National Weather Service Medford

2021: February Climate Summary & March Outlook

*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).

February 2021 Weather Review

Overall, February 2021 was generally cooler than normal and near, to slightly above normal in terms of precipitation. Active weather persisted throughout the month, although the systems were considerably weaker compared to the January 2021 storms. However, each system delivered beneficial rainfall as well as helped to build the area snowpack. Snow water equivalent, the measure of the amount of water in the snowpack, ranged from 80% to 90% of normal by the end of the month.

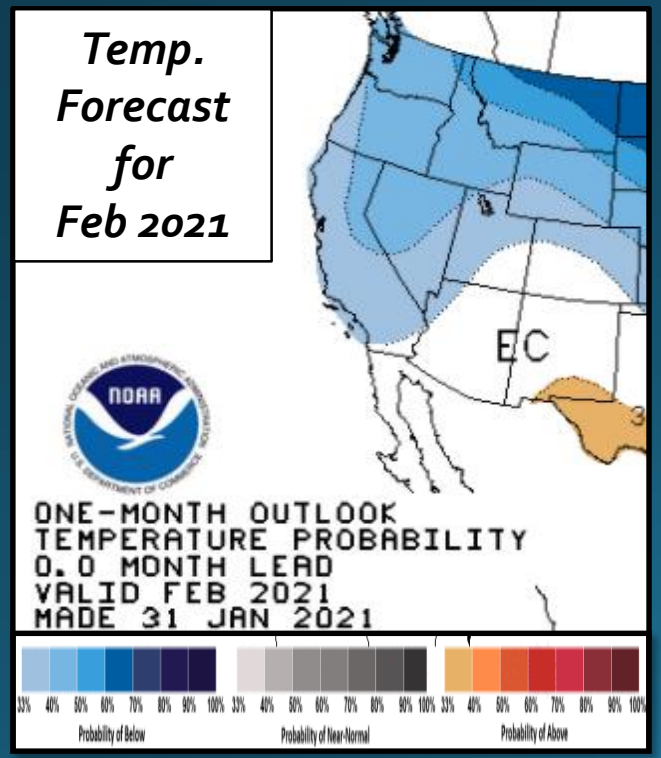
An atmospheric river pushed into the region at the beginning of the month, and although snow levels were slightly higher, snow still fell down to 1500 – 2000 ft with this event. The snowy weather continued through the 3rd, then high pressure built over the region during the following week. The area was left under northwest flow, so a few weak systems moved through although they were drastically weaker and much warmer compared to recent storms.

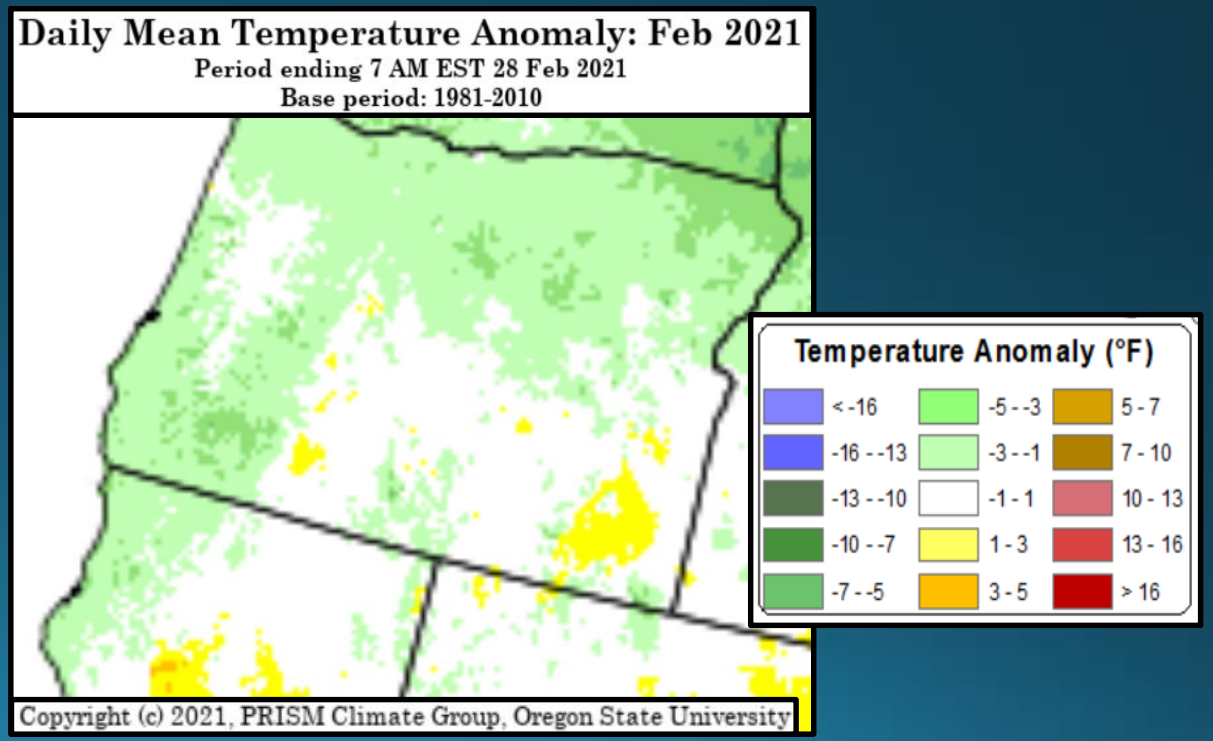
The weather became more active on the 12th. A significant ice and snow storm affected the region from roughly Eugene northward into Seattle. A very cold air mass settled in the lower elevations and ahead of a moist warmer frontal system. The cold air wasn't able to be mixed out before the warm, moist air moved in aloft and this created the ideal situation for low elevation snow and ice. The cold pool didn't make it into the Medford CWA due to the east/west oriented terrain acting as a wall just south of Eugene. However, the region still got it's fair share of mountain snow and valley rain from the same system. The impacts just were considerably less compared to those to the north since the cold pool didn't make it this far south. Active weather continued through the 18th as more systems that were fairly typical for this time of year passed through and snow levels were generally between 3000 – 5000 ft during this time.

Active weather continued through the end of the month with periods of gusty winds. However, after the 21st, precipitation was mostly confined to areas north of the Umpqua Divide and along the Cascades. All in all, the weather during the month was beneficial in building the area snowpack and delivering much needed rainfall to help put a dent in the drought. In fact, many areas saw some kind of change in drought designation, ranging from a reduction in drought category to a reduction in areal coverage of drought severity across a county.

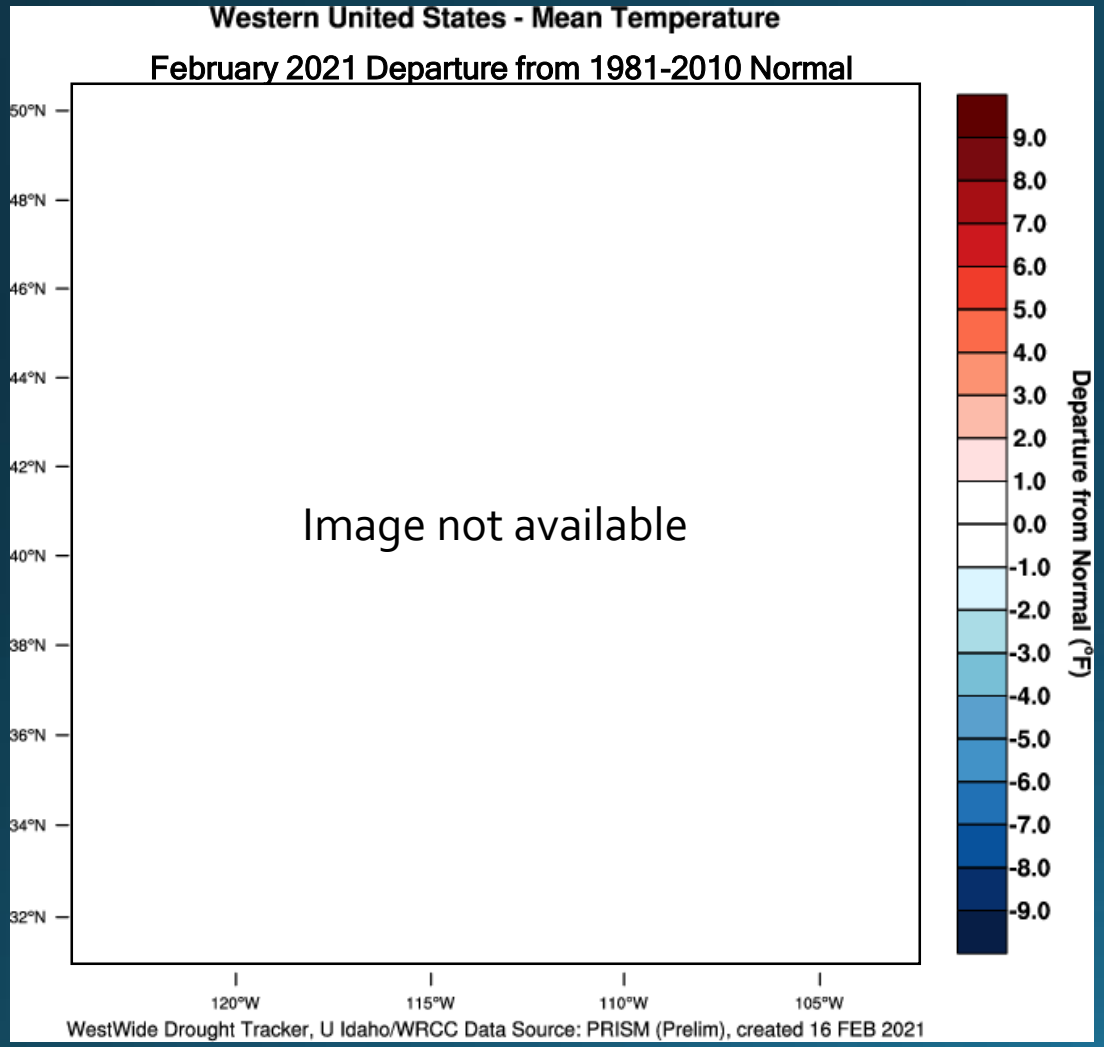
A Look Back at the February 2021 Temperature Outlook

