

Weather and Climate Summary and Forecast Summer 2015

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I think it is obvious, June 2015 was hot! While May provided temperatures closer to normal, June brought record breaking heat to many locations and conditions do not appear to be letting up any time soon (see forecast information). Temperatures over the western US were largely above normal, especially from Northern California, throughout Oregon, Washington, Idaho and into the Great Basin and northern Rockies (Figure 1). Temperature departures from average ranged from 1-3°F above normal in Southern California and Arizona to 8-10°F above normal north into the PNW. This pattern resulted from a large high pressure area that dominated the western US during the month. These summer high pressure systems tend to entrench themselves and shift slightly from west to east and north to south. These shifts can increase on or off shore flow along the coast and within the western valleys. During the month of June the high pressure area was largely over the Great Basin and desert southwest and ushered in typical July/August conditions a little early. The precipitation pattern in June (Figure 1) shows that most of the west was dry, and even the areas of blue in California and Nevada were the result of a small amount of rain on a few days (most areas in the west get nothing during the summer, so a little goes a long way). The wetter than normal area in Arizona and into the four corners was the result of early monsoon season flow and the developing El Niño (see the next section).

June continued the trend to higher nighttime temperatures that the western US has seen for months now. This is largely the result of the warmer than normal sea surface temperatures in the North Pacific (Figure 2). Many stations throughout the west set records for the warmest nighttime temperatures ever recorded and warmer lows throughout the month. To date in 2015 growing degree-days are at or above normal in California and substantially higher than normal in Oregon and Washington with June accumulations putting degree-days 10-20% above the record numbers seen in 2014 (see the Appendix figure for four locations in Oregon). Reports from across the west highlight generally favorable growth conditions with little bloom disruption and a good fruit set in late May to early June in most regions and continue to point to early vine growth and fruit development (10 to 20 days early).

