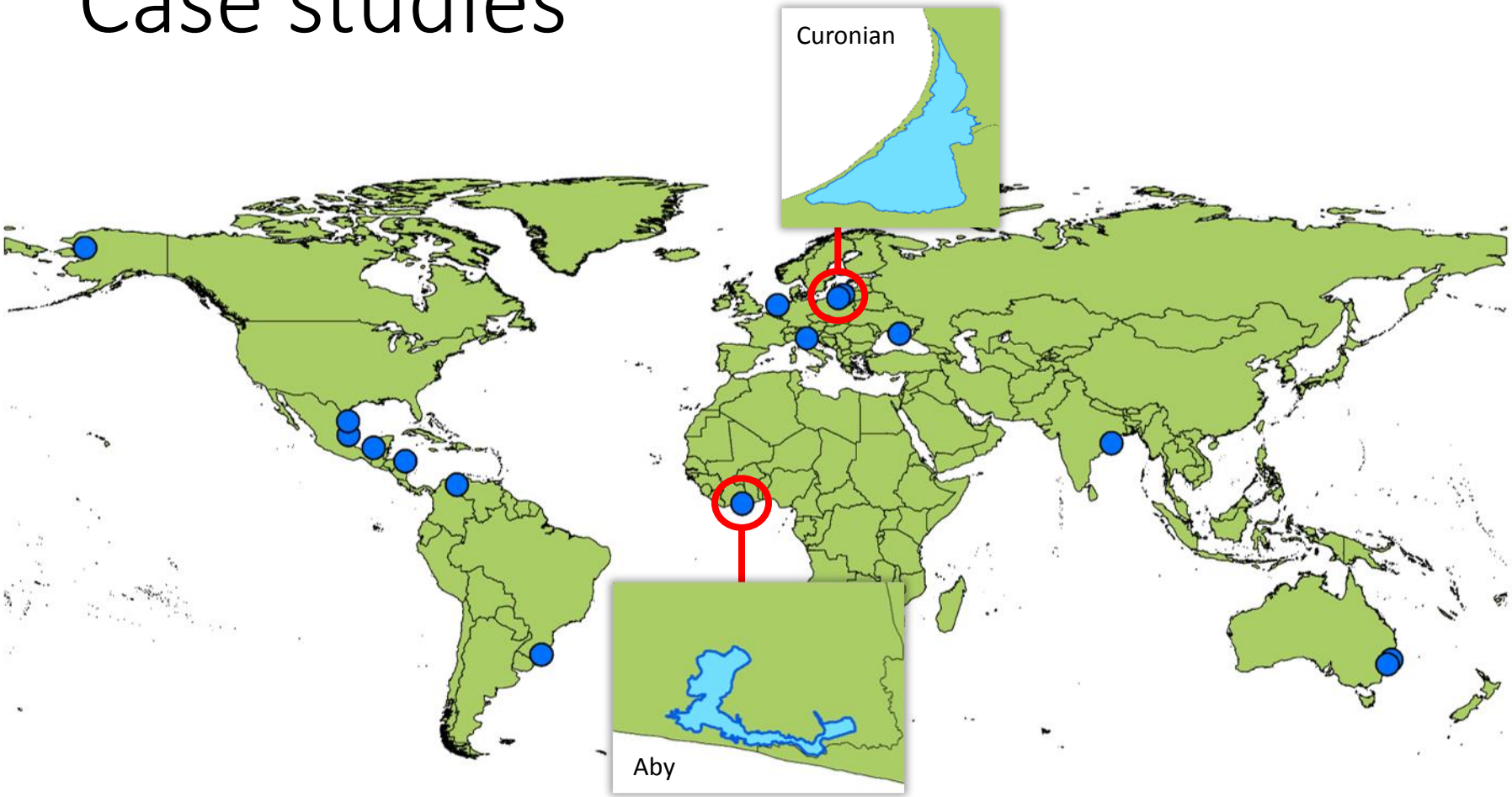
Earth Observation (EO) and its potential for lagoon studies

