

Washington State Weekly Drought Monitoring Report

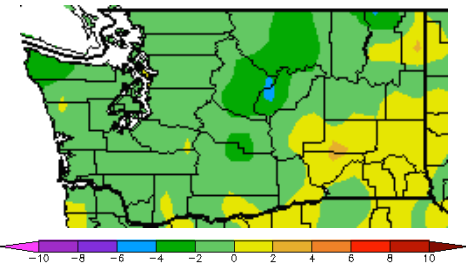
Thursday, April 16, 2015

Issue 1

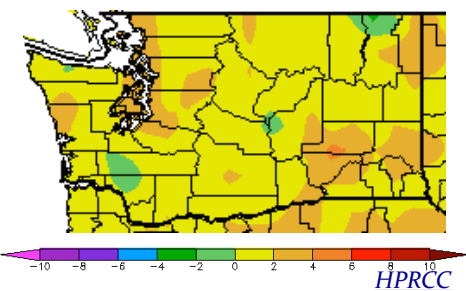
Statewide Overview

Mean Temperature Anomalies (°F)

Weekly (4/8-4/14):



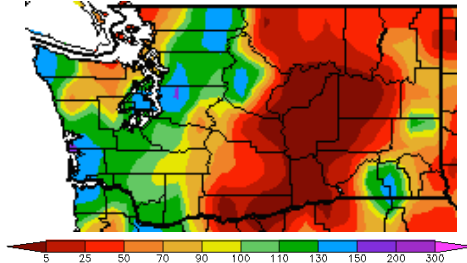
Last 30 days (3/16-4/14):



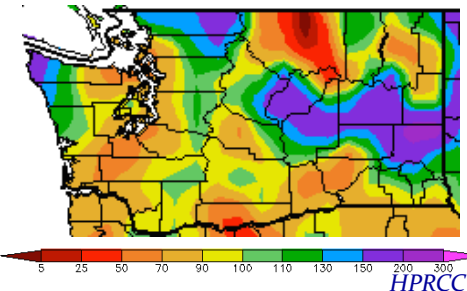
HPRCC

Precipitation Percent of Normal (%)

Weekly (4/8-4/14):



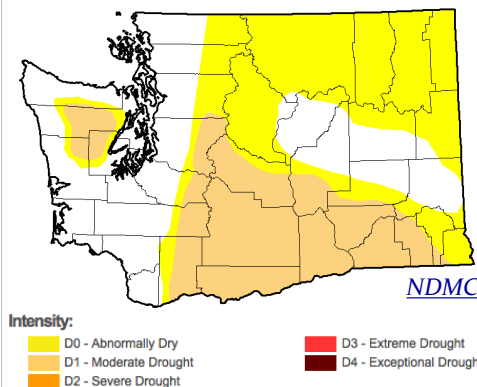
Last 30 days (3/16-4/14):



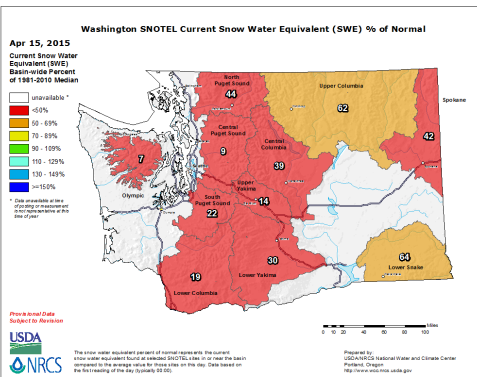
HPRCC

Drought Monitor, SWE, and seasonal precipitation

US Drought Monitor (4/14):

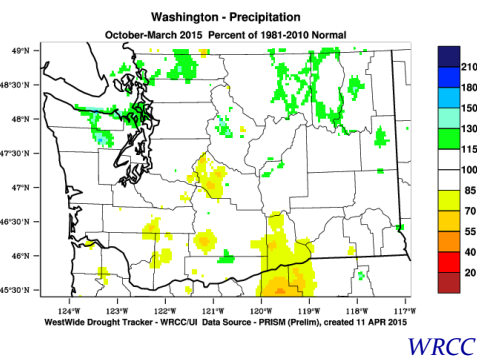


Snow Water Equivalent (4/15):



NRCSS

Oct-Mar Percent of Normal Precipitation:



WRCC

Statewide temperature, precipitation, and snow water equivalent over varying time frames shows a snapshot of the recent conditions for WA State. Temperatures over the last week were relatively cool for a majority of the state, and were within 2°F of normal (1981-2010 average). There was more precipitation than usual for the coast, south and central Puget Sound, and the north Cascades in the last week, as a result of some cool and wet storm systems that impacted the state. While there were widespread snow showers over the past week with about 10" at Stevens Pass and a few inches at Snoqualmie Pass, for example, these amounts are inconsequential in the big picture given the severe low snowpack conditions. Averaged statewide, WA SWE is only 25% of normal, with some basin averages lower, such as the Upper Yakima with only 14% of normal.

