



Office of the Washington State Climatologist

November 4, 2009

October Weather Events

October was generally cool and wet across much of the state. Parts of eastern WA experienced an early cold snap starting on October 8th associated with an arctic cold front that moved southwest from Canada, bringing freezing temperatures, blowing dust, and high temperatures only in the 40's. Some daily low temperature records were broken. For example, on October 8th there was a record low temperature of 21°F recorded at Pullman. On October 10th, Pullman recorded a low temperature of 11°F, breaking the daily record. More daily record low temperatures were broken on October 11th (Omak - 10°F; Grand Coulee - 21°F), and Spokane Airport broke the daily record for lowest high temperature on October 11th with a value of 43°F.

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Temperatures warmed back to normal shortly thereafter, and the weather pattern drastically changed on October 13th as a series of systems moved in, bringing precipitation and high winds to at least some part of the state for many days. Some daily high precipitation records were broken around the state (ex. October 17 - SeaTac Airport, 1.24 inches; October 17 - Olympia, 1.19 inches; October 27 - Mullan Pass, 1.17 inches; October 29 - Seattle, 0.41 inches). The first significant snowfall fell in the Olympic and Cascade Mountains on October 26-27th, and even in northeastern WA and southeastern WA at elevations above 4,500 ft. A few traces of snow were measured in lower elevations in Spokane and Chelan counties on October 28th and 29th. Figure 1 shows the new snow measured on the morning of October 29th from the Community Collaborative Rain, Hail, and Snow (CoCoRaHS) observers.

October 1st started the new water year (an arbitrary date to mark the beginning of the wet season), and the spigot was subsequently turned on mid-month. Most of the state received above normal precipitation for the month (see Table 1), and drought-like conditions were alleviated in some areas (Drought Monitor - <http://www.drought.unl.edu/dm/monitor.html>). The average 28-day streamflow also improved from what has been seen the past few months, with many streams experiencing normal to above normal flow (Figure 2).

