Office of the Washington State Climatologist

November 12, 2010

October Event Summary

In general, October was warmer and wetter than normal. October temperatures were warmer than normal for the entire state, while precipitation anomalies varied by location. The northern Puget Sound and north central WA remained relatively dry for the month while the rest of the state was quite wet.

In this Issue

Despite the high monthly precipitation totals for most of the state, the first half of the month featured mostly dry days. The majority of the precipitation fell during two particularly wet periods: roughly October 7-10 and October 22 through the end of the month (an example of one station is shown in Figure 1). These stormy periods were substantial, dumping more than the normal month's allotment of precipitation for most of the state. The latter stormy period also dropped snow in the mountains, mainly the Olympics and the southern Cascades. Some daily precipitation records were broken in eastern WA on October 24 - Ephrata received 0.26", Moses Lake 0.23", and Mullan Pass 0.91".

Figure 1 shows the daily temperatures and precipitation totals for Spokane during October. The warmer than normal average monthly temperatures for several locations in eastern WA was influenced by warmer than normal temperatures during the first few days of the month. Spokane, for example, had high temperatures that were 15°F higher than the daily normal.

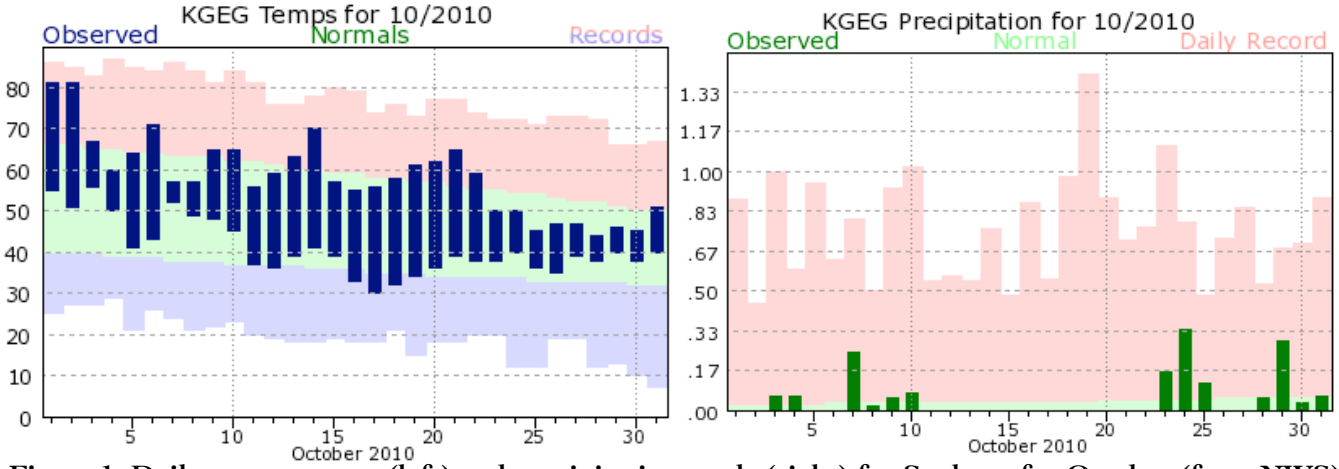


Figure 1: Daily temperatures (left) and precipitation totals (right) for Spokane for October (from NWS).

ENSO & Lowland Snow

A brief analysis of the relationship between lowland snow and the phase of ENSO was recently posted on our site. In order to supplement previous studies including a climatological analysis done by the Spokane National Weather Service Office, 4 western WA sites were analyzed from the 1950/51 through the 2009/10 winter seasons in order to compute the average La Niña, El Niño, and neutral year snowfall. More information can be found on our site: http://www.climate.washington.edu/events/2010lowlandsnow/.

On the Weather Forecasts made by the Old Farmer's Almanac

A message from your State Climatologist

One way to annoy many meteorologists is to suggest that the weather forecasts from the Old Farmer's Almanac (OFA) are more skillful than those from the National Weather Service. I certainly share this peeve, and so on a lark some years ago, I decided to determine for myself whether the OFA forecasts for the Pacific Northwest had merit. The results of this analysis are summarized here.

The OFA does not fully explain how they make their forecasts. A secret formula devised by the founder of OFA is supposedly locked up in a black box in an office in Dublin, NH, with some refinements and enhancements to the method over the years. The OFA is not forthcoming with details but claim to use sunspots and solar activity in particular to project how the weather will differ from seasonal norms. These projections are made in the late summer/early fall for the next year for 18 different regions of the US. They include qualitative forecasts for the entire year for blocks of days ranging from a few days to about a week in length. Because they are qualitative, these forecasts cannot be verified quantitatively. Moreover, the chaotic nature of the atmosphere is such that there are strict limits to the predictability of the occurrence and timing of weather events such as cold snaps or rainy periods. It is simply impossible to predict specific events beyond a couple of weeks, at best. On the other hand, the OFA also provides numerical forecasts of monthly temperature and precipitation anomalies, and in principle, these forecasts could be skillful. The OFA claims "80% accuracy" in their weather forecasts (it is unclear whether they are referring to the qualitative forecasts for the day-to-day weather within each month, or to the temperature and precipitation anomaly forecasts for months on the whole), and so it seems reasonable to check to see if this is actually the case.

