

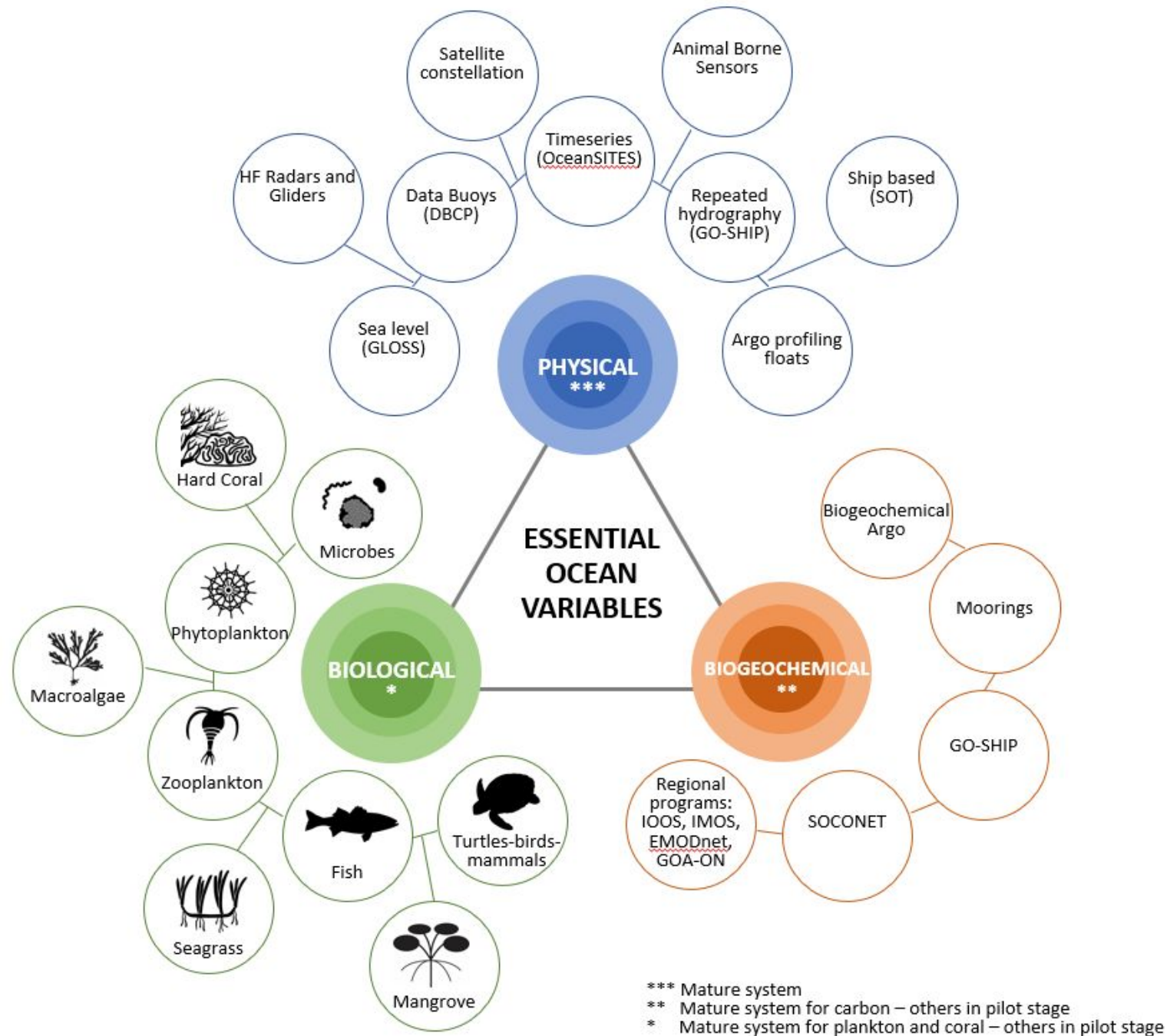


The Global Ocean Observing System


# GOOS Biology and Ecosystems Panel


**Karen Evans (co-chair, CSIRO), Gabrielle Canonico (co-chair, NOAA/US IOOS), Ana Lara-Lopez (IPO, UNESCO)**

# The Biology and Ecosystem Panel is one of three panels of GOOS that help coordinate ocean observations by defining and supporting data collection for the Essential Ocean Variables (EOVs)



