

REPORT OF MONITOR TECHNICAL COMMITTEE

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The MONITOR Technical Committee met from 8:30 to 16:00 hours on October 2, 2005, to review accomplishments of the preceding year and begin planning for the next year. The Chairman and Vice Chairman, Drs. Jeffrey Napp and Sei-ichi Saitoh, welcomed the Committee members and observers (*MONITOR Endnote 1*) and the meeting began with introductions. A total of 22 scientists from 5 countries were in attendance. Nine of 16 MONITOR members were present. The draft agenda was reviewed and adopted (*MONITOR Endnote 2*).

PICES North Pacific Ecosystem Status Report (Agenda Item 2)

Drs. R. Ian Perry and Phillip R. Mundy provided an overview of the workshop on “*Filling the gaps in the PICES North Pacific Ecosystem Status Report*” held on October 1. It was well-attended, and did an excellent job of identifying some of the important elements missing from the first version of the report (PICES Special Publication No. 1, 2004). The summary of the workshop is included elsewhere in this Annual Report.

The first endeavour was considered a pilot project. The workshop co-conveners stated that MONITOR was not obligated to use the same procedure or format to produce the next report.

Five key issues for the North Pacific Ecosystem Status Report were identified at the workshop: (1) target audience, (2) type of information, (3) form of publication, (4) frequency of publication, and (5) who would accomplish the task. The Chairman proposed that a Study Group be formed to resolve these issues and report their recommendations back to the Committee. The PICES Deputy Executive Secretary, Dr. Skip McKinnell, discouraged the Committee from tasking a Study Group to resolve these issues due, in part, to the length of time needed to form and convene this group. He encouraged the Committee to make these

decisions themselves and then report back to the Science Board as soon as possible. At the time of the meeting there did not appear to be a consensus on the issues. The Chairman asked the MONITOR members to provide their recommendations by the end of the week on each of these 5 issues. He will then circulate their comments and attempt to reach consensus by the end of January 2006.

PICES website: Contributions from MONITOR (Agenda Item 3)

The Committee discussed the value of promoting PICES-sponsored programs on the MONITOR web pages. At present, only the reports of the Committees are posted on the website. Dr. Saitoh volunteered to work with the *ad hoc* PICES web publishing/oversight committee to accomplish this. The recommendation is adding two types of content: products from PICES projects, and products from general monitoring/observation programs.

In the first category, links to the following were suggested:

- North Pacific Continuous Plankton Recorder project (*e.g.*, reports, papers, SAHFOS);
- Bird/mammal observations along the east-west transect of the North Pacific CPR Program (*e.g.*, reports, papers);
- North Pacific Ecosystem Status Report;
- North Pacific Ecosystem Metadatabase;
- PICES Press articles on status of regional oceans.

In the second category, links to the following were suggested:

- “Ecosystems Considerations” chapter that is prepared annually for the North Pacific Fishery Management Council;
- Pacific Scientific Advice Review Committee Ocean Status Report;
- GOOS and GEOSS;
- Oceans.US;

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- All regional Ocean Observing Systems in the PICES region (*e.g.*, AOOS, PaCOOS, NaNOOS, NEAR-GOOS, *etc.*).

MONITOR Action Plan (Agenda Item 4)

The PICES Governing Council requested that each Committee prepare an Action Plan. This plan will follow a prescribed template using the PICES Strategic Plan. The Action Plan will help the Committee to be more forward thinking, and it will help Council to understand how each Committee's actions or proposals contribute to the overall goals and mission of PICES. The Chairman distributed a draft MONITOR Action Plan and asked that Committee members provide their comments on the draft by October 6.

Status of the Continuous Plankton Recorder (CPR) Program (Agenda Item 5)

Drs. David W. Welch (presenting for Dr. Sonia Batten) and William J. Sydeman gave reports on the status of the North Pacific CPR Program and seabird/marine mammal surveys done on ships of opportunity. A report from the Chairman of the Advisory Panel on *Continuous Plankton Recorder Survey in the North Pacific* (Dr. Charles B. Miller) was also distributed (*MONITOR Endnote 3*). The program is continuing to collect biological data, and new physical data (sea surface temperature and salinity) have been added to the east-west line. Data analysis is revealing new insights into spatial and temporal distribution patterns of the target organisms, and the work is being published in peer-reviewed journals. The Committee was very pleased with the results of the two programs. The Committee recognized the value of adding continuous underway temperature, salinity, and chlorophyll fluorescence to the north-south transect, either on the towed body or in a sea chest.

