Drought Task Force

A NOAA Climate Program Office initiative in partnership with NIDIS
Involves scientists from academia, other agencies and across NOAA

Underpinning Science

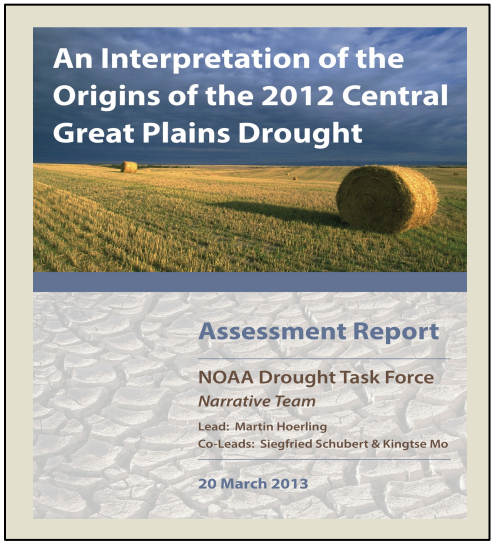
Basic science to support progress

Basic Science

Testing Capabilities

Retrospective Drought Analyses

Assessments to improve understanding

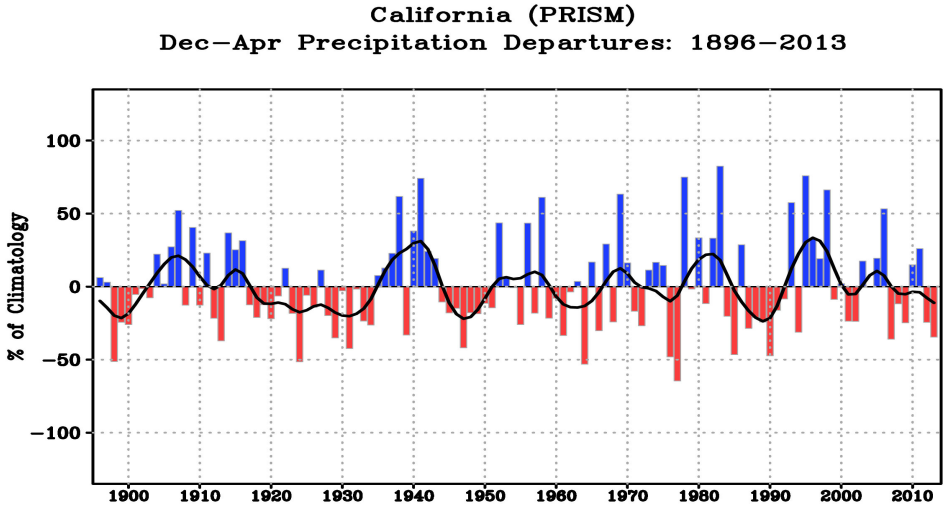


A spectrum of coordinated research activities to advance drought understanding, monitoring and prediction

Assessing & Improving Drought Capabilities

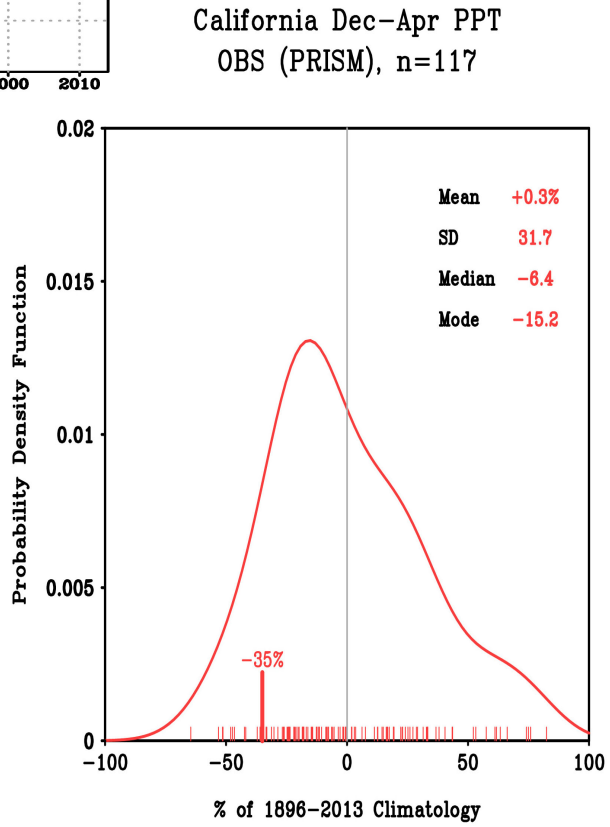
A testbed framework to advance drought systems

