



Office of the Washington State Climatologist Newsletter

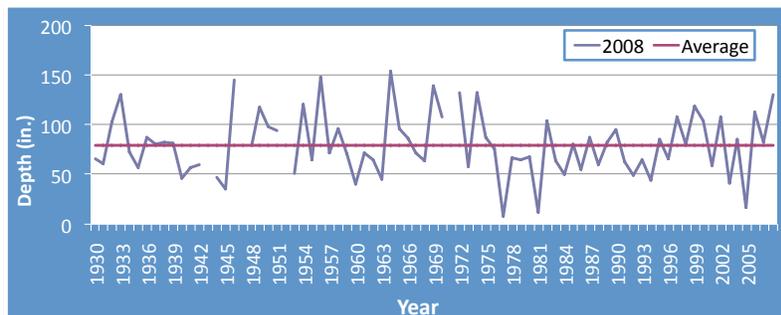
March 4, 2008

Historical Winter Snow

Reminiscent of the 1998-1999 winter, copious amounts of snow have fallen across the Cascades this winter due in part to the moderate/strong La Niña in the equatorial Pacific. State transportation crews have been busy working to keep the mountain passes open, which have been closed numerous times due to avalanches and traffic problems. As of February 1, snowpack across much of the state is greater than 140% of normal. The biggest departures from average are in the central Cascades, particularly Stampede Pass, Snoqualmie Pass, and Stevens Pass, which have not had this much snow on the ground since 1974. Further, White Pass has a record February 1 snow depth of 110", surpassing the previous record of 88", and is also tied for the 3rd highest snowdepth ever at White Pass.

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Snoqualmie Pass February 1 snowdepth.

Further east, many areas have also received impressive snowfall amounts that have not been observed in over a decade. In Spokane, over 62" of snow has fallen from November through January, more than double the average of 28.5", and is the 7th snowiest all-

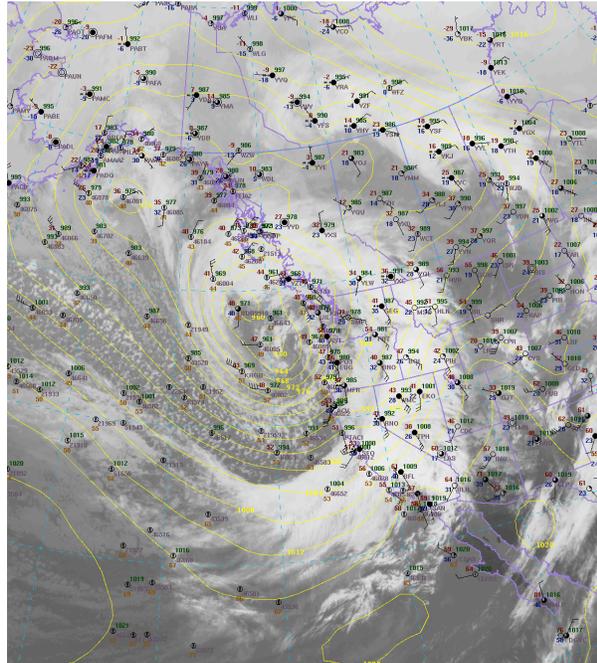
time for the November – January period. The majority of the snow fell in January, with over a 1/3 of the month's 40" total falling on the 26th and 27th as a cold front moving south from the Gulf of Alaska collided with a slow-moving moist stationary front from the south. How does this winter compare historically to an entire winter season in Spokane? Well as of February 1, if no more snow were to fall, this winter would be ranked the 20th snowiest winter dating back to 1881.

