



National Research Council – Institute of Marine Sciences
(CNR-ISMAR)

European/International Projects Report

Ufficio Progetti Programmazione



Year 2021



Authors:

Loredana Teresa Alfarè, Laura Barbieri, Elisabetta Borella, Maria Rita Cogliandro, Emma
Giovanna D'Acunzo
(in alphabetical order)

National Research Council – Institute of Marine Sciences

Tesa 104 – Arsenale, Castello 2737/F, 30122 Venice, Italy

Tel (+39) 366 6134613 – Fax (+39) 041 24079302

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INTRODUCTION

The Institute of Marine Sciences (ISMAR) of the Italian National Research Council (CNR) is the largest institution in Italy devoted to scientific development in ocean science. CNR-ISMAR conducts multidisciplinary studies in all fields of marine sciences encompassing geological, biological and oceanographic research in the Mediterranean and in the world oceans. CNR-ISMAR's permanent staff includes 202 people distributed over 6 geographic sites: Venice (where ISMAR Headquarter is located), Trieste, Lerici, Bologna, Roma and Naples.

CNR-ISMAR carries out a constant analytical work in its laboratories distributed across its six territorial branches and operates several multi-parametric observing systems (buys, platforms, mooring, fishery observational sites etc.), most of them are placed along the Italian coasts and transmit data in real time. Among some big infrastructures, the institute maintains: an important permanent observation networking in the Adriatic and Tyrrhenian Sea; an advanced computational center to elaborate geophysical data and produce circulation models; a cores repository facility.

The Institute is also national leader in marine geological mapping, geologic and environmental risk assessment, collection of long-term oceanographic time series, oceanographic modeling, sustainable exploitation of marine resources and maritime spatial planning. Since 2008, year of its foundation, CNR-ISMAR has been involved in more than 350 EU-funded projects, coordinating 45 of them thus demonstrating its capacity to be competitive at EU level.

On September 2018 the CNR reorganized the marine institutes assigning to ISMAR the branches of Rome (ex ISAAC) and Naples (ex IAMC) and assigning to CNR-IRBIM the former ISMAR branches of Ancona and Lesina, while the branch of Genoa was assigned to IAS. In this second report we have considered only the projects carried out by the present Institute.

The report consists in 4 sections devoted to each single programme. The first section is focused on HORIZON 2020 reporting a general programme introduction and a brief description of the running projects funded. The other three sections are structured in the same way and are focused on INTERREG -Territorial Cooperation Programmes, EU Tenders and on Other Programmes. A list of bilateral projects has been added as well.

Recently the CNR had assigned 4 Strategic Project Areas to the projects and for this reason the CNR-ISMAR's sheets reports the following codes which corresponds to:

AP1: Global Change

AP2: Natural Resources and Ecosystems

AP3: Natural Hazards, Human Impacts and Technology for the Environment

AP4: Earth Observation

Some projects started few years ago have been classified with other 3 additional codes (AP5: Technology and Environmental Processes; AP6: Environment and impacts on the ecosystem and health; AP7: Interoperability and data access) which now have been included in the four mentioned above.

According to this classification the CNR-ISMAR funded projects have been divided as reported in the following graphic:

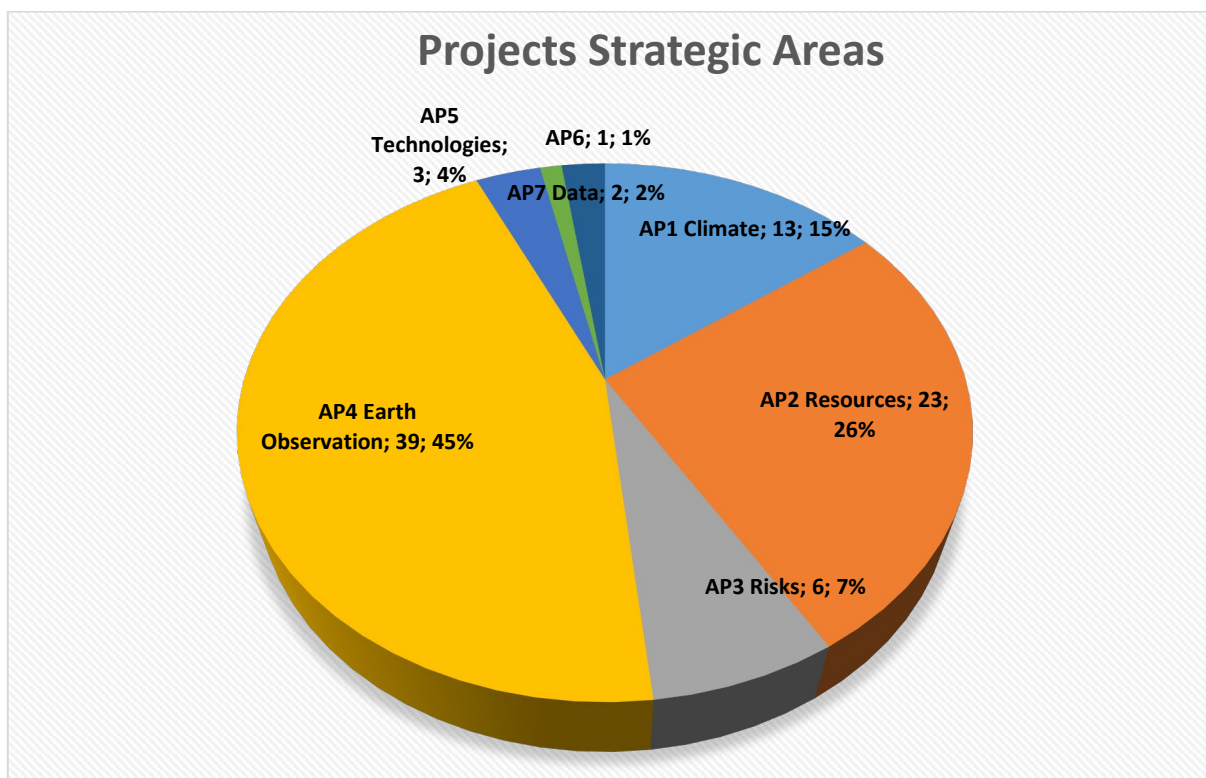


Fig. 1 Projects Stratetig Areas

It is worth to underline that the classification is quite different as shown in the following serie of graphics related to the different programmes. In some cases it seems that the AP Code has not been assigned properly and it would be appropriate to provide better instructions to researchers and technologists when they have to fill in this field.

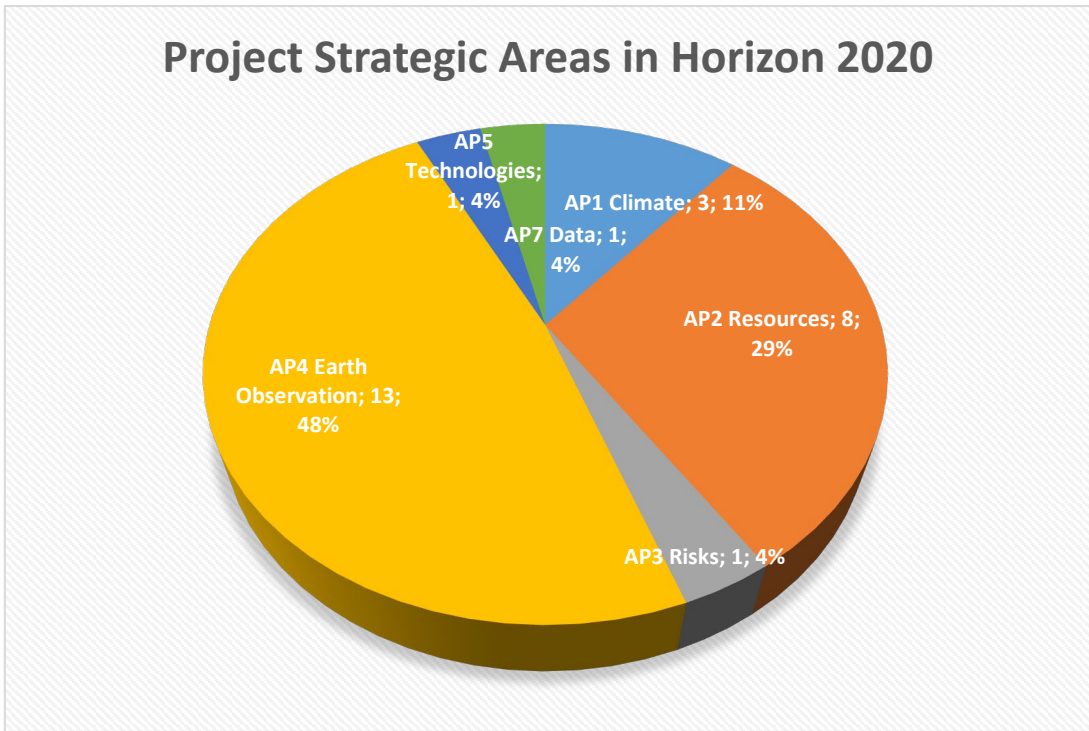


Fig. 2 Project Strategic Areas in Horizon 2020

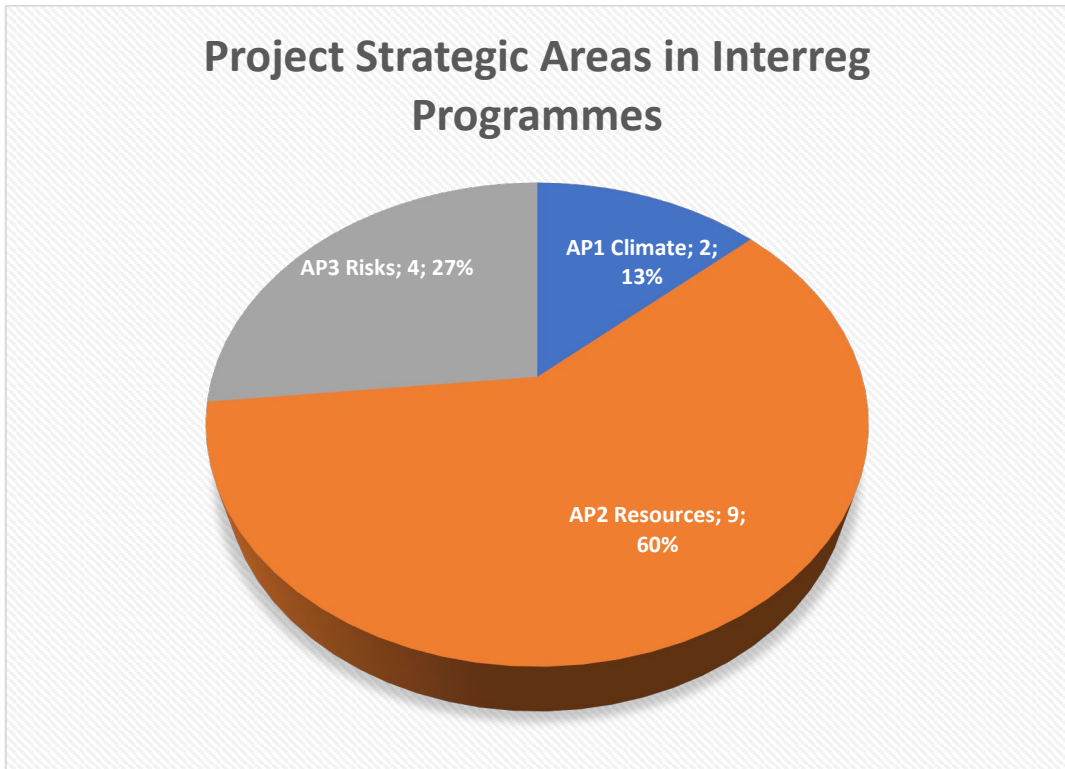


Fig. 3 Project Strategic Areas in Interreg Programmes

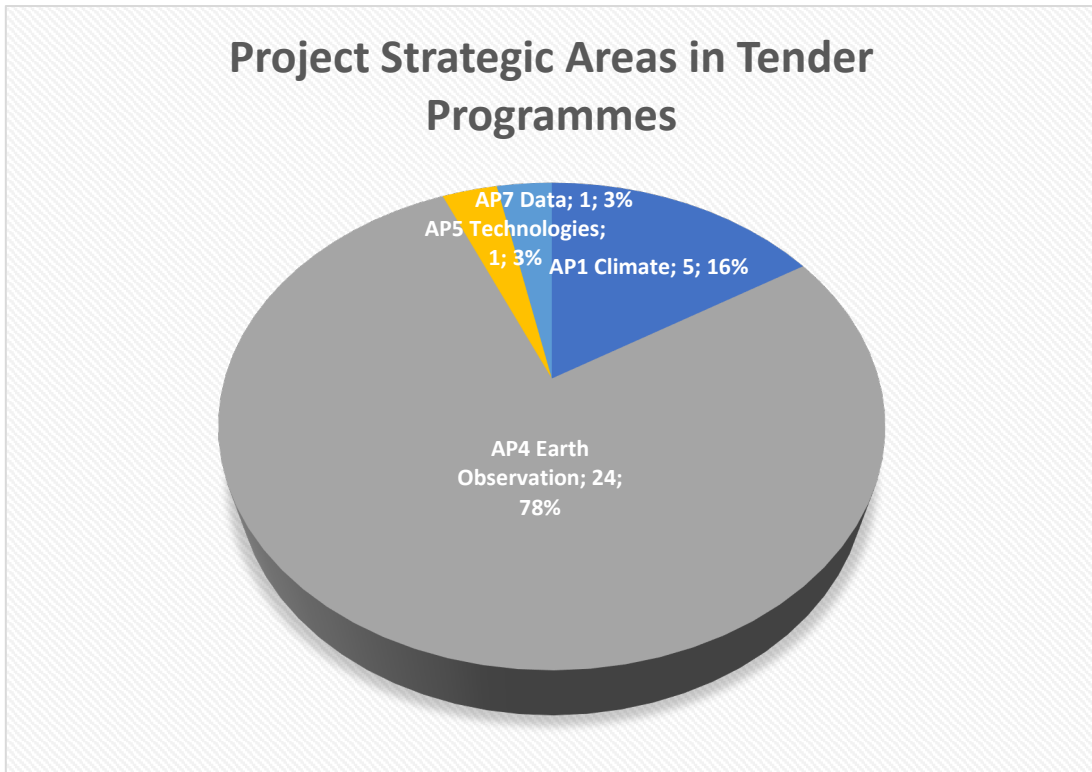


Fig. 4 Project Strategic Areas in Tender Programmes

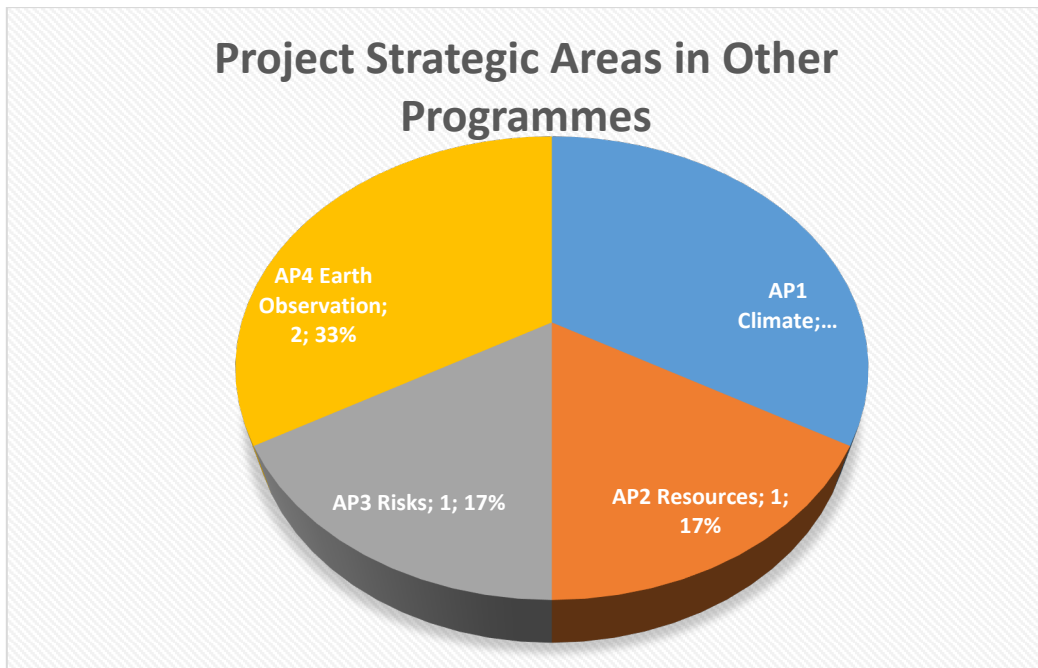


Fig. 5 Project Strategic Areas in Other Programmes

Concerning the distribution of CNR-ISMAR projects in the different EU and international programmes the situation is summarized in the following graphic:

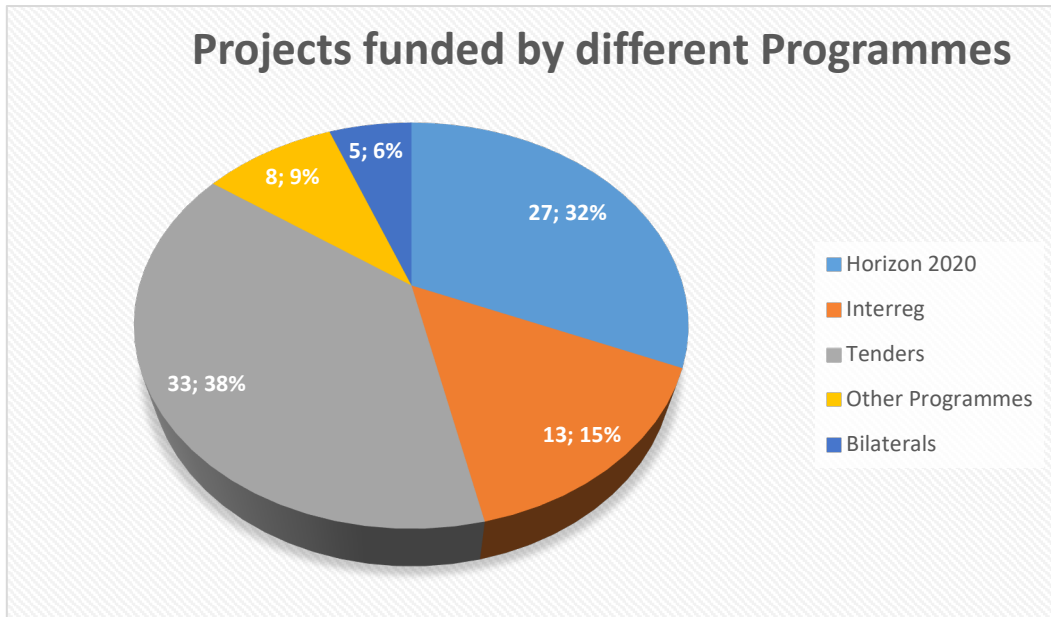


Fig. 6 Projects funded by different Programmes

In 2021 CNR-ISMAR has increased its participation to all EU programmes achieving good results as stated by the general success rate that is 71,79%.

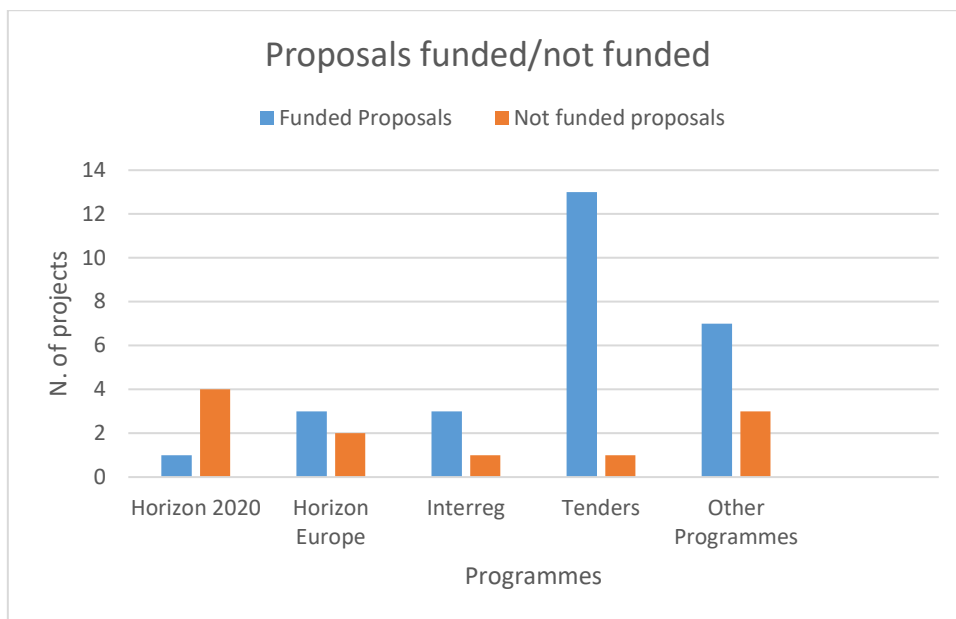


Fig. 7 Projects funded/not funded

HORIZON 2020

The Programme

Horizon 2020 unifies in a single financial tool three predecessors (2007-2013) aimed at supporting research, innovation and technological development: the Seventh Framework Programme (7FP), Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT).

Respect to the previous Framework Programme, in Horizon the funding schemes have been substituted by the so called “actions”.

The Programme H2020 (Fig.1) is structured in three pillars: **Excellent Science, Industrial Leadership and Societal Challenges** integrated with 5 horizontal initiatives, which are Euratom, Joint Research Center, Science with and for Society, Spreading Excellence and Widening Participation and the European Institute of Innovation and Technology (EIT).

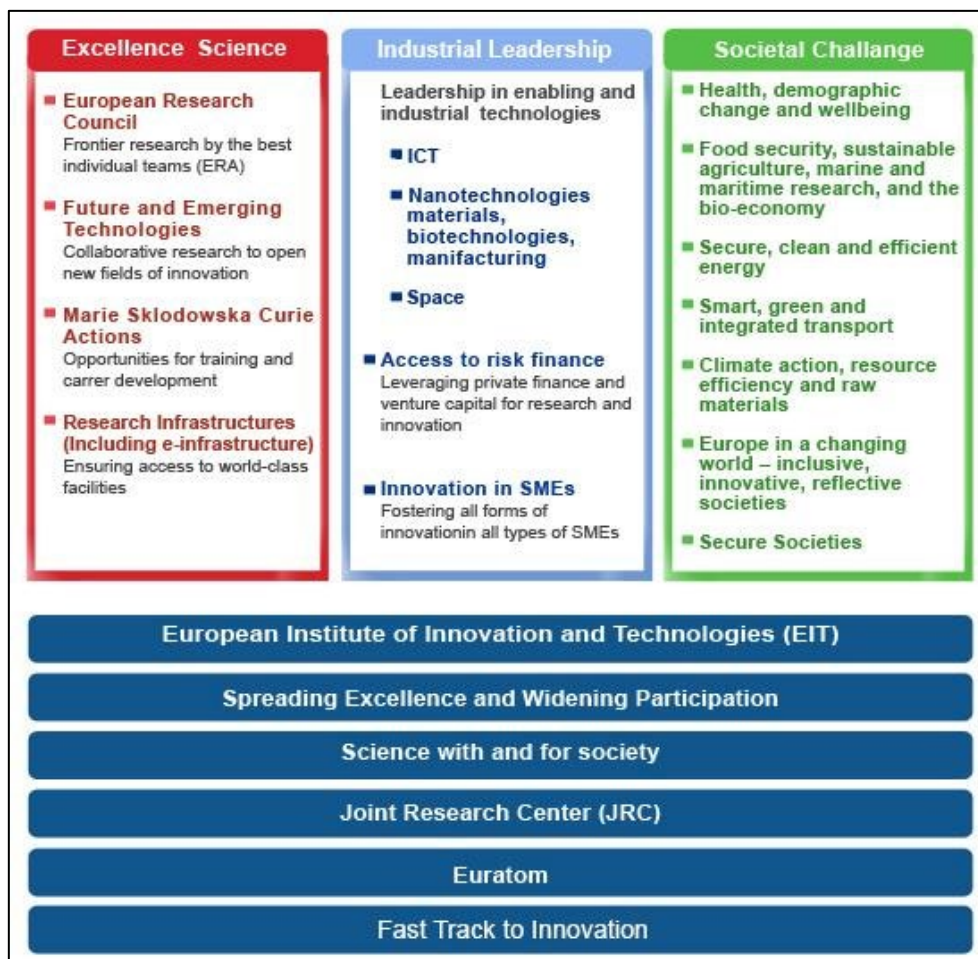


Fig. 8 Structure of Horizon 2020

The total budget in current prices is nearly € 80 billion and in constant prices € 70.2 billion for 7 years. The budget repartition of each programme is illustrated in Fig. 9

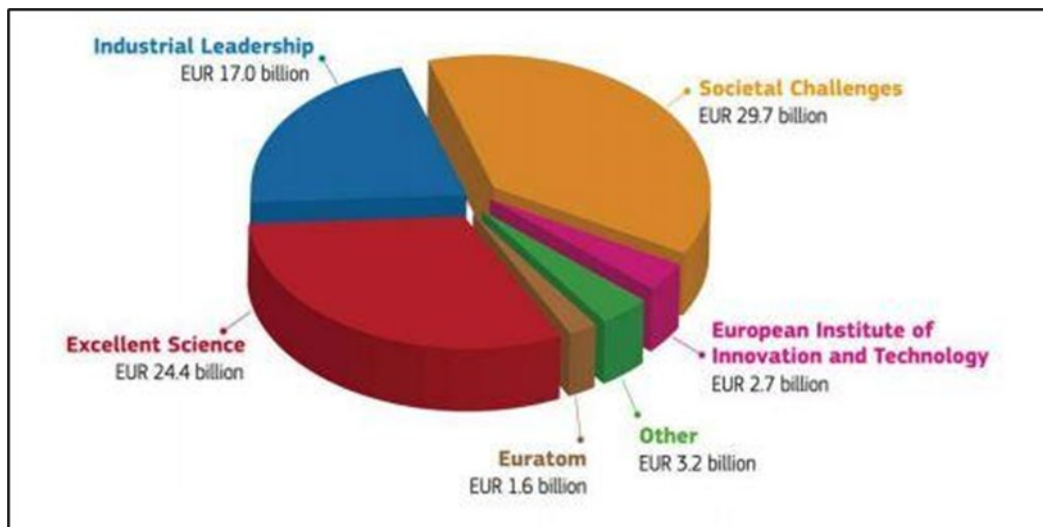


Fig. 9: Budget for each programme

According to H2020 Dashboard Portal¹, a total of 285.598 eligible proposals were submitted under Horizon 2020 calls out of 1.001.359 applications. 34.146 proposals were retained requesting a total EU financial contribution of € 478.9 billion. The data are updated on 16 December 2021.

The overall success rate of eligible full proposals is 11.95%.

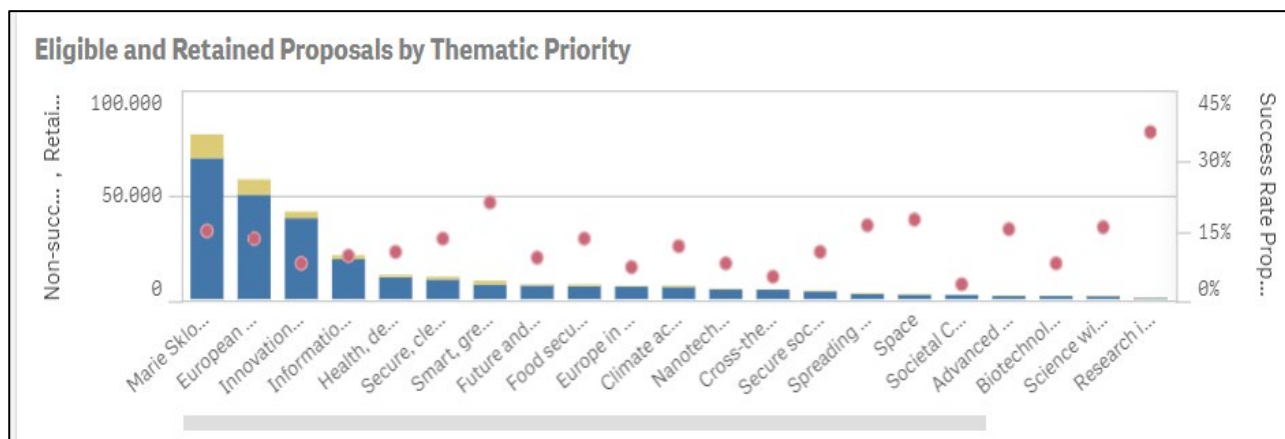


Fig. 10: Eligible and Retained Proposals by Thematic Priority

Overall 35.381 grant agreements were signed with an EU contribution of 67,62 billion and 176.701 participations.

