



## MARGINAL SEAS POLITICAL EVENT REPORT



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## Executive summary

Amongst the primary targets of Euro-Argo RISE project is the promotion of Argo activities to policymakers and stakeholders across Europe and the strengthening of the Argo monitoring in the European Marginal Seas (EMS). Under this aspect, the Marginal Seas political event on Argo was held on the 8<sup>th</sup> of June 2021. The event showed the importance that the Argo system has for climate change studies, marine environmental protection, economic development and services to society in the EMS (Baltic, Black and Mediterranean Seas). Moreover, it highlighted the Argo contribution to the United Nations Decade of Ocean Science for Sustainable Development (from here on Ocean Decade). The development of Argo in the three EMS is advancing, and it is progressing towards the biogeochemical (BGC) extension steered by the robust and consolidated Euro-Argo European Research Infrastructure Consortium (Euro-Argo ERIC). Moreover, the Argo technology is mature enough to go beyond the open ocean and to observe the shallow coastal areas. The political event aims to convince politicians and stakeholders to increase the involvement of riparian countries in the implementation of the Argo program in the regional seas and it was underlined the need of a continuous and sustained funding from the European Commission.

### 1<sup>st</sup> European Marginal Seas political event:

66 participants

6 main groups of affiliations

18 countries

45 % female participants

55% male participants

# 1 Introduction

## 1.1 Context

The international Argo programme is an essential component of the global ocean observing system required to monitor and forecast the oceans and the evolution of our climate. Argo is the first-ever global, in situ ocean-observing network in the history of oceanography, providing an essential complement to satellite systems through its open and free data policy.

As a major component of the Global Ocean Observing System (GOOS), the Argo programme is actively participating in monitoring and understanding climate change and its impact on ocean health.

In the framework of the H2020 Euro-Argo Research Infrastructure Sustainability and Enhancement (Euro-Argo RISE) project, a political event has been organised for decision-makers and stakeholders. The target of this event was to demonstrate the importance of Argo for the environment and society in the EMS. Moreover, to highlight the Argo contribution to the Ocean Decade.

The political event was initially programmed in June 2020 in Paris (France) as a side event of the Intergovernmental Oceanographic Commission (IOC) Assembly, but it was postponed due to the Covid-19 pandemic, and it was held as an online seminar of 2 hours (from 2:00 to 4:00 PM CEST) on June 8th, 2021. The chosen date is the same as the World Ocean Day (<https://worldoceanday.org/>) that aims at creating a healthier ocean that sustains us all.

## 1.2 Goals of the meeting

The main goals of the meeting were:

- To provide a platform for discussion and dialogue between ocean science and policy.
- To provide a unique opportunity to build a vision on Argo development in the EMS and to identify its key drivers such as operational oceanography, marine research and sustainable development.
- To focus on EMS, but with a potential interest for all marginal seas in the world oceans.
- To meet leading scientists from the Euro-Argo community and beyond who presented their contribution and panellists representing key players involved in the European ocean observing community and institutions.
- To contribute to the expansion of the Argo community in EMS.
- To create the conditions for a sustainable funding on Argo monitoring activities in the EMS.

### 1.3 Organizing Committee

The event was organised in the framework of Work Package (WP) 6 of the Euro-Argo RISE project by the Institute of Oceanology – Bulgarian Academy of Sciences (IO-BAS) with the assistance of the Euro-Argo ERIC office.

The organizing committee was composed by the following project partners:

- Atanas Palazov (IOBAS, Bulgaria, Organizer of the event)
- Giulio Notarstefano (OGS, Italy)
- Dimitris Kassis (HCMR, Greece)
- John Allen (SOCIB, Spain)
- Lara Díaz-Barroso (SOCIB, Spain)
- Waldemar Walczowski (IOPAN, Poland)
- Laura Tuomi (FMI, Finland)
- Vincent Taillandier (SU, France)
- Sylvie Pouliquen (EA ERIC office, France)
- Estérine Evrard (EA ERIC office, France)
- Francine Loubrieu (EA ERIC office, France)

The organization of the event required several teleconferences to discuss the topics, the speakers and the panellists to be invited, the format of the meeting, the preparation of the invitation letter, the agenda and the topics of the final discussion. Information of the meeting was posted on a dedicated web page (figure 1) of the Euro-Argo ERIC website (<https://www.euro-argo.eu/News-Meetings/Meetings/Others/Euro-Argo-Political-Event>),



Figure 1. Political event web page.

and also on the Twitter channel (<https://twitter.com/euroargoeric> in figure 2).

**Euro-Argo ERIC**

1.238 Tweet

Segui

**Euro-Argo ERIC** @EuroArgoERIC · 28 mag

Decision-makers and stakeholders, join the Euro-Argo Political Event organised by IOBAS to learn more about the importance of Argo for environment and society.

📅 8 June 2021, by invitation only.

See more details: [euro-argo.eu/News-Meetings/...](https://euro-argo.eu/News-Meetings/)

#EARISE #H2020 #argofloats



Figure 2. Political event advertisement on Twitter.

## 1.4 Overview of participants

About 170 targeted participants from 32 countries were contacted by the WP6 project partners. About 90 out of 170 (from 20 countries) registered to the meeting and 66 out of 90 (from 18 countries) attended the political event (figure 3). They can be grouped into 6 different fields as reported in figure 4 and the gender ratio was quite well balanced between female and male (figure 5).



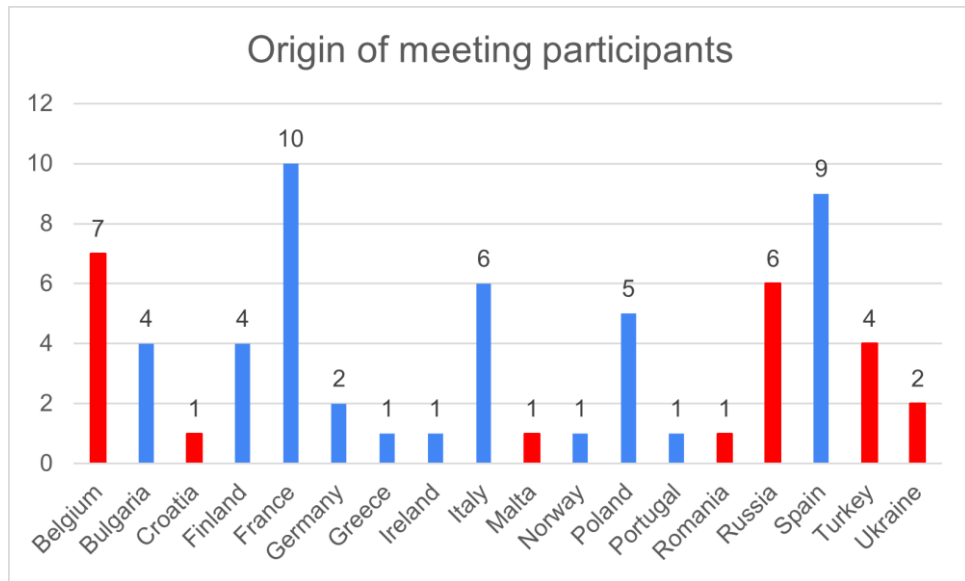


Figure 3. Origin of meeting participants. Members of Euro-Argo ERIC are in blue (Poland is an Observer, Portugal is a Candidate Member, the other countries are full Members).