This article with additional snowdepth and snowfall plots are located at:

<http://www.climate.washington.edu/events/2008winterSnow/>

Early January Windstorm

On January 4, a strong storm system with a very deep low-pressure center of about 958 mb (similar to a category 2 hurricane), was responsible for flooding and strong winds along much of the west coast, especially in northern and central California. The low-pressure center of the storm tracked too far north to produce significant wind gusts around western Washington, but wind gusts were around 40-45 mph, with stronger gusts to the north, Bellingham 60 mph. However in the far southeast corner of the state, the storm was partly responsible for strong downslope winds in Walla Walla and the Blue Mountains, with a maximum recorded gust of 78 mph. According to the Pendleton National Weather Service Office, the “Veteran's Affairs Medical Center in Walla Walla, WA reported 28 structures, 4 vehicles and 50 trees damaged just on their campus alone”. Also Walla Walla, set a record low sea-level pressure of 28.93 inHg, breaking the previous record of 28.95 inHg observed in 1950, 1951, and 1952. Additional information on this wind event is available from the [Portland NWS](#).



GOES infrared satellite image of the strong Pacific storm system 21 UTC January 4, 2008.

Tornado in Vancouver, WA



Associated Press photo of the damage to the Vancouver Lake Crew house and rowing shells from the tornado that touched-down January 10.

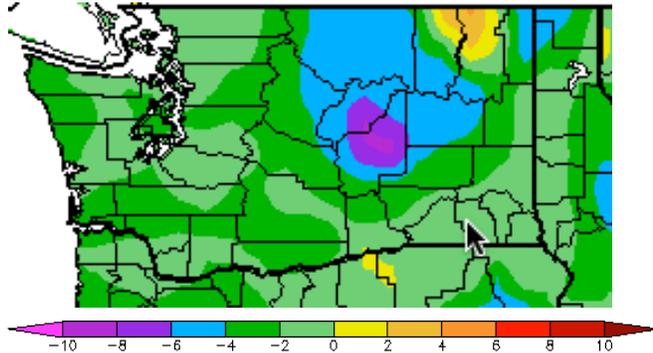
On January 10, 2008, a rare January tornado touched down near the southeast end of Vancouver Lake and traveled east about 4-miles before dissipating. The NWS classified the quarter mile wide tornado as an EF-1 with maximum winds of 90-110 mph. The most significant damage from the storm was to the Vancouver Lake Crew house, which was destroyed along with the majority of their rowing shells. Other damage included uprooted trees, downed power lines, and torn shingles on roofs. No fatalities or injuries were reported. While this was only the 3rd time since 1950 that a tornado was reported in January, Washington averages about 1-2

tornadoes every year. Last year was the first time since 2002 that no tornadoes were reported in the state. The only fatalities due to tornadoes in Washington were on April 5, 1972 when a F-3 tornado touched down in Vancouver killing 6 people and injuring 300. NWS Portland tornado damage path: http://www.wrh.noaa.gov/pqr/VUO_tor.php

Climate Summaries

January

The January statewide average temperature was 28.9°F, 1.2°F cooler than the 20th century average and the coolest January in 15 years (25.5°F January 1993). The coldest part of the state was located in Okanogan region where temperatures were 4 to 6 degrees cooler than normal. Despite a wet first half to month, much of the second half was dry and resulted in below normal precipitation in western Washington. The percentage of normal precipitation ranged from 50% in the north Puget Sound area to 90% along the coast. However in eastern Washington, precipitation was generally much above normal, with the percentage of normal ranging from 75% around Wenatchee to 175% around Spokane and Okanogan.



January temperature departure from normal.

Source: High Plains Regional Climate Center

<http://www.hprcc.unl.edu>

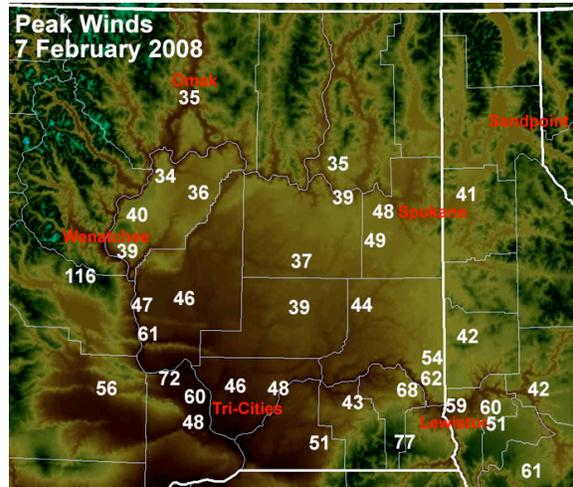
January Climate Summary for Various Locations

