

Washington State Weekly Drought Monitoring Report

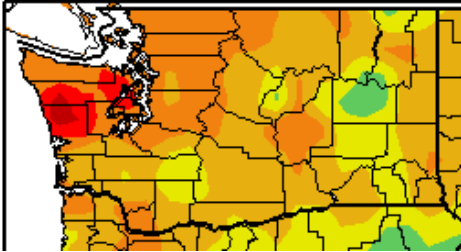
Thursday, July 23, 2015

Issue 14

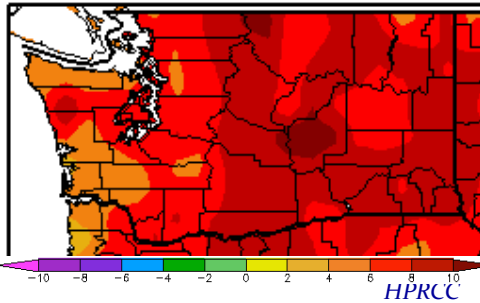
Statewide Overview

Mean Temperature Anomalies (°F)

Weekly (7/15-7/21):

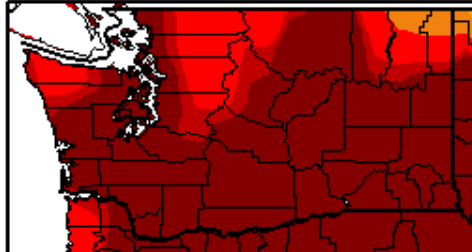


Last 30 days (6/22-7/21):

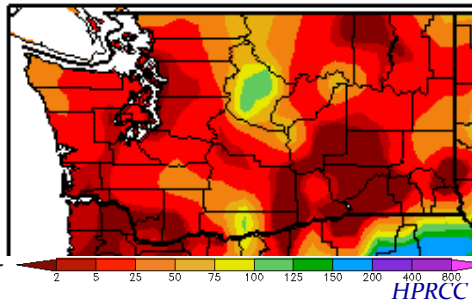


Precipitation Percent of Normal (%)

Weekly (7/15-7/21):

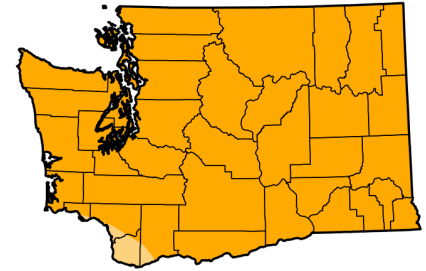


Last 30 days (6/22-7/21):



Drought Monitor, and Long-term Streamflow

US Drought Monitor (7/21):

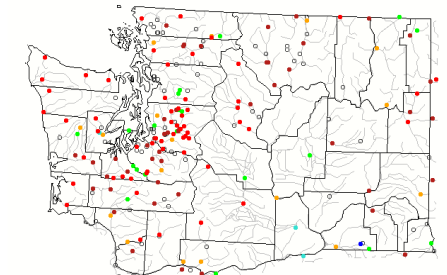


NDMC



Streamflow Time Series (7/22):

The absence of significant precipitation during the last few weeks has resulted in streamflows remaining much below normal at the large majority of gauges in WA state. The chart below illustrates the streamflows on a percentile basis; more details about the flows at each location are provided on the USGS website and can be gained by clicking on the individual markers.



USGS

Explanation - Percentile classes						
●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	Not-ranked

The recent weather for WA state is summarized above in the form of maps of temperature and precipitation anomalies for the last 7 days, and for the last 30 days. Mean temperatures during the period of 15-21 July were about 4 °F above normal in the western portion of the state, and 0-4 °F above normal across eastern Washington. These anomalies represented a continuation of relatively warm weather, but to a certain extent, some relief from the extreme heat that prevailed in WA state from late June into July. The effects of this heat wave are included in the 30-day temperature anomaly map for the period of 22 June through 21 July, which shows that it has been especially hot east of the Cascades where most locations were more than 6 °F above normal. Precipitation was absent during the last 7 days for most of WA state with some light amounts (mostly less than 0.1") recorded at a few locations. This is a normally dry time of year and hence not than unusual. But the previous 30-day period was also much drier than normal, and deficits on these time scales are generally more important from the hydrological perspective. The latest version of the US Drought Monitor pictured in the upper right portion of this page reflects no changes for WA state during the past week. As noted above, there has been a recent moderation in temperatures. Nevertheless, the prospects for significant rain in the near future seem dim, and it is possible there will be further degradation of conditions in WA state. Additional information on the extended outlook, specifically the 8-14 day time scale and beyond, is provided on page 3 of this report.