# GOOS Steering Committee

 **Biology and Ecosystems Panel Executive**

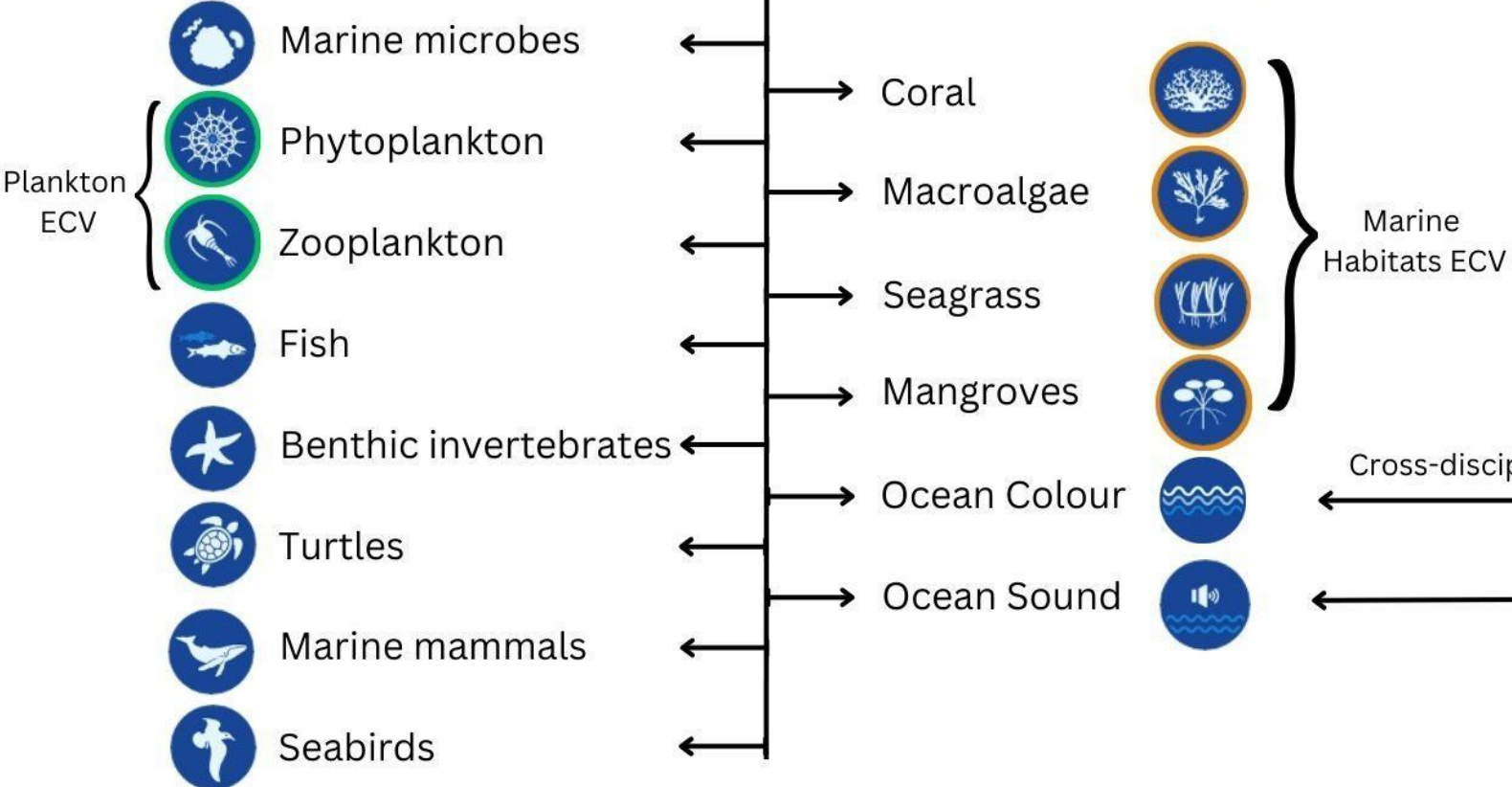
 **Biology and Ecosystems Panel EOV Leadership**



