

## **Report of the Advisory Panel on *North Pacific Coastal Ocean Observing Systems***

The Advisory Panel on *North Pacific Coastal Ocean Observing Systems* (AP-NPCOOS) held its meeting from 0900–1500 h on September 24, 2017, in Vladivostok, Russia. Five AP-NPCOOS members and 6 observers were in attendance (*AP-NPCOOS Endnote 1*). The meeting was chaired by Dr. Sung Yong Kim.

### AGENDA ITEM 2

#### **Introduction of AP-NPCOOS members**

The meeting started with members and observers introducing themselves followed by Dr. Kim reviewing the AP-NPCOOS Terms of Reference and goals for the meeting, primary agenda (*AP-NPCOOS Endnote 2*), and plans for the upcoming year.

### AGENDA ITEM 3

#### **AP-NPCOOS Terms of Reference**

Dr. Kim noted that progress was already being made on one of the Terms of Reference, namely ToR#2: Convene workshops/sessions to engage those involved in coastal ocean observing systems from around the North Pacific.

### AGENDA ITEM 4

#### **Report from FUTURE SSC**

Dr. Vyacheslav Lobanov briefed AP-NPCOOS on the activities of the Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems (FUTURE) Scientific Steering Committee (SSC), of which he is a member. He reminded the Advisory Panel of FUTURE's three goals: 1) What determines an ecosystem's intrinsic resilience and vulnerability to natural and anthropogenic forcing? 2) How do ecosystems respond to natural and anthropogenic forcing, and how might they change in the future? 3) How do human activities affect coastal ecosystems and how are societies affected by changes in these ecosystems? Dr. Lobanov explained that we must all work to establish strong linkages among FUTURE, the FUTURE SSC and the existing PICES expert groups, of which AP-NPCOOS is one. In particular, he updated the role of AP-NPCOOS in the FUTURE conceptual diagram.

### AGENDA ITEM 5

#### **Update on Summer School 2018**

A plan of the AP-NPCOOS-hosted PICES Summer School on “*Coastal ocean observatory science*” was reported by Dr. S. Kim Juniper (see *AP-NPCOOS Endnote 3*).

### AGENDA ITEM 6

#### **Coastal Ocean Observing Systems in PICES member countries**

The coastal observing efforts of three member countries were reviewed in brief presentations by members of AP-NPCOOS.

*Canada* (Kim Juniper and Akash Sastri)

- Line P, Zooplankton time series (S. and N. Vancouver Island, Strait of Georgia, and Hecate Strait);
- Lighthouse, long-term mooring, and water buoys;
- VENUS and NEPTUNE for cabled network for onshore and offshore observations;
- Offshore and inshore water column profilers, ferry observations;
- Data format, ISO conventions, data delivery, and datum issues for sea level observations.

*Korea* (Sung Yong Kim and Jae-Hak Lee)

- Geostationary Ocean Color Imagery (hourly during the day and 0.5 km resolution) for red tide monitoring and spatial observations of chlorophyll;
- Buoys and Argo floats, tide gauges and coastal radar;
- Three marine platforms off the west coast of Korea;
- Observations of wave gliders and subsurface gliders.

*Japan* (Hide Yamazaki and Naoki Yoshie)

- Web-based data center including three major resources of ocean observations – Japan Oceanographic Data Center (JODC), Marine Information Clearing House (MICH), and Japan Meteorological Agency;
- Fisheries Research Agency – 100-year long time series of temperature; data regeneration using data assimilation technique; chapter Y (Japan Coastal area);
- Ocean acidification monitored at 10 sites since 1982;
- Seto Inland Sea – a most productive area on fisheries in a semi-enclosed coastal area with long-term monitoring of temperature, salinity, and nutrients.

A plan to document the efforts of individual countries under NP-APCOOS was proposed by Dr. Kim.

- **Contents:** a successful story of individual countries on coastal ocean observing system;
- **Targeting journals:** *Journal of Ocean Technology* or *Journal of Operational Oceanography*;
- **Tentative timelines:** journal template distribution (10/1/2017), abstract, a list of authors, and title due (11/1/2017), completion of paper writing (3/1/2018), Submission (4/1/2018);
- Members representing only four countries (Canada, Japan, Korea and USA) agreed with the plan.