City	Temperature (°F)			Precipitation (inches)		
	Average	Normal	Departure from Normal	Total	Normal	% of Normal
Coast						
Hoquiam	41.6	42.0	-0.4	9.11	9.79	93%
Long Beach	-	42.3	-	-	11.61	-
Quillayute	37.9	40.5	-2.6	12.02	13.66	88%
Western WA						
Bellingham	36.9	38.0	-1.1	2.33	4.59	51%
Everett	39.0	39.7	-0.7	3.72	4.37	85%
Olympia	36.2	38.5	-2.3	6.69	7.54	89%
Puyallup	37.8	39.9	-2.1	4.03	5.53	73%
Seattle	38.7	40.9	-2.2	4.26	5.13	83%
Vancouver	38.6	39.0	-0.4	5.44	5.81	94%
Cascades						
Mt. Rainier (Paradise)	24.8	26.4	-1.6	12.62	18.11	70%
Ross Dam	30.9	33.1	-2.2	7.01	8.84	79%
Stampede Pass	24.0	25.6	-1.6	6.15	12.04	51%
Eastern WA						
Lind	22.4	29.8	-7.4	0.06	1.03	6%
Omak	17.8	28.5	-10.7	0.35	0.94	37%
Spokane	24.7	27.3	-2.6	3.18	1.82	175%
Walla Walla	34.4	34.0	0.4	2.02	2.14	94%
Wenatchee	23.4	27.8	-4.4	0.86	1.14	75%
Yakima	27.1	29.8	-2.7	0.81	1.20	68%

Normal is defined as the 1971-2000 average. The data above is preliminary and subject to change. The latest official data can be obtained from the National Climatic Data Center (NCDC).

February

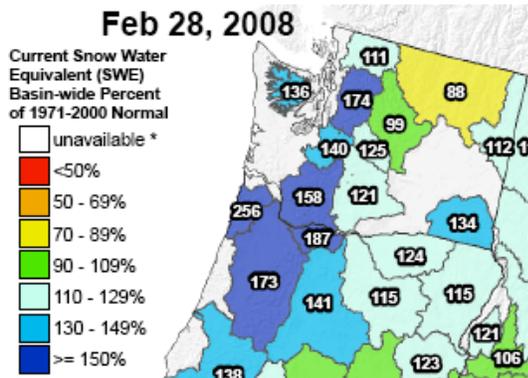
Winter storms during the beginning of the month brought heavy amounts of snow to the Olympic and Cascade Mountains, creating avalanches and unsafe conditions across the mountain passes. Two winter storms on the 6th and 7th brought heavy snow across eastern Washington and strong winds. Wind gusts around the Spokane area were between 40 and 50 mph and in excess of 60 mph around the Palouse Blue Mountains and Tri-Cities.



February 7, peak wind gusts around eastern Washington. Source: NWS Spokane

By the second half of the month, a strong ridge of high pressure developed, steering clear any winter storm headed to the region. As a result, day time temperatures warmed and statewide temperatures were near to slightly above normal with the warmest area being the central and southern Cascades, which was about 2 to 5 degrees above normal. Statewide, precipitation was much below normal with an exception for the northern Cascades. The percentage of normal precipitation ranged from 10-25% around Okanogan, 100-120% in the northern Cascades, and 50-70% most elsewhere.

Despite the lack of precipitation, the strong winter storms during the beginning of January and February brought enough snow to the Olympic and Cascade Mountains, the mountain snowpack remains very healthy. As of February 28, the snow water equivalent (SWE) percentage of normal is 136% in the Olympic Mountains and ranges from 100% to 174% in the Cascade Mountains. Due to the high snowpack, Spring and Summer streamflow is expected to slightly above normal, with an exception for the Okanogan and Chelan basins (slightly below normal).

