



United Nations
Educational, Scientific and
Cultural Organization



Intergovernmental
Oceanographic
Commission



Sustainable
Development
Goals

One Planet, One Ocean

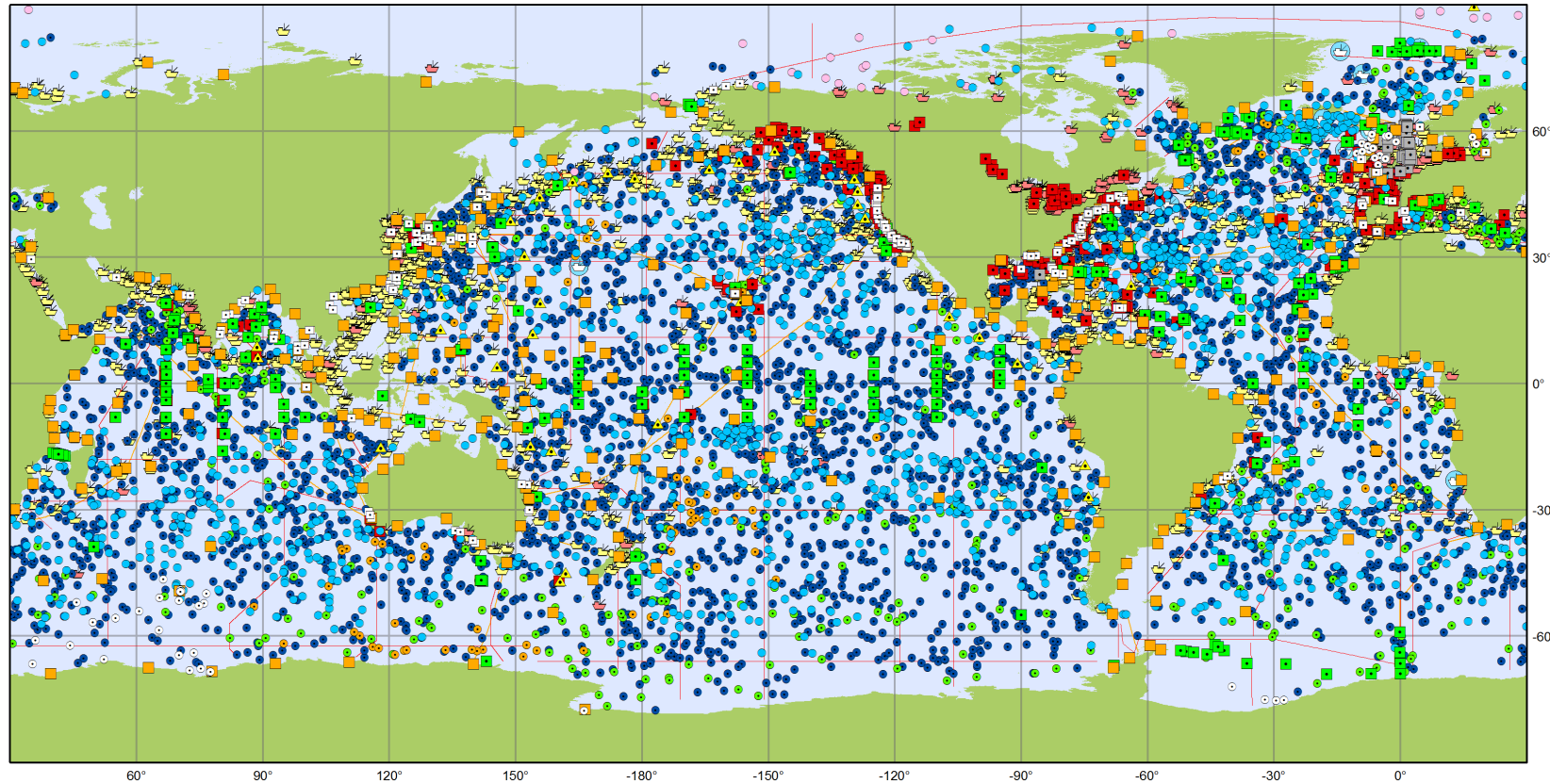
GCOS Sponsor's remarks: IOC

A. Fischer, V. Ryabinin

IOC/UNESCO

GCOS SC-27, 28 October 2019

GOOS system contributing to GCOS



Main in situ Elements of the Global Ocean Observing System

September 2019

Profiling Floats (Argo)

- Core (3869)
- Deep (96)
- BioGeoChemical (367)

Data Buoys (DBCP)

- Surface Drifters (1491)
- Offshore Platforms (92)
- Ice Buoys (23)
- Moored Buoys (358)
- ▲ Tsunameters (35)

Timeseries (OceanSITES)

- Interdisciplinary Moorings (345)
- Repeated Hydrography (GO-SHIP)
- Research Vessel Lines (63)
- Sea Level (GLOSS)
- Tide Gauges (290)

