SPOTTER NEWSLETTER

NWS PHOENIX SKYWARN NEWSLETTER

JANUARY-FEBRUARY 2023

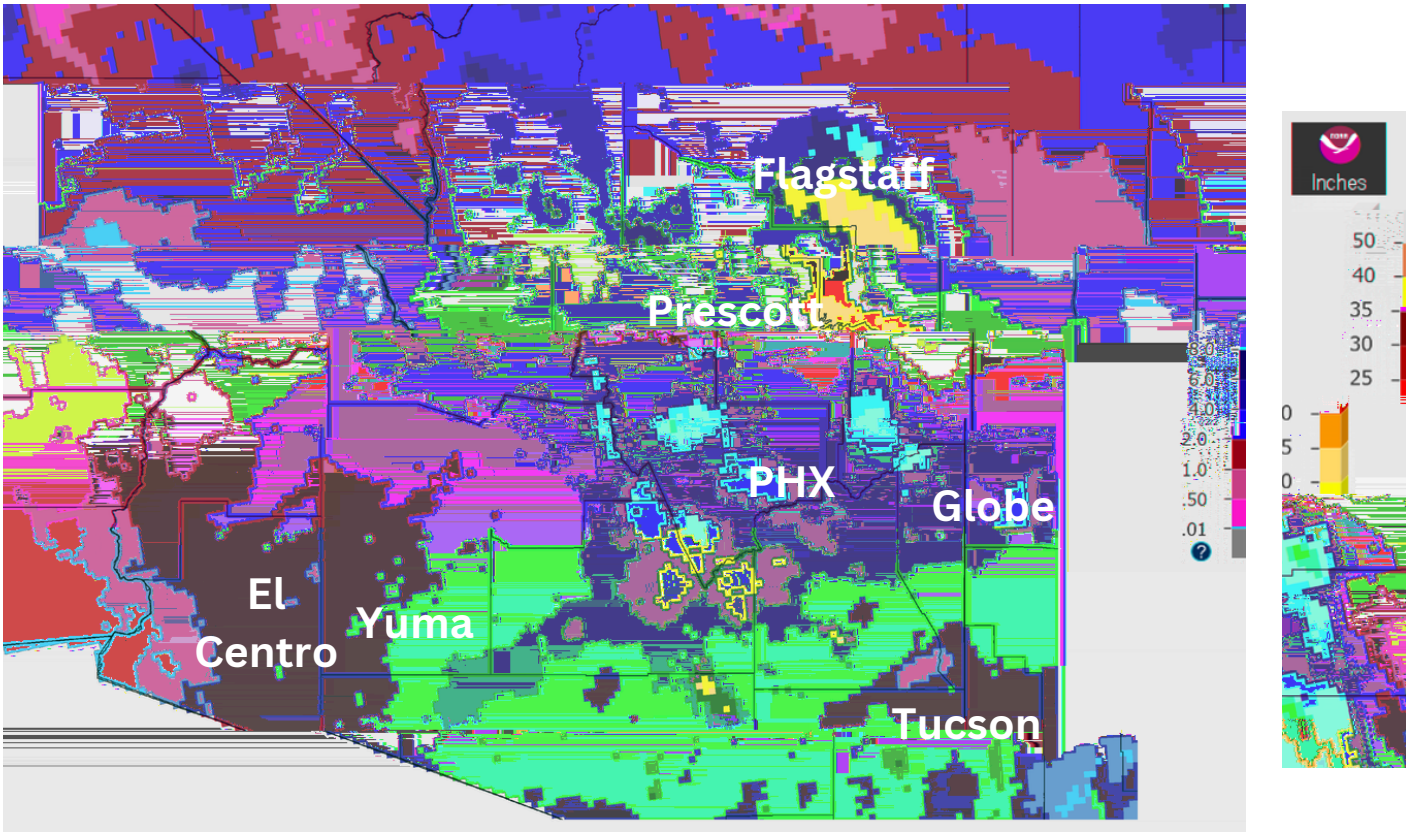
WHAT'S INSIDE

Winter/Drought Update

Unlike some recent Winters, this one has produced noteworthy precipitation episodes over much (though not all) of the region. For many, temperatures have seemed even colder than usual. Now that we are about two-thirds of the way through meteorological Winter (December through February), we'll take a closer look at the numbers and evaluate the impacts on drought status.

