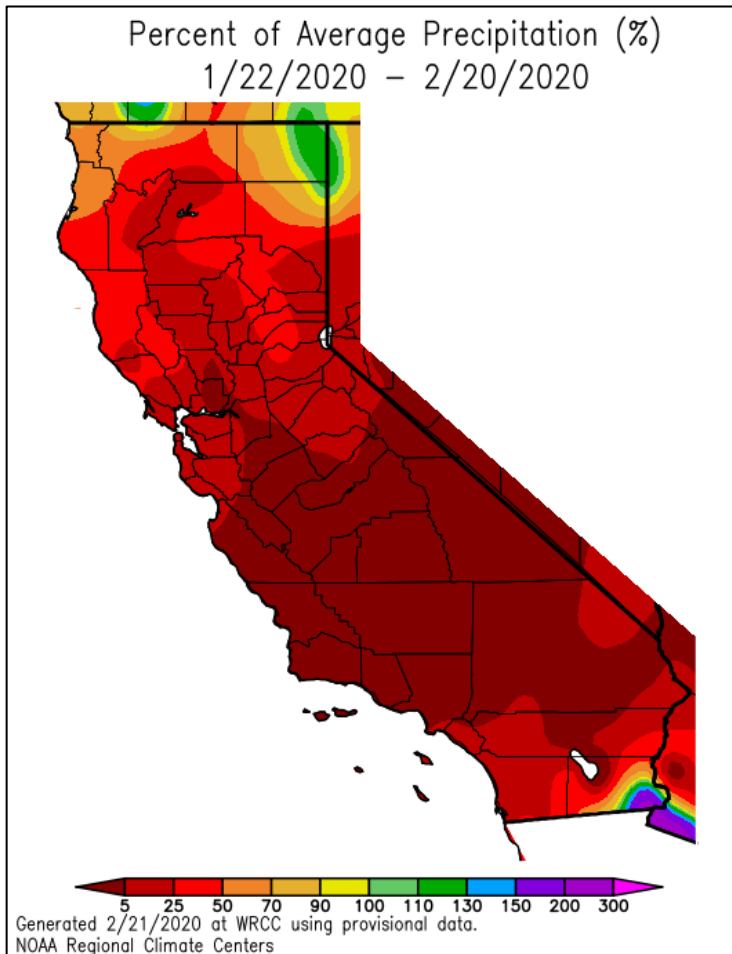


WY2020 Water Resources Update – February 21, 2020

Summary:

- Record dry month of February is likely in many regions.
- Long range outlook for March is not promising. Arctic Oscillation to blame?
- Water Year runoff projections have been decreasing steadily the past 6 weeks.

Details:



For the past few weeks the West Coast has been stuck in a deadly dry weather pattern. Storms have been steering well to the north providing flooding rains to Washington and British Columbia, but leaving most of California and Nevada high and dry.

In terms of the observations for major precipitation indices in February so far, we are on track to establish a record for the driest February ever recorded on the 8SI (see below). The Central and Southern Sierras will receive some light precipitation this weekend, and it may be just enough to keep the other two indices above their record lows.

Next week looks to be a return to our high pressure ridge and warm dry weather. Great for going to the beach but not so good for water supply.

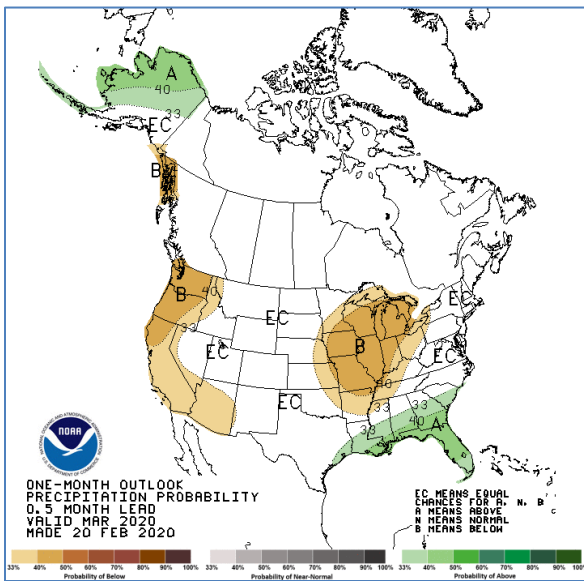
	February Precipitation	Percent of Average	Current Record Low
Northern Sierra (8SI)	0.02 in.	0%	0.46 in. (1988)
Central Sierra (5SI)	0.0 in.	0%	0.21 in. (1953)
Tulare (6SI)	0.0 in.	0%	0.13 in. (1953)