This analysis considers the monthly temperature and precipitation anomaly forecasts from OFA for the Pacific Northwest (their Region 15) during winter (November through March) over the period of 1990 to 2002. These forecasts were compared with the observed temperature and precipitation anomalies based on averages from the appropriate NOAA/NCDC Climate Divisions (Div. 1-4 for WA, 1-4 for OR, and 1 for CA). An unfavorable correspondence was found between the OFA forecasts and the observed monthly mean temperature and precipitation anomalies. The temperature forecasts were wrong as often as

not; the precipitation forecasts were actually a bit worse than by chance. In more quantitative and statistical terms, the correlation coefficient between the forecasts and verifying observations was essentially zero for temperature, and about -0.2 for precipitation. This analysis was carried in 2003, and of course more data is now available, but there is no reason to think that an updated analysis would yield much different results.

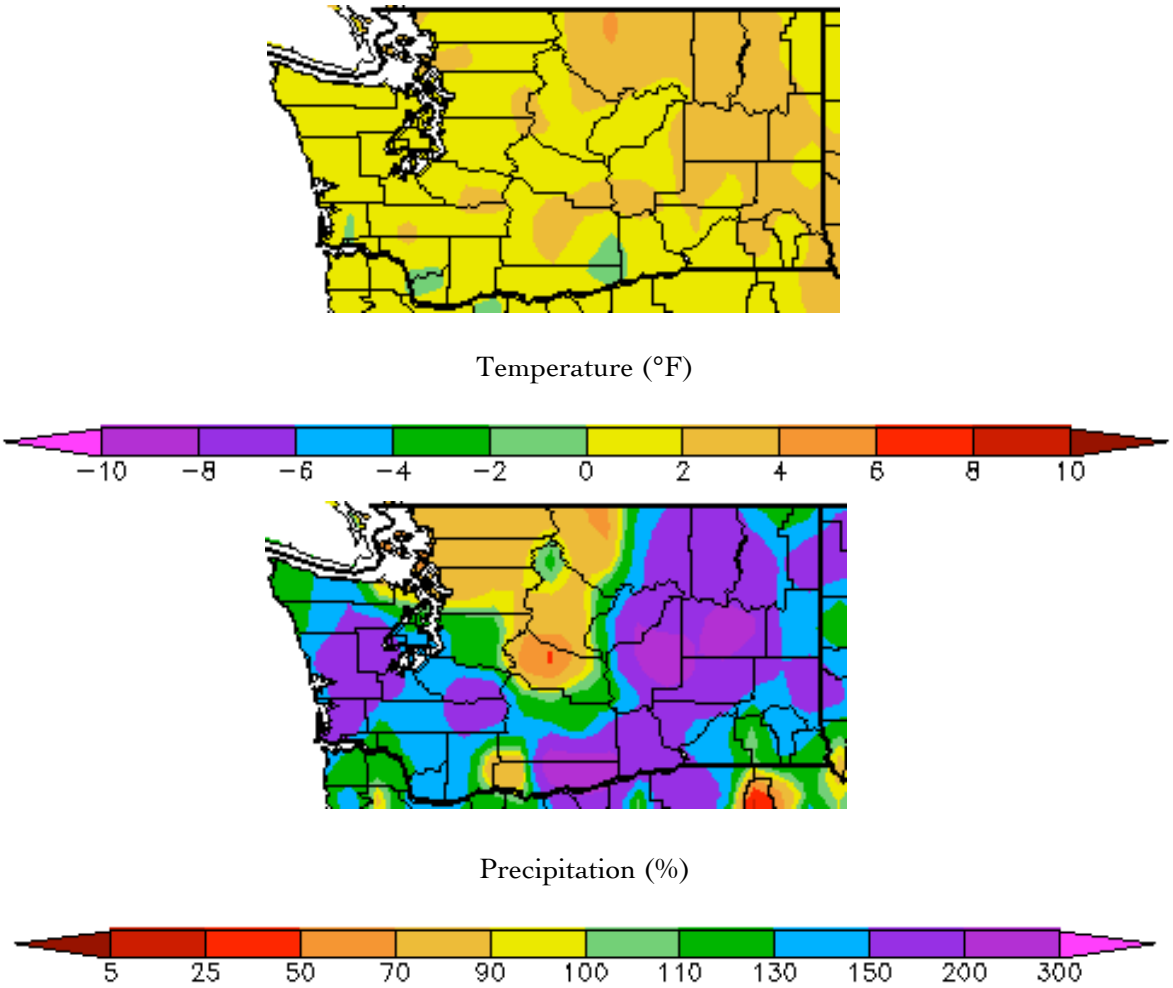
The present analysis is by no means the only independent assessment of OFA weather forecasts. In particular, John Walsh and David Allen of the University of Illinois published an article (Weatherwise, October 1981) with an evaluation of the accuracy of 60 monthly temperature and precipitation forecasts for 32 stations across the U.S. They found that the OFA forecast the sign of the temperature anomalies correctly 50.7% of the time. The corresponding accuracy for precipitation was 51.9%. These compare with a rate of 50% by flipping a coin, over the long haul. Jan Null, a certified consulting meteorologist with Golden Gate Weather Services, has done his own OFA forecast verifications for a number of different periods across the country. While there are some occasional hits, his analysis has revealed in general, quite poor performance. Jeff Masters, of Weather Underground, a reputable private forecasting outfit, has also found OFA forecasts to be no better than those made by chance and sometimes significantly worse.

