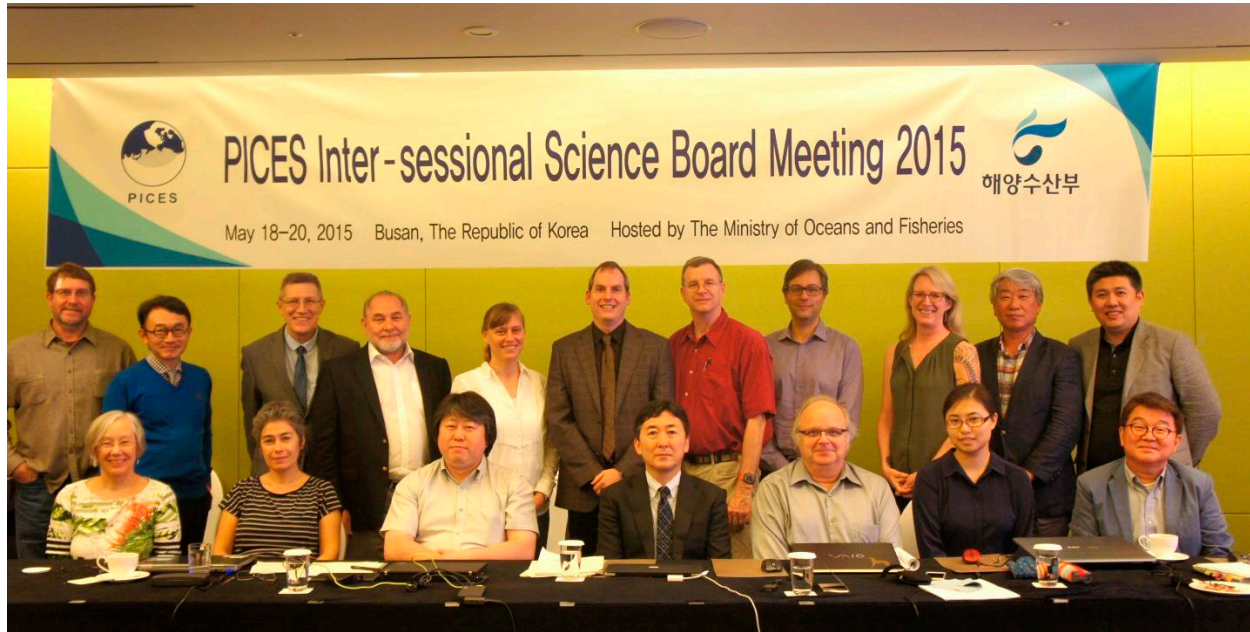


Report of the 2015 Inter-sessional Science Board meeting

The thirteenth inter-sessional Science Board meeting took place in Busan, Korea, from May 18 to 20, 2015. The meeting was attended by all Science Board members and 12 invited guests (*ISB-2015 Endnote 1*). Science Board Chairman, Dr. Thomas Therriault, called the meeting to order and welcomed the participants. After self-introductions were made, the draft agenda was reviewed by Science Board and an item dealing with the addition of two new members to the Section on *Carbon and Climate* was added under Agenda Item 17 before being adopted (*ISB-2015 Endnote 2*).



Participants of the ISB-2015 meeting (back row, from left): Steven Bograd (FUTURE SSC), Hiroaki Saito (Science Board Vice-Chairman; FUTURE SSC), Igor Shevchenko (representing Russia), Lev Bocharov (Past PICES Chairman; Governing Council), Jennifer Boldt (MONITOR), Thomas Therriault (Science Board Chairman), Harold (Hal) Batchelder (PICES Deputy Executive Secretary), Enrique Curchitser (Governing Council), Elizabeth (Libby) Logerwell (FIS), Kyung-Il Chang (POC), Chuanlin Huo (MEQ); (front row, from left): Laura Richards (PICES Chairman), Angelica Peña (BIO), Toru Suzuki (TCODE), Shigeru Itakura (Governing Council), Robin Brown (PICES Executive Secretary), Rui Zheng (SOA), Chul Park (PICES Vice-Chairman).

Monday, May 18, 2015

AGENDA ITEM 2

Mid-year report from FUTURE SSC

FUTURE Scientific Steering Committee Co-Chairman, Dr. Steven Bograd, summarized the FUTURE SSC's first meeting which took place March 1–3, 2015, in La Jolla, USA, following the restructuring of FUTURE's governance structure at PICES-2014 in Yeosu.

The SSC reviewed and consider potential changes to the terms of reference suggested by the FUTURE Evaluation Team at ISB-2014 and revised by Science Board during PICES-2014. Dr. Bograd presented the latest iteration of the terms of reference and following discussion by Science Board these were accepted with one modification (see Recommendation).

ISB-2015

Other outcomes from the meeting were that each SSC member would be responsible for acting as a direct liaison between a PICES Standing Committee and/or Expert Group to facilitate increased two-way communications related to FUTURE activities/information. The FUTURE SSC also discussed proposals for five potential new expert groups to advance FUTURE science, including ones building on the work of existing WGs and the SSC prepared an Action Plan for 2015.

Recommendation: Science Board recommends TOR #7 be revised from “Ensure that FUTURE research and products translate into high level impacts for PICES and its member countries” to “Communicate FUTURE research and products with the aim of translating them into high level impacts for PICES and its member countries”.

Action: Science Board to review and provide comments to Drs. Bograd and Saito on FUTURE SSC Committee-ExGs liaisons, Action Plan for 2015, and SEES conceptual diagram by end of June 2015.

AGENDA ITEM 3

Structure of PICES Annual Meetings

Committee Chairmen provided feedback on the current structure of PICES Annual Meetings and time management issues related to the Committee business meetings. The consensus was not to change the length of time for the Sunday 2-hour overture meetings. Committee Chairmen used this time according to their needs, either to provide background for high priority issues to be discussed at the main business meetings during the week or to get a head start on regular agenda items. For some Committees presentations from representatives of external organizations takes considerable time. Science Board resolved that it was necessary for ExGs to report both during the Sunday FUTURE meeting (FUTURE mini-symposium) and to continue to report at their parent Committee’s meetings. Broad engagement of the PICES community at the FUTURE mini-symposium is essential for the success of the integrated program. A joint FUTURE/Science Board meeting will precede the Science Board meeting after the Closing Session at PICES-2015.

