TAKAHIRO YOSHIDA's WEBSITE

April, 2025

Contents

Welcome!

Takahiro Yoshida (　　) is an Assistant Professor (*Kōshi*) at Center for Spatial Information Science, the University of Tokyo, Japan. The foundation of all his research interests is the geographical information science. His more specific interests are:

(1) spatial data analysis based on spatial statistics, spatial econometrics, and remote sensing, and its combination with compositional data analysis; and
(2) climate change mitigation and adaptation in urban areas with complex systems of building environments, transport networks, and human behaviors.

Very welcome you who are interested in either. Very very welcome you who are interested in both. In most cases, it is either. Admission information can be found in a webpage of Department of Socio-Cultural Environmental Studies, Graduate School of Frontier Sciences.

researchmap

Educational background

- Ph.D. in Policy and Planning Sciences, University of Tsukuba, March 2018.
  - [Dissertation title] Methodological developments and socio-economic applications of compositional data analysis for geographical data.
- Master of Science in Engineering, University of Tsukuba, March 2015.
- Bachelor of Policy and Planning Sciences, University of Tsukuba, March 2013.

Academic experience

- April 2024 – present

  - Assistant Professor (*Kōshi*), Division of Spatial Information Analysis, Center for Spatial Information Science, the University of Tokyo, Japan.

- September 2022 – March 2024
  - Assistant Professor, Division of Spatial Information Analysis, Center for Spatial Information Science, the University of Tokyo, Japan.
- April 2021 – August 2022
  - Project Assistant Professor, Department of Urban Engineering, School of Engineering, the University of Tokyo, Japan.
- April 2018 – March 2021
  - Research Associate, Center for Global Environmental Research, National Institute for Environmental Studies, Japan.
- April 2016 – March 2018
  - Research Fellow (DC2), Japan Society for the Promotion of Science, Japan.

(Concurrent appointments)

- April 2024 – present
  - Assistant Professor (*Kōshi*), Department of Socio-Cultural Environmental Studies, Graduate School of Frontier Sciences, the University of Tokyo, Japan.
- April 2024 – present
  - Assistant Professor (*Kōshi*), Collaborative Research Organization for the Digital Spatial Society, the University of Tokyo, Japan.
- April 2024 – present
  - Assistant Professor (*Kōshi*), Collaborative Research Organization for Future Regional Society, the University of Tokyo, Japan.
- April 2023 – present
  - Visiting Researcher, Social System Division, National Institute for Environmental Studies, Japan.
- April 2023 – March 2024
  - Assistant Professor, Collaborative Research Organization for Future Regional Society, the University of Tokyo, Japan.
- April 2021 – present

  - Part-Time Lecturer, Graduate School of System Design and Management, Keio University, Japan.

- April 2021 – March 2023
  - Visiting Researcher, Earth System Division, National Institute for Environmental Studies, Japan.
- April 2019 – March 2022
  - Part-Time Lecturer, Department of International Economics, Faculty of Economics, Toyo University, Japan.
- September 2013 – September 2013
  - Intern, Geographic Information Analysis Research Division, Geography and Crustal Dynamics Research Center, Geospatial Information Authority of Japan, Japan.

Contact

- E-mail: yoshida *at* csis.u-tokyo.ac.jp
- Address: 5-1-5 Kashiwanoha, Kashiwa-shi, Chiba 277-8568, JAPAN
- Links: Google Scholar; Web of Science; ResearchGate; researchmap; ORCID

Publications

In progress / under review

- [Translation] Shinya Uryu, Narumasa Tsutsumida, Takahiro Yoshida.

  - Robin Lovelace, Jakub Nowosad, Jannes Muenchow (2019) ***Geocomputation with R***. Chapman and Hall/CRC Press.

- Takahiro Yoshida, Daisuke Murakami, Hajime Seya **Location powered quotient: A compositional data analysis-based approach.**
- Hajime Seya, Takahiro Yoshida **Propensity score matching for multiple treatment levels: A CODA-based contribution.** arXiv: 1710.08558 [LINK]
- Takahiro Yoshida, Daisuke Murakami, Hajime Seya, Morito Tsutsumi **A Monte Carlo study: Spatial multinomial discrete choice models.**
- Takahiro Yoshida, Daisuke Murakami, Hajime Seya, Morito Tsutsumi **Spatial seemingly unrelated regression models combined with compositional data analysis approach.**
- Takahiro Yoshida, Masato Tomonari, Hajime Seya, Morito Tsutsumi **On the relationships between amount of zero responses and goodness-of-fits of compositional models.**
- Takahiro Yoshida, Morito Tsutsumi, Hozana Ishii **Identification of regional difference of election voting trends: Functional compositional data clustering approach.**
- + four papers are under review.

Refereed journal papers

1. Liang Zhang, Hasi Bagan, Chaomin Chen, Takahiro Yoshida (2025) **Exploring the impact of urban morphology on river cooling effects: A case study of the Arakawa River in Tokyo.** *Ecological Indicators*, 172, 113288. DOI: 10.1016/j.ecolind.2025.113288 [LINK]

