

Assessment of CLIVAR science for applications

- Interest in an “Applications Process Team,” or other targetted applications activities, in particular
 - collaborating with the research and operational communities that may use this knowledge for managing climate risks
- But -- need to know what science knowledge has come out of US CLIVAR to know what the opportunities are
 - “Assessment” of CLIVAR science at various stages of readiness
- “Applications” defined broadly – a continuum from next stages of research to operations (R2O)
 - Working list of these stages
- Note – readiness on the intermediaries side too – see Ray and Webb 2015 in Parris et al, 2015, “Climate in Context,” book on lessons learned from the RISA program, volume forthcoming this fall/winter from Wiley

Continuum of readiness of science for applications

Concept we're using to organize this assessment

- 1) Scientific understanding advanced to a readiness for the next research steps aimed at predictable signals
- 2) Application of understanding of climate phenomena in collaboration with a boundary organization to understand how predictable signals may be translated into useable products
 - 1) NOAA RISAs, DOI Climate Science Centers, USDA Climate Hubs
- 3) Use of knowledge in risk framing for a decision process, or in a science synthesis
 - 1) the National Climate Assessment, ESA (pika, wolverine, polar bear), NEPA/EIS ("Appendix U")
- 4) Transitioning science knowledge into operational products (e.g. R2O), such as intraseasonal climate prediction.

Strategies

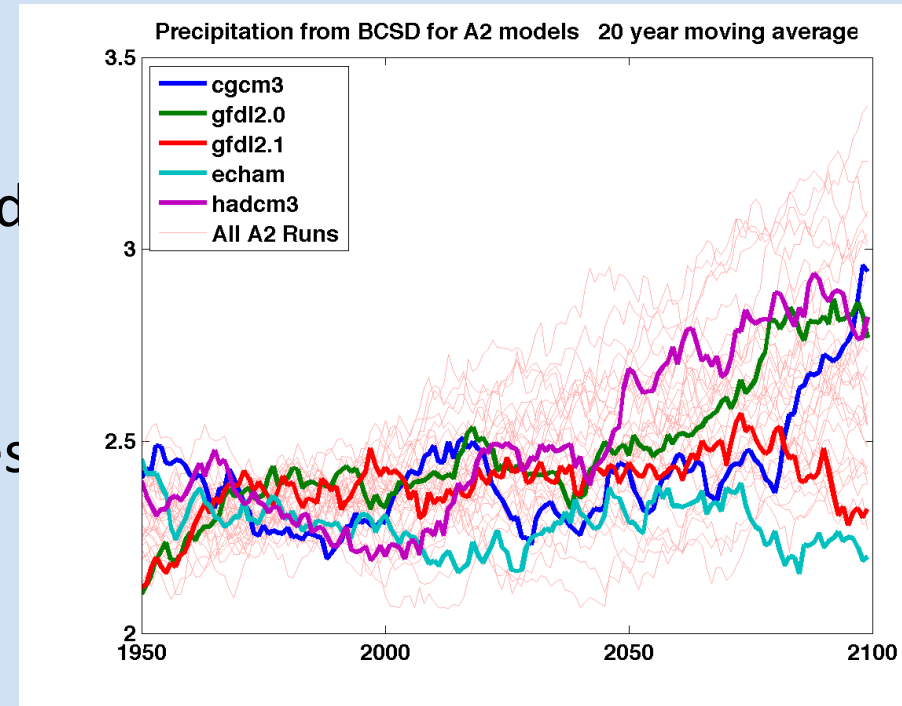
- AGU and AMS sessions – still time to submit
- Will solicit input from Panels, WG & other CLIVAR groups,
- Questionnaire through US CLIVAR ?
- Disseminate initial findings, white paper, webinars, look for what's missing
- Report or BAMS, EOS article

Examples, submitted to AGU session

- Week 3-4 understanding developed from years of CLIVAR-related work
- PACE post-doc activities:
 - Application of Future Climate Scenarios for Natural Resource Management in Southwestern Colorado
 - Attribution of extreme events in the Western US
 - Medium-Range Weather Forecasts for Agriculture over the Greater Horn of Africa
- Results of working groups
 - MJO WG: capability and decision support gap between weather and seasonal forecasts
 - Extremes WG
- How IRI, CPC, other operational centers have incorporated CLIVAR-sponsored research into their operational and experimental products
- IPCC and National Climate Assessment (NCA)

Track 2: Focus on key societal questions/sensitivities: what are the science Qs?

