

2021 Report of the FUTURE Scientific Steering Committee



The FUTURE SSC conducted a virtual annual meeting for three hours on each of three consecutive days, from October 5/6 to October 7/8, 2021. FUTURE Co-Chairs, Drs. Steven Bograd (USA) and Sukyung Kang (Korea) led the meetings, which were hosted online by the PICES Secretariat.

AGENDA ITEM 1

Introductions and nomination of a rapporteur

Self-introductions were made (*FUTURE SSC Endnote 1*); Lori Waters (Secretariat) agreed to take notes. Steven Bograd relayed the protocols for conducting business using the Zoom conferencing service.

AGENDA ITEM 2

Adoption of agenda

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

AGENDA ITEM 3

Changes in membership and revision of liaison table

There has been one change to FUTURE SSC membership since our last meeting (April 2021). Dr. Chenjun Sun has replaced Dr. Guangshui Na as a member from China. 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. Sun, and thank you Dr. Na for all of your contributions to FUTURE over the past few years!

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 2021, which included continued development of the UN Decade of Ocean Science (UNDOS)-endorsed SmartNet program (Sustainability of marine ecosystems through global knowledge networks) through the joint PICES Study Group-ICES Strategic Initiative on the *UN Decade of Ocean Science (SG-UNDOS; see below)*; planning for the next FUTURE Open Science Meeting and the FUTURE *Phase II* final report; hosting of a community virtual workshop in June 2021 to plan a new Working

Group proposal on climate extremes; and submission of the WG-Extremes proposal for Science Board consideration. This was followed by discussion of several key FUTURE SSC activities:

- *FUTURE Product Matrix*: 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 catalog of FUTURE-relevant products, as well as a synthesis of products and a gap analysis of unmet objectives. Following guidance from SSC members, Saeseul Kim (PICES Secretariat) has now completed the FUTURE Product Matrix, and it will soon be posted on the PICES website. In addition to reviewing the results of this exercise at the annual meeting, the SSC held a separate virtual meeting in mid-November to outline 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. The Product Matrix will be included in the FUTURE *Phase II* Final Report, which SSC members are planning to complete next year.
- *Updates to FUTURE SEES schematic*: Following our agreement to periodically update the FUTURE SEES schematic by adding new and removing completed expert groups, the SSC discussed new versions of the schematic that were prepared by Lori Waters (PICES Secretariat). The set of schematics will be available on the PICES website and will form a visual legacy of the FUTURE program.
- *Plan for the next FUTURE Open Science Meeting*: The SSC revisited the idea of hosting the next 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 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 2022–2023, the SSC will target spring 2024 for the meeting. A sub-group 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: 35 (*Third North Pacific Ecosystem Status Report*); 36 (*Common Ecosystem Reference Points*); 40 (*Climate and Ecosystem Predictability*); and 41 (*Marine Ecosystem Services*; SG-ECOP (*Early Career Ocean Professionals*); and SG-UNDOS (*UN Decade of Ocean Science*).

Expert group highlights:

- **WG 35** has completed its Synthesis Report, which was reviewed by its parent committees and has now been published as [PICES Special Publication 7](#). Individual NPESR regional chapters are mostly complete and will be published online following review by the NPESR Editorial Board and Science Board. A new Study Group to plan NPESR4 has been proposed, and is supported by FUTURE SSC.
- **WG 36** has published a [peer-reviewed paper](#) in the *Journal of Ecological Indicators* describing a case study of ecosystem responses to environmental and human pressures for the west coast of Vancouver Island, and is nearing completion of a manuscript on methodologies to quantify thresholds in ecological time series. They plan to complete their final report in fall 2021.

- **WG 40** is currently completing a special issue of *Frontiers in Marine Science* on ‘North Pacific Climate and Ecosystem Predictability on Seasonal to Decadal Timescales’.
- **WG 41** is continuing on two Projects: a marine ecosystem services methodology review amongst PICES member countries and a web-based survey on economic valuation of marine ecosystem services.

Each of these Working Groups is set to end their term at PICES-2021.

