2017 US CLIVAR Summit
PPAI overview

Emily, (Simon)
With major assist from Dan Vimont
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
PPAI Overview

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
PPAI Overview

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)
PPAI Overview

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
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)
PPAI Overview

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.