- Many multi-year to 1-3 decade planning processes
 - Risk mitigation, e.g. do we build based on this info, or wait
 - Adaptation, building resilience for current and future extremes
 - See people trying to use GCM projections this way (graphic)

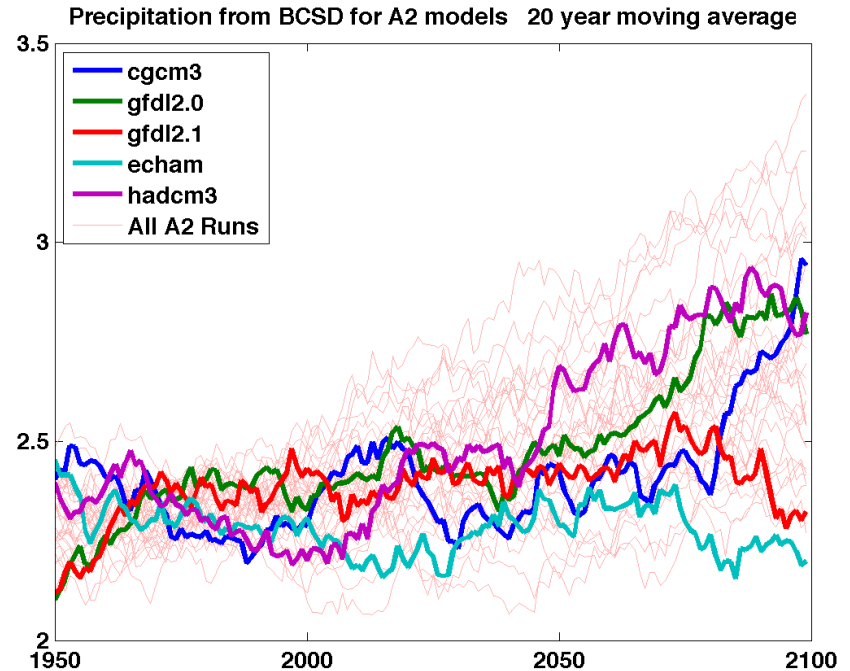


- Western drought attributed as $\sim 1/2$ natural temp variability: if/when might there be a natural cooler period in the western U.S.??
- Hiatus is a big conversation; major volcanic eruption, no – but if this happens, scientists should be able to say something
- Then, design science programs to address these questions

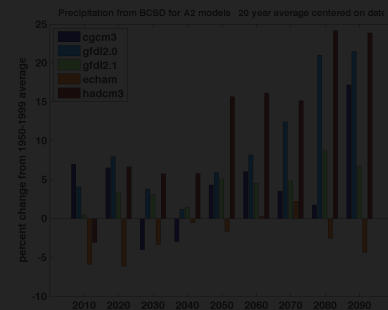
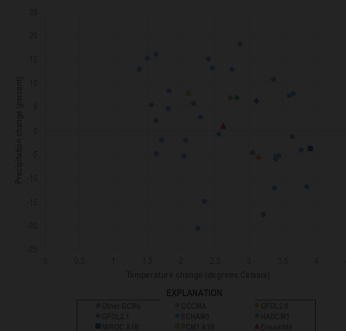
Top ~5 things climate scientists want ecologists to know

Time series projections data, sequencing

- Many ecological questions sensitive to sequence & models like MC1 require time series
- Majority of GCM runs not intended to be used this way

