



Office of the Washington State Climatologist

June 5, 2012

May Event Summary

May temperatures were below normal throughout WA in the mean, despite a several day period mid-month in which daily temperatures were much warmer than normal. Figure 1 shows the daily average temperature compared to normal for Seattle and Spokane for the month, illustrating the warm period (shaded red). Temperatures were below normal for most of the rest of May, which is why the average May temperatures came in below normal. Precipitation was variable throughout the state, with drier than normal conditions east of the Cascade Mountains and on the north side of the Olympic Peninsula, as described below in the Climate Summary section.

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Notable weather events during May include the statewide warm spell illustrated in Figure 1 and some extremely rainy days for western WA. From about May 12 through the 16th, temperatures were unseasonably warm throughout the state. While this was not record breaking on the west side of the Cascades, some daily high temperature records were broken on the east side as temperature soared to about 20°F above normal. Record high temperatures were set at Moses Lake (92°F), Chief Joseph Dam (92°F), Republic (87°F), and Pullman Moscow Airport (85°F) on May 14 and in Yakima (94°F) on May 15. A shift from the warm and dry weather to a cooler and wetter pattern occurred on May 20, and maximum daily rain-

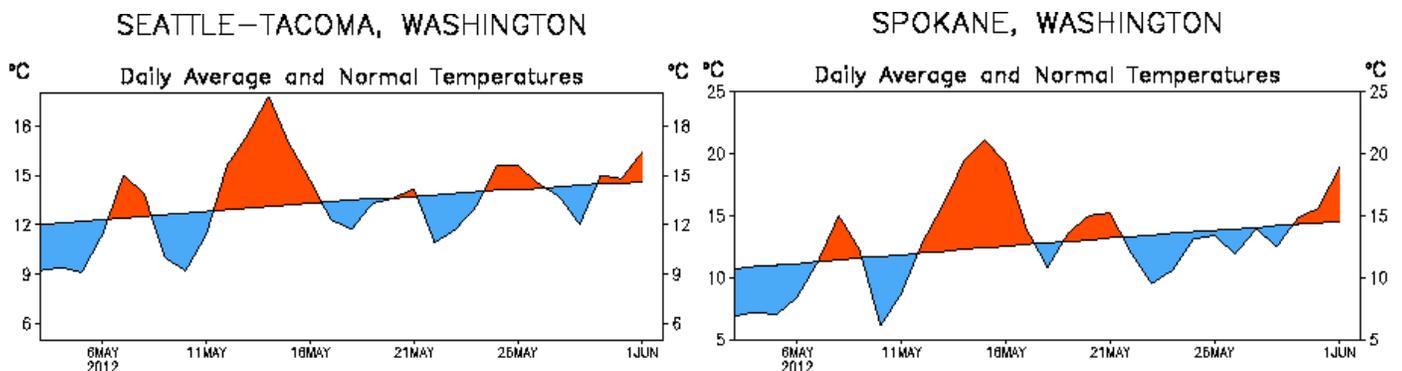


Figure 1: Daily average temperatures for May for Seattle (left) and Spokane (right) compared to normal. The sloping black line represents the normal temperatures while the red and blue shaded areas are the actual May temperatures (from CPC).

fall was recorded at SeaTac Airport (0.55”) and the Seattle Weather Forecasting Office (0.58”) on the next day (5/21).

Another wet day for the whole state occurred on May 3 with daily record precipitation measured at SeaTac Airport (0.73”), Olympia (1.09”), Hoquiam (0.99”), and Seattle WFO (0.67”). Quite a bit of snow fell in the mountains on that day as well, with Paradise Mt. Rainier, Sunrise Mt. Rainier, and Crystal Mountain recording 12, 11, and 9 inches of snow, respectively.

Snowpack

As of June 1, the snowpack in the WA mountains remained greater than normal for the time of year. Figure 2 shows the snow water equivalent (SWE) percent of normal from the National Resources Conservation Service (NRCS). Most of the basins have much above normal SWE while the Spokane and the Lower Snake basins have a closer to normal snow-pack with 115 and 104% of normal SWE, respectively.