- **SG-UNDOS** is continuing to lead PICES engagement in the UN Decade of Ocean Science (see below). They have requested a 6-month extension to develop a proposal for a longer-term Advisory Panel to guide PICES UNDOS activities.
- **SG-ECOP** has been very active since it was approved at PICES-2020, meeting bi-weekly to address their terms of reference. They have completed a PICES ECOP Engagement Plan, which includes results of a survey to catalog ECOP demographics and participation in PICES activities, as well as a proposal for a longer-term Advisory Panel (see SG-ECOP [article](#) in PICES Press). FUTURE SSC expresses strong support for these activities.

AGENDA ITEM 6

FUTURE and PICES-ICES joint activities in UNDOS

The joint PICES-ICES UNDOS Program proposal, SmartNet, was endorsed as an official UNDOS network proposal in June 2021 (see PICES Press, [Vol. 29, No. 2](#)). SG-UNDOS, which encompasses the PICES members affiliated with this activity, has worked with our ICES partners to develop the ICES-PICES Ocean Decade (IPOD) Steering Committee for the SmartNet Program. IPOD has met several times this year to strategize the co-design and governance structure of SmartNet. Initial activities of the Program include (a) publication of an introduction to SmartNet in a UNDOS special volume of *Eco Magazine*; (b) planning for national surveys to gauge interest and engagement in UNDOS; (c) planning for a virtual Town Hall associated with the February 2022 Ocean Sciences Meeting to introduce potential stakeholders to SmartNet and other UNDOS programs; (d) planning for participation in the February 2022 UNDOS-sponsored Laboratory on ‘A Productive Ocean’; and (e) preparing a manuscript on our plans for co-design and stakeholder engagement for an UNDOS special volume of *ICES Journal of Marine Science*.

AGENDA ITEM 7

Potential new Expert Groups

The FUTURE SSC hosted a 3-hour virtual workshop in June 2021 to engage the PICES community in planning for a new expert group on ‘Climate Extremes and Coastal Impacts in the Pacific’. Approximately 40 people participated in the workshop, where several decisions were made: (a) there is strong interest in developing a single transdisciplinary Working Group on this theme; (b) we anticipate a relatively large membership to account for disciplinary expertise, representation from ECOPs and the indigenous community, and participation of partner organizations, including CLIVAR and APN; (c) we anticipate strong collaborations with SmartNet and other UNDOS programs and activities; and (d) we would like to request a longer than usual lifetime (5 years) to be more fully effective. Following the workshop, SSC members and interested PICES participants finalized the WG-Extremes proposal, which was presented to, and approved by, Science Board and Governing Council. WG-Extremes will now secure members and begin activities in 2022.

FUTURE SSC – 2021

AGENDA ITEM 8

FUTURE SSC 2022 Action Plan

During the meeting, a list of action items for the next year were developed (*FUTURE SSC Endnote 4*).

AGENDA ITEM 9

Recommendations and requests for Science Board

During the meeting, a list of recommendations and requests to Science Board were developed (*FUTURE SSC Endnote 5*).

Meeting adjourned at 21:00 PDT, October 7.

