

2022 Report of the FUTURE Scientific Steering Committee



The FUTURE SSC conducted an in-person (with hybrid capacity) annual meeting at the PICES-2022 (Busan, Korea) on September 28/29, 2022. FUTURE Co-Chairs, Drs. Steven Bograd (USA) and Sukyung Kang (Korea) led the meetings.

AGENDA ITEM 1

Introductions and nomination of a rapporteur

Self-introductions were made (*FUTURE SSC Endnote 1*).

AGENDA ITEM 2

Adoption of agenda

The agenda was adopted without modification (*FUTURE SSC Endnote 2*).

AGENDA ITEM 3

Changes in leadership and membership; revision of liaison table

There has been one change to FUTURE SSC membership since our last meeting (April 2021). Dr. Daisuke Hasegawa has replaced Dr. Tetsuo Fujii as a member from Japan, as Dr. Fujii has taken on the role of PICES Vice-Chair. The SSC revised the liaison table (*FUTURE SSC Endnote 3*) to reflect the change in membership and the addition of new expert groups and completion of others. Welcome Dr. Hasegawa, and thank you Dr. Fujii for all of your contributions to FUTURE over the past few years!

In addition, the FUTURE SSC voted a new Co-Chair from the western Pacific, Dr. Hanna Na from Korea. Dr. Na will replace Dr. Sukyung Kang as Co-Chair, as Dr. Kang moves on to Science Board Chair (but will remain a member of FUTURE SSC). Congratulations Dr. Na! And thank you Dr. Kang for all your years of tremendous leadership of the FUTURE Science Program!

AGENDA ITEM 4

SSC general business and updates

Dr. Bograd provided a summary briefing to SSC members on the activities of the FUTURE SSC since the last inter-sessional meeting in April 2022, which included continued development of the UN Decade of Ocean

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Science (UNDOS)-endorsed SmartNet program (Sustainability of marine ecosystems through global knowledge networks) through the new Advisory Panel on the UN Decade of Ocean Science (AP-UNDOS); planning for the next FUTURE Open Science Meeting and the FUTURE *Phase II* final report; hosting of a joint SSC-Science Board virtual meeting in August 2022 to discuss strategies for the ‘future of FUTURE’ (see below); and continued development of the newly formed WG on *Climate Extremes and Coastal Impacts* (WG 49). This was followed by discussion of several key FUTURE SSC activities:

- *FUTURE Product Matrix and Synthesis Manuscript*: The Product Matrix links products developed by PICES expert groups to specific objectives and questions of the FUTURE Science Program, allowing for an easily accessed catalogue of FUTURE-relevant products, as well as a synthesis of products and a gap analysis of unmet objectives. Saeseul Kim (PICES Secretariat) helped the SSC complete the first draft of the FUTURE Product Matrix earlier this year, and we aim to have an accessible Product Matrix on the PICES website soon. In addition, the SSC prepared an outline for a journal manuscript that will use the Product Matrix to highlight key achievements of the FUTURE program, identify knowledge gaps and the reasons they remain, and determine next steps for addressing FUTURE’s goals. Completion of this manuscript is a key objective for the SSC in 2023.
- *Plans for the Next FUTURE Open Science Meeting*: The SSC continued planning for the next, long-delayed FUTURE Open Science Meeting, which would aim to highlight and synthesize accomplishments of the FUTURE *Phase II* (2014–2020) Science Program, with an emphasis on the application of the Social-Ecological-Environmental System (SEES) approach in the context of the UN Decade of Ocean Science for Sustainable Development. Due to travel constraints and delays related to the COVID-19 pandemic, and with many other meetings now being scheduled for 2022–23, the SSC will target spring 2024 for the meeting and link a one-day FUTURE Symposium to an existing planned meeting (e.g., the Marine Social-Ecological Systems Symposium (MSEAS) in Yokohama) or a UNDOS Symposium in China. The SSC will continue to work with the Secretariat on meeting planning and logistics, including exploring alternate meeting structures such as ‘ideation’ workshops to develop ocean solution roadmaps and events aimed at early career ocean professional participation.

