

# Annual Report 2015

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 / 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 tephras 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 FY2015

### Peer-reviewed Articles

Suzuki, T., Saito, H., Kasahara, A., Kuriyama, E. and Imaizumi, T. 2016. Late Quaternary

tephrostratigraphy of underground sediments in the middle west part of Aizu Basin, Fukushima, northeast Japan. *The Quaternary Research* **55**: 1-16. (in Japanese with English abstract)

Thiel, C., Tsukamoto, S., Tokuyasu, K., Buylaert, J-P., Murray, A.S., Tanaka, K. and Shirai, M. 2015. Testing the application of quartz and feldspar luminescence dating to MIS 5 Japanese marine deposits. *Quaternary Geochronology* **29**: 16-29.

Hayashizaki, R. and Shirai, M. 2015. Coastal transport processes of sand grains assumed from residual optically stimulated luminescence intensities of alkali-feldspar grains around the Ohkouzu Diversion Channel mouth in Niigata Prefecture, central Japan. *Geographical Review of Japan Series A* **88**: 327-340. (in Japanese with English abstract)

#### Other Articles

Yamazaki, H., 2015, Evaluation of the crustal activity for the high-level radioactive waste disposal. *Geotechnical Engineering Magazine* **63** (6): 32-35. (in Japanese)

Yamazaki, H., 2015, Onshore plate boundary connecting Suruga Bay and Sagami Bay, central Japan. *Electric Power Civil Engineering* **378**: 3-8. (in Japanese)

Sato, Y., Mizuno, K., Hosoya, T., Ueki, T., Morita, S. and Yamazaki, H. 2015. Coring survey and diatom fossil analyses of alluvium in Ashigara Plain, central Japan. *Interim Report of Geological Survey of Japan* **68** (Annual Report of Investigations on Geology and Active Faults in the Coastal Zone of Japan (FY2014), ed. Tanaka, Y.) : 83-105. (in Japanese with English abstract)

Suzuki, T. 2015. Relay Essay of Physical Geography looking over the Earth: Knowing volcanic eruption and ash-fall from volcanic ash deposits. *Science Journal Kagaku* **85**: 1125-1127. (in Japanese)

Suzuki, T., Nakajima, E., Kawashima, S., Kawai, M. and Nakayama, T. 2016. Identification of three Early Pleistocene tephras in and around the west part of the Musashino Upland, Tokyo, Northeast Japan. *Geographical Reports of Tokyo Metropolitan University* **51**: 127-133.

Shirai M and Omura A. 2016. Influence of dam reservoir on deep marine sedimentological environment: An example of the Kumano Trough, central Japan. *Geographical Report of Tokyo Metropolitan University* **51**: 119-126.

Tamura, I., Okada, M. and Mizuno, K. 2016, An integrated stratigraphy around the Plio-Pleistocene boundary in the Chikura Group, The Boso Peninsula, central Japan, Based on data from paleomagnetic, oxygen isotopic and widespread tephra correlation. *Geographical Report of Tokyo Metropolitan University* **51**: 41-52.

Kawai, T. 2016. Middle Pleistocene terrace evolution in the drainage of the Natori River,

- Northeast Japan. *Geographical Reports of Tokyo Metropolitan University* **51**: 93-100.
- Nishizawa, F. and Suzuki, T. 2016. Re-examination of previous correlation of distal Ks5 Tephra and proximal Oda pyroclastic flow deposits in South Kyushu, SW Japan. *Geographical Reports of Tokyo Metropolitan University* **51**: 83-91.
- Utsugawa, T. and Shirai, M. 2016. Sand grain producing-transport processes estimated from gravel-sand grain roundness on dams-constructed Tenryu River, central Japan. *Geographical Reports of Tokyo Metropolitan University* **51**: 101-108.

#### Books/ Reports/ Book Reviews

- Suzuki, T. 2015. 3.2.2. High-resolution tephrochronological survey for the estimation of mean slip rate and accumulated displacement of the fault zone. *2012-2014 Report of the integrated research project for the Tachikawa Fault Zone*, 79-98. (in Japanese)
- Suzuki, T. 2015. 3.2.2. High-resolution tephrochronological survey for the estimation of mean slip rate and accumulated displacement of the fault zone. *2014 Report of the integrated research project for the Tachikawa Fault Zone*, 95-114. (in Japanese)
- Tamura, I. 2015. Book review (Fujioka, K. and Hitara, D. (eds.): Opening of the Japan Sea and Collision of the Izu Arc - History of Ground in Kanagawa Prefecture). *The Quaternary Research* **54**: 97-98. (in Japanese)

#### Miscellaneous Reports

- Suzuki, T. 2015. Structure of the underground below capital cities. *Rekishi-jin (Otonanoryugi)* **15**: 58-61. (in Japanese)
- Suzuki, T. and Miyauchi, T. 2015. INQUA2015 Mid-Congress Excursion (Guidebook) M-11 Fuji volcanoes and active tectonics in the Izu-Tanzawa Collision Zone, 35p.
- Saito, Y., Okumura, K., Suzuki, T., Yokoyama, Y. and Izuho, M. 2016. Studies of the Quaternary in Japan. *Quaternary International* **397**: 1-2.
- Kasahara, A. 2016. Natural environment of Koriyama area as a basis of agricultural development. In "Agriculture and its Products in Koriyama city of Fukushima Prefecture: Farmland Use, Women Farmer, Branded Vegetables and Rice Processing", ed. Takinami, A., Department of Geography, Tokyo Metropolitan University, Hachioji: pp. 4-7. (in Japanese)
- Yamada, M. 2015. A report of academic award lecture 2014. *Quaternary newsletter* **22** (6): 21-22. (in Japanese)
- Yamada, M. 2015. Introduction of the joint student excursion. *The Geological Society of Japan News*: **18** (12): 5. (in Japanese)

### Presentations

- Yamazaki, H. 2015. Natural environment and hazard for Kanagawa Prefecture. Lecture of the Super Science High School project at Seisho High School, Kanagawa Prefecture, July, Odawara. (in Japanese)
- Yamazaki, H. 2015. Population-energy issues and the nuclear energy from the viewpoint of global environment change. Abstracts of the 122nd Annual Meeting of the Geological Society of Japan: p. 173, September, Nagano. (in Japanese)
- Yamazaki, H. 2015. The global environmental problem and atomic energy. Lecture for the Smart Energy Fukui Society, September, Fukui. (in Japanese)
- Yamazaki, H. 2015. Some disasters to attack the southern Chiba Prefecture. The disaster prevention lecture of the Amaha high school, September, Futtsu. (in Japanese)
- Yamazaki, H. 2015. On the radioactive nuclear waste and its geological disposal. Lecture for the Electric Construction Industrial Guild of Ishikawa Prefecture, December, Kanazawa (in Japanese)
- Yamazaki, H. 2015. The global environmental problem and atomic energy. The 2nd study network for the HLW disposal, November, Nagoya. (in Japanese)
- Yamazaki, H. 2015. On the radioactive nuclear waste and its geological disposal. Lecture for the Japan Electric Construction Industrial Guild, December, Tokyo (in Japanese)
- Yamazaki, H. 2015. Be careful and have a concern about the sudden disaster. The disaster prevention lecture of the Irumagawa junior high school, December, Sayama. (in Japanese)
- Yamazaki, H. 2016. On the nuclear energy and geological disposal. Lecture for the Gunma-Kokusai Academy Secondary School, January, Tokai Village. (in Japanese)
- Yamazaki, H. 2016. Fault displacement and its risk. The combination security symposium for the nuclear energy. January, Tokyo. (in Japanese)
- Yamazaki, H. 2016. On the fault displacement issue and its risk. The 16th seminar of the Japan Society of Maintenology, February, Tokyo. (in Japanese)
- Yamazaki, H. 2016. A tendency and the measures of the huge earthquake. Lecture for the Mitaka station square community center, February, Mitaka. (in Japanese)
- Yamazaki, H. 2016. On the radioactive nuclear waste and its geological disposal. Lecture for the Electric Construction Industrial Guild of Toyama Prefecture, March, Toyama. (in Japanese)
- Sato, Y., Mizuno, K., Hosoya, T., Ueki, T., Morita, S. and Yamazaki, H. 2015. Holocene environmental changes in Ashigara Plain suggesting subsidence event of Kodu-Matsuda fault. Programme and Abstracts, Japan Association for Quaternary Research 45: 18, August, Shinjuku. (in Japanese)