Action:

- Committee Chairmen to provide Science Board with member attendance from the overture and main Committee business meetings at PICES-2015,
- Secretariat to send reminders to Governing Council and to Committee Chairmen to encourage members to attend FUTURE mini-symposium,
- Science Board to revisit Annual Meeting structure at PICES-2015.

AGENDA ITEM 4

Status of planning for PICES-2015, Qingdao, China

Invited speakers for all Topic Sessions were in place except for the Science Board Symposium and S10. Each Committee Chairman and FUTURE SSC Co-Chairman provided names of potential invited speakers for the Science Board Symposium and Dr. Therriault will follow up on contacting them. Executive Secretary, Mr. Robin Brown, will provide the name of the Keynote Speaker after he meets with the Chinese delegation responsible for PICES-2015, following ISB-2015. Submission of abstracts was moved up 10 days for this Annual Meeting from previous years to allow for registrants to make arrangements for visas (where applicable) and travel.

Action:

- Dr. Therriault to contact prospective speakers for S1 and Drs. Saito and Bograd to follow up on WG 29 speaker for S1;
- Mr. Robin to provide name of Chinese Keynote speaker after meeting in China.

AGENDA ITEM 5

Review of selection criteria for sessions/workshops at PICES Annual Meetings*Submission of Topic Session/Workshop proposals*

To streamline the submission of proposals, Science Board discussed criteria to better enable Committees to review and rank proposals and provide more complete information for the Secretariat to work with:

- Convenor of a session/workshop and proponent of a session/workshop must be the same person;
- Corresponding convenor must be clearly indicated on web or at-venue submissions;
- Maximum of four conveners per session and workshop preferred (but may be exceeded with justification);
- Proponent of a session/workshop must obtain prior consent from listed co-convenor(s);
- Proposals received during the Annual Meeting will be accepted for review;
- On-line ranking tool to be closed by end of Committee meetings (Tuesday).

The sponsorship field will be retained only for organizations; Committees wishing to sponsor a session will discuss it at both their individual meetings and at the Science Board meeting. Any proposals received during the Annual Meeting should be sent to the Secretariat for dissemination to all Committees prior to their main business meetings. Proposals received after this time will not be considered. Committees can decide whether or not to provide the same ranking weight for proposals received during the Annual Meeting compared to those submitted in advance online. Expert groups can provide input to the rankings via their parent committees but only Committees and the newly formed FUTURE SSC will rank session/workshop proposals. All Committees agreed that the online ranking system was useful as a tool but that final decisions would ultimately be made during their meetings.

A template Committee Chairs will use to communicate high priority items to Science Board, including support for sessions/workshops and potential sponsorship (funding), will be provided by the Secretariat prior to their business meetings. The Secretariat will compile completed templates for discussion by Science Board. This will ensure essential information can be discussed and prioritized by Science Board before being presented to Governing Council.

Action:

- Secretariat to set up online ranking for FUTURE SSC;
- Secretariat to prepare and circulate template by end of June for comments by Committee Chairmen.

AGENDA ITEM 6

Wooster and POMA awards

Two nominations for the Wooster Award and one nomination for the POMA were submitted to the Secretariat by the deadline of March 31, 2015. MONITOR and TCODE provided their opinion for the POMA nomination. Science Board met *in camera* to select a recipient for each award. The recipients will be announced during the Opening Session at PICES-2015.

AGENDA ITEM 7

Venue and date for ISB-2016

Dr. Therriault, Science Board Chairman stated there was a clear need to continue having inter-sessional Science Board meetings as all PICES business cannot be conducted during Annual Meetings. Recent inter-sessional meetings (except for the present meeting) have linked to other PICES events and Science Board was asked to think of a potential event/workshop that could be linked to ISB-2016. Mr. Brown will discuss a potential Chinese venue with Chinese delegates in Qingdao after ISB-2015.

Action: Mr. Brown to report on result to Science Board at PICES-2015.

ISB-2015

AGENDA ITEM 8

Mid-year reports from expert groups reporting to Science Board

No final report was available from the Study Group on *Biodiversity Conservation* (SG-BC). No update on activities was provided by the Study Group on *Socio-Ecological-Environmental Systems* (SG-SEES).

Action: Secretariat to follow up on SG-BC final report and update on SG-SEES activities.

The joint ISC-PICES Study Group for *Scientific Cooperation of ISC and PICES* (SG-SCISC) was formally established with a kickoff message for the group in April. SG-SCISC will hold its first meeting inter-sessionally in Kona, HI, USA July 13-14, 2015 and plans to have a draft framework for scientific cooperation in time for PICES-2015 and ISC15.

Dr. Elizabeth Logerwell presented on behalf of Study Group on *North Pacific Ecosystem Status Report* Chairman, Dr. Phillip Mundy. The immediate goal of the SG is to gather ecosystem time series observations from each PICES country through each Committee's members (a total of 36 initial time series). SG-NPESR3 members assigned to each Committee will work with the Committee Chairmen to gather published datasets and address any concerns involving retrieval. A document containing the original Committee feedback to FUTURE AP-SOFE's proposal at PICES-2013 for this new direction and format the NPESR-3 would take was re-circulated to Science Board at ISB-2015 for review and re-confirmation that each Committee Chairman would be willing to undertake this task.

Action: Committee Chairmen to identify any concerns regarding the method for gathering ETSO information and send Dr. Mundy by end on June.

Information on inter-sessional activities provided by the Section on *Human Dimensions of Marine Systems* (S-HD) was unsatisfactory such that Science Board was unable to evaluate progress.

Action: Secretariat follow-up with S-HD to express concerns raised by SB and to ensure details will be presented at PICES-2015.

AGENDA ITEM 9

Implementation of Science Board recommendations and Governing Council Decisions from PICES-2014

Highlights of Science Board recommendations and Governing Council decisions from PICES-2014 were reported by Mr. Brown. Of note was an update on Arctic-based activities (Decision 2014/S/2) given by Dr. Logerwell. She attended and represented PICES at the Third Meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean held April 14–16, 2015 in Seattle, WA, USA. Objectives of the meeting were to review current programs for fish-relevant research and monitoring in the central Arctic Ocean and adjacent shelf seas, report on the status of research and monitoring, develop a framework for a Joint Program of Scientific Research and Monitoring for the Central Arctic Ocean region, and to consider how to promote cooperation with ICES and PICES, as well as other relevant scientific entities. An inventory and status report on Arctic research and monitoring and a framework for a Joint Program of Scientific Research and Monitoring will be finalized by the end of June.

