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March 2023, Issue 4

NAUTILOS Newsletter

New approach to underwater technologies for innovative, low-cost ocean observation



NAUTILOS half way through - a word by the Coordinator, Gabriele Pieri (CNR)

The NAUTILOS project went through its mid-term last October 2022; two main achievements highlight this landmark. The first is represented by the first in-person plenary Consortium meeting. The NAUTILOS Consortium came together for a fruitful 3-day meeting in Faro hosted by the University of Algarve.



The other significant result is represented by the positive conclusion of the activities of Work Package 4, which along with the previously concluded Work Package 3, characterises the end of the development phase for the technologies of the project, namely sensors and samplers. At this point, the new generation of cost-effective sensors and samplers has been described and implemented.



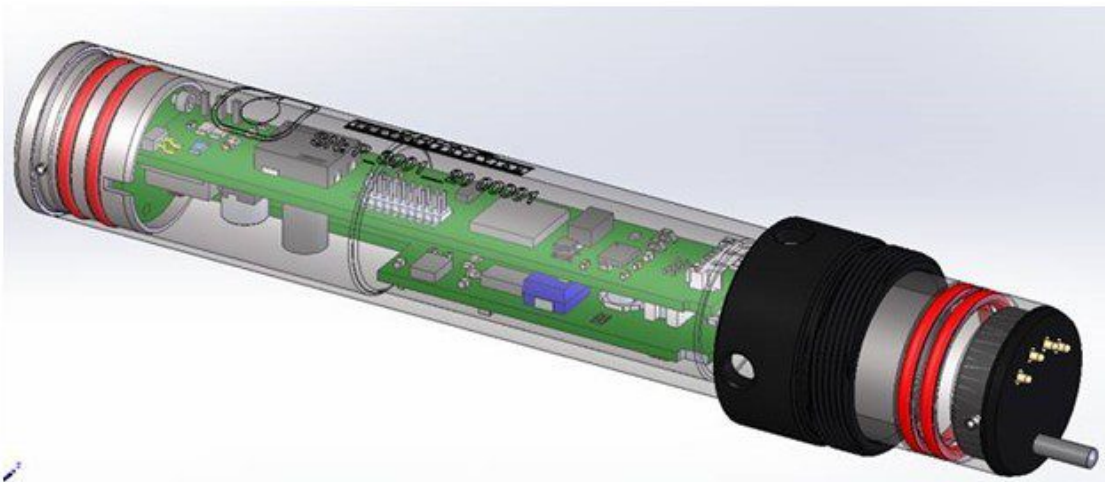
In these first two years of the project, all planned deliverables were completed, reaching 54 submitted at Month 30. Three more milestones were achieved by month 24: the drafting of the first version of the Exploitation Strategy, along with an Open Access Instrumentation Roadmap, led to the first one in WP11; the development, as mentioned earlier, of sensors and samplers, brought to the achievement of the milestone for WP3 and 4; finally, another milestone has been achieved with the

Looking forward to the following steps, several actions have already been carried out towards integrating the various technologies into the different platforms envisaged to host them. In parallel, other activities are underway to calibrate and validate many of the developed sensors and samplers. An important appointment, in this regard, is represented by the calibration workshop week foreseen in connection with the next Consortium meeting, which NIVA will host in Oslo in May 2023. This calibration workshop will see multiple technologies tested in different environments, representing a crucial activity for Work Packages 5 and 6. At the same time, it will also be an excellent opportunity in view of the demonstration phase of Work Package 7, which is already in progress but will see its main activities in the upcoming second half of the project.

Among the activities already planned for the coming months, it is relevant to mention the organisation of the first summer school, which is part of the capacity-building events foreseen in Work Package 12, and which will be hosted in Norway by the partner NIVA. A subsequent summer school, still focused on the European Strategy for Plastics in a Circular Economy (ESPCE), will be arranged in the 4th year of NAUTILOS and hosted in Crete by the partner HCMR. Another mention should be made of the project's participation in the Grand Finale of the Ocean Race, which will take place in Genoa, Italy and which will be the occasion to organise the first Round Table on policies planned as part of Work Package 10 activities. The central theme for this round table is "Supporting Ocean Observations". Furthermore, NAUTILOS will participate in a Citizen Science panel in Genoa, presenting many of the activities already carried out during these two years of the project.