**BGC Panel**

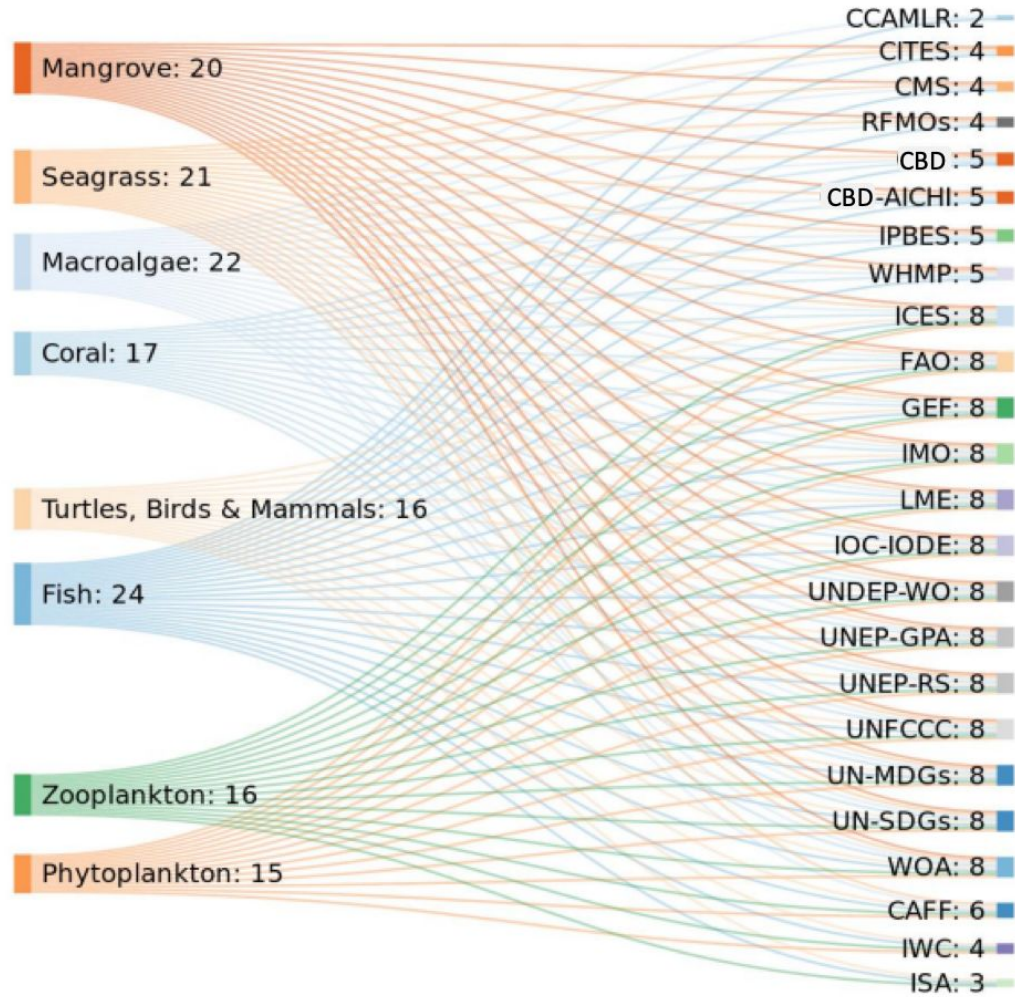


**Physics Panel**





# BIOLOGY AND ECOSYSTEM OBSERVATIONS

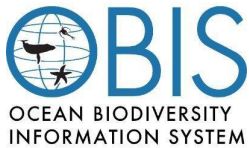


# The key 'biodiversity' questions for science and society

What **changes** are occurring?  
What are the **impacts** of these changes?  
