



Office of the Washington State Climatologist

May 3, 2013

April Event Summary

Average April temperatures were below normal for a majority of the state. Total precipitation was above normal for western and central WA but below normal throughout much of eastern WA (more details in the Climate Summary section). The total April precipitation for many of the western WA locations ranked among the top fifteen wettest since records began. Table 1 summarizes these records. An interesting statistic has been reported by the National Weather Service Seattle Office: the total April precipitation at SeaTac Airport was greater than the precipitation that fell in January and February of this year combined - which is only the third time this has occurred since weather records began in Seattle (1917 and 1993). While this “fun fact” is quite interesting for us weather types, it is not representative of the region as whole. The total January and February precipitation was higher than the April precipitation for all of the other stations listed in Table 1.

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Station	2013 April Precipitation	Rank	Records Began	Record (Year)
SeaTac	5.89	2	1948	6.53 (1991)
Bellingham AP	4.19	6	1949	6.09 (1992)
Arlington	6.30	6	1923	7.45 (1972)
Hoquiam	7.40	8	1954	10.27 (1996)
Quillayute	10.93	8	1967	13.90 (1992)
Olympia AP	4.52	14	1948	7.80 (1991)
Everett	3.94	14	1895	5.76 (1917)

Table 1: The total April precipitation (inches) for several WA locations. The ranking (in terms of the wettest), period of record, and the year and amount of the wettest April are also listed for each station.

April began rather spring-like, with warmer than normal temperatures and mostly sunny skies around the state for the first 3 days of the month. Conditions quickly turned around, however, with wet weather arriving on the 4th. Figure 1 shows the 24-hr precipitation ending between 7 am 9 am on April 5. Record daily rainfall was measured at Ho-

quiam (1.40") and Olympia Airport (1.06") on the 5th. The wet conditions continued into the second week of April, with more daily rainfall records set statewide on the 7th at SeaTac (1.54"), Olympia AP (0.85"), Omak (0.72"), Wenatchee (0.45"), Moses Lake (0.23"), and Pasco (0.14"). Cooler temperatures and snow in the mountains occurred on the 12th and 13th. Two avalanches with fatalities were associated with this snow event. Elsewhere in the state scattered thunderstorms formed, bringing cloudbursts of hail and heavy rain.

The third week of April offered some respite from the wet weather as a ridge of high pressure built into the region. Clear skies caused cold nighttime temperatures that were below freezing on the east side of the Cascade Mountains. Several stations recorded record low temperatures during this period: Omak on the 14th (22°F) and Spokane Airport on the 17th (21°F), for example. The month concluded in a see-saw manner: rain returned for several days (around the 18th-21st) and then a high pressure formed, bringing clear skies with more cold overnight temperatures and afternoons with above normal temperatures for several days. Rain then returned again on the 28th and 29th, especially in the Puget Sound Convergence Zone, before the month ended dry.

