

REPORT OF PHYSICAL OCEANOGRAPHY AND CLIMATE COMMITTEE

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The meeting of the Physical Oceanography and Climate Committee was held from 14:30-18:00 hours on October 12, 2003. The Chairman, Dr. Kuh Kim, called the meeting to order and welcomed members and observers (*POC Endnote 1*). Dr. Michael G. Foreman served as rapporteur. The Committee reviewed and adopted the proposed agenda (*POC Endnote 2*).

Business arising from PICES XI (Agenda Item 3)

- The final report of WG13 on *CO₂ in the North Pacific* was published as PICES Report No. 24. Dr. Andrew G. Dickson gave a brief summary of the report. The Committee thanked Dr. Richard A. Feely for compiling and editing the report and Dr. Yukihiro Nojiri for hosting the several inter-*sessional* activities.
- Dr. Stewart (Skip) M. McKinnell informed the Committee that 13 manuscripts were accepted for publication in the special issue of *Progress in Oceanography* on “Recent progress in studies of the Japan/East Sea ecosystem” (Guest editors: S. McKinnell, K.-R. Kim, M. Terazaki and A. Bychkov). This volume resulted from the PICES/CREAMS workshop in August 2002, and will be published before PICES XIII.
- Dr. Vyacheslav B. Lobanov reported on the 3rd PICES Workshop on “Okhotsk Sea and adjacent areas”, which was co-sponsored by TINRO-Center and Census of Marine Life, and held June 4-6, 2003, in Vladivostok, Russia. There were 5 sessions, and 91 extended abstracts are under consideration for publication as a separate volume in the PICES Scientific Report Series in 2004.
- Dr. Kuh Kim informed the Committee that due to the outbreak of SARS, the 12th PAMS/JECSS workshop was postponed until November 2004.

Progress report of WG 17 on *Biogeochemical data integration and synthesis* (Agenda Item 4a)

The Co-Chairman of WG 17, Dr. Dickson, presented an extensive report of this Working Group activities since PICES XI, including their last meeting on October 10, 2003, and future plans (see *POC Endnote 3* for details).

Progress report of North Pacific Data Buoy Advisory Panel (Agenda Item 4b)

The Technical Coordinator, Mr. Ron McLaren, reviewed the current activities of the Panel (see *POC Endnote 4* for details).

Science Board issues (Agenda Items 5-7)

Dr. McKinnell gave a summary of the progress of the North Pacific Ecosystem Status Report. This activity is strongly supported by POC. Comments and feedback to Science Board were requested by November 30, 2003.

The Chairman of Science Board, Dr. Ian Perry, informed POC that the PICES Review Committee finished its report and the recommendations were being implemented.

Dr. Perry reviewed the activities of the Study Group on *PICES Strategic Issues* headed by the Chairman of PICES, Dr. Vera Alexander. The first draft report was completed, and POC and other committees were requested to provide their comments to Science Board by November 30, 2003.

POC Strategic Plan (Agenda Item 8)

No further comments were given to the POC Strategic Plan stated earlier and reviewed at last year's Annual Meeting.

Report from Study Group on *PICES Capacity Building* (Agenda Item 9)

The Committee supported the recommendations of the Study Group on *PICES Capacity Building*, but noted that their implementation strongly depends on finding additional financial resources. Comments to Science Board are due to November 30, 2003.

Next major PICES scientific program(s) (Agenda Item 10)

Dr. Lobanov gave a presentation on the need for a third phase of the *Circulation Research in the East Asian Marginal Seas* project, CREAMS-III. CREAMS-I and CREAMS-II comprised mostly of physics and chemistry of the Japan/East Sea, while CREAMS-III will be broader and include biology and fisheries in the region. Scientists from several PICES member countries (Japan, Korea, Russia and U.S.A.) are involved in this research. The Committee suggests that CREAMS-III is an appropriate candidate as a scientific program under PICES.

Dr. Lobanov also proposed a pilot project on implementing a real-time observing system in the western marginal seas, and input was requested from BIO, FIS and MONITOR.

