



Office of the Washington State Climatologist

November 4, 2011

October Event Summary

In an overall sense, Washington State experienced near-normal temperatures and below normal precipitation during October. There were some exceptions to this generalization, of course, and more information is provided in the "Climate Summary" on page 4. Some details on the daily and weekly weather variations are described below.

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The first week and a half of October started off rather soggy, with SeaTac Airport receiving measurable precipitation for the first 11 days of the month for the first time since records began in 1948. Most of this precipitation was light, however, despite a few total daily rainfall records set throughout the state. Wenatchee set a record on the 5th with 0.40" of precipitation falling while rain on the west side set records on the 11th at Olympia (0.96") and SeaTac Airport (0.89").

Overall, the second half of October had fewer rainy days than the beginning of the month. A high pressure dominated the weather pattern mid-month, keeping conditions dry statewide for several days. Warmer than normal temperatures persisted east of the Cascade Mountains from about the 18th to the 22nd. Figure 1 illustrates this with a temperature departure from normal plot for Spokane. The 18th was also warm on the west side, measuring up as the warmest Seattle

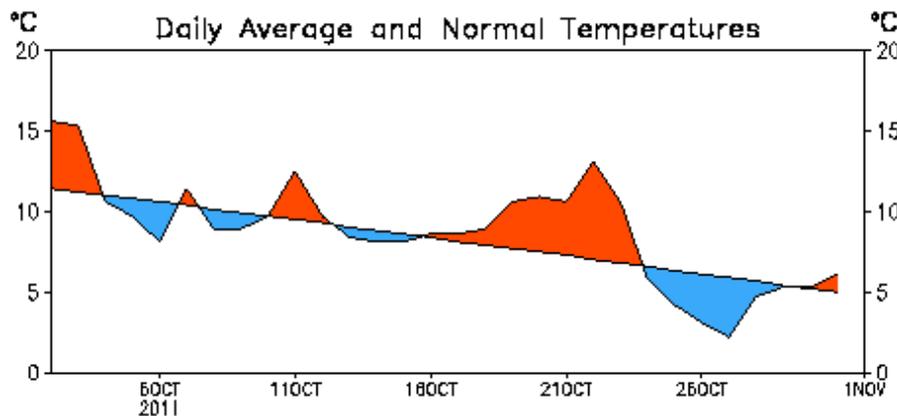


Figure 1: Spokane average daily temperature departures from normal for October 2011 (from CPC).

warmest Seattle October day this year with a temperature of 67°F. A frontal passage overnight on the 23rd into the 24th left very cool air in its wake, dropping lows into the 20s and 30s statewide. The first frost of the season occurred in eastern WA during this cold spell (also evident in Figure 1). The end of the

month wrapped up with cooler than normal temperatures setting a few records east of the Cascades: on the 27th low temperature records were set at Ephrata (19°F) and Chief Joseph Dam (23°F).

The Timing of Seasonal Closures of Mountains Passes in Washington State

A message from the State Climatologist

Storms are beginning to roll into the Pacific Northwest more or less on cue with the usual start to the wet season. But when is it liable to cool down enough for snow in the high country and hence winter recreation? One way to gauge the timing of the onset of winter is by the dates of the seasonal closures of the North Cascades Highway, and Cayuse and Chinook Passes, and that is what is considered here.

The dates of the closures of the three passes for years of 1973 to 2010 are shown in Figure 2. The mean date of closure ranges from about Julian date 322 (19 November) at Chinook Pass to Julian date 332 (29 November) at Cayuse Pass. The great majority of the years have closure dates between early November and the middle of December; the year-to-year variations in closure dates are on the order of 2 weeks. The three passes tend to act as a group in terms of being closed relatively early or late, as might be expected. The major dumps of snow that are required to raise the avalanche hazard high enough to close these passes are rarely highly localized. A notable year in the record is 1976 where no closure date is plotted on Figure 2 for any of the passes. The passes remained open that winter due to the extremely low snowfall, especially during the early and middle portions. Only 2 years in the record had closure dates that were delayed until January – the 79/80 and 89/90 winters. It is also worth noting that a long-term trend in the closing dates is lacking.

