cycles were evaluated using stable-isotope analyses at Rayong, Batan and Bandon

2) Biodiversity survey:

In Southeast Asia, biodiversity including the taxonomic knowledge of fishery species are still unclear. So, we conducted taxonomic study through specimen collection making and genetic studies. We collected fish specimen of 1811 individuals from Philippines, 538 individuals from Thailand, 268 individuals from Malaysia. These specimens were recorded and donated into University of Philippine Visayas Museum and Thailand National Science Museum. For standardization of specimen collection, we published "Fish Collection Building and Procedures Manual, English edition" and "Fishes of Northern Gulf of Thailand".

Using collected fish specimen, we analysed genetic diversity and differences of 7 fishery important species based on the mtDNA COI sequences analyses, and we identified the plural reproducible populations of *Atule mate*, *Megalaspis cordyla*, *Rastrelliger kanagurta*, *Gerres filamentosus* in Southeast Asian Sea. For the more detailed genetic population identification, microsatellite DNA markers which can be used for various fish species were established using Next generation DNA analysing machine. Besides, species identification system based on the morphological features using photographs is now under construction. It can be easily identify the fish species using photographs by ordinal persons and this system will cultivate the interesting of biodiversity for ordinal persons.

3) Coastal resources survey:

To stock assessment of coastal fishery resources, new acoustic survey equipment and system were developed. Using this new system, fish stock assessments in Rayong were carried out. Then, these data were used for the training course at Kasetsart University in Thailand for undergraduate students in collaboration with Southeast Fisheries Development Center.

The new buoyance control system of underwater robot was developed. And portable under water monitoring robot was made. This underwater robot was used for underwater ruins surveys and educational workshops for high school students in Ishigaki Is. in collaboration with Ishigaki city.

4) Utilization of resources survey

To understand the linkage between natural resources and livelihoods of coastal area, we conducted interview and observation survey using GPS system to collect data about fishing gear, fishing areas and operation, and target species, cost and benefit of 13 households in Rayong, 24 households in Batan. We

also collected weather conditions, and are analysing the impact of weather conditions on local fishermen's lives and their adaptations.

5) Social survey

In order to clarify the relationship among social situation, cultural regulation, job opportunity, social capital, and management of natural resources, we conducted household interview survey to collect information of jobs, time allocation, communication, compliance, health condition, educational background, community bonds etc. of 117 households in Rayong and 467 households in Batan. Besides, economic systems including funding, transportation, price making systems and market access were evaluated in both areas.

Achievement of action researches

1) Community-Based Set-Net Fishery in Rayong, Thailand:

Community-based Japanese-type Set-net fishery has been installed in Rayong. The community conduct management and maintenance of fishing gears and their own fish shops. All data of operation, fish catch and incomes have been recorded. Our project member input several technical supports for the management and operations. The transformations of fish catch, price, markets, and behaviours of community members and non-members who are living in Rayong were recorded.

2) Cooperative Stock Enhancement in Batan Bay, Philippines

Community-based stock enhancement of shrimp is conducting in Batan Bay. Intermediate shrimp aquaculture and surveillance have been conducted local community. Project member provide technical supports for aquaculture and monitoring environments.

3) Collaboration between Eco-tourism and Fisheries development in Ishigaki-Mikawa, Japan

Town seminar was held in collaboration with Junior Chamber International Japan, Yaeyama branch. We discussed how to harmonize conservation of coastal area and tourism development. And educational workshops for high school students in Ishigaki Is. was held in collaboration with Ishigaki city.

Generalization and concept development

To facilitate interdisciplinary discussions and activities, data sharing system through internet was established and the international seminar was held at Philippines in 2012 and at Thailand in 2013. To identify the key factors of "Area-Capability", workshops were held in Japan, and five axes for evaluation of potentials of Area-Capability, 1) Ecosystem health supported by biodiversity and biomasses, 2) Knowledge and interests of peoples on ecosystems, 3) Governance situation, 4) Strength of People's network and community, 5) Contacts between human and nature, were identified, tentatively.

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○ Future Themes

FR4:

Regarding the community based set-net fishery impacts on environment and social development, we will compile the case study results as an installation manual books with good example of Rayong. We will publish the evaluation manual of stock enhancements for harmonising between environments and rural development based on the case study of Hamana Lake in Japan. And the technical guide book of the shrimp stock enhancement will be also published in English.

We will record the processes and changes of the environment and social aspect around Batan Bay in Philippines based on the field survey. And shrimp stock enhancement will be continued with the measurement of stock status and livelihoods changes.

Key factors identification of potentials for good practices in which people care the environment and their livelihood improvements, will be discussed on the workshops based on the data and information

FR5:

Regarding the impacts of community based stock enhancement on environment and social development, we will compile the case study results as an installation manual books with good example of Batan Bay. Key factors of high resilience against natural disaster will be identified based on the records and data from Batan Bay area and the results will be published as a guide books for rural development. And all data, information and results, we try to clarify the "Area-Capability" and publish a book of What is Area Capability, the concept and practices. And we will hold an international seminar of Area Capability as a new concept for evaluation of rural development with harmonizing conservation of environment to disseminate this new concept and approach.

Stage: Full Research

Project No.: R-07

Project Name: Desertification and Livelihood in Semi-Arid Afro-Eurasia

Abbreviated Title: Desertification in Afro-Eurasia

Project Leader: TANAKA Ueru

Research Axis: Resources

URL: <http://www.kazehitotsuchi.com/>

Key Words: Afro-Eurasia, Desertification, Poverty, Vulnerable people, Livelihood, Human-environment interrelations, Practical techniques for desertification control, Socio-ecological adaptability, Development assistance

○ Research Subject and Objectives

Research objectives

The objectives of this research are set as follows: 1) to deepen understanding of the social, cultural and ecological characteristics of targeted areas in semi-arid Afro-Eurasia as a premise to study on desertification; 2) to design and verify some practical techniques or approaches effective for desertification control in the context of rural development support; 3) to propose and implement some techniques and approaches to desertification control and rural development, paying special attention to vulnerable people. Special focus is given to vulnerable people and areas left behind in the trend of economic development and globalization.

Background

Desertification is one of the globally concerned problems/issues with complex phenomena related to land degradation and poverty in sub-humid, semi-arid and arid areas of Afro-Eurasia. After the ratification of the United Nations Convention to Combat Desertification (UNCCD) in 1994, the international community, including Japan, signed its commitment to solve the problems. Twenty years has past. So far, there have been many efforts made by international organization, local government and NGOs, however, the problems still remain unsolved and become more serious year by year. Why desertification have not been prevented and even became worse? It may be explained from its causes closely linking with poverty. As defined in UNCCD (1994), the causes of desertification are both climatic factors and human activities. If the latter are carefully focused, the causes are the daily activities to support people's livelihood and basic needs for survival, such as cropping, animal husbandry and gathering of fuel woods. Nobody can force them to stop the livelihood activities of local people for desertification control. Difficulty of desertification control may also be explained from the complexity. Climatic factors include short and uneven distribution of rainfall, excess rain and flooding, and wind. Livelihood activities are varied under different landscape, soils, vegetation, food customs, traditions of techniques, socio-economic condition and so on. Susceptibility of land resources and ecosystems under the pressure of human activities and the impact of climatic factors are also different for each place. Thus, desertification can be considered as a sum of these combinations.

Perception and contribution to global environmental problems

Desertification is one of the problems at global concern and, at the same time, the phenomena of desertification are the combinations of accumulated causes and consequences at local and human-scale under complex socio-ecological environments. This means that solutions should be designed by the combination of the actions at local and human-scale.

Common activities of the entire project

1. To deepen the understanding of social and ecological characteristics of some targeted areas of Semi-Arid Afro-Eurasia as a premise to study on desertification

1-a. Identification of social and ecological characteristics of the targeted areas

1-b. Identification of causes and types of dominant desertification phenomena in relating with the changes of local livelihood under demographic and economic pressure, climatic trend and intervention by outsiders

1-c. Identification of mechanisms and processes of social and ecological adaptation being functioned under environmental and demographic changes

1-d. Identification of common features and specificity in the social ecological characteristics of the target areas through comparative studies for seeking the possibility of horizontal technology transfer

2. To design and verify some practical techniques/approaches effective for desertification control in the context of rural development assistance

2-a. Re-examination of conventional techniques/approaches to desertification control and rural development assistance

2-b. Collection of indigenous knowledge and techniques and its modification utilized for desertification control

2-c. Identification of the requisites and possibilities of technology transfer within/between Africa and Asia

2-d. Design and verification of some techniques/approaches effective for desertification control and improvement of livelihood security

3. To propose and implement some techniques/approaches to desertification control and rural development, with paying special attention to for vulnerable people

3-a. Provision of verified practical techniques/approaches, knowledge and experiences, and plan of implementation project(s) to relevant organizations

3-b. Dissemination of the study results through oral presentations (seminars, symposiums and workshops for wide range of audiences), posters, academic papers, publications, and advisories

○ Progress and Results in 2014

[General aspects of the project activities]

Project sites

Project research takes place in the Sahel of West Africa (Burkina Faso, Niger and Senegal), Northeast Africa (Sudan), East Africa (Tanzania), Southern Africa (Namibia and Zambia), South Asia (India) and East Asia (Mongolia and China), where ecological conditions and land resources are degraded due to demographic pressure and uncertain social and economic conditions, and extreme weather.

Specific activities at each area

1. West Africa and Northeast Africa (so-called 'Sahel zone' of Africa)

1-a. Extension of some verified techniques of desertification control (Andropogon grass-band system, fallow-band system, extension method incorporated with social-network survey) collaborating with local NGO (Niger)

1-b. Monitoring of soil fertility maintenance and degradation process under different cultivation practices in semi-arid condition (Niger)

1-c. Cross-border migration, social and ecological adaptation and process of community formation (Niger, Burkina Faso and Togo)

1-d. Mechanisms and process of innovation by local people (Burkina Faso)

1-e. Influences of "Islam" in daily livelihood of urban and rural communities (Burkina Faso)

1-f. Background and conditions around street children as a vulnerable existence (Burkina Faso)

1-g. Advisory for aid organizations to make implementation project (Burkina Faso, Senegal)

1-h. Preliminary survey to identify possible area(s)/site(s) for the transfer of some verified techniques (Senegal, Sudan)

2. Southern Africa

2-a. Impact of transformation in local animal husbandry on peoples' livelihoods, communities, vegetation and land resources (Namibia)

2-b. Monitoring of soil fertility maintenance and degradation process under different cultivation practices in semi-arid condition (Namibia)

2-c. Changes of local livelihood activities and land use systems after compulsory trans-migration (Zambia)

2-d. Local rules in utilizing land resources and ecosystems (Zambia)

3. South Asia

3-a. Data-base of indigenous tools, its manufacturing processes, and literature of traditional farming systems to seeking appropriate techniques useful for rural development assistance in semi-arid Asia and Africa (India)

3-b. Co-existence of local livelihoods between the pastoralists and cultivators in highly populated area, Rajasthan and Tamil Nadu (India)

3-c. Seasonal movement of pastoralists and its contribution of soil fertility maintenance (India)

3-d. Preliminary survey to seek possibility technology transfer between India and Africa (India, Senegal)

4. East Asia

4-a. Requisites of resilience mechanisms in the pastoralists' livelihood to reduce vulnerability against natural disaster (Mongolia)

4-b. Indigenous knowledge/techniques of land resource management by pastoralists (Mongolia)

4-c. Preparation of a field experiment for re-appraisal of dry farming techniques described in antique books (China)

5. Inter regional sites

We make comparative studies on 1) Adaptation strategies in agro-pastoral systems between high/low population areas, tropical/temperate climate regions, and cultivation/pastoral system" and 2) Possibility of technology transfer, e.g. land use systems, restoration of degraded land, farming tools and soil management practices in Africa and Asia.

Project activities and the framework of UNCCD

UNCCD has already set the framework for action to address desertification. We focus on 'scientific knowledge' and 'techniques' which may be associated with some shortcomings in the framework. Many techniques employed to control desertification to date, however scientifically sound and rational they may be, unfortunately are often not matched to the needs and situations of local people if, for example, they are too expensive or require too much time or labor. Some techniques are highly dependent on materials and machinery that may not be locally available. Our project modifies such shortcomings and adds more knowledge and techniques through the activities in Semi-arid Africa and Asia. In West Africa the major focus of project work is on collaborating with local people in the innovation of practical desertification control techniques and extension methods, especially related to the livelihoods of vulnerable people. In Southern Africa, basic studies are being developed to describe agro-ecosystems, local livelihood systems, and adaptation strategies under demographic pressure and environmental fluctuation. In South Asia, we have inventoried local knowledge (e.g. indigenous knowledge, techniques and tools), in order to identify pastoral peoples' adaptation strategies in high population areas experiencing fluctuating social and agro-climatic conditions. In East Asia, we re-appraise indigenous knowledge in the traditional upland farming systems. Comparative studies within Africa and between Africa and Asia are also underway in order to evaluate the possibility of horizontal technology transfer.

【Progress】

Design of practical technique with local people

Many techniques have been introduced to control desertification to date, but unfortunately most are not adopted by local people. New techniques, however scientifically sound and rational, may not match the needs and situation of local people if they are too expensive or require too much time or labor. Some techniques are highly dependent on materials and machinery from outside that may not be locally available. Together with volunteer villagers in Niger and Burkina Faso, we designed an alternative

technique using local materials and indigenous knowledge to control soil erosion and increase household income. The technique is called “Contour lines of Andropogon”. Andropogon (*Andropogon gayanus* Kunth) is a wild perennial grass found everywhere in the Sahel and utilized as a material to construct granaries and housing. The plant stalk and woven mats are sold in local markets, and the income is sometimes equivalent to the price of 1 to 2 months of grain for consumption. When used to control soil erosion, the plant is transplanted to a pit with manure, an indigenous technique known as “Zai”. Manure application to the wild grass, a newly adopted practice, increases plant productivity and harvest of stalk. Planting along the contour line reduces soil erosion by intercepting surface run-off water. This technique is also helpful for vulnerable people, such as elders and widows, who have no land or compete with the others to collect wild Andropogon. This is a typical example of designing a practical technique, which satisfies desertification control and improvement of local livelihood, combined with indigenous knowledge, locally available materials and experiences of outsiders.

Improvement of extension method incorporated with social-network survey

The project successfully conducted the extension of the ‘fallow-band system’ in Niger under the collaboration with Global Environmental Forum (GEF, a NPO in Tokyo) and JICA in 2010 through 2014. Follow-up survey in one village, however, revealed that the technique was accepted and practiced by the limited households, not by the entire village. To identify the reasons, the project applied social-network survey to visualize the networks of information, confidence, opinion leaders, and vulnerable people. Through this research, one idea was spin off. It is a modification of conventional extension method, by incorporating a technique of social network survey as a component, to improve the efficiency with feasible cost and labors.

Preliminary studies on transfer of knowledge and techniques within Africa and between Africa and Asia

Together with an local NGO established within an Islamic community in Senegal, we began an implementation trial of the ‘fallow-band system’ and ‘andropogon line’ transferred from Niger and Burkina Faso. The indigenous technique known as ‘diguette’ (or stone line) commonly practiced in Burkina Faso to control soil erosion has been introduced to Tanzania. Inventory of indigenous farming tools and techniques in semi-arid India is under preparation aiming to seek possibilities of transfer to Senegal.

【Special remarks】

Project members obtained 11 academic awards in 2014.

- (1) Ikazaki, K.: Young Scientist Award, Japanese Society of Soil Science and Plant Nutrition
- (2) Endo, H., K.P. Singh, H. Miyasaki, U. Tanaka: Best Poster Award, 25th meeting of Japanese Association of Arid Land Studies
- (3) Ishimoto, Y.: Young Scientist Award and Katakura Motoko Award, Japanese Association of Arid Land Studies
- (4) Shinjo, H. Ikazaki, K., Imanaka, R., Tanaka, U. et al: Best Poster Award, 20th World Congress of Soil Science (International Union of Soil Science)
- (5) Ikazaki, K., Shinjo, H., Tanaka, U. et al: Best Presentation Award, 20th World Congress of Soil Science (International Union of Soil Science)
- (6) Tanaka, U., Ikazaki, K., Shinjo, H., Tobita, S.: Award of Minister of Environment and Environmental Award, The Hitachi Environment Foundation
- (7) Oyama, S.: Award for Areal Studies, The Daido Life Foundation
- (8) Machi, Y., Tanaka, U., Shinjo, H., Shimizu, T.: Best Presentation Award (Kitamura Award), 2014 Autumn Meeting, Japanese Society of Agricultural Systems
- (9) Ikazaki, K.: Achievement Award for Young Scientists, The Foundation of Agricultural Science of Japan
- (10) Nakamura, H.: Best Poster Award, 25th annual meeting of Japanese Society of International Development

(11) M. Jegadeesan, H. Miyazaki and U. Tanaka: Best Poster Award, A National Seminar on Extension Management Strategies for Sustainable Agriculture -Challenges and Opportunities (EMASSA-2014)

○Project Members

- ◎ TANAKA Ueru (RIHN, Associate Professor, Project management, Agricultural Studies)
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○ Future Themes

We intend to make comparative studies on adaptation strategies utilized by people in agro-pastoral systems in relation to several key variables, including population areas, tropical/temperate climate regions, and cultivation/pastoral system. We also will explore the possibility of technology transfer, e.g. land use systems, restoration of degraded land, farming tools and soil management practices between Africa and Asia. In order to share such experiences and findings, we will increase the frequency of academic workshops and open seminars held domestically and internationally.

● Achievements

○Papers

【Original Articles】

- Kanno, H., T. Sakurai, H. Shinjo, H. Miyazaki, Y. Ishimoto, T. Saeki, and C. Umetsu 2015, 01 Analysis of Meteorological Measurements made over Three Rainy Seasons and Rainfall Simulations in Sinazongwe District, Southern Province, Zambia. *Japan Agricultural Research Quarterly* 49(1) :59-71. (reviewed).
- Koki Teshirogi 2014, 08 Recent Changes in Communal Livestock Farming in Northwestern Namibia with Special Reference to the Rapid Spread of Livestock Auctions and Mobile Phones. *MILA the Special Issue* :27-36.

- Ando, K., Shinjo, H., Noro, Y., Takenaka, S., Miura R., Sokotela, S.B., Funakawa, S 2014,06 Short-term effects of fire intensity on soil organic matter and nutrient release after slash-and-burn in Eastern Province, Zambia. *Soil Science and Plant Nutrition* 60 :173-182. DOI: 10.1080/00380768.2014.88348. (reviewed).
- Ando K., Shinjo H., Kuramitsu H., Miura R., Sokotela S., Funakawa S. 2014,06 Effects of cropping and short-natural fallow rotation on soil organic carbon in the Eastern Province of Zambia. *Agric. Ecosyst. Environ* 196 :34-41. (reviewed).

【Review Articles】

- Ueru TANAKA, Kenta IKAZAKI, Hitoshi SHINJO, Satoshi TOBITA 2014,12 Practical technique for desertification control concurrently to reduce wind erosion and improve crop performance. *Environmental Research Quarterly* 176 :5-14. (in Japanese) ('Award of Minister of Environment' and 'Environmental Award, The Hitachi Environment Foundation').

○Research Presentations

【Oral Presentation】

- Ueru TANAKA A practical technique to control wind erosion and to improve crop performance - Possibility of technology transfer from Niger to Senegal -. ISM-RIHN Joint Seminar: Community development assistance based on local resources and social networks in the Sahel, 2015,02,04, ISM, Dakar (Senegal).
- Takao SHIMIZU, Ueru TANAKA and Hiroshi NAKAMURA The technology co-designed with 'Studying Farmers (Tokuno-ka 篤農家) in Burkina Faso and Niger. Joint seminar on 'Community development assistance based on local resources and social networks in the Sahel', 2015,02,04, ISM, Dakar, Sénégal..
- Takao SHIMIZU Becoming Muslim in a modern educational system in Burkina Faso: A challenge of Coranic school and 'Franco-Arab. Yaoudé Forum, Conflict Resolution and Coexistence through Reassessment and Utilization of "African Potentials (Itaru OHTA), 2014,12,04-2014,12,06, Yaoundé, Cameroun.
- Takao SHIMIZU Result of statistic research of Street-Children in Ouagadougou, Burkina Faso. 14th Africa Educational Research Forum, 2014,10,24-2014,10,25, RINH, Kyoto, Japan. (in Japanese)
- Ueru TANAKA, Kenta IKAZAKI, Takao SHIMIZU, Yuko SASAKI, Hitoshi SHINJO, Satoshi TOBITA Designing of practical techniques for desertification control collaborating with local people in the Sahel, West Africa. 5th International Disaster and Risk Conference (IDRC) 2014, 2014,08,28, Davos, Swiss.
- Ikazaki, K., Shinjo, H., Tanaka, U., Tobita, S., Funakawa, S., Kosaki, T. "Fallow Band System", a do-nothing practice for controlling desertification and improving crop production in the Sahel, West Africa. 20th World Congress of Soil Science, 2014,06,08-2014,06,13, Jeju, Korea. (Best Presentation Award).
- Yudai ISHIMOT, Hidetoshi MIYAZAKI, Ueru TANAKA Using Land Resource by Small Scale Farmers in Rural Southern Province, Zambia: Understanding the Grazing Route to Acquire Fodder Continuously. 51th Academic meeting for Japan Association for African Studies, 2014,05,23-2014,05,25, Kyoto (Kyoto University). (in Japanese)
- Takao SHIMIZU Is the problem of "street-children" is a "social problem" or a phenomenon on the urban space? Looking through anthropologist on NGOs (Ouagadougou, Burkina Faso).. International Union of Anthropological and Ethnological Sciences (IUEAS) 2014 with JASCA, 2014,05,15-2014,05,18, Makuhari, Chiba, Japan.
- Yudai Ishimoto, Hidetoshi Miyazaki, Ueru Tanaka, Chieko Umetsu Social Capital and Small-Scale Farmers in Zambia: An Analysis of Mobile Phone Usage. *Resilience* 2014, 2014,05,03-2014,05,08, Montpellier, France. (reviewed).
- Takao SHIMIZU Intermediate report for statistic research for Street-Children in Ouagadougou, Burkina Faso . 13th Africa Educational Research Forum , 2014,04,11-2014,04,12, Osaka University, Osaka, Japan. (in Japanese)

【Poster Presentation】

- SASAKI, Yuko, TANAKA, Ueru, IKAZAKI, Kenta, SHINJO, Hitoshi, TOBITA, Satoshi Improved Extension Method of Practical Technique to Cope with Desertification in Niger, West Africa. 3rd UNCCD Science Conference, 2015, 03, 09–2015, 03, 12, Cancun, Mexico.
- MUNIANDI JEGADEESAN, Hidetoshi MIYAZAKI and Ueru TANAKA Agrarian Change and Livelihood Diversification in Tamil Nadu. A National Seminar on Extension Management Strategies for Sustainable Agriculture -Challenges and Opportunities (EMASSA-2014), 2014, 12, 12–2014, 12, 13, Home Science College and Research Institute Tamil Nadu Agricultural University, Madurai, India. (Best Poster Award).
- Ando, K., Shinjo, H., Kuramitsu, H., Miura, H., Funakawa, S. Effects of cropping and short natural fallow rotation on carbon balance in the semiarid tropics of Africa. 20th World Congress of Soil Science, 2014, 06, 08–2014, 06, 13, Jeju, Korea.
- Shinjo, H., Ikazaki, K., Imanaka, S., Tanaka, U., Hayashi, K., Tobita, S. and Kosaki, T. Sustainable and efficient land management practices in the Sahel. 20th World Congress of Soil Science, 2014, 06, 08–2014, 06, 13, Jeju Korea. (Best Poster Award) .
- Taguchi, K., Shinjo, H., and Ikazaki, K. Effects of soil texture on millet growth in the Sahel of West Africa.. The annual meeting of Japanese Society of Pedology 2014, 2014, 05, 21, Shimane University, Matsue.

Stage: Full Research

Project No.: E-05-Init

Project Name: Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge

Abbreviated Title: ILEK project

Project Leader: SATO Tetsu

Research Axis: Ecosophy program/OICOS initiative

URL: <http://ilekcrp.org/>

Key Words: knowledge production, adaptive governance, residential research, multi-scale translator, meta-analysis

○ Research Subject and Objectives

Research purpose:

Diverse ecosystem services should be managed as commons by collaboration of various stakeholders with different values and interests. This project focuses on the formation and circulation of a novel concept of local knowledge (Integrated Local Environmental Knowledge, ILEK) blending scientific and local daily-life knowledge productions. Diverse ecosystem services should be managed on the basis of collective knowledge base such as ILEK. We examine mechanisms to facilitate production and circulation of ILEK to understand ILEK-based adaptive governance mechanisms for creation and sustainable governance of such commons. This initiative-based project conducts meta-analysis and integrates a wide range of results of RIHN projects and locally accumulated knowledge through daily practices of stakeholders in various areas of the world, to understand formation mechanisms of ILEK and drivers of adaptive governance using ILEK as a knowledge base. Residential researchers living in local communities play important roles to produce ILEK essential for adaptive governance. Bilateral translators of knowledge promote circulation of ILEK among different stakeholders. The project invites these important actors in local communities to provide viewpoints of 'knowledge users' to elucidate production and circulation mechanisms of ILEK for sustainable adaptive governance of local commons. Analyses of circulation of knowledge across multiple scales by cross-level knowledge translators clarify cross-scale governance for solutions of global environment problems.

Background of research:

Bottom-up approaches driven by diverse stakeholders of local communities are essential to solve diverse global environment problems including worldwide degradation of ecosystem services which comes up to the surface on the basis of locally specific problem structures. Scientific as well as various types of local knowledge systems are required for the stakeholders to effectively manage ecosystem services. Studies have been accumulated to describe characteristics and structures of these knowledge bases, but design-oriented analyses of production and circulation mechanisms of knowledge to contribute to adaptive governance of ecosystem services have not been conducted in detail. This research focuses on the roles and functions of residential researchers and bilateral knowledge translators as important actors to provide knowledge basis for decision makings and actions by local stakeholders, and production and circulation of the Integrated Local Environmental Knowledge (ILEK), a transdisciplinary blend of science and various types of local knowledge, to understand mechanisms to facilitate collaboration of diverse actors to achieve adaptive governance of local communities to design sustainable future.

Contribution to solutions of global environmental problems:

This research contributes to bottom-up solutions of diverse global environmental problems by clarifying adaptive governance systems of ecosystem services supported by production and circulation of the Integrated Local Environmental Knowledge (ILEK). It aims to clarify theory and approaches of solutions of global environmental problems from the viewpoints of knowledge users (stakeholders) to establish adaptive governance systems of diverse ecosystem services by effectively integrating scientific knowledge and various types of local knowledge deeply embedded in everyday life. These results will

contribute to formation of future visions of “science in/with society” and “society making full use of science” to support bottom-up solutions of diverse global environmental problems.

○ Progress and Results in 2014

Research plan:

This project effectively inherits research outcomes of cognitive sciences from previous RIHN projects and integrates them with various cases of issue-driven and solution-oriented science approaches from the world, which involve collaborative interactions between scientists and stakeholders to produce and utilize ILEK for creation and sustainable management of local commons. The project aims to elucidate pathways to promote science in/with society as well as to design social systems to make full use of science for solutions of diverse global environmental problems. The project analyzes scientific processes and outcomes of various cases of solution-oriented knowledge productions by residential and other types of researches including RIHN projects from the viewpoints of knowledge users, based on the hypothesis that the multiple roles and functions of important actors to produce and circulate ILEK support the adaptive governance of local communities for sustainable futures. We have established the preliminary conceptual models of ILEK-based adaptive governance based on the framing of local stakeholders and potential responses of stakeholder networks. In 2014, we aimed to elaborate these theoretical frames from meta-analysis of case studies and modeling to produce verifiable hypothesis for designing action-based verification processes. We also conducted analysis of roles and functions of bilateral knowledge translators in the contexts of cross-scale collaboration mediated by knowledge flow across multiple scale levels from local to global. Through the previous research, we recognized that local communities are almost always interacting with external actors and institutions including global and regional ones. Cross-scale translators are an important component of stakeholder networks in each local community. This observation led us to incorporate cross-scale analysis into each case study, and to avoid analyzing cross-scale governance independently in a separate research group. Action-based verification processes have started from FR3 in selected case study sites to incorporate cross-scale elements as much as possible. With the approaches integrating empirical studies, Action-based verification processes and theoretical analysis, the project aims to elucidate the way forwards toward solution of global environmental problems.

Research methods:

This initiative based project employs a unique transdisciplinary approach incorporating feedback loops connecting local empirical analyses and abstract theoretical levels. At the local empirical level, we identified 61 case study sites based on the presence of dedicated residential researchers or translators among project members closely collaborating with diverse stakeholders in each case study site. Fifteen sites of action-based verification have been extracted among the case study sites. Organizations and people working as a bilateral translator connecting multiple scales from global to local levels are reviewed for their knowledge production and translation, and cases of such cross-level knowledge translators are identified for cross-scale analysis. Project member scientists conduct co-design, co-production and co-delivery processes of transdisciplinary research through daily interactions with local leaders, decision makers, cross-level translators and other stakeholders. These localized research results are integrated by meta-analysis using semi-structured interviews, text analysis, GIS-based cluster analysis and conceptual as well as mathematical modeling to identify important drivers of adaptive governance. The scientists and stakeholders at the local level researches will be involved at the meta-level theoretical analysis through the deliberative stakeholder workshops planned in FR3 and 4. The workshop is designed to critically review and discuss the outcomes of theoretical meta-analysis to give feedback from the local perspectives to both theoreticians and empirical researches. These feedback at the workshop will be immediately brought back to local level research and actions by participating scientists and stakeholders deeply embedded to each case study sites. This two-tier structure of transdisciplinary approaches will enable the scientists and stakeholders to achieve close collaboration and mutual learning throughout the entire research processes to produce acceptable and applicable way forwards for designing sustainable societies at local as well as global scale levels.

Research organizations:

The research organization has been composed of Case Study, Social Experiment, Multi-scale Analysis, Theory and Modeling, and Managing groups together with thematic task forces (TFs) cross-cutting the research groups. The Case Study group with three working teams (East Asia: EU & North America: Developing Countries) conducts field research of diverse knowledge systems produced by RIHN projects and other researches in different localities of the world. We design and conduct action-based verification of hypothesis focusing on ILEK-based adaptive governance mechanisms to clarify drivers of adaptive societal changes. A part of Case Study group has been re-organized into Action-based Verification group in FR3. We also make a quest of mechanisms to facilitate cross-scale actions for global environment problems, by analyzing roles of bilateral translators across global, regional and local scales. Multi-scale Analysis group consisted of Top Down and Bottom Up teams was merged into Action-based Verification group to work together with other groups to elucidate dynamic translation and circulation of knowledge across different scale levels to facilitate cross-scale adaptive governance. Theory and Modeling group works together with other groups to conduct meta-analysis of the case studies to establish and elaborate parameters for modeling. The results are fed back to other groups to refine research strategies. In order to facilitate interactions among diverse project members with different academic background, the cross-cutting Task Forces (TFs) are organized at different levels of analyses, including Ethics of Design-oriented Science, ILEK Simulator, Environmental Governance, Transdisciplinarity, Residential Research, Sato-umi Fisheries Resource Management, Biosphere Reserves, and Resource Management Certification TFs. The Managing group coordinate diverse research activities of these groups and TFs, develop and improve basic concepts and strategies, and integrate research results for design of sustainable societies. Comprehensive understanding of adaptive governance mechanisms of commons is expected to be achieved with this integrative research design.

Research outcomes of the year 2014:

a) ILEK Triangle model

While collaborative research and actions were continued in each case study sites, preliminary analysis were conducted regarding knowledge production, circulation and utilization for local decision making and actions in 11 cases of RIHN research project to construct a conceptual model of ILEK-based local adaptive governance for meta-analysis and integration of case studies and cross-scale analysis. The model, named "ILEK Triangle", is composed of interactive system of three important elements of ILEK-based adaptive governance (knowledge production, decision making and action at individual or small group level, and formal/informal institutional changes), driven by knowledge producers, knowledge users and translators. In this ILEK Triangle, ILEK productions were hypothesized to lead to dynamic changes of institutions toward sustainability through two different pathways: first, through changes of individual decision makings and actions resulting in adaptive changes of social systems, and second, through direct effects upon formal and informal institutions and collective knowledge systems in the community. In order to identify important drivers to mobilize this system, detailed analyses of interview records of RIHN project leaders were conducted. A set of hypothetical drivers were identified by these analyses, which were classified into five categories (below).

1. create and visualize values

Produced knowledge creates or visualizes new shareable values in local communities to mobilize collaborative actions.

2. create new linkages (local and cross-scale)

Produced knowledge creates new linkages among actors within and outside the community, including actors addressing broader issues.

3. provide options and opportunities

Produced knowledge expand options and opportunities for sustainable actions among stakeholders and mediates changes in environmental perception.

4. create collective actions

Produced knowledge creates collective actions, transforming existing local institutions or creating new ones.

