

AtlantECO



Atlantic Ecosystems Assessment, Forecasting & Sustainability



Stazione
Zoologica
Anton Dohrn
Napoli

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EMBL-EBI



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Grant Agreement in preparation

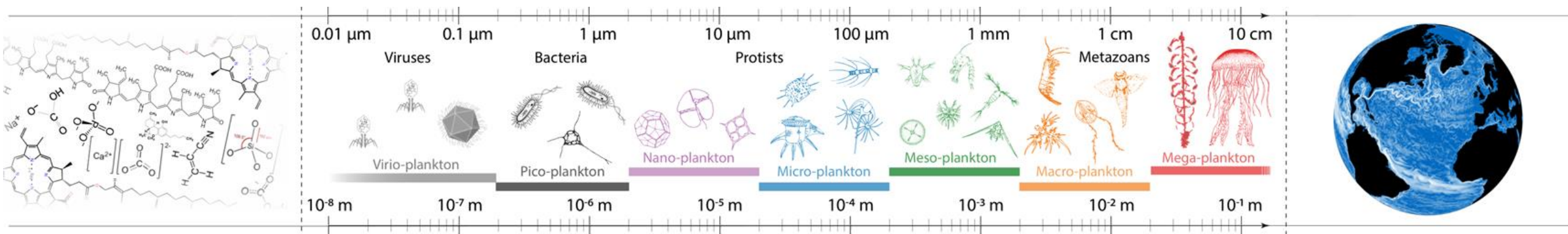


Vision

- Develop and apply a novel, holistic framework to manage ecosystem health and services
- Provide knowledge-based resources and engage with science, industry, policy, and citizens
- Exchange & build capacity along and across the Atlantic Ocean

Three pillars of research

- Microbiomes (next generation imaging & 'omics)
- Plastics & the plastisphere
- Seascape & connectivity





Five ecosystem services

ES1: Climate support system: carbon drawdown and storage

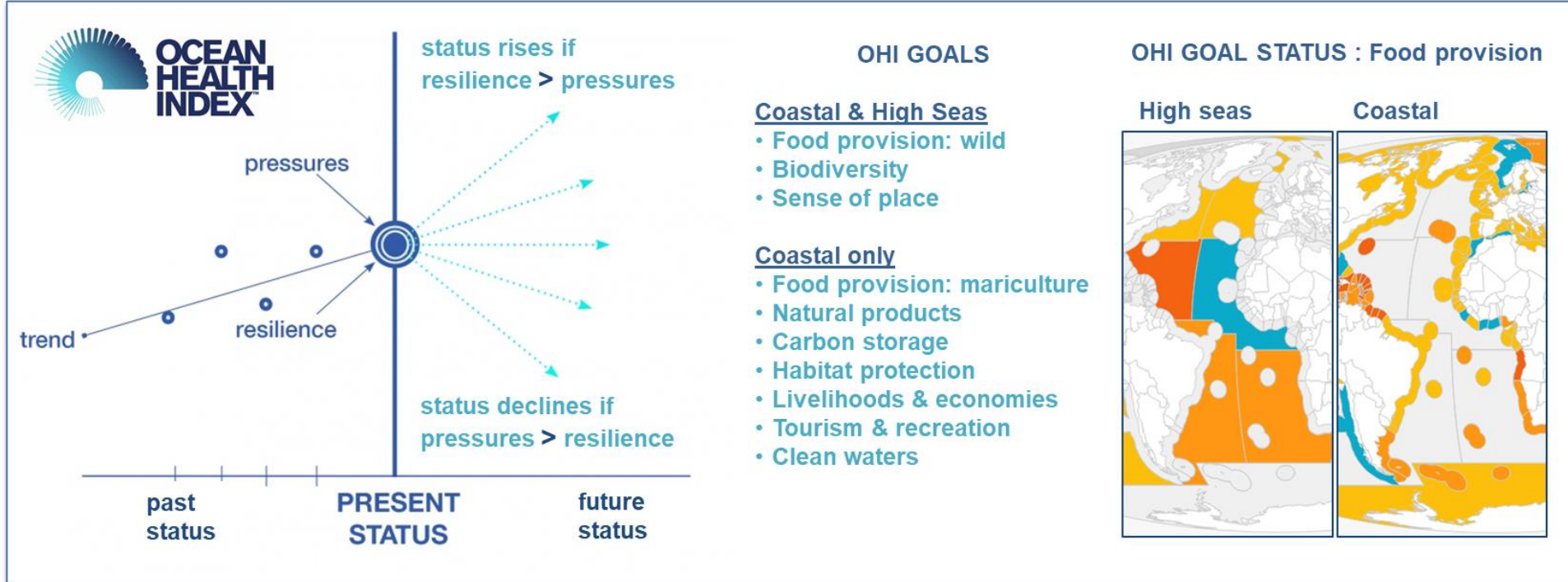
ES2: Deep ocean life support system: transfer to mesopelagic and seabed ecosystems