- Suzuki, T. 2015. Characteristics of the Edo and Tokyo and its history of natural disasters caused from volcanoes and earthquakes. Meguro City College in 2015, May, Setagaya. (in Japanese)
- Suzuki, T., Nakayama, T., and Terada, Y. 2015. Geology and People in Todoroki Gorge. City Geo-Walk in Tokyo “Geology and People in Todoroki Gorge”, May, Setagaya. (in Japanese)
- Suzuki, T. and Murata, M. 2015. Identification of early to middle Pleistocene widespread tephras from Northeast Japan in Kanto, Central Japan: tie point for the stratigraphy of tephras from whole of Japanese Islands. Abstracts of the XIX INQUA Congress: S04-08, July, Nagoya.
- Suzuki, T., Murata, M., Sato, H., Yamada, M., Ojima, T. and Yamazaki, H. 2015. A pair of huge eruptions occurred at ca.2 Ma in the Sengan Geothermal Area, Northeast Japan, and associated Tmg-R4 and Kd44-Nk widespread tephras. Programme and Abstracts, Japan Association for Quaternary Research 45: 12, August, Shinjuku. (in Japanese)
- Suzuki, T. 2016. Geology of Tama and its relation to volcano. Hachioji Eco Hiroba, January, Hachioji. (in Japanese)
- Suzuki, T. 2016. Earthquakes and volcanoes in Japanese islands: is a new active period beginning? Open University, Tokyo Metropolitan University, Iidabashi. (in Japanese)
- Ishihara, T., Suzuki, T. and Uchida, Y. 2015. Basin fill sediments and late Quaternary tephras under the eastern part of Aizu basin, Northeast Japan. Abstracts of Japan Geoscience Union Meeting 2015: HQR23-P06, May, Makuhari. (in Japanese with English abstract)
- Maruyama, S., Hattori, K., Hirata, T., Suzuki, T. and Danhara, T. 2015. Simultaneous determinations of 58 elements in volcanic glass shards using the femtosecond laser ablation ICP-MS. Abstracts of Japan Geoscience Union Meeting 2015: MTT44-P01, May, Makuhari. (in Japanese with English abstract)
- Chigira, M., Suzuki, T., Wang, G. and Tobita, T. 2015. Debris avalanches of pyroclastic fall deposits induced by the 1949 Imaichi earthquake. Abstracts of Japan Geoscience Union Meeting 2015: HDS06-10, May, Makuhari. (in Japanese with English abstract)
- Biswas, R., Toyoda, S. and Suzuki, T. 2015. Dating of Quaternary tephras using Optical and ESR methods: Reliability test and improving the methodology. Abstracts of the XIX INQUA Congress: S08-13, July, Nagoya.
- Maruyama, S., Hattori, K., Hirata, T., Suzuki, T. and Danhara, T. 2015. Simultaneous determinations of 58 major to trace elements in volcanic glass shards on the INTAV sample mount using the femtosecond laser ablation ICP-mass spectrometry. Abstracts of the XIX INQUA Congress: S04-P01, July, Nagoya.
- Teraguchi, K. and Suzuki, T. 2015. Detection and correlation of cummingtonite-bearing

- middle Pleistocene cryptotephra in tephric soil deposits covering MIS7 fluvial terraces, Kanto, central Japan. Abstracts of the XIX INQUA Congress: S05-P03, July, Nagoya.
- Ishihara, T., Suzuki, T. and Uchida, Y. 2015. Basin fill sediments and shallow subsurface geology in the Aizu basin, Northeast Japan. Programme and Abstracts, Japan Association for Quaternary Research 45: 11, August, Shinjuku. (in Japanese)
- Maruyama, S., Hattori, K., Hirata, T., Suzuki, T. and Danhara, T. 2015. Comparisons of simultaneous determinations of wide-ranged elements in volcanic glass shards on the INTAV mount using the femtosecond laser- and the excimer laser-ablation ICP-MS. Annual Meeting of the Geochemical Society of Japan 2016, September, Nagoya.
- Ishihara, T., Suzuki, T. and Uchida, Y. 2015. Shallow subsurface geology based on analysis of drilling cores and borehole data obtained in the Aizu basin, Northeast Japan. Abstracts of AGU (American Geophysical Union) Fall Meeting: EP53A-0985, December, San Francisco.
- Shirai, M., Hayashizaki, R., Utsugawa, T. and Omura, A. 2015. Changes in MAR during the later 20th century of southern end of the Mogami Trough, off Niigata: Influence of dam reservoir on hemipelagic environment. Abstracts for Annual Meeting of the Sedimentological Society of Japan 2015:33-34, April, Tsukuba. (in Japanese)
- Shirai, M., Watanabe, M., Utsugawa, T., Hayashizaki, R., Takahashi, T., Obi, R. and Kato, Y. 2015. Slope failure of the Oya-Kuzure and generation of the Akamizu Fall, upper reaches of the Abe River, Shizuoka Prefecture. Abstracts of Japan Geoscience Union 2015 Meeting: HGM22-04, May, Makuhari. (in Japanese with English abstract)
- Shirai, M., Hayashizaki, R., Utsugawa, T. and Omura, A. 2015. Influence of dam reservoir deposition to deep marine hemipelagic environment off Niigata, central Japan. Abstracts of the XIX INQUA Congress: G04-P03, August, Nagoya.
- Shirai, M. 2016. Several topics on sand and stratum. Open University, Tokyo Metropolitan University, Iidabashi. (in Japanese)
- Takahashi, T. and Shirai, M. 2015. The river transport processes in MIS 5.1 and MIS 3 to 2 estimated from size and roundness of the terrace gravels in Tama River and Sagami River. Abstracts of Japan Geoscience Union 2015 Meeting: HGM22-P05, May, Makuhari. (in Japanese with English abstract)
- Takahashi, T. and Shirai, M. 2015. Estimation of the paleo-river transportation processes from the size and roundness of terrace gravels in the Sagami River, Central Japan. Abstracts of the XIX INQUA Congress: T18-P22, August, Nagoya.
- Tamura, I. and Yamazaki, H. 2015. The history of volcanic eruption based on widespread tephra correlation at Pliocene and early Pleistocene in Japan. Abstracts of Japan Geoscience Union 2015 Meeting: SVC47-P01, May, Makuhari. (in Japanese with English abstract)



abstract)