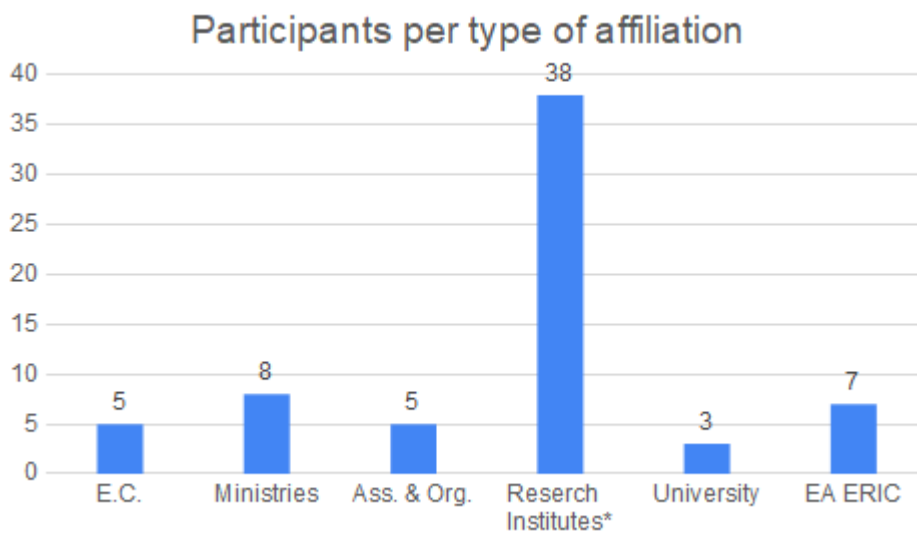


Figure 4. Participants per type of affiliation. (E. C. for the European Commission; Ass. & Org. for International and European Associations and Organizations; EA ERIC for Euro-Argo ERIC Office). \*Mainly high level personnel.

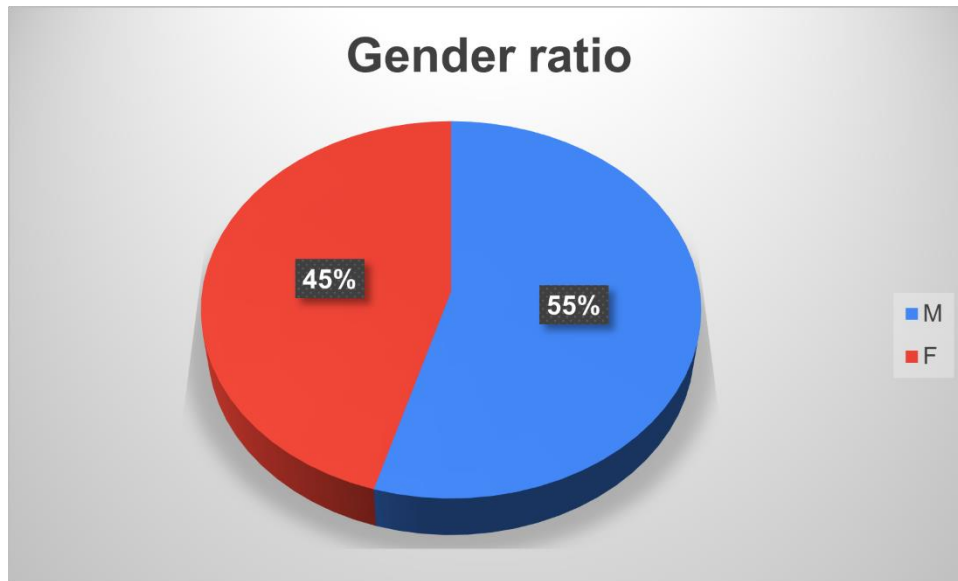


Figure 5. Gender ratio of the participants.

## 2 Sessions presentations

The political event was structured around five presentations and a panel discussion (see the file agenda in Annex 1). It addressed the Argo program and the Ocean Decade, presented the Euro-Argo ERIC framework and its services to users, and highlighted activities and benefits of the Argo program in EMS.

### 2.1 Opening

The organizer of the event (Atanas Palazov, Deputy Director, IO-BAS) gave a welcome speech. He presented the meeting format and targets together with practical matters.

### 2.2 The Argo program and UN Decade of Ocean Science for Sustainable Development

The opening presentation of the meeting was given by **Dr. Vladimir Ryabinin** (Executive Secretary of Intergovernmental Oceanographic Commission, UNESCO) and presented “*the Argo program and United Nations Decade of Ocean Science for Sustainable Development*” (<https://oceandecade.org/>). He introduced the concept behind ocean management sustainability and the different ways of managing the ocean (coastal zones, marine protected areas, fisheries and aquaculture, climate change, research and development strategies, ocean policies, oceanographic weather and climate services, capacity development at national and regional level, warning systems). There are some fields where Argo can really provide a big step forward like coastal management, sustainable ocean economy, marine protected areas. He provided an example on how Argo can significantly help political decisions about climate change (figure 6). Then Dr. Ryabinin spoke about the science we have to achieve in order to have the ocean we want, highlighting the steps needed to improve data, services, knowledge, ocean literate society, funding chain, transfer of technology. The sustainability plan of the Ocean Decade aims at working in different sectors: from the ecosystem, pollutants, food and economy to observing systems, ocean-related-risks and capacity development and behaviour change. He then talked about the high-level panel for a sustainable ocean economy, which is composed of 14 countries and is committed to sustainably manage 100% of the ocean area under national jurisdiction by 2025. In this way, it should be possible to produce six times more food from the ocean, 40 times more ocean energy, decrease carbon transportation and ports and generate more ocean economy. He mentioned that 28 Ocean Decade Programs, proposed by different actors, address multiple challenges and more programs are expected.

