July to September 2024 Outlook: Perspective for the Lower Rio Grande Valley/Deep S. Texas Region

NATIONAL WEATHER SERVICE

June 28, 2024

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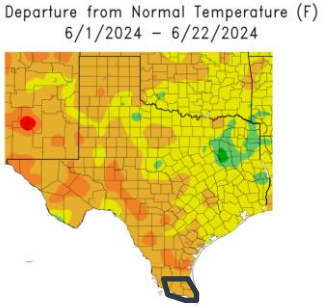
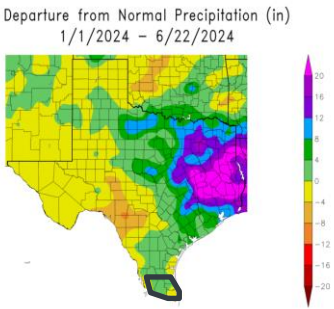
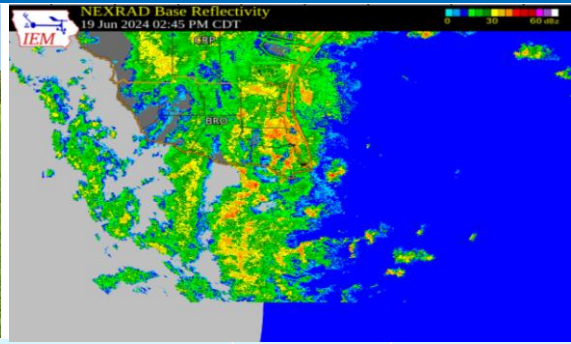
Slightly above average heat likely to continue as focus shifts towards the tropics; July-mid September in particular



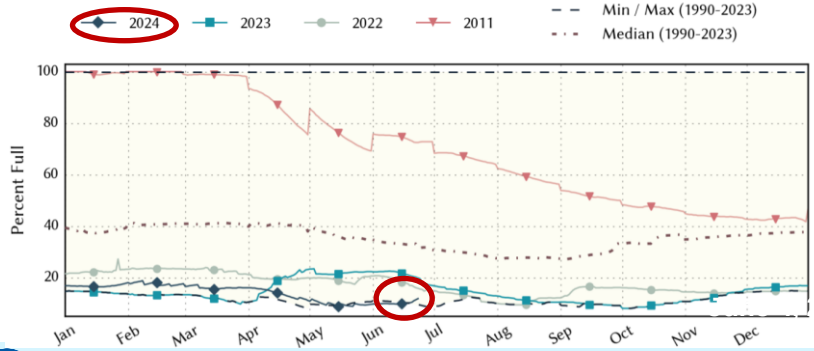



Green fields in Brownsville, June 27th



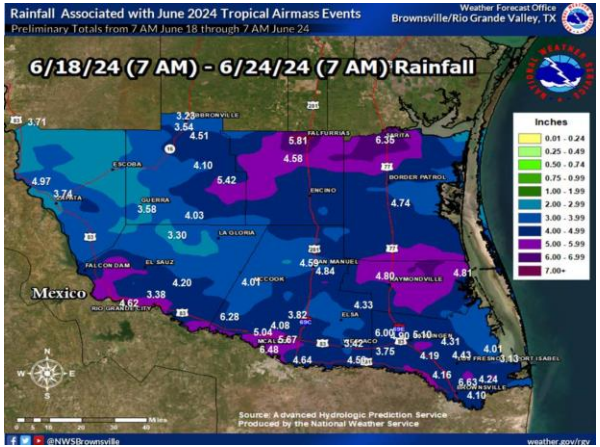
June 2024: Copious amounts of rainfall from TS Alberto puts much of the area in a surplus year to date

- **With the heat shifting into the Midwest and Eastern U.S., the floodgates in the tropics (i.e. the Central American Gyre) opened up allowing for deep copious moisture (i.e. TS Alberto) to bring heavy, beneficial rainfall to the Lower Rio Grande Valley/Deep S. Texas Ranches at a crucial time.**
- **A much-needed 4-6+ inches of rainfall fell across the region June 18-24, with 2-3+ inches on June 18-20. That put our 30-day percent of normal and departure from normal rainfall (from May 25-June 24) between 150-400% and +2 to +8 inches, respectively. Furthermore, this rainfall production flipped the region from drier than normal to wetter than normal since January 1.**
- That said, more rainfall is needed as the Rio Grande reservoirs that serve the Rio Grande Valley remained **at or near record calendar-day lows as of the end of June** (image below).

