OPENCoastS^{+}: on-demand forecast of circulation and water quality in coastal regions

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Context and motivation for a digital water resources strategy

- Anticipate contamination events and support emergency actions
- Support water economy daily tasks and leisure & recreation
- Guide management to minimize risks in the coastal areas

Coastal Digital Twins:
user-centered, on-demand framework for decentralized ocean-to-coast knowledge creation through modeling, forecasting, data analysis and service provisioning

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Digital water resources: coastal forecasting

Managers

Companies

Researchers

Public

….

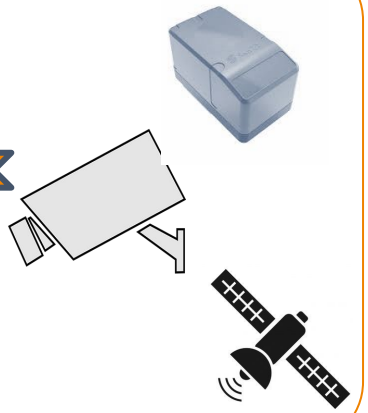
Digital infrastructures: EOSC, PRACE,...

OPENCoastS

WIFF
Water Information and Forecasting Framework

WORSICA

AI



SUSTAINABLE DEVELOPMENT GOALS

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

ESMF

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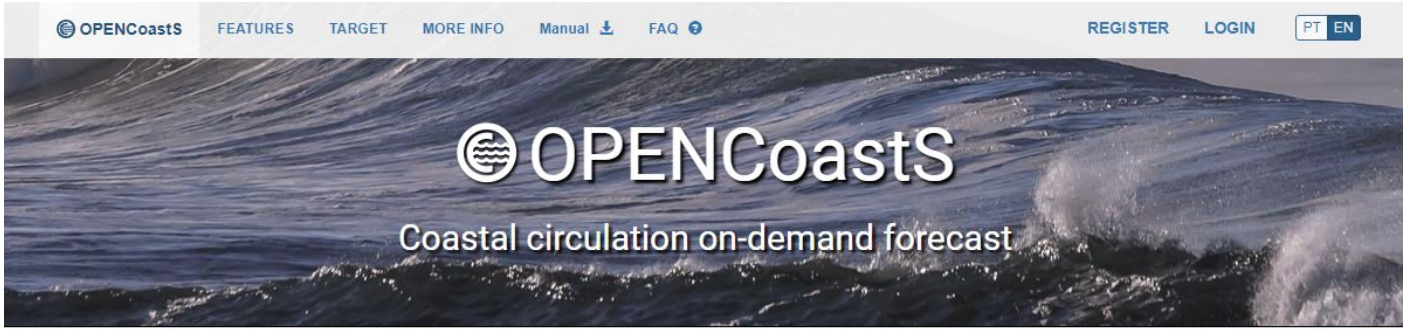
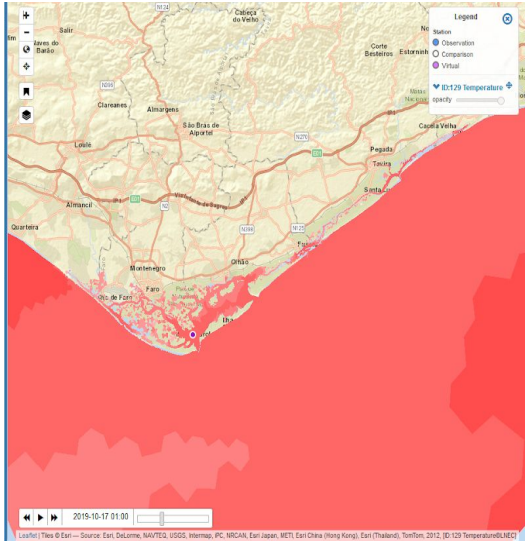


It assembles on-demand circulation forecast systems for selected coastal areas and generates daily forecasts of water levels, wave parameters, 2D and 3D velocities, and 3D salinities, temperatures and water quality variables over the region of interest for 48 hours, based on numerical simulations of all relevant physical and biogeochemical processes



OPENCoastS PLATFORM:

https://opencoasts.ncg.ingrid.pt/

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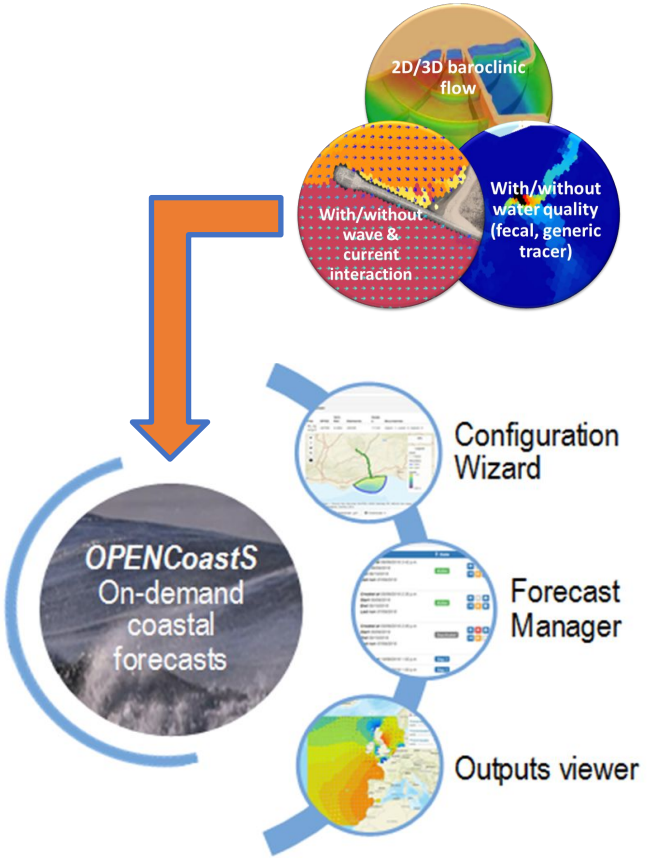
OPENCoastS+

- OPENCoastS and the connected data sources are all built following data standards in the coastal and oceanographic communities
  - Allows for a swift assembly of new functionalities to address user needs and allows for the construction of added value services on top of OPENCoastS' outputs by other researchers or industry
  - Capacity to open application results in the future if the users allow it
  - Allows for easy integration with similar tools towards ensemble analysis



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OPENCoastS+

- OPENCoastS is an open service both for usage and access to software
  - Users on all continents, facilitating knowledge creation equally for all
  - Allows for onsite application to address confidential deployments

- Uses open access computational resources at EOSC to setup, run and validate forecast systems at any location worldwide

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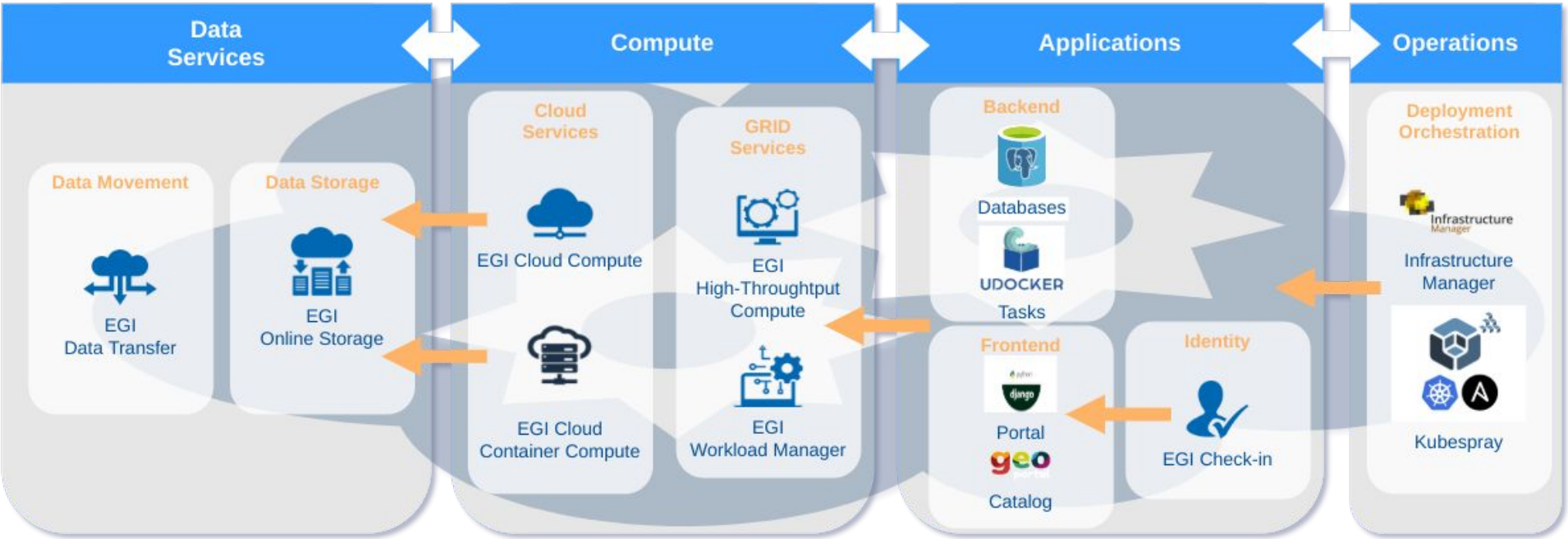
OPENCoastS deployment over EGI



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A new paradigm in coastal forecasting to empower users

A service to:

- Make the implementation of coastal forecasts fast and easy: build forecast systems for a location chosen by the user, using a browser-based, user-friendly, interface
- Make the service flexible in its configuration (forcings, processes and models)
- Flexible IT architecture that can grow to additional processes
- Take advantage of the EOSC infrastructure and core-services to provide the required computational resources

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Thank you!!!

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