Ship based Measurements (SOT)

- Automated Weather Stations (265)
- Manned Weather Stations (1386)
- Radiosondes (13)
- eXpendable BathyThermographs (34)

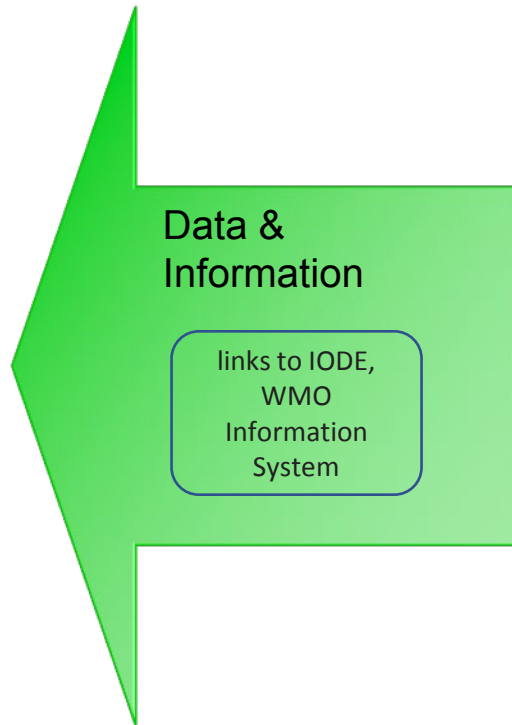
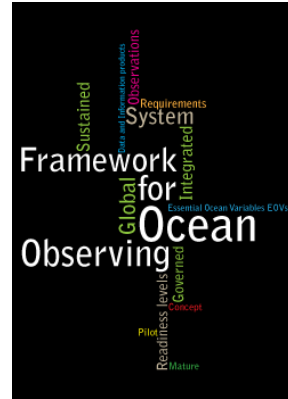
Other Networks

- HF Radars (270)
- Animal Borne Sensors (53)