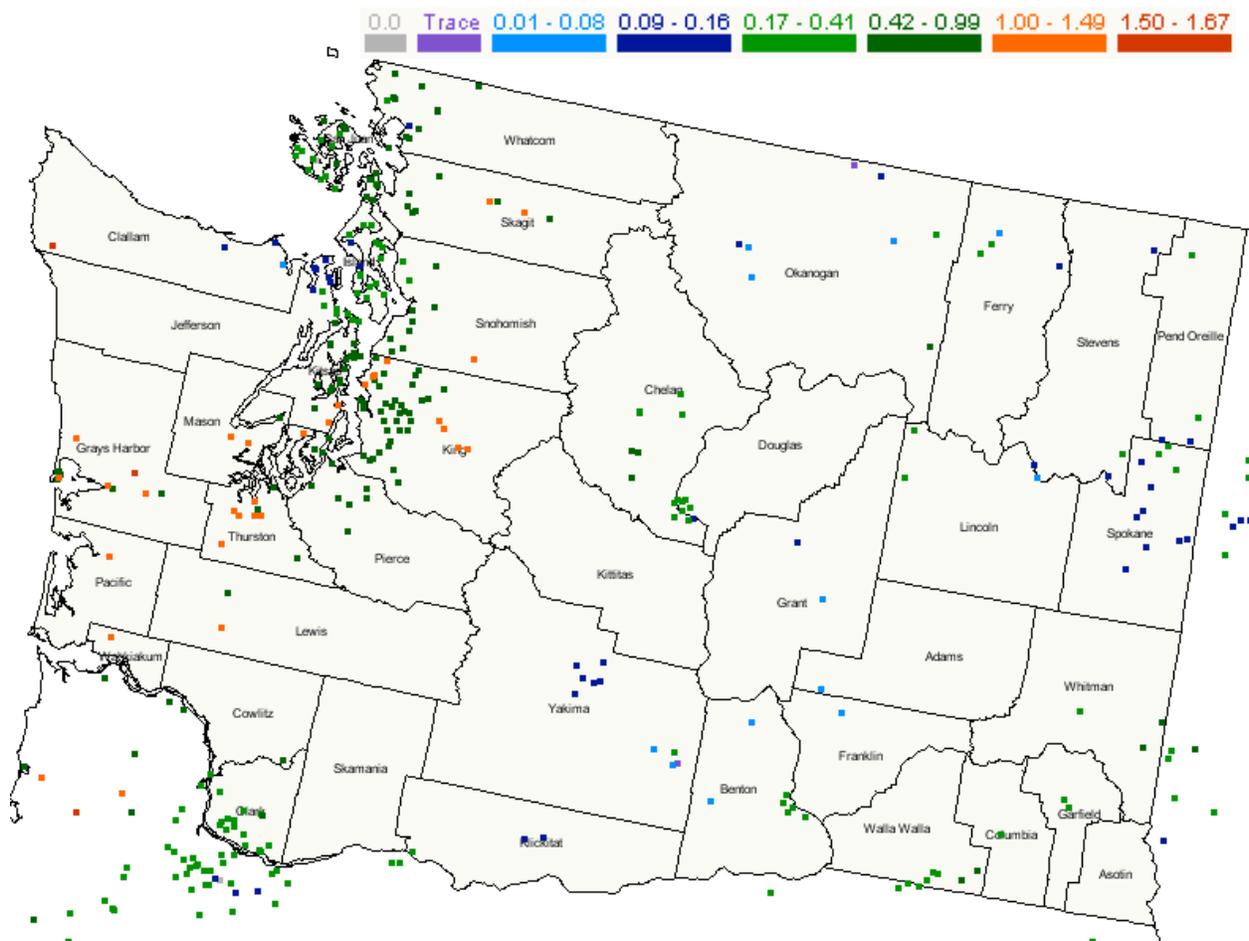


Figure 1: The 24-hr precipitation totals measured on the morning of April 5 from Community, Collaborative, Rain, Hail, and Snow (CoCoRaHS) observers.

Snowpack Summary

The mountain snowpack grew during the first half of April. Figure 2 shows the mountain snow depth at the sites maintained by the Northwest Weather and Avalanche Center (NWAC) at the 1st and 15th of the month beginning on November 15th and ending on May 1. Since the April 15th measurement, the snowpack has started to decrease at all of these stations. Even with this decrease, the May 1 snow water equivalent (SWE) values from the National Resources Conservation Service (Figure 3) indicate a snowpack that is normal to above normal for this time of year. The Olympic, North Puget Sound, Central Puget Sound, South Puget Sound, Upper Columbia, and Lower Columbia basins all have above normal snowpack, ranging from 115 to 156% of normal. The remaining basins (Central Columbia, Upper Yakima, Lower Yakima, Lower Snake, and Spokane) are near-normal (95-102% of normal), erasing concerns for water supply and irrigation for the summer.

