The Global Ocean Observing System

Global Ocean Observing System (GOOS) & LMEs

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22nd Large Marine Ecosystems Consultation Meeting (LME22), Paris, France, 11-13 July 2023

Why observe the ocean?

Climate and weather

The ocean plays a huge role in the Earth's climate and weather. At the same time, it is being affected by climate change.

Ocean health

Overfishing, climate change and pollution are putting ocean's vital natural services at risk.

Coastal communities

Coastal communities are in the front line facing threats posed by changing oceans.

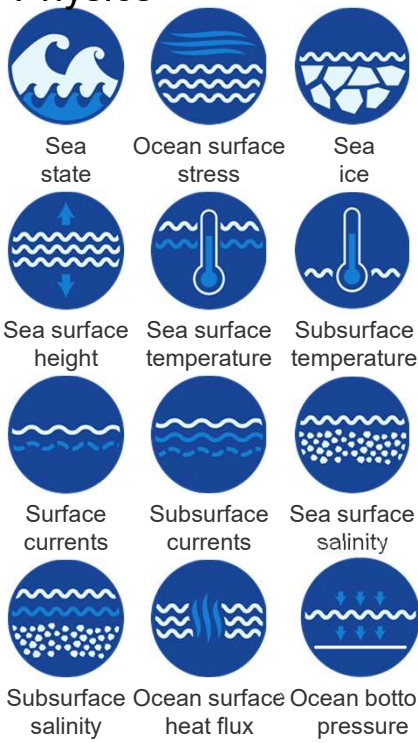
If we haven't got data underpinning our decisions, we might as well be guessing at solutions

Underpinning a wide range of applications

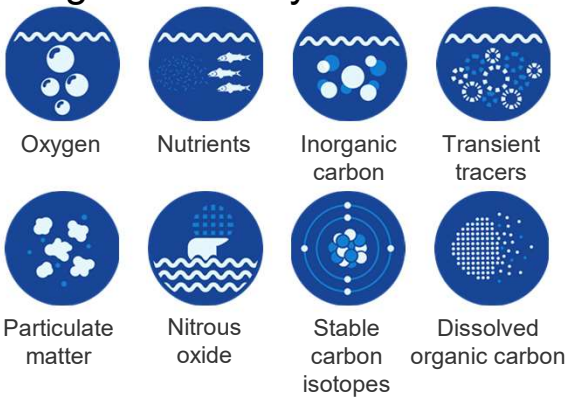
A truly global ocean observing system that delivers the essential information needed for our sustainable development, safety, wellbeing and prosperity