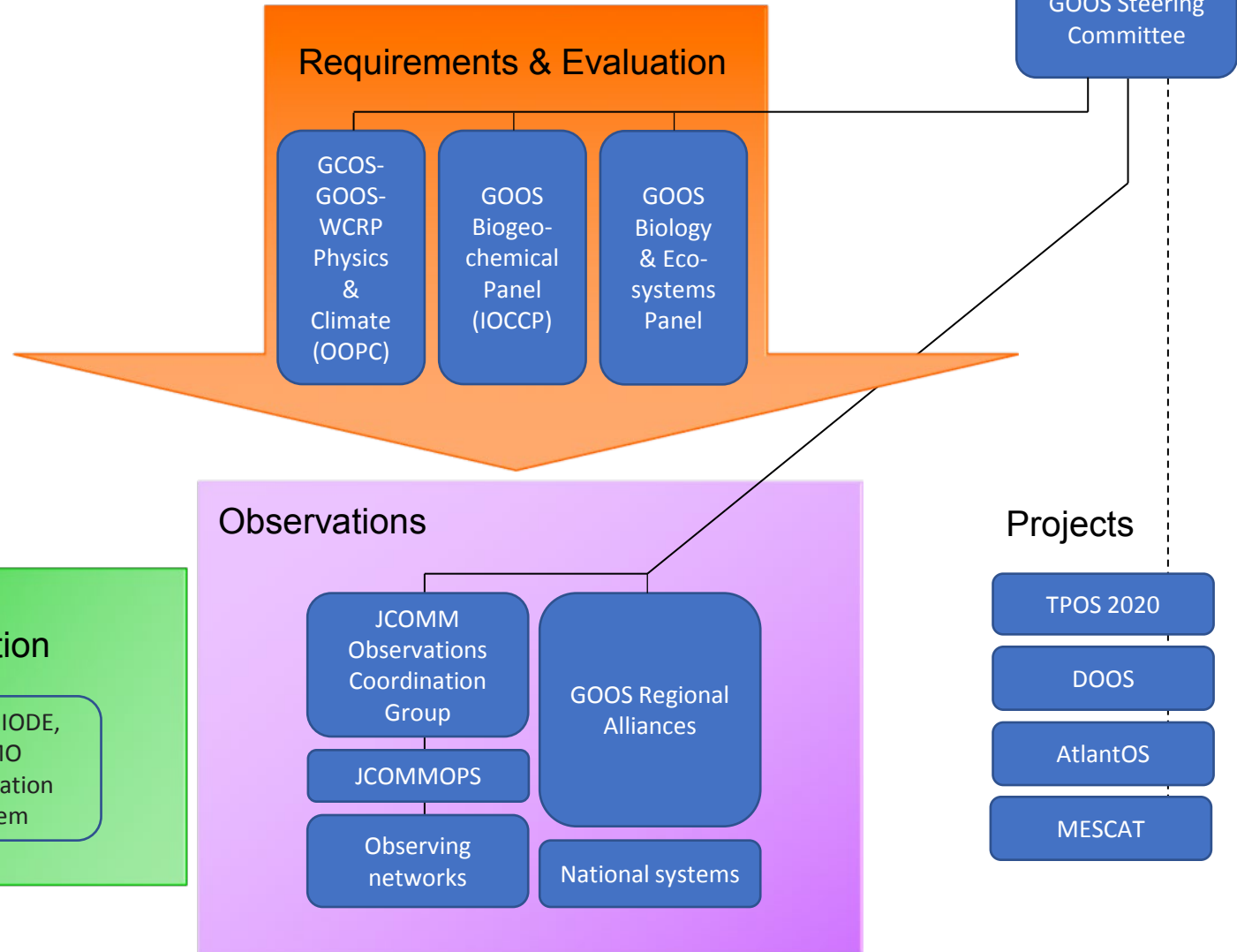


Powered by JCOMMOPS

GOOS structure 2019



Sponsors: IOC/UNESCO, WMO, UN Envi, ICS



IPCC SROCC

- Key physical ocean ECVs
- Importance of an integrated view

Surface T

SST

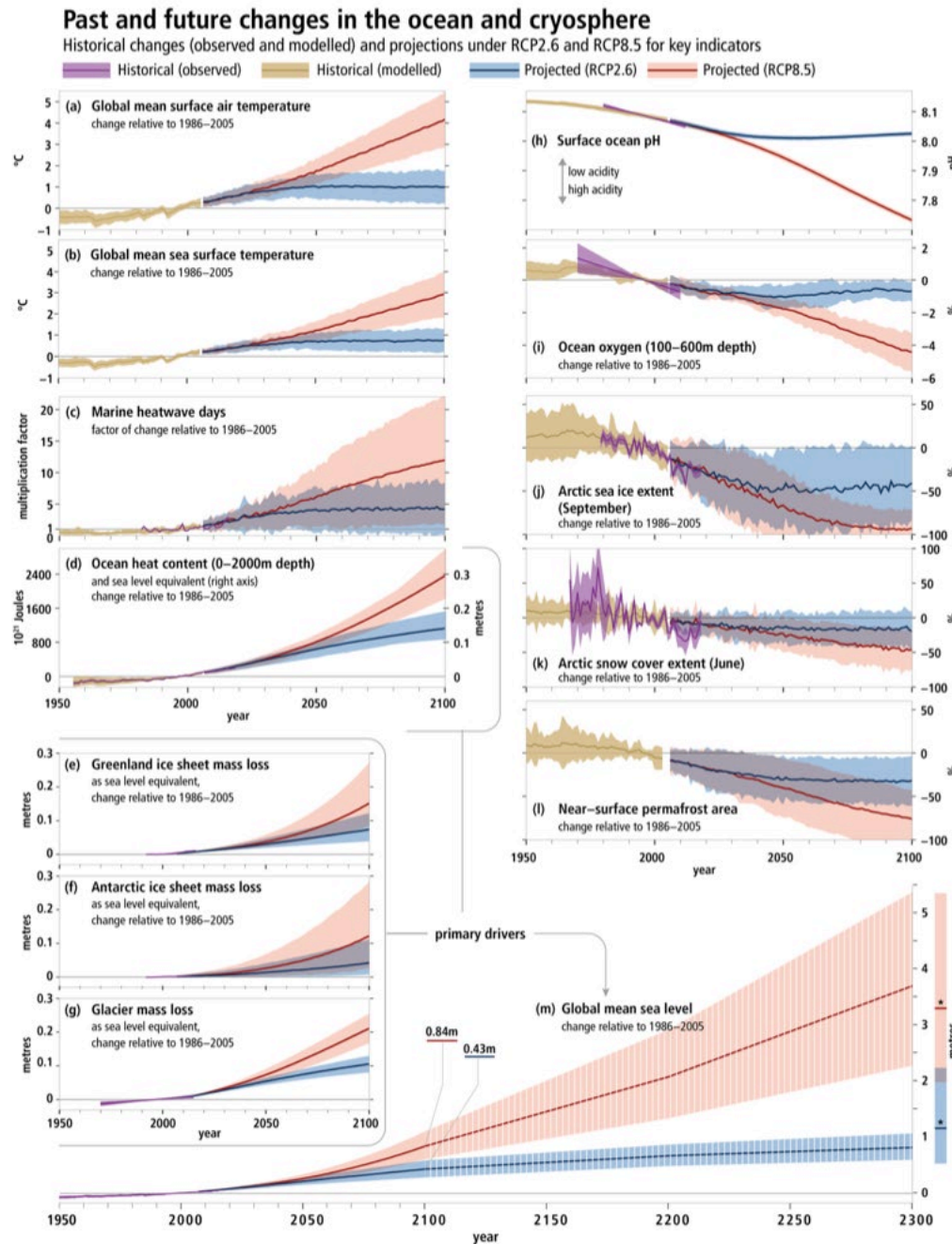
SST & T

T

Ice sheets/shelves

Ice sheets/shelves

Glaciers



Inorganic carbon

Oxygen

Sea ice