Day 1 meeting adjourned 5:30 pm.

Tuesday, May 19, 2015

AGENDA ITEM 10

Mid-year reports from Scientific and Technical Committees

Progress reports since PICES-2014 highlighting high priority items or those with financial implications of Committees and ExGs are provided below.

Biological Oceanography Committee

BIO Chairman, Dr. Angelica Peña, reported that Drs. Motomitsu Takhashi (Japan) and Janelle Curtis (Canada) were new members of the BIO Committee, and Dr. Debora Iglesias-Rodriguez (U.S.) was in the process of being added. The Working Group on *Jellyfish Blooms around the North Pacific: Causes and Consequences* (WG 26) has made significant progress on its delayed final report. China's contribution should be delivered by the end of May. Selected papers stemming from ICES 2014 ASC Theme Session A (co-chaired by WG 26 Co-Chairman, Dr. Richard Brodeur) will be published in a special issue of the *Journal of Plankton Research*. BIO requested some limited funding to purchase extra copies of this special issue for PICES distribution.

Action: Secretariat to arrange purchase of additional copies of JPR Special Issue.

Working Group on *Regional Climate Modeling* (WG 29) convened a Theme Session on “*Regional models for predictions of climate change impacts: methods, uncertainties and challenges*” at the 3rd PICES/ICES/IOC Symposium on “*Effects of climate change on the world's oceans*” in Santos, Brazil (March 21–27, 2015). The WG will convene a topic session at the P/ICES (S-CCME) Workshop on “*Modelling the effects of climate change on fish and fisheries*” to be held August 10–12, 2015, in Seattle, WA, USA.

Notification that the Working Group on *Biodiversity of Biogenic Habitats* (WG 32) was approved by Governing Council at PICES-2014 but was only communicated to WG Co-Chairmen, Drs. Janelle Curtis and Masashi Kiyota in early May. Dr. Peña also noted that there was some miscommunication at PICES-2014 between BIO and Science Board with respect to the extension of the Advisory Panel on *Marine Birds and Mammals*. Science Board approved an extension before BIO had a chance to work with the AP to review their terms of reference and provide input. BIO did not review the PICES Scientific Report from the Spatial Ecology and Conservation Activity Plan. A draft of the report will be ready by PICES-2015. The issue of expert group classification and life span was discussed in the context of potential changes in the Rules of Procedure. BIO will review AP-MBM's terms of reference at PICES-2015 to ensure that the AP is classified appropriately. Dr. Richards will work with the Finance and Administration Committee and Secretariat to review the Rules of Procedure. Science Board will discuss further at PICES-2015.

Action: Science Board to provide potential recommendations to Dr. Richards related to Rules of Procedure by the end of June.

Fishery Science Committee (FIS)

FIS Chairman, Dr. Elizabeth Logerwell announced that Drs. Tetsuichirou Funamoto and Masahito Hirota were new Japanese Committee members, replacing Drs. Akihiko Yatsu and Motomitsu Takahashi. As discussed at PICES-2014, the Section on *Climate Change Effects on Marine Ecosystems* (S-CCME) agreed to roughly 3-year terms for co-chairmanship. The transition between Co-Chairmen will be staggered to allow continuity within S-CCME. Dr. Suam Kim (Korea/PICES) rotated off at PICES-2014 and was replaced by Dr. Shin-ichi Ito (Japan). S-CCME members, Drs. Manuel Barange and Jacquelynne King, were symposium convenors for the 3rd International Symposium on the “*Effects of climate change on the world's oceans*” held March 21-27, 2015, in Santos, Brazil. S-CCME members also served as co-convenors or invited speakers at Theme Sessions S4 on “*Regional models for predictions of climate change impacts: Methods, uncertainties and challenges*” (Shin-ichi Ito, invited speaker), S6 on “*Climate change in the seasonal domain: Impacts on the phenology of marine ecosystems and their consequences*” (Mark Payne, co-convenor), S8 on “*Climate change impacts on*

marine biodiversity and resilience” (Jake Rice, co-convenor), S9 on “Impact of climate change on ecosystem carrying capacity via food-web spatial relocations” (Brian MacKenzie, co-convenor), S10 on “Forecasting climate change impacts on fish populations and fisheries” (Anne B. Hollowed, co-convenor), S11 on “Impacts on coastal communities” (Manuel Barange, co-convenor), S12 on “Linking climate change to marine management objectives” (Jacquelynn King, co-convenor), W1 on “Addressing uncertainty in projecting climate change impacts in marine ecosystems” (Manuel Barange, Mark Payne and Brian MacKenzie, co-convenors), W4 on “Upwelling systems under future climate change” (Kenneth Drinkwater, co-convenor), and W5 on “Moving towards climate-ready fishery systems: Regional comparisons of climate adaptation in marine fisheries” (Manuel Barange and John Pinnegar, invited speakers). Other activities of S-CCME include:

- S-CCME obtained “speaker space” at two high-level climate and oceans meetings: “World Oceans Day”, June 8, 2015, Paris, France and “Our Common Future Under Climate Change”, July 7–10, 2015, Paris, France. Dr. Barange will make presentations on behalf of S-CCME.
- Dr. Drinkwater will co-convene a theme session entitled “The role of sea ice in the Arctic and sub-Arctic” at the ESSAS Annual Science Meeting, June 15–17, 2015 in Seattle, WA, USA.
- S-CCME received funding from the National Marine Fisheries Service, NOAA’s Climate Program Office, the Norwegian Research Institute, ICES and PICES to hold a WK-SICCME workshop (August 10–12, 2015 Seattle, WA, USA) targeted at identifying a suite of common representative fishery pathways for use in projecting climate change impacts on fish and fisheries.
- S-CCME requested and received approval for a 90 or 120 minute time slot during the SCICOM Open Session science meetings at the ICES ASC in Copenhagen, Denmark to present highlights from the Brazil Climate Change Symposium and WK-SICCME and to discuss new activities.
- S-CCME members are co-convening a Topic Session S7 on “Past, present and future climate in the North Pacific Ocean: Updates of our understanding since IPCC AR5” and Theme Session G on “Managing marine ecosystem services in a changing climate” the respective PICES and ICES annual meetings in 2015.
- Dr. Shin-ichi Ito was convenor of the session “New frontiers in modelling for oceanography, fisheries and marine ecosystem management” at the 2nd International Ocean Research Conference “One Planet One Ocean” held November 18, 2014 in Barcelona, Spain.

