

Organization and Activities of the Doctoral Program in Geoenvironmental Sciences for the Academic Year 2021

Organization

During the year from April, 2021 to March, 2022, several promotions and appointments were made so that our research and teaching activities covering geoenvironmental sciences were enforced. Following is the list of all faculty and administrative staffs with specialties:

Professors:

Asanuma, Jun, Ph.D., surface hydrology, hydrometeorology, flood risk management
Kureha, Masaaki, Ph.D., regional geography, geography of tourism, rural geography
Kusaka, Hiroyuki, D.Sc., urban climatology, mountain meteorology, applied meteorology
Matsui, Keisuke, D.Sc., cultural geography, geography of religion and tourism
Onda, Yuichi, D.Sc., environmental dynamics, hydrology, geomorphology, environmental radioactivity
Sugita, Michiaki, D.Sc., hydrologic sciences, surface hydrology, boundary layer meteorology
Tanaka, Hiroshi, Ph.D., atmospheric science, general circulation
Tsuji-mura, Maki, D.Sc., hydrologic sciences, ground-water hydrology, isotope hydrology
Tsutsumi, Jun, D.Sc., urban geography, regional geography of Australia, GIS
Ueda, Hiroaki, D.Sc., atmospheric science, climate dynamics
Yamanaka, Tsutomu, D.Sc., hydrologic sciences, isotope tracers, ecohydrology

Associate Professors:

Hattanji, Tsuyoshi, D.Sc., hydrogeomorphology, slope processes
Ikeda, Atsushi, D.Sc., geomorphology, geocryology
Kato, Hiroaki, D.Sc., forest hydrology, environmental radioactivity
Matsushita, Bunkei, D. Env., remote sensing, spatial information science, global environment
Ueno, Kenichi, D.Sc., atmospheric science, precipitation system, regional climatology

Assistant Professors:

Harada, Mariko, Ph.D., earth and planetary system science, paleoclimatology, paleoenvironment

Karaki, Tatsu-ro, Ph.D., physical oceanography, environmental science
Kubo, Tomoko, D.Sc., urban geography, geography of housing, geography of North America
Matsueda, Mio, D.Sc., atmospheric science, predictability of weather and climate
Morimoto, Takehiro, D.Sc., agricultural and rural geography, GIS and spatial information science
Ogura, Takuro, D.Env., geomorphology, GIS analysis, geoscience education
Parkner, Thomas, Ph.D., geomorphology, gully erosion, soil erosion, mass movements
Sekiguchi, Tomohiro, Ph.D., geomorphology, sedimentology
Takahashi, Junko, Ph.D., pedology, environmental radioactivity
Yamashita, Akio, D.Sc., regional geography, geography of urban environmental issues

Technical Staff:

Ozaki, Shiro

Administrative Staff:

Sekine, Takako

Doctor and Master's Theses

[Abbreviations]

D.Sc. Doctor of Philosophy (Science or Geoscience)
D.Env. Doctor of Philosophy (Environmental Studies)
M.Sc. Master of Science
M.Sc. (M) Master of Science in Mountain Studies
M.Eng. Master of Engineering
M.Env. Master of Environmental Science
M.A. (E) Master of Arts in Education
M.A. (A) Master of Arts in Area Studies
M.S.E.Sc. Master of Sustainable Environmental Sciences

[a] Human Geography

D.Sc. Kawazoe, Wataru (2022): Geographical Study of Religious Activities and their Roles in the International Migration Processes: A Case Study of Christian Church in Japan and the Republic of Korea.
M.Sc. Fu, Kailin (2022): A Study on the Growth of Island Tourism and Its Transformation into