5. appropriate translation

Knowledge translators (individual or organizational) mediate changes in individual actions or formal and informal social systems by appropriate selection, modification and reconstruction of knowledge.

b) Preliminary results of discourse analysis

We developed detailed interview protocol based on ILEK Triangle in March 2013 to extract perceptions of scientists and stakeholders collaborating in ILEK productions and community actions in case study sites with regard to important drivers of ILEK-based adaptive governance. More concise and user friendly self-evaluation questionnaire was also developed in 2013 by improving the interview protocol. Interview Specialists Group (ISG) was established and has accumulated interview records, including translators, knowledge producers, and 8 knowledge users. The interviewees commonly shared importance of opportunities to expand human networks by collaborative actions supported by ILEK, which were largely dependent on attributions of knowledge producers and translators, as well as knowledge itself. The analysis of participatory observations by Case Study and Action-based Verification group clarified that new values were created and visualized through the collaborative interactions, and options and opportunities also expanded as a result of collaboration. Various types of actions created by knowledge production and circulation effectively mobilized local institutions, thereby promoting decision making and actions. Translators played significant roles in collaborative networking by bridging gaps in knowledge hierarchy and providing legitimacy for different stakeholders to collaborate. This hypothetical drivers of knowledge-based adaptive governance should be verified in the remaining project periods by both empirical studies and theoretical modeling.

c) Progress in text analysis and theoretical modeling

Methods of computer-assisted text analysis based on the ILEK database launched have been developed to conduct quantitative and qualitative analyses of discourses of scientists, translators and stakeholders accumulated in the project research. Semantic network analysis methodologies have been developed to extract major concepts delivered in the narratives of various actors, and the changes of message structures according to time axes. We aim to improve this technique to provide data sets for mathematical modeling of dynamic changes of knowledge circulation networks in the adaptive governance processes.

Approaches of mathematical modeling of ILEK-based adaptive governance have been improved in the process of intensive interactions between theoreticians, empirical scientists and stakeholders. Particularly promising approaches include communication dynamics models analogous to evolutionary dynamics of knowledge as a meme, complex network models including asymmetric simple exclusion processes (ASEP) focusing on functions of bilateral translators in knowledge circulation networks (\approx social network), and game theoretic models of exclusion mechanisms of free-riders in adaptive governance processes.

d) Academic and societal outputs

The basic concepts of the project including ILEK, residential researchers and bilateral knowledge translators, as well as methodological framework of the project were summarized and published in a book chapter in English (Sato, T, 2014, "Integrated Local Environmental Knowledge Supporting Adaptive Governance of Local Communities", Alvares, C. ed, Multicultural Knowledge and the University, Multiversity India, Mapusa, India, pp.268-273.). We organized the first ILEK project international symposium in September 2014 entitled "Knowledge Translation: Bridging Gaps between Science and Society", and an international symposium co-organized by University of Saskatchewan and Kyoto Model Forest Association titled "International Symposium on Community-based Management of Forest Resources: Perspectives on culture, learning and adaptation in Canada and Japan" in March 2015. The Resource Management Certification TF organised a symposium on "Producing Intangible Values of Agriculture and Fisheries Products: Local certification and trust formation mechanisms" in February 2015. In order to share general research outcomes of the project with various stakeholders to receive their input to the research processes, we had a deliberative workshop inviting 45 local stakeholders including residential as well as visiting researchers in January 2015.

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Management Group

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○ Future Themes**a) Meta-analysis and modeling**

The improved version of self-evaluation questionnaire will be applied to case studies and social experiments to accumulate data to extract perceptions on ILEK-based adaptive governance among scientists and stakeholders collaborating in ILEK productions and community actions. A new project researcher in charge of case studies in developing countries will play a key role in meta analysis of case studies outside Japan, especially in developing countries. Text data of naturally spoken narratives and writings of important actors in case study and action-based verification sites will also be accumulated to provide resources for discourse analysis.

In FR4, we will improve analysis of these interview records and narrative data using conventional and computer-assisted discourse analysis to elaborate hypotheses on important drivers and processes of

ILEK-based adaptive governance. Computer-assisted analysis techniques including semantic network analysis will be further improved in close collaboration among modelers, database specialists and empirical scientists. Outcomes of these analyses will be successively delivered to the Theory and Modeling group to test various modeling approaches, and to the Action-based Verification group to promote verification of hypothesis in FR4. Research results are also applied to the design of ILEK Simulator scheduled to be launched toward the end of the project.

b) Case studies and Action-based Verification

FR4 will be a critical stage of the project to implement action-based verification processes at selected sites to verify focused hypotheses on drivers and processes of ILEK-based adaptive governance. The designs of verification processes on the bases of ILEK Triangle model has been completed at 15 sites to address questions related to characterization of drivers of knowledge-based adaptive governance. Each verification process is composed of attempted or ongoing actions delivered by knowledge producers or translators and expected societal changes observable within the project period. We will organize the Action-based Verification Group with project members committed to each sites to improve the design and implementation and to integrate results. Societal changes resulted from experimental actions can be measured by dynamism of stakeholder networks, changes in perceptions among stakeholders and scientists, and emergence of collaborative actions. Methodologies of qualitative and quantitative evaluation of social dynamism will be established and improved in FR4.

c) Stakeholder workshop at meta-analysis level

Stakeholder workshops will be an important component of two-tier transdisciplinary approach in the project. We completed the first deliberative workshop in September 2014 (within Japan), and are designing a series of localized workshops in the verification sites outside Japan in 2015. The WS will mainly invite scientists and stakeholders deeply embedded to each case study sites. The protocol basically follows those utilized in World Wide Views on Biodiversity project. The output of the WS have been analysed collaboratively by scientists and stakeholders to provide feedback to both academic and stakeholder communities at local and cross-scale levels.

d) ILEK Simulator as a societal output of the project

In its initial design, we assumed that the final societal output of ILEK project would be societal changes in each case study site directly delivered by project members deeply embedded in each community. However, as we found collaboration among diverse actors within and outside the community could be an important driver of adaptive governance, a mechanism to promote mutual learning and interaction among diverse case study sites over the world was desperately needed. Based on the Web GIS system and semantic network analysis protocols, we started designing a web-based ILEK Simulator as the societal output of the project. ILEK Simulator provides plausible options and tips of ILEK-based adaptive governance fitted to particular local settings, together with real-life examples of local collaborative activities in other sites sharing common characteristics. ILEK Simulator will open a new pathway to connect local communities in the world for collaboration in adaptive governance processes.

●Achievements

○Books

【Chapters/Sections】

- Naoyuki Mikami 2015, 02 Public Participation in Decision-Making on Energy Policy: The Case of the “National Discussion” After the Fukushima Accident. Yuko Fujigaki (ed.) (ed.) Lessons From Fukushima: Japanese Case Studies on Science, Technology and Society . Springer, pp.87-122. DOI:DOI: 10.1007/978-3-319-15353-7_5.
- Matsuda H, Kaji 2015, 02 Calculating risk due to radioactive seafoods. KIn Kurokura H (ed). (ed.) “Radioactive pollution in aquasphere, towards rebuilding fisheries in FUKUSHIMA”. Koseisha-Koseikaku, pp.103-130.

- Hitoshi Sakio and Kanako Nikkuni 2014, 09 Riparian willow forest regeneration following a large flood. In: Mucina, L., Price, J.N. & Kalwij, J.M. (eds.), (ed.) Biodiversity and vegetation patterns, processes, conservation. Kwongan Foundation, Perth, AU, pp.182.

○Editing

【Editing / Co-editing】

- Sun-Kee Hong, Jan Bogaert, Qingwen Min (ed.) 2014, 08 Biocultural Landscapes: Diversity, Functions and Values. Springer, 218pp.

○Papers

【Original Articles】

- Nami Okubo and Ayumi Onuma 2015, 02 An economic and ecological consideration of commercial coral transplantation to restore the marine ecosystem in Okinawa, Japan. *Ecosystem Services* 11 :39-44. (reviewed).
- Suzuki T, Nagao S, Horiuchi M, Maie N, Yamamoto M, Nakamura K 2015, 01 Characteristics and behavior of dissolved organic matter in the Kumaki River, Noto Peninsula, Japan. *Limnology* 16 :55-68. (reviewed).
- Daisuke Akaishi and Koji Nakamura 2014, 12 Omnivorous and predaceous larval habits of *Muscina angustifrons* (Loew) (Diptera, Muscidae) . *Med. Entomol. Zool* 65(4) :195-199. (reviewed).
- Akça, E. 2014, 08 Preparing For Future: Soil Projects.. *Soil and Water Journal* 1(2) :7-12. (reviewed).
- Reed MG, Godmaire H, Abernethy P, and Guertin MA. 2014, 07 Building a community of practice for sustainability: Strengthening learning and collective action of Canadian biosphere reserves through a national partnership.. *Journal of Environmental Management* 145 :230-239. (reviewed).
- Vlachopoulou EI, Makino M, Matsuda H 2015, 03 Fisheries vs Marine Conservation: Lessons learned from the Shiretoko World Natural Heritage Site. *Annals of Marine Sociology of Polish Academy of Science* : 36-43. (reviewed).
- Honjo, H., Sano, M., Miki, H. & Sakaguchi, H. 2015, 02 Statistical properties of approval ratings for governments. *Physica A* 428 :266-272. (reviewed).
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- Tokita, K 2015, 01 Analytical theory of species abundance distributions of a random community model. *Population Ecology* 57 :53-62. (reviewed).
- Ōnishi, Hideyuki 2014, 10 The Formation of the Ainu Cultural Landscape: Landscape Shift in a Hunter-Gatherer Society in the Northern Part of the Japanese Archipelago. *Journal of World Prehistory* 27(3-4) :277-293. (reviewed).
- Saitoh M, Momose H, Inoue S, Kurashima O, Matsuda H 2014, 09 Range-expanding wildlife: predicting the future distribution of large mammals in Japan, with management implications. *International Journal of Geographical Information Science* . (reviewed).
- Akiyama, E., Hanaki, N., and Ishikawa, R 2014, 08 How do experienced traders respond to inflows of inexperienced traders? An experimental . *Journal of Economic Dynamics and Control* 45 :1-18. (reviewed).
- Makino M, Sakurai Y 2014, 07 Towards the integrated research in fisheries science. *Fisheries Science* 80 :227-236. (reviewed).
- Kadoya T, Takenaka A, Ishihama F, Fujita T, Ogawa M, Katsuyama T, Kadono Y, Kawakubo N, Serizawa S, Takahashi H, Takamiya M, Fujii S, Matsuda H, Muneda K, Yokota M, Yonekura K, Yahara T 2014, 07 Crisis of Japanese vascular flora demonstrated by quantifying extinction risks for 1618 taxa. . *PLoS ONE* 9(7). (reviewed). e102384. doi:10.1371/journal.pone.0102384.
- Watanabe E, Saito M, Hayashi M, Matsuda H 2014, 06 Biodiversity hotspot analysis based on the extinction risk of vascular plant species in the Red Data Book of Japan. *Jpn J. Cons. Ecol* 19 : 53-66. (reviewed).
- Miki, H. 2014, 06 Scaling analysis of stationary probability distribution of random walks on one-dimensional lattices with aperiodic disorder. *Physical Review E* 89 :062105. (reviewed).

- Yonenoh, H. and Akiyama, E 2014,06 Selection of opponents in the Prisoner's dilemma in dynamic networks: An experimental approach. *Journal of Theoretical Biology* 351 :25-36. (reviewed).
- Sachoemar, S.I., T.Yanagi and R.S.Aliah 2014 Sustainable aquaculture to improve productivity and water quality of marginal brackishwater pond. *Coastal Marine Science* 37 :1-8. (reviewed).

【Review Articles】

- Ōnishi, Hideyuki 2014,09 Issues in Conservation of landscape as Living Heritage in Atoll Island States of the South Pacific: A study of cultural landscape of Tuvalu and Kiribati. *Survey Report on the Oceania Island Countries* :96-102.
- Bjorn E. Berglund, Junko Kitagawa, Per Lageras, Koji Nakamura, Naoko Sasaki, Yoshinori Yasuda 2014 Traditional Farming Landscapes for Sustainable Living in Scandinavia and Japan: Global Revival Through the Satoyama Initiative. *AMBIO* 43 :559-578. (reviewed).

○Research Presentations

【Oral Presentation】

- Akça, E and Tangolar S. Organic Agriculture: Cases from Turkey. . The CORE-Organic Project, 2015,03,10-2015,03,11, Florence, Italy.
- Eizo Akiyama, Nobuyuki Hanaki, Ryuichiro Ishikawa How do experienced traders respond to inflows of inexperienced traders? An experimental analysis. 日本ファイナンス学会「実験アセットプライシング・コンファレンス」, 2015,03,09, 東京都渋谷区. .
- Kitamura, Kenji, and Tetsu Sato Collective Action Based on Local Knowledge and Technologies: Reforestation and Sustainability in the Watershed in Hokkaido, Japan. International Symposium on Community-based Management of Forest Resources: Perspectives on Culture, Learning and Adaptation in Canada and Japan, 2015,03,03-2015,03,05, Kyoto, Japan.
- Kitamura, Kenji, and Tetsu Sato Collective Action Based on Local Knowledge and Technologies: Reforestation and Sustainability in the Watershed in Hokkaido, Japan. International Symposium on Community-based Management of Forest Resources: Perspectives on Culture, Learning and Adaptation in Canada and Japan, 2015,03,03-2015,03,05, Kyoto, Japan.
- Akça, E. Climate Change and Organic Carbon Management: The Central Anatolian Case. . Economics of land Degradation Meeting. GD of Combatting Erosion and Desertification., 2015,02,23-2015,02,25, Antalya, Turkey.
- Kitamura, Kenji Designing and Implementing Action-Based Verification. Full Project Meeting of Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge (ILEK Project), 2015,01,24, Kyoto, Japan. (in Japanese)
- Akça, E. Soil Organic Carbon and its Economy.. Ecosystem Services that Agricultural Management Benefits Workshop., 2014,12,11, Konya, Turkey.
- Claus, A. C. Building Ideological Infrastructure for Marine Conservation in Okinawa.. American Anthropological Association, 2014,12,02-2014,12,07, Washington DC..
- Ōnishi, Hideyuki The views of local people as politics of cultural heritage: A study of the landscape cognition of local people in the Amami Islands. AJJ (Anthropology of Japan in Japan) 2014 Autumn Meeting, 2014,11,29-2014,11,30, Nagoya, Japan .
- Toshiyuki TSUCHIYA Perspectives of Community-based Natural Resources Management in Protected Areas in Asia. From Case Studies Discussed at Asia Parks Congress, 2014,11,12-2014,11,19, Sydney, Australia.
- Sakurai, R., and H. Kobori How to foster residents' participation in green restoration activities?. 43rd North American Association for Environmental Education, 2014,10,08-2014,10,10, Ottawa, Canada.
- Sakurai, R., N. Matsuda., T. Maruyama., and G. Ueda Evaluating participatory wildlife damage prevention program in Japan. Pathway 2014: Common Futures- Integrating Human Dimensions into Fisheries and Wildlife Management, 2014,10,05-2014,10,09, Colorado, USA.

- Welter S, Reed, M.G., and Gamble A. Stretching community-based ecosystem management to protect Indigenous livelihoods: The Beardys and Okemasis First Nation and the Prince Albert Model Forest.. World Congress of the International Union of Forest Research Organizations World Congress "Sustaining Forests, Sustaining People: the Role of Research", 2014,10,05-2014,10,09, Salt Lake City, United States.
- Kakuma, S Governance of Satoumi in Coral Reefs - To Harmonize Conservation and Sustainable Fisheries. 2nd World Small scale Fisheries Congress, 2014,09,21-2014,09,26, Merida, Mexico.
- Tetsu Sato Integrated Local Environmental Knowledge (ILEK) supporting voluntary actions of fishermen toward sustainable resource and community managements. 2nd World Small scale Fisheries Congress, 2014,09,21-2014,09,25, Merida, Mexico.
- Akça, E., Çarkacı, D.A, Kuş, M., Zeydanlı, U., Çağırğan, O., Şimşekli, N. The effect of Wind shields on soil organic matter: Evaluation of 60 year management. . 2nd Desertification Meeting,, 2014,09,16-2014,09,18, Konya, Turkey.
- Akça, E, Katısöz, Ö, Çullu, MA, Kume, T., Nagano, T., Büyük, G., Öztürk, H., Kapur, S. Increasing Soil Organic Matter against Desertification: TEMA Project.. 2nd Desertification Meeting, 2014,09,16-2014,09,19, Konya, Turkey.
- Kitamura, Kenji Designing the Social Experiments in the ILEK Project. Full Project Meeting of Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge (ILEK Project), 2014,09,13, Kyoto, Japan.
- Makino M ILEK Fisheries Management Toolbox: Community-based visualization of multiple resource management options. ILEK International Symposium, 2014,09,13-2014,09,14, kyoto, Japan.
- Reed, M. G. Learning with Canadian Biosphere Reserves: Connecting researchers and practitioners through a national community of practice.. First International Symposium of the Integrated Local Ecological Knowledge Project, 2014,09,12-2014,09,13, Kyoto Japan.
- Hitoshi Sakio Riparian willow forest regeneration following a large flood. 57thAnnual Symposium of the International Association for Vegetation Science, 2014,09,01-2014,09,05, Perth, AU.
- Eizo Akiyama Evolution of Behavioral Heterogeneity. 14th SAET Conference on Current Trends in Economics, 2014,08,19-2014,08,21, Shinjuku-ku, Tokyo.
- Kakuma, S Satoumi and Coral Reef Fisheries Management. Pacific Congress on Marine Science and Technology, August 2014, Tokyo, Japan.
- Yasushi Maruyama, Makoto Nishikido, Shota Furuya Motivations of financial participation for wind energy project. Grand Renewable Energy 2014 International Conference and Exhibition, 2014,07,27-2014,08,01, 東京都江東区.
- Omoto, R. Transformation of framings of seafood sustainability certification schemes. XVIII ISA World Congress of Sociology, 2014,07,13-2014,07,19, Yokohama, Japan.
- Makoto Nishikido, Yasushi Maruyama, Shota Furuya, Memi Motosu Polyvalent Meaning of Community Wind Power Movements: Comparing with Anti-Nuclear Movements in Japan. XVIII ISA World Congress of Sociology, 2014,07,13-2014,07,19, Yokohama, Japan. (in Japanese)
- Yasuda, A "Recreational hunting in Africa: "Meat" or "Poison" for local community," . XVIII International Society of Sociology World Congress, 2014,07,13-2014,07,19, Yokohama, Japan.
- Naoyuki Mikami Public Participation and Deliberation about Nuclear Energy Policy: A Case Study of "National Debate" after Fukushima Accident. XVIII ISA World Congress of Sociology, 2014,07,13-2014,07,19, Yokohama, Japan.
- Ayumi Onuma To Lift Or Not To Lift Trade Bans: Legal And Illegal Markets With Laundering. 5th World Congress of Environmental and Resource Economists, 2014,07,02, Istanbul, Turkey.
- Omoto, R. The importance of "translators" in opening up environmental options for stakeholders. 14th Science Council of Asia (SCA) conference, 2014,06,18-2014,06,19, Kuala Lumpur, Malaysia.
- Kitamura, Kenji Commons and Protected Areas: Distant and Close Relationship. Commons Research Seminar, 2014,06,14, Kyoto, Japan. (in Japanese)
- Miyouchi, Taisuke Citizen science for sustainable social-ecological systems, from Japanese experience. 14th Congress of the International Society of Ethnobiology, 2014,06,01-2014,06,07, Bumthan, Bhutan.

- Daisuke TAKEKAWA Traditional Dolphin Hunting in Global Information Oriented Society: A Case Analysis of the Conflict Between the International Environmental Group and Local Community. IUAES Inter-Congress 2014, 2014, 05, 15-2014, 05, 18, 千葉市. (in Japanese)
- Ōnishi, Hideyuki Collapse of the Soviet Landscape and Adaptation Strategies of the Indigenous People: Land Use and Livelihood Strategies in Two Nanai Villages. IUAES (International Union of Anthropological and Ethnological Sciences) Inter-Congress 2014, 2014, 05, 14-2014, 05, 18, Chiba, Japan. .
- Mikami, Naoyuki, Ekou Yagi, and Yasushi Ikebe Recent Trends and New Approaches of Public Engagement in Japan. 13th International Public, 2014, 05, 05-2014, 05, 08, Salvador, Brazil.

【Poster Presentation】

- Sasaoka, M., and Laumonier, Y. Conservation value of human-modified tropical forests in Maluku, east Indonesia. The 14th Congress of the International Society of Ethnobiology, 2014, 06, 01-2014, 06, 07, Bumtan, Buhtan.

【Invited Lecture / Honorary Lecture / Panelist】

- Tokita K Statistical mechanics of a random community model. Joint Workshop of International Institute for Applied Systems Science (IIASA) and Research Institute for Humanity and Nature (RIHN), 2015, 03, 27, Laxenberg, Austria.
- Akça, E. The Erosion in Turkey and Mitigation Techniques.. The Fig and Erosion Workshop. , 2015, 02, 22, Aydın, Turkey.
- Akça, E. Economy of Organic Carbon and Measuring Techniques.. GD of Agrarian Reform Ministry of Food, Agriculture and Livestock. , 2014, 12, 17, Ankara, Turkey.
- Matsuda H Avian collision risk management in wind turbines. 1st Meeting of Work group on Bird Strike Science and Engineering, 2014, 11, 06, Shinagawa, Tokyo.
- Reed, M. G. . Learning about sustainability practices with local communities, biosphere reserves and the Canadian Commission for UNESCO.. the Canadian Commission for UNESCO, the Canada Council and officers of the Social Sciences and Humanities Research Council, 2014, 11, 04, .
- Tokita, K Statistical mechanics of evolutionary dynamics: an answer to the diversity-stability in community ecology. New Challenges in Complex Systems Science, 2014, 10, 24-2014, 10, 26, Shinjuku-ku, Tokyo. .
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Stage: Full Research

Project No.: R-08-Init

Project Name: Human-Environmental Security in Asia-Pacific Ring of Fire: Water-Energy-Food Nexus

Abbreviated Title: WEF Nexus Project

Project Leader: Makoto Taniguchi

Research Axis:

URL: <http://www.chikyu.ac.jp/wefn/index.html>

Key Words:

○ Research Subject and Objectives

Climate change and economic development are causing increased pressure on water, energy and food resources, presenting communities with increased levels of tradeoffs and potential conflicts among these resources. Therefore, the water-energy-food nexus is one of the most important and fundamental global environmental issues facing the world. As water is the central matter within this cluster, we will focus on the inherent tradeoffs between water and food, and water and energy. For the purposes of this project, we define human-environmental security as the joint optimization between human and environmental security as well as the water-energy and water-food connections. To optimize the governance and management within these inter-connected needs, it is desirable to increase human-environmental security by improving social managements for the water-energy-food nexus. In this research project, we intend to establish a method to manage and optimize the human-environmental security of the water-energy-food nexus. We base our approach on the viewpoint that it is important for a sustainable society to increase human-environmental security and decrease vulnerability by optimizing the connections within the critical water-energy and water-food clusters.

We will take a regional perspective to address these global environmental problems. The geological and geomorphological conditions in our proposed study area are heavily influenced by the so-called "Ring of Fire," around the Pacific Ocean. Within these areas including Japan and Southeast Asia, the hydro-meteorological conditions are dominated by the Asia monsoon. The populations that live under these natural conditions face elevated risk and potential disaster as negative impacts, while also benefitting from positive ecological goods and services.

There are therefore tradeoffs and conflicts within the water-energy-food nexus, as well as among various stakeholders in the region.

The objective of this project is to maximize human-environmental security (minimize the vulnerability) by choosing management structures and policies that optimize both the water-food and water-energy connections in Asia-Pacific coastal regions. We define joint security approach as optimized policy for both critical water clusters. Optimal policies will develop joint security approaches for human-environmental security in the coastal region of the Ring of Fire, including stakeholders and decision-makers.

Group1 : Environmental governance, science in/for society, and co-design/co-production approaches, in particular emphasizing regional scale stake-holders such as GEC (Global Environmental Change) Asia Platform

Group2 : Biophysical measurements/analyses of the water-energy nexus by using state-of-art space satellite, geothermic, and hydrogeological techniques to evaluate linkages between water and energy

Group3 : Biophysical measurements/analyses within the water-food (e.g., fisheries resources) nexus by using state-of-the-art geochemical, coastal oceanographic, geophysical, hydrologic, and ecological techniques including isotopic tracers to evaluate the linkages between land and ocean

Group4 : Social measurements/analyses of the water-energy-food relationships by use of community surveys, cost-benefit/efficiency analysis, and environmental valuation, based on sociology, economics, anthropology, psychology, and behavior-science methodologies

Group5 : Development of integrated indicators/indices and network analyses based on principal component analyses (PCA), social network analyses, and factors weights determined by feedback from stakeholder meeting/workshop

Area • Japanese site(1) Obama, Fukui • Japanese site(2) Otsuchi, Iwate • Japanese site(3) Beppu, Oita
• Canada study group • America study group • Indonesia study group • Phillippine study group

○ Progress and Results in 2014

Group 1:

Group 1 has been conducting co-design framing and integration of stakeholders of various scales (local-national-global). Stakeholder meetings were conducted as co-design in each of the study sites within our 5 countries of interest to identify the water-energy-food nexus with local stakeholders. Regarding vertical scale integrations (local-country-regional-global), integration of the local-national stakeholder scale has been made based on involvement in a new water act in Japan, and a sustainable groundwater act in California, as well as participatory methods by web as co-monitoring of local environments such as measurements of natural springs. Linkage to the global nexus platform has also been made to the Bonn Nexus, North Caronia Nexus, World Water Forum etc.

Group 2:

Group 2 has been quantitatively examining the water-energy nexus and conflicts between water and energy development locally. The potential of geothermal energy was examined accurately by using an absolute gravimeter in Beppu, Japan and Kamojang Geothermal Field, Indonesia. The survey in Beppu was conducted in detail using two different approaches, geochemically and physically, which is a new procedure. In the Philippines, a social survey on the acceptability of geothermal facilities was conducted in the Makiling-Banahaw Geothermal Complex. The results suggest that social accessibility of geothermal facilities is significantly higher for those in municipalities where the facilities already exist. The potential of mini/micro hydropower (MHP) was estimated by two procedures, using direct measurement of water levels of rivers and geographic information system (GIS) and a digital elevation model (DEM) in Beppu. The results show that the potential estimated by the two procedures are similar. The potential of ground heat was examined in Obama. A coordinated survey of groundwater was performed in cooperation with the local government. The ground heat in Obama was estimated to be equivalent to 900 households per hectare. Integrated assessment indicators for the water-energy nexus were selected for preparation for future intercomparison among sites, as well as collaboration with the other groups, especially for the purpose of evaluating costs and benefits in energy development alternatives.

Group 3:

Group 3 has been quantitatively examining the water-food (fisheries) nexus in the coastal zone, in particular how the water discharge from land to the ocean affects fishery production and diversity. Physical, chemical and biological surveys were conducted at four sites in Japan (Otsuchi, Obama, Beppu, and Yuza), two sites in Indonesia (Citarum river and Jakarta bay), and in the Phillipines (Laguna de Bay) with different spatial scales (inter-bay scale and within-bay scale). In Otsuchi, physical and biological surveys were conducted on submarine groundwater discharge (SGD) and collections of crustaceans/fishes. Biotic and abiotic data were compared between the two bays. Radon concentration, abundance and species diversity of fishes were higher in the bay with higher SGD. In Obama bay, physical and biological surveys were conducted, and higher fish abundance and species diversity were observed at the site with higher radon concentration. In Beppu and Yuza, physical and biological surveys including underwater observation of marine organisms (including crustaceans and fishes) were conducted. Analyses of photographs taken underwater showed higher abundance and species diversity of fishes in areas with more SGD at both sites.

Group 4:

Group 4 has been conducting stakeholder analysis and social network analysis on the water-energy-food nexus. According to stakeholder analyses in Obama, we found common interests in water quality among stakeholders, gaps in prerequisite knowledge and recognition of the volume of groundwater, as well as a lack of cooperation especially from the agriculture sector of this groundwater issue. A social network analysis in Obama showed that the food manufacturing industry and commercial industries which are consuming a large volume of water are located at the centre of the social network, while the local government is located at a point distant from many stakeholders. Another stakeholder analysis in Beppu showed common interests in community development among stakeholders and gaps in prerequisite knowledge and recognition of the geothermal resource in terms of economic/non-economic value and utilization as power generation/hot-spring. Through these case studies, we have two primary common findings. The first one is that disputes are not obvious at present but potentially exist. Gaps in understanding of scientific evidence result in biased prerequisite knowledge and information among stakeholders. As effectiveness of stakeholder analysis for nexus issues, we identified a new issue such as the lack of linkage of agriculture and water departments in city offices whose importance was not recognized to the stakeholders (within the water-food nexus in Obama), and identified a misunderstanding in term definitions and differences of interest in scientific evidence (within the water-energy nexus in Beppu). We then clarified what a kind of scientific evidence is needed and verified the needs and the implications from the case studies on the local level. Through the experiment, we responded by raising awareness and improving the understanding of stakeholders, cultivated “naïve questions” of stakeholders and reframed and reduced gaps of risk perception of stakeholders. In the experiment, we screened stakeholders of four categories (hot spring resorts inhabitants, industries, supporters, environmentalists), and set up three communities consisting of 50 persons of the above categories. One remarkable result regarding the pros and cons of geothermal power in general terms was that the supporter count increased greatly while the neutralities count decreased greatly after deliberation, suggesting a response from providing scientific evidence on the issue.

Group 5:

Group 5 has been creating integrated indices for water-energy-food, an integrated map and an environmental-economic assessment for synthesizing the study results. For framework construction of the integrated index, a review of the integrated index literature related to the security of water, energy and food has been completed. Furthermore, the concepts, theories, methodologies and practices of the water-energy-food nexus have been reviewed. As for indicator selection, profiling activities have been conducted in Indonesia, the Philippines, the USA and Canada to identify hazards and existing data, and potential indicators are now being selected in the Philippines. To take the same approach in each study site, an index task force meeting was organized. Regarding the integrated map, necessary information and dates on social and natural sciences in Beppu Bay have been collected. In addition the methodologies and practices for creating and using the integrated map have also been developed for the transdisciplinarily approach. An environment-economic assessment via an internet questionnaire survey on the water-energy-food nexus in the Reinan district, Fukui prefecture was conducted and the economic values of groundwater for its function in fisheries production and drinking water was identified. Integrated physical models including water, nutrients, and biomass/fishery production are in development to help inform optimal policy decisions.

Project Members

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○ Future Themes

1. Suggested guidelines to increase environmental security and reduce conflicts related to the water-energy-food nexus.
2. Recommendations for decreasing coastal vulnerability related to the separate governance of land and oceans.
3. Policy and governance structure recommendations for improved water management.
4. Suggestions for sustainable environmental management of the water-energy-food nexus in the Asia-Pacific region.

● Achievements

○ Papers

【Original Articles】

- Taniguchi Makoto 2015, 02 The basic act on the water cycle with groundwater. *J. Groundwater Hydrol.* 57(1) :83-90. (reviewed).

○ Research Presentations

【Oral Presentation】

- Naoki Masuhara and Kenshi Baba Comprehensive Case Analysis on Participatory Approaches, from Nexus Perspectives. 2014 AGU Fall Meeting, 2014, 12, 15-2014, 12, 19, San Francisco, CA, USA.
- Naoki MASUHARA, Maximilian SPIEGELBERG and Makoto TANIGUCHI Human-Environmental Security in the Asia-Pacific Ring of Fire: Approaching the Water-Energy-Food Nexus. International Symposium on Earth Science and Technology 2014, 2014, 12, 04-2014, 12, 05, 福岡県福岡市.
- Taniguchi, M. Introduction of RIHN NEXUS Project. Seminar on Human-Environmental Security in Asia-Pacific Ring of Fire: Water-energy-food nexus.. 2014 World Water Week, Energy and Water, 2014, 09, 04, Stockholm.
- Taniguchi, M. Summary of the seminar. Seminar on Human-Environmental Security in Asia-Pacific Ring of Fire: Water-energy-food nexus.. 2014 World Water Week, Energy and Water, 2014, 09, 04, Stockholm.
- Aiko ENDO, Pedcris ORENCIO, Terukazu KUMAZAWA, Makoto TANIGUCHI Integrated approach to evaluate water-energy-food nexus for maximizing human environmental security. World Water Week 2014, 2014, 08, 31-2014, 09, 05, Stockholm.
- Taniguchi, M. Interdisciplinary and Transdisciplinary Approaches for Water-Energy-Food Nexus in Asia Pacific Ring of Fire. Asia Oceania Geosciences Society Meeting, 2014, 07, 31, Hotel Royton Sapporo, Sapporo.
- Taniguchi, M. Ecosystem services through submarine groundwater discharge in the coastal zone. Asia Oceania Geosciences Society Meeting, 2014, 07, 30, Hotel Royton Sapporo, Sapporo.
- Taniguchi, M., Endo, A., Masuhara, N., Yamada, M., Oh, T., Orencio, P. Optimal policies for Water-Energy-Food security in Asia Pacific region. Bonn Nexus meeting, 2014, 05, 20, Bonn, Germany.
- A. ENDO, A. ISHII, R. SUGIMOTO, H. HONDA, M. TANIGUCHI "An Integrated Map to Coordinate Coastal, Water & Fisheries Policies in Japan: Visualizing a Water & Food Nexus". Bonn 2014 NEXUS Conference: Sustainability in the Water-Energy-Food Nexus, 2014, 05, 18-2014, 05, 19, Bonn, Germany.

- A.Endo “Food systems of fresh whale meat from Japanese small-scale coastal whaling” . IUAES2014 with JASCA: The Future with/of Anthropologies, 2014,05,15-2014,05,18, Makuhari Messe, Japan.
- Taniguchi, M. IAHS interactions with CCEC and Future Earth, IUGG CCEC workshop, Institute for Atmospheric Research. Chinese Academy of Science, 2014,04,12, Beijing, China.
- Taniguchi, M. Water-energy-food nexus with climate change: Research for global sustainability. IUGG CCEC workshop, Institute for Atmospheric Research, Chinese Academy of Science, 2014,04,11, Beijing, China.
- Taniguchi, M. Water-energy-food nexus in Asia Pacific,. MAIRS Open science conference and Future Earth in Asia, 2014,04,09, Beijing Friendship Hotel, Beijing, China.