Winter/Drought Update - Continued

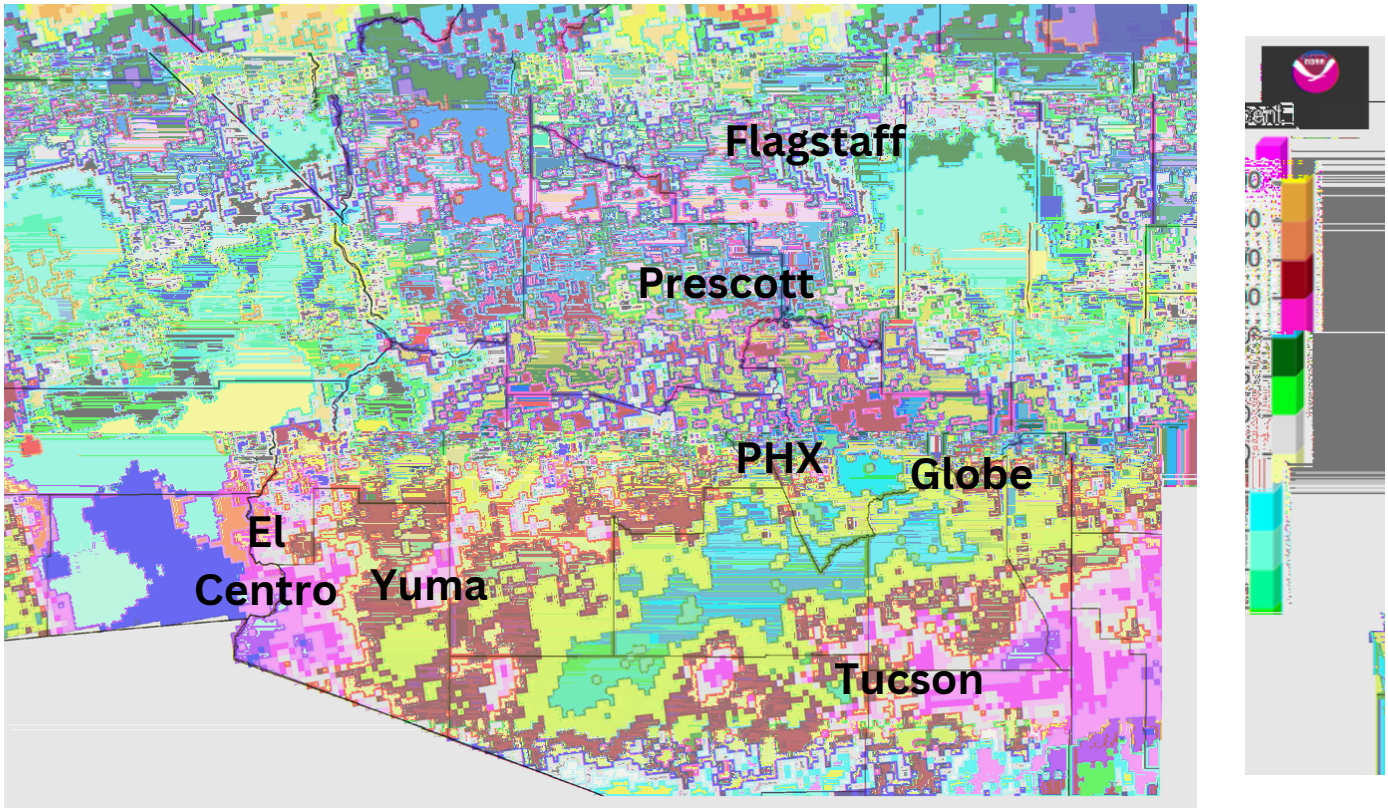
The parameter that is probably most significant this time of year is precipitation given it's effects on water supply, forest health, etc. The map below is for the 60 day period ending January 26th. It shows the total precipitation (liquid equivalent). Notice the bullseyes over Gila County and adjacent portions of Pinal County with 8+ inches (yellow/tan). Some spots are in the 10-15" range!



