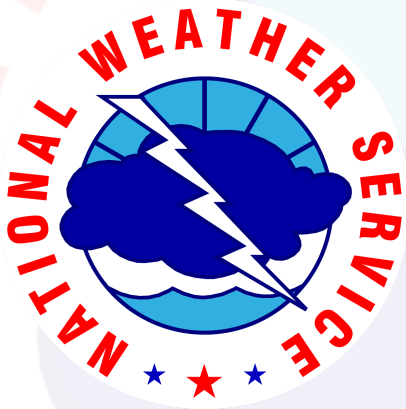


SPOTTER NEWSLETTER

NWS PHOENIX SKYWARN NEWSLETTER

DECEMBER 2024

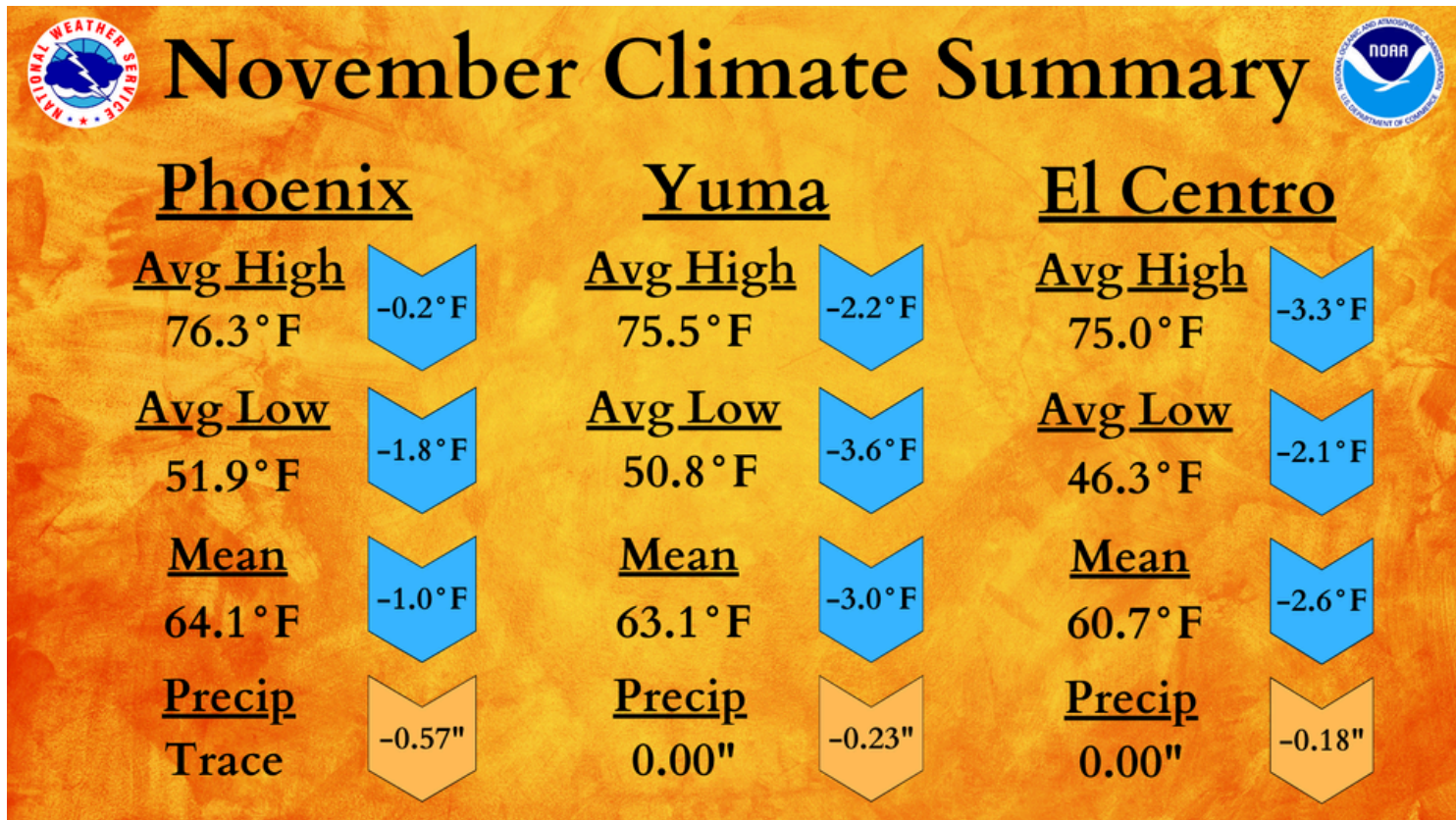


What's Inside

- November Numbers
- Drought Status
- Winter Outlook
- Probabilistic Forecasts
- Storm Report review
- Update your contact information