PICES supported the participation of Dr. Shoshiro Minobe at the NPAFC International Symposium on “Pacific salmon and steelhead production in a changing climate: Past, present, and future” (May 17–19, 2015, Kobe, Japan). Dr. Minobe gave a talk in Session 2 (*Climate change impacts on salmonid production and their marine ecosystems*). The title of Dr. Minobe’s talk is “Habitat change projections for Pacific salmon (*Oncorhynchus* spp.) in the North Pacific and adjacent seas based on CMIP5 climate models” co-authored with James R. Irvine, Alexander V. Zavolokin, Shigehiko Urawa, Hiromichi Ueno, Elizabeth A. Logerwell, Katherine W. Myers, and Mio Terada. The research that Dr. Minobe presented resulted from W2 on “Linkages between the winter distribution of Pacific salmon and their marine ecosystems and how this might be altered with climate change” (co-sponsored by NPAFC) at PICES-2014.

Dr. James Irvine reported to FIS Chairman, Dr. Logerwell, about the International Year of the Salmon (IYS) Scoping Workshop held February 17–18, 2015 in Vancouver, BC, Canada. Attending were members of the Study Group on IYS and invited scientific experts from member countries. PICES Deputy Executive Secretary, Dr. Hal Batchelder also attended this meeting. A report of the Workshop was prepared by the Chair of the Study Group and will be available from the NPAFC Secretariat.

Dr. Logerwell, representing PICES, attended the *Third Meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean* held April 14–16, 2015 in Seattle, WA, USA (see Agenda Item 10 for more details). A slight majority of FIS members voted for PICES to support the conference entitled “Recent advances in cephalopod science” to be held November 6–14, 2015 in Hakodate, Japan but FIS agreed that if resources were limited that PICES might consider saving them for other PICES events.

Action: Science Board declined to offer support to the cephalopod conference. No specific PICES support was requested.

Marine Environmental Quality Committee (MEQ)

MEQ Chairman, Dr. Chuanlin Huo, reported that Dr. Peter Ross (Canada) was a new MEQ member, replacing Dr. Janelle Curtis. Dr. Huo noted that although only four papers were presented at the MEQ contributed Paper Session at PICES-2014, the Paper Session was still considered valuable, and member countries should be reminded that this is an option and submissions should be encouraged. WG 31 is working to promote more contributions to the Session.

Working Group on *Development of Ecosystem Indicators to Characterize Ecosystem Responders to Multiple Stressors* (WG 28) will submit a draft final report to MEQ at PICES-2015 and, based on comments, will submit its final report before ISB-2016. Dr. Therriault reported that a formal request to Governing Council for an extension of 4 to 6 months to complete the report was not necessary. Due to scheduling conflicts with the PICES Annual Meeting, IAEA and ICRP declined to co-sponsor Workshop (W5) on “*Monitoring and assessment of environmental radioactivity in the North Pacific*” led by the Working Group on *Assessment of Marine Environmental Quality of Radiation around the North Pacific* (WG 30). However, Co-Chairmen, Drs. Yusheng Zhang and Kathryn Higley, were able to recruit IAEA consultant, Dr. Ron Szymczak, as an invited speaker and are consulting with SCOR for potential co-sponsorship. Working Group on *Emerging Topics in Marine Pollution* (WG 31) has 11 papers confirmed for submission to a special issue on microplastics to the peer-reviewed journal *Archives of Environmental Contamination and Toxicology* (Guest Editors: Won Joon Shim and Richard C. Thompson). The special issue is the result of papers presented at Topic Session S8 on “*Marine debris in the ocean: Sources, transport, fate and effects of macro- and micro-plastics*” (co-sponsored by GESAMP, ICES and NOWPAP) at PICES-2014.

A new *ad hoc* Chinese-PICES committee formed to facilitate communication and engagement between Chinese scientists and PICES had actively encouraged its scientists to attend the symposium, with some success, as Chinese registration doubled from 2 to 4. MEQ requested funding (\$1000 USD) for the Chinese translation and publication of the outreach brochure based on “*Economic and social impacts of HABs on aquaculture and fisheries*” (PICES Scientific Report No. 47, 2014).

Physical Oceanography and Climate Committee (POC)

POC Chairman, Dr. Kyung-Il Chang, announced that since PICES-2014, Dr. Jerome Fiechter (USA) is a new member of POC, replacing Dr. James Overland.

The Section on *Carbon and Climate* (S-CC) is expecting Dr. Zhongyong Gao (China) and Dr. Simone Alin (USA) to be added as new members. Some Science Board members voiced concern that membership was simply increasing without any consideration of removing less active members. Although there is no limit to the number of members for Sections under the current Rules of Procedure, Science Board agreed with the additions to fill in gaps in expertise but recommended that S-CC review its membership. S-CC has begun a basin-wide acidification assessment (Outlook) and has requested all its members to present results or syntheses on their country activities at PICES-2015. S-CC expects to complete the assessment by PICES-2016.

The Section on *Climate Change Effects on Marine Ecosystems* (S-CCME) is formally requesting links to CMIP6 data. Dr. Shin-ichi Ito is moving forward on obtaining specific variables from CMIP6 simulations.

Recommendation: Science Board recommends Dr. Zhongyong Gao (China) and Dr. Simone Alin (USA) be added as S-CC members.

Action: Secretariat to ask S-CC to review its membership to ensure members are needed and active.

Dr. Osamu Katou (Japan) is a new member of the Advisory Panel for a *CREAMS/PICES Program in East Asian Marginal Seas* (AP-CREAMS), replacing Dr. Naoki Iguchi. AP-CREAMS requests Dr. Fei Yu (China) be added as a Co-Chairman to provide national balance. AP-CREAMS held its inter-sessional meeting on April 25, 2015 in Okinawa during PAMS-18. The first draft of the EAST-II report on “*Oceanography of the*

Yellow and East China Sea” for publication in the PICES Scientific Report series is planned for PICES-2015. A second revision (shortening) of the supplementary chapter of the North Pacific Ecosystem Status Report 2003–2008 is expected to be completed and submitted by PICES-2015.

Recommendation: Science Board recommends Dr. Fei Yu be added as a Co-Chairman to AP-CREAMS.

Action: POC and MONITOR, as co-parents of AP-CREAMS, has responsibility to review the supplementary chapter. Dr. Phillip Mundy as SG-NPESR3 will also be asked to provide a review. Dr. Boldt to e-mail AP-CREAMS co-chairs to inform them of this.