It appears that La Niña conditions will be present in the tropical Pacific through the upcoming winter, which tends to mean more snow than usual in the mountains of the Pacific Northwest. As discussed in last month's newsletter, La Niña, and more generally the phenomenon known as El Niño-Southern Oscillation (ENSO), has corresponded more with precipitation amounts early in the cool season (October-December) and temperatures after the first of the year. Does this mean that the passes are liable to close earlier than usual? The answer may be a bit surprising. We compared the closure dates shown above with the mean NINO3.4 index for October through December of each year and found essentially no correspondence for the period of record. There is a weak indication that very late closures are rare during La Niña but that is about it. This lack of correspondence is a good example of how climate-related factors such as ENSO can provide useful indications of seasonal mean weather in a probabilistic sense, but little or no help with regards to timing individual weather events. The winter of 2010-11 nicely illustrates this aspect. For example, there was no way to anticipate going into that season that our most intense cold-air outbreaks would be in late November and late February rather than during December or January.

These three Cascades passes have striking scenery, and autumn has its special charms. But if you have your heart set on driving these routes this year, the past record suggests it is probably prudent not to wait too long into the month of November. In case you are planning a trip of this sort, you may want to check out the detailed mountain weather forecasts provided by the Northwest Avalanche Forecast Center at <http://www.nwac.us/>.

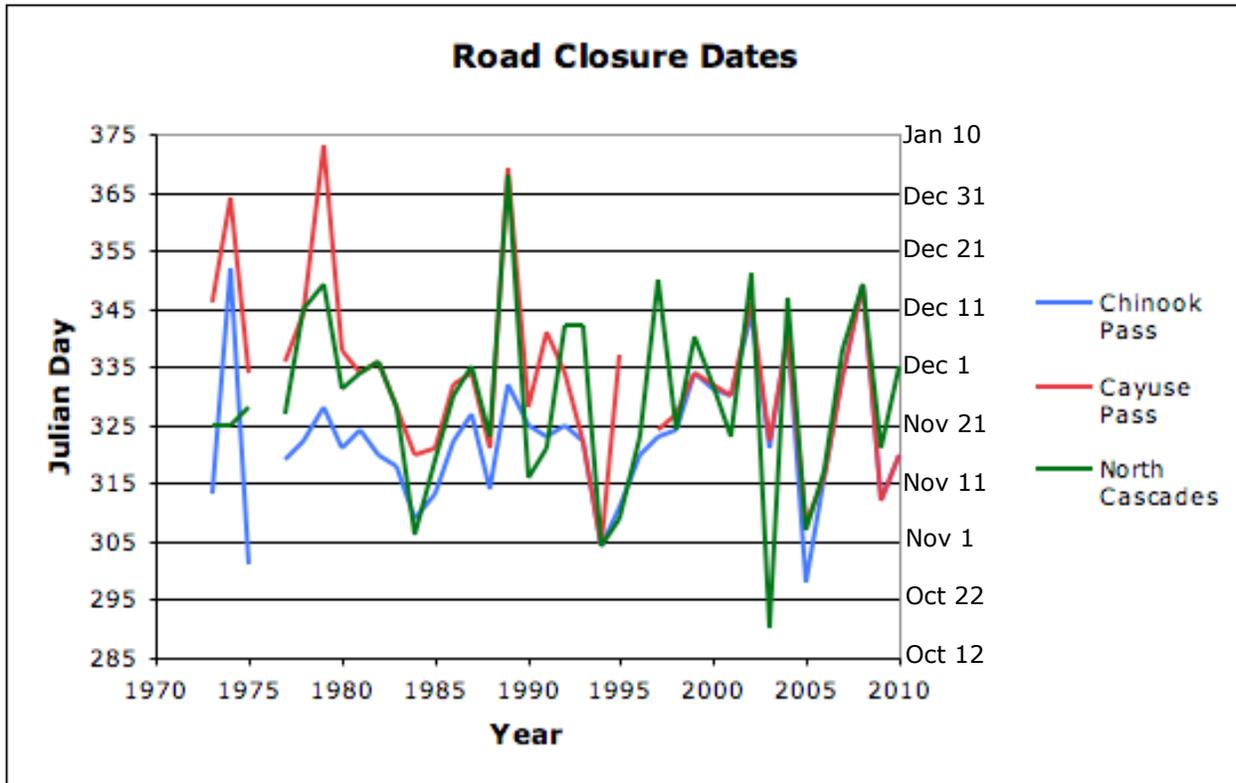
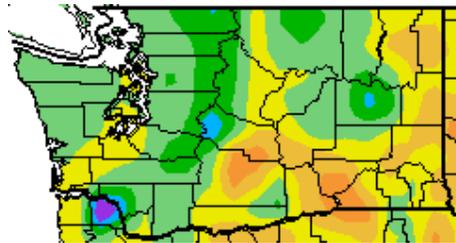


Figure 2: Dates of seasonal closures (Julian day) of the North Cascades Highway, Cayuse Pass and Chinook Pass for the years 1973-2010 from the Washington State Department of Transportation (<http://www.wsdot.wa.gov/winter/PassDates.htm>).

