

ERATOSTHENES Centre of  
Excellence (ECoE)



ERATOSTHENES:  
Excellence Research Centre for Earth Surveillance  
& Space-Based Monitoring of the Environment

# 1st virtual EXCELSIOR International Technical Workshop

15 July 2020

# The AIR Center on Azores Island



Pedro Freire da Silva

Atlantic International Research - AIR Centre



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CONSORTIUM



## Presentation Outline

- Mission and Vision
- Network and Offices
- Earth Observation Laboratory
  - ESA\_LAB@Azores
  - MBON
  - EO Lab Organisation
  - Lines of Action
- Ongoing Activities
- Networking Fridays



## AIR CENTRE: MISSION AND VISION

- International, distributed and collaborative network institution
- To foster **job creation** and **knowledge driven economic development** in Atlantic regions
- Based in **scientific excellence** and providing services to the scientific community
- To monitor and decisively contribute to reach the UN sustainable development goals, summarized in 3 main global challenges:
  - Climate Change
  - Digital transformation
  - Income inequalities and population dynamics

### Main Thematic Missions

- Bay and estuarine areas
- Floods and natural disasters
- Sustainable food production (aquaculture and agriculture)
- Coastal ecosystems and processes
- Low cost sensors and information systems
- Islands

### Basic Scientific Agenda:

- Marine resources and biodiversity
- Healthy and clean oceans
- System integration from deep see to space
- Mitigation and adaptation to climate change
- Sustainable energy systems
- Data Science
- Remote Sensing Sciences