Source of graphic:

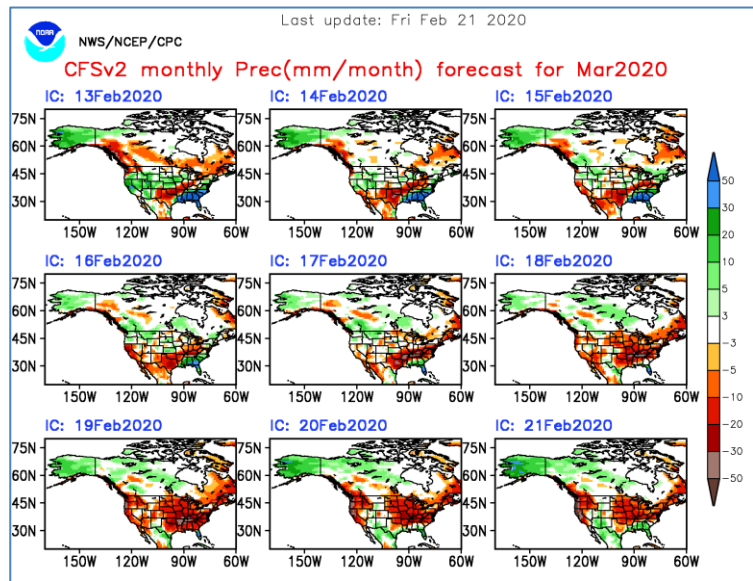
<https://wrcc.dri.edu/cgi-bin/anomimage.pl?wrc30dPpct.png.gov>

CPC Precipitation Outlook for March 2020

March Precipitation Outlook

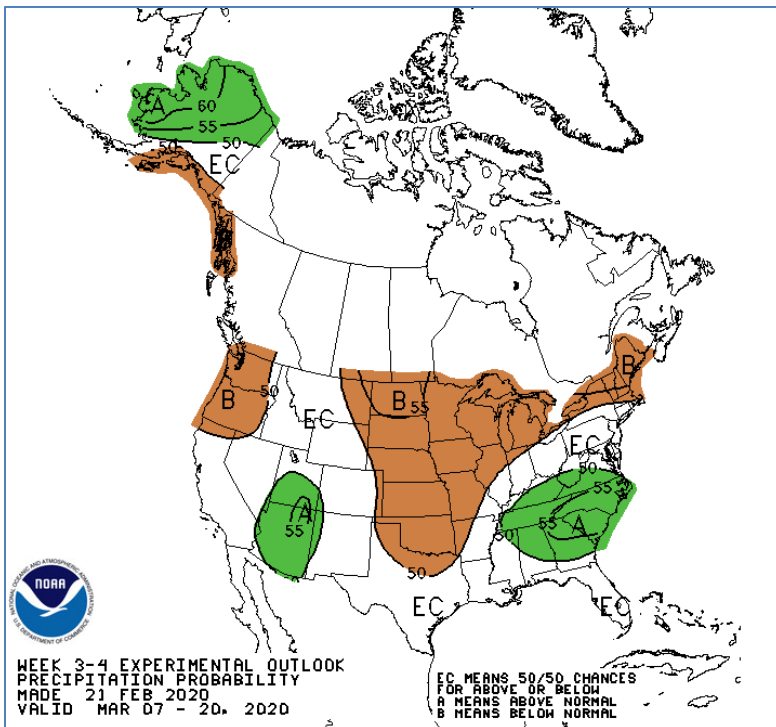


CFSv2 March Outlook (updated Feb. 21, 2020)



