

Black Sea challenges, experiences and initiatives

**Brief story of the cooperation in the
South European Seas**

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Facts



Black Sea – part of the ancient world for 8000 years

3 millenia of documented history

– over

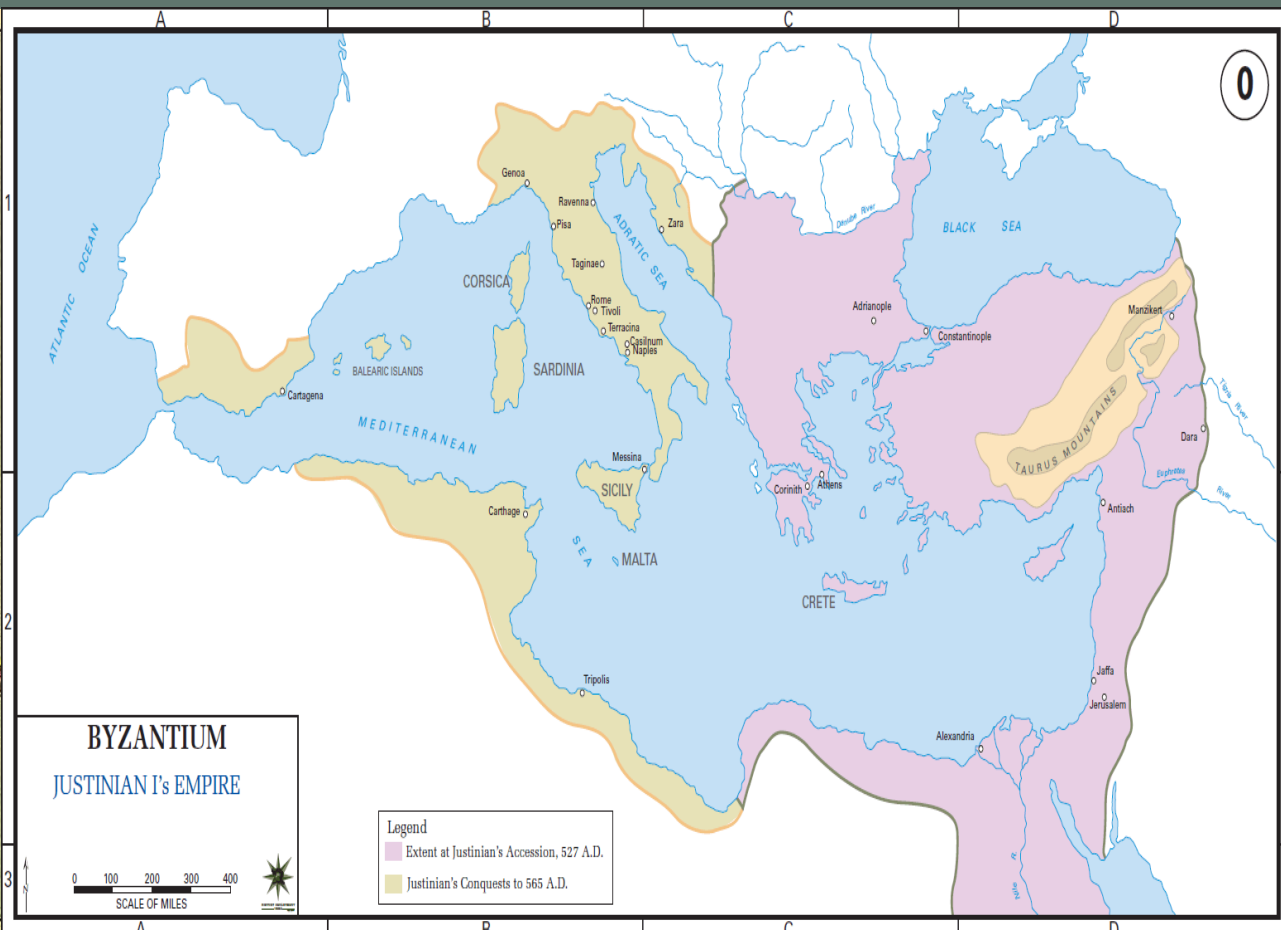
Ancient Greek colonies



<https://en.wikipedia.org/wiki/File:AntikeGriechen1.jpg>

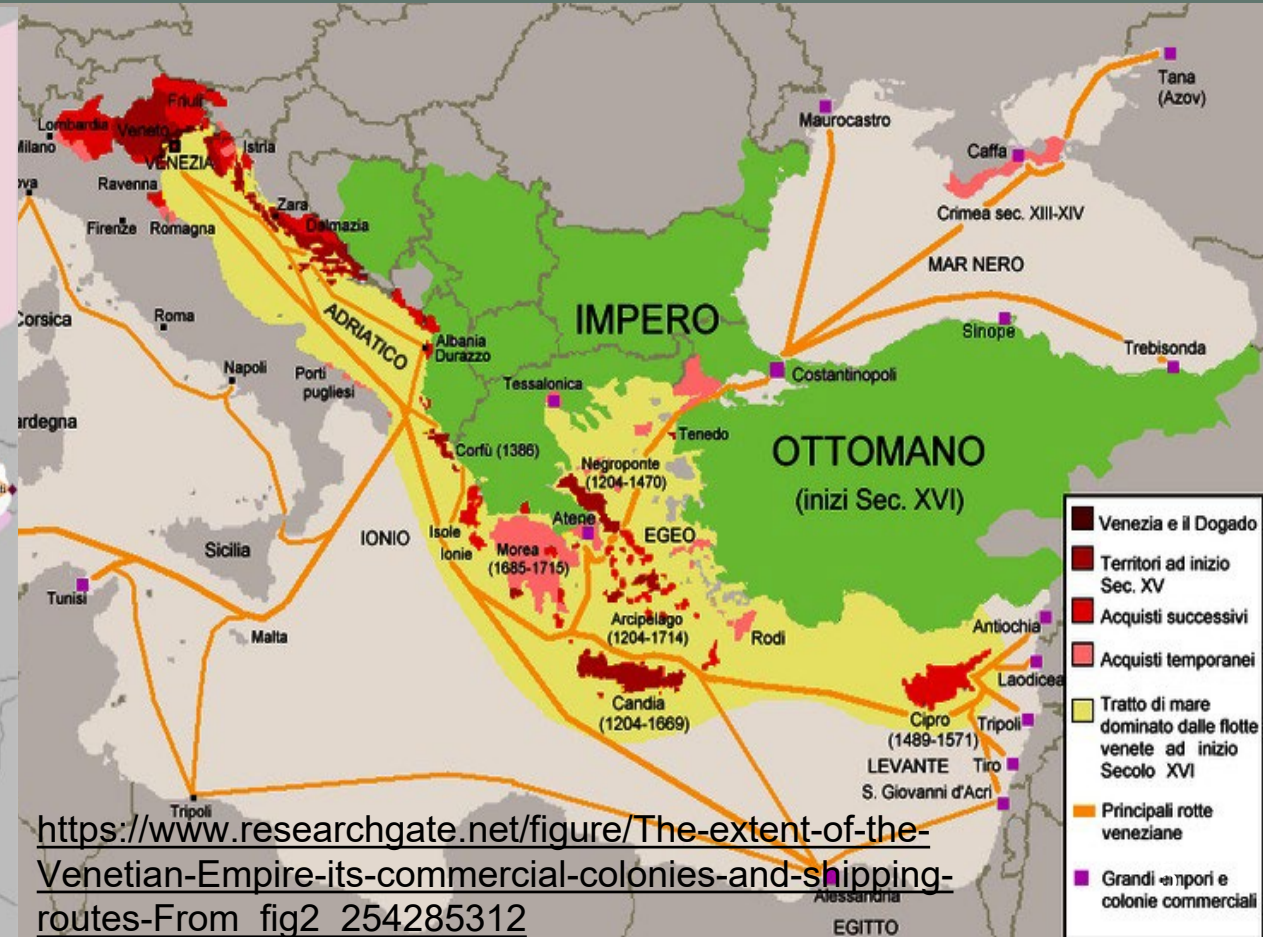
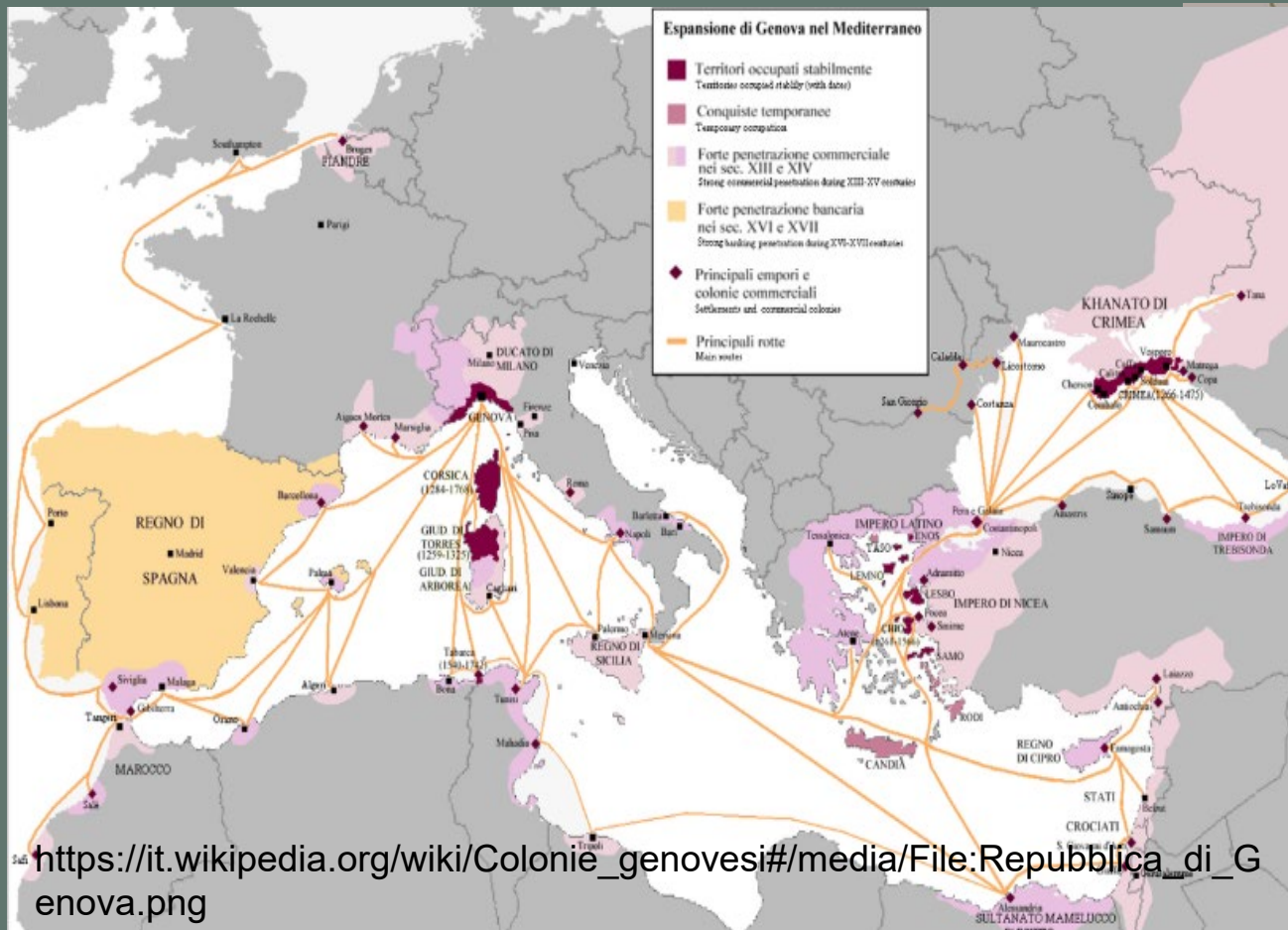
Black Sea in Antiquity