ES3: Food security and trophic fluxes: fisheries and aquaculture.

ES4: Healthy planet, healthy people: biohazards, cycling of plastics and pollutants

ES5: Biodiversity: resilience, adaptation and biodiscovery

Ocean Health Index (OHI) as a framework to assess ecosystem health & services



- Indicator of achievements with respect to the Convention for Biological Diversity (CBD)
- Explicitly linked to several of the UN's Sustainable Development Goals, e.g. SDG14
- Map to key elements identified in MSFD as measures of Good Environmental Status (GES)

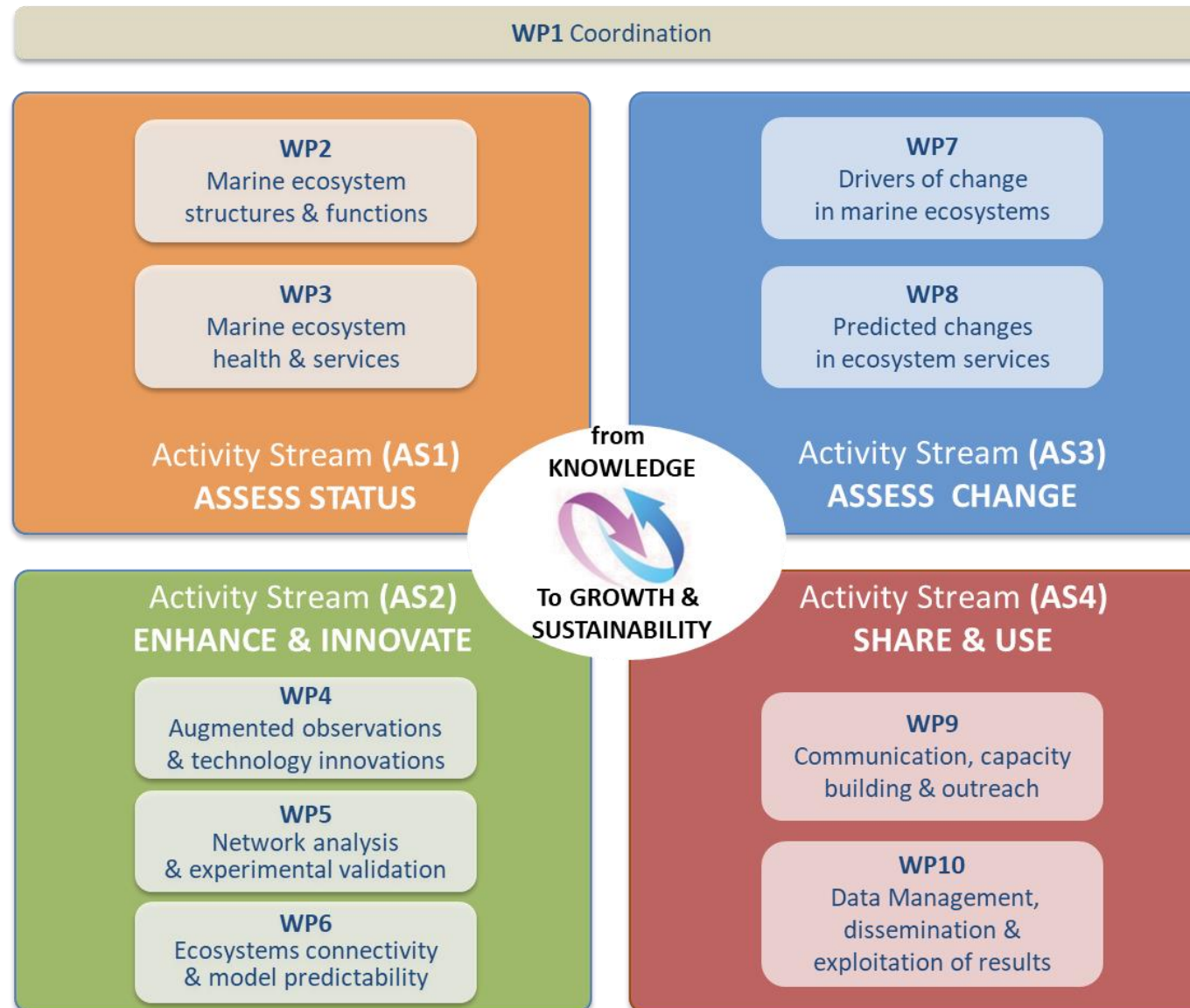
Objectives / Activity Streams (AS#)

