



United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation
la science et la culture

Organización
de las Naciones Unidas
para la Educación
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования
науки и культуры

• Intergovernmental
Oceanographic
Commission

• Commission
océanographique
intergouvernementale

• Comisión
Oceanográfica
Intergubernamental

• Межправительственная
океанографическая
комиссия

IOC and WCRP: dialogue with sponsors

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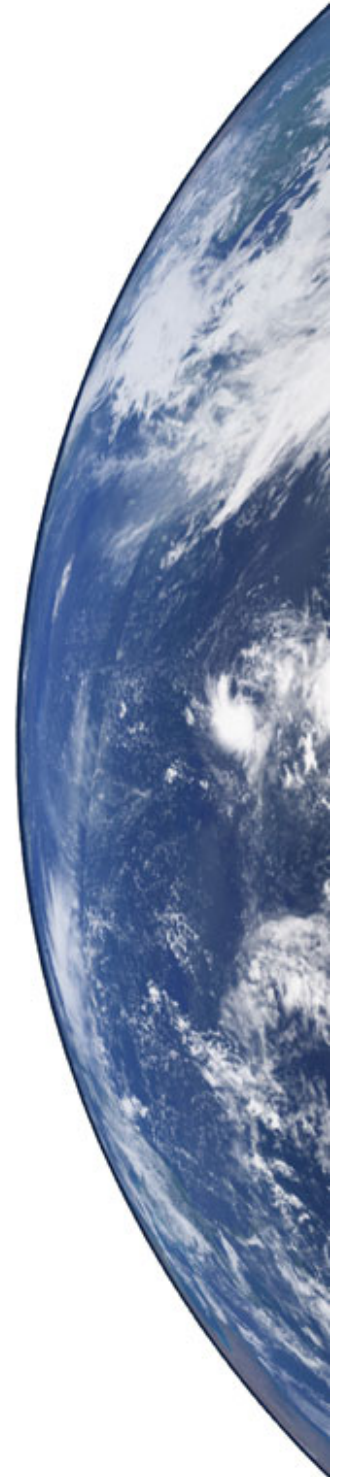
Albert Fisher

Director, GOOS Project Office, IOC/UNESCO, a.fischer@unesco.org

The IOC of UNESCO:

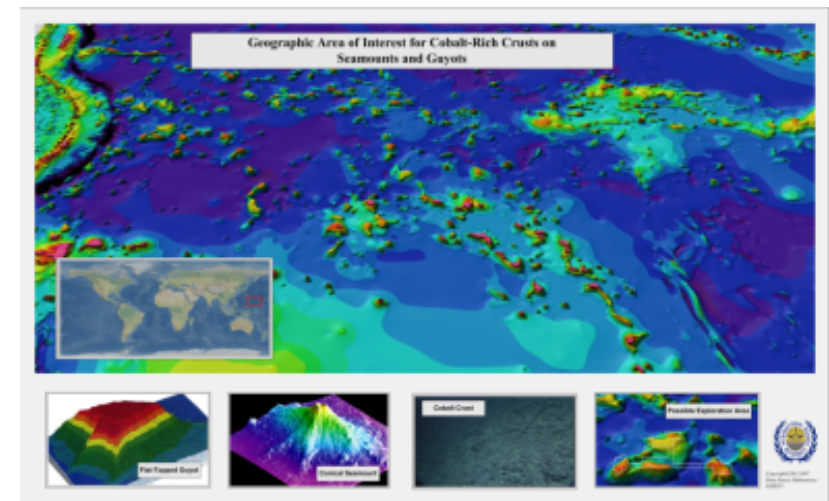
Building knowledge and capacity for sustainable ocean management

- Established in 1960
- Only intergovernmental organization mandated to promote marine science in all ocean basins
- Science, services, observations, data exchange and capacity development
- Foster sustainable development of the marine environment



IOC within the UN system

- Focal point for ocean observations, science, services and data exchange
- Competent international organization for marine science (UNCLOS)
- Functional autonomy



