

Report of Science Board

Science Board met in Hiroshima, Japan from 12:30-14:00 on October 14, 2012, to set the agenda and discuss the items set for the luncheon meeting. Science Board Chairman, Dr. Sinjae Yoo, welcomed members and guests, Dr. Yutaka Michida from the Intergovernmental Oceanographic Commission (IOC) and Dr. Satoru Taguchi from the Scientific Committee on Oceanic Research (SCOR) to the meeting (*SB Endnote 1*) after calling it to order. The second day of the meeting was held after the Closing Session from 15:00–18:00 on October 19 with invited guests Dr. Adolf Kellermann (ICES) and Dr. Lisa Miller (SOLAS) attending. Due to the complexity of issues and lack of time, the agenda item on status of proposed inter-sessional workshops/symposia and majority of FUTURE SSC agenda items were deferred for discussion to the third day of meeting, held from 8:30–18:00 on October 20. The revised meeting agenda can be found in *SB Endnote 2*.

Sunday, October 14, 2012

AGENDA ITEM 2

Procedures for Science Board Symposium, awards, and Closing Session

Procedures for judging presentations by Early Career Scientists were discussed briefly. Some confusion arose concerning the eligibility of workshops (which proceed the week of topic sessions). Science Board agreed that any presentations made by early career scientists at workshops would be eligible. It was confirmed that all Science Board members were responsible for evaluating the Best Oral and Poster presentations for the Science Board Symposium and reporting the outcome to the Science Board Chairman. Topic session and workshop convenors are responsible for preparing summary reports and the Science Board Vice-Chairman will prepare a summary of the Science Board Symposium.

AGENDA ITEM 3

Relations with specific international programs/organizations

Dr. Yutaka Michida (IOC Vice-Chairman) discussed the background and mission of IOC, and its objectives and challenges. With the world economy in financial crisis, Dr. Michida noted that IOC was also facing financial difficulties. IOC is expected to reduce its budget by 70% effective immediately. However, he felt that IOC would meet its budgetary commitments where it had been identified as a co-sponsor of an upcoming event. WESTPAC is a sub-commission of IOC, and would most likely be able to make contributions to co-sponsored events. He reflected on past WESTPAC-PICES cooperation, citing joint workshops and symposia that have taken place, as well as joint training, *e.g.*, through S-HAB, the sharing of oceanographic data and information, *e.g.*, IODE, and collaboration in ocean observing systems, *e.g.* NEAR-GOOS. In addition, Korea provided a budget from a Korean trust fund to IOC for joint workshops and research on ocean acidification which is expected to be funnelled into its area of interest (*i.e.*, the North Pacific). Currently it has four high-level objectives that correspond to the major challenges facing the oceans: (1) prevention and reduction of the impacts of natural hazards, (2) mitigation of the impacts of and adaptation to climate change and variability, (3) safeguarding the health of ocean ecosystems, and (4) management procedures and policies leading to the sustainability of coastal and ocean environment and resources. Dr. Michida was particularly interested in hearing any PICES ideas concerning ocean hazards.

Dr. Satoru Taguchi (SCOR Vice-President) discussed ongoing cooperation between SCOR and PICES, citing support for SCOR activities, including capacity building, and vice versa. He viewed very positively the way PICES and SCOR have worked out ways to cooperate that have made it possible to share strengths and he indicated that it would be appropriate for both organizations to continue the kinds of cooperation that have been beneficial in the past. To further strengthen collaboration, Dr. Taguchi suggested that PICES should be invited to co-sponsor sessions focused on the North Pacific region when SCOR conducts meeting or other

activities that can be easily regionalized. PICES should consider contributing to SCOR capacity building activities beyond the support that PICES already gives for some meetings, e.g., contributing to the SCOR Visiting Scholars program, POGO-SCOR fellowships; PICES could propose and co-fund SCOR working groups.

Actions and outcome from ISB-2012 on interactions with other organizations were reviewed.

Friday, October 19, 2012

AGENDA ITEM 4

Relations with specific international programs/organizations (continued)

The International Council for the Explorations of the Sea (ICES) was represented by Dr. Adolf Kellermann (Head, ICES Science Program) who informed Science Board that ICES was about to undergo major structural changes, which included the development of a new Science Plan in 2013. A new Strategic Initiative for ICES was the teaming of the Marine and Maritime Science and Technology Forum with the maritime industry. Dr. Kellermann invited PICES to co-sponsor a number of symposia in 2013/14, most of them fishery-related. FIS Chair, Dr. Libby Logerwell was given the opportunity to identify tentatively the top two that would be of interest to FIS and FUTURE: ICES Symposium on “*Effects of fishing on benthic fauna and habitat: Change in ecosystem composition and functioning in response to fishing intensity, gear type and discard*” (May 2014, Tromsø, Norway) and Symposium on “*Ecological basis of risk analysis for marine ecosystems*” (June 2014, Helsinki, Finland).

Dr. Kellermann gave an overview of the ICES experience with their new training programme (see Agenda Item 19 of the 2012 inter-sessional Science Board meeting report in the [2012 Annual Report](#)).

SOLAS observer, Dr. Lisa Miller, described the particulars for a 6th SOLAS Summer School to be held from August 23 to September 2, 2013, in Xiamen, China. SOLAS asked PICES to co-sponsor the event by providing travel funds for 3 students/early career scientists from PICES member countries, as was done for the previous summer school in Cargèse, Corsica, in 2011.

Dr. Miller expressed her appreciation to Science Board for nominating her as an affiliate member of SCOR Working Group 140 on Biogeochemical Exchange Processes at the Sea-Ice Interfaces, and briefly described the tasks the WG intended to address. Her affiliate status has still not been officially approved, but did not see a problem with its acceptance. The Group’s first formal meeting will take place either in November (by teleconference) or in the spring of 2013.