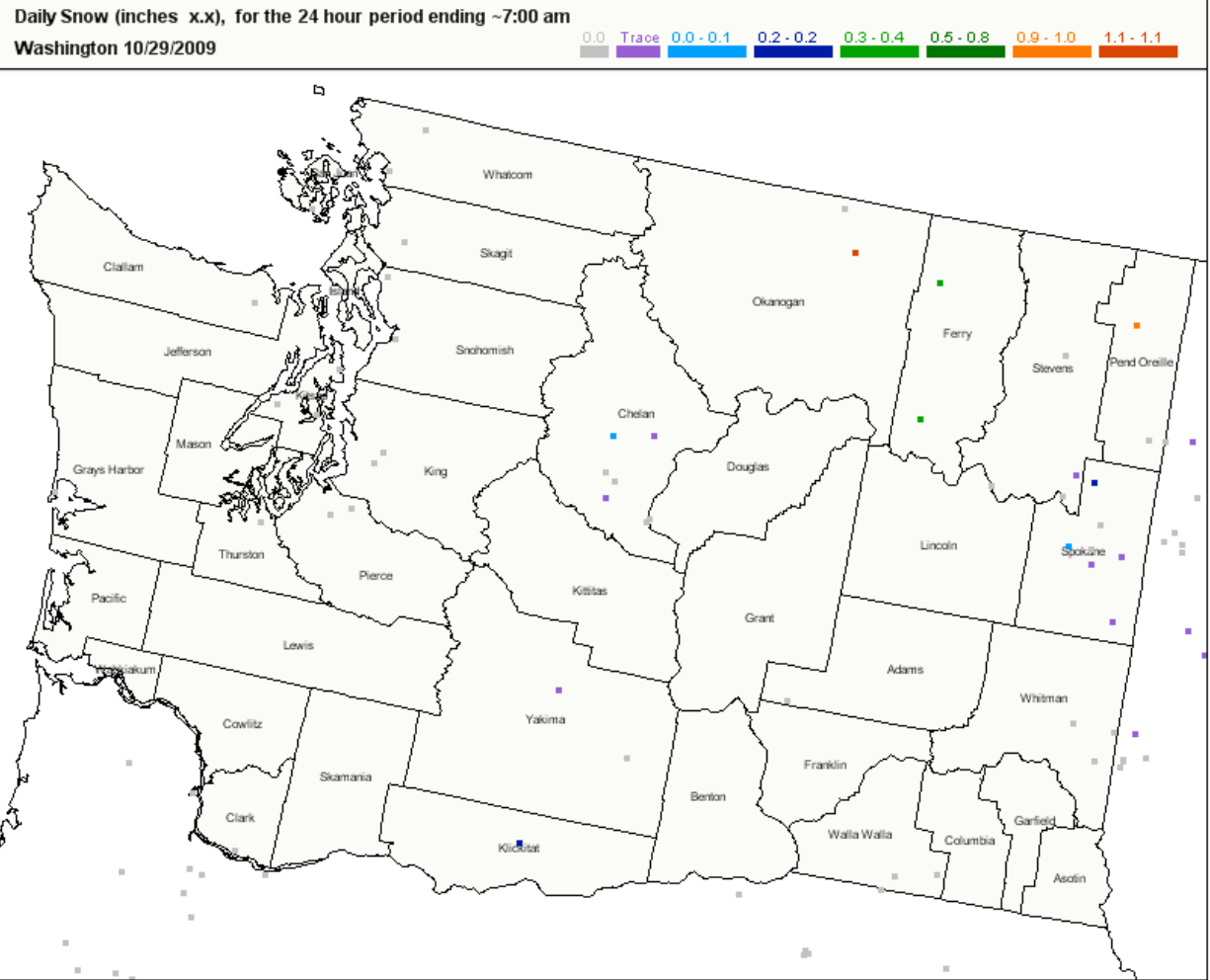
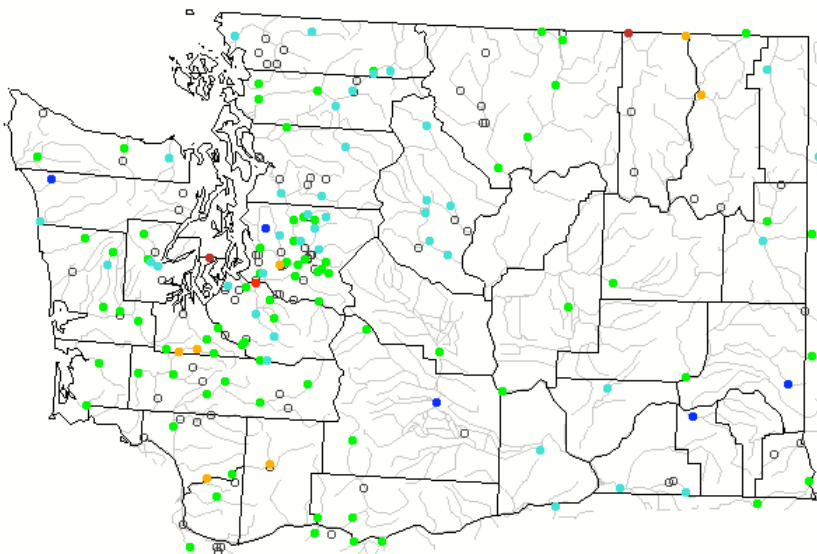


Figure 1: CoCoRaHS new snow on the morning of October 29th with a trace to 0.01 inches measured in Spokane and Chelan counties.

Monday, November 02, 2009



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 2: 28-day average streamflow through November 2 from USGS.

Resource to Monitor Conditions at Howard Hanson Dam

As discussed in previous newsletter issues, the heavy rain event in January 2009 caused damage to the Howard Hanson Dam on the Green River in King County. Because of this, the amount of water that can be held in the reservoir behind the dam will be reduced during this wet season as not to overwhelm the dam and cause catastrophic flooding. The Army Corps of Engineers do expect some minor flooding in the Green River valley as a result of this, however. We have developed a site that will monitor the precipitation at two nearby stations (Cougar Mountain SnoTel and Landsburg COOP) in near real-time and compare it to the 1971-2000 normal precipitation to put this year's precipitation in historical context. The site can be found here: <http://www.climate.washington.edu/events/2009howardhanson/>.

CoCoRaHS News



Thank you, CoCoRaHS volunteers, for your participation as we kick off our wet season! As precipitation becomes more common through the next few months it is important to distinguish between actual precipitation and dew. To clarify:

0.00 (Zero) - should be recorded when it has not rained or snowed.

