Integrated Marine Biogeochemistry and Ecosystem Research

VISION:

To provide a comprehensive understanding of, and accurate predictive capacity for, **ocean responses to accelerating global change** and the **consequent effects on the Earth System and human society**.

SCOR International Council for Science Scientific Committee on Oceanic Research

GLOBAL CHANGE IGBP International Geosphere-Biosphere Programme

www.imber.info

Presentation Outline

- Future Earth
- Integrated Marine Biogeochemistry and Ecosystem Research Project (IMBER)
- Surface Ocean-Lower Atmosphere Study (SOLAS)
- EURO-BASIN

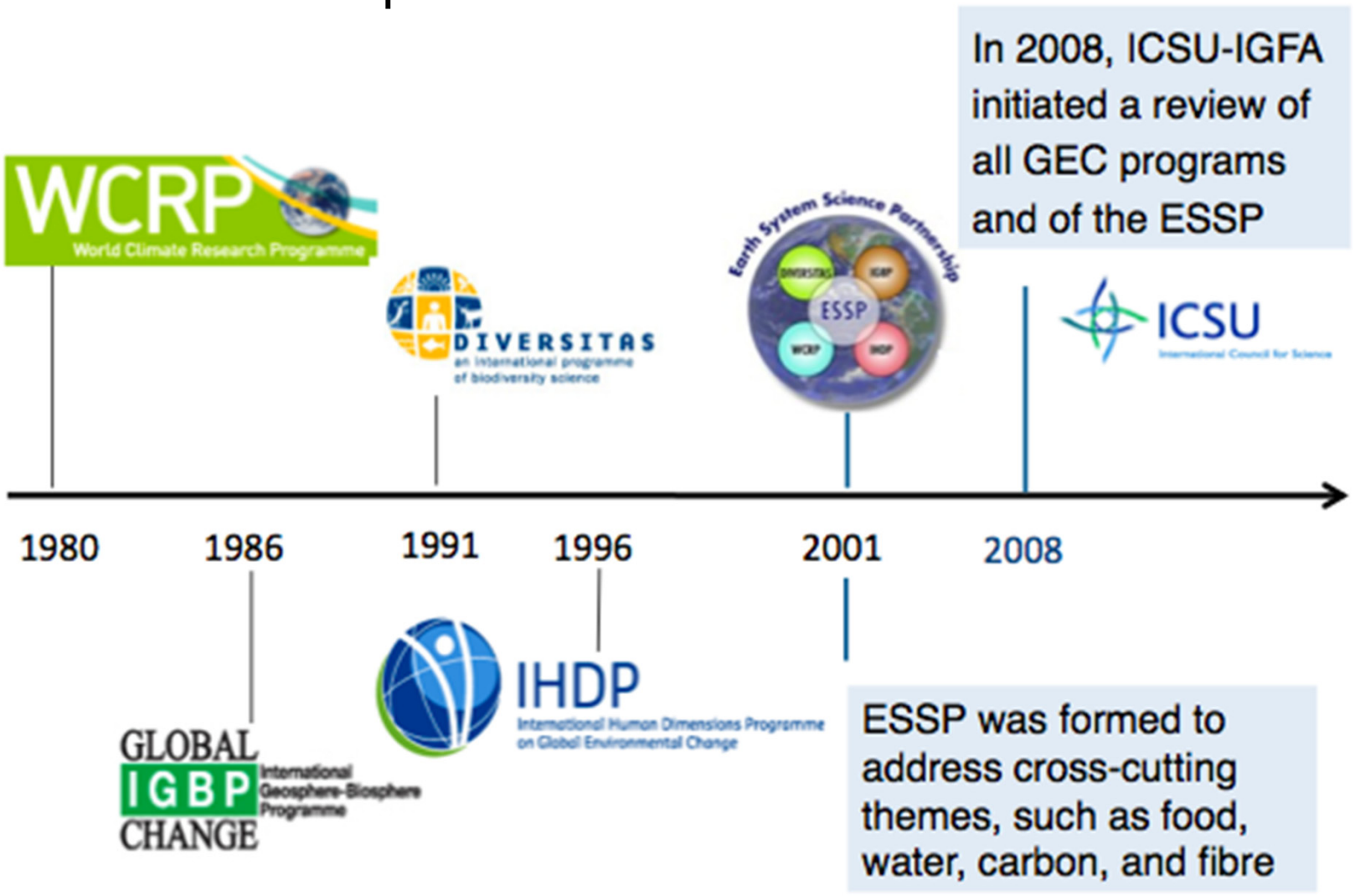
Structure of International Council for Science (ICSU)