Workshops and Topic Sessions at PICES XIII (Agenda Item 11)

A workshop and two Topic Sessions were proposed for PICES XIII:

- A 2-day PICES/CLIVAR workshop on “Scale interactions of climate and marine ecosystems”; recommended conveners: Kelvin Richards (CLIVAR), Richard J. Beamish (Canada), Kuh Kim (Korea) and a scientist from Japan to be decided (*POC Endnote 5*).
- A 1-day Topic Session on “Application of Global Observing Systems to physics, fisheries and ecosystems”; recommended POC conveners: Michael G. Foreman (Canada) and Vyacheslav B. Lobanov (Russia). BIO, FIS, MEQ and CCCC are to be approached to co-sponsor the session (*POC Endnote 6*).

- A 1-day joint POC/BIO Topic Session on “Impacts of climate change on the carbon cycle in the North Pacific” (*POC Endnote 7*); recommended conveners: Christopher L. Sabine (U.S.A.), Kitack Lee (Korea) and Paul J. Harrison (Canada).

PICES XIV theme (Agenda Item 12)

POC recommends that the theme for PICES XIV be “Mechanism of climate impacts on fisheries and ecosystems for marginal seas”.

Relations with international organizations and programs (Agenda Item 13)

- The North-East Asian Regional Global Ocean Observing System (NEAR-GOOS) has been operational since 1996, and involves four PICES member countries (Japan, People’s Republic of China, Republic of Korea, and Russian Federation). PICES should actively communicate with scientists in NEAR-GOOS and participate in their meetings, with the idea of broadening the program to an ecosystem-based effort. POC recommends PICES involvement in the NEAR-GOOS Coordinating Committee Meeting to be held in December 2003, in Beijing, and NEAR-GOOS activities at the 6th WESTPAC Symposium to be held in April 2004, in Hangzhou, People’s Republic of China.
- NOAA’s proposal for a Pacific Coastal Observing System (PaCOS) encompassing the California Current System needs an international collaboration with PICES as the facilitator, as this observing system extends from the northern Vancouver Island to Baja California and involves three countries (Canada, the United States and Mexico). POC strongly supports PICES activities in this direction including a joint PICES/PaCOS/AOOS (Alaskan Ocean Observing System, former Coastal Alaskan Observing System or CAOS) Workshop on “Development of pilot coastal monitoring program(s) in the NE Pacific” to be held November 17-19, 2003, in Victoria, Canada.

Proposals with financial implications (Agenda Item 14)

Publications

- A special issue on “Recent progress in studies of the Japan/East Sea ecosystem”, resulting from the CREAMS/PICES workshop in August 2002, be published in *Progress in Oceanography* in summer 2004;
- “Guide to best practices for oceanic CO₂ measurements and data reporting”, prepared by the Working Group 17, be published in 2004 in the PICES Scientific Report Series, with partial financial support from the IOC-SCOR Advisory Panel on *Ocean CO₂*.

Inter-sessional meetings

- Co-sponsor jointly with several Japanese institutes and IOCCP (International Ocean Carbon Coordinated Project) a 4-day workshop on “Ocean surface p(CO₂) database and data integration”, to be held January 14-17, 2004, in Tsukuba, Japan (postponed from October 2003) (*POC Endnote 3*);
- Co-sponsor jointly with NOAA and GCP (Global Carbon Project) a 3-day workshop on “Understanding North Pacific carbon cycle change: Data synthesis and modeling”, to be held in June 2004, in Seattle, U.S.A. (*POC Endnote 3*);
- Co-sponsor a NEAR-GOOS meeting at the 6th WESTPAC Symposium, to be held April 19-23, 2004, in Hangzhou, People’s Republic of China;
- Convene a 3-day CREAMS/PICES workshop on “Japan/East Sea circulation: What we know and how well can we forecast?”, in the summer of 2005, near Vladivostok, Russia (*POC Endnote 8*).

Requests for travel funding

- 1-2 scientists to attend the PICES/CLIVAR Workshop on “Scale interactions of climate and marine ecosystems”, to be held in October 2004, in conjunction with PICES XIII in Honolulu, U.S.A.;
- 2 invited speakers for PICES XIII: 1 for the Topic Session on “Application of Global Observing Systems to physics, fisheries and ecosystems”, and 1 for the Topic Session on

“Impacts of climate change on the carbon cycle in the North Pacific”;

- 2 scientists to participate in the joint IOCCP/PICES workshop on “Ocean surface p(CO₂) database and data integration” in January 2004;
- 1-2 scientists to participate in the joint NOAA/GCP/PICES workshop on “Understanding North Pacific carbon cycle change: Data synthesis and modeling” in June 2004;
- 1 scientist to attend the NEAR-GOOS meeting at the 6th WESTPAC Symposium in April 2004;
- 2 scientists to attend the CREAMS/PICES workshop on “Japan/East Sea circulation: What we know and how well can we forecast?” in the summer of 2005.