- Tamura, I. and Yamazaki, H. 2015. Plio-Pleistocene tephrochronology in central Japan. Abstracts of the XIX INQUA Congress: S04-P07, July, Nagoya.
- Tamura, I., Mori, Y., Tanaka S. and Usami T. 2015. Petrographic properties of the Wakebe tephra in the Kameyama Formation of the Tokai Group and the widespread tephra correlation. Programme and Abstracts, Japan Association for Quaternary Research 45: 13, August, Tokyo. (in Japanese)
- Tamura, I., Mori, Y., Usami, T. and Tanaka, S. 2015. The Wakebe-Ikego1 volcanic ash, a widespread tephra at Gauss/Gilbert boundary in Central Japan. Abstracts of the 122nd Annual Meeting of the Geological Society of Japan: p. 71, September, Nagano. (in Japanese)
- Mori, Y., Usami, T., Tanaka, S. and Tamura, I. 2015. An ancient lake "Anoutsu-ko" of the Tokai Group suggested by diatom fossil assemblage in Tsu city, Mie prefecture. Programme and Abstracts, Japan Association for Quaternary Research 45: 14, August, Tokyo. (in Japanese)
- Hoshi, H., Tamura, I. and Komatsu, T. 2015. Radiometric ages and petrographic properties of the Oroshi volcanic ash in the lower Tokai Group. Abstracts for the 122nd Annual Meeting of the Geological Society of Japan: p. 234, September, Nagano. (in Japanese)
- Yasue, K., Komatsu, T., Tokuyasu, K., Tamura, I. and Horiuchi, Y. 2015. Provenance analysis techniques for understanding the stage of mountain buildings : Approches focusing on the radiation damage of quartz. Abstracts for the 122nd Annual Meeting of the Geological Society of Japan: p. 303, September, Nagano. (in Japanese)
- Ando, K. 2015. Estimation of a slip velocity of the Chelungpu Fault associated with 1999 ChiChi earthquake in Taiwan using the numerical calculation about the stratum deformation. Abstracts of the XIX INQUA Congress: T06-P03, July, Nagoya, Japan.
- Hayashizaki, R. and Shirai, M. 2015. Estimation of sediment sources of the 2011 Tohoku-oki tsunami deposits using grain shape and OSL intensity of alkali feldspar grains in Minamisoma city, Fukushima Prefecture, Japan. Abstracts for Annual Meeting of the Sedimentological Society of Japan 2015: 88-89, April, Tsukuba. (in Japanese)
- Hayashizaki, R. and Shirai, M. 2015. Effectiveness of luminescence dating of tsunami deposits examined from the March 2011 Tohoku-oki Tsunami deposits. Abstracts of Japan Geoscience Union Meeting 2015: MIS25-P14, May, Makuhari. (in Japanese with English abstract)
- Hayashizaki, R. and Shirai, M. 2015. Bleaching achievements of sand grains of the 2011 Tohoku-oki tsunami deposits and estimation of accurate depositional age of tsunami deposits using OSL dating. Abstracts of the XIX INQUA Congress: S08-P13, July,

Nagoya.

- Kasahara, A. and Suzuki, T. 2015. Correlation of distal U8 tephra to a pyroclastic flow deposit and subsurface chronology under the Koriyama Basin, in the southern part of Northeast Japan. Abstracts of the XIX INQUA Congress: S05-P01, July, Nagoya, Japan.
- Nishizawa, F. and Suzuki, T. 2015. Tephrochronological study on Middle Pleistocene ignimbrites in the Futami Basin, west-central Kyushu, Japan. Abstracts of the XIX INQUA Congress: S04\_06, July, Nagoya.
- Utsugawa, T. and Shirai, M. 2015. Fluvial sand grain producing–transportation processes estimated by changes in lithology and form of gravel to medium-sand grain in the tributary of Watarase River. Abstracts for Annual Meeting of the Sedimentological Society of Japan 2015: 79–80, April, Tsukuba. (in Japanese)
- Utsugawa, T. and Shirai, M. 2015. Sand grain producing and transport processes in downstream reaches of the dams-constructed Tenryu River, central Japan. Abstracts of Japan Geoscience Union Meeting 2015: AHW27-O8, May, Makuhari. (in Japanese with English abstract)
- Utsugawa, T., Shirai, M., Hayashizaki R., Takahashi, T. and Nakajima, E. 2015. Influences of dam reservoir on sand grain producing and transport processes estimated from gravel and sand grain roundness of Tenryu River, central Japan. Abstracts of the XIX INQUA Congress: G04\_P02, August, Nagoya.
- Utsugawa, T. and Shirai, M. 2016. Breaking and abrasion mechanisms revealed from lithological and roundness changes of gravel–sand grains in the Watarase River watershed, central Japan. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89: 175, March, Shinjuku. (in Japanese)
- Yamada, M. and Suzuki, T. 2015. Tephrochronological study on the age of the Middle Pleistocene Shiobara Group, northern Tochigi Prefecture, central Japan. Programme and Abstracts, Japan Association for Quaternary Research 45: 10, August, Waseda (in Japanese).
- Yamada, M., Tanabe, T. and Suzuki, T. 2015. Identification of the Middle Pleistocene widespread Hakkoda-Kokumoto tephra in the Tsumagoi Group, western Gunma prefecture, central Japan. Abstracts of the 122nd Annual Meeting of the Geological Society of Japan: p. 57, September, Nagano (in Japanese).
- Igarashi, R., Sugai, T., Imura, R. and Nishizawa, F. 2015. Characteristics of failure landform and incised valley in Shirasu area in Southern Kyushu. Abstracts of Japan Geoscience Union Meeting 2015: AHW27-O8, May, Makuhari. (in Japanese with English abstract)
- Shibayama, A. and Nishizawa, F. 2015. Example of the disaster prevention education for science educational materials in Nihon University Sakuragaoka High School. Proceedings

of the 17th Conference Japan Society for Disaster Information Studies: C1-1, October, Kofu. (in Japanese)

Kato, Y. 2016. Depositional system of the early Pleistocene Inagi Formation, Kazusa Group in the northwest Tama Hills, central Japan. The 64th Meeting of Graduation Thesis of Geography 2016, March, Koganei. (in Japanese)

Shioya, A. and Suzuki, T. 2016. Reconsideration of the age of the middle Pleistocene Hoshakuji fluvial terrace in the Kinu River Basin, North Kanto, Japan. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89: 177, March, Shinjuku. (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 FY2015

#### Peer-reviewed Articles

Endo, N., Matsumoto, J., Hayashi, T., Terao, T., Murata, F., Kiguchi, M., Yamane, Y. and

