

# **Annual Report 2023**

## **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

## 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 FY2023

### *Peer-reviewed Articles*

Albert, P. G., McLean, D., Buckland, H., Suzuki, T., Jones, G., Staff, R. A., Veinberg, S., Kitaba, I., Yamada, K., Moriwaki, H., Ishimura, D., Ikehara, K., Manning, C.J., SG14 Project Members, Nakagawa, T. and Smith, V.C. 2024. Cryptotephra preserved in Lake Suigetsu (SG14 core) reveals the eruption timing and distribution of ash fall from Japanese volcanoes during the

late-glacial to early Holocene. *Quaternary Science Reviews* **324**: 108376.

<https://doi.org/10.1016/j.quascirev.2023.108376>

- Fukushima, T., Suzuki, T. and Momohara, A. 2024. Plant macrofossil assemblage in ca. 1.3 Ma from the Sayama Formation of the Kazusa Group in west Kanto region and its phytostatigraphic significance. *Fossils* **115**: 19-32.
- Hiramine, R., Aoki, K. and Ishimura, D. 2023. Holocene drift pumices and their source volcanoes at Sekinehama, Mutsu City, Aomori Prefecture, Japan. *The Quaternary Research* **62**: 61-69. (in Japanese) <https://doi.org/10.4116/jaqua.62.2204>
- Naya, T. and Suzuki, T. 2023. Stratigraphic distribution of the fossil diatom *Lancineis rectilatus* in the Lower Pleistocene Kazusa Group in the Tama Hills, central Japan, and its geological and palaeontological significance. *Fossils* **114**: 23-35.
- Suzuki, T., Watanabe, T., Hashimoto, M., Kawabata, M., Jimba, N., Sugawara, D., Kawashima, S., Kokubun, K. and Nakayama, T. 2023. Two early Pleistocene tephra detected within the Kazusa Group in the Kanto Plain: Recognition and significance of SYG-Kd29 and Ob3-Kd31B. *Journal of Geography* **132**: 483-503.

#### **Other Articles**

- Aoki, K. 2024. Amagi Kawagodaira tephra. In *Cyclopedia of earth sciences (Saishin Chigaku Jiten)*, ed. Chigaku dantai kenkyukai, 44-45, Tokyo: Heibonsha Limited, Publishers. (in Japanese)
- Ishimura, D. 2024. Major element composition of volcanic glass shards in late Quaternary tephra from the Towada volcano, northeast Japan. *Geographical Reports of Tokyo Metropolitan University* **59**: 135-142.
- Kikuchi, T., Suzuki, T., Nihei, T., Sakamoto, Y., Miyamoto, Y., and Kobayashi, T. 2023. Excursion Group 1: A development of new-town coexisting with nature: challenge of Minami-osawa region. *E-journal GEO* **18**: 357-360. <https://doi.org/10.4157/ejgeo.18.357>
- Kobayashi, M. 2024. Osorezan Volcano. In *Cyclopedia of earth sciences (Saishin Chigaku Jiten)*, ed. Chigaku dantai kenkyukai, 206, Tokyo: Heibonsha Limited, Publishers. (in Japanese)
- Kobayashi, M. 2024. The history of Mt. Fuji and the scientific characteristics of the spring water that came to its foot - Understanding the path of Mt. Fuji's groundwater. In *Nature and society of Shizuoka - Focusing on the eastern part of the prefecture*, ed. Shizuoka University Education Center of Regional Development, 45-61. (in Japanese)
- Kobayashi, M. 2024. The birth and history of Lake Sengokuhara and Lake Ashinoko. In *Hakone Geomuseum Exhibition Manual*, ed. Yamaguchi, T., 28-29. (in Japanese)
- Kobayashi, M. 2024. Phreatic eruptions for 3,000 years ago – Evidence of eruption in topography and sediments –. In *Hakone Geomuseum Exhibition Manual*, ed. Yamaguchi, T., 28-29. (in Japanese)

- Kobayashi, M. 2024. Living mountain, Mt.Fuji. In *Mt.Fuji and Japanese people*, ed. and author Toyama, A., 49-77. Shizuoka: The Shizuoka Shimbun. (in Japanese)
- Kobayashi, M. and Inoue, T. 2024. Utilize the blessings of Mt. Fuji. In *Mt.Fuji and Japanese people*, ed. and author Toyama, A., 217-239. Shizuoka: The Shizuoka Shimbun. (in Japanese)
- Mannen, K., Kobayashi, M., Nishizawa, F., Kasama, T. and Miyashita, Y., 2023. Dating of the lacustrine deposit exposed in Shunzan-shita, Sengokuhara, Hakone volcano, Japan. *Bulletin of the Hot Spring Research Institute, Kanagawa Prefecture* **55**: 1-13. (in Japanese with English abstract).
- Shirai, M. 2024. Chapter 1-1-1: Geological position of the Hamura City and around area in Japanese islands. In *History of Hamura-city*, Volume 1, 19-21. Tokyo: Hamura City. (in Japanese)
- Shirai, M. 2024. Chapter 1-1-3: Hills distributing on western margin of the Kanto Plain. In *History of Hamura-city*, Volume 1, 27-31. Tokyo: Hamura City. (in Japanese)
- Shirai, M. 2024. Chapter 1-1-4: Musashino Uplands and fluvial terraces around the Hamura City. In *History of Hamura-city*, Volume 1, 31-38. Tokyo: Hamura City. (in Japanese)
- Shirai, M. 2024. Chapter 1-4-1: Tachikawa Fault Zone and predicted earthquake damages around the Hamura City. In *History of Hamura-city*, Volume 1, 85-88. Tokyo: Hamura City. (in Japanese)
- Shirai, M., Akasaka, I., Utsugawa, T. and Takaoka, S. 2024. Chapter 1-4-3: Damages by the Reiwa 1 East Japan Typhoon (Typhoon Hagibis) in the Hamura City. In *History of Hamura-city*, Volume 1, 92-101. Tokyo: Hamura City. (in Japanese)
- Suzuki, T. 2024. Iiduna-Kamitaru tephra group, Omachi Apm tephra group, Kaisho-Kamitakara tephra, Shirakawa pyroclastic flow, Tateyama D tephra, Hakkoda-Kokumoto tephra, Mikurajima volcano. In the Geoscience Encyclopedia, ed. the Association for the Geological Collaboration in Japan, pp. 77, 193, 231, 685, 872, 1170, 1458, Tokyo: Heibonsha Limited, Publishers. (in Japanese)
- Suzuki, T., Ichiko, T. and Sato, H. 2023. Symposium of general meeting of the Association of Japanese Geographers 2023 spring: Natural disasters in volcanic islands: actual conditions and countermeasures in the Izu Islands. *E-journal GEO* **18**: 346-349. (in Japanese)  
<https://doi.org/10.4157/ejgeo.18.346>
- Tateishi, R., Ishimura, D., Okada, S. and Tsutsumi, H. 2023, Active fault map in 1:25,000, "Tajima", Geospatial Information Authority of Japan. (in Japanese)
- Utsugawa, T. 2024. Chapter 1-1-2: Division of landforms in the Hamura City. In *History of Hamura-city*, Volume 1, 21-26. Tokyo: Hamura City. (in Japanese)
- Utsugawa, T. and Shirai, M. 2024. Chapter 1-1-5: Tama River and water utilization of the Hamura City. In *History of Hamura-city*, Volume 1, 38-46. Tokyo: Hamura City. (in Japanese)

Yamamoto, T. and Kobayashi, M. 2023.  $^{14}\text{C}$  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).

### **Books**

Suzuki, T. (supervision) 2023. Understanding with researching! Japanese mountains Part 1: Development and landforms. Tokyo: Choubunsha Publishing Co., Ltd. (in Japanese)

Suzuki, T. (supervision) 2024. Understanding with researching! Japanese mountains Part 2: Blessing of mountains and people's life. Tokyo: Choubunsha Publishing Co., Ltd. (in Japanese)

Suzuki, T. (supervision) 2024. Understanding with researching! Japanese mountains Part 3: Volcanoes and knowledge of disaster countermeasures. Tokyo: Choubunsha Publishing Co., Ltd. (in Japanese)

Yamaoka, K. and Suzuki, T. 2024. Understanding! working on! disaster and measure 3: Volcano. Tokyo: Teikoku-Shoin Co., Ltd. (in Japanese)

### **Reports**

Watanabe, T. and Kawajiri, K. 2024. The Asama-UG tephra founded in core record obtained from Asamizodai, Sagami-hara-shi, Kanagawa Prefecture, central Japan. *Bulletin of the Sagami-hara City Museum* **32**: 45-50. (in Japanese)

### **Book Reviews**

None

### **Miscellaneous Reports**

Kobayashi, M. 2023. Visiting the traces of Mt. Fuji's eruption (Part 2), Explosive eruptions and collapses of Mt. Fuji at a huge outcrop that appeared in the eastern foot of Mt. Fuji. *Mt. Fuji World Heritage Column*: 15. (in Japanese)

Kobayashi, M. 2024. Visiting the traces of Mt. Fuji's eruption (Part 3), Tanukiko debris avalanche, Geological strata and topography created by the debris of Mt. Fuji. *Mt. Fuji World Heritage Column*: 21. (in Japanese)

Suzuki, T. 2023. Interpretive article for *Historical geomorphology* by Sohei Kaizuka, 287-289. Tokyo: University of Tokyo Press. (in Japanese)

Suzuki, T. 2023. In memoriam and dedication Prof. Takao Kikuchi. *QR newsletter* **30**: 19-20. (in Japanese)

Suzuki, T. 2024. Mito and Hitachi Upland. *The Map Center* **616**: 19. (in Japanese)

- Suzuki, T. 2024. Miura Peninsula: Type of the Japanese marine terrace. *The Map Center* **616**: 25. (in Japanese)
- Takahashi, T. 2024. Climate changes and fluvial terraces in the Chichibu Basin, Upper Ara River. *The Map Center* **616**: 20 (in Japanese).

