



Office of the Washington State Climatologist

November 2, 2012

October Event Summary

What a difference a month makes! In contrast to the extremely dry conditions experienced statewide in August and September, total October precipitation was at least 50% above normal throughout the state. The change in the weather pattern occurred on October 12 (coincidentally also the same day as the 50th anniversary of the Columbus Day Storm), and it rained almost every day for the remainder of the month. Though it initially seemed like a bad time of year to promote CoCoRaHS - a network of volunteers measuring precipitation in their back

yards - climatology did not fail us as our typical wet fall/winter weather began. Despite the dry start to the month, the total October precipitation actually ranked as the top ten wettest

for many locations statewide (Table 1). Now lets take a look at the breakdown of events.

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Station	October 2012 Precipitation	Rank	Records Began
Wenatchee	1.56	3	1960
SeaTac AP	6.71	4	1948
Bellingham AP	6.79	5	1949
Quillayute	15.60	6	1966
Hoquiam	12.99	6	1953
Colville	2.38	9	1899
Olympia	8.07	10	1948
Yakima	1.01	12	1946
Pullman	2.67	12	1940

Table 1: Total October precipitation (inches), the rank in the historical record, and the year records began at selected WA locations.

Poor air quality from wildfire smoke was still a concern in the beginning of the month. The dry, clear weather was conducive to freezing temperatures as well. Record low temperatures were recorded on October 5 around the state; for example, Olympia (28°F), Bellingham (33°F), Pullman (20°F), and Walla Walla (33°F) all recorded record lows. With the start of the rainy, unsettled weather pattern, the statewide burn ban was lifted in western WA on October 13 and in eastern WA on October 16. A maximum daily rainfall record was set at Quillayute on October 13 (1.75") and again on October 14 (2.62"). A notable

weather event occurred in the Puget Sound on October 20 as a waterspout was sighted near Whidbey Island that formed due to the unstable atmospheric conditions. The first snow for most mountain locations fell on the next day, October 21. The month ended with heavy rain. Maximum daily rainfall records were set on October 30 at both SeaTac Airport (1.36") and the Seattle Weather Forecasting Office (1.20").

WA 2012 Water Year Summary

The water year in the Pacific Northwest begins on October 1 and ends on September 30, and is labeled by the year it ends in. According to the American Meteorological Society's Glossary of Meteorology, "It commences with the start of the season of soil moisture recharge, includes the season of maximum runoff [...] and concludes with the completion of the season of maximum evapotranspiration". In other words, it starts around here at the start of the beginning of our wet season. As we begin our journey into the 2013 water year, it is worth taking a look back at the temperature and precipitation for the water year that just ended.

How does the 2012 water year (WY) compare to normal? Figure 1 shows the 2012 WY average temperature departure from normal and the total precipitation percent of normal (based on the 1981-2010 normal period) for WA State. Generally, western WA was colder and wetter than normal for WY 2012, except for the Olympic Peninsula where conditions were just barely on the dry side. Eastern WA experienced more variety in precipitation, with north-eastern WA and southeastern WA wetter than normal while the Columbia Basin was drier than normal. Regarding temperature, the far northern and far southern portions were cooler than normal while the remaining eastern WA locations had above normal WY temperatures.

