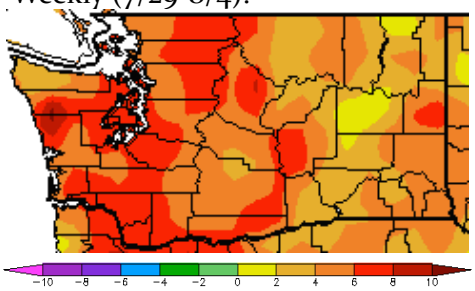
Washington State
Weekly Drought Monitoring Report

Thursday, August 6, 2015 Issue 16

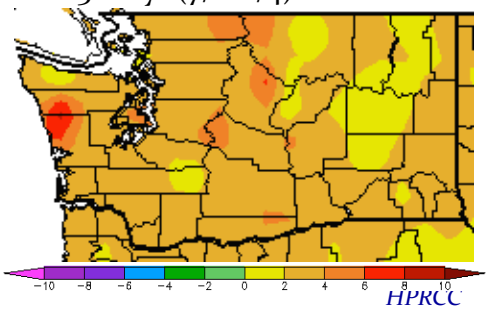
Statewide Overview

Mean Temperature Anomalies (°F)

Weekly (7/29-8/4):



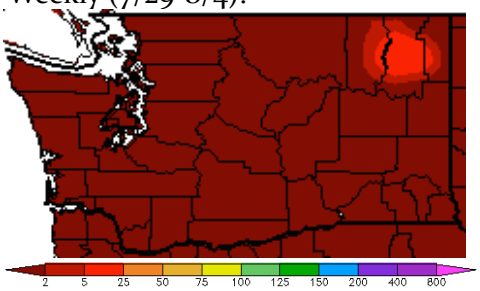
Last 30 days (7/6-8/4):



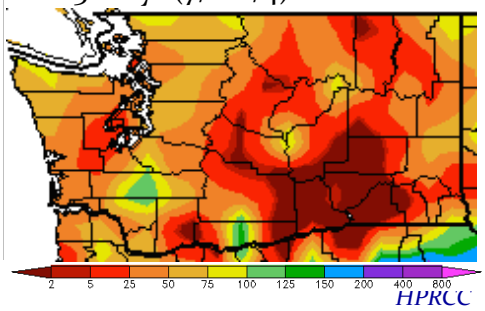
HPRCC

Precipitation Percent of Normal (%)

Weekly (7/29-8/4):



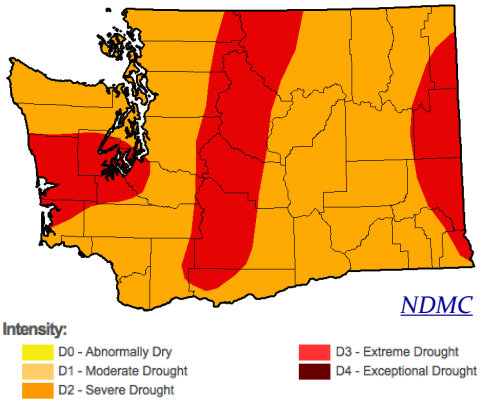
Last 30 days (7/6-8/4):



HPRCC

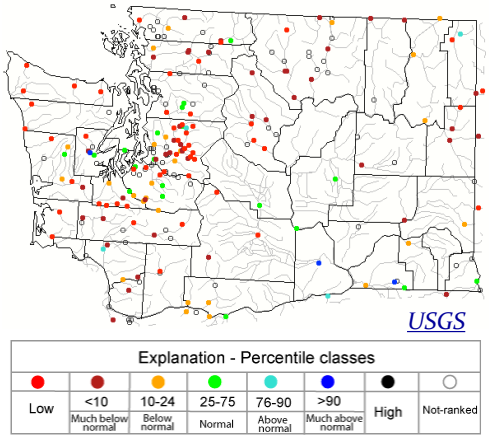
Drought Monitor, Streamflow, and Water Year Precipitation

US Drought Monitor (8/4):