60 day precipitation (ending 1/26/23)

Winter/Drought Update - Continued

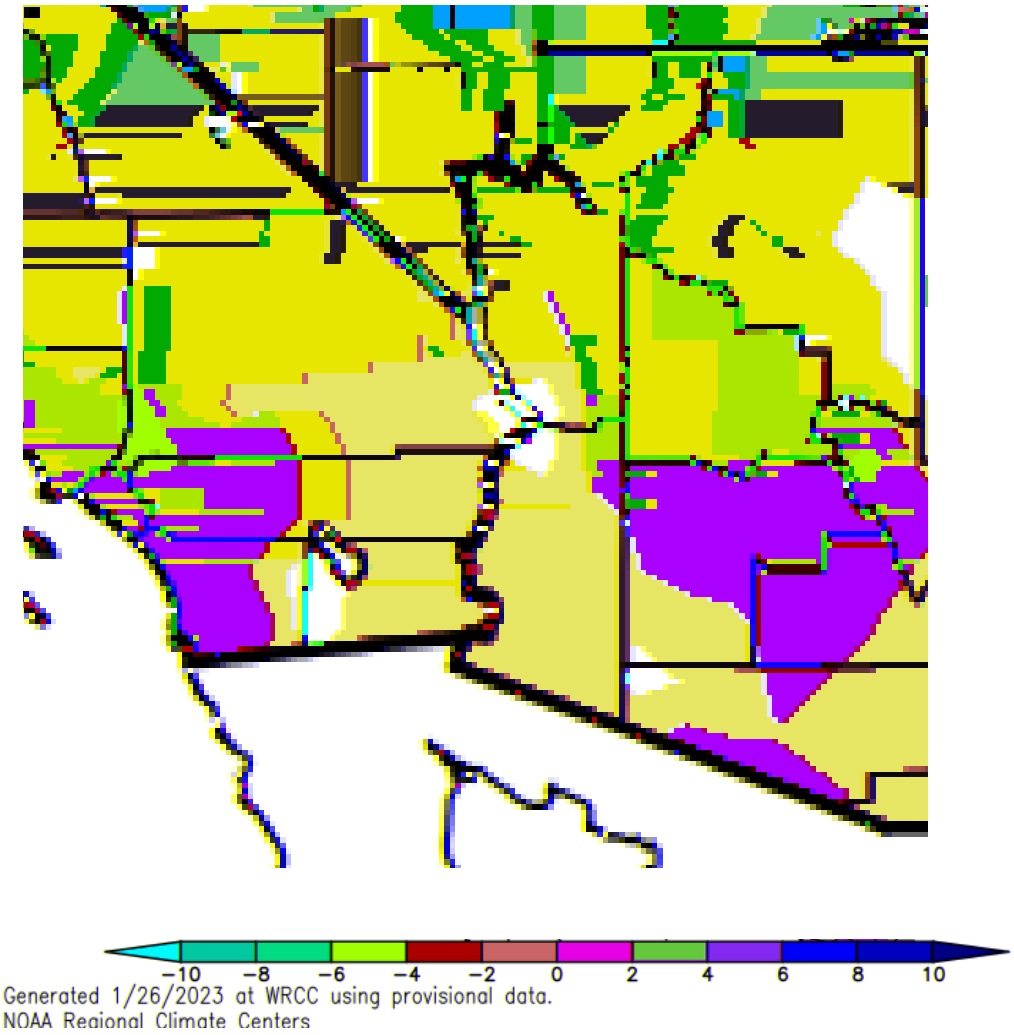
How do the totals seen on the previous page compare to normal for that same span of time? For large portions of Arizona, quite nicely! In fact, large portions of Gila and Pinal Counties were more than 150% of normal (light blue) and some areas more than 200% of normal (dark blue, purple). Unfortunately, the typically drier areas of southeast California and far southwest Arizona were even drier than normal (yellow, tan, red). Even some portions of Arizona were below normal as well including the Colorado Plateau and Coconino Plateau.



60 day precipitation percent of normal
(ending 1/26/23)

