2025 Monsoon Outlook

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Updated: Jun 6, 2025


La Joya, NM September 13, 2023 | Photo Courtesy X @chicano31


Lamy, NM August 11, 2011
Photo Courtesy Perry Paulazzo


Ruidoso, NM July 9, 2024
Photo Courtesy Jesus Figueroa


Near Red Lake, NM July 27, 2022
Photo Courtesy Red Lake Chapter Govt


Clines Corners, NM September 21, 2024
Photo Courtesy Stephen Joyi


Sandia Park, NM August 3, 2021
Photo Courtesy Kerry Jones

2025 Monsoon Outlook

Bottom Line Up Front

Official CPC Outlook (Climate Prediction Center):

- *Precipitation:* There are equal chances for above normal, near normal, or below normal precipitation for most of NM this summer. Western NM is favored to lean toward above normal while eastern NM is favored to lean toward below normal.
- *Temperature:* There is a 50 to 70% chance that temperatures will lean toward above normal for the entire state, especially the Four Corners region and far southeast NM.
- Next CPC update will be June 15, 2025

Alternative Scenarios:

- Multi-model ensemble analysis is similar to the CPC outlook but with greater coverage of equal chances of above, near, or below normal precipitation over central and western NM. Eastern NM is also favored to lean toward below normal precipitation. There is a 50-70% chance that temperatures will lean toward above normal for the entire region.
- The forecast analog method suggests there is potential for precipitation to lean toward above normal for a larger area of NM, especially during July and September. Temperatures may lean toward above normal for northwest NM and actually lean near to below normal for parts of central and eastern NM.
- The National Hurricane Center (NHC) is predicting an above normal Atlantic hurricane season and a below normal eastern Pacific hurricane season. Moisture absorbed into the monsoon circulation has the potential to create very active burst patterns with widespread precipitation possible from any remnant tropical systems.
- The Gulf of California sea surface temperatures (SSTs) are currently above normal. Scientists continue to debate the influence of SSTs on moisture transport anomalies and seasonal monsoon precipitation across the southwest United States (Johnson and Delworth 2023).
- As of early June 2025, it appears there is potential for wetter conditions to occur from July to early August followed by a break in mid to late August then a return to wetter conditions in September.

Note: It is important to note that this summary is a seasonal outlook for the entire 3-month period covering July to September. There will be sub-seasonal variability that leads to drier and wetter periods throughout the summer. Due to the highly variable nature of precipitation associated with thunderstorms, there will be areas within an above normal precipitation outlook that receive below normal precipitation and vice versa. All it takes is one extreme rainfall event to produce destructive, life-threatening flooding impacts.

2025 Monsoon Outlook

Climate Prediction Center (June-July-August)

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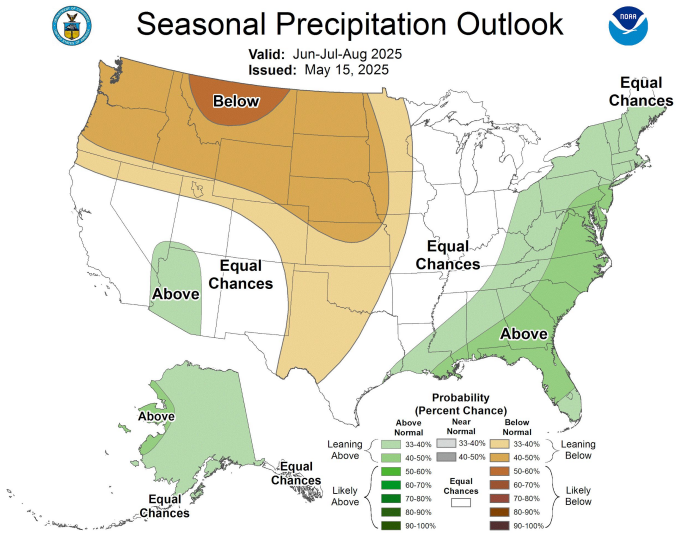
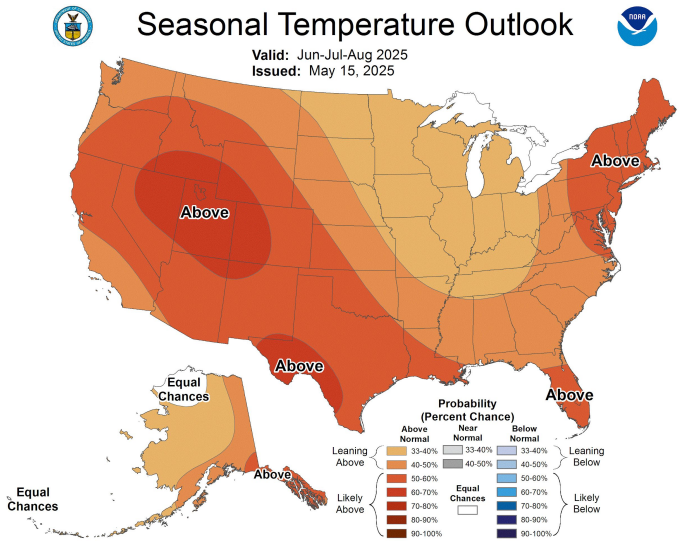
The Climate Prediction Center (CPC) seasonal outlook for the 3-month period from June through August indicates there are equal chances that precipitation will lean toward above normal, near normal, or below normal for the vast majority of NM, while extreme eastern NM has a 33% to 40% chance that precipitation will lean toward below normal. There is a 50 to 70% chance that temperatures will lean toward above normal for the entire state, especially the Four Corners region and far southeast NM. *Next update June 15, 2025*





2025 Monsoon Outlook

Climate Prediction Center (July-August-September)

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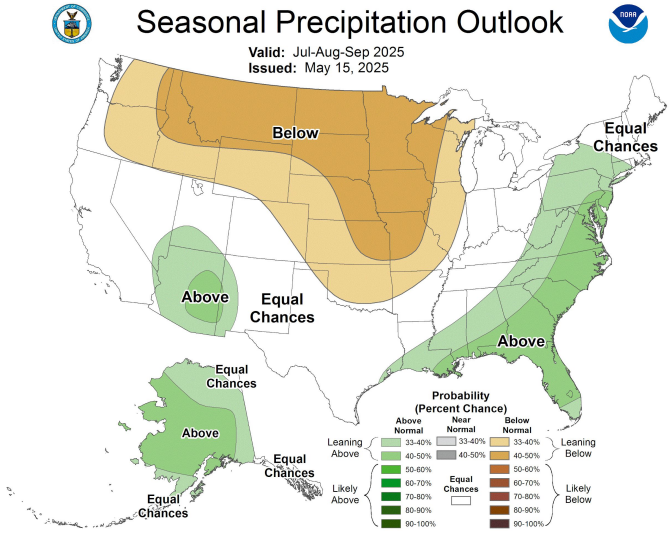
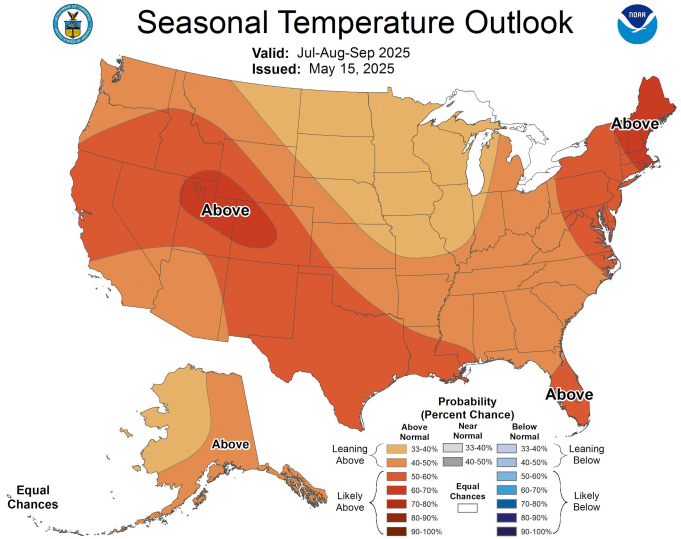
The CPC seasonal outlook for the 3-month period from July through September indicates there are equal chances that precipitation will lean toward above normal, near normal, or below normal for central and eastern NM, while western NM has a 33% to 50% chance of leaning toward above normal. There is a 50 to 60% chance that temperatures will lean toward above normal for the entire state. *Next update June 15, 2025*





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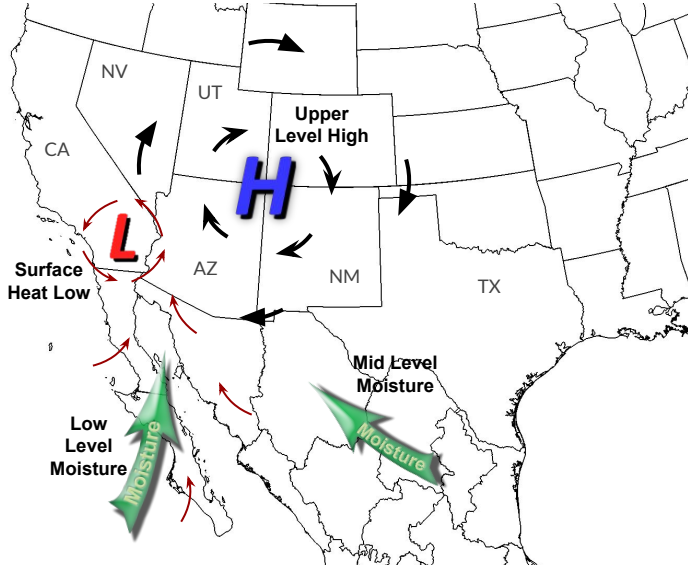
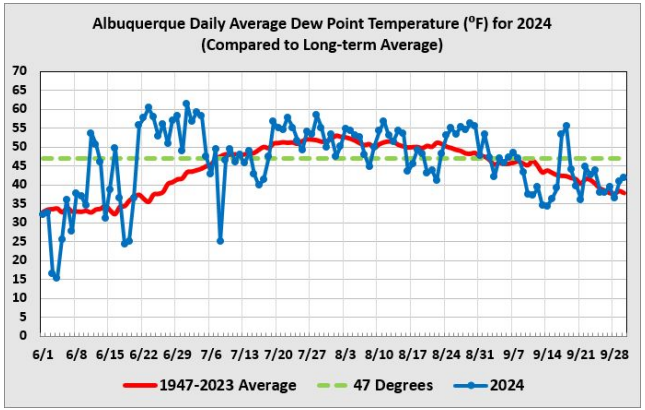
What is the North American Monsoon System?

