

Annual Report 2013

Geography

Department of Geography
Graduate School and Faculty of Urban Environmental Sciences
Tokyo Metropolitan University

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1. Laboratory of Quaternary Geology and Geomorphology

1) Staff

Haruo YAMAZAKI Professor / D.Sc.
Geomorphology, Quaternary Science, Seismotectonics

Takehiko SUZUKI Professor / D.Sc.
Geomorphology, Quaternary Science, Volcanology

Masaaki SHIRAI Associate Professor / PhD (D.Sc.)
Sedimentology, Quaternary Geology, Marine Geology

2) Overview of Research Activities

We focus on various earth scientific phenomena and processes on the solid earth surface in order to prospect the futuristic view of environmental changes through the understanding the history and process of surface geology/landform development during the Quaternary period. The followings are some examples of our studies.

1. Plate tectonics: The Quaternary tectonics including the historical process of seismic and volcanic activity are our special interest along the plate collision zone.
2. Tephra study: Tephra means a generic term on the volcanic ejecta excluding lava-flow and related explosive deposits. We are trying to identify the source volcano, age of the eruption and the distribution of widespread tephros that have covered the Japanese Islands through the Pliocene, Pleistocene and Holocene.
3. Paleo-environment and natural hazards: On the basis of geomorphological and sedimentological studies, paleo-environmental change and natural hazards history are reconstructed.
4. Chronological studies: We are improving chronological efficiency of tephro-stratigraphy, radio-isotope activity, historical records, and so on through studies on these objectives.
5. Modeling: For understanding correlation between intra-surface processes (volcanism, faulting etc.) and land formation, studies on computer simulation are carried out.

3) List of Research Activities in FY2013

Peer-reviewed Articles

- Yamazaki, H. 2013. Earthquake and seismogenic fault, and what is the active fault; Eliminate a delusion and rumor for active fault and give a calm response. *Journal of Atomic Energy Society of Japan* **55**: 322-325. (in Japanese)
- Suzuki, T. 2013. History and future of volcanic disasters in and around the Tokyo metropolitan area, central Japan. *Journal of Geography (Chigaku Zasshi)* **122**: 1088-1098. (in Japanese with English abstract)
- Shirai, M. and Hayashizaki, R. 2013 Transport process of sand grains from fluvial to deep marine regions estimated by luminescence of feldspar: Example from the Kumano area, central Japan. *Island Arc* **22**: 242-257.
- Chiba, T., Shirai, M. and Sato, S. 2014 Recognizing cryptic environmental changes by using paleoecology and taphonomy of Pleistocene bivalve assemblages in the Oga Peninsula, northern Japan. *Quaternary Research* **81**: 21-34.
- Nishiki, K., Oikawa, T., Furukawa, R., Oishi, M., Nakano, S. and Miyagi, I. 2013. Amounts of tephra fall deposits from Shinmoedake Volcano, Kirishima Volcanoes, during March 2011-February 2012: A preliminary study for immediate estimation of the eruptive mass. *Bulletin of the Volcanological Society of Japan* **58**: 353-363. (in Japanese with English abstract)

Other Articles

- Yamazaki, H. 2013. The depth of the misconception on the Tachikawa fault—Why did the researcher mistake it?— *Energy-Forum* **702**: 52-53. (in Japanese)
- Yamazaki, H. and Suzuki, Y. 2014. A background and process on the activity-evaluation for geological faults located in the nuclear site. *Energy Review* 2014-2: 7-8. (in Japanese)
- Suzuki, T., Kasahara, A., Nishizawa, F. and Saito, H. 2014. Chemical characterization of volcanic glass shards by energy dispersive X-Ray spectrometry with EDAX Genesis APEX2 and JEOL JSM-6390. *Geographical Reports of Tokyo Metropolitan University* **49**: 1-12.
- Ueki, T. 2013. Description and age estimate of the Ogoya Landslide in south Tokushima Prefecture, southwest Japan. *Bulletin of the Geological Survey of Japan* **64**: 213-219. (in Japanese with English abstract)
- Ueki, T. 2013. What is the “Yobake” as a Japan's top 100 geological site?, Excursion of the scenic

- spot “Nagatoro” , Thinking a dynamic Earth at Yorii—Fluvial terrace of the Ara River—. In *Walking and enjoying nature of the Saitama Prefecture 2*, ed. R. Kanaizuka and S. Omura, 196-197, 198-200, 204-206. Tokyo: Chuokei Publishing. (in Japanese)
- Ueki, T. 2014. Magnetostratigraphy of Pliocene and Lower Pleistocene in Japan. *Chikyu Monthly / Special* **63**: 136-144. (in Japanese)
- Ueki, T. 2014. Outline of methods of natural history education: A guide of outreach programme for scientists. *The University Bulletin of Chiba Institute of Science* **7**: 129-150. (in Japanese with English abstract)
- Oishi, M. and Ojima, T. 2013. Geology of dig site of Kashiwatouge obsidian. *The basic study of the place of origin of the Kashiwatouge obsidian in Izu-Amagi area 2: Preliminary report of the survey at Tokunaga-higashi, Shirasakabora, Tokunaga, Izu city*: 18-22. (in Japanese)
- Nishiki, K., Oishi, M., Takahashi, K. and Miyake, Y. 2013. The 2004 and 2009 eruptions of the Asama Volcano which supplied ash fall deposits as far as the Tokyo metropolitan area. *The Journal of the Geological Society of Japan* **119**: VII-VIII. (in Japanese with English abstract)
- Kudo, T. and Kobayashi, M. 2013. Radiometric dating of tephra from pre-caldera and caldera-forming stages, Towada volcano, northeast Japan. *Bulletin of the Geological Survey of Japan* **64**: 305-311. (in Japanese with English abstract)

Books

- Ueki, T., Hara, H. and Ozaki, M. 2013. *Geology of the Hachioji district*. Quadrangle Series, 1: 50,000. Geological Survey of Japan, Tsukuba: National Institute of Advanced Industrial Science and Technology. (in Japanese with English Abstract)

Reports

- Suzuki, T. 2013. 3.2.2. High-resolution tephrochronological survey for the estimation of mean slip rate and accumulated displacement of the fault zone. *2012 Report of the Integrated Research Project for the Tachikawa Fault Zone*: 35-49. (in Japanese)

Book Reviews

- Kasahara, A. 2013. Book review (Kimura, G.: *A geological perspective on nature*). *The Quaternary Research* **52**: 92-93. (in Japanese)

Miscellaneous Reports

- Yamazaki, H. 2013. Misunderstand on the active fault. *Kansai Science Forum* **77**: 6-17. (in Japanese)
- Yamazaki, H. 2014. The necessity of a calm argument on the nuclear power plant, the active fault and the geological disposal of the high level waste—In particular about the Higashi-dori nuclear power plant in Aomori Prefecture—(Opinion). *Energy for the Future* **38** (1): 24-27. (in Japanese)
- Suzuki, T. 2013. Memory of Nagaoka-san. In *Memories and selected papers of late Professor Shinji Nagaoka*, ed. The Committee for Publication of Memories and Selected Papers of Late Professor Shinji Nagaoka, 53-54. Nagasaki: Faculty of Education, Nagasaki University. (in Japanese)
- Saito, Y. and Suzuki, T. 2013. Report of International Union for Quaternary Research, XVIII Congress, July 21 to 27, 2011, Exhibition and Congress Centre BERNEXPO, Bern, Switzerland. *The Quaternary Research* **52**: 65-89. (in Japanese)

Presentations

- Yamazaki, H. 2013. A commentary about the active fault. The 3rd symposium on issue of active fault, Japan Energy Conference, May, Chiyoda. (in Japanese)
- Yamazaki, H. 2013. Natural environment and hazard for Kanagawa Prefecture. Lecture of the Super Science High School Project at Seisho High School, Kanagawa Prefecture, June, Odawara. (in Japanese)
- Yamazaki, H. 2013. Misunderstand on the active fault. Lecture at the Kansai Science Forum, June, Osaka. (in Japanese)
- Yamazaki, H. 2013. Active fault and seismic hazards. Special Lecture of Open University of Tokyo Metropolitan University, June, Shinjuku. (in Japanese)
- Yamazaki, H. 2013. Knowledge and the technology that are necessary for active fault investigation. A Class for Technical Tradition, Geological Survey Enterprises, Association, Kanto. July, Chiyoda. (in Japanese)
- Yamazaki, H. 2013. The Tachikawa fault and earthquake. Workshop for School Staff of Tachikawa Girl's High School, August, Tachikawa. (in Japanese)
- Yamazaki, H. 2013. What is the active fault? – The handling of the active fault in the atomic energy –. Invited Lecture of Atomic Energy Society in Japan, September, Hachinohe. (in Japanese)
- Yamazaki, H. 2013. Why is the earthquake generated? Lecture of Higashi-Murayama-shi Community Hall, September, Higashi-Murayama. (in Japanese)