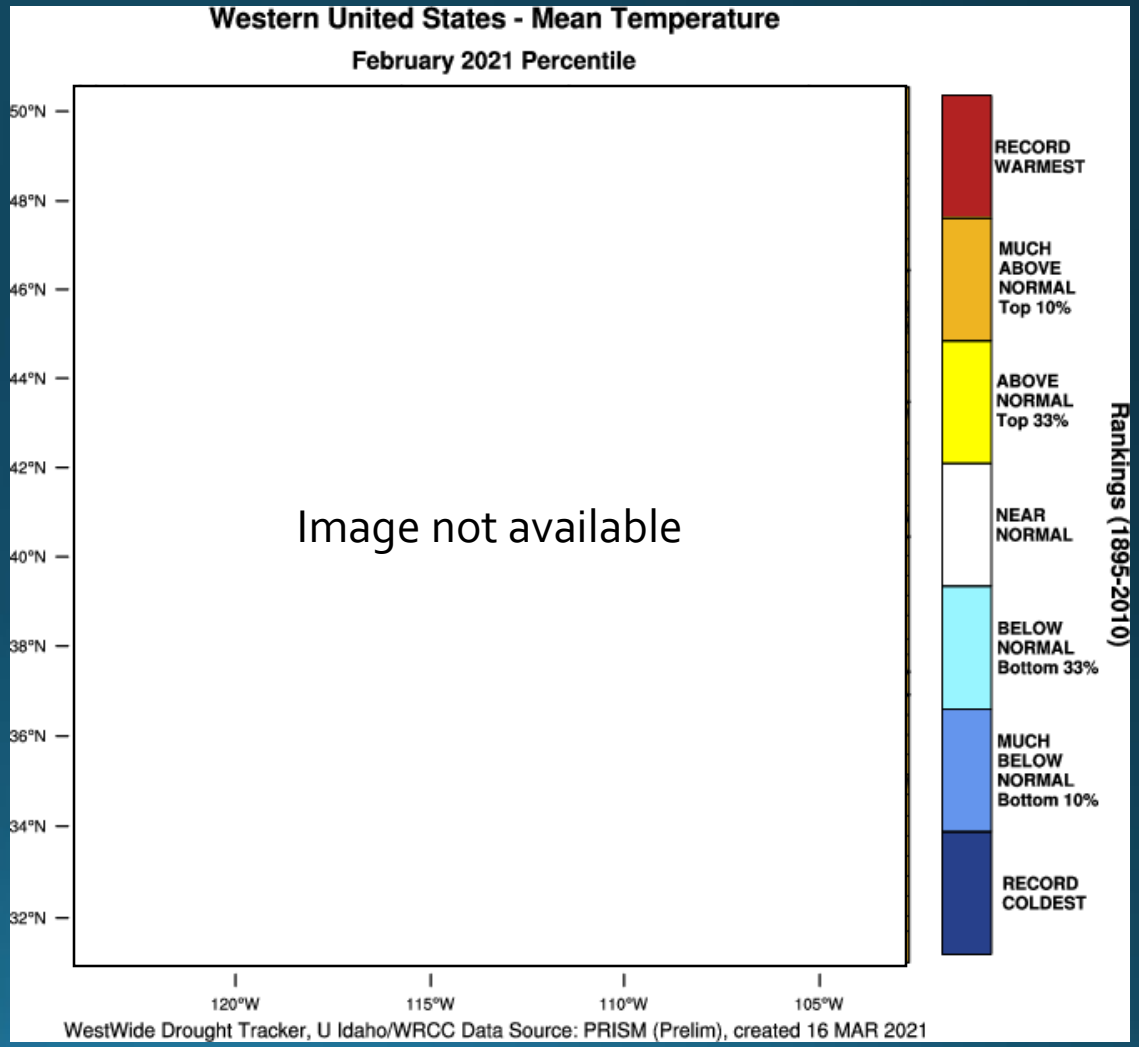
- ***Was the forecast anomaly correct?*** Yes- Our forecast update was made Feb 2nd and was pretty much right on. Here's what we said: "Temperatures are expected to finish the month near to slightly below normal, generally in the -4°F to +3°F from 1981-2010 normal."
- ***Was the expected impact correct?*** No, not quite. Regarding temperatures, our update indicated, "While colder than normal temperatures are good for snowpack retention," (expected) "precipitation deficits for the month would mean no improvement to a worsening of drought conditions." It turns out that SWE % of normal increased by 10-20% of normal from Jan 31st to March 1st due to cold temps and more precip.
- ***Did our forecast improve upon the CPC forecast?*** Yes, we improved upon the temperature forecast by accurately predicting the anomalies and also indicating that it was not likely to be colder than normal across the entire area for the monthly anomalies.





February 2021 Observed Temperatures





Average Temperatures

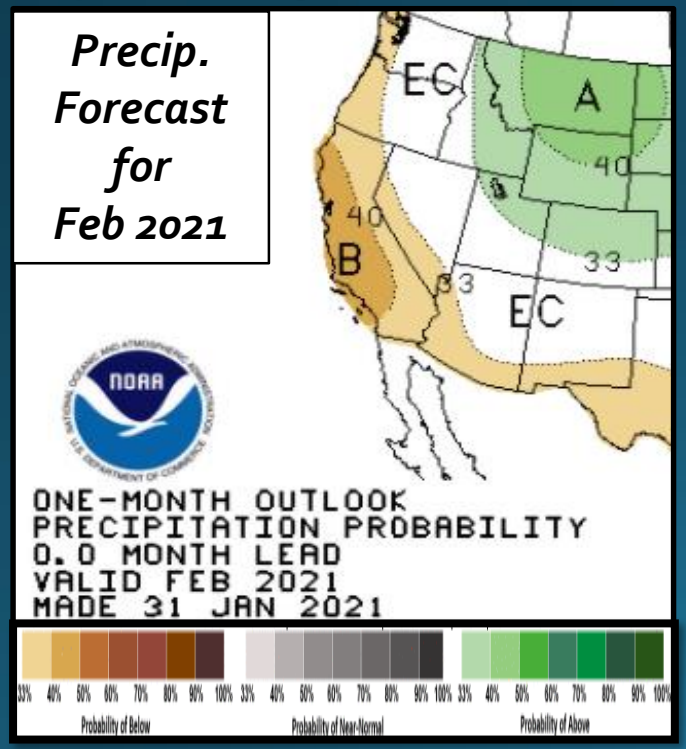
	Average (°F)	Departure from Normal	Average Max (°F)	Departure from Normal	Average Min (°F)	Departure from Normal
North Bend	46.2	-0.2°	51.7	-1.0°	40.7	0.5°
Roseburg	44.9	-0.4°	51.8	-1.7°	38.1	0.9°
Medford	43.1	-1.1°	51.1	-3.2°	35.0	0.9°
Klamath Falls	34.1	-0.1°	45.2	0.4°	23.0	-0.7°
Montague, CA	38.8	-0.3°	50.6	0.1°	27.0	-0.7°
Mt. Shasta City, CA	38.9	0.7°	48.3	-0.3°	29.4	1.5°
Alturas, CA	32.9	-1.0°	44.8	-1.3°	21.1	-0.7°

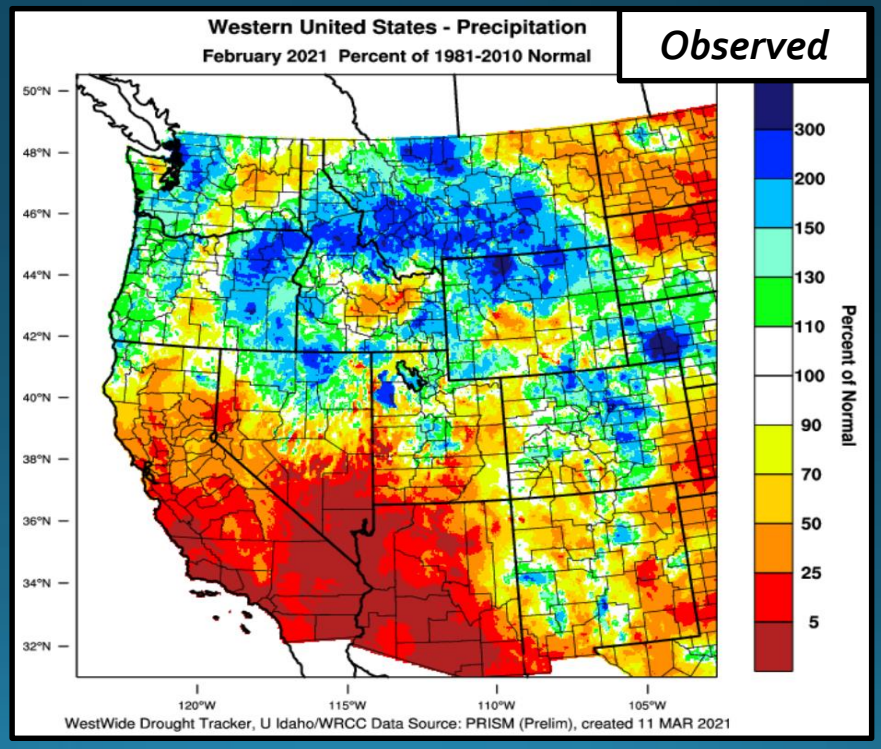
Monthly Max & Min Temperatures

	Max (°F)	Date(s)	Min (°F)	Date(s)
North Bend	54°	14th & 22nd	34°	9th
Roseburg	61°	28th	32°	10th
Medford	62°	1st	28°	5th
Klamath Falls	55°	6th	13°	4th & 7th
Montague, CA	61°	22nd	18°	7th
Mt. Shasta City, CA	60°	6th	22°	25th
Alturas, CA	55°	7th	10°	4th

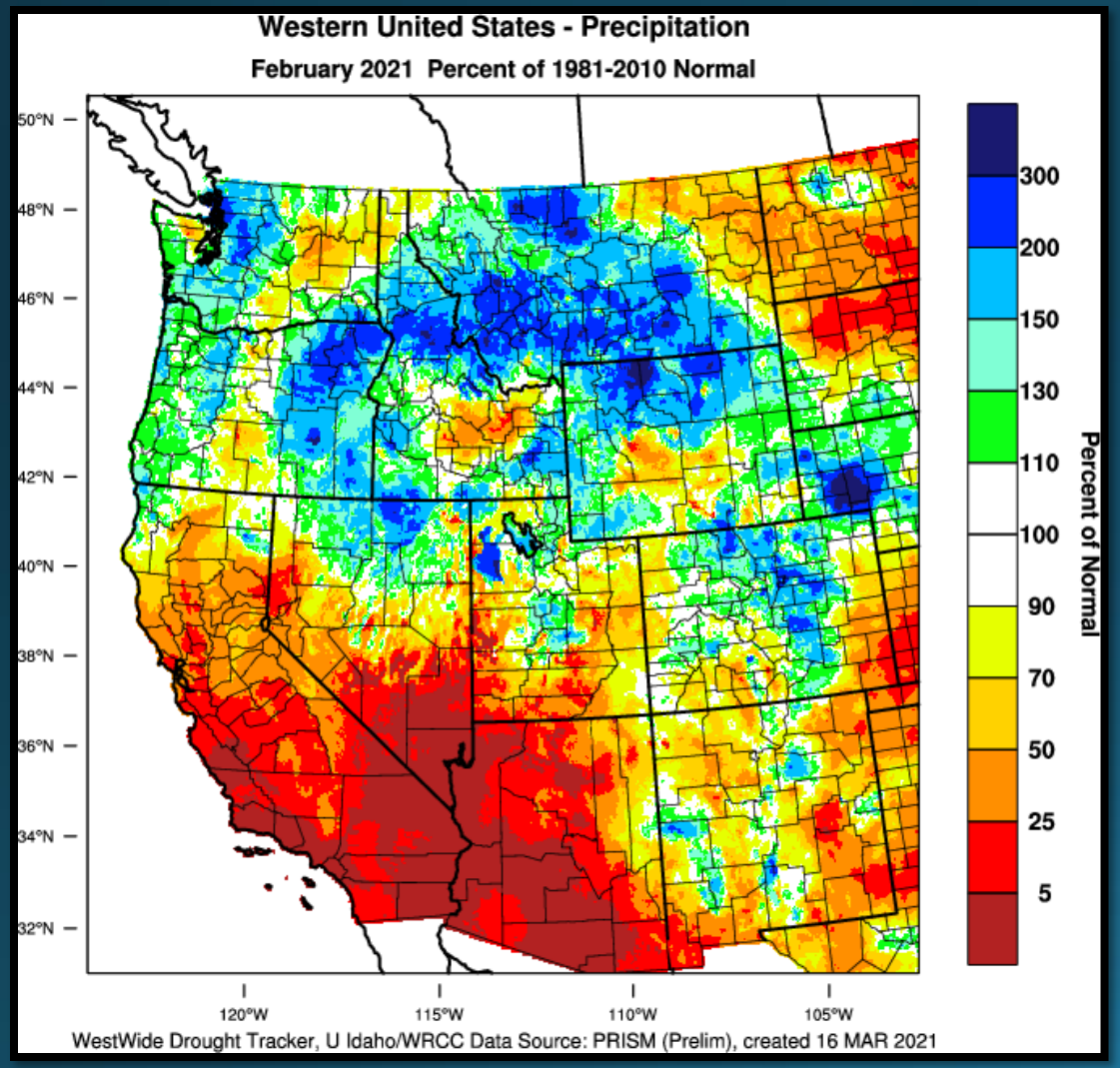
A Look Back at the February 2021 Precipitation Outlook