- Tourism Resources -Taking the Experiential Tourism in Changdao, China as an Example-.
- M.Sc. Hong, Jun (2022): The Role of Users in the Existence of the Katsuura Morning Market in Chiba Prefecture.
- M.Sc. Hu Sihang (2022): A Study on the Authenticity of Translocal Food Culture: A Case Study of Jinhua Japanese Food and Beverage Cultural.
- M.Sc. (M) Lu, Zichang (2022): A Study on Sustainable Livelihoods of Residents in Nature Reserves -A Case Study of Maolan Nature Reserve, Guizhou Prvince, China.
- M.Sc. Tian, Hongjia (2022): The Utilization and Development of Industrial Heritage in Hongmei Cultural and Creative Park, Tiexi District, Shenyang.
- M.Sc. Wakamatsu, Hana (2022): The value of Japanese confectionery in Kanazawa City, Ishikawa Prefecture -By focusing on management behavior of Japanese confectionery shops-.
- M.Sc. Wakaume, Shogo (2022): Formation Process of Regional Tourism Area in Cycle Tourism.
- M.Sc. Wan, Yizhu (2022): The Ritual Inheritance along with the Development of Tourism in China's Meizhou Island -Focusing on the Reaction of the Bearers of Mazu Birthday Festival-.
- M.Sc. Zhang, Qingyun (2022): A Study on the Preservation of Place Name Culture in the Context of Urbanization -A Case Study of Suzhou City, China-.
- [b] Regional Geography**
- M.Sc. Ishii, Kumiko (2022): The Role of Technical Colleges in the Local Labor Market: A Case Study of Ibaraki Kosen.
- M.Sc. (M) Kurosawa, Shumpei (2022): Social and Economical Sustainability of Local Ski Fields in Hokkaido.
- M.Sc. Uno, Hiroki (2022): Location Characteristics of Hotels in Bangkok Metropolitan Area.
- M.Sc. Wang, Huiyi (2022): The Connection between Nature-Oriented Tourism Behaviors and Migration of Chinese Tourists in Japan - A Case Study of Tourists and Migrants to Nagano Prefecture.
- [c] Spatial Information Science**
- D.Sc. Athukorala, Arachchige Sumudu Darshana (2022): Spatial Analysis of Urban Wetland Ecosystem Service Value Changes in Mu-
- thurajawela Marsh and Negombo Lagoon, Sri Lanka.
- D.Sc. Sano, Hiroaki (2021): Examination of Issues in Tsunami Evacuation Based on Derivation of Evacuation Zones on Different Spatial Scales: A Case Study of the Coastal Area of Hamamatsu City, Japan.
- D.Sc. Zheng, Zilai (2021): Location Analysis of Parcel-Pickup Points in the Guangzhou Metropolitan Area, China.
- D.Sc. Iwai, Yuki (2022): Analysis of Tsunami Evacuation Process from Combined Effects of Spatiotemporal and Personal/ Social Characteristics.
- M.Sc. Ai, Li (2022): Residential Area Structure of Single Households by Age in Regional Central City: A Case Study of Fukuoka City.
- M.Sc. Kamata, Aoi (2022): Analysis of heat factors by building type at micro scale using urban district weather model.
- M.Sc. Kobayashi, Shun (2022): Impact of urbanization on extreme precipitation in Lagos, Nigeria.
- M.Sc. Li, Xin (2022): Quantitative Analysis of the Characteristics of the Area around Each Station along the Tsukuba Express.
- M.Sc. Nishiba, Satoshi (2022): Effect of upwind atmospheric stability on Toyama foehn.
- M.Sc. Onodera, Taira (2022): The formation mechanism of "Kiyokawa-dashi" wind, with a focus on the blowing range.
- M.Sc. Pan, Xingtong (2022): Introduction and Demand Simulation of Sharing Taxis to Secure Regional Public Transportation: A Case Study of *Tsukutaku* in Tsukuba City, Japan.
- M.Sc. Pan, Yan (2022): Evaluation of Urban Green Space based on Spatio-temporal Analysis and Landscape Pattern Analysis: A Case Study of Shanghai, China.
- M.Sc. Pan, Yi (2022): A Study on Urban Development Mode in Jiangxi Province, China: By Gravity Model and Network Analysis.
- M.Sc. Sugitani, Hiroki (2022): Spatial pattern of high temperature events in the Kyushu region.
- M.Sc. Wei, Guangsen (2022): A Study on Accessibility for the Elderly Using Public Transportation in the Suburbs of a Local City: A Case Study of the Shinoi Area, Utsunomiya City.
- M.Sc. Wu, Dong (2022): Remote Sensing Reflectance Measurement of Lake Water by the Above Water Approach.

- M.Sc. Yang, Meng (2022): Simulation of the Impact of PM_{2.5} on Residents in the Surrounding Area: A Case Study of Binhai New Area, Tianjin.
- M.Sc. Ye, Jiahuan (2022): The Location Characteristics Analysis on Public Electric Vehicles Charging Stations: A Case Study of EVCSs in Tokyo Metropolitan Area.
- M.Sc. Zhang, Haoran (2022): Long-term Change Analysis of Impervious Surface Area and Watershed Function in Japan Based on a Global Artificial Impervious Area Map.
- M.Env. Vu, Thuy Thi Phuong (2021): Mapping the Mangrove Dynamics in Three Provinces, Vietnam Using Landsat Time-series between 1990-2020.