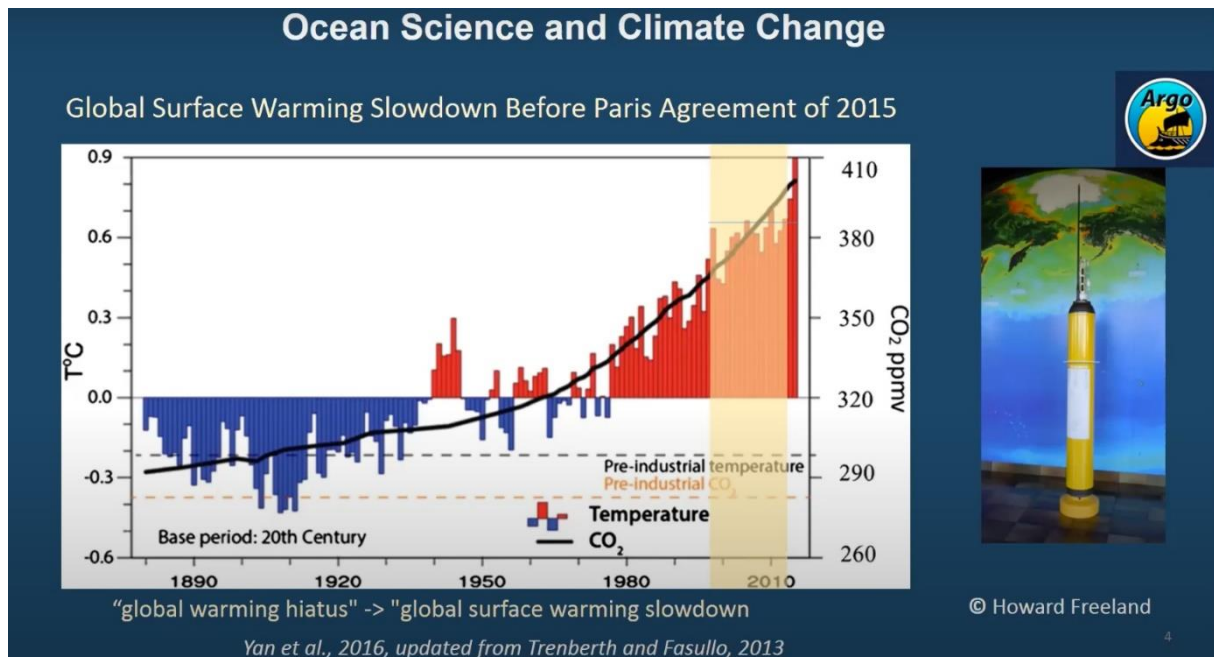


Figure 6. Slide from presentation by V. Ryabinin. Argo contribution in Climate Change.

## 2.3 Euro Argo - activities and achievements

The next presentation was given by **Sylvie Pouliquen** (Programme Manager, Euro-Argo ERIC) who presented "*Euro Argo - activities and achievements*". She described the Argo monitoring system, how it works, the fleet and the sensors carried onboard the platforms. The Argo program is targeting a wide variety of users and supports operational services, science and research in order to better understand climate change and provide solutions for climate change mitigation (Roemmich et al., 2019). She highlighted that Argo is crucial to observe, understand and support marine environmental protection (figure 7). Many applications of Argo in commercial and government sectors are indirect and maintained via forecasting services: aquaculture, fisheries, oil and gas, emergency response, insurance-risk management, national defence. Then she talked about the evolution of the European contribution to the Argo network that is now about 23% at global level, 50% in the Atlantic and close to 100% in EMS. The development of Argo in EMS will be fostered by a wider engagement of the surrounding countries. The data management system is a pillar of Argo; data policy is free and open, the dataset is 100% quality-controlled and 2 steps of quality control are implemented (real-time and delayed-mode). Argo is a key element of the European Integrated Observing System, and it is suited for integration with satellite observations and other in-situ observing systems. The spatial and temporal coverage provided by Argo makes it the most cost-effective observing system. Then she described the Euro-Argo ERIC, its structure and objectives (Euro-Argo ERIC, 2019). Euro-Argo ERIC ensures coherence with Argo international strategy, enlarging its users community and responding to their needs. Euro-Argo members can have several benefits linked to float procurements and data services, joint outreach and training activities, communication tools, community building aspects and coordination with European and international bodies. There are three different levels of engagements: (1) as a supporter

in Euro-Argo activities, (2) as a contributor to the network or as a user of Argo data, (3) as joining the ERIC for a sustained contribution.

