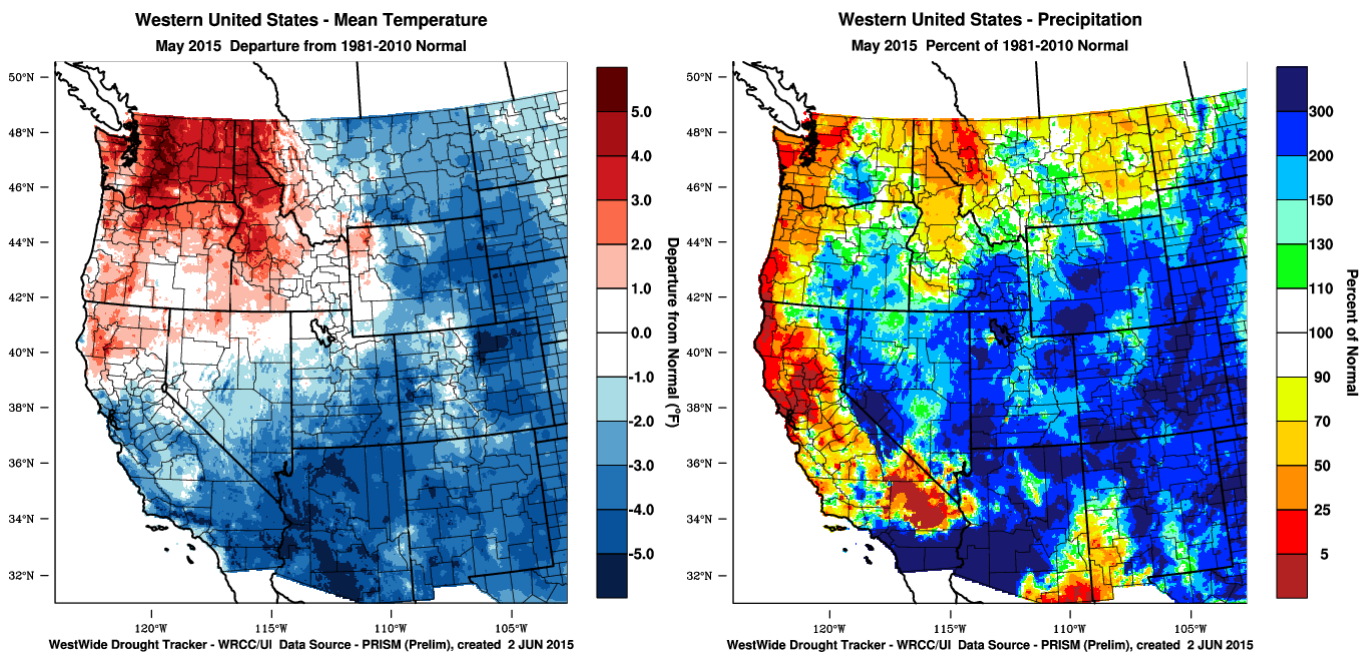


# Weather and Climate Summary and Forecast Spring 2015

Gregory V. Jones  
Southern Oregon University  
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Well May 2015 did not hold completely true to the forecast with a long-lived, fairly rare event playing a big role in the weather experienced over the west coast and Great Basin. May ended up mixed over the west in terms of temperatures with Northern California, Oregon, Washington, and Idaho largely above normal in temperatures (1-5°F above normal) and the Bay Area south and east into the Great Basin experiencing a cooler than normal month (Figure 1). This pattern was a result of a cut-off low pressure area (one that spins away from the jet stream) which traveled off the Pacific and over central California and Nevada, moving very little during the middle of the month. Cut-off lows over the western US generally occur a handful of times per year, have a residence time of a week or less, and are more difficult to forecast in timing and longevity. This event ended up lasting nearly 20 days, and without the steering of the jet stream, moved a little east, then a little west, then northeast over this period. The result was clouds and moisture wrapping around the system for a prolonged period. The precipitation pattern in May (Figure 1) shows the result from this event with much greater than normal rainfall in Southern California, the southwest, and Nevada, while the coast and western valleys were drier than normal.

Higher nighttime temperatures during May, from both the cut-off low air flow from the southwest and higher sea surface temperatures in the North Pacific, resulted in very little frost/freeze pressure for the western US during the month. The north-south pattern in temperatures resulted in continued early vine growth in Oregon and Washington, but slowed things down in many parts of California to a more normal growth pattern. Unfortunately the unsettled pattern of the last few days with spring thunderstorms, high winds, and rain are occurring along with flowering in many areas. To date in 2015 growing degree-days are now closer to normal in much of California, but continued higher than normal in Oregon and Washington with May accumulations running between the last two warm years (2013 and 2014) (see the Appendix figure for four locations in Oregon).



