6-3-2020

Weather and Climate Summary and Forecast: June 2020 Report

Gregory V. Jones
Linfield College

Weather and Climate Summary and Forecast
June 2020 Report

Gregory V. Jones
Linfield College
June 3, 2020

Summary:

- May flip-flopped from unseasonably warm in the first ten days of the month, to average or cooler than average during mid-month, back to a relatively warm last ten days, ending overall warmer than average.
- Mid-month rains brought some welcome relief for dry conditions in northern California and the PNW with 110 to 250% of normal precipitation for the month of May. Southern California, the southwest, and the central Rockies experienced a dry month with generally less than 25% of average precipitation.
- May rains stalled, but did not stop, short to long term drought concerns which are forecast to remain in place or develop for much of the west.
- The short-term forecast is pointing to a warm (south) to seasonal (north) first week, then a cool down with rains in the PNW then a return to seasonal or warmer than average conditions after the middle of the month.
- The June through August seasonal forecast for the western US continues to point to the likelihood of warmer than average conditions into the heart of summer. The overall precipitation outlook continues the drier than average conditions for much of the PNW and northern California, and near average elsewhere in the west.

The month of May averaged out to be a warm month for many, however, it was a tail of three periods with moderate to extreme heat in the first ten days and last ten days of the month, with a relatively cool period mid-month. The overall average shows that the bulk of the western US was warmer than average (Figure 1). Much of California and the southwest saw temperatures 1-5°F warmer than average, western Oregon and Washington were 1-2°F warmer than average, while eastern portions of those states saw near average or up to 1 degree below average. The forecast for a cooler month from the Plains across the rest of the country held true, with many areas seeing temperatures 2-4°F cooler than normal for the month (not shown). The precipitation pattern for May in the western US showed largely dry conditions in the southwest and in the Rockies, with Northern California into the PNW seeing a wetter than average month (Figure 1). Percent of normal amounts ranged from 5-25% southwest, but 110-250% of normal northward in California, Oregon, and Washington. For the rest of the country, New Mexico and western Texas experienced a very dry month as did much of the northern Plains and Northern New England, while the Gulf Coast, Florida and the mid-Atlantic experienced a moderately wet month (not shown).

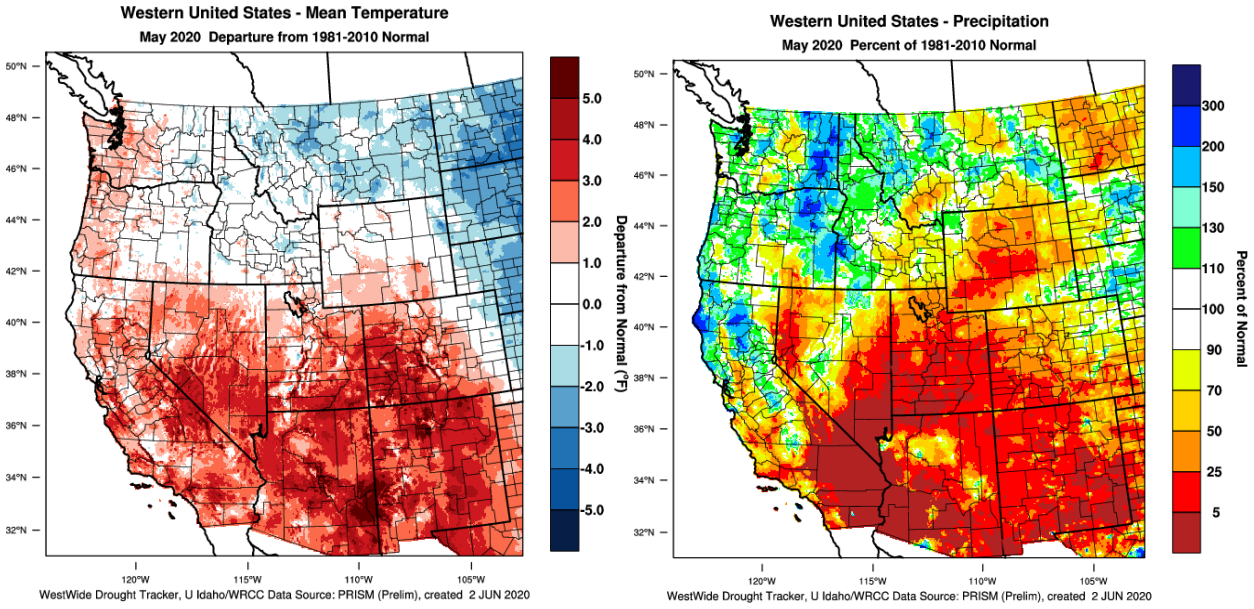


Figure 1 – Western US May 2020 temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