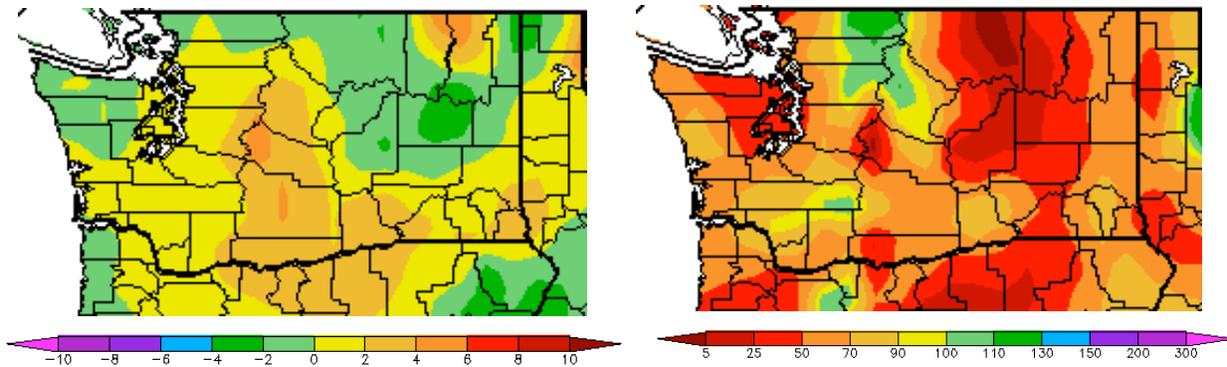


February 28th snow water equivalent percentage of normal. Source: NRCS <http://www.wa.nrcs.usda.gov/>

February Climate Summary for Various Locations

City	Temperature (°F)			Precipitation (inches)		
	Average	Normal	Departure from Normal	Total	Normal	% of Normal
Coast						
Hoquiam	45.9	43.8	2.1	5.53	8.39	66%
Long Beach	-	43.9	-	-	9.91	-
Quillayute	42.2	42.1	0.1	7.92	12.35	64%
Western WA						
Bellingham	40.9	41.1	-0.2	2.01	3.51	57%
Everett	43.5	42.1	1.4	1.73	3.41	51%
Olympia	41.2	41.0	0.2	4.01	6.17	65%
Puyallup	43.6	42.6	1.0	5.50	4.67	118%
Seattle	43.9	43.3	0.6	1.47	4.18	35%
Vancouver	43.9	42.0	1.9	2.40	4.86	49%
Cascades						
Mt. Rainier (Paradise)	32.1	27.7	4.4	1.94	13.93	14%
Ross Dam	35.6	35.9	-0.3	7.07	6.66	106%
Stampede Pass	32.3	27.9	4.4	0.96	12.04	8%
Eastern WA						
Lind	-	35.7	-	-	0.83	-
Omak	28.9	34.0	-5.1	0.12	1.14	11%
Spokane	31.9	32.6	-0.7	0.93	1.51	62%
Walla Walla	42.0	39.3	2.7	0.92	1.90	48%
Wenatchee	36.8	34.1	2.7	0.53	0.86	62%
Yakima	38.8	36.0	2.8	0.51	0.80	64%

Normal is defined as the 1971-2000 average. The data above is preliminary and subject to change. The latest official data can be obtained from the National Climatic Data Center (NCDC).