¹ <https://webgate.ec.europa.eu/dashboard/sense/app/e02e4fad-3333-421f-a12a-874ac2d9f0db/sheet/941d3afe-da24-4c2e-99eb-b7fcbd8529ee/state/analysis>

For Italy a total of 62.240 eligible proposals were submitted out of 109.621 applications receiving an EU net contribution of € 5.62 billion with a success rate of 11,74% (11,95 EU average). 7878 grant agreements were signed².

CNR is the Italian institution with the high amount of funds received with a net EU contribution of 312,2 million, 774 H2020 participations and 772 grants agreements signed.

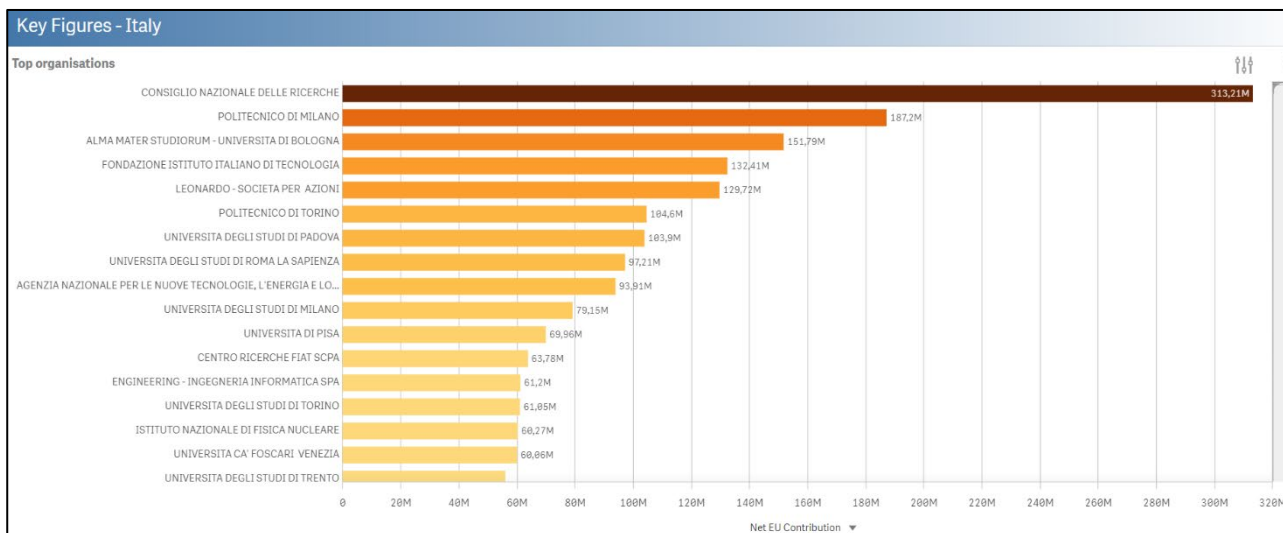


Fig. 11 Top organizations for funds received under H2020 Programme

² [H2020 Country Profile - Key Figures - Italy | Foglio - Qlik Sense \(europa.eu\)](https://www.europa.europa.eu/press-communication/infographic/infographic-h2020-country-profile-key-figures-italy_en)

CNR-ISMAR in Horizon 2020

CNR-ISMAR has achieved remarkable results in Horizon 2020 managing in 2021 27 projects financed by the Programme for a total amount of € 161.608.949,50 receiving € 11.809.432,00 which include the amount distributed to partners when LP or leader of the CNR team. The grant share for CNR-ISMAR is € 6.429.335,00. It is worth to mention that the Programme is at the end and for this reason researchers have addressed their efforts to the new Horizon Europe programme since there were few calls for H2020.

The Institute has taken part in 17 projects under the RIA Funding Scheme, in 3 projects under CSA, in 2 under IA and EIT Raw Materials and in 1 under MSCA, ERC and INFRA .

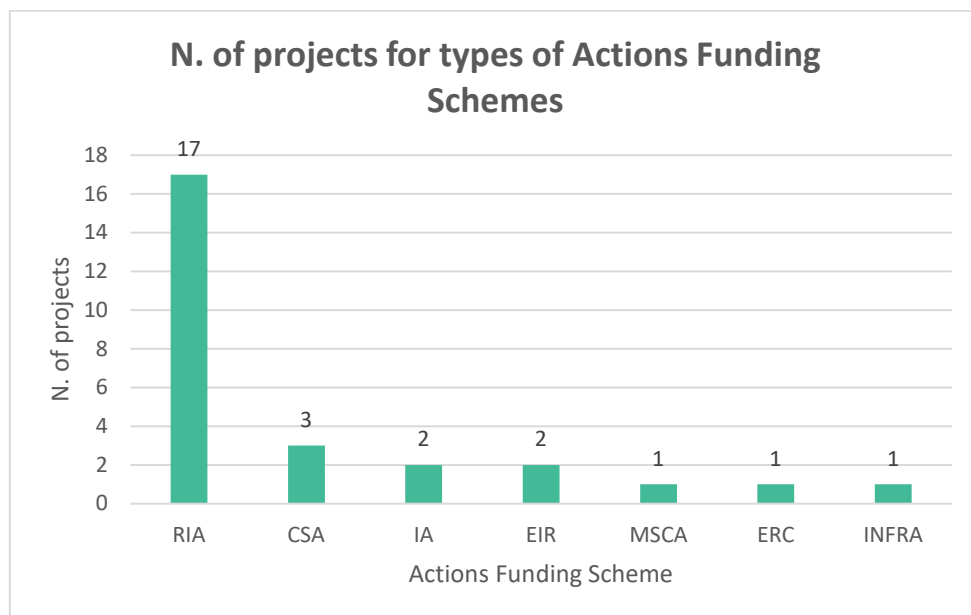


Fig. 12 CNR-ISMAR n. of projects submitted for types of Actions Funding Schemes

CNR-ISMAR has participated as Lead Partner in Horizon 2020 only in one project (MAELSTROM) and this indicates that there are some difficulties in covering this role, nevertheless considering the difficulties derived from the reorganization of the marine institutes CNR-ISMAR has shown a good performance. In 5 projects CNR-ISMAR is leader of the CNR team, which means that coordinates several CNR's institutes.

List of ISMAR projects funded under Horizon 2020



Programme: HORIZON 2020 - MSCA-ITN-2016 - Innovative Training Networks

CNR Strategic Area: AP3 RISKS

Project title: **Submarine LANDslides and Their impact on European continental margins**

Acronym: SLATE

Role in the project: Partner

Duration: 01/04/2017 - 31/03/2021

Total budget: € 3.894.543

ISMAR budget: € 258.061

Web site: http://cordis.europa.eu/project/rcn/208794_it.html

Key words: geohazards, tsunami, submarine landslides

Summary:

The over-arching aim of the SLATE ETN is (i) to understand key factors triggering submarine landslides, the subsequent motion and evolution of failed material, and ensuing geohazards eg tsunamis and (ii) to integrate an innovative broad range of scientific disciplines and private sector needs into a novel training and co-supervision of 15 ESRs.

SLATE will focus on investigating submarine landslides and associated geohazards as important natural risks that threaten offshore infrastructures and coastal regions in Europe. Submarine landslides can move much longer than any slope failure on land, and occur on remarkably low gradients, suggesting fundamental and still poorly understood differences from onshore counterparts.

A wide spectrum of tectonic and marine environmental settings needs to be investigated. To master this holistic approach, SLATE will bring together a world-class team of leading experts from renowned academic institutions and key non-academic partners with an unusually comprehensive set of interdisciplinary expertise. This ETN comprises experts with outstanding backgrounds in marine geophysics, sedimentology, civil engineering, geotechnics, tsunami research, and hazard assessment as well as marine technology. SLATE partners offer excellent datasets and skills that include field observations, lab experiments, as well as analytical, mathematical, and numerical modelling techniques.

Training will cover various geoscientific methods, as well as assessment of consequences and impacts on coastal regions and society. Together with various transferable and complementary courses skilled in SLATE, this integrative approach will guide the research of all projects to train a new generation of highly motivated and excellent qualified young scientists to tackle challenges linked to landslide-initiated hazards.

Contact person in ISMAR: marzia.rovere@bo.ismar.cnr.it

Partnership:

1. Universitaet Bremen, (Germany)
2. Universitaet Innsbruck, (Austria)
3. Christian-Albrechts-Universitaet zu Kiel, (Germany)
4. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas, (Spain)
5. Control Y Prospecciones Igeotest SI, (Spain)
6. Institut Francais de Recherche pour l'Exploitation de la Mer (France)
7. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, (Italy)
8. Consiglio Nazionale delle Ricerche, (Italy)
9. Stiftelsen Norges Geotekniske Institutt (Norway)
10. Natural Environment Research Council, (United Kingdom)
11. University of Durham, (United Kingdom)

Programme: H2020--FNR-2020 Innovative Actions

CNR Strategic Area: AP 2 RESOURCES

Project title: **Smart technology for Marine Litter SusTainable RemOval and Management**

Acronym: MAELSTROM

Role in the project: Lead Partner and leader of the CNR Team

Duration: 01/01/2021-31/12/2024

Total budget: € 6.809.461

ISMAR budget: € 1.003.750

Web site: <https://cordis.europa.eu/project/id/101000832>

Key words: marine litter, recycling, clean-up campaigns, automated solutions

Summary:

MAELSTROM will strive to provide answers and technological solutions to the complex question of whether floating river litter should be intercepted, and legacy ML removed, considering the balance between the positive effect of avoiding microplastics degradation into micro/nano plastics and the potential negative effects of the own removal process. Indeed, the type of ecosystem, the efficiency and selectivity of the removal technologies and the frequency of the removal are key variables to this decision making. Recycling the collected litter into higher performance certified “marine-litter-origin” materials and the assessment of the economic and societal impact of these cleaning activities will also be considered.

The project will implement a wide array of complementary activities: from the designing and testing of innovative removal technologies for ML in different coastal ecosystems – the Venice lagoon/coast and the estuary of the Douro river in Porto - to the assessment of the effectiveness of removal and the environmental impact of such cleaning operations, to the adoption and adaptation of full-fledged circular economy solutions to effectively connect economic and environmental gains.

Contact person in ISMAR: fantina.madricardo@ismar.cnr.it

Partnership:

1. Consiglio Nazionale delle Ricerche (Italy)
2. Stichting Deltares (Netherlands)
3. Università Ta Malta (Malta)
4. International Sustainable Development Initiatives (Malta)
5. Gees Recycling Srl (Italy)
6. Venice Lagoon Plastic Free (Italy)
7. Centro Internazionale in Monitoraggio Ambientale - Fondazione CIMA (Italy)

8. Fundacion Tecnalia Research and Innovation (Spain)
9. Alpha Consultants Ltd (United Kingdom)
10. CIIMAR (Portugal)
11. Servizi Tecnici Srl (Italy)
12. The Great Bubble Barriers (Denmark)
13. Makeen Power (Netherland)
14. CNRS (France)

Programme: H2020 - RIA - Research and Innovation Actions

CNR Strategic Area: AP 5 TECHNOLOGIES

Project title: **Development and demonstration of a long-endurance sea surveying autonomous unmanned vehicle with gliding capability powered by hydrogen fuel cell**

Acronym: ENDURUNS

Role in the project: Partner

Duration: 01/11/2018 – 31/10/2022

Total Budget: € 7.908.265

ISMAR budget: € 550.875

Web site: <https://enduruns.eu>

Key words: integrated hybrid AUV system, seabed mapping, deep sea applications

Summary:

The main ambition of the ENDURUNS project is to develop an integrated hybrid AUV system capable of operating under deep ocean conditions and performing a wide-range of missions, targeting the increase of scientific knowledge as well as industrial capability and performance. Due to its versatile nature, the ENDURUNS system will be suited to perform scientific missions, such as seabed mapping, profiling, geological and geophysical surveys, commercial missions, such as inspection of infrastructure and assets, mineral and seabed mining exploration missions and public authority missions such as surveillance, search and find missions (e.g. aircraft wreckage), equally well. Therefore, the ENDURUNS system will enable for the first time long endurance missions demonstrated up to TRL 5 or above during the project for a wide variety of high impact deep sea applications. The AUV and USV combination are expected to significantly outperform all existing AUV vehicles, in terms of endurance, positioning, survey capability, resolution, sensitivity, etc.

Contact person in ISMAR: simone.marini@sp.ismar.cnr.it

Partnership:

1. Altus LSA Commercial and Manufacturing Sa (Greece)
2. Graal Tech Srl (Italy)
3. Compagnie Maritime d'Expertises Sa (France)
4. Engitec Systems International Limited (Cyprus)
5. Space Applications Services Nv (Belgium)
6. On Air S.R.L. (Italy)
7. Uab Metis Baltic (Lithuania)
8. Klaipėdos Valstybinio Jūrų Uosto Direkcija (Lithuania)
9. Hysytech Srl (Italy)

10. Zarras Dimitrios (Greece)
11. Swiss Approval South East Mediterranean Sea (Sems) Ltd (Cyprus)
12. The University of Birmingham (United Kingdom)
13. Universidad De Castilla - La Mancha (Uclm) (Spain)
14. National Center for Scientific Research Demokritos (Greece)
15. Consiglio Nazionale delle Ricerche (CNR-ISMAR) (Italy)
16. Tuco Yacht Værft Aps (Denmark)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **A new hyperspectral radiometer integrated in automated networks of water and land bidirectional reflectance measurements for satellite validation**

Acronym: FORCOAST

Role in the project: Partner

Duration: 01/11/2019 – 30/04/2022

Total budget: € 2.288.911

ISMAR budget: € 81.250

Web site: <https://forcoast.eu/>

Key words: information products and services, advanced modelling

Summary:

The FORCOAST project addresses the topic “DT-SPACE-01-EO-2018-2020 COPERNICUS MARKET UPTAKE” which seeks to foster market development exploiting the value of Copernicus Earth Observation Products. FORCOAST aims to provide information services that offer high resolution water quality and met-ocean indicators in coastal and nearshore areas, to improve operation, planning and management of different marine activities in the sectors of wild fisheries, oyster grounds restoration, and bivalve mariculture. FORCOAST information products and services will be co-designed with stakeholders, thereby ensuring that these products and services are tailored to meet their needs.

FORCOAST is developing, testing and demonstrating, in operational mode, novel Copernicus-based downstream information services that will incorporate Copernicus Marine, Land and Climate Services Products, local monitoring data and advanced modelling in the service. The services will integrate Copernicus Earth Observation Products with local models and other diverse data sources (local, regional or global) with ICT (enhancing new frontiers opened by web, and use of cloud) across the different market segments. FORCOAST will provide consistent coastal data products, based on a standardized data processing scheme. FORCOAST is supporting the concept of developing an advanced platform and cloud computing for Copernicus-based downstream services utilizing one of the DIAS systems. The availability and accessibility of data and derived products generated will stimulate their exploitation by a wide range of user communities in the targeted sectors. FORCOAST will provide those services in eight pilot service uptake sites covering five different regional waters (North Sea, Baltic Sea, Mediterranean Sea, Black Sea and the coastal Atlantic Ocean).

Contact person in ISMAR: federico.falcini@cnr.it

Partnership:

1. Stichting Deltares (Netherlands)
2. Eurogoos (Spain)
3. Instituto Superior Tecnico (Portugal)
4. Exporsado - Comercio e Industria de Produtos do Mar Sa (Portugal)
5. Fundacion Azti - Azti Fundazioa (Spain)
6. Marine Instruments Sa (Spain)
7. Sofia University St Kliment Ohridski (Bulgaria)
8. Terrasigna Srl (Romania)
9. Marine Institute (Ireland)
10. Cuan Beo Environmental Company LBG (Ireland)
11. Universite de Liege (Belgium)
12. Institutul National de Cercetare-Dezvoltare Marina Grigore Antipa (Romania)
13. Jailoo Srl (Romania)
14. Institut Royal des Sciences Naturelles de Belgique (Belgium)
15. Eigen Vermogen Van Het Instituut Voor Landbouw- En Visserijonderzoek (Belgium)
16. Brevisco (Belgium)
17. Danmarks Meteorologiske Institut (Denmark)
18. Aarhus Universitet (Denmark)
19. Oyster Boat Aps (Denmark)
20. Consiglio Nazionale delle Ricerche (Italy)
21. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (Italy)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **A new hyperspectral radiometer integrated in automated networks of water and land bidirectional reflectance measurements for satellite validation**

Acronym: HyperNets

Role in the project: Partner and leader of the CNR Team

Duration: 01/02/2018 – 31/01/2022

Total budget: € 4.500.000

ISMAR budget: € 346.755

Web site: <http://hypernets.eu/>

Key words: hyperspectral radiometer, pointing system, prototype network, surface reflectance

Summary:

The objective of the HYPERNETS project is to develop a new lower cost hyperspectral radiometer and associated pointing system and embedded calibration device for automated measurement of water and land bidirectional reflectance and, subsequently, for validation of all optical bands on all satellite missions. The instrument will be tested in a prototype network covering a wide range of water and land types and operating conditions. Quality controlled data with associated uncertainty estimates will be provided automatically for the validation of all optical satellite missions. Preparations will be made a) for the new instrument design (and associated calibration service) to be commercialized with an expected lifetime of at least 10 years and b) for the networks to be further expanded to fill the very important gap in the current Sentinel-3&2 Validation plans and the in situ component of the Copernicus programme and become the main source of surface reflectance validation data for all spectral bands of all optical missions for at least the next 10 years.

Contact person in ISMAR: vittorioernesto.brande@cnr.it

Partnership:

1. Institut Royal des Sciences Naturelles de Belgique (Belgium)
2. Tartu Ulikool (Estonia)
3. Sorbonne Université (France)
4. Consiglio Nazionale delle Ricerche (Italy)
5. NPL Management Limited (United Kingdom)
6. Helmholtz Zentrum Potsdam Deutschesgeoforschungszentrum GFZ (Germany)
7. Consejo Nacional de Investigaciones Cientificas y Tecnicas (CONICET) (Argentina)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Joint European Research Infrastructure of Coastal Observatories: Science, Service, Sustainability**

Acronym: JERICO S3

Role in the project: Partner

Duration: 01/02/2020 – 31/01/2024

Total Budget: € 9.999.933

ISMAR budget: € 471.115

Web site: <https://www.jerico-ri.eu>

Key words: coastal ecosystem, e-infrastructure, monitoring strategies

Summary:

JERICO-RI: Joint European Research Infrastructure of Coastal Observatories – a system of systems strengthening the European network of coastal observatories providing a powerful and structured European Research Infrastructure (RI) dedicated to observe and monitor the complex marine coastal seas and to: (i) provide services for the delivery of high quality environmental data, (ii) access to solutions and facilities as services for researchers and users, (iii) create product prototypes for EU marine core services and users, (iv) support excellence in marine coastal research to better answer societal and policy needs. JERICO-S3 will provide a state-of-the-art, fit-for-purpose and visionary observational RI, expertise and high quality data on European coastal and shelf seas, supporting world-class research, high-impact innovation and a window of European excellence worldwide. It will significantly enhance the current value and relevance of the JERICO-RI, through the implementation of the science and innovation strategy elaborated as part of the JERICO-NEXT project. JERICO-S3 is mainly targeting a more science integrative approach to better observe the coastal ecosystem, raising up the scientific excellence, with consideration of the regional and local ecosystems; the preliminary development of an e-infrastructure in support to scientists and users by offering access to dedicated services; progress on the design of the RI and its strategy for sustainability. Major user-driven improvements will be realised in terms of observing the complexity of coastal seas and continuous observation of the biology, access to facilities, data and services, best practices and performance indicators, innovative monitoring strategies, cooperation with other European RIs (EuroARGO, EMSO, AQUACOSM, DANUBIUS, ICOS, EMBRC, LIFEWATCH) and international scientific communities, industry and other stakeholders, and aligning strategy with COPERNICUS/CMEMS, EMODNET and GEO/GEOSS.

Contact person in ISMAR: annalisa.griffa@sp.ismar.cnr.it

Partnership:

1. Institut Francais de Recherche pour L'exploitation de la Mer (France)
2. Acri-St Sas (France)
3. Alfred-Wegener-Institut Helmholtz-Zentrum fur Polar- und Meeresforschung (Germany)
4. Fundacion Azti - Azti Fundazioa (Spain)
5. Blue Lobster It Limited (United Kingdom)
6. The Secretary of State for Environment, Food and Rural Affairs (United Kingdom)
7. Consiglio Nazionale delle Ricerche (Italy)
8. Centre National de la Recherche Scientifique - CNRS (France)
9. Covartec As (Norway)
10. Stichting Deltares (Netherlands)
11. Danmarks Meteorologiske Institut (Denmark)
12. ETT SPA (Italy)
13. EUROGOOS (Belgium)
14. Havstovan (Faroe Islands)
15. Ilmatieteen Laitos (Finland)
16. Hellenic Centre for Marine Research (Greece)
17. Helmholtz-Zentrum Geesthacht Zentrum fur Material- und Küstenforschung GMBH (Germany)
18. IEEE France Section (France)
19. Instituto Hidrografico (Portugal)
20. Havforskningens Instituttet (Norway)
21. Leibniz-Institut fur Ostseeforschung Warnemunde Stiftung (Germany)
22. Ruder Boskovic Institute (Croatia)
23. Marine Institute (Ireland)
24. Mariene Informatie Service Maris BV (Netherlands)
25. Norsk Institutt for Vannforskning (Norway)
26. Norce Norwegian Research Centre AS (Norway)
27. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (Italy)
28. Puertos del Estado (Spain)
29. Consorcio Para el Diseno, Construcción, Equipamiento y Explotacion de la Plataforma Oceanica de Canarias (Spain)
30. Institut Royal des Sciences Naturelles de Belgique (Belgium)
31. Ministerie Van Infrastructuur en Waterstaat (Netherlands)
32. Sveriges Meteorologiska och Hydrologiska Institut (Sweden)
33. Socib - Consorcio Para el Diseno, Construcción, Equipamiento Y Explotacion Del Sistema De Observacion Costero de las Illes Balears (Spain)
34. Suomen Ymparistokeskus (Finland)
35. Tallinna Tehnikaulikool (EE)
36. United Nations Educational, Scientific and Cultural Organization -UNESCO (France)
37. Universitat Politecnica de Catalunya (Spain)
38. Vlaams Instituut Voor de Zee VZW (Spain)
40. 52°North Initiative for Geospatial Open Source Software GmbH (Germany)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Joint European Research Infrastructure of Coastal Observatories - Design Study**

Acronym: JERICO DS

Role in the project: Partner

Duration: 01/10/2020 - 30/09/2023

Total Budget: € 2.555.531

ISMAR budget: € 145.500

Web site: <https://cordis.europa.eu/project/id/951799/it>

Key words: Pan-European Research Infrastructure, ESFRI roadmap

Summary:

JERICO projects have consisted, since 2007, in continuously improving observations in European coastal marine areas with the objective to build a pan-European Research Infrastructure (RI). JERICO projects need to progress towards a structured operational European RI supported by the EU Member States (and associated members) and the EC, and endorsed as a high-value RI at EU level as part of the ESFRI roadmap. JERICO-DS will thus analyze the needs and propose a design for a sustainable observational European RI, conceptually designing the entire picture of the JERICO RI, covering both hardware and software components.

Contact person in ISMAR: annalisa.griffa@sp.ismar.cnr.it

Partnership:

1. Institut Francais de Recherche pour l'Exploitation de la Mer (France)
2. Consiglio Nazionale delle Ricerche (Italy)
3. Stichting Deltares (Netherlands)
4. Eurogoos (Belgium)
5. Hellenic Centre for Marine Research (Greece)
6. Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung GmbH (Germany)
7. Instituto Hidrografico (Portugal)
8. Havforskningsinstituttet (Norway)
9. Ruder Boskovic Institute (Croatia)
10. Marine Institute (Ireland)
11. Institut Royal des Sciences Naturelles de Belgique (Belgium)
12. Sveriges Meteorologiska och Hydrologiska Institut (Sweden)

13. Socib - Consorcio para el Diseno, Construccion, Equipamiento y Explotacion del Sistema de Observacion Costero de las Illes Balears (Spain)
14. Suomen Ymparistokeskus (Finland)
15. Tallinna Tehnikaulikool (Estonia)

Programme: H2020 – Coordination and Support Actions

CNR Strategic Area: AP 1 CLIMATE

Project title: **EUROpean quality Controlled Harmonization Assuring Reproducible Monitoring and assessment of plastic pollution**

Acronym: EUROqCHARM

Role in the project: Partner

Duration: 01/11/2020 – 31/10/2023

Total Budget: € 2.045.000

ISMAR budget: € 119.375

Web site: <https://cordis.europa.eu/project/id/101003805/it>

Key words: plastic pollution, data harmonization, data comparability

Summary:

This project aims to identify, test and optimise monitoring approaches through quality assured and rigorously validated methods based on current state-of-the-art techniques which cover all environmental matrices. In addition, the project will focus on harmonizing and possibly standardising methods and reporting formats to facilitate data comparability and meta-level analysis on regional, national and international scales. With multiple national and international organisations and working groups currently participating in the proposal of harmonisation and standardised for research and monitoring, a coordinated and strategic action to bring these key players together, merge working group ideas and facilitate a framework for harmonised procedures for monitoring and assessment.

Contact person in ISMAR: stefano.alianni@sp.ismar.cnr.it

Partnership:

1. Norsk Institutt for Vannforskning (Norway)
2. Consiglio Nazionale delle Ricerche (Italy)
3. Stichting VU (Netherlands)
4. Institut Francais de Recherche pour L'exploitation de la Mer (France)
5. Institutul National de Cercetare-Dezvoltare Marina Grigore Antipa (Romania)
6. Salt Lofoten AS (Norway)
7. Agencia Estatal Consejo Superior de investigaciones Cientificas (Spain)
8. Norsk Institutt for Luftforskning Stiftelse (Norway)
9. Eigen Vermogen Van Het Instituut Voor Landbouw- En Visserijonderzoek (Belgium)
10. Alfred-Wegener-Institut Helmholtz-Zentrum fur Polar- und Meeresforschung (Germany)

11. Aarhus Universitet (Denmark)
12. Chiron As (Norway)
13. Eidgenoessische Anstalt fuer Wasserversorgung Abwasserreinigung und Gewaesserschutz (Switzerland)
14. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (Italy)
15. Association Francaise de Normalisation (France)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Commercial service platform for user-relevant coastal water monitoring services based on Earth observation**

Acronym: COASTOB

Role in the project: Partner

Duration: 01/11/2017 – 30/04/2021

Total Budget: € 2.306.911

ISMAR budget: € 287.823

Web site: <https://coastobs.eu/>

Key words: service platform, earth observation products, seagrass and macro-algae monitoring

Summary:

The intensive concentration of population and excessive exploitation of natural resources puts high pressure on coastal ecosystems leading to biodiversity loss, habitat destruction, pollution as well as conflicts between potential uses and space competition. Several European directives aim at sustainable management of coastal waters, retaining or restoring a high ecological status and safeguarding ecosystem services. Increasing pressure and stricter regulations increase the need for efficient monitoring solutions. Where traditional in situ sampling is insufficient to characterize the highly dynamic coastal environments, Earth Observation (EO) provides a synoptic view and frequent coverage. With the launch of the Copernicus Sentinel satellites, operational water quality services become a business opportunity.

CoastObs will develop a service platform for coastal water monitoring with validated products derived from EO. In dialogue with users from various sectors, CoastObs will develop innovative EO-based products: monitoring of seagrass and macro-algae, phytoplankton size classes, primary production, and harmful algae as well as higher level products such as indicators and integration with predictive models. CoastObs will establish sustainable supply chains that can be directly integrated into the users' systems. The CoastObs consortium has the knowledge and ambition to develop services that are commercially viable, grow in capacity and thus create new jobs. The business case is to define user groups with common requirements, so tailored products can be developed at highly reduced costs per user. Setup of efficient data structures (array database) for smart (re)processing of data is part of this ambition. The commitment of 13 users to CoastObs demonstrates the need for such user-friendly and affordable coastal water services.

