

## **SUMMARY OF CORE PROJECT 2005 SSC's: AN AIMES PERSPECTIVE**

### **IMBER - East China Normal University, P.R China - April 18 – 20, 2005**

IMBER – Integrated Marine Biogeochemistry and Ecosystem Research; an IGBP/SCOR collaboration (SCOR = Scientific Committee on Oceanic Research;

<http://www.jhu.edu/~scor>)

AIMES perceived interactions with IMBER

#### *1. Biogeochemistry:*

Interactions, transfers, change in community structure

Fe, N, N<sub>2</sub>, P, trace metals

Improve parameterization, initialization and evaluation of modeled bgc fluxes, budgets and interactions

Possible cross-cutting venues: PML AMEMR (Advances in marine ecosystem modeling research); Carbo-Oceans sensitivity/uncertainty analyses; GODAE

#### *2. Sensitivity to global change:*

Climate and physical forcings/variability

Global Change Issues in high latitudes that an integrated regional study could address:

Carbon storage and sequestration (organic matter (OM), methane (CH<sub>4</sub>), clathrates, CO<sub>2</sub>)

Hydrology: ppt/et ratios: runoff, sediment transport, salinity gradients, permafrost, etc

Changes in thermohaline circulation (THC); warming, altered CO<sub>2</sub> uptake

Changes in high latitude albedo

#### *3. Feedbacks to the Earth System*

Storage, ecosystem feedbacks, nitrous oxide (N<sub>2</sub>O)

Action/Recommendations: IMBER will participate in the AIMES SSC meeting later this year when the AIMES Science Plan is being developed to ensure effective linkages between the projects. Julie Hall has agreed to attend.

### **iLEAPS – Vienna, Austria – 29-30 April 2005**

iLEAPS – The Integrated Land Ecosystem-Atmosphere Processes study;

<http://www.atm.helsinki.fi/ILEAPS/>

*LEARN* (Land-Ecosystem-Atmosphere Reactive Nitrogen) Mary Ann Carroll (iLEAPS SSC member) presented the LEARN proposal to iLEAPS for consideration as a recognized project. LEARN has strong potential conflicts with INI (recent nitrogen fast-track initiative that was assumed by AIMES at the IGBP-SC meeting in Beijing. The LEARN activity was discussed in terms of N saturation and bias of N-Hemispheric research regarding inorganic and organic N losses in streamflow. Suggested that losses in tropics of a concern; Michael Keller countered that this is a Northern Hemispheric bias and not necessarily of concern or something new. Discussed transformations via direct emissions, direct uptake by foliage and linkages to the C cycle. More information can be found at <http://www.acd.ucar.edu/oppFund/BGS>

It is still very unclear how INI and LEARN will collaborate and complement each other. Action items by iLEAPS SSC:

- LEARN was recognized as an iLEAPS project.
- Torben Christensen is the iLEAPS SSC contact person to LEARN.
- Mary Anne Carroll, Kathy Hibbard, Kevin Noone, and Jim Galloway to prepare a document to outline the domains of LEARN and INI in order to prevent overlap and ensure tight collaboration.
- LEARN SSC to sharpen and focus the scientific questions before next SSC meeting in January 2006.

With regard to INI and iLEAPS, the SSC suggested that the IGBP reassesses the pathway of Fast Track Initiatives to project status (e.g. INI to AIMES Nitrogen Project). It was also suggested that the name of INI should be changed to reflect the present status.

*MAIRS* – Monsoon Asia Integrated Regional Study - Yan Xiaodong  
MAIRS a new Earth System Science Partnership (ESSP) initiative at the request of START. MAIRS activity will look at the seasonal variation of solar radiation, land-ocean thermal contrasts as well as mechanical and thermal. Greenhouse gas and monsoon climate changes, anthropogenic aerosols (sulphate, BC, ABC on climate as well as impacts of land use/cover on monsoon climate.

Increasing summer monsoon precipitation and variability, weakening of summer and winter monsoon over Asia continent as well as increasing aridification. There is support for a MAIRS IPO from the Chinese Academy of Science for 10 years, Possibility of GAME/GEWEX sending an expert in field observation to work at MAIRS IPO with formal opening sometime this year (October/November)

*With Respect to AIMES:* One of their goals of MAIRS is to develop a regional model of earth system – links to AIMES. A workshop on the development of the Reg ESM (regional earth system model) for MAIRS in collaboration with RMIP was held in Seoul in January 2005. Also, advanced training institutes of regional modelling for monsoon Asia joint with the Pacific Research Center?