Temperatures in May elevated both the warmer than average water year (starting in October) in California and the southwest and the cooler than average conditions in the northern Rockies and northern Plains (Figure 2). Central to Northern California continues mostly warmer than average with only portions of inland southern California slightly below normal. Oregon and Washington have been near average to slightly warmer than average for the water year, except eastern wine regions which are slightly cooler than average for this period. The northern Rockies and northern to central Plains are the only areas of the country running colder than average (1-3°F below normal) while the Gulf Coast states and the eastern third of the US has been seeing temperatures 1-4°F above normal (not shown). The water year precipitation amounts for the western US are running 20-90% of average with only western Washington, the Blue Mountains, and a few isolated areas in the Rockies closer to average. The most above-average region is Southern California and the southwest, where rain events in March and April brought wetter than average conditions to those regions (Figure 2). The relatively dry first half of winter, spring and into early summer continues to add to longer-term drought concerns (see Drought section below). Much of the rest of the country has seen wetter than average conditions for the water year, except Texas and across the Gulf Coast through Florida, which continues to be much drier than average although the summer tropical storm season is expected to alleviate the concerns (not shown).

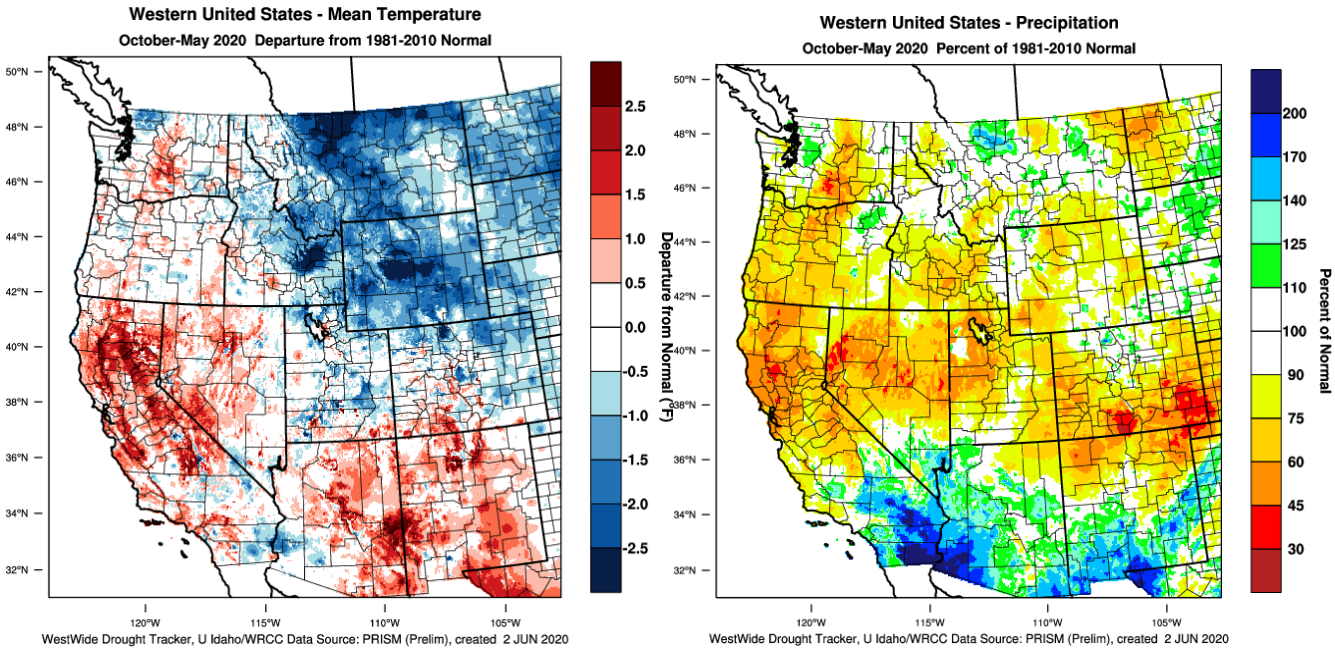


Figure 2 – Western US water year to date (October-May) temperature departure from normal (left) and percent of normal precipitation (right; images from WestWide Drought Tracker, Western Region Climate Center; University of Idaho).