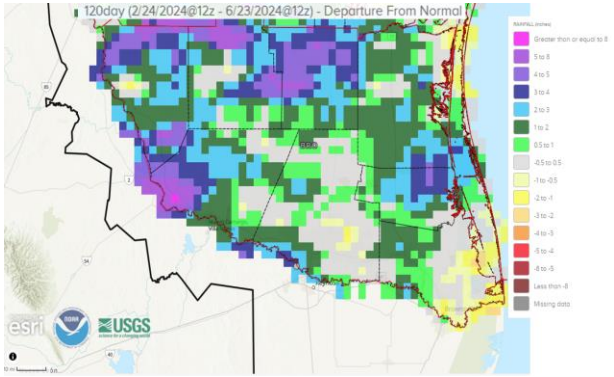


Latest data from the **Falcon Reservoir** indicates that there was an **improvement from 9.5% to 12.5% full over the past month** courtesy of Tropical Storm Alberto. Slow rises should level off by the start of July.

Image: Texas Water Development Board

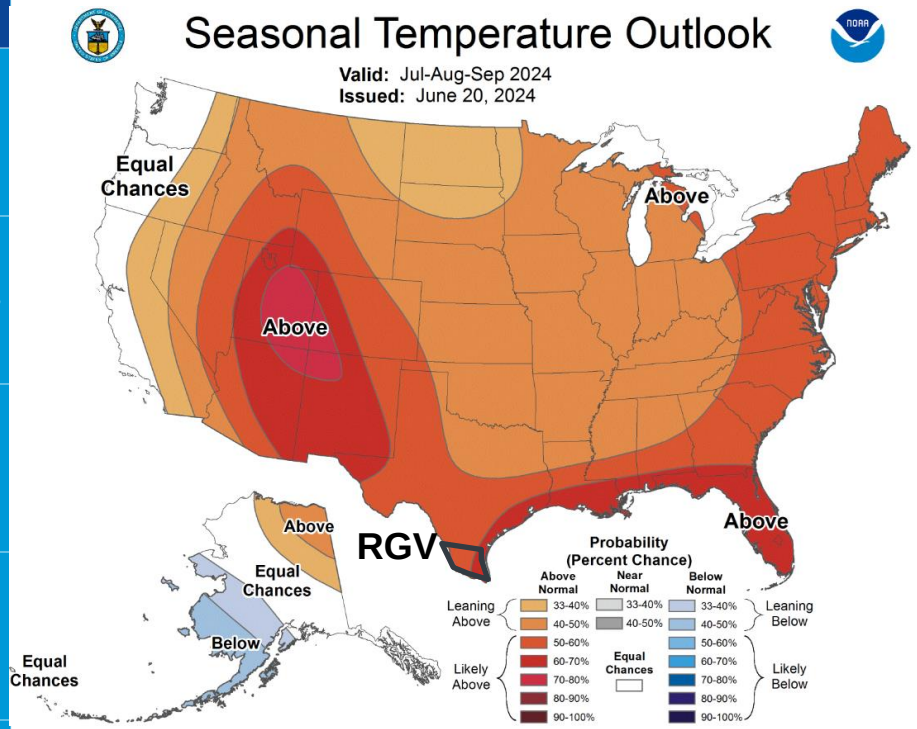


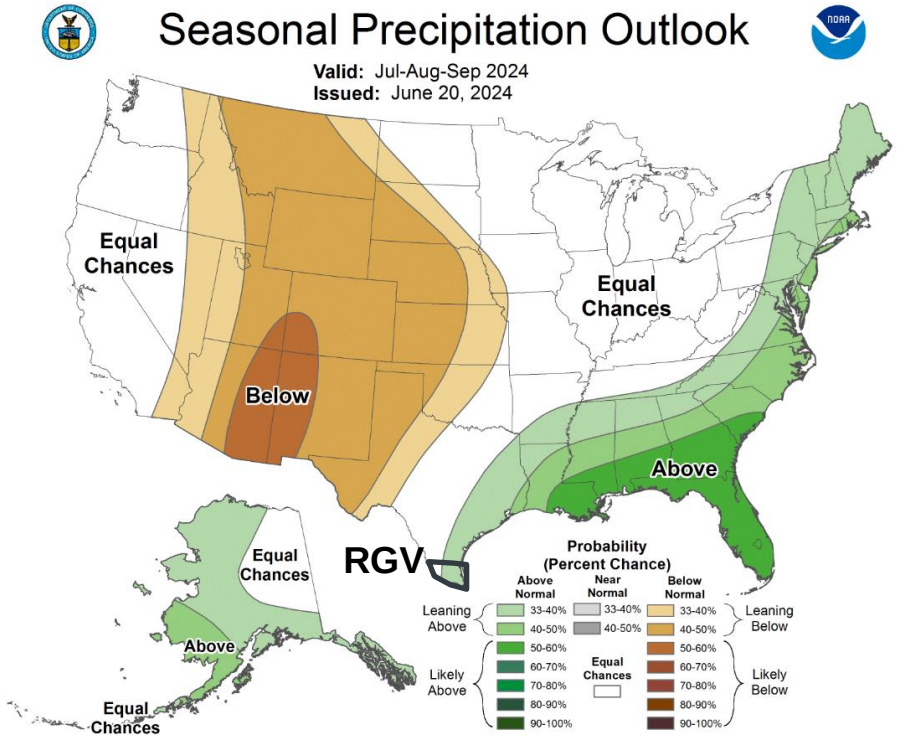