2. Yujiro Hirano, Yukiko Yoshida, Takahiro Yoshida, Yoshiki Yamagata, Suguru Mizutani, Ji Xuan (2025) **Evaluation of CO2 emissions reduction in the Japanese residential sector through energy-saving scenarios based on large-scale survey data.** *Energies*, 18 (8), 1964. DOI: 10.3390/en18081964 [LINK]
3. Ishwar D. Ramnarine, Tarek A. Sherif, Abdulrahman H. Alorabi, Haya Helmy, Takahiro Yoshida, Akito Murayama, Perry P. J. Yang (2025) **Urban revitalization pathways toward zero carbon emissions through systems architecting of urban digital twins.** *Environment and Planning B: Urban Analytics and City Science*, fisrt published online (February 4, 2025). DOI: 10.1177/23998083251318142 [LINK]
4. Alexis Comber, Paul Harris, Daisuke Murakami, Tomoki Nakaya, Narumasa Tsutsumida, Takahiro Yoshida, Chris Brunsdon (2024) **Encapsulating spatially varying relationships with a generalized additive model.** *ISPRS International Journal of Geo-Information*, 13 (12), 459. DOI: 10.3390/ijgi13120459 [LINK]
5. Terigelehu Te, Chunling Bao, Hasi Bagan, Yuxin Xie, Meihui Che, Takahiro Yoshida, Bayarsaikhan Uudus (2024) **Mapping seamless monthly XCO2 in East Asia: Utilizing OCO-2 data and machine learning.** *International Journal of Applied Earth Observation and Geoinformation*, 133, 104117. DOI: 10.1016/j.jag.2024.104117 [LINK]
6. Junya Yamasaki, Yasutaka Wakazuki, Satoru Iizuka, Takahiro Yoshida, Ryoichi Nitanai, Rikutaro Manabe, Akito Murayama (2024) **Microclimate simulation for future urban district under SSP/RCP: Reflecting changes in building stocks and temperature rises.** *Urban Climate*, 57, 102068. DOI: 10.1016/j.uclim.2024.102068 [LINK]
7. Luwen Tan, Yuxin Xie, Chaomin Chen, Hasi Bagan, Takahiro Yoshida (2024) **Urbanization and land subsidence: Multi-decadal investigation combined SBAS-InSAR and multi-factors in Shanghai, China.** *Geocarto International*, 39 (1), 2391056. DOI: 10.1080/10106049.2024.2391056 [LINK]
8. Yasuo Takahashi, Takahiro Yoshida, Sawako Shigeto, Hiroyuki Kubota, Brian Johnson, Yoshiki Yamagata (2024) **Spatial exploration of rural capital contributing to quality of life and urban-to-rural migration decisions: A case study of Hokuto City, Japan.** *Sustainability Science*, 19, 489–506. DOI: 10.1007/s11625-023-01427-9 [LINK]
9. Takahiro Yoshida, Daisuke Murakami, Hajime Seya (2024) **Spatial prediction of apartment rent using regression-based and machine learning-based approaches with a large dataset.** *The Journal of Real Estate Finance and Economics*, 69 (1), 1–28. DOI: 10.1007/s11146-022-09929-6 [LINK] *Note*: Published online: November 2022; Issued with volume and pages numbers: July 2024.
10. Daisuke Murakami, Narumasa Tsutsumida, Takahiro Yoshida, Tomoki Nakaya, Binbin Lu, Paul Harris (2023) **A linearization for stable and faster geographically weighted Poisson regression.** *International Journal of Geographical Information Science*, 37 (8), 1818–1839. DOI:

10.1080/13658816.2023.2209811 [LINK]

11. Chaomin Chen, Hasi Bagan, Takahiro Yoshida (2023) **Multi-scale mapping of local climate zones in Tokyo using airborne LiDAR data, GIS vectors, and Sentinel-2 imagery.** *GIScience & Remote Sensing*, 60 (1), 2209970. DOI: 10.1080/15481603.2023.2209970 [LINK]
12. Junya Yamasaki, Yasutaka Wakazuki, Satoru Iizuka, Takahiro Yoshida, Ryoichi Nitanai, Rikutaro Manabe, Akito Murayama (2023) **Diurnal change of summer temperature distribution in urban area based on SSP/RCP images under climate change: Using an analysis model compared with actual measurement results.** *Journal of the City Planning Institute of Japan*, 58 (3), 835–842. [in Japanese] DOI: 10.11361/journalcpij.58.835 [LINK]
13. Mai Fukaya, Junya Yamasaki, Takahiro Yoshida, Ryoichi Nitanai, Rikutaro Manabe, Akito Murayama (2023) **Realities and prospects of area-based management activities aimed at solving social issues: Through a survey of advanced cases in Japan.** *Journal of the City Planning Institute of Japan*, 58 (3), 1320–1327. [in Japanese] DOI: 10.11361/journalcpij.58.1320 [LINK]
14. Thiti Jittayasotorn, Muthiah Sadidah, Takahiro Yoshida, Takuro Kobashi (2023) **On the adoption of rooftop photovoltaics integrated with electric vehicles toward sustainable Bangkok City, Thailand.** *Energies*, 16 (7), 3011. DOI: 10.3390/en16073011 [LINK]
15. Junya Yamasaki, Wenchao Wu, Takahiro Yoshida, Ryoichi Nitanai, Rikutaro Manabe, Akito Murayama (2023) **Environmental impact assessment for future changes in land use composition under SSP scenarios in Japan: Assessment and issues based on the LCIA method LIME3.** *Environmental Science*, 36 (4), 135–144. [in Japanese] DOI: 10.11353/sesj.36.135 [LINK]
16. Xinyan Hou, Xuan Xie, Hasi Bagan, Chaomin Chen, Qinxue Wang, Takahiro Yoshida (2023) **Exploring spatiotemporal variations in land surface temperature based on local climate zones in Shanghai from 2008 to 2020.** *Remote Sensing*, 15 (12), 3106. DOI: 10.3390/rs15123106 [LINK]
17. Chaomin Chen, Hasi Bagan, Takahiro Yoshida, Habura Borjigin, Jun Gao (2022) **Quantitative analysis of the building-level relationship between building form and land surface temperature using airborne LiDAR and thermal infrared data.** *Urban Climate*, 45, 101248. DOI: 10.1016/j.uclim.2022.101248 [LINK]
18. Joseph Emile Honour Percival, Narumasa Tsutsumida, Daisuke Murakami, Takahiro Yoshida, Tomoki Nakaya (2022) **Exploratory spatial data analysis with gwpcorMapper: An interactive mapping tool for geographically weighted correlation and partial correlation.** *Journal of Geovisualization and Spatial Analysis*, 6, 17. DOI: 10.1007/s41651-022-00111-3 [LINK]
19. Junya Yamasaki, Masahiro Masubuchi, Yasutaka Wakazuki, Satoru Iizuka, Takahiro Yoshida, Ryoichi Nitanai, Rikutaro Manabe, Akito

