


# System of Systems for monitoring economy related parameters and a Digital Twin of the Ocean development - reference to the Black Sea

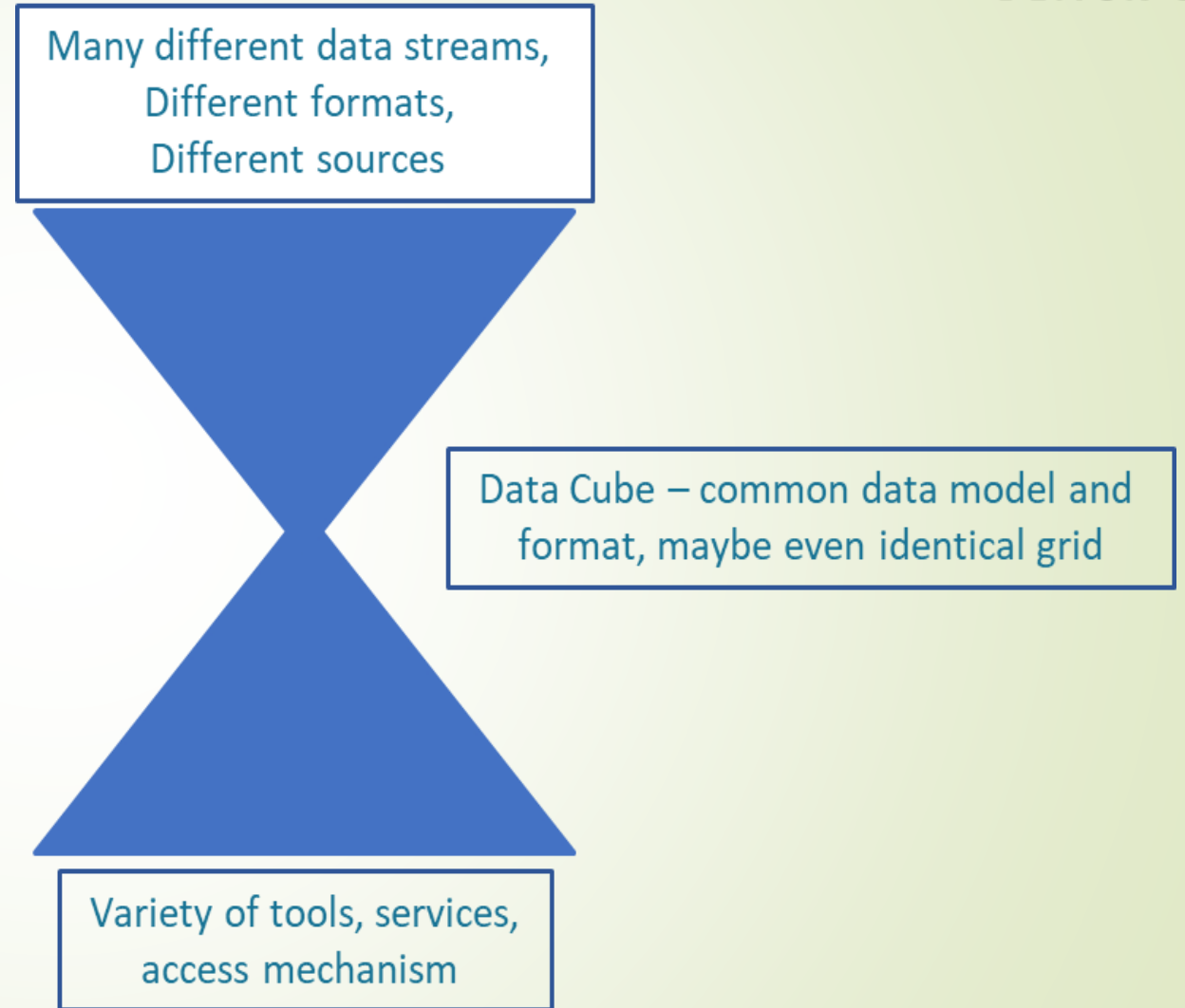
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# What is the System of Systems?