AS1 – Assess the status of ecosystem structures, functions, health and services at regional, basin and all Atlantic scales and provide high quality gridded data products and maps

AS2 – Enhance knowledge and Innovate by adopting standard optical and genetic observations protocols, cutting-edge network analysis methods, and better parameterisation of connectivity and biogeochemical models.

AS3 – Assess drivers and stressors of change and forecast their impact on tipping points and recovery of ecosystem structures, functions and services, and develop eco-socio-economic models to predict their future states

AS4 – Share and use capacity and knowledge across the four continents bordering the Atlantic Ocean ensuring a seamless engagement between science, industry, policy, and society.



AtlantECO

Budget: 11M€

Duration: 2020-2024

Consortium: 36 partners

SOUTH AFRICA



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

University of Cape Town

CSIR
our future through science

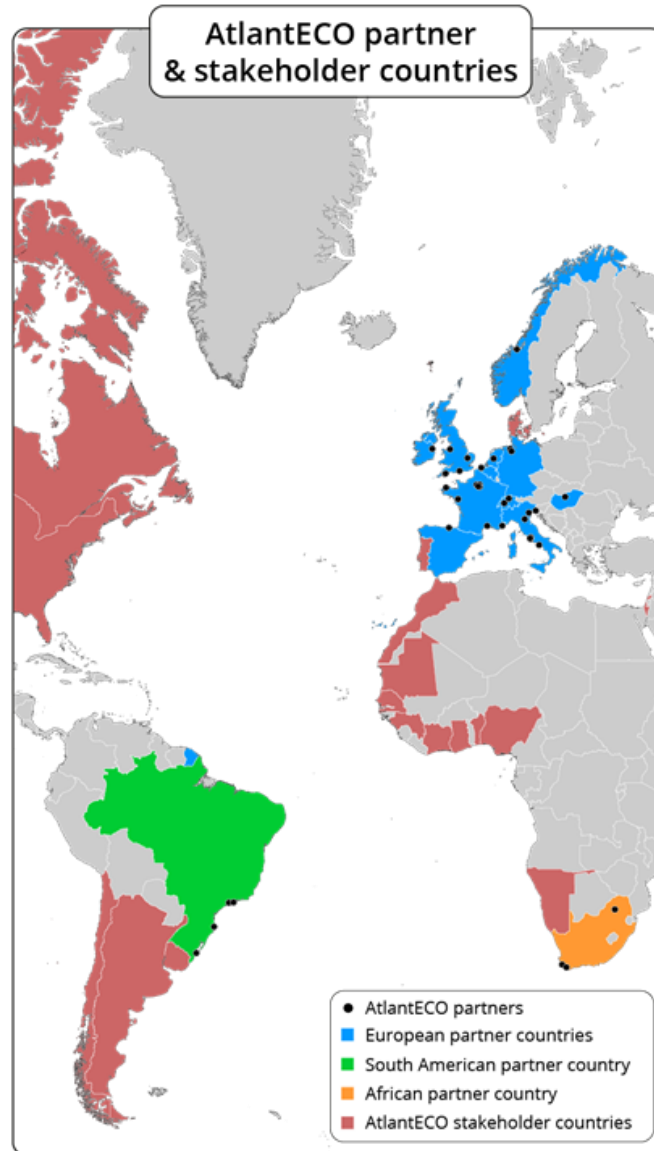
SOUTH AMERICA



FUSP

UNIVERSIDADE FEDERAL DE SANTA CATARINA

ufscar



EUROPE



Stazione Zoologica Anton Dohrn Napoli

UNESCO
United Nations
Educational, Scientific and
Cultural Organization

EMBL-EBI

ETH zürich

EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

THE MARINE BIOLOGICAL
ASSOCIATION
Est. 1884
Incorporated by
Royal Charter 2013

cea

tara
EXPEDITIONS
FOUNDATION

OGS

SINTEF

spi
Sociedade Portuguesa de Inovação

NIOZ

