September 2024 Weather Digest

September 2024 Weather Summary

September ended up as warmer and much drier than normal, continuing a trend from August and ending our Monsoon season on somewhat of a down note. Most sites averaged about 1 to 3 degrees above normal, both for high temperature and average temperature. El Paso recorded 4 new daily high temperature records, and more impressively, recorded a new latest occurrence of 100+ degrees on Sep 27, 11 days later than the previous record.

Of course above normal heat usually is accompanied by below normal rainfall, and that was true of this September, which for the majority of the area tallied only 25-50% of normal. The only area that saw above normal rainfall was the southeastern Bootheel of New Mexico, where around 150% of normal rain occurred. As far as drought is concerned much of New Mexico remained unchanged in moderate to severe drought. Meanwhile, west Texas drought conditions worsened, going to severe to extreme drought. September 2-3 saw the bulk of rainfall for much of the area as the last breath of the Monsoon (see Monsoon recap below) produced decent rainfall.

September 2024 Weather Summary

Post-Monsoon tropical moisture moved up to the area Sep 15-17 in what looked like a promising rainfall event. However, much of this fizzled out and just some scattered light rain showers developed.

Looking ahead to October, we continue to cool while we lose daylight. At El Paso, the average high temperature on Oct 1 is 84°, falling to 74° on the last day of the month. Daylight on Oct 1 totaled 11 hrs, 50 mins, while on Oct 31 daylight will have shrunk to 10 hrs, 55 mins. Our October full moon, also known as the Hunter's Moon, occurs on the 17th, while the new moon occurs on the 2nd. The Draconid meteor shower will be viewable from Oct 6 to Oct 10, with the peak occurring on Oct 8.


Sep 6 Map of planned re-entry of Starliner
= 20 - 45 degrees above horizon
= 45 - 90 degrees above horizon
All times are in Mountain time
09/06 21:54:00
09/06 21:53:00
09/06 21:52:00
09/06 21:51:00
09/06 21:50:00
09/06 21:49:00
09/06 21:48:00
09/06 21:47:00
09/06 21:46:00
09/06 21:45:00
-145 -140 -135 -130 -125 -120 -115 -110 -105 -100 -95 -90 -85

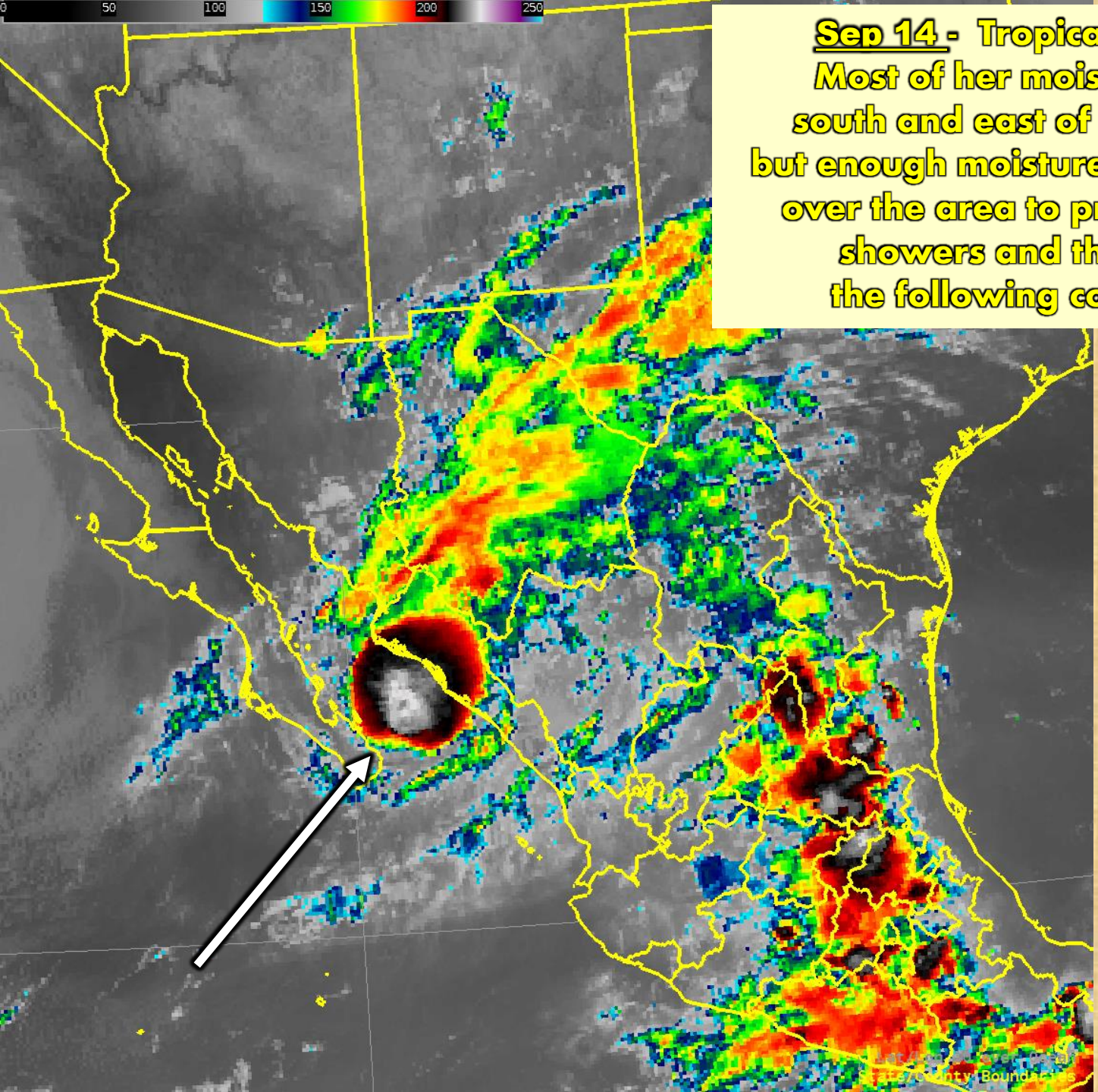

Sep 6 Starliner re-entering atmosphere


Sep 6 Starliner landing
NASA

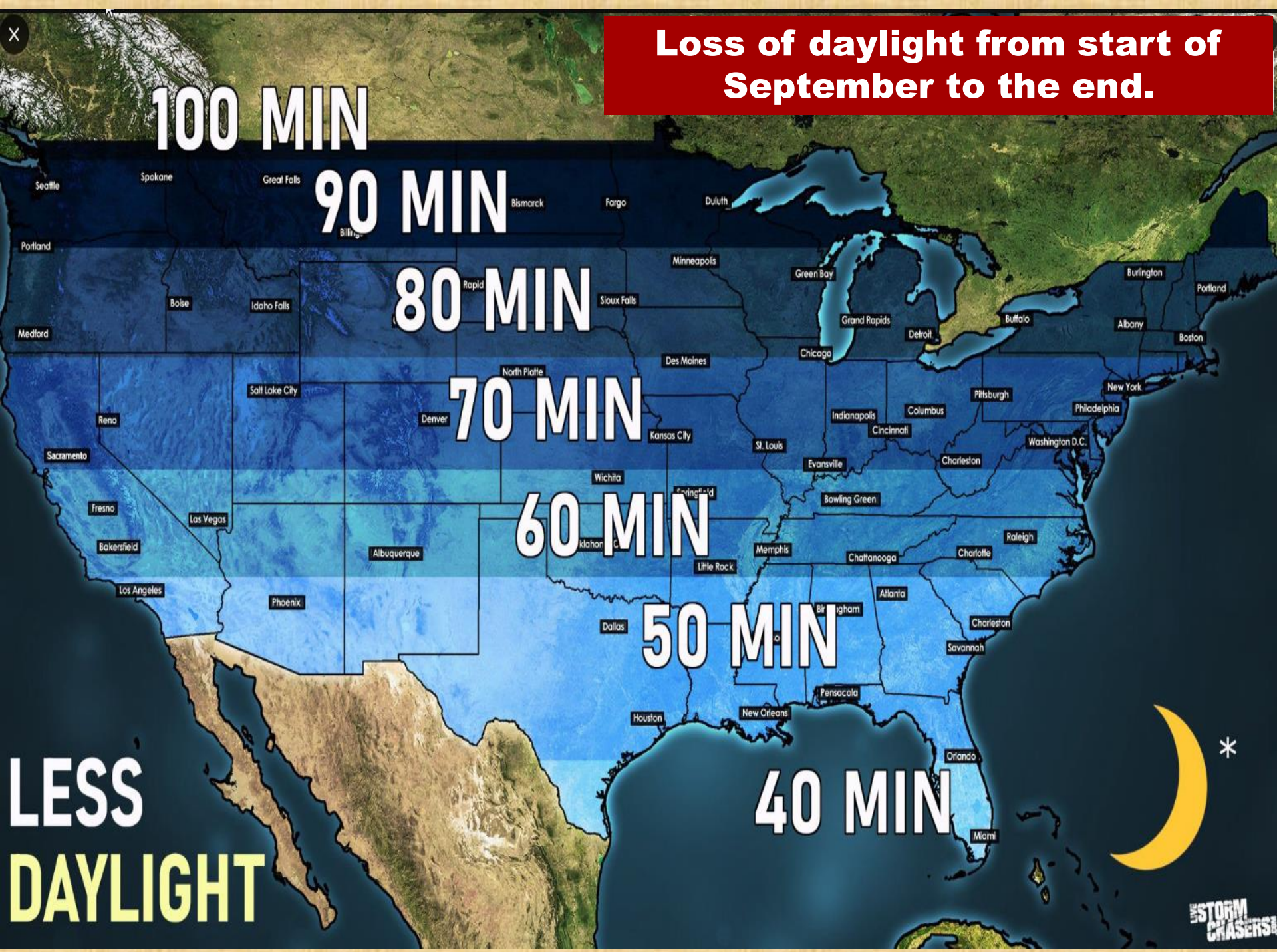

Sep 6 Starliner landing
NASA


Sep 21 Valley fog near Ruidoso


Sep 25 Autumn at Lake Roberts



Sep 14 - Tropical Storm Ileana
Most of her moisture remained south and east of the Borderland, but enough moisture moved up ahead over the area to produce scattered showers and thunderstorms the following couple of days.


Loss of daylight from start of September to the end.
100 MIN
90 MIN
80 MIN
70 MIN
60 MIN
50 MIN
40 MIN
LESS DAYLIGHT
Seattle
Spokane
Great Falls
Bismarck
Fargo
Duluth
Portland
Minneapolis
Green Bay
Burlington
Portland
Boise
Idaho Falls
Rapid
Sioux Falls
Grand Rapids
Buffalo
Albany
Medford
Detroit
Boston
Chicago
Des Moines
North Platte
Salt Lake City
Pittsburgh
New York
Reno
Denver
Indianapolis
Columbus
Philadelphia
Kansas City
Cincinnati
Sacramento
St. Louis
Washington D.C.
Evansville
Charleston
Wichita
Fresno
Bowling Green
Las Vegas
Raleigh
Bakersfield
Albuquerque
Memphis
Chattanooga
Charlotte
Little Rock
Los Angeles
Atlanta
Phoenix
Dallas
Charleston
Savannah
Pensacola
Houston
New Orleans
Orlando
Miami

ENSO Alert System Status:
La Niña Watch is in effect

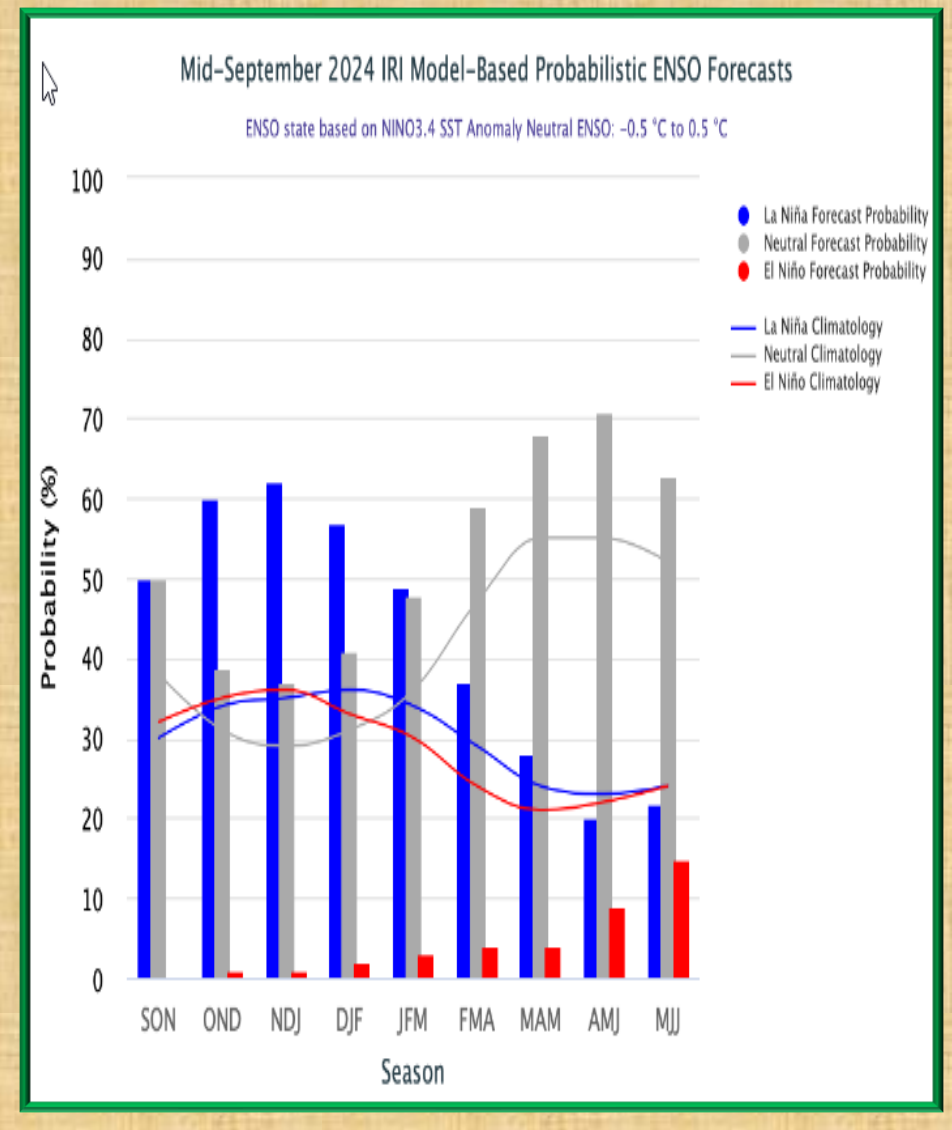
ENSO Alert System

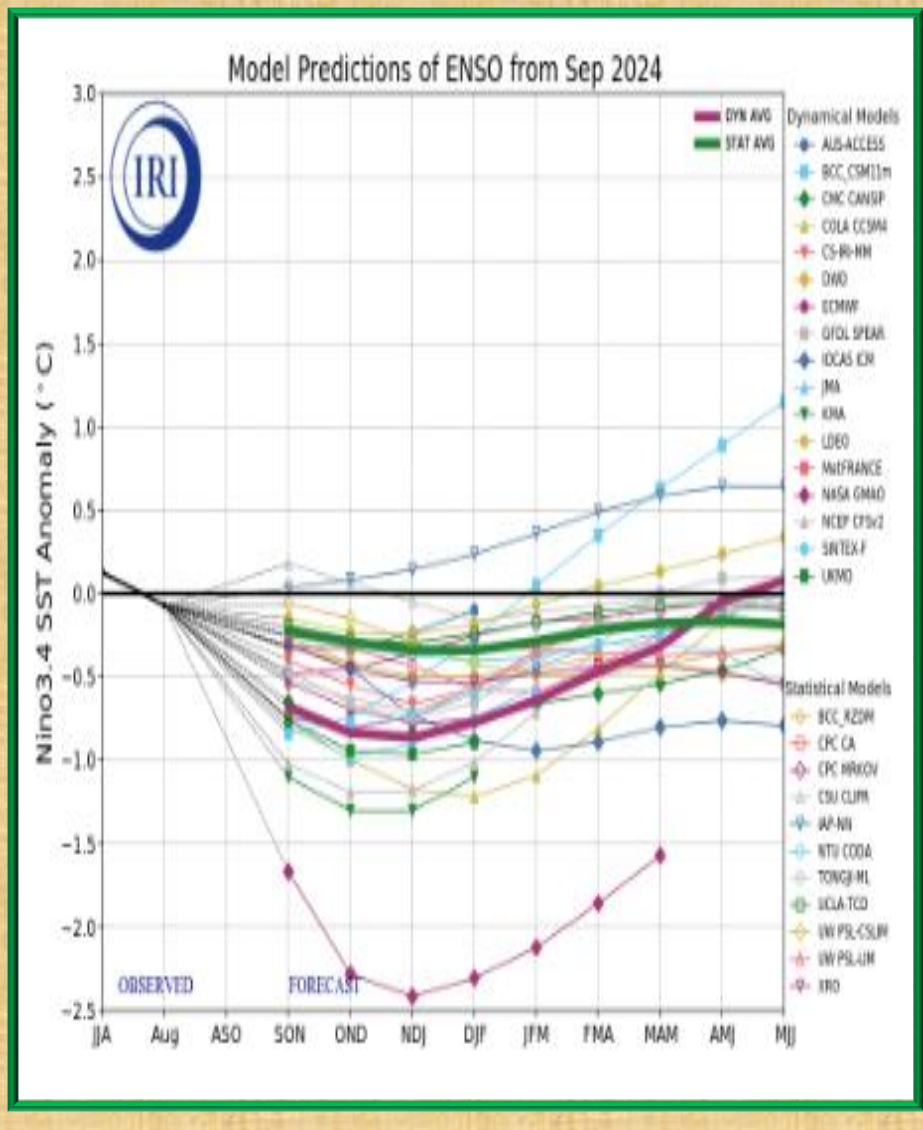
- El Niño or La Niña Watch: Issued when conditions are favorable for the development of El Niño or La Niña conditions in the next six months.

