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ERIC

EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM

ANNUAL
REPORT

2022

Observing the ocean to save the earth



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EMSO ERIC **ANNUAL REPORT 2022**

European Multidisciplinary Seafloor and water-column Observatory
European Research Infrastructure Consortium (EMSO ERIC)

Observing the Ocean to Save the Earth

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INTRODUCTION BY EMSO ERIC DIRECTOR GENERAL

Prof. Juan Josè Dañobeitia
EMSO ERIC Director General



EMSO ERIC during 2022 ensured the consolidation of the path of services and operations deployment after the difficulties generated by the COVID-19 slow-down. However, the challenges that EMSO ERIC is facing are still complex and the way to address them is through a transdisciplinary and multidisciplinary way of working, an "open-minded" culture and information sharing with all our partners: the core of EMSO values since the beginning. The diversity of skills brought together under the umbrella of EMSO ERIC allows us to continuously and constructively advance and exchange knowledge that undoubtedly has an impact on progress and innovation in all European countries.

EMSO ERIC, among its main core activities, has been particularly successful in launching the TNA call for Physical Access, which is intended to promote access to the Regional Facilities' data through the grant of funds to ease and co-finance the use of infrastructures. The Programme enjoyed participation not only from prestigious Research centres and Universities from all over Europe but also, for the first time, involved European SMEs which are now accessing the EMSO Regional Facilities.

About the Data and Data Products and Services, a relevant effort in harmonisation has been carried out, and most of the facilities having now made a serious step forward concerning an EMSO ERDDAP¹ system services to access high-quality data and metadata in line with the FAIR principles. EMSO ERIC also impro-

¹ Environmental Research Division's Data Access Program

ved its machine-to-machine API², expanded ERDDAP servers' deployment, and integrated data services into the European Open Science Cloud (EOSC) enhancing the connection of the EMSO ERIC's data repositories and services with it. The establishment of EMSO ERIC's initial specification in 2022 aimed at harmonizing data and metadata, particularly focusing on key Essential Ocean Variables (EOVs) and the impact of EMSO ERIC's open-access data and integration with EOSC now is extended to researchers, educators, policymakers, and the general public across Europe and beyond. Eventually, the data management platform has significantly improved and facilitated data discovery.

EMSO ERIC significantly participated, as well in shaping the framework of future interactions between RIs and the Industry paving the way for a European Network for collaboration between ICOs³ and ILOs⁴. The ENRIITC⁵ and the ENVRI-FAIR⁶ projects have been fundamental opportunities for EMSO to contribute to shaping the future role of RIs in the broad European Innovation Ecosystem and the uptake of the ENVRI services by the private sector. The launch of the first TNA call has also boosted the collaboration with SMEs on a concrete basis bringing to the achievement of innovation and research goals for more efficient and reliable sensors and equipment. In addition, the concept of the EMSO Innovation Forum has been developed and once per year, it will bring together all the actors involved in the Marine sector, from research to industry and NGOs, to discuss the present and future challenges and develop ideas about possible collaborations to feed the European Innovation Ecosystem and support the achievement of the objectives set up by the European Commission connected to the Marine environment.

The impact of EMSO ERIC communications showed growing numbers in all the relevant KPIs, with an updated communication strategy that will guarantee an efficient quality control mechanism, and a better capacity to reach a wider audience with tailored communication products. The ability of the EMSO ERIC communication team to be present in the most important events in the RIs and Marine fields, from the ICRI conference to the EGU2022 and the UN Ocean Conference, permitted to enhance EMSO visibility and impact to the highest levels.

I can proudly affirm that during 2022 EMSO ERIC has also been very successful in terms of achievement of additional financial resources through the funding of projects in highly competitive Horizon Europe calls. New Projects involve significant collaboration between different marine RIs or that harmonize the entire geosciences community, such as Geo-Inquire, or that promote guidelines for remote access to RF facilities, like eRImote, or again that promote the use of georeferenced high-quality images to incorporate them into underwater research, are helping EMSO in achieve the objectives of its Annual Work Plan and at the same time, given the opportunity to the EMSO's community to strengthen the relationships with the key actors in the field. In short, EMSO ERIC made a substantial advancement in the very competitive R&D European funds arena where EMSO ERIC is well known at a European level.

I would like also to mention that in 2022 we have finally fulfilled several staff positions that were key to the sustainable and ambitious development of EMSO. The main strengths of EMSO ERIC are indeed its human resources in the Central Management Office team and the different teams of the Regional Facilities that make up EMSO ERIC as a truly Pan-European distributed organisation providing excellent science, a positive and always growing socio-economic impact on European society and unique data for supporting the decision-making process at the policy level.

I want to conclude by saying that is an honour for me to lead this wonderful technical team that already represents a reference point for all the European stakeholders involved or interested in EMSO ERIC impact for the like of the Oceans.

² Application Programming Interface

³ Industry Contact Officer

⁴ Industry Liaison Officer

⁵ European Network of Research Infrastructures and Industry for Collaboration

⁶ ENVIRONMENTAL RESEARCH INFRASTRUCTURES BUILDING FAIR SERVICES ACCESSIBLE FOR SOCIETY, INNOVATION AND RESEARCH

EMSO ERIC

Mission implementation

EMSO ERIC Service Groups (SGs) provide the service function, data and other resources generated by EMSO Regional Facilities (RFs). These units ensure excellence in research and lead and promote innovation. They are participated by the staff of the Regional Facilities and are in charge of specific activities guaranteeing access to data, technology, and experience in innovation and scientific research. Naturally, the guidelines from the Central Management Office reflect this approach, which is structured around specific strategic elements, and decisions are made based on the established priorities. Accordingly, the EMSO ERIC Work Programme has been built around specific objectives and defines the activities that allow for achieving the goals set at the strategic level identifying the personnel responsible for the execution of them. Regarding the objectives, they are formulated for a multi-year period and established in terms of assigned priorities, time horizon and available resources. The objectives (relating to the year) arise from the strategic ones resulting from conciliation between strategic needs and practical conditioning constraints. They are articulated in sub-objectives, achievable and measurable through an internal evaluation process performed at the level of the CMO and each Service Groups.

In autumn 2022 the revision and update of the schedules of the Service Level Agreement between EMSO ERIC and the RFs owners for the period 2022-2023 was initiated as it is stated in the agreement. The schedules set the data and facility components offered to the users' access by each Regional Facility, and the resources (operation and effort costs) allocated by the organizations managing the facilities for the reference period. The formal signature of the updated SLA schedules is ongoing in 2023.



EMSO ERIC Science

Excellence Science is the main driver for EMSO ERIC and the most urgent scientific questions and needs identified by the EMSO scientific community give orientation to the efforts and the actions undertaken with the final goal of supporting the achievement of new knowledge and laying the groundwork for the expansion of the service portfolio.

EMSO reference community converged around the following scientific objectives recognised as urgent:

- Understand the distribution and behavior of different invasive species in the European Seas, especially in the Mediterranean;
- Determine the structure and function of the microbiome in the context of ocean circulation and the presence of pollutants;
- Understand ecosystem characteristics in sites (e.g., the Black Sea);
- Understand the interaction between geosphere and hydrosphere in the context of the marine geo-hazards;
- Investigate the ocean noise on a broader frequency range to discriminate the sources and assess the impact of anthropic noise on marine life.

To pursue these objectives, EMSO ERIC has created the necessary conditions and promoted appropriate actions such as:

1. Streamline and integrate the existing competencies and capacities and
2. Provide its community with the necessary resources.

EMSO ERIC organised the competencies and capacities within and across the Service Groups (SGs) to pursue the above mentioned as follows:

- The Science SG and the Data Management SG jointly work to implement the recommendations and indications for data and metadata standardization and to develop the most valuable tools devoted to data visualisation and basic processing by the users;
- The Science and the Engineering and Logistics SGs integrate their respective competencies to develop new pieces of equipment and methodologies for generating new observations, while the Data Management develops the new data integration in the existing data portal.

EMSO ERIC also favours and supports networking with other RIs of the environmental sector, especially in the marine domain, to ensure and monitor metadata compliance with international standards and best practices. The scouting of funding opportunities undertaken by EMSO ERIC has led to submitting a set of project proposals in response to Horizon Europe calls, some of which have been notified as successful. The projects complement the resources of the RIs and underpin their commitments to achieving the expected scientific results.



EMSO ERIC

Data management and information technologies

PROGRESS IN ENHANCING THE HARMONIZATION, INTEROPERABILITY, AND FAIRNESS OF EMSO ERIC DATA

The foundation of the data management infrastructure for providing original continental-scale service products is based on multidisciplinary and spatially distributed measurements/time series within EMSO. Ensuring interoperability, harmonisation, and FAIRness of the Regional Facilities (RFs) data is crucial for accessing multidisciplinary data and unprecedented data products. Meeting the challenges involved in achieving full operation requires complete compliance with FAIR principles for both data and services.

The year 2022 marked the establishment of EMSO ERIC's initial specification aimed at achieving harmonization between EMSO data and metadata, with particular emphasis on key Essential Ocean Variables (EOVs). To achieve this, the specification draws on OceanSites, NVS vocabularies, and other standards, creating a catalogue of harmonized (meta)data, instruments, and other relevant information. Additionally, EMSO ERIC has enhanced its machine-to-machine API, expanded the deployment of ERDDAP servers, and continued integrating data services into the European Open Science Cloud (EOSC).

Improve interoperability, such as more mature standardisation, better semantics, and standard metadata, have represented the yearly Data action plan's primary objective, integrated within the EMSO Work Programme 2020. The RI is expected to be fully compliant with FAIR principles by the end of 2022. Results have been reached to increase interoperability with other RIs; the ENVRI FAIR project framework represents a valid instrument for this purpose.

The advances in data interoperability and adoption of curated vocabularies have been essential for EMSO ERIC contribution to the data broker developed together with Euro-Argo ERIC and the marine component of ICOS ERIC and LifeWatch ERIC, and SeaDataNet as a European marine data management infrastructure to improve FAIRness. The first version of this data broker built upon ERDDAP, represents a contribution to the ENVRI Hub. It improves the RI predisposition to connect its data repositories and services to the European Open Science Cloud (EOSC).

The progress made in achieving data interoperability and adoption of curated vocabularies has played a crucial role in EMSO ERIC's contribution to the data broker developed in collaboration with Euro-Argo ERIC, the marine component of ICOS ERIC, and LifeWatch ERIC, as well as SeaDataNet. The initial

version of this data broker, constructed using ERDDAP, serves as a valuable addition to the ENVRI Hub, enhancing the research infrastructure's capacity to connect its data repositories and services with the European Open Science Cloud (EOSC).

EMSO ERIC has had a central role in developing the EOSC Future Dashboard for the State of the Environment, a cross-disciplinary service designed by ENVRI to showcase the benefits of an integration platform supporting scientific workflows (Adamaki et al., 2023, <https://doi.org/10.5194/egusphere-egu23-8784>). It allows users to view environmental indicators in real-time and is entirely user-configurable. EMSO ERIC operates the Dashboard using engineering best practices. In addition, it is open-source, allowing other EOSC clusters to use it as a basis for disseminating their relevant indicators.

EMSO ERIC DATA SERVICES

The EMSO ERIC data management platform has undergone significant improvements, including integrating new EMSO ERIC Regional Facilities and updates to the data portal, data visualization dashboard, product generation tools, and integration with ERDDAP and other tools. These updates have facilitated data discovery, access, and download for the different types of users of the platform.

EMSO ERIC is nearing full production, but the community is already benefiting from its value-added data services. Open-access data and its integration with EOSC have a significant impact on researchers,

METRIC	2020	2021	2022
Number of countries reached	85	115	110
Number of distinct users	1.010	1.883	1.413
Data portal page views	4.038	4.625	5.226
API and ERDDAP federation requests	4.005	62.780	154.730

Table 1 - Statistics related to the access to the data portal

educators, policymakers, and the general public across Europe and beyond.

In 2022, EMSO ERIC's services maintained close to 100% uptime without significant incidents. During this time, the EMSO ERIC data portal received over 5,226 visits and more than 150,000 requests (from the API and ERDDAP federation) from 1,413 distinct users in 110 countries. It represents the consolidation of EMSO ERIC's primary services. The countries with the most visits include China, Italy, Spain, the United States, France, the United Kingdom, Brazil, Germany, and Japan, as summarized in Table 1 showing the statistics from 2020 till 2022.

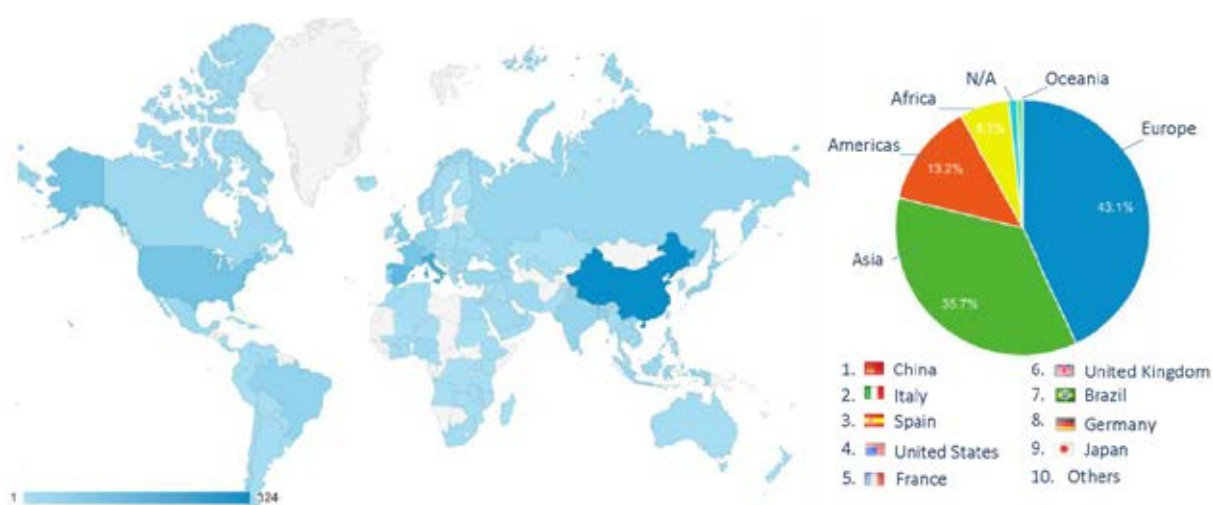


Figure 1 - Distribution of accesses per country and continent



EMSO ERIC

Engineering and logistics

ENGINEERING, STANDARDS AND INTEROPERABILITY IMPLEMENTATION

Harmonising instrument operation procedures is one of the objectives of the Engineering and Logistics Service Group: calibration of sensors, maintenance of platforms and operation of instruments need to be performed in a standard way, regardless of the Regional Facility. This is the foundation of the EMSO Label and the only way to provide the best data and services to the stakeholders.

During 2022, regular meetings with the engineers of the Regional Facilities were held, trying to focus on a specific type of sensor, the Acoustic Doppler Current Profiler, ADCP (see Figure 2), that will be the first sensor to undergo a standardization process within EMSO. The outcome of this process will be a handbook of best practices on ADCP operation, starting from the sensor preparation, its deployment, recovery and, finally, its data retrieval and storage. Checklists and specific tools for the mentioned phases of the sensor operation will also be developed and adopted by the Regional Facilities in order to obtain the EMSO Label.



Figure 2 - ADCP mounted on a buoy in the Marine Institute of Ireland. Photo: Hugo Ferreira

PHYSICAL ACCESS

The first call for physical access to EMSO Regional facilities was launched on April 7th 2022. Aside from valuable access time and work provided by the four available Regional Facilities - OBSEA, Western Mediterranean, South Adriatic and Hellenic Arc -, EMSO offered up to 11k€ to potential users.

This amount could be used for travel, operations, adaptations, developments and consumables. For 2022 four cut-off dates were set as deadlines to receive proposals, providing this way the opportunity to submit proposals of access year-round. Two proposals were accepted in April, one in August and another one in October, totaling four access projects. As shown in Figure 3, the applicants were all from Europe: two projects were awarded to UK based institutions (430 Access Units), one to a German institution (14 Access Units) and one to a Swedish institution (222 Access Units).

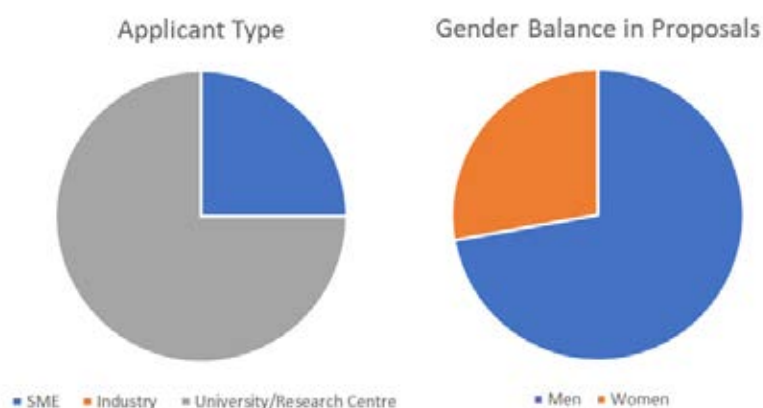


Figure 3 - Country of origin of Applicants to Physical Access. On the left shown by project and on the right shown by access time, both showing percentage of total amount

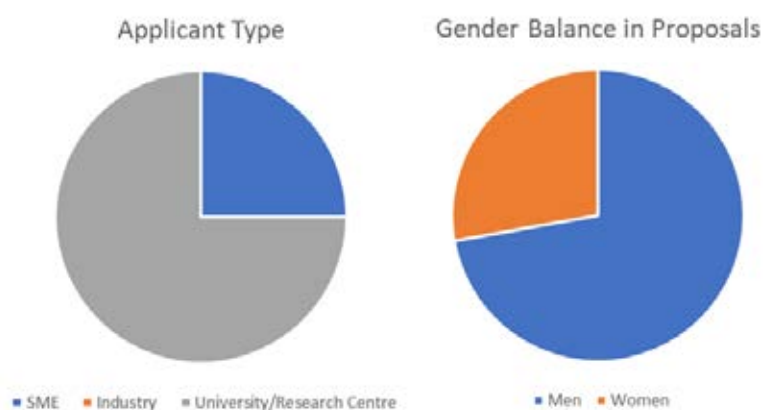


Figure 4 - Facilities hosting Physical Access projects. On the left shown by project and on the right shown by access time, both showing percentage of total amount

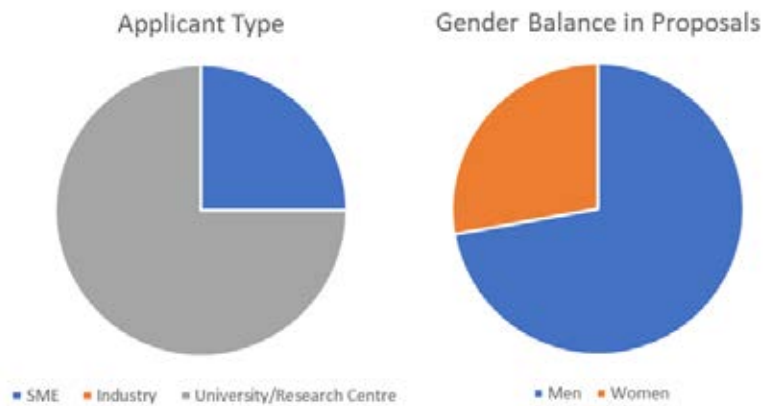


Figure 5 - One of the four projects was led by an SME while the rest were from Universities or Research Centers. The share of women participating in Physical Access projects was slightly over 25%

The Physical Access programme is a great opportunity for users to access facilities in the open ocean in order to test new technologies or methods. The four accepted proposals that will take place in three different Regional Facilities (Figure 4) cover very different topics: PH sensors and biofouling (Calibration free PH sensors by ANB Sensors), AUV and USBL technology (TRIPLE – Vtest by Marum Research Institution), microplastics and carbon sequestration (CUPIDO by British Antarctic Survey) and biofouling on power cables (SEASNAKE by Research Institutes of Sweden, RISE). This variety of topics and users is also a very interesting input to the EMSO ecosystem, providing new ideas and fresh concepts to the host Regional Facilities. It is a win-win collaboration in which everyone learns something new.

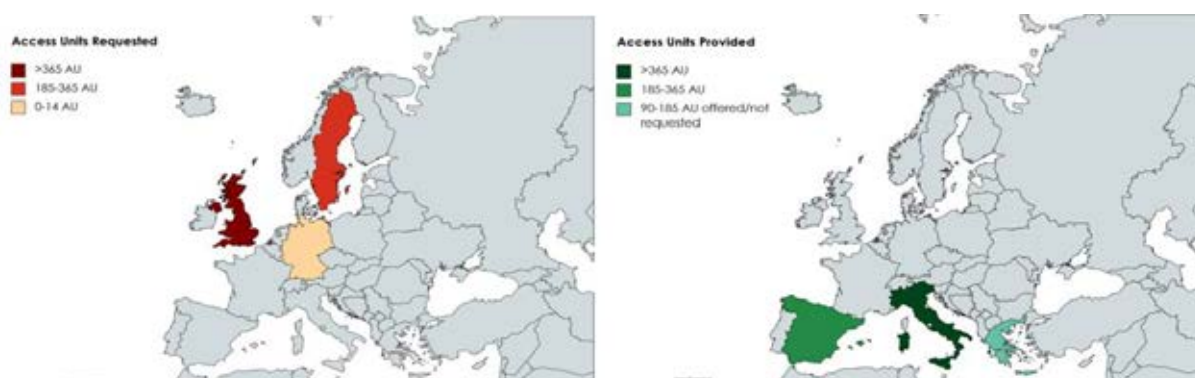


Figure 6 - On the left, Access Units requested by country. On the right, the Access Units provided

As shown in Figure 5, the applicants were mostly Universities or Research centers (3 projects) and an SME from the UK (1 project). The SEASNAKE project, however, incorporated 4 private entities (SMEs and large industries) that have a very active role in the development of the technologies being tested. Regarding gender balance in all projects, women represented 28% of the user team's personnel.