Murayama (2022) **Thermal environment simulation for future images based on SSP/RCP in urban center neighborhood under climate change: Focusing on the Nishiki 2 district, Nagoya city.** *Journal of the City Planning Institute of Japan*, 57 (3), 949–956. [in Japanese] DOI: 10.11361/journalcpij.57.949 [LINK]

20. Tomoki Hosaka, Junya Yamasaki, Takahiro Yoshida, Ryoichi Nitanai, Rikutaro Manabe, Akito Murayama (2022) **Framework of climate change adaptation measures of urban planning-related sectors in UK and French municipalities: From the analysis of measures in 8 advanced Climate Change Action Plans.** *Journal of the City Planning Institute of Japan*, 57 (1), 138–150. [in Japanese] DOI: 10.11361/journalcpij.57.138 [LINK]
21. Junya Yamasaki, Masahiro Masubuchi, Satoru Iizuka, Takahiro Yoshida, Ryoichi Nitanai, Rikutaro Manabe, Akito Murayama (2022) **Thermal environment simulation for urban center neighborhood by Using 3D city model of Project PLATEAU: Toward heat adaptation in community planning.** *Papers on Environmental Information Science*, 36, 238–243. [in Japanese] DOI: 10.11492/ceispapers.ceis36.0_238 [LINK]
22. Daisuke Murakami, Takahiro Yoshida, Yoshiki Yamagata (2021) **Gridded GDP projections compatible with the five SSPs (shared socioeconomic pathways).** *Frontiers in Built Environment*, 7, 760306. DOI: 10.3389/fbuil.2021.760306 [LINK] [DATA] [SUPPORT SITE]
23. Soshiro Ogata, Misa Takegami, Taira Ozaki, Takahiro Nakashima, Daisuke Onozuka, Shunsuke Murata, Yuriko Nakaoku, Koyu Suzuki, Akihito Hagihara, Teruo Noguchi, Koji Iihara, Keiichi Kitazume, Tohru Morioka, Shin Yamazaki, Takahiro Yoshida, Yoshiki Yamagata, Kunihiro Nishimura (2021) **Heatstroke predictions by machine learning, weather information, and an all-population registry for 12-hour heatstroke alerts.** *Nature Communications*, 12, 4575. DOI: 10.1038/s41467-021-24823-0 [LINK]
24. Meng Cai, Yuan Shi, Chao Ren, Takahiro Yoshida, Yoshiki Yamagata, Chao Ding, Nan Zhou (2021) **The need for urban form data in spatial modeling of urban carbon emissions in China: A critical review.** *Journal of Cleaner Production*, 319, 128792. DOI: 10.1016/j.jclepro.2021.128792 [LINK]
25. Yasuo Takahashi, Hiroyuki Kubota, Sawako Shigeto, Takahiro Yoshida, Yoshiki Yamagata (2021) **Diverse values of urban-to-rural migration: A case study of Hokuto City, Japan.** *Journal of Rural Studies*, 87, 292–299. DOI: 10.1016/j.jrurstud.2021.09.013 [LINK]
26. Mai Fukaya, Junya Yamasaki, Ryoichi Nitanai, Rikutaro Manabe, Takahiro Yoshida, Akito Murayama (2021) **Long-term environmental changes in condominium complex and its surrounding neighborhoods: Toward the development of neighborhood sustainability assessment framework.** *Journal of the City Planning Institute of Japan*, 56 (3), 905–912. [in Japanese] DOI: 10.11361/journalcpij.56.905 [LINK]

27. Narumasa Tsutsumida, Takahiro Yoshida, Daisuke Murakami, Tomoki Nakaya (2021) **A review on geographically weighted methods and their future directions.** *Theory and Applications of GIS,* 29 (1), 11–21. [in Japanese] DOI: 10.5638/thagis.29.11 [LINK]
28. Takuro Kobashi, Peraphan Jittrapirom, Takahiro Yoshida, Yujiro Hirano, Yoshiki Yamagata (2021) **SolarEV City concept: Building the next urban power and mobility systems.** *Environmental Research Letters*, 16 (2), 024042. DOI: 10.1088/1748-9326/abd430 [LINK]
29. Anna Ebata, Takahiro Yoshida, Kazuki Tamesue, Hajime Seya, Morito Tsutsumi (2021) **Exploratory spatial data analysis of *Furusato Nozei*: A tax donation program in Japan.** *Theory and Applications of GIS,* 29 (1), 1–10. [in Japanese] DOI: 10.5638/thagis.29.1 [LINK]
30. Daisuke Murakami, Narumasa Tsutsumida, Takahiro Yoshida, Tomoki Nakaya, Binbin Lu (2021) **Scalable GWR: A linear-time algorithm for large-scale geographically weighted regression with polynomial kernels.** *Annals of the American Association of Geographers*, 111 (2), 459–480. DOI: 10.1080/24694452.2020.1774350 [LINK]
31. Soowon Chang, Takahiro Yoshida, Daniel Castro-Lacouture, Yoshiki Yamagata (2021) **Block-level building transformation strategies for energy efficiency, thermal comfort and visibility using Bayesian multilevel modeling.** *Journal of Architectural Engineering*, 27 (3), 05021008. DOI: 10.1061/(ASCE)AE.1943-5568.0000491 [LINK]
32. Yoshiki Yamagata, Takahiro Yoshida (2020) **A "Smart Lifestyle" for the re-design of the "After Corona" urban forms.** *Environment and Planning B: Urban Analytics and City Science*, 47 (7), 1146–1148. DOI: 10.1177/2399808320950043 [LINK]
33. Takuro Kobashi, Takahiro Yoshida, Yoshiki Yamagata, Katsuhiko Naito, Stefan Pfenninger, Kelvin Say, Yasuhiro Takeda, Amanda Ahl, Masaru Yarime, Keishiro Hara (2020) **On the potential of "photovoltaics + electric vehicles" for deep decarbonization of Kyoto's power systems: Techno-economic-social considerations.** *Applied Energy*, 275, 115419. DOI: 10.1016/j.apenergy.2020.115419 [LINK]
34. Takuro Kobashi, Kelvin Say, Jiayang Wang, Masaru Yarime, Dong Wang, Takahiro Yoshida, Yoshiki Yamagata (2020) **Techno-economic assessment of photovoltaics plus electric vehicles towards household-sector decarbonization in Kyoto and Shenzhen by the year 2030.** *Journal of Cleaner Production,* 253, 119933. DOI: 10.1016/j.jclepro.2019.119933 [LINK]
35. Takahiro Yoshida, Rim Er-rbib, Morito Tsutsumi (2019) **Which country epitomizes the world? A study from the perspective of demographic composition.** *Sustainability,* 11 (22), 6404. DOI: 10.3390/su11226404 [LINK]
36. Michael B. Tobey, Robert B. Binder, Soowon Chang, Takahiro Yoshida, Yoshiki Yamagata, Perry P. J. Yang (2019) **Urban systems design: A conceptual framework for planning smart communities.** *Smart Cities,* 2 (4), 522–537. DOI: 10.3390/smartcities2040032 [LINK]

