



I'm here to talk to you about what makes a collection of activity into a cohesive and high-performing system - how we can work at global and regional levels to leverage our individual national contributions and make them stronger together

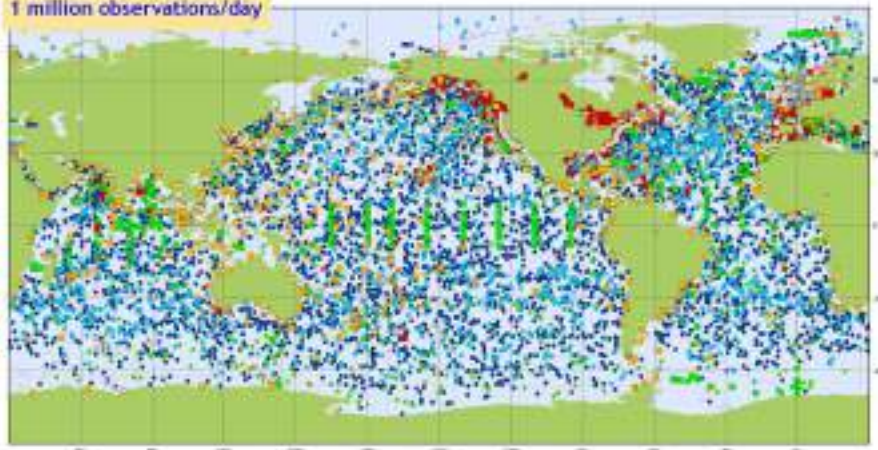
Outline

1. GOOS in a nutshell
2. GOOS and GCOS strategies
and contributions in both directions
3. Working on common goals
Partnerships, defining requirements, regional development
4. Our common panel: OOPC
5. Summary of proposed actions by SC

GOOS



1 million observations/day



Main in situ Elements of the Global Ocean Observing System

August 2018

- | Profiling Floats (Argo) | Data Buoys (IBOPE) | Transects (Ocean-SITES) | Ship-based Measurements (SOT) | Other Networks |
|-------------------------|--------------------------|-----------------------------------|---------------------------------------|----------------------------|
| • Core (3436) | • Surface Drifters (288) | • Sub-surface Floats (11) | • Automated Weather Stations (111) | • HF Radars (17) |
| • Core (70) | • Offshore Platforms (7) | • Repeated Hydrography (22 08-09) | • Manual Weather Stations (176) | • Animal Borne Sensors (2) |
| • Biogeochemical (228) | • Ice Buoys (28) | • Research Vessel Lines (14) | • Buoys (18) | • Ocean Gliders (17) |
| • Moored Buoys (151) | • Moored Buoys (151) | • Sea Level (26955) | • Hydrographic Hydrothermographs (17) | |
| • Neutrality (18) | • Neutrality (18) | • Tide Gauges (22) | | |
- www.ioc-goos.org 10/02/2018