Country-wise, the United Kingdom was the country with the most projects (two) and access units granted - access time requested -. On the other hand, Italy was the country offering the most access units and hosting the most projects (two), together with Spain (Figure 6). For the following years, EMSO plans to increase the number of Regional Facilities available and to reach users from other continents, bringing know-how and expertise from far away. EMSO will also try to broaden even more the reach regarding user profiles, offering its facilities to users from diverse sectors such as aquaculture, pharmaceutical, tourism, transport and others.

EMSO ERIC

Industry & Innovation

During the year 2022, EMSO continued working as one of the most active actors in the European Research Infrastructures landscape, in particular in the ENVRI community, in building a solid and permanent framework to support the European Research Infrastructures in improving the active contribution to the European Innovation Ecosystem through closer collaboration with the private sector.

In this regard, EMSO plans to publish on its website by the end of 2023 a section dedicated to the successful cases of collaboration between EU RIs and the industry starting from the already closed collaboration during the provision of access to our facilities.

From this point of view, it is indeed fundamental to showcase the virtuous examples of collaboration with the private sector already having a significant impact on the innovation ecosystem in order to demonstrate that EU RIs are already ready to develop long-lasting and productive relationships with the private sector.

On that, EMSO will proactively work to nurture an innovation culture in the research environment at the European and National level, specifically in the environmental sector, to maximize the impact of scientific research on society in terms of socioeconomic effects.

Following this approach, EMSO will participate in 2023 in the drafting of several Horizon Europe project proposals for the uptake of the outcomes of ENVRIplus (ended), ENVRI-fair and ENRIITC (ended) to build a permanent network to support the Industry Contact Officers (ICO) and the Industry Liaison Officers (ILO) to work even closer for fostering innovation in Europe.

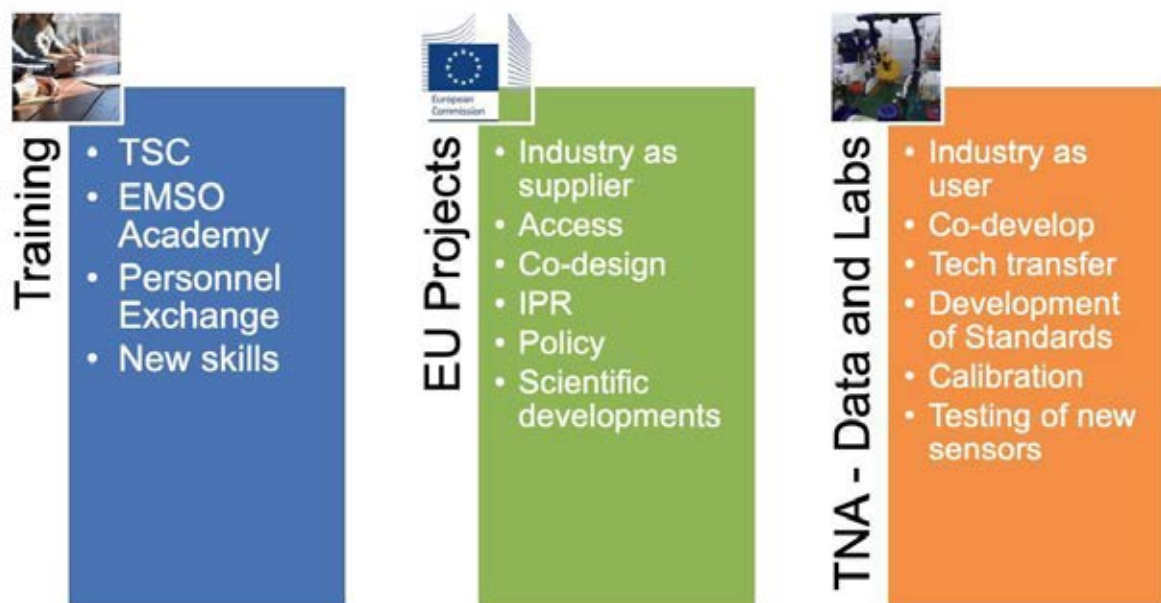
Internally, EMSO is committed to launching the EMSO Innovation Forum next year, which will bring together all the actors working in the Marine sector, from policymakers to researchers and private companies to build a permanent table for the Marine Innovation Community to develop collaborations and actively contribute to the European Innovation Ecosystem supporting the EU Missions and the achievement of the UN Decade of Oceans Sustainable Developments Goals.

The main objectives of the forum are:

- Facilitate knowledge exchange activities between scientific organizations (EMSO RFs) and the private sector to fully exploit the EMSO innovation potential.
- Create a stronger relationship between EMSO's Industry Contact Officers (ICOs) and Industry Liaison Officers (ILOs) involving PERIIA (<https://www.periia.eu/>) in the activities.

- Give a permanent basis to the dialogue between EMSO and private sector representatives to understand how to improve the EMSO services.
- Develop an annual plan for the activities of collaboration with the private sector.
- Design a one day technical hackathon on specific topics of interest for the Marine Community.

The EMSO Innovation Forum will complete the actual EMSO's approach towards the private sector which is mainly structured around the three following pillars:



ACTIVITIES DEVELOPED WITHIN THE HORIZON EUROPE FRAMEWORK

ENVRI-FAIR

In the framework of the H2020 ENVRI-FAIR, EMSO is leading Task 3.4 which aims at spurring innovation by strengthening ENVRI innovation-related cooperation with industry in the development of key RIs data services areas products, technologies and training. A comprehensive private sector uptake strategy has been developed and it is centred on:

1. strengthening of RI innovation-cooperation preparedness along lines of the RI Innovation Preparedness Roadmap and framework developed in ENVRIplus;

2. promoting effective and continuous communication and liaison with industry clients including through close collaboration and partnering at the international level with leading industry associations, technology clusters, interest groups, facilitator organizations and sister innovation-minded RIs.

The Deliverable D3.5 titled “Catalogue of services targeted for the private sector”⁷ has been already published. The catalogue of services targeted for the private sector addresses the ENVRI private sector clients/users by defining and implementing strategies for strengthening RI innovation-cooperation awareness and preparedness and promoting industry uptake of ENVRI services in compliance with FAIR standards.

EMSO participated also in the drafting, as the main author, of the D3.1 “A strategic action plan for enhancing the uptake of ENVRI data by the private sector” in which a clear and effective action plan is presented for the ENV RIs to support the uptake of research data by the private sector.

ENRIITC

In the framework of the H2020 project ENRIITC, in addition to the tasks planned at the beginning of the project, EMSO participated also in the drafting of the D1.5 “Policy Paper on the sustainability of the ENRIITC Network” and the D3.5 “Policy recommendations for the optimisation of ILO ICO performance” to maximize the impact at policy level in shaping the future of the European Innovation Ecosystem.

ERIC FORUM 2

In the framework of the second edition of the ERIC FORUM project, EMSO, among many other tasks and WPs, is involved in Task 9.2 “Assessment of strategies and best practices for developing fruitful relationships with the industry”.

The task will build upon the outcomes of the work done by several ERICs in past H2020 projects, to assess and tune strategies and best practices, already drafted, for engaging the industry as a full partner of the ERICs. The main outcome of the task is to improve coordination among the ERICs and their capacity to collaborate with the private sector by having a common approach that will reinforce their sustainability and their socio-economic impact. The main output of the task will be the creation of a toolbox (D9.2) that will contain tailored recommendations and strategies, training materials and webinar recordings, as well as concrete success stories of past and ongoing collaborations between ERICs and the industry to showcase the width of opportunities and potential collaboration models. This task will also explore the possibilities offered by innovation procurement mechanisms as a possible instrument to engage with industry.

⁷ <https://zenodo.org/record/6532029>



EMSO ERIC

Key Performance Indicators for 2022

The results enclosed in this chapter represent the evaluation, in terms of Key Performance Indicators (KPIs), of EMSO ERIC during the period January – December 2022.

The aim of this section, which represents a “pilot action” that will be improved and refined in the next editions, is to share the findings of the EMSO’s performances in achieving strategic objectives, which have been somehow reflected in about twenty KPIs.

Overall, the findings deriving from this analysis support the conclusion that EMSO ERIC generally realised its mission and is on the right path to constantly improve in the future. Being a distributed Research Infrastructure, the information included in this chapter have been completed also thanks to the close cooperation of the different Research Organisations that are part of EMSO ERIC.

The current analysis has been divided into five different parts following the order and the domain of the different KPIs considered, which are mainly:

- Development of EMSO ERIC,
- Financial sustainability of EMSO ERIC,
- Scientific and technological impact,
- Training, education and industry relations,
- Social and societal impact.

The KPIs listed in Tables 2 and 5 are characterized by the same structure in each section and enclose the following information:

- **Indicator**, which identifies the KPI considered,
- **Target**, that indicates the value tentatively foreseen for a certain indicator,
- **Delivery date**, which is the year within each KPI should have been achieved,
- **State of the art**, that specifies the value of a certain variable really achieved within the delivery date,
- **% Of Accomplishment**, which refers to the accomplishment ratio of each KPI, in 2022.

Since 2020 and 2021 have been impacted by the COVID-19 pandemic, the KPIs discussed in the current document are referred to the year 2022 and are compared to the information expected in 2020 (except for the financial section which refers to 2021) and, for some of the indicators, also foreseen in a EMSO Link deliverable. Starting from 2023 the KPIs section will remain in the annual report and be considered as a consistent part of it, to be built in close cooperation with all the EMSO ERIC Regional Facilities and following a more structured and consolidated procedure.

DEVELOPMENT OF EMSO ERIC

EMSO is a European Research Infrastructure Consortium (ERIC) characterized by the primary goal to lead the advancement of knowledge related to ocean dynamics and processes and to understand and evaluate the anthropogenic effects in the water column, seafloor and sub-seafloor, as overfishing of species, pollution and dumping by plastic, a persistent pollutant that significantly affects the oceans, greenhouse gas emissions, and organic waste flows into oceans.

EMSO ERIC aims for an interdisciplinary and multidisciplinary approach to global ocean observations.

EMSO ERIC promotes the development and progress of marine technologies and responds to environmental demands of European society, to the main European Policies (e.g., the Green Deal, the Marine Strategy Framework Directive or the Blue Growth Strategy) and supports the UN Sustainable Development Goals. All of these issues have an impact on EMSO in terms of involving new members and, therefore, Countries, and in terms of joining external funded projects such as the Horizon Europe projects so to contribute, through these, to the achievement of strategic EMSO ERIC objectives as defined in the strategic plan or in the work plan. Therefore, the following KPIs are mainly referred to those key issues.

INDICATOR	TARGET	DELIVERY DATE	STATE OF THE ART IN 2022	% OF ACCOMPLISHMENT
EMSO ERIC Members (8 as of 2020)	11	2022	9	82%
EMSO ERIC Regional Facilities (11 RFs in 2020)	14	2022	14	100%
EU funded Projects	3	2022	13	433%
EU funded Projects outside the RI pillar in Horizon 2020 or Horizon Europe	1	2022	3	300%

Table 2 - List of indicators related to the growth of EMSO ERIC in terms of Members, Regional Facilities and participation to EU funded projects

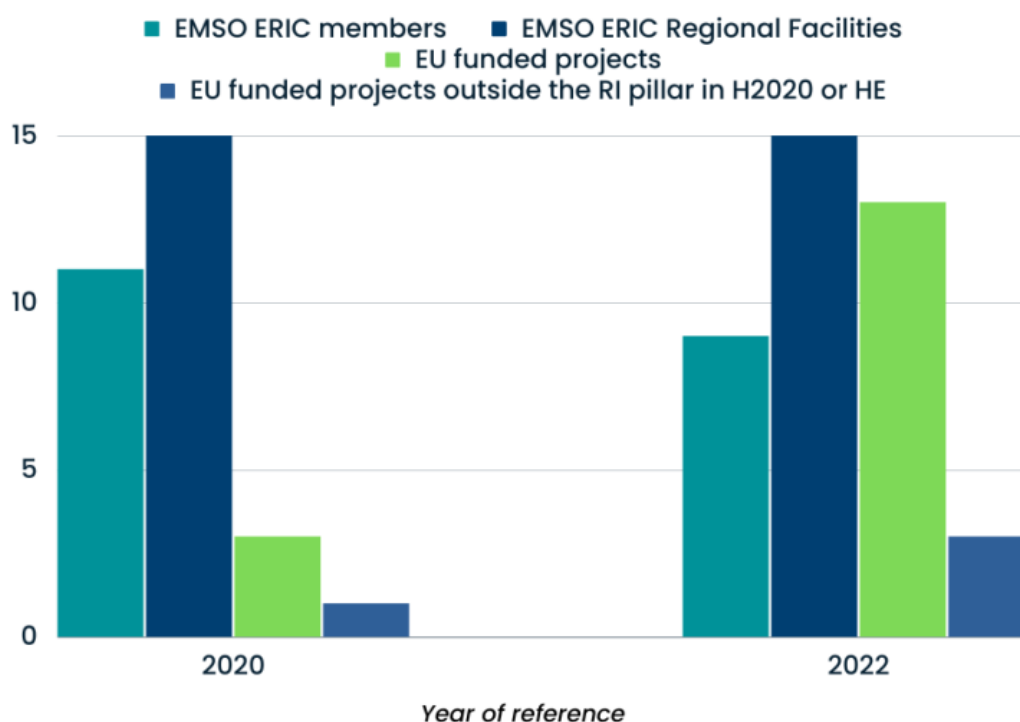


Figure 7 – Development of EMSO ERIC

FINANCIAL SUSTAINABILITY OF EMSO ERIC

The central financial support break-down for the EMSO ERIC actually consists of Member and Host country financial contributions, in addition to EU projects revenues and significant in-kind contributions notably from Italy and Spain. While EMSO ERIC relies on the core budget from the membership contributions for its management and continuous operation, EC research funding frameworks (e.g., Horizon Europe) Member Countries contribution supplement its development. Nevertheless, in order to guarantee that the ERIC runs smoothly in terms of services offered and scientific development, human resources are a key element that, furthermore, represents an index of growth of the organization and, for this reason, this section of Key Performance Indicators also takes into account this fundamental issue. Thus, these KPIs are related to the above-mentioned aspects.

INDICATOR	TARGET*	DELIVERY DATE	% OF ACCOMPLISHMENT
EMSO ERIC financial support from Member Countries	Renew 5-year Member commitments	2022	ACHIEVED
Revenues from EU Projects	2021 = €269.887 2022 = € 443.920	2022 Balance Sheet and Income approved on April 18th 2023	+64%
Cash carry over	2021 = €738.714 2022 = € 704.561	2022 Balance Sheet and Income approved on April 18th 2023	-4.7%
Personnel costs	2021 = €456.640 2022 = €698.223	2022 Balance Sheet and Income approved on April 18th 2023	+ 53%
Personnel costs allocated to EC projects	59%	2022 Balance Sheet and Income approved on April 18th 2023	63.5%
Administrative costs/total Personnel cost	25,4%	2022 Balance Sheet and Income approved on April 18th 2023	19%

Table 3 - List of KPIs related to financial aspects of EMSO ERIC

**Data extracted from the EMSO ERIC 2022 Balance sheet and Income Statements*

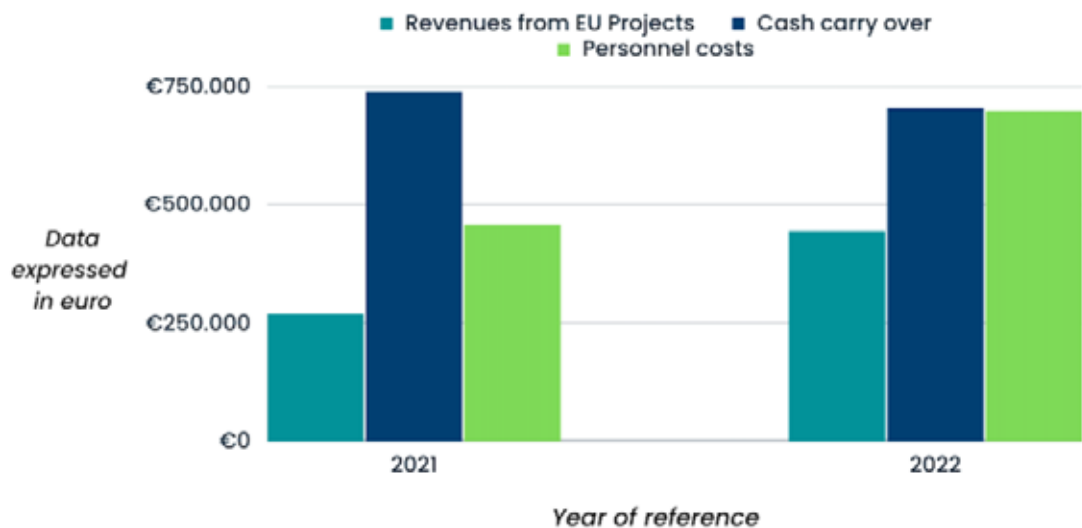


Figure 8 - Financial sustainability of EMSO ERIC

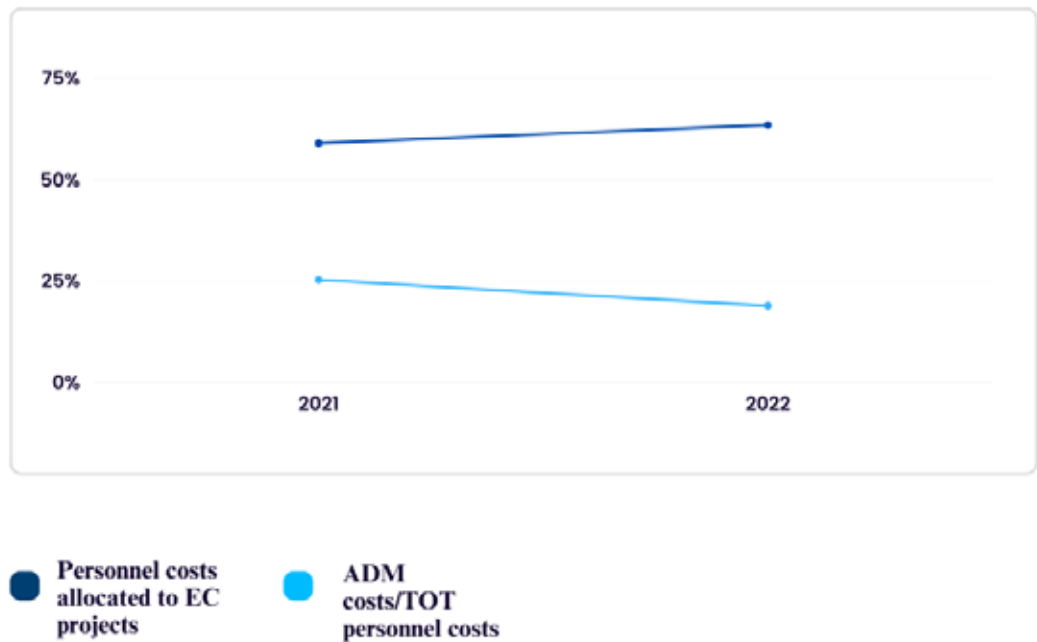


Figure 9 – Financial Sustainability: Relevant Percentages

SCIENTIFIC AND TECHNOLOGICAL IMPACT

Within its mission and following its strategic plan and vision, EMSO ERIC aimed and will further aim at enhancing scientific and technological impact through the different activities and the provision of services. Scientific and technological impact is a “core business” for EMSO ERIC, and such impact can be achieved in different ways, through EMSO ERIC homogenized and standardization of data and metadata, through new scientific or technological developments, etc. Here is a summary of a first sample of KPIs that are strictly related to scientific and technological impact.

With reference to Data Services, the information reported in Table 4 reflects the growth from a pre-production phase to a production ready phase.