37. Michael B. Tobey, Robert B. Binder, Takahiro Yoshida, Yoshiki Yamagata (2019) **Urban systems design case study: Tokyo's Sumida ward.** *Smart Cities,* 2 (4), 453–470. DOI: 10.3390/smartcities2040028 [LINK]
38. Yoshiki Yamagata, Takahiro Yoshida, Daisuke Murakami, Tomoko Matsui, Yuki Akiyama (2018) **Seasonal urban carbon emission estimation using spatial micro big data.** *Sustainability,* 10 (12), 4472. DOI: 10.3390/su10124472 [LINK]
39. Takahiro Yoshida, Morito Tsutsumi (2018) **On the effects of spatial relationships in spatial compositional multivariate models.** *Letters in Spatial and Resource Sciences,* 11 (1), 57–70. DOI: 10.1007/s12076-017-0199-5 [LINK]
40. Takahiro Yoshida, Morito Tsutsumi (2017) **The epitome of the future Japan from the perspective of demographic composition: Application of compositional data analysis to population studies.** *Theory and Applications of GIS,* 25 (2), 79–89. [in Japanese] DOI: 10.5638/thagis.25.79 [LINK]
41. Daisuke Murakami, Takahiro Yoshida, Hajime Seya, Daniel A. Griffith, Yoshiki Yamagata (2017) **A Moran coefficient-based mixed effects approach to investigate spatially varying relationships.** *Spatial Statistics,* 19, 68–89. DOI: 10.1016/j.spasta.2016.12.001 [LINK]
42. Hajime Seya, Takahiro Yoshida, Morito Tsutsumi (2016) **Ex-post identification of geographical extent of benefited area by a transportation project: Functional data analysis method.** *Journal of Transport Geography,* 55, 1–10. DOI: 10.1016/j.jtrangeo.2016.07.004 [LINK]
43. Yoshiki Yamagata, Daisuke Murakami, Takahiro Yoshida, Hajime Seya, Sho Kuroda (2016) **Value of urban views in a bay city: Hedonic analysis with the spatial multilevel additive regression (SMAR) model.** *Landscape and Urban Planning,* 151, 89–102. DOI: 10.1016/j.landurbplan.2016.02.008 [LINK]

Refereed proceedings papers

1. Ryota Tsurumi, Takahiro Yoshida (2025) **The impact of people flow on summer energy consumption in a Tokyo office building using a state space model.** *Energy Proceedings*, 51, 11464. DOI: 10.46855/energy-proceedings-11464 [LINK]

    - This paper was presented at the 16th International Conference on Applied Energy (ICAE2024), Niigata, Japan, September 1–5, 2024.

2. Adair Garrett, Katherine Ginensky, Xi Wang, Hina Ahmed, Jingyuan Shen, Takahiro Yoshida, Akito Murayama, Perry Pei-Ju Yang (2025) **Leveraging digital twin interface for multimodal transportation resilience, connectivity, and equity: A case study of**

Toyosu, Tokyo. *Energy Proceedings*, 51, 11460. DOI: 10.46855/energy-proceedings-11460 [LINK]

- This paper was presented at the 16th International Conference on Applied Energy (ICAE2024), Niigata, Japan, September 1–5, 2024.

3. Jingyuan Shen, Xi Wang, Abdulrahman Alorabi, Takahiro Yoshida, Akito Murayama, Perry Pei-Ju Yang (2025) **Systems-level methodology for optimizing urban infrastructure energy resilience.** *Energy Proceedings*, 50, 11419. DOI: 10.46855/energy-proceedings-11419 [LINK]

    - This paper was presented at the 16th International Conference on Applied Energy (ICAE2024), Niigata, Japan, September 1–5, 2024.

4. Yujiro Hirano, Takahiro Yoshida, Yoshiki Yamagata, Yukiko Yoshida (2025) **Energy management simulation for a local energy supply system.** *Energy Proceedings*, 53, 11512. DOI: 10.46855/energy-proceedings-11512 [LINK]

    - This paper was presented at the 16th International Conference on Applied Energy (ICAE2024), Niigata, Japan, September 1–5, 2024.

