Operational modelling capacity in European Seas

An assessment and recommendations for improvement

A. Capet, V. Fernandez, J. She, T. Dabrowski, G. Umgiesser, J. Staneva, L. Meszaros, F. Campuzano, L. Ursella, G. Nolan, G. El Serafy

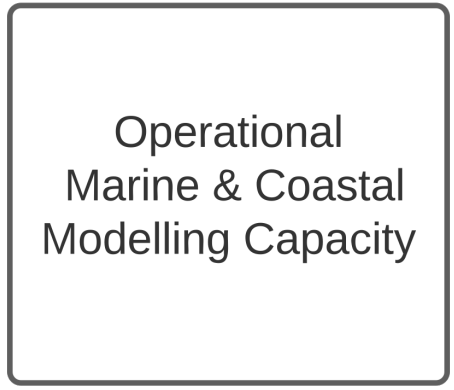
EuroGOOS Coastal Working Group

October 28, 2021

Operational modelling capacity in European Seas

Perspectives and Recommendations from the EuroGOOS-Coastal Working Group

To characterize, at European scale :



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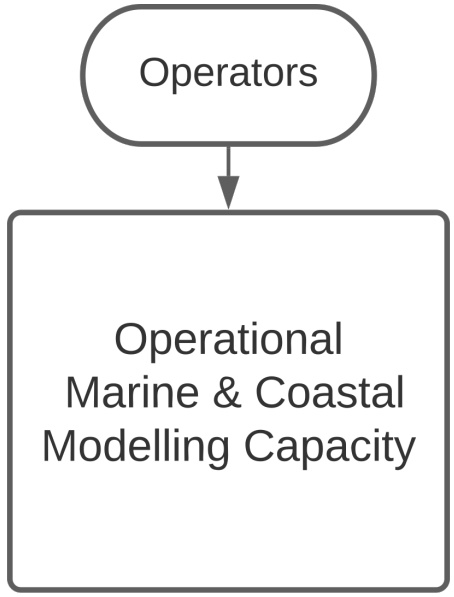

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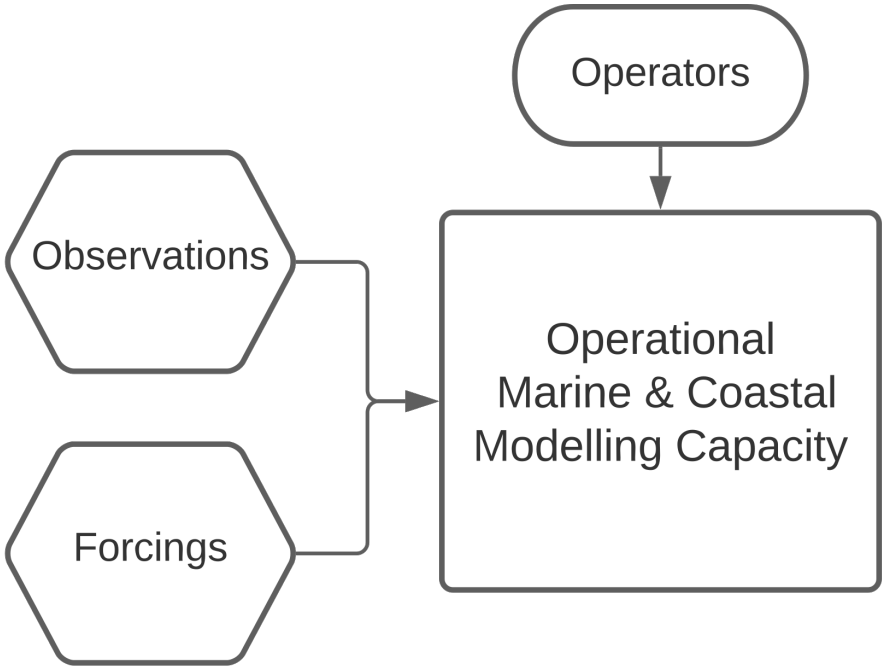

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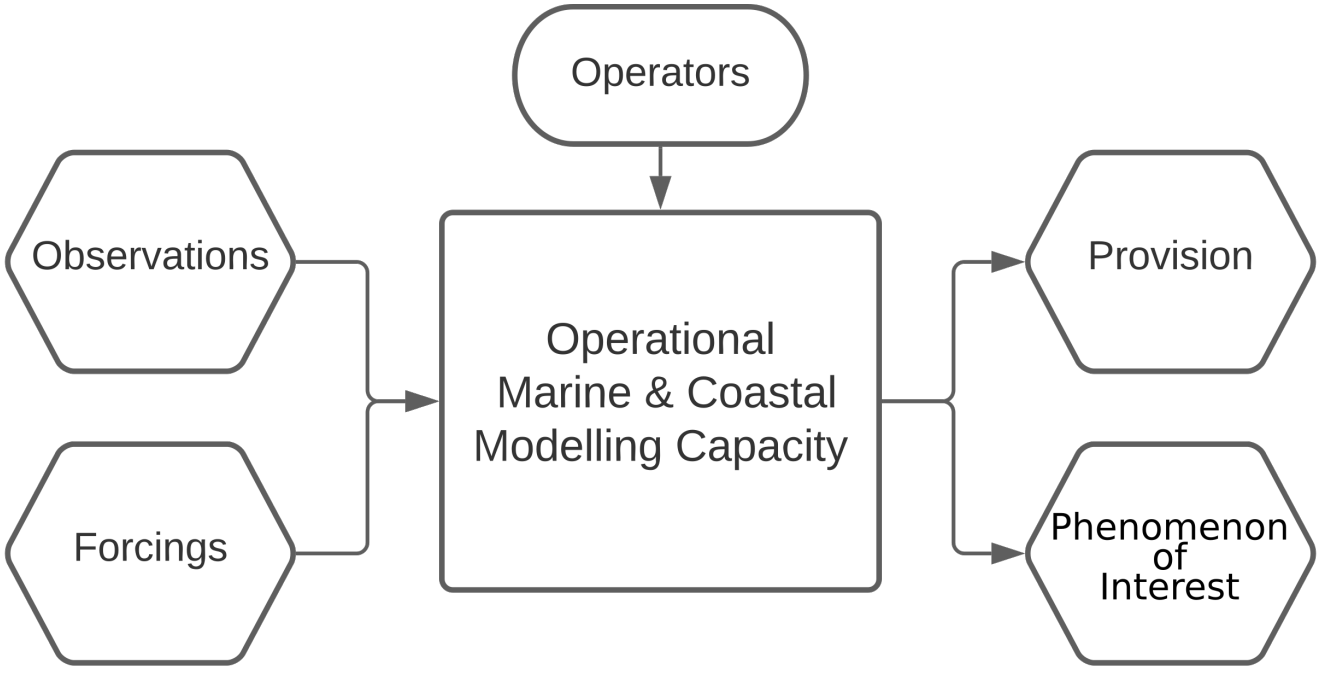