- Shah Alam, Md. 2015. Trends in precipitation characteristics in Bangladesh from 1950 to 2008. *SOLA* **11**: 113-117, doi:10.2151/sola.2015-027.
- Hattori, M., Matsumoto, J., Ogino, S.Y., Shin-Ya Ogino, Enomoto, T. and Miyoshi, T. 2016. The impact of additional radiosonde observations on the analysis of disturbances in the South China Sea during VPREX2010. *SOLA* **12**: 75–79. doi:10.2151/sola.2016-018
- Lestari, S., Hamada, J.-I., Syamusdin, F., Sunaryo, Matsumoto, J. and Yamanaka, M.D. 2016. ENSO influence on rainfall extremes around Sulawesi and Maluku Islands in the eastern Indonesian maritime continent. *SOLA* **12**, 33-36. doi:10.2151/sola.2016-008.
- Ogino, S.Y., Yamanaka, M.D., Mori, S. and Matsumoto, J. 2016. How much is the precipitation amount over the tropical coastal region? *Journal of Climate* **29**: 1231–1236. doi: 10.1175/JCLI-D-15-0484.1.
- Suzuki, H., Takahashi, H. and Nakakita, E. 2015. Study on spatial scale of heavy rainfall based on raingauge precipitation data from multiple organizations. *Journal of Japan Society for Natural Disaster Sciences* **34** (Special issue): 61-76. (in Japanese with English abstract)
- Konno, S., Izumi, T. and Takahashi H. 2015. Relationship between Terra/ASTER land surface temperature and ground-observed air temperature. *Geographical Review of Japan Series B* **88**: 38-44.
- Sugawara, H., Shimizu, S., Takahashi, H., Hagiwara, S., Narita, K., Mikami, T. and Hirano, T. 2016. Thermal influence of a large green space on a hot urban environment. *Journal of Environmental Quality* **45**: 125-133, doi:10.2134/jeq2015.01.0049.
- Fujibe, F. 2015. Comments on "Anthropogenic heat release: Estimation of global distribution and possible climate effect" by Chen B. et al. *Journal of the Meteorological Society of Japan* **93**: 501-503. doi: 10.2151/jmsj.2015-027.
- Kudo, K. and Fujibe, F. 2015. Evaluation of long-term temperature trends at urban meteorological stations in Japan with respect to time of the day and weather conditions: Analysis using the JRA-55 data. *Journal of Heat Island Institute International* **10**:16-23. (in Japanese with English abstract)
- Shido, F., Aoyagi, T., Seino, N., Fujibe, F. and Yamamoto, A. 2015. Influence of nearby plants and artificial structures on the surface air temperature statistics: An in-situ measurement at central Tokyo (Otemachi) throughout years. *Tenki* **62**: 403-409. (in Japanese with English abstract)
- Kubota, H., K. Yoneyama, J.-I. Hamada, P. Wu, A. Sudaryanto and I. B. Wahyono. 2015. Role of maritime continent convection during the preconditioning stage of the Madden-Julian Oscillation observed in CINDY 2011/DYNAMO. *Journal of the Meteorological Society of Japan* **93A**, 101-114.
- Takahashi H.G., Adachi, S.A., Sato, T., Hara, M., Ma, X. and Kimura, F. 2015. An Oceanic

- Impact of the Kuroshio on Surface Air Temperature on the Pacific Coast of Japan in Summer: Regional H<sub>2</sub>O Greenhouse Gas Effect, *Journal of Climate* **28**, 7128-7144.
- Kodama, C., Yamada, Y., Noda, A.T., Kikuchi, K., Kajikawa, Y., Nasuno, T., Tomita, T., Yamaura, T., Takahashi, H.G., Hara, M., Kawatani, Y., Satoh, M. and Sugi, M. 2015. A 20-year climatology of a NICAM AMIP-type simulation. *Journal of the Meteorological Society of Japan*, **93**, 393-424.
- Tanaka, K., Tantasirin, C., Wiwatwittaya, D., Tanaka, N., Takahashi, H.G., Yoshifuji, N., Igarashi, Y., T. Sato, T. and Suzuki, M. 2015. Earlier leaf flush associated with increased teak defoliation. *Forest Science*, **61**,1009-1020.
- Sugimoto, S., Sato, T., and Sasaki, T. 2015. Impact of land-use change on winter precipitation in Hokkaido, Japan, *SOLA* **11**, 95-99.
- Sugimoto, S., Sato, T., and Sasaki, T. 2015. Seasonal and Diurnal variability in historical warming due to the urbanization of Hokkaido, Japan. *Journal of Geophysical Research* **120**, doi:10.1002/2014JD022759.
- Matsumura, S., Horinouchi, T., Sugimoto, S., and Sato, S. 2016. Response of the Baiu rainband to northwest Pacific SST anomalies and its impact on atmospheric circulation. *Journal of Climate*, doi: 10.1175/JCLI-D-15-0691.1.
- Nakajima, K. and Takahashi, H. 2015. Relationships between High Concentration Area of Photochemical Oxidants and Sea Breeze in the Southern Kanto Plain. *Journal of Japan Society for Atmospheric Environment* **50**: 92-99.
- Nguyen-Le, D., Matsumoto, J. and Ngo-Duc, T. 2015. Onset of the rainy seasons in the eastern Indochina Peninsula. *Journal of Climate* **28**: 5645-5666. doi: 10.1175/JCLI-D-14-00373.1.
- Nguyen-Le, D. and Matsumoto, J. 2015. Delayed withdrawal of the autumn rainy season over central Vietnam in recent decades. *International Journal of Climatology*, doi: 10.1002/joc.4533.

#### Other Articles

- Fujibe, F. 2015. Diurnal variation of wintertime weak precipitation in western Japan. *Tenki* **62**: 1001-1004. (in Japanese)
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- Kamizawa, N. and Takahashi, H.G. 2015. Future changes of interannual variation of the Asian summer monsoon precipitation using the CMIP5. European Geosciences Union General Assembly 2015, April, Vienna, Austria.
- Kamizawa, N. and Takahashi, H.G. 2015. Projected long-term changes in the interannual variation of the Asian summer monsoon precipitation in CMIP5. Tropical Meteorology Workshop, September, Fukushima.
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### 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

1. Development of survey methods 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. Influence of anthropic pressure in a river basin on downstream water environment
6. Evaluation of forest fire impact on soil, vegetation and landform in terrestrial ecosystems
7. Study for carbon and nitrogen dynamics in urban ecosystems
8. Soil carbon sequestration from the point of view of soil parent materials

#### 3) List of Research Activities in FY2015

##### Peer-reviewed Articles

Tashiro T, Collado M B, Watanabe M, Morishima W. 2015. Correlation between temporal variations of particle size and paleo-vegetation of the Paitan Lake in the central plain of Luzon, the Philippines. *The Quaternary Research* **54**, 87-95 (in Japanese) .

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- Kawahigashi, M. 2015. Regional Assessment of Soil Change in Asia, 10.3.9 Compaction 10.3.10 Sealing and Capping. In “Status of the World’s Soil Resources, Main report” ed. Intergovernmental Technical Panel on Soils (ITPS), Food and Agriculture Organization of the United Nations, 2015, 296-297.
- Kawahigashi, M. and Kida, K. 2015 Influence of land surface disturbance on soil development processes. In “Role of soils in Asian Mega Cities” 2015. ed. M. Watanabe, T. Kosaki, M. Kawahigashi, 62-67, Proceedings of the Kenkyukan 2015.
- Sakagami, N., Sato, T., Odani, H., Tamura, M., Kato, T. and Ohta, H. 2016. Short stay program in Indonesia focused on agricultural sustainability and promotion of international collaborative education. *Research Bulletin of International Students Center Ibaraki University* **14**: 67-75 (in Japanese).

