National Weather Service Medford

December 2018 Climate Summary

*These data are preliminary and have not undergone final QC by NCEI. Therefore, these data are subject to revision. Final and certified climate data can be accessed at the National Centers for Environmental Information (NCEI).

December 2018 Weather Review

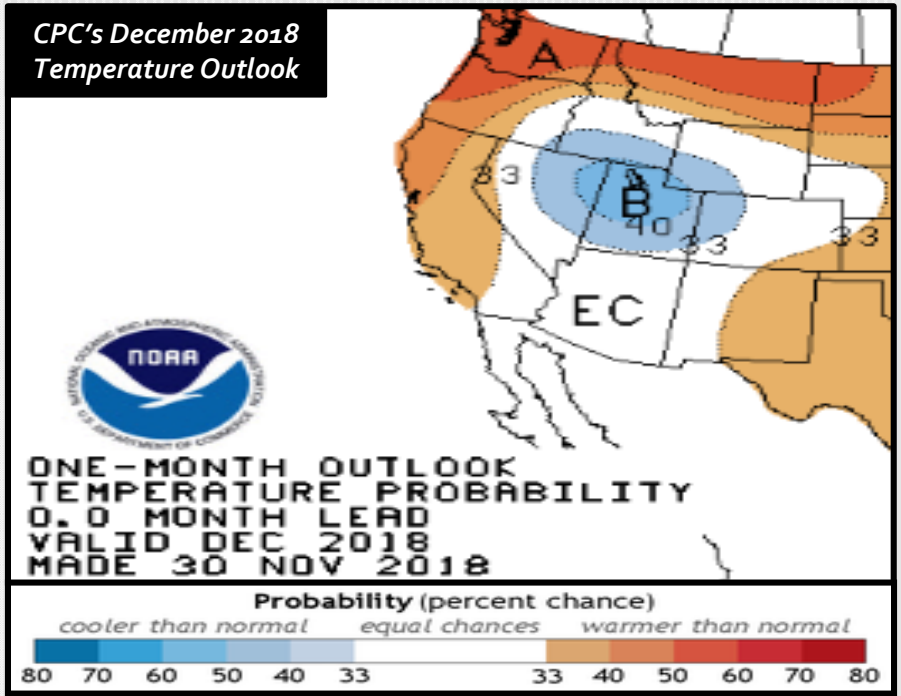
The active weather during the end of November continued well into December. Multiple, strong systems moved through the forecast area during the month, which greatly helped to decrease the precipitation deficit and build snowpack in the mountains. Although there were multiple periods of heavy rain, breaks between systems were just long enough to prevent main stem flooding during the month. Some of these systems also brought strong winds to the area, and there were reports of downed trees and numerous power outages along the coast around mid-month. Strong winds even made it into the more sheltered valleys, like the Rogue, Illinois, and Umpqua Basin, where reports of fallen trees were received. In addition to inland impacts, several large long-period swells (20-25 ft @ 15+ seconds) moved through the waters offshore of southwest Oregon during the month.

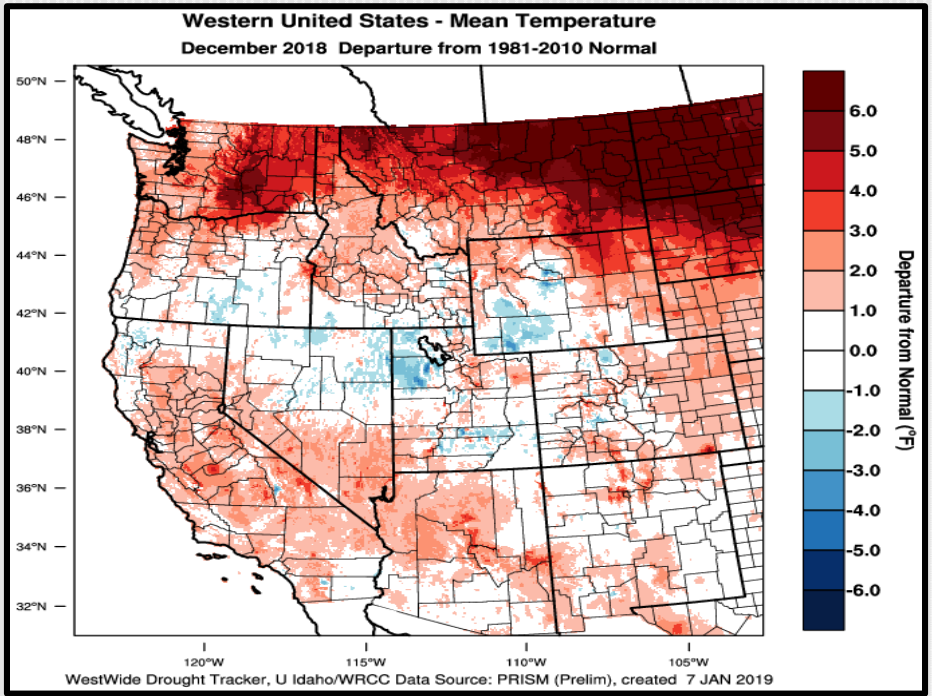
The wettest of these systems moved through on Christmas Eve. Heavy rain, and snow mainly above 4500 feet, fell with system away from the immediate coast. In fact, it was the third wettest Christmas Eve for the Medford Airport, with other locations experiencing one of their top 10 wettest Christmas Eves on record. Once this system moved through, upper level ridging began nudging it's way over the forecast area. A few weaker systems made it over the ridge, bringing more precipitation mainly along and west of the Cascades and north of the Siskiyous. The ridge finally moved over the area, bringing stagnant conditions for the valleys both east and west of the Cascades to finish the year.

Despite the very active weather, December ended with only 70 to 90% of normal for precipitation and around 60 to 80% of normal for snowpack. Temperatures were within a few degrees of normal, but on the warmer side of normal.

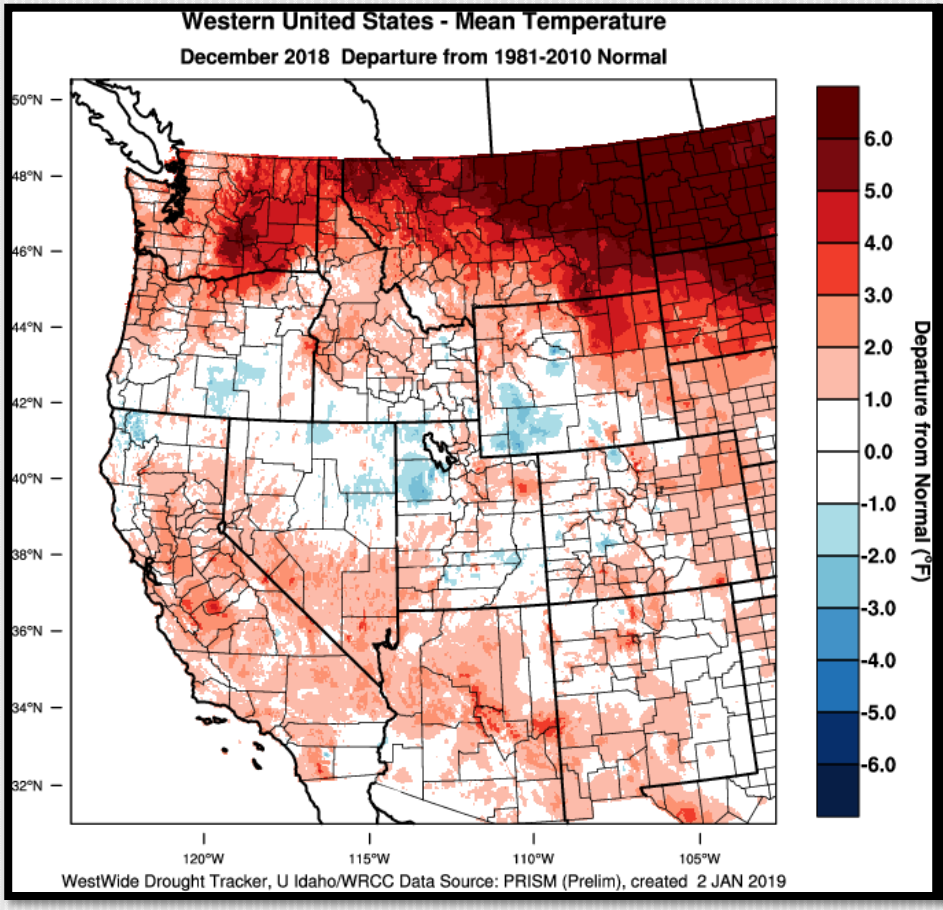
A Look Back at the Dec 2018 Temperature Outlook

