

REPORT OF PHYSICAL OCEANOGRAPHY AND CLIMATE COMMITTEE

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The meeting of the Physical Oceanography and Climate Committee was held from 13:30-17:30 hours on October 23, 2002. The Chairman, Dr. Kuh Kim, called the meeting to order and welcomed new members Drs. Michael G. Foreman and Jinping Zhao (*POC Endnote 1*). Congratulations were extended to Dr. Yutaka Nagata on his Wooster Award. Dr. Susan E. Allen served as rapporteur. The Committee reviewed the draft agenda and it was adopted with the addition of an item on NEAR-GOOS (*POC Endnote 2*).

Business arising from PICES X (Agenda Item 2)

- Dr. William R. Crawford, as one of Guest Editors, was congratulated on the timely publication of the special issue in *Journal of Oceanography* (Vol. 58, No. 5) on "Physics and biology of eddies, meanders and rings in the PICES region".
- The electronic (CD-ROM and web-based) version of the *Oceanographic Atlas of the Okhotsk Sea, Bering Sea and Japan/East Sea* was prepared by the Pacific Oceanological Institute and translated into English without the financial help of PICES. It is a first edition containing maps, sections and descriptions (see www.pacificinfo.ru). Comments are welcome.
- The 3-day CREAMS/PICES Workshop held August 22-24, 2002, in Seoul, was attended by 69 scientists from 7 countries. Funding was provided from U.S.A., the Republic of Korea and PICES. Selected papers will be submitted to a special issue of a primary journal. *Progress in Oceanography* will be approached as soon as new editors officially start.
- A 2-day JGOFS/PICES Workshop on *Synthesis of JGOFS North Pacific Process Study*, sponsored by PICES, Japanese Oceanographic Society and Nagoya

University, was held October 1-2, 2002, in Sapporo, Japan. Abstracts have been published and a special issue in *Journal of Oceanography* is planned.

- Dr. Vyacheslav B. Lobanov attended the NEAR-GOOS meeting as a PICES representative. Regional (near) Real-Time and Delayed Mode Databases have been operated by JMA and JODC, and each participating country (Japan, People's Republic of China, Republic of Korea and Russia) has a website with data and meta-data, but limited mostly to physical parameters. It is hoped that D.P.R. Korea will join the project. After completion of the first phase, the progress of NEAR-GOOS has been slow. A new strategic plan is now under development, and in order to broaden the program to an ecosystem-based effort, NEAR-GOOS is requesting the assistance of PICES scientists.

Progress report of North Pacific Data Buoy Advisory Panel (Agenda Item 3)

The Co-Chairmen, Brian O'Donnell, and the Technical Coordinator, Ron McLaren, reported that the Panel met in June 2002, in Victoria, Canada, and presented current activities of the Panel to POC (see *POC Endnote 3* for details).

Final report of WG 13 on CO₂ in the North Pacific (Agenda Item 3)

The final report of WG 13 will be submitted by the end of November.

Progress report of WG 17 on Biogeochemical data integration and synthesis (Agenda Item 3)

The Co-Chairman of WG 17, Dr. Yukihiko Nojiri, presented the Working Group activities since PICES X and future plans (see *POC Endnote 4* for details).

Science Board issues (Agenda Items 4 and 5)

The Chairman of Science Board, Dr. Ian Perry, reported that a draft of the North Pacific Ecosystem Status Report was completed and is ready for comments. POC strongly supports this initiative and suggests that a junior support scientist be hired to join the PICES Secretariat and assist with this endeavor. Dr. Perry also presented the PICES Review Committee Report. He mentioned the need for (i) a stronger sense of direction, (ii) developing a strategy for capacity building, and (iii) adding an additional staff member to the Secretariat.