Technical Committee on Monitoring (MONITOR)

MONITOR Chairman, Dr. Jennifer Boldt, reported that Dr. Sonia Batten is a new *ex-officio* member of MONITOR, representing SAHFOS. Dr. Kazuaki Tadokoro (Japan) and Dr. Lisa Eisner (USA) are new members, replacing Dr. Hiroya Sugisaki and Dr. Phillip Mundy, respectively. The Advisory Panel on *North Pacific Coastal Ocean Observing Systems* (AP-NPCOOS; established January 2015) will hold a 1-day Workshop (W6) on “*Best practices for and scientific progress from Coastal Ocean Observing Systems*” at PICES-2015. A goal at the workshop is to collect and synthesize coastal ocean observing plans and “best practices” for platforms and sensors for each PICES member country. Dr. Boldt questioned the status of the request from Dr. Maciej Telszewski (representing IOCCP) on PICES support for an IOC/SCOR IOCCP training course on “*Instrumenting our oceans for better observation: A training course on autonomous biogeochemical sensors*” to be held June 22–July 1, 2015 in Kristineberg, Sweden [a high priority request from S-CC/BIO/MONITOR to send 2–3 early career scientists to the training course was supported by Science Board and approved by Governing Council at PICES-2014].

Action: Dr. Boldt to forward Dr. Telszewski’s e-mail to the Secretariat for follow-up.

Dr. Boldt reported no progress since the establishment of the GOOS Biology and Ecosystems Panel to which Drs. David Checkley and Sanae Chiba were named members, or the GOOS Biogeochemistry Panel to which Dr. Masao Ishii (S-CC) was named member following the First Technical Workshop held in November 2013 in Townsville, Australia.

Action: Mr. Brown to contact Dr. Luis Valdés on status of GOOS Panels.

Technical Committee on Data Exchange (TCODE)

TCODE Chairman, Dr. Toru Suzuki, reported that Mr. Robin Brown (Canada) had stepped down as member. China wants to add a new member but has not recommended a name. TCODE proposes Dr. Daisuke Anbe to be added as a new Japanese member. Drs. Joon-Soo Lee and Suzuki attended IODE-XXII in Bruges, Belgium, March 16–20, 2015. Dr. Suzuki reported on GE-BICH (Group of Experts on Biological and Chemical Data Management and Exchange Practices) progress and achievements, outlining its contribution to IODE. On the advice of GE-BICH, the IOC Committee will abolish GE-BICH due to a shortage of funds. Its activities will be transferred to other projects. Dr. Hernan Garcia (Vice-Chairman of TCODE), Co-Chairman of GE-BICH, will work with IODE Co-Chairmen on future arrangements. IQuOD (International Quality-controlled Ocean Database) and OBIS-ENV-DATA were recommended as a new project. Drs. Cyndy Chandler and Yutaka Michida were elected as the new Co-Chairs of IODE. Drs. Lee and Suzuki attended a side meeting of ODINWESTPAC (Oceanographic Data and Information Network for the Western Pacific region) at WESTPAC-X in Phuket, Thailand, May 12–15, 2015. TCODE member, Dr. Tony Koslow, was appointed as a new member of the Study Group on *North Pacific Ecosystem Status Report*. Dr. Igor Shevchenko is collecting links to data policies of relevant national and international organizations for the purpose of developing a PICES data policy. Dr. Lee is a new Focal Points member for Korea at NOWPAP DINRAC, and will attend the DINRAC FP meeting July 9–10, 2015 in Beijing, China. Dr. Lee is a new member of the

NEAR-GOOS Coordinating Committee (CC) of Korea, and will attend a NEAR-GOOS CC meeting in Tokyo, Japan, in late fall 2015.

Recommendation: Science Board recommends Dr. Daisuke Anbe be added as a TCODE member.

Action: Secretariat to contact Chinese delegation to appoint an additional member representing China.

AGENDA ITEM 11

Optional election of PICES Science Board Chairman-elect

Science Board unanimously agreed that to continue the continuity of Science Board business, a Chairman-elect position should be sustained. Nominations (CVs) must be received by the Executive Secretary at least 60 days prior to the beginning of the Annual Meeting, where the election will occur.

Action: Secretariat to start the process for nominations of Science Board Chairman-elect.

AGENDA ITEM 12

PICES' 25th anniversary

Dr. Chang presented several ideas from the POC Committee to mark the 25th anniversary of PICES, including limiting the number of bottom-up topic session proposals (but encouraging workshops) while promoting top-down proposals related with plenary sessions. Suggestions for top-down sessions: (1) Progress in understanding climate variability and change in the North Pacific, (2) Regional climate and ecosystem projections – present and future, and (3) Missing processes physics controlling marine ecosystem in PICES science (e.g., coastal-estuarine circulation, ocean mixing, air-sea interaction, sea level rise). There were no further ideas from Science Board beyond those presented at PICES-2014. The Anniversary Planning Committee will meet between ISB-2015 and PICES-2015 to finalize details.

AGENDA ITEM 13

Status of planning for PICES-2016

Science Board discussed ideas for what the structure of PICES-2016 should be to celebrate PICES' 25th Anniversary and agreed that it should be different from the usual Annual Meeting framework, and should consist of a combination of retrospective and forward-looking components. It was agreed there should be a plenary that would review and synthesize what PICES has done over the last 25 years (the outcome from the session could result in a small book or review paper). Another idea included a series of plenaries (one or two per day) focusing on a different PICES topics (e.g., PICES' first integrative science program (CCCC), FUTURE, NPESR, regime shifts, future visions of the North Pacific, *etc.*). The meeting should be limited to three parallel sessions if possible to focus the meeting and make the sessions fuller. US national delegate, Dr. Enrique Curchitser, suggested highlighting the advances PICES has made in modelling of the North Pacific, and emphasizing how PICES would make itself relevant to the scientific community (and member countries) over the next 25 years, tackling such subjects as sea level rise, ocean acidification, hypoxia, depletions of biodiversity, *etc.* To attract people from outside PICES (*i.e.*, funding agencies), the forward-thinking features could be introduced at the beginning of the Annual Meeting, when such representation was more likely to be present. An alternative suggestion was to present PICES' past achievements as the reference point first before moving forward to the future. The Keynote could consist of two speakers (one demonstrating past successes; the other describing future challenges).

