An El Niño Southern Oscillation (ENSO) Precipitation Climatology for Hawaii and the U.S. Affiliated Pacific Islands using PERSIANN Climate Data Record

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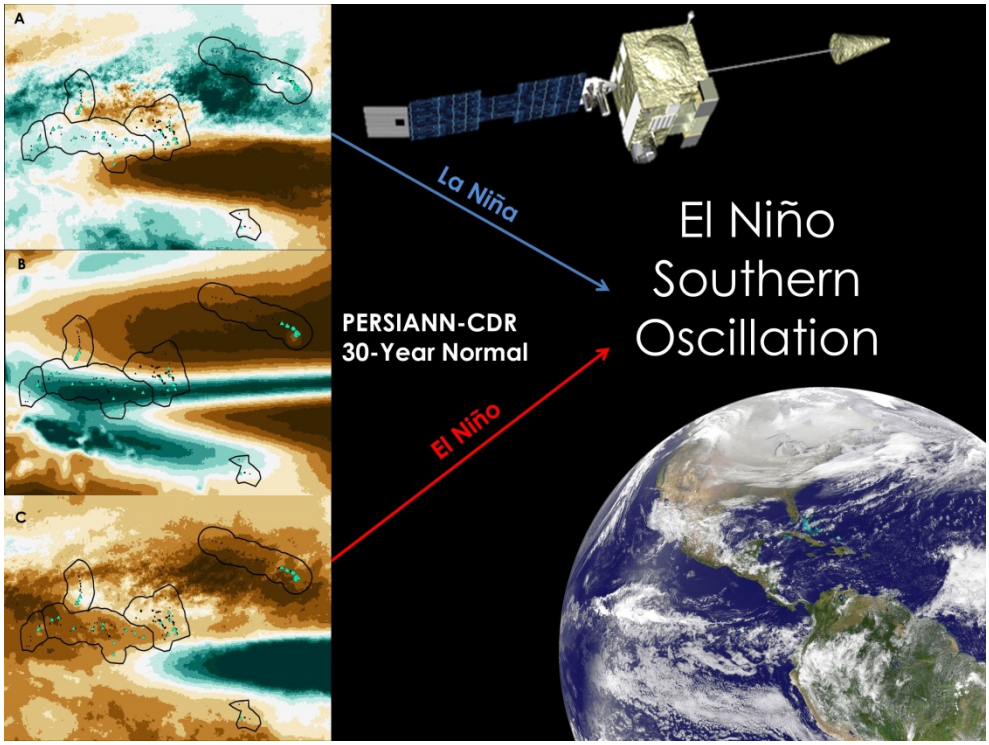
There are over 2000 islands across Hawaii and the U.S. Affiliated Pacific Islands (USAPI), where accessibility to fresh water is heavily dependent upon the amount and rate of precipitation received within a given month, season, or year. Due to the location of the USAPI, many of the islands experience dramatic variations in precipitation during the different phases of the El Niño Southern Oscillation (ENSO). Currently, forecasters in the region rely on ENSO climatologies based on limited *in-situ* data to inform their precipitation outlooks. This NOAA/NASA collaborative project updated the ENSO-based rainfall climatology for Hawaii and each USAPI's Exclusive Economic Zones using NOAA's PERSIANN Climate Data Record. The resulting 478-page satellite-derived reference atlas compliments land-based data by offering a greatly enhanced spatial representation of rainfall averages. The PERSIANN-CDR provides a 30-year record of global daily precipitation at 0.25° resolution (15km). This atlas incorporates a 30-year study period from 1 January 1985 through 31 December 2014.



The maps throughout the atlas not only illustrate the long-term average rainfall distribution by month, but also show the percent departure from average for each three-month season based on the Oceanic Niño Index (ONI) for weak, moderate, and strong ENSO phases. At 15km, the PERSIANN dataset was able to accurately depict the precipitation trends and anomalies across the entire region. To facilitate inter-comparisons across seasons and locations, this percentage based climatology using the 30-year average was provided to regional climatologists, forecasters, and outreach folks within the region. The maps showing the anomalous wet and dry areas for each ENSO phase are already being used by the regional constituents to better understand precipitation patterns across their regions, and as such are able to produce more accurate forecasts during different ENSO phases to inform adaptation, conservation, and mitigation options for drought and flooding events.

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