The southwest monsoon is a seasonal shift in the large-scale atmospheric circulation pattern that brings increasing moisture to the southwest United States during the summer months (lower left image). This shift is preceded by a transition out of the drier spring months when periodic bouts of wind and fire weather are common. As moisture increases over the region, showers and thunderstorms with heavy rain, flash flooding, strong winds, hail, and intense lightning become more frequent over the region. Variability is typical throughout the season, characterized by wetter monsoon bursts and lengthy hot and dry spells. The season typically ends in September as the large-scale atmospheric circulation becomes more influenced by an active jet stream. Despite the overall increase in showers and thunderstorms during monsoon season, not everyone experiences the same season due to factors like complex terrain and variable steering flow. It is not uncommon for seasonal rainfall totals to vary by several inches within the same county.



Conceptual Model of Monsoon Circulation

Dewpoint temperature is one of many parameters used to monitor the various moisture surges and dry intrusions that impact the region throughout the summer. The red line on the chart to the right shows the climatology of average daily dewpoint at the Albuquerque Sunport between June 1st and September 30th while the blue line shows the average daily dewpoint for the 2024 season. There are a lot of deviations from average throughout the season but the higher dewpoints tend to occur from mid July to late August.



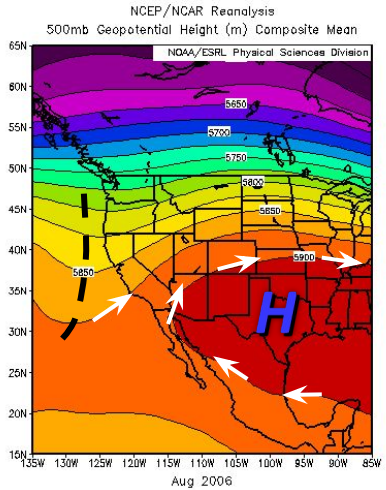
Typical weather hazards associated with the monsoon include:

- ➔ Heat Stress
- ➔ Wildfires
- ➔ Downburst Winds
- ➔ Dust Storms
- ➔ Hail
- ➔ Lightning
- ➔ Flash Flooding
- ➔ Burn Scar Flooding
  - ◆ It is important to note that 2024 was actually the 18th driest summer on record for NM but wildfire burn scar flooding was still severe, especially for the Ruidoso area and for portions of Hermit's Peak - Calf Canyon.

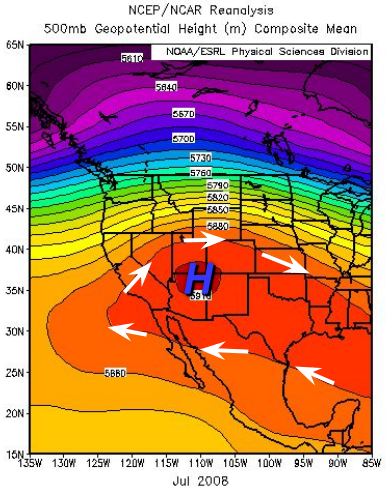
2025 Monsoon Outlook

Monsoon Patterns & Variability

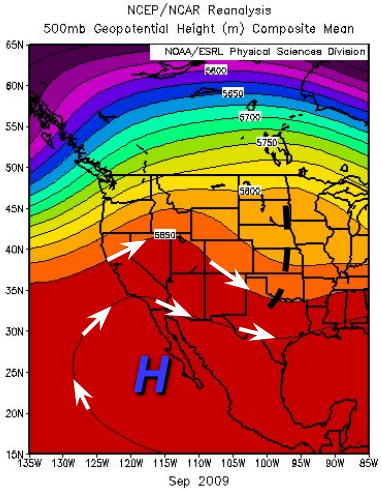
The charts below are generalized illustrations of the various atmospheric height patterns around 15,000 feet above ground level associated with the summer monsoon. The blue “H” on each chart represents the approximate center of upper level high pressure with each pattern. The white arrows show the general circulation that drives storm systems as they move across western North America. The surface weather pattern and monsoon impacts can vary greatly with each of these scenarios and all of these patterns can occur throughout the same monsoon season. Pattern A, which is typically associated with monsoon bursts and greater frequency of heavy rainfall, may dominate the region for several weeks then briefly evolve into pattern D, which is typically associated with intense heat, decreasing storm coverage, and very localized heavy rainfall. A more detailed explanation of each pattern and their associated weather impacts can be found on our North American Monsoon feature.



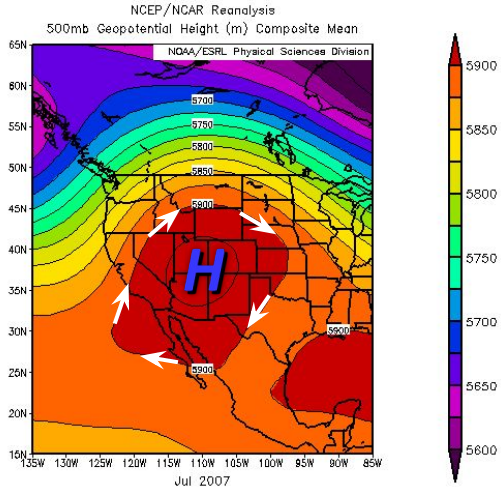
Pattern A:
Bermuda High Extension



Pattern B:
Four Corners Monsoon High



Pattern C:
“Reverse” Monsoon



Pattern D:
Extreme Monsoon High

2025 Monsoon Outlook

Historical Precipitation & Temperature for NM

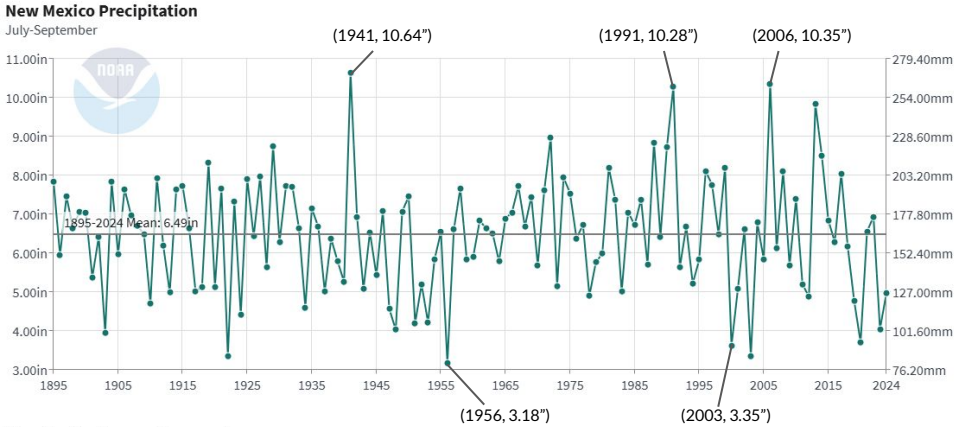
The chart on the upper right shows the July to September average statewide precipitation for New Mexico and the lower right chart shows the average statewide temperature based on the long-term record dating back to 1895 from the National Centers for Environmental Information (NCEI).

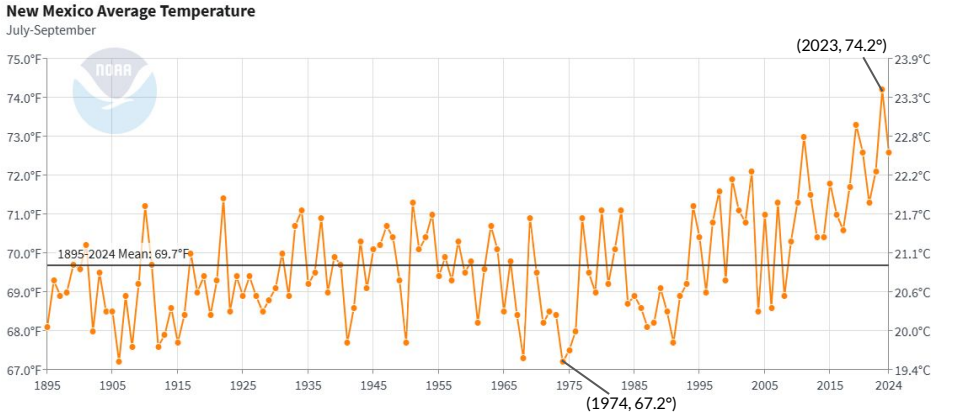
- Statewide Average Precipitation *July-September*
  - Long-Term (1895-2024): **6.49”**
  - Short-Term (1991-2020): **6.58”**

- Statewide Average Temperature *July-September*
  - Long-Term (1895-2024): **69.7°**
  - Short-Term (1991-2020): **70.7°**

- Year-to-year precipitation variability can be dramatic with subtle trends in the overall long-term record. 1941 was the wettest monsoon on record followed by 2006 and 1991 in a close 2nd and 3rd place respectively. Four of the top 7 driest summers on record have occurred since 2000. The last 7 monsoon seasons have been near normal to well below normal.