Many different and exciting challenges await the Consortium in the coming period and the subsequent milestone represented by the month 36 Review Meeting.

An up-close look at NAUTILOS biogeochemical and biological instrument development



developed under WP3 – one of two work packages devoted to the advancement of novel sensing techniques. The broad focus of the WP3 instrumentation is Biogeochemistry and Biology, with sensors and instruments targeting the detection of primary productivity, marine life, and marine sound, through a variety of techniques. Five partners have taken part in the development work.



The stimulation and detection of fluorescence is used in four of the sensors. Fluorescence at different wavelengths can be used to detect certain naturally occurring biological material, as well as serving as a secondary measure of dissolved chemicals that can affect fluorescence decay. In Sub Task 3.1.1, HES-SO have developed a novel Dissolved Oxygen (DO) sensor that relies on highly precise measurement of the decay time of a fluorophore in the presence of the test sample. The sensor and electronics have already been successfully miniaturised for field deployment.

In Sub Task 3.1.2, NKE advanced the design of two WiSens sensors designed to use fishing vessels as deployment vessels of opportunity. The new Chlorophyll-a and Dissolved Oxygen sensors, as well as a newly developed data hub have reduced size, increased depth rating, and extended autonomy.

Read more about the accomplishments in this work package [here](#).

Invitation

Nautilus Policy Table – Supporting ocean observations



Nautilus project is please to invite you and your colleagues to our upcoming policy round table on Tuesday, June 27th, from 09:15-13:00 CEST at Magazzini dell'Abbondanza, Via del Molo, 65r, 16128 Genova GE.

This four-hour dialogue will give you the opportunity to help shape the future of ocean observations, and we highly encourage you to register as soon as possible.

To secure your spot, please register for the workshop by the 15th of June through our Workshop [registration page](#). After the deadline, we will not be able to accept any further registrations.

The discussion topics during the round table revolve around themes related to ocean observation, such as:

- the importance of ocean observation in a changing climate;
- the need for ongoing and better support for ocean observation;
- the importance of closing data and knowledge gaps;
- the need for balance between action and observation.

We highly value your participation in this event, and we look forward to your contribution to the dialogue. Thank you for your interest, and we hope to see you there!

Recognition



Nautilus recognized for protecting and restoring marine and freshwater ecosystems and biodiversity by EU MISSION Restore Our Ocean and Waters

Mission Restore our Ocean and Waters is an initiative launched by the European Union to protect and restore marine and freshwater ecosystems and biodiversity. The mission has set three primary objectives: protecting and restoring marine and freshwater ecosystems and biodiversity, preventing and eliminating pollution of oceans, seas, and waters, and promoting a sustainable blue economy.

Nautilus, has been recognized by the “Mission Restore our Ocean and Waters” for its significant contributions to protecting and restoring marine and freshwater ecosystems and biodiversity. This comes as a testament to Nautilus’ commitment to preserving the environment and promoting sustainable practices in the blue economy.

