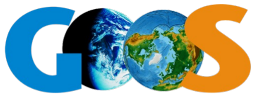


The Global Ocean Observing System

The Global Ocean Observing System

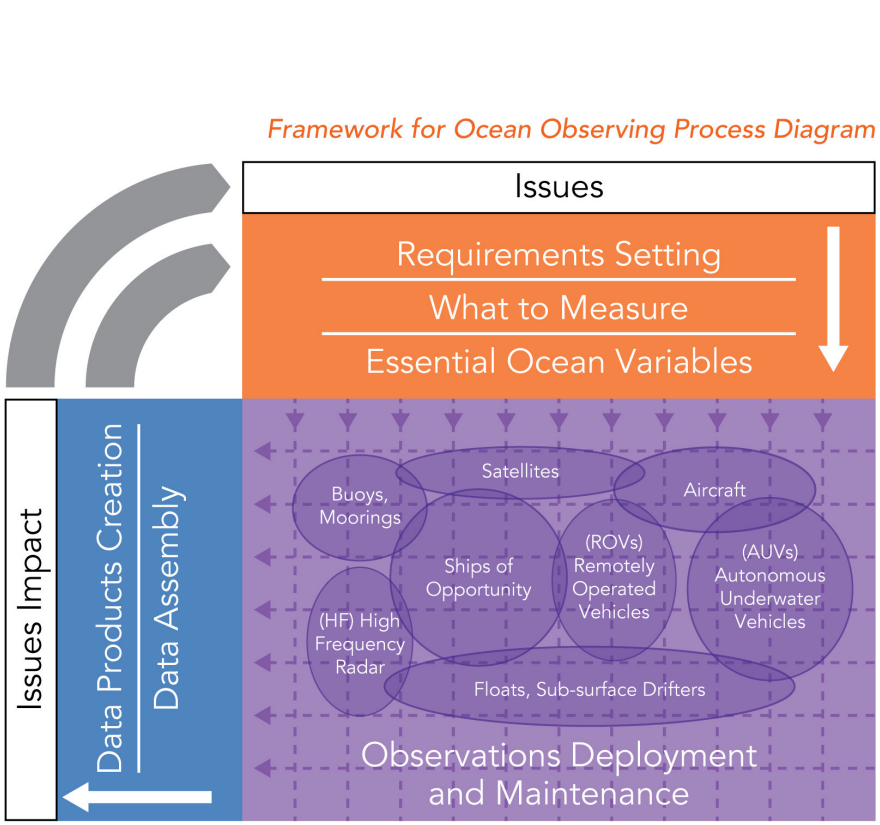
Toste Tanhua
GOOS SC co-chair,
GEOMAR Helmholtz Centre for Ocean Research Kiel

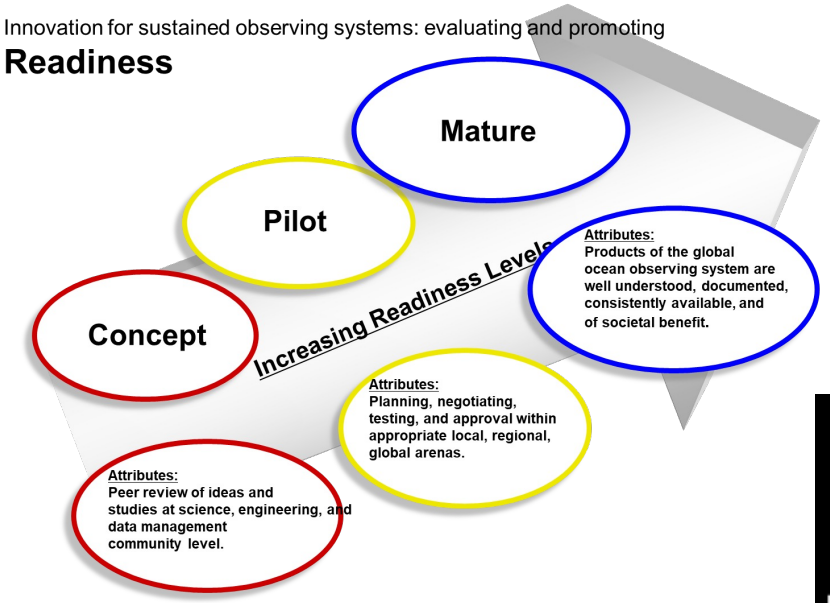
What is GOOS?

