



7th IMBER Scientific Steering Committee Meeting

National Academy of Sciences, Washington DC

5-7 May 2010

Minutes

Present:

SSC members and IPO

Javier Aristegui (Exec)
Anita Bundy
Claudio Campagna
Ken Drinkwater
Julie Hall (Past-Chair)
Eileen Hofmann (Chair)
Su Mei Liu
Eugene Murphy
Alberto Piola
Carol Robinson (Exec)
Mike Roman (Exec)
Lisa Maddison (IPO)
Sophie Beauvais (IPO)
Virginie Le Saout (IPO)

Invited participants

Wendy Broadgate (IGBP)
Robert Cowen (CLIOTOP)
Kendra Daly (Vice Chair, OCB SSC)
Scott Doney (Chair, OCB SSC)
Raleigh Hood (SIBER)
Fred Lipschultz (NASA)
Roberta Marinelli (NSFOffice of Polar Programs)
Ed Urban (SCOR)

APOLOGIES:

SSC members

Jean-Pierre Gattuso
Niki Gruber
Hiroshi Ogawa
Katja Philippart
Sinjae Yoo

Invited participants

Paula Bontempi (NASA)
Peter Milne (NSFOffice of Polar Programs)
Steve Murawski (NOAA Nat. Marine Fisheries Service)
Don Rice (NSF Ocean Sciences)
Eric Schwaab (NOAA Nat. Marine Fisheries Service)
Phil Taylor (NSF Ocean Sciences)

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1. Action Items

SSC Members

ACTION: SSC MEMBERS TO SUGGEST POTENTIAL HOST INSTITUTIONS FOR THE IMBER INTERNATIONAL PROJECT OFFICE (IPO).

ACTION: SSC TO CONSIDER HOW IMBER COULD ASSIST IN THE DEVELOPMENT OF AN ACCESSIBLE INTERNATIONAL CENTRALISED DATA SYSTEM.

ACTION: CAROL ROBINSON TO SEND EUGENE MURPHY AND KEN DRINKWATER THE COST-ACTION PROPOSAL.

ACTION: CAROL ROBINSON TO PUT SALVADOR LLUCH-COTA FROM SPACC IN CONTACT WITH VERONIQUE GARCON AND OTHERS FROM SOLAS INVOLVED IN THE UPWELLING CONFERENCE IN PERU.

ACTION: SSC MEMBERS TO SEND SUGGESTIONS OF POTENTIAL ASIAN DATA MANAGEMENT EXPERTS TO ALBERTO PIOLA AND SOPHIE BEAUVAIS.

ACTION: JULIE HALL TO KEEP THE SSC INFORMED ABOUT THE OCEANOBS WORKING GROUP AND HOW IMBER MAY CONTRIBUTE.

ACTION: ALBERTO PIOLA TO CONTACT DMC MEMBERS ABOUT HOLDING A DMC MEETING IN CRETE. (DONE)

ACTION: JULIE HALL TO PROVIDE ALIDA BUNDY WITH THE NAMES OF POTENTIAL HUMAN DIMENSIONS EXPERTS. (DONE)

ACTION: JULIE HALL TO SEND THE CONTINENTAL MARGINS TOPICS IDENTIFIED BY THE SSC IN 2009 TO SSC MEMBERS. (DONE)

ACTION: SSC TO SEND NOMINATIONS FOR THE TWO MARINE POSITIONS ON THE IGBP SC TO WENDY BROADGATE.

ACTION: RALEIGH HOOD AND SOPHIE BEAUVAIS TO UPDATE THE SIBER WEBSITE.

IMBIZO Organising Committee

ACTION: IMBIZO ORGANISING COMMITTEE TO ASK GUEST EDITORS TO PRODUCE AN EXECUTIVE SUMMARY OF KEY WORKSHOP RESULTS.

ACTION: OPEN THE DRY CRUISE WORKSHOP TO EVERYONE, NOT ONLY IMBIZO REGISTRANTS.

SPONSORS

ACTION: ED URBAN TO SEND THE POGO ARTICLE TO EUGENE AND LISA MADDISON. (DONE)

ACTION: WENDY BROADGATE TO PROVIDE DETAILS OF THE CONTACT FOR OSM FUNDING.

ACTION: WENDY BROADGATE TO PROVIDE DETAILS OF THE CONTACT FOR FUNDING NOT LINKED TO SPECIFIC CALLS AT ESF.

WORKING GROUPS

ACTION: DMC TO UPDATE THE DATA MANAGEMENT COOK BOOK AND GIVE AN ISSN NUMBER.

IPO

ACTION: IPO TO DEVELOP A NEW IMBER POSTER.

ACTION: IPO TO EXPLORE THE POSSIBILITY OF INCLUDING THE IMBER LOGO ON THE COVER OF THE DSR II DARK OCEAN SPECIAL ISSUE DUE TO BE PUBLISHED IN AUGUST 2010. (DONE)

ACTION: IPO TO ENCOURAGE IMBER ACKNOWLEDGEMENT WHEREVER POSSIBLE.

ACTION: IPO TO INVESTIGATE APPOINTING AN OCB REPRESENTATIVE AS THE IMBER US NATIONAL CONTACT.

ACTION: LISA MADDISON TO CONTACT OCB TO DETERMINE HOW TO LINK OCB PROJECTS WITH IMBER ENDORSEMENT.

ACTION: LISA MADDISON TO CONTACT KENDRA REGARDING THE IMBER ENDORSEMENT STATEMENT FOR THE OCB WEBSITE.

ACTION: IPO TO DEVELOP TORS TO IDENTIFY WHAT IMBER REQUIRES FROM NATIONAL CONTACTS.

ACTION: IPO TO RAISE THE PROFILE OF NATIONAL CONTACTS THROUGH PUBLICATION OF THEIR WORK IN THE NEWSLETTER AND/OR ON THE WEBSITE.

ACTION: IPO TO CONTACT PEOPLE INVOLVED IN REGIONAL PROGRAMMES AND ENDORSED PROJECTS ABOUT BECOMING REGIONAL CONTACTS.

- ACTION:** SOPHIE BEAUVAIS TO INVESTIGATE THE POSSIBILITY OF PRODUCING A BOOK OR TEACHING MODULES AT CLIMECO₂.
- ACTION:** IPO TO ADD THE MOORE FOUNDATION TO THE LIST OF SPONSORS.
- ACTION:** IPO TO CONTACT THE LOCAL ORGANISING COMMITTEE ABOUT ADVERTISING THE DRY CRUISE TO LOCALS.
- ACTION:** IPO TO SEND A FORMAL LETTER TO SCOR REQUESTING EXTENSION OF IMBER TO 2020.
- ACTION:** IPO TO FIND OUT WHEN THE ADVERTISEMENT FOR THE RPO STAFF IS TO BE RELEASED.
- ACTION:** IPO AND SSC TO ENSURE THAT THE REGIONAL PROGRAMMES HAVE BALANCED REPRESENTATION ON THEIR SSCS.
- ACTION:** IPO AND SSC TO IDENTIFY AN IMBER CO-CHAIR FOR THE CMTT.
(DONE)
- ACTION:** IPO TO PUSH TO HAVE THE IMBER DMC (LEADER: GWEN MONCOIFFÉ) INCLUDED IN THE FP7 PROPOSAL. (DONE)
- ACTION:** SOPHIE BEAUVAIS TO PUT METADATA IN THE GCMD PORTAL WITH A LINK TO THE DATA
- ACTION:** IPO TO DISCUSS THE OCEAN ACIDIFICATION PORTAL WITH IGBP AND SCOR.
- ACTION:** IPO TO PROVIDE INPUT ON SYNTHESIS TOPICS TO SYNTHESIS LEADERS, COPIED TO WENDY BROADGATE.
- ACTION:** IPO TO INVESTIGATE HOW IMBER CAN CONTRIBUTE TO THE IGBP 2012 GLOBAL CHANGE OSC.
- ACTION:** IPO TO SEE IF ANY OF THE WORKING GROUPS CURRENTLY UNDER REVIEW FIT INTO THE IMBER GOAL.
- ACTION:** IPO TO ORGANISE THE PUBLICATION OF THE SIBER SPIS.
- ACTION:** LISA MADDISON TO WORK WITH THE REGIONAL PROGRAMMES LEADERS TO DETERMINE WHAT ACTIVITIES REQUIRE FUNDING AND MATCH THESE WITH POTENTIAL FUNDING SOURCES.
- ACTION:** LISA MADDISON TO INVESTIGATE FOUNDATIONS THAT COULD POTENTIALLY FUND HUMAN DIMENSIONS ACTIVITIES.
- ACTION:** LISA MADDISON TO EXPLORE FUNDING POSSIBILITIES AT THE FOUNDATION FOR THE SEA.
- ACTION:** LISA MADDISON TO INVESTIGATE POSSIBILITIES OF ADDITIONAL FUNDING FROM IOC-UNESCO.
- ACTION:** LISA MADDISON TO INVESTIGATE THE WORLD BANK AS FUNDING SOURCE.