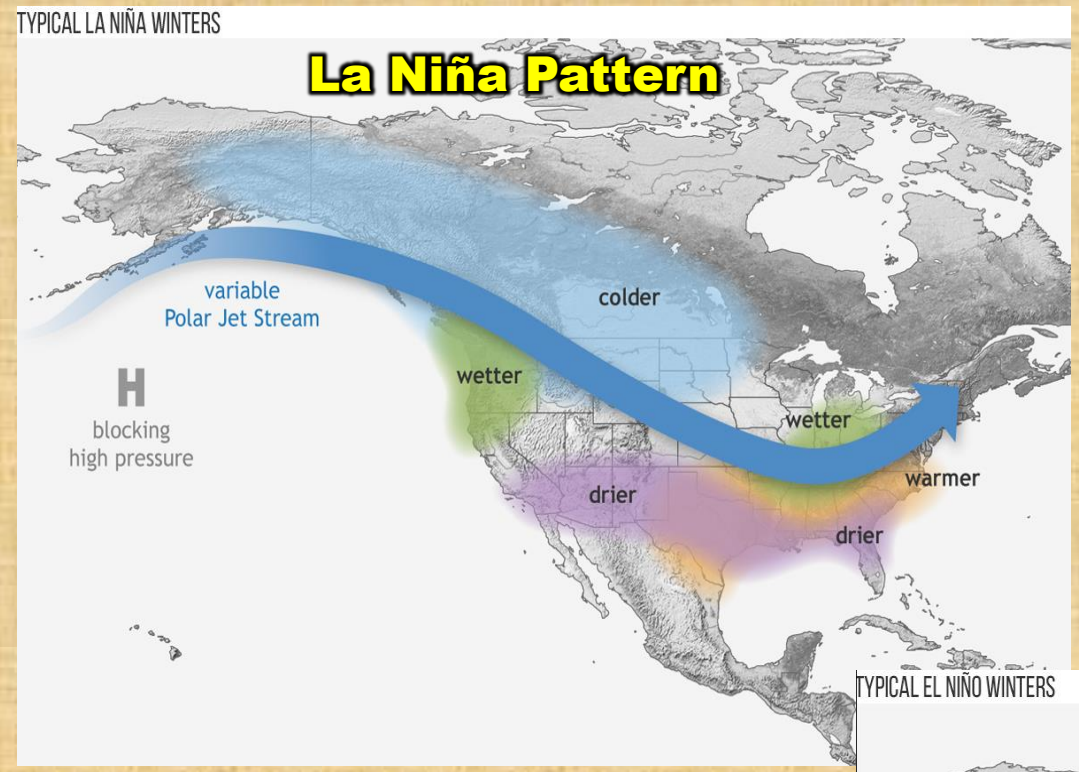
- El Niño or La Niña Advisory: Issued when El Niño or La Niña conditions are observed and expected to continue.

ENSO Forecast

ENSO is in Neutral phase and is expected to transition to La Niña over the next couple of months.

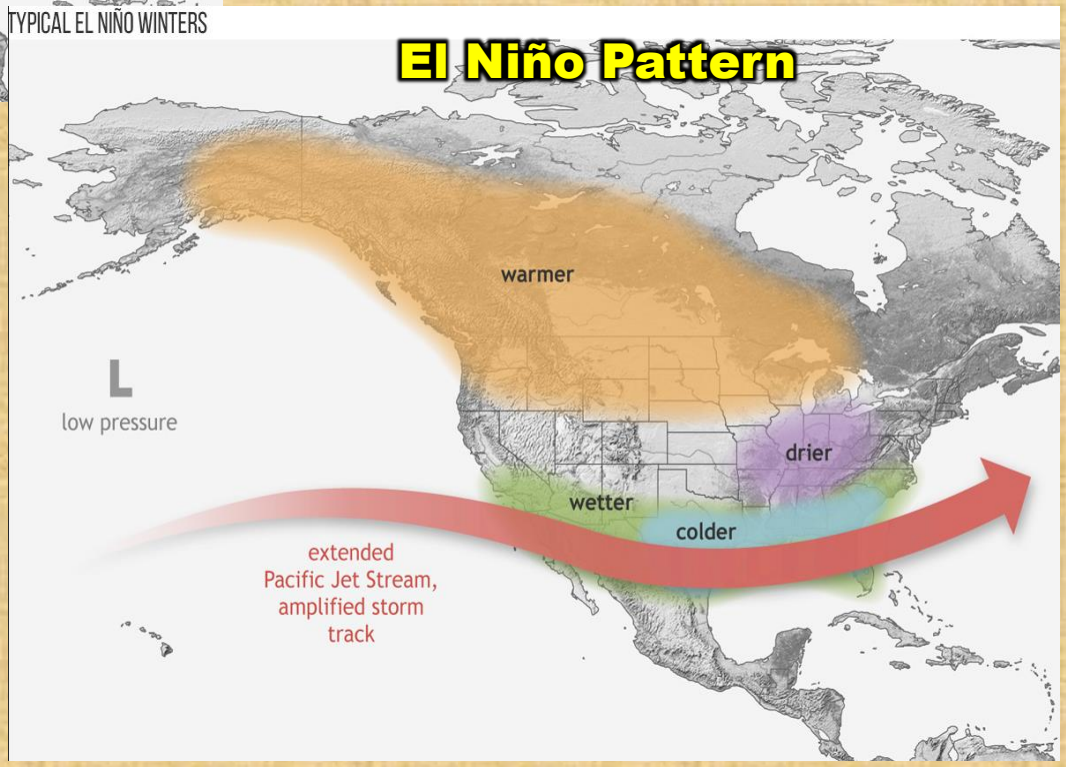






With a La Niña pattern, a ridge of high pressure tends to build off the west coast of the U.S., blocking most of our Pacific winter storm systems. These storms tend to end up moving across the northern Plains and down to the southeastern part of the country. Of course it is important to remember that these patterns are only what typically happens and are not guaranteed to occur.

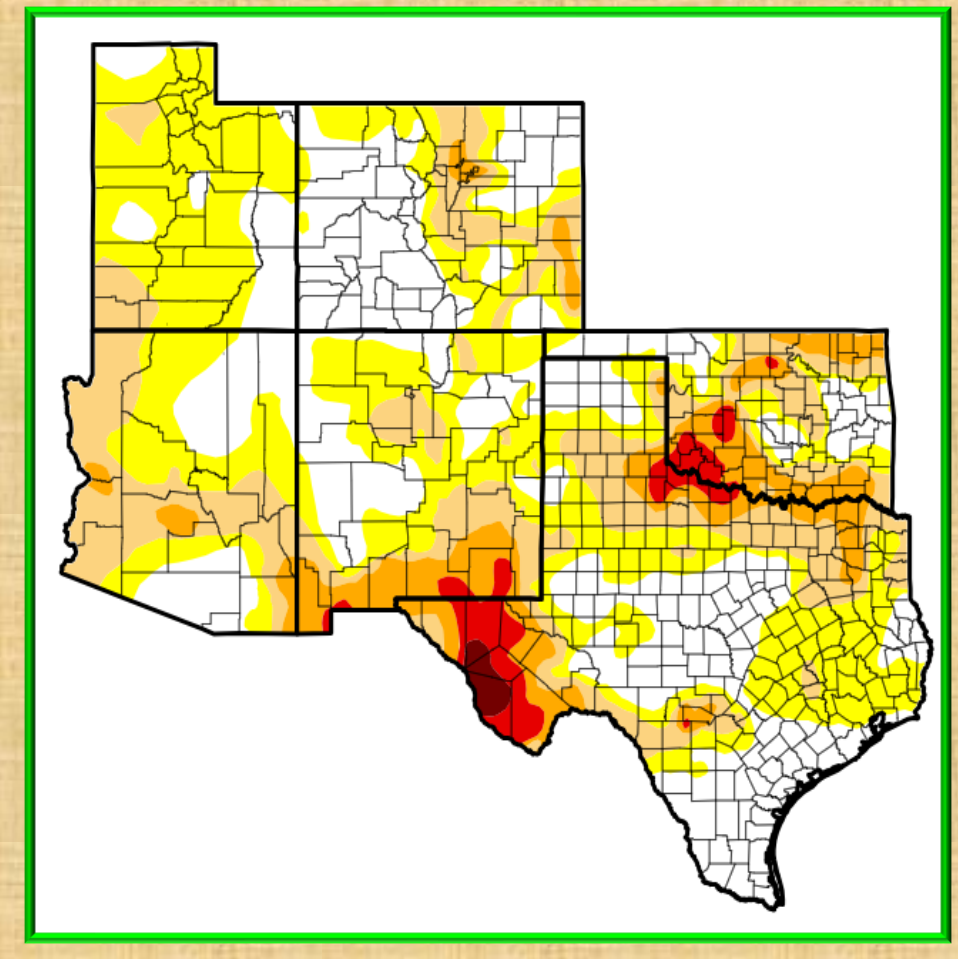
With El Niño, we often see the opposite pattern where the eastern Pacific ridge of high pressure is often weak or non-existent, allowing winter storms to sweep across the southern U.S. This typically will give the south-western U.S. above normal precipitation.



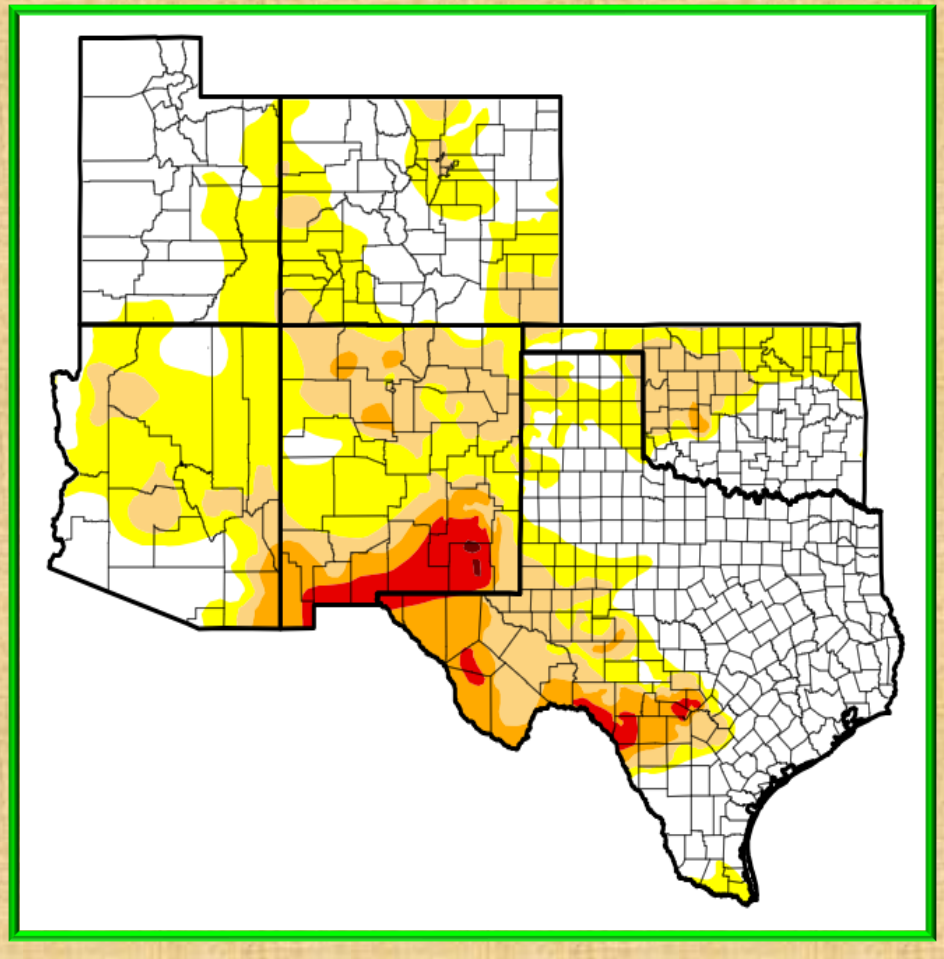
Current drought conditions and 3 month change

- Abnormally Dry – D0
- Moderate Drought – D1
- Severe Drought – D2
- Extreme Drought – D3
- Exceptional – D4

Sep 24, 2024



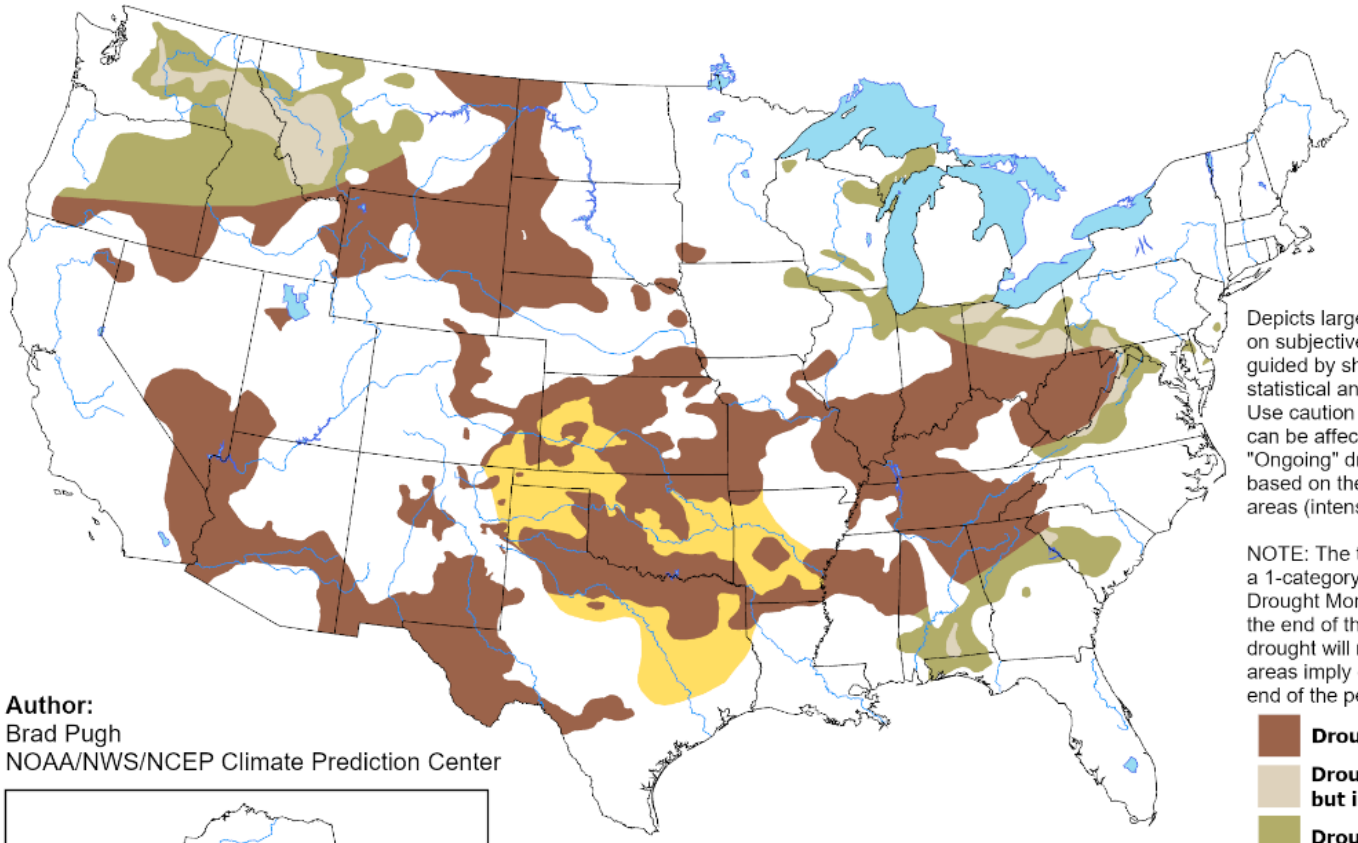
Jun 25, 2024



U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for September 19 - December 31, 2024
Released September 19, 2024

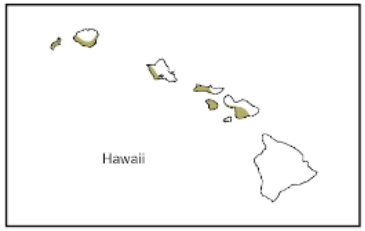


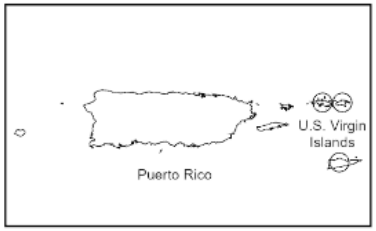
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- **Drought persists**
- **Drought remains, but improves**
- **Drought removal likely**
- **Drought development likely**
- **No drought**