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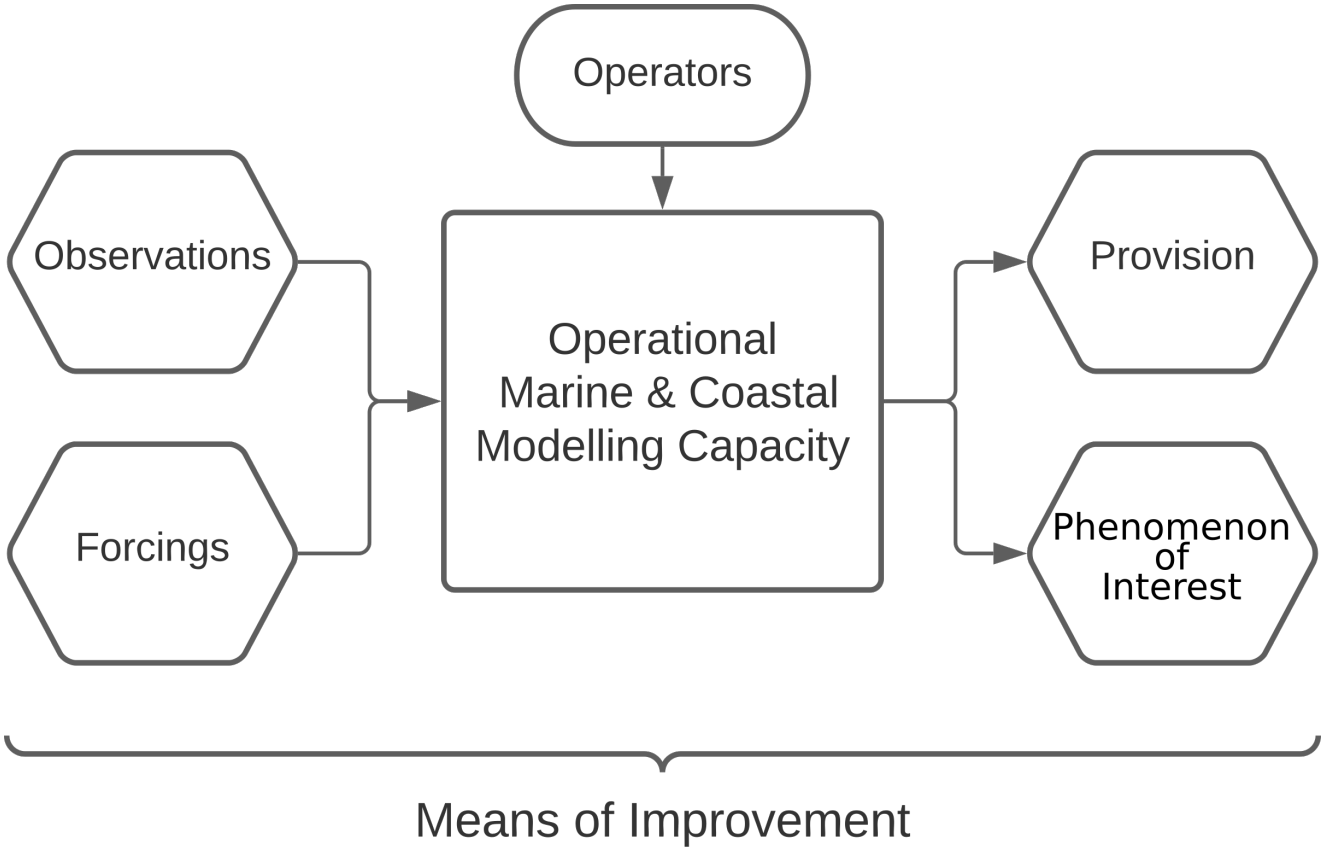

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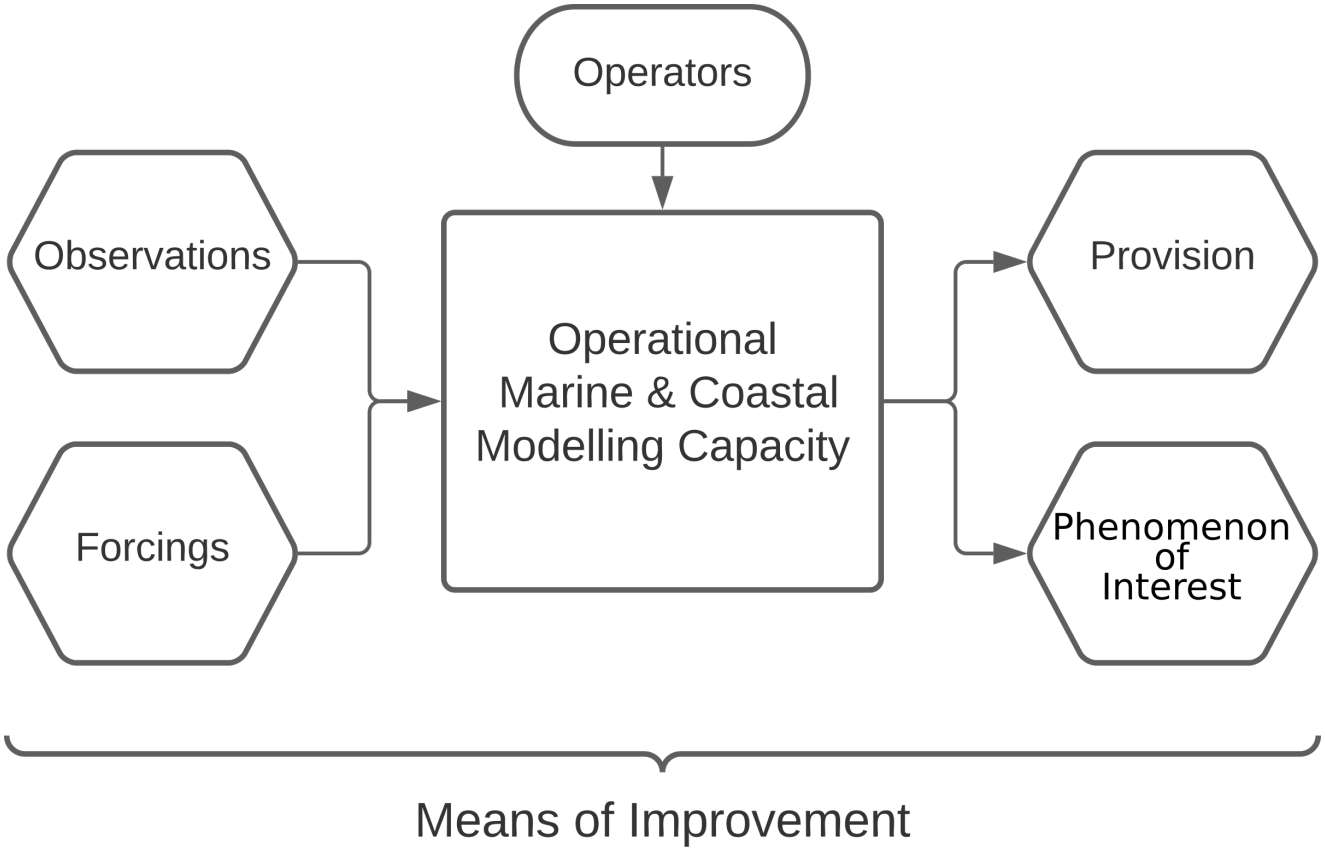
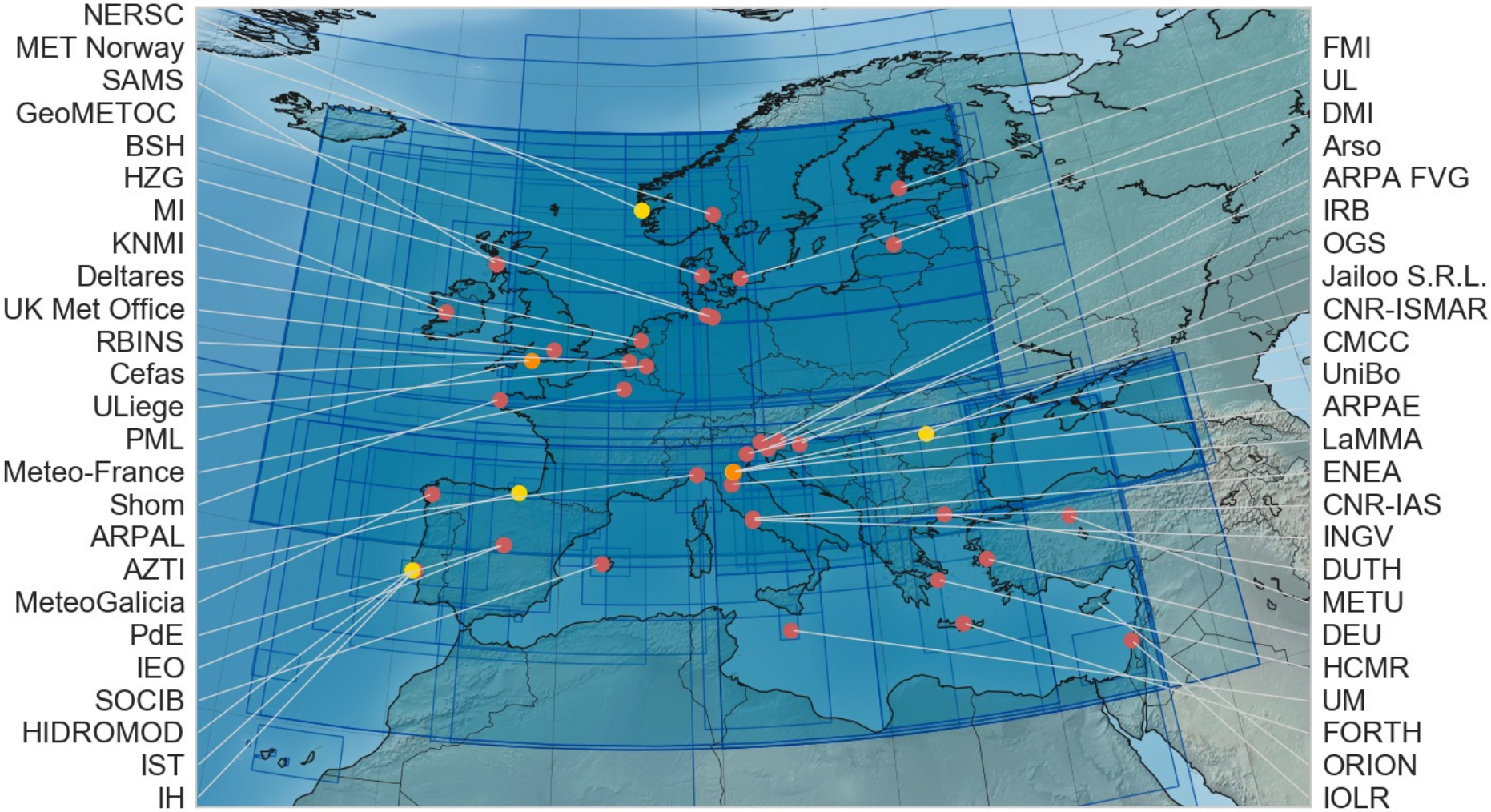