INDICATOR	TARGET	DELIVERY DATE	STATE OF THE ART IN 2022	% OF ACCOMPLISHMENT
EGIM rollout (install EGIMS)	2	2022	4	200%
Registered users of services (approx. 1000 users in August 2020)	+20% of 2020 (approx. 1200)	2022	1410	118%
Number of countries reached (approx. 80 in 2020)	+20% of 2020 (approx. 96)	2022	110	115%
Data portal page views (approx. 4000 in 2020)	+20% of 2020 (approx. 4800)	2022	5226	109%
API and ERDDAP requests (approx. 4000 in 2020)	+20% of 2020 (approx. 4800)	2022	154730	3223%
Physical access calls (0 in 2020)	2	2022	4	200%
Number of projects funded through the physical access calls (0 in 2020)	1	2022	4	400%

Table 4 - List of indicators related to the growth of EMSO ERIC in terms of use of its data and products and of its physical access calls

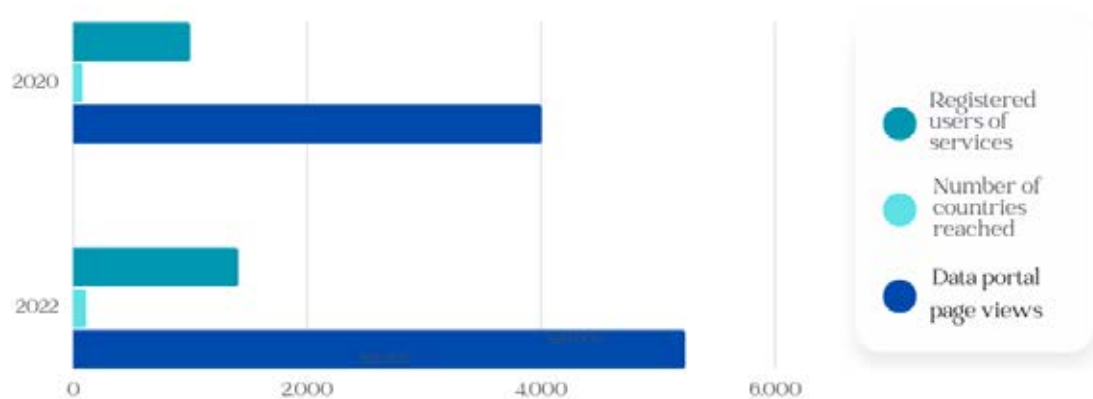


Figure 10 - EMSO ERIC Scientific impact

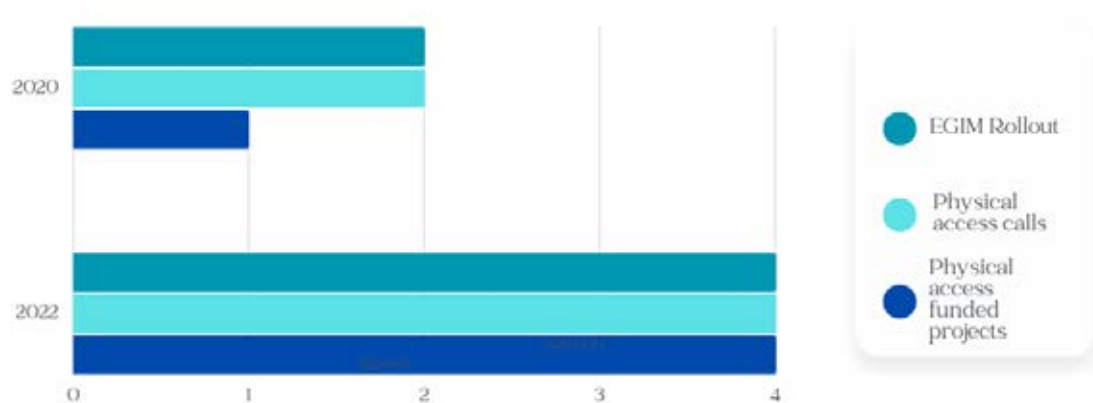


Figure 11 - EMSO ERIC Technological impact

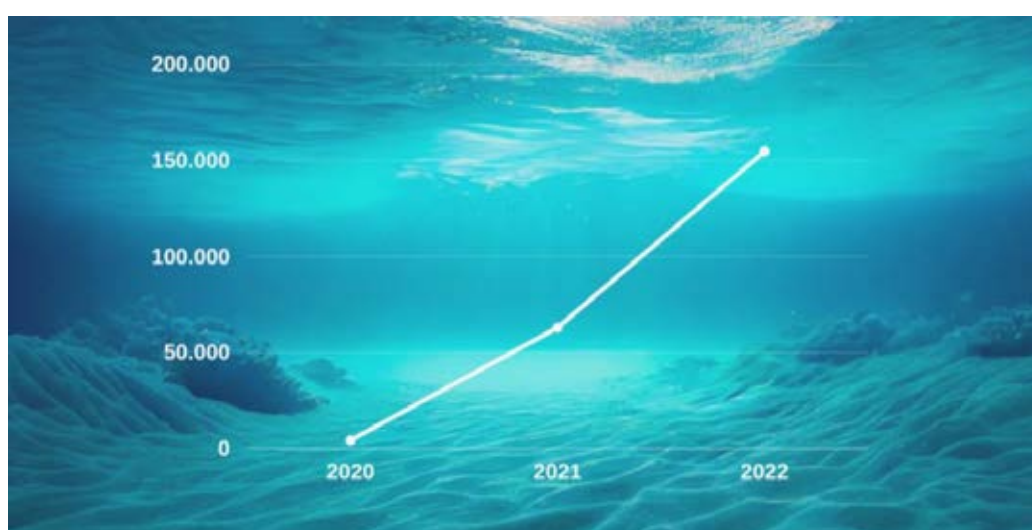


Figure 12 – API and ERDDAP requests

TRAINING, EDUCATION AND INDUSTRY RELATIONS

Training and education represent valuable tools through which, not only enhancing knowledge and capacity building but, likewise, make an organization even more successful, also betting on the improvement of the staff's skills. Education and training are critical to develop and improve trainee expertise and abilities and, in the case of EMSO ERIC, being a distributed Research Infrastructure, training and education can be delivered internally through EMSO and its different Research Organizations, or externally through specific R&I projects, or within other scientific communities. Another important element is represented by the relations with industries, especially SMEs. There is a clear and not negligible interaction between research and entrepreneurship when creating innovation and possible co-design devices or tools that aim at delivering a strong and concrete societal impact. The following KPIs mainly refer to the above-mentioned issues.



Figure 13 – Training, education and industry relations

INDICATOR	TARGET	DELIVERY DATE	STATE OF THE ART IN 2022	% OF ACCOMPLISHMENT
Number of publications somehow related to EMSO ERIC	65	2022	49	75%
Industry contacts	10	2022	14	140%
Training courses delivered somehow related to EMSO ERIC	4	2022	5	125%
Hours devoted to staff training	0	2022	23	>200%

Table 5 - List of KPIs focused on educational aspects and on relations with industries

SOCIAL AND SOCIETAL IMPACT

Nowadays, the most common expectation is that scientific research should provide answers to societal issues and support policy-making processes.

Governments, organizations, universities, and private businesses supporting research demand is a proof of how the research they support aims at influencing society while attracting the attention of a wider audience to the research benefits. EMSO ERIC, and the research organizations part of it, are trying to make the change as well, in this sense, by increasing and carefully addressing messages and activities on social media, improving communication through the website, joining or organizing tailored events, etc.

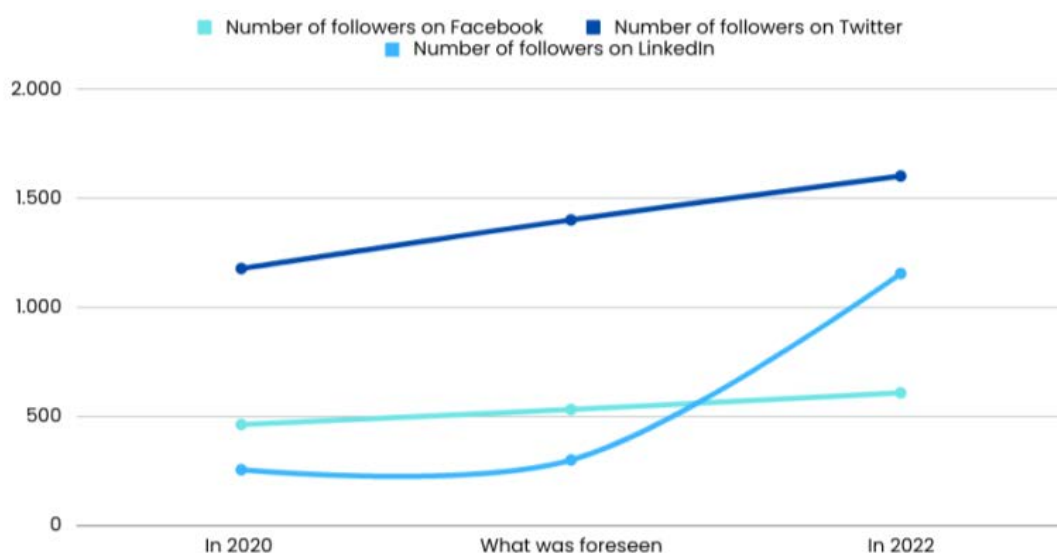


Figure 14 - Social Media Engagement Index

INDICATOR	TARGET	DELIVERY DATE	STATE OF THE ART IN 2022	% OF ACCOMPLISHMENT
EVENTS (organized or participated)	210	2022	27	270%
Number of participants in the events	250	2022	> 1000	> 400%
MEDIA COVERAGE (newspaper, radio, TV, etc.)	10	2022	5	50%
Number of followers on Facebook (463 in 2020)	+15% than in 2020, approx. 532	2022	608	114%
Number of followers on Twitter (1177 in 2020)	+20% than in 2020 approx. 1400	2022	1601	114%
Number of followers on LinkedIn (256 in 2020)	+15% than in 2020 approx. 300	2022	1154	385%

Table 6 - List of indicators related to the ERIC's visibility and to the maximization of the impact through events, media and social media

EMSO ERIC

Gender Policy

EMSO ERIC started defining its Gender Equality Strategy already in 2017; at the end of 2021, EMSO finalized its Gender Equality Strategy through the preparation of the official document “EMSO ERIC Gender Equality Plan (EE GEP)”, which embeds a precise plan of action to promote gender balance. EE GEP was signed by the Director-General and duly approved by the 17th EMSO ERIC Assembly of Members on the 8th of March 2022.

With GEP approved and published, in 2022 EMSO ERIC started implementing the planned recommendations both internally to the EMSO organization and externally, in the main international initiatives and projects in which the ERIC is involved.

Based on an active action for **gender equality in recruitment and professional progression** and with the scope of supporting the gender equality dimension in EMSO ERIC recruitment procedures, gender balance was promoted in all selection procedures for the positions opened in 2022 for EMSO ERIC Central Management Office (CMO); attention was paid to the composition of the recruitment committees as well as to the assignment of the organizational positions. Almost 70% of the newly hired staff personnel are women. A new mentoring initiative was also implemented for these new recruits, facilitating their integration into the CMO.

Moreover, to promote **gender balance in leadership and decision-making**, gender balance in accessing selections for attending higher education courses and training was ensured. Indeed, 2 CMO people were selected to attend a specialized Master’s course on Research Infrastructures, of which one woman and one man.

In the frame of the **work-life balance** dimension, EMSO ERIC actively supported the reconciliation of private life and work times, through smart working agreements between DG and the permanent staff of the CMO.

EMSO ERIC encouraged **gender balance in the related organizational research culture**, both in the EMSO transnational access programme and in EU-funded projects.

In the framework of the ERIC Forum project (GA n. 823798), which ended in December 2022, where EMSO ERIC participated as a beneficiary, the established Gender Equality Working Group (GE WG), initially triggered by the newly established GEP eligibility in Horizon Europe, offered an open environment for personnel, mostly unfamiliar at the time with gender equality and GEP development, to exchange good practices and support each other with their plan development.

As part of the eRImote project (GA n. 101057557) the equal opportunity officer was appointed during the Kick-off meeting in June 2022, involved in monitoring board member appointments, outreach to experts, and disseminating the project to improve gender balance.

In the framework of the planning activities for the 2023 Transnational Access programme, EMSO decided to set the gender balance as the first prioritization criterium in case of equal score.

EMSO ERIC Communication

Communication is a transversal activity that supports and enhances the rest of the EMSO ERIC activities. The engagement of the new Communication Officer, at the end of 2022, has been an extraordinary impulse for the whole ERIC in a very short time, significantly increasing visibility and impact. Thus, EMSO ERIC already has a consolidated presence in social media, and active participation and dissemination in multiple activities like congresses, fairs and workshops, at a European and international level. All these achievements fostered a substantial increment of followers on the EMSO social media profiles that placed EMSO in the second position in the Marine ESFRI RIs for followers' number.

EMSO ERIC is also working on communication key actions to increase collaboration with other sister initiatives, encourage the birth of new partnerships and foster the visibility of the Marine RIs sector.

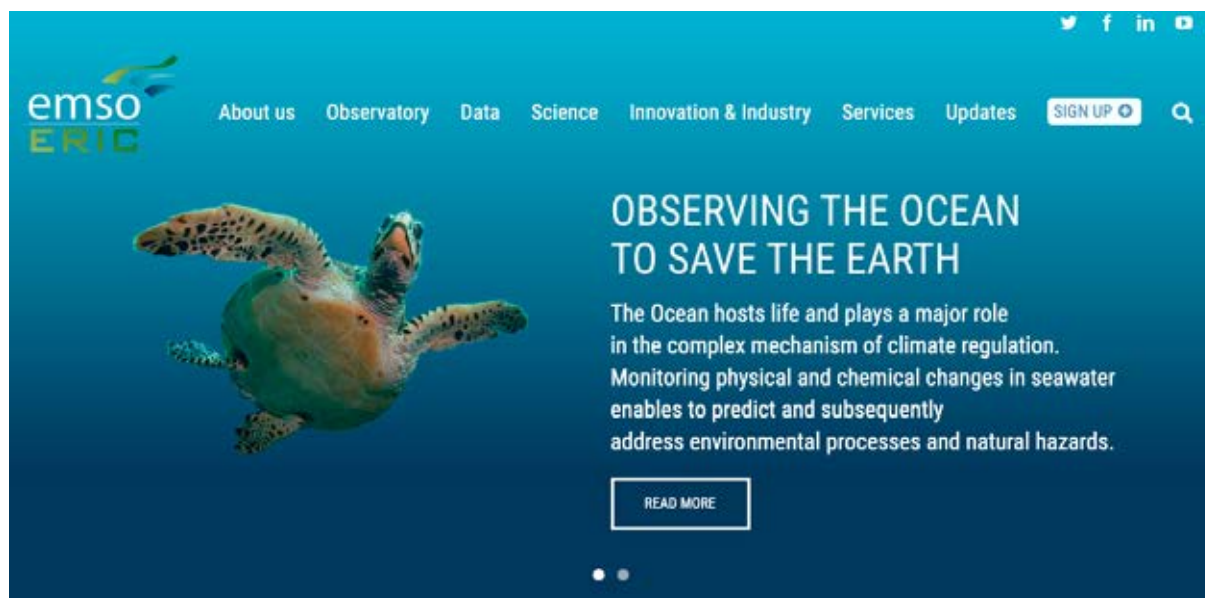


Figure 15 – EMSO website header

EMSO NEWSLETTER

An important goal achieved in 2022 has been the launch in April of the first issue of the EMSO External Newsletter. The Newsletter reached a wider community of stakeholders, is managed by the brand-new Editorial Board and is led by GeoEcoMar. Initially conceived as a collective effort to share internal news, highlights and activities on Regional Facilities and CMO work with periodic issues throughout the year, the newsletter rapidly evolved into the fundamental backbone of the internal communication exchange and a valuable source of information for external readers.

The Newsletter constituted a fundamental tool to strengthen the EMSO identity by building a mature and well-established mechanism for knowledge and best practices exchange: in a few months the Newsletter was released also externally, through email newsletter (reaching more than 450 subscribers) and EMSO website, to disseminate and engage a wider group of audience.

EMSO SPECIAL ISSUE: “The Discovery of the Unknown Planet: The Ocean”

EMSO is the promoter of the Special Issue of the journal “Frontiers in Marine Science”. The title of this special issue is “The Discovery of the Unknown Planet: the Ocean”⁸ and appears under the themes “Deep-sea Environments and Ecology” and “Ocean Observation”. The topic editors are: Paolo Favali, Juan Dañobeitia, Bruce M. Howe and Henry A. Ruhl.

The issue is handling with 25 contributions. In particular, we highlighted “The role of the marine Research Infrastructures in the European landscape: present and future perspectives”, by Dañobeitia and others. This paper represents a “white paper” to figure out the integration process among most of the marine Research Infrastructures (EuroArgo, LifeWatch, EMBRC, ICOS, DANUBIUS and EMSO).

Each of these marine infrastructures have their specific scope of activity, but they are complementary to each other, with some degree of overlap necessary for the approach of an interrelated Earth system. They aim to strengthen collaboration and favour synergies between them towards an integrated interdisciplinary approach. The goals of these infrastructures are perfectly aligned with the key priorities of the UN Decade of Ocean Science for Sustainable Development (2021-2030), and with the main goals of the EC Horizon Europe framework programme (2021-2027).

⁸ <https://www.frontiersin.org/research-topics/18542/the-discovery-of-the-unknown-planet-theocean>

EMSO RECRUITMENT ACTIVITIES

At EMSO ERIC a prudent management of personnel was adopted and according to the available resources during 2022 four positions have been tendered. We have also followed the DG's commitment in the 15th AoM on modifying the recruitment systems to encourage candidate participation.

The vacancies published in 2022 and the outcomes of the communication campaigns are the following:

DATA SYSTEM ENGINEER

- Open date: June 2nd, 2022
- Application deadline: July 10th, 2022
- Estimated starting date: July, 2022
- Number of applicants: 1

SENIOR ADVISOR

- Open date: June 2nd, 2022
- Application deadline: July 1st, 2022
- Estimated starting date: July 14th, 2022
- Number of applicants: 2

IT OFFICER

- Open date: February 23rd, 2022
- Application deadline: open
- Estimated starting date: Summer 2022
- Number of applicants: 11

COMMUNICATION OFFICER

- Open date: March 29th, 2022
- Application deadline: May 15th, 2022
- Starting date: July 1st, 2022
- Number of applicants: 10

Communication channels

used during the recruitment campaigns:

- LinkedIn
- Facebook
- X (former Twitter)
- EMSO website

EMSO WEBSITE

The EMSO website is the primary source of information for the stakeholders and the general public, and it is conceived as a living instrument describing the activities and results achieved within EMSO ERIC.

In 2022 it has been added a section named “Physical access” devoted to showcasing the physical access service to the regional facilities where the proponent can send a proposal to have access to the EMSO Regional Facilities. During the access provision, the users’ devices can be installed, including sensors, instruments, systems, new technologies and where new procedures/experiments can be tested/take place.

The Data Portal⁹ and the page on the Physical Access¹⁰ to the infrastructure have been strongly improved in 2022 with new information and tools for data manipulation. The huge success of the EMSO Data Services, also showcased on the European Open Science Cloud (EOSC)¹¹ Digital Innovation Hub (DIH) portal has attracted an increased number of users of the website making it even more a fundamental piece in the EMSO communication strategy.

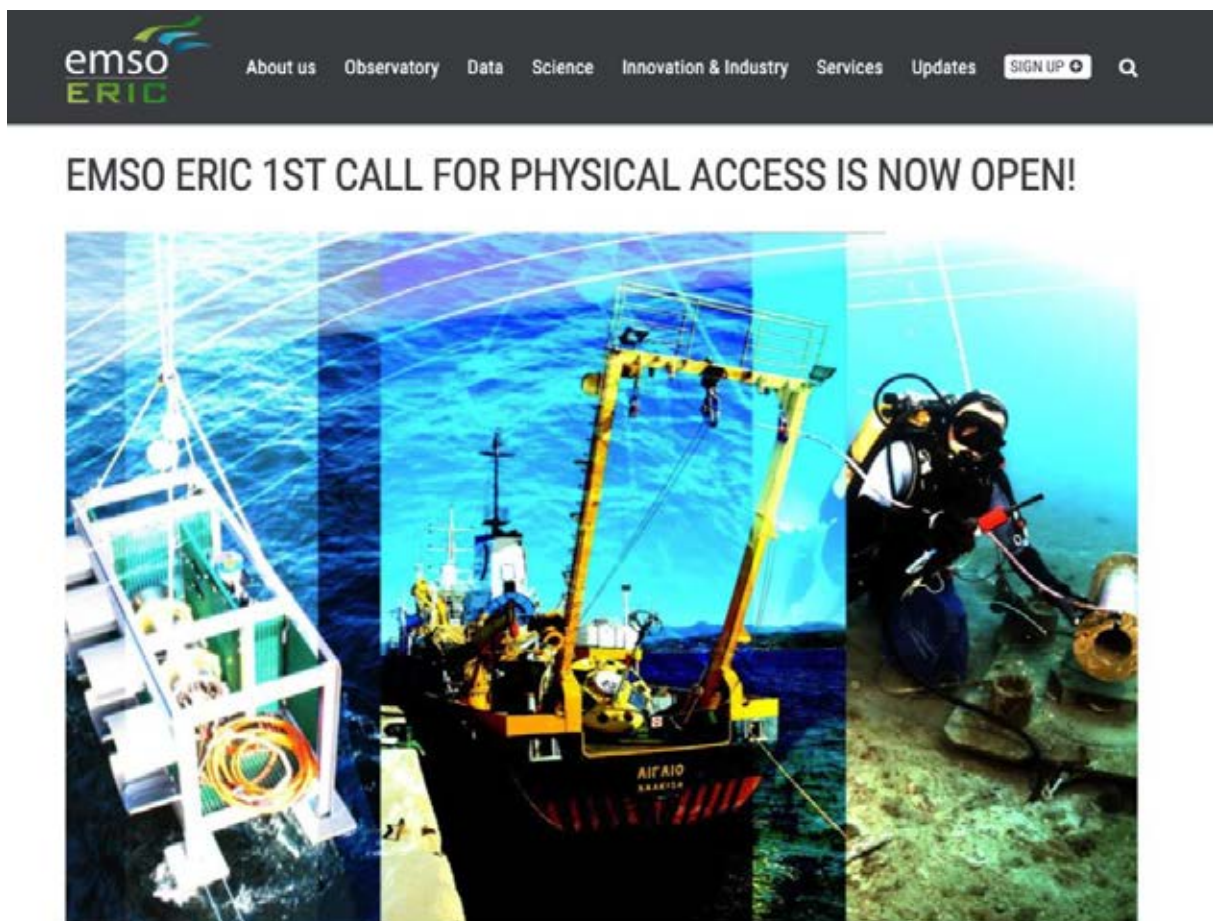


Figure 16 – Launching of the EMSO Physical Access

⁹ <https://data.emso.eu/>

¹⁰ <https://emso.eu/physical-access/>

¹¹ <https://eosc-dih.eu/list-of-all-services/>

EMSO SOCIAL CHANNELS

The EMSO social media channels (Facebook, X/Twitter, LinkedIn) have been continuously updated during the year to share information about consortium activities, updates on observatories' initiatives, scientific results achieved by the EMSO community, funding call opportunities, job opportunities, events and other topics of interest for the community.

