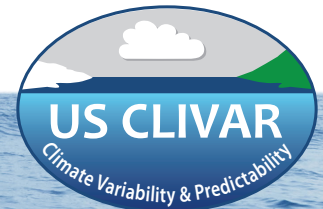


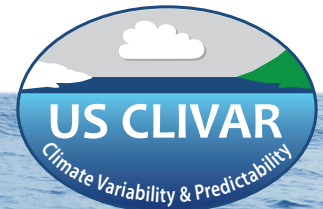
Charge to Panel Breakouts

Bob Weller



Panel Business

- Advise US CLIVAR on research priorities, identify research gaps, and **develop suitable milestones** to promote funding opportunities.

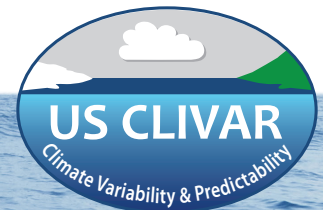


Panel Business

- Advise US CLIVAR on research priorities, identify research gaps, and develop suitable milestones to promote funding opportunities.
- Develop and encourage **implementation activities** to further develop and implement US CLIVAR **goals and research challenges**.
 - Community workshops
 - Working Groups
 - Commissioned studies
 - Training opportunities (e.g., NCAR ASP Colloquium)

Panel Business

- Advise US CLIVAR on research priorities, identify research gaps, and develop suitable milestones to promote funding opportunities.
- Develop and encourage implementation activities to further develop and implement US CLIVAR goals and research challenges.
- Advise on the **adequacy and effectiveness** of Working Group and Science Team plans and implementation.



Panel Business

- Advise US CLIVAR on research priorities, identify research gaps, and develop suitable milestones to promote funding opportunities.
- Develop and encourage implementation activities to further develop and implement US CLIVAR goals and research challenges.
- Advise on the adequacy and effectiveness of Working Group and Science Team plans and implementation.
- **Liaise with other US CLIVAR Panels** to ensure relevant needs are considered in their efforts.
 - Through Cross-Panel Sessions

Panel Business

- Advise US CLIVAR on research priorities, identify research gaps, and develop suitable milestones to promote funding opportunities.
- Develop and encourage implementation activities to further develop and implement US CLIVAR goals and research challenges.
- Advise on the adequacy and effectiveness of Working Group and Science Team plans and implementation.
- Liaise with other US CLIVAR Panels to ensure relevant needs are considered in their efforts.
- Consider necessary **coordination with other national and international activities** to develop integrated, efficient, and effective plans.

Panel Business

- Advise US CLIVAR on research priorities, identify research gaps, and develop suitable milestones to promote funding opportunities.
- Develop and encourage implementation activities to further develop and implement US CLIVAR goals and research challenges.
- Advise on the adequacy and effectiveness of Working Group and Science Team plans and implementation.
- Liaise with other US CLIVAR Panels to ensure relevant needs are considered in their efforts.
- Consider necessary coordination with other national and international activities to develop integrated, efficient, and effective plans.
- Generate a list of accomplishments and **progress over the past year, action items for the Panel, and set of recommendations** for SSC and Funding agency consideration.

Cross-cutting Strategies

POS Panel

PSMI Panel

PPAI Panel

| Cross-Cutting Strategies⇒ Goals ↓ | POS Panel | | | PPAI Panel | |
|---|---|--|---|--|--|
| | Sustained and new observations | Process studies | Model development strategies | Quantifying improvement in predictions and projections | Communication of climate information |
| Understand the role of the oceans in observed climate variability on different timescales | Document variations | Data to evaluate and improve models | Improve modeling of climate across processes and timescales | Understand limits of climate predictability | Prioritize observing network and predictability studies and improve predictions of ocean and climate variability |
| Understand the processes that contribute to climate variability and change in the past, present, and future | Document climate-critical processes | Investigate processes to help explain variations | Property conserving climate reanalyses | Quantifying importance of model uncertainty in projections | Set priorities for observations and predictability studies; communicate about confidence and predictability |
| Better quantify uncertainties in the observations, simulations, predictions, and projections of climate | Initialize and evaluate model simulations | Model assessment | Improve models | Quantify model, intrinsic and scenario errors | Address needs for predictability and sensitivity studies |
| Improve the development and evaluation of climate simulations and predictions | Initialize and evaluate climate models | Provide data to develop and test model process representation | Reduce biases in climate models | Quantify importance of model physics errors | Determine key targets for model development across communities |
| Collaborate with research and operational communities that develop and use climate information | Provide multi-disciplinary datasets | Provide process understanding and opportunity for collaboration across disciplines | Communication between observational and model communities | Improved communication across disciplinary boundaries | Provide information on dominant climate phenomena and predictability |

POS Panel: Sustained & New Observations

Advocate and leverage long-term climate monitoring strategies to better document, understand, model and predict climate variability.