Is **recovery** from these changes possible?



Biology and Ecosystems Panel



**MBON**  
Marine Biodiversity  
Observation Network



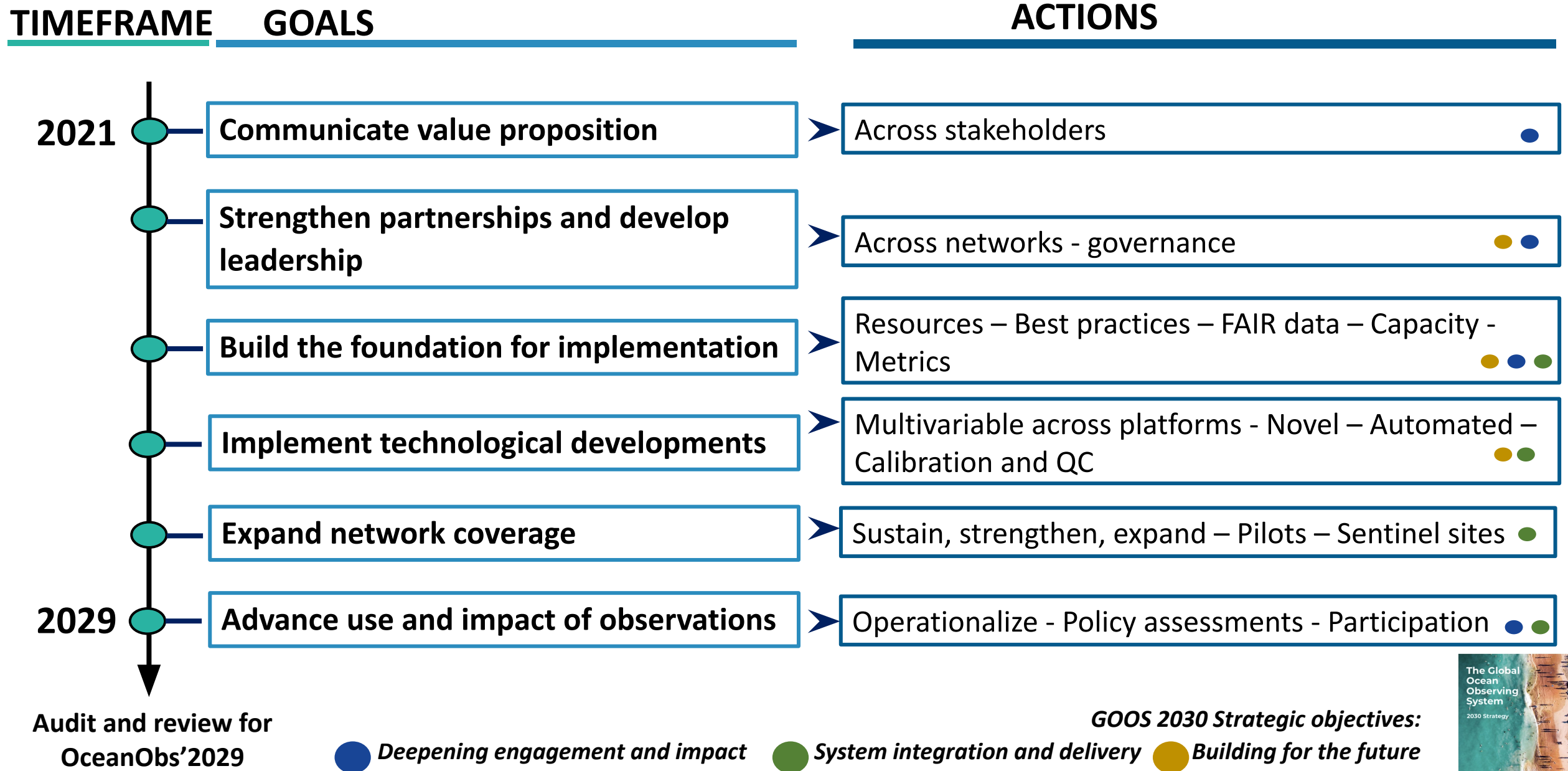
2021 United Nations Decade  
2030 of Ocean Science  
for Sustainable Development