5. Haya Helmy, Perry P.J. Yang, Takahiro Yoshida, Akito Murayama, Amal Bogoreh, Ishwar Ramnarine (2024) **Carbon-neutrality Architecting and New-age Visions for Urban Areas using Systems design (CANVAS)? A case study of Tokyo Nihonbashi.** *Energy Proceedings*, 45, 11107. DOI: 10.46855/energy-proceedings-11107 [LINK]

    - This paper was presented at the 15th International Conference on Applied Energy (ICAE2023), Doha, Qatar, December 3–7, 2023.

6. Narumasa Tsutsumida, Daisuke Murakami, Takahiro Yoshida, Tomoki Nakaya, Binbin Lu, Paul Harris, Alexis Comber (2022) **A comparison of geographically weighted principal components analysis methodologies.** *Proceedings of the 15th International Conference on Spatial Information Theory*, 21:1–21:6. DOI: 10.4230/LIPIcs.COSIT.2022.21 [LINK]

    - This paper was presented at the 15th International Conference on Spatial Information Theory (COSIT2022), Kobe, Japan, September 5–9, 2022.

7. Daisuke Murakami, Narumasa Tsutsumida, Takahiro Yoshida, Tomoki Nakaya (2022) **Large-scale spatial prediction by scalable geographically weighted regression: Comparative study.** *Proceedings of the 15th International Conference on Spatial Information Theory*, 12:1–12:5. DOI: 10.4230/LIPIcs.COSIT.2022.12 [LINK]

    - This paper was presented at the 15th International Conference on Spatial Information Theory (COSIT2022), Kobe, Japan, September 5–9, 2022.

8. Perry Pei-Ju Yang, Takahiro Yoshida, Akito Murayama, Soowon Chang, Yoshiki Yamagata (2021) **Green recovery planning from COVID for a low energy urban district using urban digital platform: A case study of Tokyo Shinagawa.** *Energy Proceedings*, 22, 870. DOI: 10.46855/energy-proceedings-9395 [Link]
    - This paper was presented at the 13th International Conference on Applied Energy (ICAE2021), Online and Bangkok, Thailand, November 29 – December 5, 2021.
9. Takahiro Yoshida, Daisuke Murakami, Hajime Seya, Narumasa Tsutsumida, Tomoki Nakaya (2021) **Geographically weighted regression for compositional data: An application to the U.S. household income compositions.** *Proceedings of the 11th International Conference on Geographic Information Science*, paper 55. DOI: 10.25436/E2G599 [LINK]
    - This paper was presented at the 11th International Conference on Geographic Information Science (GIScience2021), Online, September 27–30, 2021 (Originally planned: Poznan, Poland, September 15–18, 2020).
10. Daisuke Murakami, Narumasa Tsutsumida, Takahiro Yoshida, Tomoki Nakaya, Binbin Lu, Paul Harris (2021) **Stable geographically weighted Poisson regression for count data.** *Proceedings of the 11th International Conference on Geographic Information Science*, paper 47. DOI: 10.25436/E2X59B [LINK]
    - This paper was presented at the 11th International Conference on Geographic Information Science (GIScience2021), Online, September 27–30, 2021 (Originally planned: Poznan, Poland, September 15–18, 2020).
11. Takahiro Yoshida, Yoshiki Yamagata (2020) **Change of CO2 emissions in Tokyo under the COVID-19 situation: Urban carbon mapping approach.** *Energy Proceedings*, 9, 0579. DOI: 10.46855/energy-proceedings-7117 [Link]
    - This paper was presented at the 12th International Conference on Applied Energy (ICAE2020), Online, December 1–10, 2020 (Originally planned: Bangkok, Thailand, November 29 – December 2, 2020).
12. Yoshiki Yamagata, Takahiro Yoshida (2020) **Urban carbon mapping of roads under the COVID-19 situation: The case of Tokyo 23 wards.** *Energy Proceedings*, 9, 0580. DOI: 10.46855/energy-proceedings-7116 [Link]
    - This paper was presented at the 12th International Conference on Applied Energy (ICAE2020), Online, December 1–10, 2020 (Originally planned: Bangkok, Thailand, November 29 – December 2, 2020).

13. Narumasa Tsutsumida, Takahiro Yoshida, Daisuke Murakami, Tomoki Nakaya (2020) **A Geographically weighted total composite error analysis for soft classification.** *Proceedings of the 2020 IEEE Geoscience and Remote Sensing Society Symposium,* 874–876. DOI: 10.1109/IGARSS39084.2020.9323939 [LINK]

    - This paper was presented at the 40th annual conference of the IEEE Geoscience and Remote Sensing Society (IGARSS2020), Online, September 26 – October 2, 2020 (Originally planned: Hawaii, USA, July 19–24, 2020).

14. Soowon Chang, Takahiro Yoshida, Robert Binder, Yoshiki Yamagata, Daniel Castro-Lacouture (2020) **Energy sharing boundaries integrating buildings and vehicles tangled in spatial and temporal changes.** *Proceedings of the ASCE Construction Research Congress 2020,* 434–443. DOI: 10.1061/9780784482858.048 [LINK]

    - This paper was presented at the ASCE Construction Research Congress 2020 (ASCE CRC2020), Tempe, Arizona, USA, March 8–10, 2020.

15. Takahiro Yoshida, Yoshiki Yamagata, Daisuke Murakami (2019) **Spatially detail urban carbon mapping: Integration of top-down and bottom-up approaches.** *Proceedings of the 15th International Conference on Geocomputation,* 7.3. DOI: 10.17608/k6.auckland.9848738.v1 [LINK]

    - This paper was presented at the 15th International Conference on Geocomputation (Geocomputation2019), Queenstown, New Zealand, September 18–21, 2019.

