



EMODnet
European Marine
Observation and
Data Network

EMODnet Sea-basin Checkpoints Results
Physics

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Physics theme

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<http://www.emodnet-atlantic.eu/>



General

⦿ All basins

- Gridded models outputs provided by Copernicus typically have a resolution of around 7km
 - ✓ which is too coarse for some applications (eg broad-scale habitat mapping, MPA connectivity, Oil platform) which would require hectometric resolution
 - ✓ Due to that coarseness some grid cells near the coastline have no value. This complicates the oil spill modelling in an area of particular importance, that of predicting whether the oil would reach the coast.

⦿ Atlantic

- Typically models (e.g. currents, waves, light, temperature, etc.) provide little information on the reliability of the values they compute.

⦿ Mediterranean

- The appropriateness is
 - ✓ MODERATE for the majority of the input data sets
 - ✓ LOW for vertical and temporal coverage, horizontal resolution, temporal validity (last time the data set was updated).
- For most parameter categories major gaps are in horizontal coverage and horizontal resolution
- At top of the list of unfit for use data is all wave parameters both in terms of availability and appropriateness



Ice

◎ **Baltic**

- high-resolution (1-3km) weather and ocean-ice assimilation and reanalysis (>30years) should be developed
- the total mass of ice is difficult to measure and lack of long-term time series

◎ **Artic:**

- data on ice cover in sea expressed in kg are not available.
- Starting from 2010 if estimates of ice thickness are available there is no dataset available on change in average ice cover, so estimates must be made from available data on ice extent and ice thickness.
- Obtaining good measures of average ice thickness over the last decade is challenging because of data scarcity in space and time. For the past 50 and 100 years it was not possible.



Waves – Wind speed

⊙ **Mediterranean**

- The appropriateness for waves and winds is LOW: horizontal and temporal resolution are not appropriate for challenges' needs.
- Availability of both waves and winds is LOW because they are commercial also from Met Offices
- Data delivery scores LOW for spectral wave datasets

⊙ **Atlantic, Baltic and Arctic**

- lack of appropriate information on wind vertical distribution

⊙ **North Sea**

- The wind farm siting challenge found that wind and wave conditions
 - ✓ were either charged for at a cost per point of data
 - ✓ or had a coarse resolution meaning that their usefulness for site selection was limited



Currents, temperature, salinity

⊙ Atlantic

- There is a clear lack of sea surface current observations which are a key input for many applications:
 - ✓ Marine safety (search and rescue, oil spill)
 - ✓ Marine resource (Renewable marine energy)
 - ✓ Environment (water quality monitoring, pollution control)
 - ✓ weather forecast and ocean 3D modeling (assimilation, validation)
 - ✓ research

⊙ Baltic

- spatiotemporal distribution of long time series for temperature and salinity (>50 years) is uneven, and is available only from a limited number of locations



Sea-level

⊙ **Mediterranean**

- The monitoring system is lacking resolution and coverage, both spatial and temporal

⊙ **Arctic**

- There are no long term data available in Greenland, Canada and the USA

⊙ **Atlantic**

- The number of GPS measurements at tide-gauge locations, which is needed to provide information on vertical land motion, is not sufficient

⊙ **Baltic**

- most of the sea level data from Poland, Lithuania and Latvia are not included in EMODnet database
- some historical data may be recorded in paper, therefore will need digitization



River

⊙ **Mediterranean**

- River flow and discharge score LOW for 3 out of 8 appropriateness indicators

⊙ **Artic**

- For the requested parameters many time series are relatively short, a few decades in many cases, and often incomplete
- It is worrying that stations have been closed and data are delayed

⊙ **Baltic**

- the river temperature dataset has few observations, discharge observations are available from different databases but with major data gaps.
- The BHDC is no longer updated