#### Books

None

#### Reports

- Kida, K. 2015. A Report on the 23rd Pedologist Training Course. *Pedologist*. **59**:25-27 (in Japanese) .

#### Book Reviews

None

### Miscellaneous Reports

Kawahigashi, M. 2015. Urban soil. In “What is soil?” The tour exhibition for International Year of Soil. Saitama Museum of Rivers. (Soil monolith and panel exhibition).

### Presentations

Hardenbicker, U., Watanabe, M., Kotowich, R. 2015. Exploring the use of weathering indexes in an alluvial fan chronology. European Geosciences Union General Assembly 2015, April 2015, Vienna.

Ito N., Sakagami N., Watanabe M. 2015. Antimicrobial activity of 4,9-dihydroxyperylene-3,10-quinone contained in *Cenococcum geophilum*. Goldschmidt 2015, Aug. 2015, Prague

Kawahigashi, M., Prokushkin, A. S. and Sumida, H. 2015. Nutrient release during biodegradation of organic horizons in the Siberian taiga underlain by continuous permafrost. Japan Geoscience Union (JpGU) 2015, Makuhari, Japan.

Kawahigashi, M., Orgilbold M., Bolorumaa, O. and Fujitake, N. 2015. Consideration of in-stream processes of nutrients and heavy metals in the Selenge River system. The 8th congress of Soils in Urban, Industry, Traffic, Mining and Military Area, SUITMA8, 2015, September 20-25, Mexico City, Mexico.

Kawahigashi, M. 2015. Potential of the primary productivity of man-made soils. The presentation of a proposal for Tokyo Metropolitan policy in the committee for promotion of collaborations between TMU and Tokyo Metropolitan governments.

Kawahigashi, M. and Kida, K. 2015. Influence of land surface disturbance on soil development processes. Kenkyukan Workshop “Role of soils in Asian Mega Cities” 2015. December 1, Tokyo

Sumida, H., Kobayashi, T. and Kawahigashi, M. 2015. Development of resource recovery technology from plant waste to maintain soil fertility. International Union for Quaternary Research, XIX Congress 2015, July 26- August 2, Nagoya, Japan.

Sakagami, N. 2016. Decomposition of soil organic component under organic rice cultivation in Bali, Indonesia. International Symposium on Agriculture and Environment (ISAE) 2016, Faculty of Agriculture, University of Ruhuna, January, Matara, Sri Lanka.

Zahara, M., Shiotsu, F., Nurwulan, A., Sakagami, N., Asagi, N., Masutomi, Y., Ali, J. and Nitta, Y. 2015. Current situation and challenges on quality control and palatability of rice in Indonesia. 7th Meeting of Japan Society for Rice Quality and Palatability, November, Utsunomiya, Japan (in Japanese).

Kida, K. and Kawahigashi, M. 2015. How does road construction drive soil formation process? International Union for Quaternary Research, XIX Congress, July 26- August 2, Nagoya,

Japan.

- Kida, K. and Kawahigashi, M. 2015. Soil characteristics and its formation processes induced by land development. The 8th congress of Soils in Urban, Industry, Traffic, Mining and Military Area, SUITMA8, 2015, September 20-25, Mexico City, Mexico.
- Kida, K., Matsudaira, H., Ozawa, Y., Morishita, M., Miyajima, S., Osato Y., Watanabe, M. and Kawahigashi, M. 2015. Evaluation of soil function in developed lands in urban ecosystems. Abstracts of Society of Environmental Science, Japan. 81, September, Osaka (in Japanese).
- Kida, K. and Kawahigashi, M. 2015. Influences of mixing artifacts on soil developmental processes in urban reclaimed land. Japanese Society of Soil Science and Plant Nutrition, 61: 92, September, Kyoto (in Japanese).
- Kida, K. and Kawahigashi, M. 2016. Dynamics of inorganic carbon and Ca in urban soils affected by coverage and mixing of artifacts. Abstracts of Japanese Society of Pedology: 65, March, Okinawa (in Japanese).
- Orgilbold, M., Bolormaa, O., Fujitake, N. and Kawahigashi, M. 2015. Role of tributaries on water quality of the main river in the Selenge River system. International Union for Quaternary Research, XIX Congress 2015, July 26- August2, Nagoya, Japan.
- Orgilbold, M. and Kawahigashi, M. 2016. Impact of land use changes on the Selenge River System: implications for dynamics of solutes and particulate matters. Abstracts of Japanese Society of Pedology: 66, March, Okinawa.
- Orgilbold, M and Kawahigashi, M. 2016. Elemental dynamics in the Selenga River Delta, southern Lake Baikal. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89 : 221, March, Tokyo (in Japanese).
- Orgilbold, M. and Kawahigashi, M. 2016. Impact of land uses on the elemental dynamics in water of Selenga River system. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89: 291, March, Tokyo.
- Miyajima S., Osato Y. and Watanabe M. 2015. Application of CCD camera apparatus for soil profile observation in urban area. International Union for Quaternary Research, XIX Congress 2015, July 26- August2, Nagoya, Japan.
- Miyajima, S., Watanabe, M., Murata, T. 2016. Characteristics of soil temperature change and soil respiration in urban green space. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89: 230, March, Tokyo (in Japanese) .
- Morishita, M. and Kawahigashi, M. 2015. Evaluation of degradation of buried peat soils by using Fourier-Transform infrared micro-spectroscopy. Abstracts of Japanese Humic Substances Society 45. November, Nagoya (in Japanese).

- Morishita, M. and Kawahigashi, M. 2015. Muck formation process as a key to consideration of past human activity, evaluated by chemical structural change of peat in the Sagami plain, Japan. International Union for Quaternary Research, XIX Congress 2015, July, Nagoya.
- Morishita, M. and Kawahigashi, M. 2015. Evaluation of decomposed peat using Fourier-Transform infrared micro-spectroscopy. Prairie division of Canadian Association of Geographers (PCAG) annual meeting, September, Kenora Ontario Canada.
- Morishita, M. and Kawahigashi, M. 2016. Degradation process of soil organic matter observed by diversity in micro-environments in soils, the case study of peat soils. Abstracts of Japanese Society of Pedology: 67, March, Okinawa (in Japanese).
- Matsudaira, H. and Kawahigashi, M. 2016. Initial pedogenesis of soil in “Uminomori” park in an urban green space. Abstracts of Japanese Society of Pedology: 64, March, Okinawa (in Japanese).