Contact person in ISMAR: vittorioernesto.brande@cnr.it

Partnership:

1. Water Insight BV (Netherlands)
2. University of Stirling (United Kingdom)
3. Consiglio Nazionale delle Ricerche (Italy)
4. Université de Nantes (France)
5. Stichting Hz University of Applied Sciences (Netherlands)
6. Universidad de Vigo (Spain)
7. Bio-Littoral (France)
8. Geonardo Environmental Technologies Ltd (Hungary)

Programme: H2020 – Research and Innovation action

CNR Strategic Area: AP4 EARTH OBSERVATION

**Project title: ENVIRONMENTAL RESEARCH INFRASTRUCTURES BUILDING FAIR SERVICES
ACCESSIBLE FOR SOCIETY, INNOVATION AND RESEARCH**

Acronym: ENVRI-FAIR

Role in the project: Partner and member of the CNR Team

Duration: 01/01/2019 – 30/06/2023

Total Budget: € 18.997.878

ISMAR budget: € 132.187

Web site: <https://envri.eu/home-envri-fair/>

Key words: thematic data services, ENVRI and ESFRI clusters, European Open Science Cloud (EOSC).

Summary:

ENVRI-FAIR is the connection of the ESFRI Cluster of Environmental Research Infrastructures (ENVRI) to the European Open Science Cloud (EOSC). Participating research infrastructures (RI) of the environmental domain cover the subdomains Atmosphere, Marine, Solid Earth and Biodiversity / Ecosystems and thus the Earth system in its full complexity. The overarching goal is that at the end of the proposed project, all participating RIs have built a set of FAIR data services which enhances the efficiency and productivity of researchers, supports innovation, enables data- and knowledge-based decisions and connects the ENVRI Cluster to the EOSC. This goal is reached by: (1) well defined community policies and standards on all steps of the data life cycle, aligned with the wider European policies, as well as with international developments; (2) each participating RI will have sustainable, transparent and auditable data services, for each step of data life cycle, compliant to the FAIR principles. (3) the focus of the proposed work is put on the implementation of prototypes for testing pre-production services at each RI; the catalogue of prepared services is defined for each RI independently, depending on the maturity of the involved RIs; (4) the complete set of thematic data services and tools provided by the ENVRI cluster is exposed under the EOSC catalogue of services.

Contact person in ISMAR: francesca.depascalis@ismar.cnr.it

Partnership:

1. Forschungszentrum Julich GMBH (FZJ) (Germany)
2. Centre National de la Recherche Scientifique (CNRS) (France)
3. Integrated Carbon Observation System (ICOS) (Finland)
4. Lunds Universitet (ULUND) (Sweden)

5. Fondazione Centro Euro-Mediterraneo Sui Cambiamenti Climatici (CMCC) (Italy)
6. Universitetet i Bergen (UIB) (Norway)
7. Euro-Argo - European Research Infrastructure Consortium (EURO-ARGO ERIC) (France)
8. Institut Francais de Recherche pour l'exploitation de la Mer (IFREMER) (France)
9. European Multidisciplinary Seafloor and Water Column Observatory - European Research Infrastructure Consortium (EMSO ERIC) (Italy)
10. E-Science European Infrastructure for Biodiversity and Ecosystem Research (Spain)
11. Lifewatch - European Research Infrastructure Consortium (LIFEWATCH ERIC)
12. Norsk Institutt for Luftforskning Stiftelse (NILU) (Norway)
13. Consiglio Nazionale delle Ricerche (CNR) (Italy)
14. Ilmatieteen Laitos (FMI) (Finland)
15. Helsingin Yliopisto (UHEL) (FI)
16. Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)
17. United Kingdom Research and Innovation – UKRI (United Kingdom)
18. Bureau De Recherches Geologiques et Minieres (BRGM) (France)
19. Koninklijk Nederlands Meteorologisch Instituut (KNMI) (Netherlands)
20. Eiscat Scientific Association (EISCAT) (Sweden)
21. Institutul National de Cercetare-Dezvoltare Pentru Geologie si Geoecologie Marina (GEOECOMAR) (Romania)
22. Institutul National de Cercetare Dezvoltare Pentru Stiinte Biologice Ra (INSB) (Romania)
23. The University of Stirling (USTIR) (United Kingdom)
24. Consiglio per la Ricerca In Agricoltura e l'analisi dell'economia Agraria (CREA) (Italy)
25. Institut National de la Recherche Agronomique (Inra) (France)
26. Sios Svalbard AS (Norway)
27. Universiteit van Amsterdam (UVA) (Netherlands)
28. Technische Informationsbibliothek (TIB) (Germany)
29. Mariene Informatie Service Maris BV (MARIS) (Netherlands)
30. Institut Royal des Sciences Naturelles de Belgique (RBINS) (Belgium)
31. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS) (Italy)
32. Agencia Estatal Consejo Superior De investigaciones Cientificas (CSIC) (Spain)
33. Umweltbundesamt Gesellschaft Mit Beschränkter Haftung (EAA) (Austria)
34. Biosense Institute - Research and Development Institute for Information Technologies in Biosystems (Biosense) (SERBIA)
35. Consortium of European Taxonomic Facilities (CETAF) (Belgium)
36. Stichting Naturalis Biodiversity Center (NATURALIS) (Netherlands)
37. SurfSara BV (SURFSARA) (Netherlands)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Copernicus Evolution - Research for harmonised and Transitional water Observation**

Acronym: CERTO

Role in the project: Partner and leader of the CNR Team

Duration: 01/01/2020 - 31/12/2022

Total Budget: € 2.843.000

ISMAR budget: € 350.000

Web site: <https://certo-project.org/>

Summary:

The aims to address this lack of harmonisation by undertaking research and development necessary to produce harmonised water quality data from each service and extend Copernicus to the large number of stakeholders operating in transitional waters. CERTO will focus on methods to classify waters, using satellite observations, together with the most comprehensive existing in situ data sets and additional data gathering within the project. Methods will be improved to remove the atmospheric signal, particularly problematic in near-coastal and transitional waters, as well as to flag waters where the bottom is visible. CERTO will also evaluate optical water quality Indicators, as specified by the broad group of end-users engaged in the project from industry, monitoring agencies and science communities. CERTO will investigate cross-cutting Indicators that may be used across coasts, transitional and inland waters including large rivers (monitored through the Water Framework and Marine Strategy Framework Directives). The project will contribute to DANUBIUS the European research infrastructure in River-Sea Systems, and international communities such as Group on Earth Observation (GEO) AquaWatch and Blue Planet, the Lagoons for Life initiative as well as supporting the United National Sustainable Development Goals.

Contact person in ISMAR: rosalia.santoleri@ismar.cnr.it

Partnership:

1. Plymouth Marine Laboratory (United Kingdom)
2. Brockmann Consult GmbH (Germany)
3. Associação para a Investigação e Desenvolvimento de Ciências (Portugal)
4. The University of Stirling (United Kingdom)
5. Institutul National de Cercetare-Dezvoltare Pentru, Geologie si Geoecologie Marina GeoEcoMar (Romania)
6. HYGEOS (France)
7. Odermatt and Brockmann GmbH (Switzerland)

8. Consiglio Nazionale delle Ricerche (Italy)
9. PML Applications Ltd (United Kingdom)
10. Climate-KIC Holding BV (Netherlands)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP7 DATA

Project title: **Research Lifecycle Management technologies for Earth Science Communities and Copernicus users in EOSC**

Acronym: RELIANCE

Role in the project: Partner and leader of the CNR Team

Duration: 01/01/2021 – 31/12/2022

Total Budget: € 1.999.972

ISMAR budget: € 189.125

Web site: n.a.

Key words: EOSC-hub, data cubes access, data management

Summary:

The overall goal of RELIANCE project is to improve the FAIRness of research at a holistic level in ESOC, not just of the data, methods, code or publications individually, but of the whole research as a single information unit. In order to do that, Reliance proposes a set of complementary services supporting the research lifecycle using Research Objects (RO) as the overarching mechanism that connects the different research related artefacts, extended with data cubes for efficient and scalable structured data access and discovery, as well as rich machine-readable metadata, including metadata extracted from unstructured text, enabling a FAIR access to the underlying research. Accordingly, Reliance project will adapt and integrate into EOSC-hub the following interconnected services: i) RO management and evolution ii) data cubes access, discovery and exploration, and iii) text mining to enrich the RO with extracted metadata in order to make them more machine actionable and enable the creation of added value on top of them.

As part of the integration in EOSC, Reliance services will leverage the existing offering in EOSC, and they will be made available via existing user interfaces and python libraries for use in Jupyter notebooks and other environments. In line with the guidelines to integrate new services into ESOC-hub, Reliance services will connect to core services like the EOSC AAI, but also to other common and thematic services.

Contact person in ISMAR: federica.foglini@bo.ismar.cnr.it

Partnership:

1. Instytut Chemii Bioorganicznej Polskiej Akademii Nauk PSNC (Poland)
2. Consiglio Nazionale delle Ricerche CNR (Italy)
3. Expert System Iberia ESI (Spain)
4. Meteorological Environmental Earth Observation MEEO (Italy)

5. Istituto Nazionale di GeoFisica e Vulcanologia INGV (Italy)
6. University of Oslo UiO (Norway)
7. Universidad Politécnica de Madrid UPM (Spain)
8. Terradue T2 (Italy)
9. Alpha Consultants LTD ALPHA (United Kingdom)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Atlantic Ecosystems Assessment, Forecasting & Sustainability**

Acronym: ATLANTECO

Role in the project: Partner

Duration: 01/09/2020 – 30/08/2024

Total Budget: € 10.925.660

ISMAR budget: € 253.000

Web site: <https://www.atlanteco.eu/the-project>

Key words: Atlantic ecosystems, ecosystem services, ecosystem stressors

Summary:

The overall objective of AtlantECO is to assess and predict changes in the status and dynamics of Atlantic ecosystems at regional and basin scales to improve the sustainability of ecosystem services and enhance Blue Growth for Atlantic communities. CNR will be coordinating the Work Package 7, aimed to identify and quantify the variability and the dominant patterns of ecosystem stressors, as well as forcing of short- and long-term ecosystem changes. The analysis will combine novel high-resolution observation-based data products and model output. It distinguishes between drivers (e.g. wind forcing, currents, mixed layer dynamics, nutrients, biotic interactions) of planktonic ecosystem dynamics and stressors, here defined as environmental variables and anthropogenic processes for which projected changes are likely to have a negative impact on ecosystem dynamics (e.g. oxygen, pH, saturation state with respect to calcium carbonate, nutrient limitation). CNR will also be involved in WP 6, focused on the Multi-scale connectivity in Atlantic ecosystems.

Contact person in ISMAR: bruno.buongiornoardelli@cnr.it

Partnership:

1. Stazione Zoologica Anton Dohrn (SZN) (Italy)
2. Eidgenoessische Technische Hochschule Zuerich (ETH Zurich) (Switzerland)
3. Universidade Federal de São Carlos (UFSCar) (Brazil)
4. Commissariat à l’Energie Atomique et aux Energies Alterna&ves (CEA) (France)
5. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale-OGS (Italy)
6. European Molecular Biology Laboratory (EMBL) (United Kingdom)
7. Universidade de Sao Paulo (USP) (Brazil)
8. University of Pretoria (South Africa)
9. Universiteit Utrecht (UU) (Netherlands)
10. University of Cape Town (South Africa)
11. Fonda&on Tara Ocean (FTO) (France)

12. Universidade Federal de Santa Catarina (UFSC) (Brazil)
13. SINTEF AS (Norway)
14. Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (AWI) (Germany)
15. Fondazione Centro Euro-Mediterraneo sui Cambiamenti & Clima (CMCC), (Italy)
16. Consiglio Nazionale delle Ricerche (CNR) (Italy)
17. Centre National de la Recherche Scientifique (CNRS) (France)
18. Council for Scientific and Industrial Research (CSIR) (South Africa)
19. Marine Biological Association of the United Kingdom (MBA) (United Kingdom)
20. Plymouth Marine Laboratory Limited (PML) (United Kingdom)
21. Sorbonne Université (SU) (France)
22. Universität Bern (UBERN) (Switzerland)
23. National Oceanography Centre (NOC) (United Kingdom)
24. The University of Liverpool (UNILIV) (United Kingdom)
25. Università degli Studi di Roma La Sapienza (UNIROMA) (Italy)
26. Universidad de Santiago de Compostela (USC) (Spain)
27. United Nations Educational, Scientific and Cultural Organization - UNESCO (France)
28. Seascope Belgium (SBE) (Belgium)
29. European Marine Biological Resource Centre European Research Infrastructure Consortium (EMBRC-ERIC) (France)
30. European Multidisciplinary Seafloor and water column Observatory- European Research Infrastructure Consortium (EMSO-ERIC) (Italy)
31. Sociedade Portuguesa de Inovação (SPI) (Portugal)
32. Okologiai Kutatóközpont (OK) (Hungary)
33. Stichting Nederlandse Wetenschappelijk Onderzoek Instellingen (NIOZ) (Netherlands)
34. Universidade Federal da Bahia (UFBA) (Brazil)
35. Universidade Federal do Rio Grande (FURG) (Brazil)
36. Agencia Estatal Consejo Superior de Investigaciones Científicas M.P. (CSIC) (Spain)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Improving and integrating the European Ocean Observing and Forecasting System**

Acronym: EUROSEA

Role in the project: Partner

Duration: 01/11/2019 – 31/12/2023

Total Budget: € 12.642.177

ISMAR budget: € 30.000

Web site: <https://eurosea.eu/>

Key words: ocean observation improvement, knowledge gaps, sustainable use of oceans

Summary:

The oceans provide us with food and oxygen. They are trade routes and climate buffers. They serve as places for recreation, but often also as waste dumps. Storms, rising sea levels, tidal waves and pollution threaten people and ecosystems along the coasts. This is particularly true of Europe with its vast populated coastlines, marginal seas, gulfs and bays. Yet, despite the immense importance of the oceans, there are still major gaps in our knowledge of the ocean interior, due to missing or insufficiently linked ocean observations. Such knowledge gaps make it difficult to assess the present ocean status, as well as predict how best to plan for future developments for a sustainable use of the oceans. Through the EuroSea project, an international consortium of 55 partners has now joined forces with the aim to significantly improve ocean observation in Europe and beyond.

Contact person in ISMAR: carlo.mantovani@sp.ismar.cnr.it

Partnership:

1. Helmholtz-Zentrum für Ozeanforschung Kiel -GEOMAR (Germany)
2. EuroGOOS
3. United Nations Educational, Scientific and Cultural Organisation - IOC/UNESCO (France)
4. Mercator Ocean International – MOI (France)
5. Alma Mater Studiorum – Università di Bologna - UNIBO (Italy)
6. Marine Institute – MI (Ireland)
7. Agencia Estatal Consejo Superior de Investigaciones Cientificas - CSIC (Spain)
8. Ecole Normale Supérieure – ENS (France)
9. Collecte Localisation Satellites Sa – CLS (France)
10. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale – OGS (Italy)

11. Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici – CMCC (Italy)
12. Universitetet i Bergern - UiB (Norway)
13. United Kingdom Research and Innovation – UKRI (United Kingdom)
14. Sorbonne University – SU (France)
15. Consorcio para el Diseno, Construcción, Equipamiento y Explotación del Sistema de Observación Costero de las Illes Balears – SOCIB (Spain)
16. European Centre for Medium-Range Weather Forecasts - ECMWF
17. Instytut Oceanologii Polskiej Akademii Nauk IO PAN (Poland)
18. Institut für Weltwirtschaft – IfW (Germany)
19. Euro-Argo – ERIC (France)
20. Centre National de la Recherche Scientifique – CNRS (France)
21. Institut Français de Recherche Pour L'Exploitation de la Mer IFREMER (France)
22. Institut royal des Sciences naturelles de Belgique – RBINS (Belgium)
23. Institut de Science et Ethique – SCIENCETHICS (France)
24. Istituto Superiore per la Protezione e la Ricerca Ambientale – ISPRA (Italy)
25. France Section – IEEE (France)
26. European Marine Board IVZW - EMB
27. Institut Mines-Télécom – IMT (France)
28. OceanNext
29. AZTI Fundazioa – AZTI (Spain)
30. Puertos del Estado – EPPE (Spain)
31. ACRI-ST SAS (France)
32. OVE Arup & Partners International Limited - ARUP
33. Hellenic Centre for Marine Research – HCMR (Greece)
34. Norsk Institutt for Vannforskning- NIVA (Norway)
35. Met Office (United Kingdom)
36. European Multidisciplinary Seafloor and water column Observatory - European Research Infrastructure Consortium - EMSO ERIC
37. Consorcio para el Diseño, Construcción, Equipamiento y Explotación de la Plataforma Oceanica de Canarias – PLOCAN (Spain)
38. Universitaet Bremen – UBREMEN (Germany)
39. Universidade do Porto – UPORTO (Portugal)
40. Stazione Zoologica Anton Dornh – SZN (Italy)
41. Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung – AWI (Germany)
42. ETT SPA (Italy)
43. Nologin Consulting, S.L. – Nologin (Spain)
44. Universitat Politècnica de Catalunya – UPC (Spain)
45. Danmarks Meteorologiske Institut – DMI (Denmark)
46. Tallinna Tehnikaukool -TalTech (Estonia)
47. Consiglio Nazionale Delle Ricerche – CNR (Italy)
48. Institut de Recherche pour le Développement – IRD (France)
49. The Chancellor Masters and Scholars of The University of Cambridge – UCAM (United Kingdom)
50. Xylem Aanderaa Data Instruments AS – XYLEM (Norway)
51. Organisation Meteorologique Mondiale - WMO
52. Universidade do Estado do Rio de Janeiro – UERJ (Brazil)
53. Universidade Federal de Pernambuco – UFPE (Brazil)
54. Memorial University of Newfoundland – MUN (Canada)
55. Dalhousie University - DAL (Canada)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP2 RESOURCES

Project title: **Solutions At Underwater Radiated Noise**

Acronym: SATURN

Role in the project: Partner and member of the CNR Team

Duration: 01/02/2021 – 31/01/2025

Total Budget: € 8.965.964

ISMAR budget: € 250.000

Web site: n.a.

Key words: bioacoustics, underwater noise, stakeholder engagement, maritime policy

Summary:

The SATURN consortium brings together leading experts in bioacoustics; population biology; marine mammal, fish and invertebrate biology; maritime architecture and engineering; shipping; maritime policy; stakeholder engagement and science communication. We will combine expertise from these disciplines to work with unity of purpose and clarity of intent to identify:

- a. The sounds that are most detrimental to aquatic species and how they are produced and propagated;
- b. The short-term and cumulative long-term negative impacts of noise from shipping and boats on three representative groups of aquatic species in rivers and the sea (invertebrates, fish and marine mammals);
- c. The most promising options for measuring and reducing the negative impacts of ship noise that can be applied to current and future vessels.

Contact person in ISMAR: andrea.barbanti@ve.ismar.cnr.it

Partnership:

1. University College Cork (UCC) (Ireland)
2. Aarhus Universitet (AU) (Denmark)
3. Bureau Veritas Marine and Offshore SAS BV (France)
4. CETENA S.p.A (CETENA) (Italy)
5. Secretary of State for Environment, Food and Rural Affairs (CEFAS) (United Kingdom)
6. DNV GL AS (DNVGL) (Norway)
7. JASCO Applied Sciences GmbH (JASCO) (Germany)
8. Stichting Maritiem Research Instituut Nederland (MARIN) (Netherlands)
9. Naval Group (NG) (France)
10. Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO) (Netherlands)

11. Consorcio para el Diseño, Construcción, Equipamiento y Explotación de la Plataforma Oceánica de Canarias (PLOCAN) (Spain)
12. Quiet Oceans (QO) (France)
13. Institute for Terrestrial and Aquatic Wildlife Research, University of Veterinary Medicine Hannover (TIHO) (Germany)
14. Técnicas y Servicios de Ingeniería, S.L (TSI) (Spain)
15. Wärsilä Netherlands B.V. (WART) (Netherlands)
16. Universiteit Leiden (LEID) (Netherlands)
17. Universitat Politècnica de Catalunya, Barcelona Tech (UPC) (Spain)
18. Consiglio Nazionale delle Ricerche (CNR) (Italy)
19. Universidad de la Laguna (ULL) (Spain)

Programme: H2020 – ERC

CNR Strategic Area: AP1 CLIMATE

Project title: **Testing the role of Mediterranean thermohaline circulation as a sensor of transient climate events and shaker of North Atlantic Circulation**

Acronym: TIMED

Role in the project: Partner

Duration: 01/1/2017 – 31/12/ 2021

Total Budget: € 2.400.000

ISMAR budget: € 124.375

Web site: <https://cordis.europa.eu/project/id/683237/it>

Key words: thermohaline circulation, MedTHC dynamics, sediment cores, deep-sea corals

Summary:

The Mediterranean Sea is an excellent sensor of transient climate conditions at different time scales. Changes in Mediterranean water properties result from complex interactions between the Atlantic inflow, local climate and north and south atmospheric teleconnections. In turn, Mediterranean outflow waters spill into the Atlantic Ocean, thus acting as a net salt and heat source for the Atlantic Meridional Overturning Circulation (AMOC). Climate models anticipate changes in these circulation systems within decades; thus it becomes critical to understand the natural range of variations in the Mediterranean Thermohaline Circulation (MedTHC) and whether these can alter the AMOC. An innovative approach, based on both well-established and newly-developed analytical methods will be applied to characterize, qualitatively and quantitatively, past changes in the MedTHC dynamics. Particular emphasis will be placed on building robust regional chronologies and proxy records with unprecedented high-resolution. This approach will combine proxy data from sediment cores and deep-sea corals along the main paths of water masses as they cross the Mediterranean basins and exit into the North Atlantic.

Contact person in ISMAR: fabrizio.lirer@na.ismar.cnr.it

Partnership:

1. Universitat de Barcelona UB (Spain)
2. Consiglio Nazionale delle Ricerche (CNR) (Italy)

Programme: H2020 – Infrastructures initiative

CNR Strategic Area: AP2 RESOURCES

Project title: **An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities**

Acronym: EUROFLEETS+

Role in the project: Partner

Duration: 01/02/2019 – 31/01/2023

Total Budget: € 9.999.360

ISMAR budget: € 37.317

Web site: <https://www.eurofleets.eu/>

Key words: vessel fleets, ocean observation infrastructures, portable telepresence system

Summary:

The EUROFLEETS+ project will facilitate open free of charge access to an integrated and advanced research vessel fleet, designed to meet the evolving and challenging needs of the user community. European and international researchers from academia and industry will be able to apply for several access programmes, through a single-entry system. EUROFLEETS+ will prioritise support for research on sustainable, clean and healthy oceans, linking with existing ocean observation infrastructures, and it will support innovation through working closely with industry. The project will enable access to a unique fleet of 27 state-of-the-art research vessels from European and international partners. Through competitive Calls, researchers will be able to access the entire North Atlantic, Mediterranean, Black Sea, North Sea, Baltic Sea, Pacific Southern Ocean and Ross Sea. In addition to ship time, researchers will also have access to new AUVs and ROVs. A unique portable telepresence system will enable remote access by researchers and diverse end users including the public; a first for Europe.

Contact person in ISMAR: anna.vetrano@sp.ismar.cnr.it

Partnership:

1. Marine Institute (Ireland)
2. Faroe Marine Research Institute (Faroe Islands)
3. Finnish Environment Institute – Marine Research Center (Finland)
4. Flanders Marine Institute (Belgium)
5. Mariene Informatie Service 'MARIS' BV(Netherlands)
6. European Centre for Information on Marine Science and Technology (Portugal)
7. University of Gothenburg (Sweden)

8. Hellenic Centre for Marine Research (Greece)
9. Royal Belgian Institute of Natural Sciences (Belgium)
10. Institute of Oceanology, Polish Academy of Sciences (Poland)
11. National Research Council (Italy)
12. Portuguese Institute for the Ocean and Atmosphere (Portugal)
13. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (Germany)
14. National Institute of Oceanography and Applied Geophysics (Italy)
15. Tubitak Marmara Research Center (Turkey)
16. University Bremen (Germany)
17. Institutul National de Cercetare-Dezvoltare Pentru Geologie si Geoecologie Marina- GeoEcoMar (Romania)
18. Spanish Institute of Oceanography (Spain)
19. University of Girona (Spain)
20. Greenland Institute of Natural Resources (Greenland)
21. Marine and Freshwater Research Institute (Iceland)
22. Technical University of Denmark (Denmark)
23. Institut Français de Recherche pour l'Exploitation de la MER (France)
24. European Multidisciplinary Seafloor and Water Column Observatory – European Research Infrastructure Consortium (Italy)
25. Institute of Marine Research (Norway)
26. Agencia Estatal Consejo Superior de Investigaciones Cientificas – Unidad De Tecnologia Marina (Spain)
27. Tallinna Tehnikaülikool (Estonia)
28. Royal Netherlands Institute for Sea Research (Netherlands)
29. Centre for Maritime Research and Experimentation (Belgium)
30. Coronis Computing S.L. (Spain)
31. Blue Lobster IT Limited (United Kingdom)
32. GEOMAR Helmholtz Centre of Ocean Research (Germany)
33. NIWA Vessels Ltd (New Zealand)
34. Balearic Islands Observing and Forecasting System (Spain)
35. VoyagerIP International Services Limited (Ireland)
36. Seaonics AS (Norway)
37. Hampidjan Hf (Iceland)
38. IQUA Robotics SL (Spain)
39. MacArtney A/S (Denmark)
40. The Global Foundation for Ocean Exploration, Inc. (USA)
41. Université du Québec à Rimouski-Institut des Sciences de la mer de Rimouski (Canada)
42. Bermuda Institute of Ocean Sciences (BIOS), Inc. (Bermuda)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP1 CLIMATE

Project title: **eLTER Advanced Community Project**

Acronym: eLTER+

Role in the project: Partner and member of the CNR Team

Duration: 01/02/2020 – 31/01/2025

Total Budget: € 10.065.009

ISMAR budget: € 41.354

Web site: <https://www.lter-europe.net/projects>

Key words: ecosystem integrity study, ecosystem services, cc impacts,

Summary:

The Advanced Community Project for the eLTER Research Infrastructure (eLTER PLUS) belongs to INFRAIA-01-2018-2019 programme of HORIZON 2020 and is built on three main pillars - networking, joint research activities and transnational, remote and virtual access. eLTER PLUS will conduct a performance test of the emerging eLTER RI while challenging, assessing and strengthening its operations. Selected sites and platforms in terrestrial, freshwater and coastal ecosystems will be used to study ecosystem integrity, impacts of climate change and endangered ecosystem services at a pan-European scale. Alongside these exemplary case studies eLTER PLUS will identify and assess innovative observational and analytical methods, elaborate detailed specifications of eLTER RI according to community needs (standard observations, site design), support community building and training, and pilot priority services (IT and other support).

Contact person in ISMAR: caterina.bergami@bo.ismar.cnr.it

Partnership:

1. University of Helsinki (Finland)
2. Umweltbundesamt Gesellschaft Mit Beschränkter Haftung (Uba Gmbh) (Austria)
3. Suomen Ympäristökeskus (Finland)
4. Centre National de la Recherche Scientifique CNRS (France)
5. Forschungszentrum Jülich GmbH (Germany)
6. Helmholtz-Zentrum für Umweltforschung GmbH – Ufz (Germany)
7. Polytechnio Kritis (Greece)
8. Consiglio Nazionale delle Ricerche (Italy)
9. Europejskie Regionalne Centrum Ekohydrologii Polskiej Akademii Nauk (Poland)
10. Sveriges Lantbruksuniversitet (Sweden)
11. Institut Po Bioraznoobrazie I Ekosistemni Izsledvaniya Balgarska Akademiya Na Naukite (Bulgaria)

12. Senckenberg Gesellschaft für Naturforschung (Germany)
13. Okologiai Kutatóközpont (Hungary)
14. Ben-Gurion University of the Negev (Israel)
15. Israel Institute of Technology (Israel)
16. Latvijas Universitāte (Latvia)
17. Universitatea din București (Romania)
18. Institute of Landscape Ecology of the Slovak Academy of Sciences (Slovakia)
19. Znanstvenoraziskovalni Center Slovenske Akademije Znanosti In Umetnosti (Slovenia)
20. Agencia Estatal Consejo Superior de Investigaciones Científicas (Spain)
21. Biosense Institute - Research and Development Institute for Information Technologies in Biosystems (Serbia)
22. Fciencias.lid - Associação Para a Investigação e Desenvolvimento de Ciências (Portugal)
23. Centre for Ecology & Hydrology (United Kingdom)
24. Universitaet fuer Bodenkultur Wien (Austria)
25. Eigen Vermogen Van Het Instituut Voor Natuur- En Bosonderzoek (Belgium)
26. Ústav Vyzkumu Globalni Zmeny Av Cr Vvi (Czechia)
27. Københavns Universitet (Denmark)
28. CSC-Tieteen Tietotekniikan Keskus Oy (Finland)
29. Università Degli Studi Di Milan (Italy)
30. Eidgenössischen Forschungsanstalt für Wald Schnee und Landschaft (Switzerland)
31. Icteta Instituto De Ciências, Tecnologias E Agroambiente Da Universidade Do Porto (Portugal)
32. Pensoft Publishers (Bulgaria)

Programme: H2020 – Innovative Actions-LS

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **New Approach to Underwater Technologies for Innovative, Low-cost Ocean obServation**

Acronym: NAUTILOS

Role in the project: Partner and member of the CNR Team

Duration: 01/10/2020 - 30/09/2024

Total Budget: € 9.048.349

ISMAR budget: € 134.134

Web site: <https://www.cnr.it/it/news/9719/new-approach-to-underwater-technologies-for-innovative-low-cost-ocean-observation>

Key words: observation tools and services, new cutting-edge technologies, open data

Summary:

NAUTILOS will fill in existing marine observation and modelling gaps through the development of a new generation of cost-effective sensors and samplers for physical (salinity, temperature), chemical (inorganic carbon, nutrients, oxygen), and biological (phytoplankton, zooplankton, marine mammals) essential ocean variables, in addition to micro-/nano-plastics, to improve our understanding of environmental change and anthropogenic impacts related to aquaculture, fisheries, and marine litter. Newly developed marine technologies will be integrated with different observing platforms and deployed through the use of novel approaches in a broad range of key environmental settings.