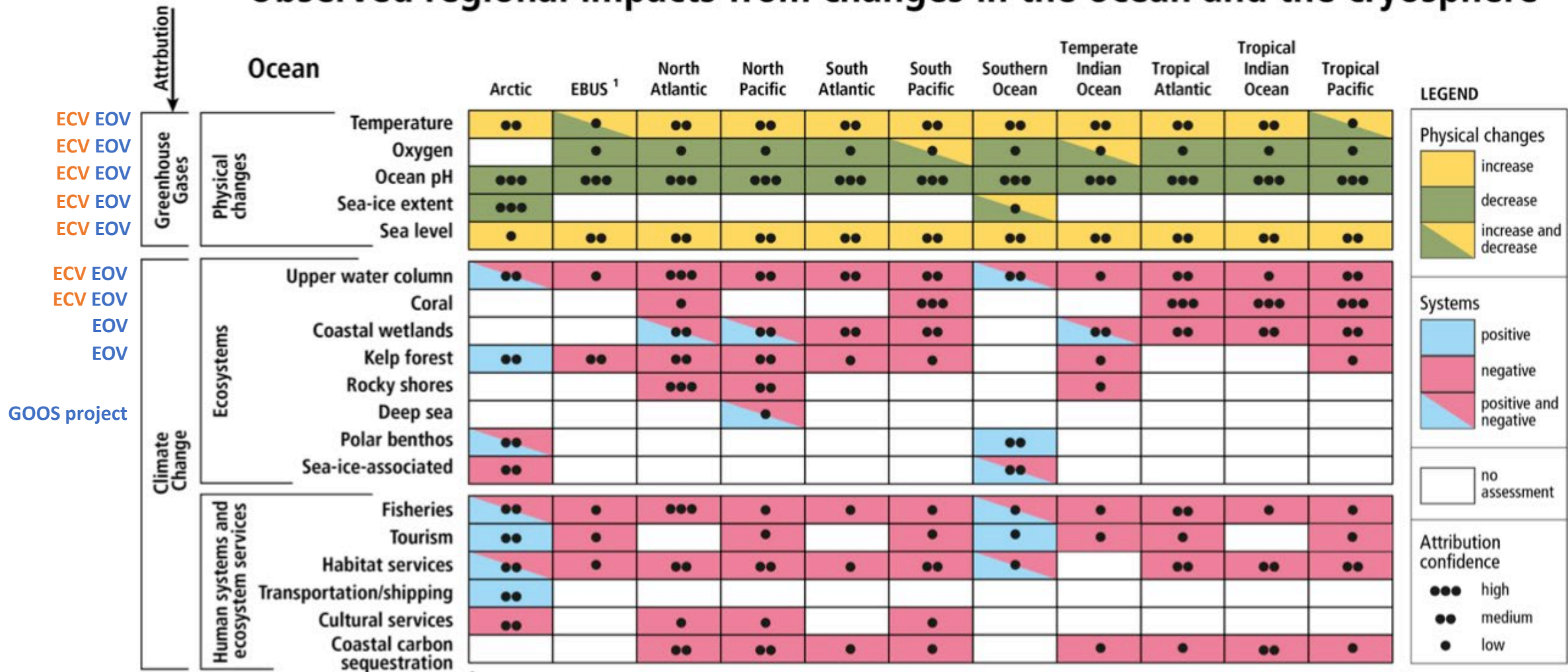
Snow

Permafrost

Sea level

Are we addressing impacts?

Observed regional impacts from changes in the ocean and the cryosphere



¹ Eastern Boundary Upwelling Systems (Benguela Current, Canary Current, California Current, and Humboldt Current); {Box 5.3}

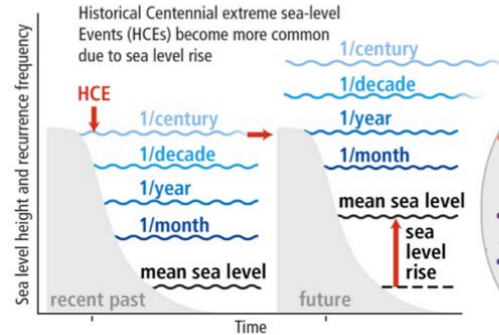
Are we addressing impacts?