- Statewide average temperatures have trended warmer for July to September since around the 1990s. The top 7 warmest summers have occurred since 2000. The hottest monsoon on record occurred in 2023.

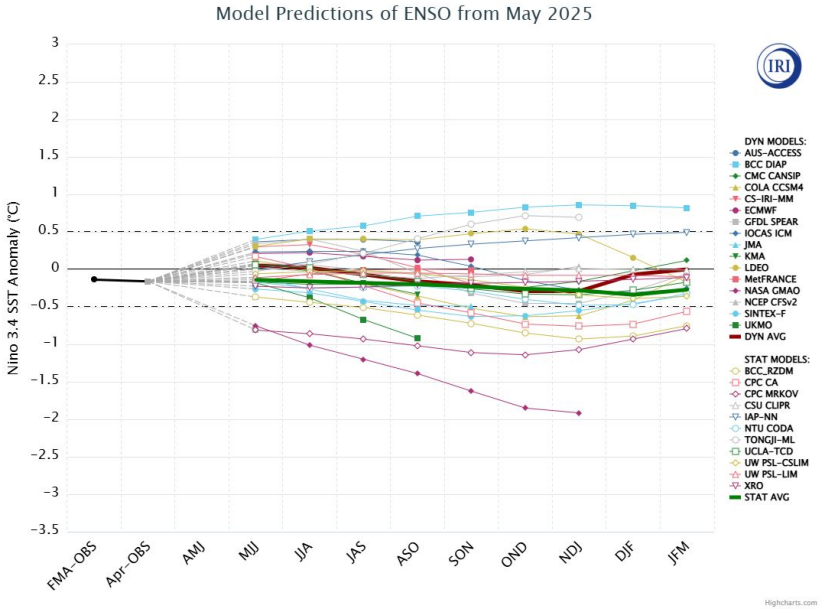


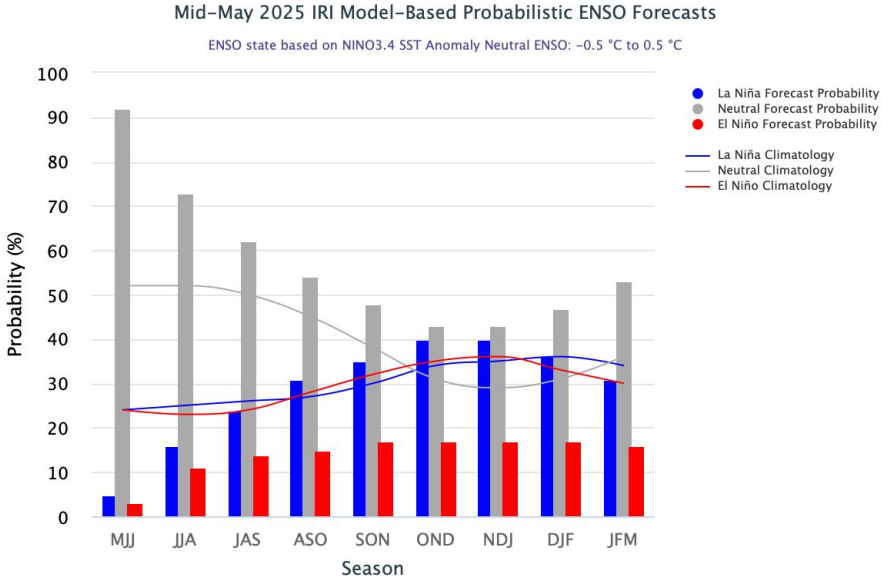


2025 Monsoon Outlook

ENSO

The El Niño - Southern Oscillation (ENSO) alert system status is currently not active. ENSO-neutral is present. Equatorial sea surface temperatures (SSTs) are near average across most of the Pacific Ocean. ENSO-neutral is favored through the Northern Hemisphere summer 2025 (74% chance during June-August) with ENSO-neutral chances exceeding 50% through August-October 2025. For more detailed information on ENSO evolution, status, and predictions, please review the slides available from CPC.





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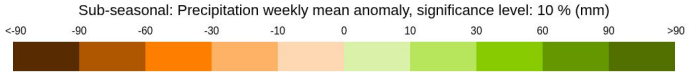
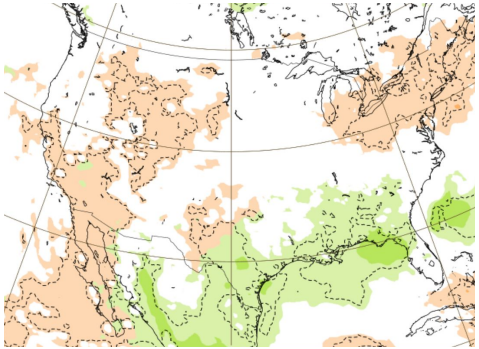
ECMWF (Weekly Precipitation Outlook: June-July 2025)

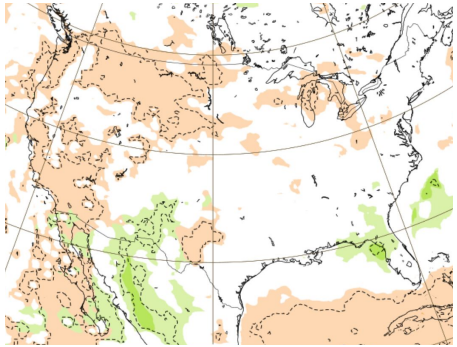
Issued June 5, 2025: ECMWF sub-seasonal range ensemble 7-day average precipitation anomaly



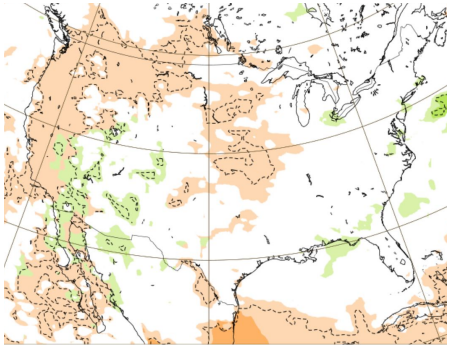
June 23-30, 2025



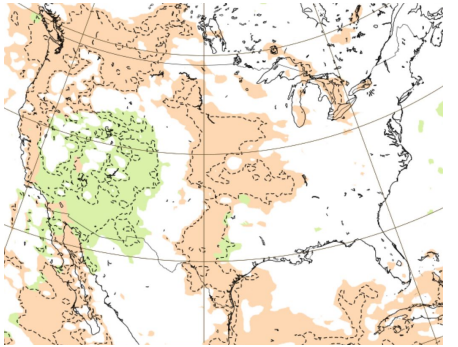
June 30-July 7, 2025



July 7-14, 2025



July 14-21, 2025



The ECMWF sub-seasonal ensemble shows patches of near to slightly below normal precipitation favored for the last week of June across New Mexico. Notice in the last week of June the precipitation anomaly within the Sierra Madre of northwestern Mexico is above normal with increasing coverage of above normal precipitation over New Mexico by the first week of July. This pattern change toward potentially wetter conditions by early July may signal a slightly early start to the wetter phase of the southwest monsoon over New Mexico. The above normal precipitation anomalies persist over parts of the area into mid July followed by increasing coverage of above normal precipitation across much of the Intermountain West by mid to late July.

Let's take a look at the associated upper level height forecast to see what clues may lie behind the trend toward above normal precipitation. The map on the bottom right shows the PRISM June normal precipitation for reference.

