Data, Observation & Modelling

Fri. Nov 13, 2026 2:00 PM - 3:30 PM JST | Fri. Nov 13, 2026 5:00 AM - 6:30 AM UTC | Room A (Oshidori) (2F)

Oral A5 Ocean Digital Twins, Data Architectures and AI-Enabled Approaches

Chair: Philipp S. Sommer, Tomoki Tozuka

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[7MgO-EqD-05] JAXA's Earth Observation Data Infrastructure for Digital Twins

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Earth observation satellite data provide a fundamental data infrastructure for digital twins by archiving the state of the Earth from the past to the present and supporting change detection, understanding current situation, and future prediction. JAXA develops and operates a wide range of Earth observation satellites and has continuously advanced the observation, calibration/validation, archiving, and distribution of satellite data.
To facilitate the development of digital twins and AI-driven applications, JAXA has been exploring scalable data management and dissemination approaches, including cloud-native architectures and API-based access services. These efforts are expected to promote wider adoption of Earth observation data, expanding the user community beyond traditional Earth science researchers to include private-sector stakeholders developing operational solutions and value-added services.
Recent advances in cloud computing enable large-scale analysis of archived satellite data in combination with numerical models and AI technologies, supporting both research and service development. Furthermore, the integration of satellite observations with measurements from ground-based sensor networks is accelerating the creation of practical decision-support services.
This presentation highlights JAXA’s recent activities, technological advancements, and emerging applications in satellite data infrastructure, generative AI, foundation models for Earth observation data analysis, and integrated Earth observation systems designed to contribute to digital twin ecosystems.

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