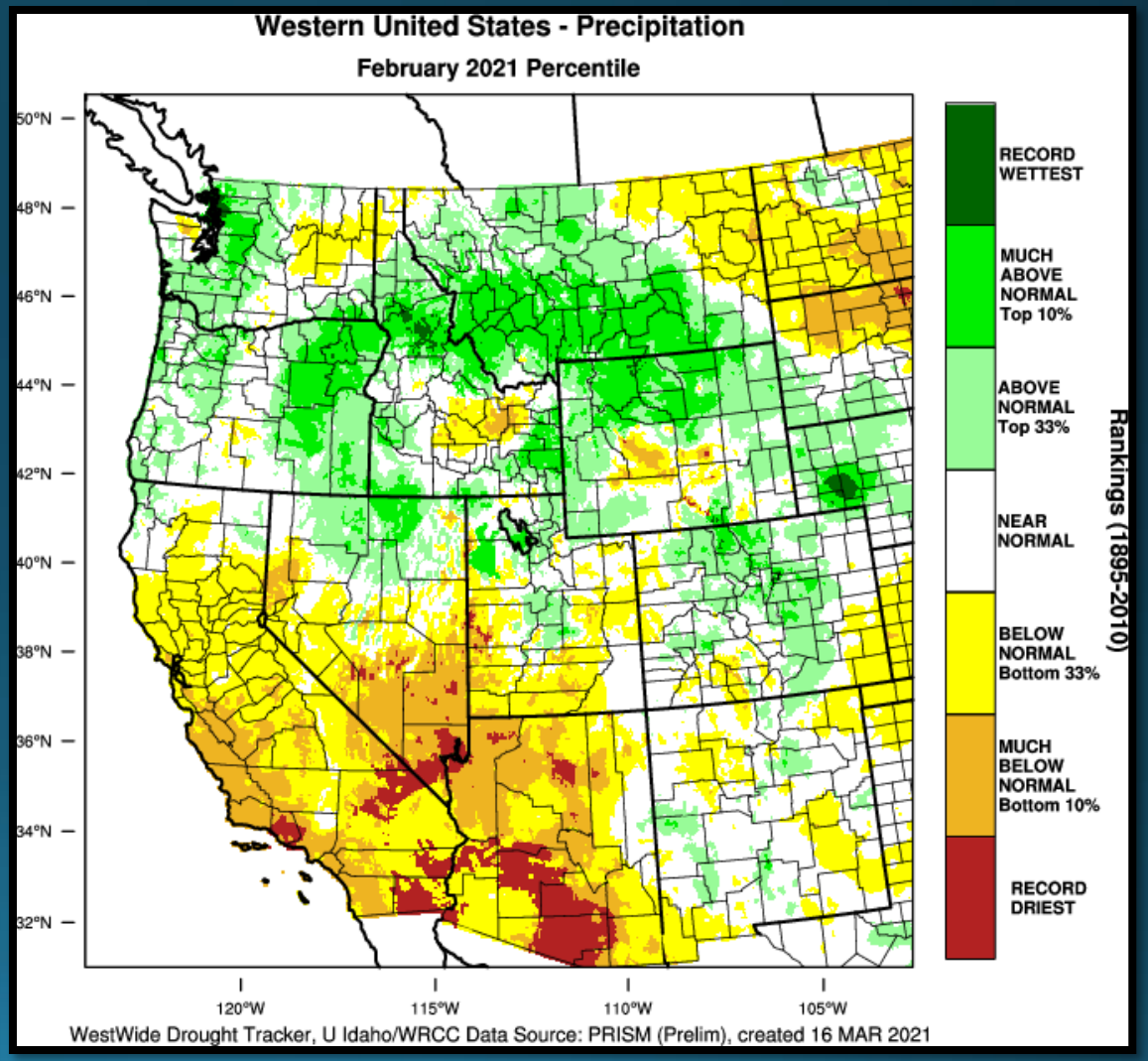
- ***Was the forecast anomaly correct?*** Yes and no. Our localized forecast indicated, "Precipitation is most likely to be near to below normal based on the latest ensemble guidance- most likely 50-100% of normal. The highest percentage of precipitation compared to normal is most likely to be in the Oregon Cascades." Precipitation was actually near to above normal for the month for most areas west of the Oregon Cascades as well as portions of the east side. However, other areas had below normal precipitation.
- ***Was the expected impact correct?*** No. Snow Water Equivalent (SWE) increased 7 to 20% as compared to normal across the forecast area, least in CA and most on the Oregon west side.
- ***Did our forecast improve upon the CPC forecast?*** Yes, for the Oregon Cascades. We also accurately indicated wetter N and E of us.



