

## REPORT OF THE MODEL TASK TEAM

The final meeting of the MODEL Task Team (hereafter MODEL) was held from 09:00–12:30 on October 26, 2008. The Co-Chairman, Dr. Thomas C. Wainwright, called the meeting to order and welcomed the participants (*MODEL Endnote 1*). Dr. Wei Hao (China), Co-Chairman of MODEL, was unable to attend. The Task Team reviewed and adopted the draft agenda (*MODEL Endnote 2*).

### AGENDA ITEM 2

#### **Review of agenda and inclusion of new items**

During the meeting, participants:

- reviewed the accomplishments of MODEL over the past year;
- discussed production of the MODEL final report;
- discussed the PICES FUTURE Program draft Implementation Plan;
- discussed possible proposed activities of FUTURE.

### AGENDA ITEM 3

#### **MODEL accomplishments after PICES XVI**

Dr. Harold Batchelder provided an update on the U.S. GLOBEC Program pan-regional synthesis phase. U.S. GLOBEC has had three regional programs in the Northwest Atlantic (Georges Bank), Northeast Pacific (California Current and Gulf of Alaska), and the Southern Ocean. All three programs aimed to link climate forcing to ocean physics and to ecosystem productivity. The final phase of U.S. GLOBEC is a pan-regional synthesis, with a total budget of \$7 million. For this phase, ten 3-year projects have been funded, of which two are of special interest to PICES: one led by Dr. Emanuele Di Lorenzo and others on Pacific boundary ecosystems, and one led by Dr. Batchelder and others on comparative ecology of krill. There will be a pan-regional projects meeting in February 2009, and a final U.S. GLOBEC symposium is planned to be held in the Washington, DC area in 2011.

Dr. Enrique Curchitser provided an update on the U.S. CAMEO (Comparative Analysis of Marine Ecosystem Organization) Program, which focuses on cross-system comparisons of marine ecosystem structure and function. The joint NSF/NOAA program is intended to build on GLOBEC to connect models to management. Initially planned for \$11 million per year over 5 years, the project was funded at \$2 million for 2 years. Proposals were received in June 2008, and the proposal review panel has met, but there have been no announcements of awards yet.

Dr. Bernard Megrey provided an update on ESSAS (Ecosystem Studies of Sub-Arctic Seas) activities. A meeting of ESSAS Working Group 3 (*Modeling Ecosystem Response*) was recently held in Halifax, Canada, to plan work. The first steps will be to compare subarctic systems with EcoPath models, catalogue available data products and characterize ecosystems. There is a proposal to embed NPZ and multiple fish models in ROMS, which would allow full analysis of upper/lower trophic linkages. The group also plans further development of NEMURO.SAN (a spatially explicit, multi-species fish bioenergetics and population dynamics model).

Dr. Wainwright reported on progress of the NOAA project “A software framework for integrating marine ecosystem models.” The project is embedding NEMURO code within the Earth Systems Modeling Framework (ESMF), which may make the NEMURO code easier to integrate into other U.S. climate change research efforts. The project began 2 years ago, and after delays, is now mostly finished. A prototype 3-D gridded NEMURO model ESMF component has been completed, along with a demonstration application that reproduces the Station A7 simulations run with NEMURO version 1.0. Debugging and optimizing are in progress, and the next step is to link the NEMURO ESMF component with a 3-D ROMS circulation model via

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the new ESMF interface in ROMS. Initial code will be available on the MODEL web page shortly after the close of PICES-2008.

Dr. Megrey reported on the PICES Marine Ecosystem Model Inter-Comparisons Project. The initial planning workshop for the project was held on October 25. During the workshop, participants talked about the project objectives, models to include, locations, methods of skill assessments, and choice of indicator species. A general statement of the project objective and an outline of a work plan were developed. The next step will be to solicit participants (including those outside the PICES community), then potential participants will help to develop draft work plan and a proposal for a workshop session at PICES-2009. The work plan and workshop proposal will be presented to Science Board at their inter-sessional meeting in April 2009.

Following discussion, MODEL expressed continued support for the project, and particular support for the idea of a 2- or 3-day workshop at next year's PICES Annual Meeting (see Agenda Item 5c).

Dr. Michio Kishi reported on the PICES International Summer School on *Ecosystem-based management and ecosystem approach* held in Hakodate, Japan, August 23–26, 2008. This was the second PICES summer school, which consisted of 5 or 6 lectures followed by group discussions and projects. Some of the groups made posters which were displayed at the poster session at PICES-2008.

At PICES-2008, MODEL was involved with one topic session (S7) – “*Marine system forecast models: moving forward to the FUTURE*” and two workshops: (W4) “*Climate scenarios for ecosystem modeling (II)*” and (W5) “*Marine ecosystem model inter-comparisons*”. These were reviewed briefly at the meeting.

Dr. Yasuhiro Yamanaka also reported on recent developments with NEMURO applications in Japanese laboratories, particularly applications of the global high-resolution climate model.

### AGENDA ITEM 4

#### **Discussion of the MODEL final report**

The Task Team reviewed an outline of the CCCC final report, and discussed the MODEL contribution to it. Dr. Wainwright agreed to draft the MODEL sections with the assistance of Dr. Megrey; this draft will then be circulated to past and present MODEL members for their review. A revised MODEL contribution will be forwarded to CCCC by January 15, 2009 for integration into the CCCC draft report.

### AGENDA ITEM 5

#### **Discussion of the PICES FUTURE scientific program draft implementation plan**

##### a. General discussion of the implementation plan

MODEL reviewed the second draft implementation plan of the FUTURE Science Program. Comments from MODEL members are summarized below. Comments fell into three general areas: general comments, client-service orientation, and organizational structure. (NOTE: these comments do not reflect a consensus of all MODEL members, but only the collected opinions of those present at the meeting.)

