



Integrated Marine Biogeochemistry and  
Ecosystem Research

**Julie Hall**

**Chair**

**IMBER Scientific Steering Committee**

International Council for Science

Scientific Committee on Oceanic Research

GLOBAL  
I G B P  
CHANGE

# **Interactions with PICES**

## **Joint Session this conference**

Interactions between biogeochemical cycles and marine food webs in the North Pacific

## **FUTURE**

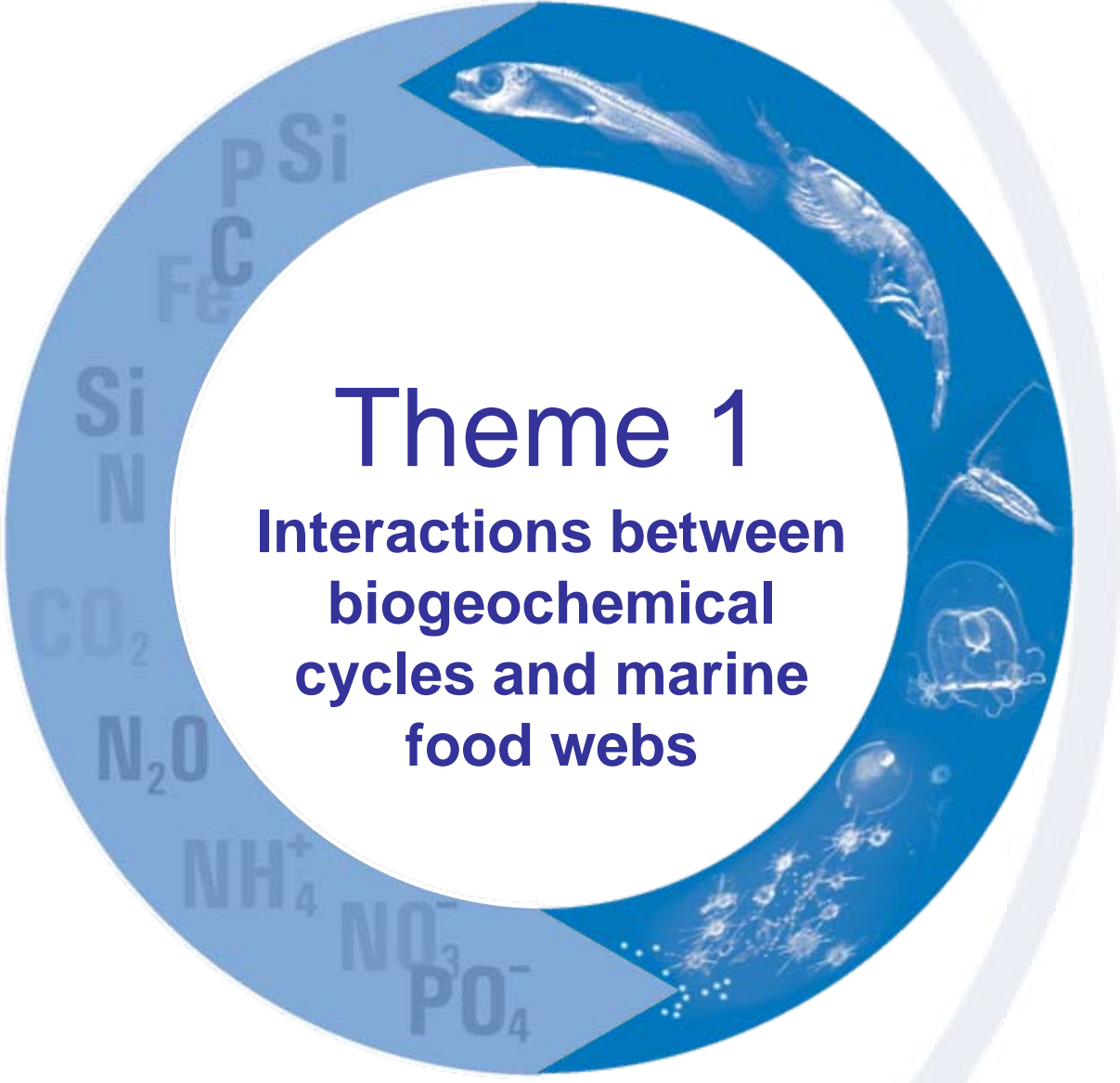
Current draft links closely with some Themes and Issues identified in IMBER Science Plan