After the summaries of PICES countries coastal ocean observing efforts, the AP-NPCOOS discussed plans to have a ½-day business meeting at PICES-2018 in Yokohama, Japan. Topic Session (S4) on “*Adverse impacts on coastal ocean ecosystems: How do we best measure, monitor, understand, and predict?*” was held September 28, 2017 at PICES-2017. Eleven presentations were given, including two invited talks. For a summary of S4 presentations see [Session and Workshop Summaries at PICES-2017](#).

AGENDA ITEM 7

**AP-NPCOOS issues and next steps**

*FUTURE and AP-NPCOOS*

The next discussion centered around how AP-NPCOOS fits into the FUTURE program. AP-NPCOOS can play a role in each of the three main FUTURE goals:

**Completed**

- Report from second meeting of AP-NPCOOS at PICES-2016 (San Diego, USA); short summaries of coastal ocean observing in each member country.

**Anticipated products**

- A set of publications focusing on the examples of success stories to fulfill the regional and national needs via coastal ocean observing system efforts and to share hands-on experiences.  
*Value: Develop and advise about best practices for coastal ocean observing systems*
- Host a summer school and report focused hands-on experiences on data quality control and quality assurance obtained from coastal ocean observing system.  
*Value: Convene a workshop to engage those involved in coastal ocean observing systems from around the North Pacific*

*AP-NPCOOS planned activities, outcomes and recommendations*

The next order of business was to agree on some AP-NPCOOS activities and desired outcomes for the following year.

**Recommendation:** Publications to collect unique stories regarding coastal ocean observing systems in individual countries and a summer school.

***AP-NPCOOS Endnote 1*****AP-NPCOOS participation list**Members

S. Kim Juniper (Canada)  
Sung Yong Kim (Korea, Co-Chair)  
Vyacheslav Lobanov (Russia)  
Akash Sastri (Canada)  
Naoki Yoshie (Japan)

Observers

Daisuke Hasegawa (Japan, POC, WG 38)  
Lian Peng (China)  
Sonia Batten (MONITOR)  
Lesley Anne MacDougall (Canada)  
Peter Chandler (Canada, TCODE Vice-Chair, WG 35 Co-Chair)  
Jim Christian (Canada, S-CC Co-Chair, POC)

Members unable to attend

Canada: Charles Hannah  
China: Manchun Chen, Zhongsheng Lin, Wenhai Lu, Yingze Sun, Chuanxi Xing  
Japan: Hidekatsu Yamazaki  
Korea: Jae-Hak Lee  
USA: Jack A. Barth

***AP-NPCOOS Endnote 2*****AP-NPCOOS meeting agenda\***

1. Introduction of AP-NPCOOS (Co-Chairs Barth and Kim)
2. Introduction of AP-NPCOOS members
3. Discussion of how to fulfill AP-NPCOOS Terms of Reference
4. Report from FUTURE SSC (Lobanov; TBD)
5. Update on Summer School 2018 (Kim Juniper or Akash Sastri)
6. Coastal Ocean Observing Systems in PICES member countries (members); (15-minute presentation each)
7. Discussion of AP-NPCOOS issues (publication) and next steps
8. End

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\* **Preparation materials in advance of AP-NPCOOS meeting**

**Request for materials in advance of AP-NPCOOS meeting. Due to Co-Chairs by September 15, 2017.**

- Please provide a map and list of updated coastal ocean observing assets for your country. This might include moorings, shore stations, ship-based measurements (especially cross-shelf sections), autonomous vehicles, cabled observatories, *etc.* Please include the list of sensors and variables that are being measured, and how frequently they are observed. We know this is a big effort, but ask that you do the best you can to provide an overview and as many details as possible. We can build on these maps and lists over time.
- Please provide a list, either from your country or ones you know of internationally, of “best practices” documents. These might include documents on sensor maintenance, calibration, quality control, data delivery, *etc.*
- Please provide a list of technical groups, meetings, workshops in each country that deal with coastal ocean observing and provide their contact information.