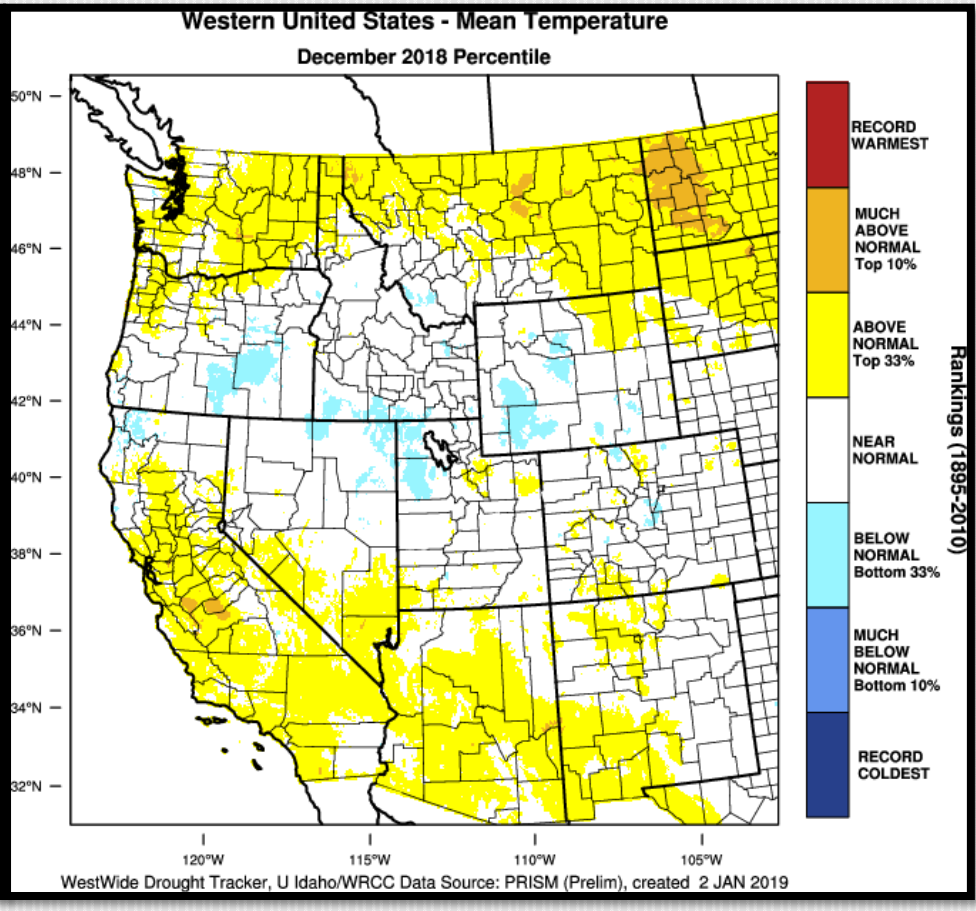
- ***Was the forecast anomaly correct?*** CPC's forecast leaned too warm since their probabilistic temperature forecast indicated increased chances of above average temperatures. Observed temperatures were within 3 degrees of 1981-2010 normals, and were generally near to slightly below the long term 1895-2010 climate average. A portion of Coos County was in the top 33% of historical climatology, however.
- ***Was the expected impact correct?*** Generally, 'yes'. Our localized forecast indicated, "With warmer temps, but not extreme, snow will build up high and run-off will increase, so drought relief is expected." However, as we saw, above, temperatures were cooler than expected.
- ***Did our forecast improve upon the CPC forecast?*** Mostly, 'yes'. Our Dec. 6th localized outlook indicated, "Temperatures are least likely to be above normal (0 to +2F) across Curry County and our California areas due to consistently wet weather, while areas that get warming due to down sloping in a southwest to westerly flow (mainly areas to the lee of the Cascades and Siskiyous) are likely to be warmest (+2° to +4°F) anomalies. We were able to add value by indicating anomalies would not be far from normals and provided some spatial improvement, though , overall, like CPC, we leaned a bit too warm. Also, as we'll see, the precipitation distribution was a bit different than was expected.





December 2018 Observed Temperatures





Average Temperatures

	Average (°F)	Departure from Normal	Average Max (°F)	Departure from Normal	Average Min (°F)	Departure from Normal
North Bend	47.7	***2.4°***	54.7	***3.7°***	40.7	***1.0°***
Roseburg	43.4	***1.3°***	49.5	***1.8°***	37.3	***0.9°***
Medford	39.2	***-0.1°***	47.0	***1.1°***	31.5	***-1.2°***
Klamath Falls	31.3	***1.7°***	39.8	***1.4°***	22.7	***2.0°***
Montague, CA	36.4	***1.3°***	46.1	***1.9°***	26.7	***0.7°***
Mt. Shasta City, CA	35.6	***0.5°***	43.5	***-0.8°***	27.8	***1.8°***
Alturas, CA	32.0	***2.5°***	42.2	***2.0°***	21.7	***2.9°***

Monthly Max & Min Temperatures

	Max (°F)	Date(s)	Min (°F)	Date(s)
North Bend	62°	14th	33°	31st
Roseburg	59°	16th	30°	6th & 14th
Medford	62°	16th	24°	3rd & 7th
Klamath Falls	51°	20th	9°	3rd
Montague, CA	55°	14th	18°	3rd
Mt. Shasta City, CA	56°	13th	17°	3rd
Alturas, CA	54°	14th	8°	3rd

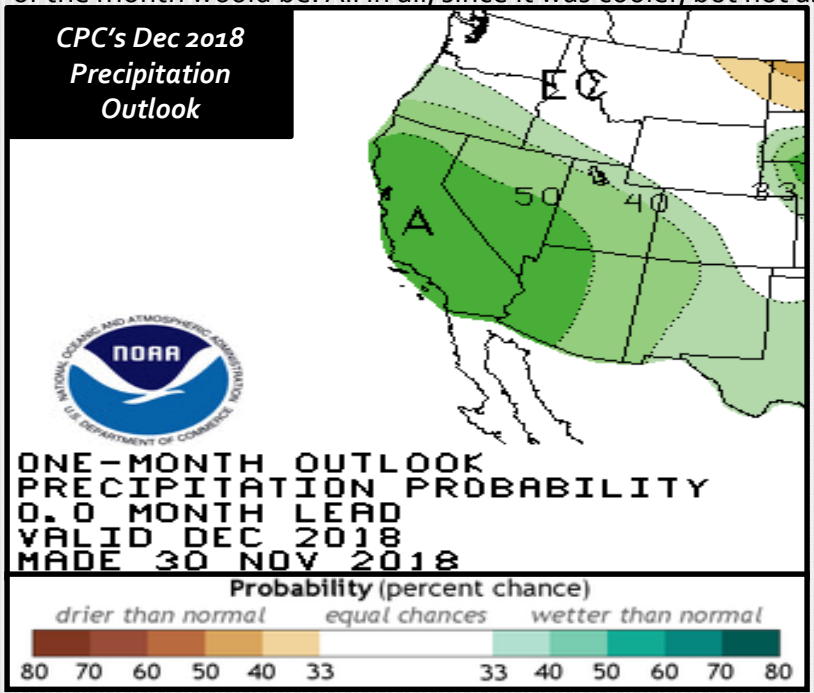
	Date	Record *Low*	Old Record/Year
Klamath Falls	3rd	9°	10° / 1968