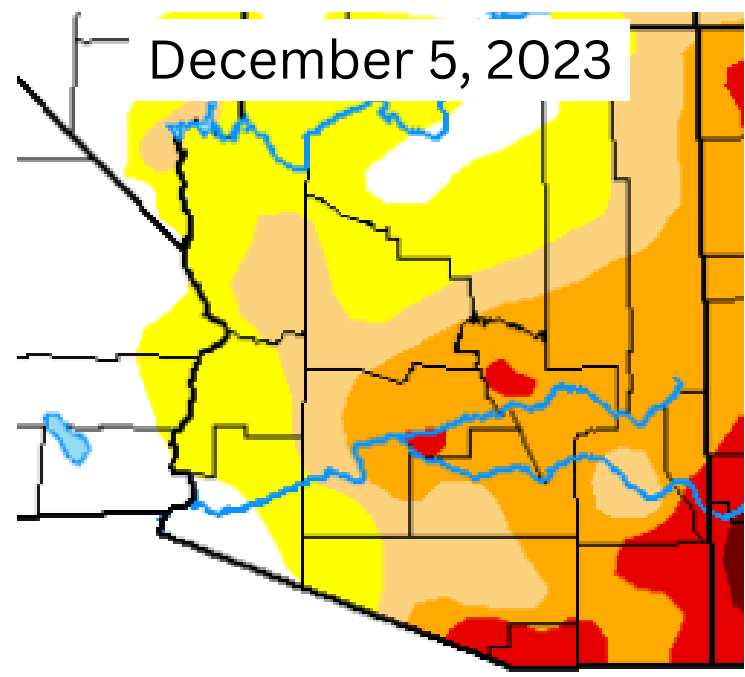
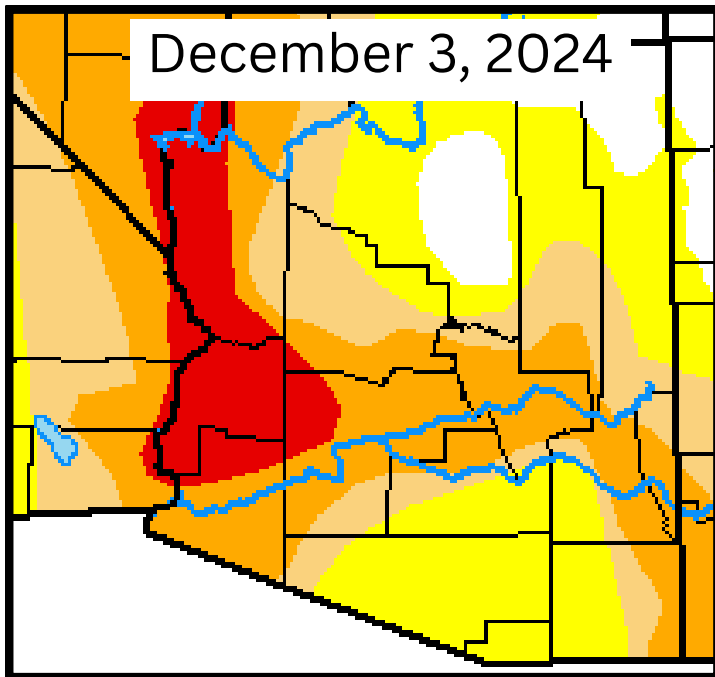
We finally cooled off during the latter half of October and largely kept that going through November. In this edition of the newsletter, we will have a brief review of November temperatures, examine the status of drought in the region, take a look at the long-range forecast for the winter, and touch on the topic of probabilistic forecasting.

NOVEMBER TEMPERATURES

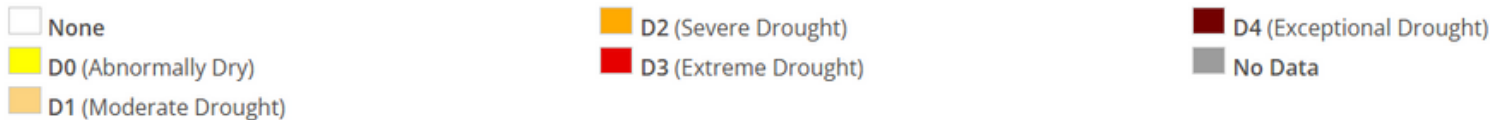


The numbers in the table show a theme of below normal temperatures. This was true for many places in the region - quite a change from what we had been experiencing for the previous several months. For many, this is quite welcome. Unfortunately, precipitation was also below normal. For the Greater Phoenix area, much of the south and east Valley was similar to Sky Harbor ("Phoenix" in the table). But, some areas of the central and north valley fared better with up to two tenths of an inch (still below normal). Isolated spots in the far northeast Valley saw over half an inch.

DROUGHT STATUS



Drought Classification



The maps above depict drought status at two points of time. The upper left is for December 3, 2024. The upper right is from a year prior (December 5, 2023). There are some distinct differences from a year ago. One area that stands out is southeast AZ where noticeable improvement is evident. Conversely, western AZ, southeast CA, and far southern NV have worsened substantially (by three categories in some cases).