- Fully engaged with WCRP grand challenge on *regional sea level change and coastal impacts?*

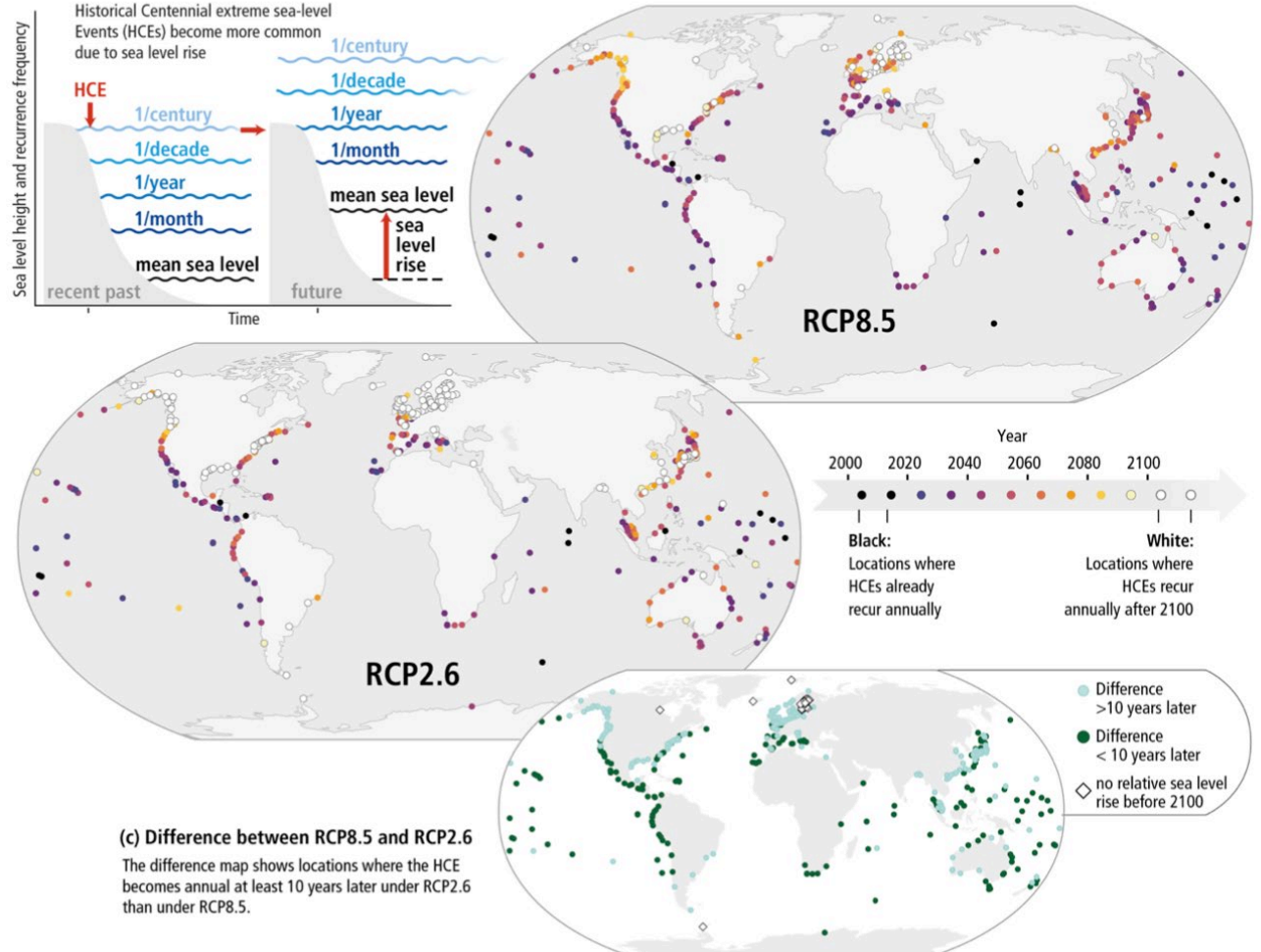
Extreme sea level events

Due to projected global mean sea level (GMSL) rise, local sea levels that historically occurred once per century (historical centennial events, HCEs) are projected to become at least annual events at most locations during the 21st century. The height of a HCE varies widely, and depending on the level of exposure can already cause severe impacts. Impacts can continue to increase with rising frequency of HCEs.

(a) Schematic effect of regional sea level rise on projected extreme sea level events (not to scale)