cmcc

SORBONNE
UNIVERSITÉ
CRÉATEURS DE FUTURS
DEPUIS 1257

CNRS

Utrecht University

USC
UNIVERSIDADE DE SANTIAGO
DE COMPOSTELA

u^b
UNIVERSITÄT
BERN

AWI
ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR-
UND MEERESFORSCHUNG

MTA
ÖKOLÓGIAI
KUTATÓKÖZPONT

SAPIENZA
UNIVERSITÀ DI ROMA

CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

UK Research
and Innovation

PML | Plymouth Marine
Laboratory

seascope
BELGIUM

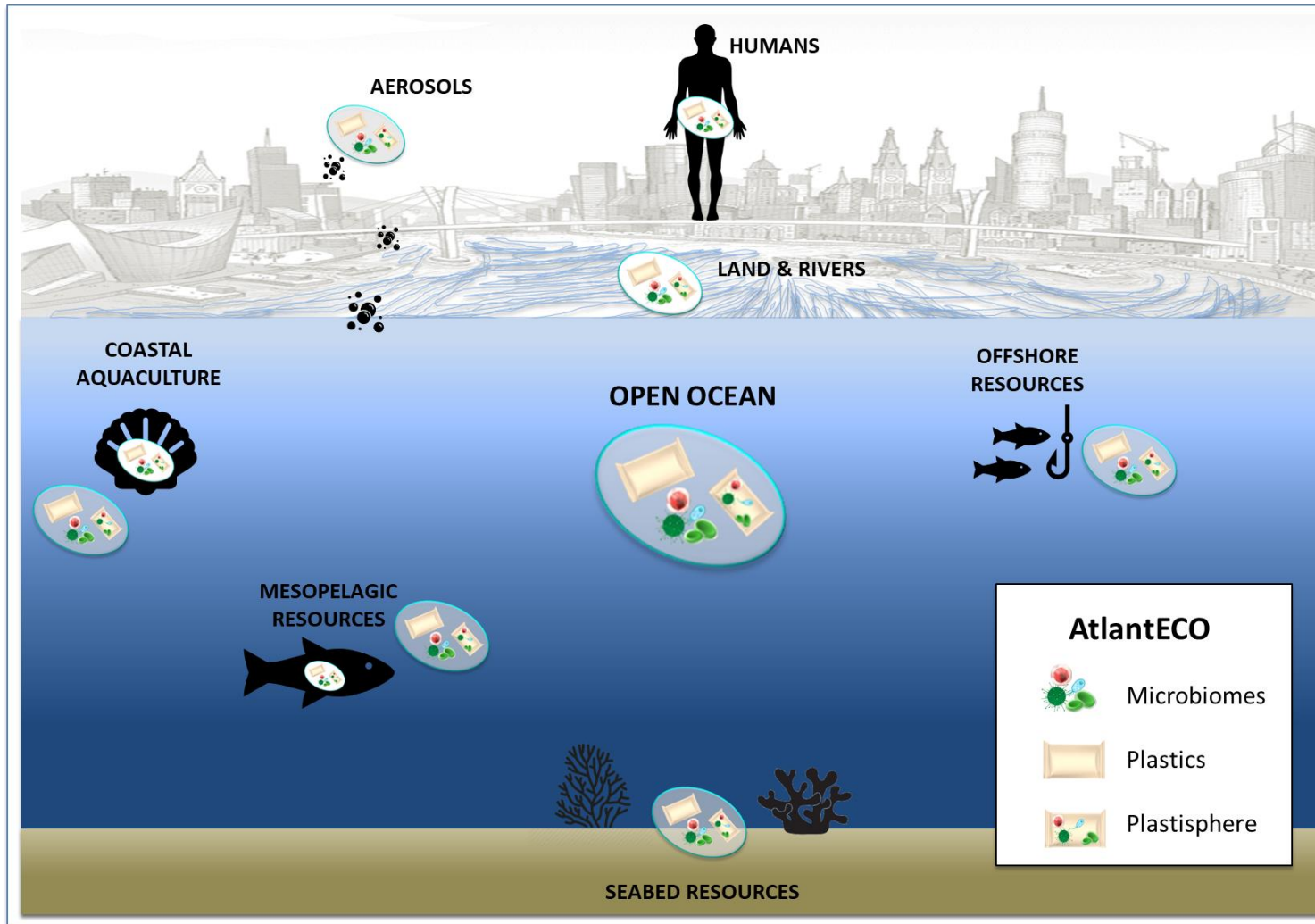
National Research
Council of Italy

UNIVERSITY OF
LIVERPOOL

emso
ERIC
EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM

The focus of AtlantECO is on open ocean systems

It extends its activities to other systems via synergies with other projects



SYSTEMS	SYNERGY with PROJECTS
Open Ocean	<i>AtlantECO proposal</i>
Coasts - aquaculture	H2020 – AquaVitae
High seas - fisheries	H2020 – TriATLAS
Mesopelagic - resources	H2020 – SUMMER
Seabed - resources	H2020 – iAtlantic
Land & rivers	H2020 – SIMBA
Aerosols	Weizmann Institute
Humans	ERC – MicrobioS

ACTIVITY	SYNERGY with PROJECTS
Human-environment interactions	ERC – MicrobioS Partner EMBL (Bork)
Plastics distribution models	ERC – TOPIOS Partner UU (van Sebille)
Nutrient co-limitation models	ERC – BYONIC Partner ULIV (Tagliabue)
Nutrient co-limitation experiments	ERC – DIATOMIC Partner CNRS (Bowler)
Carbon pump parameterisation	ERC – REFINE Partner SU (Claustre)



AANCHOR
BUILDING AN ALL ATLANTIC
OCEAN COMMUNITY
Implementing the Belém Statement

