

iFADO project Newsletter #8



iFADO project final workshop

On June 1st 2023, the final project workshop, held in hybrid format, took place at [Instituto Superior Técnico](#) in Lisbon (Portugal).

The workshop showcased the main products and applications developed during the project's lifetime (Nov 2017-June 2023). The workshop was shaped into short, dedicated presentations by project partners and invited external institutions and industry. The presentations involved activities related to novel and traditional monitoring campaigns, remote sensing, and numerical modelling products. The workshop highlighted the developments in international coordination and collaboration activities achieved during the project between project partners and external actors/stakeholders. The project results supported the continuous implementation of the Marine Strategy Framework Directive in the Atlantic Area.



A [detailed agenda](#) and links to each presentation follows:

[The iFADO project in numbers](#). Francisco Campuzano ([+ATLANTIC](#))

The UK-Irish Waters Autonaut Mission. Harry Spedding ([AutoNaut Ltd](#))

[MSFD assessment: iFADO methodological harmonization for in situ monitoring](#). Tamara Rodriguez ([IEO](#))

[iFADO in situ monitoring and interregional cooperation](#). Manuel Ruiz Villarreal (IEO)

[Data sharing from cruises – Geonetwork](#). Gonzalo Gonzalez Nuevo (IEO)

[The iFADO PAAoramic mission: the first European Atlantic area international multi-platform ocean monitoring mission](#). Filipa Carvalho ([NOC](#)) & iFADO partners

[International missions with novel technologies in the Atlantic Area](#). Carlos Barrera ([PLOCAN](#))

[iFADO platform and data viewer](#). Francisco Campuzano (+ATLANTIC)

[iFADO presence in Maritime Technologies & events](#). Carlos Barrera (PLOCAN)

[Involving marine technologies producers to support science & best practices](#). Anaïs Turpault (PMBA)

[Numerical model evolution and improvement in the Atlantic Area](#). Tomasz Dabrowski (MI)

[Model patching as a first step towards upscaling](#). Hazem Nagy (MI)

[Innovative numerical model validation](#). Manuela Juliano (FRCT)

[OSPAR ICG-EMO activities on the Atlantic Area](#). Francisco Campuzano (+ATLANTIC)

[European Atlantic Ocean waters from remote sensing](#). Steve Groom (PML)

[HPLC samples and the EO in situ benchmarking](#). Vanda Brotas (FCUL)

[Chlorophyll a along the Portuguese coast](#). Pedro Nunes (IPMA)

[Marine litter remote sensing and modelling](#). Elise BELAKEBI-JOLY (Noveltis)

iFADO Miniboat Fleet mini-session:

- [Generating Atlantic Ocean linkages](#). Cassie Stymiest ([Educational Passages](#))
- [TUGA da Costa Azul miniboat](#). Paulo Oliveira (IPMA)
- [KES Kraken miniboat](#). Susan Hartman (NOC)
- [Galway Sailor miniboat](#). Tomasz Dabrowski (MI)
- [PLOCAN miniboats](#). Carlos Barrera (PLOCAN)

[iFADO project legacy for the future](#). Francisco Campuzano (+ATLANTIC)

The iFADO PAAnoramic mission: the first European Atlantic area international multi-platform ocean monitoring mission

The aim of the European Union's ambitious Marine Strategy Framework Directive (MSFD; Directive 2008/56/EC) is to protect more effectively the marine environment across Europe. Its implementation in the European Atlantic Region (EAR) and the need to extend periodic monitoring programs to offshore waters is very challenging due its surface extension and large deep-water areas. To overcome these difficulties, the iFADO project (innovation in the Framework of the Atlantic Deep Ocean; www.ifado.eu; 2017-2023) combined traditional monitoring with cost-effective state-of-the-art technologies: remote sensing, numerical modelling and emerging observation platforms such as gliders and oceanic buoys.

After several successful international glider missions, the consortium proposed a flagship action for the project's final year: the PAAnoramic mission. This mission will extend to the Atlantic Area, the annual glider endurance line between mainland Portugal and the Canary Islands (Spain), established during the iFADO project since 2018. The PAAnoramic mission covered the European Atlantic façade using autonomous underwater vehicles combined with in-situ monitoring cruises and supported by satellite imagery and operational numerical modelling.

This is the first international multi-platform ocean monitoring mission covering the European Atlantic area.



The PAAnoramic glider mission was divided into several sections:

- [Marine Institute](#) covered a return transect from the initial release point and the Porcupine Abyssal Plain Sustained Observatory (PAP-SO);
- [National Oceanographic Centre](#) covered the section from the Irish coast to Portugal;
- [IPMA](#) designed a mission in Western Iberia from the open ocean to the coastal area;
- [PLOCAN](#) completes the mission with the route from Portugal to the Canaries.

First two gliders were deployed next to the Irish coast on early December 2022, while a third one was launched in mainland Portugal in May 2023. After its recovery, it will be relaunched during June 2023 to complete the mission in the Canary Islands.

