

Annual Report 2018

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

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

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

Daisuke ISHIMURA Assistant Professor / D.Sc.
Tectonic Geomorphology, Quaternary Geology

Makoto KOBAYASHI Project Associate Professor / D.Sc.
Volcanology, Volcanic Geology, Quaternary Geology

Masanori MURATA Project Assistant Professor / D.Sc. (from May, 2018)
Tephrochronology, Volcanic Geology

Kaori AOKI Project Researcher / D.Sc.
Quaternary, Marine Tephrochronology, Chronology

2) Overview of Research Activities

To prospect the futuristic view of environmental changes, our laboratory investigates the history and process of surface landform/geological development during the Quaternary period. The followings are some topics of our studies.

1. Reconstruction of geomorphological/geological phenomena during the Quaternary (the last 2–3 million years) with accuracies of 10^5 – 10^1 years
2. Study on volcanic products (tephra) and explosive eruption history in and around the Japanese Islands

3. Investigation on production–transport–depositional processes of sedimentary particles
4. Study on coastal–deep marine sediment for reconstruction of natural hazard history and influence of human activity to natural environment
5. Reconstruction of earthquake recurrence interval and fault activity from earthquake/fault induced landform and sediment
6. Investigation on marine/fluvial terraces for reconstruction of landform development and crustal movement during the last 10^5 years

3) List of Research Activities in FY2018

Peer-reviewed Articles

Suzuki, T. 2018. Recent progress in tephra studies in Japan and overseas. *The Quaternary Research* **57**: 131-142.

Albert, P., Smith, V., Suzuki, T., Tomlinson, E., Nakagawa, T., McLean, D., Yamada, M., Staff, R., Schlolaut, G., Takemura, K., Nagahashi, Y., Kimura, J. and Suigetsu 2006 Project Members 2018. Constraints on the frequency and dispersal of explosive eruptions at Sambe and Daisen volcanoes (South-West Japan Arc) from the distal Lake Suigetsu record (SG06 core). *Earth-Science Reviews* **185**: 1004-1028. doi.org/10.1016/j.earscirev.2018.07.003

Ishimura, D., Toda, S., Mukoyama, S., Homma, S., Yamaguchi, K. and Takahashi, T. 2019. Three-dimensional surface displacement and surface ruptures associated with the 2014 Mw6.2 Nagano earthquake using differential LiDAR. *Bulletin of the Seismological Society of America* **109**: 780-796. doi.org/10.1785/0120180020.

Miyazaki, M. and Ishimura, D. 2018. Re-examination of the ages of the last interglacial marine terraces and crustal movements since the last interglacial period along the Northern Sanriku Coast based on tephrochronology. *Journal of Geography (Chigaku Zasshi)* **127**: 735-757. (in Japanese with English abstract)

Niwa, Y., Toda, S., Ishimura, D., Mori, Y. and Omata, M. 2018. Near-surface geometry and average vertical deformation rate of the Kamishiro fault in the Itoigawa-Shizuoka Tectonic Line active fault system, revealed from a borehole survey at Kamishiro, Hakuba village, Nagano prefecture, Japan. *Active Fault Research* **49**: 1-16. (in Japanese with English abstract)

Tsutsumi, H., Toda, S., Goto, H., Kumahara, Y., Ishimura, D., Takahashi, N., Taniguchi, K., Omata,

- M., Kohriya, Y., Gomi, M., Asano, K. and Iwata, T. 2018. Paleoseismic trenching across the surface rupture of the 2016 Kumamoto earthquake at Jichu, Mashiki Town, Kumamoto Prefecture. *Active Fault Research* **49**: 31-39. (in Japanese with English abstract)
- Tamura, I., Mizuno, K., Utsunomiya, M., Nakajima, T. and Yamazaki, H. 2019. Widespread tephros of the Kazusa Group distributed in the Boso Peninsula, Chiba Prefecture, Japan - Especially, tephrostratigraphy and tephra correlation of the lower part of the Kazusa Group -. *Journal of Geological Society of Japan* **125**: 23-39. (in Japanese with English abstract)
- Yamada, M., Kawai, T., Nishizawa, F. and Suzuki T. 2018. Stratigraphical study on the Middle Pleistocene pyroclastic flow deposits, northern Tochigi and southern Fukushima Prefectures, Northeast Japan. *Journal of Geological Society of Japan* **124**: 837-855. (in Japanese with English abstract)

Other Articles

- Suzuki, T. 2018. Chapter 2: History and future of volcanic disasters in and around the Tokyo Metropolitan area, Central Japan. In *Tokyo as a Global City, International Perspectives in Geography AJG Library 8*, eds. Kikuchi, T. and Sugai, T., 19-33. Singapore: Springer. doi.org/10.1007/078-981-10-7638-1_2
- Shirai, M. 2019. Chapter 1: Introduction of geomorphology and geology around Hamura. In *The Book of materials –Nature–, in History of Hamura-city*, 11-29. Tokyo: Hamura City. (in Japanese)
- Shirai, M. 2019. Chapter 2: Landmarks in and around the Hamura-city. In *The Book of materials –Nature–, in History of Hamura-city*, 33-55. Tokyo: Hamura City. (in Japanese)
- Shirai, M. 2019. Chapter 4: Terrace cliffs formed by Tama River in the Hamura-city. In *The Book of materials –Nature–, in History of Hamura-city*, 73-93. Tokyo: Hamura City. (in Japanese)
- Shirai, M. 2019. Chapter 5: Landscape ca. 2 millions years ago around Hamura estimated from investigation of the Kazusa Group. In *The Book of materials –Nature–, in History of Hamura-city*, 95-109. Tokyo: Hamura City. (in Japanese)
- Shirai, M. 2019. Chapter 6: The unresolved Ome Formation. In *The Book of materials –Nature–, in History of Hamura-city*, 111-128. Tokyo: Hamura City. (in Japanese)
- Shirai, M. 2019. Chapter 8: Why the Tamagawa-Josui water supply was installed from the Hamura? In *The Book of materials –Nature–, in History of Hamura-city*, 153-161. Tokyo: Hamura City. (in Japanese)

- Ishimura, D. 2018. Tectonics around the Ohmi basin and Nobi plain based on recent 10^5 years crustal movement. *Chikyu monthly/special (Gekkan Chikyu Gogai)* **69**: 18-24.
- Utsugawa, T. 2019. Topographical and Historical Excursion in Québec City, Canada. *Regional Studies* **59**: 12-18. (in Japanese)
- Utsugawa, T. 2019. Chapter 3: Tama River in and around Hamura City. In *The Book of materials –Nature–, in History of Hamura-city*, 57-72. Tokyo: Hamura City. (in Japanese)
- Utsugawa, T. 2019. Chapter 7: Gravels observed in and around Hamura City. In *The Book of materials –Nature–, in History of Hamura-city*, 129-151. Tokyo: Hamura City. (in Japanese)

Books

None

Reports

- Utsugawa, T. 2018. A report on the field trip of the 2018 annual meeting of the Sedimentological Society of Japan. *Journal of the Sedimentological Society of Japan* **77**: 45-49. (in Japanese)

Book Reviews

- Suzuki, T. 2018. Suzuki, T. 2018. “Kazan-zenkei: photos of volcanic landforms and products” by Shirao, M. and Geshi, N. *The Quaternary Research* **57**: 170-171. (in Japanese)

Miscellaneous Reports

- Suzuki, T. 2018. Reports of INQUA-INTAV, inter-congress conference, Crossing New Frontiers-Tephra Hunt in Transylvania. *QR newsletter* **25**(5): 14-16. (in Japanese)
- Mizuno, K., Suzuki, T., Okada, M., Okumura, K. 2018. Aims of special issue “Stratigraphy and chronological criteria”, *The Quaternary Research* **57**: 129-130. (in Japanese)
- Goto, H., Ishimura, D. and Tsutsumi, H. 2018. *Description of Active Fault Map in Urban Area, Gozaisyoyama and Hikonetobu*. Geographical Survey Institute, D1-No.870. (in Japanese)
- Kaneda, H., Ishimura, D., Kumahara, Y. and Nakata, T. 2018. *Active Fault Map, Nogo-Hakusan*. Geographical Survey Institute. (in Japanese)
- Kaneda, H., Ishimura, D., Tajikara, M. and Nakata, T. 2018. *Active Fault Map, Kanmuriyama*. Geographical Survey Institute. (in Japanese)

Okada, A., Ishimura, D., Hirouchi, D., Nakata, T. and Nakano, T. 2018. *Active Fault Map, Gifu*. Geographical Survey Institute. (in Japanese)

Presentations

Suzuki, T. 2018. Volcanoes and eruptions in the Japanese Islands. Open University, Tokyo Metropolitan University, April, Chiyoda-ku. (in Japanese)

Suzuki, T. 2018. Activity for volcanic hazard mitigation by the corporation of Tokyo Metropolitan University and Tokyo Metropolitan Government. Symposium of Volcanic-Hazard, Volcanological Society of Japan, May, Chiba.

Suzuki, T. 2018. Cause and mechanism of landslide disaster and its measure. Lecture for the Members of Hachioji City Assembly, July, Hachioji.

Suzuki, T. 2018. Introduction of landforms and Quaternary geology of the Japanese Islands: crustal movement, volcanism under humid climate. Seminar of Korea Institute of Geoscience and Mineral Resources (KIGAM), August, Daejeon, Korea. (invited)

Suzuki, T. 2018. Volcanoes on the Japanese Islands: Knowing and consideration of disasters and coexistence. Hidaka Lively College, October, Hidaka. (in Japanese).

Suzuki, T. 2018. Consideration of future earthquakes occurring below the Tokyo capital region using active faults, slope landforms, and underground geology. National Conference for Promoting Disaster Risk Reduction 2018, October, Koto-ku. (in Japanese).

Suzuki, T. 2018. Formation of Kanto Plain and building of big Edo city. Special talks for the memory of opening TMU Premium College, November, Hachioji. (in Japanese).

Suzuki, T. 2018. Diversity of volcanoes and tephra in the Japanese Islands. 4th Symposium of Geopark: diversity of volcanoes and tephra in the Japanese Islands: fundamentals of geopark. December, Bunkyo-ku. (in Japanese).

Suzuki, T. 2019. Geology of Tama and its relation to volcano. 9th Training Lecture for Leader of Hachioji City Environmental Learning, January, Hachioji. (in Japanese)

Suzuki, T. 2019. Study for volcanic hazard mitigation. Forum of volcanic hazards mitigation measure: preparation of volcanic hazards in Tokyo. February, Hachioji. (in Japanese)

Suzuki, T., and Chigira, M. 2018. Preparation of geomorphological and geological data for earthquake-induced landslides potential assessment in Japanese Island situated in a humid, tectonically active volcanic zone. *Abstracts of Japan Geoscience Union Meeting 2018:*

- HDS11-03, May, Chiba. (in Japanese with English abstract)
- Suzuki, T. and Chigira, M. 2019. Slope failures occurred in the Izu-oshima Island and Kanto regions in geological time: assessment of earthquake-induced landslides. Disaster Prevention Research Institute, Kyoto University Annual Meeting 2018, February, Uji. (in Japanese)
- Suzuki, T., Fukushima, T., and Taura (Fukushima), I. 2018. Age of an early Pleistocene tephra detected in the upper part of Sayama Formation, Sayama Hills, Kanto Plain: correlation of Zoshki tephra with Akatsuka A10 tephra and Byobugaura Ob5.1 tephra. *Abstracts of Japan Geoscience Union Meeting 2018: HQR04-11*, May, Chiba. (in Japanese with English abstract)
- Suzuki, T., Kobayashi, M., Nishizawa, F., and Shirai, M. 2018. Landform development of the alluvial plain along Moto-arakawa River, Saitama Prefecture, Japan. *Japan Association for Quaternary Research, Programme and Abstracts 48*: 21, August, Hachioji. (in Japanese)
- Suzuki, T., Kobayashi, M., Nishizawa, F., and Shirai, M. 2019. Risk assessment of lahar in low land of the east part of Saitama Prefecture, Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 95*: 137, March, Kawasaki. (in Japanese)
- Suzuki, T., Maruyama, S., Danhara, T., and Hirata, T. 2018. A pair of huge VEI=7 eruptions occurred at ca. 2 Ma in the Sengan geothermal region, Northeast Japan: identification of Sgn-Kd44 and Tmg-R4 widespread tephras using LA-ICP-MS and SEM-EDS. *Programme and Abstracts the Volcanological Society of Japan 2018 Fall Meeting*: 26, September, Akita. (in Japanese).
- Suzuki, T., Kobayashi, M., Nishizawa, F., Aoki, K., Ishimura, D., and Nakayama, D. 2018. Recent progress and perspective in tephrochronological studies for eruption histories of Quaternary volcanoes in north Izu Islands, off Tokyo Metropolitan Area, Japan. *Crossing New Frontiers INTAV International Field Conference on Tephrochronology "Tephra Hunt in Transylvania" Book of Abstracts*: 99-100, June, Moieciu de Sus, Romania.
- Suzuki, T., Kobayashi, M., Nishizawa, F., Aoki, K., Ishimura, D., Ito, M., and Nakayama, D. 2018. Recent progress and perspective in studies for eruption history of Quaternary volcanoes in north Izu Islands. *Abstracts of Japan Geoscience Union Meeting 2018: SVC41-49*, May, Chiba. (in Japanese with English abstract)
- Suzuki, T., Maruyama, S., Danhara, T., Hirata, T., Ojima, T., Machida, H., and Arai, F. 2018. Identification of Lower Pleistocene widespread tephras associated with huge caldera-forming eruptions in Northeast Japan (Tohoku) using LA-ICP-MS and SEM-EDS analyses. *Crossing New Frontiers INTAV International Field Conference on Tephrochronology "Tephra Hunt in*