Part of the Roman – Eastern Roman – Byzantine continuity



Black Sea in Medieval times

The Genoese and Venetian connections



Ottoman period



Up to modern days



Major challenges in the Black Sea. The 1990s

Extremely high human pressures felt on the Black Sea, coming from the internal rivers (hydrographic basins), from the coast and sea itself

Major causes:

- Pollution (all types of pollutants)
- Eutrophication
- Alien species
- Overfishing

Mid 1990s – Black Sea – in one of the worst environmental crisis on Earth

**Major
challenges
in the
Black Sea.
The 1990s
and years
2000**

Concerted interventions – governments, United Nations, EU

The Bucharest Convention for the Black Sea (1992)

Black Sea Strategic Action Plan (1997, updated in 2007)

Due to general closures of industries and intensive agricultural activities – the situation started to mildly improve

Early 2000s – onwards - uncontrolled development

- re-launch of industries

- uncontrolled extension of coastal cities and

related troubles

**Major
challenges
in the
Black Sea.
The
years 2000
- onwards**

Rapid development of the coastal communities - efforts to keep under control via ICZM and marine spatial planning

New pollutants – litter, plastic, other (pharmaceuticals)

A new Major Challenge over the past 2 decades–

CLIMATE CHANGE SIGNALS

(storms, sea level rise, change in current circulation, changes in specific species habitats)

Estimated effects -still to be properly assessed

The Road towards a Black Sea Research and Innovation Agenda (SRIA)

**June 2017 -
Start date**



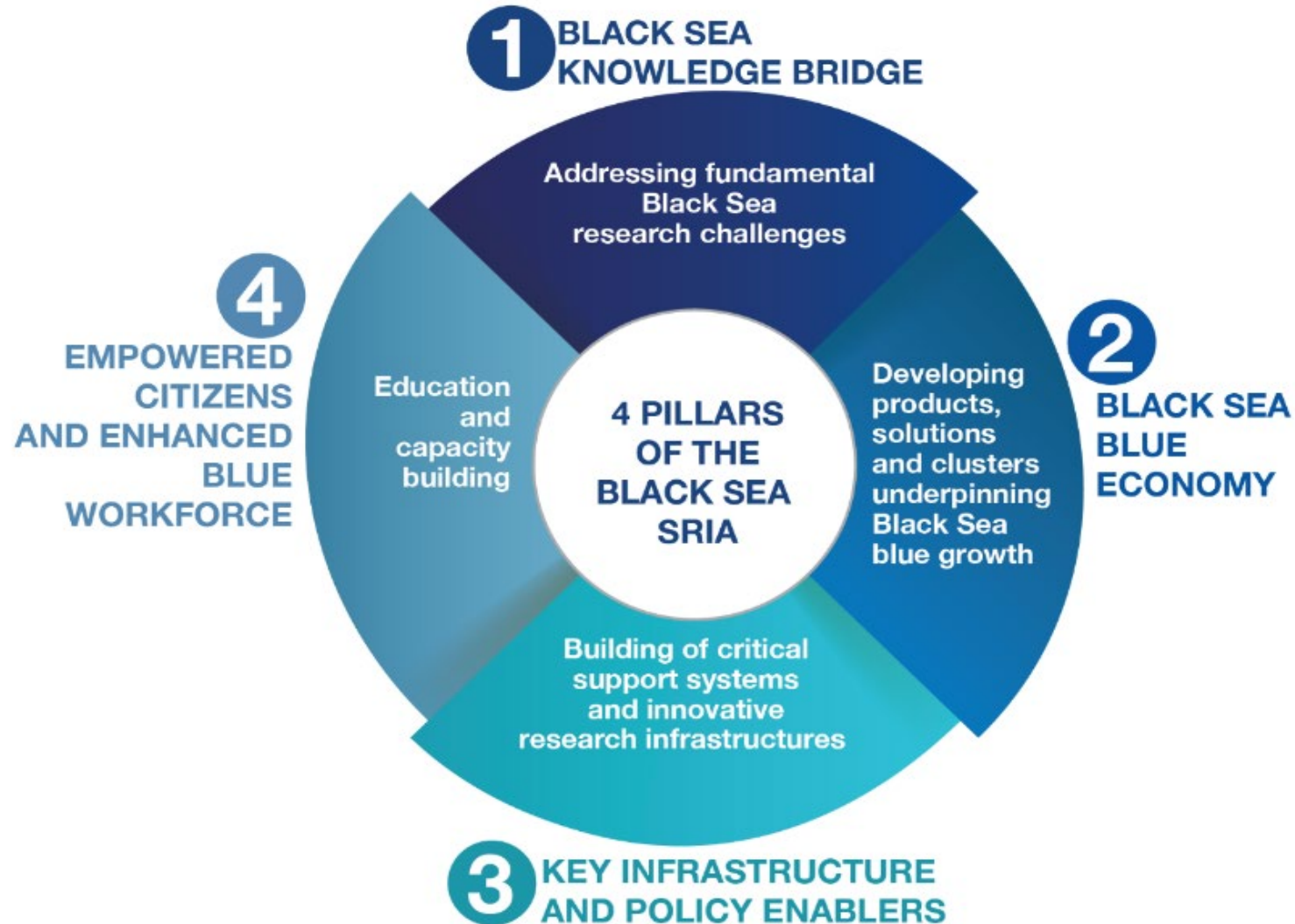
**June 2018 – Burgas EMD
– Vision Paper for SRIA**



