

# **Annual Report 2022**

## **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

Professor : Takehiko SUZUKI

Geomorphology, Quaternary Science, Volcanology

Associate Professor : Masaaki SHIRAI

Sedimentology, Quaternary Geology, Marine Geology

Assistant Professor : Daisuke ISHIMURA

Tectonic geomorphology, Quaternary Geology

Project Assistant Professor : Masanori MURATA

Tephrochronology, Quaternary Geology

Project Researcher : Kaori AOKI

Quaternary Science, Marine Tephrochronology, Geochronological Dating

## 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 FY2022

#### **Peer-reviewed Articles**

- Ishimura, D., Ishizawa, T., Yamada, M., Aoki, K. and Sato, K. 2022. Washover deposits related to tsunami and storm surge along the north coast of the Shimokita Peninsula in northern Japan. *Progress in Earth and Planetary Science* **9**: 69. <https://doi.org/10.1186/s40645-022-00529-9>
- Ishimura, D., Iwasa, Y., Takahashi, N., Tadokoro, R. and Oda, R. 2022. Paleoseismic events and shallow subsurface structure of the central part of the Futagawa fault, which generated the 2016 Mw 7.0 Kumamoto earthquake. *Geomorphology* **414**: 108387. <https://doi.org/10.1016/j.geomorph.2022.108387>
- Iwasa, Y., Kumahara, Y., Goto, H., Ishimura, D. and Hosoya, T. 2022. Faulting history of the Futagawa fault zone based on trenching survey at Komori, Nishihara Village, Kumamoto Prefecture. *Active Fault Research* **56**: 47-58. (in Japanese with English abstract) [https://doi.org/10.11462/afr.2022.56\\_47](https://doi.org/10.11462/afr.2022.56_47)
- Lowe, D. J., Abbott, P. M., Suzuki, T. and Jensen, B. J. L. 2022. Global tephra studies: Role and importance of the international tephra research group “Commission on Tephrochronology” in its first 60 years. *History of Geo- and Space Sciences*. **13**: 93-132. <https://doi.org/10.5194/hgss-13-93-2022>
- McIntosh, I. M., Aoki, K., Yanagishima, T., Kobayashi, M., Murata, M. and Suzuki, T. 2022. Reconstruction of submarine eruption processes from FTIR volatile analysis of marine tephra: Example of Oomurodashi volcano, Japan. *Frontiers in Earth Science* **10**: 2022. <https://doi.org/10.3389/feart.2022.963392>
- Okuno, M., Iguchi, M., Miyishi, M., Miura, D., Kobayashi, M., Hashimoto, T., Ohba, T., Sato, E. and Takarada, S. 2022. Epilogue of the special issues on “Understanding volcanoes by integrating eruptive history research and volcano observations”. *Bulletin of the Volcanological Society of Japan* **67**: 251-254. (in Japanese).
- Sato, K., Yamada, M., Ishimura, D., Ishizawa, T. and Baba, T. 2022. Numerical estimation of a tsunami source at the flexural area of Kuril and Japan Trenches in the fifteenth to seventeenth century based on paleotsunami deposit distributions in northern Japan. *Progress in Earth and Planetary Science* **9**: 72. <https://doi.org/10.1186/s40645-022-00530-2>
- Suzuki, T. and Usui, R. 2022. Izu-Oshima volcano: Eruption history as a basaltic volcano in a geopark area, central Japan. *The Journal of the Geological Society of Japan* **128**: 335–344. (in Japanese) <https://doi.org/10.5575/geosoc.2022.0031>
- Suzuki, T., Terayama, S. and Aoki, K. 2022. Late Pleistocene pre-caldera edifice examined by lacustrine deposits and tephtras around the Funo-no-taki falls in the east part of the Izu-Oshima volcano, Japan. *The Quaternary Research* **61**: 63–72. (in Japanese with English abstract) <https://doi.org/10.4116/jaqua.61.2106>

Takahashi, T., Aoki, K., Murata, M., Kobayashi, M. and Suzuki, T. 2022. Late Pleistocene stratigraphy of rhyolite tephra beds in Toshima, northern Izu Islands. *The Quaternary Research* **61**: 87-107. (in Japanese with English abstract) <https://doi.org/10.4116/jaqua.61.2104>

Yamamoto, T. and Kobayashi, M. 2023. <sup>14</sup>C ages for the Gotenba and Mabusegawa debris avalanche deposits in the eastern foot of Fuji Volcano, Japan. *Bulletin of the Geological Survey of Japan* **74**: 107-118. (in Japanese with English abstract).

### **Other Articles**

Aoki, K. 2023. The records of volcanic activities in the deep-sea sediment. In *Nature and natural disasters in the Izu Islands*, ed. Suzuki, T. and Ichiko, T., 83-88. Tokyo: Kokon Shoin (in Japanese).

Hiramine, R., Aoki, K., Ishimura, D. and Suzuki, T. 2023. Characteristics of drift pumice clasts along the coast of the Japanese Islands: The AT tephra, representative source of drift pumice clasts. *Geographical Reports of Tokyo Metropolitan University* **58**: 87-94.

Ishimura, D. and Toda, S. 2022. Surface ruptures in the northeastern part of the inner Aso caldera. In *Surface ruptures associated with the 2016 Kumamoto Earthquake sequence in southwest Japan*, ed. Kumahara, Y., Kaneda, H. and Tsutsumi, H., 197-204, Singapore: Springer.

Kaneda, H., Toda, S., Ishimura, D., Kumahara, Y., Goto, H., Okada, S. and Kobayashi, M. 2022. Surface ruptures and tectonic geomorphology along and around the Idenokuchi Fault. In *Surface ruptures associated with the 2016 Kumamoto Earthquake sequence in southwest Japan*, ed. Kumahara, Y., Kaneda, H. and Tsutsumi, H., 151-179, Singapore: Springer.

Kobayashi, M., 2023. Eruption of Mt. Fuji that attacked Fujinomiya City, The new findings about Aosawa lava, Kazamatsurigawa pyroclastic flow and Fuagoyama-Anmoyama ejecta. *Fujinology* **3**: 54-61. (in Japanese).

Kobayashi, M., 2023. The history of eruptions and sector collapses of Mt. Fuji revealed by geological peels. *Fujinology* **3**: 62-63. (in Japanese).

Kobayashi, M., Murata, M. and Nishizawa, F. 2023. Chapter 4: Niijima and Kozushima: Explosive eruptions caused by rhyolitic magma. In *Nature and natural disasters in the Izu Islands*, ed. Suzuki, T. and Ichiko, T., 45-68. Tokyo: Kokon Shoin. (in Japanese)

Kumahara, Y., Ishimura, D., Tsutsumi, H. and Sugito, N. 2022. Surface ruptures along the Kita-Amagi fault zone. In *Surface ruptures associated with the 2016 Kumamoto Earthquake sequence in southwest Japan*, ed. Kumahara, Y., Kaneda, H. and Tsutsumi, H., 45-57, Singapore: Springer.

Kumahara, Y., Toda, S., Tsutsumi, H., Goto, H., Ishimura, D., Okada, S., Kagohara, K. and Kaneda, H. 2022. Surface ruptures along the central–northern part of the Futagawa Fault. In *Surface ruptures associated with the 2016 Kumamoto Earthquake sequence in southwest Japan*, ed. Kumahara, Y., Kaneda, H. and Tsutsumi, H., 89-139, Singapore: Springer.

Suzuki, T. 2022. Large volcanic eruption and its impact to the environment. In *Illustrated encyclopedia*

- of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 40-43. Tokyo: Asakura Shoten. (in Japanese)
- Suzuki, T. 2023. Volcanoes and disaster prevention. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 554-555. Tokyo: Maruzen Publishing. (in Japanese)
- Suzuki, T. 2023. Landforms of hills and uplands. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 208-209. Tokyo: Maruzen Publishing. (in Japanese)

### **Books**

- Suzuki, T. and Ichiko, T. eds. 2023. *Nature and natural disasters in the Izu Islands*. Tokyo: Kokon Shoin. (in Japanese)

### **Reports**

None

### **Book Reviews**

- Utsugawa, T. 2022. Book review (The sedimentological society of Japan (supervisor), Ito, M. ed.: Field manual: The world of sedimentary structures). *Geographical Review of Japan* **95A**: 377-378. (in Japanese)

### **Miscellaneous Reports**

- Hiramine, R. 2022. Drift pumice everywhere—Drift pumice on the coast of Japan—. *Chiri* **67**(7): 33-36. (in Japanese)
- Ishimura, D., Hiramine, R. and Aoki, K. 2022. Chasing pumice from the 2021 Fukutoku-Oka-no-Ba eruption—Pumice drift and characteristics—. *Chiri* **67**(7): 23-32. (in Japanese)
- Sugito, N., Ishimura, D., Sawa, H., Suzuki, Y. and Yamanaka, T. 2022. 1:25,000 active fault map “Chino (revision)”. Geospatial Information Authority of Japan. (in Japanese).
- Suzuki, T. 2022. Evaluation of slope disaster potential deduced by loam (tephric soil deposits): distribution in the Japanese Islands and evaluation in artificial landform transformation area. *Technical Note of the National Research Institute for Earth Science and Disaster Resilience* **480**: 61-62.
- Takahashi, T. 2022. A report for the excursion of the Japan Association for Quaternary Research Meeting 2022 (Course-B: Landslide disaster in the Izusan area, Atami City). *Quaternary Newsletter* **29**: 5-6. (in Japanese)

