

Weather and Climate Summary and Forecast August 2019 Report

Gregory V. Jones
Linfield College
August 3, 2019

Summary:

- A relatively mild month of July with low heat stress compared to July 2018. The month was moderate to extremely dry, increasing concerns for ongoing dry conditions in the PNW and the fire risk across the west.
- Growing degree-day accumulations slowed some during July, but continue 50-250 GDD above average in all but portions of the north and central coast of California and eastern Washington, which are closer to average or slightly below average. Véraison reports and estimates point to an average to slightly delayed vintage.
- The forecast through mid-month indicates a warm start to August becoming seasonal through mid-month then warming to slightly above average later in the month with no major heat events. Some precipitation is forecast for the extreme northwest, but not much expected, while the rest of the west should stay dry.
- A very warm North Pacific is driving the forecast for August through October, with the western US likely seeing a warmer than average second half of summer and start to fall. The precipitation forecast calls for near average throughout the west, which for August and September is largely little to nothing, but no indication yet for the onset of fall rains.

The July forecast for warmer than average temperatures missed the mark with conditions that ended up near average to cooler than average over most of the western US (Figure 1). While other regions, including Alaska, portions of Siberia, the Arctic, and much of Europe sweltered in extreme, record-breaking heat, the west coast experienced a relatively mild, seasonal month. The reason comes from a complex pattern in the jet stream, which has ushered extremely warm air northward. In addition, the west coast's normally dominant high-pressure dome was located further to the west and north, allowing for onshore flow from the North Pacific for much of the month. The cool July extended across the northern Rockies and into the central and southern Plains, while the Four Corners and southern Rockies were warmer than average. Extreme heat in July dominated the eastern US with many regions 3-5°F above average (not shown). The western US was largely seasonally dry in terms of precipitation for the month of July, with the majority of California was much drier than average (Figure 1). The exception was the Sierra Nevada Mountains, which experienced July thunderstorm activity. The driest area in the country in June was the western US, along with the southern Plains, while the rest of the country experienced near average to moderately higher than average precipitation for the month, especially the northern Plains and the lower Mississippi (not shown).

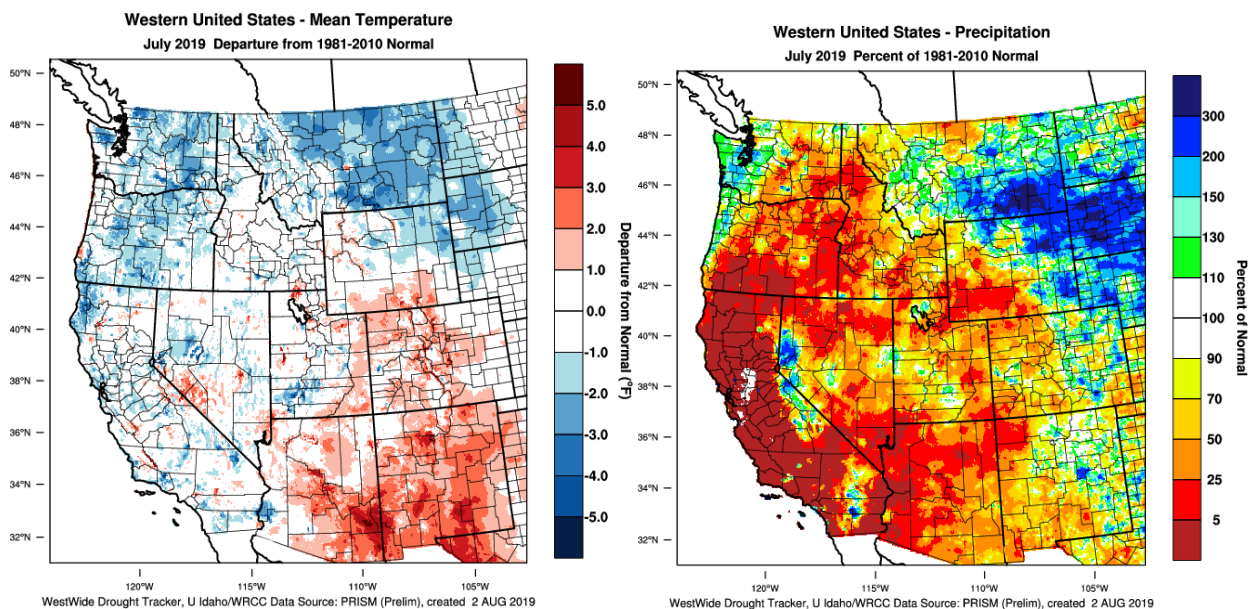


Figure 1 – Western US July 2019 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