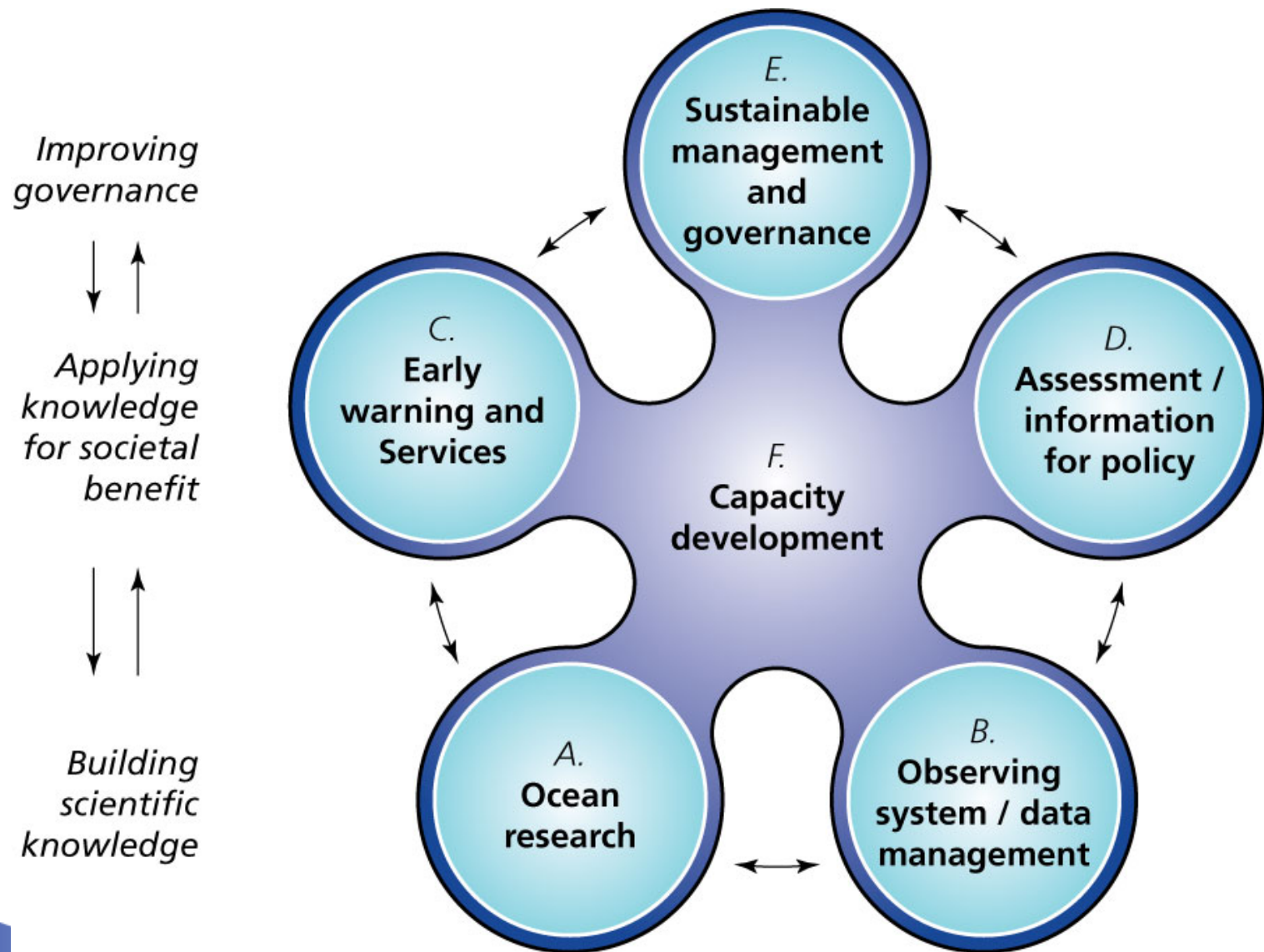
IOC of UNESCO

4 high level objectives:

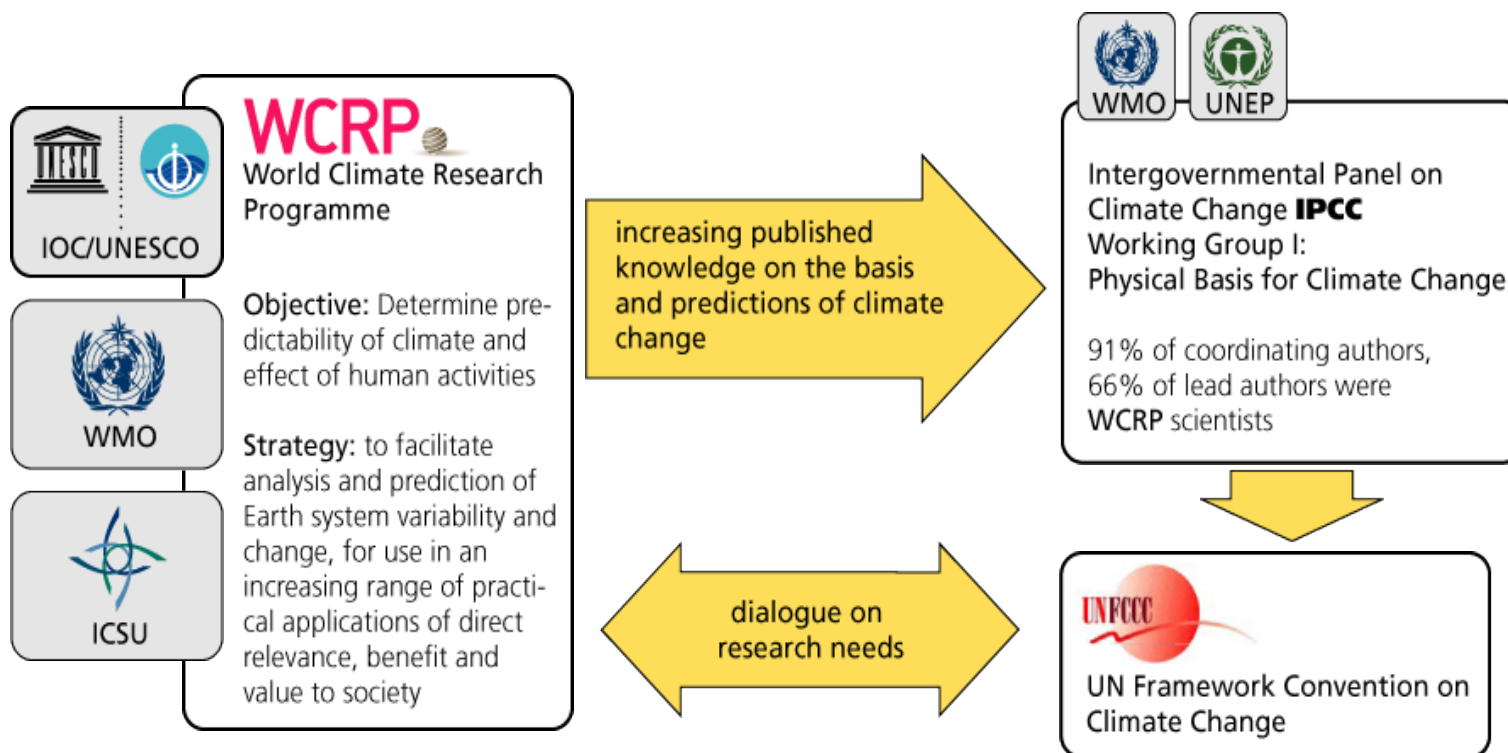
- Preventing and reducing impacts of natural marine hazards
- Mitigating impacts and adapting to climate change
- Safeguarding health of ocean ecosystems
- Promoting policies for sustainability



From vision to execution



WCRP is an essential piece to achieve IOC goals in HLO 2...



...and a key linkage between the IOC and the UNFCCC & IPCC

WCRP and ocean observations

- **WCRP is our co-sponsor for the Ocean Observations Panel for Climate (OOPC)**, together with GOOS and GCOS
- Secretariat now hosted in Geneva at GCOS office: Katy Hill
- New co-chairs: Mark Bourassa (USA) and Toshio Suga (Japan)



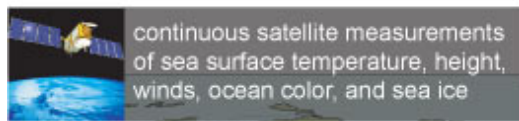
the Global Ocean Observing System

- the system GOOS
 - **collaborative system of sustained observations**
 - built on requirements
 - in situ and satellite
 - operational and research funding
 - linked to data management and product generation activities
 - global-scale and coastal
- the GOOS programme
 - advocacy for all elements of the system
 - provide a **platform for collaboration**
 - promote **global participation** through capacity development

