Minutes of the IMBER Editorial/Executive Committee Meeting
RSMAS, Miami, Florida, USA
December 13 – 16 2004

Present:

Julie Hall, Dennis Hansell, Patrick Monfray, Ann Bucklin, David Hutchins, Wilco Hazeleger, Ed Urban, Claire Hamilton.

Aims of the Meeting:

1. Review latest draft of IMBER SP/IS.

2. Develop plan to complete final draft of IMBER SP/IS for submission to IGBP and SCOR by the end of January 2005.

3. Identify priorities for implementing the IMBER in the next 6 to 12 months.

Co-ordinators of SP/IS section provide detailed report on status of latest draft and issues to be resolved to complete SP/IS.

Science Plan

Executive Summary
It was agreed that the Executive Summary should be able to be used as a stand-alone document that would provide readers an overview of the IMBER project. It was also agreed that the Executive Summary should highlight the heart of IMBER in terms of the link between Biogeochemical cycles and Ecosystems and Theme 2. The Executive Summary is to include the following:

Vision/Goal
Context statement
Statement of anticipated achievements
Priority Emphasis/Domains
Implementation Strategy
Themes
Anticipated Products
Challenges
Review of SP/IS components

Introduction
To be aligned, and consistent with new Executive Summary.

Report on Theme 1 – Ann
Ann identified that functional biodiversity section was weak and that Issue 3 had too many questions. It was recommended that Ann work to strengthen the referencing of theme 1, the section on functional Biodiversity and look at combining some of the priority questions in Issue 3. Innovative approaches section to be moved to the Implementation Plan.

Report on Theme 2- Dave
Theme 2 Issue 2, Bullets to be removed and text shortened.
Issue 3 a figure of nutrient inputs needs to be added.
Issue 4 Patrick to revise the section on Harvesting, this section to be sent to Coleen for comment. And then circulated to some GLOBEC people - suggestions Cisco Werner, Geoff Runge and Andrew Bakun. Innovative approaches section to be moved to the Implementation Plan.
Action: Issue 4 has been sent to Coleen Moloney, Cisco Werner, Geoff Runge, Andrew Bakun and P. Curry for comment.

Report on Theme 3 – Wilco
Sections need to be decreased more even in length and some references updated to more recent papers. Innovative approaches section is to be moved to the Implementation Plan.

Report on Theme 4 – Julie
Minor editorial changes to be completed in Theme 4.

Cross Cutting Issues
The role of these in the document was discussed, and it was decided to:

Move all methodology-based material in to the Implementation Strategy
Embed Synergistic/Antagonistic Sections within the Themes
Prepare a section on Integrated Modelling to place in this section of the Document

Implementation Strategy

Approaches to Research

Material from previous cross-cutting section to be placed here, and text from innovative approaches etc in the Themes to be embedded. Modelling section to focus on implementation of models, and to be consistent and complementary to modelling section under cross-cutting issues.

Working Groups

Concern was expressed regarding the proposed list of Working Groups and how these would come together to ensure effective implementation of the IMBER Science Plan. The suggested lists of working Groups were mapped onto the Themes and Issues in the Science Plan. This exercise revealed a significant number of gaps and overlaps. After extensive discussion the following working groups were proposed, some of these working Groups cut across the Themes and Issues, while others are closely aligned with the Themes and Issues.

Groups marked with * were decided to be of the highest priority to pursue early in IMBER's development.

End-to-end food webs: material and energy flow*. This cross-cutting working group is intended to focus on an immediate and high priority for IMBER: develop an implementation plan for end-to-end food web studies. The group will be conducted jointly with GLOBEC, with co-chairs from each project. The

plan will be developed to guide studies of integrated marine food webs, extending from microbes to whales. The implementation plan should also ensure coordinated focus on biogeochemical processes, integrated food web and ecosystem modelling, functional biodiversity, and impacts of global change, as they relate to food webs. The planned studies will involve collaborative research between IMBER and GLOBEC.

Ocean Carbon*: This working group, formed jointly with SOLAS, is already working toward seamless implementation of ocean carbon research in the two projects. Two major scientific emphases have been identified by the two projects: (1) carbon inventories, fluxes and transports; and (2) sensitivities of carbon-relevant processes to changes occurring in the ocean. After development of the implementation plan, the group will work to encourage the development of requisite research activities at national and international levels. This group will work in coordination with the SCOR/IOC International Ocean Carbon Coordination Project (IOCCP).

Macro- and micro-nutrients: This working group will focus on development of an implementation plan for research on the impacts of changing macro- and micro-nutrient inputs on biogeochemical cycles and ecosystems. This working group will work closely with SOLAS, LOICZ and GEOTRACES.