For the water year from October through July, the general temperature pattern continues from previous months with the ten-month period showing near average temperatures in most of the west coast and inland states, except for warmer than average conditions in scattered areas in Washington, Oregon, and California. Cooler than average conditions have held in eastern Washington and Oregon, portions of southern California and into the desert southwest, Great Basin, and Rockies. The northern Rockies into the northern Plains have seen substantially colder than average conditions during this period (up to 6°F colder than average). The colder than average conditions in the northern Rockies and Plains extends into the central portion of the country, Great Lakes, and northern New England, while the southeast has been moderately warmer than average (not shown).

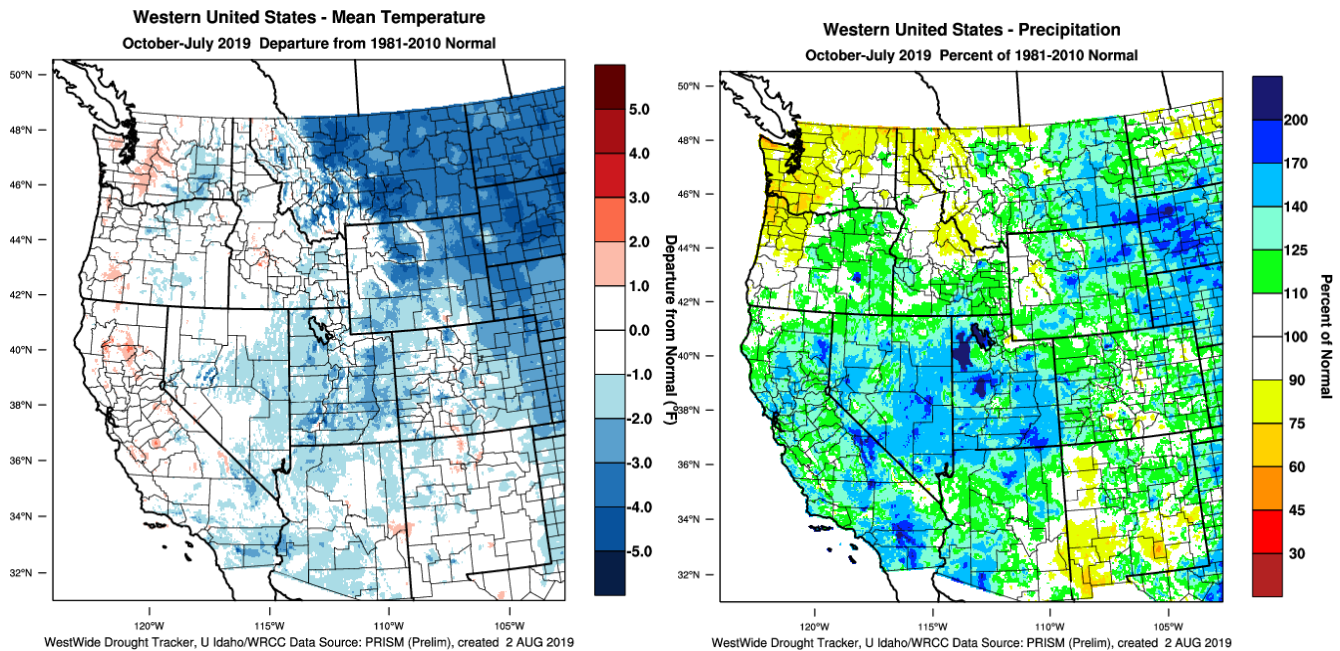


Figure 2 – Western US Water Year 2018 - July 2019 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

Water year precipitation amounts have not changed much from last month, with amounts continuing to be moderately wetter than average in much of California, the majority of the southwest, Great Basin and portions of the Rockies. The water year period to date has been 115-200% of average for these regions (Figure 2). A relatively dry water year to date continues in northwestern Oregon and Washington and some scattered areas in the northern Rockies (60-85% of average; Figure 2). The central and eastern US has largely seen precipitation amounts running 110-200% or more of normal so far this water year (not shown), with only the southernmost portion of Texas and south Florida experiencing a drier than average conditions.