【Poster Presentation】

- Tomohiro Oh A Historical Perspective on Local Environmental Movements in Japan: Lessons for the Transdisciplinary Approach on Water Resource Governance. AGU FALL MEETING, 2014,12,15-2014,12,19, San Francisco, CA, USA.
- Naoki Masuhara and Kenshi Baba Governance structure of local energy policy in Japan. International Conference “Sustainability in the Water-Energy-Food Nexus. Synergies and Tradeoffs: Governance and Tools at various Scales”, 2014,05,19-2014,05,20, Bonn, Germany.

Stage: Full Research

Project No.: R-09

Project Name: Long-term Sustainability through Place-Based, Small-Scale Economies: Approaches from Historical Ecology

Abbreviated Title: Small-Scale Economies

Project Leader: HABU, Junko

Research Axis: Resources

URL: <http://www.chikyu.ac.jp/fooddiversity/index.html>

Key Words: Small-Scale Economy; Diversity; Networks; Local Autonomy; Long-term Sustainability; North Pacific Rim

○ Research Subject and Objectives

(1) OBJECTIVES:

This project examines the importance of place-based, small-scale and diversified economies, particularly the importance of small-scale food production, circulation and consumption, for the long-term sustainability of human societies. Long-term sustainability can be defined as “the capacity of humans to create, test out, and maintain abilities to adapt to environments” (Walker and Salt 2006) over a span of from several hundred to several thousand years. The following working hypothesis begins our research: “Highly specialized subsistence (food production) strategies can support a larger community for a short period, but a decrease in subsistence and food diversity makes the production system and its associated community more vulnerable in the long-run.”

Archaeological, historical and paleoenvironmental studies are used to test this hypothesis or examine the long-term impacts of the loss of subsistence/food diversity in relation to other environmental and cultural factors. To link these studies with the current discussion of the scale and methods of alternative food systems, ethnographic and ecological studies of contemporary small-scale food systems and communities are conducted. In combination, studies of the past and present point to the future, as the research process also involves collaborative design of ecologically sound and equitable food systems.

The theoretical genesis of this project is the approach of historical ecology (Balée 1998, 2006, 2010, Balée and Erickson 2006, Crumley 1994, Erlandson and Rick 2008, Kirch and Hunt 1997, Thomson and Wagner 2013), which conducts comprehensive research into long-term and short-term cultural change while emphasizing the impact of human activities on the environment. In particular, this project proposes that **diversity**, **network** and **scale** are three key concepts to understand long-term sustainability of socioeconomic systems. By integrating case studies on food diversity, the mobility of people and flows of goods and information in relation to the scale and resilience of societies and economies, this study aims to advance theories on the interrelationship between culture and environment. Other cultural factors, including technological developments, sociopolitical structure and rituals/religion, are also taken into consideration. We plan to publish the results of our research as peer-reviewed articles as well as volumes for the general public in both English and Japanese.

(2) BACKGROUND:

This research aims to construct strategies for tackling global environmental problems associated with the rise of large-scale economic systems. These problems include soil and water contamination, loss of biodiversity and long-lasting damage to ecosystems caused by large and homogenized food production. In the case of agriculture, the development of large-scale monoculture with applications of a large amount of pesticides and chemical fertilizers has resulted in serious soil contamination, water pollution, loss of biodiversity, and even the destruction of whole ecosystems. The predominant measures to deal with these global environmental problems are top-down regulations enacted by national/local governments and international agencies. However, these regulations may not be sufficient when we consider long-term environmental effects on a time-span of hundreds or thousands of years. As an alternative approach, this project examines the past and present practice of place-based, smaller-scale food production systems, evaluates their advantages and limitations, and explores their future potentials (see also Capra 1997, 2002).

(3) GEOGRAPHIC FOCUS

Our regional focus is the North Pacific Rim. In particular, we have identified northern Japan, with its solid archaeological record and its importance to contemporary food production in Japan, as the core area of our field research. The west coast of North America, with rich traditions of ethnographic and ecological investigation as well as active contemporary food/agriculture movements, will provide main comparative case studies. These two regions share a number of characteristics in common, including climate, vegetation, fauna, and a high level of seismic activity. There are also cultural ties with historical depth as a result of the migration of anatomically modern humans after the late Pleistocene. Historically, the abundance of small-scale economies supported by marine food exploitation and intensive nut-collecting also characterize these two regions.

(4) RESEARCH METHODS AND ORGANIZATION

The project consists of three research groups, each with several sub-projects:

1) Longue-Durée Group: Archaeological, historical, and paleoenvironmental studies are used to test our working hypothesis listed above. Because of the long time span, these studies are capable of addressing the relationships between the factors stated above. These relationships include long-term consequences of the loss of diversity and associated expansion of the scale of production, the importance of networks, and changes in community and population size.

2) Contemporary Society Group: Ethnographic and sociological studies of small-scale food production systems and their associated communities are conducted to understand the complex inter-relationships among cultural and natural contributors in contemporary urban and rural settings. Due to the lack of long time span, this group cannot directly test our working hypothesis. Nevertheless, when compared to archaeological case studies, the increased depth of our observation provides an opportunity to evaluate the importance of small-scale food production with wide food diversity in relation to other factors listed above. Chemical and biological analysis of soil, water and food will provide direct evidence to evaluate the degree of human impacts on the environment.

3) Implementation, Outreach and Policy Proposal Group: Our emphasis on food diversity, network, and locally autonomous, small-scale production are used to develop academic and public outreach programs for instigating and promoting place-based, small-scale and diversified food production. In collaboration with educational programs, NPOs, NGOs and local community organizations, these programs develop alternative strategies to overcome problems and vulnerabilities of currently dominant large-scale, homogenous productions. Our ultimate goal is to make actionable contributions to local/national policies of rural/urban developments and food policy.

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○ Progress and Results in 2014

(1) Longue-Durée Group

Seven research teams in this group test our working hypothesis or examine the long-term impacts of the loss of subsistence/food diversity in relation to other environmental and cultural factors. In total, results of our first year research are consistent with our initial hypothesis and are likely to produce substantial results in the coming years of research.

A. Japan

1) Northern Japan Team: This team represents the flagship sub-project of our research. The main focus of this team is to understand the mechanisms of the growth and decline of the Middle Jomon culture in prehistoric Japan in relation to changes in subsistence and food diversity. Previous studies indicated the possibility of a significant decrease in subsistence diversity and a rapid population increase between 5,500 and 5,000 years ago, followed by a drastic population decrease at around 4500 years ago (e.g., Crema 2013, Habu 2004, 2008, Habu and Hall 2013, Imamura 1995, Koyama 1978, 1984). Research this year focused on collecting data to address the following five key themes: 1) Examining the evidence for changes in subsistence/food diversity through the analysis of lithic assemblage data, macro floral and faunal remains data, analysis of plant and insect impressions on pottery, and stable isotope analysis of human skeletal remains; 2) Examining the types of major food items and their changes over time through residue analysis and starch grains analysis; 3) Establishing chronological framework on the basis of AMS radiocarbon dating; 4) Extrapolating changes in local and regional population size by compiling site data base and simulation studies; and 5) Identifying the patterns and timings of climate change through pollen analysis and alkenon sea surface temperature analysis. For Themes 1), 2) and 3), multiple journal articles and an excavation report will be submitted for publication. Data collection is in progress for Themes 4) and 5).

B. Comparative Studies

In order to expedite comparative research, we are collaborating with existing projects that have completed their excavation and fieldwork.

2) California Team: Preliminary analysis indicates that, unlike the Middle Jomon case, prehistoric and early historic hunter-gatherer cultures in California did not show evidence of a drastic population decline until the European contact. Team analysis suggests that California hunter-gatherers relied on a wide variety of food resources and successful landscape management. To examine the validity of this interpretation, faunal and floral remains analysis and settlement data analysis at the archaeological site in Año Nuevo State Park are in progress.

3) Northwest Coast Team: This is another area where maintaining wide food diversity seems to have functioned positively for long-term sustainability of past hunter-gatherer cultures. Two sub-teams are formed: 3a) lithic assemblage data and faunal/floral data from the Lower Columbia River are being analyzed and demographic simulations are in progress on the basis of settlement data. 3b) Paleoenvironmental reconstruction is underway in the Gulf Islands area.

4) Kurils/Eastern Hokkaido Team: Our case study on the Kuril Islands and eastern Hokkaido seems to indicate that, in addition to food diversity and climate change, social network may have been a key factor for understanding the resilience of socioeconomic systems. This academic year, human skeletal samples for stable isotope analysis to examine food diversity were obtained.

5) Canadian Arctic Team: Preliminary studies indicate that too much specialization on bowhead whale hunting among the prehistoric Thule people made their socioeconomic system vulnerable. To establish fine-grained time-scale, AMS dating of faunal remains is being conducted.

6) Baikal (Eastern Siberia) Team: Human skeletal remains from middle Holocene sites is being studied to better understand hunter-gatherer subsistence during this period of time.

7) Isotope Ecology Team: This team has collaborated with the regional groups discussed above to identify temporal/spatial variability in food diversity and to establish absolute chronology. Results include carbon, nitrogen and strontium isotope data of Jomon skeletal remains.

(2) Contemporary Society Group

As corollaries of our main hypothesis, this team addresses the questions of 1) the positive role of small-scale and diversified production systems in relation to the environment, and 2) whether social networks associated with small-scale and diversified production increase the resilience of local communities, especially in time of disaster. The latter includes the examination of responses to the Great Tohoku Earthquake in Japan.

A. Japan

1) Northern Japan Team: This team includes a group of scholars who have conducted fieldwork in Akkeshi (Hokkaido), Hirosaki (Aomori Pref.), Joboji, Otsuchi, Tsugaruishi and the Hei River Valley (Iwate Pref.), Ishinomaki (Miyagi Pref.), Minami-Soma, Iwaki, Nihonmatsu, and Aizu-Wakamatsu (Fukushima Pref.). Communities examined here can be broadly classified as those dependent on small-scale fishing, farming and the production of non-food commodities such as urushi lacquersap. Interviews and participant observations have revealed that social networks and non-cash exchanges are important to residents' everyday life, and were critical in mitigating damage at the time of the March 11 Earthquake. Project research continues on the role of social networks in coping with the effects of the Fukushima nuclear accident.

B. Comparative Studies

2) California Team: Research to assess the significance of small-scale urban and peri-urban farming to local food security is in progress by a group of scholars at University of California, Berkeley. Ethnographic and experimental research on traditional environmental knowledge in relation to environmental change and the scale of subsistence activities has begun with several indigenous groups, including the Amah Mutsun and the Wukchumni Yokuts people.

3) Northwest Coast and Alaska Team: With a herring egg harvest as a starting point, interviews were conducted to understand how diverse food resources are harvested and distributed among a coastal Sitka Tlingit community and beyond, under various socio-cultural customary rules.

(3) Implementation, Outreach and Policy Proposal Group

This group identifies, proposes and implements social and environmental activities consistent with, and complementary to, research conducted by the groups described above. In cooperation with NPOs, NGOs, local public organizations, indigenous tribes and other stakeholders, it has implemented the following programs: 1) Eco-literacy educational program with a focus on cherry salmon at the Hei River area, Iwate Pref., Japan, 2) Urban agriculture program in California in collaboration with educational programs at UC Berkeley, 3) Phytoremediation program in California using fern plants to remediate soil contamination by arsenic, 4) Environmental education program about traditional environmental knowledge of the Tlingit people, Northwest Coast, and 5) Traditional environmental and resource management (TERM) program in collaboration with the Amah Mutsun Tribe, California.

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○ Future Themes

(1) Longue-Durée Group

Many sub-projects in this group will move on to the write-up stage, and a series of journal articles are expected to be submitted during 2015/16. Some teams will continue to analyze archaeological remains and collect environmental data, the results of which will be published in 2016/17.

A. Japan

1) Northern Japan Team

During 2015/16, we expect to complete all the data collection and analyses that are necessary to test our hypothesis and examine the correlations between food diversity, population size, climate change and other cultural and natural factors during the Early to Middle Jomon periods. Expected publications in 2015/16 and 2016/17 include the excavation report of the Goshizawa Matsumori site and a series of journal articles on changes in food diversity on the basis of lithic assemblage data from multiple sites, floral remains from Goshizawa Matsumori and Sannai Maruyama No. 9, faunal remains from Sannai Maruyama, and plant and insect impressions on Middle and Late Jomon pottery. Our Jomon site database for the study area will be completed, on the basis of which a revised version of Koyama's (1978, 1984) Jomon population estimates will be calculated. AMS dates from the Goshizawa Matsumori, Sannai Maruyama, and a series of sites in Hakodate will be used to refine the absolute chronology for the study area. Results of our pollen analysis from Lake Ogawara and alkenon sea surface temperature analysis of a marine core near Hakodate, together with AMS dates from these cores, will provide us with the climate change data on a fine-grained time-scale, against which the timing of the changes in food diversity and population size will be compared. Results so far seem to indicate evidence of the reduction of food diversity in the first half of the Middle Jomon period, followed by the decline in population size by the end of the Middle Jomon period. The timing of the cooling event seems to have occurred after the reduction of food diversity in the study area.

B. Comparative Studies

Of the comparative case studies listed above, research in 3a) the Lower Columbia River area of the Northwest Coast, 5) Canadian Arctic and 6) the Baikal region will complete data analysis by the end of 2015/16. Research on 2) California, 3b) the Gulf Islands area of the Northwest Coast, and 4) Kurils/Eastern Hokkaido will continue through to the end of 2015/16. By the end of the 2015/16 academic year, all the analyses of these regional teams will be completed. Preliminary results from California and the Northwest Coast point to successful management of the environment by complex hunter-gatherer populations with a wide diversity of food, whereas our example from the Canadian Arctic indicates a rapid population decline after the loss of food diversity. Data from the Kurils/Eastern Hokkaido and the Baikal region needs to be further examined after we obtain results of stable isotope analyses.

7) **Isotope Ecology Team:** Carbon and nitrogen isotope analyses of Early to Late Jomon human skeletal remains from the Kanto and Tohoku regions will be completed. Strontium and other trace element analyses of samples from Japan, the Kurils/eastern Hokkaido, and the Baikal region will also be completed.

(2) Contemporary Society Group

As discussed above, this group examines the positive role of small-scale and diversified production systems in relation to the environment, and with an emphasis on the importance of social networks. Field research and data analysis will continue in this research group, and some of the sub-projects will start publishing results in the form of journal articles.

A. Japan

1) Northern Japan Team

Field research plans for 2015/16 include investigations into small-scale fishing communities, farming communities including organic and no-till farmers, and communities associated with other forms of small-scale economies including forestry and traditional craft production. Interviews and participant observations, as well as biological and chemical analyses of products, soil and water, will be

conducted. Preliminary results seem to indicate diverse variations, depending on the region and local culture, in the junction between the global market economy and individual/local economic systems. The homogenization of economies due to globalization is not self-evident, along with the use of currency for transactions, local forms of distribution and gift exchange work in a multi-layered and complementary manner. Furthermore, the development of communication networks such as the Internet allows for an increased possibility for local systems to connect to the global information network without losing their identities. Through these analyses, we expect to find common characteristics among successful small-scale communities in the study area, as well as to outline major problems that these communities are facing in the age of globalization.

B. Comparative Studies

2) California Team: This team consists of two sub-teams: 2a) scholars working on small-scale farming that are tied to alternative food movements in California, and 2b) those working on Native American communities. In the San Francisco Bay Area, through a series of experiments, we are assessing the potential for food production and the limiting factors (disease, insect and soil chemistry) of urban farming. In collaboration with scholars at the University of California, Berkeley, interviews and surveys on urban and peri-urban farming in central California will also be conducted. Along the Central California Coast, we will continue to collaborate with several Native American communities, including the Amah Mutsun community and the Wukchumni Yokuts tribe, to understand landscape management, biodiversity and the importance of traditional environmental knowledge.

3) Northwest Coast and Alaska Team: In southeast Alaska, our study explores the herring network of the Tlingit people. We are in the process of identifying one or more locations for additional case studies.

(3) Implementation, Outreach and Policy Proposal Group

Five current programs listed on above will continue their activities in 2015/16. In addition, some of the research teams in Groups 1 and 2 plan to develop their own implementation and outreach programs. They range from collaborations with NPOs that cultivate oil crops in the areas affected by the Fukushima Nuclear accident, to educational programs that activate local environmental knowledge among Native American and Native Alaskan communities.

● Achievements

○ Books

【 Authored/Co-authored 】

- Ertl, J., Mock, J., McCreery, J. and Poole, G. 2014 Diversity in the Anthropology of Japan. Graduate Program in Cultural Resource Management, Kanazawa University, Kanazawa-City, Ishikawa
- Ochiai, Emiko and Hosoya, Leo Aoi 2014, 06 Transformation of the Intimate and the Public in Asian Modernity. Brill, Leiden-Boston, Netherlands, 307pp.
- Sasaki, Tsuyoshi 2014, 09 Nihon no Kaiyou Shigen: Naze Sekaiga Me wo Tsukerunoka (Japan's Ocean Resource: Why It Catches the World's Attention). Shodensha, Chiyoda-ku, Tokyo, 256pp. (in Japanese)

【 Chapters/Sections 】

- Goto, Yasuo 2014, 05 Hurricane Katrina no Shougeki to New Orleans no Mirai -Saigai wo Meguru Global na Taikou- (Impacts of Hurricane Katrina and the Future of New Orleans: Global Responses to Disaster). Fukushima University Disaster Restoration Studies Team (ed.) Restoring and Revitalizing from Great Eastern Japan Earthquake and International Comparison. Hassakusha, Shinjuku-ku, Tokyo, pp.179-197. (in Japanese)
- Ikeya, Kazunobu 2014, 07 Kankyō, Shigen (Environment, Resource). The National Museum of Ethnology (ed.) Sekai Minzoku Hyakka Jiten (The Encyclopedia of Peoples in the World). Maruzen Shuppan, Chiyoda-ku, Tokyo, pp.609. (in Japanese)
- Ikeya, Kazunobu 2014, 07 Kankyō to Saigai (Environment and Disaster). The National Museum of Ethnology (ed.) Sekai Minzoku Hyakka Jiten (The Encyclopedia of Peoples in the World). Maruzen Shuppan, Chiyoda-ku, Tokyo, pp.644-645. (in Japanese)

- Kanno, Tomonori 2014, 08 Kitakamigawa Chuuryuiki ni Okeru Jomon Jidai Chuuki Kouhan Shuuraku Iseki no Tokuchou (Characteristics of the Settlement in the Latter Half of the Middle Jomon Period in the middle reaches of Kitakami river, Japan Household Assemblages of Middle-Late Jomon Period). Anzai, M., and Masahiro Fukuda, M (ed.) *Kanshinsei no Kikouhendou to Jomon Bunka* (Climate Change in the Holocene and Change in Jomon Cultures). Center for Tohoku Cultural Studies at the Tohoku University of Arts and Design, Yamagata, pp.9-31. (in Japanese)
- Matsui, Akira 2014, 05 Shuryou no Taishou (Hunting game). Izumi, T., and Imamura, K. (ed.) *Jomon Jidai (Ge)* (Jomon Period (Second Volume)). The Archaeology of Japan Lecture Series 4. Aoki Shoten, Chiyoda-ku, Tokyo, pp.3-35. (in Japanese)
- Sato, Takao 2014, 10 Nihon Saiko no Maisou Kenkotsu: Kamikuroiwa Iwakage Shutsudo Jomon Kenkotsu no Kenkyuu (The Oldest Dog Burials in Japan: Research on the Jomon Dog Remains Unearthed from the Kamikuroiwa Rock Shelter Site). Hyodo, I. (ed.) *Heisei 26 Nendo Tokubetsuten Zuroku Zoku-Kamiirakura Iwakage to Sono Jidai -Jomon Souki no Sekai-* (Pictorial record of special exhibition. Kamikuroiwa rock shelter and that period -The world of the Early Jomon period-). Museum of Ehime History and Culture, Iyo-city, Ehime, pp.139-143. (in Japanese)
- Yoneda, Minoru 2014, 06 Chikyuujou ni Hirogatta Hito to Iu Seibutsu (Homo sapiens That Spread on the Earth). Kokubo, E. and Mineshige, S. (ed.) *Uchyu to Seimei no Kigen 2: Soryuushi kara Saibou he* (The Origin of the Universe and Life 2: from an Elementary Particle to Cell). Iwanami shoten, Chiyoda-ku, Tokyo, pp.221-240. (in Japanese)
- Yoneda, M., Kobayasi, K. and Itoh, S. 2014 Ichitani Kagacho Nichome Iseki 6ji Chousa Shutsudo Jomon Jidai Jinkotsu no Tanso Chisso Duitai Bunseki Oyobi Houshasei Tanso Nendai Sokutei (Carbon and nitrogen isotope analysis and radiocarbon dating on the skeletal remains from 6th excavation Ichitani Kagacho Nichome site). Excavation Report of Ichitani Kagacho Nichome site 4. , pp.64-68. (in Japanese)

OPapers

[Original Articles]

- Bronk, Ramsey C., Schulting, R., Goriunova O.I., Bazaliiskii, V.I., Weber, A.W. 2014 Analyzing radiocarbon reservoir offsets through stable nitrogen isotopes and Bayesian modeling: A case study using paired human and faunal remains from the Cis-Baikal region, Siberia. *56*(2) :789-799. DOI: 10.2458/56.17160.
- Cowart, Alicia 2014 *Paleoenvironmental Change in Central California in the Late Pleistocene and Holocene: Impacts of Climate Change and Human Land Use on Vegetation and Fire Regimes*. Ph.D. Dissertation Department of Geography, University of California at Berkeley. .
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- Ertl, John 2014 *Traversing the Landscape and Boundaries of Japanese Archaeology: Ethnography of Archaeological Practices at Amenomiya Kofun* . In Ertl, John, John Mock, John McCreery and Greg Poole (ed.) *Diversity in the Anthropology of Japan*. Graduate Program in Cultural Resource Management, Kanazawa University, Kanazawa-City, Ishikawa-Ken,
- Ertl, J. and Hansen, P. 2014 *Introduction: Moving Beyond Multiculturalism as a Framework for Diversity in the Anthropology of Japan*. Ertl, John, John Mock, John McCreery and Greg Poole (ed.) *Diversity in the Anthropology of Japan*. Graduate Program in Cultural Resource Management, Kanazawa University, Kanazawa-City, Ishikawa-Ken,
- Fukunaga, Mayumi 2014, 12 *Close to Home: Why Field Research Methods in Environmental Sociology and Sustainability Still Matter*. *Journal of Environmental Sociology* 20. (in Japanese)
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- Itahashi, Y., Chikaraishi, Y., Ohkouchi, N., and Yoneda, M. 2014,06 Refinement of reconstructed ancient food webs based on the nitrogen isotopic compositions of amino acids from bone collagen: A case study of archaeological herbivores from Tell Ain el-Kerkh, Syria. Geochemical Journal 48 : 15-19. DOI:10.2343/geochemj.2.0318. (reviewed).
- Oishi, T., Hagiwara, M. 2015 A preliminary report on the distribution of freshwater fish of the Congo river: Based on the observation of local markets in Brazzaville, Republic of the Congo . African Study Monographs Supplementary Issue 51 :93-105.
- Sato, T., Khenzykhenova, F., Simakova, A., Danukalova G., Morosova, E., Yoshida, K., Kunikita, D., Kato, H., Suzuki, K., Lipnina, E., Medvedev, G. and Martynovich, N. 2014,05 Paleoenvironment of the Fore-Baikal region in the Karginian interstadial: Results of the interdisciplinary studies of the Bol' shoj Naryn site. Quaternary International 333 :146-155. DOI:10.1016/j.quaint.2013.12.050.
- Schulting R.J., Ramsey C., Goriunova O.I., Bazaliiskii V.I., Weber A.W 2014 Freshwater reservoir offsets investigated through paired human-faunal 14C dating and stable carbon and nitrogen isotope analysis at Lake Baikal, Siberia. Radiocarbon 56(3). DOI:10.2458/56.17963.
- Striplen, Chuck J 2014 A Dendroecology-Based Fire History of Coast Redwoods (SEQUOIA SEMPERVIRENS) In Central Coastal California. Ph.D. Dissertation Department of Environmental Science, Policy and Management, University of California at Berkeley.. .
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- Weber, S. and Kashyap, A. 2014,05 Panicum sumatrense: The Forgotten Millet. Paul Minnis (ed.) New Lives For Ancient And Extinct Crops. University of Arizona Press, Tucson, AZ , USA, pp.236-253.

○Research Presentations

【Oral Presentation】

- Adachi, Kaori Changes in the Middle-Late Jomon Hunter-Gatherer Lifeways in the Northern Tohoku Region, Japan. The annual meeting of the Japan Association for Quaternary Research, 2014,09,06, Tokyo University, Kashiwa-City, Chiba. (in Japanese)
- Adachi, Kaori Diversity and Sustainability of Regional Communities in Northern Tohoku, Japan, during the Middle-Late Jomon Periods. Workshop: Food Diversity and Long-Term Sustainability, 2015,03,11, University of California, Berkeley, USA.
- Altieri, Miguel A. Paper presented to Berkeley Food Institute, Initiatives on urban agriculture. , 2014,10,10, University of California, Berkeley, USA.
- Altieri, Miguel A. Paper presented to CJS-JSPS Symposium- Long-term Sustainability through Place-based, Small-Scale economies. , 2014,09,26-2014,09,28, University of California, Berkeley, USA.
- Altieri, Miguel A. Paper presented to Colloquium on the significance of urban agriculture to provide ecosystem services in urban environments. , 2014,10,22, Stanford University, CA, USA.
- Ames, Kenneth M. Household-scale economies on the Northwest Coast, A Lower Columbia River Case Study. The CJS-JSPS Symposium “Long-term Sustainability through Place-based, Small-scale economies, 2014,09,26-2014,09,28, University of California, Berkeley.

- Ames, Kenneth M. The Social Lives of Projectile Points Inter and Intra-household variation in projectile point forms in Lower Columbia River Plankhouses. 79th Annual Society for American Archaeology Meetings, 2014, 04, 23–2014, 04, 27, Austin, TX, USA.
- Ames, Kenneth M., and Elizabeth M. Sobel The archaeology of exchange and trade on the Lower Columbia River. The Confederated Tribes of Grand Ronde History Conference, 2014, 11, 14, Grand Ronde, OR, USA.
- Balée, William A historical-ecological approach to geometry, gigantism, and dualism in the landscape. Friday Forum Speakers Series, 2014, 10, 24, Louisiana State University, Baton Rouge, LA, USA.
- Balée, William Geometry, gigantism, and lacquerware, or, the origin of social hierarchy. Anthropology Colloquium Series, 2014, 10, 03, Tulane University, New Orleans, LA, USA.
- Balée, William Left-handedness, the right angle, and societal verticality: Reflections on Hocart's theory of hierarchy. The CJS-JSPS Symposium Long-term sustainability through place-based, small-scale economies, 2014, 09, 26–2014, 09, 28, University of California, Berkeley, USA.
- Ertl, John Intersections of Diversity and Mobility in Japanese Archaeological Discourse. 17th International Congress of Anthropological and Ethnological Sciences, 2014, 05, 15–2014, 05, 18, Chiba, Japan.
- Fitzhugh, Ben Building an International Human Ecodynamics Research Community in the Remote North Pacific from the Perspective of Archaeology and Paleoecology. International Congress of Arctic Social Sciences (ICASS), 2014, 05, 22, Prince George, B.C. Canada.
- Fitzhugh, Ben Vulnerability and Resilience on the North Pacific Rim: Climate Oscillation & Food Security, Political Economy and Pandemic. The CJS-JSPS Symposium Long-term Sustainability through Place-based, Small-scale economies, 2014, 09, 26–2014, 09, 28, University of California, Berkeley, USA.
- Fitzhugh, Ben and Funk, Caroline Sustainability and settlement: A comparative analysis of late Holocene settlement patterns in the Aleutians and Kuril Islands. The Society for American Archaeology Annual Meeting, 2014, 04, 25, Austin, TX, USA.
- Fukunaga, Mayumi Who manages the watershed?: Legitimacy building and competing uses of watershed space. IUEAS, 2014, 05, 08, Chiba-City, Chiba-Ken.
- Grier, Colin Actor Networks and Coastal Landforms in Precontact Coast Salish History: Formulating a New Approach to Some Key Issues in Northwest Coast Archaeology. 79th Annual Meeting of the Society for American Archaeology, 2014, 04, 23–2014, 04, 27, Austin, TX, USA.
- Grier, Colin Decentralization, Local Autonomy and Resource Management Practices in Coast Salish Societies of the Northwest Coast: Lessons from the Small Scale. The CJS-JSPS Symposium Long-Term Sustainability through Place-Based, Small-Scale Economies, 2014, 09, 26–2014, 09, 28, University of California, Berkeley.
- Habu, Junko Did Jomon People Have the Staple Food?—Food Diversity and Environmental Issues—. The 6th RIHN Tokyo Seminar, 2015, 01, 16, Yurakucho Asahi Hall, Chiyoda-Ku, Tokyo.
- Habu, Junko Long-term Sustainability through Place-Based, Small-scale Economies: Approaches from Historical Ecology. Workshop: Food Diversity and Long-Term Sustainability. , 2015, 03, 11, University of California, Berkeley.
- Habu, Junko Sedentary Hunter-Gatherers in East Asia: Jomon People. The 8th Minpaku Kyodo Kenkyukai, 2014, 07, 06, National Museum of Ethnology, Suita-City, Osaka.
- Habu, Junko and Weber, Steven Mobility, Food Diversity and Climate Change: Prehistoric Cases from East and South Asia. Society for American Archaeology, 2014, 04, 23–2014, 04, 27, Austin, TX, USA.
- Hamada, Shingo Household-scale Fisheries and Environmental Change in Northern Japan. JSPS-CJS Symposium: "Long-term Sustainability through Place-based, Small-scale economies", 2014, 09, 26–2014, 09, 28, University of California, Berkeley. DOI:<http://jspssustainabilityconference2014.weebly.com>.
- Hamada, Shingo The Historical Ecology of the Herring in the North Pacific Rim: Cases from Tlingit and Ainu. The 2014 Hokkaido Ethnological Society Workshop, 2014, 07, 13, Hokkai-Gakuen University, Sapporo, Hokkaido. (in Japanese)
- Hamada, Shingo Totemism in Science: An Experimental and Multispecies Ethnography of Fisheries Science in Japan. The 113th Annual Meeting of American Anthropological Association, December 2014, Washington, DC, USA.

- Hosoya, Leo Aoi Revitalizing Broad-spectrum Economies: From the Scope of Archeology and Ethnography. The CJS-JSPS Symposium: Long-term Sustainability Through Place-based, Small-scale Economies, 2014, 09, 26-2014, 09, 28, University of California, Berkeley, USA.
- Hosoya, L. A., Nakamura, O., Seguchi, S. and Shibutani, A. What did Jomon people eat in fact? Jomon subsistence and society: Chronological shifts in Japanese Jomon subsistence strategies on the basis of local characteristics of north Tohoku area. 6th Worldwide Conference of the Society for East Asian Archaeology, 2014, 06, 10, National University of Mongolia, Ulaanbaatar.
- Ikeya, K Human history of nomadism and sedentarism among nomadic peoples. IUAES, 2014, 05, 15, Chiba-City, Chiba-Ken.
- Kaneko, Nobuhiro No-tillage with Weed Green Mulch: Extension of Fukuoka's Natural Farming. The CJS-JSPS Symposium Long-term sustainability through place-based, small-scale economies, 2014, 09, 26-2014, 09, 28, University of California, Berkeley, USA.
- Kusaka, S., and Nakano, T. Carbon isotope analysis on tooth enamel to reveal relationships between diet and tooth ablation types of the Jomon in Japan. The 83rd Annual Meeting of the American Association of Physical Anthropologists, 2014, 04, 08-2014, 04, 12, Calgary, Alberta, Canada.
- Naganuma, M., Sato, T., Takahashi, T. and Kato, H Results of the archaeological excavation from Hamanka 2 site, Rebun Island, 2011 and 2013 field years. Baikal-Hokkaido Archaeology Project May 2014 Workshops, 2014, 05, 05-2014, 05, 07, University of Alberta, Edmonton, Canada.
- Oishi, Takanori Food diversity, interethnic relationships, and long-term sustainability of forest use in central African tropical rainforests. The CJS-JSPS Symposium "Long-term Sustainability through Place-based, Small-scale economies, 2014, 09, 26-2014, 09, 28, University of California, Berkeley .
- Oishi, Takanori Land conflict in multi-ethnic context: trans-ethnic negotiation and cultural transmissions in the expansion process of cocoa farming in southeastern Cameroon. The Forth Forum on Comprehensive Area Studies on Coexistence and Conflict Resolution Realizing 'African Potentials' , 2014, 12, 05-2014, 12, 06, Yaoundé, Cameroon.
- Oishi, Takanori Psychosocial importance of forest life for the Bakwele farmers of southeastern Cameroon. The 14th International Society of Ethnobiology Congress, 2014, 06, 01-2014, 06, 07, Lamai Gompa, Bumthang, Bhutan .
- Ono A., Shimada, K., Hashizume, J., Yoshida, A., Hori, K. Natural resource environment and humans around obsidian exploitation in the central highland, Japan. Asian Paleolithic Association, 2014, 11, 12-2012, 11, 16, Gongju, Korea.
- Schulting, R., Bronk, R. C., Goriunova, O. I., Bazaliiskii, V. I., Weber, A. W. Examination of the fresh water reservoir effect in the Cis-Baikal region. The Baikal-Hokkaido Archeology Project Workshop, 2014, 05, 05-2014, 05, 07, University of Alberta, Edmonton, Canada.
- Schulting R., Yoneda Y., Weber A. Hunter-gatherers in a northern 'maritime' zone: a comparison of stable carbon and nitrogen isotopes from Baikal and Hokkaido. The Annual Meetings of the European Association of Archaeologists, 2014, 09, 10-2014, 09, 14, Istanbul, Turkey.
- Takahashi, Satsuki Precarious Drama: Surviving and Living in Post-Disaster Japan. The Annual Meeting of American Anthropological Association, 2014, 12, 05, Washington, DC, USA.
- Tsutaya, T., Yoneda, M., Masuda, R., and Sato, T. Preliminary analysis on stable isotopes and mitochondrial DNA of dog remains from the Rebun Island. Baikal-Hokkaido Archaeology Project May 2014 Workshops, 2014, 05, 05-2014, 05, 07, University of Alberta, Edmonton, Canada.
- Weber, A. W., Bronk R. C., Schulting, R., Goriunova, O. I. and Bazaliiskii, V. I. Freshwater reservoir effect corrections to chronology of middle Holocene hunter-gatherers in the Cis-Baikal region of Siberia. The Baikal-Hokkaido Archeology Project Workshop, 2014, 05, 05-2014, 05, 07, University of Alberta, Edmonton, Canada.
- Weber, Steven., and B. Shaw. Ancient Seeds: Their Role In Understanding Subsistence Strategies At Specialized Craft Production Sites In Central Thailand. NSF funded seminar: The Thailand Archaeometallurgy Project, 2014, 04, 28-2014, 05, 02, School for Advanced Research (SAR), Santa Fe, NM, USA.