- ACTION:** SOPHIE BEAUVAIS TO DISPLAY THE WAY FORWARD DOCUMENT PROMINENTLY ON THE IMBER WEBSITE.
- ACTION:** IPO TO EXPLORE HAVING EPOCA AS A CONTRIBUTING PROJECT.
- ACTION:** IPO TO COORDINATE IMBER REPRESENTATION AT SCIENTIFIC MEETINGS.
- ACTION:** LISA MADDISON TO SEND DATES OF NEXT SSC MEETING TO THE SSC MEMBERS AND TO SOLAS. (DONE)
- ACTION:** LISA MADDISON TO CONTACT HEATHER BENWAY (LINK TO EPOCA).
- ACTION:** SOPHIE BEAUVAIS TO PUT IMBER PRESENTATIONS ONTO THE WEBSITE.
- ACTION:** RALEIGH HOOD AND SOPHIE BEAUVAIS TO UPDATE THE SIBER WEBSITE.
- ACTION:** LISA MADDISON TO DEVELOP A COMMUNICATIONS STRATEGY.
- ACTION:** IPO TO DEVELOP A NEW IMBER BROCHURE.
- ACTION:** IPO TO REGISTER WITH GOOGLE MARINE.

Wednesday 5 May

2. Introduction

Welcome

Eileen Hofmann welcomed everyone and introduced the new SSC members – Alida Bundy (Canada), Claudio Campagna (Argentina) and Su Mei Liu (China). Welcome was also extended to Raleigh Hood (SIBER), Robert Cowen (CLIOTOP) and Kendra Daly (OCB).

Apologies

Jean-Pierre Gattuso, Niki Gruber, Hiroshi Ogawa, Katja Philippart and Sinjae Yoo.

Review of the agenda

- Day 1: Activities of the working groups and task teams over the past year,
- Day 2: Strategies and approaches for implementing the Transition Task Team recommendations, as well as a discussion about the presentations to representatives from US agencies that fund ocean research.
- Day 3: Presentations to raise the visibility of IMBER to the US funding agencies.

Review of actions from last SSC and Executive Committee Meetings (Hofmann and Hall)

Action items reviewed

The majority of the actions have been achieved, although some, e.g. starting the Human Dimensions working group, are still in progress.

Executive Committee

Javier Aristegui and Carol Robinson have been appointed to the IMBER Executive Committee (Exec) joining Mike Roman, Eileen Hofmann and Julie Hall. The Exec. Committee meets (virtually) more frequently than in previous years and this has proved to be very useful.

3. Report from the IPO

3.1 IPO funding update (Lisa Maddison)

Although funding from the consortium of French institutions that support the IPO was renewed for three years in 2008, the contract was only recently signed by all the parties. There have been indications that the contract may not be renewed. This could mean that the office at the IUEM in Brest could be in jeopardy. Eileen Hofmann asked SSC members to consider alternative host institutions for the IPO.

ACTION: SSC MEMBERS TO SUGGEST POTENTIAL HOST INSTITUTIONS FOR THE IPO.

3.2 IPO and IMBER activities (Lisa Maddison)

Review of sponsored meetings, IMBER special sessions and meetings attended by the IPO.

3.3 Communications (Sophie Beauvais)

IMBER communication tools,

- A new IMBER poster with a format that has a general introduction to IMBER and sections adapted for different audiences is being developed.
- Need recognisable 'branding' of IMBER communications products (Claudio Campagna).
- All publications where IMBER is involved should bear the IMBER logo if possible (Javier Aristegui).

IMBER attribution

- Determining what qualifies as an IMBER publication is difficult (Wendy Broadgate).

- The IPO has received permission from several authors to use their publications, but can these then be claimed to be IMBER publications as there was no actual IMBER involvement? (Lisa Maddison)
- The IPO has developed a website tool for people to submit their publications, but response has been very poor. It is a slow process (two years before GLOBEC had any response to their request for publications (Wendy Broadgate).
- Encourage authors to acknowledge IMBER in their publications.
- Publications submitted to the ESSAS website will be included in the IMBER publication list (Sophie Beauvais).

ACTION: IPO TO DEVELOP A NEW IMBER POSTER.

ACTION: IPO TO EXPLORE THE POSSIBILITY OF INCLUDING THE IMBER LOGO ON THE COVER OF THE DSR II DARK OCEAN SPECIAL ISSUE DUE TO BE PUBLISHED IN AUGUST 2010.

ACTION: IPO TO ENCOURAGE IMBER ACKNOWLEDGEMENT WHEREVER POSSIBLE.

3.4 Project endorsement (Sophie Beauvais)

- OCB is essentially the 'US-IMBER connection' and as many OCB projects are relevant to IMBER these should be linked to IMBER (Mike Roman).
- Appoint someone at OCB as the IMBER US national contact to forge the science link (Julie Hall).
- Projects endorsed by IMBER regional programmes are assumed to be endorsed by IMBER (Eileen Hofmann).
- Kendra Daly to raise the issue of including a statement on the OCB website encouraging people to seek IMBER endorsement at the next OCB meeting.
- IMBER only endorses funded projects. A letter stating that a project will contribute to IMBER goals can be provided to assist with fund-raising. This was the case with ESSAS and showing this international connection proved beneficial.

Endorsement Committee

Su Mei Liu agreed to replace Wajih Naqvi and join Ken Drinkwater and Carol Robinson on the Endorsement Committee.

ACTION: IPO TO INVESTIGATE APPOINTING AN OCB REPRESENTATIVE AS THE IMBER US NATIONAL CONTACT.

ACTION: LISA MADDISON TO CONTACT OCB TO DETERMINE HOW TO LINK OCB PROJECTS WITH IMBER ENDORSEMENT.

ACTION: LISA MADDISON TO CONTACT KENDRA DALY REGARDING THE IMBER ENDORSEMENT STATEMENT FOR THE OCB WEBSITE.

3.5 National contacts (Sophie Beauvais)

Role of national contacts

- Existing national contacts were identified from various IMBER-related activities (e.g. ex-SSC members, IMBER meeting attendees and endorsed projects) (Julie Hall).
- The national contacts need to be active members of projects (Wendy Broadgate).
- Generally communities (e.g. OCB) are able to make more impact in promoting IMBER science than individuals, but in some cases individuals can be effective (Julie Hall).
- SSC members should automatically be the national contacts (Carol Robinson).
- Need to involve communities and countries where IMBER work is being done but there is currently no IMBER contact, for example, Chile. (Javier Arístegui).
- Perhaps there should be more than one national contact per country. As the Norwegian contact Ken Drinkwater reports annually on the endorsed projects that he

is involved in. However, there is considerably more IMBER-related work going on in Norway that is not reported.

- Terms of Reference (ToR) must be developed for national contact identification. Carol Robinson's experience with the COST-Action proposal uncovered many people doing IMBER work in Europe that she was previously unaware of.
- Raise the profile of the national contacts by publicising the work that is going on in the different countries. Suggestions include an article in the IMBER newsletter and/or a feature on the website that changes monthly, including information about the national contact, the activities that they are involved in, etc.
- IGBP is currently revising their national contact strategy. Wendy Broadgate offered to assist with IMBER national contacts.

ACTION: IPO TO DEVELOP TORS TO IDENTIFY WHAT IMBER REQUIRES FROM NATIONAL CONTACTS.