## 4. Laboratory of Geographical Information Sciences

### 1) Staff

Hiroshi MATSUYAMA 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 FY2015

#### Peer-reviewed Articles

- Mahmud, M. R., Numata, S., Hosaka, T., Matsuyama, H. and Hashim, M. 2015. Preliminary study for effective seasonal downscaling of TRMM precipitation data in Peninsular Malaysia: Local scale validation using high resolution areal precipitation. *Remote Sensing* **7**: 4092-4111.
- Mahmud, M. R., Matsuyama, H. and Hosaka, T., Numata, S. and Hashim, M. 2015. Temporal downscaling of TRMM rain-rate images using principal component analysis during heavy tropical thunderstorm seasons. *Journal of Hydrometeorology* **16**: 2264-2275.
- Konno, S., Izumi, T. and Takahashi, H. 2015. Relationship between Terra/ASTER land surface temperature and ground-observed air temperature. *Geographical Review of Japan* **88B**: 38-44.
- Osawa, S., Izumi, T., Nanaumi, E. and Ishikawa, M. 2015. Investigation and analysis on current status of the tsunami-stricken coastal forest using high-resolution images prepared by unmanned aerial vehicle. *Journal of the Japanese Society of Revegetation Technology* **41**: 157-162 (in Japanese).
- Wada, N., Izumi, T., Matsuyama, H. and Kondo, J. 2016. The relationship between "Aspect ratio of windward open space" and "Surface air temperature" in the meteorological field derived from highly precise observation using fourfold radiation shielding funnel. *Tenki* **63**: 13-22 (in Japanese).
- Aoyama, M. 2015. Distribution and land conditions of the liquefaction sites caused by the earthquake in Awaji Island area on April13, 2013. "MAP", *Journal of the Japan Cartographers Association* **53**: 27-33 (in Japanese with English abstract).
- Une, H., Aoyama, M., Koyama, T. and Hasegawa, T. 2015. Improvements to hazard map of Abiko City based on liquefaction damage. *Journal of Geography (Chigaku Zasshi)* **124**: 287-296 (in Japanese with English abstract).
- Saito, H. and Matsuyama, H. 2015. Probable hourly precipitation and Soil Water Index for 50-yr recurrence interval over the Japanese archipelago. *SOLA* **11**: 118-123.
- Chen, C. W., Saito, H. and Oguchi, T. 2015. Rainfall intensity-duration conditions for mass movements in Taiwan. *Progress in Earth and Planetary Science* **2**: 14, DOI 10.1186/s40645-015-0049-2.
- Hayakawa, S., Y., Oguchi, T., Saito, H., Kobayashi, A., Baker, R. V., Pelletier, D. J., McGuire, L. Komatsu, G., and Goto, K. 2015. Geomorphic imprints of repeated tsunami waves in a coastal valley in northeastern Japan. *Geomorphology* **242**: 3-10.
- Hayakawa, S., Y., Oguchi, T., Saito, H., Kobayashi, A., Komatsu, G. and Goto, K. 2015.

Characteristics of erosional morphology formed by tsunami waves along the Sanriku Coast, northeastern Japan: Analysis using terrestrial laser scanning. *Journal of Geography (Chigaku Zasshi)* **124**: 241-258 (in Japanese with English abstract).

Watanabe, T., Izumi, T. and Matsuyama, H. 2016. Accumulated phytotoxic ozone dose estimation for deciduous forest in the Kanto, Japan in summer. *Atmospheric Environment* **129**: 176-185.

Hisatomi, Y., Nakayama, D. and Matsuyama, H. 2015. Diagnostic study on long term variation and future projection of shallow groundwater flow in Musashino Terrace as simulated by MODFLOW. *Journal of Japan Society of Hydrology and Water Resources* **28**: 109-123 (in Japanese with English abstract).

#### Other Articles

Aoyama, M. 2016. Land conditions of the liquefied sites in the northern part of Miyagi Prefecture caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Annual Reports of the Faculty of Education, Gunma University, Cultural Science Series* **65**: 71-80 (in Japanese).

Aoyama, M. 2016. Liquefaction damages in the Osaki plain, Miyagi Prefecture caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Geographical Reports of Tokyo Metropolitan University* No.51: 33-40.

Aoyama, M. 2016. Educational practice using Geographical Information System (GIS) in geographical education, Gunma University. *Research in Educational Practice and Development, Gunma University* No.33: 1-8 (in Japanese).

Saito, H. and Matsuyama, H. 2016. Landslide occurrences, recurrence interval of heavy rainfall, and two rainfall types for major disasters in 2013-2014. *Quarterly Journal of Economics, Kanto Gakuin University* **266**: 15-28 (in Japanese).

Mori, K. 2016. Half a century since getting feet wet: The trace of a certain hydrologist. *Proceedings of the Institute of Natural Science, Nihon University* **51**: 77-81 (in Japanese).

Mori, K., Oyagi, H. and Mita, A. 2015. Hydrochemical characteristics of inland water in the Chichi-jima Island, with special reference to the origin of dissolved substance. *The Annual Report of Ogasawara Studies* No.38: 17-30 (in Japanese).

#### Books

none



### Reports

- Matsuyama, H. 2015. An observational study of BRDF at forests using small-sized UAV in relation to the seasonal variation of their phenology. *Annual Report 2014 of Center for Environmental Remote Sensing, Chiba University* **20**: 59-60 (in Japanese and English).
- Matsuyama, H., Sakai, K., Yamamoto, R., Hasegawa, K. and Izumi, T. 2015. An observational study of BRDF at forests using small-sized UAV in relation to the seasonal variation of their phenology. *Proceedings of the 17th CEReS Symposium on Remote Sensing for Environment*: 14-17 (in Japanese).
- Saito H. 2015. Detection of topographic changes and re-vegetation in landslides using UAV (Unmanned Aerial Vehicle) and SfM (Structure from Motion) method. *Annual Report 2014 of Center for Environmental Remote Sensing, Chiba University* **20**: 56-58 (in Japanese and English).
- Saito, H. 2015. Application of geographic information system (GIS) for regional analysis of landslides. In *Large-scale landslides in the Japanese Alps*, ed. Y. Kariya, S. Takaoka and Y. Matsushi. *E-journal GEO* **10**: 38 (in Japanese).
- Saito, H., Obanawa, H., Uchiyama, S., Hayakawa, Y., Izumi, T., Yamamoto, R. and Matsuyama, H. 2015. Analysis of landslide occurrences and topographic changes using UAVs and SfM-MVS. *Proceedings of the 17th CEReS Symposium on Remote Sensing for Environment*: 40-42 (in Japanese).

### Book Reviews

- Matsuyama, H. 2015 Book Review (Nagoshi, T. ed., Great nature story Hijikawa Arashi guide book & DVD). *Geographical Review of Japan* **88**: 400-401 (in Japanese).
- Matsuyama, H. 2015. Book Review (Mori, K. and Sato, Y. 2015. Lakes in Japan: An illustrated interpretation) . *Geographical Review of Japan* **88**: 531-532 (in Japanese).
- Aoyama, M. 2016. Book Review (Fujioka, K.: Why are rivers formed?). *Geographical Review of Japan* **89**: 42-44 (in Japanese).

### Miscellaneous Reports

- Matsuyama, H. 2015. Toward understanding the global atmospheric circulation. My Vision for Freshman in High School Dec. 2015: 26 (in Japanese)
- Matsuyama, H. 2015. LaGIS autumn seminar camp at "Unten". *Unten Tsuushin* 45: 4 (in Japanese).
- Matsuyama, H. 2015. Continued story of re-visit of No.1 Glacier at the headwater of Urumqi River, China. *Chiri* **60**(12): 88-91 (in Japanese).
- Matsuyama, H. 2016. Hydrology challenged by field survey of snowy mountains.