Seasonal deviations in growing degree-days (GDD) mapped over the western US since March shows that the majority of the western valleys are continuing to run 50-250 GDD above average (Figure 3). Coastal areas of central to southern California, the North Coast, and portions of eastern Washington are closer to the average or slightly below average for this time of year. In terms of the deviation in days, current conditions put much of northern California, western Oregon, and western Washington 10-18 days ahead of normal for heat accumulation, while coastal areas in the North Coast, central to southern California, and eastern Washington are running 4-10 days behind in heat accumulation (not shown).

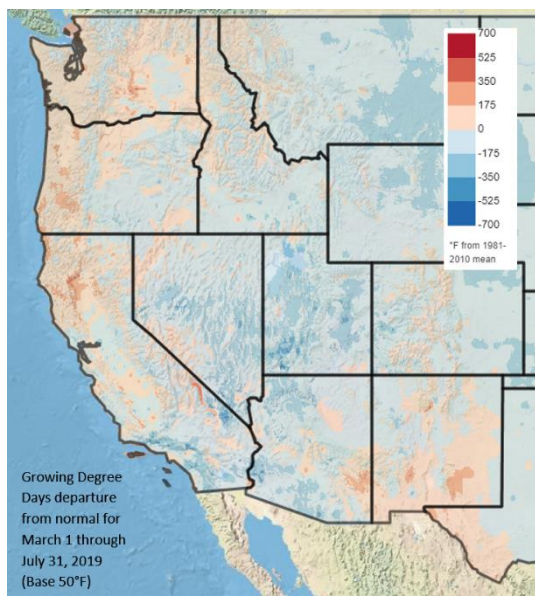


Figure 3 – Western US March through July 2019 growing degree-days departure from 1981-2010 normals (image from Climate Impacts Research Consortium, University of Idaho).

Véraison has started in many locations in California with most other regions in the state not far behind and estimated véraison dates likely to be in the second week of August for most of Oregon and Washington. Heat accumulation (GDD) amounts for four locations that I have tracked for many years in Oregon have slowed during the last month. GDD is currently 10-25% above the 1981-2010 normals for the months of April through July, from 1-10% lower than the same point in 2018, and now running below 2015, the warmest year to date in the regions (see the Appendix Figure 1 for four locations in Oregon).

Drought Watch – Limited drought conditions continue over the majority of the US (Figure 4, left panel). The most significant area of drought concern continues to be western Washington, northwestern Oregon, and portions across the northern border areas with British Columbia. Other areas experiencing dry conditions to moderate drought include the Four Corners, numerous areas in Texas, isolated areas of the Mississippi River valley and the northern Great Plains, and portions of the southeast. The US seasonal drought outlook shows continued concern for short to long-term drought in the PNW, especially western Washington, northwestern Oregon, and the northern Cascades, as the August through October forecast shows (see the 90-day forecast below). Additional drought concerns have overall diminished from previous months, with only southern Texas remaining an area of concern (Figure 4, right panel).