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## Goal

***to investigate the sensitivity of marine biogeochemical cycles and ecosystems to global change, on time scales ranging from years to decades.***



**Theme 1**  
**Interactions between  
biogeochemical  
cycles and marine  
food webs**

# Theme 1. Interactions between biogeochemical cycles and marine food webs.

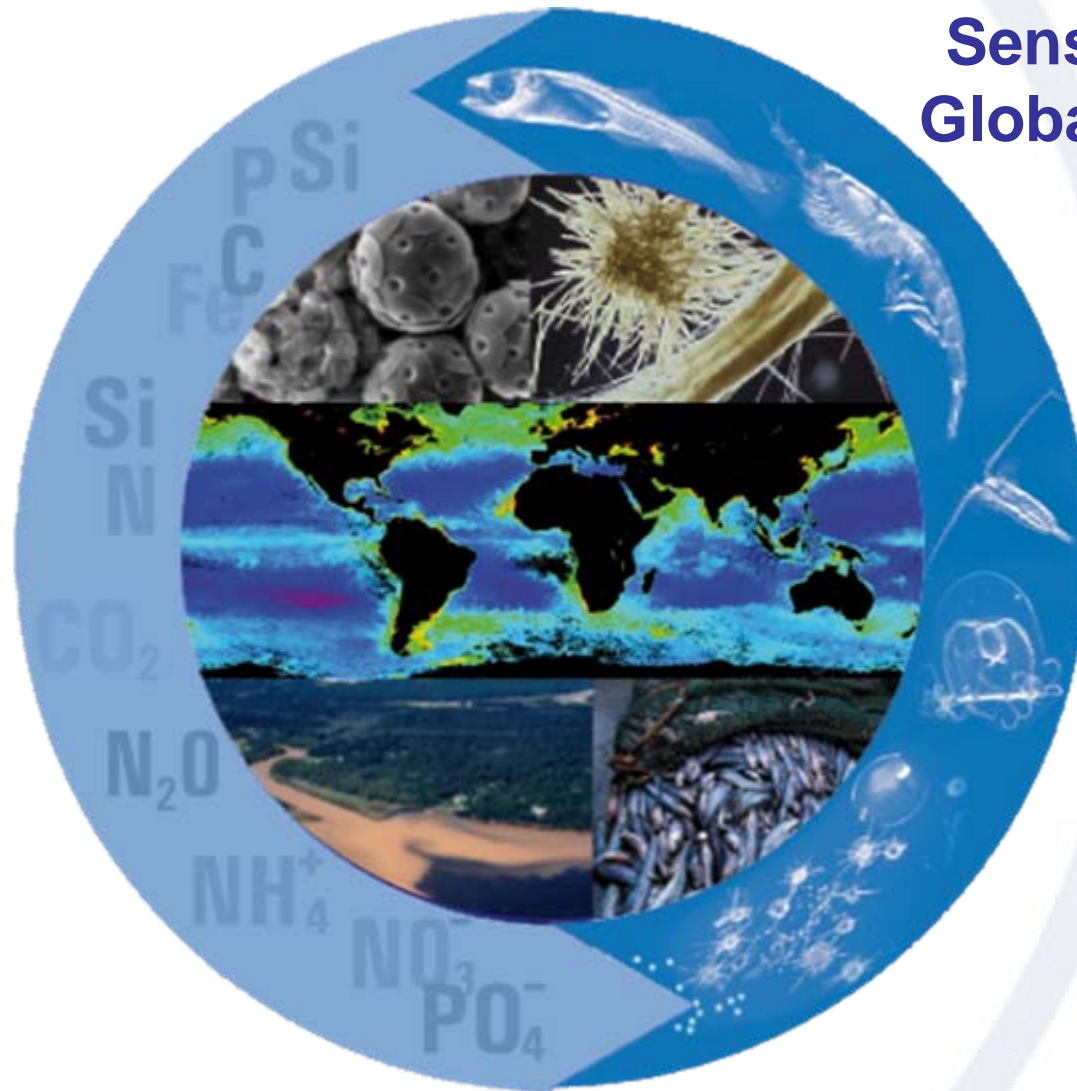
**What are the key marine biogeochemical cycles, ecosystem processes, and their interactions, that will be impacted by global Change?**