- International Geosphere-Biosphere Programme (IGBP)
- International Human Dimensions Programme on Global Environmental Change (IHDP)
- DIVERSITAS – biodiversity
- World Climate Research Programme (WCRP)
- Earth System Science Partnership (ESSP)

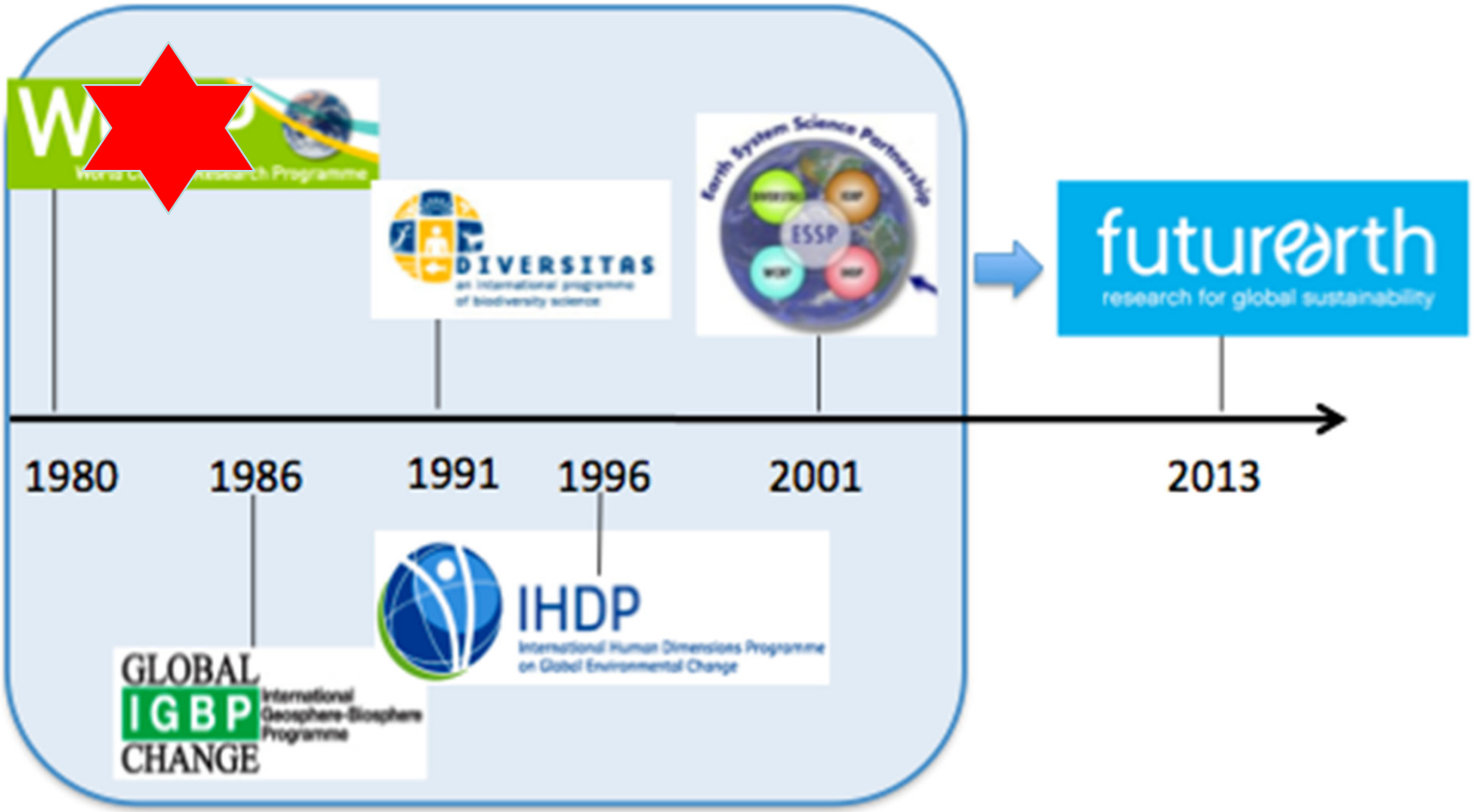
Situation in 2008

- IGBP and WCRP were successful
- DIVERSITAS was operating but not interacting strongly with other global environmental change (GEC) programs
- IHDP just developing international profile
- ESSP not functional as a partnership to address cross-cutting themes
- IGFA (International Group of Funding Agencies) unhappy about the many GEC programs and lack of greater vision
- GEC programs unhappy about chronic funding/underfunding problems

