Data, Observation & Modelling

Thu. Nov 12, 2026 4:00 PM - 5:30 PM JST | Thu. Nov 12, 2026 7:00 AM - 8:30 AM UTC | Room A (Oshidori) (2F)

Oral A3 Data-Driven Emulators

Chair: Alain Arnaud, Deanesh Ramsewak

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[hyhteQZr-04] The Atlas of Ocean Microplastics (AOMI): Harmonized Observational Data for Marine Microplastic Research and Digital Twins of the Ocean

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As research on ocean microplastics continues to expand, data remain highly fragmented across studies, regions, and methodologies, preventing synthesis, comparison and policy relevance of this data. Therefore, the Atlas of Ocean Microplastics (AOMI, https://aomi.env.go.jp/) was developed to provide a unified and accessible platform for marine microplastic data.
The AOMI dataset provides global measurements of microplastics collected historically by researchers worldwide, including particle counts (expressed as particle counts per seawater volume or survey area) and mass concentrations (expressed as mass per area). In addition, it also provides gridded data of microplastic surface distribution corrected for wind and wave driven mixing, following Isobe et al. (2021). The current dataset includes ~19, 351 points worldwide. While AOMI has improved data comparability, significant spatial gaps remain, especially in the East Asian Seas, the South China Sea, the Indian Ocean, and the Southern Ocean.
This presentation introduces AOMI, highlighting its structure, data integration framework, and ongoing development. The platform enables users to visualize spatial and temporal patterns of microplastic distribution and to access curated datasets for further analysis. We discuss progress achieved to date, key challenges in harmonizing heterogeneous environmental datasets, and future directions for expanding coverage and standardization.
Beyond its role as a global data repository, AOMI can provide an observational foundation for developing and validating digital twins of the ocean. Its standardized microplastic observations can be integrated with numerical ocean models, particle-transport simulations, and environmental datasets to improve representations of microplastic transport and distribution. Such integration can support model validation, identify observational gaps, and enable scenario-based assessments of microplastic accumulation. By connecting harmonized observations with dynamic ocean models, AOMI can support emerging digital twin applications and contribute to improved scientific assessment and evidence-based management of marine microplastic pollution.

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