Sensitivity to climate: from variability to change. As marine biogeochemistry and biology respond to physics at all temporal and spatial scales, IMBER will take advantage of progress achieved by CLIVAR and GODAE communities on analyses and reanalyses of the ocean physical states. Because IMBER will focus on time scales of years to decades, it will need to take into account processes occurring at basin scales, but also the cascade of impacts to smaller scales of key regional and coastal areas where highly productive ecosystems exist. These cascades imply the need to nest high-resolution, smaller-scale models into basin-scale ones. Ensembles of sensitivity studies over recent and near-future centuries should be carried out using various coupled ocean-atmosphere models stressed by changing atmospheric composition (using IPCC scenarios). Particular attention will be dedicated to episodic events and on changes in the frequency and magnitude of extreme events. This group's implementation plan will need to be prepared in cooperation with CLIVAR, GODAE and PAGES.

Feedbacks to the Earth System: This working group will stimulate the interaction between the climate modelling community (which is dominated by physicists), the biogeochemistry and marine ecosystems modelling community, and observationalists with a hydrography and palaeoceanography background. This group will identify feedbacks between physical climate and marine ecosystems, and their spatial and temporal scales. The group will identify how these processes affect or interact with natural climate variability and affect anthropogenic climate change. It will recommend how to use models and observational data to identify the feedbacks and validate the models. The group will stimulate research in relation to identified feedbacks, coordinate modelling activities, and organize synergistic activities to achieve their goals. This group will work closely with CLIVAR.

Human dimensions:* This working group is focussed on the development and implementation of Theme 4 of the Science Plan. It will bring together natural and social scientists to work collaboratively to develop the plans for a workshop that will focus on identifying the issues to be addressed in Theme 4. The second task of this group will be to develop an implementation plan for Theme 4.

Capacity building:* This small working group will be set up very early in the project and will develop by correspondence a capacity-building strategy for IMBER. This strategy will then be used by the other working groups as a guide to capacity building issues and approaches in the development of their implementation plans.

Data management:* This will be a small working group that will include data gatherers, data users and specialists in data management. They will be responsible for the development of an IMBER data management policy that will support the project and will ensure consistency with other marine research projects and interoperability with data management approaches of the Global Ocean Observing System.

It was also decided that to ensure effective implementation, each working group would need to address in their implementation plan the following issues:

- achieving the IMBER overarching goal of integrating biogeochemistry and ecosystem research;
- specifying standards and protocols for IMBER research;
- addressing research questions in priority domains, that is, the mesopelagic layer, continental margins, and high-latitude areas;
- defining the role of integrated modelling activities, including integrating diverse data types across time/space scales of interest;
- planning for integration and synthesis activities; and
- defining strategies and approaches for building new capacity for research, especially in developing nations.

Due to funding constraints IMBER cannot establish all of these Working Groups immediately. The Ocean Carbon, End-to-End Foodwebs, Capacity Building and Data Management Working Groups were identified as the top priorities. It should be noted that the above changes will require discussions with other projects. See below under Interactions with other projects.

Linkages with Other Programmes

This section to be updated and relevant text checked with each programme.
Action: Claire to check text with each project.

Hot Topics

The Hot Topics were reviewed and it was felt that these needed to link closely with the Working Groups. The following Hot Topics need to be checked by their original authors to ensure that they are in a consistent format:

High CO_2
Extreme and Episodic Events
End to End Foodwebs
Environmental Genomics
Oxygen Minimum Zones
Trace Metals from Margins

Action: Claire to work with original authors to produce final draft of Hot Topics for the document.

Figures

The figures included in the Implementation Plan were reviewed and suggestions made to give a more global representation in figures used. As a result of this some figures were removed and/or replaced. It was also suggested that a number of non-copyrighted photos be identified and added into the Plan to make it more visually appealing.

Action: Claire to work with SSC members to identify appropriate photos.

The development of a diagram to represent IMBER was discussed, and it was decided that this would use images rather than drawings or figures. It is intended that this would be used in presentations on the IMBER project and may be used in the introduction of the IMBER SP/IS.

Action: Julie and Claire to work with NIWA graphic artist to produce draft for consideration by the IMBER SSC.

Report from Joint IMBER/SOLAS Carbon Working Group Meeting

This meeting was held in Miami in November 17-19 2004. The meeting was held at RSMAS, and was attended by 20 people representing the ocean carbon community who will be involved in IMBER and SOLAS carbon research. The group developed the an outline for the joint implementation for carbon research of IMBER and SOLAS.

On Day 1 the participants presented their ideas on the status and needs of various issues (e.g., carbon fluxes, time series, observing systems, data management, international collaborations, the mesopelagic, continental margins, etc.). The participants then broke into the groups: carbon inventories and fluxes; sensitivities of carbon processes to global changes; and special domains (e.g., continental margin, mesopelagic). The break-out groups wrote up the research implementation requirements identified within their topics of responsibility.

Present status: the working group leaders have submitted their sections to Truls and Dennis for consolidation. The revised and combined text will be returned to the participants for additional revision and comment.