Sources:

- https://www.cpc.ncep.noaa.gov/products/predictions/30day/off14_prpcp.gif
- <https://www.cpc.ncep.noaa.gov/products/people/mchen/CFSv2FCST/monthly/images/summaryCFSv2.NaPrec.202003.gif>



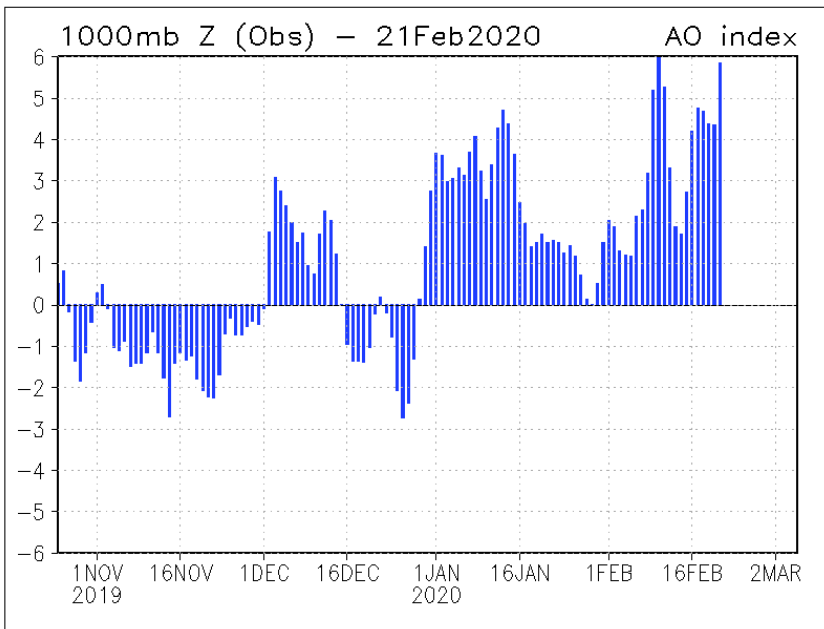
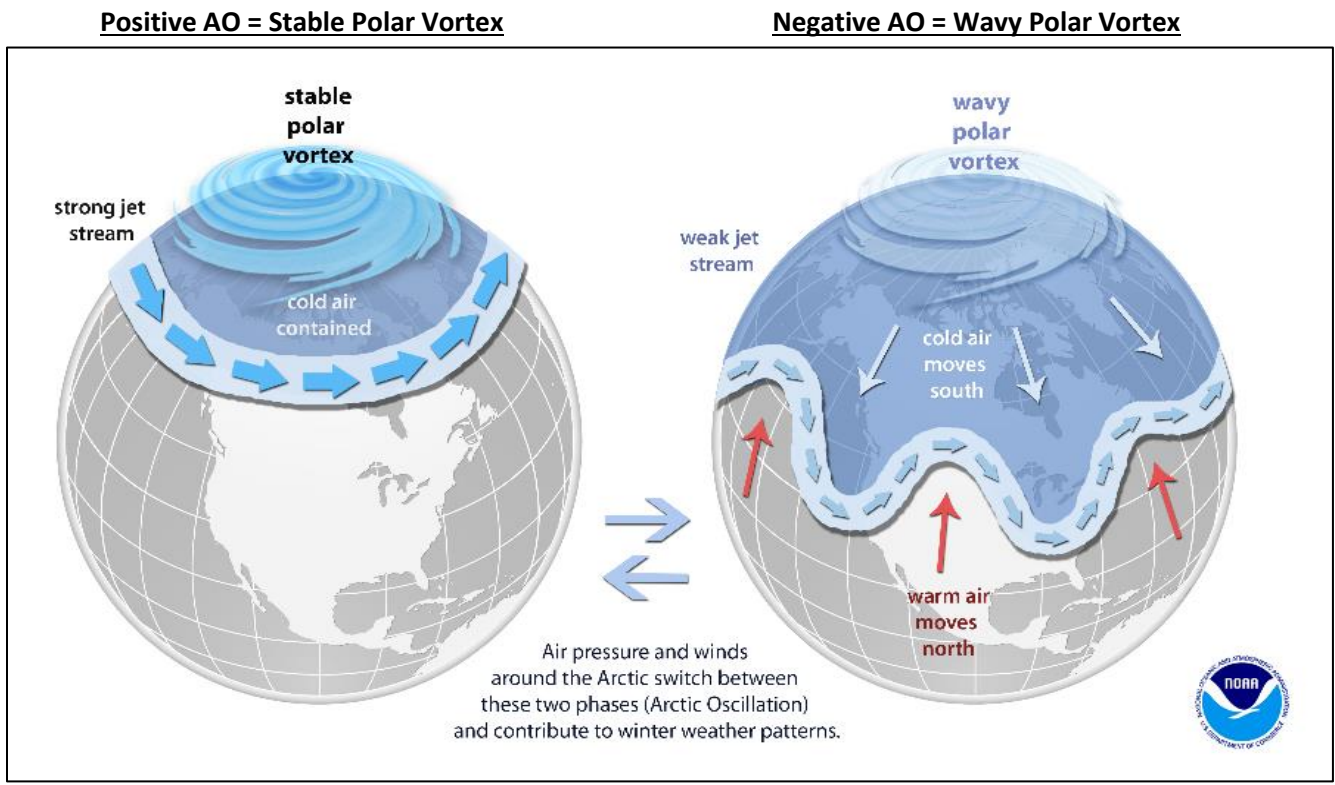
The outlook for March has been quite uncertain. The European ensembles continue to show some signs that the first week or two of March may bring us some wetter weather. But the outlook for the entire month still is looking dry in both the European, CFSv2 and GEFS models – hence the CPC has put CA in a slight chance of below normal for the month.