The programs are in need of stable financial support for the future. The ideal situation would be funding that did not require frequent renewal via proposals. The east-west CPR transect supported by the North Pacific Research Board (NPRB) has been given one additional year of

funding, and is now funded through the summer of 2007. Funding for the seabird/marine mammal observations will support data collection through March 2006, and then *ca.* 6 months of support to complete data analysis and reporting. Data collection beyond March 2006 will require a new proposal to NPRB or another funding agency. Funding for the north-south transect will end in summer of 2006, unless the Gulf Ecosystem Monitoring (GEM) program of the *Exxon Valdez* Oil Spill Trustee Council renews its commitment. GEM may not be soliciting proposals this year, and the north-south line will be lost unless replacement funding is obtained. MONITOR agreed to write the CPR program a strong letter of support/endorsement, and the Chairman will discuss the program with the Executive Director of the Alaska Ocean Observing System.

Co-sponsorship of the CREAMS Advisory Panel with POC (Agenda Item 6)

POC requested that MONITOR consider co-sponsoring the Advisory Panel for *the CREAMS/PICES Program in East Asian Marginal Seas* that was approved in 2004. This inter-disciplinary program has as its second term of reference, "*To facilitate the establishment of permanent observation and data exchange networks in this region.*" Dr. Kuh Kim, Science Board Chairman, spoke to the Committee regarding the role of monitoring in CREAMS, and encouraged MONITOR to co-sponsor the Panel and actively provide scientific advice. The Committee briefly discussed the issue and agreed to be a co-sponsor.

Committee membership (Agenda Item 7)

The Chairman reported that Committee membership is supposed to be restricted to 3 scientists from each member country. The United States currently has 5 members on the Committee. In the future it may be necessary for MONITOR to establish a Section to deal with some of its ongoing issues. At that time the "extra" members can serve on the Section and then the number national representatives allowed will not be an issue.

PICES and GOOS (Agenda Item 8)

Dr. Vyacheslav B. Lobanov gave a brief introduction on the structure of International GOOS (Global Ocean Observing System) and the relatively new Global Earth Observing System of Systems (GEOSS). PICES has been supportive of the Northeast Asian Regional (NEAR) component of GOOS. China, Japan, Korea, and Russia are members of NEAR-GOOS. PICES is also a co-sponsor of the CREAMS program. In addition, PICES, with support from PaCOOS and GEM, organized a workshop on the regional observation systems of the west coast of North America in the fall of 2003, in Victoria, Canada. Thus, a topical question for MONITOR and PICES is “*What role should PICES have in the coordination and participation in GOOS?*” The Committee recommends that a Study Group be established to answer this question (*MONITOR Endnote 4*). The Study Group is expected to provide the answer to MONITOR within one year of its formation.

Future integrative scientific program(s) of PICES (Agenda Item 9)

The Chairman provided an update on the process to select a new integrative scientific program for PICES. A Study Group on *Future integrative scientific program(s)* (SG-FISP) was formed that comprises the Science Board members (as of April 2005) plus scientists from member countries under-represented on the Board. Proposals for the program theme were submitted to the Study Group before the Annual Meeting and discussed at a special meeting of the Study Group during PICES XIV. A brief report of this meeting was presented at the Closing Session on October 7 and at the Governing Council meeting on October 8. Theme proposals will be posted on the PICES website, and the entire scientific community will be encouraged to provide their comments on the proposed themes and to develop new ideas and share them with SG-FISP. The Study Group assessment will be presented at the inter-sessional Science Board/Governing Council meeting in April 2006, and an open forum presentation on the preferred theme(s) will be given at PICES XV in

October 2006, in Yokohama, Japan. At that time, recommendations will be made on how to proceed with the implementation of selected theme(s).

National reports of relevant monitor and observation activities (Agenda Item 10)

All member countries but China reported on national monitor and observation activities.

Canada (D. Mackas)

Canada currently has ongoing ship-based monitoring in 4 regions, continues to release Argo floats, and plans to add a cabled observatory in the near future. The sites visited by research vessels are: Line P/Station P, west Vancouver Island, Strait of Georgia, Hecate Strait, and the northern British Columbia coast. Line P/Station P may be visited fewer times in 2006 than in years past as the principal research vessel *John P. Tully* will have a mid-life refit this year.