Historical Characteristics of California Rainy Season Variability

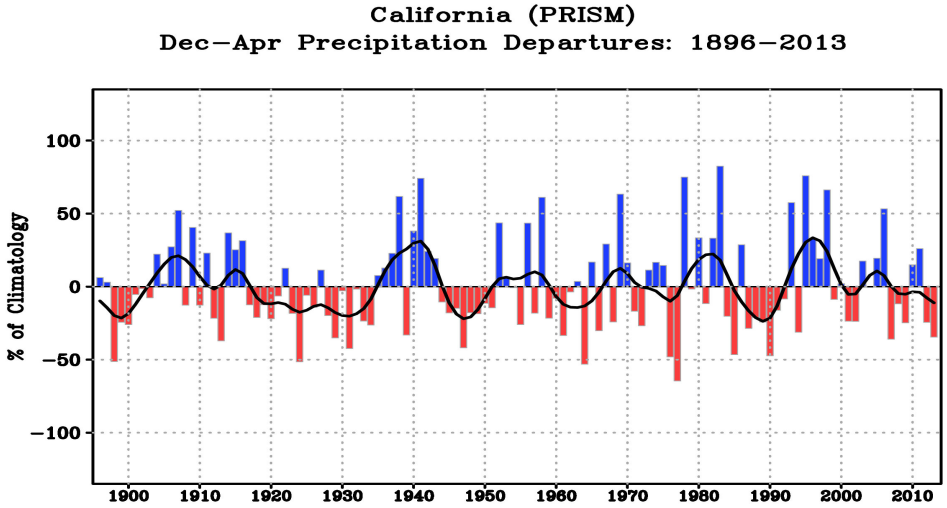


CA Rainy Season is Highly Variable

- The coefficient of year-to-year variability is ~ 30%
- 2012-13 pcpn deficit is ~ 1 standardized departure
- 2012-13 ranked 13th driest since 1896
- Due to skewness, ~60% CA rainy seasons below historical avg