The CPC week 3-4 (March 6-20) outlook shows no signal for the middle of March. Last week’s product did have a wet signal, but that was focused on early March, which still looks to have the best chance for precipitation.

Source:

- <https://www.cpc.ncep.noaa.gov/products/predictions/WK34/gifs/WK34prcp.gif>

Why is it so dry? One player may be the Positive Arctic Oscillation (AO)



One climate signal that can play a role in our weather patterns is the Arctic Oscillation (AO). For nearly 2 months the AO has been stuck in a strongly positive pattern, which generally results in a more northward track of the jet stream. While other variables can affect the jet stream and steer storms our way, the overall shift northward can leave CA and NV dry.

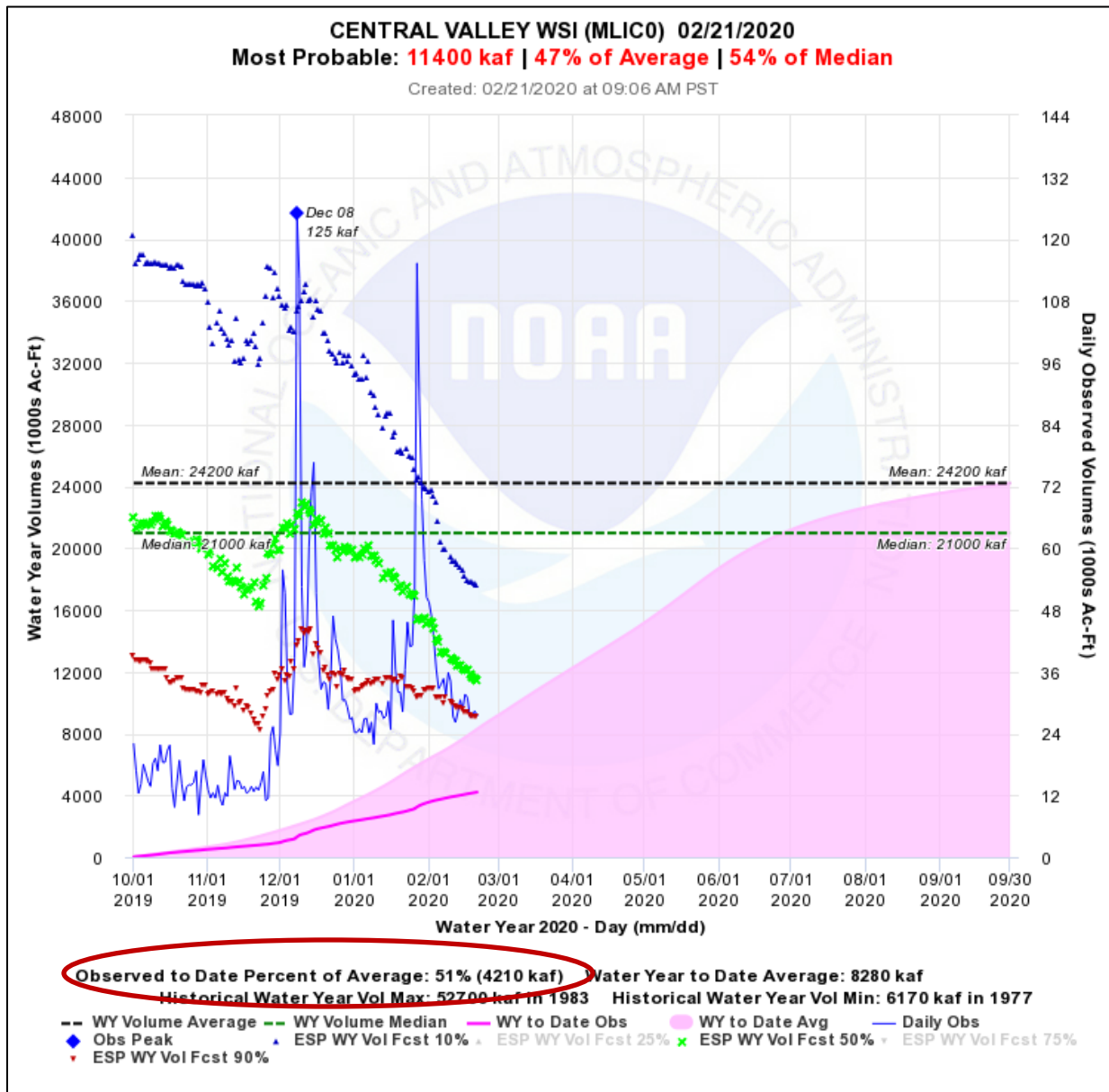
One researcher, Judah Cohen, who writes weekly on the AO (see [here](#)) has noted that this winter the AO has been at record high levels in the positive phase.

If you look back at historical analogs of very strong AO's, the two which Cohen points out are WY 1976 and WY 1990, both of which were very dry years. WY 1976 was the start of the memorable '76-'77 drought.

Source of graphic:
<https://www.cpc.ncep.noaa.gov/products/predictions/WK34/gifs/WK34prcp.gif>

Water Supply Impacts (HEFS = Hydrologic Ensemble Forecast Service)

Water Year Runoff Projection



Source: <https://www.cnrfc.noaa.gov/ensembleProduct.php?id=MLIC0&prodID=9>

CNRF water supply forecasts continue their freefall. With no precipitation in February and a much below normal January, two of our wettest months have been no shows. Over the last 6 weeks, the Central Valley projected runoff has fallen about 8 million acre-feet.

We are now two-thirds of the way through the water year (looking at the Northern Sierra Index). Reaching an average water year is almost out of the question. Even the Chiefs couldn't comeback from this big a deficit (sorry for the football analogy).

Conclusion:

With the recent dry weather, lots of sun and dry air, the snowpack (which looked so good in December) has been shrinking. We'll be getting new measurements next week to see how much we've lost. The dry weather has also been drying out soils that were wet a couple months ago. So any March precipitation will need to overcome lots of soil deficits to produce any runoff.

I hope everyone has their drought hats on by now!