- Yamazaki, H. 2013. Tachikawa fault and earthquake. Lecture for PTA of Toho High School, September, Kunitachi. (in Japanese)
- Yamazaki, H. 2013. Earthquake and fault, and what is the active fault. Technical Class of Tokyo Urban Planning and Development Company. September, Hachioji. (in Japanese)
- Yamazaki, H. 2013. On the Tachikawa fault—Commentary about the active fault and earthquake—. Lecture for the Senior Class of the Koganei-shi East Community Center. October, Koganei. (in Japanese)
- Yamazaki, H. 2013. Atomic energy and the issue of active fault. Symposium of Atomic Energy Society in Japan, Tohoku Office, October, Aomori. (in Japanese)
- Yamazaki, H. 2013. Lecture on the active fault: Issue of the active fault in the atomic energy. Special Lecture of Nuclear Professional School, Graduate School of the University of Tokyo, October, Ibaraki. (in Japanese)
- Yamazaki, H. 2013. The Tachikawa fault and earthquake. Museum for Local History of Hanno-shi, November, Hanno. (in Japanese)
- Yamazaki, H. 2013. Geological excursion “Tachikawa fault”. Tokyo Geotechnical Consultant Association, November, Tokyo-Saitama. (in Japanese)
- Yamazaki, H. 2013. Local shallow earthquake in Tokyo and the Tachikawa fault. Lecture of SPP of Tachikawa Metropolitan High School, November-December, Tachikawa. (in Japanese)
- Yamazaki, H. 2014. The inland shallow-earthquake of Tokyo, and the Tachikawa fault. The Local Community to Establishing the Network for Hazard Prevention. February, Sayama. (in Japanese)
- Suzuki, T. 2013. Knowing earthquakes and volcanoes in Japanese islands. Open University of Tokyo Metropolitan University, April and May, Chiyoda. (in Japanese)
- Suzuki, T. 2013. Affection on city by earthquakes and volcanic eruption: Relation between large cities in Japan and earthquakes occurred below cities, active faults and active volcanoes. Seminar for Disaster Prevention Measures of Companies, May, Shibuya. (in Japanese)
- Suzuki, T. 2013. Tephra studies by Dr. Shinji Nagaoka. Annual Meeting of the Geological Society of Japan, West Japan Branch and Symposium of Shinji Nagaoka; Field work in Sea, Mountain and Volcanoes, June, Shimabara. (in Japanese)
- Suzuki, T. 2013. Search for the seven Izu volcanic islands; Eruptive histories and their comparison of Hachijo-jima to Izu-oshima. 65th Lecture of Citizen University of Hachijo-jima, September, Hachijo-jima. (in Japanese)
- Suzuki, T. 2013. Landforms, ground and natural disasters in Tama: Possibility of earthquake occurred

- below cities by Tachikawa active fault and eruption of Fuji volcanoes. Seminar for Tama Nikkei Konwakai, September, Hachioji. (in Japanese)
- Suzuki, T. 2013. Origin and distribution of Diluvial Clay in Japan. Seminar for Diluvial Clay in Japan Home Shield Corporation, October, Sumida. (in Japanese)
- Suzuki, T. 2013. Knowing earthquakes and volcanoes in the Japanese Islands. Open University of Tokyo Metropolitan University, November, Chiyoda. (in Japanese)
- Suzuki, T. 2013. Tephrostratigraphy and geological structure under Tokyo area, central Japan. Joint Symposium of Current Status and Direction of Tephra, Geomorphological and Geological Studies in Kanto, November, Hachioji. (in Japanese)
- Suzuki, T. 2014. Map reading: How to read topographical map, and fundamental of landform and geology. Lecture for Green Volunteer Leader by Bureau of Environment, Tokyo Metropolitan Government, January, Shinjuku. (in Japanese)
- Suzuki, T. 2014. Landform and geology around Tama and Tokyo. Training Lecture for Leader of Hachioji City Environmental Learning, February, Hachioji. (in Japanese)
- Suzuki, T. 2014. Report on the survey of landform and geological conditions for shallow landslide. Local Conference for Reports on TMU Group for Izu-Oshima Typhoon Wipha (1326) Disaster Survey, March, Oshima. (in Japanese)
- Suzuki, T., Saito, H. and Imaizumi, T. 2013. Quaternary underground geology and activity of the West Aizu Basin Fault Zone in the Aizu basin, northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2013*: SSS32-P06, May, Makuhari. (in Japanese with English abstract)
- Suzuki, T., Saito, H. and Murata, M. 2013. Geological structure interpreted from tephra in boring core and vicinity of the Tachikawa Fault Zone, Tokyo, NE Japan. *Abstracts of Japan Geoscience Union Meeting 2013*: HQR23-09, May, Makuhari. (in Japanese with English abstract)
- Suzuki, T., Kasahara, A., Uemura, K., Murata, M., Aoki, T., Saito, H., Kawashima, S. and Kawai, M. 2013. Tephrochronological study on Quaternary stratigraphy under the west part of Musashino Upland, Tokyo, central Japan. *Japan Association for Quaternary Research, Programme and Abstracts* **43**: 74-75, August, Hirosaki. (in Japanese)
- Suzuki, T., Saito, H. and Imaizumi, T. 2013. Underground Quaternary tephrostratigraphy and activity of the West Aizu Basin Fault Zone, Northeast Japan. *Abstracts for the 120th Annual Meeting of the Geological Society of Japan*: 170, September, Sendai. (in Japanese)
- Suzuki, T. and TMU Group for Izu-Oshima Typhoon Wipha (1326) Disaster Survey 2014. Preliminary report on the landslides disaster, Oct. 2013, Izu-Oshima Volcanic island, central

- Japan: (2) Shallow landslide, landforms, and geology. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 310, March, Setagaya. (in Japanese)
- Suzuki, T., Kasahara, A., Yagi, H., Imaizumi, T. and Yoshida, A. 2014. Late Quaternary tephra and basin fill sediments under Ukinuma of Murayama city in the north part of the Yamagata basin, Northeast Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 201, March, Setagaya. (in Japanese)
- Ishiyama, T., Sato, H., Togo, M., Suzuki, T., Hirouchi, D., Kawasaki, S., Abe, S., Koriya, Y. and Omata, M. 2013. Deep and long trench excavation and 3D seismic reflection survey across the Tachikawa fault, central Japan. *Programme and Abstracts, the Seismological Society of Japan, Fall Meeting, 2013*: 112, October, Yokohama. (in Japanese)
- Koarai, M. and Suzuki, T. 2013. Volcanic hazard estimation using tephra GIS and geospatial information. *Abstracts of International Association of Volcanology and Chemistry of the Earth's Interior 2013 Scientific Assembly*: Poster 4W_4D-P17, July, Kagoshima.
- Murata, M. and Suzuki, T. 2013. Eruptive history of early Quaternary caldera volcanoes in the Aizu region, southern part of Northeast Japan Arc. *Japan Association for Quaternary Research, Programme and Abstracts* **43**: 144-145, August, Hirosaki. (in Japanese)
- Sugito, N., Suzuki, T., Ishiyama, T., Hirouchi, D. and Imaizumi, T. 2013. Slip rate of the western margin active fault zone of the Nagano basin in central Iiyama, Nagano Prefecture. *Programme and Abstracts, the Seismological Society of Japan, Fall Meeting, 2013*: 188, October, Yokohama. (in Japanese)
- Shirai, M. and Imamura, A. 2013 Depositional environment of the early Pleistocene Inagi Formation, northern edge of the Tama Hills, central Japan. *Abstracts of Japan Geoscience Union Meeting 2013*: HQR23-P04, May, Makuhari. (in Japanese with English abstract)
- Shirai, M., Omura, A., Ito, T. and Niwa, Y. 2013. Mass accumulation rate of hemipelagite at the Western Kumano Trough during the last *ca.*100 years. *Programme and Abstracts, Japan Association for Quaternary Research* **43**: 8-9, August, Hirosaki. (in Japanese)
- Shirai, M., Omura, A., Hayashizaki, R., Utsugawa, T. and Niwa, Y. 2014. Changes in MAR off the Niigata Coast during the later 20th century. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2014*: 32-33, March, Yamaguchi. (in Japanese)
- Niwa, Y., Shirai, M., Omura, A., Utsugawa, T., Watanabe, M. and Hayashizaki, R. 2013. Influence of porosity on electrical conductivity of stirred sediments gained from stable salinity environment:

- Examples of hemipelagite at the Kumano Trough and lacustrine at the Sakuma dam lake. *Programme and Abstracts, Japan Association for Quaternary Research* **43**: 120-121, August, Hirosaki. (in Japanese)
- Watanabe, M., Shirai, M. and TMU Group for Izu-Oshima Typhoon Wipha (1326) Disaster Survey 2014. Preliminary report on the landslides disaster, Oct. 2013, Izu-Oshima volcanic island, central Japan: (3) Vegetation and soil of the landslide area. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 311, March, Setagaya. (in Japanese)
- Tamura, I. 2013. The widespread tephra in Tokai Group. The Public Symposium of the Mie Museum “The end of Neogene and the beginning of Quaternary”, November, Tsu. (in Japanese)
- Tamura, I. and Yamazaki, H. 2013. Tephrochronology on Plio-Pleistocene boundary in central Japan, based on tephra correlation between south Kanto area and Tokai and Kobiwako Groups. *Programme and Abstracts, Japan Association for Quaternary Research* **43**: 78-79, August, Hirosaki. (in Japanese)
- Tamura, I. and Yamazaki, H. 2013. Tephrochronology on Plio-Pleistocene boundary in central Japan and presumption of source volcano areas. *Abstracts of Geological Society of Japan 2013 Meeting*: 69, September, Sendai. (in Japanese)
- Tamura, I., Yamazaki, H. and Takagi, H. 2013. 2.5 Ma garnet-bearing tephra found in Kanto Plain. The Symposium of the Kanto Branch of Geological Society of Japan “The geological study of summit of Izu collision”, November, Yokohama. (in Japanese)
- Ueki, T. and Sugihara, N. 2013. Geomorphic development around the Iyari Swamp, northern Nagano Prefecture, central Japan, since the Last Glacial. *Programme and Abstracts, Japan Association for Quaternary Research* **43**: 44-45, August, Hirosaki. (in Japanese)
- Oishi, M., Geshi, N., Shinohara, H. and Miwa, T. 2013. Characteristics of grain composition of volcanic ash from each eruptive style. *Abstracts of Japan Geoscience Union Meeting 2013*: SVC048-P07, May, Makuhari. (in Japanese with English abstract)
- Oishi, M., Nishiki, K., Geshi, N., Furukawa, R., Oikawa, T., Ishizuka, Y., Hirota, A., Tanaka, A. and Miwa, T. 2013. Volume estimation of single vulcanian eruption during the activity of Showa crater, Sakurajima Volcano, Japan. *Abstracts of International Association of Volcanology and Chemistry of the Earth's Interior 2013 Scientific Assembly*: Poster 3F-P18, July, Kagoshima.
- Oishi, M., Miwa, T., Geshi, N. and Shinohara, H. 2013. Making process of volcanic glass shards in the tephra, based on the analysis of grain component and texture: A case study of 2011 eruption of

- Shinmoedake, Kirishima Volcano, Japan. *Programme and Abstracts, Japan Association for Quaternary Research* **43**: 4-5, August, Hirosaki. (in Japanese)
- Oishi, M., Miwa, T., Geshi, N., Shinohara, H. and Vinet, N. 2013. Magma ascent mechanism during the 2011 eruption of Shinmoedake, Kirishima Volcano, Japan, deduced from the analysis of morphology and texture of volcanic ashes. *AGU Fall Meeting 2013*: V21B-2712, December, San Francisco, U.S.A.
- Nanayama, F., Furukawa, R., Ishizuka, Y., Yamamoto, T., Geshi, N. and Oishi, M. 2013. Characterization of fine volcanic ash from explosive eruption from Sakurajima volcano, South Japan. *AGU Fall Meeting 2013*: V23C-2867, December, San Francisco, U.S.A.
- Ando, K. 2013. Extrapolation of whether the Kushibiki fault is the back thrust of the Fukaya fault or not –Using a maximum fault slip rate–. *Programme and Abstracts, The Seismological Society of Japan, Fall Meeting, 2013*: 112, October, Yokohama. (in Japanese)
- Hayashizaki, R. and Shirai, M. 2013. Transportation process of Tsunami deposits estimated from equivalent doses variation in K-feldspar grains using OSL dating method in Soma, northeastern Fukushima Prefecture, Japan. *Programme and Abstracts, Japan Association for Quaternary Research* **43**: 112-113, August, Hirosaki. (in Japanese)
- Hayashizaki, R. and Shirai, M. 2014. Estimating bleaching degrees of the 2011 off the Pacific coast of Tohoku Earthquake Tsunami deposits using post-IR IRSL dating method. *Abstracts of the 30th Workshop on ESR Applied Metrology*: 37, February, Osaka. (in Japanese)
- Kasahara, A., Suzuki, T., Kitamura, A., and Kato, S. 2014. Late Pleistocene tephra distributed near under Lake Hakuryu, northeastern part of the Yonezawa Basin, Northeast Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 202, March, Setagaya. (in Japanese)
- Ojima, T. and Yamazaki, H. 2013. Reexamination of large scale felsic pyroclastic deposits in the southwestern part of Sengan Volcanic Field, Japan. *Programme and Abstracts, the Volcanological Society of Japan 2013 Autumn Meeting*: 131, September, Fukushima. (in Japanese)
- Nishizawa, F. and Suzuki, T. 2013. Re-examination of the correlation of pyroclastic deposits similar to Shimokado pyroclastic flow deposit and Ks18 tephra. *Abstracts of Japan Geoscience Union Meeting 2013*: SVC048-P06, May, Makuhari. (in Japanese with English abstract)
- Nishizawa, F. and Suzuki, T. 2013. Re-examination of the widespread correlation of Middle Pleistocene tephra in Japan: A co-ignimbrite Ks18 tephra in central Japan and the Shimokado pyroclastic flow deposits, south Kyusyu. *Abstracts of International Association of Volcanology*

- and Chemistry of the Earth's Interior 2013 Scientific Assembly*: Poster 3W_3F-P15, July, Kagoshima.
- Uemura, K. and Yokota, A. 2013. Reexamination of terrace surface division and its marker tephras around Higashi-Matsuyama, western margins of the Kanto Plain, Central Japan. *Programme and Abstracts, Japan Association for Quaternary Research* **43**: 142-143, August, Hirosaki. (in Japanese)
- Utsugawa, T. and Shirai, M. 2013. Formation process of the Noshiro coastal dune, northeastern Japan: Insight from internal structure and its distribution. *Abstracts of Japan Geoscience Union Meeting 2013*: HGM22-P07, May, Makuhari. (in Japanese with English abstract)
- Utsugawa, T. and Shirai, M. 2013. Influence of sedimentary supply on formation process and shape of the Noshiro coastal dune, northeastern Japan. IGU 2013 Kyoto Regional Conference, August, Kyoto.
- Utsugawa, T. and Shirai, M. 2014. Fluvial sand grain producing process revealed from lithology and roundness change of gravel and sand: A case study of the tributaries of Watarase River. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2014*: 40-41, March, Yamaguchi. (in Japanese)
- Utsugawa, Toru, Hiradate, S., Maejima, Y. and Utsugawa, Takako 2013. A detailed soil map (scale, 1:5,000) of the Chichijima, Ogasawara Islands. *Abstracts of the Annual Meeting of Japanese Pedology Society 2013*: 40, October, Sendai. (in Japanese)
- Utsugawa, Toru, Utsugawa, Takako, Hoshi, Y., Hiradate, S. and Maejima, Y. 2014. A detailed soil map (scale, 1:5,000) of the Hahajima, Ogasawara Islands. *Abstracts of the Annual Meeting of Japanese Pedology Society 2014*: 35, March, Matsue. (in Japanese)
- Saito, H. and Suzuki, T. 2013. Pliocene ignimbrites in and around Abukuma Mountains. *Abstracts for the 120th Annual Meeting of the Geological Society of Japan*: 45, September, Sendai. (in Japanese)
- Yokota, A., Suzuki, M. and Endo, K. 2013. Eruption history of Tarumae volcano and tephras since 17th century found in Shiraoui-Tomakomai lowlands. *Abstracts of Japan Geoscience Union Meeting 2013*: HQR24-P01, May, Makuhari. (in Japanese with English abstract)
- Nanri, S. 2014. The activities of the Miyake-jima volcano around 30 ka: Significance of the pumice distributed in the northwestern part of the Miyake-jima Island. The 62th Meeting of Graduation Thesis of Geography 2014, March, Koganei. (in Japanese)

2. Laboratory of Climatology

1) Staff

Jun MATSUMOTO Professor / D. Sc
Monsoon Climatology, Environmental Climatology

Hideo TAKAHASHI Professor / D.Sc.
Urban Climatology, Climatic Change, Rainfall Climatology

Hiroshi TAKAHASHI Assistant Professor / PhD (D.Sc.)
Climate System Study, Cloud-Precipitation Climatology, Regional Climate Modeling

2) Overview of Research Activities

Our laboratory investigates climate system on the Earth in various temporal-spatial scales. In particular, we focus on climate changes due both to natural and anthropogenic causes, for example, processes of heat island and heavy rainfall events over and around urban regions, and influences of land-use changes and deforestation on regional climates. We also investigate diurnal, intra-seasonal, and inter-annual variabilities and long-term changes of climate, in particular, rainfall activities in the Asian monsoon region, and influences of global warming on regional climates (future projection).

We apply three major methods, observation (monitoring), data-analysis of various global and regional datasets, and numerical modeling for investigating above-mentioned topics.