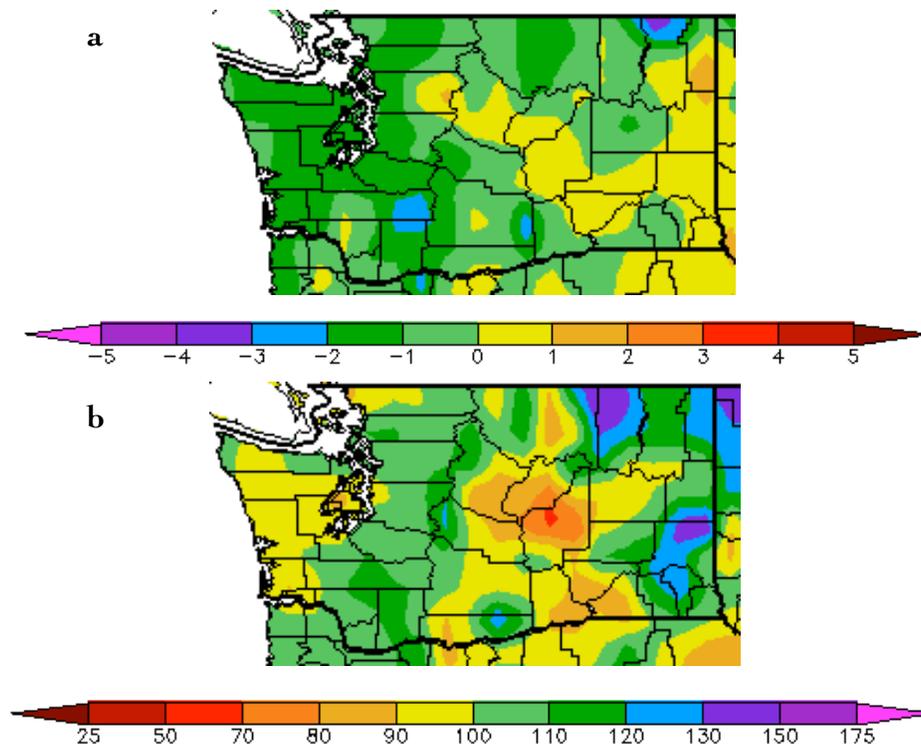


Figure 1: The (a) temperature departure from normal (°F) and (b) precipitation percent of normal for the 2012 water year [from HPRCC].

A closer look at the monthly temperature and precipitation data for two WA locations yields further insights into the WY. Figure 2 shows the monthly average temperature and total precipitation compared to normal for a western WA (Olympia Airport) and eastern WA (Spokane Airport) location. October and November 2011 started out on the dry side, and December was extremely dry for a majority of the state. Rains kicked in after January 1, and conditions were wetter than normal statewide through April with an extremely wet, record-