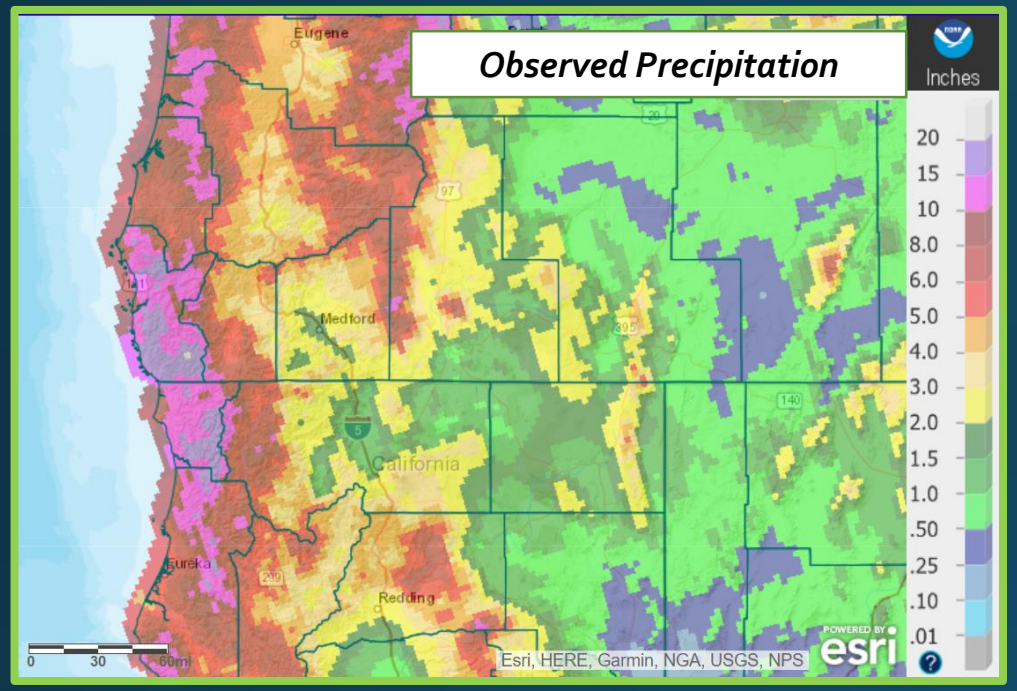


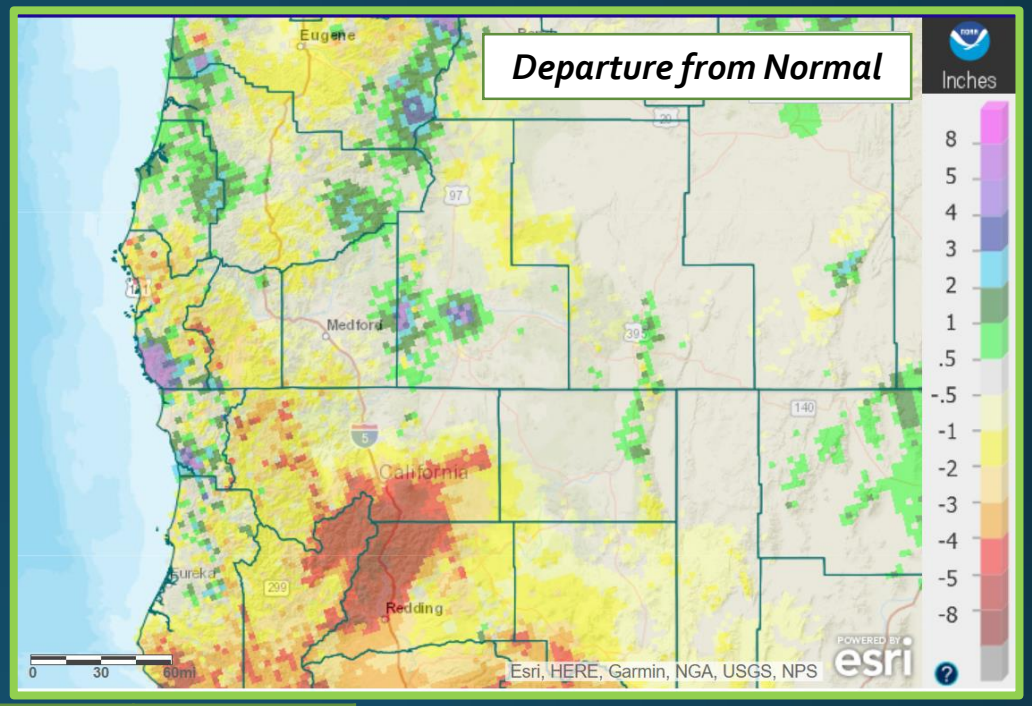
February 2021 Observed Precipitation





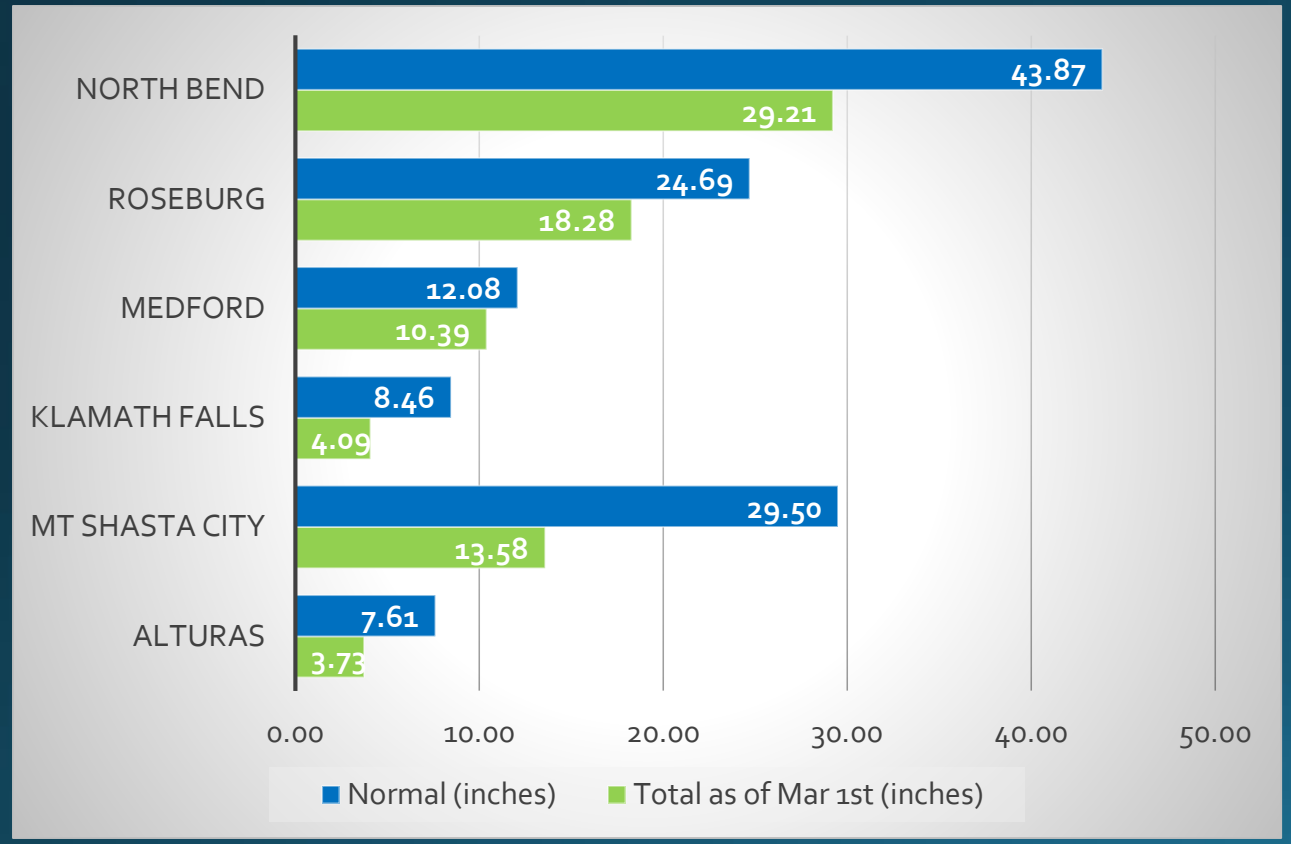
Precipitation

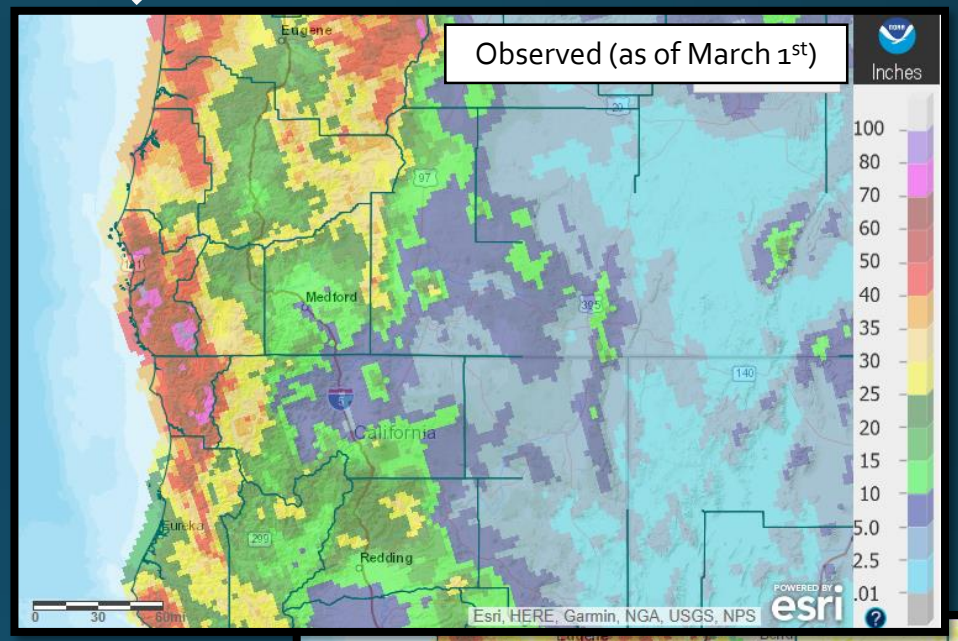


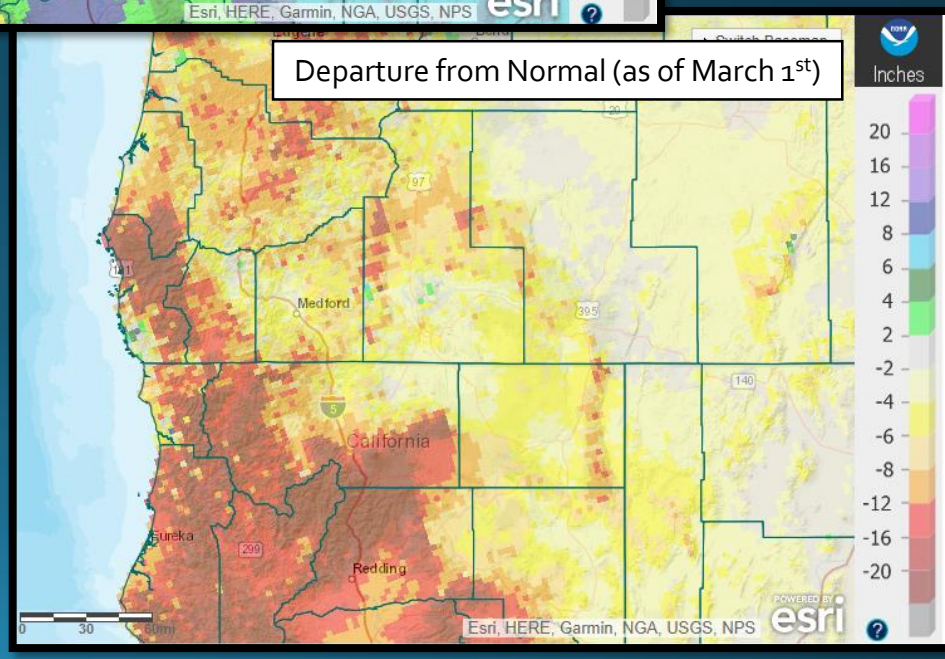


	Total	Departure from Normal	Greatest 24-hr Total	Date(s)
North Bend	*7.70"*	*0.11"*	*2.39"*	*31st – 1st*
Roseburg	*4.45"*	*0.50"*	*1.38"*	*2nd – 3rd*
Medford	*1.87"*	*-0.14"*	*0.45"*	*18th – 19th*
Klamath Falls	*1.07"*	*-0.85"*	*0.39"*	*18th – 19th*
Montague, CA	*1.29"*	*-0.72"*	*0.36"*	*18th – 19th*
Mt. Shasta City, CA	*2.14"*	*-5.09"*	*1.02"*	*1st – 2nd*
Alturas, CA	*1.41"*	*-0.04"*	*0.37"*	*12th – 13th*

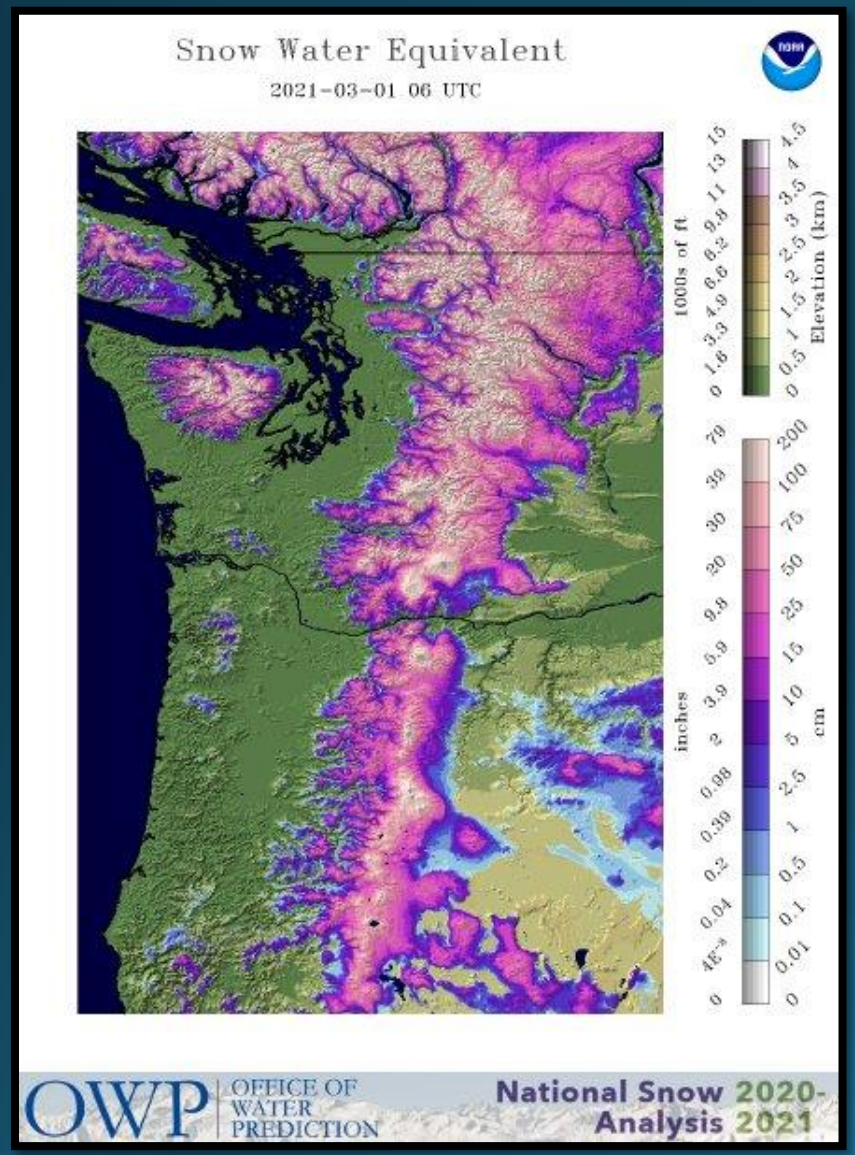
Water Year Status (As of March 1st)