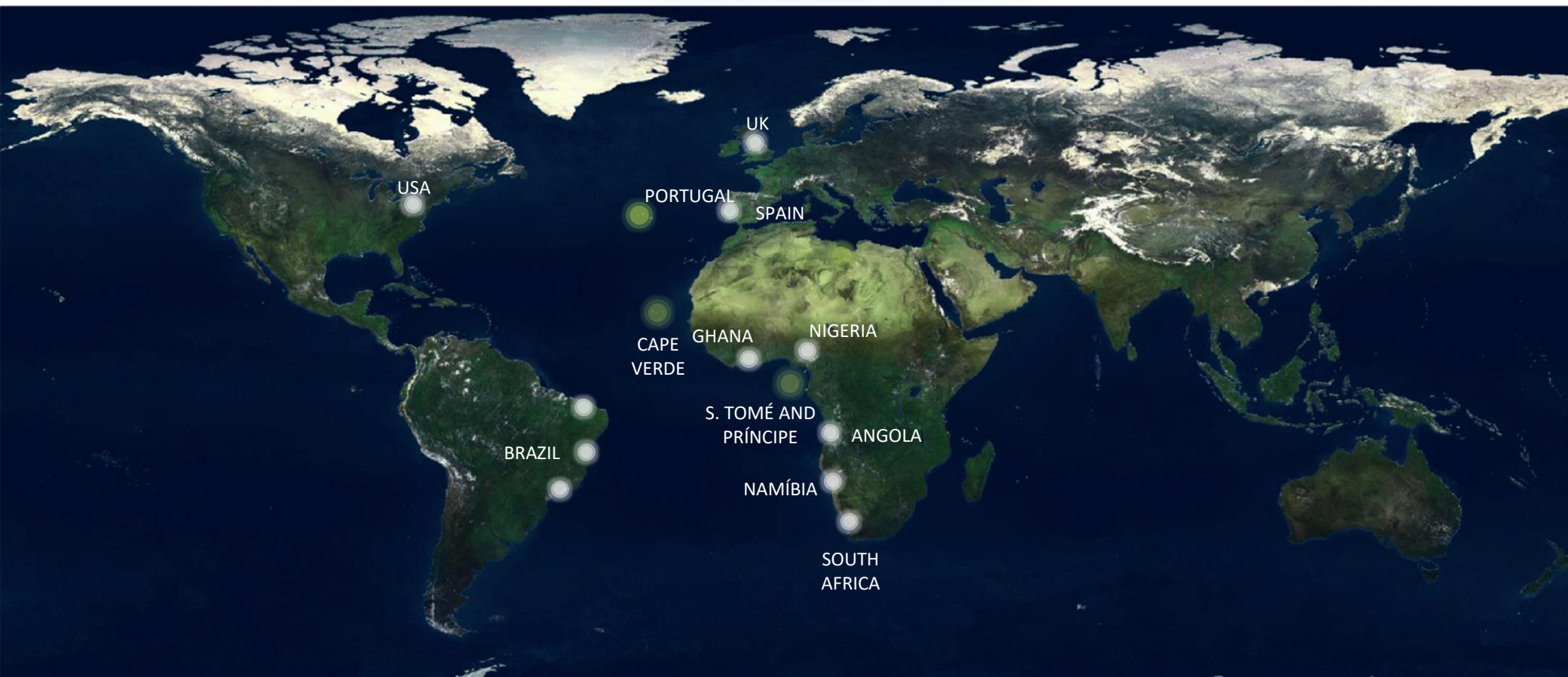
## NETWORK

Pennsylvania State University  
 UFRJ (Univ Federal) do Rio de Janeiro  
 SECITECE  
 IDESCO  
 FRCT  
 A-RAEGE-Azores  
 FUNCAP  
 UTexas – Austin  
 University of Florida  
 MIT  
 CMU  
 PLOCAN  
 INDP  
 University of Cape Verde  
 CEIIA  
 INESC TEC  
 Ministry for Education and Culture, Uruguay  
 Azores Regional Secretary for Sea, Science and Technology  
 Ministry for Science, Technology Innovations and Communications, Brazil  
 Ministry for Science and Innovation, Spain  
 Ministry for Science, Technology and Higher Education, Portugal



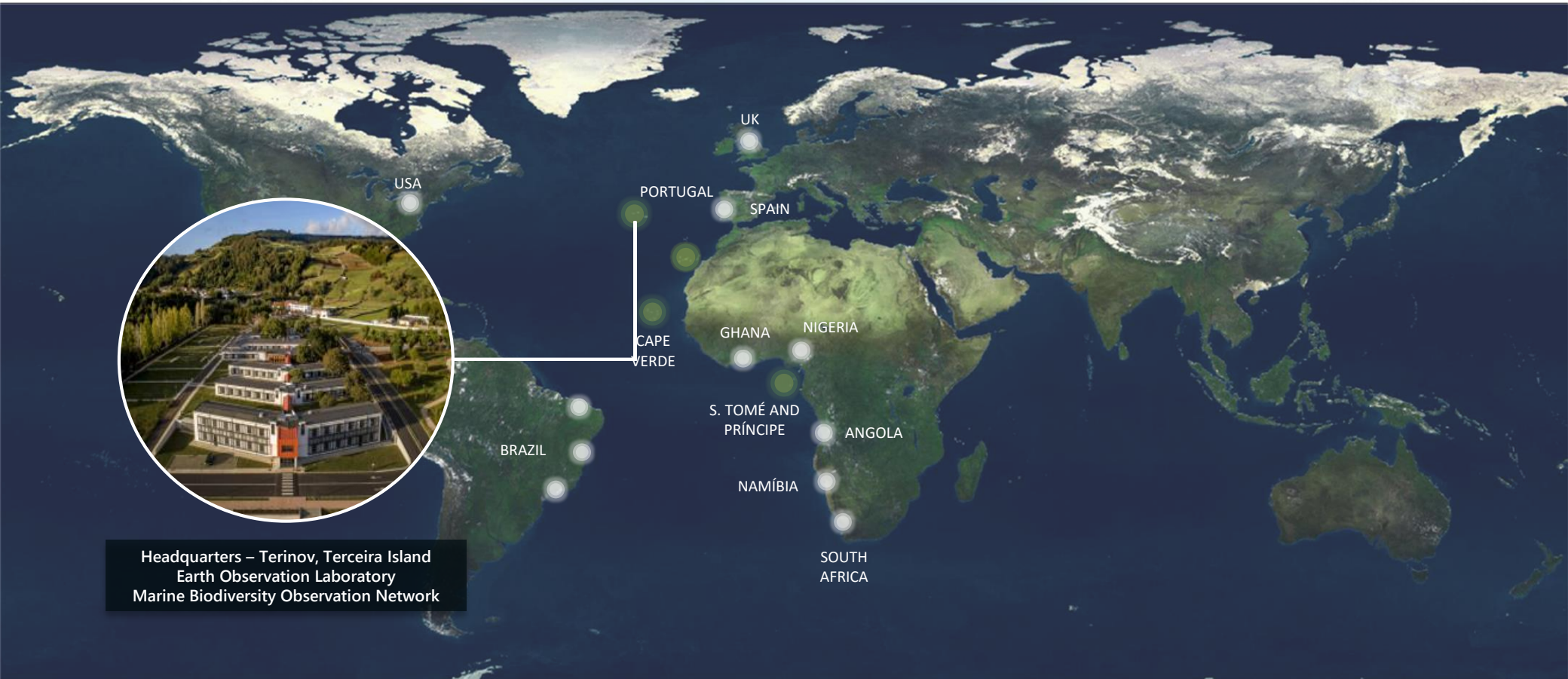
UNOOSA  
 INPE (Instituto Nacional de Pesquisas Espaciais)  
 LifeWatch ERIC (European Infrastructure Consortium)  
 GEO MBON (Marine Biodiversity Observation Network)  
 GEO Blue Planet – Oceans and Society  
 EDP Inovação Colab DTX Colab +Atlântico  
 EUROcean Ciência Viva  
 EIT Climate-KIC EIT InnoEnergy Iberia  
 EMSO – ERIC EMBRC – ERIC  
 SINTEF  
 CYTED (Prog Iberoamericano C&T para el Desarrollo)  
 AE (Agencia Estatal Investigación)  
 IEO CODI CDTI CSIS  
 BSC-CNS (Barcelona Super Computing Center)  
 Thales Tekever, LusoSpace Deimos WavEC  
 FCT (Portuguese National Funding Agency)  
 IBS (Institute for Bio Sustainability)  
 Instituto Hidrográfico  
 University of Ghana  
 University of Namibia  
 CSIR (Council for Scientific and Industrial Research)  
 Centro Tecnológico Nacional – Angola  
 Ministry for Education, Culture and Science, São Tomé and Príncipe  
 Ministry of Science and Technology, Department of Science and Technology, South Africa  
 Ministry of Science and Technology, Nigeria  
 Ministry for Higher Education, Science, Technology and Innovation, Angola  
 Ministry of Education, Cape Verde