Winter/Drought Update - Continued

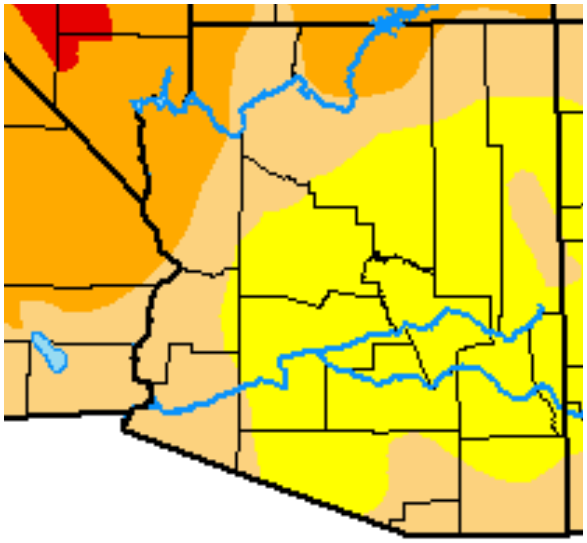
If you thought we've been colder than usual for this time of year, you're right! The map below shows the departure from average for high temperatures over a 60 day period ending 1/26/23. In addition to having cloudiness, a good portion of this can be attributed to continental air from the north pushing through the region.



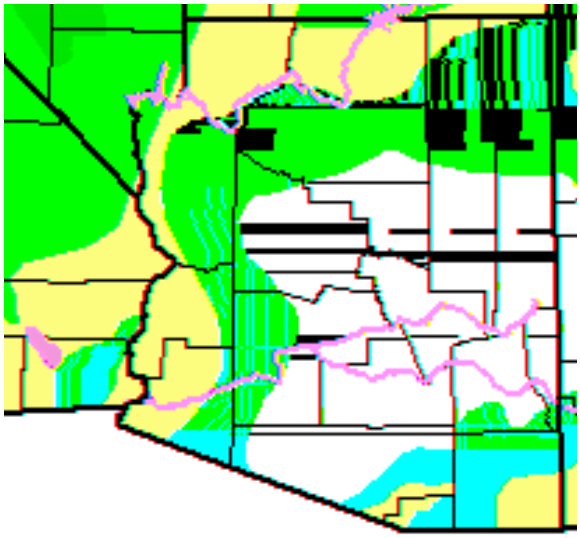
Winter/Drought Update - Continued

Last year's Monsoon lead to improvements region-wide in drought. With the Winter precipitation, we've had even more improvement. The maps below show the drought status for two points in time enabling a comparison for the Winter so far. Nearly all of Arizona has had at least a one category improvement. A large swath is not even in the Abnormally Dry condition. Even some portions of the Mohave Desert have seen improvement but much of it remains in at least Moderate Drought. We have a video (link) that goes into more detail including reservoir status and a 3 month outlook.

November 29th



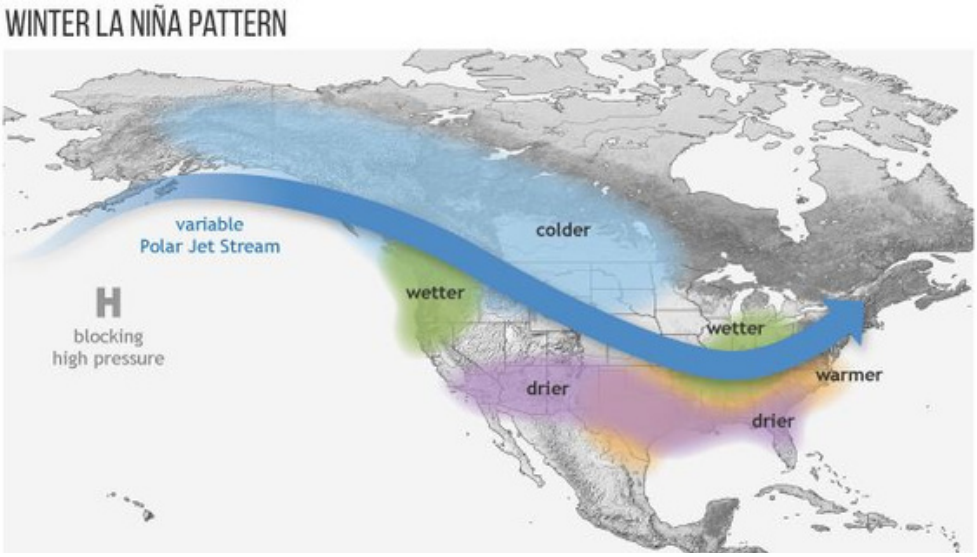
January 24th



What Happened to La Nina?