- Transylvania” Book of Abstracts: 62-63, June, Moieciu de Sus, Romania.*
- Chigira, M., and Suzuki, T. 2018. Distribution of earthquake-susceptible tephra in Kanto and Tohoku areas: For the earthquake hazard mapping. *Abstracts of Japan Geoscience Union Meeting 2018: HDS07-04*, May, Chiba. (in Japanese with English abstract)
- Chigira, M., Tajika, J., Ishimaru, S., and Suzuki, T. 2019. The reasons why so many landslides were induced by the 2018 Eastern Iwate Earthquake: distribution of pyroclastic fall deposits, their weathering, and slope undercut. Disaster Prevention Research Institute, Kyoto University Annual Meeting 2018, February, Uji. (in Japanese)
- Endo, K., Ishiwata, S., Hori, S., Uesugi, Y., Suginaka, Y., Sugai, T., Suzuki, T., Nakayama, T., Osato, S., Noguchi, M., Kondo, R., and Takemura, T. 2018. Tokyo Formation in Tokyo Upland, and related topography. *Abstracts of Japan Geoscience Union Meeting 2018: HQR04-12*, May, Chiba. (in Japanese with English abstract)
- Endo, K., Chiba, T., Suginaka, Y., Sugai, T., Suzuki, T., Uesugi, Y., Ishiwata, S., Nakayama, T., Funatsu, T., Osato, S., Noguchi, M., Sato, A., Kondo, R., and Hori, S. 2018. New division of landforms in Musashino Upland, Tokyo. *Japan Association for Quaternary Research, Programme and Abstracts 48: 3*, August, Hachioji. (in Japanese)
- Ishihara, T., Suzuki, T., Hongo, M., and Uchida, Y. 2018. Geological stratigraphy of a drilling core based on analysis of tephra and pollen assemblages in the western part of Aizu Basin, Northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2018: HQR04-P12*, May, Chiba. (in Japanese with English abstract)
- McLean, M., Albert, P., Suzuki, T., MacLeod, A., Blockley, S., Nakagawa, T., SG14 Project Members, and Smith, V., 2018. Constraining the tempo and frequency of eruptions that dispersed ash over central Honshu (Japan) between 30 and 50 ka. Cities on Volcanoes Conference 10, September, Napoli, Italy.
- Smith, V., McLean, M., Albert, P., Suzuki, T., and Nakagawa, T. 2018. Using distal sedimentary archives to obtain better constraints on the timing, magnitude and dispersal of past eruptions in Japan. Cities on Volcanoes Conference 10, September, Napoli, Italy.
- Takasugi, N., Saito, T., Makino, K., and Suzuki, T. 2018. Correlation of the Iz-KT tephra and pumice fall deposits found in Kosha Volcano, Central Japan. *Programme and Abstracts the Volcanological Society of Japan 2018 Fall Meeting: 26*, September, Akita. (in Japanese)
- Shirai, M., and Utsugawa, T. 2018. Forming process of a waterfall accompanying with slope failure

- caused by 18th century earthquake, central Japan. *Abstracts of 20th International Sedimentological Congress*: ThFr-4.8-D182-P, August, Quebec, Canada.
- Shirai, M., Utsugawa, T. and Kimura, Y. 2018. Relief of riverbed and roundness of cobble: an example from the middle Sagami River, central Japan. *Abstract of Japan Geoscience Union Meeting 2018*: HGM03-P05, May, Chiba. (in Japanese with English abstract)
- Shirai, M., Akasaka, I., Takaoka, S. Utsugawa, T. and Kato, S. 2018. Publication of “the Book of materials –Nature–” in History of Hamura-city. *Japan Association for Quaternary Research, Programme and Abstracts* **48**: 83, August, Hachioji. (in Japanese)
- Ishimura, D. 2018. Characteristics of event deposits correlating with AD869 Jogan tsunami event on the Sanriku Coast. *Programme and Abstracts, the Seismological Society of Japan*: S16-P01, October, Fukushima. (in Japanese)
- Ishimura, D. 2018. Co-seismic vertical offset associated with the 2016 Kumamoto earthquake sequence and slip rate along the Futagawa fault around Futa, Nishihara Village, Kumamoto prefecture. *Programme and Abstracts, JSAF 2018 Fall Meeting*: 40-41, November, Tottori. (in Japanese)
- Ishimura, D. and Hiramine, R. 2018. Proximal-distal fall unit correlation of VEI-5 tephra (Towada-Chuseri) from Towada volcano, northeast Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **95**: 263, March, Kawasaki. (in Japanese)
- Ishimura, D. and Yamada, K. 2018. Origin and transport process of tsunami deposits based on the image analysis of gravel particles. *Abstract of Japan Geoscience Union Meeting 2018*: MIS11-P08, May, Chiba. (in Japanese with English abstract)
- Ishimura, D. and Yamada, K. 2018. Correlation of sediments between tsunami deposits based on geochemical characteristics. *Japan Association for Quaternary Research, Programme and Abstracts* **48**: 49, August, Hachioji. (in Japanese)
- Ishimura, D., Kumahara, Y., Tsutsumi, H., Toda, S., Ichihara, T., Takahashi, N., Takada, K. and Kato, Y. 2018. Paleo-seismological survey on surface rupture with small amount of displacement associated with the 2016 Kumamoto earthquake. *Abstract of Japan Geoscience Union Meeting 2018*: SSS08-07, May, Chiba. (in Japanese with English abstract)
- Ishimura, D., Kumahara, Y., Tsutsumi, H., Toda, S., Takahashi, N., Ichihara, T., Takada, K. and Kato, Y. 2018. Paleoseismic records of a surface rupture with a small amount of displacement far from main rupture zone: Trench survey at Miyaji, Aso City, in the northwestern part of Aso Caldera.

- Programme and Abstracts, the Seismological Society of Japan: S09-P01, October, Fukushima.*
(in Japanese)
- Fukushima, Y. and Ishimura, D. 2018. InSAR analysis on the surface ruptures in the Aso caldera activated by the 2016 Kumamoto earthquake sequence. *130th Meeting of the Geodetic Society of Japan, Abstracts: 171-172, October, Kochi.* (in Japanese)
- Iwasa, Y., Kumahara, Y., Goto, H., Torii, M., Ishimura, D. and Hosoya, T. 2018. Faulting history of the northeastern part of Futagawa-Hinagu fault zone based on trench survey at Komori, Nishihara Village, Kumamoto. *Programme and Abstracts, JSAF 2018 Fall Meeting: 22-23, November, Tottori.* (in Japanese)
- Konno, A., Ono, H., Kasai, H., Ishimura, D., Toda, S., Takahashi, N. and Nishizawa, F. 2018. A proposal for archiving tectonic landforms and surface ruptures using T-Lidar. *2018 Spring Meeting of the Tohoku Geographical Association, May, Sendai.* (in Japanese)
- Kobayashi, M. 2018. Volcanic hazards prediction of the eruption of Fuji, Hakone and Izu-Islands volcanoes, and their management, Open University, Tokyo Metropolitan University, Volcanoes in Japan, April, Chiyoda-ku. (in Japanese)
- Kobayashi, M., Mannen, K., Nagai, M. and Chiba, T. 2018. Interpretation of the crater chains, stratigraphy and ages of the eruptive deposits around the Kami-yama and Owakudani, Hakone Volcano. *Programme and abstracts the Volcanological Society of Japan 2018 Fall Meeting: 210, September, Akita.* (in Japanese with English abstract)
- Kobayashi, M., Mannen, K., Yamaguchi, T. and Nagai, M. 2019, New detection of crater-chains around Kamiyama and Owakudani, in Hakone Volcano, and their feature of spatio-temporal distribution of their formation ages. Workshop on the mechanism and forecasting phreatic eruptions, January, Odawara. (in Japanese)
- Kobayashi, M., Murata, N., Aoki, K. and Suzuki, T. 2018. Eruptive history after the Miyatsuka-yama event (ca.10-13ka) in Nijijima Volcano, Izu Islands. *Programme and abstracts the Volcanological Society of Japan 2018 Fall Meeting: 109, Akita.* (in Japanese)
- Kobayashi, M., Murata, M., Nishizawa, F. and Suzuki, T. 2018. The Eruption deposits and its ages at the latest stage (AD838 Tenjo-san eruption etc.) in Kuzushima Volcano. *Proceedings of the International Meeting on Eruptive History and Informatics: 2018-2, 38-47, December, Jonan-ku.* (in Japanese)
- Kobayashi, M., Nishizawa, F., Aoki, K. and Suzuki, T. 2018, Tephrostratigraphy in central and

- northern Niijima Volcano, Izu Island: Necessity of reexamination of the eruption history for mitigation of volcanic hazard. *Abstract of Japan Geoscience Union Meeting 2018*: SVC40-50, May, Chiba. (in Japanese with English abstract)
- Kobayashi, M., Nishizawa, F., Aoki, K. and Suzuki, T. 2018. Geomorphological analysis of Niijima and Kozushima Volcanoes using high-resolution LiDAR DEM. *Abstract of Japan Geoscience Union Meeting 2018*: SVC41-P33, May, Chiba. (in Japanese with English abstract)
- Kobayashi, M., Aoki, K., Murata, M., Nishizawa, F. and Suzuki, T. 2018. Tephrostratigraphy of Niijima Volcano and its eruptive history during the last 20,000 years, Izu Islands. *Japan Association for Quaternary Research, Programme and Abstracts 48*: 22, August, Hachioji. (in Japanese)
- Kasama, T. and Kobayashi, M. 2018. A tour of traces of natural disasters in Hakone-North Izu region. Geoscience education and outreach tour in 2018, Kanto section of the Geological Society of Japan, August, Hakone and Kannami. (in Japanese)
- Murata, M., Kobayashi, M., Nishizawa, F., Ishimura, D. and Suzuki, T. 2018. Tephrostratigraphy and eruptive history in the northern part of Nachi-san, Kozushima Volcano, Izu Islands. *Programme and abstracts the Volcanological Society of Japan 2018 Fall Meeting*: 209, September, Akita. (in Japanese)
- Aoki, K., 2018. The examination for the Middle-late Pleistocene cryptotephrostratigraphy of the sediment core MD01-2421 collected off the Kashima coast, Japan by recycling the residue of the sample for foraminiferal research. *Japan Association for Quaternary Research, Program and Abstracts 48*: 23, August, Hachioji. (in Japanese)
- Aoki, K., Kobayashi, M., Nishizawa, F. and Suzuki, T. 2018. Establishment of tephra database in and around the Izu Islands –a case of the Daisan-yama site on Niijima. *Abstract of Japan Geoscience Union Meeting 2018*: SVC41-P32, May, Chiba. (in Japanese with English abstract)
- Aoki, K., Kobayashi, M., Nishizawa, F., Murata, M. and Suzuki, T. 2018. Standard stratigraphy and characteristic properties of tephra on the Niijima-island: Preliminary report for the establishment of tephra database in and around the northern volcanic Izu Islands, *Japan Association for Quaternary Research, Programme and Abstracts 48*: 44, August, Hachioji. (in Japanese)
- Aoki, K., Nagatsuma, Y., Kurihara, K., Sakamoto, T., Iijima, K., and Fukuoka, T., 2018. Geochemical character of Quaternary tephra beds in sediment cores from IODP site U1344 in the central Bering Sea. *Japan Geoscience Union Meeting 2018*: HQR04-09, May, Chiba. (in

Japanese)