Survey (Google Form) → EuroGOOS → ROOSes & CMEMS → Partners

Contributions

49 organizations – **104** operational model systems



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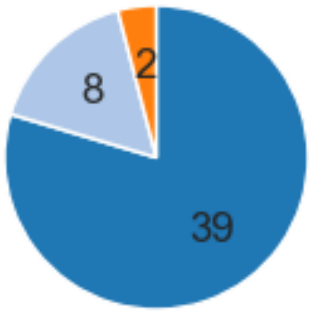
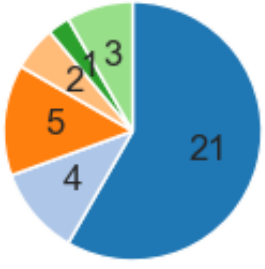
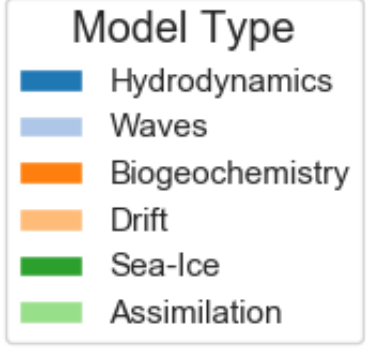
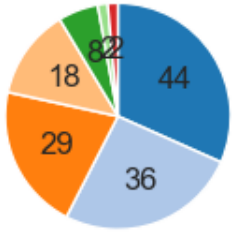