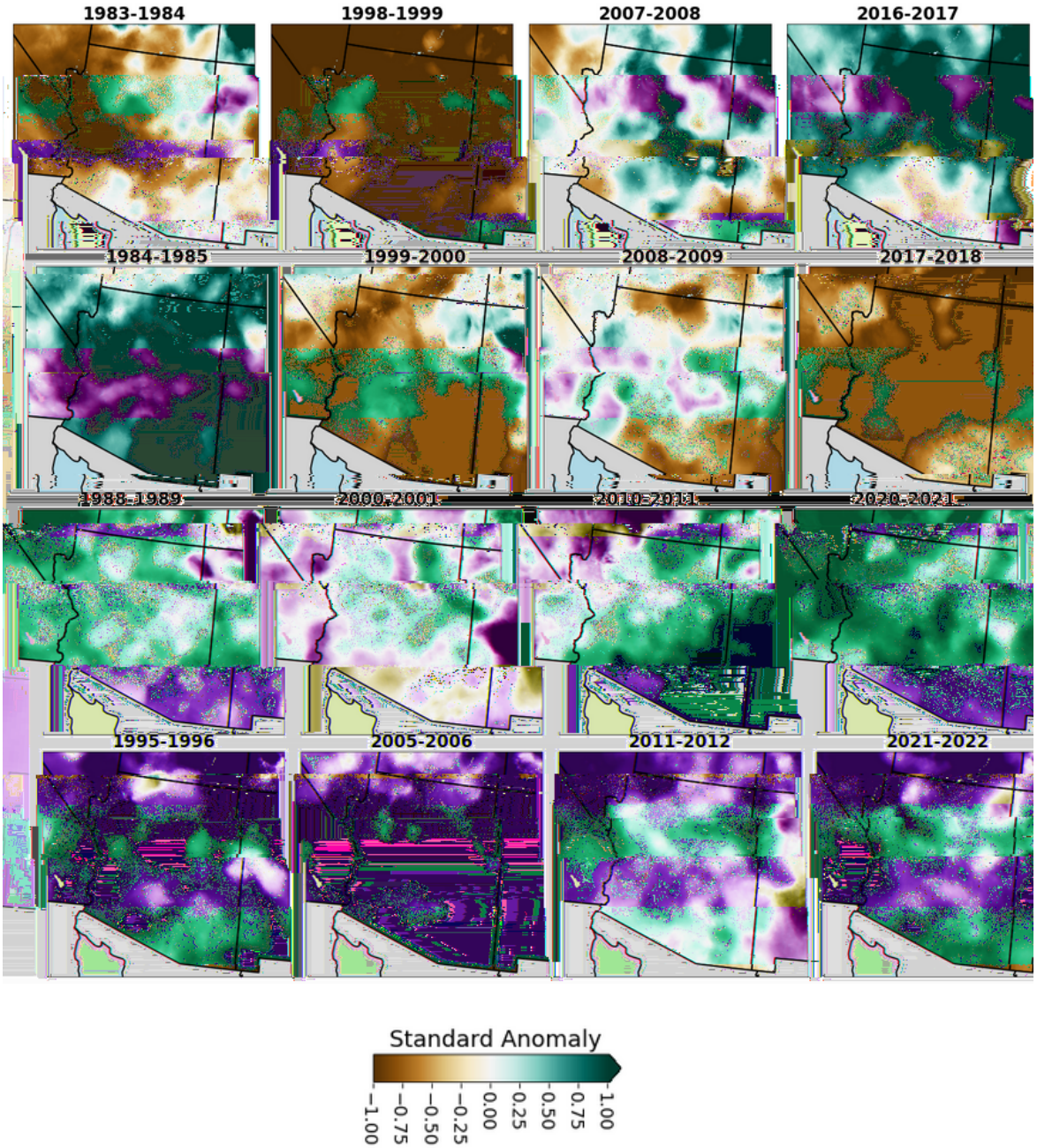
We tend to associate La Nina conditions during the Winter with "dry." In some areas that's been the case. But, for a lot of others it hasn't. For instance, PHX is already in the upper third compared to the 30 year period upon which the statistical normals are derived (1991-2020). As such, the rest of the Winter season (through February) could be dry and it would still place in the upper third.

To review, La Nina refers to the temperature of the surface waters in the Pacific (close to the Equator) being below average. Specifically, it is when the sea surface temperatures (SSTs) in the central tropical Pacific have been at least 0.5 degrees Celsius below average for five consecutive months or more. This often affects the thunderstorm patterns in a key area of the Pacific which in turn can influence jet stream patterns in mid-latitudes (learn more). But, the climate system is very complex and La Nina and El Nino don't explain all of the variability.