Looking at longer time scales shows that temperatures have been on the warmer side of normal over the last 30 days while precipitation amounts relative to climatological means were variable over the same time frame. The precipitation picture becomes more clear when examining an even longer time frame; October 2014 through March 2015 precipitation is near-normal for most of state. With the warmer than normal temperatures over this same time frame (not shown), the precipitation fell as rain instead of snow in the mountains for most of the season. Finally, the US Drought Monitor shows "moderate drought" through the mountains with the lowest SWE reflecting the dismal snowpack.

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

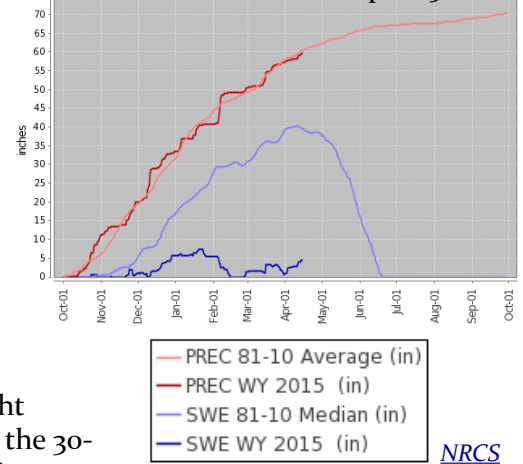
Drought Declared Areas

See [WA ECY](#) for a map of the drought declared areas

Olympic Mountains

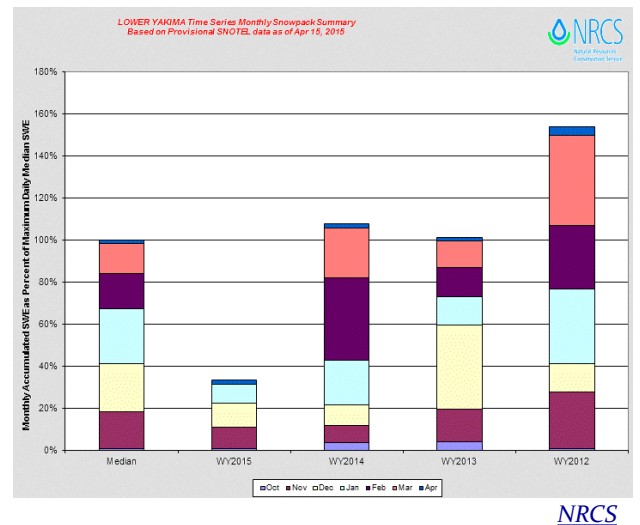
The northwestern section of the Olympic Peninsula (see precipitation maps above) has been wetter than normal for both the last week and the last 30 days. Quillayute Airport, located in that region, has received 4.17" of precipitation for April (as of 4/14), which is a little more than half of the total monthly precipitation expected (7.85"). The Waterhole Snotel station, located at 5000' in the Olympic Mountains, shows the recent wetter period and has gained 5" of SWE since April 1 (dark blue line). Compared to what the typical SWE should be at this time of year (light blue line; averaged 1981-2010), however, there is about a 35" deficit in SWE. Note that the SWE measurement is the amount of water in snow when melted; 35" of SWE equates to about 350" of snowfall and 100" of snow depth. The small amount of snow gained is unfortunately not a drought buster. The precipitation for the Waterhole station since October 1 matches the 30-year average, as is typical for the state this season. The eastern side of the Olympics have been drier than normal for the last week and last 30 days.

Waterhole Snotel as of April 15:



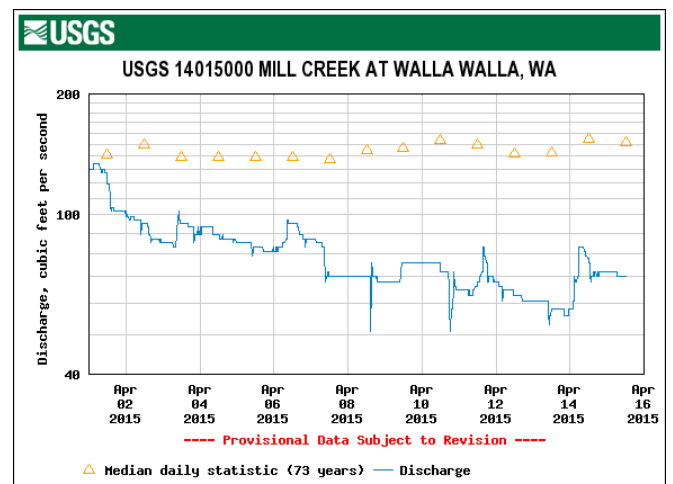
Chelan/Kittitas/Yakima Region

Unlike some other parts of the state, the eastern slopes of the central Cascade Mountains have been very dry in the last week and drier than normal for the last 30 days as well. Yakima Airport has only received a trace of precipitation so far in April and Ellensburg has not received any precipitation. Wenatchee and Chelan did receive about 0.30" on the 6th and 7th, respectively, as an upper level trough brought showers over part of the region. Normal April precipitation for this part of the state is about a half an inch to 0.65". More important for the drought in this region is the snowpack situation in the Yakima Basin. The figure on the right shows the monthly accumulated SWE since October for this season (WY 2015) in the Lower Yakima basin compared to the 1980-2010 median and other recent years. With an already bad start to the snowpack, especially in December (yellow) and January (light blue), the little to no SWE accumulation in February or March hurt the basin greatly. Very little SWE typically accumulates in April, and though there was some accumulation for the first two weeks of April, it had only minor effects.