- Tamura, I. 2018. The geohistory of Tama River at 1.65Ma by strata and fossils. Geo- Walk in Zisei no Kai, October, Hino. (in Japanese)
- Tamura, I. 2018. The geohistory in Todoroki Corge and Musashino Upland. Geo-Walk in Zisei no Kai, November, Setagaya-ku. (in Japanese).
- Tamura, I., Mizuno, K. and Utsunomiya, M. 2018. The Bnd2-O1 tephra : Widly distributed 2.1Ma tephra including Osumilite -Refinement of its distribution and estimated source volcano-. *Japan Association for Quaternary Research, Programme and Abstracts* **48**: 19, August, Tokyo. (in Japanese)
- Tamura, I., Utsunomiya, M. and Mizuno, K., Nakajima, T. and Yamazaki, H. 2018. A widespread tephra included Osumilite of the Kazusa Group distributed in the Boso Peninsula, Chiba Prefecture, Japan. *Abstracts of Japan Geoscience Union Meeting 2018*: HQR05- P13, May, Chiba. (in Japanese with English abstract)
- Nishizawa, F., Kobayashi, M., Murata, M. and Suzuki, T. 2018. Ring-shape edifice (Nachi-san) and its formation age in central Kozushima Volcano, Izu Islands. *Japan Association for Quaternary Research, Programme and Abstracts* **48**: 67, August, Hachioji. (in Japanese)
- Nishizawa, F., Ito, M., Kobayashi, M., Aoki, K., Ishimura, D. and Suzuki, T. 2018, Explosive eruption history of Kozushima Volcano, the Izu Islands: pyroclastic deposits newly recognized in the northern part of the island. *Abstract of Japan Geoscience Union Meeting 2018*: SVC41-51, May, Chiba. (in Japanese with English abstract)
- Ito, M., Nishizawa, F., Ishimura, D., Kobayashi, M. and Suzuki, T. 2018. Eruption history in the southern part of Kozushima Volcano, Izu Islands. *Abstract of Japan Geoscience Union Meeting 2018*: SVC41-P34, May, Chiba. (in Japanese with English abstract)
- Yasuda, A., Tajima, Y., Shimano, T., Kaneko, T., Yoshimoto, T., Nishizawa, F. and Fujii, T. 2018. On construction of a database for identifying tephra layers of the Shin-Fuji volcano. *Programme and abstracts the Volcanological Society of Japan 2018 Fall Meeting*: 111, September, Akita. (in Japanese)
- Kawai, T., Nishizawa, F., Yamada, M. and Suzuki, T. 2018. Recognition of Kakuto Tephra and Sawa Debris Avalanche Deposit and chronology of Middle Pleistocene in the Yaita Hills and the Kitsuregawa Hills, northern part of Tochigi Prefecture, Central Japan. *Japan Association for Quaternary Research, Programme and Abstracts* **48**: 29, August, Hachioji. (in Japanese)

- Kawai, T., Yamada, M., Nishizawa, F. and Suzuki, T. 2018. Variation of air-fall tephra and pyroclastic flow deposits erupted in Middle Pleistocene from the Shiobara Caldera, northern part of Tochigi Prefecture, Central Japan. *Japan Association for Quaternary Research, Programme and Abstracts* **48**: 65, August, Hachioji. (in Japanese)
- Utsugawa, T. 2018. Photographs of the land use associated with coastal dunes in Akita Prefecture, northeastern Japan. The 2018 annual meeting of the Rissho Geographical Association, June, Kumagaya. (in Japanese)
- Utsugawa, T. and Shirai, M. 2018. Characteristics of roundness of cobble–pebble deposited on refreshed gravel bar affected to typhoon 1721 in Tama River, central Japan. *Abstract of Japan Geoscience Union Meeting 2018*: HGM03-P06, May, Chiba. (in Japanese with English abstract)
- Utsugawa, T. and Shirai, M. 2018. Effects of rock type and grain size on changes in roundness of gravel and sand grains during fluvial transport process. *Abstracts of 20th International Sedimentological Congress*: MoTu-5.4-D236-P, August, Quebec, Canada.
- Hiramine, R., Ishimura, D., Aoki, K., Kobayashi, M. and Suzuki, T. 2018. Estimation of source area of drift pumices collected from current beaches on the basis of glass chemistry. *Proceedings of the General Meeting of the Association of Japanese Geographers* **95**: 264, March, Kawasaki. (in Japanese)
- Matsukaze, J. 2019. Abrasion process of gravel considered from change of beach gravel shape in the Joetsu region, central Japan. The 67th National Geography Major Graduation Article Conference, March, Shinjuku-ku. (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

Fumiaki FUJIBE Project Professor / D.Sc.

Urban Climatology, Environmental Climatology

Jun-Ichi HAMADA Project Associate Professor / PhD (D.Sc.)

Tropical Climatology, Meteorological Observation

Tomoshige INOUE Project Assistant Professor / PhD (D.Sc.)

Monsoon Climatology, Climate Change, Global Warming

Masato NODZU Project Researcher / PhD (D.Sc.)

Tropical climatology, Satellite Meteorology

Yoshihito SETO Project Researcher / PhD (D.Sc.)

Urban Climatology, Local Climatology, Statistical Analysis

Takanori WATANABE Project Researcher / PhD (D.Sc.) (from June, 2018)

Urban climatology, Atmospheric chemistry, Meteorological model

Ko NAKAJIMA Project Researcher / PhD (D.Sc.) (from October, 2018)

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 FY2018

Peer-reviewed Articles

Fukushima, A., Kanamori, H. and Matsumoto, J. 2019. Regionality of long-term trends and interannual variation of seasonal precipitation over India. *Progress in Earth and Planetary Science* **6**:20. doi.org/10.1186/s40645-019-0255-4

Takahashi, H.G., 2018: A systematic tropospheric dry bias in the tropics in CMIP5 models: Relationship between water vapor and rainfall characteristics. *Journal of the Meteorological Society of Japan* **96**: 415-423. doi.org/10.2151/jmsj.2018-046

Takahashi, H.G. and Polcher, J. 2019: Weakening of rainfall intensity on wet soils over the wet Asian

- monsoon region using a high-resolution regional climate model. *Progress in Earth and Planetary Science* **6**: 26. doi.org/10.1186/s40645-019-0272-3
- Takahashi, H.G., Watanabe, S., Nakata, M. and Takemura, T. 2018: Response of the atmospheric hydrological cycle over the tropical Asian monsoon regions to anthropogenic aerosols and its seasonality. *Progress in Earth and Planetary Science* **5**: 44. doi.org/10.1186/s40645-018-0197-2
- Sugimoto, S., Takahashi, H.G. and Sekiyama, H. 2019: Modification of near-surface temperature over East Asia associated with local-scale paddy irrigation. *Journal of Geophysical Research: Atmospheres* **124**. doi.org/10.1029/2018JD029434
- Fujibe, F. 2018. Localized strong winds associated with extensive fires in central Tokyo: Cases of the Great Kanto Earthquake (1923) and an air attack in World War II (1945). *Journal of Wind Engineering and Industrial Aerodynamics* **181**: 79-84. doi.org/10.1016/j.jweia.2018.08.016
- Fujibe, F. 2018. Climatological features of Yunagi (evening calm) in Japan. *Proceedings of the 25th National Symposium on Wind Engineering*: 7-12 (in Japanese with English abstract).
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2018. Spatial and temporal features of heat stroke mortality in Japan and their relation to temperature variations, 1999-2014. *Geographical Review of Japan, Series B* **91**: 17-27. doi.org/10.4157/geogrevjapanb.91.17
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2018. Regional features of the relationship between daily heat-stroke mortality and temperature in different climate zones in Japan. *SOLA* **14**: 144-147. doi.org/10.2151/sola.2018-025
- Katsumata, M., Mori, S., Hamada, J.-I., Hattori, M., Syamsudin, F., and Yamanaka, M. D. 2018. Diurnal cycle over a coastal area of the maritime continent as derived by special networked soundings over Jakarta during HARIMAU2010. *Progress of Earth Planetary Sciences* **5**:64.
- Mori, S., Hamada J.-I., Hattori, M., Wu, P. -M., Katsumata, M., Endo, N., Ichianagi, K., Hashiguchi, H., Arbain, A. A., Sulistyowati, R., Lestari, S., Syamsudin, F., Manik, T., and Yamanaka, M. D. 2018. Meridional march of diurnal rainfall over Jakarta, Indonesia, observed with a C-band Doppler radar: An overview of HARIMAU2010 campaign. *Progress of Earth Planetary Sciences* **5**:47.
- Ichino, M., Mikami, T. and Masuda, K. 2018. Fluctuations of global solar radiation in Japan during the first half of the 19th century as estimated from historical weather records. *Journal of Geography* **127**: 543-552. (in Japanese with English abstract)
- Kamizawa, N. and Takahashi H.G. 2018. Projected trends in interannual variation in summer

- seasonal precipitation and its extremes over the tropical Asian monsoon regions in CMIP5. *Journal of Climate* **31**: 8421-8439. doi.org/10.1175/JCLI-D-17-0685.1
- Olaguera, L.M., Matsumoto, J., Kubota, H., Inoue, T., Cayanan, E.O., and Hilario, F.D. 2018. Interdecadal shifts in the winter monsoon rainfall of the Philippines. *Atmosphere* **9**: 464. doi.org/10.3390/atmos9120464
- Olaguera, L.M., Matsumoto, J., Kubota, H., Inoue, T., Cayanan, E.O., and Hilario, F.D. 2018. Abrupt climate shift in the mature rainy season of the Philippines in the mid-1990s. *Atmosphere* **9**: 350. doi.org/10.3390/atmos9090350
- Trinh-Tuan, L., Matsumoto, J., Tangang, F.T., Juneng, L., Cruz, F., Narisma, G., Santisirisomboon, J., Phan-Van, T., and Gunawan, D., Aldrian, E. and Ngo-Duc, T., 2019. Application of quantile mapping bias correction for mid-future precipitation projections over Vietnam. *SOLA* **15**: 1-6. doi.org/10.2151/sola.2019-001

Other Articles

- Endo, N. and Matsumoto, J. 2019. A brief history of meteorological observations in French Indochina. *Geographical Reports of Tokyo Metropolitan University* **54**: 23-32.
- Suzuki, H., Nakakita, E. and Takahashi, H. 2018. 2.5 Operation restriction of train that utilizes radar-observed rainfall. *Meteorological Research Note* **237**: 77-83. (in Japanese)
- Fujibe, F. 2018. Statistical studies on extreme precipitation. *Meteorological Research Note* **236**: 1-8 (in Japanese).
- Fujibe, F. 2018. Localized strong winds associated with extensive fires in central Tokyo: Cases of the Great Kanto Earthquake and an air attack in World War II. *Tenki* **65**: 351-358 (in Japanese).
- Fujibe, F. 2018. Strong winds and disaster in eastern Japan due to the typhoon on 28 September 1902. *Tenki* **65**: 691-699 (in Japanese).
- Fujibe, F. 2019. Below-freezing days under sunny weather in Tokyo. *Tenki* **66**: 77-82 (in Japanese).
- Akasaka I. 2019. Climatological characteristics on diurnal cycle of wind at Manila for the late 19th century. *Bulletin of the Institute of Natural Sciences Senshu University* **50**: 29-36. (in Japanese)
- Akasaka I. 2019. Chapter 9: Climate in southwestern Kanto region. In *The Book of materials –Nature–, in History of Hamura-city*, 165-184. Tokyo: Hamura City. (in Japanese)
- Akasaka, I. 2019. Chapter 10: Climate in Hamura City and its seasonal change. In *The Book of materials –Nature–, in History of Hamura-city*, 187-227. Tokyo: Hamura City. (in Japanese)

- Akasaka, I. 2019. Chapter 11: Recent secular variations in climate of Hamura City. In *The Book of materials –Nature–, in History of Hamura-city*, 241-273. Tokyo: Hamura City. (in Japanese)
- Akasaka, I. 2019. Chapter 12: Climate in Hamura City for the past 100 years. In *The Book of materials –Nature–, in History of Hamura-city*, 275-288. Tokyo: Hamura City. (in Japanese)
- Kamizawa, N. and Takahashi H.G. 2019. Long-term changes in the relationship between the seasonal precipitation over the Asian summer monsoon region and El Niño–Southern Oscillation. *Geographical Reports of Tokyo Metropolitan University* **54**: 23-32.
- Otsuka, M., Matsumoto, J., and Seko H. 2019. Geostationary satellite data assimilation in mesoscale forecast systems: A review. *Geographical Reports of Tokyo Metropolitan University* **54**: 1-10.
- Trinh-Tuan, L., Konduru, R.T., Inoue, T., Ngo-Duc, T. and Matsumoto, J. 2019. Autumn rainfall increasing trend in South Central Vietnam and its association with changes in Vietnam's East Sea surface temperature. *Geographical Reports of Tokyo Metropolitan University* **54**: 11-22.