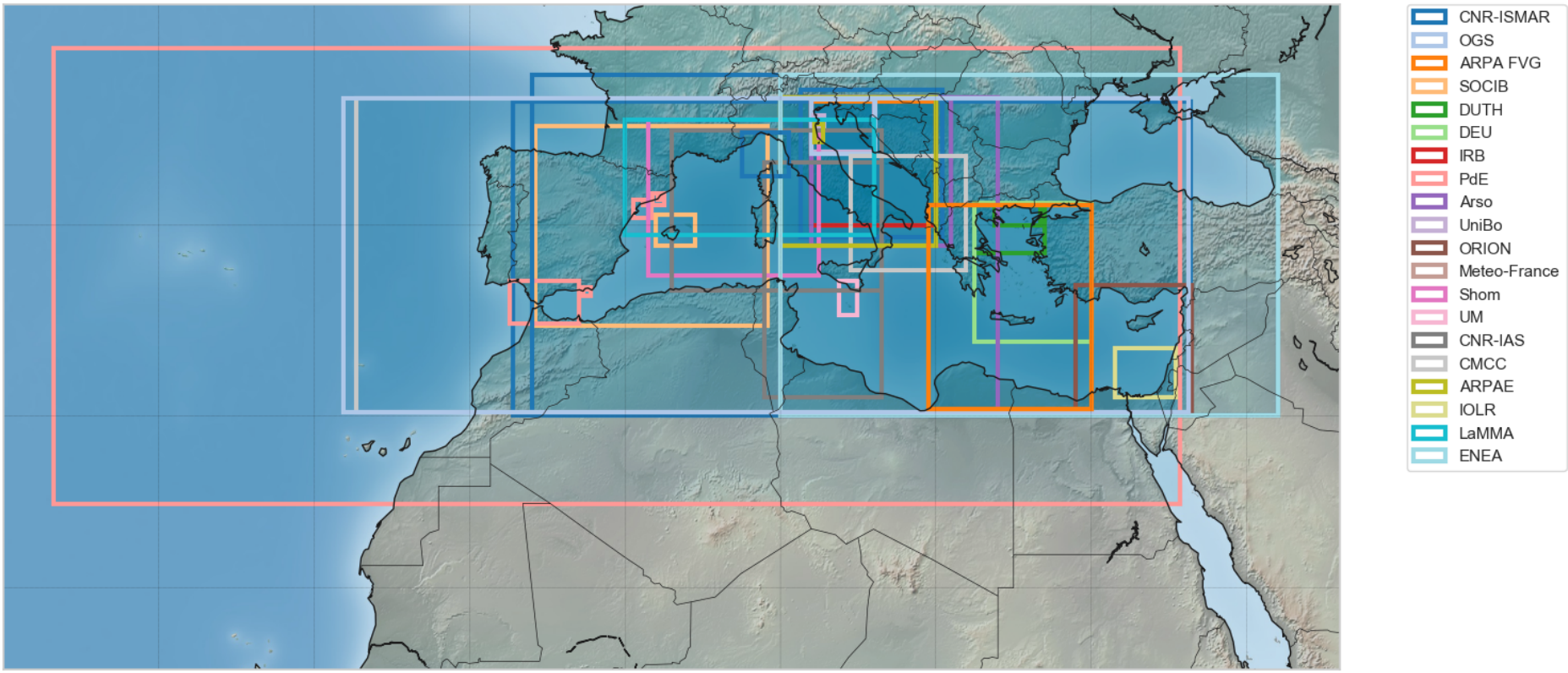






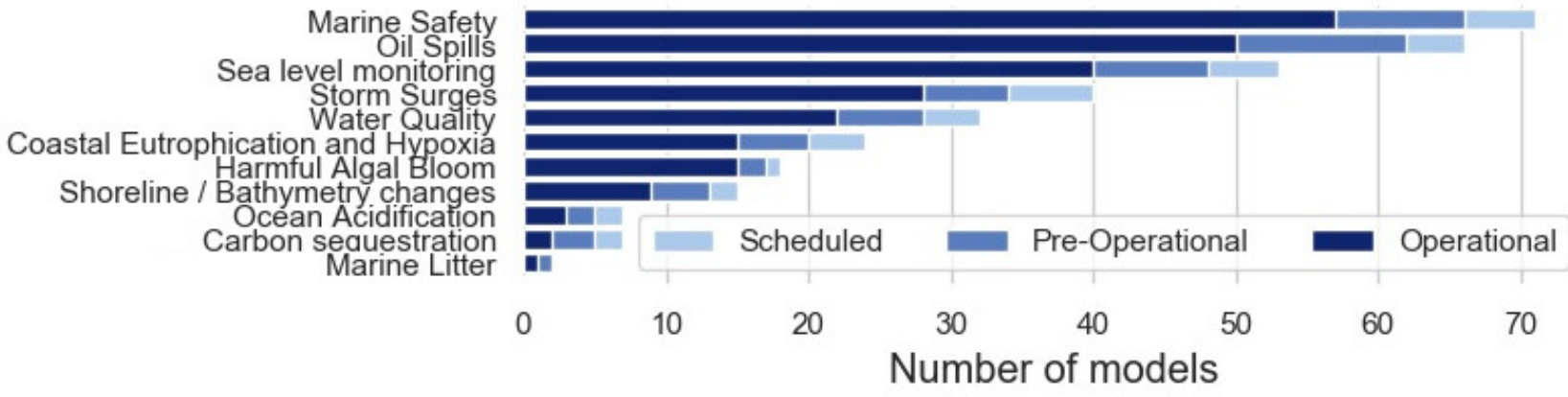
Contributions - MONGOOS

21 organizations – **39** operational model systems



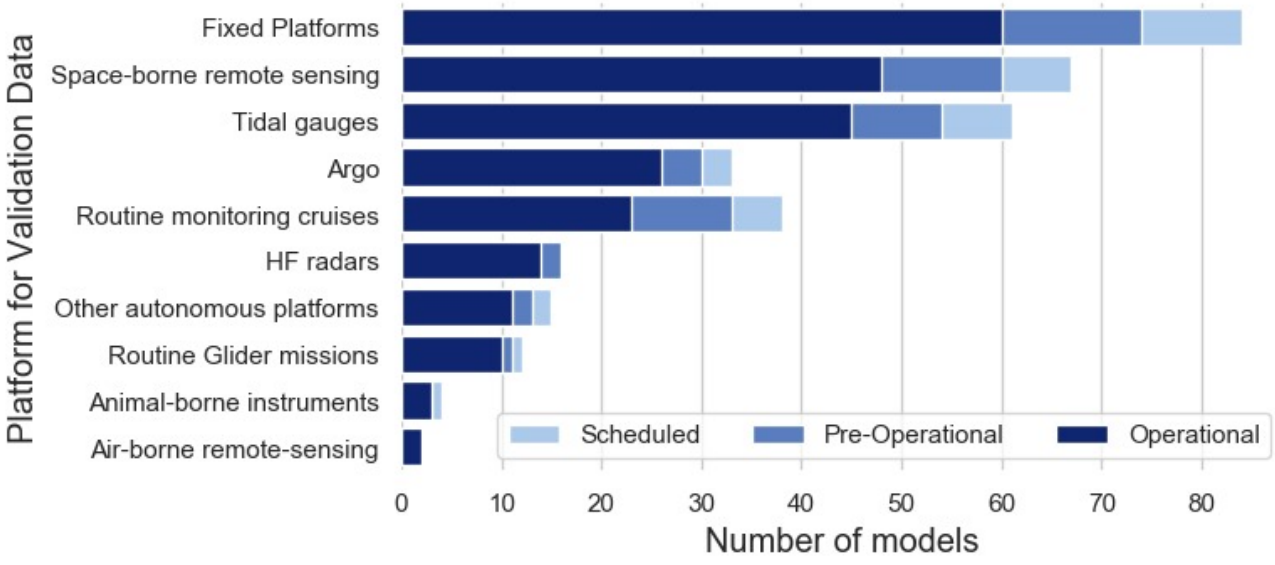
Data provision

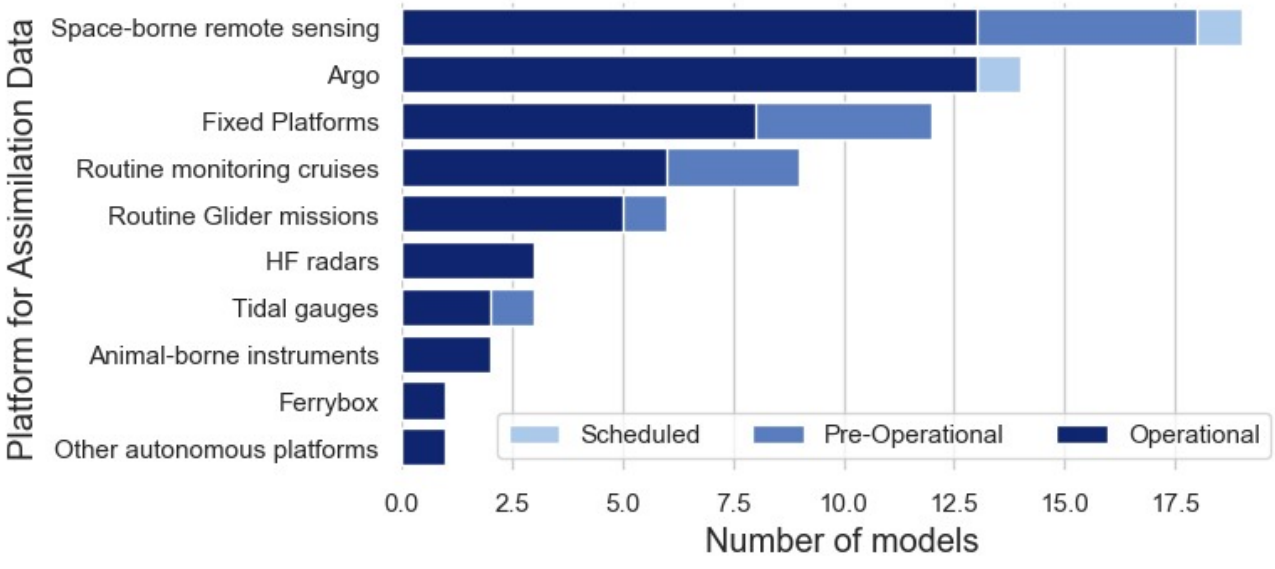
Which Phenomenon of Interest ?



Observations

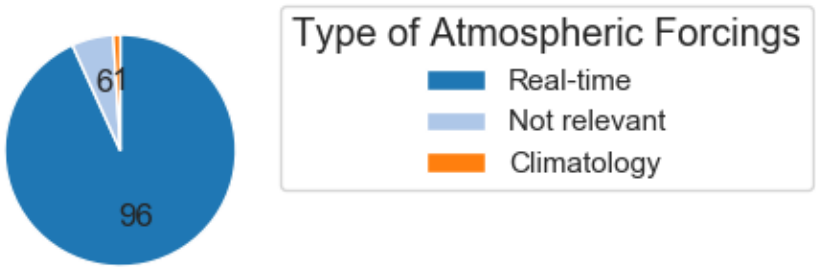
Which platform, for which purpose?