A draft description of the theme for PICES-2016, “*25 Years of PICES Celebrating the Past, Imagining the Future*” was e-mailed by the Secretariat to Science Board for review during the meeting.

Action: Science Board reviewed the theme description overnight and discussed and approved the next day.

AGENDA ITEM 14

Updating the PICES Strategic Plan

PICES Chairman, Dr. Laura Richards, informed Science Board that an update of the PICES Strategic Plan would be undertaken to coincide with the 25th Anniversary of PICES and should be in place by PICES-2016. A Governing Council Study Group on *Revising the Strategic Plan* was approved at PICES-2014 and established in January 2015 to review, and propose revisions if necessary. Dr. Richards asked for thoughts on whether the science, *i.e.*, Theme A, in the existing Strategic Plan would still be relevant as a vision for the next 5 years, and how often the Plan needed updating. Some members found the existing Plan too technical and suggested using more user-friendly language. Ideas for presentation might be found by looking at the Strategic Plans of other organizations, and could be displayed as a glossy brochure for 2016.

Most Committees followed their Committee Action Plans, based on the Strategic Plan, to some extent. There was some confusion on what level of detail was necessary, as it was currently overly detailed, and how often the Action Plan should/could be updated. With the restructuring of FUTURE, the FUTURE Implementation Plan will need to be revised in concert with the Strategic Plan.

Action: Each Committee to review the Strategic Plan, especially Themes A and B and provide comments to Dr. Therriault by end of June (Secretariat to send a reminder to Science Board by mid-June).

Day 2 meeting adjourned 5:00 pm.

Wednesday, May 20, 2015

AGENDA ITEM 13 (cont'd)

Status of planning for PICES-2016

Ideas on the description of the theme for PICES-2016, “*25 Years of PICES Celebrating the Past, Imagining the Future*” from FIS included Topic Session ideas on accomplishments: Basin-scale phenomena (regime shifts, the Pacific Decadal Oscillation), impacts locally from biogeochemistry, through lower trophic levels (zooplankton, HABS, *etc.*) and up to higher trophic levels including fisheries and coastal fishing communities. Ideas on where PICES needs to go:

- Recent advances in predictive capabilities to forecast effects of anthropogenic change to our ecosystems and our human communities;
- Recent advances in observational and sampling technology and how they have changed the way we see the ocean;
- Societal, economic and ecological resilience of our coasts and oceans to climate change;
- Climate change and fisheries: ecological, economic and societal impacts of changes in fish population production, distribution, phenology, diversity *etc.*;
- Climate change and fisheries: evolutionary and physiological adaptation;
- GCM downscaling and linking to ecosystem models;
- Out of the ivory tower: Innovations in bringing PICES science results to stakeholders.

See Agenda Item 12 Topic Sessions suggestions from POC. Dr. Saito suggested a session on the new tools being used to explore the distribution of contamination in the North Pacific. Dr. Shevchenko recommended a Topic Session on ocean monitoring and data management/sharing issues. This idea was well received with a

suggestion that perhaps each contracting party could highlight how science has helped in forming policy and what remains as top concerns for their country.

The four standing Scientific Committees were in accord that their respective Paper Sessions should be maintained, each Committee tailoring its session to meet its specific intent.

It was debated whether to give some general guidance on submitting ideas or to offer examples for themes or Topic Sessions in the theme description. Dr. Batchelder will add some examples for Topic Sessions to the theme description and circulate to Science Board after the meeting before the theme is posted on the PICES website.

Science Board agreed that early career scientists should be encouraged to attend the Annual Meeting. One or more plenaries could be dedicated just to ECS who would speak on ideas or challenges they were working on. It would be preferable to schedule these talks at the beginning of the Annual Meeting to grab the attention of funding agencies and organizations that would likely be present only for the first part of the meeting.

AGENDA ITEM 15

Interactions with other organizations

A Current and potential strategic collaborations

ICES (International Council for the Exploration of the Sea)

Dr. Therriault reported on an informal meeting he and Dr. Richards had with representatives of SCICOM at the ICES ACS in A Coruña, Spain (September 15–19, 2014) on reviewing the Framework for Strategic Collaboration between PICES and ICES. He encouraged Science Board to discuss with their Committees potential areas for further collaboration with ICES. Dr. Therriault was contacted by Professor Ya Wei Luo, one of the presenters at the Workshop (W3) on “*Effects of climate change on the biologically-driven ocean carbon pumps*” at the Symposium on “*Effects of climate change on the world’s oceans*”, co-sponsored by PICES/ICES/IOC (March 21–27, 2015, Santos, Brazil) to inquire about the process of forming a joint PICES-ICES expert group stemming from the workshop. He will discuss the potential collaboration with SCICOM at the 2015 ICES ASC after he has received more details from Dr. Luo. Mr. Brown mentioned that the IAEA (International Atomic Energy Agency) had an Ocean Acidification International Coordination Centre located in Monaco which also could be a potential collaborator with PICES.

Action:

- Dr. Therriault to contact Dr. Luo for terms of reference and proposed membership for a potential expert group on climate change and carbon sequestration needed by August;
- Science Board to identify potential areas for future collaboration with ICES and submit to Dr. Therriault by mid-July.
- Mr. Brown to contact IAEA on potential ocean acidification collaboration with PICES.

NPAFC (North Pacific Anadromous Fish Commission)

PICES provided travel funds for three Keynote speakers, Drs. Skip McKinnell, Ryan R. Rykaczewski, Shoshiro Minobe, to attend the NPAFC Symposium (co-sponsored by PICES) on “*Pacific salmon and steelhead production in a changing climate: Past, present, and future*” (May 17–19, 2015, Kobe, Japan). The International Year of the Salmon is on track to be approved by NPAFC. PICES will be a participant.

NOWPAP (Northwest Pacific Action Plan)

Dr. Huo, as Co-Chairman of the PICES-NOWPAP Study Group on *Scientific Cooperation in the North Pacific Ocean* (SG-SCOOP), presented a draft framework for the collaboration between PICES and NOWPAP and requested input from MONITOR, TCODE and the FUTURE SSC on any specific activity they would like incorporated into the framework. The Secretariat will work with Dr. Huo to finalize the draft framework for review by Science Board at PICES-2015.

Action: Secretariat to circulate draft framework to Committees for feedback by end of July.

ISC (International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean)

The first meeting of Study Group for Scientific Cooperation of ISC and PICES was formally established in April and will hold its first meeting in conjunction with the ISC Annual Meeting in July in Hawaii, USA.