The fundamental aim of the project will be to complement and expand current European observation tools and services, to obtain a collection of data at a much higher spatial resolution and temporal regularity and length than currently available at the European scale, and to further enable and democratise the monitoring of the marine environment to both traditional and non-traditional data users. The principles that underlie the NAUTILOS project will be those of the development, integration, validation and demonstration of new cutting-edge technologies with regards to sensors, interoperability and embedding skills. NAUTILOS will also provide full and open data feed towards well-established portals and data integrators (EMODnet, CMEMS, JERICO).

Contact person in ISMAR: stefania.sparnocchia@ts.ismar.cnr.it

Partnership:

1. Consiglio Nazionale delle Ricerche (Italy)
2. Hellenic Centre for Marine Research (Greece)

3. Norsk Institutt for Vannforskning (Norway)
4. Suomen Ympäristökeskus (Finland)
5. Institut Français de Recherche pour L'Exploitation de la Mer (France)
6. Centre National de la Recherche Scientifique CNRS (France)
7. ETT Spa (Italy)
8. Edgelab Srl It
9. Universidade do Algarve (Portugal)
10. Nke Instrumentation Sarl (France)
11. Aquatec Group Limited (United Kingdom)
12. Subctech GmbH (Germany)
13. CeiiA - Centro de Engenharia e Desenvolvimento (Associação) (Portugal)
14. Haute Ecole Spécialisée de Suisse Occidentale (Switzerland)
15. CSEM Centre Suisse d'Electronique et de Microtechnique Sa - Recherche et Développement (Switzerland)
16. Univerza V Ljubljani (Slovenia)
17. Fundação Eurocean (Portugal)
18. Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany)
19. Università della Calabria (Italy)
20. IMAR - Instituto do Mar (Portugal)
21. Evroproject Ood (Bulgaria)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Satellite Seafloor Survey Suite**

Acronym: 4S

Role in the project: Partner

Duration: 01/10/2020 – 30/09/2023

Total Budget: € 2.672.640

ISMAR budget: € 272.175

Web site: n.a.

Key words: data and solution gaps, digital information, cloud based software

Summary:

4S will address a current data and solution gaps from coastal and offshore stakeholders, which are the ability to generate and access spatial and recent information on seabed, such as benthic habitat, morphology, depth and change and trends.

Digital information on these are crucial to respond to EC maritime directive, environmental impact studies and engineering offshore activities. We will address this gap by developing an online, cloud based software, named 4S – Satellite Seafloor Survey Suite – which empowers the users to benefit from satellite capabilities and specific aquatic EO algorithms. 4S will harness Copernicus data together with US satellite lidar data and – optionally – integrate client airborne (drone) imagery and on-site data. Other stakeholders, many of which have signed supporting letters, will participate in 7 use cases which cover four countries, the Caribbean and several selected sites globally. The development of a sustainable business based on 4S will be driven by the industry partners, which contribute with 52% of the workload.

Contact person in ISMAR: marzia.rovere@bo.ismar.cnr.it

Partnership:

1. EOMAP GmbH & Co.KG (Germany)
2. Hellenic Centre for Marine Research (Greece)
3. Quality Positioning Services (QPS) (Netherlands)
4. Länsstyrelsen Västerbottens län LV (Sweden)
5. Consiglio Nazionale delle Ricerche (Italy)
6. Instituto Hidrografico (Portugal)
7. FugroGermany Marine GmbH (Germany)
8. Smith Warner International Limited (Jamaica)

Programme: H2020 – Research and Innovation Actions

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Metrology for Integrated Marine Management and Knowledge-Transfer Network**

Acronym: MINKE

Role in the project: Partner

Duration: 01/04/2021 – 31/03/2025

Total Budget: € 4.994.955

ISMAR budget: € 77.336

Web site: <https://minke.eu>

Key words: marine metrology research infrastructures, Ocean & Coastal Observation

Summary:

MINKE will integrate key European marine metrology research infrastructures, to coordinate their use and development and propose an innovative framework of “quality of oceanographic data” for the different European actors in charge of monitoring and managing the marine ecosystems. MINKE proposes a new vision in the design of marine monitoring networks considering two dimensions of data quality, accuracy and completeness, as the driving components of the quality in data acquisition. The present proposal, through the different Integration Activities (Networking, Transnational-Virtual Access and Joint Research), aims to lay the groundwork for creating the necessary synergies among the different involved actors in the quintuple helix model of innovation, creating a new community with complementary capabilities for Ocean & Coastal Observation, that will facilitate the transition towards a blue growth socio-economic system.

Contact person in ISMAR: katrin.schroeder@ve.ismar.cnr.it

Partnership:

1. Agencia Estatal Consejo Superior Deinvestigaciones Cientificas (Spain)
2. Institut Francais de Recherche pour l'Exploitation de la Mer (France)
3. Hellenic Centre for Marine Research (Greece)
4. Consorcio Para el Diseno, Construccion, Equipamiento y Explotacion de la Plataforma Oceanica de Canarias (Spain)
5. Universitat Politecnica de Catalunya (Spain)
6. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (Italy)
7. Consiglio Nazionale delle Ricerche (Italy)
8. Istituto Nazionale di Ricerca Metrologica (Italy)
9. Service Hydrographique et Oceanographique de la Marine (France)
10. Norsk Institutt for Vannforskning (Norway)
11. National Oceanography Centre (United Kingdom)

12. Agenzia Nazionale per le Nuove Tecnologie, l'Energia e lo Sviluppo Economico Sostenibile (Italy)
13. Physikalisch-Technische Bundesanstalt (Germany)
14. Universite d'Aix Marseille (France)
15. Universidad Catolica del Norte (Chile)
16. Anel.Lides Sl (Spain)
17. Laboratoire National de Metrologie et d'Essais (France)
18. 52°North Initiative for Geospatial Open Source Software Gmbh (Germany)
19. Institut d'Arquitectura Avancada de Catalunya (Spain)
20. Suomen Ymparistokeskus (Finland)
21. Joint Programming Initiative on Healthy and Productive Seas and Oceans (Belgium)
22. European Multidisciplinary Seafloor and Water Column Observatory - European Research Infrastructure Consortium (EMSO ERIC) (Italy)

Programme: H2020, Marie Skłodowska Curie Actions, Global Fellowships

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Marine Environmental Dynamics and sex-based analysis for climate change adaptation in marine spatial planning**

Acronym: MEDIX

Role in the project: Lead Partner

Duration: 23/12/2020 – 23/12/2022

Total Budget: € 269.000

ISMAR budget: € 244.903

Web site: <http://www.medix-project.eu/>

Key words: climate change, MSP, Ecosystem-based management

Summary:

To effectively adapt to climate change (CC), a novel more dynamic approach in governing the oceans is needed. Marine Spatial Planning (MSP) – a public process aimed to allocate human uses at sea while maintaining multiple ecosystem services (ES) – as currently implemented is too static to adequately incorporate climate refugia and CC responses of marine life. The goal of my project is to provide a stronger, more complete model for the sustainable planning of marine ES in the California Current. MEDIX will significantly improve the traditional MSP process in a context of a fast-changing climate by creating a novel approach to MSP that incorporates a dynamic ES assessment under CC scenarios with a sex-based analysis of CC effects on species and ecosystems, to elaborate a guideline for adaptation actions in MSP. The California Current will provide an ideal case study to test the new approach for adaptation strategies to maintain the ES.

Through the MSCA Global Fellowship, Dr. Elena Gissi, Marie S. Curie Fellow, will reinforce her expertise in ecosystem-based management in MSP with new interdisciplinary expertise and skills in ES modeling under CC and sex analysis, which she will transfer back to Europe, where the development of adaptive strategies for MSP is relevant and timely. The GF envisages: i) an outgoing period at Stanford University, USA, where Dr. Gissi will be involved in a major initiative to revise and adapt the marine protected areas network of the California Current within the national MSP initiative, in collaboration with governments, and ii) a return period in Italy at CNR, Italy, where she intends to build on and transfer the skills acquired to elaborate the adaptive MSP guidelines that she will make accessible to relevant European stakeholders through a process of science-to-policy and science-for-society engagement in the Mediterranean.

Contact person in ISMAR: elena.gissi@cnr.it

Partnership:

1. National Research Council, Institute of Marine Sciences (Italy)
2. Stanford University, Hopkins Marine Station (USA)

Programme: *H2020-EU.3.2.3.3* Boosting marine and maritime innovation through biotechnology, BG-11-2020 - Towards a productive, healthy, resilient, sustainable and highly-valued Black Sea

CNR Strategic Area: AP2 RESOURCES

Project title: **Developing Optimal and Open Research Support for the Black Sea**

Acronym: DOORS

Duration: 01/06/2021 – 31/05/2025

Project budget: € 9.795.350

ISMAR budget: € 350.000

Web site: <https://www.doorsblacksea.eu/>

Key words: Blue Growth Accelerator, Black Sea

Summary:

DOORS will bring the four pillars of the SRIA into reality, turning the challenges into opportunities for a highly valued Black Sea. It will harmonise research and provide the infrastructure to better understand the Black Sea, particular ecosystem characteristics, develop the framework to support Blue Growth and early development of startups, and provide evidence to inform policy and behavioural change. To reach its ambitious objectives, the project team will work closely with stakeholders from the start to develop an open research system and establish a framework to support continuous stakeholder dialogue.

DOORS will implement three Work Programmes: a System of Systems to harmonise approaches and provide an accessible data repository, a Blue Growth Accelerator to support enterprise, and Knowledge Transfer and Training to share best practice and build capacity. These will:

- Engage stakeholders through communication, dissemination and training activities to raise awareness, build capacity and foster a stronger Black Sea identity
- Harmonise data collation, analysis and access to optimise data use in decision and policy making
- Strengthen the Black Sea scientific network through new collaborations, and bridge the gap between science and policy
- Provide a range of products to support Black Sea innovation and enterprise DOORS will have long-lasting impact by giving stakeholders in the region the skillsets and understanding to:
 - Implement key policies and legislation
 - Improve environmental quality and reduce pollution risk
 - Design measures to mitigate pollution and remediate historically contaminated areas
 - Become resilient communities
 - Realise and sustainably develop potential economic growth for future well-being
 - Build capacity in existing industries, develop new start-ups and become actively involved in delivering Blue Growth
 - Create ocean informed citizens to better understand Black Sea's potential

Contact person in ISMAR: debora.bellafiore@ismar.cnr.it

Partnership:

1. Institutul National de Cercetare-Dezvoltare Pentru Geologie Si Geoecologie Marina-Geocomar (GEOCOMAR)
2. Institutul National de Cercetare-Dezvoltare Marina Grigore Antipa (NIMRD), Romania,
3. Organizatia Neguvernamentala Ecologista Mare Nostrum (MNOSTRUM), Romania
4. Institute of Oceanology Bas (IO-BAS), Bulgaria
5. Geo Marine (GEOMARINE), Bulgaria
6. Burgaski Svoboden Universitet (BFU), Bulgaria
7. Middle East Technical University (METU), Turkey
8. Dokuz Eylul Universitesi (DEU), Turkey
9. Karadeniz Teknik Universitesi (KTU), Turkey
10. Gis and Rs Consulting Center Geographic (GEORG), Georgia
11. P.P. Shirshov Institute of Oceanology of Russian Academy of Sciences (SIORAS), Russia
12. Russian Presidential Academy of National Economy and Public Administration, North-West Institute of Management (NWIM RANEPa), Russia
13. Odessa State Environmental University (OSENu) Ukraine
14. Universitatea De Stat Din Tiraspol (UST) Moldova
15. Consiglio Nazionale Delle Ricerche (CNR), Italy
16. Institut Francais de Recherche pour l'Exploitation de la Mer (IFREMER), France
17. Helmholtz-Zentrum Hereon GmbH (HEREON), Germany
18. Brockmann Consult GmbH (BC), Germany
19. Stichting Deltares (DELTARES), Netherlands
20. Universitat Politecnica de Catalunya (UPC), Spain
21. Socib - Consorcio Para el Diseno, Construccin, Equipamiento y Explotacion del Sistema de Observacion Costero de las Illes Balears (SOCIB), Spain
22. University College Cork - National University of Ireland, Cork (UCC), Ireland
23. Hellenic Centre for Marine Research (HCMR), Greece
24. Kantor Symvouloi Epicheiriseon Anonimi Etairia (KANTOR), Greece
25. The University of Stirling (USTIR), United Kingdom
26. Plymouth Marine Laboratory Limited (PML), United Kingdom
27. National Oceanography Centre (NOC), United Kingdom
28. Eurogoos (EUROGOOS), Belgium
29. Euro-Argo Eric (Euro-Argo Eric), France
30. European Multidisciplinary Seafloor and Water Column Observatory - European Research Infrastructure Consortium (EMSO ERIC) Italy
31. European Marine Biological Resource Centre European Research Infrastructure Consortium (EMBRC), France
32. E-Science European Infrastructure for Biodiversity and Ecosystem Research (LIFEWATCH), Spain
33. Derzhavna Naukova Ustanova Tsentr Problem Morskoyi Heologii Heoekolohiyi ta Osadovoho Rudoutvorennya Nanukrainy Dnu Morheoekotsentr Nan Ukrainy (MGEC) Ukraine
34. Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy
35. Athina-Erevnitiko Kentro Kainotomias Stis Technologies Tis Pliroforias, Ton Epikoinonion Kai Tis Gnosis (ATHENA), Greece

36. Toulon var Technologies (POLMED), France
37. Rea Michael (MRM), United Kingdom

Programme: H2020 - EIT RAW MATERIALS

CNR Strategic Area: AP2 RESOURCES

Project title: **Encouraging Girls to Study Geosciences and Engineering**

Acronym: ENGIE

Role in the project: Partner

Duration: 01/09/2020 – 31/12/2022

Total budget: € 1.113.917

ISMAR budget: € 102.125

Web site: <https://www.engieproject.eu/>

Key words: geosciences, geoengineering, gender balance, awareness raising strategy

Summary:

The ENGIE project aims to turn the interest of girls to study geosciences and geo-engineering, and thus to improve the gender balance in these disciplines. The project is developing an awareness-raising strategy and creating a stakeholder collaboration network for the implementation of a set of outreach actions in more than 22 European countries.

Contact person in ISMAR: silvia.giuliani@bo.ismar.cnr.it

Partnership:

1. University of Miskolc (Hungary)
2. Luleå University of Technology and University of Zagreb (Croatia)
3. National Research Council (Italy)
4. La Palma Research Centre (Spain)
5. European Federation of Geologists

20 of EFG's national associations take part in the project implementation as Linked Third Parties and are extending the project activities to more than 20 European countries.

Programme: H2020 - EIT RAW MATERIALS

CNR Strategic Area: AP2 RESOURCES

Project title: **BetterGeoEdu 2.0 - Teaching raw materials to primary schools with gamification**

Acronym: BGE2

Role in the project: Partner

Duration: 01/01/2020 – 31/12/2021

Total budget: € 569.273

ISMAR budget: € 67.302

Web site: www.bettergeoedu.com

Key words: raw materials, primary schools

Summary:

BetterGeoEdu 2.0 will develop teaching material using BetterGeo – a modification of the popular game Minecraft. Teaching material will be tailored for primary schools, and cover innovation themes of the EIT RM KIC like mining, processing & recycling, complete with a train-the-trainer programme for teachers. BetterGeoEdu brings a unique and innovative way of teaching raw materials to primary schools using a game known and loved by millions.

Contact person in ISMAR: luca.bellucci@bo.ismar.cnr.it

Partnership:

1. Geological Survey of Sweden, SGU – Sweden
2. Geological Survey of Slovenia, GeoZS - Slovenia
3. University of Leoben - Austria
4. Tallinn University of Technology - Estonia
5. Trinity College Dublin - Ireland
6. Technical University of Madrid, UPM - Spain
7. University of Liège - Belgium
8. National Research Council, CNR - Italy

Programme: HORIZON 2020 BLUE GROWTH- RESEARCH AND INNOVATION

CNR Strategic Area: AP2 RESOURCES

Project title: **Advancing Black Sea research and innovation to co-develop blue growth within resilient ecosystems**

Acronym: BRIDGE-BS

Role in the project: Partner

Duration: 01/06/2021 – 30/11/2025

Total budget: € 8.999.877

ISMAR budget: € 443.750

Web site: <https://www.h2020-bridge.eu>

Key words: Ecosystem resilience, ecosystem services, multi-stressors, biogeochemistry, start-ups, capacity building

Summary:

The Black Sea's unique ecosystem services are degrading and need to be better managed for the benefit of citizens dependent upon their sustainability. As a critical contribution to the science-based policy needed to preserve the Black Sea ecosystems, BRIDGE-BS proposes a multidisciplinary, multisectoral program building on regional and international initiatives. The project will develop predictive tools and capabilities necessary to understand and predict the impacts of climate-driven and anthropogenic multi-stressors on the services stemming from Black Sea ecosystems. These services and their responses to stressors will be mapped, monitored and modeled in order to identify a safe operating space within which a sustainable blue economy can flourish. To this end, BRIDGE-BS is structured around "three" interconnected nodes: Service Dynamics, Blue Growth Incubators and Empowered Citizens.

Contact person in ISMAR: andrea.barbanti@ismar.cnr.it

Partnership:

1. Middle East Technical University (TR)
2. Institute of Oceanology - Bulgarian Academy of Sciences (BG)
3. Institutul National de Cercetare-Dezvoltare Marina Grigore Antipa (RO)
4. Institut Po Bioraznoobrazie I Ekosistemni Izsledvaniya Balgarska Akademiya Na Naukite (BG)
5. Ukrainian Scientific Centre of Ecology of the Sea (UA)
6. Ivane Javakhishvili Tbilisi State University (GE)
7. Institutul National de Cercetare-Dezvoltare Pentru Geologie si Geoecologie Marina-Geoecomar (RO)

8. P.P. Shirshov Institute of Oceanology of Russian Academy of Sciences (RU)
9. International Center for Black Sea Studies (EL)
10. Hellenic Centre for Marine Research (EL)
11. Consiglio Nazionale delle Ricerche (IT)
12. Universite de Liege (BE)
13. Athens University of Economics and Business - Research Center (EL)
14. Stockholms Universitet (SE)
15. Centro Tecnológico del Mar - Fundacion Cetmares (ES)
16. Indigo Med Smpc (EL)
17. Institute of Electronic Engineering and Nanotechnologies (MD)
18. Danmarks Tekniske Universitet (DK)
19. Organization of the Black Sea Economic Cooperation (TR)
20. Strategies Mer et Littoral (FR)
21. Conference des Regions Peripheriques Maritimes d' Europe - Association

Programme: Societal Challenges – SC2 - Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the bioeconomy (Topic BG-13-2016 Support to the BLUEMED Initiative: Coordination of marine and maritime research and innovation activities in the Mediterranean)

CNR Strategic Area: AP2 RESOURCES

Project title: **BLUEMED**

Acronym: BLUEMED

Role in the project: Partner and member of the CNR Team

Duration: 01/10/2016 - 31/03/2021

Total budget: € 2.998.000

ISMAR budget: € 200.000

Web site: <http://www.blued-med-project.eu/>

Key words: Blue Growth, BLUEMED SRIA, feasibility study

Summary:

The BLUEMED project aims at boosting Blue Growth in the Mediterranean by promoting the concrete and operational implementation of the BLUEMED Strategic Research and Innovation Agenda (SRIA), converting its outputs into actions. This project has the privilege to set – for the first time in the whole Mediterranean Basin – the scene for the long-term effective coordination of marine and maritime research and innovation activities, consolidating networks and establishing mechanisms that will remain and be further developed after the conclusion of the project.

The specific objectives of the project are to:

- Consolidate and update the BLUEMED SRIA;
- Identify and define key framework conditions for the SRIA implementation, addressing a roadmap for the deployment of Research Infrastructures (RIs), assessing data policies and improving strategies for human resources in the 'blue' careers perspective;
- Establish a detailed and realistic Implementation Plan of the SRIA, to be developed together and from the beginning with national research funders and all stakeholders concerned;
- Support and facilitate the cooperation and coordination in all the Mediterranean countries, in order to promote the alignment of Programmes and pooling of resources and investments to address the challenges identified in the BLUEMED SRIA;
- Support the design and implementation of new transnational joint activities through the execution of Start-up Actions and the preparation of feasibility studies on specific and crucial challenges for the Mediterranean of the future;

- Support the consolidation of the role of the BLUEMED Initiative as a key policy reference for all actors of Blue Growth in the area, including administration, private sectors and society, focusing and improving the role of Research and Innovation;
- Contribute to the implementation of Regional Seas, EU and National policies;
- Promote the extension of the BLUEMED Initiative to other EU countries and non-EU Mediterranean countries.

Contact person in ISMAR: andrea.barbanti@ve.ismar.cnr.it

Partnership:

1. Consiglio Nazionale delle Ricerche (CNR) (Italy)
2. Hellenic Centre for Marine Research (HCRM)(Italy)
3. Research Promotion Foundation (RPF) (Cyprus)
4. Iza oceanografiju i ribarstvo (IZOR) (Croatia)
5. Ministerio de Economia Y Competitividad (MINECO) (Spain)
6. Malta Council for Science and Technology (Malta)
7. Instituto Espanol de Oceanografia (IEO) (Spain)
8. Direcao-Geral de Politica do Mar (DGPM) (Portugal)
9. Centre national de la recherche scientifique (CNRS) (France)
10. National Institute of Biology (NIB) (Slovenia)
11. Institut Francais de Recherche pour l'Exploitation de la Mer (IFREMER) (France)

INTERREG -Territorial Cooperation Programmes

European Territorial Cooperation (ETC), better known as INTERREG, is one of the two goals of cohesion policy and provides a framework for the implementation of joint actions and policy exchanges between national, regional and local actors from different Member States. The overarching objective of European Territorial Cooperation (ETC) is to promote a harmonious economic, social and territorial development of the Union as a whole. INTERREG is built around three strands of cooperation: cross-border (Interreg A), transnational (Interreg B) and interregional (Interreg C). Five programming periods of INTERREG have succeeded each other: INTERREG I (1990-1993) - INTERREG II (1994-1999) - INTERREG III (2000-2006) - INTERREG IV (2007-2013) - INTERREG V (2014-2020).

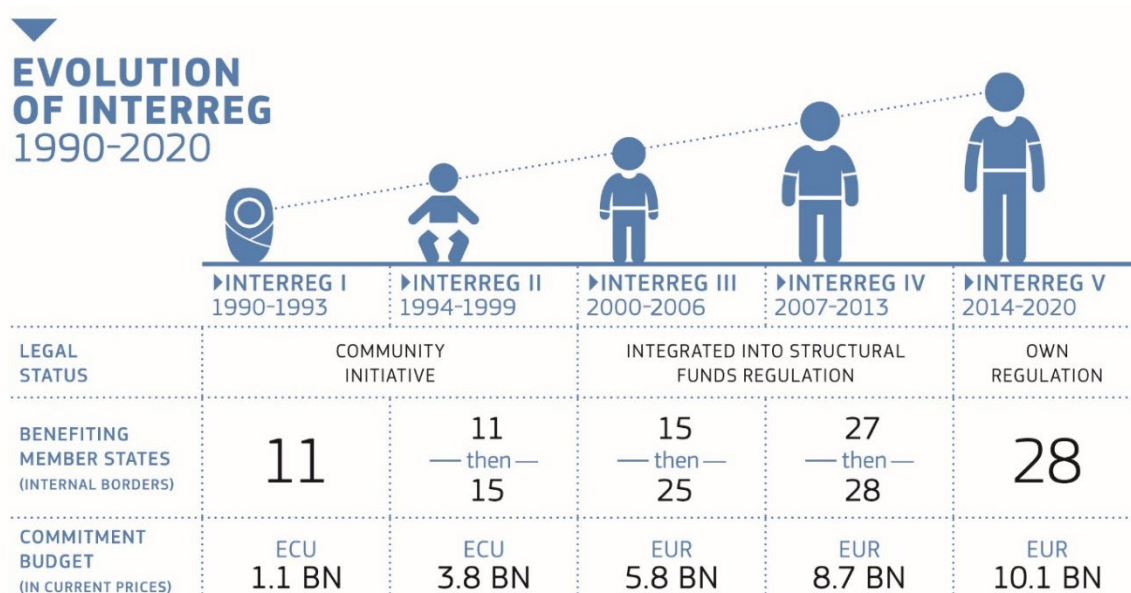


Fig. 13 Evolution of Interreg Programme

Source: https://commons.wikimedia.org/wiki/File:Evolution_of_INTERREG_1990-2020.jpg

2014-2020 period – INTERREG V

In accordance with the new design of the European Cohesion Policy 2014-2020 and the targets set out in Europe 2020, INTERREG has significantly been reshaped to achieve greater impact and an even more effective use of the investments. Key elements of the 2014-2020 reform are:

- Concentration
- Simplification
- Results orientation

The fifth period of INTERREG is based on 11 investment priorities laid down in the ERDF Regulation contributing to the delivery of the Europe 2020 strategy for smart, sustainable

and inclusive growth. At least, 80% of the budget for each cooperation programme has to concentrate on a maximum of 4 thematic objectives among the eleven EU priorities:

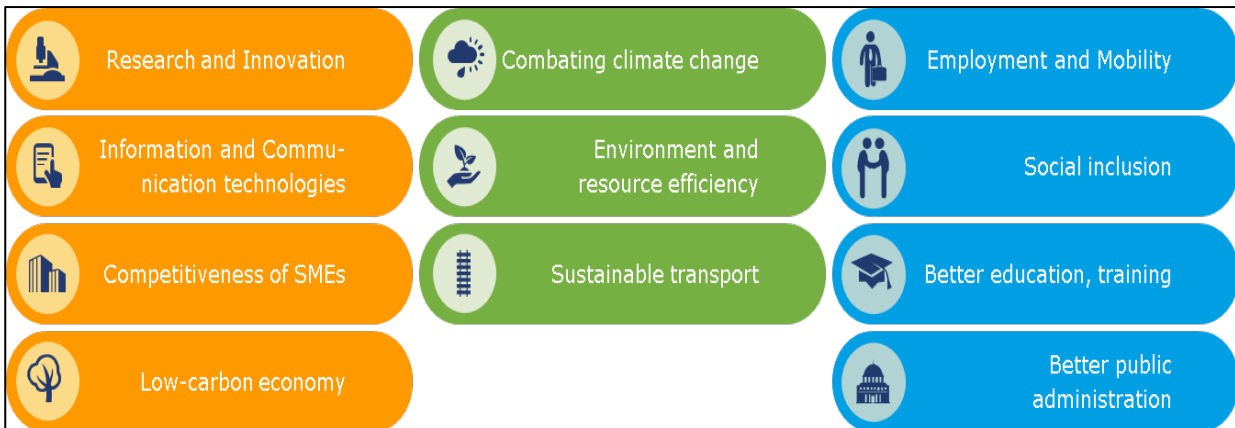


Fig. 14 Interreg Priorities

Source: http://ec.europa.eu/regional_policy/images/cooperation/european-territorial/cohesion-priorities.png

The fifth programming period of INTERREG has a budget of 10.1 billion invested in over 100 cooperation programmes between regions and territorial, social and economic partners. This budget also includes the ERDF allocation for Member States to participate in EU external border cooperation programmes supported by other instruments (Instrument for Pre-Accession and European Neighborhood Instrument).