AGENDA ITEM 5

Report on MAFF Project

Dr. Mitsutaku Makino reported on the first meeting (October 11 at PICES-2012) of the PICES-MAFF Project on Marine Ecosystem Health and Human Well-Being. The meeting was chaired by the principal investigators Dr. Ian Perry and Dr. Makino. The project team identified 5 potential areas for integration with other PICES activities. The team was able to draw on the experience of S-HAB work of the previous MAFF-funded project (Development of the prevention systems for harmful organisms’ expansion in the Pacific Rim) for ideas, and an approach using project tools to do an integrated social-ecological assessment will be applied to 3 test countries (Indonesia, Guatemala and Palau). Timelines have been established to refine a 3D “cube of well-being” in which a person (community, region, etc.) can be selected from one or more cells defined by a specific category specified by each axis, refine and select specific objects and approaches for the project, set up a project web site for project team members, prepare a draft questionnaire for the first target country and the first scoping meeting/workshop with its representatives. The team hopes to conduct its first workshop, possibly in conjunction with ISB-2013. In the meantime, the team was looking at ways to engage China and Russia in order to include potential members.

FUTURE SSC AGENDA ITEM 6

Presentation and discussion of FUTURE Advisory Panel current status

AP-AICE Chairman, Dr. Thomas Therriault, reported on poor attendance at the AICE meeting leaving some member countries and Committees unrepresented. He recommended that because the AICE mandate is so broad, additional members will be needed. His preference for selecting additional members was firstly to ensure comprehensive representation by Committees and thereafter to seek to balance national representation.

Dr. Therriault noted that the development of a common FUTURE presentation, and holding the joint AP meeting before the individual AP meetings seemed to strengthen the relationship between the Advisory Panels and Committees. However, communication still needed to be improved in the sense that the Advisory Panels were not getting feedback from Committees, as the APs meet prior to the Committee meetings. Therefore, more Committee and expert group members should be encouraged to attend the joint FUTURE Advisory Panel meeting at future PICES Annual Meetings.

AP-COVE Chairman, Dr. Hiroaki Saito, reported that 6 of 7 members attended their meeting. COVE reviewed the reports of WG 27, WG 28, S-CCME and S-CC, and noted that events for these expert groups were going smoothly. Dr. Saito noted that although S-CCME was very active, there was some overlap with other expert groups, and instructed the S-CCME Co-Chairs to communicate better with the other groups and with the FUTURE APs. He also agreed with AICE that more Committee and expert group members should be involved in the FUTURE AP meetings.

AP-SOFE Chairman, Mr. Robin Brown, announced that meeting participation was generally good (except by China), but that participation by email between meetings was generally poor. Although engagement with Committees was still limited, it was getting better and a FUTURE roadmap would help decrease the communication gap.

Changes in chairmanship/membership

See Agenda Item 12.

Online submission of topic sessions/workshops

The FUTURE Advisory Panels viewed the new online submission and evaluation system favourably and considered it to be an advancement in streamlining the selection of topic sessions and workshops for PICES Annual Meetings. To further improve the process, it was suggested that more reminders from the Secretariat on submissions and rankings be implemented, that more information on the number of invited speakers (and expected financial obligations) be included, and that rankings by individuals should not be disclosed.

Action: Secretariat to update the online system before opening it for proposals for PICES-2014.

FUTURE roadmap (see Table 1)

AICE found that the topic of ecosystem resilience and vulnerability was a challenge to link into the FUTURE roadmap. WG 28 was starting to include elements of this topic but AICE felt it would be worthwhile to establish a study group to focus on the ecosystem indicators. SOFE suggested that Governing Council be enlisted to help identify stakeholders for outreach products and to share this information with S-HD.

The plan and strategy for developing the next North Pacific Ecosystem Status Report (NPESR III) was discussed at the AP meetings. It was agreed there was a need to identify critical environmental data needs early, and a mechanism to ensure they will be available, *i.e.*, WG 28 can provide ecosystem indices during its lifespan, but there will need to be a process in place to maintain them.

Action: SOFE to work with WG 28 to identify ecosystem indicators and with S-HD to identify socio-economic indicators. SOFE to recommend a process for reporting indicators after WG 28 is disbanded.

FUTURE Open Science Meeting (OSM)

It was agreed that to remain relevant to the scientific community, the organizers of the OSM should encourage participation by other organizations and identify topic sessions to co-convene with other organizations. COVE emphasized that the next generation of scientists needed to be involved in FUTURE to see the program through. One way would be to have a social event incorporated into the meeting giving early career scientists (ECS) an opportunity to network; another way would be to have an ECS co-convene one or more topic sessions. For details of the OSM, see FUTURE SSC Agenda Item 9.

Table 1. FUTURE roadmap, October 2012

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Products													
	Knowledge				Indicators of cumulative stresses [WG28]								
			core indicators of EBM [WG19]										
					Characteristics of NP Indices in modern models [??]								
	Status		NPESR 2				NPESR (web)	NPESR 3*	NPESR (web)	NPESR (web)	NPESR (web)	NPESR (web)	NPESR 4
				NIS Atlas/DB									
	Forecast /outlook				distribution shift of marine organisms [S-CCME]								
					MLD/circulation projections [WG29]								
					CMIP5 Analysis/Derived Vars [WG29]								
					Jellyfish outbreak [WG26]								
	Outreach		Cohen Commission Report										
					Press release-FUTURE activities [SOFE]								
					Hot topic updates [SOFE]								
					Newsletters/briefing of S-HD and S-CCME								
					Wikipedia updates [TCODE]								
					climate index portal [TCODE]								
					Education materials to engage early career scientists in PICES								

* Governing Council approved the activities and timelines of the FUTURE roadmap proposed by Science Board with a caveat to the suggested timeline for delivering the next edition of the North Pacific Ecosystem Status Report (NPESR 3) “under the condition that NPESR 2 is fully completed”.

		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
Engagement strategy														
					Identify and contact with users with trial products, develop strategy [S-HD] - Preliminary			Identify and contact with users with trial products, develop strategy [S-HD]						
ExGs														
	Sections	S-HAB			S-HAB									
		S-CC		S-CC										
				S-CCME										
				S-HD										
	WG	WG 26												
			WG 27					Regional Ocean Climate Model Inter-comparison ?						
			WG 28					Coastal Ecosystem modeling ?						
				WG 29				?						
					WG-Marine Pollution									
					Ecosystem Resilience?									
	SG				SG-MP									
Events														
	Symposium				Climate effects 2		FUTURE OSM	Climate effects 3		CCME Symp	HD Symp		FUTURE Synthesis	
	FUTURE WS		Kick-off WS	Indicator WS	Roadmap WS	Distr. shift WS	Mid-term Evaluation							
				RCM WS 1		RCM WS 2								
	IPCC						AR5					AR6?		