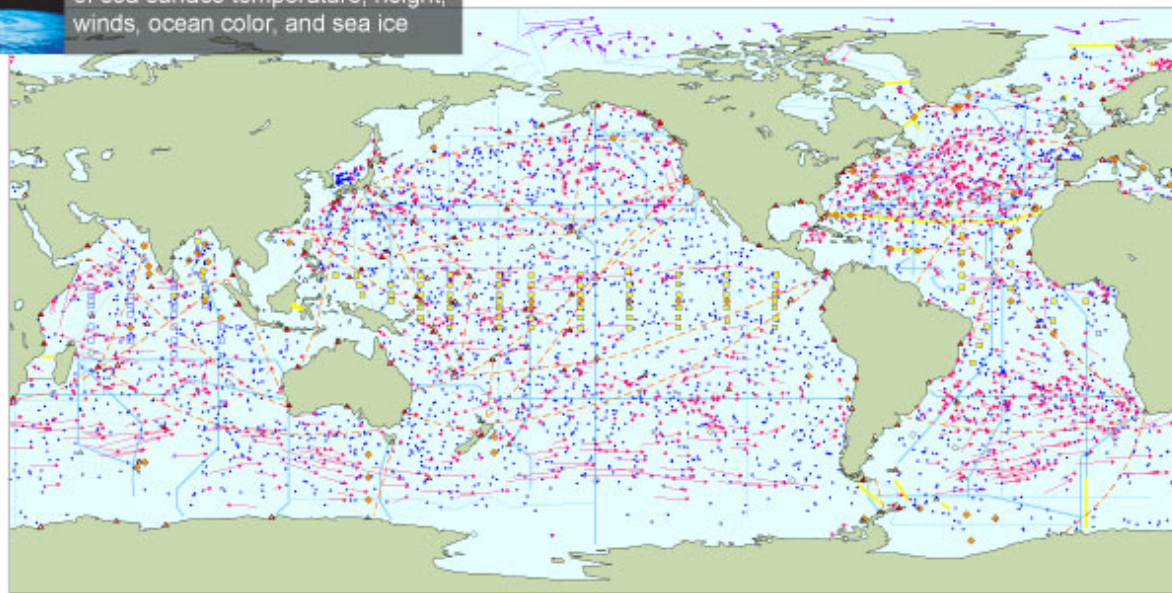


Ocean observing system for climate – drawing from best practices

Requirements for Essential Climate Variables



Total *in situ* networks **61%** April 2013



100% Surface measurements from volunteer ships (VOS)

250 ships in VOSclim pilot project



75% Global drifting surface buoy array

5° resolution array: 1250 floats
ice buoys



66% Tide gauge network (GCOS subset of GLOSS core network)

170 real-time reporting gauges



81% XBT sub-surface temperature section network

51 lines occupied



100% Argo profiling float network

3° resolution array: 3000 floats



62% Repeat hydrography and carbon inventory

Full ocean survey in 10 years

Transport monitoring

48%



29 sites

34% Global time series network



58 moorings planned

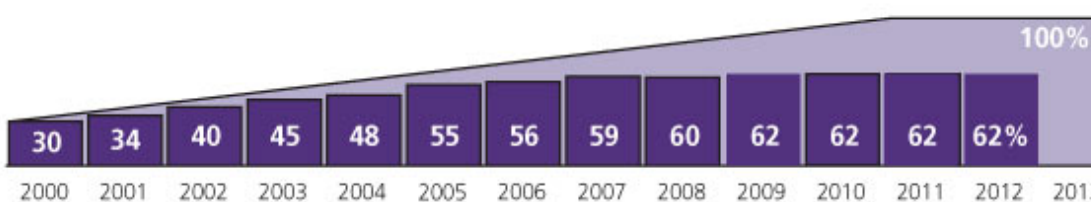


56% Global tropical moored buoy network



119 moorings planned

Representative milestones



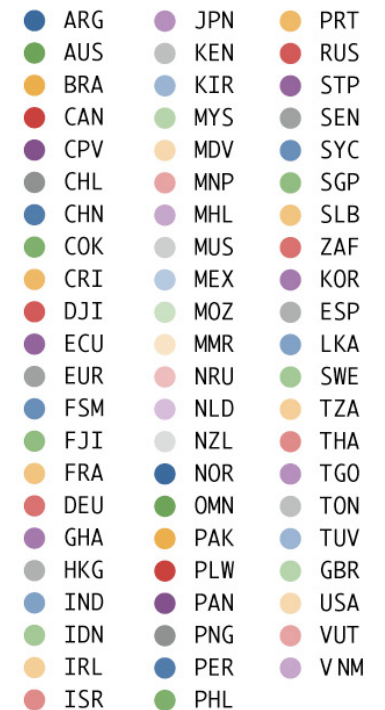
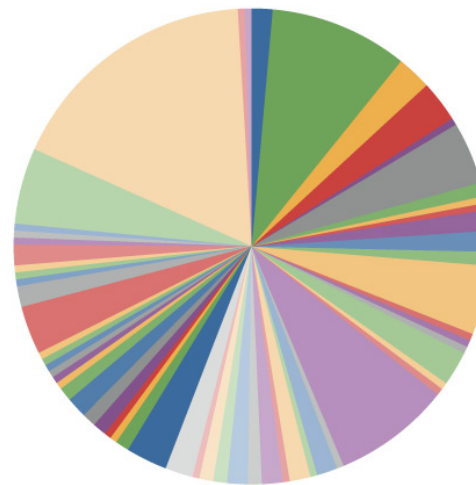
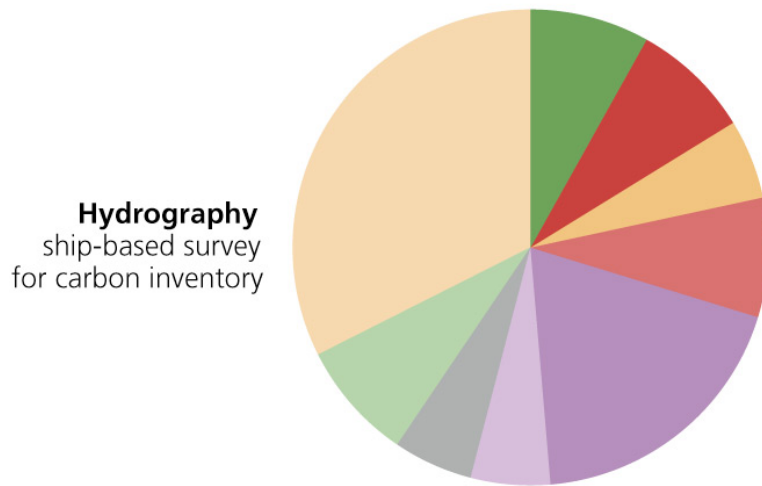
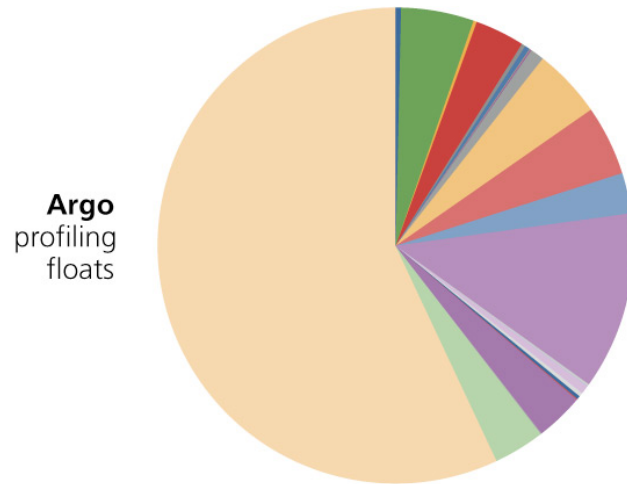
original goal for full implementation by 2010