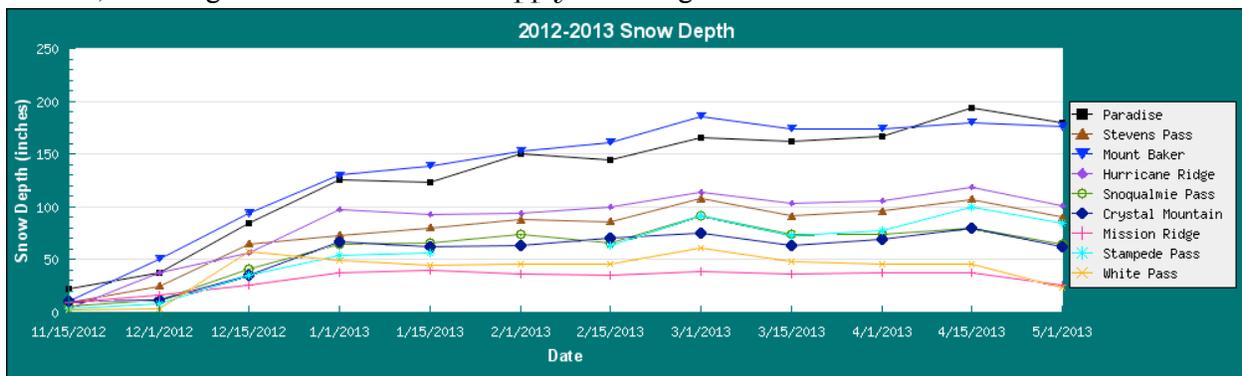


Figure 2: Snow depth (inches) at the NWAC mountain sites during the 2012-2013 fall, winter, and spring as