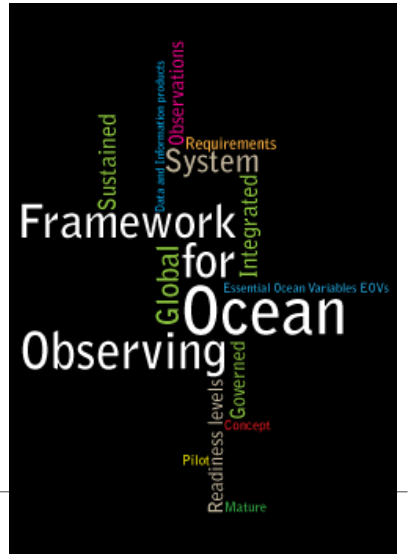
A healthy and safe ocean is fundamental to the Earth; it regulates climate and provides transport, food, livelihoods, and space for recreation. Long-term ocean observing is essential to our ability to provide relevant information to support a sustainable ocean.

- The Global Ocean Observing System (GOOS) is a permanent programme coordinating the functioning of a long-term, sustained ocean observing system serving societal needs for climate, operational services and ocean health.
- Since 1991, GOOS has created an extensive global system, based on contributions from a large number of organizations and nations, from which nations and people all over the world benefit.

The Framework of Ocean Observing (FOO); A central document to GOOS







The Global Ocean Observing System

Steering Committee

Scientific oversight

Expert Panels

Physics

GCOS • GOOS • WCRP
OOPC Ocean Observations Panel for Climate

Biogeochemistry

International Ocean Carbon Coordination Project
IOCCP

Biology and Ecosystems

BioEco GOOS

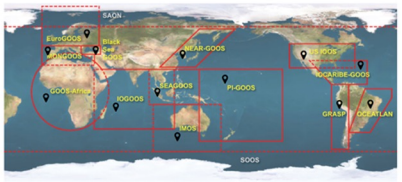
Observation coordination

Global observing networks and platforms

OceanOPS

Regional and National organizations

GOOS Regional Alliances (GRAs)



Project development

Improving through innovation and renovation

TPOS 2020
Tropical Pacific Observing System

AtlantOS

DEEP OCEAN OBSERVING STRATEGY

GOA-ON
Global Ocean Acidification Observing Network

Major delivery areas

1. **Climate:** *climate change modeling, warming, acidification*
2. **Real time services:** *weather forecasts and early warning for ocean related hazards, maritime economy*
3. **Ocean health:** *productivity, species diversity and resilience*

Sponsored by:

UNESCO IOC WMO UNEP ICSU

Delivery across 3 target application areas

Climate

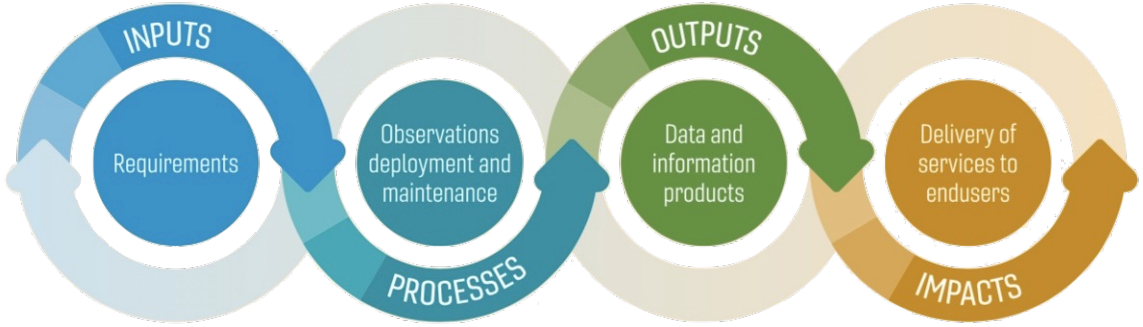
mitigation and adaptation, seasonal forecasts