Convenors' report on POC Sessions at PICES XI (Agenda Item 6)

- Dr. David L. Musgrave, as one of convenors, was congratulated on the excellent BIO/POC/FIS Topic Session on "The importance of biophysical coupling in concentrating marine organisms around shallow topographies". He reported that convenors were pleased with the diversity of the talks.
- Dr. James E. Overland, co-convenor of the POC/FIS Topic Session on *Detection of regime shifts in physics and biology*, reported that he was disappointed with the small number of abstracts submitted to the session, but was pleased with the large Asian contribution and the geographical distribution of talks.
- Dr. Kuh Kim reported that the turn out at the POC Paper Session was poor and that two speakers did not attend. The number of abstracts submitted was also low. Although no decision was reached it was suggested that perhaps Topic Sessions are preferable to Paper Sessions.
- The PICES/CLIVAR workshop on "Climate variability in the Pacific and its impact on the marine ecosystem" was well attended. Many excellent presentations were given (partially due to large number of invited speakers funded by WCRP, NSF, NOAA, NASA and PICES). Dr. Kelvin Richards, co-convenor of the workshop, reported that one of the impressions that came out of the workshop was the need to

work towards mechanistic linkages between variations in the climate and the marine ecosystem, rather than statistical correlations between climate indices and abundance of species. POC considers this workshop as the first step in establishing a strategic consortium between the PICES and CLIVAR communities in the future, and recommends to have a PICES/CLIVAR session/workshop again in 2004, in conjunction with PICES XIII, focusing on the mechanisms of climate induced decadal variability of the marine ecosystem.

- It was noted that some presentations were repeated at PICES/GLOBEC workshop and PICES/CLIVAR workshop and PICES sessions. It was recommended that the Science Board take measures to reduce the duplication of papers between sessions/workshops.

POC Strategic Plan (Agenda Item 7)

- POC felt strongly that the future direction of POC and PICES should be generally towards mechanistic understanding of the linkages between the physical climate and fisheries and ecosystems.
- Dr. Makoto Kashiwai reported on the CCCC Integration Workshop. POC thinks that more direct connection with CCCC would be preferable. Perhaps a POC representative on the CCCC Implementation Panel would be appropriate.
- Mr. Robin M. Brown reported on TCODE activities and congratulated POC's WG13 on its data coordination. TCODE requested early consultation on data handling by Working Groups.

Topic Sessions at PICES XII (Agenda Item 8)

Two Topic Sessions were proposed for PICES XII:

1. *Application of global observation systems to physics, fisheries and ecosystems* (jointly with BIO, FIS and MEQ); recommended convenor: Michael G. Foreman (Canada)
2. *Impact of physical processes on biological productivity and fish populations with*

special attention to the effects of variability in fresh water input to the ocean (jointly with BIO and FIS); recommended convenor: Yury I. Zuenko (Russia)

PICES XIII theme (Agenda Item 9)

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

Relations with international organizations and programs (Agenda Item 10)

- The 12th PAMS/JECSS (Pacific Asian Marginal Seas/Japan (East) and East China Seas Study) workshop will be held April 14-16, 2003, in Hangzhou, People's Republic of China. PICES is interested in co-sponsoring the workshop for the purpose of collecting information on variability and status of the East China Sea and Yellow Sea ecosystems for the North Pacific Ecosystem Status Report.
- CAOS (Coastal Alaskan Observing System) plans to meet in spring 2003, and may be a source of information for the North Pacific Ecosystem Status Report in the northern Gulf of Alaska and the Bering Sea.
- EPOC (Eastern Pacific Ocean Conference) meets in the fall of every year. It was suggested that a joint meeting of PICES and EPOC could be planned (perhaps in Honolulu). A potential problem in the difference of style (PICES - formal, EPOC - very informal) was raised.

Proposals with financial implications (Agenda Item 11)

Publications

- A special issue on the Japan/East Sea ecosystem, resulting from the CREAMS/PICES workshop in August 2002, be published in a primary journal in 2004;
- Final report of WG 13 should be completed and published in PICES Scientific Report Series in 2003.

Inter-sessional meetings

- POC recommends co-sponsoring the 12th PAMS/JECSS workshop, if necessary.