### **Presentations**

- Albert, P., McLean, D., Suzuki, T., Nakagawa, T., SG06/SG14 Project Members and Smith, V. 2022. Constraining the timing, tempo and scale of past Japanese explosive volcanism: Insights from the Lake Suigetsu sedimentary archive (Honshu Island, Japan). *Cities on Volcanoes Volcanoes and Society: Environment, Health and Hazards*, June, Crete, Greece.
- Albert, P., Jones, G., Smith, V., Cullen, V., Ikehara, K., Staff, R., Suzuki, T., Buckland, H., McLean, D., Nakagawa, T. and Sagawa, T. 2023. Constraints on the timing of East Asian explosive volcanism: Insights from cryptotephra deposits preserved in marine and lacustrine archives. *Book of Abstracts, IAVCEI 2023 Scientific Assembly*: 10, February, Rotorua, New Zealand.
- Aoki, K., Hiramane, R., Ishimura, D., Watanabe, T., and Suzuki, T. 2022. Did drifted pumices on the Sanohama beach, the southeastern part of the Izu-Oshima Island derive from the 2021 Fukutoku-Oka-no-Ba eruption, Japan? *Abstract of Japan Geoscience Union Meeting 2022*: SVC31-17, May, Online.
- Aoki, K., Kobayashi, M., Takahashi, T., Murata, M., Nishizawa, F. and Suzuki, T. 2022. Geochemical variation of tephra beds in the sedimentary core C9010E off the Boso Peninsula in Japan and their source volcanoes. *Abstracts of Goldschmidt Conference 2022*, July, Hawaii, The United States of America. <https://doi.org/10.46427/gold2022.12789>
- Aoki, K., Kobayashi, M., Murata, M., Miyairi, Y., Yokoyama, Y., Suzuki, T. 2022. Tephrostratigraphy of drilled core C9010E off the Boso Peninsula: Discovery of 30 ka-tephra estimated to originate from the submarine volcano Oomurodashi-. *Japan Association for Quaternary Research, Programme and Abstracts 52*: 22, August, Shizuoka. (in Japanese)
- Baba, A., Fujii, T., Yasui, A., Kobayashi, M., Murata, M. and Nishizawa, F. 2022. The initial deposit of the 1707 eruption of Fuji volcano, Japan. *Abstract of Japan Geoscience Union Meeting 2022*: SVC29-07, May, Chiba.
- Baba, A., Fujii, T., Yasui, A. and Kobayashi, M. 2022. Petrological features of welded tuff and obsidian of 1707 eruption, Fuji volcano. *Programme and Abstracts, the Volcanological Society of Japan 2022 Fall Meeting*: 16, October., Mishima. (in Japanese)
- Buckland, H., Albert, P., Ikehara, K., Jones, G., Manning, C., McLean, D., Nakagawa, T., Smith, V. and Suzuki, T. 2023. Integrating offshore tephra deposits with near-source eruption records in Japan to better constrain eruption source parameters. *Book of Abstracts, IAVCEI 2023 Scientific Assembly*: 134, February, Rotorua, New Zealand.
- Hashimoto, M., Moriguchi, S. and Takahashi, T. 2022. About the hazard of the heavy rain in the Miyagi Prefecture in July 2022. Meeting for Prompt Reports of the Heavy Rain in July-August 2022 of IRIDeS, Tohoku University, August, Online. (in Japanese)
- Hiramane, R. 2022. Characteristics and sources of drift pumice clasts on the Pacific coasts of the Japanese Islands. *The 21st Meeting of the Japan Driftological Society*, November, Isen. (in Japanese)

- Hiramine, R. 2022. Source volcanoes of drift pumice along the Pacific coast of the Japanese Islands based on EPMA analysis. *JURC-DES Annual Meeting 2023*: O-03, February, Nankoku. (in Japanese)
- Hiramine, R., Ishimura, D., Aoki, K., Suzuki, T., Soda, T., Watanabe, T., Yamada, M., Ichihara, T. and Yamada, K. 2022. Date, amount, and size distribution of washed-up pumice clasts erupted from Fukutoku-Oka-no-Ba in 2021. *Abstracts of Japan Geoscience Union Meeting 2022*: SVC31-18, May, Chiba. (in Japanese with English abstract)
- Hiramine, R., Aoki, K., Ishimura, D. and Suzuki, T. 2023. Drift pumice along the Pacific coasts of the Japanese Islands: Source volcanoes, production and transport processes. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 99, March, Hachioji. (in Japanese)
- Ichikawa, R., Takahashi, T. and Toda, S. 2022. Ages of secondary slides in the large-scale landslide at the northern foot of Kurikoma Volcano, northeastern Japan. *Quarterly Journal of Geography* **74**: 135-136, March, Sendai. (in Japanese)
- Ishimura, D. and Takahashi, T. 2022. Roundness change of gravel particle along the rivers based on image analysis: A case study of Joganji, Sagami and Shimanto rivers. *Abstract of Japan Geoscience Union Meeting 2022*: HGM03-P05, May, Chiba.
- Ishimura, D., Hiramine, R., Yamada, M. and Nakamura, Y. 2022. Particle shape of drift pumice from the 2021 Fukutoku-Oka-no-Ba eruption. *Japan Association for Quaternary Research, Programme and Abstract* **52**: 40, August, Shizuoka. (in Japanese)
- Ishimura, D., Hiramine, R., Yamada, M. and Nakamura, Y. 2023. Characteristics of drift pumice's roundness associated with the 2021 Fukutoku-Oka-no-Ba eruption, Japan: Focusing on locations and times of drift. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 100, March, Hachioji. (in Japanese)
- Kaneda, H., Sasaki, N., Ishimura, D., Fukui, K., Omori, T., Matsushi, Y., Doi, I., Kano, Y., Omura, J., Iijima, S., Ota, R., Ogura, Y. and Watanabe, T. 2023. A study on the prediction of large-scale slope failures in active volcanoes at the fault terminus: The case of the Tateyama, 1858 Tobi Collapse. Symposium to Report the Results of FY2022 "Earthquake and Volcano Observation Research Plan to Contribute to Disaster Mitigation (Phase 2)", 2R5512, March, Bunkyo-ku.
- Kato, T., Yamada, M., Ishimura, D., Yamada, K. and Narusawa, M. 2022. Source estimation of the crevasse-splay deposit by comparison of roundness distribution. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2022*: O2, April, Online. (in Japanese)
- Kikuchi, T., Suzuki, T., Nihei, T., Sakamoto, Y., Miyamoto, Y. and Kobayashi, K. 2023. 1st Excurion Group A town building coexists with nature nature: Challenge of Minamiosawa. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 308, March, Hachioji. (in Japanese)

- Lowe, D., Abbott, P., Suzuki, T. and Jensen, B. 2023. Origin and development of the Commission on Tephrochronology (COT) and its role in advancing global tephra studies. *Book of Abstracts, IAVCEI 2023 Scientific Assembly*: 653, February, Rotorua, New Zealand.
- McIntosh, I. and Aoki, K. 2022. Investigating shallow submarine eruption processes recorded in dissolved H<sub>2</sub>O contents of marine tephra: Example of Oomurodashi volcano tephra in drill core C9010E. *Abstract of Japan Geoscience Union Meeting 2022*: SGC35-09, May, Chiba.
- McClean, D., Albert, P., Vineberg, S., Staff, R., Suzuki, T., Kimura, J., Chang, Q., Manning, C., SG14 Project Members and Nakagawa, T. 2023. There she blows! Unravelling the eruptive history of Aso volcano (Japan) using distal ash deposits. *Book of Abstracts, IAVCEI 2023 Scientific Assembly*: 711, February, Rotorua, New Zealand.
- Murata, M., Takahashi, T., Aoki, K., Sato, J. and Suzuki, T. 2022. Landform development of the alluvial plain in the west part of the Kazo lowland, Saitama Prefecture, Japan. *Abstract of Japan Geoscience Union Meeting 2022*: HQR04-P02, May, Chiba.
- Nakamura, Y. 2023. Distribution of deep-seated gravitational slope deformation features and active faults based on high-resolution DEMs: A case study of the Saigawa Hills and the Chikuma Mountains, Nagano Prefecture. The 71st National Geography Major Graduation Article Conference, March, Online. (in Japanese)
- Narusawa, M., Yamada, M., Ishimura, D., Yamada, K. and Kato, T. 2022. Source estimation of the gravelly paleotsunami deposits in Onuma, Miyagi Prefecture, using the particle shape image analysis. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2022*: 05, April, Online. (in Japanese)
- Niwa, Y. and Ishimura, D. 2022. Crustal movements since 100 ka along the Sanriku coast from geomorphology/geology studied after the 2011 Tohoku-oki earthquake. *Abstract of Japan Geoscience Union Meeting 2022*: SCG52-19, May, Chiba. (invited)
- Shiihara, M., Ichihara, T., Hiramine, R. and Ishimura, D. 2022. Drift pumice from the Fukutoku-Okanobu 2021 eruption in Fukuoka City, Japan. *The 21st Meeting of the Japan Driftological Society*, November, Isen. (poster, in Japanese)
- Shirai, M. and Utsugawa, T. 2022. A type of gravelly hyperconcentrated flow deposit distributed in the upper reaches of the Abe River, central Japan. *Abstracts of Japan Geoscience Union Meeting 2022*: HCG25-P05, May, Chiba.
- Shirai, M. and Utsugawa, T. 2022. Hyperconcentrated flow deposit formed by large-scale Oya slope failure in the upper reaches of the Abe River. *Japan Association for Quaternary Research, Programme and Abstract 52*: 45, August, Shizuoka. (in Japanese)
- Shirai, M., Utsugawa, T. and Kawajiri, K. 2022. Sedimentological record of the Fuji Sagami-River lahar flowing down during LGM along the upper reaches of Sagami River, central Japan. *Abstracts of the 21st International Sedimentological Congress (Beijing 2022)*: T3-40859, August, Beijing, China.