- researchmap, <http://article.researchmap.jp/tsunagaru/2015/03/> (in Japanese).
- Nakaegawa, T., Lu, M., Yokoo, Y., Yamanaka, T., Matsuyama, H., Tokunaga, T., Tanakamaru, H. Hayashi, T. and Ishida, S. 2016. Applaud of contribution to Hydrological Research Letters in 2015. *Journal of Japan Society and Water Resources* **29**: 68-72 (in Japanese).
- Nakaegawa, T., Ishida, S., Tanakamaru, H., Tokunaga, T., Hayashi, T., Matsuyama, H., Yamanaka, T., Yokoo, Y. and Lu, M. 2015. Current status of Hydrological Research Letters in 2015. *Journal of Japan Society and Water Resources* **29**: 73-78 (in Japanese).
- Tokyo Metropolitan University (including H. Matsuyama) 2015. "Books to read while students" as recommended by professors of Tokyo Metropolitan University 2014-2015. 20p (in Japanese).
- Izumi, T. 2015. Technological innovation of the survey by UAV –“An introduction of multicopter safety operation Committee”–. *The Journal of Survey*, **66** (8): 24-25 (in Japanese).
- Hayakawa, Y. S., Oguchi, T. and Saito, H. 2015. Laser scanning survey reveals the characteristics of erosional landforms created by tsunami waves at Aneyoshi along the Sanriku Coast. *Journal of Geography (Chigaku Zasshi)* **124**: viii (in Japanese and English).
- Mori, K. 2016. In memory of the late Professor Kimihiko Tsukada (1938-2015). *Journal of Japanese Association of Hydrological Sciences* **46**: 1-3 (in Japanese).
- Mori, K. 2016. Nabe-san, awe-inspiring and gentle-mannered superior, "Reminiscences of the late Professor Tetsuo Miyazawa". Research Group Tokai P-GEX: 9 (in Japanese).
- Mori, K. 2015. Fifteen years as a staff member of the Geosystem Sciences Department – Reminiscence and prospect – . In Fifty years chronology of Department of Applied Earth Science and Geosystem Sciences, Nihon University, ed. Department of Geosystem Sciences, College of Humanities and Sciences, Nihon University, 45-46 (in Japanese).
- Omi, H., Kinoshita, A., Murakami, S., Setojima, M., Akiyama, Y. and Honda, K. 2015. Recognizability of geographic features on relief models of different scale. *Journal of Association of Precise Survey and Applied Technology* **107**: 54-61 (in Japanese).

#### Presentations

- Matsuyama, H. 2015. Water in Tokyo, water in Hamura – A road to Yotsuya via Tamagawa Josui – . Lectures at Hamura Citizen's College, Yutorogi, September, Hamura.
- Matsuyama, H. 2015. Water in Tokyo, water in Hamura – Springs in Tokyo – .Lectures at Hamura Citizen's College, Yutorogi, September, Hamura.
- Matsuyama, H. 2015. Cubic Earth – If the earth was cubic – . Open Lecture at Bunka Girl's Junior High school, December, Nishi-Tokyo (in Japanese).
- Matsuyama, H. and Kezer, K. 2016. Different roles of temperature and precipitation on the

- shrinkage of No.1 Glacier of the Urumqi River, Tianshan Mountains, China for recent 30 years. Program & Abstracts of the International Science Conference on MAHASRI: 74, March, Hachioji.
- Izumi, T. 2015. A study on social implementation process of "modern version watchtower" embodied by small UAV. Proceedings of the General Meeting of the Association of Japanese Geographers 2015 Fall Meeting 88: 115, September, Matsuyama (in Japanese).
- Izumi, T. 2015. The latest developments and the issues of the the snow and ice observation by UAV. Organized session "Snow and ice observations using the UAV" at JSSI & JSSE Joint Conference, September, Matsumoto (in Japanese).
- Izumi, T. and Izumi, Y. 2015. The forefront and future prospects of the small UAV operations in disaster areas, through the activities of the "Tokyo Metropolitan University Disaster Investigation and Assistance Special Team by Unmanned Aerial Vehicles. 24th Conference of GIS Association of Japan, October, Tokyo (in Japanese).
- Izumi, T., Tsuzuku, M., and Kumakura, K. 2015. The development of ultra-high resolution 3D measurement system by a multicopter using the latest laser scanner. Abstracts of Japan Geoscience Union Meeting 2015: HTT30-P04, May, Makuhari (in Japanese with English abstract).
- Izumi, T., Sugaki, K., Totake, M., Kumakura, K. and Shiozaki, S. 2015. Development and testing of a new multicopter UAV for high-performance laser scanner. Research Abstracts on Spatial Information Science, CSIS DAYS 2015: 8, November, Kashiwa (in Japanese).
- Matsumura, K. and Izumi, T. 2015. Suggestion of environmental load reduction measures through the use of drones in the agriculture and fisheries. Proceedings of the Annual Meeting of Society of Environmental Science, Japan 2015: 33, September, Osaka (in Japanese).
- Aoyama, M. 2016. Distribution of floodwater depth in Joso City, Ibaraki Prefecture, caused by the Kanto-Tohoku torrential rain in September 2015. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89: 289, March, Tokyo (in Japanese).
- Aoyama, M. and Koyama, T. 2015. Correlation between liquefaction areas in Kanto region and the time-series changes of distribution of gravel pits. Abstracts of Japan Geoscience Union Meeting 2015: HSC24-P02, May, Makuhari (in Japanese with English abstract).
- Saito, H. 2015. Application of GIS for analysis of landslides. Proceedings of GIS-Landslide Meeting: 3, November, Sapporo (in Japanese).
- Saito, H. 2015. Application of drones and geospatial data for physical geography. Geospatial EXPO – Toward Capitalize the Geospatial Information in the Real World! Accelerate Geographic Information Utilization by the Business Startup and Academic Research – :