Books

None

Reports

- Tsukahara, T., Matsumoto, J. Shiroyama, T. and Nishiwaki, M. (Eds) 2019. *Climate in History, History in Climate*. Kobe: STS Science. (in Japanese with English Abstract)

Book Reviews

- Takahashi, H. 2019. “Weather, earthquake, and railway disaster prevention” by Shimamura, M. *Tenki* **66**: 67-68. (in Japanese)

Miscellaneous Reports

- Matsumoto, J. 2018. Climatological challenges of disaster prevention in Southeast Asia. *Trends in The Sciences* **23**(7): 20-21. (in Japanese)
- Kosaka, Y., Matsumoto, J. and Takahashi, H.G. 2019. Diverse atmosphere-ocean coupled phenomena revealed with latest advances in meteorology (A report on the Symposium of the 2017 Spring Assembly of the Meteorological Society of Japan). *Tenki* **66**: 17-18. (in Japanese)
- Takahashi, H. 2018. Urban climate phenomenon of Tokyo observed by using high density

- meteorological observation network. *Heat Island Institute International Annual Issue* **13**: 7-13. (in Japanese)
- Masuda, K. 2019. Which items of climatology and meteorology should we adopt in education of geography and earth science? *Chiri* **64** (3): 20-27. (in Japanese)
- Kajikawa, Y., Fujinami, H., Kamizawa, N., Takaya, Y., Kusunoki, S., Yoneyama, K., Kitoh, A., and Ose, T. 2018. Report on the Sixth International Workshop on Monsoons. *Tenki* **65**: 321-329. (in Japanese)
- Kamae, Y., Tochimoto, E., Nishikawa, H., Uno, F., Yamazaki, A., Kawase, H., Tsujino, S., Kohyama, T., Ohtake, J., Yamashita, Y., Michibata, T., Kawazoe, S., Kamizawa, N., Tsukijihara, T., and Kinoshita, T. 2018. Report on the Forth Young Meteorologists' Overnight-sessions *Tenki* **65**: 643-648. (in Japanese)

Presentations

- Matsumoto, J. 2018. Climatological challenge of disaster prevention in Southeast Asia. *Open Symposium, Science Council of Japan*, April, Minato-ku. (In Japanese)
- Matsumoto, J. 2018. Asian monsoon climatology, *The 31st Research Meeting of Meteorological Instruments*, April, Meguro-ku. (In Japanese)
- Matsumoto, J. 2018. Environment and culture in Monsoon Asia from the climatological perspective. *Proceedings of the General Meeting of the Association of Japanese Geographers 2018 Fall Meeting*, **94**: 33, September, Wakayama.
- Matsumoto, J. 2019. Discussant: Meet Meghalaya in 2004. Indo-Japan Joint Workshop: Socioeconomic/ Hydroclimatological Perspectives of Future Asian Monsoon, February, Meguro-ku.
- Matsumoto, J. and Asada, H. 2018. Extreme rainfall, severe floods and their impact on rice production in Bangladesh. Regional Conference of IGU 2018, August, Quebec, Canada.
- Matsumoto, J., Fujibe, F. and Takahashi, H. 2018. Urban climate in Tokyo. Regional Conference of IGU 2018, August, Quebec, Canada.
- Matsumoto, J., Terao, T. and Kanae, S. 2018. Post MAHASRI and AMY-II. Ad-hoc Workshop on Aerosol-Monsoon Interactions: Disentangling the Influences of Dynamics and Physics on Variability and Change of Precipitation over East Asia, December, Maryland, USA.
- Matsumoto, J., Villafuerte II, M.Q. and Kubota, H. 2018. Changes in extreme rainfall in the

- Philippines from the early 20th century. *Asian Extremes: Climate, Meteorology and Disaster in History*: 23, May, Singapore, Singapore.
- Matsumoto, J., Inoue, T., Kiguchi, M., Okami, N., Murata, F., Tanoue, M., Fukushima, A., Yamane, Y., Terao, T., Hayashi, T., Oki, T. and Kamahori, H. 2018. Recent Japanese data rescue activities in monsoon Asia. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji.
- Matsumoto, J., Kubota, H., Inoue, T., Akasaka, I., Kamahori, H., Fujibe, F., Hayashi, T., Terao, T., Murata, F., Fujinami, H., Fukushima, A., Mikami, T. and Zaiki, M. 2018. Asian monsoon variability over 100 years through long-term data rescue activities in ACRE-Japan. *Abstract of the Japan Geosciences Union 2018*: ACG37-P03, May, Chiba.
- Matsumoto, J., Inoue, T., Fujibe, F., Hamada, J.I., Hayashi, T., Terao, T., Murata, F., Kubota, H., Akasaka, I., Kamahori, H., Endo, N., Yamamoto, H., Kobayashi, S. and Muraji, Y. 2018. Recovery of the Asian monsoon history since the end of the 19th century by the data rescue activities in ACRE-Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 138, March, Kawasaki. (in Japanese)
- Endo, N. and Matsumoto, J. 2018. Brief history of meteorological observations in French Indochina. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November 15, Hachioji. (poster)
- Endo, N. and Matsumoto, J. 2019. A Brief history of meteorological observations in French Indochina. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 139, March, Kawasaki. (in Japanese)
- Hattori, M., Yamazaki, T., Ogino, S.-Y., Wu, P.M. and Matsumoto, J. 2018. The impact of the radiosonde observations of cold surge over the Philippine Sea on the analysis of the tropics and the southern hemisphere. *Abstract of the Asia Oceania Geosciences Society Annual Meeting* **15**: AS50-A011, June, Hawaii, USA.
- Kiguchi, M., Endo, N. and Matsumoto, J. 2018. Activities on rainfall data rescue in Cambodia and Laos. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Kiguchi, M., Hatono, M., Yoshimura, K., Kanae, S., Oki, T., and Matsumoto, J. 2018. A Development of a gridded precipitation dataset using high dense historical observation data in Japan. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S

- Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Kubota, H., Matsumoto, J., Akasaka, I. Zaiki, M. and Kobayashi, S. 2019. Expansion of Asian summer monsoon variability studies through the data rescue of rainfall data in the Philippines. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 140, March, Kawasaki. (in Japanese)
- Kubota, H., Matsumoto, J., Mikami, T. and Zaiki, M. 2019. Long-term variability of tropical cyclone landfall in Japan since 1881. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting*, **95**: 24, March, Kawasaki. (in Japanese)
- Kubota, H., Matsumoto, J., Zaiki, M., Mikami, T., Hirano, J., Tsukahara, T. and Grossman, M.J. 2018. Overview and recent progress of ACRE-Japan, and data rescue of typhoons and ship logs. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji.
- Kubota, H., Matsumoto, J., Zaiki, M., Mikami, T., Tsukahara, T., Kobayashi, S., Yamamoto, H., Hirano, J., Inoue, T., Akasaka, I., Kamahori, H., Fujibe, F., Hayashi, T., Terao, T., Murata, F., Fujinami, H. and Fukushima, A. 2018. Climate variability in the Asian monsoon region during the past 200 years through the data rescue activities. *Abstract of the Japan Geosciences Union 2018*: ACG37-04, May, Chiba.
- Murata, F., Kuriyama, K., Inoue, T., Matsuyama, S., Yamasaki, R., Kamahori, H. and Matsumoto, J. 2018. Rainfall trend over Shikoku Island, Japan using long-term daily precipitation data. *Abstracts of the Meteorological Society of Japan 2018 Autumn Meeting* **114**: 464, November, Sendai. (poster, in Japanese)
- Ogino, S.Y., Yamanaka, M.D., Mori, S. and Matsumoto, J. 2018. Tropical coastal dehydrator in global atmospheric water circulation: An overview. *The 8th GEWEX Open Science Conference: Extremes and Water on the Edge*:A-19, May, Canmore, Canada. (poster)
- Ogino, S.Y., Yamanaka, M.D., Mori, S. and Matsumoto, J. 2018. Tropical coastal dehydrator: Role of coastal precipitation in global water cycle between land and ocean. *Abstracts of the Meteorological Society of Japan 2018 Spring Meeting* **113**: 172, May, Tsukuba.
- Ogino, S.Y., Yamanaka, M.D., Mori, S. and Matsumoto, J. 2018. Tropical coastal dehydrator: A new view in global atmospheric water circulation. *Abstract of the Japan Geosciences Union 2018*: ACG37-06, May, Chiba.
- Takahashi, Y., Kubota, H., Sato, M., Matsumoto, J., Yamashita, K., Yoshida, K., Hamada, J.-I., J.S.,

- Perez, G.J., and Dalida L.U.Jr. 2018. ULAT: Project for development of extreme weather monitoring and alert system in the Philippines. *Abstracts of the Meteorological Society of Japan 2018 Autumn Meeting* **114**: 328, October, Sendai. (in Japanese)
- Terao, T., Kanae, S. and Matsumoto, J. 2018. Towards establishment of the science plan of Post-MAHASRI RHP. The 8th GEWEX Open Science Conference: Extremes and Water on The Edge, May, Canmore, Canada.
- Terao, T., Kanae, S. and Matsumoto, J. 2018. Towards the establishment of the post-MAHASRI science plan. *Abstract of the JpGU 2018 Meeting*: ACG37-01, May, Chiba.
- Terao, T., Kanae, S. and Matsumoto, J. 2018. Upcoming Asian monsoon hydroclimatological research framework under GEWEX, *EMS Annual Meeting*, September, Budapest, Hungary.
- Terao, T., Murata, F., Yamane, Y., Kiguchi, M., Fukushima, A., Tanoue, M., Kamimera, H. Hayashi, T. and Matsumoto J. 2019. Meteorological data rescue over the northeastern Indian subcontinent for the analysis of climatic change in rainfall characteristics. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 141, March, Kawasaki. (in Japanese)
- Takahashi, H. 2019. Two kinds of climatic changes which we are facing: Global warming and urban heat island. Lecture in the energy conservation month, Nerima Ward regional council on global warming countermeasures, February, Nerima-ku. (in Japanese)
- Takahashi, H., Seto, Y., Nakajima, K., Fujitsuka, D., Sugawara, H. and Tsunematsu, N. 2018. Vertical temperature observation at central Tokyo by utilizing a temperature profiler. *Proceedings of the General Meeting of the Association of Japanese Geographers 2018 Autumn Meeting* **94**: 69, September, Wakayama. (in Japanese)
- Takahashi, H.G. 2018. A preliminary study on reproducibility of rainfall characteristics in CMIP5-GCMs over the tropics. *A workshop on tropical meteorology*, September, Nagoya. (in Japanese)
- Takahashi, H.G. 2018. Long-term trends in snowfall over Japan, The 11th International Atmospheric Circulation Reconstructions over the Earth. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Takahashi, H.G., Watanabe, S., Suzuki, K. and Takemura, T. 2018. An impact of aerosols on the hydrological cyclone of the atmospheric branch -Decomposition based on physical processes.

