

2017 US CLIVAR Summit

PPAI overview

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PPAI Overview

Recap

- With PSMIP
 - Teleconnections
 - Scarcity of observations
 - We lack a good handle on the energy transfer in the boundary layer
 - Case studies are effective for communication and resolving specific responses
 - Climate model representation of meridional modes
 - How to mix probabilistic and deterministic models
 - Uncertainty quantification
 - Decadal variability
 - Salience, credibility, legitimacy, compatibility, contextual acceptability

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Recap

- With POS: sea level rise
 - Our ability to close the budget is improving, but uncertainties still remain
 - Define the connection between mean sea level state and local changes; extremes
 - Application
 - Gaps in the observing system – the global mean is quite a blunt instrument
 - **Global vs. regional**
- CMIP6 Horizon
 - VIACS - Great model for bridging the gap
 - CMIP5 was learning the “dos and don’ts”
 - There’s a MIP for that

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Recap

- S2S and S2S extremes
 - Current activities
 - S2S Task Force: 14 funded projects, focused on approaches to S2S prediction and evaluating and improving models
 - UGCS development: coupling more often improves predictions
 - Predictability/risk extremes
 - Need to assess the role of noise in extremes, e.g. west coast precip during 2015/16
 - Clustering of extremes
 - Predictability of horizontal water vapor transport (e.g. atmospheric rivers)
 - Climate-ocean linkage with fisheries and marine ecosystems
 - Climate/weather is complex, but there are many first-order relationships with basic climate variables
 - Integrate regional simulations and global system to understand predictability (e.g. Northeastern fishery region)

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Major Observations

- There is a lot of room for improvement in precipitation forecast skill, and there is enormous demand for improved precip forecasts.
- Applications are extremely diverse. Needs from stakeholders cannot be known *a priori* without discussion / conversation. So, a collaborative / adaptive approach is beneficial for the Applications interface; interface with applications must be ongoing
 - Marine Ecosystems, sea level, and extremes
- There are differing opinions of "downscaling" between climate modeling and application communities.
 - Applications – downscaling is an essential tool for applications community
 - Processes – resolving / diagnosing regional processes can inform modeling communities

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More observations

- The West Coast 2015-16 precipitation forecast was a bust from the user perspective
- Teleconnections in the atmosphere include a wide range of uncertainty (e.g. LENS, CMIPs, etc.).
- The internal variability in teleconnections (strength, structure) is large, and better understanding / appreciation of the signal-to-noise of climate change impacts on teleconnections is needed
- Climate change impacts
- Direct climate change impacts (e.g. sea ice, sea level) may be more useful for applications communities than “chain of event” impacts (e.g. teleconnections to circulation to extreme events)
- We talk about what we should be doing – but we should also talk about what we shouldn't be doing (e.g. burden of so many MIPs)

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Next Steps

- PPAI Telecon in the next month to discuss possible future actions
- Possible workshop ideas:
 - Assessing regional climate processes. Combining statistical and dynamical downscaling communities. Focus on what we can learn about the physical climate system from combining these events.
 - How to improve precipitation prediction
- Variations paper on uncertainty and applications
- Discussion – what should these models be used for, and how? Perhaps article in Variations, BAMS? Fold in uncertainty to this.