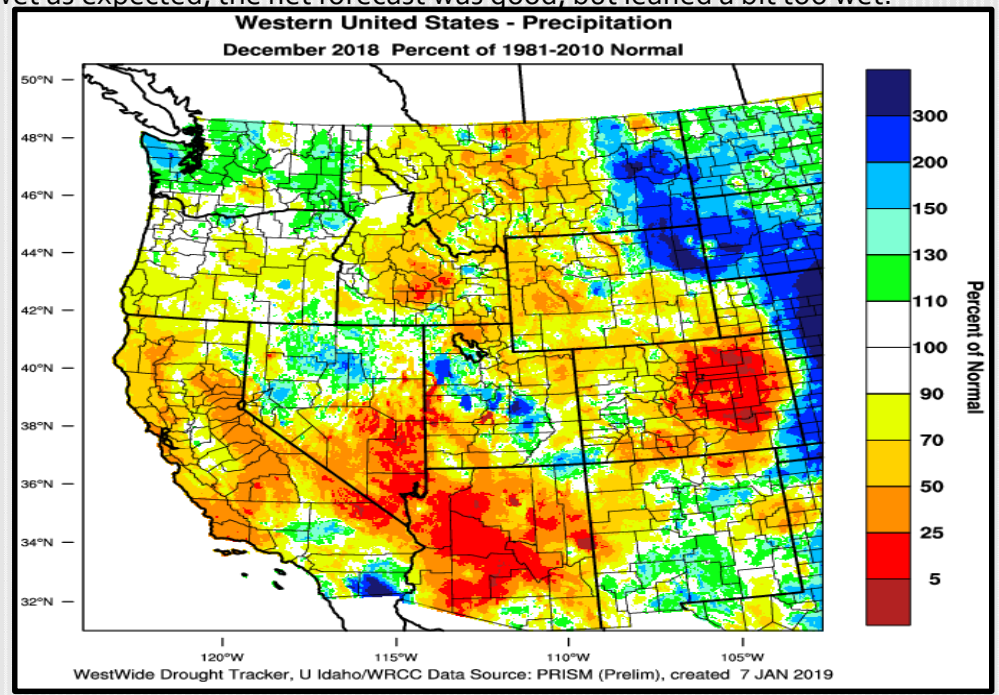
	Date	Record *High*	Old Record/Year
Medford	16th	62°	Ties w/ 1988

A Look Back at the Dec 2018 Precipitation Outlook

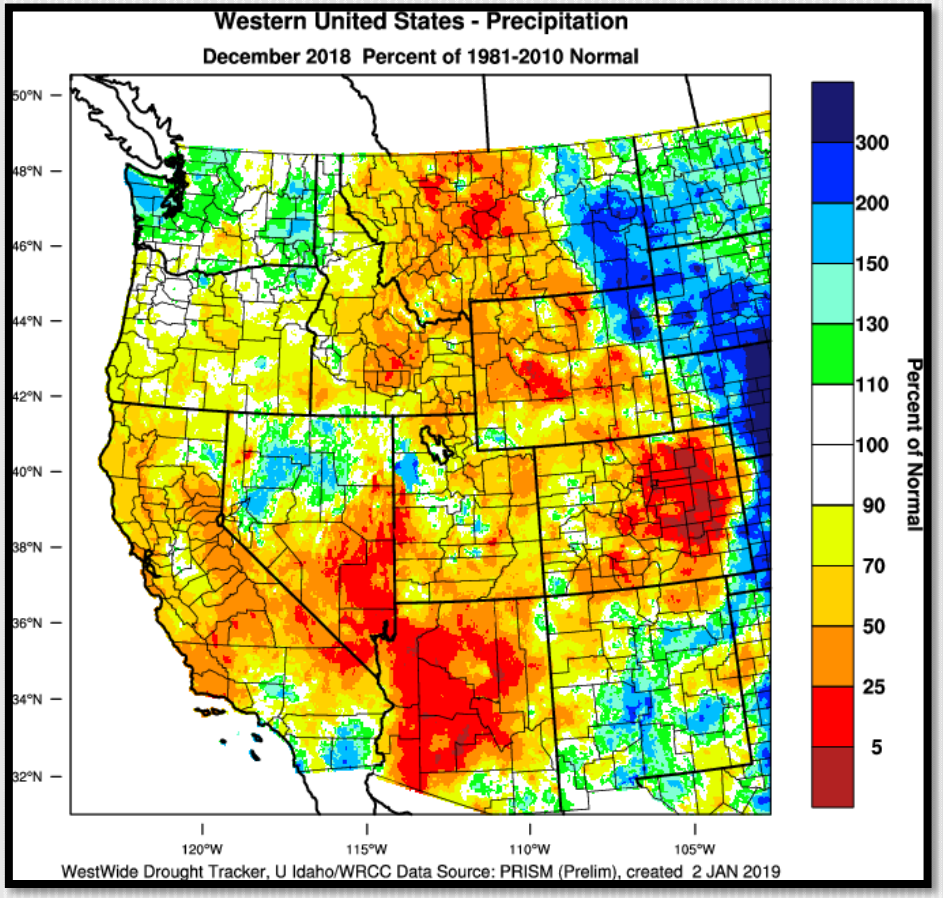
- ***Was the forecast anomaly correct?*** CPC's forecast for increased probabilities of above normal precipitation leaned a bit too wet. As the next slide indicates, precipitation across most of the forecast area was mostly within 33% of the long term 1895-2010 climate record.
- ***Was the expected impact correct?*** Yes and no. Our Dec 6th localized outlook forecast increased run-off, some drought relief, and snow pack reaching near to above normal above 6kft by month's end. It was not as wet as expected across all but Lake County. While run-off did increase, and snow pack improved into the 60-100% range, the USDM did not depict improvement and snow pack remained below normal (<80% SWE) except in Lake County in Oregon and portions of eastern Siskiyou and Modoc counties in northeastern California.
- ***Did our forecast for our CWA improve upon the CPC forecast?*** Slightly. Like CPC (and for longer than CPC indicated) we expected precipitation was most likely to be above normal for all areas. Our indication of "An active MJO moving into phase 3 around December 9th " increasing "the chance of very wet weather/major storm activity from approximately the 11th to 21st" did add value to the forecast. While most areas saw their wettest single day on the 24th, it was wet during the said period, and we indicated uncertainty when the wettest portion of the month would be. All in all, since it was cooler, but not as wet as expected, the net forecast was good, but leaned a bit too wet.