Historical Perspective



Future Earth is response



FutureEarth aims to combine two approaches

Policy / innovation-driven research

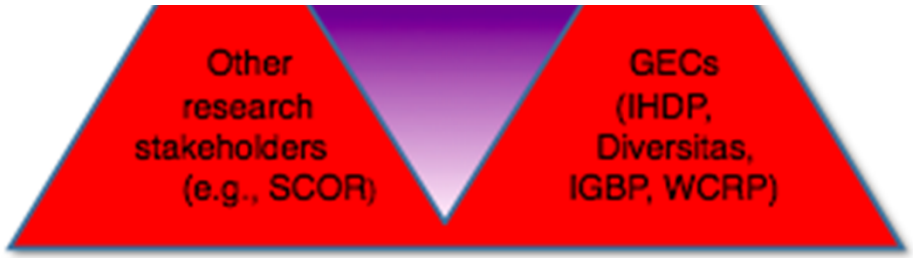
co-designed and co-produced projects
with formal & informal learning & education

Solutic
Integra
on r
Tra

Three Themes

Dynamic Planet
Global Development
Transformation towards Sustainability

Target knowledge
Process knowledge



Underpinning research, technology and other relevant evidence-based knowledge

Curiosity-driven research

Future Earth

- New 10-year international research initiative that will develop the knowledge for responding effectively to the risks and opportunities of global environmental change and for supporting transformation towards global **sustainability** in the coming decades
- Alliance of partners – International Council for Science (ICSU), Belmont Forum, International Social Science Council, UNEP
- Transition team established and interim director appointed
- In June Chair and scientific steering committee appointed
- Planning ongoing for secretariat and/or office nodes

Future Earth – Pros and Cons

- Renewed interest by funding agencies
- Combining efforts to address complex issues – focus on transdisciplinary research

- All core projects of IGBP, IHDP and DIVERSITAS invited to become part of Future Earth
- Ongoing discussions about how this will happen

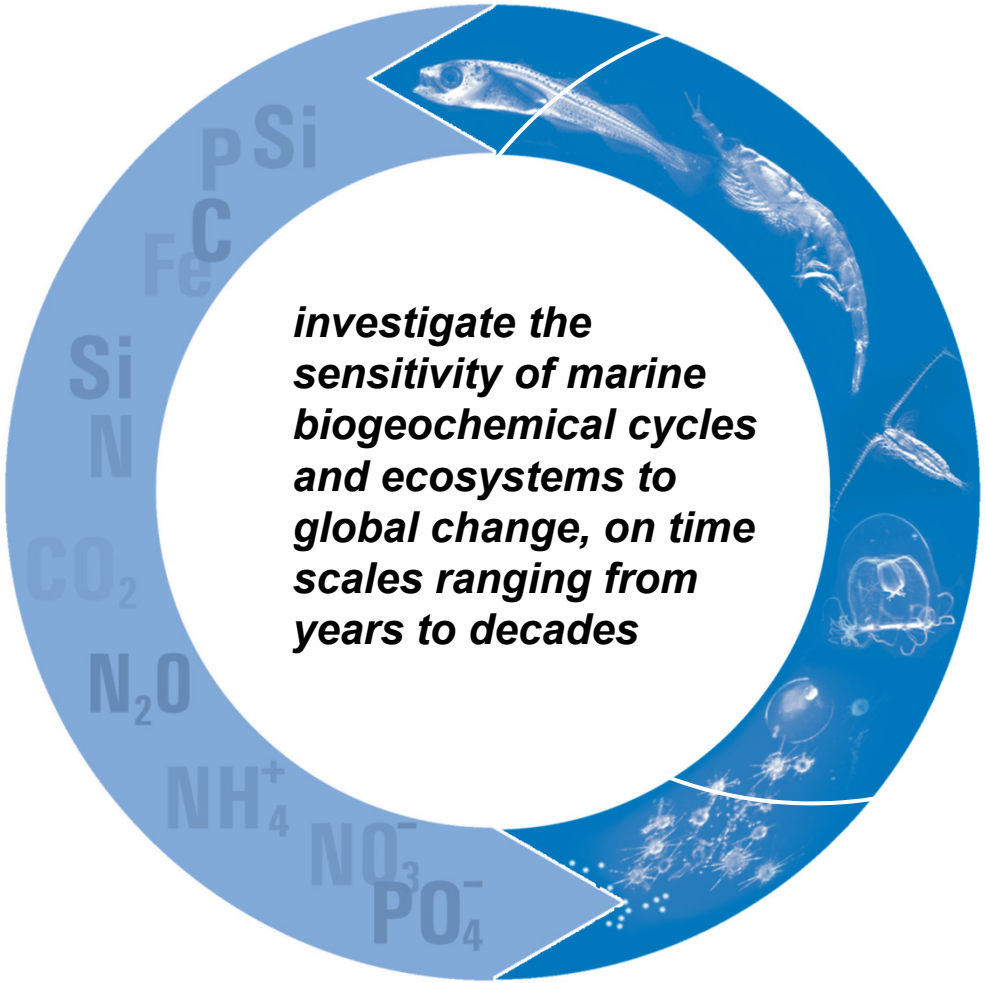
- Lack of focus and possible loss of support for basic science research
- Focus on policy-prescriptive research rather than policy-relevant research
- No obvious funding or governance structure