1. Climate changes and climate variability over Japan and around the world
2. Variability and seasonal changes of regional climate over Asian monsoon region
3. Observational study on formation processes of urban heat island, detailed structure of urban boundary layer, and elucidation of urban effects on short duration intense rainfall
4. Impacts of land-surface conditions and changes on cloud and precipitation activities, in particular, in the tropics
5. Reconstruction of past climate during the historical period in Japan and in East Asia

3) List of Research Activities in FY2013

Peer-reviewed Articles

- Chen, T.C., Tsay, J.D., Yen, M.C. and Matsumoto, J. 2013. The winter rainfall of Malaysia. *Journal of Climate* **26**: 936-958, doi: 10.1175/JCLI-D-12-00174.1.
- Chen, T.C., Tsay, J.D., Yen, M.C. and Matsumoto, J. 2013. Interannual variation of the winter rainfall in Malaysia caused by the activity of rain-producing disturbances. *Journal of Climate* **26**: 4630-4648, doi:10.1175/JCLI-D-12-00367.1.
- Hsu, H.-H., Zhou, T.-J. and Matsumoto, J. 2014. East Asian, Indochina and western North Pacific summer monsoon – An update. *Asia-Pacific Journal of Atmospheric Sciences* **50**: 1-24, doi:10.1007/13143-014-0027-4.
- Hyung-Jin Kim, H.J., Takata, K., Tanaka, K., Yamashima, R., Matsumoto, J., Saito, K., Takemura, T. and Yasunari, T. 2014. Regional climatic effects according to different estimations of biogenic volatile organic compounds during the Asian summer monsoon. *Asia-Pacific Journal of Atmospheric Sciences* **50**:45-68, doi:1007/13143-014-0027-4.
- Kiguchi, M., Miyazaki S., Kim, W., Kanae, S., Oki, T., Matsumoto, J. and Satomura, T. 2013. The heat flux from the land surface during the pre-monsoon season in the inland region of Thailand. *Climate and Land Surface Changes in Hydrology, IAHS Publications* **359**: 239-245.
- Ngo-Duc, T., Matsumoto, J., Kamimera, H. and Bui, H.H. 2013. Monthly adjustment of Global Satellite Mapping of Precipitation (GSMaP) data over the VuGia-ThuBon River Basin in Central Vietnam using an artificial neural network. *Hydrological Research Letters* **7**: 85-90, doi:10.3178/hrl. 7.85.
- Ogino, S.Y., Fujiwara, M., Shiotani, M., Hasebe, F., Matsumoto, J., Hoang, T.H.T. and Nguyen, T.T.T. 2013. Ozone variations over the northern subtropical region revealed by ozonesonde observations in Hanoi. *Journal of Geophysical Research, Atmospheres* **118**: 3245–3257, doi:10.1002/jgrd.50348.
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- Wu, P.M., Arbain, A., Mori, S., Hamada, J.-I., Hattori, M., Syamsudin, F. and Yamanaka, M. D. 2013. The effects of an active phase of the Madden-Julian Oscillation on the extreme precipitation event over western Java Island in January 2013. *SOLA* **9**: 79-83.

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- Mizoguchi, M., Takahashi, H.G., Matsumoto, J., Tanaka, K. and Kuwagata, T. 2013. Global data utilization for climatic changes and evaluation of their effects on agriculture in Asian monsoon region. *Abstracts of Japan Geoscience Union 2013 Meeting*: U02-10, May, Makuhari. (in Japanese with English abstract)
- Sakai, D., Takahashi, H.G., Matsumoto, J. and Mizuta, R. 2013. Future change of pressure patterns and their frequencies during extremely hot temperature events in August in Japan simulated by MRI-AGCM3.2H. IGU 2013 Kyoto Regional Conference, August, Kyoto.
- Akasaka, I., Kubota, H., Villafuerte II, M.Q., Cayan, E.O. and Matsumoto, J. 2013. Long-term changes in seasonal progression patterns of rainfall in the Philippines. IGU 2013 Kyoto Regional Conference, August, Kyoto.
- Akasaka, I., Wang, L. and Takahashi, H. 2014. Year-to-year variations in summer precipitation and its regional characteristics in Inner Mongolia. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 307, March, Setagaya. (in Japanese)
- Nguyen-Le, D. and Matsumoto, J. 2013. Climatological onset date of summer monsoon in Vietnam. *Abstracts of Japan Geoscience Union 2013 Meeting*: AHW02-P05, May, Makuhari.
- Nguyen-Le, D. and Matsumoto, J. 2013. Long-term trends and variations of rainy seasons in

- Vietnam. International Symposium on Answers to Asian Aquatic Problems 2013, November, Hachioji.
- Nguyen-Le, D. and Matsumoto, J. 2013. Interannual variability of rainy season in Vietnam during 1951-2007. AGU Fall Meeting 2013, December, San Francisco, U.S.A.
- Nguyen-Le, D. and Matsumoto, J. 2014. Long-term trends of rainy seasons onset and withdrawal in Vietnam. The Third International Workshop of Climatic Changes and Their Effects on Agriculture in Asian Monsoon Region, March, Bali, Indonesia.
- Konno, S. 2013. Wintertime measurements of meteorological elements atop Mt. Dodaira in the western Kanto mountain range, Japan. *Abstracts of IGU 2013 Kyoto Regional Conference: Poster_B 42*, August, Kyoto.
- Makita, H. and Matsumoto, J. 2013. Caspian Sea Level Changes in Recent Years. IGU 2013 Kyoto Regional Conference, August, Kyoto.
- Makita, H. and Matsumoto, J. 2013. Cloud system in East Asia including yellow sand on March 21, 2010 observed by the Japanese Geostationary Satellite (MTSAT). IGU 2013 Kyoto Regional Conference, August, Kyoto.
- Nguyen-Thi, H. A., Matsumoto, J., Ngo-Duc, T. and Endo, N. 2013. An insight view of the tropical cyclone-induced rainfall in Central Vietnam. The Third International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle, August, Da Nang, Vietnam.
- Seto, Y. and Takahashi, H. 2013. Relationship between local wind systems and temperature distribution in summer over the Kanto Plain. *Abstracts of IGU 2013 Kyoto Regional Conference: CS04-5*, August, Kyoto.
- Seto, Y., Yokoyama, H., Ando, H., Hiroi, K., Nakayama, M., Kusunoki, K., Maki, M., Saitoh, Y. and Takahashi, H. 2013. Relationship between rainfall distribution and surface wind during heavy rainfall occurred in central Tokyo in summer. *Abstracts of Japan Geoscience Union 2013 Meeting: AAS23-07*, May, Makuhari. (in Japanese with English abstract)
- Seto, Y., Yokoyama, H., Ando, H., Tsunematsu, N., Ichihashi, A., Nakatani, T., Shoji, Y., Kusunoki, K., Nakayama, M. and Takahashi, H. 2014. Relationship between rainfall distribution and surface wind convergence during heavy rainfall occurred in central Tokyo in summer. Research Meeting on Tokyo Metropolitan Area Convection Study for Extreme Weather Resilient Cities (TOMACS) Theme 1: Studies of Extreme Weather with Dense Meteorological Observations, March, Tokyo. (in Japanese)
- Yokoyama, H., Ando, H., Seto, Y., Hiroi, K., Nakayama, M., Kusunoki, K., Maki, M., Saitoh, Y. and

- Takahashi, H. 2013. Surface meteorological monitoring network for observation of extreme weather (1): Meteorological characteristics in Tokyo. *Abstracts of Japan Geoscience Union 2013 Meeting*: AAS23-06, May, Makuhari. (in Japanese with English abstract)
- Villafuerte II, M.Q. and Matsumoto, J. 2013. Detection of trends and changes in extreme rainfall over the Philippines using the generalized extreme value distribution. *Proceedings of the International Symposium on Answers to Asian Aquatic Problems 2013*: 39-46, November, Hachioji.
- Villafuerte II, M.Q. and Matsumoto, J. 2013. Multidecadal changes in extreme rainfall over the Philippines. *Proceedings of the Third International MAHASRI/HyARC Workshop on Asian Monsoon and Water Cycle*: 177–184, August, Da Nang, Vietnam.
- Villafuerte II, M.Q. Matsumoto, J. and Kubota, H. 2014. Nonstationarities in extreme rainfall over the Philippines: Linked to global warming and ENSO. The Third International Workshop of Climatic Changes and Their Effects on Agriculture in Asian Monsoon Region, March, Bali, Indonesia.
- Villafuerte II, M.Q., Matsumoto, J., Akasaka, I., Takahashi, H.G. and Cinco, T.A. 2013. Spatiotemporal variability and trends of rainfall extremes in the Philippines: Linkage with ENSO and monsoon. *Abstracts of Japan Geoscience Union 2013 Meeting*: AHW02-P04, 19–24, May, Makuhari.
- Fujima, Y., Yamato, H. and Takahashi, H. 2013. A study on a cooling process in the urban canopy layer in Tokyo—Comparison between urban and suburban area—. *Abstracts of the Meteorological Society of Japan 2013 Autumn Meeting* **104**: 418, November, Sendai. (in Japanese)
- Katayama, R. and Takahashi, H.G. 2013. Seasonal variation of aerosol optical depth and its association with precipitation activity over monsoon Asia. *Abstracts of the Meteorological Society of Japan 2013 Autumn Meeting* **104**: 189, November, Sendai. (in Japanese)
- Machida, S. and Takahashi, H.G. 2013. The distribution and temporal changes of cloud around the Nagoya city on fine days in summer. *Abstracts of the Meteorological Society of Japan 2013 Autumn Meeting* **104**: 304, November, Sendai. (in Japanese)
- Nakajima, K., Yoshikado, H., Ooka, R., Kawamoto, Y. and Takahashi, H. 2013. Effects of sea breeze on distribution of air pollutant concentration in the southern Kanto Plain. *Abstracts of the Meteorological Society of Japan 2013 Autumn Meeting* **104**: 415, November, Sendai. (in Japanese)
- Ninomiya, D. and Takahashi, H.G. 2013. Long-term change of the seasonal variability of the winter