- Provides one single portal for stakeholders tailored to their needs (<https://www.doorsblacksea.eu/>)
- Brings together different data streams
- Produces harmonised spatial and temporal data products
- Supports knowledge transfer, growth and collaboration for sustainable growth and prosperity
- Developed under DOORS (Developing Optimal and Open Research Support) project (2021-2025), focused on the Black Sea

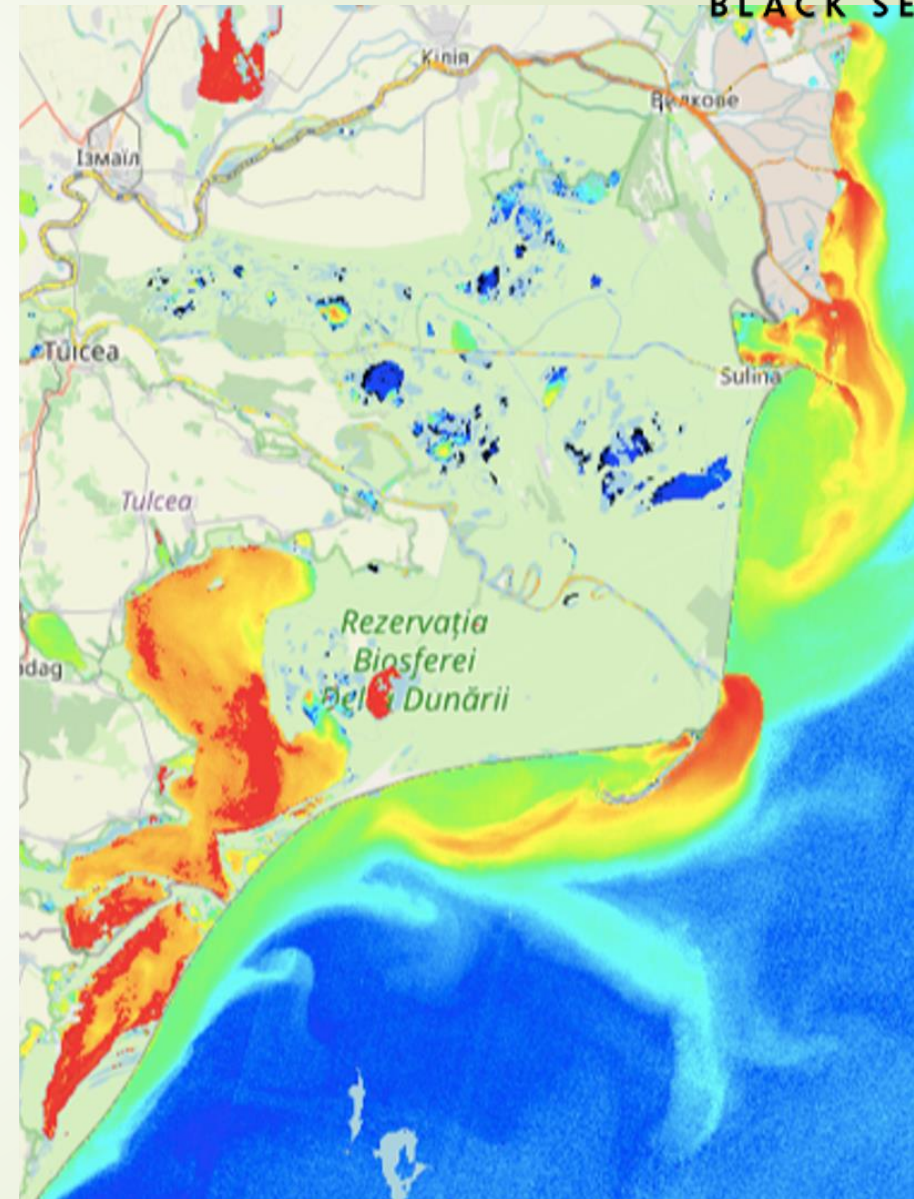


# What is the System of Systems?

- A web based interactive platform that brings together data from diverse sources including archived data, live data streams, satellite data and models to provide the intelligence to allow for a holistic approach to the management of the Black Sea.
- The SoS consists of several components, which differ with respect to the types of data that can be accessed with them and their level of complexity.
- SoS entry points:
  - The xcube viewer (<https://doors.viewer.brockmann-consult.de/> )
  - The Jupyter Lab (<https://doors.jupyter.brockmann-consult.de/> )
  - The Dashboards (<https://doors-dash.brockmann-consult.de/> )
  - Datasets description: <https://doors-cubes.readthedocs.io/en/latest/>
  - Catalogue(s):
    - <https://doors-cubes.readthedocs.io/bcdev.github.io/doors-stac/geodb/catalog.json>
    - <https://radianteearth.github.io/stac-browser/#/external/bcdev.github.io/doors-stac/geodb/catalog.json>