GOOS systems approach: FOO

Framework for Ocean Observing Process Diagram



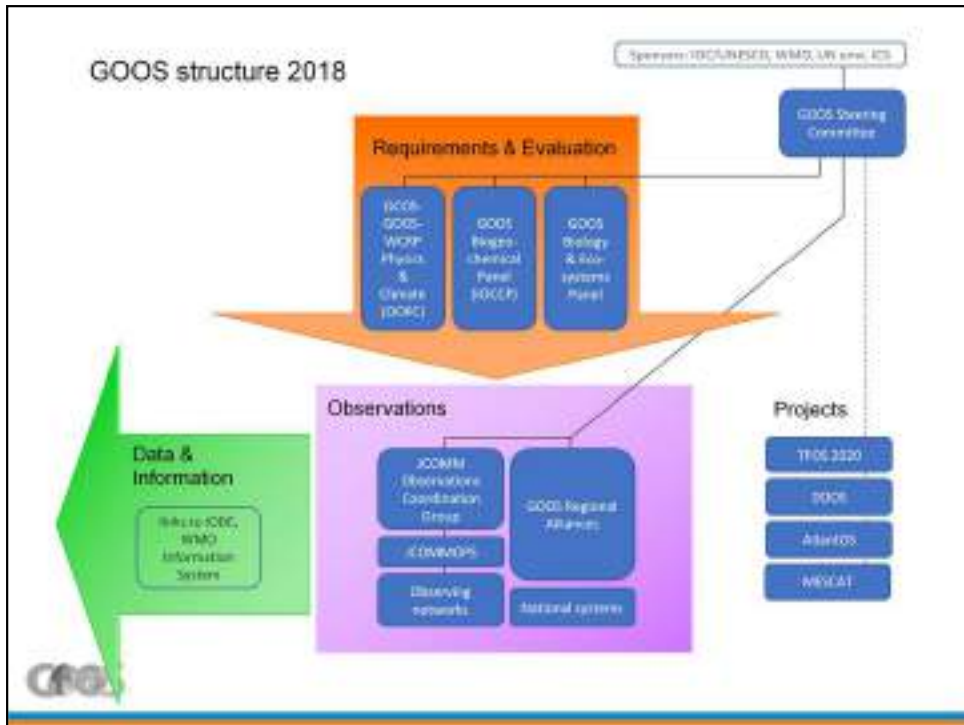


Information from the ocean, and therefore sustained observations of the ocean, can be used to inform decision-making in a number of different areas of key importance to human well-being.

GOOS is aimed at delivering for all IOC Member States the essential sustained observations for climate mitigation and adaptation (GCOS), operational ocean services for disaster risk reduction and to support the development of the Blue Economy, and in order to safeguard ocean health and continued ocean ecosystem services when making local, regional, and global policy decisions.

It is a complex space with many different stakeholders and users –

These are our ideas about connecting them up, many of the same challenges faced by EOOS on the regional level.



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GCOS





The GOOS 2030 vision is a broad and ambitious one, for the entire sustained ocean observing system

GOOS 2030 Strategy

The GOOS Mission

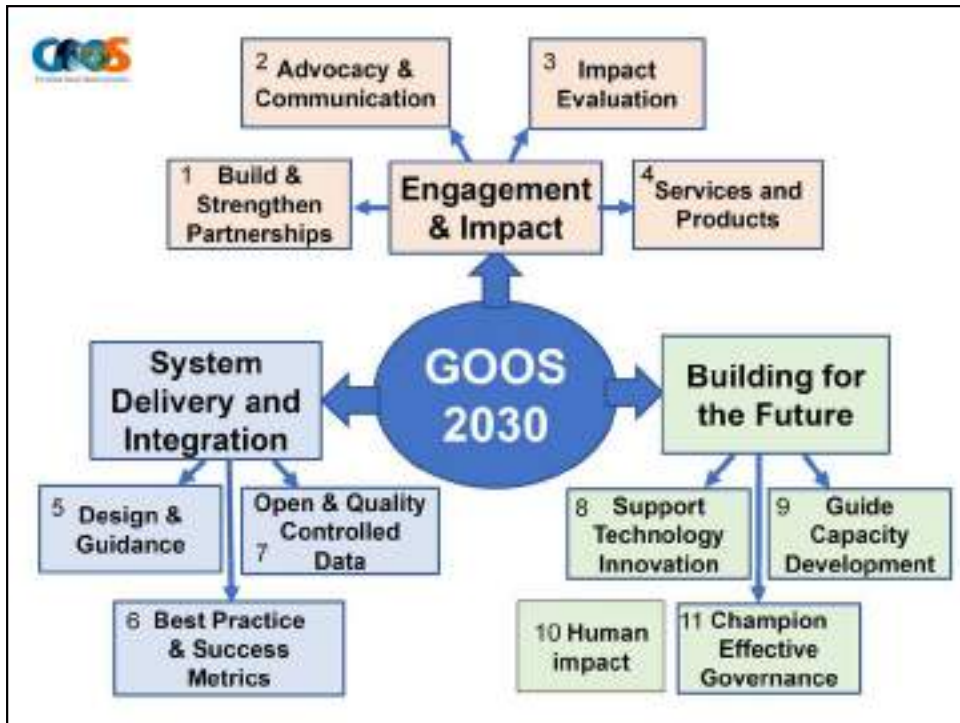
To lead the ocean observing community and create the partnerships to grow an integrated, responsive and sustained global observing system