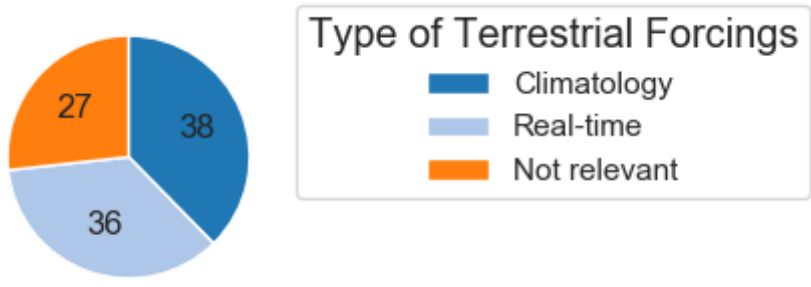


Forcings

Atmosphere

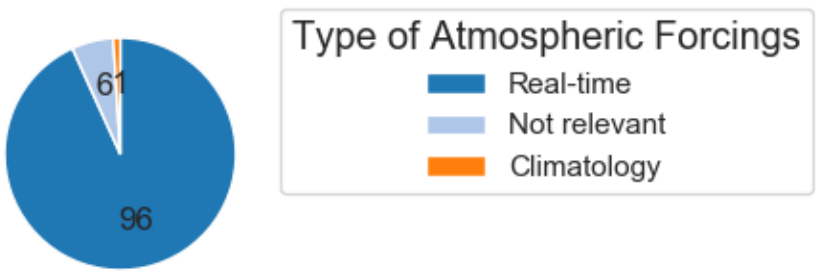


Land

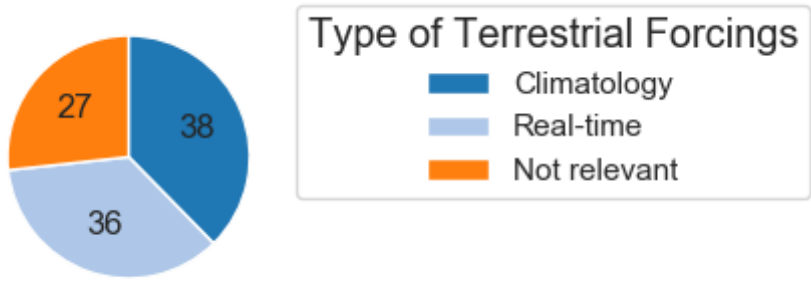


Forcings

Atmosphere



Land



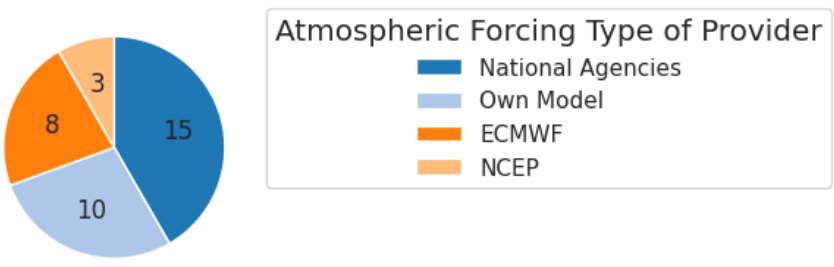
Lists of national providers

Agency	Country	Website
DMI	Denmark	https://www.dmi.dk/
FMI	Finland	https://en.ilmatieteenlaitos.fi/
MetCoOp	Finland, Norway, Sweden	https://www.met.no/en/projects/metcoop
RMI	Finland	https://www.meteo.be/en/belgium
Meteo France	France	http://www.meteofrance.com

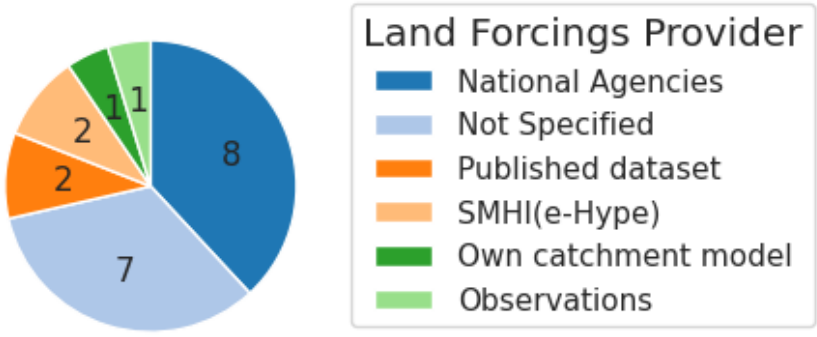
Agency	Country	Website
DHMZ	Croatia	http://meteo.hr/
HYDRO-SCHAPI	France	http://hydro.eaufrance.fr/
FFG Elbe	Germany	https://www.elbe-datenportal.de
WSV	Germany	https://www.gdws.wsv.bund.de/
EPA	Ireland	https://www.epa.ie/