### ***Presentations***

- Albert, P., Smith, V., Jones, G., Cullen, V., McLean, D., Ikehara, K., Staff, R., Suzuki, T., Buckland, H., Nakagawa, T. and Sagawa, T. 2023. New constraints on the timing of East Asian explosive volcanism: insights from cryptotephra deposits preserved in marine and lacustrine archives, Japan. 21st Congress of the International Union for Quaternary Research (INQUA), July, Rome.
- Aoki, K., Hiramine, R., Ishimura, D., Sato, T., Yoshida, K., Chang, Q., Watanabe, T. and Suzuki, T. 2023. Discovery of drift pumice clasts originating from Nishinoshima at Sanohama, Izu-Oshima. *Abstract of Japan Geoscience Union Meeting 2023*: SVC34-P12, May, Chiba.
- Baba, A. and Kobayashi, M. 2023. The 1707 eruption as seen from the northern foot of Fuji volcano. *Abstracts of Japan Geoscience Union Meeting 2023*: M-IS22-02, May, Chiba.
- Fukushima, Y., Ishimura, D., Tang, C., Takahashi, N., Takahashi, T., Yoshida, K., Iwasa, Y. and Malatesta, L. 2024. 3D deformation field by SAR image analysis and its characteristics. *Workshop for 2024 Noto Peninsula Earthquake in ERI, University of Tokyo*, March, Bunkyo-ku.
- Hayashizaki, R. Suzuki, T. and Sasamori, K. 2023. pIRIR dating of MIS 5c-e marine terrace deposits from the Naka Upland, Ibaraki Prefecture, Japan. *Abstracts of Japan Geoscience Union Meeting 2023*: HQR03-04, May, Chiba.
- Hiramine, R., Aoki, K., Ishimura, D. and Suzuki, T. 2023. Characteristics and source volcanoes of drift pumice along the Pacific coast on the central to west of the Japanese Islands based on major element composition of volcanic glass shards. 21st Congress of the International Union for Quaternary Research (INQUA), July, Rome. (poster)
- Hiramine, R. and Ishimura, D. 2024. Drift pumices interbedded within beach sediments at Shiriyazaki, Shimokita Peninsula, Tebiro and Honohoshi beaches, Amami-Oshima Island, and Akaishi beach, Ishigaki Island. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 245, March, Shibuya-ku. (in Japanese)  
[https://doi.org/10.14866/ajg.2024s.0\\_123](https://doi.org/10.14866/ajg.2024s.0_123)
- Homma, H. 2024. Transport process of beach sand grains inferred from change in grain size distribution -An example of the central part of Niigata Prefecture-. The 16th Meeting Studying on Graduation Thesis in Odawara and Ashigara areas, February, Online.
- Ichikawa, R., Takahashi, T., Toda, S., Ogura, T. and Suwa, K. 2024. Stratigraphy of the lahar deposits and micro-landform development during the past 10,000 years around Lake Showa

- of Kurikoma Volcano, northern Japan. *Proceedings of the International Meeting on Eruptive History and Informatics 2023-2*: 28-32, February, Fukuoka.
- Ishimura, D. 2023, Gravelly event deposit research using particle shape parameter. *Abstracts of Japan Geoscience Union Meeting 2023*: MIS16-01, May, Chiba. (invited)
- Ishimura, D. and Hiramane, R. 2023. A record of about one year from the 2021 Fukutoku-Oka-no-Ba eruption, Japan: Focusing on the amount, size, particle shape, and attached organisms of drift pumice. *Abstracts of Japan Geoscience Union Meeting 2023*: SVC34-13, May, Chiba.
- Ishimura, D. and Hiramane, R. 2023. One-year record of drift pumice from the 2021 Fukutoku-Oka-no-Ba eruption, Japan, focusing on the amount, size, shape, and attached organism. 21st Congress of the International Union for Quaternary Research (INQUA), July, Rome. (poster)
- Ishimura, D., Homma, S. and Mukoyama, S. 2023, Three-dimensional surface displacement of the 2016 Kumamoto earthquake using differential LiDAR in Komori, Nishihara Village, Kumamoto Prefecture. *Abstracts of Japan Geoscience Union Meeting 2023*: SSS13-P01, May, Chiba.
- Ishimura, D., Tsutsumi, H., Takahashi, N., Kaneda, H. and Ichihara, T. 2023: Paleo-faulting events of the slip-partitioned Idenokuchi fault that ruptured during the 2016 Kumamoto earthquake sequence, Japan. 21st Congress of the International Union for Quaternary Research (INQUA), July, Rome.
- Ishimura, D., Baba, T. and Chikasada, N. 2024, Submarine topography around Kameiso, off Komatsubara, Tokushima Prefecture. *Proceedings of the General Meeting of the Association of Japanese Geographers 105*: 254, March, Shibuya-ku. (in Japanese)
- Ishimura, D., Yamada, K., Baba, T., Chikasada, N., Ramos, N., Cantillep, A., and Punzalan, C. 2023. Coastal boulder mapping based on deep learning, and boulder transport simulation: case study at Ilocos Norte, Luzon Island, Philippines. 2023 SSJ Fall Meeting: S17P-08, October, Yokohama. (poster, in Japanese)
- Ishimura, D., Fukushima, Y., Toda, S., Takahashi, N., Iwasa, Y., Takahashi, T. and Malatesta, L. 2024. Co-seismic deformation in the northeastern part of the Noto Peninsula associated with the 2024 Noto Peninsula earthquake. *Proceedings for Emergency Open Symposium for 2024 Noto Peninsula Earthquake in the 2024 Spring Meeting of the Association of Japanese Geographers*: 9-10, March, Shibuya-ku.
- Jimba, N. 2024. Reconstruction of 19th century eruptive activity on the Izu-Oshima Volcanic Island by using historical documents. The 72nd National Geography Major Graduation Article Conference, March, Online.
- Katoh, S., Hyodo, M., Ishimura, D., Hirose, K., Kitaba, I. and Nakagawa, T. 2023. Chronostratigraphy of the lower part of the Katata Formation of the Kobiwako Group and



- three drilling cores (KT1 to KT3 cores) along the Kisen River, Shiga Prefecture. *Association for Quaternary Research, Programme and Abstracts* 55: 22, August, Tokorozawa.
- Kobayashi, M. 2023. Warning and evacuation methods for Mt. Fuji eruption from the viewpoint of the topographical characteristics of Shizuoka Prefecture. *The Forefront of Volcanic Disaster Prevention and Environmental Research on Mt. Fuji* (Global Center for Asian and Regional Research, University of Shizuoka / Mt. Fuji World Heritage Centre), Shizuoka, August, Fujinomiya.
- Kobayashi, M. 2024. Research on the eruption history of active volcanoes in the northern edge area of the Izu volcanic Arc. *Volcanoes and Disaster Prevention in Shizuoka - Looking Back on 45 Years* (Shizuoka University Organization for Designing Future Society, Faculty of Education and Center for Integrated Research and Education of Natural Hazards), March, Shizuoka.
- McIntosh, I., Tani, K., Aoki, K., Nichols, A., Yanagishima, T., Chang, Q., Kimura, J., Kobayashi, M., Murata, M. and Suzuki, T. 2023. FTIR analysis of H<sub>2</sub>O in hydrated volcanic glasses: insights into submarine eruption processes. *Abstracts of Japan Geoscience Union Meeting 2023: SGC37-05*, May, Chiba.
- McLean, D., Albert, P., Jones, G., Vineberg, S., Buckland, H., Staff, R., Suzuki, T., Kimura, J., Chang, Q., Manning, C., Kitaba, I., Yamada, K., Kitagawa, J., SG14 Project Members, Nakagawa, T. and Smith, V. 2023. There she blows! Unravelling the eruptive history of Aso volcano (Japan) using distal ash (tephra) deposits. 21st Congress of the International Union for Quaternary Research (INQUA), July, Rome.
- McLean, D., Albert, P., Nakagawa, T., Staff, R., Suzuki, T., Vineberg, S., Jones, G., Manning, C., Yamada, K., Kitaba, I., SG06/SG14 Project Members and Smith, V. 2023. Establishing the timing of Late Quaternary explosive eruptions in East Asia: New insights from Lake Suigetsu (central Japan) Invited Papers. *Abstracts of Japan Geoscience Union Meeting 2023: SVC28-07*, May, Chiba.
- Nakamura, Y. and Ishimura, D. 2023. Distribution of deep-seated gravitational slope deformation features in Saigawa Hills and Chikuma Mountains, Nagano Prefecture based on high-resolution DEMs. *Abstracts of Japan Geoscience Union Meeting 2023: HDS10-01*, May, Chiba.
- Narusawa, M., Yamada, M., Kato, T., Ishimura, D. and Yamada, K. 2023. Source estimation of the paleotsunami deposits in Onuma, Miyagi Prefecture, northeast Japan using the particle shape image analysis. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2023: 63-64*, April, Niigata.
- Narusawa, M., Yamada, M. and Ishimura, D. 2023. Numerical estimation of tsunami sources of tsunami deposits in Onuma, Minamisanriku Town, Miyagi Prefecture. *Abstracts of Japan Geoscience Union Meeting 2023: MIS16-02*, May, Chiba.

- Nishizawa, F., Ishihama, S. and Taguchi, K. 2023. The geological provenance and stratigraphic position of plant remains from the Nishitomioka-Mukobata Site. *Abstracts of the Public Seminar 'Welcome to the Jomon Forest - Natural Science and Archaeology in the Buried Forest of Isehara', Commemorating the 30th Anniversary of the Establishment of the Kanagawa Archaeology Foundation: 7-15, December, Isehara.*
- Ohta, R. and Watanabe, T. 2023. History of mass movements in a tectonically active mountainous watershed: A case study in Mt. Kushigata, Koma Mountains, central Japan, *Programme and Abstracts, JSAF 2023 Fall Meeting: 39-40, November, Fukuoka.*
- Ramirez, A.B.G., Ramos, N.T., Claro, S.M.D., Mangahas, R.Z. and Ishimura, D. 2023. Sedimentological characterization and preservation potential of the 1994 Mindoro tsunami deposit in the Philippines. IGCP Project 725 "Forecasting Coastal Change" Presents, The First Annual Meeting in Brazil, October, Florianopolis.
- Ramirez, A.B.G., Ramos, N.T., Claro, S.M.D., Lyndon S. Nawanao, L.S., Mangahas, R.Z., Baba, T., Chikasada, N., Ishimura, D. and Satake, K. 2023. Onshore deposit sedimentology and source mechanism of the 1994 Mindoro tsunami in the Philippines. 21st Congress of the International Union for Quaternary Research (INQUA), July, Rome.
- Sasaki, S., Fujimori, K., Yamada, M. and Ishimura, D. 2024. Primary report of the ostracod fossils from Tsunami deposit in Onuma on the southern part of the Sanriku Coast, northeast Japan. Estuary Research Center (EsReC) 31st Annual Meeting on Brackish Water Area Research / 12th Regular Meeting of Estuarine Science / Joint Meeting on Brackish Water Area Research 2024. January, Shimane.
- Shirai, M., Kawajiri, K. and Utsugawa, T. 2023. Fuji-Sagamigawa lahar deposit distributed from Otsuki to Uenohara Cities, Yamanashi Prefecture. *Abstracts of Japan Geoscience Union Meeting 2023: HQR03-P07, May, Chiba.*
- Suwa, K., Takahashi, T., Ichikawa, R. and Toda, S. 2023. Distribution and sources of the tephra fall deposits scattered by the phreatic eruptions since the mid-Holocene at the Kurikoma Volcano, northeastern Japan. *Abstracts of Japan Geoscience Union Meeting 2023, SVC31-P04, May, Chiba.*
- Suzuki, T. 2023. Read the landscape of Hokkaido. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands, Districts series, April, Online. (in Japanese)
- Suzuki, T. 2023. Read the landscape of Tohoku. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands, Districts series, April, Online. (in Japanese)

- Suzuki, T. 2023. Read the landscape of Kanto. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands, Districts series, April, Online. (in Japanese)
- Suzuki, T. 2023. Read the landscape of Izu-Ogasawara Islands. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands, Districts series, May, Online. (in Japanese)
- Suzuki, T. 2023. Read the landscape of Koshinetsu. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands, Districts series, May, Online. (in Japanese)
- Suzuki, T. 2023. Read the landscape of Tokai and Kinki. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands, Districts series, May, Online. (in Japanese)
- Suzuki, T. 2023. Read the landscape of Chugoku and Shikoku. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands, Districts series, May, Online. (in Japanese)
- Suzuki, T. 2023. Read the landscape of Kyushu. Series of the Extension Center, Waseda University: Tales from topographic lands in the Japanese Islands, Districts series, May, Online. (in Japanese)
- Suzuki, T. 2023. Interpretation of the landform and geology of the cut for the South Hachioji Bypass in Terada district in Hachioji. Field observation at under construction area for the South Hachioji Bypass of Route 20, June, Hachioji. (in Japanese)
- Suzuki, T. 2023. Natural disasters around Tokyo: volcanic islands, plain, and mountains. Open University Introducing Research Centers of Tokyo Metropolitan University: Research Center for Hazard Mitigation in Volcanic Islands and Urban Areas, August, Chiyoda-ku. (in Japanese)
- Suzuki, T. 2023. Read the landscape of the Kanto Plain in and around the Musashino Upland. Annual meeting of the Japan Association for Quaternary Research, September, Tokorozawa. (in Japanese)
- Suzuki, T. 2023. Open lecture Consideration of mountain building using plain landform and geology: case of a combination of Kanto Mountains and Kanto Plain. *Japan Society of Mountain Science 2023 Fall Meeting*, November, Akiruno.
- Suzuki, T. 2023. Discussion field meeting Quaternary landform and geology along the east margin of Kanto Mountains: transition of mountain to bottom of plain. *Japan Society of Mountain Science 2023 Fall Meeting*, November, Akiruno.