- Suwa, K., Takahashi, T., Ichikawa, R. and Toda, S. 2023. Intensity and frequency of the phreatic eruptions at the Kurikoma Volcano in the Holocene inferred from tephra fall deposits. *Proceedings of the International Meeting on Eruptive History and Informatics 2022-2*: 81-83, March, Fukuoka. (in Japanese)
- Suzuki, T. 2022. Sciences of Kanto loam: Eruption history and development of plains. Chiba City Museum of Science, Science Classes for Adult Persons. April, Chiba. (in Japanese)
- Suzuki, T. 2022. Feature and birth of the Japanese Islands. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. April, Online. (in Japanese)
- Suzuki, T. 2022. Feature of the landscape in Japan. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. April, Online. (in Japanese)
- Suzuki, T. 2022. Read the landscape of mountains. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. May, Online. (in Japanese)
- Suzuki, T. 2022. Read the landscape of volcanoes. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. May, Online. (in Japanese)
- Suzuki, T. 2022. Read the landscape of water. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. June, Online. (in Japanese)
- Suzuki, T. 2022. Read the landscape of coast. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. June, Online. (in Japanese)
- Suzuki, T. 2022. Landform and geology of the Mt. Takao, Physical Geography, Landforms and Geology. Tokyo Metropolitan University, Open University, August, Online. (in Japanese)
- Suzuki, T. 2022. Reconstruction of the emergence in the Kanto area deduced from the Quaternary Kazusa Group and tephras. *Abstracts 2022 the 129 Annual Meeting of the Geological Society of Japan*, S1-O-6, September, Shinjuku-ku. (in Japanese)
- Suzuki, T. 2022. Huge earthquakes and volcanic eruptions occurring in the Japanese Islands: What are they expected in the Izu volcanic islands? Search for the seven. 82nd Lecture of Citizen University of Hachijo-jima entitled preparation for disasters: Learning, protection and help, September, Hachijojima. (in Japanese)
- Suzuki, T. 2022. Read the landscape of earthquake and active faults. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. October, Online. (in Japanese)
- Suzuki, T. 2022. Read the landforms buried in urban. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. October, Online. (in Japanese)
- Suzuki, T. 2022. Read the landscape of lakes. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. November, Online. (in Japanese)
- Suzuki, T. 2022. Read the landscape of islands. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands. November, Online. (in Japanese)

- Suzuki, T. 2022. Topography and geology around Tokyo Gaikan Expressway area. Gaikan Expressway Lecturing. December, Chofu. (in Japanese)
- Suzuki, T. 2023. Recent progress of studies on Niijima and Kozushima volcanoes and marine volcanoes in the Izu Islands. Tokyo Collaborative Liaison Committee on Volcano Disaster Prevention. March, Online. (in Japanese)
- Suzuki, T. 2023. Tales from topographic lands in the Japanese Islands: Regions. Free experience for the spring of 2023 class of the Extension Center, Waseda University. March, Online. (in Japanese)
- Suzuki, T. 2023. Large scale landform forming oceans and lands in the world. Online Seminar for Geography, March, Online. (in Japanese)
- Suzuki, T. and Ichiko, T. 2023. Natural disasters in volcanic islands: Actual conditions and countermeasures in the Izu Islands: The objectives of the symposium. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 15, March, Hachioji. (in Japanese)
- Suzuki, T., Sato, J., Watanabe, T., Kokubun, K., Kawashima, S., Kawai, M. and Nakayama, T. 2022. Trace of Lower Pleistocene Kazusa Group from the Tama Hills to the south part of the Musashino Uplands, NE Japan. *Abstract of Japan Geoscience Union Meeting 2022*: HQR04-02, May, Chiba.
- Suzuki, T., Chigira, M. and Matsushi, Y. 2022. Assessment of earthquake-induced landslides potential on artificial landform transformation areas in the Tama Hills covered with thick tephric loess, west Tokyo. *Abstract of Japan Geoscience Union Meeting 2022*: HDS07-P12, June, Chiba. (in Japanese with English abstract)
- Suzuki, T., Chigira, M., Matsushi, Y. and Nakayama, D. 2022. Changes of the earthquake-induced landslides risk by artificial landform transformation: A case in the Tama New Town, west Tokyo. *Abstracts 2022 the 129 Annual Meeting of the Geological Society of Japan*, T13-O-12, September, Shinjuku-ku. (in Japanese).
- Suzuki, T., Aoki, K., Kobayashi, M., Murata, M., Nishizawa, F. and Takahashi, T. 2022. Recent trends in the study of the eruptive history of the northern Izu slands volcanoes. *Proceedings of the International Meeting on Eruptive History and Informatics* **2022-1**: 123-124, October, Sakai. (in Japanese with English abstract)
- Suzuki, T., Aoki, K., Kobayashi, M. Murata, M., Nishizawa, F. and Takahashi, T. 2023. Constraining the tempo and frequency of explosive eruptions since 30 ka occurred in the north Izu Islands, off Tokyo, Japan. *Book of Abstracts, IAVCEI 2023 Scientific Assembly*: 1017, February, Rotorua, New Zealand.
- Suzuki, T., Watanabe, T., Tanaka, H. and Kawabata, M. 2023. MIS 9 terrace surface in northwest end of the Tama Hills, inland area of the Kanto Plain. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 98, March, Hachioji. (in Japanese)

- Takahashi, T. 2022. Reconstruction of the long-term sediment routing system in the mountainous rivers based on the development of the tributary fluvial terraces. Conference for the Researches of the River Foundation 2022, August, Chiyoda-ku. (poster, in Japanese)
- Takahashi, T. and Ishii, Y. 2023. Valley-filling processes since the last interglacial around the Tozurahara District, the middle reaches of the Sagami River, central Japan. *Proceedings of the General Meetings of the Association of Japanese Geographers* **103**: 282, March, Hachioji. (in Japanese)
- Takahashi, T. and Matsukaze, J. 2022. A study of the valley filling processes since the last interglacial in the Doushi River, a tributary of the Sagami River, central Japan. *JGU Meeting Abstracts* **3**: 39, November, Sapporo. (in Japanese)
- Takahashi, T., Suwa, K., Ichikawa, R. and Toda, S. 2022. Depressions likely explosion craters and phreatic eruption deposits since the mid-Holocene in the Kurikoma Volcano, northeastern Japan. *Proceedings of the International Meeting on Eruptive History and Informatics 2022-1*: 5-7, October, Osaka. (in Japanese)
- Utsugawa, T. 2022. Compilation of Hamura City history focusing on role of the physical geography. The General Meeting of Geographical Society of Hosei Univ., May, Online. (in Japanese)
- Utsugawa, T. 2023. Sedimentary environment of the last interglacial marine terrace deposits in southern Joban coastal region. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 90, March, Hachioji. (in Japanese)
- Utsugawa, T. and Shimazu, H. 2022. Sedimentological record of alternate bar in embanked river: Case study of the lower reaches of Natori River, northeastern Japan. *Abstracts of the 21st International Sedimentological Congress (Beijing 2022)*: T11-61673, August, Beijing, China.
- Watanabe, T. 2023. Tephrochronological study on the 100,000 years eruptive history of Aizu region based on Yanohara Bog sediment. *Report Meeting on the Research of Yanohara Bog 2022*, March, Showa-village. (in Japanese)
- Watanabe, T. and Ishimura, D. 2023. Formation and development of deep-seated gravitational slope deformation in Sekita Pass based on dense drilling cores in Chayaike Bog. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 94, March, Hachioji. (in Japanese)
- Watanabe, T., Ishimura, D., Sato, J., Nakamura, Y. and Suzuki, T. 2022. Formation age of linear depression from tephrochronology on the Sekita Mountains, central Japan. *Abstracts of Japan Geoscience Union Meeting 2022*: HDS11-03, May, Chiba. (in Japanese)
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- Watanabe, T., Suzuki, T. and Ishimura, D. 2022. Eruptive age from the Myoko Volcano Group tephra based on drilling core records from ridge-top wetlands, the Sekita Mountains, central Japan. *Programme and Abstracts, the Volcanological Society of Japan 2022 Fall Meeting*: 162, October, Mishima. (in Japanese)
- Yamada, K. and Ishimura, D. 2022. Test of mapping of coastal boulders using deep learning. *Japan Association for Quaternary Research, Programme and Abstract* **52**: 35, August, Shizuoka. (in Japanese)

## 2. Laboratory of Climatology

### 1) Staff

Professor : Jun MATSUMOTO

Monsoon Climatology, Environmental Climatology

Professor : Hideo TAKAHASHI

Urban Climatology, Climatic Change, Rainfall Climatology

Assistant Professor : Hiroshi TAKAHASHI

Asian Monsoon, Cloud-Precipitation Climatology, Regional Climate Modeling

Project Professor : Fumiaki FUJIBE

Urban Climatology, Environmental Climatology

Project Associate Professor : Jun-Ichi HAMADA

Tropical Climatology, Meteorological Observation

Project Researcher : Yoshihito SETO

Urban Climatology, Local Climatology, Statistical Analysis

Project Researcher : Masato NODZU

Tropical Climatology, Satellite Meteorology, Climatology over Small Islands

Project Researcher : Rakesh Teja KONDURU

Diurnal Convection, Tropical Climatology, Land-Atmosphere Convection, Regional and Global Climate Modeling

Project Researcher : Anu GUPTA

Monsoon Climatology

### 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 FY2022

#### *Peer-reviewed Articles*

Chen, T. C, Tsay, J. D., Matsumoto, J., Black, A. S. and Chen, J. M. 2022. Development of late spring-early summer rainstorms in Southern East Asia from the eastward-propagating mid-tropospheric cyclones of South Asia. *International Journal of Climatology* **43**: 1293–1313.