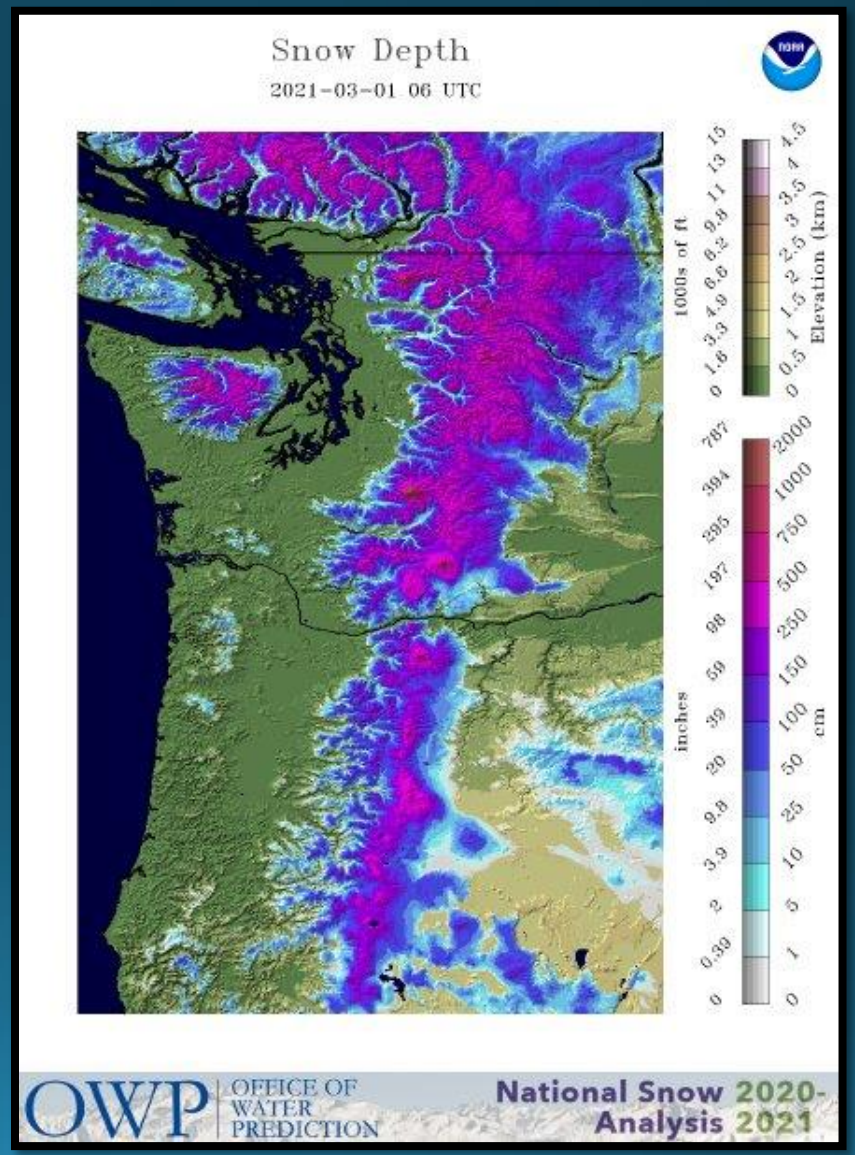




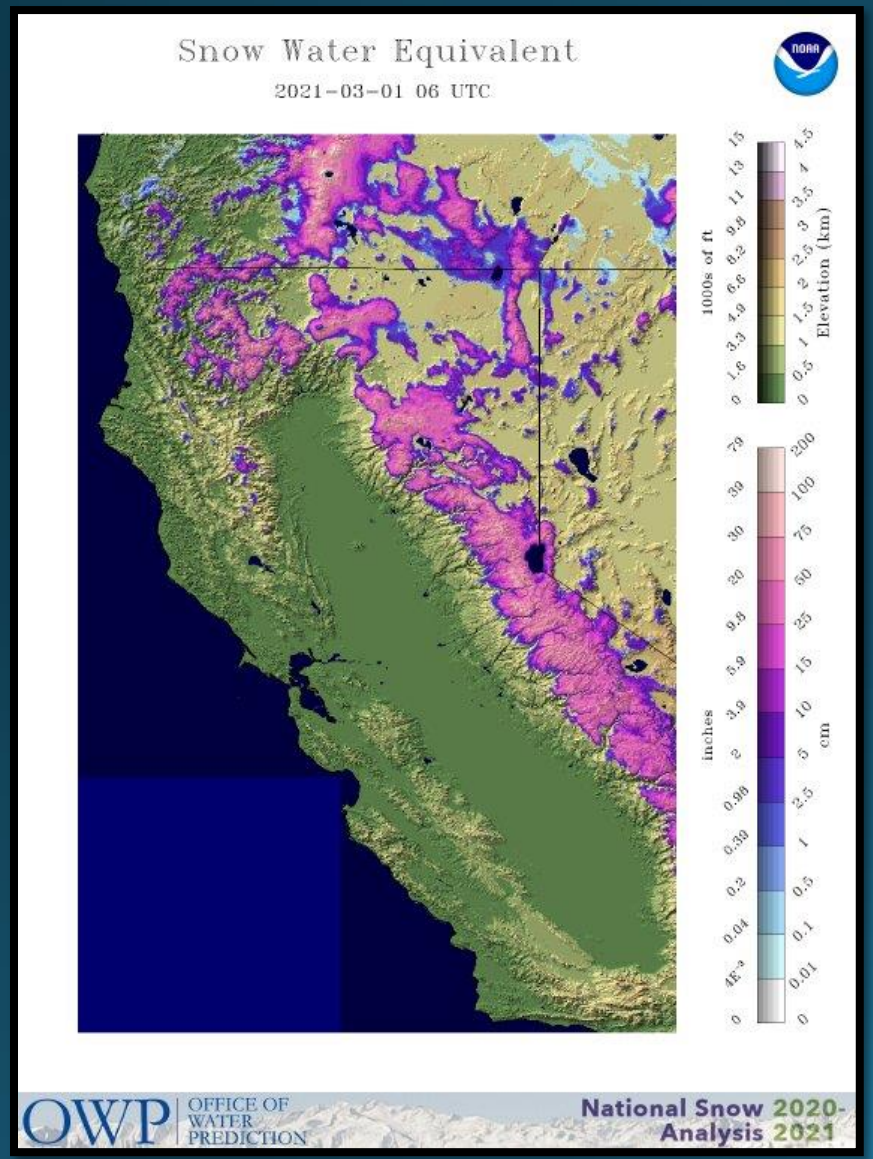


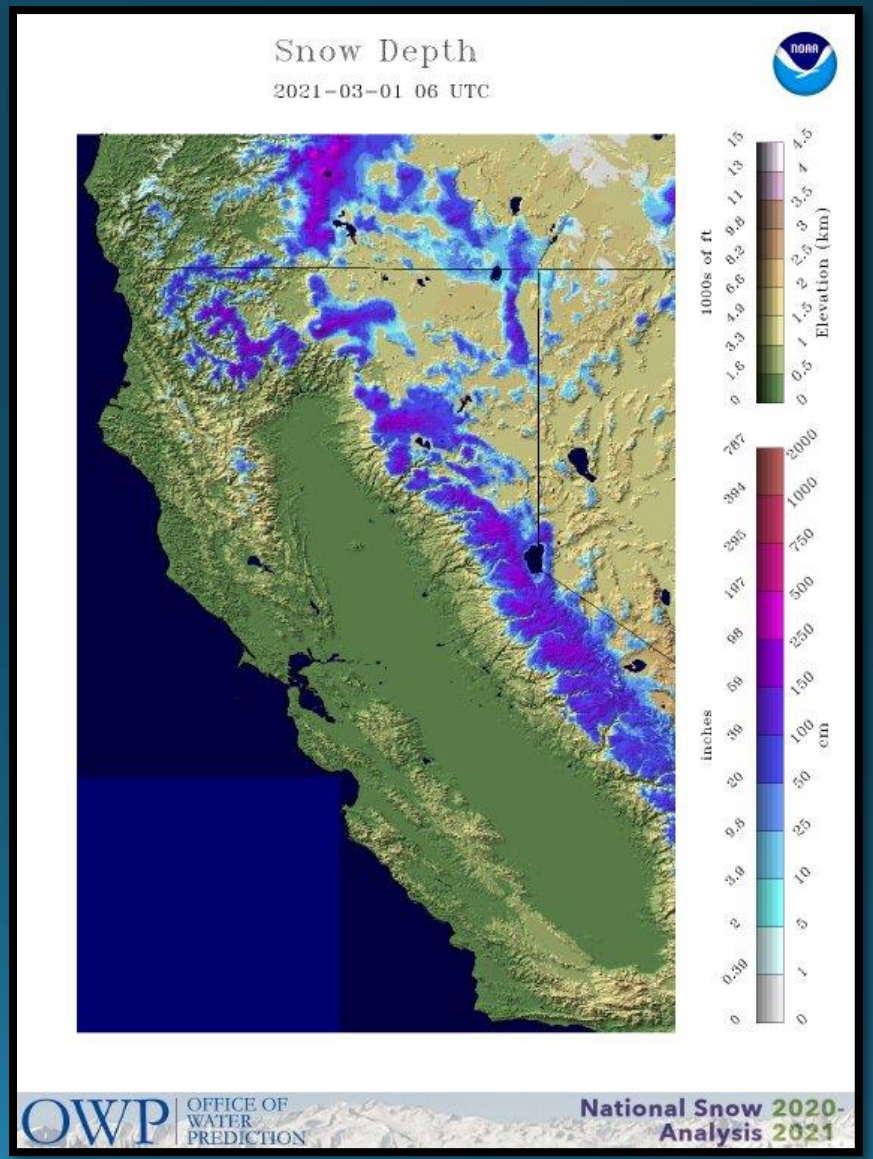
PacNW SWE & Snow Depth as of 3/1/21



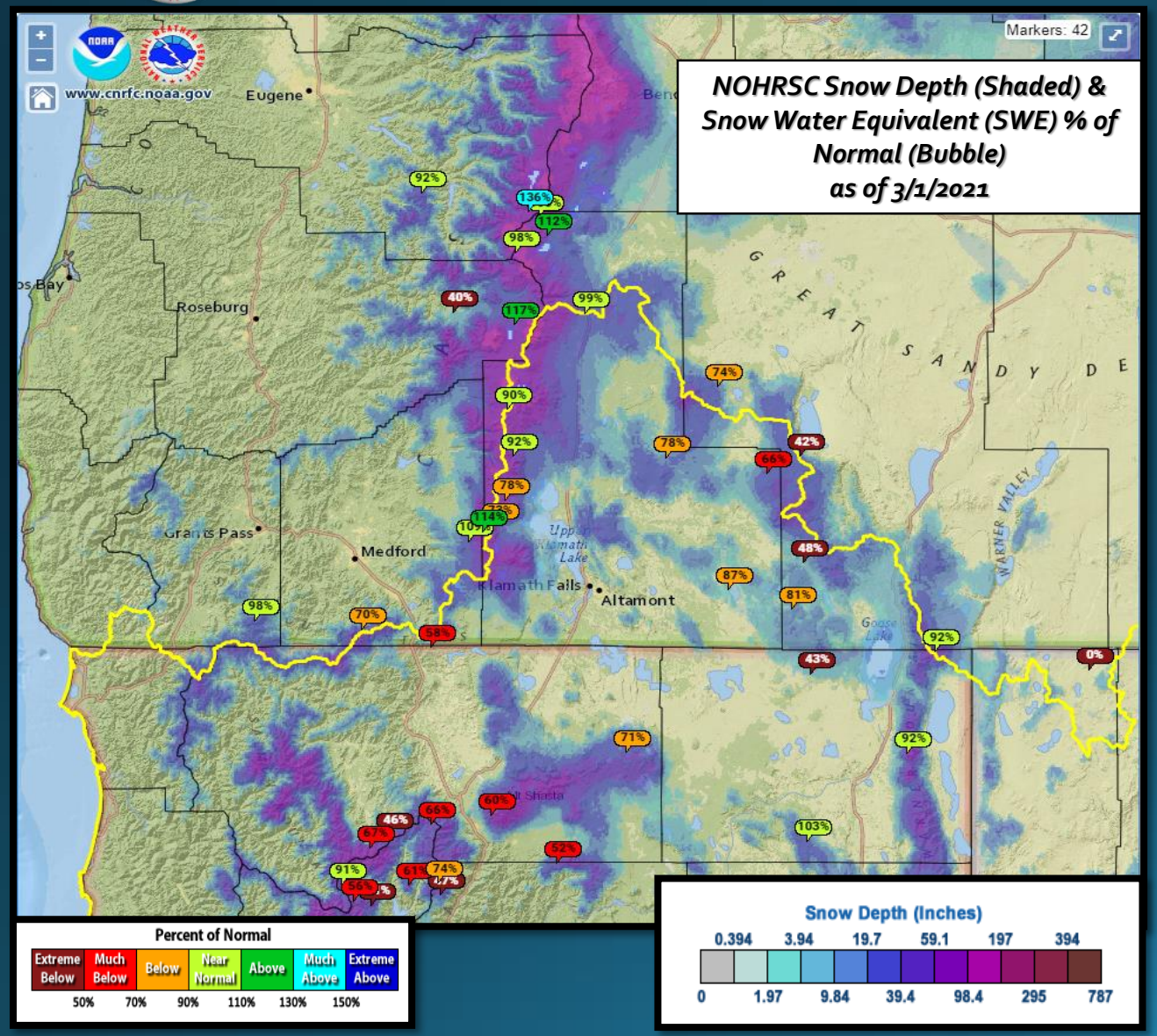


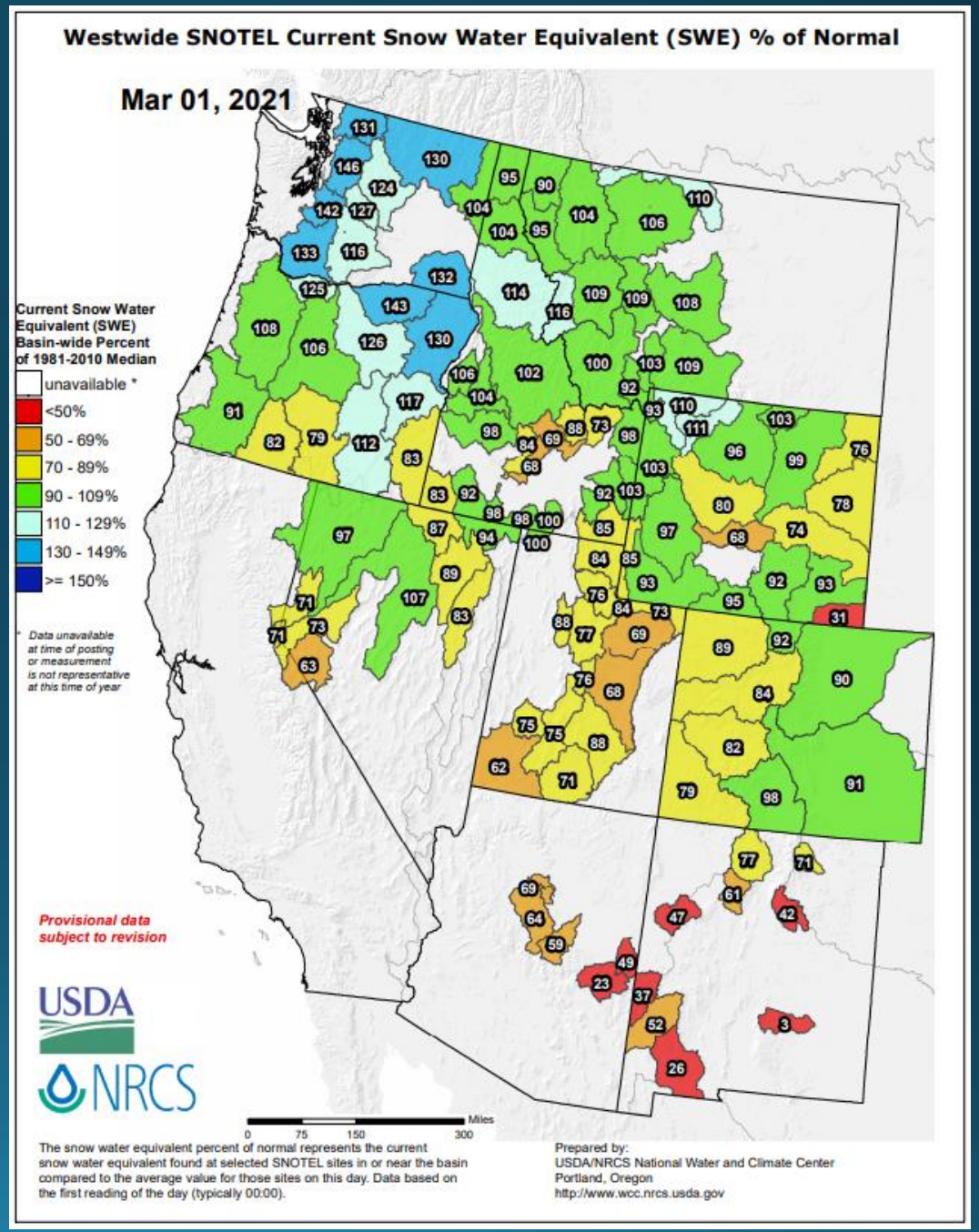
California SWE & Snow Depth as of 3/1/21