CLIVAR (Climate Variability and Predictability Project of the World Climate Research Program)

CLIVAR, traditionally a program related to understanding the physical and climatological aspects of the coupled ocean–atmosphere system, is examining ways to be more involved in FUTURE-related activities, and is looking at potential linkages with PICES. Mr. Brown will be attending a CLIVAR workshop in Qingdao, where CLIVAR’s headquarters are located, immediately after ISB-2015 and will follow-up on potential collaboration between the two organizations. Dr. Curchitser is the new lead on the Dynamics of Upwelling Systems Panel.

NPFC North Pacific Fisheries Commission

NPFC has a provisional Secretariat in place, supported by Japan. The Commission should be in a position to receive requests after its first meeting in September and PICES will follow up on engagement. NPFC is a regional management organization, but will be forming a science component.

B The 3rd Climate Change Symposium

Dr. Peña, member of the Symposium SSC, reported on the outcome of the Third International Symposium on the “*Effects of climate change on the world’s oceans*”, co-sponsored by PICES/ICES/IOC, which took place March 21–27, 2015 in Santos, Brazil. Overall, the meeting was a success, with a diverse range of theme sessions and good mix of social/natural scientists attending. The Poster Session was very popular, possibly due to its centralized location. PICES received excellent recognition for organizing the event (both scientifically and administratively) and producing an interesting symposium. However, it was very difficult for the convenors to select theme sessions based on keywords rather than by topics. For the next symposium, Dr. Peña recommended that PICES be more proactive in what it wanted included for topics or ideas and discuss these with the other supporting organizations. For example, two PICES physical oceanographers were on the SSC but the symposium did not contain a physical oceanography theme session.

Although PICES was very involved in the organization of the event, participation by members was relatively poor, possibly due to timing, *i.e.*, end-of-fiscal-year business or end-of-academic-year classes, distance, especially in the case of Western Pacific members, and PICES areas of interest not being promoted. Mr. Brown recommended that the administrative workload be more equitably distributed amongst the major sponsors for the next event.

C PICES-sponsored conferences/symposia in 2015 and beyond

Science Board did not support IMBER’s request for PICES co-sponsorship of IMBIZO IV because the invitation was received too late (March 2015), and the scheduling of IMBER’s meeting (October 26–30, 2015) was too close to the PICES Annual Meeting (October 14–25, 2015). Science Board agreed PICES should maintain its close relations with IMBER, especially as IMBER undergoes changes related to FutureEarth. Science Board supported the request for one invited speaker to attend the 3rd CLIOTOP Symposium (September 14-18, 2015, San Sebastian, Spain). At the request of the Secretariat prior to ISB-2015, FIS reviewed the Cephalopod International Advisory Council’s solicitation to PICES to to the PICES community of the conference on “Recent Advances in Cephalopod Science” November 8-14, 2015, in Hakodate, Japan. Most Science Board members were not in favour of co-sponsorship as funding was not specifically requested.

Action:

- Secretariat to contact IMBER with Science Board's decision regarding IMBIZO IV;
- Secretariat to work with Drs. Logerwell, Chang, Saito and Bograd to identify a potential invited speaker for CLIOTOP (contact Dr. Elliott Hazen for suggestion);
- Secretariat to advertise the cephalopod conference.

D Capacity building*PICES/ICES Early Career Scientist Conference*

Korea agreed to host the 3rd PICES/ICES Early Career Scientist Conference in spring 2017. Korea will confirm the venue and precise dates within one month of ISB-2015. Dr. Kyung Il Chang or Dr. Sinjae Yoo will serve as a senior mentor. [The venue was later announced as the Korea Institute of Maritime and Fisheries Technology (KIMFT), Busan; recommended Korean ECS SSC member – Dr. Tae-Wook Kim (KIOST), senior mentor – Dr. K.I. Chang (SNU); meeting dates ranged from mid-May to early June (to be confirmed)]. PICES and ICES early career SSC members are to be decided.

WESTPAC, which is also holding a conference in April 2017 in Qingdao, China, is prepared to combine its event with the ECS Conference. However, China will still support the ECS Conference if this is not possible.

Action: Dr. Batchelder to work with Dr. Kellermann to identify SSC members

PICES Summer School

No proposals were presented for the next PICES Summer School, but Science Board agreed that it might be an opportune time to do more capacity building for 2016.

Action: Secretariat to contact Governing Council to gauge interest in having a PICES Summer School in 2016.

Summer schools co-sponsored by PICES

No requests were submitted to PICES for co-sponsoring summer schools led by other organizations.

Training courses

Science Board agreed with MONITOR's desire to co-sponsor the POGO/SCOR CPR training workshop in Goa during the IIOE-2 symposium in December 2015. PICES will fund travel for one or two ECS from PICES member countries working on CPR in the Pacific Ocean.

Action: MONITOR to identify potential ECS candidates for the CPR workshop.

E Other interactions with international organizations**United Nations-related organizations**

Several UN-related organizations that PICES has relations with were discussed briefly. Specifics for selected organizations are presented below.

Report of the Secretary-General for the resumed Review Conference on the United Nations Fish Stocks Agreement

Mr. Brown will draft the part of the template that is applicable to PICES. This will be an opportunity to promote PICES activities, as they are only partly addressed in the current template.

ISB-2015

Action: Secretariat to complete the template that is applicable to PICES and send to Science Board for review before PICES-2015.

Intergovernmental Oceanographic Commission of UNESCO (IOC)

Mr. Brown will participate in the 28th Session of the IOC (Intergovernmental Oceanographic Commission of UNESCO) Assembly (June 18–25, 2015, Paris, France) where he will relate MONITOR's interest in collaborating on GOOS issues and to inquire about progress on the GOOS Biology and Ecosystems and GOOS Biogeochemistry panels.

IOC-IODE (International Oceanographic Data and Information Exchange of IOC, UNESCO)

Dr. Shevchenko is working on a PICES data exchange policy which needs to be in place before TCODE can apply to become an IODE Associate Data Unit of IODE.

IOC-Global Ocean Observing System (GOOS)

See MONITOR's report in Agenda Item 8.

UN Regular Process (UNRP for Global Reporting and Assessment of the State of the Marine Environment) aka World Ocean Assessment

Dr. Therriault completed revisions to Chapter 36C (The North Pacific) which has gone back for review to the Group of Experts for WOA. The chapter is expected to make a significant contribution to existing knowledge of North Pacific biodiversity.

