EDITO

European Digital Twin Ocean

EDITO: two innovative projects for an operational European Digital Twin of the Ocean

landSeaLot Kickoff

Yann Drillet, MOi team and partners from EDITO projects

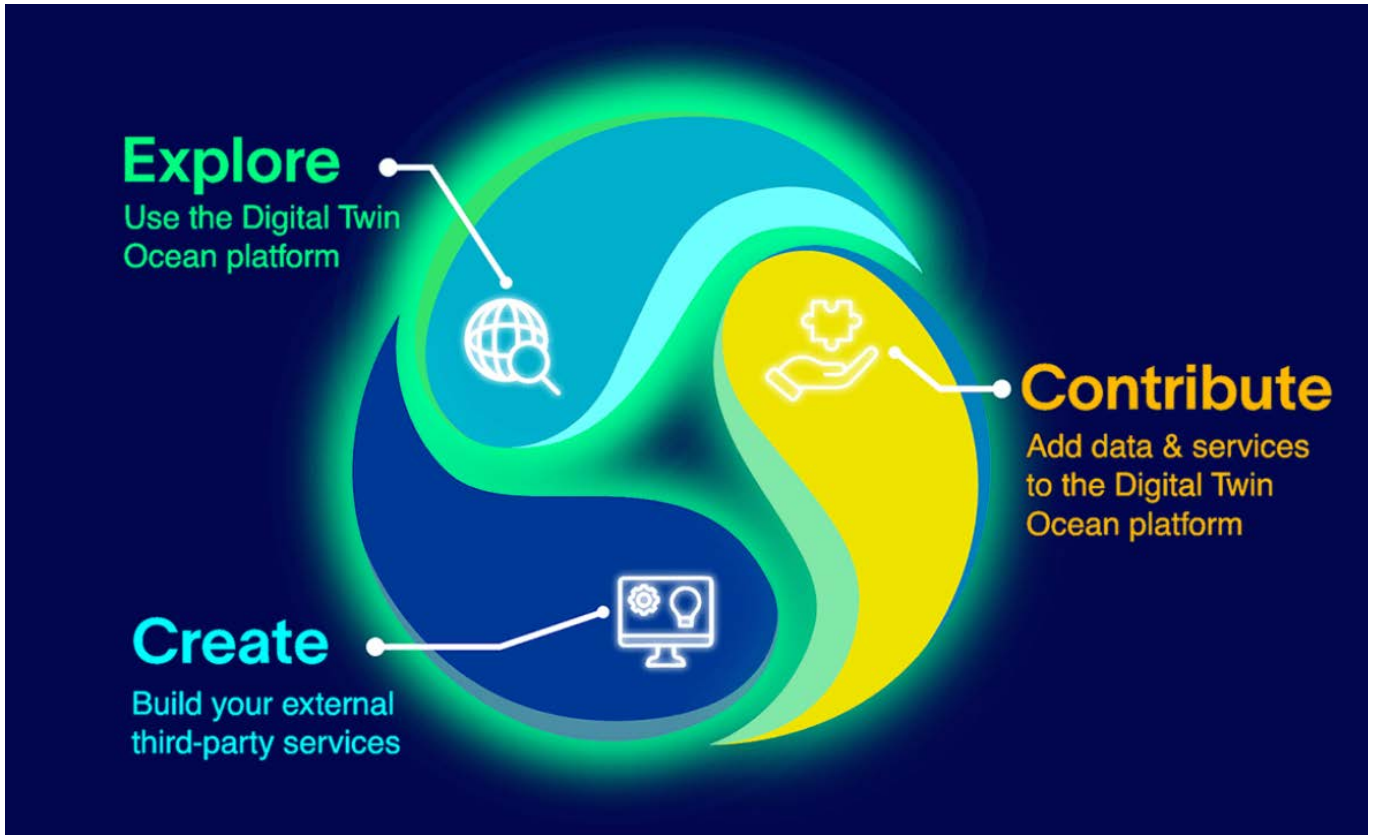
MERCATOR OCEAN INTERNATIONAL

https://www.edito-modellab.eu/

What EDITO will deliver ?