System % sustained, of initial goals



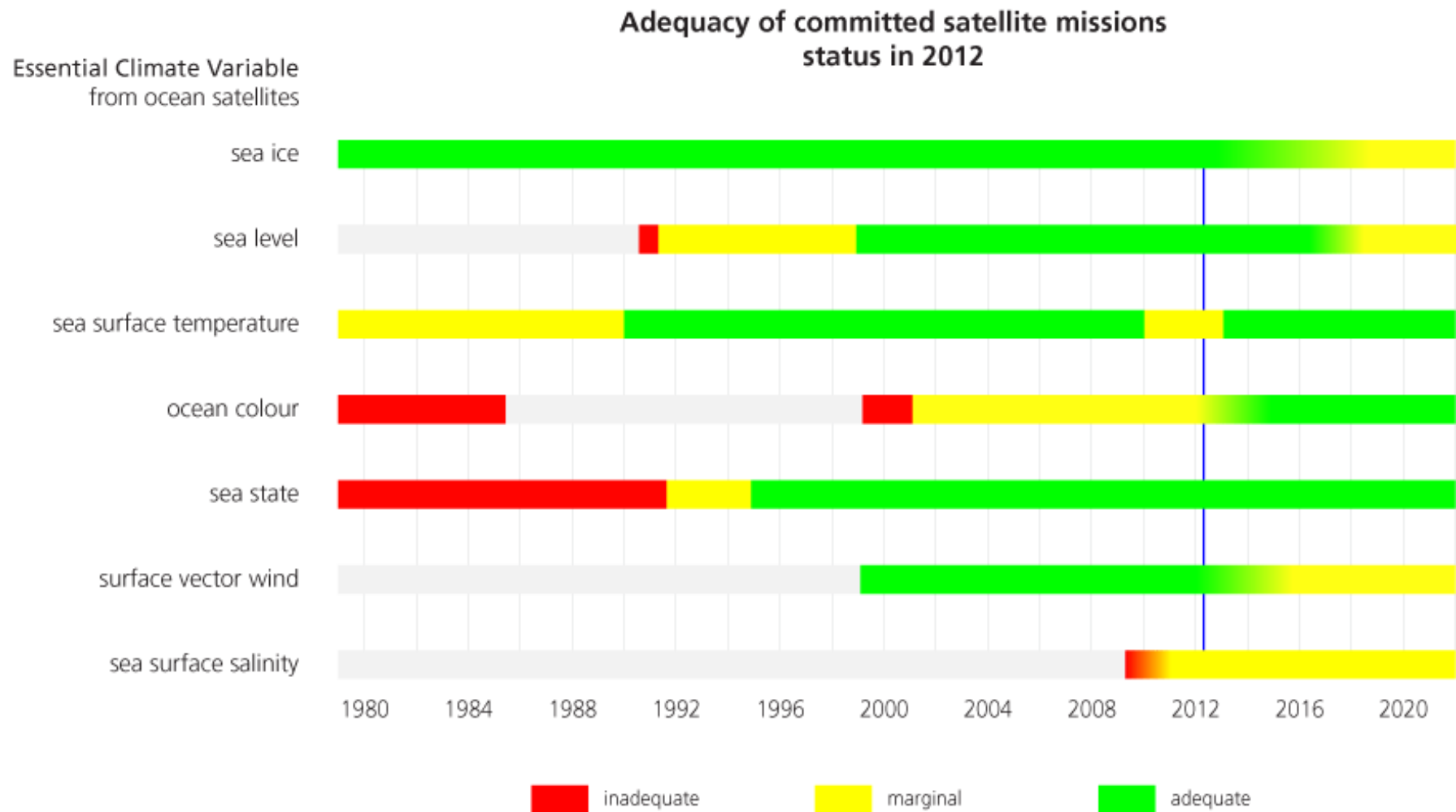
GOOS for climate

global participation varies by network

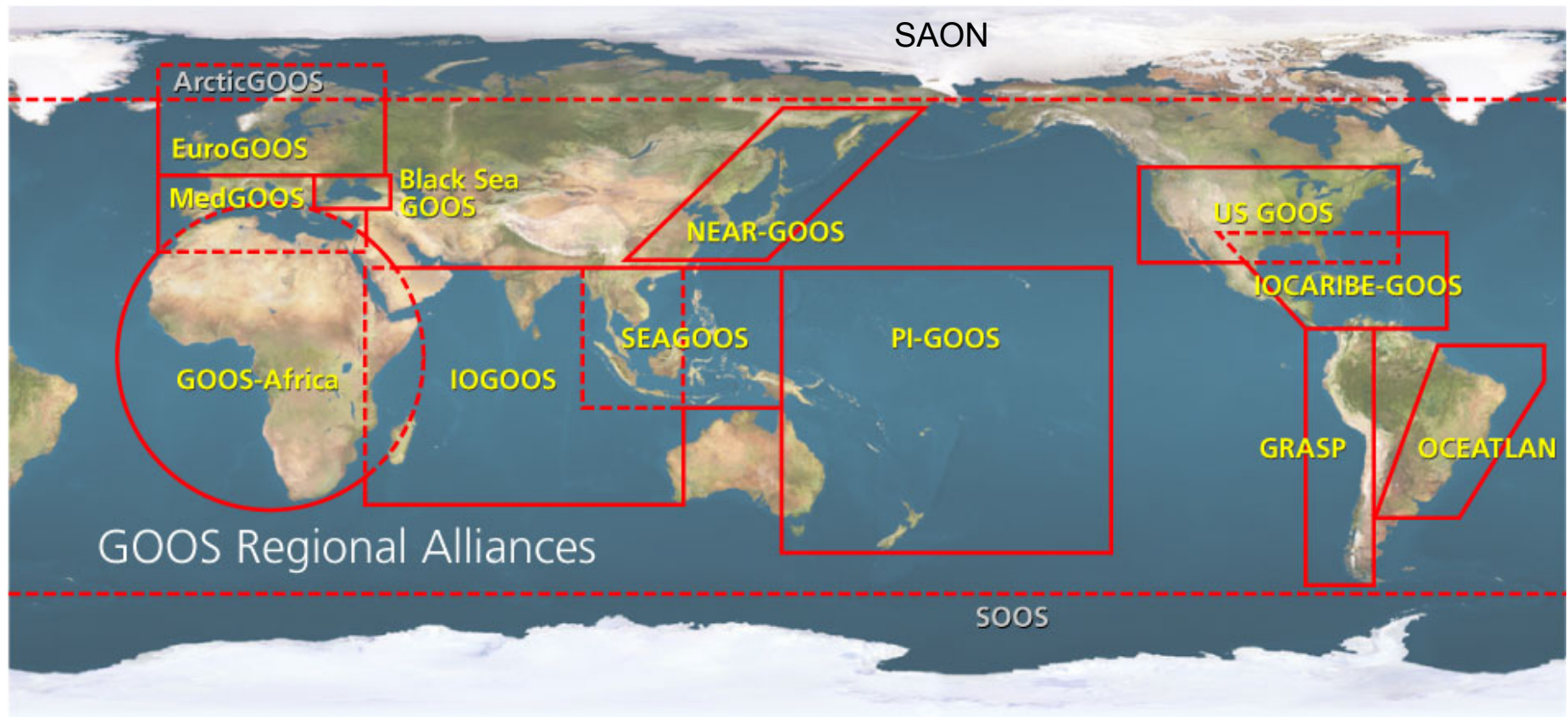


GOOS for climate

adequacy of satellite observations of ECVs



Regional implementation of GOOS





OceanObs'09

Ocean information for society: **sustaining the benefits, realizing the potential**



Alberto Piola, Susan Wijffels, Ray Schmitt, and Anny Cazenave in Session 2A.



Conference co-chairs Julie Hall, Ed Harrison, and Detlef Stammer

Patriocio Bernal, Executive Secretary of the IOC, opens the conference

Why a Framework?

- OceanObs'09 identified tremendous opportunities, significant challenges