(b) Year when HCEs are projected to recur **once per year** on average



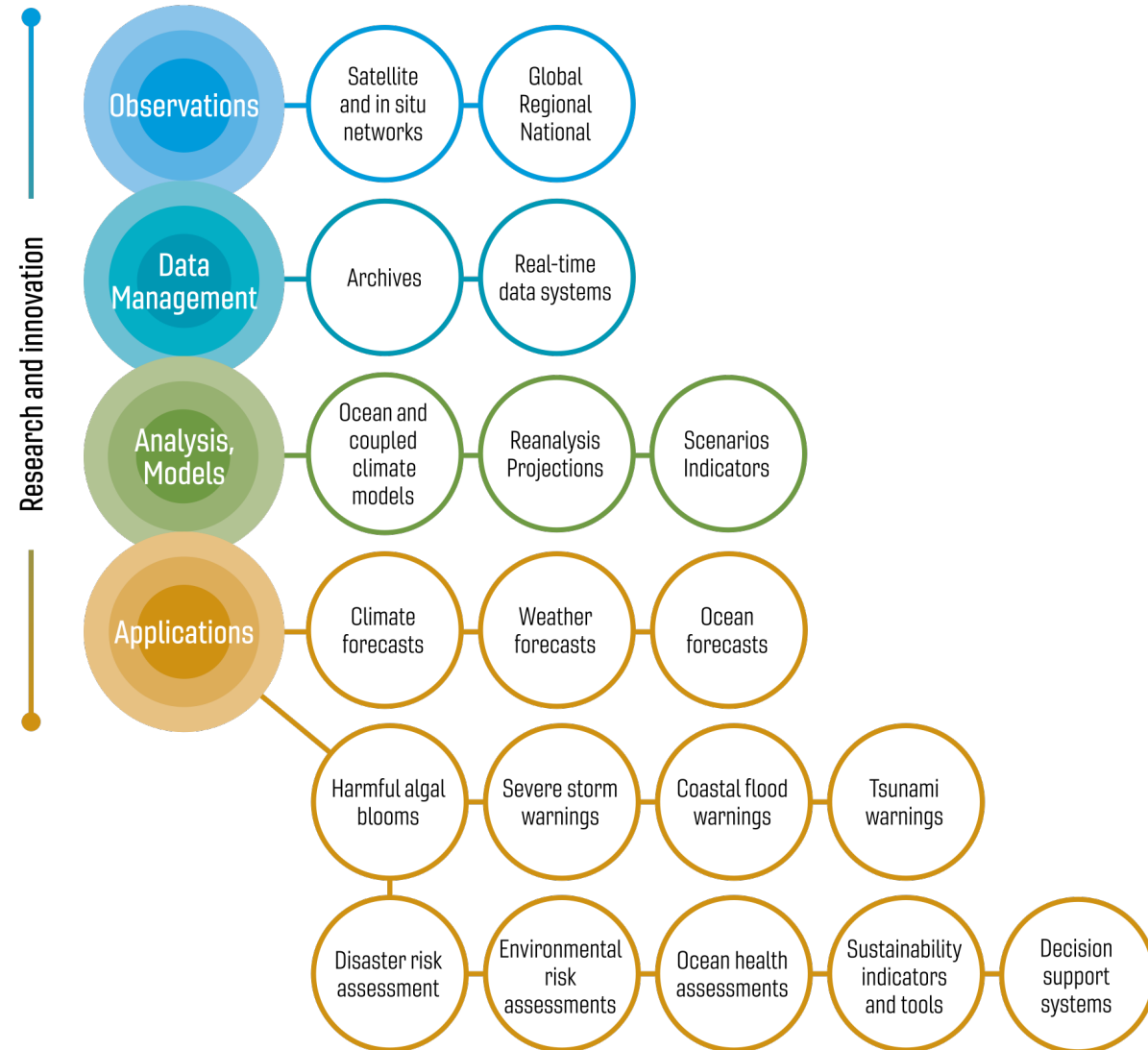
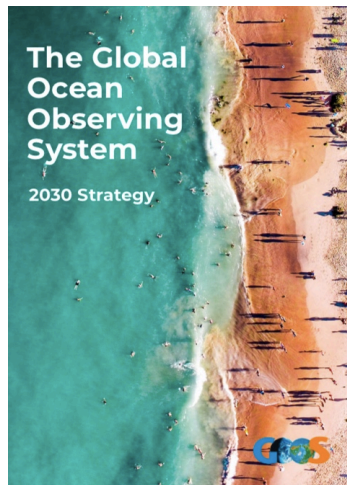
(c) Difference between RCP8.5 and RCP2.6
The difference map shows locations where the HCE becomes annual at least 10 years later under RCP2.6 than under RCP8.5.

