

Satoshi TAJIMA

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Key research interests: coastal hydrogeology, transport in porous media

As of January 2025

EDUCATION

PhD Candidate

The University of Tokyo

Tokyo, Japan

Advisor: Prof. Tomochika Tokunaga

Dissertation title: "Seawater-groundwater interactions in highly permeable coastal aquifers"

April 2022 –
(expected
March 2025)

Master of Environmental Sciences

The University of Tokyo

Tokyo, Japan

April 2020 –
March 2022

Bachelor of Agriculture

The University of Tokyo

Tokyo, Japan

April 2016 –
March 2020

RESEARCH EXPERIENCE

Research Fellow

Japan Society for the Promotion of Science (JSPS)

Tokyo, Japan

April 2023 –
(expected
March 2025)

Visiting Researcher

Spanish National Research Council (IDAEA-CSIC)

Barcelona, Spain

Advisor: Prof. Marco Dentz

September 2022 –
September 2023

Research Assistant

WINGS-PES, The University of Tokyo

Kashiwa, Japan

October 2020 –
March 2023

PEER-REVIEWED JOURNAL ARTICLES

Tajima, S., Dentz, M., Liu, J., Tokunaga, T. (2024). Time-dependent dispersion coefficients for the evolution of displacement fronts in heterogeneous porous media. *Advances in Water Resources*, 104714. DOI: 10.1016/j.advwatres.2024.104714.

Tajima, S., Yamaguchi, K., Shiroyama, H. (2024). Consensus building with fishermen on offshore wind farms in Japan: Current status and policy recommendations. *Marine Policy*, **160**, 105975. DOI: 10.1016/j.marpol.2023.105975.

Tajima, S., Liu, J., Tokunaga, T. (2024). Mechanisms of non-fresh groundwater presence at water tables in highly permeable coastal aquifers. *Groundwater*. DOI: 10.1111/gwat.13383.

Tajima, S., Brunner, P., Liu, J., Delottier, H., Tokunaga, T. (2023). Groundwater flooding on atolls caused by storm surges: effects of the dual-aquifer configuration. *Water Resources Research*, **59**(10), e2023WR034762. DOI: 10.1029/2023WR034762.

Tajima, S., Liu, J., Tokunaga, T. (2022). Estimating freshwater lens volume in highly permeable aquifers. *Hydrological Research Letters*, **16**(1), 12-17. DOI: 10.3178/hrl.16.12.

Tajima, S., Yoshida, S., Fukui, T., Nihei, N., Kobayashi, N. I. (2022). Cesium-137 stored on and discharged from banks of an agricultural canal in Iitate, Fukushima.

Journal of Environmental Radioactivity, **241**, 106775.
DOI: 10.1016/j.jenvrad.2021.106775.

ARTICLES
IN JAPANESE
(Peer-reviewed)

Yamaguchi, K., **Tajima, S.**, Katsuno, T., Shiroyama, H. (2024). Challenges and proposals for regional community transitions with offshore wind projects: A case study in Akita Prefecture, Japan. *Environmental Information Science*, **25**(2). (洋上風力発電をめぐる地域社会の移行における課題と提言 一秋田県を事例に一, *環境情報科学*.)

Yamaguchi, K., **Tajima, S.**, Watanabe, A., Shiroyama, H. (2024). Consensus building with fishermen in Japanese offshore wind projects: a case study in the Oga-Katagami-Akita district and policy recommendations. *Japan Society of Ocean Policy*, **13**, 65–81.

(我が国の洋上風力事業における漁業者との合意形成: 秋田県男鹿市、潟上市及び秋田市沖における事例と政策提言, *日本海洋政策学会誌*, **13**, 65–81.)

Tajima, S., Otori, H., Yamaguchi, K. (2021). Contribution of offshore windfarm projects to regional economies: base ports in Akita Prefecture. *Journal of Japan Society of Ocean Policy*, **11**, 27-41.