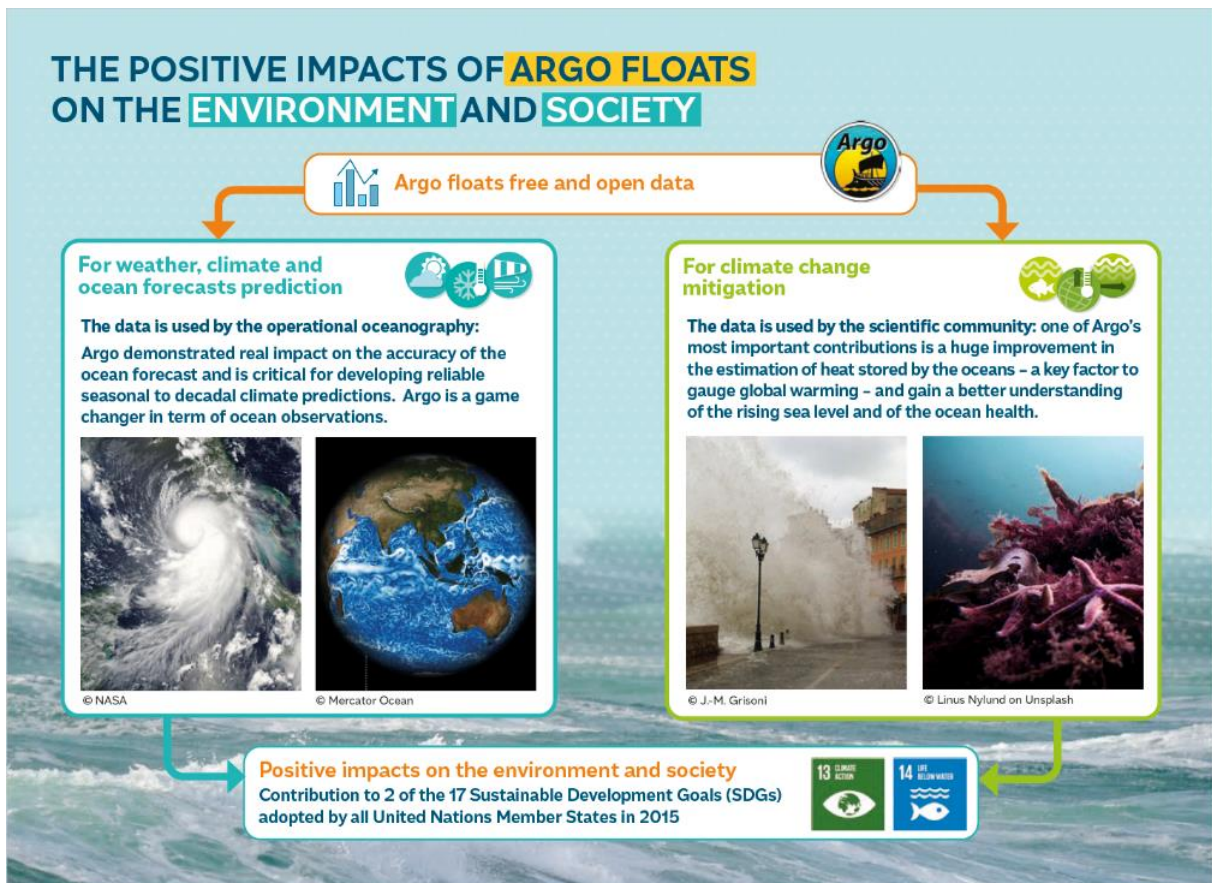


Figure 7. Slide from presentation by S. Pouliquen. Positive impacts of Argo on environment and society.

## 2.4 Benefits and achievements of Argo program in the Marginal Seas

### 2.4.1 Baltic Sea

**Laura Tuomi** (Head of Group Operational Oceanography, Marine Research Unit, FMI) followed on presenting “*Benefits and achievements of Argo program in the Baltic Sea*”. She explained that despite the Baltic Sea geographical and hydrographic characteristics which seemed not favourable at the beginning for the use of Argo, it was demonstrated that this kind of platform can successfully operate in this marginal sea. The Argo coverage is quite well spatially distributed in the basin. Argo operations started in 2011 thanks to Finland; Poland joined the activity in 2016 and Germany deployed its first float in the Baltic Sea in 2021. Physical and BGC parameters are acquired. The number of floats with BGC sensors is increasing in the Baltic Sea, enabling environmental monitoring with Argo. Floats are most often recovered, thanks to the small dimension of the basin. Because of the shallow water, floats are more likely to hit the seafloor and hence they have to be programmed to avoid such circumstances. Anyway, if the

float has to stay in a confined area, the parking depth is set at the sea bottom and so far groundings have not caused problems and no float has been lost due to them. They also operate with Argo under ice in the northern part of the basin (figure 8). Argo is the most important observing system of the water column in the Baltic when compared to the information provided by traditional monitoring. Argo float data allows better capture of the seasonal and year-to-year variability together with the extremes in the open sea areas. Argo data improved significantly the Baltic Sea reanalysis and forecast.

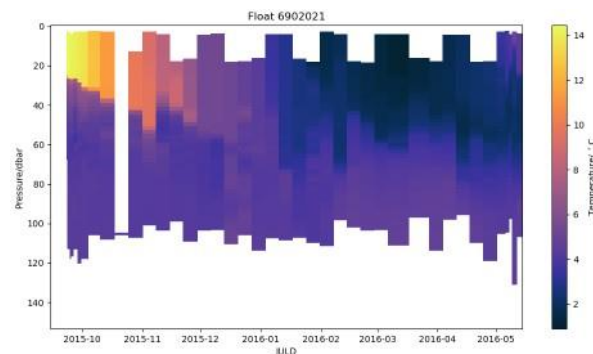


## Measuring all year round in the northern Baltic

### Operating under ice

- Using ice avoidance algorithms allows providing profile **data also during the Baltic Sea ice winter**
- Year around measurements have been successfully made in the Bothnian Bay and Bothnian Sea.

Temperature measurements at Bothnian Sea during ice winter 2015/2016.



7

Figure 8. Slide from presentation by L. Tuomi. Under ice operation with Argo float in the Baltic Sea.

**Question from audience:** What about the evolution of the long term strategy to sample the Baltic Sea with Argo (temperature and salinity, oxygen, BGC parameters)?

**Answers:** Finland and Poland have gained experience and regularly sample targeted deep areas of the Baltic Sea with Argo floats. Hence, the spatial and temporal coverage is good there. There is a need to involve other countries to extend the coverage to other areas of the Baltic Sea. The BGC extension is ongoing, but it requires more funding. Poland is also testing a rescue system for Argo, similar to the system used on some gliders. It works on the principle of rejected ballast. It can be useful, especially for expensive BGC floats, if they get stuck on the bottom or caught on some underwater object.

**Question from audience:** How much research and development in float technology do you consider to be important for the future observing system, especially to include more coverage in the shallower waters?

*Answers: In the Baltic Sea, we are actually currently using standard Argo floats, which are ballasted to the specific density conditions of each basin. I think in many of the shallow coastal seas the problem is a bit opposite to the Baltic. In Baltic, we want to keep the floats in the 'deep' basins, but in other coastal seas, the goal is to trap them into the shallow areas and not to drift to deeper ones. IOPAN has tested setting the diving depth of the floats below the sea floor, so that the float will ground every time it dives, keeping it more stationary. So further developing floats that are designed to act as virtual moorings could be one possibility.*

*Float technology is pretty mature for floats to work in shallow waters. But it would be worth trying to optimise the hydraulic behaviour or the full potential of existing coastal floats. Planning interactions between scientists and manufacturers could drive further technological developments and tests in very shallow waters.*

#### 2.4.2 Black Sea

The next presentation focusing on the Black Sea was given by **Atanas Palazov** (Deputy Director, IO-BAS) who presented “*Benefits and achievements of the Argo program in the Black Sea*”. The first Argo float was deployed in 2002 and 46 Argo platforms have been deployed up to 2020 with a maximum of 16 floats running simultaneously in 2020. The basic setting of the Argo platform is slightly different and is tailored for operations in the Black Sea. Four countries (Bulgaria, Italy and Turkey - providing floats and Romania – helping in at sea activities) and the European Union currently contribute to Argo in this marginal sea and data is used in complement of other data coming from different observing systems. Argo data significantly improved results in scientific publications (figure 9). He talked about the importance of Argo for modelling and forecasting in the Black Sea in the framework of Copernicus Marine Environment Monitoring Service (CMEMS). An important experiment was carried on in 2009 with 2 floats equipped with oxygen sensors in order to monitor oxygen depletion and associated processes in the semi-enclosed basin with permanent anoxia. In 2013 Bulgaria deployed for the first time two Bio-Argo floats in the Western Black Sea with a set of BGC sensors to measure: oxygen, downwelling irradiance, chlorophyll-a, back-scattering. Argo in the Black Sea can be used to improve studies related to climate change, circulation and physical/BGC processes, in order to provide scientific basis for developing new products for the support of the sustainable development of the blue economy in the Black Sea.

