



AIRCENTRE

GLOBAL INTERNATIONAL AIRCRAFT CENTRE



MANAGEMENT AND FINANCIAL REPORT 2022





Headquarters and Earth Observation Lab

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aircentre.org



AIR Centre - Atlantic
International Research
Centre



This final version of the AIR Centre management report and financial statements regarding 2022 reflects what was approved by the Board of Directors.

Emir Sirage
(CEO)

Paulo Gadelha
(President of the Board of
Directors)



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MESSAGE FROM THE CEO

BY MIGUEL BELLO AND EMIR SIRAGE

The year of 2022 represented (5) five years of operations of the AIR Centre since its formal creation in 2018 as an Association registered in Portugal governed by the collective of its international members with a scientific and technological agenda for the Atlantic. The AIR Centre was decided to be formally established during the second international high-level meeting “Industry-Science-Government Dialogue on Atlantic Interactions - Florianopolis Summit” taking place on November 20 and 21, 2017 in Brazil. The signing of the “Florianopolis Declaration”, which determined the formation of an installation and steering committee to define the financial and implementation plan of the AIR Centre was supported by the governments of Portugal, Brazil, Spain, Angola, Cabo Verde, Nigeria, Uruguay and São Tomé and Príncipe, together with the Regional Government of the Azores, and the United Kingdom and South Africa that participated at this phase as observer countries.

There were initial agreements, informally agreed by the governments, where Portugal assumed the installation of AIR Centre headquarters, with offices in Lisbon and the set-up of an Earth Observation Laboratory (EO Lab) in Terceira Island, Azores, therefore guaranteeing the basic funding to these structures for the years to come, noting the Portuguese public funding could only be used in Portugal. Even so, understanding the challenges of securing national funding, all members have agreed that there wouldn't be quotas or fees, unless of symbolic value, and countries or regions/states should provide the necessary funding for specific activities, projects or structures developed or implemented in each region or country under the entitlement of the AIR Centre. The diversity of origins in the AIR Centre has been significant since its foundation in 2018 and reflected through the years in the leadership of the steering and installation committee, the CEO, the Board of Directors and General Assembly, having Portugal, Spain and Brazil as nationalities assuming these role(s).

Furthermore, the year of 2022 was very challenging and uncertain, starting with the many concerns on the real impacts of a new Covid-19 variant "Omicron" and on top of the global health issue, Russia invaded Ukraine starting a war in Europe with profound impacts in the political and economy stability of the world. Nevertheless, 2022 can be considered another exceptional year for the Atlantic International Research Centre (AIR Centre), where the main strategic and operational objectives have been achieved and the organizational structure continued its consolidation. Regarding the internal organization, full digital management of finance and accounting has been implemented, an internal project policy was approved for effective project management and legal services were hired for a professional support to the overall activities.

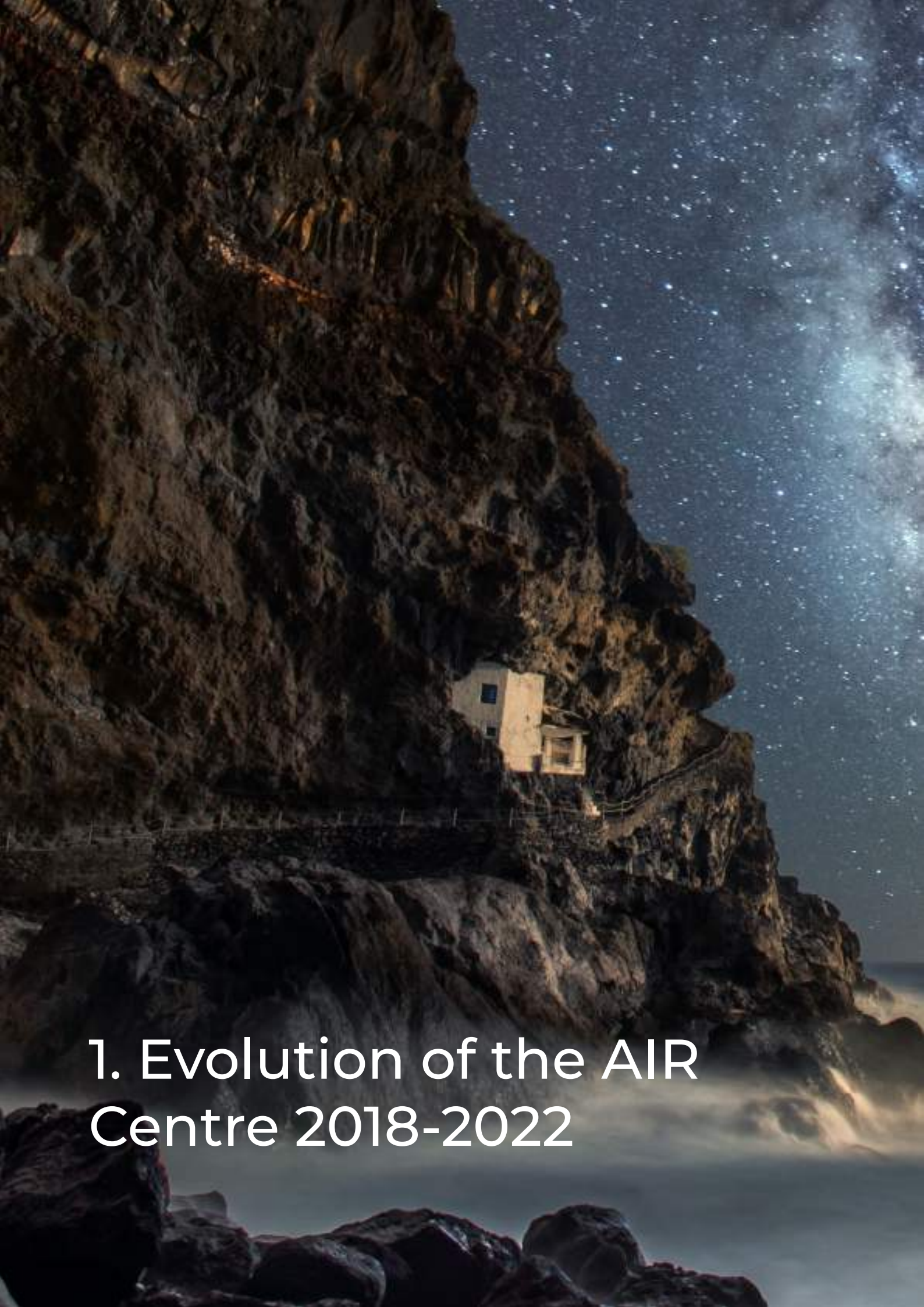
The number of HR, meaning the AIR Centre team has reached a headcount of 24 employees and one (1) intern (plus one (1) HR from Colab +Atlantic, under a collaboration protocol) working in Terceira island - Azores and Lisbon. During 2022 the AIR Centre international Network has been also extended. This to mention, two (2) countries that were partnering with the network, requested during 2022 the formal membership: France and Guatemala, allowing a continuous increase of the existing network in both sides of the Atlantic ocean.

With respect to projects aligned with the AIR Centre missions, again 2022 was noteworthy where many proposals with different stakeholders of the network: companies, universities, research centres, governmental organizations were partners, and as of today more than 500 entities are collaborating with the AIR Centre. In 2022, new projects were awarded to the AIR Centre as prime or as consortia partner with international teams. Between those new awarded projects one can highlight:

1. BlueMissionAA, a project for implementing the EU mission Restore our Ocean and Waters by 2030 in the Atlantic and Arctic;
2. SBEP, an Horizon Europe co-funded partnership that is constituted by a network of 60 Partner institutions from 25 countries and the European Commission to boost the transformation towards a climate-neutral, sustainable, productive and competitive Blue Economy by 2030;
3. GDA Marine, a project supported by ESA, under the framework of a global partnership to mainstream the use of Earth observation into development operations in cross-cutting areas, such as climate and disaster resilience, among others;
4. New Space Portugal, a project supported by Portugal Recovery and Resilience Programme for the development of the Atlantic Constellation in cooperation with Spain;
5. Custodian, a project to develop a sensory network platform for sustainable fishing, and others key-projects listed in this report. In parallel, the AIR Centre maintained a very active elaboration of proposals (around 24) and the execution of projects, in a similar way as during 2021.

A more intense activity in the organization of international events was performed by the AIR Centre during 2022, also due to the leadership role of the Presidency of the Eureka network composed of around 50 countries worldwide. The AIR Centre participated and was a co-organizer of many events during 2022 (which are listed in this report), however it is important to highlight a few: the Eureka meets the Atlantic series of events in South Africa, Brazil and US, the Global Innovation Summit, where a Ministerial took place, having as one of the key accomplishments the change of Eureka Regulatory Corpus, allowing for full membership for non-European countries. The AIR Centre also participated with a stand at the UN Ocean Conference in Lisbon, co-hosted by the Governments of Kenya and Portugal, where the Prime Minister of Portugal made an address at the opening highlighting "...the importance of the ocean and that scientific knowledge should be at the center, emphasizing the importance of the Atlantic and that the Portuguese Government will continue to invest in the AIR Centre, as a scientific collaboration network between countries and research institutes in areas such as space, oceans, climate and energy".

Further, to keep connected the AIR Centre international network, the series of "Networking Fridays" webinars were continued, and during 2022, this networking platform continued to be one of the most important events joining the Ocean community all around the world with the participation of outstanding leaders in the domains of Ocean, Space or Climate sciences and other stakeholders from more than 145 countries. In parallel to all above activities, the AIR Centre Scholarship Program "Training the leaders of the Future" was continued during 2022, with the award of several PhD scholarships for international collaboration from Portugal to the world, and representing till date, around than 120 applications from 30 countries.



1. Evolution of the AIR Centre 2018-2022



TIMELINE OF AIR CENTRE SCIENTIFIC DIPLOMACY PROCESS



GLOBAL CHALLENGES

1ST HIGH LEVEL

Industry-Science-Government Dialogue

Terceira Island, Azores
April 2017

2ND HIGH LEVEL

Industry-Science-Government Dialogue,
Decision on AIR Centre creation

Florianopolis, Brazil
November 2017



"Florianopolis Declaration"



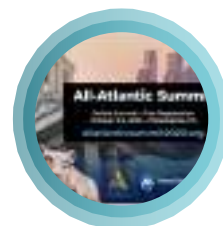


"Canary Islands Declaration"

November 2018
Canary Islands, Spain

Industry-Science-Government Dialogue

4TH HIGH LEVEL



"Philadelphia Declaration"

October 2020
Online Summit, Philadelphia, USA

Industry-Science-Government Dialogue

6TH HIGH LEVEL

3RD HIGH LEVEL

Industry-Science-Government
Dialogue, Scientific Agenda

Praia, Cabo Verde
May 2018



"Praia Declaration"



5TH HIGH LEVEL

Industry-Science-
Government Dialogue

Lagos, Nigeria
April 2019



"Lagos Declaration"



"Letter of Intent for a Joint Framework to Promote Innovation,
Entrepreneurship and Capacity Building in the New Space Sector
Through the Deployment of an All-Atlantic Nanosatellite Constellation"



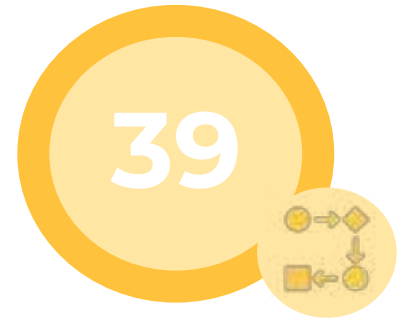
EVOLUTION OF THE AIR CENTRE 2018-2022

MAIN INDICATORS

+500 PARTNERS

~80 SUBMITTED
PROPOSALS

APPROVED PROJECTS



KEY COUNTRIES

85 MAIN
INSTITUTIONS



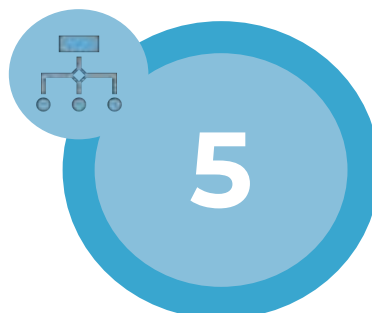
EVENTS



AIR CENTRE

ATLANTIC INTERNATIONAL RESEARCH CENTRE

MISSIONS



PHD APPLICATIONS

FROM CREATION TO IMPLEMENTATION

The creation of the AIR Centre resulted from a scientific diplomacy process initiated in 2016 (see figure on the previous page: Chronology of the AIR Centre's Science Diplomacy process). Its implementation was successful and promoted several scientific and political workshops across different geographies under the title "Atlantic Interactions", including the organization of "High-Level Dialogues between Industry-Academy-Government on Atlantic Interactions", as was promoted on the website: <http://www.atlanticinteractions.org>.

The approach aligned in the High Level Dialogues provided clear guidance for promoting science-based economic development driven by existing knowledge in the Atlantic regions, addressing new science, knowledge and innovative technologies to achieve social impact. The image below illustrates the various international leaders and stakeholders who participated in the first "High Level Dialogue on Atlantic Interactions", held in the Azores in April 2017, where it was agreed that for a better understanding of the Atlantic regions in terms of their response climate change and the sustainable management of common resources implies an alignment of research & innovation strategies through North/South - South/North international cooperation. The conclusions of the meeting recommended the Government of Portugal and the Regional Government of the Azores, together with the Foundation for Science and Technology (FCT), to move forward with the creation of the Atlantic International Research Centre – AIR Centre.



Figure 1 – International leaders and stakeholders at the 1st High-Level Dialogue on Atlantic Interactions

After the success of this first High Level Summit held in Portugal, the process for the implementation of the AIR Centre continued with its focus on the theme of “Atlantic Interactions”, and between 2017 and 2018, other High Level Dialogues were organized in the Brazil, Cape Verde, Spain and Nigeria.

In Brazil, namely in the city of Florianópolis, capital of the state of Santa Catarina, in November 2017 the Declaration of Florianópolis was signed, being the second high-level international meeting, in which it was decided that during the 1st semester of 2018 a the Association for the Development of the AIR Centre - AD AIR Centre in Portugal, which, as a non-profit institution with headquarters in Terceira Island, Azores, and offices in Lisbon, would have the objective of incorporating and executing the mission and objectives proposed for the AIR Centre.

During the period from 2018 to 2022, the AIR Centre achieved exceptional progress in terms of implementing its mission, activities, attracting highly qualified human resources and establishing international collaborations and partnerships in the Atlantic and the rest of the world. Some of the key developments during this period include:

- Diversification of missions and activities - the vision of “Atlantic Interactions” is to integrate the areas of space, ocean, climate, energy, and data sciences to address regional/national and global challenges in the Atlantic regions. However, the AIR Centre has managed to expand into these activities through:
 - Consolidation of the network in the Atlantic through international initiatives and projects related to the Ocean;
 - Transatlantic Impact through projects and other initiatives taking advantage of new Earth Observation infrastructure.
- Internationalization for long-term cooperation: The AIR Centre has developed partnerships with several international organizations, including the European Space Agency (ESA), several United Nations organizations (UNEP, UNDP, UNOOSA), GEOBlue Planet, MBON, LifeWatch ERIC, Convention of Abidjan, Benguela Current Convention, FioCruz, AEM, among others. These partnerships helped strengthen the AIR Centre’s research capacity and broaden its impact;

- **Institutional Consolidation:** Through funding mechanisms of the European Commission, either by the International Partnerships Directorate (DG INTPA) or by the Research and Innovation Directorate (DG RTD), the AIR Centre has been expanding its Europe-West Africa cooperation to build and promote a new Centre of Excellence that promotes Mid-Atlantic Blue and Green Growth for the implementation of the “Innovation Centre for Green and Blue Growth” (CAVIC) and is the leader of a Coordinated Support Action (CSA) for the implementation of the European Union Mission - Restore our Ocean and our Waters by 2030 in the Atlantic and Arctic;
- **Launch of new initiatives:** Having established a conceptual framework, the “Atlantic Pole to Pole Observation System of Systems (APPOSS)”, the AIR Centre supported the launch of several new initiatives, such as the Constellation of the Atlantic, which aims to develop a constellation of 16 satellites (high resolution “1-10m” with revisit times of “3h” and low latency “<1h”). Another example is an Earth Observation Laboratory (EO Lab) in operation, with earth segment capabilities (with a DRS antenna that receives data from 6 satellites) and an AIR Data Centre with data processing and storage capabilities for the development collaborative space demonstrators with applications in various sectors: agriculture, fisheries, environment, energy, marine litter, maritime surveillance, extreme weather events, among others;
- **Focus on innovation:** The AIR Centre focused on innovation during this period, working towards sustainable development in the Atlantic regions. For example, the AIR Centre is directly involved in multi-stakeholder projects (e.g. academia and companies) that focus on developing marine pollution monitoring systems using satellite data and is developing new applications using artificial intelligence (AI) in the context of ocean observation.

Overall, the period from 2018 to 2022 was a period of exceptional growth and evolution for the AIR Centre, broadening its focus, developing, and fostering new partnerships and initiatives, privileging innovation in its research and development activities.



Members
General Assembly



Partners
MoU or Agreement

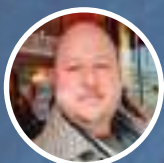


Offices
Research Facility

AIR CENTRE NETWORK IN THE ATLANTIC



STEERING AND INSTALATION COMMITTEE 2018



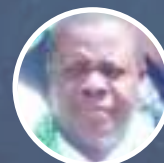
Andrei Polejack
Deputy Secretary for Policies
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Aquilino Varela
Director of Science, Technology
and Innovation, Cabo Verde



M.A. Atmanand
Former Director National Institute
of ocean Technology,
Chennai, India



Ekanem Udoh
Director of Science and
Technology Promotion, Nigeria



António Sarmento
CoLab +Atlântico, Portugal
(Chair)



Stewart Bernard
Council of Scientific and
Industrial Research, South Africa



José Joaquín Hernández Brito
PLOCAN, Spain



David González
Director of Science and
Technology, Uruguay



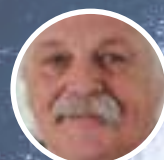
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Rui Oliveira
INESC TEC - Universidade do
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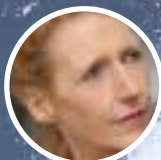
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PI MaREI Centre Environmental
Research Institute



Francisco Wallenstein Macedo
Azores Mission Structure for
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Bruno Pacheco
Regional Director of Science and
Technology, Azores



Claire Durkin
Head of Global Science and Innovation in BEIS-
Department for Business, Energy and Industrial
Strategy, United Kingdom (Observer)

EXECUTIVE BOARD OF THE STEERING COMMITTEE OF THE AIR CENTRE



António Sarmento
CoLab +Atlântico, Portugal
(Chair)



Andrei Polejack
Deputy Secretary for Policies and
Programs, Brazil



Stewart Bernard
Council of Scientific and Industrial
Research, South Africa



José Joaquín Hernández Brito
Chief Operating Officer, PLOCAN, Spain



Carolina Rêgo Costa
Portuguese Science and Technology
Foundation, FCT,
Portugal (Executive Legal Officer)

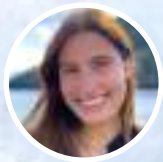


Bruno Pacheco
Regional Director of Science and
Technology, Azores

STAFF AT THE END OF 2022



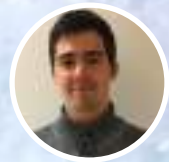
Emir Sirage
Chief Executive Officer - CEO



Mariana Ávila
Project Developer



João Campos
Project Controller and Planning Officer



Emanuel Castanho
Project Developer



Tânia Li Chen
Project Developer



Gabriel Costa
Administrative Assistant



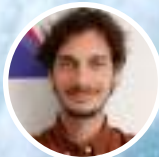
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Catarina Paes Duarte
Events and Network Manager



Alexandra Frazão
Executive Secretary



Andrea Giusti
Project Developer



João Bentes de Jesus
Project and Business Developer



Letícia Leão
Administrative Assistant



Adriano Lima
Senior Project Officer and
MBON Scientific Programmer



Joaquim Melo
Junior Project Developer



Inês Correia Mesquita
Communication Officer



Mariana Moreira
Scientific and Project Officer in Geodesy,
Geophysics and Earth Observations



José Luís Moutinho
Chief Business & Networking
Officer



Natalia Ospina-Alvarez
Senior Project Officer and Innovation
Manager in Blue Economy



João Pinelo
Head of Data Science, Cloud
Infrastructure and Development



Geisa Rosa
Human Resources, Administrative
and Finance Manager



Pedro Silva
Chief Technology Officer
CTO, EO Lab



Joana Soares
Executive Secretary for MBON
and Project Officer for AIR Centre



Iga Szczesniak
Project Developer



André Valente
Project Officer

FLAGSHIP INITIATIVE “APPOSS”

With a national and international cooperation strategy, the AIR Centre conceptualized an architecture for an operational infrastructure that integrates the different sciences of space, ocean, climate, energy and data sciences and which is called “Atlantic Pole to Pole Observation System of Systems - APPOSS”, promoting an integrated vision for Observation of the entire Atlantic (North-South/South-North). The “APPOSS” includes seven components: Space, Atmosphere, Sea Surface, Underwater, Control Centre, Data Management and Services for the end user, as depicted in the picture below. APPOSS intends to be a system capable of integrating observations from different sources (satellites, buoys, autonomous underwater vehicles, among others), in the future using Artificial Intelligence (AI), numerical models and high-performance computing that are essential for the implementation, for example, the concept of Digital Earth: high-precision digital twin of the Earth “Digital Twin Earth”.

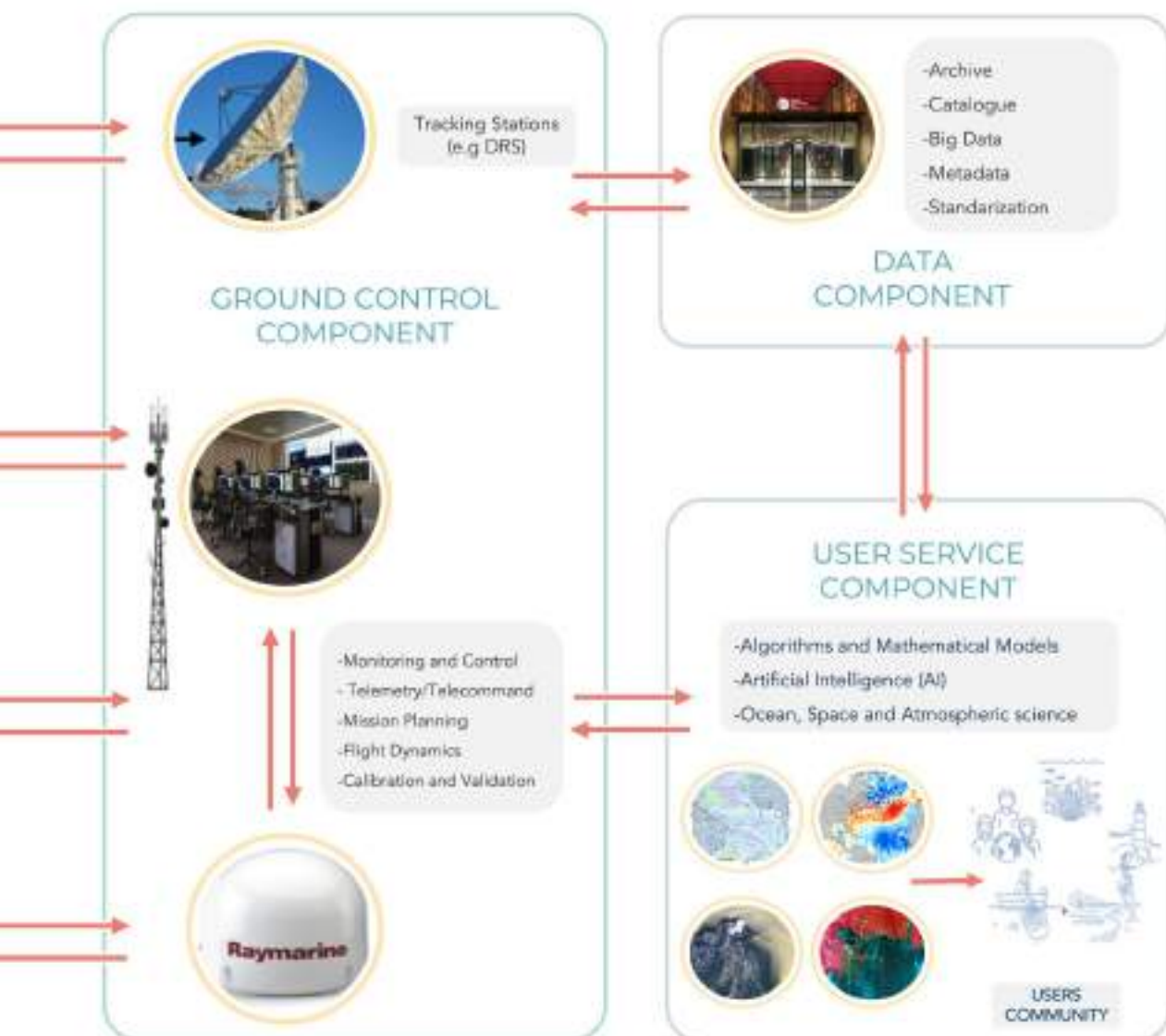
VISION FOR THE ATLANTIC POLE TO POLE OBSERVATION SYSTEM OF SYSTEMS



The APPOSS vision is to cover pole to pole because there are no boundaries in the ocean, and events in the Arctic can have an influence on the Southern Ocean. And it is defined as a - System of Systems - because it is impossible to observe the ocean with a single system, which is why APPOSS includes 4 main components:

- Space components with data from different types of satellites;
- Atmospheric components using high altitude platforms ("HAPS") and drones;
- Water surface components with the use of scientific vessels, buoys, automatic vessels;
- Underwater component for water column data acquisition with autonomous underwater vehicles;

For the surface and underwater ocean component, the AIR Centre is part of a project called "Atlantic Observatory" in partnership with Norway, which explores the capabilities of radar equipment and autonomous underwater vehicles "gliders" for observation of the surface and water column.



