El Niño Impacts and Outlook
Western Region
October 2014

Typical El Niño Weather Pattern

Typical El Niño jet stream patterns across the U.S. include a stronger than usual storm track across the southern U.S., leaving the northern US removed from the average storm track. Image courtesy of NOAA.

El Niño and the West

- A weak to moderate El Niño is forecast to develop during winter 2014-15
- Wetter than normal conditions anticipated for southern third of California eastward along the U.S.-Mexico border
- Drier than normal conditions anticipated for the Pacific Northwest and Inland Northwest
- El Niño is not a useful predictor of winter precipitation for an east-west zone that roughly follows the Interstate-80 corridor

El Niño is a warming of Pacific Ocean waters that occurs along the equator between South America and the Date Line. The main effects to the U.S. are seen in the cold season (Oct-Mar). Patterns of western climate vary considerably from one El Niño to the next and depend on the location, magnitude, and month of the ocean temperature departures from average.

Climate Outlook and El Niño Connections

Winter Temperature and Precipitation Outlook

The official outlooks for Dec-Jan-Feb temperature and precipitation for the West reflect the development of a weak to moderate El Niño during this period. Historical statistical pattern relationships (ocean pattern A has been preferentially followed by climate pattern B) have played a major role in the development of climate forecasts; newer methods solve the dynamic equations directly. Above normal temperatures are forecast for much of the West, though cooler than normal temperatures are anticipated in the far southern portion of the region across much of New Mexico. Above normal precipitation is favored across the southern portion of the West. El Niño does not have a strong signal in areas important for water resources or facing persistent drought such as northern California, the Great Basin, and the central Rockies. These areas have equal chances of above or below normal precipitation. The Dec-Jan-Feb period accounts for 50 percent of annual Sierra Nevada precipitation.

Likelihood of El Niño

Currently, the odds favor a weak-to-moderate El Niño developing during the Nov-Feb 2014-15 time frame (67% probability). The three phases, El Niño (warm), La Niña (cool), and Neutral are all parts of a collective process called ENSO (El Niño/Southern Oscillation). Ocean experts first predict the state of ENSO and then atmospheric experts use these ocean forecasts to drive atmospheric forecasts.
Current Conditions and Observed Impacts

The backdrop for El Niño this winter is major drought affecting much of the West, especially the Colorado River (15 years) and the Sierra Nevada (3 years). High temperatures exacerbate drought conditions, and so far through September of this year, every month in California has been warmer than average. This year to-date has been the warmest by far in a 120-year record. The average precipitation deficit is such that about a year’s worth of precipitation is “missing” over the past three years.

Western Region Partners

- Western Regional Climate Center
- National Integrated Drought Information System (NIDIS) - drought.gov
- Western Governors’ Association
- Western States Water Council
- NOAA/ESRL Physical Sciences Division
- NOAA Climate Prediction Center
- USDA/NRCS National Water and Climate Center - www.wcc.nrcs.usda.gov
- National Interagency Fire Center
- DOI WaterSMART
- NOAA's Western Regional Collaboration Team
- Western Water Assessment
- California Nevada Applications Program meteora.ucsd.edu/cnap
- Climate Impacts Research Consortium pnwclimate.org/resources
- NWS River Forecast Centers water.weather.gov/ahps/rfc/rfc.php
- NOAA Fisheries Service
- NWS Western Region Forecast Offices www.wrh.noaa.gov/
- State Climatologists - stateclimate.org

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