The scientific payload sensors installed in the glider (CTD, DO and fluorometer) will allow collection of data related to physical and biogeochemical essential ocean variables. On their way, the gliders will visit various offshore Marine Protected Areas, such as the Savage Islands and the Gorringe Bank among other seamounts. The mission will also visit some buoys moored in the open ocean such as [PAP-SO](#) and the [ESTOC](#) (European Station for Time-Series in the Ocean Canary Islands). The mission also demonstrated how gliders can reduce logistics, costs, and risks of ocean monitoring and covering remote areas during harsh weather conditions.

The PAAnoramic mission involved participation of four Atlantic Area countries (Ireland, UK, Portugal and Spain), including two archipelagos (Madeira and Canary Islands). The mission was also supported by two non-iFADO project partners: [Cyprus Subsea](#) (Cyprus) and [Instituto Hidrográfico](#) (Portugal).

The mission main goal was to demonstrate how international collaboration is key for monitoring the ocean, to implement MSFD, achieve Good Environmental Status, and contribute to the UN Sustainable Development goals such as SDG14. This ambitious action will set a milestone for a future Atlantic Area international unmanned monitoring strategy.

A video of the PAA nOramic mission can be accessed at the [iFADO vimeo channel](#).

Students from two secondary schools from La Palma and El Hierro islands (Canary Islands, Spain) launched two educational miniboats to cross the Atlantic Ocean



Students from IES Garoé de Valverde (La Palma Island) and IES Garoé (El Hierro Island) have launched an educational miniboat of the Oceanic Platform of the Canary Islands (PLOCAN) in the waters of Tazacorte (La Palma) and La Restinga (El Hierro) respectively. The objective of the miniboats is to cross the Atlantic Ocean in the framework of the iFADO project of the Interreg Atlantic programme, and the international educational programme [Educational Passages](#).

The launching of the small educational sailing boats, called “[Buche Salado II](#)” and “[El Hierro-Mar, Salitre y Lava](#)”, took place after a joint training session held at the IES of Los Llanos de Aridane on the 5th of May 2023 with the participation of students from [IES Eusebio Barreto](#) and [IES Garoé de Valverde](#). “[El Hierro-Mar, Salitre y Lava](#)” was launched 15 days after the training session.

The training session was attended by Cassie Stymiest, director of the international educational programme [Educational Passages](#), which brings marine sciences to secondary school classrooms in collaboration with the European project iFADO; Francisco Campuzano, coordinator of the iFADO project; the teachers of IES Eusebio Barreto, Antonia María Arroyo, and IES Garoé, María Mileyvi Fernández, and Carlos Barrera on behalf of PLOCAN.

Cassie Stymiest said that “it is a special day because we share the experience of launching a mini boat into the sea with the students and representatives of iFADO and PLOCAN. We will celebrate that with the Buche Salado II we reached the 190th miniboat milestone of our international Educational Passages programme.” Stymiest congratulated all those who have participated and looked forward to the voyage, valuing the importance of this programme to bring science closer to young people.



Campuzano highlighted the importance of international collaboration and of the different actors, including citizen participation, to be able to monitor large marine areas such as the Atlantic Ocean. The iFADO project, he continued, funded by the European [INTERREG Atlantic Area programme](#), integrates research institutions from different areas such as numerical modelling, satellite remote sensing, oceanographic campaigns and new technologies.

The mini-sailboat is expected to cross the Atlantic Ocean like other small boats in the Educational Passages educational programme, which aims to spread environmental learning and knowledge, and in particular that of the ocean environment, by means of small boats equipped with GPS capable of tracking winds and ocean currents, allowing students of all ages to explore oceanic phenomena while developing transoceanic educational classrooms.

The small sailboats are equipped with GPS and a temperature sensor powered by a small solar panel installed on the surface of the boat. In a small hold of about twenty centimetres, the students have housed work done at the institute in which they give an account of where the boat came from so that it can be identified when it is picked up.

Pushed by the winds and sea currents, the miniboats will describe a route that can be observed in real time through the [Educational Passages website](#) and the [iFADO platform](#), so that the students can learn about the characteristics of the sea routes it sails along, learning interactively about the dynamics of ocean currents and winds.



The main objective of the programme is to introduce students to the world of sailing and engage them in collaborative learning through international cultural experiences, and to increase understanding of the value of the hydrosphere as a shared resource through knowledge of the ocean environment. The programme brings the ocean into the classroom, whether on the coast or inland.

Last year, the [iFADO II educational sailing boat “Buche Salado”](#) left the port of Tazacorte and sailed to the island of Guadeloupe in the Lesser Antilles after a two-month Atlantic crossing of 5,055 kilometres.

New publications section on iFADO webpage

The iFADO webpage now counts with a new section listing the numerous publications and thesis generated during the project lifetime. Currently iFADO Scientific Production counts with 30 journal publications, most of them in open access, and 4 MSc and 3 PhD thesis. The complete list can be access at <https://www.ifado.eu/publications/>

Interreg Atlantic Area **iFADO**

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Publications

iFADO Scientific Production

This page collects most of the scientific contributions of the iFADO project published in international journals and PhD thesis produced during the project lifetime.