Saturday, October 20, 2012

FUTURE SSC AGENDA ITEM 7

Status of new expert groups

The status of the Section on *Human Dimensions*, Section on *Climate Change Effects on Marine Ecosystems*, Working Group (29) on *Regional Climate Modeling*, and Study Group on *Marine Pollution* were presented at the joint FUTURE Advisory Panel meeting (October 14, 2012). The reports of these groups can be found elsewhere in the [2012 Annual Report](#).

FUTURE SSC AGENDA ITEM 8

FUTURE inter-sessional workshop

Science Board supported the S-CCME proposal for an inter-sessional FUTURE joint PICES/ICES workshop on “*Global assessment of the implications of climate change on the spatial distribution of fish and fisheries*” to take place in conjunction with ISB-2013. Both are tentatively scheduled for St. Petersburg, Russia during the 4th week of May 2013. It was noted that although S-CCME was very energetic and worked closely with ICES, there was a lack of communication with FUTURE and PICES expert groups resulting in *e.g.*, some duplication in activities.

Recommendations:

- appoint a S-CCME member to a FUTURE Advisory Panel;
- have S-CCME present its report at the joint FUTURE AP meeting instead of at the Committee-level;
- have a common S-CCME presentation to distribute to the Committee meetings.

Action: Science Board Chairman to ask S-CCME to enhance communication with FUTURE APs on decisions.

FUTURE SSC AGENDA ITEM 9

FUTURE OSM 2014

The FUTURE Advisory Panels supported the central location of Honolulu, Hawaii, for the FUTURE Open Science Meeting in April 2014. Science Board agreed that the meeting would span 4 days and would be structured around the 4 research themes, including FUTURE current status and perspectives. The purpose would be to evaluate the progress made midway through the lifespan of the Program and make any necessary adjustments to bring the Program back to its implementation objectives. The format of the meeting would be plenary sessions and breakout groups; panel discussion at the end of each day. The meeting would be followed by a 1-1.5 day meeting in which a small team would put together an evaluation report. Papers from the OSM will be published in a special issue of a peer-reviewed scientific journal. Timeline for a preliminary announcement to be sent to Committees for feedback will be early December, to be finalized January 1, 2013 by the OSM SSC composed of the FUTURE AP Chairs, Science Board Chairman, and S-HD Co-Chairman, Dr. Makino.

Actions:

- SSC to circulate a preliminary OSM announcement to Committees and their expert groups for feedback by early December, 2012.
- SSC to finalize first announcement by January 1, 2013 and send by January 13, 2013.

FUTURE SSC AGENDA ITEM 10

Other FUTURE matters

The FUTURE roadmap that was originally presented at the joint FUTURE Advisory Panel meeting on October 14, was updated to reflect the input at that meeting (See Table 1). Dr. Yoo will present it to Governing Council on October 21. Dr. Chang noted that it was premature for POC WG 27 and 29 to identify and contact users with trial products since these two Working Groups were just established. In addition, he emphasized a need to form a working group on end-to-end modelling so that the upper trophic levels could also be modelled.

AGENDA ITEM 11

Status of proposed inter-sessional workshops/symposia

Science Board reviewed the 2011–2012 Standing List of International and Regional Organizations and Programs. The list is used by the Secretariat as a guide in making decisions about participation in meetings of other organizations. No additions or removals were recommended. The Arctic Climate Impact Assessment (ACIA) is slated to be removed from the list in 2013, but it was noted that ACIA was in the middle of an ocean acidification review process, which might be relevant to PICES.

At the Executive Assembly of the IOC, the government of Brazil offered to be the host the 3rd IOC/ICES/PICES International Symposium on “*Effects of climate change on the world’s oceans.*” Science Board discussed the idea and agreed, in principle, for PICES to co-organize the event. The venue and date still need to be determined.

Science Board agreed to co-sponsor IMBER’s IMBIO III on “*The future of marine biogeochemistry, ecosystems and societies*” to be held January 28–31, 2013, in Goa, India, at the same level as for IBIZO II in 2010. It was noted that IMBER intends to hold an Open Science Conference in June 2014, which will potentially conflict with the draw for FUTURE’s Open Science Meeting scheduled for April 2014.

A Phase II Open Science workshop on climate change HAB issues, to be co-sponsored by IOC and SCOR, is scheduled for spring of 2014. Science Board felt it important to keep SCOR and IOC informed of our event and to encourage their scientists to attend FUTURE’s meeting. Science Board agreed to co-sponsor the Phase I workshop on “*Harmful algal blooms in a changing world*”, in spring 2013, in Friday Harbor, USA (see Agenda Item 12, under priority items with funding implications).

AGENDA ITEM 12

Reports from Scientific and Technical Committees

Brief highlights of Committee activities and plans were provided by their Chairs. Detailed reports of each Committee can be found in the [2012 Annual Report](#).

BIO

BIO Committee Chairman, Dr. Atsushi Tsuda, reported that:

- Dr. William Peterson was nominated to be a BIO member of SOFE;
- AP-MBM member, Dr. Hirohito Kato, requested that IWC be asked to include a seabird observer in the POWER cruise in the North Pacific;
- NPRB representative, Dr. Francis Wiese, invited PICES scientists to suggest topics for a NPRB Bering Sea Project study;
- MEMIP progress has been slowed because of lack of computer availability for running models;
- BIO strongly recommended PICES to make a statement against the commercial dumping of iron sulphate in a fertilization experiment [later found to be a fine dirt-like substance with trace amounts of iron in it] that took place 300 km off Haida Gwaii (west coast of Canada).

Recommendation: Science Board recommends that BIO and MEQ draft an appropriate statement, based on PICES expert group publication evidence, to be presented to Governing Council.