Our 7 day (June 18-24, 2024) rainfall map shows that anywhere from **3-6 inches of rain from TS Alberto fell** across much of the region. Lowest amounts over our northwestern sections.



Rainfall production from **Tropical Storm Alberto flipped the area from a deficit to a surplus**. Here is a map depicting the departure from normal from over 120 days or since Feb. 24, 2024).

Seasonal Forecast, July – September 2024 USA





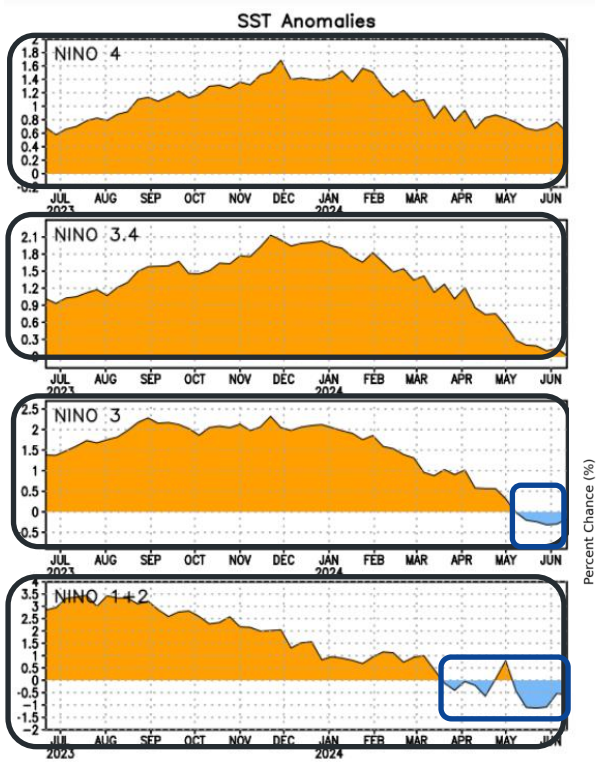
Key Takeaways: July-September 2024 Outlook