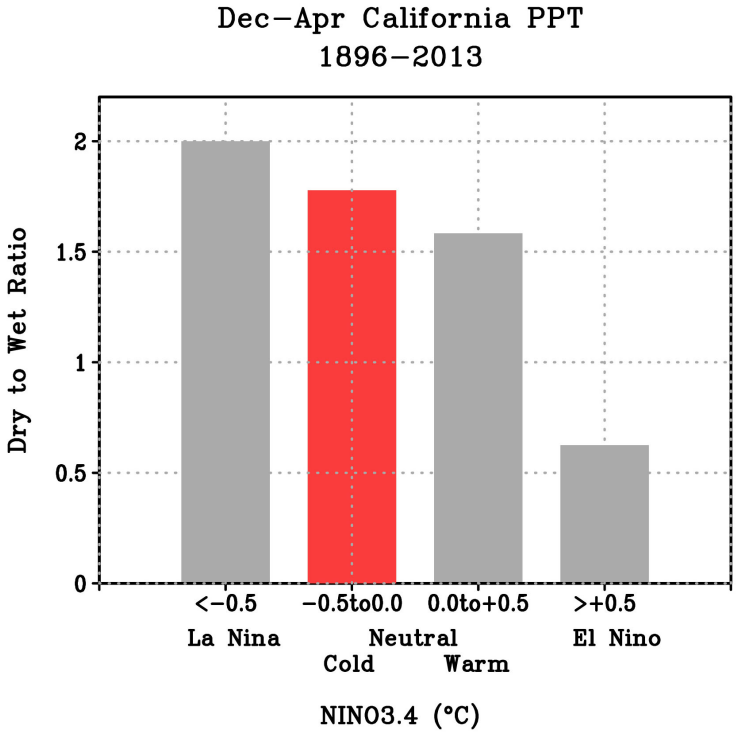


Historical Characteristics of California Rainy Season Variability



CA Rainy Season & ENSO: Complicated Relation

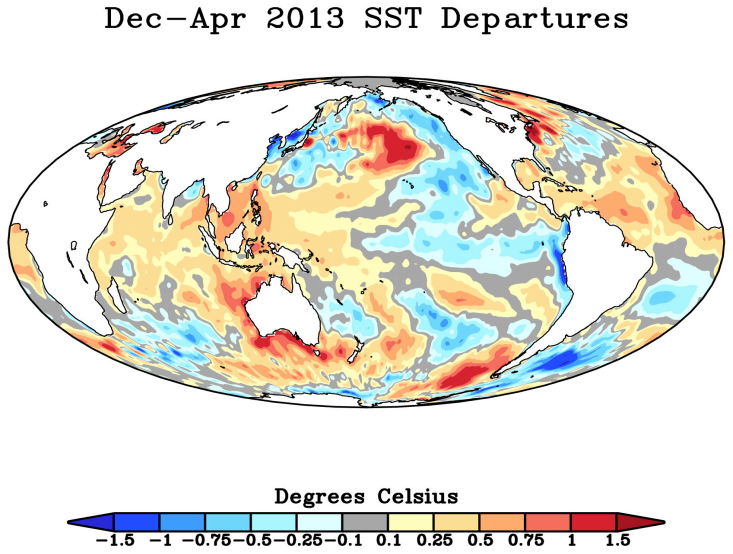
- CA ***Dry Risk*** is Elevated When EPacific is Cool/Cold
- CA ***Wet Risk*** is Elevated for Strong EPacific Warming
  - *5 wettest CA rainy seasons since 1896 were El Ninos*



Current Scientific Understanding on Drivers for the Current California Drought

Global sea surface temperatures a driver of this drought

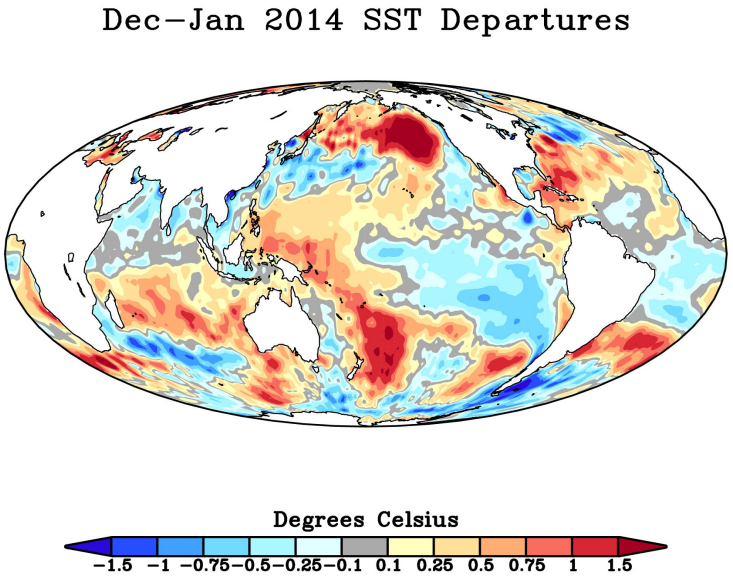
- The hazard risk for California drought was elevated in 2012-13 due to strong sensitivity to sea surface temperatures (SSTs).
- The 2012-13 SST driver acted to reduce California averaged precipitation to only 77% of normal.
- Such an oceanic contribution to drought may be predictable, if the responsible ocean state is predictable.
- The specific SSTs contributing to the CA drought are not currently known.

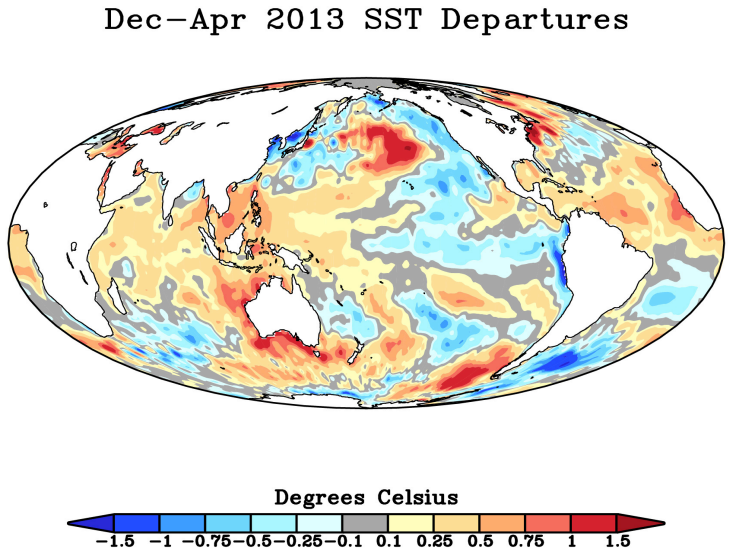


Current Scientific Understanding on Drivers for the Current California Drought

Global sea surface temperatures a major driver of this drought

- Persistence of the global SST pattern into 2014 suggests a similar oceanic driver of the CA drought has also persisted.