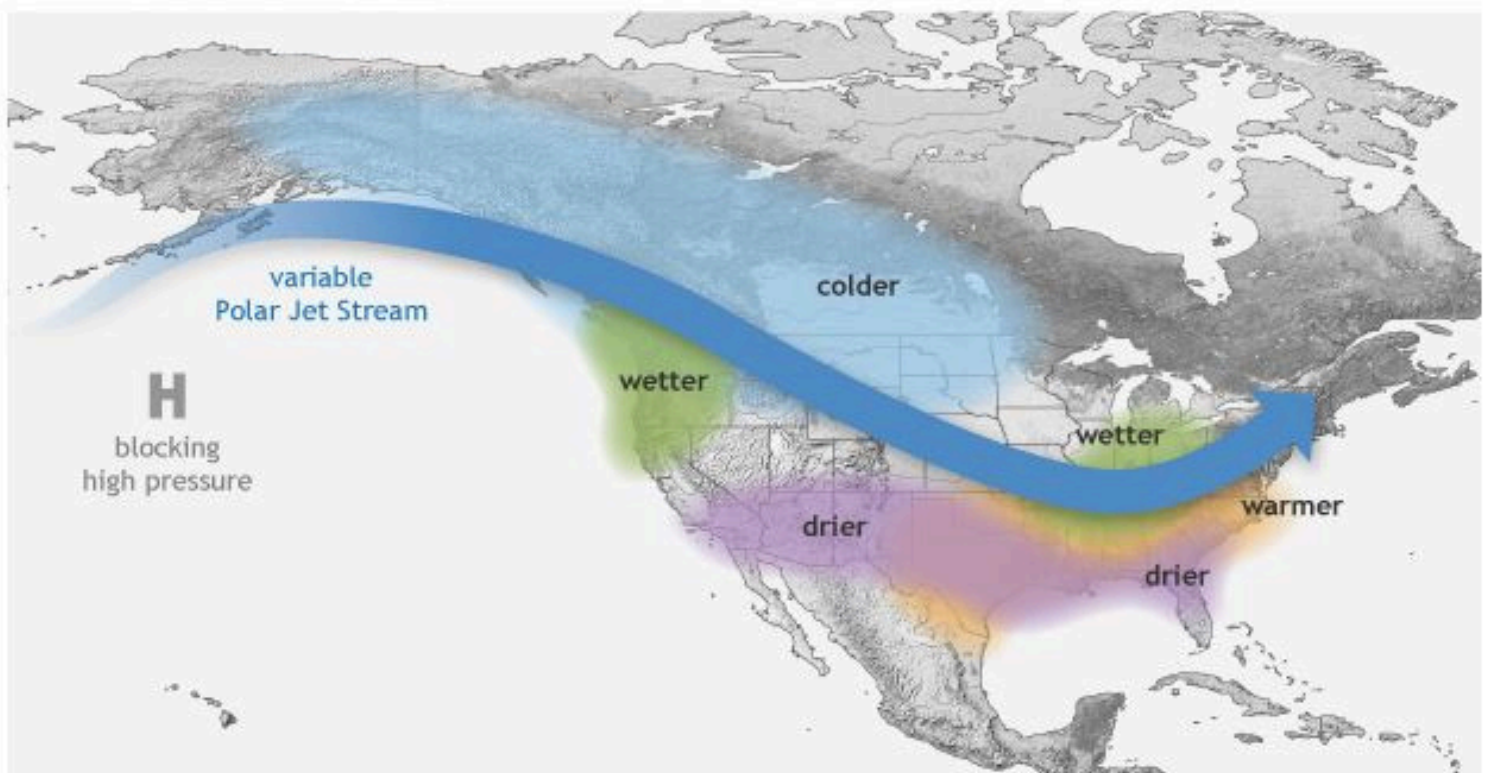
Some of that improvement (mainly for southeast AZ) is attributable to last winter with some help from Monsoon precipitation. Central AZ saw some wintertime improvement as well. Western areas of the map saw the biggest decline during the summer and fall. That time frame also wiped out the wintertime gains made over central AZ.

WINTER OUTLOOK - LA NINA

You may have heard that La Nina is expected to be present this winter. Let's review the basics of what La Nina is and some of the broad scale patterns that tend to be associated with it.