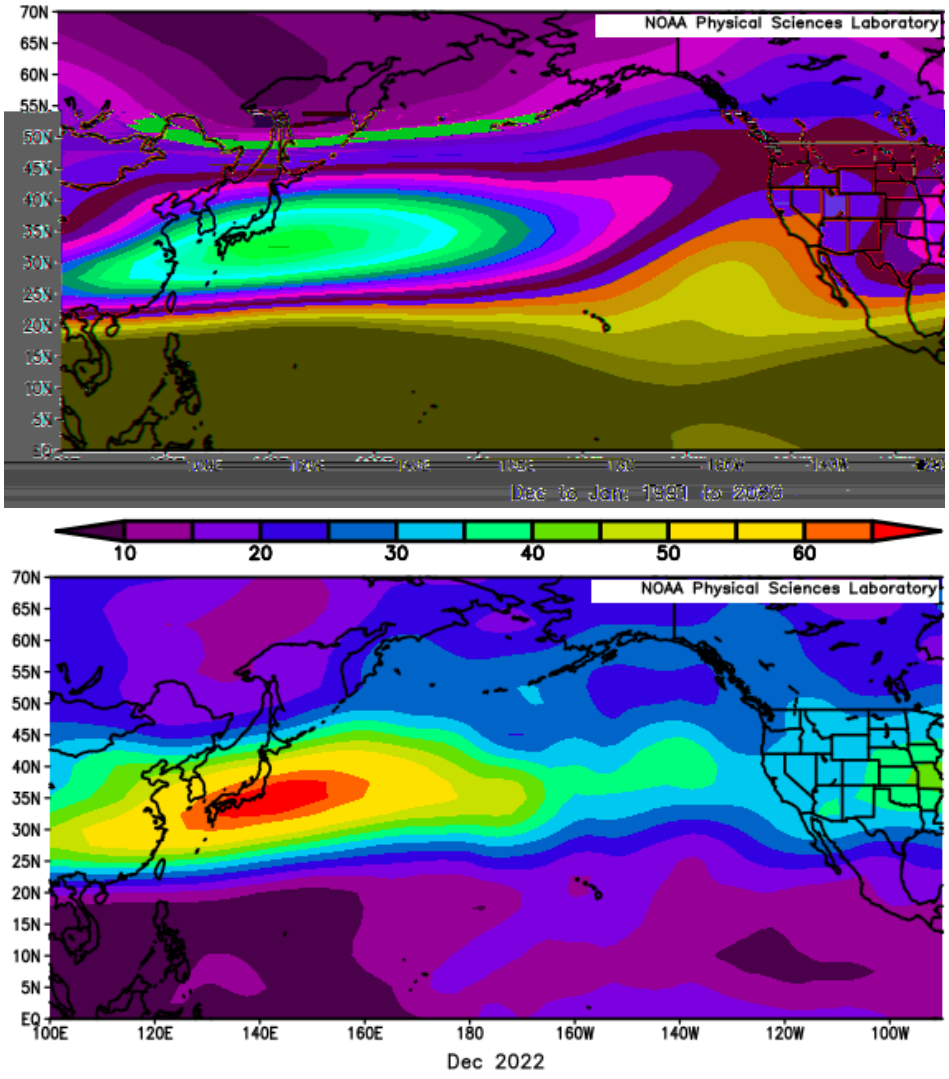
What Happened to La Nina? (cont.)

The thumbnail maps below show standardized anomalies (a way of assessing how unusual a situation is) for precipitation during previous La Nina Winters (Dec-Feb). Note how they are not all alike. While most episodes wind up on the drier side, sometimes you can get a wet Winter and other times it's closer to average.