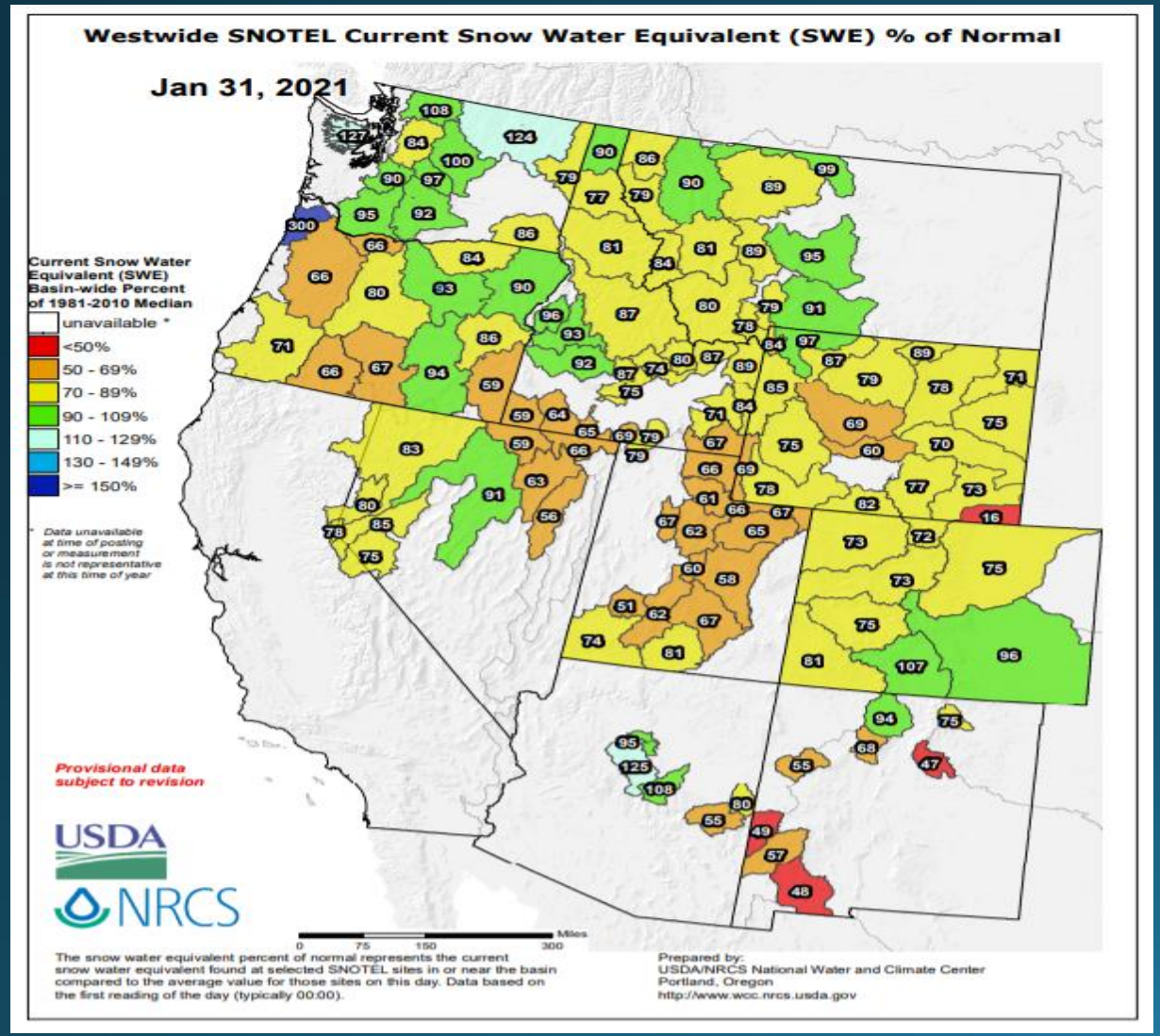


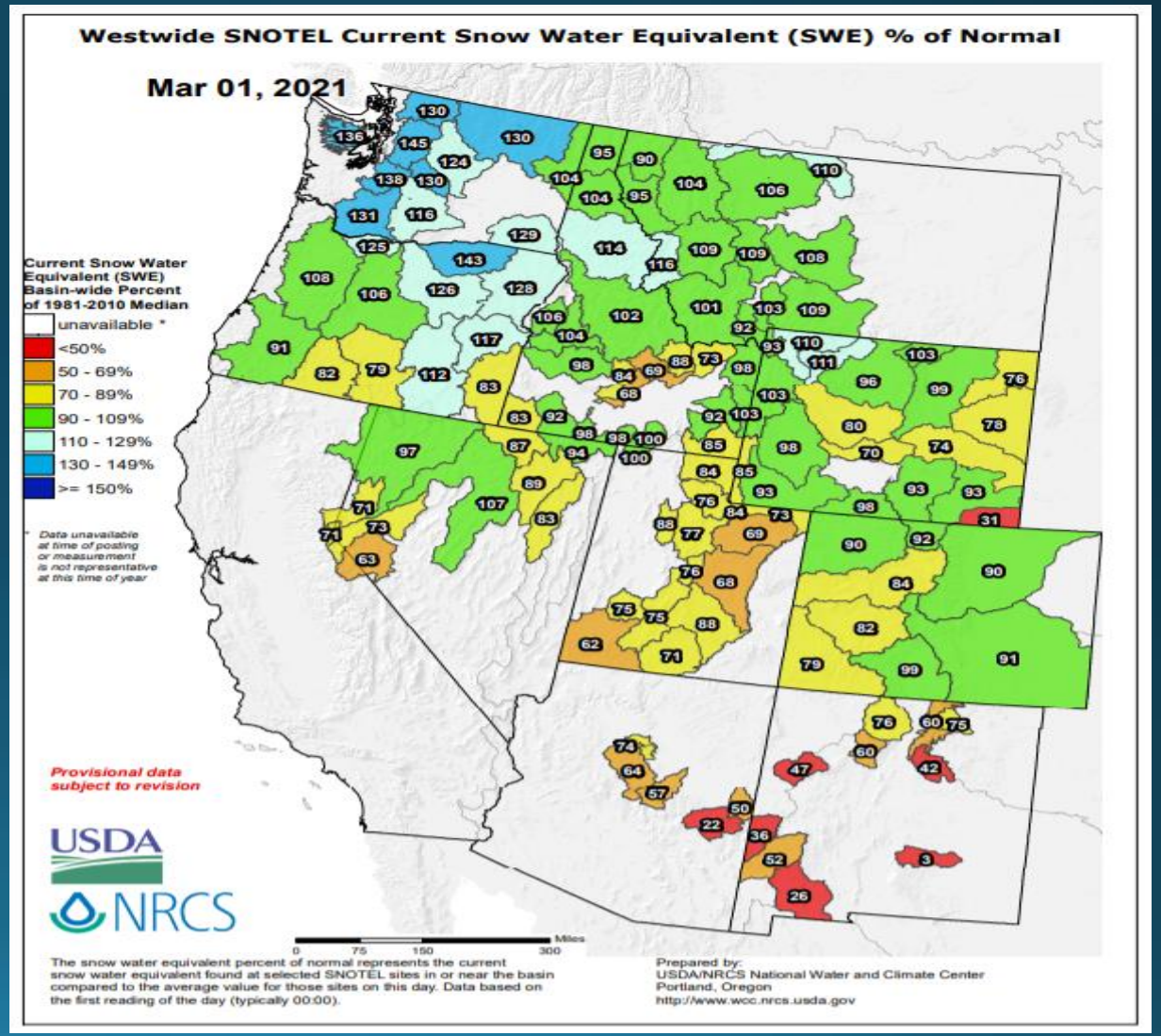
Snowpack Status





Snow Water Equivalent (SWE) Feb 2021 Comparisons:



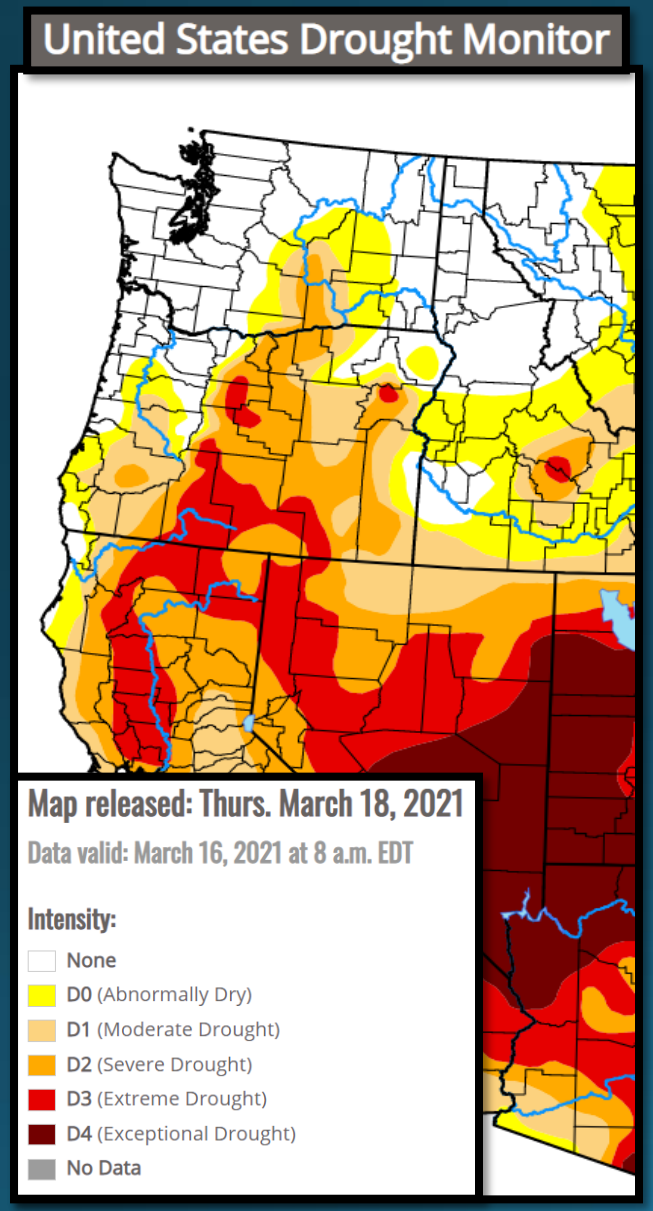


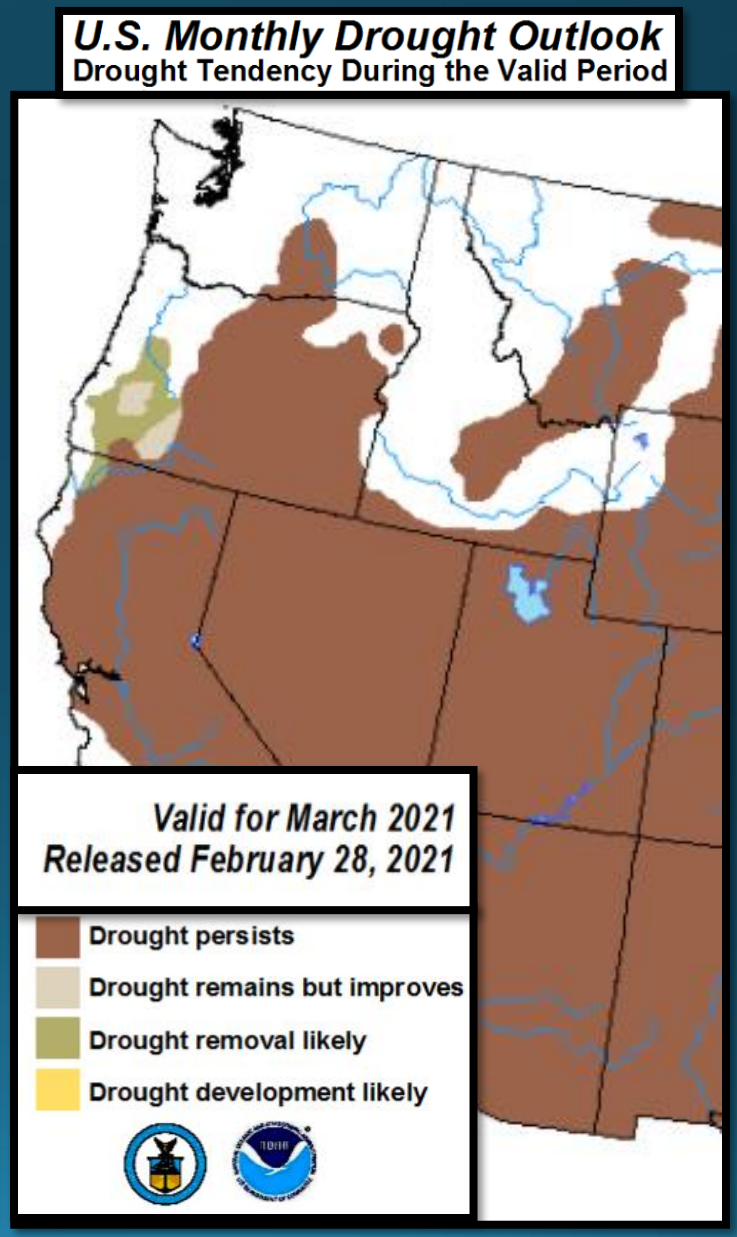
Crater Lake

Image Courtesy: NPS

	Average Max Temp (°F)	Average Min Temp (°F)	Total Precipitation	Total Snowfall	Snow Depth as of: 02/28/21	Highest Max/ Lowest Min
February	30.9°	19.7°	9.95"	*89.1"*	104"	38° / 13°
Normal (1981-2010)	34.8°	17.8°	7.72"	71.3"	109"	N/A

Drought Monitor (Current) & Outlook (March)





Normals for March (1981-2010)

Temperatures:

Along the coast, lows are typically in 40s with highs in the 50s to near 60F. The Interior West Side usually experiences average lows in the lower 30s to lower 40s and highs in the 50s to near 60 in the lower valleys. Lows in the upper teens to mid 20s occur across the higher, most typically snow packed mountains, and the East Side. Highs in those mountains and across the East Side are typically in the mid 30s to the lower 50s.

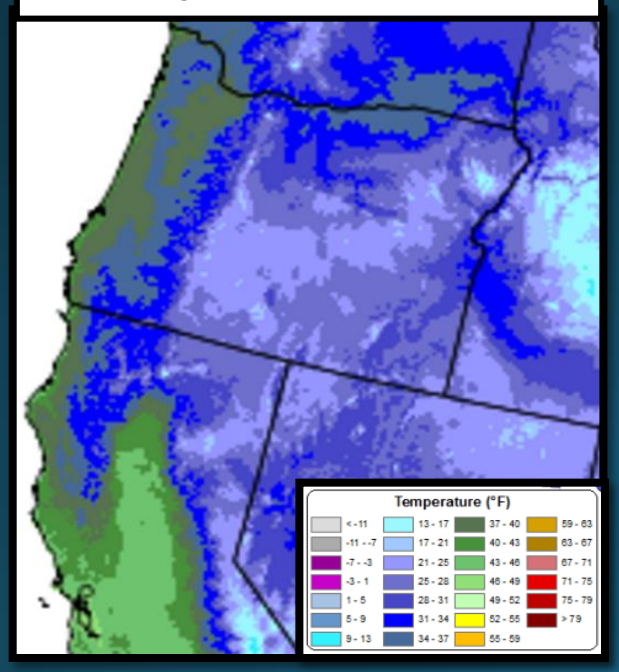
Precipitation:

On the high side for March, Curry County usually gets 10 to 20 inches of water. South and southwest flow favored areas of west of the Cascades, the Mount Shasta area, and the Cascade and Siskiyou Mountains typically receive 5 to 10 inches. The remainder of the West Side has a wide range in normals, ranging from 1 to 5 inches. East of the Cascades, the drier portions of Lake County typically receive about a half an inch, while the rest of the area gets 1 to 3 inches of water, except up to around 5 inches in the some of the mountains.

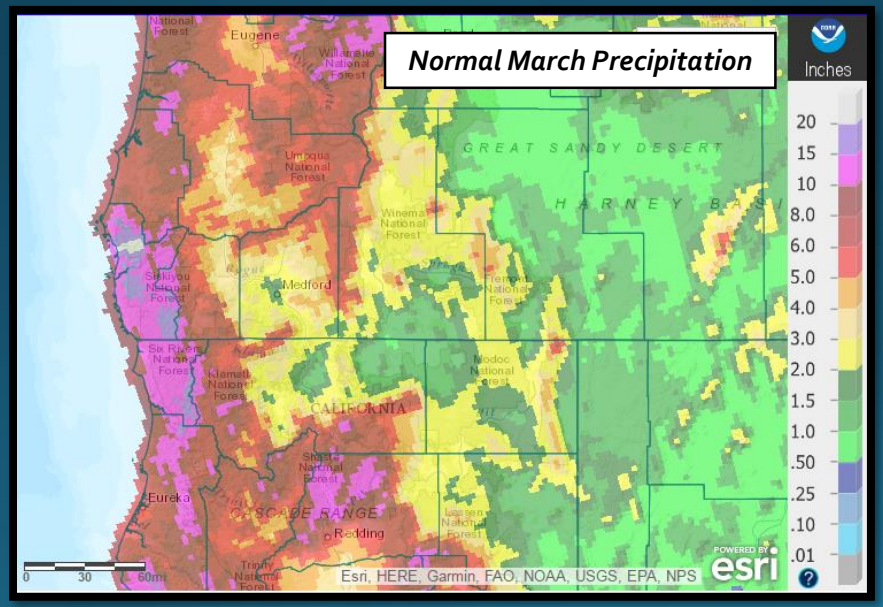
Snow:

Peak snowpack, in terms of snow water equivalent, for the forecast area occurs in the mid-March to mid-April time frame. Thus, in early March, we usually continue to add more water to the snowpack than is lost from melting and sublimation and, sometimes, this lasts through mid-April. Our maritime snowpack usually yields depths of 5-10 feet above 6000 feet elevation in mid-March. Crate Lake's snowpack has historically peaked around 125 inches on March 31st. Average March snowfall for Crater Lake Park Headquarters is 73 inches.