KEY PARTNERS



PORTUGAL

- University of Azores (UAC)
- The Atlantic Observatory
- The Institute of Science and Innovation for Bio-Sustainability (IB-S), University of Minho (UMinho)
- The Minho Advanced Computer Center (MACC)
- CoLAB + Atlantic
- Interdisciplinary Centre of Marine and Environmental Research (CIIMAR)
- The Underwater Systems and Technologies Laboratory (LSTS), Faculty of Engineering of the University of Porto (FEUP)
- Institute for Systems and Computer Engineering, Technology and Science (INESC TEC)
- Portuguese Hydrographic Institute
- Institute for Systems and Robotics (ISR) at Instituto Superior Técnico (IST)
- Fórum Oceano
- University of Lisbon (ULisboa)
- Portuguese Space Agency (PT Space)
- Portuguese Institute for Sea and Atmosphere (IPMA)



BRAZIL

- State Secretary of Science, Technology and Higher Education
- Ceará State University (UECE)
- Marine Science Institute (LABOMAR) of the Federal University of Ceará (UFC)
- Laboratory of Computational Methods in Engineering (LAMCE)
- Alberto Luiz Coimbra Institute for Graduate Studies and Research in Engineering (COPPE) at the Federal University of Rio de Janeiro (UFRJ)
- Oswaldo Cruz Foundation (FIOCRUZ)
- Geosciences Institute (IGEO), Federal University of Bahia (UFBA)
- Marine Environmental Monitoring Research Laboratory (LAPMAR)
- Institute of Geosciences (IG), Federal University of Pará (UFPA)
- Emilio Goeldi Museum (MPEG)
- Institute for Scientific and Technological Research of the State of Amapá (IEPA)
- Federal University of Amapá (UNIFAP)
- State University of Amapá (UEPA)



NIGERIA

- National Space Research and Development Agency (NASRDA)
- Federal Institute of Industrial Research, Oshodi (FIRO)
- National Agency for Science and Engineering Infrastructure (NASENI)
- Nigerian Hydrological Services Agency (NIHSA)
- Nigerian Natural Medicine Development Agency (NNMDA)
- Nigerian Institute for Oceanography and Marine Research (NIOMR)
- Federal University of Technology Minna (FUTMINNA)



SPAIN

- Oceanic Platform of the Canary Islands (PLOCAN)
- Superior Council for Scientific Research (CSIC)
- Barcelona Supercomputing Center (BSC)
- Center for Energy, Environment and Technology (CIEMAT)
- The Center for the Development of Industrial Technology (CDTI)
- The Spanish Institute of Oceanography (IEO)



SOUTH AFRICA

- The Department of Science and Innovation (DSI)
- South African National Space Agency (SANSA)
- Council for Scientific and Industrial Research (CSIR)
- Department of Forestry, Fisheries and the Environment (DFFE)
- South African National Biodiversity Institute's (SANBI)
- South African Earth Observation Network (SAEON)
- South African National Antarctic Programme (SANAP)
- Nelson Mandela University (NMU)
- University of Cape Town (UCT)



UNITED KINGDOM

- Satellite Application Catapult
- Plymouth Marine Laboratory (PML)
- National Oceanography Centre (NOC)



CABO VERDE

- The Institute of the Sea (IMAR)
- University of Cabo Verde (UniCV)
- Technical University of the Atlantic (UTA)
- National Port Authority (ENAPOR)
- Maritime and Port Institute of Cabo Verde (IMP)



ANGOLA

- National Institute for Fisheries and Marine Research (INIPM)

**COLOMBIA**

- Ministry of Science of Technology (MINICIENCIAS)

**MOROCCO**

- University Abdelmalek Essaadi (UAE)

**GUATEMALA**

- Senacyt (National Secretariat of Science and Technology, Government of Guatemala)

**BENIN**

- Benin Institute for Halieutic and Oceanographic Research (IRHOB)

**DOMINICAN REPUBLIC**

- Republic Ministry of Higher Education, Science and Technology (IMESCyT)

**FRANCE**

- Pôle Mer Bretagne Atlantic
- La Direction générale de la recherche et de l'innovation (MESR DGR)

**GHANA**

- Regional Marine Center (RMC) of the University of Ghana
- Centre for Remote Sensing and Geographic Information Services (CERSGIS)
- Ghanaian Statistical Service
- D:Lab at Ashesi University
- Space Systems Technology Lab for the All-Nations University College

**MEXICO**

- Mexican Space Agency (AEM)
- University of Quintana Roo – UQRoo

**NAMIBIA**

- Sam Nujoma Marine and Coastal Resources Research Centre (SANUMARC), University of Namibia (UNAM)

**NORWAY**

- Norwegian University of Science and Technology (NTNU)

**SÃO TOMÉ AND PRÍNCIPE**

- University of São Tomé and Príncipe (USTP)
- Ministry of Public Works, Infrastructure, Natural Resources & Environment (MOPIRNA)
- Ministry of Health (MS)
- Ministry of Agriculture, Fisheries and Rural Development (MAPDR)
- Ministry of Planning, Finance, and Blue Economy (MPFEA)
- National Institute for Endemic Diseases (CNE)
- National Port Authority (ENAPORT)

**UNITED STATES OF AMERICA**

- The Alliance for Education, Science, Engineering and Development in Africa (AESEDA), College of Earth and Mineral Science at Pennsylvania State University (Penn State)
- Global Science and Technology Partnerships (GoPortugal)
- MIT Portugal
- Carnegie Melon Portugal
- UT Austin

**OTHER INTERNATIONAL ORGANISATIONS**

- Agência Espacial Europeia (ESA)
- UNEP
- PNUD
- UNOOSA
- GEOBlue Planet
- MBON
- LifeWatch ERIC
- Convenção de Abidjan
- Convenção da Corrente de Benguela
- FioCruz
- AEM

DIVERSIFICATION OF FINANCING SOURCES

Since its creation in 2018, the AIR Centre has been growing in a consistent and structured way. Its mission, always present, to create a unique international and collaborative network for technological, scientific, and social development in the context of the Atlantic Ocean is, today, a reality. In this five-year period, it was possible to increase participation in national, European and international projects, expanding the network and giving visibility to the various members of the AIR Centre in the international context of Space (e.g. Earth Observation) and Ocean.

With the institutional support of funding bodies in Portugal, such as the Foundation for Science and Technology (FCT) and the Regional Government of the Azores (GRA), it was possible to significantly expand the activities of the AIR Centre between 2018 and 2022, but in parallel, the organization has concentrated its efforts on ensuring a diversification of funding sources, originating from projects and other international programs (see Figure 2).

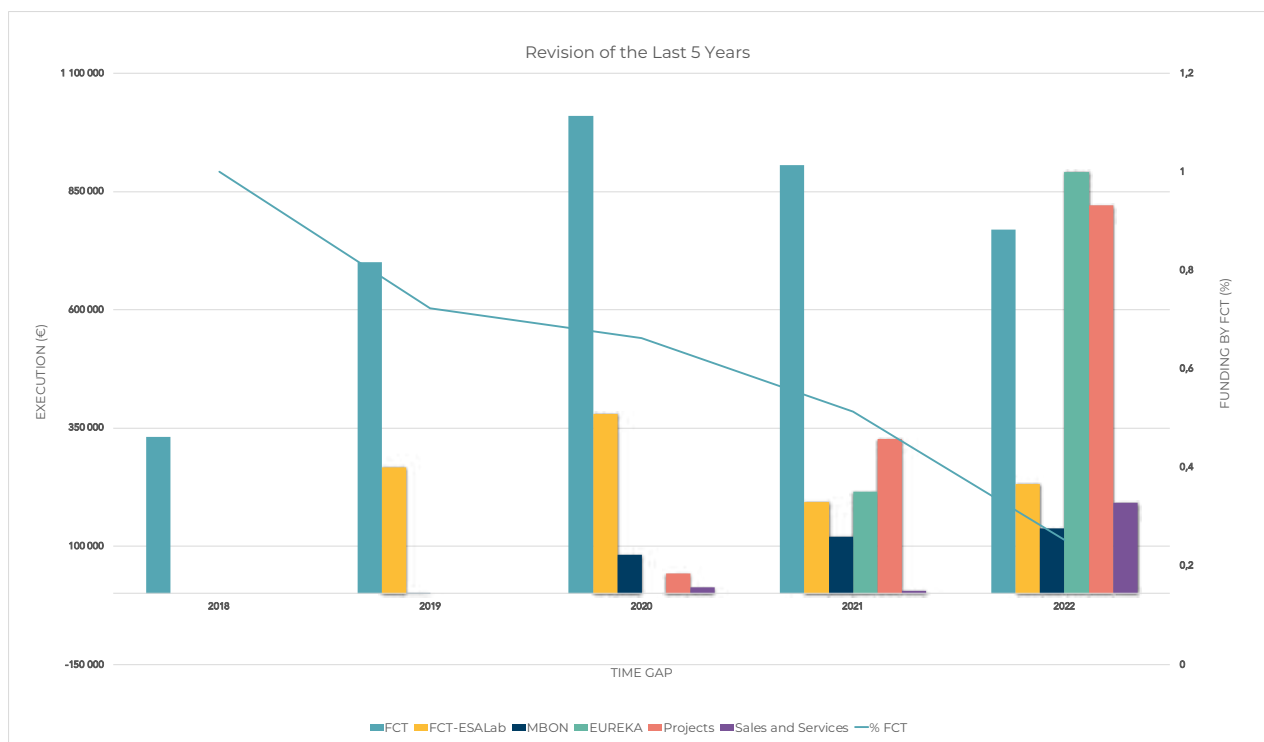
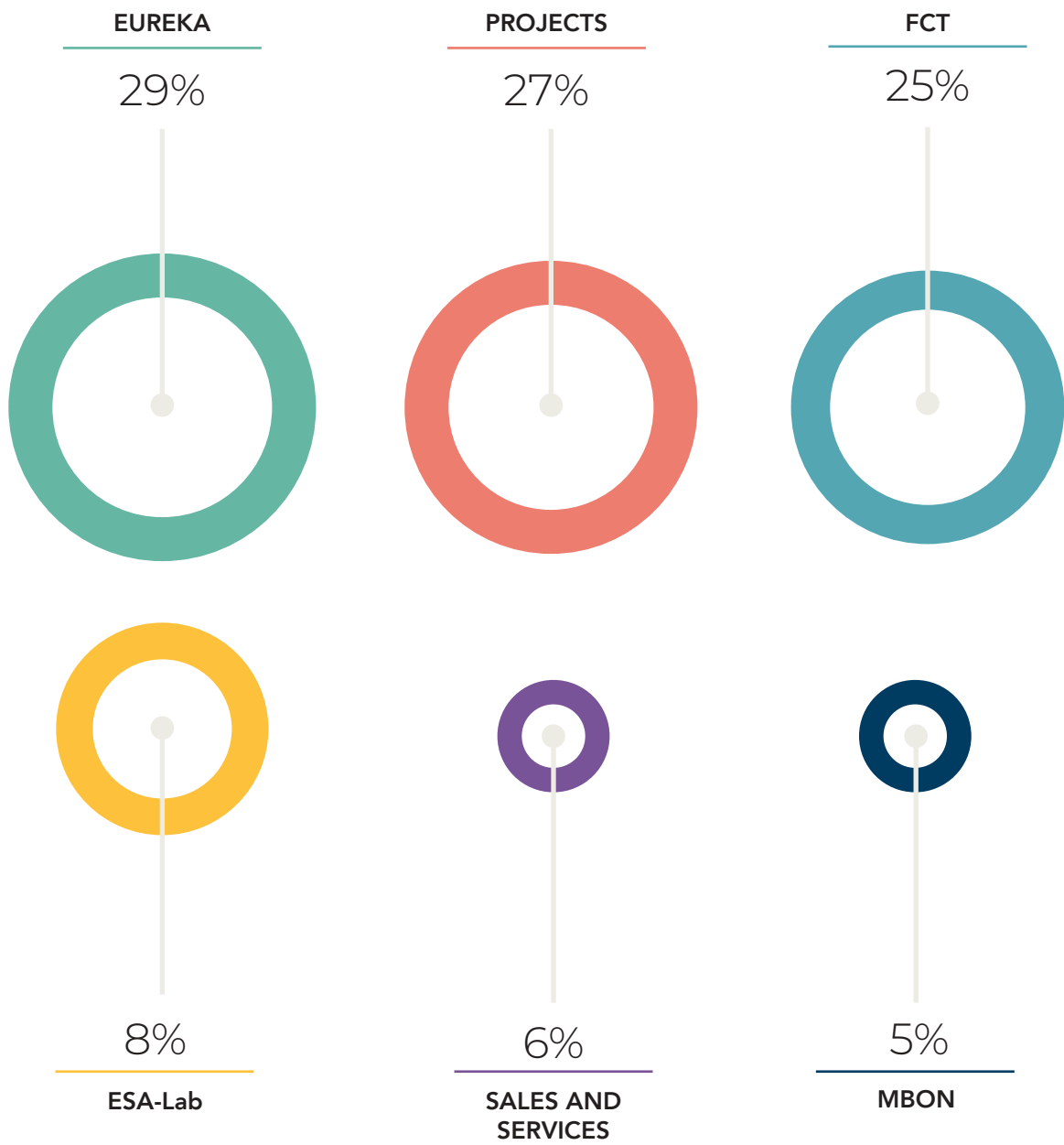


Figure 2 - Diversification of Funding Sources 2018-2022

Thanks to the continuous efforts of the operational team and the AIR Centre's network, we can now rely on more than 8 different sources of funding, which guarantee financial stability and long-term projection. Among the funding sources are the Horizon program (DG RTD, H2020), the European Space Agency (ESA), EEA Grants, Interreg Europe, the Azores Operational Programme, the National Recovery and Resilience Program (PRR), among others. In this context, the AIR Centre has already secured participation in several projects, most of which are still running, with a total amount of funding close to 3.7 million euros.

It is important to mention that in 2022, the AIR Centre led the organization of several national and international events, such as the Atlantic Innovation Week 2022, the GEO Blue Planet Symposium, several events of the “Eureka meets the Atlantic” program, Global Innovation Summit 2022, between others. These events were crucial to bring together the various projects from different areas and funding programs and thanks to these initiatives it was possible to collaborate with around 95 countries, hundreds of leaders and international stakeholders from academia and companies, creating countless new opportunities for cooperation and development in the positioning and importance of the Atlantic in the world context.





2. THE AIR CENTRE NETWORK IN THE ATLANTIC

Image by Jim Petkiewicz on Unsplash

2. THE AIR CENTRE NETWORK IN THE ATLANTIC



The AIR Centre, in addition to the activities defined in the plan and as previously mentioned, in its breadth of Atlantic Interactions, has evolved to diversify into two (2) verticals: Atlantic Networking and Earth Observation Lab (EO Lab).

ATLANTIC NETWORKING

Expansion of the AIR Center network in the Atlantic: consolidation of the current network, creation of new partnerships and agreements with Atlantic countries and the continuous development of international cooperation.

Promotion of actions and events with regional, national, and international impact: the diffusion, dissemination, growth of the social and economic impact, through the organization of events and other initiatives that promote networking with the network and that expand the institutional visibility of the AIR Center as a unique actor of Atlantic Interactions.

2.1 EXPANSION OF THE NETWORK IN THE ATLANTIC

During 2022, the process of consolidating and expanding the AIR Center network and the development of international cooperation in the Atlantic continued, with new partnerships and bilateral agreements being promoted. This cooperation resulted in the formalization of memorandums of understanding, affiliation agreements and protocols of intent, as listed in table 1 as follows.

Table 1 - Agreements and MoUs signed in 2022

| Document | Country | Signature Date | Signed by |
|---|---------------|-----------------|--|
| Memorandum of Understanding Between AIR Centre and UNEP | Quénia | 24 de Fevereiro | Miguel Belló Mora, CEO AIR Centre and Jian Liu, Director Science Division |
| Protocolo de Cooperação entre a Universidade da Madeira (Uma) e o AIR Centre | Portugal | 27 de Fevereiro | Miguel Belló Mora, CEO AIR Centre e Reitor Silvio Fernandes |
| Acordo de Cooperação Técnica entre o Estado de AMAPÁ-UEAP e o AIR Centre | Macapá-Brasil | 7 de Março | Miguel Belló Mora, CEO AIR Centre e Reitora da UEAP Kátia Santos |
| Mutual Non-Disclosure agreement between EarthDaily Canada Holdings Corp and AIR Centre | Canadá | 11 de Abril | Miguel Belló Mora, CEO AIR Centre Wade Larson, SVP Business Development |
| Memorandum of Understanding Between AIR Centre and The Instituto Geográfico Agustín Codazzi - IGACC | Bogotá | 19 de Abril | Jose Moutinho, e Madin Maseeh, President |
| Affiliation Agreement Between AIR Centre and Maldives Space Research Organisation | Maldivas | 5 de Setembro | Emir Sirage, CEO AIR Centre; Joaquin Brito, Plocan; Malik Lopes, IMAR; Nora Silva, INIDA; Sandra Freire, UNI-CV; Carlos Pina, NOSI; IPB e MORE Orlando Gonçalves; K4P Aliances Manuel Heitor |
| Memorandum of Understanding Between AIR Centre and PLOCAN; IMAR; INIDA; Univ. Cabo Verde; NOSI; CIMO/IPB; MORE; K4 Aliances | Cabo Verde | 13 de Outubro | Emir Sirage, CEO AIR Centre; Ana Judith Chan Orantes, SENACY |
| Memorandum of Understanding Between AIR Centre and Earth Observation Research and Innovation Centre (EORIC) of the University of Energy and natural Resources in Sunyani, Ghana | Ghana | 2 de Novembro | Emir Sirage, CEO AIR Centre; Augusto Teixeira de Albuquerque |
| Memorando de Entendimiento entre AIR Centre e Secretaria Nacional de Ciencia e Tecnologia (Senacyt) | Guatemala | 11 de Novembro | José Moutinho Neto, AIR Centre ; Ana Maria Reales Directora General del IGAC |
| Memorando de Entendimento entre o AIR Centre e a Universidade Federal do Ceará | Brasil | 20 de Novembro | José Moutinho Neto, AIR Centre ; Elvis Asare Bediako, Vice-Chancellor; Emmanuel Kwesi Nyantakyi, Head; Isa Olalekan Elegbede, Lecturer (Witness-University of Lagos) |

2.2 PROMOTION OF ACTIONS WITH REGIONAL, NATIONAL, AND INTERNATIONAL IMPACT

The AIR Center held, co-held, or participated in a series of events that promoted active networking and the creation of new collaboration opportunities in the network and that continue to expand the institutional visibility of the AIR Center as a key player in Atlantic Interactions and a single point of contact between several Atlantic regions. Table 2 describes each event, which are published in detail on the AIR Center website (<https://www.aircentre.org/events/>).

Table 2 - Event List of 2022

| NO | EVENT | AIR CENTRE | TYPE | DATE 2022 | PARTNERS |
|-----|---|--------------|-----------|-------------|--|
| 3 | Onward webinar series (4) | Co-organizer | Virtual | | |
| 3.1 | ONWARD Webinar no. 6 with Dr. Rita Colwell (UMIACS) | | | MAR 17 | ONWARD |
| 3.2 | ONWARD Webinar no. 7 with Verónica Jurquiza (INIDEP, Argentina) | | | MAR 29 | |
| 3.3 | ONWARD Webinar no. 8 with Veronika Strnadová and Marketa Gladyshev (EUSPA) | | | NOV 10 | |
| 3.4 | ONWARD Webinar #9 with Katrina Campbell (Queen's University Belfast) | | | DEC 10 | |
| 4 | Seminário " como a desnaturalização de desastres explica Petrópolis" | Co-organizer | Virtual | MAR 10 | Fiocruz; UFRJ, UFF; NEPED/UFSCAR; FUNDAJ; FAPERJ. |
| 5 | Atlantic Innovation Week - 2022 Terceira, Azores | Organizer | hybrd | MAR 14-17 | |
| 6 | Blue Talks | Co-organizer | Virtual | MAY 20 | Portuguese Embassy in Washington; Government of Kenya |
| 7 | Projeto E5DES Workshop sobre Dessalinização em Cabo Verde Cidade da Praia, Cabo Verde | Co-organizer | hybrd | MAY 25 | Canary Islands Institute of Technology; Univesrity of Cape Verde; |
| 8 | MARINE LIFE OBSERVATIONS - 2022 UN OCEAN CONFERENCE SIDE EVENT Lisboa, Portugal | Co-organizer | In-Person | JUN 28 | GEO BON; MBON; Marine Life; CIIMAR, GOOS; IOOS; OBIS; Ocean KAN; University South Florida |
| 9 | Integrating Marine Litter Monitoring to Inform Action - 2022 UN OCEAN CONFERENCE SIDE EVENT Cascais, Portugal | Co-organizer | Hybrid | JUN 29 | GEO Blue Planet; Mercator; GOOS; EU4OceanOB; Eurosea |
| 10 | Symposium on advances in Ocean Observation Terceira, Azores - Portugal | Co-organizer | In-Person | JUL 4-7 | FLAD; The Ocean Foundation; Schimdt institute; NSF; NOAA; NASA; The Research Council of Norway |
| 11 | I Fórum Internacional de Tecnologia e Inovação Social para as Pessoas e o Planeta Bahia, Brazil | Co-organizer | Hybrid | JUL 19-21 | Fiocruz; UFBA; FAO Brasil; Governo da Bahia |
| 12 | SCIENTIFIC REQUIREMENTS WORKSHOP | Co-organizer | Virtual | SEP 21 | ESA; DEIMOS; CLS; Deltares;CMCC;TELESPAZZIO; + atlantic |
| 13 | 5th Geo Blue Planet Synposium, Accra Ghana | Co-organizer | Hybrid | OCT 24-28 | GEO Blue Planet; Mercator; University of Ghana; GMES-Africa Union; NOAA |
| 14 | Projeto E5DES Workshop on Dessaliniation in Senegal Dakar, Senegal | Co-organizer | Hybrid | NOV 10 | University of Assane Seck de Ziguinchor.; Canary Islands Institute of Technology |
| 15 | 5th Fortaleza Austral Spring School Fortaleza, Brazil | Co-organizer | Hybrid | NOV 21-22 | Labomar; Federal University of Ceará |
| 16 | Blue Mission AA KoM Cork, Ireland | Organizer | Hybrid | NOV 23 | |

2.2.1 NETWORKING FRIDAYS

The Networking Fridays webinar series began on April 24, 2020, to bring people together during a time of uncertainty and social distancing resulting from the COVID-19 pandemic. With the great success of these webinars, during 2022, the Networking Fridays sessions continued weekly on Fridays and provided the opportunity for researchers, innovators/entrepreneurs, representatives of multilateral organizations, government officials and entrepreneurs to informally discuss their work with the audience and explore future ways of collaborating.

The statistics regarding the participation of the Atlantic community between 2021 and 2022 are shown in Figure 3.

The aim of the Networking Fridays is to keep the network active, connected and informed about activities of interest that are taking place in the Atlantic region. During 2022, multiple speakers and moderators from the Atlantic community participated and interactive discussions were provided with thousands of proactive spectators, originating from more than 100 countries globally. Recordings of most of the sessions are available on the AIR Centre's YouTube channel.

During 2022, the sessions that took place within the scope of the Networking Fridays can be seen in Table 3.

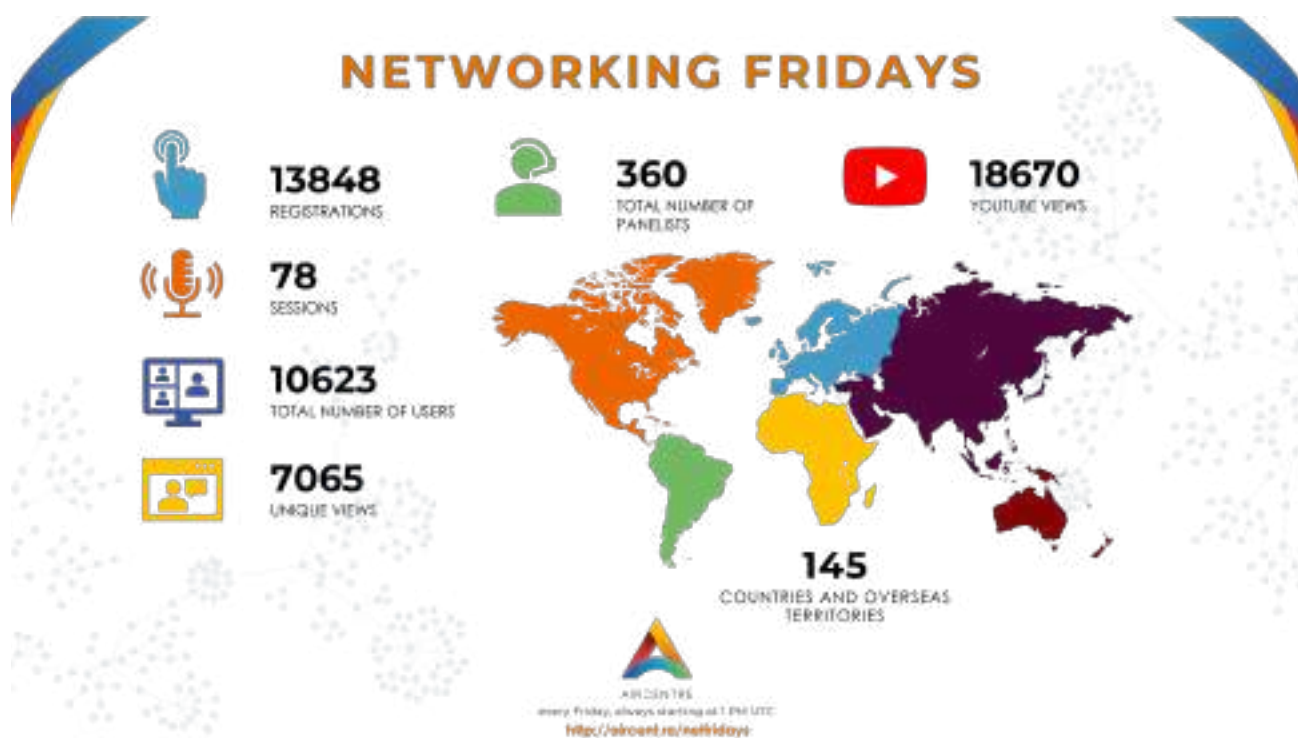


Figure 3 - Networking Fridays statistics until 2022

Table 3 - List of Networking Fridays in 2022

| NO | EVENT | AIR CENTRE | TYPE | DATE 2022 | PARTNERS |
|----------|--|--------------|---------|-------------|----------|
| 1 | Networking Fridays (9) | Organizer | Virtual | | |
| 1.1 | NETWORKING FRIDAYS WITH CE2COAST | | | FEV 18 | |
| 1.2 | NETWORKING FRIDAY ON WOMEN EMPOWERMENT IN AQUACULTURE | | | MAR 4 | |
| 1.3 | NETWORKING FRIDAY WITH TINI AND MINCIENCIAS | | | JUN 17 | |
| 1.4 | NETWORKING FRIDAY ON SCIENTIFIC DIPLOMACY | | | JUN 24 | |
| 1.5 | NETWORKING FRIDAY ON OCEAN LITERACY | | | JUL 1 | |
| 1.6 | NETWORKING FRIDAY ON SUSTAINABILITY MANAGEMENT IN A CHANGING CLIMATE | | | JULY 15 | |
| 1.7 | NETWORKING FRIDAYS WITH ZACHARIE SOHOU (IRHOB) | | | SEP 16 | |
| 1.8 | NETWORKING FRIDAY WITH LUIS ERNESTO BEZERRA (LABOMAR) | | | SEP 30 | |
| 1.9 | NETWORKING FRIDAYS ON CLIMATE CHANGE | | | NOV 25 | |
| 2 | Marine Biodiversity Networking Fridays (8) | Co-organizer | Virtual | | |
| 2.1 | Marine indicators for the Convention on Biological Diversity (CBD) | | | JAN 14 | |
| 2.2 | Marine biodiversity monitoring in the Indo-West Pacific Region | | | FEB 11 | |
| 2.3 | Ocean Observation: strengthening collaboration among the marine biodiversity Ocean Decade Actions | | | MAR 11 | |
| 2.4 | Marine Biodiversity Networking Friday on IOC/WESTPAC and coral reef survey and recovery activities | | | APR 8 | MBON |
| 2.5 | The Southern Ocean: Antarctic Marine Biodiversity Monitoring | | | MAY 13 | |
| 2.6 | Latitudinal marine biodiversity patterns in Asia-West Pacific and the world | | | JUN 10 | |
| 2.7 | The Global Ocean Observing System and related activities in the Asia-Pacific region | | | SEP 9 | |
| 2.8 | Bio-GO-SHIP: Expanding biological ocean observations for plankton ecosystem science and monitoring to the global scale | | | DEC 9 | |