Carbon Coordination

Julie reported on the recent international Carbon Coordination meeting held in Paris, which was held to discuss the most effective way of coordinating carbon research and

observations at the international level. The summary of this meeting is attached in Appendix 1.

IGOS Carbon Theme IOCP

It was agreed that we need to be aware of this theme and be involved in any developments regarding the IOCP Theme.

Action: Patrick and Dennis to monitor documents from IGOS and provide IGOS with comments.

Data Management

IMBER has been approached by SOLAS to discuss joint development of data management policies and protocols, these discussions will take place early in the New Year.

Interactions other projects

DIVERSITAS – Ann is having on-going discussions with Carlo Heip and David Raffaeli regarding the interactions between IMBER and DIVERSITAS.

Census of Marine Life – It was agreed that we need to continue discussions with Census of Marine Life.

LOICZ – LOICZ have responded to the suggestion of involvement in a Continental Margins working group by suggesting the development of a joint IMBER/LOICZ working group. There needs to be further discussions with LOICZ regarding working groups now that IMBER will not be setting up a Working Group on Continental Margins.
Action: Julie to discuss a way forward with Liana McManus

GEOTRACES – The draft GEOTRACES Science Plan will be circulated to IMBER in mid-January for comment prior to being placed on the Web.
Action: Dave and Jay to review this document and send comments to Julie.

GOOS – The marine projects coordination meeting held in Venice in September was attended by chairs of the Ocean Observing Panel for Climate (OOPC) and the Coastal Ocean Observing Panel. Discussions at this meeting highlighted the need for greater interaction between GOOS and IMBER. Initially, this will be addressed through interactions between OOPC and the joint IMBER/SOLAS Carbon Working Group and by links with the GODAE project.

Endorsement of IMBER research

IMBER has been approached by a number of individuals and regional projects regarding endorsement of their research by IMBER. The endorsement process outlined in the previous draft of the SP/IS was discussed and was modified to make IMBER endorsement of projects straightforward and the responsibilities of being an IMBER-endorsed project clear. See Appendix 2 for modified text and proposed form.

It was agreed that the endorsement form be circulated to people who have requested IMBER Endorsement for their projects. Approval of endorsement will be considered by the IMBER Executive Committee on a case-by-case basis.
Action: Claire to place this item on the Agenda for the next IMBER SSC meeting.

Release of current version of the IMBER SPIS
IMBER has been approached by Mike St John of Germany for a copy of the current version of the IMBER SP/IS. It was decided that to facilitate the development of national projects the current version of the SP/IS will be released on a case-by-case basis to individuals on the understanding that the document will not be circulated.
Action: Claire to watermark the current version with "Not for Circulation", and provide copy to Mike St John.

Implementation of IMBER over next 6 – 12 months:

Update on IPO
Julie reported on a recent meeting with the French agencies that will be funding the IMBER IPO in Brest. It has been agreed that an advertisement for the executive officer position will be placed in EOS at the beginning of January, and will also be circulated on a wide range of relevant email lists. The closing date for applications will be the 14th of February, with short listed applicants being interviewed in early March. It is hoped that the position will be filled by the beginning of May. Once the Executive Officer is in place, advertisements will be placed for the Deputy Executive Officer and an Administrator. A draft of the advertisement is shown in Appendix 3.

Web page
It was decided that there will be no major modifications of the IMBER webpage until the IPO is established in Brest. It will then become a high priority of the IPO to redevelop the site.

IMBER visual identity
The IGBP secretariat has approached IMBER to see if they are interested in having Glyn Gorrick develop an artistic image for the IMBER project that is consistent with the new image for IGBP and similar to those being developed for other IGBP projects. The cost of developing the image would be partially supported by IGBP, with IMBER needing to contribute 1250 euros towards this. The Executive had mixed feelings about the development of this image and its priority within the IMBER project. A final decision regarding this will be made at the next IMBER SSC meeting.

John Bellamy for the IGBP Secretariat has offered to work with IMBER to develop a visual identity for IMBER. This would include a standardised PowerPoint presentation background, an IMBER letterhead, a Newsletter layout and a basic webpage design. The Executive discussed the initial drafts that John had prepared.
Action: Claire to work with John Bellamy on developing his ideas further.

IMBER brochure, poster, presentations

Presentation - The IMBER presentation needs to be updated to align with the minor changes that have been made to the priority questions within Themes 1 and 2.

Action: Claire to update presentation and circulate to SSC members.

Poster – To be discussed further at the next IMBER SSC meeting.

Action: Claire to place this item on the Agenda for the next IMBER SSC meeting.

Brochure – It was agreed that a preliminary IMBER brochure be prepared for use at the Town Meeting to be held at the ASLO meeting in February and the BASINS meeting in Reykjavik in March 2005. The background for this brochure could be based on the IMBER diagram outlined above.

