



Office of the Washington State Climatologist

April 4, 2012

March Event Summary

Statewide, March can be summed up with two adjectives: wet and cold. The latter is illustrated by the graph of Quillayute daily March temperatures in Figure 1. The gently sloping black line represents the normal daily average temperatures for the site, while the blue and red colored areas indicate the actual temperatures in 2012.

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Regarding the precipitation, March 2012 ranked as the record wettest March at Spokane AP (4.56"; since 1881), Boundary Dam (5.29"; since 1966), Colville (4.55"; since 1900), Grand Coulee Dam (4.13"; since 1934), Newport (6.31"; since 1910), Republic (4.90"; since 1900), and Rosalia (4.98"; since 1893). It should be noted that the Colville record has a lot of missing data, so March 2012 ranked first among 69 years of complete March records rather than the full 113-year record. Other stations ranked among the top ten wettest Marches in the historical record, and are shown in Table 1. The Pullman COOP station, for example, had its 2nd wettest March since records began in 1941 (the wettest March occurred in 2003). It's also interesting to note that March 2012 at Olympia ranks just behind the precipitation that fell in March 2011.

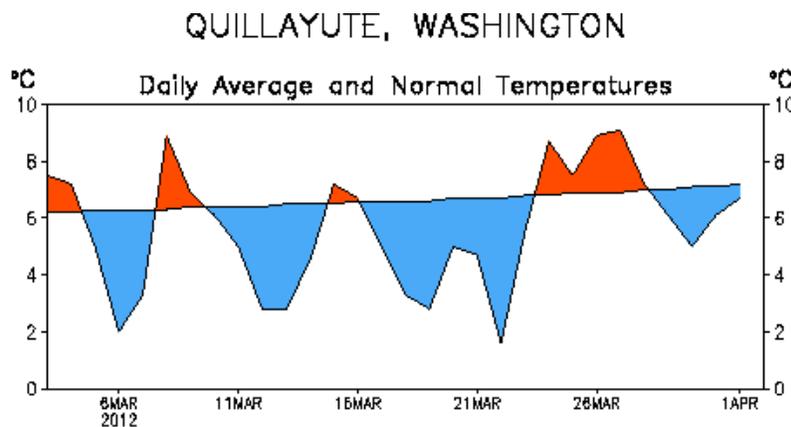


Figure 1: Daily average temperatures for March compared to normal for Quillayute (from CPC).

A brief summary of the March weather follows. The first week of March started out wet for the western half of the state, with even some lower elevation snowfall on the 5th in western and central WA. A brief respite from the precipitation occurred statewide on the 7th and 8th, but the spigot was turned wide open on the 9th. Copious rain fell at low elevations, with even some light snow on the 13th and 14th. Heavy snow occurred in the mountains,

Station	March 2012 Precipitation	Rank	Records Began
Pullman COOP	4.26	2	1941
SeaTac AP	7.20	3	1948
Quillayute	21.00	3	1967
Hoquiam	13.02	5	1954
Olympia AP	8.57	6	1948
Yakima	1.44	6 (tie)	1947

Table 1: Total March precipitation, the ranking when compared to other years, and the year that records began for several WA stations.

prompting avalanche concerns. The winds were also rather strong at times. March 15th was the wettest March day at Spokane Airport since records began in 1881 with a total rainfall of 1.18". Minor flooding occurred on the 16th in Thurston, Mason, Grays Harbor, and Lewis Counties as rain continued and another wet week began on the 19th. A drier pattern finally emerged on the 23rd and 24th, before rain returned to close out the end of the month. Rain was particularly heavy on the 29th, with daily precipitation records broken at SeaTac (1.08"), Seattle WFO (1.04"), Olympia AP (1.98"), Quillayute (1.80"), Hoquiam (1.59"), and Ephrata (0.40").

CoCoRaHS March Madness - Final Standings

The annual CoCoRaHS March Madness competition is now complete. And the winners are... North Carolina and North Dakota! North Carolina won the "traditional count" contest with an impressive 138 new volunteers in March (Texas was close behind with 133) and North Dakota won the "per capita count". Washington fared better than last year, adding 8 new volunteers during March and tying for 25th place in the traditional count competition. Thank you to all who made an extra effort to try to recruit this month. Just because we were not very competitive does not mean that those new volunteers won't be very valued. And, hey, we beat Oregon and Idaho (3 new volunteers each)! Learn more about CoCoRaHS at www.cocorahs.org.

A Review of Winter 2011-2012

The calendar tells us it's officially spring, so be on the look-out for OWSC's annual winter summary. The report will be posted on our website (www.climate.washington.edu) within a week and will include discussion of the strength of this winter's La Niña and the WA temperature and precipitation anomalies compared to other La Niña years.