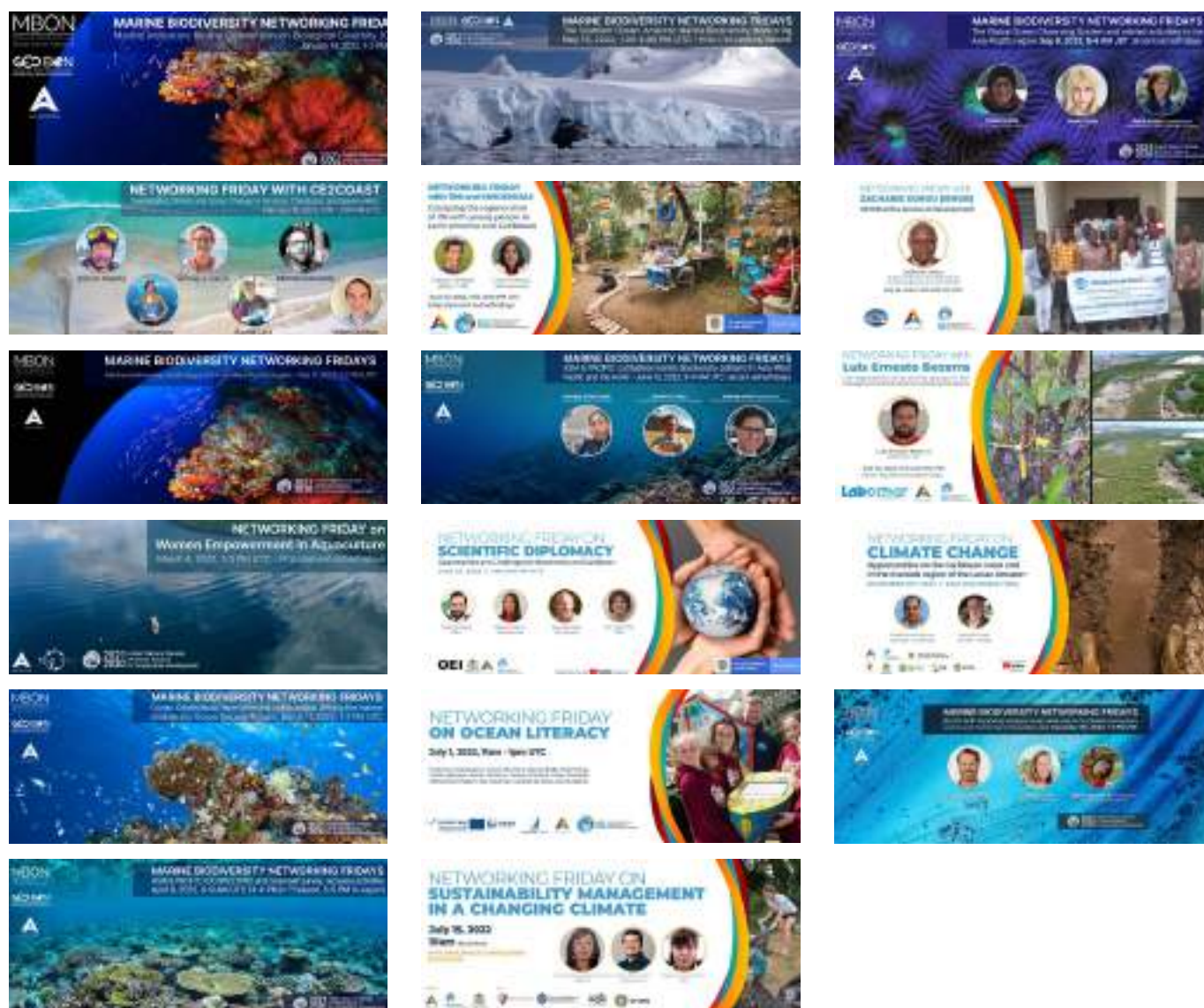


Figure 35 - Banners for Networking Fridays in 2022



3. GLOBAL CHALLENGES AND OPERATIONAL GOALS

3. GLOBAL CHALLENGES AND OPERATIONAL GOALS



GLOBAL CHALLENGES IN THE ATLANTIC

The AIR Centre is an organization that operates in a network, collaboratively and distributed internationally. Its mission is oriented to promote and create value and benefits for science, economy, and citizens of the Atlantic space, aligning with regional, national, and international priorities. For the execution of its activities during 2022, and with a continuity strategy in alignment with the Resolution of the Ministers Council no. 29/2018, the AIR Centre reinforces the Atlantic positioning in which Portugal and its partners have a central role. This strategic position opens unique opportunities in the international context, facilitating, in particular, the development and promotion of a research and development agenda within the Atlantic interactions. Thus, promoting international cooperation for the strengthening of multidisciplinary Ocean-Space-Climate-Data Science knowledge, through North-South/South-North cooperation. By addressing the Ocean-Space-Climate-Data Science nexus, it also promotes multilateral cooperation in addressing national and regional priorities and global challenges, as defined in the major benchmarks of the UN Agenda 2030, the Paris Agreement, the UN Decade for Ecosystem Restoration and the “All-Atlantic Ocean Atlantic Research Alliance”.

Under the Resolution of the Ministers Council no. 55/2019 (15,16,17), the AIR Centre develops and promotes the national scientific and technical capacity in Earth Observation and Data Science. Using innovative space technologies for the development of technological solutions, namely through a European Space Agency - ESA Laboratory in the scope of Earth Observation, an infrastructure for receiving satellite data and a Data Center on Terceira Island in the Azores reinforcing cooperation with North and South Atlantic partners.

During 2022, the AIR Centre remains committed to developing its activities based on a scientific agenda aligned with 5 missions that aim to promote transdisciplinary and collaborative Research and Development (R&D) with various stakeholders (Universities, Research & Engineering Centres, Institutions and/or Research Laboratories and companies). AIR Centre also seeks to stimulate technology transfer and help projects move up the value chain to higher TLRs across the Atlantic regions that are part of the network. The five missions on which the AIR Centre’s scientific agenda is based are represented in the following pages.



CLEAN AND PRODUCTIVE COASTS, BAYS AND ESTUARIES

Promote the sustainable development of the main bays, coastal and estuarine zones, focusing on the conciliation of urban growth and environmental preservation and restoration;



RESILIENCE TO COASTAL HAZARDS



Prevention, reduction and increasing preparedness for response against exposure to coastal risks and vulnerability to natural or man-made disasters, such as floods, sea level rise and extreme weather conditions, as well as adaptation to and mitigation of the effects of climate change;

SUSTAINABLE FOOD PRODUCTION

Promote new food value chains with sustainable fisheries and offshore aquaculture and reduce environmental risks and food safety pressures;





IMPROVED RESOURCE MANAGEMENT OF OCEANS, COASTS AND MARINE SYSTEMS

Promote the sustainable development of ocean and coastal ocean and coastal ecosystems, strengthen the capacity of good governance of marine and coastal biodiversity, and raise awareness among local communities and decision-makers about the economic value of marine and coastal ecosystems and biodiversity and biodiversity;

ENVIRONMENTAL AND MARITIME MONITORING

Enable the creation of impactful and affordable data collection and information systems that use nanosatellites, robotics, and collaboratively developed autonomous systems coupled with Earth observation systems, models, and artificial intelligence.



Figure 5 – The five (5) AIR Centre missions



OPERATIONAL GOALS

Throughout the year 2022, the AIR Centre has defined several operational objectives, reflected in the plan of activities, contributing to the global challenges that are part of its missions. Importantly, the organization's focus is geared towards strengthening its distributed network in the North-South and South-North Atlantic, and on consolidating the organization as an international reference in the greater Atlantic area. However, during 2022, the international community had to continue to adapt and maintain operational agility to get through the post-pandemic period. Despite this, the AIR Centre, maintained the execution of its activities with dynamism and proactivity, which was adjusted according to the governmental guidelines of this transition period, both in the mainland and in the Azores. Several measures were maintained during 2022 aimed at keeping the organization running smoothly, as follows:

- Maintaining the health of the AIR Centre team and stakeholders is considered a priority;
- Instructions, recommendations, procedures and contingency plans aligned with the policies of the management of the post-pandemic period were defined in conjunction with the Science and Technology Park - TERINOV on the island of Terceira and the Secretary General of Education in Lisbon;
- All AIR Centre resources followed a work rotation plan regarding the workplace, increasing physical presence at the facilities (both at the headquarters - TERINOV and the offices in Lisbon), with the teleworking policy remaining at 5 days per month;

- Continuity of operations was maintained, i.e. 100% operational with all human resources available, having maintained the use of the of video and teleconferencing tools (ex: Zoom, MS Teams, Google Meeting, etc.) for the continuity of the activities at the internal level and interaction with external stakeholders and partners;
- Re-planning of the 2022 events for mode: 100% online or hybrid adjusting always to the measures and policies of post-pandemic management that were in in force in the different locations.

The operational objectives defined in 2022, as designated in the business plan, were as follows:

- Continuity in the consolidation of the internal structure: stability of processes for the integration of new human resources (HRs), based on an organizational chart (see figure 6) approved in 2021 to match the operational dynamics of the organization;
- Availability and access to facilities (both at the headquarters in the Azores - Science and Technology Park - TERINOV, and at the offices in Lisbon - Palácios das Laranjeiras);
- Continuity in the implementation and stabilization of internal procedures to support management and administration, based on the consolidation of the organizational chart in 2022, as in the previous year.

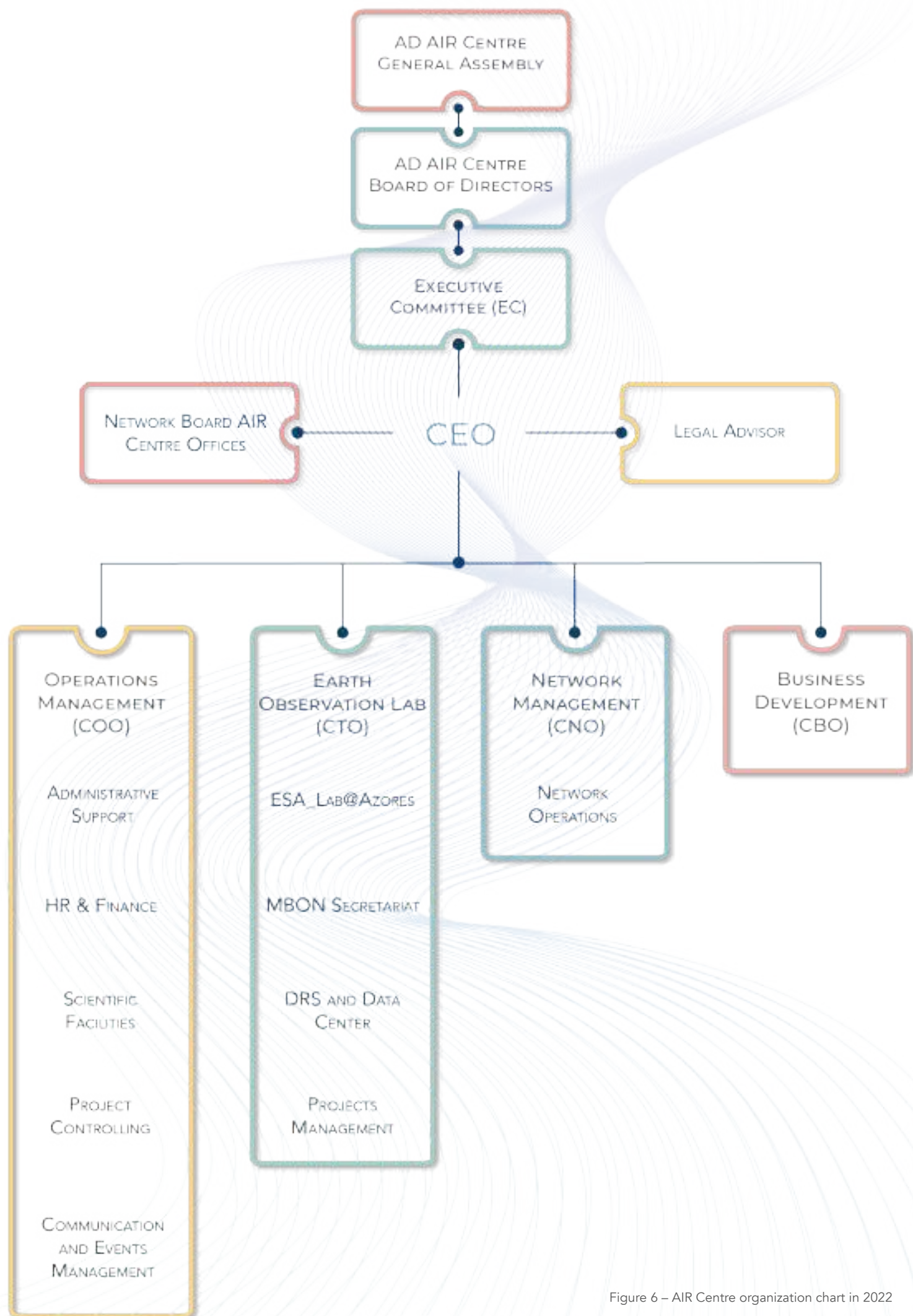

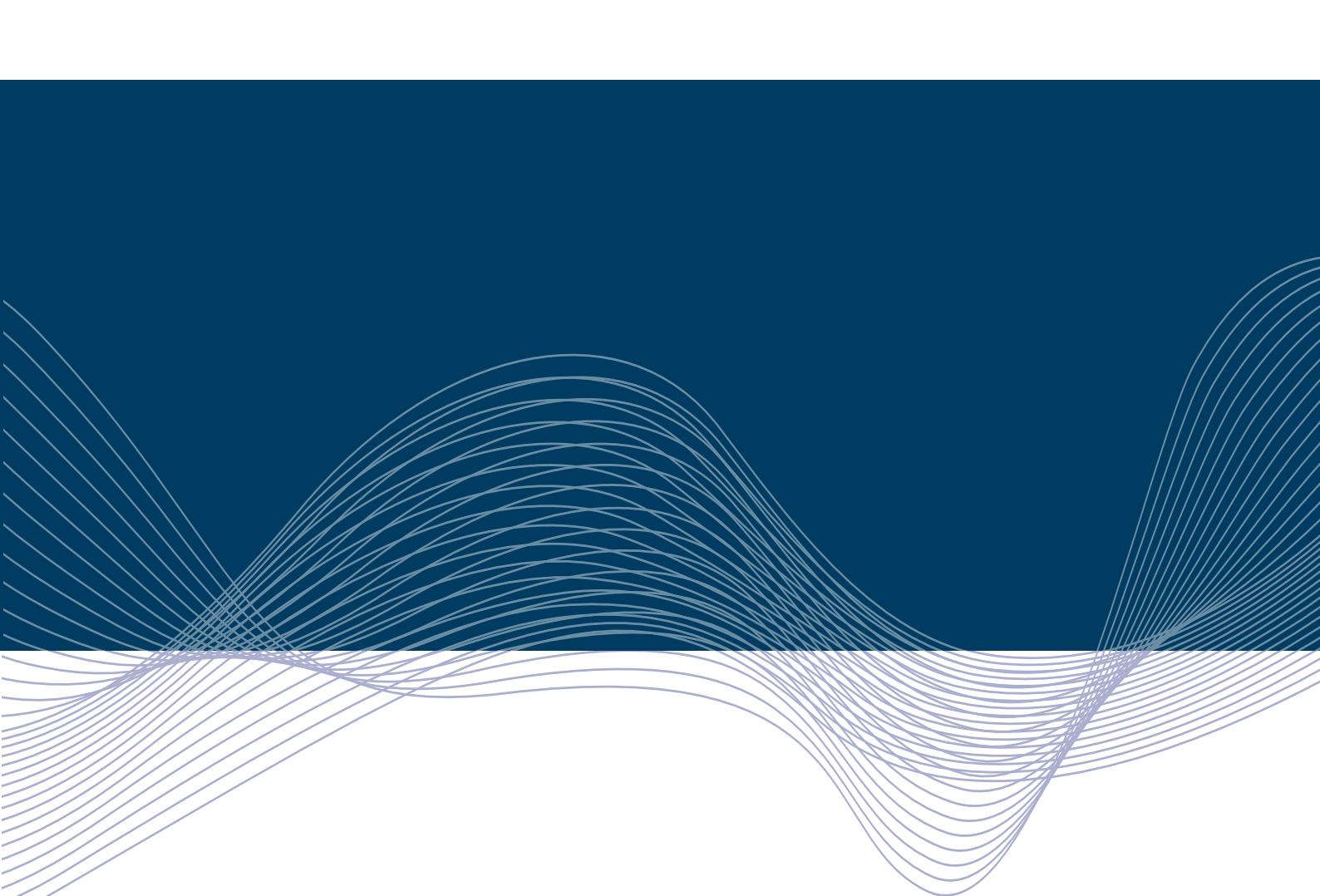


Figure 6 – AIR Centre organization chart in 2022



Therefore, and following what was approved in GA n°. 12 on December 10, 2021, an activity plan for 2022 is defined, with the following:

- Implementation of new products and services using the data/images of the High and Very High Earth Observation satellites: Geosat-1 and Geosat-2 within the AIR Centre missions;
- Operationalization of the Direct Reception Station (DRS) for satellite data/images and the AIR Data Centre on Terceira Island;
- Continued implementation of the strategic program of the Portuguese Presidency of the Eureka international network in the period 2021-22;
- Participation in the implementation of the Atlantic Constellation (through the Recovery and Resilience Program (PRR) project - New Space Portugal);
- Implementation of projects approved in 2022 and preparation of new proposals for 2023;
- Organization of events and initiatives within the scope of the links to the United Nations and the Scientific Committee on Oceanic Research - SCOR;
- Continuity in the implementation of the AIR Centre Fellowship Program.



RESULTS OF OPERATIONAL OBJECTIVES 2022

Continuity in the consolidation of the internal structure

During 2022, internal procedures were consolidated to ensure compliance with national legislation on public procurement, finance, and human resources. We continued with the implementation of the means of electronic administration versus the physical redundancy of dossiers e.g. relating to project monitoring, the use and integration of management and administration systems, favouring increased efficiency and quality of internal and external service, continued, as well as the knowledge

management of the employees involved in these processes. The following results will be evident in 2022:

- Complete digital operationalization (100%) of financial administration through the use of platform/software for financial management and accounting designated: Primavera;
- Administrative procedures and actions carried out/completed:
 - Publication of gender equality manual on AIR Centre website;
 - Manual, workflow for HR management and Training Plan;
 - Updating and standardization of document management for project monitoring (i.e. at the digital level in AIR Centre's GDrive, respective

physical support through file folders, and instructions for document identification);

- Hiring of a legal support, through the Prior Consultation procedure, to accompany all the internal procedures;
- Updating of the document: Regulations for the operation of the AIR Centre's Board of Directors;
- Approved, in Executive Committee, the project management policy ("Project Policy");
- Planned and structured organization of the General Assembly, Board of Directors, and Executive Committee meetings.

Even though in the year 2022, there was an external factor impacting operations due to the post-pandemic period and the war in Ukraine, the AIR Centre maintained a progressive dynamic in hiring new human resources. In January 2021, a total of seventeen (17) employees were integrated in the AIR Centre, both in the Azores and in Lisbon, and in December 2022 the total number of employees in the organization's staff rose to twenty-four (24) (see Figure 7). Note should also be made of the integration of employees with a special regime, i.e. one (1) external employee through a protocol with the partner institution CoLab +Atlântico, with a technical and strategic contribution to the Flagship Initiatives of the AIR Centre, namely the "Atlantic Constellation"

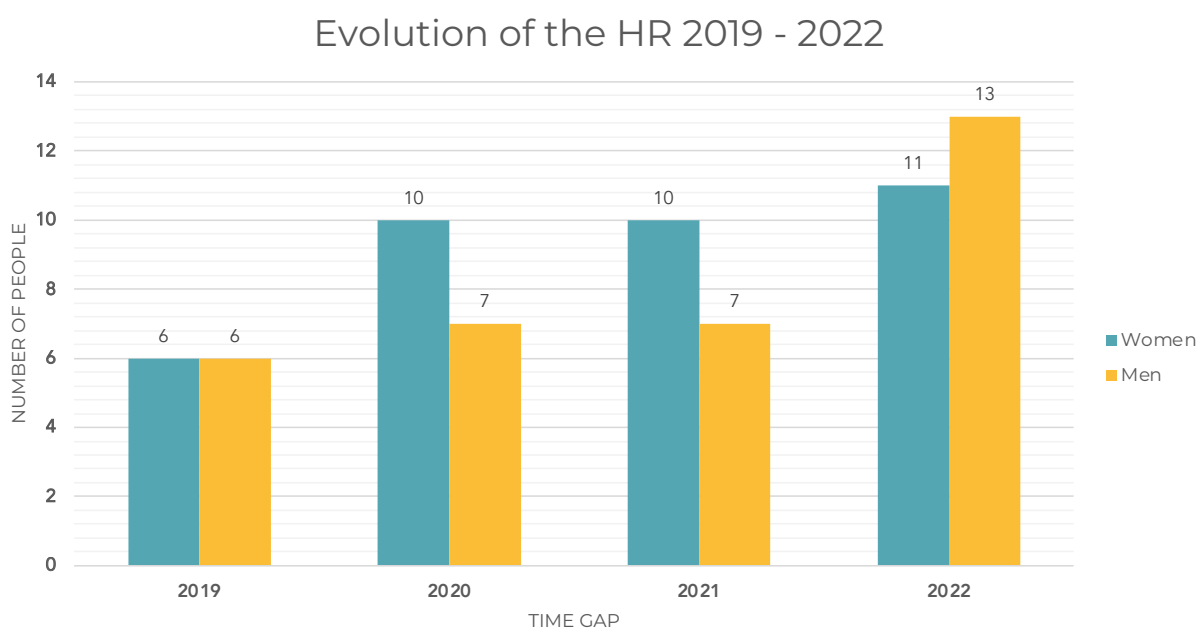


Figure 7 - Evolution of HRs in Air Centre (2019-2022)

As far as the qualifications of the human resources in 2022 are concerned, the distribution is as follows: six (6) PhDs, thirteen (13) Master’s degrees, three (3) Graduates and two (2) with non-higher education of the total number of AIR Centre employees (see Figure 8).

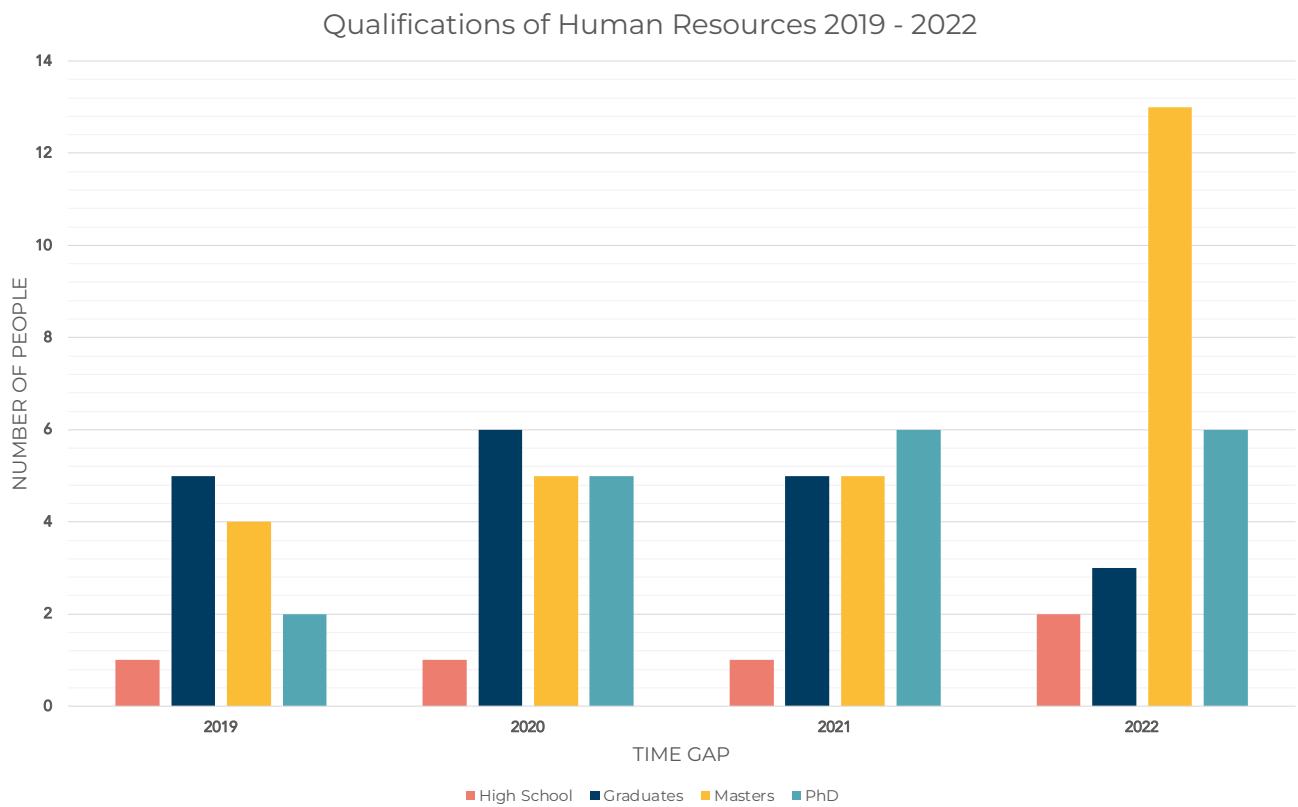


Figure 8 – Distribution of AIR Centre HR qualifications in 2022

Regarding gender indicators in 2022, eleven (11) is the total number of AIR Centre employees made up of female individuals (see Figure 9).



Figure 9– Gender indicators at the AD AIR Centre in 2022





It is important to highlight that in 2022, the AIR Centre continued to prioritize the motivation of its employees. To this end, it organized a “team building” and “performance appraisal” event at its facilities in Lisbon, which brought together the team in the Azores and the Lisbon team. Figure 10, illustrates the importance of this type of meeting, the motto being:

“Individually, we are one drop. Together, we are an ocean”.