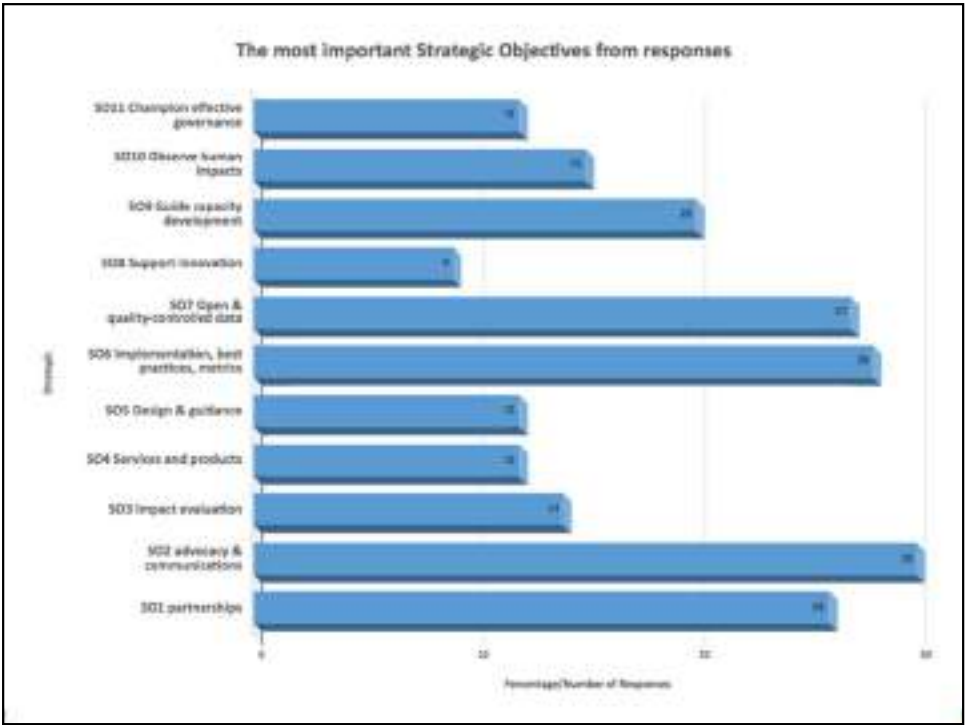
The mission speaks more specifically to the GOOS programme, the coordination activities that are based on national contributions to the observing system, and our plan to develop partnerships to achieve the full vision for the observing system.