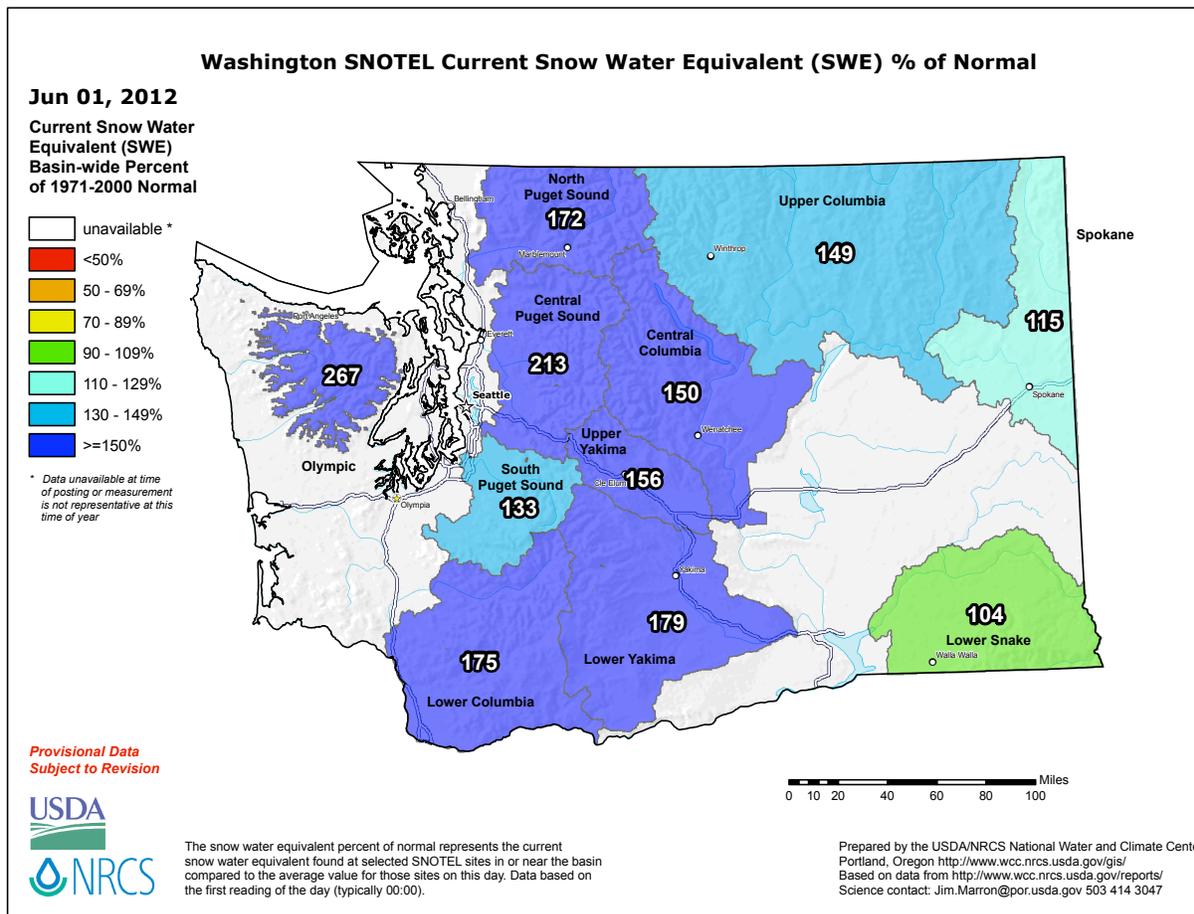


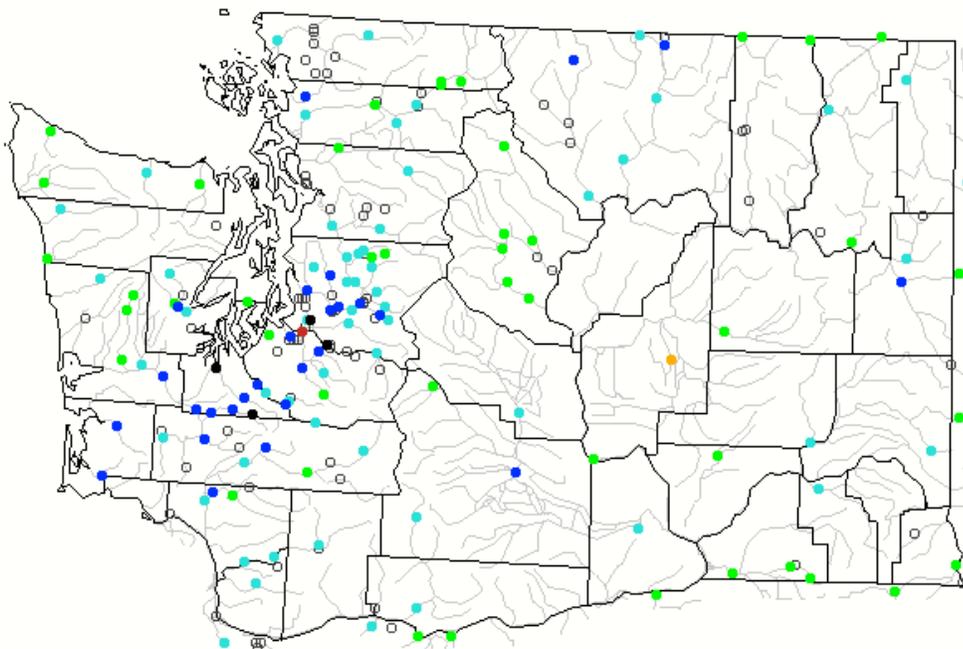
Figure 2: Snowpack (in terms of snow water equivalent) percent of normal for Washington as of June 1, 2012. Image is from the National Resources Conservation Service.