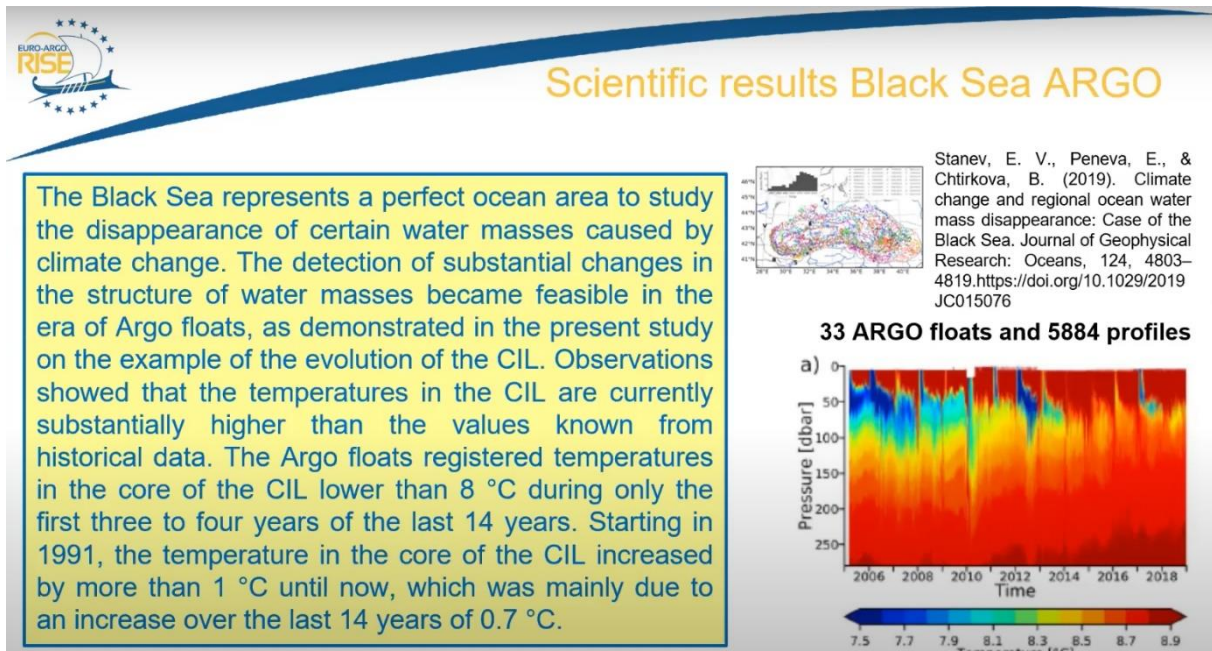


Figure 9. Slide from presentation by A. Palazov. Argo float data in science.

### 2.4.3 Mediterranean Sea

With regard to the Mediterranean Sea, **Giulio Notarstefano** (Technologist - Mobile Autonomous Oceanographic Systems, OGS) presented “*Benefits and achievements of Argo program in the Mediterranean Sea*”. The overall coordination of profiling float operations in the Mediterranean and Black Seas is done through the MedArgo Regional Center. MedArgo also helps to ensure the quality of Argo data, and it encourages the participation and collaboration between countries working in the same region. The main contributors in the Mediterranean Sea are Italy, France, Spain, Greece, European Union and USA with smaller input from Germany, Turkey, Lebanon and China. Besides the contributors, some countries provide a great help in activities at sea with Argo floats: Malta, Croatia and Israel. The MedArgo float population has greatly increased since the start of Argo in 2000, and it now ranges between about 80 and 90 platforms that operate simultaneously in the basins. The Argo program started in 2000 in the Mediterranean Sea, and it dramatically changed the way of observing this marginal sea in the last 20 years (figure 10). In the pre-Argo era, CTD profiles were mainly collected by R/Vs with a scarce spatial coverage. Argo allowed filling in the majority of gaps at sub-basin level and provides multi-parametric information since it can be equipped with several sensors, from the physics to the BGC. Argo is also more cost effective and less environmentally damaging than R/V. Argo is the game changer for observing and understanding a marginal sea like the Mediterranean. Argo data are widely used by the scientific community and by the operational oceanography services and this has a strong impact in climate change studies, marine environmental protection, economic development and services to society. Argo can help to address several Marine Strategy Framework Directive (MSFD) indicators to contribute to the good environmental assessment. Argo data have many application fields in science, and they can be used to study catastrophic phenomena like *Kassis*



and Varlas (2020) did for the strong tropical-like Mediterranean cyclone, known as Medicane. Argo platforms can also be equipped with additional BGC sensors to study key processes of the carbon cycle (primary production, biological carbon pump and carbon sequestration). Argo is also a unique source of data in support of operational oceanography services that provide systematic information on the state of the ocean on a global and regional scale. With Argo, operational services can provide more reliable ocean forecasts and climate predictions and more accurate monitoring of the ecosystem’s health. Assimilation of Argo data in 3D physical models of the Mediterranean Sea allows detailed study of the state of this basin and it is of great utility for studying the behaviour of the ocean system. CMEMS physical products, built with Argo as well, are used to build Ocean Monitoring Indicators (OMI) like the Ocean Heat Content (OHC) trend. OHC is a key factor to measure global warming. A warming ocean affects climate patterns, ecosystems, fishery’s economy and society’s safety. Argo data are also assimilated in 3D BGC models of the Mediterranean Sea that can be used to study the phytoplankton population that is the base of the marine food web. Integration of BGC Argo data in 3D models improves the model forecast and provides a more accurate description of the ocean interior. Argo data are used also in real application across Blue Sectors, like Ocean Health and Extremes, Hazards & Safety.



