OSID & IESS

Thu. Nov 12, 2026 4:00 PM - 5:30 PM JST | Thu. Nov 12, 2026 7:00 AM - 8:30 AM UTC | Room D (Icho) (3F)

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Chair: Bruno Buongiorno Nardelli, Akira Nagano

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[OECfne_2-05] African Ocean Biodiversity Atlas: Advancing Digital Twins of the Ocean Through AI-Enabled Biodiversity Intelligence and Community Knowledge

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Digital Twins of the Ocean (DTOs) are transforming ocean science by integrating diverse datasets into dynamic digital environments that support ecosystem monitoring, forecasting, and evidence-based decision-making. However, significant data gaps and fragmented biodiversity information continue to limit the representation of African marine and coastal ecosystems within emerging global digital ocean infrastructures. Addressing these gaps requires interoperable platforms that integrate ecological observations, environmental data, and local knowledge into accessible digital systems.

The African Ocean Biodiversity Atlas (AOBA) is an AI-enabled geospatial platform designed to strengthen biodiversity intelligence for Africa's marine and coastal ecosystems while contributing to the development of Digital Twins of the Ocean. The platform integrates marine biodiversity records, habitat information, Earth observation data, oceanographic variables and community-generated observations within an interoperable framework aligned with international ocean data standards. Artificial intelligence and machine learning are applied to automate species distribution modelling, biodiversity hotspot mapping, habitat classification, ecological change detection, and environmental risk assessment.

A distinguishing feature of AOBA is the integration of Indigenous and local ecological knowledge alongside scientific observations, creating a more comprehensive digital representation of marine ecosystems. The platform supports community-led marine conservation, locally managed marine protected areas, ecosystem restoration, sustainable fisheries management, marine spatial planning, and biodiversity policy development by providing stakeholders with real-time, decision-ready information.

The African Ocean Biodiversity Atlas (AOBA) is a UN Ocean Decade endorsed project dedicated to integrating biodiversity data, advanced analytics, and community knowledge. It exemplifies how regional digital infrastructures can enhance the biodiversity component of Digital Twins of the Ocean. This initiative aims to foster more inclusive, interoperable, and scalable digital ocean ecosystems, thereby improving environmental monitoring, supporting climate resilience, and enabling informed decision-making for sustainable ocean governance across Africa.

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