Requests for travel funding

- 1-2 scientists to attend the Third PICES Workshop on *Okhotsk Sea and adjacent areas* to be held June 1-3, 2003, in Vladivostok, Russia;
- 1-2 (Japanese or Russian) scientists from the MONITOR Task Team to attend the CAOS meeting in spring 2003.

POC Best Presentation Award

Dr. Shuhei Masuda (Frontier Research System for Global Change, Japan) won the POC Best Presentation Award for his paper entitled “A model of regime transitions in the North Pacific”.

Other business (Agenda Item 13)

POC recommended that the PICES website be improved.

POC Endnote 1

Participation List

Members

Susan E. Allen (Canada, rapporteur)
Michael G. Foreman (Canada)
Dun-Xin Hu (China)
Kuh Kim (Korea, Chairman)
Vyacheslav B. Lobanov (Russia)
David L. Musgrave (U.S.A.)
James E. Overland (U.S.A.)
Stephen C. Riser (U.S.A.)
Jinping Zhao (China)
Yury I. Zuenko (Russia)

Observers

Jack A. Barth (U.S.A.)
Alexander S. Bychkov (PICES)
William R. Crawford (Canada)
Denis D'Amours (Canada)
Stewart M. McKinnell (PICES)
Ron McLaren (Canada)
Leonid Mitnik (Russia)
Yutaka Nagata (Japan)
Yukihiro Nojiri (Japan)
Brian O'Donnell (Canada)
Kelvin Richards (U.S.A.)

POC Endnote 2

POC Meeting Agenda

1. Adoption of agenda
2. Completion of PICES X decisions
3. Reports of existing subsidiary bodies and proposals for new subsidiary bodies
4. North Pacific Ecosystem Status Report
5. PICES Review Committee Report
6. Summaries of scientific sessions and workshops supported by POC
7. Review of POC Strategic Plan
8. Topic Session proposal for PICES XII
9. PICES XIII theme
10. Relations with international organizations and programs
11. Items with financial implications
12. 2002 POC Best Presentation Award
13. Other business
14. Adoption of POC report and recommendation to Science Board

POC Endnote 3

Report of *North Pacific Data Buoy Advisory Panel*

Overview

Two years ago, at the request of the Data Buoy Co-operation Panel (DBCP), Canada was invited to explore the possibility of facilitating the formation of a DBCP Action Group for the North Pacific Ocean, similar to other successful groups, which have been formed for other major ocean areas. The main objective of the group would be to increase the amount of operational meteorological and oceanographic data available in the North Pacific Ocean.

PICES was considered as a logical partner in this initiative, due to its pre-existing and well-established structure of scientific representatives

and member countries in the Pacific Rim area. The concept of working with PICES was discussed at the DBCP meeting in Perth, Australia, in the fall of 2001, and was approved. At the PICES Tenth Annual Meeting, the Governing Council approved the formation of the *North Pacific Data Buoy Advisory Panel*, reporting jointly to the Physical Oceanography and Climate Committee (POC) of PICES and the Data Buoy Co-operation Panel.

In late 2001, expressions of interest were obtained from representatives of PICES member countries and the final selection of the initial members of the Panel was approved by the Governing Council.

The first meeting of the group was held June 5-7, 2002, in Victoria (Canada). During the meeting, the Terms of Reference, consistent with DBCP and PICES objectives, was finalized and a set of Operating Principles was agreed to. Some time was spent discussing the number of buoys that would be required to completely meet the objective of 1 Sea Surface Temperature (SST) and 8 Mean Sea Level pressure (MSL) observations per day in every 500 x 500 km square area. As far as practical, buoys will be deployed to achieve and maintain this density over the operational area. As a minimum, approximately 120 data buoys would be required.