## MedArgo ARC

### How Argo has changed the way of observing the ocean

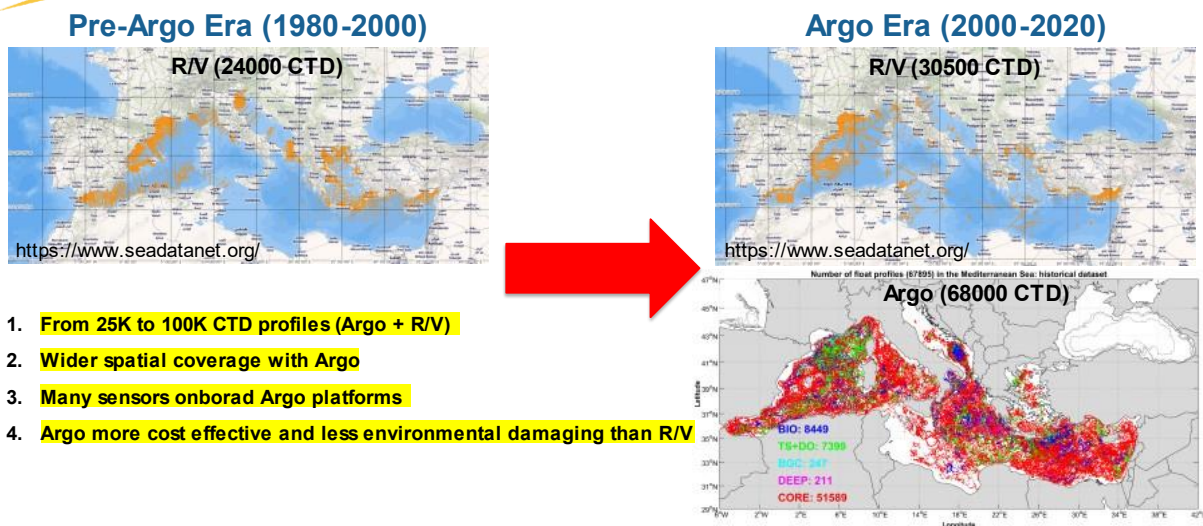


Figure 10. Slide from presentation by G. Notarstefano. Improvement of data coverage with Argo float.

### 3 Panel session

#### 3.1 Questions & Answers session and discussion with the panelists

A panel session followed, where selected panellists representing key areas of European oceanography were invited to this political event to have their vision and future perspective of Argo in European Marginal Seas. Their fields of expertise range from science to operational monitoring, observing system programs and maritime policy at the European Commission. The panel session was chaired by the following persons:

- **Aldo DRAGO**, Head of the Physical Oceanography Research Group, University of Malta
- **Zoi KONSTANTINO**, Policy Officer, European Commission DG MARE
- **Pierre-Yves LE TRAON**, Scientific Director, Mercator Ocean and Copernicus Marine Service
- **Inga LIPS**, Secretary General, EuroGOOS
- **Sylvie POULIQUEN**, Programme Manager, Euro-Argo ERIC

The session was moderated by Atanas Palazov and each panellist replied to specific questions grouped into four core topics as follows:

#### 1. Development of Argo in European Marginal Seas (scientific knowledge, challenges, potential, benefit, ...).

Question: Why is it important to develop Argo in marginal seas?

**Aldo DRAGO** answered that the Mediterranean Sea is an interconnected system in its dynamics and ecosystem. Most of the Mediterranean coastline lacks a continental shelf, which means that the interaction of the coastal areas with the open sea is very strong. Therefore, national monitoring systems need to be connected because coastal areas are connected by the background circulation and the basin scale situation. This means that national efforts and systems need to be integrated across countries to measure and monitor the larger regional scale together: this is probably the biggest success, above all in the Mediterranean Sea, of the Argo program. He thinks that the greatest success comes from the international cooperation that this effort has brought. He argues that the MedArgo system inspires nations to work together in an endeavour in which countries and institutes do not compete, but instead complement one another. Future developments are needed to serve the shallower waters, since there are big demands of an Argo system that will eventually be linked to the national observing systems. He ended his speech saying that in the future we will be doing observations of the ocean much differently than we are doing today, where the current Argo system is the

precursor of the initiative that will lead us to the next step of really doing observations in the coastal scale areas.

**Zoi KONSTANTINOU** said that Aldo Drago's vision is very inspiring, and she hopes to see it achieved in the next few years. The marginal seas are of major importance for Europe, and Argo is the most important component of the ocean observing system. It's greener, with lower emissions and overall an efficient system, being additionally a product of collaboration. We are moving towards a direction where more information and knowledge are necessary for these marginal seas in Europe. We need to see how the marine environment will affect our coastal populations, and we cannot do this without continuous and sustained observations. Argo is a main component in this, and it should be supported accordingly.

**Inga LIPS** mentioned one specific aspect where Argo floats can be used. The marginal sea dynamics and biochemical processes are very much dependent on the stratification. Hence, information about the stratification is crucial when we want to predict water exchange, transport of substances, plankton blooms, near bottom oxygen conditions. Argo is a very good tool to observe these different kinds of changes. Regular measurements of profiles are almost missing and hard to perform in many regions. Argo floats would be a cost effective solution for this kind of observation. When the number of vertical profiles is increased, the confidence of the marine environment assessment is also increased, together with an improvement for the operational oceanography and different kinds of services and products.

**Pierre-Yves LE TRAON** said that at the start of Argo monitoring the marginal seas was not an objective of Argo. Now it has been demonstrated that this is really feasible and very important results have been reached. The marginal seas and the associated coastal areas are of critical importance for Europe and European citizens that live close to these marginal seas. Hence, monitoring ocean health, climate change and its impact, developing ocean services for the blue economy are very important and Argo is crucial to achieve this goal within a context of complementary techniques (gliders, vessels, coastal mooring, ...). The Argo contribution is really extremely important and unique to address this target, and more is expected in the coming years. What is achieved with the operational simulation of BGC data in Mediterranean Sea models is unique in the world, in terms of capabilities in Europe and also to address social needs.

*Question: How do you see future possibilities and potential challenges in using Argo in marginal seas? Shall we focus on BGC Argo?*

**Sylvie POULIQUEN** said that Argo is really an example that a tool that was developed for an open ocean has shown great potential in the marginal seas, and this was possible thanks to Europe that has been leading in this development of marginal seas. The success we have now is due to the development of the technology and the strategy together. All the components

of Argo need to be sustained, and what we collectively need is a sustained observing system. Argo is part of an integrated observing system that will complement the other observing networks and provide a continuum from open marginal seas to the coasts, with the capability we are testing to go closer to the coasts. BGC Argo will be a game changer in the next decade for the marginal seas. It will provide a homogeneous spatial and temporal coverage of key BGC parameters that are complementary of what exists presently in marginal seas. The future challenge will be to develop and to manage this homogeneous BGC network in the marginal seas. For this purpose, an engagement with the majority of the surrounding countries around the marine Exclusive Economic Zones (EEZ) is strongly needed.