POC Best Presentation Award (Agenda Item 15)

Dr. Sung-Hyun Nam (Seoul National University, Korea) won the POC Best Presentation Award for his paper entitled “The corrections of the high-frequency (2-20 days) fluctuation effects on the TOPEX/POSEIDON altimeter data in the East (Japan) Sea”, co-authored by S.-J. Lyu and K. Kim.

Other business (Agenda Item 16)

Request for advice from the United States

Dr. Kuh Kim read a letter from Dr. Richard Marasco, US national delegate to PICES, requesting scientific advice on the issue of recent regime-like changes in conditions in the North Pacific and their implications for fisheries. Dr. Perry suggested forming a Working Group with members from each committee to respond to the letter in a year. The Committee suggests that PICES accept this request. Dr. James Overland was recommended as a POC representative on the proposed Working Group.

PICES web site revisions

Ms. Julia Yazvenko (PICES Secretariat) demonstrated the features of the new PICES web site. The Committee nominated Dr. Foreman to be the point of contact on scientific content for the POC web page.

POC Endnote 1

Participation List

Members

Susan E. Allen (Canada)
Sang-Kyun Byun (Korea)
Michael G. Foreman (Canada, rapporteur)
Kuh Kim (Korea, Chairman)
Vyacheslav B. Lobanov (Russia)
Fan Wang (China)
Ichiro Yasuda (Japan)
Yury I. Zuenko (Russia)

Observers

Liqi Chen (China)
Andrew G. Dickson (U.S.A.)
Stewart M. McKinnell (PICES Secretariat)
Dmitry Kaplunenko (Russia)
Ron McLaren (Canada)
Yutaka Nagata (Japan)
R. Ian Perry (Science Board Chairman)
Kelvin Richards (U.S.A.)

POC Endnote 2

POC Meeting Agenda

1. Welcome and introductions
2. Approval of agenda
3. Completion of PICES XI decisions
4. Reports of existing subsidiary bodies and proposals for new subsidiary bodies
5. Discussion of *North Pacific Ecosystem Status Report*
6. PICES Review Committee Report
7. Discussion of report from Study Group on *PICES Strategic Issues*
8. Review of POC Strategic Plan
9. Discussion of report from Study Group on *PICES Capacity Building*
10. PICES scientific program(s)
11. Planning PICES XIII
12. PICES XIV theme
13. Relation with other international organizations/programs
14. Items with financial implications
15. 2003 POC Best Presentation Award
16. Other business
17. Adoption of POC report to Science Board

POC Endnote 3

Progress report of WG 17 on *Biogeochemical data integration and synthesis*

Meeting summary

The meeting of Working Group 17 was held from 09:00 – 18:30 hours on October 10, 2003. After a brief welcome by the Co-Chairman, Dr. Andrew G. Dickson (see *WG 17 Endnote 1* for attendance), the meeting continued with a series of status reports and technical presentations (*WG 17 Endnote 2*).

Measurement inter-comparisons

Dr. Dickson provided a brief description of an inter-comparison of underway and mooring/drifter-based $p(\text{CO}_2)$ measurement systems that had been organized by Dr. Yukihiro

Nojiri earlier this year. The experiment, co-sponsored by several Japanese agencies, was held from March 10–14, 2003, at the National Research Institute of Fishery Engineering, Hazaki, Ibaraki, Japan. The participated institutions are shown below:

Underway equilibrator systems

| | |
|-------------|--|
| Germany | Institut für Meereskunde, Kiel |
| Korea | Seoul National University |
| Japan | National Inst. for Environmental Studies (NIES) National Research Inst. for Fisheries Science AIST/Kanso Co. |
| New Zealand | NIWA |

UK University of East Anglia
U.S.A. NOAA
Monterey Bay Aquarium
Research Institute (MBARI)