The Panel discussed the urgent items for the coming year, including a strategy to involve all the PICES member countries in the work of the Panel. To be effective in this goal, attendance of a Panel representative at the PICES Eleventh Annual Meeting (October 18 - 26, 2002, Qingdao, People's Republic of China) was recognized as desirable. The annual DBCP meeting was to be held October 14-18, 2002, in Martinique. It was recommended that following the DBCP meeting, Brian O'Donnell and Ron McLaren attend the PICES meeting to make presentations to various PICES groups, including a workshop on "Monitoring from moored and drifting buoys".

Buoy deployments for 2002/2003

Eight SVP/B buoys purchased by Canada were deployed by NAVO in September 2002, in the Gulf of Alaska. Additional 4 buoys will be deployed later in the year.

Web Page

Paul Moersdorf offered to host the NPDBAP web site at the NDBC facilities at Stennis Space Centre. Ron McLaren, with the help of Estelle Couture, agreed to start building the web site.

Selection of Co-Chairmen and Technical Coordinator

The Panel considered the selection of officers and, in accordance with the Operating

Principles, "Members will elect two Co-Chairmen and appoint a Coordinator. The Co-Chairmen will be selected to balance representation from Asia and North America and from PICES and the DBCP." Dr. Moersdorf nominated Mr. Brian O'Donnell as the North American Co-Chairman, which was unanimously accepted by the members in attendance. Mr. O'Donnell advised that he would be pleased to accept the nomination and continue with the formative work of the Panel, with the caveat that he could only commit to a 1-year term due to future career obligations.

The position of the second Co-Chairman was reserved as vacant, pending facilitation by the PICES Secretariat to secure the appointment of a suitable representative from Asia.

The Panel proceeded to consider the position of Technical Coordinator. Mr. O'Donnell asked Mr. Ron McLaren if he would be willing to serve as the Technical Coordinator. Mr. McLaren replied in the affirmative, and the Panel expressed agreement with the appointment.

Time and place of next meeting

After some discussion, the time and place of the next meeting of the Panel remains under consideration. To encourage participation by western Pacific countries, a location in Asia was recommended. The possibilities include:

- Prior to, or in conjunction with PICES XI to be held October 18 - 26, 2002, in Qingdao, People's Republic of China. As mentioned earlier, there is a conflict with the annual DBCP meetings to be held October 14-18, 2002, in Martinique.
- Prior to, or in conjunction with PICES XII to be held October 10 - 18, 2003, in Seoul, Republic of Korea.

NPDB activities following PICES XI and DBCP meetings

- Appoint Co-Chairman from Western Pacific member country;
- Hold annual meeting of NPDB in October 2003, immediately prior to PICES XII in

Seoul, Korea. (To some extent depends on success of #1 above. Alternately meeting could be held prior to/during DBCP sessions in Brazil);

- Deploy 11 wind speed, direction and SST buoys west of the date line in co-operation with the Global Drifter Program (January – February 2003);

- Establish NPDB web page in co-operation with PICES, MEDS and NDBC (February 2003);
- Work with researchers (SIO, PMEL etc.) and participate in working groups as appropriate to promote the deployment of buoys in the North Pacific.

NPDBAP Endnote 1

Participation List

Estelle Couture	Member	Marine Env. Data Service, Canada (MEDS)
Elizabeth Horton	Member	Naval Oceanographic Office, USA (NAVO)
Ron McLaren, Ron	Member, Technical Coord.	Meteorological Service of Canada (MSC)
Paul Moersdorf	Member	National Data Buoy Centre, USA (NDBC)
Brian O'Donnell	Co-Chairmen	Meteorological Service of Canada (MSC)
Natalia Bessmertnaya	Observer	Intern, PICES
Etienne Charpentier	Observer	Data Buoy Co-operation Panel (DBCP)
Yvonne Cook	Observer	Meteorological Service of Canada (MSC)
Howard J. Freeland	Observer/Presenter	Department of Fisheries and Oceans (DFO)
Owen Lange	Observer/Presenter	Meteorological Service of Canada (MSC)
David L. Mackas	Observer/Presenter	Department of Fisheries and Oceans (DFO)
Stewart M. McKinnell	Observer	Assistant Executive Secretary, PICES
Dave Watson	Observer	Meteorological Service of Canada (MSC)

POC Endnote 4

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

Meeting summary

The meeting of the Working Group 17 was held from 08:30 – 17:30 hours on October 18, 2002. After a brief welcome by the Co-Chairmen, Drs. Andrew Dickson and Yukihiro Nojiri (see WG 17 Endnote 1 for attendance), and a review of the terms of reference for the Working Group (*WG 17 Endnote 2*), the meeting continued with a series of status reports and technical presentations (see *WG 17 Endnote 3* for meeting agenda).