## OFFICES





## OFFICES



Headquarters – Terinov, Terceira Island  
Earth Observation Laboratory  
Marine Biodiversity Observation Network

## Earth Observation Laboratory

- ✓ Located in Terceira Island
- ✓ ESA\_LAB@Azores (MoU signed by ESA, RGA, PT Space and AIR Centre)
- ✓ GEO Blue Planet Thematic and regional Node (MoU signed by FCT, GEO Blue Planet and AIR Centre)
- ✓ GEO MBON Secretariat (MoU signed by FCT, MBON and AIR Centre)



TERinov

# Earth Observation Laboratory

- The Earth Observation Lab, located in the TERINOV Technological Park (Terceira island, Azores) is established as:
  - ESA\_LAB@Azores, a laboratory to set-up an **institutional link** between research entities, Portugal Space and the European Space Agency to **explore innovative applications** of space technologies of EO observation in the Atlantic area
  - *GEO Blue Planet Thematic and regional Node*
  - *GEO MBON Secretariat*
- Thematic mission oriented, tackling end-user needs and real problems



# EO Lab: ESA\_LAB@Azores

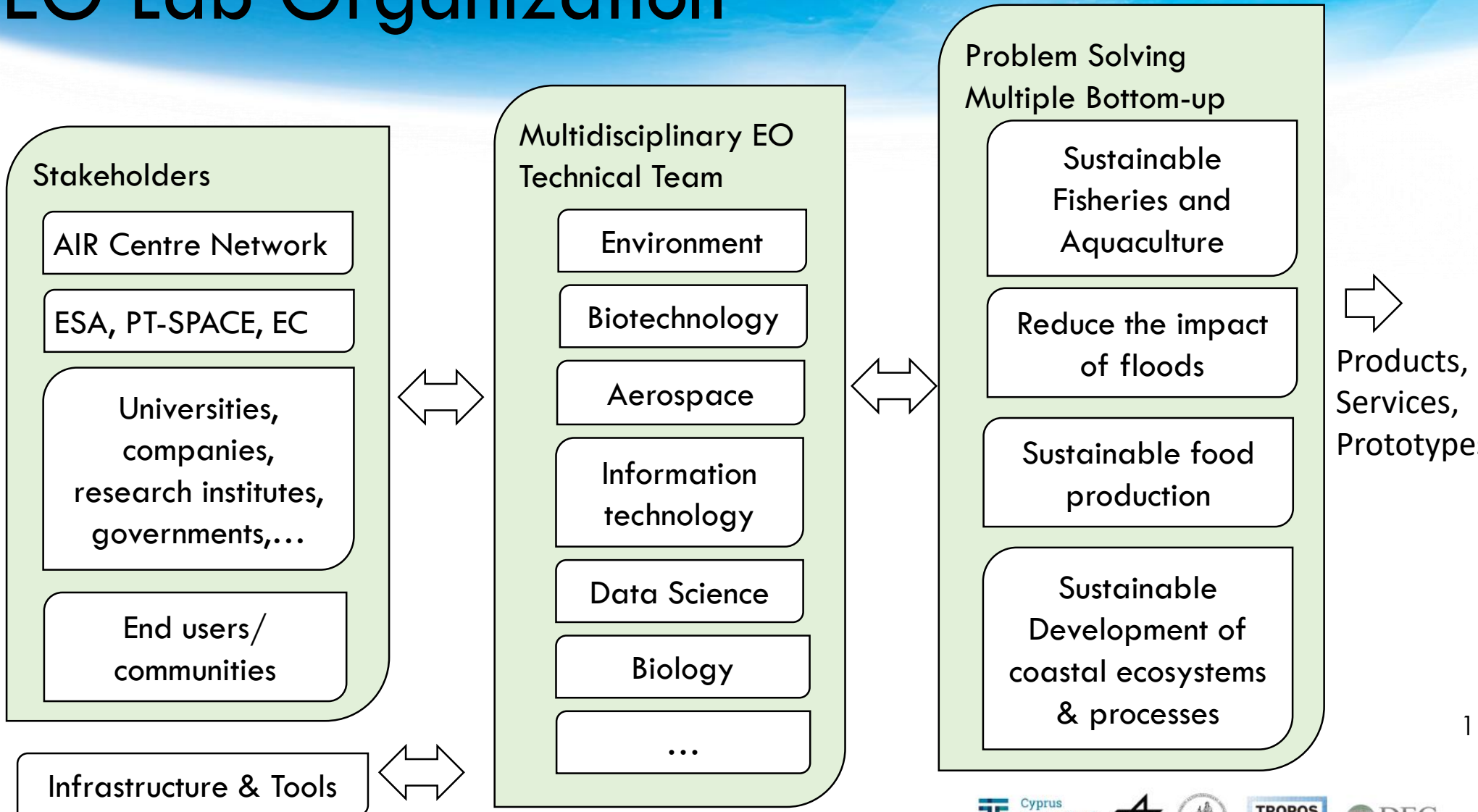
- Maximize integration of a distributed space ecosystem into European society
- **Extend the use of space technologies and application to support societal challenges, public demands and policies in the Atlantic**
- **Test procedures and methods to involve and connect Azores regions into a globally competitive European space sector**
- **Attract, educate young and talented people to get involved in accelerated space for creation, innovation and joint ventures**
- Contribute to the European Autonomy in accessing and using space in a safe and secure environment
- Inspire and open new interest in space and make space more visible to new generation

# Marine Biodiversity Observation Network (MBON)

- Identification of scientific and technological interests related to **biodiversity in the Atlantic**
- Hosting **MBON secretariat within** the EO Lab
- Organization of **workshops and other dissemination** events and **user engagement activities**
- Jointly **disseminate scientific knowledge** to general public, policy makers and media
- Proactively engage citizens, coastal communities, policy makers and local business in **development of effective EO services and products** for decision making



## EO Lab Organization



# EO Lab Lines of Actions

- Sustainable Fisheries, Aquaculture
  - e.g. resource mapping, vessel detection, Bathymetry, Algae potential
- Reduce the impact of floods
  - e.g. sea level rise, landslides, damage mapping, extreme phenomena
- Sustainable food production
  - e.g. soil management in agriculture and forestry for food and nutrition security
- Sustainable Development of coastal ecosystems and processes
  - e.g. prevention, reduction, mitigation and removal of pollution in coastal areas (e.g. microplastics)
  - climate change adaptation and mitigation;



# E5DES Project

- **Funding:** Interreg MAC 2014-2020
- **Coordinator:** ITC - Canarias
- **Objective:** Research and innovation towards the Excellence and Technological Efficiency, use of Renewable Energies, Emerging Technologies and Circular Economy in Desalination Process.