34 Essential Ocean Variables (EOVs)

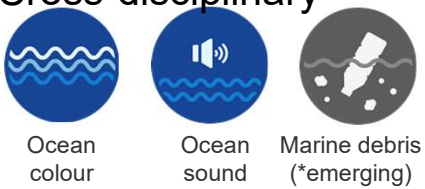
Physics



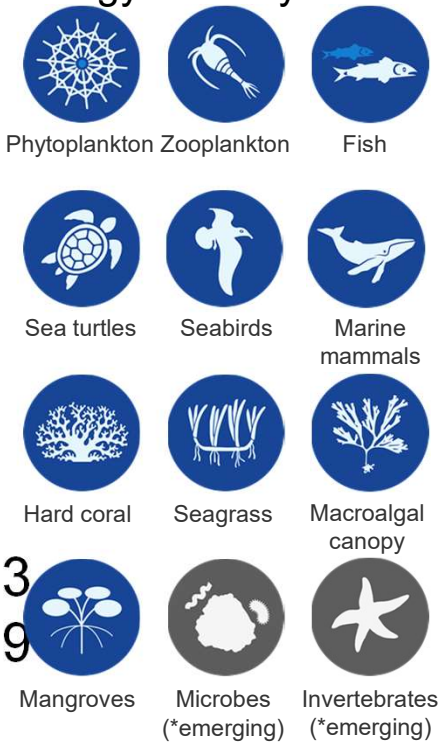
Biogeochemistry



Cross-disciplinary



Biology & ecosystems



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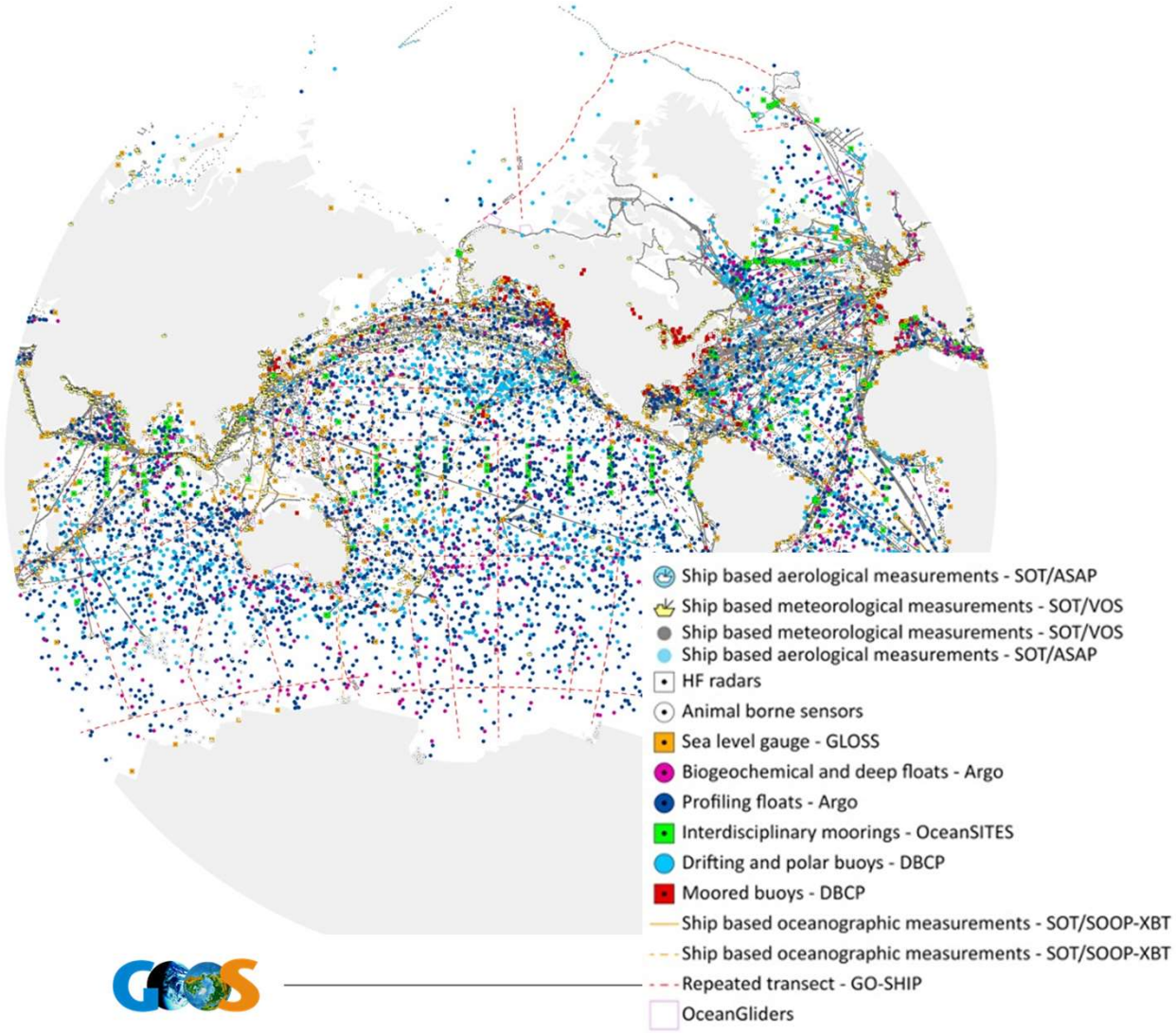


GOOS Today

- 84 countries, 8,700+ observing platforms, 13 global networks
- More than 100,000 observations per day - delivering an accessible, safe and productive ocean
- Global observing networks, e.g. Argo, GO-SHIP, Drifting Buoys, plus emerging networks, e.g., OceanGliders, HF Radar.

"The weather forecasting systems will run off the rails if they don't have the surface pressure information over the ocean to constrain them" - Lars Peter Riishojgaard, Director of the Earth System Branch WMO

www.ocean-ops.org

Biological & ecological observations

- Many gaps - but perhaps there is more out there - connect up regional initiatives - 12 EOVs
- Only 7% of the ocean surface has an *identified* active BioEco monitoring program
- Some of the biggest gaps are in areas of high biodiversity and high human pressure