Regarding the planned and structured organization of formal meetings of the AIR Centre’s main bodies in 2022, the General Assembly (GA) met 4 times during the year (see Annex 1, GA members), and presented the following key topics for discussion and approval:

Table 4 - General Assembly Meetings in 2022

| DATE | GENERAL ASSEMBLY | KEY TOPICS FOR DISCUSSION AND APPROVAL |
|--------|---------------------|---|
| 10-Feb | Extraordinary No 13 | <ul style="list-style-type: none"> • Opening of the General Meeting • Agenda approval |



Figure 10 - AIR Centre team gathered at the Team Meeting in October 2022

DATE GENERAL ASSEMBLY KEY TOPICS FOR DISCUSSION AND APPROVAL


| | | |
|--------|-------|--|
| | | <ul style="list-style-type: none"> • CEO presentation on: <ul style="list-style-type: none"> • Request for resignation of the member of the Board of Directors - Carolina Rego Costa; • Approval of new member of the AIR Centre Board of Directors;; • Approval of the new composition of the Board of Directors; • Information on a new member of the Executive Committee; • Presentation of the date(s) of the General Meeting on the 14th, in a hybrid meeting regime in Lisbon or Azores (e.g. 1st week of April 2022); • Other topics; |
| 12-Apr | No 14 | <ul style="list-style-type: none"> • Opening of the General Meeting • Agenda Approval • Approval of France as a new member of the AIR Centre • CEO Overview |

DATE

GENERAL ASSEMBLY

KEY TOPICS FOR DISCUSSION AND APPROVAL

| | | |
|--------|-------|---|
| | | <ul style="list-style-type: none"> • Approval of the 2021 Management Report and Accounts; • Review of the 2022 Activity Plan; • Review of the 2022 Budget Forecast; • Capital Increase at GEOSAT • Other topics; |
| 4-Jul | No 15 | <ul style="list-style-type: none"> • Opening of the General Meeting • Agenda Approval • Request to the General Meeting to appoint a Chairman of the Board of Directors following the resignation of Maurício Guedes; • Request to the General Meeting for appointment of Chairman of the Board of Directors and Interim CEO following the resignation of Miguel Belló Mora; • Approval of the Board of Directors for the designation, procedures, preparation of the "International Vacancy Announcement" for the new CEO of the AIR Centre • Other topics; |
| 12-Dec | No 16 | <ul style="list-style-type: none"> • Opening of the General Assembly meeting; • Approval of the agenda; • Replacement of the Chairman of the Board of the General Meeting; • Inclusion of a new member on the International Search Committee (ISC) for the new CEO of the AIR Centre; • Guatemala's application for membership; • Overview: Activities 2022; • Proposed Activity Plan 2023; • Closing forecast for the 2022 accounts and budget proposal for 2023; • Presentation of document: Strategic Orientations of the AIR Centre 2023-2027; • Conclusions and table tour; • Other topics. |



The Board of Directors (BD) of AIR Centre (see Annex 2, members of the BD) met in 2022: on 7 February, 28 March, 27 June, 10 August, and 22 November - always in conjunction with the issues discussed in the Executive Committee (emanation of the BD, of an operational management nature), and whenever necessary.

The members who currently make up the governing bodies of AD AIR Centre, except for the CEO and the Statutory Auditor, receive no remuneration of any kind, by decision of the General Assembly.

The CEO, the management team, the technical/operational and administrative human resources guarantee the execution of the plan of activities and tasks foreseen for the efficient operation of the AIR Centre. In this way, it is possible to ensure the continuous improvement of the effectiveness of the procedures, including the prompt signing of the various agreements or contracts, the submission of project applications and their follow-up, the organization of regional, national and international events, missions to the network stakeholders and other activities (e.g. advanced training for human resources), as well as the implementation of new procedures and processes always oriented towards an increasing operational digitalization, and the monitoring of the work of the auditors with regard to financial, legal and ongoing projects, based on compliance with applicable national, European and international legislation.

3.1 NEW PRODUCTS AND EO SERVICES

The AIR Centre, as a shareholder of the GEOSAT satellite operator, has followed the company's activities during 2022, namely to consolidate a technical collaboration for the use of images from the Geosat-1 and Geosat-2 ("High and Very High-Resolution - VHR") Earth Observation satellites (see figure 11), in order to involve the AIR Centre's network, for example in the use of images or development of solutions for emergency situations or for scientific purposes, thus resulting in new project opportunities based on Earth Observation (OT) systems.

Thus, on June 9, 2022, a collaboration protocol was signed with Geosat, so that the AIR Centre could use an image package (from the archive and for the "tasking" pass), going against the involvement of network partners of the AIR Centre for the use of Earth Observation systems. For the operationalization of this protocol, on November 8-9, 2022, the AIR Centre visited GEOSAT in Valladolid (Spain), with the following agenda:

- Visit to the satellite image processing facilities (see Figure 12), meet the technical team, and systematize with the CEO of Geosat, about the following:
 - Definition of work plan to access the image package;
 - Exploring common opportunities for collaboration in OT (through ESA, European Commission, and other multilateral funding sources that could involve AIR Centre partners);
 - Technical alignment, within the PRR project: "NewSpace Portugal"
 - Ensuring that the current CEO of AIR Centre is up to date on Geosat's strategy and business plan and is informed of all activities as a shareholder.

Note that the worldwide Earth Observation market segment (acquisition, processing and sale of satellite images and services based on them) was valued between USD 2.6 billion (BryceTech) and USD 3.8 billion (PWC). Products in this market compete on resolution, accuracy, temporal frequency, distribution mechanisms and price. Market studies are unanimous in predicting the growth of this segment, triggered by the growing demand for information products and Big Data Analytics. The close collaboration with Geosat will certainly allow the AIR Centre and its network to explore new solutions in a more competitive way, based on science, and in the most varied areas of application, as follows on page 52.

SATELLITES



GEOSAT 1

625km swath @ 22m

2-3 days revisit time

3-bands

- Red
- Green
- NIR



GEOSAT 2

12km swath @ 40cm & 75cm

2 days of revisit

5-bands

- Panchromatic
- Red
- Green
- Blue
- NIR

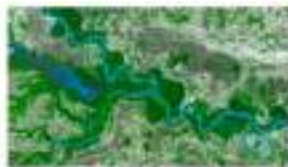
Figure 11 – Characteristics of the Earth Observation satellites: Geosat 1 (left) and Geosat 2 (right)



Figure 12 - Visit to Geosat's satellite image processing facilities in Valladolid, Spain



AGRICULTURE, RESOURCES & ENERGY, MARITIME,
HUMANITARIAN RELIEF



FORESTRY, EMERGENCY MNGT, FINANCE & INSURANCE,
LAND MAPPING



ENVIRONMENT, FIRES MONITORING, INFRASTRUCTURES,
DEFENSE & SECURITY

Figure 13 - Segmentation of markets using Geosat's satellite images (source: <https://geosat.space/>)

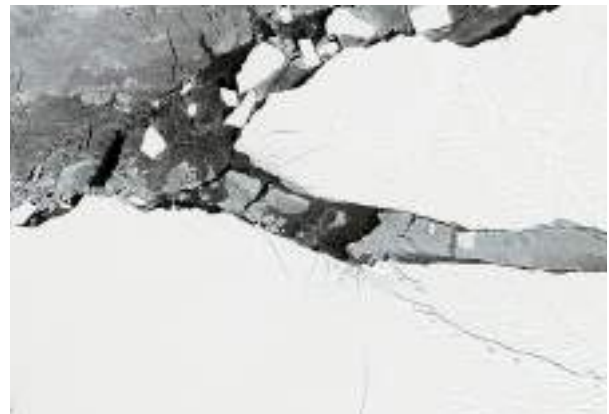
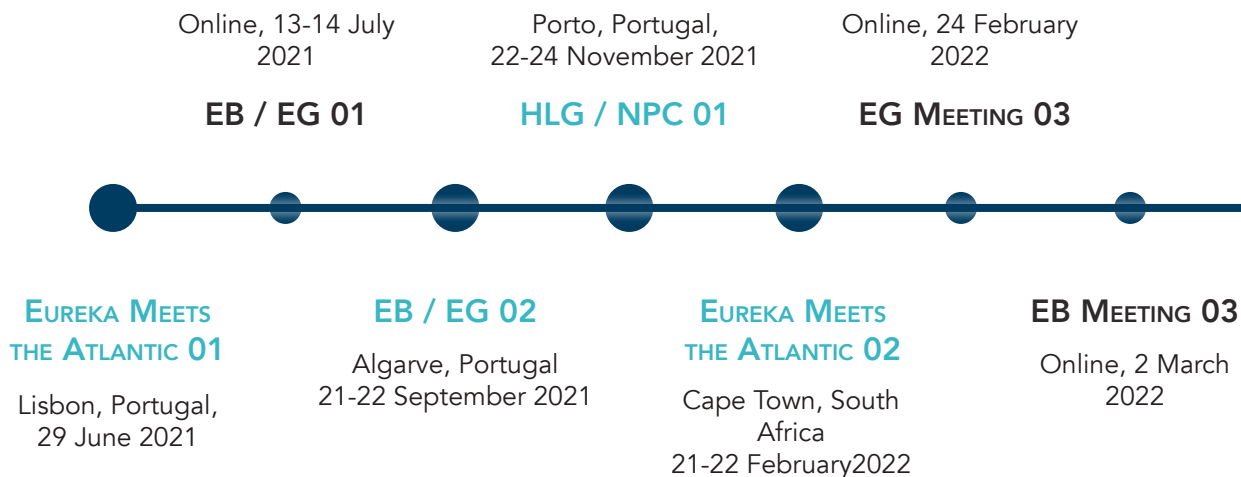


Figure 14 - Examples of Geosat's satellite images (source: <https://geosat.space/>)

3.2 PORTUGUESE EUREKA CHAIRMANSHIP

The Portuguese Chairmanship of the Eureka network is assumed by the AIR Centre in 2021 with a duration of (1) one year until June 2022. This Presidency succeeded the Presidency of the Council of the European Union (January-June 2021) and coincided with the co -Presidency of Portugal on the Council of the European Space Agency (ESA) also during the year 2021. These (4) four pages briefly describe the activities and most important results of the Presidency led by the AIR Centre.



EmA 01 - The Portuguese Presidency of Eureka 2021-2022 proudly presents the event EUREKA meets the Atlantic through the collaboration and innovative research of Space-Ocean-Earth, in the context of the Encontro Ciência 21. The event took place on the 29th of June 2021, in Lisbon, and in a hybrid format with live streaming.

EB/EG 01 - The first Executive Board and Group Meeting under the Portuguese Chairmanship of Eureka took place online on the 13th and 14th of July 2021. Throughout the meeting several key topics were addressed, including the Innovative SMEs Eurostars-3 Partnership Project Proposals, ending on the topic of Globalisation. Other topics such as the Introductions to PT Chairmanship and Appointment of a new Risk and Audit Committee member, as well as Eureka Project Management Platform and other relevant management themes were also discussed.

EB/EG 02 - The 2nd Executive Board and Group Meeting under the Portuguese Chairmanship of Eureka took place in Algarve on the 21st and 22nd of September 2021 and counted with the in-person participation of several Eureka member countries. The first day, the Executive Group meeting, was on the 21st September, during which there was the opportunity to discuss several key topics, including Eurostars-3 and the second day was dedicated to cover topics such as the Risk and Audit Committee and Risk Management, as well as relevant themes of the Eureka Secretariat management activities.

HLG/NPC 01 - The first network meetings under the Portuguese Eureka Chairmanship took place in Porto on 22 to 24 November 2021 with several inperson and online delegations participating. Day 1 counted with several workshops and the NPC meeting, followed by the HLG/NPC meeting and HLG meeting on the second day, concluding with a second HLG and General Assembly on the third and last day of the event.

EmA 02 - The Portuguese Presidency of Eureka promotes the 2nd event "Eureka meets the Atlantic", which focused on the theme of Earth Observation (OT), which is fundamental for sustainable development through green and digital innovation. It took place on the 21st and 22nd of February 2022, in Cape Town - South Africa, and in a hybrid format with live streaming.

EG 03 - On the 24th February, the second Executive Group meeting took place in Brussels. The meeting started with an overview of the Portuguese Chairmanship activities, and throughout the day several other topics were discussed, such as the European Partnership on Innovative SMEs, the Membership of Non-European Countries, as well as an update on Globalstars, Clusters and complementary activities.

EB 03 - The Executive Group meeting was followed by the Executive Board meeting the week before. It was dedicated to covering topics such as the Risk and Audit Committee and the 2022 Internal Audit Plan, as well as the Monitoring of the Delivery of the 2021 Business Plan and other relevant internal management aspects.



HLG/NPC 02 - The second Network Meeting took place in Terceira Island in Azores, from 15 to 17 March 2022 with several in-person and online delegations the Atlantic Innovation Week, an event happening in parallel, the NPC meeting and INNOWWIDE workshop, followed by the HLG/NPC meeting on the second day, concluding with a second HLG and General Assembly on the third and last day of the event. Bilateral meetings were part of the agenda during the three working days.

EmA 03 - The third "Eureka meets the Atlantic", co-organized by the Portuguese Presidency of the Eureka Network, the UFRJ Technological Park, and ANPROTEC, focused on how innovation based on Earth Observation (OT) can be disruptive in the current status quo of the blue economy. It will take place on the 29th and 30th of March, in Rio de Janeiro - Brazil, in a hybrid format with live streaming.

EmA 04 - On April 21, 2022, the fourth Eureka meets the Atlantic, "towards a network of sustainable and healthy cities - from local to global innovation", took place in the United States of America, in the bustling city of Boston, Massachusetts. Organized by the Portuguese Presidency of Eureka and supported by the MIT Portugal program, the event addressed urban innovation and the path towards more sustainable and healthier cities, on local and global scales.

EB/EG 04 - The 4th Group and Executive Committee event took place in Brussels and online, from the 24th to the 25th of May. It was dedicated to the discussion of current and future activities, the European Partnership on Innovative SMEs, the working group for future presidencies, among other topics. KPIs dashboard, project management and other internal issues were also discussed.

HLG/NPC 03 - The third and last meeting of the Eureka network took place in the city of Cascais, from the 20th to the 21st of June 2022. The NPC meeting was followed by the innovative SME coordination group (ISCG), and the last meeting of the Day one was the Innovative SMEs (IS) HLG. Day two started with the NPC/HLG meeting followed by the HLG meeting. Finally, the General Assembly took place, focusing on the revision of the statutes of the Eureka Association and the appointment of Ricardo Conde, president of Portugal Space, as president of the Eureka Association until the end of the year 2022, as well as the participants in the Executive Board.

MM - The 28th ministerial event began on June 21, 2022, with the Ministerial dinner at Palácio da Cidadela, in Cascais. On the morning of the 22nd of June, the Ministerial Conference took place at the Estoril Congress Centre, bringing together more than 40 senior representatives: Ministers, Secretaries of State and other senior representatives of the Member States of the Eureka network, together with representatives of the European Commission (EC).

GIS 22 - Marking one year of the Portuguese Presidency of Eureka, the Global Innovation Summit 2022 brought together leaders, researchers, and companies from all over the world to discuss a sustainable future for the planet. Companies from 90 countries, about 150 speakers and more than 1700 people registered for the event, which among several sessions had, as some of the most important themes, the preservation of the oceans, the potential of science and space innovation and the reformulation of policies for promote sustainability.



FPCUP IN EUREKA

In collaboration with the Eureka initiative, the AIR Centre organized two sessions under the European Copernicus program (FPCUP 2020-3-5), with the aim of promoting the internationalization of small and medium-sized companies that develop products and services based on Copernicus. The first session took place in South Africa, attended by 20 SMEs and around 80 participants. The second session took place in Brazil and was attended by 20 SMEs and around 150 people. These events proved to be crucial to promote the international expansion of European, African, and South American companies that rely on Copernicus program resources. The participation of SMEs in high-level events, either as participants or co-organizers, offers a unique opportunity for growth through sharing technological knowledge and networking. In this way, the AIR Centre expands its sphere of influence and action in the South Atlantic, contributing to the development of companies and services, in an environment of mutual collaboration and constant inspiration.

MAIN RESULTS OF THE PRESIDENCY OF THE EUREKA NETWORK

1. The launch of the Eureka Clusters joint “Sustainability Call”, which brought together around 20 million euros from 16 countries (among the countries participating in this call, from the AIR Centre network, were: South Africa, United Kingdom).
2. Memorandum of Understanding with European Space Agency.
3. Extending Eureka’s reach in Africa and Latin America with events:
 - Eureka meets the Atlantic - Lisbon (Portugal), Cape Town (South Africa), Rio de Janeiro (Brazil), Boston (USA);
 - Continuity of coordination of the “Africa Working Group”: dialogue with Nigeria and Kenya for joining the Eureka network and launch of a future joint call of the Globalstars program with Kenya, also involving South Africa;
 - Continuity of coordination of the “Western Balkans Working Group”: Launch of the “Danube call” led by Austria and with the participation of Portugal;
 - Establishment of a partnership with 3 Brazilian financing entities (Confap, Finep and Embrapii). Launch of the Globalstars call with Embrapii, led by the Netherlands.
4. Negotiation and launch of the Innovative SMEs European Partnership (Eurostars 3 and Innowwide).
5. Eureka Ministerial Meeting with more than 40 countries (successful amendment of the Eureka Regulatory Corpus, allowing full adherence to non-European countries).
6. Organization of the Global Innovation Summit 2022 with the reintroduction of the “Eureka Innovation Awards”



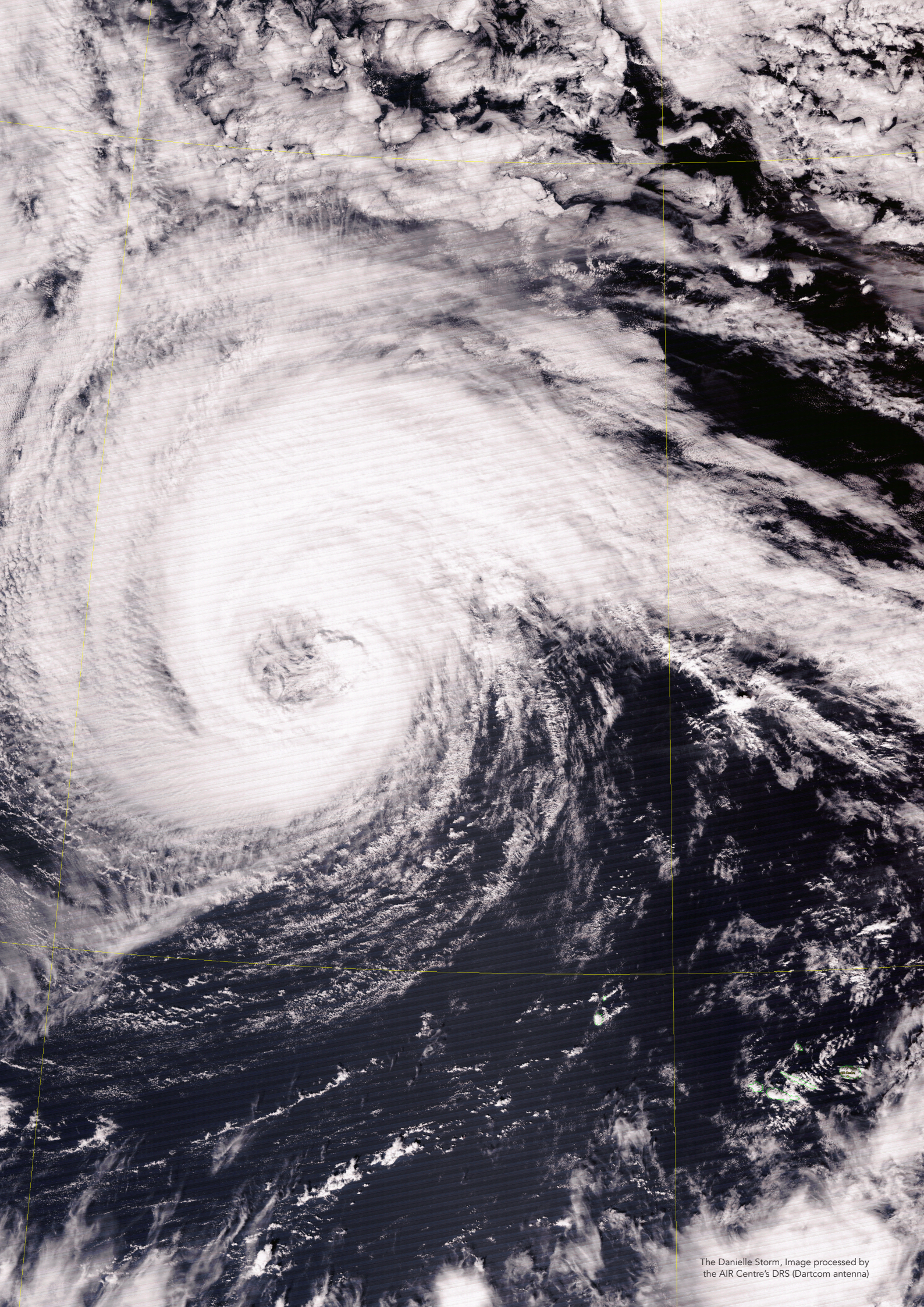
1200 Enterprises (Large, SMEs start-ups) and other stakeholders



+ 90 Countries



1700 Registrations



The Danielle Storm, Image processed by
the AIR Centre's DRS (Dartcom antenna)

3.3 ATLANTIC CONSTELLATION



PARTICIPATION IN THE IMPLEMENTATION OF THE ATLANTIC CONSTELLATION (PROJECT UNDER THE RECOVERY AND RESILIENCE PROGRAM (PRR) - AGENDA NEW SPACE PORTUGAL);

The Atlantic Constellation appears as a fundamental piece for the strategic positioning of the AIR Centre in Atlantic Interactions, where the integration of Space, Ocean, Climate, Earth, Energy and Data Sciences resulted in the design of an architecture called “Atlantic Pole to Pole Observation System of Systems (APPOSS)”. In the path towards the implementation of APPOSS, promoting an integrated philosophy for the observation of the whole Atlantic (north-south/south-north) and in its space component, the AIR Centre in 2022, achieved a collaboration as a key partner under the Recovery and Resilience Program (RRP) - “Agenda New Space Portugal”. The Atlantic Constellation promotes the added value of using satellites for Earth Observation (EO), namely for ocean observation, due to its very extensive field of view.

The objective of this constellation is to obtain spatial data with a higher frequency (every 3 hours) and lower latency (less than 1 hour), for the development of new space-based applications and contributing to the digital transformation of Atlantic regions, promoting the areas of artificial intelligence (AI) and Big Data integrated in solutions for: earth observation (e.g. geographic information of the soil and its variations, vegetation status, forest registration and management, water resources management, agriculture, nature conservation and precision agriculture); emergency management (e. g. natural disaster management and alert, including forest fires, climate forecasting); biodiversity protection on land and ocean (e.g. observation of key variables, ecosystem variability and dynamics), maritime surveillance (e.g. coastal surveillance, maritime traffic control) and fisheries, mining and energy (e.g. monitoring of off-shore renewable energy infrastructure), monitoring of climate phenomena in coastal cities, improvement of land registry systems and protection of critical infrastructure, among other solutions.

The governance model of the RRP Agenda Consortium - “New Space Portugal” involves multiple entities, Portuguese and international, between academia and companies, subdivided into five pillars that form the Atlantic Constellation: 1) HR “Medium/High Resolution”; 2) VHR “Very High Resolution”, 3) Digital Planet, 4) SAR¹ constellation, 5) VDES² constellation) and whose structure is represented in Figure 16.

¹ SAR – Synthetic-aperture radar

² VDES – VHF Data Exchange System



Figure 16 - Architecture of the governance of the New Space Portugal agenda

This structure is represented above and aims to streamline the collaboration of partners throughout the implementation of the Agenda, promoting a flexible approach suitable for the management of a large project, allowing full delegation of powers and top-down decision making (from “Work-packages (WP’s)” to individual tasks).

The AIR Centre’s responsibility in the RRP Agenda, is the implementation of “WP 5 - Service Configuration and Demonstration for the Atlantic”. The framework of this WP is oriented towards the evolution of the Earth Observation (EO) sector where it is increasingly important to foster the demonstration of new services that solve societal problems and are aligned to address global challenges.

As mentioned above, the RRP Agenda aims to develop innovative services based on OT data, collected by the space infrastructure (the orbiting Atlantic Constellation), which will be converted into value-added information after processing and analysis through the Digital Planet (Pillar 3 of the Agenda). The information/data will be available at different levels of processing for Atlantic and International stakeholders, i.e.: scientific community, policy makers/authorities, commercial customers, resulting in new opportunities for cooperation and business.

The year 2022 was fundamental for the consolidation of the Atlantic Constellation initiative and the approval of the PRR Agenda, this result being possible due to the vital institutional support and follow-up of two (2) countries: Portugal and Spain.



Both countries have identified Earth Observation from space as one of the strategic lines of greatest national interest, since it generates highly qualified jobs for the development of space systems (ground segment, flight segment, launcher, and operations). In this strategic priority line, Portugal and Spain have agreed to collaborate in the development of the Atlantic Constellation to provide high frequency data, complementing existing systems such as the Sentinel satellites of the European Copernicus program. Thus, in 2022, the AIR Centre contributed directly and indirectly to the following achievements:

Table 5 - Chronology preceding the signing of the contract "New Space Portugal" (PRR Agenda)

| KEY DATES 2022 | DESCRIPTION |
|----------------|--|
| 17 September | Signing of the PRR Agenda "New Space Portugal" by the Consortium leader in Portugal. |
| 4 November | With the presence of the Prime Ministers of Portugal and Spain, the Ministry of Science, Technology and Higher Education of Portugal and the Ministry of Science of Spain, signed a Memorandum of Understanding (MoU) concerning the development of the Atlantic Constellation composed of an estimated number of 12-16 satellites (6 to 8 to be developed by each country). |
| 6 December | Signature of the PRR Agenda Consortium Contract "NewSpace Portugal", by AIR Centre. |



Figure 17 - Prime Ministers of Portugal and Spain, the Ministry of Science, Technology and Higher Education of Portugal and the Ministry of Science of Spain at the signing of the MoU within the Constellation of the Atlantic





Figure 18 – Participation in the UNEP Conference with GRID centers, Stockholm, Sweden

3.4 UNEP AND SCOR

UNITED NATIONS ENVIRONMENT PROGRAM (UNEP)

UNEP is the leading global authority setting the environmental agenda and, within the United Nations system, serves as the world's environmental advocate. On February 24, 2022, the AIR Centre joined UNEP as a GRID¹ centre in the Azores, through the signing of a "Memorandum of Understanding – MoU", meeting with UNEP representatives in Stockholm, Sweden, in the May 31, 2022 (Figure 18), for strategic alignment and definition of the work plan for 12 months. This new GRID centre is part of an international network of 9 centres, being the only one in the Atlantic, and will help assess environmental issues with satellite data and develop new tools and methods to assist in decision-making. In addition, it will work to strengthen the transfer of knowledge and training to contribute to the preservation of marine and coastal ecosystems in the Atlantic region.

GRID centres manage and analyse data on environmental and natural resource issues through Geographic Information Systems (GIS), remote sensing imagery and in-situ data. The centres process, integrate, disseminate, and communicate geographic information through interoperable data platforms, through other online technologies including interactive graphics or maps, as well as through contributions to reports on various topics related to the environment.

In this networking context, UNEP is developing a World Environment Situation Room (WESR) to support countries dealing with environmental emergencies and towards achieving the 2030 Sustainable Development Goals (SDGs). The goal is to have a network of data, users, applications, and knowledge where data flows bi-directionally between organizations, data providers and platforms.