- Abstracts of the Meteorological Society of Japan 2018 Autumn Meeting* **114**: 80, November, Sendai. (in Japanese)
- Fujibe, F. 2018. Revisiting typhoon-induced record high winds in Japan around 1900. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji.
- Fujibe, F. 2019. Recent features of extreme weather events in relation to climate change. *The 23rd Earthquake Technology Expo.*, February, Yokohama. (invited)
- Fujibe, F. 2019. Strong winds and disaster in Kagoshima due to a typhoon on 15 August 1899. *Proceedings of the General Meeting of the Association of Japanese Geographers* **95**: 144, March, Kawasaki. (in Japanese)
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2018. Regional and temporal features of heat-stroke ambulance transport rates in comparison to mortality rates in Japan. *Abstracts of the Meteorological Society of Japan 2018 Spring Meeting* **113**: 280, May, Tsukuba. (in Japanese)
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2018. Regional features of the relationship between daily heat-stroke mortality and temperature in Japan. *The 13th National Conference of Heat Island Institute International*: 100-101, August, Sakai. (in Japanese)
- Fujibe, F., Matsumoto, J. and Suzuki, H. 2018. Relationship between daily heat-stroke mortality and temperature in Japan. *Abstracts of the Meteorological Society of Japan 2018 Autumn Meeting* **114**: 561, November, Sendai. (in Japanese)
- Kamahori, H., Fujibe, F. and Matsumoto, J. 2018. Data Rescue for precipitation observation in Tokai area. *Abstracts of the Meteorological Society of Japan 2018 Spring Meeting* **113**: 160, May, Tsukuba (in Japanese)
- Kamahori, H., Fujibe, F. and Matsumoto, J. 2018. Evaluation of extremeness of western Japan flood in July 2018 based on data rescue for rainfall observation over 100 Years. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Kamahori, H., Fujibe, F. and Matsumoto, J. 2019. Data rescue for precipitation observation in Kanto and Tokai area. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 247, March, Kawasaki. (in Japanese)
- Hamada, J.-I., Matsumoto, J., Yamashita, K., and Takahashi, Y. 2018. Monitoring for lightning activities and thunder cloud developments over the Tokyo metropolitan area based on electrostatic

- field and electromagnetic measurements. *Abstract of the JpGU 2018 Meeting*: MIS04-08, May, Chiba.
- Hamada, J.-I., Matsumoto, J., Yamanaka, M. D., Haryoko, U., and Syamsudin, F. 2018. Interdecadal variations of monsoon rainfall in Batavia/Jakarta, Indonesia during the past 150 years. *The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops*, November, Hachioji. (poster, in Japanese)
- Hamada, J.-I., Matsumoto, J., Yamanaka, M.D., Sunaryo Hasan and Fadli Syamsudin 2019. Long-term variations of monsoon rainfall over Jakarta, Indonesia. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 242, March, Kawasaki. (in Japanese)
- Hamada, J.-I., Mori, S., Katsumata, M., Matsumoto, J., Syamsudin, F., and Yoneyama, K. 2018. Diurnal and intraseasonal variations of lightning activities over the western Indonesian maritime continent. - Pre-YMC2015 observational results-. *Proceedings of the 12th MU/EAR symposium*: 41-43, September, Uji. (in Japanese)
- Kubota, H., Takahashi, Y., Sato, M., Yamashita, K. and Hamada, J.-I., 2018. Observation study of the relationship between lightning activity and tropical cyclone intensity in the Philippine Sea. *Abstract of the JpGU 2018 meeting*: MIS04-03, May, Chiba.
- Kubota, H., Takahashi, Y., Sato, M., Yamashita, K. and Hamada, J.-I., 2018. Observation study for understanding the relationship between lightning activity and tropical cyclone intensity in the Philippine Sea. *Abstract of the AOGS2018 meeting*: AS31-D1-AM1-315-004, June, Hawaii, USA.
- Mori, S., Wu, P., Shirooka, R., Yokoi, S., Yoneyama, K., Hamada, J.-I., Haryoko, U., Nurhayati, N., Sulistyowati, R. and Syamsudin, F. 2018. Observed characteristics of convection activities over the coastal area of Southwest Sumatra during the Pre-YMC 2015 and YMC-Sumatra 2017 campaign observation. *Proceedings of the 12th MU/EAR symposium*: 44-46, September, Uji. (in Japanese)
- Mori, S., Hamada, J.-I., Wu, P., Shirooka, R., Yokoi, S., Yoneyama, K., Haryoko, U., Sulistyowati, R., and Syamsudin, F., 2018. Convective activities over the southwestern coastal land of Sumatra island, Indonesia, during the Pre-YMC 2015 and YMC-Sumatra 2017 campaigns. *Abstract of the AGU 2018 Fall meeting*: A43O-3332, December, Washington, D.C. USA.
- Sato, M., Takahashi, Y., Yamashita, K., Kubota, H., Hamada, J.-I., and Marciano, J., 2018. ULAT Project: Lightning observations in the Philippines for the intensity prediction of severe weather.

- Abstract for the EGU General Assembly 2018*, 20, EGU2018-16395, April, Vienna, Austria.
- Sato, M., Takahashi, Y., Kubota, H., Yamashita, K., Hamada, J.-I., and Marciano, J. J., 2018. Lighting observations in the Philippines and western Pacific region for the intensity prediction of severe weather. *Abstract of the JpGU 2018 meeting*: MIS04-02, May, Chiba.
- Sato, M., Takahashi, Y., Kubota, H., Y. Yamashita, K., Hamada, J.-I., and Marciano, J. M., 2018. ULAT Project: Lightning observations in the Philippines and western Pacific region for the intensity prediction of severe weather. *Abstract of the AOGS 2018 meeting*: AS16-53-D2-AM2-303A-007, June, Hawaii, USA.
- Takahashi, Y., Sato, M., Kubota, H., Yamashita, K., Hamada, J.-I., Ishida, T., Kurihara, J., Matsumoto, J., Marciano, J., and Peres, G., 2018. Status of ULAT project for development of extreme weather monitoring and alert system in the Philippines. *Abstract of the JpGU 2018 meeting*: MIS04-01, May, Chiba.
- Yamashita, K., Sato, M., Takahashi, Y., Kubota, H., Momota, E., Hamada, J.-I., Matsumoto, J., Kojima, S.Y. and Katahira, Y.I. 2018. Development of lightning observation system for short-term forecast of extreme weather events in the Philippine under ULAT project. *The 34th International Conference on Lightning Protection*, September, Rzezow, Poland.
- Inoue, T., Matsumoto, J. and Kubota, H. 2018. Long-term variations of precipitation in Myanmar (Burma) for recent 125 years (1891-2015). The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Inoue, T., Matsumoto, J. and Kubota, H. 2019. Variations of precipitation in Myanmar for the past 125 years by using daily precipitation data since the end of the 19th century. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 244, March, Kawasaki. (in Japanese)
- Kiguchi, M., Okami, N., Murata, F., Tanoue, M., Fukushima, F., Yamane, Y., Terao, T. Hayashi, T., Oki, T., Inoue, T. and Matsumoto, J. 2018. Change of rainfall characteristics in Bangladesh using 126-years record. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Kiguchi, M., Okami, N., Murata, F., Tanoue, M., Fukushima, F., Yamane, Y., Terao, T., Hayashi, T., Oki, T., Inoue, T. and Matsumoto, J. 2019. Change of rainfall characteristics in Bangladesh using 126-years record. *Proceedings of the General Meeting of the Association of Japanese*

- Geographers 2019 Spring Meeting 95*: 246, March, Kawasaki. (in Japanese)
- Murata, F., Kuriyama, K., Inoue, T., Matsuyama, S., Yamasaki, R., Fujihara, K., Kamahori, H. and Matsumoto, J. 2018. Rainfall trend in 1891–2017 over Shikoku Island, Japan. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Murata, F., Terao, T., Kiguchi, M., Yamane, Y., Fukushima, A., Tanoue, M., Hayashi, T., Inoue, T. and Matsumoto, J. 2018. Difference in rainfall distribution over Bangladesh between 1891–1946 and 1989–2016. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Terao, T., Murata, F., Yamane, Y., Kiguchi, M., Fukushima, A., Syiemlieh, H. J., Hayashi, T., Inoue, T. and Matsumoto, J. 2019. Reconstruction of the hydroclimatological behavior of Asian monsoon based on satellite rainfall estimation. *Indo-Japan Joint Workshop: Socioeconomic/Hydroclimatological Perspectives of Future Asian Monsoon*, February, Meguro-ku.
- Terao, T., Murata, F., Yamane, Y., Kiguchi, M., Fukushima, A., Tanoue, M., Kamimera, H., Hayashi, T., Inoue, T. and Matsumoto, J. 2018. Relationship between the western North Pacific monsoon and the Northeastern Indian subcontinent monsoon in the beginning of the 20th century. *Kansai branch of the Japan Meteorological Society FY2018 1st meeting*, December, Kochi. (in Japanese)
- Nakajima, K., Takahashi, H. and Tsunematsu, N. 2018. Characteristics of periodic variation of wind in Tokyo in clear and weak wind night. *Proceedings of the General Meeting of the Association of Japanese Geographers 94*: 67, September, Wakayama. (in Japanese)
- Tsunematsu, N., Honjo, T., Ichihashi, A., Nakajima, K., Yamagata, Y. and Murakami, D. 2018. Investigation of summertime thermal environment in downtown Tokyo -Airborne remote sensing, field observations, and numerical simulations-. *IPCC Cities and Climate Change Science Conference*, March, Edmonton, Canada. (poster)
- Tsunematsu, N., Honjo, T., Ichihashi, A., Nakajima, K., Yamagata, Y. and Murakami, D. 2018. Observational and numerical study on summertime thermal environment in downtown Tokyo. *10th International Conference on Urban Climate*, August, New York, USA. (poster)
- Nodzu, M. I., Matsumoto, J., Trinh-Tuan, L. and Ngo-Duc, T., 2018. Relationship between two groups of winds and precipitation over Northern Vietnam in summer. *Abstract of the Japan Geosciences Union 2018*: ACG37-08, May, Chiba.
- Nodzu, M. I., Matsumoto, J., Trinh-Tuan, L. and Ngo-Duc, T., Duc-Tri, T. 2018. Relationship

- between reproducibility of GSMaP and rain top height in TRMM2A25 over Northern Vietnam. Precipitation Measurement Missions (PMM) 2nd domestic science meeting, September, Chuo-ku. (in Japanese)
- Nodzu, M. I., Matsumoto, J., Trinh-Tuan, L. and Ngo-Duc, T. and Duc-Tri, T. 2018. Comparison of GSMaP performance and distribution of rain top height over Northern Vietnam. *Abstracts of the Meteorological Society of Japan 2018 Autumn Meeting* **114**: 450, November, Sendai. (in Japanese)
- Nodzu, M. I., Matsumoto, J., Trinh-Tuan, L. and Ngo-Duc, T. and Duc-Tri, T. 2019. Validation of GSMaP hourly precipitation with surface gauge observation over Northern Vietnam. Joint Research Meeting on the GPM and Satellite Simulators FY2018, March, Nagoya. (in Japanese)
- Kanaya, Y., Nodzu, M., Miyazaki, K., Inoue, K., Tanimoto, H. and Kasai, Y., 2018. Effective utilization of satellite-based air pollution data at kilometer-class spatial resolution: integration with MAX-DOAS observations and chemical transport models. *COSPAR 2018 Scientific Assembly Online Abstracts*: A0.4-0006-18, July, Pasadena, USA.
- Seto, Y. and Takahashi, H. 2018. Accuracy of the amount of divergence obtained from surface observations and its relationship with vertical flow. *Abstracts of the Meteorological Society of Japan 2018 Spring Meeting* **113**: 198, May, Tsukuba. (in Japanese)
- Seto, Y., Fukushima, A. and Takahashi, H. 2018. Regional distribution of the transition time of local wind systems in summer in the south Kanto region. *Proceedings of the General Meeting of the Association of Japanese Geographers 2018 Autumn Meeting* **94**: 159, September, Wakayama. (in Japanese)
- Seto, Y., Fukushima, A. and Takahashi, H. 2018. Distribution of the transition time for local summer wind systems in the south Kanto region. *Proceedings of the 60th Symposium on Winds*: 35-36, December, Shinagawa-ku. (in Japanese)
- Hasegawa, S., Watanabe, T., Izumi, T. and Matsuyama, H. 2018. Evaluating the accuracy of scatterometer MetOp-B/ASCAT off the coast of Japan. *Abstracts of the 2018 Spring Meeting of the Meteorological Society of Japan* **113**: 194, May, Tsukuba. (in Japanese)
- Matsumura, K., Ichinose, T., Sugimoto, K., Akiyama, T., Watanabe, T. and Izumi, T. 2018. Fertilization management system of the future – For environmental preservation of Mongol. The 2018 Annual Meeting of Society of Environmental Science, Japan, September, Kita-ku. (poster, in Japanese)