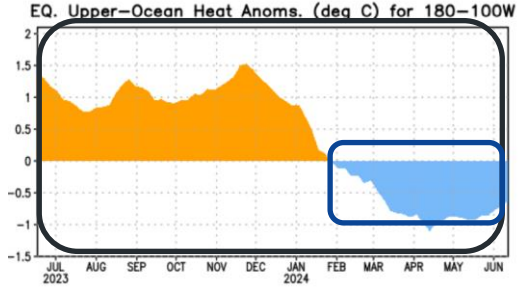
- **Warmer than normal temperatures** are **likely** to continue through the summer. Overall, there is a **slight lean to a wetter than normal rainfall** through September. **Precise location of the heat dome this summer will be key. Tropics will also be key and a wildcard this season, particularly July-mid September.** That said, **dryness/drought expansion or redevelopment** will depend on if/when another tropical system or two comes through. Increased in dryness and drought expansion could create a positive feedback loop for enhancing temperatures.
  - While confidence remains **high** that **temperatures will run warmer than normal** through the summer, it remains to be seen where the most intense heat will reside as the heat dome looks to swing like a pendulum across other parts of the country June-July before finally locking in on a region of the U.S. in August-September.
  - Medium and long-range weather models are showing the **core of the heat to be located north of the Rio Grande Valley/Deep South Texas** over the south-central and central U.S. with occasional visits to parts of the western and eastern U.S. through mid-July. This pattern would favor persistent onshore flow, and with that, at times, chances for showers and storms to develop off the sea breeze.
  - Despite the beneficial rains, Amistad and Falcon Reservoir missed out on the higher totals. Levels at Falcon remain very, very low as of late June. Amistad total water levels at the end of June remained **at all-time record lows**. Barring another tropical system or two, **confidence is near-certain on total storage remaining at or near record lows through mid to late summer**
  - **While 100° days are likely July through September, confidence in the occurrence is not. Given the northward placement of the heat dome, according to some of the medium to long range models, the Rio Grande Valley/Deep South Texas region could be spared from some of the most intense heat and occurrence of 100° days. If forecast trends continue, this year will not rival last year's heat!**
  - All said, **dependency on tropical systems** in what's expected to be an active season ***remains critical for the reservoir areas***; no longer as critical for the rest of the region in light of Tropical Storm Alberto – as long as additional rains fall directly over the region.

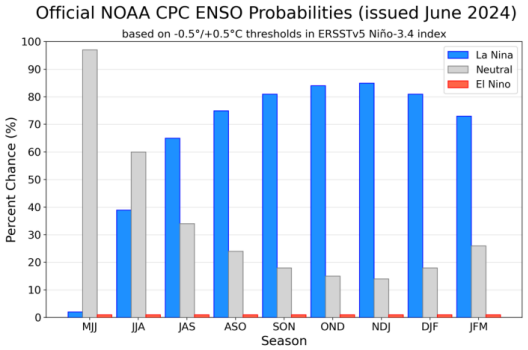
The "Why" of the Forecast: La Nina remains on track to develop this Summer; heat ridge positioning and tropics are key variables too

- The continued rapid **transition towards a La Nina** favors warmer/hotter conditions through mid-late summer.
- **Precipitation trends** through the summer season is a ***wildcard*** and will depend largely on where the heat ridge sets up.
- Precise position of the heat ridge is key in where the most intense heat resides and whether or not it encourages or inhibits tropical development. Very important especially mid-late summer (July-August).
- Anthropogenic (human) and non-anthropogenic climate forcings, such as a **positive feedback loop** of warm/hot and dry weather regime, will also play a role.

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7	-0.8	-1.0	-1.0
2022	-1.0	-0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.1	0.2	0.5	0.8	1.1	1.3	1.6	1.8	1.9	2.0
2024	1.8	1.5	1.1	0.7								