- Suzuki, T. 2023. History of eruptions and environmental changes constructed by volcanic ash: Suigetsu Lake as a hub of volcanic ash studies. 1st Science Café 2023, the Fukui Prefectural Varve Museum, December, Wakasa.
- Suzuki, T., Aoki, K., Kobayashi, M., Murata, M., Nishizawa, F. and Takahashi, T. 2023. A 30,000 yr high-precision eruption history in the north Izu Islands, off Tokyo, Japan. 21st Congress of the International Union for Quaternary Research (INQUA), July, Rome.
- Suzuki, T., Watanabe, T., Hashimoto, M., Kawabata, M., Jimba, N., Sugasawa, D., Kawashima, S., Kokubun, K., Kawai, M. and Nakayama, T. 2023. Two Early Pleistocene tephros detected within the Kazusa Group in the Kanto Plain: Recognition and its significance of Ob3-Kd31B and SYG-Kd29. *Abstracts of Japan Geoscience Union Meeting 2023*: HQR03-02, May, Chiba.
- Takahashi, N., Ishimura, D., Ohta, R., Arai, Y. and Yamane, Y. 2024. Contrasting grain shape evolution in headwaters controlled by rock strength and provenance. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 210, March, Shibuya-ku.  
[https://doi.org/10.14866/ajg.2024s.0\\_14](https://doi.org/10.14866/ajg.2024s.0_14)
- Takahashi, T. 2023. River flood in the northern part of the Miyagi Prefecture in July 2022 and its geomorphological and geological background. *Seminar of 11th Shinsai-Taisaku-Gijutsuten in Tohoku*, April, Sendai (in Japanese).
- Takahashi, T. 2023. Relationships between terrace development around tributary junctions and morphologies of tributary basin in the Doushi River, a tributary of the Sagami River, central Japan. *Abstracts of Japan Geoscience Union Meeting 2023*, HGM02-P06, May, Chiba.
- Takahashi, T. 2023. Landslides induced by the 1923 Kanto Earthquake and their long-term impact for river watersheds. *Symposium of IRIDeS, Tohoku University (84th IRIDeS Open Forum)*, September, Sendai. (in Japanese)
- Takahashi, T. and Sugai, T. 2023. The changing connectivity between tributaries and mainstem rivers under climatic changes during glacial-interglacial cycles. 21st Congress of the International Union for Quaternary Research (INQUA): July, Rome.
- Takahashi, T., Hashimoto, M. and Moriguchi, S. 2023. River flood in the Osaki Plain triggered by the heavy rain July 2022 in the northern part of the Miyagi Prefecture and its geomorphological background. *Proceedings of the General Meeting of the Association of Japanese Geographers* **104**: 127, September, Suita.  
[https://doi.org/10.14866/ajg.2023a.0\\_14](https://doi.org/10.14866/ajg.2023a.0_14)
- Takahashi, T., Yamane, Y. and Suwa, K. 2023. Sediment yield of the landslides induced by the 1923 Kanto Earthquake in the mountainous area of the western Kanagawa Prefecture, central Japan. *JGU Meeting Abstracts* **4**: 28, November, Fukue.
- Takahashi, T., Yamane, Y. and Suwa, K. 2024. A GIS-based study for distribution of the landslides induced by the 1923 Kanto Earthquake in the Tanzawa Mountains and Hakone Volcano,

- central Japan. *Proceedings of the International Meeting on Eruptive History and Informatics 2023-2*: 100-103, February, Fukuoka.
- Takahashi, T., Toda, S., Ichikawa, R. and Suwa, K. 2024. Stratigraphy and distribution of the deposits by phreatic eruptions of the Kurikoma Volcano since the middle Holocene: For evaluation of the phreatic eruption hazard. *Report Session for the Research Grants of the Mt. Kurikoma Area Geopark in 2023*, March, Kurihara. (in Japanese)
- Takahashi, T., Taya, A. and Ishimura, D. 2024. Measuring roundness of fluvial terrace gravel using image analysis in the middle Sagami River, central Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 249, March, Shibuya-ku.  
[https://doi.org/10.14866/ajg.2024s.0\\_88](https://doi.org/10.14866/ajg.2024s.0_88)
- Takishita, K., Miwa, T., Nagai, M., Nakada, S., and Suzuki, T. 2023. Shape parameter measurements of standard tephra samples via DIA in each particle. *Programme and Abstracts of the Volcanological Society of Japan 2023 Fall Meeting* **233**, October, Kagoshima. (in Japanese)
- Tanaka, T., Ishikawa, A., Ishimura, D., Hanaoka, M., Abe, H. and Nara, K. 2024. Estimate survival periods of mycorrhizal fungal spores using boring cores. *Abstracts of 135th Annual Meeting of the Japanese Forest Society*: 291, March, Setagaya-ku.
- Utsugawa, T., Oota, K. and Shirai, M. 2023. Evaluation of clastic grain form based on the density analysis with gravels sampled at the Sakawa River, Kanagawa. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2023*: 50-51, April, Niigata.
- Yamada, M., Kato, T., Ishimura, D. and Yamada, K. 2023. Source estimation of crevasse-splay deposits using shape analysis of clastic material. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2023*: 1-2, April, Niigata.
- Yamada, M. and Shirai, M. 2023. Geomorphic evolution during the last Interglacial based on sedimentological features in the Western Tsugaru area, Aomori, Northern Japan. *Abstracts for Annual Meeting of the Sedimentological Society of Japan 2023*: 45-46, April, Niigata.
- Yamada, M., Yamaguchi, K., Kaneko, R., Ishimura, D. and Fujino, S. 2023. Tsunami generating factor during the 7.3 ka eruption of the Kikai caldera inferred from the stratigraphic relationship between tsunami deposits and K-Ah ash. *Abstract of Japan Geoscience Union Meeting 2023*: SCG57-03, May, Chiba.
- Yamane, Y., Hara, Y., Torii, M., Toda, S., Ishimura, D., Takahashi, N., Okuno, M. and Fukada, Y. 2023. Re-excavating pre-earthquake paleoseismic trenches across the Futagawa fault at Tanaka, Kumamoto, Central Kyushu, Japan: changes of trench walls by the 2016 Kumamoto Earthquake. *Programme and Abstracts, JSAF 2023 Fall Meeting*: 69-70, November, Fukuoka.
- Yasuda, A., Kametani, N., Shimano, T., Tajima, Y., Yoshimoto, M., Sugiyama, C., Nishizawa, F., Kaneko, T. and Fujii, T. 2023. On the key layers helping to identify local tephtras around Fuji

- Volcano. *Programme and Abstracts, the Volcanological Society of Japan 2023 Fall Meeting*: 182, October, Kagoshima.
- Yoshida, K., Tada, N., Hanyu, T., Hamada, M., McIntosh, I., Hagiwara, Y., Sato, T., Kitada, K., Tamura, Y., Ono, S., Hiramine, R., Takai, S., Harano, A. and Kuroda, M. 2024. Summary report: KAimei investigates marine eruptive volcanoes in the Izu-Bonin arc. *Symposium of Ocean and Earth 2023*: 1-10, March, Bunkyo-ku.
- Watanabe, T., Ishimura, D. Nagata, K. and Yoshida, Y. 2023. The relationship between deep-seated gravitational slope deformation and landslide in Sekita-pass region, Sekita Mountains, Central Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 243, March, Shibuya-ku. [https://doi.org/10.14866/ajg.2024s.0\\_286](https://doi.org/10.14866/ajg.2024s.0_286)
- Watanabe, T., Suzuki, T., Ishimura, D., Nakamura, Y. and Iijima, S. 2023. Tephrostratigraphy during the past 100,000 years in the Yanohara Bog, Aizu Area, Northeast Japan. *Abstracts of Japan Geoscience Union Meeting 2023*: HQR03-P02, May, Chiba.
- Watanabe, T., Suzuki, T. and Ishimura, D. 2023. A challenge to establish a Late Pleistocene tephrostratigraphy focusing on cryptotephra within wetland sediments in Quaternary volcanic region, Central Japan. 21st Congress of the International Union for Quaternary Research (INQUA), July, Roma. (poster)

## 2. Laboratory of Climatology

### 1) Staff

Professor : Hideo TAKAHASHI

Urban Climatology, Climatic Change, Rainfall Climatology

Professor : Yoshihiro IIJIMA

Climatology, Cryospheric Science, Future Earth Science

Assistant Professor : Hiroshi TAKAHASHI

Asian Monsoon, Cloud-Precipitation Climatology, Regional Climate Modeling

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 : 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) Global- to regional-scale climate change, climate variability, and seasonal changes in Japan

and the Asian monsoon regions, and other regions of the world

- 2) Climate change and its environmental response and adaptation of the humane society
- 3) Observational and statistical studies on the heat islands, short-term heavy rainfall, detailed structure of urban atmosphere, and local wind system structure
- 4) Synoptic- to mesoscale atmospheric phenomena related to weather in Japan and Asian regions
- 5) Interaction between surface conditions and cloud/precipitation activity, especially in the tropics
- 6) Reconstruction of past climate during the historical period in Japan and in East Asia