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Du, H., Donat, M. G., Zong, S., Alexander, L. V., Manzanas, R., Kruger, A., Choi, G., Salinger, J., He, H. S., Li, M.-H., Fujibe, F., Nandintsetseg, B., Rehman, S., Abbas, F., Rusticucci, M., Srivastava, A., Zhai, P., Lippmann, T., Yabi, I., Stambaugh, M. C., Wang, S., Batbold, A., de Oliveira, P. T., Adrees, M., Hou, W., Santos e Silva, C. M., Lucio, P. S. and Wu, Z. 2022. Extreme precipitation on consecutive days occurs more often in a warming climate. *Bulletin of the American Meteorological Society* **103**: E1130–E1145. <https://doi.org/10.1175/BAMS-D-21-0140.1>

Fujibe, F. and Matsumoto, J. 2022. Long-term changes in the newspaper coverage of words related to meteorology and disaster. *Tenki* **69**: 319–325. (in Japanese with English abstract). [https://doi.org/10.24761/tenki.69.6\\_319](https://doi.org/10.24761/tenki.69.6_319)

Fujibe, F. and Matsumoto, J. 2022. Regional features related to timing of maximum and minimum precipitation during the warm season in Japan. *Geographical Review of Japan* **95B**: 55–68. <https://doi.org/10.4157/geogrevjapanb.95.55>

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Seto, Y., Tsunematsu, N. and Takahashi, H. 2022. Surface wind convergence during localized heavy rainfall in Tokyo in summer: Evaluation and utilization of the amount of divergence using high-density observation data. *Tenki* **69**: 365–378. (in Japanese with English abstract) [https://doi.org/10.24761/tenki.69.7\\_365](https://doi.org/10.24761/tenki.69.7_365)

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### **Other Articles**

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Gupta, A. and Matsumoto, J. 2023. Lack of spatial uniformity in the long-term change of Indian

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- Matsumoto, J. and Olaguera, L. M. P. 2022. Seasonal synoptic climate in South and Southeast Asia. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F. Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 108–109. Tokyo: Asakura Shoten. (in Japanese)
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- Takahashi, H. 2022. Climate of East Asia (including Eastern Russia). In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 73, Tokyo: Asakura Shoten. (in Japanese)
- Takahashi, H. 2022. Recent unusual meteorological events in East Asia. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 100–101, Tokyo: Asakura Shoten. (in Japanese)
- Takahashi, H. 2023. Climate elements and climate factors. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 116–117. Maruzen Publishing. (in Japanese)
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- Takahashi, H. G., Kiguchi, M. and Sugimoto, S. 2022. Floods and droughts in Asia, Europe, and America. In *Handbook of air quality and climate change*, ed. Akimoto, H. and Tanimoto, H. Singapore: Springer. [https://doi.org/10.1007/978-981-15-2527-8\\_36-1](https://doi.org/10.1007/978-981-15-2527-8_36-1)
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- Tsunematsu, N. and Seto, Y. 2022. Investigative research on changes in the heat environment before and after the creation of green spaces in public open spaces through urban redevelopment. *Annual Report of the Tokyo Metropolitan Research Institute for Environmental Protection 2022*: 52–59. (in Japanese)
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- Yamashita, S. and Matsumoto, J. 2022. Researchers who contributed to the development of climatology and their representative works. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 411–414. Tokyo: Asakura Shoten. (in Japanese)

### **Books**

- Nagoshi, T., Hiramatsu, N. and Fujibe, F. eds. 2022. *Meteorological education in the present and future. Meteorological Research Note No.245*. Tokyo: The Meteorological Society of Japan. (in Japanese)
- The Association of Japanese Geographers ed. 2023. (Chief: Murayama, Y., Editors: Akimoto, H., Ichinose, T., Oguchi, T., Kajita, M., Suzuki, Y., Hashimoto, K., Matsui, K., Matsumoto, J., Morishima, W., Yamamoto, K. and Watanabe, M.), *The encyclopedia of geography*. Tokyo: Maruzen Publishing. (in Japanese)
- Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita,

S. and Watarai, Y. eds. 2022. *Illustrated encyclopedia of world climate*. Tokyo: Asakura Shoten. (in Japanese)

### **Reports**

Takahashi, H. 2023. Study on evaluation of forecast performance of JMA numerical prediction model for typhoon impacts. *Report of Joint Research by Tokyo Metropolitan University and Disaster Prevention Research Institute, East Japan Railway Company, 2022*, 4–24. (in Japanese)

### **Book Reviews**

None

### **Miscellaneous Reports**

None

### **Presentations**

Akasaka, I., Zaiki, M., Kubota, H. and Matsumoto, J. 2022. Seasonal marches of rainfall and prevailing winds at Manila from the late 19th century to the early 20th century. *Abstracts of the Meteorological Society of Japan 2022 Fall Meeting 122*: 441, October, Online. (in Japanese)

Algodon, R. M., Takahashi, Y., Sato, M., Kubota, H., Ishida, T., Yamashita, K., Castro, E. C., Estrebillo, L. J., Purwadi, Perez, G.J.P., Marciano, J., Matsumoto, J., Hamada, J.-I., Tsuboki, K. and Yamada, H. 2022. 3D reconstruction of Typhoon Trami using air-borne images and isolated cumulonimbus clouds using multiple ground cameras. *Abstracts of the Japan Geosciences Union Meeting 2022: AAS07-02*, May, Chiba. (in Japanese)

Fujibe, F. 2022. Climatology of diurnal variation of surface wind speed in Japan. *27th National Symposium on Wind Engineering Proceedings: 14*, December, Shinjuku-ku. (in Japanese with English abstract)

Fujibe, F. 2023. Climatology of heat stroke deaths in Japan. The International Workshop on Climate, Water, Land, and Life in Monsoon Asia, March, Hachioji.

Fujibe, F. and Matsumoto, J. 2022. Long-term change in heat-related mortality in Japan. *Abstracts of the Meteorological Society of Japan 2022 Spring Meeting 121*: 81, May, Online. (in Japanese)

Fujibe, F. and Matsumoto, J. 2022. On the negative correlation between summer neonatal mortality and temperature in Japan. *Abstracts of the Meteorological Society of Japan 2022 Fall Meeting 122*: 164, October, Sapporo. (in Japanese).

Gupta, A. and Matsumoto, J. 2022. Climatological intraseasonal variation in aerosols and their impact on extreme rainfall over India. *Vietnam International Water Week VACI2022*, September, Online.

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- Hamada, J.-I., Kubota, H. Matsumoto, J., Sato, M., Takahashi, Y. and Vincent, G. 2022. An observational study on the pre-monsoon heavy rainfall in the Metro Manila, Philippines based on a dense surface meteorological observation network. *Abstracts of the Japan Geoscience Union Meeting 2022*: MIS09-P02, June, Online.
- Kamizawa, N. and Takahashi, H. G. 2022. Future changes in the Asian summer monsoon precipitation projected by CMIP6 models. *Abstracts of the Japan Geoscience Union Meeting 2022*: AAS01-06, May, Chiba.
- Kitabayashi, S. 2023. Fast and slow responses of surface air temperature to increasing anthropogenic aerosols in the South Asian monsoon region. The International Mini Workshop for Young Researchers on Climate and Weather in Monsoon Asia, March, Hachioji.
- Kitabayashi, S. and Takahashi, H. G. 2022. Fast and slow responses of surface air temperature to the increasing anthropogenic aerosols in the Asia monsoon region. *Abstracts of the Japan Geoscience Union Meeting 2022*: AAS08-P04, May, Chiba. (Poster)
- Konduru, R. T., Nodzu, M. I. and Matsumoto, J. 2022. Satellite observed annual and seasonal variation of Yakushima precipitation. *Proceedings of the General Meeting of the Association of Japanese Geographers 2022 Autumn Meeting 102*: 25, September, Takamatsu.
- Kubota, H., Chan, J. C. L. and Matsumoto, J. 2022. Interdecadal variability of tropical cyclone activity in the Philippines and Japan. *Abstract of the Asia Oceania Geosciences Society Annual Meeting*: AS63-A016, August, Online. (invited)
- Kubota, H., Matsumoto, J., Akasaka, I., Tsukahara, T., Ota, A. and de Jong, A. 2022. Long-term variability of South China Sea summer monsoon onset using meteorological data in the ship logs. *Proceedings of the General Meeting of the Association of Japanese Geographers 102*: 27, September, Takamatsu. (in Japanese)
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- Manalo, J. A., Matsumoto, J., Takahashi, H. G., Villafuerte II, M. Q., Olaguera L. M. P., Ren, G. and