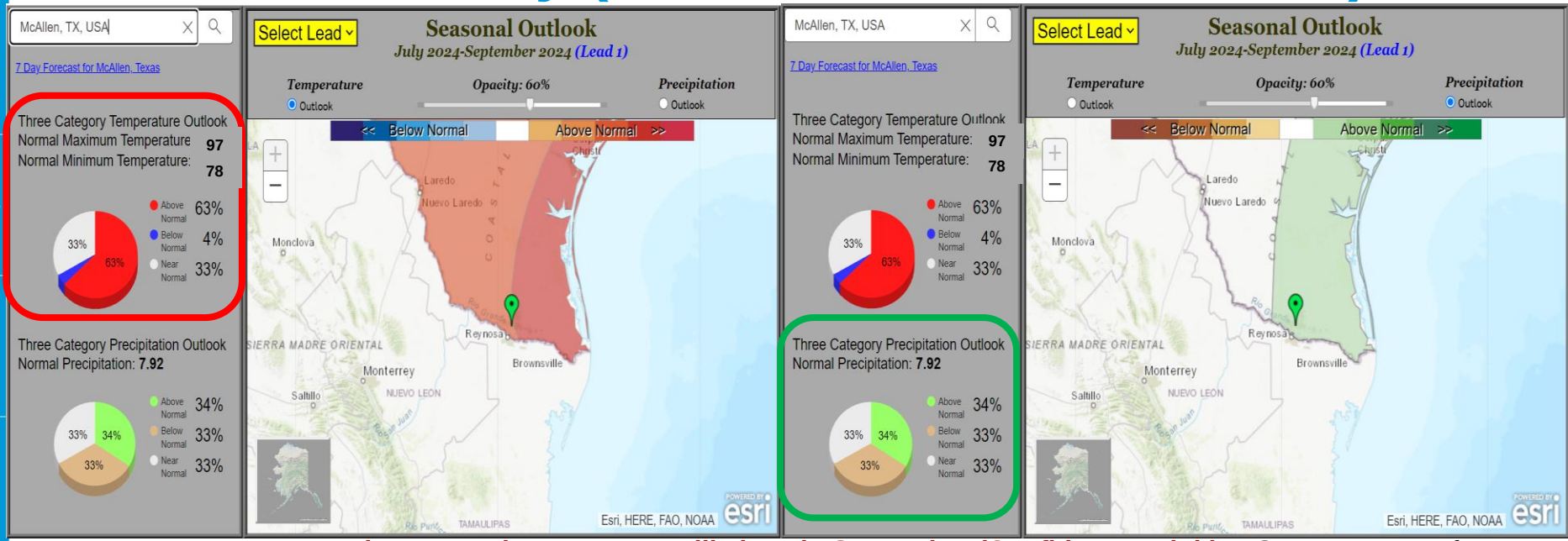






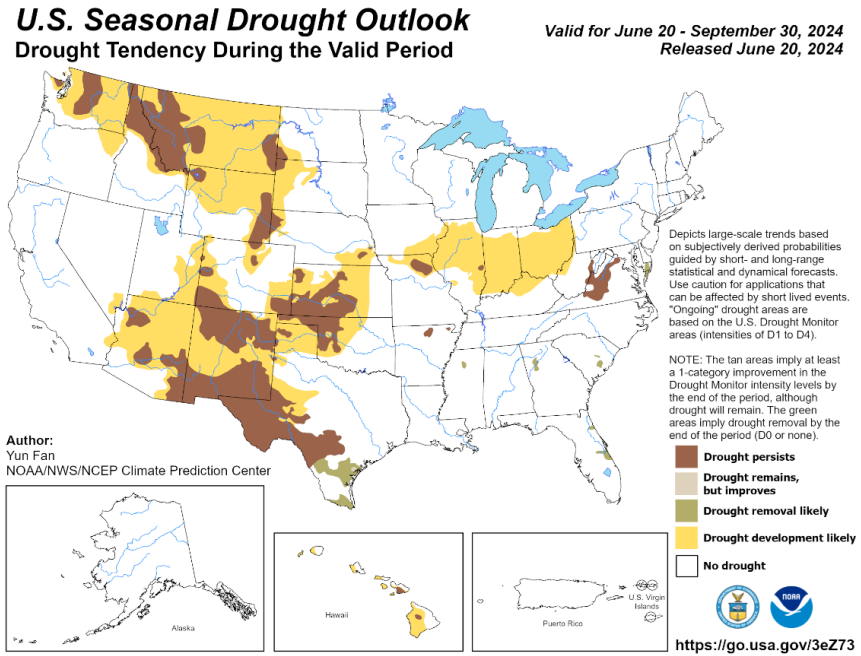
*Above right: Oceanic Niño Index. Values below -0.5 (**light blue**) for five consecutive 3-month periods indicated La Niña. El Niño (**red,** +0.5) officially began in April-June 2023, reached strong levels (**+1.5**) by August-October 2023, strengthened further through November-January, and has been weakening since late winter.