- Masuda, K. 2018. Which items of climatology and meteorology should we adopt in education of geography and earth science? JpGU 2018 O01-06. May, Chiba. (invited, in Japanese)
- Akasaka, I., Kubota, H., Zaiki, M. and Matsumoto, J. 2018. Rainfall characteristics in the Philippines for the late 19th—early 20th centuries. The 11th Annual ACRE Meeting, ACRE Japan, ACRE SE Asia-2, ACRE China-3, and C3S Data Rescue Service (DRS) Workshops, November, Hachioji. (poster)
- Akasaka, I., Zaiki, M. and Matsumoto, J. 2018. Diurnal cycle of the wind direction and its seasonality at Manila for the late 19th century. *Abstract of the Japan Geosciences Union 2018*: ACG37-P04, May, Chiba.
- Akasaka, I., Zaiki, M. Kubota, H., and Matsumoto, J. 2019. Seasonal changes in wind direction and rainfall at Manila for the late 19th century. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 243, March, Kawasaki. (in Japanese)
- Takahashi, K., Mikami, T., Takahashi, H., Nagata, R., Yamato, H., Akasaka, I., and Tsunematsu, N. 2018. Changes in meteorological field prior to a short duration intense rainfall observed by using high density surface observation data: A case study on the intense rainfall event in Setagaya on 24th July 2015. *Abstracts of the Meteorological Society of Japan 2018 Spring Meeting* **113**: 148, May, Tsukuba. (in Japanese)
- Kamizawa, N. and Takahashi H.G. 2018. Projected future changes in the interannual variation of the Asian summer monsoon precipitation and its extremes in a large ensemble experiment. A workshop on tropical meteorology, September, Nagoya. (in Japanese)
- Kamizawa, N. and Takahashi H.G. 2018. Long-term changes in the interannual variation and the extremes of the seasonal precipitation of the Asian summer monsoon in the 20th century. *Abstracts of the Meteorological Society of Japan 2018 Fall Meeting* **114**: 245, October, Sendai. (in Japanese)
- Kamizawa, N. and Takahashi H.G. 2018. Projected future changes in the Asian summer monsoon precipitation in d4PDF. *Abstracts of the Meteorological Society of Japan 2018 Fall Meeting* **114**: 454, October, Sendai. (in Japanese)
- Kamizawa, N. and Takahashi H.G. 2018. Projected changes in the Asian summer monsoon precipitation using a large ensemble AGCM experiment. *Abstract of American Geophysical Union Fall Meeting 2018*: A11N-2472, December, Washington D. C., USA.
- Konduru, R.T. and Takahashi, H.G. 2018. Realistic simulation of Indian summer monsoon rainfall in

- convection permitting weather research forecasting model. *Abstracts of Japan Geoscience Union Meeting 2018*: ACG37-P02, May, Chiba.
- Konduru, R.T. and Takahashi, H.G. 2018. Continental-scale convection permitting simulation of the Indian summer monsoon: Model simulation dependency on convection or grid resolution. The 2nd GEWEX (Global energy and water exchange) Convection-Permitting Climate Modeling, Boulder, USA.
- Konduru, R.T. and Takahashi, H.G. 2018. Continental-scale simulation of diurnal variations in South Asian summer monsoon: Insights from the explicit and parameterized convection experiments. *Abstracts of the 5th International Workshop on Non-hydrostatic Models*: 70-71, November, Chiyoda-ku.
- Matsuzaki, Y. and Matsumoto, J. 2018. The impact of cold surge for convection of maritime continent. *Abstracts of Japan Geoscience Union Meeting 2018*: ACG37-09, May, Chiba.
- Matsuzaki, Y. and Matsumoto, J. 2018. Wind field variability around the maritime continent in boreal winter. *Abstracts of the Meteorological Society of Japan 2018 Fall Meeting* **114**: 505, November, Sendai. (in Japanese)
- Olaguera, L.M., Matsumoto, J., Kubota, H., Cayanan, E.O., and Hilario, F.D. 2018. Abrupt climate shift in the mature rainy season of the Philippines in the mid-1990s. *Abstracts of Japan Geoscience Union Meeting 2018*: A-CG37-P01, May, Chiba.
- Olaguera, L.M., Matsumoto, J., Kubota, H., Inoue, T., Cayanan, E.O. and Hilario, F.D. 2018. Interdecadal shifts in the winter monsoon rainfall of the Philippines. *Proceedings of the Philippine Meteorological Society* **2**: 14, March, Quezon City, Philippine.
- Yamaji, M., Takahashi, H.G., Kubota, T., Oki, R., Hamada, A. and Takayabu, Y.N. 2018. Drop size distribution observed by dual-frequency precipitation radar onboard global precipitation measurement core satellite. *Abstracts of the Meteorological Society of Japan 2018 Fall Meeting* **114**: 510, October, Sendai. (in Japanese)
- Yamaji, M., Kubota, T., Takahashi, H.G., Hamada, A., Takayabu, Y.N. and Oki, R. 2018. Drop size distribution observed by dual-frequency precipitation radar onboard global precipitation measurement core satellite. *Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions VII. International Society for Optics and Photonics* **10782**: 107820H. doi.org/10.1117/12.2324640
- Hoshi, R. and Takahashi, H.G. 2018. A long-term change of lag-relationship between the Arctic

Oscillation in winter and the succeeding summer climate. *Abstracts of the Meteorological Society of Japan 2018 Autumn Meeting* **114**: 266, October, Sendai. (in Japanese)

Matsuura, K and Takahashi, H.G. 2018. Projected change of tropical cyclones including weak tropical disturbance in Northwest Pacific. *Abstracts of the Meteorological Society of Japan 2018 Autumn Meeting* **114**: 457, October, Sendai. (in Japanese)

Yamazaki, T. and Takahashi, H.G. 2018. An oceanic impact of the Kuroshio path on snowfall on the Kanto region of Japan in the cold season. Abstracts of the 5th International Workshop on Nonhydrostatic Models: 72, November, Chiyoda-ku.

3. Laboratory of Environmental Geography

1) Staff

Makiko WATANABE Professor / PhD
Soil Geography, Environmental Dynamic Analysis, Geoarcheology

Masayuki KAWAHIGASHI Associate Professor / D. Agr.
Soil Ecology, Environmental Chemistry, Material Dynamics in Ecosystems

Kimihiko KIDA Project Researcher / PhD. (D.Sc.) (until October, 2018)
Urban Soil study, Soil Classification

2) Overview of Research Activities

This research unit focuses on the relations between human and natural environment. For understanding processes enacted upon environment in local and regional scales, we try to integrate subdivisions of both physical and human geography together with interdisciplinary aspects of environmental sciences, such as botanical science, forest ecology, zoology, soil science, landscape design, political ecology, folklore, anthropology and so on. Research methods are in primary based on fieldworks, including weather observation, land survey, soil and vegetation surveys, and interview survey and in participative on laboratory analyses on soil-water analyses and interpretations of aerial photo and satellite imagery as well.

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 of ancient water environment in Kharga, Western Desert, Egypt
4. Environmental risk evaluation of the soils surrounding the mining area in Erdenet, Mongolia
5. Environmental dynamics study of watershed area of Small Water Impounding Project dam in central Luzon, Philippines
6. Influence of anthropic pressure in a river basin on downstream water environment
7. Evaluation of forest fire impact on soil, vegetation and landform in terrestrial ecosystems
8. Study for elemental dynamics in urban ecosystems

9. Soil carbon sequestration from the point of view of soil parent materials

3) List of Research Activities in FY2018

Peer-reviewed Articles

- Bolormaa, O., Jainjav, Y., Ochirkhuyag, B., Lunchakorn, P., Watanabe, M. and Kim, K. W. 2019. Geochemical source and dispersion of copper, arsenic, lead, and zinc in the topsoil from the vicinity of Erdenet mining area, Mongolia. *Geochemistry: Exploration, Environment, Analysis*. doi.org/10.1144/geochem2018-025
- Sakagami, N., Guo, Y. and Watanabe, M. 2018. Physicochemical characteristics of *Cenococcum sclerotia* formed in different types of forest soil. *Soil Microorganisms* **72**: 50-55.
- Sakagami, N., Shiotsu, F., Asagi, N., Komatsuzaki, M., Nitta, Y. and Suprpta, D.N. 2019. Carbon degradation of paddy soil under organic and conventional farming in Bali, Indonesia as measured by sequential loss on ignition. *Tropical Agriculture and Development* **63**: 30-33.
- Asagi, N., Kubota, T., Sakagami, N., Okada, T., Hasegawa, M., Isono, T., Nitta, Y. 2018. Effect of sweet sorghum cultivation and residual application method on yield and curcumin content in turmeric rhizomes. *Japanese Journal of Farm Work Research* **53**: 149–157. (in Japanese with English abstract)
- Morishita, M. and Kawahigashi, M. 2018. Controlling factors for the distribution of sapric peat soils extracted by GIS analysis. *Soil Science and Plant Nutrition* **65**: 65-72. doi.org/10.1080/00380768.2018.1544833
- Batdulam, B., Bolormaa, O. and Kawahigashi, M. 2019. Distribution and composition of plastic debris along the river shore in the Selenga River Basin in Mongolia. *Environmental Science and Pollution Research*, **26**: 1-14. doi.org/10.1007/s11356-019-04632-1

Other Articles

- Akasaka, I., Endo, T., Watanabe, M. and Yano, M. 2018. Rainfall characteristics and their changes in the Institute for Nature Study since 1990. *Miscellaneous Reports of the National Park for Nature Study* **49**:41-48. (in Japanese)
- Murata, T., Kawai, N., Uoi, N. and Watanabe, M. 2018. Soils in historical urban parks. In *Anthropogenic Soils in Japan, International Perspectives in Geography, AJG Library 9*, eds.

- Watanabe, M. and Kawahigashi, M., 39-57. Singapore: Springer.
- Kawahigashi, M. 2018. Soils on ski slopes. In *Anthropogenic Soils in Japan, International Perspectives in Geography, AJG Library 9*, eds. Watanabe, M. and Kawahigashi, M., 25-31. Singapore: Springer.
- Kawahigashi, M. 2018. Soils affected by conversion of abandoned paddy fields to alternate uses. In *Anthropogenic Soils in Japan, International Perspectives in Geography, AJG Library 9*, eds. Watanabe, M. and Kawahigashi, M., 177-186. Singapore: Springer.
- Kawahigashi, M., Shinagawa S. and Ishii K. 2018. Soils in reclaimed land after drainage in Isahaya Bay. In *Anthropogenic Soils in Japan, International Perspectives in Geography, AJG Library 9*, eds. Watanabe, M. and Kawahigashi, M., 135-145. Singapore: Springer.
- Kida, K. 2018. Soils sealed by technic hard materials in urban and traffic areas. In *Anthropogenic Soils in Japan, International Perspectives in Geography, AJG Library 9*, eds. Watanabe, M. and Kawahigashi, M., 1-23. Singapore: Springer.
- Morishita, M. and Yamada, K. 2018. Soils on river embankments. In *Anthropogenic Soils in Japan, International Perspectives in Geography, AJG Library 9*, eds. Watanabe, M. and Kawahigashi, M., 33-38. Singapore: Springer.

Books

- Watanabe, M. and Kawahigashi, M. (eds.) 2018. *Anthropogenic Soils in Japan, International Perspectives in Geography, AJG Library 9*, Singapore: Springer.

Reports

None

Book Reviews

None

Miscellaneous Reports

- Tanino, K. 2019. A scientific view of Legends: Why is the sand of Onizuka in Kashima and Takamahara red? *Chiri* 64(1):58-64. (in Japanese)

Presentations

- Watanabe, M. 2018. Environmental studies in soil. Perspectives of bridging chemistry and biology and geosciences in multi-scales. *Abstract of the 6th International Conference on Chemistry and Chemical Engineering Research and Development in Chemistry*: 6, June, Ulaanbaatar, Mongolia. (Plenary Lecture)
- Watanabe, M., Kelly, C.L. and Hardenbicker, U.M. 2018. Interpretation of Beaver Index as a wet-dry proxy during the Holocene applied for the alluvial fan deposits in the Qu'Appelle Valley, Saskatchewan. *Japan Association for Quaternary Research, Programme and Abstracts* **48**: 50, August, Hachioji.
- Khulan, N., Watanabe, M. and Bolormaa, O. 2018. Microelement compounds of sclerotium and forest soils samples. *Abstract of the 6th International Conference on Chemistry and Chemical Engineering, Research and Development in Chemistry*: 48, June, Ulaanbaatar, Mongolia.
- Yondonjamta, J., Bolormaa, O., Ochirukhuyag, B., Watanabe, M., Prathumratana, L. and Kim, K.W. 2018. Geochemical source and dispersion of heavy metals and arsenic in the topsoil from the vicinity of Erdenet mining area, Mongolia. *Abstract of the 6th International Conference on Chemistry and Chemical Engineering, Research and Development in Chemistry*: 34, June, Ulaanbaatar, Mongolia.
- Murata, T., Watanabe, M., Tanaka, H., Kawai, N. and Yano, M. 2018. Long term soil temperature experiment in green spaces of Tokyo Metropolis. *Abstract of Annual Meeting of Japanese Society of Soil Science and Plant Nutrition* **64**:144, August, Fujisawa. (in Japanese)
- Kawahigashi, M. 2018. Introduction of Tokyo Metropolitan University (TMU). Aktru Summer School, July, Tomsk, Russia. (invited)
- Kawahigashi M. 2018. Functions of dissolved organic matter in boreal forest ecosystems. Aktru Summer School, July, Altay-Aktru, Russia. (invited)
- Kawahigashi M. 2018. Soils beneath gray and green infrastructure in Japan. Regional meeting of Polish Soil Science Society, April, Torun, Poland. (invited)
- Kida, K. 2018. Anthropogenic soils in the soil classification system. Symposium of "The border between soils influenced by human impacts", *Abstract of Annual Meeting of Japanese Society of Soil Science and Plant Nutrition* **64**: 176, August, Fujisawa. (in Japanese)