Snowpack

Snowpack built significantly during the wet and stormy month of March. The April 2 snow water equivalent (SWE) percent of normal from the National Resources Conservation Service (NRCS) is shown in Figure 2. The Central Puget Sound and Olympic basins have much above normal snowpack (greater than 150% of normal) while the North Puget Sound, South Puget Sound, Lower Columbia, Lower Yakima, Upper Yakima, Central Columbia, Upper Columbia, and Spokane basins all have above normal SWE (ranging from 111 to 145% of normal). The Lower Snake has near-normal SWE, with 105% of normal. The current snowpack situation is good news for summer crop irrigation. Nevertheless, the dry conditions overall since the beginning of the water year (October 1, 2011) are still reflected in the United States Drought Monitor (http://droughtmonitor.unl.edu/DM_state.htm?WA,W). There have been some improvements in the area of abnormally dry conditions since this time last month.

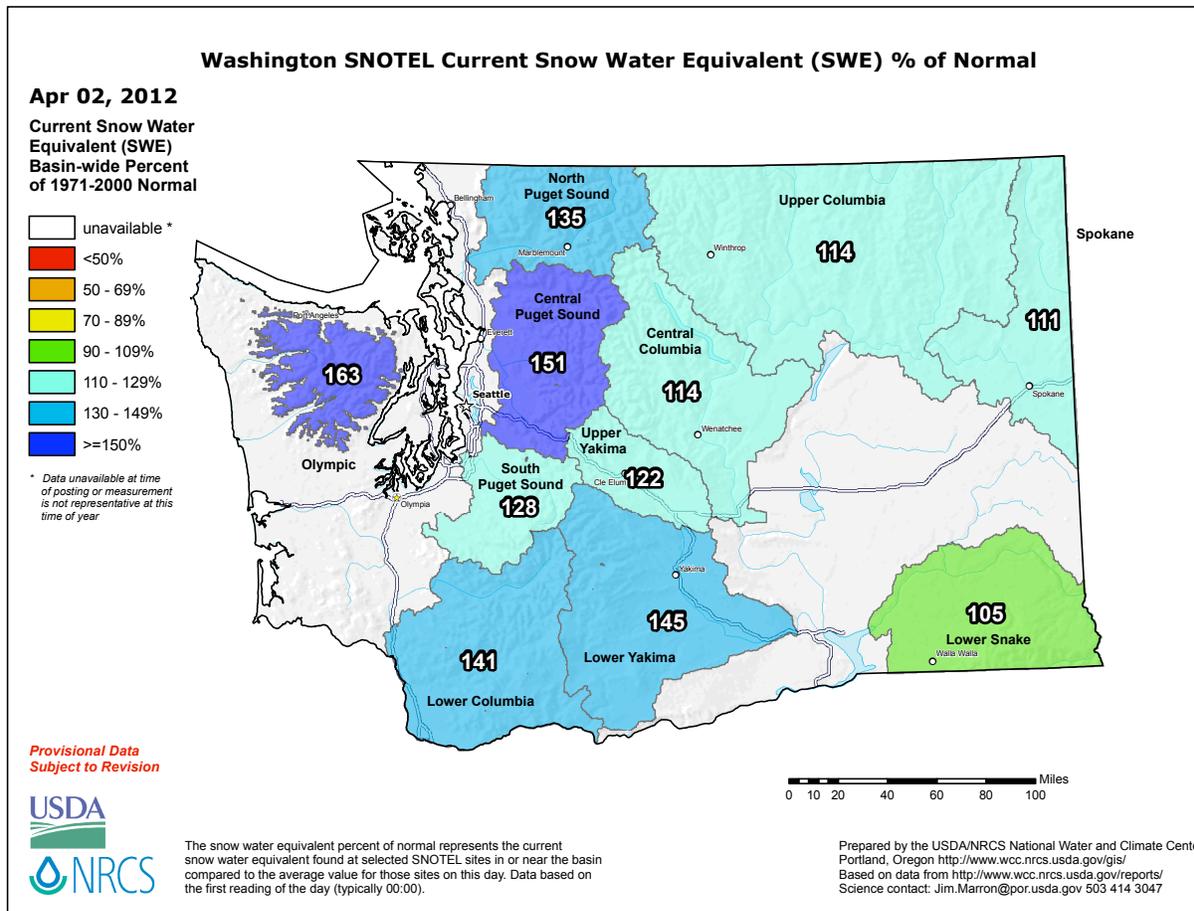
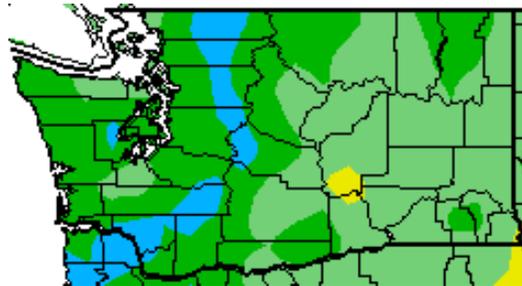


Figure 2: Snowpack (in terms of snow water equivalent) percent of normal for Washington as of April 2, 2012. Image is from the National Resources Conservation Service.

