

Recent developments on the integrated information system for the support of the implementation of the EU Marine Strategy Framework Directive in Greece

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According to the Marine Strategy Framework Directive (MSFD), EU Member States must operate monitoring programmes for the ongoing assessment of the environmental status of their marine waters on the basis of the indicative lists of elements set out in Annex III and the list set out in Annex V, and by reference to the environmental targets established pursuant to Article 10. Monitoring programs aim to evaluate the 11 Descriptors, including 40 Criteria and 56 Environmental Indicators, as defined in the MSFD (2008/56 / EU). Based on the 11 Descriptors, it is estimated that the Good Environmental Status (GES) is achieved or not. This means that monitoring should provide data which support the indicators in order to assess if Good Environmental Status (GES) has been achieved or is maintained, to measure progress towards environmental targets and evaluate the effectiveness of measures to achieve or maintain GES.

In respect to the monitoring requirements, the Hellenic Centre for Marine Research (HCMR), as the responsible organization for carrying out the required actions for the monitoring of the quality of the Greek marine waters, inter alia, is aiming to produce services capable to be used as indication tools of Good Environmental Status (GES) of marine waters across Europe and for Greek territory waters. The services produced are compliant to Inspire Directive and they are also using the Open Geospatial Consortium Web Services technologies.

The services have been divided into three different levels according to their aim and usability as following:

- The first level deals with the acquisition of monitoring data sets produced and gathered under the activities of the MSFD monitoring programs concerning Greek Waters. These data sets were processed and stored into a Data Base System.
- The second level deals with data sets from other Projects dealing as well with water monitoring. The Projects contributed for this aim mainly are: a) Poseidon Project, b) Argo Floats Project and c) WFD and others monitoring Projects.

These data sets from the Projects above have been also processed and either stored into the Data Base System, either are embedded to the platform via a specially developed machine to machine interface.

- The third level of services will stand as the presentation layer of the gathered water monitoring data. In particular, Good Environmental Status (GES) indicators will be produced for every Descriptor of water monitoring among any of water bodies categories which are: a) Sea Region Subdivisions, b) Territorial Water Bodies and c) Coastal Water Bodies.

In the future phases a Decision Making System will be developed and the Data Base will be enhanced with socioeconomic data for every monitoring area. Thus, the Decision Making System will offer an

overall picture of the water health status among the different water body categories assisting and offering guidance to the Decision Makers with the decisions they have to be made.

For the visualization needs a Web based Geospatial portal has been developed for the end users giving the capabilities to navigate and search among the various water bodies areas for specific Descriptors and indicators data to be collected and download for further activities.

The architecture of the portal has as following:

- Postgres Relational Data Base System with stored processed data.
- OGC GeoServer for creating the necessary geospatial layers for any of the water bodies areas and stations of measurement.
- Interactive Web page interface for navigation, searching and downloading data sets.

The figures bellow depict some aspects of the portal.

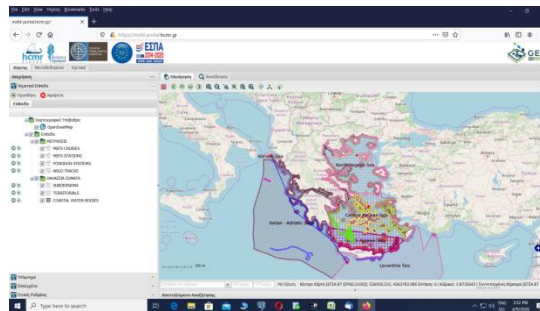


Figure 1: all water bodies on sight

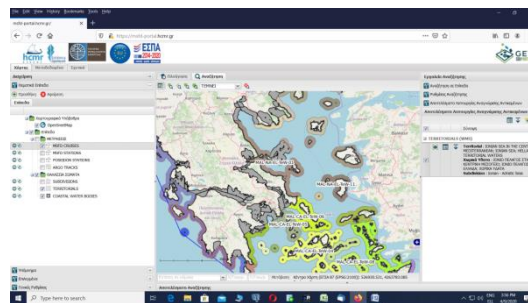


Figure 2: Territorial water bodies and Ship Cruise route

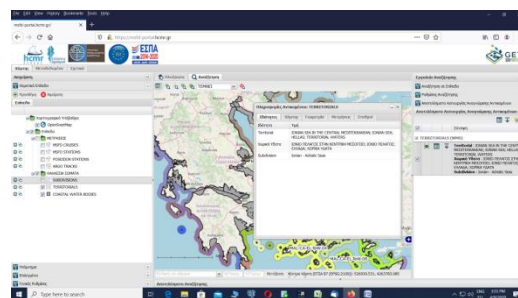


Figure 3: Information of specific territorial water body