2025 Monsoon Outlook

ECMWF (Weekly Precipitation Outlook: June 2025)

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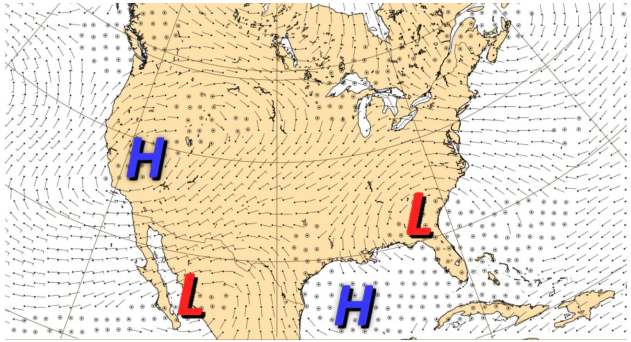
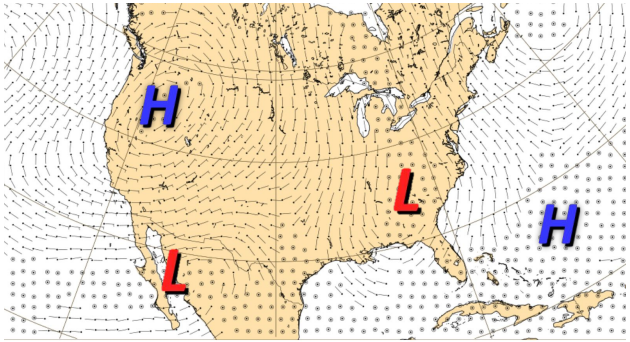
Issued June 5, 2025: ECMWF sub-seasonal range ensemble 7-day average 500mb wind anomaly

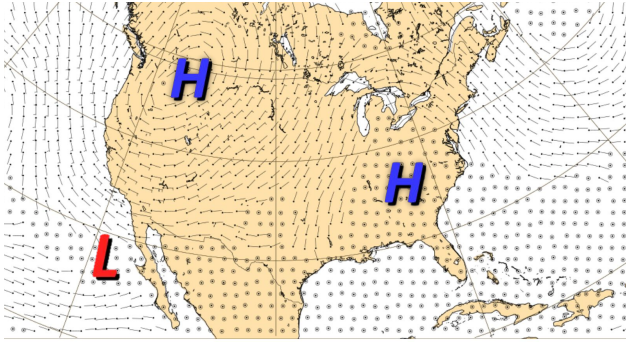
June 30-July 7, 2025



July 7-14, 2025



July 14-21, 2025



Despite the overall below normal hurricane season forecast for the eastern Pacific, extended ensemble guidance is hinting that the latter part of June into early July may feature robust convective activity in the eastern Pacific. This pattern would assist the development of a more well-defined Monsoon High over the western U.S. The above normal precipitation shown on the previous slides in early July is an indication of level moisture working northward beneath the upper level ridge. Average onset dates for the wetter phase of the southwest monsoon spread from south to north into the southwest U.S. with an approximate start date of July 7th for New Mexico. This forecast signals an early transition toward greater coverage of showers and thunderstorms across New Mexico. The Monsoon High then begins to develop northward over the western United States by mid July while the Bermuda High begins building over the western Atlantic and eastern seaboard. Temperatures across the region are likely to become more typical of mid to late June with many areas warming into the 90s and low 100s.

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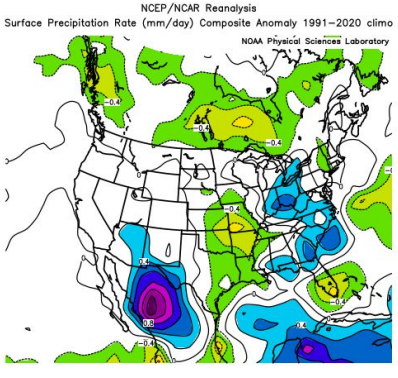
Analog 1 (ENSO Neutral April-September)

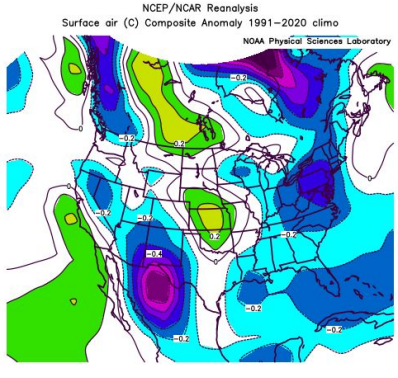
The following alternate scenarios use analogs to provide additional insight into possible deviations from the CPC outlook.

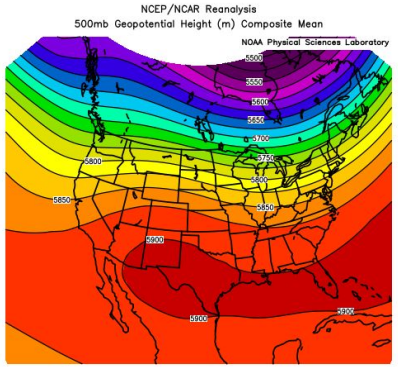
The analog method is a method of forecasting that involves searching historical meteorological records for previous events or flow patterns similar to the current situation, then making a prediction based on those past events or patterns. -AMS Glossary of Meteorology

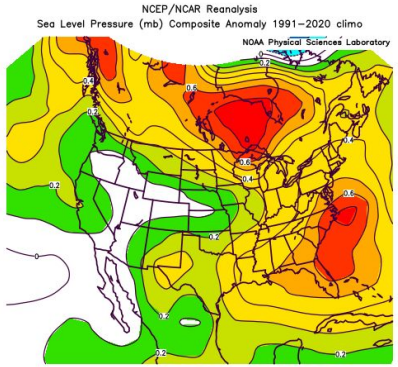
The following list includes 20 years since 1978 when the Oceanic Nino Index (ONI) was neutral (-0.4 to +0.4) for the April to September three-monthly averages. The analogs use the 1991-2020 climatology to develop the anomalies from the NCEP/NCAR reanalysis for **July to September**. The statewide precipitation ranking for New Mexico is shown based on 130 years. Surface precipitation rate is in units of mm/day which can be converted to inches/season over the 92 days.

- ❏ 2024 (18th driest)
- ❏ 2018 (51st driest)
- ❏ 2017 (14th wettest)
- ❏ 2014 (8th wettest)
- ❏ 2013 (3rd wettest)
- ❏ 2012 (16th driest)
- ❏ 2006 (2nd wettest)
- ❏ 2005 (45th driest)
- ❏ 2003 (2nd driest)
- ❏ 2001 (24th driest)
- ❏ 1996 (12th wettest)
- ❏ 1994 (30th driest)
- ❏ 1993 (56th wettest)
- ❏ 1990 (7th wettest)
- ❏ 1986 (36th wettest)
- ❏ 1984 (43rd wettest)
- ❏ 1981 (10th wettest)
- ❏ 1980 (49th driest)
- ❏ 1979 (39th driest)
- ❏ 1978 (17th driest)







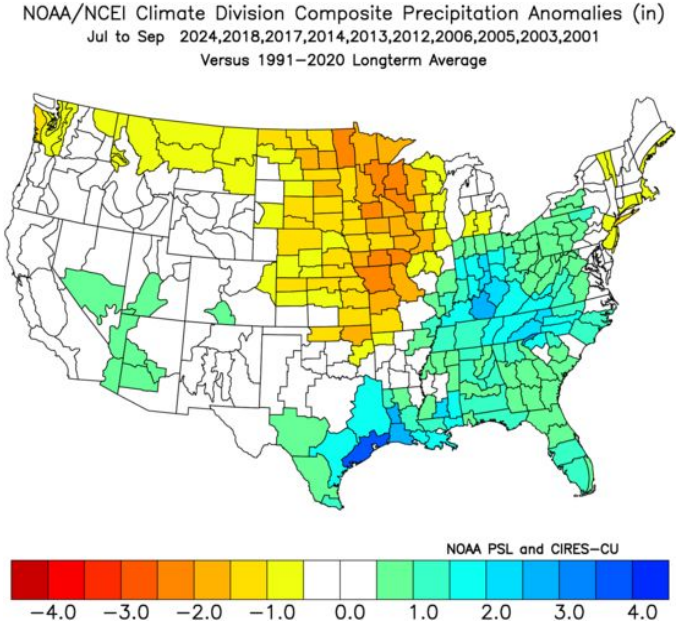


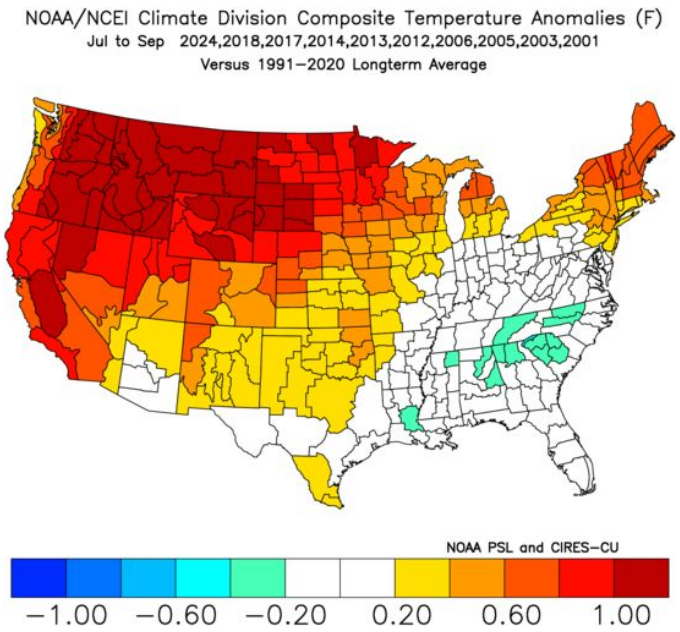
Jul to Sep: 2024,2018,2017,2014,2013,2012,2006,2005,2003,2001,1996,1994,1993,1990,1986,1984,1981,1980,18,2017,2014,2013,2012,2006,2005,2003,2001,1996,1994,1993,1990,1986,1984,1981,1980,19

2025 Monsoon Outlook

Analog 1 (Climate Division Anomalies since 2000)

The charts below show the NOAA/NCEI composite temperature and precipitation anomalies by climate division for all ENSO-neutral April to September periods since 2000. The analogs use the 1991-2020 climatology for **July to September.** There are notable differences between the NOAA/NCEI and NCAR reanalysis when comparing the analog database for temperatures since 2000 (which removes half of the years). The analog trend is toward above normal temperatures for nearly the entire western U.S., including NM. There is still a close match with near normal precipitation for NM and above normal precipitation more into Arizona. Note that these charts are also closer to the official CPC outlook for the southwest U.S.





