Future Changes in Tropical Precipitation

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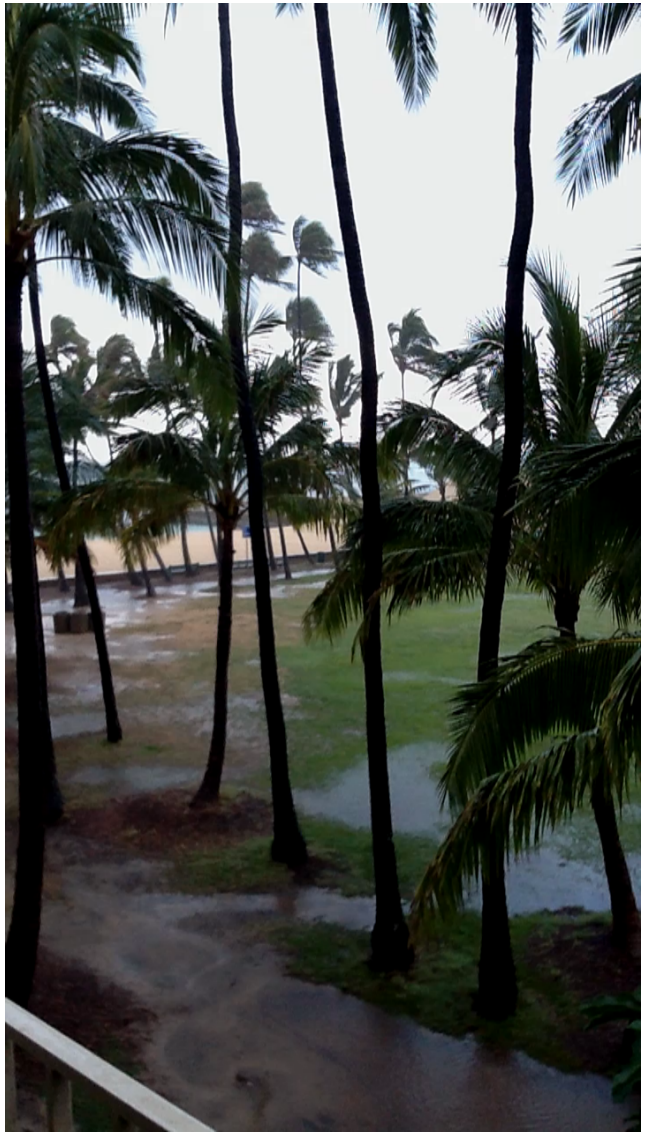