An integrated platform

New services

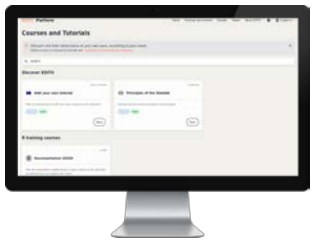


Get started with EDITO

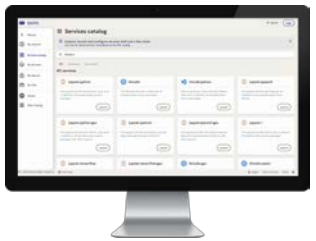
Home

https://tutorials.digitaltwinocean.edito.eu

Tutorials



Datalab



Viewer

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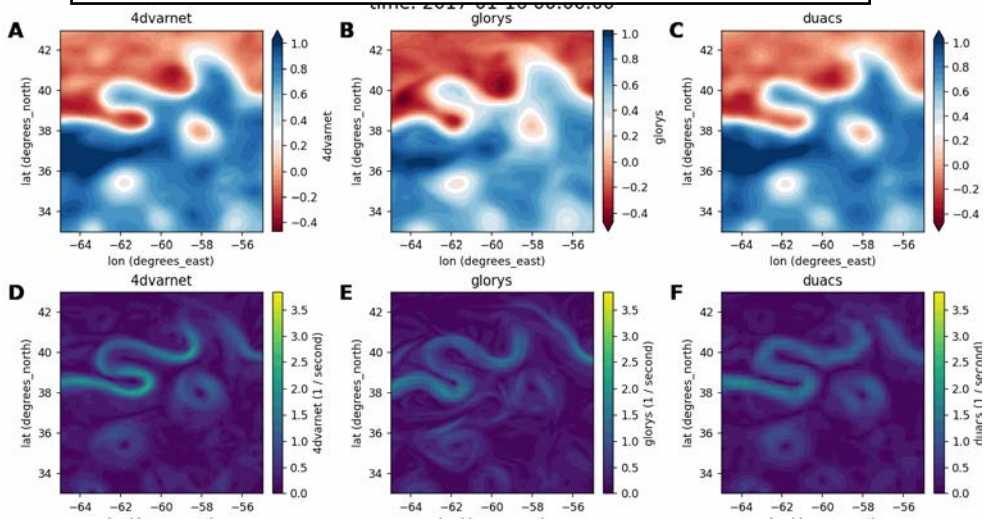
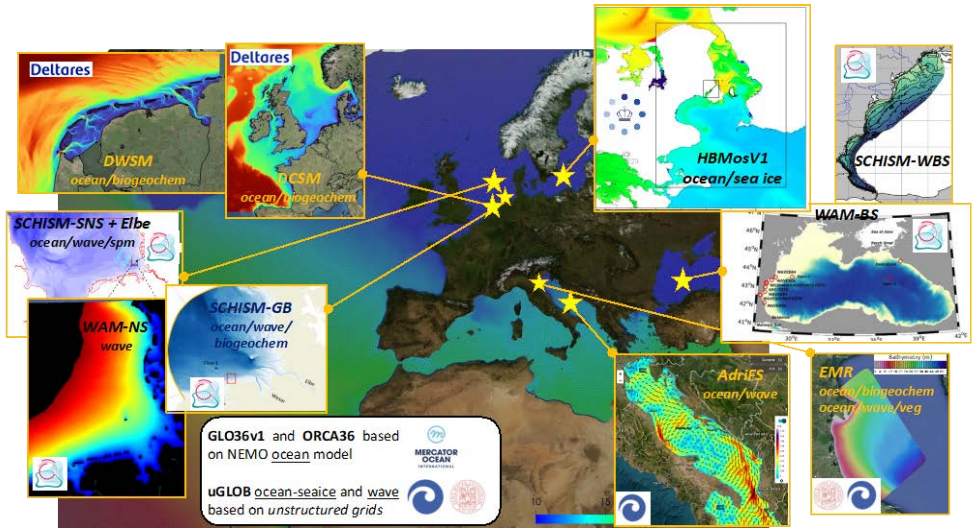
Models & emulators





