

# ENSO Teleconnections to Precipitation Extremes in High Resolution E3SM

**Objective:** Evaluate the representation of El Niño Southern Oscillation (ENSO) teleconnections to winter precipitation extremes over the US in the high-resolution version of DOE's E3SMv1 (E3SM-HR, 25km).

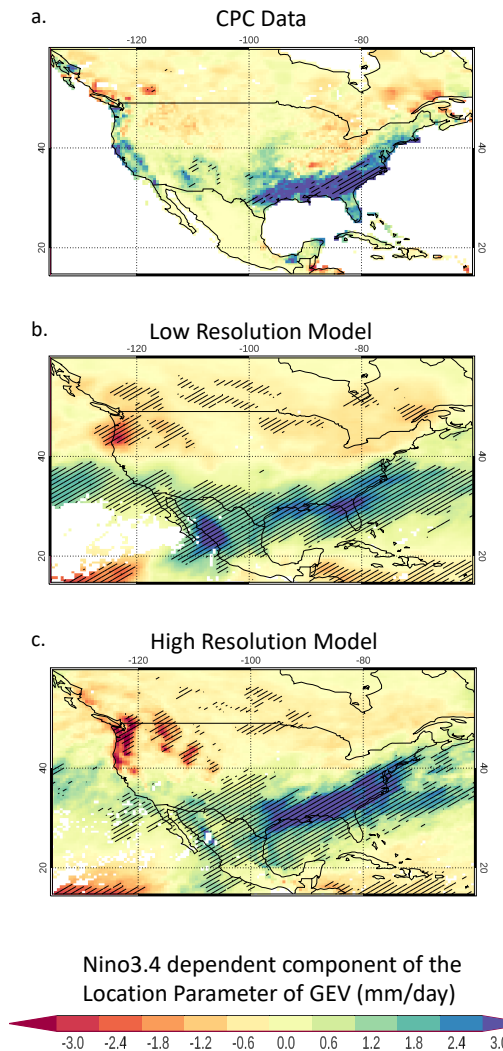
**New Science:** Extreme value analysis of a century-long control simulation of E3SM-HR and identification of the role of large-scale drivers in generating model bias.

**Results/Impacts:** E3SMv1-HR reduces low resolution model's (110km) bias over Southeast-US by simulating stronger El-Niño associated extremes. This is due to improved simulation of ENSO associated moisture variability and stronger vertical velocities in E3SMv1-HR.

Over the Pacific Northwest, E3SMv1-HR simulates stronger than observed La Niña associated extremes despite weaker simulation of ENSO dependent extra-tropical storm track activity. This is due to stronger than observed influx of moisture from the Pacific Ocean during La Niña events in E3SMv1-HR.

Mahajan, S., Tang, Qi, Keen, N., C. Golaz, Van-Roekel, L. (2021): Simulation of ENSO teleconnections to precipitation extremes over the US in the high resolution version of E3SM. *Journal of Climate* (available online), [10.1175/JCLI-D-20-1011.1](https://doi.org/10.1175/JCLI-D-20-1011.1)

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ENSO teleconnections to precipitation extremes as estimated by fitting Generalized Extreme Value (GEV) distributions with the Nino3.4 index as a covariate in an observational dataset (1980-2018), low-resolution (100km) and high resolution (25km) E3SMv1.