- Called for a **framework for planning and moving forward with an enhanced global sustained ocean observing system over the next decade**, integrating new physical, biogeochemical, biological observations while sustaining present observations



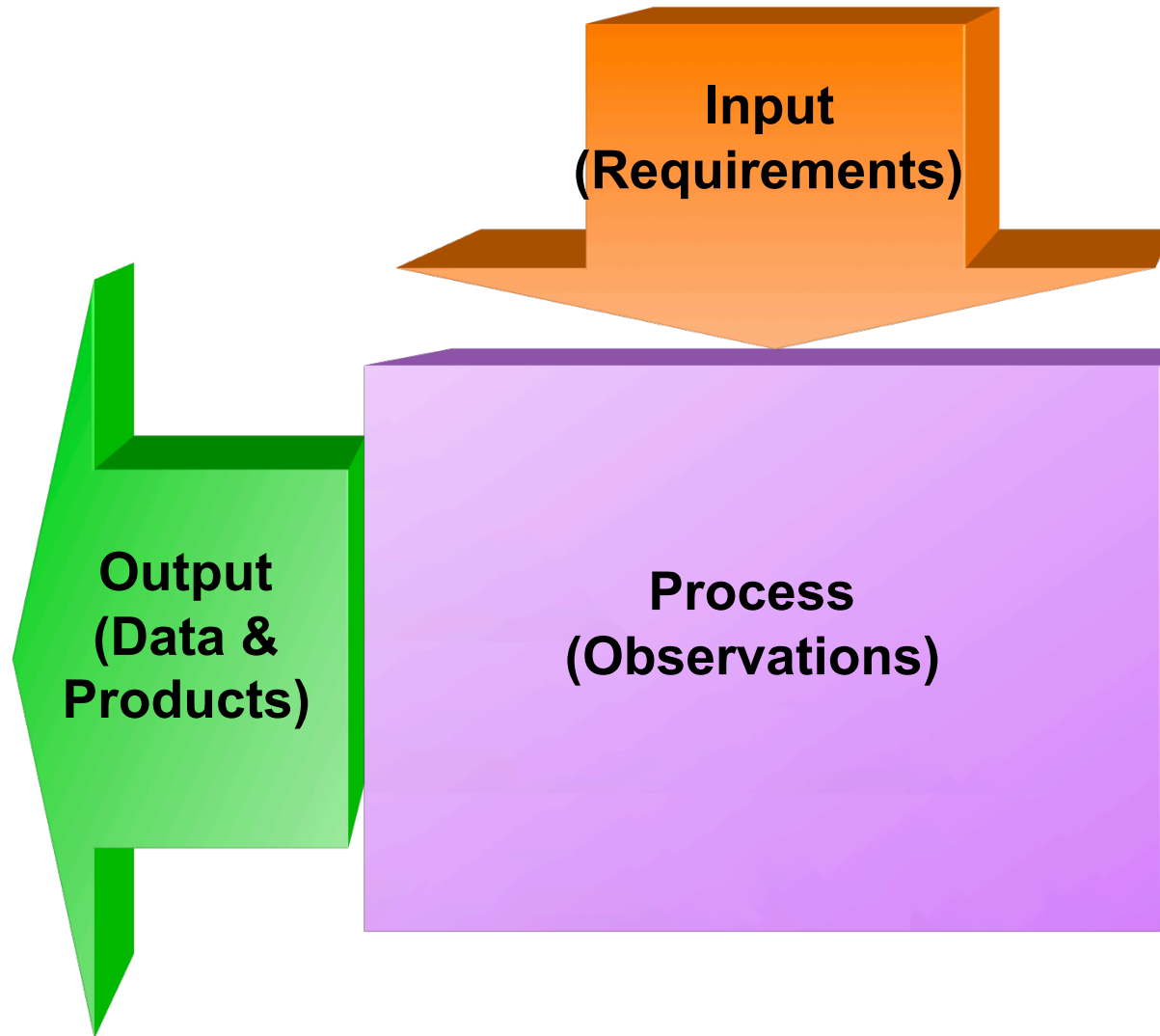
High level objectives

- Take lessons learned from successes of existing observing efforts – **best practices**
- **Guide** observing community as a whole to sustain and expand the capabilities of the ocean observing system
- Deliver and observing system that is **fit-for-purpose**
- Promoting **collaborative alignment** of independent groups, communities and networks, **building on existing structures** as much as possible