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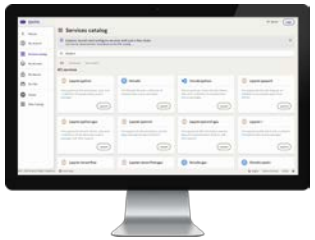
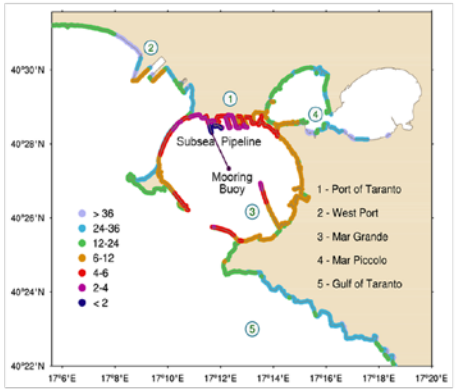
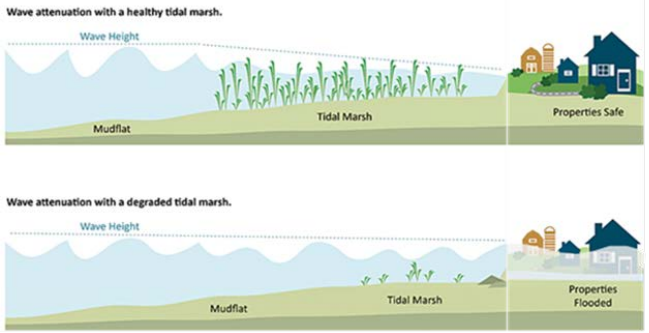


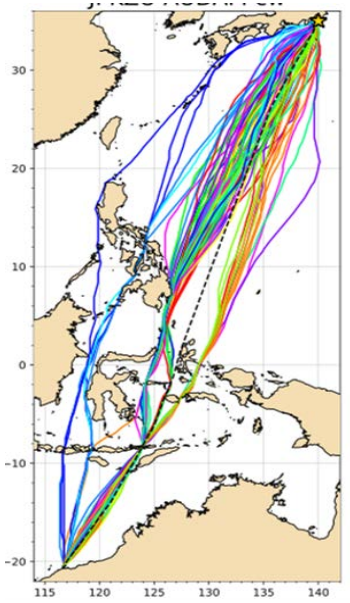
Applications : NBS, hazard mapping, ship routing, pollution



Arrival time (hours) for the beached oil to exceed the socioeconomic threshold of 0.1 g/m



Source: Esri ArcNews, "GIS Helps Integrate Coastal Hazard Risk and Sea Level Rise," 2014



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THANK YOU

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Digital Twin Ocean, The European Perspective

A core infrastructure, conceived as a public good and service, to support the implementation of the marine Green Deal objectives

At European level: hundreds of initiatives, Regional, National and European marine projects and infrastructures, Private initiatives, Monitoring services, Citizen science campaigns…. are committed to study and protect the marine ecosystem.

The complexity is to help them to work together and with other international initiatives.

Need for user-driven powerful tools, fit for digital age, to strengthen ocean knowledge and ocean management: by integrating and connecting wide range of data and models (from physics to socio-economics) with cloud infrastructures, HPC, AI and services.