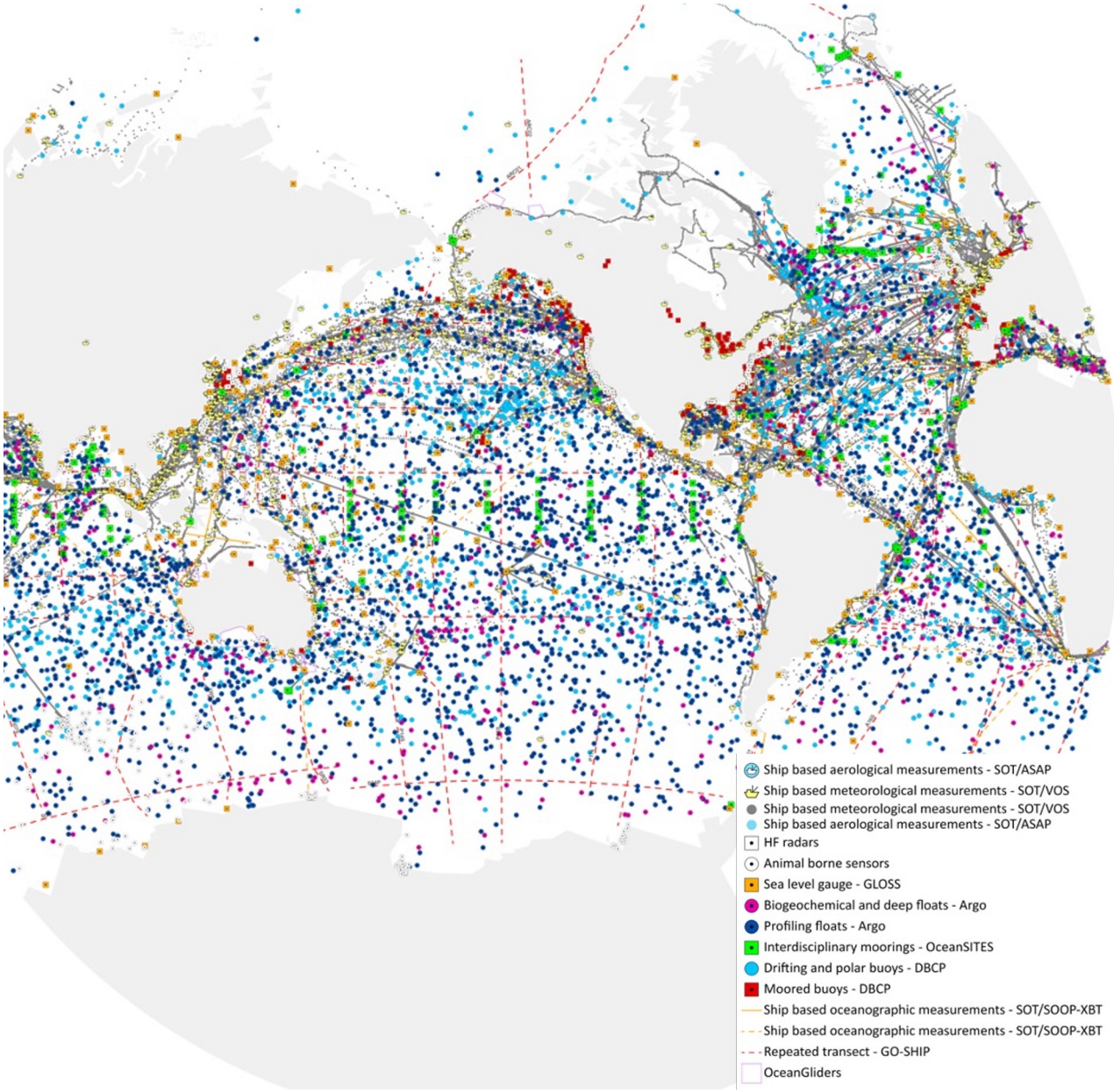
Operational services

supporting the marine economy and reducing risk

Ocean health

sustainability of ocean ecosystem services





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**
- **GOOS is the infrastructure that coordinates the global system**