What about IGBP Core Projects?

- Eight core projects
- IMBER – co-sponsored by IGBP and SCOR
- SOLAS – co-sponsored by IGBP and SCOR

- LOICZ – Land Ocean Interactions in the Coastal Zone
- PAGES - Past Global Changes

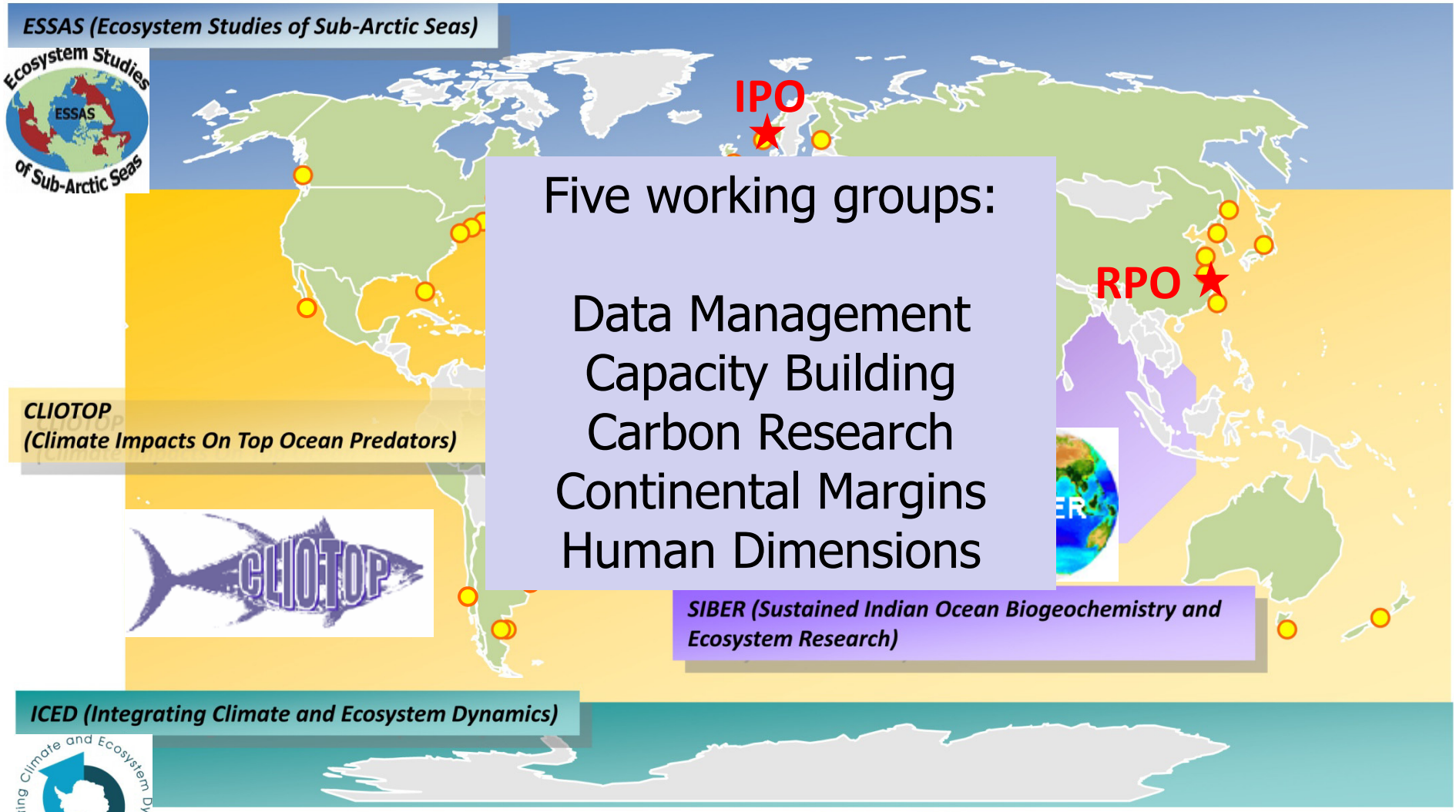
IMBER RESEARCH FOCUS



FOUR RESEARCH THEMES

- Interactions between biogeochemical cycles and marine food webs
- Sensitivity to global change
- Feedbacks to the Earth System