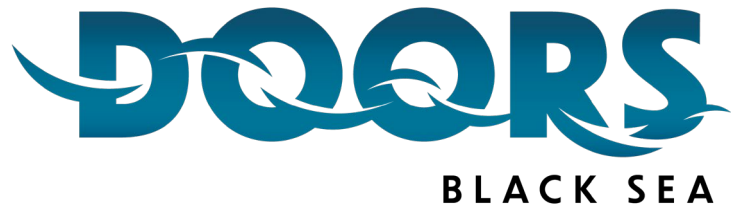
**May 2019 - Romania –
Launch of SRIA**



FOUR MAIN PILLARS OF THE BLACK SEA SRIA



H2020 Black Sea CONNECT



Developing
Optimal and Open
Research Support
for the Black Sea



Advancing Black Sea
Research and
Innovation to Co-
Develop Blue Growth
within Resilient
Ecosystems

..and more recent..



DOORS Objectives

To make operational the Black Sea SRIA, support the successful Blue Growth implementation and contribute to a healthy, productive and resilient Black Sea.

3 Key Programmes:

1

System of Systems (SoS)

Platform bringing together *in situ*, Earth observation and modelled data on the Black Sea, giving access to physical, geological, chemical, and biological parameters of the Black Sea.

2

Blue Growth Accelerator (BGA)

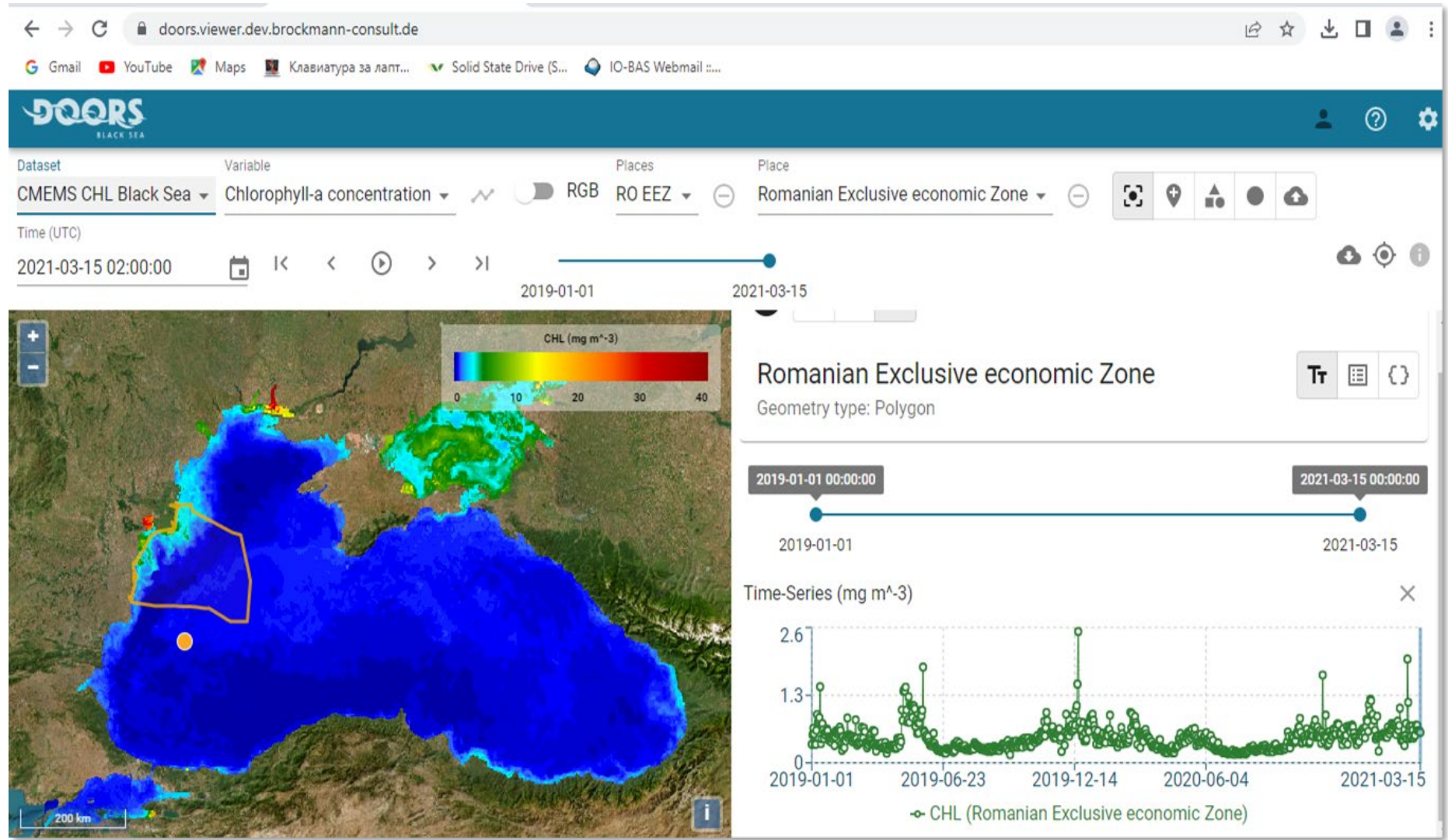
To identify sectors for innovation, providing professional support to unlock their potential. Facilitate development of Blue Growth sectors.