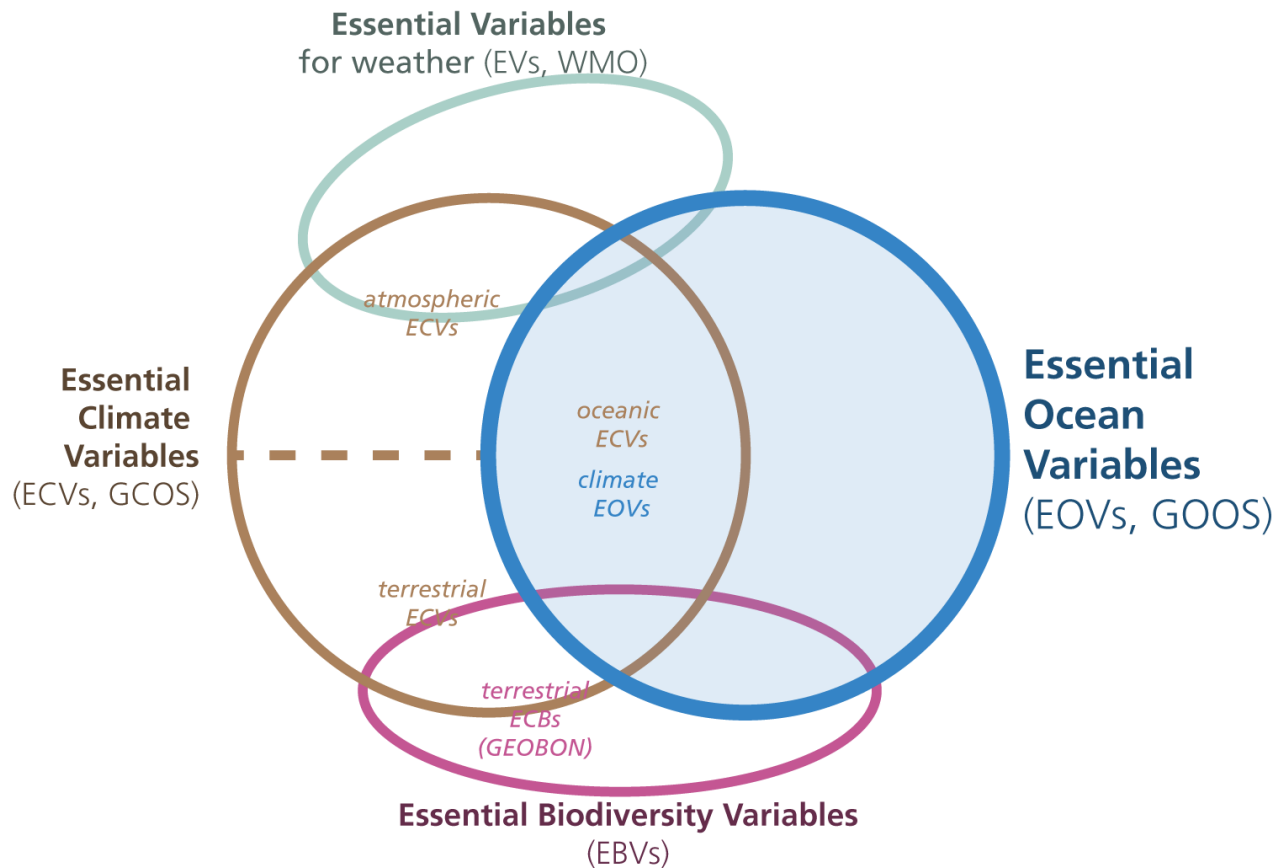
Framework for Ocean Observing

A simple system



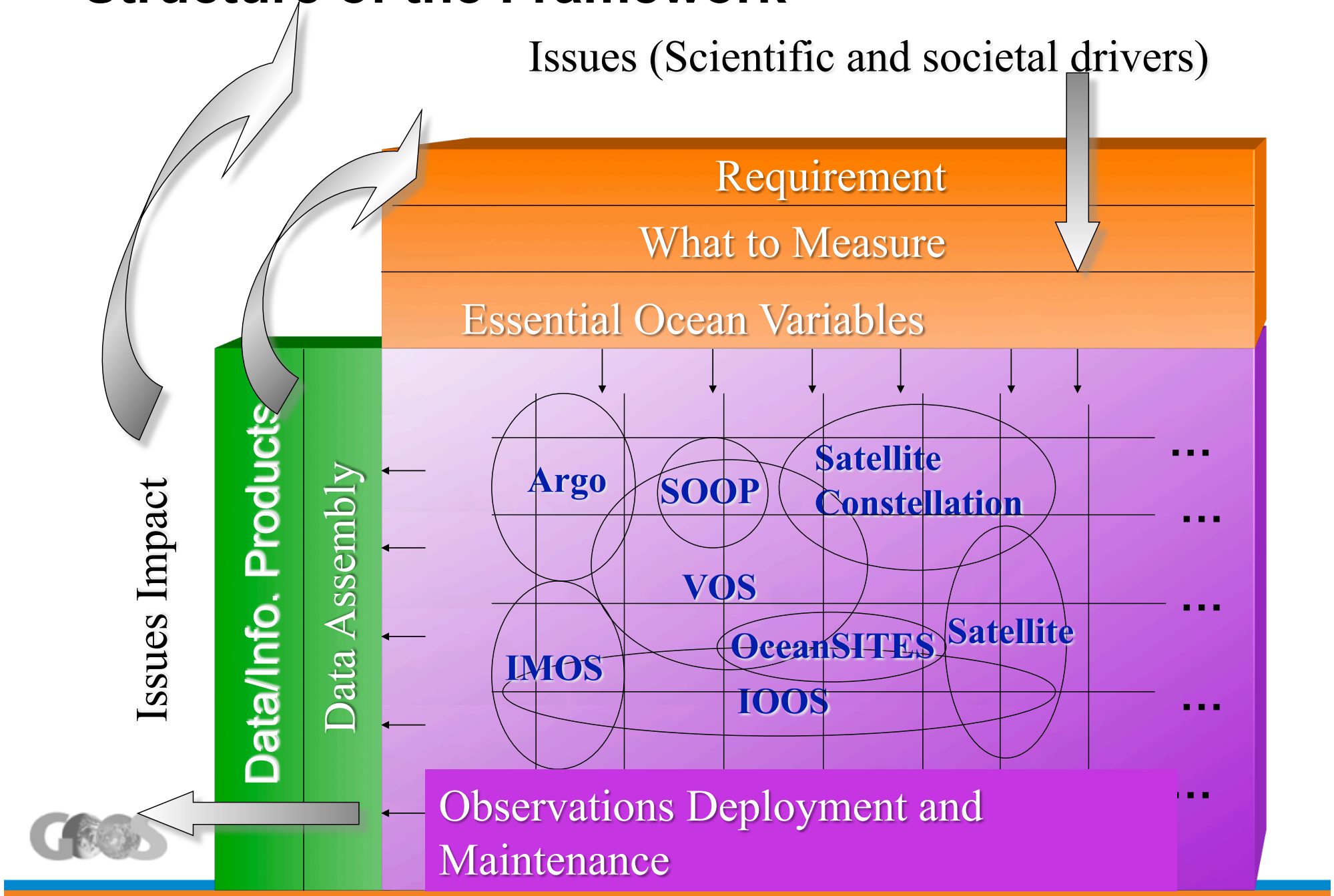
Driven by requirements, negotiated with feasibility

Essential Ocean Variables



- **We cannot measure everything, nor do we need to**
- basis for including new elements of the system, for expressing requirements at a high level
- Driven by requirements, negotiated with feasibility
- Allows for innovation in the observing system over time

Structure of the Framework



Towards sustained system: requirements, observations, data management

Readiness

Mature

Pilot

Concept

Increasing Readiness Levels

Attributes:

Products of the global ocean observing system are well understood, documented, consistently available, and of societal benefit.