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- Matsumoto, J. 2023. Where there is a will there is a way: My research life in Monsoon Asia. The International Workshop on Climate, Water, Land, and Life in Monsoon Asia, March, Hachioji.
- Matsumoto, J. and Gupta, A. 2022. Aerosol variations over India by the monsoon intra-seasonal oscillations. *Abstract of the Asia Oceania Geosciences Society Annual Meeting: AS03-A017*, August, Online. (invited)
- Nodzu, M. I. 2022. Validation of the GSMaP data with radar observations over the Pacific Ocean along the Japanese Islands. The Joint PI Meeting of JAXA Earth Observation Missions FY2022, November, Chuo-ku. (poster)
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- Olaguera, L. M. P., Matsumoto, J. and Manalo, J. A. 2022. Influence of boreal summer intraseasonal oscillation on rainfall extremes and monsoon break events in the Philippines. *Abstract of the Asia Oceania Geosciences Society Annual Meeting: AS40-A009*, August, Online.
- Sengoku, K. 2023. The climatology of cold-air damming in the Kanto Plain, Japan. The International Workshop on Climate, Water, Land, and Life in Monsoon Asia, March, Hachioji.
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- Seto, Y. and Takahashi, H. 2022. Characteristics of local wind and pressure patterns in summer over the Kanto Plain. *Proceedings of the General Meeting of the Association of Japanese Geographers* **102**: 115, September, Takamatsu. (in Japanese)
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- Sugiura, T. 2023. Seasonality for the decay of Madden–Julian Oscillation over the Maritime Continent. The International Mini Workshop for Young Researchers on Climate and Weather in Monsoon Asia, March, Hachioji.
- Sugiura, T. 2023. Seasonality for the decay of Madden–Julian Oscillation over the Maritime Continent. The 71st National Geography Major Graduation Article Conference, March, Online. (in Japanese)
- Takahashi, H. 2022. "Extreme weather" reconsidered. Meguro City College Lecture: Knowing the Earth, June, Meguro-ku. (in Japanese)
- Takahashi, H. G. 2022. Impact of sea surface temperature near Japan on the extra-tropical cyclone induced snowfall events in Tokyo during Kuroshio large meandering. *Abstracts of the Japan Geoscience Union Meeting 2022*: ACG44-04, May, Chiba.
- Takahashi, H. G., Sugimoto, S. and Sato, T. 2022. Isolated impact of land-surface condition over the Tibetan Plateau in late spring on the Asian monsoon circulation in early summer from a large-ensemble dataset. *Abstracts of the Japan Geoscience Union Meeting 2022*: AAS08-09, May, Chiba.
- Terao, T., Kanae, S. and Matsumoto J. 2022. Social perspectives and targets of Asian Precipitation Experiment (AsiaPEX). *Frontiers in Hydrology Meeting*, June, Online.
- Terao, T., Kanae, S., Fujinami, H. and Matsumoto, J. 2022. Third pole environment and sciences in AsiaPEX. *Abstract of the Asia Oceania Geosciences Society Annual Meeting*: HS04-A002, August, Online. (invited)

### 3. Laboratory of Environmental Geography

#### 1) Staff

Professor: Masayuki KAWAHIGASHI

Soil Ecology, Environmental Chemistry, Material Dynamics in Ecosystems

Professor: Keiichiro YOSHIDA

Vegetation Geography, Biogeography, Relationships between Nature and Human

#### 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 soil science, vegetation science, forest ecology, landscape design, political ecology, folklore, anthropology and so on. Our research methods are primarily based on field surveys and monitoring observations on soil, vegetation, local climate, land and water, and interview surveys. We also conduct physical and chemical analysis of various environmental samples collected in the field to understand environmental changes. In addition, we use and analyze remote sensing data from satellites and UAV, and develop analysis and investigation methods. Research fields extend from domestic to widely overseas, with an overseas focus on environmental change and human responses in arctic, tropical, subtropical, semi-arid, and desert regions in Europe, Mongolia, Southeast Asia, South America, and the Pacific Islands. Current major themes are as follows.

1. Monitoring of environmental parameters in Japan and overseas to predict short- and long-term environmental changes
2. Impact of human activities on soils and waters in various terrestrial ecosystems
3. Analysis of waste dynamics affecting to natural ecosystems
4. Vegetational shifts on mountainous areas induced by climate change
5. Long-term monitoring of forest dynamics related to topography
6. Conservation and sustainable use of natural environments in semi-arid tropical regions

#### 3) List of Research Activities in FY2022

##### *Peer-reviewed Articles*

Battulga, B., Kawahigashi, M. and Oyuntsetseg, B. 2022. Characterization of biofilms formed on polystyrene microplastics (PS-MPs) on the shore of the Tuul River, Mongolia. *Environmental Research* **212**: 113329. <https://doi.org/10.1016/j.envres.2022.113329>

Battulga, B., Atarashi-Andoh, M., Nakanishi, T. and Koarashi, J. 2022. A new approach to extracting biofilm from environmental plastics using ultrasound-assisted syringe treatment for isotopic analyses. *Science of the Total Environment* **849**: 157758.

<http://dx.doi.org/10.1016/j.scitotenv.2022.157758>

Charzynski, P., Urbanska M., Capra G.F., Ganga A., Holmes P., Szulczewski M., Baatar U., Boularbah, A., Bresilla B., Cacovean H., Datta A., Gadsby H., Gargouri K., Gebregeorgis, E.G., Giani L., Grover S., Juliev M., Kasparinskis R., Kawahigashi M., Kellermann L.A., Kim, K-H., Krotka L., Kukul, I., Kunchulia I., Laaouidi, Y., Leglize, P., Mouketou-Tarazewicz D., Mugagga F., Novak T.J., Ortiz, J., Osuna-Vallejo V., Penízek V., Tomov, P., Prokofeva P., Pulido M., Recha C.W., Reintam E., Repe, B., Sahin S., Salehi M.H., Dan-Badjo, A.T., Teperics, K., Tormanen, T., Tsyrybka, V., Vaisvalavicius, R., Vezzani, F. and Zhang, S. 2022. A global perspective on soil science education at third educational level; Knowledge, practice, skills and challenges. *Geoderma* **425**: 116053.

<https://doi.org/10.1016/j.geoderma.2022.116053>

#### **Other Articles**

Kagawa, Y., Yoshida, K., Ono, E. and Uesugi, E. 2023. Excursion in Kyoto: Getting started on regional geography. In *Regional geography: Looking around our world, connecting its geographies for our future*, ed. Uesugi, E. and Ono, E., 14-21. Tokyo: Kokon Shoin. (in Japanese)

Kondo, A., Yoshida, K. and Uesugi, E. 2023. How to describe a region: An approach to regional geography. In *Regional geography: Looking around our world, connecting its geographies for our future*, ed. Uesugi, E. and Ono, E., 32-35. Tokyo: Kokon Shoin. (in Japanese)

Morishita M, 2023. Soil classification. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 244-245. Tokyo: Maruzen Publishing. (in Japanese)

Morishita M, 2023. Soil formation and distribution. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 245-246. Tokyo: Maruzen Publishing. (in Japanese)

Morishita, M. and Kawahigashi, M. 2023. Practical investigation of soil profile. 5. Soil survey in peatlands. *Japanese Journal of Soil Science and Plant Nutrition* **94**: 49-53. (in Japanese)

Yoshida, K. 2023. Biome on the earth. In *The encyclopedia of geography*, ed. The Association of Japanese Geographer, 252-253. Tokyo: Maruzen Publishing. (in Japanese)

Yoshida, K. 2023. Ecotone. In *The encyclopedia of geography*, ed. The Association of Japanese Geographer, 264-265. Tokyo: Maruzen Publishing. (in Japanese)

Yoshida, K. 2023. The development history of the natural environment in Brazil. In *Regional geography: Looking around our world, connecting its geographies for our future*, ed. Uesugi, E. and Ono, E., 96-101. Tokyo: Kokon Shoin. (in Japanese)

### **Books**

None

### **Reports**

None

### **Book Reviews**

None

### **Miscellaneous Reports**

Tokonami, Y., Azuma, K., Kimura, A., Seki, M., Takahashi, Y., Tatsuno, T., Nishikura, S., Murashima, K., Yamazaki, A. and Yamamoto, S. 2022. Report on 22nd World Congress of Soil Science (22nd WCSS) *Japanese Journal of Soil Science and Plant Nutrition* **94**: 78-79.

### **Presentations**

Battulga, B., Atarashi-Andoh, M. and Koarashi, J. 2022. A new approach to extracting biofilm from environmental plastics using ultrasound-assisted syringe treatment for isotopic analyses. *European Geoscience Union (EGU) General Assembly 2022*: EGU22-1044, May, Online.

Battulga, B., Atarashi-Andoh, M. and Koarashi, J. 2022. Preliminary study to characterize microplastics in the coastal environment using multiple analytical approaches. *Joint Conference on Environmental Chemicals*: TU-A2-4, June, Online.

Battulga, B., Nakayama, M., Atarashi-Andoh, M. and Koarashi, J. 2022. Characterizations of formed biofilms and microbial communities on microplastics in coastal rivers of Japan. *MICRO 2022: Plastic Pollution from Macro to Nano*: 427021, November, Online.