Here is a short summary of each EMSO social profile data and achievement.

Facebook (2022)

608 people follow the page, and this number has continuously grown since January 7th, 2017. The posts recorded the different activities developed by the whole partnership from conferences to the great success of a publication and outcomes of the projects and also advertised the collaborations going on between EMSO ERIC and other Organizations.

X (formerly known as Twitter2022)

EMSO's Twitter account at the end of 2022 counts 1601 followers compared to 1502 in December 2021. This channel has been used to share mainly the partner's activities abroad and spread information about international activities and "sister infrastructures" to the EMSO community. All the partners have been invited to cite the EMSO Twitter account giving them the chance to increase their visibility.

LinkedIn (2022)

EMSO's LinkedIn account has 1154 followers with an increase of +58% compared to December 2021. Most of these followers work in the research field, but many different workers are educators, media and communication experts and business developers.

EMSO ERIC ZENODO COMMUNITY

After the opening of the EMSO ERIC community on ZENODO¹², the European multidisciplinary data repository, EMSO is increasingly implementing its use in order to guarantee free and traceable access to the main published documents. Furthermore, the number of DOIs for every uploaded document that could be used as a unique reference to it, is constantly growing on the platform, representing a powerful tool that could be a turning point in monitoring and presenting the scientific documents in which EMSO is involved.

ZENODO¹³ is a certified Open Access repository directly managed by CERN through the OpenAIRE¹⁴ project and it is compliant with the OpenAIRE Guidelines v3.0. ZENODO helps researchers receive credit by making the research results citable and through OpenAIRE integrates them into existing reporting lines to funding agencies like the European Commission. In addition, citation information is also passed to DataCite and onto the scholarly aggregators. The ZENODO Community enables EMSO to have an Open Repository for all our public documents and for scientific papers produced under the EMSO activities.



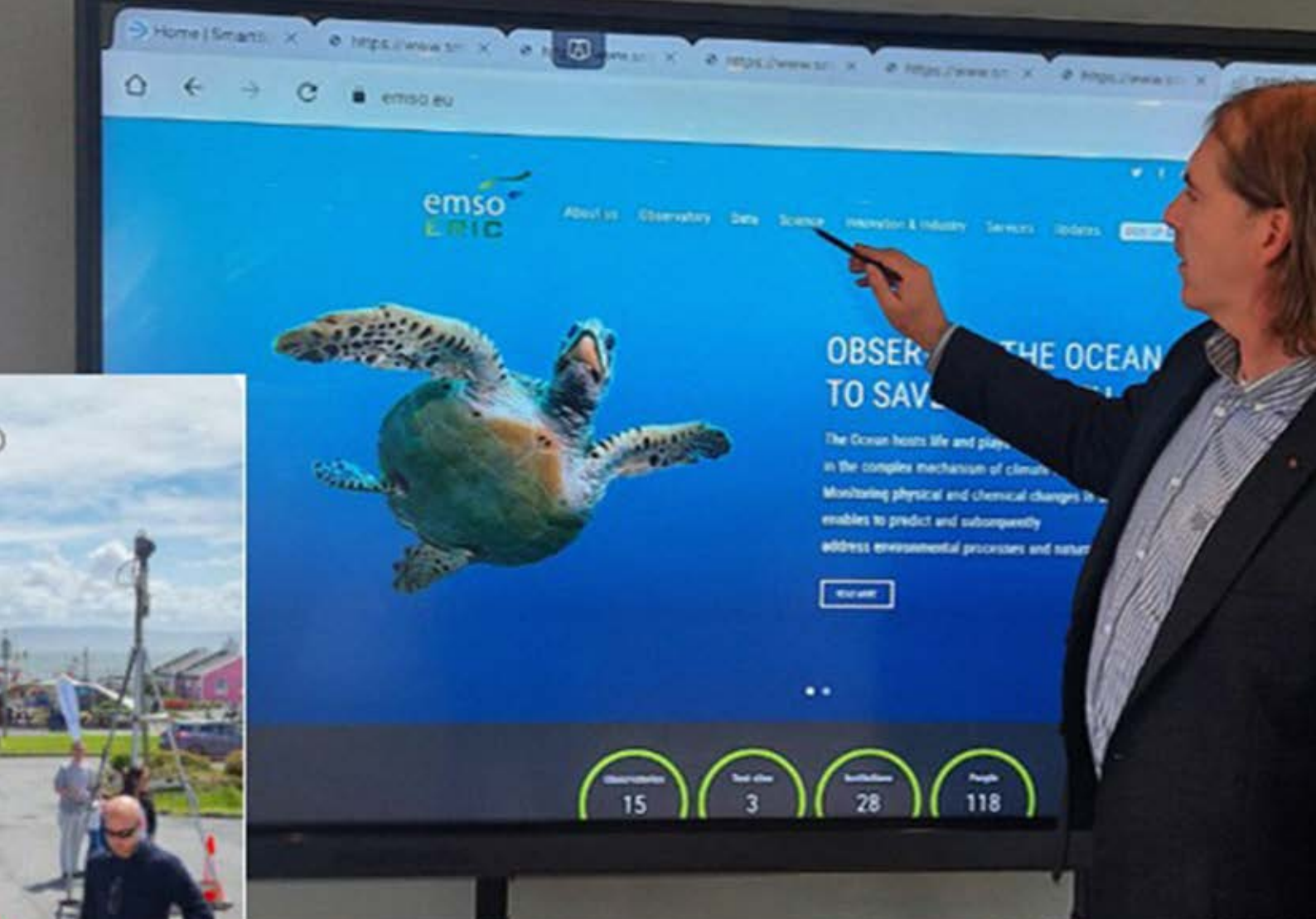
Figure17 - The EMSO ERIC Zenodo community landing page

¹² <https://zenodo.org/communities/emso-eric/>

¹³ <https://zenodo.org>

¹⁴ <https://www.openaire.eu/>





EMSO ERIC

Administrative and Financial Management

EMSO ERIC ECONOMIC DATA SUMMARY

EMSO ERIC is a not-for-profit legal entity/international organization undertaking mainly non-economic R&D activities, since 2016 it has shown a continuous growth of revenues essentially due to the increase of the number of EC-funded projects while the contributions from the Member States have been stable (See Table 7).

REVENUES	2022	2023 (est.)
INGV	220.000	220.000
INGV additional cash contribution (rent)	35.000	35.000
Member state fees	280.000	245.000
In kind	222.000	157.000
- CSIC	92.000	69.000
- INGV	130.000	88.000
Revenues generated by the projects	450.000	550.000
Other revenues	-	-
Total revenues	1.207.000	1.207.000

OPERATIONAL COSTS	2022	2023 (est.)
Personnel	877.300	973.750
-In kind contributions	222.000	157.000
Personnel*	655.300	816.750
Services(utilities, events, professional services)	120.000	120.000
Travel and promotional expenses	35.000	35.000
Other Expenses (including IRAP, office rent, DG indemnities)	115.000	135.000
Physical access to Regional facilities service	45.000	75.000
Total operational costs	1.192.300	1.263.750
Net result	14.700	-56.750
Cash carry over	752.874	696.124

Table 7 – EMSO ERIC Income statements for 2022 and 2023 (estimate): the 2022 balance sheet has been approved by the EMSO ERIC AoM on April 18th, 2023

Most EMSO ERIC costs (73,5% in 2022) are Personnel expenses: personnel is the key asset of EMSO ERIC. Therefore, EMSO ERIC has implemented an employment strategy defined as an indicator which represents a desirable future based (i) on the basic competencies of the Officers, (ii) on a number of training and motivational policies required for embodiment of the objectives, and (iii) procedures for implementing EMSO ERIC strategy.

The role of EMSO ERIC employment strategy is to enhance the effectiveness of each of the Officer's positions and to more efficiently achieve the strategic objectives by clearly showing the position and directions of the Research Infrastructure policies to those in financial and administrative jobs to get their feedback.

EMSO ERIC INTERNAL CONTROL SYSTEM

Given the amount of resources provided by the Member States and the non-profit nature of the Institution, the financial management of EMSO ERIC has always been based on prudence and diligence, accounting concepts which imply being conservative in spending, and avoid capital expenditures that could imperil the cash flow. The approach followed by EMSO ERIC is an accounting practice that goes beyond the common sense of being cost-conscious and fiscally conservative. In fact, actions have always been put in place to:

- preventing that income and assets from being overstated in the EMSO ERIC reporting,
- providing a realistic overview of the financial health than more optimistic estimates,
- ensuring that EMSO ERIC will always be able to meet its debt obligations.

Also, European project revenues are only recognised when they are certain, rather than when they are probable or projected and expenses are recorded accurately and in full. They can never be understated to artificially inflate the revenue.

In addition, EMSO ERIC has implemented an Activity-based costing (ABC) method that assigns overhead and indirect costs to related services for example Physical access) provided by EMSO ERIC. This accounting method of costing recognizes the relationship between costs, overhead activities, and services, assigning indirect costs to products less arbitrarily than traditional costing methods.

EMSO ERIC internal control system is structured along three main layers: (i) External auditing international firm Call assigned to BDO, (ii) internal auditing and accounting (Studio Pinto), (iii) Labour and taxation (Ferrari advisors). EMSO ERIC is ISO 9001 and GDPR (Data Protection Officer EC REG 679/2016) certified (2020) and registered its EMSO ERIC European Trademark (EUIPO 2019).

EMSO ERIC financial management has been deployed considering the risks in the consequences of the actions, and a high degree of vigilance and carefulness in practising decision when making estimates under conditions of uncertainty. EMSO ERIC financial practice requires to make well-judged decisions to ensure their expenditure does not exceed their income while providing to the stakeholders and the Member States the right information to take the best decisions.

Prudence in EMSO ERIC financial management generated a healthy financial attitude because it facilitated financial choices while keeping control over the financial situation, particularly in decisions over investments to be carried out and the day-to-day financial transactions, Table 8 effectively shows the overall trend of increasing revenues generated by the EMSO ERIC through the successful participation to European R&D and innovation Projects throughout 2025.

ACRONYM	COORDINATOR	BUDGET EMSO ERIC	REVENUES 2019	REVENUES 2020	REVENUES 2021	REVENUES 2022*	REVENUES 2023	BALANCE 2024-2025
EMSO-Link	EMSO-ERIC	539.926	234.284	171.721	-	-		-
DANUBIUS-PP	GeoEcoMar	47.187	22.972	11.091	-	-		-
ENVRI plus	ICOS ERIC	68.795	43.403	-	-	-		-
ENVRI-FAIR	FZJ	650.862	148.380	145.464	191.708	165.310		-
ERIC Forum	BBMRI ERIC	44.166	3.680	21.424	9.751	9.311		-
Eurofleets+	MI	129.000	45.198	35.778	20.131	23.000	4.893	-
Eurosea	GEOMAR	27.500	355	1.841	2.746	10.000	12.558	-
ATLANTECO	SZN	17.000	-	1.965	2.721	3.000	5.549	3.765
ENRIITC	ESS	109.531	-	25.720	35.123	48.688	-	-
Egi-ACE	EGI Foundation	134.375	-	-		70.000	35.000	29.375
MINKE	CSIC	186.750	-	-	4.006	43.000	70.000	69.744
DOORS	GeoEcoMar	140.000	-	-	3.703	37.691	47.000	51.606
eRIMOTE	DESY	160.875				15.000	75.000	70.875
EOSC-FUTURE	ATHENA	144.813				15.000	60.000	69.813
GEO-INQUIRE	GFZ	367.026				5.000	120.000	242.026
IMAGINE	STICHTING EG	46.875				5.000	20.000	21.875
OTHER PROJECTS							100.000	200.000
TOTAL		2.400.780	498.272	415.004	269.887	450.000*	550.000	759.079

Table 8 – Evolution of ongoing funded EC Projects as of December 31st 2022 (estimate as of March 31st 2023)

FINANCIAL SUSTAINABILITY STRATEGY

The financial sustainability strategy followed by the ERIC has always been very prudent and conscious. The working capital has been guaranteed by an adequate creation of reserves (cash carry-over) which allowed EMSO ERIC (i) to finance the growth of the increasing cash out-flows needs, (ii) the successful launch of Trans-national access actions granted by EMSO ERIC from 2022 onwards, (iii) to avoid the undertaking debts and obligations towards third parties (Banks or other providers of finance) or suppliers.

EMSO ERIC implemented a Reserve working capital strategy to cover additional amount of working capital on hand for emergencies, seasonality, or unpredictable events. The primary purpose of working capital management enabled EMSO ERIC to maintain sufficient cash flow to meet its short-term operating costs and short-term debt obligations.

Table 9 shows how the cash-flow reserve, expected to decrease in 2023, will be kept to a steady level in spite of the expected increase of current operational expenses (mainly personnel costs) in 2023 and to the increased expenses generated by the return to the pre-COVID mobility patterns of the employees/consultants. However, in the near future, it is foreseen that the increase in the investment volume foreseen in 2023 and 2024 will absorb the cash reserves accumulated during the first phase of the EMSO ERIC development.

YEAR	CASH-CARRYOVER (in Euro)	REVENUES (in Euro)	YEARLY CASH-CARRYOVER REVENUES
2016	104.124	125.999	0,83
2017	235.788	496.954	0,47
2018	129.299	754.625	0,17
2019	75.052	998.319	0,08
2020	133.919	880.479	0,15
2021	59.992	841.756	0,07
TOTAL	738.174		

Table 9 - Evolution of Revenues vs Cash carry-over over the years

However, the cash carry over is being progressively reduced up to a level which will allow EMSO ERIC to face its current and medium-term obligations and carry out its R&D and service provision institutional activities. The break-down of the available resources in EMSO ERIC is shown in Table 10.

EMSO ERIC recently implemented an advanced fully automated IT cost control service, including ser-

ver provisioning and configuration, infrastructure management and software updating. The cost control management solution will help to achieve greater efficiency and avoid costly security breaches, thereby increasing real-time controls and cutting costs in the long run.

YEAR	TOTAL FTEs	FTEs Employees	FTEs Consultants	FTEs In-Kind Contributions
2016	0,25	0	0,25	0
2017	4,95	0	2,16	2,79
2018	6,83	1,8	2,19	2,84
2019	8,63	2,88	3	2,75
2020	8	2,3	2,45	3,25
2021	8,72	3,2	1,85	3,67
2022	8,72	3,2	1,85	3,22

Table 10 - Break-down of EMSO ERIC employees, consultants and in-kind contributions FTEs

EMSO ERIC has strongly relied on its Host Organization (INGV) which since 2016 provided significant financial support with respect to the other Member States but also on the availability of the In-Kind contributions which have been fully used by EMSO ERIC to guarantee the start-up phase and all following years.

In addition, since 2017 the Spanish Marine R&D Institution CSIC has provided a significant In-kind contribution covering the salary cost of the Director-General (see Table 11). Other agreements are being signed to provide additional in-kind contributions by the European Regional Facilities participating in the ERIC (Service Level Agreements).

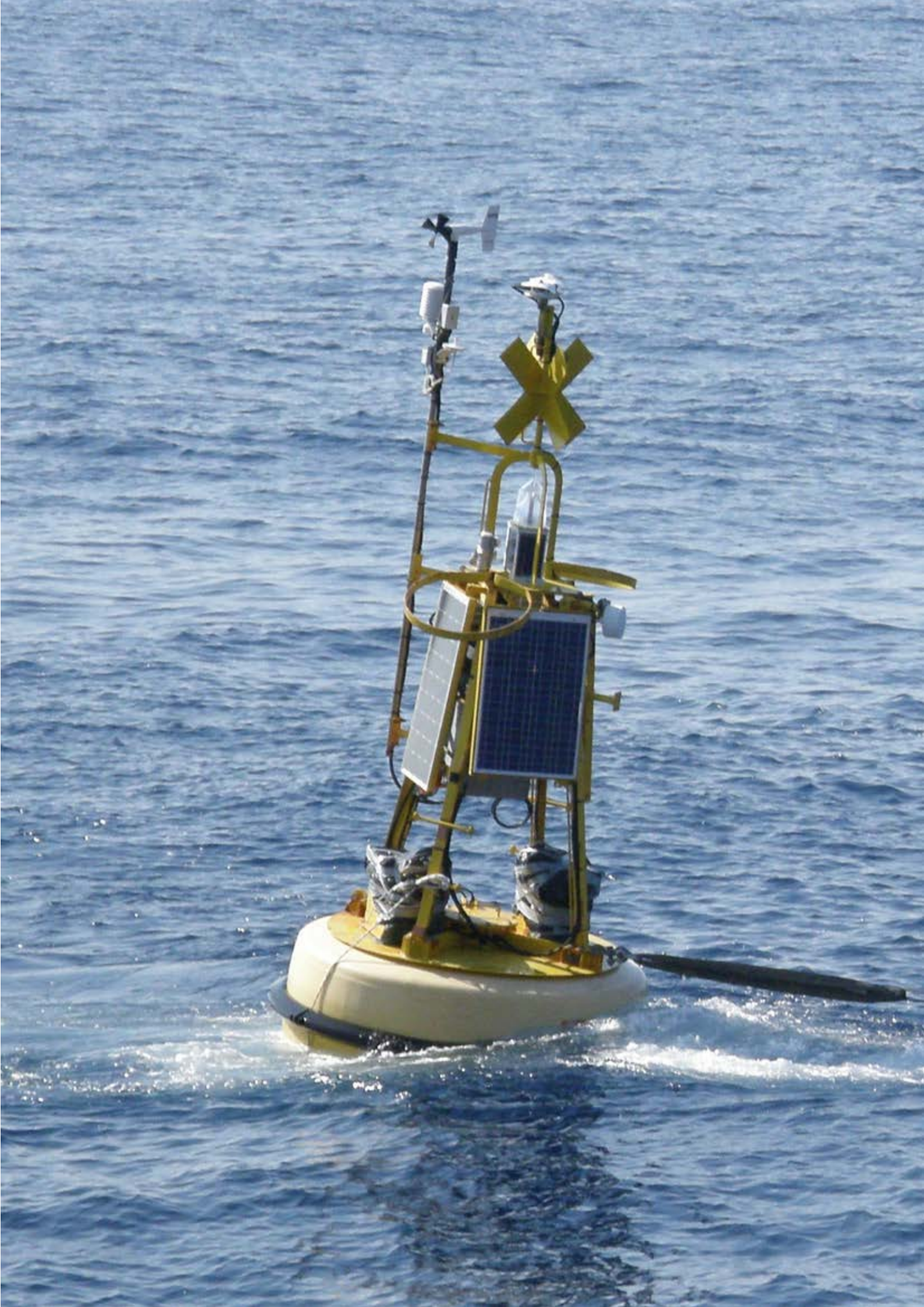
PERSONNEL	2021 (in €)	2021 (FTE)	2022 (in €)	2022 (FTE)
IN KIND				
CSIC	92.396	1,0	92.000	1
INGV	191.609	2,67 (32 MM)	130.000	1,5 (18 MM)
Total	284.005	3,67	222.000	3,33

Table 11 - In-Kind contributions provided by INGV, CSIC

COVID-19 PANDEMIC EFFECTS

During the 2020-2022 period EMSO ERIC has always implemented all the necessary measures to foresee a short-term impact on its operations and financial positions as a result of the COVID-19 pandemic: infection prevention and control strategies based on a thorough workplace hazard assessment, using appropriate combinations of engineering and administrative controls, safe work practices, and personal protective masks to prevent worker exposures.

The measures also required the training of workers on infection prevention and control, including social distancing and the use of protective masks. EMSO ERIC has assessed assumptions and included the related details regarding such assumptions in the Financial Statements projections.



EMSO ERIC Looking ahead

The oceans are the fundamental source of climate balance, and sustainable resources for life on Earth, which is why society conclusively demands that different stakeholders from political leaders to international organizations maintain and restore the health of marine ecosystems. Integrated and harmonized observation of the oceans is key to obtaining reliable high-quality information that allows us to suggest actions based on knowledge. Reduce anthropogenic impact from coastal environments to the deep sea and address major challenges of the century, as supported by the United Nations Sustainable Development Goals and Blue Growth strategies. The European Multidisciplinary Seafloor and Water Column Observatory (EMSO) is a research infrastructure consortium providing high-quality, long-term, multidisciplinary observations through a consortium of networks of fixed-point ocean observatories at key environmental locations in European seas, from the Arctic to the Black Sea.