Growing degree-days for the western US shows a March through May that is largely running above normal (Figure 3). Amounts are currently 5-15% above normal or running 12-20 days ahead of average for this time of the season. However, some areas are slightly behind in heat accumulation with eastern Washington 5-10% down or about one week behind. In California, the Bay Area has moved to near average to slightly above average while areas of Southern California remain below average.

Heat accumulation (GDD) amounts for four locations that I have tracked for many years in Oregon are showing a similar pattern to that in the PNW (Figure 3). All four locations are above the 1981-2010 normals for the months of April and May, however eastern Oregon (Milton-Freewater and the Walla Walla region) are running only 5% up while other locations are 25-60% up (see Appendix Figure 1). Similarly, compared to the average of the last 15 years for the sites, Medford, Rosburg, and McMinnville are 10-30% up while Milton-Freewater is 10% down. Compared to 2019, Roseburg and Medford are 1-5% up during the same period in 2020 while McMinnville and Milton-Freewater are running 9 and 32% below values seen in 2019, respectively (see the Appendix Figure 1 for four locations in Oregon).

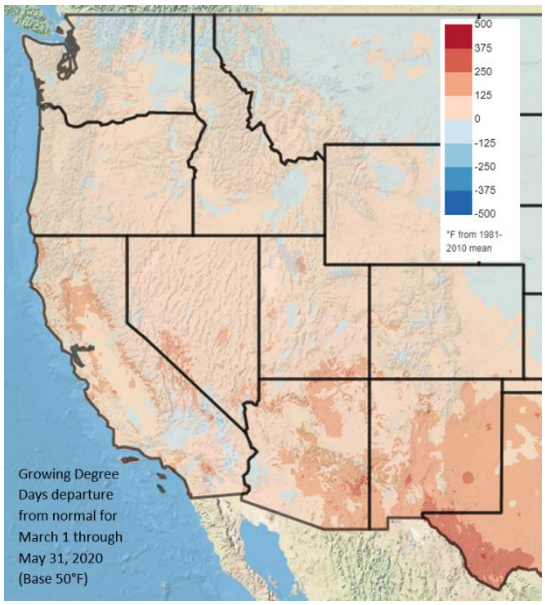


Figure 3 – Western US March through May 2020 growing degree-days (image from Climate Impacts Research Consortium, University of Idaho).

Drought Watch – Above-normal precipitation fell in parts of the Northwest and into Northern California during May (Figure 1), which led to improvement in some areas (though not all) with ongoing drought. However, widespread moderate to extreme drought conditions remain over much of California, Oregon, and central to eastern Washington (Figure 4). The drought zone in the west extends southeastward across the Great Basin to the Four Corners region and now into the Front Range and Panhandle region. During May, much of Texas and Gulf Coast had enough precipitation to lower drought concerns somewhat, while the rest of the eastern US remains drought-free. The longer-term outlook for the US through August continues to show the forecasted dry conditions for much of California, Oregon, and Washington with drought development and/or persistence through mid-summer. The Four Corners region will also likely remain dry, while southern Texas, the Gulf Coast, and Florida will likely continue to see drought conditions subside due to an increased likelihood for tropical systems (Figure 4, right panel).