Author:
Brad Pugh
NOAA/NWS/NCEP Climate Prediction Center

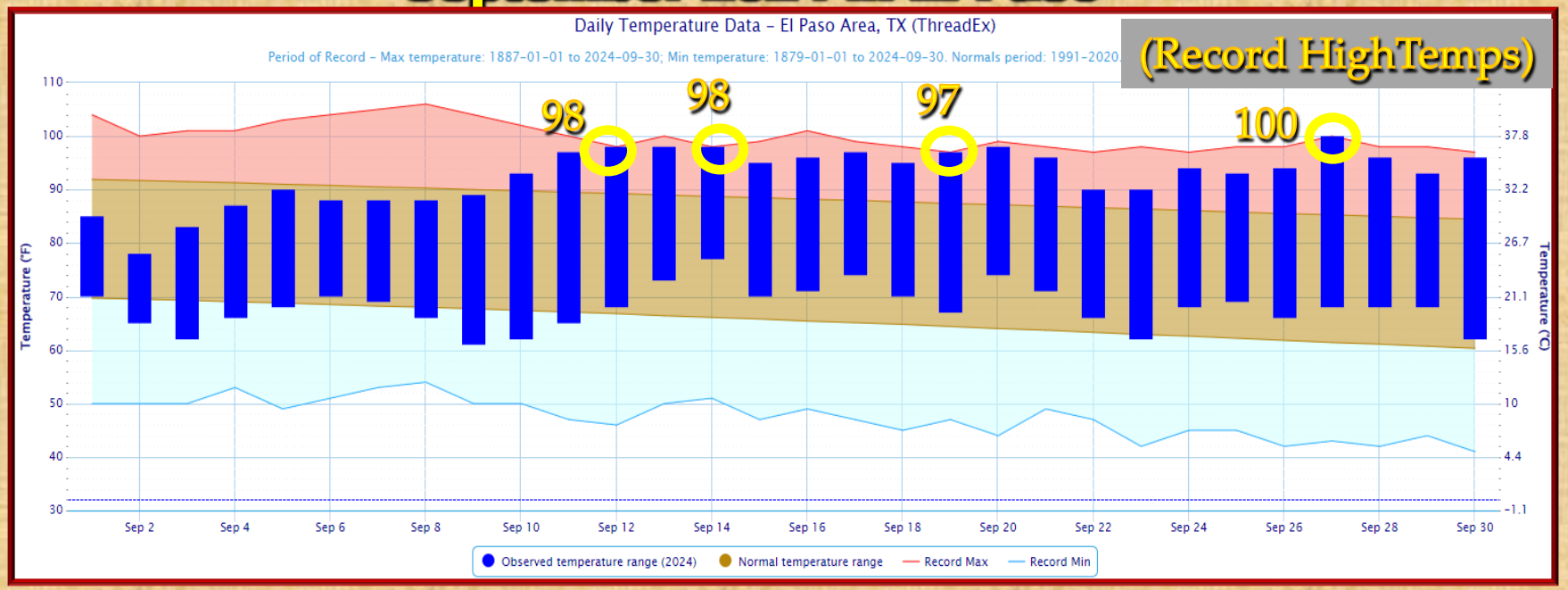


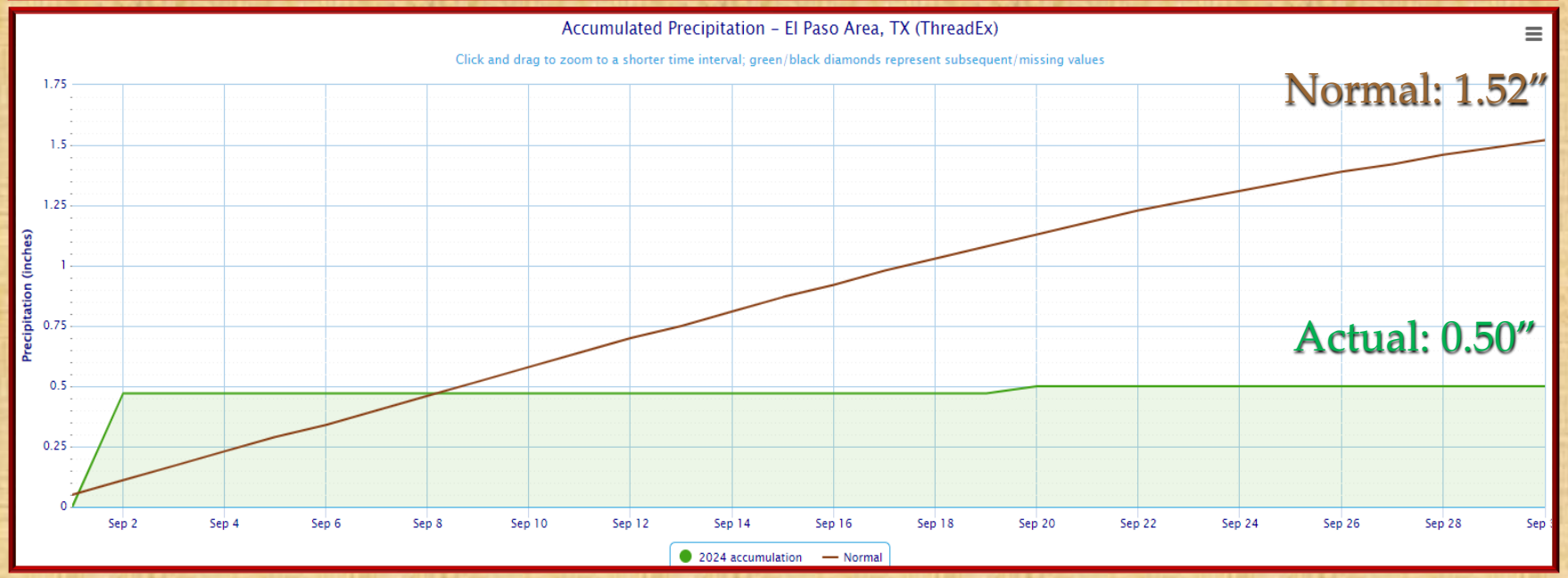


https://go.usa.gov/3eZ73

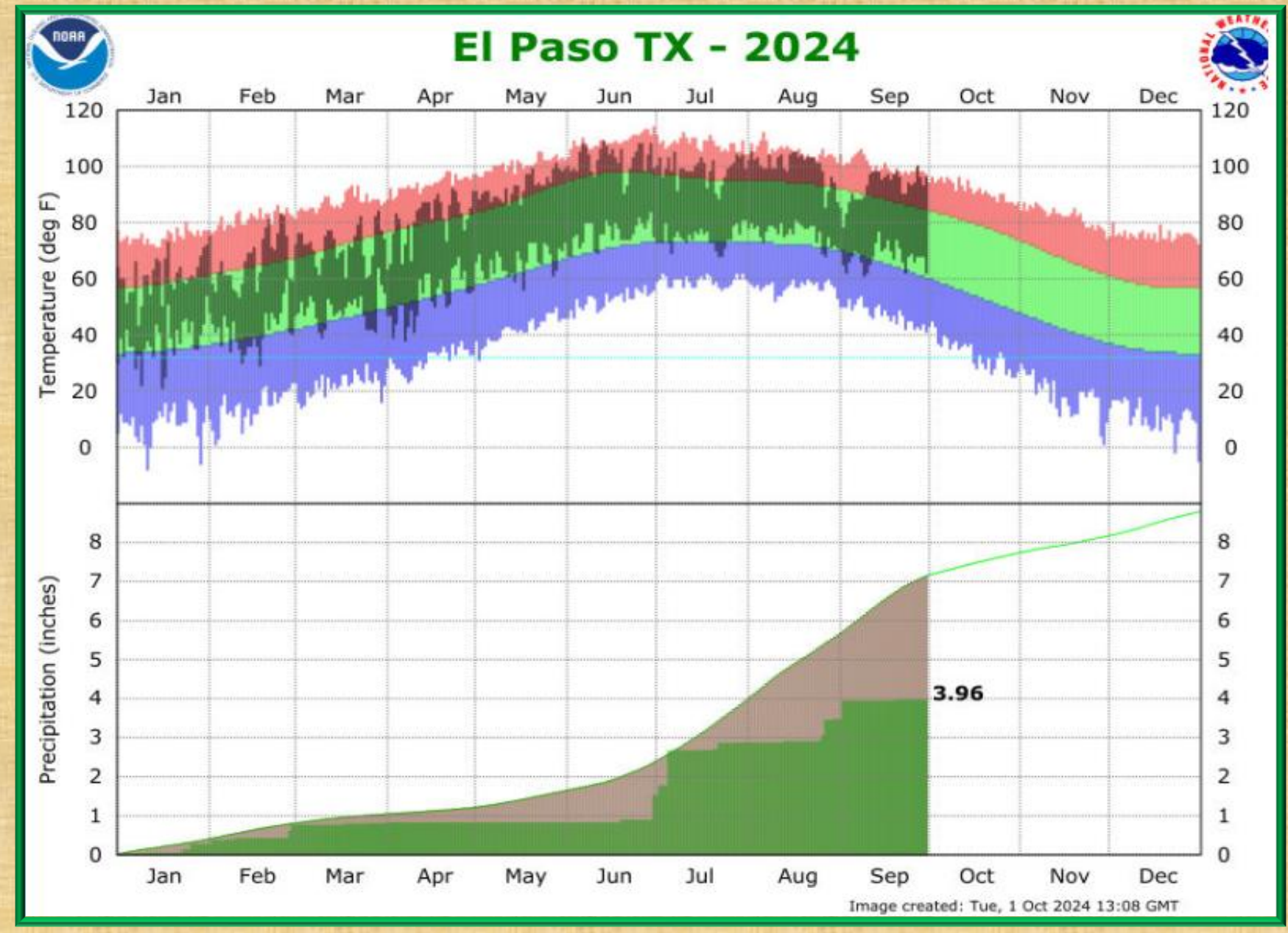
Temperature and precipitation data for September 2024 in El Paso

= record

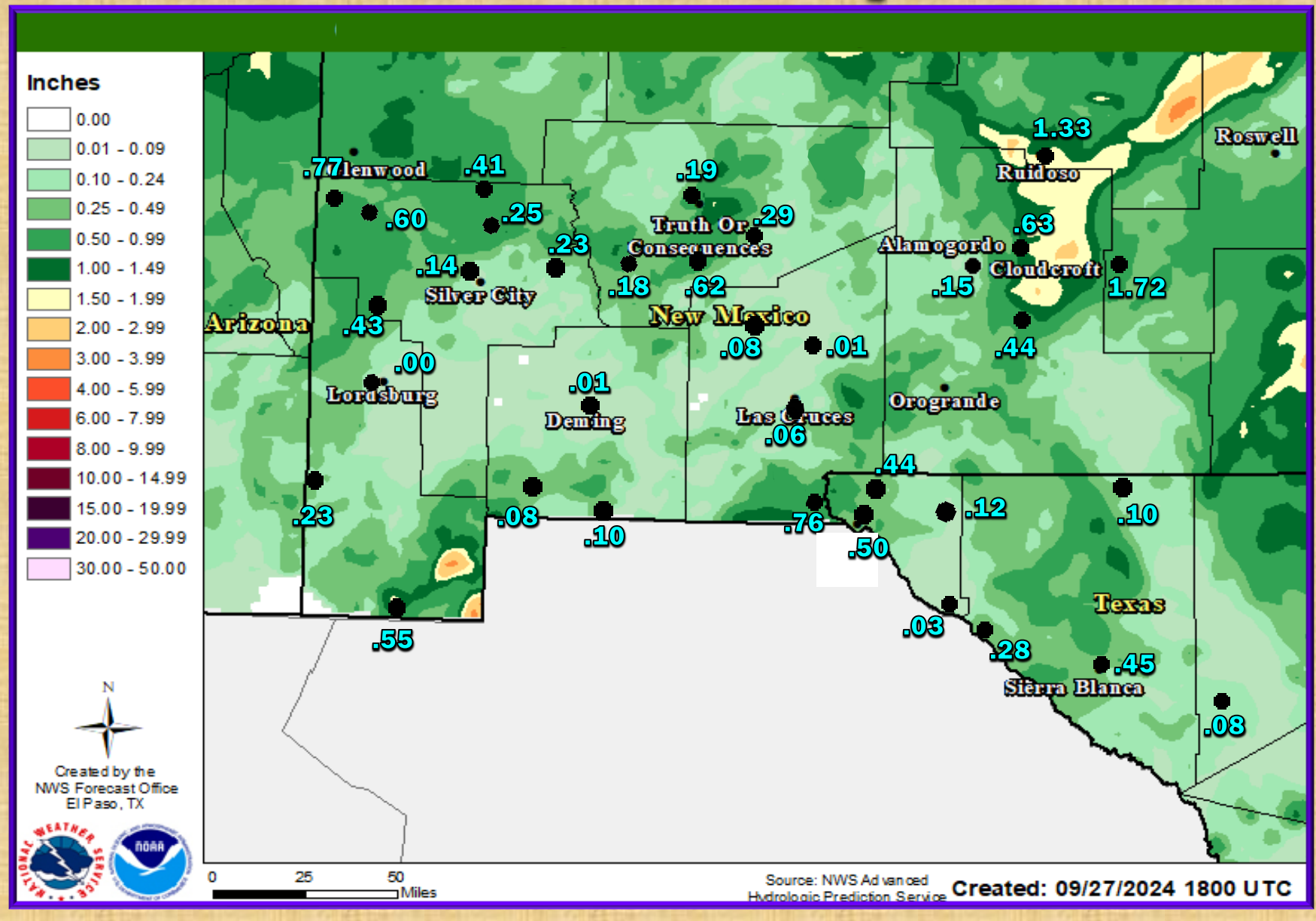




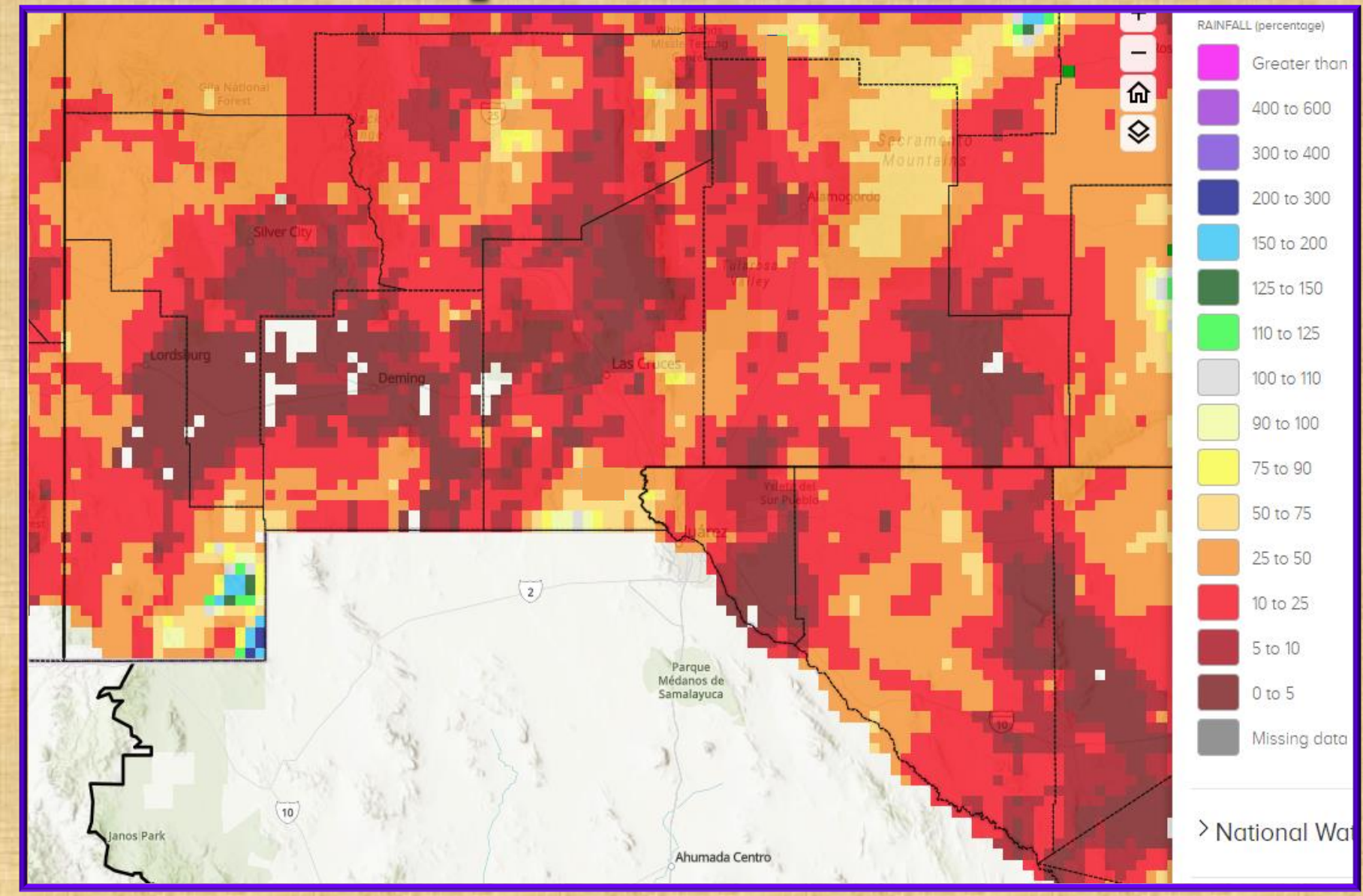
Temperature and Precipitation
Year-to-date for 2024 for El Paso



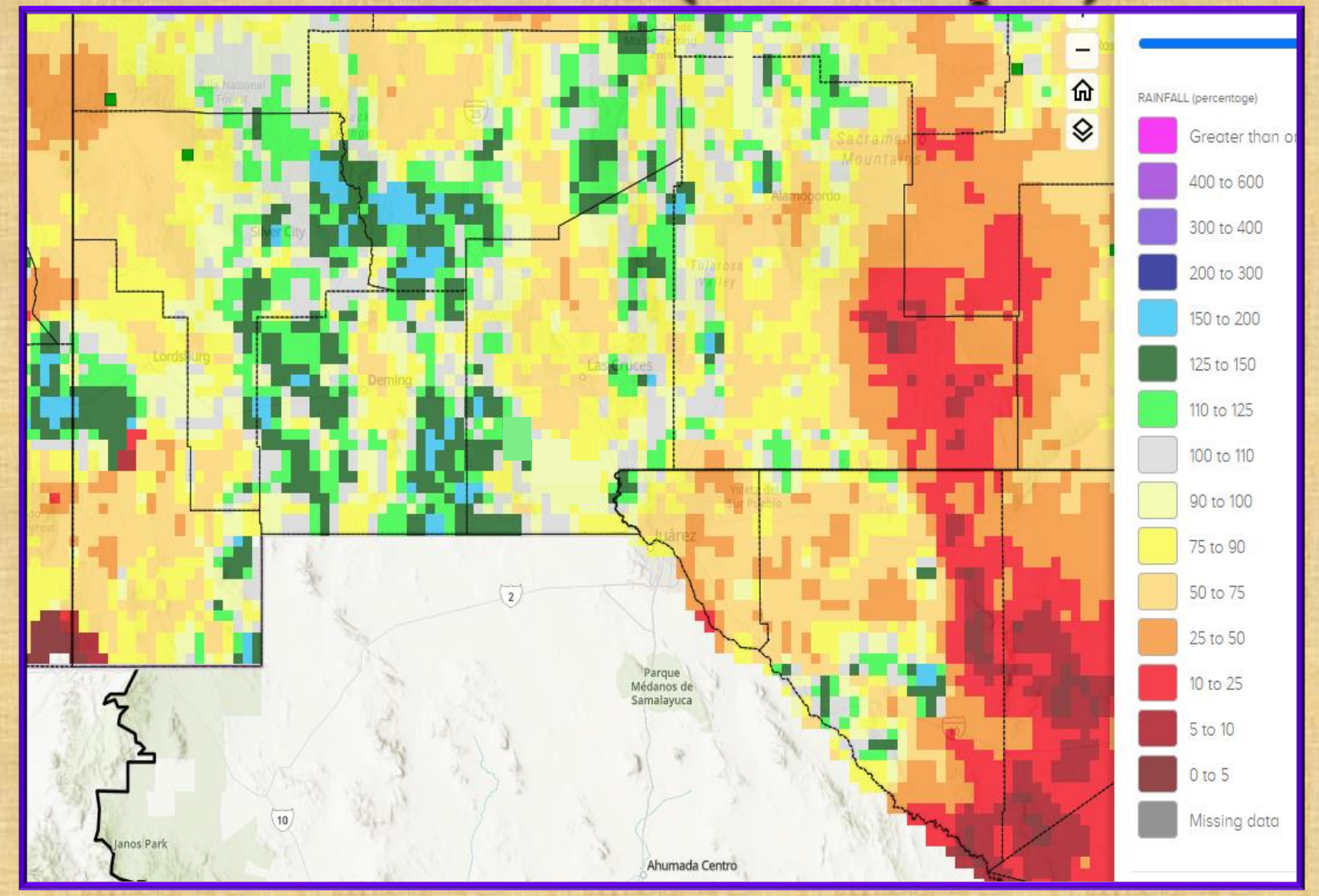
September 2024 rainfall estimate with surface rainfall reports



September 2024 rainfall estimate percent of normal



Radar rainfall estimate percent of normal for the Water Year (Oct 1 – Sep 30)



Tracking the 2024 Monsoon Season across the El Paso Forecast Area

A transition to monsoon flow began around June 22 this year with winds shifting to the south and east and bringing in higher humidity. This is about 10-14 days earlier than normal [see fig 1]. Widespread thunderstorms over northern Mexico and southern New Mexico also began around this same Time [see fig 2]. This flow remained rather consistent throughout July across south-central New Mexico and far west Texas with occasional southwesterly winds over western New Mexico.

Main headline for the 2024 Monsoon is a pretty good start to the rainfall. The counties which contain or are adjacent to the Rio Grande mostly saw above normal rainfall for the early Monsoon season so far while the more distant counties of Hudspeth, Hidalgo and western Grant were below normal. July 31st roughly marks the half way point for a typical Monsoon season.

Sea surface temperatures (SST) of the northern Gulf of California and western Gulf of Mexico are a good indicator of how far we've progressed through the monsoon. SSTs reaching 29 degrees typically indicate the 1/3 progress mark, which was quickly reached on July 17th [see fig 3].