ACTION: IPO TO RAISE THE PROFILE OF NATIONAL CONTACTS THROUGH PUBLICATION OF THEIR WORK IN THE NEWSLETTER AND/OR ON THE WEBSITE.

ACTION: IPO TO CONTACT PEOPLE INVOLVED IN REGIONAL PROGRAMMES AND ENDORSED PROJECTS ABOUT BECOMING REGIONAL CONTACTS.

3.6 ClimECO₂ Summer School (Sophie Beauvais)

- To be held at IUEM, Brest 23-27 August 2010.
- Co-sponsored by IMBER.
- Format similar to ClimECO.
- Concern that the topics are so broad (Alberto Piola).
- Meeting organisers more French than international (Javier Arístegui). Participants are from a broad range of countries (Sophie Beauvais).
- A video recording of the plenary sessions will be available on the website (no interactive real-time webinar). Proceedings will be produced (Sophie Beauvais).
- Useful to produce a record of the multidisciplinary perspectives raised – e.g. SOLAS Summer Schools produce a book (Wendy Broadgate).

ACTION: SOPHIE BEAUVAIS TO INVESTIGATE THE POSSIBILITY OF PRODUCING A BOOK OR TEACHING MODULES AT CLIMECO₂.

4- IMBIZO II (Julie Hall)

Background

- Instead of an Open Science Conference, IMBER chose to hold smaller (120 participants) biannual conferences around specific topics dealing with the integration of biogeochemistry and ecosystems in a changing ocean.
- Format is three concurrent workshops combined with joint poster sessions and plenaries with invited speakers and emergent cross-cutting theme activities.
- Products include special issues and synthesis papers from each workshop and individual contributions.
- IMBIZO I was held in Miami in November 2008 and resulted in a *DSR II* Special Issue on Bathy- and Mesopelagic Zones and three general synthesis papers on end-to-end food webs.

Planning

- The theme of IMBIZO II is Regional Comparisons and the three workshops are:
 1. The effects of varying element ratios on community structure at low trophic levels and food quality at mid and high trophic levels.

2. Large-scale regional comparisons of marine biogeochemistry and ecosystem processes: Research approaches and results.
 3. Sensitivity of marine food webs and biogeochemical cycles to enhanced stratification.
- There are currently 140 applicants and if this increases significantly, the workshop co-chairs will need to decide if the size of the IMBIZO should be increased.
 - Registration will remain open pending a decision on a proposal that was submitted to the US NSF to provide support for early career scientists to attend the IMBIZO. Participants for the workshops will then be selected based on the abstracts submitted. There is currently an imbalance in the numbers of the workshops which will be addressed.
 - The co-chairs will then design the individual workshop programmes.

Products

- Special Issues and synthesis papers will be produced from each workshop.
- Learn from the experience at IMBIZO I and encourage synthesis rather than discussion about individual work on the topic (Mike Roman).
- Task guest editors to provide executive summaries of key results from workshops (Eileen Hofmann).

ACTION: IMBIZO ORGANISING COMMITTEE TO ASK GUEST EDITORS TO PRODUCE AN EXECUTIVE SUMMARY OF KEY WORKSHOP RESULTS.

Funding

- The funding situation is not too bad. There is currently a shortfall of about \$2K.
- Waiting for a request for funding from ICES.
- A proposal (not for a specific call) was submitted to NSF to support early career US participants and some of the US organisers. Expect a response soon. IMBIZO registration will remain open (but not advertised) until this has been decided.

ACTION: IPO TO ADD THE MOORE FOUNDATION TO THE LIST OF SPONSORS.

Capacity building

- SCOR has provided travel funds to support participants from developing countries.

Data Management

- The Data Management Committee (DMC) is organising a one-day Dry Cruise workshop the day before the IMBIZO starts. Alberto Piola and Cindy Chandler are leading the activity.
- About 55 participants have registered.
- Local students and scientists from Greece should be encouraged to attend.

ACTION: IPO TO CONTACT THE LOCAL ORGANISING COMMITTEE ABOUT ADVERTISING THE DRY CRUISE TO LOCALS.

Future IMBIZOs

- Start planning IMBIZO III at the meeting (Carol Robinson).
- After the IMBIZO can benefit from lessons learned. Need 18 months lead in time (Julie Hall).
- Consider topics for the next IMBIZO at the meeting, including human dimensions.
- Could call for bids to host future IMBIZOs to generate enthusiasm (Ed Urban).
- Consider a larger OSC as the IMBER community grows (Wendy Broadgate).
- Ken Drinkwater suggested that an OSC could be IMBER's final closing event.

- Request for IMBER to continue to 2020 (Julie Hall). Eileen Hofmann brought this up at the IGBP SC meeting in Grenoble in March 2010. IGBP's decision depends on the current ICSU review of all the global change and environment projects. SCOR has not received a formal request from IMBER. The SCOR Ex Com would consider renewal and possibly even continuing as the sole IMBER sponsor, if necessary. Might need to raise money outside SCOR.
- An Exec. Committee meeting could be tacked onto IMBIZO II if most members attend (Mike Roman).

ACTION: IPO TO SEND A FORMAL LETTER TO SCOR REQUESTING EXTENSION OF IMBER TO 2020.

5- IMBER China RPO (Julie)

- Following the Continental Margins OSC in Shanghai in 2008, Jing Zhang, then an IMBER SSC member, investigated the possibility of opening an IMBER regional office in China.
- January 2010 a memorandum of understanding (MOU) between IMBER and the East China Normal University (ECNU) was signed.
- The IMBER China Regional Project Office (RPO) will be hosted and financially supported by the ECNU. This is a very generous contribution, providing the office and running expenses, salaries and travel expenses for the DEO to visit the IPO and attend SSC meetings.
- Deputy Executive Officer and Administrative assistant positions will be advertised internationally soon.
- The RPO will not work independently but will support IMBER activities, mainly focusing on the Continental Margins Task Team (CMTT) activities, capacity building activities (Jing Zhang is the Chair of the Capacity Building Working Group) as well as other IMBER activities in Asia.
- The RPO will link with other project offices in Asia (e.g. LOICZ China office).
- The objectives, priorities and responsibilities of the China RPO will be determined by the SSC depending on the CMTT and Capacity Building Working Group activities.

ACTION: IPO TO FIND OUT WHEN THE ADVERTISEMENT FOR THE RPO STAFF IS TO BE RELEASED.

6- Reports from IMBER Regional Programmes

6.1 ICED (Eugene Murphy)

- The objectives and core activities of this 10-year project were presented.
- Model development is an important focus to improve the reliability of predictions of ecosystem dynamics and responses to climate change and harvesting.
- Undertaking data synthesis, centralizing integrated datasets/portals for model studies.
- Working towards dedicated ICED field work in priority regions.
- Improving communication e.g. online interactive maps to represent Southern Ocean ecosystem activities.
- ICED has links with several IMBER-related projects, e.g. CLIVAR, but needs to develop links with SIC SG 2.

Upcoming activities

- Modelling the quantity of fresh water.
- Data syntheses and mining with a focus on zooplankton and fish
- ICED IPY science integration
- EO Foresight workshop entitled "Workshop on global change in polar systems".

- New ICED biological diversity sub-programme being developed following the Sentinel Workshop.

Discussion

- Ed Urban mentioned POGO (cruises online with links to the metadata) that might be a useful tool for cruise planning. Eugene would also like links to the data.
- There is no international system that centralises data. On joint cruises, data sets are produced but each group or individual manages their own data and consequently it is not always accessible. Perhaps IMBER could develop this idea.
- Claudio Campagna asked if ICED includes top predators. Eugene replied that CAMLAR has strong link to top predator work. ICED provides access to top predator databases and also includes top predators in models.
- The report from the OCB Southern Ocean Scoping Workshop, held at Princeton University in June 2009, will provide inputs for US Southern Ocean research for the next 10 years. Roberta Marinelli (NSF Office of Polar Programs), would like to have ICED and IMBER involvement in US Southern Ocean research (Eileen Hofmann).
- As with BASIN, there are parallel US and EU projects. The EU project will depend more on national programmes than the US project mentioned above.
- Javier Arístegui noted that the modelling has been large scale. Eugene replied that ICED has started embedding more physical mesoscale information into the models, e.g. distribution of zooplankton.
- Alberto Piola asked if IMBER provided benefits to ICED with respect to data management. Eugene responded that the data side was developed under GLOBEC. The ICED programme now needs a long term strategy to determine if people are willing to let their data be released into this broad range.
- ICED does not have a dedicated data manager, but has some data management experience.

