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## 6.0 RELATIONS WITH INTERGOVERNMENTAL ORGANIZATIONS

### 6.1 Intergovernmental Oceanographic Commission

Bjørn Sundby and Ed Urban attended the IOC Executive Council meeting in June 2005 to represent SCOR. Several items were relevant to SCOR, and Sundby and Urban made official interventions related to these issues (see below). They also took the opportunity to meet with individuals from SCOR nations and from nations that are not yet members of SCOR. SCOR brochures in English and Spanish were distributed.

#### Intervention on Report from Intergovernmental Panel on Harmful Algal Blooms

Thank you, Mr. Chairman. We thank Dr. Reguera for her presentation from IPHAB and comments about the GEOHAB programme. We also thank IOC for the excellent work of Henrik Enevoldsen of the IOC staff.

The Scientific Committee on Oceanic Research (SCOR) and IOC developed the GEOHAB programme together. The programme is now in its launch phase. SCOR has been pleased to witness the good reception that GEOHAB has received from IPHAB, the IOC Assembly, and the IOC Executive Council since the program's inception in 1999.

The GEOHAB program is constrained by two factors presently: (1) insufficient funding for international implementation activities and (2) absence of an International Programme Office.

SCOR presently provides 70% of the funding for international GEOHAB implementation, with IOC providing the remaining and significant 30% of funding. (We are pleased to know that the United States will increase their current level of support and hope that other nations are able to do the same.) Recognizing the difficult financial situation of IOC and difficult decisions that must be made, any decrease in IOC funding clearly will have a serious impact on GEOHAB implementation.

Regarding the second constraining factor, GEOHAB has not been able to establish an international programme office, a step necessary for an international science programme to transition from planning to implementation of research. Offers have been made from several research institutions willing to host a program office. However, the funding required for a program executive officer has not been committed. Without such funding, an office cannot be established. SCOR agrees with IPHAB's recommendation that IOC member nations should provide financial contributions to an office, pooling their resources and sharing the financial responsibility for supporting GEOHAB.

Thank you, Mr. Chairman.

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### Intervention on Terms of Reference for Intergovernmental Panel for GOOS

Thank you, Mr, Chairman.

SCOR agrees with the new terms of reference for I-GOOS and the GOOS Scientific Steering Committee (GSSC) and is pleased that the development process will be completed at this meeting. SCOR's only suggestion is that the terms of reference for I-GOOS should state that the chair of the GSSC will be an ex-officio member of I-GOOS. The terms of reference for the GSSC already specifies that the I-GOOS chair would be an ex-officio member of the GSSC. We believe that both of these cross-linkages are necessary to provide an appropriate and reciprocal relationship between I-GOOS and the GSSC.

Thank you.

### Intervention on International Ocean Carbon Coordination Project

Thank you, Mr. Chairman, for the opportunity to comment on the international Ocean Carbon Coordination Project. As mentioned by Dr. Maria Hood, this is a joint project between IOC and SCOR. It reflects a several decade long partnership on ocean carbon issues between our two organizations. SCOR has approved the terms of reference, and we are looking forward to continue working with IOC. SCOR appreciates the excellent work by Dr. Hood who is spearheading many important aspects of our joint activities on ocean carbon issues.

Thank you.

### **6.1.1 Global Ocean Observing System (GOOS)**

The printed version of the book includes pages 50-62 from the Intergovernmental Oceanographic Commission's 2004 Annual report, available at

<http://unesdoc.unesco.org/images/0013/001395/139555e.pdf>

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## 6.2 Other Intergovernmental Organizations

### 6.2.1 Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)

GESAMP

(Group of Experts on the Scientific Aspects of Marine Environmental Protection)

The report "The New GESAMP: Science for Sustainable Oceans", which outlines a strategic vision for GESAMP's future functions and operations, was published in March 2005 and is available on-line at <ftp://ftp.fao.org/docrep/fao/007/y5897e/y5897e00.pdf>. GESAMP's Sponsoring Organizations (UN, UNEP, FAO, UNESCO-IOC, WHO, WMO, IMO, and IAEA) are developing a revised Memorandum of Understanding to implement the strategic vision. UNIDO has expressed interest in becoming a new sponsor of GESAMP and is also considering the MOU.