### 3) List of Research Activities in FY2023

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

- Abe, T. and Iijima, Y. 2024. Ground subsidence and polygon development due to thermokarst in the Lena-Aldan interfluvium, eastern Siberia, revealed by satellite remote sensing data. *Progress in Earth and Planetary Science* **11**: 5. <https://doi.org/10.1186/s40645-024-00610-5>
- Fujibe, F. and Matsumoto, J. 2023. Long-term change in heat-related excess mortality in Japan. *Geographical Review of Japan* **96B**: 41-49. <https://doi.org/10.4157/geogrevjapanb.96.41>
- Fujiwara, H., Okochi, H., Kamogawa, M., Suzuki, T., Hayashi, S., Sato, N., Orihara, Y., Matsumoto, J., Hamada, J.-I., Murata, K., Yoshikawa, E. and Kudo, T. 2023. Characteristics of hailfall and lightning in a splitting thunderstorm observed on May 4, 2019 in the Tokyo Metropolitan Area, Japan. *Journal of Atmospheric Electricity* **42**: 1-14. <https://doi.org/10.1541/jae.42.1>
- Kitabayashi, S. and Takahashi, H. G. 2024. Seasonal dependence of recovery from surface cooling induced by strong tropical volcanic eruptions. *Journal of Geophysical Research: Atmospheres* **129**: e2023JD038788. <https://doi.org/10.1029/2023JD038788>
- Kubota, H., Tsukahara, T., Hirano, J., Matsumoto, J., Zaiki, M., Mikami, T., Allan, R., Wilkinson, K., Wilkinson, S. and de Jong, A. 2023. Typhoon analysis in the vicinity of Japan using the instrumental meteorological data recorded in the ship logs of foreign vessels during the Late Edo Period. *E-journal GEO* **18**: 412-422. (in Japanese with English abstract) <https://doi.org/10.4157/ejgeo.18.412>
- Mizuochi, H., Sasagawa, T., Ito, A., Iijima, Y., Park, H., Nagano, H., Ichii, K. and Hiyama, T. 2024. Creation and environmental applications of 15-year daily inundation and vegetation maps for Siberia by integrating satellite and meteorological datasets. *Progress in Earth and Planetary Science* **11**: 9. <https://doi.org/10.1186/s40645-024-00614-1>
- Nakai, T., Hiyama, T., Kotani, A., Iijima, Y., Ohta, T. and Maximov, T. C. 2023. Stochastic representation of spatial variability in thaw depth in permafrost boreal forests. *Permafrost and Periglacial Processes* **34**: 481-493. <https://doi.org/10.1002/ppp.2204>



- Nakano, T., Kurosaki, Y. Ito, T.Y., Iijima Y and Bavuudorj, G. 2023. Applicability of digital camera images to estimate vegetation parameters in semi-arid grasslands of Mongolia. *Journal of Agricultural Meteorology* **79**: 114-119. <https://doi.org/10.2480/agrmet.D-23-00008>
- Olaguera, L.M., Manalo, J.A., Bathan. A. and Matsumoto, J. 2024. Quantifying the influence of the Madden-Julian Oscillation on rainfall extremes during the northeast monsoon season of the Philippines. *Atmospheric Science Letters* **25**: e1232. <https://doi.org/10.1002/asl.1232>
- Olaguera, L.M.P., Manalo, J.A. and Matsumoto, J. 2023. Climatological characteristics of the monsoon breaks during the southwest monsoon season of the Philippines. *International Journal of Climatology* **43**: 5001-5012. <https://doi.org/10.1002/joc.8129>
- Petilla, C.E.R., Tonga, L.P., Olaguera, L.M.P. and Matsumoto, J. 2023. Changes in intensity and tracks of tropical cyclones crossing the central and southern Philippines from 1979 to 2020: An observational study. *Progress in Earth and Planetary Science* **10**: 32. <https://doi.org/10.1186/s40645-023-00563-1>
- Sato, N., Tsuji, T. Iijima, Y. Sekiya, N and Watanabe, K. 2023. Predicting rice lodging risk from the distribution of available nitrogen in soil using UAS images in a paddy field. *Sensors* **23**: 6466. <https://doi.org/10.3390/s23146466>
- Sengoku, K., Takahashi, H., Fujibe, F. and Takahashi, H. G. 2023. The climatology of cold-air damming in the Kanto Plain, Japan. *International Journal of Climatology* **44**: 253-268. <https://doi.org/10.1002/joc.8326>
- Takahashi, H. G., Sugimoto, S. and Sato, T. 2024. Impact of spring land-surface conditions over the Tibetan Plateau on the early summer Asian monsoon using an AGCM large ensemble. *Climate Dynamics*. <https://doi.org/10.1007/s00382-023-07077-y>
- Taña, E. A., Olaguera, L.M., Llorin, A.G.A., Dado, J.M., Cambaliza, M.O., Cruz, F.A., Villarín, J.M.T. and Matsumoto, J. 2024. Patterns and drivers of heavy and extreme hourly rainfall events over Metro Manila, Philippines. *Theoretical and Applied Climatology* **155**: 5015-5029. <https://doi.org/10.1007/s00704-024-04899-6>
- Tang, J., Xue, Y., Long, M., Ma, M., Liang, X.-Z., Sugimoto, S., Yang, K., Ji, Z., Hong, J., Kim, J., Xu, H., Zhou, X., Sato, T., Takahashi, H. G., Wang, S., Wang, G., Chou, S. C., Guo, W., Yu, M. and Pan, X. 2023. Regional climate model intercomparison over the Tibetan Plateau in the GEWEX/LS4P Phase I. *Climate Dynamics* **62**: 2837-2858. <https://doi.org/10.1007/s00382-023-06992-4>
- Yamaji, M. and Takahashi, H. G. 2023. Seasonal differences of precipitation and microphysical characteristics over the Asian monsoon region using spaceborne dual-frequency precipitation radar. *Journal of the Atmospheric Sciences* **80**: 2115-2128. <https://doi.org/10.1175/JAS-D-22-0198.1>
- Zhang, X., Ren, G., H., Bing, Mikami, T., Matsumoto, J., Zhang, P. and Yang, G. 2023.

Reconstruction and characterization of droughts and floods in the Hanjiang River Basin, China, 1426-2017. *Climatic Change* **176**: 62. <https://doi.org/10.1007/s10584-023-03538-9>

Zhang, X., Ren, G., Mikami, T., Matsumoto, J. and Yang, G. 2023. Correspondence of drought occurrences at multi-temporal scales between North China and Upper Hanjiang River. *Journal of Geophysical Research, Atmospheres* **128**: e2023JD039247. <https://doi.org/10.1029/2023JD039247>

### **Other Articles**

Takahashi, H. G., Kiguchi, M. and Sugimoto, S. 2023. Floods and droughts in Asia, Europe, and America. In *Handbook of Air Quality and Climate Change*, ed. Akimoto, H., Tanimoto, H., 1181-1210. Singapore: Springer. [https://link.springer.com/referenceworkentry/10.1007/978-981-15-2760-9\\_36](https://link.springer.com/referenceworkentry/10.1007/978-981-15-2760-9_36)

Takeda, H., Sasagawa, H. and Hamada, J.-I. 2023. A practical report on the enrichment of observations and experiments and actual condition of the students in science classes. *Hiyoshi Review of Natural Science, Keio University* **70**: 39-57. (in Japanese)

### **Books**

None

### **Reports**

None

### **Book Reviews**

None

### **Miscellaneous Reports**

None

### **Presentations**

Abe, T. and Iijima, Y. 2023. Ground surface displacement related to permafrost thaw along the coast of the Laptev Sea, Northeast Siberia and its implications. *Abstracts of AGU Fall Meeting 2023*: C53C-1048, December, San Francisco.

Abe, T. and Iijima, Y. 2023. Thermokarst development in the Lena-Aldan interfluvium, Central Yakutia, revealed by multi-satellite images. *Abstracts of AGU Fall Meeting 2023*: C21E-129, December, San Francisco.

- Abe, T. and Iijima, Y. 2023. Ground surface displacement along the coast of the Laptev Sea in Northeastern Siberia detected by InSAR. *Abstracts of European Conference on Permafrost 2023*: 195, June, Puigcerdà.
- Abe, T. and Iijima, Y. 2023. Ground surface displacement along the coast of the Laptev Sea in Northeastern Siberia detected by InSAR. *Abstracts of the Japan Geoscience Union Meeting 2023*: ACG46-P11, May, Chiba.
- Abe, T. and Iijima, Y. 2023. Surface displacement associated with permafrost thawing along the Laptev Sea coast of Northeast Siberia and its interpretation. Summaries of JSSI & JSSE Joint Conference on Snow and Ice Research – 2023 in Koriyama: 119, September, Koriyama. (in Japanese)
- Abe, T. and Iijima, Y. 2024. Thermokarst development in the Lena-Aldan interfluvium, Central Yakutia, revealed by multi-satellite images. *Abstracts of PAWCs International Symposium*: 18, March, Nagoya.
- Abe, T., Iwahana, G. and Iijima, Y. 2023. Surface displacement associated with freezing and thawing of frozen soil near Fairbanks, Alaska. *The Abstracts of the 140th Conference on the Geodetic Society of Japan*: 43, October, Sendai. (in Japanese)
- Abe, T., Takaya, K., Kurata, N., Ise, T. and Iijima, Y. 2023. Perspectives on permafrost devastation from satellite data analysis and deep learning. Hyper Interdisciplinary Conference in Osaka 2023: P-120, August, Osaka. (in Japanese)
- Akasaka, I., Kubota, H. and Matsumoto, J. 2024. Climatological characteristics of drought in the northwestern part of the Philippines in 1903 and their impacts on crops. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 263, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_176](https://doi.org/10.14866/ajg.2024s.0_176)
- Akasaka, I., Zaiki, M., Kubota, H. and Matsumoto, J. 2023. Seasonal changes in rainfall and surface wind at Manila for the late 19th century. The 16th International Conference on the History of Science in East Asia, August, Frankfurt.
- Gomi, S. and Takahashi, H. 2024. Estimation of wind speed distribution and diurnal variation of the “Enrei-Oroshi” in the Suwa area, Nagano Prefecture, Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 266, September, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_313](https://doi.org/10.14866/ajg.2024s.0_313)
- Gupta, A., Singh, V. and Matsumoto, J. 2023. Exploring aerosol effects on tropical cyclone dynamics and cloud microphysics. The 1st International Workshop of the Typhoon Science and Technology Research Center, November, Yokohama.
- Gupta, A., Matsumoto, J. and Nodzu, M. I. 2023. Seasonal variation in the spatial and vertical distribution of aerosol species over the tropical Asian region. *Abstracts of the Japan Geoscience Union Meeting 2023*: AAS01-P04, May, Chiba.

