



Some Long Range Forecasts

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Our forecast – Winter 2019-2020 – Flashback!

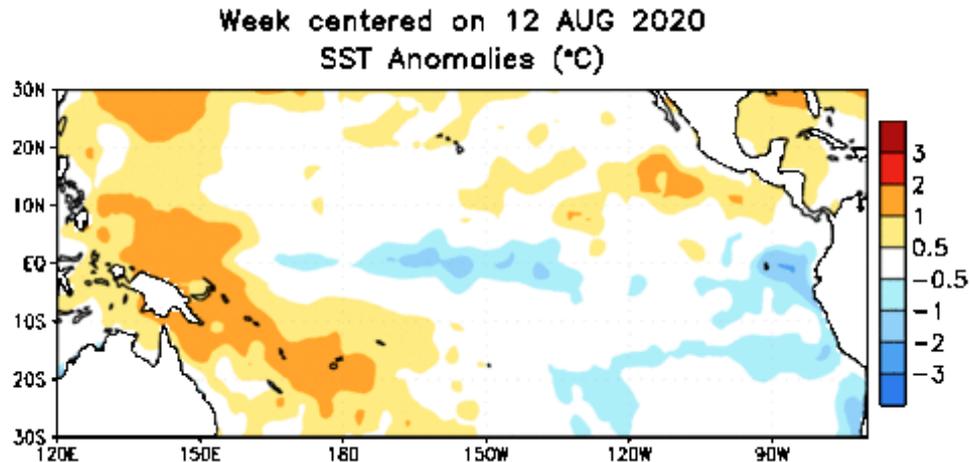
- ▶ We forecast similar to the previous year. Near normal temperatures (less than 0.5 sigma from normal), possibly warmer in December and January. Mixed news for heating bills.
- ▶ The reality: December and January were above normal, but so was February. That left us $+3.8^{\circ}\text{F}$ above normal, which is more than one standard deviation (3.5°F). We can't do anything but call it a bust. But CPC busted it as well.
- ▶ Normal to above normal amounts of precipitation (about 0.5 sigma), and about 15 inches of snow.
- ▶ The reality: 6.93 inches of rain ($+1.19$) and 18.1 inches of snow ($+3.1$ over prediction). We nailed the precipitation and snow! BOOM!

Our forecast – Winter 2019-2020 – Flashback!

- ▶ Reasoning: We are continuing with warm neutral conditions similar to last year's weak El Nino, could be classic, could be Modaki. If it goes toward Modaki – this would mean more blocking. We're fairly confident in this forecast (a four out of five where one is low and five is high).
- ▶ Reasoning: Another mixed result, a cold February would have made it a great forecast. While ENSO did it's thing as forecast, there was little to no blocking from Thanksgiving to mid-March. The winter flow was very zonal. A normal blocking year would have saved the forecast.

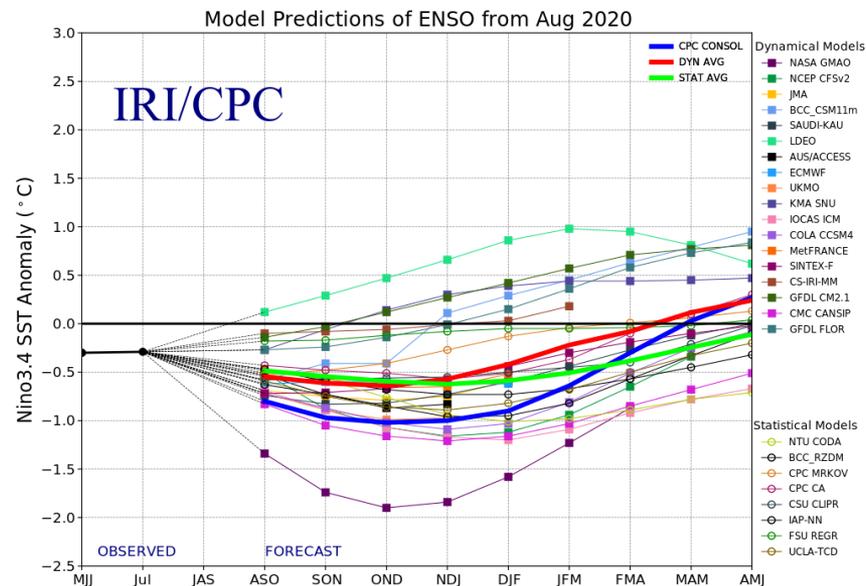
Winter 2020-2021 (mid-MO)