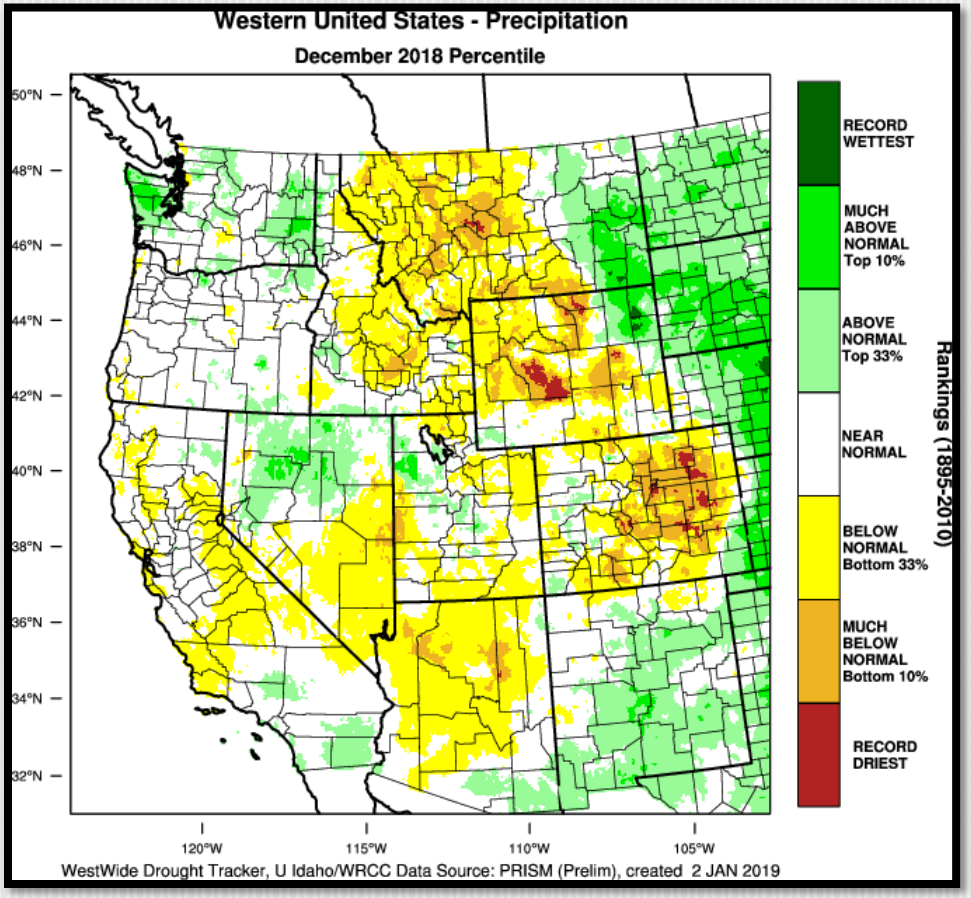
CPC's Dec 2018 Precipitation Outlook





December 2018 Observed Precipitation



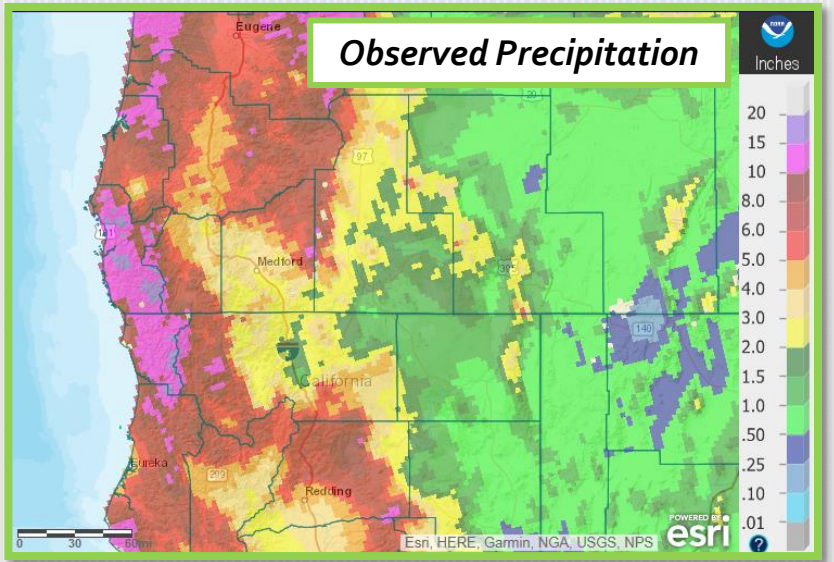


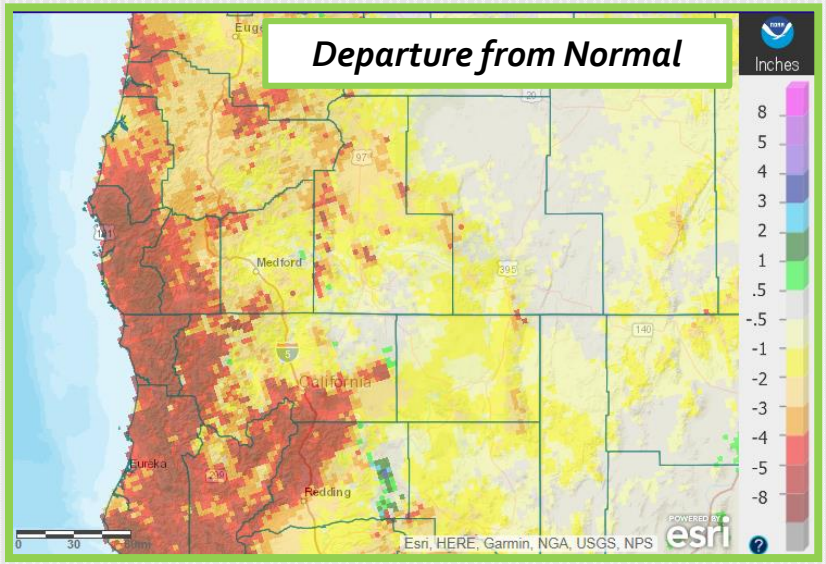
Precipitation

	Total	Departure from Normal	Greatest 24-hr Total	Date(s)
North Bend	10.10"	-1.03"	1.33"	9th
Roseburg	4.20"	-2.32"	0.68"	18th
Medford	3.21"	-0.28"	0.95"	24th
Klamath Falls	1.62"	0.17"	0.67"	24th
Montague, CA	2.04"	-0.62"	0.82"	24th
Mt. Shasta City, CA	3.68"	-4.17"	1.40"	16th
Alturas, CA	1.16"	-0.55"	0.45"	24th

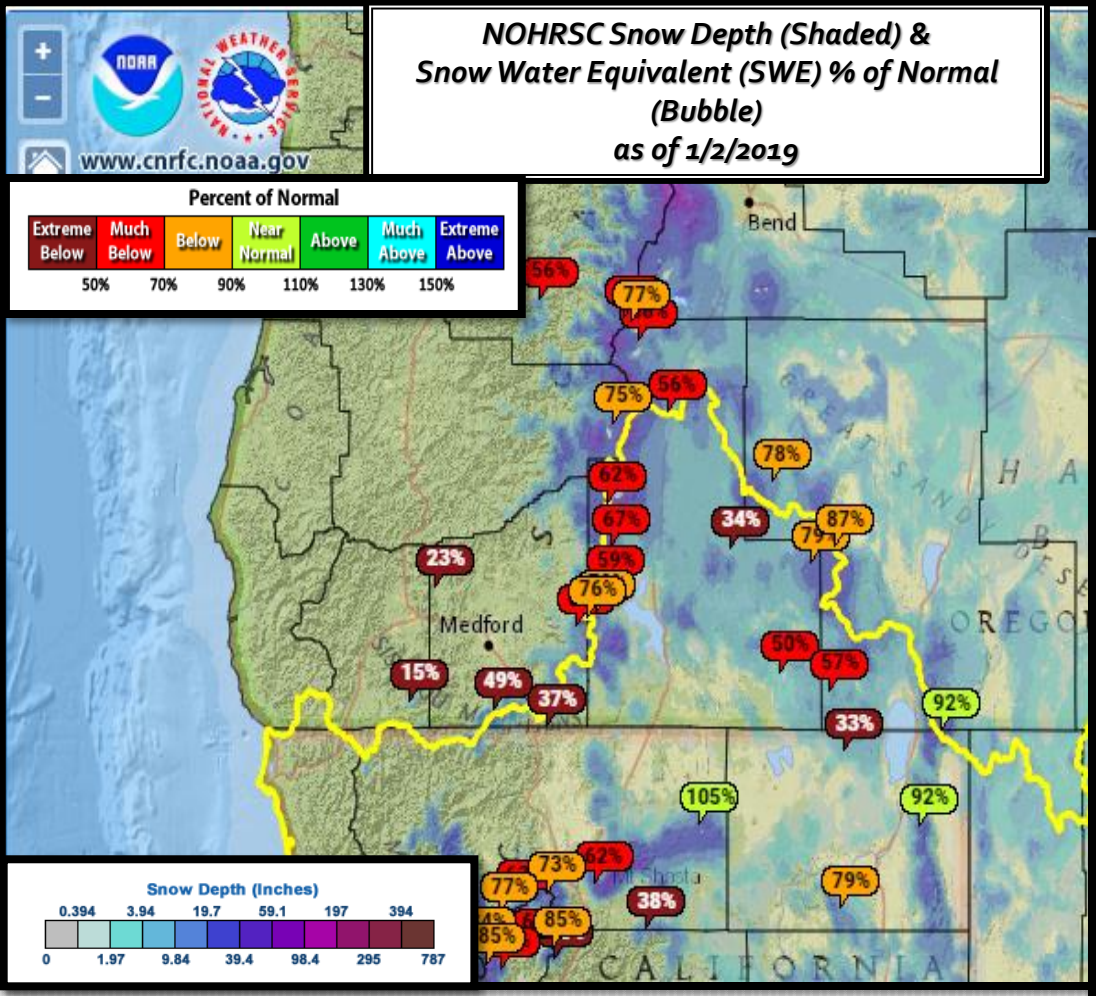
Record Daily Precipitation

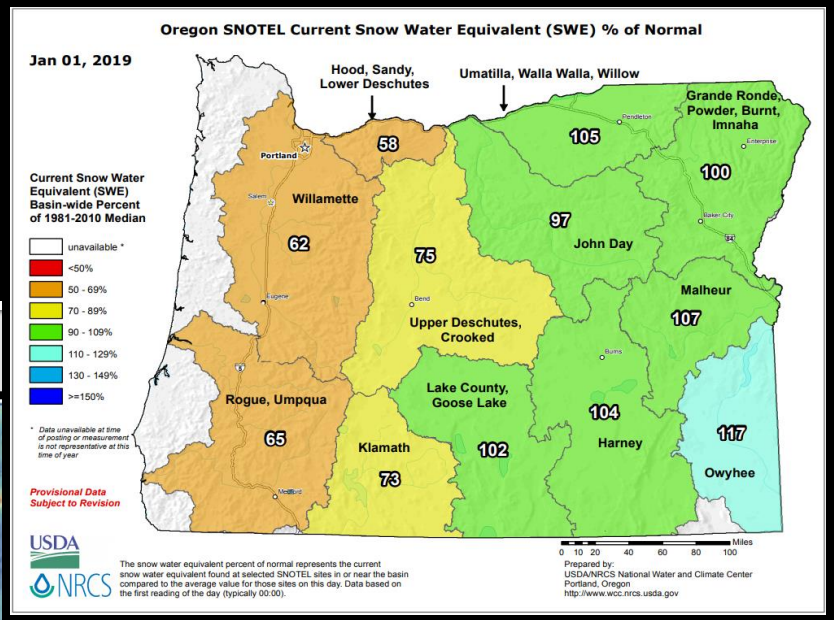
	New Record	Date	Old Record	Year
Klamath Falls	0.67"	24th	0.56"	1964