plotted by OWSC (<http://www.climate.washington.edu/snowdepth/>).

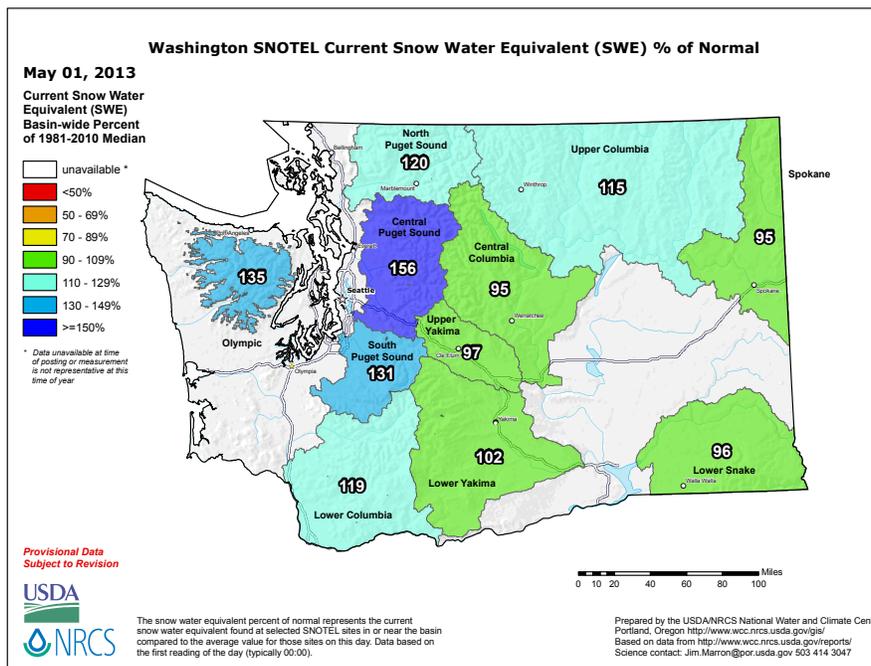
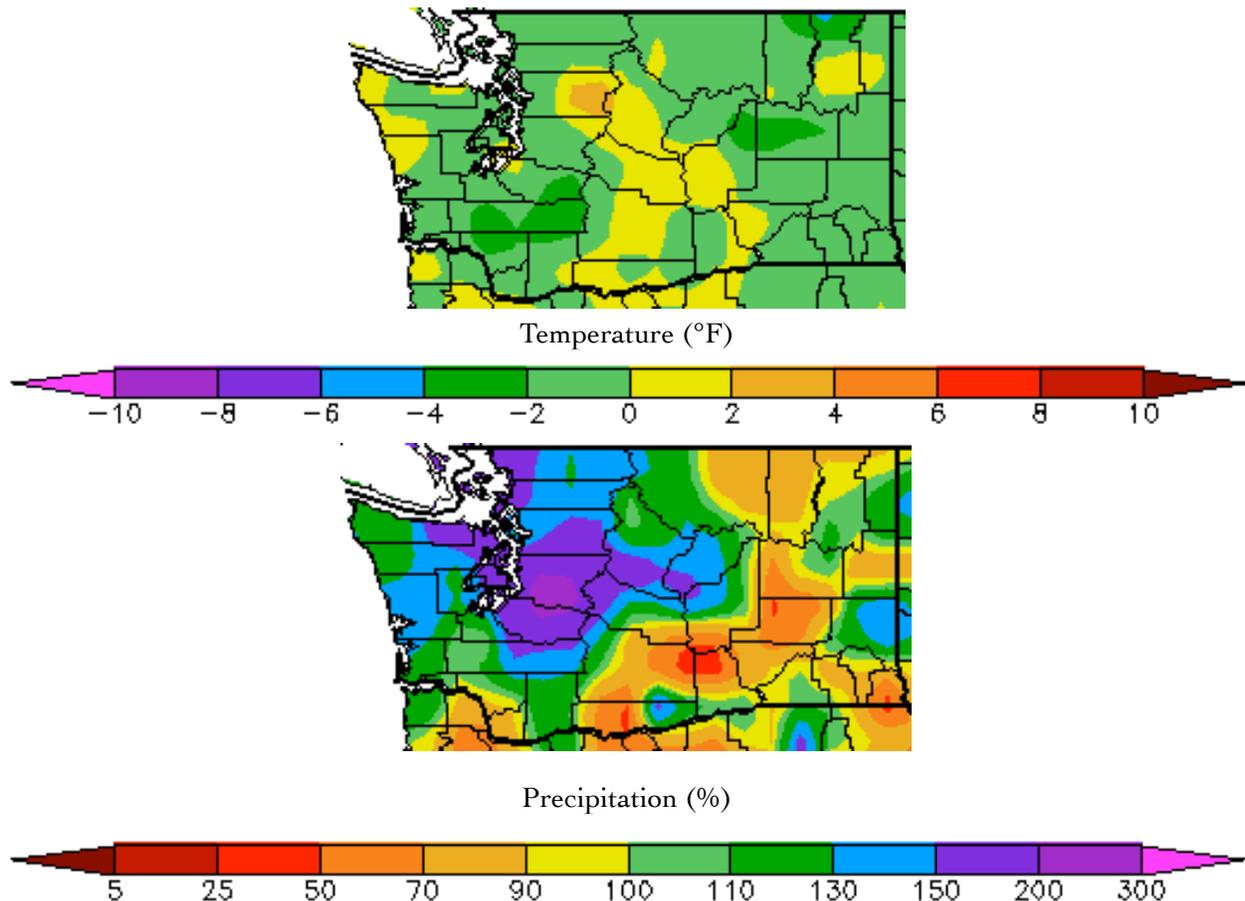