Tri-lateral Horizon 2020 projects with microbiome components

2016-2020



2019-2023

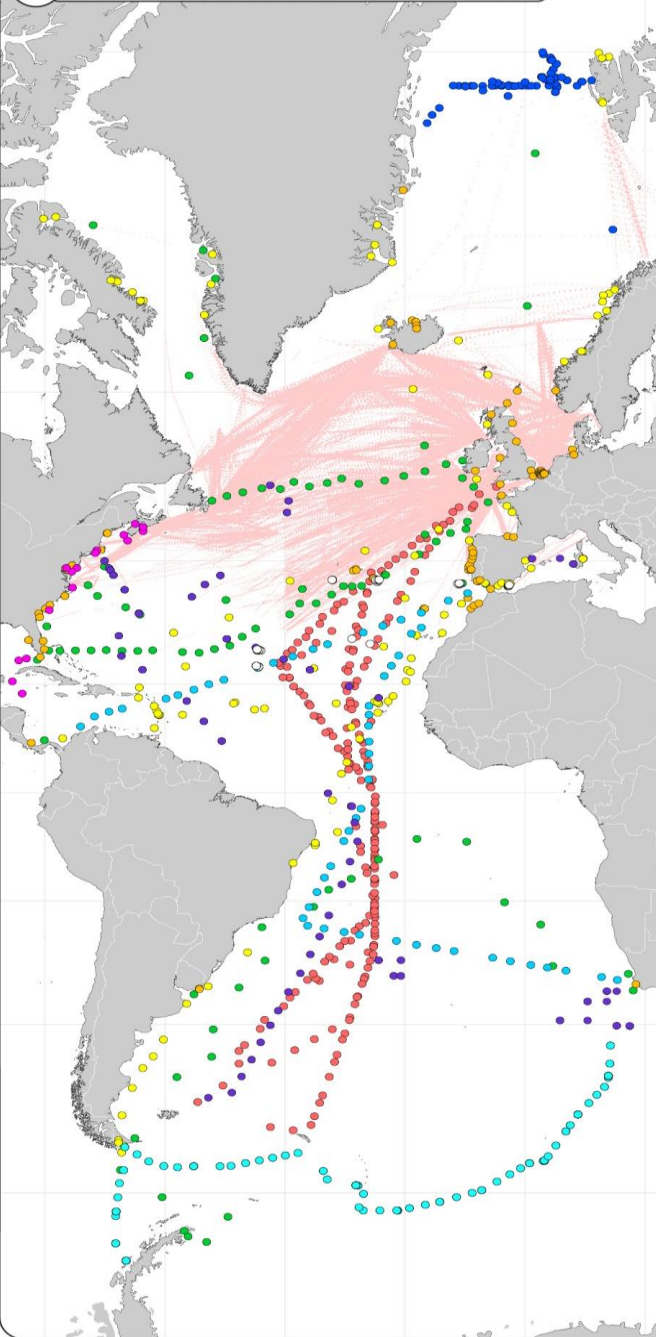


2020-2024

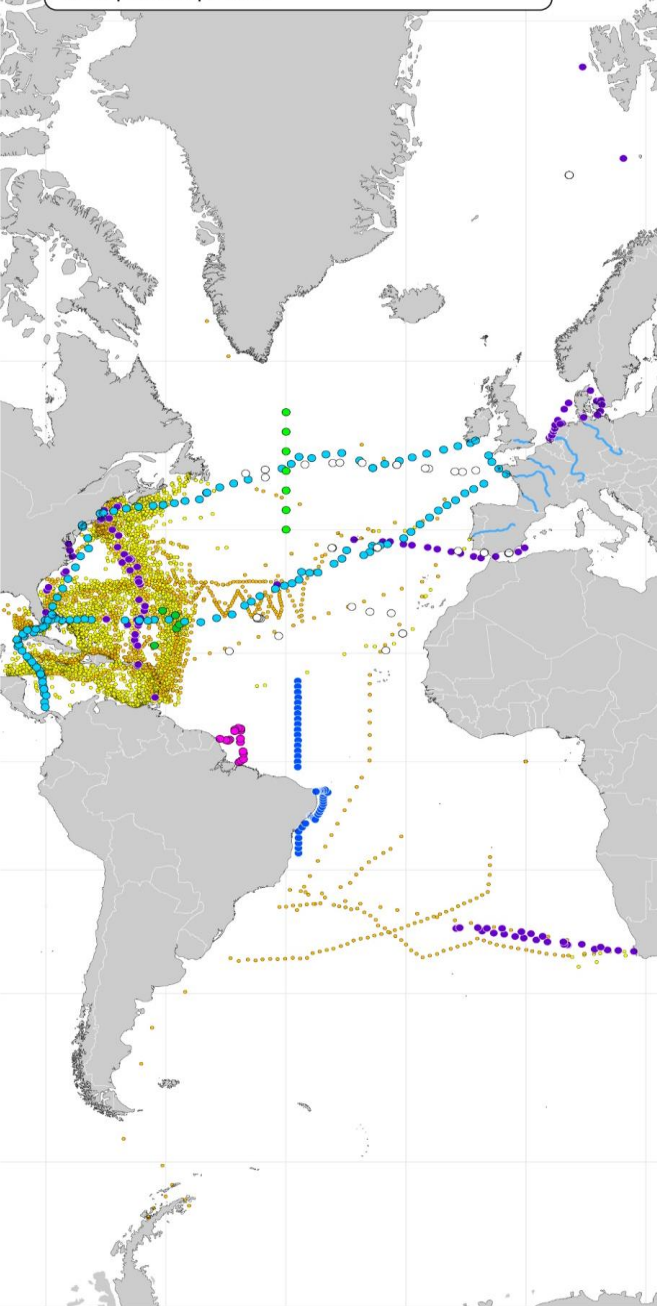


ASTRAL

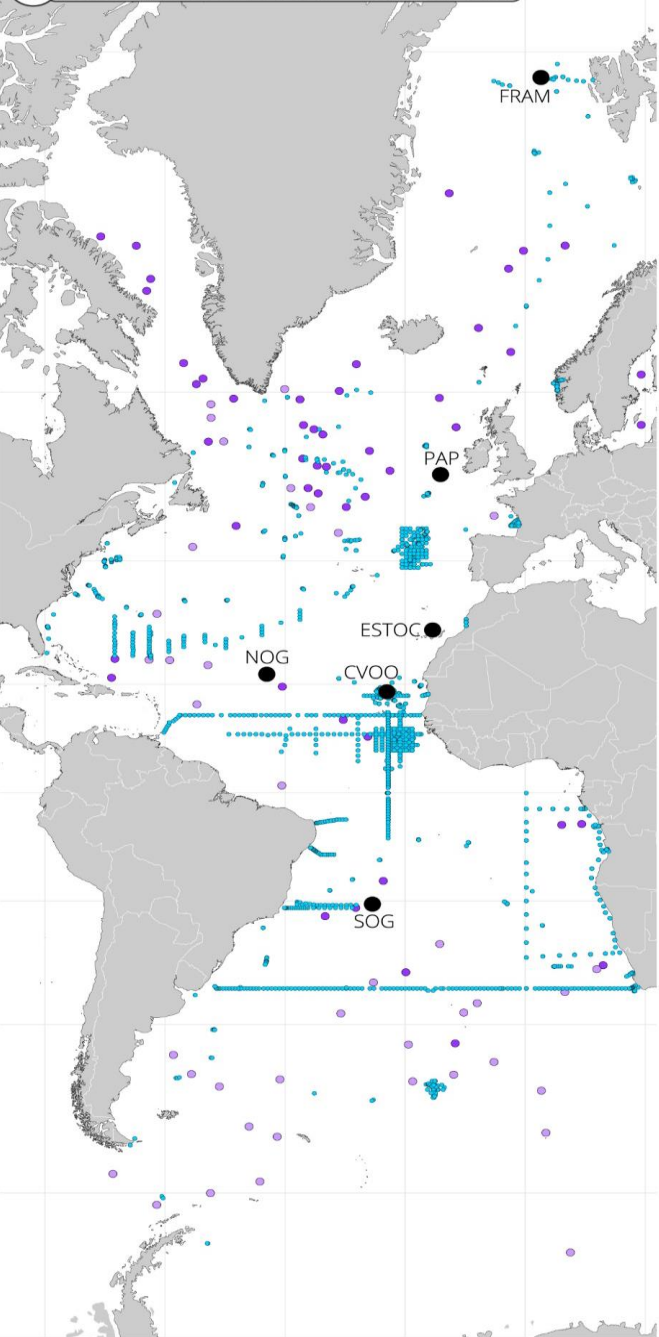
A Existing observations – microbiomes



B Existing observations – plastics and the plastisphere





C Existing observations – carbon flux



- A**
- Microbiomes in water column**
- Global Ocean Survey (GOS) [2003-2009] (0-10 m)
 - Tara Expeditions [2009-2018] (0-1,000 m)
 - Malaspina Expedition [2010] (0-4,000 m)