- General Comments:
  - Liked product separation into “status, outlooks, and forecasts.”
  - The document has lots of introduction, but little concrete information on structure or how work will be accomplished.
- Client-service Orientation
  - What a “client” is depends on the country: some countries do not fit into client-oriented framework.
  - Countries have different structures of interactions between science and socio-economic management, and these differences are not reflected here.

- PICES is much different from ICES which is all “western” countries—the same organization model will not work.
- Countries may not agree on using joint approaches developed by this program.
- Organizational Structure and Product Production.
  - The proposed organizational structure is not product-oriented. In particular, the key-question task teams seem to be research-oriented, not product-oriented.
  - There is no identification of who does forecasts, and what are the products.
  - Task teams should not be focused on broad questions, but rather on the tasks needed to answer those questions, which may be overlapping among the key questions.
  - Modeling activities have no coordination—spread among all task teams.
  - The task team to identify clients, constituents is a short-term task—strange for a permanent task team. However, the problem of identifying what clients want would be longer-term task, requiring social scientists to develop questionnaires, interviews.

#### b. Proposed workshop and topic session

The Task Team discussed and recommended two FUTURE-related events at PICES-2009:

1. A multi-day workshop that will be proposed by the PICES Marine Ecosystem Model Inter-Comparison Project (see discussion above under Agenda Item 3).
2. A proposed POC/FUTURE Topic Session on “*Future marine ecosystem predictions from an earth system science perspective*” (see *POC Endnote 4*).

#### AGENDA ITEM 6

##### **Requests for travel to future meetings**

As MODEL is ending at this meeting, no requests for travel to future meetings were made.

#### AGENDA ITEM 7

##### **Announcements**

Dr. Sinjae Yoo announced the third CREAMS/PICES Summer School on “*Satellite oceanography*” to be held August 24–27, 2009, at Seoul National University in Korea. The school will have a maximum of 30 students. Specific topics and the schedule remain to be worked out.

During discussion of this, it was noted that the PICES summer school does not always cover modeling. Dr. Shin-ichi Ito suggested that a hands-on modeling training session might be held regularly before or after PICES meetings, as a standing PICES event. Possible topics include ocean ecosystem modeling using the NEMURO models and environmental data analysis using the open-source “R” package. MODEL decided to recommend this to Science Board (see *MODEL Task Team recommendations* below).

Dr. Manuel Barange announced the third GLOBEC Open Science Meeting, to be held in Victoria, Canada, June 26–29, 2009. The meeting theme is “*Marine ecosystems: from function to prediction*”, and will be convened by Drs. Ian Perry, Eileen Hofmann, and Barange. Sponsors include GLOBEC International, PICES, U.S. NSF, SCAR, and ICES. The 5-day meeting will include 2 days of workshops run in parallel, followed by a 3-day plenary symposium.

##### *MODEL Task Team recommendations*

1. MODEL supports the idea of a multi-day “Marine ecosystem model inter-comparison workshop” at PICES-2009, with a full proposal to be presented to Science Board at its inter-sessional meeting April 2009 in Qingdao, China.
2. MODEL recommends to Science Board that PICES hold an annual quantitative science training session in conjunction with the Annual Meeting.

MODEL Endnote 1

MODEL participation list

Members

Shin-ichi Ito (Japan)  
Michio J. Kishi (Japan)  
Bernard A. Megrey (U.S.A.)  
Goh Onitsuka (Japan)  
Jake Schweigert (Canada)  
Thomas C. Wainwright (U.S.A., Co-Chairman)  
Yury I. Zuenko (Russia)

Observers

Harold Batchelder (U.S.A.)  
Manuel Barange (GLOBEC)  
Fei Chai (U.S.A.)  
Enrique Curchister (U.S.A.)  
Skip McKinnell (PICES)  
Hiroshi Sumata (Japan)  
Yasuhiro Yamanaka (Japan)  
Sinjae Yoo (Science Board Vice-Chairman)

MODEL Endnote 2

MODEL meeting agenda

1. Welcome and introduction of members. (T. Wainwright and H. Wei)
2. Review of agenda and inclusion of new items as needed. (T. Wainwright and H. Wei)
3. Review of MODEL accomplishments after PICES XVI.
  - a. Update on U.S. GLOBEC pan-regional synthesis (H. Batchelder)
  - b. Update on U.S. CAMEO programs (E. Curchitser)
  - c. Update on ESSAS activities (B. Megrey)
  - d. Status of NOAA project “Software framework for integrating marine ecosystem models” (T. Wainwright)
  - e. Report on “Marine Ecosystem Model Inter-Comparisons” project and workshop (W5) (B. Megrey)
  - f. Report on “PICES International Summer School on Ecosystem Based Management” held in Hakodate, August 2008 (M. Kishi and S. Ito)
  - g. Brief preview/review of workshops and theme sessions at PICES-2009  
W4 – “*Climate scenarios for ecosystem modeling (II)*” (Y. Yamanaka)  
S7 – “*Marine system forecast models: moving forward to the FUTURE*” (T. Wainwright)
4. Discussion of MODEL final report (T. Wainwright)
5. Discussion of PICES FUTURE scientific program draft implementation plan (H. Wei and T. Wainwright)
  - a. General discussion of the implementation plan
  - b. PICES-2009 (Oct. 23–Nov. 1, 2009, Jeju) - proposals for Topic Sessions and workshops
  - c. Proposals for FUTURE inter-sessional workshops and scientific work
6. Requests for travel to future meetings
7. Announcements
  - a. CREAMS/PICES Summer School on “*Satellite oceanography*” (Busan, August 2009)
  - b. Third GLOBEC Open Science Meeting (Victoria, June 2009) (M. Barange)
8. Adjournment