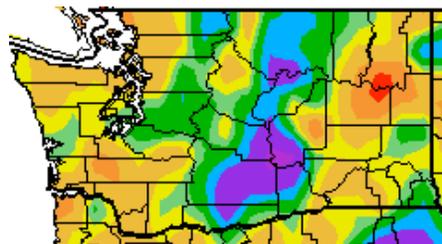
Climate Summary

Average October temperatures were very close to normal in western WA, staying within 1°F of normal for most locations (Table 1; map below). The central and northern Cascade Mountains were cooler than normal, and so were portions of northeastern WA. Omak, for example, was 1.5°F cooler than normal for October. Other locations in eastern WA were near-normal (Table 1; map below), except for a few areas that had warmer than normal October temperatures. Pullman and Yakima, for example, were 1.7°F and 1.6°F above normal for the month.

Total October precipitation was below normal for most of the state, as illustrated in the precipitation percentage of normal map below. Most of western WA received between 70 and 90% of normal precipitation with near normal precipitation totals for the southern Puget Sound region and in King County as exceptions. Precipitation in the Cascades and central WA was above normal, with Yakima and Wenatchee receiving 167% and 150% of normal precipitation, respectively (Table 1). Drier October conditions prevailed east of there with Spokane and Ephrata as relative dry spots.



Temperature (°F)



Precipitation (%)



*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 Washington						
Olympia	50.3	50.3	0.0	4.26	4.60	93
Seattle WFO	53.6	53.3	0.3	2.97	3.41	87
Sea-Tac	52.2	52.8	-0.6	3.45	3.48	99
Quillayute	50.1	50.0	0.1	10.39	10.49	99
Bellingham AP	50.2	49.8	0.4	1.83	3.68	50
Vancouver	55.3	53.8	1.5	2.20	3.07	72
Eastern Washington						
Spokane AP	48.1	47.6	0.5	0.73	1.18	62
Wenatchee	51.5	50.9	0.6	0.66	0.44	150
Omak	47.3	48.9	-1.6	0.97	1.10	88
Pullman	49.2	47.5	1.7	1.49	1.34	111
Ephrata	51.2	50.5	0.7	0.40	0.53	75
Pasco AP	53.9	54.0	-0.1	0.59	0.60	98
Yakima AP	50.6	49.0	1.6	0.90	0.54	167

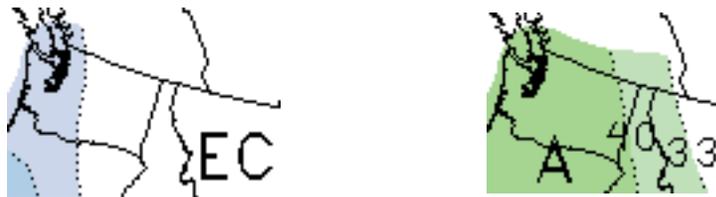
Table 1 - October climate summaries for locations around Washington with a climate normal baseline of 1981-2010. Note that the Vancouver Pearson Airport 1981-2010 normal involved using surrounding stations in NCDC's new normal release, as records for this station began in 1998.

Climate Outlook

Weak-to-moderate La Niña conditions are present in the equatorial Pacific Ocean. Most of the eastern equatorial Pacific has had sea-surface temperature (SST) anomalies at least 1°C below normal during the last 4 weeks, according to the Climate Prediction Center (<http://www.cpc.noaa.gov/products/precip/CWlink/MJO/enso.shtml>; CPC). SST anomalies have exceeded -0.5°C in other areas of the equatorial Pacific during the same time period. The consensus among ENSO forecast models is for a continuation of weak-to-moderate La Niña conditions through the winter season.

The November CPC temperature outlook calls for cooler than normal conditions in the western half of WA and equal chances of below, equal to, or above normal temperatures for the eastern half of the state. For November precipitation, there is at least a 40% chance that it will be higher than normal for the state.

The CPC 3-month seasonal outlook for November-December-January (NDJ) calls for equal chances of below, equal to, or above normal temperatures for the entire state. The precipitation outlook, on the other hand, indicates increased chances of above normal precipitation for the whole state (exceeding 50% on the three-class outlook).



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



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