- Harada, K. and Takahashi, H. 2023. Characteristics of the local cyclone formed along the south coast of Kanto. *Abstracts of the 77th Japanese Study Group for Climate Impact and Application*: 5-6, April, Online. (in Japanese)
- Harada, K. and Takahashi, H. 2023. Meteorological field analysis of the local cyclone formed along the Kanto offshore shear line. *Abstracts of the Meteorological Society of Japan 2023 Spring Meeting* **123**: 190, May, Online. (in Japanese)
- Iijima, Y., Ito, R. and Abe, T. 2023. Estimation of snow cover in Hokkaido using ALOS-2/PALSAR-2 backscatter coefficient differences. *Abstracts of the Japan Geoscience Union Meeting 2023*: STT39-03, May, Chiba.
- Iijima, Y., Abe, T., Omori, N., Saito, H. and Fedorov, A.N. 2023. Ecohydrological changes due to channeling of alases and thermokarst lakes in Central Yakutia. *Abstracts of European Conference on Permafrost 2023*: 322, June, Puigcerdà.
- Iijima, Y., Sato, T., Ichii, K., Park, H. and Hiyama, T. 2024. Interannual changes in permafrost, ecosystem, hydrology, and climate from seasonal processes in the Eurasian Arctic region. *Abstracts of PAWCs International Symposium*: 28, March, Nagoya.
- Inoue, R. and Takahashi, H. G. 2023. Interannual variability of the precipitation during the Baiu withdrawal from the seasonal change of the monsoon circulations. *Abstracts of the Meteorological Society of Japan 2023 Fall Meeting* **124**: 86, October, Sendai. (in Japanese)
- Konduru, R.T., Nodzu, M.I., Matsumoto, J. and Yamaji, M. 2023. Highest annual and seasonal precipitation of Japan observed by TRMM PR over Yakushima Island: Role of surface wind convergence and Kuroshio SST. *Abstracts of the Japan Geoscience Union Meeting 2023*: ACG30-P09, May, Chiba.
- Kubota, H., Ishii, M., Kamahori, H., Zaiki, M., Matsumoto, J., Yamamoto, H., Kobayashi, S. and Akasaka, I. 2023. Data-rescue of meteorological observation data around Japan. *Abstracts of the Meteorological Society of Japan 2023 Spring Meeting* **123**: 36, May, Online. (in Japanese)
- Kubota, H., Tsukahara, T., Hirano, J., Matsumoto, J., Zaiki, M., Mikami, T., Allan, R., Wilkinson, K., Wilkinson, S. and de Jong, A. 2023. Tropical cyclone events observed by naval ships along Japan waters during the 1850s and 1860s. *Abstract of the Asia Oceania Geosciences Society Annual Meeting*: AS18-A072, August, Singapore.
- Kurata, N., Takaya, K., Ise, T. and Iijima, Y. 2023. Environmental factors influencing the emergence of submerged landforms by thermokarst in Eastern Siberia. *Abstracts of the Japan Geoscience Union Meeting 2023*: ACG39-P03, May, Chiba.
- Matsugishi, S., Ohno, T., Ito, J., Satoh, M., Kajikawa, Y., Kawai, Y., Nakano, M., Takahashi, H. G., Takasuka, D., Tomita, H. and Yashiro, H. 2023. Deep convection and energy spectrum in ultra-high resolution global simulations. *Abstracts of the Japan Geoscience Union Meeting 2023*: AAS01-02, May, Chiba.

- Matsugishi, S., Ohno, T., Ito, J., Satoh, M., Kajikawa, Y., Kawai, Y., Nakano, M., Takahashi, H. G., Takasuka, D., Tomita, H. and Yashiro, H. 2023. A few hundred-meter global simulations. *Abstracts of the Japan Geoscience Union Meeting 2023: AAS08-09*, May, Chiba.
- Matsumoto, J. 2023. Talk on climate “Climate from Tokyo to the global-scale”. The 46th Research Meeting of Meteorological Instruments, June, Online. (in Japanese)
- Matsumoto, J. 2023. Significance of ship log records on the past climate. Workshop, Towards a New Phase of Historical Climatology: Dutch Navy Logbooks and Climatological Information, August, Leiden.
- Matsumoto, J., Inoue, T., Kubota, H., Zaiki, M., Akasaka, I. and Endo, N. 2023. Climate data rescue since the late 19th century in Asian monsoon region. The 16th International Conference on the History of Science in East Asia, August, Frankfurt.
- Matsumoto, J., Olaguera, L.M. and Manalo, J. 2023. The contribution of non-tropical cyclone vortices to the rainfall and rainfall extremes during summer and winter monsoon seasons in the Philippines. *Abstract of the Asia Oceania Geosciences Society Annual Meeting: AS01-A036*, August, Singapore.
- Matsumoto, J., Nodzu, M. I., Ushio, T., Ngo-Duc, T. and Nguyen-Vinh, T. 2023. Evaluating GSMaP offshore data and tropical cyclone-induced rainfall over the coastal regions of Vietnam. The Joint PI Meeting of JAXA Earth Observation Missions FY2023, November, Chiyoda-ku.
- Matsumoto, J., Kubota, H., Akasaka, I., Zaiki, M., Tsukahara, T. and Ota, A. 2023. Long-term Asian monsoon changes through the data rescue activities. International Workshop, Making Sense of Dutch Shiplogs: Towards a Citizen Science Project, August, Amsterdam.
- Matsuzaki, Y. and Takahashi, H. G. 2023. Seasonal march of cold surge over the Philippine Sea and its impact on convective characteristics. *Abstracts of the Meteorological Society of Japan 2023 Fall Meeting 123*: 436, October, Online. (in Japanese)
- Nodzu, M. I. 2023. Climatology over the Izu Peninsula in the global-warming age. Izu Green Study Lecture Series “New Meteorology over Izu Region”, October, Ito. (in Japanese)
- Nodzu, M. I., Ogino, S.-Y. and Matsumoto, J. 2023. Thermal budget analysis of development and decay processes of dual inversion layers in winter over northern Vietnam. 28th General Assembly of the International Union of Geodesy and Geophysics, July, Berlin.
- Nodzu, M. I., Matsuzaki, Y., Matsuyama, H. and Matsumoto, J. 2023. Precipitation distribution over the flat area in the middle of Hachijojima. *Abstracts of the Meteorological Society of Japan 2023 Fall Meeting 124*: 78, October, Sendai. (in Japanese)
- Nodzu, M. I., Matsuzaki, Y., Matsuyama, H. and Matsumoto, J. 2023. Intra-island geographical distribution of precipitation over Izu-Oshima, Miyakejima, and Hachijojima. *Abstracts of the 78th Japanese Study Group for Climate Impact and Application*: 15-16, December, Online. (in Japanese)

- Nodzu, M. I., Matsuzaki, Y., Matsuyama, H. and Matsumoto, J. 2023. Geographical variability of precipitation in an island: Inter-comparison among the Izu Islands, southeastern Japan. 28th General Assembly of the International Union of Geodesy and Geophysics, July, Berlin. (poster)
- Nodzu, M. I., Matsuzaki, Y., Kanno, H., Matsuyama, H. and Matsumoto, J. 2024. Validation of the GSMaP precipitation data based on the reliability index over Hachijojima and Chichijima. *Abstracts of the FY2023 Joint Workshop on the GPM Satellite and Satellite Observation Simulators*: 22-23, March, Nagoya. (in Japanese)
- Nomoto, R., Takahashi, H. and Nodzu, M. I. 2023. Seasonal variations in precipitation characteristics of the Intertropical Convergence Zone over the Pacific Ocean. *Abstracts of the Meteorological Society of Japan 2023 Fall Meeting* **124**: 304, October, Sendai. (in Japanese)
- Nomoto, R., Takahashi, H. and Nodzu, M. I. 2023. Seasonal variations of precipitation in the Intertropical Convergence Zone in the Pacific Ocean: Analyses using satellite observation data. The 14th Tropical Meteorology Meeting, September, Bunkyo-ku. (in Japanese)
- Otsuka, M. and Matsumoto, J. 2023. Analysis of long-term precipitation variations over Central Japan using the dense Kunai local rain-gauge observation data. *Abstracts of the Meteorological Society of Japan 2023 Spring Meeting* **123**: 194, May, Online. (in Japanese)
- Saito, H., Iijima, Y. and Kirimura, T. 2023. Detection of thermokarst and vegetation succession from multitemporal satellite images. *Abstracts of AOCs 2023 20th Annual Meeting*: IG02-A007, August, Singapore.
- Sengoku, K. and Takahashi, H. 2023. The surface wind field during a cold-air damming event in the Kanto Plain. *Abstracts of the Meteorological Society of Japan 2023 Fall Meeting* **124**: 135, October, Sendai. (in Japanese)
- Seto, Y. and Takahashi, H. 2023. Characteristics of pressure patterns affect on local wind systems in summer over the Kanto Plain. *Abstracts of the Meteorological Society of Japan 2023 Spring Meeting* **123**: 267, May, Online. (in Japanese)
- Seto, Y. and Takahashi, H. 2023. Characteristics of local wind patterns and temperature distribution in sunny summer days over the Kanto Plain. *Proceedings of the General Meeting of the Association of Japanese Geographers* **104**: 113, September, Suita. (in Japanese)  
[https://doi.org/10.14866/ajg.2023a.0\\_99](https://doi.org/10.14866/ajg.2023a.0_99)
- Seto, Y. and Takahashi, H. 2023. Characteristics of local wind patterns and temperature distribution in sunny summer days over the Kanto Plain, Japan. *Abstract book of the 15th Korea-China-Japan Joint Conference on Geography*: 462, October, Seoul.
- Sugiura, T. and Takahashi, H. G. 2023. Differences and seasonality in the zonal circulation of eastward-propagating and decaying cases of the MJO. *Abstracts of 14th Tropical Meteorology Study Group Meeting*: 10, September, Bunkyo-ku. (in Japanese)

- Sugiura, T. and Takahashi, H. G. 2023. Zonal circulation of the MJO in decay over the Maritime Continent. *Abstracts of the Meteorological Society of Japan 2023 Fall Meeting* **124**: 307, October, Sendai. (in Japanese)
- Sugiura, T., Takahashi, H. G. and Matsumoto, J. 2023. Seasonal variation of MJO: its track and effects of background fields on its eastward propagation. *Abstracts of the 77th Japanese Study Group for Climate Impact and Application*, April, Online. (in Japanese)
- Sugiura, T., Takahashi, H. G. and Matsumoto, J. 2023. MJO decay over the Maritime Continent: seasonality and effects of background fields. *Abstracts of the Japan Geoscience Union Meeting 2023*: AAS05-P05, May, Chiba.
- Takahashi, H. 2023. Discontinuous transitions in the annual changes of daily mean temperature: A preliminary analysis for Japan. *Abstracts of the 78th Meeting of Japanese Study Group for Climate Impact and Application*: 13-14, December, Online. (in Japanese)
- Takahashi, H. 2024. Stepwise seasonal transitions in the annual cycle of daily average temperature in Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 265, March, Shibuya-ku. (in Japanese)  
[https://doi.org/10.14866/ajg.2024s.0\\_222](https://doi.org/10.14866/ajg.2024s.0_222)
- Takahashi, H. G. 2023. Progress in the study of precipitation characteristics of the Asian monsoon. Symposium in the Meteorological Society of Japan 2023 Spring Meeting, "Multilateral Progresses of the Asian Summer Monsoon", May, Bunkyo-ku.
- Takahashi, H. G., Nakaegawa, T., Endo, H., Takaya, Y., Ose, T. and Kamizawa, N. 2023. Classification of the atmospheric circulations during the hot days in western Japan. *Abstracts of the Meteorological Society of Japan 2023 Fall Meeting* **124**: 199, October, Sendai. (in Japanese)
- Takahashi, Y., Sato, M., Kubota, H., Matsumoto, J., Mariciano, J. and Perez, G. 2023. ULAT project completed: Extreme weather monitoring system development in the Philippines. *Abstracts of the Japan Geoscience Union Meeting 2023*: MIS06-09, May, Chiba.
- Takaya, K., Kurata, N., Ise, T. and Iijima, Y. 2023. Automatic detection of subsidence landforms caused by thermokarst in Eastern Siberia using deep learning. *Abstracts of the Japan Geoscience Union Meeting 2023*: ACG39-09, May, Chiba.
- Terao, T., Kanae, S. and Matsumoto, J. 2023. Collaborative observational and modeling initiative toward understanding of Asian hydroclimatological system. *Abstract of the Asia Oceania Geosciences Society Annual Meeting*: AHS03-A017, August, Singapore.