Dolgormaa, M., Kawahigashi, M., Battulga, B., Sainjargal, B. and Bolormaa, O. 2022. Changes in distribution and types of plastic debris in urban river shores, Ulaanbaatar city, Mongolia. *Abstract of MICRO 2022, Online Atlas Edition: Plastic Pollution from MACRO to Nano*: 426761, Lanzarote, Spain.

Higa, M., Seto, M., Ishida, Y., Wakamatsu, N. and Yoshida, K. 2023. Distributions of *Abies firma* over a sixty years in an old-growth *Abies-Fagus* forest. *Abstracts for 70th Annual Meeting of Ecological Society of Japan*: P2-082, March, Online. (in Japanese)

Ishida, Y., Fukamachi, A., Wakamatsu, N., Seto, M., Higa, M. and Yoshida, K. 2023. Changes in forest floor vegetation following the trail management in Kagitori-yama Rare Population Protection Forest, northeastern Japan. *Abstracts for 70th Annual Meeting of Ecological Society of Japan*: P2-228, March, Online. (in Japanese)

Kajiwaru, T. and Kawahigashi, M. 2022. Heterogeneity in plant growth of the black pine planted on a

- coastal embankment along the Sendai Bay area. *Abstract of the Soils of Urban Industry Traffic Mining and Military Areas (SUITMA11)*: O-03, September, Online.
- Kajiwara, T. and Kawahigashi, M. 2022. Searching for soil indicators affecting on heterogeneity of black pine growth planted on the coastal forest. *Proceeding of the General Meeting of the Association of Japanese Geographers* **102**: 49, September, Takamatsu. (in Japanese)
- Kajiwara, T. and Kawahigashi, M. 2022. Search for factors contributing to the heterogeneity of growth in a coastal disaster-prevention forest of black pine in the Sendai Plain: A cross-sectional understanding of soil properties. *Abstract of Annual Meeting of Japanese Society of Coastal Forest 2022 Meeting*: 10-11, October, Chiyoda-ku. (in Japanese)
- Kajiwara, T. and Kawahigashi, M. 2022. Assessing the heterogeneity of the soil environment in the planting base of a black pine coastal disaster prevention forest in the Sendai Plain. *Abstract of Conference of the Kanto Branch of Japanese Society of Soil Science and Plant Nutrition*: O-5, November, Mito. (in Japanese)
- Kajiwara, T., Kawahigashi, M., Ono, K. and Kodani, E. 2022. Searching for vegetation indices suitable for understanding growth heterogeneity in coastal forest of Japanese black pine on planting base. *Abstracts of the Japan Geoscience Union Meeting 2022*: HTT19-03, June, Chiba. (in Japanese)
- Koseki, H., Takahashi, N., Hori, K., Yoshida, K. and Ushiyama, M. 2023. Considerations on natural disasters prevention in university entrance examinations. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 245, March, Hachioji. (in Japanese)
- Morishita, M. and Ishitsuka, N. 2022. Areal estimation of soil properties using UAV images: Implementation of machine learning with data augmentation. *22nd World Congress of Soil Science*: P-521, July, Online.
- Morishita, M. and Ishitsuka, N. 2022. A technique for selecting soil sampling points by using unsupervised classification of aerial drone images. *Proceedings of the Japanese Society of Soil Science and Plant Nutrition* **68**: 84, September, Setagaya-ku. (in Japanese)
- Morishita, M. and Ishitsuka, N. 2022. Spatial soil estimation using aerial drone images: Non-linear prediction by ground truth data augmentation. *Proceedings of JASS 2022 Annual Meeting*: 25-26, November, Fukushima. (in Japanese)
- Morishita, M., Ise, Y., Hayano, M., Maejima, Y. and Takata, Y. 2022. Predicting gley horizon lowering in paddy fields using machine learning. *Pedologist* **66**(2): 68, August, Online. (in Japanese)
- Nishikura, S. and Kawahigashi, M. 2022. Key factors of soil formation in Japanese polders affected by sedimentary environment. *Poster Book of Abstracts of World Congress of Soil Science 2022*: P906, August, Glasgow, United Kingdom.
- Nishikura, S. and Kawahigashi, M. 2022. Soil classification based on microtopography in Isahaya Bay polder conserved area. *Pedologist* **66**(2): 63, August, Online. (in Japanese)
- Nishikura, S. and Kawahigashi, M. 2022. Effects of microtopography as a soil forming factor on polder

- soils in the Isahaya polder conserved area, Japan. *15th International Conference of the East and Southeast Asia Federation of Soil Science Societies (ESAFS2022)*: OS9-2, August, Online.
- Nishikura, S. and Kawahigashi, M. 2022. Characteristics of sedimentary environment in Japanese polder soil from the viewpoint of hydraulic environmental index. *Abstract of Annual Meeting of Japanese Society of Soil Science and Plant Nutrition* **68**: 65, September, Setagaya-ku. (in Japanese)
- Srisomkiew, S. and Kawahigashi, M. 2022. Digital soil mapping for soil fertility assessment in the Thung Kula Ronghai region, Thailand. *Poster Book of Abstracts of World Congress of Soil Science 2022*: P818, August, Glasgow, United Kingdom.
- Takahashi, N., Koseki, H., Hori, K., Yoshida, K. and Ushiyama, M. 2023. Content analysis of the high school textbook "Geography" focused on the field of disaster prevention. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 167, March, Hachioji. (in Japanese)
- Takahashi, T. and Kawahigashi, M. 2023. Characterization of urban green space soils by multi-point sampling. *Proceedings of the General Meeting of the Association of Japanese Geographers 2023 Spring Meeting*, **103**: 146, March, Hachioji. (in Japanese)
- Yoshida, K. 2022. Relationships between nature and human in Kanazawa Hakkei. *Lecture to Learn about Kanazawa (Kanagawa Prefectural Kanazawa-Bunko Museum and Kanazawa Ward administration Office)*, December, Yokohama. (invited, in Japanese)
- Yoshida, K., Higa, M., Ishida, Y., Wakamatsu, N. and Seto, M. 2022. Large-scale wind disturbance in the boreal forests on Mt. Rishiri, northern Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **102**: 46, September, Takamatsu. (in Japanese)

## 4. Laboratory of Geographical Information Sciences

### 1) Staff

Professor: Hiroshi MATSUYAMA

Hydrometeorology, Land Surface—Atmosphere Interaction, Statistical Analysis, Programming

Assistant Professor: Takeki IZUMI

Urban Climatology, Geographical Information Sciences, Numerical Meteorological Modelling

Assistant Professor: Daichi NAKAYAMA

Geographical Information Sciences, Remote Sensing, Computational Geomorphology

Project Researcher: Takanori WATANABE

Urban Climatology, Atmospheric Chemistry, Air Quality Modelling

### 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 FY2022

#### **Peer-reviewed Articles**

- Chikita, K. A., Amita, K., Oyagi, H. and Okada, J. 2022. Effects of a volcanic-fluid cycle system on water chemistry of a deep caldera lake: Lake Tazawa, Akita Prefecture, Japan. *Water* **14**: 3186. <https://doi.org/10.3390/w14193186>
- Fujitsuka, Y. 2022. Gentrification and change of the urban landscape in inner Tokyo: The case of Shitaya, Negishi, and Higashi-Nippori districts. *Urban Geography of Japan* **17**: 1-9. (in Japanese with English abstract)
- Ikeda, S., Yamazaki, T., Iwasaki, T., Fukui, S., Kanno, H. and Okubo, S. 2022. A probabilistic forecast experiment and its verification for relative humidity and leaf wetness with downscaling data of one-week ensemble prediction system of the Japan Meteorological Agency. *Tenki* **69**: 133-148. (in Japanese)
- Kaihara, S., Tadakuma, N., Saito, H. and Nakaya, H. 2022. Influence of below-threshold rainfall on landslide occurrence based on Japanese cases. *Natural Hazards* **115**: 2307-2332. <https://doi.org/10.1007/s11069-022-05639-7>
- Matsuyama, H. 2023. Characteristics of precipitation at Haha-jima, Ogasawara (Bonin) Islands in comparison with those at Chichi-jima. *Journal of Geography (Chigaku Zasshi)* **132**: 17-31. (in Japanese with English abstract) <https://doi.org/10.5026/jgeography.132.17>
- Matsuyama, H., Watanabe, T. and Zemtsov, V. 2023. Extreme drought around Tomsk, Russia in summer 2012 in comparison with other regions in Western Siberia. *Water* **15**: 388. <https://doi.org/10.3390/w15030388>
- Miyoshi, S. and Matsuyama, H. 2022. Investigating the effects of drought on the vegetation activity using remote sensing data: A case study at Chichi-jima, Ogasawara (Bonin) Islands. *Journal of Geography (Chigaku Zasshi)* **131**: 365-380. (in Japanese with English abstract) <https://doi.org/10.5026/jgeography.131.365>
- Nagai, S., Nemoto, Y., Matsuyama, H. and Fujitsuka, Y. 2022. Relationship between topography and Hikawa Shrine in Tokyo Metropolis. *Theory and Application of GIS* **30**: 115-122. (in Japanese with English abstract)
- Omoto, K., Waragai, T., Ikeda, A. and Oyagi, H. 2022. Analysis of cemented and un-cemented sand layers and spring water, collected from Yoshino Coast, southeast of Miyako Island, Okinawa. *Quarterly Journal of Geography* **74**: 68-77. (in Japanese with English abstract) [https://doi.org/10.5190/tga.74.2\\_68](https://doi.org/10.5190/tga.74.2_68)