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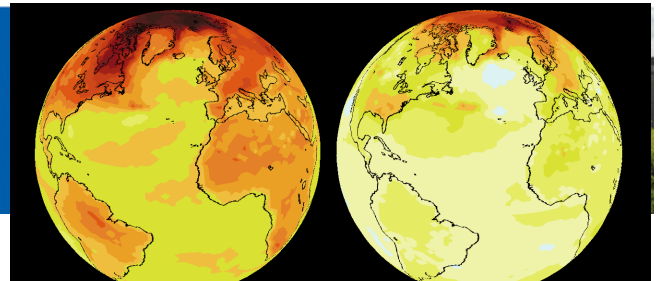
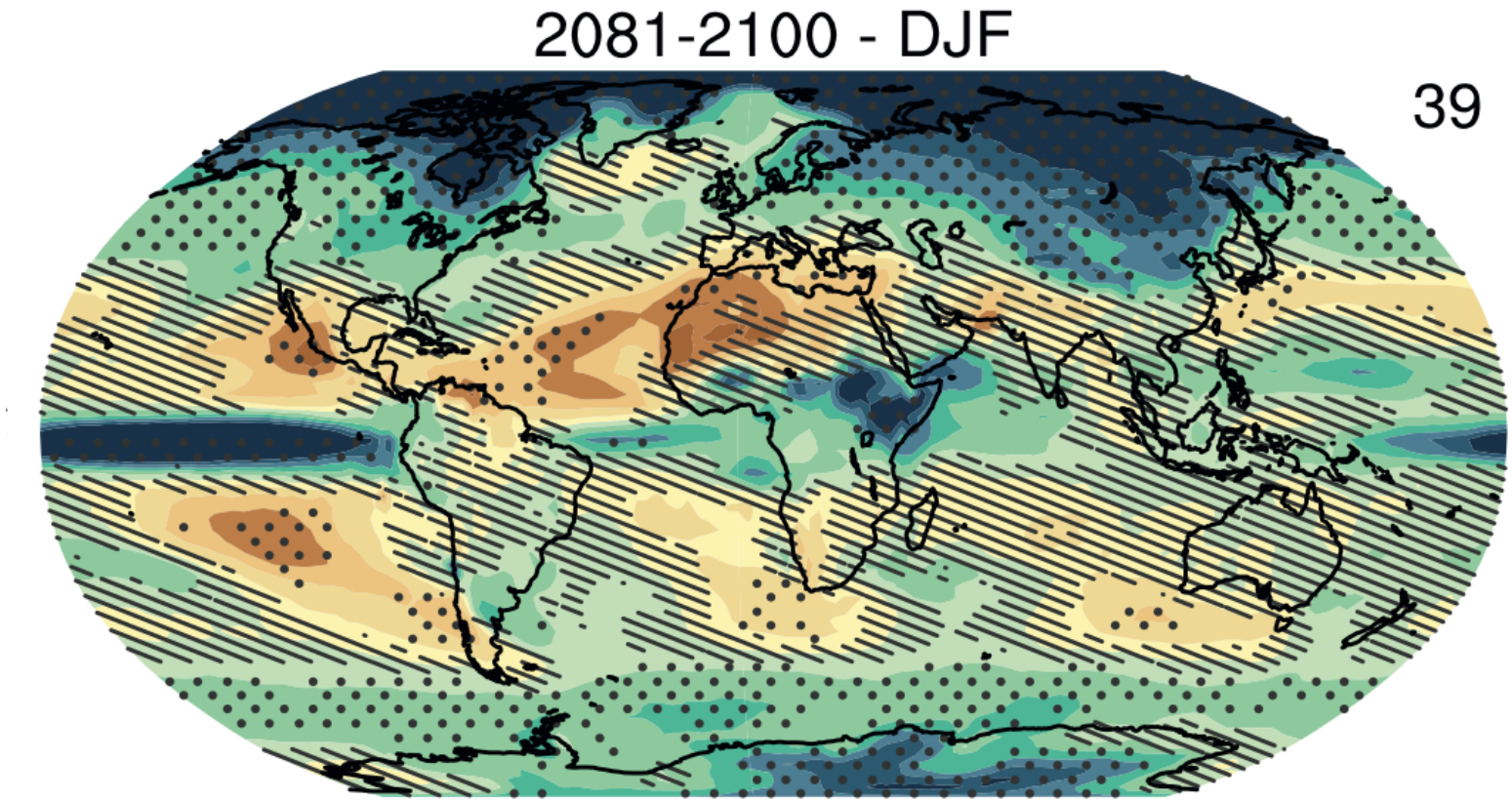
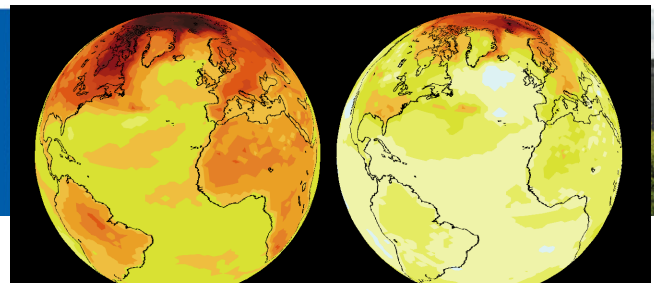