3

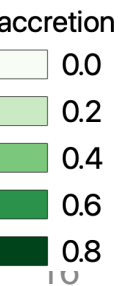
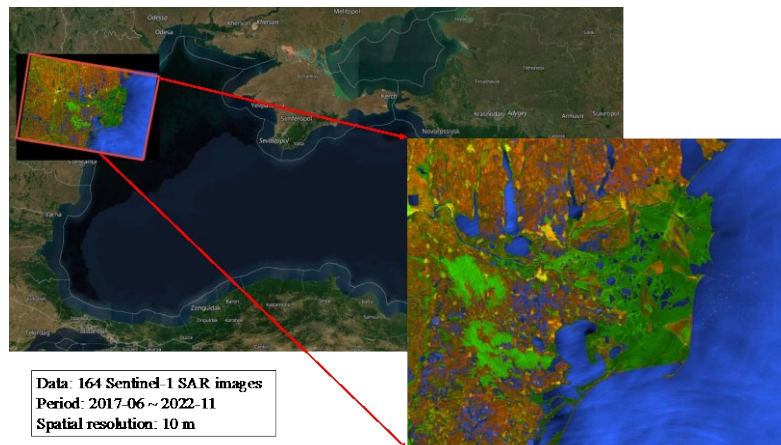
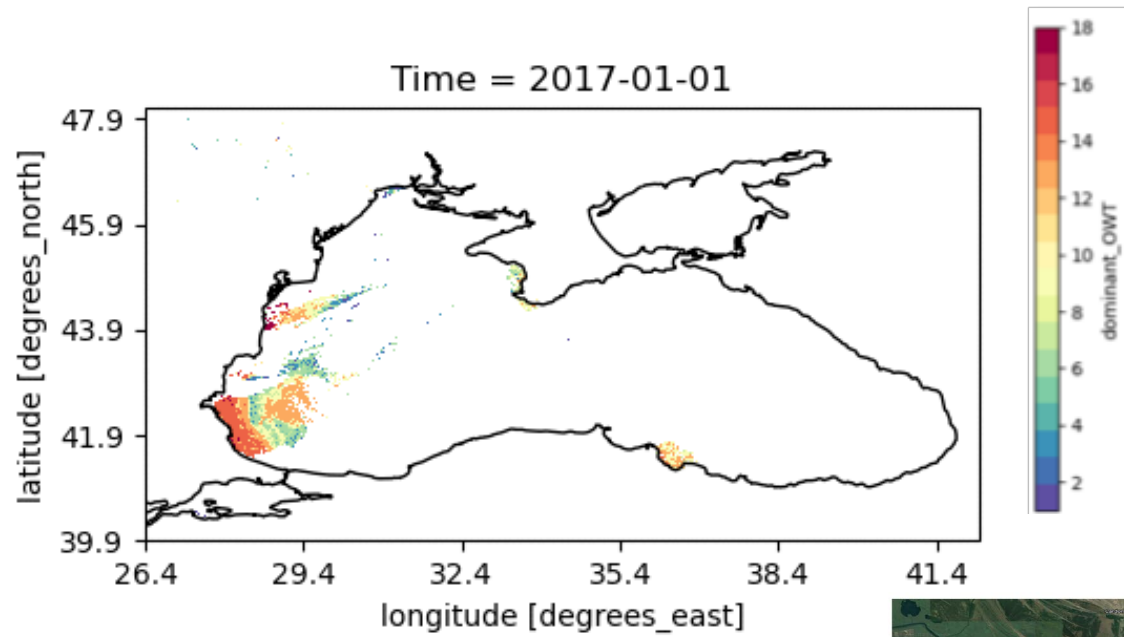
Knowledge Transfer & Training (KTT)

Bring together different actors on science and policy to promote a culture of openness, share best practice and knowledge for capacity building

The System of Systems
(before the Digital Twin
was an accomplished
expression)