- Call for continued support to **sustain ongoing collection of key or essential climate variables** at key locations, consistent with Global Climate Observing System (GCOS) goals and the OceanObs'09 call to action
- Encourage **extension of recently acquired capabilities** to measure processes of climate variability
- Work with other scientific communities to build the next generation of climate observations **spanning traditional disciplinary boundaries**
- Identify and call attention to climatically important but **currently undersampled regions**
- Contribute to the development of **new and sustained deep-ocean observations** by highlighting where deep-ocean data gaps exist – in conjunction with the US Global Ocean and Carbon and Repeat Hydrography Program
- Advocate a specific focus on polar ocean observational data gaps and how they can be mitigated with the development, deployment, and coordination of additional **high latitude ocean observing systems**

PMSI Panel: Process Studies

Promote process studies to gain a quantitative understanding of the mechanisms controlling climate variability and change, and to provide observational data to evaluate and improve models

- *Ensure that data and process-level understanding gained from process studies is optimally used to **benefit climate model evaluation and development and to inform the design of sustained climate observing systems***
- *Foster **coordination and collaboration across disciplines** for process study design, e.g., through communication with climate-relevant chemical and biological communities*
- *Ensure that the **climate model development community** is closely **involved in the early stages of process study design** to ensure that the data to be collected will maximally benefit model improvement and parameterization development*
- *Ensure that the community takes full advantage of **new facilities** (e.g., NSF OOI and DoE mobile ARM) by integrating them into the design of climate phenomena studies*
- *Develop strategies for using ensembles of eddy-resolving ocean simulations and cloud-resolving regional simulations to **optimize the use of observational platforms** to collect data in process studies and to maximize the use of coordination with the global land-based and satellite observing system*

PSMI Panel: Model Development Strategies

Improve climate models, their representation of processes, data assimilation approaches, and evaluation.

- Foster **better communication and practices** between model development and observational communities
- Encourage using **novel model strategies** such as coupled modeling and modeling with hierarchies of models of differing complexity
- Oversee progress and facilitate interagency collaboration for support of **Climate Process Teams** designed to speed development of climate models by bringing together model development specialists with observationalists and process modelers to focus on the most critical model deficiencies
- Play an increasing role in strengthening **connections between the climate and weather** model communities, emphasizing the sharing of conventions for data storage, assimilation systems, and model development and evaluation protocols
- Aid in the cross-communication of the **design of idealized simulations** so that observations and the scientists who collect them have an opportunity to contribute to the discussion about whether idealized models are being used in the correct regime
- Promote use of **empirical and statistical modeling** for prediction, evaluation of physical models, identifying and understanding key processes, and help quantify uncertainty and predictability

PPAI Panel: Quantifying Improvements in Predictions & Projections

Develop and employ techniques to critically assess improvements in predictions and projects in order to build the confidence of users and to identify the most likely targets for future improvements.

- Understand **intraseasonal-to-interannual forecast quality** and the **limits of prediction skill**
- Promote activities to identify and exploit **decadal** predictability, establishing a **prediction skill baseline**
- Promote **hindcast simulation experiments** and their analysis to assess how climate model predictions and projections are improving
- Employ a combination of **deterministic and probabilistic metrics** to assess hindcast simulations
- Assess whether a **model's ensemble spread** is an appropriate representation of forecast uncertainty
- Establish **statistical modeling benchmarks**, facilitating community involvement to determine optimal statistical models, common data formats, and appropriate model experiment design
- Employ rigorous **testing of models against observational data**, quantifying model biases and errors, assimilation system problems, and observational deficiencies responsible for the drifts and implement better parameterizations to suppress modeled climate drifts

PPAI Panel: Communication of Climate Information

Apply fundamental lessons from research on climate to facilitate knowledge transfer between the various scientific communities that generate and use information on climate variability and change.

- *Foster connections with **other scientific communities**, bridging disciplinary boundaries*
- *Improve **practices of model documentation and comparable quantitative evaluation** to promote understanding, engagement, and exploitation of models*
- *Actively seek out and support **forums for dialogue**, such as needs-assessment workshops, forecast use and evaluation, and developing communities of practice*
- *Partner with **science communities and boundary organizations** that study and convey climate information to end users*
- *Provide **information on uncertainties** necessary for climate service agencies to communicate with end users to address their risk tolerances and competition with other factors shaping their decision context*
- *Improve the communication and flow of information essential to build capacity to improve end users' comprehension of **distinctions between climate variability, anthropogenic forcing, and evolution of the current state of climate***

PPAI Science Strategies and Challenges

Develop and employ techniques to critically assess improvements in predictions and projects in order to build the confidence of users and to identify the most likely targets for future improvements

Apply fundamental lessons from research on climate to facilitate knowledge transfer between the various scientific communities that generate and use information on climate variability and change

- **Climate Extremes Grand Challenge**
 - Understand **intraseasonal-to-interannual forecast quality** and the **limits of prediction skill**
 - *E.g.* Drought prediction and assessment of skill and its limits
- **Decadal Variability and Predictability Grand Challenge**
 - Promote activities to identify and **exploit decadal predictability**, establishing a **prediction skill baseline**
 - *E.g.* Influence of slowly-evolving base state on ENSO variance, structure, predictability, and impacts
- **Climate and Marine Biogeochemistry Grand Challenge**
 - Develop a better understanding of the **interplay between climate and the biological properties** of the world's ocean
 - *E.g.* Influence of climate variability on marine ecosystems, derived goods and services, and their management