www.ocean-ops.org/reportcard2022

In-situ observing network status

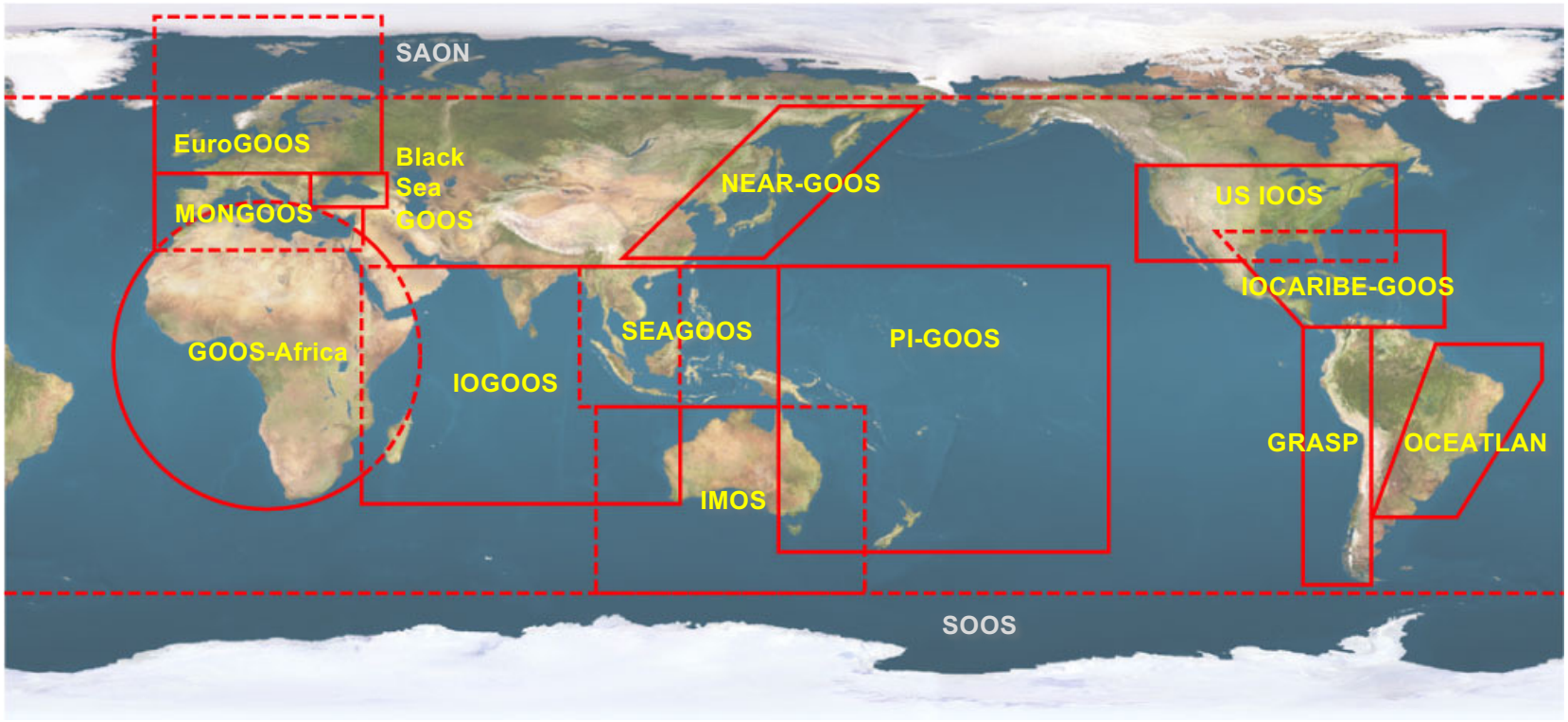
GOOS *in situ* networks [1]	Implementation STATUS [2]	Data & metadata REAL TIME [3]	Data & metadata ARCHIVED DELAYED MODE [4]	Data & metadata META-DATA [5]	Best practices [6]	GOOS delivery areas [7] OPERATIONAL SERVICES	GOOS delivery areas [7] CLIMATE	GOOS delivery areas [7] OCEAN HEALTH
Ship based meteorological - SOT	★★☆	★★☆	★★☆	★★☆	★★☆	✓	✓	
Ship based oceanographic - SOT	★★☆	★★½	★★★	★½☆	★★☆	✓	✓	
Repeated transects - GO-SHIP	★★½	Not applicable	★★★	☆☆☆	★★★		✓	✓
Sea level gauges - GLOSS	★★½	★★☆	★★★	★☆☆	★★☆	✓	✓	
Time series sites - OceanSITES	★★☆	Not applicable	★★½	★★☆	★★☆		✓	✓
Moored buoys - DBCP	★★½	★★★	★★★	★★☆	★★½	✓	✓	✓
Tsunami buoys - DBCP	★★☆	★★★	★★★	☆☆☆	★★★	✓		
HF radars	★½☆ Emerging	★½☆	☆☆☆	★☆☆	★★★	✓	✓	
Drifting buoys - DBCP	★★★	★★½	★★½	★½☆	★★★	✓	✓	
Profiling floats - Argo	★★★	★★★	★★★	★★★	★★☆	✓	✓	
Deep & biogeochemistry floats - Argo	★☆☆ Emerging	★★½	★★½	★★★	★★☆	✓	✓	✓
OceanGliders	☆☆☆ Emerging	★★☆	★☆☆	★½☆	★★☆	✓	✓	✓
Animal borne sensors - AniBOS	☆☆☆ Emerging	★☆☆	★★☆	☆☆☆	★★☆	✓	✓	✓