- No.3, November, Tokyo (in Japanese).
- Saito, H. 2016. Characteristics of landslide magnitude-frequency and trigger of landslide, Research Meeting of Large-scale Landslides in the Japanese Alps, the Association of Japanese Geographers: No.1, March, Tokyo (in Japanese).
- Saito, H. and Matsuyama, H. 2015. 50-yr recurrence interval for hourly precipitation and Soil Water Index over the Japanese archipelago. Proceedings of the General Meeting of the Association of Japanese Geographers 2015 Fall Meeting 88: 131, September, Matsuyama (in Japanese).
- Saito, H. and Matsuyama, H. 2015. Probable hourly precipitation and Soil Water Index over the Japanese archipelago. Research Abstracts on Spatial Information Science, CSIS DAYS 2015: 11, November, Kashiwa (in Japanese).
- Saito, H., Iijima, Y. and Ulrich, M. 2015. Size and frequency distribution of thermokarst lakes in the eastern Siberia. Abstracts of Arctic Science Summit Week: B3-P06, April, Toyama.
- Saito, H., Matsuyama, H. and Uchida, T. 2015. Landslide occurrences and recurrence intervals of heavy rainfalls in Japan. Abstracts of Japan Geoscience Union Meeting 2015: HDS25-07, May, Makuhari (in Japanese with English abstract).
- Saito, H., Obanawa, H., Josaphat T. S. S., Uchiyama, S. and Hayakawa, Y. S. 2015. Application of high definition data for analysis of topographic and vegetation changes using UAVs and SfM photogrammetry – A case study of shallow landslides around Mt. Aso –. The 23rd CEReS International Symposium, December, Chiba.
- Saito, H., Uchida, T., Matsuyama, H. and Korup, O. 2015. Landslide occurrences and recurrence intervals of heavy rainfalls in Japan. AGU Fall Meeting, December, San Francisco, U.S.A.
- Saito, H., Uchida, T., Korup, O. and Matsuyama, H. 2015. Landslide occurrences and recurrence intervals of heavy rainfalls in Japan. Research Meeting of Prediction of Sediment-Related Disaster: 177-179, December, Tsukuba (in Japanese).
- Daimaru, H., Murakami, W., and Saito, H. 2015. Background of shallow landslides triggered by the 1971 torrential rain in the village of Kawauchi, Fukushima Prefecture. Abstracts of Japan Geoscience Union Meeting 2015: HSC24-P01, May, Makuhari (in Japanese with English abstract).
- Hayakawa, S.Y., Obanawa, H., Wassmer, P., Saito, H. and Oguchi, T. 2015. Tsunami-induced bedrock erosion and sediment deposition on uplifted coastal bench: Cape Todogasaki, eastern Japan. Abstracts of Japan Geoscience Union Meeting 2015: HTT08-03, May, Makuhari.
- Mondini, C.A., Chiang, S.H., Chang, K.T., Notarnicola, C., Chinellato, G., Schlögel, R. and Saito, H. 2015. Remotely sensed spectral signatures library for semi-automatic event

- landslide recognition and mapping. International Symposium on Remote Sensing 2015: 19, April, Tainan (Taiwan).
- Murakami, W., Daimaru, H. and Saito, H. 2015. Relationship between the wind damage caused by the 1959 Isewan Typhoon and the landslide that occurred afterwards. Abstracts of Japan Geoscience Union Meeting 2015: HDS25-P11, May, Makuhari (in Japanese with English abstract).
- Mita, A., Oyagi, H. and Mori, K. 2015. Local flow systems of confined groundwater as inferred from spatial changes in chemical properties -A case study in the Tertiary hill in the Tokai District, central Japan-. International Geographical Union Regional Congress, Moscow, Russia.
- Mita, A., Oyagi, H. and Mori, K. 2015. Flow regime of confined groundwater with special reference to the distribution of chemical characteristics – A case study in the Kita-ise artesian district – . 2015 General Meeting, Japanese Association of Hydrological Sciences, Tsukuba (in Japanese).
- Nemoto, Y. 2015. Diagnostic study on the artificial flooding tactics at Oshi Castle by Mitsunari based on inundation flow simulations. Proceedings of the General Meeting of the Association of Japanese Geographers 2015 Fall Meeting 88: 83, September, Matsuyama (in Japanese).
- Watanabe, T., Izumi, T. and Matsuyama, H. 2015. Estimation for the growth inhibition risk of forest by photochemical oxidants. Abstracts of the Meteorological Society of Japan 2015 Spring Meeting 107: 124, May, Tsukuba (in Japanese).
- Izakura, R., Watanabe, T., Izumi, T. and Matsuyama, H. 2015. Effects of the geometry of the city on the occurrence of heavy rainfall events – A case study in the 23 wards of Tokyo Metropolis – . Abstracts of the Meteorological Society of Japan 2015 Spring Meeting 107: 333, May, Tsukuba (in Japanese).
- Yamamoto, R., Izumi, T. and Matsuyama, H. 2015. A study on grasp of street trees by calculation of green visibility ratio from 360-degree image using object-based image analysis. Proceedings of the General Meeting of the Association of Japanese Geographers 2015 Fall Meeting 88: 61, September, Matsuyama (in Japanese).
- Yamamoto, R., Izumi, T. and Matsuyama, H. 2015. A study on measurement of street trees using mobile mapping system to acquire 360-degree image. Proceedings of the General Meeting of the Association of Japanese Geographers 2015 Fall Meeting 88: 151, September, Matsuyama (in Japanese).
- Yamamoto, R., Izumi, T. and Matsuyama, H. 2015. An observational study on evaluation of street trees using mobile mapping system (IP-S2 Lite, TOPCON CORPORATION) and aerial photo. 24th Conference of GIS Association of Japan (CD-ROM):D-3-4, October,

- Tokyo (in Japanese).
- Yamamoto, R., Izumi, T. and Matsuyama, H. 2015. A study on the relationship between image resolution and discrimination accuracy of vegetation using small UAVs. Research Abstracts on Spatial Information Science, CSIS DAYS 2015: 7, November, Kashiwa (in Japanese).
- Sakai, K., Yamamoto, R., Hasegawa, K., Izumi, T. and Matsuyama, H. 2015. Generation of DSMs of forest crown using areal images taken by small-sized UAV – Comparison of DSMs generated by vertical images and by vertical + oblique images – . The 23rd CERES International Symposium, December, Chiba.
- Hisatomi, Y. 2016. Estimation of spatially and temporarily detailed groundwater recharge process by focusing on the relationship between precipitation and groundwater level. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89: 226, March, Tokyo (in Japanese).
- Ishikawa, K. 2016. Development of an address geocoding system in Tokyo in the Meiji era. 64th General Meeting for Graduation Theses of Geography, March, Koganei (in Japanese).
- Ishikawa, K. and Nakayama, D. 2015. A preliminary study of constructing an address geocoding system in Tokyo in the Meiji era. 24th Conference of GIS Association of Japan (CD-ROM): P-2, October, Tokyo (in Japanese).
- Ishikawa, K. and Nakayama, D. 2015. Mapping of historical documents using address geocoding system in Tokyo in the Meiji era. Research Abstracts on Spatial Information Science, CSIS DAYS 2015: 59, November, Kashiwa (in Japanese).
- Ishikawa, K. and Nakayama, D. 2016. Constructing an address matching system in Tokyo in the Meiji era. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89: 118, March, Tokyo (in Japanese).
- Ishikawa, K. and Nakayama, D. 2016. Making social maps in Tokyo in the Meiji and Taisho era. Proceedings of the General Meeting of the Association of Japanese Geographers 2016 Spring Meeting 89: 322, March, Tokyo (in Japanese).

## 5. Laboratory of Urban and Human Geography

### 1) Staff

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

Akihiro TAKINAMI                          Associate Professor / PhD (D.Lit.)  
Geopoetics, Francophone Studies

Naoto YABE                                  Associate Professor / PhD (D.Sc.)  
Quantitative Geography, Urban Geography

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 FY2014

#### Peer-reviewed Articles

- Abe, C. and Wakabayashi, Y. 2015. The changes in childcare services due to the municipal merger: A comparative study of Kahoku City and Hakusan City in Ishikawa Prefecture. *Annals of Japan Society for Urbanology* **48**: 185-192. (in Japanese)
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