- Yoneda, M. and S. Kusaka Maritime adaptation of Jomon hunter-fisher-gatherer of prehistoric Japan. Radiocarbon and Diet: Aquatic Food Resources and Reservoir Effect, International Scientific Meeting, 2014, 09, 24-2014, 09, 26, Kile, Germany.

【Poster Presentation】

- Fitzhugh, Ben and William Brown Human paleodemography and ecodynamics in the Subarctic North Pacific: Teleconnections in large time and space scales?. American Quaternary Association (AMQUA) Annual Meeting, 2014, 08, 09, Seattle WA.
- Ito, Y., Habu, J., Onishi, T., and Inano, Y. Anacardiaceae fruits excavated from Goshizawa-matsumori Site in Aomori City. The 29th Meeting of Japanese Association of Historical Botany, 2014, 11, 23, Kagoshima University, Kagoshima.
- Oishi, Takanori and Njoukou, André-Ledoux Wild mushroom uses by the Baka and the Bakwile of southern Cameroon. The 14th International Society of Ethnobiology Congress, 2014, 06, 01-2014, 06, 07, Lamai Gompa, Bumthang, Bhutan.

【Invited Lecture / Honorary Lecture / Panelist】

- Ames, Kenneth M. What's up on the Northwest Coast: Revising/Rethinking Complex Hunter Gatherers. Parson's Lecture, 2014, 10, 16, University of Michigan, Ann Arbor, MI, USA.
- Fukunaga, Mayumi Re-weaving Hope: Tsunami survivors, local reciprocity networks, and futurity. CJS-JSPS Symposium Long-term Sustainability through Place-based, Small-scale Economies, 2014, 09, 26-2014, 09, 28, University of California, Berkeley.
- Grier, Colin Hunter-Gatherer Landscapes: Built Environments and the Emergence of Social Inequality. Department of Archaeology and Art History, Seoul National University, 2014, Seoul, Korea.
- Habu, Junko Archaeology, food diversity and long-term sustainability of human societies: Lessons from prehistoric Japan. 2014 Senior Fellowship Program in National Museum of Korea, 2014, 11, 09-2014, 11, 15, Yongsan-dong, Seoul.
- Habu, Junko Food Diversity and the Growth and Decline of Human Cultures. Seminar on Cultural Resources, Archaeology and Contemporary Society 4, 2014, 10, 26, Tokyo National Museum, Taito-Ku, Tokyo.
- Habu, Junko Graduate education at UC Berkeley: Training a new generation of scholars in the field of archaeology. Lecture at Alumni Association of Archaeology and Ethnology, Keio University, 2014, 06, 07, Keio University, Minato-Ku, Tokyo.
- Habu, Junko Jomon Staple Food and Society. Tsugaru City Jomon 2015 Symposium, 2015, 02, 14, Tsugaru City Shogai Gakushu Center, Tsugaru-City, Aomori-Ken.
- Habu, Junko Sedentism, Mobility and Human Impacts on the Environment: A Perspective from Historical Ecology. JAQUA Meeting 2014, 2014, 09, 05-2014, 09, 09, Tokyo University, Kashiwa-City, Chiba-Ken.
- Hamada, Shingo Herring Fisheries and Food Cultures in Japan. Sitka Herring Festival / Sitka Natural History Series, 2015, 03, 23, University of Alaska Southeast Campus, Sitka, Alaska, USA. DOI:<http://www.sitkatribes.org/SitkaHerringFestival1.htm>.
- Hamada, Shingo Seafood, Seascape and Shifting Baselines. Introduction Trans-Disciplinary Human Development, Faculty of Liberal Arts, Sophia University, 2014, 10, 16, Sophia University, Chiyoda-Ku, Tokyo.
- Kaner, Simon Jomon archaeology seen from the perspective of the European Neolithic. , August 2014, Chuo University, Hachioji-City, Tokyo.
- Kaner, Simon Metastable ecosystems along the Shinano-Chikuma River, central Japan: challenges and potential. Talk at workshop in Historical Ecology in northeast Asia, September 2014, University of Oregon, Eugene, OR, USA.
- Kaner, Simon What the foreign specialist William Gowland saw in the mounded tombs. 2nd Ishibashi Lecture Series, 2014, 10, 25, The Tokyo National Museum, Taito-ku, Tokyo.
- Matsui, A., Rasmi Shoocongdej Multi-Interaction between Human and Chicken from Archaeological Context. Human and Chicken Mutual-relationship Research Project, August 2014, Tokyo.

- Oishi, Takanori Small-scale economy as a counter-strategy in the time of Godzillas. Book talk Symposium “To see once more than stars: Living in a post-Fukushima world” Session3: Environment, 2014, 08, 08, Iwasaki memorial hall, International house of Japan, Minato-ku, Tokyo.
- Oishi, T., Kamgaing, O.W., Yamaguchi, R., Hayashi, K. Anti-poaching operations by military forces and their impacts on local people in South-Eastern Cameroon . Symposium 'Beyond Enforcement: Communities, governance, incentives and sustainable use in combating wildlife crime', 2015, 02, 27, Glenburn Lodge, Muldersdrift, South Africa.
- Takahashi, Satsuki Fukushima Future: Nukes, Renewables, and Temporal Momentums in Coastal Japan. , 2014, 07, 03, Tsukuba University, Tsukuba-City, Ibaraki-Ken.
- Weber, Steven The Rise and Fall of Cities in Prehistory: An Example From the Indus Civilization. RIHN 9th International Symposium Living in the Megacity: The Emergence of Sustainable Urban Environments, 2014, 06, 25-2014, 06, 27, Kita-Ku, Kyoto-City, Kyoto.

Stage: Full Research

Project No.: H-05

Project Name: Historical Adaptation to Climate Change in Japan: Integrating Palaeoclimatological Data and Archaeological Evidence

Abbreviated Title:

Project Leader: NAKATSUKA Takeshi

Research Axis:

URL:

Key Words:

○ Research Subject and Objectives

a) Research objectives and background

When we confront rapid environmental and/or climatic changes, what should we do? The most important subject in global environmental studies is not only to find methods for mitigating the changes, but also to ascertain ways to adapt to them. This project will seek ways to adapt from Japan's long history through precise reconstructions of past abrupt climate changes and subsequent responses of human society. By categorizing historical society-climate relations and synthesizing findings from many case studies, the objective of this project is to describe general social characteristics or modes associated with tolerance or vulnerability to abrupt changes.

To date, many palaeoclimatologists and historians have stated the possibility that past changes in societies and civilizations might have been caused by climate changes based on the apparent coincidence between societal reformation and climate change (Yoshida and Yasuda, 1995; Fagan 2001, 2008; Diamond 2005; Parker 2013). Especially, recent paleoclimatological studies using tree ring and speleothem records have revealed the tight relations prevailing between the multi-decadal climate variability and the collapse of regional societies all over the world (Zhang et al., 2008; Buckley et al., 2010, Cook et al., 2004;2010). "Climate variations in the past" obviously differ from "human-induced environmental problems". However, we think that social responses to "climate changes", especially to multi-decadal climate variation, have the same characteristics as those to "global environmental change". Human societies often rely excessively on particular resources or technologies such as petroleum or nuclear power. Therefore, it is not easy for people to adapt to a world that is losing such resources and technologies. Similarly, human societies that have used to particular climate conditions leading to abundant crops for more than a few decades cannot adapt to drastic climate change easily. Common structures of "overadaptation" and "consequential failure of adaptation" must exist for global environmental problems and many historical examples of society-climate relations.

b) Research methods and organization

This project consists of three research steps. (1) Reconstruction and understanding of past climate changes during last several millennia in Japan. (2) Categorization of society-climate relations by detailed chronological comparisons between climate and societal events. (3) Identification of common characteristics underlying tolerance and vulnerability of human societies against climate change beyond ages and areas through detailed historical studies.

Recent progress in studies of tree-ring width and cellulose oxygen isotope ratios (Cook et al., 2013; Yamaguchi et al., 2010; Li et al., 2011; Sano et al., 2012; 2013; Xu et al., 2011; 2013a; 2013b) allow accurate reconstruction of past climate variation at annual resolution in East Asia and Japan. In this project, high-resolution palaeoclimate data based on tree ring, coral ring, speleothem, varve sediments, ice cores, and historical documents are integrated to ensure the accuracy and extend the variety (precipitation and temperature, summer and winter, land and ocean) of past climate reconstructions in and around Japan. The reconstructed past climate data have been evaluated together with modern climate analysts and modellers to understand modes and mechanisms of climate variations in the past. Now we can conduct collaborative discussions with historians and archaeologists. The high resolutions of datasets bring remarkable benefits in allowing corroboration of paleographic and archaeological records such as those showing changes in population, harvest, price of crop, farmland

development, irrigation and flood controls with concrete climate events such as abrupt changes in drought and flood frequencies. In this project, we devote attention not only to the magnitude but also to the periodicity of climate change, such as multi-decadal variations. By particularly addressing some key social factors such as roles of “market economy”, “stockpiling”, “landownership”, “family system” and “people’s environmental knowledge”, we will extract common lessons on how we can avoid “over-adaptation” and “consequential collapse” to climate changes, which shall be useful for solving “global environmental problems”.

Although this project is not a “trans-disciplinary” project (merely an “interdisciplinary” project) urgently required in Future Earth and RIHN frameworks, we believe that this project contributes to RIHN’s mission by interacting with many other “trans-disciplinary” projects because every environmental problem has its own historical structures extending for more than a few decades.

○ Progress and Results in 2014

Because this project has three research steps arrayed sequentially as mentioned above, most of achievements during FR1 are still located in Step One to prepare palaeo-climatological data sets as many and precise as possible for Step Two and Three. However, significant findings and research strategies have been obtained for Step Two and Three in FR1, too.

a) Step One – Reconstruction and understanding of past climate changes

During FR1, we have extended and improved spatio-temporal coverages of tree-ring based reconstructions of past climate in and around Japan. One of the most remarkable achievements is 4,300 year length of continuous tree-ring cellulose oxygen isotope chronology in Japan, which demonstrates climatological background of notorious “4.2k event”, leading collapse of many ancient civilizations, in annual time resolution. Although our previous tree ring oxygen isotope chronology based on Honoki cypress was largely affected by “juvenile effect” so that we could not discuss about centennial scale climate variations, we have newly established Sugi cedar tree-ring oxygen isotope chronology, independent from juvenile effect and recording long-term hydroclimate variability such as dry medieval condition in southwest Japan.

b) Step Two – Categorization of society-climate relations by chronological comparisons

In FR1, we have integrated previous knowledge on document-based climate history (Maejima and Tagami, 1986) and newly reconstructed summer monsoon activity (tree-ring oxygen isotope ratios) in Early Modern Period and found that there was tight relationship between monsoon-modulated summer temperature variation and Japanese societal reactions. During the two short periods (1710–30& 1800–1820 AD) characterized by hot summer, rice yield was very large, often resulting in price decrease in market (Takatsuki, 2012) and increase in population especially at northeast Japan where cold climate usually caused serious crop failure. Because people in northeast Japan excessively relied on the warmth by selling large amount of rice to market, they could not adapt to the following cold periods, resulting in unprecedented giant famines (Tenmei and Tenpo famines) and decrease in population by starvation and birth control (Kikuchi, 2003). Although we must discuss many aspects of societies against the climate variation as described below (Step Three), the two warm-cold cycles and subsequent human responses in 18th and early 19th centuries can be categorized as typical cases of multi-decadal climate-society interactions.

If you compare the newly reconstructed East Asia summer temperature variation (Cook et al, 2013) since 800 AD with Japanese Medieval chronological table, you can find an apparent climate-society relationship that 10–20 years length of hot summer often resulted in notorious warfare, rebellion or famines during the following cold periods, especially in east and northeast Japan. These coincidences between climate and society in Medieval Period may also reflect the over-adaptation to relatively comfortable climate and the subsequent failure of adaptation to following difficult climate as well as the cases in Early Modern Period although there are only few document records on crop yields or human population during Medieval Period so that intense surveys of historical and archaeological records are necessary to understand the underlying mechanism of the apparent “simple” relationship. On the other hand, the most important lesson from the climate-society relationships during Medieval Period for this project is that the same magnitude of climate variation did not always result in the same consequence in society. For example, in 13th century when Kamakura Shogunate governed, abrupt decreases in

temperature resulted in serious famines, but did not cause any rebellions. In contrast, during 12th and 14-15th centuries, large variations in summer temperature resulted in biggest civil wars (Genpei War, Twin Dynasty (Namboku-cho) War and Ohnin War and subsequent Sengoku(Warring) Period) in Japanese history. There must be clues to determine different modes of societal reactions against climate variation during Medieval Period.

c) StepThree - Identification of common characteristics underlying tolerance and vulnerability of societies against climate changes

In order to identify real factors in societies controlling of response modes against climate variations, it is necessary to conduct detailed studies on cause and effect relationship for the typical cases with more attention to various kinds of sociocultural variables. In FRI, we have started the analyses of cause and effect relationship from Early Modern Period using many documentary records on crop yields, market prices, population and so on. After intense discussions in our project, we have designed a sequential research framework of the cause and effect relationship originating from "Climate variations", transmitted through "Climate Disaster" and "Agricultural Impact" and resulting in "Short, Middle, Long-Term Reactions" by societies. In the analyses of societal reactions, we will focus on several key elements such as "Market Pricing", "Public Stock", "Land Ownership", "Family System" and "People's Climate Knowledge" as various societal functions against difficult climate. Because the original function of each element against difficult climate often turn into completely different one during comfortable climate period, it is very important to analyse historical consequence of each element during both of comfortable and difficult climate periods in comparison with the high resolution of palaeo-climatological data. Although it becomes more difficult to trace each element back into Medieval and Ancient Periods, part of analytical results obtained from Early Modern Period, such as relationship between climate and agricultural productions and/or functional change of public stock along with climate variation, may be shared beyond the age because most of elements had been existing from Ancient Period.

Project Members

- ◎ NAKATSUKA, Takeshi (Research Institute for Humanity and Nature, Professor, Leader of the whole project)
- SANÔ, Masaki (Research Institute for Humanity and Nature, Senior Project Researcher, Sub leader of the whole project)

Group of Paleoclimatology

- YASUE, Koh (Shinshu University, Associate Professor, Dendroclimatological and wood anatomical analyses in Japan and Asia)
- ABE, Osamu (Graduate School of Environmental Studies, Nagoya University, Assistant Professor, Coral analyses in Southwest Japan)
- MITSUTANI, Takumi (Nara National Institute for Cultural Properties, Visiting Researcher, Age determination of cultural properties in Japan using tree ring width)
- SAKAMOTO, Minoru (National Museum of Japanese History, Professor, Age determination of paleoclimate proxy materials using radiocarbon)
- KAGAWA, Akira (Forest and Forest Products Research Institute, Researcher, Development of analytical methods for isotopic ratios of tree-ring samples)
- FUJITA, Koji (Graduate School of Environmental Studies, Nagoya University, Associate Professor, Analyses of ice cores in Central Asia)
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- MORIMOTO, Maki (Graduate School of Environmental Studies, Nagoya University, Part-time Researcher, Coral analyses in Southwest Japan)
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- HIRANO, Jumpei (National Research Institute for Earth Science and Disaster Prevention, Researcher, Analyses of climate changes in Japan using old documentary records)
- TAIRA, Hideaki (Tateyamasugi Research Institute, Director, Analyses of human-forest relationship during last two millennia in mountainous area)
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- LI, Zhen (Research Institute for Humanity and Nature, Research Associate, Reconstruction of past hydroclimate in Japan using tree-ring oxygen isotope ratios)
- HAKOZAKI, Masataka (Centre for Chronological Research, Nagoya University, Postdoctoral fellow, Reconstruction of past climate in Japan using tree-ring width, density and oxygen isotope ratios)
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- YOSHIMURA, Kei (Atmosphere and Ocean Research Institute, University of Tokyo, Associate Professor, Evaluation of proxy isotope data using general circulation models with isotope dynamics)
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- KANEDA, Akihiro (Nara National Research Institute for Cultural,Chief Researcher,Analyses of social responses to climate changes during Ancient Age)
- MURAKAMI, Mayuko (Graduate School of Arts and Letters, Tohoku University,Researcher,Analyses of social responses to climate changes during Ancient Age)
- BATTEN, Bruce (Graduate School of International Studies, J. F. Oberlin University,Dean,Analyses of social responses to climate changes during Japanese History)
- KOBAYASHI, Kenichi (Faculty of Letters, Chuo University,Professor,Dating of excavated wooden properties during Jomon, Yayoi and Kohun Era)

Group of Medieval Era

- TAMURA, Noriyoshi (Faculty of Humanity, Beppu University,Professor,Analyses of social responses to severe events of flood and drought during periods of Muromachi and provincial wars)
- MIZUNO, Shoji (School of Human Culture, The University of Shiga Prefecture,Professor,Analyses of social adaptation to hydroclimate variability during Kamakura and Muromachi periods.)
- ITO, Keisuke (Research Institute for Humanity and Nature,Project Researcher,Relationship between economy and climate during Medieval period)
- SHIMIZU, Katsuyuki (School of Commerce, Meiji University,Associate Professor,Analyses of social response to climate changes from the Muromachi period to the age of provincial wars)
- NISHIYACHI, Seibi (Faculty of Letters Nara Women' s University,Professor,Analyses of agricultural adaptation to climate change during Medieval warm period)
- TAKAGI, Tokuroh (Faculty of Education, Waseda University,Associate Professor,Analyses of environmental adaptation in manor and village)
- KAWASUMI, Tatsunori (Faculty of letters, Ritsumeikan University,Professor,Human geographical adaptation to heavy flood occurrences in Middle Age of Japan)
- ITO, Toshikazu (Faculty of Human Studies, Meijo University,Professor,Analyses of societal responses against climate variation in Japan during Medieval period)

Group of Early Modern Era

- SATO, Daisuke (International Research Institute of Disaster Science, Tohoku University,Associate Professor,Historical analyses of social responses against natural disasters)
- WATANABE, Koichi (National Institute of Japanese Literature,Professor,Urban adaptation to heavy flood events at Edo during modern age.)
- KAMATANI, Kaoru (Research Institute for Humanity and Nature,Project Researcher,Changes in livelihood pattern against climate change including fishery around lake Biwa during modern age)
- KIKUCHI, Isao (Miyagi Gakuin Women' s University,Professor,Social responses against great famines in Northeast Japan during modern age)
- NAKAYAMA, Tomihiro (Graduate School of Letters, Hiroshima University,Professor,Changes in livelihood pattern during modern age in Southwest Japan)
- HIRANO, Tetsuya (Tokiwa University,Associate Professor,Societal responses to climate change during modern age at local villages in East Japan)
- SATO, Hiroyuki (Faculty of Education, Kagoshima University,Associate Professor,Societal responses to climate change during modern age in Southernmost Japan.)
- OGI, Shin-ichiro (Faculty of Humanities, Kochi university,Professor,Societal responses to climate change during modern age in Southern Japan.)
- TAKEI, Koichi (Faculty of Law and Letters, University of the Ryukyus,Associate Professor,Societal responses to climate change during modern age in Northern Japan)
- TAKAHASHI, Miyuki (Faculty of Economics, Rissho University,Associate Professor,Analyses of population dynamics in northeast Japan during Early Modern period)
- YAMADA, Kosei (Okinawa International University,Research Fellowship for Young Scientists,Societal responses to climate change during modern age in southwest islands of Japan)
- TAKATSUKI, Yasuo (Research Institute for Economics and Business Administration, Kobe University,Associate Professor,Analyses of market pricing in Early Modern Japan)
- MURA, Kazuaki (Mitsui Bunko,Researcher,Analyses of market pricing in Early Modern Japan)

- BROWN, Philip C. (College of Arts & Sciences, Department of History, The Ohio State University, Professor, Analyses of landownership in Japan during Early Modern period)
- ENDO, Takahiro (Osaka Prefecture University, Associate Professor, Societal responses to climate change during modern age in central Japan)
- KORIYAMA, Shiho (Kasai City Library, Part-time Researcher, Estimate of climate impacts in Early Modern feudal domains)

○ Future Themes

To reach the goal of this project through the three steps of research scheme as mentioned above, we have two research groups (A, B) for Step One, three research groups (C, D, E) for Step Two and Three and one group (F) for final integration, although all groups are always communicating with other groups actively.

a) Group A: Reconstruction of Past Climate Variation

Although a key climatological parameter for Japanese history, summer rainfall amount, has been successfully reconstructed with annual time resolution during last 4300 years, there remain following subjects necessary to be archived during the early stage of this project. (1) Temperature reconstruction with annual time resolution in Japan. (2) Monthly to daily resolutions of climate reconstruction. (3) Improvement of spatial resolution of climate reconstruction in Japan and Asia. (4) Reconstruction of long-term climate variability. For (1) and (2), measurements of tree-ring density and intra-ring analyses of tree isotope ratios are effective, respectively, as well as diary-based documentary weather reports, abundant during Early Modern Period. Using tree ring samples covering last several thousand years, those two measurements are now being conducted. For (3), we are now analysing and integrating of many tree ring and other paleo-climate proxies such as speleothem, varve sediment, document records and ice core all over Asia under the umbrella of international Asia 2k network. For (4), Sugi cedar tree-ring oxygen isotope ratios are independent from juvenile effect and able to provide us of reliable long-term climate signal as well as annual resolution data. In addition, sea surface temperature in an inland bay of Japan recently reconstructed by biomarker molecular composition in sediment core has demonstrated long-term variability, very similar to that of East Asia summer temperature (Cook et al., 2013), suggesting the applicability of long-term characteristics in East Asia summer temperature to Japanese historical analyses.

b) Group B: Analyses of Past Climate Variation

The direct collaboration between historians and climatologists in daily time resolution in Early Modern period has developed an innovative method, to understand climate variations during Little Ice Age, that is the assimilation of daily weather records written in old diaries all over Japan into a super-computer based general circulation model (GCM) to reproduce past atmospheric circulation precisely. Because there remain many diaries in Europe, China and North America as well as Japan since 17th century, those can be integrated into the same GCM, the assimilation of daily weather must improve our understandings on Little Ice Age all over world.

Groups C, D and E compare the reconstructed past climate variations with historical and archaeological evidences throughout corresponding periods to categorize society-climate relations (Step Two) and analyse typical cases of society-climate relations (Step Three).

c) Group C: Prehistoric and Ancient Period (approximately until tenth centuries)

Newly developed annual resolutions of tree-ring oxygen isotope chronologies have introduced an unprecedented chance to discuss climate-society relationship during this period. In fact, remarkably large climate variability was found at several episodes since 4300 year ago. Although Japanese archaeologists could not date most of archaeological events precisely, the progress in tree-ring oxygen isotope chronology provides archaeologists with a new dating chance to determine the ages of any excavated woods at the annual time resolution all over Japan. Group C will compile many archaeological and documentary records in chronological order, such as construction of pit houses and tombs, restoration of rice paddy fields and waterways, occurrence of large floods in various regions to make

many cause-and-effect analyses between climate variations and societal reactions during the Prehistoric and Ancient Periods.

d) Group D: Medieval Period (ca. 11th - 16th centuries)

Because we can seldom find a completely new historical document during this period in contrast to Early Modern Age, the most important task of Group D is to compile all existing records relevant to climate variations based on current archives of historical documents during the Medieval Period in Japan. The compiled records should not only include meteorological disasters (Fujiki, 2007) but also cover sociocultural and economic variables, as many as possible, potentially underlying the societal reactions to climate changes. Group D will collaborate with archaeological members in Group C because archaeological data sets on Medieval Japan previously obtained all over Japan must provide us of new understandings on climate-society relationship at that time.

e) Group E: Early Modern Period (ca. 17th - 19th centuries)

In contrast to Ancient and Medieval Period in Japan, there are numerous local unread documents together with many published documents translated into modern Japanese. Group E will unravel many documentary records such as tax accounts to villages, market prices for variety of rice, religion registration records relating to population dynamics together with many documents for governance, especially against climate variations, written by villagers, local officers and governments. Parts of results on climate-society relationship during Early Modern Period will be shared with Group C and D. Because Group E consists of many historians all over Japan from northern Tohoku to southern Kyushu, we can elucidate geographical differences in societal responses against climate variations systematically.

f) Group F: Categorization and Integration

To extract common lessons from societal adaptation to past climate variations, it is the most important for us to categorize and integrate numerous examples investigated separately by Group C, D and E using some unified measures beyond periods and regions. For this purpose, we will learn strategies of IHOPE project (Costanza et al. eds. 2007) systematically by investigating all IHOPE publications and joining the IHOPE. Group F consists of five full-time researchers and a project leader working at the project office in RIHN besides many project members who can deal with some socio-economic parameters, relating to climate variations. They always communicate with each other and exchange information to compare and integrate every aspect of project achievements in collaboration with all other groups in the project.

● Achievements

○ Books

【Authored/Co-authored】

- Kaoru Kamatani 2015,03 Tradition and culture of Nara ink stick - Miyatake-Ke old stock -. Nara Association of Ink Stick Production, Nara, 80pp. (in Japanese)

【Chapters/Sections】

- Takeshi Nakatsuka 2015,03 Emergence of a new dendrochronological method using oxygen isotope ratio. Minoru Sakamoto and Nanae Nakao (ed.) How old is this building? - Chronological studies of old architecture using carbon isotopes. Yoshikawa Kobun Kan, Bunkyo-ku, Tokyo, pp.176-180. (in Japanese)
- Takeshi Nakatsuka 2014,12 Temperature variation during last 2000 years revealed by proxy records (10-5-1). Global environment committee, Meteorological society of Japan (ed.) Global Warming - its mechanism and uncertainty -. Asakura Shoten, Shinjyuku-ku, Tokyo, pp.146-148. (in Japanese)
- Takeshi Nakatsuka 2014,09 Overlook from Humankind History - Chain structure in emergence of environmental problems. Sei-ichiro Watanabe, Takeshi Nakatsuka, Tomohiro Oh (ed.) Clinical Environmental Studies. Nagoya University Press, Chikusa-ku, Nagoya, pp.54-61. (in Japanese)

- Takeshi Nakatsuka 2014,09 Temporal structure of environmental problems - Common mechanisms of their emergence and development - . Sei-ichiro Watanabe, Takeshi Nakatsuka, Tomohiro Oh (ed.) Clinical Environmental Studies. Nagoya University Press, Chikusa-ku, Nagoya, pp.230-240. (in Japanese)
- Takeshi Nakatsuka 2014,09 Clinical environmental Studies as eternal spirals of diagnosis and treatments. Sei-ichiro Watanabe, Takeshi Nakatsuka, Tomohiro Oh (ed.) Clinical Environmental Studies. Nagoya University Press, Chikusa-ku, Nagoya, pp.218-221. (in Japanese)

○Editing

【Editing / Co-editing】

- Sei-ichiro Watanabe, Takeshi Nakatsuka, Tomohiro Oh (ed.) 2014,09 Clinical Environmental Studies. Nagoya University Press, Chikusa-ku, Nagoya, 317pp. (in Japanese)

○Papers

【Original Articles】

- Zhen Li, Takeshi Nakatsuka and Masaki Sano 2015,03 Tree-ring cellulose $\delta 180$ variability in pine and oak and its potential to reconstruct precipitation and relative humidity in central Japan. *Geochemical Journal* 49. DOI:10.2343/geochemj.2.0336. (reviewed).
- Chenxi Xu, Nathsuda Pumijumnong, Takeshi Nakatsuka, Masaki Sano, Zhen Li 2015,02 A tree-ring cellulose $\delta 180$ -based July-October precipitation reconstruction since AD 1828, northwest Thailand. *Journal of Hydrology* . DOI:10.1016/j.jhydrol.2015.02.037. (reviewed).
- Akira Kagawa, Masaki Sano, Takeshi Nakatsuka, Tsutomu Ikeda, Satoshi Kubo 2015,01 An optimized method for stable isotope analysis of tree rings by extracting cellulose directly from cross-sectional laths. *Chemical Geology* 393-394 :16-25. DOI:10.1016/j.chemgeo.2014.11.019. (reviewed).
- Chenxi Xu, Masaki Sano, Kei Yoshimura and Takeshi Nakatsuka 2014,07 Oxygen isotopes as a valuable tool for measuring annual growth in tropical trees that lack distinct annual rings. *Geochemical Journal* 48(4) :371-378. DOI:10.2343/geochemj.2.0312. (reviewed).
- Keisuke Ito 2014,06 Kei-ichi Nakajima's "Medieval Money" and money history studies in Early Medieval period. *Japanese History Research* (622). (in Japanese) (reviewed).
- Mao Harada, Yumiko Watanabe, Takeshi Nakatsuka, Suyako Tazuru-Mizuno, Yoshiki Horikawa, Junji Sugiyama, Toshitaka Tsuda and Takahiro Tagami 2014,05 Alpha-cellulose extraction procedure for the tropical tree sungkai (*Peronema canescens* Jack) by using an improved vessel for reliable paleoclimate reconstruction. *Geochemical Journal* 48(3) :299-307. DOI:10.2343/geochemj.2.0306. (reviewed).

【Review Articles】

- Takeshi Nakatsuka 2015,02 What happens on human societies by climate variations? - Lessons from history -. *Environmental Conference (Kankyo Kaigi) Spring 2015* :74-79. (in Japanese)
- Takeshi Nakatsuka 2014,12 Why did Heike collapse? -Viewpoint from climate variations-. *HUMAN* 7 : 132-141. (in Japanese)

○Research Presentations

【Oral Presentation】

- Masaki Sano, Koh Yasue, Katsuhiko Kimura, Takeshi Nakatsuka A 1500-year hydroclimate record in southwestern Japan inferred from tree-ring $\delta 180$. The 4th International Asian Dendrochronological Conference 2015, 2015,03,09-2015,03,12, Kathmandu.
- Kaoru Kamatani Learning on Honkatada villeage in Edo era - Katada at 300 years ago unlabelled by Meisai-cho -. Conference on "Katada and Katada feudal domain in Edo era", 2015,03,08, Northern Regional Culture Center in Otsu City. (in Japanese)
- Masaki Sano, Takeshi Nakatsuka Societal Adaptation to Climate Change: Integrating Palaeoclimatological Data with Historical and Archaeological Evidences. International Symposium on Multi-Hazard Approach in Mongolia, 2014,10,24, Nagoya. (in Japanese)

- Masaki Sano, Takeshi Nakatsuka, Chenxi XU, Shin-Hao CHEN, I-Ching CHEN Reconstruction of East Asia summer monsoon variations by tree-ring oxygen isotope ratios. 2014 fall academic meeting of the Association of Japanese Geographers, 2014, 09, 20–2014, 09, 22, Toyama.
- Takeshi Nakatsuka Recent activities for paleo-climatological reconstructions in PAGES Asia 2k and RIHN. 2014 fall academic meeting of the Association of Japanese Geographers, 2014, 09, 20–2014, 09, 21, Toyama. (in Japanese)
- Takeshi Nakatsuka, Kyohei Ohishi, Noboru Higami Dating of well wall boards in Oritsu-jyuku remain, Inazawa, Aichi using oxygen isotope ratios. 2014 annual meeting of Japan Society for Scientific Studies on Cultural Properties, 2014, 07, 05, Nara. (in Japanese)
- Takeshi Nakatsuka, Masaki Sano, Chenxi Xu, Katsuhiko Kimura, Takumi Mitsutani Establishment of several millennia lengths of Tree-Ring Cellulose Oxygen Isotope Chronologies all over Japan. 3rd Asia 2k workshop, 2014, 05, 26–2014, 05, 27, Beijing, China.
- Takeshi Nakatsuka and others 400 years interval of amplification in quasi bi-decadal climate variability – a case of summer precipitation in Japan. Japan Geoscience Union 2014 Annual Meeting, 2014, 04, 28–2014, 05, 02, Nishi-ku, Yokohama.