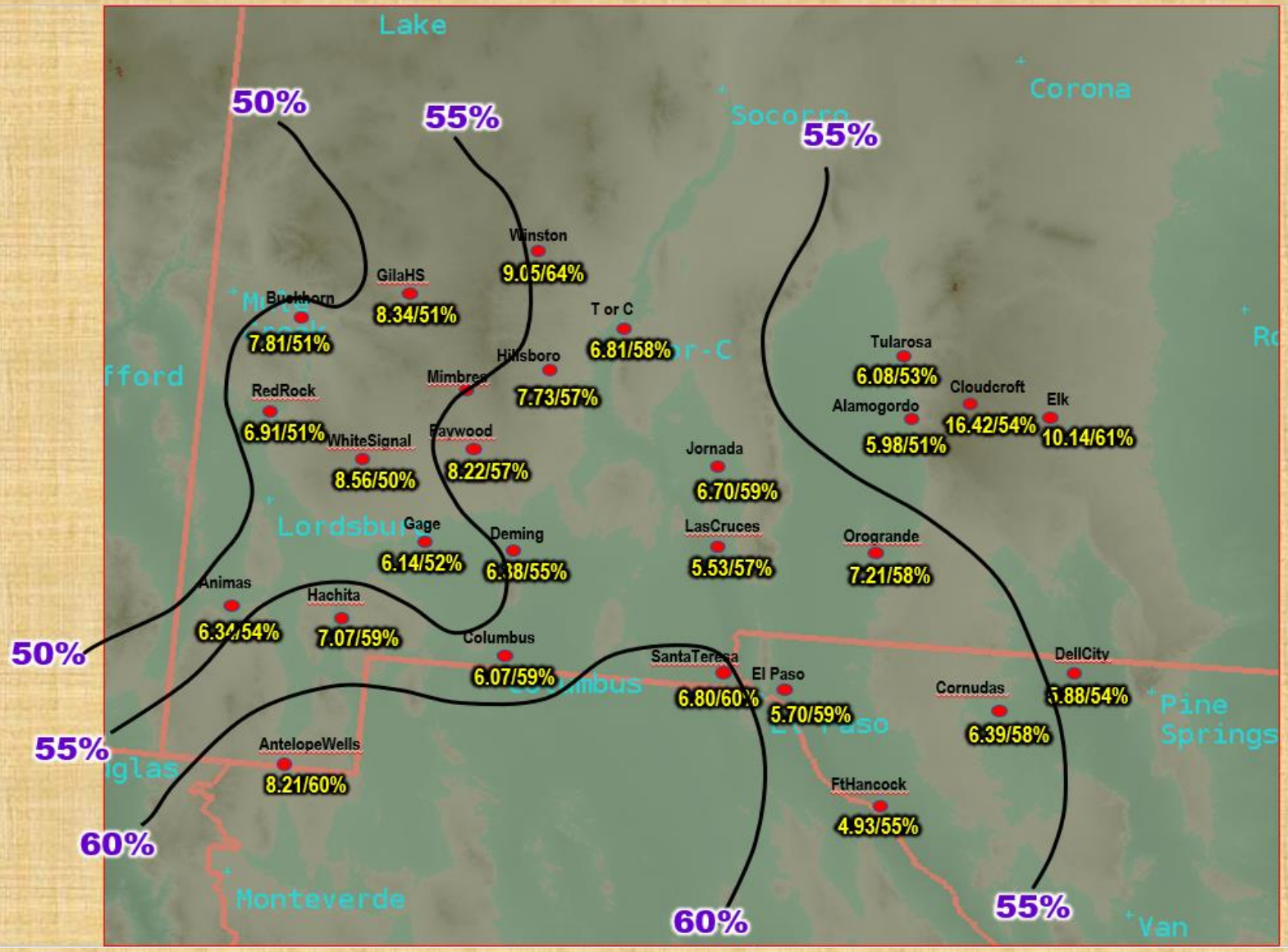
Tracking the 2024 Monsoon Season across the El Paso Forecast Area

Updating our monsoon season through the end of August; after a relatively wet July, August saw a strong downtick in rainfall. While the mountains, especially the Black Range and Gila, saw ample rainfall with above normal readings, much of the lowlands and especially west Texas, saw well below normal rainfall totals. The Monsoon pattern was still well in place [see fig 4], with dewpoint temperatures remaining in the 50s to 60 degrees. Unfortunately, the main Monsoon high pressure was centered over New Mexico for much of August. This tends to inhibit widespread rainfall, and indeed that was the case for August. This is one of the first parameters to fall out of favor when the monsoon ends [see fig 4]. The average last day of the monsoon over southern New Mexico and west Texas occurs on about September 24, so we are looking at around 3 more weeks of Monsoon in September.

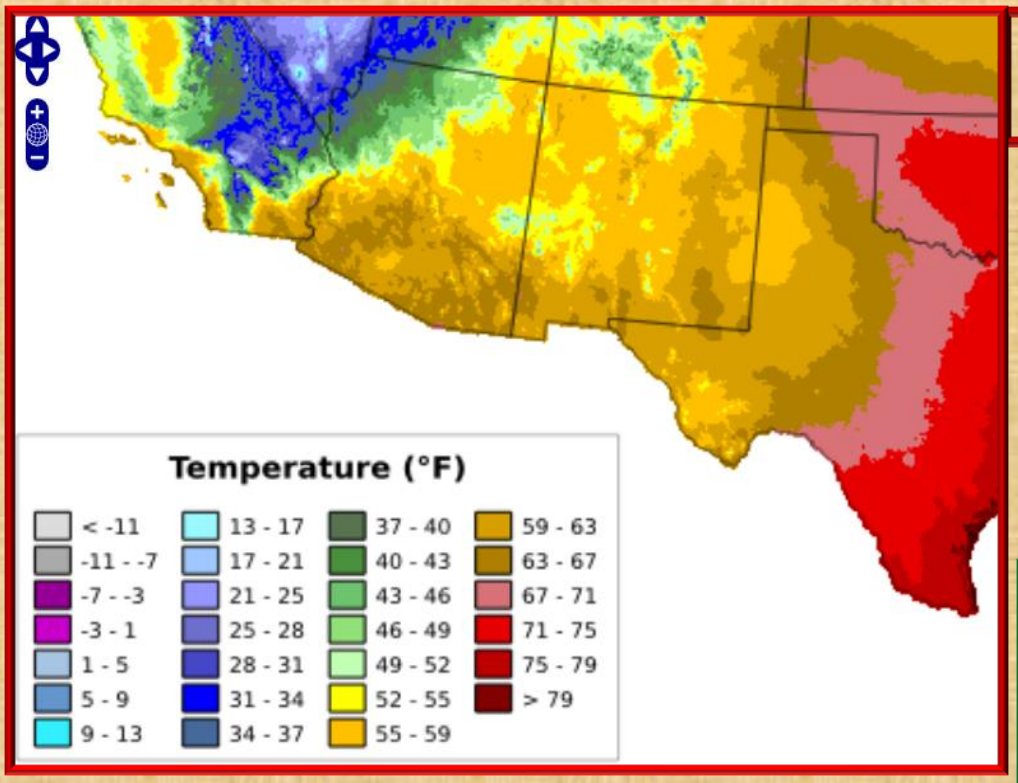
Tracking the 2024 Monsoon Season across the El Paso Forecast Area

September saw our annual Monsoon season end earlier than normal, with the end coming around a day or two of Sep 10, some 2 weeks earlier than normal. The season started around June 22, and the Monsoon rains began shortly thereafter. What began as a promising wet season late June through mid July, with above normal rainfall many areas, gradually diminished to a dissappointing dry stretch in August and September. The upper air pattern, by around Sep 10, had transitioned back to the fall/winter westerly flow. For the season, most of the areas from the Continental Divide east ranged from near normal to above normal, except eastern Hudspeth and Otero Counties, which were below normal. West of the Divide, rainfall was near to just slightly below normal.

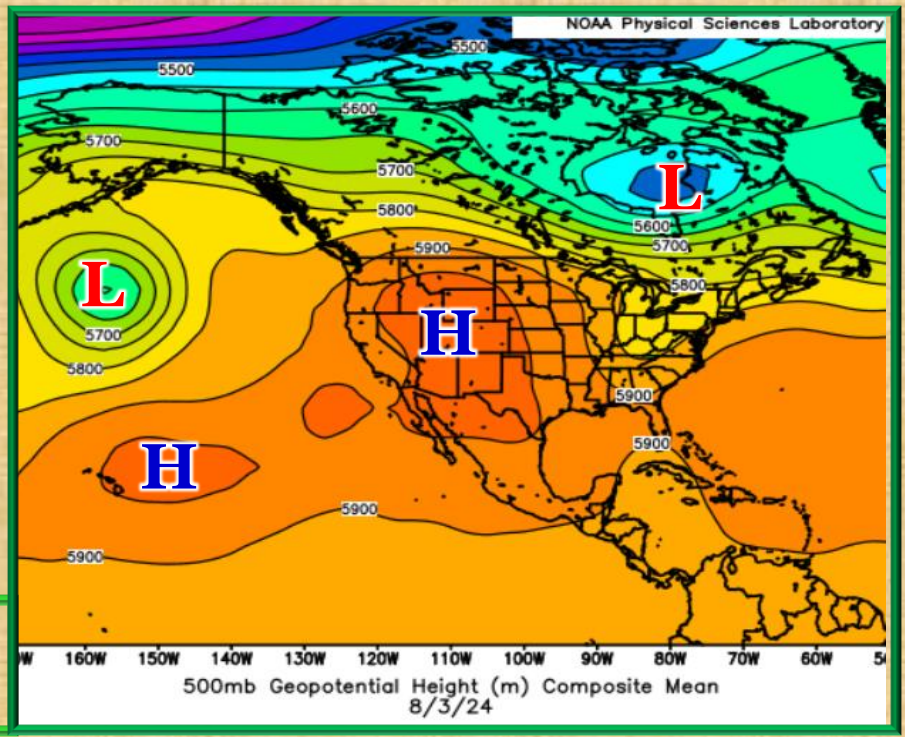
Percent of Annual Precipitation Falling During the Monsoon Season (Jun15-Sep 30)



Tracking the 2024 Monsoon Season across the El Paso Forecast Area. Fig 1

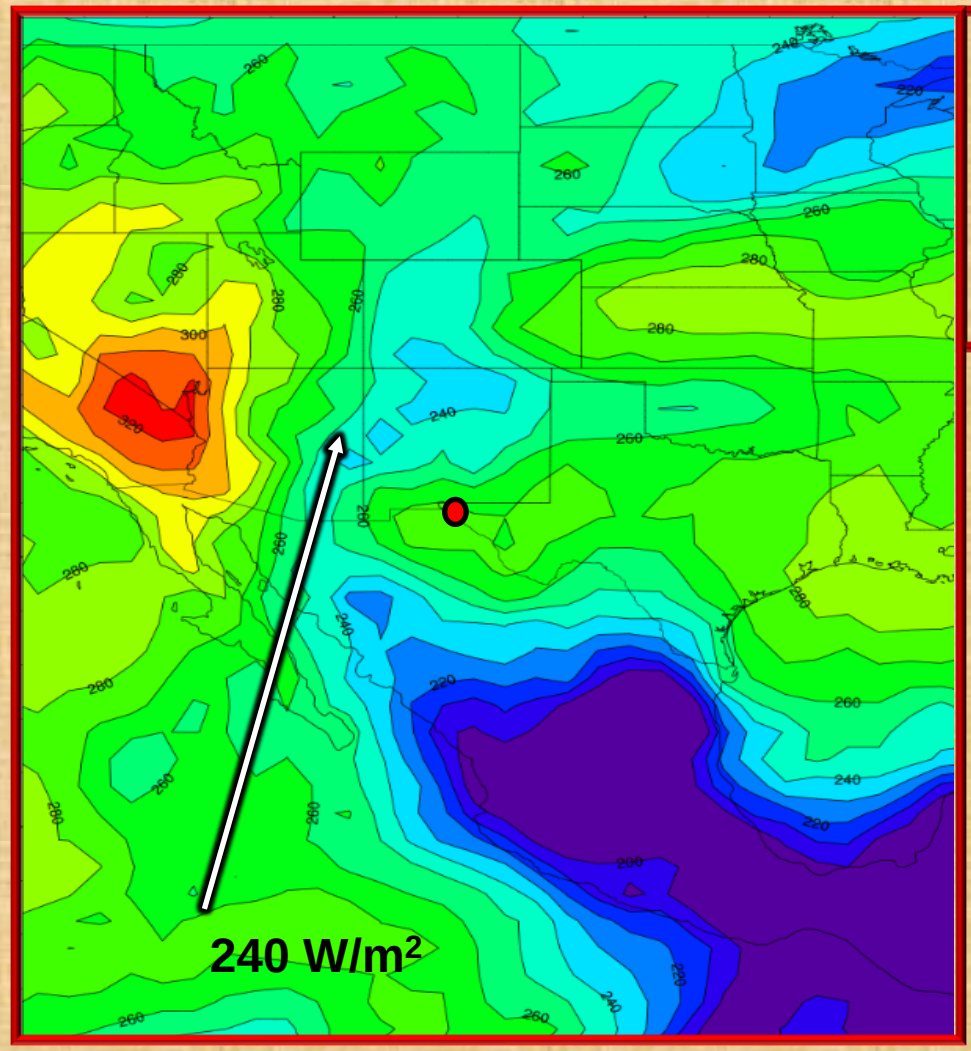


July 1– Dewpoints in the 50s. They first reached this level around June 21.

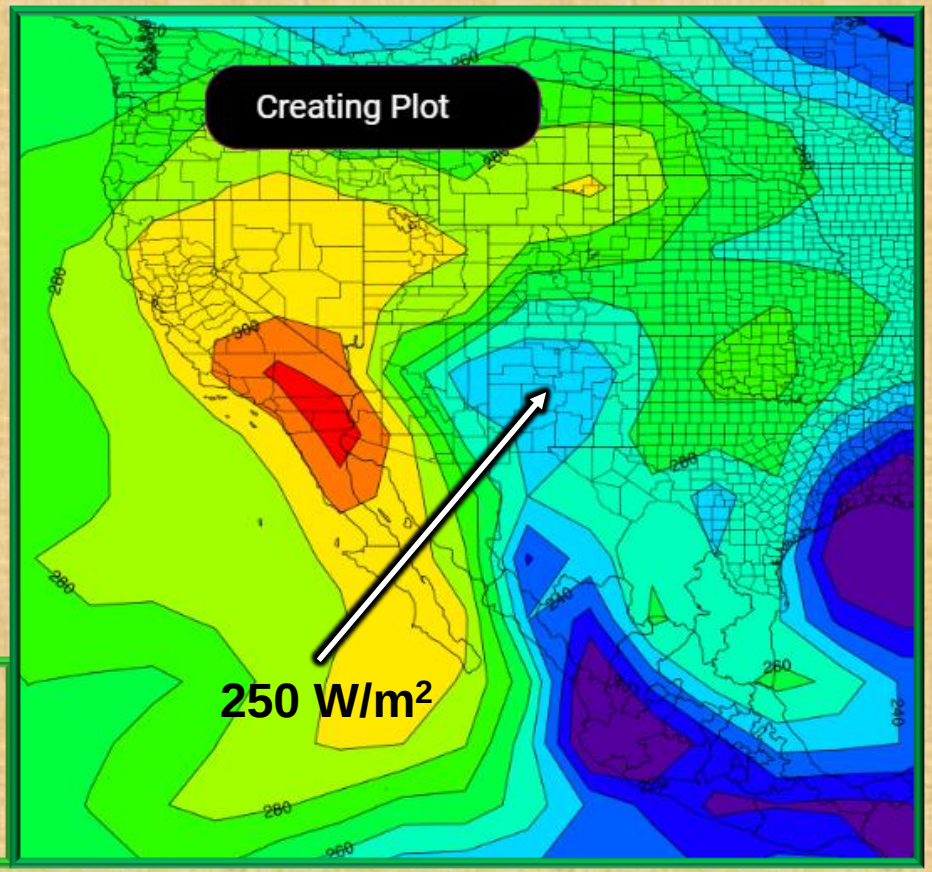


By June 22, 500mb (18,000 ft) sub-tropical high reaches the Desert Southwest

Tracking the 2024 Monsoon Season across the El Paso Forecast Area. Fig. 2

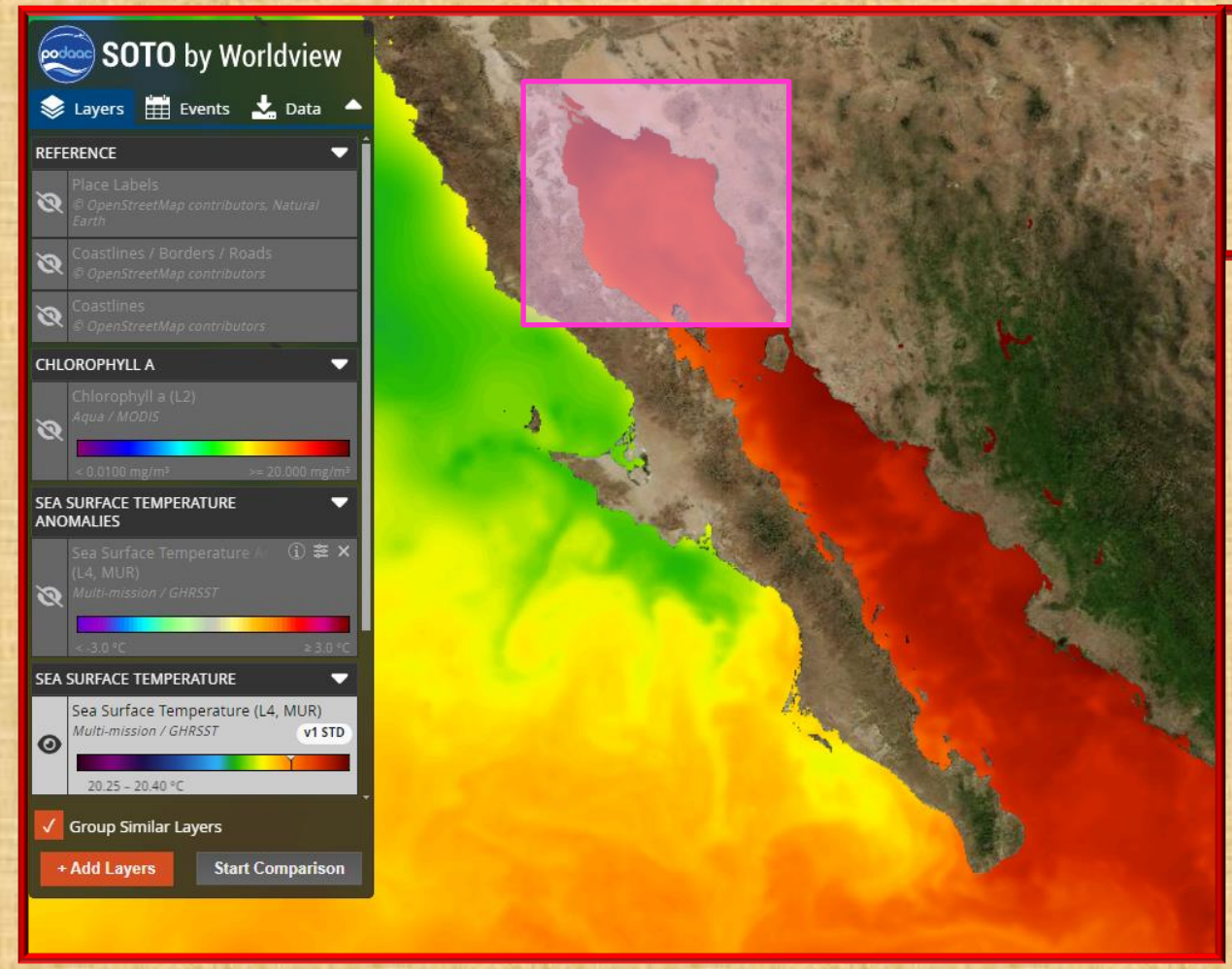


June 20-24 - Outgoing Longwave Radiation (OLR) diminishes to less than 240 W/m² in the area though over much of New Mexico. Thick clouds and anvil tops from thunderstorms diminish the OLR values, often indicative of the monsoon moisture and thunderstorms moving into the area. (Pentad data Jun 20-25)