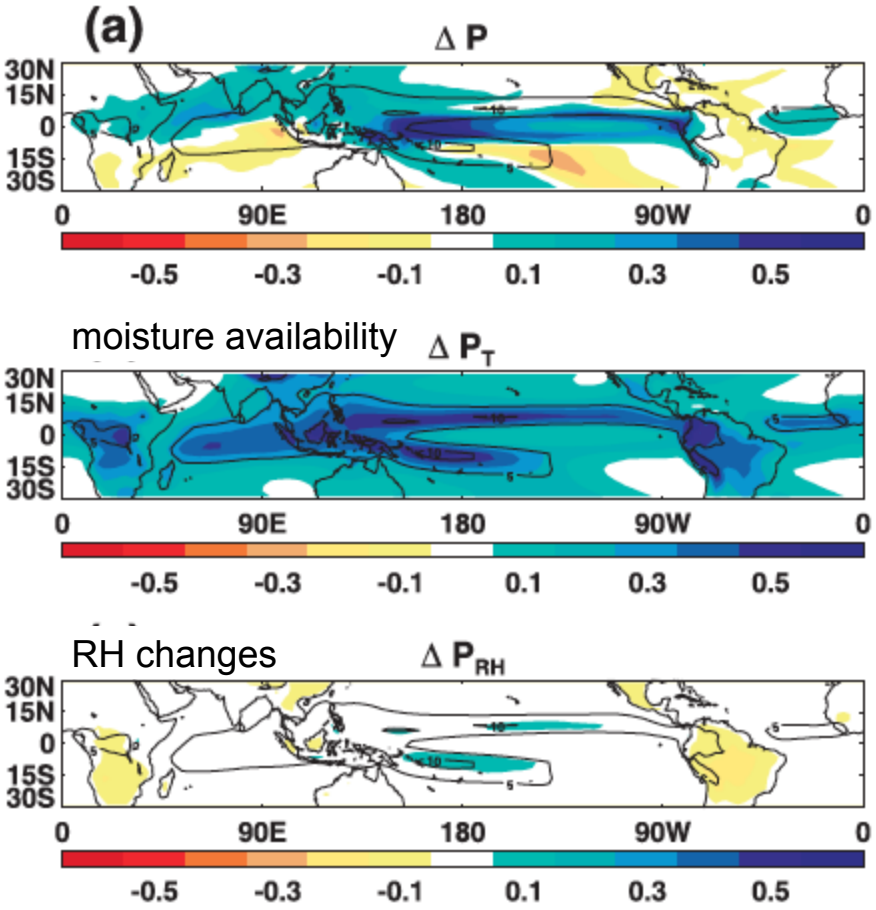
Changes in Mean Rainfall

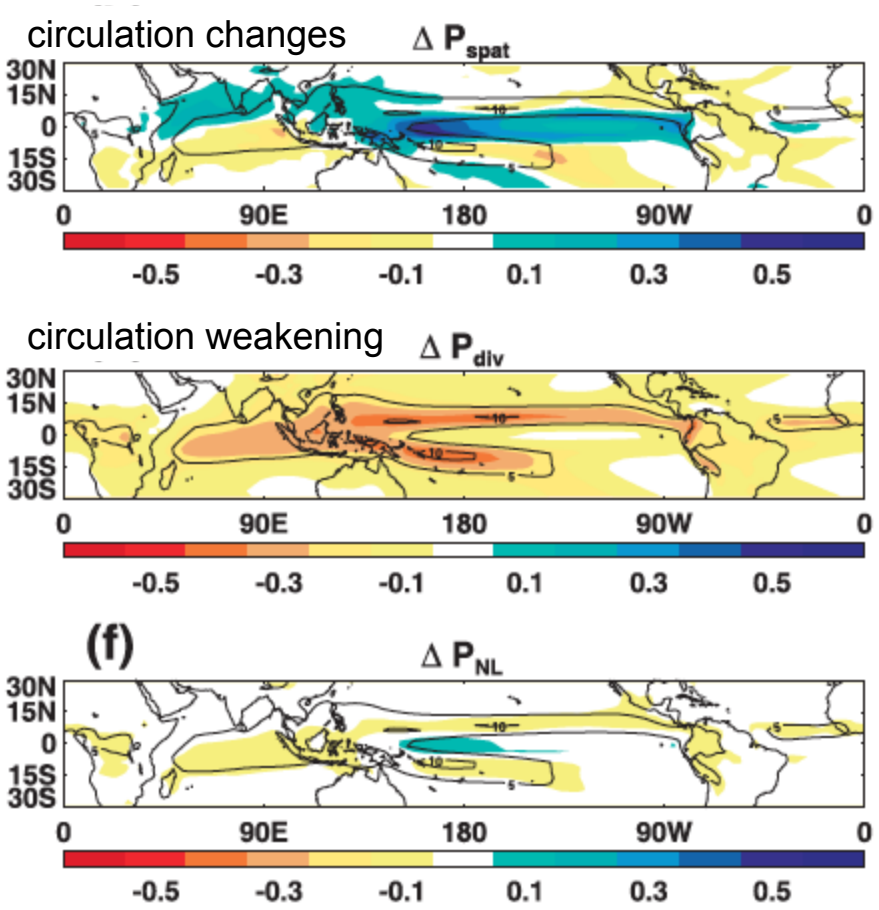


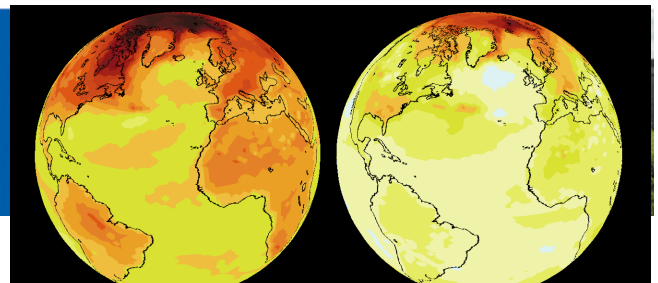
- Rainfall change in tropical Pacific are coincident with an equatorial peak in SST warming across the Pacific