Attributes:

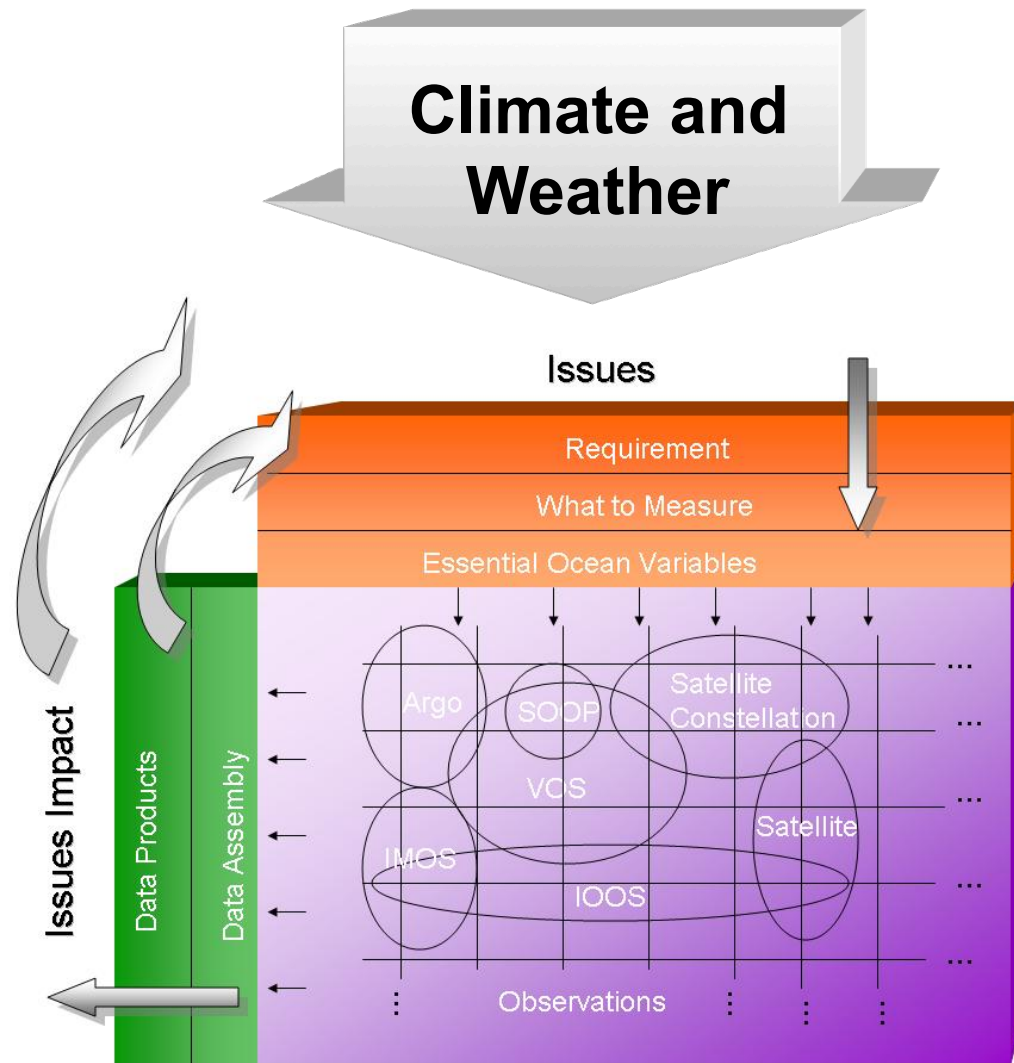
Planning, negotiating, testing, and approval within appropriate local, regional, global arenas.

Attributes:

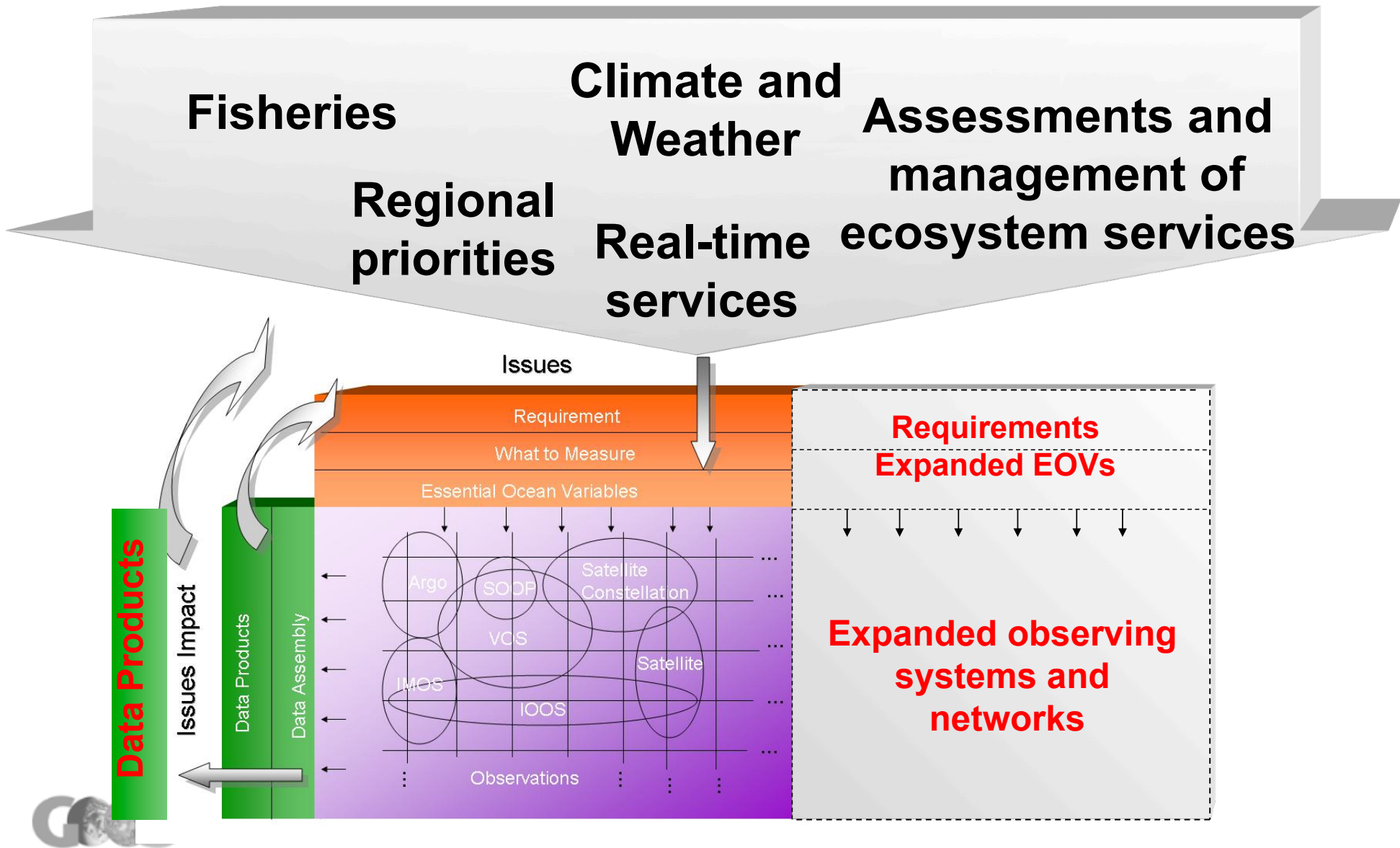
Peer review of ideas and studies at science, engineering, and data management community level.