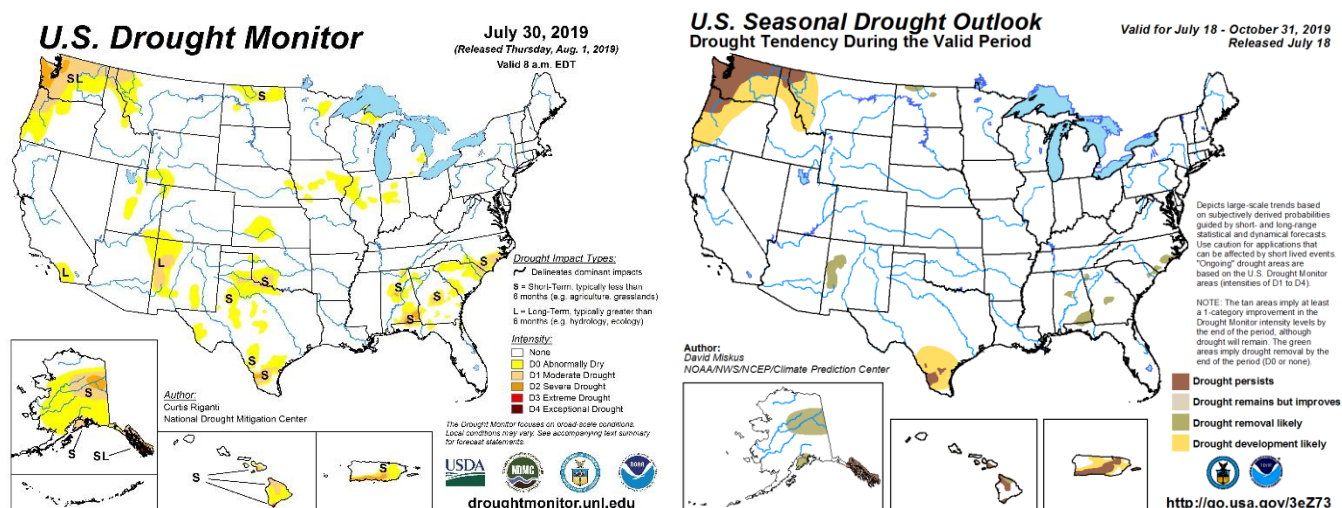


Figure 4 – Current US Drought Monitor and seasonal drought outlook.

ENSO Watch – Conditions in the tropical Pacific have declined to neutral ENSO conditions with only slightly warmer than average sea surface temperatures (SSTs) in the key areas of the Tropical Pacific (Figure 5). Patterns in the atmosphere showed mainly ENSO-neutral to borderline El Niño conditions. Collective model forecasts favor ENSO-neutral through autumn, possibly returning to weak El Niño by winter. The official CPC/IRI outlook still comes with an El Niño advisory, but calls for a transition to ENSO-neutral by late summer, most likely remaining neutral through fall and winter. If these conditions continue to hold the weather across the western US will likely see less of a Tropical Pacific influence than if the El Niño conditions had stayed in place. However, the broader warming in the entire North Pacific will likely carry the influential role heading into late summer and early fall (see forecast periods below and Appendix Figure 1).