**Figure 1** – Western US May 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** – it is official, the four main meteorological agencies in the Pacific sector (Chile, Japan, Australia, and the US) have all confirmed the onset of an El Niño event (warm tropical waters westward off of South America, Figure 2) and its likelihood of strengthening into the fall and winter. Some are even calling for this to be a ‘strong’ event with widespread impacts globally. One potential result already from this El Niño is the whiplash from extreme drought to extreme flooding in Texas. 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). While an El Niño was forecast last year about this time, but fizzled, this one appears to be much more likely to continue.

In the North Pacific, the ocean continues to exhibit the “blob” of warmer than normal sea surface temperatures (Figure 2), which is still influencing the overall flow of the jet stream across North America. The current long range forecasts (see below) is being driven by the combined effects of a warm North Pacific and El Niño setting up in the tropics. 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.

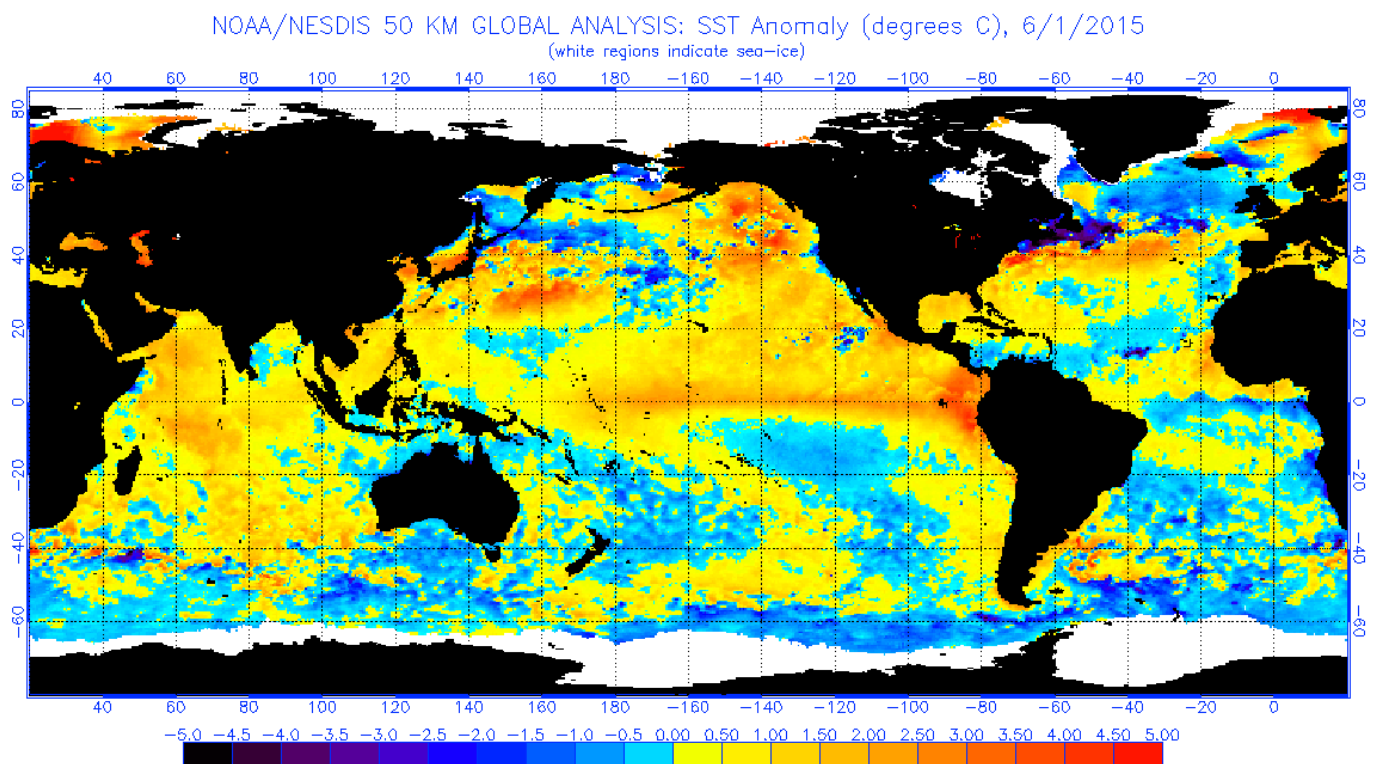


Figure 2 – Global sea surface temperatures (°C) for the week ending May 31, 2015 (image from NOAA/NESDIS).