[d] Hydrologic Sciences

- M. Env. Yi, Junchen (2022): Influence of Human Activities and Climate Change on River Runoff in the Onogawa Basin, Ibaraki Prefecture, Japan.
- M. Env. Suzuki, Asami (2022): Temporal Change of Residence Time of Spring Water in a Headwater Basin Underlain by Sedimentary Rock.
- M. Env. Kikuchi, Keita (2022): Hydrological Characteristics and Microbe Dynamics of Spring Water in a Headwater Basin.
- M. Sc. Kawade, Marina (2021): Lake currents and heat distribution in Nishiura, Lake Kasumigaura.

[e] Atmospheric Science

- M. Sc. Kuramochi, Masaya (2022): Geographical characteristics associated with year-to-year variability of the mass-weighted isentropic zonal mean meridional circulation.
- M. Sc. Yokoi, Mikihiro (2022): Ocean heat transport caused by anomalous atmospheric circulation associated with preceding El Niño modoki.
- M. Sc. Matsumoto, Ayari (2022): Projected future changes of East Asian winter monsoon.
- M. Sc. Mori, Akira (2022): The Classification and Predictability of Heat waves in Australia.
- M. Sc. Onuki, Kotaro (2022): Application of Weather Forecast Data to Wildfire Prediction in Australia.
- M. Sc. Tsuchiya, Tomonori (2022): Verification of the heavy snowfall mechanism in the Kanto region using Kunai observation data.

[f] Geomorphology

- M. Sc. Maniwa, Shiho (2022): Topographic conditions constraining the distribution of subalpine coniferous forests on the snowy mountains in the eastern Japan.

[g] Environmental Dynamics

- M. Sc. Iida, Hikaru (2021): Elucidation of influence of stemflow on infiltration of rain water and dissolved ¹³⁷Cs to forest soils.
- M. Sc. Omomo, Saki (2021): Changes in groundwater recharge mechanism and recharge rate by thinning of Japanese cedar and cypress plantations.
- M. Sc. Kinoshita, Motosuke (2021): Estimation of fine-grained sediment migration process by thinning from slope scale to basin scale using Pb-210ex, Cs-137, Cs-134.
- M. Sc. Shibuya, Kai (2021): Distribution of Peat Wetlands and Dynamics of Cs-137 and Sr-90 in the Sakhan Catchment, Chernobyl Region, Ukraine.
- M. Sc. Pham Thuy Linh (2021): Short-term and Long-term Effects of Thinning on Canopy Interception of Japanese Plantation Forest.
- M. Sc. Fujiwara, Seigo (2021): Changes in Sediment and Cesium Transport Processes at the Slope Scale due to Decontamination Activities in Fukushima.
- M. Sc. Makino, Fumiaki (2021): Effect of Large-scale Agricultural Land Decontamination on ¹³⁷Cs Migration Based on Long-term Observations of Slopes, Mountain Streams, and Rivers in the Kuchibuto River Basin.

Research Activities

Each research group had the following research activities during the academic year 2021.

[a] Human Geography

Research grants

Matsui, K. (PI: Matsui, K.) (2019-2022): Geographical study on the creation of local communities in remote islands. Grant-in Aid for Scientific Research (B), JSPS, JPY 17,290,000.

_____ (PI: Matsui, K.) (2018-): Geographical study on utilization of places and sustainable development. Donation for Scientific Research, Research and Consulting Regional Science Co. Ltd, JPY

1,000,000.

_____ (PI: Kubo, T.) (2020-2021): International Cooperative Research for the Establishment of the Sustainable Urban Developmental Model: To Manage both Competitiveness and Residents' Quality of Life in Japanese Cities. The Toyota Foundation Research Grant Program, JPY 6,600,000.

Kubo, T. (PI: Kubo, T.) (2018-2021): International comparative study on expansion of empty space in urban areas and the gap in residential environment. Grant-in-Aid for Early-Career Scientists, JSPS, JPY 4,160,000.

_____ (PI: Kubo, T.) (2020-2021): International Cooperative Research for the Establishment of the Sustainable Urban Developmental Model: To Manage both Competitiveness and Residents' Quality of Life in Japanese Cities. The Toyota Foundation Research Grant Program, JPY 6,600,000.

