Keith Alverson

Ocean Observations and Services

Intergovernmental Oceanographic Commission of UNESCO

IOC / UNESCO WMO UNEP ICSU

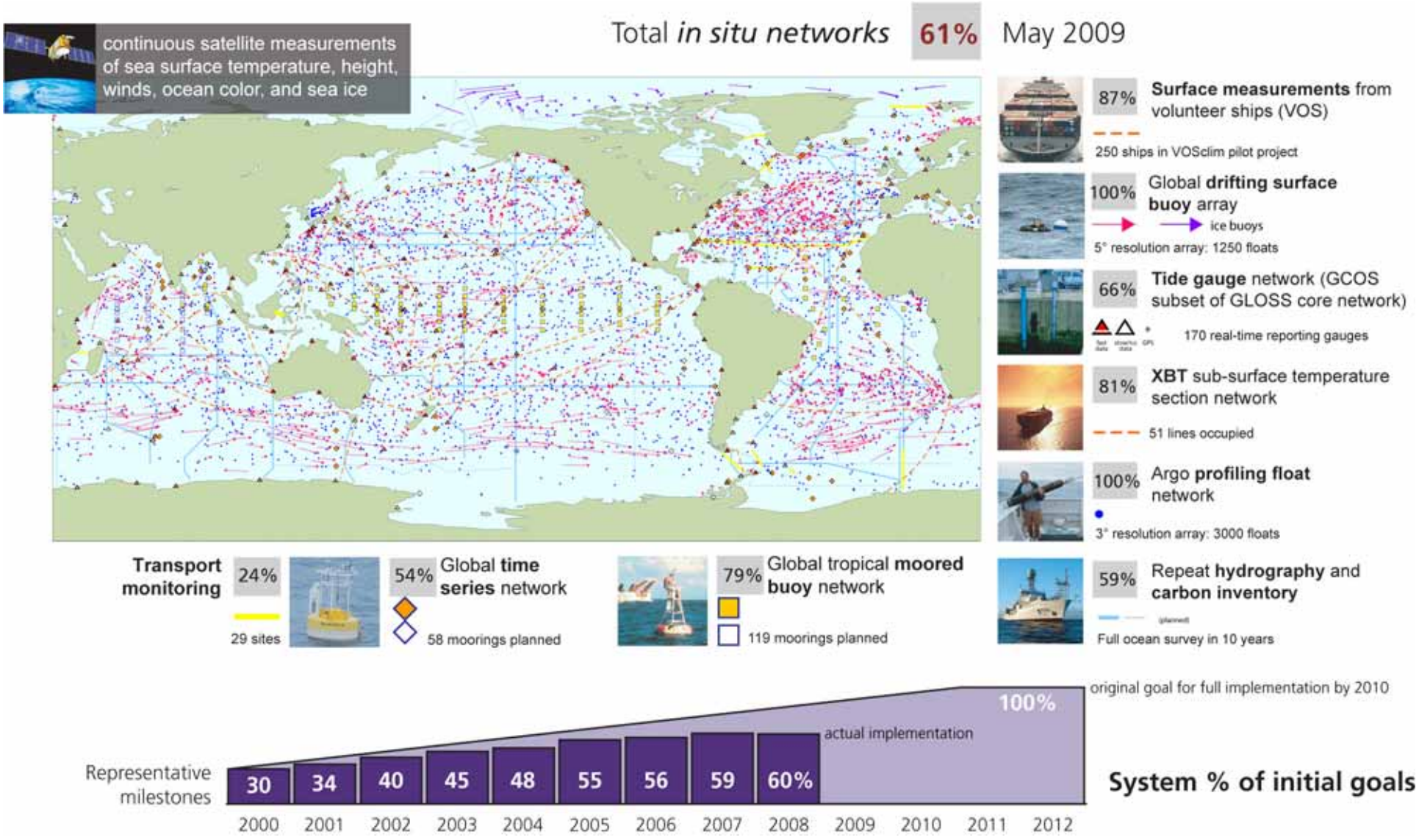
IOC and UNEP Regional Seas

1. The Global Ocean Observing System of IOC, WMO, UNEP and ICSU
2. Overview of IOC Regional Efforts
3. Assessment of Assessments and Regular Process for Global Reporting and Assessment of the Marine Environment
4. Transboundary Water Assessment Program

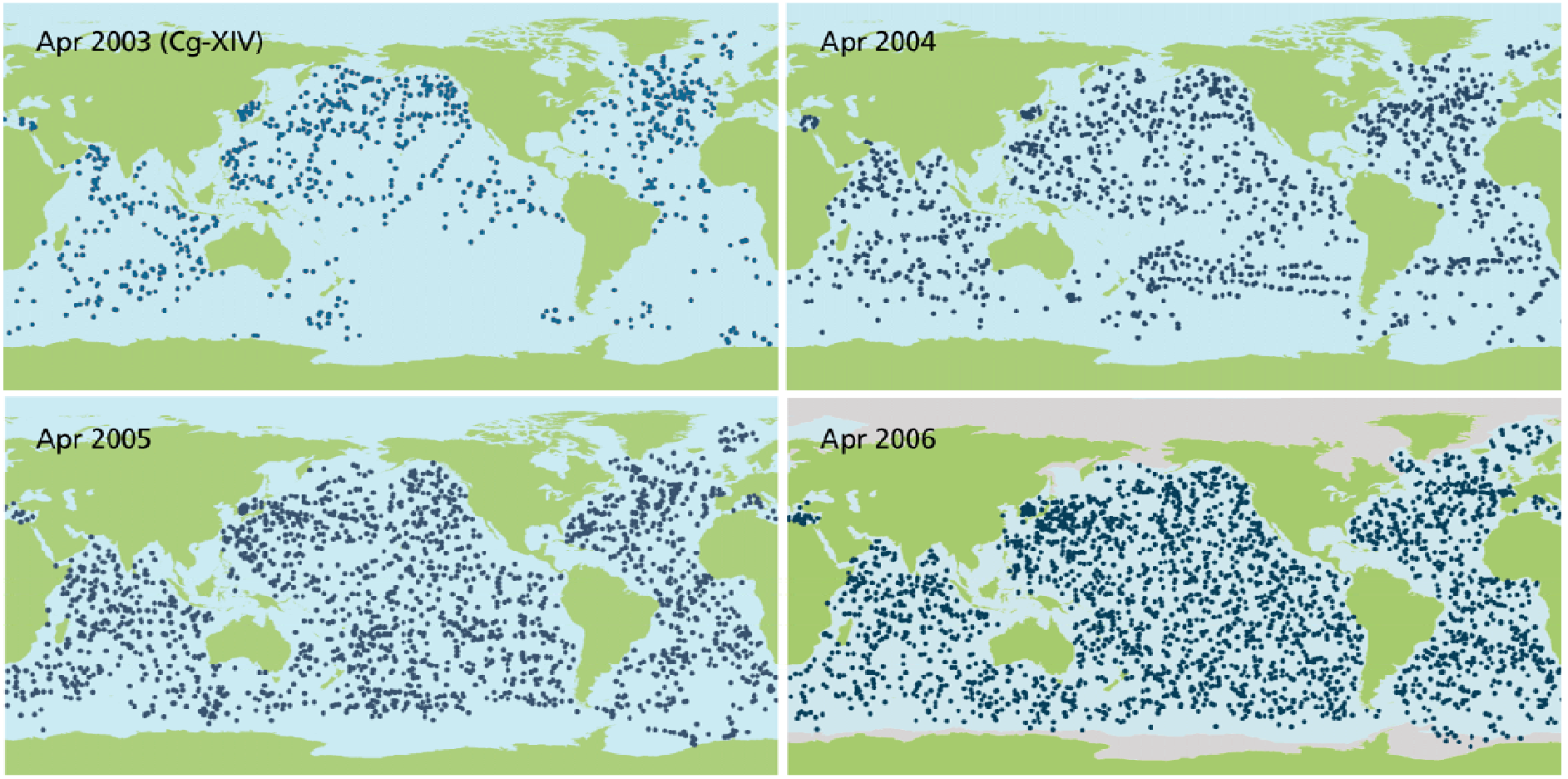
Global Ocean Observing System for Climate

Designed to serve IPCC WG1 (Detection and Attribution) needs …

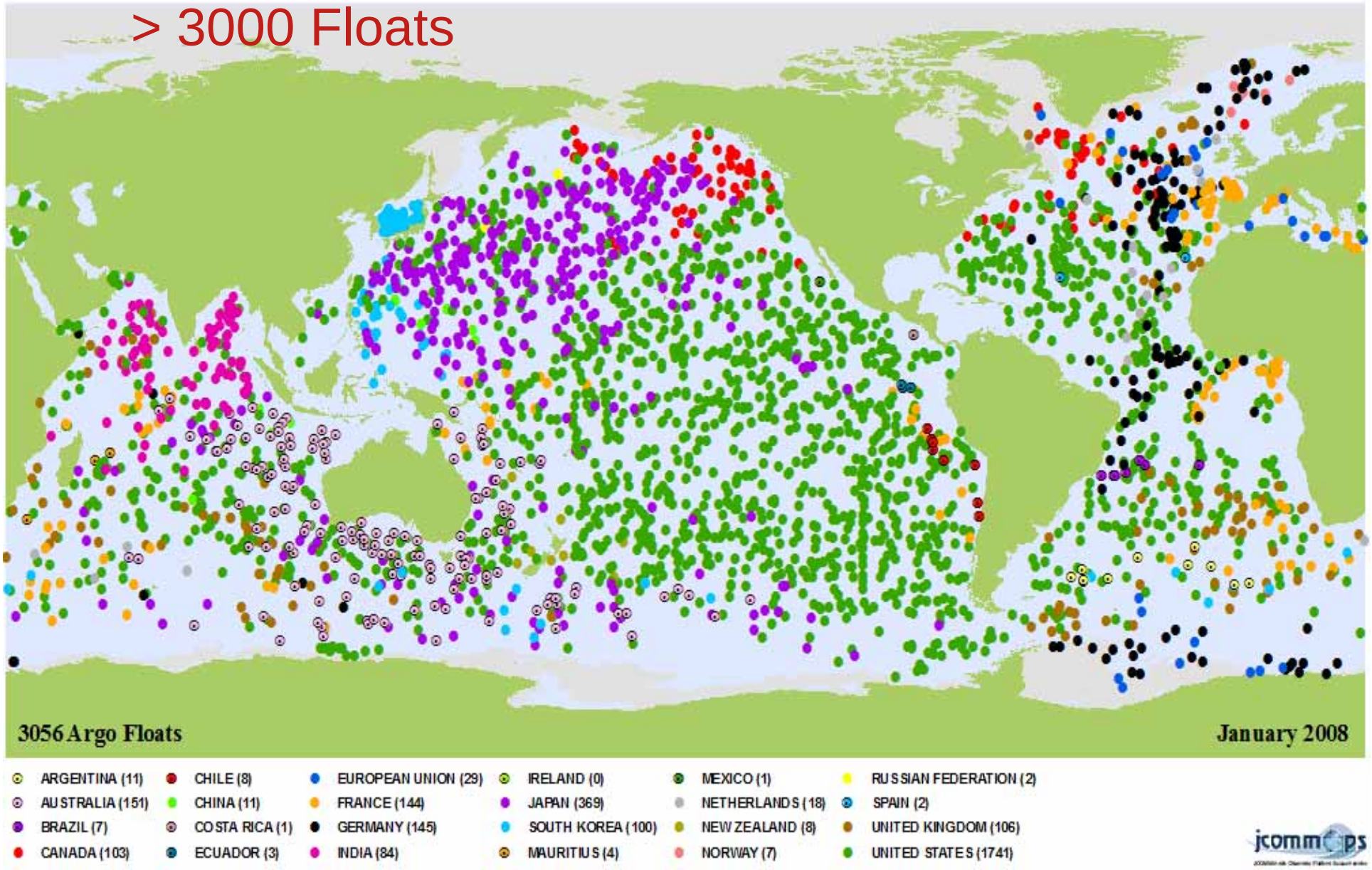
Reporting “Essential Climate Variables” to UNFCCC …