Aug 27-31, 2024 – Outgoing Longwave Radiation increases some to 250 W/m2. This denotes slight decrease in overall thunderstorm coverage from beginning of month

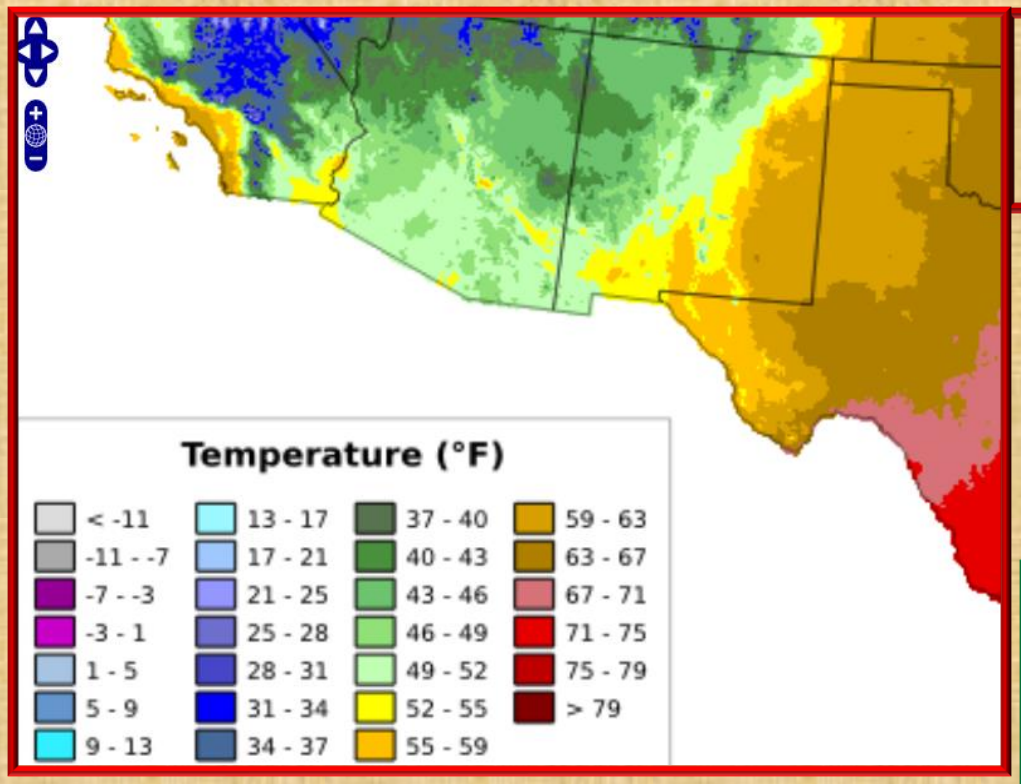
Tracking the 2024 Monsoon Season across the El Paso Forecast Area. Fig. 3



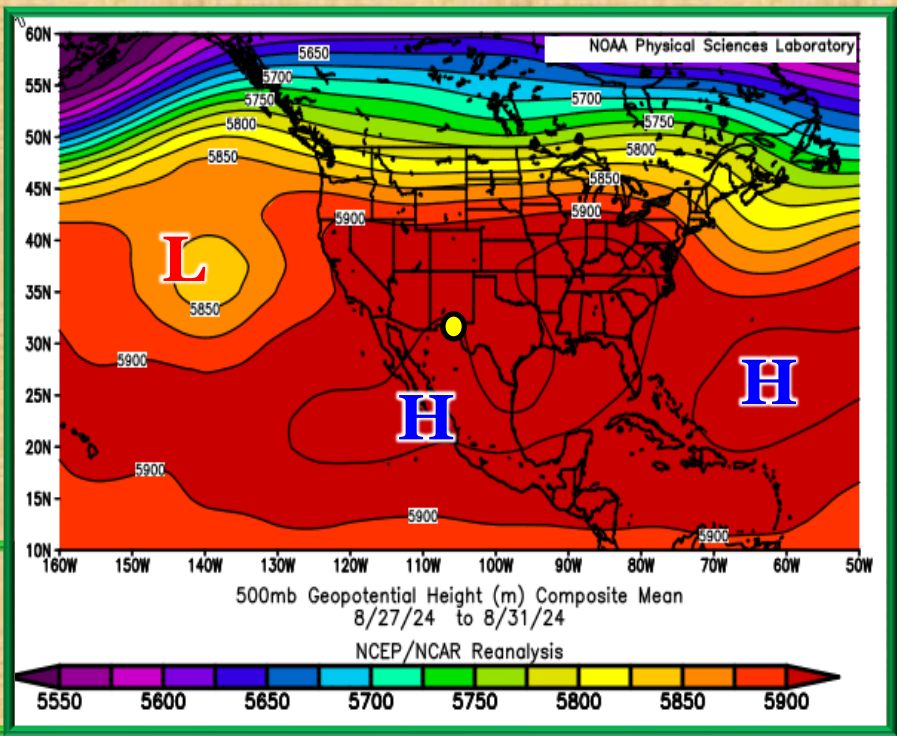
July 17 – Sea surface temperatures in the northern Gulf of California reach 29C deg (84F)

Studies have shown that once northern Gulf of California sea surface temperatures reach 29C, New Mexico/Arizona will receive around 65-70% of their total summer rainfall.

As we near the end of the 2024 Monsoon Season. Fig 4

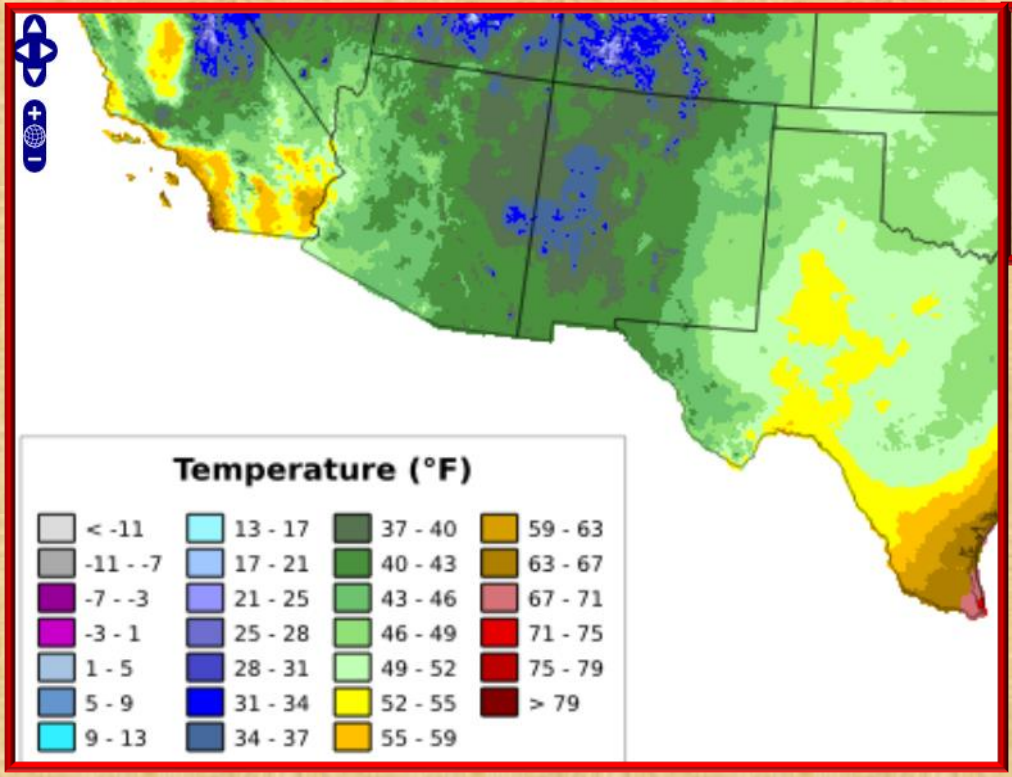


Aug 31– Dewpoints remain in the 50s, indicating the monsoon season is still in full swing.

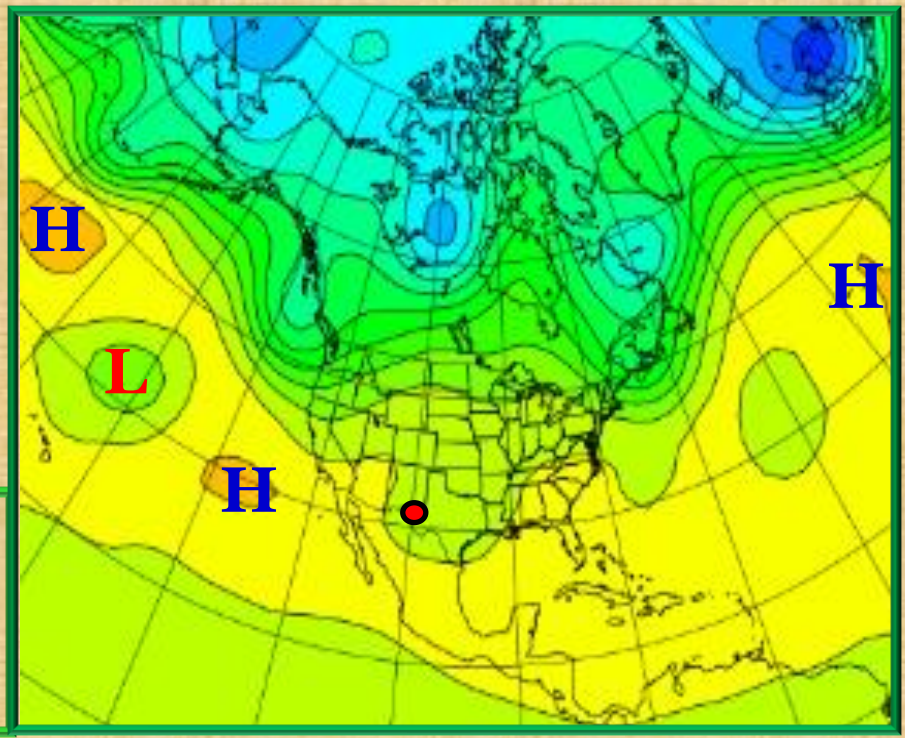


As of the end of August, the 500mb (18,000 ft) upper flow is still well in the Monsoon pattern.

The end of the 2024 Monsoon Season. Fig 5



Sep 9 – Dewpoints fell into the 40s, and with the exception of a few days around mid-month, remained in the 30s and 40s.



By September 11, the 500mb (18,000 ft) upper flow had transitioned from a monsoon pattern to an Autumn mid-latitude flow

Fig. 4

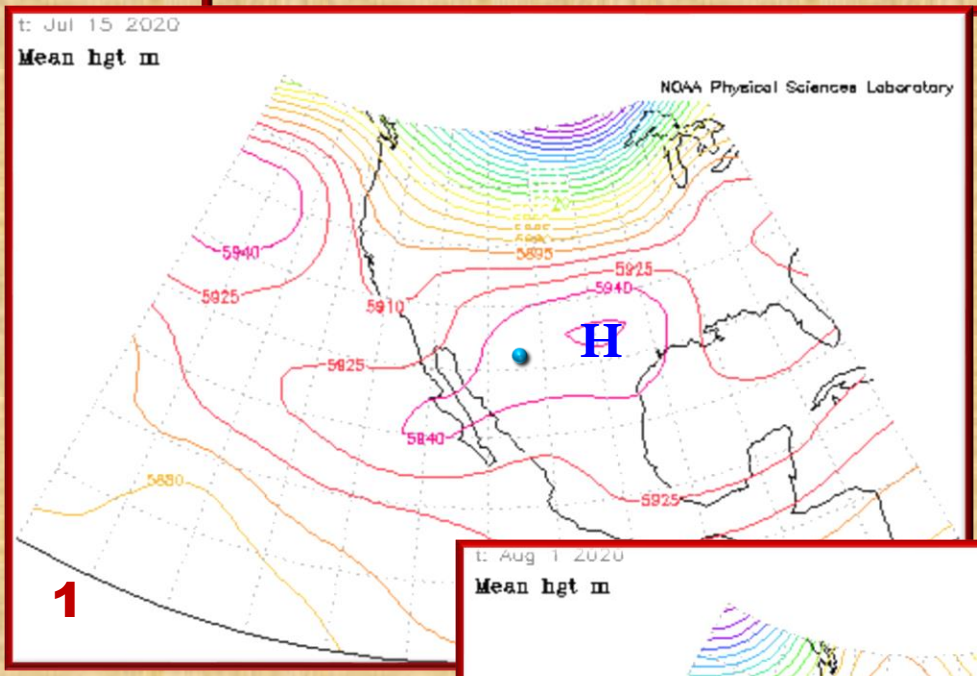
Percent of monsoon rainfall after 29C							
Year	29C Date	ELP	DMN	CLD	TCS	HIL	BKN
2024	Jul 17	41	56	75	33	59	73
2023	Jul 17	89	100	83	97	100	81
2022	Jun 29	85	82	85	67	74	80
2021	Jul 16	51	75	68	60	63	71
2020	Jul 22	88	65	67	98	89	86
2019	Aug 8	83	91	62	67	71	34
2018	Jul 21	59	46	74	80	62	61
2017	Jul 23	58	67	66	88	61	64
2016	Aug 3	93	92	71	79	85	73
2015	Jul 27	63	43	56	53	61	57
2014	Jul 23	92	82	77	91	89	MSG
2013	Aug 8	61	68	61	88	75	MSG
2012	Jul 24	53	64	73	42	52	80
2011	Jul 29	37	90	36	86	62	68
2010	Jul 29	47	31	43	33	47	32
2009	Jul 24	54	61	47	56	65	56
2008	Jul 27	48	39	54	46	58	58
2007	Jul 26	65	62	60	91	72	100
2006	Jul 29	84	81	73	86	85	MSG
2005	Jul 30	95	79	72	83	87	80
AVE	Jul 25	68	68	64	72	69	67

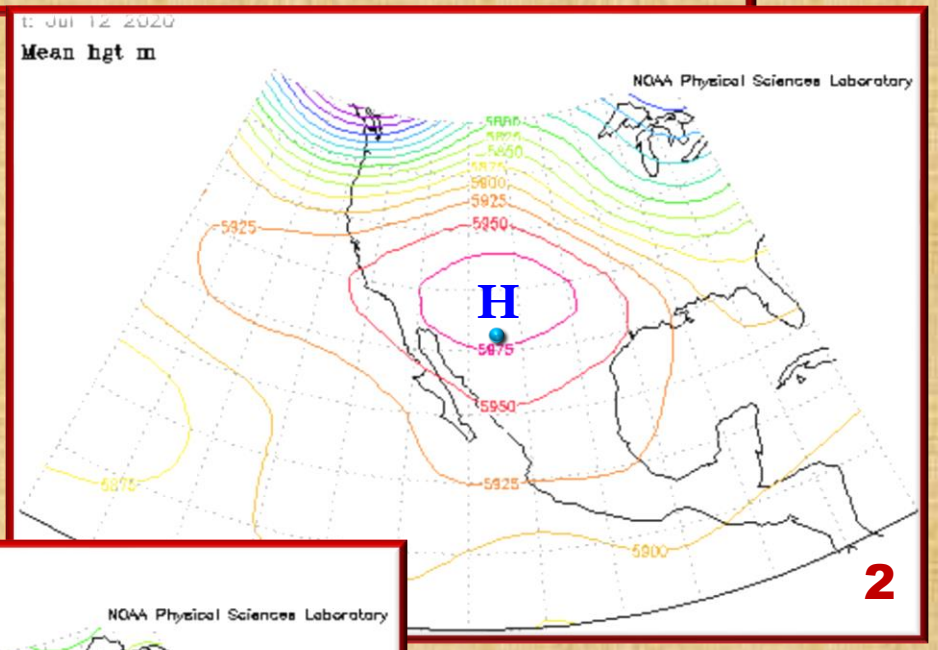
ELP=El Paso Intl Airport
DMN=Deming Airport
CLD=Cloudcroft COOP
TCS=T or C Airport
HIL=Hillsboro COOP
BKN=Buckhorn COOP

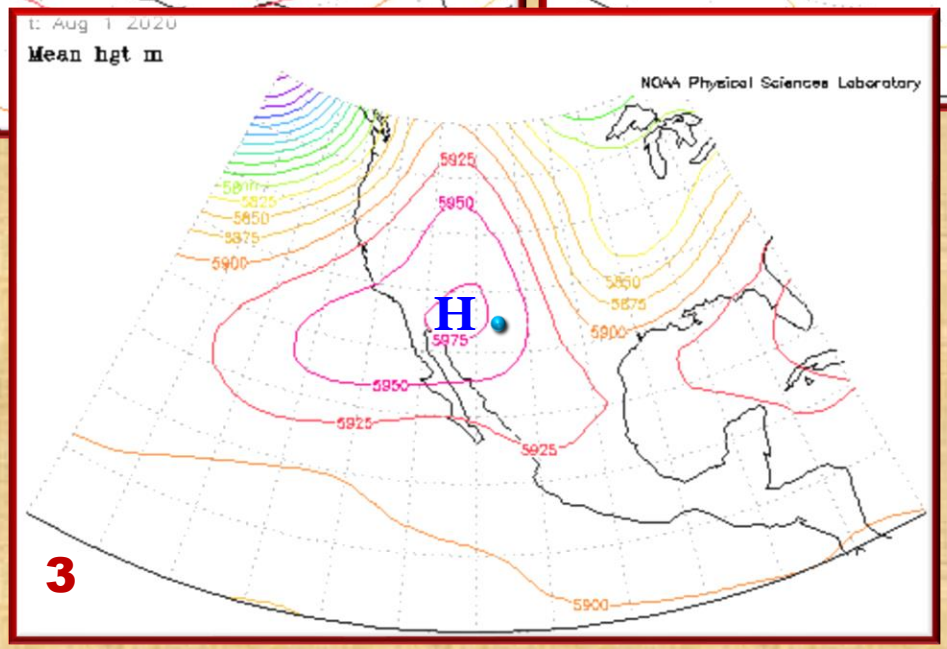
The northern Gulf of California sea surface temperature this year reached 29C on July 17. Research has shown that, on average, around 65-75% of the total Monsoon rainfall will fall after that date.

Tracking the 2023 Monsoon Season across the El Paso Forecast Area. Fig. 5

Position of NAM upper high determines our rainfall potential. Blue dot represents El Paso.