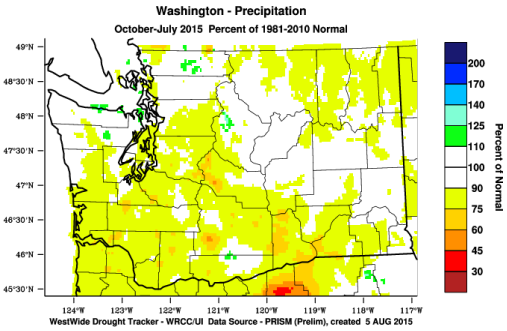
NDMC

7-day Average Streamflow (8/4):



USGS

October-July Precipitation Percent of Normal:



WWDT

A snapshot of recent conditions for WA State is shown on this page using statewide temperature, precipitation, and streamflow over varying time frames. Over the last 7 days (7/29-8/4), temperatures have been warmer than normal throughout the entire state with another heat wave elevating average temperatures 10-15°F above normal. No precipitation fell over the last week aside from a few hundredths at 1 station in northeastern WA. The story is similar for the last 30 days: warmer than normal temperatures and below normal precipitation, especially in the lower Columbia Basin. Taking an even longer view, with the passage of another dry month (July), the water year (October 2014-July 2015) precipitation is now below normal throughout most of WA State. The northern Olympic Peninsula, northern Sound, and parts of eastern WA are still at near-normal (90-110% of normal) precipitation for the water year. Water year temperatures (not shown) are 3-6°F above normal throughout the state.

Streamflow averaged over the last 7 days is much below normal or at record lows for over 60% of the state. The Yakima River in Benton county and Mill Creek in Walla Walla county, which show above normal streamflow on the plot in the middle right panel, are reflecting high numbers because they are controlled rivers. Snowmelt is no longer contributing to streamflow and little precipitation has fallen. The US Drought Monitor depiction of drought has stayed the same over the last week, and currently has D3, or extreme drought, depicted in 3 separate portions of the state.

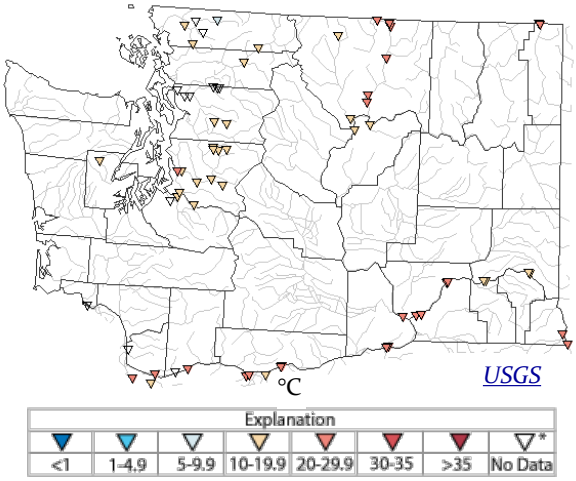
Contacts: Karin Bumbaco (kbumbaco@uw.edu)
Nick Bond (nab3met@uw.edu)
Jeff Marti (jema461@ecy.wa.gov)

Statewide Drought Declared

On May 15, Governor Inslee declared a statewide drought; more information can be found at WA State Department of Ecology. This section will focus on a few areas of the state in a little more detail.

Southern Puget Sound and Fish Impacts

Southern King county and northern Pierce county were among the warmest locations relative to normal over the last week, with average temperatures between 6 and 8°F above normal. Some bad news for hatcheries has come out of the Soos Creek hatchery near Auburn: half of its summer steelhead population and 18% of the coho population has died in the last month due to low water levels and high water temperatures (DFW). Two weather stations near Auburn show average air temperatures for July 4.3°F above normal at Tacoma and 5.5°F above normal at SeaTac Airport, also ranking as the warmest July on record for both stations. The drought conditions are causing problems at about a dozen of the Department of Fish and Wildlife-operated hatcheries, and in some cases, interventions such as transferring juvenile fish to cooler hatcheries or even releasing fish early have been attempted. It's not just juvenile fish that are being impacted by drought. The Pacific Northwest as a whole is reporting that a quarter million (about half) sockeye salmon returning into the Columbia River system are dead or dying from disease due to the warmer than normal water temperatures. There are predictions that 80% of the run could die. The plot on the right shows water temperatures at select locations as of August 5. Sockeye salmon begin to get stressed at 68°F (20°C), and we can see temperatures exceeding that on the Columbia River and elsewhere in WA.