GESAMP has continued to participate in the development of a regular UN process for global marine assessment (GMA). GESAMP was represented in a Group of Experts that developed recommendations on the possible scope, framework, and modalities of the GMA for an international workshop on the GMA held in conjunction with the June 2004 meeting of the UN Informal Process on Oceans and the Law of the Sea (ICP). GESAMP participated in that workshop as well as in a 2<sup>nd</sup> international workshop immediately following the June 2005 meeting of ICP. The latter workshop recommended the initiation of an "Assessment of Assessments" as the first step in establishing the GMA.

A GESAMP report on inputs of oil into the global marine environment from sea-based activities is in press. Three other Working Groups are currently active:

- The Evaluation of the Hazards of Harmful Substances Carried by Ships;
- Environmental Risk Assessment and Communication in Coastal Aquaculture; and
- Environmental Exposure Models for Application in Seafood Risk Analysis.

From Michael E. Huber, Chair of GESAMP

## 6.2.2 North Pacific Marine Science Organization (PICES)

### SCOR and PICES: Continuing Connections

**Report at the 37<sup>th</sup> SCOR Executive Committee Meeting  
Cairns, Queensland, Australia  
September 29 – October 1, 2005**

The North Pacific Marine Science Organization (PICES) is an intergovernmental scientific organization and its current membership includes Canada, Japan, People's Republic of China, Republic of Korea, the Russian Federation, and the United States of America. The organization was established in 1992: (i) to promote and co-ordinate marine scientific research in the northern North Pacific and adjacent marginal seas; (ii) to advance scientific knowledge about the ocean environment, global weather and climate change, living resources and their ecosystems, and the impact of human activities on them; and (iii) to promote the collection and rapid exchange of scientific information on these issues.

Continuing and extending cooperation with SCOR is based on the recognition that PICES could play an important role in bringing a regional perspective to global activities of SCOR, and that by participating in these activities, PICES could advance its own scientific agenda. Progress on on-going and potential new collaborations between PICES and various scientific activities initiated/sponsored by SCOR are reported below.

#### LARGE-SCALE OCEAN RESEARCH PROGRAMS CO-SPONSORED BY SCOR

##### **Global Ocean Ecosystem Dynamics project (GLOBEC)**

- The PICES Climate Change and Carrying Capacity (CCCC) Program provides a mechanism for integrating national GLOBEC research programs in the North Pacific and is a regional component of the international GLOBEC effort.
- Several theme sessions directly related to GLOBEC activities were convened at PICES XIII (October 14 - 24, 2004, in Honolulu, U.S.A.): "*Mechanisms that regulate North Pacific ecosystems: Bottom-up, top-down, or something else?*" (S2), "*Modeling approaches that integrate multiple spatial scales and trophic levels between shelf and open oceans*"(S5), and "*The impacts of large-scale climate change on North Pacific marine ecosystems*" (S9). Selected papers from the theme session S2 (authored by scientists from Canada, China, Japan, Korea, Mexico, Norway, Russia, and U.S.A.) will be published as a *Progress in Oceanography* special issue in early 2006.
- PICES co-sponsored and served as a local organizer for the GLOBEC Symposium on "*Climate variability and sub-arctic marine ecosystems*" held May 16 - 20, 2005, in Victoria, Canada. The symposium brought together 230 scientists from 12 countries (including all six PICES member countries) to present current knowledge of the structure and function of sub-arctic marine ecosystems and to discuss, at two special workshops, the Implementation Plans

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of a new GLOBEC regional program on *Ecosystem Studies of Sub-Arctic Seas* (ESSAS) and of the U.S. national program on the *Bering Ecosystem Study* (BEST). PICES is prepared to actively support future ESSAS activities, for example, comparative regional workshops.