EIRINI POLITI

WORKSHOP: Understanding the effect of environmental and climate change on coastal lagoon management; Potential and challenges for Earth Observation
12-14th September 2017, MaREI centre, Environmental Research Institute, UCC, Ringaskiddy, Co. Cork, Ireland

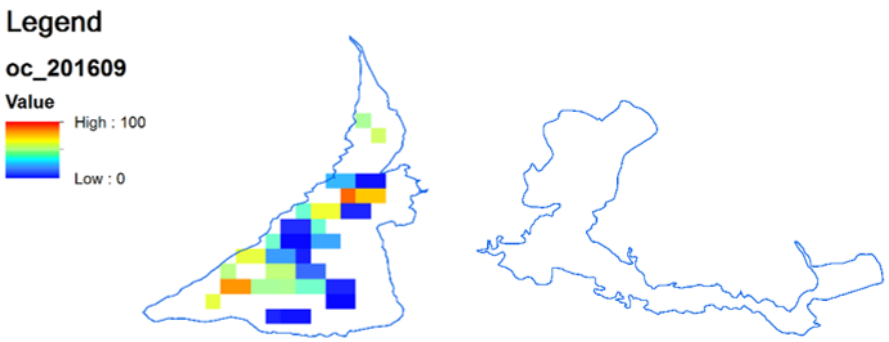
Case studies



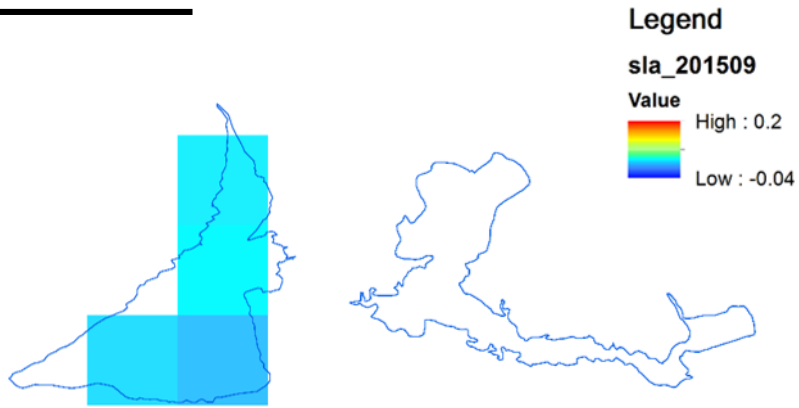
Questions to address

- Type of dataset
- Spatial scale
- Temporal scale
- Time periods
- Sampling design
  - Random pixel
  - Multiple pixels (which, where?)
  - Average
- Uncertainty/Validation
- Where can I access/process data?

