

GEOHAB 2022

Marine Geological & Biological Mapping

The NEANIAS Cloud-based Underwater Services

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www.neanias.eu

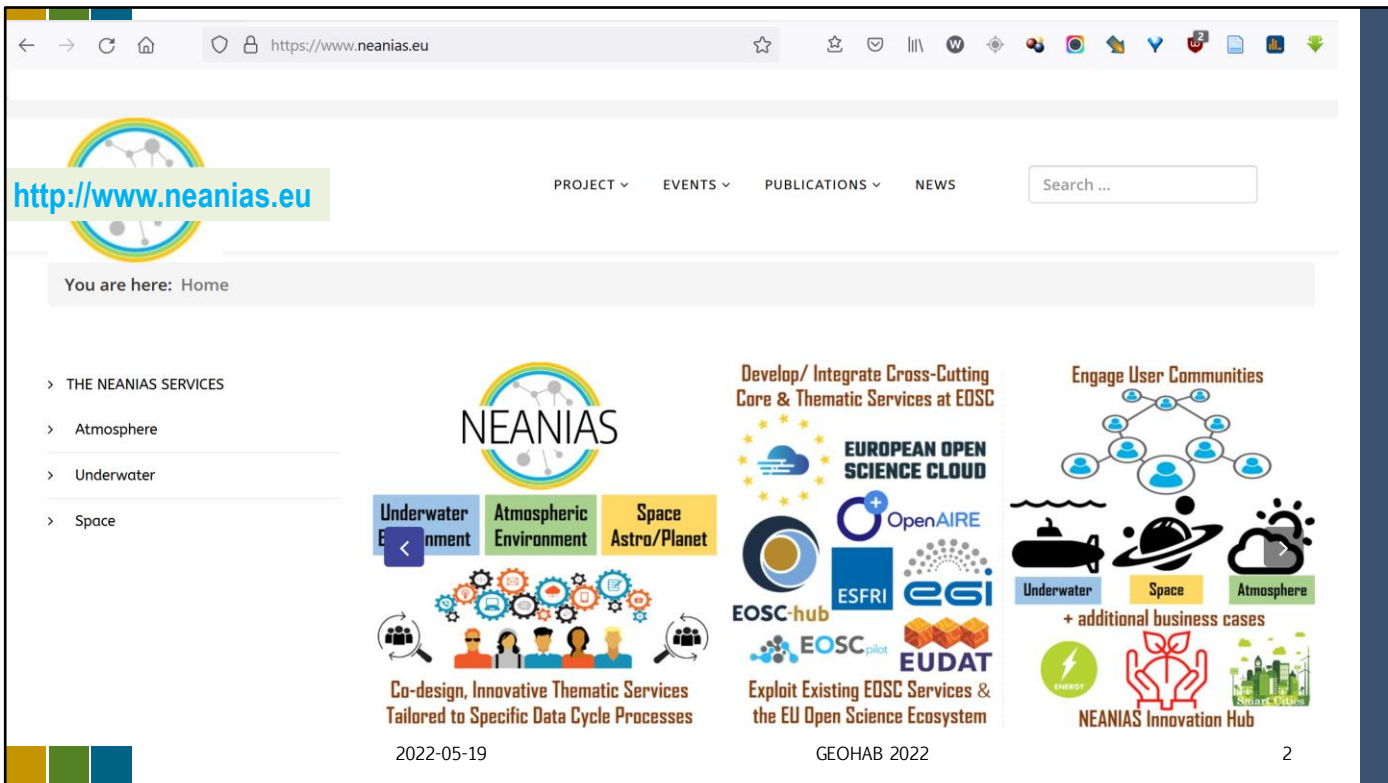


Novel EDSC Services for Emerging
Atmosphere, Underwater & Space
Challenges

NEANIAS receives funding from
European Union under Horizon
2020 Research and Innovation
Programme under grant
agreement No. 863448



..P.W. working as a Engineering Service Manager and Senior Deep Water Surveyor for Teledyne Marine.