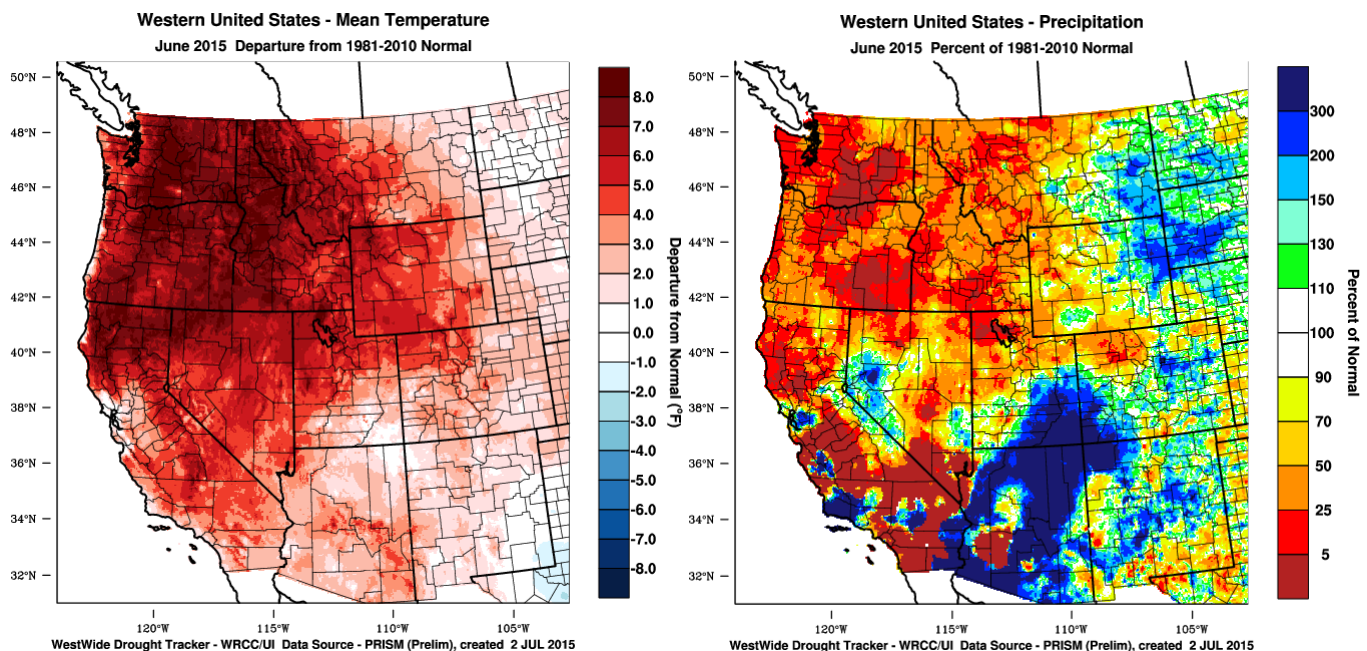


Figure 1 – Western US June 2015 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

El Niño Watch – conditions in the tropical Pacific continue to show strengthening El Niño conditions (warm tropical waters westward off of South America, Figure 2). Additional data from across the tropics points to a strong likelihood of the event strengthening into the fall and winter. There also continues to be some talk of this being a ‘strong’ event with widespread impacts globally. As mentioned last month, El Niño events tend to cause a large separation in the jet stream, with the sub-tropical jet ushering in large amounts of moisture in the southwest and into Texas and the polar jet stream being pushed northward and into a ridging pattern (see Forecast Periods below for more information).

North Pacific Watch – the ocean in the North Pacific continues to exhibit the “blob” of warmer than normal sea surface temperatures (Figure 2). Beyond the warmer temperatures and higher humidity levels, we are seeing widespread evidence of ocean and coastal impacts to salmon runs and bird migrations due largely to food source changes from the warmer SSTs. 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 last month, from historical analogs (years with similar conditions), the western US would be expected to experience:

Summer (June-Sept) – warmer from the North Coast of California into Oregon and Washington, cooler from the Bay Area south and into the southwest. The cooler conditions south would be expected from increased cloud cover, precipitation, and higher humidity levels from southwest flow from the El Niño region. Thunderstorm activity during the summer from the central valley of California north into Oregon also increases during these conditions. Similar conditions in the last 30 years occurred during the 1992, 1998, 2003, 2004, and 2005 growing seasons.

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.

Even with the onset of the El Niño, the US Drought Monitor and others are still forecasting for the drought across the western US to either persistent, intensify, or develop from the current conditions seen in California, Oregon, and Washington.