¹ Global Resource Information Database (GRID), World Network of Environmental Data Centers created by UNEP in 1972)



SCOR - SPECIAL COMMITTEE FOR OCEAN RESEARCH

The International Council for Science (ICSU) formed a Special Committee for Ocean Research (SCOR) in 1957 to promote international cooperation for oceanographic research. This research has particular attention to interdisciplinary issues related to oceanic processes and to the development of oceanographic sciences in developing countries.

Portugal was a member of SCOR in 1992 and tried, unsuccessfully, to rejoin in 1997. Recognizing the importance and potential of Portugal having representation on the Committee, with SCOR's scientific credibility, which translates into the integration of Portuguese researchers, their work and scientific contribution, in major international oceanographic research programs, as well as the benefits that accrue from the infra-structural projects supported by SCOR. The AIR Centre, at the end of 2021, expressed interest in becoming the institution that represents Portugal as the new National Committee of SCOR, having been approved by that Committee.

On January 31, 2022, a meeting was held for the constitution of the National SCOR Committee, which had a broad and representative participation, an executive committee was appointed, and the best practices, rights and duties of the National Committee were defined.

Under the AIR Centre's PhD fellowship program, there is a call for two fellowships in areas related to SCOR activities: Deep-sea ecosystems and Upwelling ecosystems. The call is currently in the application evaluation phase.

During the 2nd half of 2022, the construction of the SCOR Portugal page on the AIR Centre website began:

- Composition of the National Committee
- Publication of information on national initiatives related to Ocean Sciences and the activities of SCOR International;
- Web Archive of national historical documents on ocean sciences of the oceans, photographs, etc;
- Information on PhD and MSc degrees in ocean sciences awarded by Portuguese Universities.

The 1st (first) Annual Meeting of the National Committee, scheduled for December 10, 2022, in Aveiro, had to be postponed, having been, however, scheduled for February 24, 2023. and activities for 2023.



3.5 AIR CENTRE PHD SCHOLARSHIP PROGRAMME

The AIR Centre PhD Fellowship Program results from the Collaboration Protocol signed between the Foundation for Science and Technology (FCT) and the AIR Centre, on 20 May 2020. This protocol aims to fund 60 PhD research grants in the field of land and ocean observation, climate science and climate change, ocean health and marine pollution. The protocol also aims to contribute to the development of technological aspects, conservation of the marine environment and its biodiversity, the use and exploitation of its resources, the management and application of data, the application of artificial intelligence, robotics or emerging and innovative fields related to technological development and blue economy. The AIR Centre PhD Fellowship Program has the following objectives:

- Strengthen the scientific research and technological development capabilities of the AIR Centre network to meet national priorities and global challenges in the Atlantic region;
- To develop and strengthen the ties between the AIR Centre and the Portuguese scientific community in areas of common interest;

- Promote bilateral/multilateral cooperation between Portuguese scientific institutions and institutions from the different Atlantic countries, through inclusive sharing of knowledge and data, with a view to job creation, youth entrepreneurship and sustainable development;
- Expanding the scope of the AIR Centre's scientific agenda, through a broader engagement with Academia, in order to continue to demonstrate and enhance the relevance and social impact of scientific research.

By the end of 2022, six (6) international competitions have been opened for a total of forty-four (44) PhD scholarships. Of these forty-four (44), thirty-three (33) grants focus on different themes and scientific areas (see table 6), defined according to the objectives of the Program, mentioned above, and under the FCT Research Grants Regulations (RBI) and the Research Grant Holder Statute (EBI). The remaining eleven (11) grants represent reopening of calls.

Table 6 - List of Themes and Scientific Areas of the AIR Centre Doctoral Program

| AREA | Nº | TITLE |
|--------------------------------|----|---|
| A. Data Science | 1 | AIR DataNET: Research data management tools for the AIR_DataNet repository |
| | 2 | Value-added services for the AIR_Data Net repository |
| | 3 | Atlantic open data cubes - Concepts and tools for the Macaronesian region Data Cube |
| B. Health | 4 | Earth Observation for Public Health |
| | 5 | Air quality impacts using earth Observations and GIS – Geographical Information System |
| | 6 | Disaster Risk Reduction Strategies for coastal regions: mapping and prediction derived from the intersection between Hazard, Exposure and Vulnerability |
| C. Ocean Accounting | 7 | Ocean Accounting |
| D. Marine Robotics | 8 | Marine robotics: Unmanned systems for marine litter detection and collection |
| | 9 | Marine robotics: Coordinated autonomous ocean and air vehicles |
| | 10 | Adaptive Ocean Sampling and Mapping using Networked Marine Robots (surface and underwater vehicles) |
| | 11 | Optimal trajectory planning and execution control for long-range Autonomous Surface Vehicles |
| | 12 | Team-based planning and execution control for multi-domain autonomous vehicles |
| | 13 | Models of computation for systems of teamed maritime vehicles |
| E. Marine Litter | 14 | Aerial surveys of estuarine and beach plastic litter |
| F. Numerical Modelling | 15 | Healthy Atlantic Basin |
| | 16 | Downscaling / Upscaling of Ocean Circulation models in the Atlantic |
| G. Biodiversity | 17 | Assessing and Forecasting Trends In Macroalgal Beds Distribution And Productivity |
| | 18 | Marine Biogeography Functional Patterns and Processes in Atlantic Archipelagos |
| | 19 | The genetic structure in populations of marine gastropods in oceanic islands: contrasting |
| | 20 | The genetic structure in populations of marine bivalves in oceanic islands: contrasting evolutionary |
| | 21 | The genetic structure in populations of crustacean decapod crabs in oceanic islands: contrasting |
| H. Earth Observation | 22 | Monitoring and assessing the health of mangroves |
| | 23 | Assessing and mitigating the impact of the Great Atlantic Sargassum Belt in local communities |
| I. Bioeconomy | 24 | Circular bioeconomy and the valorization of the coastal region for the sustainable development of the Caribbean region |
| J. Blue Growth | 25 | Accounting, monitoring and sustainable use of the oceans and natural resources |
| K. Circular Economy | 26 | Circular economy and natural resource management for sustainable development |
| L. Ecosystems and Biodiversity | 27 | Ecosystems and biodiversity in island, coastal and inland regions |
| M. Natural Sciences | 28 | Mid-Atlantic Ridge seascapes: Tools to understand deepsea connectivity |
| | 29 | Distribution modelling of oceanic megafauna towards dynamic ocean management |
| N. Computer Sciences | 30 | Automatic image annotation of underwater video imagery with artificial intelligence techniques and machine learning algorithms |
| O. Marine Ecosystems | 31 | Marine ecosystems vulnerability assessment in Santo Antão island (Cabo Verde) |
| P. Deep-sea ecosystems | 32 | Megabenthic communities from cold-water coral reefs across the deep Atlantic Ocean |
| Q. Upwelling ecosystems | 33 | Marine carbonate system in the Northwest Atlantic upwelling ecosystem. |

Table 7 - List of Doctoral Scholarships Contracted with FCT

| ÁREA | Nº | TITLE | COUNTRY | MENTOR(S) | PHD PROGRAMME / UNIVERSITY | HOSTING INSTITUTION(S) |
|--------------------------------|----|---|-----------------|---|---|---|
| B. Health | 1 | Earth Observation for Public Health | England | Prof. César Capinha, the Institute of Geography and Spatial Planning (IGOT) Universidade de Lisboa Prof. Carla A. Sousa, Institute of Hygiene and Tropical Medicine (IHMT) Universidade Nova de Lisboa | PhD Program in Biomedical Sciences, specialty in Parasitology offered by Universidade Nova de Lisboa | Institute of Hygiene and Tropical Medicine (IHMT), Universidade Nova de Lisboa, in close cooperation with the Center for Social Studies (CES), University of Coimbra, the Oswaldo Cruz Foundation (Fiocruz), in Brazil, and the Institute of Geography and Spatial Planning (IGOT), University of Lisbon. |
| | 2 | Disaster Risk Reduction Strategies for coastal regions: mapping and prediction derived from the intersection between Hazard, Exposure and Vulnerability | Bangladesh | Supervisor: Prof. Dr. Pedro Pinto Santos, Institute of Geography and Spatial Planning (IGOT) Co-Supervisor(s): Prof. Dr. José Luís Zêzere, Institute of Geography and Spatial Planning (IGOT) and Prof. Dr. José Manuel Mendes, Center for Social Studies (CES), University of Coimbra | PhD Program in Territory, Risk and public Policies offered by the University of Lisbon, University of Coimbra and University of Aveiro. | Institute of Geography and Spatial Planning (IGOT), University of Lisbon in close cooperation with the Center for Social Studies (CES), University of Coimbra and the Oswaldo Cruz Foundation (Fiocruz), Brazil. |
| D. Marine Robotics | 3 | Marine robotics: Unmanned systems for marine litter detection and collection | Portugal | Supervisor: Prof. Hugo Silva, INESC TEC Co-Supervisor: Dr. Sen Wang, Heriot Watt University | PhD Programme in Electrical and Computer Engineering (PDEEC) I University of Porto | INESCTEC, in cooperation with Heriot Watt University and UFBA – Federal University of Bahia |
| E. Marine Litter | 4 | Aerial surveys of estuarine and beach plastic litter | Portugal | Prof. Hugo Silva, INESC TEC Prof. Dr. Eduardo Silva, INESC TEC | PhD Programme in Electrical and Computer Engineering (PDEEC) I University of Porto | INESCTEC, in cooperation with Heriot Watt University and UFBA – Federal University of Bahia |
| F. Numerical Modelling | 5 | Healthy Atlantic Basin | Brazil | Supervisor- Prof. Dr. Ramiro Neves, MARETEC/Instituto Superior Técnico Co-supervisor - Prof. Marcelo Rollnic, Federal University of Pará | PhD Program in Environmental Engineering offered by Instituto Superior Técnico | Maretec Research at Instituto Superior Técnico in the MOHID Modelling team in collaboration with the Laboratório de Pesquisa em Monitoramento Ambiental Marinho – LAPMAR, Federal University of Pará |
| | 6 | Downscaling / Upscaling of Ocean Circulation models in the Atlantic | Brazil | Supervisor- Prof. Dr. Ramiro Neves, MARETEC/Instituto Superior Técnico Co-supervisor - Prof. Marcelo Rollnic, Federal University of Pará | PhD Program in Environmental Engineering offered by Instituto Superior Técnico | Maretec Research at Instituto Superior Técnico in the MOHID Modelling team in collaboration with the Laboratório de Pesquisa em Monitoramento Ambiental Marinho – LAPMAR, Federal University of Pará |
| G. Biodiversity | 7 | Macroalgal Beds Distribution And Productivity | Spain | Supervisor: Isabel Sousa Pinto (Ciimar and University of Porto); Co-Supervisor: Jorge Ferreira de Assis, Centre of Marine Science, University of Algarve | PhD in Biology, University of Porto | CIIMAR |
| | 8 | Marine Biogeography Functional Patterns and Processes in Atlantic Archipelagos | Italy | Supervisor: Sérgio Ávila, CIBIO-Açores, Portugal Co-Supervisor: Rui Freitas, Universidade Técnica do Atlântico, Cabo Verde Co-Supervisor: António Múrias dos Santos, CIBIO, Portugal | Doctoral Degree in Biodiversity, Genetics and Evolution - BIODIV - is a 4 years programme offered jointly by the Faculty of Sciences of the University of Porto and the Faculty of Sciences of the University of Lisbon | University of the Azores and University of Porto, in cooperation with the Atlantic Technical University (Cabo Verde) and the University of Algarve. |
| | 9 | The genetic structure in populations of marine gastropods in oceanic islands | Germany | Sérgio P. Ávila (CIBIO-InBIO, Pólo dos Açores); António M. Santos (CIBIO-InBIO; FCUP); Manuel Curto (INF-BÖKU). | Doctoral Degree in Biodiversity, Genetics and Evolution - BIODIV - is a 4 years programme offered jointly by the Faculty of Sciences of the University of Porto and the Faculty of Sciences of the University of Lisbon | FCUP, Porto; CIBIO-InBIO, Porto; CIBIO-Açores, Ponta Delgada; Institute for Integrative Nature Conservation Research of the University of Natural Resources and Life Sciences (INF-BÖKU, Vienna |
| | 10 | Marine bivalves in oceanic islands | Italy | Sérgio P. Ávila (CIBIO-InBIO, Pólo dos Açores); António M. Santos (CIBIO-InBIO; FCUP); Manuel Curto (INF-BÖKU) | Doctoral Degree in Biodiversity, Genetics and Evolution - BIODIV - is a 4 years programme offered jointly by the Faculty of Sciences of the University of Porto and the Faculty of Sciences of the University of Lisbon | FCUP, Porto; CIBIO-InBIO, Porto; CIBIO-Açores, Ponta Delgada; Institute for Integrative Nature Conservation Research of the University of Natural Resources and Life Sciences (INF-BÖKU, Vienna |
| | 11 | Crustacean decapod crabs in oceanic islands: contrasting | Portugal | Sérgio P. Ávila (CIBIO-InBIO, Pólo dos Açores); António M. Santos (CIBIO-InBIO; FCUP); Manuel Curto (INF-BÖKU) | Doctoral Degree in Biodiversity, Genetics and Evolution - BIODIV - is a 4 years programme offered jointly by the Faculty of Sciences of the University of Porto and the Faculty of Sciences of the University of Lisbon | FCUP, Porto; CIBIO-InBIO, Porto; CIBIO-Açores, Ponta Delgada; Institute for Integrative Nature Conservation Research of the University of Natural Resources and Life Sciences (INF-BÖKU, Vienna |
| H. Earth Observation | 12 | Monitoring and assessing the health of mangroves | Brazil | Supervisor: Helena Freitas, University of Coimbra Co-supervisor: António Gouveia, University of Coimbra | PhD biomedical sciences (specialty area of Ecology), University of Coimbra | University of Coimbra |
| I. Ecosystems and Biodiversity | 13 | Ecosystems and biodiversity in island, coastal and inland regions | Brazil/Colombia | Supervisor: Claudia Pascoal, University of Minho | PhD Programme in Molecular and Environmental Biology | IBS/University of Minho |

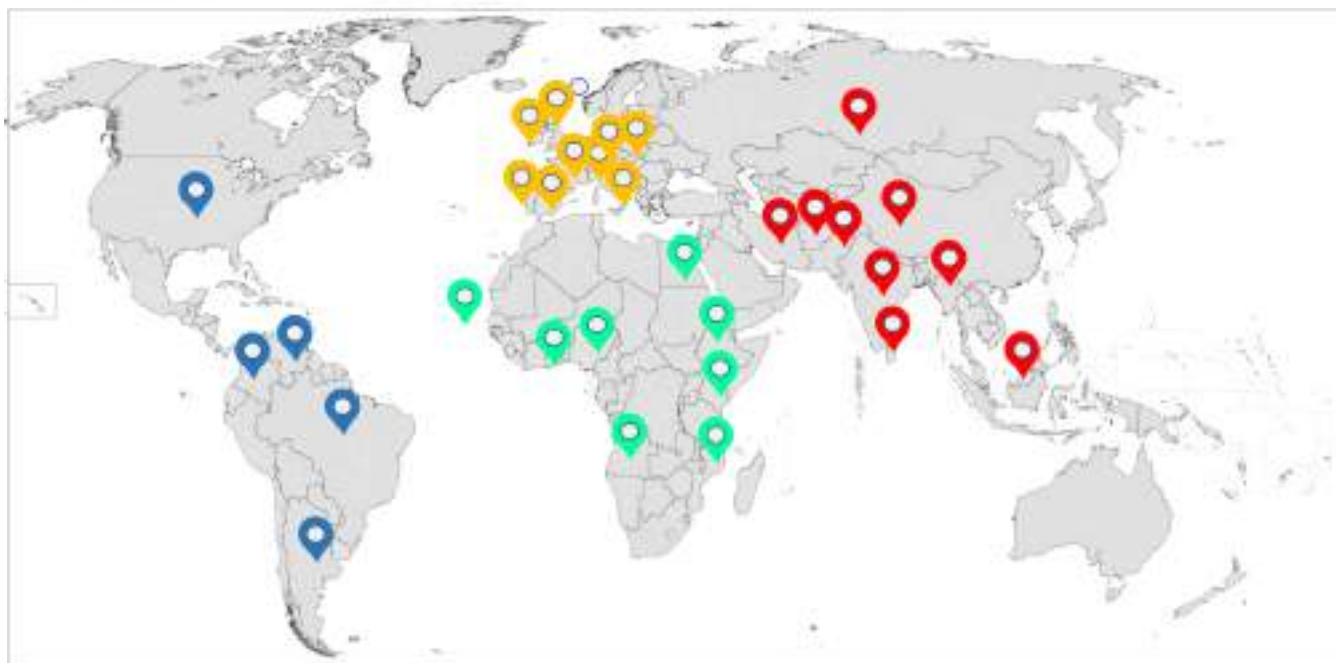


Figure 19 - Illustrative map of the origin geographies of applications submitted to the doctoral programme

However, there are three (3) grants in the review or completion phase:

- Two (2) grants in the process of evaluating applications;
- One (1) scholarship in Prior Hearing period.

The remaining seventeen (17) scholarships were not contracted for the following reasons:

- Withdrawal (personal and/or professional reasons; delay in the process of obtaining degree recognition and conversion of grades to Portuguese scale by Portuguese Universities, for foreign candidates);
- Ineligible applications (e.g. non-submission of degree recognition and conversion of grades to the Portuguese scale by foreign applicants);

- Lack of applicants (specificity of the areas and themes defined in the scope of the Program)

About one hundred and twenty (120) applications were submitted, from about 30 countries. It is important to mention that women represent almost half of the applications and 50% of the scholarships awarded.

Candidates Gender Indicators

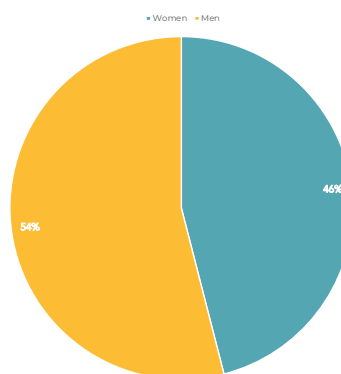


Figure 20 - Gender indicators of applications submitted to the doctoral programme



Figure 21 - Institutions: FIOCRUZ, LAMCE, UFBA, IGEO, UFPA, UFRJ, from Brazil; INESC TEC, OKEANOS, MACC, IGOT, MARETEC, IST, CIIMAR, IB-S, CIBIO, University of Azores, FEUP, University of Porto, University of Lisbon, University of Aveiro, University of Algarve, University of Minho, from Portugal; NTNU, University of Bodo, Norway; INF-BÖKU, Austria, Universidad del la Costa, Colombia; UTA, Cape Verde

In this context, numerous collaborations and partnerships have been established with several universities and educational institutions, research centers and national and international scientific institutions.

On December 19, 2022, FCT requested planning for all calls to take place in 2023, under the protocol signed with the AIR Centre, authorizing the opening of the missing grants and the reopening of all grants that were not awarded, for the reasons indicated above.

A satellite image of Cozumel, Mexico, showing the coastline and surrounding waters. The land is colored in shades of red and orange, while the water is dark blue. White clouds are scattered across the scene. The text "4. EVOLUTION OF THE EARTH OBSERVATION (EO) LAB" is overlaid in white, bold, sans-serif font.

4. EVOLUTION OF THE EARTH OBSERVATION (EO) LAB

Image - Cozumel, Mexico European Space Agency
and Copernicus Programme, Processed by SNAP



4. EVOLUTION OF THE EARTH OBSERVATION (EO) LAB

In addition to the activities defined in the plan, and in their breadth of Atlantic Interactions, the AIR Centre has evolved to specialize in the vertical:

EARTH OBSERVATION LABORATORY (EO LAB)

Consolidation of the activities of the Earth Observation Laboratory (EO Lab): Management and implementation of the AIR Centre Research & Development projects, the operationalization of the DRS and the AIR Data Centre, effective continuity in the consolidation of the EO Lab activities, concerning - ESA_Lab Azores, MBON Secretariat, A-RAEGE-Azores.

CONSOLIDATION OF THE EARTH OBSERVATION LABORATORY (EO LAB)

The Earth Observation Laboratory (EO Lab) achieved several important successes during the year 2022. Since its creation in mid-2019 at the Terceira Science and Technology Park (TERINOV), it has continuously and effectively consolidated itself as a key player in the Atlantic region by establishing cooperations and raising projects that link Space and scientific expertise, students, teaching and research in the fields of Earth Observation from Space. With a highly specialized and multidisciplinary technical team, the EO Lab functions as the AIR Centre's technical body, contributing to the execution of its various missions, enhancing networking efforts in the Atlantic. Also established as an ESA_Lab@Azores and integrated in a network of other 26 laboratories throughout Europe, it consists of a partnership with the European Space Agency (ESA), the Portuguese Space Agency (PT Space) and the Regional Government of the Azores (GRA). For the activities of ESA_Lab, a Steering Committee is established that meets annually, with the next meeting taking place in 2023.



Figure 22 - ESA_LAB Network of the European Space Agency

The 1st workshop of the ESA_Lab(s) network (see Figure 22) took place at the European Space Agency Operations Centre (ESOC) in July 2022 with presentations from the different host organizations representing the member states implementing the same program.

The EO Lab also hosts the secretariat of the Marine Biodiversity Observation Network (MBON, which is part of the GEO (Earth Observation Group)) as well as the A-RAEGE-Azores for fundamental science activities.. The results of these two initiatives during 2022, will be presented later. The most prominent accomplishments of the EO Lab in 2022 include the following:

- Signing of the Memorandum of Collaboration with the United Nations Environment Program for the use of Earth Observation for sustainable development;
- Start-up of key infrastructures, namely the satellite Direct Reception Station, the Data Center and the Azorean Long-Range Network (LoRaWAN);
- Approval of the Ocean Decade Marine Life 2030 Program, strategically positioning MBON for future activities;
- Launch of multiple innovative and competitive projects and studies in various areas including fisheries, circular economy, marine litter. Examples of key initiatives:
 - European Commission study assessing the current status of the Marine Biodiversity Monitoring Observation Network (MARBIOME);



- European Digital Innovation Centers in the food and blue economies that will leverage new initiatives for the EO Lab promoting Earth observation products and service uptake in companies and other organizations;
- Demonstration of new technologies to reduce fishing gear loss in companies and stakeholders (Custodian project);
- Study for tracking the algae *Rugulopteryx okamurae*, an invasive species using satellite Earth Observation.

Also in 2022, through the program - “Framework Program Agreement for Copernicus Uptake - FP CUP” of the European Commission, the agreement was signed for the following actions:

- Integration of Copernicus into Portuguese Higher Education;
- Integration of Copernicus for the maritime sector;
- Coastal coordination on end-user friendly needs and methodologies;
- Use of Copernicus in Africa, namely in defined geographies (e.g. Nigeria, Ghana, among others).

In addition, in 2022 the EO Lab technical team participated and co-organized important events such as:

- Dedicated sessions and an exhibition (through a booth, see figure 23) of AIR Centre’s main activities at the UN Ocean Conference (<https://oceandecade.org/pt/un-ocean-conference/>) in Lisbon - from 27 June to 1 July 2022;



Figure 23 - Members of the technical team of the EO Lab at the AIR Centre, at the UN Oceanic Conference exhibition stand in Lisbon



Figure 24 - Ideation days at the AIR Centre on the use of space technologies with secondary school students

- Copernicus market penetration initiatives, bringing European SMEs into the wider Atlantic markets, as well as specialized training courses in different countries, including Brazil and South Africa;
- Ideation days at the TERINOV Science and Technology Park in the Azores (see figure 24), raising awareness among high school students with an immersive experience in the use of space technologies for sustainable development;
- Co-organization with the “International Space University - ISU” of sessions dedicated to the Atlantic Constellation, resulting in an in-depth study illustrated through a final report by ISU students:
- The report is classified: ORCAS “Oceans, Resources and Climate Applications from Space” - <https://isulibrary.isunet.edu>.
- Internship session at the Summer School of Marine Robotics in Faial, Azores;
- Presentation of results in technical-scientific publications at international conferences with a total of 9 publications;
- Events dedicated to identifying new funding opportunities, such as the CAVIC initiative in Cape Verde (described in more detail in this report) with the aim of replicating the success of the EO Lab in other geographies.



Figure 25 - Visit of the University of the Azores to the EO Lab, on the 8th of September 2022

It is also important to highlight the dimension of the achievements of the EO Lab in the connection between Azorean regional entities and international initiatives related to the space sector with various projects and activities. Examples of this involvement include UNICOL – Cooperativa Agrícola da Ilha Terceira, one of the largest dairy products in the Azores; Lotaçor, a public trading company in the fisheries sector; the University of the Azores (see Figure 25) and several other regional entities.