2025 Monsoon Outlook

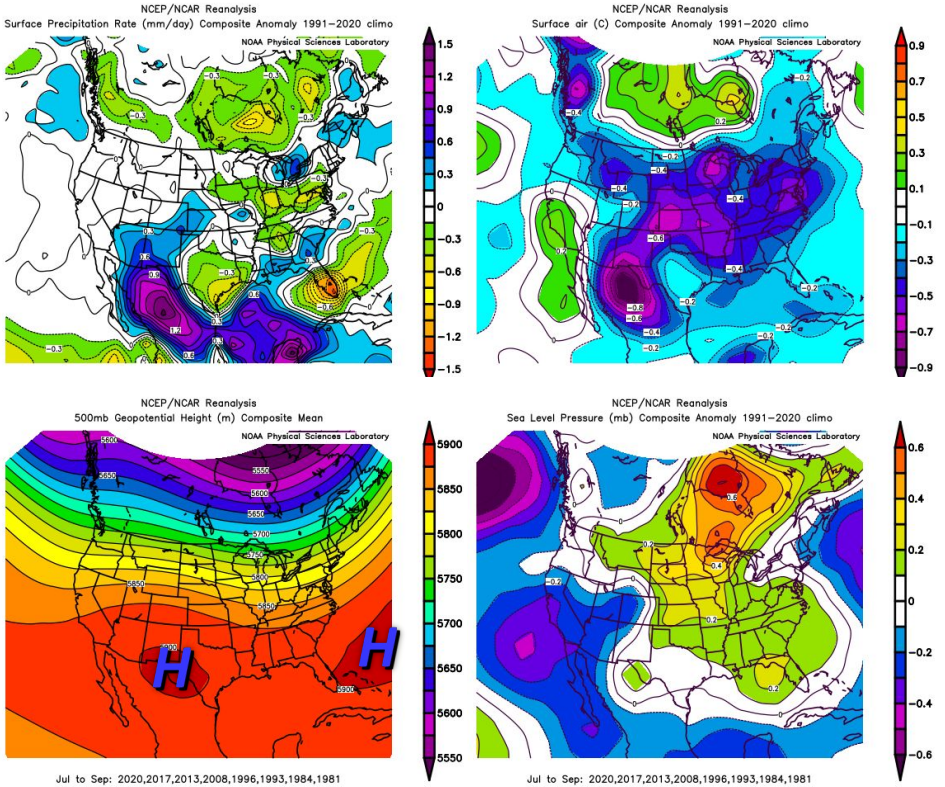
Analog 2 (ENSO Evolution 2024/2025)

The following list includes 8 years since 1978 when the ENSO evolution was similar to the most recent Oceanic Nino Index (ONI) from winter to spring, including the 2025 forecast ENSO probability leaning toward neutral or weak La Nina conditions during the fall and early winter months. The analogs use the 1991-2020 climatology to develop the anomalies from the NCEP/NCAR reanalysis for **July to September**. The statewide precipitation ranking for New Mexico is shown based on 130 years.

- ❏ 2020 (5th driest)
- ❏ 2017 (14th wettest)
- ❏ 2013 (3rd wettest)
- ❏ 2008 (12th wettest (tie))
- ❏ 1996 (12th wettest (tie))
- ❏ 1993 (56th wettest)
- ❏ 1984 (43rd wettest)
- ❏ 1981 (10th wettest)

There are several notable differences between the two analogs. The analog for 2025 shows greater coverage of slightly above normal precipitation northward into NM with higher above normal values over southwest NM. Surface temperature anomalies are slightly cooler in the 2025 analog, the monsoon high center is more discrete, and there is a tendency toward lower surface pressure in the Sonoran Desert (stronger heat low). It is important to note that the cooler temperature anomalies in both analogs warm considerably when removing years before 2000.

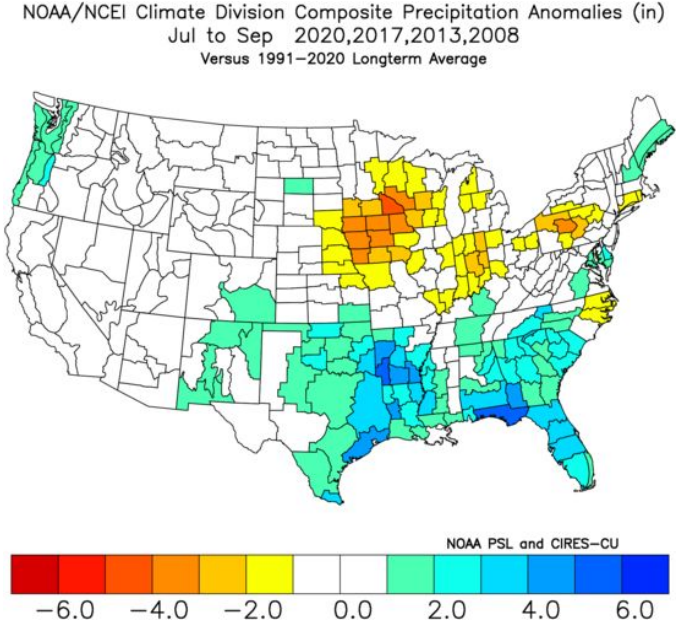
Note: the charts have different ranges in their legends between the two analogs.

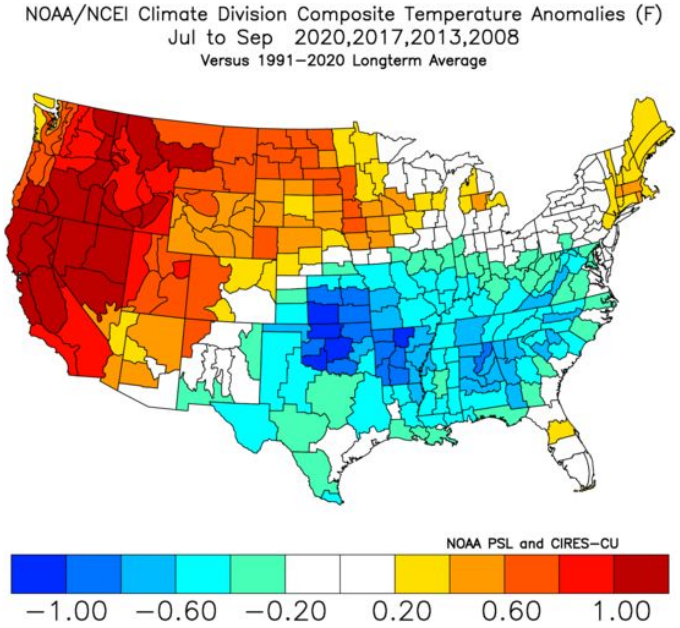


2025 Monsoon Outlook

Analog 2 (Climate Division Anomalies since 2000)

The charts below show the NOAA/NCEI composite temperature and precipitation anomalies by climate division for similar ENSO-neutral April to September periods like 2024-2025 since 2000. The analogs use the 1991-2020 climatology for **July to September.** There are less notable differences between the NOAA/NCEI and NCAR reanalysis when comparing the analog databases since 2000 (which also removes half of the years). This analog shows greater coverage of near to above normal precipitation across central and eastern NM compared to the first analog along with near to below normal temperatures within central and eastern NM. This analog is somewhat similar to the CPC forecast for precipitation across the U.S. as a whole, but very different for temperature.





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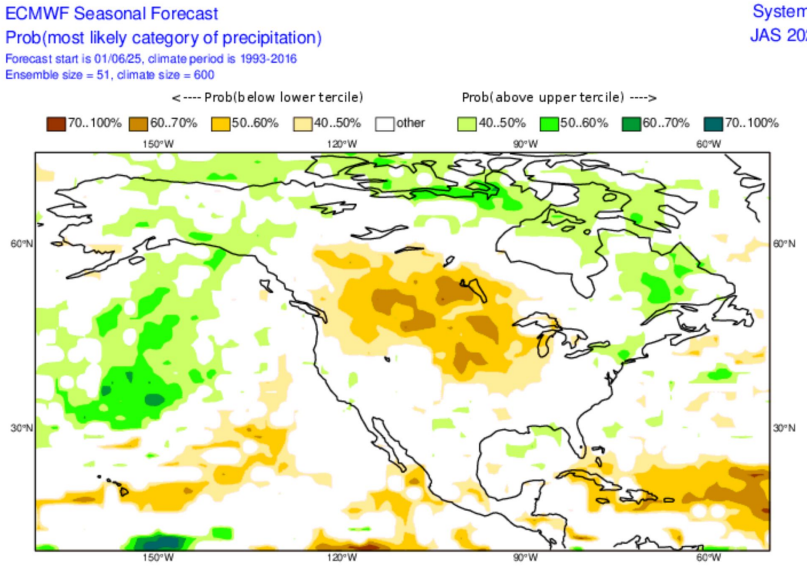
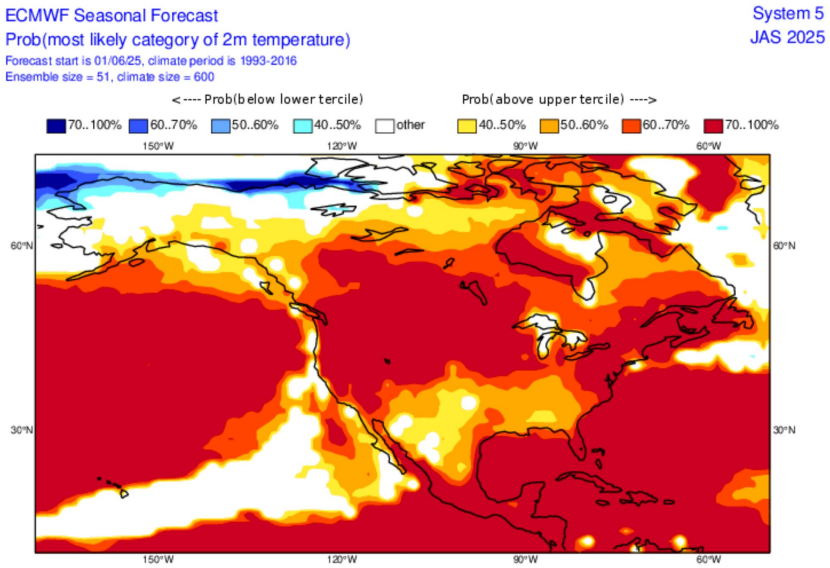
ECMWF (July-August-September 2025)