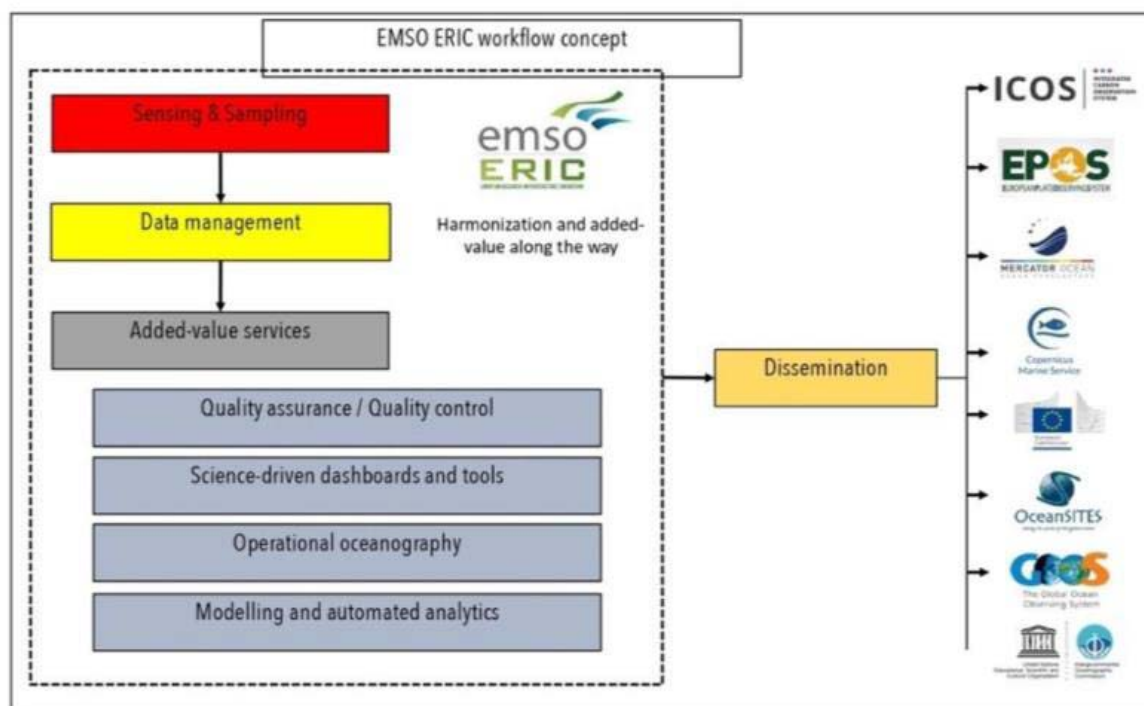


Fig 18 - EMSO ERIC conceptual workflow

A key objective of EMSO ERIC is to provide a variety of stakeholders with high-quality and FAIR data based on continuous and sustained monitoring of environmental processes, through physical and virtual access to RFs data. Stakeholders include marine scientists and engineers, policymakers, marine industries and the wider public. The EMSO ERIC conceptual workflow and value chain in providing high-quality multidisciplinary and FAIR environmental data is shown in Figure 18.

Despite the technological developments in ocean observations, significant challenges still exist as described in Oceanobs '19 white paper (Speich et al., 2019). EMSO ERIC has participated in the scientific and engineering community's efforts to better establish future ocean observation requirements for future ocean observation, in particular with respect to the GOOS EOVS (Miloslavich et al., 2018). In addition, EMSO ERIC has established plans for Geo-hazards, Oceanography and Climate, and Environmental Indicators workflows to support its RFs to deliver complex services and products.

EMSO ERIC develops and promotes common standards, vocabularies, software tools, and data services for ocean data management that are freely available through the portal and are widely adopted and used by the Marine community. Furthermore, EMSO ERIC manages and publishes all data originating from all observatory RFs.

EMSO ERIC continues to advance steadily, providing quality services to scientific users and industry. As part of this effort in 2022 a pilot project that promotes physical access to four regional facilities in the Mediterranean basin (OBSEA, Western Mediterranean Sea, South Adriatic Sea and Hellenic Arc) was launched. We perceive from the positive response of the scientific and technology community that these calls have been a stimulus and a success recognizable by the number of requests received to carry out high-level experiments of fixed duration and sensor tests in the facilities. EMSO ERIC has carried out a financial effort facilitating 4 of the proposals with an amount of 45 k€. Scientists and engineers have been able to benefit from high-quality interconnected instrumented platforms operating in the open ocean to perform their cutting-edge research and/or testing. Beyond the access, the staff at EMSO RFs, including engineers and scientists, can offer qualified capabilities for training services and engineering development, which complement an ideal research work environment. The plan is to expand the offer next year with more regional facilities and increase financial support a little more.

EMSO ERIC is permanently looking to enhance fruitful collaboration with other environmental RIs, at all levels including EC funding projects like Horizon Europe calls. GEORGE project, for instance, is a good frame to work together with ICOS and Euro-Argo ERIC promoting the exchanging of technologies and sharing of high-quality data. One of the outcomes will be the improvement of the EGIM (EMSO Generic Instrument Module). EGIM (Nadine et al., 2022) is a standard ocean observation module that integrates different sensors and aims to significantly improve the capacity of observatories simplifying records, reducing maintenance and achieving standardization and interoperability. The goal is to mark a key step in the future of ocean observation, fostering the capacity to address sustainability issues in the management of ocean resources and habitats.

The EMSO plan of the activities for 2022 and 2023 is presented in the “EMSO ERIC Long-term vision and strategic plan”¹⁵.

¹⁵ <https://zenodo.org/record/5840068>

EMSO ERIC

Governance bodies and Organisation structure

EMSO ERIC ASSEMBLY OF MEMBERS | 2022

The highest governing body in EMSO ERIC is the Assembly of Members (AoM), composed of EMSO ERIC members' representatives. The AoM met four times in 2022 the AoM with two extraordinary meetings

Some changes in the official roles of the Assembly of Members occurred in 2022 (see Table 12, ANNEX 5, for further information).

- On the 1st of March, there was a change in the Spanish Delegation: Ana Aricha, Vice Deputy Director General for Internationalization of Science and Innovation in the Spanish Science and Innovation Minister was appointed replacing José Juan Sanchez.
- On the 27th of May Pal Sorgaar, special advisor at the Research Council of Norway was appointed the new Norwegian Delegate replacing Christine Daele Olseng
- In December UK withdrew the EMSO ERIC consortium as announced one year in advance

EMSO ERIC ADVISORY COMMITTEE | 2022

The EMSO ERIC Advisory Committee (AC, formerly Science, Technology and Ethics Committee – STE-AC) was launched and activated in 2020. The AC advises the AoM (see Table 13, ANNEX 5) on all matters of a scientific, technical, and ethical nature or issues linked to EMSO ERIC's reputation and access to its data by research and operational users that may influence the scientific work carried out by EMSO ERIC. Moreover, the AC may propose actions to promote the use of EMSO Infrastructure by a larger community. The AC also participates in designing the EMSO ERIC biannual conference.

The Advisory Committee was successfully inaugurated in a zoom kick-off video conference meeting held on April 30, 2020. Despite the impersonal online format imposed by the Covid-19 lockdown, the event was the first and extraordinary opportunity for the AC members to meet each other, as well as the Chair of the EMSO ERIC AoM, the Director-General of EMSO ERIC, and EMSO ERIC CMO. The "EMSO

ERIC Advisory Committee (ex-STEAC) - Terms of Reference'' was finalised in 2020, and the document complements the Implementing Rules n. 5 (Implementing Rules, First block October 2016 - as for the Statutes Art. 15). Scientists from various disciplines represent the Membership composition, together with Industry, technology and Innovation Hubs representatives, Research Infrastructure managers, and other experts whose background and specialisation can successfully contribute to the ERIC activities.

The extremely valuable contribution given by the AC during 2021 facilitated the consolidation of the EMSO vision and the sustainability of the operational plan to achieve the goals set out in the strategic plan for the years 2020-2023.

EMSO ERIC EXECUTIVE COMMITTEE | 2022

The Executive Committee (ExCom) is composed of the Director-General, the Regional Team leaders and the Service Group leaders. The Body features and functions are described in Art. 14 of EMSO ERIC Statutes and in Section 9 of the Implementing Rules, but it mainly ensures the implementation of the core mission of EMSO ERIC by coordinating activities of the Regional Teams and Service Groups (further information on Ex Com members available in Table 14, ANNEX 5).

A Regional Team (RT) is in charge of operating a Regional Facility and carries out the operational activities of EMSO ERIC. It comprises staff belonging to one or more scientific institutions, from one or more than one country. Each RT is represented by one representative, specifically by the Regional Team Leader (RTL), in the ExCom.

The ExCom met twice in 2022, the first meeting was at the end of January where the Norwegian gliders were introduced to the EMSO community and with a significant update on the recently approved EC projects (for further information, see ExCom meeting #18, in ANNEX 5), the second meeting was held in September with a very intensive agenda (see the Agenda of ExCom meeting #19, in ANNEX 5) where DG introduced the planning to prepare the next Strategic Plan for 2024-2028, based first on a stakeholder consultation process.

EMSO ERIC

Director General and Central Management Office (CMO)

The Director-General (DG) is the Chief Executive Officer and legal representative of EMSO ERIC and is responsible for the preparation and implementation of the decisions and programs that are submitted for approval to the Assembly of Members (AoM). The DG, in the execution of the activities, is supported by the staff of the Central Management Office (CMO) and for its strategic implementation functions by the Executive Committee (ExCom). The CMO is in charge of supporting the Annual Work Program and the day-to-day administration and management of EMSO ERIC.

A dedicated path to internal growth has been completed as an EMSO ERIC effort in supporting its staff' professional development. The learning and growth perspective is priority-oriented to support organizational change. Investing in employee skills is crucial to ensure the right people to the right places, especially for a Research Infrastructure.

COORDINATION ACTIVITIES FOR SERVICES DEPLOYMENT AND OPERATION

The EMSO ERIC service functions, derived from the operational activities carried out by the Regional Teams that manage the Regional Facilities, are provided by the EMSO ERIC Service Groups, led by the Service Group Leader (SGL) and supported by the CMO Officers. CMO officers provide the integration and coordination of activities in EMSO ERIC to help the DG align the specific objectives and activities of the Service Groups with the objectives of the Strategic Plan.

Under the coordination of the DG, the CMO Officers, together with the Financial Officer, dedicated a significant effort to elaborating a Service Deployment Plan (SDP) for the full deployment of EMSO ERIC services and operations during the 2020-22 period. The first draft of the document focused on Data management and was presented to the Assembly of Members on July 23rd 2020. The final version of the SDP has been approved by the AoM during the 16th meeting on December 14th, 2021.

The launch of a comprehensive set of EMSO core services, corresponding to and delivered by the EMSO Service Groups, has been planned within the SDP 2021-23, sizing the investment expenditure items and the overall cost to identify the financial sources that cover the increasing investment expenditures. Moreover, it includes a plan to improve CMO-ExCom coordination, efficiency and effectiveness with a

CMO organigram chart centered on CMO Officers as first-line of support to Service Group Leaders in delivering EMSO services. The first new service to be launched is the EMSO Physical Access Program in April 2022.

SUPPORTING ACTIVITIES

The Sustainability Strategy action supports the integration of the objectives set out in the Strategic Plan with the specific activities in the annual Work Programme. It is a transversal element to the entire RI and represents the collector of all aspects of RI's sustainability. The task is accountable to ensure that the agreed work programmes are synchronized with the strategy.

A specific "Governance Model" was designed in 2020 and it focuses on integrating the monitoring system within RI governance to facilitate the management of the activities and monitor the strategy execution risks identified in the plan. The EMSO ERIC quality management system has been built upon this methodology. The monitoring system interfaces with it, so the indicators (KPIs) and expected results include all planned expenditures.

PROJECTS AND PROJECT MANAGEMENT ACTIVITIES

Participation in proposals and projects, including those funded by the European R&I Framework Programmes like Horizon Europe, is one of the means through which EMSO ERIC and its research organisations cooperate and reach common objectives (see ANNEX 4 for further information about the European projects in which EMSO is involved).

Being part of an R&I project, fulfilling an expected impact and exploiting a certain result is a key element, even more so, in Horizon Europe and about a vision or a strategic roadmap. EMSO ERIC with its research organisations is involved in different projects, each of them particularly relevant concerning specific objectives defined in EMSO ERIC's strategic plan or work programme.

Furthermore, in 2022, EMSO ERIC developed an internal support, coordination and management service for the benefit of a distributed consortium which mainly aims at enhancing a good and smooth cooperation with the EMSO ERIC research organisations in the framework of external funded projects.

PROJECT MANAGEMENT, PARTICIPATION AND ACTIVITIES CARRIED OUT IN 2022

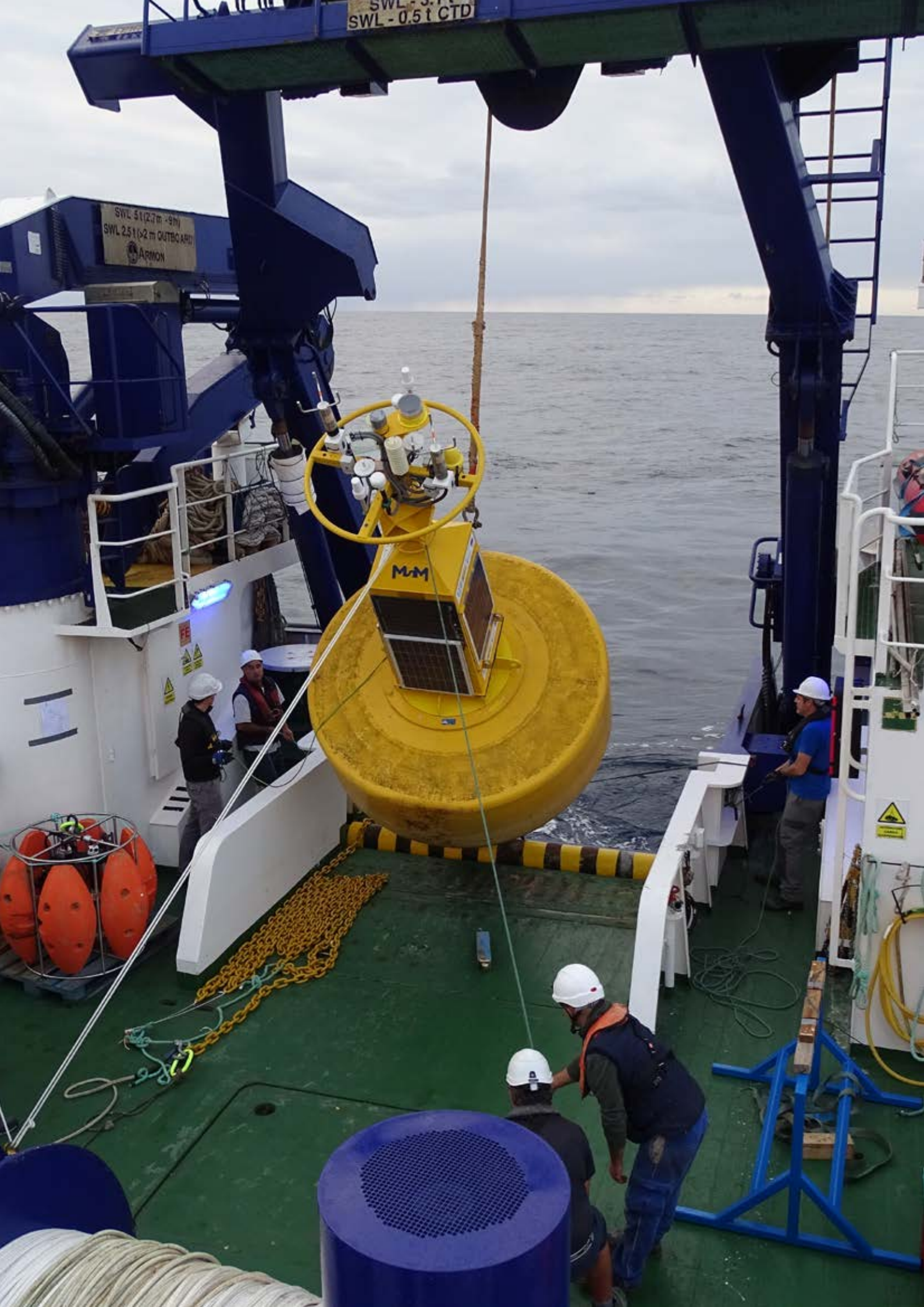
The officers working in the project management field have been working on the following activities:

- **MANAGEMENT OF THE WHOLE EMSO ERIC XTERNAL PROJECTS' PORTFOLIO**
- **MANAGEMENT OF THE PROPOSAL PHASE FOR THE FOLLOWING HORIZON EUROPE PROPOSALS:**
 - Proposals funded: TRIDENT, GEORGE, ANERIS, BLUE CLOUD 2026,
 - Proposals submitted, waiting for final result: ERIC FORUM 2
 - Proposals rejected: Intelli-Guard
 - Accession to the already funded project: EOSC FUTURE project
- **COORDINATION OF THE WORK OF THIRD PARTIES/AFFILIATED ENTITIES INVOLVED IN EU PROJECTS:**
 - AtlantEco (PLOCAN)
 - ENVRI-FAIR (PLOCAN, MI, HCMR, CCMAR)
 - iMagine (IFREMER, MI, UPC)
 - Geo-INQUIRE (HCMR, MI, UPC, PLOCAN)
- **EMSO ERIC COORDINATION AND MANAGEMENT SERVICE**

The EMSO ERIC coordination and management service aims at ensuring smooth coordination of the activities implemented in the frame of externally funded projects while increasing cooperation between the EMSO ERIC CMO and all its Regional Facilities.

- **PROJECTS' PORTFOLIO SPECIAL ISSUE**

This is an information service devoted to ExCom that aims to raise knowledge and awareness about the EMSO ERIC projects' activities among the EMSO community and maximize the projects' impact.



SWL - 0.5 t CTD

SWL 5 t (2.7 m - 9 m)
SWL 2.5 t (x2 m OUTBOARD)
ARMON

M-M

EMSO ERIC

Regional Facilities | 2022

EMSO consists of 14 Regional Facilities (RFs) – 12 cable and stand-alone observatories and 2 test sites - located at strategic environmental sites throughout Europe seas, from the Arctic seas to the North Atlantic and passing through the Mediterranean to the Black Sea, reaching depths down to 4850 m. The RFs monitor Essential Ocean Variables that address the observation of systematic geochemical changes that affect the water column due to persistent global changes, monitor the oceanographic conditions of marine ecosystems, and are alert for the occurrence of geo-hazards, all as general objective to better understanding the complex phenomena interactions between the hydrosphere, biosphere, geosphere and atmosphere that occur from the bottom to the surface of the oceans and their significant impact in Earth systems, providing interoperable high-quality data to the science community and those stakeholders responsible for policy formulations.

Looking at the actual configuration of EMSO RFs, in the Atlantic, there are five open-ocean facilities (Nordic Seas, Azores, Porcupine Abyssal Plain, Iberian Margin and Canary Islands) and shallow-water testbed site (SmartBay). In the Mediterranean, there are six facilities (Ligurian Sea, Western Mediterranean Sea, South Adriatic Sea, Cretan Sea, Western Ionian Sea and Hellenic Arc), each of which has multiple sites and one shallow water testbed facility at OBSEA, and the EuxRo buoys which are monitoring the Black Sea.

The Atlantic dimension has always represented a fundamental player in the climate system and global ocean circulation. The implementation of the network of multidisciplinary underwater observatories, with the recent entry of Norway into the consortium, brought an excellent fleet of ocean gliders, connecting fixed-point observatories with water column observations at the gate of the Arctic Ocean. The Nordic Seas facility includes several of the country's major universities and research institutes, with extensive Marine research and technology experience. Norway's relationship with the seafloor and water-column observatories date back to the establishment of the European Seas Observatory NETwork (ESONET), a Network of Excellence supported by the European Commission after the EMSO Preparatory Phase.

A huge step forward in the monitoring system of the Atlantic Ocean has been taken within the European Multidisciplinary Seafloor and Water Column Observatory – Portugal (EMSO-PT) initiative in the Iberian Margin node, aimed at generating continuous scientific data on marine environmental processes related to the interaction between the geosphere, biosphere and hydrosphere. In this node were installed two underwater fixed-point observatories, one deep-site and another shallower site in the Portuguese mainland northern coast (off the coast of Aguçadoura). Moreover, in each site, an EGIM (EMSO Generic

Instrument Module), a fixed mooring module with an instrument pack designed to measure homogeneously a set of core variables using the same hardware, sensor references, qualification methods and data format, was deployed in 2022 to continuously measure parameters of interest, ensuring accurate and comparable ocean variable measurements. EGIM was developed during the EU project EMSODEV (EMSO implementation and operation: DEvelopment of instrument module).

The use of new technologies and the optimization of ocean monitoring systems are the necessary and fundamental direction to allow international research infrastructures an adequate capacity to acquire representative and wide-ranging of ocean data. After more than 14 years of continuous operation at sea, the Western Mediterranean Sea RF (W1M3A) was recovered at the Palumbo shipyard in Savona for refitting at the end of August 2022. The refitting was funded by the National Research Council of Italy (CNR) and by the Ligurian Region in the framework of wider support to regional infrastructures. This operation is devoted to prolonging the life of the observatory and making it ready for new future scientific missions: the team of CNR, in fact, will implement some improvements to the buoy making it ready to host new sensors in the coming years to enhance the observational capacity of the observatory, with an upgraded control unit to continuously provide meteorological data and oceanographic observations from the sea surface to the ocean interior.