4.1 DRS AND AIR DATA CENTER



OPERATIONALIZATION OF THE DIRECT RECEPTION STATION (DRS) FOR SATELLITE DATA AND OF THE AIR DATA CENTER ON TERCEIRA ISLAND

Continuing the activities in the scope of the Atlantic interactions and in order for the AIR Centre to provide its Atlantic network with a specialized Data Science infrastructure, following the work of the previous year, 2022 saw the successful operationalization of an infrastructure integrating the Direct Receiving Station ("DRS") for receiving data from 6 satellites (see figure 13) and a new Data Center ("AIR Data Center") (see figure 26). To achieve this operationalization phase, a detailed implementation plan was followed during the period 2020-2022 according to the steps shown in Table 8 below:

Table 8 - Steps of the implementation of "DRS" and "Air Data Center"

| Stages | Description |
|--------|--|
| 1 - 23 | <ul style="list-style-type: none">• Identification of the location for installing the antenna and data center;• Capacity feasibility study for a data center based on identified location;• Feasibility study of positioning the antenna over the data center;• Elaboration of the data center project;• Civil construction planning, including expertise;• Engineering and civil construction works;• Installation of the support for placing the antenna on the roof in the new building;• Electrical installation;• Installation of the first phase of the electrical/communication network between the offices and the data center;• Pre-installation of air conditioning systems;• Installation of wall panels;• Installation of technical floors;• Temporary network installation for internet access;• Installation of DRS antenna and racks with servers for data processing;• Installation of air conditioning system;• Installation of the "chiller" thermal system;• UPS system installation;• Installation of automatic fire detection and extinguishing system. Installation of switches;• Network installation for internet access;• Network configuration;• Installation of storage servers;• Installation of web servers; |

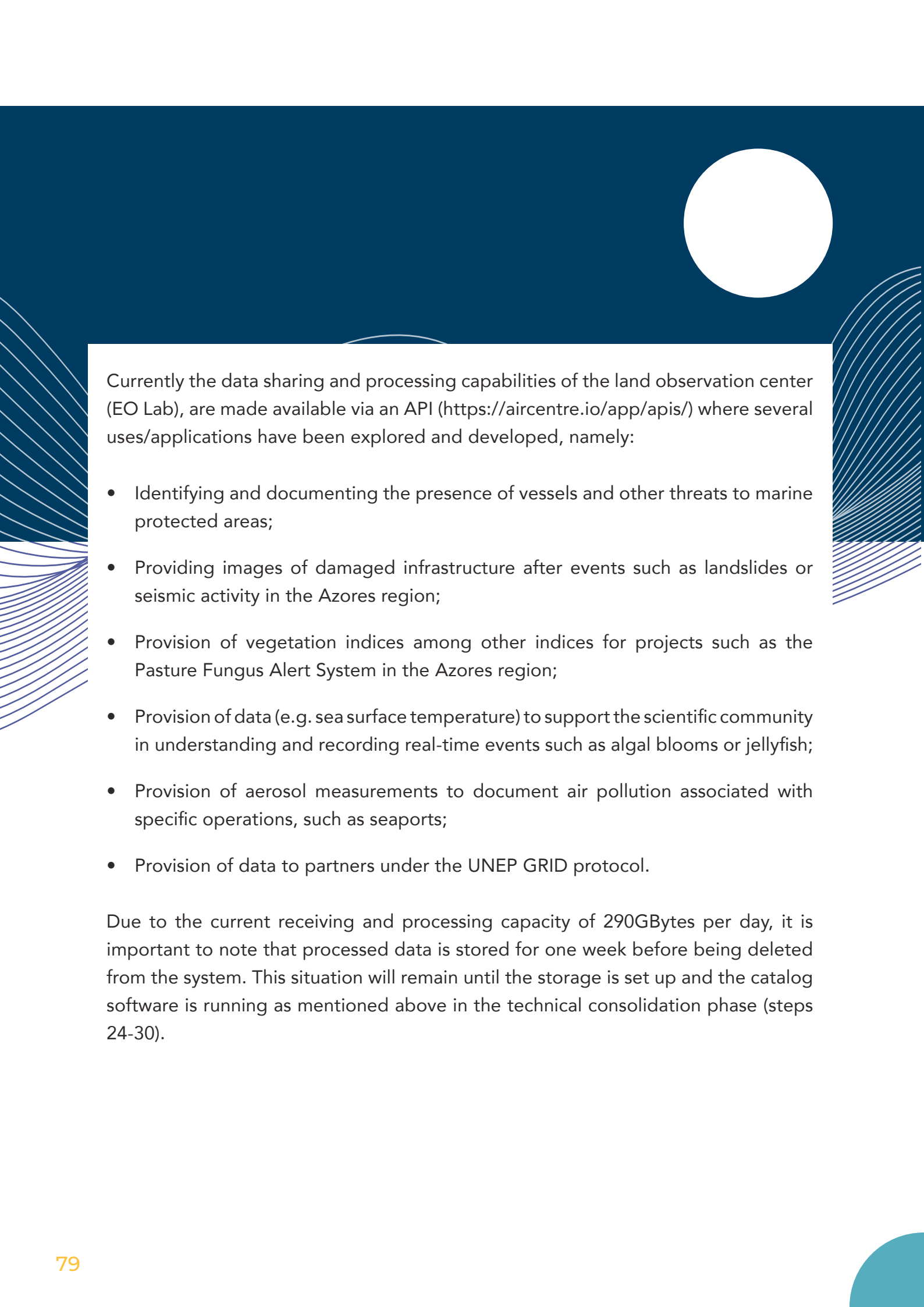


Figure 26 - DRS-Data reception of 6 satellites (Earth, Aqua, Suomi NPP, JPSS-1, FY-3C and 3D)

Steps 1-23 have enabled the DRS satellite data acquisition and processing infrastructure to be operational today. It is anticipated that by 2023 additional steps (see Table 9) will be required for a technical consolidation of the “AIR Data Center” data center that will allow to exploit the capabilities of this infrastructure at regional, national, and international level with the entire AIR Centre network.

Table 9 - Air Data Center consolidation stages

| Stages | Description |
|---------|---|
| 24 - 30 | <ul style="list-style-type: none"> • Installation of the second phase of the network between the offices and the data center; • Configuration of storage servers; • Configuration of web servers; • Creation and implementation of cataloguing program; • Implementation of API (“Application Programming Interface”) for data sharing; • Installation of computing servers for data analysis and support for intensive computing services; • Configuration of processing servers. |



Currently the data sharing and processing capabilities of the land observation center (EO Lab), are made available via an API (<https://aircentre.io/app/apis/>) where several uses/applications have been explored and developed, namely:

- Identifying and documenting the presence of vessels and other threats to marine protected areas;
- Providing images of damaged infrastructure after events such as landslides or seismic activity in the Azores region;
- Provision of vegetation indices among other indices for projects such as the Pasture Fungus Alert System in the Azores region;
- Provision of data (e.g. sea surface temperature) to support the scientific community in understanding and recording real-time events such as algal blooms or jellyfish;
- Provision of aerosol measurements to document air pollution associated with specific operations, such as seaports;
- Provision of data to partners under the UNEP GRID protocol.

Due to the current receiving and processing capacity of 290GBytes per day, it is important to note that processed data is stored for one week before being deleted from the system. This situation will remain until the storage is set up and the catalog software is running as mentioned above in the technical consolidation phase (steps 24-30).

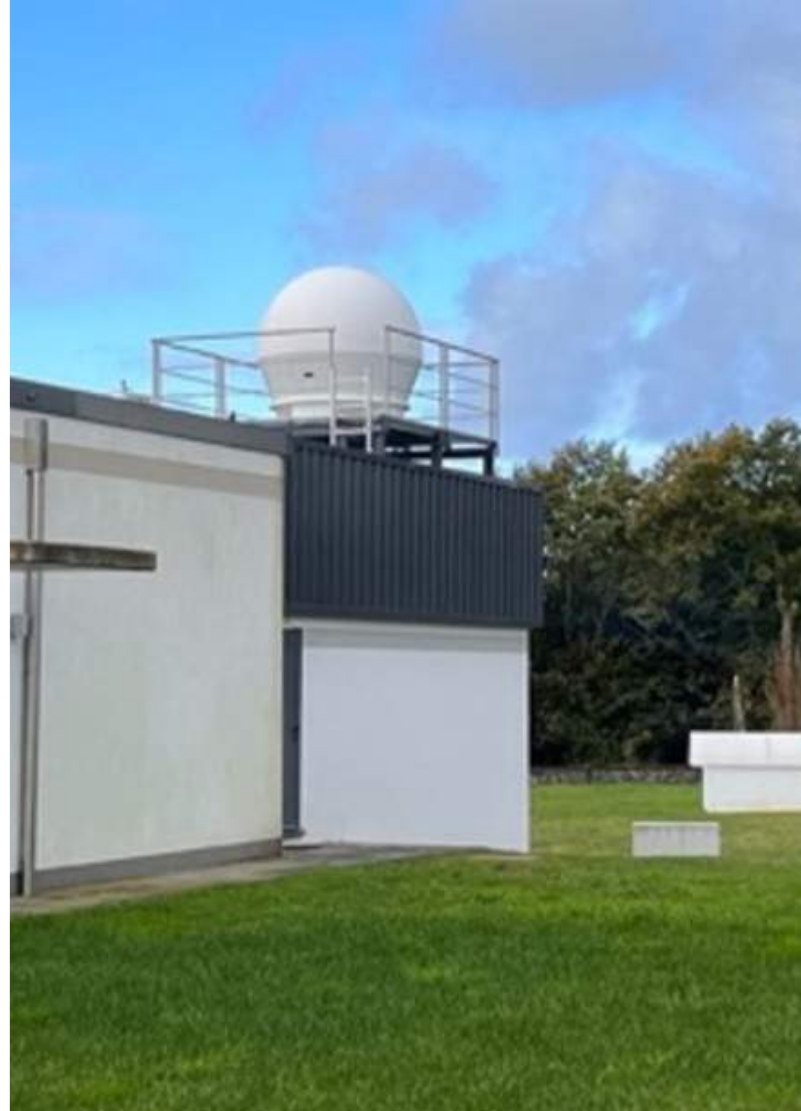


Figure 27 - DRS Antenna and AIR Data Center

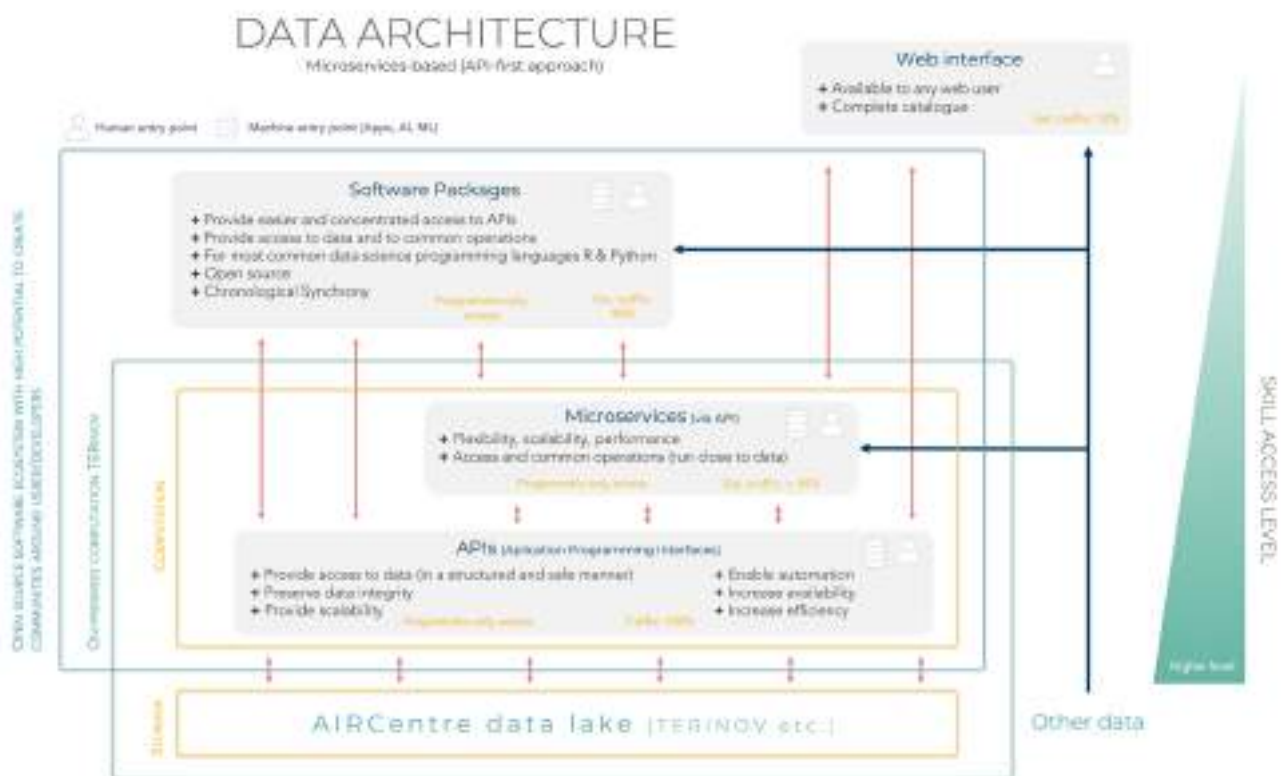


Figure 28 - System conception and architecture for data management at the AIR Data Center

The capabilities installed in the AIR data center allow a direct and strategic connection to the International scientific community. The agreement signed between the Foundation for Science and Technology (FCT) and the AIR Centre, where a fast connection line was installed as an extension of the public scientific communication network (RCTS), allowed the acquired and processed data to be made available to research entities and companies with high speed transmission between the Islands and the mainland, and will be implemented during 2022.

The AIR Centre data center is designed as an expandable and modular solution, in terms of system architecture, as described in Figure 28.

One of the outputs of the infrastructure is reflected in the images collected by the different satellites mentioned above, as can be seen in Figure 29.

Finally, and as part of the operationalization activities of the AIR Centre data center, a close collaboration has been established during 2022 with the Massachusetts Institute of Technology (MIT) and the Earth, Atmosphere and Planetary Sciences Research Center (EAPS) for the development and adoption of the Julia programming language, created at MIT for scientific computing.

Julia has specific characteristics (fast, for high performance computing, dynamically typed, reproducible, multi-threading, open source, and has a large and diverse community)

that make it a great tool to work in the earth observation (OT) domain, especially geographic datasets and to calculate intensive models. AIR Centre's involvement with this new community of researchers resulted in the action to organize the first earth observation meeting called: "JuliaEO - Global Workshop on Earth Observation with Julia", in January 2023 in the Azores, expecting a strong involvement and participation of the AIR Centre network to develop further activities in the OT area.

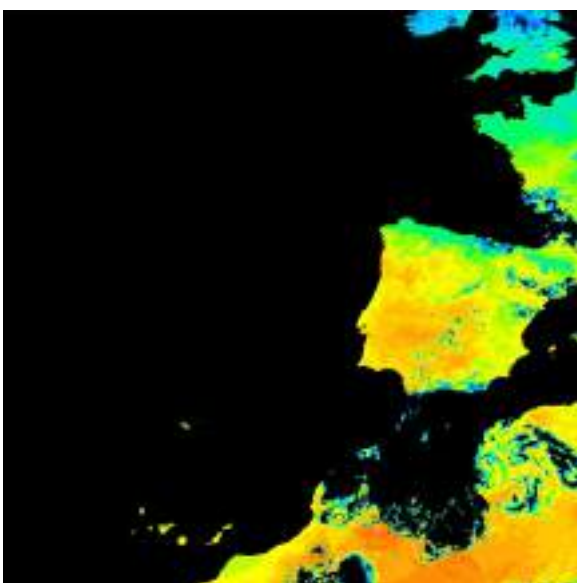
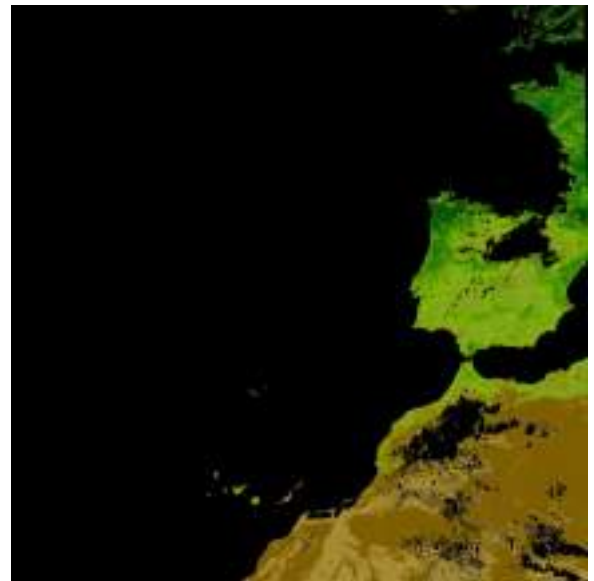
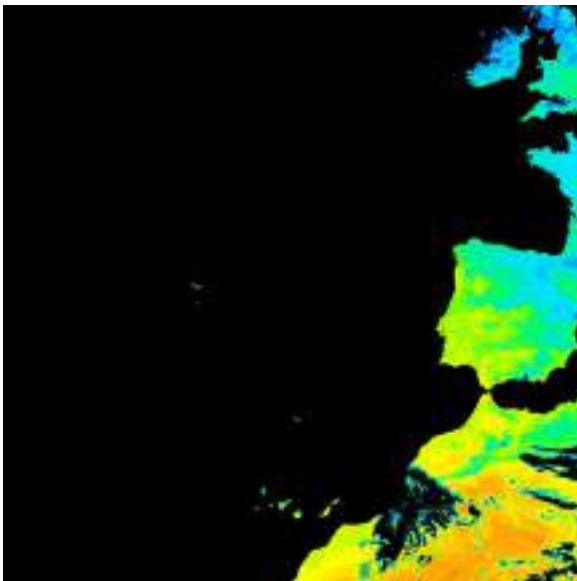


Figure 29 - Satellite images (DRS antenna) that illustrate different indexes: NVDI (vegetation) and earth temperature

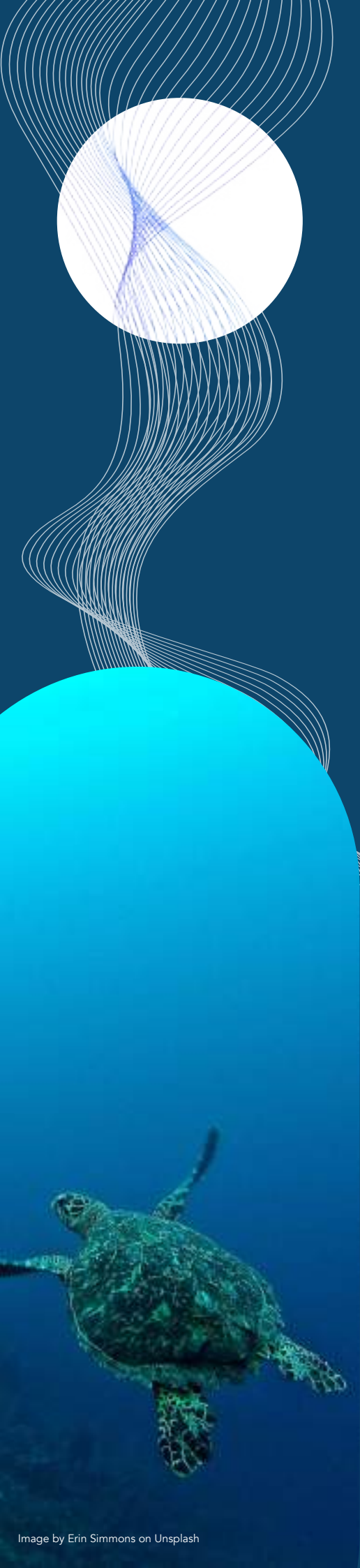
4.2 SECRETARIAT OF THE MARINE BIODIVERSITY OBSERVATION NETWORK, MBON

The Marine Biodiversity Observation Thematic Network (MBON) is a “coalition of the willing” within the Group on Earth Observations (GEO BON) Biodiversity Observation Network. Supported by 110 member countries, this network aims to share knowledge and know-how to assess biodiversity changes in the ocean, including data; products; protocols and methods; data systems and software to inform and support ecosystem-based management and the long-term health and use of marine ecosystems.

This network has its secretariat at the AIR Centre, on Terceira Island, and resulted from a protocol signed in November 2018, between MBON, AIR Centre and the Azores Regional Science and Technology Fund (FRCT). This partnership promotes scientific knowledge and the development of Earth Observation (OT) technology solutions to contribute to ocean biodiversity and ecosystem services and effective management policies, locally in the Azores and globally in the Atlantic context.

As Portugal is a maritime nation and a leader in the development of goals and targets for the International Convention on Biological Diversity, it has been committed to assist in the organization of MBON activities. This partnership has also been instrumental in contributing to the advancement of the United Nations Decade of Ocean Science for Sustainable Development.





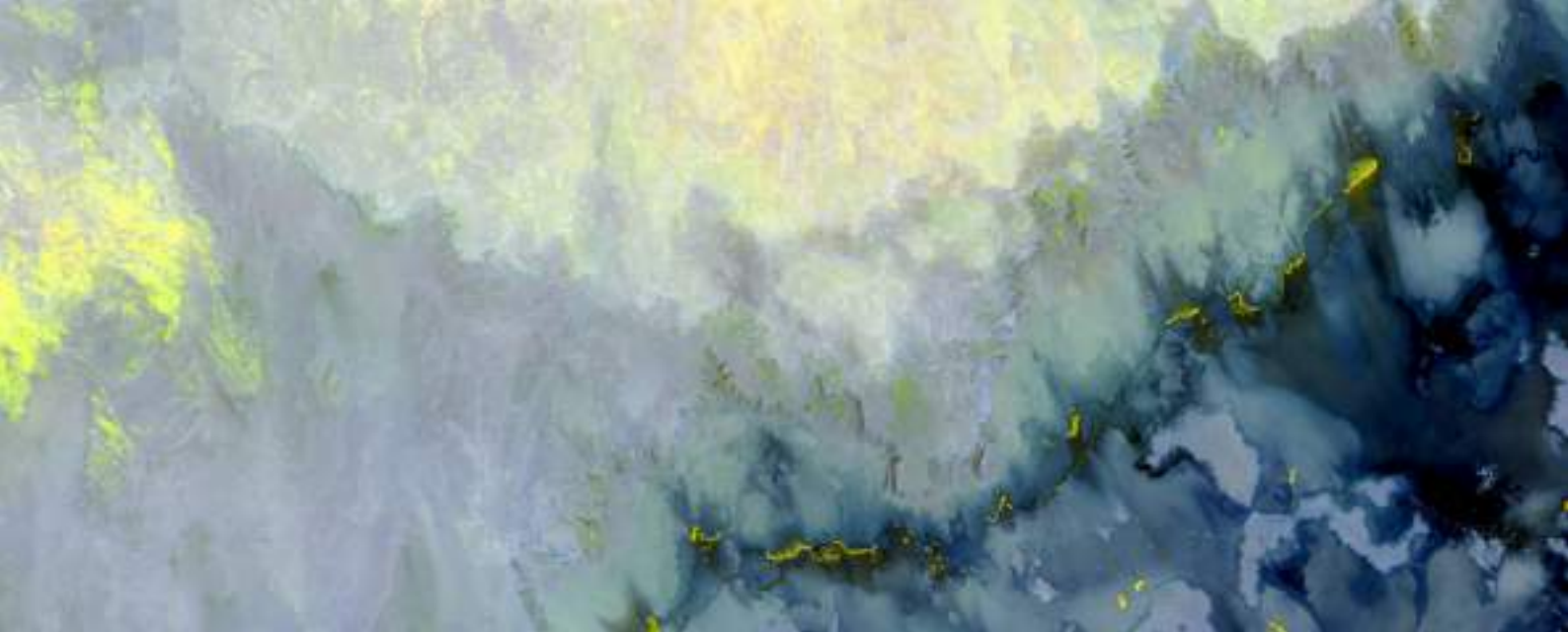
A major challenge of MBON is to highlight how Essential Ocean Variables (EOVs) and Essential Biodiversity Variables (EBVs) can be used to track changes in the abundance, distribution, and diversity of organisms in the ocean. Using common methods to monitor these biodiversity variables in the ocean is critical to understanding how changes at a given location are related to changes over larger areas, including at a regional and global scale, over time.

During 2022, the partnership between MBON and the AIR Centre was essential to frame the winning proposals, for example: “i) Coordinated Support Action (CSA) BlueMissionAA - <https://bluemissionaa.eu> and ii) Blueprint for Atlantic-Arctic Agora on cross-sectoral cooperation for restoration of marine and coastal ecosystems and increased climate resilience through transformative innovation A-AAGORA IA”, as both proposals focus on the preservation and restoration of marine and coastal ecosystems and biodiversity. Likewise, MBON played a leading role in framing the MarBioME EC competition, which aimed to assess the current state of marine biodiversity monitoring in the European Union and adjacent marine waters to support European Union legislation and policies on marine biodiversity, such as the Marine Framework Strategic Directive.

At the international level, the MBON secretariat co-ordinates the Marine Life 2030 program (<https://marinelife2030.org>), approved by the United Nations for the Decade of Oceans, contributing, and playing a key role in the United Nations Decade of Ocean Science for Sustainable Development. Globally, the consolidation of MBON activity was recognized by the Portuguese Government, which points to MBON in its National Strategy for the Sea until 2030. The strategy highlights the importance of MBON in leading international efforts in marine biodiversity conservation projects. The following table 10 presents the general list of productivity indicators developed by the MBON secretariat during 2022.

Table 10 - List of MBON secretariat productivity indicators during 2022

| DESCRIPTION | TOTAL |
|---|-------|
| 1. Publications | 3 |
| 2. Communications in scientific meetings | 9 |
| 3. Reports and statements | 3 |
| 4. Organization of congresses, workshops, seminars | 16 |
| 5. Participation in scientific dissemination events, workshops, and exhibitions | 40 |
| 6. Advanced Training | 3 |
| 7. Dissemination material produced (Audio/Visual and Digital Materials) | 6 |
| 8. News Releases | 13 |
| 9. Contributions to Technical Consultations | 2 |
| 10. Proposals submitted/ongoing | 9 |
| 11. Approved Projects | 5 |
| 12. Networking | |
| 12.1 MoU partners | 5 |
| 12.2 Informal Partners | 16 |



4.3 A-RAEGE-Az

The potential for space sector activities in Portugal is based on the national research, innovation, and growth strategy “Portugal Space 2030 - <https://ptspace.pt/pt/espaco-2030/>”. This strategy aims to stimulate the exploitation of space data and signals through space-based services and applications enabled by space technologies, in which the location of the Azores is of particular importance due to its geostrategic position.

In this context, the AIR Centre contributes to the Atlantic Network of Geodynamic and Space Stations (RAEGE), which incorporates a ground segment infrastructure. This allows exploring the areas of geodesy and geodynamics based on several observation techniques, in particular geodesic Very Long Baseline Interferometry (VLBI), Global Navigation Satellite Systems (GNSS) and radio astronomy and Space Situational Awareness (SSA) studies.

The AIR Centre has contributed to the operational consolidation of the RAEGE infrastructure in the Azores (A-RAEGE-Az) with the various activities carried out by the two (2) AIR Centre employees who reside on the island of Santa Maria and work locally in this scientific infrastructure.

In 2022, this is the summary of the activities carried out:

- Study on the spatial geodetic techniques present at the Santa Maria RAEGE station: Very Long Base Line Interferometry (VLBI) and Global Navigation Satellite System (GNSS);
- Operation of geodetic Very Long Base Line Interferometry (VLBI) observations within the scope of the consortium with the International VLBI service (IVS).