FUTURE SSC Endnote 1

FUTURE SSC participation list

Members

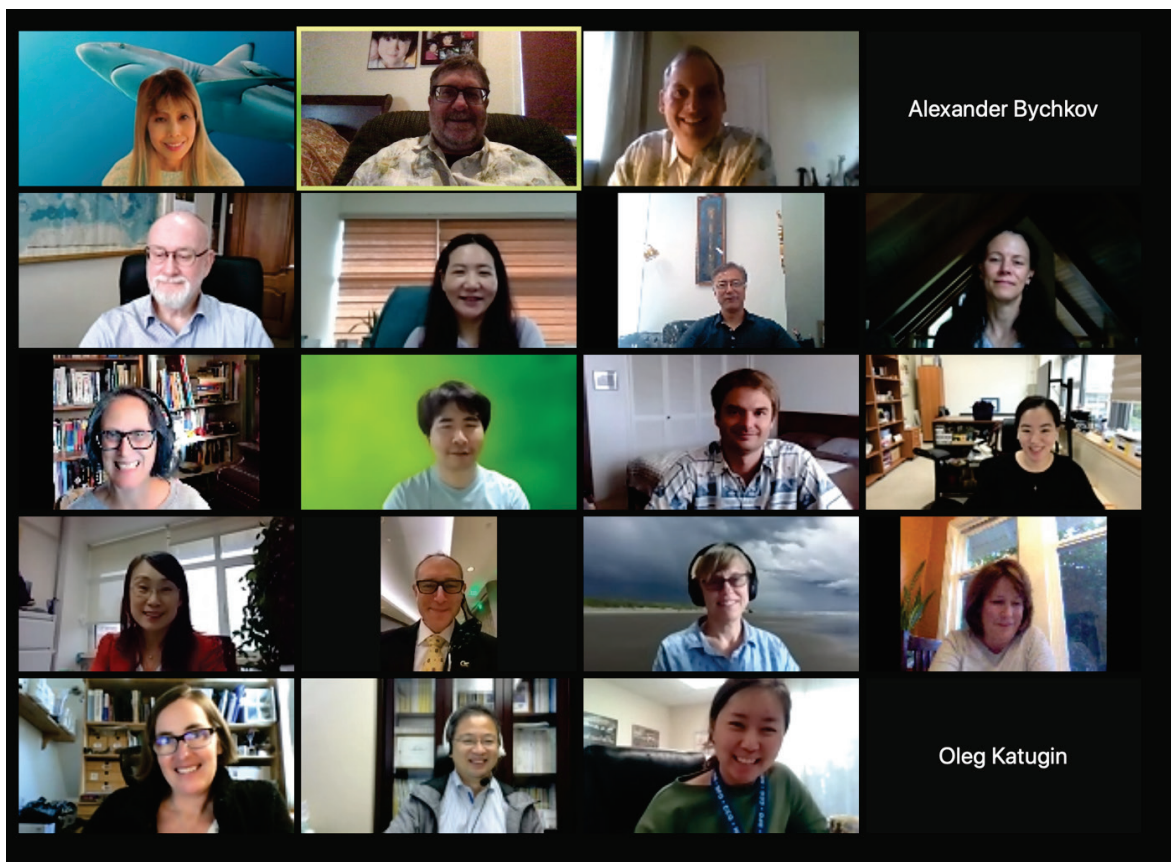
Steven Bograd (USA, Co-Chair)
Sukyung Kang (Korea, Co-Chair)
Jennifer Boldt (Canada)
Jacquelynne (Jackie) King (Canada)
Thomas Therriault (Canada)
Fangli Qiao (China)
Chengjun Sun (China)
Tetsuo Fujii (Japan)
Mitsutaku Makino (Japan)
Hanna Na (Korea)
Oleg Katugin (Russia)
Vyacheslav Lobanov (Russia)
Emanuele Di Lorenzo (USA)
Ryan Rykaczewski (USA)

Observers

Sung Yong Kim (MONITOR Chair)
Raphael Roman (SG-ECOP)
Erin Satterthwaite (SG-ECOP Chair)

PICES

Vera Trainer (Science Board Chair)
Sonia Batten (Executive Secretary)
Alex Bychkov (Past Executive Secretary)
Sanae Chiba (Deputy Executive Secretary)
Saeseul Kim (Intern)
Lori Waters (Administrative Assistant)



Day 1 participants (pictured only) at PICES-2021. Top from left: Sanae Chiba, Steven Bograd, Thomas Therriault, Alexander Bychkov; second row from left: Vyacheslav Lobanov, Sukyung Kang, Mitsutaku Makino, Sonia Batten; third row from left: Jackie King, Sung Yong Kim, Ryan Rykaczewski, Hanna Na, third row from left: Chengjun Sun, Emanuele Di Lorenzo, Jennifer Boldt, Vera Trainer; fourth row from left: Lori Waters, Tetsuo Fujii, Saeseul Kim, Oleg Katugin.