CNR-ISMAR in INTERREG Programmes

In this year CNR-ISMAR has continued to work on the projects financed by the Programme Interreg, closing several of them. In 2021 there are 14 projects running funded for a grant share of € 4.751.047. In 3 projects the institute is playing the role of Lead Partner (Change We Care, Ecos, Durasoft) and in 4 is leader of the CNR team.

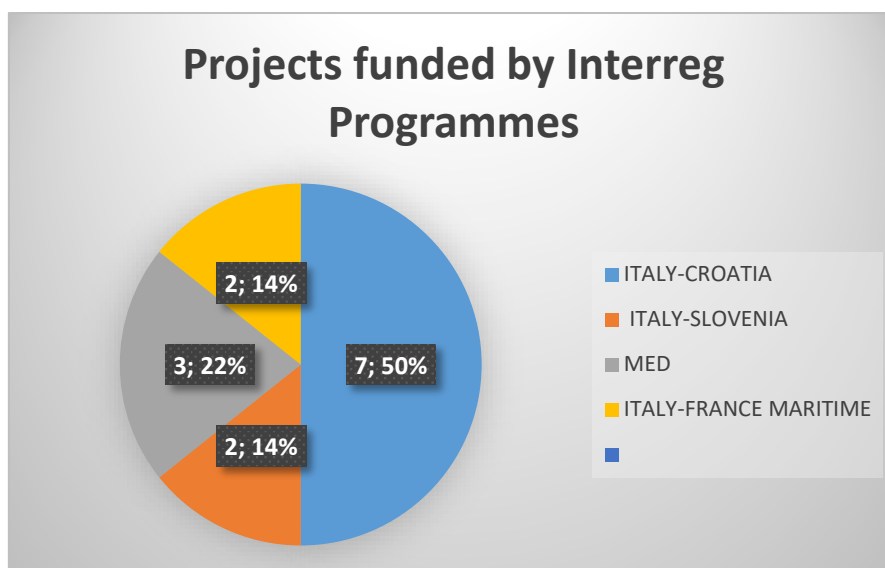


Fig. 15 Projects funded by Interreg Programmes

List of ISMAR projects funded under INTERREG PROGRAMMES



Programme: INTERREG Italy-Croatia

Priority Axis 2: Safety and Resilience

CNR Strategic Area: AP 1 CLIMATE

Project title: **Climate cHallenges on coAstal and traNsitional chanGing arEas: WEaving a Cross-Adriatic REsponse**

Acronym: CHANGE WE CARE

Role in the project: Lead Partner

Duration: 01/01/2019 – 31/12/2021

Total budget: € 2.700.780

ISMAR budget: € 433.200

Web site: <https://www.italy-croatia.eu/web/changewecare>

Key words: climate change, planning options, cc adaptation measures, action plans

Summary:

The project explores climate risks faced by coastal and transition areas contributing to a better understanding of the impact of climate variability and change on water regimes, salt intrusion, tourism, biodiversity and agro-ecosystems affecting the cooperation area. The main goal is to deliver integrated, ecosystem-based and shared planning options for different problems related to climate change (CC), together with adaptation measures for vulnerable areas to decision makers and coastal communities who may best benefit from it. Adaptation measures are developed in cooperation with local authorities and will be discussed with other stakeholders. The project also aims at defining a paradigm for transferring successful methods of analysis, development and implementation of adaptation measures from the pilot sites to other systems facing similar problems at the cross-border scale, by harmonizing procedures and data standards and bridging knowledge gaps for the final users. To this aim, a set of five coastal systems will be considered in order to encompass the broad variability of possible geomorphological and ecological settings, physical drivers, and threats determining coastal vulnerability in the cooperation area. Each Pilot Site will be solidly framed within the physical characterization of CC-driven modification of the Adriatic Sea basin, accounting for the interconnections set by processes acting over a larger scale, such as sea level rise, current circulation and cyclogenesis. Major elements of innovation are: 1) the methodological approach, based on a coordinated knowledge build-up and sharing among scientific and policy actors, unprecedented in the cooperation area; 2) the definition, based on the experiences from the paradigmatic Pilot Sites, of flexible and transferable adaptation measures addressing the variability of the coastal landscape features in the cooperation area. Besides extensive knowledge base on the present state and possible evolution, main project results include a set of comprehensive and versatile procedures (guidelines) for the characterization of current (WP3) and expected (WP4) environmental dynamics, as well as for the definition of participated response strategies to CC effects. This

will result in five climate change Adaptation Plans (one for each Pilot Site), monitoring and action plans, thus ensuring a Project follow-up (WP5)

Contact persons in ISMAR: davide.bonaldo@ve.ismar.cnr.it

Partnership:

1. National Research Council, Institute of Marine Sciences – CNR-ISMAR (Italy)
2. Emilia-Romagna Region (Italy)
3. Friuli Venezia Giulia Autonomous Region (Italy)
4. Veneto Region (Italy)
5. Institute of Oceanography and Fisheries; (Croatia)
6. Italian National Institute for Environmental Protection and Research – ISPRA (Italy)
7. Managing Body for Parks and Biodiversity-Po Delta (Italy)
8. Public Institution for Coordination and Development of Split-Dalmatia County –Rera S.D. (Croatia)
9. Public Institution for Management of Protected Natural Areas of Dubrovnik-Neretva County (Croatia)
10. Public Institution Vransko Lake Nature Park (Croatia)
11. University of Zagreb Faculty of Geodesy (Croatia)

Programme: INTERREG Italy-Croatia

Priority Axis 3: Environmental and Cultural Heritage

CNR Strategic Area: AP2 RESOURCES

Project title: **ECOLOGICAL observing System in the Adriatic Sea: oceanographic observations for biodiversity**

Acronym: ECOSS

Role in the project: Lead Partner and leader of the CNR Team

Duration: 01/01/2019 – 30/06/2021

Total budget: 3.390.551

ISMAR budget: 1.013.900

Web site: <https://www.italy-croatia.eu/web/ecoss>

Key words: ecological observatory, Natura 2000 sites, public engagement, data management infrastructures

Summary:

ECOSS overall objective is the establishment of the ECOlogical observing system in the Adriatic Sea (ECOAdS), shared between Italy and Croatia, able to integrate ecological and oceanographic research and monitoring with Natura 2000 conservation strategies. Building on the facilities, infrastructures and long term ecological data existing in the Programme area and developing specific case studies, ECOSS will enhance the marine observational capacities for improving the conservation status and the expansion of the marine component of Natura 2000 network. The synergies and feedbacks among the main conservation management questions, ecological variables and key oceanographic processes will be assessed, basing on the connectivity among habitats and species in coastal and offshore waters. For the first time in the area, the holistic view of marine ecosystem health, at the base of the MSFD, will be merged with the traditional nature conservation approach, evidencing and developing the interconnections and synergies among the MSFD and H&BD. ECOSS will activate, develop and stabilize a process of Public Engagement so that all the societal actors (researchers, citizens, policy makers, business, third sector organizations, etc.) work together during the whole process in order to better align the project outcomes with the values, needs and expectations of society. ECOSS will develop, building on the existing ICT facilities, a robust data management infrastructure, following the principles of open science, facilitating access to the results and maximizing the re-use and the transferability of project outputs.

Contact persons in ISMAR:

Alessandra Pugnetti and Caterina Bergami: mng_ecoss@ismar.cnr.it

Partnership:

1. National Research Council, Institute of Marine Sciences – CNR ISMAR (Italy)
2. National Institute of Oceanography and Experimental Geophysics – OGS (Italy)
3. Regional Agency for Prevention, Environment and Energy in Emilia Romagna (Italy)
4. Institute of Oceanography and Fisheries (Croatia)
5. Po Delta Veneto Regional Park (Italy)
6. Blue World Institute of Marine Research and Conservation (Croatia)
7. Public Institution for the Management of Protected Natural Areas of Dubrovnik Neretva County (Croatia)
8. Public Institution for the Management of Protected Areas in the County of Split and Dalmatia “Sea and Karst (Croatia)
9. Shoreline (Italy)
10. Department of Environmental Sciences, Informatics and Statistics, Ca Foscari University of Venice (Italy)

Programme: INTERREG Italy-Croatia

Priority Axis 3: Environmental and Cultural Heritage

CNR Strategic Area: AP 2 RESOURCES

Project title: **Soundscapes in the North Adriatic Sea and their impact on Marine Biological Resources**

Acronym: SOUNDSCAPE

Role in the project: Partner and leader of the CNR Team

Duration: 01/01/2019 – 30/11/2021

Total budget: € 2.146.040

ISMAR budget: € 511.240

Web site: <https://www.italy-croatia.eu/web/soundscape>

Key words: underwater noise, mitigation policies, marine spatial planning

Summary:

Currently the measurements of the underwater noise and its impact on the marine biological resources is very limited spatially and temporally in the Mediterranean Sea. The main objective of the project is to create a cross-border technical, scientific and institutional cooperation between Italy and Croatia in the Northern Adriatic Sea to face together the challenge of assessing the impact of underwater environmental noise on the marine fauna and in general on the ecosystem on a basin scale. In order to ensure an efficient protection of marine biodiversity and to promote a sustainable use of marine and coastal ecosystems and resources, we will: 1) put together all the experts and stakeholders working on underwater noise and soundscape assessment within the Interreg Italy-Croatia in the Northern Adriatic Sea, which is an area highly impacted by increasing maritime traffic, tourism and resources exploitation; 2) collect the state of the art technologies and methodologies developed up to now (see for example the Life Plus Project BIAS for the Baltic Sea), transfer and adapt them to the specific environmental properties of the Northern Adriatic Sea; 3) establish common management and mitigation policies to strengthen the marine spatial planning and the protection of ecosystems in order to increase environmental benefits and to contribute to the blue growth of the EUSAIR region.

Contact persons in ISMAR: fantina.madricardo@ve.ismar.cnr.it

Partnership:

1. Institute of Oceanography and Fisheries (Croatia)
2. CNR-ISMAR (Italy)
3. Blue World Institute of Marine Research and Conservation (Croatia)
4. Agenzia Regionale per la Protezione dell'Ambiente del Friuli Venezia Giulia (Italy)
5. Fondazione Cetacea Onlus (Italy)

6. Regione Marche (Italy)
7. Croatian Agency for the Environment and Nature (Croatia)
8. Teaching Institute for Public Health, Primoje-Gorski Kotar County (Croatia)

Programme: INTERREG ITALY-CROATIA (Strategic Projects)

Priority Axis 2: Safety and Resilience

CNR Strategic Area: AP1 CLIMATE

Project title: **Climate change information, monitoring and management tools for adaptation**

Acronym: AdriaClim

Role in the project: Partner

Duration: 01/01/2020 - 31/12/2022

Total budget: € 8.823.415

ISMAR budget: € 390.000

Web site: <https://www.italy-croatia.eu>

Key words: climate risks, cc adaptation plans, blue economy, cc monitoring

Summary:

The Mediterranean Sea and specifically the Adriatic coastal and marine areas are particularly vulnerable to climate-related risks. The sea surface temperature of the Adriatic Sea will increase of about +1.5/1.6°C in 2050 and sea level will increase of +7 cm with consequent negative impacts on coastal areas and marine ecosystem services.

In Italy and Croatia climate monitoring, modelling and adaptation are necessary to face this crucial climate challenge and to turn potential threats into economic opportunities. AdriaClim will develop accurate information able to support the development of regional and local climate change adaptation plans. In particular coastal adaptation planning, for a sustainable blue economy, will be developed based on reliable and accurate information on local sea level rise, sea temperature and salinity, coastal erosion, etc. AdriaClim will consolidate the climate change monitoring (observing and modelling) and planning of measures for strengthening the adaptation capacity in Italy and in Croatia also building upon cross-border cooperation. AdriaClim will develop consolidate and enhance climate monitoring systems and innovative data handling for fostering knowledge and cooperation for adaptation strategies planning in coastal and marine environment.

Contact person in ISMAR: c.ferrarin@ismar.cnr.it

Partnership:

1. Regional Agency for Prevention, Environment and Energy in Emilia Romagna (Italy)
2. National Research Council (CNR) (Italy)
3. Regional Agency for Environmental Protection and Prevention of Veneto (Italy)
4. Zadar County Development Agency Zadra Nova (Croatia)
5. Dubrovnik Neretva County (Croatia)

6. Ruder Boskovic Institute (Croatia)
7. Public Institution Rera Sd for Coordination and Development of Split-Dalmatia County (Croatia)
8. Institute of Oceanography and Fisheries (Croatia)
9. Apulia Region (Italy)
10. Euro-Mediterranean Center on Climate Change Foundation (Italy)
11. Alma Mater Studiorum - University of Bologna (Italy)
12. Environmental Protection Agency of Friuli Venezia Giulia (Italy)
13. Italian National Institute for Environmental Protection and Research (ISPRA)(Italy)
14. Marche Region – Productive Activities, Education and Labour (Italy)
15. Local Health Authority Nr 3 (Italy)
16. Molise Region (Italy)
17. Emilia-Romagna Region (Italy)
18. City of Venice (Italy)
19. Region of Istria (Croatia)

Programme: INTERREG ITALY-CROATIA (Strategic Projects)

Priority Axis 1: Blue Innovation

CNR Strategic Area: AP2 RESOURCES

Project title: **Developing innovative technologies for sustainability of Adriatic Sea**

Acronym: INNOVAMARE

Role in the project: Partner and leader of the CNR Team

Duration: 01/07/2020 – 31/12/2022

Total budget: € 5.555.755

ISMAR budget: € 553.288

Web site: <https://www.italy-croatia.eu>

Key words: innovative technologies, policy instruments, underwater robotics and sensors

Summary:

Main challenges in Programme area according to EUSAIR are low competitiveness on international markets of SMEs, the effectiveness of the innovation activities, human skills capacities, lack of support schemes and weak involvement of stakeholders and interrelation of business, research and the public sector in sectors of blue economy. To tackle these challenges, INNOVAMARE project aim is to enhance framework conditions on cross-border level by jointly develop and implement strategical and operational level capacity that consist of mix of policy instruments and innovation players as a frame for development of innovative technologies for sustainability of Adriatic Sea. Project is set up on mission-oriented approach that rather than focusing on sectors – as in traditional industrial policy – mission-oriented policy focuses on problem-specific societal challenges, which many different sectors interact to solve. In this case the project focusing on using mix of policy instruments together with innovation players to increase effectiveness of innovation activities of underwater robotics and sensors in direction of sustainability of Adriatic Sea as a crucial strategical societal challenge on cross-border level. INNOVAMARE project has 9 main outputs: 1. development of a cross-border network for scientific-research sector and the private sector based on demand and offers 2. Developed methodology and business plan for DIH for innovative underwater robotics and sensors and living lab in Adriatic Sea, 3. Designed and implemented questionnaire for stakeholders, 4. Developed tools and workshop materials for raising human capital, 5. Pilot action I. - creating a prototype that is innovative robotic solution as a platform for development of solutions for monitoring and prediction of the sea pollution, 6. Pilot action II. – analysis of the obtained results on pilot action I and guidelines for the improvement of underwater conditions, 7. Established DIH (Digital innovation Hub) for innovative underwater robotics and sensors and living lab in Adriatic Sea, 8. Developed strategy and action plan for the enhancement of framework conditions for raising collaboration and networking in the field of robotics and sensors for further steps in public policies based on quadruple helix approach, 9. Policy recommendations.

Contact person in ISMAR: francesca.depascalis@ve.ismar.cnr.it

Partnership:

1. Croatian Chamber of Economy (Croatia)
2. Regional Union of the Chambers of Commerce of Veneto Region (Italy)
3. University of Trieste (Italy)
4. Regional Agency for Technology and Innovation (Italy)
5. National Research Council (Italy)
6. Maritime Technology Cluster FVG (Italy)
7. Communication Technology Srl (Italy)
8. National Institute of Oceanography and Experimental Geophysics (Italy)
9. Ruder Bošković Institute (Croatia)
10. Faculty of Electrical Engineering and Computing (Croatia)
11. University of Dubrovnik (Croatia)
12. University of Rijeka (Croatia)
13. Geomar Ltd (Croatia)
14. Šibenik Knin County (Croatia)

Programme: INTERREG ITALY-CROATIA (Strategic Projects)

Priority Axis 2: Safety and Resilience

CNR Strategic Area: AP3 RISKS

Project title: **Strategic development of flood management**

Acronym: STREAM

Role in the project: Partner

Duration: 01/04/2020 - 31/12/2022

Total budget: € 9.411.657

ISMAR budget: € 403.529

Web site: <https://www.italy-croatia.eu>

Key words: coastal flooding, flood risk maps, raising citizens' awareness

Summary:

In the last decades, flooding events linked to climate change have been on the increase, rising costs and leaving consequences for communities. Cities in the program area are experiencing urban flooding problems caused by extreme weather. The risk of coastal flooding in the region is expected to increase over the next 50-100 years, with urban areas continuing to expand and sea levels expected to rise.

Local authorities and emergency services are not sufficiently prepared to promptly react to crisis situations due to the lack of innovative technologies and adequate equipment. Project STREAM will enhance all stakeholders' competencies to promptly respond to the flood. STREAM objective is to improve monitoring and risks and to improve the management for prompt reaction in events of flood disasters by creating and developing flood risk maps, flood hazard maps and FRMP, as well as by developing EWS along with raising awareness of citizens. This action will result in increasing safety of the project area from natural and man-made disasters, which will reduce the adverse consequences on human health, environment, cultural heritage, and economic aspects of the area associated with floods. Such improvement of the early warning system will reduce the risk of flood disasters and minimize loss.

Contact person in ISMAR: c.ferrarin@ismar.cnr.it

Partnership:

1. Zadar County Development Agency Zadra Nova (Croatia)
2. Dubrovnik Neretva County (Croatia)
3. Public Institution Rera Sd for Coordination and Development of Split Dalmatia County (Croatia)
4. University of Zadar (Croatia)

5. Regional Agency for Prevention, Environment and Energy in Emilia Romagna (Italy)
6. Regional Strategic Agency for the Eco- Sustainable Development of the Territory – Apulia Region (Italy)
7. National Research Council (CNR) (Italy)
8. Euro-Mediterranean Center on Climate Change Foundation (Italy)
9. Politechnic University of Marche (Italy)
10. Marche Region (Italy)
11. Public Body for the Right to Study (Italy)
12. Public Institution Development Agency of Lika- Senj County (Croatia)
13. Karlovac County (Croatia)
14. Town of Poreč – Parenzo (Croatia)
15. City of Venice (Italy)
16. IUAV University of Venice (Italy)
17. Croatian Waters (Croatia)
18. Emilia-Romagna Region (Italy)
19. Regional Agency for Territorial Safety and Civil Protection- Emilia-Romagna Region (Italy)
20. Puglia Region (Italy)

Programme: INTERREG Italy-Croatia

Priority Axis 3: Environmental and Cultural Heritage

CNR Strategic Area: AP3 RISKS

Project title: **Water management solutions for reducing microbial environment impact in coastal areas**

Acronym: WATERCARE

Role in the project: Partner and member of the CNR team

Duration: 01/01/2019 – 31/12/2021

Total budget: € 2.833.019

ISMAR budget: € 50.025

Web site: <https://www.italy-croatia.eu/web/watercare>

Key words: microbial environment contamination, Water Quality Integrated System

Summary:

WATERCARE overall objective is to reduce the impact of microbial environment contamination in bathing waters and deriving by high and heavy rainfalls drained in the local sewage network, in accordance with EU Directive 2006/7/CE, and addressing SO 3.3 “Improve the environmental quality conditions of the sea and coastal areas by use of sustainable and innovative technologies and approaches”.

This goal will be achieved through a Water Quality Integrated System (composed by a real time hydro-meteorological monitoring network and by a forecast operational model) that will provide a real-time alert system able to preventively identify the potential ecological risk from fecal contamination of bathing waters due to high unusual local riverine floods. WATERCARE aims at helping local authorities to better manage bathing waters and touristic related activities. It offers an instrument of control and good practice for the improvement of sewage discharge and the water quality.

Contact persons in ISMAR: c.ferrarin@ismar.cnr.it

Partnership:

1. CNR (Italy)
2. Aset Spa (Italy)
3. Marche Region – Department of Protection of Water and Protection of soil and coast (Italy)
4. Abruzzo Region – Department of Infrastructures, Transports, Mobility, Networks and Logistics (Italy)
5. University of Urbino “Carlo Bo” – Department of Biomolecular Sciences (Italy)
6. County of Split-Dalmatia (Croatia)
7. Dubrovnik-Neretva Region (Croatia)

8. University of Split – Department of Marine Studies (Croatia)
9. Metris Research Centre (Croatia)
10. Croatian Waters – Water Management Institute (Croatia)

Programme: INTERREG ITALIA-SLOVENIA

Priority Axis 3: Protecting and promoting natural and cultural resources

CNR Strategic Area: AP2 RESOURCES

Project title: **Rocky habitats and marine environments of the Northern Adriatic: management proposals**

Acronym: TRETAMARA

Role in the project: Partner and leader of CNR Team

Duration: 01/02/2020 - 21/01/2022

Total budget: € 810.000

ISMAR budget: € 127.500

Web site: <https://www.ita-slo.eu/it/tretamara>

Key words: rocky outcrops, management proposals, guidelines, best practices

Summary:

In the northern Adriatic Sea there are peculiar marine and coastal habitats that host a very relevant animal and plant biodiversity: they are the underwater biogenic-geogenic rocky outcrops of Friuli Venezia Giulia and Veneto, the dead corallites of *Cladocora caespitosa* of the Slovenian side pertaining to several coastal ZSC-ZPS along the littorals. In the frame of the previous Trecorala project (INTERREG Ita-Slo 2007-13) the ecological status of these geo-biogenic formations has been assessed: the activity led to the identification of priority habitats such as coralligenous, rhodolith and maerl fonds that have been recognized as sites of EU interest. In Slovenia, the *Cladocora caespitosa* formations are found in the protected marine areas Natural Monument of Punta Grossa and Strunjan Nature Park. TRETAMARA aims to build upon previous knowledge and promotes the identification of the best management practices to be included in the Management Plans of coastal and marine sites. The project will contribute to the harmonization of management plans in the northern Adriatic basin, also proposing national and transnational guidelines for an integrated management of the marine-coastal habitats of high ecological value: this will be achieved through targeted actions with high innovative content.

Contact person in ISMAR: alessandro.bergamasco@ve.ismar.cnr.it

Partnership:

1. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale – OGS (Italy)
2. Consiglio Nazionale delle Ricerche – Istituto di Scienze Marine (CNR-ISMAR) (Italy)
3. Nacionalni Inštitut Za Biologijo, Morska Biološka Postaja Piran (Slovenia)
4. Shoreline Società Cooperativa (Italy)

Programme: INTERREG ITALY-SLOVENIA

Priority Axis 1: Promoting innovation capacities for a more competitive area

CNR Strategic Area: AP2 RESOURCES

Project title: **Innovative technologies to improve the durability of traditional wooden structures in socio-ecologically sensitive environments**

Acronym: DURASOFT

Role in the project: Lead Partner

Duration: 01/03/2020 - 31/08/2022

Total budget: € 864.394

ISMAR budget: € 149.920

Web site: <https://www.ita-slo.eu/it/durasoft>

Key words: wooden service infrastructures, innovative techniques, environmental compatibility

Summary:

Fishing and agro-pastoral activities, in the Italian lagoons and in the Slovenian highlands have produced, in the course of millennia unique types of housing in which the use of wood is predominant. They are associated with wooden service infrastructures such as piers, moorings, piling and fences. The existence of these structures and the associated cultural heritage, however, depends on constant maintenance that is no longer economically sustainable in humid and coastal environments where the degradation of wood is massive and fast. To overcome this, over the last century, impacting protection techniques and unsuitable materials have been used. Hence, the project will test some innovative techniques developed and produced by the partners aimed to increase the durability of traditional wood species and products, with special focus on soft wood. The treated wood can be used, structures in socio-ecologically sensitive environments within the Adriatic-Alpine area, in traditional buildings and service, making them economically and environmentally sustainable. The environmental compatibility of these techniques will be assessed in the light of the most recent scientific knowledge subject to protocols developed by the partners and transferable to the entire program area.

Contact person in ISMAR: davide.tagliapietra@ve.ismar.cnr.it

Partnership:

1. Consiglio Nazionale delle Ricerche – Istituto di Scienze Marine (Italy)
2. University of Ljubljana (Slovenia)
3. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (Italy)
4. Università Ca' Foscari (Italy)
5. Primorska Gospodarska Zbornica (Slovenia)

6. Silvaprodukt (Slovenia)
7. Agriteco SC (Italy)

Programme: INTERREG Italy-France Maritime 2014-2020

Priority Axis 2: Protection and valorization of natural and cultural resources and risk management

CNR Strategic Area: AP3 RISKS

Project title: **Transborder System for Safety at Sea against the Risks of Navigation and for the Protection of the Marine Environment plus**

Acronym: SICOMAR plus

Role in the project: Partner

Duration: 01/06/2018 – 28/02/2022

Total budget: € 6.688.230

ISMAR budget: € 413.076

Web site: <http://interreg-maritime.eu/it/web/sicomarplus>

Key words: navigation safety, governance tools, innovative surveillance methods

Summary:

The SICOMAR plus project addresses the common challenge of navigation safety and quality of the transboundary marine environment. The project's overall objective is to reduce the risks associated with navigation accidents and their consequences on human life, goods and the environment. It will create a coordinated system of governance tools, highly technologically innovative surveillance methods and new safety services at sea. The project intends to launch shared strategic planning activities which will identify navigation safety solutions in high-risk marine zones of the cooperation area by setting up two joint monitoring plans for navigation and pilotage safety. The project provides for investments to improve the coverage of monitoring networks, increase the effectiveness of risk reduction forecasting systems, safety at sea and environmental protection services and establish data sharing and interoperability. The main actors and recipients will be the Public Administrations and their agencies, research centres, citizens, private economic operators and environmental associations. The integrated transborder approach concerns many aspects: the integration of data monitoring, sharing networks and systems, the implementation of reduced uncertainty forecast models and the demonstration of piloting and emergency management services. Communication initiatives will include raising the awareness of the group targets involved with respect to the integrated management of safety at sea and training maritime personnel and stakeholders. The innovative aspect is based on both the method and the tools: coordination of governance tools, technologically advanced surveillance methods and new safety services at sea.

Contact person within ISMAR: marcello.magaldi@sp.ismar.cnr.it

Partnership:

1. Regione Toscana (Italy)
2. Consorzio Laboratorio di Monitoraggio e Modellistica Ambientale per lo sviluppo sostenibile (Italy)
3. Université de Toulon (France)
4. Institut FMES (France)
5. Agenzia Regionale per la Protezione dell'Ambiente Ligure (Italy)
6. Fondazione CIMA – Centro Internazionale in Monitoraggio Ambientale (Italy)
7. Università degli studi di Genova (Italy)
8. Consiglio Nazionale delle Ricerche (Italy)
9. Agenzia Regionale per la Protezione dell'Ambiente della Sardegna (Italy)
10. Parco Nazionale dell'Arcipelago di La Maddalena (Italy)
11. Comando Generale del Corpo delle Capitanerie di Porto – Guardia Costiera (Italy)
12. Office de l'Environnement de la Corse (France)
13. Institut Français de Recherche et d'Exploitation de la MER – IFREMER (France)
14. Service d'incendie et de secours de la Haute-Corse – SDIS 2B (France)
15. Communauté des Communes Golfe de Saint-Tropez (France)
16. Institut méditerranéen des hautes études stratégiques (France)

Programme: INTERREG Italy-France Maritime 2014-2020

Priority Axis 2: Protection and valorization of natural and cultural resources and risk management

CNR Strategic Area: AP3 RISKS

Project title: **Assistance to Navigation for a Safe Access to Ports**

Acronym: SINAPSI

Role in the project: Partner

Duration: 01/04/2019 – 31/10/2022

Total Budget: € 2.188.294

ISMAR budget: € 575.025

Web site: <http://interreg-maritime.eu/web/sinapsi>

Key words: maritime transport, safety of navigation, weather real time data

Summary:

Maritime transport is a crucial aspect of Blue Economy since international economic exchanges are based on an efficient and safe transport and logistics system of which ports are a vital element. Operational safety is essential in port areas due to an ever-increasing number of ships whose sizes keep getting bigger. Loading and unloading goods in ports must be as efficient as possible to keep up with growing competition from other ports in the Mediterranean and Northern European areas. However, these operations must guarantee the safety of ships, cargo and operators. Therefore, ensuring the safety of navigation remains an open challenge. Weather and sea conditions can affect, to a large extent, the safe handling of ships inside ports, where space is limited. Knowledge of weather and sea conditions plays a primary role in guaranteeing safety. Despite the application of new technologies, naval accidents due to bad weather and sea conditions are common; for example, the incident of the Sigma cargo ship stranded on the Tuscan coast due to strong winds and rough seas in 2017. SINAPSI's goal is to meet the need of port operators to have real-time data on weather and sea conditions and be able to navigate and handle ships in ports with complete safety. It will achieve this objective by monitoring and simulating weather and sea conditions near and inside ports. The information thus produced will be made available to the stakeholders (Pilots, Commanders, Port and Maritime Authorities) through a dedicated ICT application. SINAPSI will also integrate the current Maritime monitoring network for the measurement of weather-marine parameters.