GOOS 2030 Strategic Objectives

Key areas of partnership with GCOS

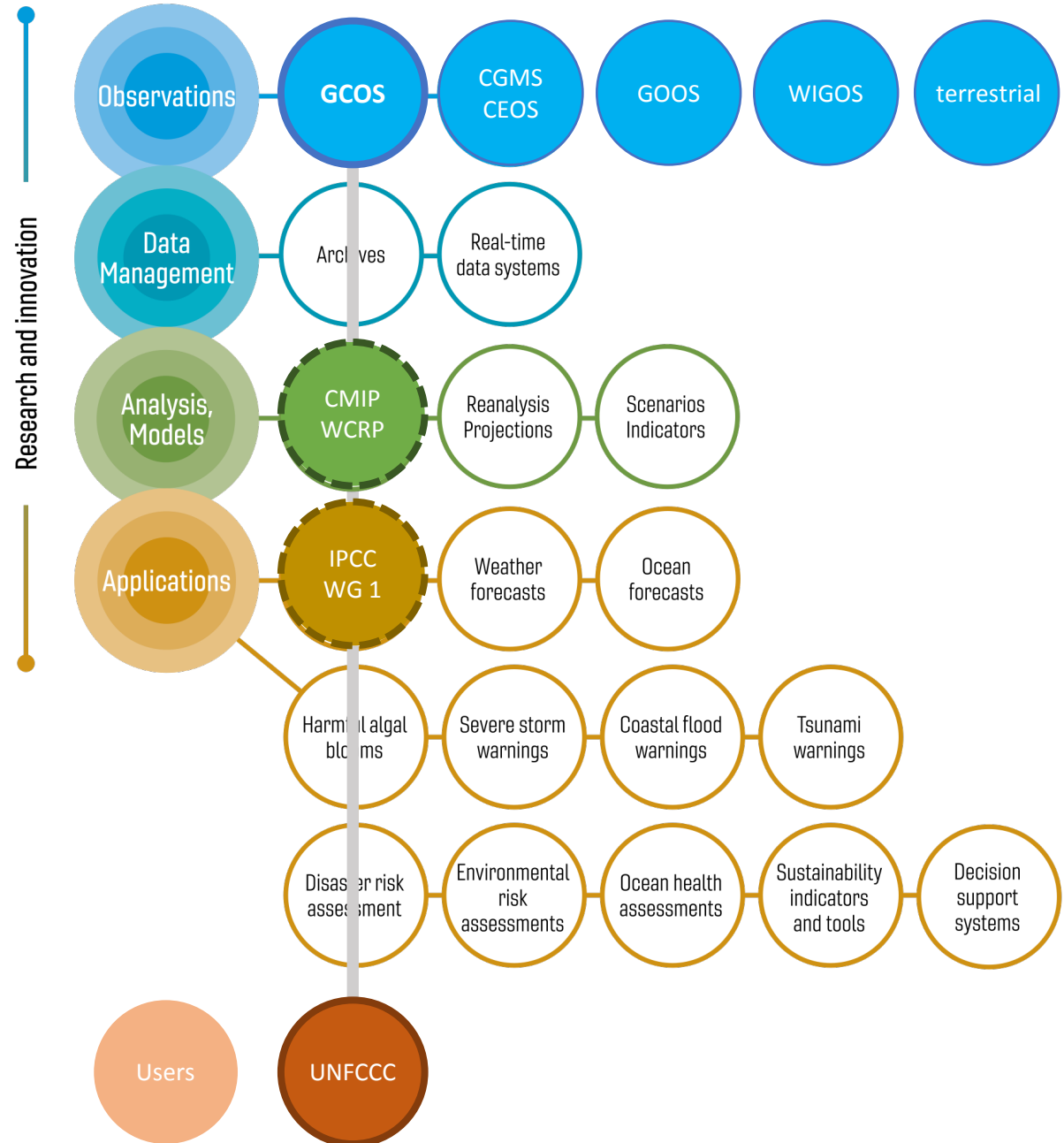


Value chain
Climate observations
to application and
users



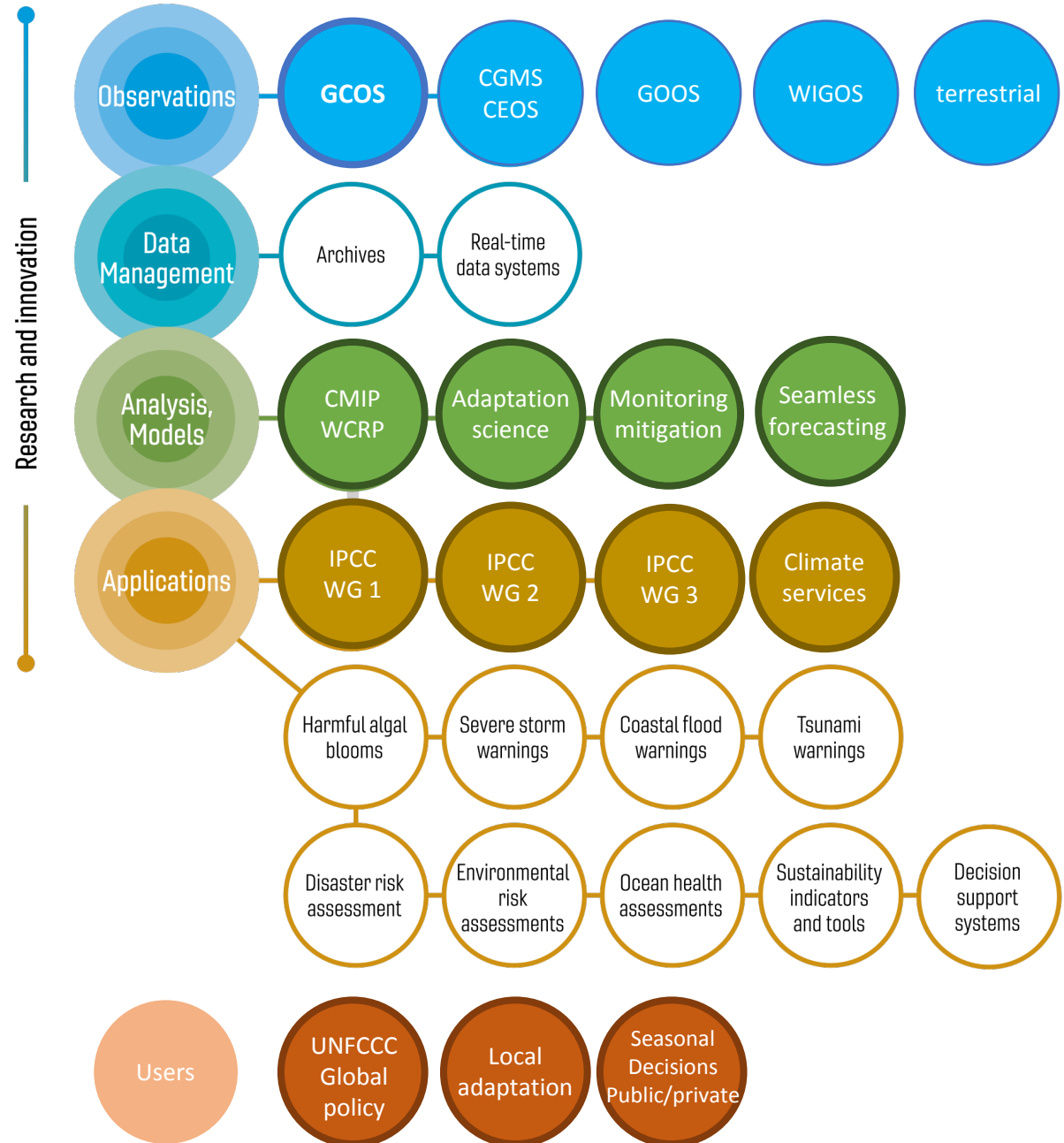
Value chain
Climate observations
to application and
users

GCOS today



Value chain
**Climate observations
to application and
users**

The GCOS that
IOC would like to see



UN Decade of Ocean Science for Sustainable Development 2021-2030

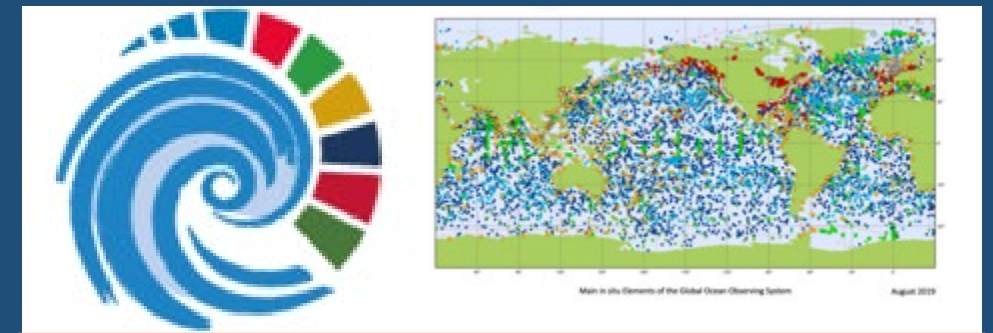


Proposal for an International
Decade of Ocean Science for
Sustainable Development
(2021-2030)



The Science We Need for the Ocean We Want

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



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

Plans of Co-Sponsors regarding GCOS

- **Seeking clarity from WMO** – IOC, GOOS, and GCOS have worked closely together
- Change can **capitalize on opportunities**
- **GCOS partnership requires co-design of change** with stakeholders
 - *Observing systems*: CEOS, CGMS, GOOS, WIGOS, GEO?
 - *Scientific*: WCRP, others including Provia, FutureEarth
 - *Assessment*: IPCC WG 1, 2, and 3; IPBES and others looking at climate impact
 - *Applications*: forecast systems and climate services
 - *Sponsors*: WMO, IOC, UNEP, ISC

Plans of Co-Sponsors regarding GCOS

- **Change process**

- Look for opportunities to improve & Identify what key things to keep
 - What outputs and on what frequency?
 - What feedback? What advocacy? for the component observing systems
 - What new areas of work?
- Example: change in Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM)
 - Joint WMO-IOC Consultative Group created in 2018, made recommendations that were acted on by WMO Congress and IOC Assembly in 2019, transition into 2020
 - Widely viewed as a positive process, strengthening partnership on areas of value to stakeholders
- What is that process for GCOS?



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