T (trace) - should be recorded when you know that it has rained, but there are only a few drops in the gauge and it is not measurable.

Dew - should **not** be recorded, as it is not the result of precipitation.

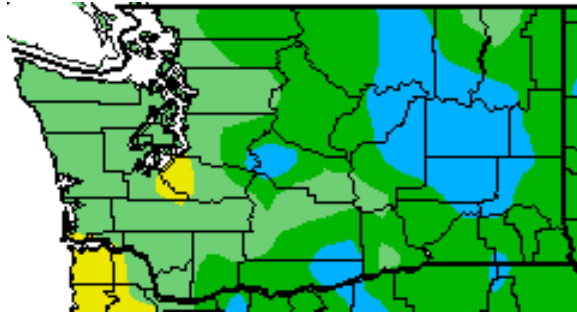
As usual, we are looking for new volunteers (especially in Asotin, Columbia, Franklin, and Wahkiakum counties). Find out more and sign up at www.cocorahs.org. If you are in an under-represented area, then you may qualify for a free rain gauge. To see if you qualify, email wash.cocorahs@gmail.com after you sign up.

Climate Summary

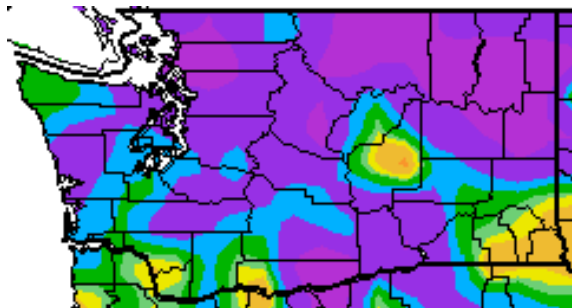
As illustrated by the maps below from the High Plains Regional Climate Center, temperatures were below normal for nearly the entire state of Washington for the month of October. West of the Cascades was generally closer to normal, with temperatures only about 0.5°F below normal (Table 1). One station was even warmer than normal resulting in the small bull's eye of temperature within the 0-1°F bracket for the month. Eastern WA was cooler than western WA, with temperatures anywhere from 2 to 5°F below normal (Table 1).

Most of the state had above normal precipitation for October (at least 110% and up to 200% of normal), which is a change from the recent dry trend. There were still some dry areas, like the Blue Mountains that had stations reporting only between 70 and 90% of normal. Grant

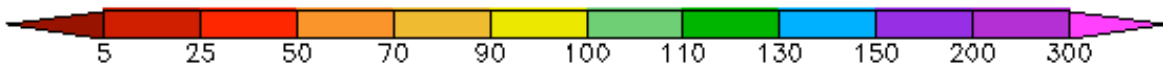
county also had one station (Ephrata) reporting monthly precipitation at 87% of normal (Table 1).



Temperature (°F)



Precipitation (%)



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

	Mean Temperature (°F)			Precipitation (inches)		
	Avg	Normal	Departure from Normal	Total	Normal	% of Normal
Olympia	49.4	49.7	-0.3	5.32	4.19	127
Seattle	52.7	53.3	-0.6	5.60	3.32	169
Sea-Tac	52.2	52.7	-0.5	5.54	3.19	174
Vancouver	54.5	52.4	2.1	3.12	3.28	95
Spokane	43.2	47.2	-4.0	2.31	1.06	218
Wenatchee	48.4	50.9	-2.5	0.56	0.45	124
Omak	43.5	47.8	-4.3	1.55	0.76	204
Pullman	43.6	48.5	-4.9	1.86	1.48	126
Ephrata	47.6	51.7	-4.1	0.41	0.47	87
Pasco	48.9	53.3	-4.4	0.95	0.57	167
Yakima	46.5	48.6	-2.1	0.89	0.53	168