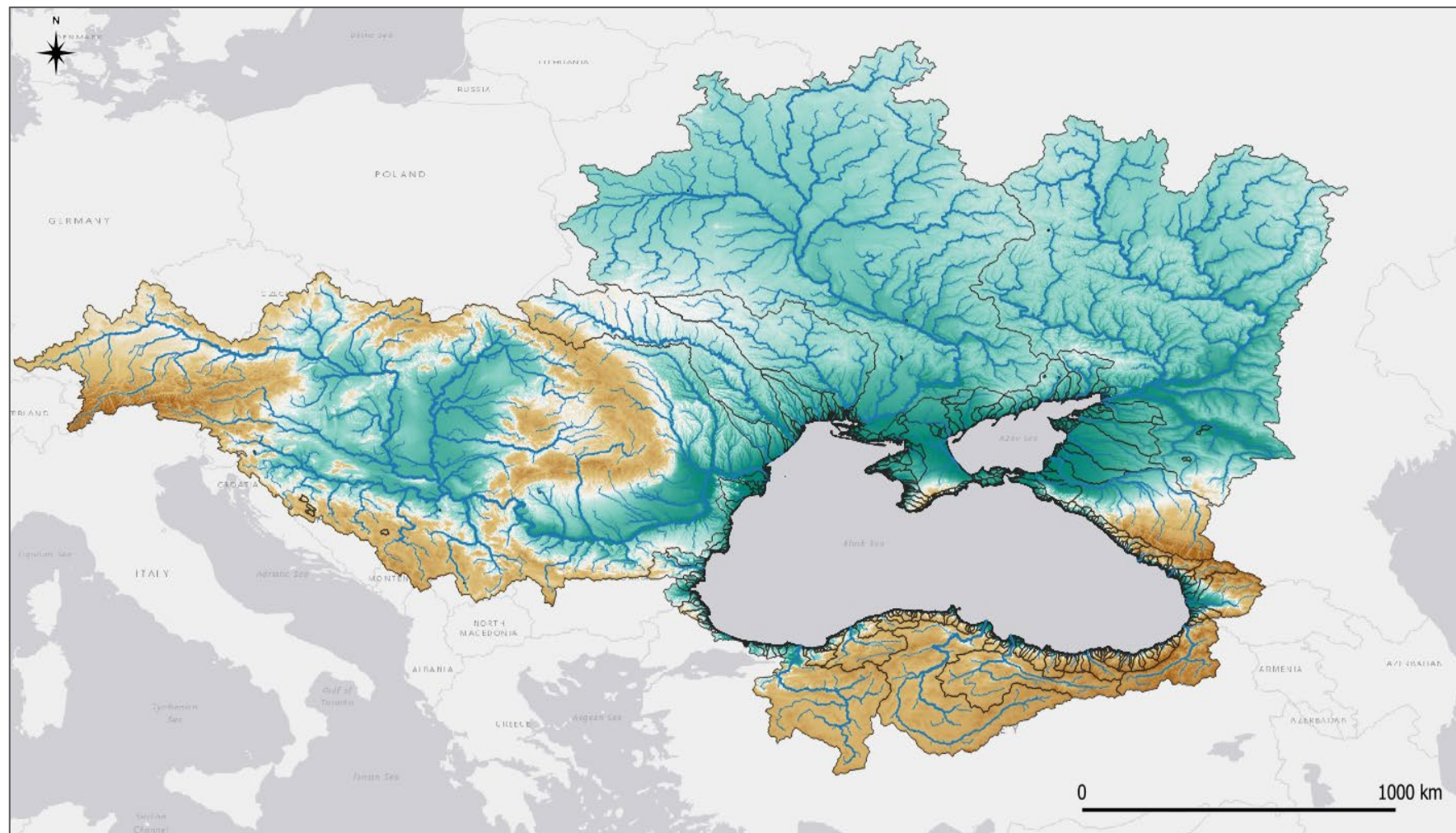


The System of Systems (2)



The Black Sea —
receptacle of
the largest
hydrographic
basins in
Europe

Successful
Management —
only at River -
Sea System
Scale



Challenges in River – Sea Systems

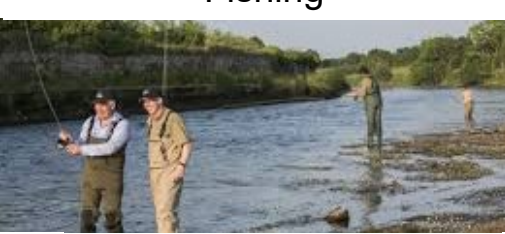
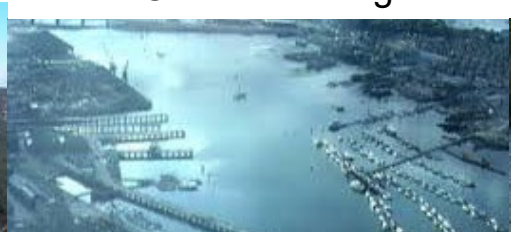