## **Issues:**

1. Transformation of organic matter in marine food webs
2. Transfers of matter across ocean interfaces
3. End-to-end food webs and material flows (IMBER/GLOBEC)

# Theme 2

## Sensitivity to Global Change



# Theme 2. Sensitivity to Global Change

**What are the responses of key marine biogeochemical cycles, ecosystems and their interactions to global change?**

## **Issues:**

1. Impacts of climate-induced changes through physical forcing and variability
2. Effects of increasing anthropogenic CO<sub>2</sub> and changing pH on marine biogeochemical cycles, ecosystems and their interactions (IMBER/SOLAS: Joint Implementation plan)

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# Theme 2. Sensitivity to Global Change

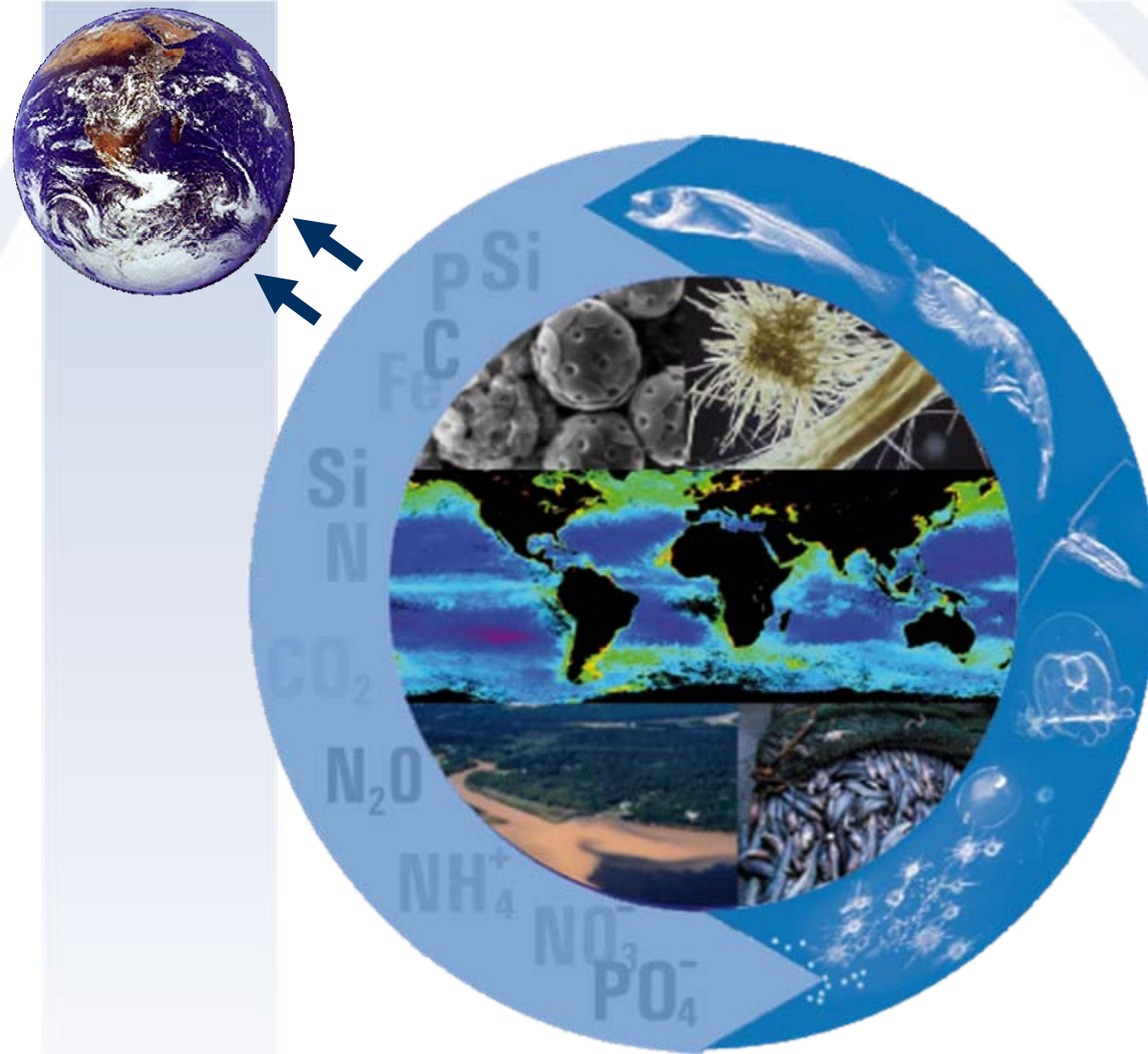
## ...Issues:

3. Effects of changing supplies of macro- and micronutrients
4. Impacts of harvesting of marine resources on end-to-end food webs and biogeochemical cycles (IMBER/GLOBEC)



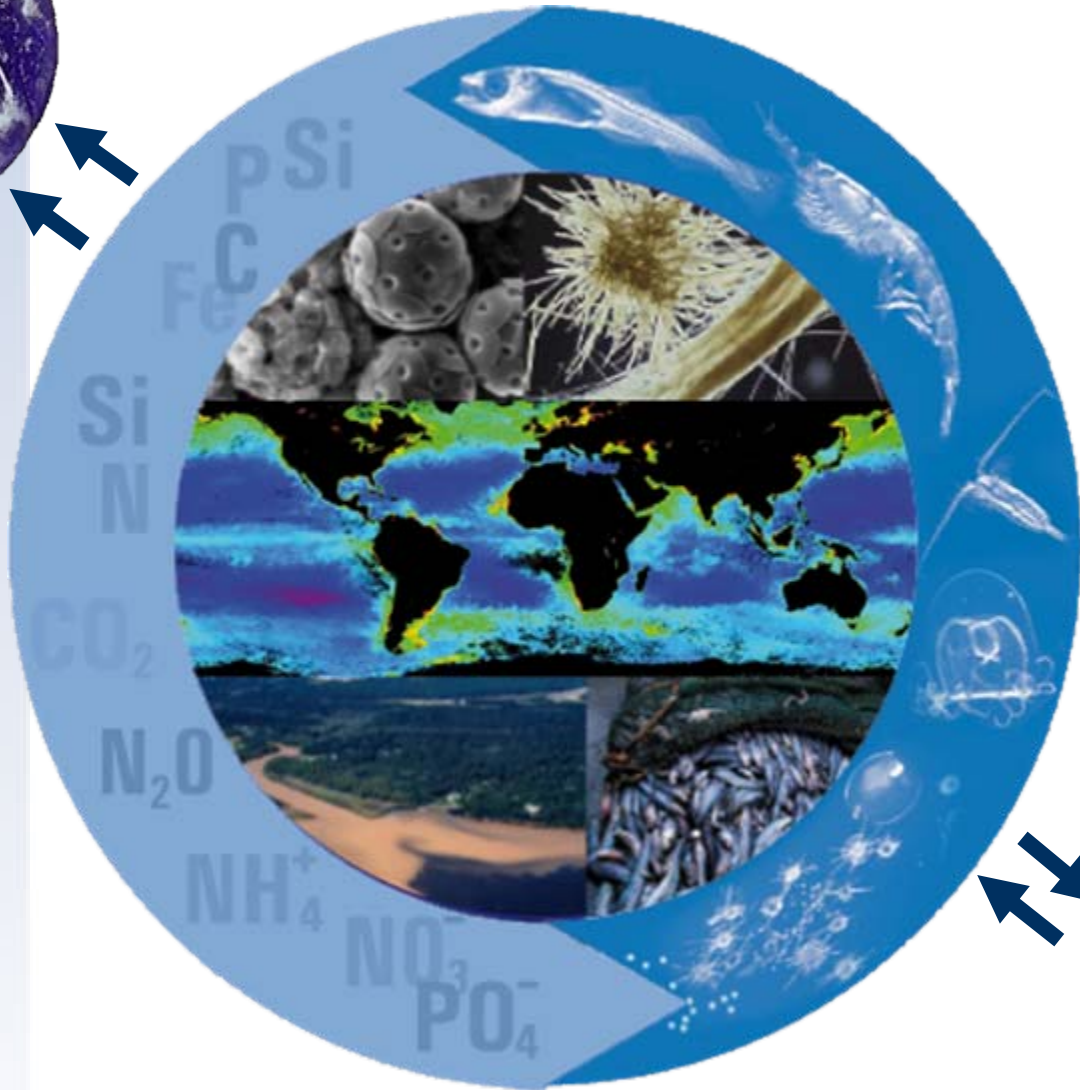
# Theme 3

## Feedbacks to the Earth System



# Theme 4

## Responses of society



# IMBER National Activities

**China** 5 year funding IMBER/GLOBEC programme.

**India** Impact of anthropogenic perturbations on oceanographic and atmospheric processes in and around India in context of global change; SIBER workshop in October

**Japan** IMBER-JAPAN established under the Science Council of Japan (2004-), chaired by H. Saito. North West Pacific cruise has been funded for Summer 2008.

**New Zealand** Two funded research cruises in permanently oligotrophic regions to north west of New Zealand focused on N cycling in this region

**Chile** Currently funded COPAS programme is a contribution to IMBER

**France** Currently funded for three years CYBER programme "CYcles Biogéochimiques, Ecosystèmes et Ressources". (2006-2009)

**Netherlands** Programme under development with joint IMBER /SOLAS cruise planned

**Germany** Planning for new programme in 2007

**Spain** Developing a co-sponsored proposal with The Netherlands for a "Deep-water Oceanography" project. Holding a Spanish IMBER symposium in March 2007.

**UK** Plans for IMBER contribution in new funding round 2007

**USA** A new "Ocean Carbon Biogeochemistry" group has been formed in 2006

# Contributing and endorsed projects

## Contributing Projects

- **EUR-OCEANS** *European Network of Excellence for Ocean Ecosystems Analysis*, 60 research institutions and universities from 25 countries (2005-2008)