Dr. Christopher L. Sabine provided a brief overview of the WOCE Hydrographic Program/JGOFS CO₂ survey that had been carried out in the 1990s, and the information that was being gleaned from this data about the distribution of “anthropogenic” CO₂ in the Pacific Ocean. He then went on to outline U. S. plans for a more limited “repeat survey” that

will start in 2003, and is expected to continue for a number of years as well as for a planned cooperative atmosphere and ocean CO₂ observing network. Dr. Sabine advocated for close cooperation between Working Group 17 and the Ocean Carbon Coordination Project of the Global Carbon Project (a joint project of IGBP/IHDP/WCRP) that he chairs. In particular, he asked that the two groups work together to:

- Collate historical, present day and future CO₂, carbon isotope and hydrographic data into an internationally accessible database.
- Collate underway pCO₂ data into an internationally accessible database.
- Foster international efforts to determine changes in the ocean carbon system as a result of climate change and global change by supporting synthesis efforts, planning meetings, scientific symposia, and PICES-supported publications.

- Co-sponsor scientific meetings with GCP, SCOR-IOC CO₂ Advisory Committee, CLIVAR and International SOLAS.
- Sponsor research and inter-comparison studies to support international consistency of analytical methods and reference materials for carbon and carbon-related species among PICES countries.

The Working Group noted that many of these points overlapped directly with their Terms of Reference (*WG 17 Endnote 2*) and agreed that such collaboration would be desirable.

Dr. Shuichi Watanabe provided a brief overview of the goals and cruise plans of the JAMSTEC Ocean Observation and Research Department. In particular their goals are to understand: (i) the role of the ocean in climate change, and (ii) the anthropogenic changes in, and the natural variability of the climate. To accomplish this, JAMSTEC is undertaking several research projects including a number explicitly aimed at the study of the biogeochemistry of the North Pacific (including repeat surveys in some areas) as well as a round-the-world cruise of their research vessel *Mirai* in 2003–2004.

Dr. C. S. Wong briefly reported on Canadian activities relevant to the Working Group's interests. In particular, he mentioned that work was still continuing at Ocean Station P (2-3 times per year), as well as collaboration on VOS lines with NIES. Future Canadian plans will focus on SOLAS-related activities and more active involvement with research into CO₂ disposal options.

Dr. Alexander Bychkov gave a brief presentation (on behalf of Dr. Pavel Tishchenko) describing recent CO₂-related work at the Pacific Oceanological Institute. This involved participation in 3 recent cruises in the Japan Sea (with Republic of Korea), the Sea of Okhotsk (with Germany), and the Bering and Chukchi Seas (with other Russian institutes).

Dr. Tongsup Lee briefly reviewed the status of relevant Korean activities. In particular, he described the two CREAMS projects studying processes in the marginal seas around the Republic of Korea.

Dr. Yukihiro Nojiri presented the NIES VOS observing projects in the Pacific Ocean. He reiterated the difficulty of obtaining a consistent time-series from a commercial vessel whose route and schedule is independent of the scientific goals. He described the data sets that had been obtained using the M/S *Skaugran*, and the M/S *Alligator Hope*, and indicated that the M/S *Pyxis* was now being used to study the North Pacific. The data from these projects is all made available over the Internet in a timely fashion.

In addition, to the above mentioned status reports on North Pacific CO₂ measurement activities, there were three presentations from individuals involved with database activities.