Contacts: Karin Bumbaco (kbumbaco@uw.edu)
 Nick Bond (nab3met@uw.edu)
 Jeff Marti (jema461@ecy.wa.gov)



Statewide Drought Declared

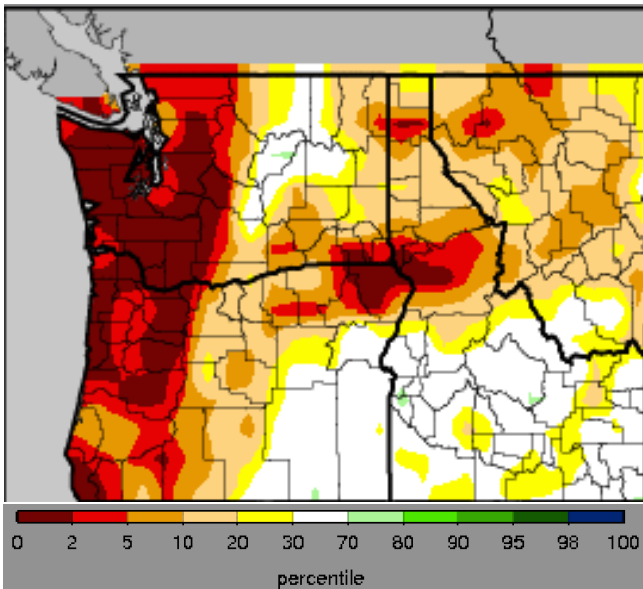
On May 15, Governor Inslee declared a statewide drought; more information can be found at WA State [Department of Ecology](#). This section highlights issues that have developed in various regions of the state.

Agricultural Sector

Weekly reports from the US Dept. of Agriculture are indicating that the state’s agricultural producers are definitely feeling the effects of the hot and dry conditions. For example, only 32% of the winter wheat crop, and 21% of the spring wheat crop is rated in good or excellent condition. Many non-irrigated crops and pastures are “stressed” or “struggling”. Some lower-value vegetable and plantings are being abandoned so that the limited water available for irrigation can be used for higher-value and perennial crops. There is a silver lining: crops such as winter wheat are maturing ahead of schedule (34% of this crop has been harvested as of 19 July compared with a 5-year average of 5%). The early harvests have allowed some extra seedings of buckwheat and alfalfa.

[USDA](#)

Soil Moisture

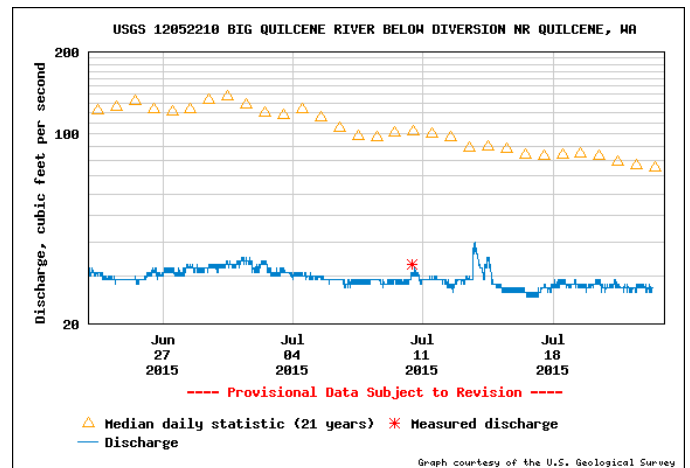


Near real-time hydrological information for the United States is made available by the University of Washington. The map at left shows soil moisture levels for the Pacific Northwest on 21 July 2015 in terms of percentiles for the date, with respect to a climatology for the period of 1916-2004. These updates of soil moisture, and other variables, are based on output from the VIC macro scale hydrologic model, which itself has as input daily values of observed precipitation and maximum and minimum temperatures. Not surprisingly, the VIC model representation of soil moisture shows that the majority of WA state is considerably drier than normal, with the usually more moist western half of the state really standing out. The 1-month and 2-month forecasts of soil moisture from the model using climatological average values for precipitation indicate that it is highly likely that the soils will remain dry.

[VIC](#)

Jefferson County

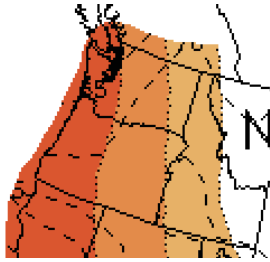
The lack of water is not just impacting farms and fish. The Peninsula Daily News [Port Townsend](#) recently reported the Port Townsend Paper Corp. mill may need to shut down temporarily if the water supply drops too low. This mill is the largest private employer in Jefferson County, and even a temporary shut down would have significant impacts on the local economy. City and mill officials are meeting regularly to determine ways to reduce water usage while maintaining operations. The Big Quilcene River is one of the major sources of water for Port Townsend, and as shown to the right in the streamflow record for the last month, this stream is not currently living up to its name.