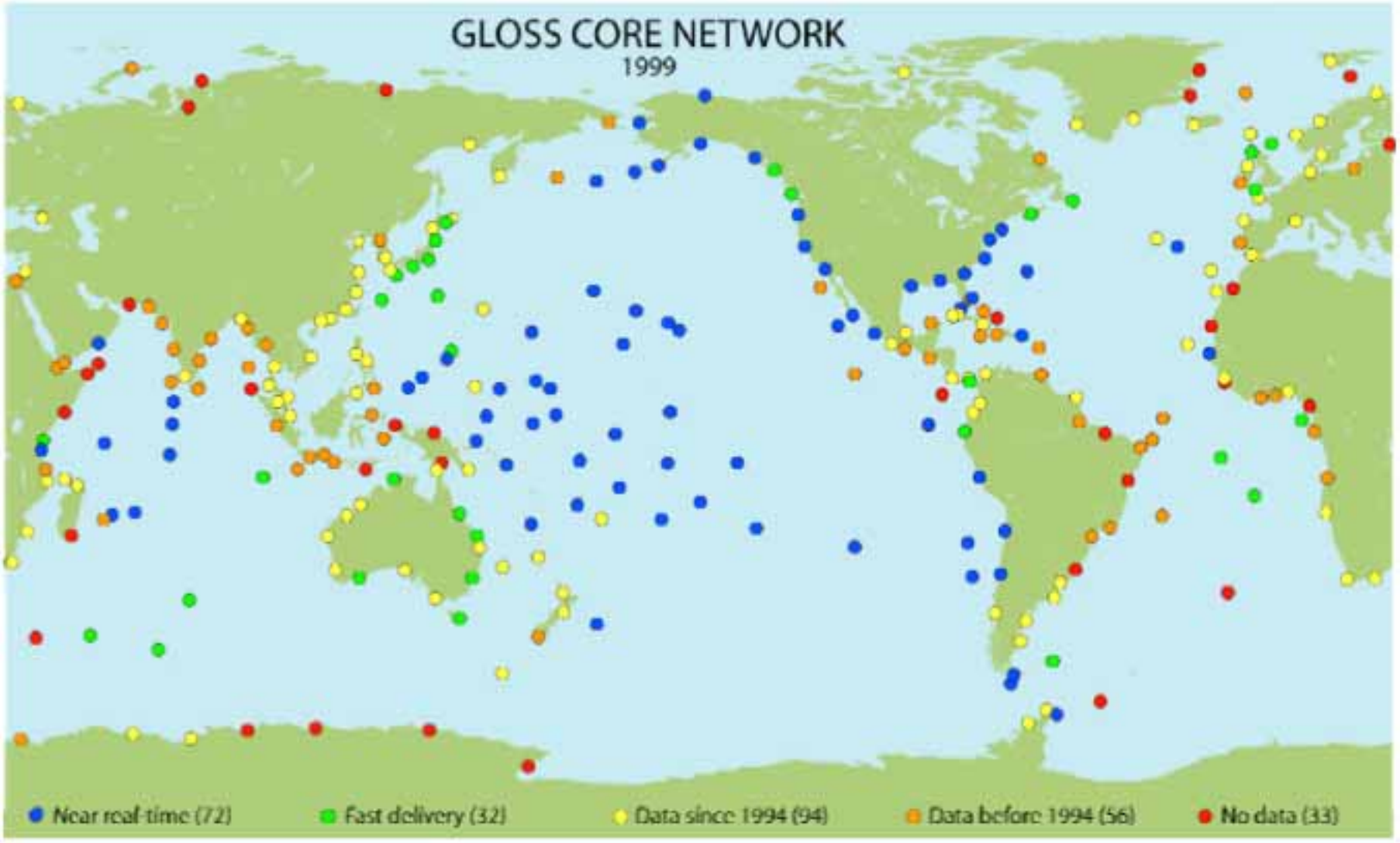
The ARGO array of profiling floats from 2003…



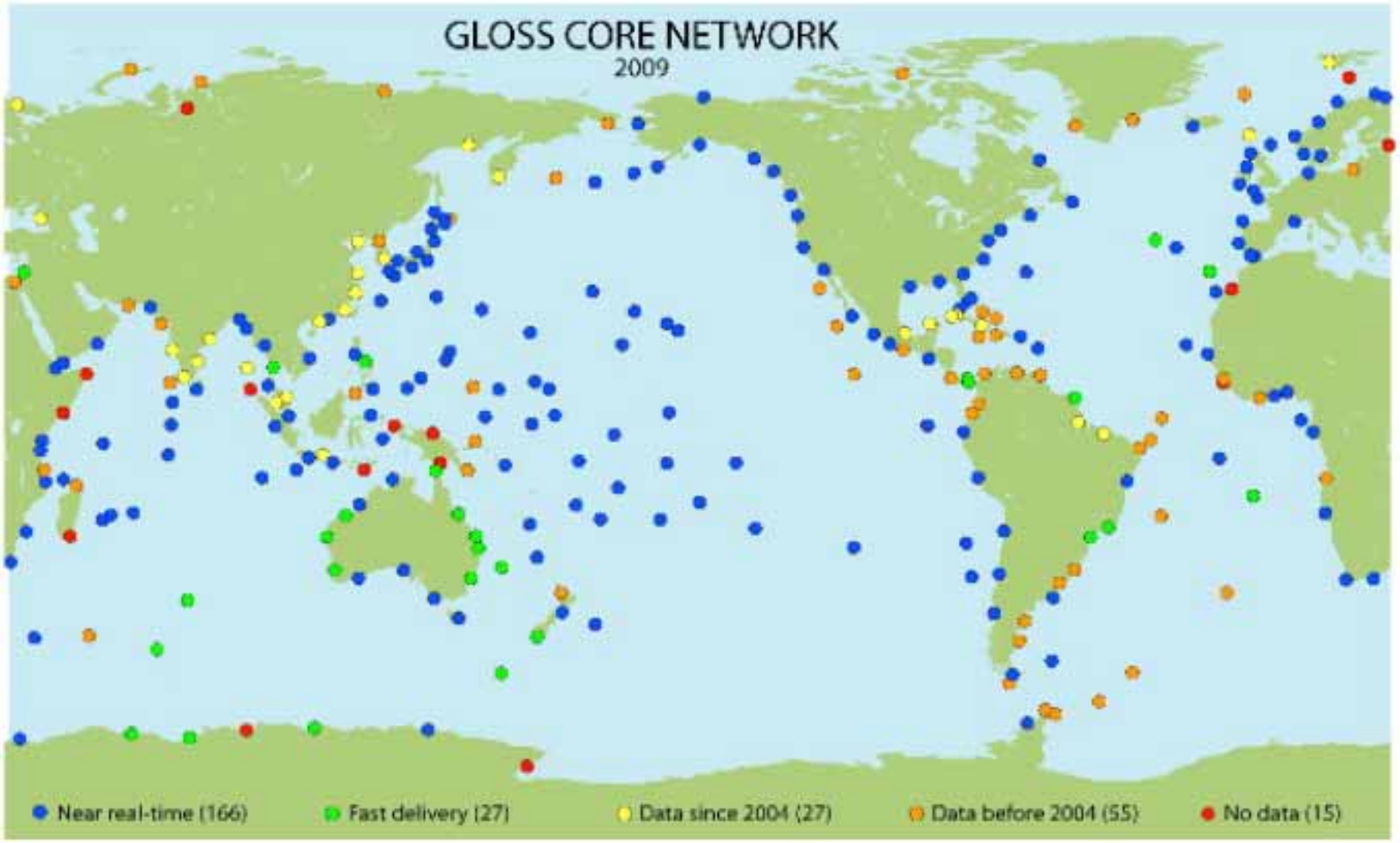
> 3000 Floats


3056 Argo Floats
January 2008
ARGENTINA (11)
AUSTRALIA (151)
BRAZIL (7)
CANADA (103)
CHILE (8)
CHINA (11)
COSTA RICA (1)
ECUADOR (3)
EUROPEAN UNION (29)
FRANCE (144)
GERMANY (145)
INDIA (84)
IRELAND (0)
JAPAN (369)
SOUTH KOREA (100)
MAURITIUS (4)
MEXICO (1)
NETHERLANDS (18)
NEW ZEALAND (8)
NORWAY (7)
RUSSIAN FEDERATION (2)
SPAIN (2)
UNITED KINGDOM (106)
UNITED STATES (1741)

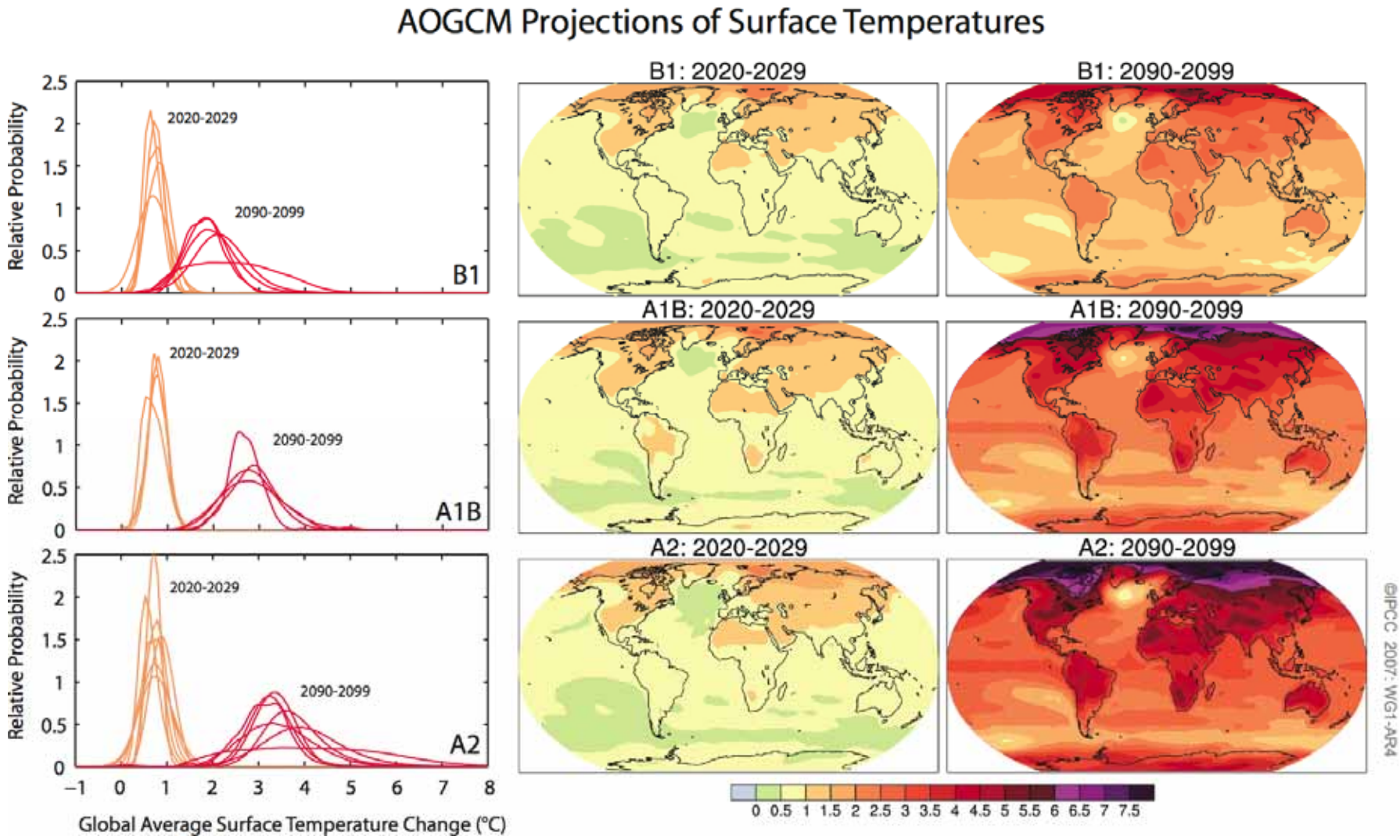
Evolution of the GLOSS tide gauge network 1999-2009