AGENDA ITEM 5

Updates from FUTURE children expert groups

Dr. Bograd reviewed recent activities of four Working Groups and two Study Groups that are parented or co-parented by the SSC: WG 36 (Common Ecosystem Reference Points); WG 40 (Climate and Ecosystem Predictability); WG 41 (Marine Ecosystem Services); and WG 49 (Climate Extremes and Coastal Impacts); SG-ECOP (Early Career Ocean Professionals); and SG-UNDOS (UN Decade of Ocean Science).

Highlights include:

- **WG 36** completed its term with submission and SSC approval of their Final Report. This WG was quite productive, having published a peer-reviewed paper in the journal *Ecological Indicators* (Vol. 132, December 2021, 108232) describing a case study of ecosystem responses to environmental and human pressures for the west coast of Vancouver Island, and nearing completion of a manuscript on methodologies to quantify thresholds in ecological time series.
- **WG 40** completed its term with a special issue of *Frontiers in Marine Science* on ‘North Pacific climate and ecosystem predictability on seasonal to decadal timescales’ (Vol. 19, December 2022).
- **WG 41** is finalizing two projects: a marine ecosystem services methodology review amongst PICES member countries and a web-based survey on economic valuation of marine ecosystem services. This WG will end following submission and approval of a Final Report.

- **WG 49** was established in 2022, and held a first virtual meeting in August 2022 and a first in-person meeting at PICES-2022 (*FUTURE SSC Endnote 4*). The primary objective of these meetings was to establish a membership that is balanced by country, disciplinary expertise and career stage, as well as to review its terms of reference. New Co-Chairs were selected and approved by Science Board and Governing Council: Karen Hunter (Canada), Helen Killeen (USA), Chan Joo Jang (Korea), Hiroki Wakamatsu (Japan), and Antonietta Capotondi as *ex officio* representing CLIVAR.
- **SG-UNDOS** continued to lead PICES engagement in the UN Decade of Ocean Science through April 2022, when the SG submitted a proposal for a longer-term Advisory Panel to guide PICES UNDOS activities. The new **AP-UNDOS** was approved by Science Board and Governing Council and conducted its first meeting at PICES-2022.
- **SG-ECOP** had been very active since it was approved at PICES-2020, meeting frequently to address its terms of reference. The SG completed a PICES ECOP Engagement Plan, which includes results of a survey to catalog ECOP demographics and participation in PICES activities. The SG submitted a proposal for a longer-term Advisory Panel which was approved by Science Board and Governing Council. The new **AP-ECOP** has continued the high level of activity of the preceding SG.

AGENDA ITEM 6

Future of FUTURE

Following our inter-sessional meeting in April 2022, the FUTURE SSC decided to continue strategic discussions about the plans and priorities for the FUTURE Science Program in the coming years. This discussion was motivated in part by the accelerating efforts PICES is committing to the UN Decade of Ocean Science (UNDOS), and especially the joint ICES-PICES UNDOS program SmartNet (see SmartNet Workshop review in the 2022 Winter issue of PICES Press). Given a change in SSC leadership, as well as delays in activities due to COVID-19, the time was right for reassessing FUTURE. A virtual joint meeting between the FUTURE SSC and Science Board was held in August 2022, and the discussion continued at PICES-2022. While there are a number of ideas about how to advance *Phase III* of the FUTURE Program, the SSC and Science Board agreed on several priority recommendations:

1. Retain a flagship Science Program to integrate PICES science;
2. Maintain the momentum of FUTURE and proceed with *Phase III* tasks;
3. Bring ECOPs and others into SSC membership for new ideas, enthusiasm;
4. Facilitate cross-pollination across FUTURE, AP-UNDOS, AP-ECOP, AP-SciComm (FUTURE recommendation: Joint AP meeting at Annual Meeting);
5. Renew focus on science-based solutions and operational products;
6. Around 2025–2027, rethink a new Science Program for PICES, informed by emergent themes identified in UNDOS.

AGENDA ITEM 7

FUTURE SSC 2022–2023 Action Plan

During the meeting, a list of action items for the next year were developed (*FUTURE SSC Endnote 5*).

AGENDA ITEM 8

Recommendations and requests for Science Board

See *FUTURE SSC Endnote 6*.

The meeting was adjourned at 18:00 Busan time, September 29, 2022.