- Asian monsoon. *Abstracts of the Meteorological Society of Japan 2013 Autumn Meeting* **104**: 455, November, Sendai. (in Japanese)
- Okuhara, K., Matsumoto, J. and Takahashi, H.G. 2013. Westerly wind bursts and their relationship with ENSO and IOD. *Abstracts of the Meteorological Society of Japan 2013 Autumn Meeting* **104**: 479, November, Sendai. (in Japanese)
- Suzuki, H. and Matsumoto, J. 2014. Long-term changes of heavy rainfall in Japan using the data of climatological and raingauge stations from 1931 to 2010. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 92, March, Setagaya. (in Japanese).
- Yamaji, M., Takahashi, H.G. and Matsumoto, J. 2013. Interannual variability of aerosol-cloud-precipitation based on satellite observations. *Abstracts of the Meteorological Society of Japan 2013 Autumn Meeting* **104**: 501, November, Sendai. (in Japanese)

3. Laboratory of Environmental Geography

1) Staff

Makiko WATANABE

Professor / PhD

Soil Geography, Environmental Dynamic Analysis, Geoarcheology

Masayuki KAWAHIGASHI Associate Professor / Dc. Agr.

Soil Ecology, Environmental Chemistry, Material Dynamics in Ecosystems

2) Overview of Research Activities

This research unit studies processes enacted upon human and natural environment in local and regional scales, with interdisciplinary fields comprised of physical geography, environmental chemistry, forest ecology, soil science, anthropology and so on. Research methods are in primary based on fieldworks associated with laboratory analyses of soil, water, plant and other environmental samples collected, interview survey, aerial photo and satellite imagery interpretation as well. Evaluation of urban soils as environmental resources is one of our major research subject together with overseas field studies.

Recent research subjects are as follows;

1. Development of survey methodology for evaluation of soils in urban area
2. Characterization of sclerotium grains and their function in forest soil ecosystem
3. Geoarcheological study on ancient water environment of Kharga, Western Desert, Egypt
4. Environmental dynamics study of watershed area of SWIP dam in central Luzon, Philippines
5. Environmental risk evaluation of heavy metals around urban and mining area of Mongolia
6. Vegetation and land recovery after forest fire in taiga of Siberia permafrost area
7. Influence of land reclamation in Amur River Basin on dynamics of bio-elements
8. Effective application of plant residues for acid soil rehabilitation to enhance agricultural productivity
9. Influence of land use and land cover change in sub-urban areas on water quality in soils and water resources
10. Soil carbon sequestration from the view point of soil parent materials

3) List of Research Activities in FY2013

Peer-reviewed Articles

- Nurudin, M., Ohta, S., Hardiyanto, E.B., Mendham, D., Wicaksono, A., Heriyanto, J., and Watanabe, M. 2013. Relationships between soil characteristics and productivity of *Acacia mangium* in South Sumatra. *TROPICS* **22**: 1-12.
- Tanino, K., Hosono, M. and Watanabe, M. 2013. Physicochemical properties and geomorphic history of tephritic-loess-derived dunes in Shiriyazaki, Japan. *Geographical Review of Japan* **86**: 229-247. (in Japanese with English abstract)
- Kawahigashi, M., Ono, K., Iimura, Y. and Fujitake, N. 2013. Investigations of environmental changes based on chemical analyses of humic substances. *Humic Substance Researches* **10**: 1-10.
- Nagano, H., Kasahara T., Takahashi, M., Yoshioka, R., Kong, Y., Yashima, M., Okazaki, M., Suzuki, S., Takesako, H., Tamura, K., Sumida, H., Kawahigashi, M., Kosaki, T., Ikazaki, K. and Inubushi, K. 2013. Temporal and spatial variation in physicochemical and microbial properties of soils in Chiba University's Environmental Horticulture and Forestry Farm –Comparative research of results in 2002, 2003 and 2011—. *Horticulture Research* **67**: 21-27. (in Japanese with English Abstract)
- Prikhodoko, V. E., Ivanov, I. V., Manakhov, D. V., Gerasimenko, K., Inubushi, K., Kawahigashi, M., Nagano, H. and Sugihara, S. 2013. Soils, vegetation, and climate of the southern Transural region in the Middle Bronze Age (by the example of the Arkaim Fortress). *Eurasian Soil Science* **46**: 925-934.
- Ito, N., Hashimoto, B., Sakagami, N. and Watanabe, M. 2013. The structure of a perylene-containing fossilized sclerotium is maintained by the small amount of silica originally present. *Organic Geochemistry* **63**: 37-39.
- Uoi, N., Murata, T. and Watanabe, M. 2014. Relation between vertical soil compaction and land use history in urban green spaces: A case study of Kitanomaru Garden, Kokyo Gaien National Garden. *Journal of Japanese Society of Revegetation Technology* **39**: 412-421 (in Japanese with English abstract).

Other Articles

- Kawahigashi, M. 2014. Soils in arctic and subarctic area. In *Encyclopedia of soils*, ed. Tsuchi no Hyakkajiten Editorial Committee, 46-48. Tokyo: Maruzen Publishing Co. Ltd. (in Japanese)

- Kawahigashi, M., Takahashi, T., Fujii, K., Miura, S., Ishizuka, S., Kaneko, S., Shirato, Y., Yagasaki, Y., Takata, Y., Wagai, R., Kishimoto, A., Yonemura, S., Hiradate, S., Watanabe, M., Izumi, T., Fujitake, N. and Iimura, Y. 2013. Evaluation of soil carbon stock in Japan from the view point of the quality and quantity. *Journal of Japanese Society of Soil Sciences and Plant Nutrition* **84**: 224-229. (in Japanese)
- Nagao, S., Seki, O., Kawahigashi, M., Kodama, H., Suzuki, T., Shesterkin, V. P., Kim, V. I., Levshina, S. I. and Makhinov, A. N. 2014. Migration behavior of dissolved organic matter in the lower Amur River. *Proceedings of the 3rd International Meeting of Amur-Okhotsk Consortium 2013*: 29-32.
- Sakagami, N. and Dewa, N.S. 2014. Local wisdom and agricultural sustainability (column). In *Sustainability sciences in the society after earthquake disaster—Towards collaboration between universities and regional societies*, ed. M. Tamura, T. Itoh, K. Kimura, S. Kato, N. Sakagami and N. Mimura, 87-88. Tokyo: Kokusai-Bunken-Sha. (in Japanese)
- Narisawa, K. and Sakagami, N. 2014. New aspects of natural symbiosis—Utilization of symbiotic microbes—. In *Sustainability sciences in the society after earthquake disaster—Towards collaboration between universities and regional societies*, ed. M. Tamura, T. Itoh, K. Kimura, S. Kato, N. Sakagami and N. Mimura, 77-87. Tokyo: Kokusai-Bunken-Sha. (in Japanese)
- Amasya, A.F. 2014. Niche differentiation of fungivorous *Acari* and *Collembola* in Japanese beech forest soils. *Geographical Reports of Tokyo Metropolitan University* **49**: 33-46.

Books

- Tamura, M., Itoh, T., Kimura, K., Kato, S., Sakagami, N. and Mimura, N. eds. 2014. *Sustainability sciences in the society after earthquake disaster—Towards collaboration between universities and regional societies*. Tokyo: Kokusai-Bunken-Sha. (in Japanese)

Reports

- Watanabe, M. and Kamei, H. 2014. Analyses of soil and bone samples from the 6th excavation Shinjuku Ichigaya Kaga-cho archeological site. *Archaeological Prospection Report for Ichigaya Kaga-cho 2-7 ruin. Shinjuku City, Tokyo*: 36-39. (in Japanese)
- Kawahigashi, M. 2013. Report of the 28th annual meeting (Hachioji). *Humic Substance Researches* **10**: 21-26. (in Japanese)

Book Reviews

None

Miscellaneous Reports

Watanabe, M. 2014. Soil. In DVD "Jomon people who lived in Shinjuku – Excavation of Ichigaya-kagacho 2chome ruin (Commentary and appearance)", Planning by Shinjuku-city, Production by Nichiei Kikaku (22min. 47sec.).