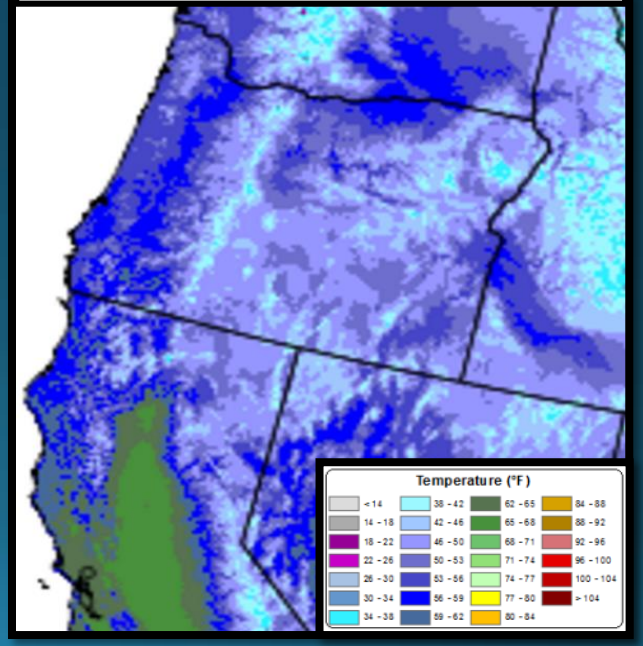
Average Minimum Temperatures



Normal March Precipitation

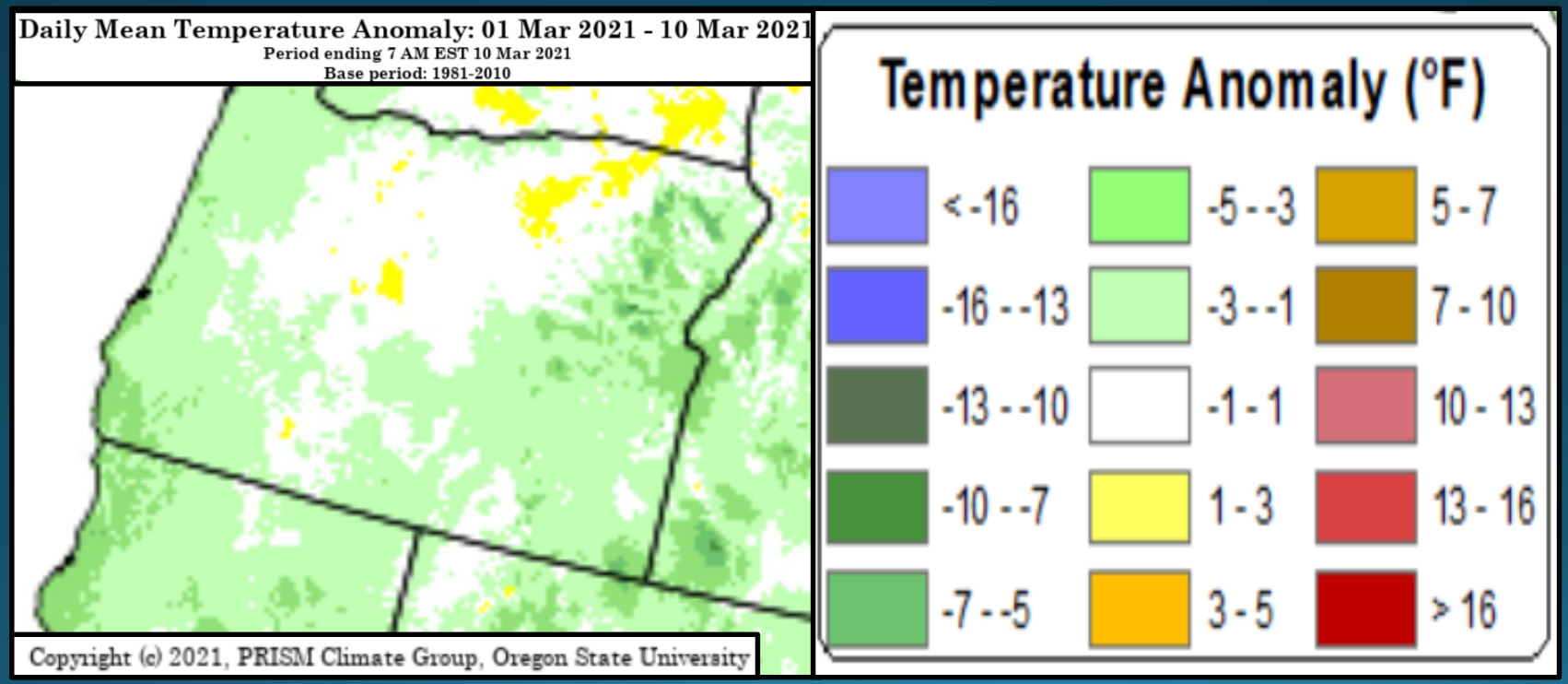


Average Maximum Temperatures



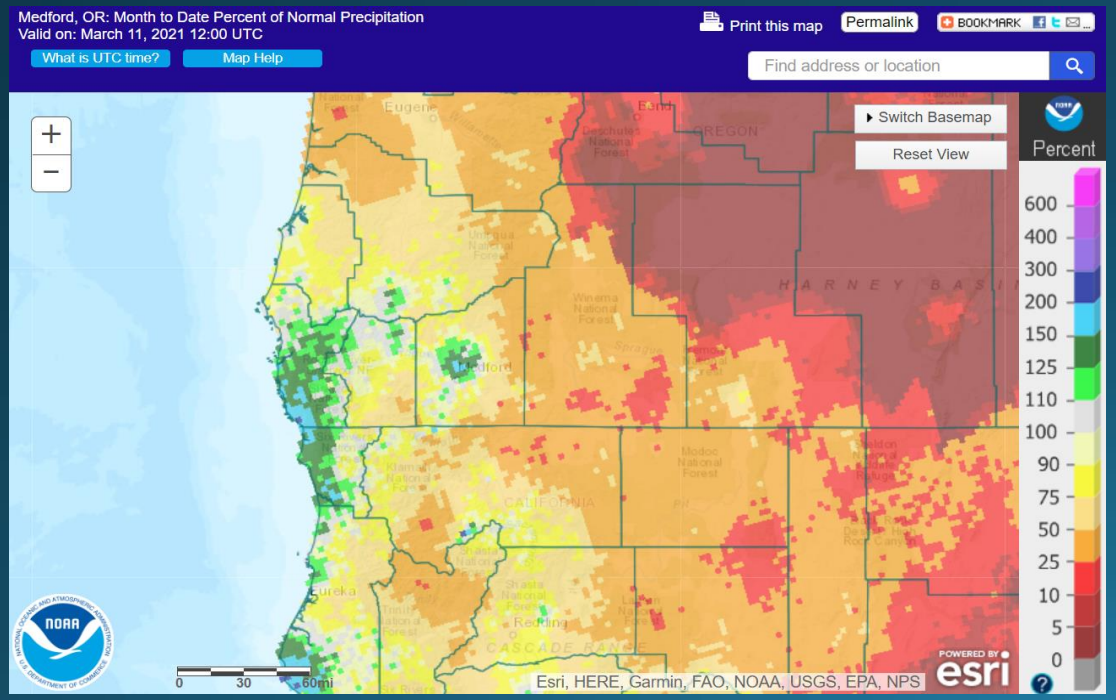
March 2021 Temperatures, Thus Far:

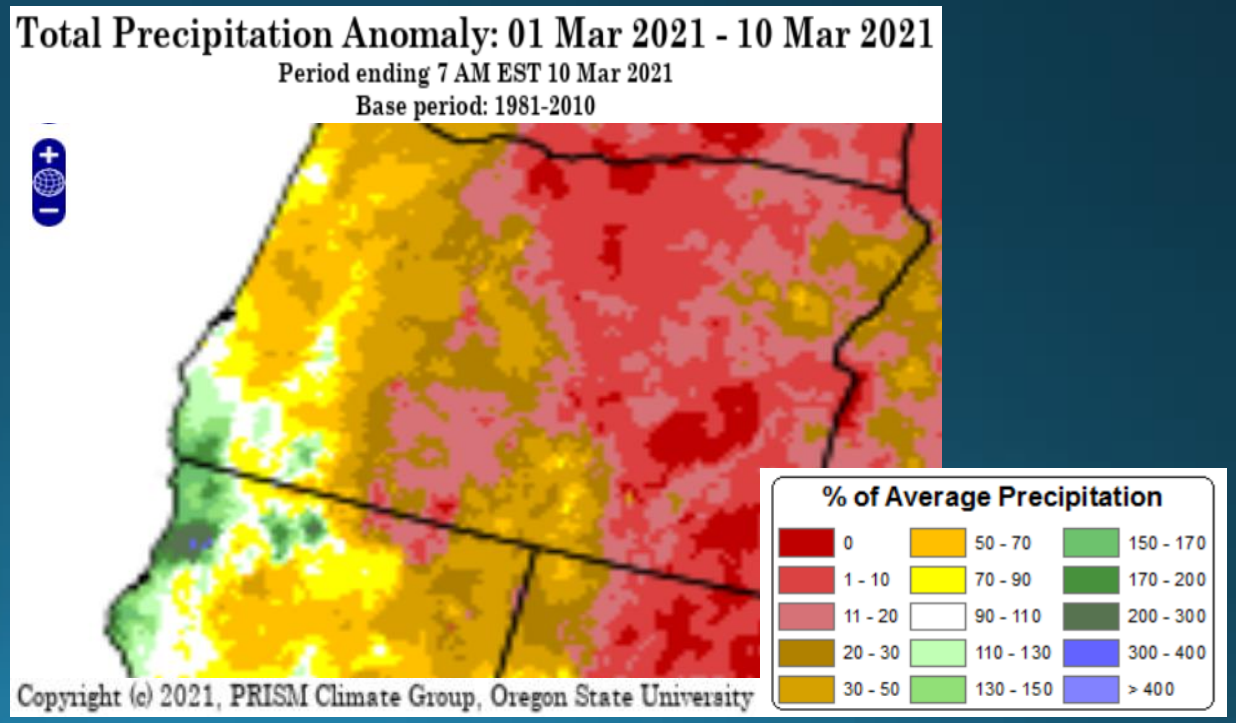
- ***Anomaly to Date:*** Temperatures for the first 10 days of this month have mostly been colder than normal by 1 to 5 degrees, coldest along and near the coast. This is where upper level troughing and precipitation have been the greatest in terms of duration and amount thus far this month.
- ***About the Data:*** This dataset is high resolution data from Oregon State University. We're working on adding county boundaries or other markers to this dataset. Also, the color scheme in the legend does not quite match the mapped data. That is being looked into.



March 2021 Precipitation, Thus Far:

- ***Anomaly to Date:*** Several cold and wet frontal systems have positively affected some of the forecast area along and west of the Cascades so far this month. It has been very wet across portions of far NW CA, whereas it has been very dry in the Upper Klamath and Sprague River Basins.
- ***About the Data:*** The second map shown is high resolution data from Oregon State University. It is believed to be more accurate than the one on the left. We're working on adding county boundaries or other markers to this dataset.





March 2021 Outlook Update

(Written March 11th)

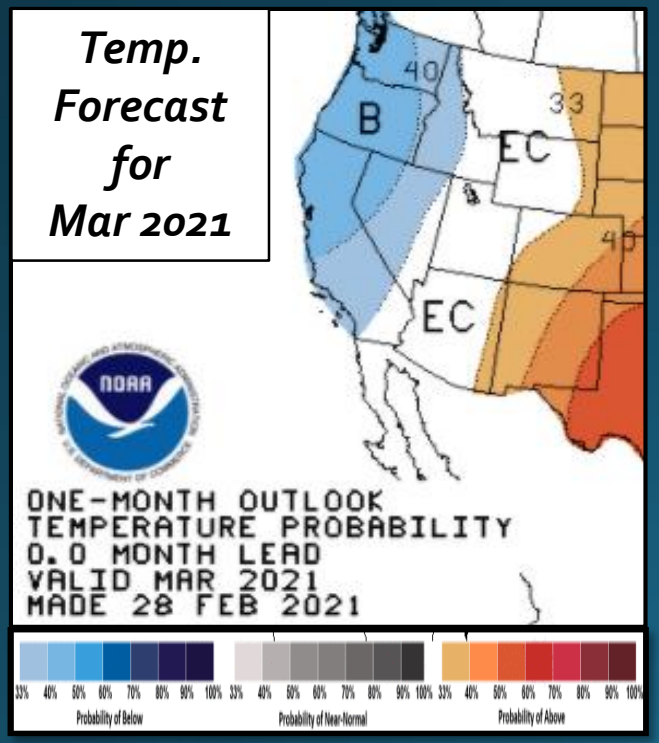
The official Climate Prediction Center forecast for March 2021 predicts increased probabilities for below normal temperatures (40-50%) and equal chances for below normal, near normal, and above normal precipitation (33%) for the Medford NWS forecast area.

- ***More Detailed March Temperature Forecast:*** ***Temperatures are expected to finish the month generally below normal, in the -6°F to -1°F range as compared to the 1981-2010 normals.*** Both observed and forecast conditions indicate cooler conditions continuing, especially over far SW OR and far NW CA.

- ***More Detailed March Precipitation Forecast:*** Precipitation is most likely to vary quite a bit across the area this month from 100-200% of normal from the Cascades westward, to 50-100% across most areas east of the Cascades. Increasing convection in the month of March with cold upper level troughs increases the threat for more localized areas of wet and dry locations.

Summary: La Nina still continues, and the weather pattern looks typical of March and La Nina for the rest of March 2021. Forecasting precipitation in the spring at longer lead times tends to generally have lesser skill than in other months due the higher frequency of convection and slow moving weather systems, so precip anomalies this month may be wide ranging. Ensembles suggest a wetter than normal 2nd half of the month focused from the Cascades westward. They also suggest the last week of the month is more likely to be closer to normal temperatures.

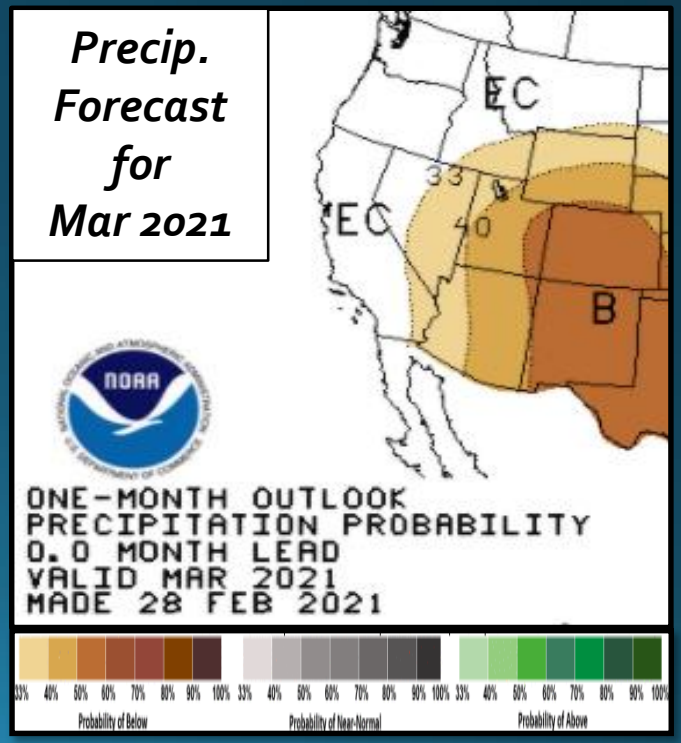
Temp. Forecast for Mar 2021



Expected Impact, March 2021:

Drought relief is expected to continue from generally the Cascades westward, with the drought staying about the same east of the Cascades. An increased tendency for NW flow and colder temperatures means we'll likely move above normal for snowpack by month's end for the Oregon Cascades and Siskiyous westward. Lesser run-off is likely east of the Cascades, though the snowpack may still build some in terms of % SWE due to colder temperatures and less resultant snow loss. Overall, the chances for low elevation snowfall are likely to continue through month's end. While the meteorological drought is likely to lessen west of the Cascades, we'll still be waiting to see how the snowmelt goes to see how the water supply ends up, especially for areas generally east of Siskiyou Summit. Expect thunderstorms, at times, across the area due to March sun and colder air aloft.

Precip. Forecast for Mar 2021



*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: 01/1902 – Present**
- **Roseburg: 04/1900 – Present**
  - *Missing:*
    - *05/1900-01/1901*
    - *03/1901-06/1902*
    - *08/1902-12/1930*
    - *10/1965-06/1997*
- **Medford: 03/11/1911 – Present**
- **Klamath Falls: 12/1897 – Present**
- **Montague, CA: 07/1948 – Present**
  - *Missing:*
    - *08-09/1952*
    - *02/1953-06/2000*
- **Mount Shasta City, CA: 04/1948 – Present**
- **Alturas, CA: 05/1935 – Present**