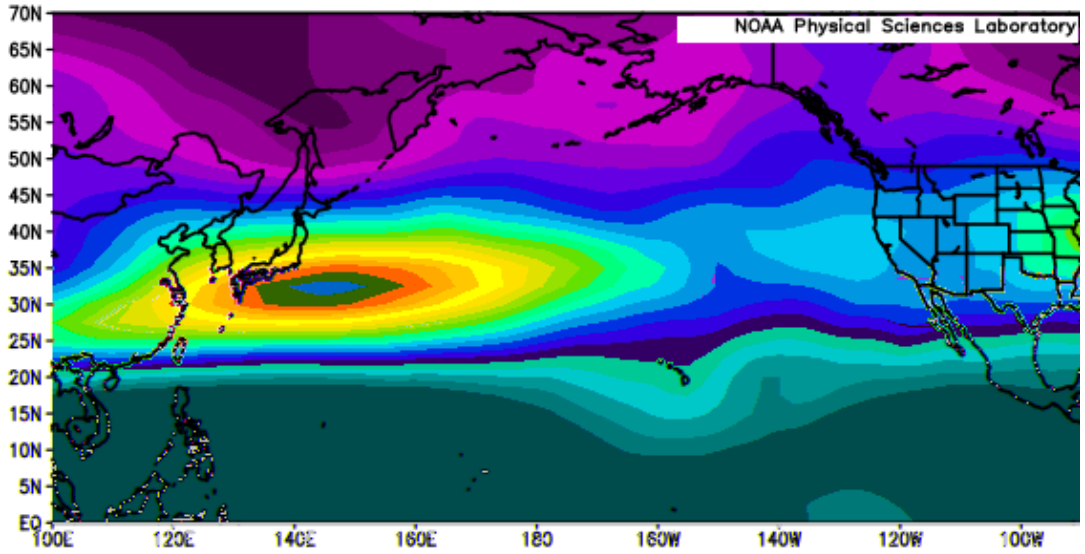
What Happened to La Nina? (cont.)

One factor that has been a persistent feature this Winter is a strong jet stream across the Pacific. Typically in the Winter there is a strong jet stream extending across portions of east Asia and the western Pacific known as the East Asia Jet (top image). This is due in large part to the sharp contrast between the bitter cold of Siberia and the vastly warmer tropical West Pacific. The bottom map shows the jet stream winds for December (latest available). Notice the extension of the stronger winds across the northeast Pacific. That was a main driver for the coastal atmospheric river events.

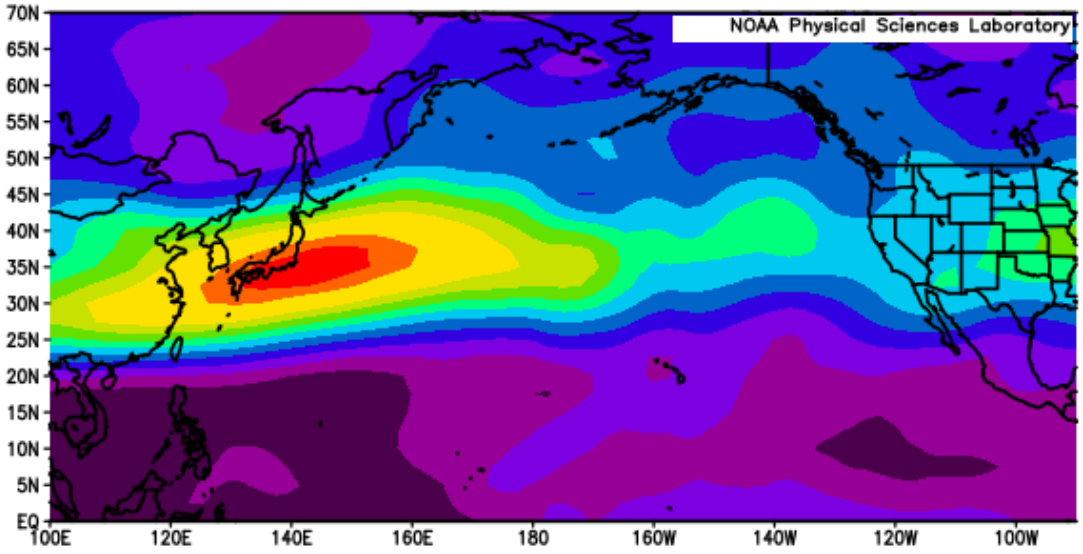


What Happened to La Nina? (cont.)

Referring back to the thumbnail maps of previous La Nina Winters, 2016-17 bears some loose resemblance to what we've had so far. Looking at the jet stream winds for that Winter (top), you see some similarities to this Winter (bottom) with an eastward extension of the East Asia Jet. But, it is unclear as to why the jet stream has been so strong over the northeast Pacific.



Dec to Feb: 2017



Dec 2022

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