Asami, S. and Watanabe, M. 2013. Soil related item. Japan Knowledge Complete Japanese Encyclopedia (Encyclopedia Nipponika). Tokyo: Shougakukan, NetAdvance Inc. (<http://www.japanknowledge.com/>) (in Japanese)

Presentations

Watanabe, M. 2014. Survey report on vegetation and soil of the upper slopes of the Oct.2013 landslide area, Izu-Oshima Volcanic island. TMU Local briefing session of Izu-Oshima Typhoon 1326 (Wipha) Disaster (Invited speaker). March, Oshima. (in Japanese)

Watanabe, M., Shirai, M. and TMU Group for Izu-Oshima Typhoon 1326 (Wipha) 2014. Disaster survey preliminary report on the landslides disaster, Oct. 2013, Izu-Oshima Volcanic island, central Japan: (3) Vegetation and soil of the landslide area. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 311, March, Setagaya. (in Japanese)

Bolormaa, O., Watanabe, M., Dorj, D., Yondonjamts, J. and Erdenetuya, O. 2013. Heavy metal distribution in surface soils around mining areas of Mongolia. 7th International Conference of the Urban Soils Working Group, SUITMA, of the International Union of Soil Sciences, September, Torun, Poland.

Sugimura, T., Watanabe, M., Abbas, A.M. and Kamei, H. 2013. Application of ALOS satellite imageries for geo-archaeological studies of El-Zayyan Temple in Kharga Oasis, Western Desert, Egypt. International Symposium of Remote Sensing, May, Chiba.

Tashiro, T., Morishima, W. and Watanabe, M. 2013. Reconstruction of paleoenvironment during last 4,000 years in central plain of Luzon, the Philippines. IGU 2013 Kyoto Regional Conference, August, Kyoto.

Tashiro, T., Watanabe, M., Collado, M.B. and Morishima, W. 2014. Relation between paleovegetation and paleoclimate by analysis of collected core sample in central plain of Luzon,

- Philippines. *Proceedings of the General Meeting of the Association of Japanese Geographers* **85**: 272, March, Setagaya. (in Japanese)
- Kawahigashi, M. 2013. Discussion of homeostasis in environment. Open Class in Tokyo Metropolitan University, July, Hachioji. (in Japanese)
- Kawahigashi, M. 2013. Fate of pollutants from urban ecosystems. 2013 TMU-NUM Education Exchange Program, October, Ulaanbaatar, Mongolia.
- Kawahigashi, M. 2014. Predicting dynamics of metal elements in rivers in the Lake Baikal water systems. Workshop in Institute of the Low Temperature Science, Hokkaido University, March, Sapporo. (in Japanese)
- Kawahigashi, M., Prokushkin, A.S., and Sumida, H. 2013. Organic horizon development on the earth hummocks in permafrost terrain. IGU 2013 Kyoto Regional Conference, August, Kyoto.
- Kida, M., Maki, K., Tsuda, K., Hayakawa, K., Sugiyama, Y., Kawahigashi, M., Otsuka, T., Kato, T. and Fujitake, N. 2013. Concentrations of aquatic humic substance in lake and river waters. *Abstracts of the Annual Meeting of Japanese Humic Substance Society*: 17-18, November, Saga. (in Japanese).
- Nakata, Y., Bando, K., Sakagami, S., Kawahigashi, M., Takami, M., Tsuchiya, K. and Yajima, H. 2013. Application of fulvic acids prepared from bamboo compost for bone regeneration process. *Abstract of the Annual Meeting of Japanese Humic Substance Society*: 37-38, November, Saga. (in Japanese)
- Sakagami, N. and Takashima, Y. 2013. Relationship between soil properties and distribution of fungal sclerotia beneath subtropical forest in Okinawa pref. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Autumn Meeting* **84**: 88, September, Fukushima. (in Japanese)
- Ito, N., Sakagami, N., Torimura, M. and Watanabe, M. 2013. Characteristics of segments containing perylene in Lake Biwa sediment. Discussion Meeting of Japan Society for Environmental Chemistry, July, Tokyo. (in Japanese)
- Shiotsu, F., Sakagami, N., Komatsuzaki, M. and Dewa, N.S. 2014. Present situation of rice cultivation in Bali, Indonesia –Approaches of organic farming. *115th Annual Meeting of Japanese Society for Tropical Agriculture*: 11, March, Tokyo. (in Japanese)
- Kida, K. and Kawahigashi, M. 2013 Major element distribution in soils under asphalt pavement. Taiwan and Japan Joint Research Workshop, August, Pingtung, Taiwan.

- Kida, K. and Kawahigashi, M. 2013. Influence of asphalt pavement on elemental composition and physico-chemical properties of subgrade soils. 7th International Conference of the Urban Soils Working Group, SUITMA, of the International Union of Soil Sciences, September, Torun, Poland.
- Kida, K., Kawahigashi, M. and Watanabe, M. 2013. Effects of asphalt road construction on distributions of major elements in subsoils. *Abstracts of the Annual Meeting of Japanese Soil Science and Plant Nutrition* **59**: 215, September, Nagoya. (in Japanese).
- Miyajima, S., Watanabe, M. and Morishima, W. 2014. The change of temperature and soil moisture in man-made soils by influence of soil profile structure. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 176, March, Setagaya. (in Japanese)
- Morishita, M. and Kawahigashi, M. 2013. Pedogenesis of buried peat soils distributing in the Sagamino Plain—Evaluation of chemical structure of peat—. *Abstracts of the Japanese Society of Pedology*: 43, November, Sendai. (in Japanese)
- Morishita, M. and Kawahigashi, M. 2014. Pedogenesis of buried peat soils distributing in the Sagamino Plain—A comparison between peat bog and lowland peat—. *Abstracts of the Japanese Society of Pedology*: 38, March, Matsue. (in Japanese)

4. Laboratory of Geographical Information Sciences

1) Staff

Hiroshi MATSUYAMA Associate Professor / PhD (D.Sc.)

Hydrometeorology, Geographical Information Sciences

Takeki IZUMI Assistant Professor / PhD (D.Eng.)

Urban Climatology, Geographical Information Sciences, Numerical Meteorological Modelling

Daichi NAKAYAMA Assistant Professor / PhD (D.Sc.)

Geographical Information Sciences, Remote Sensing, Computational Geomorphology

2) Overview of Research Activities

This laboratory is going to study the natural environment as a whole which is composed of geomorphology, climate, hydrology, vegetation, and so on. Concretely, deductive approach and inductive approach are combined for conducting studies. The former approach is going to explain results from causes by physical laws such as mass balance, energy balance, equation of motion, and so on. The latter approach is going to explain facts demonstratively based on field surveys and *in situ* observations. Therefore, collection of quantitative data, digital mapping, statistical analyses, numerical modeling, and GIS (Geographical Information Systems) are main methods used in this laboratory.

The main study themes in this laboratory are listed as follows.

1. Energy and water cycle in the atmosphere and hydrosphere
2. Capturing snow distribution and snow water resources, along with snowmelt-runoff based on remote sensing techniques and field surveys
3. Quantitative evaluation of spectral reflectance characteristics of coniferous forests and their leaf area indices
4. Water environment around Mt. Aso and Tokyo metropolis
5. Numerical simulation of urban climate and local wind
6. Capturing surface conditions of cities using GIS
7. Monitoring and modeling natural environment and natural hazards

3) List of Research Activities in FY2013

Peer-reviewed Articles

- Matsuyama, H., Inamura, T. and Izumi, T. 2014. How do local residents regard the strong local wind *Matsubori-kaze?*—A case study based on a questionnaire survey at Ozu-Higashi Elementary School—. *Journal of Geography (Chigaku Zasshi)* **123**:69-81. (in Japanese with English abstract)
- Aoyama, M., Koyama, T. and Une, H. 2014. Geomorphological condition and land history of the liquefaction damaged sites in the lower part of the Tone River lowland induced by the 2011 off the Pacific coast of Tohoku Earthquake. *Geographical Review of Japan* **87**: 128-142. (in Japanese with English abstract)
- Koyama, T. and Aoyama, M. 2013. Relationship between liquefaction sites and land history in Itako and Kamisu cities, Ibaraki Prefecture. *Geo-Pollution Science, Medical Geology and Urban Geology* **8**:26-38. (in Japanese with English abstract)
- Hasegawa, K., Omi, H., Hiruma, Y., Kumagai, S., Yamamoto, R., Izumi, T. and Matsuyama, H. 2013. Estimation of leaf area index of *Cryptomeria japonica* using various methods—A case study in the Aso District, Kumamoto Prefecture—. *Journal of Geography (Chigaku Zasshi)* **122**: 875-891. (in Japanese with English abstract)
- Nemoto, Y., Izumi, T., Nakayama, D. and Matsuyama, H. 2013. Hydrological study on the artificial flooding tactics at Bichutakamatsu castle by Hideyoshi based on the flood-inundation simulations. *Geographical Review of Japan* **86**: 315-337. (in Japanese with English abstract)
- Miyano, H., Izumi, T., Nakayama, D. and Matsuyama, H. 2013. Observational study of long-term springwater temperature change in Tokyo in relation to changes in land-use. *Journal of Geography (Chigaku Zasshi)* **122**: 822-840. (in Japanese with English abstract)