Tropical Precipitation Changes
Chadwick et al., 2013

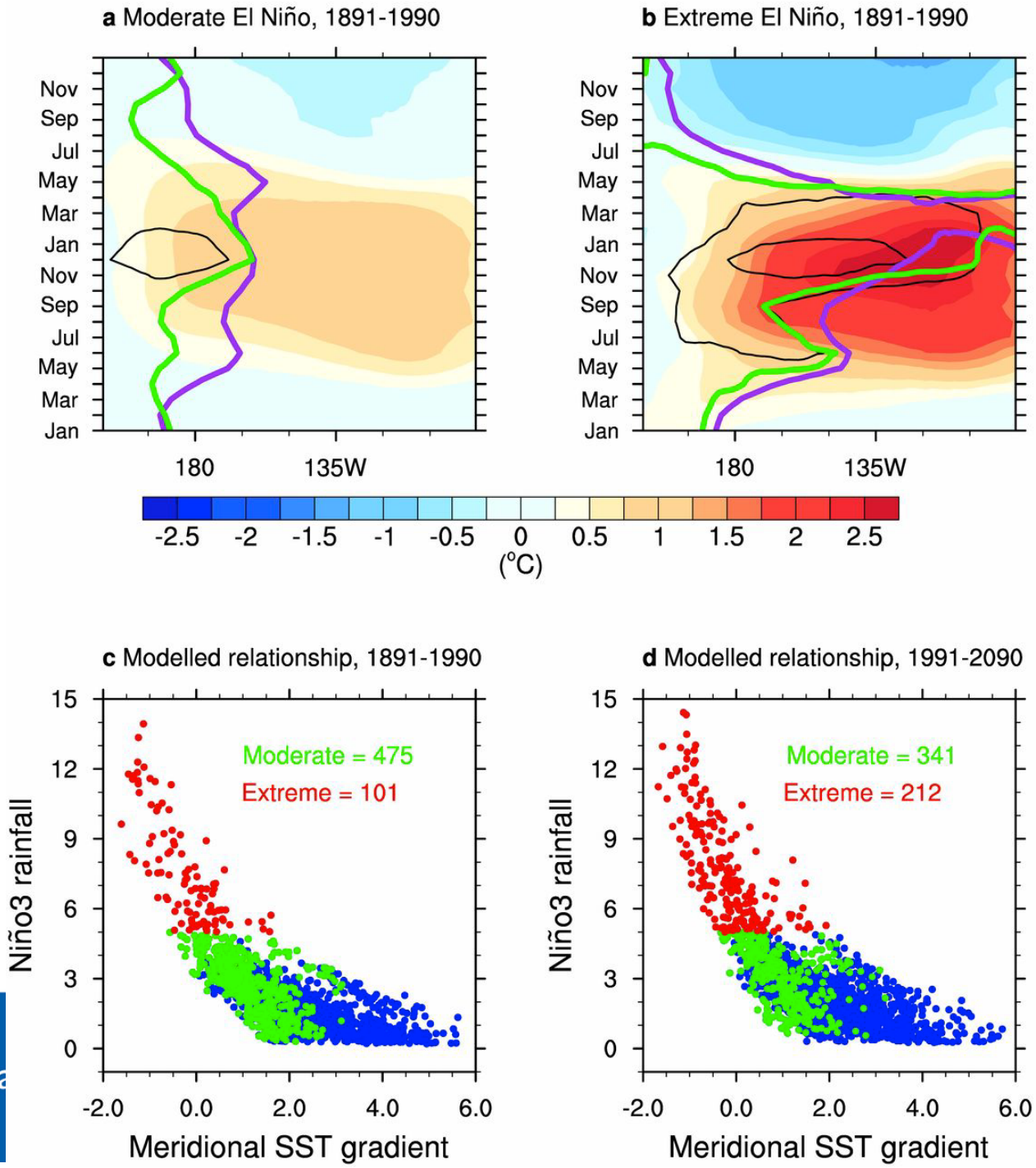






Extreme El Niños

Cai, Borlce, Lengaigne, van Rensch, Collins, Vecchi, Timmermann, Santoso, McPhaden, Wu, England, Guilyardi, Jin. Increasing frequency of extreme El Niño events due to greenhouse warming. Nature Climate Change, 2014