The idea of a high-latitude regional study was enthusiastically received by the iLEAPS SSC. This should be on the table for the next IGBP SC meeting.

Andy Andreae will attend the AIMES SSC meeting in November.

### **GLOBEC – Rome, Italy 1-3 June 2005**

GLOBEC – Global Ocean Ecosystem Dynamics; (<http://www.pml.ac.uk/globec/>)  
As with iLEAPS, GLOBEC was enthusiastic about collaborating with AIMES on a high latitude regional study. It links nicely with a new project, ESSAS (Ecosystem Studies of Sub-Arctic Seas - <http://www.pml.ac.uk/globec/structure/regional/essas/essas.htm>).

Proposed a Post-doctoral/young scientist workshop on climate and marine ecosystem modelling. To provide advanced training using NCAR's Community Climate Simulation Model (CCSM). Goal would be to train a cohort of marine ecologists able to run earth system models for their own objectives. Workshop would be about 45 participants over 3 weeks, in 2007.

**LOICZ – Egmond an Zee, the Netherlands: 26-30 June 2005**

LOICZ – Land Ocean Interactions in the Coastal Zone; <http://www.loicz.org>

LOICZ is strongly poised to work with AIMES. They have several models that they would like to test in EMDI fashion and John Parslow, perhaps with Jim Syvetski would like to run a model intercomparison to test robustness of models. LOICZ, along with iLEAPS and GLOBEC are keen for a regional study in high latitudes.

1. John Parslow contact for a LOICZ model intercomparison of ecosystem models in coastal areas. He would like to provide modellers with the opportunity to test models at different sites in a global sense. The primary goal is the development of a suite of estuarine and coastal models that can be used globally.
2. Michel Maybeck suggested that it would be useful for scientists, educators, laymen, etc. for a global change glossary based on IGBP science. For instance, what does a social vs. natural scientist mean when they say climate regime? What are Milankovich cycles, what is a catastrophic event (in scientific terms), excess anthropogenic CO<sub>2</sub>, residual terrestrial sink, etc. His idea stems from the Atlas. He suggested an activity that used the IGBP syntheses volume indexes as primary references.
3. Based on GAIM legacy (RICE, PILPS, BIOME-6000, etc) Michel also suggested a HYDRO-6000 would be of great interest to both LOICZ and GWSP. This builds on the BIOME-6000 activity where biome reconstructions were developed based on paleo proxies. Dennis Ojima and Sandy Harrison are disussing the possibility of a compatible vegetation history. A history of vegetation based on land use would be complimentary for a hydro-reconstruction as well as the ongoing AIMES IHOPE activity.

**PAGES Beijing, China; August, 2005- Attended by Colin Prentice**

**Agreed areas of strong interaction between AIMES and PAGES:**

1. IHOPE: PAGES already strongly involved. Will provide the observational data required on past human environments.
2. "Ice-core challenge": should be a joint AIMES-PAGES project. Interaction facilitated by having Jerome Chapellaz on both SSCs. (Note added now: research area promoted by joint initiative of QUEST and INSU-CNRS, under development).

**Agreed actions:**

Bette Otto-Bliesner (new PAGES SSC member, proposed) to attend AIMES SSC 2005. Ice-core challenge project to be a joint project.

**Additional remarks:**

PAGES is moving to include a modelling component and more of a process orientation, which will extend the scope of potential collaboration with AIMES. New director (Thorsten Kiefer) is scientifically pro-active; he and chair (Julie Brigham-Grette) are keen to collaborate.

Some discussion on- and off-line about a proposed initiative (see latest PAGES newsletter) for data synthesis and analysis around the relations between human activity and environmental change, especially forest dynamics, during the Holocene. Apparently, this notion was somewhat inspired by the idea of testing the Ruddiman hypothesis – also ties in with IHOPE activity; however, the general view seems to be that one should not put all one's eggs in that basket as the hypothesis may be quite wrong, and also there are many other reasons to perform such a synthesis/analysis. The work could build on achievements by BIOME 6000 but needs to move from a time slice approach to a continuous time approach. In a subsequent discussion with Thorsten, we agreed that such a project would need a stronger community backing and buy-in than was evident from the proposal which was sent to PAGES.