NEANIAS stands for **Novel European Open Science Cloud Services for Emerging Atmosphere, Underwater & Space Challenges**. It is an ambitious EU-funded H2020 project that comprehensively addresses the challenges set out in the ‘Roadmap for EOSC’ foreseen actions. NEANIAS also is ancient Greek and means “Young guy”.

NEANIAS is a project with more than 20 partners from all over Europe.

- > 9 Thematic Services
- > 3 In Each Research Sector:
 - Underwater
 - Atmosphere
 - Space
- > More than 30 Core Services



2022-05-19

Underwater Work Package Leader
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NEANIAS drives the co-design and delivery of innovative thematic services, derived from state-of-the-art research assets and practices in three major sectors: Underwater, Atmospheric and Space research, each engaging numerous academic and business groups, researchers, professionals, end-users and governmental entities.

9 thematic services, 3 within each research sector, and more than 30 core services are designed, developed and validated towards a qualified cloud-based solution. The thematic services address cross-cutting application field in the mentioned sectors while the **core** ones deliver reusable **cross-sector services** that are generic yet able to be further exploited and specialized both, from internal NEANIAS, as well as external, other parties' services.

Underwater surveys have numerous scientific and commercial applications in the fields of you name it: archaeology, geology & submarine geohazards, biology, and oil/gas and renewable energy, as well as marine engineering and robotics.

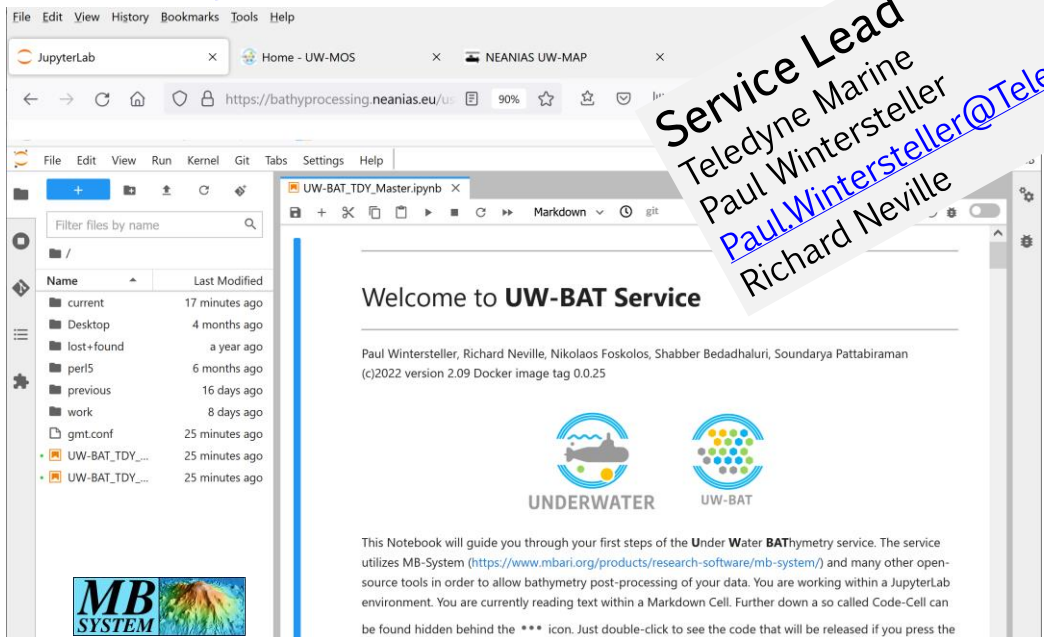
Within NEANIAS we are developing the following underwater services that are onboarded to EOSC in its next to last release.

Our Underwater Workpackage Leader is Evi Nomikou from University of Athens



UW-BAT Bathyprocessing

<https://bathyprocessing.neanias.eu>



The **Bathymetry Mapping from Acoustic Data service** (UW-BAT) delivers an advanced user-friendly, cloud-based version of the popular open-source MB-System software for post-processing bathymetry through Jupyter notebooks with additional functionalities.