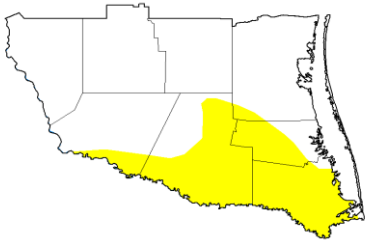
The July-September 2024 Outlook: Rio Grande Valley (McAllen as Anchor Point)



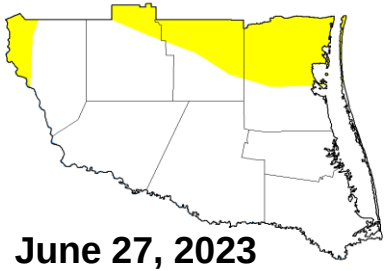
- **Temperature:** **Warmer than normal temperatures likely July-September (Confidence: High).** RGV averages: Afternoon – 97 to 102 from July through early September, low to mid 90s by late September.. Wake-up: 75 to 80 through early September, then low to mid 70s by late September.
- **Precipitation:** **Equal chances for above, below, and average**. **Slight lean for above average precipitation eastern half of the area.** RGV averages: 8.5 to 10 inches (most in September).

The July-September 2024 “Droughtlook”

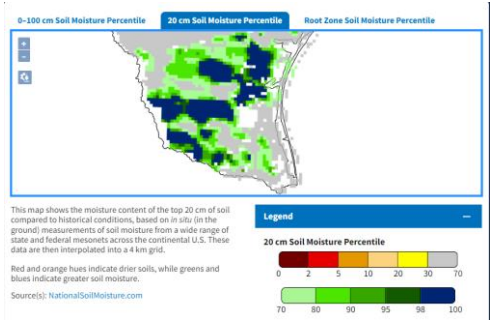




June 25, 2024

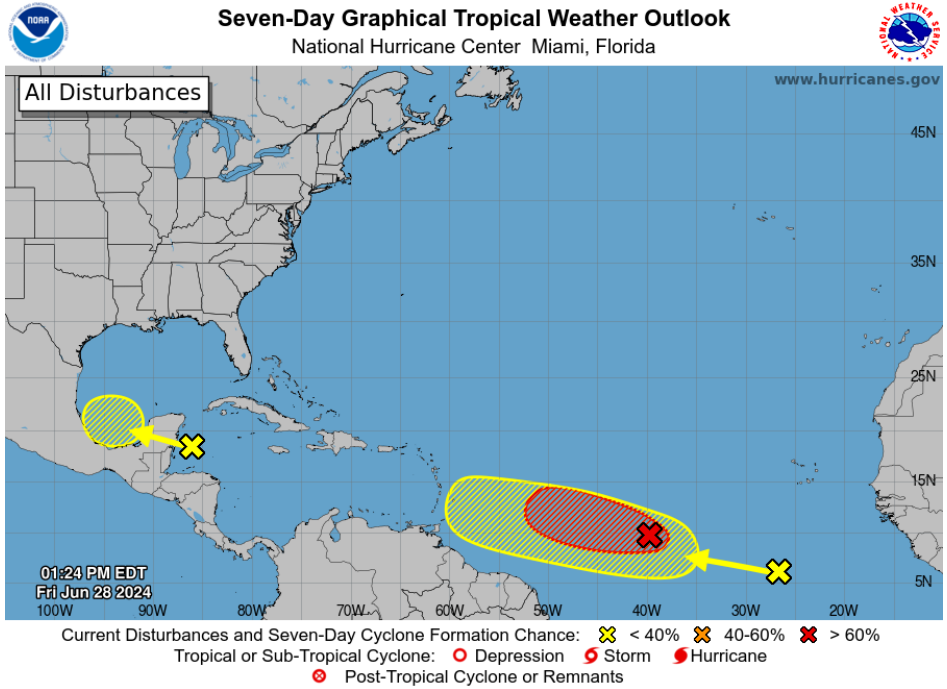


June 27, 2023



- **Rainfall Associated with Tropical Storm Alberto and a second wave of moisture** the following weekend erased drought across the populated RGV, as Abnormally Dry (D0) conditions replaced Moderate Drought (D1). 4” (depth) soil moisture **recovered to 80 to 100 percent of average**…though these values can quickly dry out in July without sufficient rainfall.
- A modestly wet July (slide 13) would **maintain at least average to slightly above average soil moisture**…but a drier and average July would return slightly drier conditions. The forecast leans toward the slightly above normal rainfall. **Tropical conditions will dictate how July ends**. **August through early September remain “wild cards”** but are leaning toward average-above average soil moisture conditions.

