## Weather and Climate Summary and Forecast Fall 2015

Gregory V. Jones Southern Oregon University November 1, 2015

While the growing season was effectively over by the first of October, the month continued to add to the overall warm and dry conditions in the western US. The coolish September gave way to a very warm October throughout the western United States all the way to the plains and south into Texas while the eastern half of the country was near normal to cooler than normal in northern Maine. The October precipitation pattern in the United States reflects the tropical flow into the desert SW, Texas and Gulf Coast that came from both the remnants of Hurricane Patrica and El Niño moisture (see El Niño section) and the extreme rainfall in South Carolina from Hurricane Joaquin. The October pattern over the western US (Figure 1) shows temperatures that were 2.0-5.0°F or more above normal. Western US precipitation continued dry in many places, however record-breaking localized downpours did occur in southern California and into Nevada and Arizona (Figure 1).

A growing season summary from March through October shows the overall warm season with temperatures that were 1.0-4.0°F or more above the 1981-2010 climate normals (Figure 2). While precipitation amounts during March through October are typically low, the pattern in the western US during this period shows the extremely dry central California into the PNW and the relatively wetter than normal pattern in southern California and into the Great Basin. (Figure 2). The current US Drought Monitor shows that much of this region remains in severe to exceptional drought (Figure 3), with 71% of California remaining in extreme to exceptional drought conditions.

Growing degree-days ended the season (whether you accumulate March through September or April through October) at or above the values seen in 2014, with the highest departures coming in Washington (5-15% above 2014). For Oregon, April through October accumulations ended from slightly down in the Willamette Valley (2% below the record numbers seen in 2014) to a percent or so up in the Umpqua and Rogue valleys to 6% over 2014 values in the Walla Walla Valley (see the Appendix figure for four locations in Oregon). The 2015 vintage also ended 28-32% above the 1981-2010 climate normals for wine region locations in Oregon.



**Figure 1** – Western US October 2015 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).



**Figure 2** – Western US March through October 2015 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).



Figure 3 – Current US Drought Monitor.

**El Niño Watch** – <u>NO CHANGE</u> from last month as all monitoring agencies worldwide continue to show and forecast strengthening El Niño conditions (warm tropical waters off South America, Figure 4). The current moisture patterns in the southwest are showing the typical flow of additional moisture with heavy rains in Texas, the plains and into the southeast. However, the current pattern is not bringing much rain to California but appears to have a good chance of developing in the 90 day forecast (see next section).

North Pacific Watch – <u>NO CHANGE</u> ... the "blob" of warmer than normal sea surface temperatures in the North Pacific continues (Figure 4). Current index values of the Pacific Decadal Oscillation have been running strong positive, indicating that the warm phase is in place. The main result of the warmer waters is that humidity levels are up across the west, along with nighttime temperatures. The current long range forecasts continue (see below) to be driven by the combined effects of a warm North Pacific and El Niño conditions in the tropics. As detailed in previous months, from historical analogs (years with similar conditions), the western US would be expected to experience:

**Winter (Oct-Feb)** – typically much warmer and drier from the northern most counties in California into the PNW and up into Canada and Alaska in most years. Near normal winter temperatures from the North Coast southward along with very likely higher rainfall amounts. However, during these types of years in the past there is a much greater risk of extreme, heavy rainfall in the winter across California and the southwest. The ultimate precipitation pattern and amounts will depend on the strength of this El Niño. (winter analogs did not change from last month)



Figure 4 – Global sea surface temperatures (°C) for the period ending November 2, 2015 (image from NOAA/NESDIS).

## **Forecast Periods:**

**6-10 Day:** Troughs out of the Gulf of Alaska are becoming more frequent and dipping further south. The result is that more winter-like systems will be influencing the western US. Over the short term the bulk of the western US is expected to have cooler than normal conditions. The precipitation forecast over the 6-10 day period is calling for a wetter than normal PNW, while all points south and southeast will likely be drier than normal. I know it is El Nino time ... but the short term shows the effects being shunted into Texas and the Gulf Coast.

**8-14 Day:** The only change out to the two week forecast window is a greater chance of precipitation dipping south into California. Temperatures are forecast to trend slightly warmer along the western US coast while likely remaining cooler than normal over the inland valleys, mountains and Great Basin. Precipitation forecast two weeks out points

to likely a continued drier than normal California and southwestern US states. The PNW has a higher likelihood of near normal to slightly higher than normal precipitation.

**30 Day:** The outlook for November continues to favor above normal temperatures in much of Alaska, along the western US coast and into the Great Lakes and the southeastern US. At this point the 30 day forecast for precipitation has no clear signal with an equal chance for slightly above, normal or slightly below for Washington, Oregon and California. The current El Niño influence is showing up from Texas through the southeastern US with a much greater chance of above average rainfall.

**90 Day:** The November-December-January (NDJ) forecast continues to be dominated by El Niño developments. Forecasts are pretty much following the typical El Niño influences with greater chances of broader warmer than average conditions in the western US. Alaska and the PNW are forecast to be the warmest regions, but the entire western states is likely to see a mild start to winter. For precipitation, the NDJ outlook tilts the odds to near normal to below median precipitation in the PNW and the expansion of above normal precipitation for the southern portion of California into the desert SW and Texas. This is a classic pattern driven by historic conditions during El Niño. However, El Niño conditions can have a large variance in where and when the onset of rains occur, so only time will tell.

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Appendix Figure – Cumulative growing degree-days (base 50°F, no upper cut-off) for McMinnville, Roseburg, Milton-Freewater, and Medford, Oregon. Comparisons between the current year (2015) and a recent cool year (2010), a recent warm year (2014) and the 1981-2010 climate normals are shown (NCDC preliminary daily data).