Forcings - MONGOOS

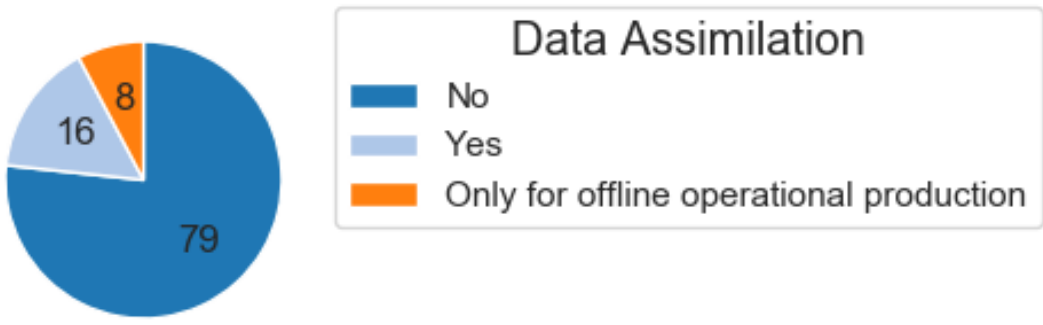
Atmosphere - Providers



Land - Providers



Data assimilation



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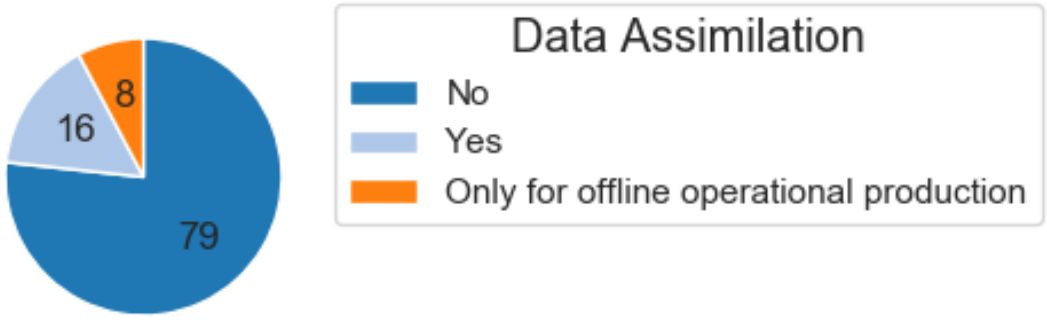
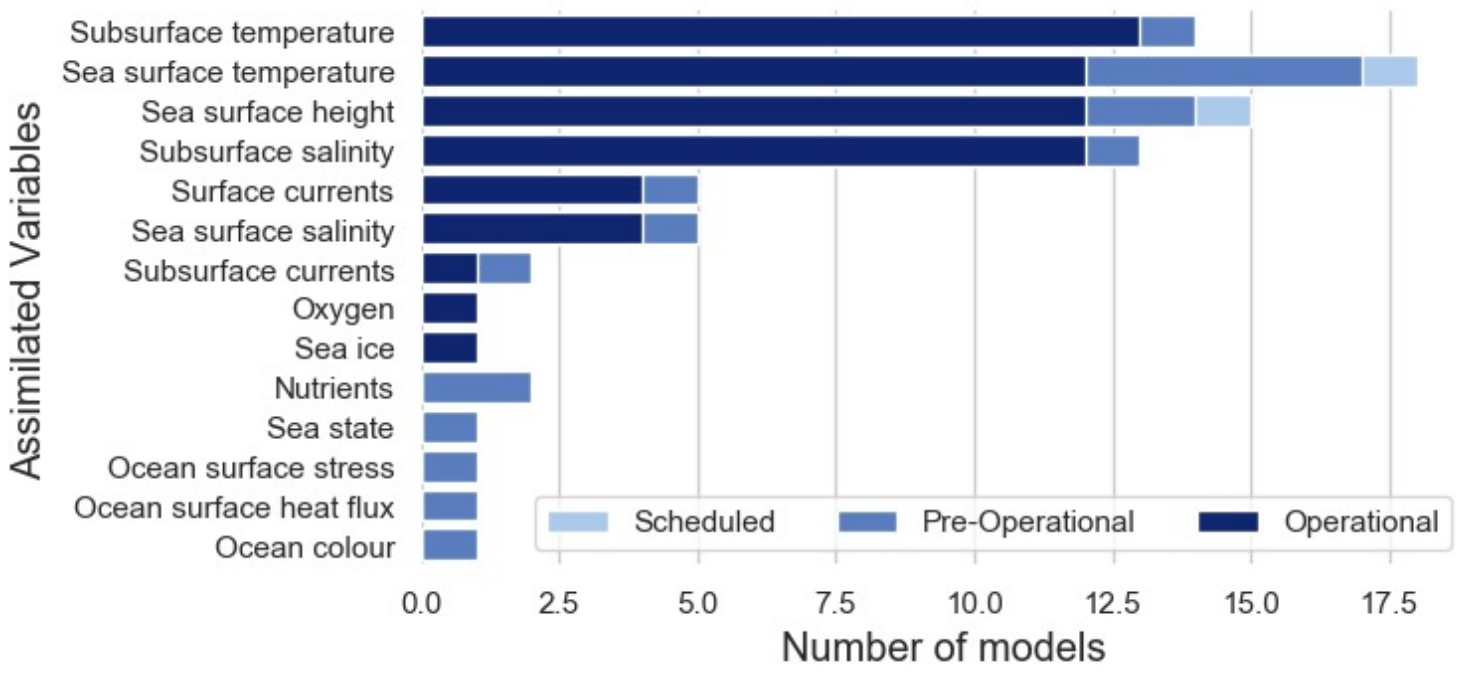
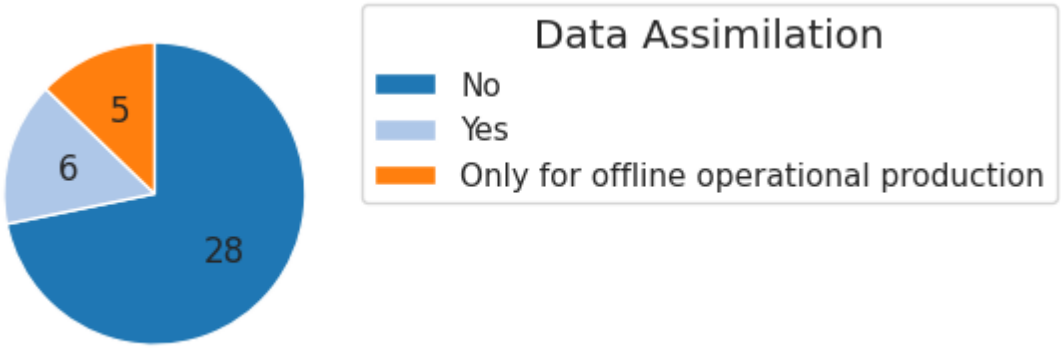
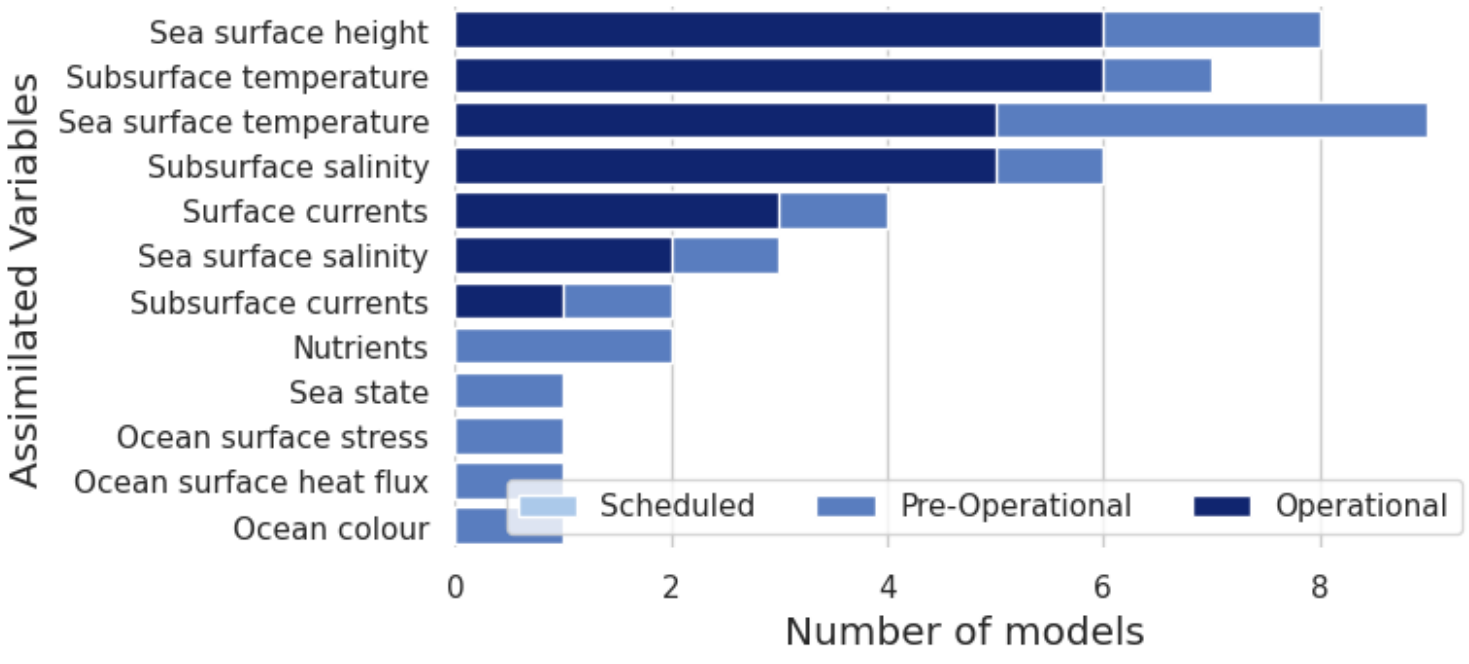