Japan (K. Hidaka and S.-I. Saitoh)

There are at least 2 oceanographic lines being monitored around Japan by universities or national laboratories. The A-Line has been occupied for the past 15 years, and is visited 5 to 8 times per year. The O-Line, which crosses the Kuroshio Current, has been monitored for more than 3 years. There are also many other relevant projects in Japan. The Odate project (Tohoku National Research Institute of Fishery Science) is in the process of analyzing plankton samples collected between 1949 and 2003. There is also a single location in the western sub-arctic gyre, Station KNOT that is occupied 3-4 times per year. Occupation of the station is not regularly scheduled and most of the measurements are for process studies. One issue of concern is the loss of plankton samples. Each prefecture with access to the ocean has a local monitoring program. These programs have collected many plankton samples over the years, but have no obligation to archive the samples. Those samples are being discarded as the local programs run out of space. Lastly, Hokkaido University, in close collaboration with JODC,

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assembled the observations collected by the T/S *Oshoro Maru* and *Hokusei Maru* since 1957, in a Long-Term Fisheries and Oceanographic Data Base (HUFO-DAT) for distribution as a CD. Volume 1 which contains hydrographic station data, nutrients, oxygen, zooplankton wet weight, and chlorophyll *a* concentration will be available soon for general distribution to the community. Volume 2, currently in preparation, will include experimental fishing and associated biological data.

Korea (K. Kim)

CREAMS (Circulation Research of the East Asian Marginal Seas) is Korea's major observation program and was presented earlier in the meeting (see also POC Agenda Item 5b).

Russia (G. Kantakov and V. Lobanov)

In the Far East, Russia monitors 2 lines in the Japan/East Sea and 4 lines in the Sea of Okhotsk. The lines have been sampled since 1984 and are occupied twice each year, in spring and fall. In addition, the Pacific Research Fisheries Center (TINRO) has regular fisheries surveys in the Sea of Okhotsk and the Bering Sea. There are also coastal stations in Primorye, Peter the Great Bay and the Amur River delta.

United States (J. Barth, J. Bengtson, P. Mundy, J. Napp and T. Royer)

Monitoring programs or sites in Alaska include: the Alaska Ocean Observing System (AOOS), moorings on the eastern Bering Sea shelf (M2, M4, M5) and in the Bering Strait, the Bering Sea and Aleutian Islands NMFS groundfish, mid-water, and marine mammal surveys, and the Bering Aleutian Salmon International Survey (BASIS). In the Gulf of Alaska, there is monitoring at Station GAK 1, the Seward Line, a ferry run between Homer-Kodiak-Seward, the north-south CPR transect (Anchorage-Tacoma), the Prince William Sound Ocean Observing System, the NMFS groundfish, mid-water, and marine mammal surveys, and several coastal monitoring stations in the southeast of Alaska.

Farther south off the coast of the states of Washington, Oregon and California, three regional OOS programs have formed: NaNOOS (Northwest Association of Networked Ocean Observing Systems), CeNCOOS (Central and Northern California Ocean Observing System), and SCCOOS (Southern California Coastal Ocean Observing System). These programs cover the entire west coast of the United States. NOAA has also begun a federal program, PaCOOS (Pacific Coastal Ocean Observing System), which intends to supply the critical fisheries components of the integrated observing systems throughout the U.S. California Current Large Marine Ecosystem. PaCOOS is also working to enable easy data access through Live Access Server and OpenDAP. PICES previously (November 2003) facilitated a workshop of all the west coast of North America observing systems (including those off Baja California, Mexico).

Monitoring off the coast of Oregon continues with support from several sources. Samples are obtained twice each month from a small number of stations close to shore, and a much longer transect is occupied 4 times per year. NMFS conducts annual hake and groundfish surveys along the west coast, and scientists have started to use gliders to replace or augment CTD surveys. The NSF is considering support of a cabled observatory off the coasts of Oregon and Washington.

A presentation on Alaska pinniped surveys was made. The populations of several of these species are in decline or at a very small size. To understand why they are declining various projects are attaching satellite tags to animals to study their migration and foraging habits. The animals migration range is very large with some of the tagged animals moving tens of kilometers each day away from the rookeries. Several of the tagged animals interacted with oceanographic eddies during their travels. Temperature/depth sensors could be placed on the animals for a relatively low cost enabling oceanographers to use the pinnipeds as "ships of opportunity".