Attendance at international meetings

Kubo, T. (2022, Feb.): Protecting, Revitalizing, and Reusing: Vacant Houses, Kominka, and Traditional Japanese Building Methods. Japan Kominka Association US Office (online).

_____ (2022, Feb): AAG Annual Meeting 2022 (online).

[b] Regional Geography

Research projects

Kureha, M., Tsutsumi, J. and Yamashita, A. (2021-2023): Geographical studies on regional ecology in Matsumoto City and the surrounding region.

Yamashita, A. (2018-): Causes and future prediction of heat island phenomena of rapidly growing cities in developing countries, project with Murayama, Y. (Univ. of Tsukuba).

Research grants

Kureha, M. (2021-2025): Geographical study on the system for sustainable tourism in Japan. Grant-in Aid for Scientific Research (B), JSPS, JPY 17,290,000.

Tsutsumi, J. (2019-2022): Industrial diversification in contemporary Australia in terms of the emerging Asia link. Grant-in Aid for Scientific Research (B), JSPS, JPY 15,210,000.

Yamashita, A. (2021-2022): Research on governance for sustainable use and maintenance of agricultural canals in urbanized areas. Kurita Water and Environment Foundation, JPY 650,000.

Others

Kureha, M. (2021): Special lecture on socioeconomic geography in Hosei Univ.

_____ (2021): Special lecture on geography of tourism in Rikkyo Univ.

Tsutsumi, J. (2021): Lecture on national land development in Takasaki City Univ. of Economics.

_____ (2021): Methodology of Fieldwork in Takasaki City Univ. of Economics.

_____ (2021): Lecture on Disaster Management in Takasaki City Univ. of Economics.

_____ (2021): Lecture on Regional Geography in Takasaki City Univ. of Economics.

_____ (2021): Lecture on Geography in Gunma Univ.

_____ (2021): Lecture on Regional Policy in Nihon Univ.

_____ (2021): Special Lecture on Human Geography in Nihon Univ.

_____ (2021): Area studies 5 in Rikkyo Univ.

[c] Spatial Information Science

Research projects

Kusaka, H. (2019-2021): Environmental Restoration and Conservation Agency (ERCA), Environment Research and Technology Development Fund of the Environmental Restoration and Conservation Agency of Japan. (Collaborated with Prof. M. Inatsu)

_____ (2021-2023): JSPS KAKENHI, Improvement of the urban district LES model and its application.

_____ (2019-2022): JSPS KAKENHI, Elucidation of the synergistic effects of meteorological changes and environmental pollution through water quality by developing an integrated particle model, (collaborated with Chief researcher M. Kazino)

_____ (2019-2022): JSPS KAKENHI, Evaluation of Impacts of Agricultural Land Dynamics on the Regional Thermal Environment Using a Regional Meteorological Model, (collaborated with A. Maruyama)

Matsushita, B. (2011-): Monitoring water environment change and analyzing its driving factors in inland waters by remote sensing technique, project with Research Center for Limnology, LIPI, Indonesia.

_____ (2012-): Impervious surface area as an indicator for evaluating drainage basins, project with Prof. Jin Chen (Beijing Normal University, China).

_____ (2014-): Remote estimation of chlorophyll-a concentration in inland waters using a hybrid algorithm, project with Dr. Gongliang Yu (Key Laboratory of Algal Biology, Institute of Hydrobiology, Chinese Academy of Sciences, China).

_____ (2017-): Remote estimation of phytoplankton primary production in various waters by integrating a semi-analytical model with a machine learning algorithm, project with Dr. Wei Yang (Center for Environmental Remote Sensing, Chiba University).

_____ (2020-): Seamless retrievals of water quality parameters from Sentinel-2 (MSI) and Sentinel-3 (OLCI) in inland and coastal waters by a machine-learning approach, project with Dr. Nima Phalevan (NASA Goddard Space Center).

_____ (2021-): Semi-analytically retrieving inherent optical properties for inland and coastal waters from remote sensing reflectance, project with Dr. Dalin Jiang (University of Stirling, UK).

_____ (2021-): A digital sustainability solution for allowing ports to meet their business and strategic objectives (Ports 4.0), project with Fregata Space, Spain.

_____ (2021-2023): Using a new deep learning approach to properly segment multiscale geographic objects, project with Dr. Jian Yang (University of Toronto, Canada).

Morimoto, T. (2021): New entrants and Branding Strategy in a Production Region of Processed Sweet Potato Products.