Action: Julie and Claire to work with graphic artist at NIWA and to provide pdf of the brochure to Ann for printing.

Identification of National Contacts list

Although this is difficult due to the politics in some countries IMBER must identify, where possible, individuals who are actively interested in the IMBER project to act as National Contacts.

Action: Claire to work with SSC members to identify national contacts in as many countries as possible.

It was suggested that a meeting of national representatives would be a good activity for the IMBER SSC to undertake to promote the development of IMBER research.

Action: Claire to place this item on the Agenda for the next IMBER SSC meeting.

IMBER Mailing List

It was agreed that the IMBER mailing list needs to be revised and extended and placed in an appropriate database.

Action: Claire to investigate placing mailing list in an appropriate database, and contacting the GLOBEC, LOICZ and SOLAS IPOs and the manager of the JGOFS mailing list to arrange for a one-time email inviting people to join the IMBER mailing list.

IMBER Summer School

Temel Oguz from Turkey has approached IMBER regard IMBER support for an IMBER graduate Summer School in 2005. It was felt that this was too early for the IMBER project and would clash with the SOLAS Summer School in 2005. We have agreed with Temel that any application should be postponed until the funding round in 2005 for a School in 2006.

Action: Claire to place this item on the Agenda for the next IMBER SSC meeting.

Meeting Reports

GODAE Meeting – Patrick gave a report of the GODAE meeting, which he attended in Florida in November 1-2, 2004. GODAE is interested in developing predictive models and is keen to work with research projects such as IMBER in this. It was recommended that a formal contact be made with GODAE and that links to GODAE should be considered when Working Groups are formed.
Action: Julie to write to Neville Smith, Chair of GODAE.

National German IMBER Meeting – Julie reported on the meeting held in Hamburg, December 10th 2004, which was focussed on the development of a funding proposal for a German IMBER project. This meeting was successful and there is a high level of interest in IMBER in Germany.

IMBER Representation at Meetings

Basin scale workshop – Patrick informed the meeting of the Basin Scale Workshop to be held in Reykjavik in March 2005. This meeting is by invitation only and IMBER has no opportunity at this stage to influence the focus of the meeting, or the list of attendees (not many biogeochemists or lower food web scientists have been invited). Both Ann and Patrick will attending this meeting and will represent IMBER at this meeting.
Action: Julie to write a letter to the organising committee expressing IMBER's interest in being involved in future discussions regarding the development an implementation Plan for a North Atlantic Basin-scale Analysis, Synthesis and INtegration (BASIN) Program

Regional IMBER Projects

ICCED – The development of the Southern Ocean regional project ICCED is continuing. The initial planning group has been expanded to include two Biogeochemists following the recommendation from the IMBER SSC in August. There will be a meeting May 26-28 2005, in Cambridge at BAS in the UK to start developing a Science Plan for this project. The outline for this meeting is attached in Appendix 4.
Action: Julie to send note to ICCED team regarding their proposed note on the May workshop.

Eur-Oceans- Discussions are continuing with Eur-Oceans on the development of a Memorandum of Understanding between the projects and possible joint activities.

Carbo-Oceans – IMBER has received a letter from Carbo-Oceans asking how the two projects can go about working together. This is a very positive initiative for IMBER.
Action: Julie to contact Christophe Heinz regarding endorsement of projects by IMBER.

National Updates

USA – Dennis, Ann and Dave have arranged for a Town Meeting to take place at the ASLO meeting in February 2005. This meeting will be used to promote the IMBER project in the U.S. oceanographic community.

Japan – Hiroaki Saito
The first IMBER-Japan NC meeting will be held during 21-22 Jan. 2005, following SOLAS-Japan NC meeting (20-21 Jan, 2005) in Nagoya, Japan. In the meeting, they will discuss the research strategy and funding proposal for an IMBER-related study as well as the relationship with SOLAS-Japan and Japan-GLOBEC. Some NC members from Japan-GLOBEC and SOLAS-Japan will also be attending the meeting. During FY2005, a couple of IMBER-Japan meetings will be held in Nagoya and in Tokyo.

On 2 December 2004, the Japan-GLOBEC meeting was held; Prof. Sakurai reported on the details of Japan-Korea-China GLOBEC meeting held in November in Hangzhou, China. GLOBEC representatives from Japan-Korea-China want to hold a symposium in 2007 in Nagasaki Japan, if possible this will be a joint GLOBEC-IMBER symposium.

Budget
Ed reported on the IMBER budget for 2005 and highlighted the need to find potential funders for working group meetings.
Action: All SSC members are asked to investigate potential funding sources to support meetings for the high-priority Working Groups.

SSC meeting 2005
The dates when the most SSC members are available for our next SSC meeting are the week of April 18-22, 2005.
Action: Julie to contact Jing to see if the SSC meeting could be held on these dates in Shanghai.