### **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

Assistant Professor: Dahédrey Payandi-Rolland

Biogeochemistry, Hydrology, Microorganisms and Environment Interactions

#### **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 in primary 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 FY2023

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

- Allain, A., Alexis, M.A., Bridoux, M.C., Shirokova, L.S., Payandi-Rolland, D., Pokrovsky, O.S. and Rouelle, M. 2024. The specific molecular signature of dissolved organic matter extracted from different arctic plant species persists after biodegradation. *Soil Biology and Biochemistry* **193**: 109393. <https://doi.org/10.1016/j.soilbio.2024.109393>
- Battulga, B., Atarashi-Andoh, M., Koarashi, J., Oyuntsetseg, B. and Kawahigashi, M. 2023. Plastic-associated metal(loid)s in the urban river environments of Mongolia. *Ecotoxicology and Environmental Safety* **261**: 115100. <https://doi.org/10.1016/j.ecoenv.2023.115100>
- Battulga, B., Atarashi-Andoh, M., Matsueda, M. and Koarashi, J. 2023. Tracking the behavior and characteristics of microplastics using a multi-analytical approach: a case study in two contrasting coastal areas of Japan. *Environmental Science and Pollution Research* **30**: 77226-77237. <https://doi.org/10.1007/s11356-023-28005-x>
- Morishita, M. and Ishitsuka, N. 2023. Mapping of soil management zones by unsupervised classification of drone aerial images. *Japanese Journal of Soil Science and Plant Nutrition* **94**: 254-262. (in Japanese) [https://doi.org/10.20710/dojo.94.4\\_254](https://doi.org/10.20710/dojo.94.4_254)
- Nishikura S. and Kawahigashi M. 2023. Effects of microtopography on soil development of the conserved area in the Isahaya Bay polder. *Soil Science and Plant Nutrition* **69**: 172-182. <https://doi.org/10.1080/00380768.2023.2196535>

#### **Other Articles**

- Kawahigashi M. and Kajiwara T. 2023. Reforestation of sandy soils in the Tohoku sea coast of Japan. In *Sandi Soils*, ed. Hartemink, A. E. and Huang, J., 191-200. Switzerland: Springer Nature.
- Kida, K and Kawahigashi, M. 2023. Practical investigation of soil profile. 6. Soils on reclaimed land. *Japanese Journal of Soil Science and Plant Nutrition* **94**: 131-134.
- Morishita M, 2023. Data-intensive study on soil spatial evaluation and classification. *Japanese Journal of Soil Science and Plant Nutrition* **94**: 368-369. (in Japanese) [https://doi.org/10.20710/dojo.94.5\\_368](https://doi.org/10.20710/dojo.94.5_368)
- Nishikura S. and Kawahigashi M. 2024. Soils in polders characterized by the formation of secondary iron oxides. *Geographical reports of Tokyo metropolitan university* **59**: 143-150.
- Yoshida, K. 2023. Hawai'i Volcanoes National Park. New Shakaika No.2: 3.

#### **Books**

None

### **Reports**

None

### **Book Reviews**

None

### **Miscellaneous Reports**

Batdulam, B. and Kawahigashi, M. 2023. From bad to worse: How micro- and meso-plastics collect heavy metals. NEWS RELEASE 8-JUL-2023.

Hatano, R., Toma, Y., Kawahigashi, M. and Kosaki, T. 2023. Outline of the symposium on “food, soil and fertilizer science- as a basic science to achieve SDGs”. *Japanese Journal of Soil Science and Plant Nutrition* **94**: 481-484.

### **Presentations**

Battulga, B., Nakayama, M., Atarashi-Andoh, M. and Koarashi, J. 2023. Microbial life on plastics and its implication on elemental cycling in the aquatic environment. *Abstracts of the Japan Geoscience Union Meeting 2023*: AHW18-08, May, Chiba.

Battulga, B., Nakanishi, T., Atarashi-Andoh, M. and Koarashi, J. 2023. Characterizing the plastic-associated biofilms by a multi-isotope approach: Insight from visible plastics in two contrasting coastal areas of Japan. *Goldschmidt 2023*. July, Online.

Battulga, B., Nakanishi, T., Atarashi-Andoh, M. and Koarashi, J. 2023. Occurrence of plastics and their association with radiocesium in the coastal rivers in Fukushima, Japan. *The American Geophysical Union (AGU) Annual Meeting 2023*: H53R-1561, December, San Francisco.

Dolgormaa, M. and Kawahigashi, M., 2023. Plastic debris composition and degradation in the Tuul River system in Mongolia. *American Geophysical Union Conference – 2023*, December, San Francisco.

Dolgormaa, M., Battulga, B., Bolormaa, O. and Kawahigashi, M. 2023. Plastic fluxes and composition change in transportation and accumulation process of the urban river, Mongolia. *Abstracts of the Japan Geoscience Union Meeting 2023*, May, Chiba.

Higa, M. and Yoshida, K. 2023. Structure and environment of riparian vegetation on the Okarasawa alluvial fan of Mt. Rishiri. *Abstracts for 28th Annual Meeting of the Society of Vegetation Science*: 31, October, Kobe. (in Japanese)

Kajiwara, T. and Kawahigashi, M. 2023. Evaluation of planting bases for the artificial forest along the Sendai coast by detail monitoring. *Abstract of Global Conference on Sandy Soils*: 58, June, Madison.

Kajiwara, T. and Kawahigashi, M. 2023. Spatial dependence of soil properties in the planting base

- of coastal black pine forests in the Sendai plain. *Abstract of Japanese Society of Soil Science and Plant Nutrition* **69**: 78, September, Ehime. (in Japanese)
- Kajiwara, T. and Kawahigashi, M. 2023. Evaluation of growth environment of coastal forest planting bases using geostatistics - a case study of coastal forests in the Sendai Plain. *Pedologist* **67**: 91, November, Kochi. (in Japanese)
- Kajiwara, T. and Kawahigashi, M. 2024. Spatial variation analysis of soil properties in coastal forest planting bases - a case study of coastal forests in the Sendai Plain. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 205, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_212](https://doi.org/10.14866/ajg.2024s.0_212)
- Kawahigashi, M. 2023. Controlling factors on plant growth in the planting bases consisting of sandy soil materials. *Abstract of Global Conference on Sandy Soils*: 39, June, Madison, USA.
- Kawahigashi, M. and Nishikura, S. 2023. Effects of land uses on polder soils from the view point of iron oxides. *Abstracts of the Annual Meeting in the Kanto Region of Japanese Society of Soil Science and Plant Nutrition*. P16, November, Setagaya-ku. (in Japanese)
- Kawahigashi, M. and Takahashi, T. 2023. Spatial diversity of soil developmental index in the urban greenery area on the reclaimed land. *SUITMA12 Final Program*: 17, No. 40, September, Santiago de Compostela.
- Morishita, M., Sahara, T., Suzuki, S., Okabe, N. and Sakurai, G. 2023. A relationship between distribution trend of lowland soils and paddy rice yield in Japan. *Annual Meeting of Japanese Society of Pedology 2023*. November, Kochi. (in Japanese)
- Nishikura, S. and Kawahigashi, M. 2023. Effects of land use and sediments for soil moisture behavior in polder focusing on iron form. *SUITMA12 Final Program*: 91, No. 40, September, Santiago de Compostela.
- Takahashi, T. and Kawahigashi, M. 2023. Comparison of spatial dependence of soil properties in urban green spaces with different planting years. *Pedologist* **67**: 90, November, Kochi. (in Japanese)
- Takahashi, T. and Kawahigashi, M. 2023. Influences of soil material on soil formation and changes in spatial autocorrelation in urban green spaces. *Proceedings of the Japanese Society of Soil Science and Plant Nutrition* **69**: 78, September, Ehime. (in Japanese)
- Takahashi, T. and Kawahigashi, M. 2024. Horizontal vertical distribution of exchangeable anion in land reclamation forest. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 273, March, Shibuya-ku. (in Japanese)  
[https://doi.org/10.14866/ajg.2024s.0\\_289](https://doi.org/10.14866/ajg.2024s.0_289)
- Yoshida, H., Yoshida, K., Takyu, M. and Isogai, T. 2023. The dynamics and interspecific competition during the 17-year period at the forest ecotone. *Abstracts for 28th Annual Meeting of the Society of Vegetation Science*: 30, October, Kobe. (in Japanese)

- Yoshida, H., Yoshida, K., Takyu, M., and Isogai, T. 2024. Spatial patterns and dynamics of dominant tree species at the forest ecotone. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 105, March, Shibuya-ku. (in Japanese)  
[https://doi.org/10.14866/ajg.2024s.0\\_198](https://doi.org/10.14866/ajg.2024s.0_198)
- Yoshida, K. 2023. Expectations and challenges for learning new courses of geography (Chiri Sougou) in high school. *2023 Research Council (TMU Koudai Renkeishitsu)*, August, Hachioji. (invited, in Japanese)
- Yoshida, K. 2024. Relationships between nature and human in the ancient capital of Kamakura. *Learning Kyoto's History and Culture in the Kyo-Machiya (Faculty of Contemporary Social Studies, Doshisha Women's Colledge of Liberal Arts)*, February, Kyoto. (in Japanese)
- Yoshida, K., Higa, M., Ishida, Y., Wakamatsu, N., Seto, M. and Yoshida, H. 2023. Large-scale wind disturbance and tree regeneration in the boreal forests on Mt. Rishiri, northern Japan. *Abstracts for 28th Annual Meeting of the Society of Vegetation Science*: 30, October, Kobe. (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 FY2023

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

- Fujitsuka, Y. 2023. Gentrification in spital fields, East London. *Urban Geography* **18**: 73-86. (in Japanese with English abstract)
- Matsuyama, H. 2023. Supplement of the characteristics of precipitation at Haha-jima, Ogasawara (Bonin) Islands. *Journal of Geography (Chigaku Zasshi)* **132**: 515-525. (in Japanese with English abstract) <https://doi.org/10.5026/jgeography.132.515>
- Matsuyama, H., Nagai, S. and Nozaka, U. 2023. Changes of water quality at springs and rivers in Aso caldera in relation to the 2016 Kumamoto earthquake. *Journal of Japan Society of Hydrology and Water Resources* **36**: 200-213. (in Japanese with English abstract) <https://doi.org/10.3178/jjshwr.36.1807>
- Sunako, S., Fujita, K., Izumi, T., Yamaguchi, S., Sakai, A. and Kayastha, R. B. 2023. Up-glacier propagation of surface lowering of Yala Glacier, Langtang Valley, Nepal Himalaya. *Journal of Glaciology* **24**: 425-432. <https://doi.org/10.1017/jog.2022.118>
- Watanabe, T., Matsuyama, H., Kuzhevskaja, I., Nechepurenko, O., Chursin, V. and Zemtsov, V. 2023. Long-term trends of extreme climate indexes in the southern part of Siberia in comparison with those of surrounding regions. *Atmosphere* **14**: 1131. <https://doi.org/10.3390/atmos14071131>

#### **Other Articles**

- Fujitsuka, Y. 2023. Development of gentrification studies in Japan. *Toshi Mondai* **114**: 36-42. (in Japanese)
- Matsuyama, H. 2023. Meteorological observations in the past in the Ogasawara (Bonin) Islands. *Tenki* **70**: 213-218. (in Japanese)