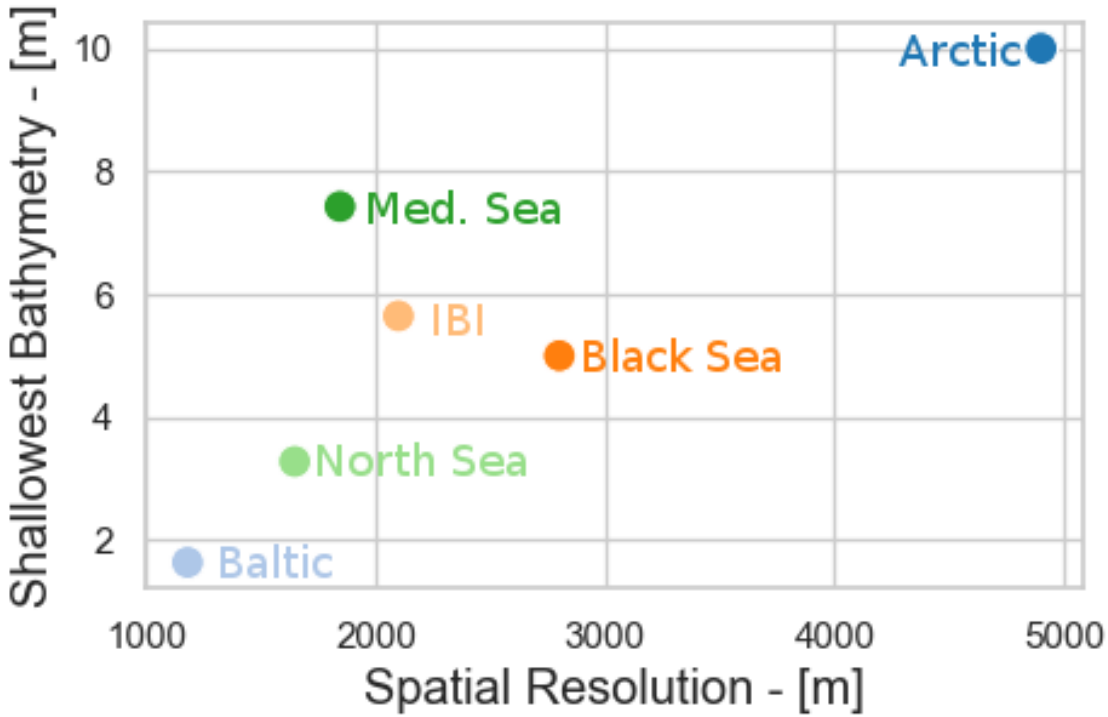


Data assimilation - MONGOOS

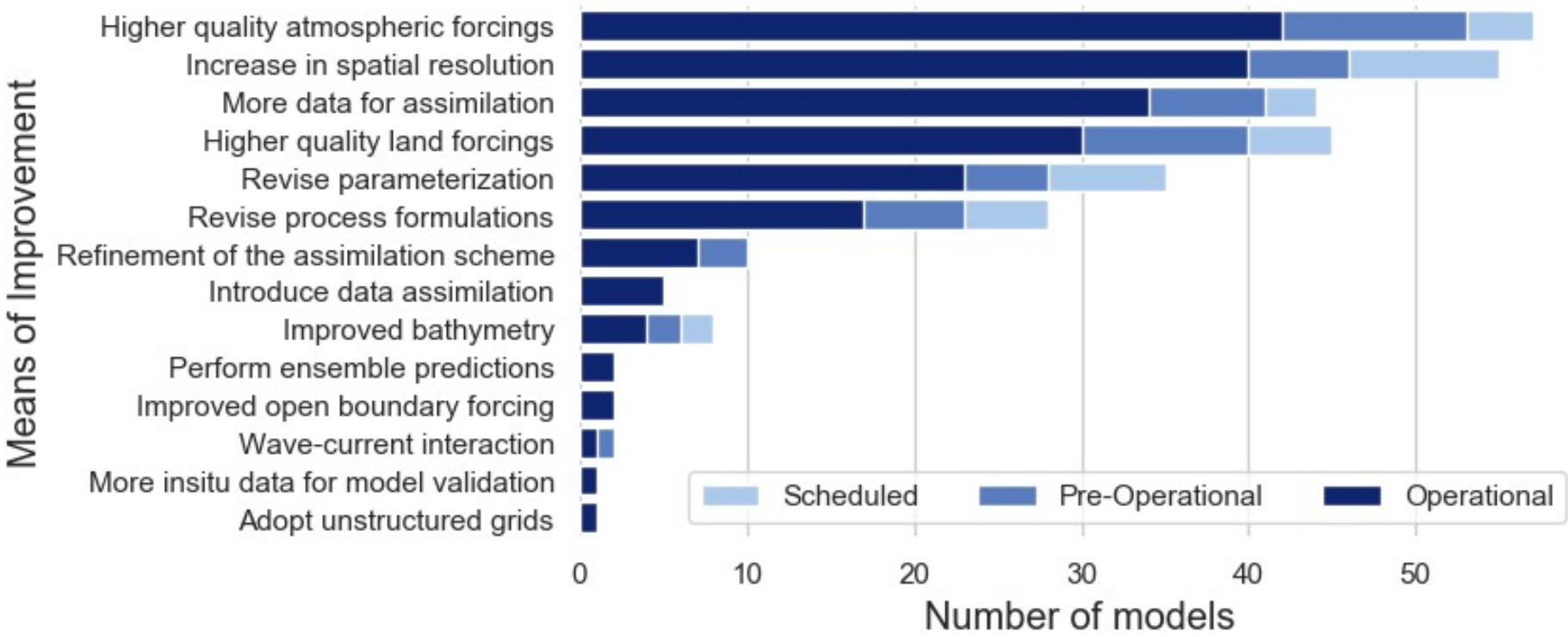




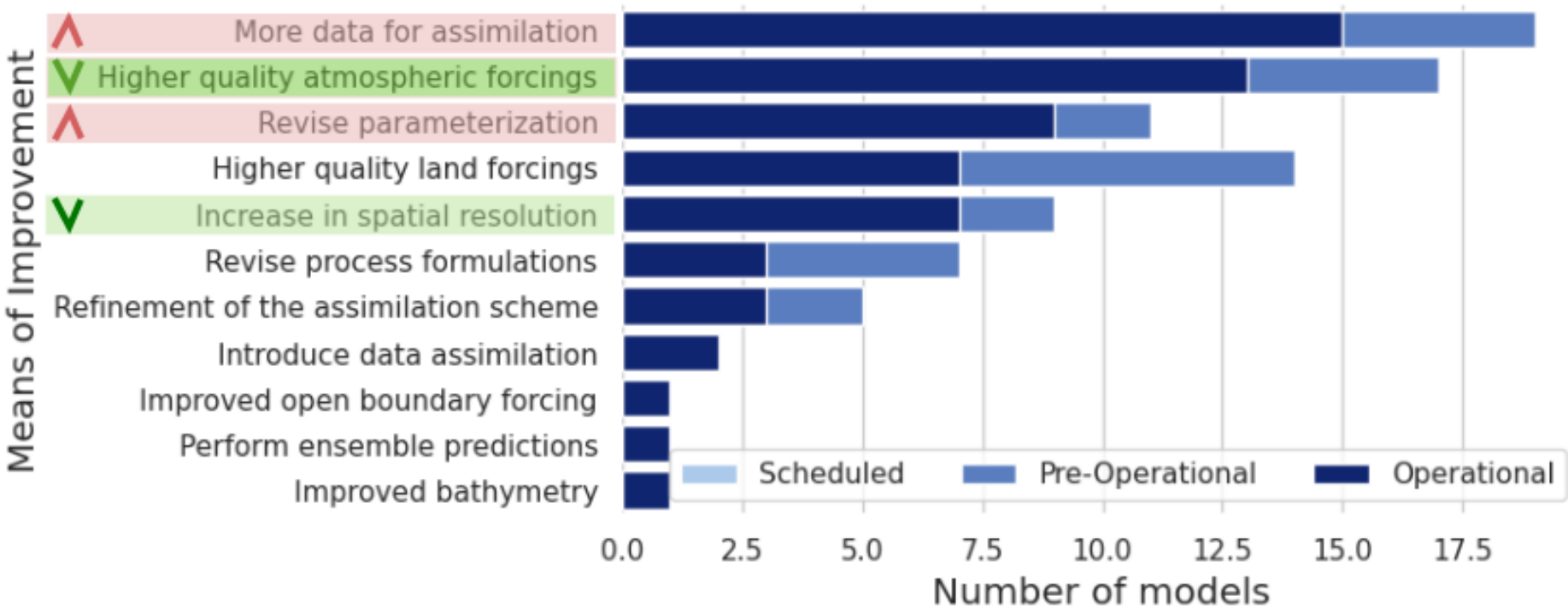
Coastal


Shallowest Bathymetry - [m]
10
8
6
4
2
Arctic
Med. Sea
IBI
Black Sea
North Sea
Baltic
1000
2000
3000
4000
5000
Spatial Resolution - [m]

Means of improvement



Means of improvement - MONGOOS



Recommendations

Recommendations

Disparity in European Modelling Capacity

In terms of

- Quality of forcings.
- Model engine and processes.
- Assimilation procedures.