- Preparation and development of procedures for VLBI observations;
- Collaboration in Troubleshooting, calibration and maintenance of the station equipment with preparation of the respective technical reports;
- Analysis of VLBI data corresponding to the observations made by the A-RAEGE-Az station with the purpose of troubleshooting and data quality assessment;
- Analysis of VLBI and GNSS data (Figure 30) for studies and development of papers presented in international conferences in partnership with the IGN;

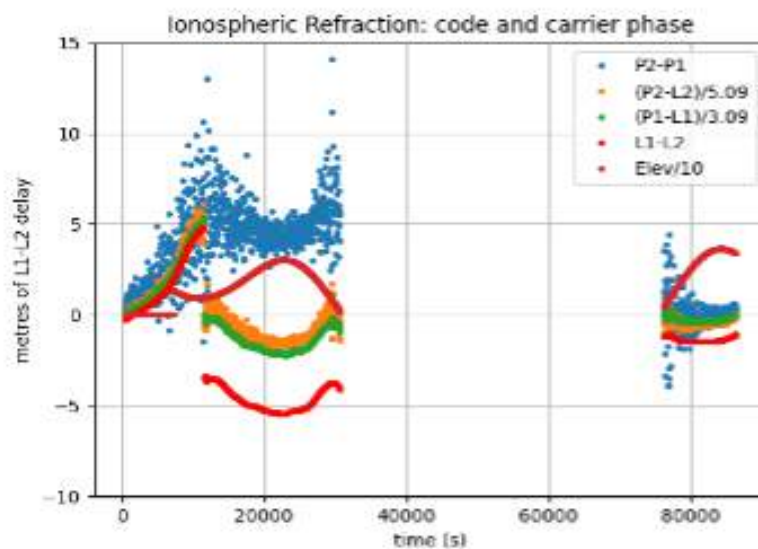


Figure 30 - Ionospheric refraction computed with GNSS data

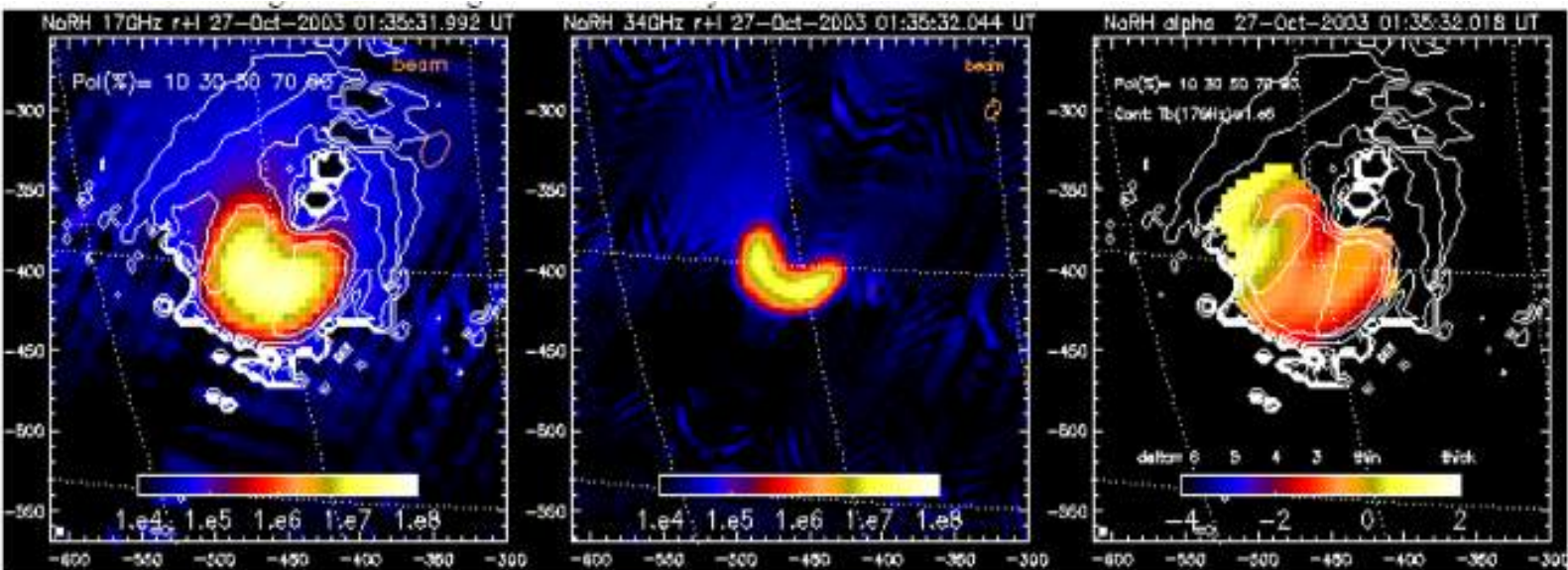


Figure 31 - Solar explosion radio images

- Collaboration in science popularization activities;
- Participation and collaboration in international congresses and conferences;
- International Visitors Leadership Program (IVLP): Invitation from the US Embassy to participate in an advanced training program, the IVLP, in the field of Space. This program is organized by the U.S. Department of State, in collaboration with U.S. academic, business and civil society entities, and aims to provide the guests a chance to meet and discuss directly with representatives of partner entities on a specific theme, thus fostering the establishment of future relationships and collaboration opportunities;
- Radio astronomy research (e.g. solar flares, (figure 31), and solar energetic particles);
- Production of a scientific portfolio about the RAEGE station with special emphasis on publications.



Figure 32 - RAEGE team and partners in the context of installing equipment for the antenna



5. PROJECT DEVELOPMENT

5. PROJECT DEVELOPMENT



5.1 APPROVED PROJECTS IN 2022

DEVELOPMENT OF PROJECTS WITHIN THE ATLANTIC

Throughout 2022, the AIR Center included more than 24 proposals, shown in Table 11, that were submitted for evaluation within the scope of different programs (such as the European Commission's Horizon Europe, European Space Agency – ESA, Regional and National Financing Programs – Operational Program, PO) corresponding to a requested budget of around 4M€ which resulted in the approval of around 1.7M€. The number of partners involved in each proposal depended a lot on the themes and included actors from different geographies. In total, the proposals involved more than 125 partners in 26 countries.

Table 11 - Statistics of project proposals in 2022

PROPOSALS 2022

| | | |
|------------------------|----|-----|
| Proposals won | 7 | 29% |
| Proposals rejected | 8 | 33% |
| Proposals under review | 9 | 38% |
| Total | 24 | |

The list of projects approved in 2022 is described in Table 12, with an addition of two projects with the source of funding coming from the Recovery and Resilience Program - PRR of Portugal (note: both projects have the acceptance term signed, but the "kick-off - KO" and execution of the contracts is scheduled for the 1st half of 2023.)

Table 12 - List of projects and funding entities approved in 2022

| PROJECT | FUNDING ENTITY |
|--|---|
| BlueMissionAA - Building a Coordination Hub to Support the Mission Implementation in The Atlantic and Arctic Basin | Horizon (H2020) |
| SBEP - A climate neutral, sustainable, and productive blue economy Partnership | Horizon (H2020) |
| A-AAgora - Blueprint for Atlantic-Arctic Agora on cross-sectoral cooperation for restoration of marine and coastal ecosystems and increased climate resilience through transformative innovation | Horizon (H2020) |
| GDA Marine - Agile EO Information Development (GDA-Aid): Marine Environment Blue Economy | European Space Agency (ESA) |
| Copernicus for Sustainable Fisheries Management Nigeria | European Commission (EC) |
| Copernicus Uptake in Portuguese Higher Education | European Commission (EC) |
| Copernicus User Uptake in Africa | European Commission (EC) |
| Copernicus Uptake for the Maritime Sector | European Commission (EC) |
| Coastal Coordination of User Needs and Methodologies | European Commission (EC) |
| COAST - Conservation of Marine Ecosystems around Santo Antão, Cape Verde: implications for policy and society | Fundo Regional para a Ciência e Tecnologia (FRCT) |
| Custodian - Sensory Network Platform for Sustainable Fishing | EEA Grants |
| Azores EcoBlue | EEA Grants |
| Vinhas da Terceira - Monitorização das Vinhas da Terceira | Câmara Municipal Angra do Heroísmo |
| New Space Portugal (Termo de aceitação assinado, contrato de execução previsto em 2023) | Plano Recuperação e Resiliência (PRR) |
| EDIH - Food4Sustainability (Termo de aceitação assinado, contrato de execução previsto em 2023) | Plano Recuperação e Resiliência (PRR) |

From this list of projects approved in 2022 and considering the importance of vertical 2: “Atlantic Networking”, described above, the project led by the AIR Center is described and highlighted in more detail: “Coordinated Support Action, CSA - Building a coordination hub to support the mission implementation in the Atlantic and Arctic basin – BLUEMISSIONAA”. This project fits in with the intentions of the European Commission, which officially launched five European Missions, innovative initiatives to face global challenges in the areas of health, climate, and environment. Each mission will have a time horizon and a budget adapted to the challenge it proposes and its main objective is to stimulate solution-oriented innovation, with the involvement of all actors. This CSA, BlueMissionAA, led by the AIR Centre, is part of the mission: “Oceans, seas, and healthy coastal and inland waters”, and involves 15 partners, of extreme relevance in the international context with consolidated activities in the area of research & innovation (I&I) for a more sustainable Ocean. The composition of the consortium is as follows:



Figure 33 - Entities that are part of the BlueMissionAA consortium

BlueMissionAA will be the coordination center that will support the implementation of the European Union (EU) mission in which the priority will be to restore our oceans and waters by 2030 in the Atlantic and Arctic basins, with a focus on the restoration of marine and coastal ecosystems and in increasing climate resilience. It will have a structuring effect to mobilize a broad community of relevant stakeholders and citizens towards the pursuit of mission objectives at basin level. Provide an effective governance framework aligned with policies, initiatives and actions at national, regional and EU level [WP1],



Figure 34 - BlueMissionAA Work Packages list














































































build a well-coordinated monitoring framework to assess implementation progress on an ongoing basis [WP2], provide a comprehensive catalog support services [WP3], promote an attractive innovation ecosystem for ecological restoration [WP4] and provide the opportunity to empower EU citizens to get involved in the preservation and restoration of oceans and waters through participatory means [WP5] (see WPs in Figure 34).

The 15 partners who already have extensive experience in the Atlantic and Arctic basins over the years combine the benefits of comprehensive geographic coverage with a balanced mix of unique capabilities, knowledge and access to relevant stakeholder and citizen networks needed to achieve the objectives of this single project for the Atlantic.

Therefore, and as previously mentioned in the previous chapters, the five (5) missions of the AIR Center support the Atlantic Interactions strategy and, in this context, the matrix below (see figure 35) illustrates all ongoing projects and how they align with the missions and components described in the AIR Centre's APPOSS architecture.

AIR CENTRE'S MISSIONS

| | |
|---|--------------------|
|  | Blue Mission AA |
|  | New Space Portugal |
|  | A-AAGORA |
|  | Mission Atlantic |
|  | NEXTOCEAN |
|  | IntAIRSect |
|  | CE2COAST |
|  | FPA-CUP |
|  | MAGAL |
|  | AEROS |
|  | K2D |
|  | LABPLAS |
|  | ARIA 2 e 3 |
|  | PORTS XXI |
|  | MARBIOME |
|  | ASTRAL |
|  | SAP |
|  | AZORES ECOBLUE |
|  | CUSTODIAN |
|  | EOatSEE |
|  | GDA-AID |
|  | E5DES |
|  | MBON |
|  | ATON & S4A |
|  | COAST |
|  | SBEP |

| Clean and Productive Bays and Estuaries | Resilience to Coastal Natural Hazards | Sustainable Food Production | Improved Management of Marine & Coastal Resour. | Improved Environmental and Maritime Monitoring |
|---|---|--|---|---|
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CONTROL, DATA AND SERVICE SEGMENT

[illegible]

Figure 35 - Interception matrix of projects with missions/APPOSS

6. INTERNATIONAL INITIATIVES

6. INTERNATIONAL INITIATIVES

6.1 UNOOSA

The United Nations Office for Outer Space Affairs (UNOOSA) works to support all countries within the United Nations, especially developing countries, and promotes the benefits of space to accelerate sustainable development.

UNOOSA's activities cover all aspects of space, from space law to space applications. AIR Centre has submitted a request to UNOOSA to become in 2022, a permanent observer member and regional representative for the Atlantic, in order to contribute to the achievement of the UN Sustainable Development Goals ("UN SDGs") and to enhance the activities developed in the area of Space with its Atlantic network. This request was accepted, and the AIR Centre is now the Atlantic representative at UNOOSA.

In early 2022, the AIR Centre carried out an institutional communication explaining its mission and main activities, as referred to in Table 13 below.

In addition, the approval of AIR Centre as an observer member of UNOOSA, is further proof of the consolidation of this partnership with the United Nations, being that in November 2018, a Memorandum of Understanding had already been signed with UNOOSA to identify user needs (e.g. in the area of fisheries and maritime surveillance), with a strong emphasis on SDG 14 for the Atlantic region and the development of targeted capacity building activities in space-related technologies.

Table 13 - Meeting at 59 of the Scientific and Technical Sub -Company of peaceful uses of the space

| DATE(s) 2022 | MEETING | SCOPE |
|--------------|--|--|
| 14 February | n.59 of the Scientific and Technical Sub-Committee on the Peaceful Uses of Space | Presentation of AIR's mission and activities of the AIR Centre |

6.2 KNOWLEDGE FOR PEOPLE, THE PLANET AND PROSPERITY THROUGH PARTNERSHIPS - K4P ALLIANCES

The K4P Alliances Program (<https://k4palliances.com/index.html>), (see Figure 36) aims to stimulate institutional collaboration and initiatives geared towards achieving the goal of carbon neutrality, or “net zero”, by 2050. Through long-term sustainable pilot projects in association with forms of cooperation with Latin America and Africa, it aims to stimulate research and innovation activities with the active participation of local communities.

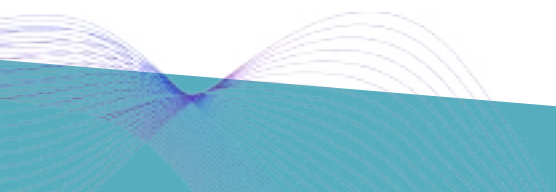


Figure 36 - Map of geographies and areas covered by K4P Alliances

Several pilot projects will be implemented through collaborative partnerships functioning as centers of excellence (e.g. in the form of “Collaborative Laboratories” involving experts in all fields of knowledge, together with interfacing and brokering activities with public and private sectors as well as civil society organizations”). These centers, transdisciplinary based, promote “data ecologies”, the integration of advanced forms of Earth Observation (OT) systems and remote sensing and in-situ data to understand the present and build the future. This initiative will launch a series of concrete actions and will be organized and implemented in terms of “Regional Chapters”, following a gradual approach, giving full priority to the “Human Agency”. These are the foreseen lines of action:

1. Collaborative Innovation: Promote institutional innovation and community-based participatory research and innovation to foster new jobs.
2. Transdisciplinary Data Observatories: Development of Data Ecologies with advanced Earth Observation (OT) methods.
3. Human Resource Capacity Building: promoting new knowledge and skills training;
4. Regional Chapters: Implementation, evaluation, and reporting.

AIR Centre has integrated as a key partner in this initiative, K4Palliances, during the 2nd half of 2022, promoting the CAVIC project presented below.





6.2.1 INNOVATION CENTER OF CAPE VERDE FOR GREEN AND BLUE GROWTH – CAVIC

This project aims to promote cooperation between Europe and West Africa to build and develop a new center of excellence for inclusive green and blue growth in the Atlantic.

As this project is one of twelve (12) projects under the K4PAlliances, the idea of creating this center is to capitalize on the computing, data processing and hardware capacity already installed on the island of Santiago, Praia - leveraging the installed capacity through the EllaLink cable (<https://ella.link>). This will enable closer technical links with the Núcleo Operacional da Sociedade de Informação (NOSI) as the main partner in Cape Verde for this project.

The center will develop digital products/solutions to leverage the new emerging opportunities of the green and blue economy, namely through the use of solutions such as digital twins (e.g. exploiting data from Earth Observation - OT) and implementing responsible artificial intelligence (AI) for further empowerment of these solutions. This center will integrate a network comprising European, African, and Latin American entities, including the AIR Centre. To this end, during 2022, the AIR Centre team with its partners has been exploring possible sources of funding for the project, such as the European Commission's Directorate General for International Partnerships (DG INTPA), for an amount in the range of 10 to 12 million euros over a period of 5 years. This amount allows the center to start with 10 to 15 employees, most of whom would be recruited in Cape Verde and other West African countries, including its Managing Director. By the end of the 5-year period, the goal will be to have between 50 to 70 employees and to position the center in the

city of Praia, in the Technology Park where NOSI is integrated, thus taking advantage of its already installed capacity.

Therefore, and particularly regarding the blue economy area, CAVIC already has a connection with the Institute of the Sea (IMAR), located on the island of São Vicente in Mindelo, and member in the General Assembly of the AIR Centre. It is also intended to develop a technical articulation with the center ("OSCM - Ocean Science Center Mindelo - <https://www.oscm.cv>") funded by Germany.

Being strategic the need to consolidate the CAVIC consortium and all its partners involved to advance in the implementation of the project, in the last quarter of 2022, namely on October 10 to 14, the AIR Centre had the opportunity to make an official visit to Cape Verde, to the islands of São Vicente and Santiago, where several entities and partners were visited (i. e since NOSI, IMAR, OSCM, Universidade Atlântica, INIDA, University of Cape Verde, Delegation of the European Commission in Cape Verde, Secretary of State for Science of the Government of Cape Verde, among other local entities linked to the system of innovation and entrepreneurship). This visit marked the signing of a MoU that defines the next steps of CAVIC to be carried out between the last quarter of 2022 and 2023, see Figure 37.



Figure 37 – Members and partners of the CAVIC consortium at the signing of the MoU, at the premises of the Secretary of State for Science of the Government of Cape Verde with the presence of the Secretary of State for Science



Figure 38 – “Training of Trainers for Copernicus” presentation, Cape Verde Ocean Week, São Vicente Island, Cape Verde

Considering the implementation and operationalization phase scheduled for the course of 2023, CAVIC will diversify funding sources for future projects, ensuring their financial sustainability. For example, CAVIC is establishing a close dialogue with the GMES & Africa program (Program for Global Monitoring of Environment and Security), which promotes the use of Earth Observation (EO) systems. The articulation with GMES in this program will contribute to this project being able to collaborate and diversify with new products/solutions, within the scope of the Green and Blue economies, in partnership with the main entities in these areas of West African countries, stimulating sustainable growth with knowledge base.

It is also important to mention the participation of the AIR Centre in the event: “Cabo Verde Ocean Week 2022”, see Figure 38, which will be held from 20 to 25 November 2022, and where the project: “Training of Trainers for Copernicus” was presented. A project that promotes advanced training in the use of satellite images and data based on the European Satellite Program–Copernicus, contributing to the development of applications in the fisheries sector, maritime surveillance, and oceanographic science, among others.





7. FINANCIAL STATEMENTS

7. FINANCIAL STATEMENTS 2022



7.1 ACCOUNTING REFERENCE FOR THE PREPARATION OF FINANCIAL STATEMENTS

The financial statements were prepared according to the Sistema de Normalização Contabilística, approved by the Decree-Law 36-A/2011, of March 9th, and changed by the Decree-Law 98/2015, transposing the EU Directive 2013/34/EU of June 26th, 2013.

The financial statements were prepared in accordance with the NCRF-ESNL norms, assuming continuity of the activities.

7.2 MAIN ACCOUNTING POLICIES

The main accounting policies applied to the current financial statements are:

The tangible assets are valued according to cost, minus the accrued depreciations and impairment losses.

The tangible assets where the cost is unknown are valued at just value, the value by which they are insured or by which they were written on the books.

The depreciations are computed by the straight-line method.

AD AIR Centre recognizes subsidies whenever there is a sufficient assurance that they will be received and that the entity will comply with the requirements.

The transfers/subsidies that are related to current expenses and the depreciation of assets are deferred on the balance sheet, under the caption Deferrals, and registered as income of the period (caption Operational subsidies), proportionately to the incurred costs and the depreciation and amortization costs of assets during the project's lifetime, independently of the date of the transfer of the subsidy.

The transfers/subsidies that are related to tangible and intangible assets are initially recognized under Equity, being afterwards recognized on the profit and loss statement (caption Allocation of subsidies for investments), in a systematic and rational basis during the timeframe necessary to balance them with their related costs. In the case where the subsidy is related with non-depreciable assets, it is kept under Equity, except in the case where its value is required to compensate some impairment losses.

The financial assets and liabilities are recognized in the balance sheet when the entity is aware of its contractual obligations. A financial asset is any asset in cash or a contractual right to receive cash. A financial liability is any liability that consists in a contractual obligation to deliver cash. The financial assets and liabilities are value at their cost minus impairment losses, namely:

- a. Clients, suppliers, accounts receivable, accounts payable or bank loans, including those in a foreign currency; and
- b. Loan contracts.

The financial instruments traded in the market are valued at just value, and their fluctuations are recognized as part of the net results of the period.

AD AIR Centre registers its income and expenses in accordance with the expense recognition principle, by which expenses and income are recognized when they are obtained or incurred, independently of the moment of the payment or receipt, being included on the financial statements of their respective periods.

The management used value judgement when applying the accounting policies that had major impact in the quantities recognized on these financial statements.

The financial statements were prepared under the assumption that the activities of this entity will continue on the next fiscal year, and according to its books. The assumption is based on the current knowledge of past and present activities of the entity, in the evolution of its business and its strategy for the future. The management does not foresee, in a short or mid-term timeframe, any change that is able to alter the validity of its assumptions. Therefore, it is not expectable significant changes on the registered quantities of its assets and liabilities in the next reporting period.

7.3 ANNEX TO ACCOUNTS

Associação para o Desenvolvimento do Atlantic International Research Centre

BALANÇO INDIVIDUAL EM 31 DE DEZEMBRO DE 2022 | BALANCE SHEET FOR THE PERIOD ENDED ON THE 31ST OF DECEMBER, 2022

valores em euros | figures in euros

| RUBRICAS CAPTIONS | Notas Notes | 31-12-2022 | 31-12-2021 |
|--|---------------|---------------------|---------------------|
| ACTIVO ASSETS | | | |
| Activo não corrente Non current assets | | | |
| Activos fixo tangíveis Tangible assets | 1 | 547,458.50 | 229,008.47 |
| Outros investimentos financeiros Financial investments | 2 | 17,875.87 | 12,962.14 |
| | | 565,334.37 | 241,970.61 |
| Activo corrente Current assets | | | |
| Créditos a receber Credits receivable | | - | 11,808.00 |
| Diferimentos Deferrals | 3 | 24,759.28 | 13,696.69 |
| Outros activos correntes Other current assets | 4 | 11,421.08 | - |
| Caixa e depósitos bancários Cash and bank deposits | 5 | 2,175,422.10 | 846,700.03 |
| | | 2,211,602.46 | 872,204.72 |
| Total do Activo Total assets | | 2,776,936.83 | 1,114,175.33 |
| FUNDOS PATRIMONIAIS E PASSIVO EQUITY FUNDS AND LIABILITIES | | | |
| Fundos Patrimoniais Equity funds | | | |
| Resultados transitados Retained earnings | 6 | 48,460.24 | 8,924.51 |
| Ajustamentos / outras variações nos fundos patrimoniais Other equity changes | 7 | 547,459.21 | 229,009.18 |
| Resultado líquido do período Net income for the period | | 84,761.47 | 39,535.73 |
| Total dos Fundos Patrimoniais Total Equity funds | | 680,680.92 | 277,469.42 |
| Passivo Liabilities | | | |
| Passivo corrente Current liabilities | | | |
| Fornecedores Suppliers | 8 | 104,394.00 | 98,327.21 |
| Estado e outros entes públicos State and other public entities | 9 | 53,379.80 | 47,623.62 |
| Financiamentos obtidos Loans | | - | 3,842.61 |
| Diferimentos Deferrals | 3 | 1,743,034.07 | 511,281.94 |
| Outros passivos financeiros Other financial liabilities | 10 | 195,448.04 | 175,630.53 |
| | | 2,096,255.91 | 836,705.91 |
| Total do passivo Total liabilities | | 2,096,255.91 | 836,705.91 |
| Total dos fundos patrimoniais e do passivo Total equity funds and liabilities | | 2,776,936.83 | 1,114,175.33 |

Associação para o Desenvolvimento do Atlantic International Research Centre

DEMONSTRAÇÃO INDIVIDUAL DOS RESULTADOS POR NATUREZAS | PROFIT AND LOSS STATEMENT

PERÍODO FINDO EM 31 DE DEZEMBRO DE 2022 | PERIOD THAT ENDED ON THE 31ST OF DECEMBER, 2022

figures in euros | valores em euros

| RENDIMENTOS E GASTOS INCOME AND EXPENSES | Notas Notes | 31-12-2022 | 31-12-2021 |
|--|---------------|-------------------|------------------|
| Vendas e serviços prestados Sales and services provided | 11 | 192,498.47 | 21,058.78 |
| Subsídios, doações e legados à exploração Operating subsidies | 12 | 2,850,116.84 | 1,766,620.84 |
| Fornecimentos e serviços externos Supplies and external services | 13 | - 1,533,614.84 | - 576,596.01 |
| Gastos com o pessoal Staff costs | 14 | - 1,424,560.30 | - 1,170,658.50 |
| Outros rendimentos Other income | 15 | 104,770.78 | 27,696.78 |
| Outros gastos Other expenses | 16 | - 1,487.10 | - 883.62 |
| Resultado antes de depreciações, gastos de financiamento e impostos Net income before depreciations, interest and taxes | | 187,723.85 | 67,238.27 |
| Gastos / reversões de depreciação e amortização Expenses / reversals of depreciation and amortization | 1, 17 | - 102,962.35 | - 27,696.78 |
| Resultado operacional (antes de gastos de financiamento e impostos) Operational net income (before interest and taxes) | | 84,761.50 | 39,541.49 |
| Juros e gastos similares suportados Financing costs | | - 0.03 | - 5.76 |
| Resultado antes de impostos Net income before taxes | | 84,761.47 | 39,535.73 |
| Imposto sobre o rendimento do período Corporate taxes | | - | - |
| Resultado líquido do período Net income after taxes | | 84,761.47 | 39,535.73 |

Associação para o Desenvolvimento do Atlantic International Research Centre

DEMONSTRAÇÃO INDIVIDUAL DAS ALTERAÇÕES NOS FUNDOS PATRIMONIAIS NO PERÍODO DE 2022 | STATEMENT OF CHANGES IN EQUITY FUNDS FOR 2022

figures in euros | valores em euros

| DESCRIÇÃO DESCRIPTION | Notas Notes | Resultados transitados Retained earnings | Ajustamentos/outras variações nos fundos patrimoniais Equity funds adjustments | Resultado líquido do período Net income for the period | Total dos Fundos Patrimoniais Total Equity Funds |
|--|---------------|--|--|--|--|
| POSIÇÃO NO INÍCIO DO PERÍODO STARTING POSITION | | 8,924.51 | 229,009.18 | 39,535.73 | 277,469.42 |
| ALTERAÇÕES NO PERÍODO CHANGES IN THE PERIOD | | | | | |
| Outras alterações reconhecidas nos fundos patrimoniais Other changes in equity funds | | 39,535.73 | 318,450.03 | - 39,535.73 | 318,450.03 |
| | | 39,535.73 | 318,450.03 | - 39,535.73 | 318,450.03 |
| RESULTADO LÍQUIDO DO PERÍODO NET INCOME FOR THE PERIOD | | | | 84,761.47 | 84,761.47 |
| RESULTADO INTEGRAL COMPREHENSIVE EARNINGS | | | | 45,225.74 | 403,211.50 |
| | | - | - | - | - |
| POSIÇÃO NO FIM DO PERÍODO FINAL POSITION | | 48,460.24 | 547,459.21 | 84,761.47 | 680,680.92 |