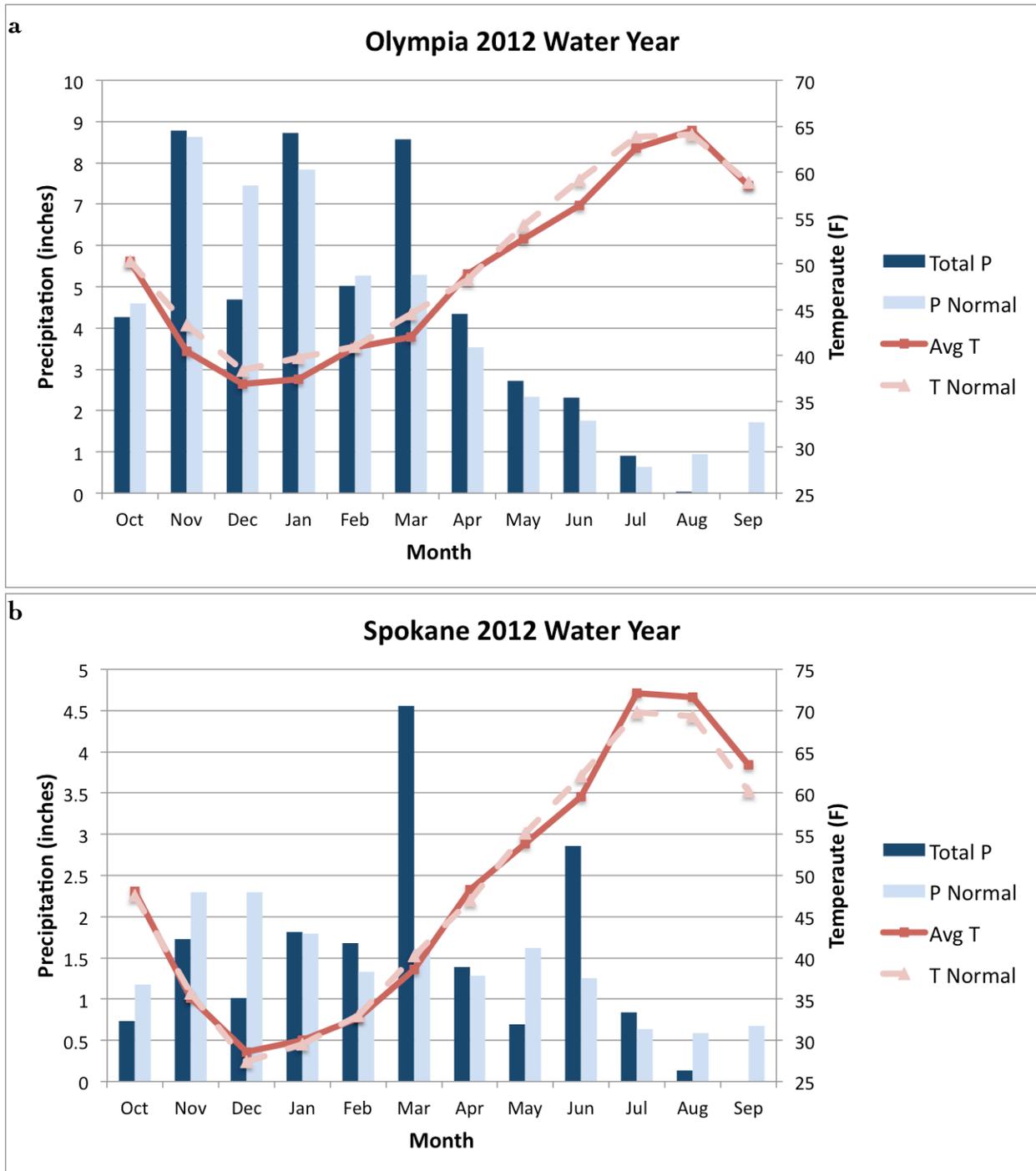


Figure 2: 2012 water year summary for (a) Olympia Airport and (b) Spokane Airport.

setting period occurring in March. May was also wet west of the Cascade Mountains but dry in eastern WA. That represented just a brief respite, however, as wetter than normal conditions continued through June. July precipitation was variable due to considerable thunderstorm activity, and the WY ended on an extremely dry note with little precipitation falling in August and September.

Regarding temperature, the WY started out with near-normal temperatures in October for nearly the entire state before colder than normal temperatures prevailed for most of winter and spring. February and April were exceptions, during which temperature were above normal nearly statewide. Otherwise, November through June was on the cold side for a majority of the state. July remained colder than normal on the west side of the Cascade Mountains while it finally warmed above normal on the east side of the Cascades. The remaining two months in the water year - August and September - were warmer than normal statewide.

While there was variability statewide in WY temperature and precipitation, the WY was generally cooler and wetter than normal. The La Niña that existed in the equatorial tropical Pacific during a majority of the WY likely had an impact on that outcome. Unfortunately, the weak El Niño-Southern Oscillation (ENSO) signal now present, and likely to continue through WY 2013, implies relatively low predictability for the year ahead. Nevertheless, NOAA's Climate Prediction Center (CPC) is predicting below normal precipitation for the winter and early spring. These predictions are based in part on global climate model simulations that can, in principle, account for influences outside of the tropics such as current anomalies in sea surface temperature, ice cover, and soil moisture. It will be interesting to see how these models perform as a group over the next year or so, especially if ENSO takes a backseat.

October Emergency Management Workshop

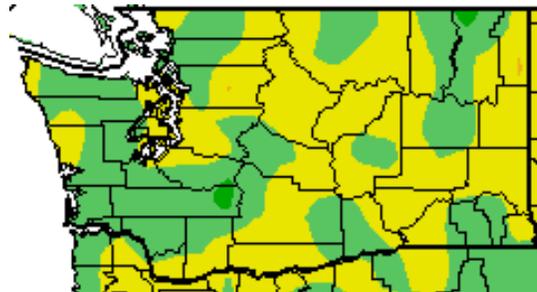
The National Weather Service Seattle held their annual media and emergency management workshops on October 3 and 4 at the NOAA Western Region Center. Well over 200 members of the media and emergency management community from around the region attended including representatives from transit, DOTs, schools, private and public sector emergency management officials, fire, law enforcement, US Coast Guard, Seattle Federal Executive Board, Red Cross, tribal nations, health, and many more. Ed O'Lenic, CPC Chief of Operations, gave the latest regional winter weather outlook via GoToMeeting to the audiences. State Climatologist, Nick Bond, discussed how the outlook related to previous similar winter seasons. Northwest Weather and Avalanche Center Director, Mark Moore, addressed new operations at the center. Karen Rich, Director of the Take Winter By Storm campaign, discussed the preparedness campaign plans for this season. Senior Service Hydrologist, Brent Bower, and WCM, Ted Buehner, addressed WeatherReady Nation and NWS decision support services for the coming winter season along with opening up discussion about meeting partner's needs and requirements. This year's crowd for the two identical workshops was the largest to attend yet. Feedback was overwhelmingly positive.