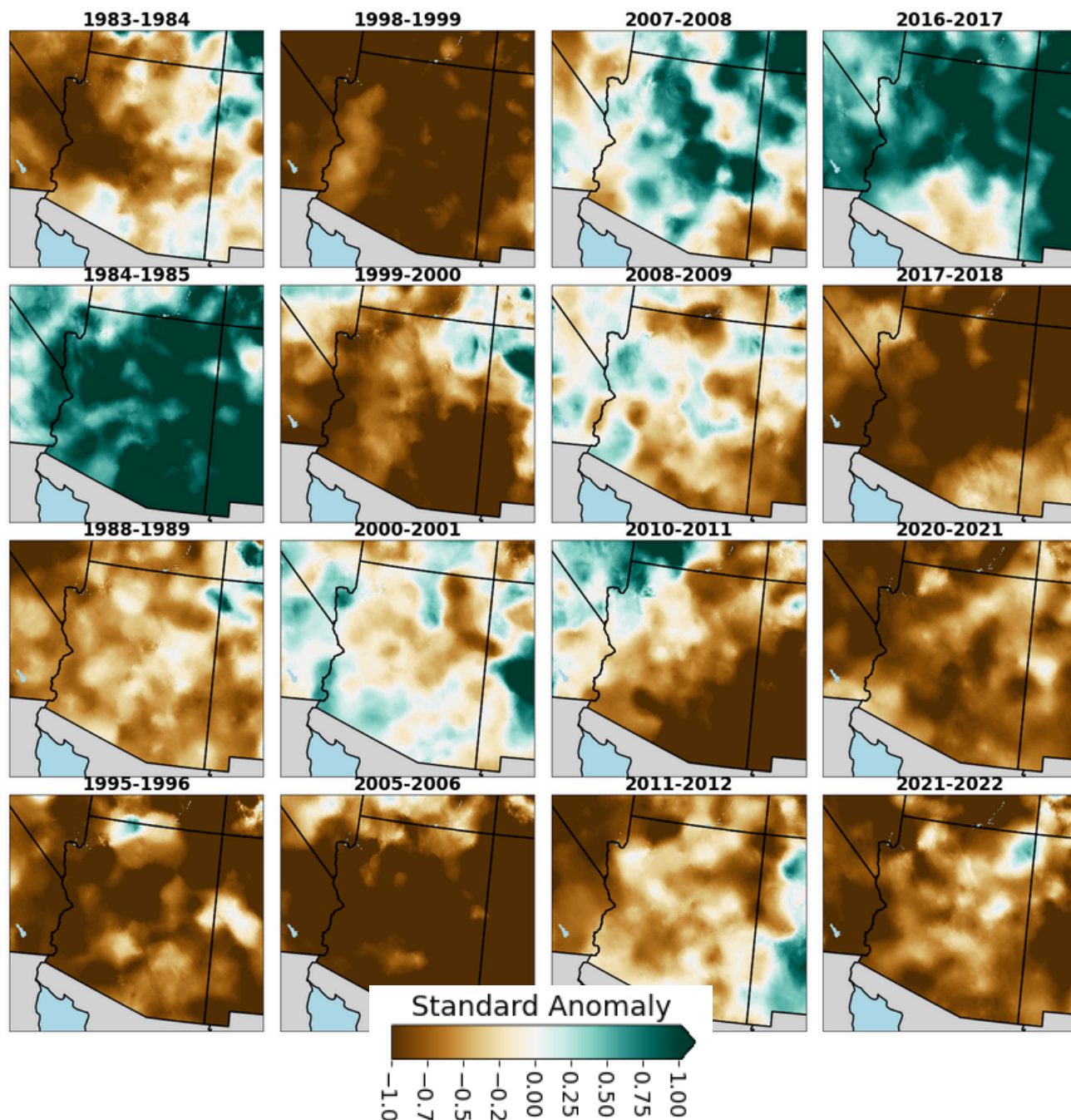
La Nina refers to the temperature of the surface waters in the Pacific (close to the Equator) being below average. Specifically, it is when the sea surface temperatures (SSTs) in the central tropical Pacific have been at least 0.5 degrees Celsius below average for five consecutive months or more. This 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.

WINTER LA NIÑA PATTERN



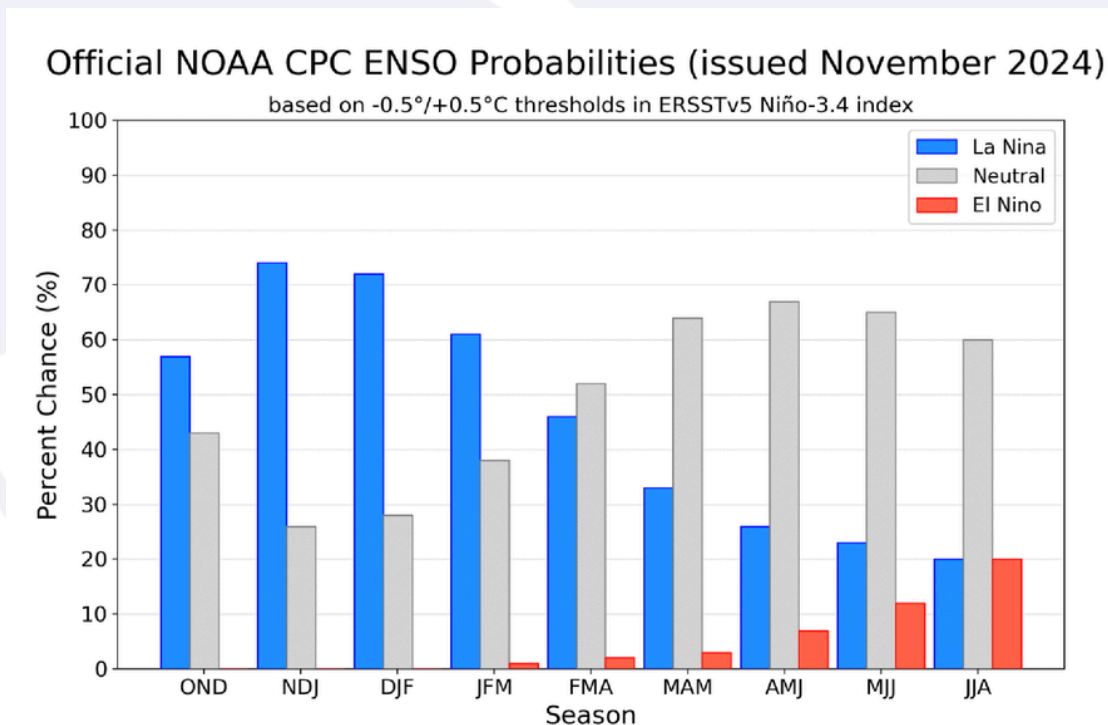
WINTER OUTLOOK - LA NINA (CONT.)