- Sakagami, N., Guo, Y., Takashima, Y., Nishizawa, T., Narisawa, K. and Watanabe, M. 2018. Soil environmental condition and vegetation recovery of the abandoned cropland around Komado-Shitsugen moor, Fukushima Prefecture. *Abstracts of 17th World Lake Conference*: 154, October, Kasumigaura.
- Ebihara, A., Hirano, A., Sakagami, N., Nishizawa, T. and Ohta, H. 2018. Formation of soil layers after the eruption in 2000, Miyake-jima island -changes in soil chemical properties. *Abstract of Annual Meeting of Japanese Society of Soil Science and Plant Nutrition* **64**: 3, September, Fujisawa. (in Japanese)
- Saito, A., Sakagami, N., Narisawa, K., Itoh, T. and Nishizawa, T. 2018. Elemental composition and microbial community structure analysis of surface soils affected by the Kanto-Tohoku Heavy Rainfall Disaster in September 2015. *Abstracts of 17th World Lake Conference*: 228, October, Kasumigaura. (in Japanese)
- Guo, Y., Sakagami, N., Takashima, Y., Nishizawa, T., Narisawa, K. and Watanabe, M. 2018. Correlations between vegetation and soil microbiome across a vegetation gradient on the deforested land adjacent to the Komado-Shitsugen moor in Japan. 17th International Symposium on Microbial Ecology, August, Leipzig, Germany.
- Noguchi, M., Takada, K., Sakagami, N., Guo, Y., Nishizawa, T., Ohta, H. and Narisawa, K. 2018. Effect of microbial inoculant with *Veronaeopsis simplex* Y34 on microbial communities of Tomato root under hothouse cultivation. Japanese Society of Soil Microorganisms 2018, June, Hiroshima. (poster, in Japanese)
- Inose, Y., Takashima, Y., Guo, Y., Sakagami, N., Nishizawa, T., Watanabe, M. and Narisawa, K. 2018. Screening of symbiotic fungi associated with beech and application for trial planting of beech seedlings in the abandoned cropland around Komado-Shitsugen moor. *Abstracts of 17th World Lake Conference*: 228, October, Kasumigaura. (in Japanese)
- Sakoda, M., Mizusawa, M., Shiotsu, F., Guo, Y., Sakagami, N., Takimoto, T., Masutomi, Y., Fujiwara, T., Senoo, K. and Nishizawa, T. 2018. Effect of denitrifying bacteria on rice plant growth-promotion under low-nitrogen input condition: Investigation of rice plant growth and molecular analysis of root-associated soil bacterial community. *Abstracts of 17th World Lake Conference*: 226, October, Kasumigaura. (in Japanese)

- Tanino, K., Hosono, M. and Watanabe, M. 2018. Developing process of wind erosion landforms in humid temperate climate —The case in Ibaraki Pacific Coast Japan. *Association for Quaternary Research, Programme and Abstracts* **48**: 43, August, Hachioji. (in Japanese)
- Shirai, M., Akasaka, I., Takaoka, S. Utsugawa, T. and Kato, S. 2018. Publication of “the Book of materials –Nature–” in History of Hamura-city. *Japan Association for Quaternary Research, Programme and Abstracts* **48**: 83, August, Hachioji. (in Japanese)
- Orgilbold, M., Bolormaa, O., Khakhinov, V., Fujitake, N., Kawahigashi, M. 2018. Suspended solids as carriers of pollutants in the Selenga River system, the Lake Baikal watershed. *The 6th International Conference on Chemistry and Ehemical Engineering, Research and Development in Chemistry*: 10-11, June, Ulaanbaatar, Mongolia.
- Morishita, M. and Kawahigashi, M. 2018. Distribution of sapric peat soils in Japanese agricultural fields: the spatial analysis using geographic information system (GIS). *Abstracts of Japanese Society of Soil Science and Plant Nutrition* **64**: 79, August, Fujisawa. (in Japanese)
- Morishita, M. and Kawahigashi, M. 2019. Controlling factors for the distribution of sapric peat soils in Japanese agricultural fields. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring meeting* **95**: 258, March, Kawasaki. (in Japanese)
- Batdulum, B., Kawahigashi, M., Oyuntsetseg, B. 2018. Fate of plastic debris in river environment of Selenga river system and characterization of aged microplastics. *The 6th International Conference on Chemistry and Ehemical Engineering, Research and Development in Chemistry*: 32-33 June, Ulaanbaatar, Mongolia.
- Ibory, Y. and Kawahigashi, M. 2019. Influences of agricultural land uses on distribution of Andosols. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring meeting* **95**: 257, March, Kawasaki. (in Japanese)
- Nishikura S. and Kawahigashi, M. 2019. Vegetation succession and pedogenesis in Isahaya polder. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring meeting* **95**: 290, March, Kawasaki. (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 mainly 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
8. Quantitative evaluation of geographical phenomena in Tokyo in the modern era

3) List of Research Activities in FY2018

Peer-reviewed Articles

- Matsuyama, H. 2018. Review and prospect on the field of hydrology and water resources contributed by geographers in recent 30 years. *Journal of Japan Society of Hydrology and Water Resources* **31**: 467-486. (invited, in Japanese with English abstract)
- Matsuyama, H. 2018. Severe drought after an absence of 37 years illustrated by photographs and figures: Comparison of less precipitation at Chichi-jima and Haha-jima in the Ogasawara (Bonin) Islands from 2016 to 2017 and normal precipitation in 2018. *Journal of Geography (Chigaku Zasshi)* **127**: 823-833. (in Japanese with English abstract)
- Saito, H., Iijima, Y., Basharin, N.I., Fedorov, A.N. and Kunitsky, V.V. 2018. Thermokarst development detected from high-definition topographic data in central Yakutia. *Remote Sensing* **10**: 1579. doi.org/10.3390/rs10101579
- Kuo, H.L., Lin, G.W., Chen, C.W., Saito, H., Lin, C.W., Chen, H. and Chao, W.A. 2018. Evaluating critical rainfall conditions for large-scale landslides by detecting event times from seismic records. *Natural Hazards and Earth System Sciences* **18**: 2877-2891. doi.org/10.5194/nhess-18-2877-2018
- Ozturk, U., Marwan, N., Korup, O., Saito, H., Agarwal, A., Grossman, M.J., Zaiki, M. and Kurths, J. 2018. Complex networks for tracking extreme rainfall during typhoons. *Chaos* **28**: 075301. doi.org/10.1063/1.5004480
- Ishizaki, H. and Matsuyama, H. 2018. Distribution of the annual precipitation ratio of Radar/Raingauge-Analyzed Precipitation to AMeDAS across Japan. *SOLA* **14**: 192-196. doi.org/10.2151/sola.2018-034

Other Articles

- Aoyama, M. 2019. Relationship between liquefied sites and artificial landform changes in the Kinu and Kokai river basin, caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Annual Reports of the Faculty of Education, Gunma University, Cultural Science Series* **68**: 69-78. (in

Japanese)

Maehara, S. 2018. Interannual variation of the area of the *Zostera marina* field at Matsukawaura, Fukushima prefecture as revealed by high resolution images of UAV and aerial photographs. *Geographical Report of Kokushikan University* **26**: 57-90. (in Japanese)

Books

None

Reports

Matsuyama, H. 2018. Creation of 3D model of forests using UAV (Unmanned Aerial Vehicle). *Annual Report 2017 of Center for Environmental Remote Sensing, Chiba University* **23**: 51. (in Japanese)

Ishikawa, K. and Nakayama, D. 2018. P.19. A study on occupation distribution in Tokyo in 1926 by using classified telephone directory. *Theory and Applications of GIS* **26**: 134. (in Japanese)

Book Reviews

Matsuyama, H. 2018. “Geographical Interpretation of Landscape Photographs, The Geographical Society Tokyo Gakugei University Series II Vol. 3” eds. Kagami, M. and Arai, M., *Geographical Review of Japan* **91**: 328-329. (in Japanese)

Matsuyama, H. 2018. ”Integrated Physical Geography” by Iwata, S. *Chiri* **63**(11): 118. (in Japanese)

Matsuyama, H. 2018. “Memory and Succession of Immigrants' America: Immigration Museums Narrating America as the Museum of the World” ed. Yagasaki, N. *Geographical Review of Japan* **91**: 506-507. (in Japanese)

Matsuyama, H. 2018. “GIS for Hazard and Environment” ed. Yamagishi, H. *Theory and Applications of GIS* **26**: 135-136. (in Japanese)

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- Matsuyama, H. 2018. Congratulation, Mr. Shimizu! *Science Mentor News, the Japan Science Society* **4**: 37. (in Japanese)
- Matsuyama, H. 2018. Congratulation, Mr. Suzuki! *Science Mentor News, the Japan Science Society* **4**: 44. (in Japanese)
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- Matsuyama, H. 2019. Report of Tomsk, Russia in 2018. *Journal of Japan Society of Hydrology and Water Resources* **32**: 103-108. (in Japanese)
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- Hasegawa, K. 2018. Proposal to learn geography in high school—Education of relationship between resources and industry—. *Chiri* **64**(2): 116-121. (in Japanese)
- Hisatomi, Y. 2018. Practical report of physics—How to use the graphs in teaching kinematics—. *The Journal of Science Education* **61**(767): 25-30. (in Japanese)
- Ishikawa, K. 2018. Mapping of address data of modern era in old Tokyo city. *GIS NEXT* **63**: 62. (in Japanese)
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- Tachiki, S., Yamamoto, R. and Izumi, T. 2018. Comparison of land surface classification between pixel-based and object-based methods by using Landsat 7 satellite image—A case study of Aso-Kumamoto district—. *Proceedings of 20th CEReS Symposium on Environmental Remote Sensing*: 10. (in Japanese)

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- Government, May, Shinjuku-ku. (in Japanese)
- Matsuyama, H. 2018. Interannual variability of rainfall in Ogasawara—Comparison between Chichi-jima and Haha-jima—. *Lecture at Ogasawara Environmental Planning Institute*, August, Haha-jima. (in Japanese)
- Matsuyama, H. 2018. The application of Soil Water Index to landslide prediction—Toward its usage to snowmelt-driven landslides—. TSU-TMU Joint Symposium 2018 “The Natural and Artificial Environments. The Cultural Trends”, September, Tomsk, Russia.
- Matsuyama, H. 2018. Characteristics of springwaters at Kurokawa Seiryu Kouen—Comparison between other springs at Hino city and those at Tokyo Metropolis—. September, Hino. (in Japanese)
- Matsuyama, H. 2018. Figure of the Earth as seen from the hydrological cycle. Yume-Nabi Live, October, Fukuoka. (in Japanese)
- Matsuyama, H. 2018. Hydroclimatology at Ogasawara—Comparison between Chichi-jima and Haha-jima—. Lecture at Open University “Study for 50 years by Tokyo Metropolitan University on World Natural Heritage Ogasawara”, October, Chiyoda-ku. (in Japanese)
- Matsuyama, H. 2018. Considering the balance of earth system: Global warming and abnormal weather. Lecture at Meguro City College “Environmental History of Human Beings”, November, Meguro-ku. (in Japanese)
- Matsuyama, H. 2019. Hydroclimatological study of Ogasawara and its feedback to the community. Ogasawara Mini-Symposium, Japan Society of Island Studies/Ogasawara Research Committee, Tokyo Metropolitan University, March, Chichi-jima. (in Japanese)
- Yamanaka, T., Sayama, T., Amita, K., Ishida, S., Katsuyama, M., Tanakamaru, H., Hayashi, T., Maeda, M., Matsuyama, H. and Yokoo, Y. 2018. Hydrological Research Letters: Current status and ways forward. *Abstracts of Japan Geoscience Union Meeting 2018*: U05-P03, May, Chiba. (in Japanese with English abstract)
- Nakayama, D. 2018. Feasibility study of landslide and flood prediction using GIS and machine learning. TSU-TMU Joint Symposium 2018 “The Natural and Artificial Environments. The Cultural Trends”, September, Tomsk, Russia.
- Nakayama, D. 2019. Estimation of landslides at Izu Oshima island using decision tree. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 261, March, Kawasaki. (in Japanese)