Other Articles

- Matsuyama, H. 2013. "Parana River", "Pilcomayo River", "Amazon River", "Araguaia River", "Xingu River", "Tapajos River", "Tocantins River", "Parnaiba River", "Purus River", "Madeira River", "Patos Lake", "Apure River", "Orinoco River", "Caura River", "Braço Casiquiare River", "Maracaibo Lake", "Apurimac River", "Ucayali River", "Urubamba River", "Putomayo River", "Maranon River", "Titicaca Lake", "Grande River", "San Miguel River", "Beni River", "Mamora River". In *Encyclopedia of rivers in Japan and world*, ed. Y. Takahashi, K. Takara, K. Nonomura

- and S. Haruyama, Tokyo: Maruzen, 825-826, 831-840. (in Japanese)
- Matsuyama, H. 2014. Global warming and urbanization affect springwater temperatures in Tokyo, Japan. *IOP Conference Series: Earth and Environmental Science* **18** (2014) 012102 doi:10.1088/1755-1315/18/1/012102.
- Mahmud, M. R., Numata, S., Matsuyama, H., Hosaka, T. and Hashim, M. 2014. Challenge and opportunities of space-based precipitation radar for spatio-temporal hydrology analysis in tropical maritime influenced catchment: Case study on the hilly tropical watershed of Peninsular Malaysia. *IOP Conference Series: Earth and Environmental Science* **18** (2014) 012001 doi:10.1088/1755-1315/18/1/012001.
- Fukumoto, R. and Izumi, T. 2013. The development and application of a citizen support system as a self-help platform in disasters. *Proceedings of International Symposium on City Planning 2013*: 238-241.
- Hasegawa, H., Aoyama, M., Sasaki, A and Masuzawa, T. 2013. Geomorphic development of the Glacial and periglacial landforms in the Arakawa cirques, southern Japanese Alps since the Last Glacial. *Geographical Report of Kokushikan University* **22**: 23-37. (in Japanese)
- Komatsu, G., Goto, K., Baker, V. R., Oguchi, T., Hayakawa, Y. S., Saito, H., Pelletier, J. D., McGuire, L. and Iijima, Y. 2014. Effects of Tsunami wave erosion on natural landscapes: Examples from the 2011 Tohoku-oki Tsunami, in *Tsunami events and lessons learned; Environmental and societal significance*, ed. Y.A. Kontar, V. Santiago-Fandiño and T. Takahashi, 243-253. Berlin: Springer, doi:10.1007/978-94-007-7269-4_13.
- Matsushi, Y., Saito, H., Fukuoka, H. and Furuya, G. 2013. Landslides of tephra deposits on hillslopes of the Aso caldera wall and volcanic central cones by the north-Kyushu heavy rainfall at July 2012. *Annals of the Disaster Prevention Research Institute, Kyoto University* **56B**: 237-241. (in Japanese with English abstract)

Books

None

Reports

- Matsuyama, H. 2013. Configuration of BRDF observation system using newly-developed unmanned aerial vehicle (UAV). *Annual Report 2012 of Center for Environmental Remote Sensing, Chiba University* **18**: 59. (in Japanese and English)

- Saito, H. 2014. Relationships between landslides, topography, and geology in the Japanese Alps. *News Letter of Institute of Mountain Science, Shinshu University* **41**: 10-11. (in Japanese)
- Sakai, K., Hasegawa, K., Izumi, T. and Matsuyama, H. 2013. Configuration of BRDF observation system using newly-developed unmanned aerial vehicle (UAV). *Proceedings of the 15th CEReS Symposium on Remote Sensing for Environment*: 13 (in Japanese).

Book Reviews

- Matsuyama, H. 2013. Book review (Oki, T.: *Mizu kiki hontou no hanashi (How to think water crisis out)*). *Geographical Review of Japan* **86B**: 93-94.
- Nakayama, D. 2013. Book Review (Tange, Y.: *History of climate and civilization*). *Chiri* **58**(5): 97. (in Japanese)
- Nakayama, D. 2013. Book Review (Kinda, A. and Uesugi, K.: *Japanese history of cartograph*). *Chiri* **58**(8): 95. (in Japanese)
- Nakayama, D. 2013. Book Review (Braudel, F., Kanazuka, S. *trns.* : *La dynamique du capitalisme*). *Chiri* **58**(9): 114. (in Japanese)
- Nakayama, D. 2013. Book Review (Tanikawa, K.: *Place-names of Japan*). *Chiri* **58**(10): 111. (in Japanese)
- Nakayama, D. 2014. Book Review (Kawamura, Y.: *Cityscape and settlements of Japan 1300*). *Chiri* **59**(3): 111. (in Japanese)

Miscellaneous Reports

- The Japan Science Society (Matsuyama, H. is one of the supervisors) 2013. Cubic Earth—If the Earth were cubic—. The Japan Science Society, <http://www.jss.or.jp/fukyu/cubicearth/>.
- Matsuyama, H. 2013. Brazil—Difficult for certified weather forecasters to predict its weather properly. 16th June, 2013, Nikkan Sports.
- Matsuyama, H. 2013. Dr. H. who accidently met at Hakone. *Annual Report of Old Boys/Girls of Wandervogel Club in Tokyo University in 2014*: 47-48. (in Japanese)
- Matsuyama, H. 2014. Field work in physical geography—(3) “Discovery” of Yuda hot spring—. *Chiri* **59**(1): 82-87. (in Japanese)
- Matsuyama, H. 2014. Field work in physical geography—(5) Nobody can determine the weather as one likes—. *Chiri* **59**(3): 90-95. (in Japanese)
- Matsuyama, H. and Izumi, T. 2014. Field work in physical geography—(4) How to make wonderful

- connection—. *Chiri* **59**(2): 88-93. (in Japanese)
- Izumi, T. 2014. Field work in physical geography—(6) Perspective of the skyview aerial data taken by a unmanned helicopter. *Chiri* **59**(4): 88-93. (in Japanese)
- Izumi, T. and Matsuyama, H. 2013. Field work in physical geography—(1) Fortunate coincidence and good intuition—. *Chiri* **58**(11): 12-17. (in Japanese)
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- Matsuyama, H. 2013. Walking with thinking water—Hydrological aspect of walking—. Meguro City Collage. October, Meguro. (in Japanese)
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- influenced catchment: Case study on the upper and remote forested tropical watershed of Peninsular Malaysia. The 8th International Symposium on Digital Earth 2013, August, Kuching, Malaysia.
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- Sakai, K., Hasegawa, K., Izumi, T. and Matsuyama, H. 2014. Construction of new observation system of BRDF using small-sized UAV to capture 3D structure of forests based on optical remote sensing. The 16th CERES Symposium on Environmental Remote Sensing, February, Chiba. (in Japanese)
- Sakamoto, M. 2014. Observational study on the situation and mechanism of “Matsubori-kaze” based on field survey and meso-scale meteorological model. The 62th Meeting of Graduation Theses of Geography 2014, March, Koganei. (in Japanese)
- Sakamoto, M., Inamura, T., Izumi, T. and Matsuyama, H. 2014. Observational study on the situation and mechanism of “Matsubori-kaze” based on field survey and meso-scale meteorological model. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 82, March, Setagaya. (in Japanese)
- Hisatomi, Y., Nakayama, D. and Matsuyama, H. 2014. Diagnostic study on shallow groundwater flow in Musashino Terrace as simulated by MODFLOW. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 175, March, Setagaya. (in Japanese)
- Shimizu, T., Hiroi, T., Nishimine, Y. and Matsuyama, H. 2013. Spatial analysis of the stores of drug store “COSMOS Pharmaceutical Corporation” and discount store “DIREX Corporation”. *Research Abstracts on Spatial Information Science, CSIS DAYS 2013*: 56, November, Kashiwa. (in Japanese)
- Tanaka, D., Saito, H. and Matsuyama, H. 2013. Analyses of heavy rainfall events such as heavy rainfall of northern part of Kyushu in 2012 with the use of the snake line—Application of probability value of 50 years—. The 5th GIS-Landslide Workshop, November, Tsukuba. (in Japanese)

5 Laboratory of Urban and Human Geography

1) Staff

Yoshio SUGIURA Professor / PhD (D.Sc.)
Human Geography

Yoshiki WAKABAYASHI Professor / PhD (D.Sc.)
Urban Geography, Behavioral Geography, Geographical Information Sciences

Akihiro TAKINAMI Associate Professor / PhD (D.Lit.)
Cultural Geography, Tourism Study, Francophone Studies