【Poster Presentation】

- Takeshi Nakatsuka, Masaki Sano, Chenxi Xu Research subjects on climate variations during historical periods in Japan. 2014 annual meeting of the Geochemical Society of Japan, 2014, 09, 16–2014, 09, 18, Toyama. (in Japanese)
- Masaki Sano, Koh Yasue, Katsuhiko Kimura, Takeshi Nakatsuka Construction of Yaku cedar tree-ring oxygen isotope chronology – Toward reconstruction of summer monsoon –. 2014 annual meeting of Japan Geoscience Union, 2014, 04, 28–2014, 05, 02, Yokohama. (in Japanese)

【Invited Lecture / Honorary Lecture / Panelist】

- Kaoru Kamatani History of Nara Ink Stick. Open symposium on “Tradition and culture of Nara ink stick”, 2015, 03, 21, Nara prefectural culture hall. (in Japanese)
- Kaoru Kamatani What old documents in local regions tell us. The party to learn history of Imazu, 2015, 03, 14, Imazu Nakahama/Wakaba house (Autonomy hall). (in Japanese)
- Takeshi Nakatsuka, Yumiko Murakami, Chenxi Xu Dates and environments revealed by tree rings – Results from oxygen isotope analyses–. New evidences in Yokaichi-jikata remain unlabelled by scientific analyses, 2014, 11, 23, Komatsu, Ishikawa. (in Japanese)
- Takeshi Nakatsuka Present status on method and application of oxygen isotope dendrochronology. Research meeting of the Association of Ancient Studies, 2014, 11, 09, Nakagyo-ku, Kyoto. (in Japanese)
- Takeshi Nakatsuka Recent Development of Oxygen Isotopic ($\delta^{18}O$) Dendroarchaeology in Japan. Seminar in Institute of Earth Environment, 2014, 08, 25, Xi'an, China.
- Takeshi Nakatsuka Oxygen Isotope Dendrochronology – Its Background, Development and Applications. Lecture in Institute of Earth Environment, 2014, 08, 22, Xi'an, China.
- Takeshi Nakatsuka The PAGES 2k network and Asia 2k Phase 1. 3rd Asia 2k workshop, 2014, 05, 26–2014, 05, 27, Beijing, China.
- Takeshi Nakatsuka and others Reconstruction of summer precipitation in annual time resolution during last two millennia in central Honshu by tree-ring oxygen isotope ratios –Development of historical hydrology–. 2014 annual meeting of Japan Geoscience Union, 2014, 04, 28–2014, 05, 02, Nishi-ku, Yokohama. (in Japanese)
- Takeshi Nakatsuka, Chenxi Xu, Masaki Sano, Katsuhiko Kimura A high precision dendrochronological method using tree-ring cellulose oxygen isotope ratio. 2014 annual meeting of Japan Geoscience Union, 2014, 04, 28–2014, 05, 02, Nishi-ku, Yokohama. (in Japanese)

Incubation Studies

Study on the system for conservation and use of tropical forest

ICHIE Tomoaki (Research and Education Faculty, Natural Sciences Cluster, Agriculture Unit, Kochi University)

This project aims to offer a suitable conservation and utilization system which is capable of minimizing conflict and maximizing fairness between different interested individuals, while bringing out to the maximum various ecological services possessed by tropical forests. Following the suggestion of the IS evaluation committee, we held 3 meetings and 1 workshop that focused on the review of related domestic and international researches, systems and activities, and on the reconsideration of our research plans by utilizing past research findings made under the projects of Research Institute for Humanity and Nature. In addition, we have begun to put in efforts to think out on effective use of our past research findings and held photo exhibitions for people in Japan and Malaysia to introduce our long-term ecological researches conducted in Sarawak, Malaysia. Through these efforts, our research team has been fully organized, and we have developed a better perspective on our research issues and methodologies.

Completed Research (CR) Follow-up Grants

These grants allow CR Project Leaders or team members to disseminate their research results to both the academic community and the general public, to contribute to the RIHN Archive, and to incubate new research ideas for future development as RIHN projects.

Operation of the Amur Okhotsk Consortium as a multilateral academic network

SHIRAIWA Takayuki (Institute of Low Temperature Science, Hokkaido University / Research Institute for Humanity and Nature)

A Amur-Okhotsk Consortium meeting was held inviting national representatives of Japan, China, Russia and Mongol on December 17-18, 2014 in Sapporo city. Participants were officers from Ministry of Foreign Affairs, Ministry of Environment, Ministry of Land, Infrastructure, Transport and Tourism, Hokkaido Regional Development Bureau of Japan, Hokkaido Regional government, and the UNEP/NOWPAP Toyama office. A total of 80 participants, mostly academic researchers and including minor number of citizens, joined the meeting. National representatives made presentations on current environmental issues from each country on Dec. 17. On Dec. 18 we discussed the agenda for the 2015 International Meeting of the Amur-Okhotsk Consortium at Harbin, China, and decided on ways to fulfill both the economic growth and environmental conservation needs.

Co-hosting of the 8th National Health Research Forum of Lao P.D.R., and the 2nd Xepon Workshop

MOJI Kazuhiko (School of International Health Development, Nagasaki University)

Purpose: Co-hosting the 8th Laos National Health Research Forum (NHRF) and supporting the related activities at Xepon District, Savannakhet Province after the forum. Outcome: The 8th Laos National Health Research Forum was successfully held in Vientiane on October 16 and 17, 2014. More than 140 participated, including 30+ Japanese. There were 25 oral presentations and 45 poster presentations, some of which were related to the RIHN ecohealth project. The forum offered a very productive opportunity for collecting and exchanging information related to health research and promotion in Lao P.D.R. After the forum, NIOPH and Japanese Consortium members travelled to Xepon district of Savannakhet province, to attend the 2nd Community Health Workshop at the Xepon Village Health Volunteer (VHV) Training Center. Volunteers and district health staff discussed how to improve their activities to promote ecohealth in this area.

Network Development for establishing an integrated management model of R. Syr Darya with special emphasis on environmental preservation

KUBOTA Jumpei (RIHN)

After the collapse of the former USSR and the independence of contemporary central Asian countries, conflicts and lack of coordination on resources and environmental issues have arisen among countries. The aim of this research is to further develop the research network originally founded as part of the RIHN's Ili Project, and to extend its activities with various stakeholders in central Asia. In 2014, we investigated the present status of fisheries in the small Aral Sea through interviews to local fishermen and fish processing industries, especially focusing on the recent development of marketing channels and fish processing industries. We also discussed the future plan for this region with the city mayor of Alarisk and proposed that catching management was necessary. Based on the field survey, we organized a special session in the annual meeting of The Japan Association for Central Asian Studies on March 29, 2015.

The establishment of the occasion on opinion and information exchange aimed for rural development, environmental conservation and health promotion in highland mountainous village

OKUMIYA Kiyohito (Center for Southeast Studies, Kyoto University)

This fiscal year, we conducted research work for 3 weeks since the middle of September staying in the Ladakh region and Domkhar village where we collected information for producing a guidebook about rural tourism. We conducted life history interviews with 9 villagers (6 Men and 3 Women), concretely covering the period from birth to present day. We also met with some important persons and discussed the preparation workshop planned for next fiscal year. We consulted on the publication schedule and way of editing on guidebook with our counterparts. There is a facebook website operated by younger generations of the village, and we got permission to include additional contents related to rural tourism.

Evaluation of Social Experiment for Sustainable Risk Management

KADA Ryohei (Shijonawate Gakuen University)

During the course of Full Research, we have experimented with participatory, community-based watershed social action, called as the “Yaman ng Lawa” (“*Blessings of the Lake*”) Program since 2012. By assessing how stakeholder participation can improve fishery and water resource management and bring about better livelihood and public health, it has been proved that such community-based watershed social action can combat environmental degradation and protect local fish habitat and bring about better health of fisheries. Furthermore, through this participatory approach, we were able to collect and arrange local knowledge toward collective action in resource management.

Developing a new framework for forest resource management in semi-arid land: by seeking an appropriate way of utilization of indigenous and alien species in eastern Sudan

NAWATA Hiroshi (Faculty of International Resource Science, Akita University)

This project aims to develop a new framework for forest resource management in arid land, by seeking an appropriate way of utilization of indigenous and alien species in eastern Sudan, to contribute livelihood improvement at local level.

Centers for Research Development (CRD) and Promotion (CRP)

The Center for Coordination, Promotion and Communication (CCPC), which was established in 2007, has been responsible for cross-project, cross-domain investigation, research and support that concerns the entire institute. In order to intensify its function, CCPC divided into two centers, namely the Centers for Research Development (CRD) and Promotion (CRP) in 2013.

The CRD consists of four units. The Planning Unit is chiefly responsible for establishing RIHN's long term vision and organizing fundamental committees, including those related to project evaluation and personnel affairs. The Initiative Framework Unit serves as a cross-cutting mechanism to capture and synthesize key contributions of individual- and institutional-collaboration projects and to develop new research projects within RIHN (the 'initiative-based' projects). The Collaboration Nexus Unit facilitates the internal and external research networks. The Future Earth Unit coordinates RIHN engagement with the international Future Earth initiative.

The Center for Research Promotion (CRP) is divided into three units. The Survey and Analysis Unit develops and maintains the laboratory facilities necessary for research and fieldwork. The Informatics Unit builds the databases and archives supporting ongoing research. Finally, the Communication and Production Unit determines how communication regarding RIHN research, processes and outcomes should be established with academic, public and user-specific communities

The CRD and CRP also collaborate 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

In RIHN's second phase, the Core Research Hub has been established within the CRD. 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 Humanities of the Earth System. At present, it has nurtured three Initiative-based Research Projects, "Designing Local Frameworks for Integrated Water Resources Management", "Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge", and "Human-Environmental Security in Asia-Pacific Ring of Fire: Water-Energy-Food Nexus".

• Building Research Data Networks

The CRD and CRP play 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 CRP and CRD promote 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

The Survey and Analysis Unit in CRP 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 9th International Symposium

In order to diffuse the findings of the one FR project concluding in March 2015, the RIHN 9th International Symposium “Living in the Megacity: The Emergence of Sustainable Urban Environments” was held on 25-27 June 2014 at the RIHN Lecture Hall. The details of the symposium are as follows.

<Wednesday 25 June>

Opening Session

Chair: MCGREEVY, Steven R. (RIHN)

- Opening Remarks: YASUNARI Tetsuzo (Director-General, RIHN)
- Objectives of the Symposium: MURAMATSU Shin (RIHN)
- Keynote Address 1: The Management of Urbanization, Development and Environmental Change in the Mega-Cities of Asia in the Twenty First Century
Terence G. MCGEE (The University of British Columbia, Canada)
- Keynote Address 2: Feeding the Megacities and Urban-Rural Linkages
Parviz KOOHAFKAN (President, World Agricultural Heritage Foundation /U.N. Food and Agriculture Organization (retired))

Session 1: Lessons from Research with Long-Term Historical Perspective: The Rise and Fall of Cities

Chairs: HABU Junko (RIHN) & UCHIYAMA Yuta (RIHN)

- Landscape Transformation in Theorizing Societal Collapse
William BALÉE (Tulane University, USA)
- Resilience and Cities: Some Historical Perspectives
Mark J. HUDSON (Nishikyushu University, Japan)
- Islamic Cities and Megacities: Studying Regions and History
FUKAMI Naoko (Waseda University, Japan)
- The Rise and Fall of Cities in Prehistory: An Example from the Indus Civilization
Steven WEBER (Washington State University Vancouver, USA)
- Teotihuacan: Origin, Urban Impacts, and Legacy of an Ancient City
SUGIYAMA Saburo (Aichi Prefectural University, Japan / Arizona State University, USA)
- Discussion

<Thursday 26 June>

Session 2: Lessons from “Urban Interaction Spheres”: Adapting to Local Environments and Reducing Environmental Loads

Chair: ISHIKAWA Satoshi (RIHN) & MIMURA Yutaka (RIHN)

- Landscape Ecological Urbanism in Southeast Asia: A Strategy to Create New Urban Territories that Reflect Cultural and Natural Processes
MURAKAMI Akinobu (University of Tsukuba, Japan)
- Human Utility of Marine Ecosystem Services and Behavioral Intentions for Marine Conservation: Implications for Urban-Suburban Partnership
YAGI Nobuyuki (The University of Tokyo, Japan),
WAKITA Kazumi (Tokai University, Japan), and ARAI Ryoko (The University of Tokyo, Japan)
- Hometown Investment Trust Funds: New Financing Methods to Link Urban Centers and the Regions, and their Possibilities

AKAI Atsuo (Music Securities, Inc., Japan / Waseda University, Japan)

- The Sanitary to Sustainable to Sacred City: Urban Nature Experience and Engagement
Kathleen L. WOLF (University of Washington, USA)
- Discussion

Session 3: Lessons from Global Perspectives: Designing Sustainable Cities

Chairs: HAYASHI Kengo (RIHN)

- Visualization of City Sustainability Index (CSI): What is City Sustainability?
How Can we Assess City Sustainability?
MORI Koichiro (Shiga University, Japan)
- An Analysis of the Use of Urban Sustainability Indicators: Lessons from Cities of Quebec
Georges A. TANGUAY (Université du Québec à Montréal, Canada / CIRANO, Canada)
- Sustainability and the Urban Functions from the Perspective of the Global Power City Index
ICHIKAWA Hiroo (Meiji University, Japan)
- Essence of City Prosperity Index: A Measuring Tool a Policy Dialogue
Eduardo LÓPEZ MORENO (UN-Habitat, Kenya) · Discussion

<Friday 27 June >

Session 4: Synthesis and Discussion Futurability of Cities and Global Environment

Chair: MURAMATSU Shin (RIHN) & Daniel NILES (RIHN)

- Synthesis of Session 1
HABU Junko (RIHN)
- Synthesis of Session 2
ISHIKAWA Satoshi (RIHN)
- Synthesis of Session 3
HAYASHI Kengo (RIHN)
- Discussion and Comments from Keynote Speakers
- Closing Remarks
SATO Tetsu (Deputy Director-General, RIHN)

2. RIHN Forum

“What are global environmental problems?” “What are integrated global environmental studies?” “What will be the outcomes of such studies?” “What is the future of global environmental problems?” “Will it be possible to solve such problems?”

The RIHN Forum is intended to help us to address such fundamental questions and to animate discussion of up-to-date environmental topics. The thirteenth forum was held in fiscal 2014 as below.

The 13th RIHN Forum

Date: 12 July, 2014

Theme: How to co-design the global environment and our future?

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. Four seminars were held in 2014 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 58 th Public Seminar | 18 July, 2014 Did the Heike Collapse Out of Arrogance? What Tree Rings Tell Us. NAKATSUKA Takeshi (RIHN) |
| The 59 th Public Seminar | 19 September, 2014 Tasting coffee and chocolate more deeply - linking local production and consuming regions. YOSHINO Keiichi (Dari K Co., Ltd.) |
| The 60 th Public Seminar | 17 October, 2014 Hear the story from a Hanamachi mother – Food, clothing, housing and environment in Kyoto. IMAI Kimiko (Kamishichiken-Daimonji) |
| The 61 st Public Seminar | 12 February, 2014 “Kyoto, Town, Environment” – A discussion with high school students. Second-year students at a Kyoto Prefectural Rakuhoku High School |

4. RIHN Kids Seminar

In order to enhance community relations, RIHN has held public lectures for children in neighboring elementary schools since 2010. The fiscal year 2014 seminar was held as below.

The 5th Kids Seminar “Tree-rings tell the past climate variations”

Date: 1 August, 2014

Venue: RIHN

SANO Masaki (RIHN)

5. RIHN Open House

In order to introduce RIHN’s research projects and facilities to the surrounding community, RIHN has opened our buildings to the public once a year since 2011. Several interesting events such as joint experiments, public talks, exhibitions, and games were conducted in order to deepen our interaction with local citizens in fiscal 2014.

Date: 1 August, 2014

Venue: RIHN

6. 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. The fiscal year 2014 seminar was held as below.

The 14th RIHN Area Seminar

RIHN-Oita Prefecture joint Symposium

“Sustainable future in rural areas: Reconsidering the wealth of the agricultural community”

Date: 15 February, 2015

Venue: Usa Culture Hall USANOPIA (Usa city, Oita)

7. RIHN Tokyo Seminar

In order to gain the attention of researchers and the general public and to promote research cooperation and development, RIHN periodically holds seminars in Tokyo. We invite renowned Japanese researchers as well as public officials to discuss RIHN research project objectives and findings. The seminar was held in fiscal year 2014 as below.

6th Tokyo Seminar

“Environmental problems have been existed from the past – To see the future from the past”

Date: 16 January, 2014

Venue: Yurakucho Asahi Hall

8. The Earth Forum Kyoto and International Symposium

RIHN, Kyoto Prefecture, Kyoto City, Kyoto University, and Kyoto Prefectural University co-host this forum in order to clearly convey our message of the importance of environmental issues to the world. The symposium was held in fiscal year 2014 as below.

The Earth Forum Kyoto

7 February, 2015

Venue: Kyoto International Conference Center

9. The Earth Hall of Fame KYOTO

The Earth Forum Kyoto invites world-renowned experts and activists to discuss the environmental and cultural bases of more responsible human societies. The Earth Hall of Fame Kyoto Award is given to those who have made exemplary contributions to the protection of the global environment. Organizers of the event are the International Institute for Advanced Studies, the Kyoto International Conference Centre, and RIHN.

The 2014 recipients of the Earth Hall of Fame Kyoto Award:

Mr. Shigeatsu Hatakeyama (Chairman of “Mori wa Umi no Koibito” and Professor of Field Studies and Practical Learning of Kyoto university)

10. 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 102nd 23 June, 2014

Development of molecular identification (CO1 DNA) barcode of Ichthyofauna in Panay Island, Philippines

TRAIFALGAR, Rex Ferdinand Mallare (Visiting Research Fellow, RIHN, Assistant Professor, College of Fisheries and Ocean Sciences, University of Philippines in Visayas)

Environmental condition of bivalves culture area in Bandon bay, Southern Thailand

SALAENOI, Jintana (Visiting Research Fellow, RIHN, Assistant professor, Department of Marine

- Science, Faculty of Fisheries, Kasetsart University, Bangkok, Thailand.)
- The 103rd 29 July, 2014
Agrarian change and livelihood dynamics of small scale farmer in South Tamil Nadu, India
MUNIANDI, Jegadeesan (Visiting Research Fellow, RIHN, Assistant Professor, Home Science College & Research Institute, Tamil Nadu Agricultural University)
- The 104th 5 August, 2014
Study on Some Future Scenarios of Jakarta Megacity's (Jabodetabek) Urban Expansion and Beyond: A West Jawa Conurbation Scenarios and Its Potential Impacts
RUSTIADI, Ernan (Visiting Research Fellow, RIHN, Dean, Faculty of Agriculture, Bogor Agricultural University (IPB))
- The 105th 18 August, 2014
The present and the past: Environmental services, biodiversity, metastable ecosystems, and the cultural categorisation of the landscape
JANIK, Liliana Danuta (Visiting Research Fellow, RIHN, Assistant Director in Research, Department of Archaeology, University of Cambridge)
- The 106th 18 November, 2014
"Are the world's remaining tropical forests doomed? Insights from the political economy of forestry in Cambodia"
COCK, Andrew Robert (JSPS Postdoctoral Research Fellow, The University of Tokyo/Adjunct Lecturer, Monash University Visiting Research Fellows, RIHN)
- The 107th 25 November, 2014
Analysis the Relationship of Green Open Space and Microclimate at Jabodetabek-Indonesia
ZAIN, Alinda Medrial (Urban Landscape Planning, Visiting Research Fellows, RIHN)
- The 108th 13 February, 2015
Social-ecological system Framework - Understanding urban lake governance and sustainability in India.
BAL, Mansee (Researcher, Erasmus University, Visiting Research Fellows, RIHN)
- The 109th 23 March, 2015
Economic Analysis of the Water-Energy-Food Nexus
BURNETT, Kimberly Michi (Research Economist, University of Hawaii Economic Research Organization, Visiting Research Fellows, RIHN)

11. Lunch Seminars (Danwakai)

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.

- No.230 1 April, 2014
Transdisciplinarity research conducted by Monash Sustainability Institute in collaboration with native people in Yorta Yorta, Australia
TAKEMURA, Shion (Project Researcher)
- No.231 15 April, 2014
Transdisciplinarity? Thinking from field of citizen's activity for saving energy and promoting renewable energy.
MASUHARA, Naoki (Project Researcher)

- No.232 13 May, 2014
Climate change impact to biological diversity.
ONISHI, Yuko (Assistant Professor)
- No.233 3 June, 2014
History of “Tsukuru-gyogyo (production based fishery)” and multilateral functions of stock enhancement activity
OGATA, Yuka (Project Researcher)
- No.234 17 June, 2014
Flooding in Jakarta, Indonesia in the Colonial Times: Historical Perspective on Urbanization, Modern Engineering and Nature
MATSUDA, Hiroko (Project Researcher)
- No.235 1 July, 2014
Natural resource development in Yakushima island from the perspective of dried fish production
OH Tomohiro (Project Researcher)
- No.236 15 July, 2014
Bridging archaeologists, associated researchers, and stakeholders by means of information technology
KONDO Yasuhisa (Associate Professor)
- No.237 5 August, 2014
“Kobori Masakazu - Biography & Legend”
MARES, Emmanuel (Clerical Assistant)
- No.238 19 August, 2014
Environmental certification within a bio-region: “Salmon-Safe” in the Columbia River Basin in the United States
OMOTO, Reiko (Project Researcher)
- No.239 26 August, 2014
Discours of Marine Protected Areas (MPA)
SEKINO, Nobuyuki (Project Researcher)
- No.240 2 September, 2014
Herring in the North Pacific
HAMADA Shingo (Project Researcher)
- No.241 16 September, 2014
What we learn from “chiiki”
KAMATANI, Kaoru (Project Researcher)
- No.242 7 October, 2014
Stakeholders Meeting of Water Management in Sulawesi.
What we expect in the context of transdisciplinary research?
Rampisela Dorotea Agnes (Associate Professor)
- No.243 4 November, 2014
Paleoclimate reconstruction using tree rings
SANO Masaki (Senior Project Researcher)
- No.244 18 November, 2014
Food diversity of African tropical forest and its futurity: A case of Cameroon and Republic of the Congo
OISHI, Takanori (Project Researcher)

- No.245 2 December, 2014
Money circulation of medieval-times Japan
ITOU, Keisuke (Project Researcher)
- No.246 16 December, 2014
Visual communication in science: The art behind the article
NILES, Daniel, LABUEN, Adam, BURNS, Emma, KURIHARA, Juna (CRP)
- No.247 January 13, 2015
Developing Indicators for Evaluating Security of a Water-Food (Fisheries) Nexus: A Case Study of Laguna de Bay, Philippines
ORENCIO, Pedcris Miralles (Project Researcher)
- No.248 February 3, 2015
Some issues about Beppu Onsen
YAMADA, Makoto (Project Researcher)
- No.249 February 17, 2015
The change of forest resource use and view of nature in the transition from the Jomon to the Yayoi period
MURAKAMI, Yumiko (Project Researcher)
- No.250 March 3, 2015
TAKESHIMA, Hirohiko (CRP: Specially Appointed Assistant Professor)
- No.251 March 3, 2015
Methodology of Typological Chronology of Jomon Pottery
ADACHI, Kaori (Project Researcher)
- No.252 March 31, 2015
Play with boxes and balls
MIKI, Hiroshi (Project Researcher)

12. 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 351 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: 26-28 November, 2014

Venue: Co-op inn Kyoto

13. Press Conferences

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 2014.

14. Publications

14-1. RIHN Series

The RIHN Series was developed to publish books introducing RIHN's research results to the general public. The following titles were published in fiscal year 2014.

Gokan /Gokan

Supervision by ABE Ken-ichi, March 2015 (in Japanese).

Hito ha Kazan ni Nani wo Mirunoka

Edited by TERADA Masahiro

14-2. RIHN Science Series

“Siberia, Water and Social Environments in the Warming Far North”

Edited by HIYAMA Tetsuya, FUJIWARA Junko

14-3.Others

“Humanity and Nature in the Japanese Archipelago” Edited by RIHN

14-4. 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 48-53 were published in fiscal 2014.

Individual Achievements

| | | |
|-------------------------------|---------------------------|---|
| A | AKIMICHI Tomoya | Emeritus Professor |
| | ABE Ken-ichi | Professor |
| | ADACHI Kaori | Project Researcher |
| B | BAL, Mansee | Visiting Research Fellow |
| | BAO, Muping | Project Research Associate |
| | BURNETT, Kimberly Michi | Visiting Research Fellow |
| C | CHEN, Xin | Visiting Researcher |
| | CHOI, Jung Sup | Visiting Research Fellow |
| | CID, Abigail Parcasio | Project Research Associate |
| | COCK, Andrew Robert | Visiting Researcher |
| E | ENDO Aiko | Associate Professor |
| | ENDO Hitoshi | Project Researcher |
| | EVANS, Thomas Parkhill | Visiting Research Fellow |
| F | FUJIWARA Junko | Visiting Researcher |
| | FUKUMOTO Sou | Visiting Researcher |
| | FUKUSHI Yuki | Research Fellow, NIHU Center for Area Studies |
| | FUKUSHIMA Atsuko | Project Research Associate |
| H | FUNAKAWA Shinya | Visiting Professor |
| | HABU Junko | Professor |
| | HAMADA Shingo | Project Researcher |
| | HANDOY Itsuki C. | Specially Appointed Associate Professor |
| | HASHIMOTO Watanabe Satoko | Project Researcher |
| | HAYASHI Kengo | Project Researcher |
| | HIMIYAMA Yukio | Visiting Professor |
| | HIROSE Mikiko | Project Research Associate |
| | HONDA Hisami | Project Research Associate |
| | HONMA Saki | Project Research Associate |
| I | ICHIMURA Jun | Visiting Researcher |
| | ISHII Reiichiro | Associate Professor |
| | ISHIKAWA Satoshi | Associate Professor |
| | ISHIMOTO Yudai | Visiting Researcher |
| | ISHIYAMA Shun | Project Researcher |
| | ITOU Keisuke | Project Researcher |
| J | JANIK, Liliana Danuta | Visiting Research Fellow |
| | JIANG, Hong-wei | Visiting Researcher |
| K | KAJITANI Shinji | Visiting Associate Professor |
| | KAKIOKA Ryo | Project Research Associate |
| | KAMATANI Kaoru | Project Researcher |
| | KANEKO Nobuhiro | Visiting Professor |
| | KANER, Simon Charles | Visiting Research Fellow |
| | KANIE Norichika | Visiting Associate Professor |
| | KANNO Miho | Visiting Researcher |
| | KATO Hisaaki | Project Research Associate |
| | KATO Satoko | Project Research Associate |
| | KATO Yoshikazu | Project Researcher |
| | KIHIRA Tomoe | Project Research Associate |
| | KIKUCHI Naoki | Associate Professor |
| | KITAMURA Kenji | Project Researcher |
| | KONDO Yasuhisa | Associate Professor |
| KOOHAFKAN, Abolghassem Parviz | Visiting Research Fellow | |

| | | |
|---|---------------------------|---|
| | KOTERA Akihiko | Senior Project Researcher |
| | KOYAMA Masami | Project Research Associate |
| | KUBOTA Jumpei | Professor |
| | KUMAZAWA Terukazu | Assistant Professor |
| | KUSAKA Soichiro | Project Researcher |
| L | LI Zhen | Project Research Associate |
| M | MALLEE, Henricus Paulus | Professor |
| | MARES, Emmanuel Bernard | Center Research Associate |
| | MASUDA Tadayoshi | Visiting Researcher |
| | MASUHARA Naoki | Project Researcher |
| | MATSUDA Hiroko | Visiting Researcher |
| | MATSUOKA Syunji | Visiting Professor |
| | MCGREEVY, Steven Robert | Specially Appointed Assistant Professor |
| | MEUTIA, Ami Aminah | Project Researcher |
| | MIKI Hiroshi | Project Researcher |
| | MIMURA Yutaka | Project Researcher |
| | MIYAGAWA Chie | Visiting Researcher |
| | MIYAZAKI Hidetoshi | Project Researcher |
| | MIZUNO Kosuke | Visiting Professor |
| | MORI Soichi | Visiting Professor |
| | MORISHITA Syota | Visiting Researcher |
| | MUNIANDI, Jegadeesan | Visiting Research Fellow |
| | MURAKAMI Yumiko | Project Researcher |
| | MURAMATSU Shin | Professor |
| | MUTO Nozomu | Project Research Associate |
| N | NAITO Daisuke | Visiting Associate Professor |
| | NAKAGAMI Ken'ichi | Visiting Professor |
| | NAKAGAWA Chigusa | Project Researcher |
| | NAKAMURA Ryo | Visiting Researcher |
| | NAKANO Takanori | Professor |
| | NAKATSUKA Takeshi | Professor |
| | NAWATA Hiroshi | Visiting Professor |
| | NILES, Daniel Ely | Associate Professor |
| | NOVA Anika | Visiting Researcher |
| O | OGATA Yuka | Project Researcher |
| | OH Tomohiro | Project Researcher |
| | OISHI Takanori | Project Researcher |
| | OKAMOTO Takako | Project Research Associate |
| | OKAMOTO Yuki | Project Researcher |
| | OKUDA Noboru | Associate Professor |
| | OKUMIYA Kiyohito | Visiting Associate Professor |
| | OKURA Humi | Visiting Researcher |
| | OMOTO Reiko | Project Researcher |
| | ONISHI Masayuki | Visiting Professor |
| | ONISHI Yuko | Assistant Professor |
| | ORENCIO, Pedcris Miralles | Project Researcher |
| R | RAMPISELA, Dorotea Agnes | Associate Professor |
| | REED, Maureen Gail | Visiting Research Fellow |
| | RUSTIADI, Ernan | Visiting Research Fellow |
| S | SALAENOI, Jintana | Visiting Research Fellow |

| | | |
|---|----------------------------------|---|
| | SANO Masaki | Senior Project Researcher |
| | SASAKI Yuko | Project Researcher |
| | SATO Tetsu | Professor |
| | SEKINO Nobuyuki | Project Researcher |
| | SEKINO Tatsuki | Associate Professor |
| | SHIMIZU Takao | Project Researcher |
| | SHIN Kicheol | Assistant Professor |
| | SHIRAIWA Takayuki | Visiting Associate Professor |
| | SOFIYUDDIN Hanhan Ahmad | Visiting Researcher |
| | SPIEGELBERG Maximilian | Visiting Researcher |
| T | TAKAGI Akira | Specially Appointed Associate Professor |
| | TAKEHARA Mari | Project Research Associate |
| | TAKEMURA Shion | Project Researcher |
| | TAKESHIMA Hirohiko | Specially Appointed Assistant Professor |
| | TANAKA Masakazu | Visiting Professor |
| | TANAKA Ueru | Associate Professor |
| | TANIGUCHI Makoto | Professor |
| | TAYASU Ichiro | Professor |
| | TERADA Masahiro | Specially Appointed Associate Professor |
| | TERAMOTO Syun | Project Research Associate |
| | TESHIROGI Kouki | Project Researcher |
| | TRAFALGAR, Rex Ferdinand Mallare | Visiting Research Fellow |
| U | UBUKATA Fumikazu | Visiting Associate Professor |
| | UCHIDA Eriko | Project Research Associate |
| | UCHIYAMA Junzo | Visiting Associate Professor |
| | UCHIYAMA Yuta | Project Researcher |
| W | WANG Yuan | Visiting Researcher |
| | WATANABE Kazuo | Project Researcher |
| X | XU Chenxi | Project Researcher |
| Y | YAMADA Makoto | Project Researcher |
| | YAMAMOTO Mami | Project Research Associate |
| | YAOTA Kiyoyuki | Visiting Researcher |
| | YAP, Minlee | Project Researcher |
| | YASUNARI Tetsuzo | Director-General |
| | YASUTOMI Natsuko | Assistant Professor |
| | YONEMOTO Shohei | Visiting Professor |
| | YOSHIMIZU Chikage | Center Researcher |
| Z | ZAIN, Alinda Medrial | Visiting Research Fellow |
| | ZHOU, Shiqiao | Visiting Research Fellow |

※Job titles listed above are as of 31 March, 2015.

(For those who retired in the middle of fiscal 2014, the job titles of that time are listed.)

ADACHI, Kaori

Project Researcher

[Professional Career]

Research Fellow of Japan Society for the Promotion of Science(2010)

Research associate, Graduate School of Letters, Keio University(2012)

[Higher Degrees]

Ph.D. (History, Keio University, 2014)

M.A. (History, Keio University, 2008)

[Fields of Specialization]

Archaeology

Ethno-Archaeology

[Academic Society Memberships]

The Society of Archaeological Studies

The Paleological Association of Japan

The Archaeological Society of Nippon

Japanese Archaeological Association

Japan Association for Quaternary Research

The Homepage of Hokkaido Archaeological Association

The Mita Historical Society

The Archaeological Society of Waseda University

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

- 2015, 03 Sites in the Shimokita Peninsula and the Past Researches of Them. Shitsukari-Abe Cave Vol.1. Rokuichi-Shobo, Chiyoda-Ku, Tokyo, pp.9-11.

[Research Presentations]*[Oral Presentation]*

- ADACHI Kaori Diversity and Sustainability of Regional Communities in Northern Tohoku, Japan, during the Middle-Late Jomon Periods.. Workshop: Food Diversity and Long-Term Sustainability, 2015,03,11, University of California, Berkeley. .

[Invited Lecture / Honorary Lecture / Panelist]

- ADACHI, Kaori Changes in the Middle-Late Jomon Hunter-Gatherer Lifeways in the Northern Tohoku Region, Japan. JAQUA Meeting 2014, 2014,09,05-2014,09,09, Tokyo University, Kashiwa-City, Chiba-Ken. .