High May Streamflow Conditions in WA

During May, there were numerous fatal accidents on WA Rivers that made headlines, along with a remarkable rescue. Two children died on the Chehalis River in separate incidents and an Everett City Councilman died on the Green River in a rafting accident. Another incident that could have had a similarly tragic ending occurred on the Wallace River, where a 13-year old boy was rescued from the river before plummeting over a 265-ft waterfall. The related news articles listed below have more information on each incident:

- http://seattletimes.nwsouce.com/html/localnews/2018224760_apwachehalisriverteen.html
- http://seattletimes.nwsouce.com/html/localnews/2018164915_apwachehalisriverdrowning.html
- http://seattletimes.nwsouce.com/html/localnews/2018204756_apwacouncilmandrowns.html
- http://seattletimes.nwsouce.com/html/localnews/2018258047_rescue22m.html

The likelihood of these types of accidents is increased through a combination of warm temperatures luring people out for recreational water activities and the cold, fast-flowing rivers carrying snowmelt, exactly the conditions that were present during this past month. The higher springtime flows make it easier to find trouble in terms of getting caught in fast currents. In addition, high streamflow tends to be associated with colder water temperatures, making hypothermia a real risk on rivers at this time of year.



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

Figure 3: Average May streamflow compared to historical values for WA (from USGS:

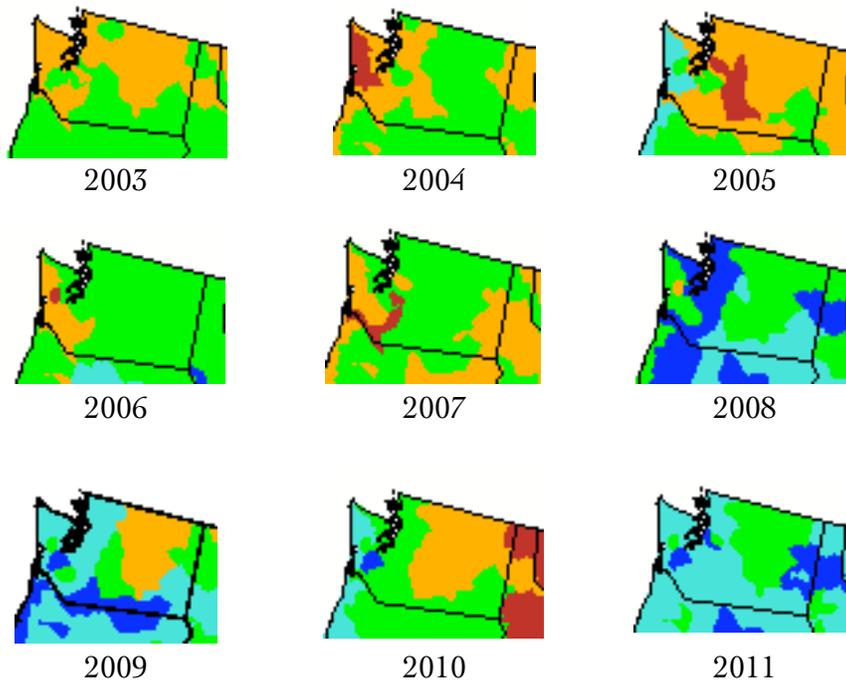
<http://waterwatch.usgs.gov/index.php?m=mv01d&r=wa&w=map>).

While the state’s rivers (and lakes) are a threat every spring, the conditions during May 2012 were primed for these tragedies. Figure 3 shows the average streamflow during May 2012 compared to historical May streamflows. The monthly average streamflow was higher than normal throughout most of the state, especially in the southern Puget Sound and southwest WA where streamflow was much above normal.

The number of river accidents during

May 2012 appears to be greater than other years in recent memory, and this is likely due to a combination of the river and weather conditions with some chance thrown in. Figure 4 shows examples of average streamflow during May for the past nine years. Last year, for example, also had high streamflow, but this was mostly due to heavy May rain that caused river flooding. The warm conditions weren't there to bring lots of people out for recreation on the rivers. Other years had May conditions with normal or below normal flows, such as 2003 and 2007, resulting in less dangerous rivers during the month. On the other hand, 2008 was more similar to 2012 with above normal streamflow from snowmelt, and even some May flooding, which presumably increased the risk of accidents on the rivers.