16. Yoshiki Yamagata, Takahiro Yoshida, Haruna Matsui, Perry Yang, Chen Helen (2019) **Experiential modelling of urban street: a combining approach with neural image assessment and street experiment.** *Proceedings of the 15th International Conference on Geocomputation,* 8.6. DOI: 10.17608/k6.auckland.9848270.v1 [LINK]

    - This paper was presented at the 15th International Conference on Geocomputation (Geocomputation2019), Queenstown, New Zealand, September 18–21, 2019.

17. Daisuke Murakami, Narumasa Tsutsumida, Takahiro Yoshida, Tomoki Nakaya, Binbin Lu (2019) **Scalable geographically weighted regression for big data.** *Proceedings of the 15th International Conference on Geocomputation,* 6.4. DOI: 10.17608/k6.auckland.9850898.v1 [LINK]

    - This paper was presented at the 15th International Conference on Geocomputation (Geocomputation2019), Queenstown, New Zealand, September 18–21, 2019.

18. Narumasa Tsutsumida, Daisuke Murakami, Takahiro Yoshida, Tomoki Nakaya, Binbin Lu, Paul Harris (2019) **Geographically Weighted Non-negative Principal Component Analysis for Exploring Spatial Variation in Multidimensional Composite Index.** *Proceedings of the 15th International Conference on Geocomputation,* 6.5. DOI: 10.17608/k6.auckland.9850826.v1 [LINK]

    - This paper was presented at the 15th International Conference on Geocomputation (Geocomputation2019), Queenstown, New Zealand, September 18–21, 2019.

19. Soowon Chang, Takahiro Yoshida, Michael Tobey, Yoshiki Yamagata, Perry Yang (2019) **Trandformative model of urban buildings optimizing energy demands, solar harvesting potential, and indoor thermal comfort.** *Energy Proceedings*, 5, 0355. DOI: 10.46855/energy-proceedings-4271 [Link]

    - This paper was presented at the 11th International Conference on Applied Energy (ICAE2019), Vasteras, Sweden, August 12–15, 2019.

20. Takahiro Yoshida, Soowon Chang, Daisuke Murakami, Yoshiki Yamagata (2019) **The relationships between energy consumption and surface temperature: A combining multiple-scale observations approach.** *Energy Proceedings*, 3, 0940. DOI: 10.46855/energy-proceedings-1809 [Link]

    - This paper was presented at the 11th International Conference on Applied Energy (ICAE2019), Vasteras, Sweden, August 12–15, 2019.

21. Takuro Kobashi, Takahiro Yoshida, Katsuhiko Naito, Stefan Pfenninger, Yoshiki Yamagata (2019) **Cost-optimal pathways to decarbonize urban energy systems with PV, batteries, and electric vehicles: A case study for Kyoto, Japan.** *Energy Proceedings*, 3, 0107. DOI: 10.46855/energy-proceedings-1795 [Link]

    - This paper was presented at the 11th International Conference on Applied Energy (ICAE2019), Vasteras, Sweden, August 12–15, 2019.

22. Michael Tobey, Soowon Chang, Takahiro Yoshida, Robert Binder, Yoshiki Yamagata (2019) **Measuring resiliencce, economy, sustainability, and human well-being in multiple scales for urban diagnostics.** *Energy Proceedings*, 2, 0904. DOI: 10.46855/energy-proceedings-1416 [Link]

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    - This paper was presented at the Applied Energy Symposium and Forum: Low carbon cities and urban energy systems (CUE2018), Shanghai, China, June 5–7, 2018.

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    - This paper was presented at the 6th International Workshop on Compositional Data Analysis (CoDaWork2015), Girona, Spain, June 1–5, 2015.

Book chapters

1. Takahiro Yoshida (2025) **Quality of life.** In Peter Nijkamp, Karima Kourtit, Kingsley Haynes, Zeynep Elburz (eds.) *The Thematic Encyclopedia of Regional Science*, —, Edward Elgar Publishing. DOI: — [LINK]
2. Yoshiki Yamagata, Daisuke Murakami, Hajime Seya, Takahiro Yoshida (2024) **High-resolution remote sensing and visibility analysis method for smart environment design.** In Prasad S. Thenkabail

(ed.) *Remote Sensing Handbook, Volume VI: Droughts, Disaster, Pollution, and Urban Mapping (the 2nd edition)*, 362–378, CRC Press. DOI: 10.1201/9781003541417-17 [LINK]

