Washington State Weekly Drought Monitoring Report

Thursday, April 23, 2015

Statewide Overview

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<th>Mean Temperature Anomalies (°F)</th>
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Statewide temperature, precipitation, and snow water equivalent over varying time frames shows a snapshot of the recent conditions for WA State. The last week has been 2-4°F warmer than normal for nearly the entire state with very little precipitation, if any. Despite the warm weekly temperature anomalies, the Pasco/Yakima/Sunnyside/Ellensburg area recorded below freezing low temperatures overnight in the upper 20s/low 30s on the morning of the 15th. Temperatures warmed thereafter as a ridge of high pressure built into the region on the 18th, bringing warm, sunny, and dry conditions. The summer-like weather was detrimental to the snowpack with statewide average snow water equivalent (SWE) now at 20% of normal. The SWE map from NRCS shows that the basin average has decreased relative to normal since last week. Several individual sites are currently snow-free. The poor snowpack is reflected in the US Drought Monitor as the area of “moderate drought” was expanded in the mountains since last week.

Temperatures over the last 30 days were largely 1-4°F warmer than normal, with a few areas on the cooler side. Precipitation over the last 30 days is below normal for most of the state, except for areas from Grant to Whitman counties and the northwestern Olympic Peninsula. The April through September water supply forecast from the Northwest River Forecast Center shows below normal flows throughout the entire state. The lowest projections (between 25 and 50% of normal) are in the Wenatchee and Yakima area as well as the northeastern Olympic Peninsula.

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**Drought Declared Areas**

See WA ECY for a map of the drought declared areas; more drought declarations were made on April 17.

**Olympic Mountains and Peninsula**
The northern Olympic Peninsula was warmer than normal with very little precipitation over the last week. A cold frontal passage on the 21st brought the week’s only precipitation with 0.08” at Quillayute Airport and 0.15” at Sequim. The streamflow over the last 2 weeks at the Elwha River at McDonald Bridge (near Port Angeles) is below normal, which is not surprising due to the lack of snowpack in the Olympics. This streamflow gauge is one of the few in the area that is in a “transient basin”, meaning there is usually a peak in streamflow in the winter due to rain and then again in the spring from snowmelt. The streamflow on April 22nd is near the 25th percentile compared to the long record.

**Western Slopes of the Northern and Southern Cascades**
A drought declaration was declared by Governor Inslee for these two areas on April 17. The main concern is for fish (e.g., salmon, bull trout, steelhead), mainly on tributaries, as lower than normal streamflows and warmer than normal water temperatures are expected through the summer. Like most of the state, the western slopes of the northern and southern Cascades extending west were warmer and drier than normal over the last week. An example of the low snowpack in these regions is shown on the right. Spencer Meadow (3400’), located in Skamania County, is snow-free (and has been since February) when it typically has between 20 and 30” of SWE on the ground at this time of year (blue lines). Note the near-normal precipitation (red lines).

**Chelan/Kittitas/Yakima Region, Walla Walla Watershed, and Okanogan**
These three regions are lumped together because they all rely on snowpack for crop irrigation, though they specialize in different crops. The Okanogan watershed is the newest to be declared in drought (April 17 declaration), and just like the eastern slopes of the Cascades and Walla Walla, the extremely low snowpack and subpar streamflow forecasts were the catalyst. The weather over the last week has been much warmer and drier than normal. The wetter than normal areas over the last 30 days in eastern WA on the map above are unfortunately not in any of these areas of declared drought. Yakima, for example, has only received a “trace” of precipitation in April thus far. On April 21, the Yakima Bureau of Reclamation announced a reduction in the amount of water estimated for pro-ratable water users to 54% of normal. Senior water right holders are still expected to get their typical water allotment. While the reservoirs are full, as shown in the teacup diagram on the right, the Bureau announced that it is beginning to draw on reservoir storage to supplement reduced snowmelt runoff. The reservoir storage is not typically tapped into until late June.

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The 8-14 day forecasts from NOAA/CPC indicates above normal temperatures and near-normal precipitation for Washington state for the period of 30 April through 6 May. The latest forecast is somewhat drier for our region than the forecasts from earlier in the week, and the chances of below normal precipitation is enhanced for southeastern WA.

Equatorial sea surface temperatures (SSTs) east of the International dateline have warmed since the beginning of 2015. Significantly warmer than normal SSTs are now present near the dateline and off the coast of South America (below - left). The atmospheric response to this SST pattern is typical of that associated with El Niño, featuring anomalous westerly low-level winds and sustained deep cumulus convection in the central equatorial Pacific. The suite of models used to predict ENSO are indicating some strengthening of El Niño over the course of 2015 in an overall sense, with considerable spread between individual model forecasts (below - right). The historical record shows the El Niño conditions during summer tend to weakly correspond with warmer than normal temperatures in WA, but a systematic signal in precipitation during this time of year is lacking.

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