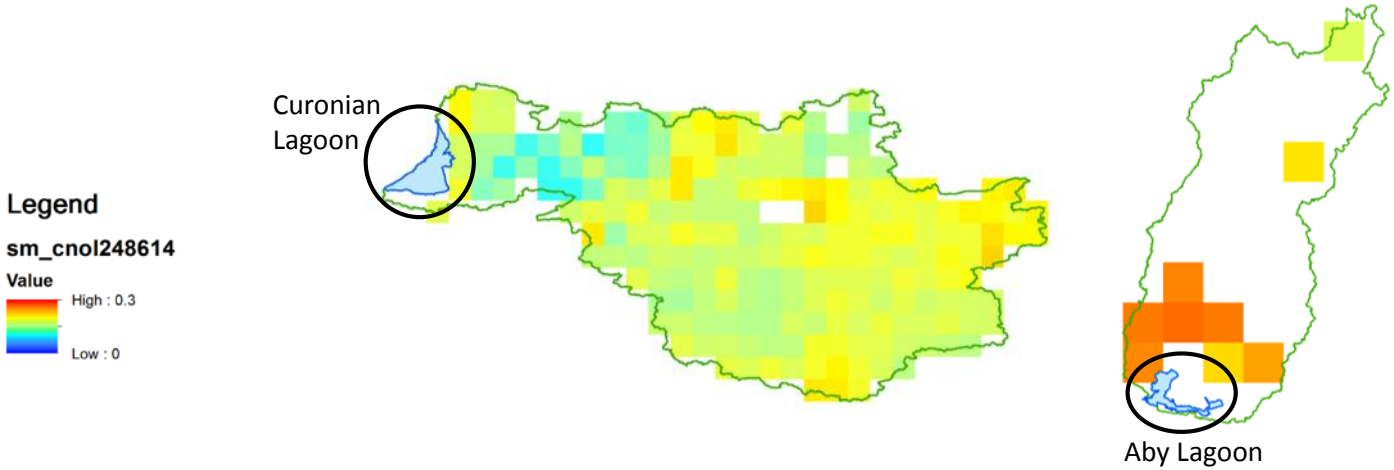
Spatial scales



Ocean Colour (OC): ESACCI-OC-L3S-OC_PRODUCTS-MERGED-1M_MONTHLY_4km_GEO_PML_OCx_QAA-201609-fv3.tif

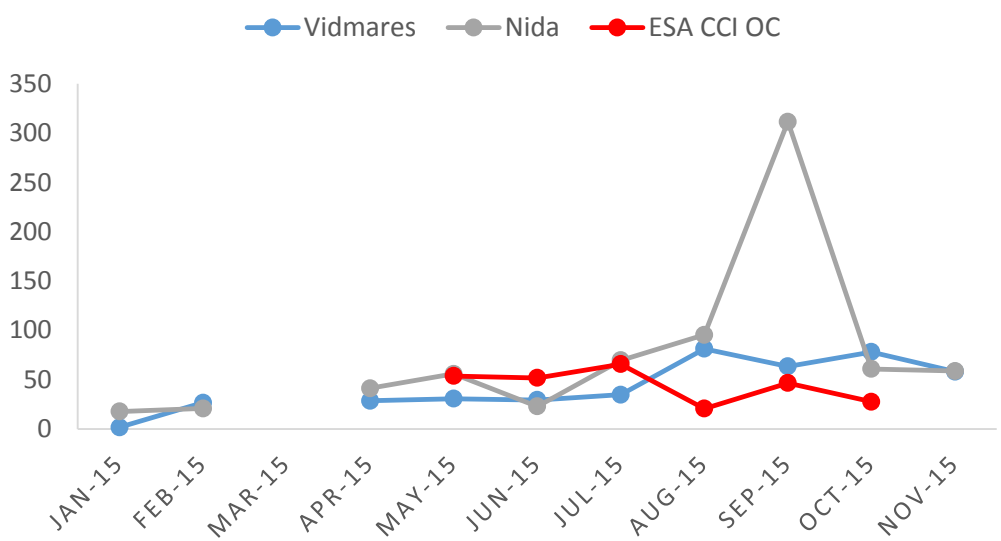


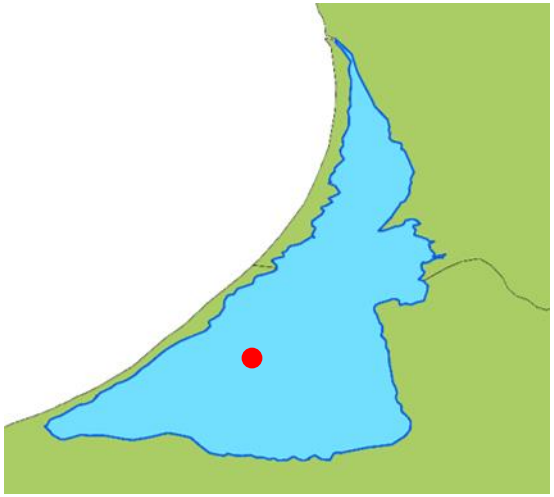
Sea Level Anomalies (SLA) calculated after merging all altimetry mission measurements into monthly grids with a spatial resolution of 1/4 of degree.