- ▶ Much cooler tropics than last year – headed toward La Niña. See the cool anomalies along the equator. <https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml>



Winter 2020 - 2021

- Models are consistent on projecting weak La Niña conditions. <https://iri.columbia.edu/our-expertise/climate/enso/>

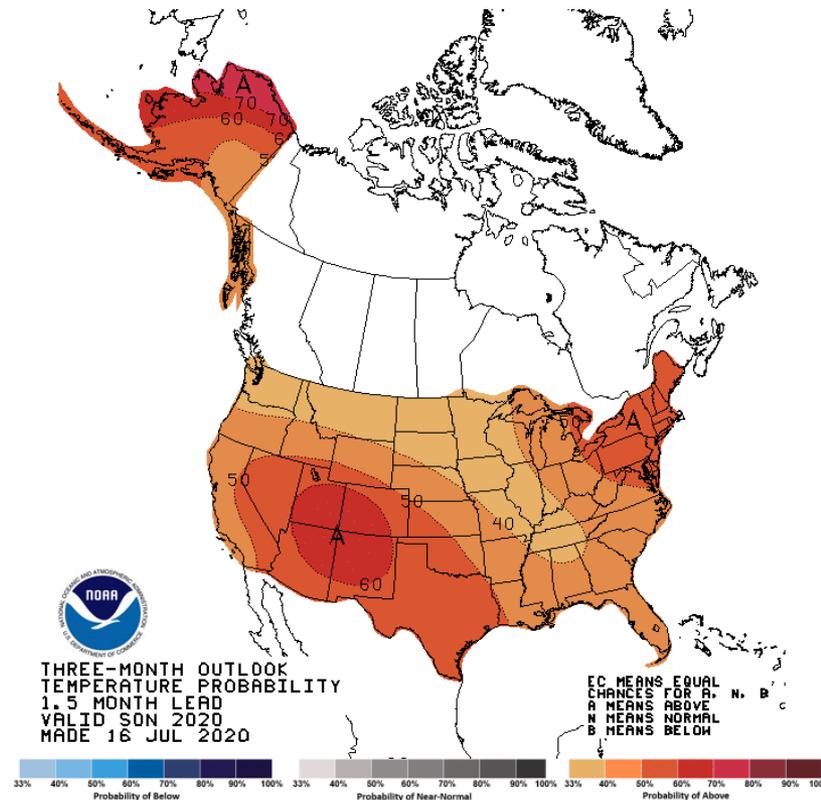


Summer 2020 (Mid MO)

- ▶ Our temperature forecast was good. We said about 0.5 sigma above normal (+1.1° F) for summer. We were at 1.2 F – 2 points baby!
- ▶ As for precipitation, we were close on this too. We are near normal (12.89 inches). We predicted within 0.5 sigma (+2.16 in.) of normal. (+0.64 inches) – 2 points!!
- ▶ Our forecast was based on the weakening El Niño and the transition to La Niña. This is all as of August 31st 2020. Another good forecast.