#### **Other Articles**

- Fujitsuka, Y. 2022. Problems pertaining to the gentrification in New York City. *Chiri* **67**(4): 31-36. (in Japanese)

- Kanno, H. 2022. Local winds in Eastern Asia. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 90-91. Tokyo: Asakura Shoten. (in Japanese)
- Kanno, H. 2022. Generation cause of the Okhotsk High and cold damage for agriculture. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 102-103. Tokyo: Asakura Shoten. (in Japanese)
- Kanno H. 2023. Agriculture and climate. In *The encyclopedia of geography*. ed. The Association of Japanese Geographers, 136-137. Tokyo: Maruzen Publishing. (in Japanese)
- Matsuyama, H. 2022. Pre-1906 extension of precipitation data for Chichi-jima in the Ogasawara (Bonin) Islands based on the analysis of historical documents (Oozeki Bunko) at Haha-jima: Behind-the-scenes story on Kanno and Matsuyama (2021). *Annual Report of Ogasawara Studies* **45**: 45-62. (in Japanese)
- Matsuyama H. 2022. Synoptic-scale climate of each season in South America. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 192-193. Tokyo: Asakura Shoten. (in Japanese)
- Matsuyama H. 2022. Local wind and regional characteristics of climate in South America. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 194-195. Tokyo: Asakura Shoten. (in Japanese)
- Matsuyama H. 2022. Snow and ice in South America. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 196-197. Tokyo: Asakura Shoten. (in Japanese)
- Matsuyama H. 2022. Recent unusual meteorological events in South America. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 200-201. Tokyo: Asakura Shoten. (in Japanese)
- Matsuyama, H. 2022. Data sets and analysis methods useful for studying climate of the world. In *Illustrated encyclopedia of world climate*, ed. Yamakawa, S., Eguchi, T., Takahashi, H., Tokiwa, K., Hirai, F., Matsumoto, J., Yamaguchi, T., Yamashita, S. and Watarai, Y., 409-410. Tokyo: Asakura Shoten (in Japanese)
- Nakayama, D. 2023. Landslide disaster prediction on Miyake Island and Izu-Oshima Island: An approach from machine learning and numerical simulation. In *Nature and natural disasters in the Izu Islands*. ed. Suzuki, T. and Ichiko, T., 180-196. Tokyo: Kokon Shoin. (in Japanese)
- Nodzu, M. I., Matsumoto, J., Watanabe, T., Seto, Y., Nakajima, K., Inoue, T. and Hamada, J.- I. 2023.

Observation of daytime changes in boundary layer on a clear and weak-wind summer day in western suburban of Tokyo. *Geographical Reports of Tokyo Metropolitan University* **58**: 49-56.

### **Books**

Keirinkan. (including Hasegawa, K.) 2022. *Basic earth science*. Osaka: Keirinkan. (in Japanese)

Keirinkan. (including Hasegawa, K.) 2022. *Sensor Basic earth science*. Osaka: Keirinkan. (in Japanese)

### **Reports**

Iijima, Y. and Matsuyama, H. 2022. Discussion and summary of the symposium "Japan-Russia joint research on the environmental change in Siberia". *E-journal GEO* **17**: 168. (in Japanese)  
<https://doi.org/10.4157/ejgeo.17.165>

Inagaki, K. 2022. Simulation of evacuation behavior in the event of river flooding: A case study of Tomsk City, Russia. *E-journal GEO* **17**: 166. (in Japanese) <https://doi.org/10.4157/ejgeo.17.165>

Matsuyama, H. and Iijima, Y. 2022. The purpose of the symposium "Japan-Russia joint research on the environmental change in Siberia" *E-journal GEO* **17**: 165. (in Japanese)  
<https://doi.org/10.4157/ejgeo.17.165>

Nakayama, D. 2022. Land cover change since 2000 in Tomsk region, Russia. *E-journal GEO* **17**: 165-166. (in Japanese) <https://doi.org/10.4157/ejgeo.17.165>

Nemoto, Y. 2022. Estimation of ice jam flooding in Tomsk urban area using flood inundation simulation. *E-journal GEO* **17**: 165. (in Japanese) <https://doi.org/10.4157/ejgeo.17.165>

Saito, H. 2022. Preliminary detection of thermokarst landforms using vegetation index in Eastern Siberia. *E-journal GEO* **17**: 166-167. (in Japanese) <https://doi.org/10.4157/ejgeo.17.165>

Watanabe, T. 2022. Long-term trends of extreme climate indices in Western Siberia. *E-journal GEO* **17**: 165. (in Japanese) <https://doi.org/10.4157/ejgeo.17.165>

### **Book Reviews**

Matsuyama, H. 2022. Book Review (Ono, E. and Yoshida, K. eds.: *Physical Geography: Looking around our world, connecting its geographies for our future*). *Tenki* **69**: 227-228. (in Japanese)

Matsuyama, H. 2022. Book review (Kamada, M. ed.: *An academic introduction to Australia: Traveling and studying*). *Geographical Review of Japan* **95A**: 273-274. (in Japanese)

Matsuyama, H. 2022. Book review (Yamada, M.: *Redrawn maps as a strategy of war: How Imperial Japan falsified its topographical maps*). *Geographical Review of Japan* **95A**: 323-324. (in Japanese)

Matsuyama, H. 2022. Book review (Center for Water Cycle, Marine Environment and Disaster Management, Kumamoto University ed.: *Learning from traces of the Kumamoto earthquake*). *Chiri* **67**(10): 105. (in Japanese)

Matsuyama, H. 2022. Book review (Yokoyama, S.: *Food culture of fermented soy-foods (Natto) in Asia*)

- and the Himalayas). *Geographical Review of Japan* **95A**: 372-373. (in Japanese)
- Matsuyama, H. 2023. Book review (Yoshimizu, H. ed.: Lesson plans for junior high school geography based on criterion referenced assessment). *Geographical Review of Japan* **96A**: 112-113. (in Japanese)
- Matsuyama, H. 2023. Book review (How do new commute line and super express change the city?: Sociology of the railway transport impact). *Geographical Review of Japan* **96A**: 198-199. (in Japanese)

### **Miscellaneous Reports**

- Matsuyama, H. 2022. Questions to geographers who appeared television. No.10 Superhuman Female Warriors Garibenger V #128. "Clarify the mysteries of spring water". *Chiri* **67**(11): 53-57. (in Japanese)
- Matsuyama, H. 2022. Rainfall, sewerage, and combined sewer system: Maintenance hall and Nogawa in Tokyo Metropolis. *Journal of Japan Sewage Works Association* **59**(722): 68-69. (in Japanese)
- Matsuyama, H. 2022. Report on the taking a detour train in the suburbs of Tokyo area. *Report of Old Boys/Girls of Wandervogel Club in the University of Tokyo*: 79-82. (in Japanese)
- Matsuyama, H. and Kanno, H. 2022. Reproduction of climate variability using old documents: A case study at Ogasawara (Bonin) Islands. *ESTRELA* **339**: 10-15. (in Japanese)
- Watanabe, T. 2022. Roles of numerical simulation on climate change projection. *ESTRELA* **339**: 16-21. (in Japanese)
- Yamamoto, R. 2022. Introduction of the dissertations (A geographical information study on observation and analysis methods suitable for capturing urban and watershed vegetation: Possibilities of 360-degree images, ultra high resolution images by UAVs and object-based image analysis). *Journal of The Remote Sensing Society of Japan* **42**: 169-170. (in Japanese)

### **Presentations**

- Honda, K., Natsume, M. and Nemoto, Y. 2022. Estimation of early modern village territory using Kyūjū-daka-Kyūryō – Torishirabechō and rural community area data. 31st Conference of GIS Association of Japan, October, Naha. (in Japanese)
- Iijima, Y., Abe, T., Saito, H. and Hiyama, T. 2022. Permafrost degradation and water body change in the central Lena River basin, Eastern Siberia. *Abstracts of Research Meeting of Japan Society of Hydrology and Water Resources/Japanese Association of Hydrology*: OP-P-03, September, Kyoto. (in Japanese) [https://doi.org/10.11520/jshwr.35.0\\_145](https://doi.org/10.11520/jshwr.35.0_145)
- Kanno, H. and Matsuyama, H. 2023. Pre-1906 extension of precipitation data for Chichi-jima in the Ogasawara (Bonin) Islands based on the analysis of historical documents. The International

- Workshop on Climate, Water, Land, and Life in Monsoon Asia. March, Hachioji.
- Kanno, H. and Matsuyama, H. 2023. Reconstruction of precipitation before 1906 at Chichi-jima in Ogasawara (Bonin) Islands using old documents (2) Meteorological observation at Ohgiura, Chichi-jima. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 42, March, Hachioji. (in Japanese) [https://doi.org/10.14866/ajg.2023s.0\\_33](https://doi.org/10.14866/ajg.2023s.0_33)
- Matsuyama, H. 2022. Appearing on TV Asahi: Superhuman Female Warriors Garibenger V #128. "Clarify the mysteries of spring water" on 30th June 2022, Minato-ku. (in Japanese)
- Matsuyama, H. 2022. Water in Tokyo, water in Nerima. 4th Furusato Culture Lecture in FY2022, Nerima Shakujii Kouen Furusato Museum, December, Nerima-ku. (in Japanese)
- Matsuyama, H. 2023. Why severe drought occurred at Ogasawara (Bonin) Islands during El Niño event in 2018-2019? The International Workshop on Climate, Water, Land, and Life in Monsoon Asia, March, Hachioji.
- Matsuyama, H., Nodzu, M. and Matsumoto, J. 2022. Ground evaluation of the GPM observation and the GSMaP data over the Izu and Ogasawara Islands. The Joint PI Meeting of JAXA Earth Observation Missions FY2022, November, Chuo-ku, Tokyo.
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## 5. Laboratory of Urban and Human Geography