- Several theme sessions of scientific interest to GLOBEC will be convened at PICES XIV to be held September 28 - October 9, 2005, in Vladivostok, Russia. Examples include: “*Mechanisms of human and climate impacts on ecosystems in marginal seas and shelf regions*” (S1), “*The comparative responses of different life history strategists to climate shifts*” (S4), and “*Modeling climate and fishing impacts on fish recruitment*” (S5).
- GLOBEC agreed to co-sponsor the PICES/CCCC Symposium on “*Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis*” to be held April 19-21, 2006, in Honolulu, U.S.A. The primary scientific objective of this symposium is to present a synthesis of the effects of seasonal to multi-decadal variability on the structure and function of the North Pacific that goes beyond the analysis and understanding developed from studies of a single trophic level, process or region—a True Synthesis. The symposium will be a part of GLOBEC synthesis efforts, and the GLOBEC SSC is planning to meet in conjunction with this event. A letter was sent to SCOR by GLOBEC and PICES requesting travel support for scientists from countries with “economies in transition” to attend the symposium.
- PICES, GLOBEC and ICES are working together to organize the 4<sup>th</sup> International Zooplankton Production Symposium on “*Human and climate forcing of zooplankton populations*” to be held May 28 - June 1, 2007, in Hiroshima, Japan (local sponsors/organizers are the Plankton Society of Japan and the Japanese Society of Fisheries Oceanography).

## **Surface Ocean-Lower Atmosphere Study (SOLAS)**

- Meso-scale iron enhancement experiments are an important part in the agenda of both SOLAS and PICES. Three international collaborative field projects were developed under the umbrella of PICES, through its Advisory Panel on the *Iron Fertilization Experiment in the Subarctic Pacific Ocean* (IFEP) established in 2000. SERIES (Subarctic Ecosystem Response to Iron Enrichment Study) was performed in the eastern subarctic Pacific in summer of 2002, and SEEDS-I and SEEDS-II (Subarctic Pacific Iron Experiment for Ecosystem Dynamics Study) were conducted in the western subarctic Pacific in summer of 2001 and 2004, respectively. Important new findings from the first two experiments were published recently in *Science* (SEEDS-I: Tsuda *et al.* 2003, 300: 958-961) and *Nature* (SERIES: Boyd *et al.* 2004, 428: 549-553). More detailed results from these experiments can be found in special issues of *Progress in Oceanography* (SEEDS-I) and *Deep-Sea Research II* (SERIES) to be published in 2005. SEEDS-II was completed in August 2004, and results are underway.
- Proceedings of the PICES IFEP workshop on “*In situ* iron enrichment experiments in the eastern and western subarctic Pacific” (February 10-12, 2004, in Victoria, Canada) will be published in the PICES Scientific Report Series in summer 2005.
- A 5-year synthesis report of the IFEP Advisory Panel is planned for publication in the PICES Scientific Report Series in 2006. It will include circumstances of IFEP, summaries of

SEEDS-I, SEEDS-II and SERIES, and future plans to understand why the three iron enrichment experiments in the subarctic North Pacific are different in magnitude, biology, and export.

- A 1-day workshop on “*Modeling and iron biogeochemistry: How far apart are we?*” will be held October 2, 2005, at PICES XIV. The goal of this workshop is to examine the structure of iron biochemical models with respect to what is known about iron biogeochemistry. It is expected that this workshop will enhance communication between experimentalists and modelers, and establish a framework for organizing a 2-3 day workshop (hopefully, jointly with SOLAS) that will address this problem in detail and compare ecological models that describe how plankton ecosystem respond to meso-scale iron enrichment in the high-nutrient, low-chlorophyll waters of the subarctic Pacific.
- A 2-day workshop on SEEDS-II, co-sponsored by the Ocean Research Institute (University of Tokyo), SOLAS-Japan and PICES, will be held in October 17 - 18, 2005, in Tokyo, Japan. The goals of this workshop are to (1) synthesize results from the second *in situ* iron enrichment experiments in the western subarctic North Pacific (SEEDS-II); and (2) discuss differences in magnitude, biology and export between SEEDS-I and SEEDS-II.