Global HF Radar Network

Ocean Gliders

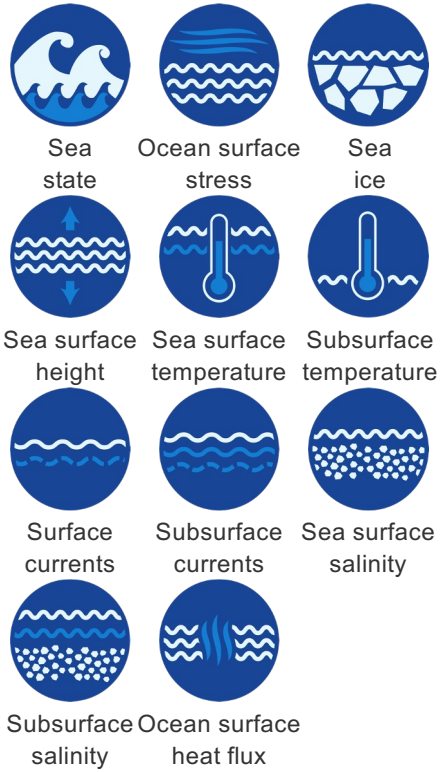
GOOS Regional Alliances

- One mechanism for regional implementation of GOOS

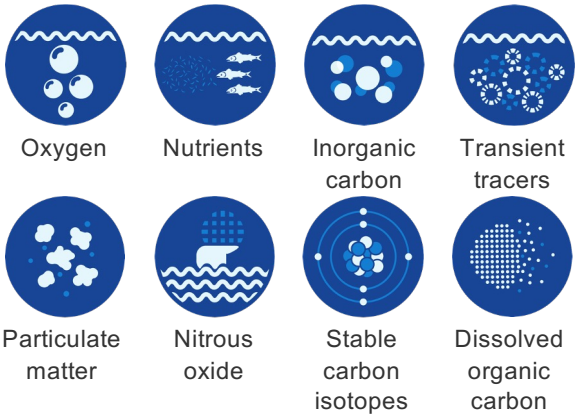


34 Essential Ocean Variables (EOVs)

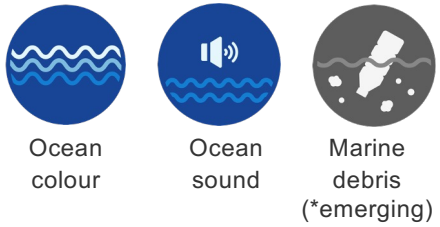
Physics



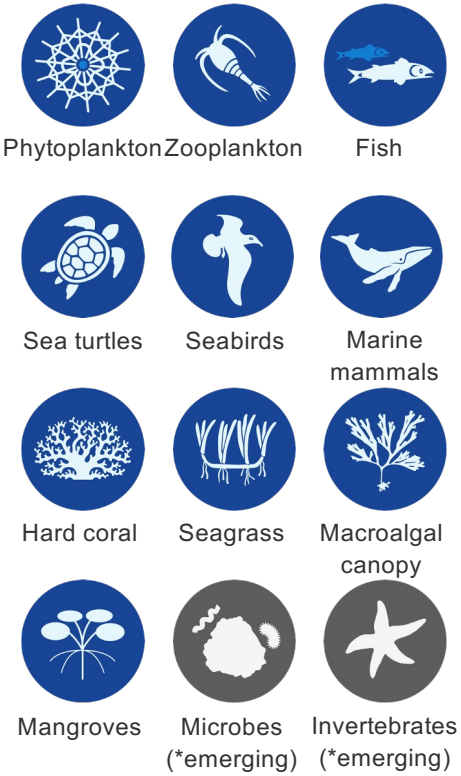