PICES Best Poster Award (Agenda Item 11)

Each Committee has one representative to judge PICES XIV posters for the Best Poster Award. Dr. William J. Sydeman volunteered to represent MONITOR. The Best Poster Award is not restricted to “young” scientists, and it was a hardship to have each judge review each of almost 160 posters at PICES XIV. The recommendation for PICES XV is to have each judge first review the posters from their own session, and to suggest the top two posters from that section for further review. All judges would then review this reduced number of posters and pick a winner from this group of semi-finalists.

Planning for PICES XV (Agenda Item 12)

The Committee proposes a 1-day joint MONITOR/TCODE Workshop (with electronic-

posters) on “*Data management, delivery and visualization of products from Ocean Observing Systems in major boundary currents*” (MONITOR Endnote 5). Travel support for 1 invited speaker is requested. [Later, the workshop title was changed to “*Data management, delivery and visualization of high-volume data products*”.]

The Committee also agreed to co-sponsor a 1-day Topic Session, with POC and CCCC. The session would focus on synchronicity in responses among boundary current ecosystems to climate variability, and the use of data from OOS in major boundary currents to construct and run prognostic models (POC Endnote 7). These models are a critical element for testing hypotheses regarding the structure and function of large marine ecosystems.

MONITOR Endnote 1

Participation list

Members

Jack Barth (U.S.A)
 Kiyotaka Hidaka (Japan)
 Vyacheslav B. Lobanov (Russia)
 David L. Mackas (Canada)
 Phillip R. Mundy (U.S.A)
 Jeffrey M. Napp (U.S.A., Chairman)
 Thomas C. Royer (U.S.A.)
 Sei-ichi Saitoh (Japan, Vice Chairman)
 William J. Sydeman (U.S.A.)

Observers

David Fluharty (U.S.A.)
 Kuh Kim (Science Board, Chairman)
 Skip McKinnell (Deputy Executive Secretary)
 Franz Mueter (U.S.A.)
 R. Ian Perry (Canada)
 Fangli Qiao (China)
 Peter Rand (U.S.A.)
 Robin Rigby (CoML)
 Hirofumi Shimizu (Japan)
 Darlene Smith (Canada)
 John E. Stein (U.S.A.)
 David W. Welch (Canada)

MONITOR Endnote 2

MONITOR meeting agenda

1. Welcome and introductions
2. PICES North Pacific Ecosystem Status Report
3. PICES website: Contributions from MONITOR
4. MONITOR Action Plan

5. Status of Continuous Plankton Recorder (CPR) Program
6. Co-sponsorship of the CREAMS Advisory Panel with POC
7. MONITOR membership
8. PICES and GOOS

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9. Future integrative scientific program(s) of PICES
10. National reports of relevant monitor and observation activities
11. PICES Best Poster Award
12. Planning for PICES XV
13. Other business

MONITOR Endnote 3

Report of the Advisory Panel on *Continuous Plankton Recorder (CPR) Survey in the North Pacific* (submitted by Dr. Charles B. Miller, CPR-AP Chairman)

The Action Plan for the North Pacific CPR Program is to keep towing continuous plankton recorders along the AC (Alaska-California) and VJ (Vancouver-Japan) lines (see below) for as many late winter-spring periods as possible, that is, deep into the future. Action includes continuous work-up of the CPR samples by SAHFOS (Sir Alister Hardy Foundation for Ocean Sciences, Plymouth, U.K.) and its associated workers, and reporting on ecological insights from the results as insights develop. We would also like to keep the seabird observation program on the VJ line active as long as practicable. Strong inter-annual and sub-regional differences in plankton life history scheduling and bird species composition are already evident in sampling from 2000 on.

The status of the North Pacific CPR Program has not changed much since PICES XIII (October 2004). The program, operated by SAHFOS, continues to be managed by Dr. Sonia Batten. Neither Dr. Batten nor Dr. Charles Miller (CPR-AP Chairman) will be at Vladivostok to report to MONITOR at PICES XIV. Dr. David Welch, associated with Dr. Batten from the inception of the North Pacific CPR Program, will attend and can report on recent results and developments.

Again in 2005, the Alaska to Pacific Northwest CPR lines were from Cook Inlet (Anchorage) to Tacoma in Washington State (AT route), rather than along the original route from Valdez to Long Beach (AC route). The MV *Horizon Kodiak* has towed CPRs on the new line. The new route is shorter, allowing six monthly tows instead of five. The AT-Line crosses the AC-Line, and samples closely equivalent habitat in the central Gulf of Alaska. Most of the work-up of 2004 samples is complete. In addition, a

Vancouver to Japan route has again been sampled from the Ro-Ro *Skaubryn*, which has also supported seabird observations by Mr. Michael Henry of Point Reyes Bird Observatory, supervised by Dr. William Sydeman. Various combinations of hull-mounted seawater temperature sensors and towed CTDs (on the CPR units) have been recording physical conditions on these runs as well.