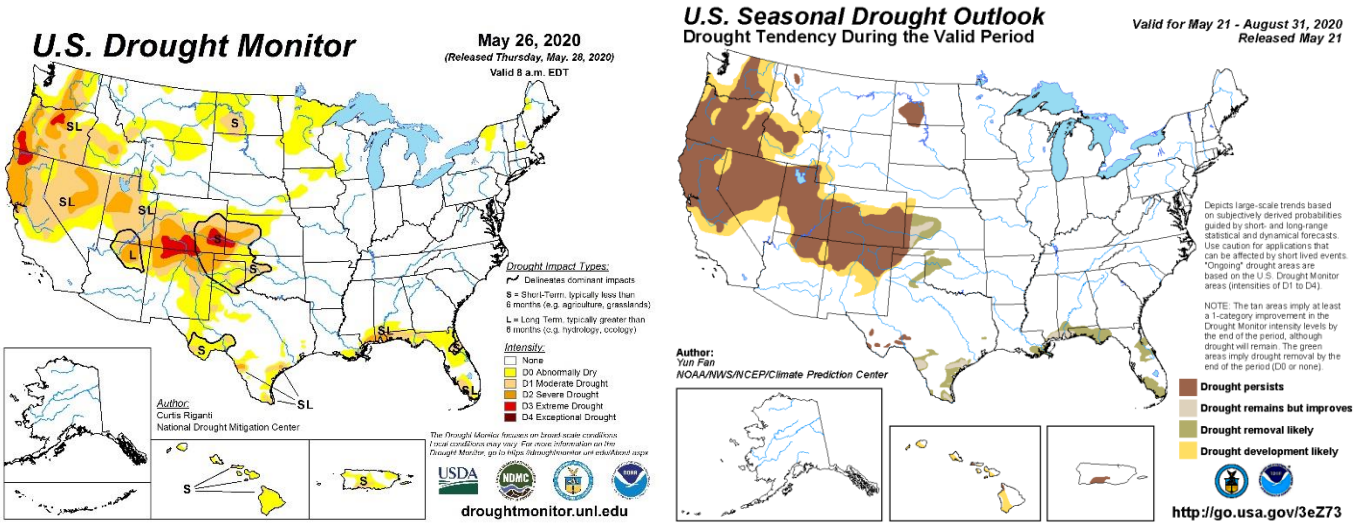


Figure 4 – Current US Drought Monitor and seasonal drought outlook.

ENSO Watch – The tropical Pacific continues to waffle between weak El Niño (warm) and neutral conditions. In mid-May, the Climate Prediction Center (CPC) report indicated that SSTs in the east-central Pacific were either ENSO-neutral or leaning slightly in the cool-ENSO direction. Patterns in atmospheric variables are also indicating mostly neutral conditions. Most model forecasts favor neutral SST conditions continuing into summer, becoming below average but not necessarily into La Niña territory during summer through fall. The official CPC/IRI outlook and other

agencies outlooks are consistent with these model forecasts, calling for a likely continuation of ENSO-neutral in summer and fall, with some chance of La Niña by fall. When ENSO is in a neutral phase, tropical Pacific SSTs are usually close to average. However, ENSO-neutral conditions do not mean that regional weather conditions will necessarily be average, but that these types of springs into early summers tend to be the least predictable. The current conditions along with the changes in the North Pacific (see below) are driving the longer-term forecast (see forecast periods below and Appendix Figure 2).