#### **Integrated Marine Biogeochemistry and Ecosystem Research (IMBER)**

- In October 2004, Dr. Julie Hall attended PICES XIII on behalf of IMBER and presented an overview of this project on ocean biogeochemistry and ecosystem research to the PICES scientific community (at the session on “*The impacts of large-scale climate change on North Pacific marine ecosystems*”) and to the PICES Science Board and Governing Council. Council accepted the recommendation of Science Board that PICES should assist in the implementation of IMBER in the North Pacific. It was also suggested that issues of marine biogeochemistry and food webs that would link with IMBER should be considered as a potential topic for a new PICES scientific integrative program.

#### **Global Ecology and Oceanography of Harmful Algal Blooms Program (GEOHAB)**

- All PICES member countries have significant HAB problems, and similar levels of scientific uncertainty in regard to HABs that are severely limiting the ability to forecast and mitigate HAB events. Responding to interest in sharing information from active HAB science and management programs in each of its member countries, and to achieve the appropriate level of coordination and collaboration among these countries, PICES established in 2003 a Section on *Harmful algal blooms and their impacts*. It is expected that through this HAB Section PICES will participate in the international collaborations, including GEOHAB.
- Major focus for the PICES HAB Section is currently on building a common data resource among PICES nations that allows inter-comparison of HAB species composition and the magnitude of environmental and economic impacts. Two joint PICES-IOC workshops were convened to facilitate this activity. At the workshop on “*Harmonization of HAB data*” (PICES XII in October 2003, Seoul, Korea), national representatives accepted an offer from IOC and ICES to utilize the successful harmful algal event database (HAE-DAT) format on a trial basis. At the workshop on “*Developing a North Pacific HAB data resource*” (PICES

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XIII in October 2004, Honolulu, U.S.A.) all countries provided an interim “report card” on the use of this database and identified further modifications needed to encompass unique aspects of Pacific Rim marine resources. All countries unanimously decided to adopt the HAE-DAT as the official PICES HAB database. A formal letter of agreement with IOC is prepared and will be signed in June 2005.

- Starting in 2005, the PICES HAB Section will convene an annual series of workshops to document the existing knowledge on the eco-physiology of HAB species that impact all, or most, countries in the North Pacific. A 1-day workshop at PICES XIV (preceded by a ½-day laboratory demonstration on detection techniques for algal toxins) will focus on two genera, *Pseudo-nitzschia* and *Alexandrium*. Future workshops will discuss species such as *Cochlodinium* sp., *Heterosigma akashiwo*, *Dinophysis* sp., *Heterocapsa* sp., *Chattonella* sp., *Gymnodinium catenatum*, and *Karenia mikimotoi*.