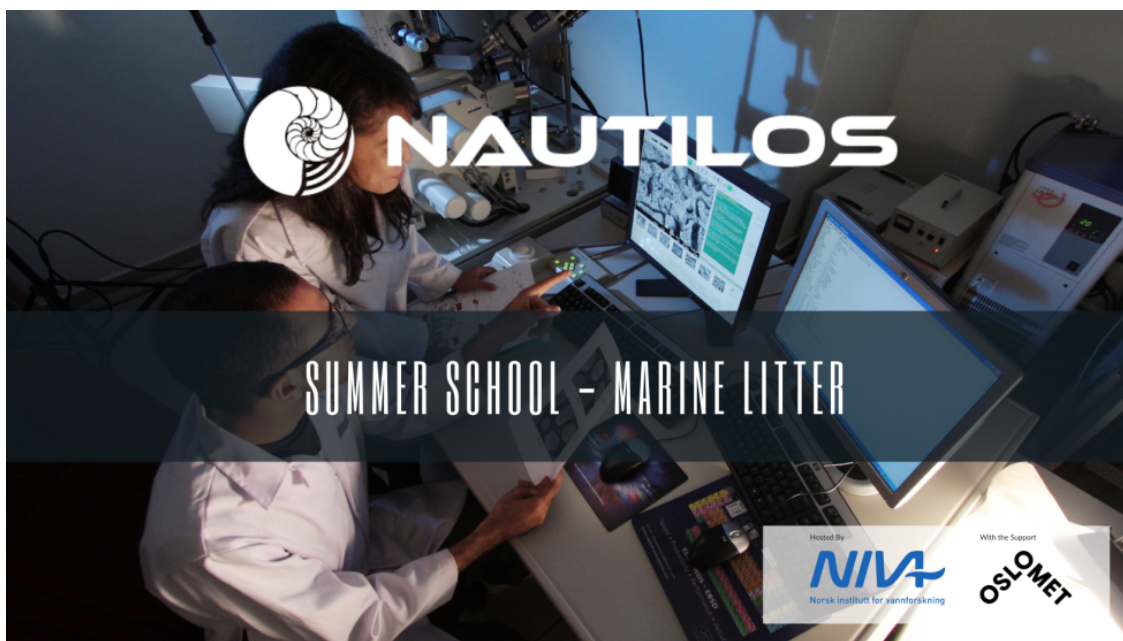
Nautilus’ actions have also played a central role in delivering against and contributing to the objectives of Mission Ocean. Furthermore, Nautilus’ efforts have been in line with the EU Biodiversity Strategy 2030, the EU Action Plan Towards Zero Pollution for Air, Water and Soil, and the Sustainable Blue Economy Strategy.

Read more [here](#).



Citizen Science & Collabs

For a Deep Dive into Marine Conservation, join Nautilus Summer School on Marine Litter



Nautilus Summer School is a four-day course designed for early career scientists and marine technicians who are interested in the blue economy and open data sharing. The main goal of the course is to improve professional skills and competences related to marine litter.

It is scheduled from September 4th to September 7th, 2023, with the first day taking place at the Norwegian Institute for water Research (NIVA) and the remaining days at the OceanLab facilities of the OsloMet University at the Oslo fjord. The application deadline is May 20th, 2023, and successful applicants will be notified by June 20th, 2023.