Mr. Todd D. O'Brien provided an overview of the work done at the US NODC (National Ocean Data Center) and, in particular, of the work involved in preparing the World Ocean Database (1994, 1998, 2001) - an integrated database that has been compiled in a selective fashion from the larger NODC holdings.

Mr. Alexander Kozyr reviewed the work at CDIAC (Carbon Dioxide Information and Analysis Center) in support of ocean CO₂ measurements. In particular, he provided a guided tour of the GLODAP (Global Ocean Data Analysis Project) web site and indicated the role that CDIAC had played in this project.

Dr. Toru Suzuki provided an overview of a new project PICNIC (PICES CO₂ Related Data Integration for the North Pacific) and the work done at MIRC to prepare an inventory of Japanese CO₂ data in the North Pacific. This web site (<http://picnic.pices.jp>) incorporates the extensive information about Japanese cruises and information about Canadian (IOS) and U. S. cruises (linked to CDIAC holdings). At present, the inventory is linked where practical to the original data sets (at other locations on the Internet), however work is in progress to host some datasets at MIRC. The work planned for the coming year includes the implementation of LAS 6 (Live Access Server) to enable more straightforward data visualization over the Internet.

Finally, there was an interesting technical presentation by Dr. Yutaka Watanabe who showed that there were clear changes in the levels of some biogeochemical variables in the North Pacific (1970–2000), and that it seemed that these changes could be related to variations in the NPI (North Pacific Index).

For the last half of the afternoon, the Working Group Members focused their discussion on how best to achieve the goals set forth in the Terms of Reference, and how to prioritize the necessary activities. The decisions reached are outlined below.

Plans for Future Activities

Written Guide of Best Practices

The Working Group agreed that the highest priority for the coming year would be the preparation of a written guide of best practices for oceanic CO₂ measurements and data reporting. This would be based on existing documents: the DOE (1994) *Handbook of methods for the analysis of the various parameters of the carbon dioxide system in sea water* (Dickson, A. G. & Goyet, C., Eds.) and draft protocols for data reporting that were generated by PICES Working Group 13, and discussed further at a NOAA Data Management Workshop held in Seattle, in October 2001.

To ensure that this activity proceeds in a timely fashion, a number of the Working Group members expect to meet to review progress at the forthcoming planning meeting of the oceans group of the IGBP/IHDP/WCRP Global Carbon Project which will be held in Paris, France (January 13-15, 2003), and again in conjunction with the 3rd JGOFS Open Science Meeting in Washington, DC, U.S.A. (May 5-8, 2003). Another benefit of this proposed timetable for meetings is that it will encourage substantial input from non-PICES scientists, thus leading to an improved product that could be of use to a variety of international CO₂ programs.

It is hoped that a complete draft will be available for review by the Working Group at the meeting to be held in conjunction with PICES XII in

October 2003, in Seoul, Korea. It is planned that this guide will be published in the PICES Scientific Report Series in 2004.

Measurement inter-comparisons

There are plans for an on-land inter-comparison of underway and drifting/mooring p(CO₂) measurement systems. This is being organized in Japan by Dr. Nojiri in March 10-15, 2003, and will include participants from PICES countries as well as from Europe and Australasia.

There is also an ongoing inter-comparison of C-13 in dissolved inorganic carbon that was initiated by Working Group 13. The results are still coming in from this exercise, and it should be completed in the next six months. There are plans to organize a workshop if needed to discuss the results from this inter-comparison.

Work on Pacific CO₂ database

Another priority of the Working Group is to develop a North Pacific database for ocean CO₂ and related parameters in association with existing Data Centers. This project is going ahead at MIRC (Marine Information Research Center of the Japan Hydrographic Association) with the development of the PICNIC data inventory, now available on line at <http://picnic.pices.jp>. At present, the strategy is to provide links to original data wherever practical, and to serve various historical data sets as they are digitized. During the coming year, this project will work to update its use of the Live Access Server (LAS) technology so as to provide for improved visualization of the relevant North Pacific data sets.