Associação para o Desenvolvimento do Atlantic International Research Centre
DEMONSTRAÇÃO INDIVIDUAL DE FLUXOS DE CAIXA | CASH FLOW STATEMENT
PERÍODO FINDO EM 31 DE DEZEMBRO DE 2022 | PERIOD ENDED ON THE 31ST OF DECEMBER, 2022

figures in euros | valores em euros

| RUBRICAS CAPTIONS | Notas Notes | 31-12-2022 | 31-12-2021 |
|--|---------------|----------------|----------------|
| Fluxos de caixa das actividades operacionais Operating activities | | | |
| Recebimentos de clientes e utentes Receipts from trade debtors | | 145,502.23 | 42,622.00 |
| Pagamentos a fornecedores Payment to trade creditors | | - 1,534,594.42 | - 702,880.20 |
| Pagamentos ao pessoal Payments to staff | | - 947,771.60 | - 929,573.07 |
| Caixa gerada pelas operações Cash flow generated by operations | | - 2,336,863.79 | - 1,589,831.27 |
| Pagamento/recebimento do imposto sobre o rendimento Income tax receipts/payments | | - | - |
| Outros recebimentos/pagamentos Other receipts/payments | | - 512,132.06 | - 279,195.05 |
| Fluxos de caixa das actividades operacionais Cash flows from operating activities | | - 2,848,995.85 | - 1,869,026.32 |
| Fluxos de caixa das actividades de investimento Investing activities | | | |
| Recebimentos provenientes de: Receipts related to: | | | |
| Investimentos financeiros Financial investments | | 2,294.56 | - |
| Outros activos Other assets | | - | - |
| Pagamentos provenientes de: Payments related to: | | | |
| Activos fixos tangíveis Tangible assets | | - 374,555.42 | - 141,344.12 |
| Investimentos financeiros Financial investments | | - 7,456.07 | - 6,597.92 |
| Outros activos Other assets | | - | - |
| Fluxos de caixa das actividades de investimento Cash flows from investing activities | | - 379,716.93 | - 147,942.04 |
| Fluxos de caixa das actividades de financiamento | | | |
| Recebimentos provenientes de: Receipts related to: | | | |
| Outras operações de financiamento Other financing operations | | 4,557,434.88 | 2,176,537.82 |
| Pagamentos respeitantes a: Payments related to: | | | |
| Juros e gastos similares Interest and similar expenses | | - 0.03 | - 692.60 |
| Outras operações de financiamento Other financing operations | | - | - |
| Fluxos de caixa das actividades de financiamento Cash flows from financing activities | | 4,557,434.85 | 2,175,845.22 |
| Variação de caixa e seus equivalentes Changes in cash and cash equivalents | | 1,328,722.07 | 158,876.86 |
| Efeito das diferenças de câmbio Effect of exchange differences | | - | - |
| Caixa e seus equivalentes no início do período Starting Cash and cash equivalents | 5 | 846,700.03 | 687,823.17 |
| Caixa e seus equivalentes no fim do período Final Cash and cash equivalents | 5 | 2,175,422.10 | 846,700.03 |

ANNEX TO FINANCIAL STATEMENTS

NOTE 1 - TANGIBLE ASSETS

#01

figures in euros / valores em euros

| ACTIVOS FIXOS TANGÍVEIS TANGIBLE ASSETS | 31-12-2022 | 31-12-2021 |
|--|-------------------|------------------|
| Equipamento básico Basic equipment | | |
| Activo bruto: saldo inicial Initial balance | 59,773.57 | 35,874.42 |
| Activo bruto: aquisições Acquisitions | 221,241.33 | 23,899.15 |
| Activo bruto: transferências de investimentos em curso Transfers | 363,787.57 | - |
| Depreciações: saldo inicial Starting depreciations | - 14,004.63 | - 1,850.74 |
| Depreciações do exercício Depreciations for the period | - 93,249.03 | - 12,153.89 |
| Saldo final - Equipamento básico Final balance - Basic equipment | 537,548.81 | 45,768.94 |
| Equipamento administrativo Administrative equipment | | |
| Activo bruto: saldo inicial Initial balance | 53,313.32 | 45,499.15 |
| Activo bruto: aquisições Acquisitions | 2,123.74 | 7,814.17 |
| Depreciações: saldo inicial Starting depreciations | - 35,814.05 | - 20,271.16 |
| Depreciações do exercício Depreciations for the period | - 9,713.32 | - 15,542.89 |
| Saldo final - Equipamento administrativo Final balance - Administrative equipment | 9,909.69 | 17,499.27 |
| Total líquido de Activos fixos tangíveis Net total for Tangible assets | 547,458.50 | 63,268.21 |
| Depreciações do exercício Depreciations for the period | 102,926.35 | 27,696.78 |

figures in euros / valores em euros

| INVESTIMENTOS EM CURSO ASSETS UNDER CONSTRUCTION | 31-12-2022 | 31-12-2021 |
|--|--------------|-------------------|
| Activos tangíveis em curso Tangible assets under construction | | |
| Activo bruto: saldo inicial Initial balance | 165,740.26 | - |
| Activo bruto: aquisições Acquisitions | 198,047.31 | 165,740.26 |
| Activo bruto: transferências Transfers | - 363,787.57 | - |
| Saldo final - Activos tangíveis em curso Final balance - Tangible assets under construction | - | 165,740.26 |
| Total de Investimentos em curso Total for Assets under construction | - | 165,740.26 |

NOTE 2 - FINANCIAL INVESTMENTS

#02

figures in euros / valores em euros

| INVESTIMENTOS FINANCEIROS FINANCIAL INVESTMENTS | 31-12-2022 | 31-12-2021 |
|---|------------------|------------------|
| Participações de capital: Geosat Financial participations: Geosat | 100.00 | 100.00 |
| Fundo de Garantia de Compensação do Trabalho Work compensation fund | 17,775.87 | 12,862.14 |
| Total de Investimentos financeiros Total for Financial investments | 17,875.87 | 12,962.14 |

The entity holds a share of 100 euros of the equity of Geosat, acquired in 2021.

NOTE 3 - DEFERRALS

#03

figures in euros / valores em euros

| DIFERIMENTOS DEFERRALS | 31-12-2022 | 31-12-2021 |
|--|---------------------|-------------------|
| Activo Assets | | |
| Gastos a reconhecer: Seguros Deferred expenses: Insurance | 17,913.40 | 12,862.02 |
| Gastos a reconhecer: Serviços informáticos Deferred expenses: IT Services | 1,582.37 | - |
| Gastos a reconhecer: Formação Deferred expenses: Training | 2,233.60 | - |
| Gastos a reconhecer: Deslocações e estadas Deferred expenses: Travel and hospitality | 3,029.91 | - |
| Outros gastos a reconhecer Other deferred expenses | - | 834.67 |
| Total de Diferimentos - Activo Total for Deferrals - Assets | 24,759.28 | 13,696.69 |
| Passivo | | |
| Outros rendimentos a reconhecer Other deferred income | 1,743,034.07 | 511,281.94 |
| Total de Diferimentos - Passivo Total for Deferrals - Liabilities | 1,743,034.07 | 511,281.94 |

NOTE 4 - OTHER CURRENT ASSETS AND LIABILITIES

#04

figures in euros / valores em euros

| OUTROS ACTIVOS E PASSIVOS CORRENTES OTHER CURRENT ASSETS AND LIABILITIES | 31-12-2022 | 31-12-2021 |
|---|------------------|------------|
| Activo Assets | | |
| Adiantamentos a fornecedores Advance payments | 4,564.37 | - |
| Outros devedores Other debtors | 6,856.71 | - |
| Total de Outros activos correntes Total for Other current assets and liabilities | 11,421.08 | - |

NOTE 5 - CASH AND BANK DEPOSITS

#05

figures in euros / valores em euros

| CAIXA E DEPÓSITOS BANCÁRIOS CASH AND BANK DEPOSITS | 31-12-2022 | 31-12-2021 |
|--|---------------------|-------------------|
| Depósitos bancários Bank deposits | | |
| Saldo inicial Starting balance | 846,700.03 | 687,823.17 |
| Débitos Debits | 5,007,691.87 | 2,530,998.91 |
| Créditos Credits | 3,678,969.80 | 2,372,122.05 |
| Saldo final - Depósitos bancários Final balance - Bank deposits | 2,175,422.10 | 846,700.03 |
| Total de Caixa e depósitos bancários Total for Cash and bank deposits | 2,175,422.10 | 846,700.03 |

NOTE 6 – NET RESULTS

This caption contains the net results accrued from previous periods, including the retained earnings from the previous year, of 39 535,73 euros, resulting in the amount of 48 460.24 euros on the 31st of December 2022.

NOTE 7 – ADJUSTMENTS TO EQUITY FUNDS

This caption includes the subsidies related to assets, that are transferred in a systematic way to the caption Other income (Allocation of subsidies for investments), by the same cadence as the registration of the depreciations of its related assets.

NOTE 8 – SUPPLIERS

#08

figures in euros / valores em euros

| FORNECEDORES SUPPLIERS | 31-12-2022 | 31-12-2021 |
|--|-------------------|-----------------|
| Fornecedores gerais: Mercado nacional Suppliers: Internal market | 40,721.09 | - |
| Fornecedores gerais: Mercado intracomunitário Suppliers: EU market | 52.06 | - |
| Fornecedores gerais: Mercado externo Suppliers: External market | 63,620.85 | 1,551.98 |
| Total de Fornecedores Total for Suppliers | 104,394.00 | 1,551.98 |

NOTE 9 – STATE AND OTHER PUBLIC ENTITIES

#09

figures in euros / valores em euros

| ESTADO E OUTROS ENTES PÚBLICOS STATE AND OTHER PUBLIC ENTITIES | 31-12-2022 | 31-12-2021 |
|--|------------------|------------------|
| Passivo Liabilities | | |
| Retenção na fonte de imposto sobre o rendimento Withholding of personal income tax | 16,062.50 | 14,576.62 |
| Imposto sobre o valor acrescentado Value-added tax | 10,303.19 | 10,396.94 |
| Contribuições para a Segurança Social Social security | 26,319.60 | 22,650.06 |
| Outros Others | 694.51 | - |
| Total de Estado e outros entes públicos - Passivo Total for State and other public entities - Liabilities | 53,379.80 | 47,623.62 |

NOTE 10 – OTHER FINANCIAL LIABILITIES

#10

figures in euros | valores em euros

| OUTROS PASSIVOS FINANCEIROS OTHER FINANCIAL LIABILITIES | 31-12-2022 | 31-12-2021 |
|---|-------------------|-------------------|
| Credores por acréscimo de gastos Accruals | 177,717.98 | 161,832.56 |
| Credores diversos Other creditors | 17,730.06 | 13,797.97 |
| Total de Outros passivos financeiros Total for other financial liabilities | 195,448.04 | 175,630.53 |

The most significant amount on the caption Accruals, of 170 132,50 euros, is related to the vacation allowance that will be paid to the employees in 2023, which is an expense of the 2022 fiscal year. The remaining amount of 7 585,48 euros cover the accruals with the auditing fees and communication services that will be billed in 2023.

The amount under Other creditors is essentially related with outstanding reimbursements of AD AIR Centre expenses that were paid by employees.

NOTE 11 – SALES AND SERVICES PROVIDED

#11

figures in euros | valores em euros

| VENDAS E SERVIÇOS PRESTADOS SALES AND SERVICES PROVIDED | 31-12-2022 | 31-12-2021 |
|---|-------------------|------------------|
| (1104) MarBioME (EC) | 67,977.89 | - |
| (1301) HYPERS | - | 22.16 |
| (1303) ARI-ESA POSTS A3 | 6,499.68 | 1,736.14 |
| (1304) ARI - ESA ENERGY A2 | 7,436.28 | 755.35 |
| (1305) PORT XXI ESA | 5,482.52 | 18,545.13 |
| (1308) ATON | 19,645.94 | - |
| (1311) EOatSEE (ESA) | 17,858.35 | - |
| (1312) GDA Marine (ESA) | 36,067.96 | - |
| (1314) Space 4 Atlantic | 31,529.85 | - |
| Total de Vendas e serviços prestados Total for Sales and services provided | 192,498.47 | 21,058.78 |

NOTE 12 – OPERATING SUBSIDIES

#12

figures in euros | valores em euros

| SUBSÍDIOS, DOAÇÕES E LEGADOS À EXPLORAÇÃO OPERATING SUBSIDIES | 31-12-2022 | 31-12-2021 |
|---|---------------------|---------------------|
| (0010) Lisboa | 1,635.57 | 1.00 |
| (1001) FCT (geral) | 768,884.77 | 906,312.61 |
| (1002) ESALAB (geral) | 231,004.11 | 193,477.37 |
| (1003) CE2COAST (FCT) | 9,562.60 | 4,571.49 |
| (1004) ALL ATLANTIC - 2021 | - | 6,000.02 |
| (1005) EUREKA (FCT) | 890,798.69 | 214,816.75 |
| (1101) MBON (PO Açores) | 136,958.21 | 119,867.96 |
| (1102) SAOO (Symposium on Advances in Ocean Observation) | 28,075.18 | - |
| (1103) RAEGE2020 (FCT) | 86,595.66 | 60,014.79 |
| (1105) Workshop Julia | 10,670.40 | - |
| (1201) ASTRAL (H2020) | 90,530.54 | 103,464.19 |
| (1202) MISSION ATLANTIC (H2020) | 7,524.20 | 4,184.14 |
| (1203) LABPLAS (H2020) | 74,010.23 | 20,365.90 |
| (1204) NEXTOCEAN | 31,713.69 | 19,688.76 |
| (1205) BlueMission (H2020) | 1,622.75 | - |
| (1206) SBEP (H2020) | 11,958.20 | - |
| (1207) A-Agora (Horizon) | 853.59 | - |
| (1302) FPACUP (ESA) Act. 2019-1-26 Portuguese users coordination and training Pt2 | 11,152.32 | 3,200.70 |
| (1306) FPACUP (ESA) Act. 2020-3-05 Atlantic Ocean Interactions | 131,443.34 | 48,083.83 |
| (1307) FPACUP (ESA) Act. 2020-3-02 Business Innovation in Portugal | 30,059.75 | 6,558.90 |
| (1308) ATON | - | 5,062.65 |
| (1309) FPACUP (ESA) Act. 2020-2-02 Sustainable Fisheries Management | 32,786.91 | - |
| (1313) ECOBLUE | 8,817.19 | - |
| (1315) FPCUP 2021-1-7: Cupernicus uptake in Portuguese HE | 1,480.00 | - |
| (1316) FPCUP 2021-2-39: Cupernicus user uptake in Africa | 6,280.31 | - |
| (1317) FPCUP 2021-2-42: Cupernicus uptake maritime sector | 1,184.00 | - |
| (1318) FPCUP 2021-2-47: Coastal coord. of user needs | 1,480.00 | - |
| (1401) MAGAL (PO Açores) | 10,332.60 | 32,976.24 |
| (1402) INTAIRSECT (PO Açores) | 23,536.55 | 9,822.78 |
| (1404) K2D (PO Açores) | 30,091.38 | 590.38 |
| (1405) AEROS (PO Açores) | 33,734.18 | 22.61 |
| (1406) SAP (PO Açores) Sistema Alerta Pithomyces | 45,175.65 | 4,292.56 |
| (1407) COAST (FRCT) | 1,532.00 | - |
| (1501) ESDS (INTERREG) | 41,481.76 | 3,245.21 |
| (1601) Rede LoRa WAN | 2,108.27 | - |
| (1602) Vinhas da Terceira | 5,595.60 | - |
| (1701) Custodian | 49,446.64 | - |
| Total de Subsídios, doações e legados à exploração Total for Operating subsidies | 2,850,116.84 | 1,766,620.84 |

NOTE 13 – SUPPLIES AND EXTERNAL SERVICES

#13

figures in euros | valores em euros

| FORNECIMENTOS E SERVIÇOS EXTERNOS SUPPLIES AND EXTERNAL SERVICES | 31-12-2022 | 31-12-2021 |
|---|---------------------|-------------------|
| Subcontractos Subcontracts | 62,000.00 | - |
| Serviços de consultoria Consulting services | 41,246.48 | 75,180.36 |
| Serviços administrativos, financeiros, jurídicos e de auditoria Administrative, accounting, financial, audit and tax services | 133,160.95 | 142,849.52 |
| Publicidade e propaganda Advertising services | - | 150.00 |
| Honorários Professional fees | 21,561.98 | - |
| Materiais Tools | 9,221.37 | 25,817.98 |
| Energia e outros fluidos Energy and other fluids | 1,027.91 | 578.11 |
| Deslocações e estadas Travel and hospitality | 400,639.15 | 149,701.68 |
| Comunicação Communications | 16,278.36 | 10,829.38 |
| Conferências, seminários e outros eventos Conferences and other events | 636,888.32 | 143,097.94 |
| Rendas e alugueres Rents and leasing | 201,616.24 | 25,890.89 |
| Outros serviços Other services | 9,974.08 | 2,501.05 |
| Total de Fornecimentos e serviços externos Total for Supplies and external services | 1,533,614.84 | 576,596.91 |

NOTE 14 – STAFF COSTS

#14

figures in euros | valores em euros

| GASTOS COM O PESSOAL STAFF COSTS | 31-12-2022 | 31-12-2021 |
|--|---------------------|---------------------|
| Remunerações dos órgãos sociais Management salaries | 184,448.85 | 136,942.50 |
| Remunerações do pessoal Staff salaries | 873,269.21 | 785,507.62 |
| Prémios Bonuses | 85,000.00 | - |
| Encargos sobre remunerações dos órgãos sociais Social security: management | 39,534.61 | 28,105.48 |
| Encargos sobre remunerações do pessoal Social security: staff | 203,810.30 | 171,265.85 |
| Seguro de acidentes de trabalho e de saúde Insurance | 25,482.06 | 24,125.86 |
| Outros gastos com o pessoal Other staff costs | 13,015.27 | 24,711.19 |
| Total de Gastos com o pessoal Total for Staff costs | 1,424,560.30 | 1,170,658.50 |

NOTE 15 – OTHER INCOME

#15

figures in euros | valores em euros

| OUTROS RENDIMENTOS OTHER INCOME | 31-12-2022 | 31-12-2021 |
|--|-------------------|------------------|
| Rendimentos suplementares Additional income | 985.44 | - |
| Alienações Alienation | 700.00 | - |
| Correcções relativas a períodos anteriores Corrections from previous periods | 64.00 | - |
| Imputação de subsídios para investimentos Allocation of subsidies for investment | 102,962.35 | 27,696.78 |
| Diferenças de câmbio favoráveis Exchange differences | 58.99 | - |
| Total de Outros rendimentos Total for Other income | 104,770.78 | 27,696.78 |

NOTE 16 – OTHER EXPENSES

#16

figures in euros | valores em euros

| OUTROS GASTOS OTHER EXPENSES | 31-12-2022 | 31-12-2021 |
|--|-----------------|---------------|
| Impostos indirectos Indirect taxes | 181.35 | - |
| Correcções relativas a períodos anteriores Corrections from previous periods | - | 1.00 |
| Diferenças de câmbios desfavoráveis Exchange differences | 32.10 | 704.64 |
| Multas e penalidades Fines and penalties | 450.00 | 176.83 |
| Despesas não devidamente documentadas Expenditure not properly documented | 823.65 | 1.15 |
| Total de Outros gastos Total for Other expenses | 1,487.10 | 883.62 |

NOTE 17 – DEPRECIATION AND AMORTIZATION COSTS

#17

figures in euros | valores em euros

| GASTOS DE DEPRECIACÃO E DE AMORTIZAÇÃO DEPRECIATION AND AMORTIZATION COSTS | 31-12-2022 | 31-12-2021 |
|---|-------------------|------------------|
| Activos fixos tangíveis: Equipamento básico Basic equipment | 93,249.03 | 12,153.89 |
| Activos fixos tangíveis: Equipamento administrativo Administrative equipment | 9,713.32 | 15,542.89 |
| Total de Gastos de depreciação e de amortização Total for Depreciation and amortization expenses | 102,962.35 | 27,696.78 |

7.4 INFORMATION REQUIRED BY LEGAL DIPLOMAS



In accordance with the article 21st, number 1 of the Decree-Law 411/91, of October 17th, AD AIR Centre confirms that it does not have any outstanding payments due towards Social Security and the Tax Authorities.

The net income for the 2022 period is 84 761,47 euros and will be transferred to the caption Retained earnings.

The auditing firm is Martins Pereira, João Careca e Associados SRC, Lda. which will earn, in 2023, for its fees of services rendered in 2022, the amount of 4 950 euros plus VAT.

ANNEXES

Image by Mario Von Rotz on Unsplash

MEMBERS OF THE GENERAL ASSEMBLY 2022

| NAME | POSITION AT THE GENERAL ASSEMBLY | COUNTRY |
|----------------------------|---|----------------|
| Paulo Ferrão | President of the General Assembly | Portugal |
| Ana Quartin | Representing the Foundation for Science and Technology I.P | |
| António Felix Rodrigues | Representing the Autonomous Region of the Azores | Portugal |
| Emiliana Soares da Silva | | |
| Joaquín Hernandez Brito | Secretary of the General Assembly and representing Spain, PLOCAN – Oceanic Platform of the Canary Islands | Spain |
| Josefina Loustau | Representing Spain, PLOCAN – Oceanic Platform of the Canary Islands | |
| Asma Ibrahim | Representing Nigeria, NASRDA – National Space Research and Development Agency | Nigeria |
| Abayomi Oguntunde | | |
| James Loveder | Representing the United Kingdom, BEIS – Department for Business, Energy & Industrial Strategy | United Kingdom |
| Chris Mathews | | |
| Malik de Pina Duarte Lopes | Representing Cabo Verde, Instituto do Mar | Cabo Verde |
| Clarissa Amaral | Representing the State of Bahia, State Secretary for the Environment | Brazil |
| Bouchta El Moumni | Representing Morocco, Abdelamlek Essaadi University | Morocco |
| Filomena Vaz Velho | Representing Angola, Instituto Nacional de Investigação Pesqueira e Marinha (INIPM) | Angola |
| Tumisang Modiole | Representing South Africa, Department of Science and Innovation (DSI) and SANSA | South Africa |
| Stewart Bernard | | |
| Jean Rogelio Linero Cueto | Representing Colombia, Ministry of Science (Minciencias) - Government of Colombia | Colombia |
| Isabelle Benezeth | Representing France, MESR DGR | France |
| Phillippe Monbet | Representing France, Pôle Mer Bretagne Atlantique | |

ANNEX 2

MEMBERS OF THE BOARD OF DIRECTORS

| NAME | POSITION AT THE BOARD OF DIRECTORS | COUNTRY |
|-------------------------|--|----------------|
| Paulo Gadelha | President of the AD AIR Centre Board of Directors and Executive Committee member | Brazil |
| Emir Sirage | Chief Executive Officer (Interim) and Member of Executive Committee | Portugal |
| Sofia Cordeiro | Member of the Board of Directors | Portugal |
| Salvador Landeros Ayala | Representing Mexican Space Agency (AEM) | Mexico |
| Nick Veck | Representing Catapult Satellite Applications | United Kingdom |
| Flávio Tiago | Member of the Board of Director | Portugal |
| Selby Modiba | Representing the Department of Science and Technology – Government of South Africa | South Africa |
| João Careca | | Portugal |

ANNEX 3

PORTUGUESE EUREKA CHAIRMANSHIP TEAM



MIGUEL BELLO
MORA
Chair Person



ANA CRISTINA
NEVES
Deputy Chairperson



PAULO FERRÃO
H&R



JOSE PAULO
ESPERANÇA
Deputy H&R



EMIR SIRAGE
MPC Chair



RTA SILVA
Deputy MPC Chair / MPC



POLINA PEREIRA
Deputy MPC



JOÃO FERREIRA
Deputy MPC



MARGARIDA
OLIVEIRA
Deputy MPC



JOÃO BENTES DE
JESUS
Strategic Advisor



LUÍS SILVESTRE
Communication Coordinator /
Press Manager



INÊS CORREIA
MESQUITA
Science Communication Officer



TERESA TAVARES
Science Editor of Eureka100



ANDREA CUNTZ
Events Manager



ALEXANDRA
FRAZÃO
Executive Secretary



CESA RODA
Administrative and Finance
Manager



ALIRIOVA
FERNANDA
BAPTISTA
Finance Expert

FUTURE PROSPECTS OF EVENTS

During the first half of 2023, the AD AIR Centre considers it imperative that , at the level of the Ministry of Science, Technology and Higher Education, the renewal of SPC No. 29/2018 for an additional period of 3 to 5 years from 2024 is approved, in order to ensure the continuity of the operations of The AD AIR Centre.

In 2023, the AD AIR Centre will be supported by the following commitments:

1. According to Council of Ministers Resolution (SPC) No. 29/2018, during 2023, the Foundation for Science and Technology (FCT) I.P., is committed to transferring an amount equivalent to €1,082M.
2. In accordance with Council of Ministers Resolution (SPC) No. 55/2019, during 2023 and under the ESA@Lab's business plan, the Foundation for Science and Technology (FCT) I.P., is committed to transferring an amount equivalent to €700K.
3. The Regional Government of the Azores (GRA), through the Regional Secretariat of Culture, Science and Digital Transition, and representing itself on the Board of Directors of the AD AIR Centre through the Regional Directorate of Science and Technology (DRCT), has foreseen the commitment of programmes (e.g. MBON), initiatives/events, projects in the context of the autonomous region of the Azores and the international network of the AIR Centre.

ANNEX 5

EVOLUTION OF THE MANAGEMENT AND FINANCIAL REPORTS



2018



2019



2020



2021



2022

AUDITOR'S REPORT



João Careca
Alco Beirão
Elsa Cárdena Martins

STATUTORY AUDITOR'S REPORT

(Free translation from a report originally issued in Portuguese language. In case of doubt the Portuguese version will always prevail)

REPORT ON THE AUDIT OF THE FINANCIAL STATEMENTS

Opinion

We have audited the accompanying financial statements of **AD AIR CENTRE – Associação para o Desenvolvimento do Atlantic International Research Centre (the Entity)**, which comprise the balance sheet as at 31st december 2022 (showing a total of 2.776.937 euros and a total net equity of 680.681 euros, including a net profit of 84.761 euros), the income statement by nature for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements are prepared, in all material respects, in accordance with the Accounting Standard for Non Profit Entities adopted in Portugal under the Portuguese Accounting System.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs) and further technical and ethical standards and guidelines as issued by Ordem dos Revisores Oficiais de Contas (the Portuguese Institute of Statutory Auditors). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section below. We are independent of the Entity in accordance with the law and we have fulfilled other ethical requirements in accordance with the Ordem dos Revisores Oficiais de Contas code of ethics.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis of matter

As mentioned in the section on future prospects and subsequent events of the management report and financial statements, the continuity of the Association's operations is dependent on the renewal of "Resolução do Conselho de Ministros" nº 29/2018 for an additional period of 3 to 5 years as of 2024.

Our opinion is not qualified in relation to this matter.



Responsibilities of management body for the financial statements

Management is responsible for:

- the preparation of financial statements in accordance with the Accounting Standard for Non Profit Entities adopted in Portugal under the Portuguese Accounting System;
- the preparation of the management report in accordance with applicable laws and regulations;
- designing and maintaining an appropriate internal control system to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error;
- the adoption of accounting policies and principles appropriate in the circumstances; and
- assessing the Entity's ability to continue as a going concern, and disclosing, as applicable, the matters that may cast significant doubt about the Entity's ability to continue as a going concern.

Auditor's Responsibilities for the Audit of the Financial Statements

Our responsibility is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control;
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management;



- conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Entity to cease to continue as a going concern;
- evaluate the overall presentation, structure and content of the financial statements, including the disclosures, in accordance with the Accounting Standard for Small Entities adopted in Portugal under the Portuguese Accounting System;
- communicate with those charged with governance, including the supervisory body, regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Our responsibility also includes the verification that the information contained in the management report is consistent with the financial statements.

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

On the management report

In compliance with the applicable legal requirements, in our opinion the management report was prepared in accordance with the applicable legal and regulatory requirements in force and the information contained therein is consistent with the audited financial statements and, taking into consideration the knowledge and appreciation about the Entity, we have not identified any material misstatements.

Lisboa, 1st march 2023

Martins Pereira, João Careca & Associados, SROC, Lda.

Society registered at OROC under n.º 68 and CMVM under n.º 20161404

represented by João António de Carvalho Careca

registered at OROC under n.º 849 and CMVM under n.º 20160473

