

# 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