Appendix 1 - **International Ocean Carbon Stakeholders Meeting Report**
UNESCO, Paris, December 6-7, 2004

Many national and international programs conduct or have a direct interest in observations and research related to the global ocean carbon cycle. There is an immediate need to provide a global forum for coordination of ocean carbon studies, including data collection, large-scale synthesis efforts, model-data integration, and the development of a sustained ocean carbon observing system. Coordination is central to the achievement of the carbon-related goals of the SOLAS and IMBER Science Plans.

On December 6-7, 2004, a meeting was held at UNESCO in Paris to evaluate the most efficient way to meet these coordination needs. The meeting, sponsored by the U.S. National Science Foundation, IOC, and SCOR, included representatives of IOC, SCOR, IGBP, SOLAS, IMBER, GCP, CLIVAR, GOOS, GCOS, CARBOOCEAN, NASA, NSF, and JCOMM.

The meeting identified two types of coordination activities – those specific to meeting research program goals and those to address a global ocean carbon observing system. Unlike the research programs that have a finite lifetime, there are coordination activities that must be sustained, including the development of the observing system and permanent data archiving. The two coordination activities are intrinsically linked and must work closely together.

At the international level, the coordination needs for research and observations are:

1. To implement a central information center for program planning (for example, compiling information on current and planned repeat hydrographic sections, VOS carbon measurements, time series networks measuring carbon, process studies, etc.)
2. To develop international agreements on standards, best practices, data and meta-data standards, etc.
3. To develop, evaluate, and evolve strategies for large-scale observations for a sustained observing system
4. To carry out basin and global scale data synthesis and interpretation activities
5. To develop a data management system for ocean carbon data
6. To monitor implementation of the global ocean carbon observing systems, and to liaise with the larger global ocean/climate observing system.

To meet these coordination needs, the participants felt that it was important to continue the work of the IOCCP (sponsored by IOC and SCOR) and to utilize the recently formed SOLAS/IMBER implementation group for carbon research. These groups should be closely linked and jointly provide the services listed above. The IOCCP would take the lead on tasks 1,2, and 6 in collaboration with the research programs, and the SOLAS/IMBER group would take the lead on tasks 3,4, and 5, with input from the IOCCP. Secretariat functions should be coordinated, and optimally co-located, to provide an integrated service to the community. An important service would be to implement a web-based portal to provide a central point of contact for information on ocean carbon research and observations.

acronyms:
CARBOOCEAN (European Union integrated research activity on the marine carbon cycle); CLIVAR (Climate Variability and Predictability Study); GCP (Global Carbon Project); GOOS (Global Ocean Observing System); GCOS (Global Climate Observing System); IGBP (International Geosphere – Biosphere Programme); IOC (Intergovernmental Oceanographic Commission); IOCCP (International Ocean Carbon Coordination Project); IMBER (Integrated

Marine Biogeochemistry and Ecosystem Research Project); JCOMM (The Joint World Meteorological Organization – Intergovernmental Oceanographic Institution Committee on Oceanography and Marine Meteorology); NASA (U.S. National Aeronautics and Space Administration); NSF (U.S. National Science Foundation); SOLAS (Surface Ocean – Lower Atmosphere Study); SCOR (Scientific Committee on Oceanic Research); UNESCO (United Nations Educational, Scientific, and Cultural Organization); VOS (Volunteer Observing Ships).

Appendix 2 – Modified Text and Proposed Endorsement Form

Recognition of IMBER Research

The aim of the IMBER Science Plan and Implementation Strategy is to provide a framework to encourage participation of regional, national and individual research efforts in the IMBER project. Research efforts can be submitted for recognition as IMBER projects. This will ensure that (a) the IMBER SSC knows what research is being conducted under the IMBER label, (b) research carrying the IMBER label falls within the science themes identified in this document, (c) such research conforms to the scientific approaches outlined in this document, and (d) a data management sharing plan is in place for the component activity. The IMBER SSC and IPO will also work to inform related projects in different countries about opportunities for joint and comparative work.

International/regional research groups can submit their project for recognition by the IMBER SSC via the IMBER Web site. National groups and individual Principle Investigators (PIs) should first work through their national IMBER committees or representatives, who in turn will present the application to the international SSC. If the PI or group is from a nation without an IMBER national committee or other formal representation, they may apply directly to the IMBER SSC. Projects seeking recognition from multiple IGBP/SCOR projects are welcome, as the IMBER SSC recognises that many national/regional activities will contain research objectives relevant to more than one project. The form for applying for endorsement is in Appendix III.

The following is a guide to the benefits to, and responsibilities of, recognised projects.