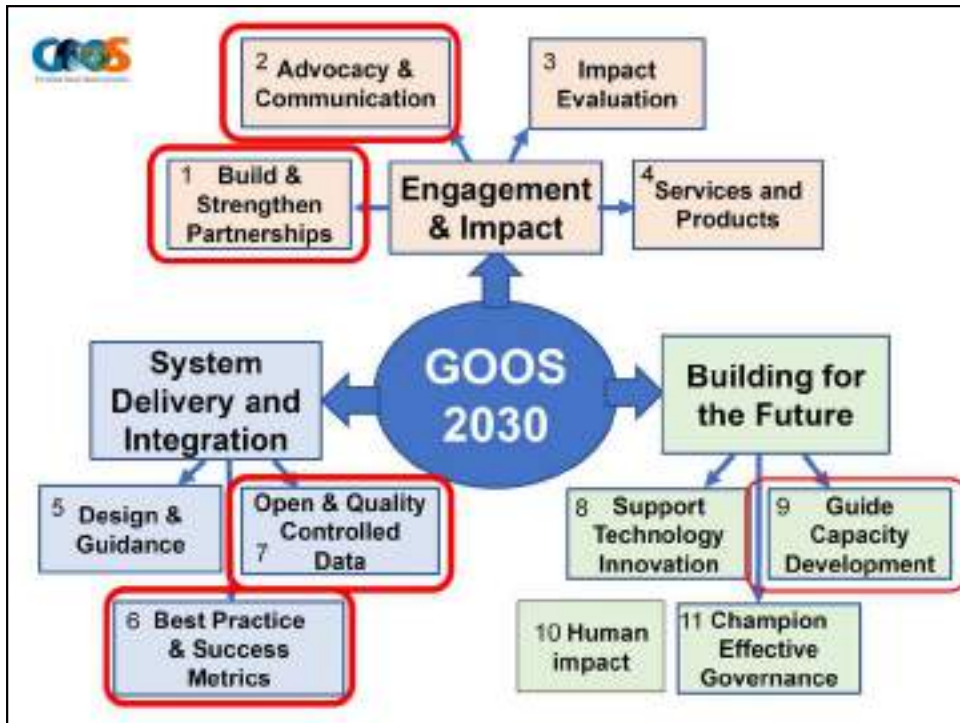


The Strategy defines 11 specific strategic objectives grouped around 3 goals:

- deepening engagement and impact -> to improve delivery from observations to users, and to raise the visibility and funding for sustained observations
- the core GOOS activities around system integration and delivery, ensuring that this voluntary collaborative system delivers as one against agreed targets
- and building for the future with innovation, capacity development, a growing understanding of the human impact on the ocean, and











How GOOS contributes to GCOS goals

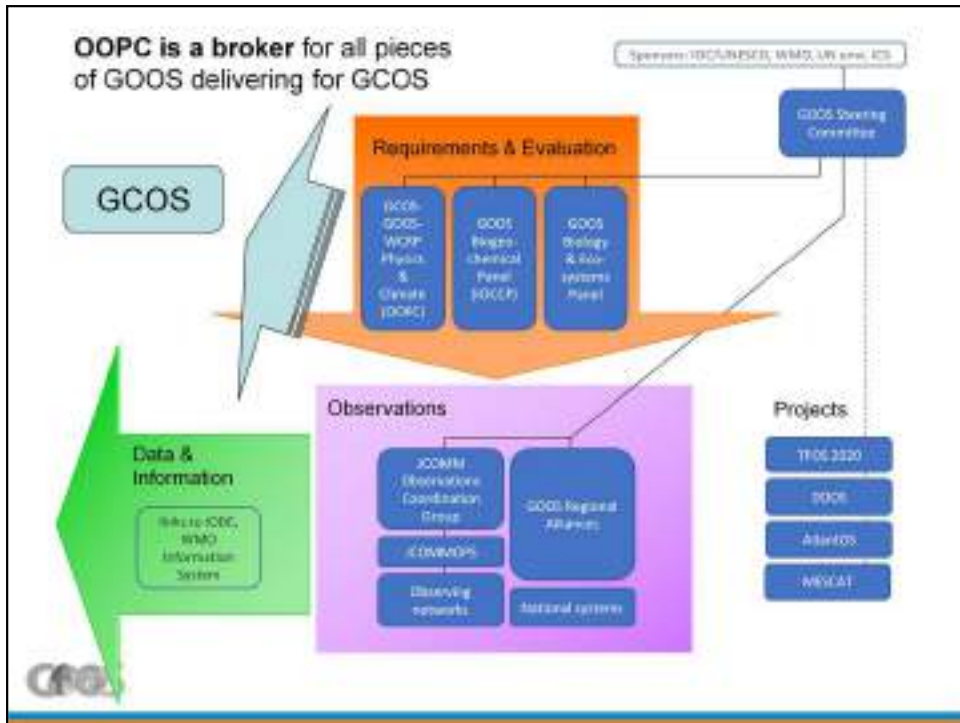
| Strategic Goal | Components | OOPC Role | Contributing GOOS activities |
|---------------------|------------------------------------|---|---|
| Identify User Needs | Review Essential Climate Variables | Setting, reviewing requirements for ECVs, EOVs (drawing on EOVS Specifications) | GOOS Biogeochemistry (BGC) Panel, Biology and Ecosystems (BioEco) Panel |