Figure 3: Snowpack (in terms of snow water equivalent) percent of normal for Washington as of May 1, 2013. Image is from the National Resources Conservation Service (NRCS).

Climate Summary

Mean April temperatures were below normal for most of the state, as illustrated by the High Plains Regional Climate Center (HPRCC) temperature departure from normal map below. The average temperatures that were on the cooler side did not exceed 2°F below normal in most cases (Table 2), but there were some cooler locations such as southwestern WA and northeastern WA (2-4°F below normal). Parts of the Olympic Peninsula and central WA had above normal temperatures for the month, with only a few locations exceeding 2°F above normal.

Total April precipitation was above normal for western WA, and some locations (i.e., the central and northern Puget Sound) were very wet for the month (above 150% of normal). The wetter than normal conditions extended to central WA as well, with Wenatchee and Ephrata as notable wet spots (183 and 131% of normal, respectively). While there were a few other areas in eastern WA that were wetter than normal (e.g., Pullman; Table 2), in general eastern WA was drier than normal for April with precipitation between 70 and 90% of normal.



April temperature (°F) departure from normal (top) and April precipitation % of normal (bottom). (High Plains Regional Climate Center (<http://www.hprcc.unl.edu>); relative to the 1981-2010 normal).

	Mean Temperature (°F)			Precipitation (inches)		
	Average	Normal	Departure from Normal	Total	Normal	Percent of Normal
Western Washington						
Olympia	48.2	48.3	-0.1	4.52	3.54	128
Seattle WFO	50.2	50.5	-0.3	4.60	2.77	166
Sea-Tac	50.9	50.3	0.6	5.89	2.71	217
Quillayute	48.8	46.7	2.1	10.93	7.85	139
Bellingham AP	48.4	48.4	0	4.19	2.69	156
Vancouver AP	51.6	52.1	-0.5	2.20	3.01	73
Eastern Washington						
Spokane AP	46.0	47.0	-1.0	0.94	1.28	73
Wenatchee	51.1	51.6	-0.5	0.84	0.46	183
Omak	48.7	50.0	-1.3	0.96	1.05	91
Pullman AP	44.4	46.1	-1.7	2.37	1.56	152
Ephrata	50.5	50.4	0.1	0.63	0.48	131
Pasco AP	52.0	52.9	-0.9	0.55	0.65	85
Yakima AP	51.6	49.1	2.5	0.40	0.55	73

Table 2: April climate summaries for locations around Washington with a climate normal baseline of 1981-2010. Note that the Vancouver Pearson Airport and Seattle WFO 1981-2010 normals involved using surrounding stations in NCDC's new normal release, as records for these station began in 1998 and 1986, respectively.

A Review of Winter 2012-2013

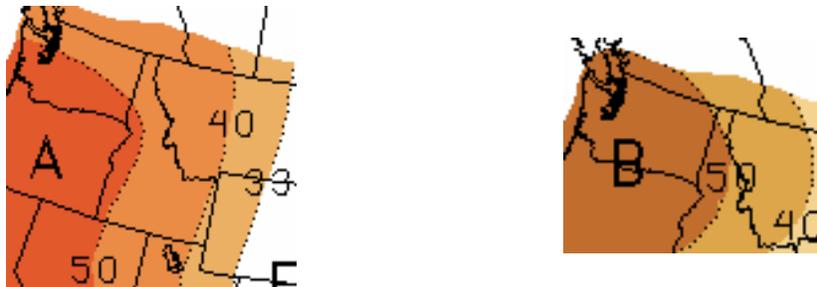
A report on the 2012-2013 ENSO neutral winter conditions was posted on our website in late April: <http://www.climate.washington.edu/events/2013winter/>. Highlights include the average temperature and precipitation anomalies for WA during the winter, the snowpack evolution, and the disappearing El Niño.

Climate Outlook

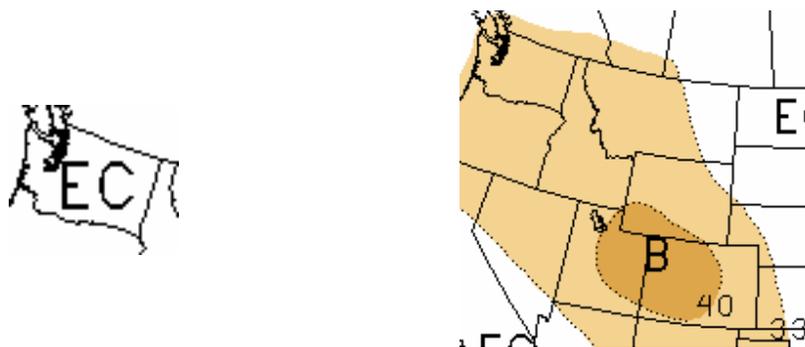
The conditions in the equatorial Pacific Ocean are ENSO-neutral, according to the Climate Prediction Center (CPC): <http://www.cpc.ncep.noaa.gov/>. In the last 4 weeks, sea-surface temperatures (SSTs) have been near-normal for most of the equatorial Pacific Ocean except for the coast of South America where below normal SSTs (below 1°C) have developed. There is a consensus among the model predictions that near-neutral ENSO conditions will persist through spring and summer 2013.

The CPC three-class outlook for May includes increased chances of warmer than normal temperatures for WA. There is a higher likelihood of warmer than normal temperatures (exceeding 50% on a three-class probability scale) for the southern half of the state. With regards to precipitation, there is a high likelihood (exceeding 50%) of below normal precipitation for the entire state during May.

The three-month temperature outlook for May-June-July (MJJ) is a toss up: there are equal chances of below, equal to, or above normal temperatures for the state. For precipitation, however, the total precipitation for MJJ is expected to be below normal.



May outlook for temperature (left) and precipitation (right) from the CPC.



May-June-July outlook for temperature (left) and precipitation (right) from the CPC.