Benefits

- Provides the opportunity for participation in the development, planning, and implementation of a collaborative, internationally recognised programme;
- Adds to the scientific value of planned research by providing complementary information, for example, by widening the range of studies and extending their spatial and temporal coverage;
- Promotes rapid communication of ideas and results through meeting and project publications;
- Develops and tests standard methods and protocols for measuring variables, thereby facilitating quality control and meaningful data sharing;
- Makes available data sets collected in component studies and develops a common data management strategy; and
- Enables close working links with other relevant international programmes and projects.

Responsibilities

- Accept general principles and goals outlined in the IMBER Science Plan and Implementation Strategy (this document);
- Carry out a programme in general accordance with the relevant aspects of the IMBER Science Plan and Implementation Strategy;
- Participate in the activities of IMBER through management bodies, and by assisting in its planning and development as a whole;

- Make meta-data available to the IMBER IPO within six months and data available to the community with two years (in a way not conflicting with data policies of national funding agencies);
- If cruises are involved, make available to the IMBER IPO, 6 months in advance, cruise details including cruise track, process study locations, date, focus of research, contact person and if berths are available to others;
- Provide relevant model output and source code to the IMBER IPO three months after publication (in a way not conflicting with policies ofnational funding agencies);
- Acknowledge the links with IMBER in the products of the project (e.g., acknowledgement in scientific papers).

APPLICATION FORM FOR ENDORSEMENT OF ACTIVITIES

This Form should be completed in English and should be NO MORE THAN 5 PAGES.
For further guidance, consult the Chair of the IMBER SSC or the IMBER IPO.
The Application Form can be obtained in Word format at http://www.imber.info

1. TITLE:

Activity Duration: _____ to: _____

2. APPLICANTS

Leading Applicant:
Name:

Organisation / affiliation:

Address:

Tel:

Fax:

E-mail:

Other Key Participants:
Name:
Organisation/affiliation:

Name:
Organisation/affiliation:

Name:
Organisation/affiliation:

3. OBJECTIVES, STRATEGY AND ACTIVITY PLAN

Brief description of **activity objectives**:

Brief description of **research strategy** (if relevant):

Brief description of the **activity plan**:

Timetable for **activity implementation**:

Specify which Themes and issues within IMBER these will contribute to:

4. OUTPUTS

Scientific:

Specify data to be delivered:

Planned dissemination of results (check all the apply):

International journals: _____ National journals: _____

Conference presentations: _____ Other: _____

What provisions/plans have been made for data management, archival, distribution and curation of samples?

Training:

Specify training to be provided by the activity (check all that apply):

Graduate training: _____ Undergraduate training: _____

Technical training: _____ Other training: _____

Are courses open to participants from other countries? Yes: _____ No: _____

5. IMBER SCIENCE PLAN THEME(S) AND ISSUE(S) ADDRESSED

Specify which of the Themes and issues of the IMBER Science Plan the activity will address:

For research projects, specify how the activity contributes to the overall IMBER strategy of comparative research:

6. BENEFITS FROM IMBER

How will the activity benefit from endorsement by IMBER?

How might the IMBER SSC assist the activity?

7. SCOPE FOR INTERNATIONAL PARTICIPATION AND CONTRIBUTION

Specify whether the activity will involve international participation:

8. LINKAGES WITH OTHER PROGRAMMES

Is the project part of a National Programme? Yes: _____No: _____

If yes, provide title:

Is the activity part of, or affiliated with, other international/regional programmes?

Yes: _____ No: _____

If yes, provide programme title:

9. SUPPORTING INFRASTRUCTURE AND FACILITIES

Specify the infrastructure and facilities available to participants:

10. FUNDING

Has funding been obtained? Yes: _____ No: _____

If yes, specify source(s):

If no, specify potential source(s) of funding:

11. ENCLOSE SEPARATELY:

(i) Short **Curriculum Vitae** of the leading applicant including a list of 6 (max.) most relevant publications:

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12. SIGNATURE OF LEADING APPLICANT:
I accept the responsibilities associated with endorsement by IMBER:

_____ _____
Leading Applicant Date

This application form should be sent e-mail to www.imber.info and by mail to either:

IMBER IPO
Plymouth Marine Laboratory
Prospect Place
The Hoe
PL1 3DH
Plymouth
UNITED KINGDOM

Appendix 3 – Advertisement for the Executive Officer Position

Executive Officer for IMBER (Integrated marine Biogeochemistry and Ecosystem Research) international project.