ACTION: ED URBAN TO SEND THE POGO ARTICLE TO EUGENE MURPHY AND LISA MADDISON.

ACTION: SSC TO CONSIDER HOW IMBER COULD ASSIST IN THE DEVELOPMENT OF AN ACCESSIBLE INTERNATIONAL CENTRALISED DATA SYSTEM.

6.2 SIBER (Raleigh Hood, Julie Hall)

- Raleigh Hood presented an outline of SIBER which emerged as a result of a CLIVAR/GOOS effort.
- IMBER and IOGOSS provide international programmatic homes for SIBER.
- The draft SIBER SPIS was submitted at the beginning of 2010 and was recently reviewed by the wider scientific community (review led by Julie Hall and Nick D'Adamo from IOGOOS and IOC in Perth). Reviews were very positive. The science plan is strong scientifically, the science relevant and appropriate for IMBER. The document needs shortening and the work outlined in the Implementation Plan prioritized. It was suggested that it be accepted once the reviews have been addressed in a revision.
- The SIBER SSC recommended by Julie Hall and Nick D'Adamo provides a balance of gender, geographic and scientific expertise.
- Recent SIBER publication: Wiggert, J. D., R. R. Hood, S. W. A. Naqvi, K. H. Brink and S. L. Smith (2009) Indian Ocean Biogeochemical Processes and Ecological Variability. AGU Monograph Series, American Geophysical Union, Washington, D.C.

Discussion

- Kendra Daly asked about the impact of piracy. Raleigh confirmed that it is a problem, particularly in the western Indian Ocean. Work is limited to unaffected areas.

- Responding to Ed Urban's question about the inclusion of capacity building activities in the SPIS, Raleigh agreed that it is essential, but that they have not moved forward with this yet.
- Raleigh and Wajih Naqvi were commended on their effort in pulling everything together and particularly for including many local people in the process.
- As there were no further comments, Eileen Hofmann suggested that:
 1. Revision of the SIBER SPIS be completed.
 2. The SIBER SPIS be published as an IMBER document.
 3. The first SIBER SSC meeting be held in Perth, Australia in July 2010.

DECISION: ACCEPT THE SIBER SPIS ONCE THE REVIEWS HAVE BEEN TAKEN INTO CONSIDERATION.

DECISION: ACCEPT THE SIBER SSC RECOMMENDED BY JULIE HALL (IMBER) AND NICK D'ADAMO (IOGOOS).

6.3 ESSAS (Ken Drinkwater)

- ESSAS is co-chaired by George Hunt and Ken Drinkwater.
- Recent achievements include the new website and the production of a special NORway-CANada Comparison of Marine Ecosystems (NORCAN) volume in *Progress in Oceanography*. Several papers, comparing various aspects of the ecosystem including climate, physical oceanography, phytoplankton production, zooplankton and fish are under review.
- A proposal was submitted to the Nordic Council for an ESSAS Nordic Research Network.
- First meeting of the new ESSAS project TROPHARC identified research topics to address.
- ESSAS annual science meeting, August 2010.
- The second ESSAS OSM and SSC meeting will be held in Seattle, May 2011, and will deal with polar comparisons, not only the Arctic. Ken outlined potential workshop themes and asked for additional suggestions. The ESSAS OSM conveners are also looking for co-conveners for the workshop dealing with sources of macro- and micro-nutrients in the sub-Arctic.
- It is hoped that several special issues of peer-reviewed journals will result from the OSM.

Discussion

- With the focus of ESSAS on the sub-Arctic, IMBER has no link to the Arctic (Eugene Murphy). Ken suggested that perhaps a project within ESSAS, focused on higher Arctic, should be developed.
- Replying to Eugene Murphy's question whether sea ice behaviour has shown any large scale consistencies, Ken said that recent warming of the Sub-Arctic and Arctic has increased production in both the Bering and Barents Seas.
- Alida asked about the conveners of the socio-economic workshop. It will be co-convened by Ian Perry and others, focusing more on economic themes such as fisheries, oil and gas, and transportation.
- ESSAS is a 10-year programme, but depending on the IMBER schedule, perhaps it could continue for more than 10 years. The 2011 OSM is intended to be the mid-term symposium.
- The EU Cost-Action proposal recently submitted by Carol Robinson had "comparative high latitude ecosystems", which would involve both ESSAS and ICED, as one of the objectives.

ACTION: CAROL ROBINSON TO SEND EUGENE MURPHY AND KEN DRINKWATER THE COST-ACTION PROPOSAL.

6.4 CLIOTOP (Bob Cowen)

- CLIOTOP is chaired by Alistair Hobday and Olivier Maury.
- Initially tuna-orientated but now includes sharks, marine mammals, turtles and sea birds.
- There are five working groups and the data collecting component: Mid-trophic Automatic Acoustic Sampling (MAAS).
- The mid-term workshop was held in Paris in February 2010.
- The publication of a Special Issue (28 papers) from the first symposium in La Paz, Mexico is imminent.

Discussion:

- Raleigh Hood commented on the very US-centric SSC and was informed by Bob that people are about to rotate off and the new members will not be from the US. Wendy Broadgate and Ed Urban reiterated that IMBER must ensure that the Regional Programmes' SSCs have balanced representation.
- Asked by Claudio Campagna if conservation is dealt with by any of the working groups, Bob replied only with regard to regional fisheries management. Alida Bundy queried if fishing is the major threat from a conservation point of view. Bob confirmed that by-catch is the primary threat.
- Javier Arístegui asked about the approaches used for end-to-end modelling and learnt that two basin-scale models are used from microbes to top predators.
- Eugene Murphy mentioned the huge database (from many sources) and data management issues that were brought up at the mid-term workshop and that he had asked if IMBER could help with this. Bob replied that Olivier Maury will contact Working Group 3, which deals with data management to suggest this. He would then contact IMBER regarding the policies of taking on the dataset. Carol suggested contacting Corinne Le Quéré from UEA who has recently published a zooplankton dataset in a new journal which ensures the dataset is accessible and has a DOI number.
- Eugene Murphy was impressed with the modelling approaches being used by CLIOTOP that provide a framework to test more detailed models against, for example, the broader global scale ICED models. He hopes that Olivier Maury will bring it to IMBIZO II.
- As several CLIOTOP SSC members will be attending the IMBIZO, it was decided to hold the next SSC meeting in Crete.
- Eileen Hofmann asked when the addendum to the CLIOTOP SPIS is expected to be completed. Bob said that 2011 is the target.

ACTION: IPO AND SSC TO ENSURE THAT THE REGIONAL PROGRAMMES HAVE BALANCED REPRESENTATION ON THEIR SSCS.

6.5 Update on SPACC and BASIN (Eileen Hofmann)

SPACC

- SPACC was one of the first region programmes under GLOBEC.
- There are ongoing discussions regarding its future now that GLOBEC has ended.
- Its focus is small pelagics, but it is becoming more IMBER-like as it considers ecosystem feedbacks to biogeochemistry.
- Some would prefer it to become an ICES working group, but Salvador Lluich-Cota is planning to re-draft the science plan to include more biogeochemistry, thus making it more IMBER-related. Eileen suggested that IMBER should be open to this, should it materialise.

- Carol Robinson mentioned a biogeochemistry upwelling conference that is being held in Lima, Peru in November 2010. Veronique Garcon and others might be interested to include SPACC in this.

ACTION: CAROL ROBINSON TO PUT SALVADOR LLUCH-COTA FROM SPACC IN CONTACT WITH VERONIQUE GARCON AND OTHERS FROM SOLAS INVOLVED IN THE UPWELLING CONFERENCE IN PERU.