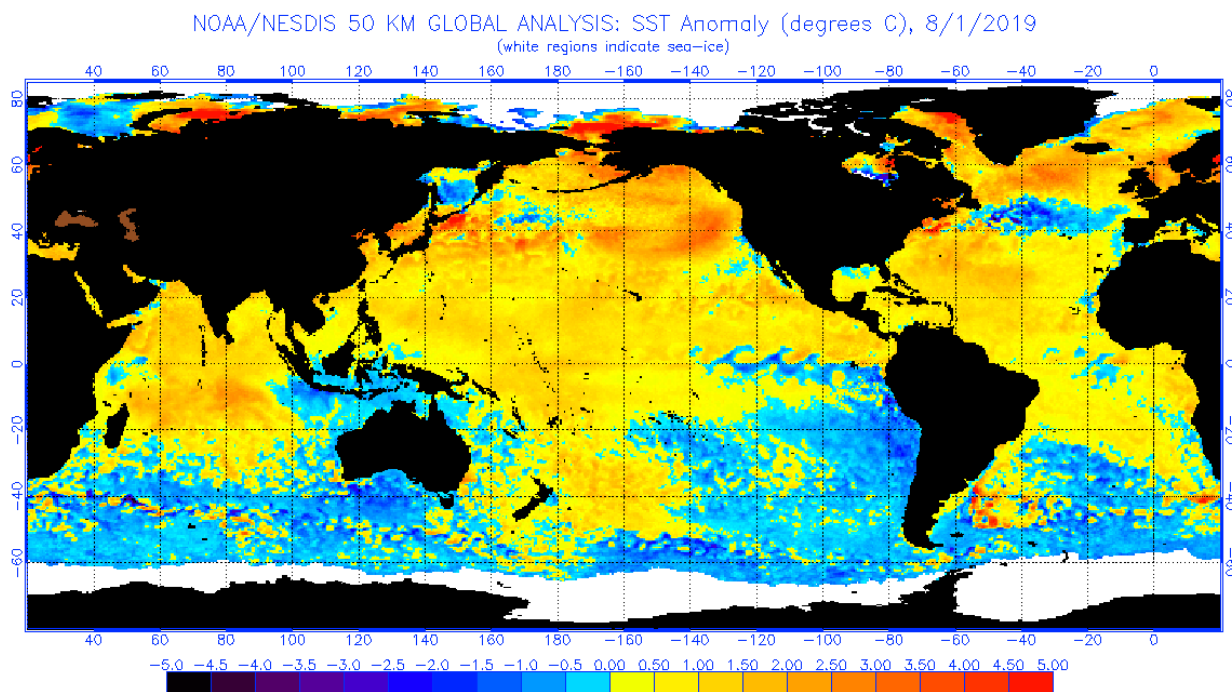


Figure 5 – Global sea surface temperatures (°C) for the period ending August 1, 2019 (image from NOAA/NESDIS).

North Pacific Watch – Ocean SSTs have soared far above average levels during the last 60 days with nearly the entire North Pacific much above average (Figure 5). The return of the ‘blob’ of extremely warm ocean temperatures in the North Pacific should be a major influence in the 90 day forecast (see below) with a likely warm late summer, early fall for most of the west, but especially the PNW. There continue to be signs of coastal upwelling along the central California coast that has likely helped keep North Coast temperatures down so far this vintage. These conditions suggest a warmer second half of the summer and seasonal models from regional forecasting agencies are showing that the period will be significantly warmer than average for most of the West. With the tropics moving to a neutral ENSO phase (see above), the warm North Pacific should play a larger role in the influence on the western US weather during the next 3-4 months.

Forecast Periods:

Next 5 days: current cool conditions and light rain in the extreme northwest will give way to a warm-up through August 7th with temperatures reaching into the low to mid-90s in the western valleys and into the low 100s in all of the usual locations. No rain forecast past today.

6-10 day (valid August 8-12): after the warm-up over the next few days, conditions will likely head back to seasonal or near average temperatures over most of the western US. Areas within the Great Basin might stay slightly below average, with the desert southwest warming to above average. The northern tier of states from the Rockies eastward are forecast to see below average temperatures for this time of year, while the southern tier of states will likely be much warmer than average. There is a possibility for a couple of rain events during this forecast period, but they

appear to be centered northward along the Canadian coast and will likely be the coastal drizzly events in western Washington and Oregon, and possibly some mountain thunderstorms in the inland PNW. No rain is forecast for California at this time. Forecasted dry conditions in the desert southwest, southern Texas, and the southeast contrast with the upper Midwest and Ohio River valley, which are forecast to see above average precipitation during this period.