The ECMWF model forecast for July, August, and September predicts near normal precipitation for most of the desert southwest with near to above-average precipitation farther west into California and farther southeast into Texas. Above normal temperatures are forecast for nearly the entire United States for the 3-month period, especially the northern and western United States. Note the similarities on this outlook compared to some hints on the ENSO analogs and the CPC official outlook.





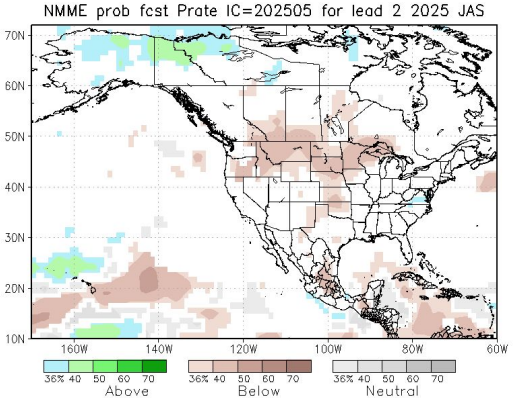
2025 Monsoon Outlook

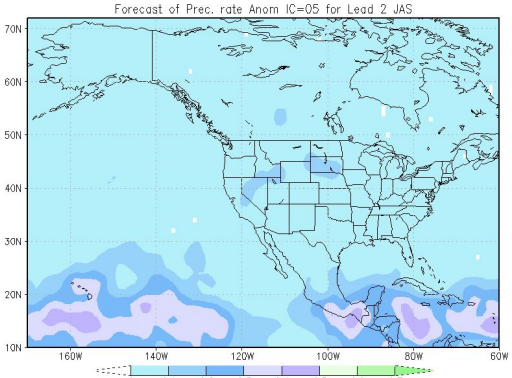
Climate Models (July-August-September 2025)

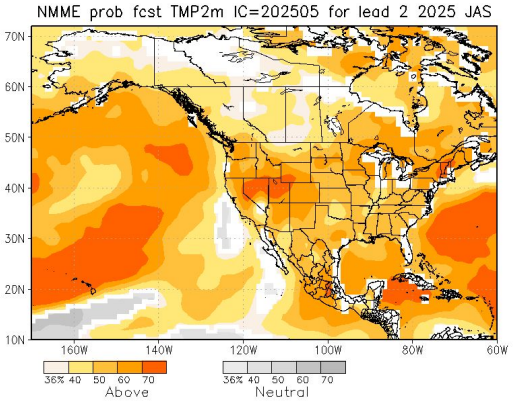
NMME (North American Multi-Model Ensemble) - The North American Multi-Model Ensemble (NMME) is a multi-model seasonal forecasting system consisting of coupled models from North American modeling centers (User's Guide).

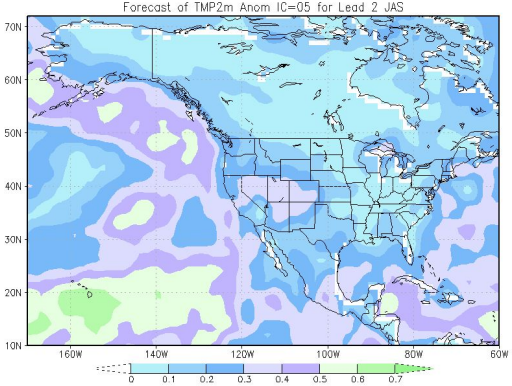
The upper left and lower left images are the calibrated probabilities of precipitation and temperature for the three month period from July through September, respectively. Calibrated probabilities are calculated using model hindcasts to account for biases and errors. Skill maps are also included in the upper right and lower right charts to assist with explaining model accuracy of each respective variable. In general, a higher skill score means a better model forecast.

The July-August-September precipitation outlook from the NMME indicates equal chances that precipitation will lean above normal, near normal, or below normal across central and western NM. There is near a 40% chance that precipitation will lean toward below normal across eastern NM. There is a greater than 60% chance that temperatures will lean toward above normal for this same period.









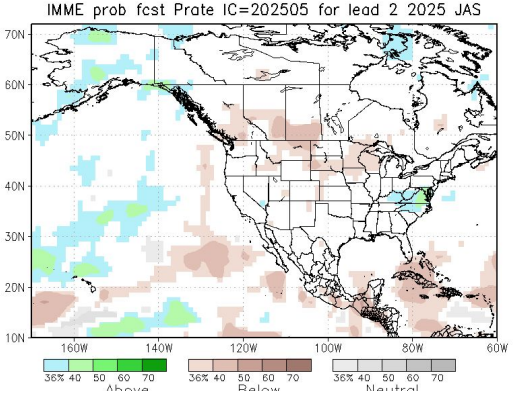
2025 Monsoon Outlook

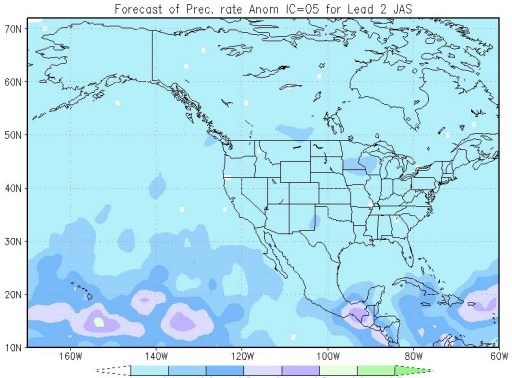
Climate Models (July-August-September 2025)

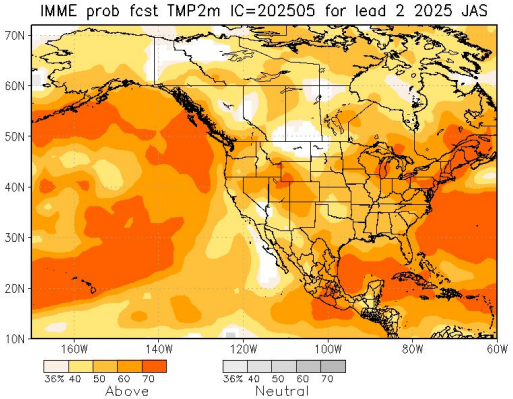
IMME (International Multi-Model Ensemble) - The International Multi-Model Ensemble (IMME) is a multi-model seasonal forecasting system consisting of coupled models from international modeling centers (AGU Abstract).

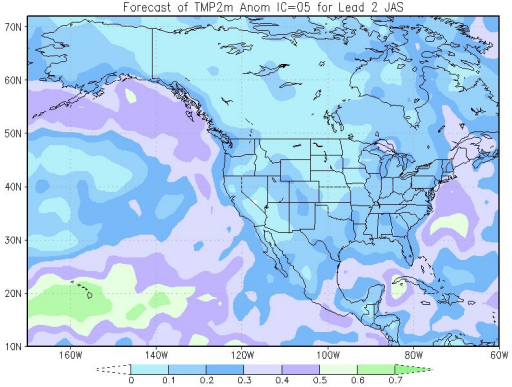
The upper left and lower left images are the calibrated probabilities of precipitation and temperature for the three month period from July through September, respectively. Calibrated probabilities are calculated using model hindcasts to account for biases and errors. Skill maps are also included in the upper right and lower right charts to assist with explaining model accuracy of each respective variable. In general, a higher skill score means a better model forecast.

The July-August-September precipitation outlook from the IMME indicates equal chances that precipitation will lean above normal, near normal, or below normal across most of NM. There is near a 40% chance that precipitation will lean toward below normal across far northeastern NM. There is a greater than 50% chance that temperatures will lean toward above normal for this same period.