Aim for all NEANIAS thematic services is to create a cloud-based service and validated with several datasets and application scenarios targeted a Technical Readiness Level - TRL 8.

The Service is provided by Teledyne



UW-MOS Seabed Mosaicing

<https://uw-mos.neanias.eu>

Service Lead
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NEANIAS

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UW-MOS

Neanias UW-MOS Service

The Neanias UW-MOS service, developed by Coronis Computing S.L., deals with optical mapping in underwater environments. UW-MOS provides an operational solution for large area representation of the seafloor addressing also visibility limitations from the underwater medium. UW-MOS is composed of several sub-services or tasks to deal with the underwater mapping problem from images, presented below.

Please, [log in](#) to use this service.

CORONIS COMPUTING
Computer Vision and Machine Learning

2D mosaicing

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The **Seafloor Mosaicing from Optical Data service** provides an operational solution for large area representation (in the order of tens of thousands of images) of the, predominantly flat, seafloor addressing also visibility limitations from the underwater medium.

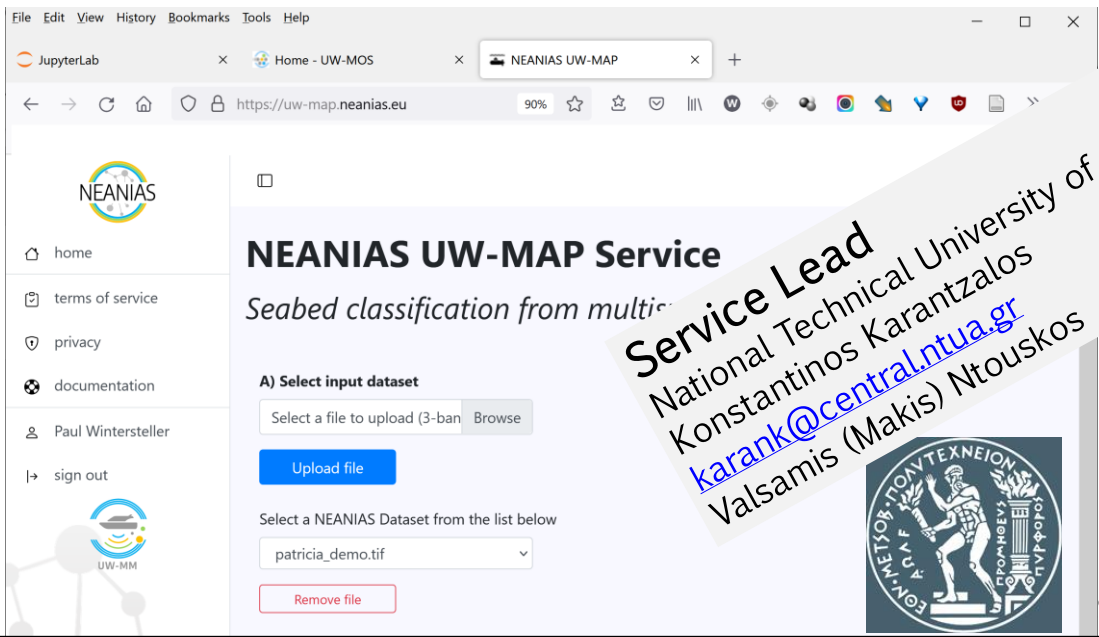
It provides image calibration, undistortion as well as enhancement and quality check beforehand 2D mosaicking and 3D reconstruction.