- Responses of society

IMBER Regional Programmes and International Network

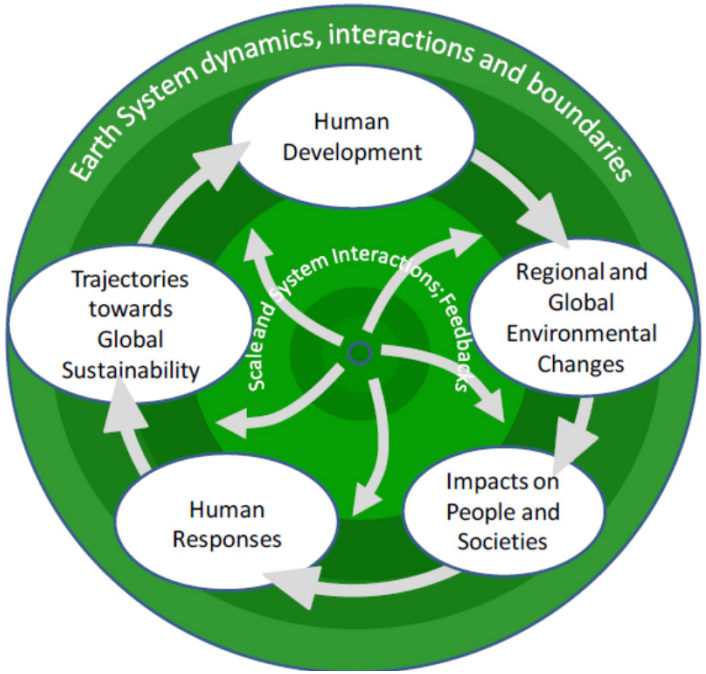


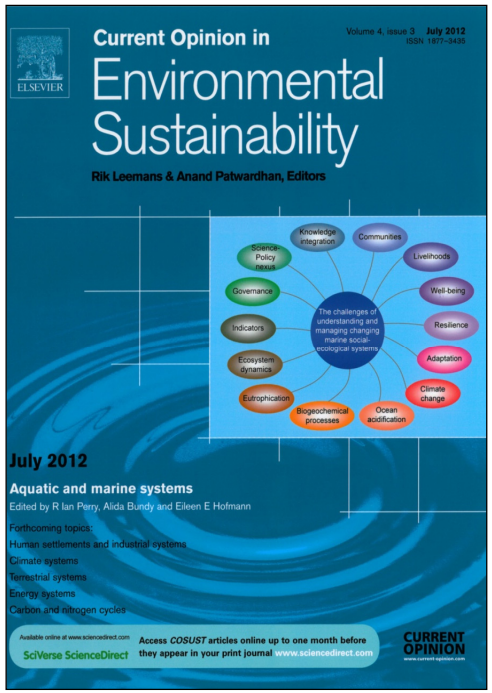
Human Dimensions Working Group

Co-Chairs: Alida Bundy and Moenieba Isaacs

ADApT conceptual framework, to help understand and forecast human-ocean-human interactions in global change, and help decision makers consider the suitable responses for marine adaptation to global change.