FIS

FIS Committee Chair, Dr. Elizabeth Logerwell, recommended that a joint PICES-NPAFC study group be formed at PICES-2013 to look at a framework for establishing scientific linkages between the two organizations. Science Board enthusiastically supported the idea. FIS received a WG 24 final report from WG Co-Chairman, Dr. Brett Dumbauld. The section from China was not received despite the efforts of Dr. Fangli Qiao to encourage China's contribution. The report will be reviewed by a FIS and MEQ subgroup before submitting to the Secretariat for publication. A special PICES seminar on environmental data availability and modelling capabilities, and possible techniques for incorporating this information in ISC (International Scientific Committee to study the tuna and tuna-like species of the North Pacific Ocean) stock assessments, will take place at ISC₁₃ in July 2013 in Korea.

Action:

- Secretariat to develop, jointly with NPAFC, motivation, terms of reference and list of potential members for a PICES-NPAFC study group for review at ISB-2013;

MEQ

Acting Chairman, Dr. Mitsutaku Makino, reported that the lifespan of Working Group on *Non-indigenous Aquatic Species* (WG 21) ends at PICES-2012, but that the Working Group indicated it wanted to continue its activities in another capacity such as a new Section, Working Group, Advisory Panel, or in collaboration with the Study Group on *Marine Pollution*. In this regard, WG 21 requested a 1-year extension to finalize the new terms of reference for the above options. Dr. Makino recommended that WG 21 align its TORs with MEQ's Action Plan once the Committee revises it.

The Working Group on *Environmental Interactions of Marine Aquaculture* (WG 24) submitted its final report to MEQ and FIS without a country report from China. Its final meeting before disbanding was held on October 13. Members recognized that environmental research on aquaculture is still important to PICES, and recommended that the topic be included in MEQ's revised Action Plan, and be closely coordinated with FIS.

The Working Group on *Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors* (WG 28) continues to be active. The WG has constructed a web-based questionnaire to be completed by experts on habitat vulnerability and stressors.

The Section on the *Ecology of Harmful Algal Blooms* (S-HAB) successfully organized local HAB centers in the Philippines, Guatemala and Indonesia under a PICES/MAFF Seafood Safety Project supported by a grant from the Fisheries Agency of Japan. S-HAB has identified potential contributions and links to a new PICES-MAFF project (see Agenda Item 5) and has, therefore, revised its terms of reference. The new TORs will be discussed by Science Board only after MEQ has revised its Action Plan, to be reviewed at ISB-2013. S-HAB requested new members, Chunjiang Guan (China), Douding Lu (China), Chang Hoon Kim (Korea) and Stephanie Moore (USA) be added to the Section.

The Study Group on *Marine Pollution* (SG-MP) proposed a new Section on Emerging Topics in Marine Pollution. Because MEQ has not completed a revision of its Action Plan, Science Board advised that it was too early to establish a new expert group and recommended that MEQ have its revision completed by ISB-2013 in order for SG-MP to complete its final report for submission at PICES-2013.

Dr. Chuanlin Huo (China) submitted a proposal for a new Working Group on the Assessment of Marine Environmental Quality of Radiation around the North Pacific. Following discussion, Science Board agreed on the need to establish a Study Group to examine the need for a Working Group. The terms of reference were revised during the Science Board meeting by Dr. Huo (then MEQ Chairman-elect) with help from the Secretariat. Dr. Huo informed Science Board that the State Oceanic Administration of China was prepared to host an inter-sessional workshop for Study Group members (if endorsed by Governing Council) to discuss how

such a Working Group will relate to other PICES expert groups and to refine terms of reference for the proposed Working Group. If the Study Group proposal is not endorsed by Council, the workshop will still proceed, but with the expectations of forming a Study Group at a later date.

Executive Secretary, Dr. Alex Bychkov, explained the procedures for electing a Committee chairman, and conducted the election. Dr. Chuanlin Huo was elected as the Chairman of MEQ. MEQ will form a task team to develop a draft revised Action Plan for review at ISB-2013, based on keywords submitted by MEQ members.

Recommendations:

- extend WG 21 for 1 year to work on new terms of reference;
- extend SG-MP for 1 year to complete its final report and recommendations;
- extend S-HAB for 1 year to revise its terms of reference;
- establish a Study Group on *Developing Radionuclide Science in the North Pacific Ocean*.

Action: MEQ to include environmental research on aquaculture in its Action Plan

POC

POC Committee Chairman, Dr. Kyung-II Chang, informed Science Board that the special issue of selected papers on modelling from the 2011 ESSAS Open Science Meeting, dedicated to the late Dr. Bernard Megrey, was switched from the *Journal of Marine Systems* to *Progress in Oceanography* due to the lengthy publication queue of the former journal. Publication is expected after 2013.

The Section on *Carbon and Climate* (S-CC) opened its PACIFICA database in May 2012 and a unified data product will be opened at the end of 2012. S-CC may request financial support to document PACIFICA data activities. The details may be presented at ISB-2013 or PICES-2013.

AP-CREAMS is considering a special publication on the EAST-II project based on data collected during cruises. It will be discussed at the 6th PEACE (Program of the East Asian Cooperative Experiment) workshop in Nagoya, Japan in November 2012. A report will be presented at ISB-2013. AP-CREAMS proposed a 4th PICES Summer School on “*Ecological modelling*” to take place in Seoul, Korea, August 2014. A NOWPAP/PICES/IOC-WESTPAC training course on remote sensing data analysis is being proposed for 2013, to take place in China (see Agenda Item 19 for more details on the summer school and training course). The supplementary chapter to NPESR II was revised and re-submitted to MONITOR and AP-SOFE for review.

Actions:

- S-CC to develop a proposal for funding to document PACIFICA data activities.
- POC to report on AP-CREAMS’s activities at November 2012 workshop at ISB-2013.
- At ISB 2013, POC to report on dates, venue, and organizers of PICES-2014 summer school at ISB-2012.

MONITOR

Chairman, Dr. Hiroya Sugisaki, noted that there was no Korean member at the MONITOR meeting this year. A Chinese member attended after a 5-year absence, but only for MONITOR’s overture meeting on October 14. Dr. Sugisaki’s description of MONITOR–AP-CREAMS activities was similar to that reported in Dr. Chang’s POC report (see previous section).