- **CARBOOCEAN** *Integrated Project Carboocean – Evaluation of the sources and sinks of marine carbon*, 47 international groups(2005-2010)

## Endorsed projects

- **BIOSOPE** *Biogeochemistry and Optics South Pacific Experiment* (part of PROOF, 2002-2005)
- *National* **CHINESE IMBER/GLOBEC** (5 years, 2006-2010)
- *The marine carbon cycle from North to South of the* **Galathea route** August 2006-April 2007
- **ECOMADR** *Integration Analysis of North Adriatic Marine Ecosystem* January 2006 - September 2007

# IMBER regional activities

**ICED** *Integrated Analyses of Circumpolar Climate Interactions and Ecosystem Dynamics in the Southern Ocean.*

**BOUM** *Biogeochemistry from oligotrophic to the ultra oligotrophic Mediterranean Sea (partially funded)*

**SIBER** *Sustained Indian Ocean Biogeochemical and Ecological Research*

**OECOS** *Ecosystem Comparison in the Oceanic subarctic Pacific (some funding)*

**PRIMO** *Formation and dynamics of the Oxygen Minimum Zone in the Peru-Chile Current System (not funded yet)*

# **Interactions between IMBER and PICES in the future**

IMBER would like to develop a strong relationship with PICES through FUTURE

We would like to see PICES play a key role in the Implementation of IMBER in the North Pacific



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# Integrated Marine Biogeochemistry and Ecosystem Research



## Science Plan and Implementation Strategy

# IMBER Science Plan and Implementation Strategy, 2005



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