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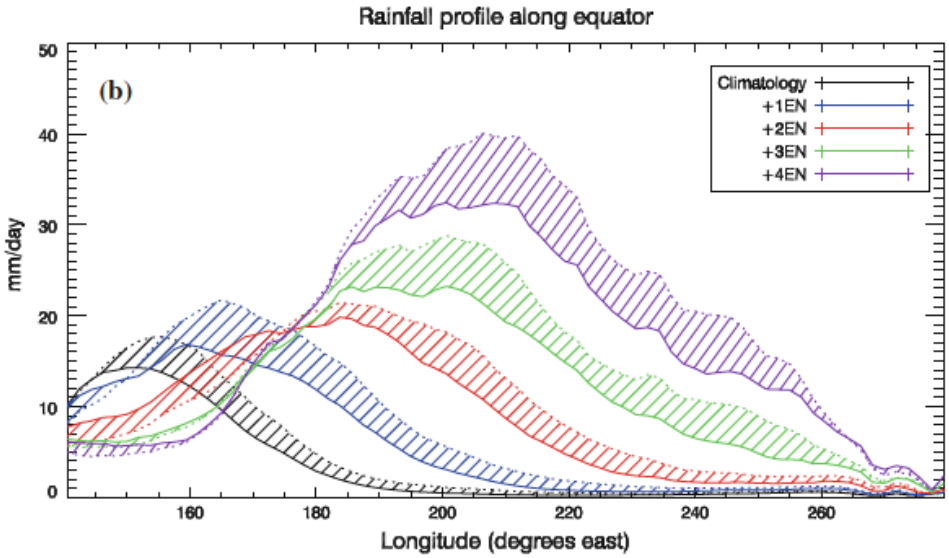
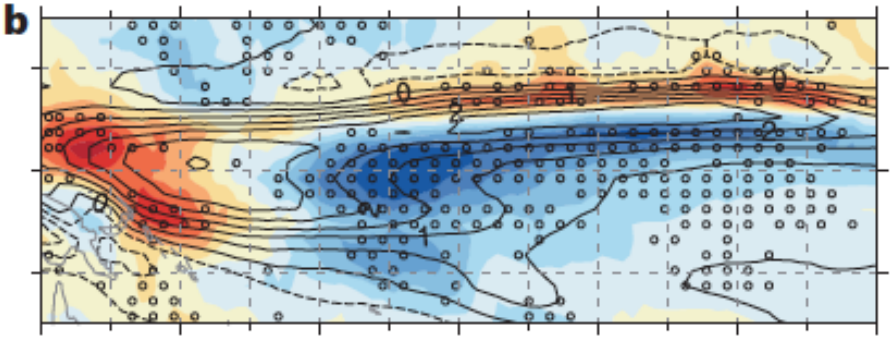
Changing El Niño Teleconnections



Atmosphere model simulations

Do changes in the mean cause changes in ENSO rainfall response or does the ENSO rainfall response rectify the mean?