AP-CPR continues to be active. A second GACS (Global Alliance of CPR Survey) workshop will take place in September 2013 in Paris, France. GACS Vice-Chair and AP-CPR member, Dr. Sonia Batten will attend. Principal Investigator, Dr. Sanae Chiba reported that the research program on the analysis of Western Pacific CPR samples was proceeding well. Funding for the Pacific CPR program is assured through 2013. Plans are to approach NPRB for funding for 2014. Dr. Sugisaki noted that Dr. Jon Hare, Co-Chairman of ICES/WKOOI (Workshop to Define the Ocean Observing Needs for ICES), reported on PICES/MONITOR activities during their workshop from February 29–March 2, 2012, as PICES did not have a representative at the workshop.

TCODE

Chairman, Dr. Toru Suzuki, described several changes in TCODE membership (see below). No new nominations for POMA were submitted in 2012 so 3 existing nominations will be rolled over to 2013. Dr. Suzuki encouraged Committee Chairs to discuss with their members ideas for new nominations. TCODE is continuing to support registration of metadata from PICES expert groups and to cooperate with other data management groups and activities, *i.e.*, ICES Data Management Group (DIG; formerly known as WGDIM) and IODE OBIS/ODP/GEBICH.

Additional Science Board recommendations

As a result of further discussions at the meeting, a summary of Science Board recommendations to Governing Council is provided below.

Changes in chairmanship

- Dr. Thomas Therriault (Canada) elected as Science Board Chairman-elect;
- Dr. Phillip Mundy (USA) replaces Mr. Robin Brown (Canada) as AP-SOFE Chair;
- Dr. Chaunlin Huo (China) replaces Dr. Steven Rumrill (USA) as MEQ Chair;
- Ms. Darlene Smith (Canada) replaces Dr. Mitsutaku Makino (Japan) as MEQ Vice-Chair.

Changes in membership

- Dr. Amya Dunham (Canada) replaces Dr. Laura Richards as FIS member
- Dr. Zhenya Song (China) replaces Dr. Zhanhui and Dr. Lei Zhou (China) replaces Dr. Dake Chen as POC members
- Ms. Lynn M. DeWitt (USA) replaces Dr. Thomas Royer; Mr. Graham Gillespie (Canada) replaces Dr. Colin Wallace; Mr. Jinkun Yang (China) replaces Mr. Runguang Yin; Dr. Joon-Soo Lee (Korea) replaces Dr. Kyu-Kui Jung as TCODE members
- Dr. Vladimir Kulik (MONITOR) to replace Dr. Young Jae Ro (MONITOR) as AP-AICE member
- Dr. Mingyuan Zhu (BIO, China) to replace Dr. Song Sun as AP-AICE member
- Dr. William Peterson (USA) to replace Mr. Wang (China) as AP-SOFE member
- BIO member from Korea to replace Dr. Young-Shil Kang as AP-AICE member
- Dr. Masahide Kaeriyama (AP-AICE) to be replaced by FIS member (TBD) as AP-AICE member

Membership additions

- Drs. Chunjiang Guan (China), Douding Lu (China), Stephanie Moore (USA), Chang Hoon Kim (Korea) to be added to S-HAB
- MEQ member from Japan to be added to AP-AICE membership
- S-HD member to be added to AP-AICE membership
- S-HD member to be added to AP-SOFE membership
- Dr. Lei Zhou (POC) to be added to AP-SOFE membership
- Dr. Jacquelynne King appointed to WG 27 by Governing Council

Groups to be disbanded

- Working Group 24 on *Environmental Interactions of Marine Aquaculture*

Proposed new expert groups

- Study Group on *Radionuclide Science in the North Pacific Ocean*

Extension of existing expert groups

- Working Group 21 on *Non-indigenous Aquatic Species* for 1 year
- Study Group on *Emerging Topics in Marine Pollution* for ½ year

Inter-sessional symposia/sessions/workshops/meetings

Joint theme sessions at the ICES Annual Science Conference, September 23–27, 2013, Reykjavik, Iceland

- *Marine litter*;
- *Future fisheries management – how to account for food-web structure and dynamics* [later renamed to “*Do food web dynamics matter in fisheries management?*”];
- *Responses of living marine resources to climate change and variability: Learning from the past and projecting the future*;
- *Identifying mechanisms linking physical climate and ecosystem change: Observed indices, hypothesized processes, and “data dreams” for the future.*

Symposia/workshops/meetings

- International Symposium on “*Climate variability and change on marine resources and fisheries: Toward a South Pacific Integrated Ecosystem Studies Program (SPICES)*”, January 7–10, 2013, Concepción, Chile (co-sponsored by PICES);
- IMBER IMBIZO III on “*The future of marine biogeochemistry, ecosystems and societies: Multidimensional approaches to the challenges of global change in continental margins and open ocean systems*”, January 28–31, Goa, India (co-sponsored by PICES);
- 5-day PICES/ICES/GEOHAB workshop on “*Harmful algal blooms in a changing world*”, March 18–22, 2013, Friday Harbor, USA;
- 2-day inter-sessional Science Board meeting, May 20–21, 2013, St. Petersburg, Russia;
- 3-day FUTURE joint PICES/ICES workshop on “*Global assessment of the implications of climate change on the spatial distribution of fish and fisheries*”, May 22–24, 2013, St. Petersburg, Russia;
- ICES Symposium on “*Ecological basis of risk analysis for marine ecosystems*”, June 2–6, 2014, Helsinki, Finland (co-sponsored by PICES);
- WG 26 meeting in conjunction with the 4th International Jellyfish Bloom Symposium, June 4, 2013, Hiroshima, Japan;
- 4th International Jellyfish Bloom Symposium, June 5–7, 2013, Hiroshima, Japan;
- a CLIVAR/PICES workshop [later re-developed as theme session] on “*Biophysical interactions*” at the 2nd International Symposium on “*Boundary current dynamics: Its connection with open-ocean, coastal processes, biophysical interactions and responses to global climate change*”, July 8–13, 2013, Li Jiang, China;
- 8th International Conference on Marine Bioinvasions, August 20–22, 2013, Vancouver, Canada (co-sponsored by PICES);
- 3-day workshop on “*Development and application of regional climate models-II*”, September 3–5, 2013, Busan, Korea;
- FUTURE Open Science Meeting, April 2014, Honolulu, USA;
- 3rd International Symposium on “*Effects of climate change on the world’s oceans*”, spring 2015, Brazil (co-sponsored by PICES, ICES, IOC).