Contact person in ISMAR: marcello.magaldi@sp.ismar.cnr.it

Partnership:

1. Università degli Studi di Genova (Italy)
2. Consiglio Nazionale delle Ricerche CNR-ISMAR (Italy)
3. Université de Toulon (France)
4. Autorità di Sistema portuale del Mar Tirreno Settentrionale (Italy)
5. Consorzio Laboratorio di Monitoraggio e Modellistica Ambientale (Italy)
6. European Research Institute Onlus (Italy)
7. Chambre de Commerce et d'Industrie du Var (France)

Programme: INTERREG MED 2014-2020

Priority Axis 3: Protecting and promoting Mediterranean natural and cultural resources

CNR Strategic Area: AP2 RESOURCES

Project title: **Actions for Marine Protected Areas**

Acronym: AMARE PLUS

Role in the project: Partner

Duration: 01/06/2021 – 30/06/2022

Total Budget: € 400.000

ISMAR budget: € 70.000

Web site: <https://amare.interreg-med.eu/>

Key words: GIS, MSFD, Training, Geoportal

Summary:

The objective of the current restricted call is to build upon the concrete 2014-2020 Interreg MED AMARE projects' achievements and further capitalise on completed project' outputs, bridging with the next programming period requirements, in line with the new EU growth strategy: the European Green Deal.

The call explicitly focuses on "capitalisation" – a fundamental and "key cooperation principle" of the Interreg MED Programme "Strategic Framework". Within this call, the capitalisation principle entails a very precise content, composed of 'transfer' and 'mainstreaming'. These fundamental principles represent the identity of the Interreg MED Programme and are coherent with the promotion of development, of good governance and supported by the European Union Cohesion Policy.

The starting point will be a concrete and finalised deliverables /outputs of the 2014-2020 Interreg MED AMARE completed project. These deliverables/outputs, selected for the transferring process, will be fully operational for triggering a transfer process. The call is specifically dedicated to the transfer of three products: the Spatial Geoportal" on biodiversity and multiple stressors, coupled with Monitoring Protocols, methodologies to address the effects of different combinations of human uses on vulnerable habitats and the " Transferring of best Practices across MPAs", a summary of recommendations arisen from the project.

Contact person in ISMAR: federica.fogliini@bo.ismar.cnr.it

Partnership:

1. National Inter University Consortium for Marine Sciences - CONISMA (Italy)
2. National Research Council – Institute of Marine Sciences (Italy)
3. Institute of Marine Sciences – CSIC (Spain)

4. Public Institute Landscape Park Strunjan (Slovenia)
5. Association for fishing and maritime activities -AFMA (France)
6. Management Body of Samaria National Park (Greece)

EUROPEAN TENDERS

Among the several EU Tenders CNR-ISMAR, in particular the branch of Rome, has participated to those lunched by ESA and Copernicus programmes due to the affinity with their topic fields.

The European Space Agency (ESA) is an intergovernmental organisation of 22 member states dedicated to the exploration of space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe and the world.

Copernicus, previously known as GMES (Global Monitoring for Environment and Security), is the European Programme for the establishment of a European capacity for Earth Observation. It offers information services that draw from satellite Earth Observation and in-situ (non-space) data. The European Commission manages the Programme. It is implemented in partnership with the Member States, the European Space Agency (ESA), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the European Centre for Medium-Range Weather Forecasts (ECMWF), EU Agencies and Mercator Océan.

CNR-ISMAR in TENDER Programmes

Continue the success of the Institute in this programme managing 12 new projects for a total of 33 projects: 8 funded by ESA and 13 by Copernicus Programmes for a ISMAR grant share of € 22.123.289,00. In 18 projects the institute is playing the role of PI.

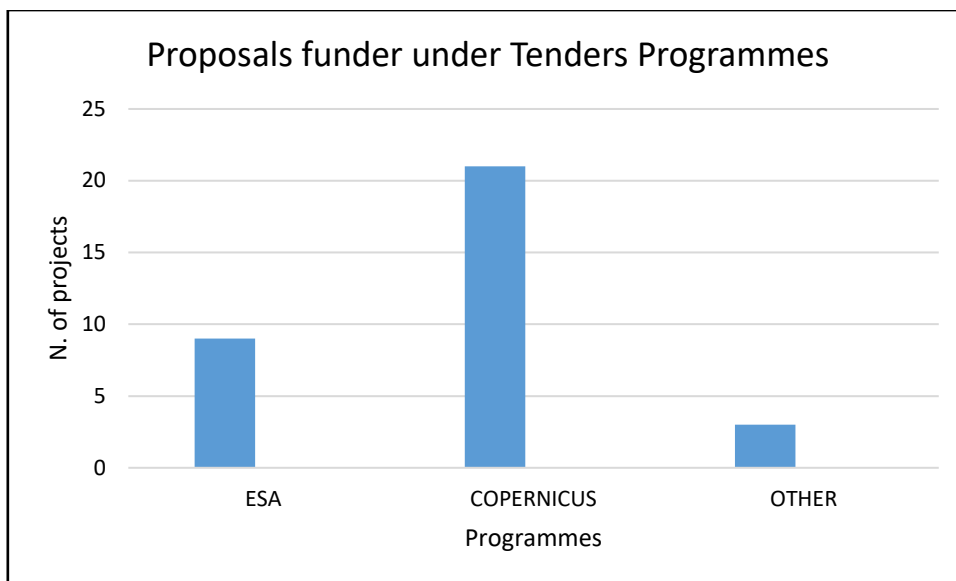


Fig. 16 Proposals funded under Tender Programmes

List of ISMAR projects funded under EU Tenders



Programme: TENDER EU Copernicus-Mercator Ocean

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Copernicus Marine Environment Monitoring Service – Multi-Observation Thematic Assembly Centre**

Acronym: CMEMS TAC-MOB

Role in the project: Partner

Duration: 01/01/2018 - 31/12/2021

Total budget: € 1.700.000

ISMAR budget: € 210.000

Web site: <https://marine.copernicus.eu/about-us/about-your-copernicus-marine-service/>

Key words: data observation service, in situ measurement of the oceans

Summary:

The Copernicus Marine Service has been designed to respond to issues emerging in the environmental, business and scientific sectors. Using information from both satellite and in situ observations, it provides state-of-the-art analyses and forecasts daily, which offer an unprecedented capability to observe, understand and anticipate marine environment events. The purpose of this Contract is to provide a data observation service for ocean observational data, combining, via statistical methods, satellite and in-situ measurements of the oceans.

Contact person in ISMAR: bruno.buonjornonardelli@cnr.it

Programme: TENDER UE Copernicus-ECMWF

CNR Strategic Area: AP 1 CLIMATE

Project title: **Copernicus Climate Service - Quality Assessment of ECV products
ECMWF C3S_511 -SERVICE CONTRACT**

Acronym: C3S_511

Role in the project: Principal Investigator

Duration: 01/09/2017 - 30/06/2021

Total budget: € 4.880.000

ISMAR budget: € 1.520.000

Web site: <https://climate.copernicus.eu/>

Key words: climate data records, interim climate data records, ECV products

Summary:

In order to ensure reliable access to high-quality ECV products via the CDS, ECMWF has issued a number of service contracts for production of Climate Data Records (CDRs) and Interim Climate Data Records (ICDRs). These contracts, supplemented with a second batch to be initiated in 2017, will address the majority of the ECVs listed in Volume II of the ITT. C3S is also supporting the production of a new generation of global and regional climate reanalyses, at ECMWF and elsewhere, that are designed to provide physically consistent estimates of multiple ECVs. In addition, CDRs, ICDRs and reanalyses that are produced independently from C3S can potentially be made available via the CDS.

Decisions to add specific ECV products to the CDS catalogue, whether produced by C3S or not, must be guided by user demand, scientific integrity and traceability of the products, ease of use and reliability of continuous access. Independent assessments addressing each of these elements will be provided by the C3S Evaluation and Quality Control (EQC) function, which is designed to ensure the quality of all products and services delivered by C3S.

Contact person in ISMAR: rosalia.santoleri@ismar.cnr.it, chunxue.yang@cnr.it

Partnership:

1. ECMWF (United Kingdom)
2. CNR (Italy)

Programme: TENDER UE Copernicus-ECMWF

CNR Strategic Area: A4 EARTH OBSERVATION

Project title: **C3S_512 Quality Assurance for the Climate Data Store**

Acronym: C3S_512

Role in the project: Partner

Duration: 01/03/2017 - 03/12/2021

Total budget: € 6.000.000

ISMAR budget: € 880.090

Web site: <https://climate.copernicus.eu/>

Key words: evaluation and quality control, climate data store

Summary:

ECMWF as the Entrusted Entity for the Copernicus Climate Change Service (C3S) invites tenders for implementation of the Evaluation and Quality Control (EQC) function for the C3S Climate Data Store (CDS).

The successful tenderer shall be responsible for the evaluation of the quality and the provision of quality assurance information to users of the CDS, including its technical infrastructure, data catalogue, and toolbox.

The purpose of the EQC function in C3S is to provide quality assurance information for all C3S products and services as well as to ensure that users have the information they need in order to use the products and services for their own purposes. The EQC function also keeps track of user requirements and informs ECMWF about gaps, limitations and shortcomings in products and service delivery. C3S users include scientists, consultants, planners and the policy-makers, the media and the general public. The aim of this tender is to verify that the C3S Climate Data Store is fit for the purpose and to ensure that it remains so.

Contact person in ISMAR: chiara.cagnazzo@cnr.it - federico.serva@artov.ismar.cnr.it

Partnership:

1. Barcelona Supercomputing Center-Centro Nacional de Supercomputación (BSC)
2. Meteo-France
3. Deutscher Wetterdienst (DWD)
4. Wageningen Environmental Research (WENR)
5. Koninklijk Nederlands Meteorologisch Instituut (KNMI)
6. Predictia Intelligent Data Solutions S.L. (Predictia)
7. Consiglio nazionale delle Ricerche (CNR)
8. Ilmatieteen Laitos (FMI)

Programme: TENDER UE Copernicus-Mercator Ocean

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **85-OD-MF-CMEMS LOT1: Dissemination Service of CMEM'S Near-Real Time and forecast Products**

Acronym: CMEMS-DU-LOT1

Role in the project: Principal Investigator

Duration: 30/11/2017 - 30/06/2021

Total budget: € 1.681.640

ISMAR budget: € 1.036.600

Web site: <https://marine.copernicus.eu/>

Key words: dissemination of products, set up and maintenance of infrastructures

Summary:

The Dissemination Units (DUs) are in charge of the dissemination of the products elaborated by TACs and MFCs making them available to users through several interfaces (WMS, DGF, Subsetting, ect.), and the main missions of the DU Operator are:

- ✓ To set up & maintain infrastructures for integration and operations
- ✓ To collect the products from Production Units & disseminate them to users
- ✓ To ensure & monitor the operations related to the collection & dissemination

DU is also in charge for scaling up and down the resources (i.e. virtual machines and monitoring services) upon the request of committing authority,

Moreover, the DU operator will provide

- ✓ continuous feedbacks on advanced components (MOTU, OCEANOTRON and their evolutions)
- ✓ support on advanced components development.

Contact person in ISMAR: vega.forneris@cnr.it

Partnership:

1. ETT SOLUTION
2. ACRI-ST
3. IFREMER

Programme: TENDER UE Copernicus-Mercator Ocean

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **85-OD-MF-CMEMS LOT2: Dissemination Service of CMEM'S Multi-Year Products**

Acronym: CMEMS-DU-LOT2

Role in the project: Principal Investigator

Duration: 30/11/2017 - 30/06/2021

Total budget: € 1.681.640,00

ISMAR budget: € 1.036.600,00

Web site: <https://marine.copernicus.eu/>

Key words: dissemination of products, set up and maintenance of infrastructures

Summary:

The Dissemination Units (DUs) are in charge of the dissemination of the products elaborated by TACs and MFCs making them available to users through several interfaces (WMS, DGF, Subsetting, etc.), and the main missions of the DU Operator are:

- ✓ To set up & maintain infrastructures for integration and operations
- ✓ To collect the products from Production Units & disseminate them to users
- ✓ To ensure & monitor the operations related to the collection & dissemination

DU is also in charge for scaling up and down the resources (i.e. virtual machines and monitoring services) upon the request of committing authority,

Moreover, the DU operator will provide

- ✓ continuous feedbacks on advanced components (MOTU, OCEANOTRON and their evolutions)
- ✓ support on advanced components development.

Contact person in ISMAR: vega.forneris@cnr.it

Partnership:

1. ETT SOLUTION
2. ACRI-ST
3. IFREMER

Programme: TENDER UE Copernicus-Mercator Ocean

CNR Strategic Area: AP7 DATA

Project title: **Copernicus Marine Environment Monitoring In Situ Thematic Assembly Center**

Acronym: CMEMS TAC INSITU

Role in the project: Partner

Duration: 01/01/2018 – 31/12/2021

Total budget: € 6.000.000

ISMAR budget: € 70.000

Web site: <http://www.marineinsitu.eu/>

Key words: in situ data, common format, near-real-time, model validation

Summary:

The In Situ TAC is the component of the Copernicus Marine Service which ensures a consistent and reliable access to a range of in situ data for the purpose of service production and validation.

In Situ TAC has two main objectives:

1. To collect multi-source, multi-platform, heterogenous data, perform consistent quality control and distribute it in a common format (NetCDF) and in near-real-time (within 24 hours) to the CMEMS Marine Forecasting Centres (MFC), for assimilation into their numerical ocean models.

2. To supply the MFCs and downstream users with re-processed 25-50-year products in delayed mode. In addition to the near-real-time products, these delayed-mode products are useful for model validation or assimilation in ocean reanalysis and climate studies.

Contact person in ISMAR: carlo.mantovani@sp.ismar.cnr.it

Partnership:

1. IFREMER (France)
2. AZTI (Spain)
3. BSH (Germany)
4. CLS (France)
5. CNR-ISMAR (Italy)
6. EUROGOOS (Belgium)
7. HCMR (Greece)
8. IMR (Norway)
9. IO-BAS (Bulgaria)
10. MET-OFFICE (United Kingdom)
11. OceanScope (France)
12. OGS (Italy)

13. Puertos del Estado (Spain)
14. SMHI (Sweden)
15. SOCIB (Spain)
16. SIKE (Finland)
17. UiB (Norway)

Programme: Tender ESA

CNR Strategic Area: AP5 TECHNOLOGIES

Project title: **OSIP Remote Sensing for Marine Litter-Early Technology Development Scheme**

Acronym: ESA-OSIP-RSML

Role in the project: Partner

Duration: 20/07/2020 - 19/07/2022

Total budget: € 175.000

ISMAR budget: € 30.000

Website: <https://ideas.esa.int/servlet/hype/IMT?documentTableId=45087625536680480&userAction=Browse&templateName=&documentId=b442d4e2f5503a5a6a12f39755d9d39c>

Key words: remote sensing, marine litter, hydrodynamic modelling, pollution pathways

Summary:

Monitoring areas closer to plastic marine litter sources such as rivers and estuarine systems has the potential to improve mitigation strategies. Upscaling in-situ point data of litter with earth observation (EO) and hydrodynamic models is our central concept. Sentinel-2 and 3, together with data from similar satellite missions, will be used to monitor discharging rivers and their estuaries based on river plume detection inferred from suspended particulate matter maps. Multi-type in-situ data will be collected at various points along the pollution pathway. Imagery taken from installed cameras on bridges or other infrastructure will be analyzed using deep-learning approaches in order to detect floating plastic in rivers (in-situ type 1). This will provide improved inputs to transport models. Water samples from estuaries and coastal areas using manta trawls (in-situ 2) are used to quantify plastic litter abundances. High-resolution monitoring via automated analysis of drone imagery along the shoreline (in-situ 3) will be established for accumulation analyses as well as collecting beach samples through field surveys (in-situ 4). Integration of in-situ data, multi-scale EO and hydrodynamic modelling serves as the development basis for a monitoring system of plastic debris in aquatic ecosystems, allowing for the first time an end-to-end depiction of real-world debris transport pathways.

Contact person in ISMAR: francesco.falcieri@ve.ismar.cnr.it

Partnership:

1. Remote Sensing Solutions GmbH (Germany)
2. Asociación Española de Basuras Marinas (Spain)
3. Dr. Shungudzemwoyo P. Garaba, Carl von Ossietzky Universität Oldenburg (Germany)
4. CNR Istituto Scienze Marine (Italy)

5. Universität Bayreuth, Animal Ecology I (Germany)
6. Universidade de Coimbra (Portugal)
7. HYDROMOD Service GmbH (Germany)

Programme: Tender ESA

CNR Strategic Area: AP5 TECHNOLOGIES

Project title: **Detection and tracking of large marine litter based on high-resolution remote sensing time series, machine learning, and ocean current modelling**

Acronym: ESA-TRACE

Role in the project: Partner

Duration: 01/08/2020 – 31/01/2022

Total budget: € 175.000

ISMAR budget: € 15.000

Website: <https://www.gfz-potsdam.de/en/section/remote-sensing-and-geoinformatics/projects/trace/>

Key words: detection, tracking of macro-litter, prevention litter dispersal, satellite technology

Summary:

The overall goal is to obtain precise and reliable data on floating macro-litter regarding their quantity, position, accumulation zones, material properties, floating depth, and sources, which may serve as a basis for litter recovery, source elimination, and prevention of litter dispersal. The combination of modern satellite technology, deep learning and trajectories forecast can potentially be applied worldwide and can help to monitor the open sea.

Contact person in ISMAR: michol.ghezzo@ve.ismar.cnr.it

Partnership:

1. Helmholtz Centre Potsdam (Germany)
2. IsardSAT S.L. (Spain)
3. CNR-ISMAR (Italy)

Programme: Tender ESA

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Ocean CIRculation from ocean COLOUR observations**

Acronym: ESA-CIRCOL

Role in the project: Principal Investigator

Duration: 01/11/2019 – 28/02/2021

Total budget: € 417.092

ISMAR budget: € 97.200

Web site: <https://eo4society.esa.int/projects/circol/>

Key words: oceanic currents, high frequency and high resolution observations

Summary:

The monitoring of the oceanic surface currents is a major scientific and socio-economic challenge. Ocean currents represent one of the fundamental elements that modulate natural and anthropogenic processes at several different space and time scales, from global climate change to local dispersal of tracers and pollutants, with relevant impacts on marine ecosystem services and maritime activities (e.g. optimization of the ship routes, maritime safety, coastal protection). An appropriate monitoring of the oceanic currents must rely on high frequency and high resolution observations of the global ocean, which are achieved using satellite measurements. At present, no satellite sensor is able to provide a direct measurement of the ocean currents – The indirect and synoptic retrieval of the large-scale geostrophic component of the sea-surface motion is given by satellite altimetry at a spatial (~100km) and temporal (~one week) resolution which is not sufficient for many applications, even more in semi-enclosed basins as the Mediterranean Sea where the most energetic variable signals are found at relatively small scales. In this context, the objective of the CIRCOL (Ocean Circulation from Ocean Colour Observations) project is to improve the retrieval of altimeter-derived currents in the Mediterranean Basin combining the largescale, altimeter-derived geostrophic currents with the high-resolution dynamical information contained in sequences of satellite-derived surface Chlorophyll (Chl) observations. The project will be implemented in two phases.

Contact person in ISMAR: daniele.ciani@cnr.it

Partnership:

1. CNR Consiglio Nazionale delle Ricerche (Italy)
2. CLS Collecte Localisation Satellites (France)

Programme: Tender ESA

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Copernicus Contributing Missions access Support Functions and platform (PRISM)**

Acronym: ESA-PRISM

Role in the project: Subcontractor

Duration: 01/12/2020 - 31/12/2025

Total budget: n.a.

ISMAR budget: € 120.542

Web site: <https://earth.esa.int/eogateway/instruments/prism>

Key words: data quality control, quality control service, quality of data set

Summary:

The Copernicus Space Component Data Access (CSCDA) Copernicus Contributing Missions access Support Functions and platform (PRISM) includes the operations, maintenance and evolution of the ensemble of existing supporting functions, processes, tools and infrastructures that coordinate the overall data access and information flow between the Copernicus Missions (i.e. including both the Contributing Mission Entities (CCMEs) and the Sentinels) and the Copernicus Services as well as eligible European Union Institutions, Public Authorities, Union Research Projects. Within this frame, the PRISM CSCDA Data Quality Control (CQC) CSCDA Quality Control Service is in charge of monitoring the quality of datasets and all delivered data products, and supports the investigation of any data anomaly.

The CNR will support Serco Italia in the scientific analysis of the Copernicus Contributing Missions (CCMs) data.

Contact person in ISMAR: davide.dionisi@cnr.it - gianluigi.liberti@cnr.it

Programme: Tender ESA

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **ocean CIRculation from ocean COLour observations**

Acronym: ESA-WOC

Role in the project: Subcontractor

Duration: 31/05/2020 – 31/05/2022

Total budget: € 147.220

ISMAR budget: € 103.988

Web site: n.a.

Key words: 3D currents and vertical motion, long-term oceanic variability

Summary:

In the framework of the ESA-World Ocean Circulation project, CNR will coordinate Theme 2: "3D currents and vertical motion". CNR will be in charge of the development of a daily product of 3D ocean currents (including the vertical component), at mesoscale-resolving spatial resolution, over a wide section of the central/North Atlantic Ocean. The 3D currents will be estimated down to depths below the deepest mixed layer starting from the algorithms developed and used within the Copernicus Marine Service and CIRCOL project. CNR will also assist and collaborate with end-users in the analysis of the new data to explore the impact of long term oceanic variability and the role of frontal meanders and eddies in the transport and dispersal of larvae and on the migratory behaviours of selected species.

Contact person in ISMAR: bruno.buonjornonardelli@cnr.it - daniele.ciani@cnr.it

Programme: Tender ESA

CNR Strategic Area: AP1 CLIMATE

Project title: **Plastic Litter Project: Detection and monitoring of artificial plastic targets with satellite imagery and UAV**

Acronym: ESA-PLP

Role in the project: Partner

Duration: 01/06/2020 – 14/06/2022

Total budget: € 175.000

ISMAR budget: € 35.000

Web site: n.a.

Key word: plastic litter, Multi- and hyper-spectral imagery, UAV cameras, datasets,

Summary:

This project is for designing and deploying permanent at-sea infrastructure and re-deployable target structures, with polymer composition representative of what is reported in the literature, for the calibration and validation of marine debris detection methodologies. Multi- and hyper-spectral imagery from UAV mounted cameras will form part of the datasets produced. All data will be stored on a database to be shared with the scientific community upon request.

Contact person in ISMAR: stefano.alianni@sp.ismar.cnr.it

Partnership:

1. University of the Aegean (Greece)
2. CNR-ISMAR (Italy)
3. A.S. Prote Maritime Ltd (Cyprus)

Programme: TENDER UE Copernicus-Mercator Ocean

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: Copernicus Marine Environment Monitoring Service- SST contract 78-CMEMS-TAC-SST

Acronym: CMEMS-TAC-SST

Role in the project: Principal Investigator

Duration: 01/01/2018 – 31/01/2021

Total budget: € 2.900.000

ISMAR budget: € 630.000

Web site: <https://marine.copernicus.eu/about-us/about-producers/sst-tac/>

Key word: Sea Surface Temperature (SST) products, satellite observational data

Summary:

This document describes the technical proposal in response to the Mercator Ocean (MO) tender for the provision of Sea Surface Temperature (SST) products at a global scale and at the regional scales for the European Seas, to be integrated as part of the Copernicus Marine Environment Monitoring Service (CMEMS). This SST Thematic Assembly Centre (TAC) will provide state of the art level 3 (L3) and 4 (L4) products based primarily on satellite observational data, both for dissemination to external users and for use internally within CMEMS. Users require both global products and products designed for specific European regions. These need to be provided operationally in near real time, and multi-year reprocessed products (MYP). Ocean monitoring indicators derived from the MYPs are also required to provide consistent descriptions of the ocean state over the past decades. The SST TAC is responsible for ensuring the quality of their products by planning and carrying out validation of their products, instigating quality control checks of incoming data streams and then monitoring the quality of the data it produces. Interaction with users is another important component of the SST TAC's responsibilities, for example via provision of quality information documents and user manuals and by responding to queries received through the CMEMS service desk.

Contact person in ISMAR: bruno.buongiornoardelli@cnr.it

Partnership:

1. DMI
2. METEO FRANCE
3. METOFFICE
4. IFREMER

Programme: Tender ESA

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Mapping Windrows as Proxy for Marine Litter Monitoring from Space**

Acronym: ESA-WASP

Role in the project: Partner

Duration: 04/05/2020 – 04/11/2022

Total budget: € 100.000

ISMAR budget: € 10.000

Web site: n.a.

Key words: Subtropical garbage patches, Sentinel-2 Marine Litter Data Processor

Summary:

There is high interest in identifying potential hotspots for litter accumulation. Subtropical garbage patches have outstanding concentrations of marine litter (ML), but they still have lower concentration than other accumulations. An example of ephemeral hotspots are windrows, sub-mesoscale fronts and other forms of water circulation in the upper layer of the project "EO Track for Marine Litter in the Mediterranean Sea" has proved that Sentinel-2 can detect and report on presence of those accumulations as proxies. These occurrences have combinations of ML and usually other organic debris, but recent investigations have shown they have significant higher ML concentrations with respect the general levels of a given basin.

We propose to exploit the recently developed prototype Sentinel-2 Marine Litter Data Processor and check its capability for monitoring purposes. The main task of this activity will be running the processor for the entire archive of S-2A/B images over the entire Mediterranean Sea, including Portugal, Cantabric Sea and Gulf of Biscay coastal areas.

Contact person in ISMAR: stefano.alianni@sp.ismar.cnr.it

Partnership:

1. ARGANS (United Kingdom)
2. University of Cadiz – UCA (Spain)
3. CNR-ISMAR (Italy)

Programme: Tender ESA

CNR Strategic Area: AP1 CLIMATE

Project title: **ESA Climate Change Initiative Plus (CCI+) Phase one - OCEAN COLOUR**

Acronym: OC-CCI+

Role in the project: Partner

Duration: 30/03/2019 – 29/03/2021

Total budget: n.a.

ISMAR budget: € 50.050

Web site: <https://climate.esa.int/en/projects/ocean-colour/about/>

Key words: water-leaving radiance, climate change

Summary:

This project focuses on the Ocean Colour ECV encompassing water-leaving radiance in the visible domain, derived chlorophyll and inherent optical properties and utilises data archives from Copernicus, ESA, NASA and NOAA.