Evolution of the GLOSS tide gauge network 1999-2009

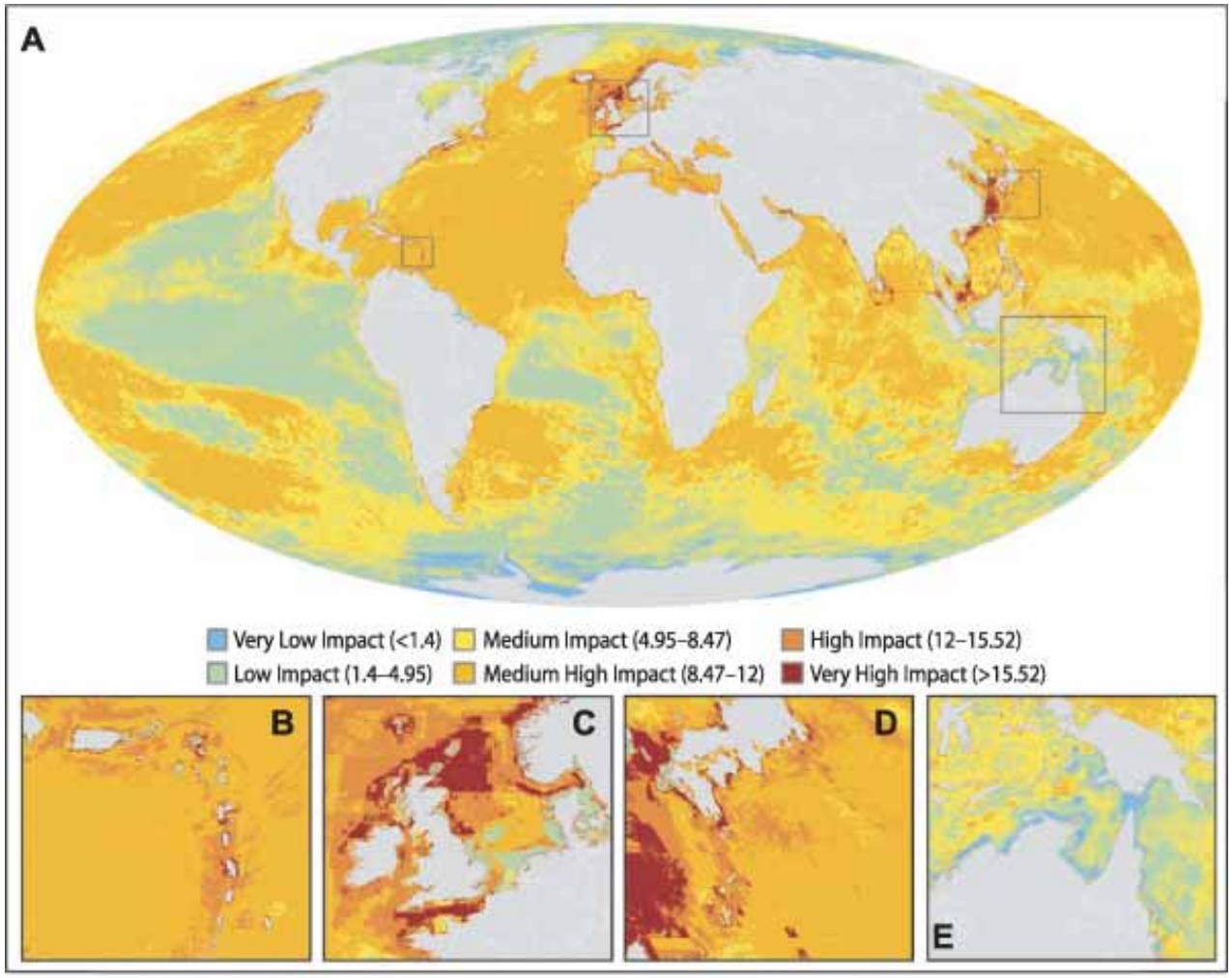


Climate Change…



IPCC AR4, 2007

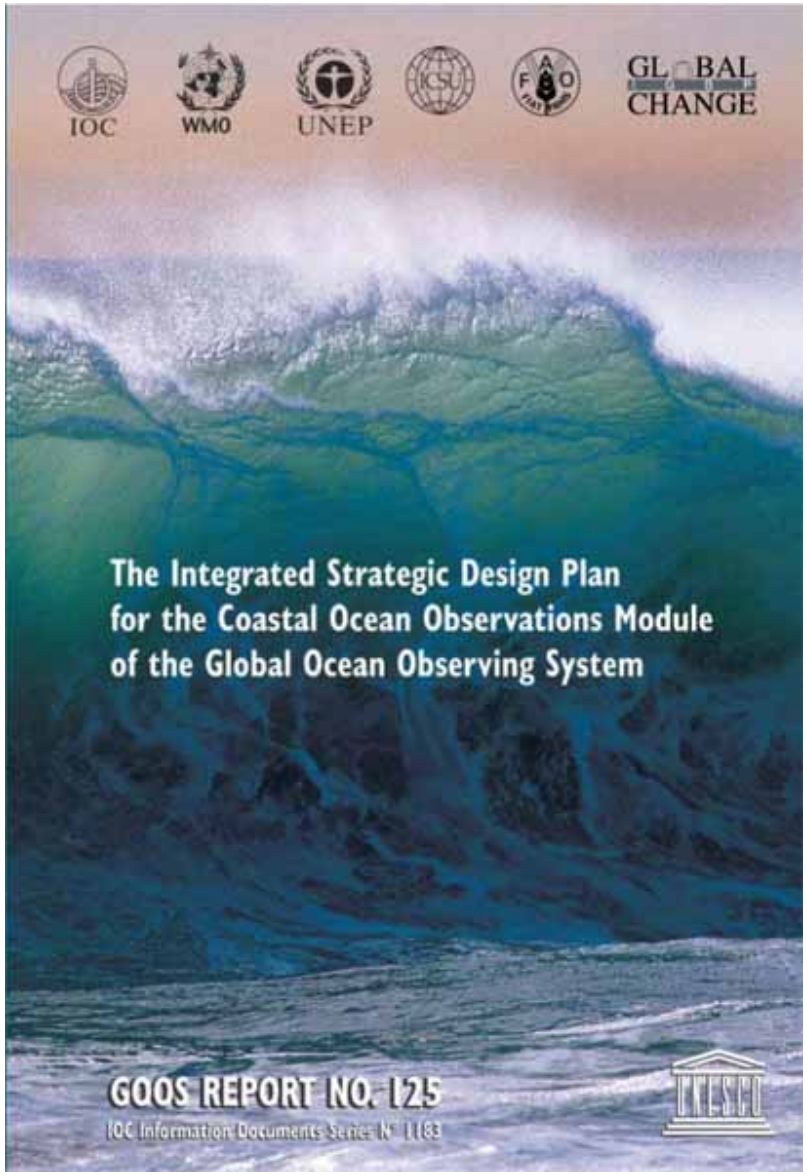
Human Impact on Marine Ecosystems:
global, substantial, not climate dominated.

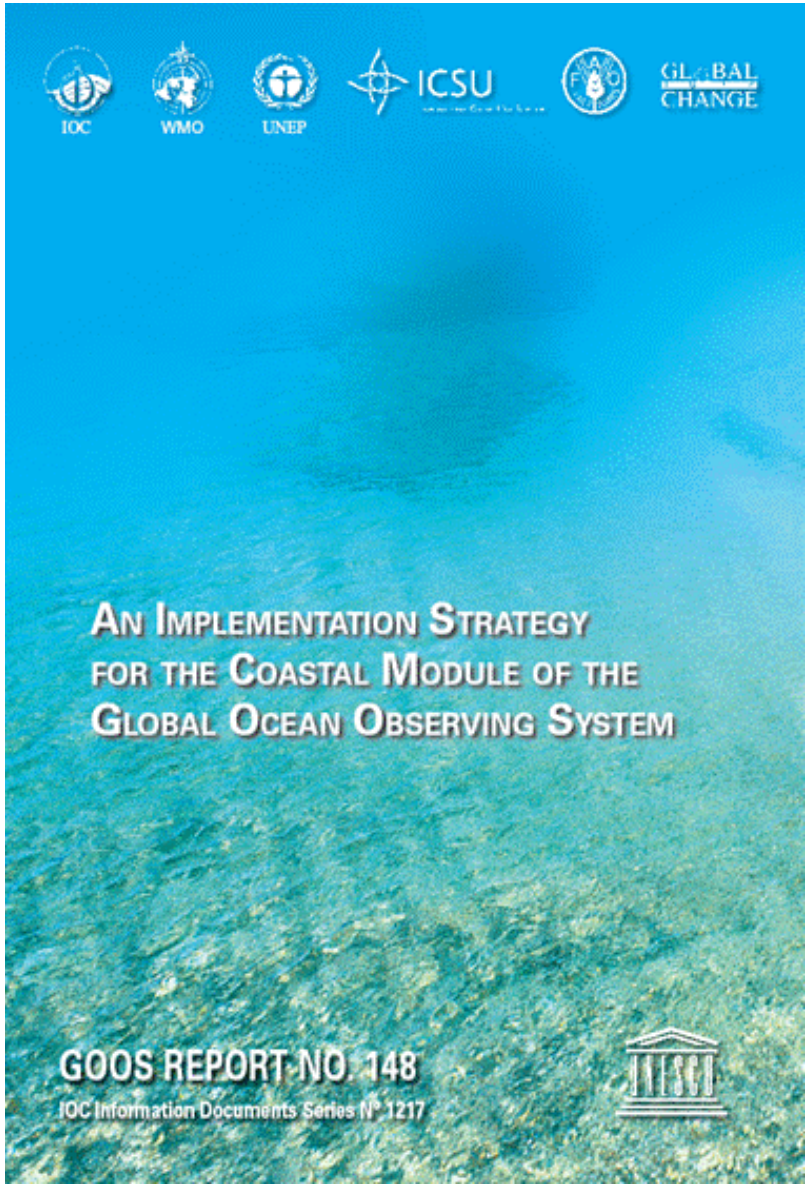


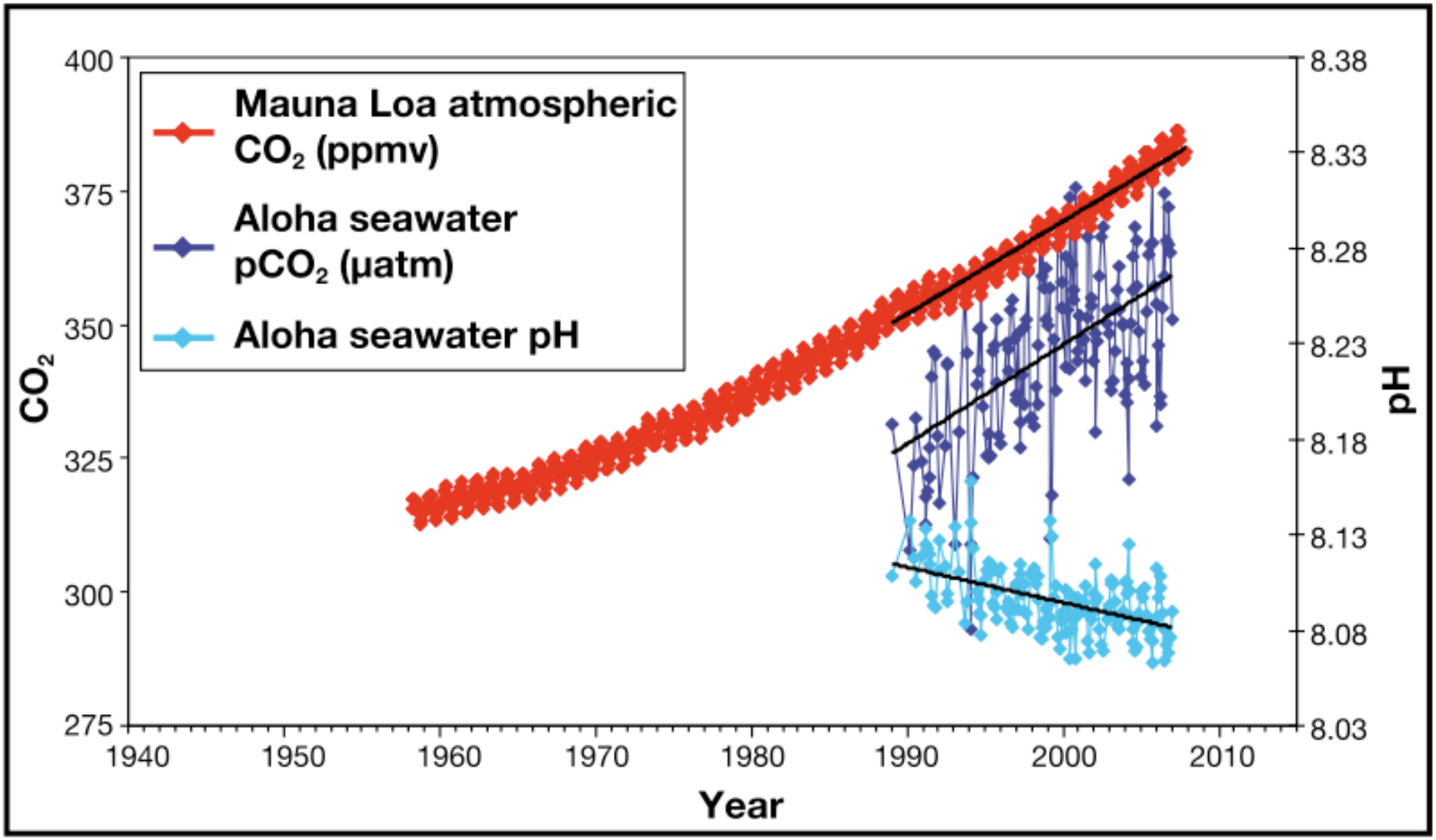
www.sciencemag.org SCIENCE VOL 319 15 FEBRUARY 2008 949

Halpern et al, Science, 2008

Coastal GOOS

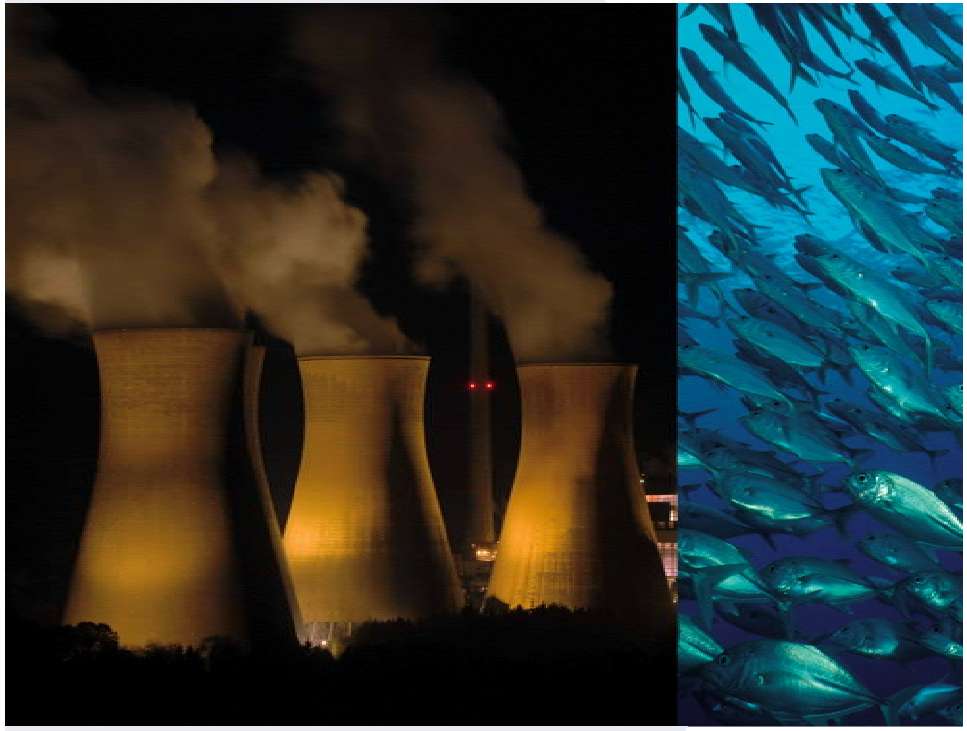






Time series of atmospheric CO_2 at Mauna Loa and surface ocean pH and pCO_2 at Ocean Station Aloha in the subtropical North Pacific Ocean. Mauna Loa data: Dr. Pieter Tans, NOAA/ESRL; HOTS/Aloha data: Dr. David Karl, University of Hawaii (modified after Feely, 2008).