Capacity building

- Fourth PICES Summer School on “*Ocean observing systems and ecosystem monitoring*”, August 19–23, 2013;
- 6th SOLAS Summer School, August 23–September 2, 2013, Xiamen, China (co-sponsored by PICES);
- NOWPAP/PICES training course on “*Remote sensing data analysis*”, fall 2013, Qingdao, China;
- PICES Summer School on “*Ecological modelling*”, August 18–21, 2014, Seoul, Korea.

Priority items with funding implications

PICES-2013, October 11–20, 2013, Nanaimo, Canada

- Invited speakers for Science Board Symposium and Topic Sessions, with the normal allocation of approximately \$5,000 per Committee/Program;
- 1 invited speaker for each of the PICES-2013 workshops.

Inter-sessional events

- 3 invited speakers to attend IMBIZO III on “*The future of marine biogeochemistry, ecosystems and societies*”, January 28–31, 2013, Goa, India;
- 2 North American invited speakers to attend the International Jellyfish Bloom Symposium, June 5–7, 2013, Hiroshima, Japan;
- 1 PICES representative to participate in the ESSAS Annual Science Meeting, January 7–9, 2013, Hakodate, Japan;
- 1 scientist to participate at ISC₁₃ (13th Annual Meeting of the International Scientific Committee for Tuna and Tuna-like Species), July 17–22, 2013, Korea
- 3 scientists to attend Phase I workshop on “*Harmful algal blooms in a changing world*”, spring 2013, Friday Harbor, USA;
- PICES representatives/convenors for joint ICES/PICES theme sessions at ICES ASC, September 23–27, 2013, Reykjavik, Iceland;
- 1 or more early career scientists to attend the 8th International Conference on Marine Bioinvasions, August 20–22, 2013, Vancouver, Canada;
- 2 POC scientists to attend International Symposium on “*Boundary current dynamics: Its connection with open-ocean, coastal processes, biophysical interactions and responses to global climate change*”, July 8–13, 2013, Li Jiang, China;
- 2 invited speakers to attend 2nd RCM Workshop, September 2013, Busan, Korea;
- 1 MONITOR scientist to attend an ICES-GOOS related meeting;
- 3 students from PICES member countries to attend the SOLAS summer school, August 29–September 3, 2013, Xiamen, China;
- support for 1 lecturer and 1 or more students/early career scientists from PICES member countries for a NOWPAP/PICES/WESTPAC training course on remote sensing data analysis, fall 2013, China;

Facilities

- Renew rent of a remote server for PICES TCODE geo-spatial portal site.

Publications

Special issues of primary journals (2013–2014)

- Fisheries Science (2013/14, Guest Editors: K. Criddle, S. Kim, M. Makino, I. Perry, Y. Sakurai, A. Velikanov) – selected papers from the PICES-2012 Topic Session on “*Social-ecological systems on walleye pollock and other commercial gadids under changing environment: Inter-disciplinary approach*”;
- Review paper in a peer-reviewed journal (2013, Guest Editors: TBD) based on the results from the 2013 PICES/ICESGEOHAB workshop on “*Harmful algal blooms in a changing world*”;
- Papers in a peer-reviewed journal (2013, Guest Editors: TBD) based on results from the 2013 PICES/ICES workshop on “*Global assessment of the implications of climate change on the spatial distribution of fish and fisheries*”;
- Progress in Oceanography (2013/14, Guest Editors: T. Ichii, S. McKinnell, M. Seki) – selected papers from the PICES-2012 Topic Session on “*Advances in understanding the North Pacific Subtropical Frontal Zone ecosystem*”;
- Progress in Oceanography (2014, Guest Editors: TBD) – selected papers for a special issue from the PICES-2013 Topic Session on “*Banking on recruitment curves; returns on intellectual investment*”.

PICES Scientific Report series

- Final report of Working Group (WG 21) on *Non-indigenous Aquatic Species* (Editors: D. Smith and V. Radashevsky);
- Final report of Study Group on Marine Pollution (Editor: P. Ross)
- Report of the 2012 GLOBEC/PICES/ICES Workshop on “*Forecasting ecosystem indicators with process-based models*” (Editors: E. Di Lorenzo, A. Miller and S. Minobe).

SB-2012

AGENDA ITEM 13

Action Plans for Standing Committees and Science Board

It was noted that Action Plans among the Committees lacked consistency, with some being too detailed and others not detailed enough. It was suggested that a link to FUTURE would allow easier comparability. Science Board Chairman instructed the Committee chairmen to update their Action Plans with FUTURE in mind.

Actions:

- Committee Chairs to submit revised Action Plans to FUTURE APs by January 2013;
- Committee Chairs to present Action Plans at ISB-2013 for finalization.

AGENDA ITEM 14

Status of proposed publications

Science Board reviewed the list of proposed publications for 2012 and beyond items needing clarification or changes are discussed here. The final report of WG 24 was discussed in Agenda Item 12 under the FIS and MEQ Committee reports. However, incoming MEQ Chairman, Dr. Chaunlin Huo, announced that he would make a final effort to speak with representatives of MOA to look at the China report status, and try to match the WG report or at least. The report will be finalized with or without the China contribution at ISB-2013. Due to the length of time passed since the publication of the final report of Working Group (WG 19) on *Ecosystem-based Management Science and its Application to the North Pacific*, AP-SOFE reported that it will not pursue the development of a brochure.

Action: Incoming SOFE Chairman, Dr. Phillip Mundy to take over the development of the next version of the North Pacific Ecosystem Status Report.

