2024 Report of Advisory Panel on North Pacific Coastal Ocean Observing Systems (AP-NPCOOS)

AP-NPCOOS held two meetings in 2024. The first was an online meeting on October 17, 2024 that was attended by 8 members. The second was a hybrid meeting on October 26, 2024 in Honolulu that was attended by 6 members in person and 2 members online. Jennifer Jackson chaired and took notes for both meetings. Akash Sastri assisted in note taking on October 26, 2024.

AGENDA ITEM 1
PREPARATION OF OCTOBER 26, 2024 HYBRID MEETING

October 17 was the first time we had met since 2023. AP-NPCOOS had had a leadership change due to the tragic illness of its past co-chair (Kim Juniper) so part of the meeting on October 17 was spent on planning and defining priorities.

AGENDA ITEM 2
AP-NPCOOS ACTIVITIES AT PICES-2024

There were two activities at PICES-2024. On October 27, there was a half-day workshop on plankton time series (W1 – North Pacific plankton time series data analyses and synthesis). On October 31, there was a full-day session on ecosystems and oceans (S4 – Observational frontier and new studies for understanding of ocean and ecosystem.

AGENDA ITEM 3
DISCUSSION ON TIMES SERIES COLLECTED BY MOORINGS ON THE SHELF OF EACH MEMBER COUNTRY

A previous priority for AP-NPCOOS was to construct an inventory of mooring time series on the shelves of each member country. This idea was revisited, and it was decided that this is a priority. In particular, these data are very useful for examining subsurface marine heat waves and hypoxia events in each member country. By creating an inventory, we could begin to jointly examine the time series in a way that is comparable throughout the North Pacific coastal waters. This initiative will help with WG49's priorities of examining coastal extreme events.

A proposal was written for a PICES-2025 workshop that will focus on constructing a shelf mooring data inventory and discuss methods of jointly examining these data.

AGENDA ITEM 4
UPDATE ON AP-NPCOOS SUMMER SCHOOL

Dr. Naoki Yoshie is very busy and has stepped away from PICES. Unfortunately, he is no longer able to organize the 2025 summer school in Japan. 2026 is more likely for a summer school. Dr. Tanaka Takahiro is taking the lead on this and should have updates throughout 2025.

AGENDA ITEM 5
MEMBER COUNTRY OBSERVATIONAL UPDATES

Russia: no member attended this year

Japan: not presenting this year; postponed to 2025

China: no member attended this year

Korea (presented by Sung Yong Kim and Jae-Hyoung Park):
- Satellites - GOCI 1/II - high resolution remote sensing comparable to the European studies
- Tide Gauges (n= 48) and current and wave measurements (Buoys, n = 49, 71)
- HF RADAR
- 3 fixed ocean stations occupied with a platform (one of them registered in Ocean SITES)
- 378 coastal CTD stations along the coast - water properties
- GPS tracking drifters to characterize summer and winter - used to measure and calculate relative dispersion rates; characterize how dispersion compares to theoretical dispersion scales

United States (presented by Jack Barth and Alex Harper):
- CeNCOOS SCCOOS - both OOS's in California to southern Oregon border
- Time series from mooring - OAH - AH presented multiple climatologies
- "Toward the Nex Generation End-to-End Coastal Ocean Observing System"
- example: deploying relatively low coast web cams - wildlife imaging (seals), coastal erosion, etc.
- California Harmful Algal Bloom Early Warning System - used microscopy and IFCB's
- standardization of collections for biological indicators of OAH - coastwide ship-based work
- test bed for testing the effects of offshore wind energy harvesting