Hiroyuki TSUBOMOTO Assistant Professor / PhD (D.Sc.)
Urban Geography, Office Study

Michiko HARAYAMA Assistant Professor
Bibliometrics

2) Overview of Research Activities

This research unit specializes in human geography, with special emphasis on the city and its environs. Our research interests center on the structural explanation of the relationship between human activities and geographic environment by employing approaches of social sciences and humanities. Methodologically, the emphasis lies largely on positivistic (viz., quantitative or mathematical); fieldwork is also encouraged. The research interests cover quantitative, socioeconomic, urban and behavioral geography. The main themes of our current research are as follows:

1. Mathematical modeling of human geographic phenomena
2. Regional analysis of human geographic phenomena
 - 1) Relationship between human activities and geographic environment
 - 2) Land use change in the city and its suburbs
 - 3) Spatial organization of the society

- 4) Transformation of human activities brought about by environmental change
- 3. Geographical studies of urban systems
 - 1) Spatial structures of intra-urban system
 - 2) System of cities
- 4. Geographical thought
 - 1) History of modern geography
 - 2) Bibliometric research of geographical studies

3) List of Research Activities in FY2013

Peer-reviewed Articles

- Sugiura, Y. 2014. The turn to functionalism of German urban geography and dawning central place studies. *Urban Geography of Japan* **9**: 1-27. (in Japanese with English abstract)
- Kukimoto, M., Yui, Y. and Wakabayashi, Y. 2014. The role of a childcare facility managed by a NPO in suburban area: A case of Kozoji New Town. *Urban Geography of Japan* **9**: 81-90. (In Japanese with English abstract)
- Kukimoto, M. and Koizumi, R. 2013. Childcare choice among white-color and double-income families with young children living in Tokyo bay area : A case of Toyosu area in Tokyo. *Annals of the Association of Economic Geographers* **59**: 328-343. (In Japanese with English abstract)

Other Articles

- Sugiura, Y. 2013. Central place theory. In *Dictionary in human geography*, ed. The Human Geographical Society of Japan, 32-35. Tokyo: Maruzen Publishing Co., Ltd. (in Japanese)
- Sugiura, Y. 2014. Urban spatial analysis: A viewpoint of quantitative geography. In *Introduction to urban geography*, ed. T. Fujii, and H. Kamiya, 66-68. Kyoto: Minerva Shobo. (in Japanese)
- Sugiura, Y. 2014. Edward Ullman. In *Introduction to urban geography*, ed. T. Fujii and H. Kamiya, 69. Kyoto: Minerva Shobo. (in Japanese)
- Furuya, Y., Sugiura, Y. and Harayama, M. 2013. Supply of private-sector condominiums and their residents in Tama City, Tokyo western suburb in the early 2000s. *Notes on Theoretical Geography* **17**: 39-66. (In Japanese)
- Wakabayashi, Y. 2013. Behavioral geography and mental maps. In *The dictionary of human geography*, ed. The Human Geographical Society of Japan, 44-47. Tokyo: Maruzen Publishing

- Co., Ltd. (In Japanese)
- Wakabayashi, Y. 2014. Cognition and behavior. In *Introduction to urban geography*, ed. T. Fujii, and H. Kamiya, 56-58. Kyoto: Minerva Shobo. (in Japanese)
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- Kukimoto, M. and Wakabayashi, Y. 2014. Provision of web-based childcare support maps by local governments in Japan: Possibilities and limitations. *Geographical Reports of Tokyo Metropolitan University* **49**: 47-54.
- Takinami, A. 2013. Aulnay-sous-Bois, a town of football or a suburban territory in France. *Notes on Theoretical Geography* **17**: 1-20. (in Japanese)
- Takinami, A. 2013. The sense of place and the travels toward the north in autobiographic works of Yasushi Inoue. *Notes on Theoretical Geography* **17**: 22-38. (in Japanese)
- Takinami, A. 2014. Sunset over Lake Shinji in Matsue: Influence of Lafcadio Hearn's travel literatures on tourism. In *Tourism and media*, ed. H. Endo, S. Teraoka and M. Horino, 81-96. Kyoto: Nakanishiya. (in Japanese)
- Tanaka, M. and Fujikawa, S. 2014. The actual situation of stores which sell "Asaka-mai" rice in Koriyama district, Koriyama city. In *How to produce, process, sell and advertise the branded rice in Koriyama of Fukushima prefecture*, ed. A. Takinami, 105-111. Hachioji: Laboratory of Urban and Human Geography, Tokyo Metropolitan University. (in Japanese)
- Fujikawa, S. 2013. The lady's neighbor told me that she has to support Athletic Club though she doesn't like football. In *Trip to Spain for beauty and food: Basque and Navarre*, ed. C. Sugawara and J. Yamaguchi, 70-71. Tokyo: Heibonsha. (in Japanese)
- Fujikawa, S. and Tanaka, M. 2014. Provision of sixth industrialized product information by "Fukushima-oishi-taisho". In *How to produce, process, sell and advertise the branded rice in Koriyama of Fukushima prefecture*, ed. A. Takinami, 112-119. Hachioji: Laboratory of Urban and Human Geography, Tokyo Metropolitan University. (in Japanese)

Books

Wakabayashi, Y. ed. 2013. *Introduction to regional geography of Japan with maps and data*. Tokyo : JTB Publishing. (in Japanese)

Takinami, A. 2014. *Paris, Genève, Méditerranée : L'espace ludique et ses territoires multiculturels*. Fukuoka: Kyushu University Press. (in Japanese)

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Book Reviews

None

Miscellaneous Reports

Wakabayashi, Y. 2013. Spatial cognition and navigation of taxi drivers in Tokyo. *Shinrigaku warudo* **63**: 23-24. (in Japanese)

Presentations

Wakabayashi, Y. 2013. Measurement of geospatial thinking abilities and the factors affecting them. IGU 2013 Kyoto Regional Conference, August, Kyoto.

Wakabayashi, Y. 2014. What is spatial thinking and how to measure it? Public Symposium on the Development of Spatial Thinking Abilities, March, Tokyo. (in Japanese)

Wakabayashi, Y. and Kukimoto, M. 2013. Present condition and problems of childcare support maps in Japan as a participatory map-making. *Papers and Proceedings of the Annual Conference of the Japan Cartographers Association 2013*, 22-23, August, Kashiwa. (in Japanese)

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Wakabayashi, Y., Kukimoto, M. and Yui, Y. 2013. Mapping the supply-demand gap in childcare services with GIS: A case study in Naha City, Okinawa. Japan Geoscience Union Meeting 2013, May, Makuhari. (in Japanese)

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- Takinami, A. 2013. The reality and representations of a Paris's north-eastern suburban town. *Proceedings of the General Meeting of the Association of Japanese Geographers 2013 Autumn Meeting* **84**: 47, September, Fukushima. (in Japanese)
- Tsubomoto, H. 2013. Office locaton as workspace for white-collar worker in central Tokyo. The 30th Symposium of the Japanese Society of Geographical Science, October, Hiroshima. (in Japanese)
- Tsubomoto, H. 2014. Recent restructuring business space of central Tokyo—A case study of office construction activities by the Knowledge-based industry after the 1990s – . The General Meeting of the Global Economy and Management Geography Study Group of the Association of Japanese Geographers 2014 Spring Meeting, March, Setagaya.
- Ikeda, Y., Tsubomoto, H. and Wakabayashi, Y. 2013. Typology and location of convenience stores in terms of sales mix in Minato Ward, Tokyo. *Proceedings of the 2013 Annual Meeting of the Human Geographical Society of Japan*: 128-129, November, Osaka. (in Japanese)
- Koizumi, R. 2013. Changing spatial patterns of residents in Tokyo metropolitan area since 2000. *Abstract of the 8th Japan-Korea-China Joint Conference on Geography*: 111-112, July, Fukuoka.
- Koizumi, R. 2013. The changes of the spatial patterns of occupational structure in Tokyo metropolitan area, 1985-2005: An extended shift-share analysis. IGU 2013 Kyoto Regional Conference, August, Kyoto.
- Komaki, N., Satake, Y., Kanmura, H. and Koizumi, R. 2014. Achievements and problems of intelligence sharing in the conduct of an international conference: Through experiments of the Japan-Korea-China Joint conference on geography. *Proceedings of the General Meeting of the Association of Japanese Geographers 2014 Spring Meeting* **85**: 355. Tokyo. (in Japanese)
- Abe, C. and Wakabayashi, Y. 2014. The actual condition and problems of the child care support center use in Kahoku City, Ishikawa Prefecture. *Proceedings of the General Meeting of the Association of Japanese Geographers* **85**: 242, March, Setagaya. (in Japanese)
- Tanaka, M. 2013. A collaborative effort to verbal guidance for visually impaired people as volunteered geographic information. IGU 2013 Kyoto Regional Conference, August, Kyoto.
- Fujikawa, S. 2014. FC Ryukyu's regional development of application for J League membership.

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