International journal publications:

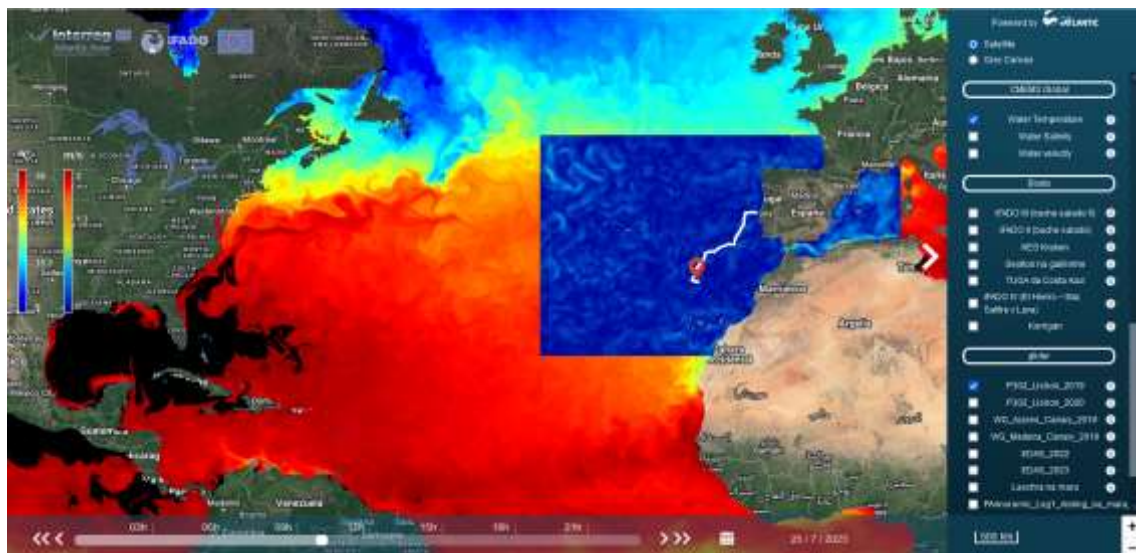
Lobanova P, Tilstone GH, Bashauzshakov I, Brozas V. Accuracy Assessment of Primary Production Models with and without Photochlorination Using Ocean-Colour Climate Change Initiative Data in the North East Atlantic Ocean. *Remote Sensing*. 2018; 10(7):1116. doi: 10.3390/rs10071116. [Open Access](#)

New iFADO data platform

The data ingestion into the iFADO platform considered the following principles:

- Each data generator should choose the service where the data is hosted given preference to international recognised data aggregators;
- If the data generator prefers to host the data, international standards and methodologies should be followed to meet the FAIR principles
- The iFADO platform should not host data from any data provider, unless necessary, but it should dynamically link with the service provider.
- Only if common file format is not consolidated or the data provider is not ready to produce international standards data then conversion and integration tools will be developed.

The new platform was presented in the iFADO final meeting and can be accessed at <http://ifado2.maretec.org/>



IEO-CSIC studied the pelagic environments in the Atlantic Ocean off the Iberian Peninsula

Data will contribute to the harmonization of methodologies for in situ Chlorophyll-a monitoring Marine Strategy Framework Directive (MSFD) descriptors for the assessment of the Good Environmental Status (GES) in the North Atlantic demarcation.

After the PELAGO23 campaign, coordinated by the Portuguese Institute of Sea and Atmosphere ([IPMA](#)), the Spanish Institute of Oceanography ([IEO-CSIC](#)) took over with the PELACUS campaign, from April 8 to 30, which contributed for the estimation the biomass of the main pelagic fish species and mapping their

distribution area using acoustic methods, a system that allows the intensity of the echo to be related to the number of fish detected by the probe.

In Pelacus 2023, phytoplankton biomass samples were collected to be analysed by different techniques and calibrate fluorescence sensors:



The PELACUS campaign, were carried out on board the Miguel Oliver oceanographic vessel of the *Secretaría General de Pesca*, will also serve to characterize the marine environment.

IEO-CSIC also developed an GeoNetWork platform to catalogue all the iFADO cruise mission. It can be accessed through the iFADO webpage in the platforms section.

iFADO highlighted in EU Portfolio analysis, EU mission “Restore our Ocean and Waters by 2030”.

Analysis of a portfolio of projects financed by sixteen EU programmes contributing to the objectives and enablers of the mission ocean and waters

The Directorate-General for Research and Innovation (European Commission) launches portfolio analysis of 841 projects funded by 16 EU funding programmes contributing to the EU mission “Restore our Ocean and Waters by 2030” goals.

The iFADO project was highlighted for its contribution to the Ocean digital knowledge system.

The full report can be found at [this link](#).



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