Soil Moistire (SM): ESACCI-SOILMOISTURE-L3S-SSMV-COMBINED-20150913000000-fv03.tif

Temporal scales

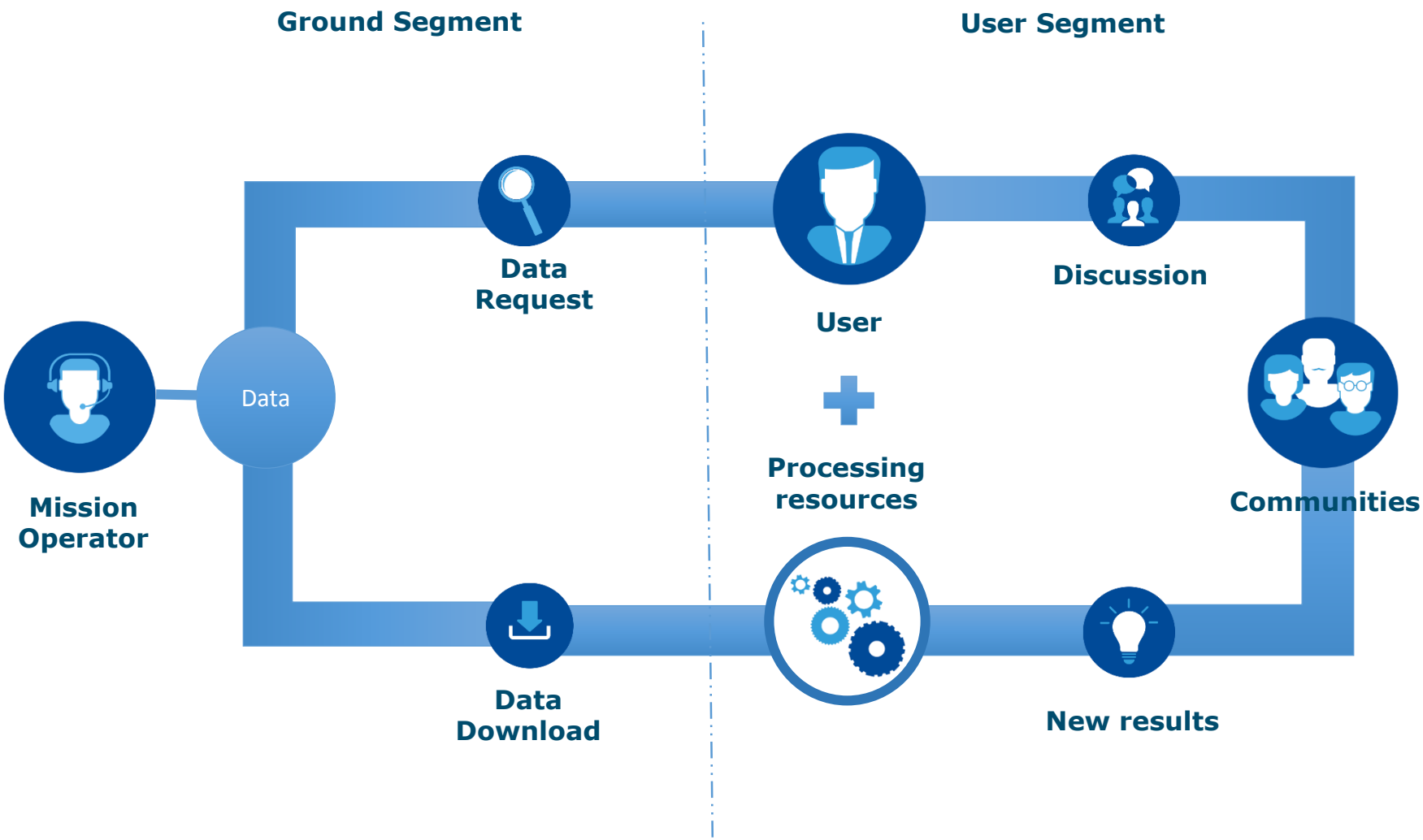




Curonian Lagoon