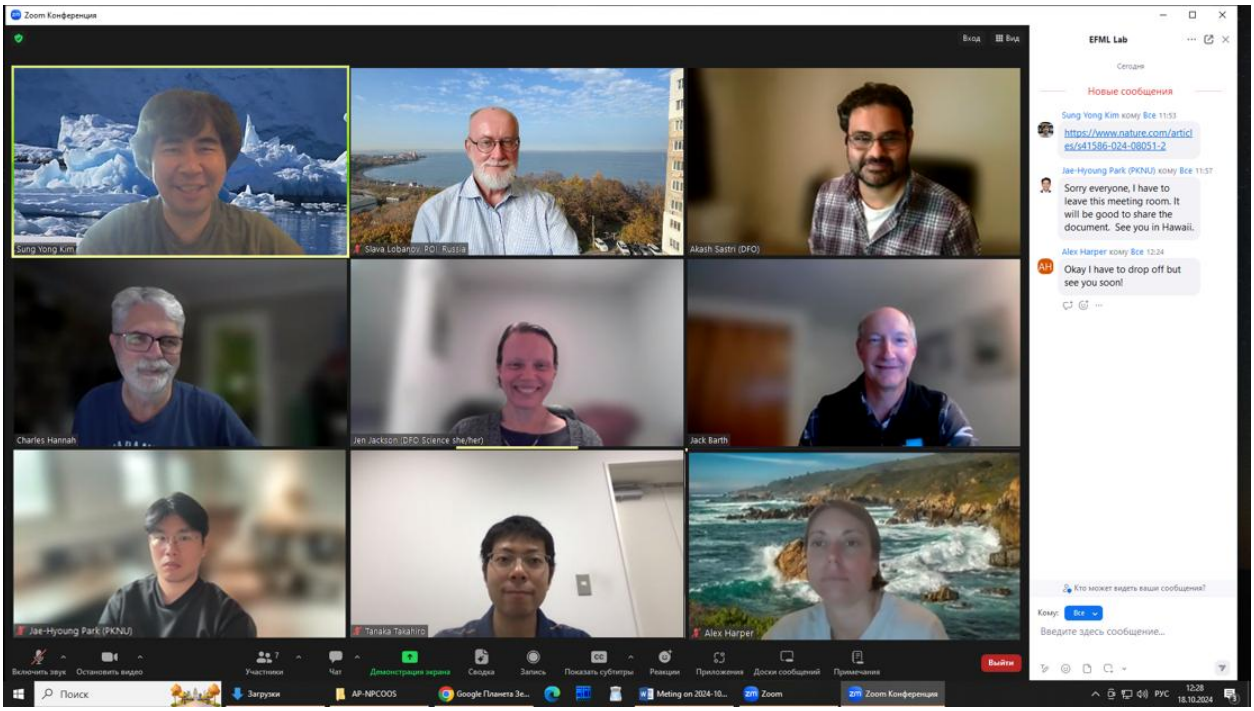
Canada (presented by Charles Hannah):
- We have a series of integrated monitoring programs less and "OOS"
- BC Shelf Mooring program; famous A1 mooring has been abandoned after multiple ship strikes moved to E1
- Marine Heatwave Cumulative Intensity
- E01 Mooring - evidence from lighthouse that coastal BC temp is increasing at 1ºC/century - no similar subsurface trend
- Hypoxia - well known on the SVI shelf - LB08
- Station CS09 demonstrates that hypoxia has become a recent but now routine observation for the northern shelf

AGENDA ITEM 6
LEADERSHIP

Dr. Jae-Hyoung (Korea) has taken the role of co-chair.

AP-NPCOOS Endnote 1

AP-NPCOOS participation list (both online on 18 October and in-person meeting on 26 October)



<u>Members</u>

Jennifer Jackson (Canada, Co-Chair)
Jae-Hyoung Park (Korea, Co-Chair)
Akash Sastri (Canada)
Charles Hannah (Canada)
Tanaka Takahiro (Japan)
Sung Yong Kim (Korea)
Jae-Hyoung Park (Korea)
Vyacheslav Lobanov (Russia)
Jack Barth (USA)
Alex Harper (USA)

<u>Members unable to attend</u>

China: Manchun Chen, Zhongsheng Lin, Lixin Qu, Chuanxi Xing, Xuelei Zhang
Japan: Dr. Hikaru Homma

AP-NPCOOS Endnote 2

Proposal for a Workshop on

"*An examination of shelf data collected by moorings and other fixed stations in the North Pacific Ocean*"

at PICES-2025

AP-NPCOOS workshop proposal for 2025

Title: An examination of shelf data collected by moorings and other fixed stations in the North Pacific Ocean.

Duration: 0.5 days

Co-conveners:

Jennifer Jackson, Canada, Jennifer.jackson@dfo-mpo.gc.ca.

Alex Harper, USA, aharper@mbari.org

Jack Barth, USA, jack.barth@oregonstate.edu

Charles Hannah, Canada, Charles.Hannah@dfo-mpo.gc.ca

Sung Yong Kim, Korea, syongkim@kaist.ac.kr

Jae-Hyoung Park, Korea, oceanjhpark@gmail.com

Workshop description:

Marine heatwaves (MHW) are becoming increasingly common in the North Pacific, fundamentally altering ecosystems and upending well-established climate indicators (i.e. ENSO, PDO). While the drivers of MHW and other extreme conditions (including ocean acidification and hypoxia) in the open ocean are relatively well-understood, little is known about how these extremes form or are advected in shelf and coastal waters. For example, subsurface MHWs can linger for several years in coastal waters after an open ocean event yet the causes of this persistence remain poorly understood. Near-shore climate signals are difficult to assess due to heterogenic variability and natural dynamics, including both regular (e.g. tidal) and synoptic (e.g. wind events, freshwater inflow) events impact the coastal waters. The dynamic nature of shelves result is waters that can rapidly modify over relatively short time scales. Mooring and other fixed station (e.g. shore stations, bottom-landers) data are collected at a high frequency, normally on the order of minutes to hours, so are an ideal way to examine processes that occur at most time scales. A discussion the 2024 AP-NPCOOS business meetings found that each PICES nation has collected mooring data on their shelves for at least the past 20 years. By examining these time series together, we could learn about the formation, advection, and dissipation of climate extremes in North Pacific shelf waters.

We propose a 0.5 day workshop at PICES 2025 that will focus on jointly examining the shelf mooring and fixed-site data collected from each PICES nation. It is anticipated that the first half of the workshop will focus on updates from each member country to complete an overview of available mooring shelf data with a focus on long (i.e. greater than 20 year) time series. The second half of the workshop will focus on methods to systematically examine the data with the focus on data products for publication.

PICES Expert Groups: TCODE, MONITOR