FUTURE SSC Endnote 2

FUTURE SSC meeting agenda

Day 1, October 5/6, 2021

- Introductions and nomination of a rapporteur
- Adoption of agenda
- Changes in membership
- SSC updates and general business
 - Review of 2020-21 Action Items
 - Update on FUTURE Product Matrix
 - Update/revision of Liaison Table
 - Update/revision of FUTURE Schematic
 - Plan for FUTURE *Phase II* Final Report
 - Planning for 2023 FUTURE Open Science Meeting

FUTURE SSC – 2021

Day 2, October 6/7, 2021

- Review & Completion of Day 1 items
- Updates from Children Expert Groups (*Appendix 3*)
 - WG 36
 - WG 40
 - WG 41
 - SG-ECOP
 - SG-UNDOS (IPOD/SMARTNET)
- Proposals for new Expert Groups
 - Working Group on Climate Extremes (forcing, predictability, attribution, ecosystem/societal impacts)
 - Other ideas (*e.g.*, to meet FUTURE and UN Ocean Decade societal goals)
- Outline for FUTURE paper based on Product Matrix

Day 3, October 7/8, 2021

- Review and completion of Day 2 items
- Plans for FUTURE business at 2022 Inter-Sessional Meeting
- Storyboard new FUTURE videos
- Develop FUTURE SSC 2022 Action Plan
- Develop list of FUTURE recommendations and requests for Science Board
- Adjourn

FUTURE SSC Endnote 3

FUTURE SSC Liaison Table

(Revised 6 Oct 2021)

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

*FUTURE SSC Endnote 4***FUTURE SSC 2021–2022 Action Plan***Completed Actions (since April 2021)*

- Make progress on FUTURE Product Matrix [Saeseul, Jennifer, Tom, Steven, Sukyung; JAN-JUN 2021]
- FUTURE SSC inter-sessional business meeting [All; APR 2021]
- Provide FUTURE SSC Inter-Sessional report to Secretariat; Article for PICES Press [Chairs; JUN 2021]
- Host PICES virtual workshop on development of ‘climate extremes’ Working Group proposal [All; JUN 2021]
- Finalize and submit WG-Extremes proposal [Chairs; AUG 2021]
- Finalize FUTURE Product Matrix [Saeseul Kim, Chairs, Jennifer, Tom; OCT 2021]
- FUTURE SSC annual business meeting [All; OCT 2021]
- Update FUTURE SSC Liaison Table and SEES Schematic [Lori Waters, Chairs, Manu; OCT 2021]
- FUTURE SSC Annual Report to Science Board [Chairs; NOV 2021]
- Submit FUTURE SSC Annual Report to Secretariat and article for *PICES Press* [Chairs; DEC 2021]

Proposed Actions

- Update FUTURE items on PICES website (liaison table, product matrix, schematic) [Chairs, Secretariat; **DEC 2021**]
- Review WG 36, WG 40 final reports [All; **DEC 2021**]
- Progress on 2024 Open Science Meeting [Chairs, Tom, Ryan, Jackie, Secretariat; **JAN-APR 2022**]
- Finalize and disseminate FUTURE *Phase II* Final Report with Product Matrix [All; **JAN-APR 2022**]
- PICES/(ICES) UN Decade of Ocean Science Activities [All, IPOD; **JAN-APR 2022**]
- Launch WG-Extremes [All; **JAN-APR 2022**]
- Prepare FUTURE manuscript based on Product Matrix [Chairs, All; **JAN-APR 2022**]
- FUTURE SSC virtual inter-sessional business meeting [All; **APR 2022**]
- Produce new FUTURE videos [All; **APR 2022**]
- FUTURE SSC in-person annual business meeting in Busan [All; **OCT 2022**]

FUTURE SSC Endnote 5

FUTURE SSC recommendations and requests to Science Board

Recommendations

- Support online distribution of revised FUTURE Liaison Table, Product Matrix and SEES schematic
- Require all new Expert Groups to contribute to Product Matrix upon completion
- Endorse plans for (a) 2024 OSM and (b) FUTURE *Phase II* Final Report
- Support meeting requests:
 - 3-day FUTURE SSC virtual inter-sessional business meeting in spring 2022
 - 2-day FUTURE SSC in-person annual business meeting in Busan in October 2022
 - Postponement of FUTURE-supported Topic Sessions and Workshops to October 2022 Annual Meeting
- Recommendations for WG and SG proposals:
 - Support WG 36 publication costs (\$2500 US)
 - Support WG 35 proposing new NPESR4 SG; FUTURE does not need to parent
 - Approve SG-ECOP engagement plan and AP proposal
 - Support SG-UNDOS extension
 - Support SG-SciComm AP proposal; postpone decision on FUTURE parenting
 - Support establishment of WG-Extremes; FUTURE to parent