ADApT –
Assessment
of Responses based
on **Description**,
Appraisal and
Typology






Integrated Marine Biogeochemistry and Ecosystem Research
IMBER
Summer School
23-28 July 2012 in An
ClimE
A View Towards Integrated Eart
Human-nature Interactions in t
IMBER focuses on the interactions and linkages between biogeochemical cycles and food webs with a view towards improving predictive capability for marine ecosystems. It is now apparent that the human dimension is an important component of marine ecosystems. Inclusion of the human aspects into marine ecosystem research is only beginning and considerable development is still required to allow meaningful interfacing of food web, biogeochemical and socio-economic systems. The inclusion of human impacts in Earth System models will allow the development of more accurate scenarios under future climate change.
Participants
This is an interdisciplinary summer school. We welcome applications from both natural and social scientists working on topics related to oceans and climate change who are interested in the challenge of crossing the barriers between disciplines.
Programme
The programme will focus on the interface between marine ecosystem biogeochemistry, physical drivers, food webs and socio-economic systems; with lectures on modelling all of these system processes, as well as model coupling and Earth System models. To help understanding there will be daily "hands-on" sessions with example models that can be usefully explored in the time available.
Conveners
Jacopo Baggio (UEA, UK)
Laurent Bopp (LSCE, France)
Elizabeth Fulton (CSIRO, Australia)
Hezi Gildor (The Hebrew University, Israel)
Eileen Hofmann (Old Dominion University, USA)
Markus Jochum (NCAR, USA)
Raghu Murtugudde (University of Maryland, USA)
Baris Salihoglu (Middle East Technical University, Turkey)
Michael St John (DTU, Denmark)
Rashid Sumaila (University of British Columbia, Canada)
Ingrid Van Putten (CSIRO, Australia)
Apply before 1st M
www.imber.info
Registration fees
Students €250, others €350
Free registration for EURO-BASIN early career scientists
Limited funding is available
PICES
IMBER IMBIZO III
The future of marine biogeochemistry, ecosystems and societies
28-31 Jan 2013 Goa, India
Workshops
Biogeochemistry-ecosystem-interactions on changing continental margins
Human impacts & the biological carbon pump
Global change & human-ocean interactions
Conveners : Alida Bundy, Julie Hall, Eileen Hofmann, KK Liu, Lisa Maddison, Wajih Naqvi, Helmuth Thomas, Liana Talaue-McManus
Contact: imbizo@univ-brest.fr Web site: http://www.imber.info/imbizo3.html
SCOR
Scientific images by Glynn Gorick - glynn@gorick.co.uk / Background illustration & graphic design by Sebastien Herve - contact@sebastien-herve.com
IMBER Open Science Conference
FUTURE OCEANS
23-27 June 2014
Bergen, Norway
Research for marine sustainability: multiple stressors, drivers, challenges and solutions
www.imber.info

Prepare to go Forward into Future Earth

- Developing projects with focus on human-natural science interface
- Developing collaborations with CLIVAR – climate relevant
- Actively developing/training a community of researchers that works at the interface of human and natural systems

IMBER and Future Earth

- IMBER has two co-sponsors
- Continue as a program with SCOR as a sponsor
- Ongoing for 10 years – science plan published in 2005 and updated in 2010

- Appropriate to consider new ideas and directions for IMBER

- IMBER started transition to research at interface of human and natural systems
- In a good position to take the lead for marine-based effort under Future Earth and move in new directions

