

EGU22-11661

<https://doi.org/10.5194/egusphere-egu22-11661>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Novel Underwater Mapping Services through European Open Science Cloud

Konstantinos Karantzas^{1,6}, Paraskevi Nomikou², Paul Wintersteller³, Josep Quintana⁴, Kalliopi Baika⁵, Valsamis Ntouskos¹, Danai Lampridou², Jafar Anbar⁵, and NEANIAS team members²

¹National Technical University of Athens, Greece (karank@central.ntua.gr)

²National and Kapodistrian University of Athens, Greece

³Teledyne Marine, Germany

⁴Coronis Computing, Spain

⁵Aix-Marseille Universite CNRS, France

⁶Athena Research Center, Greece

Seafloor mapping is closely related to studying and understanding the ocean, which has increasingly raised interest in the past years. Coastal management, habitat loss, underwater cultural heritage, natural disasters, marine resources and offshore installations have underlined the need of charting the seabed. This upturn has been encouraged by many national and international initiatives and culminated in the declaration of the Decade of Ocean Science for Sustainable Development (2021-2030) by the United Nations, 2017.

Novel Underwater cloud services offered through the EC H2020 NEANIAS project support this joint quest by implementing Open Science procedures through the European Open Science Cloud (EOSC). The services produce user-friendly, cloud-based solutions addressing bathymetry processing, seafloor mosaicking and classification. Hence, NEANIAS Underwater services target various end-users, representing different scientific and professional communities by offering three applications.

The Bathymetry Mapping from Acoustic Data (UW-BAT) service provides a user-friendly and cloud-based edition of the well known open-source MB-System, via Jupyter notebooks. This service produces bathymetric grids and maps after processing the data throughout a flexible and fit-for-purpose workflow by implementing sound speed corrections, applying tides, filters and choosing the required spatial resolution.

The Seafloor Mosaicking from Optical Data (UW-MOS) service provides a solution for representing a large area of the seafloor, in the order of tens of thousands of images, and tackling visibility limitations from the water column. The service performs several steps like camera calibration, image undistortion, enhancement, and quality control. The final product could be a 2D image Mosaic or a 3D model.

The Seabed Classification from Multispectral, Multibeam Data (UW-MM) service focuses on seabed

classification by implementing cutting-edge machine learning techniques and at the same time providing a user-friendly framework. The service unfolds within four steps: uploading the data, selecting the desired seabed classes, producing the classification map, and downloading the results.

Therefore, NEANIAS Underwater services exploit cutting-edge technologies providing highly accurate results, regardless of the level of expertise of the end-user, and reducing the time and cost of the processing. Moreover, the accessibility to sophisticated services can simplify and promote the correlation of interdisciplinary data towards the comprehension of the ocean, and the contribution of these innovative services is expected to be of high value to the marine community.