Cultural heritage

Fishing

Habitat pressures

Sediment starvation



Catchment change

Industrial development

Recreation

Geo-hazards

Societal pressures



Deltas

Flooding

Global warming

Energy

Tourism



Drought

Navigation

Pollution

Storm surge



International Centre for Advanced Studies on River -Sea Systems

DANUBIUS - RI

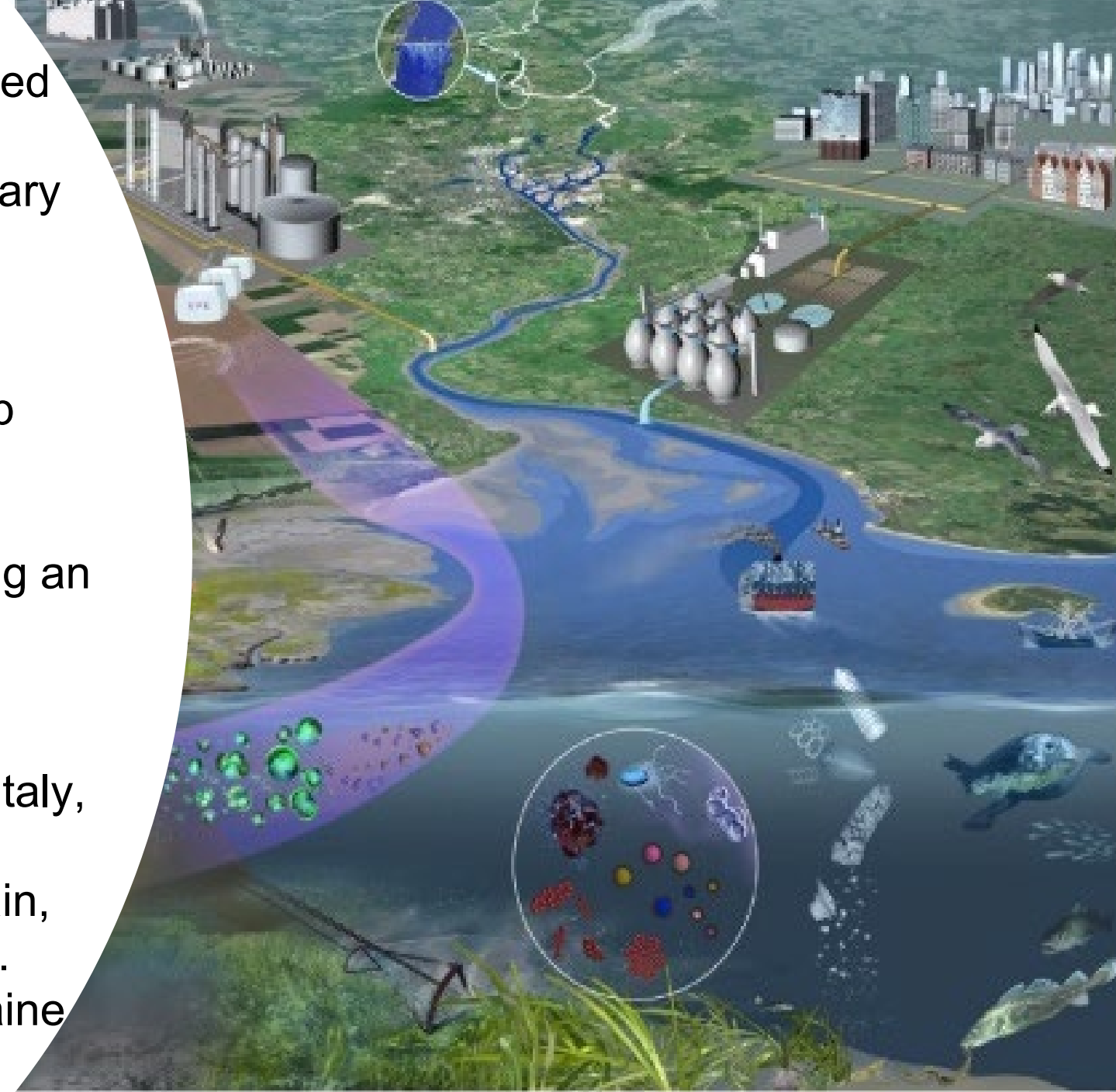
«It is not About the Danube »