ENDO, Hitoshi

Project Researcher

Born in 1978.**[Higher Degrees]**

M. A. (Tokai University, 2004)

[Fields of Specialization]

Archaeology

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

- Shudai, H., A. Yoneyama, F. Shudai, A. Konasukawa, S. Kimura and H. Endo 2015,03 “Report on the Survey of the Archaeological Materials of Prehistoric Pakistan stored in the Aichi Prefectural Ceramic Museum Part 6: Human Figurines and Some Remarks on the Social Development in the Prehistoric Balochistan. Bulletin of the Turumi University: Studies in Humanities, Social and Natural Science 52(4) :7-29.
- H. Endo 2015,03 Documenting traditional agricultural tools in Odisha, India. Proceedings, Joint Belmont Forum SMARTS2- Future Earth Unit Workshop: How to Organize and Conduct Multinational, Inter- and Trans-Disciplinary Research Collaboration? -India X Food, Rural, Environmental Studies as a Subject Matter- .

HABU, Junko

Professor

Born in 1959.**[Professional Career]**

Professor, Research Institute for Humanity and Nature, Kyoto, Japan (2014)

Professor, Department of Anthropology, University of California, Berkeley (2010)

Associate Professor, Department of Anthropology, University of California, Berkeley (2002)

Assistant Professor, Department of Anthropology, University of California, Berkeley (1996)

Faculty Lecturer, Department of Anthropology, McGill University(1994)

Full-time Research Associate (joshu), Faculty of Science, The University of Tokyo (1984)

[Higher Degrees]

Ph.D. (Archaeology, Department of Anthropology, McGill University, 1996)

M.A. (Archaeology, Division of History, Keio University, 1984)

B.A. (Archaeology, Department of Ethnology and Archaeology, Division of History, Keio University, 1982)

[Academic Society Memberships]

American Anthropological Association

Society for American Archaeology

Sigma Xi

American Geophysical Union

Indo-Pacific Prehistory Association
 Society for East Asian Archaeology
 Japanese Archaeological Association
 Society of Archaeological Studies of Japan
 The Anthropological Society of Nippon
 Japan Association for Quaternary Research
 Japanese Society for Scientific Studies on Cultural Property
 Kagoshima Archaeological Association
 Association for Edo Period Archaeology

—Achievements—

[Papers]

[Original Articles]

- Habu, Junko 2014,08 Early Sedentism in East Asia: From Late Palaeolithic to Early Agricultural Societies in Insular East Asia. . Renfrew, C.,Bahn, P. (ed.) Handbook of World Archaeology. Cambridge University Press, Cambridge, UK, pp.724-741.
- Habu, Junko 2014,04 Post-Pleistocene Transformations of Hunter-Gatherers in East Asia: The Jomon and Chulmun. Cummings, V • Jordan, P • Zvelebil, M (ed.) The Oxford Handbook of the Archaeology and Anthropology of Hunter-Gatherers. Oxford University Press, Oxford, UK, pp.507-520. DOI:10.1093/oxfordhb/9780199551224.013.043. (reviewed).

[Research Presentations]

[Oral Presentation]

- Habu, Junko Did Jomon People Have the Staple Food?—Food Diversity and Environmental Issues—. The 6th RIHN Tokyo Seminar, 2015,01,16, Yurakucho Asahi Hall, Chiyoda-Ku, Tokyo.
- Habu, Junko Long-term Sustainability through Place-Based, Small-scale Economies: Approaches from Historical Ecology. Workshop: Food Diversity and Long-Term Sustainability. , 2015,03,11, University of California, Berkeley.
- Habu, Junko Sedentary Hunter-Gatherers in East Asia: Jomon People. The 8th Minpaku Kyodo Kenkyukai, 2014,07,06, National Museum of Ethnology, Suita-City, Osaka.
- Habu, Junko and Weber, Steven Mobility, Food Diversity and Climate Change: Prehistoric Cases from East and South Asia. Society for American Archaeology, 2014,04,23-2014,04,27, Austin, TX, USA.

[Invited Lecture / Honorary Lecture / Panelist]

- Habu, Junko Archaeology, food diversity and long-term sustainability of human societies: Lessons from prehistoric Japan. 2014 Senior Fellowship Program in National Museum of Korea, 2014,11,09-2014,11,15, Yongsan-dong, Seoul.
- Habu, Junko Food Diversity and the Growth and Decline of Human Cultures. Seminar on Cultural Resources, Archaeology and Contemporary Society 4, 2014,10,26, Tokyo National Museum, Taito-Ku, Tokyo.
- Habu, Junko Graduate education at UC Berkeley: Training a new generation of scholars in the field of archaeology. Lecture at Alumni Association of Archaeology and Ethnology, Keio University, 2014,06,07, Keio University, Minato-Ku, Tokyo.
- Habu, Junko Jomon Staple Food and Society. Tsugaru City Jomon 2015 Symposium, 2015,02,14, Tsugaru City Shogai Gakushu Center, Tsugaru-City, Aomori-Ken.
- Habu, Junko Sedentism, Mobility and Human Impacts on the Environment: A Perspective from Historical Ecology. JAQUA Meeting 2014, 2014,09,05-2014,09,09, Tokyo University, Kashiwa-City, Chiba-Ken.

HAMADA, Shingo

Project Researcher

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

Department of Anthropology, College of Arts and Sciences, Indiana University, Ph.D. Program (2008~2014)

Summer Institute for Research Design (SIRD) in Socio-Cultural Anthropology, the US National Science Foundation (2010)

Leadership in Ecology, Culture and Learning (LECL), Department of Educational Policy and Administration, School of Education, Portland State University, M.A. Program (2007~2008)

Department of Anthropology, College of Liberal Arts and Sciences, Portland State University, M.A. Program (2003-2006)

Department of Anthropology, College of Liberal Arts and Sciences, Portland State University, B.A. Program (2001-2003)

American Studies and English Program, Department of Liberal Arts, Faculty of Liberal Arts, Tezukayama University, B.A. Program (1995-2000)

[Professional Career]

Graduate Assistant, Intensive English Language Program and Department of Applied Linguistics, Portland State University (2006~2008)

Associate Instructor, Department of East Asian Languages and Cultures, Indiana University (2009~2010)

Research Assistant, Department of Anthropology, Indiana University (2010)

Mellon Sawyer Pre-Doctoral Fellow, the Institute of Advanced Study, Indiana University (2012)

Associate Instructor, Department of Anthropology, Indiana University (2013)

[Higher Degrees]

Ph.D. (Indiana University, 2014)

M.A. (Portland State University, 2006)

B.A. (Tezukayama University, 2000)

[Fields of Specialization]

Socio-Cultural Anthropology

Environmental Anthropology

Maritime Anthropology

Food Studies

[Academic Society Memberships]

American Anthropological Association

The Association of the Study of Food and Society

International Commission on the Anthropology of Food and Nutrition, the International Union of Anthropological and Ethnological Sciences (IUAES)

The Society of Ethnobiology

Hokkaido Ethnological Society

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

- Hamada, Shingo., Richard Wilk, Amanda Logan, Sara Minard, and Amy Trubek 2015,03 The Future of Food Studies. *Food, Society & Culture* 18(1) :168-186. (reviewed).

[Research Presentations]*[Oral Presentation]*

- Hamada, Shingo Totemism in Science: An Experimental and Multispecies Ethnography of Fisheries Science in Japan. The 113th Annual Meeting of American Anthropological Association, December 2014, Washington, DC, USA.
- Hamada, Shingo Household-scale Fisheries and Environmental Change in Northern Japan. JSPS-CJS Symposium: "Long-term Sustainability through Place-based, Small-scale economies", 2014, 09, 26–2014, 09, 28, University of California, Berkeley. DOI:<http://jsspsustainabilityconference2014.weebly.com>.
- Hamada, Shingo The Historical Ecology of the Herring in the North Pacific Rim: Cases from Tlingit and Ainu. The 2014 Hokkaido Ethnological Society Workshop, 2014, 07, 13, Hokkai-Gakuen University, Sapporo, Hokkaido. (in Japanese)

[Invited Lecture / Honorary Lecture / Panelist]

- Hamada, Shingo Herring Fisheries and Food Cultures in Japan. Sitka Herring Festival / Sitka Natural History Series, 2015, 03, 23, University of Alaska Southeast Campus, Sitka, Alaska, USA. DOI:<http://www.sitkatribes.org/SitkaHerringFestival1.htm>.

HANDOH, Itsuki C.

Specially Appointed 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

Society for Risk Analysis

[Awards]

NIHU Humanities Research Encouragement Award (2013)

—Achievements—

[Papers]

[Original Articles]

- Baum, S.D., and Handoh, I.C. 2014,11 Integrating the planetary boundaries and global catastrophic risk paradigms. *Ecological Economics* 107 :13-21. DOI:10.1016/j.ecolecon.2014.07.024. (reviewed).
- Handoh, I.C., and Kawai, T. 2014,08 Modelling exposure of oceanic higher trophic-level consumers to polychlorinated biphenyls: pollution ‘hotspots’ in relation to mass mortality events of marine mammals. *Marine Pollution Bulletin* 85(2) :824-830. DOI:10.1016/j.marpolbul.2014.06.031. (reviewed).
- Sugahara, Y., Kawaguchi, M., Itoyama, T., Kurokawa, D., Tosa, Y., Kitamura, S.-I., Handoh, I.C., Nakayama, K., Murakami, Y. 2014,08 Pyrene induces a reduction in midbrain size and abnormal swimming behavior in early-hatched pufferfish larvae. *Marine Pollution Bulletin* 85(2) :479-486. DOI:10.1016/j.marpolbul.2014.04.022. (reviewed).

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—

[Research Presentations]*[Oral Presentation]*

- Yudai ISHIMOT, Hidetoshi MIYAZAKI, Ueru TANAKA Using Land Resource by Small Scale Farmers in Rural Southern Province, Zambia: Understanding the Grazing Route to Acquire Fodder Continuously. 51th Academic meeting for Japan Association for African Studies, 2014, 05, 23–2014, 05, 25, Kyoto. (in Japanese)
- Yudai Ishimoto, Hidetoshi Miyazaki, Ueru Tanaka, Chieko Umetsu Social Capital and Small-Scale Farmers in Zambia: An Analysis of Mobile Phone Usage. Resilience 2014, 2014, 05, 03–2014, 05, 08, Montpellier, France. (reviewed).

ISHIYAMA, Shun

Project Researcher

Born in 1965.**[Academic Career]**

Graduate School of Letters(Comparative Studies of Humanities and Social Sciences), Nagoya University, D. Course (2006)

Graduate School of Humanities and Social Sciences, Shizuoka University, M. A. 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—

[Books]*[Chapters/Sections]*

- ISHIYAMA, Shun 2014, 06 West Africa. Japan Association for African Studies (ed.) Encyclopedia of African Studies. Syowado, Sakyo-ku, Kyoto, pp.596–597. (in Japanese)

- Kiyomi KOGO, Shun ISHIYAMA 2014,04 A Pioneer of Aridland Studies –Iwao KOBORI. Hiroshi NAWATA and Kenichi SHINODA (ed.) Desertgraphy-Wisdom of Human, Animal and Plant for Sharing the Water. National Museum of Nature and Science Library, 15. Toukai University Press, Hadano-city, Kanagawa Pref., pp. 421-423. (in Japanese)
- Hiroshi NAWATA, Yoko OKAMOTO, Shun ISHIYAMA 2014,04 Experimentation for Evaporation Effect of Biscuit Pot. Hiroshi NAWATA and Kenichi SHINODA (ed.) Desertgraphy-Wisdom of Human, Animal and Plant for Sharing the Water. National Museum of Nature and Science Library, 15. Toukai University Press, Hadano-city, Kanagawa Pref., pp.133-134. (in Japanese)
- Hiroshi NAWATA, Mahgub Sliman Mohamedain, Hafiz Muhamad Fathi koura, Abderrahmane Benkhalifa, Zeineb Zubeidi, Shun ISHIYAMA, Yoko OKAMOTO 2014,04 Adapting to Desert: Clothes. Hiroshi NAWATA and Kenichi SHINODA (ed.) Desertgraphy-Wisdom of Human, Animal and Plant for Sharing the Water. National Museum of Nature and Science Library, 15. Toukai University Press, Hadano-city, Kanagawa Pref., Japan , pp. 62-82. (in Japanese)
- Abderrahmane Benkhalifa, Zeineb Zoubeidi, Shun ISHIYAMA 2014,04 Identification of Genotype and Evaluation on Genetic Diversity of date palms . Hiroshi NAWATA and Kenichi SHINODA (ed.) Desertgraphy-Wisdom of Human, Animal and Plant for Sharing the Water. National Museum of Nature and Science Library, 15. Toukai University Press, Hadano-city, Kanagawa Pref., pp.195-208. (in Japanese)
- Shun ISHIYAMA 2014,04 Water Distribution System in the oasis. Hiroshi NAWATA and Kenichi SHINODA (ed.) Desertgraphy-Wisdom of Human, Animal and Plant for Sharing the Water. National Museum of Nature and Science Library, 15. Toukai University Press, Hadano-city, Kanagawa Pref., pp.125-130. (in Japanese)
- Shun ISHIYAMA 2014,04 Cropping in the Sahara and The Sahel:Wisdom of Dryland for Sharing the Water. Hiroshi NAWATA and Kenichi SHINODA (ed.) Desertgraphy-Wisdom of Human, Animal and Plant for Sharing the Water. National Museum of Nature and Science Library, 15. Toukai University Press, Hadano-city, Kanagawa Pref., pp.312-318. (in Japanese)
- Shun ISHIYAMA 2014,04 Motivated Farmer in Saharan Oasis. Hiroshi NAWATA and Kenichi SHINODA (ed.) Desertgraphy-Wisdom of Human, Animal and Plant for Sharing the Water. National Museum of Nature and Science Library, 15. Toukai University Press, Hadano-city, Kanagawa Pref., pp.417-418. (in Japanese)

[Papers]

[Original Articles]

- ISHIYAMA, Shun 2014,09 Livelihood Issues in a Small Saharan Oasis Undergoing Population Growth. Journal of Arid Land Studies 24(2) :303-308. (reviewed).

[Research Presentations]

[Oral Presentation]

- 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.

KITAMURA, Kenji

Project Researcher

[Higher Degrees]

Ph.D. (Simon Fraser University, 2010)

Master of Applied Science (University of New South Wales, 1999)

—Achievements—

[Research Presentations]*[Oral Presentation]*

- Kitamura, Kenji, and Tetsu Sato Collective Action Based on Local Knowledge and Technologies: Reforestation and Sustainability in the Watershed in Hokkaido, Japan. International Symposium on Community-based Management of Forest Resources: Perspectives on Culture, Learning and Adaptation in Canada and Japan, 2015, 03, 03–2015, 03, 05, Kyoto, Japan.
- Kitamura, Kenji Designing and Implementing Action-Based Verification. Full Project Meeting of Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge (ILEK Project), 2015, 01, 24, Kyoto, Japan. (in Japanese)
- Kitamura, Kenji Designing the Social Experiments in the ILEK Project. Full Project Meeting of Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge (ILEK Project), 2014, 09, 13, Kyoto, Japan.
- Kitamura, Kenji Commons and Protected Areas: Distant and Close Relationship. Commons Research Seminar, 2014, 06, 14, Kyoto, Japan. (in Japanese)

KONDO, Yasuhisa

Associate Professor

Born in 1979.**[Academic Career]**

Department of Archaeology, The University of Tokyo, PhD course (2006–2009)

Department of Archaeology, The University of Tokyo, master course (2002–2005)

Department of Archaeology, The University of Tokyo, undergraduate course (1998–2002)

[Professional Career]

Associate Professor, Research Institute for Humanity and Nature (2014)

JSPS Research Fellow (PD), Tokyo Institute of Technology (2011)

Project Researcher, The University Museum, The University of Tokyo (2010)

Visiting Scholar, Center for Spatial Information Science, The University of Tokyo (2010)

JSPS Research Fellow (PD), The University of Tokyo (2009)

JSPS Research Fellow (DC2), The University of Tokyo (2008)

[Higher Degrees]

Ph.D. (The University of Tokyo, 2010)

M.A. (The University of Tokyo, 2005)

[Fields of Specialization]

Archaeology

Spatial Information Science

Geography

[Academic Society Memberships]

International Association of Geomorphologists

Computer Applications and Quantitative Methods in Archaeology (CAA)

CIPA Heritage Documentation

European Geosciences Union (EGU)

Japan Geoscience Union (JpGU)

GIS Association of Japan (GISA)

The Association of Japanese Geographers (AJG)
 Anthropological Society of Nippon
 Society of Archaeological Studies
 Japan Society for West Asian Archaeology (JSWAA)
 Japanese Palaeolithic Research Association (JPRA)

[Awards]

CSIS DAYS 2011 Presentation Award (2011)
 Japanese Society for Archaeological Informatics Katata Award (2008)

—Achievements—

[Editing]

[Editing / Co-editing]

- Yasuhisa Kondo (ed.) 2014, 11 . Newsletter, IAG Working Group on Geoarchaeology, 15. IAG Working Group on geoarchaeology, Kyoto, 47pp. ISSN 2310-483X.
- Yasuhisa Kondo (ed.) 2014, 05 Bat Digital Heritage Inventory Project Report of the 2014 Season. . , 80pp. Unpublished report submitted to the Ministry of Heritage and Culture, Sultanate of Oman.

[Papers]

[Original Articles]

- Yasuhisa Kondo 2014, 11 Cost surface analysis based on ecological niche probability to estimate relative rapidity of the dispersal of early modern humans. Takeru Akazawa, Yoshihiro Nishiaki (ed.) Cost surface analysis based on ecological niche probability to estimate relative rapidity of the dispersal of early modern humans. pp.61-63. ISBN 9784990637101.
- Wonsuh Song, Yasuhisa Kondo, Takashi Oguchi 2014, 11 Presentation of the PaleoGeo database with Google Earth. Takeru Akazawa, Yoshihiro Nishiaki (ed.) RNMH 2014 The Second International Conference: Replacement of Neanderthals by Modern Humans: Testing Evolutionary Models of Learning. pp.56-58. ISBN 9784990637101.
- Yasuhisa Kondo, Tara Beuzen-Waller, Takehiro Miki, Atsushi Noguchi, Stéphane Desruelles, Éric Fouache 2014, 07 Geoarchaeological survey in the Wādī al-Kabīr basin, Wilāyat Ibrī, Oman: a preliminary report. Proceedings of the Seminar for Arabian Studies 44 :227-234. (reviewed). A free copy will be available in July 2016.
- Tatsuki Sekino, Shoichiro Hara, Yasuhisa Kondo, Jumpei Kubota, Tomoya Akimichi 2014, 07 Repository for humanity and nature-Interdisciplinary resource sharing using semantic technology. IPSJ SIG Notes 2014-CH-103(1) :1-6. (in Japanese) Japanese with English abstract.

[Review Articles]

- Yasuhisa Kondo 2014, 11 Activity report 2013-2014. Newsletter, IAG Working Group on Geoarchaeology 15 :4-9.

[Research Presentations]

[Oral Presentation]

- Yasuhisa Kondo Information platforms for transdisciplinary research. GISTDA tour seminar, 2015, 03, 24, Research Institute for Humanity and Nature, Kyoto, Japan.
- Atsushi Noguchi, Takehiro Miki, Yasuhisa Kondo Variability of Middle Palaeolithic core reduction sequences in northern inland Oman. Middle Palaeolithic in the Desert II, 2014, 12, 11-2014, 12, 12, Pôle Juridique et Judiciaire, Université de Bordeaux, Bordeaux, France.
- Wonsuh Song, Yasuhisa Kondo, Takashi Oguchi Presentation of the PaleoGeo database with Google Earth. RNMH 2014 The Second International Conference Replacement of Neanderthals by Modern Humans, 2014, 11, 30-2014, 12, 06, Date Rekishi-no-mori Culture Center, Date, Hokkaido, Japan.

- Yasuhisa Kondo Cost surface analysis based on ecological niche probability to estimate relative rapidity of the dispersal of early modern humans. RNMH 2014 The Second International Conference Replacement of Neanderthals by Modern Humans, 2014, 11, 30–2014, 12, 06, Date Rekishi-no-mori Culture Center, Date, Hokkaido, Japan.
- Takashi Oguchi, Yasuhisa Kondo Analysis of archaeological, historical and modern interactions between human and nature using digital geospatial data. 2014 IGU Regional Conference Krakow , 2014, 08, 18–2014, 08, 25, The Jagiellonian University, Krakow, Poland.
- Yasuhisa Kondo, Takehiro Miki A reassessment of the Bronze Age and Iron Age cemetery at Bat, Oman. Seminar for Arabian Studies 2014, 2014, 07, 25–2014, 07, 27, The British Museum, London, UK.
- Yasuhisa Kondo Bridging archaeologists, associated researchers, and stakeholders by means of information technology. 236th RIHN Lunch Seminar, 2014, 07, 15, Research Institute for Humanity and Nature, Kyoto, Japan. (in Japanese)
- Yasuhisa Kondo Ecological models for the niche construction of the Neanderthals and anatomically modern humans in Europe. 9th Conference on Replacement of Neanderthals by Modern Humans: Testing Evolutionary Models of Learning, 2014, 05, 10–2014, 05, 11, Koshiba Hall, The University of Tokyo, Bunkyo-ku, Tokyo, Japan. (in Japanese)
- Yasuhisa Kondo, Katsuhiko Sano, Seiji Kadowaki, Masaki Naganuma, Takayuki Omori, Minoru Yoneda, Yoshihiro Nishiaki Assessing environmental factors to the replacement of Neanderthals by modern humans in terms of eco-cultural niche modelling . European Geosciences Union General Assembly 2014, 2014, 04, 27–2014, 05, 02, Austria Center Vienna.
- Ayako Abe-Ouchi, Wing-Le Chan, Ryouta O'ishi, Stephen Obrochta, Yusuke Yokoyama, Yasuhisa Kondo, Minoru Yoneda Challenge of modelling the climate of the last glacial-interglacial cycle and millennial climate change as a background of evolution of modern Human. European Geosciences Union General Assembly 2014, 2014, 04, 27–2014, 05, 02, Austria Center Vienna.
- Yasuhisa Kondo, Katsuhiko Sano, Seiji Kadowaki, Masaki Naganuma, Takayuki Omori, Minoru Yoneda, Yoshihiro Nishiaki Extrapolating the eco-cultural niche of Palaeolithic populations in Eurasia at 50–46 kya. 42nd Annual Conference on Computer Applications and Quantitative Methods in Archaeology (CAA), 2014, 04, 22–2014, 04, 25, Université Paris 1 Panthéon-Sorbonne, Paris, France.
- Yasuhisa Kondo, Charlotte M. Cable, Christopher P. Thornton A digital heritage inventory development at Bronze Age sites at Bat, Sultanate of Oman. 42nd Annual Conference on Computer Applications and Quantitative Methods in Archaeology (CAA), 2014, 04, 22–2014, 04, 25, Université Paris 1 Panthéon-Sorbonne, Paris, France.

[Poster Presentation]

- Takehiro Miki, Yasuhisa Kondo The Bronze Age and Islamic Period land exploitation and its relationship with water resources at Wadi al-Kabir and Bat, Oman. 3rd Symposium of Sultan Qaboos Academic Chairs “Managing Water Resources for Sustainable Development”, 2014, 10, 02–2014, 10, 03, Hongo Campus, The University of Tokyo, Bunkyo-ku, Tokyo, Japan.
- Yasuhisa Kondo RNMH-iii: The Replacement of Neanderthals by Modern Humans initiative to integrate information (Part 2). 9th Conference on Replacement of Neanderthals by Modern Humans: Testing Evolutionary Models of Learning, 2014, 05, 10–2014, 05, 11, Koshiba Hall, The University of Tokyo, Bunkyo-ku, Tokyo, Japan. (in Japanese)
- Wonsuh Song, Yasuhisa Kondo, Takashi Oguchi Theme and study area of the PaleoGeo database. 9th Conference on Replacement of Neanderthals by Modern Humans: Testing Evolutionary Models of Learning, 2014, 05, 10–2014, 05, 11, Koshiba Hall, The University of Tokyo, Bunkyo-ku, Tokyo, Japan. (in Japanese)
- Wonsuh Song, Yasuhisa Kondo, Takashi Oguchi PaleoGeo: a Web based GIS database for paleoenvironmental studies. European Geosciences Union, 2014, 04, 27–2014, 05, 02, Austrian Center Vienna.

[Invited Lecture / Honorary Lecture / Panelist]

- Yasuhisa Kondo JpGU meets ORCID. ORCID Outreach Meeting Tokyo 2014, 2014, 11, 04, National Institute of Informatics, Tokyo, Japan. Invited as Vice Chair, Japan Geoscience Union Information System Committee.

KOTERA, Akihiko

Senior Project Researcher

Born in 1972.

—Achievements—

[Papers]

[Original Articles]

- Kotera, A., Khang, N. D., Sakamoto, T., Iizumi, T. and Yokozawa, M. 2014,07 A modeling approach for assessing rice cropping cycle affected by flooding, salinity intrusion and monsoon rains in the Mekong Delta, Vietnam. *Paddy and Water Environment* 12 :343-354. DOI:10.1007/s10333-013-0386-y. (reviewed).
- Marui, A., Kotera, A., Furukawa, Z., Yasufuku, N., Omine, K., Nagano, T., Tuvshintogtokh, I., Mandakh, B. 2014,06 Monitoring the Growing Environment of Wild Licorice with Analysis of Satellite Data at a Semi-arid Area in Mongolia. *Journal of Arid Land Studies* 24(1) :199-202. (reviewed).

[Research Presentations]

[Oral Presentation]

- Kotera, A., Ueno, Y., Nagano, T. Quasi-real-time satellite monitoring for assessing agronomic flood damage. THA 2015 International Conference on “Climate Change and Water & Environment Management in Monsoon Asia”, 2015,01,28-2015,01,30, Bangkok, Thailand.
- 小寺昭彦、山村祐太、Onur Satir、Ali Volkan Bilgili、Mehmet、Ali Cullu、長野宇規 トルコ南東部の灌漑農地におけるタイムアライメント補正画像を用いた作目判別. 日本リモートセンシング学会第57回学術講演会, November 2014-November 2014, 京都大学宇治おうばくプラザ. (in Japanese)

KUBOTA, Jumpei

Professor

Born in 1957.

[Academic Career]

Department of Forestry, Faculty of Agriculture, Kyoto University, D. Course (1987)

Department of Forestry, Faculty of Agriculture, Kyoto University, M. Course (1983)

Department of Forestry, Faculty of Agriculture, Kyoto University (1981)

[Professional Career]

Professor, Research Institute for Humanity and Nature (2012)

Associate Professor, Research Institute for Humanity and Nature (2002)

Associate Professor, Faculty of Agriculture, Tokyo University of Agriculture and Technology (1997)

Assistant Professor, Faculty of Agriculture, Tokyo University of Agriculture and Technology (1989)

Assistant Professor, University Forest, Kyoto University (1987)

[Higher Degrees]

D. Agr. (Kyoto University, 1987)

M. Agr. (Kyoto University, 1983)

[Fields of Specialization]

Hydrology

Forest Hydrology

Erosion Control Engineering

[Academic Society Memberships]

The Japanese Forestry Society

The Japan Society of Hydrology and Water Resources

The Japan Society of Erosion Control Engineering

[Awards]

Water Environment Federation Excellence Award, McKee Groundwater Protection, Restoration, Sustainable Use Medal (2009)

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

- Jumpei Kubota 2015,03 The Climate Change and the History in the Kazakh Steppe . Tomohiko Uyama and Toko Fujimato (ed.) The Sixty Stories in Kazakhstan. Area Studies, 134. Akashi Shoten Co. Ltd. i , Chiyoda-ku, Tokyo, pp.72-77. (in Japanese)
- Jumpei Kubota 2015,03 Desert greening or reforestation? -Changing Societies in Arid Regions of China. Kenichi Abe (ed.) Five Senses and Environment. SHowado, Sakyo-ku, Kyoto, pp.38-41. (in Japanese)
- Jumpei Kubota 2015,02 Agricultural Development and Water Resources Conservation in Arid to Semi-arid Regions. Hideki Kitagawa (ed.) The environment and Development in Arid Regions of China. Seibundo, Shinjuku-ku, Tokyo , pp.117-134. (in Japanese)

KUMAZAWA, Terukazu

Assistant Professor

Born in 1974 年.**[Higher Degrees]**

Dr of Engineering

[Fields of Specialization]

Environmental planning

Regional informatics

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

- Terukazu Kumazawa, Kouji Kozaki, Takanori Matsui, Osamu Saito, Mamoru Ohta, Keishiro Hara, Michinori Uwasu, Michinori Kimura, Riichiro Mizoguchi 2014,04 Initial Design Process of the Sustainability Science Ontology for Knowledge Sharing to Support Co-deliberation. Sustainability Science 9((2)) : 173-192. DOI:10.1007/s11625-013-0202-z. (reviewed).

[Research Presentations]*[Oral Presentation]*

- Keishiro Hara • Terukazu Kumazawa • Kazutoshi Tsuda • Michinori Kimura Managing regional natural resources in the context of rural-urban partnerships - Case studies of local areas in Japan. the 5th International Conference of the Asian Rural Sociological Association (ARSA), 2014, 09, 02-2014, 09, 05, Vientiane, Laos.
- Terukazu Kumazawa, Takanori Matsui Description of social-ecological systems framework based on ontology engineering theory. The 5th Workshop on the Ostrom Workshop (WOW5), 2014, 06, 18-2014, 06, 21, Bloomington, Indiana, USA.

[Poster Presentation]

- Terukazu Kumazawa, Takanori Matsui, Aiko Endo Defining Resilience and Vulnerability Based on Ontology Engineering Approach. American Geophysical Union (AGU) Fall Meeting, 2014, 12, 15-2014, 12, 19, San Francisco, the United States.

MALLEE, Hein

Professor

Born in 1963.**[Professional Career]**

International Development Research Centre, Singapore

Senior Program Officer

Rural Poverty & Environment Program

Ecosystems Approaches to Human Health Program

2004 - 2013

+++++

Ford Foundation, Beijing

Program Officer

Environment and Development Program

1999 - 2004

+++++

China-Netherlands Poverty Alleviation Project | Huoshan, Anhui Province, China

Co-director

1997 - 1999

[Higher Degrees]

Ph.D. Leyden University 1997

[Fields of Specialization]

Social science

China Studies

Natural Resources Management

Forest Governance

Ecohealth

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

- Hein Mallee 2014 Ecohealth, Transdisciplinarity and Participation. Managing Environmental Risks to Food and Health Security in Asian Watersheds Project Final Report. .

[Papers]*[Original Articles]*

- Asakura, Takeshi, Hein Mallee, Sachi Tomokawa, Kazuhiko Moji and Jun Kobayashi 2015,02 The ecosystem approach to health is a promising strategy in international development: Lessons from Japan and Laos. *Globalisation and Health* 11(3). DOI:10.1186/s12992-015-0093-0. (reviewed).
- Hung Nguyen, Siobhan Doria, Dinh Xuan Tung, Hein Mallee, Bruce A Wilcox and Delia Grace 2015,02 Ecohealth research in Southeast Asia: past, present and the way forward. *Infectious Diseases of Poverty* 4(5). DOI:10.1186/2049-9957-4-5. (reviewed).
- Johanne Saint-Charles, Jena Webb, Hein Mallee, Nguyen Viet Hung, Andres Sanchez, Berna van Wendel 2014 Ecohealth as a Field: Looking Forward. *EcoHealth* . DOI:10.1007/s10393-014-0930-2. (reviewed).
- Hein Mallee 2014 「エコヘルスをめぐる世界の動向」 (International Trends in Ecohealth). *医学の歩み* 240.

[Research Presentations]*[Oral Presentation]*

- Hein Mallee What is Ecohealth? (in Chinese). Beijing University-RIHN Seminar, 2015,03,17, Beijing University. (in Chinese)
- Hein Mallee Thinking about Future Earth in Asia. RIHN Workshop on Transdisciplinary Research on Asia, 2014,10,24-2014,10,24, Iloilo City, The Philippines.
- Hein Mallee Future Earth and Ecohealth. 5th Biennial Ecohealth Conference: Connections for Health, Ecosystems and Society, 2014,08,11-2014,08,15, Universite du Quebec a Montreal. (Invited Plenary Panel Presentation).
- Hein Mallee Conceptualizing Global Environmental Change and Human Health at the Research Institute for Humanity and Nature. 5th Biennial Ecohealth Conference: Connections for Health, Ecosystems and Society, 2014,08,11-2014,08,15, Universite du Quebec a Montreal. (Poster-driven session presentation).

MASUHARA, Naoki

Project Researcher

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

Master of Political Science (Waseda University, 2000)

[Fields of Specialization]

Public Administration

Local Government Studies

Environment and Energy Policy

Citizen Participation Studies

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

- Naoki Masuhara and Kenshi Baba Comprehensive Case Analysis on Participatory Approaches, from Nexus Perspectives. 2014 AGU Fall Meeting, 2014, 12, 15–2014, 12, 19, San Francisco, CA, USA.
- Naoki MASUHARA, Maximilian SPIEGELBERG and Makoto TANIGUCHI Human-Environmental Security in the Asia-Pacific Ring of Fire: Approaching the Water-Energy-Food Nexus. International Symposium on Earth Science and Technology 2014, 2014, 12, 04–2014, 12, 05, Fukuoka city, Fukuoka pref..

[Poster Presentation]

- Naoki Masuhara and Kenshi Baba Governance structure of local energy policy in Japan. International Conference "Sustainability in the Water-Energy-Food Nexus. Synergies and Tradeoffs: Governance and Tools at various Scales", 2014, 05, 19–2014, 05, 20, Bonn, Germany.

