

Cross-cutting Strategies Intersection with Goals

Cross-cutting Strategies	<i>Sustained and new observations</i>	<i>Process studies</i>	<i>Model development strategies</i>	PPAI Panel	
				<i>Quantifying improvement in predictions and projections</i>	<i>Communication of climate information</i>
Goals					
<i>Understand the role of the oceans in climate variability on different timescales</i>	Document variations	Collect & provide data to evaluate and improve models	Improve climate models across processes and timescales	Understand limits of climate predictability	Prioritize observing network and predictability studies
<i>Understand the processes that contribute to climate change and variability in the past, present and future</i>	Document climate-critical processes	Investigate processes to help explain variations	Property conserving climate reanalyses	Quantify importance of model uncertainty in projections	Set priorities for observations and predictability studies
<i>Better quantify uncertainties in the simulations and projections of climate</i>	Evaluate model simulations	Validate model representation of relevant observed processes	Improve models	Quantify model, structural and scenario errors	Address needs for predictability and sensitivity studies
<i>Improve the development and evaluation of climate simulations</i>	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
<i>Collaborate with research communities that develop and use climate information</i>	Provide multi-disciplinary datasets	Provide process understanding and opportunity for collaboration across disciplines	Strengthen communication between observational and model communities	Improve communication across disciplinary boundaries	Provide information on dominant climate phenomena and predictability

Session 1: Systems Sensitive to Decadal Variations

Panel feedback on and consideration of action items for:

- **Identify and prioritize strategies that aid in “Quantifying improvements in predictions” [Cross Cutting Strategy 4 (CCS4)] and “Communication of Climate Information” [CCS5] through the Assessment of Decadal Sensitivity of Coupled Natural/Human Systems**
 - **In many disciplines a standard use of climate information is to take previously-determined climate “modes” of variability and test their impacts on a given system; in this regard the climate system is a black box that generates patterns to be used as input for system sensitivity tests**
 - **Predictability studies in climate science often focus on patterns inherent within the physical system, with little regard as to their impacts; in this case, the impacts—i.e. changes in the mean state of an affected system—are not treated as a variation of the climate itself in the same way that changes in temperature or precipitation are**
 - **We suggest that climate impact assessment will be improved with an end-to-end approach where neither the climate predictability problem nor the systems sensitivity problem is treated in isolation**

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Panel feedback on and consideration of action items for:

- **Identify and prioritize strategies that aid in “Quantifying improvements in predictions” [Cross Cutting Strategy 4 (CCS4)] and “Communication of Climate Information” [CCS5] through the Assessment of Decadal Sensitivity of Coupled Natural/Human Systems**
- **The main goals of these strategies are the following**
 - **Determine what climate impacts on natural and human systems are most sensitive to decadal scale variability**
 - **Identify, evaluate and develop improved climate-prediction metrics (including those related to probabilities/uncertainties) for applications-based use**
 - **Provide/solicit guidance on methods to assess conditional skill of decadal climate-impact predictions and the release, dissemination, and use of “outlooks of opportunity”**
- **We will start by providing insights on some aspects of these issues. However, we are tasked principally with developing strategies and “implementation approaches” (i.e. tactics) for achieving the goals listed here**

Implementation Approaches

Panel and cross-panel feedback on and consideration of action items for:

- **Working Groups**
 - New WGs starting in 2015; no new WGs in 2014
- **Science Teams**
 - Additional Science Team recommendations for IAG consideration?
- **Climate/Application Process Teams**
 - New CPTs possibly to be solicited in 2014
- **Science Meetings/Workshops**
- **Agency-supported Research Calls** to implement coordinated observation and data projects; field campaign and process research; modeling, prediction and applications projects
- Opportunities for **Students, Postdocs, and Early-career Scientists**
- **Wiki and Collaboration websites; Collaboratories; Other???**

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- **We hypothesize that climate impact assessment will be improved with an end-to-end approach where neither the climate predictability problem nor the systems sensitivity problem is treated in isolation**
- **Potential Research Activities:**
 - **Quantify the robustness and sensitivity of sectoral, regional and aggregate system-specific impacts at discrete time-scales**
 - **Isolate frequencies of multi-scale climate variability and climate change to which a particular system is highly sensitive**
 - **Quantify the (conditional) predictability and uncertainty of "resonant" climate drivers and system responses at highly-sensitive time-scales**
 - **Assess the sectoral, regional, and aggregate implications of system-specific climate predictions**