 - Atlantic Meridional Transect (AMT) [2009-2017] (0-200 m)
 - Ocean Sampling Day (OSD) [2014] (0-10 m)
 - Citizen Sail 4 Science (S4S) [2015-2016] (0-10 m)
 - FRAM [2009-2017] (0-600 m)
 - GEOTRACES [2010-2011] (0-1,000 m)
 - Antarctic Circumpolar Expedition (ACE) [2016-2017] (0-1,000 m)
 - eDNAbyss [2016-2018] (250-9,000 m)
 - Continuous Plankton Recorder (CPR) [1958-today] (0-10 m)
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- B**
- Plastics in surface waters**
- Van Sebille Review [1980-2010] (0-1 m)
 - Van Sebille Review [2010-2019] (0-1 m)
- Plastics & plastisphere in surface waters**
- Camadas Finas V [2014] (0-10 m)
 - Expedition 7th Continent [2015] (0-1 m)
 - PIRATA-BR [2018] (0-1 m)
 - Amaral-Zettler [2012-2018] (0-1 m)
- Plastics & microbiomes in rivers**
- Tara microplastics [2019] (0-1 m)
- Plastics & microbiomes in aerosols**
- Tara Pacific [2016-2018] (15 m)
 - NAAMES [2015-2018] (15 m)
- Plastics & microbiomes in sediments**
- eDNAbyss [2016-2018] (0-50 cm)
-
- C**
- Underwater Vision Profiler (UVP)
 - Euro-Argo BGC floats
 - Non-EU Argo BGC floats
 - Fixed observatories - time series