OCEAN ACIDIFICATION



A Summary for Policymakers from the Second Symposium on the Ocean in a High-CO_2 World

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Intergovernmental Oceanographic Commission of UNESCO

International Geosphere-Biosphere Programme

Marine Environment Laboratories (MEL) of the International Atomic Energy Agency

Scientific Committee on Oceanic Research

SYMPOSIUM SPONSORS

The [illegible] Scientific Committee on Oceanic Research (www.scor-int.org) was established by the International Council of Scientific Unions in 1957 to promote international cooperation in all areas of ocean science.

The Intergovernmental Oceanographic Commission (http://ioc-unesco.org) was established by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1960 to provide Member States of the United Nations with an essential mechanism for global cooperation in the study of the ocean.

The International Geosphere-Biosphere Programme (www.igbp.net) is an international scientific research programme that studies the interactions between biological, chemical and physical processes and human systems, to develop and impart the understanding necessary to respond to global change.

The Marine Environment Laboratories (MEL) of the International Atomic Energy Agency (www-naweb.iaea.org/naml) promotes UN interagency efforts to protect the seas, and carries out research on ocean acidification by combining isotopes with manipulative experiments and by using numerical models to better understand and project how acidification may alter marine resources during the 21st century.

www.ocean-acidification.net

FINANCIAL AND IN-KIND SUPPORT

The scientific sponsors and the organising committees of the symposium gratefully acknowledge the financial and in-kind support received from the following organisations and funding agencies:

U.S. National Science Foundation

Prince Albert II of Monaco Foundation

Scientific Committee on Oceanic Research

Intergovernmental Oceanographic Commission of UNESCO

International Atomic Energy Agency

International Geosphere-Biosphere Programme

Musee Oceanographique de Monaco

Centre Scientifique de Monaco

The International Council for Exploration of the Sea

The North Pacific Marine Science Organization

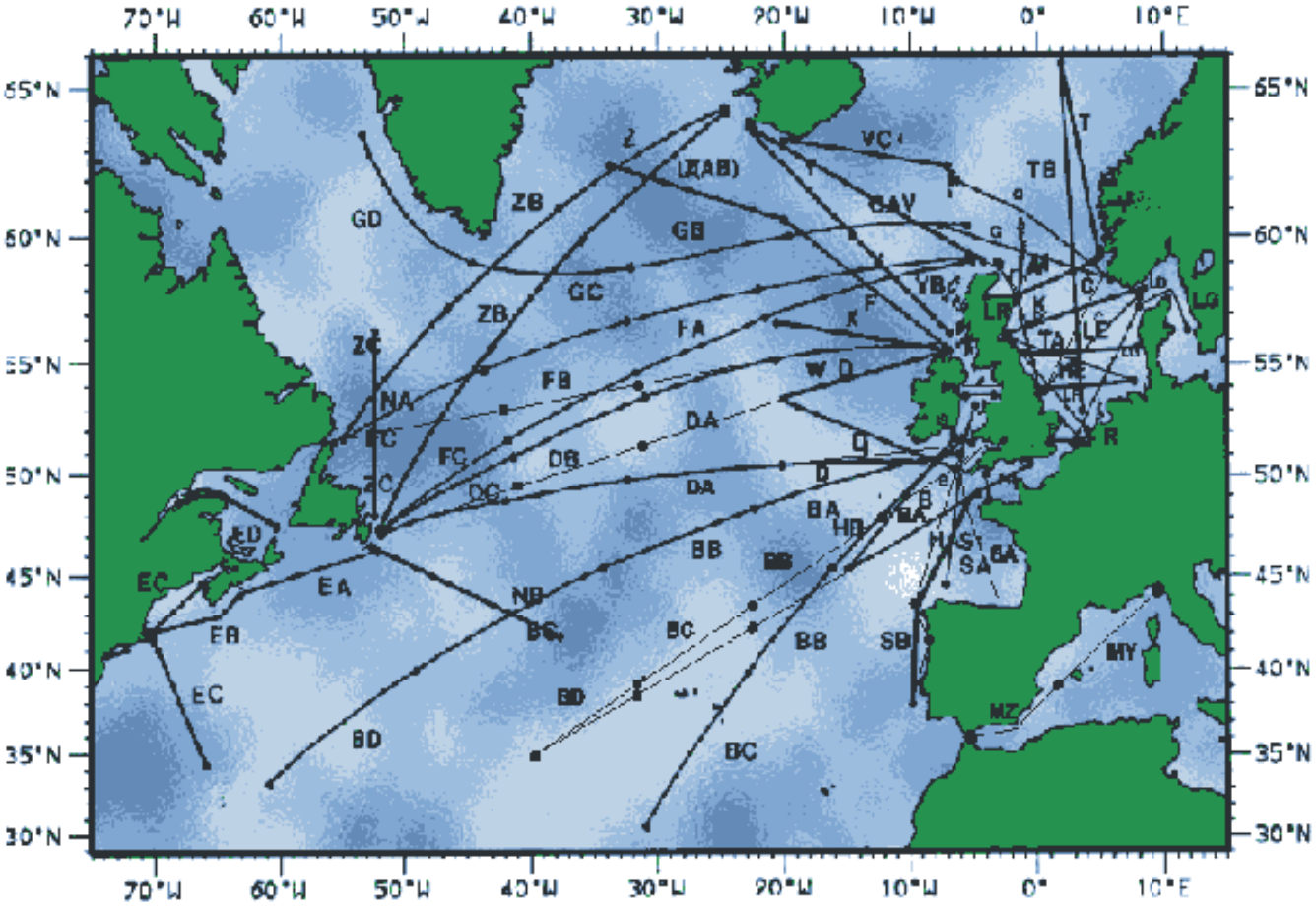
Photo credit: Ciara Nicoll

Editors: Maria Hood, Wendy Broadgate, Ed Urban and Owen Gaffney.
Layout: Hilarie Cutler, IGBP Secretariat.

Copies are available from:
www.ocean-acidification.net
For hard copies email: comms@igbp.kva.se
Or telephone: +46 8 16 64 48

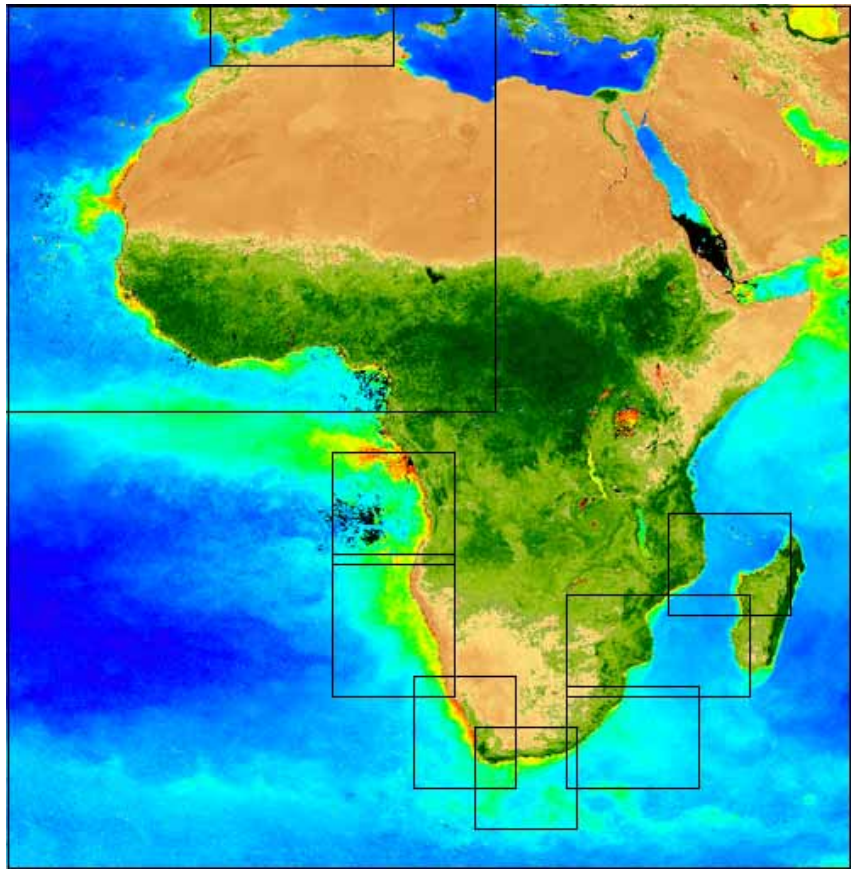
The results outlined here are synthesised in the scientific report Orr *et al.* (2009) Research Priorities for Ocean Acidification available from: www.ocean-acidification.net

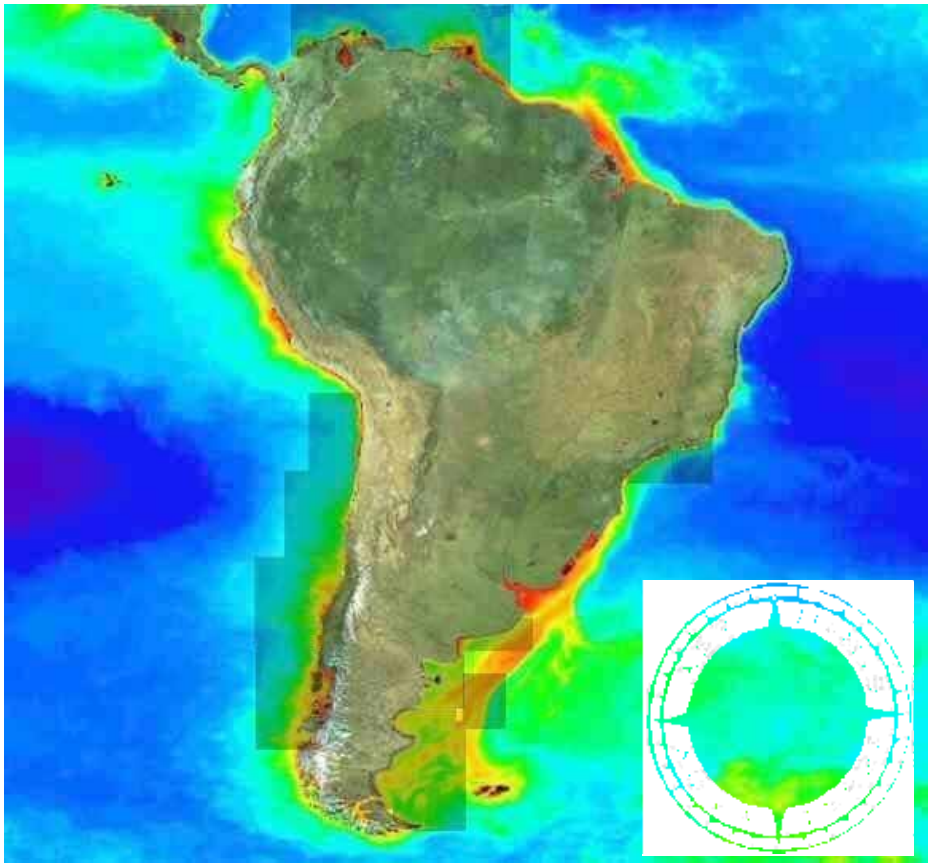
Continuous Plankton Recorder
75 year record!