## OCEAN CARBON ACTIVITIES SUPPORTED BY SCOR

### **International Ocean Carbon Coordinated Project (IOCCP)**

- IOCCP, co-sponsored by SCOR and IOC, is designed to interface with existing regional-scale research and observation groups that have an interest in ocean carbon. IOCCP is working to establish international agreements on observation methods, best practices, data management, and data sharing that will lead to the joint development of global data products and synthesis activities documenting the ocean carbon cycle. PICES, through its Working Groups on *CO<sub>2</sub> in the North Pacific* (WG 13, 1998-2001) and *Biogeochemical data integration and synthesis* (WG 17, 2002-2005), has been long acting as a regional coordinator for these activities.
- The earlier successes of WG 13 and WG 17 are often cited as examples of what needs to be done on an international level to coordinate work in this area. Recognizing the need for a regional group that has a longer lifetime than the typical Working Group, and that will allow the Organization to maintain its pre-eminence in this arena while ensuring that the important problems of carbon cycling in the North Pacific are adequately addressed, PICES established in 2005 a Section on *Carbon and Climate* (see Appendix 1 for terms of reference). It is expected that this Section will provide clear channels of communication to IOCCP, and to large-scale SCOR/IGBP programs such as SOLAS and IMBER.
- A joint PICES/IOCCP Topic Session on “*The impacts of climate change on the carbon cycle in the North Pacific*” was convened October 20-21, 2004, at PICES XIII. The session comprised 18 oral presentations together with a number of posters. Special time was allocated at the session to present the main findings from the NOAA/GCP/PICES workshop on “*Understanding North Pacific carbon-cycle changes: Data synthesis and modeling*” (June 2-4, 2004, in Seattle, U.S.A.).
- Work is in progress on the “*Guide to best practices for oceanic CO<sub>2</sub> measurements and data reporting*” being prepared by the PICES WG 17. Publication is expected in the *PICES Scientific Report Series* in late 2005 or early 2006. IOCCP is co-sponsoring this project by providing US \$8,000 to ensure a large print run of the guide for wider distribution.

## SCOR WORKING GROUPS

### **Working Group 119 on Quantitative Ecosystem Indicators for Fisheries Management**

- Collaboration with SCOR-IOC Working Group 119 started with PICES' involvement in planning and organizing the International Symposium on “*Quantitative ecosystem indicators for fisheries management*” (March 31-April 3, 2003, in Paris, France).
- In October 2004, PICES established a new Working Group (WG 19) on *Ecosystem-based management science and its application to the North Pacific*. This Working Group will definitely benefit from activities of SCOR-IOC WG 119. One of terms of reference for PICES WG 19 directly states “Evaluate the indicators from the 2004 Symposium on “*Quantitative Ecosystem Indicators for Fisheries Management*” for usefulness and application to the North Pacific”.
- In March 2005, a PICES proposal entitled “Integration of ecological indicators for the North Pacific with emphasis on the Bering Sea” was funded by the North Pacific Research Board. The 3-day Bering Indicator Workshop of intermediate scope is envisioned as the major component of this proposal. The goal of the workshop, to be held in late spring or early summer of 2006, is to provide a report on the merits and recommendations for use of various classes of ecosystem indicators, through the application of selection criteria and their correspondence to operational objectives developed before and during the workshop. Participants would be international and regional experts on resource management, climate, fisheries, and ecosystems. It is expected that key suggestions and evaluations would be provided by invited scientists with considerable expertise in the application of indicators, as represented by members of SCOR-IOC Working Group 119.
- In December 2004, PICES published its first North Pacific Ecosystem Status Report (PICES Special Publication No. 1). The report contains not just descriptive summaries of physical and biological conditions in the North Pacific, but also quantitative indices of ecosystem status and trends. This effort is seen as a work-in-progress (publication of the second version is planned for 2007) as new observations are made, new discoveries are reported, and new questions are asked. The report opens new opportunity for cooperation with SCOR-IOC WG 119 that could assist in identifying what should be addressed in the North Pacific Ecosystem Status Report, using relevance to management decisions as selection criteria.

### **Working Group 125 on Global comparisons of zooplankton time series**

- A workshop on “Climate variability, zooplankton abundance and distribution – comparative opportunities from the world’s oceans” convened during the 3<sup>rd</sup> PICES/ICES/GLOBEC Zooplankton Production Symposium (May 2003, Gijón, Spain) led to a proposal submitted to SCOR for a Working Group on *Global comparisons of zooplankton time series*. This proposal was approved at the 27<sup>th</sup> SCOR General Meeting in September 2004. PICES strongly supported formation of this Working Group and agreed to provide funding for one additional member from the North Pacific (Dr. Harold P. Batchelder, Oregon State

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University, U.S.A.) to participate in its activities. Some future meetings of the SCOR Working Group are planned to be held in conjunction with symposia organized by PICES: the symposium on “*Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis*” (April 2006) and the 4<sup>th</sup> International Zooplankton Production Symposium on “*Human and climate forcing of zooplankton populations*” (May 2007).