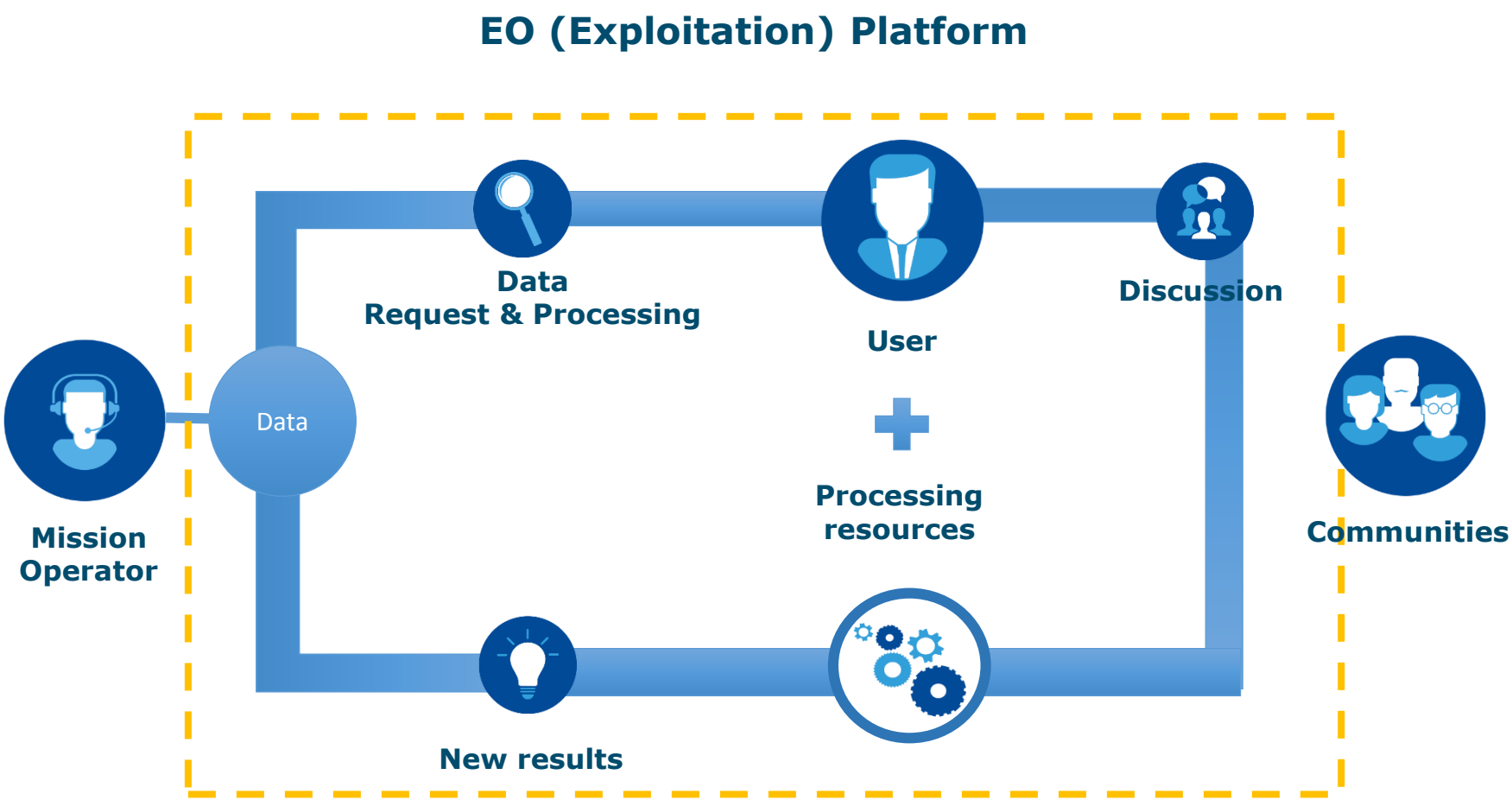
Big Data Cloud Processing Platforms

Current data exploitation



Slide: Courtesy ESA

Future (big) data exploitation



Slide: Courtesy ESA

Co-ReSyF – Coastal Water