Develop a case study and stakeholder engagement

- **Duration:** Oct. 2019 – Sept. 2022
- **Partners:** Gobierno de Canarias (ES), ULPGC (ES), ULL (ES), AREAM (PT), PLOCAN (ES), AIR Centre (PT), Nouakchot Univ. (SG), Univ. Cabo Verde (CV), Univ. Assane Seck de Ziguinchor (MA).

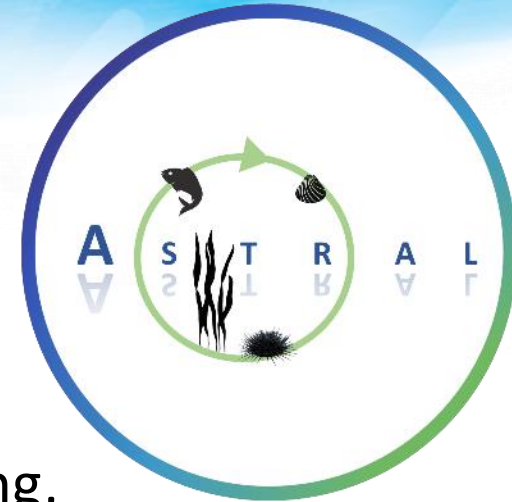


# ASTRAL

- **Funding:** EC H2020
- **Coordinator:** NORCE, Norway
- **Objective:** Develop new, sustainable, profitable and resilient value chains for integrated multi-trophic aquaculture production within the framework of existing, emerging and potential Atlantic markets.

## Develop an Atlantic aquaculture alliance and dissemination activities

- **Duration:** Sept 2020 to Aug. 2014
- **Partners:** LEITAT (ES), EMG (FR), BIO (FR), SAMS (UK), FURG (BR), CSIR (SA), CONICET (AR), CHX (IE), MI (IE), DAFF (SA), UCT (SA), PMBA (FR), AIRC (PT), MOP (BR), VIK (SA), NIOMR (NG).





# Mission Atlantic

- **Funding:** EC H2020
- **Coordinator:** DTU, Denmark
- **Objective:** Mapping and assessing present and future status of Atlantic marine ecosystem using Integrated Ecosystem Assessment.



**Building Capacity supporting management of Atlantic resources + Societal engagement and communication (Cooperation and Science Diplomacy)**

- **Duration:** Sept. 2020 to Aug. 2025
- **Main Partners (33 overall):** UHAM (DE), PML (UK), UPOR (PT), IFRE (FR), PLOCAN (ES), SU (SE), MFRI (IS), IMAR (PT), UCT (SA), UFSC (BR), UPL (UK), AIRC, (PT), MROB (NO), WMU (UN)



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## Mission Atlantic

- **Funding:** Atlantic Regional Initiative (ESA)
- **Coordinator:** DEIMOS (PT)
- **Objective:** Development and delivery of customised EO-based information services to support decision making processes to the wind energy sector in the design and operations planning of offshore infrastructures in the Atlantic Region.

**Stakeholder engagement, dissemination of project results and engagement of new users**

- **Duration:** July 2020 to June 2022
- **Partners:** WAVEC (PT), DTU (DK), IPMA (PT), EDP (PT), AIR Centre (PT)



# Renewable Offshore Wind Energy

- **Funding:** Atlantic Regional Initiative (ESA), under nego
- **Coordinator:** DEIMOS (PT)
- **Objective:** Development and delivery of customised EO-based information services to support decision making processes to the wind energy sector in the design and operations planning of offshore infrastructures in the Atlantic Region.