## SoS to address Priorities in monitoring, modelling & forecasting:

- 1. Societal Needs:** e.g. eutrophication, marine litter, biodiversity, coastal erosion, extreme events
- 2. Blue Growth:** e.g. sustainable coastal/marine tourism, shipping and navigation, fisheries and aquaculture, marine renewable energy
- 3. Capacity Building:** skills development, training and education, and business model development to support the above
- 4. Barriers to progress:** addressing barriers, including evidence to support progress and change



# System of Systems

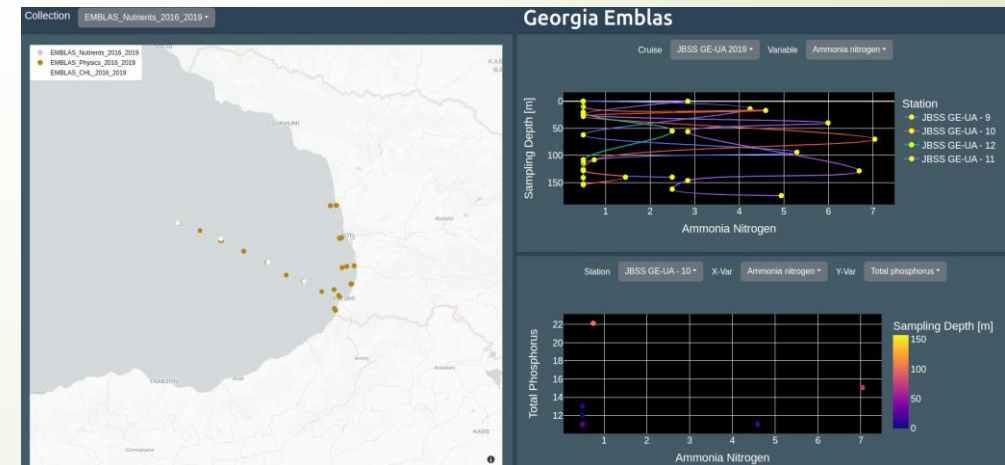
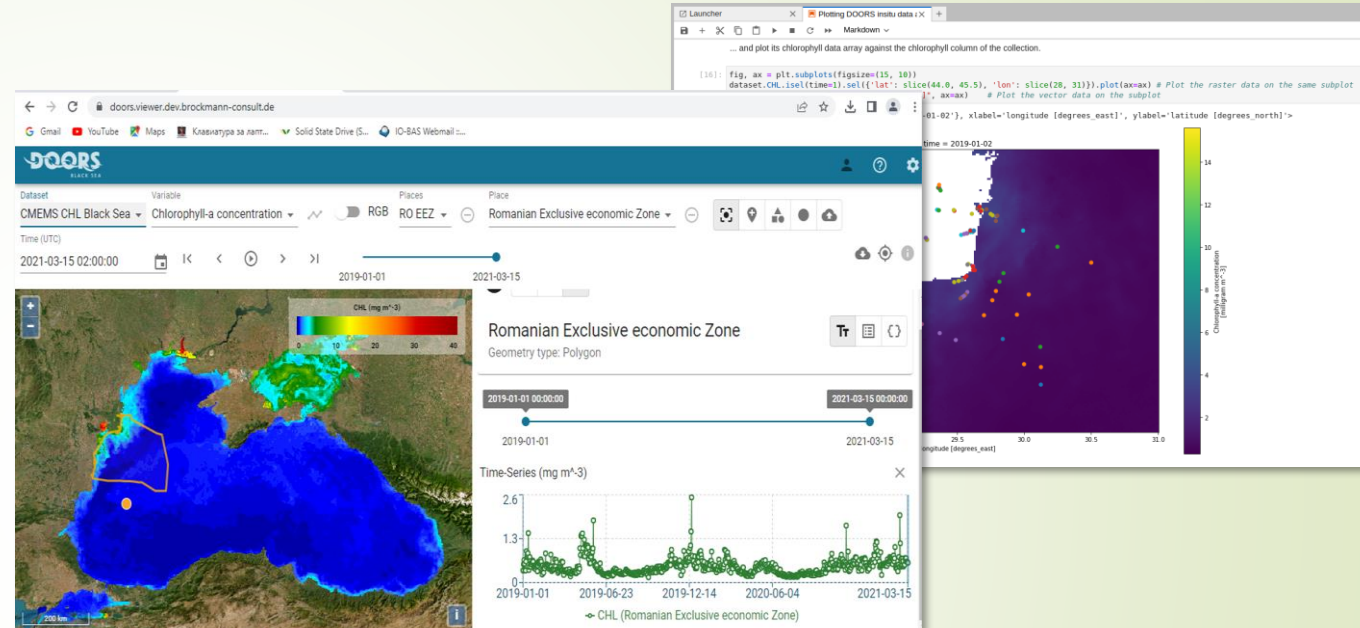
## The tasks of the SoS

