Weather and Climate Summary and Forecast

Summer 2014

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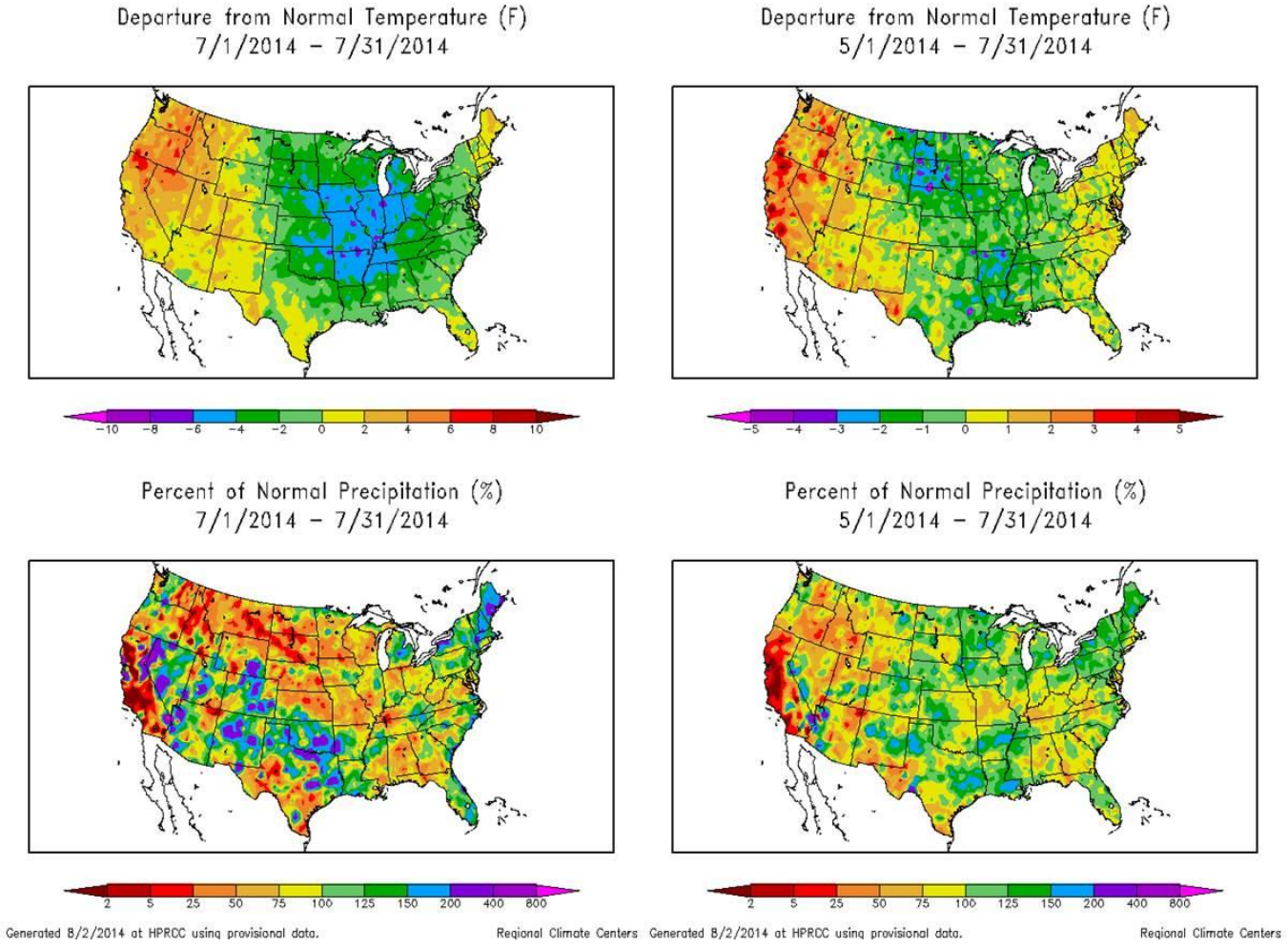
During July the United States continued to see the large west-east disparity in temperatures that has persisted all winter, spring and into summer. Temperatures within the wine regions in the western and central valleys of California, western valleys of Oregon and across into eastern Washington during the month were approximately 2 to 7 degrees above normal (see figure below or attached). These warm conditions covered most of the west all the way to the eastern side of the Rockies. The bulk of the eastern United States, centered over the Mississippi and Ohio river valleys, were substantially cooler than normal in July. Nationwide July rainfall was mixed with some regions drier and others wetter than normal, however the major signature of the month was the increased monsoon rains over the west. Areas from the Sierra Nevadas in California, across the Great Basin, Rockies and desert southwest to Texas, all saw areas of 200 to 600% above normal rainfall. However, many other regions in California and the west continue to have severe to extreme dry conditions (see figure below or attached).