**CHALLENGES**  
Safe ▪ Sustainable & Productive ▪  
Transparent & Accessible ▪ Clean  
▪ Healthy & Resilient ▪ Predicted

**OCEAN**



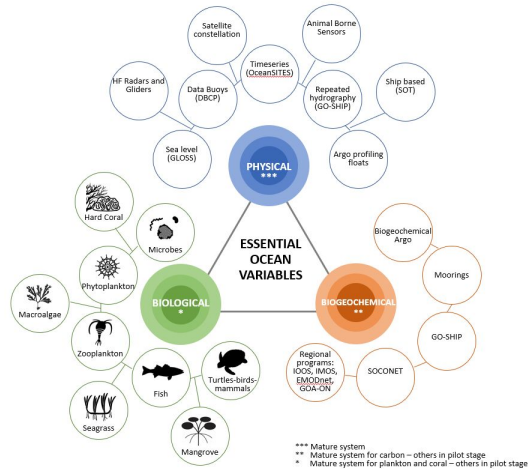
# Incorporating biological observations in the global system







### What to observe

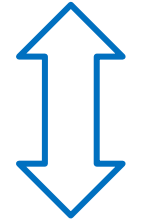
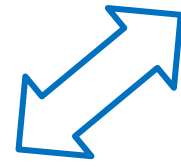
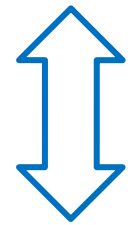
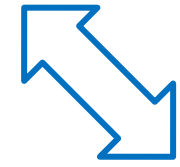
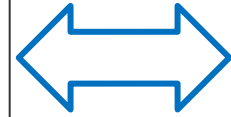
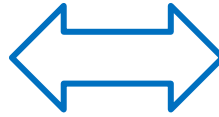


- Specification sheets
- Key variables
- Secondary variables
- Phenomena

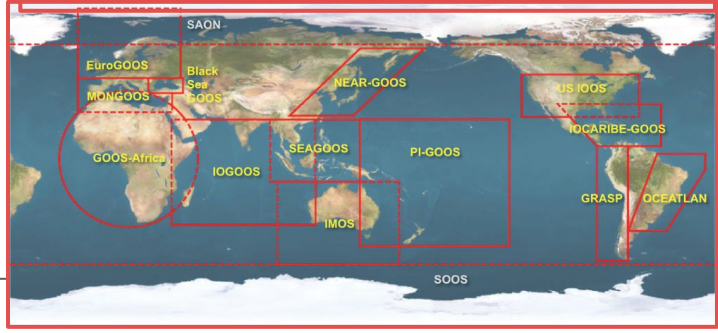
### How to observe



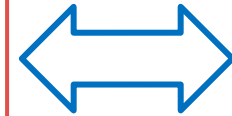
### Connecting/ sharing observations



### Regional alliance of observation systems



Ocean data/  
information products



# GOOS BioEco Portal: <https://bioeco.goosocean.org/>

- Provides open access metadata and information on global ocean observations and monitoring programs involving biological and ecosystem EOVs
- Aims to provide insight into the current and historical state and trends of ocean observation
- Currently holds metadata of **638** globally distributed active monitoring programs
- Integration of EOV sub-variables and EBVs is in development
- Data/ metadata is extractable for story-telling purposes regarding the state of global ocean observation