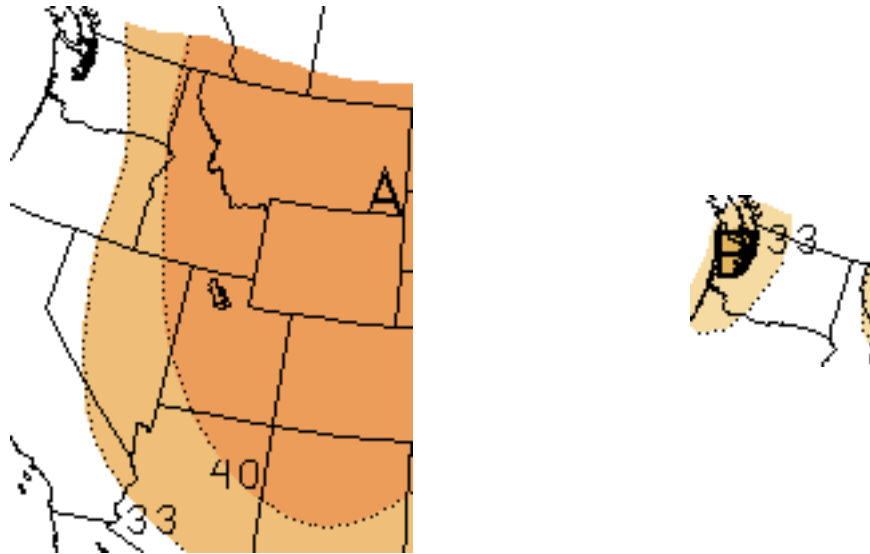
Table 1 - October Climate Summaries from locations in western Washington and eastern Washington (highlighted in orange) from NWS (climate normal baseline is 1971-2000).

Outlook

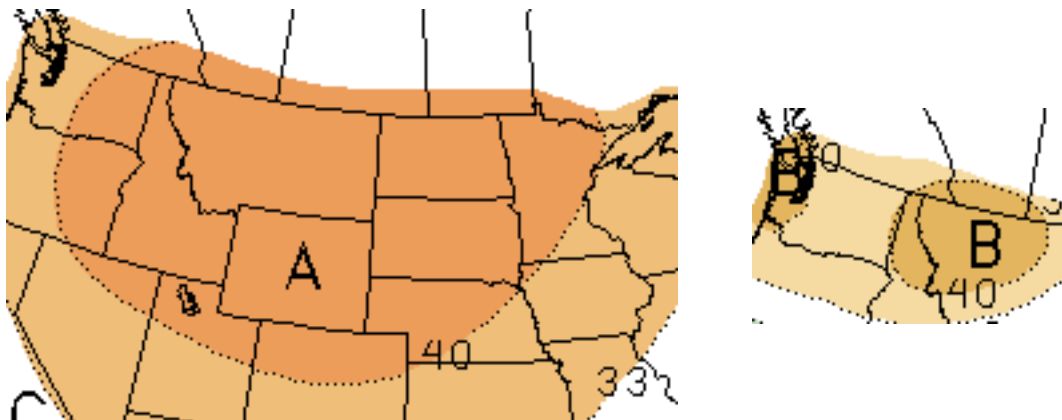
The El Niño conditions have strengthened in the tropical Pacific Ocean as the most recent 4-week equatorial sea-surface temperature (SST) anomalies have exceeded 1°C. According to forecasts from the Climate Prediction Center, El Niño is expected to strengthen (<http://www.cpc.noaa.gov/products/precip/CWlink/MJO/enso.shtml>), producing a moderate warm event. This situation provides some skill in predicting the upcoming winter season in the Pacific Northwest and much of North America. On average, winters during El Niño years are warmer and drier than typical conditions for WA state. This is not always the case, however, as some El Niño winters have been near normal, or cooler and wetter than average. Consequently, the seasonal prediction should be interpreted as a tilting of the odds towards a warm, dry winter.

The seasonal climate forecast by the NOAA Climate Prediction Center for November-December-January (NDJ) calls for at least a 33% chance of above normal temperatures for eastern WA. There is at least a 33% chance of below normal precipitation for most of western WA, and at least a 40% chance of below normal precipitation for the Olympic Peninsula.

The winter outlook (December-January-February) reflects a strengthening of the El Niño pattern over the western United States with the chances of above normal temperatures exceeding 33% for the western half of the state and exceeding 40% for the eastern half of the state. Chances of below normal DJF precipitation exceed 40% for the Olympic Peninsula and 33% for the rest of the state.



(November-December-January outlook for temperature (left) and precipitation (right) from the CPC).



(December-January-February outlook for temperature (left) and precipitation (right) from the CPC).