Mooring/drifter-based systems

France CNRS/Univ. Paris (CARIOCA)
USA MBARI
Univ. Montana (SAMI)

The experiment was a great success due to the excellent organization provided by Dr. Nojiri and his group. The site was almost ideal, with sufficient water to supply all equilibrators and the capacity to change the $p(\text{CO}_2)$ in a reasonably controlled manner. Common calibration gases were provided to all participants so it was possible to identify problems with equilibrators during the exercise. Indeed two main problems were found: (i) a number of equilibrators had their signal contaminated by outside air that had been drawn in to replace air vented through the NDIR, or removed as bubbles in the seawater stream through the equilibrator; and (ii) some equilibrators were susceptible to fouling by the extreme microbial contamination that was present in the pool. This will lead to improved equilibrator designs in the future for this important measurement. A workshop will be held in January 2004 (see below) to discuss the results from this inter-comparison, and it is planned that a technical publication will be prepared describing the experiment.

There is also an ongoing inter-comparison of C-13 in dissolved inorganic carbon that was initiated by the PICES Working Group 13. The results are still coming in from this exercise, and it should be completed by the summer of 2004.

Status of Pacific CO₂ database and data inventory activities

The Working Group then heard a summary of recent activities in the preparation of databases of North Pacific measurements. The first presentation by Mr. Alex Kozyr of the Carbon Dioxide Information and Analysis Center (CDIAC) at Oak Ridge National Laboratory, outlined work that had been going on in the

United States to synthesize the measurements made during the international WOCE/JGOFS survey in the 1990s. These data have been examined for consistency (both internally and on a basin-wide scale) and appropriate adjustments recommended. The adjusted data are now available publicly, as are a number of gridded products. There was a demonstration on how to access and display this data over the web using simple browser software to manipulate data that are available on a Live Access Server at CDIAC.

Dr. Toru Suzuki provided a brief overview of work that has been in progress at MIRC (Marine Information Research Center). Over 400 cruises in the North Pacific have been inventoried, and this inventory can be accessed at <http://picnic.pices.jp>. Work is now in progress to implement web access to metadata about these cruises (based on guidelines originally developed by the Working Group 13, and which are being refined for the Working Group 17 "Guide to best practices for CO₂ measurement and data reporting"), and it is hoped that ultimately there will be links to the actual data themselves, perhaps even using the same Live Access Server approach that has been implemented at CDIAC, which has now been installed at MIRC. The Working Group congratulated Drs. Suzuki and Sachiko Oguma on this work and expressed its appreciation of the efforts that were in progress, and look forward to the public release of much of this data in the coming years.

Topic Session at PICES XIII

The Working Group discussed plans for a Topic Session at PICES XIII to be held in Honolulu, U.S.A., in October 2004. The previously suggested topic "The impacts of climate change on the carbon cycle in the North Pacific" was adopted, convenors were identified and invited speakers proposed. A prospectus for this session is included as *POC Endnote 7*.

Inter-sessional meetings in 2004

The Working Group then heard details of two proposed inter-sessional activities for the

coming year that were seeking PICES co-sponsorship:

- A workshop on “Ocean surface $p(\text{CO}_2)$ database and data integration” will be held January 14-17, 2004, in Tsukuba, Japan. This workshop will have two themes: (i) discussion and finalization of the results from the March 2003 inter-comparison of underway and mooring/drifter-based $p(\text{CO}_2)$ measurement systems; and (ii) discussion of an international adoption of a proposal for the format of databases for underway $p(\text{CO}_2)$ measurements. Sponsorship for participation in this workshop has been obtained from the Japanese Government and SCOR/IOC (through the International Ocean Carbon Coordinated Project). The Working Group endorsed this activity that is organized by WG 17 members (Y. Nojiri, A. Dickson, A. Kozyr are serving as co-convenors for the workshop) as well as an IOCCP representative (M. Hood), and requested PICES to support participation of 2 observers from Western Pacific PICES member countries (Korea and Russia).
- A workshop on “Understanding North Pacific carbon-cycle change: Data synthesis and modeling” is planned for June 2004, in the Seattle area (U.S.A.). This workshop will be a Global Carbon Project (GCP) and PICES joint activity to encourage international participation in such a synthesis effort, and is timed to take advantage of the release of a multi-year data collection effort by the Japanese Oceanographic Data Center (JODC), in cooperation with the National Committee for JGOFS under the Japan Science Council and with the Working Group 17. The workshop (and prior data handling efforts) are supported with funds from the US Government (NOAA) and will be organized by WG 17 member Dr. Christopher Sabine. The Working Group emphasized the importance of such a workshop, offered its support and hoped that PICES would encourage the timely release of the North Pacific data by the JODC (planned for spring 2004). PICES is requested to support 1-2 WG 17 members who might not otherwise be able to attend the workshop.

