Cross-Sector Applications & Solutions

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

Oral D5 Corss-Sector Applications & Solutions

Chair: Klaas Deneudt, Michio Kawamiya

2:15 PM - 2:30 PM JST | 5:15 AM - 5:30 AM UTC

[8uJbD0lg-02] The SURIMI Framework for Model Coupling

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The presentation introduces the SURIMI model coupling framework, a generic solution to achieve multidimensional simulation model interoperability, and showcases the framework's demonstration in a real-world use case of the Northwestern Mediterranean fisheries sector.

The coupled simulation models are organized in three thematic layers:
The ecological layer consists of Ecopath with Ecosim (EwE) - a spatially explicit food web model representing the ecosystem through energy flows, taking into account oceanographic conditions;
The assessment layer consists of CMSY++ - a stock assessment model for quantitative predictions for fisheries management and specifically with respect to stock biomass and fishing pressure applied by the fleets;
The socio-economic layer consists of:
• POSEIDON - an agent-based model of fishing fleet behaviour dynamics such as fishing activity, catches as well as interactions with the environment and regulations,
• Market dynamics model – a newly developed system dynamics model to estimate fish prices at various local (port) markets, and
• The Value-Chain model - a high-level representation of distribution and processing of marine catches, producing final goods for sale and consumption.

The models are coupled to represent fisheries as a complex adaptive socio-ecological system. The local digital twin allows users to run what-if scenarios related to climate change and mitigation strategies, discovering trade-off between subsystems (e.g., short vs long term impacts on the economy and marine ecology).

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