Summary of COVE AP meeting

Date: 17 August 2010

Site: Lotte Hotel World, Seoul, PRK

Attendee: Hiroaki Saito (chair), Jacquelynne R. King (COVE AP), Toru Suzuki (COVE AP), Vyacheslav B. Lobanov (COVE AP), Emanuele Di Lorenzo (COVE AP, through WebEx video conf. system), Se-Jong Ju (WG23), Sinjae Yoo (Vice Chari of SB), Keyseok Choe (KORDI), Kwang Yul Kim (Seoul Nat. Univ.)

1. Review and discussion of COVE ToR and Proposed Workplan (Hiroaki Saito)

Hiroaki introduced the ToR and Working Plan of COVE, and explained the goal of the meeting of "selecting high priority issues of COVE" which were based on the reports from COVE-related ExGs

2. Detailed presentations from relevant Expert Groups (30 min each)

WG-20 on *Evaluations of Climate Change Projections* (Emanuele Di Lorenzo)

Additional report: Results of the RCM of National University of Seoul (Kwang Yul Kim)

WG-22 on *Iron Supply and its Impact on Biogeochemistry and Ecosystems in the North Pacific Ocean* (Hiroaki Saito)

WG-23 on *Comparative Ecology of Krill in Coastal and Oceanic Waters Around the Pacific Rim* (Se-Jong Ju)

Section on *Carbon and Climate* (Toru Suzuki)

Summary of the discussion:

Collaboration with CFAME did highlight that there was a mismatch between what the climate and ocean models can currently produce, and what biologists suggest are important physical forcing factors required for predicting species and ecosystem responses to climate change. Developing higher resolution regional climate model, one of the continuing activities of WG20, may fill the gap between physical oceanographer and biologists.

There were emerged (unexpected) forcings which were different from region to region:

- ✓ Hypoxia and acidification off Oregon by upwelling
- ✓ Hypoxia in the Peter the Great Bay is induced by eutrophication, due to excess fertilizer/increased agriculture
- ✓ SST increasing in the Sea of Japan will impact fisheries (pelagic fish, migrating fish, seaweed bed, etc).
- ✓ Increase in SST in the northern Bering Sea and Arctic Sea is faster than other

marginal seas and oceanic North Pacific, changing ecosystem structure and productivity.

- ✓ Natural and anthropogenic dust flux potentially change the ecosystem structure of HNLC. Ocean acidification is estimated to influence iron chemistry in sea water.

3. Discussion of how existing Expert Groups are meeting/not meeting/could meet COVE-AP priorities/ revising ToR if needed

WG20 and WG22 will terminate in this year, not need to revise ToR.

The ToR WG23 is well fit to COVE-AP priorities (see Discussion 4).

The ToR of CC-S was revised in 2007 to include ocean acidification, which fit well to the COVE-AP priorities (see Discussion 4). The COVE-AP encourages CC-S to complete/publish following planning activities of CC-S in 2010-2015, which is to be the basic data and information to carry out the COVE related sciences and to develop models:

PACIFICA data synthesis (including data set of C and nutrients in high seas)

PACIFICA_MarginalSeas (C and nutrients of shallow waters)

Document and archive historical pH data

4. Identify potential for new Expert Groups to address COVE-AP priorities

COVE-AP selected high priority topics to be considered to develop following working groups.

4.1. Mechanism of North Pacific Climate Variability

This WG would provide the physical basis and conceptual frameworks for other working groups that are focused more on ecosystem dynamics. The task of this working group would be to develop simplified understanding of North Pacific climate variability and change, which could be used to better guide the formulation of process-based hypotheses of the links between ecosystem dynamics and physical climate.

1) developing simplified understanding (or developing conecptual frameworks) of North Pacific Climate variability that can be readily used by the ecosystem scientist to guide them in formulating process-based hypotheses of the links between ecosystem dynamics and physical climate.

2) providing metrics to test the dynamics of the IPCC models.

3) filling the gap between what the climate and ocean models can currently produce and what biologists suggest are important physical forcing factors required for predicting species and ecosystem responses to climate change

The ToR of this working group is, of course, still premature and should be modified

before the official proposal. National/International projects such as POBEX, US CAMEO project, Japanese Hot Spot in the Climate System, POMAL, CREAMS EAST-I, etc., are potential projects to implement the new WG sciences.

4.2. Ecosystem responses to multiple stressors: Process and modeling studies.

Marine ecosystems of the North Pacific are impacted by recently emerged stressors, such as increase in temperature, change in iron supply (and chemistry under decreasing pH), hypoxia/eutrophication, ocean acidification, and are changing their structure and dynamics. The emerged stressor are variable by regions. The topic is a comparative study of the North Pacific ecosystem responses to natural or anthropogenic forcing, and available to answer the key themes of (1) and (2).

This topic can include emerging issues from WG22 (iron chemistry in low pH ocean, anthropogenic dust flux) and WG23 (hypoxia impact on euphausiids). CC-S products of PACIFICA, PACIFICA-MarginalSeas, and the data set of pH are useful to carry out the sciences related to the topic.

The region of this WG study is largely overlapped with one of AICE. COVE AP recommends to develop this WG with close communication with AICE.

5. Discussion of COVE implementation (tools, indicators, timelines, *etc*.)

Tools could include providing suggested workshops, session topics, summer school training courses, or membership to non-PICES conferences. These tools can be included in our Working Plan as examples of ‘activities’. COVE will communicate by e-mail the suggested priority topics that we wish to advise the PICES community and Committees for their consideration in proposing workshops or topic sessions.