Written “Guide to best practices for oceanic CO_2 measurements and data reporting”

Dr. Dickson provided a brief status report on the preparation of the proposed PICES “Guide to best practices for CO_2 measurement and data reporting”. The IOCCP had endorsed this activity and offered funds to PICES to assist with publication costs. A first draft of many of the sections is now complete, and these will be made available for international comment from a website by the end of October 2003. Additional discussion of the sections involving $p(\text{CO}_2)$ are expected to take place at the January 2004 workshop, and the final version will be presented for publication as a report in PICES Scientific Report Series in April 2004.

National reports and plans for future national activities

There were then brief presentations from WG 17 members on the current activities in their countries that are related to the goals of the Working Group. Dr. Dickson presented a summary of current US activities including a funded repeat hydrographic survey as well as an increase in $p(\text{CO}_2)$ work on ships-of-opportunity. The strategy is global in nature, but the North Pacific is an integral part of this whole.

Dr. Dickson also gave a brief overview of cruise plans of the JAMSTEC Ocean Observation and Research Department for the coming year (provided by Dr. Shuichi Watanabe who was unable to attend the meeting due to his participation in the scientific cruise). Dr. Tongsup Lee presented an overview of Korean plans, and Mr. Frank Whitney gave a brief statement of Canadian plans for the coming year.

Recommendations/requests to PICES for 2004 and 2005

PICES is requested to:

- Co-sponsor a 4-day IOCCP/PICES workshop on “Ocean surface $p(\text{CO}_2)$ database and data integration”, to be held January 14-17, 2004, in Tsukuba, Japan, and

provide travel support for 2 participants from Western Pacific countries (Korea and Russia) to attend the meeting;

- Co-sponsor a 3-day NOAA/GCP/PICES workshop on “Understanding North Pacific carbon cycle change: Data synthesis and modeling”, in June 2004, in Seattle, U.S.A., provide travel costs for 1-2 participants, and encourage the JGOFS North Pacific Synthesis Group to ensure that the data is made available in a timely fashion;
- Approve a 1-day joint POC/BIO Topic Session on “The impacts of climate change on the carbon cycle in the North Pacific”, to

be held at PICES XIII in Honolulu, U.S.A., in October 2004, and provide full support for 1 invited speaker;

- Publish the Working Group 17 “Guide to best practices for oceanic CO₂ measurements and data reporting” in the PICES Scientific Report Series. (IOC has provided additional funds for this activity to ensure a large print run.)
- Support (~\$15,000) a regional (Western Pacific) training workshop for CO₂ measurements planned for 2005. This activity will be arranged jointly with IOCCP and WESTPAC (IOC).

WG 17 Endnote 1

Participation List

Members

Robin M. Brown (Canada)
Andrew Dickson (U.S.A., Co-Chairman)
Alexander Kozyr (U.S.A.)
Tongsup Lee (Korea)
Toru Suzuki (Japan)

Observers

Alexander Bychkov (PICES)
Dong-Jing Kang (Korea)
Kitack Lee (Korea)
Sachiko Oguma (Japan)
Shigero Toyashima (Japan)
Frank Whitney (Canada)

WG 17 Endnote 3

WG 17 Meeting Agenda

1. Welcome and introductions
2. Discussion of agenda
3. Report on international inter-comparison on “Underway and drifting/mooring based $p(\text{CO}_2)$ measurement systems”
4. Status of database and data inventory activities
5. Planning of the Topic Session on “The impacts of climate change on the carbon cycle in the North Pacific” at PICES XIII
6. Planning for inter-sessional meetings in 2004
- a. Workshop on “Ocean surface $p\text{CO}_2$ database and data integration”
- b. Workshop on “Understanding North Pacific carbon-cycle change: Data synthesis and modeling”
7. Discussion of draft of proposed “Guide to best practices for oceanic CO₂ measurements and data reporting”
8. Members’ reports and plans for future national activities
9. Specific funding requests for 2004–2005
10. Summary and plans for future