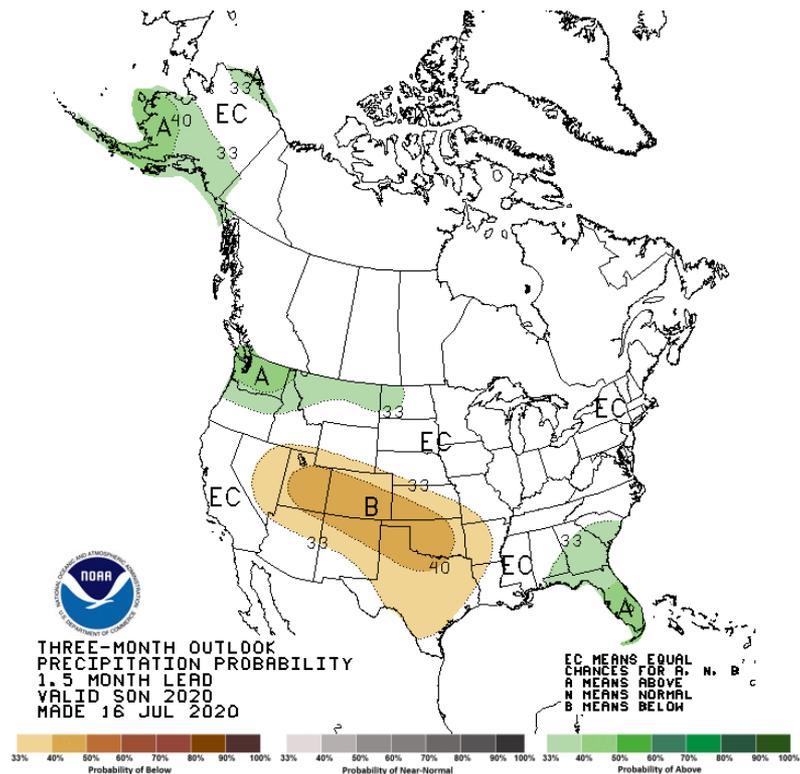
Fall 2020 – CPC Forecast

- ▶ Fall Temps – SON (above normal similar to last year – Endless Summer?)



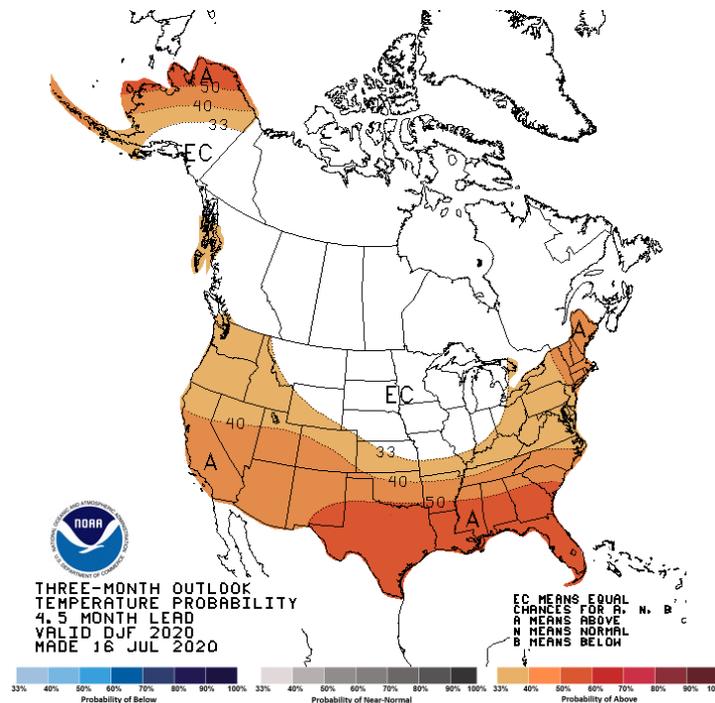
Fall 2020 – CPC Forecast

- ▶ Fall Precipitation: SON (dry – dry conditions exist to our west already)