USGS

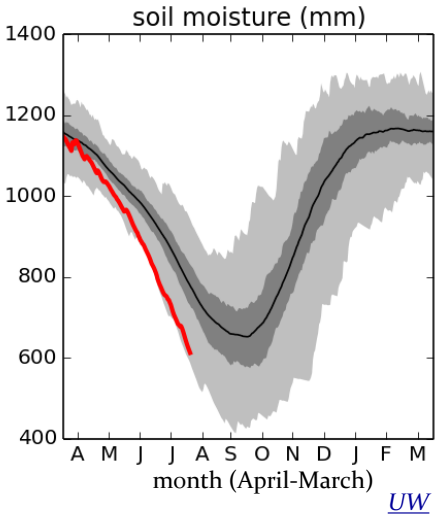
Photo Credit: Steve Pribyl

Wenatchee Area

A similar weather story can be told for the Wenatchee area; recent conditions have been warmer and drier than normal. Wenatchee and Leavenworth both recorded their 3rd warmest July on record (using average temperatures). Impacts from the low snowpack year are being felt by pear growers in the Wenatchee area, where the pears are looking smaller than usual for the time of year. The Peshastin Irrigation District is cutting water supply by a third to orchards in their jurisdiction. The district doesn't have water storage of its own, and the water supply is being supplemented by the Icicle Irrigation District. The cuts are similar to what was seen in 2005 and could cost growers up to $2 million.

Olympic Peninsula

A fire is currently burning about 15 miles west of Shelton in western WA that was started on 7/31. The cause is still under investigation, but unfortunately 8 residences have been destroyed with more threatened. The figure on the right shows modeled soil moisture for the Lower Chehalis Basin on the Olympic Peninsula (from University of Washington's Drought Monitoring System). The soil moisture is extremely dry - at about the 2nd percentile - due to the lack of winter snowfall and lack of spring and summer precipitation. Other Peninsula drought impacts have been reported as well. The US Department of Agriculture weekly WA crop report noted that cranberry beds have been showing signs of heat stress, for example.



UW

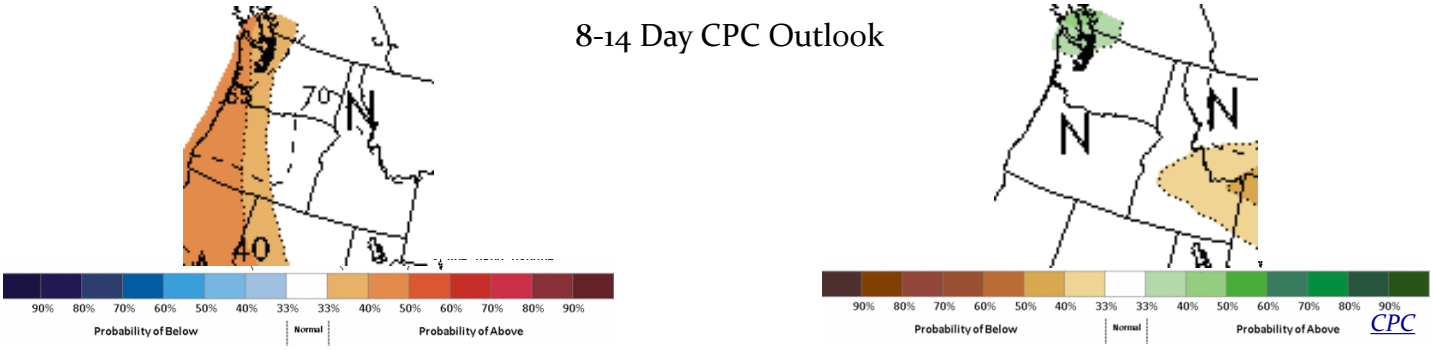
Contacts: Karin Bumbaco (kbumbaco@uw.edu)
Nick Bond (nab3met@uw.edu)
Jeff Marti (jema461@ecy.wa.gov)