The May through July period continued the run of warmer than average conditions over the western US with only a few isolated areas east of the Cascades and Sierra Nevadas being slightly cooler than normal. Much of the Northern Rockies, Great Plains and Midwest continued to have a cooler than normal spring-summer, while much of the eastern

US was warmer than normal (see figure above or attached). California and parts of Oregon and Washington again saw the greatest warmer than normal departures from average during May through July. Overall spring into summer precipitation has been mixed across the eastern US with New England wetter than average and the southeast largely drier than average. While the monsoon rainfall effect is evident in parts of the southwest during May through July, drier than normal conditions across the majority of the western US, and especially California, continue. Noted exceptions of moderately wet conditions were seen in portions of northwestern Oregon and along the Cascades into Washington.

In Oregon July temperatures in McMinnville, Milton-Freewater, Roseburg and Medford ranged from 4.1 to 5.8°F warmer than average. These conditions continued the near record 2014 growing degree-day accumulations that are similar or slightly above the 2013 values on this date (1% down to 6% up; see attached). All four locations in the attached plot are running above their 2004-2013 average (14-24%) and their 1981-2010 average (19-31%) for the first four months of the growing season.

The general forecasts for the summer have largely held true with continued warm and dry conditions in the western US, but increased monsoon effects with higher humidity levels and increased thunderstorm potential. Current short term forecasts call for continued widespread thunderstorm activity over the west, supported by monsoon flow from the south and a couple of troughs or cut-off low pressure areas moving down along the coast into California. Rainfall should not be widespread and temperatures should still remain above normal for the short term.

Moving into 6-10 and 8-14 day outlooks from the Climate Prediction Center, temperatures in California, Oregon, and Washington are projected to stay above normal. Rainfall outlooks over the same time period indicate a greater likelihood of dry conditions in Oregon and Washington, while California has some chance of monsoon precipitation, but more likely in the Sierra Nevada eastward into the southwest. The 30 day outlook through the month of August shows continued warmer than normal conditions in the west, with precipitation showing no clear signal (having an equal chance of slightly above to slightly below amounts) over the west. My sense is that the increased monsoon flow is not as easy to predict as general patterns of precipitation coming from the west.

The longer term forecast extended out to 90 days (Aug-Sept-Oct) from the Climate Prediction Center forecast is also tilting the odds to continued warm conditions over the west, with no clear signal in precipitation. The southwest will likely continue to receive monsoon flow, but its extent west and north is not clear. Over the last month the developing El Niño conditions in the tropical Pacific have slowed, with model forecasts now having a slightly delayed El Niño onset, with most models now indicating the onset during July-September, with the event continuing into early 2015. As many media outlets have reported, a strong El Niño is not favored in any of the ensemble model averages, and slightly more models call for a weak event rather than a moderate event. As mentioned previously in this report, El Niño does not have a clear signal over the western US, with weak events not affecting the region much if at all, while stronger events tend to make things warmer and drier in the PNW and warmer and wetter from the Oregon-California border southward. We will need to see the conditions play out over the next couple of months before a better assessment can be made on El Niño influences on west coast climate this fall and winter.

In summary, all evidence continues to point to a continued warmer than average growing season across the west with the continued chance for monsoon moisture, but spotty rainfall amounts into northern California, Oregon and Washington.

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