AGENDA ITEM 15

Visiting Scientist Program

Science Board was receptive to the idea of a Visiting Scientist Program, especially as it will provide resources to help in the development of FUTURE. The following is a list of potential tasks/positions:

- North Pacific Ecosystem Status Report editors,
- assembly of data for NPESR,
- development of outreach products for FUTURE,
- development of a PICES training program,
- assist in a PICES training program,
- assist with management of PICES conferences,
- WG 29 data analysis and forecasts,
- address each question of FUTURE Implementation Plan,
- development of FUTURE outlooks and forecasts,
- provision of one-on-one training, *e.g.*, RCMs.

AGENDA ITEM 16

Election of Science Board Chairman-elect

Dr. Thomas Therriault was elected unanimously and will become Chairman-elect following PICES-2012, while continuing to serve as Science Board Vice-Chairman.

AGENDA ITEM 17

PICES-2013

The theme for PICES-2013 is “*Communicating forecasts, uncertainty and consequences of ecosystem change*” to be held in Nanaimo, Canada, from October 11–20, 2013. The following sessions and workshops were endorsed:

$\frac{3}{4}$ -day Science Board Symposium

Communicating forecasts, uncertainty and consequences of ecosystem change

1-day BIO Contributed Paper Session

1-day BIO/FIS Topic Session [co-sponsored by IMBER]

Marine ecosystem services and the contribution from marine ecosystems to the economy and human well-being

$\frac{1}{2}$ -day BIO/FIS/POC Topic Session

Are marine ecosystems of the North Pacific becoming more variable?

1-day BIO/FIS/MEQ/TCODE/FUTURE Topic Session

Ecosystem indicators to characterize ecosystem responses to multiple stressors in North Pacific marine ecosystems

1-day BIO/POC/TCODE/MONITOR/FUTURE Topic Session

Recent trends and future projections of North Pacific climate and ecosystems

1-day BIO Workshop

Marine bird and mammal spatial ecology

1-day FIS Contributed Paper Session

1-day FIS/TCODE Topic Session

Banking on recruitment curves; returns on intellectual investment [merged with ISC proposal on “Pan-Pacific environmental variability and relationship to tuna/billfish/shark productivity and distributions”]; co-sponsored by ISC]

1-day FIS/FUTURE Topic Session

Science needs for offshore oil and gas development in the North Pacific

1-day FUTURE Workshop

Evaluating tools for assessment of species vulnerability to anthropogenic climate changes

$\frac{1}{2}$ -day MEQ Contributed Paper Session

$\frac{1}{2}$ -day MEQ/FUTURE Topic Session

Status, trends and effects of pollutants in coastal ecosystems: Implications for wildlife and humans

1-day MEQ Workshop

Traditional seafoods of the Snuneymux’w First Nation in Nanaimo, British Columbia: Insight into food, social and ceremonial uses

$\frac{1}{2}$ -day MEQ Workshop

Economic impacts of harmful algal blooms on fisheries and aquaculture

1-day POC Contributed Paper Session

SB-2012

1-day POC Topic Session [co-sponsored by SOLAS]

The changing carbon cycle of North Pacific continental shelves and marginal seas

1-day PICES/ICES Workshop

Identifying mechanisms linking physical climate and ecosystem change: Observed indices, hypothesized processes, and “data dreams” for the future

1-day MONITOR Topic Session

Towards the development of low-cost cooperative ocean monitoring networks [later renamed as “Cost-effective, cooperative ocean monitoring”]

1-day PICES/ICES Workshop

Comparison of size-based and species based ecosystem models

1-day TCODE Workshop

Client side development for accessing distributed PICES datasets [later renamed as “Tools, approaches and challenges for accessing and integrating distributed datasets”]

PICES-2013 business meetings

- 1¾ days for Science Board;
- 1½-h overture meetings and ½ day for Scientific and Technical Committees;
- ½ day for: FUTURE Advisory Panels: AICE, COVE, and SOFE, preceded by a ½-day joint meeting;
- ¾ day for WG 27;
- 1 day for: S-HD, S-HAB, WG 21, WG 26, WG 28, AP-MBM;
- ½ day for: S-CC, S-CCME, WG 29, AP-CPR, AP-CREAMS.

The planning for PICES-2014 was briefly discussed by Science Board. In keeping with the 6-year rotation of PICES member countries, China would be the next country to host the Annual Meeting. However, it remains unclear if China will be doing so. A decision is expected by the end of November.

AGENDA ITEM 18

Venue and dates of ISB-2013

Science Board agreed to keep the dates of ISB-2013 as May 20–21, 2013 in anticipation of a final decision on the venue in Russia. Confirmation is expected by the end of November 2012.

AGENDA ITEM 19

Capacity building/Plan for PICES summer schools

PICES/ICES Early Career Scientists Conference

The Science Board Chairman instructed Committee Chairs from Asian countries to discuss a potential Asian venue for 3rd ECS Conference to be held in 2017 with their national delegates and to have suggestions.

Action: Asian Committee Chairmen to propose suggestions for the next Early Career Scientist Conference venue at ISB-2013.

PICES Summer School, PICES-sponsored Summer Schools, and PICES-sponsored conference

Science Board reviewed the requests for co-sponsorship from SOLAS and Eur-OCEANS, and agreed to support only the 6th International SOLAS Summer School to be held August 23–September 2, 2013, in Xiamen, China, recommending \$5,000 towards the event. It was agreed that the philosophy and topics aligned

well with PICES interests. Science Board approved, in principle, a plan for AP-CREAMS to convene a PICES Summer School on “*Ecological modelling*” in Seoul, Korea in August 2014. A proposal for an early career scientist conference on “Pacific Ecology and Evolution” to be held in Bamfield, Canada in 2013 was not supported.

Recommendations:

- support for 3 students from PICES member countries to attend the 6th International SOLAS Summer School;
- support for a PICES Summer School on “*Ecological modelling*” in 2014

NOWPAP/IOC-WESTPAC training course

Science Board agreed to support a NOWPAP/WESTPAC training course on remote sensing data analysis to take place in 2013, in China (venue to be decided). A contribution of \$3,000 to support 1 lecturer and 1 student from a PICES member country was recommended.

Recommendation: support for 1 lecturer and 1 student for a NOWPAP/WESTPAC training course on remote sensing data analysis.

