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► **To cite this version:**

Sara Almeida, Paulo Nunes. Hidrografico + A contribution to the knowledge of the ocean. 9th EuroGOOS International conference, Shom; Ifremer; EuroGOOS AISBL, May 2021, Brest, France. <hal-03287551v3>

HAL Id: hal-03287551

<https://hal.science/hal-03287551v3>

Submitted on 23 Sep 2021

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HIDROGRAFICO + A CONTRIBUTION TO THE KNOWLEDGE OF THE OCEAN

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Abstract

The Ocean Decade promoted by United Nations leads ocean knowledge to international community top priority, and puts the spot lights in all marine geospatial data and knowledge producers.

The Portuguese Hydrographic Institute (IH) as public organization and marine data and knowledge producer keeps his data management processes in line with national and European data policies. To address the geospatial data needs IH starts to build a new Marine Spatial Data Infrastructure through the Hidrográfico + project who granted funding from SAMA2020 program (POCI-02-0550-FEDER-035422).

This paper presents the Hidrografico + Marine Spatial Data Infrastructure as an important asset for ocean decade.

Keywords: Marine Spatial Data Infrastructure, INSPIRE, Geographic Information Systems, Geospatial Webservices.

1. Introduction

Portuguese Hydrographic Institute (IH) is a public body involved in marine science activities. Since 80s it works in close cooperation with regional entities keeping and managing a network of permanent observations that includes tide gauges, moored buoys, coastal weather stations to support oceanographic activities and more recently, high frequency radars.

Complementing the operational oceanography component (monitoring, data management and forecasting), IH has participated in several scientific research projects, that have enabled the contribution to the knowledge of the marine environment.

The digital society rises new needs for users and data providers. In order to improve data management process and data availability, IH started to develop a new Infrastructure for Marine Spatial Data through the Hidrografico + project, funded by the SAMA2020 program (POCI-02-0550-FEDER-035422).

This article presents the construction process of the Marine Spatial Data Infrastructure, Hidrografico+, which represents an important tool for the next decade of knowledge of the oceans.

2. Methods

The overall goal of Hidrografico + project is to build an integrated Marine Spatial Data Infrastructure (MSDI). At the very beginning the objective of the project was defined as 'getting a single access point for all geospatial data and information produced by IH'. For accomplishing that goal, the project team starts by collecting the stakeholders needs, legal requirements and data sources, thus defining the requirements (Figure 1).

The software development team combines multiple commercial and open source applications (e.g. Oracle, PostgreSQL and Postgis, ArcGIS Server, GeoServer, ncWMS Server and Geonetwork) to connect multiple data users to IH geospatial data through a controlled, centralized and integrated environment (Figure 2).

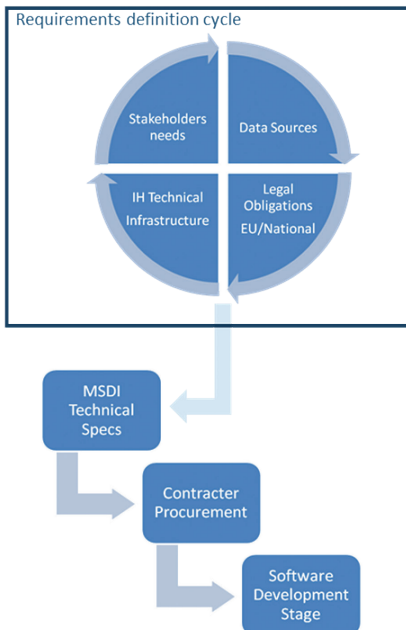


Fig. 1. Hidrografico+ project development plan.



Fig. 2. Functionalities from the MDSI.

3. Results

The Hidrográfico+ MSDI started the software development phase in 12 of December 2019. Since first of August 2020 the MSDI portal is online accessible at URL – <https://geomar.hidrografico.pt>.

The MSDI has a central geoportal (Figure 2) where users can look for, visualize and access the geospatial datasets. Humans and machines users could access directly to data services by linking their applications to the OGC webservices endpoints. IH wants to provide a good level of service to their MSDI users. The level of service is continuously monitored by a built in analytics and metrics system.

The MSDI is now online with numerous data layers accessible and several capabilities still under development. It encompasses, in the different components, the monitoring of the ocean, the operational forecasts products and the users services.

As national hydrographic office, the infrastructure provides bathymetry, access to the chart catalogue, either nautical, electronic or fishing series charts, base maps for digital models and bathymetric model for the Portuguese EEZ including Azores and Madeira (Figures 3 and 4).

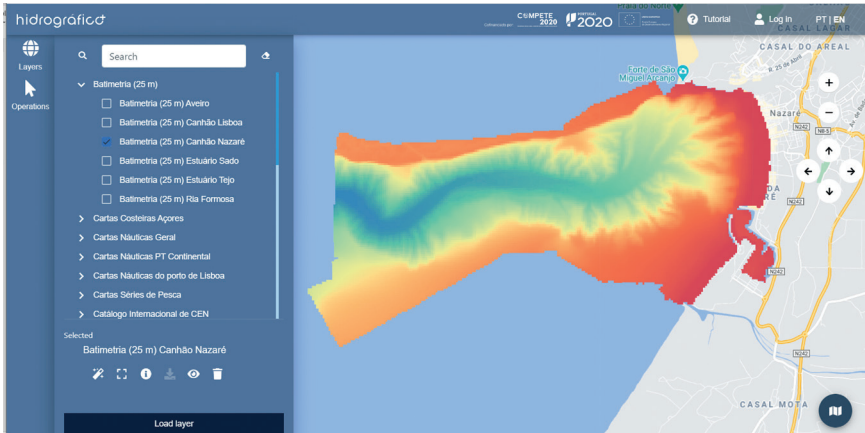


Fig. 3. Example of Nazare bathymetry.