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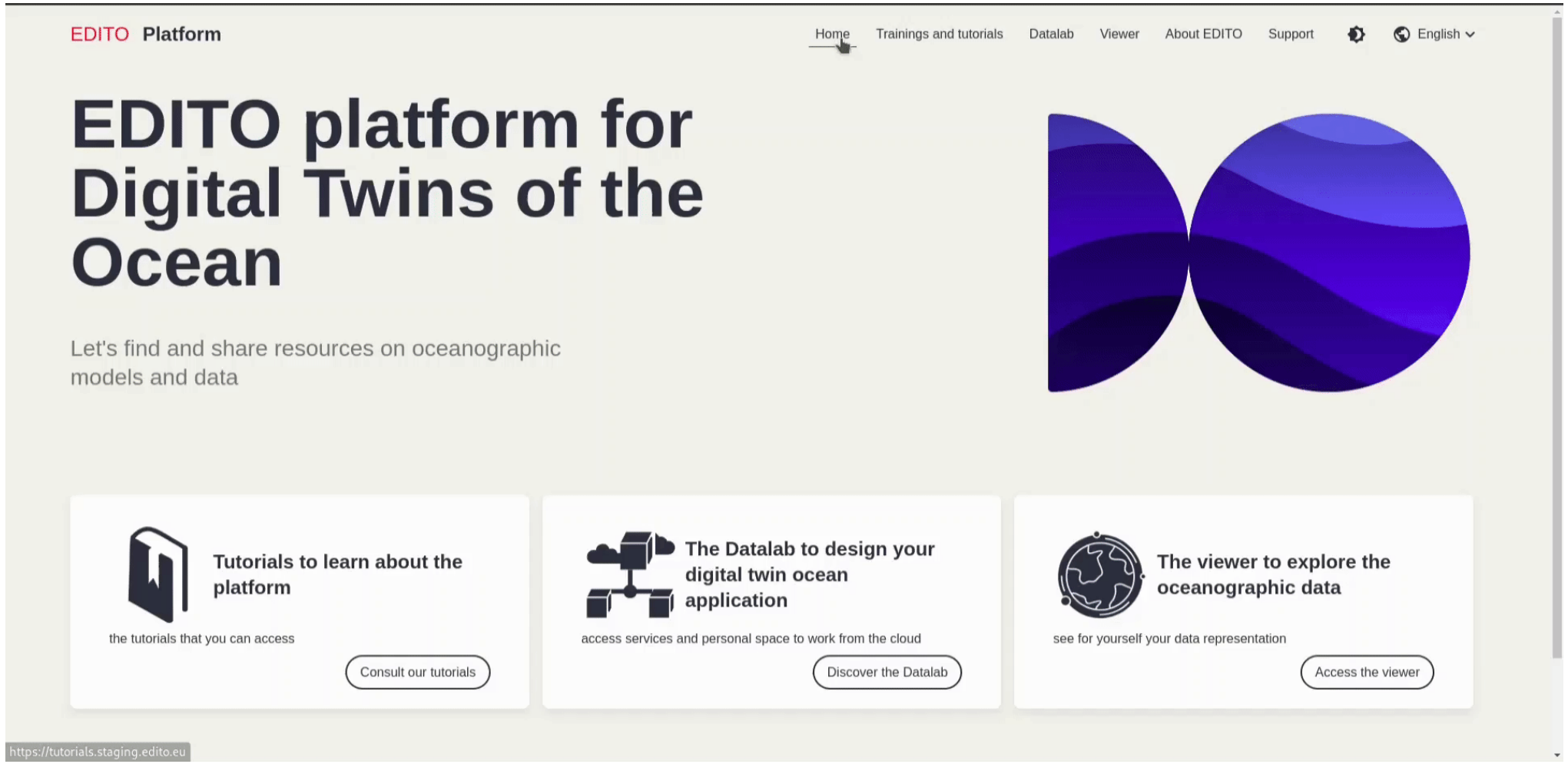

