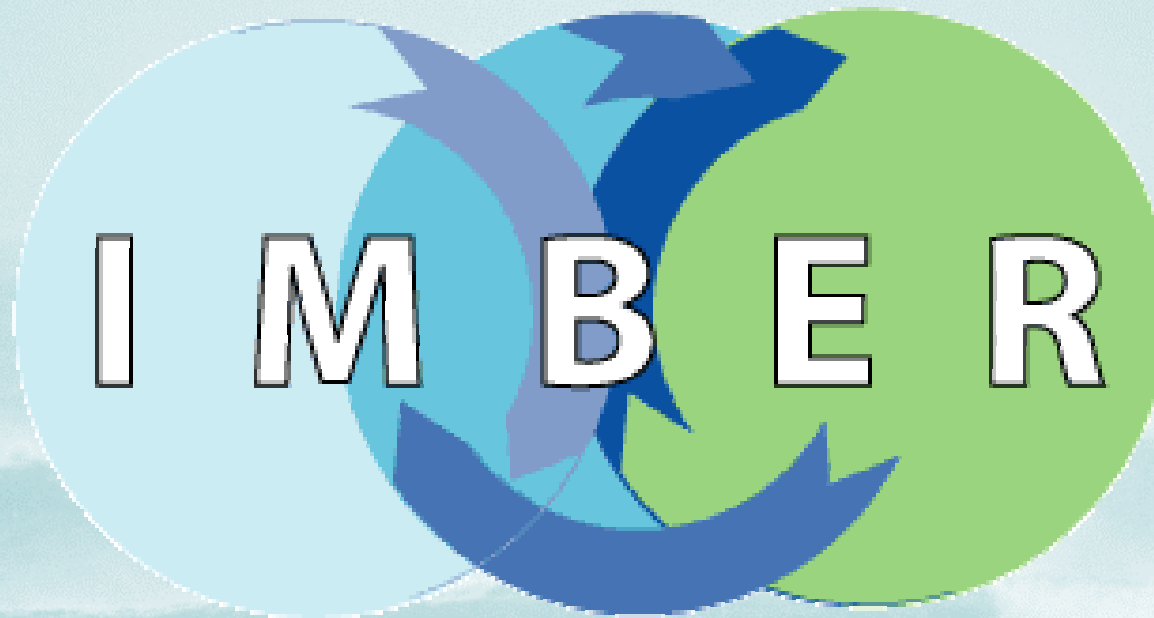


IMBER: Integrated Marine Biogeochemistry and Ecosystem Research



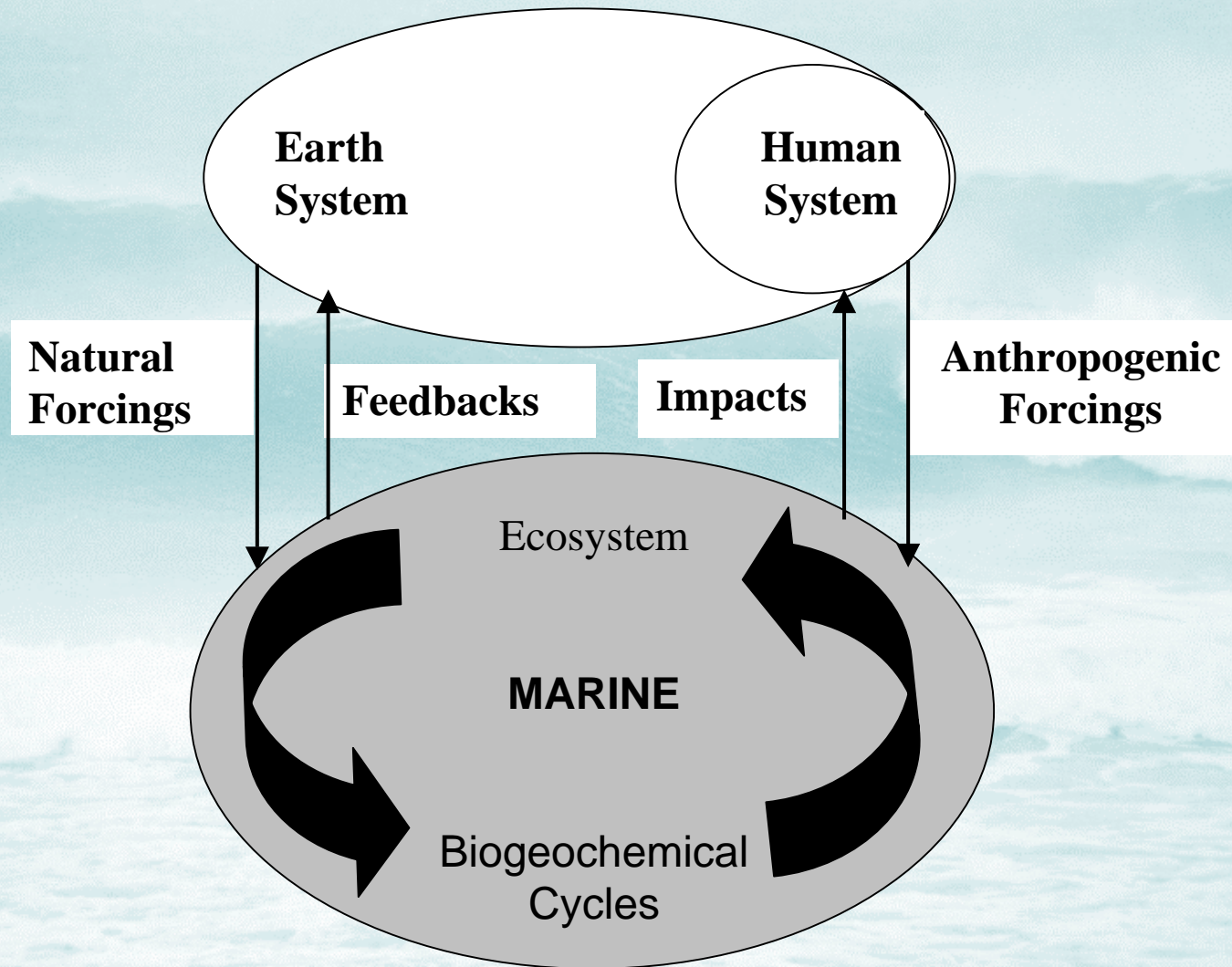


Integrated Marine Biogeochemistry and
Ecosystem Research

VISION

“To develop an understanding of how interactions between biogeochemical cycles and ecosystems respond to and force global change”

Essential features of the IMBER project



IMBER Themes

Theme 1:

Interactions between biogeochemical cycles and marine food webs

Theme 2:

Sensitivity to Global Change

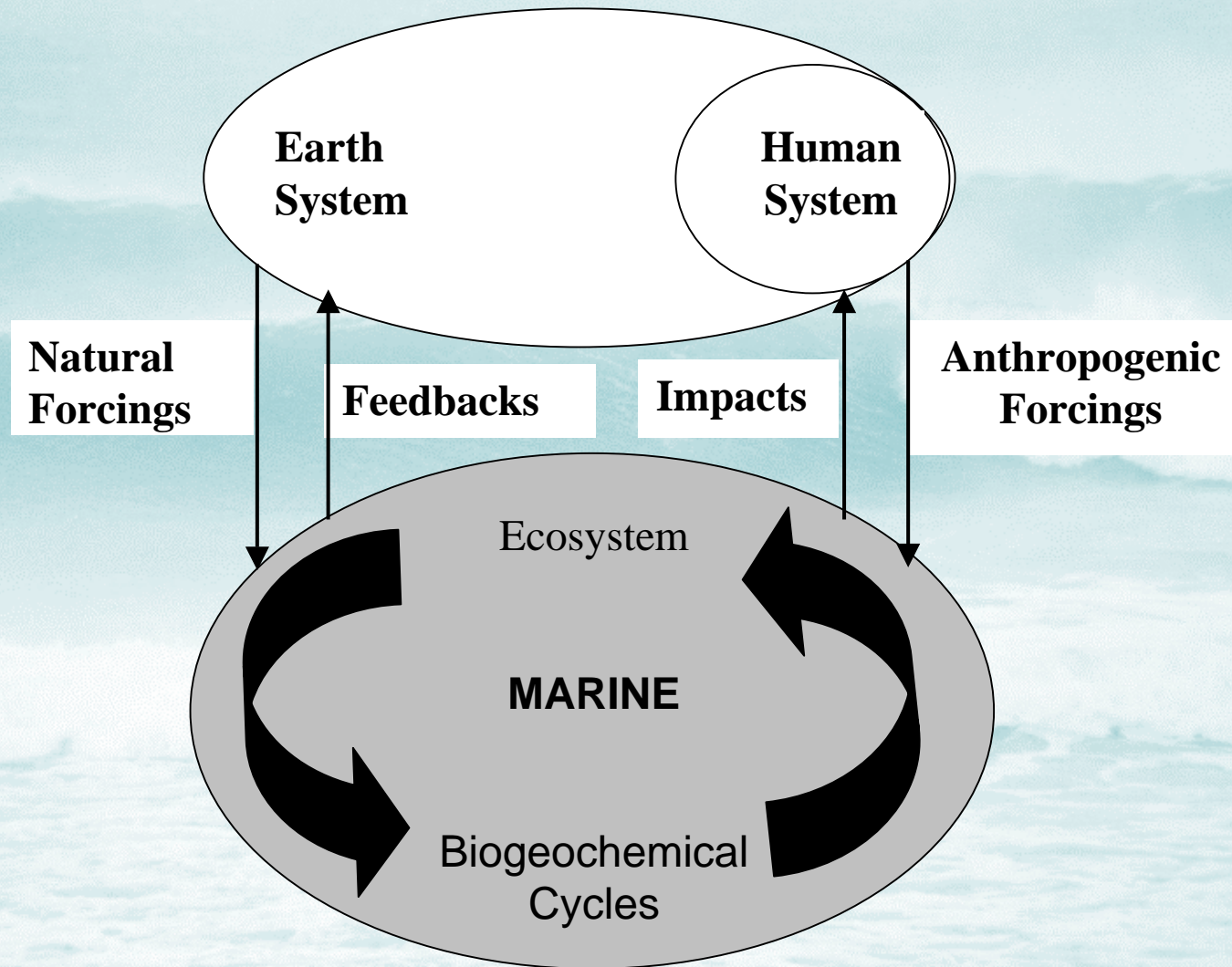
Theme 3:

Feedbacks to the Earth System

Theme 4:

Responses of Society

Essential features of the IMBER project



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 in marine food webs**
- 2. Transfers of matter across ocean interfaces**
- 3. End-to-end food webs and material flows**

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 **CO₂** and **changing pH**.
3. Effects of changing supplies of **macro- and micronutrients**
4. Impacts of **harvesting**.

Theme 3. Feedbacks to the Earth System

What is the role of ocean biogeochemistry and ecosystems in regulating climate?

Issues:

1. **Change** in global oceanic storage of **carbon**
2. Ecosystem **feedbacks** on ocean **physics** and **climate**

Theme 4: Responses of Society

What are the relationships between marine biogeochemical cycles, ecosystems, and the human system?

DOMAINS

IMBER will encourage investigations in four key domains of the ocean:

- the euphotic zone;
- the mesopelagic layer;
- the continental margins; and
- high-latitude and polar ocean areas.