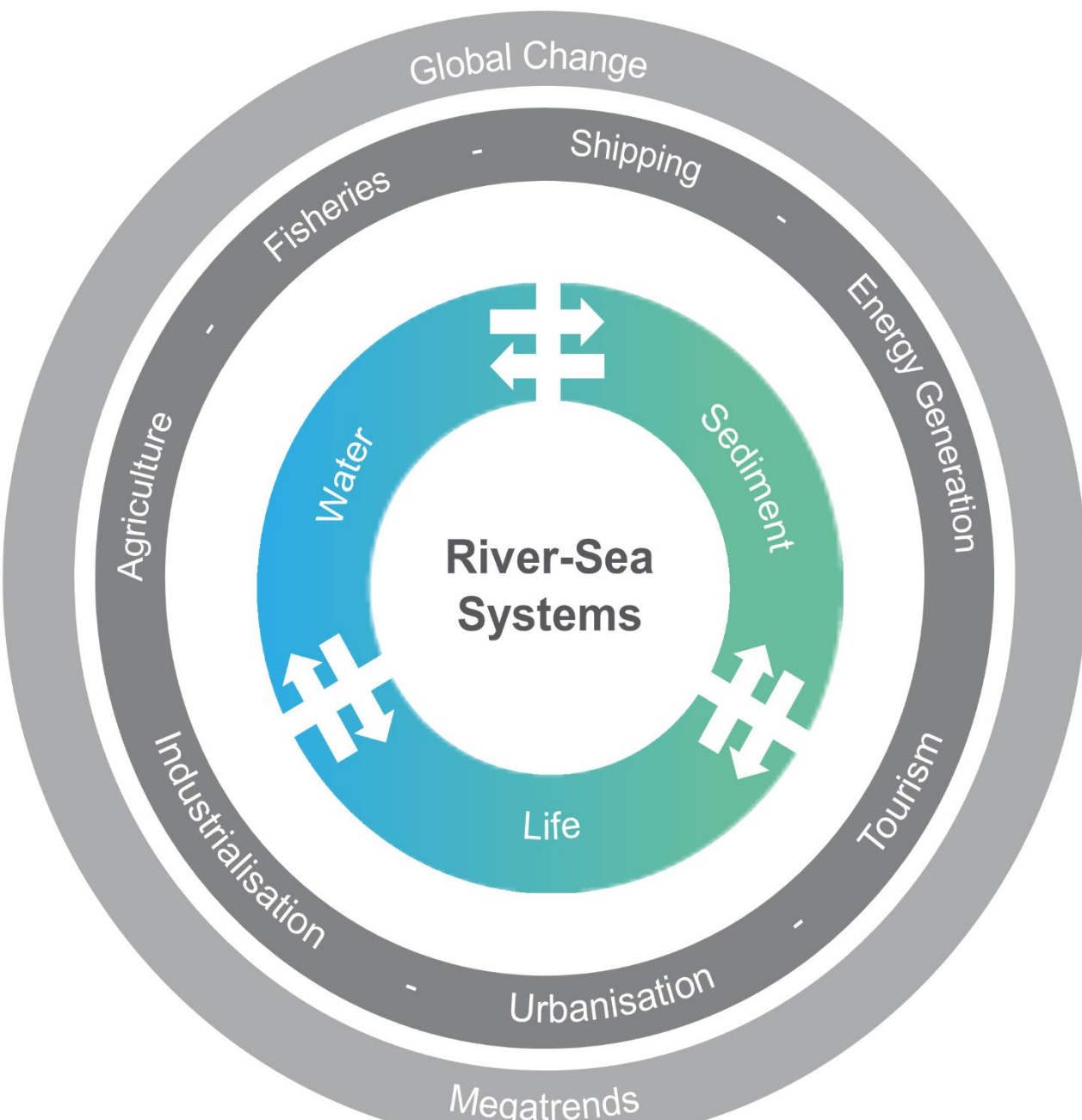
Pan- European distributed Research Infrastructure supporting interdisciplinary science on river-sea systems

On the ESFRI Roadmap since 2016

Final stages of becoming an ERIC

Led by Romania, participating countries: Italy, Netherlands, Czech Republic, Moldova, Spain, Ireland United Kingdom. Portugal, Bulgaria, Ukraine





Overarching challenges

- External (Climate Change and Extreme Events) and internal drivers (e.g. Fisheries, Transport) resulting from basic human needs cause cumulative effects on River-Sea Systems.
- Overarching challenges for DANUBIUS-RI relate to:
 - Water Sufficiency
 - Sediments and their Management
 - Ecosystem Health.



(Instead of the conclusion - What have the Romans ever done for us?)

- **Historical contacts continuous for millenia (except for the 50 years of communist rule in most of the Black Sea)**
- **Almost continuous Scientific and Technical cooperation – looking at quite similar challenges**
- **In marine sciences – CNR – ISMAR – most important role in maintaining the bridge with the Black Sea**

Decades long
ISMAR –
GeoEcoMar
collaboration
paved the way for the
Modelling
Node and Po
Delta - North
Adriatic
Lagoons
Supersite and
the DOORS
modelling
efforts

The screenshot shows the KASSANDRA Storm Surge System website. The header includes logos for CNR National Research Council, ISMAR Institute of Marine Sciences, and KASSANDRA Storm Surge System. The main content area features a navigation menu with 'Maps', 'Time Series', 'Model Description', and 'Partners'. Below the menu is a large image of a beach with driftwood. The central part of the page displays a forecast for the Black Sea, starting from 30.05.2023 00:00 UTC. A table of forecast hours is shown, with the current time set to +00. Below the table is a map of the Black Sea showing 'Sign. Wave Height [m]' with a color scale from 0.0 to 1.2. The map includes a coordinate grid and a legend. The bottom of the page shows a Windows taskbar with various open applications and a system tray with the date 5/30/2023 and time 10:15 AM.

Forecast hours from 30.05.2023 00:00 UTC:

+00	+03	+06	+09	+12	+15	+18	+21	+24	+27	+30	+33	+36	+39	+42	+45	+48
+51	+54	+57	+60	+63	+66	+69	+72	+75	+78	+81	+84	+87	+90	+93	+96	

Initial time: 30 May 2023 00:00 UTC
Forecast: +00 h
Valid: 30 May 2023 00:00 UTC

... and the Human Factor... Grazie di tutto, Davide!



Thank you

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Sources of maps and images:

https://en.wikipedia.org/wiki/Black_Sea#/media/File:Diego-homem-black-sea-ancient-map-1559.jpg (Diego Homem Black Sea Portulan Map)

<http://ancienthistory.about.com/od/mediterraneanmaps/> (Roman Empire)

https://en.wikipedia.org/wiki/Colonies_in_antiquity#/media/File:AntikeGriechen1.jpg (Ancient Greek colonies)

https://www.researchgate.net/figure/The-extent-of-the-Venetian-Empire-its-commercial-colonies-and-shipping-routes-From_fig2_254285312 (Venetian Black Sea colonies0)

https://it.wikipedia.org/wiki/Colonie_genovesi#/media/File:Repubblica_di_Genoa.png – Genoese ports

<http://www.ancient.eu/uploads/images/243.gif?v=1431031366> – Byzantines

Photos: Michael Rea, Dan Borzan, Adrian Stanica, Davide Vignati, H2020 DOORS Consortium, DANUBIUS-RI Consortium