We often associate dry winters with La Nina. The thumbnail maps below support this idea. They show standardized anomalies (a way of assessing how unusual a situation is) for precipitation during previous La Nina Winters (Dec-Feb). Notice all of the brown areas (negative anomalies). However, they are not all alike. Sometimes you can get a wet outcome.



WINTER OUTLOOK - LA NINA (CONT.)

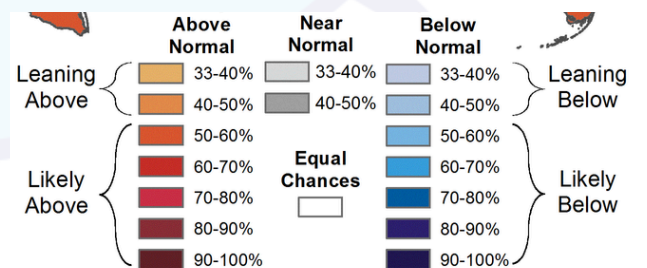
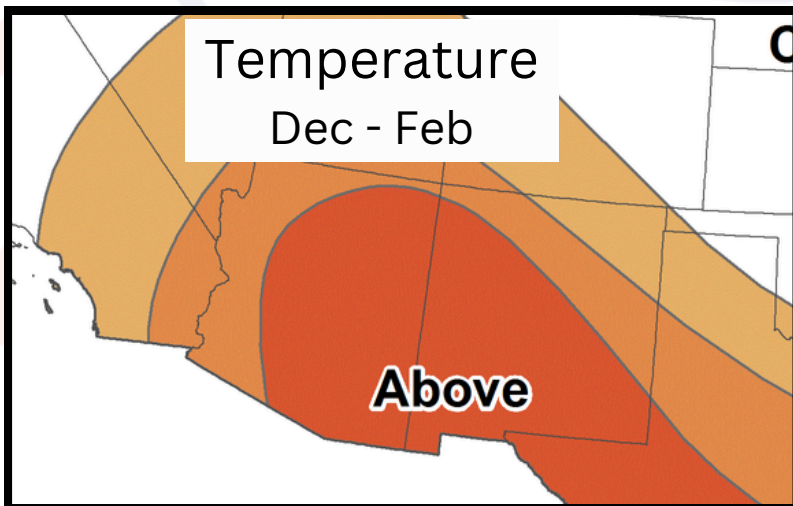
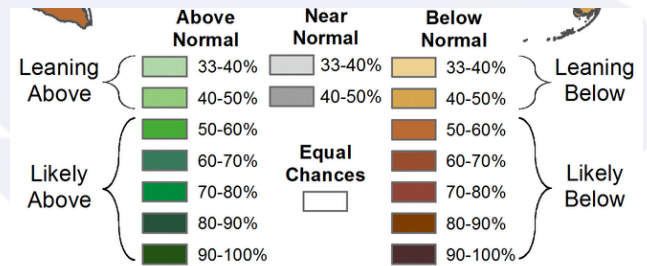
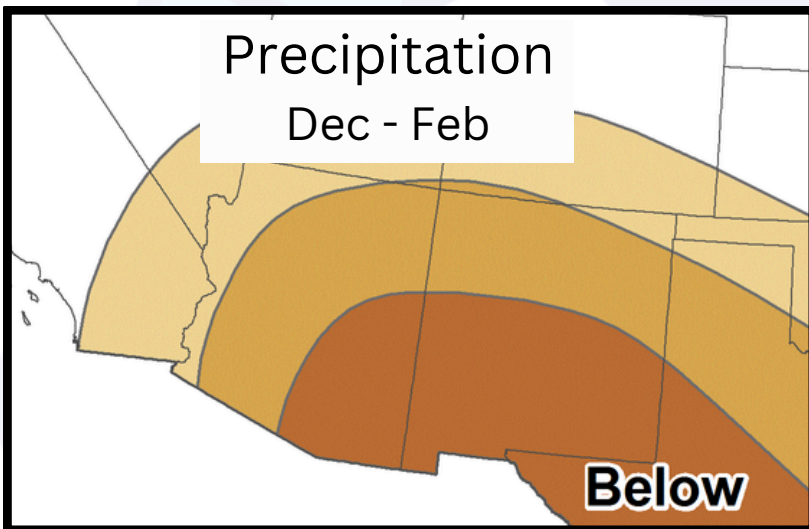
There is a forecast for La Nina which in turn influences the forecast for a given season with winter typically seeing the most noticeable effects of La Nina. So, what is the La Nina forecast? As of early December, there is a La Nina Watch in effect. That is because there is better than a 50% chance (57%) of La Nina developing before the end of this month. The probabilities increase after that and it is expected to persist through the January-March 2025 period. The bar graph below shows the probability of occurrence for La Nina, El Nino, and Neutral conditions for three month periods into next summer. Learn more [here](#).



You can see that La Nina is the most likely of the three categories over the next few months. But, that changes quickly during the spring. Of note, the anticipated strength of La Nina (not shown) is most likely to be weak.