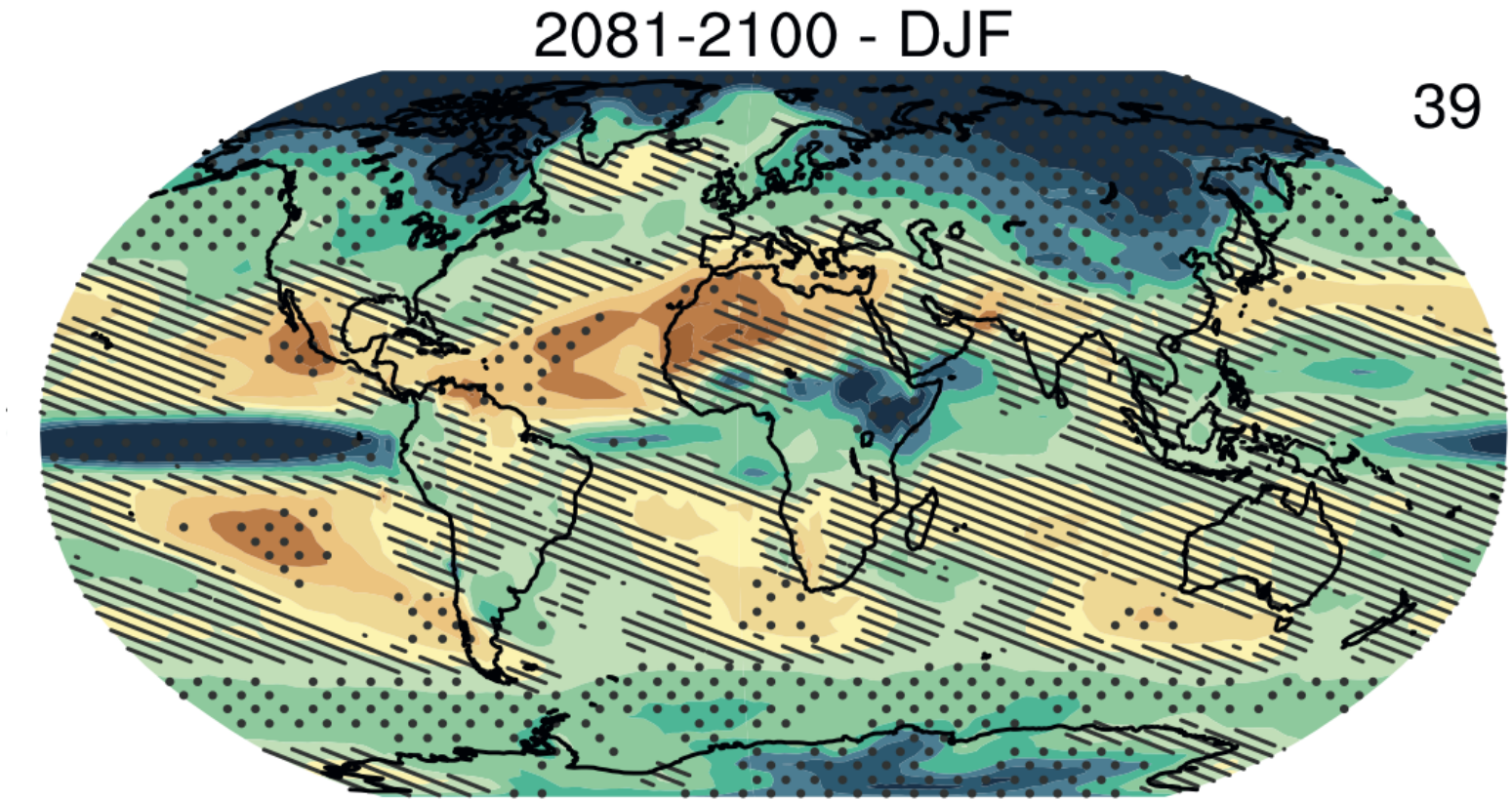
Chung, Power, Arblaster, Rashid, Roff, Climate Dynamics, 2014



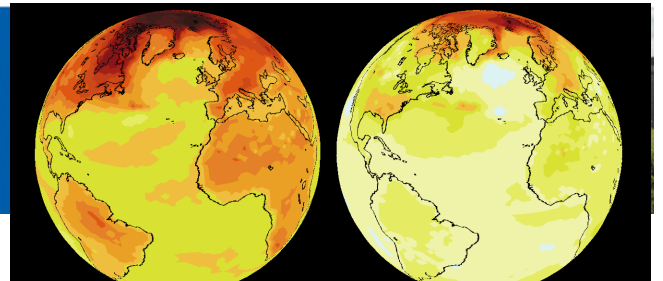
CMIP5

Power, Delange, Chung, Kociuba, Keay, Nature 2013

Changes in Mean Rainfall



- Although the models agree, there are common SST biases in this region. Model agreement ≠ robustness



New CLIVAR Atmosphere-Ocean Climate Dynamics Panel

- 34th WCRP JSC identified a gap in the domain of atmospheric/climate dynamics
- Focus on modes of variability and phenomena in which atmospheric dynamics play a leading role, as well as on local-to-basin scale ocean-atmosphere interactions common to multiple basins
- Discussion on scientific focus during this week, e.g.
  - Storm tracks and weather systems
  - Processes for mid-latitude air-sea interactions
  - Teleconnections and their interactions
  - Climate phenomena and their relevance for regional climate change

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