- Yuasa, R., Nakayama, D., Matsuyama, H. and Ichiko, T. 2018. Tsunami evacuation simulation for Matsushima in Miyagi prefecture. Institute of Social Safety Science, May, Okushiritou. (in Japanese)
- Saito H., Uchiyama, S., Hayakawa, Y.S. and Obanawa, H. 2018. Characteristics of coseismic and rainfall-induced landslides at Aso Volcano, Japan, differentiated by UAS and SfM-MVS photogrammetry. *Abstracts on the 15th Annual Meeting of AOGS: IG09-A011*, June, Honolulu, U.S.A.
- Saito, H., Uchida, T. and Matsuyama, H. 2018. Relationship between landslide occurrences and return periods of heavy rainfall in the Japanese archipelago. *Research Abstracts on Spatial Information Science, CSIS DAYS 2018: 15*, November, Kashiwa. (in Japanese)
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- Haneda, Y., Oguchi, T., Hayakawa, Y. S., Saito, H. and Uchiyama, S. 2018. Characteristics of spatial distribution of landslides at Aso region triggered by the 2016 Kumamoto earthquake. *Research Abstracts on Spatial Information Science, CSIS DAYS 2018: 16*, November, Kashiwa. (in Japanese)
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- Uchiyama, S, and Saito, H. 2018. A case study of multi-band GNSS (a preliminary report). *Research Abstracts on the 6th High-Definition Topography Symposium: HDTS-8*, March, Sapporo (in Japanese).
- Aoyama, M. 2018. Land history of the liquefied zone caused by the 2016 Kumamoto Earthquake reconstructed from the historical records and old maps. *Abstracts of Japan Geoscience Union Meeting 2018: HDS12-04*, May, Chiba. (in Japanese with English abstract)
- Aoyama, M. 2018. Increased vulnerability of the flood risk caused by the artificial landform change of the river bank dune in the Wakamiyado, Joso City, Ibaraki Prefecture. *Abstracts of Japan Geoscience Union Meeting 2018: HDS12-P05*, May, Chiba. (in Japanese with English abstract)
- Aoyama, M. 2018. Land condition of the liquefied area in the Nakagawa and Kujigawa basin caused by the 2011 off the Pacific coast of Tohoku Earthquake. *Proceedings of the General Meeting of*

- the Association of Japanese Geographers 2018 Fall Meeting* **94**: 165, September, Wakayama. (in Japanese)
- Aoyama, M. 2019. Land condition of the filled-valley residential area in the Kiyota-ku, Sapporo City caused by the 2018 Hokkaido Eastern Iburi Earthquake. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 233, March, Kawasaki. (in Japanese)
- Hasegawa, K. 2018. Reports of active learning in Geoparks and areas familiar to students—Two presentations from an introduction to physical geography—. *Abstracts of Japan Geoscience Union Meeting 2018*: G05-P05, May, Chiba. (in Japanese with English abstract)
- Hasegawa, K. 2019. Development of field study in Hakone Geopark using three-dimensional model created by 3D printer—Cross-curriculum learning between geology and geography—. *Japan Private Schools' Education Research Institute Research Report Meeting 2019*, March, Chiyoda-ku. (in Japanese)
- Nanri, S. and Hasegawa, K. 2018. A practice report of experiment on “isostasy” in earth science class at high school. *Abstracts of Japan Geoscience Union Meeting 2018*: G05-P07, May, Chiba. (poster, in Japanese with English abstract)
- Nemoto, Y. 2018. Interpret local lore based on natural science: Significance of interpreting Shingen-Tsutsumi and Artificial Flooding Tactics at Bicchutamatsu Castle by Hideyoshi. 3rd Meeting for the Study of Historical Big Dat, August, Chiyoda-ku. (in Japanese)
- Nemoto, Y. 2018. Review of conditions for GIS education development of map puzzle system. *Proceedings of the General Meeting of the Association of Japanese Geographers 2018 Fall Meeting* **94**: 141, September, Wakayama. (in Japanese)
- Nemoto, Y. 2018. Development of map puzzle system using WebGIS. *Proceedings of the 27th Conference of GIS Association of Japan (CD-ROM)*: P50, October, Hachioji. (in Japanese)
- Fujiyoshi, M., Hatakeyama, H. and Nemoto, Y. 2019. First support for a life work project in a secondary education school. 2018 Coordination Unit for Secondary/Higher Education Open Symposium at Tokyo Metropolitan University, March, Hachioji. (in Japanese)
- Ishikawa, K. 2018. Traffic census in Tokyo in the modern era and estimation of people flow. 3rd Meeting for the Study of Historical Big Data, August, Chiyoda-ku. (in Japanese)
- Ishikawa, K. 2018. Address as historical geographic information and its problem. 1st Historical Big Data Workshop, October, Chiyoda-ku. (in Japanese)

- Ishikawa, K. and Nakayama, D. 2018. Estimation and visualization of Origin-Destination flow in old Tokyo city, Japan, 1925. 17th International Conference of Historical Geographers, July, Warsaw, Poland.
- Ishikawa, K. and Nakayama, D. 2018. A study on occupation distribution in Tokyo in 1926 by using classified telephone directory. 27th Conference of GIS Association of Japan, October, Hachioji. (poster, in Japanese)
- Ishikawa, K. and Nakayama, D. 2019. Accuracy evaluation of classified telephone directory published in modern era. *Proceedings of the General Meeting of the Association of Japanese Geographers 2019 Spring Meeting* **95**: 299, March, Kawasaki. (in Japanese)
- Hasegawa, S., Watanabe, T., Izumi, T. and Matsuyama, H. 2018. Evaluating the accuracy of scatterometer MetOp-B/ASCAT off the coast of Japan. *Abstracts of the 2018 Spring Meeting of the Meteorological Society of Japan* **113**: 194, May, Tsukuba. (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.)

Regional Studies, Representation Studies

Naoto YABE Associate Professor / PhD (D.Sc.)

Quantitative Geography, Urban Geography

Hiroyuki TSUBOMOTO Assistant Professor / PhD (D.Sc.)

Urban Geography, Office Study

Yoshio SUGIURA Senior Leading Professor / PhD (D. Sc.)

Human Geography

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 FY2018

Peer-reviewed Articles

- Sugiura, Y. 2018. The central place study of Edgar Kant and its significance in the history of contemporary geography. *Urban Geography of Japan* **13**: 1-36. (in Japanese with English abstract)
- Aramata, M., Oshiro, N., Yamaguchi, S., Koizumi, R. and Sugiyama, K. 2018. Thinking about the 2020 Tokyo olympic games: globalization, urban and regional development, and security. *E-journal GEO* **13**(1): 273-295. (in Japanese with English abstract)
- Susaki, S. 2019. Image of Shinjuku Ni-chome as a Gay neighborhood and its evolution. *Geographical Review of Japan Series A* **92**: 72-87. (in Japanese with English abstract)

Other Articles

- Wakabayashi, Y. 2018. Regional trend of the problem of vacant houses in Japan according to official statistics. *Tokei* **72**(2): 2-8.
- Wakabayashi, Y. 2018. The state of maps in the modern world. *Chizu* **63**(12): 10-17.
- Wakabayashi, Y. and Koizumi, R. 2018. Chapter 9: Spatial patterns of population change in central Tokyo since the period of the Bubble Economy. In *Tokyo as a Global City, International Perspectives in Geography, AJG Library 8*, eds. Kikuchi, T. and Sugai, T., 155-176. Singapore: Springer.
- Takinami, A. 2019. Local specialty foods and drinks made with branded rice from the Koriyama region in Fukushima prefecture. *Notes on Theoretical Geography* **21**: 1-22. (in Japanese)

- Takinami, A. 2019. Systematic and comparative discourse analysis concerning “Free speech of... young people of suburbs” published in France. *Notes on Theoretical Geography* **21**: 55-80. (in Japanese)
- Yabe, N. 2018. Chapter 10: Central Tokyo as a place for raising children while working. In *Tokyo as a Global City, International Perspectives in Geography, AJG Library 8*, eds. Kikuchi, T. and Sugai., T., 155-176. Singapore: Springer.
- Yabe, N. 2018. Column finance: real estate securitization and real estate developments in Tokyo. In *Keywords in Economic Geography*, ed. The Japan Association of Economic Geographers., 417-420. Tokyo: Hara Shobo. (in Japanese)
- Tsubomoto, H. 2019. Regional differences in office restructuring in a hierarchical corporate organization. *Notes on Theoretical Geography* **21**: 81–90. (in Japanese)
- Koizumi, R. 2018. Urban, secondary and tertiary industry. *Annals of the Association of Economic Geographers* **64** extra issue: 161-164. (in Japanese)
- Araori, T. 2019. Utilization of geospatial information for infectious disease prevention: the case of influenza local surveillance in Japan. *Geographical Reports of Tokyo Metropolitan University* **54**: 43-52.

Books

None

Reports

- Wakabayashi, Y. 2019. Urban policy and gentrification in Tokyo. Report of the International Forum of Research Center for Co-creating System of Regional Planning and Management, “Gentrification in metropolitan region”, 39-49.
- Yabe, N. 2019. Time budgets of gentrifiers in central Tokyo. Report of the International Forum of Research Center for Co-creating System of Regional Planning and Management, “Gentrification in metropolitan region”, 32-38.

Book Reviews

- Wakabayashi, Y. 2018. “Never Lost Again” by Kilday, B. (translated by Okuma, N.) *Chugoku Shimbun*, 23th December, 2018.

Miscellaneous Reports

Fujitsuka, Y., Kikuchi, T., Tatemi, J. and Wakabayashi, Y. 2019. Abstract of the symposium on the frontiers of gentrification at the Academic Meeting of the Association of Japanese Geographers, Autumn 2018. *E-journal GEO* 14(2): 88-92.

Presentations

Wakabayashi, Y. 2018. Variation in the use of geospatial information on the web: mainly focused on the current conditions and intergenerational differences of map use. Regional Conference of IGU 2018, August, Quebec, Canada.

Wakabayashi, Y. 2018. Inter-generational comparison of contemporary map use based on an online survey. Papers and Proceedings of the Annual Conference of the Japan Cartographers Association, 4-5, August, Toyama. (in Japanese)

Wakabayashi, Y. 2018. Evolution of maps: future of geospatial information and human beings. Forum of geospatial information in Hiroshima, September, Hiroshima. (in Japanese).

Wakabayashi, Y. 2018. Urban policy and gentrification in Tokyo. The International Forum of Research Center for Co-creating System of Regional Planning and Management, "Gentrification in metropolitan region", September, Hachioji. (in Japanese)

Wakabayashi, Y. 2018. Commentary at the symposium on the frontiers of gentrification. The General Meeting of the Association of Japanese Geographers 2018 Autumn Meeting, September, Wakayama. (in Japanese)

Wakabayashi, Y. 2018. Special session on the contribution and prospects of Japan to the International Cartographic Conference in Tokyo 2019, October, Hachioji. (in Japanese)

Yabe, N. 2018. Time budgets of gentrifiers in central Tokyo. Research Center for Co-creating System of Regional Planning and Management International Forum "Gentrification in Metropolitan area", September, Hachioji. (in Japanese)

Yabe, N. 2018. An analysis of travel patterns of inbound tourists. Forum of Research Center for San-En-Nanshin Regional Collaboration, Aichi University, December, Toyohashi. (in Japanese)

Tsubomoto, H. 2019. Significance of the workplace that measures the five senses from the viewpoint of the workplace model "SOF". *Proceedings of 17th meeting of AIJ Facility Management Symposium*: 92-100, March, Minato-ku. (in Japanese)

- Saito, A., Tsubomoto, H., Sugano, F., Ishizaki, M., and Higa, F. 2018. Trial of questionnaire for workers of the workplace model "SOF" supporting intellectual productivity. *Proceedings of 19th meeting of Japan Society of office studies*: 25-29, September, Kanazawa. (in Japanese)
- Koizumi, R. 2018. Spatial patterns of occupational structure and their changes in Tokyo Metropolitan Area after the bubble economy. *Annals of the Association of Economic Geographers* 64(4): 86-88. May, Sendai. (in Japanese)
- Koizumi, R. 2018. The relation between the bidding plan and urban planning for Tokyo 2020. Regional Conference of IGU 2018, August, Quebec, Canada.
- Bettaieb, B. and Wakabayashi, Y. 2018. The role of geospatial information of public signs in navigating foreign tourists to central Tokyo. Abstracts of Japan Geoscience Union Meeting 2015, May, Chiba.
- Susaki, S. 2019. Comparison of gay districts between Shinjuku 2-chome and English speaking countries. *Proceedings of the General Meeting of the Association of Japanese Geographers* 95: 80, March, Kawasaki. (in Japanese)
- Yamamoto, Y. 2019. An analysis of factors on voting results of voting areas in local election: as a case of the Tokyo Governor's Election executed in July 2016. The 67th Meeting of Graduation Thesis of Geography 2019, March, Shinjuku-ku. (in Japanese)