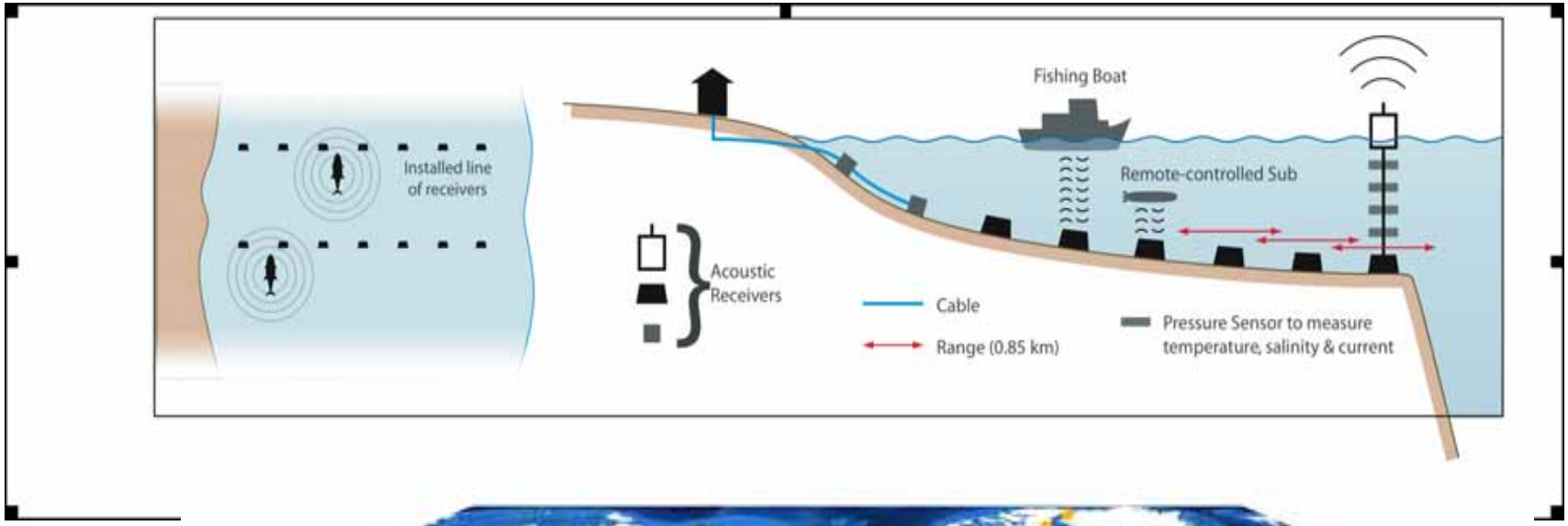
Ocean Color

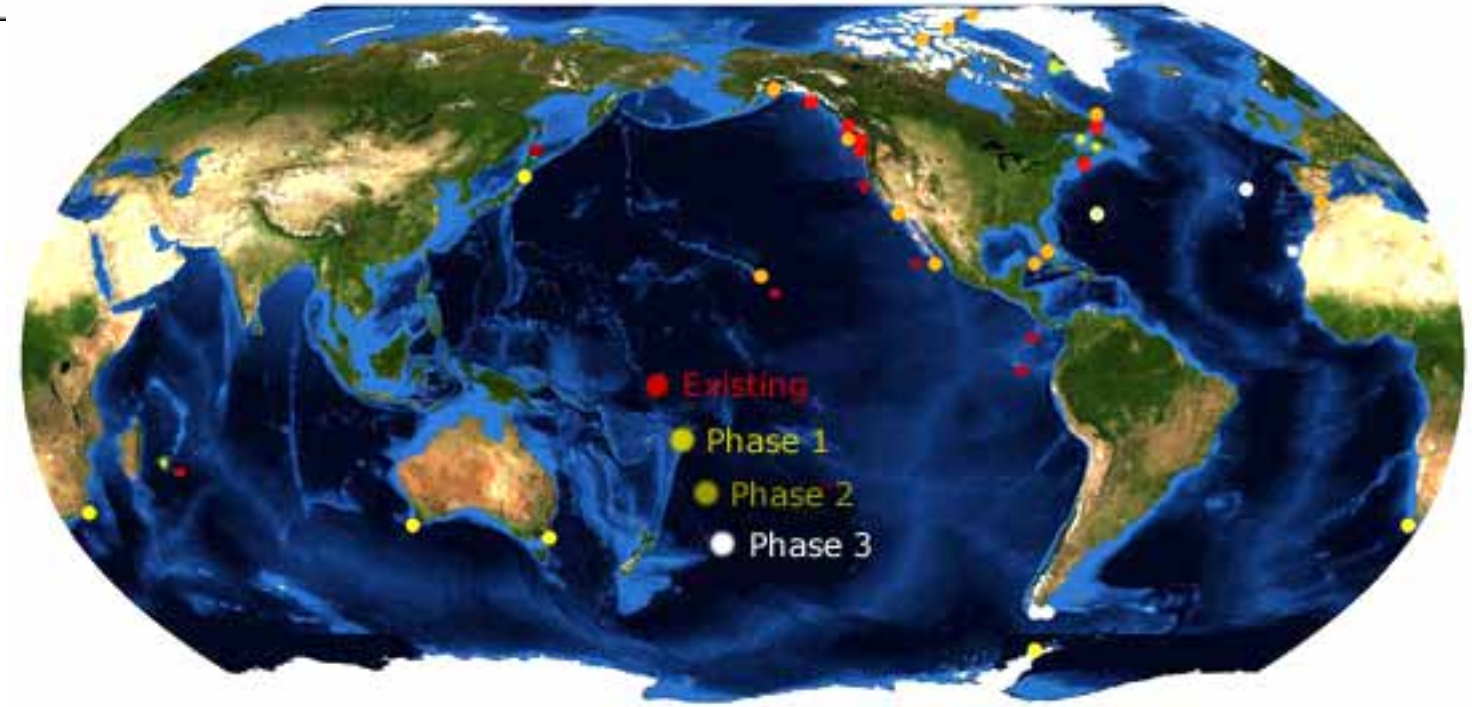
- IOCCG, CholorGIN, Antares, SAFARI…



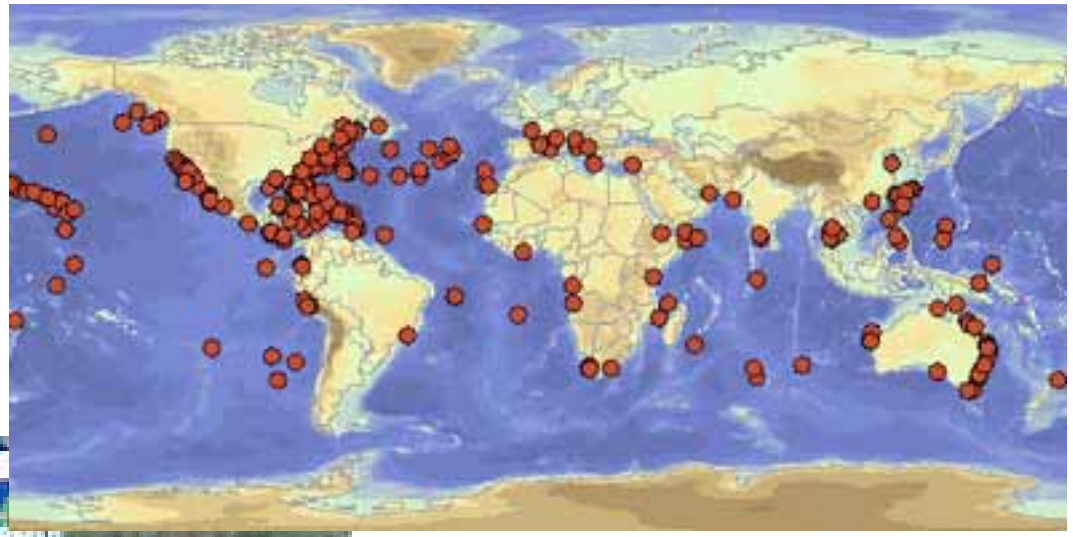


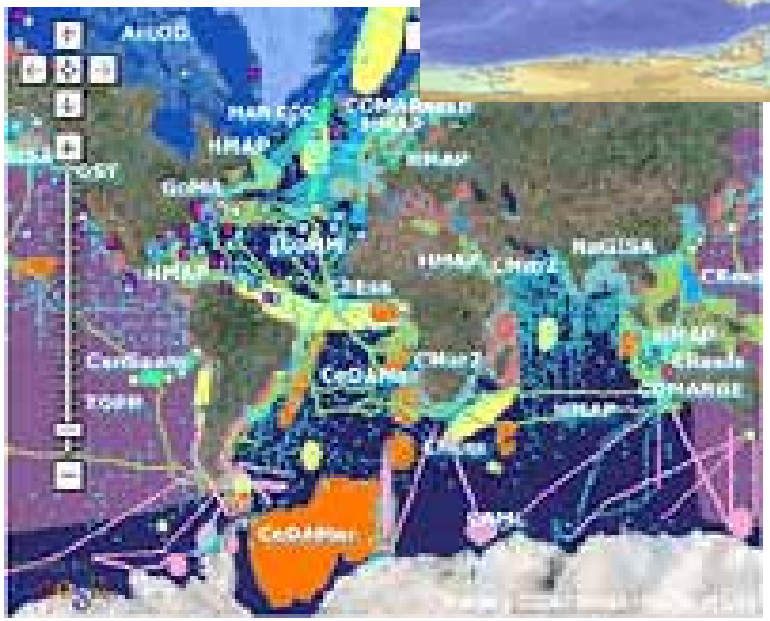
Ocean Tracking Network





CoML and OBIS





CoML project map

Observation and population data for all species of the tuna genus *Thunnus* mapped on a global scale. (Ocean Biogeographic Information System - OBIS)

IOC and UNEP Regional Seas

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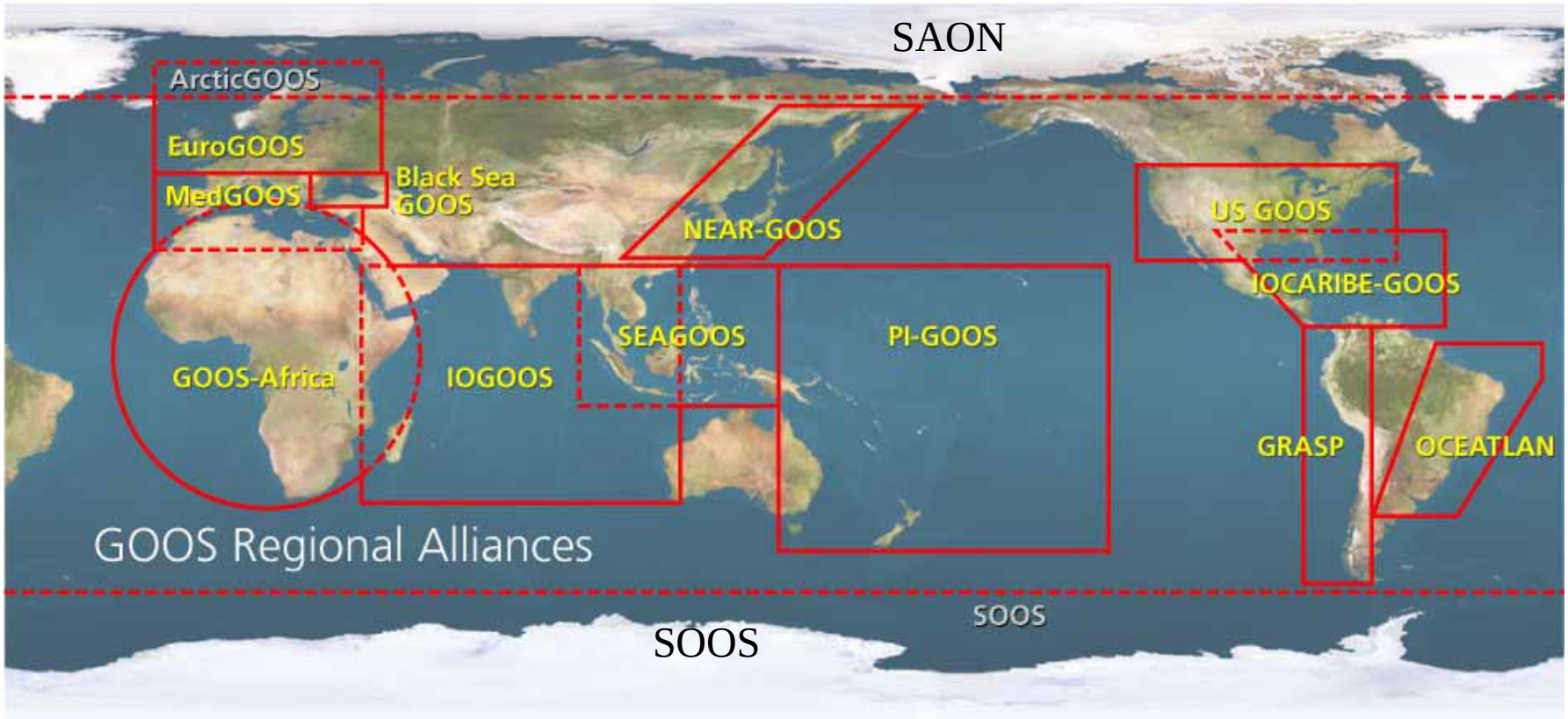
IOC Regional Subsidiary Bodies