unesco GOOS BioEco Metadata Portal

UNDER DEVELOPMENT

Statistics About Open GeoNode

Select variables

- Birds
- Fish
- Hard coral
- Invertebrates
- Macroalgae
- Mammals
- Mangrove
- Microbes
- Phytoplankton
- Seagrass
- Turtles
- Zooplankton

DESELECT ALL

Subvariables

DESELECT ALL

Readiness levels

Requirements

Coordination

Data

Data availability

In OBIS

**193** monitoring programmes

Filter by name

Agulhas Bank Zooplankton Monitoring

Applied California Current Ecosystem Studies

Arctic Marine Biodiversity Observing Network

Arendal Station 2

Asia-Pacific Marine Biodiversity Observation Network

Assessment and commercial forecasting of fish and other

mapbox

Mapbox © OpenStreetMap. Improve this map.





# Strategic Alliances



## GEO BON/MBON - GOOS BioEco - OBIS Partnership

Building a globally coherent, consistent and coordinated sustained global ocean observing system to assess the state of the ocean's biological resources and ecosystems

REQUIREMENTS

- The Global Ocean Observing System
- Focus on sustained observations
  - Bring selected EOVs from selected to mature
  - Link with platforms and observing systems of GOOS and GRAs

- MBON  
Marine Biodiversity Observation Network
- R&D focus
  - Bring EOVs from concept to pilot
  - Assist with the establishment of national and regional BONs

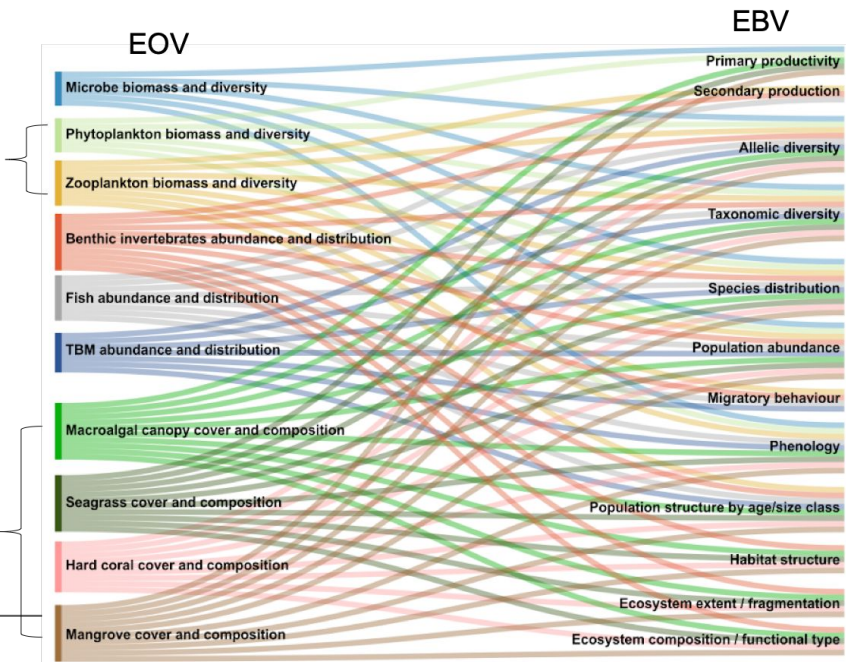
- DATA & PRODUCTS
- OBIS  
OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM
- Open data sharing
  - Data integration
  - Data quality control
  - Data harmonization
  - Tools for data exploration, visualization and analysis
  - Training