WINTER OUTLOOK - PRECIPITATION

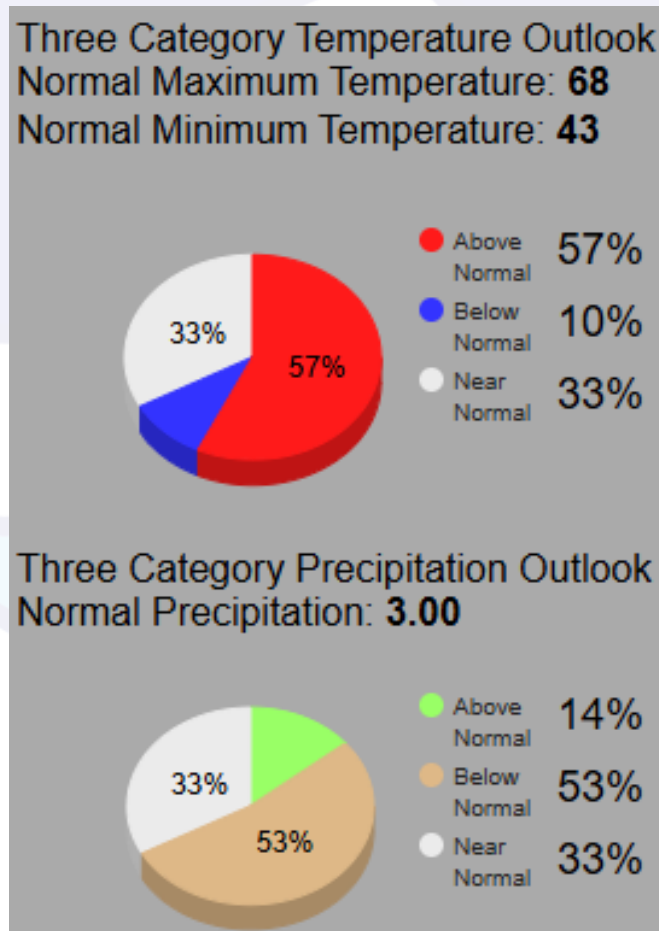
The map below is for precipitation covering the three month period of December through February when taken as one lump sum. It shows the most likely of three categories (and the associated probability of occurrence): Above Normal, Below Normal, and Near Normal. If none of the categories are more likely than another, then it's "Equal Chances" and isn't shaded on the map. That isn't the same thing as Near Normal being most likely. Instead, it is more of a 'shoulder shrug' since there aren't any distinct signals to latch onto.



WINTER OUTLOOK (CONT.)

The maps on the preceding page show Below Normal being the more likely outcome for the total precipitation during December through February. In a related fashion, the most likely outcome for the three month average temperature for that same time frame is Above Normal.

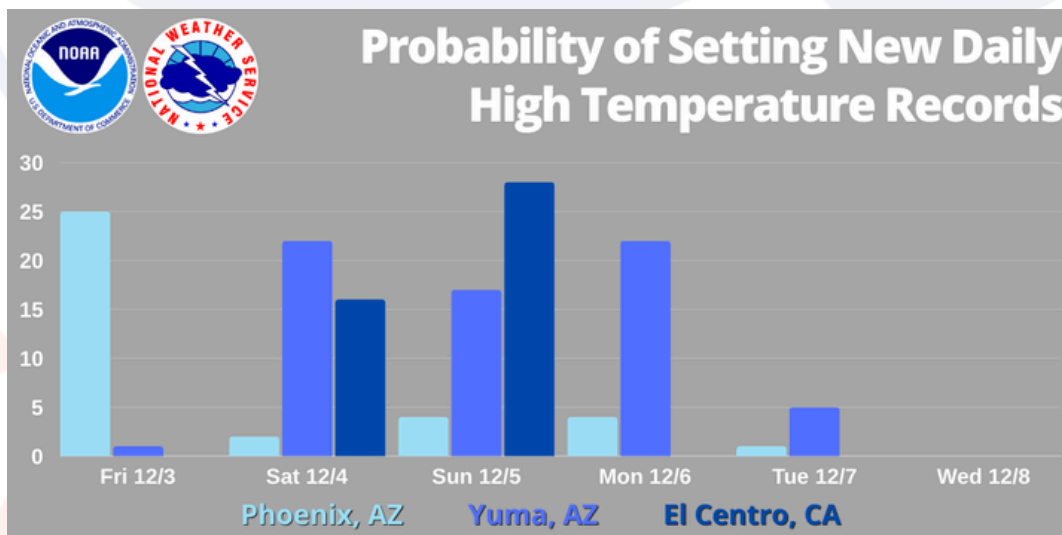
Below is what the forecast looks like for an individual location (Phoenix). By means of a pie chart, you can see what the probability of each category/outcome is. Looking at precipitation (bottom), you can see Below Normal is substantially more likely to occur than Above Normal. But, there is still a relatively decent chance of Near Normal. For temperature (top), there is an even sharper contrast between Above Normal and Below Normal.