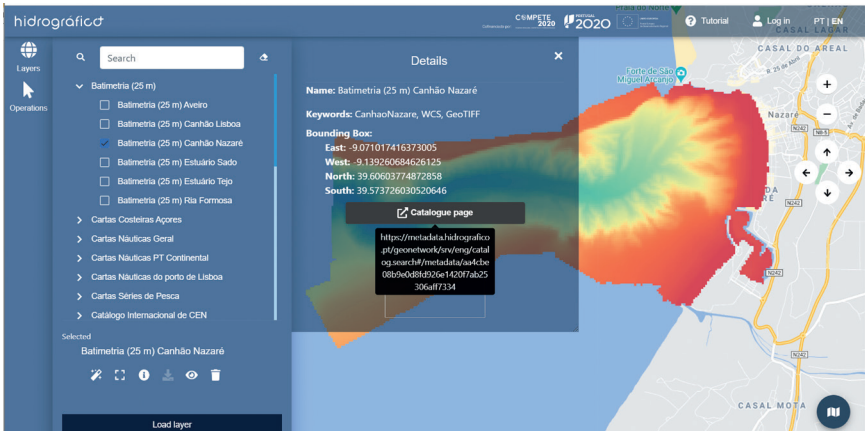


Fig. 4. Details and link to the metadata catalogue.

This MSDI presents the network of permanent observing platforms, regarding tide gauges, moored buoys and HF Radars (Figure 5), where it is possible to access to near real time data.

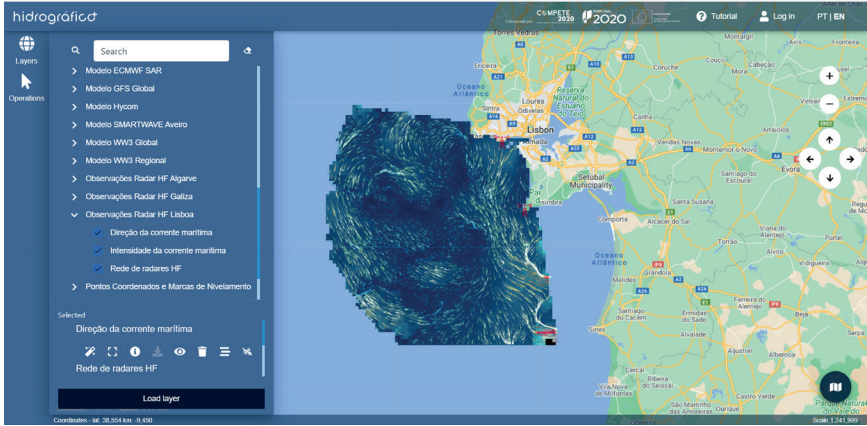


Fig. 5. Screenshot of near real time data from Lisbon HF Radar stations.

At the same point it is possible to do the comparison between tide gauges' data and predictions, checking the deviation and view graphically or tabulate the series (Figure 6). An option of download is available with different outputs' resolution.

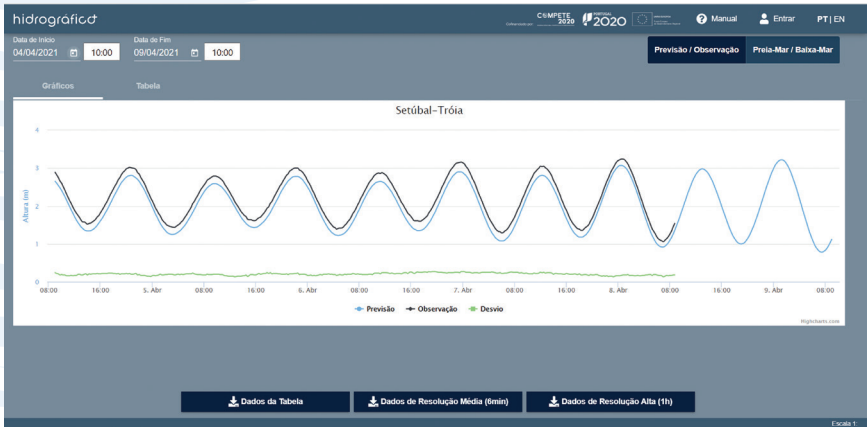


Fig. 6. View of Setúbal tide gauge and predictions.

One of the main purposes of this project was to publish validated datasets findable and accessible. In the next stage, the goal will be the harmonization process to convert the current dataset models to INSPIRE data models. This will require a new specific project but the most important step was to get datasets well documented available and accessible since now. The MSDI is based on open source technology and has been developed in a modular approach. This requirement potentials the evolution of the infrastructure and giving the possibility to insert or remove data services in an easy way.

4. Conclusion

With this new portal, Portuguese Hydrographic Institute is actively committed to contributing to the Decade of the Oceans, meeting the end-users needs and providing the stakeholders with new products and several services.

Acknowledgements

The 'Hidrográfico +' project gets funding from FEDER -POCI-02-0550-FEDER-035422. Authors acknowledge to all the Portuguese Hydrographic Institute and Deimos Eng. colleagues that give a contribution to the Hydrographic + Project.



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