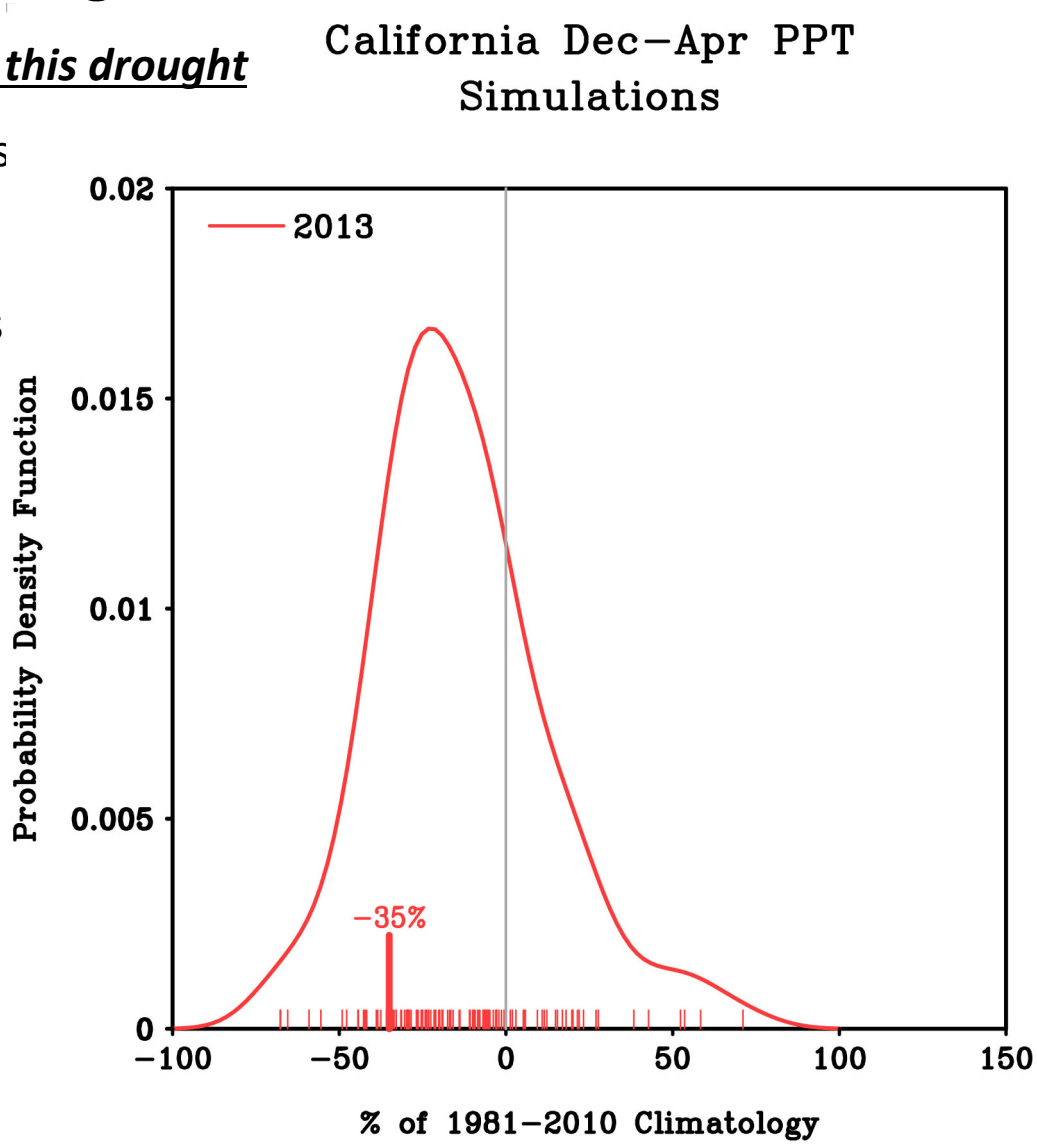


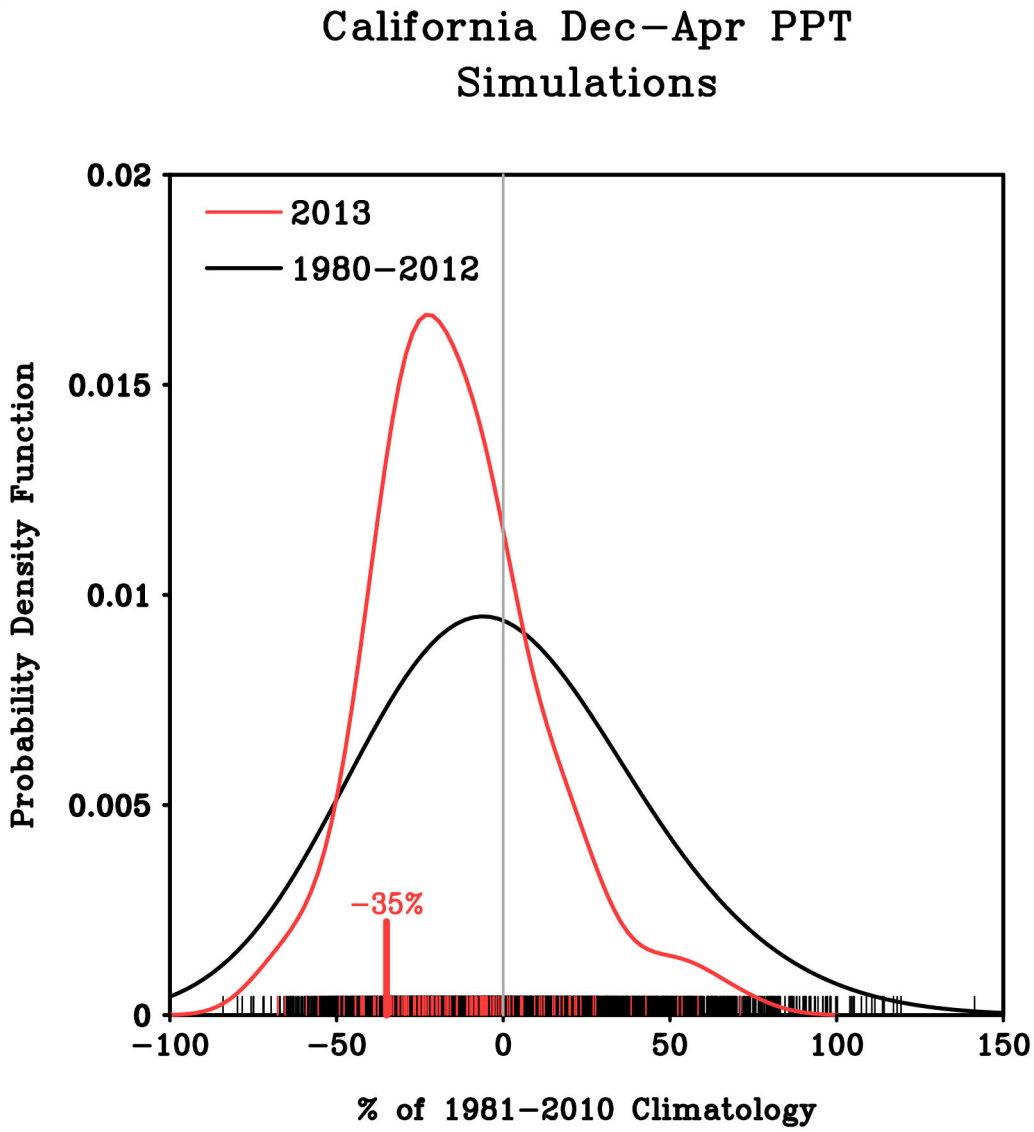


Current Scientific Understanding on Drivers for the Current California Drought

Random atmospheric variability a driver of this drought

- Simulations for 2012-13 repeated 120 times
  Each sample is a perfect analog of 2012-13
- Majority of simulations produce CA dryness
- Spread is due to random atmospheric variability; a plausible contributor to the 2012-13 drought severity.
- Such atmospheric driving unlikely to be predictable, even if SSTs and their effects could be exactly predicted.



Current Scientific Understanding on Drivers for the Current California Drought

- Model suggestion for reduced "tail risk" for wet and dry extremes in 2012-13.