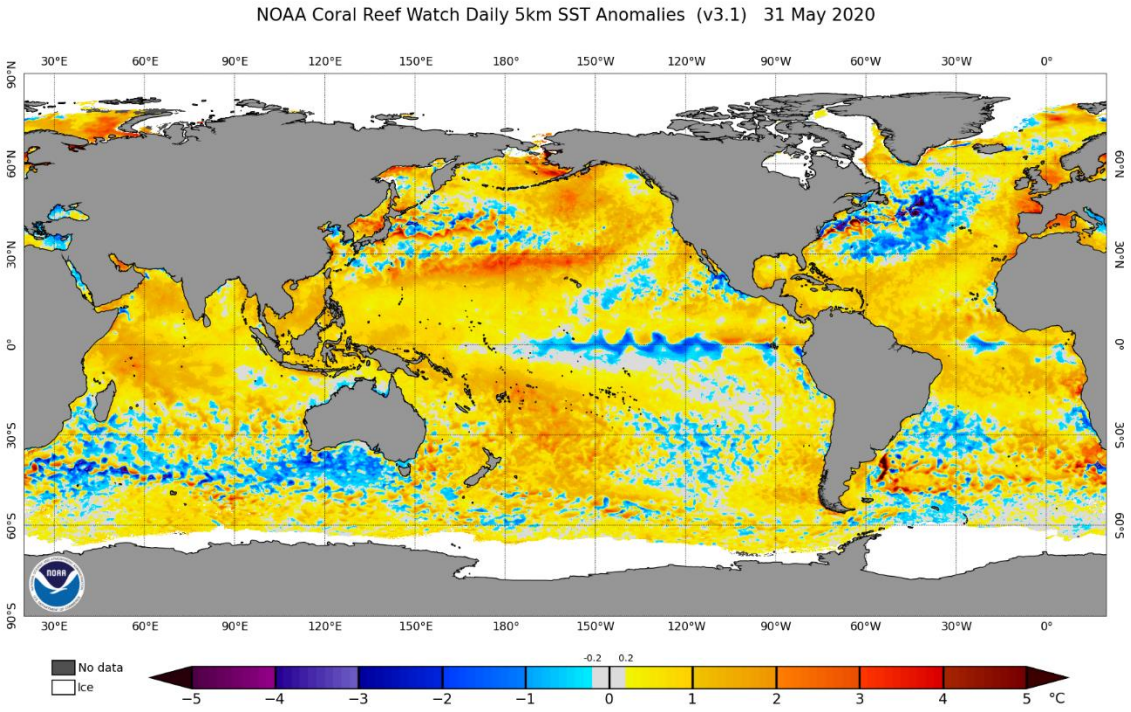


Figure 5 – Global sea surface temperatures (°C) for the period ending May 31, 2020 (image from NOAA/NESDIS).

North Pacific Watch – The North Pacific remains warm with SSTs running 2°F to nearly 4°F warmer than average and continuing the warm-up from prior months. Ocean temperatures are also now well above average along the coast from Alaska to Baja California indicating that upwelling has slowed. This is likely due to a decline in the overall wind field over the eastern Pacific. Overall, the North Pacific has warmed over a relatively large part of the basin (Figure 4), and with the warmer waters, we are seeing elevated humidity and higher nighttime temperatures over the west. The Pacific Decadal Oscillation (PDO) continues in a moderate negative phase which continues to approach conditions seen during 2008-2012. Current forecasts of how North Pacific SSTs might evolve over the next few months are mixed. However, the warmer waters in the open Pacific and now coastal regions, would likely provide more energy and moisture to the atmosphere (higher humidity) and produce less natural cooling along the coastal zones.

Forecast Periods:

Next 5 Days: The first week of June is bringing seasonable temperatures northward and continued heat southward, with no rain until the weekend. Zonal flow will bring onshore air and moderate temperatures but also allow for disturbances to move across the region. A large low-pressure area moving out of the Gulf of Alaska will bring the chance for rain and cooler temperatures over the weekend that might linger into next week. The chance of rain is highest from Northern California into Oregon and Washington, with little chance of rain in Southern California. Conditions will be unseasonably cool over the weekend and likely warm up to average or slightly above average into next week.

6-10 Day (valid June 7-11): The zonal flow from the first weekend in June will likely continue somewhat cooler than average conditions during this forecast period. Nearly all of the western US is likely to see relatively cool conditions while the Rockies eastward are forecast to see warmer than average temperature through the second week of the

month. The zonal flow will also allow storm systems to pass off the Pacific and into the western US with Northern California into the entire PNW likely getting wet during this forecast period. The northern tier of states across to the Great Lakes are forecast to see a wet period, as is the Gulf Coast, while the southwest and northeast are forecast to be drier during this period.