Biogeochemistry



Cross-disciplinary

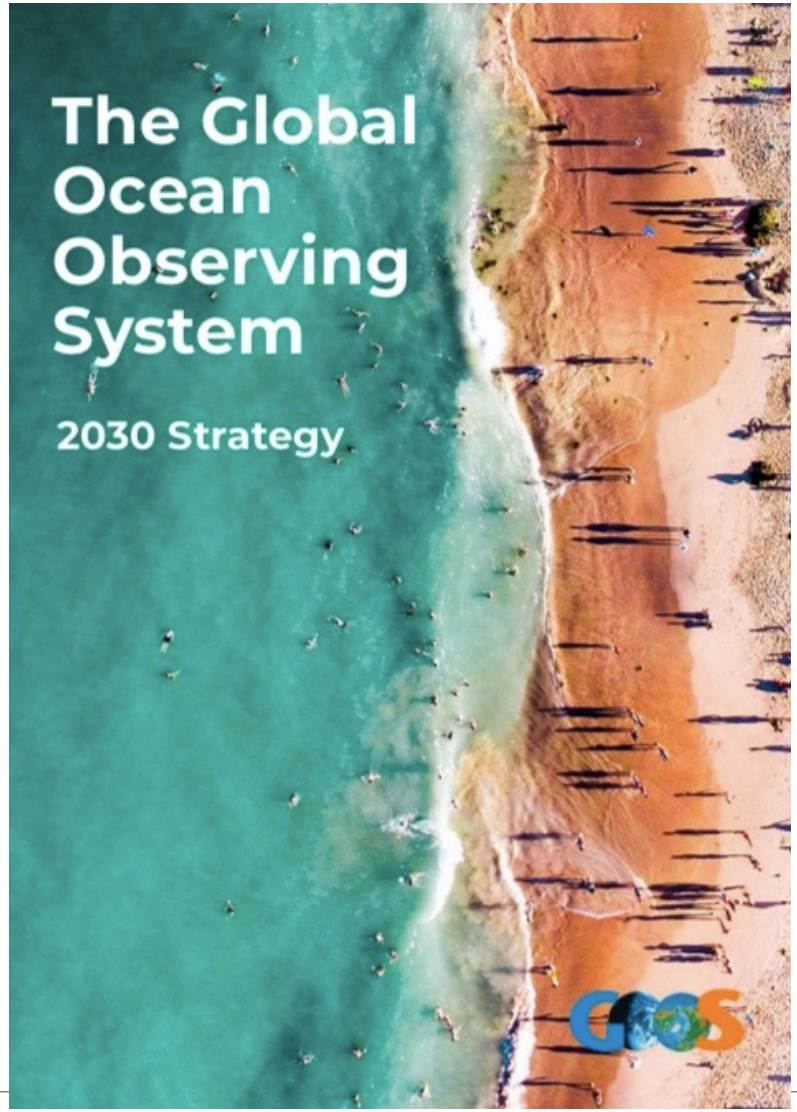


Biology & ecosystems



An ambitious strategy for the Global Ocean Observing System

Implementing this strategy will demand a step change in the level of effectiveness of partnerships across the scientific and end-user communities.