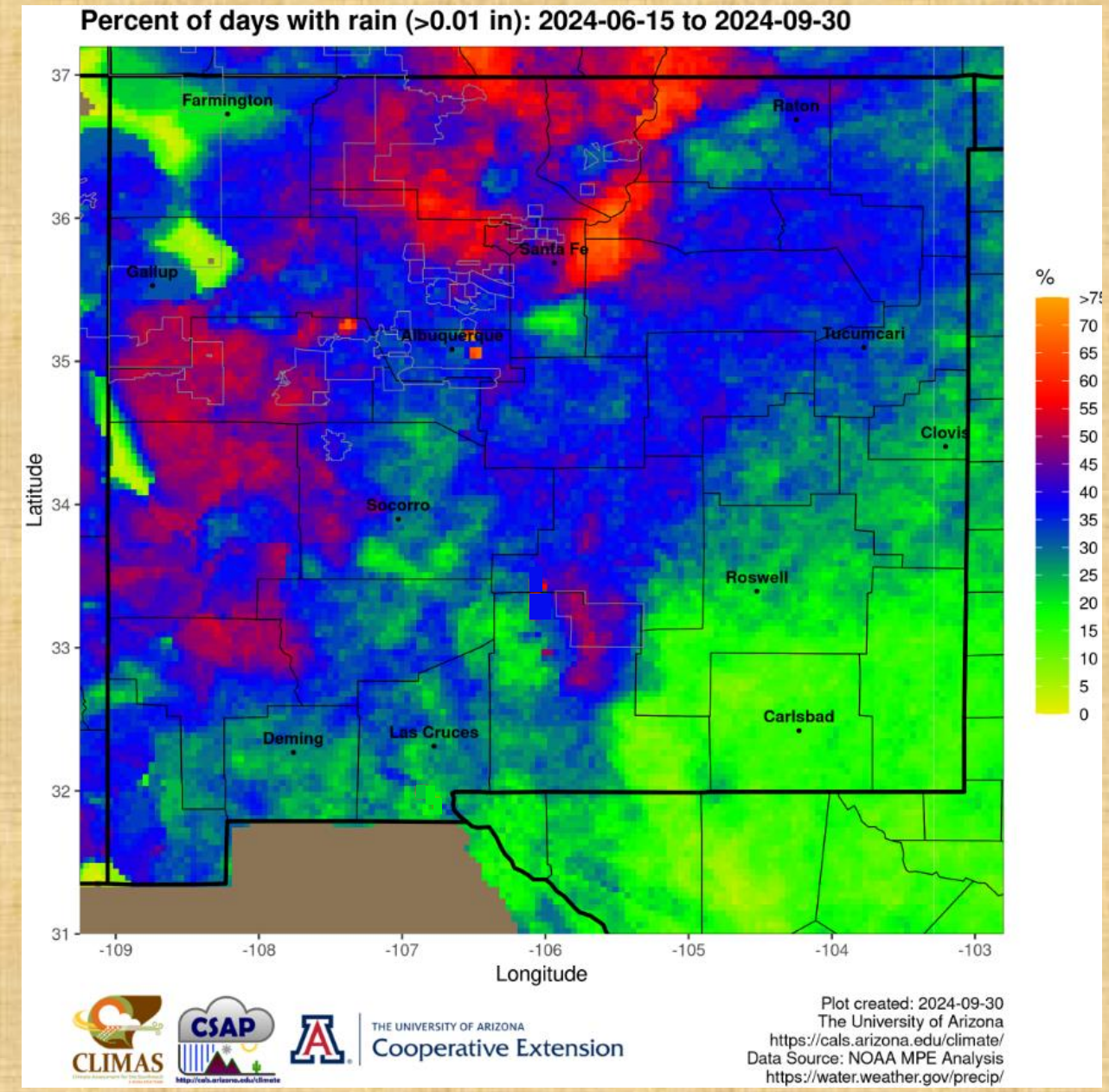




No. 1 High center east of New Mexico. Often brings ample tropical moisture and widespread heavy rain and flooding to the area under southerly flow.

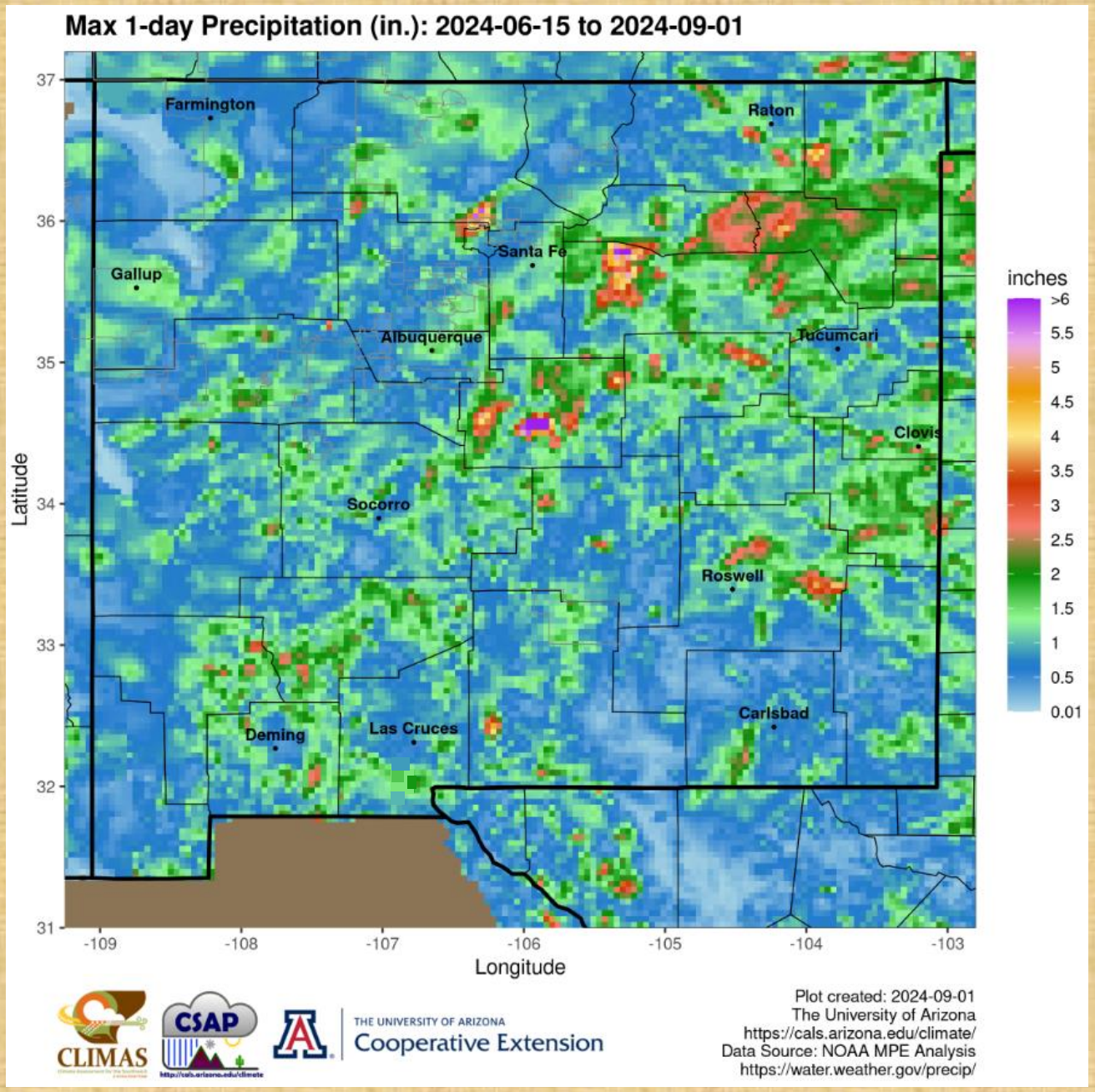
No. 2 High center over New Mexico. Often brings very hot temperatures and little if any rain (usually limited to the mountains).

No. 3 High center north and west of New Mexico. Often brings scattered storms with hit and miss heavy rains and large hail and strong wind potential.



CLIMAS
THE UNIVERSITY OF ARIZONA

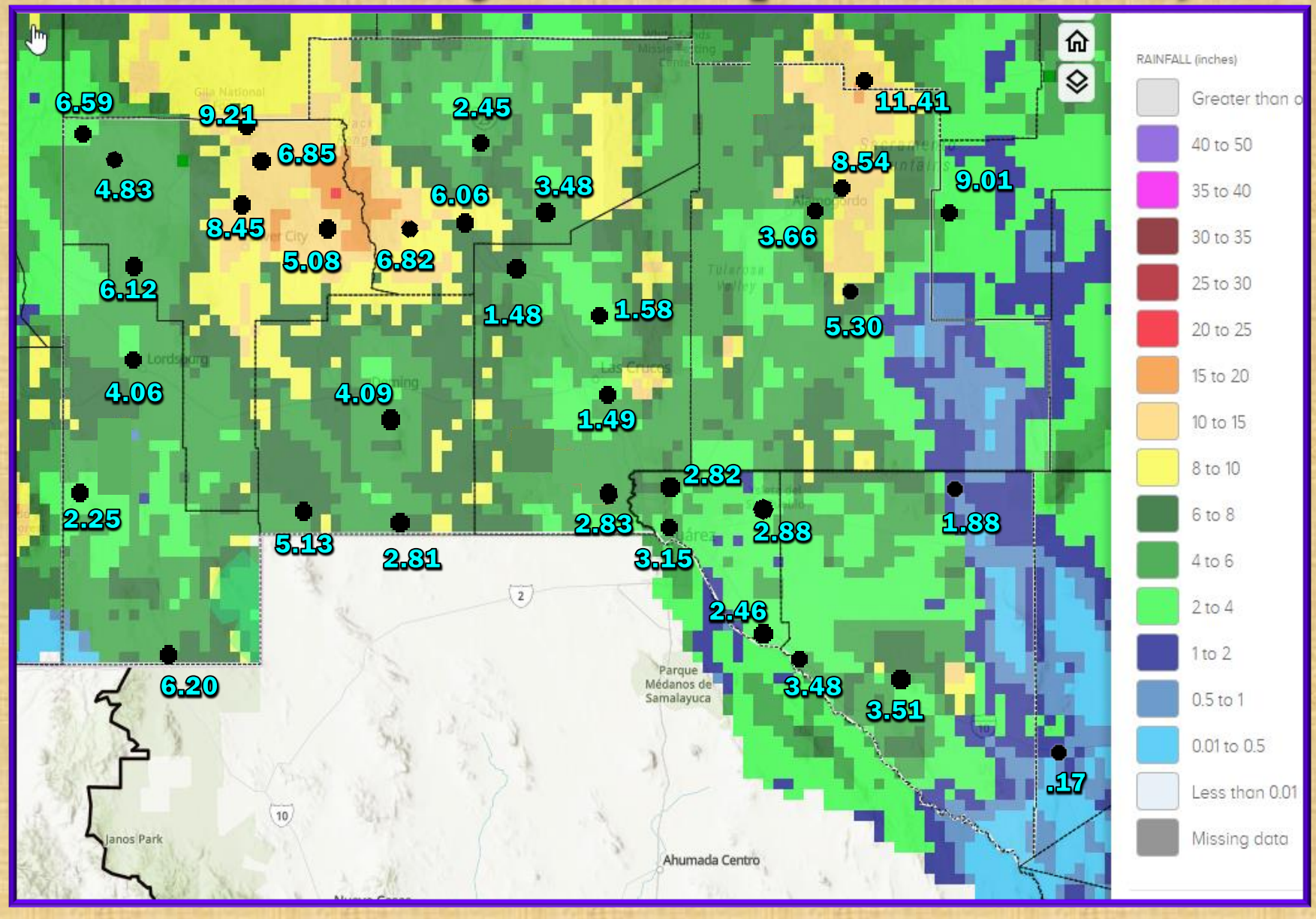
This map shows the percentage of measurable rainfall days so far during the Monsoon season. Courtesy of Climate Assessment for the Southwest.



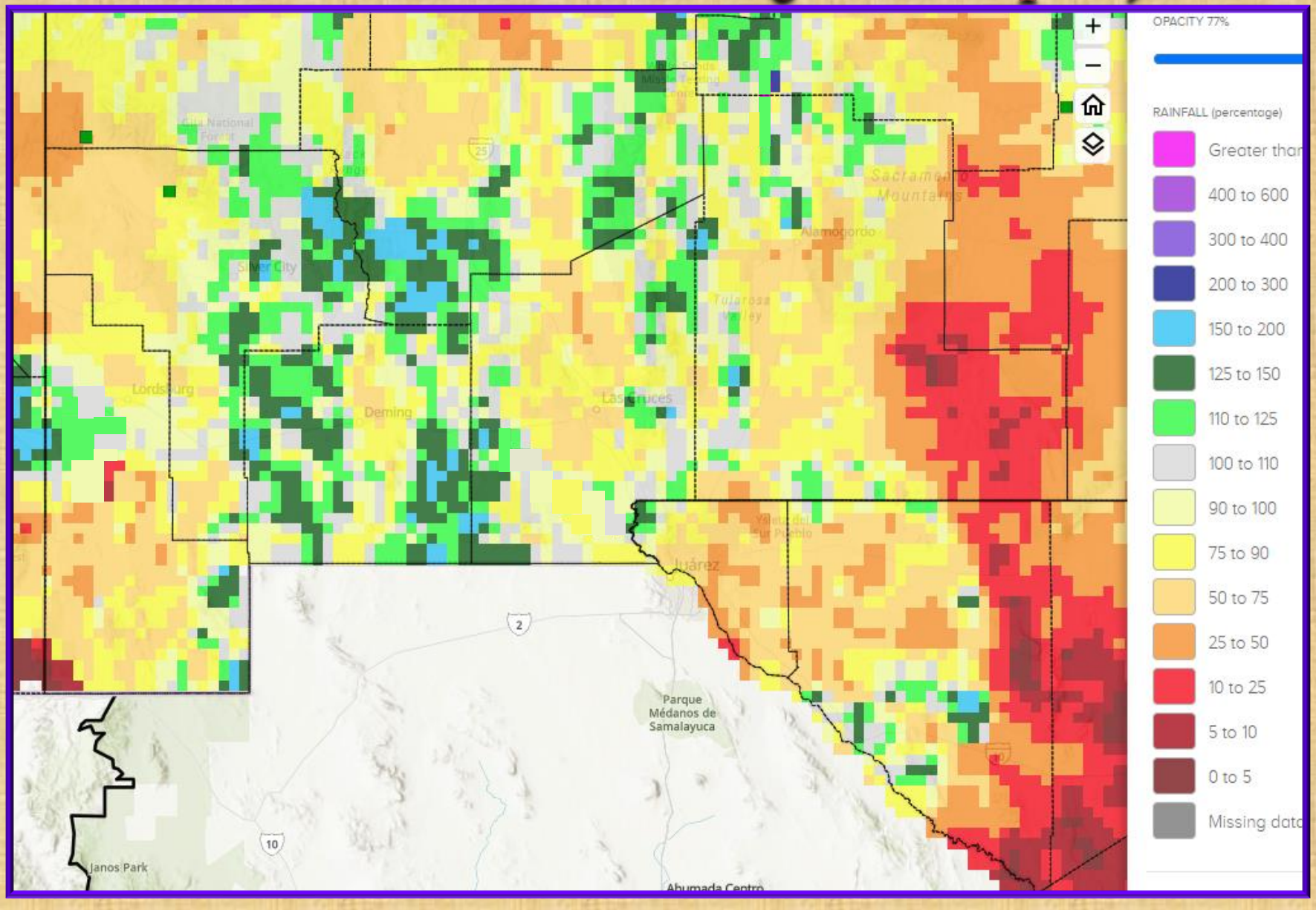
CLIMAS — THE UNIVERSITY OF ARIZONA

This map shows greatest one day rainfall total so far during the Monsoon season. Courtesy of Climate Assessment for the Southwest.

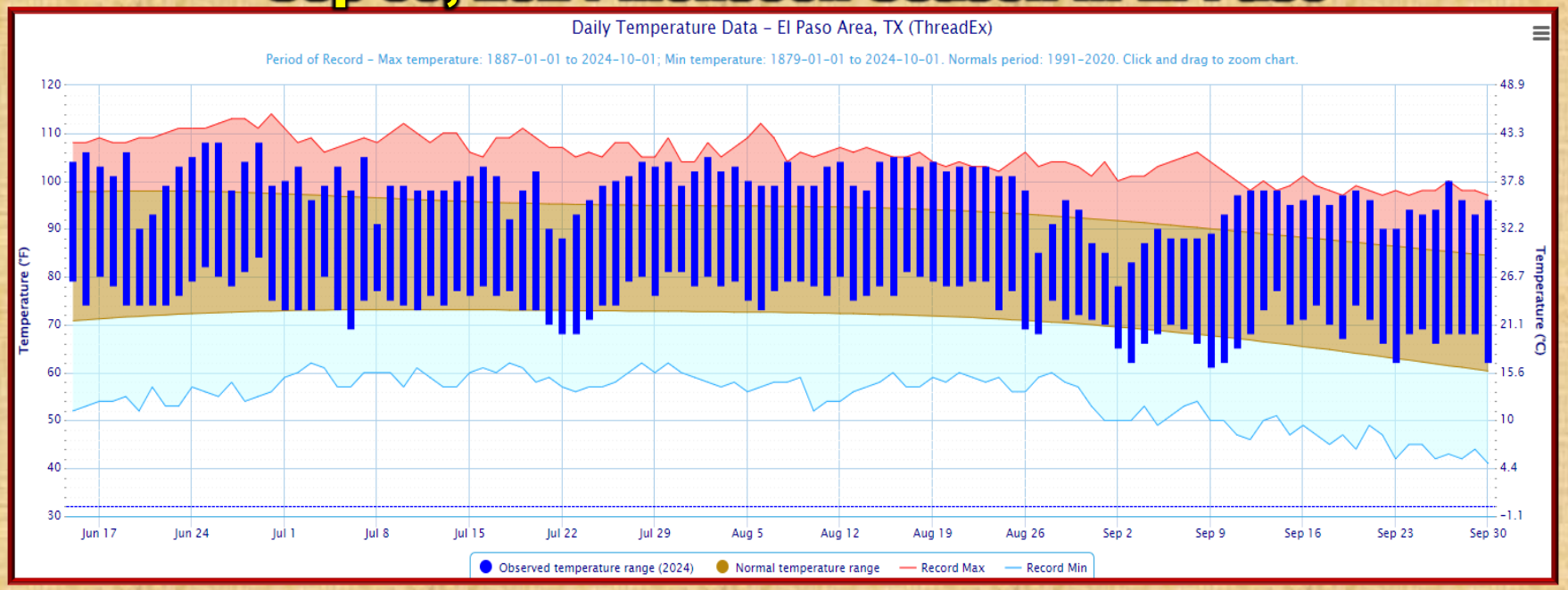
Radar rainfall estimate for the Monsoon Season 2024 (June 1 – September 30, 2024)