How GOOS contributes to GCOS goals

| Strategic Goal | Components | OOPC Role | Contributing GOOS activities |
|---|--|---|--|
| Climate Observations enhanced and continued | <p>Plans/guidance improve infrastructure</p> <p>Coordinate with disparate observing systems</p> <p>Communicate with users, funders, policy, media.</p> | <p>Observing System Reviews</p> <p>Overseeing Observing System implementation and performance</p> <p>Brokering multipplatform observing system design, targets.</p> <p>Reviews and development projects, talks, engagement with programme managers.</p> | <p>Working with other GOOS BGC Bio panels, JCOMM OCG GOOS Projects</p> <p>Network based coordination and tracking through JCOMM OCG JCOMMOPS</p> <p>JCOMM OCG GOOS Regional Alliances Other GOOS Panels.</p> <p>GOOS SC GOOS Secretariat</p> |

How GOOS contributes to GCOS goals

| Strategic Goal | Components | OOPC Role | Contributing GOOS activities |
|---------------------------|---|--|--|
| Free and Open Data Access | Advocate, facilitate data repositories and data access. | Advocating the benefits of global observations; FAIR Principles (Findable, Accessible, Interoperable, Reusable). | JCOMM OCG, JCOMMOPS Other GOOS Panels (Additional partners such as IODE OceanPredict WIS etc.) |



How GCOS contributes to **GOOS objectives**

- **Engagement and Impact**
 - facilitating the partnerships required with WCRP, IPCC, and UNFCCC in order to deliver on the GOOS climate theme
- **Integration and delivery**
 - GCOS focus on free and open data access, and adherence to the Climate Monitoring Principles
- **Building for the Future**
 - potential to leverage the GCOS Cooperation Mechanisms for some coastal ocean observations
 - potential for GCOS to contribute to the governance of the satellite/in situ ocean observing system, particularly through strong relationship with satellite agencies



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GCOS



Working on common objectives

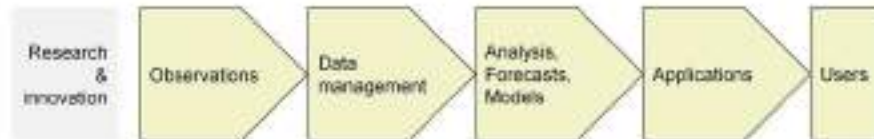
Partnerships

- Sponsors
 - context of WMO reform
 - potential common engagement with UN Environment, ICS
- Climate research programmes
 - WCRP – GCOS link strong
 - GOOS engages with SOLAS, IMBER
 - GCOS engages with PROVIA