POC Endnote 4

Progress report of *North Pacific Data Buoy Advisory Panel*

The meeting of the *North Pacific Data Buoy Advisory Panel* (NPDBAP) was scheduled from

14:30–18:30 hours on October 11, 2003. Unfortunately, there was not sufficient

attendance by Panel members to have a meeting, and an information session was held instead to review the NPDBAP Annual Report presented by the NPDBAP Technical Coordinator, Mr. Ron McLaren. The complete Annual Report is available on the NPDBAP web site (<http://npdbap.noaa.gov>). A brief summary is given below.

Background

The formation of the *North Pacific Data Buoy Advisory Panel*, reporting to the PICES Physical Oceanography and Climate Committee (POC) and the Data Buoy Co-operation Panel (DBCP), was approved by the Governing Council at PICES X (October 2001, Victoria, Canada). The DBCP officially accepted the NPDBAP as an entity at its 18th Annual Meeting held October 14-18, 2002, in Martinique.

Meetings and Workplan action items

The first meeting of the Panel was held June 5-7, 2002, in Victoria (Canada). During the meeting, the Terms of Reference, consistent with DBCP and PICES objectives, were finalized and a set of Operating Principles was agreed to. Workplan items were identified as being actions the Panel should complete over the next year.

An “ad hoc” meeting of the Panel was held during the 18th DBCP Annual Meeting. The action items from the June 2002 meeting were discussed, including buoy deployment opportunities. Representatives from Canada and the United States (NDBC, US Naval Oceanographic Office and the Global Drifter Program) were in attendance.

To include all the PICES member countries in the work of the Panel, Mr. Brian O’Donnell (North American NPDBAP Co-Chairman) and Ron McLaren attended the PICES Eleventh Annual Meeting held October 18 - 26, 2002, in Qingdao, People’s Republic of China. Unfortunately, there was not sufficient attendance by NPDBAP members to have a Panel meeting there. Two presentations were made during the meeting:

- An electronic poster explaining the objectives of the NPDBAP and the progress to date was prepared (with assistance of Ms. Estelle Couture (MEDS) and Regional MSC computer support) and displayed at the Electronic Poster Session. There was general interest, however, there were few attendees involved in the deployment of drifting buoys, so the presentation was more of academic interest than a recruitment tool.
- A presentation describing the work of the NPDBAP, the DBCP, and providing a technical overview of drifting buoy hardware and communication processes was made by Mr. McLaren at the MONITOR Workshop on “Monitoring from moored and drifting buoys”. This paper was included in the proceedings published in 2003 as PICES Scientific Report No. 27.

Some NPDBAP members met on October 21, 2003, during the 19th DBCP Annual Meeting in Angra dos Reis (Brazil). DBCP representatives from Canada, United States, Korea, Japan and the WMO were in attendance. The minutes of this meeting are available on the NPDBAP website. It was unanimously agreed to hold the next meeting of the NPDBAP just prior to the 20th DBCP Annual Meeting, which would be held October 18-22, 2004 in Chennai, India. This would permit maximum attendance of active Panel members while minimizing travel costs to attend a meeting in a different location.

Buoy deployments

During the period August 2002 to August 2003 an average of 57 drifting buoys deployed in the North Pacific Ocean (30°N to 65°N and 110°E to 110°W), reported via the Global Communications System (GTS) to the Marine Environmental Data Service (MEDS). As of August 2003, 71 buoys were reporting, 44 with barometric pressure. The total number of messages received increased from 19,165 in August 2002, to 29,841 in August 2003, the latest month for which statistics are available. Hopefully, this increase is in part, due to the efforts of the participating members of the NPDBAP. Information on all deployments is available on the NPDBAP web site.