Co-ordinate planning of future measurement programs

The Working Group agreed to collaborate with the Global Carbon Project's proposal to maintain a web site (as part of their Ocean Carbon Coordination Project). This site will display information about current and future research projects involving ocean CO₂ measurements. PICES member nations will be

encouraged to contribute information to this web site in a timely fashion.

Meeting planning

The Working Group is hoping to establish a PICES focus area among the posters presented at the forthcoming international 3rd JGOFS Open Science Conference “*A Sea of Change: JGOFS Accomplishments and the Future of Ocean Biogeochemistry*” to be held May 5-8, 2003, in Washington DC, U.S.A. Members of the Working Group will encourage their colleagues to submit abstracts for this meeting.

In addition, it was agreed that the Working Group would plan to convene a Topic Session at

PICES XIII (October 2004, Honolulu, U.S.A.) on “The impacts of climate change on the carbon cycle in the North Pacific”.

Recommendations to PICES

- Support a meeting of the Working Group in conjunction with PICES XII in Korea, in October 2003.
- Publish the proposed “Guide to best practices for oceanic CO₂ measurements and data reporting” in the PICES Scientific Report Series, in early 2004.
- Support a 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.

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)
Yukihiro Nojiri (Japan, Co-Chairman)
Todd D. O’Brien (U.S.A.)
Christopher L. Sabine (U.S.A.)
Toru Suzuki (Japan)
Shuichi Watanabe (Japan)

Yutaka Watanabe (Japan)
C. S. Wong (Canada)

Observers

Norio Baba (Japan)
Alexander Bychkov (PICES)
Sachiko Oguma (Japan)
Daniela Turk (Canada)
Masahide Wakita (Japan)
Emmy Wong (Canada)

WG 17 Endnote 2

Terms of Reference

1. Develop a North Pacific database for ocean CO₂ and related parameters in association with existing data centers. Advise data centers which of the available historical data sets should be assigned a high priority for acquisition and conversion to an electronically readable form.
2. Prepare a written guide of best practices for oceanic CO₂ measurements and data reporting. Carry out, as needed, inter-laboratory method comparisons to assure future measurement quality. Encourage the availability of suitable reference materials.
3. Develop a strategy to co-ordinate the planning of future North Pacific measurement programs to ensure optimal use of resources to obtain appropriate temporal and spatial coverage as well as maximum comparability with historical data. Efforts should be made to encourage timely availability of the “new” data.
4. Organize a symposium or an Annual Meeting Topic Session on the impacts of climate change on the carbon cycle in the North Pacific.

WG 17 Endnote 3

WG 17 Meeting Agenda

1. Welcome by Co-Chairmen and review of Terms of Reference
2. Status reports and technical presentations
 - U. S. and international plans for carbon cycle research: ties to PICES WG 17 (*Christopher Sabine, PMEL/ University of Washington, U.S.A.*)
 - JAMSTEC: Ocean observations for understanding earth environment change (*Shuichi Watanabe, JAMSTEC, Japan*)
 - Status report of the IOS CO₂-related programs in the Pacific Ocean (*C. S. Wong, IOS, Canada*)
 - Korean national status report (*Tongsup Lee, Pusan National University, Korea*)
 - NIES VOS observation and database (*Yukihiro Nojiri, NIES, Japan*)
 - Russian national status report (*Pavel Tischenko, POI, Russia; presented by Alexander Bychkov*)
 - World Ocean Database 2001 (*Todd O'Brien, NODC/NOAA, U.S.A.*)
 - The Global Ocean Data Analysis (GLODAP) Project (*Alexander Kozyr, CDIAC, U.S.A.*)
 - PICNIC data inventory web page (*Sachiko Oguma and Toru Suzuki, MIRC, Japan*)
 - Use of modern and historical data for North Pacific biogeochemical change (*Yutaka Watanabe, Hokkaido University, Japan*)
3. Discussion and planning