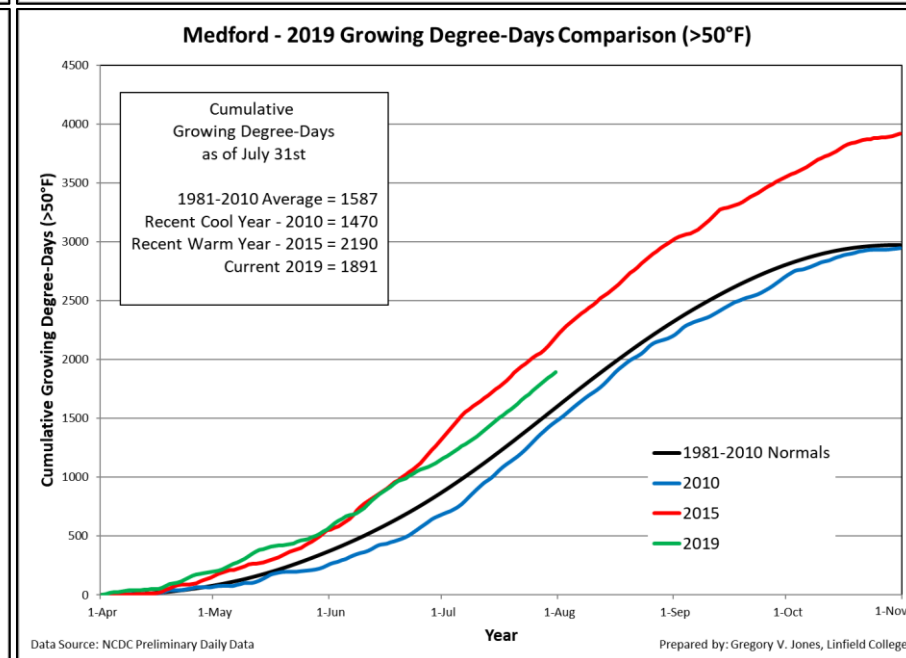
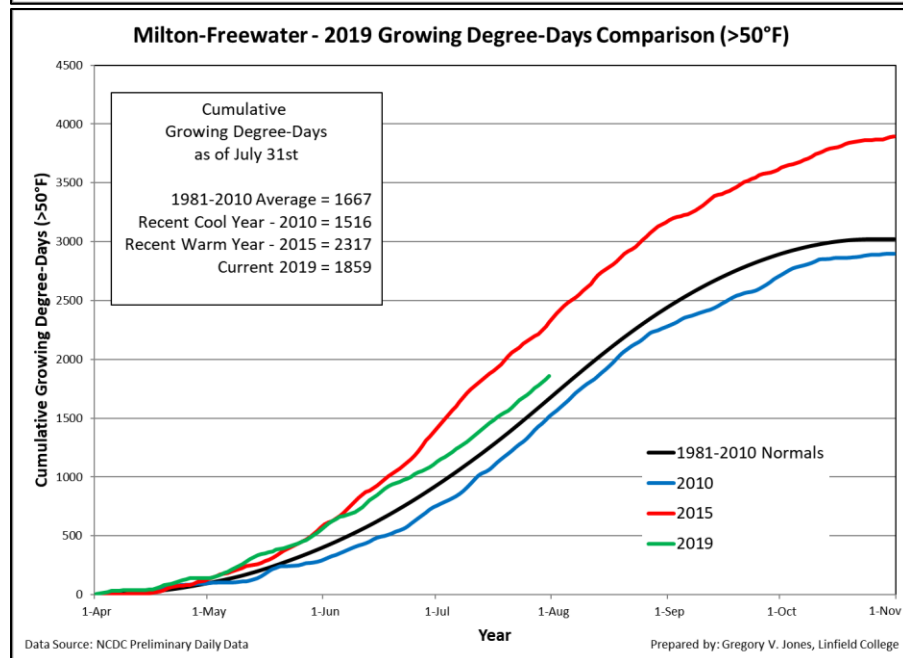
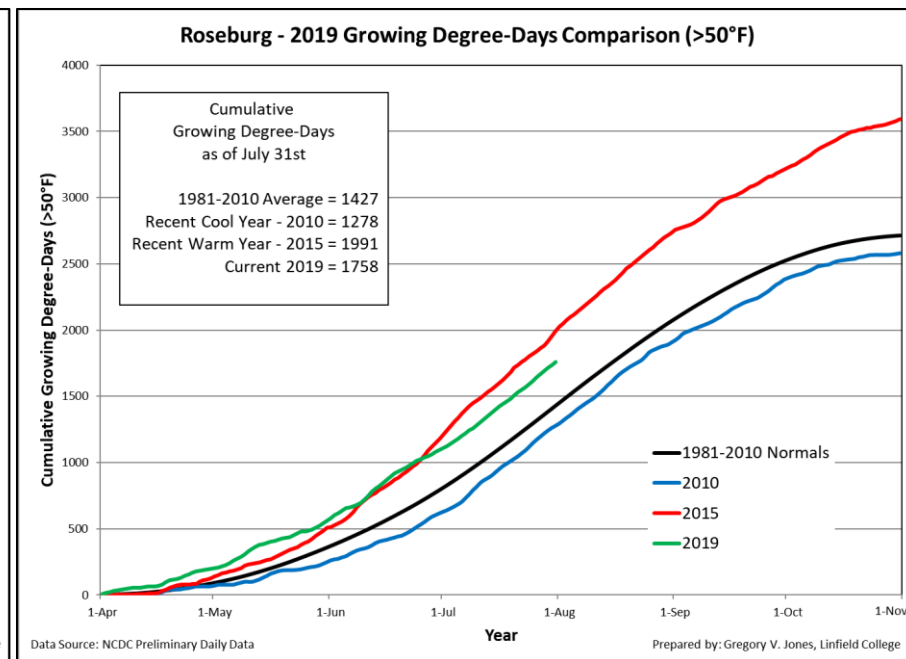
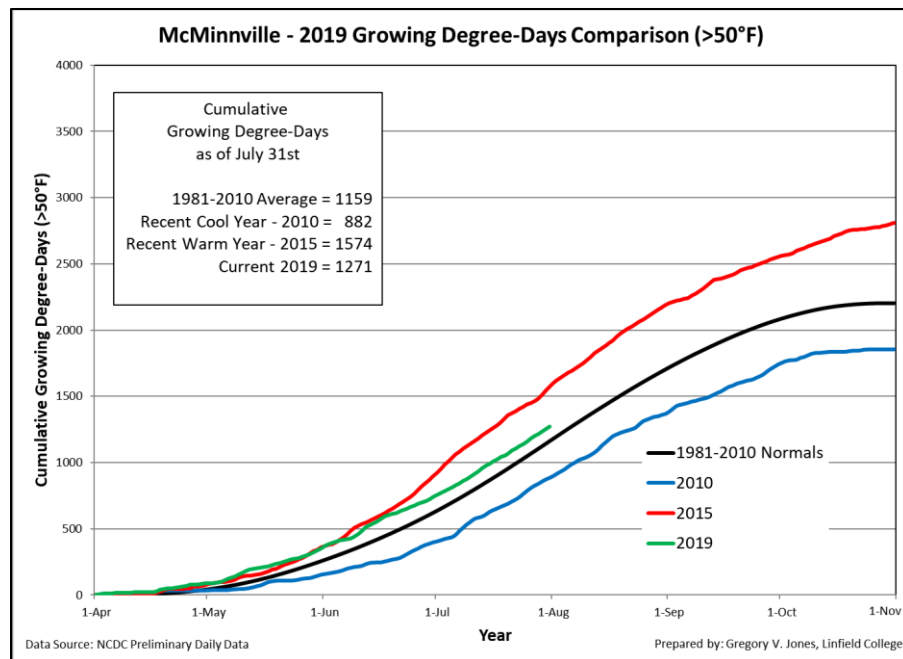
8-14 day (valid August 10-16): seasonal conditions in the 6-10 day forecast for the western US continue into mid-month with slightly warmer than average temperatures building in throughout California along with western Oregon and Washington. The southern tier of states is likely to continue seeing warmer than average conditions, while cooler than average conditions are forecast for the upper Midwest, Great Lakes, and into New England regions. A similar precipitation pattern holds during this period where dry conditions should prevail over much of the western US, except for the extreme northwest portion of Oregon and across most of Washington. The monsoon season in the Southwest continues to be slow to develop this year, with dry conditions forecast through mid-month. The center of the country is forecast to see average to slightly above average precipitation for this time of year, while the Gulf coast states and eastern seaboard are forecast to be drier than average.