IMBER Open Science Conference

FUTURE OCEANS

www.imber.info

23-27 June 2014

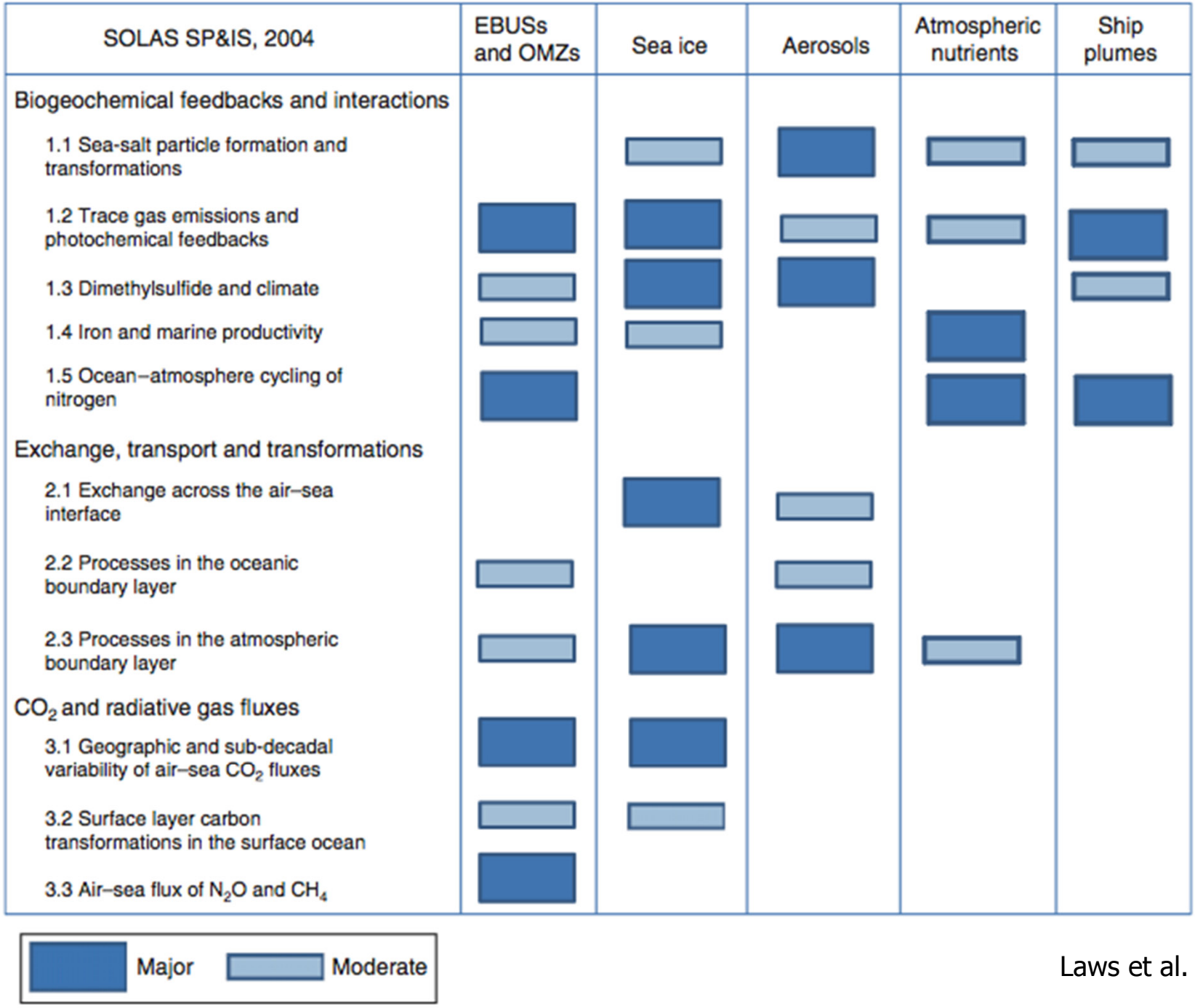
Bergen, Norway

Research for marine sustainability: multiple stressors, drivers, challenges and solutions

- Open Science Conference is intended to synthesize and integrate IMBER science to provide a basis for transition to the **Future Earth**
- Maintain and develop strong links to SCOR and other partners (e.g., SOLAS, LOICZ, GEOTRACES, CLIVAR, PICES, ICES)
- Design research that addresses human-natural science issues and provides guidance for decision makers, managers and communities

SOLAS

- An international research initiative aiming to understand the key biogeochemical-physical interactions and feedbacks between the ocean and atmosphere
- Achievement of this goal is important to understand and quantify the role that ocean-atmosphere interactions play in the regulation of climate and global change.



Laws et al. 2012

EURO-BASIN

BASIN SCALE ANALYSIS, SYNTHESIS AND INTEGRATION

- Focus on climate and human forcing, ecosystem impact and consequences for living resources management in the North Atlantic
- Understand and predict the population structure and dynamics of key plankton and fish species of the North Atlantic and shelf seas, and assess the impacts of climate variability on North Atlantic marine ecosystems and their goods and services
- Multi-nation effort – two cruises – Deep Convection (2012) and Trans-Atlantic cruise (2013)
- Extensive modeling program
- Basis for future studies of the North Atlantic

Future

- Changes are underway
- Potential for new research directions and programs
- Provide ideas and inputs
- Encourage participation in IMBER Open Science Conference in June 2014