GOOS BioEco Portal (with OBIS/IODE) - here

Biology and Ecosystems Panel

Biological and Ecological EOVs

Many programmes observe multiple EOVs

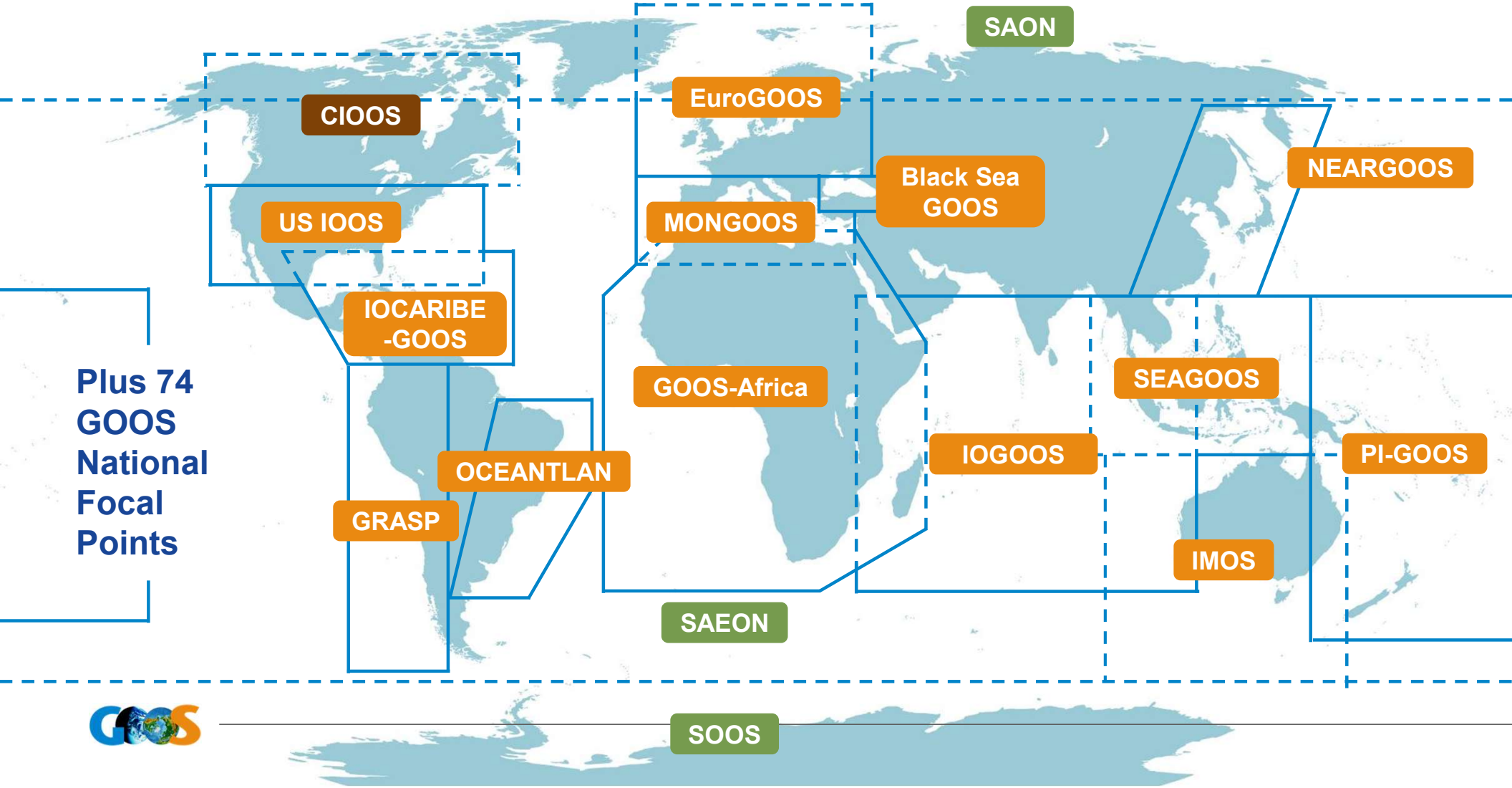
Some EOVs are already used to report to indicators