Plans for 2003 - 2004 include:

- deployment of 21 SVP-B drifters in the East China Sea/Yellow Sea area by NAVO (U.S.A.);
- deployment of 24 buoys (surface drifting buoys, profiling floats and moorings TRITON) in the seas surrounding Japan and the western North Pacific Ocean by various Japanese agencies;
- deployment of 6 to 12 SVP-B drifting buoys in the North Pacific by Canada;
- barometer upgrades to 40 SVP-B drifting buoys (NDBC, U.S.A.) and up to 10 SVP-B drifting buoys (Canada) that will be deployed for the Global Drifter Program (GDP) in the North Pacific.

NPDBAP web site

The NPDBAP web site was completed due to the efforts of Ron McLaren, Estelle Couture and Cara Schock (Marine Environmental Data Service, DFO, Canada), and Cheryl Demers and Steve Collins (National Data Buoy Center, NOAA, U.S.A.). Dr. Paul Moersdorf offered to

host the NPDBAP web site at the NDBC facilities at Stennis Space Centre, and can be found at: <http://npdbap.noaa.gov>. The web site explains the goals of the NPDBAP, Operating Principles and membership, and provides access to MEDS for buoy data. It is also linked to the NDBC web site (<http://www.ndbc.noaa.gov>) that displays NPDBAP drifting buoy data for the Eastern North Pacific in real time. Minor changes will be made over the next few months to include references to various meteorological and oceanographic web sites of the member countries and link the NPDBAP web site with the new PICES web site.

Panel Chairmanship

This issue is becoming of great importance as an Asian NPDBAP Co-Chairman has not yet been selected and the current North American Co-Chairman, Brian O'Donnell, has been assigned to a position with Climate Change and the Earth Observation System project. His future involvement with the NPDBAP will be decided over the next few months.

POC Endnote 5

Proposal for a 2-day PICES/CLIVAR Workshop at PICES XIII on "Scale interactions of climate and marine ecosystems"

The physical climate system varies on a wide range of scales: changing storminess and severe weather, recognised modes of variability (such as NAO, PDO and ENSO), and changes to mean global characteristics. Likewise the marine ecosystem has many interacting scales: small-scale patchiness vs global, shelf vs deep-sea populations, and individuals vs communities. To date, most studies considering the impact of the complexities of climate variability on the equally complex marine ecosystem have used correlation statistics of a given population and physical climate indices. We need to go beyond simple correlations to tease out the relationships between the changing physical and biological systems if we are to understand what controls what. How do the various scales of climate variability project onto the variability of the population of a given species or the ecosystem

as a whole? How does the changing climate impact on the scale interactions of the biogeochemical system? Are the time-series we have long enough to draw meaningful conclusions? What do we need to get right in models used to predict the impact of climate change on the marine ecosystem and fisheries?

The workshop will bring together experts in the physical oceanography of the Pacific, climate dynamics and variability, marine ecosystems and biogeochemistry, and fisheries. The workshop will be charged to produce statements on our present understanding of, or lack thereof, the impact of climate variability on the marine eco- and biogeochemical system, what we can hope to extract from combining extant datasets, and strategies for numerical experimentation, observational networks and data assimilation,

that will improve our knowledge and predictive capabilities. Sufficient enthusiasm by the participants will result in the publication of a special issue of a leading international journal.

Recommended Convenors: Kelvin Richards (U.S.A.), Richard J. Beamish (Canada), Kuh Kim (Korea) and a Japanese scientist (TBD).

POC Endnote 6

Proposal for a 1-day POC Topic Session at PICES XIII on “Application of Global Observing Systems to physics, fisheries, and ecosystems”

Problems such as global climate change, carbon cycling, ocean circulation forecasting, and variability in biomass and fish abundance have necessitated a great increase in the variety and quantity of ocean measurements. In response to these growing demands, the last two decades have seen a proliferation of new technologies for remotely sensing the physical and chemical properties of oceans and the biological characteristics of organisms living in them. Noteworthy examples include the TOPEX/Poseidon/Jason and ERS/Envisat satellites for sea surface heights, SeaWiFS and MODIS for ocean colour, and Argo profiling floats for deep ocean velocities, temperatures

and salinities. Technologies such as these allow interdisciplinary, near-realtime sampling of the global ocean with unprecedented resolution in time and space. In this session we welcome papers on the application of global observing systems to the description and better understanding of important physical, fishery, and ecosystem processes in the North Pacific Ocean.