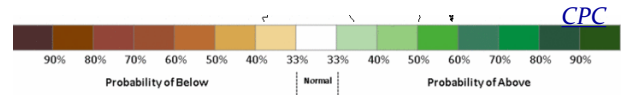
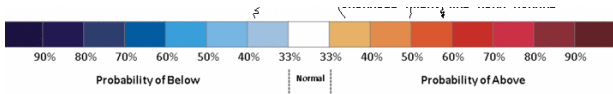
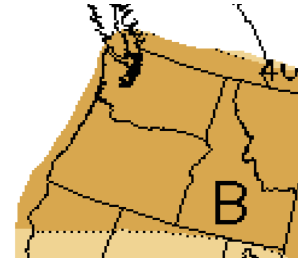
Temperature

Extended Outlook

Precipitation

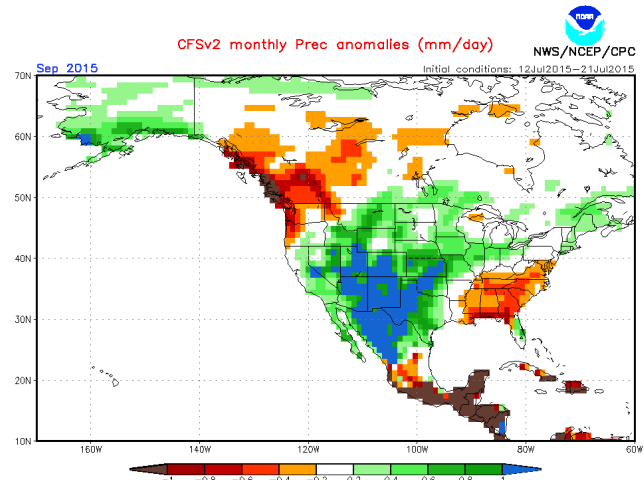
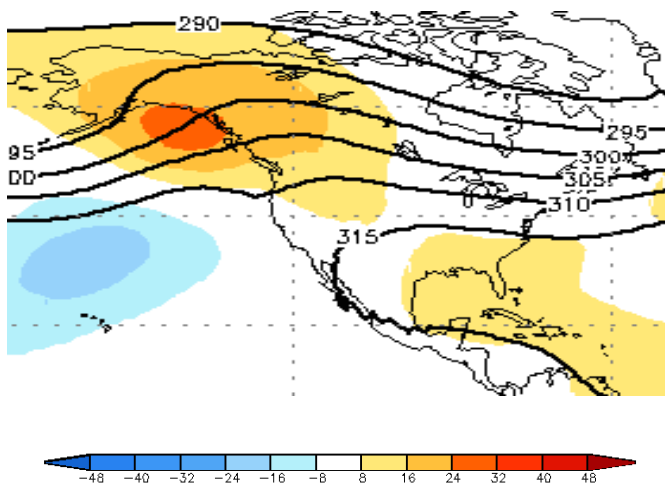


8-14 Day CPC Outlook



The 8-14 day forecast from NOAA/CPC for 30 July - 5 August indicates higher probabilities of above normal temperatures for WA state, especially from the coast to Puget Sound. There is a higher probability of below normal precipitation for the Pacific Northwest including WA state. These forecasts reflect the model mean consensus of a weak ridge of high pressure aloft centered over coastal Oregon, and hence a regional circulation pattern that generally results in sinking motion and lower humidity values in a vertically-integrated sense.

September 2015 Projections from NOAA's Coupled Forecast System (CFS)



A pair of maps showing composite results for September 2015 from the latest 10-day (12-21 July 2015) set of simulations by NOAA's Coupled Forecast System (CFS) are shown above. The figure on the left shows the predicted mean 700 hPa geopotential heights (contours) and these heights in terms of anomalies (color fill with scale in meters indicated below). The anomaly pattern of higher than normal heights over the Gulf of Alaska extending into western Canada implies weaker westerly flow than normal off the ocean into the Pacific Northwest, and hence relatively fewer and weaker weather disturbances of maritime origin. This is consistent with lower than normal precipitation for the coastal region of the Pacific Northwest and the west slopes of the Rocky Mountains of British Columbia, as shown in the map on the right. The height anomaly pattern for the southern US indicates enhanced flow of moisture into the southern and central Rockies; the predictions include enhanced precipitation for this region. All in all, this latest set of CFS simulations indicates that it is likely to be a late start to the onset of fall storms originating from the North Pacific. Instead, these model runs suggest that a summer-like weather regime featuring monsoonal precipitation in the southwestern US will persist longer than is usually the case.

CFS