co-resyf.eu

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CoReSyF

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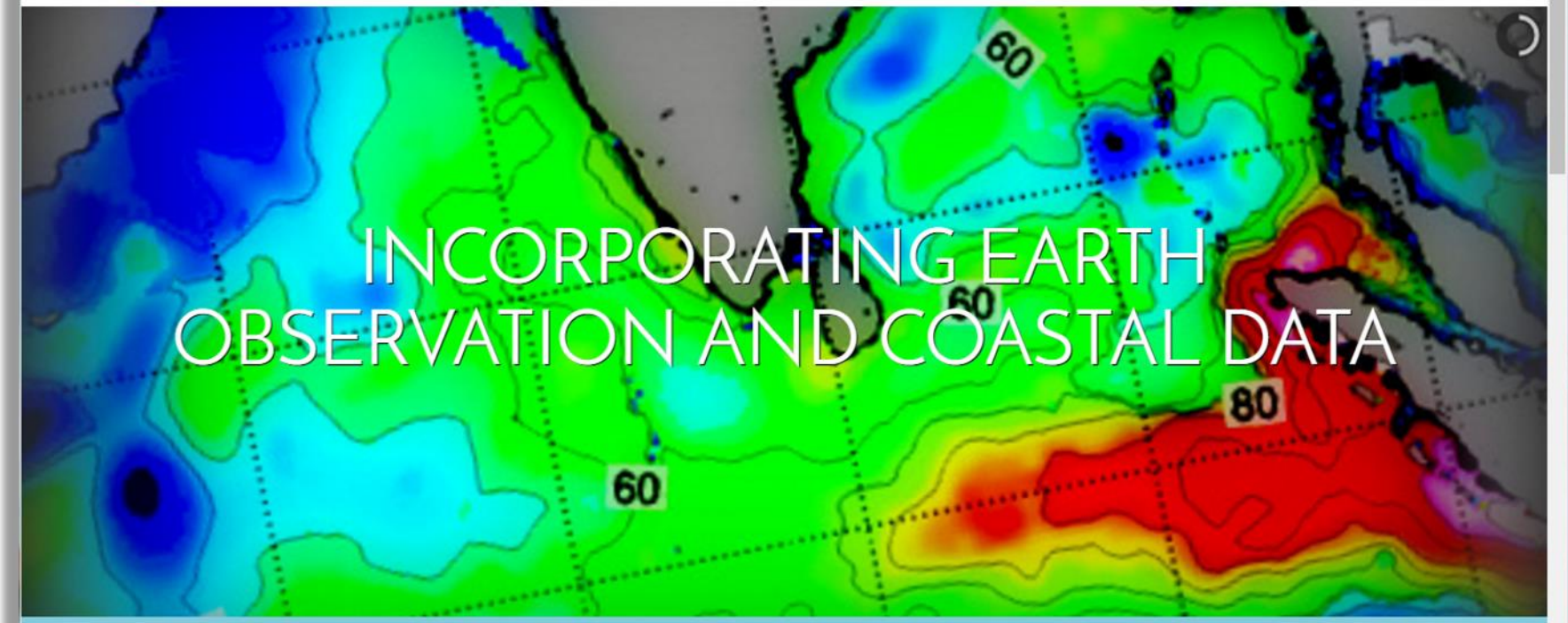


