Joint Session POS-PSMI – TPOS2020

• present observational system was designed in the 1980’s. Must consider the needs decades from now (applies for observations, data assimilation, forecasting, and modeling needs)

• heard examples of how reanalysis estimates are affected, how one process study relies on the space/time context of the existing TPOS, and how ENSO precursors span many time/space scales

• TPOS2020 aims to formulate recommendations by summer 2016

→ Input to TPOS2020 effort needed during 2015

PSMI Action items:

• Facilitate engagement with modeling centers in TPOS2020

• Recommend data assimilation experiments in support of TPOS2020 with a view of future needs
Evaluating New Mode for Process Study Feedback

Discuss sample PS: Pros/Cons from new feedback mode (webinar vs in-person)

➔ Webinars are preferred because they leave time for discussion at the summit

• Importance of dedicated data management PI & data archiving infrastructure to facilitate sharing, data available in different levels of processing

• PSMI recommends consideration of modeler involvement from early on

Discussion: Feedback template

• PSMI feedback can include “match making” between process study and modeling

• PSMI should aim to include diverse representation from process study teams, modeling centers, and scientists engaged in data assimilation, diagnostic and sensitivity analysis

PSMI Action items:

• Finalize guidelines to PS presenters & for feedback from panelists

• Include relevant modeling interaction and data management as part of feedback to process studies

• Schedule 8-10 webinars over next ~6 months (1.5h each month for two presentations); POS participation for relevant process studies
Implementing Process Understanding in Models

2 talks by Jin Huang on NCEP modeling suite and R2O transitions
- NCEP modeling suite: “seamless”, modular
- NOAA Climate Test Bed: goal is to accelerate R2O transition, main focus is to improve CFS model. 5 projects supported at the moment:
  - 2 new calls in 2016: data assimilation and sea ice
  - one of biggest challenge is access by community researchers to operational code

Overview of feedback from process study survey (cf. upcoming workshop)

Discussion:
How to integrate modeling component into process studies not directly linked to parameterization improvement? (phenomena studies, e.g. DYNAMO)

PSMI Action items:
- Get feedback from previous process study PIs on what was beneficial for modeling/observation integration
- Share process study reports with operational/modeling centers; ask modeling centers for regular update on interest in process study topics
- Sharing of survey results with community (e.g. workshop summary for IAG, white paper for broader community)
Joint Session PSMI-PPAI – Quantifying uncertainty in predictions

- Presentation by Arun Kumar on quantifying uncertainties and improvements in prediction
- Presentation by Steve Penny on ocean predictability, research needs, gaps, and recent advances
- Presentation by Xin-Zhong Liang on problems with predictability of extremes when using Gaussian statistics

→ Need to develop appropriate metrics for defining & communicating uncertainty/biases; current representation of uncertainty is not sufficient
Discussions of Special Science Sessions

Key questions:
• How can process studies facilitate improvements of ENSO modeling?

• Given that ENSO is a *phenomenon* built on many diverse *processes* (*i.e.*, across spatiotemporal scales). What can US CLIVAR do to facilitate by *e.g.*, coordination between modelers and observationalists/process studies?

• How can US CLIVAR best participate in the dialogue to inform the public on long-term global warming and interruptions such as the hiatus?

PSMI Action items:
• encourage more interaction between physical and ecosystem scientists, esp. in context of process studies, possibly using ENSO as a natural laboratory
• US CLIVAR to provide a concise summary of Hiatus discussion (cf. Summit Special science session & recent issue of *Variations*) for scientists (*e.g.*, bulleted list of points from Hiatus session)
Discussion of Gaps in Existing Process Studies

Overview of gaps in process studies from survey:
• Facilitating closing gaps in existing process studies/identify up and coming critical process studies in the community
• Coastal oceans/marginal seas an important gap to fill (impact of coastal/marginal seas on large-scale)
• Engaging with other panels

US CLIVAR Science plan discussion:
• Addressed 4 research challenges
  • identified mismatch of current process studies with some of the research challenges (e.g., should BGC be part of process studies; polar climates)
  • how can PSMIP contribute to extremes challenge and model improvement?

PSMI Action items:
• Prepare a summary of surveys results before the CPT workshop - so that it can initiate discussions
• Facilitate organization of science workshops for scientists to come together and address these gaps