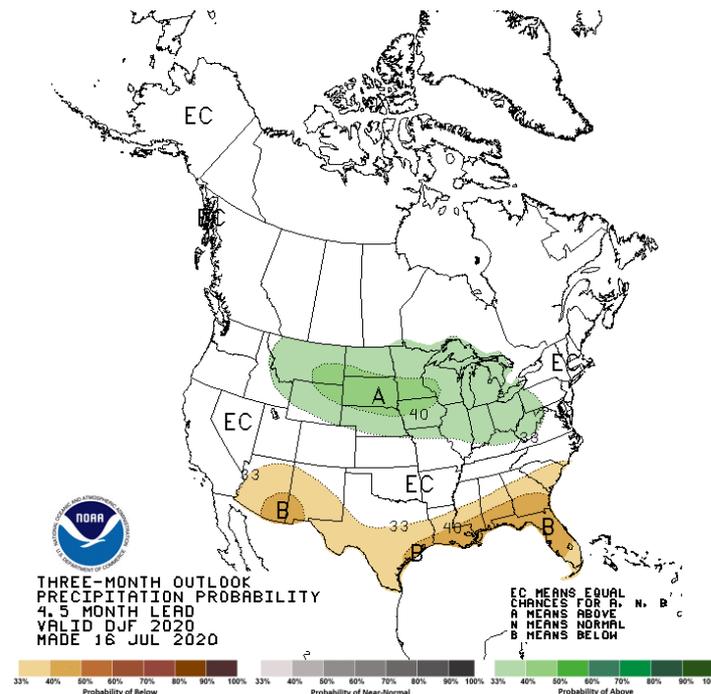
Winter 2020 – 2021 CPC forecast

- ▶ CPC Winter temps – DJF (near normal? This forecast is like the last two years – leaning toward a ‘Classic’ positive PNA / La Niña pattern dominant?)



Winter 2019 – 2020 CPC forecast

- ▶ CPC Winter Precipitation DJF (Maybe close to normal here? – A classic La Niña pattern) A little wet? Normal snow?

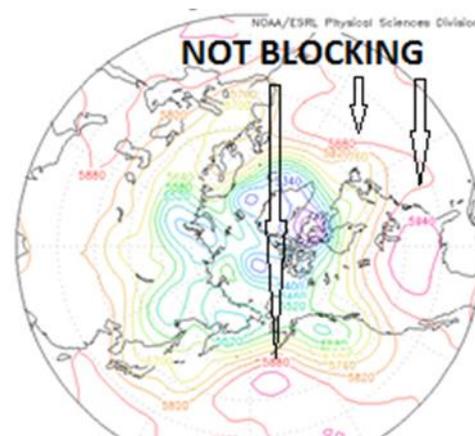
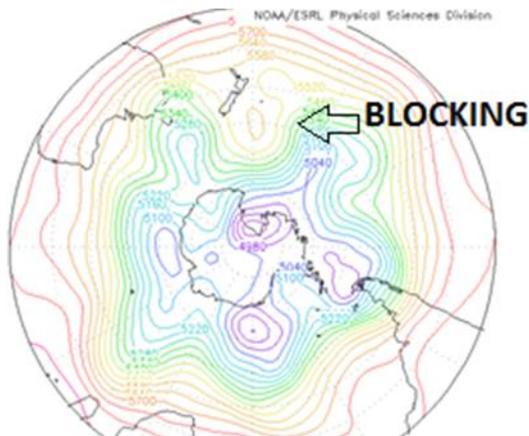


Winter 2020 - 2021

- ▶ CPC forecast is for a typical winter temperature-wise and precipitation-wise. They forecast equal chances of normal, above normal, and below normal.
- ▶ In the spring and summer, warm neutral conditions have been falling away to La Nina-like conditions. The possible analogs are 1998-1999, 2007 – 2008, 2010-2011, 2017-2018. Three of four of these are cold or normal and normal precipitation.

Our forecast – Winter 2020-2021

- ▶ What is atmospheric blocking? This semi-persistent ridging can impact our weather quite strongly. Here is some information from the leading expert on the topic:
- ▶ <http://www.globalweatherclimatecenter.com/advanced-meteorological-research-topics>



Our forecast – Winter 2020-2021

- ▶ Last year – there was a distinct lack of blocking as the flow was remarkably zonal (positive Arctic Oscillation – some of the highest since 1990) from Thanksgiving to mid-March. This was highly unusual for the Northern Hemisphere.
- ▶ Winter analogs on blocking to the four recent La Nina winters – features very strong Atlantic or Pacific Region blocking.
- ▶ Given these realities, I would expect at least blocking similar to these winters and a mainly negative AO this year.