#### **Books**

- Matsuyama, H. 2023. Meteorological observations in the past in the Ogasawara (Bonin) Islands. *Tenki* **70**: 213-218. (in Japanese)
- Abe, K. ed. (including Fujitsuka, Y.) 2024. *Urban geography in Japan*. Tokyo: Kokon Shoin. (in Japanese)
- Keirinkan Co, Ltd. (including Hasegawa, K.) 2023. *Earth science*. Tokyo: Keirinkan. (in Japanese)
- Keirinkan Co, Ltd. (including Hasegawa, K.) 2023. *Sensor Earth science 3rd edition*. Tokyo: Keirinkan. (in Japanese)
- Department of Public Management, School of Business, Osaka Metropolitan University ed. (including Fujitsuka, Y.) 2023. *Introduction to public management*. Nagoya: Arm. (in Japanese)

## **Reports**

None

## **Book Reviews**

- Matsuyama, H. 2023. Book review (The Tokai Branch of the Japanese Society of Limnology ed. Limnology for regional analysis and global environmental issues). *Geographical Review of Japan* **96A**: 275-277. (in Japanese)
- Matsuyama, H. 2023. Book review (Shimada, M.: Fundamental theory of measuring the Earth from space). *Chiri* **68**(7): 107. (in Japanese)
- Matsuyama, H. 2023. Book review (Sano, Y. and Tokuyama, H. The four-dimensional Kuroshio marine Science (4D-KMS) research project). *Journal of Geography (Chigaku-Zasshi)* **132**: N61-N62. (in Japanese)
- Matsuyama, H. 2023. Book review (Otsuki, K., Kume, T. and Kasahara, T. eds. An introduction to forest hydrology). *Geographical Review of Japan* **96A**: 329-330. (in Japanese)
- Matsuyama, H. 2023. Book review (Nishiwaki, Y. How to enjoy geography in traveling and cycling). *Geographical Review of Japan* **96A**: 421-422. (in Japanese)
- Matsuyama, H. 2023. Book review (Ishikawa, Y. ed.: Coronavirus impact and policy: Social, economical, and environmental perspectives). *Geographical Review of Japan* **96A**: 491-492. (in Japanese)
- Matsuyama, H. 2023. Book review (Oka, S., Aoyama, T., Ogawa, H. and Umemoto, T. Climatic landscapes of the windbreak in Japan). *Journal of Geography (Chigaku-Zasshi)* **132**: N105-N106. (in Japanese)
- Matsuyama, H. 2024. Book review (Ogura, N., Kazama, M. and Koizumi, M. Tokyo Bay—Long-term changes of environment, especially with a view point of living things). *Geographical Review of Japan* **97A**: 59-60. (in Japanese)
- Matsuyama, H. 2024. Book review (Yoshimizu, H. ed. Lesson plans for junior high school geography based on PBL-like social studies unit structure). *Journal of Geography (Chigaku-Zasshi)* **133**: N17-N18. (in Japanese)
- Matsuyama, H. 2024. Book review (Yamamoto, H.: Central Meteorological Observatory: Development and end of weather observation network at Empire of Japan). *Geographical Review of Japan* **97A**: 126-127. (in Japanese)

## **Miscellaneous Reports**

- Hasegawa, K. 2023. Teaching methods to be able to deal with geographic information. *Chiri* **68**(4): 96-101. (in Japanese)

- Matsuyama, H. 2023. Does a week start on Sunday or Monday? *Report of Old Boys/Girls of Wandervogel Club in the University of Tokyo in 2024*: 44-45. (in Japanese)
- Matsuyama, H. 2023. Natural environment around Ili River and Lake Balkhash. *Story of Tetsuro Ahiko/Small Samurai*, ed. N. Sano, 100-102, Tokyo: Private publication. (in Japanese)
- Nanri, S. 2023. Field work at SSH (Super Science High School) in Miyakejima Island, Izu Islands. *Geo-educational Magazine* **2023**(4): 65-67. (in Japanese)
- Saito, H. 2024. Predicting landslides with drones. *KWAN* **46**: 9. (in Japanese)

### **Presentations**

- Adachi, Y., Saito, K., Kayama, K., Urita, S., Kurita, M., Hiramatsu, M., Hirano, H., Sato, M., Dehara, M., Sumida, M., Yamanokuchi, T., Furuta, R., Kuroiwa, K. and Ishii, K. 2023. Development of multi-source change detection system. *Abstracts of the 75th (Autumn 2023) Conference of the Remote Sensing Society of Japan*: U4, November, Sendai. (in Japanese)
- Fujitsuka, Y. 2023. Gentrification in East London and regional geography education. *Proceedings of the General Meeting of the Association of Japanese Geographers* **104**: 3, September, Suita. (in Japanese) [https://doi.org/10.14866/ajg.2023a.0\\_29](https://doi.org/10.14866/ajg.2023a.0_29)
- Fujitsuka, Y. 2024. Gentrification in North Brooklyn, New York City: Changes in the 2010s. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 69, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_315](https://doi.org/10.14866/ajg.2024s.0_315)
- Hasegawa, K. 2024 Heat balance between the Earth's surface, atmosphere and outer space—The aim to understand the figure of the Earth's energy budget—. Information Exchange Meeting about Earth Science hosted by Keirinkan. February, Bunkyo-ku.
- Iijima, Y., Abe, T., Omori, N., Saito, H. and Fedorov, A. N. 2023. Ecohydrological changes due to channeling of alases and thermokarst lakes in Central Yakutia. *Abstracts of the 6th European Conference on Permafrost*: 322, June, Puigcerdà.
- Kanno, H. 2024. My research review until now and reduction of Yamase blowing days in recent years. The 19th Yamase Workshop. February, Hirosaki. (in Japanese)
- Mamiya, C., Nakayama, D. and Matsuyama, H. 2024. Effects of flood control forests by flood-inundation flow simulation—A case study at the middle reach of Kuji River, Ibaraki Prefecture—. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 194, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_126](https://doi.org/10.14866/ajg.2024s.0_126)
- Matsuyama, H. 2023. Fortunate coincidence and good intuition—Real pleasure of field work in earth sciences. Symposium of Earth Sciences by Highschool Students, July, Ichikawa. (in Japanese, invited)
- Matsuyama, H. 2024. Lake Balkhash and Ili River basin as water resources. January, Talk show at UPLINK Kichijoji, January, Musashino. (in Japanese, invited)



- Matsuyama, H. 2024. Meteorological observations in the past in the Ogasawara (Bonin) Islands. Open Lecture of Tokyo Metropolitan University, March, Chichi-jima. (in Japanese)
- Matsuyama, H. 2024. Meteorological observations in the past in the Ogasawara (Bonin) Islands. Open Lecture of Ogasawara Environmental Research Laboratory, March, Haha-jima. (in Japanese)
- Miyaoka, K. and Oyagi, H. 2023. Preliminary study on recent changes in rainfall in northern Mie Prefecture and its impact on groundwater recharge. *Proceedings of the General Meeting of the Association of Japanese Geographers* **104**: 61, September, Suita. (in Japanese)  
[https://doi.org/10.14866/ajg.2023a.0\\_109](https://doi.org/10.14866/ajg.2023a.0_109)
- Nanri, S. 2024. How to deal with interactive AI at junior high school and high school. ARPIN2023, Secondary Education Faculty Subcommittee, National Conference for the Association for the Promotion of Research Integrity, February, Bunkyo-ku. (in Japanese)
- Nemoto, Y. and Tsuzuki, T. 2024. Trial of GIS classroom practice using Leaflet in "Chiri-Sogo". *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 294, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_141](https://doi.org/10.14866/ajg.2024s.0_141)
- Nodzu, M. I., Matsuzaki, Y., Matsuyama, H. and Matsumoto, J. 2023. Geographical variability of precipitation in an island: Inter-comparison among the Izu Islands, southeastern Japan. 28th General Assembly of the International Union of Geodesy and Geophysics, July, Berlin.
- Nodzu, M. I., Matsuzaki, Y., Matsuyama, H. and Matsumoto, J. 2023. Precipitation distribution over the flat area in the middle of Hachijojima. *Abstracts of the 2023 Fall Meeting of the Meteorological Society of Japan* **124**: 78, October, Sendai. (in Japanese)
- Nodzu, M. I., Matsuzaki, Y., Matsuyama, H. and Matsumoto, J. 2023. Intra-island geographical distribution of precipitation over Izu-Oshima, Miyakejima, and Hachijojima. *Abstracts of the 78th Japanese Study Group for Climate Impact and Application*: 15-16, December, Hachioji & Online. (in Japanese)
- Nodzu, M. I., Matsuzaki, Y., Kanno, H., Matsuyama, H. and Matsumoto, J. 2024. Validation of the GSMaP precipitation data based on the reliability index over Hachijojima and Chichijima. *Abstracts of the FY2023 Joint Workshop on the GPM Satellite and Satellite Observation Simulators*: 22-23, March, Nagoya & Online. (in Japanese)
- Ono, H., Kanno, H. and Noguchi, M. 2023. Water quality problems of Republic of Kiribati. *Proceedings of the General Meeting of the Japanese Society of Regional and Agricultural Development*: 19-22, December, Fujisawa. (in Japanese)
- Oyagi, H. and Miyaoka, K. 2023. A study on unconfined groundwater of water level fluctuations in the Hokusei area, Mie Prefecture, Japan. *Proceedings of the General Meeting of the Association of Japanese Geographers* **104**: 60, September, Suita. (in Japanese)  
[https://doi.org/10.14866/ajg.2023a.0\\_98](https://doi.org/10.14866/ajg.2023a.0_98)

- Saito, H., Iijima, Y. and Kirimura, T. 2023. Detection of thermokarst and vegetation succession from multitemporal satellite images. *Abstracts of AOCS 2023 20th Annual Meeting*: IG02-A007, July, Singapore.
- Saito, H., Uchiyama, S., Teshirogi, K., Ito, C. and Hayakawa, Y. S. 2024. Studies on landslides and vegetation landscape using high-definition geographic information. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 34, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_130](https://doi.org/10.14866/ajg.2024s.0_130)
- Suzuki, K. 2024. Is the drying trend continuing in the 21st century in Chichi-jima, Ogasawara (Bonin) Islands? Open Lecture of Tokyo Metropolitan University, March, Chichi-jima. (in Japanese)
- Suzuki, K. 2024. Is the drying trend continuing in the 21st century in Chichi-jima, Ogasawara (Bonin) Islands? Open Lecture of Ogasawara Environmental Research Laboratory, March, Haha-jima. (in Japanese)
- Taima, O., Nakayama, D. and Matsuyama, H. 2024. The evaluation of landslide susceptibility based on knick point and deep-seated gravitational slope deformation. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 238, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_107](https://doi.org/10.14866/ajg.2024s.0_107)
- Tanahashi, R. 2023. Estimation of vegetation change using time-series satellite images and machine learning in Kushiro wetland. 15th (FY2023) Annual Conference of Japan Wetland Society, September, Chiyoda-ku. (in Japanese)
- Tanahashi, R. and Nakayama, D. 2023. Estimation of vegetation change using time-series satellite images and machine learning in Kushiro wetland. *Research Abstracts on Spatial Information Science (CSIS DAYS 2023)*: A07, November, Kashiwa. (in Japanese)
- Tanahashi, R., Nakayama, D. and Matsuyama, H. 2023. Estimation of vegetation changes in Kushiro wetland using time-series satellite images and machine learning. *Abstracts of the 75th (Autumn 2023) Conference of the Remote Sensing Society of Japan*: A13, November, Sendai. (in Japanese)
- Tanahashi, R., Nakayama, D. and Matsuyama, H. 2024. Estimation of vegetation change using time-series satellite images and machine learning in Kushiro wetland. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 200, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_231](https://doi.org/10.14866/ajg.2024s.0_231)
- Tsuchiya, H. and Matsuyama, H. 2023. Extraction of aspect ratios of band-shaped heavy rainfall area using directional variogram. *Proceedings of the General Meeting of the Association of Japanese Geographers* **104**: 71, September, Suita. (in Japanese) [https://doi.org/10.14866/ajg.2023a.0\\_130](https://doi.org/10.14866/ajg.2023a.0_130)
- Tsuchiya, H. and Matsuyama, H. 2023. A study on the extracting band-shaped heavy rainfall area

by using directional variogram. *Abstracts of the 2023 Fall Meeting of the Meteorological Society of Japan* **124**: 244, October, Sendai. (in Japanese)

