

Haodong Xu

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Research Interests

- Marine plastics and physical transport.
- Advanced measurement and quality control of samples.
- Microplastic transport in the North Pacific based on cruise observation, experimental analysis, and particle tracking model.
- Assessing plastic pollution, and offering innovative solutions for plastic pollution mitigation strategy, towards healthy sea and sustainable ocean.

Education

Ph.D. The University of Tokyo Supervisor: Prof. Shin-Ichi Ito	Mar. 2026
M.S. Tokyo University of Marine Science and Technology (TUMSAT) Supervisor: Prof. Hisayuki Arakawa	Sep. 2021
B.S. Shanghai Ocean University Marine Technology	Jun. 2019
Exchange at TUMSAT	Apr. 2018–Mar. 2019

Academic Appointments

APN Workshop Member. The Asia-Pacific Network for Global Change Research Proposal Development Training Workshop on plastics	June 2025
Visiting Researcher. Ocean Dynamics Group (Isobe's Lab), Kyushu University in Kasuka, Kyushu	2024 (1 week)

Publications

5. **Xu H.**, Matsumura Y., Yamashita R., Nakano H., Ito S.
Heterogeneous seafloor deposition of heavy microplastics in the North Pacific estimated over 65 years
Marine Pollution Bulletin, 211 (2025) 117536

4. Celik M., Yang Z., **Xu H.**, Nakano H., Isobe A., Arakawa H.
Carbonyl index of miniaturized microplastics at the sea surface.
Marine Pollution Bulletin, 211(2025)117376.
3. **Xu H.**, Nakano H., Tokai T., Miyazaki T., Hamada H., Arakawa H.
Contamination of sea surface water offshore the Tokai region and Tokyo Bay in Japan by small microplastics.
Marine Pollution Bulletin, 185(2022)114245.
2. **Xu H.**, Arakawa H.
Determination of appropriate particle quantity on a filter for small microplastics analysis by microscopy.
Methodx 9, (2022)101646.
1. Wang Y., Nakano H., **Xu H.**, Arakawa H.
Contamination of seabed sediments in Tokyo Bay by small microplastics particles. Estuarine Coastal and Shelf Science, 261(2021)107552.

Projects

4. Long-term hisotrical variation and future estimation of microplastic distribution and transport in the North Pacific Ocean
Role (2024–2026): principal investigator
Funding: JPY 1,500,000
3. UTokyo-Nippon Foundation FSI Marine Litter Solution Project.
Role (2023–2025): focusing on theme 1 of Act 1, covering data interpretation of particle tracking model and Lagrangian framework learning
2. Elucidation of the process of marine microplastics fragmentation and removal from the surface water based on long-term time-series sample analysis.
Role (2023–2025): developing plastic emission model, and coupling it with particle tracking model that reproduces 65-year distribution and transport of microplastics.
1. Elucidation of collection characteristics of neuston nets toward standardization of marine microplastic sampling.
Role (2019–2021): developing the double Neuston net and testing feasibility in both inner bay and open ocean.

Awards and Honors

JSPS DC2 fellowship	2024–2026
Spring GX fellowship	2023–2026
CVASU Fish Festival 2025 Best Presenter	2025

Uchida Marine Science Fund Grantee	2025
JpGU 2024 Outstanding Student Presentation Award	2024
Mushashugyo Seminar Fund Recipient	2024
Idea Environment and Art Foundation Scholarship	2021

Professional Affiliations

The Oceanographic Society of Japan

Japan Geoscience Union

Academic Services

- Primary Convener of 'Ocean plastics an earth science perspective' session in JpGU 2025, May, Japan
- Primary Convener of 'Plastics in geoscience' session in JOS 2025, September, Japan

Conferences

11. The Joint Symposium of AORI and SOEST of UHawaii. Paired with Dr. Nikolai Maximenko. Stagnated surface microplastic concentration due to historical downsizing. Oral, Kashiwa, October 8, 2025.

10. The Fall Meeting of JOS 2025. Microplastic concentration and distribution in estuary of Tone River. Session: Plastics in geoscience. Oral, Hakodate, September 23, 2025.

9. CVASU Fish Festival 2025. Modelled distribution of heavy microplastics in the sediment of North Pacific. Session of Pollution and Toxicology, Oral, Chattogram, April 30, 2025.

8. Ocean and Atmosphere Symposium 2024. Distribution and transport pattern of microplastics in estuaries. Oral, Tokyo, March 12, 2025.

7. PICES 2024. Estimating the biological removal timescale of microplastics in the North Pacific. Session 9, Oral, Honolulu, Hawaii, October 30, 2024.

6. The Fall Meeting of JOS. Validation of particle tracking model for microplastic distribution. Section: Geoscience of marine plastics, Poster, Tokyo, September 18, 2024.

5. JpGU 2024. Estimating the surface removal speed of microplastics in the North Pacific Ocean. Section: MIS09-02, Makuhari Messe, Chiba, Oral, May 27, 2024.

4. Ocean Science Meeting 2024. Evaluating the actual sinking speed and transport mechanism based on particle-tracking model and sediment microplastics sample (20~5000µm). Index: CE42A-02, Oral, New Orleans, Louisiana, February 22, 2024.

3. The Fall Meeting of JOS. Numerical simulation of distribution of microplastics in sediments. Section: Geoscience of marine plastics, Oral, Kyoto, September 27, 2023.

2. The Fall Meeting of The Oceanographic Society of Japan. Construction of ocean simulation model incorporating small microplastics. Poster, Kyoto, September 25, 2023.

1. JpGU 2021. Attempt to collect fine microplastics on the sea surface using a double neuston net. Section: M-IS20-11, Online, Oral, June 5, 2021.

Oceanographic Cruises

KS-25-12: Performance verification test of equipment for joint research cruises. R/V Shinsei Maru, September 7–10, 2025, Sanriku offshore. Deployment/operation of piston corer, asura corer.

YK-24-13: Revealing the current state of plastic pollution on the seafloor of the Sea of Japan. R/V Yokosuka, August 12–24, 2025, Sea of Japan. Deployment/operation of neuston net, AUV Shinkai 6500.

KS-24-19: Understanding the distribution characteristics of piscivorous fishes in the Kuroshio Extension region and front-induced changes in ecosystem structure. R/V Shinsei Maru, September 21–October 1, 2024, Kuroshio Extension. Deployment/operation of neuston net, CTD rosette sampler, Norpac net, pole fishing.

KH-24-2: Performance verification test of equipment for joint research cruises. R/V Hakuho Maru, July 2–6, 2024, Shimizu offshore. Deployment/operation of Gravity corer, piston corer

KS-24-9: Study on water mass mixing and nutrient supply on the mixed water area at the confluence of the Isoguchi Jet and the Oyashio Current. R/V Shinsei Maru, June 3–15, 2024, Isoguchi Jet. Deployment/operation of neuston net, CTD rosette sampler, VMP250, Norpac net.

KS-23-16: Distribution and transport processes of terrestrial materials on the shelf off the Tone River in Summer. R/V Shinsei Maru, September 15–22, Tone River estuary. Deployment/operation of neuston net, multiple corer, CTD rosette sampler.

KS-23-11: Elucidating missing plastics in the open ocean and coastal sea areas. R/V Shinsei Maru, July 17–28, 2023, Western Kyushu offshore and recirculation gyre off the Shikoku. Deployment/operation of neuston net, multiple corer, large volume pump, CTD rosette sampler, Norpac net, MOCNESS, vertical multiple plankton sampler.