## 2. Impact/contribution of Argo in ocean monitoring and operational oceanography

Question: To your point of view, would you consider that Argo and BGC Argo contribute to a sustained ocean monitoring of ocean state (support climate change impact assessment) and Ocean Health (support to MSFD) in marginal seas?

**Zoi KONSTANTINO** said that the BGC component of Argo is very important in this aspect, and implementing the MSFD has been very challenging for the European Union. It has been proven that we miss a lot of information, that we lack common standards and common ways to collect data. We need to fill these gaps, to develop further and to push further administrative limits and national capacities in order to achieve this European added value and to implement the directives and achieve the environmental and climate goals.

Question: What is the importance and added-value of Argo in marginal seas for operational oceanography, CMEMS and other programs and services to society?

**Pierre-Yves LE TRAON** said the impact is quite large. CMEMS provides operational monitoring and forecasting of the global ocean and of all the European regional seas. Argo is an essential element of the observing system which is required to constrain and validate CMEMS products. The impact of Argo is well known and well documented; if Argo data are removed, the quality of the products that are disseminated to the different users of CMEMS are degraded. So, that is really a clear demonstration that Argo observations together with satellite observations and other in situ observations are really essential for CMEMS, its users and applications to serve also crucial systems like ocean health monitoring and climate change. He sees a lot of potential for the BGC component, in particular in the marginal seas where more observations are needed to face different issues and to provide a robust contribution to MSFD.

Question: Considering the global dimension of Climate Change and Ocean Health monitoring, as well as the importance of Argo for operational services such as Copernicus and EMODnet, could we envisage a sustained European contribution to Argo that would complement the national ones?

**Zoi KONSTANTINO** said the European Commission is developing an Ocean Observing Initiative which aims at improving the governance of ocean observation at the national level. She believes that this process will bring more attention to the fact that the national monitoring systems have dependencies and interconnections with the Argo system. This should put the Argo system on high priority in the agenda for a sustained European ocean observing system.

**Pierre-Yves LE TRAON** thinks that the need of a sustained Argo array with the expansion toward the BGC component is very well recognized and very much needed. The Argo network has to be sustained by member states, but also through a direct contribution from the European Commission. Member states alone are not sufficient, and this was stated also at the very start of the discussion of CMEMS 15/20 years ago. He said that there is a lot of expectation on the Ocean Observing Initiative led by the European Commission to revise the governance and see how member states and national capabilities can be more coordinated and with a direct contribution by the European Commission. It was demonstrated that we have the capability with the European organization coordinated by Euro-Argo ERIC to organize the procurement, the deployment, the processing, and the distribution of Argo data for major European initiatives such as CMEMS and EMODnet. This is a very strong asset for the future, and he is convinced that we need to have a balanced contribution for these global networks (Argo and the other main observing systems) between what member states can do and what could be organized directly at the level of European Offices.

*Comments from audience: Programs like Argo need a mixture of sustained funding with a part of it coming from national funds and other parts from more central routes like the European Commission, considering that it is a direct contribution to global efforts and more importantly observation priorities should come from top – down.*

*There is a need for a blended funding scheme that not only addresses the national funds but also some coordination funding to make sure we coordinate all observations and needs. This will be highlighted in the upcoming document on Sustained Ocean Observation Funding that will be launched on 16 June at the EMODnet conference (see information here: <https://www.marineboard.eu/sustainable-funding-ocean-observations>).*

### 3. EU policy/strategy

*Question: Europe is surrounded by marginal seas. How do you consider the importance of Argo in marginal seas for the European Global Ocean Observing System (EuroGOOS) and for the European Ocean Observing System (EOOS) development?*

**Inga LIPS** thinks that the Argo program is and will be also in the future an important component of observational networks in marginal seas for EuroGOOS and also for EOOS development. In the frame of EOOS, the addition of Argo floats in the marginal seas will be a very important component in an integrated observing system vision. Argo floats could

contribute to observe the deep basin hypoxia and anoxia, but they could also give important information on the subsurface phytoplankton plumes which satellites are not able to detect and research vessel measurements are too scarce to map. The use of Argo floats in the marginal seas is also triggering regional collaboration (deployments and recoveries) and can facilitate policy and law development and ratification as the floats tend to drift out from the territorial and EEZ waters, and they also may strand in the shore.

*Comment from audience: What about a Schengen agreement for floats in EMS like we have for persons who travel easily in Europe?*

#### 4. Argo for Sustainable Development

*Question: Based on your expertise, what are the benefits of Argo for Blue Growth in European Marginal Seas and how can Argo contribute to support environment protection, to provide services to society and contribute to the blue economy?*

**Aldo DRAGO** said that Blue Economy has different meanings: for many people it means creating more wealth from the oceans, to others providing more jobs related to the sea directly or indirectly and to others enabling marine ecosystem services extracting more benefits from the sea (like energy, food, transportation). However we look at it, it is about reaping benefits from the ocean capital and the biggest challenge to resolve in this ocean decade is to find a compromise between raising our economic benefits from the sea and, at the same time, to safeguard its substance. The biggest problem is that in order to conserve this capital we need to know about the complex intricacies of the marine ecosystem and probably this is what we mean by the Digital Twin of the Ocean where we want to have something that tells us more every moment about the ocean. He thinks this is going to be crucial in order to be able to better understand the sea so that we can really give a guarantee that we really understand the use of its resources, and we really know well that we are not putting the capital at risk. Through this political event, we have to make aware the decision makers and the financiers where and how they need to support what we are saying in order to make sure that the Ocean Decade is really fruitful and really assures our future. He concluded that we are still probably unable to capture the spatial and temporal variability, and he thinks that the evolution of Argo in the sense of doing prototypes for the shelf scale for the near coastal areas would help to address the MSFD targets.

*Comment from Vladimir Ryabinin: About the ocean economy, he thinks there is a clear understanding of the digital state of the ocean that is updated through assimilation of data that narrowed uncertainty. On the basis of that understanding, we are able to describe the state of the ocean and to acquire more predictive capacity in meteorological and climatological applications. This will lead us to manage the ocean sustainably.*

## 4 Main outcomes of the meeting

The political event of Argo in EMS was the first and a unique occasion to put in touch scientific research in the marine domain and the Argo system with high level decision-makers and stakeholders.

The keynote speakers well highlighted the evolution of Argo in the EMS that are quite different in terms of geopolitics and geography. They showed the success of Argo in such marginal seas and the benefit of this system for the marine environmental monitoring and support to service for society along the coasts.