Implementing Coastal and Regional GOOS



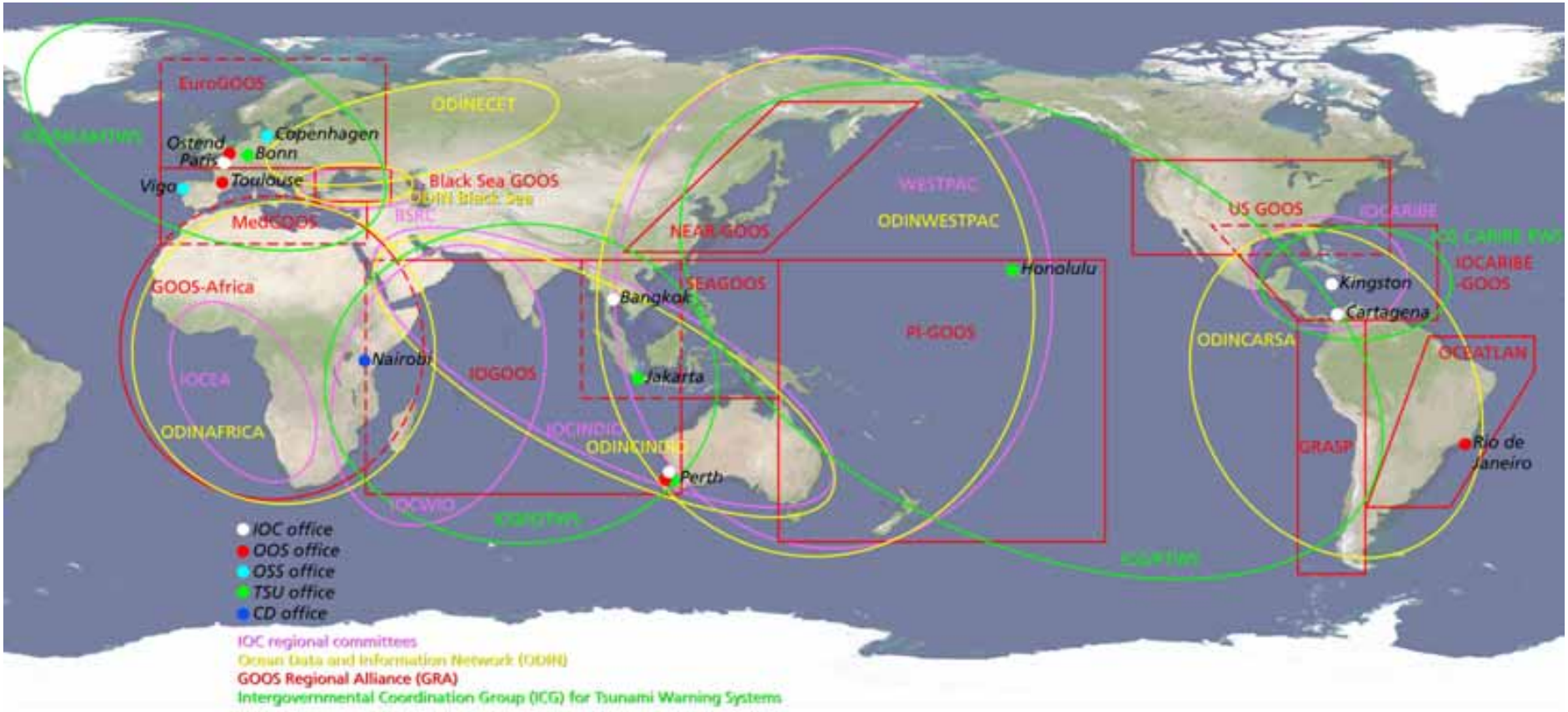
1st GOOS Regional Forum, Athens, Greece, 2002

2nd GRA Forum, Nadi, Fiji, 2004

3rd GRA Forum, Cape Town, S. Africa, 2006

4th GRA Forum, Guayaquil, Ecuador, 2008

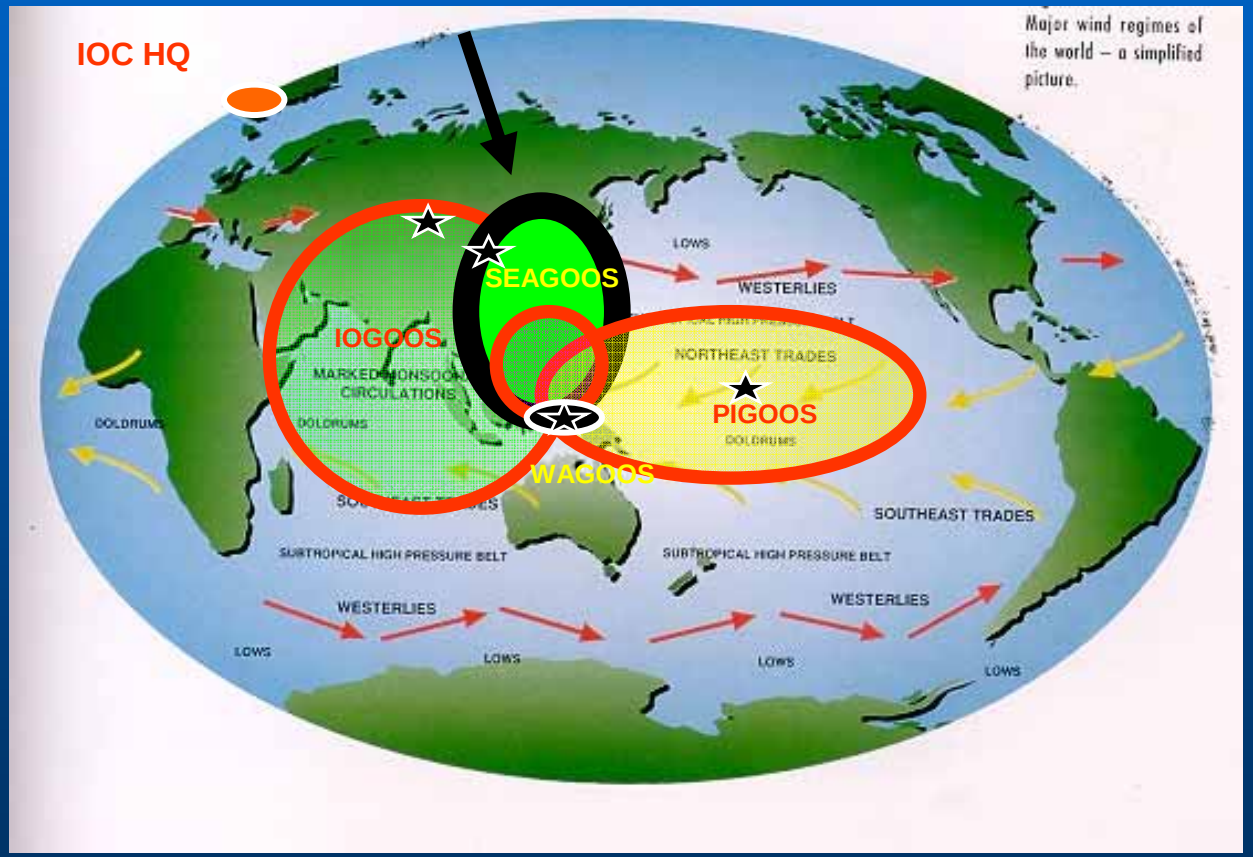
IOC Regional Programs and Offices



IOC 2008 Annual Report

SOUTH EAST ASIA GOOS

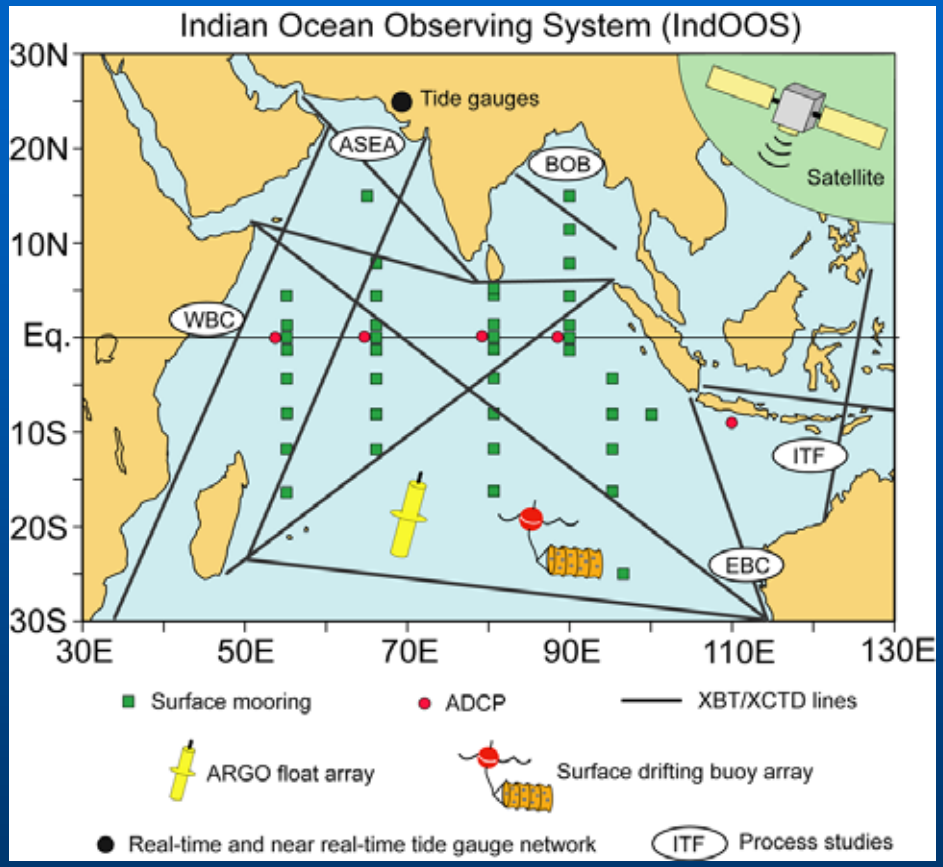
Chair: Dr Somkiat Khokiattowong, Thailand.
Secretariat: Phuket Marine Biological Centre,
Thailand Department of Marine and Coastal Resources.
Management: IOC/WESTPAC Secretariat, UNESCO Bangkok.



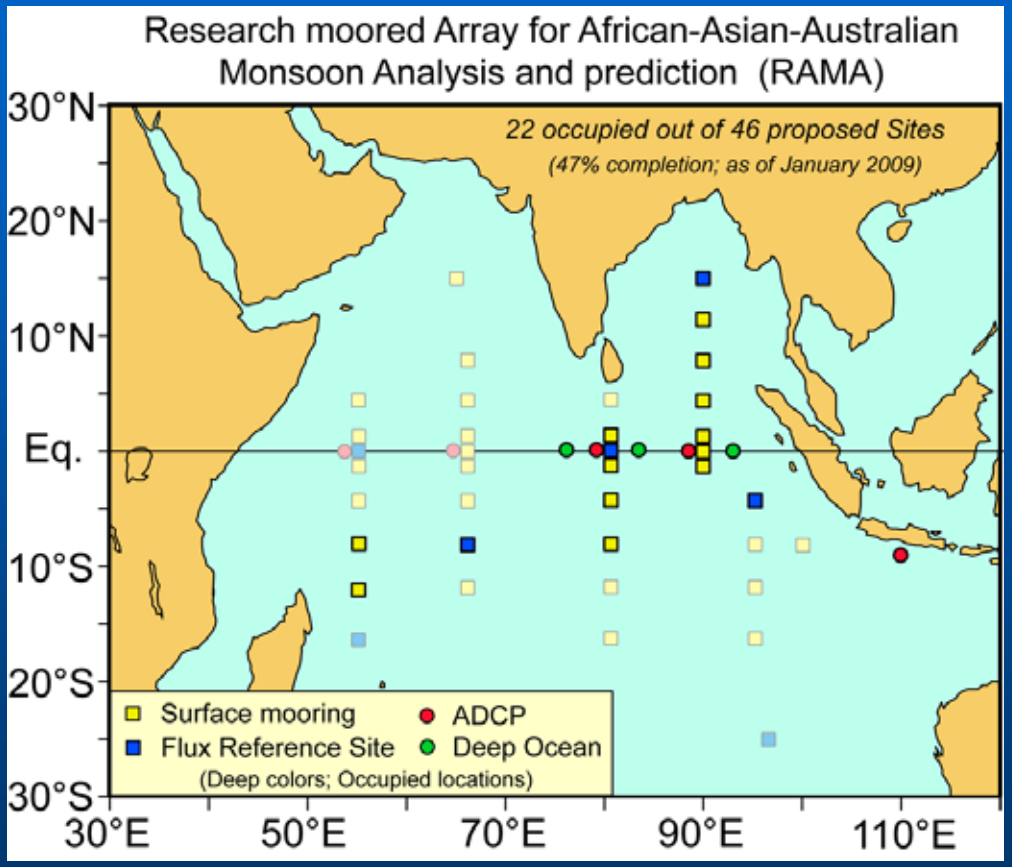
Members
UNESCO IOC Perth
IOC/WESTPAC
Australia
China
Philippines
Malaysia
Singapore
Thailand
Indonesia
Vietnam