PROBABILISTIC FORECASTS

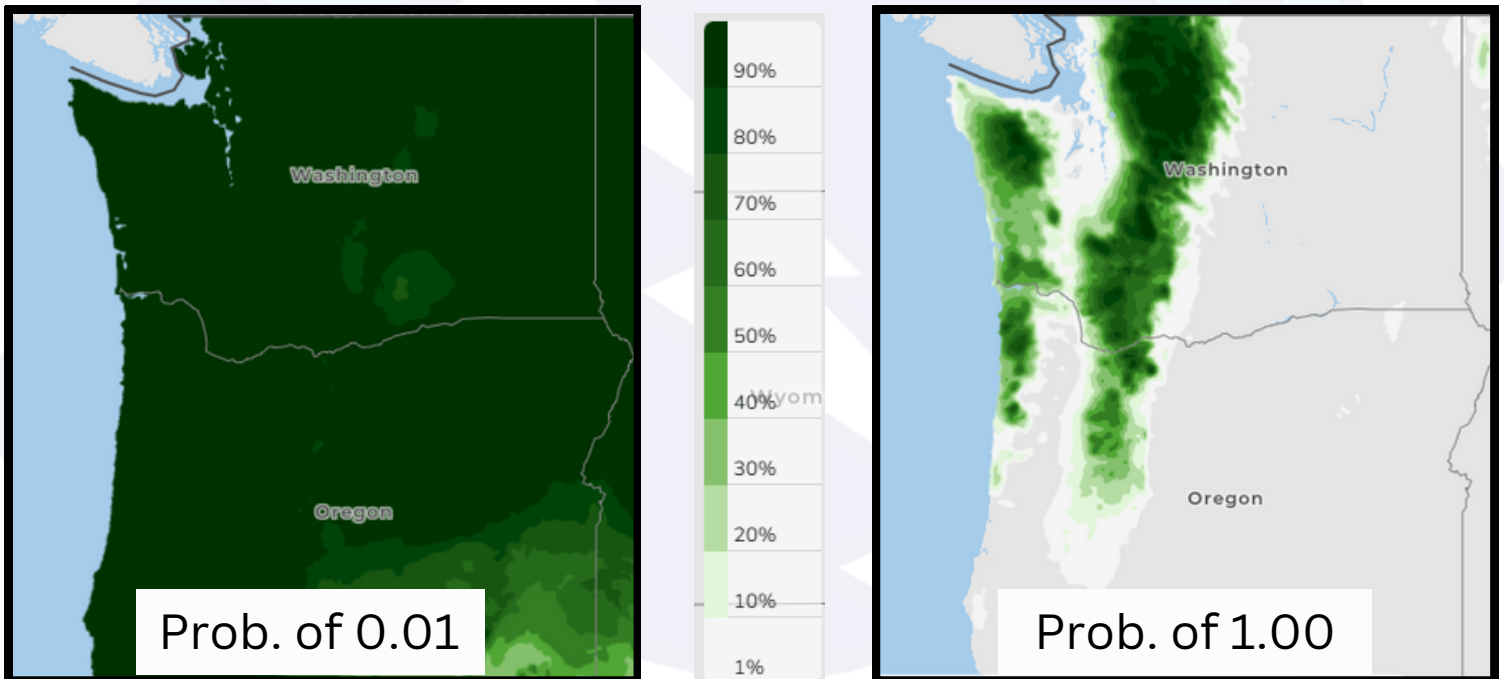
We've been talking about forecast probabilities with the seasonal forecasts because there are always a variety of possible outcomes when you are talking about the future. This is true not only for the long range forecast but also the familiar seven day forecast - even just the Day 1 forecast! These shorter term forecasts are conveying what is thought to be the most likely outcome. But with advances in research and computing capacity, we can explore the range of possible outcomes in a more robust way.

Depending upon the situation, we will try to use infographics on our home page and in social media to convey probabilities of reaching certain temperature thresholds (example below) or probabilities of reaching certain amounts of precipitation. At [this website](#), there are a series of short videos that explain the concept and how to use the information.



PROBABILISTIC FORECASTS (CONT.)