BASIN

- Peter Wiebe (US BASIN) is interested in joining IMBER.
- EU BASIN (Mike St John) has recently been funded. No decision about joining IMBER will be made until a decision is made regarding funding of a US BASIN programme.
- A meeting of the US BASIN community will be held in June.
- Julie Hall pointed out that the EU proposal was developed very pointedly towards coming into IMBER, with an office in Europe.
- Raleigh Hood mentioned that apparently there will not be a US BASIN project, but rather a science initiative.
- Mike Roman asked whether there was a Canada BASIN and Ken Drinkwater responded that he learned at the ICES meeting there had been, but funding is now limited to Atlantic monitoring.
- Mike Roman considered the US BASIN proposal to be very fish-orientated, but Eileen Hofmann had confirmed with Peter Wiebe that biogeochemistry would be included.

7-Reports from Working Groups

7.1 Continental Margins Task Team (Julie)

- Development of a Continental Margins Task Team (CMTT) has been an ongoing activity within IMBER that has met with limited success. It was started following the Joint IMBER/LOICZ Continental Margins OSC in Shanghai in 2007.
- Since the 2009 SSC meeting, there have been attempts to implement the CMTT. Initially Katja Philippart had agreed to be the IMBER co-chair with Helmuth Thomas from LOICZ. Unfortunately, due to work commitments she has had to withdraw. A new IMBER chair needs to be identified urgently.
- The draft Implementation Plan drawn up by the first CMTT needs to be edited.
- An action plan for the new CMTT needs to be devised to get the science moving forward.
- The book, "*Carbon and Nutrient fluxes in Continental Margins*" by KK Liu, was published earlier this year.

Discussion:

- Both Ken Drinkwater and Mike Roman questioned the need for a dedicated continental margins group when all the regional programmes (except CLIOTOP) deal with continental margins. Wendy Broadgate said it was a safe-guard against gaps between the IGBP projects (initially between JGOFS and LOICZ), but there is no obligation to have joint task teams.
- Recent discussions with LOICZ suggested that more focus, e.g. investigation of changes in high latitude systems, might help to move this forward (Eileen Hofmann).
- Eileen Hofmann suggested that an option might be to have an IMBER cross-cutting working group, through the regional programmes and to include LOICZ representatives for the human dimension. Carol Robinson suggested including people from the MEECE project.

- Julie Hall felt strongly that there should be synthesis of all the continental margins work that is being carried out (often in small projects) and that topics raised at the OSM must be addressed. Limiting activities to high latitude changes or the work done by the regional programmes would not necessarily include these projects. Many people would be disappointed if the decision is made to not continue with the CMTT. Replying to Ed Urban's question about implications for the China RPO, Julie indicated that the RPO will be responsible for continental margins activities, regardless of the group that is formed. Continental Margins are stated in the MOU as the primary activity of the China RPO.
- Julie Hall suggested that KK Liu or Boris Kelly-Gerreyn might be interested in leading a continental margins group for IMBER.
- Useful to develop a standard such as biogeochemical guidelines as there is so much going on in continental margins (Su Mei Liu).
- No consensus was reached regarding the Continental Margins Task Team (Eileen Hofmann).

ACTION: IPO AND SSC TO IDENTIFY AN IMBER CO-CHAIR FOR THE CMTT.

7.2 Data Management Committee (DMC) (Alberto)

- Development of data journals with papers describing data collection, descriptions, quality, etc.
- Endorsed projects are requested to put their information on IMBER's Metadata Portal. So far only about 50% have complied. Problematic as metadata formats vary according to country- hence our system differs from NASA's, which means that people have to load the information twice. This technical problem needs to be investigated.
- Raleigh Hood asked if the IMBER data portal is a specific data repository. Alberto Piola replied that is only a tool that links to the NASA GCMD portal and does not actually centralise data. IMBER has no way of determining how much data is being sent directly to the central data agencies.
- Eugene Murphy suggested that there is a need for a synthesis element to IMBER's data management as much of the data being collected is being dissipated.
- Su Mei Liu mentioned a large IFREMER project on Silicon cycling (Olivier Aumont is the PI) that is starting to collect data which might feed into this.
- The Data Management Cookbook is the DMC's greatest achievement and will form the basis for the Dry Cruise workshop in Crete, prior to IMBIZO II.
- There is a call for proposals for the European Commission FP7: Digital libraries, with one of the objectives being to provide open access to scientific information. Deadline is June 1 2010 and it has been suggested that IMBER should be included.
- As several DMC members will be attending IMBIZO II, a one-day meeting is planned in Crete.
- The DMC needs an Asian representative. Suggestions requested.

ACTION: DMC TO UPDATE THE DATA MANAGEMENT COOK BOOK AND GIVE AN ISSN NUMBER.

ACTION: IPO TO PUSH TO HAVE THE IMBER DMC (LEADER: GWEN MONCOIFFÉ) INCLUDED IN THE FP7 PROPOSAL.

ACTION: OPEN THE DRY CRUISE WORKSHOP TO EVERYONE, NOT ONLY IMBIZO REGISTRANTS.

ACTION: SSC MEMBERS TO SEND SUGGESTIONS OF POTENTIAL ASIAN DATA MANAGEMENT EXPERTS TO ALBERTO AND SOPHIE.

7.3 Capacity Building Committee (Julie Hall)

Eileen Hofmann questioned whether a dedicated Capacity Building Committee is needed, considering that capacity building is part of all the regional programmes. Julie responded that Jing Zhang, the current chair of the committee is keen to continue and that capacity building activities will be promoted by the China RPO.

7.4 SOLAS-IMBER Carbon (SIC!)

7.4.1 SGI – Report

Lisa Maddison summarised the report submitted by Nicolas Metzl.

- A *DSR // Special Issue on Surface Ocean CO₂ Variability and Vulnerabilities* was published in August 2009.
- SIC-SOS (SG1) and SIC-Interior Ocean (SG2) are planning a joint Ocean CO₂ meeting in 2011 in Paris, to prepare community analyses and papers on both surface and interior ocean CO₂ systems prior to IPCC 2013.
- A White Paper on surface CO₂ observations was submitted to OceanObs09 and published.
- Several abstracts relating to the SOCAT database have been submitted to ICDC8 – providing the opportunity to present the preliminary analyses and investigate the quality control of SOCAT and LDEO pCO₂ data sets.
- The first SOCAT data set is due for release in summer 2010.

7.4.2 SG2 - Interior Ocean Carbon Storage (Niki Gruber)

Niki Gruber joined the meeting via conference call.

- The objectives of SG2 are to determine long-term changes and the sensitivity of ocean carbon storage to change.
- One of the main activities undertaken in the past year was the organisation of the Decadal Variations workshop in Italy, to establish a new carbon inventory, to consider changes in carbon stocks, and to decide if any changes in ocean observations are required.
- Aim to complete a global synthesis in time for IPCC AR5. Synthesis is organised so that each person in the group works with existing programmes or activities in different ocean basins (different basin workshops to be held during 2010). This is done in conjunction with GO-SHIP, IOCCP, CLIVAR, ARGO and OceanSITES, etc.
- Large workshop planned in conjunction with WG1 for global synthesis and to update the carbon inventory (2011).
- Large contribution to OceanObs' 09, emphasising the importance of biological and ocean observation systems.
- Unable to secure funding for large 'Oxygen on ARGO' project, hence several small projects have been undertaken. Density of floats in some areas is very good. Plan to continue, holding basin-wide workshops and working with the Regional Carbon Assessment (Recapp).
- Niki plans to formalise the draft TOR for SIC SG2 and would like clarification on the funding for the SIC group.
- Clarify relationships in the network (e.g. CLIVAR, IOCCP, GO-SHIP).

Discussion:

- Alberto Piola asked how widely data for the synthesis are being gathered. Niki Gruber responded that a multi-level approach is needed. In addition to new data, there has also been a historical data rescue effort, e.g. from North Atlantic. Data quality is an issue. New data are better than historical data, but there is still room for improvement. There are data centres, but not all countries are involved to the same extent. Very open to receiving data if people want to contribute.

- Responding to Raleigh Hood regarding 'Oxygen on ARGO' in the Indian Ocean, Niki confirmed that they want to deploy them worldwide. Funding is usually by NSF to small groups of PIs in various countries. Aim is for a more coordinated effort. Raleigh would investigate moving this forward using the SIBER Science Plan, by including data stream, data parity, gradients, etc.
- Ken Drinkwater questioned if the current data coverage is sufficient to achieve the desired 10% accuracy. Niki suggested that it probably is not. The level of variability, frequency and spacing of the observations was underestimated, making 10% accuracy difficult to achieve.
- Replying to Eileen Hofmann's question as to whether it will be possible to provide input into AR5, Niki said that motivation was high, but it will be difficult to achieve.