A SEAGOOS Coordinating Committee is in formation

From the IOP ‘Implementation Plan’
…Indian Ocean Observing System (IndOOS)…



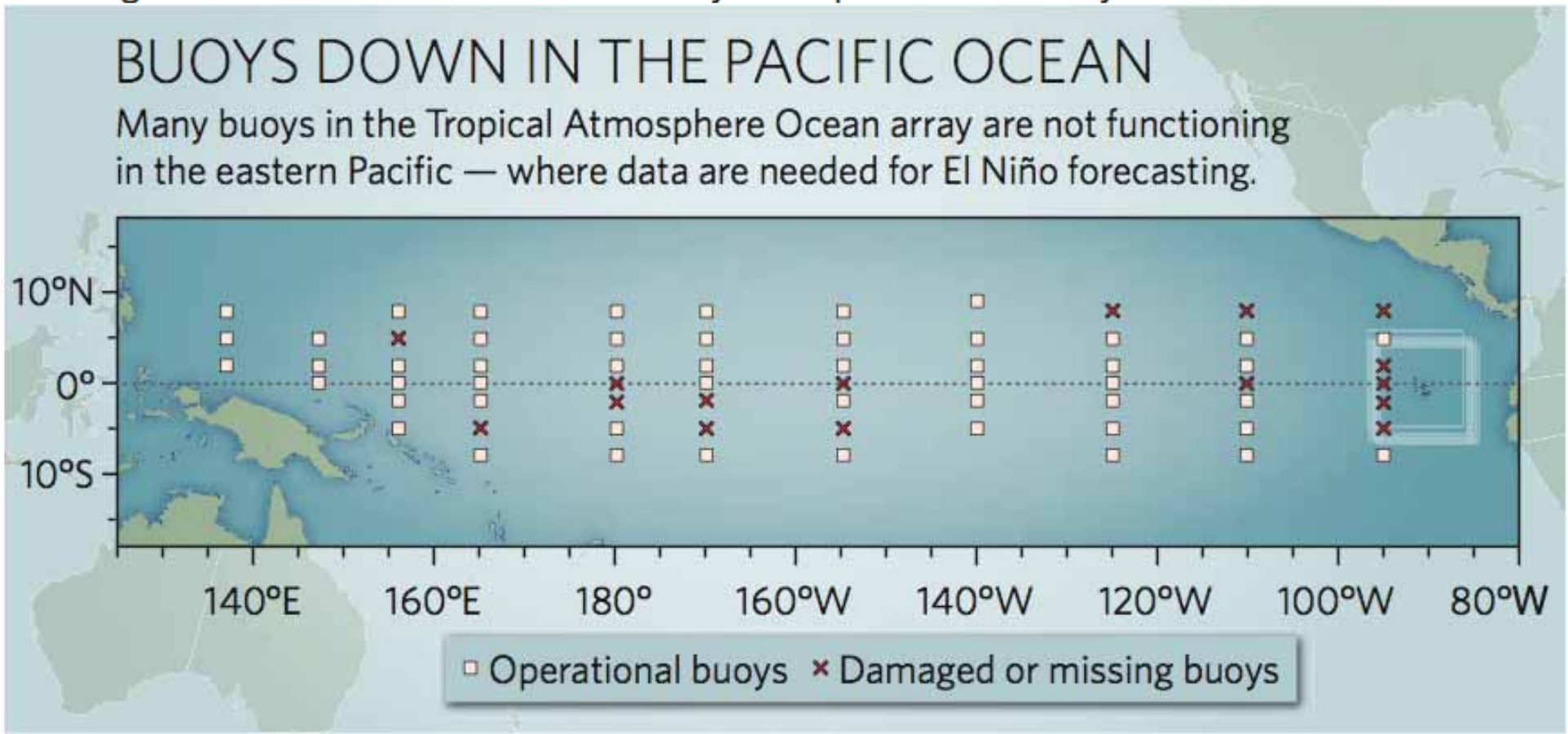
Present Status



47% complete (22 out of 46 Sites; 4 Flux Reference Sites)

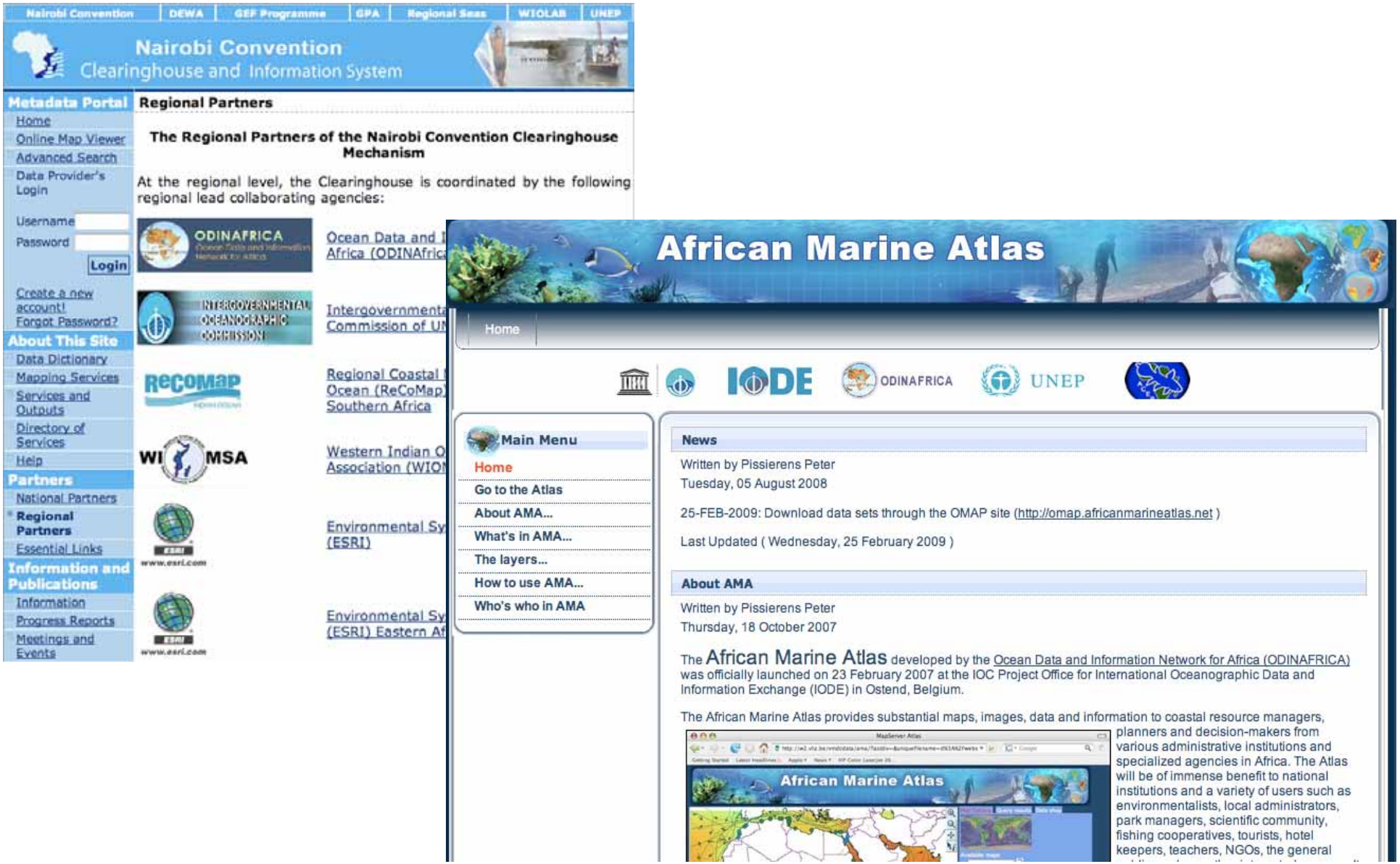
Buoy damage blurs El Niño forecasts

Missing data from the eastern Pacific Ocean may hinder predictions of this year's event.



Nature 461, 24, 2009 (24 September)

IOC – UNEP cooperation in Africa



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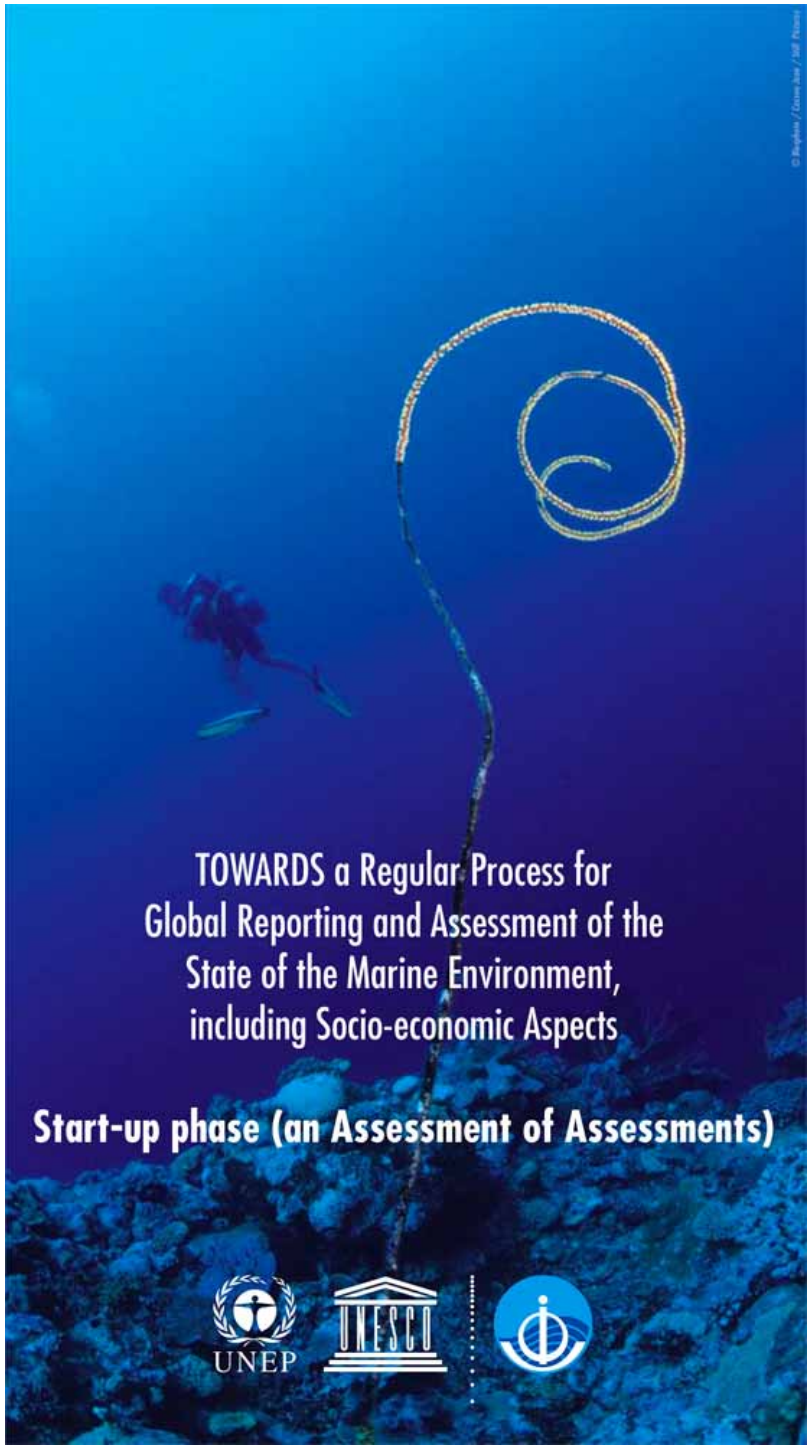


The Assessment of Assessments and Regular Process for Assessing the Marine Environment

UNEP

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

2002 - 2005

- 2002 World Summit on Sustainable Development sought "to establish by 2004 a regular process under the UN for global reporting and assessment of the state of the marine environment, including socio-economic aspects, building on existing regional assessments"

- 2002 Endorsed by UN General Assembly

- 2005 UN General Assembly launched preparatory phase towards the WSSD goal, adding "both current and foreseeable". Also decided organizational structure, finances and two years to implement

2006 - 2009

***Ad Hoc* Steering Group** to select experts, decide work program, guidance, mid-term review:
18 governments, 6 IGOs, 4 meetings

Group of Experts:
17 members, 5 formal and 2 informal meetings

Secretariat: IOC-UNESCO and UNEP.