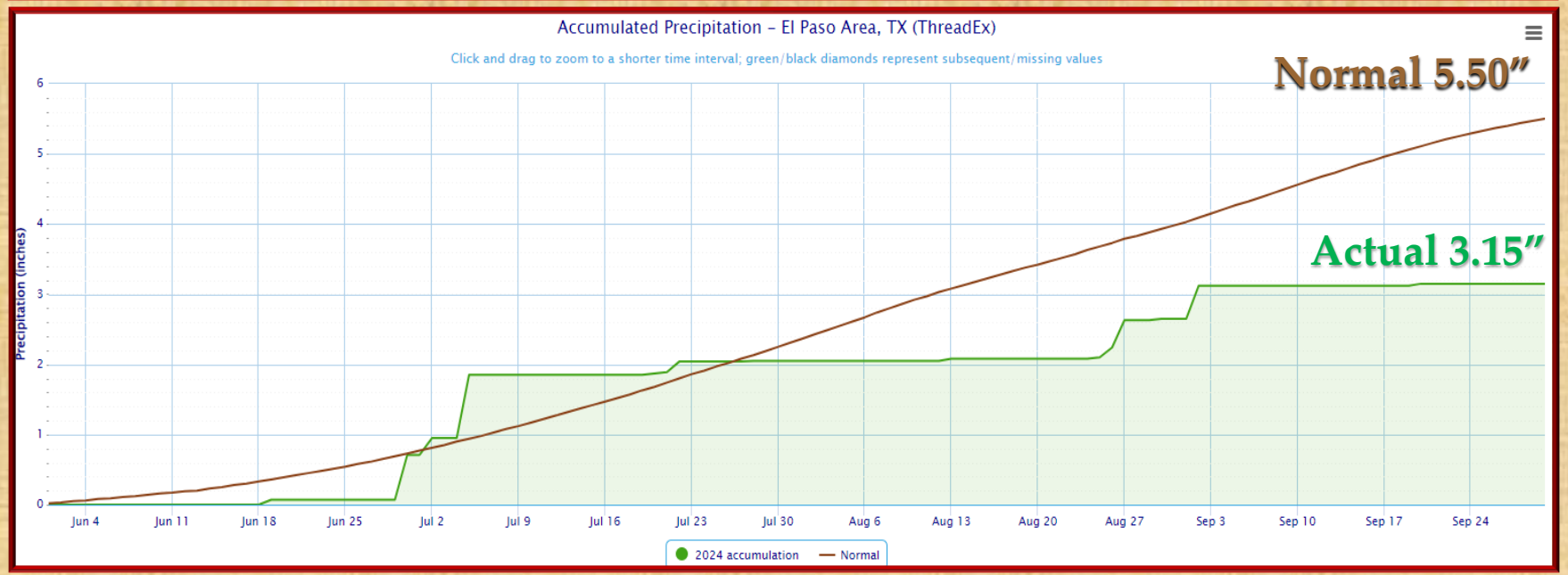


Radar rainfall estimate percent of normal for Monsoon season 2024 (June 1-Sep 30)



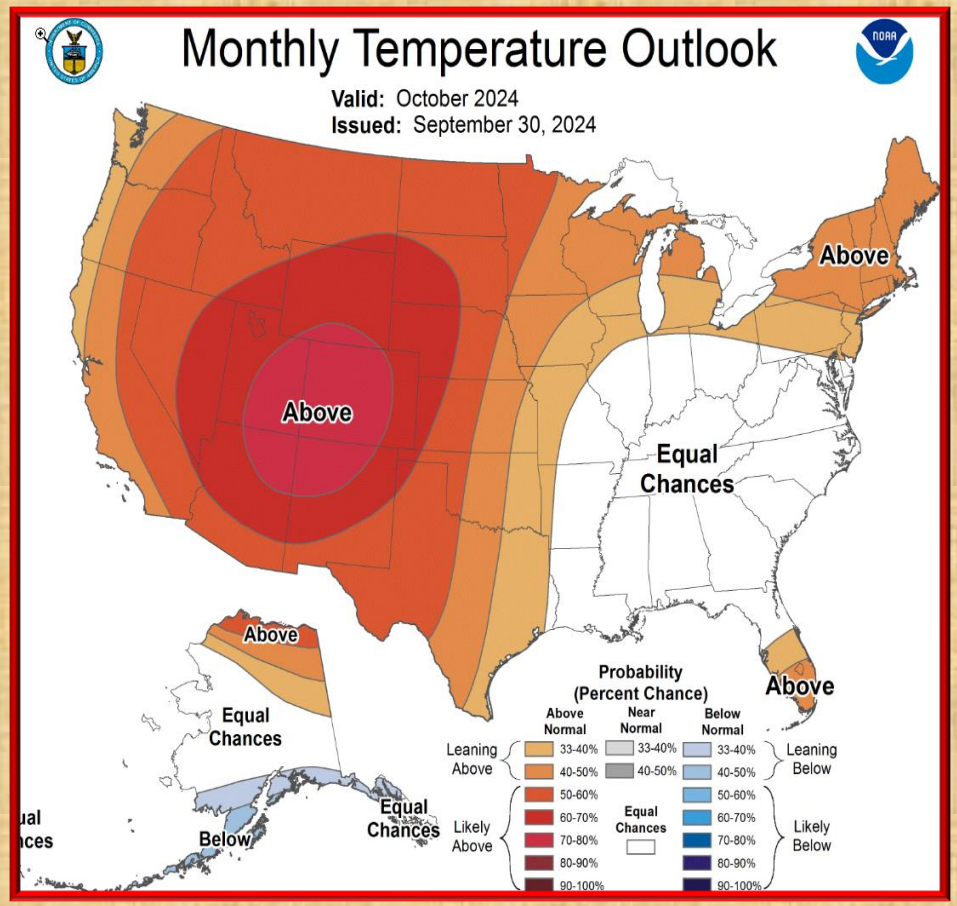
Temperature and precipitation data through Sep 30, 2024 Monsoon Season in El Paso