Evidence is lacking that the OFA's weather forecasts have skill, despite their claims to the contrary. Nevertheless, they seem to have an enduring popularity. I can only speculate on the reason(s), but I suspect it has something to do with the appeal of simple methods, i.e., the superiority of Yankee ingenuity over complicated statistical and computer models. I also expect the definitiveness of the OFA product, especially the day-to-day projections, makes them attractive relative to the probabalistic forecasts from NOAA's Climate Prediction Center and other climate forecast groups. The readers of this newsletter are advised that it is the latter-type of seasonal predictions that should be taken seriously.

Climate Summary

Mean temperatures were generally above normal for October, as shown in the High Plains Regional Climate Center (HPRCC) map below. Some stations to the east of the Cascades exceeded their normal October temperature by at least 2°F (i.e., Spokane, Omak, and Yakima; Table 1).

In continuation with the pattern seen in September, October was relatively wet for a majority of the state. Precipitation was greater than 150% of normal for parts of southwest and eastern WA. The northern Puget Sound and north central WA, however, received below normal precipitation for the month. Between 70-90% of normal precipitation fell in those areas, as illustrated by the HPRCC map below.



(October temperature (°F) departure from normal (top) and October 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 WA						
Olympia	50.4	49.7	0.7	6.21	4.19	148
Seattle	54.7	53.3	1.4	3.82	3.32	115
Sea-Tac	53.3	52.7	0.6	5.24	3.19	164
Quillayute	51.5	50.1	1.4	12.11	9.81	123
Vancouver	54.6	54.2	0.4	4.34	2.58	168
Eastern WA						
Spokane	49.7	47.2	2.5	1.54	1.06	145
Wenatchee	52.3	50.9	1.4	0.44	0.45	98
Omak	50.5	47.8	2.7	1.10	0.76	145
Ephrata	52.7	51.7	1.0	1.02	0.47	217
Pullman	49.5	48.5	1.0	2.20	1.48	149
Yakima	51.2	48.6	2.6	0.74	0.53	140

Table 1 - October climate summaries for locations around Washington. The climate normal baseline is 1971-2000 except for Seattle WFO (1986-2000) and Vancouver (1998-2009). Please be aware that the Seattle WFO and Vancouver climate normal periods are shorter than the 30-year period that is typically used for climatology.

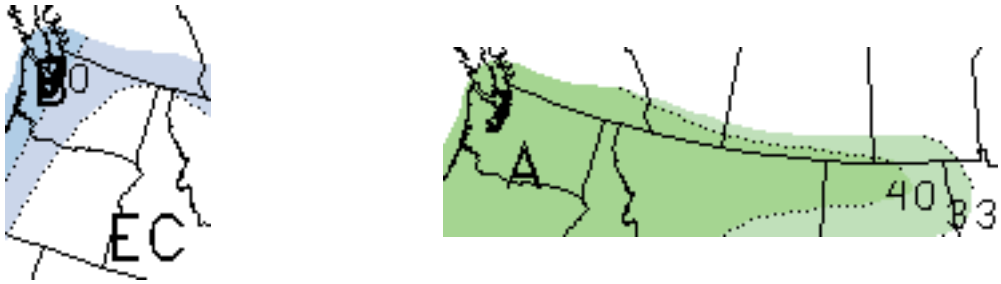
Climate Outlook

La Niña conditions are present across the equatorial Pacific according to the Climate Prediction Center (http://www.cpc.noaa.gov/products/precip/CWlink/MJO/enso.shtml). Models (http://iri.columbia.edu/climate/ENSO/currentinfo/SST_table.html) are in agreement that the La Niña conditions will persist through the boreal winter, and be of at least moderate intensity. The La Niña is reflected in the Climate Prediction Center (CPC) seasonal outlooks featured below.

The November-December-January (NDJ) outlook calls for colder than normal temperatures for most of the state (i.e., greater than 33% chance of below normal temperatures in a three-class system), particularly west of the Cascade Mountains. The southeast corner of the state has equal chances of below, equal to, or above normal temperatures. With regards to precipitation, the entire state is relatively likely to be significantly wetter than normal (i.e., at least a 40% chance using the three-class system).

The winter (December-January-February; DJF) CPC outlook is similar to the NDJ outlook. The west side of the state is apt to be colder than normal, while the precipitation outlook has higher odds than usual for above normal precipitation for the entire 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.