Framework for Ocean Observing
Societal drivers 2012



Societal drivers next decade



GOOS overall objectives

- **Sustaining present observations**
 - treating sustained research and operational observations together
 - articulating multiple missions of a single observing system
 - improve link to modeling users
 - codification of additional role OOPC has played in real-time services
- **Expanding to new variables, serving new requirements**
 - work with International Ocean Carbon Coordination Project (IOCCP) as nucleus of geochemistry panel
 - develop new Biology/Ecosystems panel in cooperation with GEOBON, SCOR, IGBP projects
- **Identifying regional priorities, capacity, and addressing gaps**
 - inventory of GRA priorities and capabilities
 - improving links with coastal ocean forecasting community



Growing partnerships

partners in developing the Framework for Ocean Observing



Group on Earth Observations



Committee on Earth Observation Satellites



Partnership for Observation of the Global Oceans



Scientific Committee on Oceanic Research



Scientific Committee on Antarctic Research



Global Climate Observing System



Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology



North Pacific Marine Science Organization



International Council for the Exploration of the Sea



International Geosphere-Biosphere Programme



World Climate Research Programme

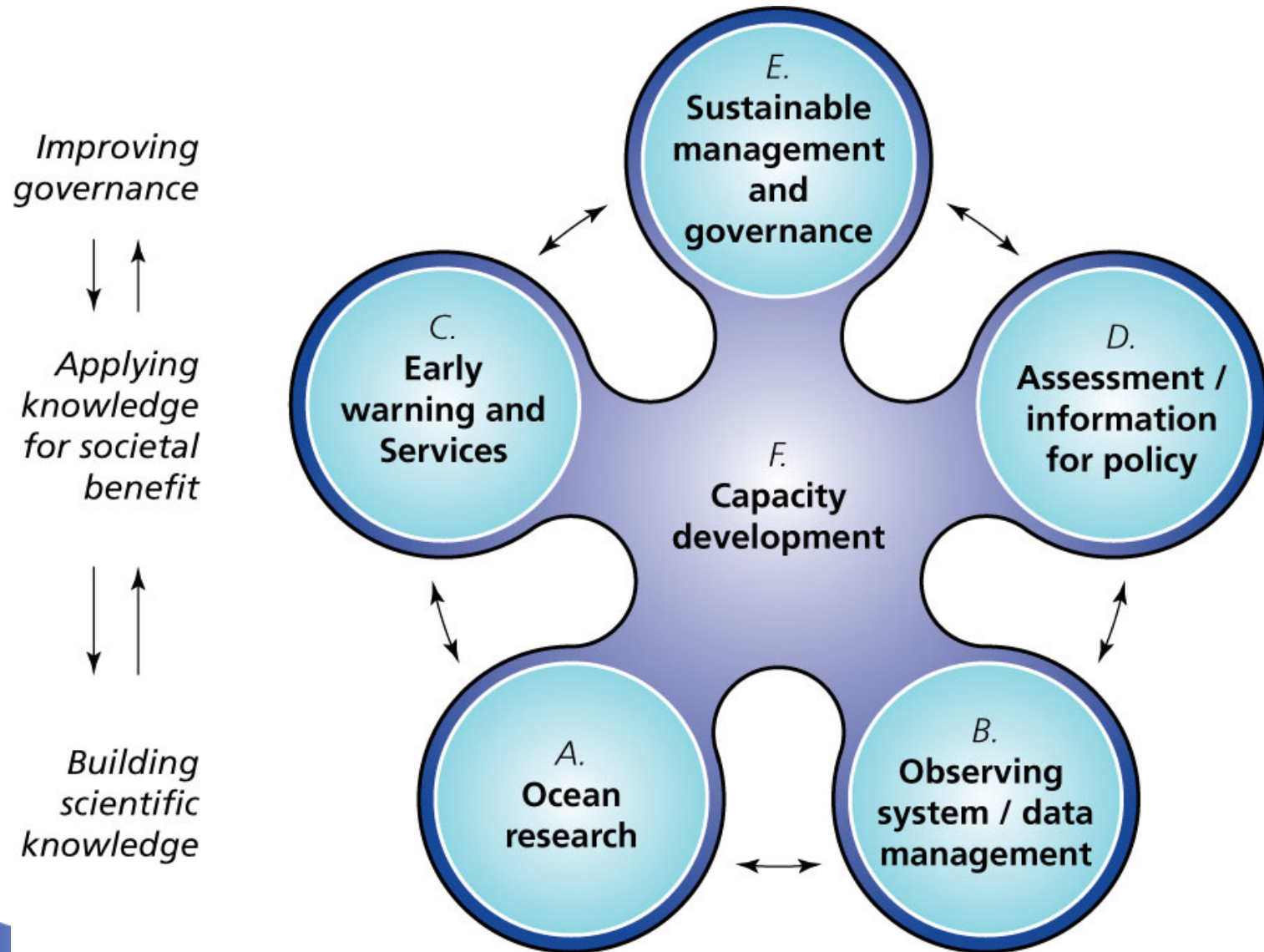


IOC



The Global Ocean Observing System

IOC expectations of WCRP in the future





Thank you
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