MCGREEVY, Steven

Specially Appointed Assistant Professor

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

Division of Natural Resource Economics, Graduate School of Agriculture, Kyoto University (2008)

College of Continuing Education, University of Minnesota (2002)

St. John's University- Collegeville, MN (1997)

[Professional Career]

Lecturer, Seisen Jogakuin College (2007)

Monbukagakusho Scholar, Graduate School of Agriculture, Kyoto University (2009)

Lecturer, Nagano National College of Technology (2011)

Assistant Professor, Research Institute for Humanity and Nature (2013~)

[Higher Degrees]

D. Ag. (Kyoto University, 2012)

M. LS. (University of Minnesota-Twin Cities, 2004)

B. A. : Major- Biology; Minor- Environmental Studies (St. John's University- Collegeville, MN, 2000)

[Fields of Specialization]

Rural Sustainable Development

Sustainable Agriculture

Socio-ecological Systems

[Academic Society Memberships]

Japan Biochar Association

International Biochar Initiative

Japanese Association for Rural Studies

Rural Sociology Society

International Association for the Study of the Commons

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

- McGreevy, Steven R. & Akitsu, Motoki 2015 “Steering sustainable food consumption in Japan: trust, relationships, and the ties that bind”. Genus, Audley (ed.) Sustainable Consumption: Perspectives, Design and Practices. Springer. Forthcoming
- McGreevy, Steven R. , Akira Shibata 2014 Mobilizing biochar: A multi-stakeholder scheme for climate-friendly foods and rural sustainable development. Tomas Goreau, Ronal Larson, and Joanna Campe (ed.) Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, & Reversing CO2 Increase. CRC Press.

[Research Presentations]*[Oral Presentation]*

- McGreevy, Steven R. & Akitsu, Motoki “Steering sustainable food consumption in Japan: trust, relationships, and the ties that bind”. SCORAI Europe/Kingston University Sustainable Consumption Workshop, 2014, 09, 30–2014, 10, 01, Royal Society of Arts, London.
- McGreevy, Steven R. “Comparing the impact of environmental education on worldview, lifestyle choices, and behavior: A survey of graduates from the “Zoo School.”. Japanese Society of Environmental Education 25th Conference, 2014, 08, 01–2014, 08, 03, Hosei University, Tokyo.

[Invited Lecture / Honorary Lecture / Panelist]

- McGreevy, Steven R. “LOHAS relationships between urban and rural areas.”. 2014 International Symposium of Comparative Kyoto Studies, 2014, 11, 03, Inamori Memorial Hall, Kyoto Prefectural University. (in Japanese) Panelist.
- McGreevy, Steven R. “Biochar in Japan- deep roots, cool landscapes.”. International Biochar Initiative Public Webinar Series, 2014, 08, 13, . Invited Lecture.
- McGreevy, Steven R. “Biochar’ s Identity Crisis- A Look at International Discourse.”. Japan Biochar Association Symposium, 2014, 06, 13, Ritsumeikan University. (in Japanese) Invited Lecture.

MIKI, Hiroshi

Project Researcher

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

- Honjo, H. , Sano, M. , Miki, H. & Sakaguchi, H. 2015, 02 Statistical properties of approval ratings for governments. Physica A 428 :266–272. (reviewed).
- Miki, H. 2014, 06 Scaling analysis of stationary probability distribution of random walks on one-dimensional lattices with aperiodic disorder. Physical Review E 89 :062105. (reviewed).

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

- Yudai ISHIMOTO, Hidetoshi MIYAZAKI, Ueru TANAKA Land Resource Management by Peasants in Semi-Arid Tropics, Southern Africa: A Case of Animal Husbandry in the Sinazongwe Area of Zambia. JAALS, 2014, 05, 31–2014, 06, 01, Kanagawa, JAPAN. (in Japanese)
- Muniandi Jegadeesan, Hidetoshi Miyazaki and Ueru Tanaka Agrarian change and livelihood dynamics of small scale farmer in South Tamil Nadu, India. JAALS, 2014, 05, 31–2014, 06, 01, Kanagawa, JAPAN.
- Hidetoshi MIYAZAKI, KP Singh, Hitoshi ENDO, Ueru TANAKA Animal husbandry and resource use in rural area of Rajasthan, Northwest India. JAALS, 2014, 05, 31–2014, 06, 01, Kanagawa, JAPAN. (in Japanese)
- MIYAZAKI H., KP Singh, H. ENDO and U. TANAKA Relationships between pastoral community and agriculturists in Rajasthan, India. IUAES 2014, 2014, 05, 15–2014, 05, 18, Chiba, Japan. Reviewed.
- Miyazaki H., Ishimoto Y., Yamashita M., Tanaka U., Umetsu C. How small scale farmers cope with two different timings of heavy rainfall events in Southern Zambia. Resilience 2014, 2014, 05, 04–2014, 05, 08, Montpellier, France. Reviewed.
- Ishimoto Y., Miyazaki Hidetoshi, Tanaka Ueru, Umetsu Chieko Social Capital and Small-Scale Farmers in Zambia: An Analysis of Mobile Phone Usage. Resilience 2014, 2014, 05, 04–2014, 05, 08, Montpellier, France. Reviewed.
- Umetsu C., Lekprichakul T., Sakurai T., Yamauchi T., Ishimoto Y., Miyazaki H. Resilience of social-ecological systems for food security: Bridging climate and disaster resilience. Resilience 2014, 2014, 05, 04–2014, 05, 08, Montpellier, France. Reviewed.

[Poster Presentation]

- ENDO Hitoshi, K.P. Singh, MIYAZAKI Hidetoshi, TANAKA Ueru The use of Animal-powered irrigation system and transformation in Semi-Arid South Rajasthan, Northwest India. JAALS, 2014, 05, 31–2014, 06, 01, Kanagawa, JAPAN. (in Japanese) Best Poster Award.
- Miyazaki H. , Y. Ishimoto, U. Tanaka, C. Umetsu Commercial farming and market activities for livelihood strategies in Southern Province of Zambia. Japan Association for African Studies, the 50th Anniversary, 2014, 05, 23–2014, 05, 25, Kyoto, Japan. (in Japanese)

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]

Isotope Environmental Studies

[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]*

- Takanori Nakano 2014 Use of Water Quality Analysis for Groundwater Traceability. Makoto Taniguchi, Tetsuya Hiyama (ed.) Groundwater as a Key for Adaptation to Changing Climate and Society. Global Environmental Studies. Springer, pp.45–67.

[Papers]*[Original Articles]*

- Kusaka, S., Nakano, T. 2014 Carbon and oxygen isotope ratios and their temperature dependence in carbonate and tooth enamel using GasBench II preparation device.. Rapid Communications in Mass Spectrometry. 28(5) :563-567. (reviewed).
- Mahara, H., Ohta, T., Morikawa, N., Nakano, T., Tokumasu, M., Hikutani, S., Igarashi, T 2014 Effects of terrigenous He components on tritium-helium dating: A case study of shallow groundwater in the Saijo Basin. Applied Geochemistry 50 :142-149. (reviewed).
- Hosono, T., Lorphensriand, O., Onodera, S., Okawa, H., Nakano, T., Yamanaka, T., Tsujimura, M., Taniguchi, M. 2014 Different isotopic evolutionary trends of $\delta^{34}\text{S}$ and $\delta^{18}\text{O}$ compositions of dissolved sulfate in an anaerobic deltaic aquifer system.. Applied Geochemistry 46 :30-42. (reviewed).
- Nagatsuka, N., Takeuchi, N., Nakano, T., Shin, K., and Kokado, E. 2014 Geographical variations in Sr and Nd isotopic ratios of cryoconite on Asian glaciers. Environ. Res. Lett 9 :1-11. DOI: 10.1088/1748-9326/9/4/045007. (reviewed).
- Naotatsu Shikazono, Arakawa Takayuki, Nakano Takanori 2014 groundwater quality of Mount Fuji southern foot, flowage and nitrogen pollution. Journal of Geography 123 :323-342. (in Japanese) (reviewed).

[Review Articles]

- Takanori Nakano 2014 Isotope environmental science - first lecture Application to the stable isotope of radioactive origin and atmospheric environment research -. Journal of Japan Society for Atmospheric Environment 49(3) :39-46. (in Japanese) (reviewed).

[Research Presentations]*[Oral Presentation]*

- Takanori Nakano Monitoring results of the precipitation in Saijo -Study by water quality component and stable isotope. Saijo groundwater resources Review Committee report, 2015,03,26, Saijo city hall. (in Japanese)
- Takanori Nakano Urban development to realize the environment starting from water temperature map creation of elementary school students: Towards environmental education and spring water ecosystem conservation of Echizen Ono . Ono city review meeting, 2014,10,03, Ono City. (in Japanese)
- Takanori Nakano Ecosystem risk evaluation of Laguna watershed based on traceability information using multi-stable isotopes : Comment on the Lake-head symposium. Special LakeHEAD Symposium Environment and Health - Challenges of Laguna de Bay -, 2014,04,08, Research Institute for Humanity and Nature.

[Poster Presentation]

- Ryoma AOKI(1), Hiroshi OKOCHI(1), Hiroko OGATA(1) Kazuki SHINMEN(1), Manabu IGAWA(2), Takanori Nakano(3) Trends of stream water chemistry in Tanzawa mountains resulting from changes in atmospheric deposition. International Conference of Asian Environmental Chemistry, 2014,11,24-2014,11,26, Convention Center, Chulabhorn Research Institute.

[Invited Lecture / Honorary Lecture / Panelist]

- Takanori Nakano Water quality map business to see the connection of water. 11th Kakita River Symposium "Kakita River and spring water in Japan", 2014,11,08, The Mishima Chamber of Commerce and Industry. (in Japanese)
- Takanori Nakano Global environmental protection network starting from making water quality map. INS water and environment study group 3rd Study Group, 2014,11,05, Faculty of Engineering, Iwate University. (in Japanese)
- Takanori Nakano Isotope ecology using isotopic compositions of heavy elements. Stable Isotope Ecology Workshop 2014, 2014,08,30-2014,09,05, Center for Ecological Research, Kyoto University.

- Takanori Nakano Water quality map making for environmental realization city. Graduate school for creative cities, Osaka city university, Knowledge information infrastructure study field workshop, 2014, 07, 01, GSCC Umeda-satellite. (in Japanese)
- Takanori Nakano A new earth observation tool using multiple stable isotopes: an example of eutrophication diagnosis in Lake Biwa, Japan. 7th GEOSS Asia-Pacific Symposium, 2014, 05, 26–2014, 05, 28, Tokyo, Japan.

NAWATA, Hiroshi

Visiting 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]

Visiting Professor, Reserach Department, Research Institute for Humanity and Nature (2013–present)

Professor, Faculty of International Resource Sciences, Akita University (2013–present)

Associate Professor, Research Department, Research Institute for Humanity and Nature (2008–2013)

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—

[Editing]

[Editing / Co-editing]

- Nawata, H. and K. Shinoda (ed.) 2014,04 Desert History: Strategies of Humans, Animals, and Plants for Sharing Water.. Tokai University Press,, Kanagawa, 472pp. (in Japanese)

NILES, Daniel

Associate Professor

Born in 1971.

[Academic Career]

Ph.D. (Graduate School of Geography, Clark University, Aug 1999–May 2007)
 Seminar in College Teaching(Interdisciplinary Unit, Clark University, June–July 2006)
 Certificate program in Wood Technology (3 of 4 semesters completed)(Laney College (Peralta Community College District, California), Jan 1998–May 1999, Jun–July 2000)
 B. A. in Community Studies (High Honors)(University of California, Santa Cruz, Aug 1989–Mar 1994)

[Professional Career]

RIHN Communications Coordinator/PASONA(October 2008–March 2009)
 RIHN Contract Worker(August 2008)
 MINPAKU Visiting Researcher(1 June 2008–31 March 2009)
 Lecturer, Department of Geography, Clark University(August–December 2006)
 Editorial Assistant, The Geographical Review (June 2005–July 2006)
 Research Assistant, Prof. Turner(August–December 2000)
 Research Assistant, Profs. Turner and Kasperon(August–December 1999)
 ESL Teacher(March 1998–January 1999)
 Research Assistant, Professor Carter Wilson(August 1996–January 1997)

[Higher Degrees]

Ph.D. (Graduate School of Geography, Clark University, Aug 1999–May 2007)
 B. A. in Community Studies (High Honors)(University of California, Santa Cruz, Aug 1989–Mar 1994)

[Fields of Specialization]

Geography

[Awards]

Full Tuition Fellowship, Graduate School of Geography, Clark University, 1999–2007
 Biodiversity Conservation Award, Regional Environmental Council, Worcester, MA 2005
 Pruser-Holtzsauer Award, Graduate School of Geography, Clark University, 2002
 Community Service Award, City of San Francisco, CA 1995
 Dean' s Undergraduate Award, University of California, Santa Cruz, 1994
 Highest Honors, Department of Community Studies, University of California, Santa Cruz, 1994

Senior Thesis Honors, Department of Community Studies, University of California, Santa Cruz, 1994
 Community Service Award, Crown College, University of California, Santa Cruz, 1994

—Achievements—

[Books]

[Authored/Co-authored]

- Niles, Daniel and Ken-ichi Abe 2015 *Humanity and Nature in the Japanese Archipelago*. RIHN

[Papers]

[Review Articles]

- Abe, K. and Niles, D. 2015 Interview with C.W. Nicol. *Humanity and Nature Newsletter* 53(March). (in Japanese)
- Niles, Daniel 2014 *Talking with Cats in the Night: Summary of a set of lectures by Sander van der Leeuw* (in Japanese). *Humanity and Nature Newsletter* 47(March). (in Japanese)
- Niles, Daniel 2014 TD = ? Review of Manifesto of Transdisciplinarity by B. Nicolescu. *Humanity and Nature Newsletter* 52(January). (in Japanese)

[Research Presentations]

[Oral Presentation]

- Daniel NILES, Adam Labuen, Emma Burns, Juna Kurihara *Visual communication in science: The art behind the article*. RIHN Danwakai Seminar, 2014,12,16, RIHN.
- Daniel NILES *Biocultural perspectives on Japanese landscape histories and futures. Linking Biological and Cultural Diversity in Europe: 1st European Conference for the Implementation of the UNESCO-SCBD Joint Programme on Biological and Cultural Diversity.*, 2014,04,08-2014,04,11, University of Florence.

[Invited Lecture / Honorary Lecture / Panelist]

- Daniel NILES Discussant. *Long-Term Sustainability through Place-Based, Small-Scale Economies*, 2015,01,12-2015,01,13, Research Institute for Humanity and Nature.
- Daniel NILES Invited participant, discussant. *Long-Term Sustainability thought Place-Based, Small-Scale Economies*, 2014,09,27-2014,09,29, University of California, Berkeley.
- Daniel NILES Invited Participant. *International Symposium on Agroecology for Food Security and Nutrition*, 2014,09,18-2014,09,19, FAO Headquarters, Rome, Italy.
- Niles, Daniel Invited participant. *RIHN/CIFOR Workshop on 'Resource Securitization'* , 2014,05,16, Centre for International Forestry Research, Bogor, Indonesia.
- Daniel NILES Invited Expert. *Steering and Scientific Committee Meeting*, 2014,04,28-2014,04,29, FAO Headquarters, Rome, Italy.
- Daniel NILES, K. ABE *Monitoring and Evaluation: Development and Conservation in GIAHS: GIAHS Scientific and Steering Committee Meeting*, 2014,04,28-2014,04,29, FAO Headquarters, Rome, Italy.

OISHI, Takanori

Project Researcher

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

Faculty of Agriculture, Kyoto University, BA Course(2001)

Division of Biological Science, Graduate School of Science, Kyoto University, M. Course(2003)

Division of Biological Science, Graduate School of Science, Kyoto University, ABD. (2008)

[Professional Career]

Part-time Lecturer, Kyoto University of Art and Design(2007)

Researcher, Kokoro Research Center, Kyoto University(2008)

Researcher, Center for African Area Studies, Kyoto University(2011)

Project Researcher, Research Institute for Humanity and Nature(2014)

[Higher Degrees]

Ph.D. (Kyoto University, 2014)

M.Sc. (Kyoto University, 2003)

[Fields of Specialization]

Ecological Anthropology

Cultural Anthropology

African Area Studies

[Academic Society Memberships]

International Commission on Anthropology of Food, IUAES

International Society of Ethnobiology

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

- Takanori OISHI, Mikiko HAGIWARA 2015,03 A preliminary report on the distribution of freshwater fish of the Congo river: Based on the observation of local markets in Brazzaville, Republic of the Congo.. African Study Monographs Supplementary Issue (51) :93-105. (reviewed).

[Research Presentations]*[Oral Presentation]*

- OISHI T. Food diversity, interethnic relationships, and long-term sustainability of forest use in central African tropical rainforests.. JSPS Symposium 2014: Long-term Sustainability through Placebased, Small-scale economies., 2014,09,26-2014,09,28, Berkeley, CA, USA.
- OISHI T. Psychosocial importance of forest life for the Bakwele farmers of southeastern Cameroon.. The 14th International Society of Ethnobiology Congress, , 2014,06,01-2014,06,07, Bumthang, Bhutan.

[Poster Presentation]

- OISHI T., NJOUONKOU A.L. Wild mushroom uses by the Baka and the Bakwele of southern Cameroon.. The 14th International Society of Ethnobiology Congress, , 2014,06,01-2014,06,07, Bumthang, Bhutan..

[Invited Lecture / Honorary Lecture / Panelist]

- OISHI T., KAMGAING O.W., YAMAGUCHI R., HAYASHI K. Anti-poaching operations by military forces and their impacts on local people in South-Eastern Cameroon.. Symposium 'Beyond Enforcement: Communities, governance, incentives and sustainable use in combating wildlife crime' Organised by IUCN CEESP/SSC Sustainable Use and Livelihoods Specialist Group(SULi)/International Institute of Environment and Development (IIED)/Austrian Ministry of Environment/ARC Centre of Excellence for Environmental Decisions (CEED), University of Queensland/TRAFFIC - the wildlife trade monitoring network , 2015,02,26-2015,02,28, Muldersdrift, South Africa.
- OISHI T. Land conflict in multi-ethnic context: trans-ethnic negotiation and cultural transmissions in the expansion process of cocoa farming in southeastern Cameroon.. The Forth Forum on "Comprehensive Area Studies on Coexistence and Conflict Resolution Realizing 'African Potentials'" , 2014,12,04-2014,12,05, Yaoundé, Cameroon.

OKUDA, Noboru

Associate Professor

Born in 1969.**[Professional Career]**

Lecturer, Shiga Women's College, Department of Human Life (1997)
 Lecturer, Mie University, Department of Liberal Arts (1998)
 Postdoctoral fellow, Ehime University, Department of Biology and Earth Science (1998)
 Research Fellow, Ehime University, Center for Marine Environmental Studies (2002)
 Associate Professor, Kyoto University, Center for Ecological Research (2005)
 Invited Associate Professor, Research Institute for Humanity and Nature (2013)
 Associate Professor, Research Institute for Humanity and Nature (2014)

[Higher Degrees]

B.S. (Science University of Tokyo, Department of Biological Science, 1992)
 M.S. (Ehime University, Department of Biology, 1994)
 Ph.D. (Kyoto University, Department of Biology, 1998)

[Academic Society Memberships]

The Ichthyological Society of Japan
 The Ecological Society of Japan
 Japan Ethological Society
 Society of Evolutionary Studies
 The Japanese Society of Fisheries Science
 The Japanese Society of Limnology

[Awards]

Best Poster Award for International Symposium "Long-term Variations in the Coastal Environments and Ecosystems" held in Ehime University (2004)
 Young Ichthyologist Award 2005 from The Ichthyological Society of Japan (2005)

—Achievements—

[Papers]*[Original Articles]*

- Garcia, V. O. S., R. D. S. Papa, J. C. A. Briones, N. Mendoza, N. Okuda and A. C. Diesmos 2014,12 Food habits and distribution of the Lake Taal sea snake (*Hydrophis semperi* Garman, 1881) and the sympatric little file snake (*Acrochordus granulatus* Schneider, 1799) in Lake Taal. *Asian Herpetological Research* . (reviewed).
- Kojima, H., R. Tokizawa, K. Kogure, Y. Kobayashi, M. Itoh, N. Okuda, F.-K. Shiah and M. Fukui 2014,07 Community structure of planktonic methane-oxidizing bacteria in a subtropical reservoir characterized by dominance of phylotype closely related to nitrite reducer. *Scientific Reports* 4 : 5728. (reviewed).
- Ishikawa, N. F., Y. Kato, H. Togashi, M. Yoshimura, C. Yoshimizu, N. Okuda and I. Tayasu (in press) 2014,07 Stable nitrogen isotopic composition of amino acids reveals food web structure in stream ecosystems. *Oecologia* 175(3) :911-22. (reviewed).

[Research Presentations]*[Oral Presentation]*

- Ho, P.-C., N. Okuda, M. Itoh, T. Miki, F.-K. Shiah, C.-W. Chang and C.-H. Hsieh "Summer hypoxia determines the coupling of methanotrophic and pelagic foodweb". The 62nd ESJ Annual Meeting, March 2015, Kagoshima.
- Itoh, M., Y. Kobayashi, T.-Y. Chen, T. Tokida, M. Fukui, H. Kojima, T. Miki, I. Tayasu, F.-K. Shiah and N. Okuda "CH₄ dynamics in a subtropical reservoir under climate changes". The 62nd ESJ Annual Meeting, March 2015, Kagoshima.
- Okuda, N. "What's the methanotrophic food web?". The 62nd ESJ Annual Meeting, March 2015, Kagoshima.
- Okuda, N. Organization of Symposium Session "Methanotrophic food webs as a carbon recycling system". The 62nd ESJ Annual Meeting, March 2015, Kagoshima.
- Yachi, S., D. Kitazawa, S. Nakano, Y. Sakai and N. Okuda "Toward the evaluation of extinction risk of Lake Biwa benthic species due to global warming". JSMB/SMB 2014, 2014,07,28-2014,08,01, Osaka city.
- Okuda, N., I. Tayasu, S. Nakano, M. Ito, M. Fukui, H. Kojima, K. Kogure, M. Fujibayashi, C. Maruo, P.-C. Ho, C.-W. Chang, L. Zhang, W.-H. Teng, T. Miki, C.-H. Hsieh, Y. Kobayashi, C.-C. Chang and F.-K. Shiah "Methanotrophic food webs as a carbon recycling system in lakes under climate changes". The 6th EAFES International Congress, 2014,04,09-2014,04,11, Haikou, China.

[Poster Presentation]

- Cid, A. P., U. Song, I. Tayasu, J. Okano, H. Togashi, N.F. Ishikawa, A. Murakami, T. Hayashi, T. Iwata, K. Osaka, S. Nakano and N. Okuda "Tracking phosphorus sources and cycling in freshwater: stable isotope approach". JpGU Meeting 2014, 2014,04,28-2014,05,02, Yokohama city.
- Sakai, Y., Z. Karube, J. Shibata, T. Takeyama, I. Tayasu, S. Yachi, S. Nakano & N. Okuda "The impact of land uses on benthic macroinvertebrate diversity in the coastal ecosystem of Lake Biwa". 2015 ASLO Aquatic Science Meeting, 2015,02,22-2015,02,27, Granada, Spain.
- Sakai, Y., Z. Karube, J. Shibata, T. Takeyama, I. Tayasu, S. Yachi, S. Nakano and N. Okuda "The impact of land uses on benthic macroinvertebrate diversity in the coastal ecosystem of Lake Biwa". ISRLE2014, 2014,08,24-2014,08,27, Chuncheon, Korea.
- Sakai, Y. and N. Okuda "Intraspecific differences in vertical habitat and food utilization by crustacean zooplankton: stable isotopic evidence". ISRLE2014, 2014,08,24-2014,08,27, Chuncheon, Korea.
- Ban, S., Q. Wu, N. Hishida, K. Fujita, O. Nagafuchi and N. Okuda "Bioaccumulation of mercury from seston to fish through the food web in Lake Biwa". ISRLE2014, 2014,08,24-2014,08,27, Chuncheon, Korea.

ONISHI, Yuko

Assistant Professor

[Academic Career]

Environmental Change Institute (ECI), Department of Geography and the Environment, University of Oxford (2010)

Environmental Change Institute (ECI), Department of Geography and the Environment, University of Oxford (2002)

National Center for Development Studies, Australian National University (1997)

[Professional Career]

IPCC Chapter Scientist, National Institute for Environmental Studies (NIES) (2011)

Institute for Industrial Science (IIS), University of Tokyo (2003)

Food and Agriculture Organisation of the United Nations (FAO) (1997)

[Higher Degrees]

Ph.D. (University of Oxford 2010)

MSc (University of Oxford 2002)

Master of Environmental Management and Development (Australian National University 1997)

[Fields of Specialization]

Ecological Modelling

Climate Change Impacts and Adaptation

Biodiversity

Conservation Biology

Biogeography

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

- Onishi, Y. Observed and Predicted Impacts of Climate Change on Plant Phenology. 14th Science Council of Asia (SCA14) International Conference, 2014, 06, 18–2014, 06, 19, Kuala Lumpur, Malaysia.

ORENCIO, Pedcris Miralles

Project Researcher

[Academic Career]

Graduate School of Environmental Science, Hokkaido University, PhD Course (2011)

Graduate School of Environmental Science, Hokkaido University, Master's Course (2009)

School of Urban and Regional Planning, University of the Philippines, Master's Course (2006)

School of Urban and Regional Planning, University of the Philippines, Diploma Course (2004)

College of Fisheries and Ocean Sciences, University of the Philippines in the Visayas, Bachelor's Course (1994)

[Professional Career]

Project Researcher in RIHN (2014)

Research Assistant in RIHN (2013)

Research Assistant in Hokkaido University GSES (2012)

Research Assistant in Hokkaido University CENSUS (2011)
 Project Officer in Grant Assistance for Grassroots Human Security Project (2007)
 Assisting Professional in Philippine Environmental Governance Management Project (2004)
 Chief of Monitoring and Evaluation Unit in Land Administration and Management Project (2002)
 Project Implementing Unit in Fisheries Resource Management Project (1999)

[Higher Degrees]

PhD in Environmental Science (Hokkaido 2014)
 Master in Environmental Science (Hokkaido 2011)
 Master in Arts in Urban and Regional Planning (Quezon City 2008)
 Diploma in Urban and Regional Planning (Quezon City 2006)
 Bachelor of Science in Fisheries (Iloilo 1999)

[Fields of Specialization]

Coastal Resource Management
 Urban and Rural Environmental Planning
 Social Vulnerability, Risk and Resilience Research

[Awards]

Hokkaido University Sustainability Weeks' 1st Research Poster Contest, Outstanding Performance Award
 Social Change, Education and Communication
 Hokkaido University Sustainability Weeks' 1st Research Poster Contest, Outstanding Performance Award
 for Breakthrough Research on Technological Innovation
 Hokkaido University Sustainability Weeks' 3rd Research Poster Contest, Outstanding Award for Living in
 Risk Category
 PSSN 2nd International Seminar and 12th Annual Scientific Conference, Best paper in Integrative
 Category

—Achievements—

[Papers]

[Original Articles]

- Orencio, P.M. and M. Fujii 2014 A Spatiotemporal Approach for Determining Disaster-risk Potential based on Damage Consequences of Multiple Hazard Events. *Journal of Risk Research* 17(7) :814-836. (reviewed).

[Research Presentations]

[Oral Presentation]

- Orencio, P.M., Endo A. and M. Taniguchi Concepts and theoretical specifications of Coastal Vulnerability Dynamics Simulator (COVUDS): A multi-agent system for simulating coastal vulnerability towards management of coastal ecosystem services. American Geophysical Union (AGU) Fall Meeting 2014, 2014, 12, 15-2014, 12, 18, San Francisco, USA.
- Orencio, P.M., and Endo, A Indicators for Evaluating a Water-Food (Fisheries) Nexus: A Case of Laguna de Bay in the Philippines. World Water Week 2014 in Stockholm, 2014, 08, 30-2014, 09, 05, Stockholm, Sweden.

SASAKI, Yuko

Project Researcher

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

Department of International and Cultural Studies, Faculty of Liberal Arts, Tsuda College (1998)
 Course in Environmental Management, Graduate School of Global Environmental Studies, Kyoto University,
 M. Course (2009)
 Course in Environmental Management, Graduate School of Global Environmental Studies, Kyoto University,
 D. Course (2012)

[Professional Career]

Trainee, International NGO in Denmark/DAPP (1998)
 Tutor, prep school of Johnan (1999)
 Instructor, Tutoring School of Rinkai Seminar (2000–2002)
 Volunteer, Japan Overseas Cooperation Volunteers (2003–2005)
 Coordinator, Japan Overseas Cooperation Volunteers (2005–2007)
 Researcher, Japan International Research Center for Agricultural Sciences (2009–2010)

[Higher Degrees]

D. Global environment studies (Kyoto University, 2012)
 M. Global environment studies (Kyoto University, 2012)

[Fields of Specialization]

African Studies (Southern Africa, Sahel)
 Rural Development Studies
 Global Environmental Studies

[Academic Society Memberships]

Japanese Agricultural System Society
 The Japan Society for International Development
 Japan Association for African Studies

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

- Yuko SASAKI, Ueru TANAKA, Kenta IKAZAKI, Hitoshi SHINJO, Reiichi MIURA, Satoshi TOBITA Use of wild plants at rural areas in the Sahel, West Africa - A case of the south-west Niger- . 50th Anniversary of Japan Association for African Studies , 2014, 05, 23–2014, 05, 25, Kyoto University, Sakyo-ku, Kyoto-shi.. (in Japanese)

SEKINO, Tatsuki

Associate Professor

Born in 1969.**[Academic Career]**

Department of Zoology, Faculty of Science, Kyoto University, D. Course (1998)

Department of Biology, Faculty of Science, Shinshu University, M. Sc. (1993)

Department of Biology, Faculty of Science, Shinshu University (1991)

[Professional Career]

Associate Professor, Research Promotion Center, Research Institute for Humanity and Nature (2002)

Researcher, Research Division, International Lake Environmental Committee Foundation (2001)

COE Scientist, Center for Ecological Research, Kyoto University (1999)

[Higher Degrees]

D. Sc. (University of Kyoto, 1998)

M. Sc. (University of Shishu, 1993)

[Fields of Specialization]

Information Science

Limnology

Ecology

[Academic Society Memberships]

Information Processing Society of Japan

Japanese Society of Limnology

Ecological Society of Japan

[Awards]

IPSJ Yamashita SIG Research Award (2015)

—Achievements—

[Papers]

[Original Articles]

- Sekino, Tatsuki 2015,01 Tools and basic data for temporal information analysis.. Proceedings of ANGIS and CRMA Bangkok meeting 2015 :55-58. (reviewed).
- Sekino, Tatsuki 2014,12 Entities of date in the Linked Data - Data linkage based on temporal information . IPSJ Symposium Series 2014(3) :125-130. (in Japanese) (reviewed).
- Sekino, T., Hara, S., Kondo, Y., Kubota, J. and Akimichi, T. 2014,08 Repository for humanity and nature—Interdisciplinary resource sharing using semantic technology. IPSJ SIG Technical Reports 2014-CH-103(1) :1-6. (in Japanese)

[Research Presentations]

[Oral Presentation]

- Sekino, Tatsuki Linked Data of Time Basic Data. PNC 2014 Annual Conference, 2014,10,21-2014,10,23, National Palace Museum, Taipei, Taiwan.
- Sekino, Tatsuki Spatiotemporal Concept and its Analysis Tools. Pre-Symposium of Kyoto University ASEAN Center (Bangkok Office) Opening Ceremony and Commemorative Symposium, 2014,06,27, Grand Millennium Sukhumvit, Bangkok, Thailand.

TAKEMURA, Shion

Project Researcher

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

- Inui, R., Akamatsu, Y., Kamitsuru, S., Hiraki, R., Takemura, S., Kamiya, D., and Kamada, M. 2015,03 Clarification of basin characteristics of class a rivers based on stream classification map and relationships between river basin characteristics and distribution of genuine freshwater fishes of rivers flow into Seto inland sea, Chugoku District.. Journal of Japan Society of Civil Engineers, Ser. B1 (Hydraulic Engineering) 71(4) :I_1123-I_1128. (in Japanese) (reviewed).
- Akamatsu, Y., Kamitsuru, S., Takamura, Y., Kamiya, D., Seiki, T., Takemura, S., Inui, R. and Kamada, M. 2014,06 Study on stream classification map in river basins of chugoku district. Advances in River Engineering 20 :169-174. (in Japanese) (reviewed).

TANAKA, Ueru

Associate professor

Born in 1960.**[Higher Degrees]**

Dr.Agric(Kyoto Univeristy, 1997)

[Awards]

SSPN Young Scientist Award(2000)

ASABE Peper Award (2010, Cowin)

SSPN Award 2012 (2013, Cowin)

Japan Society for International Development, Best Poster Award (2013, Cowin)

Japan Society for International Development, Excellent Poster Award (2013, Cowin)

Japan Association for Arid Land Studies, Best Poster Award (2013, Cowin)

20th World Congress of Soil Science, Best Poster Award (2014, Cowin)

20th World Congress of Soil Science, Best Presentation Award (2014, Cowin)

EMASSA-2014 (Tamil Nadu, India), Best Poster Award (2014, Cowin)

Hitach Foundation, 41st Environment Award and Award by Minister of Environment (2014, Cowin)

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

- Ho Trung Thong, Nguyen Van Chao, Tanaka Ueru, Ho Le Quynh Chau 2014,04 Antibiotic resistance in Escherichia coli isolated from fecal samples in some provinces of Central Vietnam. Science and Technology Journal of Agriculture and Rural Development 4/2014 :129-136. (Other) (reviewed). (in Vietnamese with English summary).

[Review Articles]

- Ueru TANAKA, Kenta IKAZAKI, Hitoshi SHINJO, Satoshi TOBITA 2014,12 Practical technique for desertification control concurrently to reduce wind erosion and improve crop performance. Environmental Research Quarterly 176 :5-14. (in Japanese) ('Award of Minister of Environment' and 'Environmental Award, The Hitachi Environment Foundation').