IMBER is a new research project focussed on marine biogeochemical and ecosystem research (www.IMBER.info). IMBER is seeking to appoint an Executive Officer to lead the International Project Office (IPO) at the Institut Universitaire Europeen de la Mer, Brest, France. The IPO supports the Scientific Steering Committee (SSC) of IMBER in implementing the project. The Executive Officer will be assisted by a Deputy Executive Officer and an Administrative Assistant. The tasks of the Executive Officer and IPO staff include assisting the SSC in implementing the IMBER Science Plan and Implementation Strategy, organising and servicing meetings of the SSC, working groups and task teams, liaising with the sponsors (IGBP and SCOR) and other relevant organisations, seeking and managing project finances, representing the project at international meetings, maintaining the project website and interacting with IMBER national committees and groups, as well as other international projects. For this senior post we seek a candidate with a strong track record in scientific coordination, as well as familiarity, and preferably some experience, in the IMBER research area. Experience of coordination of international science projects would be an advantage. Some international travel will be involved. The successful candidate will have excellent interpersonal and administrative abilities, be fluent in English and have first-class skills in both written and verbal communication. This post is available for three years and will be filled as soon as possible. Starting salary will be in the range of ????-?????, dependent on the relevant skills, knowledge and experience that the post holder brings to the role.

Further particulars can be viewed at http:??????
Informal enquiries should be made to Dr Julie Hall,
Tel: +64 7 856 1709; Fax: +64 7 856 0151;
e-mail: j.hall@niwa.co.nz
An application form and further particulars should be obtained from the
Website address
Applications to be sent to
Dr Julie Hall
NIWA
PO Box 11 115
Hamilton
New Zealand
or j.hall@niwa.co.nz
or Fax 64 7 856 0151
By February 14th, 2005.

Appendix 4

Integrated Analyses of **C**irc**u**mpolar **C**l**i**mate Interactions and **E**cosystem **D**ynamics in the Southern Ocean (ICCED)

Developing Circumpolar Science under ICCED[1]

High-latitude ocean ecosystems are crucial in global biogeochemical cycles, in maintaining global food-security and unique biological diversity. The proposed ICCED initiative will bring together climatologists, oceanographers, biogeochemists, ecosystem and fisheries scientists to generate unique circumpolar datasets and models to address three globally important questions:

How do climate processes affect the dynamics of circumpolar ocean ecosystems?

How does ecosystem structure affect circumpolar ocean biogeochemical cycles?

How should ecosystem structure and dynamics be included in the development of sustainable approaches to managing exploitation?

The scientific objectives of ICCED have been presented to the broader oceanographic community at several national and international scientific meetings. To continue the development of ICCED there will a workshop at the British Antarctic Survey, Cambridge, England in May 2005 (provisional dates 26th to the 28th May 2005) that has the goal of producing the ICCED science plan. The purposes of this document are to provide the broader community notice of this workshop and to provide background on the ICCED program as a starting point for discussions at the workshop.

The ICCED Programme is being put forward as part of the new joint International Geosphere-Biosphere Program (IGBP) and Scientific Committee on Scientific Research (SCOR) initiative entitled Integrating Marine Biogeochemistry and Ecosystem Research (IMBER). The ICCED programme also has the support of the European Union EUR-OCEANS Network and the Scientific Committee on Antarctic Research (SCAR). Through the science plan, ICCED will be linked to the developing World Climate Research Program, Climate Variability and Predictability/Climate and Cryosphere (CLIVAR/CliC) Southern Ocean International Polar Year (IPY) initiative and the Southern Ocean Global Ocean Ecosystems Dynamics (SO GLOBEC) synthesis phase to develop circumpolar data syntheses and modelling as a precursor to future field efforts. The following sections give a brief outline of the potential scope of the ICCED programme.

Scientific Background

During the past decade national and international studies of Southern Ocean ecosystems were undertaken with the objective of understanding the processes controlling marine population variability. At the same time the importance of ecosystem structure in determining ecosystem function has been increasingly recognized. For example, it is now recognized that cycling of carbon through the upper ocean ecosystem, its retention in the surface waters or its export to depth, are functions of the structure of the ecosystem. The need to include ecosystem structure

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in analyses of biogeochemical cycles has therefore been a major emphasis in the developing IMBER programme under IGBP and SCOR.

The Southern Ocean ecosystems programmes of the past decade have encompassed the whole system, including environmental structure across trophic levels from microbes to whales. Results from these studies will be the focus of synthesis and modelling activities in the coming years, as well as providing the basis for additional focussed studies. However, analyses to date are already producing revised understanding of the physical and biological factors that control Antarctic food web variability. An emerging result is the importance of circumpolar climate variability and connections in the regional dynamics of Southern Ocean ecosystems. Thus, understanding the causes and consequences of climate change on Antarctic systems has to be an integral focus of future research programmes developed for this region.

The ICCED initiative will develop a coordinated circumpolar approach to understand climate interactions in the Southern Ocean, the implications for ecosystem dynamics, the impacts on biogeochemical cycles and development of management procedures. This initiative will be composed of field studies including circumpolar monitoring, sampling along standard transects, and focussed process studies across key regions. The initiative will extend existing circulation and biological models and further develop modelling efforts directed at an integrated circumpolar view of the functioning of the whole ecosystem. An important objective will be to develop international expertise and capability through training courses, workshops, and personnel exchanges. The ICCED initiative directly addresses the questions put forward as a science focus for IMBER. The ICCED initiative will have strong ties with international programmes and organizations with a Southern Ocean focus including CLIVAR/CliC, the Committee for the Conservation of Antarctic Resources (CCAMLR), the International Marine Past Global Changes Study (IMAGES), International GLOBEC, International Global Ocean Observing System (IGOOS), SCAR, and the International Whaling Commission (IWC).