**Forecast Periods:**

**6-10 Day:** After the current unsettled conditions pass, the broader pattern from May 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 projected to be wetter than normal with near normal temperatures. Higher moisture levels (humidity) due to SW flow into the southwestern US will keep nighttime temperatures warmer than normal.

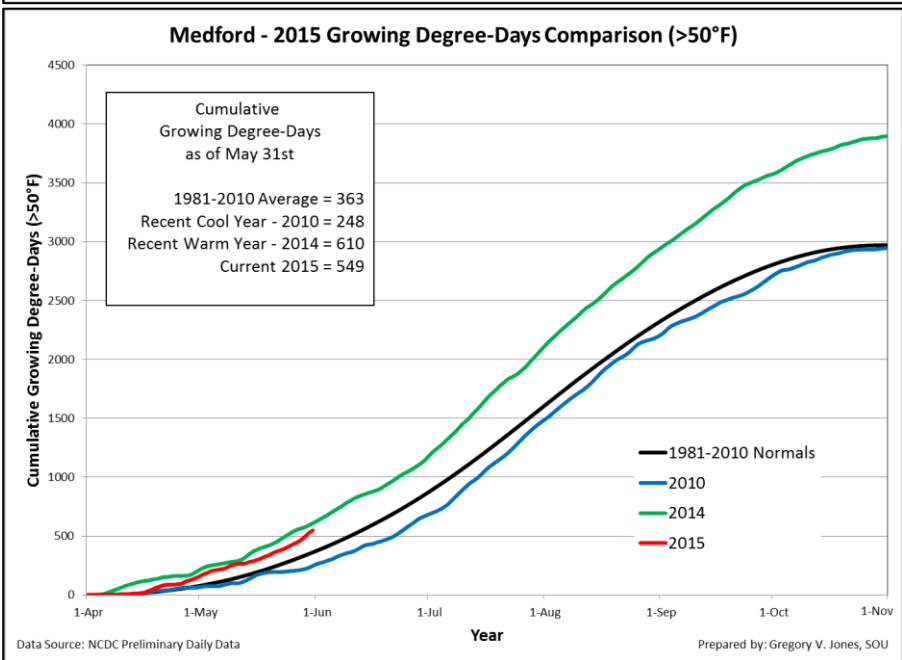
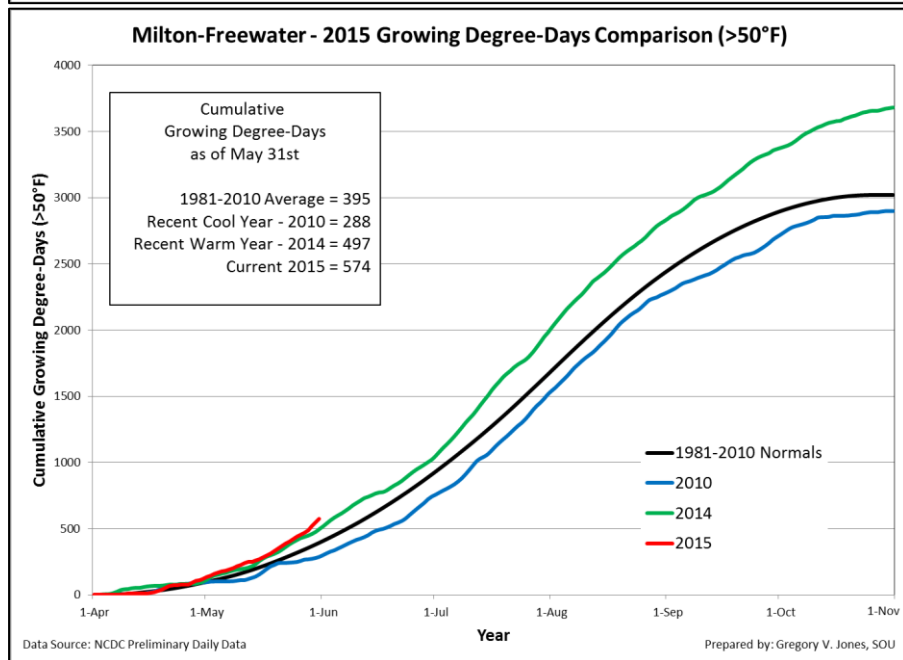
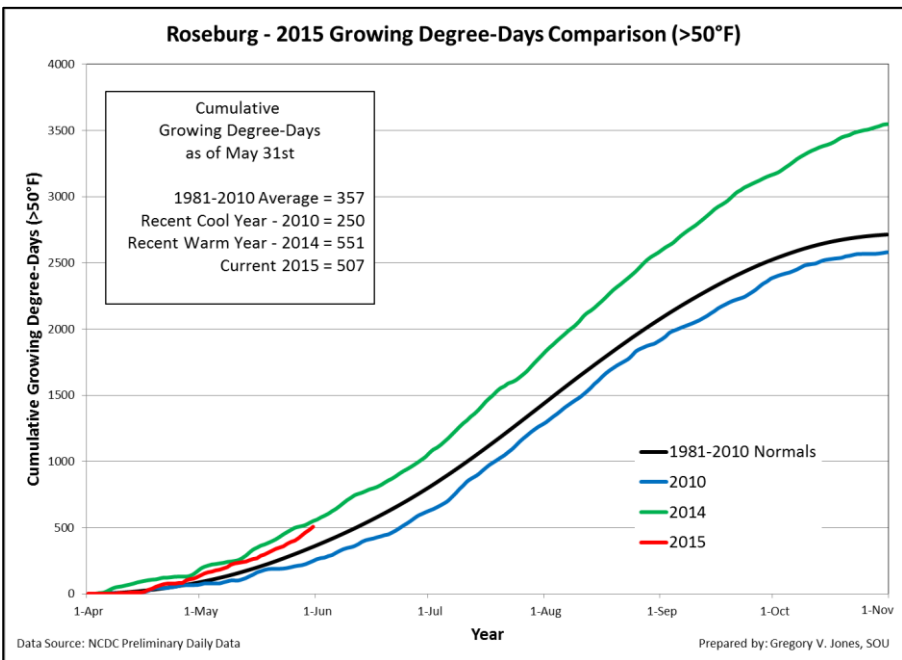
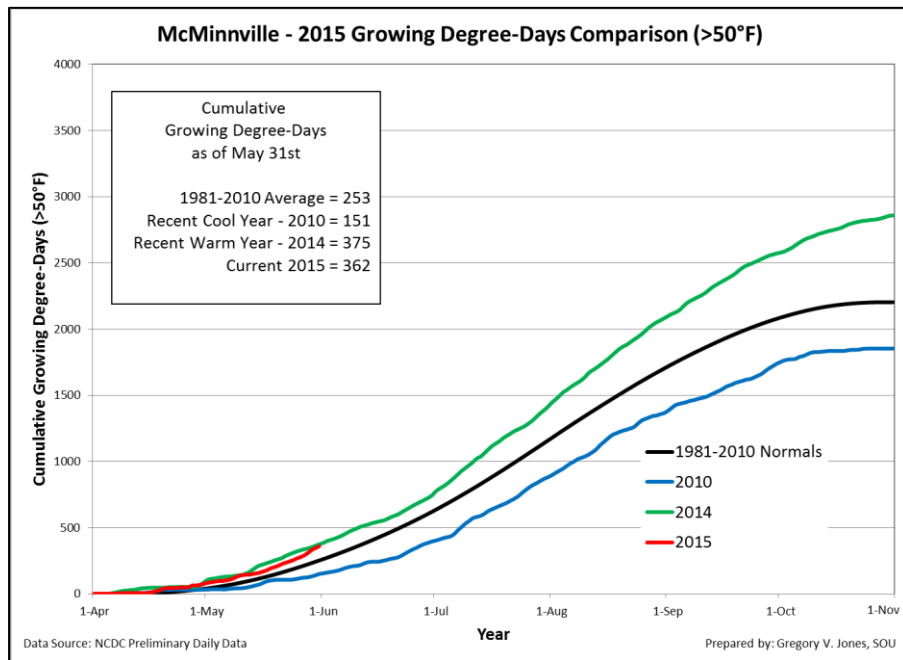
**8-14 Day:** No real difference from the 6-10 day, trending warm and dry north and near average temperatures but greater chance of wetter than normal conditions south. Higher humidity levels should continue across the west.

**30 Day:** Seasonal outlook for June reflects expected warmer than normal conditions over the western US with the greatest deviation to warmer conditions in the PNW. Precipitation amounts are project to be down in the PNW and near normal south into California and above normal in the southwest and Great Basin.

**90 Day:** NOAA's seasonal outlook (Jun-Jul-Aug) 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. The precipitation seasonal forecast is for dry north and equal chance of slightly above normal to below normal south. Model forecasts are hedging their bets in precipitation due to the El Niño developments in the tropics (see above).

Gregory V. Jones, PhD  
Environmental Science and Policy  
Southern Oregon University  
1250 Siskiyou Blvd  
Ashland, OR 97520  
541-552-6758  
[gjones@sou.edu](mailto:gjones@sou.edu)





**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).