(洋上風力産業の地域経済への貢献: 秋田県における拠点港の役割. *日本海洋政策学会誌*, **11**, 27-41.)

SELECTED
TALKS

Tajima, S. (December 2024). Illustrating salinity distribution in the unsaturated zone on Tarama Island, Japan. *The 315th Geoscience Club, Tokyo Geographical Society*, Tokyo, Japan. **(invited)**

Tajima, S., Dentz, M. (September 2024). Solute transport in coastal aquifers under transient forcing: Effects of heterogeneity and finite storage. *IAH World Groundwater Congress 2024*, Davos, Switzerland.

Tajima, S., Dentz, M. (September 2024). Solute transport in coastal aquifers under transient forcing: Effects of heterogeneity and finite storage. *The 16th Symposium on Groundwater Resources and Water Quality Protection and the Annual Meeting of Taiwan Groundwater Resources and Hydrogeology Society*, Taoyuan, Taiwan. **(invited)**

Tajima, S., Dentz, M. (April 2024). Solute transport in heterogeneous compressible aquifers under transient forcing. *EGU General Assembly 2024*, Vienna, Austria.

Tajima, S., Brunner, P., Liu, J., Delottier, H., Tokunaga, T. (August 2023). Temporal dynamics of groundwater flooding on atolls caused by storm surge. *WATERAGRI Workshop on Integrated Hydrological Modelling and Data Assimilation*, Neuchâtel, Switzerland. **(invited)**

Tajima, S., Brunner, P., Liu, J., Delottier, H., Tokunaga, T. (May 2023). Groundwater flooding on atolls caused by storm surge: effects of the dual-aquifer configuration. *JpGU Annual Meeting 2023*, Chiba, Japan. **(awarded)**

Tajima, S., Tokunaga, T., Liu, J., Dentz, M. (April 2023). Time-evolving dispersion (TED) model: towards a more realistic representation of Darcy-scale mixing in porous media. *EGU General Assembly 2023*, Vienna, Austria.

Tajima, S., Liu, J., Delottier, H., Brunner, P., Tokunaga, T. (December 2022). Groundwater flooding by storm surges on atolls. *AGU Fall Meeting 2022*, Chicago, IL, USA

Tajima, S., Liu, J., Tokunaga, T. (December 2021). Numerical investigation of unique salinity distributions in extremely permeable coastal aquifers. *AGU Fall Meeting 2021*, New Orleans, LA, USA.

Tajima, S., Liu, J., Tokunaga, T. (December 2021). Freshwater lens of Tarama Island, Japan: A unique salinity distribution and its formation mechanisms. *Japanese Association of Groundwater Hydrology Autumn Meeting 2021*, Naha, Japan. (awarded)

Tajima, S., Liu, J., Tokunaga, T. (September 2021). Limitation of applying the Dupuit-Ghijben-Herzberg analytical model for quantifying the volume of freshwater lens in extremely permeable aquifer. *The 48th IAHR Congress*, Brussels, Belgium.

VARIA

Tajima, S., Dentz, M. (2024). Dispersion and mixing in heterogeneous compressible porous media under transient forcing. *arXiv:2409.16789*. DOI: 10.48550/arXiv.2409.16789.

Yamaguchi, K., **Tajima, S.**, Shiroyama, H., (2023). Transition processes in offshore wind farm introduction in Akita Prefecture, Japan. *IFI Working Paper No. 18*. (in Japanese)
(秋田における洋上風力発電事業導入にみられる移行過程. 東京大学未来ビジョン研究センターワーキングペーパー No. 18.)

Yamaguchi, K., **Tajima, S.**, Shiroyama, H., (2023). Consensus building with local residents towards designation of promotion zones under the Act on Sea Areas Utilization for Renewable Energy: Case study in the Oga-Katagami Area, Akita Prefecture, Japan. *IFI Working Paper No. 15*. (in Japanese)
(再エネ海域利用法・促進区域指定にあたっての地域住民との合意形成：秋田県男鹿市・潟上市沖の事例調査. 東京大学未来ビジョン研究センターワーキングペーパー No. 15.)