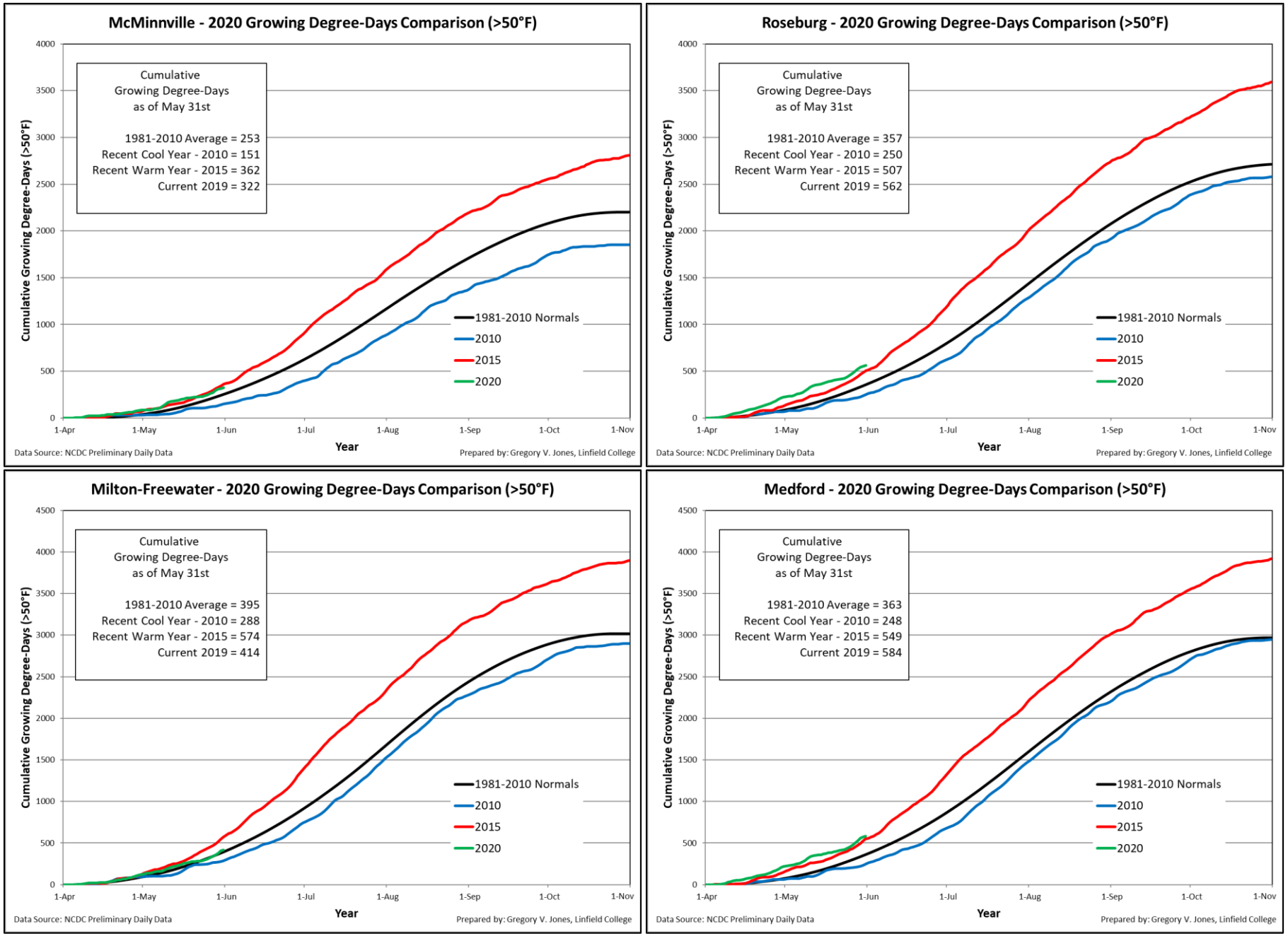
8-14 Day (valid June 9-15): The general forecast from the last period continues into mid-month. While much of the interior western US is forecast to remain cooler than average, a warm-up from the southwest into the central valley and coastal California will gradually spread into Oregon and the western portion of Washington. The rest of the country is forecast to remain warmer than average through mid-month. Precipitation in the PNW is forecast to slow after the last forecast period, with the rest of the western US likely to be near average to drier than average. The Gulf Coast north into the Mississippi and Ohio river valleys is forecast to see a wetter than average period while New England and the eastern seaboard is forecast to be dry.

30 Day (valid June 1-30): The temperature forecast for June reflects the previous two forecast periods with the PNW having an equal chance of being slightly above to slight below average (see Appendix Figure 2). The rest of the country is forecast to have a good chance for a warmer than average month of June. The rains accompanying the mid-month zonal flow will likely end up producing a wetter than average month of June for the PNW, while the rest of the west is likely to see near average. The rest of the country is mixed with near-average conditions in most regions except a wetter than average month for the Gulf Coast and drier than average central Mississippi Valley and Mid-Atlantic coastal zones.