Figure 19 - EMSO Regional Facilities map

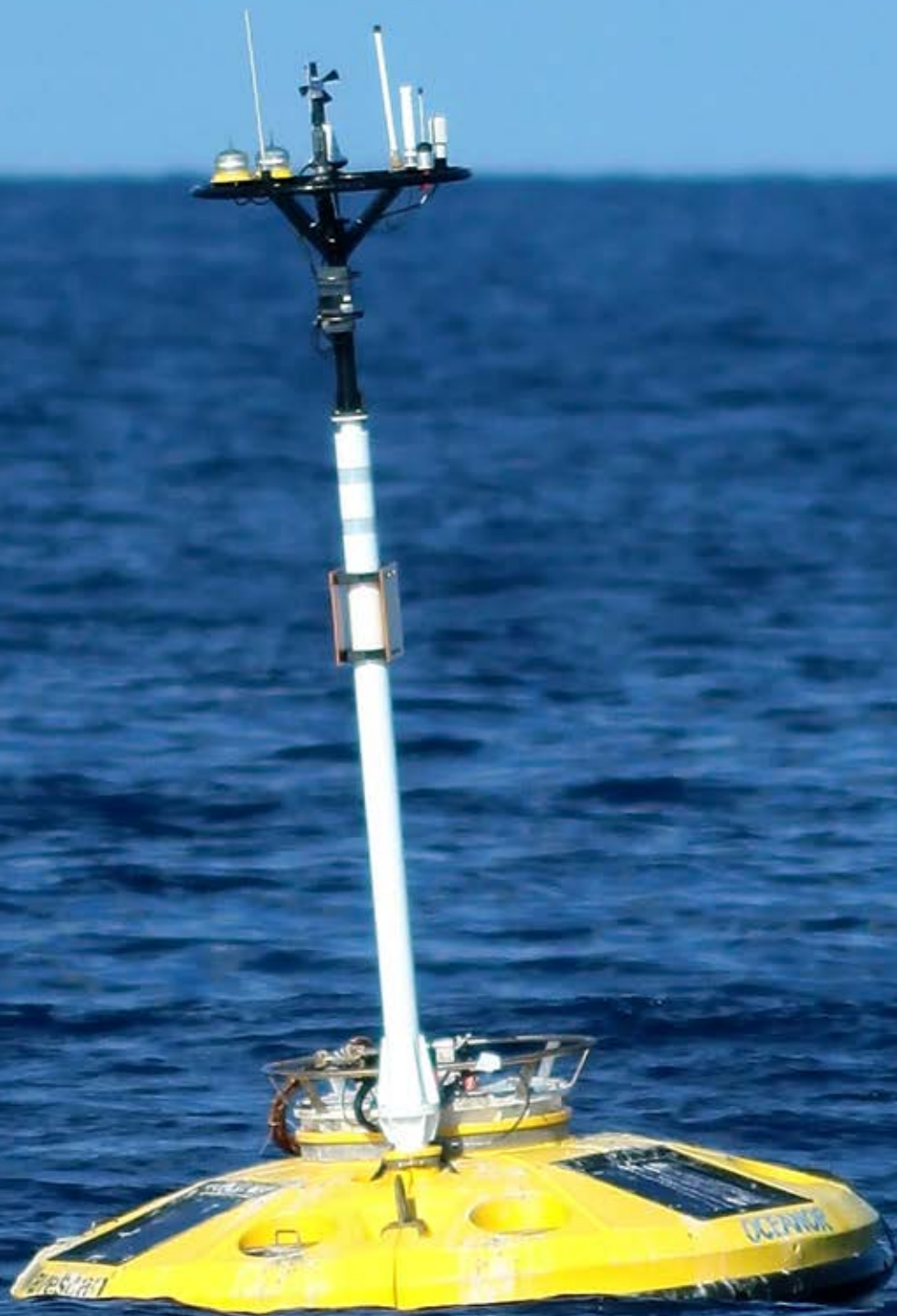
RFs of the EMSO distributed infrastructure currently offer 58 scientific services: 10 access services and 48 data-based services. Of these fifteen facilities, six are cabled and therefore capable of delivering real-time data, and four are equipped with buoys with near real-time satellite communication capability. A list of Services in science areas is listed in Figure 20.

The meteorological and water column physics and biogeochemistry services are offered at nearly all facilities. Marine ecology and biodiversity services are currently mostly offered at the Atlantic facilities, while geohazards and geodynamics services are mostly developed in the Mediterranean region. Several key environmental indicators are measured at each facility. TAs identified in the 2020 EMSO Science Service catalogue (see below), science services are delivered by individual RF. RFs were designed before creating the ERIC; they are operated independently, although EMSO ERIC activities are adding value to them through inter-facility standardization and the coordination of science, data management and logistics. Moreover, these services have clear potential as components of multi-nodes ERIC-scale services.

A detailed description of the Regional Facilities provided by Member countries is included in ANNEX 2.

SCIENCE AREAS	SCIENCE SERVICE CATEGORIES
ATMOSPHERE & OCEAN	METEOROLOGICAL PARAMETERS
	WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY
BIOSPHERE	MARINE ECOLOGY AND BIODIVERSITY
GEOSPHERE	GEOHAZARDS AND GEODYNAMICS
ACROSS SCIENCE AREAS	ENVIRONMENTAL INDICATORS (MSFD)

Figure 20 - EMSO data-related science services categories and SSG thematic leaders



EMSO ERIC

Annex 1

List of the EMSO regional teams

REGIONAL TEAM	TEAM MEMBERS	NAME	AFFILIATION
Azores	Team Leader	Sarradin Pierre Marie	Ifremer
	Science SG	Cannat Mathilde	CNRS
	Data SG	Van Iseghem Sylvie	Ifremer
	Eng&Log SG	Blandin Jérôme	Ifremer
	Comm SG	Sarrazin Jozée	Ifremer
	IISG		
Black Sea	Team Leader	Radulescu Vlad	GeoEcoMar
	Science SG	Raluca Tutuianu	GeoEcoMar
	Data SG	Raluca Radulescu	GeoEcoMar
	Eng&Log SG	Nesrin Acnola	GeoEcoMar
	Comm SG	Dinicoiou Mirela	GeoEcoMar
	IISG	Ivan Iulia	GeoEcoMar
Canary Islands	Team Leader	Delory Eric	PLOCAN
	Science SG	Delory Eric	PLOCAN
	Data SG	Gonzalez Javier	PLOCAN
	Eng&Log SG	Monagas Vidina	PLOCAN
	Comm SG	Loustau Josefina	PLOCAN
	IISG		PLOCAN
Hellenic Arc	Team Leader	Petihakis George	HCMR
	Science SG	Perivoliotis Leonidas	HCMR
	Data SG	Sotiropoulou Maria	HCMR
	Eng&Log SG	Pagonis Paris	HCMR
	Comm SG	Christodoulaki Sylvia	HCMR
	IISG	Frangoulis Costas	HCMR

REGIONAL TEAM	TEAM MEMBERS	NAME	AFFILIATION
Iberian Margin	Team Leader	Carlos Sousa	IPMA
	Science SG	Colaço Ana	University of the Azores -IMAR
	Data SG	Relvas Paulo	Universidade do Algarve (CCMAR/FCT)
	Eng&Log SG	Silva Eduardo	INESC TEC
	Comm SG	Sebastião Luis	ISR- Instituto Superior Tecnico, Portugal
	IISG	Vilhena Lourenco Nuno	IPMA
Ligurian Sea	Team Leader	Coppola Laurent	Laboratoire Océanographique de Villefranche
	Science SG	Lefevre Dominique	MIO- CNRS
	Data SG	Carval Thierry	Ifremer
	Eng&Log SG	Gojak Carl	Division Technique de l'INSU
	Comm SG	TBD	
	IISG	Hello Yann	Geoazur - Université Côte d'Azur
Porcupine Abyssal Plain	Team Leader	Hartman Susan	NOC
	Science SG	Gate Andrew	NOC
	Data SG	Snaith Helen	NOC
	Eng&Log SG	Cardwell Chris	NOC
	Comm SG	Pebody Corinne	NOC
	IISG		NOC
Western Ionian Sea	Team Leader	Embriaco Davide	INGV
	Science SG	Lo Bue Nadia	INGV
	Data SG	Fратиanni Claudia	INGV
	Eng&Log SG	Marinaro Giuditta	INGV
	Comm SG	Giuntini Alessandrta	INGV
	IISG		
Molène (Stop activities, and moving to another location)	Team Leader	Lanteri Nadine	Ifremer
	Science SG	Garziglia Sébastien	Ifremer
	Data SG	Libes Maurice	OSU Pytheas - CNRS
	Eng&Log SG	Ciausu Viorel	Ifremer
	Comm SG	Chloé Batisous	Ifremer
	IISG	Barbero Aurore	Ifremer

REGIONAL TEAM	TEAM MEMBERS	NAME	AFFILIATION
OBSEA	Team Leader	Del Rio Joaquin	UPC
	Science SG	Mihai Toma Daniel	UPC
	Data SG	Martinez Enoc	UPC
	Eng&Log SG	Nogueras Marc	UPC
	Comm SG	Neus Vidal	UPC
	IISG	Del Rio Joaquin	UPC
SmartBay	Team Leader	Berry Alan	MARINE INSTITUTE
	Science SG	Gaughan Paul	MARINE INSTITUTE
	Data SG		
	Eng&Log SG	O'Malley Conall	MARINE INSTITUTE
	Comm SG	Donnelly Felicity	MARINE INSTITUTE
	IISG	Reilly Kieran	MARINE INSTITUTE
Nordic Seas	Team Leader	Ilker Fer	University of Bergen
	Science SG	Ingunn Skjelvan	Norwegian Research Centre and Bjerknes Centre for Climate Research
	Data SG	Rocio Castano Primo	University of Bergen
	Eng&Log SG	Beatrice Tomasi	
	Comm SG	Mottlova Lucie	University of Bergen
	IISG	TBD	
Western Mediterranean Sea	Team Leader	Bozzano Roberto	CNR - Istituto per lo studio degli impatti Antropici e Sostenibilità in ambiente marino
	Science SG	Bozzano Roberto	CNR - Istituto per lo studio degli impatti Antropici e Sostenibilità in ambiente marino
	Data SG	Pensieri Sara	CNR - Istituto per lo studio degli impatti Antropici e Sostenibilità in ambiente marino
	Eng&Log SG	Pensieri Sara	CNR - Istituto per lo studio degli impatti Antropici e Sostenibilità in ambiente marino
	Comm SG	Evangelista Lorenza	CNR
	IISG	Magnifico Giuseppe	CNR

REGIONAL TEAM	TEAM MEMBERS	NAME	AFFILIATION
South Adriatic Sea	Team Leader	Cardin Vanessa	OGS - Istituto Nazionale di Oceanografia e Geofisica Sperimentale
	Science SG	Miserocchi Stefano	CNR - Istituto per le Scienze Polari
	Data SG	Partescano Elena	OGS - Istituto Nazionale di Oceanografia e Geofisica Sperimentale
	Eng&Log SG	Brunetti Fabio	OGS - Istituto Nazionale di Oceanografia e Geofisica Sperimentale
	Comm SG	Petrera Francesca	OGS - Istituto Nazionale di Oceanografia e Geofisica Sperimentale
	IISG	TBD	-
Cretan Sea	Team Leader	Petihakis George	Hellenic Centre for Marine Research (HCMR), Institute of Oceanography
	Science SG	Petihakis George	Hellenic Centre for Marine Research (HCMR), Institute of Oceanography
	Data SG	Perivoliotis Leonidas	Hellenic Centre for Marine Research (HCMR), Institute of Oceanography
	Eng&Log SG	Pagonis Pagonis	Hellenic Centre for Marine Research (HCMR), Institute of Oceanography
	Comm SG	Christodoulaki Sylvia	Hellenic Centre for Marine Research (HCMR), Institute of Oceanography
	IISG	Frangoulis Constantin	Hellenic Centre for Marine Research (HCMR), Institute of Oceanography

EMSO ERIC

Annex 2

Detailed description of the Regional facilities by Member countries

FRANCE

REPRESENTING ENTITIES:

Institut Français de Recherche pour l'exploitation de la Mer | IFREMER

Centre National de la Recherche Scientifique | CNRS

REGIONAL FACILITIES 2

EMSO AZORES

SCIENTIFIC OBJECTIVES

Understand the links between geological, physical and chemical processes and their effects on the dynamics of the hydrothermal fauna at different spatial and temporal scales at the Lucky Strike vent field.

GENERAL INFORMATION

Location: Mid-Atlantic ridge near Azores

Distance from land: 200 NM

Max water depth: 1700 m

Date 1st deployment: October 2010

Operated by: IFREMER, CNRS

Website: www.emso-fr.org

Status: running (updated November 2017)

Regional Team Leader: Pierre-Marie Sarradin, Ifremer

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Meteorological parameters
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Water mass characterisation
MARINE ECOLOGY AND BIODIVERSITY	Hydrothermal vents faunal and ecosystem response
GEOHAZARDS AND GEODYNAMICS	Seafloor geodesy
	Local seismicity
	Dynamics of mid atlantic ridge hydrothermal system
ENVIRONMENTAL INDICATORS (MSFD)	Underwater sound monitoring
	Seafloor environmental parameters

EMSO-MOLÈNE

SCIENTIFIC OBJECTIVES

Test of marine sensors to help manufacturers, platform operators and scientists to validate instruments.

GENERAL INFORMATION

Location: Near Molène Island

Distance from land: 2 km

Max water depth: 1 m

Date 1st deployment: 2012

Operated by: IFREMER

Website: www.emso-fr.org

Status:

Regional Team Leader: Nadine Lantéri, Ifremer

This site is currently under an intense readaptation with the aim of finding another location.

LIGURIAN SEA

SCIENTIFIC OBJECTIVES

Multidisciplinary long-term eulerian monitoring to study the slope failure processes on the continental slope (Nice site), water mass properties, biogeochemical cycles and biological communities' modifications in response to climate change and anthropogenic pressure (open sea platforms) and geo-hazards assessment with the monitoring of earthquakes and tsunamis.

GENERAL INFORMATION

Location: Mediterranean Sea, South of France

Distance from land: 42 km (Western Ligurian), 1 km (Nice), 50 km (Dyfamed)

Max water depth: 2400 m (Western Ligurian), 20-35 m (Nice), 2300 m (Dyfamed)

Date 1st deployment: October 2015 (Nice), 1998 and 1999 (Dyfamed), 2007 and 2010 (Western Ligurian)

Operated by: CNRS, IFREMER

Website: www.emso-fr.org

Status: running/in maintenance/in development (updated November 2017)

Regional Team Leader: Laurent Coppola, CNRS/UPMC

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Water mass characterization: Hydrodynamic changes in the water column
	Biogeochemical cycles: Impacts of the deep and dense water formation and Evolution of the carbon pump
GEOHAZARDS AND GEODYNAMICS	Geohazard: Slope failure processes on a steep continental slope
	Geohazard: Seismic hazard, tsunami generation

GREECE

REPRESENTING ENTITY:

Hellenic Centre for Marine Research | HCMR

REGIONAL FACILITIES 2

HELLENIC ARC

SCIENTIFIC OBJECTIVES

Real-time long-term monitoring of oceanic circulation, deep-sea processes and ecosystems evolution. Study of episodic events such as earthquakes, submarine slides, tsunamis, benthic storms, biodiversity changes, pollution. Simultaneous data are relative to: seismology, geodesy, sea level, fluid and gas vents, physical oceanography and biodiversity imaging at different scales.

GENERAL INFORMATION

Location: Mediterranean Sea, Hellenic Arc

Distance from land: 12 NM

Max water depth: 1700 m

Date 1st deployment: May 2007

Operated by: HCMR

Website: poseidon.hcmr.gr

Status: running/in development (updated November 2017)

Regional Team Leader: George Petihakis, HCMR

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Meteorological parameters
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Water column environmental parameters
GEOHAZARDS AND GEODYNAMICS	Geohazard
ENVIRONMENTAL INDICATORS (MSFD)	Underwater sound monitoring

CRETAN SEA

SCIENTIFIC OBJECTIVES

The E1-M3A is considered a reference point for monitoring open-ocean biogeochemical processes (including air-sea interactions) of the Eastern Mediterranean and part of the operational oceanography observing system developments supporting the WFD and the MSFD implementation in the Mediterranean Sea. Consolidating on the long experience of physical variables monitoring, the objective of the observatory has been expanded in the last few years to include regular monitoring of the epipelagic ecosystem and the associated biogeochemistry.

GENERAL INFORMATION

Location: Mediterranean Sea, Hellenic Arc

Distance from land: 24 NM

Max water depth: 1400 m

Date 1st deployment: January 2000

Supported by: HELLAS

Operated by: HCMR

Website: <http://poseidon.hcmr.gr>

Regional Team Leader: George Petihakis, HCMR

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Meteorological parameters
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Water column environmental parameters

IRELAND

REPRESENTING ENTITY:

Marine Institute | MI

REGIONAL FACILITY 1

SMARTBAY

SCIENTIFIC OBJECTIVES

Test of marine sensors to help manufacturers, platform operators and scientists to validate instruments.

GENERAL INFORMATION

Location: Galway Bay, Ireland

Distance from land: 1.5 or 5 km

Max water depth: 27 m

Date 1st deployment: August 2015

Operated by: Marine Institute

Website: smartbay.marine.ie

Status: test site, fully operational (updated November 2017)

Regional Team Leader: Alan Berry, MI

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
MARINE ECOLOGY AND BIODIVERSITY	Benthic Monitoring
ENVIRONMENTAL INDICATORS (MSFD)	Environmental parameters
	Underwater Noise Monitoring and BioAcoustics

ITALY

REPRESENTING ENTITY:

Istituto Nazionale di Geofisica e Vulcanologia | INGV

REGIONAL FACILITIES 3

WESTERN IONIAN SEA

SCIENTIFIC OBJECTIVES

Geo hazards assessment with the real-time monitoring of earthquakes and tsunamis. Physical oceanographic monitoring at the seafloor and along the water column of seawater EOVs. Time variations of terrestrial potential fields and electrical properties. Marine acoustic noise characterization and bio-acoustic tracking. Rheological properties of solid matter.

GENERAL INFORMATION

The multidisciplinary observatory is located in an area (25 km out of Catania, Sicily) which is prone to numerous natural hazard issues due to high seismicity and the presence of Mount Etna, one of the biggest and active volcanoes in Europe, whose roots possibly sink down to the seafloor.

Seismicity is linked to the collision between African and European plates and the region experienced large historical earthquakes and some of these strongest earthquakes (the most recent in 1908) caused also very intense tsunami wave. The area is also a key site for studying oceanographic dynamics governing exchanges between Eastern and Western Mediterranean basins through the Messina Strait and the Sicily Channel. Acoustic detectors, installed on the observatory, are used for undersea noise monitoring, considering that acoustic pollution affects the well-being of several ecosystems.

In the latest version of the observatory, thanks to an electro-optical cable that connects it to a ground station, the continuous power supply of the instruments installed on the observatory is guaranteed as well as the real-time transmission to the ground station of the data recorded at sea. This therefore also allows their immediate ingestion in a dedicated database and their use by researchers. Thanks to a GPS receiver installed in the ground station, all data from the observatory are synchronized in time.

The infrastructure has been enriched with water column data recorded by an oceanographic mooring, installed near the observatory, to integrate the information of the water column in the study of the processes that characterize the deep dynamics and their variability.

Location: Mediterranean Sea, East of Sicily
Distance from land: 25 km
Max water depth: 2100 m
Date 1st deployment: 2001
Supported by: Italy
Operated by: INGV, INFN
Website: <https://westernioniansea.ingv.it/>
Regional Team Leader: Davide Embriaco, INGV

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Water masses characterization: monitoring of deep dynamics and variability of the water column
GEOHAZARDS AND GEODYNAMICS	Geohazards: quality check through probability PSD tool
	Geohazards: trigger for seismic events
	Geohazards: trigger for volcanic fall-out
	Tsunami detection
ENVIRONMENTAL INDICATORS (MSFD)	Underwater Acoustic Noise Monitoring

SOUTH ADRIATIC SEA

SCIENTIFIC OBJECTIVES

The interdisciplinary laboratory for oceanographic research in the Southern Adriatic "EMSO-ERIC Regional facility" is dedicated to studies on characterising long-term changes in the Adriatic Sea in response to local climate forces.

The objective is to study the processes of dense water formation, water mass properties, biogeochemical cycles and cascading in the Southern Adriatic Sea, and to understand the ecosystem function especially in relation to carbon sequestration dynamics and acidification processes in deep waters.

GENERAL INFORMATION

The E2-M3A observatory is located in the Southern Adriatic Pit. Oceanographically, it is positioned in the centre of the cyclonic gyre where deep convection processes take place, involving both the atmosphere and the ocean dynamics forming new dense and oxygenated waters.

It comprises two sites:

- the South Adriatic Trench Observatory (E2M3A)
- the Shelf-slope Observatory site (BB and FF) located in the western part of the basin.