FUTURE SSC Endnote 1

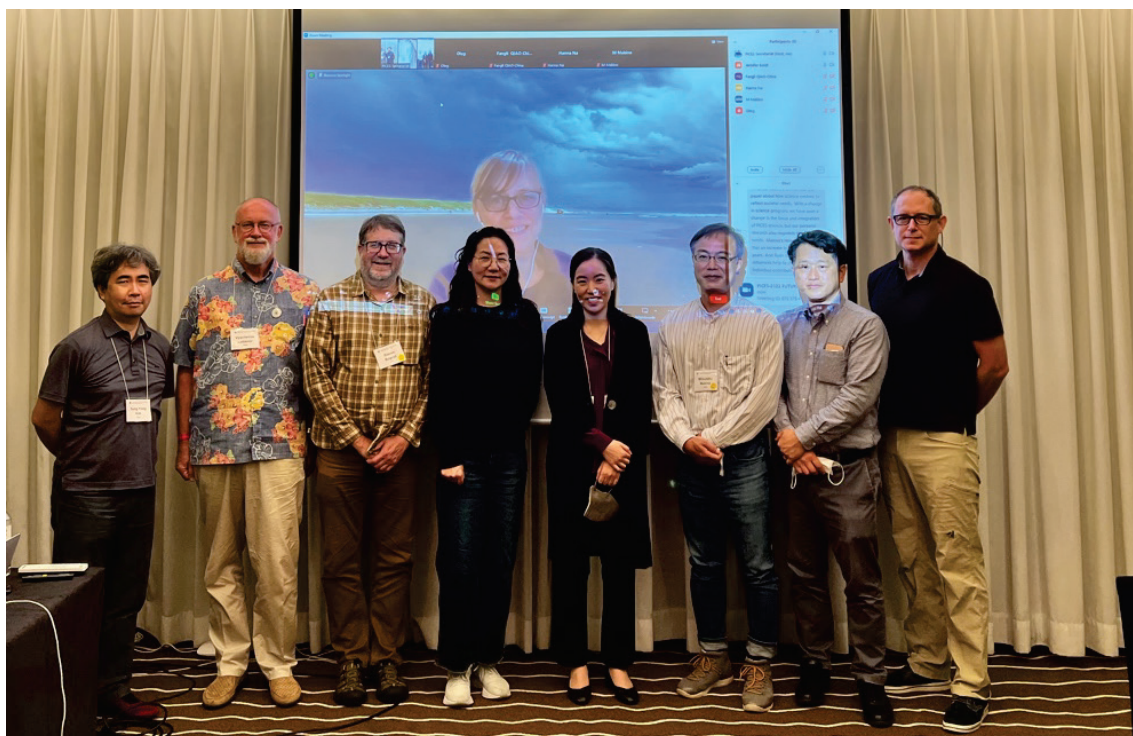
FUTURE SSC participation list

Members

Steven Bograd (USA, Co-Chair)
Sukyung Kang (Korea, Co-Chair)
Jennifer Boldt (Canada) (virtual)
Fangli Qiao (China) (virtual)
Chengjun Sun (China) (virtual)
Daisuke Hasegawa (Japan)
Mitsutaku Makino (Japan)
Hanna Na (Korea)
Vyacheslav Lobanov (Russia)
Emanuele Di Lorenzo (USA)

Observers

Robin Brown (BECI)
Sung Yong Kim (MONITOR)
Andrew Ross (MEQ)



Participants (pictured only) from left to right: Sung Yong Kim, Vyacheslav Lobanov, Steven Bograd, Sukyung Kang, Hanna Na, Mitsutaku Makino, Daisuke Hasegawa, Emanuele Di Lorenzo. Background: Jennifer Boldt (virtually).

FUTURE SSC Endnote 2**FUTURE SSC meeting agenda**

1. Welcome, introductions
2. Adoption of agenda
3. Elect new leadership [Western Pacific Co-Chair]
4. SSC updates and general business
 - Review of 2021-22 Action Items
 - Update/revision of Liaison Table
 - Update/revision of FUTURE Schematic
 - Timeline for FUTURE *Phase II* Final Report
 - Planning for 2023 FUTURE Open Science Meeting
5. Update from children expert groups
 - WG 40
 - WG 49
 - AP-ECOP
 - AP-UNDOS
6. Review and discussion of August 2022 meeting on ‘Future of FUTURE’
7. Develop 2022-2023 Action Plan and timeline
8. Recommendations and requests for Science Board