Implementation of IMBER science

- Sustained long term observations
- Repeat hydrographic lines and basin scale transects
- Field-based process studies
- Mesocosm experiments
- Laboratory based experiments
- Use of palaeo-proxies

Collaboration with other Projects

GLOBEC – Global Ocean Ecosystem Dynamics

SOLAS - Surface Ocean Lower Atmosphere Study

LOICZ – Land Ocean Interactions in the Coastal Zone

GEOTRACES – Biogeochemistry of traces elements and their isotopes

GEOHAB – Global Ecology and Oceanography of Harmful Algal Blooms

CLIVAR – Climate Variability and Prediction

Endorsement of National Projects

- Research efforts can be submitted for recognition as IMBER projects.
- IMBER SSC recognises that many national/regional activities will contain research objectives relevant to more than one project.

Anticipated Outcomes over the ten-year life of the IMBER SP/IS

- An understanding of key marine biogeochemical and ecosystem processes and their sensitivity to global change;
- An increased understanding of the role of biodiversity and food web structure on the cycling and storage of carbon in the ocean;
- Establishment of new high-technology systems for sustained measurements;

Anticipated Outcomes continued..

- A hierarchy of integrated models that link the mechanisms of biogeochemical cycles with ecosystem processes and provide predictions of the impacts of global change on the ocean system;
- Internationally shared, publicly available data sets and assimilated data products of ocean biogeochemical and ecosystem state variables;
- Identification of potential adaptive and mitigative policies to address the impacts of global change on the ocean system;

Anticipated Outcomes continued..

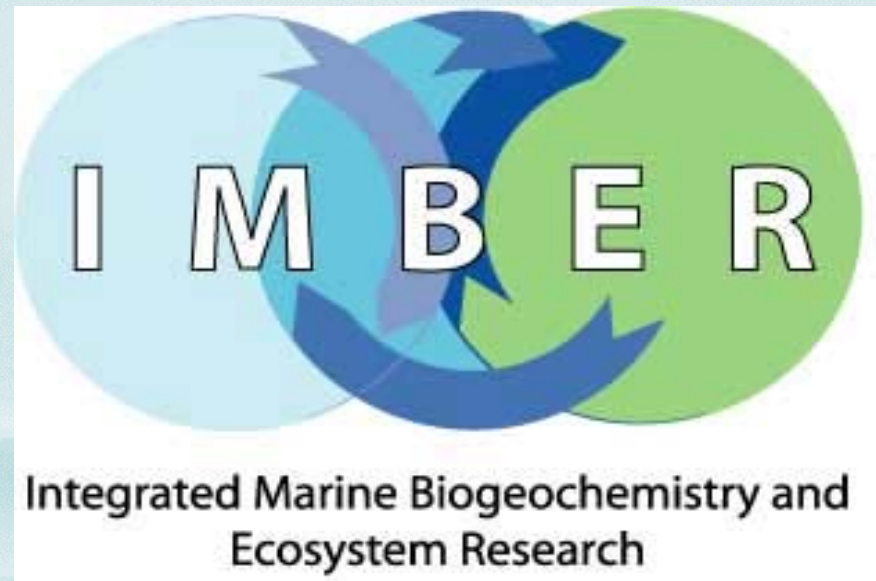
- Sound scientific knowledge to assist policy makers in making informed decisions
- A new generation of marine scientists from developed and developing countries trained in interdisciplinary research and using a systems approach; and

IMBER Timetable

- **Carbon Implementation Plan meeting**
 - November 2004
- **Executive meeting**
 - December 2004
- **Science Plan & Implementation Strategy**
 - published early 2005
- **International Project Office set up in France**
April 2005
- **SSC meeting**
 - May 2005

IMBER SSC

Julie Hall	New Zealand	Chair
Dennis Hansell	USA	V Chair
Patrick Monfray	France	V Chair
Ann Bucklin	USA	
Jay Cullen	Canada	
Wilco Hazeleger	The Netherlands	
Dave Hutchins	USA	
Arne Kortzinger	Germany	
Carina Lange	Chile	
Jack Middelburg	The Netherlands	
Coleen Moloney	South Africa	
Wajih Naqvi	India	
Raymond Pollard	UK	
Hiroaki Saito	Japan	
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www.IMBER.info

j.hall@niwa.co.nz