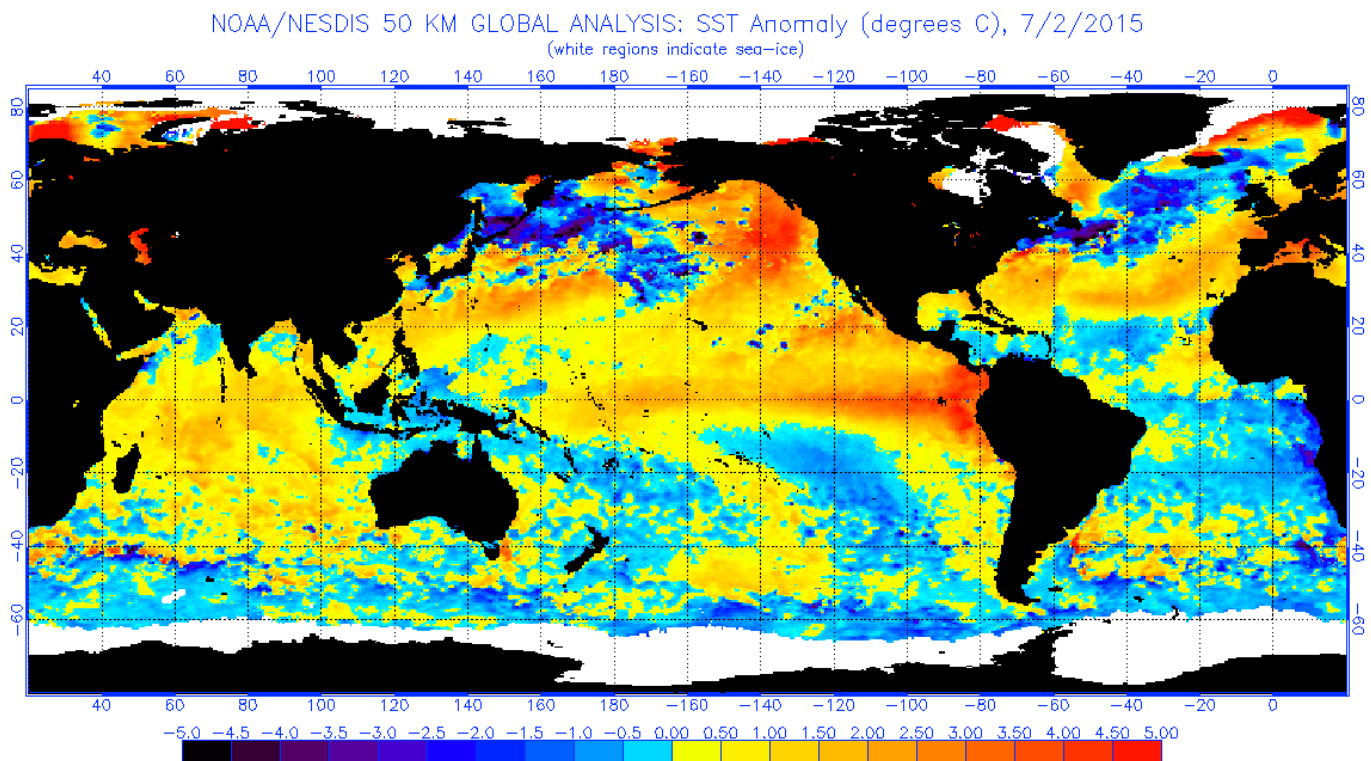


Figure 2 – Global sea surface temperatures (°C) for the week ending July 2, 2015 (image from NOAA/NESDIS).

Forecast Periods:

6-10 Day: Hotter than most would like to see, especially into the middle of next week. The broader pattern from June continues with greater chances of warmer and drier than normal conditions from Northern California into the PNW. Central to southern California and into the desert SW and Great Basin are projected to see some on shore flow with greater than normal cloud cover that would bring temperatures closer to normal or even below normal. Higher moisture levels (humidity) are likely to continue and will keep nighttime temperatures warmer than normal.