## **SCOR TRAVEL GRANTS FOR MEETINGS ORGANIZED/SPONSORED BY PICES**

- At the 27<sup>th</sup> General Meeting, SCOR approved a travel grant of \$5,000 US for scientists from countries with “economies in transition” to attend sessions/workshops of PICES XIV (September 28 - October 9, 2005, Vladivostok, Russia) related to SCOR interests.
- Two requests are addressed to the 37<sup>th</sup> SCOR Executive Committee:
  - PICES requests support participation of scientists from countries with “economies in transition” from the Pacific Rim in the PICES Fifteenth Annual Meeting to be held October 13-21, 2006, in Yokohama, Japan. The overall theme for PICES XIV is “*Boundary Current Ecosystems*” (see description in Appendix 2). The scientific program for PICES XV will be finalized at the upcoming PICES Annual Meeting in October 2005.
  - GLOBEC and PICES request a contribution to cover the expenses of 3 to 5 scientists from countries with “economies in transition” to attend the Symposium on “*Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis*” (extraction from the announcement for the Symposium is included in Appendix 3).

## ***Appendix 1* PICES Section on Carbon and Climate**

### **Terms of reference**

1. Coordinate and encourage ongoing and planned national and international syntheses of carbon cycle research studies in the North Pacific and, where necessary and appropriate, for the larger Pacific basin;
2. Ensure effective two-way communication with other international scientific groups that have a responsibility for coordination of ocean carbon studies, such as the International Ocean Carbon Coordination Project (IOCCP), and the SOLAS/IMBER implementation group for carbon research;
3. Review the existing biogeochemical information on carbon cycling within the North Pacific, identify gaps in our knowledge and make prioritized recommendations for future research;
4. Periodically review the status of the methodology of CO<sub>2</sub> measurements including the preparation of standards and reference materials, and advise on intercalibration and quality control procedures;
5. Identify suitable data sets on the oceanic CO<sub>2</sub> system in the Pacific region as they become available, and recommend the mechanisms of data and information exchange;

6. Carry out and publish (in the refereed literature) basin-scale syntheses of carbon cycling in the North Pacific, including new data whenever appropriate, and encourage scientific interpretation of these evolving data sets;
7. Organize symposiums, workshops, or annual meeting sessions on carbon cycle and climate studies in the North Pacific.

### *Appendix 2*

#### **Theme for PICES XV: “Boundary Current Ecosystems”**

The North Pacific is surrounded by boundary currents (*e.g.*, Kuroshio, Tsushima, Oyashio, California, Alaska, Bering Slope) that support a diversity of ecosystems. These ecosystems are highly variable in space and time due to combinations of climate change, decadal “regime” shifts, ENSO and other interannual variability, seasonal and event meso-scale dynamics. This variability has led to dramatic changes at both low and high trophic levels, including productivity, range extensions, and species dominance. This theme will provide opportunities to address questions such as:

- How will climate variation and projected climate change influence the dynamics and variability of boundary currents?
- How will boundary current ecosystems respond to these physical property and transport changes?
- How does human activity (*e.g.*, fishing, hatcheries) alter the sensitivity of boundary current ecosystems to natural environmental forcing?, and
- What are appropriate management strategies to maintain healthy, sustainable living marine resources in boundary current systems that experience large environmental variations?

Presentations that describe, compare and/or contrast biology, fisheries, physics, geochemistry of boundary currents and the ecosystems they support are encouraged.