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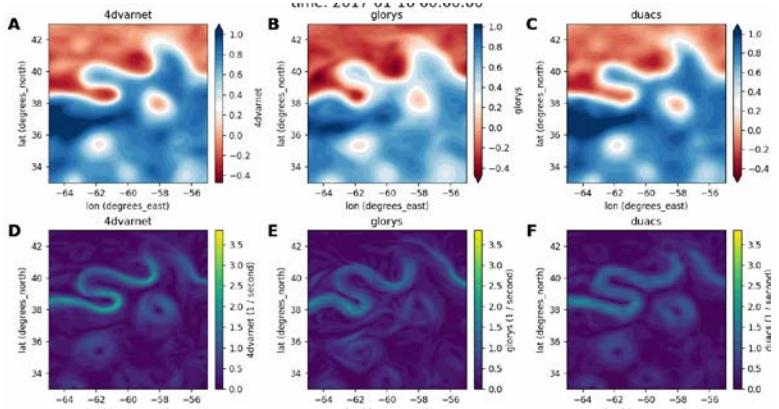
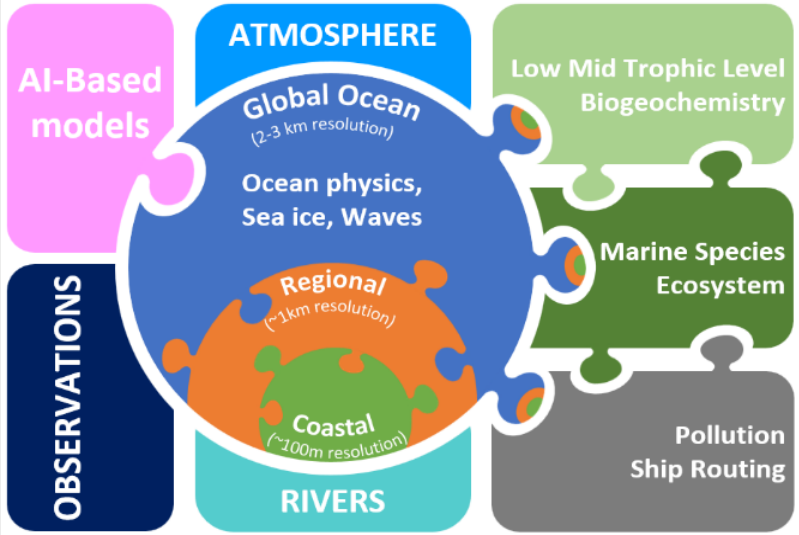
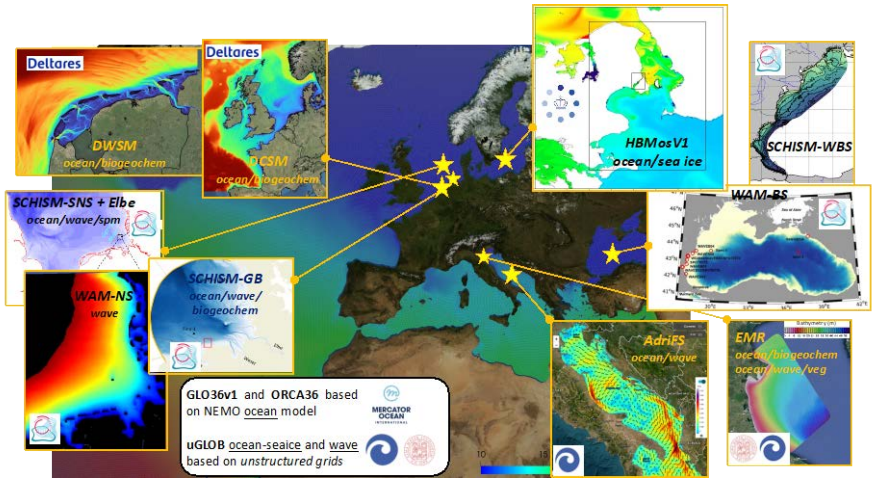
Models developed in EDITO

Deep Differentiable Emulators (DDEs) for ocean modelling and forecasting that will provide **native AI building blocks for the hybrid digital twins of the ocean**

Numerical models for hydrodynamics and waves and develop the **next generation of ocean model** configurations optimised for European HPC hardware and the Digital Twin usage.







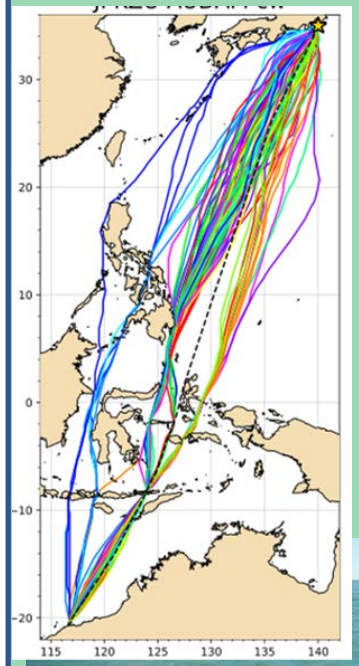
Demonstration based on FA and WiS

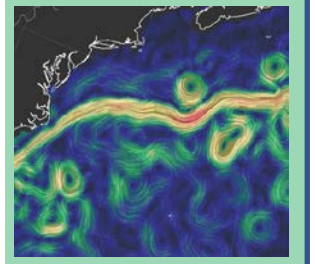
1. Marine Protected Areas & biodiversity