The service is provided by Coronis Computing and lead by Josep Quintana



UW-MAP Seabed classification from multispectral MBES data

<https://uw-map.neanias.eu>



Service Lead
National Technical University of Athens
Konstantinos Karantzas
karank@central.ntua.gr
Valsamis (Makis) Ntouskos

The **Seabed Classification from Multispectral, Multibeam Data service** delivers a user-friendly cloud-based solution integrating cutting-edge machine learning frameworks for mapping several seabed classes, validated for archeological, geo-hazards, energy, and other applications.

the goal is to further optimize and develop an efficient and robust multispectral aka multifrequency processing system integrating advanced machine learning tools for seabed classification.

‘The Service is provided by the National Technical University of Athens and lead by Konstantions Karanthalos.

Single Sign On – Supported by an
Authentication and Authorization
Infrastructure (AAI) Core Service

NEANIAS

NEANIAS SSO

English v

Username or email

Password

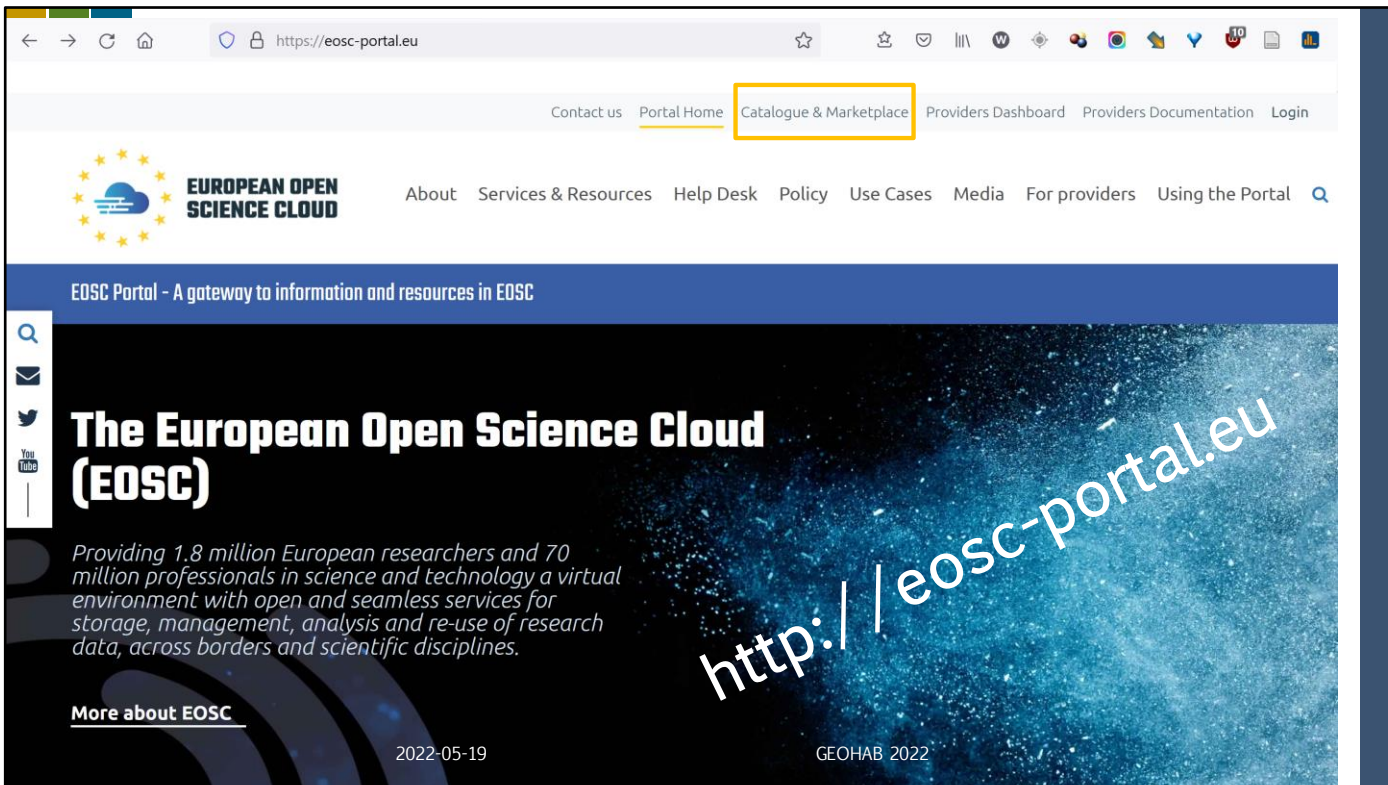
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Microsoft