Financing: voluntary contributions from states, existing resources in UNEP and IOC

Review of proposal by governments and experts

2009 Report

Summary for Decision-Makers

1 Introduction
2 Definitions and Analytical Framework
3 Review of existing assessments & findings
4 Assessment of Assessments: Best Practices
5 The Way Forward. Framework and Options for the Regular process

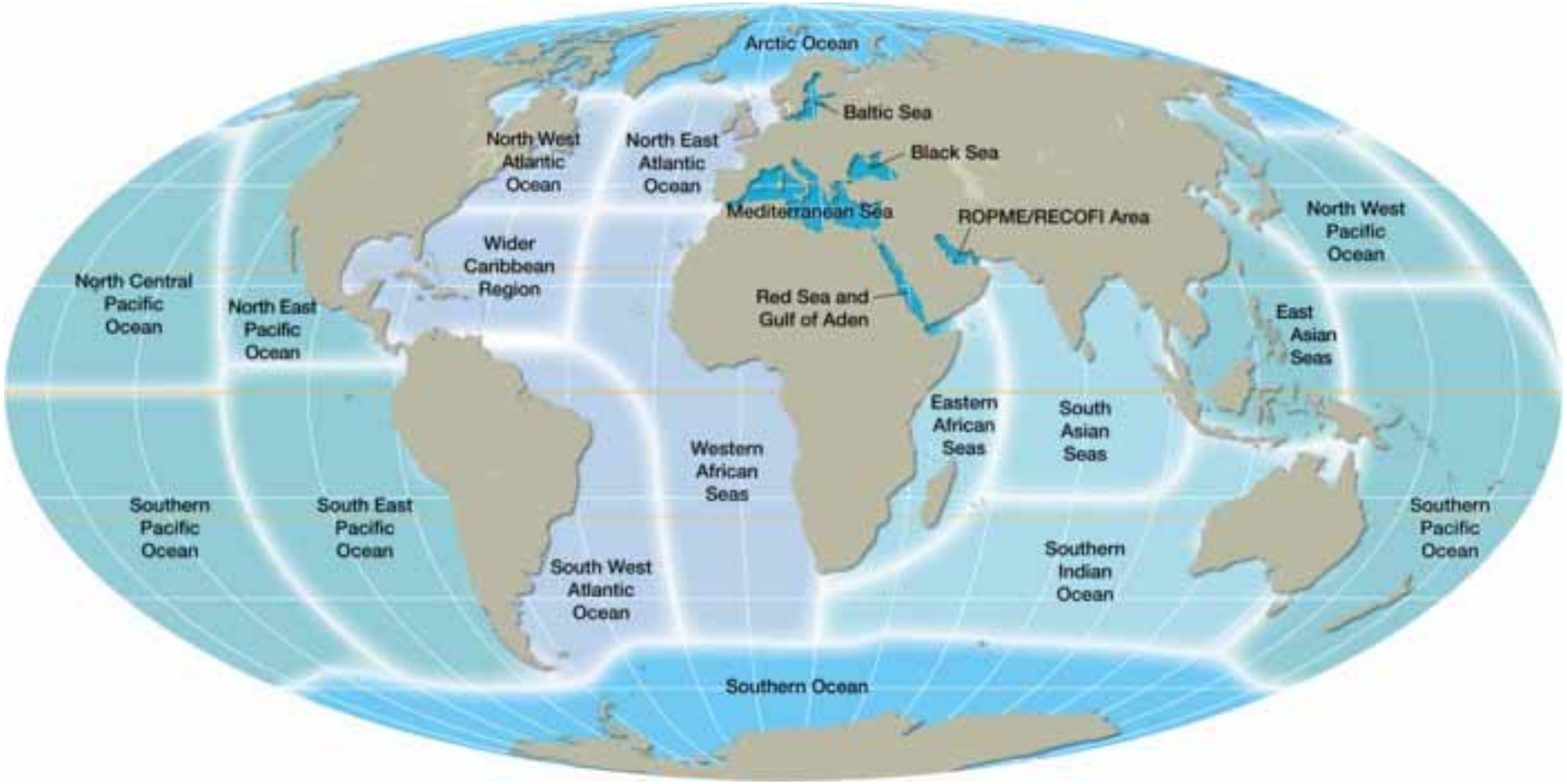
Diagnosis of existing assessments (Ch 3)

- Living marine resources and water quality are strongest
- Habitat: less developed, focused on some habitats only
- Protected species: limited outside developed world
- Social and economic conditions: poor and seldom integrated with environmental assessments
- Coverage beyond national zones particularly weak
- Integrated assessments are rare; reflect narrow mandates
- Use of reference points common for fisheries and water quality, lacking for other purposes
- Major data gaps exist globally: coverage limited, availability restricted, interoperability limited
- Often unclear links to decission-making bodies and one-off processes; policy options seldom analyzed
- Assessment processes seldom documented

Priority needs for improvements

- Greater attention to process design; clear linkage to policy-makers and documentation of processes
- Improve data access and interoperability
- Increase the consistency of indicators and use of reference points
- Develop integrated ecosystem assessments to inform on the state of systems, and including social and economic conditions
- Strengthen mandates of institutions to undertake fully integrated assessments
- Strengthen capacity for response assessments

Regions


Arctic Ocean
Baltic Sea
North West Atlantic Ocean
North East Atlantic Ocean
Black Sea
Mediterranean Sea
ROPME/RECOFI Area
North West Pacific Ocean
Wider Caribbean Region
North Central Pacific Ocean
North East Pacific Ocean
Red Sea and Gulf of Aden
East Asian Seas
Eastern African Seas
South Asian Seas
Western African Seas
Southern Pacific Ocean
South East Pacific Ocean
South West Atlantic Ocean
Southern Indian Ocean
Southern Pacific Ocean
Southern Ocean

A Regular Process should be (Ch 5)

Regular to:

- Up-date on changes
- Give timely responses
- Support learning and continuity

Global to:

- Strengthen international collaboration on shared problems and priorities
- Reflect linkages between regions
- Foster common approaches and methods
- Develop ocean governance both global and regional level

Deliverables from a Regular Process

- Show the importance of the seas
- Integration
- Improve assessment processes
- Promote international collaboration for capacity-building
- Focus global and regional initiatives to improve under-standing of marine environment and human impacts
- Provide marine knowledge for other processes such as IPCC, GEO and IPBES
- Provide useful info for decision-making
- Support better, integrated policy and management
- Build on existing processes, promote cooperation

Financing

- US$ 20 – 28 million for a five year cycle i.e. average between US$4-5.6m per year
- Additional costs for capacity building and participation in the UN forum, the MRB and Expert Panel

There are costs of inaction or delay

Proposal will streamline national and other efforts and make more out of existing money

Further process in UN

- Presentation and discussion of report in "The ad-hoc Working Group of the Whole" in New York 31Aug - 4 Sept
- Recommendations to the UN General Assembly were then adopted
- UNGA will pass a final resolution in December

Recommendations to UNGA (1)

- There is a need to conduct an integrated global assessment of the oceans, including socio-economic aspects,
- The main elements of the proposal from the Group of Experts was adopted with some amendments: Overall objective, Scope and Principles.
- Capacity-building and transfer of technology was strengthened as a part of the framework.
- A first cycle of the regular process shall be conducted between 2010 and 2015 and report to CSD

Recommendations to UNGA (2)

- States want to reconvene ad-hoc WG Sept 2010 to further consider details on:
  a) Key features, institutional arrangements and financing
  b) Objectives and scope of 1st cycle
- A new Group of Experts shall be established to develop preparatory products on common assessment questions, data and methods
- States shall give input on the fundamental building blocks autumn 2009, to be:
  a) reflected in report on oceans of UN General Secretary
  b) taken into account by the GoE
- No solution found for an effective secretariat to this work
- A voluntary trust fund to be established

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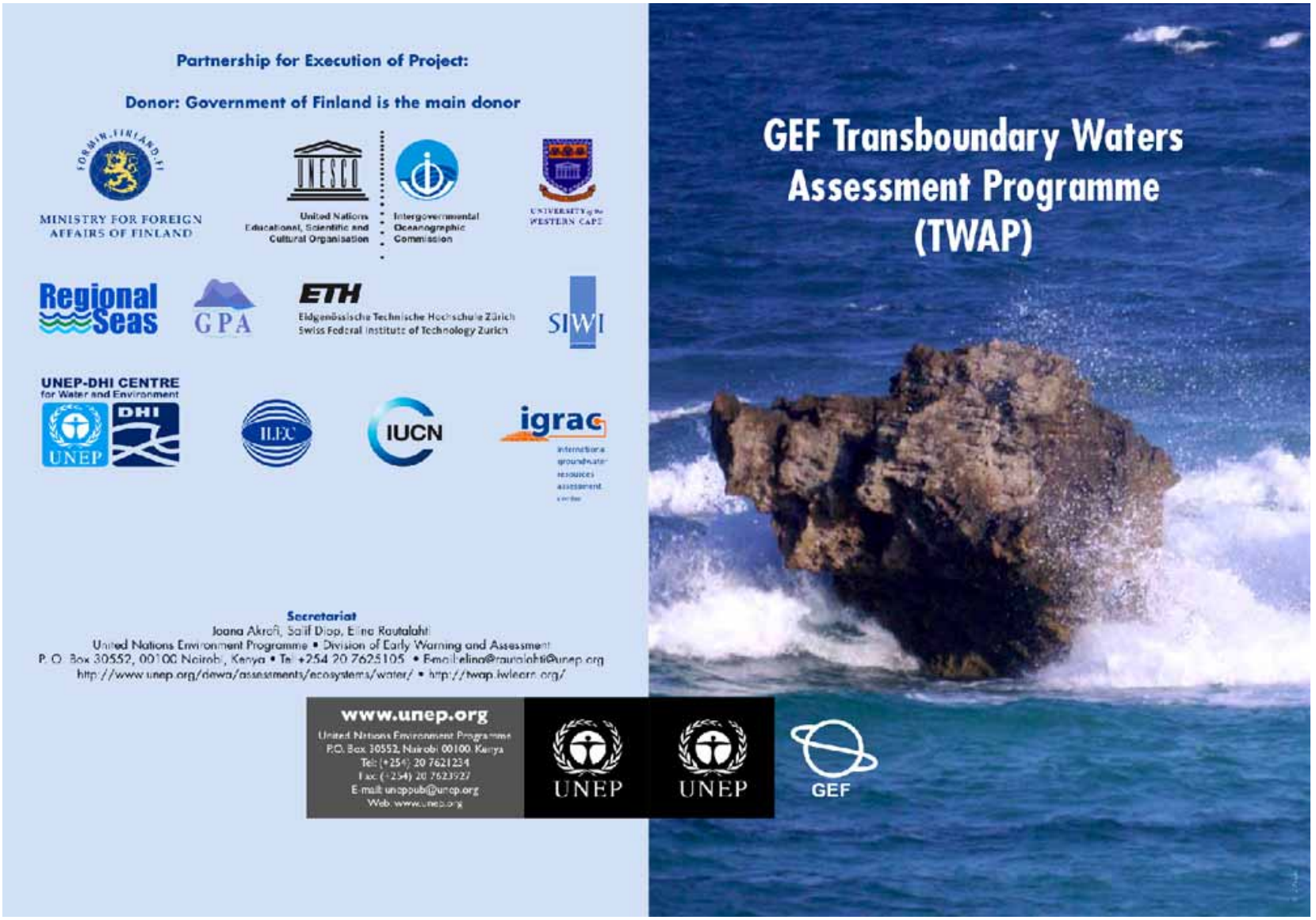
GEF TWAP


Partnership for Execution of Project:
Donor: Government of Finland is the main donor
MINISTRY FOR FOREIGN AFFAIRS OF FINLAND
United Nations Educational, Scientific and Cultural Organisation
Intergovernmental Oceanographic Commission
UNIVERSITY of the WESTERN CAPE
Regional Seas
GPA
ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich
SIWI
UNEP-DHI CENTRE for Water and Environment
UNEP
DHI
ILEC
IUCN
igrac
Secretariat
Joana Akrofi, Salif Diop, Eline Rautalahti
United Nations Environment Programme • Division of Early Warning and Assessment
P. O. Box 30552, 00100 Nairobi, Kenya • Tel: +254 20 7625105 • Email:eline@rautalahti@unep.org
http://www.unep.org/dewa/assessments/ecosystems/water/ • http://twap.iwlearn.org/
www.unep.org
United Nations Environment Programme
P.O. Box 30552, Nairobi 00100 Kenya
Tel: (+254) 20 7621234
Fax: (+254) 20 7623927
E-mail: unpppub@unep.org
Web: www.unep.org
UNEP
UNEP
GEF
GEF Transboundary Waters Assessment Programme (TWAP)

TWAP 2 Year Goals

- Inventory existing information
- Define assessment units and inter-linkages
- Define indicators
- Design coordination and information exchange mechanisms
- Design architecture: scale, core partners, links with other assessments, databases and GEF projects.
- Design management structure and execution arrangements
- Estimate costs and set target sources for co-financing

TWAP Phase 2

- Execution of the first ‘baseline’ assessment

- Arrangements for sustainable mechanisms for future periodic assessments, based on identified indicators.


GLOBAL OCEAN OBSERVING SYSTEM
www.ioc-goos.org