Our forecast – Winter 2020-2021

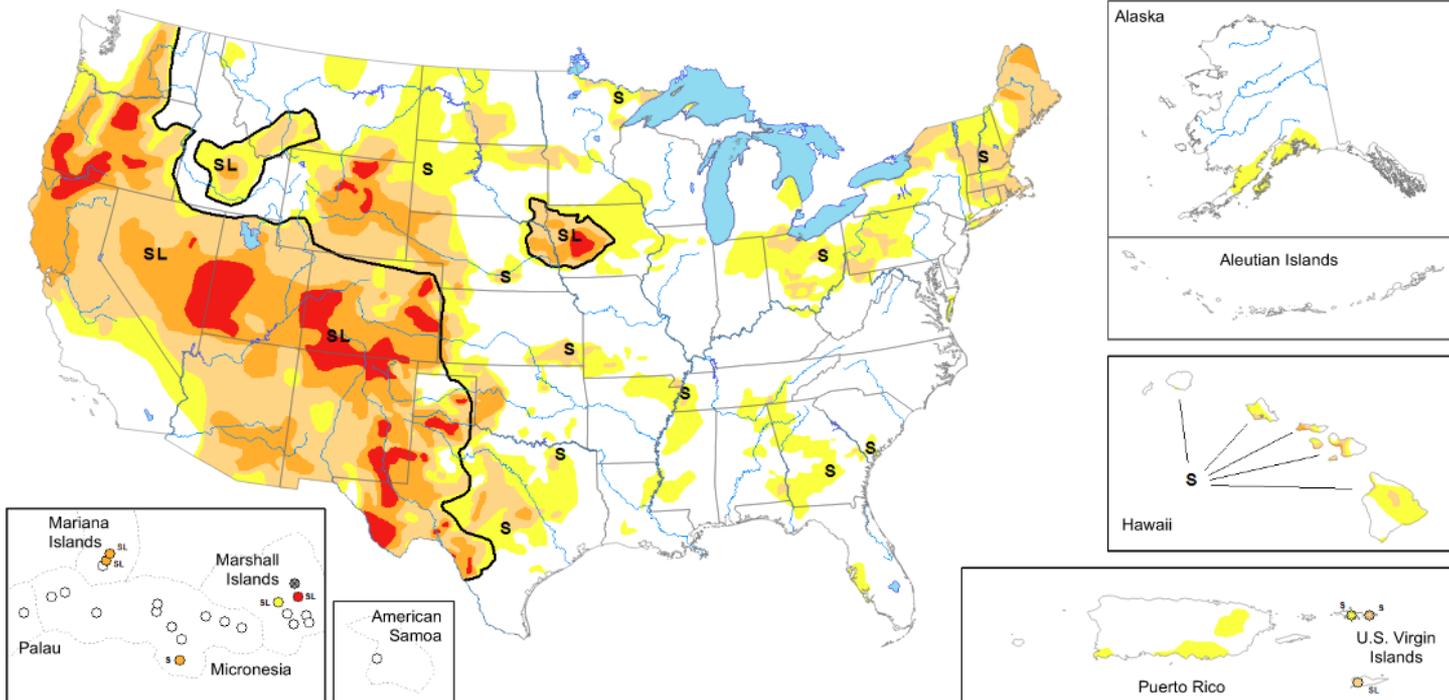
- ▶ Winter Temperatures: We'll forecast these to be 0.5 sigma below normal to maybe slightly above normal. (-1.5° F below to 0.5° F above)
- ▶ Precipitation: we're going to stay slightly on the wet side of normal, up to 0.5 sigma above normal. (from about -0.5 inches to +1.1 inches).
- ▶ In spite of cool conditions being the rule, these winters tend to have little snow, but some monster years. We'll say 15 inches of snow this year.

Our forecast – Winter 2020-2021

- ▶ Reasoning: We're headed into a La Niña year (albeit weak), and we are confident in this ENSO forecast. The forecast on the December – February period we are also confident (4 of 5 with 5 being highest). This year's jet stream will not repeat last year, and most years of this type feature strong blocking during the winter. We could see an early cold spell in November.

National drought map

Currently: MO is in good shape. As of 13 August, 2020 – summer was normal and continued no drought in MO. But very dry to the west.



CoCoRaHs

- ▶ Please consider joining CoCoRaHs. This data will be used by agencies to decide crop loss information. It's worth it to you to join Missouri CoCoRaHs. (State Climatologist Patrick Guinan)
- ▶ <http://www.cocorahs.org>
- ▶ Email: lupoa@missouri.edu