Recommendations

Homogenization

Best Practices – Modular codes – Inter-comparison exercises.

Recommendations

Homogenization

Best Practices – Modular codes – Inter-comparison exercises.

Poor capacity in biogeochemical operational modelling

- Lack of real-time land forcing service (incl. nutrient loads).
- Bottlenecks in the provision of near-real time datasets able to constrain biogeochemical phenomena.

Recommendations

Homogenization

Best Practices – Modular codes – Inter-comparison exercises.

Enforce biogeochemical capacity

Real-time land forcing service – Data provision for BGC assimilation.

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Generalize the use of data assimilation

Generalize operational data delivery – Capacity building – Unlock coastal.

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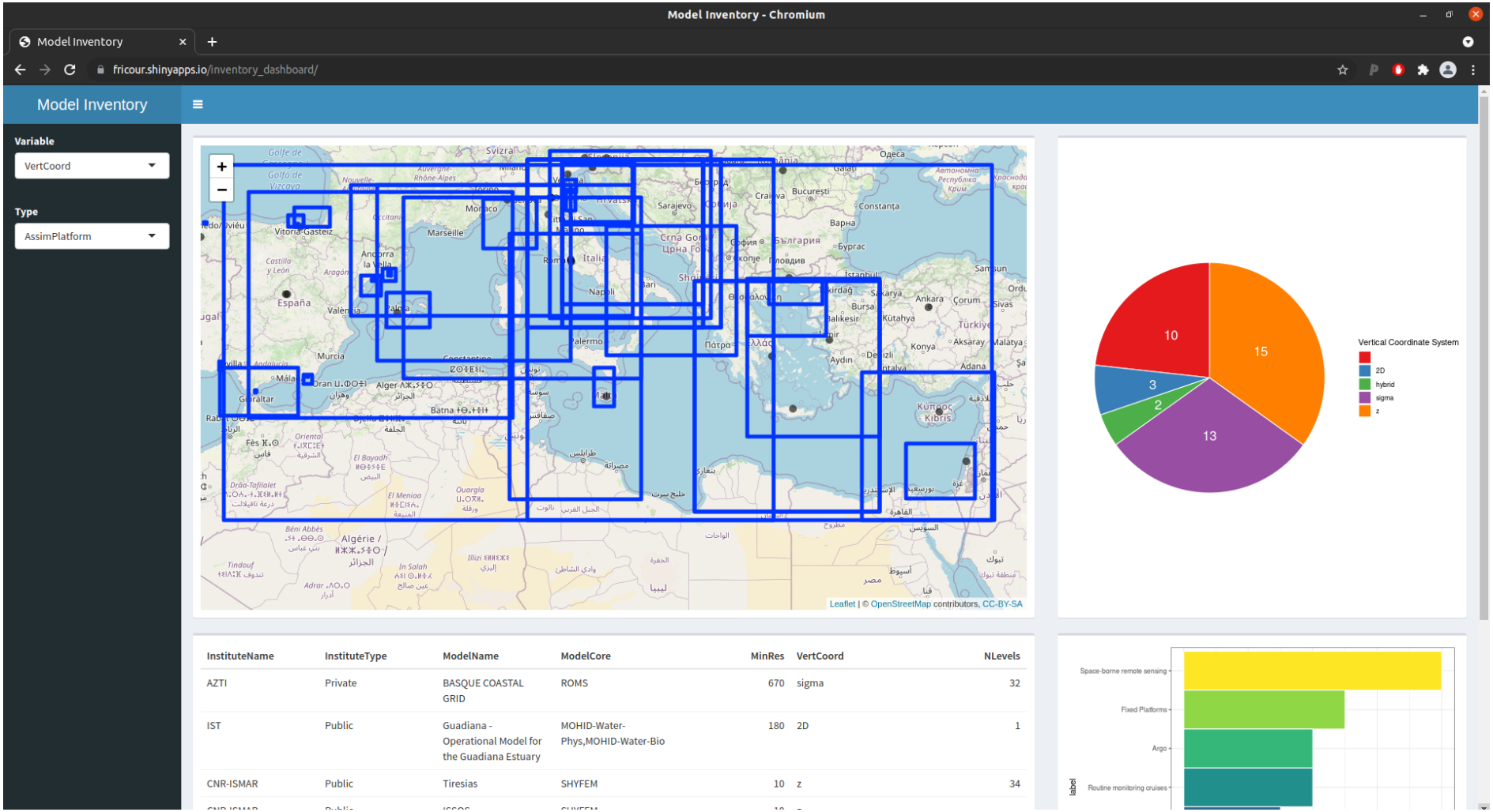
Generalize operational data delivery – Capacity building – Unlock coastal.

Further pan-European surveys

Involve private and downstream operators – Dissemination – Continuation

Furher Survey - Dissemination



Furher Survey - Continuation

EuroGOOS Coastal Operational Modeling Capacity Assessment

This survey is done in the Framework of the EuroGOOS Coastal Working Group (www.eurogoos.eu/coastal-wg/) and its main objective is to draw an updated inventory of the actual operational, or pre-operational, coastal modelling capacities in the European Regional Seas, in the Physics, Biogeochemistry or Biology domains. Note that the process-oriented numerical studies are outside the scope of this questionnaire.

It will take you no more than 20 minutes to complete the survey and your responsed would help to increase the visibility of your operational model and also the whole community to have a complete overview of what are the coastal modelling capacities in Europe, and also to provide recommendations for further improvements.

*Required

1. **Email address** *

2. **Name of Organization/Institute** *

3. **Type of Organization/Institute**
   Mark only one oval.
   - ◯ Private
   - ◯ Public
   - ◯ Mixed Public-Private
   - ◯ Other: _____

4. **Model Name**
   Name of the model implementation

Thanks to all contributors !!

frontiers in Marine Science

ORIGINAL RESEARCH
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Operational Modeling Capacity in European Seas—An EuroGOOS Perspective and Recommendations for Improvement

Arthur Capet[1], Vicente Fernández[2], Jun She[3], Tomasz Dabrowski[4], Georg Umgiesser[5], Joanna Staneva[6], Lőrinc Mészáros[7], Francisco Campuzano[8], Laura Ursella[9], Glenn Nolan[2] and Ghada El Serafy[7]*

[1] MAST-FOCUS, Liège University, Liège, Belgium, [2] European Global Ocean Observing System (EuroGOOS), Brussels, Belgium, [3] Department of Research and Development, Danish Meteorological Institute, Copenhagen, Denmark, [4] Marine Institute, Ocean Science and Information Services, Galway, Ireland, [5] ISMAR-CNR, Venice, Italy, [6] Helmholtz-Zentrum Geesthacht Centre for Materials and Coastal Research, Geesthacht, Germany, [7] Deltares, Delft, Netherlands, [8] Mechanical Engineering Department, MARETEC–Marine Environment and Technology Center, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal, [9] Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS), Trieste, Italy

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Anna Milena Zivian,
Ocean Conservancy, United States