Contact person in ISMAR: rosalia.santoleri@cnr.it

Partnership:

1. Brockmann Consult (Germany)
2. CNR
3. Foundation of the Faculty of Sciences of the University of Lisbon (FCUL)
4. HYGEOS (France)
5. Helmholtz-Zentrum Geesthacht (HZG) (Germany)
6. JRC (EU)
7. Pixalytics
8. Plymouth Marine Laboratory (PML) (UK)
9. Solvo

Programme: ESA – OCEAN HEALTH (ITT AO/1-10757/21/I-DT)

Project title: **Detection and threats of marine heat waves**

Acronym: CAREHeat

Duration: 01/02/2022-01//02/2024

Project budget: € 495.804

ISMAR budget: € 149.880

Web site: under construction

Summary:

As global ocean temperatures continue to rise, Marine Heat Waves (MHW) have become more widespread, threatening marine ecosystems and their services for food-provision, livelihoods and recreation. Predicting the occurrence, intensity and duration of MHW, and understanding their impacts on marine ecosystems is essential for management planning of ecosystems services, a key step towards developing science-based solutions for sustainable development. CAREHeat will develop novel strategies to identify MHW, assess the status and trends of MHW, and determine their effect on marine ecosystems. This will be achieved following a multidisciplinary approach capitalizing on the large potential offered by satellite Earth observations, complemented with automated (Argo and Biogeochemical-Argo) field measurements, biogeochemical modelling and emerging machine learning technologies. CAREHeat will: 1) develop, validate and cross-compare novel EO MHW products; 2) Produce an improved multidimensional global MHW Atlas, and provide a 4D MHW reconstruction Experimental Dataset; 3) Advance the understanding and prediction of MHW development, and assess the single and combined effect of MHWs and other anthropogenic stressors (acidification, eutrophication, deoxygenation) on marine dynamics, function, and biodiversity; 4) Assess the usefulness of the novel MHW indices relevant for marine ecosystems stakeholders (fishery, aquaculture, marine protected areas), contributing towards science-based solutions in support of decision-makers and marine ecosystem management strategies; 5) Provide recommendations for a Science Agenda and 5-year science roadmap.

Contact person in ISMAR: rosalia.santoleri@cnr.it - emanuele.organelli@cnr.it - angela.landolfi@cnr.it

Partnership:

1. CNR-ISMAR (Italy)
2. CLS (France)
3. + Atlantic (Portugal)
4. ENEA (Italy)
5. IFREMER (France)
6. Mercator Ocean (France)

Programme: Visiting Scientist Activity at the Ocean Sea Ice Satellite Application Facilities (OSI-SAF) of EUMETSAT

Project title: **Coastal PenWP**

Acronym: VS21_03

Role in the project:

Duration: 01/11/2021 - 31/03/2022

Project budget: € 36,278

ISMAR budget: € 36,278

Web site: <https://osi-saf.eumetsat.int/community/stories/>

Summary:

Coastal winds are of paramount importance for a large variety of both civil and scientific applications. Today, scatterometer-derived winds represent the golden standard for satellite-derived winds.

However, the impact of land contamination in coastal areas may lead to undesired biases that can be mitigated by careful pre-processing. In particular, excessively contaminated footprints should be discarded, and the low contaminated ones should be “corrected” to remove the land contribution. EUMETSAT OSI-SAF plays a leading role in the distribution of operational winds and research and development (R&D). One of its aims is to improve wind accuracy and sampling, especially near the coast. This project is the follow-up of the projects VS20_01 and VS20_03. The final aim of these projects is to improve both the accuracy and sampling of the winds derived from the American scatterometer SeaWinds onboard the satellite mission QuikSCAT.

The main goals of this project are:

- a) Implement a Land Contribution Ratio (LCR) based Normalized Radar Cross Section (NRCS) correction scheme
- b) Assess the most accurate averaging procedure among the boxcar averaging and the noise-based averaging of the available measurements
- c) Implement the sea NRCS regression scheme in the PenWP processor.

Contact person in ISMAR: giuseppe.grieco@cnr.it

Partnership:

1. KNMI (Netherlands)
2. Institut de Ciències del Mar - ICM-CSIC (Spain)
3. CNR-ISMAR (Italy)

Programme: Copernicus 2

Project title: **Copernicus Marine - Digital Operations Of Dissemination Services Lot-1: Operating The Dissemination Unit**

Acronym: COP2-DU

Duration: 01/01/2022 – 31/12 /2022

Project budget: € 2.600.000

ISMAR budget: € 280.000

Web site: <https://marine.copernicus.eu/>

Summary:

The aim of the Copernicus Marine Environment Monitoring Service (CMEMS) is to deliver generic and systematic reference information on the physical state and dynamics of the ocean and marine ecosystems for the Global Ocean and the European regional season a regular basis. The CMEMS is delivering the core data products needed by the governments of EU member states, emanations of public authorities and the public, whether natural persons or legal entities, for application areas such as marine safety, marine resources sustainable management, marine environment protection, meteorological forecasts, climatology, etc. Product Management function is ensured by a central IT element of the system – the Marine Data Store (MDS), composed by Central DU and DRAS systems – where all product data will be stored, registered and organized for their exploitation and a Marine Information System (MIS) manages all IT data flows.

The Central Dissemination Unit (DU): it is the main operational Back-End component of the system which allows collection of data, its storage and backing up, and delivering all standard delivery interfaces on which all Front-End services such as the Central Portal (and 3rd party websites) rely on.

Contact person in ISMAR: vega.forneris@cnr.it

Partnership:

1. CNR-ISMAR (Italy)
2. ACRI-ST (France)
3. ADWAISEO (Luxembourg)
4. ETT (Italy)
5. IFREMER (France)
6. INNUERE (Italy)
7. LASERROMAE (Italy)
8. SERCO-Italia (Italy)
9. T-SYSTEMS (France)

Programme: Copernicus Marine Service

Project title: **Validation and Intercomparison of Global Ocean Reanalyses for Mesoscale**

Acronym: COP-GLORAN-LOT5

Role in the project: **Principal Investigator**

Duration: 01/01/2022-31/12/2023

Project budget: € 90.000

ISMAR budget: € 90.000

Web site: n/a

Summary:

The Global Ocean Reanalysis (GLORAN) component of CMEMS is designed to provide, among a large portfolio of products, long-term physical reanalyses of the global ocean, covering at least the era of satellite altimetry, along with their scientific assessment. CNR-ISMAR is leading the activities of validation and intercomparison of CMEMS ensemble global reanalyses (GREP) focusing on mesoscale eddies. We will use a three dimensional eddy tracking scheme to understand the statistics of eddy population, duration in GREP and compare with higher resolution of ocean reanalysis (CMEMS GLORYS12). The eddy tracking will provide us the base to investigate eddy induced kinetic energy, mixed layer depth, vertical velocity, Ekman pumping and heat/salt transport, etc. The objective is to understand the uncertainty of the climate signals present in reanalyses dataset at mesoscale and to ensure the quality of reanalyses data used in ocean and climate studies related to mesoscale eddies.

Contact person in ISMAR: chunxue.yang@cnr.it

Partnership:

CNR-ISMAR (Italy)

Programme: Copernicus Marine Service

Project title: **Validation and inter-comparison of global ocean reanalyses for long term changes in the ocean state**

Acronym: 21003-COP-GLORAN-Lot8

Role in the project: Principal Investigator

Duration: 01/01/2022 - 31/12/2023

Project budget: € 90.000

ISMAR budget: € 90.000

Web site: n/a

Summary:

The Global Ocean Reanalysis (GLORAN) component of CMEMS is designed to provide, among a large portfolio of products, long-term physical reanalyses of the global ocean, covering at least the era of satellite altimetry, along with their scientific assessment. CNR-ISMAR proposes the independent validation and inter-comparison of the GREP global ocean reanalyses, looking in detail at the low-frequency changes, trends, and climatologically relevant diagnostics, deduced from the GREP ocean reanalyses along with other reanalysis products belonging to the CMEMS catalogue and outside it. Observation-only products will also be used for reference. The scientific team involved in the project has a long-standing experience in ocean reanalysis development, production and validation, and assessment of key parameters such as ocean heat and salt content, sea level and its steric component, and slowly varying processes. We will focus our studies not only on such relevant variables, assessed at both global and regional levels, but also on sea level budget studies, ocean heat content optimization through a multi-platform approach, and analysis of the thermohaline circulation, volume, heat, and salt transports across the main oceanic sections, and extreme events such as marine heat waves.

Contact person in ISMAR: andrea.storto@cnr.it

Partnership:

CNR-ISMAR (Italy)

Programme: Copernicus Marine Service

Project title: Copernicus Marine Service - Multi Observations Thematic Assembly Centre - CNR Production Unit

Acronym: CMS-MOB-TAC

Role in the project:

Duration: 01/12/2021 – 31/12/2024

Project budget: € 1.900.000

ISMAR budget: € 180.000

Web site: <http://marine.copernicus.eu>

Summary:

"In the framework of the Copernicus Marine Service Multi Observations Thematic Assembly Center (CMS-MOB-TAC), CNR will be in charge of two production lines for global Sea Surface Salinity (SSS)/Sea Surface Density (SSD), and global vertical velocities (OMEGA3D).

Specifically, CNR Production Unit (PU) will implement three evolutions of the present processing chains, including: the ingestion of SMAP data in the SSS/SSD chain, the upgrade of the SSS/SSD product to 1/8° daily processing, the upgrade of the OMEGA3D processing chain to the algorithm developed within ESA-WOC project."

Contact person in ISMAR: bruno.buongiornoardelli@cnr.it

Partnership:

1. CLS (Collecte Localisation Satellites) (France) Coordinator
2. CNR (Consiglio Nazionale delle Ricerche) (Italy)
3. LSCE (Laboratoire des Sciences du Climat et de l'Environnement) (France)
4. LOV (Laboratoire d'Océanographie de Villefrance) (France)
5. IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer) and CATDS (Centre Aval de Traitement des Données du Satellite SMOS) (France)

Programme: Copernicus Marine Training Service

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **EUMETSAT ITT**

Acronym: EUMETSAT ITT

Role in the project: Partner

Duration: 19/01/2022 – 31/12/2024

Total budget: € 251.040

ISMAR budget: € 51.040

Web site: n.a.

Key words: Copernicus, Sentinel, marine, training ocean colour

Summary:

Following the successes of the first phase of the European Commission Copernicus programme, EUMETSAT is continuing and expanding its offer of data access services, marine data products, as well as marine training activities and user support services, under phase two.

EUMETSAT operates the Sentinel-3, Sentinel-6 and Jason-3 satellites, and provides level-1 and level-2 marine data products for ocean colour, sea surface temperature, and altimetry science and applications.

User support services include data access, customisation, and visualisation platforms, web-based technical information about products, as well as a helpdesk available to answer a full range of user queries on the products and their use.

Interactive training activities are designed to accommodate a diverse range of audiences, both research and operational, putting trainee needs and interests at the centre of learning objectives. A focus on co-development of resources and participant-led learning interventions allows participants to tailor their own experiences towards development of the skills and knowledge that will help them in their own applications and work tasks. Building on four years of successful general courses, this project will develop from EUMETSAT further specialised training and advanced courses for the marine community.

Contact person in ISMAR: vittorio.brand@cnr.it

Programme: ESA

CNR Strategic Area: AP4 – EARTH OBSERVATION

Project title: **Harmony Mission Performance and Requirement Consolidation Activity for Ocean Applications**

Acronym: HARMONY-EXPRO

Role in the project: Sucontractor

Duration: 15/11/2021 – 30/06/2023

Total budget: € 499.744

ISMAR budget: € 58.000

Web site: n.a.

Key words: Earth Observation, simulation

Summary:

Harmony - a mission dedicated to the observation and quantification of small-scale motion and deformation fields – has been recommended to proceed to phase A as a candidate for ESA's 10th Earth Explorer. Aim of this activity is to justify, refine, trace and consolidate Harmony mission performances and mission requirements to SRL-5 or above through the following objectives:

OBJ-1: Trace and justify Harmony requirements to scientific and user needs. Based on documented scientific user needs and applications, establish traceability for all mission requirements set out in the Harmony MRD.

OBJ-2: Confirm Harmony L2 and L3 performance and product requirements. Based on the latest information from literature, international studies and documentation relevant to the Harmony mission, justify scientifically mission requirements.

OBJ-3: Confirm Harmony L1 performance and product requirements through sensitivity analysis.

OBJ-4: Evaluate and confirm Harmony SRL evolution using consistent Scientific Readiness Assessments of scientific activity in parallel with Harmony Phase A/B1 implementation.

OBJ-5: Provide Phase A/B1 System Scientific Support to HEEPS and System Study Activities. Respond to ad-hoc request to support the progress in the Phase A/B1 system studies and HEEPS activities.

OBJ-6: Promote the Harmony mission at the international level.

OBJ-7: Consolidate Harmony requirements to a final set of recommendations to mature the mission requirements that address the Harmony mission aim and objectives at SRL 5 or above.

Contact person in ISMAR: gianluigi.liberti@cnr.it

Programme: Copernicus Marine

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Copernicus Marine: Provision of ocean observation product**

Acronym: CMEMS LOT7_INSTAC

Role in the project: Partner

Duration: 15/12/2021 – 31/12/2024

Total budget: € 5.450.000

ISMAR budget: € 100.000

Web site: n.a.

Key words: HF radar, ocean currents, ocean observation, copernicus marine

Summary:

The mission of the In Situ Thematic Centre (INS TAC) is to provide integrated in situ products built from in situ observations acquired from outside Copernicus Marine Service data providers to fit the needs of Copernicus Marine Service internal and external users. It is a distributed centre composed of 6 regional centres working closely with the EuroGOOS ROOS (Regional Operational Observing System) and a Global centre well connected to the JCOMM networks (Joint WMO-IOC Commission for Oceanography and Marine Meteorology). INS TAC also works closely with the SeaDataNet infrastructure that coordinates a network of European National Data Centres which archive observation data acquired within scientific campaign and EMODNet, which is a network of organisations supported by the EU's integrated maritime policy. The in situ products are either assimilated in forecasting models by MFCs , used as ground truth for models from the Monitoring and Forecasting Centers (MFC) or Satellite Thematic Centre (TAC) product validation or provided to Copernicus Marine Service users for Research and downstream activities.

Contact person in ISMAR: carlo.mantovani@cnr.it

Partnership:

1. IFREMER (France)
2. AZTI (Spain)
3. BSH (Germany)
4. CLS (France)
5. CNE (Italy)
6. HCMR (Greece)
7. IMR (Norway)
8. IO-BAS (Bulgaria)
9. NOLOGIN (Spain)
10. OceanScope (France)
11. Puertos del Estado (Spain)

12. POKAPOK (France)
13. SMHI (Sweden)
14. SOCIB (Spain)
15. SYKE (Finland)
16. UiB (Norway)

List of ISMAR projects funded under other programmes



CNR-ISMAR in Other Programmes

8 projects from different EU and international programmes are running for a ISMAR grant share of € 853.452,95. In 2 of them (MSP-MED and EMODNET BATIMETRY) ISMAR is leader of the CNR team. 3 project have been funded by ONR and 2 projects have been funded by EASME while all other programmes have received 1 project each. Concerning the Bilaterals programmes, 5 projects have been funded for grant share of € 70.000,00.

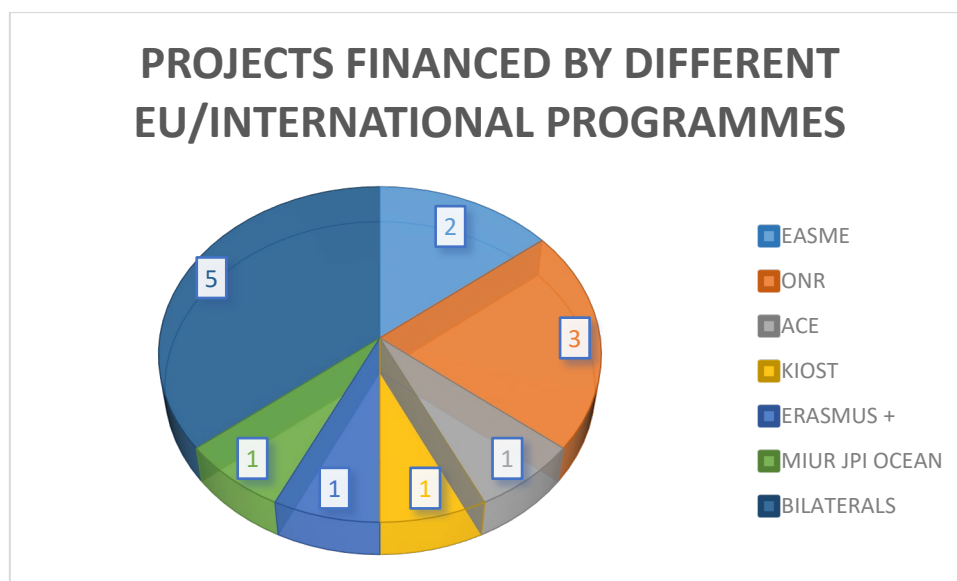


Fig. 17 Projects financed by different EU/International Programmes

Programme: Office of Naval Research – ONR

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Vertical velocities and 3D pathways from Lagrangian and microstructure data**

Acronym: 3D-pathways

Role in the project: Partner

Duration: 01/07/2018 – 14/07/2021

Total budget: € 141.555

ISMAR budget: € 141.555

Web site: n.a.

Key words: drifter data, thermocline and microstructure properties, vertical transport

Summary:

The goal of this project is to contribute to the understanding and prediction of processes of vertical transport from the surface to depth through the joint analysis of Lagrangian data at the surface and water column data from LADCP and microstructure glider.

The proposed research will contribute to the identification and characterisation of high vertical velocity regions and 3D pathways in the frontal area of interest in the South Western Mediterranean Sea. This will be achieved through the development of new methodologies and through the participation to the planning, implementation and analysis of the multiplatform experiments. The proposed work will be carried out along the following two main lines:

- i) a targeted analysis of drifter data will be performed to identify surface convergence regions with high vertical velocities;
- ii) thermohaline and microstructure properties in the corresponding interior regions will be characterised using a glider equipped with a Micro Rider, and estimates of vertical velocities from LADCP data.

Contact person in ISMAR: annalisa.griffa@sp.ismar.cnr.it

Programme: Office of Naval Research – ONR

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Multiplatform observations (Lagrangian , microstructure and microplastic) for the study of vertical velocities and subduction**

Acronym: 3D-pathways II

Role in the project: Lead Partner

Duration: 01/12/2021 – 29/02/2024

Total budget: € 135.037

ISMAR budget: € 135.037

Web site: n.a.

Key words: drifter data, thermocline and microstructure properties, vertical transport

Summary:

The goal of this proposal is to contribute to the identification and characterization of high vertical velocity regions and 3Dpathways in frontal areas ,through the joint analysis of Lagrangian data at the surface, Argofloat samplings and microstructure observations. Vertical dynamics will be further explored by using microplastics and microfibers as a subduction tracer with samples collected in the water column and surface layers.

Contact person in ISMAR: maristella.bera@ismar.cnr.it

Programme: Korea Institute of Ocean Science and Technology (KIOST)

CNR Strategic Area: AP3 RISKS

Project title: **Characterization of the maximum oceanic waves during bi-modal states under cyclone winds**

Acronym: ASTROWAVES 3

Role in the project: Lead Partner

Duration: 01/09/2021 – 31/12/2021

Total budget: € 15.000

ISMAR budget: € 15.000

Web site: n.a.

Key words: Wind waves, extremes, cyclones, observations, modelling

Summary:

Reliable predictions of oceanic waves under tropical cyclone winds have always been foremost for offshore design and operation, coastal hazards, and navigation safety. Reliable wave forecasts and hindcasts, together with long-term statistical analysis of extreme conditions, are then of utmost importance for monitoring marine areas. So far, however, the wave climate characterization during cyclonic winds has focused on the bulk characterization of the significant wave height (from model and observations), but it has lacked a description of the individual extreme waves, such as the maximum ones that may occur at a given location in the sea. In this respect, the research project ASTROWAVES-3 aims at improving the existing knowledge on the characterization of oceanic maximum waves (up to the rogue wave scale) during tropical cyclone and typhoon wind conditions in the Yellow Sea and East China Sea. To this end, dedicated observations, using the state-of-the-art Wave Acquisition Stereo System (WASS), and numerical model results will be used for the directional wave field and extreme value characterization. In-situ experiments with a dedicated WASS will be carried out at the Gageocho Ocean Research Station (ORS), off the Korean coast in the Yellow Sea.

Contact person in ISMAR: alvise.benetazzo@ve.ismar.cnr.it

Programme: ERASMUS +

CNR Strategic Area: AP2 RESOURCES

Project title: **Supporting the development of socially-inclusive Blue Challenges in schools in the Mediterranean Sea-basin**

Acronym: BlueS_Med

Role in the project: Partner

Duration: 01/09/2020 – 31/08/2023

Total budget: € 448.169

ISMAR budget: € 49.807

Web site: n.a.

Key words: educational activities on marine issues, innovative approaches

Summary:

The Erasmus+ project entitled "Supporting the development of socially-inclusive Blue Challenges in schools in the Mediterranean Sea-basin" (BlueS_Med) aims at developing, testing and evaluating innovative approaches to integrate ocean/marine issues and challenges in the curriculum and educational activities of schools in different Mediterranean countries. The project will build on the following principles: (a) co-building - ensuring children/pupils contribute to the co-design of "their" Blue challenge - putting co-responsibility and action at the center of their Blue Challenge; (b) interactive and proactive - making use of all e-tools and social medias to support implementation and peer-to-peer exchanges, while giving the priority to "practical activities" that give a feeling about the ocean and the human-ocean relationships; (c) inclusive - giving special attention to mobilise children from different social groups, to generate gender unbiased questions and to learning about the principle of democracy (discussing, listening, accepting while being still mobilised) when designing and implementing their Blue challenge; (d) sustainable - ensuring the footprint of the project and of the actions proposed under the Blue Challenge of each school is minimised - and that potential environmental and social ancillary benefits are delivered whenever possible and relevant.

Contact person in Ismar: francesca.alvisi@bo.ismar.cnr.it

Partnership:

1. Acteon Sarlfrance (France)
2. Consiglio Nazionale delle Ricerche (Italy)
3. Associazione Nazionale Insegnanti di Scienze Naturali (Italy)
4. European Research Institute Associazione (Italy)
5. Hellenic Centre for Marine Research (Greece)
6. Dimokritio Panepistimio (

7. Agence Française Pour La Biodiversité (France)
8. Institut De La Mer De Villefranche (France)
9. Parc National Des Calanques (France)

Programme: MIUR JPI OCEANS

CNR Strategic Area: AP1 CLIMATE

Project title: **Fluxes and Fate of (Small) Microplastics in Northern European Waters**

Acronym: FACTS - MIUR JPI OCEANS

Role in the project: Partner

Duration: 01/09/2020 – 31/08/2022

Total budget: € 3.747.000

ISMAR budget: € 100.905

Web site: n.a.

Key words: microplastics contamination, distribution and transport of MP

Summary:

FACTS will create new knowledge and improve our mechanistic understanding on the sources, transport, occurrence, and fate of small microplastics in the northern marine waters. FACTS will combine state-of-the-art analytical, monitoring and modelling approaches in feedback cycles to describe transport and geographical sources of microplastics contamination as well as sinks from the temperate waters of the southern North Sea to the Arctic waters of the Barents Sea. It analyses the distribution of MP in the water column and quantifies Skagerrak as a major sink zone. Investigated transport processes range from drift scenarios to air transport to aggregation and sinking processes. FACTS also zooms in on the geographic scale to study microplastic transport and fate in a semi enclosed fjord system. The goal is to address the question of how MP move vertically in the water column with time under comparatively well-defined hydrodynamic conditions. FACTS is structured around a set of sampling campaigns reaching from the German Bight to Svalbard, where samples are collected from large research vessels, smaller research vessels, fishery vessels and land based boats. Plastic particle concentrations, obtained from the proposed sampling campaigns are implemented into oceanographic models. The modelling approach is used to integrate release and transport scenarios, and the likelihood and timescale for particle pathways is estimated based on sinking, defragmentation, and beach ingrates, obtained from observations.

Contact person in ISMAR: stefano.alianni@sp.ismar.cnr.it

Partnership:

1. Aalborg Universitet (Denmark)
2. Alfred-Wegener-Institut Helmholtz-Zentrum für Polar und Meeresforschung (Germany)
3. Norwegian Institute for Air Research (Norway)
4. Carl von Ossietzky Universität Oldenburg (Germany)
5. Consiglio Nazionale delle Ricerche- Istituto di Scienze Marine (Italy)
6. Havforskningsinstituttet (Norway)

7. Norwegian Research Centre AS (Norway)
8. GEOMAR Helmholtz Zentrum für Ozeanforschung Kiel (Germany)
9. Göteborgs Universitet (Sweden)
10. Technische Universität Berlin (Germany)
11. 5750 Imhoff Drive (USA)
12. Universitetet i Bergen (Norway)
13. Continental Reifen Deutschland GmbH (Germany)
14. Ocean Scientific International LTD (United Kingdom)
15. Heriot-Watt University (United Kingdom)

Programme: OFFICE NAVAL RESEARCH (ONR)

CNR Strategic Area: AP6 IMPACTS

Project title: **Vital Rates Cuvier's beaked wales: A multi regional comparative assessment**

Acronym: ZIFIO

Role in the project: Sub-contractor

Duration: 01/07/2021 – 29/09/2023

Total budget: € 300.000

ISMAR budget: € 20.000

Web site: n.a.

Key words: Population dynamics, demographic parameters, Cuvier's beaked whale, multi-region, disturbance

Summary:

The goal of this project is to estimate and compare vital rates for Cuvier's beaked whales at five study areas around the world. These regions have widely ranging histories of military sonar use: from virtually none, to decades of frequent use that continues today. Population level effects are a pressing concern in areas where whales are chronically exposed and Population Consequences of Disturbance models have been developed to help understand what these effects might be. The results of this proposal would both inform key parameters and validate resulting projections of those models, which rely heavily on vital rate data that are currently deficient or non-existent for most Cuvier's beaked whale populations.

Contact person in ISMAR: simone.tenan@ismar.cnr.it

Programme: European Marine Observation and Data Network EASME/2020/OP/0006

CNR Strategic Area: AP4 EARTH OBSERVATION

Project title: **Emodent Batimetry 2020**

Acronym: EMODNET BATIMETRY

Role in the project: Partner

Duration: 20/12/2020 – 31/12/2022

Total budget: € 154.500

ISMAR budget: € 131.000

Web site: <https://www.emodnet-bathymetry.eu/>

Key words: Bathymetry; interoperable data; multibeam; European data infrastructure

Summary:

The project aims to integrate and harmonize EMODnet services and portals of the 7 lots (bathymetry, geology, chemistry, physics, habitats, biology, human activities), increasing the visibility, usability and interoperability of bathymetric data in European seas.

Contact person in ISMAR: marzia.rovere@ismar.cnr.it

Partnership:

1. Service Hydrographique et Océanographique de la Marine (Shom) (France)
2. Mariene Informatie Service 'MARIS' BV (MARIS) (The Netherlands)
3. Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER) (France)
4. National Oceanography Centre (NOC) (United Kingdom)
5. United Kingdom Research & Innovation (UKRI), (United Kingdom)
6. Consiglio Nazionale delle Ricerche (CNR) (Italy)
7. Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS) (Italy)
8. Instituto Español de Oceanografía (IEO) (Spain)
9. Geological Survey (Ireland)
10. Instituto Hidrográfico (IHPT) (Portugal)
11. Instituto Português do Mar e da Atmosfera, I.P. (IPMA) (Portugal)
12. Hellenic Centre for Marine Research (HCMR) (Greece)
13. Institute of Oceanology - Bulgarian Academy of Science (IOBAS) (Bulgaria)
14. Bundesamt für Seeschifffahrt und Hydrographie (BSH)(Germany)
15. GRID - Arendal (GRID) (Norway)
16. Flemish Government, Agency for Maritime and Coastal Services (MDK) (Belgium)
17. GGS geo consultancy BV (GGSGC) (The Netherlands)
18. OceanWise Limited (OCEANWISE) (United Kingdom)
19. Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC) (Spain)
20. Norwegian Mapping Authority –Hydrographic Service (NHS) (Norway)
21. Stichting Nederlandse Wetenschappelijk Onderzoek Instituten Royal NIOZ (the Netherlands)

22. Swedish Maritime Administration (SMA) (Sweden)
23. Istituto Idrografico Della Marina (IIM) (Italy)
24. Maritime Administration of Latvia (MAL) (Latvia)
25. Teledyne RESON A/S (Denmark),
26. Danube Delta National Institute (DDNI) (Romania)
27. Geodetic Institute of Slovenia (GIS) (Slovenia)
28. EOMAP GmbH & Co. KG (EOMAP) (Germany)
29. Stockholm University-Department of Geological Sciences (SU) (Sweden)
30. Stichting Deltares (DELTARES) (the Netherlands)
31. Vlaams Instituut voor de Zee (VLIZ), (Belgium)

Programme: EASME-DG Mare

CNR Strategic Area: AP2 RESOURCES

Project title: **Towards the operational implementation of MSP in our common Mediterranean Sea**

Acronym: MSP-MED

Role in the project: Partner and leader of the CNR Team

Duration: 01/03/2020 – 31/02/2022

Total budget: € 3.135.915

ISMAR budget: € 260.148

Web site: <https://www.msp-platform.eu/projects/toward-operational-implementation-msp-our-common-mediterranean-sea>

Key words: MSP, planning, sustainable development, ocean governance

Summary:

Maritime Spatial Planning emerged worldwide as an important policy tool for planning efficiently marine resource and sustainable development of maritime space. It can also be used to strengthen cross-border cooperation and to support improved ocean governance. The overall objective of MSP-MED is to favour the MSP Directive's implementation in the Mediterranean Sea, by supporting the establishment of coherent and coordinated maritime spatial plans across the Mediterranean, for promoting a sustainable and long lasting "blue" development. The MSP-MED project will capitalize the results of important EC-funded projects on MSP, recently carried out and ongoing, involving a large part of the EU Member States of the Mediterranean and their MSP Competent Authorities, promoting also the active participation of the other MS and of non-EU Mediterranean countries.