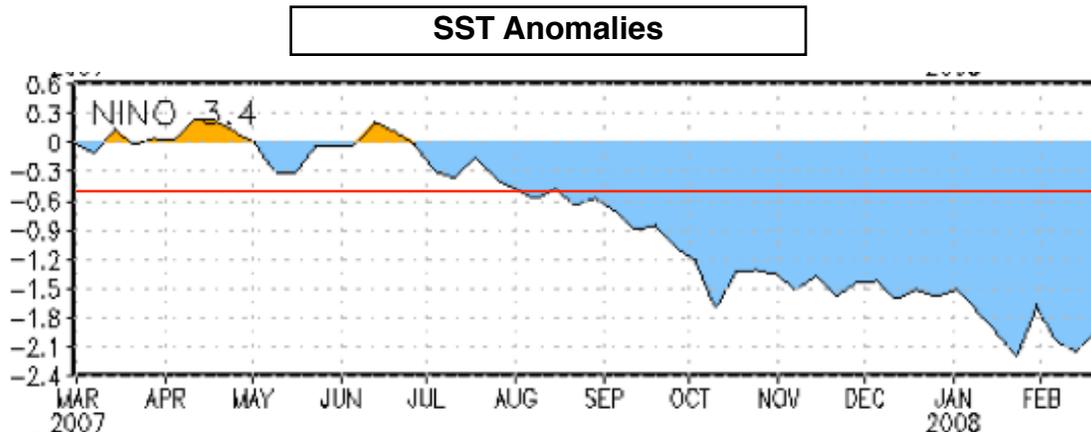
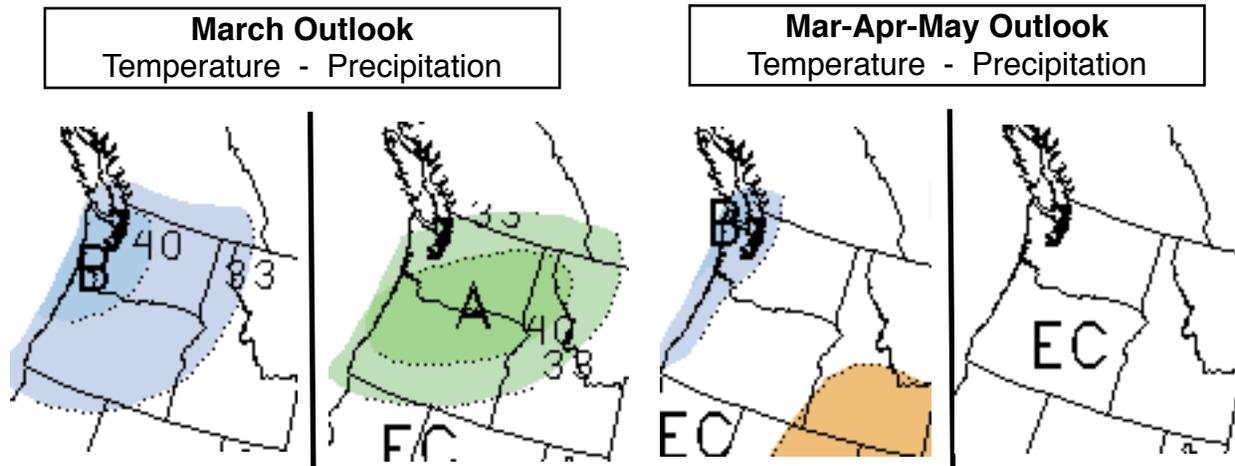
Washington February temperature departure from normal (left) and percent of normal precipitation (right).

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

Outlook

The Climate Prediction Center's (CPC) outlook for March, suggests below normal temperatures statewide with an increased probability of above normal precipitation. The seasonal outlook for Spring (March-April-May) suggests a slightly increased probability of below normal temperatures around western WA with equal chance conditions elsewhere. The typically wetter than normal affects of La Niña are expected to diminish during Spring with the CPC outlook calling for equal chances of above, below, and normal precipitation statewide.

Sea-surface temperatures (SSTs) in the tropical Pacific remain below average with the presence of a strong La Niña, which according to current model forecasts will begin to diminish through the Spring. Thereafter, few models suggest ENSO neutral conditions while the majority of the models suggest weak La Niña conditions through the end of Summer.



La Niña conditions are characterized by negative monthly SST anomalies less than or equal to -0.5°C.