written by: Ted Buehner, NWS Seattle

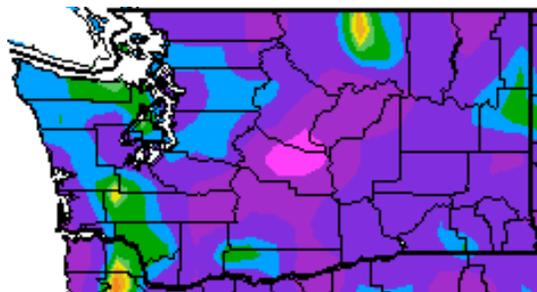
Climate Summary

Average October temperatures were generally above normal throughout the state, as illustrated by the High Plains Regional Climate Center (HPRCC) temperature departure from normal map below. Table 2 shows that these warm departures from normal were not very large, with most of the WA towns and cities within 1°F of normal. Some areas were also slightly below normal, such as Ephrata (only 0.2°F below normal) and a large area of southwest WA.

October was extremely wet across the state, contrary to August and September. The HPRCC percent of normal precipitation map below shows that most of the state received at least 150% of normal precipitation. Quillayute, on the northern Olympic Peninsula, received 149% of normal precipitation, with amounts to over 15" during this typically soggy time of year. Eastern Kittitas County was a wet spot relative to normal, receiving over 300% of normal October precipitation (Table 2).



Temperature (°F)



Precipitation (%)



October temperature (°F) departure from normal (top) and October 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	% of Normal
Western Washington						
Olympia	50.8	50.3	0.5	8.07	4.60	175
Seattle WFO	54.2	53.3	0.9	5.77	3.41	169
Sea-Tac	53.8	52.8	1.0	6.71	3.48	193
Quillayute	50.8	50.0	0.8	15.60	10.49	149
Bellingham AP	50.7	49.8	0.9	6.79	3.68	185
Vancouver	55.3*	53.8	1.5*	4.43	3.07	144
Eastern Washington						
Spokane AP	48.5	47.6	0.9	1.54	1.18	131
Wenatchee	51.3	50.9	0.4	1.56	0.44	355
Omak	49.7	48.9	0.8	1.33	1.10	121
Pullman AP	47.6	47.5	0.1	2.60	1.34	194
Ephrata	50.3	50.5	-0.2	1.02	0.53	192
Pasco AP	52.3	51.9	0.4	1.05	0.65	162
Yakima AP	50.0	49.0	1.0	1.01	0.54	187

Table 2: October 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. *The average temperature at Vancouver is missing 6 days of data; this average is calculated using the remaining 24 days.

And the Winner Is....

...Washington! Congratulations, Washingtonians, we are the winner of the 1st Annual WA vs. OR CoCoRaHS Challenge with 22 new observers signed up between October 1 and October 27. Please feel free to gloat to our neighbors to the south. But now isn't the time to forget about CoCoRaHS - if you're already an enthusiastic observer, please spread the word to your friends and family. New observers can sign up at www.cocorahs.org.

Climate Outlook

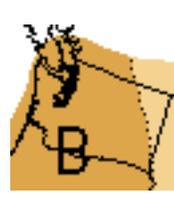
The conditions in the equatorial Pacific Ocean continue to be ENSO-neutral, with the likelihood that a weak El Niño will actually develop continuing to decrease. Yet, the Climate Prediction Center's (CPC) "El Niño Watch" is still in effect (released in early June): http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.html. Most of the models are now predicting the continuation of neutral conditions through the winter; some still indicate the development of a weak El Niño.

The CPC three-class temperature outlook for November is a toss up for most of the state: there are equal chances of below, equal to, or above normal temperatures. Only a small section on southeastern WA has higher chances of above normal temperatures for November. The November precipitation outlook is similar. There are equal chances of below, equal to, or above normal precipitation, except for a small area of southwestern WA where there are increased chances of below normal precipitation.

The CPC 3-month seasonal outlook for November-December-January (NDJ) temperature mirrors the outlook for November. There are equal chances of below, equal to, or above normal temperatures for a majority of the state while a small section of far eastern WA has increased chances of above normal temperatures. On the other hand, NDJ precipitation is expected to be below normal statewide.



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



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