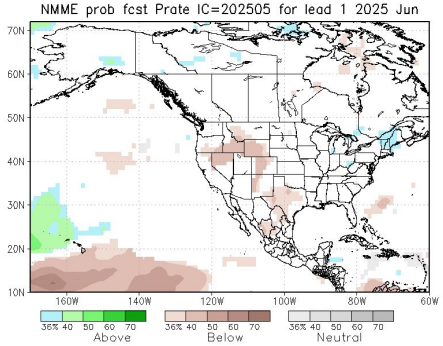


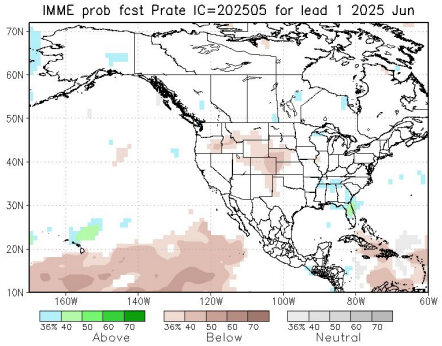
2025 Monsoon Outlook

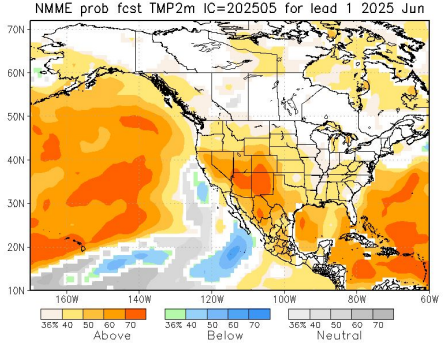
June 2025 Outlook

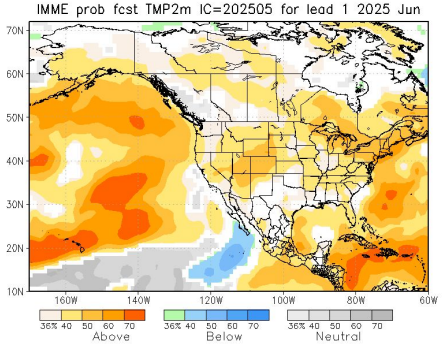
weather.gov/**abq**

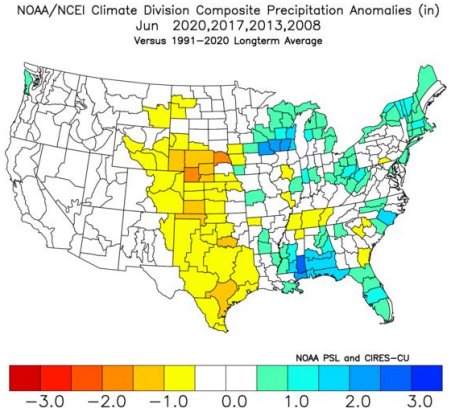
The analysis below for June includes the NMME, IMME, NOAA/NCEI climate division analog anomalies, and the official CPC outlook.

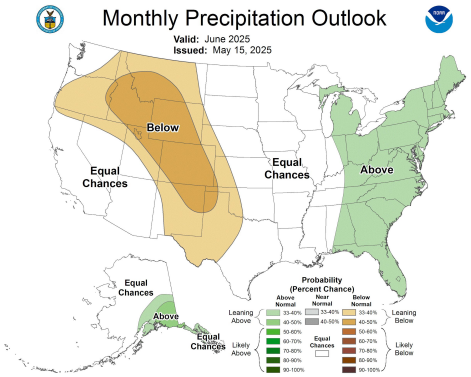


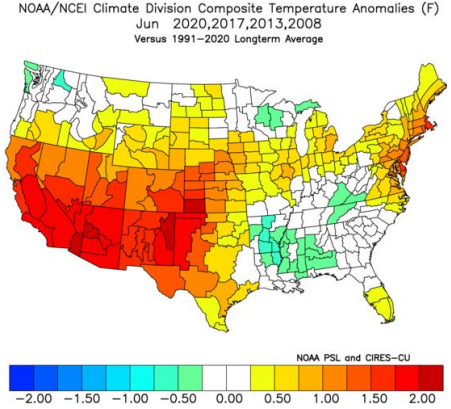


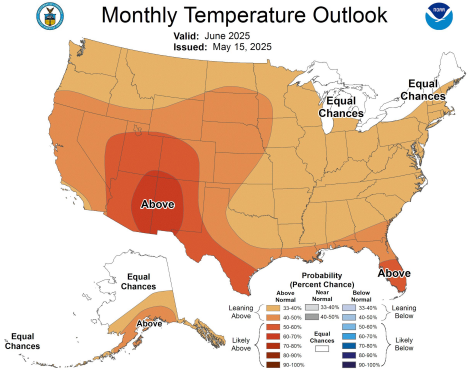








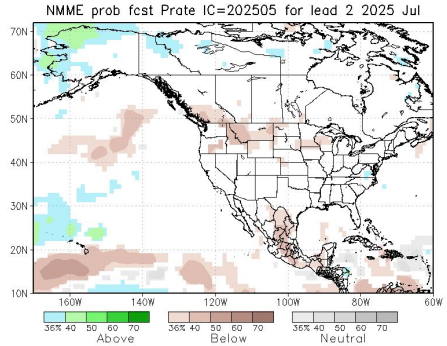


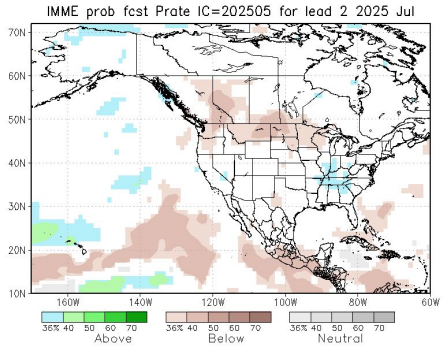


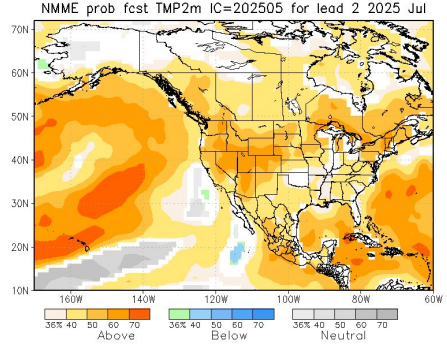
2025 Monsoon Outlook

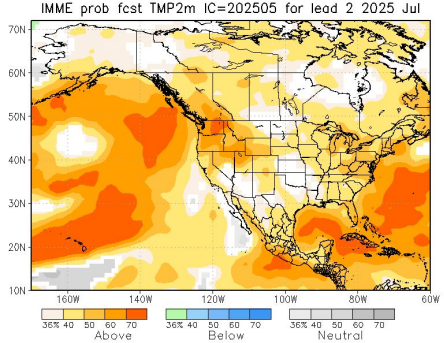
July 2025 Outlook

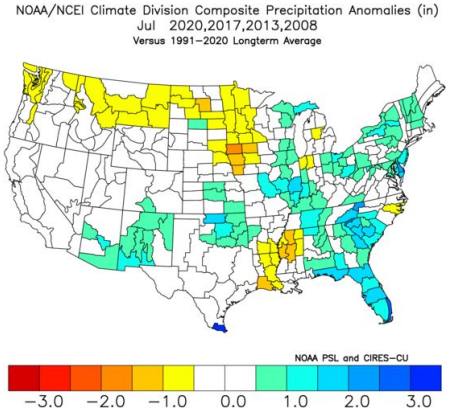
The analysis below for July includes the NMME, IMME, NOAA/NCEI climate division analog anomalies, and the official CPC outlook.



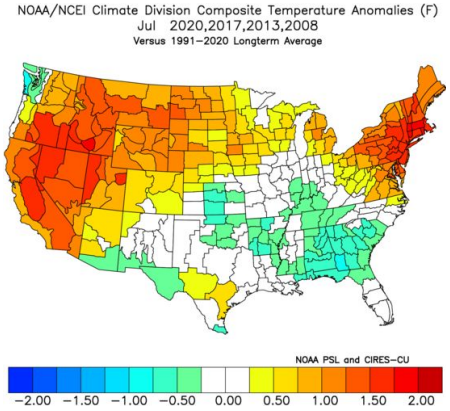








CPC July precipitation outlook issued June 15th. Check back later.

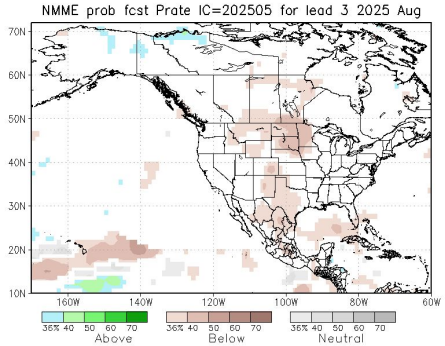


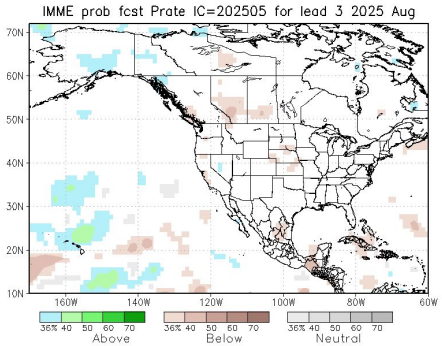
CPC July temperature outlook issued June 15th. Check back later.