_____ (2021): Scenario Simulation Considering SDGs for Urban Volume in the Tokyo Metropolitan Area, a project under JSPS.

_____ (2021): Causes and future prediction of heat island phenomena of rapidly growing cities in developing countries, a project under JSPS.

Research grants

Kusaka, H. (2019-2021): Environment Research and Technology Development Fund of the Environmental Restoration and Conservation Agency of Japan. Environmental Restoration and Conservation Agency, ERCA, JPY 10,000,000 (2021)

_____ (2019-2022): Elucidation of the synergistic effects of meteorological changes and environmental pollution through water quality by developing an integrated particle model, JSPS KAKENHI, JPY 750,000 (2021)

_____ (2019-2022): Evaluation of Impacts of Agricultural Land Dynamics on the Regional Thermal Environment Using a Regional Meteorological Model, JSPS KAKENHI, JPY 800,000 (2021)

_____ (2021-2023): Improvement of the urban district LES model and its application, JSPS KAKENHI, JPY 500,000 (2021)

_____ (2017-2021): Joint Research on Application

of Data Assimilation Technology in the Field of Meteorology to Numerical Simulation Technology in the Field of Architecture. Takenaka Corporation, JPY 660,000 (2021)

_____ (2021): Development and Promotion of Climate Change Adaptation Policy Decision-Making Tools in the Eastern Mekong Three Countries in FY2021. Pacific Consultants Co., Ltd. JPY 846,154 (2021)

Matsushita, B. (PI: Matsushita, B.) (2017-2021): Estimating global primary production of lakes using a new remote sensing method. Grant-in Aid for Scientific Research (B), JSPS, JPY 17,550,000.

_____ (PI: Fukushima, T.) (2017-2021): Study on shoaling of hypolimnetic oxygen-deficient water in tropical meromictic lakes. Grant-in Aid for Scientific Research (B), JSPS, JPY 1,625,000.

Morimoto, T. (2018-2021): Causes and Future Prediction of Heat Island Phenomena of Rapidly Growing Cities in Developing Countries. Grant-in-Aid for Scientific Research B, JSPS, JPY 350,000. (Representative: Murayama, Y.).

_____ (2021-2022): Scenario Simulation Considering SDGs for Urban Volume in the Tokyo Metropolitan Area. Grant-in-Aid for Scientific Research for JSPS Research Fellows (International Research Fellow), JSPS, JPY 1,200,000 (2021).

Visited researchers

Dr. Wang Ruci as a JSPS International Postdoctoral Fellow for Research in Japan. Apr. 2020 - Mar. 2022 (Host researcher: Morimoto, T.).

Dr. Yang Jian as a JSPS International Postdoctoral Fellow for Research in Japan from University of Toronto, Canada. Dec. 2021 - Nov. 2023 (Host researcher: Matsushita, B.).

Others

Matsushita, B. (2018-): Associate Editor of ISPRS Journal of Photogrammetry & Remote Sensing.

[d] Hydrologic Sciences

Research projects

Asanuma, J. (2014-): Hydro-Meteorological studies with Multi-satellite sensors and Multidimensional approaches at Mongolian Grassland (Hydro4m, JAXA G-COM Research Announcement).

Tsujimura, M. (2019-): Groundwater Flow System in Tokyo Area.

_____ (2019-): Contribution of Mountain Block Recharge to Groundwater in Plain Area.

_____ (2016-): Application Microbe Information to Groundwater Flow System Research.

Research grants

- Sugita, M. (2021-2025): Establishment of measurement technology of lake surface flux from a small ship and determination the spatial flux variability. Grant-in-Aid for Scientific Research (B) of the Japan Society for the Promotion of Science.
- Tsujimura, M. (2020-2024): Cycle System between Groundwater and Surface Water Revealed by Multi Tracer Approach in Klang River Basin, Malaysia. Joint International Research (B) of KAKENHI (Grants-in-Aid for Scientific Research), Japan Society for the Promotion of Science.
- Yamanaka, T. (2019-2023): Evaluation of Hydrological Components by Dynamic Isoscape Models and Its Multifaceted Developments. Grant-in-Aid for Scientific Research (B) of the Japan Society for the Promotion of Science.

Others

- Yamanaka, T. (2021, May.): Achievement Award, Japanese Association of Groundwater Hydrology.