It is important to be cognizant of safe practices on our rivers, no matter the streamflow or time of year. There are a variety of resources on the web to help become familiar with river safety. A good place to start is with the King County River Safety Public Health page, <http://www.kingcounty.gov/healthservices/health/injury/water/riversafety.aspx>, which has links to more information.



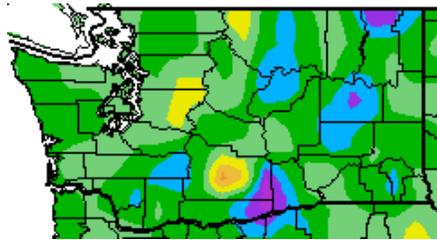
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Figure 4: Average May streamflow from 2003 to 2011 for WA (from USGS).

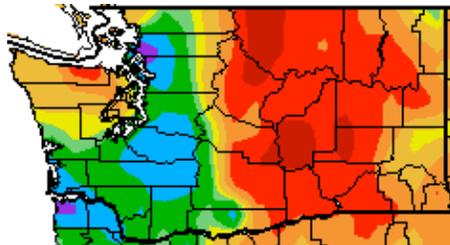
Climate Summary

Despite a stretch of warm and sunny weather during a portion of the month, the average May temperatures were below normal for most of the state. Most locations in eastern WA were between 1 and 3°F below the 1971-2000 normal as shown in the High Plains Regional Climate Center (HPRCC) map below (note that these maps have yet to be updated with the newer, 1981-2010 normals). Temperatures on the west side of the Cascades were also below normal, but by not as much. SeaTac Airport, the Seattle WFO, Bellingham, and Vancouver were all within 1°F of normal, for example (Table 1). The map shows a few locations in the Cascade Mountains with average May temperatures slightly above normal, but this is an exception to the conditions experienced throughout the rest of the state.

Total May precipitation, relative to normal, varied across the state. The northern Olympic Peninsula and all of eastern WA was relatively dry, with some locations receiving as little as 20% of climatological normals. It was wet in the Puget Sound area and southwest WA, however, with most areas receiving between 110 and 150% of normal precipitation.



Temperature (°F)



Precipitation (%)



May temperature (°F) departure from normal (top) and May precipitation % of normal (bottom).

Source: High Plains Regional Climate Center (<http://www.hprcc.unl.edu>).

	Mean Temperature (°F)			Precipitation (inches)		
	Average	Normal	Departure from Normal	Total	Normal	% of Normal
Western Washington						
Olympia	52.7	54.2	-1.5	2.73	2.33	117
Seattle WFO	55.2	56.0	-0.8	2.87	2.16	133
Sea-Tac	55.3	56.0	-0.7	2.05	1.94	106
Quillayute	50.3	51.3	-1.0	4.26	5.11	83
Bellingham AP	53.3	53.8	-0.5	1.80	2.48	73
Vancouver	57.9	58.1	-0.2	3.15	2.47	128
Eastern Washington						
Spokane AP	53.9	55.1	-1.2	0.69	1.62	43
Wenatchee	58.8	59.8	-1.0	0.16	0.68	24
Omak	55.8	58.1	-2.3	0.53	1.31	40
Pullman AP	51.2	53.2	-2.0	1.23	1.56	79
Ephrata	58.8	59.3	-0.5	0.18	0.65	28
Pasco AP	59.7	60.7	-1.0	0.24	0.73	33
Yakima AP	57.7	57.1	-0.6	0.16	0.58	28

Table 1 - May 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.

Climate Outlook

ENSO-neutral conditions are now present in the equatorial Pacific Ocean, according to the Climate Prediction Center (<http://www.cpc.ncep.noaa.gov/>). Sea-surface temperature (SST) anomalies are now near-normal through most of the equatorial Pacific, except in the Niño 3 and Niño 1+2 regions of the ocean (eastern Pacific) where SSTs are above normal. ENSO forecast models are indicating near-neutral conditions through spring and summer 2012, with about equal chances of an El Niño developing in the Fall or neutral conditions persisting. The chances of another La Niña occurring are small.

What's next for this summer? The CPC three-class temperature outlook for June calls for increased chances of below normal temperatures statewide, with higher chances of cooler temperatures in western WA. June precipitation is expected to be greater than normal statewide, with higher chances of wetter conditions east of the Cascade Mountains.

The CPC 3-month seasonal outlook for summer (June-July-August; JJA) has equal chances of below, equal to, or above normal temperatures for the state. JJA precipitation, on the other hand, is expected to be below normal for the state, with higher chances of below normal precipitation east of the Cascades.



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



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