



2015 US CLIVAR Summit Meeting Objectives and Outcomes

Bob Weller, SSC Chair

Meeting Objectives

The Panels at this meeting will consider **near-term implementation priorities** to make tangible progress in addressing new science goals over the next year.

- Provide Context – Update on US and International programs and plans
- Plan Implementation – Identify action items to advance new Science Plan goals and research challenges
- Conduct Panel Business – Review progress and identify gaps and opportunities
- Engage Cross-Panel Interaction – Foster dialogue among panels on topics of common interest
- Hold Special Science Sessions – Engage discussion of timely research topics:
 - ENSO Monitoring, Analysis, and Prediction Challenges
 - Understanding the Earth's Climate Warming Hiatus

Program Context

- ◆ Late 2013 – Issued new Science Plan
 - ◆ Mid 2014 – Convened Summit to engage panel discussion of implementation
 - ◆ Early 2015 – Awarded 5-year renewal for US CLIVAR Project Office to support SSC, Panels, and activities
 - Continue US AMOC through 2012 and wrap-up 5 existing WGs this year
 - Start new WG on Arctic-Midlatitude Interactions
 - Fund workshops/conferences
 - Towards a holistic picture of the AMOC via observation, modeling, and synthesis
 - Translating process understanding to improve climate models
 - Observing and modeling climate variability in the Intra-Americas Seas
 - Connecting paleo and modern oceanographic data to understand AMOC over decades to centuries
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- Evolution of ENSO in climate models: ENSO in a changing climate
 - Energy flow through the climate system
 - Southern Ocean air-sea fluxes
 - Salinity and freshwater changes in the ocean
- ◆ Forward – Implementation of Science Plan goals, strategies, and challenges
 - Within capped budget, no new Science Teams, up to one new WG start
 - Importance of prioritization
 - Additional mechanisms (e.g., sessions at annual conferences) to make progress



Program Synthesis and Integration

Are we doing the most with the effort of the many investigators and the Panels that we can?

- to justify, support, sustain, and grow the approach that US CLIVAR has advocated - the mix of process studies, sustained observing, model development, modeling, prediction, and applications

And are we doing it with enough visibility and impact?

- to facilitate the efforts of the agencies and program managers to develop, sustain, and grow the support for this work

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There is a lot going on providing additional context for our work to plan, organize, and advocate for US CLIVAR.

- The National Research Council issued their **Decadal Survey of Ocean Sciences** report (May release)
- The NRC is also engaged in **reports prioritizing Southern Ocean and Antarctic research (August release), Subseasonal-to-Seasonal Forecasting (2016 release), Frontiers in Decadal Climate Variability, and Extreme Weather Events and Climate Change Attribution.**
- The international community is engaged in **sustained observing** have been reviewing **the tropical Pacific observing system**, adding **time series sites**, and continuing activities such as **GOSHIP, Argo, and surface drifters.**
- In Europe, the large new European project to evaluate and assess ocean observing in the Atlantic and develop links to societal benefits, **AtlantOS**, kicked off in May 2016.
- New high-latitude projects such as **Overturning in the Subpolar North Atlantic Program (OSNAP) and Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM)** are underway.
- The National Science Foundation infrastructure project, the **Ocean Observatories Initiative (OOI)**, is now fully deployed.
- **Planning for CMIP6 experiments** is proceeding at a rapid pace.

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Is US CLIVAR:

- making sure or encouraging the **full use of sustained observing assets**?
- sufficiently encouraging analyses that **synthesize diverse observations** to document that state and variability of the ocean?
- achieving balance within portfolio on **discovery vs. assessments/applications**; how well are information needs driving physical science questions? How is science helpful to decision makers?
- How can panels be more proactive with community: **organizing special sessions** at national and international meetings? and/or **special issues and collections of papers** in journals? guiding the **organization and dissemination of results**?

Plenary Agenda

Tuesday, August 4

08:00	Welcome, introductions, objectives & outcomes	Bob Weller
08:15	Updates on research challenges	Mike Patterson
08:45	International CLIVAR	Detlef Stammer
09:45	Science Session: ENSO Monitoring, Analysis, & Prediction	Arun Kumar, Yan Xue, & Bruce Anderson
	ENSO Theory & Predictability	Mike McPhaden
	Building the Bridge between ENSO Theories & Operational Prediction	Ben Kirtman
	ENSO Precursors & Building an Operational ENSO Monitoring System	Bruce Anderson
01:30	Agency manager engagement	Agency Managers
02:00	Panel breakouts	
05:30	Working Dinner & Science Session: Warming Hiatus	Janet Sprintall & Dimitris Menemenlis
	Lack of Evidence for a Slowdown in Global Temperature	John Abraham
	Pacific Causes	Shang-Ping Xie
	Deep Ocean Warming	Sarah Purkey
	Atlantic/Southern Ocean Perspective	KK Tung

Thursday, August 6

08:00	Panel breakouts continue	
10:20	Breakout reports	Panel Co-chairs
11:20	Conclusions and Next Steps	Sonya Legg
11:45	Ajourn	

Panel Breakouts (Tues pm-Thurs am)

Phenomena, Observations, and Synthesis (POS)

- Sustaining Ocean Observing Systems
- Syntheses of Climate Parameters
- Understanding of Climate Variations and Impacts
- Panel Business

Process Study and Model Improvement (PSMI)

- Evaluation of New Reporting Mode (Process Studies & CPTs)
- Implementation Process Understanding in Models
- Discussion Arising from Science Sessions – ENSO, Warming Hiatus, Process Study Contributions
- Panel Business

Predictability, Predictions, and Applications Interface (PPAI)

- Panel Business
- Systems Sensitive to Decadal Variations
- Climate & Extreme Events: Dynamics and Predictability
- Applications Interface

Joint Panel Sessions

POS and PSMI: Tropical Pacific Observing System (TPOS 2020)

- Overview of TPOS 2020
- Salinity Processes in the Upper Ocean Regional Study (SPURS-2)
- Evaluating TPOS Using OSEs
- Perspectives of ENSO Diversity

PSMI and PPAI: Quantifying Improvements in Predictions/Projections

- Presentations
- Discussion

PPAI and POS: Predictability of Coastal Shelf Systems, Including Ecosystems

- Presentations
- Discussion

Anticipated Outcomes

- Identification of near-term panel priorities to address program goals and research challenges, including specific recommendations and action items regarding:
 - Observing and analyses systems, climate variations and impacts, process study feedback, implementing process understanding in models, predictability and prediction studies across timescales, and connecting prediction and communicating climate information activities
 - Implementation activities – Working Groups (only one possible new start), workshops, and panel-led sessions to organize community on emerging topics, esp. to address research challenges
- Recommendations to address the challenges in observing, understanding, and forecasting ENSO
- Recommendations to address the challenges to define the hiatus and to differentiate and assess its underlying mechanisms and predictability
- Identification of strategies for evaluating observing system needs, quantifying uncertainties in predictions, and linking to coastal and ecosystem impacts

Thank You