WESTPAC

Although PICES currently lists WESTPAC as an organization considered to be of high priority with respect to scientific cooperation, Mr. Brown reported it is not reciprocated by WESTPAC noting that PICES does not have special collaboration status with WESTPAC. Other than some PICES members also belonging to WESTPAC, or both organizations occasionally co-sponsoring training sessions together, PICES does not currently have any strategic collaboration with WESTPAC. Mr. Brown will explore engagement with WESTPAC when he attends the Session of the IOC Assembly in June.

NPAFC (North Pacific Anadromous Fish Commission)

See Agenda Item 13.

SCOR (Scientific Committee on Oceanic Research)

Dr. Therriault will notify Science Board as soon as SCOR proposals become available. [Proposals were later circulated to Science Board by the Secretariat June 18.]

Action: Committees' highest ranked proposals for PICES affiliate member status to be sent to Drs. Therriault and Batchelder by September 15.

SOLAS (Surface Ocean – Lower Atmosphere Study)

SOLAS has an open call for applications to its SSC. Deadline for submission is July 31, 2015. Dr. Chang will encourage POC members to apply.

Action: Secretariat to send information on applying for SOLAS SSC to Committee Chairmen for distribution to their membership.

NOWPAP (Northwest Pacific Action Plan)

See Agenda Item 15A.

PEEC

Dr. Batchelder reported on the outcome of PICES sponsorship of the Pacific Ecology and Evolution Conference held in Bamfield, BC, Canada, February 27–March 1, 2015. A representative of PICES was unable to attend but three posters were placed at the event: one on NPESR, one on marine debris, and one general PICES timeline poster. Of the 66 early career scientists participating, two thirds were involved in marine studies. An article on PEEC 2015 will appear in the Summer Issue of PICES Press. Science Board agreed it was a cost-effective way to engage and potentially recruit ECS into PICES. Science Board was encouraged to notify the Secretariat if there were similar events in other PICES countries or other ways PICES can support ECS.

Action:

- Science Board think about how to identify tier-type collaborations with organizations for PICES-2015;
- Dr. Therriault to work with Secretariat to develop a template for collaborations.

AGENDA ITEM 16

Status of publications

Science Board was unable to resolve what to do with the Non-indigenous Aquatic Database, developed by members of Working Group on *Non-indigenous Aquatic Species* (WG 21), now that it has been taken off line due to the restructuring of the US EPA website. It was agreed that PICES did not have the capacity to house, upgrade the software, and maintain the database at this time. A PICES web link will be created for the NIS Atlas.

Action: Secretariat to link Atlas, finish the report and add appropriate wording for the database.

Dr. Batchelder presented Science Board with a draft of an outreach brochure being worked on with S-HAB summarizing key points in PICES Scientific Report No. 47 (published 2014) on “*Economic and social impacts of HABs on aquaculture and fisheries*”. The Secretariat will work with a professional graphic designer to finish the brochure and send it to Science Board for its approval, after which the brochure layout will be used as a template for future works.

Action: Secretariat to circulate HABs brochure to Science Board for review before publication.

Science Board deferred committing to collaboration with the publishing company Springer-Verlag on the publication of the next North Pacific Ecosystem Status Report until it could look at options with other publishers.

Action: Mr. Brown to inform Springer of Science Board’s decision.

AGENDA ITEM 17

Other PICES business

Science Board recapped issues (see Agenda Item 8) dealing with membership and duration of expert groups (*i.e.*, Sections and Advisory Panels) and changes to the Rules of Procedure to reflect these decisions. Items to consider would be any changes to length of chairmanship terms, membership balance, how often expert groups should be reviewed and durations of extensions. F&A will revise Rules 12, 13, 16 and 17 according to Science Board’s recommendations so they can be in place by PICES-2015.

Action: Secretariat to remind Science Board to review structure, membership and balance by mid-July.

Day 3 meeting adjourned at 1:00 pm.

ISB-2015 Endnote 1

ISB-2015 participation list

Members

Steven Bograd (Co-Chairman, FUTURE SSC)
Jennifer Boldt (Chairman, MONITOR)
Kyung-Il Chang (Chairman, POC)
Chuanlin Huo (Chairman, MEQ)
Elizabeth Logerwell (Chairman, FIS)
Angelica Peña (Chairman, BIO)
Hiroaki Saito (Science Board Vice-Chairman;
Co-Chairman, FUTURE SSC)
Igor Shevchenko (representing Russia)
Toru Suzuki (Chairman, TCODE)
Thomas Therriault (Science Board Chairman)

Invited guests

Enrique Curchitser (Governing Council, USA)
Shigeru Itakura (Governing Council, Japan)
Saeseul Kim (observer, KIOST, Korea)
Yafeng Yang (observer, SOA, China)
Ungyul Yi (observer, KIOST, Korea)
Rui Zheng (observer, SOA, China)

PICES

Harold (Hal) Batchelder (Deputy Executive Secretary)
Robin Brown (Executive Secretary)
Lev Bocharov (Past PICES Chairman)
Chul Park (PICES Vice-Chairman)
Laura Richards (PICES Chairman)
Rosalie Rutka (Administrative Assistant)

ISB-2015 Endnote 2

ISB-2015 meeting agenda

Monday, May 18, 2015

1. Welcome and adoption of agenda
2. Mid-year report from FUTURE SSC
3. Structure of PICES Annual Meetings
4. Status of PICES-2015, Qingdao, China
5. Review of selection criteria for sessions/workshops at PICES Annual Meetings
6. Wooster and POMA awards
7. Venue and date for ISB-2016
8. Mid-year reports from expert groups reporting to Science Board (9)
9. Implementation of Science Board recommendations and Governing Council Decisions from PICES-2014

Tuesday, May 19, 2015

6. Wooster and POMA awards, continued
10. Mid-year reports from Scientific and Technical Committees
11. Operational election of Science Board Chairman-elect
12. PICES' 25th anniversary
13. Status of planning for PICES-2016
14. Updating the PICES Strategic Plan Status of publications (16)

Wednesday, May 20, 2015

15. Interactions with other organizations
- 15A. Current and potential strategic collaborations
- 15B. The 3rd Climate Change Symposium
- 15C. PICES-sponsored conferences/symposia in 2015 and beyond
- 15D. Capacity building/Plan for PICES summer schools
- 15E. Other interactions with international organizations
16. Status of publications
17. Other PICES business