[Research Presentations]*[Oral Presentation]*

- Ueru TANAKA A practical technique to control wind erosion and to improve crop performance - Possibility of technology transfer from Niger to Senegal -. ISM-RIHN Joint Seminar: Community development assistance based on local resources and social networks in the Sahel, 2015,02,04, ISM, Dakar (Senegal).
- Ueru TANAKA, Kenta IKAZAKI, Takao SHIMIZU, Yuko SASAKI, Hitoshi SHINJO, Satoshi TOBITA Designing of practical techniques for desertification control collaborating with local people in the Sahel, West Africa. 5th International Disaster and Risk Conference (IDRC) 2014, 2014,08,24-2014,08,28, Davos, Swiss.
- MUNIANDI JEGADEESAN, Hidetoshi Miyazaki and Ueru Tanaka Agrarian change and livelihood dynamics among small farmers in Tamil Nadu. International seminar organised by "Contemporary Indian Area Studies" , 2014,07,05, ASAFAS, Kyoto University, Kyoto.
- Ikazaki, K., Shinjo, H., Tanaka, U., Tobita, S., Funakawa, S., Kosaki, T. "Fallow Band System", a do-nothing practice for controlling desertification and improving crop production in the Sahel, West Africa. 20th World Congress of Soil Science, 2014,06,08-2014,06,13, Jeju, Korea. (Best Presentation Award).
- Shinjo, H., Ikazaki, K., Imanaka, S., Tanaka, U., Hayashi, K., Tobita, S. and Kosaki, T Sustainable and efficient land management practices in the Sahel. 20th World Congress of Soil Science, 2014,06,08-2014,06,13, Jeju Korea. (Best Poster Award).
- Muniandi Jegadeesan, Hidetoshi Miyazaki and Ueru Tanaka Agrarian change and livelihood dynamics of small scale farmer in South Tamil Nadu, India. Spring Meeting of the Japanese Association for Arid Land Studies, 2014,05,31-2014,06,01, Tokyo City University, Yokohama.
- Hidetoshi MIYAZAKI, KP Singh, H. ENDO and U. TANAKA Relationships between pastoral community and agriculturists in Rajasthan, India. IUAES, 2014,05,15-2014,05,18, Makuhari, Chiba.
- Ishimoto Yudai, Miyazaki Hidetoshi, Tanaka Ueru, Umetsu Chieko Social Capital and Small-Scale Farmers in Zambia: An Analysis of Mobile Phone Usage. Resilience 2014, 2014,05,04-2014,05,08, Montpellier, France.
- Miyazaki Hidetoshi, Ishimoto Yudai, Yamashita Megumi, Tanaka Ueru, Umetsu Chieko How small scale farmers cope with two different timings of heavy rainfall events in Southern Zambia. , 2014,05,04-2014,05,08, Montpellier, France.

[Poster Presentation]

- SASAKI, Yuko, TANAKA, Ueru, IKAZAKI, Kenta, SHINJO, Hitoshi, TOBITA, Satoshi Improved Extension Method of Practical Technique to Cope with Desertification in Niger, West Africa. 3rd. UNCCD Science Conferene, 2015,03,09-2015,03,12, Cancun, Mexico.
- MUNIANDI JEGADEESAN, Hidetoshi MIYAZAKI and Ueru TANAKA Agrarian Change and Livelihood Diversification in Tamil Nadu. A National Seminar on Extension Management Strategies for Sustainable Agriculture -Challenges and Opportunities (EMASSA-2014), 2014,12,12-2014,12,13, Home Science College and Research Institute Tamil Nadu Agricultural University, Madurai, India. (Best Poster Award).

TANIGUCHI, Makoto

Professor

Born in 1959.**[Academic Career]**

University of Tsukuba, Japan Ph.D. Hydrology (1987)
 University of Tsukuba, Japan M.S. Hydrology (1984)
 University of Tsukuba, Japan B.S. Geosciences (1982)

[Professional Career]

Research Institute for Humanity and Nature, Associate Professor (2003 - 2007)
 Department of Earth Sciences, Nara University of Education, Professor (2000 - 2003)
 Department of Earth Sciences, Nara University of Education, Associate Professor (1993 - 2000)
 Department of Earth Sciences, Nara University of Education, Research Associate (1988 - 1990)
 Division of Water Resources, CSIRO, Australia, Visiting Scientist (1987 - 1988)

[Higher Degrees]

D. Sc (The University of Tsukuba, 1987)
 M. Sc. (The University of Tsukuba, 1984)

[Fields of Specialization]

Environmental dynamic analysis
 Hydrology/Weather/Oceanic physics

[Academic Society Memberships]

American Geophysical Union
 International Association of Hydrological Sciences
 International Association of Hydrogeology
 Japanese Association of Groundwater Hydrology
 Japanese Association of Hydrological Science
 Japan Society of Engineering Geology
 The Japan Society of Hydrology and Water Resources
 The Association of Japanese Geographers
 The Japanese Society of Limnology

[Awards]

Award of 7th Japanese Association of Limnology (Yoshimura Prize, 2005)
 Research award from the Association of Japanese Geographers (1987)

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

- Taniguchi Makoto 2015,02 The basic act on the water cycle with groundwater. J. Groundwater Hydrol. 57(1) :83-90. (reviewed).

[Research Presentations]*[Invited Lecture / Honorary Lecture / Panelist]*

- Taniguchi M Synthesis of submarine groundwater discharge related date in Japan. International workshop on submarine groundwater discharge, 2015,03,17, Seoul National University, Seoul, Korea.

TAYASU, Ichiro

Professor

Born in 1969.**[Academic Career]**

Department of Zoology, Graduate School of Science, Kyoto University, Doctor Course(1997)

Department of Zoology, Graduate School of Science, Kyoto University, Master Course(1994)

Department of Zoology, Faculty of Science, Kyoto University(1992)

[Professional Career]

Professor, Research Institute for Humanity and Nature (2014)

Associate Professor, Center for Ecological Research, Kyoto University (2003)

Assistant Professor, Research Institute for Humanity and Nature (2002)

Postdoctoral Research Fellow (Research Abroad) of the Japan Society for the Promotion of Science;

Laboratoire d'Ecologie des Sols Tropicaux, Institut de Recherche pour le Developpement (2000)

Postdoctoral Research fellow (PD) of the Japan Society for the Promotion of Science; Laboratory of Forest Ecology, Graduate School of Agriculture, Kyoto University, Japan (1997)

[Higher Degrees]

Ph.D (Kyoto University, 1997)

M Sc. (Kyoto University, 1994)

[Fields of Specialization]

Isotope Ecology

Animal Ecology

Freshwater Ecology

Soil Ecology

Isotope Environmental Science

[Academic Society Memberships]

Ecological Society of Japan

The Japanese Society of Limnology

The Japanese Society of Soil Zoology

The International Union for the Study of Social Insects

Japan Geoscience Union

Advancing the Science of Limnology and Oceanography

[Awards]

16th Inoue Research Award for Young Scientists (1999)

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

- Shibata, J.-y, Karube, Z., Sakai, Y., Takeyama, T., Tayasu, I., Yachi, S., Nakano, S.-i. and Okuda, N. 2014, 04 Long-Term and Spatial Variation in the Diversity of Littoral Benthic Macroinvertebrate Fauna in Lake Biwa, Japan. Nakano, S.-i.; Yahara, T.; Nakashizuka, T. (ed.) Integrative Observations and Assessments.. Ecological Research Monographs / Asia-Pacific Biodiversity Observation Network. Springer, pp.151-166. DOI:DOI:10.1007/978-4-431-54783-9_8.

[Papers]*[Original Articles]*

- Matsubayashi, J., Morimoto, J.O., Tayasu, I., Mano, T., Nakajima, M., Takahashi, O., Kobayashi, K. and Nakamura, F. 2015,03 Major decline in marine and terrestrial animal consumption by brown bears (*Ursus arctos*). *Scientific Reports* 5 :9203. DOI:10.1038/srep09203. (reviewed).
- Ishikawa, N.F., Kato, Y., Togashi, H., Yoshimura, M., Yoshimizu, C., Okuda, N. and Tayasu, I. 2014,07 Stable nitrogen isotopic composition of amino acids reveals food web structure in stream ecosystems. *Oecologia* 175 :911-922. DOI:10.1007/s00442-014-2936-4. (reviewed).
- Ishikawa, N.F., Uchida, M., Shibata, Y. and Tayasu, I. 2014,05 Carbon storage reservoirs in watersheds support stream food webs via periphyton production. *Ecology* 95 :1264-1271. DOI: 10.1890/13-0976.1. (reviewed).

TERADA, Masahiro

Associate Professor

[Higher Degrees]

M.Lit(Osaka University,1998)

[Fields of Specialization]

History

Meta-history

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

- Masahiro Terada 2015,03 What You Are Waiting for on the Top of the Volcano, or towards a new "Scienza Nuova" of Humanity and Nature. Showado, Kyoto, 208pp. (in Japanese)

[Chapters/Sections]

- Masahiro Terada 2015,03 "Fabrication of an unknown victim: museum anthropological study on the dramatization in the memorial museum for the Great Hanshin-AWaji Earthquake(1995)". Noriko Kibe (ed.) *Saigai ni Manabu (Lesson from Natural Disasters): Preservation and Rehabilitation of Cultural Heritages*. Bensei Shuppan, Tokyo, pp.61-115. (in Japanese)

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—

[Research Presentations]

[Poster Presentation]

- Yasutomi, N. Effects of increase of observational data input on terrestrial climatological mean temperature over Asia. AOGS-AGU(WGPM) Joint Assembly 2014, 2014, 07, 28-2014, 08, 01, Sapporo, Hokkaido, Japan.
- N. Yasutomi, T. Sekino RIHN Archives - for transdisciplinary research on global environmental studies. Japan Geoscience Union Meeting, 2014, 04, 28-2014, 05, 02, Yokohama, Kanagawa, Japan.

Appendix 1 Number and Affiliation of Project Members

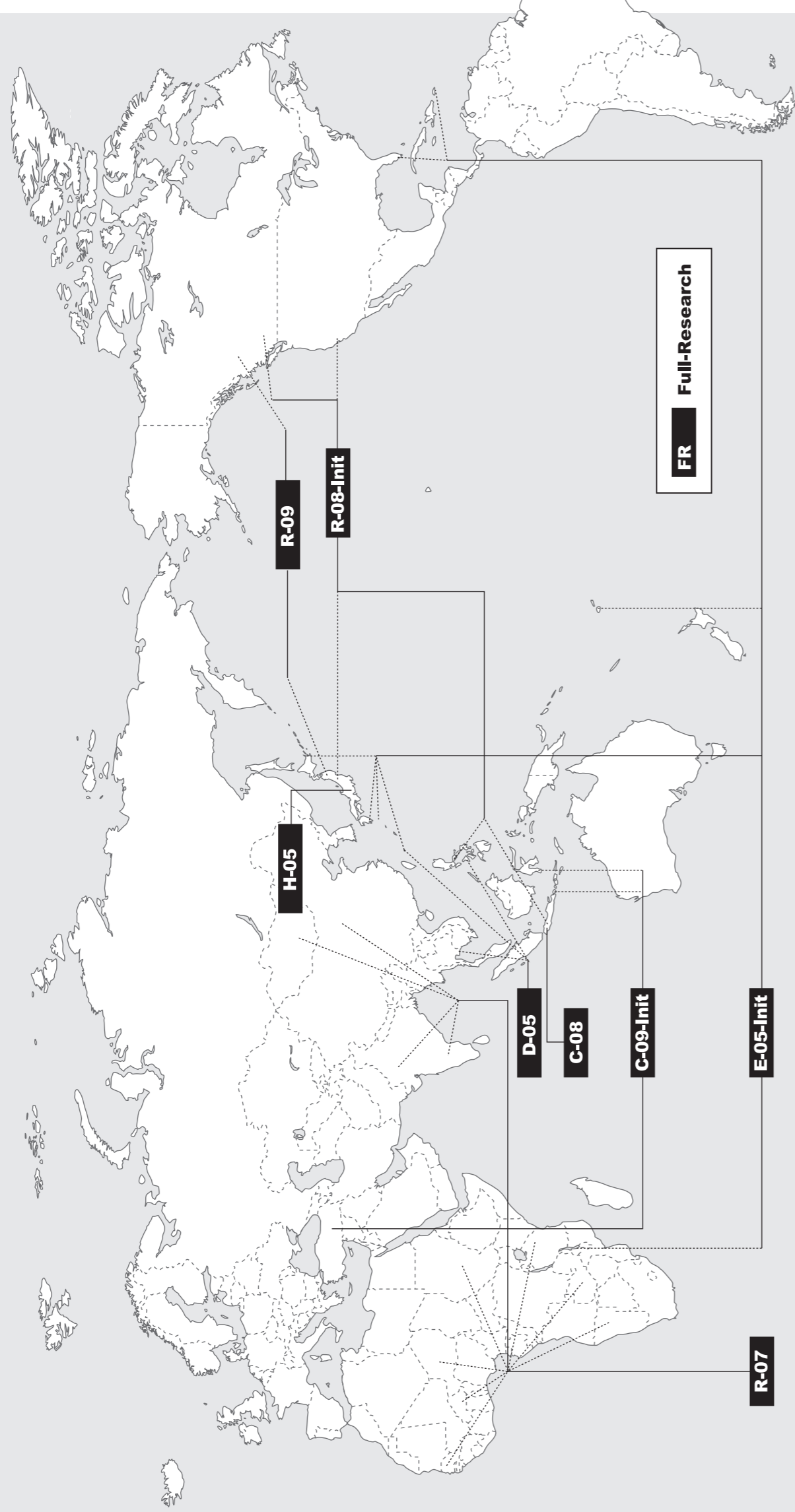
| Project Number | Title of the project | Total | RIHIN | University / College | | | Inter-University Research Institute | Public Institution | Private Institution | Others | Overseas Institution |
|--|---|-------|-------|----------------------|--------|---------|-------------------------------------|--------------------|---------------------|--------|----------------------|
| | | | | National | Public | Private | | | | | |
| C-08 (FR5) | Megacities and the Global Environment | 67 | 7 | 30 | 2 | 16 | 0 | 1 | 3 | 2 | 6 |
| C-09-Init (FR4) | Designing Local Frameworks for Integrated Water Resources Management | 89 | 7 | 18 | 5 | 5 | 0 | 4 | 2 | 0 | 48 |
| D-05 (FR3) | Coastal Area Capability Enhancement in Southeast Asia | 137 | 10 | 59 | 0 | 19 | 0 | 10 | 1 | 2 | 36 |
| R-07 (FR3) | Desertification and Livelihood in Semi-Arid Afro-Eurasia | 28 | 6 | 11 | 1 | 3 | 0 | 2 | 3 | 1 | 1 |
| E-05-Init (FR3) | Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge | 143 | 11 | 52 | 5 | 17 | 0 | 13 | 14 | 1 | 30 |
| R-08-Init (FR2) | Human-Environmental Security in Asia-Pacific Ring of Fire: Water-Energy-Food Nexus | 80 | 12 | 24 | 4 | 4 | 0 | 9 | 3 | 0 | 24 |
| R-09 (FR1) | Long-term Sustainability through Place-Based, Small-scale Economies: Approaches from Historical Ecology | 69 | 7 | 12 | 2 | 13 | 1 | 5 | 1 | 1 | 27 |
| H-05 (FR1) | Societal Adaptation to Climate Change: Integrating Palaeoclimatological Data with Historical and Archaeological Evidences | 72 | 7 | 32 | 3 | 14 | 4 | 7 | 2 | 1 | 2 |
| PR (OKUDA) | Biodiversity-driven Nutrient Cycling and Human Well-being in Social-ecological Systems | 80 | 4 | 26 | 7 | 14 | 0 | 16 | 4 | 1 | 8 |
| Individual Collaboration FS (UBUKATA) | Understanding "Securitization of Nature": History, Mechanism and Impact to Society and Nature | 5 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Individual Collaboration FS (OHNISHI) | Biocultural Diversity in the Asia-Pacific: Towards Dynamic Transmission of Traditional Ecological Knowledge | 46 | 2 | 10 | 2 | 4 | 2 | 3 | 0 | 2 | 21 |
| Individual Collaboration FS (KAJITANI) | Rebuilding Local Communities through the Creation of Local Standards and Reconstruction of the Theory of <i>Fudo</i> | 26 | 2 | 9 | 1 | 4 | 0 | 1 | 6 | 0 | 3 |
| Individual Collaboration FS (KANeko) | Designing Sustainable Agriculture and Forestry after Fukushima Accident | 13 | 0 | 10 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |

| | | | | | | | | | | | | |
|---|--|-----|----|-----|----|-----|---|----|----|----|----|-----|
| Individual Collaboration FS (TANAKA) | A Transdisciplinary Study of Military Environmental Problems | 16 | 1 | 5 | 2 | 5 | 1 | 0 | 0 | 1 | 1 | 1 |
| Individual Collaboration FS (FUNAKAWA) | Integrating Environmental Wisdom in Local Agriculture: Overcoming Environmental Degradation Associated with the Rapid Expansion of Global Agriculture | 13 | 2 | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| Institutional Collaboration FS (MIZUNO) | Toward the Regeneration of Tropical Peat Land Societies: Establishment of an International Research Network and Proposal of its Future | 23 | 3 | 12 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 5 |
| Initiative-based FS (HANDOH) | Co-development of Environmental Perception-Yielding Omniform Network towards Living with Chemical Imbalance Manifested as Environmental Risks in the Anthropocene in Peace | 32 | 1 | 15 | 2 | 3 | 0 | 2 | 2 | 1 | 1 | 6 |
| Initiative-based FS (MCGREEVY) | Lifeworlds of Sustainable Food Consumption: Agrifood Systems in Transition | 22 | 2 | 8 | 1 | 3 | 0 | 2 | 2 | 0 | 0 | 4 |
| | Total | 961 | 85 | 342 | 40 | 124 | 9 | 77 | 44 | 14 | 14 | 226 |

As of 31 March, 2015

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 | Social Sciences | Total | |
| C-08 (FR5) | Megacities and the Global Environment | 14 | 21 | 32 | 67 | (Natural Sciences) Infrastructure planning and management, Hydrology, Urban planning, City sustainability, Remote sensing, Landscape ecology, Irrigation and drainage, Water resource planning, Architectural environmental engineering, Environmental studies (Humanities) Japanese economic history, Anthropology, Economic history of Dutch East Indies, Religion, Urban study in South East Asia, Linguistic anthropology, Food culture, Asian economic history, Chinese history in the early modern ages, Chinese socio-economic history, Study of overseas Chinese, Indonesian modern history, Cultural science, History and culture, Oriental history, Urban history, Architectural history, Literacy education for urban environment, Geography of developing countries, (Social Sciences) Architectural history, Historical demography, Regional resources management, Geographic information system, Urban policy planning, Food engineering, Urban redevelopment, Chinese urban history, Western urban history, Urban history in southeast Asia, Environmental economics, Studies of colonial architecture, City planning and spatial information science, Urban history (Colonial city), Workplace design, Architectural design, Commercial science, Marketing and distribution, Islamic architecture, Soundscape, Modern architectural history, Architectonics, Architectural planning, Architect, Design, Studies of China-towns, Business administration, Axiology, Sociology, Agro informatics, Fisheries resource management, Consumer behavior, Commerce, Innovation research |
| C-09-Init (FR4) | Designing Local Frameworks for Integrated Water Resources Management | 62 | 10 | 17 | 89 | (Natural Sciences) Farming system research, Agriculture, Water resource engineering, Water environmental engineering, Irrigation and drainage, Soil science, Geology, Water quality engineering, Physical engineering, Medical science, Irrigation engineering, Regional informatics, Hydrology, Remote sensing, Agricultural engineering, Agricultural environmental engineering, Climatology, Ecology engineering, Environmental informatics, Hydrological modelling, Global hydrology, Regional environmental hydrology, Hydrospheric Atmospheric system, Agrometeorology, Theoretical ecology (Humanities) Archaeology, Cultural anthropology, Anthropology, Economic geography, Development anthropology, Geography, History of Islamic art and culture, Water resource management (Social Sciences) Environmental policy, Environmental sociology, Policy science, Management, Sociology, Agricultural engineering, Environmental science, Environmental planning, Social development study, Agricultural economics, Socioeconomics, Regional development planning |
| D-05 (FR3) | Coastal Area Capability Enhancement in Southeast Asia | 102 | 10 | 25 | 137 | (Natural Sciences) Tropical forest research, Fish ecology, Fish taxonomy, Population genetics, Genetics, Fisheries science, Ichthyology, Coastal ecology, Molecular ecology, Planktology, Robotics, Resource geology, Fishing gear, Water quality analysis, Seedling production, Genetic analysis, Marine engineering, Telemetry, Sandy beach ecosystem, Aquaculture, Ecology, Fish behavior, Marine ecology, Fisheries research, Biology, Environmental studies, Water environment studies, Environmental science, Molecular phylogenetics, Coastal environmental research, Aquatic ecology, Conservation ecology, Software engineering, Coral reef ecology, Fishery research, (Humanities) Cultural anthropology, International fisheries development studies, Area studies, SATOUMI SATOYAMA, Area development studies, Ecological anthropology, Village development, Sociology of fishing communities, Regional development studies, Underwater archaeology, Archaeology, Sociology, Cultural anthropology, Anthropology, Social anthropology, (Social Sciences) Economics, Regional development, Fisheries economics, Regional economics, Resource management, Traditional technique, Tourism study, Area studies, Village development, Fish catching and environmental linkage |
| R-07 (FR3) | Desertification and Livelihood in Semi-Arid Afro-Eurasia | 14 | 6 | 8 | 28 | (Natural Sciences) Agronomy, Boundary agriculture, Remote sensing, Soil ecology, Soil science, Weed science, Meteorology, Natural geography, Regional architecture, Environmental soil science (Humanities) Ethnoarchaeology, Cultural anthropology, Ethnic geography, African area studies (Social Sciences) Rural development studies, Social development studies, Rural economics, Area studies (Africa, South Asia), Social anthropology, Agricultural culture |
| E-05-Init (FR3) | Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge | 54 | 18 | 71 | 143 | (Natural Sciences) Local environmental science, Landscape ecology, Statistical physics, Governance theory, Science and technology studies, Fishery resource management, Theoretical biology, Game theory, Satoyama management, Complex systems theory, Wildlife management, Resource management, Sanctuary management, Ecology, Mathematical biology, Soil hydrology, Satoumi governance, Coastal management, Residential research, Satoyama restoration, Renewable energy, Nature restoration, Ecosystem management, Agroecosystem, Knowledge theory, Watershed management, Fisheries management (Humanities) Science ethics, Folklore, Governance theory, Ecological anthropology, Social anthropology, History, Japanese history (modan), Knowledge studies, Sanctuary management, Anthropology, Geography (Social Sciences) Governance theory, Resource management, Environmental ethics, International Law, Environmental economics, Fishery resource management, Environmental sociology, Residential research, Conservation theory, Agroecosystem, Network theory, Biodiversity policy, Political science, Social psychology, Environmental governance, Ocean policy, Environmental NGO theory, Coastal management |
| R-08-Init (FR2) | Human-Environmental Security in Asia-Pacific Ring of Fire: Water-Energy-Food Nexus | 49 | 5 | 26 | 80 | (Natural Sciences) Hydrology, Underground heat, Hot spring science, Energy science, Thermal energy, Agricultural water utilization, Bioresource ecology, Model of connectivity of hills, humans and oceans, Geothermal science, Estuary ecology, Fisheries and environmental oceanography, Coastal fisheries ecology, Geothermal energy, Coastal fisheries, Bioresource science, Marine / coastal geology, Geology, Water - energy nexus, Coastal oceanography (Humanities) History, Linguistic (Social Sciences) Environment and development, Conservation ecology, Environmental planning, Global environmental policy, Fishery resource, Coastal sociology, Public policy, Regional studies, Environmental policy, Policy process, International relations, Fishery economics, Environmental economics, Sociology, Energy policy, Economics, Environmental governance, Behavioral social science, Integrated water resources management, Cultural anthropology |
| R-09 (FR1) | Long-term Sustainability through Place-Based, Small-scale Economies: Approaches from Historical Ecology | 17 | 12 | 40 | 69 | (Natural Sciences) Oceanography, Aquatic marine environmental education research, Global environmental oceanography, Palaeoenvironment, Stable isotope ecology, Botanical archaeology, Anthropology, Agroecology, Physical anthropology, Environmental archaeology (Social Sciences) Environmental anthropology, Historical ecology, Human environmental geography, Silviculture, Political ecology, Archaeobotany, Zooarchaeology, Anthropology, Ethnology, Hunter-gatherers studies, Political economy, Sociology, Cultural anthropology, Urban ethnography, Integrated policy science, Paleocology, East Asian archaeology, Bioarchaeology, Archaeology, Cultural ecology, Evolutionary ecology, Dissemination and enlightenment of environmental issues, Area studies, Lifelong learning |
| H-05 (FR1) | Societal Adaptation to Climate Change: Integrating Palaeoclimatological Data with Historical and Archaeological Evidences | 35 | 34 | 3 | 72 | (Natural Sciences) Palaeoclimatology, Dendrochronology, Historical Climatology, Wood Anatomy, Palaeoceanography, Dating Method, Plant Ecology, Isotopic Meteorology and Climatology, Climate Dynamics, Climate Modeling, Earth System Dynamics, Wood Science, Isotope Geochemistry, Glaciology, Hydrology, Geochronology, Earth Dynamics, Geochemistry, Forestry (Humanities) Japanese Early Modern Age History, Archaeology, Japanese Early Modern Age Urban History, Comparative Studies of Historical Documents, Prehistorical Archaeology, Conservation of Historical Materials, Japanese Middle Age History, Japanese Archaeology, Theoretical Archaeology, Japanese History, Vegetational History, Disaster Archaeology, Historical Geography (Social Sciences) Japanese Economic History, Historical Demography |
| PR (OKUDA) | Biodiversity-driven Nutrient Cycling and Human Well-being in Social-ecological Systems | 65 | 1 | 14 | 80 | (Natural Sciences) Ecological science, Plant ecology, Satellite ecology, Stable isotope ecology, Community ecology, Water weed resource circulation, Fish genetics and breeding science, Freshwater biology, Environmental engineering, Freshwater ecology, Fish ecology, Phycology, Ecological stoichiometry, Marine ecosystem engineering, Ecosystem ecology, Aquatic biology, Fisheries biology, Hydrosphere ecology, Plant physiological ecology, Ecology, Mathematical biology, Evolutionary biology, Microbial ecology, Fungal diversity, Biogeochemistry, Chemical oceanography, Applied ecology, Molecular ecology, Forest ecology, Hydrology, Ecological genetics, Aquatic ecology, Forest hydrology, Conservation ecology, Fungology, Geophysics, Lake synthetic science, Integrated lake basin management, Plankton ecology, Analytical chemistry (Humanities) Historical geography (Social Sciences) Environmental policy, Sewage line governance, Rural sociology, Environmental sociology, Industrial ecology, Ecological economics, Applied economics, Quantitative sociology, Social psychology |
| Individual Collaboration FS (UBUKATA) | Understanding “Securitization of Nature”: History, Mechanism and Impact to Society and Nature | 1 | 0 | 4 | 5 | (Natural Sciences) Forest ecology (Social Sciences) Natural resource economics, Political ecology, Development economics, Forest policy |
| Individual Collaboration FS (OHNISHI) | Biocultural Diversity in the Asia-Pacific: Towards Dynamic Transmission of Traditional Ecological Knowledge | 18 | 20 | 8 | 46 | (Natural Sciences) Agricultural chemistry, Plant genome analysis, Agriculture, Plant breeding, Ecology, Forestry, Climatology, Wood anatomy, Botany, Biology, Pharmacy, Human ecology (Humanities) Linguistics, Culture and information science, Sociolinguistics, Geography, Human geography, Spatiotemporal Informatics, Anthropology, Archaeology, Education, Mathematical anthropology, Developmental anthropology (Social Sciences) Forestry, Environmental governance, Environmental economics, Economics, Peace studies, International development |
| Individual Collaboration FS (KAJITANI) | Rebuilding Local Communities through the Creation of Local Standards and Reconstruction of the Theory of <i>Fudo</i> | 2 | 10 | 14 | 26 | (Natural Sciences) Landscape planning, Regional Development (Humanities) Philosophy, Comparative culture, Architectural history, Religious history, Human geography, Artanthropology, Climatology, Semiotics, Communication, Environmental history, Disaster history (Social Sciences) Environmental planning, Regional economy, Regional society, Medical sociology, Bereavement, Community construction, Quantitative research, Popular culture, Business administration, Self-sustenance and circulation of natural resources, Local community, Life condition of disadvantaged area, Management of agriculture and forestry area, Depopulation, Population aging, Settlement, Law, International law, Political science, Safety science, Design foundation, Information design, Financial system, Urban regeneration, Regional vitalization, Regional development, Life and design, Urban policy |
| Individual Collaboration FS (KANEKO) | Designing Sustainable Agriculture and Forestry after Fukushima Accident | 9 | 1 | 3 | 13 | (Natural Sciences) Soil ecology, Crop science, Weed science, Environmental chemodynamics research, Geoponics, Plant nutrition, Forest environmental information, Biomass energy, Agricultural economics (Humanities) Landscape architecture, Regional economics (Social Sciences) Food economics, Agricultural policy, Agriculture management, Regional vitalization |
| Individual Collaboration FS (TANAKA) | A Transdisciplinary Study of Military Environmental Problems | 3 | 3 | 10 | 16 | (Natural Sciences) Earth and environmental studies, Environmental engineering (Humanities) Humanities (Social Sciences) Cultural anthropology, Social anthropology, Ryukyuan and Okinawan studies, Medical anthropology, Environmental economics |
| Individual Collaboration FS (FUNAKAWA) | Integrating Environmental Wisdom in Local Agriculture: Overcoming Environmental Degradation Associated with the Rapid Expansion of Global Agriculture | 10 | 2 | 1 | 13 | (Natural Sciences) Environmental Agriculture, Community development, Ecology, Agricultural ecology, Mineralogy, Botany, Agriculture (Humanities) Ecological anthropology, Anthropology (Social Sciences) Environmental economics |
| Institutional Collaboration FS (MIZUNO) | Toward the Regeneration of Tropical Peat Land Societies: Establishment of an International Research Network and Proposal of its Future | 17 | 1 | 5 | 23 | (Natural Sciences) Environmental anthropology, Environmental resource geology, Political ecology, Atmospheric chemistry, Agrometeorology, Land use and land resources management, Hydrology, Biogeochemistry, Plant ecology, Forest ecology, Geographical information science, Soil science, Physical geography (Humanities) Social anthropology (Social Sciences) Area studies(Indonesia), Economic history, Political science, Local wood use |
| Initiative-based FS (HANDOH) | Co-development of Environmental Perception-Yielding Omniform Network towards Living with Chemical Imbalance Manifested as Environmental Risks in the Anthropocene in Peace | 20 | 4 | 8 | 32 | (Natural Sciences) Earth systems science, Environmental science, Environmental impact assessment, Civil environmental system, Organic geochemistry, Water conservation, Behavioral ecology, International agricultural and environmental science, Ecological hydrology, Energy science, Biological response to environmental stresses, Fish infectious diseases, Atmospheric science, Material-cycle science, Visualization, Microbial ecology, Analytical chemistry, Embryo culture, Biogeochemistry, Physical oceanography (Humanities) Religion, Economics, Philosophy, Environmental thought, Environmental ethics (Social Sciences) Pollution History, Regional development, International law, Environmental law, Environmental economics, Education of the handicapped, Bitcoin, Economics, Human rights law |
| Initiative-based FS (MCGREEVY) | Lifeworlds of Sustainable Food Consumption: Agrifood Systems in Transition | 9 | 3 | 10 | 22 | (Natural Sciences) Soil Science, Agrifood Social Science, Agricultural Economics, Rural Sociology, Food System Science, Farm Management, Regional Studies, Renewable Energy Sciences, Water Quality, Resource Cycling, Weed Management Science (Humanities) Environmental Sociology, Social Statistics, Regional Policy and Planning (Social Sciences) Environmental Sociology, Environmental Planning, Food Policy, Rural Planning, Innovation Studies, Management Theory, Global Agricultural Economics, Agrifood Social Science, Economic Sociology |
| | Total | 501 | 161 | 299 | 961 | |



Full-Research

- C-08** **Megacities and the Global Environment**
oJakarta Mega-Urban Region
- C-09-Init** **Designing Local Frameworks for Integrated Water Resources Management**
oTurkey, Indonesia
- D-05** **Coastal Area Capability Enhancement in Southeast Asia**
oCoastal states of Southeast Asia; Ishigakijima, Japan
- R-07** **Desertification and Livelihood in Semi-Arid Afro-Eurasia**
oSenegal, Niger, Burkina Faso, Namibia, Zambia, Sudan, Tanzania, India, Mongolia, China
- R-08-Init** **Human-Environmental Security in Asia-Pacific Ring of Fire: Water-Energy-Food Nexus**
oJapan, Indonesia, Philippines, Canada, USA
- R-09** **Long-term Sustainability through Place-Based, Small-scale Economies: Approaches from Historical Ecology**
oJapan, USA
- H-05** **Societal Adaptation to Climate Change: Integrating Palaeoclimatological Data with Historical and Archaeological Evidences**
oJapan
- E-05-Init** **Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge (ILEK project)**
oYakushima, Shiretoko, Shiraho, Ishigaki-city, Ayacho, Miyazaki, Japan; Fiji; Virgin Islands of the United States; Sarasota Bay, Florida; Lake Malawi, Malawi