Tsuchiya, H. and Matsuyama, H. 2024. Extraction of aspect ratios of band-shaped heavy rainfall area using directional variogram: Part 2. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 288, March, Shibuya-ku. (in Japanese)  
[https://doi.org/10.14866/ajg.2024s.0\\_48](https://doi.org/10.14866/ajg.2024s.0_48)

## 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 FY2023

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

- Akutagawa, H., Yabe, N. and Hanibuchi, T. 2024. Characteristics of food e-commerce users from the geographic viewpoint. *E-journal GEO* **19**: 98-113. (in Japanese with English abstract)  
<https://doi.org/10.4157/ejgeo.19.98>
- Bettaieb, B. and Wakabayashi, Y. 2023. Visualising temporal changes in visitors' areas of interest using online geotagged photographs. *International Journal of Cartography* **9**: 488-506.  
<https://doi.org/10.1080/23729333.2023.2236267>
- Hirama, K., Yabe, N., Yokota, K., Furuhashi, K., Otsuka, Y. and Watanabe, K. 2023. An evaluating index for dispersed crime points from an estimated central point. *Behaviormetrika* **51**: 187-210.  
<https://doi.org/10.1007/s41237-023-00218-x>
- Sugiura, Y. 2023. Economist Peter Woroby's applied research using central place theory in southwestern Saskatchewan, Canada. *Urban Geography of Japan* **18**: 1-37. (in Japanese with English abstract)
- Sugiura, Y. 2024. Central place theory and the Japanese national land planner Tokutaro Kitamura. *Geographical Reviews of Japan* **97A**: 98-123. (in Japanese with English abstract)
- Suzuki, K., Ito, S. and U. Y. 2023. Quantitative analyses of the geospatial characteristics of haunted sites using open data. *Social Sciences & Humanities Open* **8**: 100701.  
<https://doi.org/10.1016/j.ssaho.2023.100701>

#### **Other Articles**

- Araori, T. 2024. Analysis of disease burden in Japan: Research on Disability-Adjusted Life Year and disease mapping. *Geographical Reports of Tokyo Metropolitan University* **59**: 1-8.
- Koizumi, R. 2024. Analysis of changes in the estimated population of Tokyo during the COVID-19 pandemic. *Geographical Reports of Tokyo Metropolitan University* **59**: 25-32.
- Nozawa, S. and Yabe, N. 2024. Shopping online or physical store?: An analysis of clothing purchasing behavior in Yokohama City. *Geographical Reports of Tokyo Metropolitan University* **59**: 65-72.
- Sugiura, Y. 2024. Central place studies of Walter Christaller. In *Studies of Urban Geography in Japan*, ed. Abe, K., 27-40. Tokyo: Kokon-Shoin. (in Japanese)

- Takinami, A. 2024. “Recuperation” of atmosphere by tourism: A schematic discourse analysis of the *Guides Bleus*. *Geographical Reports of Tokyo Metropolitan University* **59**: 89-96.
- Takinami, A. 2024. How has the French football slogan “Black-Blanc-Beur” changed in *Le Monde* (1998-2022) ? *Notes on Theoretical Geography* **24**: 1-33. (in Japanese)
- Tsubomoto, H. 2024. “Crossroad of new work styles and urban development: Prospects for workplace after the COVID-19 pandemic. *Geographical Reports of Tokyo Metropolitan University* **59**: 105-112.
- Wakabayashi, Y. 2023. Multiscale analysis of the issues of vacant houses in cities. *Estrela* 354: 2-10. (in Japanese)
- Wakabayashi, Y. 2023. Enhancement of map literacy by a new subject of Geography. In *High School Geography and GIS Education*, ed. Hashimoto, Y., 100-107. Tokyo: Kokon-Shoin. (in Japanese)
- Wakabayashi, Y. 2024. Toward the enhancement of map literacy by utilizing “Mapping for a Sustainable World (MSW)”. *Map: Journal of the Japan Cartographers Association* **62**: 33-36. (in Japanese)

#### **Books**

- Wakabayashi, Y. 2024. *Geographical studies of human spatial cognition and behavior (Kodo Chirigaku Kenkyu)*. Tokyo: Kokon-Shoin. (in Japanese)

#### **Reports**

- Wakabayashi, Y. 2024. Inter-generational comparison of map use and spatial cognition by employing the APC model and mixed method approach. *Academic Research Grant Report of the Japan Geographic Data Center* **8**: 129-144. (in Japanese)

#### **Book Reviews**

- Wakabayashi, Y. 2024. A Selection of Attractive Japanese Cities, vol. 1. *Map: Journal of the Japan Cartographers Association* **62**: 37. (in Japanese)

#### **Miscellaneous Reports**

None

#### **Presentations**

- Araiori, T. 2023. Health risk management using maps and geographical information: Issues in the era of digital and Artificial Intelligence (AI) . *Proceedings of the General Meeting of the*

- Society of Risk Analysis* **36**: 132, November, Sapporo. (in Japanese)
- Bettaieb, B. and Wakabayashi, Y. 2023. Visualising temporal changes in visitors' areas of interest using online geotagged photographs. ICC2023, August, Cape Town.
- Oonishi, K. 2023. The characteristics of tourist space and issues of regional revitalization in Shakotan Town, Hokkaido, Japan. The 16th Conference of the Japan Association on Geographical Space, July, Tsukuba. (in Japanese)
- Oonishi, K. 2023. Problems and prospects of animation production sites in regional areas. *Proceedings of the General Meeting of the Association of Japanese Geographers* **104**: 219, September, Suita. (in Japanese) [https://doi.org/10.14866/ajg.2023a.0\\_126](https://doi.org/10.14866/ajg.2023a.0_126)
- Oonishi, K. 2023. Assessing the Dynamics of Animation Industry Agglomeration in Japan: A study of current state and regional expansion. *Abstract book of 15th Korea-China-Japan Joint Conference on Geography*: 301-302, October, Seoul.
- Oonishi, K. 2024. A study of industry characteristics using a database of local animation production companies. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 282, March, Shibuya-ku. (in Japanese) [https://doi.org/10.14866/ajg.2024s.0\\_135](https://doi.org/10.14866/ajg.2024s.0_135)
- Saito, A., Tsubomoto, H., Higa, F. and Sugano, F. 2023. A study of the "SOF" workplace model based on intellectual productivity: A comparison of pre-and post-relocation evaluations of an IT venture company. *Journal of 24th JOS National Convention*: 15-19, September, Online. (in Japanese with English abstract)
- Saito, A., Ishizaki, M., Tsubomoto, H. and Noma, M. 2024. Creating a workplace that enhances the performance of individuals and organizations. *Facility Management Forum 2024*, February, Online. (in Japanese)
- Sugiura, Y. 2024. Practices of "New Geography" by Noma, S. in Tokyo Metropolitan University. 50th Meeting of Greco, March, Shibuya-ku. (in Japanese)
- Takami, S. 2024. The impact of the location of universities on the regional population composition and locations of student housing: Case study of Tama New Town area. *National Geography Major Graduation Article Conference 2023*, March, Online. (in Japanese)
- Tsubomoto, H. 2023. A study of working and residential places in suburban Tokyo, focusing on a survey of residents in a large new town. The 70th Annual Meetings of the Japan Association of Economic Geographers, May, Chiyoda-ku. (in Japanese)
- U, Y. 2023. Network analysis on the evolution of tourism destination network: A case study of inbound tourism to Japan. *Abstracts of Japan Geoscience Union Meeting 2022*: HTT14-08, May, Chiba.
- Wakabayashi, Y. 2023. How digitalization has changed people's map use?: results from online surveys. *The Japan Geoscience Union Meeting 2023*: 45070, May, Chiba.

- Wakabayashi, Y. 2023. Rethinking map literacy in the age of the ubiquitous mapping. ICC2023 preconference workshop "Visualization of Dynamic Phenomena and Processes on Web Maps and Ubiquitous Mapping (Part II)". August, Cape Town.
- Wakabayashi, Y. 2023. How digitalization has changed people's map use?: results from online surveys. ICC2023, August, Cape Town.
- Wakabayashi, Y. and Bettaieb, B. 2023. Comparison of the methods for visualizing the distribution of areas of interest for foreign visitors and its change by using online geotagged photographs. The Annual Conference of the Japan Cartographers Association 2023, August, Gifu. (in Japanese)
- Wakabayashi, Y. 2023. Changes in the residential preference during the COVID 19 pandemic in Japan: Results from an online survey. *Proceedings of the 2023 Annual Meeting of the Human Geographical Society of Japan*, 70-71. November, Chiyoda-ku. (in Japanese)
- Yabe, N. and Yasuda, N. 2023. Decrease of company housing in Tokyo 23 Wards and its site development. *Research Abstracts on Spatial Information Science (CSIS DAYS 2023)* : C04, November, Kashiwa. (in Japanese)
- Yanagida, Y. 2024. Relationship between spatial accessibility to juku and areal deprivation index in Yokohama city. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 286, March, Shibuya-ku. (in Japanese)  
[https://doi.org/10.14866/ajg.2024s.0\\_112](https://doi.org/10.14866/ajg.2024s.0_112)
- Yasuda, N. 2023. Changes in the space-time distribution of bustle in Tenjin, Fukuoka-Using people flow data and pedestrian traffic volumes before and after the COVID-19 pandemic-. *The 16th Conference of the Japan Association on Geographical Space*, July, Tsukuba. (in Japanese)
- Yasuda, N. 2023. Changes in the space-time distribution of bustle in Tenjin, Fukuoka-Using people flow data before and after the COVID-19 epidemic-. The Annual Conference of the Japan Cartographers Association 2023, August, Gifu. (in Japanese)
- Yasuda, N. 2024. Space-time analysis of pedestrian activities in Fukuoka before and after the COVID-19 pandemic using daily scale location big data. *Proceedings of the General Meeting of the Association of Japanese Geographers* **105**: 62, March, Shibuya-ku. (in Japanese)  
[https://doi.org/10.14866/ajg.2024s.0\\_201](https://doi.org/10.14866/ajg.2024s.0_201)