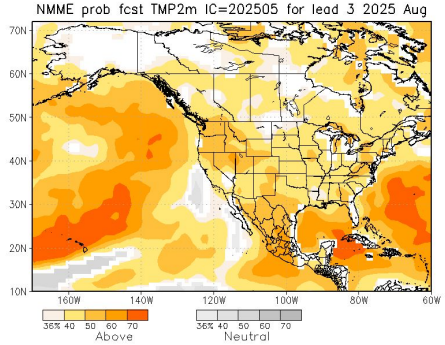
2025 Monsoon Outlook

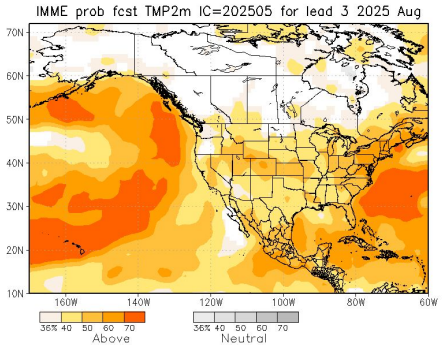
August 2025 Outlook

The analysis below for August includes the NMME, IMME, NOAA/NCEI climate division analog anomalies, and the official CPC outlook.

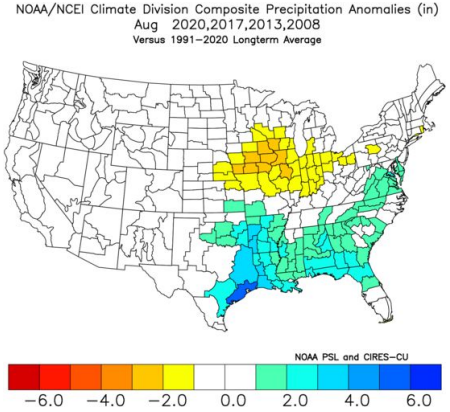




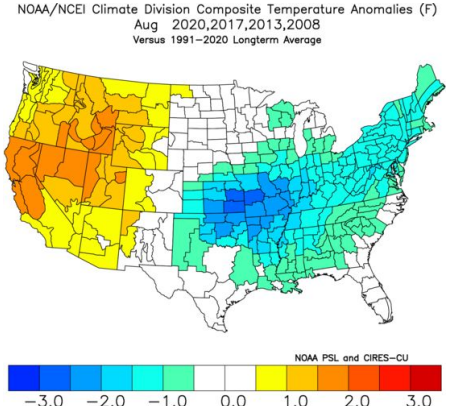




Note: the color bar values changed on the composite anomaly charts for August.



CPC July precipitation outlook issued July 15th. Check back later.

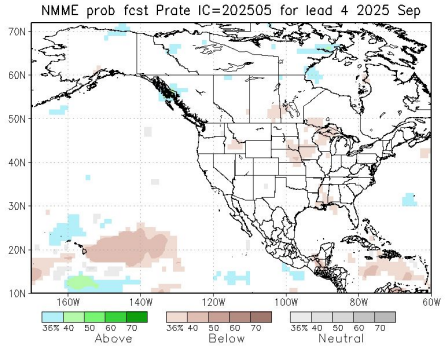


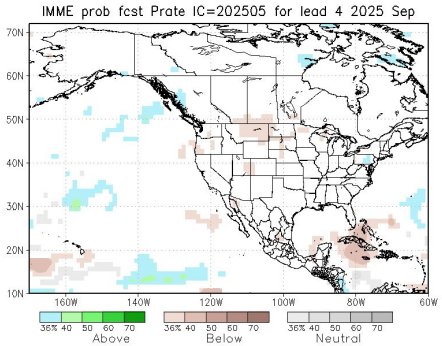
CPC July temperature outlook issued July 15th. Check back later.

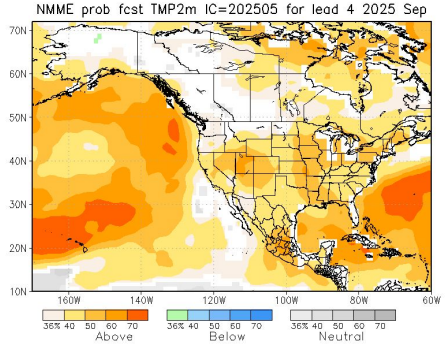
2025 Monsoon Outlook

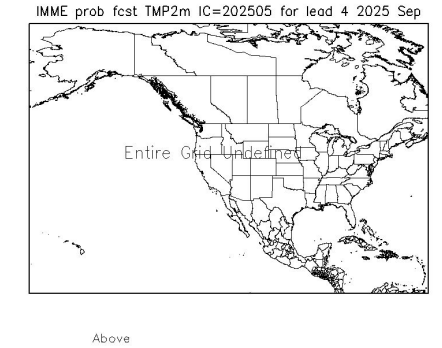
September 2025 Outlook

The analysis below for September includes the NMME, IMME, NOAA/NCEI climate division analog anomalies, and the official CPC outlook.

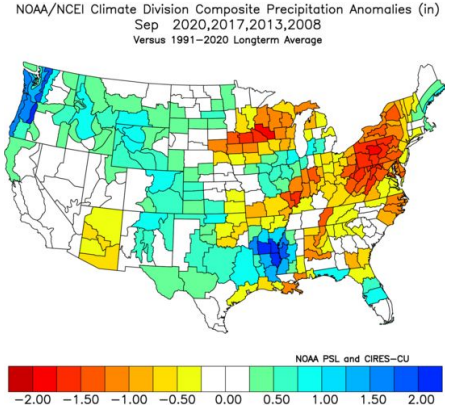




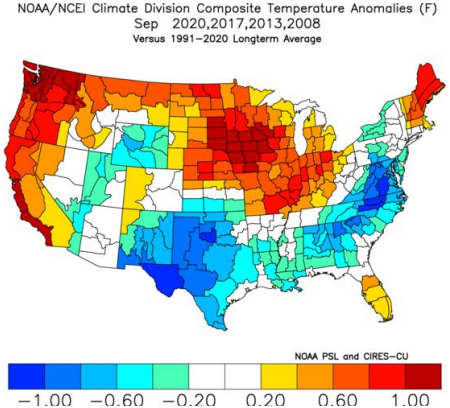




Note: the color bar values changed on the composite anomaly charts for September.



CPC July precipitation outlook issued August 15th. Check back later.



CPC July temperature outlook issued August 15th. Check back later.

2025 Monsoon Outlook

Summary

Official CPC Outlook (Climate Prediction Center):

- *Precipitation:* There are equal chances for above normal, near normal, or below normal precipitation for most of NM this summer. Western NM is favored to lean toward above normal while eastern NM is favored to lean toward below normal.
- *Temperature:* There is a 50 to 70% chance that temperatures will lean toward above normal for the entire state, especially the Four Corners region and far southeast NM.
- Next CPC update will be June 15, 2025

Alternative Scenarios:

- Multi-model ensemble analysis is similar to the CPC outlook but with greater coverage of equal chances of above, near, or below normal precipitation over central and western NM. Eastern NM is also favored to lean toward below normal precipitation. There is a 50-70% chance that temperatures will lean toward above normal for the entire region.
- The forecast analog method suggests there is potential for precipitation to lean toward above normal for a larger area of NM, especially during July and September. Temperatures may lean toward above normal for northwest NM and actually lean near to below normal for parts of central and eastern NM.
- The National Hurricane Center (NHC) is predicting an above normal Atlantic hurricane season and a below normal eastern Pacific hurricane season. Moisture absorbed into the monsoon circulation has the potential to create very active burst patterns with widespread precipitation possible from any remnant tropical systems.
- The Gulf of California sea surface temperatures (SSTs) are currently above normal. Scientists continue to debate the influence of SSTs on moisture transport anomalies and seasonal monsoon precipitation across the southwest United States (Johnson and Delworth 2023).
- As of early June 2025, it appears there is potential for wetter conditions to occur from July to early August followed by a break in mid to late August then a return to wetter conditions in September.

Note: It is important to note that this summary is a seasonal outlook for the entire 3-month period covering July to September. There will be sub-seasonal variability that leads to drier and wetter periods throughout the summer. Due to the highly variable nature of precipitation associated with thunderstorms, there will be areas within an above normal precipitation outlook that receive below normal precipitation and vice versa. All it takes is one extreme rainfall event to produce destructive, life-threatening flooding impacts.

2025 Monsoon Outlook

Resources, Citations, & Contact Information

Contact Us:

- Email: sr-abq.webmaster@noaa.gov

Resources & Citations:

- CPC Outlooks
- NMME Probability Forecasts
- IMME Probability Forecasts
- IRI ENSO Forecasts
- University of Arizona - Arizona Cooperative Extension
- University o Arizona - CLIMAS
- The North American Monsoon - Climate.gov
- Impacts of El Nino and La Nina on the Hurricane Season - Climate.gov
- NOAA Hurricane Season News Release
- Johnson, Benjamin O., and Delworth, Thomas L., 2023: The Role of the Gulf of California in the North American Monsoon. *Journal of Climate*. **36-6,** 1541-1559, *https://doi.org/10.1175/JCLI-D-22-0365.1*.
- Juang, Henry H.M., and Mo, Kingtse C., 2003: Influence of sea surface temperature anomalies in the Gulf of California on North American monsoon rainfall. *Journal of Geophysical Research*. **108-D3**, 4112, https://doi.org/10.1029/2002JD002403.