Potential field activities/data types

ICCED will facilitate the coordination of already planned field efforts to maximise the return from international circumpolar scientific effort. This will include exchange of personnel and expertise. A particular focus will be on ensuring that there is adequate international field effort to give circumpolar coverage of the Southern Ocean. Gaps in the geographical coverage will be identified as priorities for field effort.

ICCED will build on the current planned CLIVAR/CliC transects and ships-of-opportunity programme to develop **a network of multidisciplinary ocean transects** that traverse the Antarctic Circumpolar Current and include the currents systems of the Antarctic continental shelf. These will be centred on base supply tracks undertaken by national operators and will be enhanced to include biogeochemical and ecological measurements. These will also be linked to planned paleo-oceanographic activities under the IMAGES programme, to link water column analyses of ecosystem structure and function, to vertical flux and deep water sedimentation processes.

ICCED will develop, implement and utilise **a network of circumpolar remote instrumentation**, including oceanographic moorings, deployments of drifters (e.g. ARGO) that include physical, biological, optical and meteorological sensors, and passive acoustic mooring arrays designed for cetacean studies. This will draw on long-term ecosystem monitoring programmes developed as part of CCAMLR and

other national program efforts, such as the time series sites at Rothera and Palmer Station on the Antarctic Peninsula. The aim will be to extend the current scientific capacity to include chemical and biological monitoring instrumentation. To provide a wider context for these studies ICCED will draw on the available satellite data series including sea-surface temperature, ocean colour for phytoplankton concentration, sea-ice concentration and sea-surface height. These studies will provide the basis for the analyses of interannual and sub-decadal circumpolar variability.

ICCED will undertake **process studies in key regions** associated with the large-scale transect network. These will examine how large-scale climate processes affect the ecosystem dynamics at more regional scales (e.g. mesoscale). These studies will focus on understanding the effects of large-scale climate processes on regional physical/chemical regimes, ecosystem structure and biogeochemistry. This will also emphasize mid-water and deep-water processes affecting the transfer of biological material to the deep ocean. The regional process studies will include shipboard studies of plankton, nekton and predators, nutrient chemistry export processes, use of remotely operated and autonomous vehicles, studies of predator activity and satellite tracking for analyses of behavioural movement. Design of these regional studies will draw upon what has been learned in past regional studies, such as the ones conducted as part of SO GLOBEC and ongoing regional studies that are being undertaken as part of national programs.

ICCED will **coordinate a series of circumpolar genetic studies of key species**. These will be used to analyse the dynamic processes of population maintenance and connection in the Southern Ocean. A particular emphasis will be on the role of ocean circulation in dispersing and maintaining populations and oceanic food-webs. These studies will be linked to wider studies of biodiversity and the importance of ecosystem structure in oceanic ecosystems.

ICCED will undertake **coordinated circumpolar data syntheses and modelling**. The aim will be to bring together existing datasets for model development, validation, and calibration. This will include available distribution and abundance data on all components of the ecosystem, which will be an important contribution to the proposed Southern Ocean Census of Marine Life (CoML) program. A major focus of ICCED will be extension of existing circulation and biological models to the circumpolar scale and development of integrated circumpolar ecosystem models that include nutrient cycling and the dynamics of microbes to higher predators to generate "end-to-end" ecosystem models. The aim will be to generate a hierarchical set of models of varying scale that can be used to examine climate variation affects on regional ecosystems.

ICCED will stimulate the development of research capacity in the international community by undertaking training courses to develop multidisciplinary science skills, workshops, and a programme of personnel exchange between different international research groups.

ICCED will collaborate with international programmes and organizations

The ICCED initiative is an international effort. It builds upon the scientific results and experiences from the Southern Ocean Joint Global Ocean Flux Study (JGOFS) program, the Southern Ocean GLOBEC program, the World Ocean Circulation Experiment (WOCE), and the CCAMLR efforts, and earlier programs, such as the Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS). As a result of these programs, the Southern Ocean science community is well poised to undertake a circumpolar effort. It is anticipated that the ICCED initiative will form a

partnership with the Southern Ocean initiative that is developing through the EUR-OCEANS effort. It is envisaged that the IPY offers a unique opportunity to mobilise the required international effort to generate a step-change in analyses of polar ocean ecosystem dynamics for input into the next generation of earth system simulations. ICCED development under IPY is planned to be linked to the developing Southern Ocean IPY initiative under CLIVAR/CliC.

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