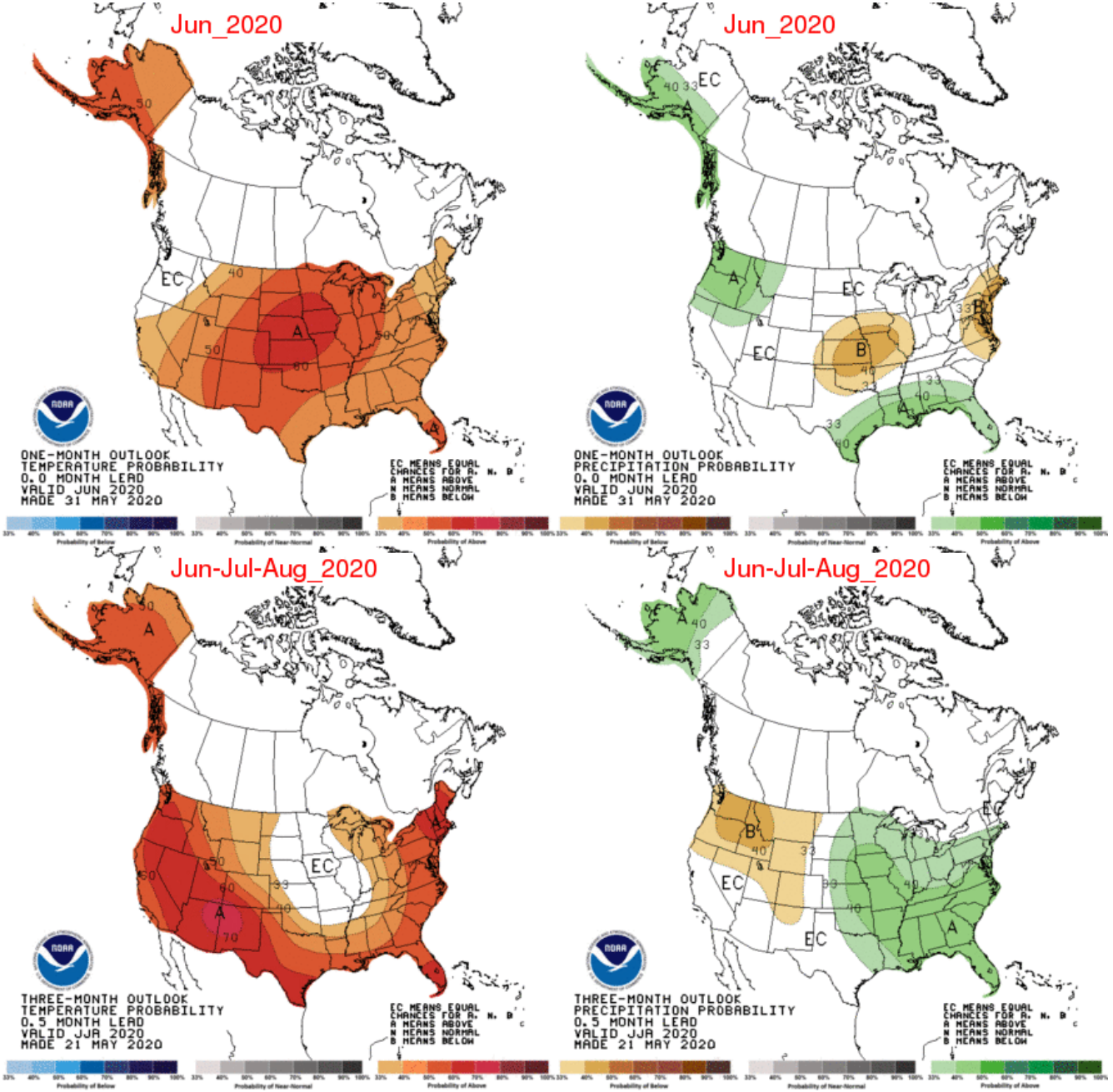
90 Day (valid June-July-August): The 90-day forecast through August continues to indicate that most of the country will likely see a warmer than average period (see Appendix Figure 2). The only area of the country that will likely be closer to average is the northern Plains and upper Mississippi River valley, which has seen this pattern for a few years now. The 90-day outlook for precipitation continues to indicate that the PNW and northern California are likely to remain dry, which is also reflected in the current US Drought Monitor and US Seasonal Drought Outlook in Figure 4 above. The southern portions of the western US and into the Rockies are forecast to be closer to normal for this period, while much of the eastern US is forecast to see wetter than average conditions through August.

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

Linfield College



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 (2020) 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 June (top panel) and June, July, and August (bottom panel) (Climate Prediction Center, climate.gov).