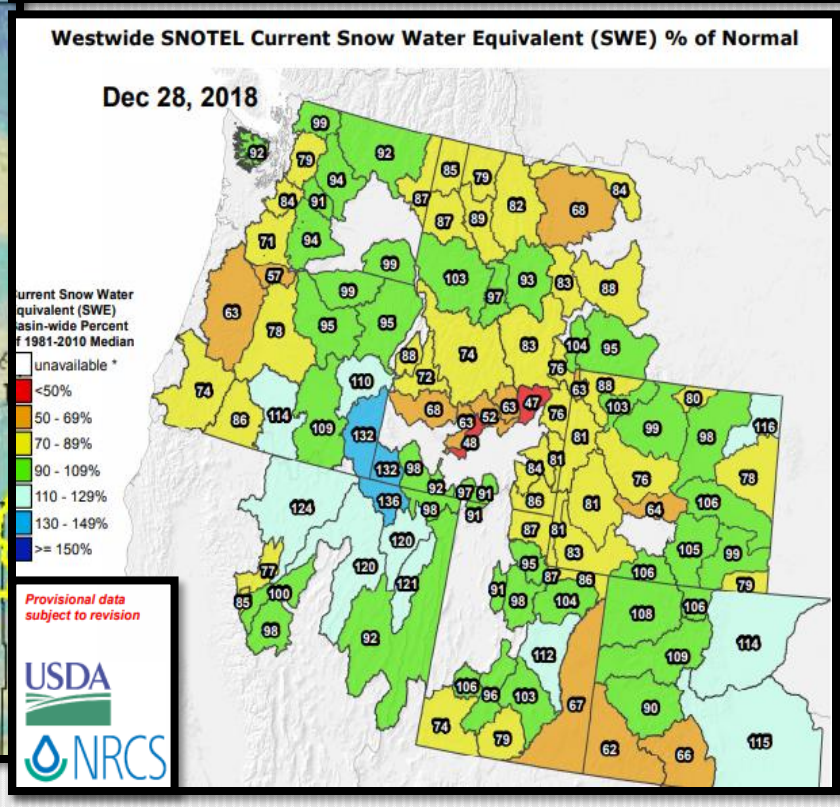




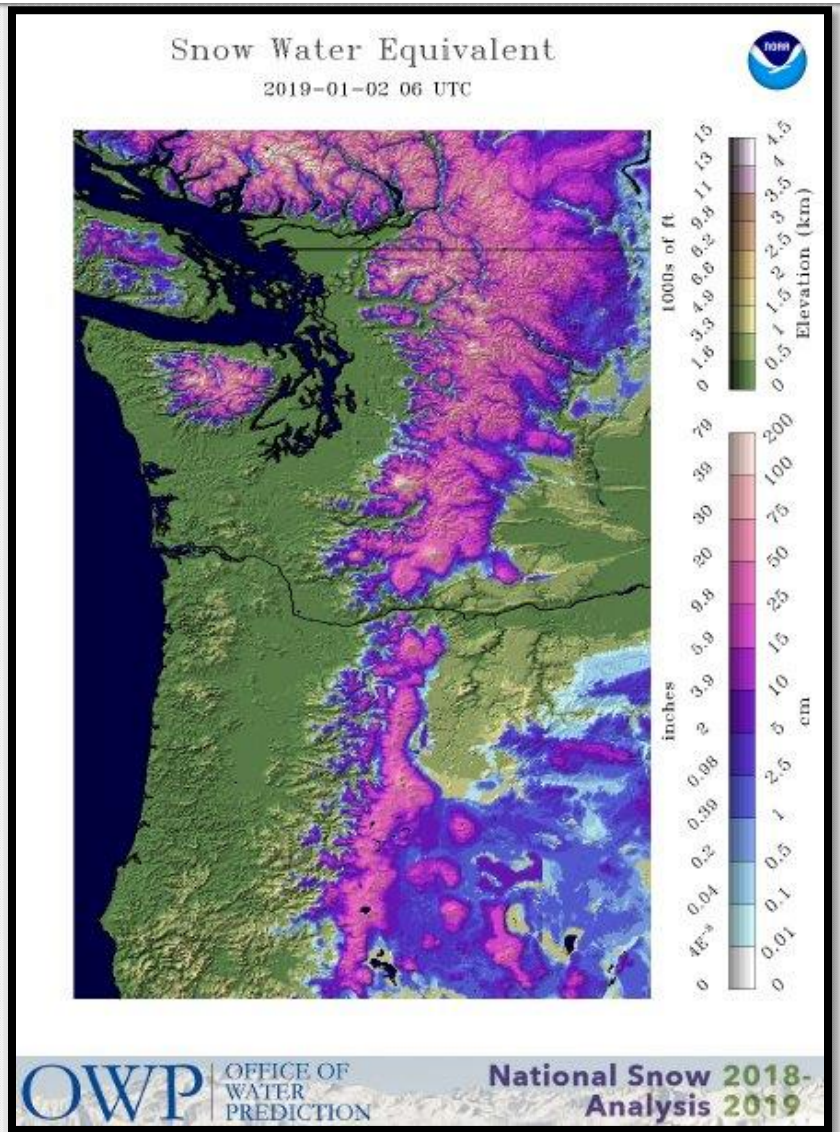
Snowpack Status

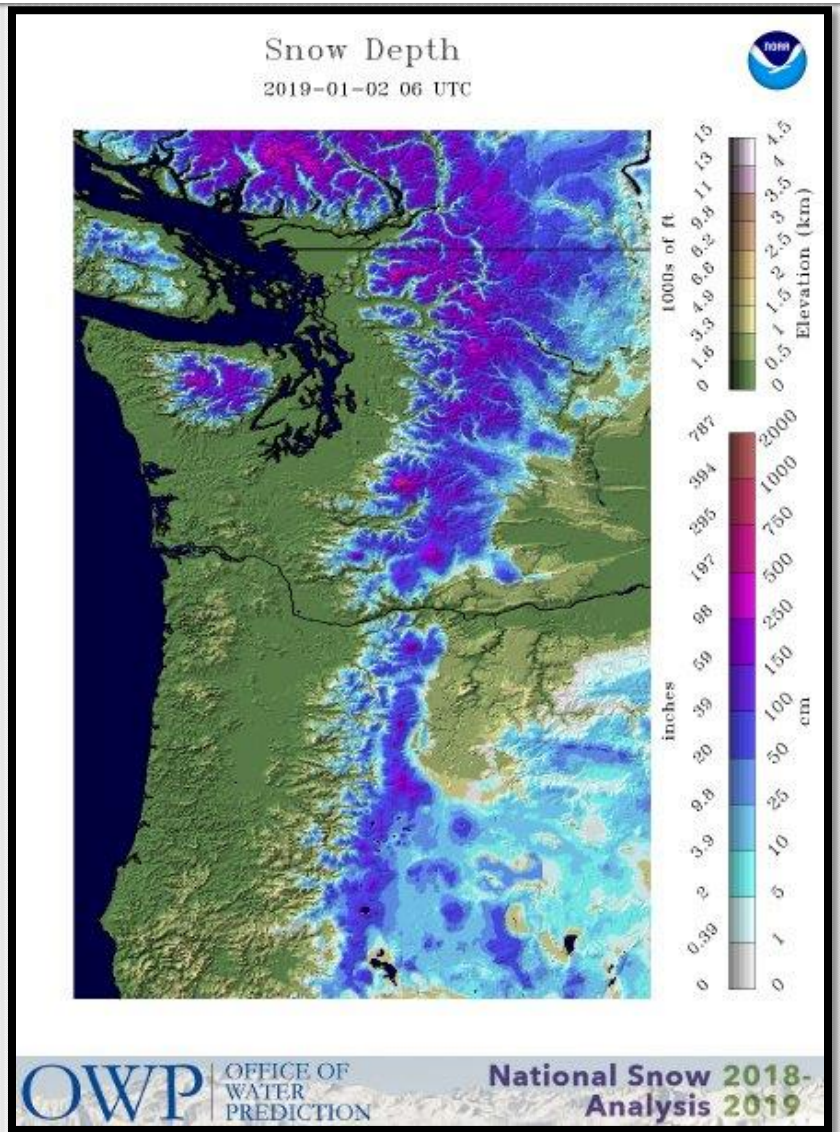




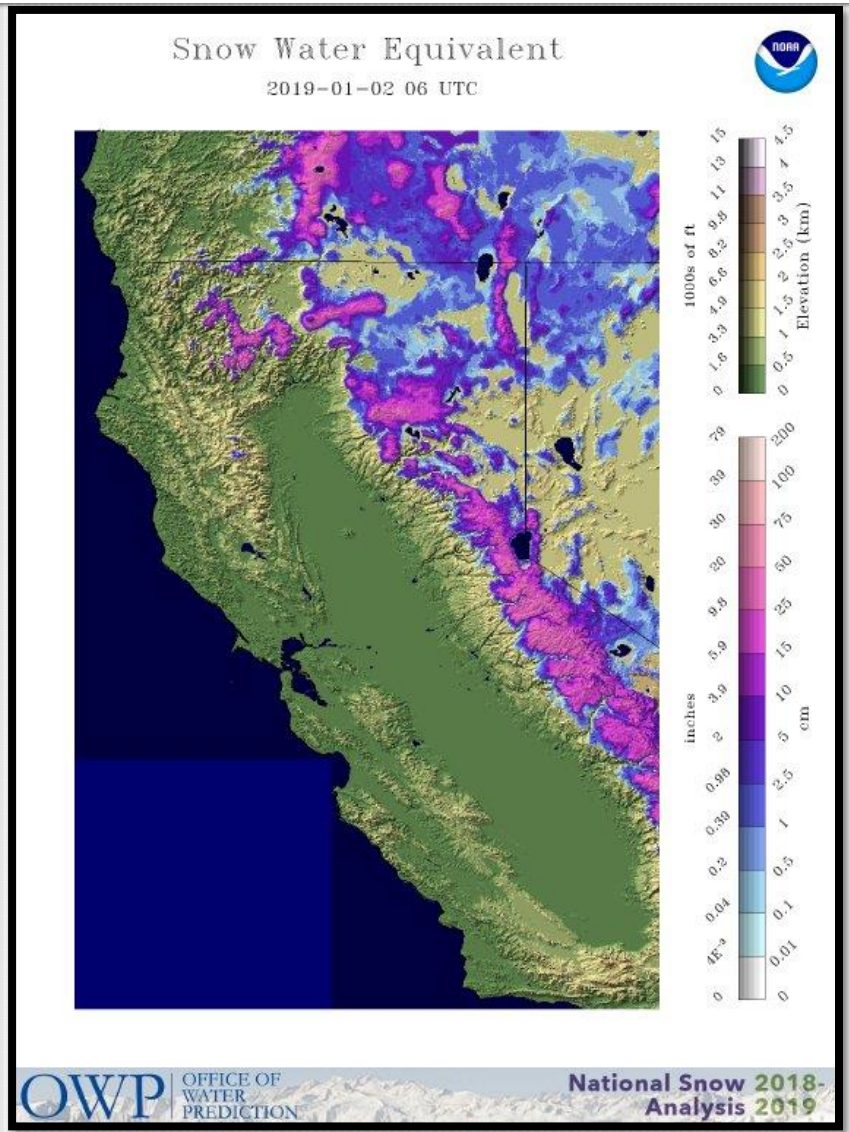


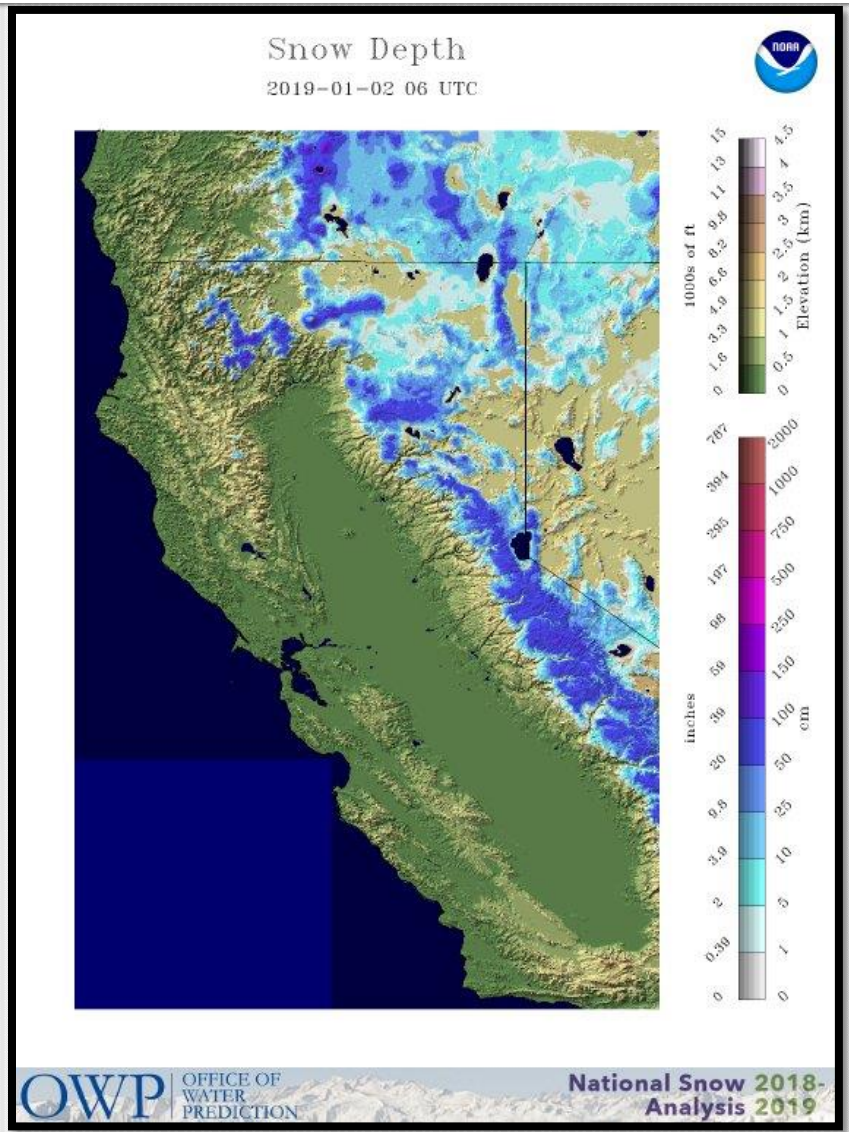
PacNW SWE & SD as of 1/2/19



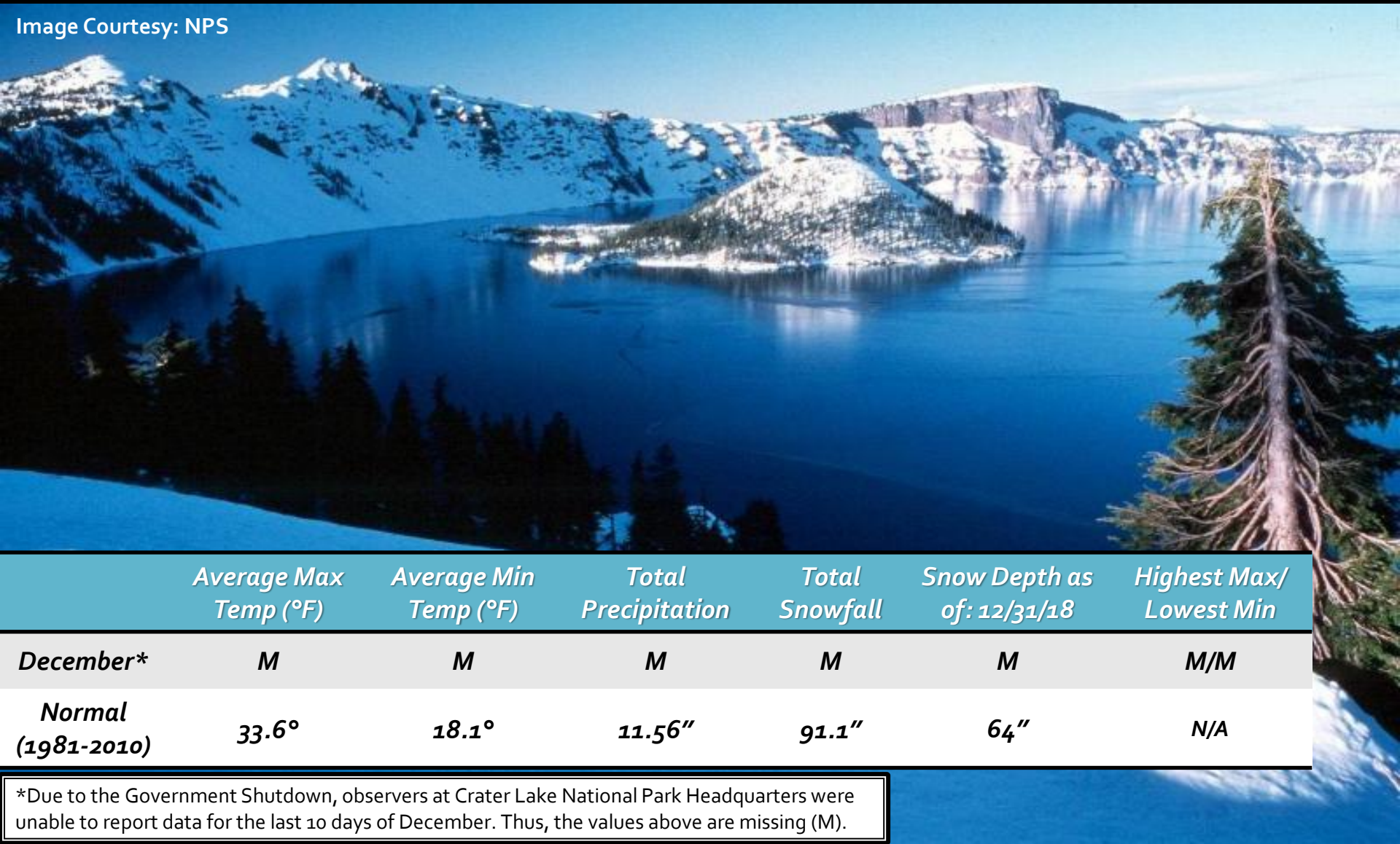


California SWE & SD as of 1/2/19





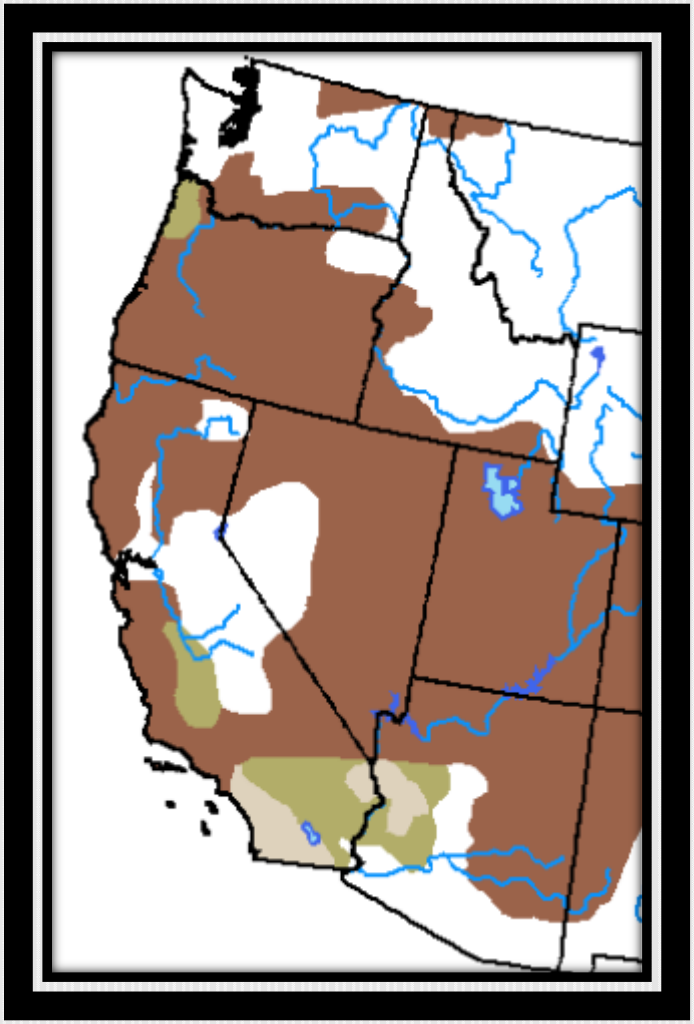
Crater Lake



	Average Max Temp (°F)	Average Min Temp (°F)	Total Precipitation	Total Snowfall	Snow Depth as of: 12/31/18	Highest Max/ Lowest Min
December*	M	M	M	M	M	M/M
Normal (1981-2010)	33.6°	18.1°	11.56"	91.1"	64"	N/A