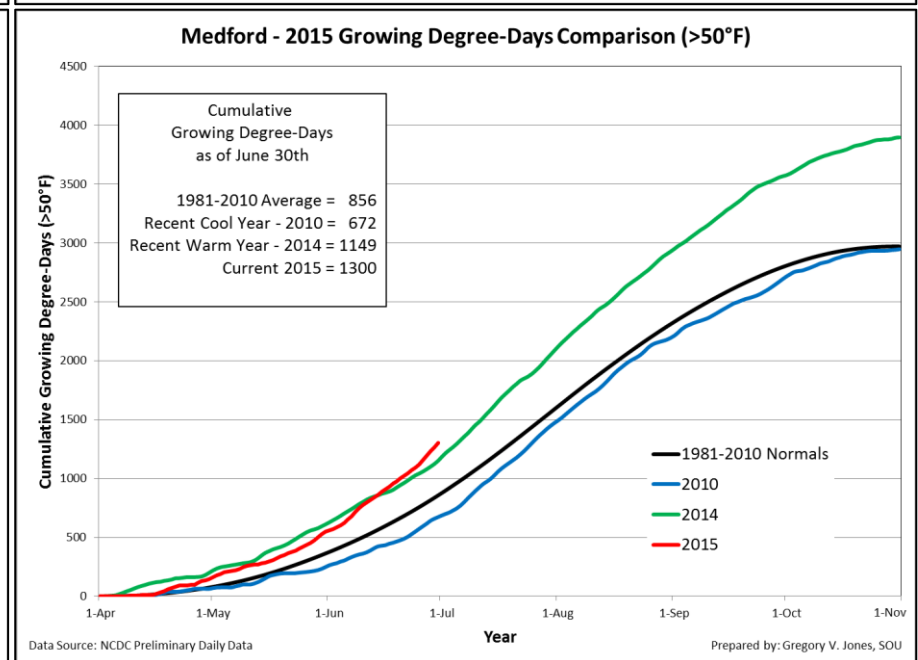
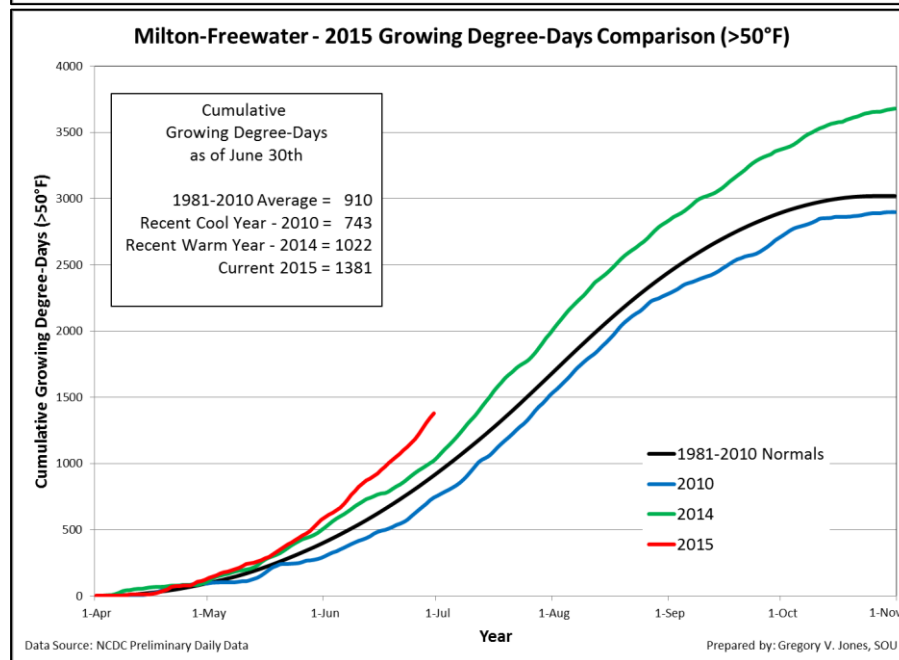
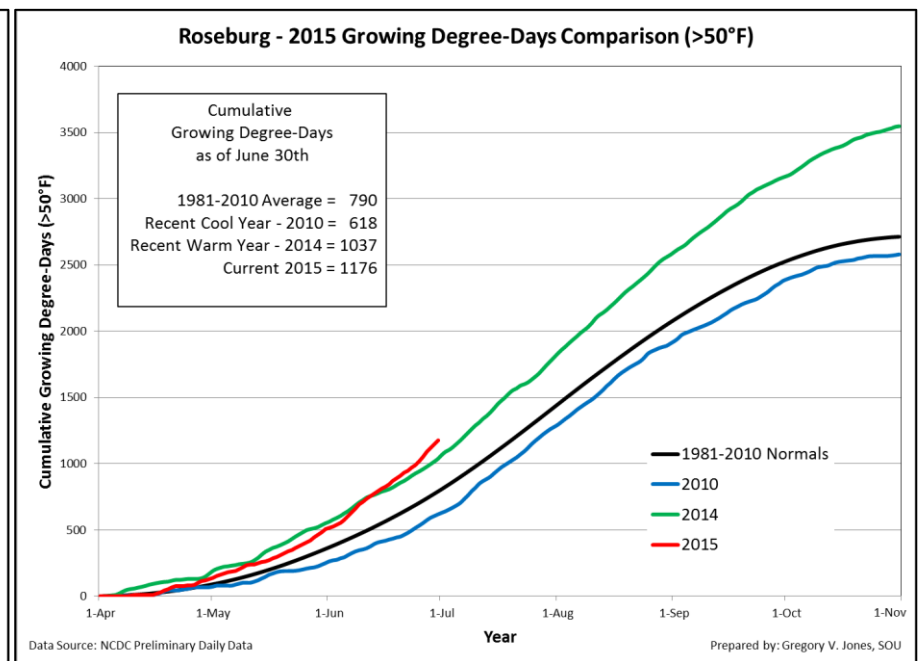
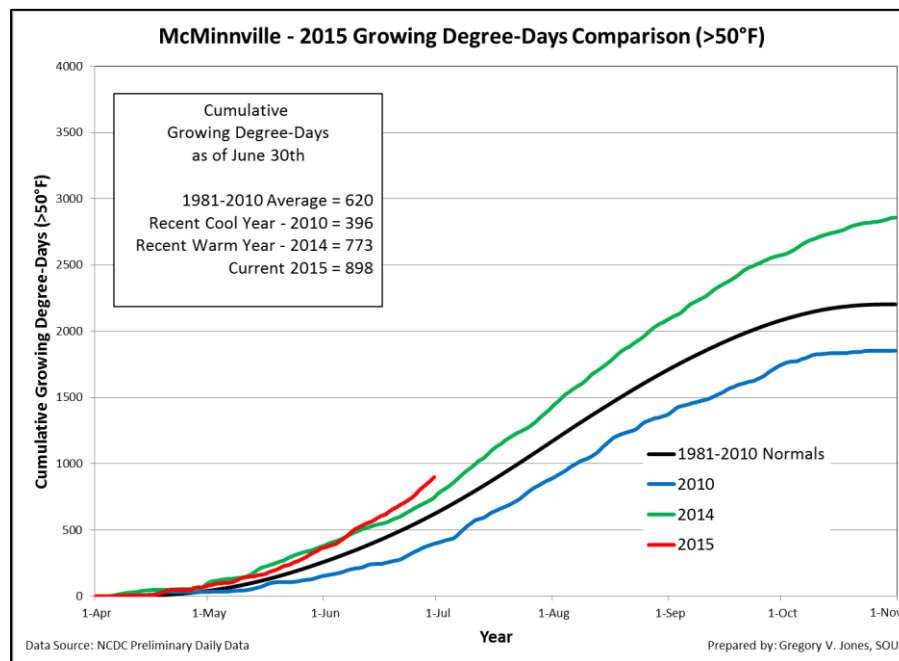
8-14 Day: No real difference from the 6-10 day, trending warm and dry north and near average temperatures but greater chance of wetter than normal conditions south and into the Great Basin. Slightly higher humidity levels should continue across the west.

30 Day: Seasonal outlook for July reflects expected warmer than normal conditions over the western US with the greatest deviation to warmer conditions in the northern Cascades, eastern Oregon and Washington. Precipitation amounts are projected to be below normal in the PNW and near normal into California, which means dry like most Julys are. The southwest and into the four corners and Rockies are forecast to see some greater monsoon flow likely bolstered by the El Niño conditions in the tropics.

90 Day: NOAA's seasonal outlook (Jul-Aug-Sep) continues the pattern from the 30 day with a strong likelihood for a warmer than normal summer in California, Washington and Oregon and into the western portions of the Great Basin and Rockies. The precipitation seasonal forecast is for equal chance of slightly above normal to below normal over much of the west, meaning again seasonal dry.

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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).