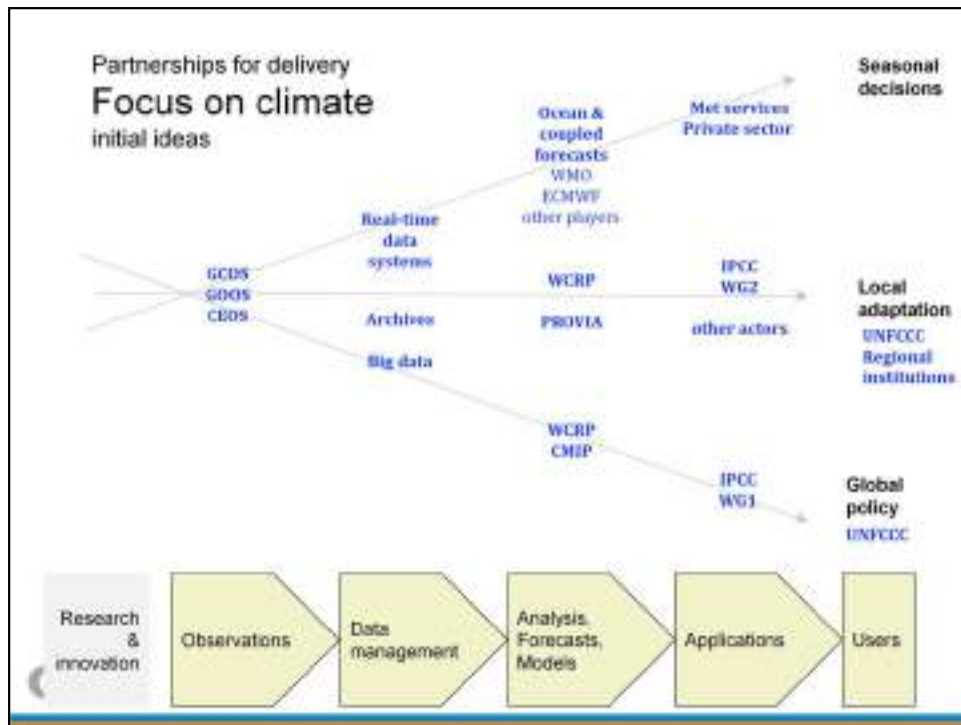
CP05

Working on common objectives
Partnerships for delivery



CFOS





A strong GCOS/GOOS relationship means GCOS benefits fully from the broader GOOS expertise and developments, and coordinated structures, including its influence on how ocean observations are implemented and performance tracked to advance the observing system. This helps to engage a strong community in GCOS. The GOOS mapping of users and consultation with the community means much more of the users and observing community is exposed to GCOS and can deliver to GCOS aims.

GOOS sees working with GCOS as the pathway to value through WCRP, IPCC WG1, UNFCCC policy on mitigation particularly; and we see potential and can help with our panel contacts with scientific community with other pathways: i.e. through research (PROVIA, IMBER, etc.), IPCC WG2, UNFCCC policy and Parties response on adaptation to climate change.

Building on the TPOS 2020 legacy, an area of potential strengthened engagement is into climate services - where oceans are in fact the dominant driver of the relevant timescales for ENSO; and the dominant source of predictability on seasonal and longer timescales. A common

clear strategy between GOOS and GCOS to engage WMO and other climate service structures would strengthen the visibility of observations for these services, delivering to both GCOS and GOOS strategies.

GOOS has strong working level engagement with research community, e.g. CLIVAR, broader engagement through BGC (SOLAS), Biology (IMBER, etc.) and Also Policy through IPBES. Due to the importance of the ocean climate variability (e.g. ENSO) OOPC / GOOS can bring a new perspective into GCOS and increase its relevance for another climate user: climate services, particularly through projects such as TPOS 2020; and perhaps strengthen links into the Agrometeorological and climate services Standing Committee proposed under the WMO Commission for Services and Applications.

Working on common objectives

Partnerships

- Space agencies
 - highly engaged in ECVs
 - potential to present more integrated requirements for remotely-sensed ocean ECVs/EOVs
- **Proposed partnership action:** GCOS and GOOS leadership consult on their partnership strategies and identify the common objectives; and then make some decisions about the approach: lead/participate, who, how, resource requirements



Working on common objectives

Defining requirements: ECVs and EOVs

Physics

- Sea State
- Ocean surface stress
- Ocean Heat Fluxes
- Sea Ice
- Sea level
- SST
- Subsurface temperature
- Surface currents
- Subsurface currents
- Sea Surface Salinity
- Subsurface salinity

Biogeochemistry

- Oxygen
- Nutrients
- Inorganic Carbon
- Transient tracers
- Particulate matter
- Nitrous oxide
- Stable carbon isotopes
- Dissolved organic carbon
- Ocean colour