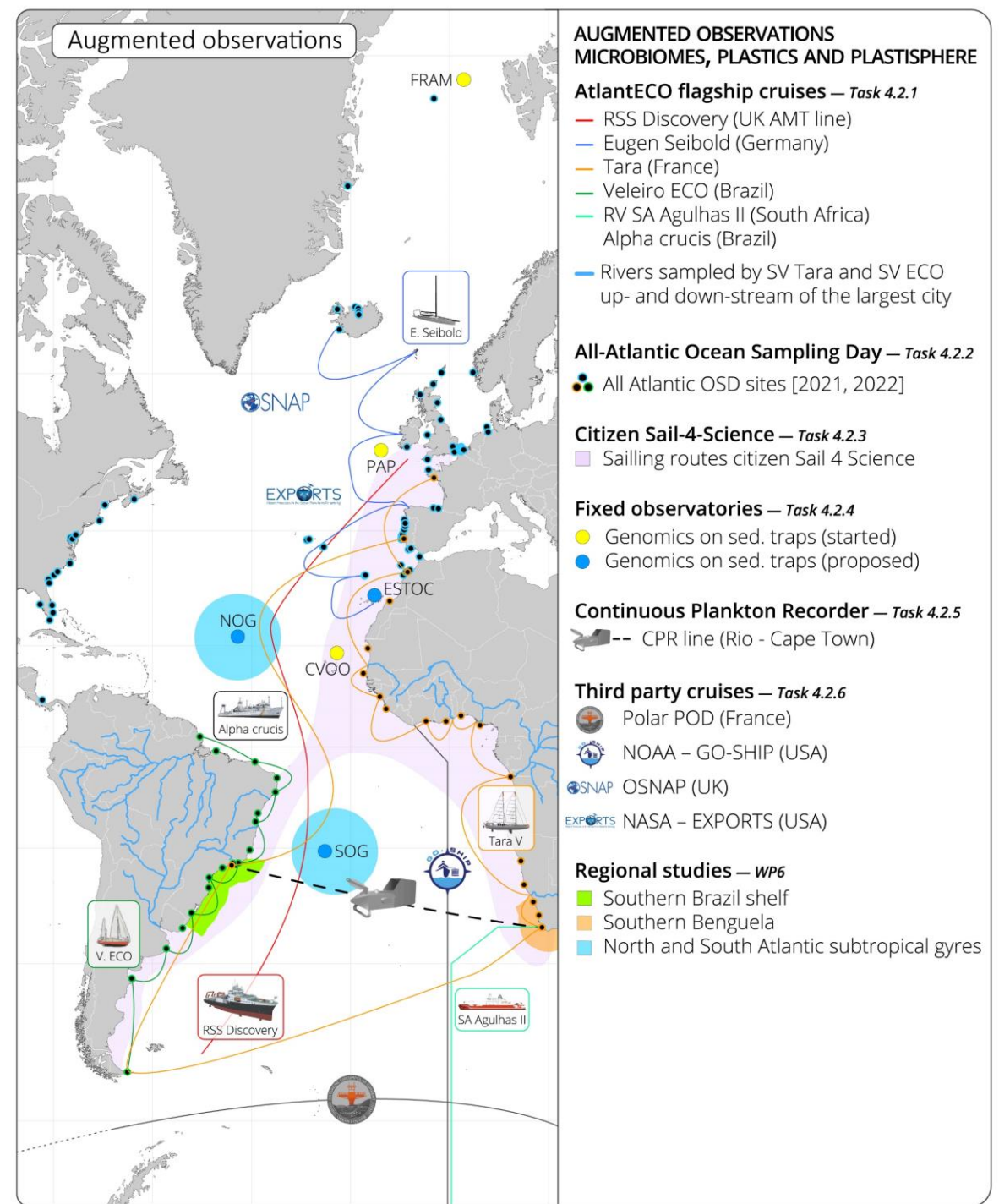
AtlantECO

Imaging & 'omics standard protocols


- Flagship cruises
- All Atlantic Ocean Sampling day 
- Citizen Sail-4-Science 
- Next generation sensors in aquaculture, fixed observatories, and argo floats



- CPR survey line "Rio-Cape Town" First in the South Atlantic
- Third party cruises





Thank you  We look forward to working with you !