ACTION: SOPHIE BEAUVAIS TO PUT METADATA IN THE GCMD PORTAL WITH A LINK TO THE DATA

7.4.3 SG3 – SOLAS-IMBER Ocean Acidification (SIOA) (Carol Robinson for Jean-Pierre Gattuso)

- Report from the first meeting of the SOLAS IMBER Ocean Acidification (SIOA) group which was held in Paris in December 2009. The aim of the group is:
 - Use of standardised techniques to allow intercomparisons.
 - Sharing of data.
 - Training of post docs.
 - Establish an international network of ocean observing systems.
- IMBER has endorsed the EPOCA blog.
- A COST Action proposal was submitted in March 2010.
- Wendy Broadgate suggested that the IOC/SCOR/IGBP oceanacidification.net portal (managed by IOC) be managed by SIOA and become the SIOA website, to avoid duplication.

ACTION: IPO TO DISCUSS THE OCEAN ACIDIFICATION PORTAL WITH IGBP, IOC AND SCOR.

8- Sponsors' reports

8.1 IGBP Report (Wendy Broadgate)

- ICSU will meet in June 2010 to determine the way forward for IGBP. As an IGBP project, IMBER could be affected.
- A Supplement to the IMBER Science Plan was recently published. A caveat stipulates that IMBER must prioritize as it is impossible to achieve everything in the Science Plan.
- IGBP has several Fast Track Initiatives. 'Upper Ocean Nutrient Limitation' is of relevance to IMBER.
- The last IGBP, SCOR, IOC Symposium on the Ocean in a high CO₂ world produced a Summary for policy-makers. The next Symposium is planned for 2012 and will be an opportunity to showcase IMBER research.

IGBP International Synthesis - Planet under pressure: Knowledge and solutions

The Synthesis Topics that could be of interest to IMBER are:

- Changing nutrient loads in the coastal zone and Open Ocean.
- Consequences of geoengineering.
- Earth system impacts from changes in the cryosphere.
- Megacities in the coastal zone.

These 3-4 year activities aim to produce a useful synthesis product (e.g. peer-reviewed articles)

Discussion:

- Eileen Hofmann asked about the mechanism for IMBER to provide input to the synthesis activities. Wendy suggested contacting the leaders of the activities to determine how IMBER results can feed in. Ed Urban commented that IGBP should assist with this and not depend on solely the leaders and the projects.
- Ken Drinkwater commented that the topics are extremely broad (e.g. impacts on the cryosphere). Wendy Broadgate replied that different groups are considering different aspects, which will then be integrated.

ACTION: IPO TO PROVIDE INPUT ON SYNTHESIS TOPICS TO SYNTHESIS LEADERS, COPIED TO WENDY BROADGATE.

Global Change OSC 2012

- This environmental meeting focusing on solutions relevant to policy-makers will be held in London in May 2012. The emphasis will be on integration and the production of policy-relevant products.
- IMBER could contribute to the OSC by leading or participating in sessions.
- IGBP is working closely with the UN to feed into the Earth Summit.

ACTION: IPO TO INVESTIGATE HOW IMBER CAN CONTRIBUTE TO THE 2012 GLOBAL CHANGE OSC.

8.2 SCOR Report (Ed Urban)

Third SCOR, IGBP, IOC Symposium on the Ocean in a High CO₂ World (2012)

- Several members of the SIOA group have been appointed to the planning committee of the symposium, so IMBER is well represented.
- Eight bids to host the symposium have been received and the venue will be decided by the end of the year.
- There will be a day dedicated to socio-economic topics and outreach to policy-makers.

SCOR working groups

- There are 13-15 working groups and new ones are solicited each year.
- Six are currently undergoing an open review (two will be chosen).
- The working groups (max 10 members) are funded \$45K for about 4 years (three meetings).
- The working groups meet at the SCOR AGM. The next will be held in Toulouse, France in September 2010.

ACTION: IPO TO SEE IF ANY OF THE WORKING GROUPS CURRENTLY UNDER REVIEW FIT INTO THE IMBER GOAL.

Pilot Project on Data Publication (SCOR/IODE/MBLWHOI Library)

Data and metadata are often not getting to the appropriate data centres and it is often not available to other users.

Usual approach:

- Data centres disassemble received datasets and repackage them in a citable format.
- Data relevant to traditional journals (e.g. figures or tables) are assigned persistent identifiers and stored in repositories.

New approach:

- Data centres and libraries store and publish ocean data so that the providers can cite it and it is readily available to other users.

- Not foolproof as scientists still have to provide metadata.
- There is a need to push more publishers for more open access to data. Traditional journals charge to look at the data online and they can only be accessed by subscribers (Eileen Hofmann).

SCOR Visiting Scholars

This is a programme to send scientists to teach and mentor in developing countries. Only travel support is provided. IMBER scientists could apply to extend IMBER science within a developing country institute. Raleigh Hood suggested that the programme should support sabbaticals.

9. OceanObs'09 (Julie Hall)

- OceanObs'99 focused on physical observations.
- OceanObs'09 introduced biogeochemical and ocean observations.
- IMBER was very active in the workshops (Niki Gruber, Wilco Hazeleger)
- SIC SG1 and SG2 submitted community white papers.
- The integration of biogeochemistry and biological measurements was a tremendous step forward for IMBER.
- A working group was formed with representatives from all the organisations interested in ocean observations. The aim is to develop a framework to determine:
 - what observations are required,
 - implementation,
 - information, data management and product development.
- The challenge is to find consensus on key biological parameters to be measured (biogeochemical non-carbon measurements are also still undecided)
- Ed Urban asked about the Mestra meeting which was intended to determine the key parameters that needed to be measured. Kendra Daly responded that the meeting was very wide-ranging. Julie Hall said that they will piggy-back onto existing work e.g. CPR extension.

ACTION: JULIE HALL TO KEEP THE SSC INFORMED ABOUT THE OCEANOBS WORKING GROUP AND HOW IMBER MAY CONTRIBUTE.

Thursday 6 May

10. IMBER budget and funding (Lisa Maddison)

10.1 Budget 2009-2010

Lisa presented the global IMBER budget, including requests for funding that had been received.

- With several new activities having recently come into IMBER all at the same time, the IMBER budget is rather limited.
- Eileen Hofmann has discussed with the chairs of the Regional Programmes that IMBER will provide some support for SSC activities, but funding for other activities is uncertain. They need to seek other funding.
- Ed Urban suggested that national contributions and sources in other countries involved in the Regional Programmes should be investigated. Also, funding is sometimes available from the host of a meeting (e.g. China or Japan).
- A funding strategy needs to be developed to ensure that the Regional Programmes are not competing with each other for funds from IMBER (Julie Hall).
- Proposals must be tracked to ensure that IMBER activities are not competing for the same outside funding - transparent process needed (Carol Robinson).
- Funding of the IPO from the consortium of French funders terminates in August 2011. A document describing the activities and achievements of IMBER and the IPO over

the past two years and plans for the future is currently being completed. Patrick Monfray will organise a meeting with the French funders. Include Jean-Pierre Gattuso, Claude Roy in the negotiations. Wendy Broadgate and Ed Urban also offered to assist. Eileen Hofmann reminded everyone that we should explore other locations in case the bid is unsuccessful.

ACTION: THE IPO TO WORK WITH THE REGIONAL PROGRAMMES TO SECURE FUNDING.

10.2 Funding requests and decisions

- Raleigh Hood asked about publishing costs for the SIBER SPIS and it was agreed that the costs should be shared with IGOOS. ICED printed 600 copies of their SPIS (\$5K) and a similar amount for printing the SIBER SPIS was approved.