Bringing together **heterogeneous data streams** into analysis (or even interpretation) - ready data cubes using the same (meta)data standard and format

Delivering harmonised spatial and temporal **data products** (sampling, cruises, fixed & mobile sensors, EO, models)

Through a smart **intuitive portal** tailored to the needs of stakeholders

Support **knowledge transfer, growth and collaboration** for sustainable growth and prosperity



Dataset

CMEMS CHL Black Sea

Variable

Chlorophyll-a concentration

RGB

Place

Point 2

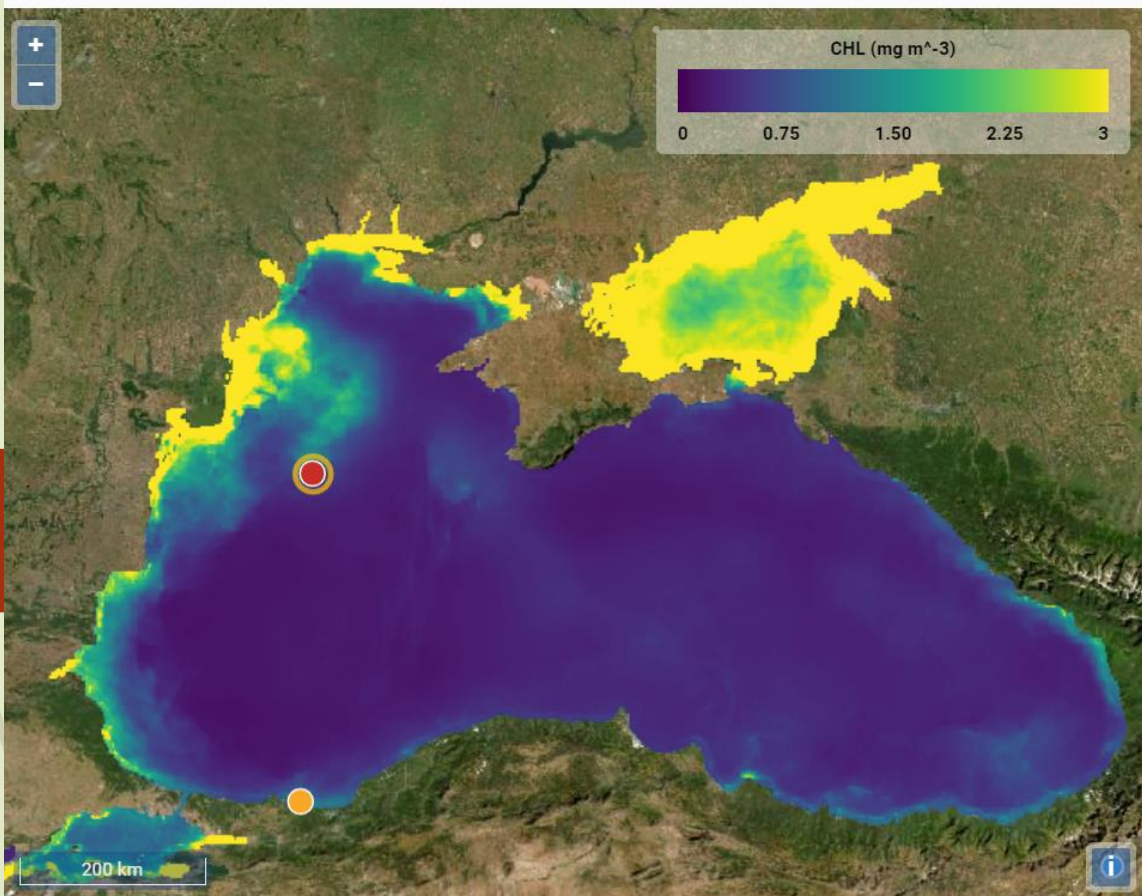
Time (UTC)

2019-05-07 12:00:00

Navigation icons: first, previous, play, next, last

2019-01-01 2021-03-15

Download, Full Screen, Info icons



2019-01-01 2021-03-15

Time-Series (mg m<sup>-3</sup>)



CHL (Point 2: 44.39001,30.82854)

# System of Systems elements

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Thank you for the attention!