[e] Atmospheric Science

Research projects

- Ueda, H. (2019-): Joint study of MRI-CGCM (Japan Meteorological Agency).
- Ueno, K. (2017- 2021): Joint study of PMM 8thRA (JAXA).

Research grants

- Ueda, H. (2021-2025): Grant-in-Aid for Scientific Research (B), JSPS.
- _____ (2021-2023): Environment Research and Technology Development Fund, ERCA.
- _____ (2021- 2023): Research collaboration with Institute of Low Temperature Science, Hokkaido University.
- _____ (2021): Research grant Project for University-Industry Cooperation Strengthening in Tsukuba with the Meteorological Research Institute, University of Tsukuba.
- _____ (2021): Research grant Project for University-Industry Cooperation Strengthening in Tsukuba with Ibaraki prefecture, University of Tsukuba.
- _____ (PI: Mitsudera, F.) (2021- 2024): Grant-in-Aid for Scientific Research (B), JSPS.
- _____ (PI: Harada, M.) (2021- 2026): Grant-in-Aid for Scientific Research (B), JSPS.
- Ueno, K. (2021): Joint study of JAXA PMM 8thRA, (PI by K. Ueno) JPY 831,000.
- Harada, M. (2021-2025): Grant-in-Aid for Scientific Research (B), Japan Society for the Promotion of Science, JSPS, JPY 16,770,000.

Attendance at international meetings

- Ueno, K. (2021, Apr.): Heavy winter precipitation events with extratropical cyclone diagnosed by GPM products and trajectory analysis. EGU General Assembly 2021, EGU21-646, April 26, Online.
- _____ (2021, Aug.): Diurnal development of MCSs in the northeastern Indian subcontinent. International Conference on Clouds and Precipitation 2021, August 2, Online.
- _____ (2021, Aug.): Heavy precipitation with winter extratropical cyclone diagnosed by GPM/GSMaP products. International Conference on Clouds and Precipitation 2021, August 5, Online.
- _____ (2021, Aug.): Perspectives of mountain studies in the coming extreme weather world. 34th International Geographical Congress, August 16, Online.
- Matsueda, M. (2021, Sep.): Flow-dependent predictability of wintertime Euro-Atlantic weather regimes in medium-range forecasts (Invited), September 27–29, Atmospheric Blocking Workshop hosted by Wave to Weather (W2W) project, Germany (online).

Others

- Kuramochi, M[†] (2022): Matsuno Award, the Meteorological Society of Japan.
- Kuramochi, M[†] (2022): Degree Programs in Life and Earth Sciences Dean Award, University of Tsukuba.
- Ueno, K. (2021, Jun.): An award for active researches. Kanto-Chubu-Kansai branch of the Japanese Society of Snow and Ice.

[f] Geomorphology

Research projects

- Hattanji, T. (2016-): Improving prediction models for shallow landslides based on channel-head mapping using LiDAR DEMs, project with Tanaka, Y. (Komazawa Univ.), Doshida, S. (National Research Institute of Fire and Disaster) and Furuichi, T. (Forest Research and Management Organization)
- _____ (2017-): Interaction of weathering, water erosion and landsliding in the Yahata Okuzure, Hokkaido, project with Parkner, T. (Univ. of Tsukuba)
- Ikeda, A. (2008-): Permafrost monitoring on Mt. Fuji, project with Iwahana, G. (IARC-UAF), Imaizumi, F. (Shizuoka Univ.)
- _____ (2017-): Geomorphological study on moor, grassland and shrub in a subalpine zone on heavily snow-covered mountains, project with Sasaki, N.

(Chuo Univ.).

Parkner, T. (2014-): Gully erosion on unstable hillslopes in the East Coast Region, North Island, New Zealand.

_____ (2017-): Interaction of weathering, water erosion and landsliding in the Yahata Okuzure, Hokkaido, project with Hattanji, T. (Univ. of Tsukuba)

Sekiguchi, T. (2007-): Self-organization of 3D-patterned bedforms under complex oscillatory flow.

_____ (2010-): Study on ripple transition under unsteady oscillatory flows.

_____ (2013-): An experiment on sedimentary process of onshore tsunami deposit, project with Yamaguchi, N. (Ibaraki Univ.)

Ogura, T. (2015-): Verification and possibility on the operation of riverbed measurement using UAV and SfM-MVS, project with Aoki, T. (Kanazawa Univ.)