Preliminary results for 2004 have been published by Dr. Batten in the 2004 SAHFOS Annual Report. Ocean temperatures were above normal, and maturation of large inter-zonal migratory copepods (signature zooplankton of the subarctic Pacific) occurred earlier than in all other years sampled to date (2000 to 2004), about three weeks earlier than in 2000. This is in agreement with initial North Pacific CPR results (Batten, S. *et al.* 2003. *Fisheries Oceanography*, 12: 201-208) showing that oceanic zooplankton mature earlier in warmer, southern parts of the range than in cooler northern parts. Bird results from the VJ runs show very strong sub-regional distinctions in bird species present and dominance along different sectors of the track.

Funding for the North Pacific CPR Program is secure for the present period, but there is great uncertainty for long-term, stable funding. The AT runs are supported by funds from the Gulf Ecosystem Monitoring (GEM) program of the *Exxon Valdez* Oil Spill Trustee Council (EVOS). The current contract is for 2004-2006. If renewal of funding for existing programs is possible, then the call for proposals would most likely occur in 2006. New project starts for the GEM program overall have been suspended for 2006 by the EVOS Trustee Council. The Council is reconsidering all aspects of the use of

funds from the *Exxon Valdez* Oil Spill Trust Fund, and new starts for GEM projects may or may not be resumed in 2007. The North Pacific Research Board (NPRB) grant will support the VJ runs (including seabird and mammal observations) to June 2006. Whether NPRB could or would fund the entire North Pacific CPR program (AT and VJ Lines) after 2006 is unknown. Proposals to NPRB will be due in early December 2005.

MONITOR should be alert to new sources of funds that could sustain the North Pacific CPR program, as monitoring time-series gain value as their duration is extended. Wholly new funding arrangements may be required to keep this valuable program in operation.

Specific actions that would be useful to the PICES CPR Program:

- Securing funding – perhaps with a lobbying effort by PICES/MONITOR (see above for current problems);
- Obtain recognition of the North Pacific CPR program from AOOS, with areas covered by the CPR routes becoming parts of that observing system;
- Expansion of the seabird/mammal observations to include the north-south route;
- Using the CPR data set in developing the PICES North Pacific Ecosystem Status Report, with a member of the CPR Advisory Panel participating in the report and associated meetings.

MONITOR Endnote 4

Terms of reference for a Study Group to develop a strategy for GOOS

1. Briefly identify and describe the major observing systems (present and proposed) in the PICES region. Descriptions should include general data types, contact information, and data transmission (real-time vs. delayed).
2. Provide a list of action items to dictate how

- PICES will begin to coordinate/facilitate communication among IGOOS and national OOS efforts within the PICES region.
3. Should PICES propose an open ocean North Pacific GOOS pilot project to IGOOS? If yes, then provide a letter of intent that describes the scope of the project.

MONITOR Endnote 5

Proposal for a 1 day MONITOR/TCODE Workshop on “Data management, delivery and visualization of products from Ocean Observing Systems in major boundary currents”

[later re-named “Data management, delivery and visualization of high-volume data products”]

“Swimming in the data stream without drowning in the flood” or “How to drink from a fire hose”

Long-term monitoring of multi-disciplinary data in boundary currents is a high priority for PICES nations. Boundary currents are locations where many monitoring activities now take place. They are very important economically and also highly variable in both space and time. Dense near-real-time data from many disciplines are vital to describe the systems or the timely management of the coastal resources. Rapid analysis of the data is essential, however, increased data rates and their diversity are challenging the users. Cabled arrays and

satellite altimeter, color and scatterometer (wind) measurements are examples of these new dense data sets. This workshop will discuss the availability of such data, and how we can effectively use them, focusing especially on availability, uses, GIS applications and other methods of display and analysis tools. A re-population of the North Pacific Metadata Base will be emphasized. Demonstrations of data archiving, displays and real-time availability are welcome.

Recommended convenors: David L. Mackas (Canada), Thomas C. Royer (U.S.A.) and Sei-Ichi Saitoh (Japan).