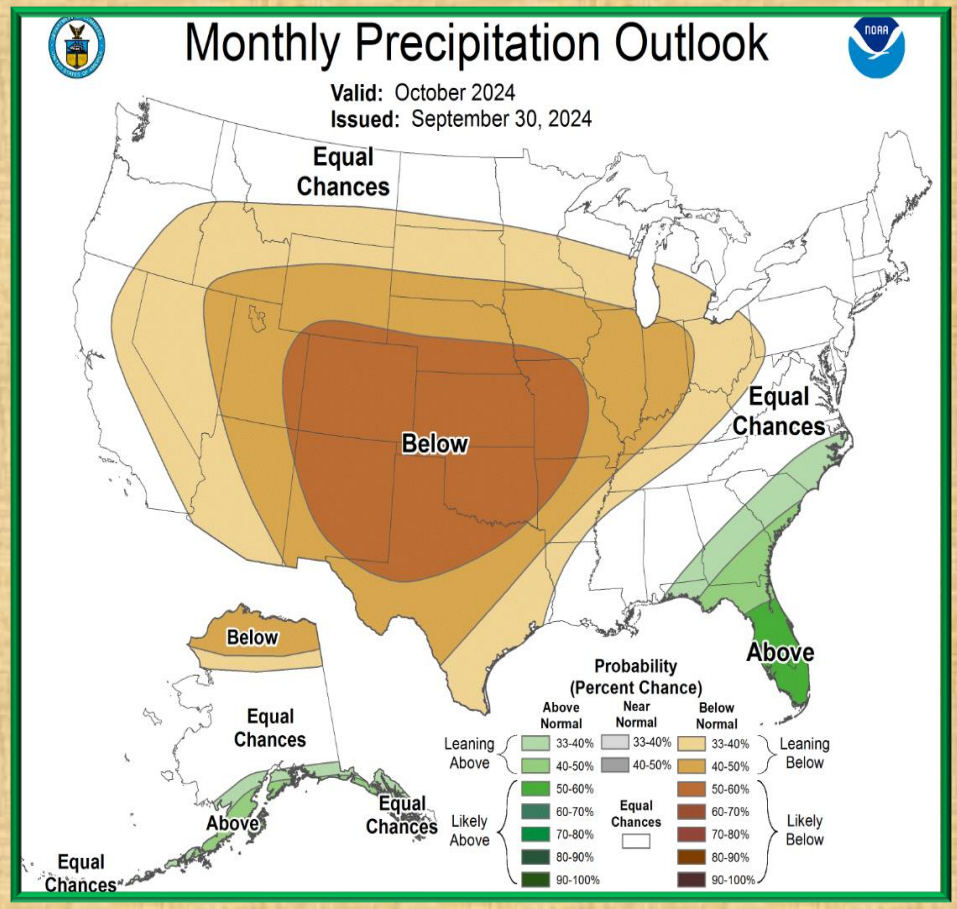


Temperature and precipitation outlook For Oct 2024

Temperature

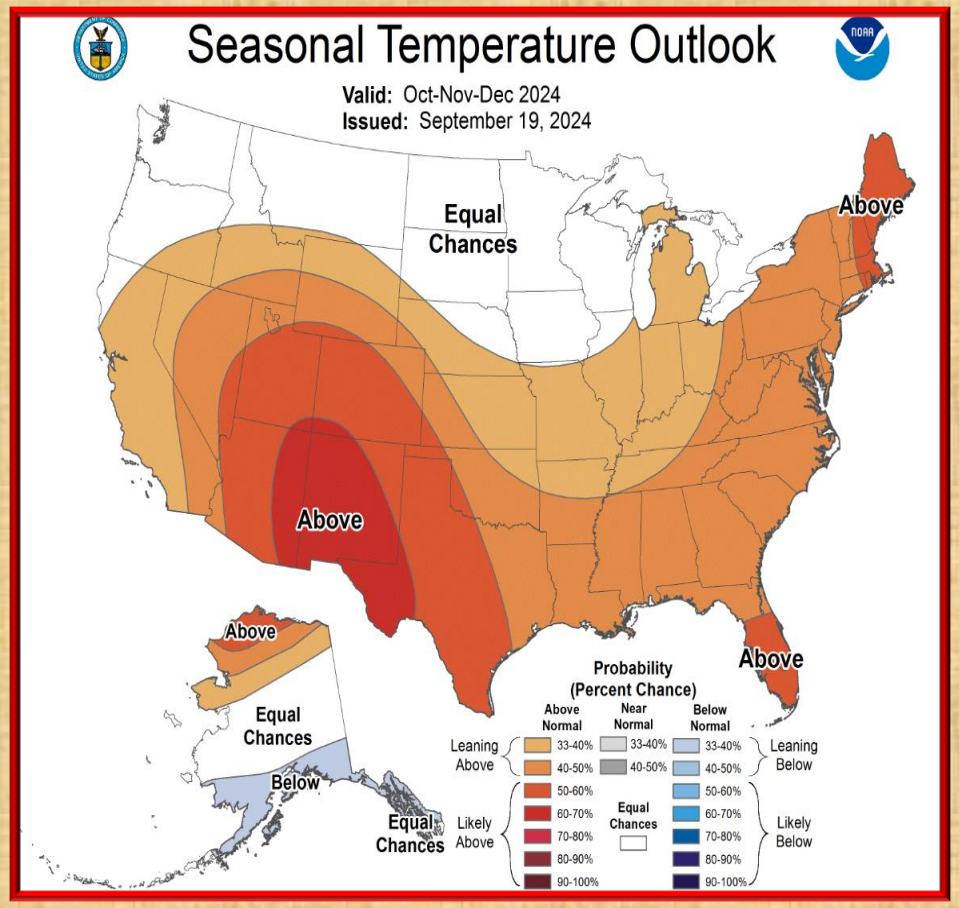


Precipitation

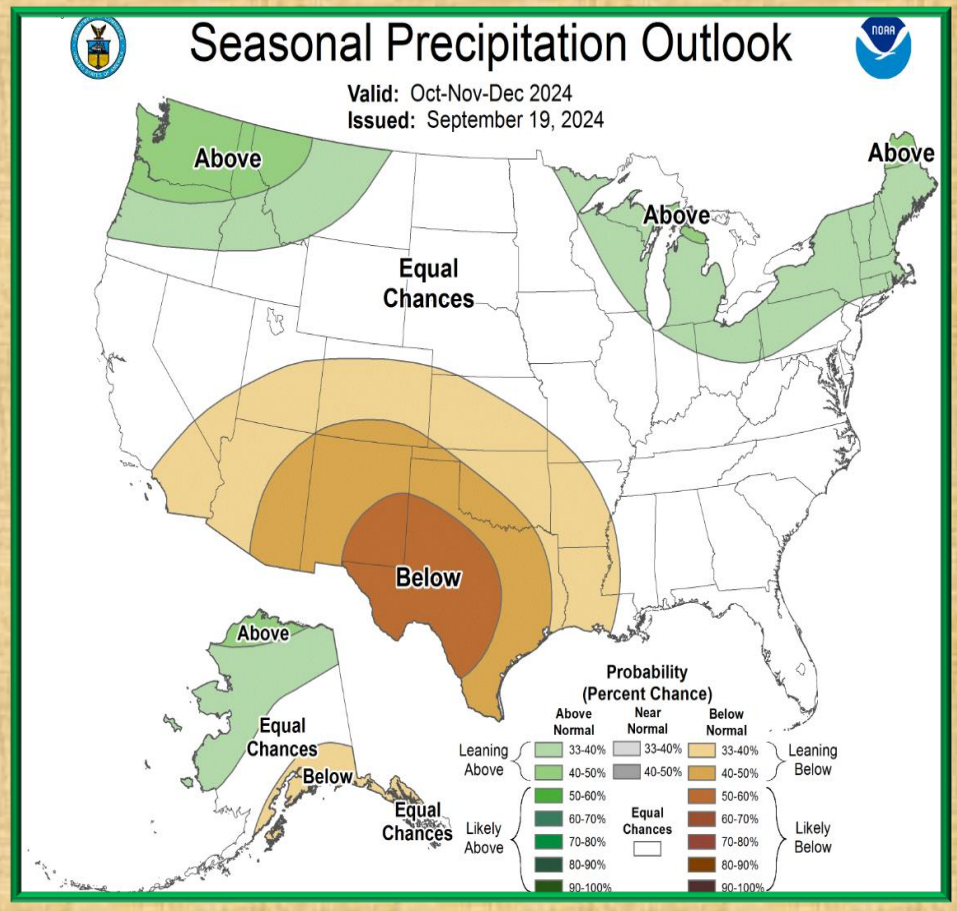


Temperature and precipitation outlook for Oct-Dec 2024

Temperature

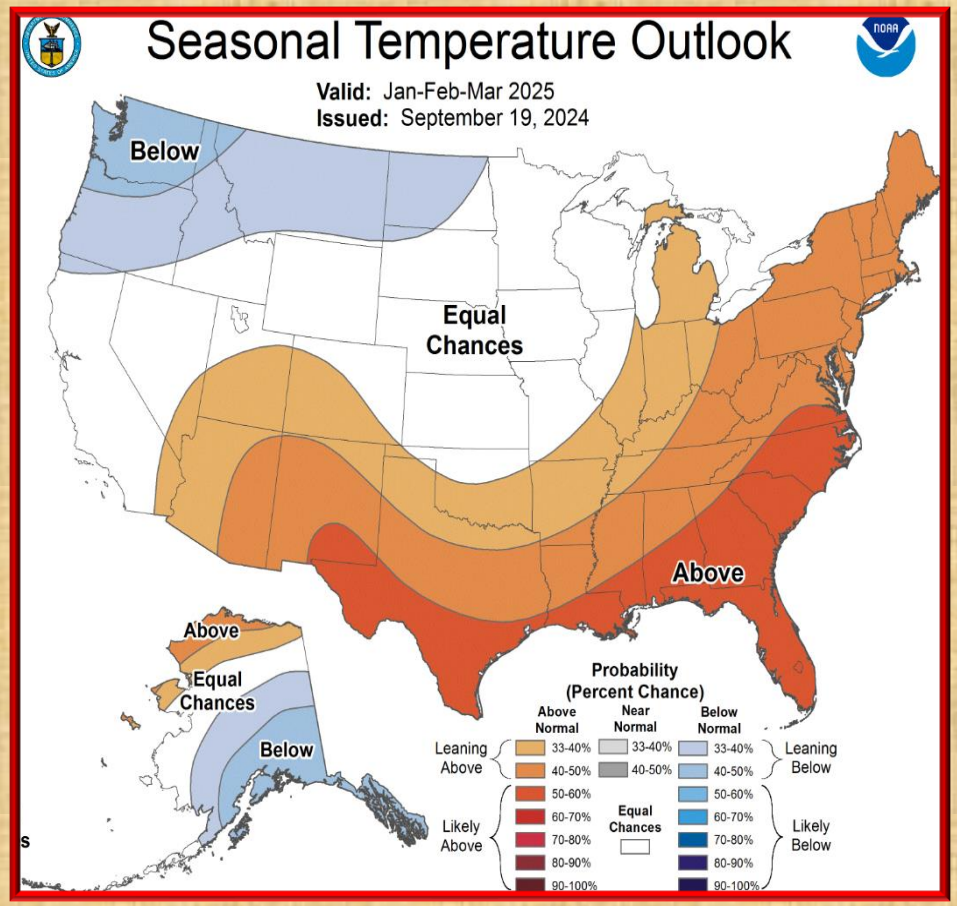


Precipitation

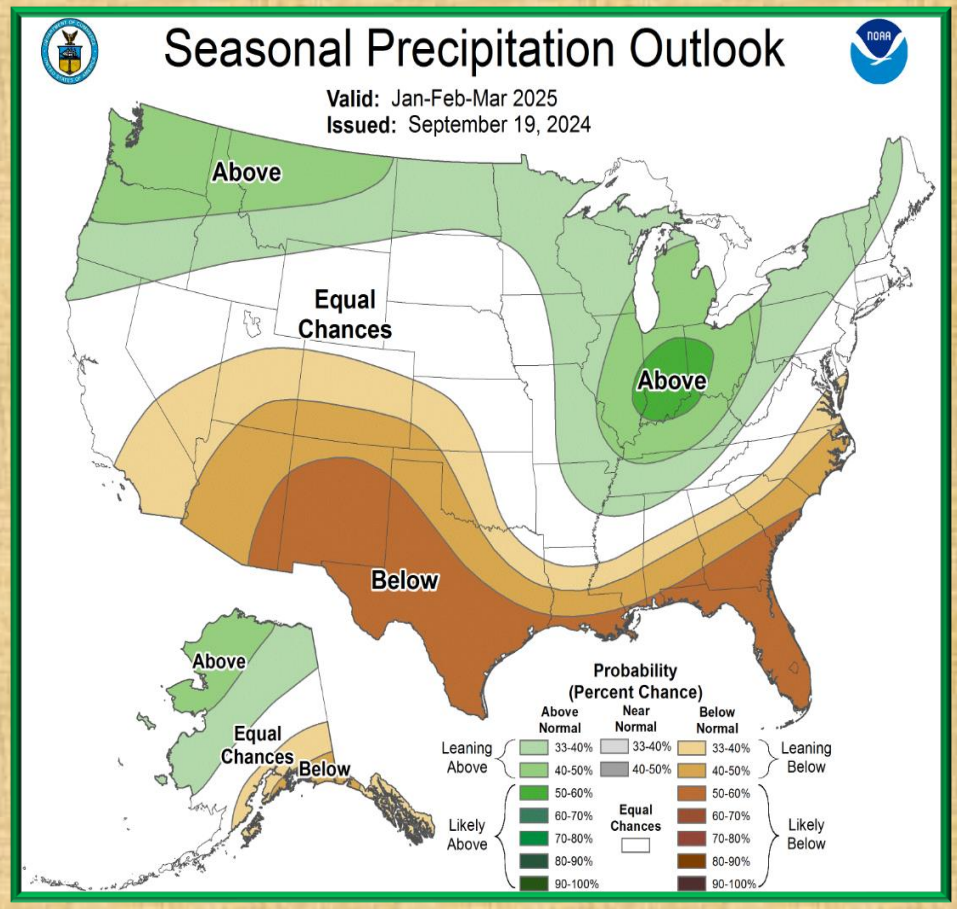


Temperature and precipitation outlook for Jan-Mar 2025

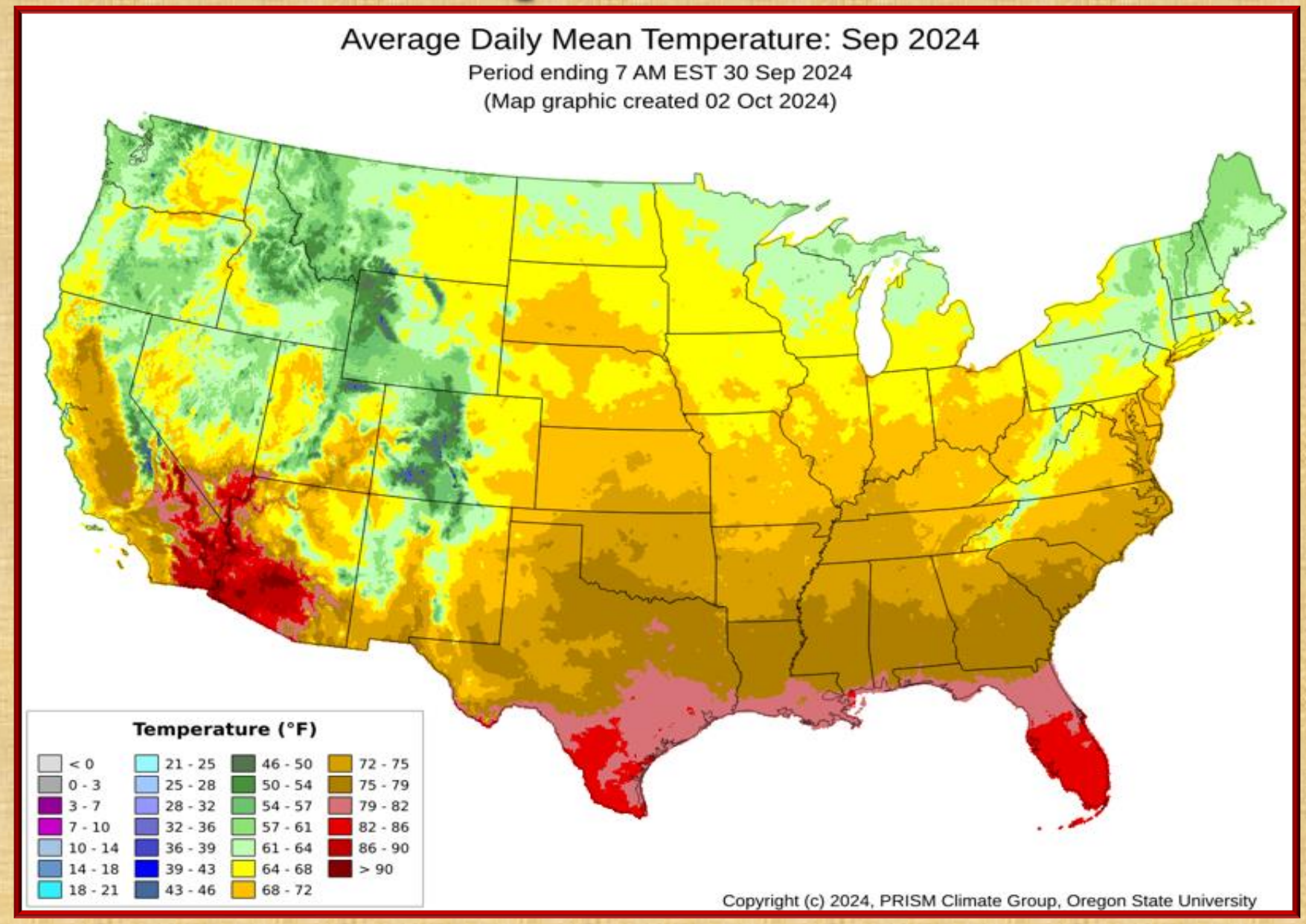
Temperature



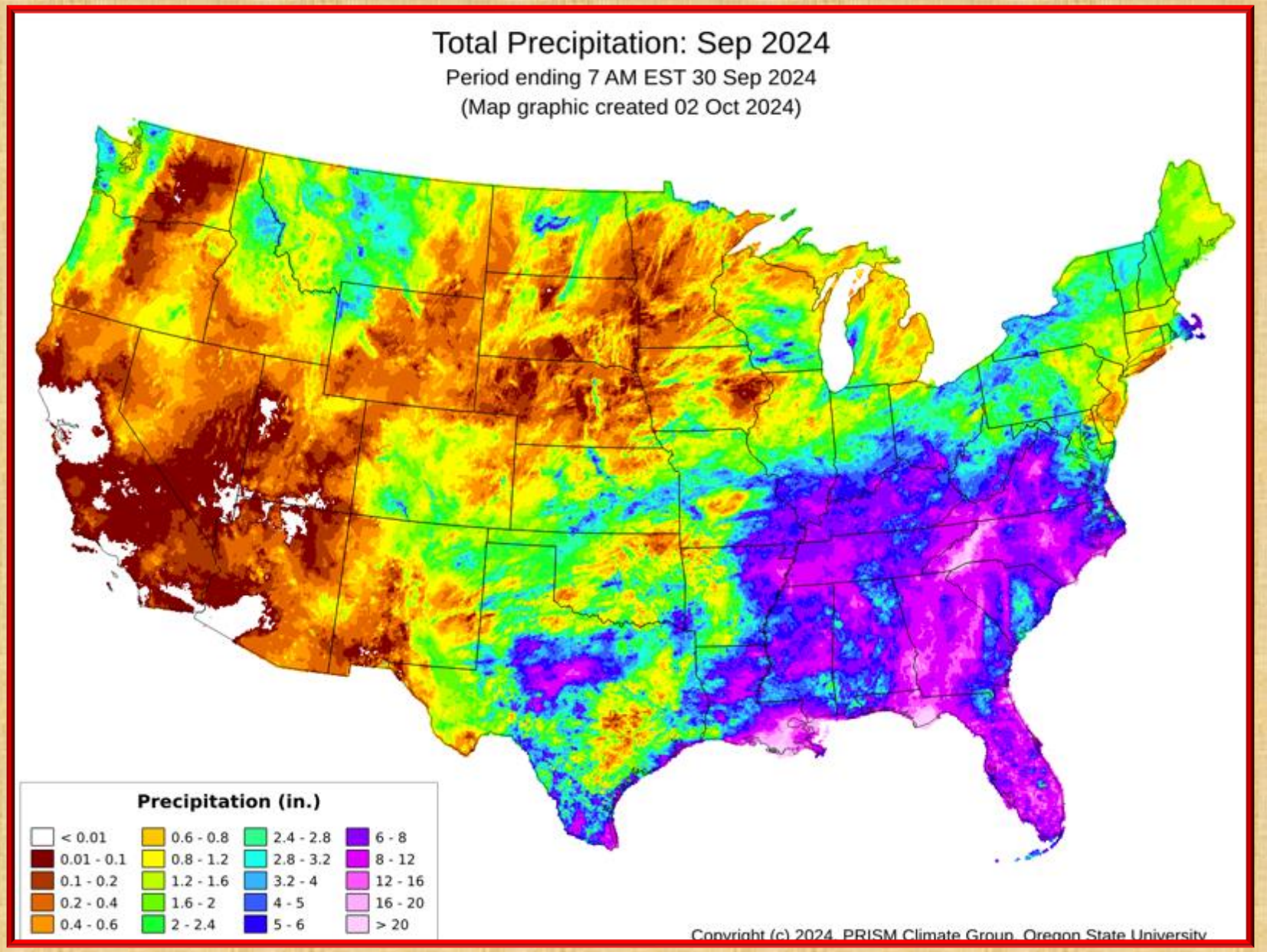
Precipitation



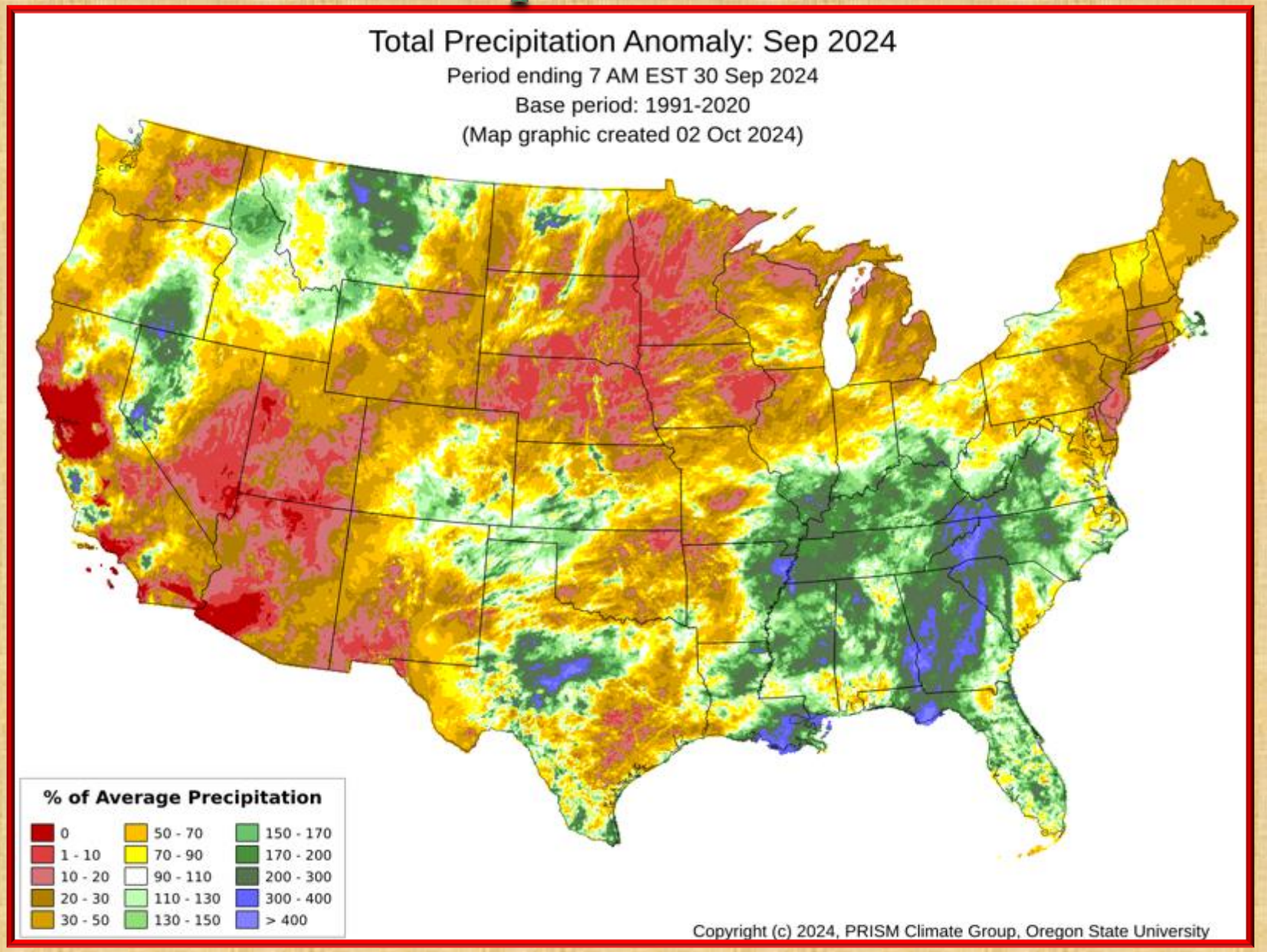
Average Daily Mean Temperature for September 2024



Total Precipitation for September 2024

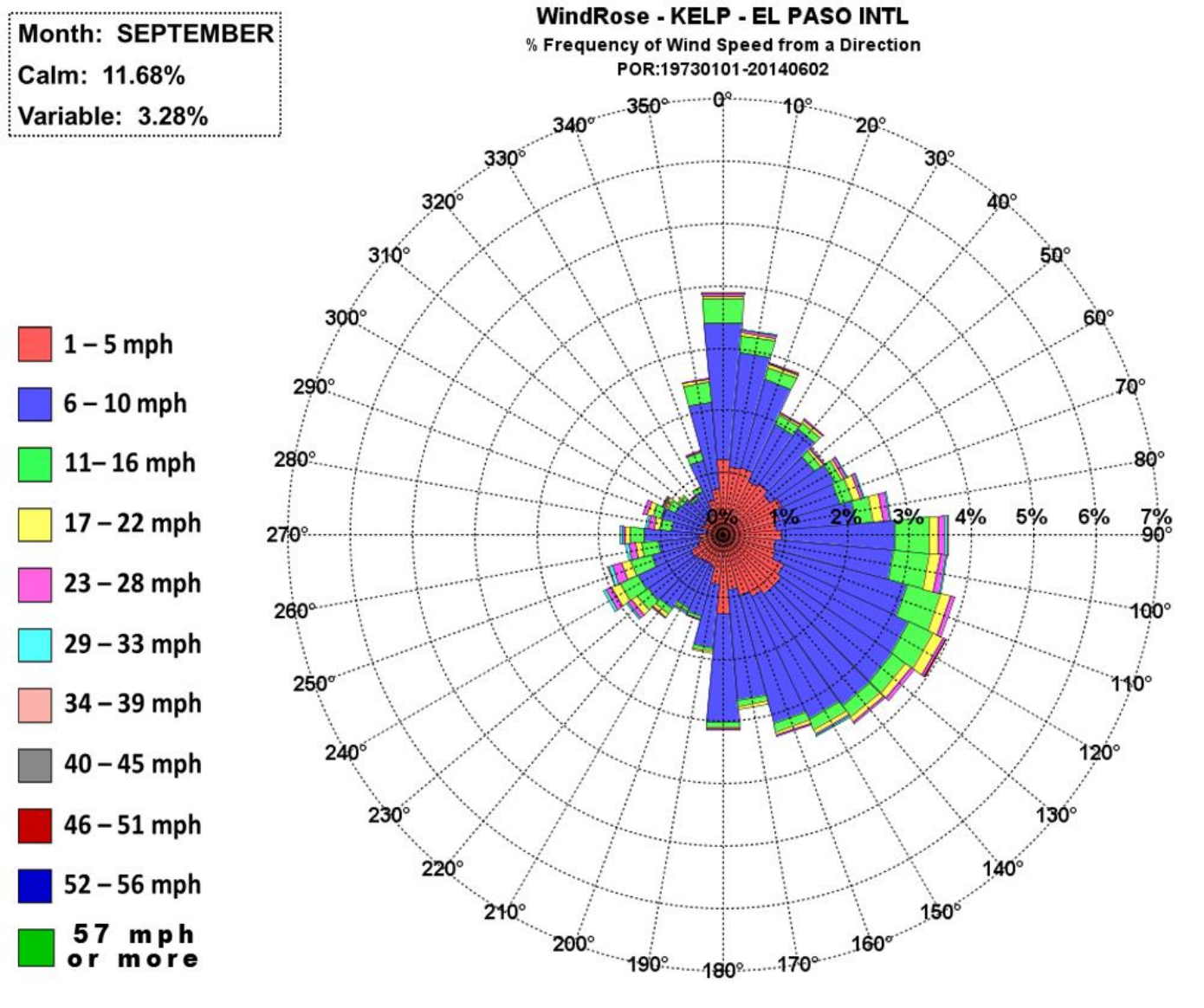


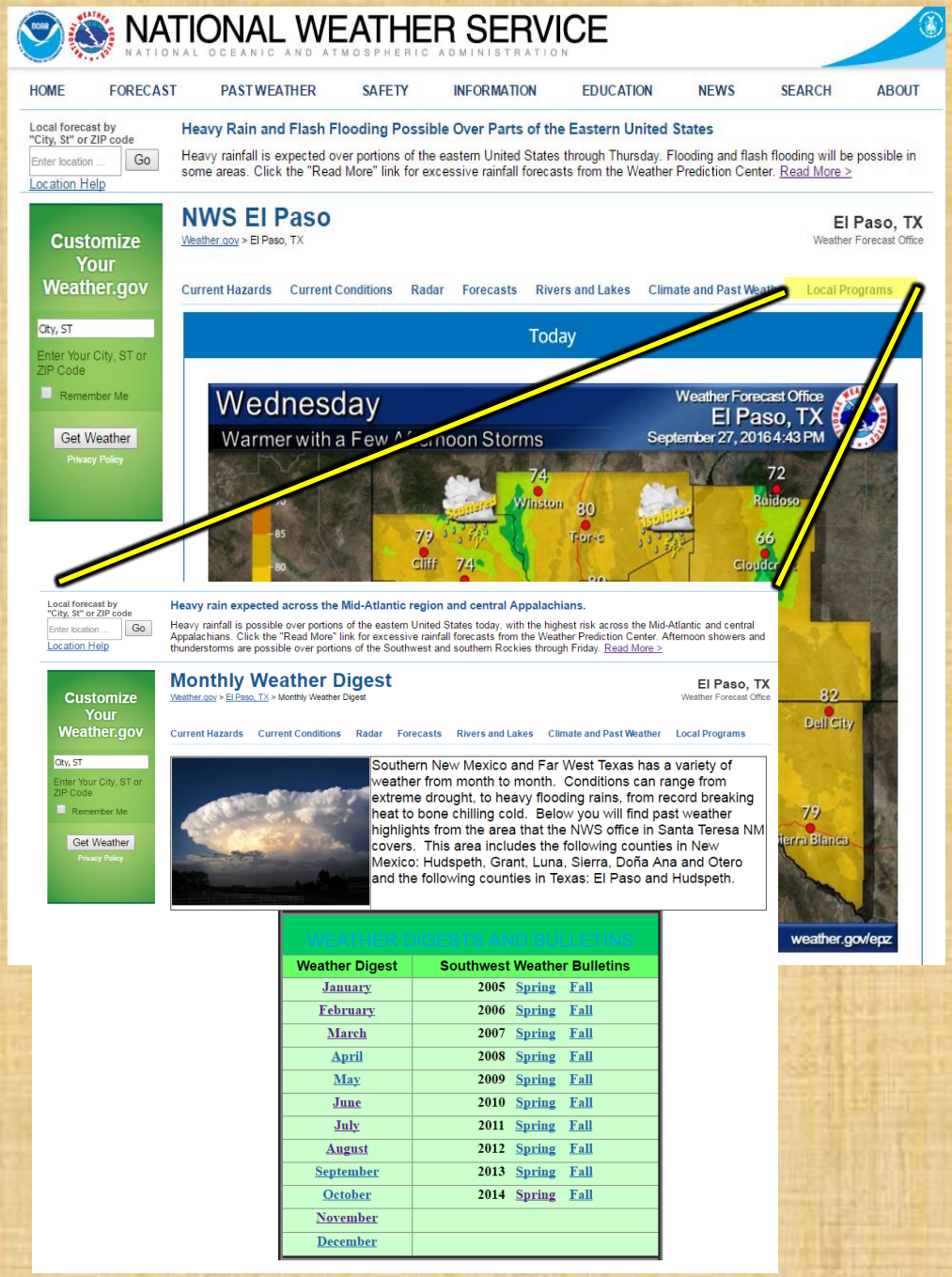
Percent of Normal Precipitation for September 2024



Special Features

www.weather.gov/epz/elpwindrosedata





Don't Forget-Current and past issues of our Weather Digest are available on our website at *www.weather.gov/epz/*

Just click on "Local Programs>Weather Digest", then choose which month's Digest to view. Also, though discontinued, don't forget to check out our back issues of Southwest Weather Bulletin.