Contact person in ISMAR: andrea.barbanti@ve.ismar.cnr.it

Partnership:

1. Consorzio per il Coordinamento delle Ricerche Inerenti al Sistema Lagunare di Venezia - CORILA (Italy)
2. Agence Francaise pour la Biodiversité (France)
3. Service Hydrographique et Oceanographique de la Marine (France)
4. Instituto Espanol de Oceanografia (Spain)
5. PANEPISTIMIO THESSALIAS (Greece)
6. Planning Authority (Malta)
7. Ministry of Environment Energy and Climate Change (Greece)
8. Regionalni Razvojni Center Koper Zavod (Slovenia)

CONCLUSIONS

This report closes the first 3-years of the new deal, started after the reorganization of the institute and the arrival of the director Rosalia Santoleri.

Thanks to the set up of the CNR-ISMAR Grant Office that has worked on a transversal basis supporting researchers both in the proposal and reporting phases the involvement in the EU and international projects has been increased as well as the success rate.

These successful data testify the effective ability of ISMAR's researchers to be competitive at European level and the positive growth trend, both in terms of human resources and Research Infrastructures.

It is worth to mention the following positive aspects:

- the participation to H2020 projects has enlarged the visibility and credibility of the institute;
- the variety of topics which characterize the 6 branches has increased the opportunity to participate to different calls;
- even the participation in Interreg territorial programmes, therefore not really scientific, has meant that the CNR-ISMAR could offer local authorities data and support to develop decision support systems and provide inputs for governance;
- the high number of projects shows that researchers are motivated and have developed a good know-how thanks to the tools and staff at their disposal;
- in these 3 years new topics have been promoted such as the Maritime Spatial Planning (MPS) and management of marine litter resulting in the acquisition of several projects at EU level;
- the set up of a Communication Office has increased the promotion of the projects' results visibility through the use of social media and other initiatives;
- finally it is important to mention that the CNR-ISMAR reorganization was not an easy task, having absorbed new institutes with their staff and the COVID-19 pandemic has increased the difficulties, nevertheless the results shows that these difficulties have been overcome at best.

ANNEX 1

RUNNING PROJECTS



EXPLANATION OF THE TABLE

The "**total budget**" column corresponds to the total amount (for all partners) of the admitted project (contribution + possible co-financing).

The "**funds managed by Ismar**" column is the amount that is expected to be disbursed (by public authorities, in the case of ISMAR LP, or by the LP, in the case of ISMAR PP) and received at the Institute. If ISMAR is LP this amount also includes the part of the contribution allocated to other partners that ISMAR will then transfer; if ISMAR is a PP, this is the share of the contribution paid by the LP (which can only be referred to ISMAR if it participates in the project "alone" or to the CNR team if the participation of several Institutes and ISMAR is expected to be in charge); if ISMAR participates in a project as a member of a CNR team but with a "passive" role, we left the column empty.

The column "**CNR grant share**" - corresponds to the share of the contribution allocated to the CNR as a whole: if ISMAR participates "alone" in a project, the amount will correspond to that of "ISMAR grant share", if instead the group consists of several institutes, the amount is to be understood as the sum of the respective contributions

The column "**ISMAR grant share**" - corresponds to the share of the contribution allocated only to ISMAR.

N.	CNR Strategic Areas	Programme	Acronym	Project Title	Total Budget	Funds managed by ISMAR	CNR Grant share	ISMAR Grant share	Role	Project start year	Project end year
1	SAC.AD002.126 AP2	H2020	EUROFLEETS+	An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities	9.999.360,00 €	37.317,00 €	201.614,00 €	37.317,00 €	PP and member of the CNR Team (USPO)	01/02/2019	31/01/2023
2	DTA.AD003.263 AP3	H2020	SLATE	Submarine Landslides and Their impact on European continental margins	3.894.543,00 €	258.061,00 €	258.061,00 €	258.061,00 €	PP	01/04/2017	31/03/2021
3	DTA.AD004.285 AP4	H2020	FORCOAST	A new hyperspectral radiometer integrated in automated networks of water and land bidirectional reflectance measurements for satellite validation	2.288.911,00 €	81.250,00 €	81.250,00 €	81.250,00 €	PP	01/11/2019	30/04/2022
4	DTA.AD004.207 AP4	H2020	HYPERNETS	A new hyperspectral radiometer integrated in automated networks of water and land bidirectional reflectance measurements for satellite validation	4.500.000,00 €	450.000,00 €	450.000,00 €	346.735,00 €	PP and Leader of the CNR Team (IREA)	01/02/2018	31/01/2022
5	DTA.AD004.198 AP4	H2020	COASTOB	Commercial service platform for user-relevant coastal water monitoring services based on Earth observation	2.306.911,00 €	287.823,00 €	287.823,00 €	287.823,00 €	PP	01/11/2017	31/10/2020 prorogato: 30/04/2021

6	DTA.AD002.613 AP2	H2020	MAELSTROM	Smart technology for Marine Litter SusTainable RemOval and Management	6.809.461,00 €	5.988.295,00 €	1.003.750,00 €	868.750,00 €	LP and Leader of the CNR Team	01/01/2021	31/12/2024
7	DTA.AD007.072 AP7	H2020	RELIANCE	Research Lifecycle Management technologies for Earth Science Communities and Copernicus users in EOSC	1.999.972,00 €	189.125,00 €	189.125,00 €	189.125,00 €	PP and Leader of the CNR Team (non è previsto trasferimento di fondi)	01/01/2021	31/12/2022
8	DTA.AD005.221 AP5	H2020	ENDURUNS	Development and demonstration of a long-endurance sea surveying autonomous unmanned vehicle with gliding capability powered by hydrogen fuel cell	7.908.265,00 €	550.875,00 €	550.875,00 €	550.875,00 €	PP	01/11/2018	31/10/2022
9	DTA.AD001.370 AP1	H2020	EUROqCHARM	EUROpean quality Controlled Harmonization Assuring Reproducible Monitoring and assessment of plastic pollution	2.045.000,00 €	119.375,00 €	119.375,00 €	119.375,00 €	PP	01/11/2020	31/10/2023
10	DTA.AD004.317 AP4	H2020	JERICO-S3	Joint European Research Infrastructure of Coastal Observatories: Science, Service, Sustainability	9.999.933,00 €	471.115,00 €	471.115,00 €	471.115,00 €	PP	01/02/2020	31/01/2024
11	DTA.AD004.350 AP4	H2020	JERICO-DS	Joint European Research Infrastructure of	2.555.531,00 €	193.687,00 €	193.687,00 €	145.500,00 €	PP and OGS LtP	01/10/2020	30/09/2023

				Coastal Observatories - Design Study							
12	DTA.AD004.245 AP4	H2020	ENVRI-FAIR	ENV ironmental Research Infrastructures building Fair services Accessible for society, Innovation and Research	18.997.878,00 €	132.187,00 €	593.437,00 €	132.187,00 €	PP and member of the CNR Team (IMAA)	01/01/2019	30/06/2023
13	DTA.AD004.282 AP4	H2020	CERTO	Copernicus Evolution - Research for Transitional-water Observation	2.843.000,00 €	400.000,00 €	400.000,00 €	350.000,00 €	PP and Leader of the CNR Team	01/01/2020	31/12/2022
14	DTA.AD004.338 AP4	H2020	ATLANTECO	Atlantic Ecosystems Assessment, Forecasting & Sustainability	10.925.660,00 €	253.762,00 €	253.762,00 €	253.762,00 €	PP	01/09/2020	30/08/2024
15	DTA.AD001.003 AP1	H2020	eLTER+	eLTER Advanced Community Project Plus	10.065.009,00 €	41.354,00 €	469.798,00 €	41.354,00 €	PP and member of the CNR Team (IGG)	01/02/2020	31/01/2025
16	DTA.AD004.353 AP4	H2020	MEDIX	Marine Environmental Dynamics and seX-based analysis for climate change adaptation in marine spatial planning	269.003,00 €	269.003,00 €	-	244.903,00 €	LP	23/12/2020	23/12/2022
17	DTA.AD004.275 AP4	H2020	EUROSEA	Improving and integrating the European Ocean Observing and Forecasting System	12.642.177,00 €	30.000,00 €	30.000,00 €	30.000,00 €	PP	01/11/2019	31/12/2023

18	DIT.AD019.126 AP2	H2020	SATURN	Solutions At Underwater Radiated Noise	8.965.964,00 €	250.000,00 €	688.825,00 €	250.000,00 €	PP and member of the CNR Team (INM)	01/02/2021	31/01/2025
19	DTA.AD001.153 AP1	H2020	TIMED	Testing the role of Mediterranean thermohaline circulation as a sensor of transient climate events and shaker of North Atlantic Circulation	2.400.000,00 €	124.375,00 €	124.375,00 €	124.375,00 €	PP	01/01/2017	31/12/2021
20	DIT.AD019.114 AP4	H2020	NAUTILOS	New Approach to Underwater Technologies for Innovative, Low-cost Ocean obServation	9.048.349,00 €	134.134,00 €	835.358,00 €	134.134,00 €	CNR LP - ISMAR member of the CNR Team (ISTI)	01/10/2020	30/09/2024
21	DTA.AD004.334 AP4	H2020	4S	Satellite Seafloor Survey Suite	2.672.650,00 €	272.175,00 €	272.175,00 €	272.175,00 €	PP	01/10/2020	30/09/2023
22	DTA.AD004.374 AP4	H2020	MINKE	Metrology for Integrated Marine Management and Knowledge-Transfer Network	4.994.955,00 €	77.336,00 €	219.478,00 €	77.336,00 €	PP member of CNR Team (IAS)	01/04/2021	31/03/2025
23	DTA.AD002.671 AP2	H2020	BRIDGE-BS	Advancing Black Sea Research and Innovation to Co-Develop Blue Growth within Resilient Ecosystems	8.999.877,50 €	478.750,00 €	478.750,00 €	443.750,00 €	PP LP of CNR Team (INM)	01/06/2021	30/11/2025

24	DTA.AD001.403 AP1	H2020	DOORS	Developing Optimal and Open Research Support for the Black Sea	9.795.350,00 €	350.000,00 €	350.000,00 €	350.000,00 €	PP	01/06/2021	31/05/2025
25	DTA.AD002.571 AP2	H2020	BGE2	BetterGeoEdu 2.0 - Teaching raw materials to primary schools with gamification	569.273,00 €	67.308,00 €	67.308,00 €	67.308,00 €	pp	01/01/2020	31/12/2021
26	DTA.AD002.232 AP2	H2020	BLUEMED	BLUEMED Coordination Action	2.998.000,00 €	200.000,00 €	200.000,00 €	200.000,00 €	PP	01/10/2016	31/03/2021
27	DTA.AD002.557 AP2	H2020	ENGI - EIT Raw Materials	ENGIE. Encouraging Girls to Study Geosciences and Engineering	1.113.917,00 €	102.125,00 €	102.125,00 €	102.125,00 €	PP	01/09/2020	31/12/2022
Sub. Tot.					161.608.949,50 €	11.809.432,00 €	8.892.066,00 €	6.429.335,00 €			
1	DTA.AD001.262 AP1	INTERREG IT-HR	CHANGE WE CARE	Climate cHallenges on coAstal and traNsitional chanGing arEas: WEaving a Cross-Adriatic REsponse	2.700.780,00 €	2.542.509,00 €	433.200,00 €	433.200,00 €	LP	01/01/2019	31/12/2021
2	DTA.AD002.406 AP2	INTERREG IT-HR	SOUNDSCAPE	Soundscapes in the North Adriatic Sea and their impact on Marine Biological Resources	2.146.040,00 €	679.436,00 €	679.436,00 €	511.240,00 €	PP and Leader of the CNR Team	01/01/2019	30/11/2021
3	DTA.AD001.364 AP1	INTERREG IT-HR	ADRIACLIM	Climate change information, monitoring and management tools for adaptation	8.823.415,00 €	390.000,00 €	390.000,00 €	390.000,00 €	PP	01/01/2020	31/12/2022
4	DTA.AD003.575 AP3	INTERREG IT-HR	STREAM	Strategic development of flood management	9.411.657,00 €	403.529,00 €	403.529,00 €	403.529,00 €	PP	01/04/2020	31/12/2022
5	DTA.AD002.614 AP2	INTERREG IT-HR	INNOVAMARE	Developing innovative technologies for sustainability of Adriatic Sea	5.555.755,00 €	791.451,00 €	791.451,00 €	553.288,00 €	PP and Leader of the CNR Team	01/07/2020	31/12/2022

6	DTA.AD002.408 AP2	INTERREG-IT- HR	ECOSS	ECOLOGical observing System in the Adriatic Sea: oceanographic observations for biodiversity	3.390.551,00 €	3.213.955,00 €	1.155.400,00 €	1.013.900,00 €	LP	01/01/2019	30/06/2021
7	DTA.AD003.391 AP3	INTERREG IT- HR	WATERCARE	Water management solutions for reducing microbial environment impact in coastal areas	2.833.019,00 €	50.025,00 €	565.325,00 €	50.025,00 €	CNR LP and ISMAR member of the CNR Team (IRBIM)	01/01/2019	31/12/2021
Sub. Tot.					34.861.217,00 €	8.070.905,00 €	4.418.341,00 €	3.355.182,00 €			
1	DTA.AD002.520 AP2	INTERREG ITA-SLO	DURASOFT	Innovative technologies to improve the durability of traditional wooden structures in socio- ecologically sensitive environments	864.384,00 €	793.101,00 €	149.920,00 €	149.920,00 €	LP	01/03/2020	31/08/2022
2	DTA.AD002.521 AP2	INTERREG ITA-SLO	TRETAMARA	Rocky habitats and marine environments of the Northern Adriatic: management proposals	810.000,00 €	150.000,00 €	150.000,00 €	127.500,00 €	PP and Leader of the CNR Team	01/02/2020	31/01/2022
Sub. Tot.					1.674.384,00 €	943.101,00 €	299.920,00 €	277.420,00 €			
1	DTA.AD007.076 AP7	INTERREG MED	AMARE PLUS	Actions For Marine Protected Areas	400.000,00 €	340.000,00 €	70.000,00 €	70.000,00 €	PP	01/06/2021	30/06/2022
2	NA	INTERREG MED	MBPC	Mediterranean Biodiversity Protection Community	-	18.000,00 €	-	18.000,00 €	SB	01/01/2022	01/09/2022
3	DTA.AD002.351 AP2	INTERREG MED	MISTRAL	Mediterranean Innovation STRAtegy for transnational activity of clusters and networks of the Blue Growth	4.100.000,00 €	42.344,00 €	404.800,00 €	42.344,00 €	PP and member of the CNR Team (DTA)	01/02/2018	31/01/2022
Sub. Tot.					4.500.000,00 €	400.344,00 €	474.800,00 €	130.344,00 €			

1	DTA.AD003.427 AP3	INTERREG IT-FR	SINAPSI	asSistenza alla Navigazione per l'Accesso ai Porti in Sicurezza	2.188.294,00 €	575.025,00 €	575.025,00 €	575.025,00 €	PP	01/04/2019	31/10/2022
2	DTA.AD003.345 AP3	INTERREG IT-FR	SICOMAR plus	Sistema Transfrontaliero per la Sicurezza in Mare Contro i Rischi della Navigazione e per la Salvaguardia dell'ambiente Marino plus	6.688.230,00 €	746.109,00 €	746.109,00 €	413.076,00 €	PP and Leader of CNR Team	01/06/2018	28/02/2022
Sub. Tot.					8.876.524,00 €	1.321.134,00 €	1.321.134,00 €	988.101,00 €			
1	DTA.AD004.376 AP4	TENDER ESA	OC-CCI+	ESA Climate Change Initiative Plus (CCI+) Phase one - OCEAN COLOUR	-	50.050,00 €	50.050,00 €	50.050,00 €	PP	30/03/2019	29/03/2022
2	DTA.AD005.305 AP5	TENDER ESA	ESA-OSIP-RSML	OSIP Remote Sensing for Marine Litter-Early Technology Development Scheme	175.000,00 €	30.000,00 €	30.000,00 €	30.000,00 €	PP	20/07/2020	19/07/2022
3	DTA.AD004.302 AP4	TENDER ESA	ESA – CIRCOL	ocean CIRculation from ocean COLOUR observations)	417.092,00 €	297.092,00 €	97.200,00 €	97.200,00 €	PI	01/11/2019	28/02/2021
4	DTA.AD004.306 AP4	TENDER ESA	ESA-PRISM	Copernicus Contributing Missions access Support Functions and platform (PRISM): ESA PRISM ITT - ITT AO/1-9421/18/I-LG - Subcontract SERCO-ISMAR	-	120.542,00 €	120.542,00 €	120.542,00 €	SC	01/12/2020	31/12/2025
5	DTA.AD001.389 AP1	TENDER ESA	ESA-PLP	Plastic Litter Project: Detection and monitoring of artificial plastic targets with satellite imagery and UAV	175.000,00 €	35.000,00 €	35.000,00 €	35.000,00 €	PP	15/06/2020	14/06/2022
6	DTA.AD004.341 AP4	TENDER ESA	ESA-WASP	Mapping Windrows as Proxy for Marine Litter Monitoring from Space	100.000,00 €	10.000,00 €	10.000,00 €	10.000,00 €	PP	04/05/2020	04/11/2021

7	DTA.AD004.323 AP4	TENDER ESA	ESA-WOC	World Ocean Circulation	147.220,00 €	103.988,00 €	103.988,00 €	103.988,00 €	PP	31/05/2020	31/05/2022
8	DTA.AD004.195 AP4	TENDER	CMEMS-DU-LOT1	85-OD-MF-CMEMS LOT1: Dissemination Service of CMEM'S Near-Real Time and forecast Products	1.681.640,00 €	1.036.610,00 €	1.036.610,00 €	1.036.610,00 €	LP	30/11/2017	30/06/2021
9	DTA.AD004.196 AP4	TENDER	CMEMS-DU-LOT2	85-OD-MF-CMEMS LOT2: Dissemination Service of CMEM'S Multi-Year Products	1.681.640,00 €	1.036.610,00 €	1.036.610,00 €	1.036.610,00 €	LP	30/11/2017	30/06/2021
10	NA	TENDER	CMEMS- LOT7_INSTAC	Copernicus Marine: Provision of ocean observation product INSTAC	5.450.000,00 €	100.000,00 €	100.000,00 €	100.000,00 €	SC	15/12/2021	31/12/2024
11	NA	TENDER	COP-DU	Copernicus Marine - Digital operations of dissemination service LOT1	2.600.000,00 €	280.000,00 €	280.000,00 €	280.000,00 €	LP	01/01/2022	31/12/2022
12	NA	TENDER	Cop- GLO_RAN_Lot_8	Validation and intercomparison of global reanalysis for ong term changes in the ocean state	90.000,00 €	90.000,00 €	-	90.000,00 €	LP	01/01/2022	31/12/2023
13	NA	TENDER	Cop- GLO_RAN_Lot_5	Validate and Intercomparison of mesoscale eddies in Global Reanalyses	90.000,00 €	90.000,00 €	-	90.000,00 €	LP	01/01/2022	31/12/2023
14	NA	TENDER	OSI_VSA21_03	Coastal PenWP	-	36.278,00 €	-	36.278,00	SC	01/11/2021	31/03/2022
15	NA	TENDER	EUMETSAT ITT 20/221413	Marine Training Service in Copernicus Phase	251.040,00 €	51.000,00 €	-	51.000,00 €	SC	15/01/2022	31/12/2024
16	NA	TENDER	CMEMS-MOB-TAC	Copernicus 2 - Multi Observations Thematic Assembly Centre -	1.900.000,00 €	-	-	180.000,00 €	LP	01/12/2021	31/12/2024
17	NA	TENDER	CMEMS_SST_TAC	Copernicus 2 - Sea Surface Temperature Thematic Assembly Centre	1.750.000,00 €	-	-	944.175,00 €	LP	01/01/2022	31/12/2024

18	NA	TENDER	CMEMS-OC-TAC	Copernicus 2 - Ocean Colour Thematic Assembly Centre	2.210.000,00 €	-	-	1.340.000,00 €	LP	01/01/2022	31/12/2024
19	NA	TENDER	CAREHeat	deteCtion and threAts of maRinE Heat waves	495.804,00 €	149.880,00	-	149.880,00	LP	01/02/2022	01/01/2024
20	NA	TENDER	COLOR	CDOM-proxy retrievals from aeOLus ObseRvations	146.881,00 €	--	--	48.580	LP	15/11/2021	14/11/2022
21	NA	TENDER ESA	ESA-HARMONY	Harmony Mission Performance and Requirement Consolidation Activity for Ocean Applications	499.744,00 €	-	-	58.000	SC	15/11/2021	30/06/2023
22	DTA.AD004.202 AP4	TENDER	78 CMEMS TAC SST	COPERNICUS MARINE ENVIRONMENT MONITORING SERVICE (CMEMS) PROVISION OF SEA SURFACE TEMPERATURE OBSERVATION PRODUCTS	-	703.072,00 €	-	630.000	LP	30/11/2017	30/12/2021
23	DTA.AD004.203 AP4	TENDER	77 CMEMS TAC SST	COPERNICUS MARINE ENVIRONMENT MONITORING SERVICE (CMEMS) PROVISION OF SEA SURFACE TEMPERATURE OBSERVATION PRODUCTS	--	1.422.330,000 €	-	1.422.330	LP	30/11/2017	30/12/2021
24	DTA.AD007.045 AP7	TENDER	CMEMS TAC INSITU	Copernicus Marine Environment Monitoring In Situ Thematic Assembly Center	6.481.634	-	-	73.589	SC	01/01/2018	31/12/2021
25	DTA.AD004.098 AP4	TENDER	CMEMS MULTIOBS	Development of a global SSS product as part of the Multi observations component of the Global CMEMS monitoring and forecasting Centre	-	-	-	250.400	SC	01/01/2018	31/12/2021

26	DTA.AD001.200 AP1	TENDER	C3S_511	Copernicus Climate Service - Quality Assessment of ECV products - ECMWF C3S_511	4.888.000,00 €	4.888.000,000 €	-	4.888.000	LP	01/09/2017	03/12/2021
27	DTA.AD004.249 AP4	TENDER	C3S_512	Copernicus Climate Service Quality Assurance for the Climate Data Store C3S_512	5.994.888,00 €		-	879.960	SC	01/09/2017	03/12/2021
28	DTA.AD001.198 AP1	TENDER	C3S_422_Offshore Maritime	Copernicus Climate Service for Ship Navigation - C3S	189.000,00 €		-	189.000	SC	01/03/2017	31/12/2020
29	NA	TENDER	COPERNICUS MARINE - DIGITAL: OPERATIONS OF DISSEMINATION SERVICES LOT 1	COPERNICUS MARINE - DIGITAL OPERATIONS OF DISSEMINATION SERVICES LOT-1 Operating the Dissemination Unit	280.000,00 €	280.000,00 €	-	280.000,00 €	LP	01/01/2022	31/12/2024
30	NA	TENDER	COPERNICUS MARINE OCEAN COLOUR THEMATIC ASSEMBLY CENTER LOT 2	COPERNICUS MARINE - PRODUCTION PROVISION OF OCEAN OBSERVATION PRODUCTS THEMATIC ASSEMBLY CENTRE OC TAC_LOT2	989.000,00 €	989.000,00 €	-	989.000,00 €	LP	01/01/2022	31/12/2024
31	NA	TENDER	COPERNICUS MARINE OCEAN COLOUR THEMATIC ASSEMBLY CENTER LOT 3	COPERNICUS MARINE - PRODUCTION PROVISION OF OCEAN OBSERVATION PRODUCTS THEMATIC ASSEMBLY CENTRE (TAC)- SST TAC LOT3	1.068.098,00 €	1.068.098,00 €	-	1.068.098,00 €	LP	01/01/2022	31/12/2024
32	NA	TENDER	C3S2_520	Copernicus Climate Change Service: Technical Solutions for C3S2_520: Quality Assurance for Datasets in the Climate Data Store	5.500.000,00 €	5.500.000,00 €	-	5.550.000,00 €	LP	01/02/2022	31/12/2026

33	DTA.AD005.320 AP5	TENDER ESA	ESA-TRACE	Detection and tracking of large marine litter based on high-resolution remote sensing time series, machine learning, and ocean current modelling	175.000,00 €	15.000,00 €	-	15.000,00 €	PP	01/08/2020	31/01/2022
Sub. Tot.					45.426.681,00 €	18.382.550,00 €	2.900.000,00 €	22.123.289,56 €			
1	DTA.AD003.662 AP3	KIOST	Astrowaves 3	Characterization of the maximum oceanic waves during bi-modal states under cyclone winds	15.000 €	15.000,00 €	15.000,00 €	15.000,00 €	LP	01/09/2021	31/12/2021
2	DTA.AD004.212 AP4	ONR	3D-pathways	Vertical velocities and 3D pathways from Lagrangian and microstructure data	141.555,00 €	141.555,00 €	141.555,00 €	141.555,00 €	PI	01/07/2018	14/07/2022
3	DTA.AD004.365 AP4	EASME	EMODNET-BATIMETRY	EMODnet Bathymetry 2020	154.500,00 €	131.000,00 €	131.000,00 €	131.000,00 €	PP and leader of CNR Team (IGAG)	20/12/2020	31/12/2022
4	DTA.AD003.593 AP3	MIUR-JPIOCEAN	FACTS - MIUR JPI OCEANS	Fluxes and Fate of (Small) Microplastics in Northern European Waters	3.747.000,00 €	100.905,00 €	100.950,00 €	100.905,00 €	PP	01/09/2020	31/08/2023
5	NA	ONR	ZIFIO (ONR)	Vital Rates Cuvier, beaked whales: A multi-regional comparative assessment	300.000,00 €	20.000,00 €	20.000,00 €	20.000,00 €	PP	01/07/2021	29/09/2023
6	DTA.AD002.560 AP2	EASME-DGMARE	MSP-MED	Towards the operational implementation of MSP in our common Mediterranean Sea	3.135.916,00 €	295.149,00 €	295.149,00 €	260.148,00 €	PP (CORILA) and Leader of the CNR Team (IRPI)	01/03/2020	28/02/2022
7	DTA.AD002.649 AP2	ERASMUS+	BlueS_Med	Supporting the development of socially-inclusive Blue Challenges in schools in the Mediterranean sea-basin	448.169,00 €	49.807,00 €	49.807,00 €	49.807,00 €	PP	01/09/2020	31/08/2023

8	NA	ONR	3D Pathways II	Multiplatform observations (Lagrangian, microstructure and microplastic) for the study of vertical velocities and subduction	135.037,95 €	135.037,95 €	135.037,95 €	135.037,95 €	LP	01/12/2021	29/02/2024
Tot. OTHER PROGRAMMES					8.077.177,95 €	888.453,95 €	888.498,95 €	853.452,95 €			
1	SAC.AD002.020.021	Bilateral	RUSSIA		-	-	-	40.000,00 €	-	2018	2021
2	SAC.AD002.002.017	Bilateral	AZERBAIJAN		-	-	-	12.000,00 €	-	2020	2022
3	SAC.AD002.014.024	Bilateral	MAROCCO		-	-	-	2.000,00 €	-	2018	2021
4	SAC.AD002.013.021	Bilateral	LEBANON		-	-	-	8.000,00 €	-	2020	2022
5	SAC.AD002.012.023	Bilateral	JAPAN		-	-	-	8.000,00 €	-	2020	2022
Sub. Tot.					-	-	-	70.000,00 €			
GENERAL TOTAL					265.024.933,45 €	41.815.919,95 €	19.194.759,95 €	34.227.124,51 €			