3. Yoshiki Yamagata, Takahiro Yoshida (2021) **Urban carbon mapping: Spatio-temporal detail visualization for CO2 emissions.** In Takuro Kobashi (ed.) *Urban Decarbonization*, 65–72, TAIGA Publishing. [in Japanese] [LINK]
4. Kazuto Sumita, Motoi Okamoto, Masamune Iwasawa, Yanchun Jin, Yoichi Mizumura, Takahiro Yoshida (2020) ***Introduction to Economic Data Analysis with Excel and R***, Ohmsha. [in Japanese] [LINK]
5. Yoshiki Yamagata, Takahiro Yoshida (2020) **Kyojima smart community studio: Urban systems design.** In Thomas Fisher, Brian Orland, Carl Steinitz (eds.) *The International Geodesign Collaboration: Changing Geography by Design*, 132–133, Esri Press. [LINK]
6. Yoshiki Yamagata, Takahiro Yoshida, Perry P. J. Yang, Helen Chen, Daisuke Murakami, Leena Ilmola (2020) **Measuring quality of walkable urban environment through experiential modeling.** In Yoshiki Yamagata, Perry P. J. Yang (eds.) *Urban Systems Design: Creating Sustainable Smart Cities in the Internet of Things Era,* 373–392, Elsevier. DOI: 10.1016/B978-0-12-816055-8.00012-9 [LINK]
7. Takuro Kobashi, Yoshiki Yamagata, Takahiro Yoshida, Soowon Chang, Yasunori Mochizuki, Amanda Ahl, Jelena Aleksejeva (2020) **Smart city and ICT infrastructure with vehicle to X applications toward urban decarbonization.** In Yoshiki Yamagata, Perry P. J. Yang (eds.) *Urban Systems Design: Creating Sustainable Smart Cities in the Internet of Things Era,* 289–333, Elsevier. DOI: 10.1016/B978-0-12-816055-8.00009-9 [LINK]
8. Yoshiki Yamagata, Takahiro Yoshida, Soowon Chang, Peraphan Jittrapirom, Sylvia Coleman, John Robinson, Roger Cremades, Dirk Neumann (2020) **Case studies towards smart communities.** In Yoshiki Yamagata, Perry P. J. Yang (eds.) *Urban Systems Design: Creating Sustainable Smart Cities in the Internet of Things Era,* 257–288, Elsevier. DOI: 10.1016/B978-0-12-816055-8.00008-7 [LINK]
9. Takahiro Yoshida, Yoshiki Yamagata, Soowon Chang, Vincent de Gooyert, Hajime Seya, Daisuke Murakami, Peraphan Jittrapirom, Gerasimos Voulgaris (2020) **Spatial modelling and design of smart communities.** In Yoshiki Yamagata, Perry P. J. Yang (eds.) *Urban Systems Design: Creating Sustainable Smart Cities in the Internet of Things Era,* 199–255, Elsevier. DOI: 10.1016/B978-0-12-816055-8.00007-5 [LINK]
10. Yoshiki Yamagata, Perry P. J. Yang, Soowon Chang, Michael B. Tobey, Robert B. Binder, Pieter J. Fourie, Peraphan Jittrapirom, Takuro Kobashi, Takahiro Yoshida, Jelena Aleksejeva (2020) **Urban systems and the role of big data.** In Yoshiki Yamagata, Perry P. J. Yang (eds.) *Urban Systems Design: Creating Sustainable Smart Cities in the Internet of Things Era*, 23–58, Elsevier. DOI: 10.1016/B978-0-12-816055-8.00002-6 [LINK]

11. Yoshiki Yamagata, Takahiro Yoshida (2019) **Tokyo smart city studio: An urban systems design approach.** In Sean Nicklin, Ben Cornwell, Leigh Trowbridge (eds.) *A Better World: Sustainable Cities and Communities*, 5, 32–35, Tudor Rose. [LINK]
12. Takahiro Yoshida, Yoshiki Yamagata (2019) **Quasi real time energy use estimation using Google's popular time data.** In Yoshiki Yamagata, Hajime Seya (eds.) *Spatial Analysis Using Big Data: Methods and Urban Applications,* 271–280, Academic Press. DOI: 10.1016/B978-0-12-813127-5.00011-4 [LINK]
13. Yoshiki Yamagata, Daisuke Murakami, Takahiro Yoshida (2019) **Evaluating walkability using mobile GPS data.** In Yoshiki Yamagata, Hajime Seya (eds.) *Spatial Analysis Using Big Data: Methods and Urban Applications,* 239–257, Academic Press. DOI: 10.1016/B978-0-12-813127-5.00009-6 [LINK]
14. Takahiro Yoshida, Daisuke Murakami (2019) **Implementation with R language.** In Yoshiki Yamagata, Hajime Seya (eds.) *Spatial Analysis Using Big Data: Methods and Urban Applications,* 181–223, Academic Press. DOI: 10.1016/B978-0-12-813127-5.00007-2 [LINK]
15. Hajime Seya, Takahiro Yoshida, Yoshiki Yamagata (2019) **Spatial econometric models.** In Yoshiki Yamagata, Hajime Seya (eds.) *Spatial Analysis Using Big Data: Methods and Urban Applications,* 113–158, Academic Press. DOI: 10.1016/B978-0-12-813127-5.00005-9 [LINK]
16. Takahiro Yoshida, Morito Tsutsumi (2017) **Cluster analysis.** In Committee of Infrastructure Planning and Management (eds.) *Handbook of Infrastructure Planning and Management*, 118–120, Corona Publishing. [in Japanese] [LINK]

Book translation

1. Giuseppe Arbia (2014) ***A Primer for Spatial Econometrics: With Applications in R.*** Palgrave Macmillan. Translated by: Morito Tsutsumi (supervision), Takahiro Yoshida, Kazuki Tamesue, Keisuke Takano, Masato Tomonari (2016) . Keiso shobo. [in Japanese] [LINK]

Honors

Awards

- **Excellent Joint Research Presentation Award**, CSIS DAYS 2024 (Center for Spatial Information Science, The University of Tokyo), November 2024. (with Taku Murakami and Narumasa Tsutsumida)
- **Poster Session Award**, GIS Association of Japan, October 2023. (with Daisuke Murakami and Hajime Seya)
- **Excellent Joint Research Presentation Award**, CSIS DAYS 2022 (Center for Spatial Information Science, The University of Tokyo), November 2022. (with Narumasa Tsutsumida, Joseph Percival, Daisuke Murakami, and Tomoki Nakaya)
- **Map Gallery Award (the first place)**, ESRI Japan, Corp., May 2022. (with Kazushi Matsuo, Yujiro Hirano, and Akito Murayama)
- **Excellent Research Presentation Award**, CSIS DAYS 2018 (Center for Spatial Information Science, The University of Tokyo), November 2018. (with Yoshiki Yamagata, Daisuke Murakami, and Tomoko Matsui)
- **GISA Award: Research Initiative Category**, GIS Association of Japan, October 2018. [LINK]
- **Poster Session Award**, GIS Association of Japan, October 2018. (with Anna Ebata, Kazuki Tamesue, Hajime Seya, and Morito Tsutsumi)
- **Map Gallery Award (the second place)**, ESRI Japan, Corp., May 2018. (with Anna Ebata)
- **Dean's Award**, Graduate School of Systems and Information Engineering, University of Tsukuba, March 2018.
- **Young Scholar Award**, Environmental Systems Research Institute (ESRI), Inc., July 2017. [LINK]
- **President's Award**, University of Tsukuba, March 2017. (with Marisa Yamaguchi and Rim Er-Rbib)
- **Poster Session Award**, GIS Association of Japan, October 2016. (with Morito Tsutsumi)
- **Map Gallery Award (the fourth place)**, ESRI Japan, Corp., May 2016. (with Shuhei Adachi, Yoi Kana, and Naoya Yanagisawa)
- **Dean's Award**, Graduate School of Systems and Information Engineer-