_____ (2018-): High-definition topography monitoring after riverbed cultivation in the Echi River, central Japan, project with Mizuno, T. (Lake Biwa Environmental Research Institute)

_____ (2018-): Use of high-frequency, high-definition topographic 3D data to develop geographic thinking of students, project with Hayakawa, Y.S. (Hokkaido Univ.)

Research grants

Hattanji, T. (2019-2022): Development of spatio-temporal analysis of shallow landslides: Collaboration of process geomorphology with historical geomorphology and spatial information science. Grant-in-Aid for Scientific Research (B), JSPS, JPY 15,210,000.

Ikeda, A. (2020-2021, 2023-2024): Topographical controls on dominant vegetation and historical botany in subalpine zone under snow-rich climate. Grant-in-Aid for Scientific Research (C), JSPS, JPY 4,290,000.

Ogura, T. (2020-2023): Damage assessment and conservation of underground space as valuable resources for human activities use in Italy and Japan, Bilateral Collaborations (Joint Research Projects and Seminars). JSPS, JPY 2,360,000, project with Oguchi, C. T. (Saitama Univ.)

_____ (2021-2024): Development and analysis of the effectiveness of physical geography and disaster education using online teaching materials with geographic information science. Grant-in-Aid for Scientific Research (C), JSPS, JPY 17,160,000, project with Oguchi, T. (the Univ. of Tokyo)

Attendance at international meetings

Hattanji, T. and Parkner, T. (2021, Dec.): American Geophysical Union Fall Meeting, New Orleans, USA (online).

Ogura, T. (2021, Sep.): 3rd GLP Asia Conference (online).

[g] Environmental Dynamics

Research projects

Onda, Y. (2013-): CYCL Project, Improvement of the forecast models of the dispersion and assessment of the impact of Radionuclides in the environment. AMORAD II project, Joint research with Insutitute De Radioprotection ET De Surute Nucleaire (IRSN).

_____ (2015-): Study on Elucidation and Modeling of Migration Mechanism of Radioactive Cesium Accumulated in Forest and Soil. Contact Research Project with Japan Atomic Energy Agency (JAEA).

_____ (2016-): Establishment of Assistive Technology for Environmental Management after the Chernobyl Disaster. Science and Technology Research Partnership for Sustainable Development (SATREPS), Project with Nanba, K. (PI, Fukushima Univ.)

_____ (2018-): Development of an emergency groundwater utilization system for disasters and critical droughts. Cross-ministerial Strategic Innovation Promotion Program (SIP) Strengthening national resilience (disaster prevention and mitigation), project with Oki, T. (PI, Univ. Tokyo)

Research grants

Onda, Y. (2013-): CYCL Project, Improvement of the forecast models of the dispersion and assessment of the impact of Radionuclides in the environment. AMORAD II project, (IRSN), JPY 5,000,000 (2021).

_____ (2015-): Study on Elucidation and Modeling of Migration Mechanism of Radioactive Cesium Accumulated in Forest and Soil. Contact Research Project with Japan Atomic Energy Agency (JAEA), JPY 15,000,000 (2021).

_____ (2016-): Establishment of Assistive Technology for Environmental Management after the Chernobyl Disaster. Science and Technology Research Partnership for Sustainable Development (SATREPS), Project with Nanba, K. (PI, Fukushima Univ.), JPY 6,000,000 (2021).

_____ (2018-): Development of an emergency groundwater utilization system for disasters and critical droughts. Cross-ministerial Strategic In-

novation Promotion Program (SIP) Strengthening national resilience (disaster prevention and mitigation), project with Oki, T. (PI, Univ. Tokyo), JPY 12,000,000 (2021).

_____ (2021-): Abandonment and rebound: Societal views on landscape- and land-use change and their impacts on water and soils, Belmont Forum, JST, JPY 4,000,000 (2021)

_____ (2019-): Advanced research to elucidate the dynamics and effects of environmental radioactivity. Contract Research Project, IER at Fukushima University FY2020 Collaborative Research Promotion Program, JPY 2,000,000 (2021).

_____ (2019-): Measurement and modeling of radioactive runoff in forests and water systems. Joint Research Project, Fukushima University, JPY 2,000,000 (2021).

Kato, H. (2020-2022): Elucidation of Forest-Water Interactions Using Environmental Isotope Tracers and Development of a Material Circulation Analysis Method. Grant-in-Aid for Scientific Research (C) of the Japan Society for the Promotion of Science, JSPS, JPY 1,200,000 (2021).