Location: Southern Adriatic Pit

Distance from land: 60 nautical miles

Max water depth: 1200 mt

Date 1st deployment: November 2006

Supported by: National Institute of Oceanography and Applied Geophysics – OGS

Operated by: National Institute of Oceanography and Applied Geophysics – OGS and Istituto di Scienze Polari ISP – CNR

Website: www.ogs.it/en/european-multidisciplinary-seafloor-and-water-column-observatory-emso-eric

Regional Team Leader: Vanessa Cardin, National Institute of Oceanography and Applied Geophysics – OGS (vcardin@ogs.it)

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Meteorological parameters
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Water column environmental parameters, Biogeochemical cycles: Impacts of the deep and dense water formation and evolution of the carbon pump –South Adriatic Pit
	Water column environmental parameters – Bari Canyon
	Water column environmental parameters – Western margin (open slope)

WESTERN MEDITERRANEAN SEA

SCIENTIFIC OBJECTIVES

EMSO-Western Mediterranean (W1M3A) RF provides time-series to investigate air-sea interactions and connection between physics and bio-geo-chemistry along the water column on the long-term for assessing climate changes and ocean acidification. The RF allows also the monitoring of underwater ambient sound to identify anthropogenic, geophysical and biological sound sources.

GENERAL INFORMATION

The observatory is located in the more inland basin of the Mediterranean Sea: in this area, the particular orographic constraints and the thermal contrast between land and sea give rise to specific local effects that influence the general circulation of both atmosphere and ocean. The area is also part of the Pelagos Sanctuary for Mediterranean Marine Mammals that is a special marine protected area extending about 90.000 km² between Italy, France, and the Island of Sardinia. The W1M3A observing system is composed of two sub-systems:

1. a large spar buoy, nominally known as "ODAS Italia 1" to acquire EOY in the upper 40 m of water column.
2. a sub-surface mooring acquiring data in the ocean interior.

The surface buoy represents one of the few examples in the world of large spar meteo-oceanographic buoy. The overall structure is 51-meter-long with a dry-weight of about 12 tons. The observatory is permanently moored on the seabed through a 2000 m long slack polypropylene mooring cable terminated by ship chains and an anchor. The buoy spans a watch circle of 3 km of diameter to sustain ocean currents, winds, and waves. The pole emerges about 15 meters above sea level, whereas the remaining 36 meters remain submerged. On the upper mast, the meteorological instruments are installed. At about 7 meter above the mean sea level, a small, closed space hosts the electronic systems for data collection. Along the underwater pole, at several depths, instruments are deployed. All electronic systems and most sensors are powered by a wind/solar system that recharges two separate batteries. Acquired data are stored on board but a subset of the data is transmitted ashore through a satellite link. The sub-surface mooring is a standard oceanographic mooring composed of pieces of Kevlar rope with floats kept in position by a ballast on the sea bottom which can be detached using a pair of acoustic releasers. Along the mooring line, several CTDs are deployed at different depths.

Location: Western Mediterranean Sea (009.118163° E 43.834516° N)

Distance from land: 80 Km

Max water depth: 1200 m

Date 1st deployment: February 2000

Supported by: Consiglio Nazionale delle Ricerche

Operated by: Consiglio Nazionale delle Ricerche

Website: <http://www.w1m3a.cnr.it>

Regional Team Leader: Roberto Bozzano

Data management: Sara Pensieri, Consiglio Nazionale delle Ricerche

Communications manager: Lorenza Evangelista, Consiglio Nazionale delle Ricerche

Engineering manager: Sara Pensieri, Consiglio Nazionale delle Ricerche

Industry and innovation manager: Giuseppe Magnifico, Consiglio Nazionale delle Ricerche

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Air-sea interaction
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Water column

PORTUGAL

REPRESENTING ENTITY:

Fundação para a Ciência e a Tecnologia | FCT

REGIONAL FACILITY 1

IBERIAN MARGIN

SCIENTIFIC OBJECTIVES

GENERAL INFORMATION

Location: Gulf of Cadiz and North Portugal continental shelf

Distance from land: to be defined

Max water depth: to be defined

Date 1st deployment: July 2020

Operated by: EMSO Portugal

Website: emso-pt.pt

Status: in procurement (updated December 2019)

Regional Team Leader: Carlos Sousa, IPMA

SUMMARY

The area of Gulf of Cadiz is very important for geo-hazards. It was the site where one of the worst earthquakes that hit Europe occurred in 1755, coupled with a destructive tsunami. Here African and European tectonic plates converge. It is a seismic volcanic region. It is also the site to investigate the flow that from Mediterranean moves into the Atlantic and affects the deep-water circulation on a global scale. The geologic and oceanographic features of this region favour the presence of highly diverse benthic communities and have also a central role in the distribution of several marine mammals and fish species.

Planned EMSO scientific disciplines: geosciences, physical oceanography, biogeochemistry, marine ecology.

ROMANIA

REPRESENTING ENTITY:
Institutul National de Cercetare
Dezvoltare Pentru Geologie si Geoecologie Marina | GEOECOMAR
REGIONAL FACILITY 1

BLACK SEA

SCIENTIFIC OBJECTIVES
Long-term environmental monitoring and for the prevention/mitigation of the marine geo hazards.

GENERAL INFORMATION
Location: Three sites in the Black Sea
Distance from land: 180 km
Max water depth: 95 m
Date 1st deployment: June 2013
Supported by: Romania
Operated by: GeoEcoMar
Website:
Status: running (updated November 2017)
Regional Team Leader: Vlad Rădulescu, GeoEcoMar

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Meteorological characterization
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Hydrography (Currents, Salinity, Temperature, Pressure)
ENVIRONMENTAL INDICATORS (MSFD)	Hydrodynamic changes on the seafloor

SPAIN

REPRESENTING ENTITY:

Plataforma Oceánica de Canarias | PLOCAN

REGIONAL FACILITIES 2

EMSO CANARIAS

SCIENTIFIC OBJECTIVES

Long-term changes of stratification and circulation on seasonal and inter-annual times scales of the subtropical Central-Eastern waters of the Atlantic Ocean.

GENERAL INFORMATION

Location: Atlantic Ocean near Canary Islands

Distance from land: 112 km

Max water depth: 3630 m

Date 1st deployment: 1994

Operated by: PLOCAN

Website: plocan.eu/en/open-ocean-observatory

Status: running (updated May 2020)

Regional Team Leader: Eric Delory, PLOCAN

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Meteorological parameters
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Hydrography (Currents, Salinity, Temperature, Pressure)
	Biogeochemistry (Oxygen, Nutrients, Chlorophyll, Turbidity, Carbon system, Particle flux)
ENVIRONMENTAL INDICATORS (MSFD)	PLOCAN Underwater Sound service

OBSEA

SCIENTIFIC OBJECTIVES

Test of marine sensors to help manufacturers, platform operators and scientists to validate instruments.

GENERAL INFORMATION

Location: Balearic Sea, South of Spain coast

Distance from land: 4 km

Max water depth: 20 m

Date 1st deployment: 2009

Operated by: Universitat Politècnica de Catalunya, UPC

Website: www.obsea.es

Status: test site running (updated November 2017)

Regional Team Leader: Del Rio Joaquin, UPC

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Meteorological parameters
MARINE ECOLOGY AND BIODIVERSITY	Seafloor environmental parameters
GEOHAZARDS AND GEODYNAMICS	Geohazard (earthquake)
ENVIRONMENTAL INDICATORS (MSFD)	Seafloor environmental parameters
	Underwater sound monitoring

UK

REPRESENTING ENTITY:

National Oceanography Centre | NOC

REGIONAL FACILITY 1

PORCUPINE ABYSSAL PLAIN

SCIENTIFIC OBJECTIVES

Measurement of EOVs from surface to full depth (4850m) in the productive northeast Atlantic.

GENERAL INFORMATION

Location: 49N, 16.5W

Distance from land: 300 miles

Max water depth: 4850 m

Date 1st deployment: 2002

Supported by: NC CLASS funding

Operated by: NOC

Website: projects.noc.ac.uk/pap

Regional Team Leader: Sue Hartman, NOC

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
Access	Access
METEOROLOGICAL PARAMETERS	Meteorological parameters
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Ocean physics and biogeochemistry
MARINE ECOLOGY AND BIODIVERSITY	Ecosystem function: surface to seafloor
	Dynamics of the benthos of the porcupine abyssal plain
ENVIRONMENTAL INDICATORS (MSFD)	Anthropogenic impacts on open ocean systems

NORWAY

REPRESENTING ENTITY:

University of Bergen

REGIONAL FACILITY 1

NORDIC SEAS

SCIENTIFIC OBJECTIVES

Better understand the drivers for the temporal and spatial changes of water mass transformations, ocean circulation, acidification, and thermo-chemical exchanges at the seafloor in the Nordic Seas, and contribute to improvement of models and forecasting by collecting and making available high-quality data.

GENERAL INFORMATION

Location: Norwegian Sea, Greenland Sea, Iceland Sea, Fram Strait

Distance from land: Distributed, 50– 1000 km

Max water depth: 3050 m

Date 1st deployment: Fall 2020

Supported by: Kingdom of Norway

Operated by: University of Bergen, Institute of Marine Research, NORCE, Norwegian Polar Institute, University of Tromsø, and Norwegian Meteorological Institute

Website: <https://www.uib.no/en/noremso/>

Status: in development (update date – October, 2022)

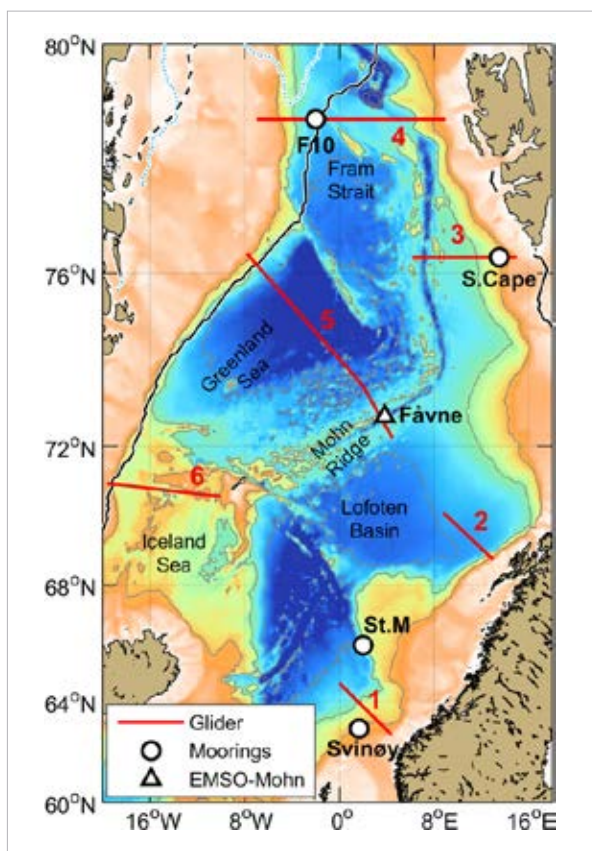
Regional Team Leader: Ilker Fer, University of Bergen

SUMMARY

The Nordic Seas regional facility is a distributed infrastructure, member of the EMSO consortium and comprises multiple ocean glider sections, 4 oceanographic mooring sites, and one seabed-water-column-coupled observatory.

Glider transects are in the Norwegian Sea (Svinøy: 62.7°N, 4.4°E - 64.7°N, 0.0°E; Gimsøy: 68.8°N, 13.0°E - 70.2°N, 8.8°E), Fram Strait (78.8°N, 9.0°E - 78.8°N, 7.0°W), the Greenland Sea (73.5°N, 2.0°E - 76.4°N, 7.8°W) and the Iceland Sea (70.6°N, 10.0°W - 71.0°N, 19.6°W). All gliders measure temperature, salinity, pressure, and depth-averaged velocity. Gliders are in operation since 2021.

Mooring sites are Svinøy (63°N 4°E in the southern Norwegian Sea at 500 m isobath; ocean currents, temperature and salinity; running since 2020); Station M (66°N 2°E in the Norwegian Sea at 2050 m isobath; temperature, salinity and pCO₂; running since 2020), South Cape (76.107°N 15.967°E, off South Cape of Svalbard at 390 m isobath near the gas hydrate Pingo; temperature, salinity, pH, CH₄ and CO₂



sensors; in development), and the central Fram Strait (78.83°N 2°W in Fram Strait at 2655 m isobath; ocean currents, temperature, salinity, dissolved oxygen, pH and pCO₂; running since 2020).

The fixed-point seabed-water-column-coupled and wireless observatory is at the Mohn Ridge (72.756°N 3.834°E, Fåvne vent field at 3050 m isobath; in development). The observatory will be composed of one deep-ocean water-column mooring coupled with a seafloor node, and of a transmission buoy that communicates acoustically with the seafloor station and relays data (pressure, temperature, turbidity, currents) via satellite.

EMSO scientific disciplines: geosciences, physical oceanography, biogeochemistry, marine ecology (planned).

SCIENCE SERVICE CATEGORY	SCIENCE SERVICE NAME
WATER COLUMN PHYSICS AND BIOGEOCHEMISTRY	Svinøy: Hydrodynamic changes in the water column and transport series of the Norwegian Atlantic Current
	South Cape: Methane release variability and transport
	Fram Strait: Hydrographic and current variability in the Arctic water column
	Station M: Hydrography and biogeochemistry time series in the Norwegian Basin
	Gliders: Hydrography and currents along 5 glider sites in the Nordic Seas
	EMSO-Mohn: Hydrothermal plume variability and transport
ENVIRONMENTAL INDICATORS (MSFD)	South Cape: Influence of high methane content in water column geochemistry
	Station M: Anthropogenic impact in the southern Nordic Seas

EMSO ERIC

Annex 3

List of publications

Abstracts congress, scientific articles and events

CONFERENCES, EVENTS, OTHERS

G. Quaranta and J. Dañobeitia, “**EMSO ERIC – a unique eye on deep ocean**”. SFE² GfÖ EEF Joint meeting, International Conference on Ecological Sciences “Ecology and Evolution: New perspectives and societal challenges”, 24th November 2022 Metz, France

J. Dañobeitia and V. Tegas, “**European Research Infrastructures – Pathway to Improved Resilience through Remote and Digital Access**”, Eurofleets+ General Assembly, Barcelona 16th November 2022

M. Galeotti and J. Dañobeitia, **EMSO ERIC**, ENRIITC. Final General Assembly meeting, 12th December, Kiruna, Sweden

M. Galeotti, “**The EMSO’s approach to the collaboration with the industry**”, ICRI 2022, Infrastructures and industry engagement – Enabling European innovation, October, 19th 2022, BRNO, CZ.

One Ocean Network for Deep Observation, March, 22th 2022. EMSO ERIC AST23 UN Forum Juanjo Dañobeitia, on behalf of EMSO ERIC European network of research infrastructures & industry for collaboration (ENRIITC).

Supporting research infrastructures engagement with industry. Meeting with Jana Kolar, ESFRI chair.
By Anne-Charlotte Joubert, ESS, ENRIITC project coordinator, and Marco Galeotti, EMSO ERIC, ENRIITC

ENVRI-Fair. **ENVRI week 2022**. Wp9 Marine Domain by Euro-Argo and EMSO Research Infrastructures, 31 Jan – 4 Feb 2022

ENVRI-FAIR, February 2022, Enhancing Marine RIs FAIRNESS within the ENVRI-FAIR EU project by S. Pouliquen, T. Carval, JJ Dañobeitia and other marine subdomain partners

1st International joint Conference, Marblue 2022, 26-28 October, Constanta. EMSO-EUXINUS, Romanian contribution to EMSO ERIC by Vlad Radulescu

Marmara Workshop, Marseille 7- 9 September 2022. Introduction, workshop objectives and discussion by P. Henry, N. Lanteri, L. Beranzoli, L. Géli, S. Ozeren, Z. Çakir (<https://emsomarmara.sciencesconf.org/>)

ITU-WMO-UNESCO IOC JTF SMART Subsea Cables, Plenary meeting 5th July, 2022 Progress of the Medusa-smart cable project in the westernmost sector (Atlantic-Mediterranean border) Strengthen collaboration in Ocean Observation to preserve "Ocean health and resources" EMSO ERIC + LifeWatch ERIC Medusa- Smart Cable Project, Juanjo Dañobeitia & EMSO TEAM

1st ESFRI Stakeholders Forum Meetup | OCEANS, Brussels, 15th September 2022.

Oceans: Jean-Marie Flaud, Chair of ESFRI Strategy Working Group on Environment

- Juan Vanaverbeke, EMBRC, coordinator of Belgian node (https://www.esfri.eu/sites/default/files/Jan_Vanaverbeke_ESFRI_Stakeholders_Forum.pdf)
- Juanjo Dañobeitia, EMSO, Director General (https://www.esfri.eu/sites/default/files/Juanjo_Da%C3%B1obeitia_ESFRI_Stakeholders_Forum.pdf)
- Andreea Strachinescu, EC, Head of Unit Maritime innovation, Marine Knowledge and Investment, DG MARE Margherita Cappelletto, Sustainable Blue Economy Partnership
- EMSO Presentation "Strengthen collaboration in Ocean Observation to preserve Ocean health and resources" by Juanjo Dañobeitia
- EMSO ERIC DG, Prof. J. Dañobeitia, was Appointed International Science Advisory Board / Ocean Observatory Council, 2022-2024. Ocean Network Canada (ONC) Board of Directors

IEEE International Workshop on Metrology for the Sea. <https://emodnet.ec.europa.eu/en/ieee-metrosea-2022>, 3 - 5 Oct 2022, Milazzo - Messina, Italy.

- "Performance of WAVY ocean Lagrangian drifters for surface characterization of ocean dynamic structures", Toma, D.M.; Carandell, M.; Del Rio, J.
- "Sea-floor interdisciplinary observatories: a global vision for monitoring underwater processes and submarine active volcanoes by technological enhancement and new scientific results", P. Favali, F. Italiano

IEEE Conference on Automation Science and Engineering, August 20th-24th 2022, Mexico City, A reinforcement learning path planning approach for range-only underwater target localization with autonomous vehicles, Masmitja, I.; Martin, M.; Katija, K.; Gomariz, S.; Navarro, J. www.case2022.org

Oceans MTS/IEEE, October 17-20, 2022, Virtual, A new nonlinear compliant mechanism for harvesting energy from ocean waves, Liang, H.; Carandell, M.; Olszewski, O.; Hao, G. <https://hamptonroads22.oceansconference.org/>

Jornadas de Engenharia Hidrográfica, June 21-23, 2022, Lisbon, Generation WAVY: a new breed of surface drifters for all ocean domains, da Silva, A.; Sousa, A.; Pedrera, F.; Del Rio, J.; Pinto, J.P.; Oliveira, M.; Gonçalves, P.; de Saint Léger, P.; Chumbinho, R., <https://jornadas.hidrografico.pt/>

Meeting between AFRI-IX, EMSO ERIC & LifeWatch, 9th June, 2022. "Una Red Submarina de alta calidad y resolu-

ción para la Observación Oceánica permanente bio-geo-química en el contacto Atlántico-Mediterráneo”, EMSO & LifeWatch, Juanjo Dañobeitia, Christos Arvanitidis et al

Medusa- Smart Cable Project, 16th May, 2022. “One Ocean Network for Seafloor Observation EMSO & LifeWatch Observing the Ocean and Earth with SMART Subsea Cables”, Juanjo et al.

Medusa- Smart Cable Project, EMSO & LifeWatch ERICs, 11 May 2022

- EMSO single entry point EU-Stakeholder
- Bruce M. Howe Chair, JTF SMART Cables University of Hawai‘i at Mānoa
- Juanjo Dañobeitia & Paolo Favali EMSO ERIC

AGU Fall Meeting Abstracts, IN26A-07, 2022 **“Toward FAIR Dashboard Services”,** Raul Bardaji, Andreu Fornós, Juanjo Dañobeitia, Alexander T Vermeulen, Christos Arvanitidis, Ivan Rodero

EGU General Assembly Conference Abstracts, EGU22-12096, doi:10.5194/egusphere-egu22-12096, 2022. **“Identification and Long-lasting Citability of Dynamic Data Queries on EMSO ERIC Harmonized Data”,** I. Rodero, A Fornós, R Bardaji, S Chiappini, J Dañobeitia,

Themes, 2022, International Conference, November 17-18th, 2022, Venice-Italy. F. Amorim, Wirth A., Cardin V.: **Time evolution of double diffusion in the southern Adriatic from the EMSO-E2M3A Regional Facility** (<https://www.unive.it/pag/34349>)

MonGOOS Workshop “The importance of scales and uncertainties in ocean transport: Physical and biogeochemical interactions in the Mediterranean Sea”, November 22nd-23rd, 2022, Florence – Italy. Amorim F., Wirth A., Ursella L., Cardin V.: The EMSO-E2M3A Southern Adriatic Regional Facility: Interconnectedness of a variety of processes at different spatial and temporal scales, their interaction and recurrence (<https://mongoos.eurogoos.eu/publications/>).

Favali P., Barberi G., Beranzoli L., Chiappini M., De Caro M., De Santis A., Di Grazia G., Embriaco D., Frugoni F., Marchetti A., Marinaro G., Monna S., Montuori C., Simeone F., Sgroi T., Ursino A., Chierici F., Riccobene G., and NEMO collaborations (2022). **“Long-term monitoring by fixed-point seafloor observatory contribution to the knowledge of the Ionian Sea geodynamics”.** SCYLLA workshop (Serpentinite diapirs in the Calabrian subduction system return Lower plate mantle from Earth’s oldest ocean), CNR-ISMAR, Bologna (Italy), September 21-23, 2022.