PRODUCTS, INDICATORS, ASSESSMENTS

ECV

Plankton

Marine Habitats



2021-2030 United Nations Decade of Ocean Science for Sustainable Development



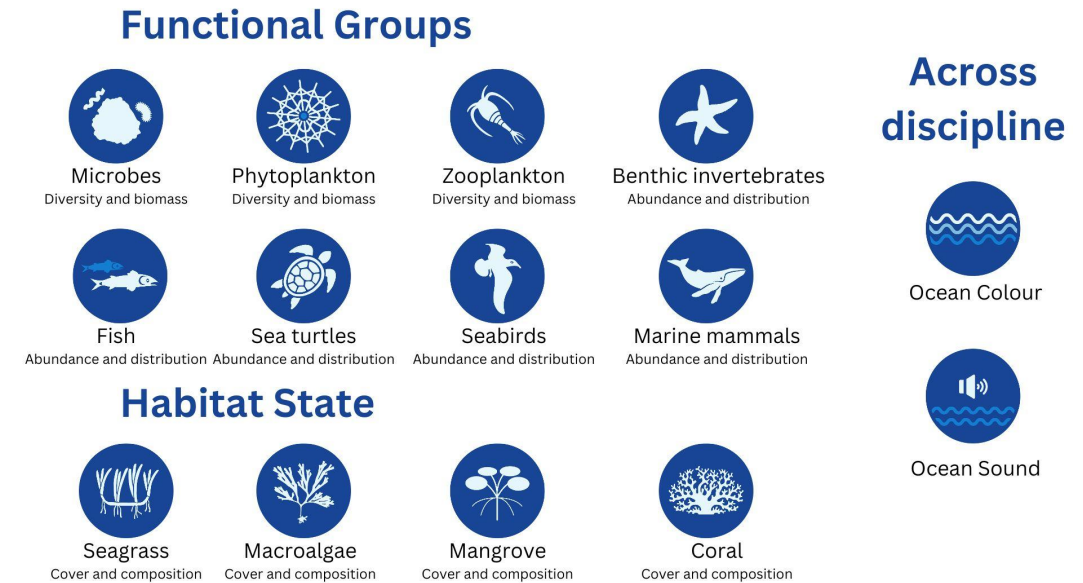
ACCELERATE transfer of marine technology, training and education

<http://iovis.org/2016/12/15/goosgeobonobis/>



# Current activities

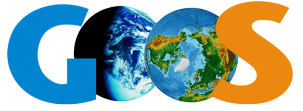
- Expanding EOV focus from coastal to deep ocean (benthic invertebrates, corals)
- Strengthening our connectivity with other GOOS expert panels (OOPC, IOCCP)
- Initiating expansion of biological data discovery across OCG networks
- Building data connectivity and interoperability for GOOS reporting (OBIS, BioEco Portal, OceanOPS)
- Leveraging external projects (EU projects Marco Bolo, BioEco Ocean) and leading SCOR WGs to progress development of EOVs, improve uptake and implementation
- Strengthening/building strategic partnerships: UN Ocean Decade, G7, GEO



# Future plans: strengthening connectivity with GRAs

- Work with GRAs to progress GOOS Strategic Objectives:
  - 3.5 (mapping of observations)
  - 6.6 (advancing observations)
  - 6.11 (building observing community)
  - 7.7 (delivering observations to OBIS)
- Requires integration of observations of BioEco EOVs into observing systems
  - Co-location of observations of marine life with other oceanographic observations
  - Greater involvement in revision/updating and implementation of specification sheets
  - Development/integration of data schemas that ensure data flows into OBIS and into GOOS reporting mechanisms (OceanOPS)
  - Identification, development and implementation of best practices





The Global Ocean Observing System

# Thank you

[goosocean.org](http://goosocean.org)



**unesco**  
Intergovernmental  
Oceanographic  
Commission



WORLD  
METEOROLOGICAL  
ORGANIZATION



**UN**  
environment  
programme

International  
Science Council