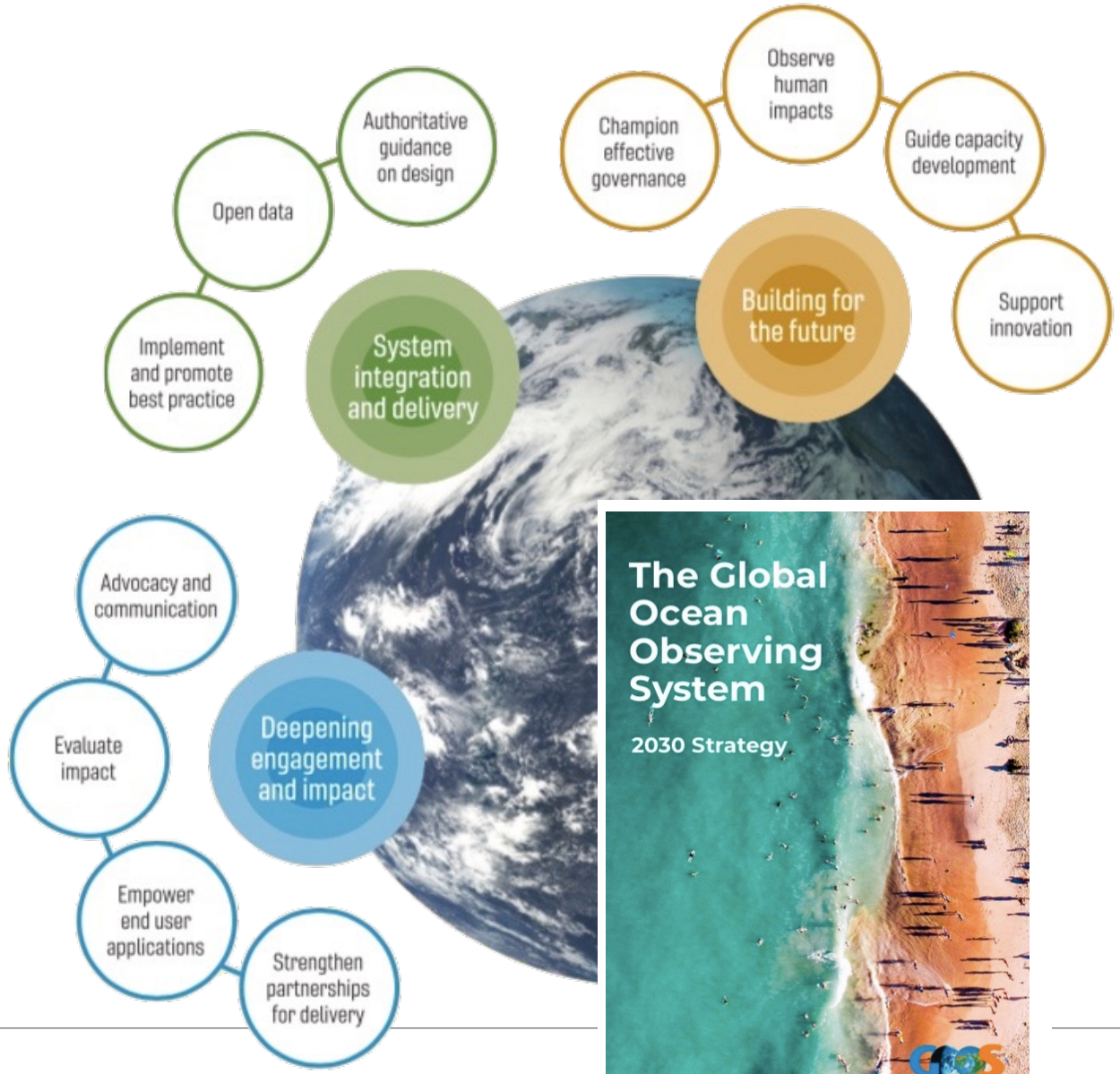


Vision

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

Mission

To lead the ocean observing community and create the partnerships to grow an integrated, responsive and sustained observing system



The Global Ocean Observing System

Thank you

goosocean.org

unesco
Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment programme

International Science Council