



Black Sea

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GROWTH AND INNOVATION IN OCEAN ECONOMY GAPS AND PRIORITIES IN SEA BASIN OBSERVATION AND DATA

THE BLACK SEA

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Objectives

The EMODnet-BlackSea project aims to quality assess, extract the synergies between and identify the gaps of, the present monitoring data sets for the entire Black Sea in view of eleven applications or 'challenges':

1. Windfarm siting
2. Marine Protected areas
3. Oil Platforms leak
4. Climate
5. Coasts
6. Fisheries management
7. Fisheries impact
8. Eutrophication
9. River inputs
10. Bathymetry
11. Alien species

The main aim of the EMODnet Black Sea Checkpoint is to assess the fitness for purpose of the present basin and coastal scale monitoring system by producing 'selected outputs' or 'targeted products'. This

assessment methodology is known as 'end-to-end' engineering for innovative technologies and it will allow to define the gaps and the sustainability of the marine monitoring system for the Black Sea.

In particular, AM&WFG of the University of Athens leads the Work Package 2 (Wind Farm Siting) with main goals to:

- **Determine the suitability of sites for wind farm development in particular:**
 - ✓ **on border between Bulgarian and Romanian waters;**
 - ✓ **on border between Turkish and Bulgarian waters;**
 - ✓ **on border between Turkish and Georgian waters**
- **Evaluate the accuracy and the suitability of the available data via statistical analysis and assessment of the confidence limits of the high resolution data sets**

Expected Outcomes

The practical outputs of the project will be:

1) carry out a literature survey;

2) for each Challenge:

- List the data sources and data providers, as well as their product specifications;
- Produce specific outputs and associated confidence limits;
- Perform an analysis of the usefulness of each data source in terms of location, price, attributes, delivery and usability;
- Provide a summary of effort (person days) spent to meet the required outputs broken down in several categories;

3) Provide the assessment of the basin scale monitoring by means of:

- 'Data Adequacy Reports' (DAR) that will consider the Literature Survey, the outcome of the

Challenges and any new information to report on the Adequacy of marine data in the Black Sea;

- Panel reports that will evaluate the DAR;
- A stakeholder workshop where the project results will be presented.
- A GIS Portal providing free and unconditional access to outputs from the Challenges, the DAR and links to other assessment reports

For Wind Farm Challenge, in particular the expected outcomes will be:

- A high resolution wind-wave-tides database for the Black Sea area with complementary data for bathymetry, geology, ecosystem and habitats, (see inputs)
- Assessment of the available database through a statistical analysis of the database
- Assessment of the confidence limits of all data sets for the test regions

Methods

The tender sets out a methodology to examine existing data, analyze them for eleven areas of application or 'challenges', make available the outputs to the stakeholders through a Web Portal and propose how the monitoring system can be optimized.

The Black Sea region is defined to be the territorial and jurisdictional waters of EU and non-EU Member States, as well as the open sea. The boundaries are the coastlines including the Sea of Azov.

The methodology to set up such an assessment is the following:

- link and collect the existing data sets across Europe, at national and international level. The tender already specifies that the main European marine infrastructure to use are the seven existing EMODnet Portals, the Copernicus/GMES Marine Service and the Data Collection Framework for Fisheries but other national and international databases will be used;
- develop an innovative Information System for the 'Challenges' and an advanced EMODnet Black Sea Checkpoint Portal that is interoperable with the EMODnet existing Portals and that offers a unique point of reference (Metadata service) in Europe to multipurpose data for re-use and exploitation by private and public users;
- develop assessment criteria in terms of accessibility, availability, multiple-use, efficiency, reliability, time consistency, space consistency, etc. of the primary, upstream data at the scale of the entire Black Sea, using the targeted products developed by the project for each Challenge.

Wind Farm Siting Challenge, led by AM&WFG-NKUA, focuses on

- **Task 1. Database building**

- Hindcast model results from high resolution simulations obtained within the FP7 MARINA project will be used:
- 10-year (2001-2010) atmospheric, wave, tidal and ocean currents data
- high spatial and temporal resolution (0.05x0.05 degree horizontal resolution, 1-hour time resolution, 5-vertical levels at 10, 40, 80, 120, 180 m)
- The wave parameters are co-located with the meteorological output fields

- **Task 2. Database analysis and assessment for windfarm siting**

- Black Sea: The sea borders between Bulgarian – Romanian, Turkish – Bulgarian and Turkish - Georgian waters.
- These data will be stored in a Structured Query Language (SQL) database
- Resource mapping based on a variety of statistical approaches