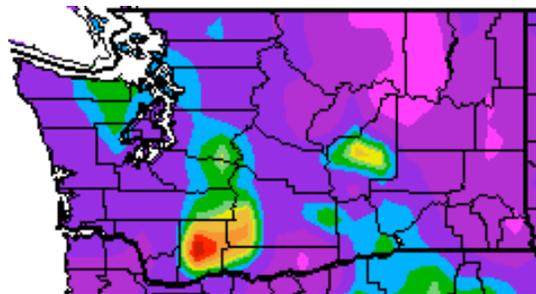
Climate Summary

Average March temperatures were below normal throughout the state, as shown in the temperature departure from normal (1971-2000) map from the High Plains Regional Climate Center (HPRCC) below. The largest temperature anomaly can be seen in the higher elevations where temperatures were between 4 and 6°F below normal. Otherwise, populated areas of the state were about 2°F below normal for the month, with south central WA as an exception (Table 2). Pasco, Yakima, and Ephrata were below normal but only by -0.2°F, -0.6°F, and -0.8°F, respectively.

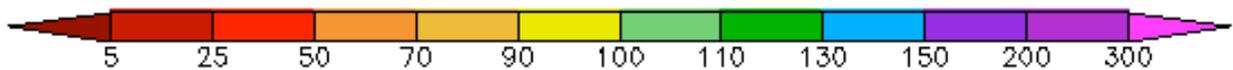
Total March precipitation was much above normal for many areas of the state, as already highlighted above. Most locations received more than 150% of normal precipitation, as shown in the percent of normal precipitation map from the HPRCC below. A few areas on the Olympic Peninsula and in eastern WA had closer to normal precipitation. One station in Skamania County is causing the red bullseye of below normal precipitation, which appears to be an error.



Temperature (°F)



Precipitation (%)



*March temperature (°F) departure from normal (top) and March precipitation % of normal (bottom).
Source: High Plains Regional Climate Center (<http://www.hprcc.unl.edu>).*

	Mean Temperature (°F)			Precipitation (inches)			Snowfall (inches)		
	Avg	Norm	Departure from Normal	Total	Norm	% of Norm	Total	Norm	% of Norm
Western Washington									
Olympia	42.0	44.5	-2.5	8.57	5.29	162	0.8	0.7	114
Seattle WFO	44.4	46.6	-2.2	5.96	3.51	170	T	0	-
Sea-Tac	43.1	46.5	-3.4	7.20	3.72	194	0.9	0.8	113
Quillayute	41.8	44.1	-2.3	21.00	10.83	194	0	0.7	0
Bellingham AP	42.5	44.2	-1.7	4.83	3.22	150	M	0.7	-
Vancouver	45.8	48.0	-2.2	7.81	3.57	219	M	M	-
Eastern Washington									
Spokane AP	38.6	40.2	-1.6	4.56	1.61	283	5.5	3.5	157
Wenatchee	41.7	44.1	-2.4	1.42	0.64	222	M	1.0	-
Omak	39.8	41.5	-1.7	1.87	1.17	160	M	M	-
Pullman AP	38.7	40.6	-1.9	5.08	2.05	248	M	M	-
Ephrata	42.2	43.0	-0.8	0.85	0.68	125	M	0.8	-
Pasco AP	46.1	46.3	-0.2	1.04	0.79	132	0	M	-
Yakima AP	42.6	43.2	-0.6	1.44	0.62	232	0.2	0.7	29

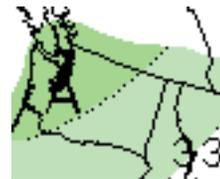
Table 2 - March climate summaries for locations around Washington with a climate normal base-line of 1981-2010. Note that the Vancouver Pearson Airport and Seattle WFO 1981-2010 normals involved using surrounding stations in NCDC's new normal release, as records for these station began in 1998 and 1986,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

Climate Outlook

The La Niña conditions are weakening across the equatorial Pacific Ocean according to the CPC (<http://www.cpc.noaa.gov/products/precip/CWlink/MJO/enso.shtml>). The sea-surface temperature (SST) anomalies in the Niño 3 and Niño 1+2 regions of the ocean (eastern Pacific) are now positive while the SST anomalies in the western Pacific (Niño 4 and Niño 3.4) are becoming less negative. ENSO forecast models are indicating a transition to near-neutral conditions by the end of April 2012. Nevertheless, the effects of La Niña often linger into spring, as reflected in the forecasts from the CPC.

The April CPC temperature outlook has higher chances of below normal temperatures statewide, with chances exceeding 40% for the western half of the state. April precipitation follows that same pattern - higher than normal precipitation expected statewide, with increased chances of above normal precipitation for the western half of the state.

The CPC 3-month seasonal outlook for April-May-June (AMJ) calls for below normal temperatures statewide with higher chances of cooler temperatures for the western quarter of WA. Precipitation, on the other hand, is a toss up, with equal chances of below, equal to, or above normal precipitation statewide.



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



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