*Due to the Government Shutdown, observers at Crater Lake National Park Headquarters were unable to report data for the last 10 days of December. Thus, the values above are missing (M).

Drought Outlook: January



Drought persists

Drought remains but improves

Drought removal likely

Drought development likely

Valid for January 2019
Released December 31, 2018

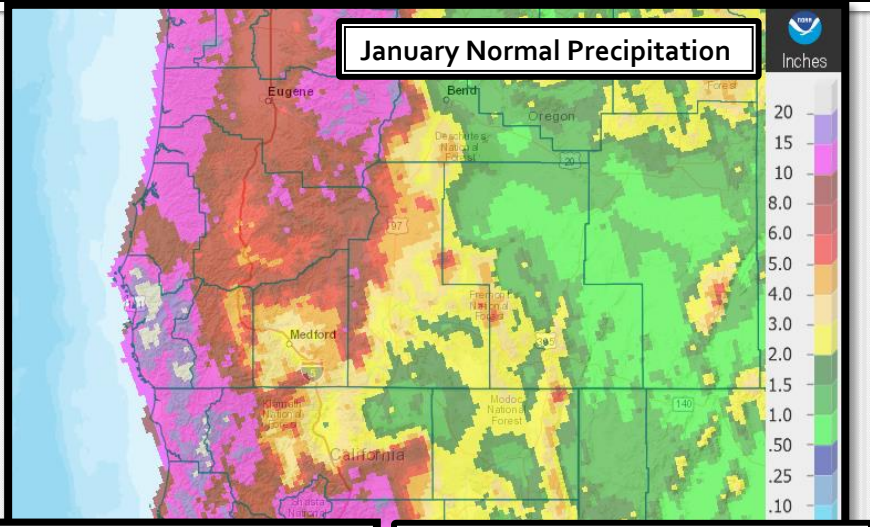
http://www.cpc.ncep.noaa.gov/products/expert_assessment/month_drought.png

Looking Ahead: Normals for January (1981-2010)

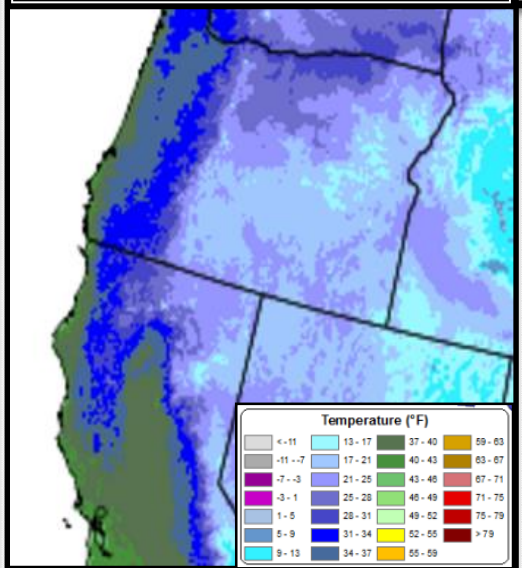
January is, in general, the second coldest and third wettest month of the year for southwestern Oregon and far northern California. Much of the lower terrain of Lake County, the Tule Lake Basin, and parts of the Sprague and Pitt River Basins receive 1/2 inch to 2 inches of water, while higher elevations east of the Cascades typically receive 2-6 inches of water. The Cascades and Mount Shasta typically receive 5-15 inches. The drier valleys west of the Cascades like the Bear Creek drainage of the Rogue Valley and the Shasta and Scott Valleys in California usually receive 2-5 inches. The remainder of the West Side gets 5-15 inches, except for the wettest portions of Curry County and far western Siskiyou County, which average 15-20+ inches.