Working group requests

- \$15K for Integration and synthesis activity. No specific activity is planned yet and it may be possible to do this by email, in which case funding will not be necessary.
- \$5K remains from the E2E Working Group which will be used for the publication of the three synthesis papers that are in review.
- \$10K requested to hold a joint SIC SG1 and SG2 workshop in 2011.
- \$15K requested for the 2010 SIOA meeting to be held in Washington in December 2010. This will be split between IMBER and SOLAS. Hence \$7.5K from IMBER.
- \$16.2K requested to hold a DMC meeting. Alberto Piola suggested that this could be piggy-backed onto IMBIZO II as several DMC members would be attending for the Dry Cruise workshop. This would reduce the cost of the meeting.
- \$15K requested by the Capacity Building group to host a meeting in 2010.

Regional Programme requests

Requests from the Regional Programmes were very varied as some had included requests for all future activities and others only support for their SSC meeting.

- ESSAS requested \$15K for their 2011 SSC meeting and \$15K for the OSM to be held in Seattle in 2011.
- \$12K was approved by the IMBER SSC in 2009 for the 2010 CLIOTOP SSC meeting and mid-term workshop. However, funds IMBER received from EUR-OCEANS and GLOBEC for this purpose were almost sufficient to cover the meetings. The remaining money approved by IMBER is available for CLIOTOP activities in 2011. Requested support for meetings of five working groups and for an SSC meeting to coincide with IMBIZO II.
- ICED requested \$10K for a fieldwork planning/coordination workshop.
- SIBER requested \$10K for the 2011 SSC meeting.

Requests for sponsorship

- PICES requested support for the 2011 Annual Meeting. It was agreed that maintaining the contact with PICES (and thereby linking to FUTURE) is important (they are sponsoring three invited speakers for IMBIZO II). Agreed to provide \$3K travel support for invited speakers for joint IMBER-PICES session.
- Request to sponsor the PICES ICES IOC Symposium 2012 (Yeosu, Korea). It was agreed that this is an important activity to support. Agree to support the travel of invited speakers assuming there is a session of interest to IMBER.

ACTION: IPO TO ORGANISE THE PUBLICATION OF THE SIBER SPIS.
ACTION: LISA MADDISON TO WORK WITH THE REGIONAL PROGRAMMES LEADERS TO DETERMINE WHAT ACTIVITIES REQUIRE FUNDING AND MATCH THESE WITH POTENTIAL FUNDING SOURCES.

ACTION: ALBERTO PIOLA TO CONTACT DMC MEMBERS ABOUT HOLDING A DMC MEETING IN CRETE.

DECISION: PRINTING COSTS FOR THE SIBER SPIS WILL BE COVERED BY IMBER (SHARE WITH IOGOOS).

DECISION: \$3K FOR TRAVEL SUPPORT FOR INVITED SPEAKERS TO A JOINT IMBER-PICES SPECIAL SESSION AT THE PICES 2011 ANNUAL MEETING.

DECISION: OFFER TO SUPPORT TRAVEL OF INVITED SPEAKERS TO A SPECIAL SESSION OF INTEREST TO IMBER AT THE ICES PICES IOC 2012 SYMPOSIUM IN YEOSU, KOREA.

10.3 Funding opportunities

- ESF is a potential source of funding for OSM. Wendy Broadgate to provide the contact details.
- ESF also has money for funding without calls – contact: Bernard Avril (Wendy Broadgate).
- The COST Action proposal will bring in a significant amount of funding if it is successful - Carol Robinson asked SSC members to reply to her emails.
- Some foundations provide funding for human dimensions activities (Mike Roman).
- The Pew Environmental programme has historically focused on environmental stewardship. Some of the regional programme and working group activities could be appropriate.
- Dieter Palman contact at the German 'Foundation for the Sea' (Julie Hall).
- GLOBEC had link to FAO (Jacky Addler). Perhaps could fund some fish-related activities (Ed Urban).
- IOC-UNESCO has provided funding for CLIOTOP, GLOBEC and SIBER. Perhaps they might be able to provide funding in the future.

ACTION: WENDY BROADGATE TO PROVIDE DETAILS OF THE CONTACT FOR OSM FUNDING.

ACTION: WENDY BROADGATE TO PROVIDE DETAILS OF THE CONTACT FOR FUNDING NOT LINKED TO SPECIFIC CALLS AT ESF.

ACTION: LISA MADDISON TO INVESTIGATE FOUNDATIONS THAT COULD POTENTIALLY FUND HUMAN DIMENSIONS ACTIVITIES.

ACTION: LISA MADDISON TO EXPLORE FUNDING POSSIBILITIES AT THE FOUNDATION FOR THE SEA.

ACTION: LISA MADDISON TO INVESTIGATE POSSIBILITIES OF ADDITIONAL FUNDING FROM IOC-UNESCO.

ACTION: LISA MADDISON TO INVESTIGATE THE WORLD BANK AS FUNDING SOURCE.

11. 'Way Forward for IMBER' (Eileen Hofmann and Julie Hall)

The Way Forward document was published in the IMBER and GLOBEC newsletters in April as a means to communicate plans for IMBER over the next five years. It stems from the Transition Task Team's recommendations, which include the incorporation of ongoing GLOBEC regional programmes and the human dimension perspective and introduces comparative analysis.

Mechanisms for implementation include the IMBIZO series, Open Science Meetings and workshops, which will also facilitate increasing community involvement. IMBER Phase 2 will focus on IMBER science and publications.

Discussion:

- Regional programmes provide a network of complementary research programmes.
- The inclusion of the regional programmes necessitates restructuring the task teams and working groups to encourage cross programme comparisons. SSC membership will be revised to include the requisite expertise as needed.
- Increase representation of IMBER science at national and international meetings (e.g. ASLO, EGU, AGU).
- The 2009 SSC suggested the development of new working groups on Human Dimensions and Synthesis, Integration and Prediction. Also a revamp of the Continental Margins Task Team.

Human Dimensions

- IGBP place strong emphasis on human dimensions.
- Agreed should build on the work of GLOBEC Focus 4 and also the PICES FUTURE Working Group, CLIOTOP WG5 and LOICZ. Develop a Human Dimensions Working Group to facilitate this.
- Investigate the NSF International Research Network Connections Program (funds workshops to develop the network between social and natural scientists).
- NSF: Dynamics of Coupled Natural and Human Systems could be a potential funding source.
- Alida Bundy will consider chairing the Human Dimensions Working Group

Integration, Synthesis and Prediction

- In 2009 the SSC suggested that synthesis and integration needed to be considered separate from the science of prediction (Julie Hall).
- Projection and forecasting result from several programmes. Perhaps this should be brought together for IPCC AR5 in 2012 (Eugene Murphy).
- Delay the decision on whether to form a dedicated Integration and Synthesis working group until after the IMBIZO II syntheses. All of the regional programmes will be represented at the IMBIZO, so a meeting could be held to consider this at the end of the IMBIZO.
- Mike Roman suggested forecasting and prediction as a cross-cutting IMBIZO II theme.
- Prediction should remain at the regional programme level.

Long term strategy for IMBER science

- IGBP recommends that IMBER prioritize what it addresses, considering its limited resources. Focus on four or five science topics.
- Ken Drinkwater recommends looking at the major issues that are not being addressed.
- Provide start up/seed funding for programmes to undertake activities that IMBER has identified as priorities (Raleigh Hood). Regional programmes must be self-sustainable (Ken Drinkwater). Eileen Hofmann agreed – provide funding for an initial SSC meeting to determine what will be done and then limited funding once programmes are established. New programmes (e.g. SPACC) must include a funding strategy in the SPIS.

ACTION: SOPHIE BEAUVAIS TO DISPLAY THE WAY FORWARD DOCUMENT PROMINENTLY ON THE IMBER WEBSITE.

ACTION: JULIE HALL AND WENDY BROADGATE TO PROVIDE ALIDA BUNDY WITH THE NAMES OF POTENTIAL HUMAN DIMENSIONS EXPERTS. (DONE)

ACTION: IPO TO EXPLORE HAVING EPOCA AS A CONTRIBUTING PROJECT.

ACTION: IPO TO COORDINATE IMBER REPRESENTATION AT SCIENTIFIC MEETINGS.

ACTION: JULIE HALL TO SEND THE CONTINENTAL MARGINS TOPICS IDENTIFIED BY THE SSC IN 2009 TO SSC MEMBERS.