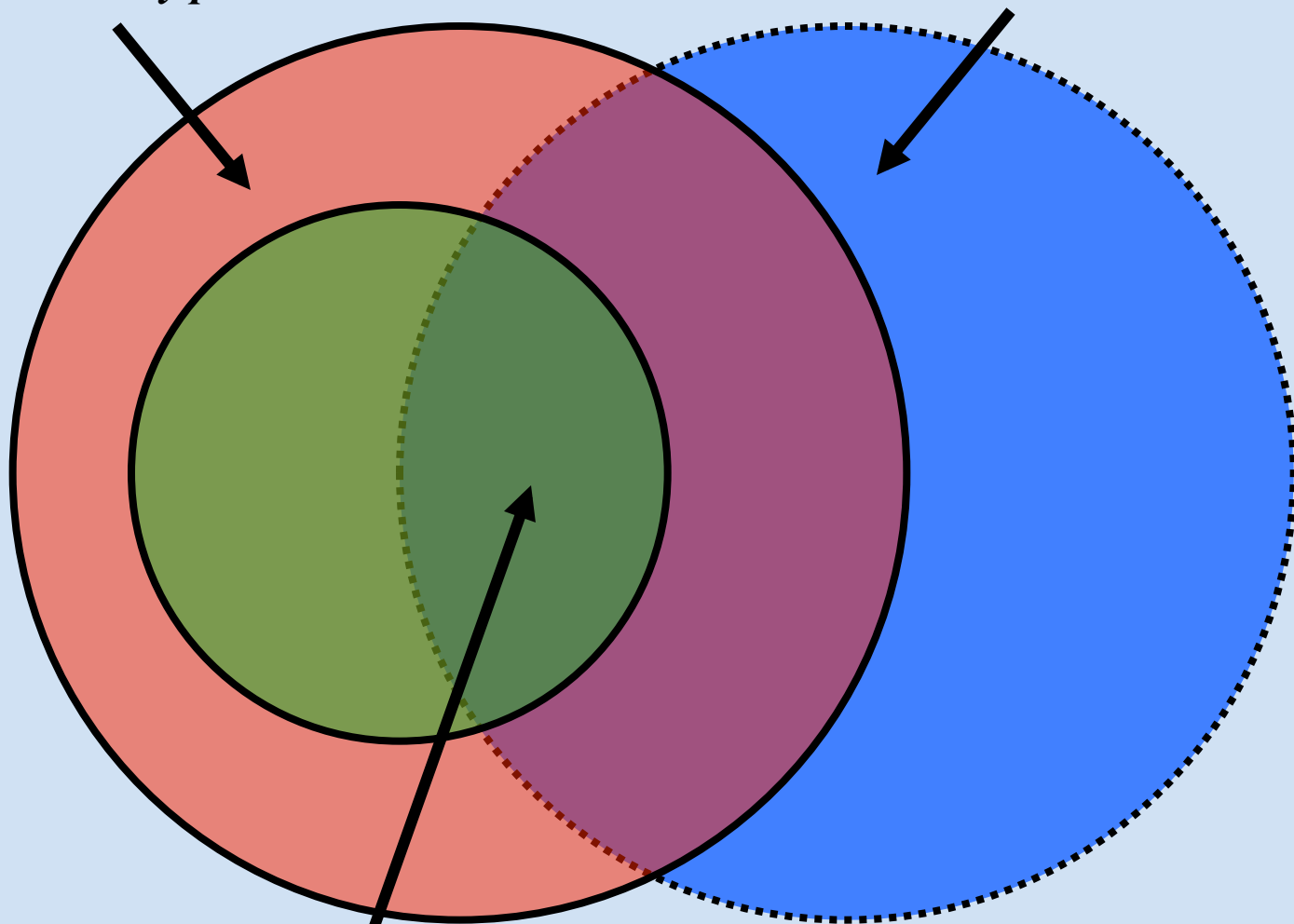


5) Natural variability still matters



Potentially predictable

Spectrum of User Needs



Current Forecast Products

Synergies with Int'l CLIVAR DCVP

- Implications of slowdown/hiatus, or opposite
- Volcanic eruption?