### 1) Staff

Professor : Yoshiki WAKABAYASHI

Urban Geography, Behavioral Geography, Geographical Information Sciences

Associate Professor : Akihiro TAKINAMI

Regional Studies, Representation Studies

Associate Professor : Naoto YABE

Quantitative Geography, Urban Geography

Assistant Professor : Hiroyuki TSUBOMOTO

Urban Geography, Office Study

### 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
  - 1) Location of economic activities
  - 2) Human migration, commodity flow, and spatial diffusion of information
  - 3) Mental map and spatial behavior
  - 4) Time geography
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 FY2022

#### **Peer-reviewed Articles**

- Araori, T. and Wakabayashi, Y. 2022. Establishment and development of disease maps in modern Japan. *Map (Chizu)* **60** (2): 19-26. (in Japanese with English abstract)
- Hirama, K., Otsuka, Y., Yokota, K., Wachi, T. and Watanabe, K. 2022. Factors related to target selection of convenience store robbers. *Acta Criminologiae et Medicinae Legalis Japonica* **88**: 75-80. (in Japanese with English abstract)
- Hirama, K., Yokota, K., Otsuka, Y., Watanabe, K., Yabe, N. and Hawaii, Y. 2022. Investigating factors related to criminal trips of residential burglars using spatial interaction modeling. *International Journal of Geo-information* **11**: 346. <https://doi.org/10.3390/ijgi11060346>
- Hirama, K., Yokota, K., Otsuka, Y., Watanabe, K., Yabe, N., Yokota, R. and Hawaii, Y. 2023. Geographical profiling incorporating neighbourhood-level factors using spatial interaction modelling. *Journal of Investigative Psychology and Offender Profiling* **20**: 135-150. <https://doi.org/10.1002/jip.1611>
- Noma, T. and Yabe, N. 2022. Creating land use maps of Tokyo in the late Edo, early Meiji, and Taisho periods: An analysis of land use change focusing on the formation of the capital city. *Theory and Applications of GIS* **30**: 19-26. (in Japanese with English abstract)
- Susaki, S. 2022. Japan's double standard on the acceptance of sexual minorities: The logic of recognition of refugees and permission for status of residence at a geographical scale. *Sundai Historical Review* **176**: 55-74. (in Japanese with English abstract)
- Thang L. L., Yui, Y., Wakabayashi, Y. and Miyazawa, H. 2023. Promoting age-friendly community of support and care in Japan's aging neighborhood: The Nagayama model. *Aging and Health Research* **3**: 100111. <https://doi.org/10.1016/j.ahr.2022.100111>
- Wakabayashi, Y., Yui, Y. and Kukimoto, M. 2023. Spatial aspects of the supply–demand gap and its change in childcare services in Naha City, Japan. *GeoJournal* **88**: 2993–3008. <https://doi.org/10.1007/s10708-022-10790-6>

#### **Other Articles**

- Sugiura, Y. 2023. History of human geography, and its study fields and research methods. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 16-17. Tokyo: Maruzen

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- Sugiura, Y. 2023. Center. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 20-21. Tokyo: Maruzen Publishing. (In Japanese)
- Takinami, A. 2023. Capturing people's lives and landscapes. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 84-85. Tokyo: Maruzen Publishing. (in Japanese)
- Tsubomoto, H. 2023. Relationship between economic functions and land use in urban centers. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 82-83. Tokyo: Maruzen Publishing. (In Japanese)
- Wakabayashi, Y. 2022. Geospatial information and future society. In *Perspectives of Human Geography*, ed. Takenaka, K., 239-255. Kyoto: Mineruva Shobo. (in Japanese)
- Wakabayashi, Y. 2023. Public participation GIS. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 672-673. Tokyo: Maruzen Publishing. (in Japanese)
- Wakabayashi, Y. 2023. GIS as a medium. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 678-679. Tokyo: Maruzen Publishing. (in Japanese)
- Yabe, N. 2023. Uniform region and functional region. In *The encyclopedia of geography*, ed. The Association of Japanese Geographers, 28-29. Tokyo: Maruzen Publishing. (in Japanese)
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### **Books**

- Takinami, A. 2023. *Asakamai rice and Koriyama people: How to produce locally and consume locally?* Sendai: Tohoku University Press. (in Japanese)
- Wakabayashi, Y. and Morita, T. eds. 2022. *Ubiquitous mapping: Perspectives from Japan*. Singapore: Springer.

### **Reports**

None

### **Book Reviews**

- Wakabayashi, Y. 2022. Book review (Editorial board of the 150-year history of surveying and mapping: The 150-year history of surveying and mapping in Japan). *Chizujoho* **42**(3): 334. (in Japanese)

### **Miscellaneous Reports**

- Tsubomoto, H. 2022. Office space and location trends in the Corona pandemic and future issues. *Quarterly Journal, the Real Estate Research (Fudosan Kenkyu)* **64**(3): 3-12. (In Japanese)
- Yabe, N. 2022. Basic geographic views acquired through GIS. *Chirigepo* **566**: 10-11.

### **Presentations**

- Araori, T. 2023. Geospatial information and disease maps for health risk assessment: A study on the evolution of sanitation systems and the social application of disease maps. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 241, March, Hachioji. (in Japanese)
- Bettaieb, B. and Wakabayashi, Y. 2022. Visualization of the distribution of areas of interest for foreign visitors and its change by using online geotagged photographs. *Abstracts of Japan Geoscience Union Meeting 2022*: HTT16-04, May, Online.
- Hirama, K., Yokota, K., Otsuka, Y., Furuhashi, K., Watanabe, K., Yokota, R. and Yabe, N. 2022. An evaluating index for dispersed crime points from an estimated central point. *Proceedings of the 50th Annual Meeting of the Behaviormetric Society*: 225-228, August, Okinawa. (in Japanese) [https://doi.org/10.20742/pbsj.50.0\\_225](https://doi.org/10.20742/pbsj.50.0_225)
- Hirama, K., Yokota, K., Otsuka, Y., Watanabe, K. and Yokota, R. 2022. Crime linkage using spatio-temporal interactive model. The 2022 Conference of Society for Police and Criminal Psychology, Program, 10, September, Quebec, Canada.
- Inada, T., Tsubomoto, H. and Wakabayashi, Y. 2023. Recent trend of residential choice in Chiba New Town at the beginning of the 21st century. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 253, March, Hachioji. (in Japanese)
- Kurihara, T. and Yabe, N. 2022. A study on inbound tourism consumption focusing on personal travel history. 65 th Spring Conference of Infrastructure Planning and Management, June, Hiroshima. (poster, in Japanese)
- Oonishi, K. 2022. Transformation of animation industry agglomeration with digitalization. *Proceedings of the General Meeting of the Association of Japanese Geographers* **102**: 510, September, Takamatsu. (in Japanese)
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- Saito, A. and Tsubomoto, H. 2023. Office evaluation and operational methods that promote knowledge creation among diverse workers. Facility Management Forum 2023, February, Online. (in Japanese)
- Saito, A., Tsubomoto, H., Higa, F. and Sugano, F. 2022. A study on workplace evaluation of an IT venture firm using the "SOF" model based on intellectual productivity. *Journal of 23rd JOS National Convention*: 25-29, September, Online. (in Japanese with English abstract)
- Susaki, S. 2022. Geographical viewpoints on gay districts. The 40th Annual Meeting of The Japan Association for Urban Sociology September, Shibuya-ku. (in Japanese)

- Susaki, S. 2023. The spatial differentiation of gay businesses in Tokyo in the late 1970s. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 251, March, Hachioji. (in Japanese)
- Tanaka, K. 2023. An analysis of transportation mode selection factors for trips to stations in Tama area, Tokyo. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 181, March, Hachioji. (in Japanese)
- U, Y., Ito, S. and Suzuki, K. 2022. Spatial characteristics of haunted sites in comparison to various public facilities. *Abstracts of Japan Geoscience Union Meeting 2022*: HTT16-05, May, Chiba.
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- Wakabayashi, Y. 2023. Current status of housing vacancies and measures against it in a residential suburb of Hachioji, Tokyo. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 175, March, Hachioji. (in Japanese)
- Yabe, N., Tanaka, K. and Shimizu, T. 2023. Urban-rural disparities in travel flow due to the impact of the COVID-19 pandemic. *Proceedings of the General Meeting of the Association of Japanese Geographers* **103**: 233, March, Hachioji. (in Japanese)
- Yasuda, N. 2022. The role and changes of the underground mall in the city center of Fukuoka city: A case study of Tenjin Underground Mall. *Proceedings of the General Meeting of the Association of Japanese Geographers* **102**: 125, September, Takamatsu. (in Japanese)