DECISION: DEVELOP A HUMAN DIMENSIONS WORKING GROUP (5-8 MEMBERS) TO RECOMMEND AN APPROACH TO INTRODUCE THE SOCIAL AND ECONOMIC ASPECTS INTO IMBER.

DECISION: TABLE A DISCUSSION AROUND INTEGRATION AND SYNTHESIS FOLLOWING IMBIZO II.

Communications

The communications strategy should be revised to improve communication with a wider audience.

- IMBER needs a more identifiable 'branding'. Currently, products all look very different (e.g. IMBIZO and ClimECO₂ posters (Claudio Campagna)).
- IGBP can help with the communications strategy and product development.
- Develop a new brochure drawing on the 'Way Forward' document.
- Several organisations partner using Google Marine (Claudio Campagna). This could be used to develop connections with a broader scientific community.

ACTION: LISA MADDISON TO DEVELOP A NEW COMMUNICATIONS STRATEGY.

ACTION: IPO TO DEVELOP A NEW IMBER BROCHURE.

ACTION: IPO TO REGISTER WITH GOOGLE MARINE.

Discussion of program for US Funding Agencies (Eileen Hofmann)

Representatives from several US funding agencies had been invited to attend the last day of the SSC meeting. The aim was to describe what IMBER does and what might be of relevance to their programmes (hoping for inclusion in their long-term planning strategies). Overview presentations will highlight IMBER science. Science-based Regional Programmes presentations will follow to try to solicit funding.

Presentations from the regional programmes were reviewed and revised to ensure that key points of interest to the agency representatives were made.

12. 2011 SSC Membership Nominations

Carol Robinson, Javier Arístegui, Jean-Pierre Gattuso and Niki Gruber complete their first term on the IMBER SSC at the end of 2010 and have been invited to serve for a second term. All have accepted.

SSC membership will change depending on the expertise that is required.

IGBP deadline for nominations is May 2011.

Gaps identified:

- CLIOTOP and SIBER are not represented on the SSC.
- Expertise in sensor development, observations.

IGBP: Call for nominations:

- IGBP Chair.
- Two marine people for the IGBP SC.

ACTION: SSC TO SEND NOMINATIONS FOR THE TWO MARINE POSITIONS ON THE IGBP SC TO WENDY BROADGATE.

13. Location and date of next SSC meeting

Suggestions given for the location of the 2011 SSC meeting include:

- Asia (given the opening of the China RPO).
- Brussels (to attract people from the EU funding system).
- Brest (to promote the hosting of the IPO).

The next SSC meeting will be held on 4-8 April 2011.

ACTION: LISA MADDISON TO SEND DATES OF NEXT SSC MEETING TO THE SSC MEMBERS AND TO SOLAS.

Friday 7 May

14. Funding Agencies Meeting

IMBER Science

Introduction and overview of IMBER science (Eileen Hofmann).

Challenges include:

- Inclusion of the human dimension.
- Comparative analysis.
- Synthesis and integration.

End-to-end food webs (Mike Roman)

- Cross-cutting across projects.
- Three synthesis papers currently under review.

Dark Ocean (Javier Arístegui)

- Ocean losing efficiency as a CO₂ sink - apparent imbalance between sources (carbon inputs) and sinks (respiration) of organic carbon (controversial).
- Synthesis and perspective papers published in DSRII Special Issue.

Ocean Acidification (Carol Robinson)

Publications:

- Jerry Blackford et al., 2010 deals with end-to-end models for the analysis of marine ecosystems.
- Helen Findlay and others from EPOCA are currently in the Arctic investigating Ocean Acidification, temperature and impacts on benthic species e.g. Arctic barnacles.
- Ulf Riebesell Impacts of Ocean Acidification.

Regional Programmes

ESSAS (Ken Drinkwater)

- Linking biogeochemistry processes to food webs in the Sub-Arctic seas.
- Affiliated programme: Comparison of Marine Ecosystems in Norway and US (MENU).
- Considering expanding into the Arctic.

ICED (Eugene Murphy)

- Focus has been on ecosystem structure and dynamics.
- Key challenges: climate, biogeochemistry and fisheries.
- Large-scale changes observed, but not consistent.

SIBER (Raleigh Hood)

- Very broad basin-wide programme.
- Unusual currents change direction seasonally.
- IOGOOS provides long-term monitoring.
- RAMA flux reference sites

CLIOTOP (Bob Cowen)

- Inter-oceanic comparisons.
- Rory Wilson's 'Daily diary device' provides huge amounts of information on feeding behaviour.
- Global databases provide analysis of more than 20 000 stomach contents (1969-2009).
- Integrates socio-economic aspects

15. Reports from Representatives of US Funding Agencies

15.1 National Science Foundation (NSF)

Roberta Marinelli gave the NSF presentation on behalf of Phil Taylor.

NSF solicitations relate to five general themes:

1. Ocean Acidification - Closed
2. Biodiversity – Closed
3. Earth System model - Open
4. Water and sustainability
5. Climate change education partnership

1-3 are relevant to IMBER.

Earth System Model (5-year solicitation)

- Links local and large-scale.
- NSF is keen to develop new partnerships.
- Science, exploratory and capacity building proposals.
- IMBER Regional Programmes would fit into the Core Program.
- Coastal thrust in the Ocean Science division (under development)

Biological Sciences – Antarctic Sciences (relevant to ICED)

- New research vessel for the Southern Ocean and sub-Antarctic to be funded by NSF.
- General science budget has increased and is open for proposals.
- Website Q&A section for advice on proposal writing. Also contact the Program Manager.

ACTION: ICED TO CONTACT ROBERTA TO DETERMINE THE MOST ADVANTAGEOUS PROPOSAL TO SUBMIT.

Dimensions of biodiversity

- Supports research that integrates taxonomic, genetic and functional dimensions.

15.2 National Aeronautics and Space Administration (NASA) (Fred Lipschultz)

- Participates in many similar activities to NSF.
- Supports a wide range, e.g. biodiversity, ecology, forecasting, fisheries research (includes human dimension), of programmes.
- All NASA grants have a remote sensing component (not ARGO floats).
- No unsolicited calls.
- Range of solicitation sub-elements e.g. carbon cycling, ocean acidification.
- Keen to fund worldwide.
- Responding to Raleigh Hood's question about the gap in ocean colour measurement, as MODIS is reaching the end of its design lifetime and the next satellite is not due to launch until 2017, Fred said the science community needs to make the case to change funding priorities to support a new satellite to fill the gap.

15.3 Ocean Carbon and Biogeochemistry (OCB) (Scott Doney)

- OCB is a coordinating body for biogeochemistry and ecosystem projects.
- Provides links between Ocean Carbon and Climate Change (OCCC), North American Carbon Program (NACP), SOLAS and IMBER communities.

- OCB does not endorse projects. No financial help is provided, but assists with networking, communications, outreach products, data management, etc.
- No dedicated data management facilities, but link to BCO-DMO.

Possible collaboration with IMBER

- Determine science topics of common interest.
- Support people to attend IMBER meetings.
- Have IMBER representatives at OCB meetings (Mike Roman and Raleigh Hood will attend the 2010 Summer Workshop)
- Scoping workshops.
- Identify community in the US that is doing IMBER work.
- Eugene Murphy asked if it is possible to have a more formal way of linking to OCB as there are many topics that overlap with IMBER. Scott replied that the interests of US researchers' are considered first and international links, second. However, Eileen Hofmann mentioned that although the Southern Ocean Scoping Workshop was based on US interest, scientists from other parts of the world were also included.
- Eugene Murphy suggested that OCB input should always be included on the IMBER SSC meeting agenda.

Workshops

- Annual Summer Workshop (multidisciplinary science workshop)
- Two scoping workshops per year enable discussion on challenges and implementation approaches on specific research topics.

ACTION: LISA MADDISON TO CONTACT HEATHER BENWAY (LINK TO EPOCA).

ACTION: SOPHIE BEAUVAIS TO PUT IMBER PRESENTATIONS ONTO THE WEBSITE.

ACTION: RALEIGH HOOD AND SOPHIE BEAUVAIS TO UPDATE THE SIBER WEBSITE.

Meeting closure

There being no further business, Eileen Hofmann thanked everyone for attending and closed the meeting.