Walla Walla Watershed

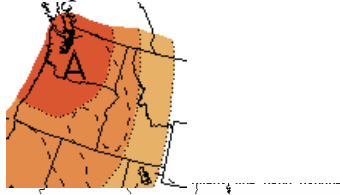
Similar to the eastern slopes of the Cascades, most of Walla Walla county has been drier than normal over the last 30 days. There has been some precipitation in the eastern part of the county in the last week, and Walla Walla Airport received about 0.84" so far for April (normal monthly amount: 1.92"), thanks in large part to showers at the beginning of this week. Despite this precipitation, the streamflow gauge on Mill Creek at Walla Walla shows decreasing flow over the last 2 weeks. The streamflow here is between the 10th and 24th percentile flow, i.e., lower than normal for this time of year.



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

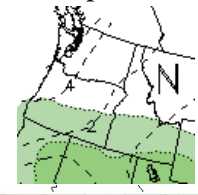
Extended Outlook

Temperature



8-14 Day CPC Outlook

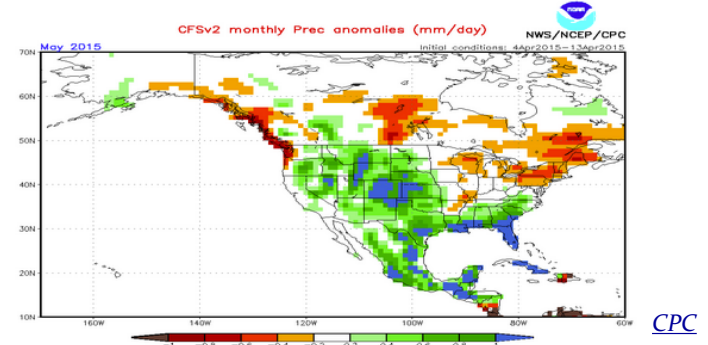
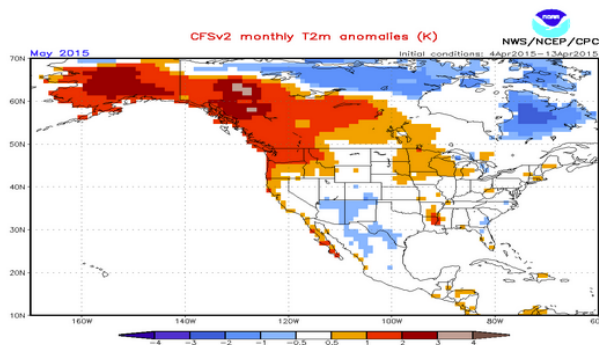
Precipitation



The 8-14 day forecasts from NOAA/CPC indicate above normal temperatures and near-normal precipitation for Washington state. The confidence in these forecasts is lower than normal because of inconsistent and weak signals among the various numerical weather prediction (NWP) model runs used for these forecasts.

The Madden-Julian Oscillation (MJO) is a primary source of large-scale variability in the tropics on time scales of 1-2 months, and has been found to have remote effects on weather patterns in western North America. At present time the MJO is liable to strengthen in the next 1-2 weeks, and will be in a phase that tends to suppress precipitation in the Pacific Northwest during the first part of May.

The latest 10-day ensemble of projections from NOAA's Coupled Forecast System (CFS) climate model for the month of May 2015 are shown below. This most recent set of runs indicates roughly the same magnitude of positive temperature anomalies, and slightly less precipitation, for Washington state than an equivalent set of runs made during the middle of March. The latest set of multi-model ensemble projections compiled by NOAA/CPC indicate a greater than 80% probability of above-normal temperatures statewide, and a weak signal of lower than normal precipitation in western Washington, during the summer of 2015.



Historical Perspective

To put this winter into historical context, OWSC compiled historical [climate division](#) data since 1950 for the two divisions that cover the Cascade Mountains. The plot has average winter (Oct-March) temperature on the x-axis and total winter precipitation on the y-axis. The two gray lines represent the 1981-2010 average values for both temperature and precipitation. The 2014-15 season (red dot circled in purple) is much warmer than any year since 1950, with the closest year - 2005 (triangle circled in blue) - 1.5°F cooler than the current season. Averaged over the entire Cascades, precipitation is near-normal, but on the drier side.