The Euro-Argo ERIC infrastructure, its achievements, future developments and targets, together with different ways of engagement were well described by the Euro-Argo ERIC Program Manager.

The selected experts in the panel session highlighted the importance of Argo for science, operational services and applications. Argo inspires nations to work together, and it's the core of an integrated ocean observing system. The Argo network is an efficient system, cost-effective, and a lower emissions' technology. Argo is a crucial system to monitor the ecosystem health, climate change and their impacts on the economy and society in EMS countries. Moreover, Argo is an important component for implementing the MSFD, in particular with its BGC component. However, certain concerns were raised since the future funding scheme to support the sustainability of Argo activities in EMS from the European Union is still not clear enough and does not correspond to the importance of the Argo observing system for marginal seas. For this reason, it was underlined the need of a continuous and sustained funding to Argo in EMS and this is on high priority in the agenda for a sustained European ocean observing system.

Vladimir Ryabinin in his final remarks said that Argo is the core of the in-situ ocean observing system, and it's increasing its potential through the BGC component and the extension toward polar regions. In the Ocean Decade there will be a revolution in ocean observation and Argo can be the core of that revolution. He thinks Argo is in the position to lead the development of that field and can contribute to co-design ocean science and ocean data.

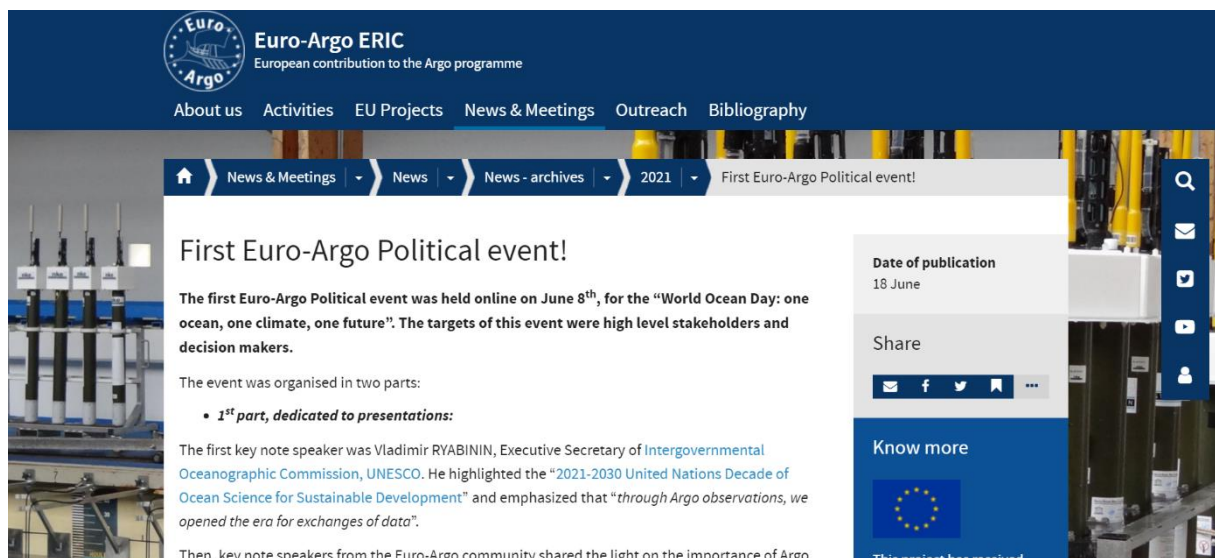
## 5 Communication

### 5.1 Press releases

Press releases after the meeting are reported in this section. Information posted on various communication channels by different institutes are reported in the following sub-paragraphs hereafter.

#### 5.1.1 Euro-Argo press release

<https://www.euro-argo.eu/News-Meetings/News/News-archives/2021/First-Euro-Argo-Political-event>



The screenshot displays the Euro-Argo ERIC website. The header includes the Euro-Argo ERIC logo and navigation links: About us, Activities, EU Projects, News & Meetings, Outreach, and Bibliography. The main content area features a breadcrumb trail: Home > News & Meetings > News > News - archives > 2021 > First Euro-Argo Political event!. The article title is "First Euro-Argo Political event!". The text states: "The first Euro-Argo Political event was held online on June 8<sup>th</sup>, for the "World Ocean Day: one ocean, one climate, one future". The targets of this event were high level stakeholders and decision makers." It further notes: "The event was organised in two parts: • 1<sup>st</sup> part, dedicated to presentations: The first key note speaker was Vladimir RYABININ, Executive Secretary of Intergovernmental Oceanographic Commission, UNESCO. He highlighted the "2021-2030 United Nations Decade of Ocean Science for Sustainable Development" and emphasized that "through Argo observations, we opened the era for exchanges of data". Then, key note speakers from the Euro-Argo community shared the light on the importance of Argo". On the right side, there is a sidebar with "Date of publication" (18 June), "Share" options (email, Facebook, Twitter, LinkedIn, etc.), and a "Know more" section with a European Union flag and the text "This project has received".

Figure 11. Press release on the Euro-Argo ERIC website.



### 5.1.2 SOCIB press release

[https://www.socib.es/index.php?seccion=detalle\\_noticia&id\\_noticia=480](https://www.socib.es/index.php?seccion=detalle_noticia&id_noticia=480)



The screenshot shows the SOCIB website interface. At the top left is the SOCIB logo with the text "Balearic Islands Coastal Observing and Forecasting System". To the right are logos for the Spanish Government (GOBIERNO DE ESPAÑA) and the Ministry of Science and Innovation (MINISTERIO DE CIENCIA E INNOVACION), along with the GOVERN ILLES BALEARS logo. A navigation menu includes "home", "about us", "facilities", "news" (highlighted), "multimedia", "job opportunities", and "competitive access". Below the menu, the main content area features a news article titled "SOCIB co-organises the Euro-Argo Political Event for decision-makers and stakeholders". The article text describes an event on June 8th, organized by SOCIB and IO-BAS, related to the H2020 Euro-Argo RISE project. To the right of the article are two sections: "facilities" with images of a "COASTAL RESEARCH VESSEL" and "COASTAL HF RADAR", and "direct links" with "SOCIB Data Catalog" and "Contractor profile".

Figure 12. Press release on the SOCIB website.

## 5.2 Twitter

Tweets were published after the event by Euro-Argo ERIC. Hereafter an example of a tweet posted on 9<sup>th</sup> of June 2021 is presented.

<https://twitter.com/EuroArgoERIC>



Figure 13. Tweet on the Euro-Argo ERIC channel.





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