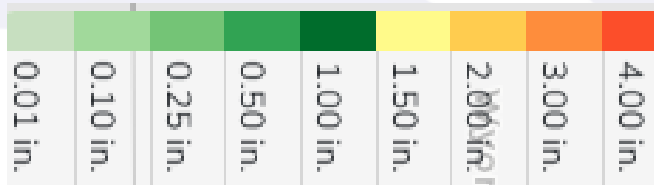
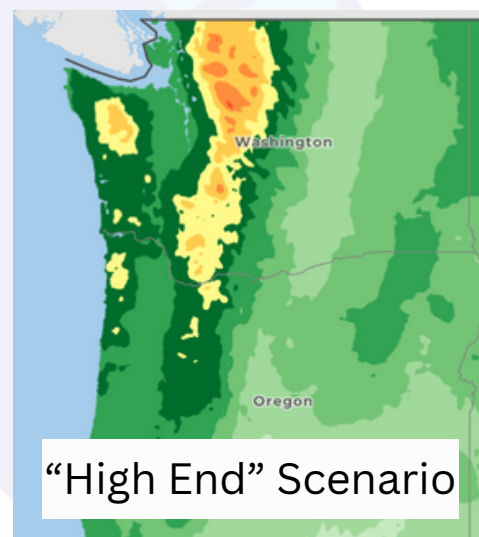
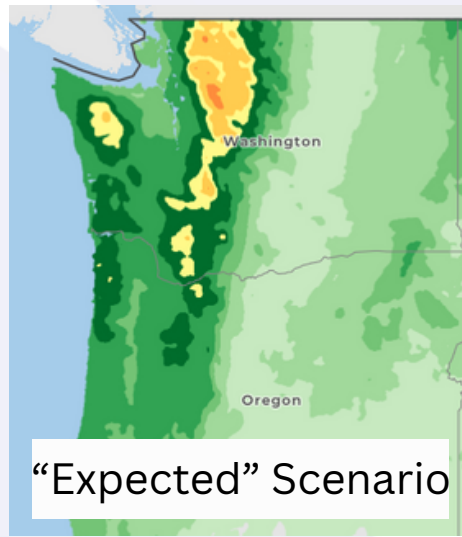
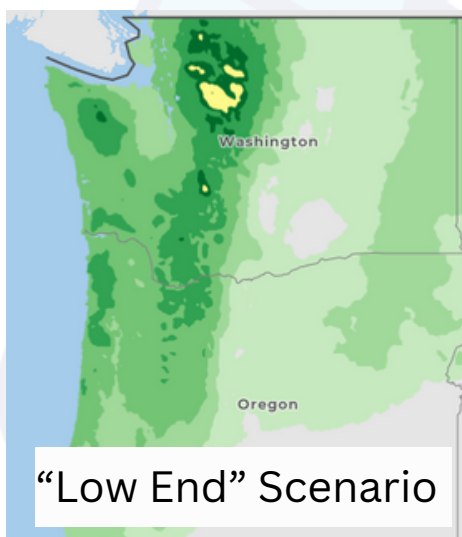
The NWS has a new webpage that enables you to delve deeper into probabilistic forecasts of precipitation at [this website](#). For example, what if you are interested in knowing the probabilities of different amounts of precipitation? The site will enable you to plot the probability of exceeding 0.01, 0.10, 0.25, 0.50, 1, 2, 3, 4, 6, 8, and 12 inches for a 24 hour period on a sliding time scale spanning the next 3 days.



The map above on the left shows the probability of getting at least 0.01 inches in 24 hours. The map on the right shows the probability of getting 1.00 inches for the same time frame. Not surprisingly, there is quite a drop-off in the probabilities for the larger amount. But, this helps quantify what that drop-off is. These are examples of what we call Probabilistic Quantitative Precipitation Forecast (QPF).

PROBABILISTIC FORECASTS (CONT.)

There are other aspects of Probabilistic QPF to explore. Using that same website for the same region and time frame, we can look at different scenarios including the most likely outcome (“Expected”), as well as “High End” and “Low End” possibilities; the latter two corresponding to the 90th percentile and 10th percentile respectively. For a 90th percentile outcome, there is only a 10% chance of it being exceeded. For a 10th percentile outcome, there is a 90% chance of it being exceeded.



With information like this, we try to answer questions like, ‘What’s the least we should get?’ or ‘What’s the most we should get?’ as well as ‘What is the most likely outcome?’ The ability to quantify various outcomes is a major step forward for the NWS to provide more robust information to support decision-making. Of note, some weather situations are more difficult to accurately represent the various probabilities. This is especially true when thunderstorms are involved.

SPOTTER REPORTS

Though a weather event may not bring much in the way of thunderstorms, it can still lead to other hazards. See below for a review of reporting criteria and methods.

Reporting Criteria:

- Tornado
- Funnel Cloud
- Storm Damage (broken tree limbs, shingles off roofs, etc.)
- Flooding (streets, running washes, etc.)
- Low Visibility
 - less than 1 mile due to dust, sand, fog, etc. (not rain though)
- Rotating Wall Cloud
- Heavy Rainfall
 - measured ½ inch or more accumulation in 30 min. or less
- Hail (diameter of largest stone - any size)
- Snow (accumulating or not)

Reporting Methods (for trained Spotters only):

- Web: <https://inws.ncep.noaa.gov/report/>
- Email: psr.spotters@noaa.gov
- Voice Hotline (unlisted - just for Spotters): 1-800-697-0655
- HAM Radio NET

Sector 2 - Maricopa and Pinal Counties: 443.050 MHz (PL 100.0)

Sector 6 - Southern Gila County: 147.200 MHz (PL 162.2)

Sector 7 - Yuma County: 146.780 MHz (PL 103.5)

Sector 8 - Imperial County: 146.670 MHz (PL 103.5)

Sector 9 - La Paz County and Blythe: 145.310 (PL 107.2) and 147.06 (PL 203.5)

STAYING CONNECTED

SOCIAL MEDIA

Be sure to stay up to date with the weather and our other programs by following us on social media.



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If your email, phone number, or address has changed since your last class, please click the link to help us keep that information up to date.

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FORGOT YOUR SPOTTER ID?

It happens to the best of us! Send Austin an email he will email you back with your information.

AUSTIN.JAMISON@NOAA.GOV

NO LONGER WANT TO BE A SPOTTER?

If you would no longer like to be one of our trained weather spotters, you can fill out this google form and we will remove you from our database of spotters.

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