GOOS BioEco Portal: visualizing monitoring programs globally

OBIS OCEAN BIODIVERSITY INFORMATION SYSTEM

obis.org

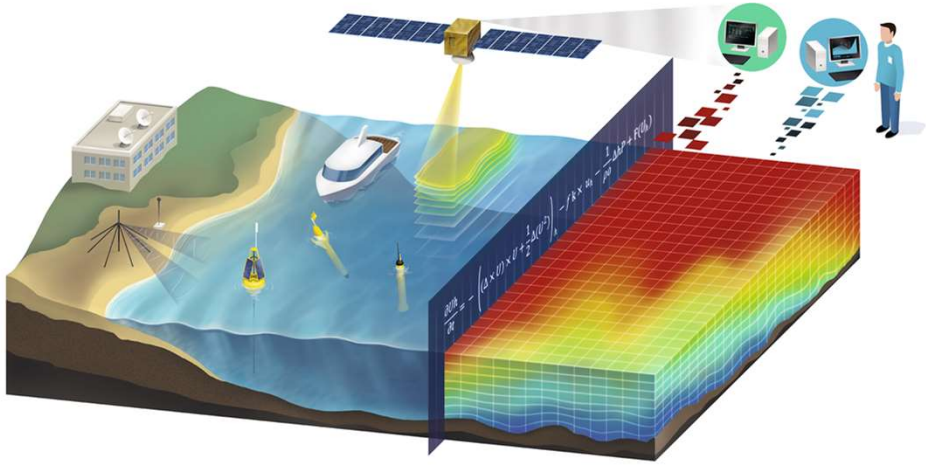
GOOS : Regional & National Alliances

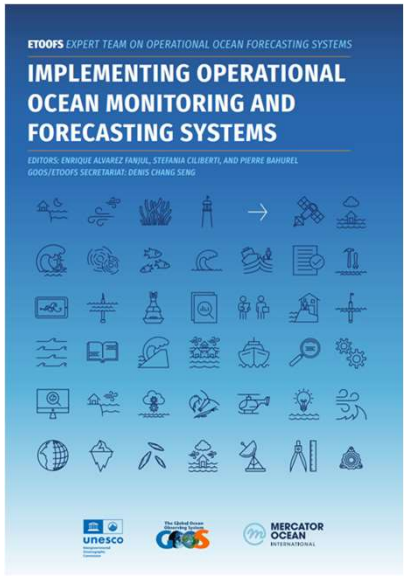


Plus 74 GOOS National Focal Points

Expert Team on Operational Ocean Forecast Systems

Objectives: To improve capacity, quality and interoperability of **ocean forecast products** to support climate, operational maritime services, biodiversity and blue economy.





ETOOFS Guide released 2022:
70+ contributing experts
40+ different entities
17+ different countries

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Ocean Observing Co-Design will develop a more user-focused co-design process to evolve a truly integrated, responsive ocean observing system.

Co-Design Exemplars

*Each exemplar is at different levels of maturity

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

The Ocean Carbon Cycle

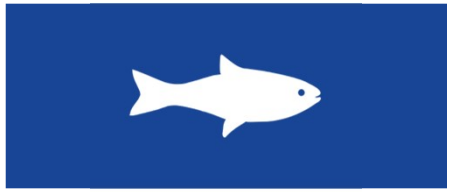
Improving carbon data to inform climate targets, such as net zero

Tropical Cyclones

Advancing tropical cyclone forecasting to save lives & property

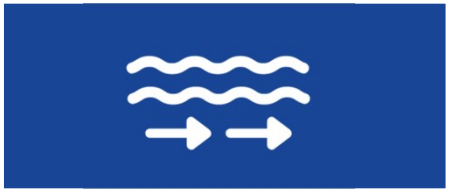
Storm Surge

Improving predictions to minimise impacts on vulnerable communities & natural resources



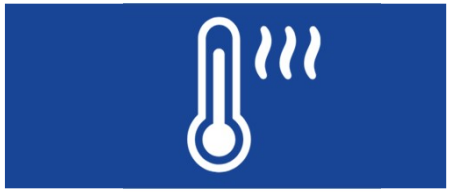
Marine Life

Conserving marine biodiversity and supporting sustainable use of resources



Boundary Currents

Understanding key current systems that significantly influence productivity, weather and climate



Marine Heatwaves

Monitoring marine heatwave impacts on biodiversity and economies

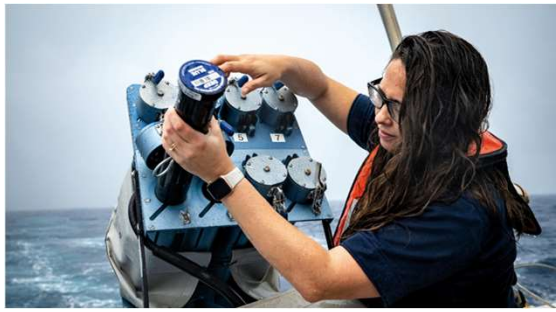
The Global Ocean Observing System

Thank you

goosocean.org

unesco Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment programme

International Science Council