**Stakeholder engagement, dissemination of project results and engagement of new users**

- **Duration:** July 2020 to June 2022
- **Partners:** WAVEC (PT), DTU (DK), IPMA (PT), EDP (PT), AIR Centre (PT)





## Atlantic Cities and Ports

- **Funding:** Atlantic Regional Initiative (ESA) - under nego
- **Coordinator:** DEIMOS (PT)
- **Objective:** Development and delivery of customised EO-based information services to support decision making processes by climate resilience, ports and protecting the oceans related stakeholders in the Atlantic Region.

**Stakeholder engagement, dissemination of project results and engagement of new users**

- **Duration:** July 2020 to June 2022
- **Partners:** Planetec (IT), University of AEGEAN (GR), AIR Centre (PT)



## Framework Partnership Agreement on Copernicus User Uptake

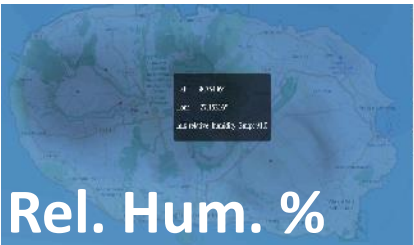
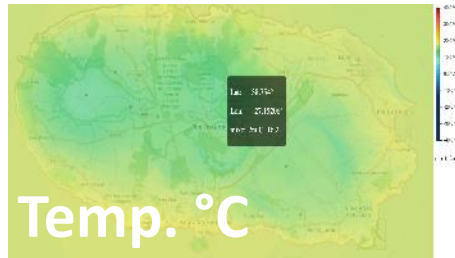
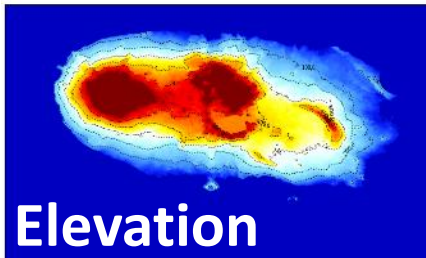
- **Objective:** Increase the number of Copernicus users and applications derived from Copernicus based on user requirements. Expanding the existing markets and creating new markets and competitiveness of European Earth Observation downstream operators.
- **Duration:** Oct 2019 to Jan 2021



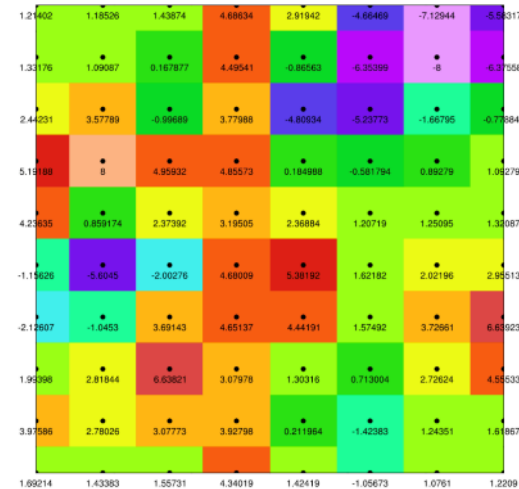
Framework Partnership Agreement  
for Copernicus User Uptake

## EO-based fungus alert System

### Continuous Data Monitorization and Analysis



### Real-time Risk Map



### Spore Counts



### Risk + Validated Contamination

### Develop Predictive Model

Inform farmers of risk and effective contamination levels enabling toxicity prevention through effective avoidance, suppression and protection.





# Networking Fridays

## We already had eleven sessions:

- Greg Jenkins (Penn State / AESEDA, USA)
- Samuel Mafwila (SANUMARC / University of Namibia, Namibia)
- Milton Kampel (MOceanS / INPE, Brazil),
- Isabel Sousa Pinto (CIIMAR / GEO MBON, USA)
- Olivia Oliveira (IGEO / UFBA, Brazil)
- Yasser Omar (IST/IT, Portugal)
- Sheila Heymans (EMB, Belgium)
- Suleiman Sadiku (FUTMINNA, Nigeria)
- Paolo Corradi (ESA, Netherlands)
- Sigi Gruber ( Head of the Healthy Oceans and Seas Unit, Directorate-General for Research and Innovation, EC)

## Future events

- Thematic Special Session on Cubesats, Marine Litter, etc



[www.aircentre.org](http://www.aircentre.org)

**THANK YOU FOR YOUR ATTENTION**

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Coordination and support action  
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Proposal acronym: EXCELSIOR



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