ing, University of Tsukuba, March 2015.
- **S-PLUS Student Research Encouragement Award (the first place)**, NTT DATA Mathematical Systems, Inc., November 2014.
- **Excellent Presentation Award**, GIS Association of Japan, November 2014.

Research grants

Principal Investigator

- April 2025 – March 2029
  - Grant-in-Aid for Scientific Research (B), Japan Society for the Promotion of Science. Project Number: 25K00624
- June 2024 – March 2025
  - Collaboration Program at Joint Support-Center for Data Science Research, Research Organization of Information and Systems. Project Number: 055RP2024
- April 2021 – March 2025
  - Grant-in-Aid for Early-Career Scientists, Japan Society for the Promotion of Science. Project Number: 21K13153
- April 2016 – March 2018
  - Grant-in-Aid for JSPS Fellows, Japan Society for the Promotion of Science. Project Number: 16J02219
- October 2015 – March 2016
  - Young Scientist Cultivation Program, Graduate School of Systems and Information Engineering, University of Tsukuba.

Co-Investigator

- April 2024 – March 2028
  - Grant-in-Aid for Scientific Research (B) (PI: Ryo Inoue), Japan Society for the Promotion of Science. Project Number: 24K00997
- April 2024 – March 2028
  - Grant-in-Aid for Scientific Research (B) (PI: Wataru Nakanishi), Japan Society for the Promotion of Science. Project Number: 24K01004
- April 2024 – March 2027

  - Environment Research and Technology Development Fund (1RA-2402) (PI: Daisuke Murakami), Environmental Restoration and Conservation Agency. Project Number: JPMEERF20241RA2

- July 2023 – March 2028
  - Cross-ministerial Strategic Innovation Promotion Program (SIP) (PI: Yumiko Iwafune), Council for Science, Technology and Innovation of Cabinet Office. Project Number: JPJ012207

- April 2023 – March 2028
  - Grant-in-Aid for Scientific Research (B) (PI: Akito Murayama), Japan Society for the Promotion of Science. Project Number: 23K26272 (23H01578)

- April 2023 – March 2026
  - Grant-in-Aid for Scientific Research (B) (PI: Yujiro Hirano), Japan Society for the Promotion of Science. Project Number: 23K26240 (23H01546)

- April 2023 – March 2028
  - Environment Research and Technology Development Fund (S-21-5) (PI: Takehito Yoshida), Environmental Restoration and Conservation Agency. Project Number: JPMEERF23S12150

- April 2023 – March 2026
  - Environment Research and Technology Development Fund (SII-11-1) (PI: Taikan Oki), Environmental Restoration and Conservation Agency. Project Number: JPMEERF23S21110

- June 2021 – March 2024
  - Collaboration Program at Joint Support-Center for Data Science Research (PI: Narumasa Tsutsumida), Research Organization of Information and Systems. Project Numbers: 005RP2021, 006RP2022, and 010RP2023

- April 2021 – March 2023
  - Grant-in-Aid for Scientific Research (A) (PI: Morito Tsutsumi), Japan Society for the Promotion of Science. Project Number: 18H03628

- April 2019 – March 2023
  - Grant-in-Aid for Challenging Research (Exploratory) (PI: Morito Tsutsumi), Japan Society for the Promotion of Science. Project Number: 17K18554

- June 2018 – March 2021

  - Collaboration Program at Joint Support-Center for Data Science Research (PI: Narumasa Tsutsumida), Research Organization of Information and Systems. Project Numbers: 006RP2018, 004RP2019, and 003RP2020

Research Collaborator

- November 2020 – March 2023
  - JST-Mirai Program (PI: Norio Ohmagari), Japan Science and Technology Agency. Project Number: JPMJMI20B2
- April 2017 – March 2020
  - Grant-in-Aid for Scientific Research (B) (PI: Tomoko Matsui), Japan Society for the Promotion of Science. Project Number: 17H01705
- April 2016 – March 2019
  - Grant-in-Aid for Scientific Research (B) (PI: Yoshiki Yamagata), Japan Society for the Promotion of Science. Project Number: 16H02910
- April 2015 – March 2018
  - Grant-in-Aid for Scientific Research (B) (PI: Morito Tsutsumi), Japan Society for the Promotion of Science. Project Number: 15H04054

Notes: R and Python

- Under construction … .
  - This page will summarize how to run spatial analysis and spatial data analysis using R or Python.
  - Currently, some tech-blogs in Japanese are being posted to Qiita. Recent posts are:
    - [Microsoft Bing Maps] R
    - QGIS PLATEAU LOD2
    - m
    - MODIS R LST
    - [R] gdb GIS sf
- Translation in progress … .
  - Robin Lovelace, Jakub Nowosad, Jannes Muenchow (2019) ***Geocomputation with R***. Chapman and Hall/CRC Press.
  - Translators: Shinya Uryu, Narumasa Tsutsumida, Takahiro Yoshida.