FUTURE SSC Endnote 3**Updated FUTURE SSC Liaison Table**

(revised September 29, 2022)

	Committee	WG	Section	AP
Chengjun Sun	MEQ	WG-42*		
Fangli Qiao	TCODE*, POC	WG-50	S-CC	CREAMS
Mitsutaku Makino	HD*	WG-41*, WG-44		SciCom*
Daisuke Hasegawa		WG-50*		
Sukyung Kang	FIS*	WG-48*	S-CCME	
Hanna Na		WG-46		NPCOOS*, ECOP
Oleg Katugin	FIS, HD		S-MBM*	
Vyacheslav Lobanov	MONITOR*			CREAMS*, NPCOOS
Emanuele Di Lorenzo	POC*	WG-40, WG-46*		UNDOS*
Steven Bograd	POC	WG-44*, WG-49*	S-CC*, S-MBM	SciCom
Ryan Rykaczewski	BIO*, TCODE	WG-43, WG-45*	S-CCME*	
Tom Therriault	MEQ*		S-HAB*	NIS*,ECOP*
Jennifer Boldt	MONITOR, FIS	WG-43*, WG-47*		
	*Primary liaison members			

FUTURE SSC Endnote 4

Working Group 49 Meeting at PICES-2022



WG 49 meeting participants from left to right: Emanuele Di Lorenzo, In-Seong Han, Chan Joo Jang, Karen Hunter, Sung Yong Kim, Jongseong Ryu, Chun Ok Jo, Jennifer Jackson, Charles Hannah, Daisuke Hasegawa, Hiroki Wakamatsu, Steven Bograd. Via Zoom: Antonietta Capotondi, Rob Suryan, Dan Lew, Hiroshi Kuroda, Jim Christian, Haruka Nishikawa, Song Yajuan (not pictured)

FUTURE SSC Endnote 5**FUTURE SSC 2022–2023 Action Plan***Completed Actions (since October 2021)*

- Virtual FUTURE SSC Annual Meeting [All; OCT 2021]
- FUTURE SSC Report to Science Board [Chairs; OCT 2021]
- Submit FUTURE SSC Annual Report to Secretariat and report for PICES Press [Chairs; NOV 2021]
- Update FUTURE Liaison Table and SEES schematic, update website [All; DEC 2021]
- Recommendations/submission of new PICES Expert Groups [All; DEC 2021-MAR 2022]
- FUTURE SSC Inter-Sessional Meeting [All; APR 2022]
- Review WG 36 Final Report [All; APR 2022]
- FUTURE SSC Report to Science Board [Chairs; APR 2022]
- Submit FUTURE SSC Inter-Sessional Report to Secretariat and report for PICES Press [Chairs; MAY 2022]
- SSC-Science Board Virtual Meeting on Future of FUTURE [All; AUG 2022]
- FUTURE SSC Annual Business Meeting in Busan; new Western Pacific Co-Chair [All; SEP-OCT 2022]

Proposed Actions

- Prepare *PICES Press* reports on FUTURE SSC meeting [Chairs; NOV-DEC 2022]
- Review WG 41 Final Report [All; NOV-DEC 2022]
- Add revised liaison table, FUTURE schematic to website [Chairs, Secretariat; NOV-DEC 2022]
- Finalize and disseminate FUTURE Product Matrix and FUTURE *Phase II* Final Report [All; NOV 2022-APR 2023]
- Progress on 2024 Open Science Meeting [Chairs, Secretariat; NOV 2022-APR 2023]
- Prepare FUTURE paper from Product Matrix [All; NOV 2022-APR 2023]
- Continued strategizing on future of FUTURE [All; NOV 2022-APR 2023]

FUTURE SSC Endnote 6**FUTURE SSC recommendations and requests to Science Board***Recommendations*

- Support online distribution of revised FUTURE Liaison Table, Product Matrix and SEES schematic
- Membership changes:
 - Chairs: Hanna Na (Korea) replace Sukyung Kang (Korea)
 - Additions: Vera Trainer (USA, AP-SciComm), retain Sukyung Kang (Korea)
- Support meeting requests:
 - Inter-sessional hybrid or virtual meeting in Spring 2023 [complete paper]
 - 1-day FUTURE SSC in-person annual business meeting in Seattle in October 2023
- No current recommendations for WG and SG proposals