Much of this water typically falls as snow above about 4,000 feet MSL. For instance, the 1981-2010 average snowfall for Crater Lake National Park Headquarters is 85.4 inches. Snow depth there usually is 68 inches on January 1st and 87 inches on January 31st based on the same average period.

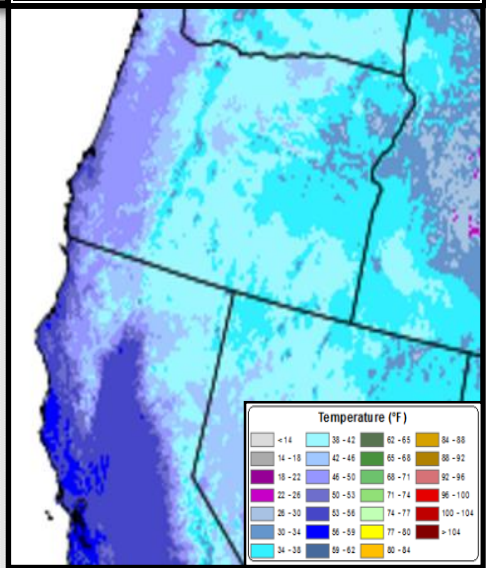
Average daily high temperatures are 30 to near 40 degrees in the mountains above 5000 feet and east of the Cascades and in the mid 40s to mid 50s west of the Cascades. Daily low temperatures are in the mid teens in the coldest locations east of the Cascades and on Mount Shasta, to the upper 20s in and near the Cascades. From the Cascades west to the coast, lower 30s to mid 40s are most typical from east to west.



Average Minimum Temperatures



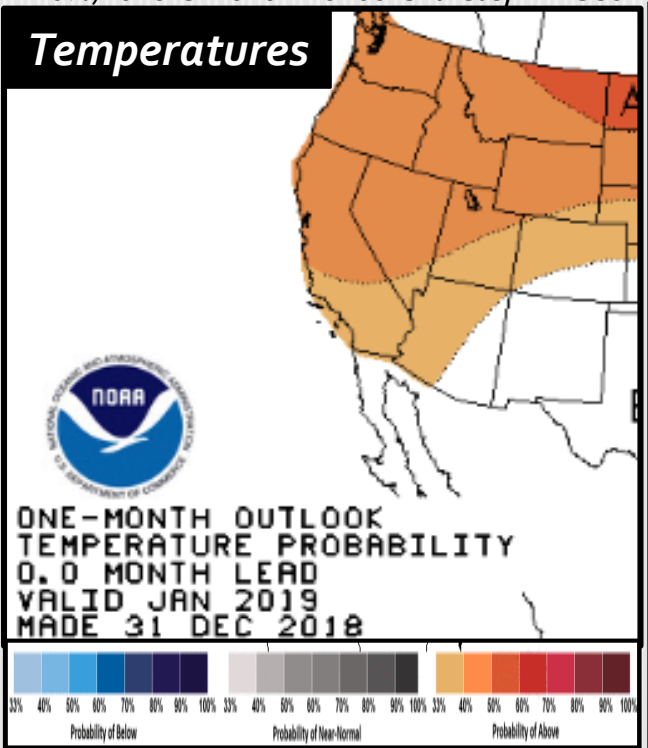
Average Maximum Temperatures



January 2019 Outlook
(Written January 9th)

The official CPC forecast for January 2018 predicts increased chances for above normal temperatures (40-50%) and equal chances of above, near, and below normal normal precipitation across the Medford Forecast Area, except the chance for below normal precipitation is slightly increased (34-40%) for approximately the northeastern third of the forecast area. Despite a mostly colder than normal start to the month, our local indicators suggest that average temperatures 1-4 degrees Fahrenheit above normal to be most likely by month's end. With more high pressure expected than normal the rest of this month, temperature anomalies are likely to be greatest across the mountains and lowest across the sheltered interior valleys as inversion conditions become more common. Recent trends and future indicators suggest that the storm track this month will be more focused over California than Oregon, reminiscent of what is most typically expected with El Nino in January. The GEFS, ECMWF, and, to a lesser degree, the CFSv2, indicate a wetter than normal period, especially for Northern California, between the 16th and the 23rd. This may be enough to push some of our Northern California area, especially the Mount Shasta area, to near normal precipitation (80-120%) for the month. For other areas, while some precipitation is expected, we anticipate it will be below normal by month's end (50-80%).

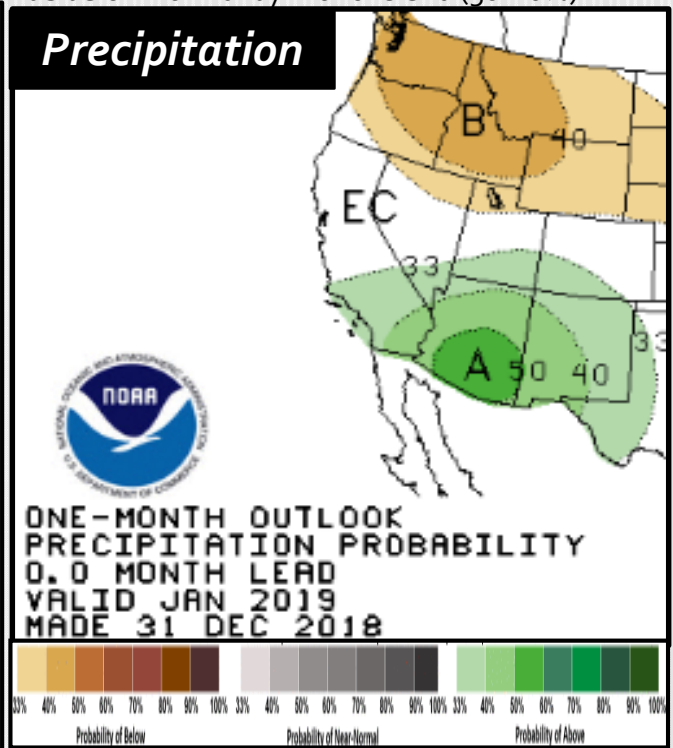
Temperatures



Expected Impact, Jan 2019:

January is typically one of the 3 wettest months for our area and is very important for mountain snowpack. While we'll see some good precipitation this month and temperatures are not likely to be too above normal, current deficits in water and snowpack will continue or increase. We don't expect drought to worsen, as the current USDM depiction may be a bit overdone for our area. For our northern California area we expect the snowpack to remain stronger than in Oregon. Impacts this month will likely be winter storm related with additional snow impacts expected in the Mount Shasta area, southerly wind impacts in other areas, and typical January impacts from ocean swell.

Precipitation



*A note about Period of Record (POR)

When looking at record setting events, it's important to consider the length and completeness of the site's period of record (POR). For example, a site may have records back to the early 1900's, but if there is a significant portion of the record missing, it's possible that the POR is not encompassing another significant event that may have surpassed the event in question. Therefore, "record setting" should be considered relative to the completeness/length of POR. To help keep records in context, the POR for each climate site is listed below:

- **North Bend: 1/1/1902 – Present**
- **Roseburg: 4/1/1900 – Present**
  - *Missing:*
    - *05/1900-01/1901*
    - *03/1901-06/1902*
    - *08/1902-12/1930*
    - *10/1965-06/1997*
- **Medford: 3/11/1911 – Present**
- **Klamath Falls: 12/1/1897 – Present**
- **Montague, CA: 7/1/1948 – Present**
  - *Missing:*
    - *08-09/1952*
    - *02/1953-06/2000*
- **Mount Shasta City, CA: 4/15/1948 – Present**
  - *Missing:*
    - *10/1984-01/1985*
    - *10/1985-03/1986*
    - *09/1986-07/1997*
- **Alturas, CA: 6/1/1998 – Present**
  - *Missing:*
    - *08/1998*