Takahashi, J. (2020-2022): Evaluation of Radiocesium Bioavailability in Forest Soil Considering Spatial Heterogeneity. Grant-in-Aid for Early-Career Scientist, JSPS, JPY 1,000,000 (2021).

Attendance at international meetings

Onda, Y. (2021, Apr.): EGU General Assembly 2021, Vienna, Austria (Online)

_____ (2021, Jul.): JpGU-AGU Joint Meeting 2021, Chiba, Japan (Online)

_____ (2021, Nov.): Annual Meeting of GSJ 2021 (Online)

_____ (2021, Dec.): AGU Fall Meeting 2021, America (Online)

Kato, H. (2021, May.): JpGU-AGU Joint Meeting 2021, Chiba, Japan (Online)

_____ (2021, Apr.): EGU General Assembly 2021, Vienna, Austria (Online)

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† Students, research assistants, researchers and fellows belonging to the research group

[Acronyms]

ACCU: Asia/Pacific Cultural Centre for UNESCO
AGU: American Geophysical Union
CAMP: CEOP Asia-Australia Monsoon Project
CAS: Chinese Academy of Sciences
CEOP: Coordinated Enhanced Observation Period

CliC: Climate and Cryosphere

CREST: Core Research for Evolutional Science and Technology

EGU: European Geosciences Union

GCCA: Global Change: Connection to the Arctic

GEWEX: Global Energy and Water Cycle Experiment

GEOSS: Global Earth Observation System of Systems

GI: Geophysical Institute

GISA: GIS Association in Japan

IARC: International Arctic Research Center

ICHARM: International Center for Water Hazard and Risk Management

IPCC: Intergovernmental Panel on Climate Change

IPY: International Polar Year

IGU: International Geographical Union

JAXA: Japan Aerospace Exploration Agency

JICA: Japan International Cooperation Agency

JSPS: Japan Society for the Promotion of Science

JST: Japan Science and Technology Agency

KAGIS: Korean Association of Geographic Information Studies

MAHASRI: Monsoon Asia Hydro-Atmosphere Scientific Research and Prediction Initiative

MAS: Mongolian Academy of Sciences

MEXT: The Ministry of Education, Culture, Sports, Science and Technology of Japan

MHLW: Ministry of Health, Labour and Welfare

MRI: Meteorological Research Institute (Japan)

NSF: National Science Foundation

RIHN: Research Institute for Humanity and Nature

TERC: Terrestrial Environment Research Center, University of Tsukuba

TRMM: Tropical Rainfall Measuring Mission

UAF: University of Alaska, Fairbanks

WERC: Water and Environmental Research Center

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNESCO-IHP: International Hydrological Programme for UNESCO

**Activity Report for Academic Exchange and Cooperation
between University of Tsukuba, Japan and University of
Alaska Fairbanks, U.S.A.**

An agreement for Academic Exchange and Cooperation has been established on 11 January, 2000 between the Institute of Geoscience, the Doctoral Program in Geoscience of the University of Tsukuba, Japan and the International Arctic Research Center (IARC), the Geophysical Institute (GI) of the University of Alaska Fairbanks (UAF), U.S.A. (see the Annual Report, 2000). The agreement was successfully extended in 2005 for the five years (from 2005 to 2009), in 2009 for the next five years (from 2010 to 2014), in 2015 for the next five years (from 2015 to 2019) and in 2019 for the next five years under the new contract names of the Graduate School of Life and Environmental Sciences, the Center for Computational Sciences (CCS) of the University of Tsukuba, Japan. The agreement includes (1) exchange of professors and research scholars, (2) exchange of graduate students, (3) collaborative research and joint academic meetings, and (4) exchange of scientific documents, publications, and information. The agreement will be effective for a period of five years, and may be renewed for another period by mutual agreement.

There was no exchange activity by the breakout of COVID-19. A cooperative joint paper was published on the importance of natural variability in climate change by Akasofu and Tanaka (2021).

- (1) Exchange of Researchers: None.
- (2) Exchange of Graduate Students: None.
- (3) Collaborative Research: Research on Arctic Oscillation, PI: H.L. Tanaka (Univ. of Tsukuba).
- (4) Exchange of scientific documents:
Tsukuba Geo-Environmental Science, Vol.14, 2020, Univ. of Tsukuba.
Geophysical Institute Biennial Report, 2020, Univ. of Alaska.
Geophysical Institute Quarterly, 2020, Univ. of Alaska.