***AP-NPCOOS Endnote 3***

**PICES Summer School on “Coastal ocean observatory science” plan**

Title: Coastal Ocean Observatory Science

Proposed Dates: July 9–13, 2018 (Students arrive July 8)

Location: University of Victoria, Victoria, British Columbia, Canada

Principal Organizer: S. Kim Juniper (Ocean Networks Canada, University of Victoria)

School Coordinators: Akash Sastri, Dave Riddell, Maia Hoeberechts (Ocean Networks Canada, University of Victoria)

Steering/Selection Committee: S. Kim Juniper (AP\_NPCOOS, Canada), Sung Yong Kim (AP-NPCOOS, Korea), Naoki Yoshie (AP-NPCOOS, Japan), Chuanxi Xing (AP-NPCOOS, China), Maia Hoeberechts (ONC, Canada) Akash Sastri (AP-NPCOOS, BIO, Canada), Dave Riddell (ONC, Canada)

Contents of summer school:

- Lectures, fieldwork aboard a coastal research vessel, laboratory demonstrations of a variety of ocean sensors, and a ‘hands-on’ introduction to sensor calibration and data quality/data assurance techniques.
- Scope of the lectures, demonstrations and exercises will cover a range of sensors and sampling equipment used to measure physical, biological, chemical, and biogeochemical properties of the coastal ocean (the Salish Sea).
- Topics to be covered include: time series analyses, bio-acoustics, remote sensing, marine pollution, ocean acidification, coastal oceanography, and fisheries oceanography.

Potential Funding sources:

- The total estimated summer school cost depends on the number of students. We estimate \$46,000 for 35 students and \$36,000 for 25 students.

- We anticipate 3 sources of funding: a) PICES and international organizations (as below); b) local research/academic organizations solicited by ONC; and c) allocation of internal ONC funds (not exceeding 25% of total).

Resources requested from PICES:

- PICES support identifying partial funding contributions from international organizations (e.g., ICES, NPRB, SOLAS, SCOR, NOWPAP, IMBER, etc.).
- PICES hosting of web page for summer school information and updates and applications.
- PICES staff support for administration of web page and application processing.
- Tentative schedules for application: Application announcement (1/1/2018), application due (3/15/2018), selection decision made (4/1/2018), Invitees confirm participation (4/15/2018).

	SUN July 8	MON July 9	TUE July 10	WED July 11	THR July 12	FRI July 13
AM	Students arrive	Time Series: Dewey	Acoustics: Gauthier	SOVI: Costa CORI: Ross	Coast.Oceanog: Hannah/ Klymak/Pawlowicz	Biol.Ocean: Dower/ Perry?
Lunch	Students arrive	At IOS	At IOS	At Vancouver Aquarium	At UVic	At UVic
PM	Check-in/ Welcome dinner	MSV John Strickland /Oceans 2.0/Marine Technology Centre	MSV John Strickland/ Oceans 2.0/Marine Technology Centre	Queen of Oak Bay: Deep Bay Marine Field Station: Dudas/ Evans?	MSV John Strickland & VENUS data processing	Presentations
Dinner	Check-in/ Welcome dinner			Dinner at Deep Bay Marine Field Station	MSV John Strickland & VENUS data processing	Dinner/ Drinks/ Photo

Figure 1 Tentative schedules for the summer school

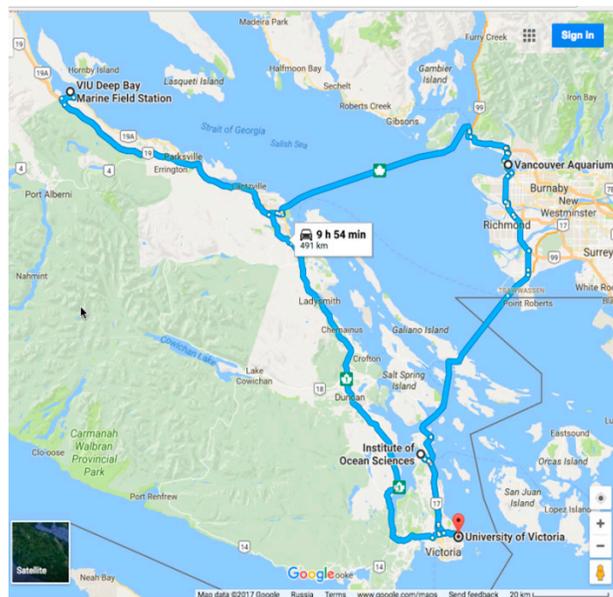


Figure 2 Tentative transit routes during the summer school.