ICOS Science Conference, Utrecht, October, 2022, Poster 219 **“A surface to the deep ocean carbon time-series”,** Poster Susan Hartman, Corinne Pebody, Andrew Gates, Anita Flohr, Jennifer Durden, Brian Bett, Filipa Carvalho

STEPS Engineers Week, Marine Institute showcased the EMSO SmartBay Observatory in conjunction with Argo Ireland, Galway Atlantaquaria, 5-6th March 2022

European Maritime Day – In My Country, Marine Institute and BlueWise Marine, SmartBay Observatory Open Day, Spiddle, Co. Galway, 20-21st May 2022

Interactive 360 Virtual Tour of SmartBay EMSO Facility, launched by Marine Institute, April 2022 (<https://www.smartbay.ie/sites/default/files/VirtualTour/index.html#node7>)

5th International Marine Science Communication Conference - CommOcean 2022. Two presentations of SmartBay and evolution of Smartbay Virtual Tour by Sinéad Ní Fhátharta, Community Liaison Coordinator (BlueWise Marine) <https://commocean.org/online-exhibition-commocean-2022>

Ocean Acidification consortia meeting, 1st December, online, NorEMSO Station M data presented by Ingunn Skjelvan

NorArgo2 annual meeting, 21 November, Bergen, NorEMSO project presented by Ilker Fer

Wright Science Colloquium, 9 November, Geneva, NorEMSO project presented by Iker Fer

ArcticGOOS workshop, 9-10 November, online, represented by Benedicte Ferré

Annual meeting NorEMSO, 17 October, Bergen, NorEMSO team

Training week for Norwegian slocum glider users, April, Bergen, led by Fiona Elliott

Presentation at **GR00M-ii general assembly**, 17 February, Paris, presented by Ilker Fer

Presentation at the **ArcticROOS annual meeting**, 9 February, online, presented by Benedicte Ferré

The annual meeting of the program Ocean Acidification of Norwegian Waters (funded by the Norwegian Environment Agency), 26 January, Bergen, Presentation of NorEMSO Station M data presented by Ingunn Skjelvan

De Filippo V. 2022. Variabilità dei flussi di particellato nell'Adriatico Meridionale. Master's degree thesis. Biotechnology and Biosciences Dept, University of Milano-Bicocca, Academic Year 2021/2022. 58 pp.

SCIENTIFIC ARTICLES

Carandell, M., Holmes, A. S., Toma, D.M., Del Rio, J., Gasulla, M., "Effect of the sampling parameters in FOCV-MPPT circuits for Fast-Varying EH sources", IEEE transactions on power electronics, Vol. 38 num. 2 p. 2695-2708, DOI: [10.1109/TPEL.2022.3216109](https://doi.org/10.1109/TPEL.2022.3216109), <https://ieeexplore.ieee.org/document/9925619>

Aguzzi, J., Chatzievangelou, D., Bahamón Rivera, Nixon, Berry, A., Carreras, M., Company Claret, Joan Baptista, Costa, C., Del Rio, J., Falahzadehabarghouee, A., Fifas, S., Flögel, S., Grinyó, J., Jónasson, J., Jonsson, P.; Lordan, C.; Lundy, M.; Marini, S.; Martinelli, M.; Masmitja, I.; Mirimin, L.; Naseer, A.; Navarro, J.; Palomeras, N.; Picardi, G.; Stefanni, S.; Vigo, M.; Vila, Y.; Weetman, A.; Doyle, J., "Advancing fishery-independent stock assessments for the Norway lobster (*Nephrops norvegicus*) with new monitoring technologies", Frontiers in marine science, Vol. 9 num. 969071 p. 1-18. DOI:[10.3389/fmars.2022.969071](https://doi.org/10.3389/fmars.2022.969071), <https://www.frontiersin.org/articles/10.3389/fmars.2022.969071/full>

Grinyó, J.; Francescangeli, M.; Santin, A.; Ercilla, G.; Estrada, F.; Mecho, A.; Fanelli, E.; Costa, C.; Danovaro, R.; Company Claret, Joan Baptista; Sobrino, I.; Valencia, J.; Aguzzi, J., "Megafaunal assemblages in deep-sea ecosystems of the Gulf of Cadiz, northeast Atlantic Ocean", Deep-Sea Research Part I: Oceanographic Research Papers, Vol. 183 p. 103738:1-103738:10, DOI: [10.1016/j.dsr.2022.103738](https://doi.org/10.1016/j.dsr.2022.103738), <https://www.sciencedirect.com/science/article/pii/S0967063722000516>

Ottaviani, E.; Francescangeli, M.; Gjerci, N.; Del Rio, J.; Aguzzi, J.; Marini, S., "Assessing the Image Concept Drift at the OBSEA Coastal Underwater Cabled Observatory", Frontiers in marine science, Vol. 9 p. 1-13, DOI: [10.3389/fmars.2022.840088](https://doi.org/10.3389/fmars.2022.840088) <https://www.frontiersin.org/articles/10.3389/fmars.2022.840088/full>

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EMSO ERIC

Annex 4

List of the projects in which EMSO is involved

HORIZON 2020 AND HORIZON EUROPE RUNNING PROJECTS

ENVRI-FAIR (H2020-RI)	
TITLE	ENVironmental Research Infrastructures building Fair services Accessible for society, Innovation and Research
COORDINATOR	FORSCHUNGSZENTRUM JULICH GMBH
PERSON MONTHS	123,80
START DATE	01/01/2019
DURATION	48 months
CONNECTION WITH EMSO STRATEGY	ENVRI FAIR links EMSO to the environmental Research Infrastructures and European Open Science Cloud (EOSC). The project is supporting the implementation of EMSO Data Services and the activity of the Data Service Group.
BENEFITS REALIZED	The EMSO participation in the ENVRI FAIR project was organized to optimize the resources to achieve EMSO strategic objectives. EMSO contributed to the Marine Subdomain FAIRness Roadmap, the Implementation Plan and the Technical Specification for the implementation process. All these activities are directed to improve the FAIRness of EMSO data and to facilitate the connection with EOSC. The design of an architecture for the data harmonization according to FAIR principles enabled the development of EMSO ERIC data services, impacting EMSO ERIC's capabilities and facilitating the adoption of FAIR principles.

BENEFITS REALIZED	Software components and plug-ins for the EMSO ERIC harmonization subsystem, which is a critical component for adopting FAIR principles across EMSO ERIC facilities, were developed and policy harmonization across EMSO ERIC regional facilities to enable the integration of services with the EOSC was conducted.
ERIC FORUM (H2020-RI)	
TITLE	ERIC Forum Implementation project
COORDINATOR	BBMRI ERIC
PERSON MONTHS	3,75
START DATE	01/02/2019
DURATION	36 months
CONNECTION WITH EMSO STRATEGY	The ERIC FORUM Project facilitates EMSO in the connection with the other ERICs and brings together 20 established ERICs. The life of the project runs in parallel with and supports the development of the ERIC Forum, the permanent, informal organization that brings together all ERICs
BENEFITS REALIZED	The ERIC Forum is a framework dedicated to the ERICs to share knowledge and challenges and support the ERICs to have a common voice and vision on joint problems. It also increased the visibility and better positioning of the Forum towards its European stakeholders.
EUROFLEETS PLUS (H2020-RI)	
TITLE	An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities
COORDINATOR	Marine Institute

PERSON MONTHS	15,5
START DATE	01/02/2019
DURATION	48 months
CONNECTION WITH EMSO STRATEGY	The privileged dialogue with the EU vessel community is supporting EMSO ERIC in shaping the maintenance procedures of the Regional Facilities, with a close connection of the Engineering and Logistic Service Group with the EUROFLEETS PLUS community, providing the requirements regarding deployment, maintenance and equipment recovery. Further information is included in the Engineering and Logistic section of this report.
BENEFITS REALIZED	EUROFLEETS PLUS facilitates the dialogue with the European research vessel community, giving the opportunity to EMSO to have a privileged channel of communication to inform about the needs of the infrastructure. The project is supporting the development of the Engineering and Logistic services.
ENRITIIC (H2020-RI)	
TITLE	Network of research infrastructure Industrial Liaison and Contact Officers
COORDINATOR	ESS ERIC
PERSON MONTHS	8,25
START DATE	01/01/2020
DURATION	36 months
CONNECTION WITH EMSO STRATEGY	ENRIITC aims at establishing a European network of Industrial Liaison and Contact Officers (ILOs/ICOs) engaged with EU Research Infrastructures. The project is supporting the development.

BENEFITS REALIZED	The Innovation and Industry Service Group optimized the work conducted in the project to map the current state of the EMSO nodes in regard to industry engagement and collaborations, as a basis to develop the added value services of EMSO ERIC.
EuroSea (H2020-BG)	
TITLE	Improving and Integrating European Ocean Observing and Forecasting Systems for Sustainable use of the Oceans
COORDINATOR	HELMHOLTZ ZENTRUM FÜR OZEANFORSCHUNG KIEL
PERSON MONTHS	4
START DATE	01/11/2019
DURATION	50 months
CONNECTION WITH EMSO STRATEGY	The EuroSea Project facilitates EMSO in the connection with E00S and G00S, as well as the development of Data services.
BENEFITS REALIZED	EMSO has a dedicated task in this project for the harmonization of the RI with the global Eulerian observatory network (OceanSITES) and to progress on the elaboration of the metadata catalogue for Eulerian observatories with JCOMMOPS.
AtlantECO (H2020-BG)	
TITLE	Atlantic ECOSystems assessment, forecasting & sustainability
COORDINATOR	Stazione Zoologica Anton Dohrn

PERSON MONTHS	2
START DATE	01/09/2020
DURATION	48 months
CONNECTION WITH EMSO STRATEGY	AtlantECO supports the development of the EMSO ERIC science service on the study of microbiomes and plastic
BENEFITS REALIZED	Follow the developments of the other partner
MINKE (H2020-RI)	
TITLE	Metrology for Integrated marine maNagement and Knowledge-transfer nEtwork
COORDINATOR	CSIC
PERSON MONTHS	22,55
START DATE	01/04/2021
DURATION	48 months
CONNECTION WITH EMSO STRATEGY	MINKE supports the development of Engineering and Logistic services, in particular on metrology.
BENEFITS REALIZED	Within WP4 “Engagement and Networking with stakeholders”, EMSO ERIC has actively worked with CNR towards the establishment and implementation of all the task activities and producing a preliminary stakeholder database to share among the beneficiaries for integrations and identifying opportunities of engagement.

Doors (H2020-BG)

TITLE	Developing Optimal and Open Research Support for the Black Sea
COORDINATOR	GeoEcoMar
PERSON MONTHS	13
START DATE	01/06/2021
DURATION	48 months
CONNECTION WITH EMSO STRATEGY	Doors supports the collaboration of EMSO in the Black Sea region and with other ERICs (EMBRC, LifeWatch, Euro-Argo).
BENEFITS REALIZED	EMSO-ERIC is working, in close cooperation with other partners, to support the provisioning of new data for the Data Cube, in association with stakeholder requirements and coupling with the specific tasks across WPs 3, 4 and 5. Indeed, EMSO ERIC is actively working within WP2 "Harmonisation" to deliver harmonised methodologies for sampling, measurement, analysis and modelling, taking into account best practices, in WP3 "Integrated observatory", in WP7 "Capacity Building", in WP8 "Stakeholder Engagement" and in WP9 "Dissemination and communication".

EGI-ACE (H2020-RI)

TITLE	EGI Advanced Computing for EOSC
COORDINATOR	EGI
PERSON MONTHS	15

START DATE	01/01/2021
DURATION	30 months
CONNECTION WITH EMSO STRATEGY	EGI-ACE supports the development of Data services and the connection with EOSC
BENEFITS REALIZED	EMSO ERIC has been working mainly in WP5 "Federated data spaces (VA) EMSO ERIC data services Installation". The services include databases of harmonized EMSO ERIC data and metadata, data portal and dashboards supporting science-driven use case applications, machine-to-machine interfaces, data archive, DAP services, and virtual research environments.

HORIZON EUROPE PROJECTS STARTED IN 2022

eRimote (HE -RI)	
TITLE	European Research Infrastructures - Pathway to Improved Resilience and Digital and Remote Access
COORDINATOR	DESY - DEUTSCHES ELEKTRONEN SYNCHROTRON
PERSON MONTHS	18,1
START DATE	01/06/2022
DURATION	30 months
CONNECTION WITH EMSO STRATEGY	Contribution to physical and remote access enabling, to service supply workflow, to operational data services, to enhance RI visibility and international cooperation.

iImagine (HE-RI)

TITLE	Imaging data and services for aquatic science
COORDINATOR	STICHTING EGI
PERSON MONTHS	5
START DATE	01/09/2022
DURATION	36 months
CONNECTION WITH EMSO STRATEGY	Contribution to physical and remote access enabling, to service supply workflow, to operational data services, to enhance RI visibility and international co-operation but also to facilitate training delivery and the technological alignment of the Regional Facilities and the technical unified framework.

Geo-INQUIRE (HE-RI)

TITLE	Geosphere INfrastructures for QQuestions into Integrated REsearch
COORDINATOR	GFZ - HELMHOLTZ ZENTRUM POTSDAM
PERSON MONTHS	24
START DATE	01/10/2022
DURATION	48 months
CONNECTION WITH EMSO STRATEGY	Contribution to high-quality time series data delivery, to operational data services, to enhance RI visibility and international cooperation but also to facilitate training delivery and the technological alignment of the Regional Facilities and the technical unified framework.



EMSO ERIC

Annex 5

List of the Members within the Consortium Governance bodies

COMPOSITION OF THE ASSEMBLY OF MEMBERS (Table 12)

MEMBER	DELEGATE	ADVISOR
FRANCE	Didier Marquer	Delegate & Vice-Chairman
	Laurent Coppola	Advisor
	Nadine Lanteri	Advisor
GREECE	Vasilios Lykousis	Delegate
	George Petihakis	Advisor
	Leonidas Perivoliotis	Advisor
IRELAND	Mick Gillooly	Delegate
	Alan Berry	Advisor
ITALY	Cecilia Di Carlo	Delegate
	Agata Sangianantoni	Advisor
	Laura Beranzoli	Advisor

MEMBER	DELEGATE	ADVISOR
PORTUGAL	Miguel Miranda	Chairman and Delegate
	Mafalda Carapuço	Advisor
	Joana Pinheiro	Advisor
	Eduardo A. Pereira da Silva	Advisor
ROMANIA	Viorel Vulturescu	Delegate
	Vlad Radulescu	Advisor
SPAIN	Jose J. Sanchez Serrano (till end February)	Delegate
	Ana Aricha (from begining of March)	Delegate
	Eric Delory	Advisor
UNITED KINGDOM	Matthew Dobson	Delegate
	Richard S. Lampitt	Advisor
	Andrew Gates	Advisor
NORWAY	Christine Daeø Olseng (till end May)	Delegate
	Pål Sørgaard (from beginning of June)	Delegate
	Benedicte Ferre	Advisor
	Ilker Fer	Advisor
	Ingerid Fossum	Advisor

COMPOSITION OF THE ADVISORY COMMITTEE (Table 13)

Chair: Vito Vitale

NAME	SCIENTIFIC EXPERTISE	ORGANIZATION
Alberto Basset	Ecology	University of Salento LifeWatch ERIC Italy
Pier Luigi Buttigieg	Marine Microbial Ecology, Data Science	Alfred Wegener Institute for Polar and Marine Research- Bremerhaven, Germany
Rick Donselaar	Sedimentology	Delft University of Technology The Netherlands
Carlos Duarte	Marine Ecology	Red Sea Research Center (RSRC), South Arabia
Peter Haugan	Geophysical Oceanography	Institute of Marine Research, Norway
Shiuchi Kodaira	Geophysics	Center for Earthquake and Tsunami, JAMSTEC, Japan
Pierre-Yves Le Traon	Physical Oceanography	IFREMER Mercator Ocean -France
Kim Juniper	Microbial Ecology	Ocean Networks Canada (ONC)
Monica Miguel Lago	Oceanography	European Association of Remote Sensing Companies (EARSC), Belgium
Nicolas Pade	Marine Biology	European Marine Biological Resource Centre (EMBRIC ERIC)
Montserrat Torne	Geophysics	National Research Council (CSIC), Spain
Filippos Vallianatos	Geophysics, Seismology	University of Athens, Greece
Christine Valentin	Business Management & Innovation	World Ocean Council (WOC)
Vito Vitale	Atmospheric physics, Polar	Italian National Research Council (CNR). Svalbard Integrated Arctic Earth Observing System (SIOS)
Robert A. Weller	Physical Oceanography	Woods Hole Oceanographic Institution (WHOI), USA

COMPOSITION OF THE EXECUTIVE COMMITTEE (Table 14) 2022, pending appointment of the Service Group Leaders

Chair: Director General

REGIONAL TEAM LEADER	REGIONAL FACILITY	AFFILIATION
Sarradin Pierre Marie	Azores	Ifremer
Radulescu Vlad	Black Sea	GeoEcoMar
Delory Eric	Canary Islands	PLOCAN
Petihakis George	Hellenic Arc	HCMR
Carlos Sousa	Iberian Margin	IPMA
Coppola Laurent	Ligurian Sea	Laboratoire Océanographique de Villefranche
Hartman Susan	Porcupine Abyssal Plain	NOC
Embriaco Davide	Western Ionian Sea	INGV
Lanteri Nadine	Molène (closed and moving to another location)	Ifremer
Del Rio Joaquin	OBSEA	UPC
Berry Alan	SmartBay	MARINE INSTITUTE
Ilker Fer	Nordic Seas	University of Bergen
Bozzano Roberto	Western Med Sea	CNR - Istituto per lo studio degli impatti Antropici e Sostenibilità in ambiente marino
Cardin Vanessa	South Adriatic Sea	OGS - Istituto Nazionale di Oceanografia e Geofisica Sperimentale
George Petihakis	Cretan Sea	Hellenic Centre for Marine Research (HCMR), Institute of Oceanography

AGENDA OF EXCOM MEETING #18 (27TH JANUARY 2022)

	SUBJECT	TIME	SPEAKER	FEEDBACK FROM MEMBERS	DECISION	DOCS
1.0	INTRODUCTION					
1.1	ExCom meeting #16 and #17 minutes status	5 min	Secretary	Y	Approve	Link tbc
2.0	General communications to the ExCom members		DG/ Secretary			
2.1	Official Register of the facilities participating to EMSO ERIC – Submission to AoM for formal acknowledgement	15 min	DG/ Secretary	Y	-	
2.2	EGIM – status of the agreement between IFREMER and EMSO ERIC	15 min	DG		-	
3.0	EMSO ERIC services					
3.1	Potential new services Sea Gliders as a service for the RFs and the user community	30 min	DG/ Nordic Sea Reg. Team Leader			
3.2	New definition of the role of the CMO Service Officers and relations with the Service Groups and Leaders	15 min	DG	Y	-	
4.0	EMSO community participation to Horizon EU calls				-	
4.1	Updates	20 min	DG/Proj. Officer	Y		

AGENDA OF EXCOM MEETING #19 (12TH SEPTEMBER 2022)

	SUBJECT	TIME	SPEAKER	FEEDBACK FROM MEMBERS	DECISION	DOCS
	WELCOME AND INTRODUCTION	-	DG	-	-	-
0.0	Pending matters					
0.1	ExCom meeting #18 minutes approval	5 min	Secretary	Y	Approve	ExCom 18th meeting minutes
1.0	DG communications to the ExCom members					
1.1	Service Group Leaders appointment status, draft ToR	10 min	DG and Science Officer Laura Beranzoli	Y By 18 Sept.	-	SGL ToR
1.2	Official Register of the EMSO Regional Facilities rescheduling	10 min		N	-	-
1.3	EGIM – agreement between IFREMER and EMSO ERIC	5 min		N	-	-
1.4	New Strategic Plan preparation - procedure and timeline	10 min	DG and Programme Manager Marco Galeotti	N	-	Consultation Process
2.0	EMSO Community coordination in HE projects				-	
2.1	EMSO community coordination within projects: new process	20 min	Policy & Proj. Mgt. Officer Valentina Tegas	Y	-	EMSO ERIC M&E PLATFORM
2.2	Overview of external projects portfolio a “SPECIAL ISSUE”: eRI mote project Kick Off	10 min	Proj. Mgt. Officer Gabriella Quaranta	N		

	SUBJECT	TIME	SPEAKER	FEEDBACK FROM MEMBERS	DECISION	DOCS
3.0	EMSO Service Implementation - Updates					
3.1	Communications: <ul style="list-style-type: none"> communication strategy (internal and external) outcomes of the selection procedure for a new Comms Officer 	10 min	Comms Officer Marco Galeotti	N	-	EMSO Communication Strategy
3.2	Innovation and Industry: <ul style="list-style-type: none"> recent progresses in the development of a strategy to engage industry 	10 min	I&I Officer Marco Galeotti	N		ENRIIC Deliverable
3.3	Eng. & Logistics <ul style="list-style-type: none"> Physical Access summary and next calls Common Best practice: what's next 	10 min	E&L Officer – Simò Cusi	N	-	Physical Access Status
3.4	Data Management: <ul style="list-style-type: none"> Data services Tools 	10 min	Data Mgt. Officer IT Director Ivan Roderò	N	-	-
4.0	AoB					
4.1	Next ExCom Meetings proposal of a calendar	5 min	ExCom Secretary	Y	-	ExCom meeting calendar

Acknowledgement

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