Google

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As an example: One of the most used core services of our NEANIAS project – the commonly used AAI service. Feel free to login with your Microsoft or Google account. Many of your institute's emails are authorized against Microsoft and will lead you to your institutes Email-server for Authentication. Just give it a try if you don't have a Gmail account.



NEANIAS promotes Open Science practices and plays an active role in the materialization of the EOSC ecosystem by efficiently engaging large scientific and professional communities; therefore, it is actively contributing to the technological, procedural, strategic and business development of EOSC.



The screenshot shows the EOSC Marketplace interface. At the top, the URL is https://marketplace.eosc-portal.eu/services?object_id=&type=. The navigation menu includes 'Contact us', 'Portal Home', 'Catalogue & Marketplace' (highlighted), 'Providers Dashboard', 'Providers Documentation', and 'Login'. The main header features the 'EUROPEAN OPEN SCIENCE CLOUD' logo and a search bar with 'UW-' entered. Below the search bar, the page displays 'Looking for: UW-' with 21 results. A 'SUGGESTED' section lists three services: 'UW-MAP' (Seabed Classification from Multispectral Multibeam Data, Organisation: Athena Research and I...), 'UW-BAT' (Processing of Bathymetric Data, Organisation: Teledyne Marine), and 'UW-Mos' (Underwater Mapping Service, Organisation: CORONIS COMPUTING SL). The left sidebar contains 'All Resources' (21) and various categories like 'Access physical & infrastructures' (3), 'Aggregators & Integrators' (2), 'Processing & Analysis' (10), 'Security & Operations' (0), 'Sharing & Discovery' (12), 'Training & Support' (0), and 'Other' (2). The 'Filters' section includes 'Scientific Domains' with 'Natural Sciences' (14) selected. At the bottom, it shows '1-10 of 21 results', 'Sort by: Best match', and 'Items on page' options (10, 20, 30). A 'Report a technical problem' link is visible in the bottom right corner.

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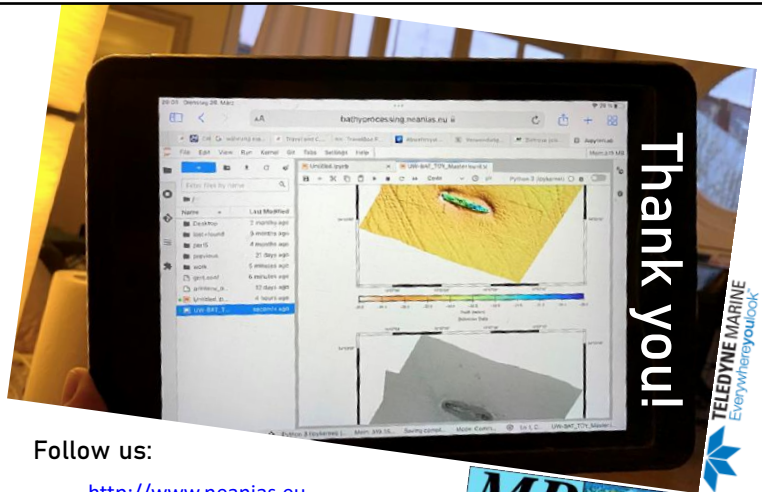
Find our services via the EOSC Marketplace by keywords of e.g., Underwater, UW- or NEANIAS. They are all currently before or in the next to last release of the project. Please feel free to test and validate them. Every feedback counts to evaluate further investigations and research in that direction.



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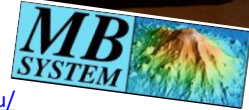
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Thank You for Your Attention!