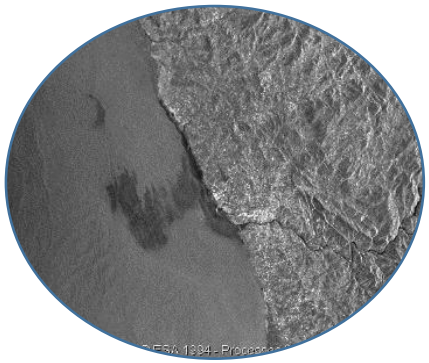
INCORPORATING EARTH OBSERVATION AND COASTAL DATA

Coastal Waters Research Synergy Framework

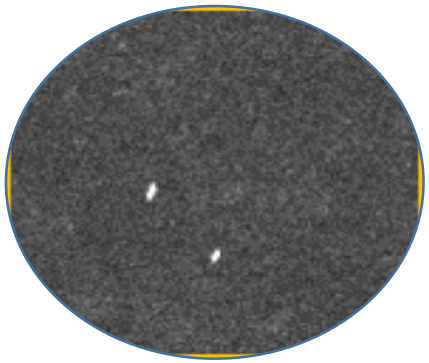
Unlocking Our Potential for Coastal Innovation Growth

Core Research Applications

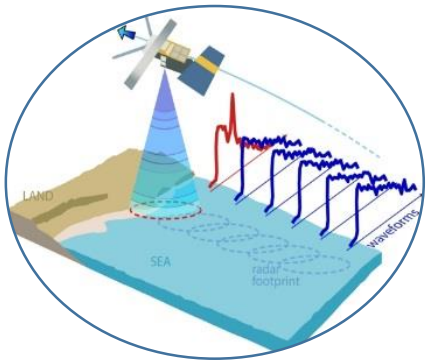
Oil spill detection



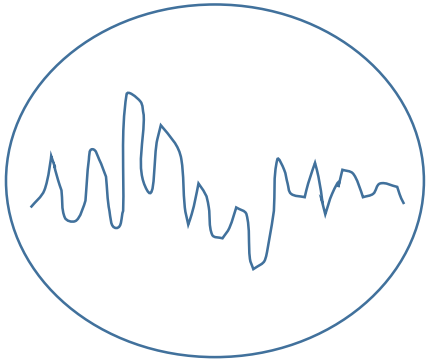
Vessel detection



Coastal Altimetry

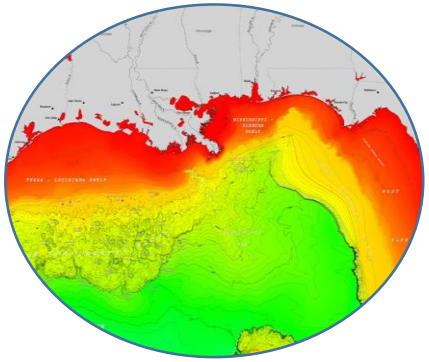


Hyper-temporal Time Series



Water quality

Optical & SAR Bathymetry



Coastal TEP | Coastal Ther

coastal-tep.eo.esa.int

coastal tep

Coastal Thematic Exploitation Platform

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Background

Data & Services

Activities

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Types of ESA Exploitation Platforms

Thematic exploitation platform (TEP)	Regional (multi-thematic) exploitation platform	Technological exploitation platform	Mission/Sensor exploitation platform (MEP)
Focusing on a geophysical theme	Focusing on a regional theme	To assess new technologies to be rolled out to the exploitation platforms	Tailored to a particular mission/sensor community

geohazards tep

hydrology tep

polar tep

urban tep

coastal tep

forestry tep

+ Food security

How are C-TEP and Co-ReSyF different to other platforms?

Functionality	amazon web services	Google Earth Engine	Co-ReSyF + C-TEP
Access to EO data catalogues	✓	✓	✓
Cloud infrastructure	✓	✓	✓
Operational services	✓		✓
Research & education		✓	✓
Core research applications			✓
Upload own algorithm (ready)	✓	✓	✓
Supports algorithm development		✓	✓
Visualisation tools		✓	✓
Analysis tools		✓	✓
Use GUIs to manage processing chains			✓
Supports various programming languages	?		✓
Sharing and collaborations on platform			✓

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Thank you

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