Recommended POC Convenors: Michael G. Foreman (Canada) and Vyacheslav B. Lobanov (Russia). BIO, FIS, MEQ and CCCC are to be approached to co-sponsor the session and nominate convenors.

POC Endnote 7

Proposal for a 1-day POC/BIO Topic Session at PICES XIII on “The impacts of climate change on the carbon cycle in the North Pacific

Background

Many recent studies have investigated carbon cycle variability in the Central and North Pacific. A significant number of these studies were related to the effects of El Niño-Southern Oscillation (ENSO) on upwelling regions of the Equatorial Pacific. Recently, there have been several studies indicating significant variability over other regions of the North Pacific and potential linkages to the Pacific Decadal Oscillation (PDO). Most of these studies covered a relatively short time frame, examined only a relatively small portion of the North Pacific, or considered only a limited number of parameters. What is often lacking is an overall picture of North Pacific carbon cycle that draws together all of these individual lines of investigation and looks for coherent patterns that may help us understand the regional significance of variability and the possible mechanisms

controlling the observed spatial and temporal patterns. A session at PICES XIII will provide a forum for presentation of new insights into links between climate change and the carbon cycle as are manifest in the North Pacific, and it will showcase, in part, results from a synthesis and modeling workshop (co-sponsored jointly by NOAA, Global Carbon Project and PICES) planned for June 2004.

Proposed session description

An important area of contemporary carbon cycle research is in its linkages and responses to climate change. This session will bring together scientists focusing on such phenomena in the North Pacific region. We encourage contributed papers and posters that present recent research into the carbon cycle of the North Pacific with particular emphasis on the following: climate induced inter-annual and decadal variability in

air-sea CO₂ exchange; the role of the North Pacific in taking up anthropogenic carbon; changes in phytoplankton community structure and its consequences for the carbon cycle; and recent modeling and synthesis activities that aim to understand such linkages.

Recommended convenors: Christopher Sabine (U.S.A.), Kitack Lee (Korea) and Paul Harrison (Canada). BIO is to be approached to co-sponsor the session.

Recommended co-sponsoring organization: International Ocean Carbon Coordination Project (IOCCP).

Recommended invited speakers:

David Karl (U.S.A.) - *Changing ecosystems and the N. Pacific carbon cycle*

Nicholas Gruber (U.S.A.) - *North Pacific carbon cycle synthesis results* (full support by PICES)

Douglas Wallace (Germany) - *Global carbon cycle and its links to climate change* (full support by IOCCP).

POC Endnote 8

Proposal for an inter-sessional workshop on “Japan/East Sea circulation: What do we know and how good can we forecast?”

Ocean circulation dynamics is an essential factor for physical processes, ecosystem dynamics and human activity. Recognizing the importance of operational oceanographic information, including forecasts (*e.g.*, in relation to the development of regional coastal components of GOOS, like NEAR-GOOS, PICES activity on the North Pacific Ecosystem Status Report and possible PICES Pilot Projects, CREAMS program development etc.), it is timely to ask “What do we know, how valid are our numerical models, and how can we make reliable forecasts of the circulation in the Japan/East Sea?”. Intensive field observations over recent years brought new knowledge on circulation dynamics in this region. At the same time there have been vigorous developments in numerical modeling. How do these correspond with each other? What are the achievements and gaps? What should be our approach to create reliable, regional models, for research and operational oceanography?

We would like to propose that a 3-day workshop on “Japan/East Sea circulation: What we know and how well can we forecast?” be convened in

summer 2005, near Vladivostok, Russia. The workshop goals are: (i) to produce assessment and synthesis of available circulation models, possibly for publication in a special issue of *Dynamics of Atmosphere and Oceans* (DAO) or a journal of equivalent status; and (ii) to exchange experience and provide training for young scientists with the models. The workshop will bring together modelers and data collectors in a relaxed environment. Preparation for the workshop will include assigned home tasks for observationalists - to assemble data sets for use in model testing, and for modelers - to run standard numerical simulation cases.

Recommended convenors: Christopher N.K. Mooers (U.S.A.), Vyacheslav B. Lobanov (Russia), Kuh Kim (Korea).

Potential co-sponsors: PICES, CREAMS, IOC/WESTPAC, ONR-Asia, Russian Academy of Sciences.

Travel support is requested for two scientists to attend the workshop.