### *Appendix 3*

#### Symposium on “*Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis*”

##### ***BACKGROUND AND OBJECTIVES***

Atmospheric forcing, ocean structure, and ecosystem structure and population dynamics vary on many spatial and temporal scales. Dominant temporal scales are diel, seasonal, interannual and longer. In the past ten to fifteen years, marine scientists have begun to document evidence that basin-wide or large-scale changes might be significant forcing for decadal- to millennium-scale changes in marine ecosystems. In 1994, the PICES Climate Change and Carrying Capacity (CCCC) Program, a regional program of the IGBP/SCOR/IOC GLOBEC International, was developed to provide a framework for examining climate-ecosystem linkages, mostly on regional

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scales, but with plans for broader-scale, basin-wide synthesis, in the North Pacific. The primary scientific objective of this symposium is to present a synthesis of the effects of seasonal to multi-decadal variability on the structure and function of the North Pacific that goes beyond the analysis and understanding developed from studies of a single trophic level, process or region—a True Synthesis.

## ***SCIENCE THEMES***

We invite scientific papers that provide inter-disciplinary or multi-regional comparisons on the specific science themes of the symposium:

### **THEME 1**

**Regime shifts**, especially examination of the ocean and ecosystem responses to known strong, infrequent changes in the North Pacific, such as those that occurred in 1977, 1989, and 1998;

### **THEME 2**

**Ecosystem productivity and structural responses to physical forcing**, with an emphasis on shorter than inter-decadal time-scales—interannual (*e.g.*, such as El Niño and La Niña), seasonal and event scales;

### **THEME 3**

**Pan-Pacific comparisons**, with an emphasis on comparisons of similar species or processes from multiple coastal ecosystems, and of open ocean-coastal linkages and climate connections.

Papers on related topics will also be considered.

## ***DATES AND VENUE***

The symposium will be held April 19-21, 2006, at the Hawaii Imin International Conference Center (East-West Center) in Honolulu, U.S.A.

## ***SYMPOSIUM STRUCTURE***

The symposium will have a combination of plenary oral sessions and poster sessions. Each day will cover one of the science themes, and include about 10 oral presentations. Keynote speakers will provide 35-minute overviews and challenges for each science theme. Contributed papers that are accepted will be 25 minutes in length. Number of posters displayed each day will be limited, and poster-only time will be provided in the afternoons for discussion with authors. Specific discussion periods will be scheduled at the end of the first two days. The Closing Session on the third day will include “Perspective” talks and a panel-based discussion. The official language of the symposium will be English.

## ***PUBLICATION***

The symposium proceedings will be published in a special issue of *Progress in Oceanography*. Papers, including those based on poster presentations, will be considered for publication following peer review. Interested authors will be required to submit one paper copy and an

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electronic version of their manuscript at the time of the meeting. Copies of the proceedings will be sent to all registered participants.

## ***REGISTRATION AND ABSTRACTS***

Those wishing to attend are invited to register and submit abstracts (maximum of 300 words) through the PICES website (<http://www.pices.int>). **The deadline for early registration and abstract submission is November 4, 2005.** Abstract format must comply with guidelines provided.

A registration fee of CDN\$ 225 (CDN\$ 150 for students) will be charged to help cover costs of the symposium. Late registration (after November 4) is CDN\$ 325 (CDN\$ 225 for students) and subject to the availability of space. A spousal registration fee is CDN\$ 50. Registration is not considered complete until the registration fee is received. Please refer to the PICES Home Page for detail instructions and forms.

Limited support is expected to be available to assist young scientists (35 years of age or younger) and scientists from countries with “economies in transition” to attend the symposium.

Application procedure and forms can be found on the PICES Home Page (<http://www.pices.int/secure/login.aspx>). **Deadline for application is November 4, 2005.**

Because of venue arrangements and the intent for only plenary sessions and posters, we are limited to *ca.* 30 oral talks and 90 poster presentations during this symposium. In the event that response (abstract submission) exceeds this, the Steering Committee will consider abstract merit and relevance, and date of submission in determining abstract acceptance. **Authors will be notified on the status of their submissions by January 4, 2006.**

## ***FURTHER INFORMATION***

Complete information and the latest news about the symposium can be found on the PICES

Home Page at

[http://www.pices.int/meetings/international\\_symposia/Honolulu2006/default.aspx](http://www.pices.int/meetings/international_symposia/Honolulu2006/default.aspx).