Extended Outlook

Temperature

8-14 Day CPC Outlook

Precipitation

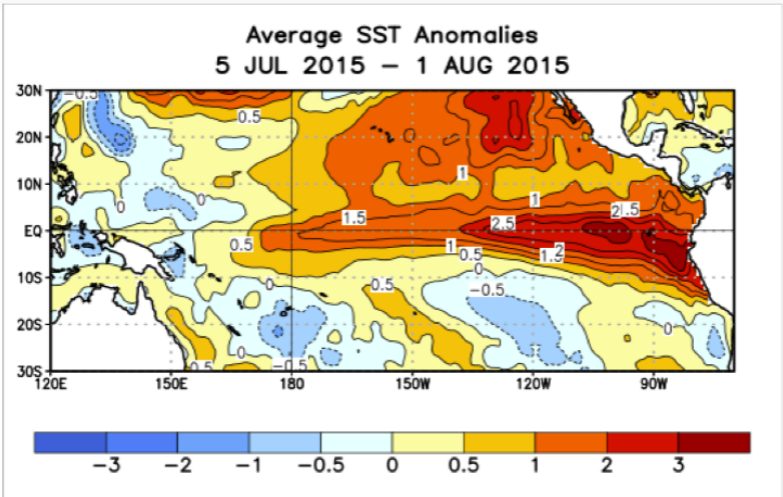


CPC

The 8-14 day forecast from NOAA/CPC for 13-19 August indicates near-normal temperatures and precipitation for eastern WA state (above). For western WA, above normal temperatures are expected and higher than normal precipitation over the northwestern portion of the state. The numerical weather prediction (NWP) models used for these forecasts are indicating weak regional circulation anomalies in the mean for the period as a whole. Some of these model simulations are suggesting a flow pattern conducive for thunderstorms shortly before or at the start of the 8-14 day period. This indication is tentative since small differences in the regional circulation impact the potential for thunderstorms in WA state, and these details are much more predictable on time scales of less than a few days.

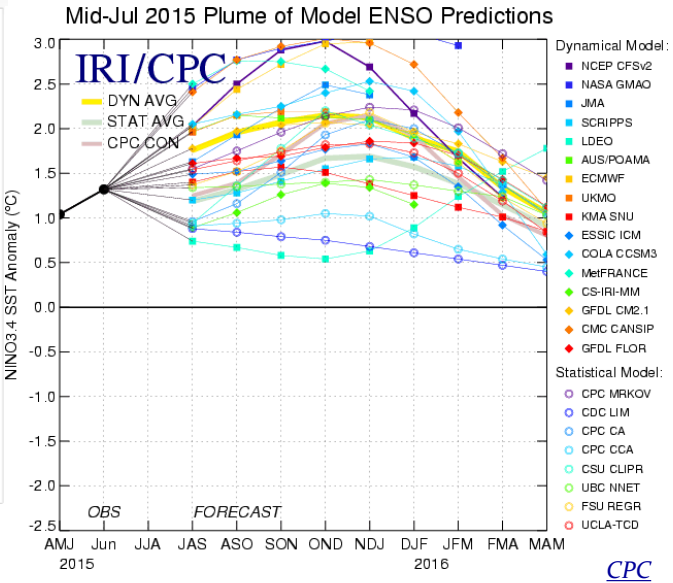
El Niño developed in the tropical Pacific Ocean during spring 2015, with sea surface temperatures (SSTs) in the central and eastern portion of the basin now being considerably warmer than normal. As is usually the case when this occurs, there are westerly wind anomalies and enhanced deep cumulus convection in the east-central Pacific, which are serving to maintain the SST anomalies (below; left). The continuation of El Niño is almost certain through the remainder of 2015 into 2016. As shown in the figure below (right), there is a strong model consensus that the NINO3.4 SST index will remain above the 1°C threshold for a moderate El Niño through the upcoming winter, with strengthening likely over the next 4-5 months. The different lines on the plot represent different ENSO model forecasts. The magnitude of this El Niño implies that it is liable to have substantial impacts on the weather of North America. El Niño generally is accompanied by warmer than normal winter temperatures in the Pacific Northwest. It has also been drier than normal during most El Niño events but this signal is less robust. For example, the strong El Niño events of 1982-83 and 1997-98 were actually accompanied by above-normal and near-normal precipitation, respectively, in WA state during the Nov-Mar period.

Sea Surface Temperature Anomalies over the last 4 weeks:



CPC

ENSO forecast:



CPC

Contacts: Karin Bumbaco (kbumbaco@uw.edu)
Nick Bond (nab3met@uw.edu)
Jeff Marti (jema461@ecy.wa.gov)