Habitat suitability and biodiversity indicators

2. Ship routing for zero carbon

Using forecasts of ocean waves and currents to reduce CO2 emmissions



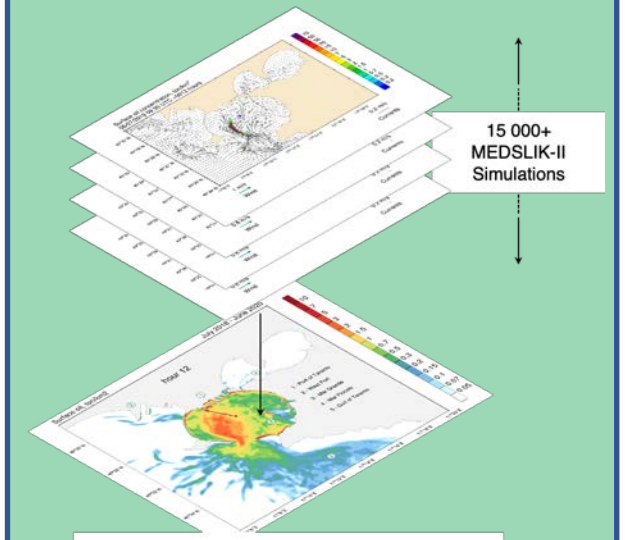


^ocean forecast

<output of VISIR-2 ship routing model for green corridor Japan-Australia

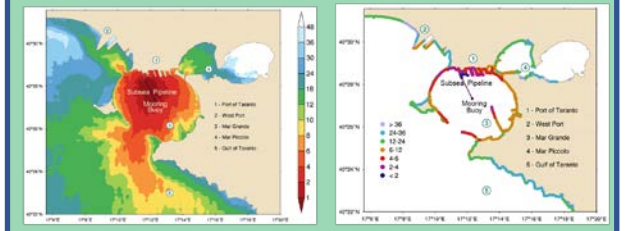
3. Zero pollution

Simulating release of oil from ships and plastics from land



Average oil concentration map (e.g., for 12th hour)

Arrival time



Arrival time (hours) for the surface oil to exceed the socioeconomic threshold of 0.01 g/m²

Arrival time (hours) for the beached oil to exceed the socioeconomic threshold of 0.1 g/m

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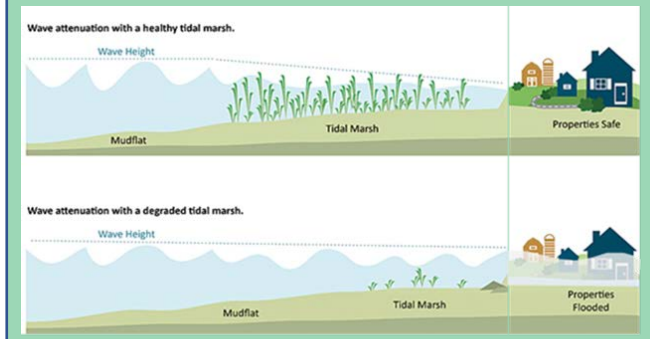
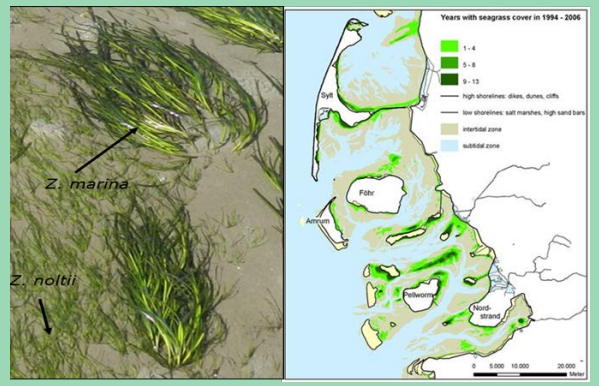
Demonstration based on FA and WiS

1. Nature Based Solutions for biodiversity and coastal hazards

Impact of extreme events on ecosystems protection and mitigation

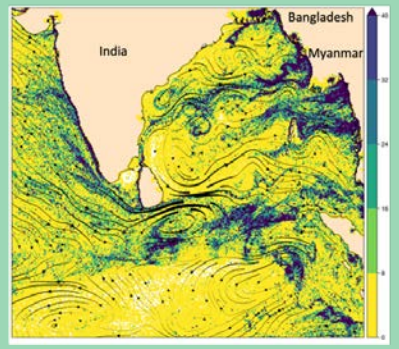


Source: Esri ArcNews, "GIS Helps Integrate Coastal Hazard Risk and Sea Level Rise," 2014



2. Marine plastic for Zero pollution

Effects of plastic pollution levels reductions in LOC in the marine environment



3. Aquaculture for Zero carbon

Marine aquaculture offers opportunities for emissions reduction and the potential for carbon sequestration. .