Bosch, T., Colijn, F., Ebinghaus, R., Körtzinger, A., Latif, M., ..., Weinberger, F. (2022). *World Ocean Review 1* (Ocean Alliance Collaborative Research Organization, The University of Tokyo, Trans.), maribus. (Original work published 2010) (Contributed as co-translator)

AWARDS &
HONOURS

Outstanding Student Presentation Award July 2023
Japan Geoscience Union

Award of Accomplishment, August 2022
Grants-in-Aid of Groundwater Research for Young Investigators
Japanese Association of Groundwater Hydrology

Dean's Award for Outstanding Achievement March 2022
Graduate School of Frontier Sciences,
The University of Tokyo

Outstanding Presentation Award for Young Researcher December 2021
Japanese Association of Groundwater Hydrology

FELLOWSHIPS

JSPS Research Fellowship for Young Scientists (DC2) April 2023 –
Japan Society for the Promotion of Science

WINGS-PES Fellowship October 2020 –
World-leading Innovative Graduate Study Program in March 2023
Proactive Environmental Studies (WINGS-PES),
The University of Tokyo

COMPETITIVE
RESEARCH
GRANTS

Grant-in-Aid for JSPS Research Fellows

- Applicant: **Tajima, S.**
- Title: Establishing a new subsurface mass transport model to mitigate upstream dispersion
- Funding: JPY 2,800,000

**April 2023 –
March 2025**

**GSFS Challenging New Area Doctoral Research Grant,
The University of Tokyo**

- Applicants: **Tajima, S.**, Ito, M., Nakagawa, Y.
- Title: Elucidating groundwater environmental conditions under which the uncultivated bacterial group CPR dominates
- Funding: JPY 600,000

**June 2022 –
May 2023**

Tokyo Geographical Society Research Grant

- Applicant: **Tajima, S.**
- Title: Illustrating Salinity distribution in the unsaturated zone on Tarama Island, Japan
- Funding: JPY 500,000

**June 2022 –
May 2023**

JSPS Bilateral Joint Research Project

- Applicants: Tokunaga, T., Aichi, M., Liu, J., Ito, Y., Ouyang, M., **Tajima, S.**, Brunner, P., Schilling, O.
- Title: The impact of coastal flooding induced saline water infiltration into subsurface in urban areas: Integrating spatially high-resolution surface processes and density-driven groundwater flow models
- Funding: JPY 3,880,000

**April 2021 –
March 2023**

**Grant-in-Aid of Groundwater Research for Young
Investigators, Japanese Association of Groundwater
Hydrology**

- Applicant: **Tajima, S.**
- Title: Assessment of climate change impacts on freshwater lenses of raised coral reef islands
- Funding: JPY 250,000

**July 2021 –
June 2022**

TEACHING
EXPERIENCE

Guest Lecturer

Advanced Lecture in Regional Environmental Sciences, Akita Prefectural University

Lecture title: "The relationship between offshore wind and local communities."

November 2024

Teaching Assistant

Graduate School of Public Policy, The University of Tokyo
Assisting a course "Seminar on Marine Affairs".

**October 2021 –
January 2025**

Teaching Assistant

Graduate School of Frontier Sciences, The University of Tokyo

Organising a program for undergraduate students "Kashiwa Science Camp".

**January 2022 –
March 2022**

Teaching Assistant

Graduate School of Public Policy, The University of Tokyo
Assisting a course "Marine Science and Technology Policy".

**September 2021 –
January 2022 /**

**September 2022 –
January 2023**

**LANGUAGE
SKILLS**

- Japanese (mother tongue)
- English (fluent)
- German (limited working proficiency)
- Spanish / French (elementary)
- Fortran / Python