AGENDA ITEM 20

Possible PICES-sponsored conferences/symposia in 2013 and beyond

Dr. Makino announced that the S-HD was prepared to organize an international symposium on the study of the human dimensions of marine ecosystems in 2016 in order not to conflict with the FUTURE OSM slated for 2014 and the proposed International Symposium on “*Effect of climate change on the world’s oceans*” to take place in Brazil in 2015. S-CCME’s phase 2 timeline to convene an international symposium will be in conjunction with the Brazil symposium.

AGENDA ITEM 21

PICES 25th Anniversary

The upcoming 25th anniversary of PICES, to take place in 2016 in the United States if there are no deviations from the normal 6-year cycle of rotation among member countries, was discussed by Science Board. To promote the anniversary, several projects were discussed including an updated and better designed website and emphasizing electronic media. Other considerations were the production of an online PICES university text book, compiling a photo archive to capture the major achievements of the Organization, and “polishing” the PICES logo.

Action: Mr. Brown volunteered to serve as a Science Board representative on the group that will work on the anniversary preparations.

AGENDA ITEM 22

Other business

Science Board briefly reviewed Governing Council’s request to revisit PICES’ role on the World Ocean Assessment (UN Regular Process for Global Reporting and Assessment of the State of the Marine Environment) after Science Board declined to pursue it further (see 2012 inter-sessional Science Board meeting report, Agenda Item 3 in the [2012 Annual Report](#)). No PICES member country has offered to host a regional workshop on the North Pacific.

SB Endnote 1

Science Board participation list

Members

Robin Brown (AP-SOFE)
Kyung-Il Chang (POC)
Mitsutaku Makino (MEQ)
Elizabeth Logerwell (FIS)
Hiroya Sugisaki (MONITOR)
Igor Shevchenko (representing Russia)
Toru Suzuki (TCODE)
Thomas Therriault (AP-AICE)
Atsushi Tsuda (BIO)
Sinjae Yoo (Science Board Chairman)
Fengli Qiao (representing China)

Observers

Chuanlin Huo (China)
Adolf Kellermann (ICES)
Yutaka Michida (IOC)
Lisa Miller (SOLAS)
Satoru Taguchi (SCOR)

Secretariat

Alexander Bychkov
Skip McKinnell

SB Endnote 2

Science Board meeting agenda

Sunday, October 14, 2012 (12:30 – 14:00)

1. Welcome and adoption of agenda (Yoo)
2. Review of procedures for Science Board Symposium awards, and Closing Session (Yoo, McKinnell)
3. Relations with specific international programs/organizations (Yoo, international organization representatives)

Friday, October 19, 2012 (15:00 – 18:00)

4. Relations with specific international organizations/programs (Yoo, continued)
5. Report on MAFF Project (Makino)
6. (FUTURE SSC) Presentation and discussion of current status of the FUTURE APs

Saturday, October 20, 2012 (9:00 – 18:00)

7. (FUTURE SSC) Status of new expert groups (All)
8. (FUTURE SSC) FUTURE inter-sessional workshop
9. (FUTURE SSC) FUTURE OSM 2014
10. (FUTURE SSC) Other FUTURE matters (All)
11. Status of proposed inter-sessional workshops/symposia (All)
12. Reports from Scientific and Technical Committees (Committee Chairs)
13. Action Plans for Standing Committees and Science Board
14. Status of proposed publications
15. Visiting Scientist Program
16. Election of Science Board Chairman-elect
17. PICES-2013, Nanaimo, Canada, theme and description, draft schedule of scientific sessions and workshops (All)
18. Venue and dates of ISB-2013 (Secretariat)
19. Capacity building/Plan for PICES summer schools in 2012 and 2013 (Yoo and McKinnell)
20. Possible PICES-sponsored conferences/symposia in 2013 and beyond
21. PICES 25th Anniversary activities
22. Other business

SB Endnote 3**Proposal to establish a Study Group on Radionuclide Science in the North Pacific Ocean****Background**

The widespread application of nuclear science and technology has led to increasing amounts of radionuclides being released directly or indirectly into the ocean. Radioactive pollution is becoming a key issue concerned by marine research scientists, especially when a nuclear accident happens.

A large amount of radioactive contaminant was released into the North Pacific from a recent nuclear accident, and the long half-life radionuclides will stay in the marine environment for a long time and possibly endanger the marine ecosystem or human-being health through food chains. Thus it is very important to monitor the radiation exposure level and assess the effects of radioactive substances on marine ecosystem in the North Pacific waters.

A Working Group was proposed to exchange and share the technologies and experiences on the monitoring of the radioactive contaminants in the North Pacific waters, to assess the relevant effect and radiological risk in waters, to promote public understanding of radiation effects and to encourage the enactment of more reasonable regulations concerning the use of radiation. The proposed terms of reference were:

1. To unify the detecting methods of concerned nuclides in PICES member states;
2. To discuss and implement intercalibration of NIT (Nuclear Isotopic techniques) in PICES member states;
3. To exchange and select the assessment methods of marine environmental quality of radiation (MEQR) among PICES member states;
4. To recommend the reference organism species in the North Pacific waters;
5. To assess the current marine environmental quality of radiation of the North Pacific waters;
6. To compile a list of existing databases of MEQR experts of the North Pacific for academic exchange;
7. To promote collaboration among PICES member states.

To provide an opportunity for greater discussion of the proposal among scientists in PICES member countries, Science Board recommended a Study Group to:

1. Convene a workshop in China to provide a forum for exchange of views among scientists on the idea of developing a scientific focus on understanding the quantities and distributions of radionuclides in the North Pacific;
2. To refine the WG terms of reference proposed by China in consideration of wider interests of scientists in PICES member countries, including relevance to the FUTURE/AICE mandate;
3. To develop a list of potential WG members;
4. To prepare a report with recommendations for future PICES activities and products related to the topic that are consistent with new MEQ Action Plan;
5. To make the report available by the inter-sessional Science Board meeting in May 2013.

Suggested members of study group

Chairman: A senior scientist on marine radioecology from China and a senior scientist on Marine Radioecology from the eastern North Pacific.

Recommended Chairman

Yusheng Zhang, Third Institute of Oceanography, State Oceanic Administration (SOA).