Biology and Ecosystems

- Phytoplankton biomass and diversity
- Zooplankton biomass and diversity
- Fish communities and abundance
- Marine benthic biota and diversity
- Hard coral cover and composition
- Seagrass cover and composition
- Mangrove cover and composition
- Macroalgal cover and composition
- Microbial biomass and diversity (benthic)
- Benthic invertebrate diversity and abundance
- Marine Mammal Populations
- Ocean noise

- **Proposed action:** secretariats to agree on approaches, terminology, how requirements from one relate to the other



www.iopecentre.org/eov

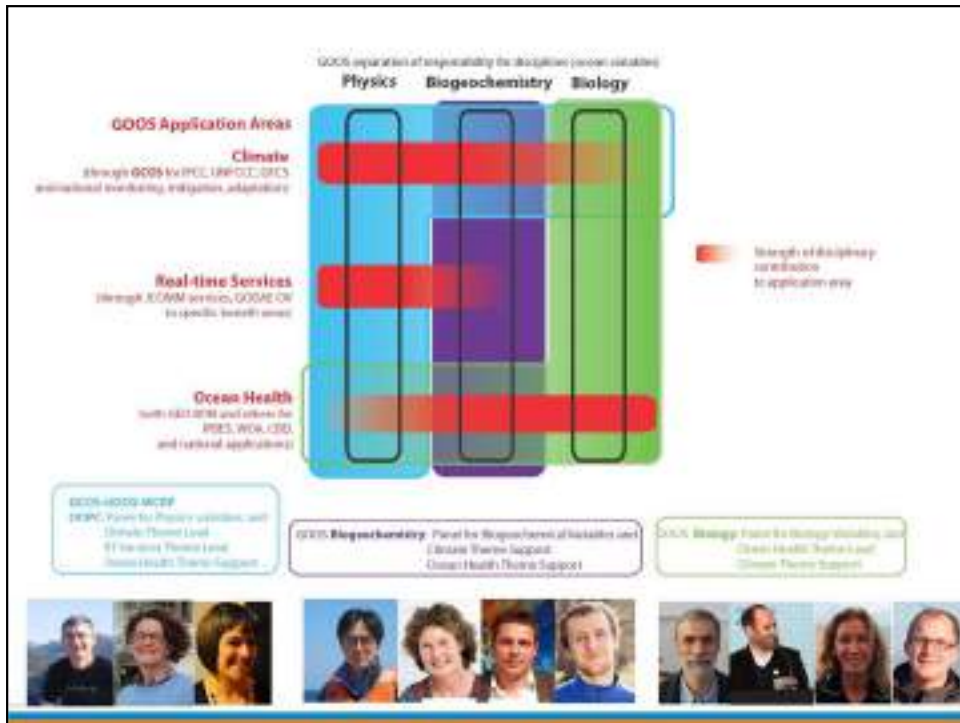
Working on common objectives

Summary

- Common approaches to common partners: sponsors, research, space agencies
- GCOS delivery pathway for GOOS's climate theme
- Compatibility in requirement definition
- Broadening the partnership for delivery
 - GOOS's TPOS 2020 project and ocean observations key in climate services
- Regional development and capacity development

- **Proposed action:** regular communication between directors, chairs, and SCs





Co-parenting OOPC

- coordinated forward planning of deliverables for efficiency
- OOPC needs time and flexibility of structure to consult, to be the conduit into GCOS of the entirety of GOOS
 - example of the ECV steward concept
- Joint guidance on priorities
- **Proposed actions:**
 - SCs to review and agree to priorities for OOPC; directors to consider joint resourcing
 - directors to discuss and agree guidance to OOPC, given role as conduit, and provide sufficient time to consult/gather this input
 - SC Chairs to have a virtual meeting after the GCOS SC to agree on the joint guidance for the work of the OOPC in the coming year