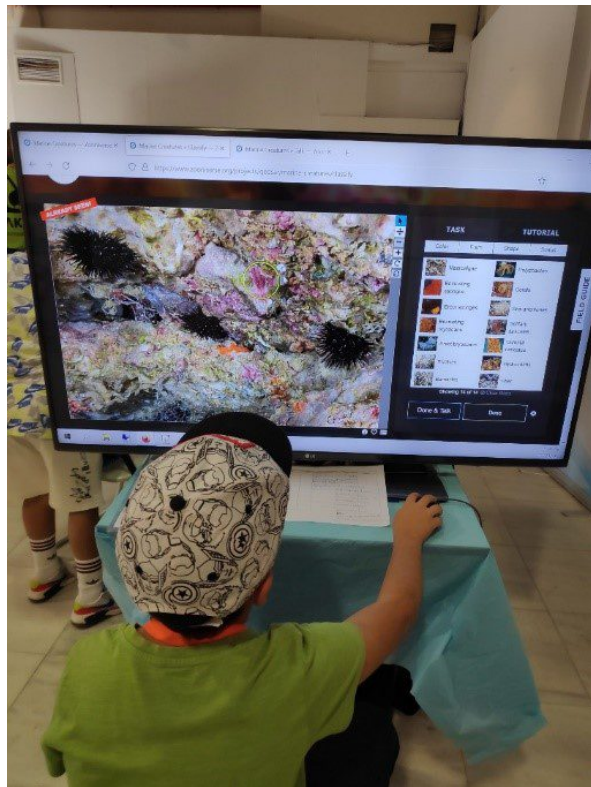
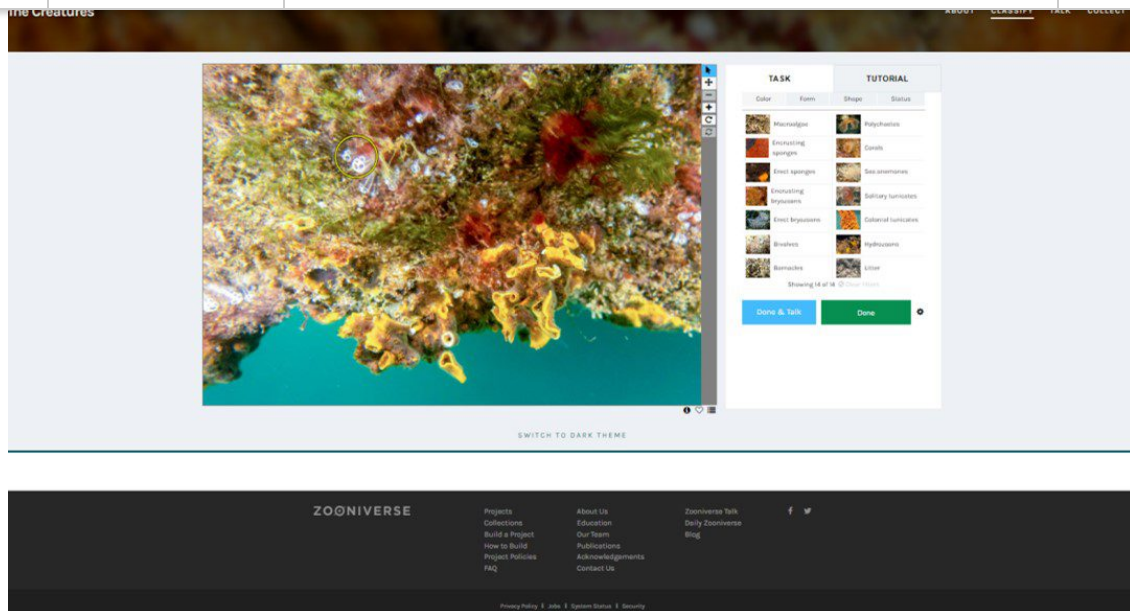
[Read the Program of the course on our website.](#)

Empowering youth to tackle plastic pollution

Our partner NIVA participated in a citizens' science activity at the Flemish coast on 8 June 2022, as part of the **Plastic Pirates – Go Europe!** initiative which aims to engage and empower young people across Europe to monitor and tackle plastic pollution in rivers, coasts and sea. Researchers in the area of Ocean and Waters were brought together with a 3rd year secondary science education class of local pupils in Nieuwport, to carry out a plastic sampling activity in a nature reserve. The NIR scanning of plastic items and fragments gave information on the polymer type and potential sources, which were further discussed in the class where NIVA presented the Nautilus project. The whole day was attended by the European Commission policy officers from the Directorate-General for Education, Culture, Youth and Sport (DG EAC), for Maritime Affairs and Fisheries (DG MARE), and for Research and Innovation (DG RTD) – as well as the Research Executive Agency (REA).



GET INVOLVED: The marine creatures citizen science project of NAUTILOS is launched!



IMBBC leads the Citizen Science activities of [Nautilus](#). Within this framework they have created a project in platform Zooniverse called [Marine Creatures](#). Its aim is to help us identify the sessile and often unnoticed benthic communities living on hard substrates using high-definition underwater images from artificial reefs, ports and natural sea caves. Morphological characters can be used to identify the taxonomic groups of these sophisticated marine communities.

Shortly after it was launched, IMBBC presented the [NAUTILOS](#) Citizen Science “[Marine Creatures](#)” online project at the Athens Science Festival 2022 «Worlds of Tomorrow» (#ASF2022) which took place in Technopolis of the Municipality of Athens, Greece, 21 – 23 October 2022. The visitors had the opportunity to assist scientists to identify marine benthic sessile organisms using underwater photos from natural or anthropogenic habitats, such as underwater caves, ports, artificial reefs. “[Marine Creatures](#)” was launched on 7 September 2022 and had already reached 1517 responses from citizen scientists.

the project, act as a Citizen Scientist and learn more about the marine environment.