30 day (valid August 1-31): the revised August forecast is calling for largely above average temperatures for the month for the PNW and near average conditions in California (see Appendix Figure 2). A relatively cool month is forecast for the central Plains and upper Midwest, while a warmer than average month along the southern tier of states from Arizona across Texas to Florida and up along the eastern seaboard is likely in play. Not much precipitation for the western states with the forecast calling for average conditions. The central portion of the country is forecast to experience a wetter than average month, while south Texas and the Great Lakes are forecast to remain drier than average.

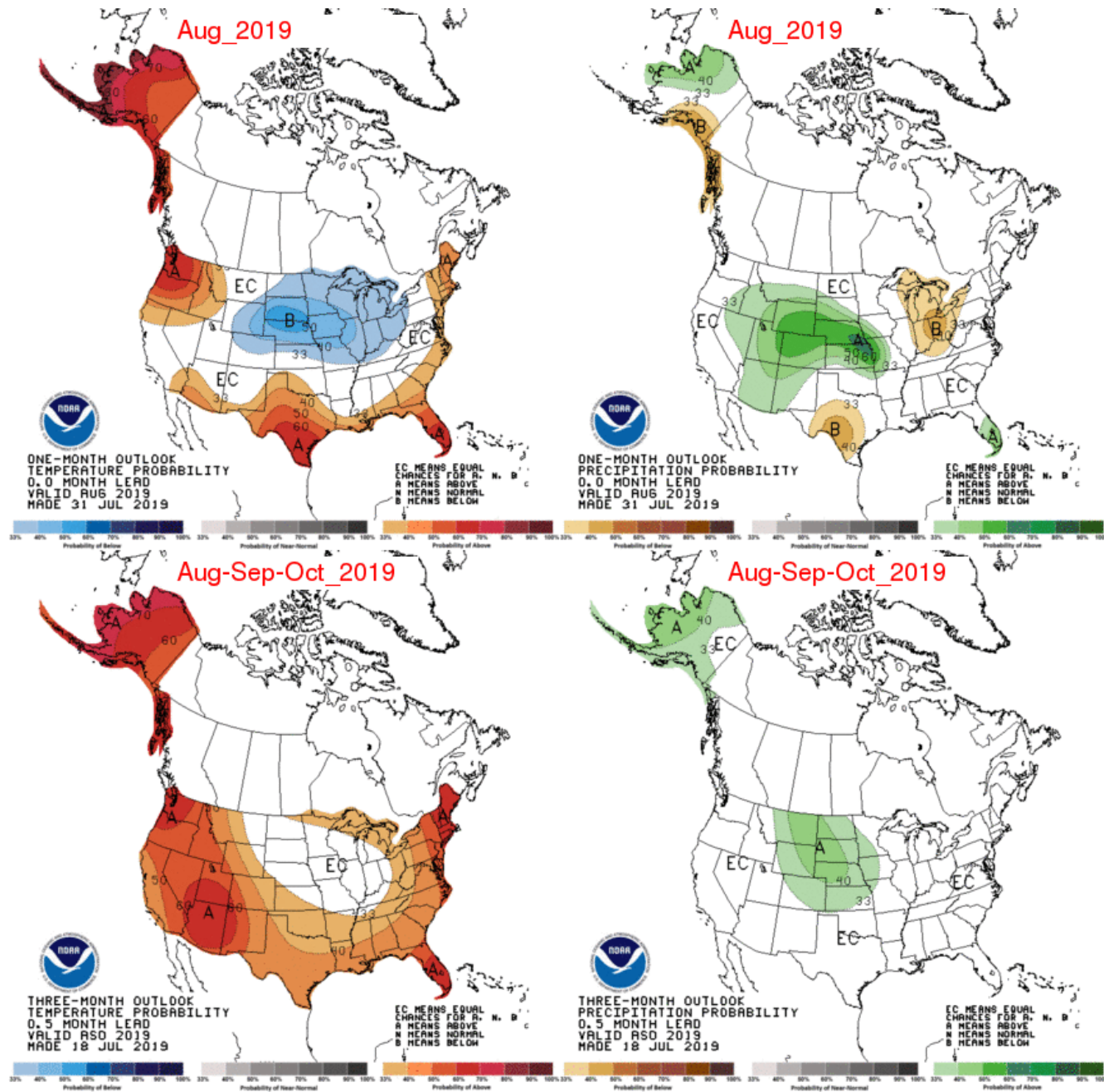
90 day (valid August-September-October): the second half of summer and into harvest forecast is pointing to the western US likely seeing a warmer than average three-month period (see Appendix Figure 2). The Great Plains and upper Midwest is forecast to stay near average during this period, while the rest of the country is likely to see a relatively warm end to summer and start of the fall. Precipitation during the next 90 days is forecast to have equal chances for slightly above, near normal, or slightly below for most of the country, which for the west coast means the typical late summer dry conditions and first fall rain events in mid to late September or early October. The only area likely to see wetter than average conditions is in the northern and central Rockies across into the northern Plains.

Gregory V. Jones, Director
Evenstad Center for Wine Education
Evenstad Chair in Wine Studies
Linfield College
900 SE Baker Street
McMinnville, OR 97128-6894
503-883-2218
gjones@linfield.edu





Appendix Figure 1 – Cumulative growing degree-days (base 50°F, no upper cut-off) for McMinnville, Roseburg, Milton-Freewater, and Medford, Oregon. Comparisons between the current year (2019) and a recent cool year (2010), a recent warm year (2015) and the 1981-2010 climate normals are shown (NCDC preliminary daily data).



Appendix Figure 2 – Temperature (left panel) and precipitation (right panel) outlooks for the month of August (top panel) and August, September, and October (bottom panel) (Climate Prediction Center, climate.gov).