NAUTILOS collaborates with the ERASMUS+ “From local to global environmental awareness” programme



Within the framework of Nautilus HCMR-IMBBC collaborated with the [Erasmus+ programme “From Local to Global Environmental Awareness”](#) and participated in the 4th transnational meeting about “Plastic Pollution in the Mediterranean” which took place in the 12th High School of Heraklion during 10 – 14 October 2022. More than 40 students and teachers from high schools of Greece, Poland, Romania, Spain, Turkey and Portugal participated in this programme. IMBBC implemented an in-class presentation for the pollution of the sea by plastics and micro-plastics and organized a beach cleaning campaign in Arina Beach, Heraklion.

Finally, IMBBC performed hands on experiments for a demonstration of the different ways to collect, isolate and identify the origin of microplastics. In addition, a Mobile phone application created by ETT called the AlgaWarning App was used by the students to collect photos of phytoplankton cells.

[More photos from the event](#)

Festival 2022



IMBBC participated in the Athens Science Festival 2022 «Worlds of Tomorrow» (#ASF2022) which took place in Technopolis of the Municipality of Athens (Greece) during 21 – 23 October 2022 and presented the Citizen Science Activities of NAUTILOS. The visitors were mainly young kids who had the opportunity to participate in a hands-on experiment aiming to create awareness for marine pollution.

See more [photos](#) from the event.

Empowering students through citizen science: the launch of marine litter trackers in the Ligurian coast



In synergy with the Erasmus Plus project “BlueS_Med”, ISMAR-CNR held a citizen science and education event related to the problem of plastic in the environment. Together with teachers and students from the Capellini-Sauro High School in La Spezia a launch of four “Marine Litter trackers” (MLT) was organized at the mouth of the Magra River on 4 January 2023. The students built the MTLs which are equipped with a low-cost real time moving tracking system and followed them for 10 days in the Ligurian coast.

[Read more](#) about what important task were the students given during this visit and how they handled it.

Scientific Conferences and more

marine debris conference during 18 – 23 September 2022 in Busan, South Korea, introduced NAUTILOS activities with the title “Vertical distribution and transport of textile microfibers in the Mediterranean water column”.



NAUTILOS at the EMSEA

HCMR, CNR-ISMAR, ETT and EUROCEAN participated in the European Marine Science Educators Association's (EMSEA) annual conference in the theme Blue Education which was organised in Palma de Mallorca, Spain, from 25 to 28 September 2022. An oral communication and a poster were presented describing the concept of Citizen Science and educational approaches of the NAUTILOS project.

UNESCO 2022 Hybrid Summer University

The Citizen Science activities of Nautilus WP12 were presented in the UNESCO 2022 Hybrid Summer University of Asterousia in Crete during 12-14 September 2022. The main subject of the UNESCO Summer School was Ocean Literacy and Biosphere Reserves / Protected Areas. The event was co-organized with the Hellenic National Committee Man and the Biosphere Programme (MAB/UNESCO) and the Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO – ECSDE).

CNR-ISMAR partner participated in the “Researcher’s Night 2022”



CNR-ISMAR participated in the “Researcher’s Night 2022” held on 30 September 2022 in Venezia, Italy, together with the high-school students and teachers from the Zaccagna-Galilei Institute, Carrara, Italy. During the event, posters and a video presentation of the project “*Why marine science matter for ocean conservation? A photographic/art contest dedicated and reserved to the schools, for the elaboration of posters or audio-video on the role of scientific knowledge in the conservation of the oceans*” were promoted to the participants. A photographic contest will open on January 2023 as a result of the synergy among NAUTILOS project and [BlueNight Project](#) coordinated by CNR-ISMAR.

Read the end of the story and see more photos [here](#).

What’s new on NAUTILOS website



Under Results section on NAUTILOS website, we have uploaded the full list of project's deliverables, grouped by work package and featuring a concise description of each deliverable. In following of the Open Access principle regarding EU-funded research and innovation, all public deliverables of the project are made available for a quick and easy download.

Check out the results of our team's work [here](#).

Let's stay connected ! Besides [YouTube](#), [LinkedIn](#) and [Twitter](#), you can now follow us on [Facebook](#) too



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