Tropics Heated Up as June Ended. Is This a Trend?



Note: Above is not a forecast, but just a still image of the potential development situation on June 28th, 2024. For updates and the latest forecasts on the tropics, go to hurricanes.gov.

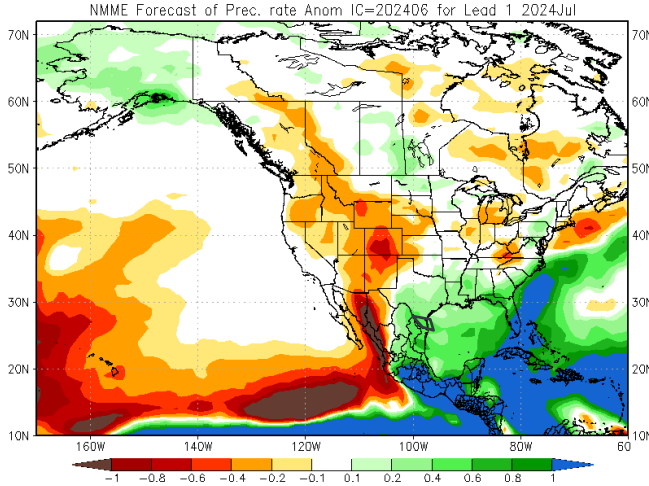
Interpreting this Graphic

- The tropical Atlantic became **unusually "busy" at the end of June 2024** (left). This "busy-ness" could be a **repeated trend through at least mid September**, as the seasonal forecast offers the **possibility for 17 to 25 tropical cyclones**. Alberto (June 19-20) is already off the list.

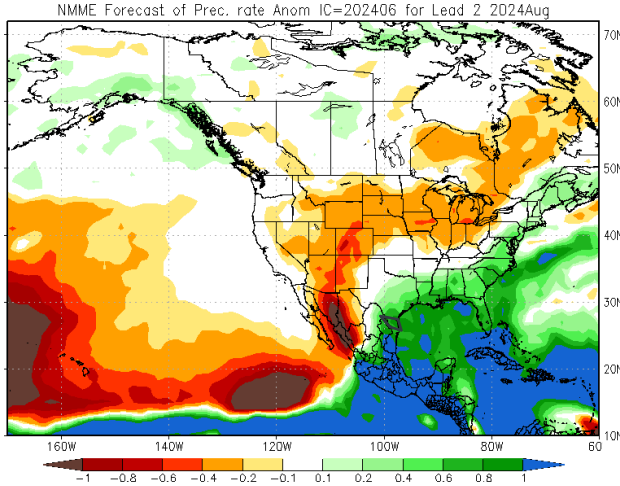
- The National Hurricane Center issues graphical Atlantic (and Pacific) Tropical Weather Outlooks (gTWO) four times daily from May 15 through Nov. 30. Two-day and Seven-day outlooks are provided for situations where disturbances are determined by expert analysis. Probability categories are low (>0 to <40 percent), medium (40 to 60 percent), and high (70 to near 100 percent) for cyclone development. When a cyclone is determined, this map will show a number (for depressions), the tropical storm, or the hurricane symbol

July, and especially August/September, Could Be Active

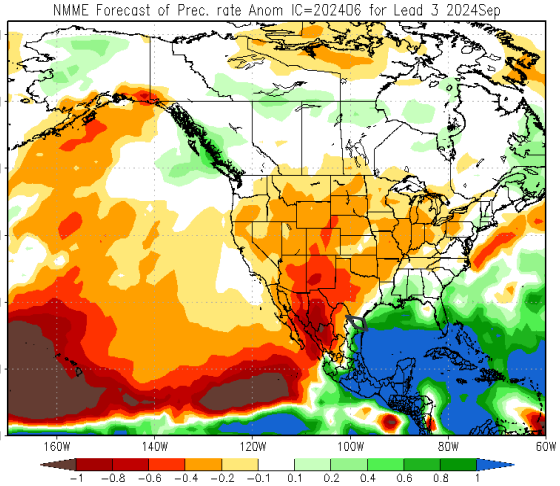
July



August

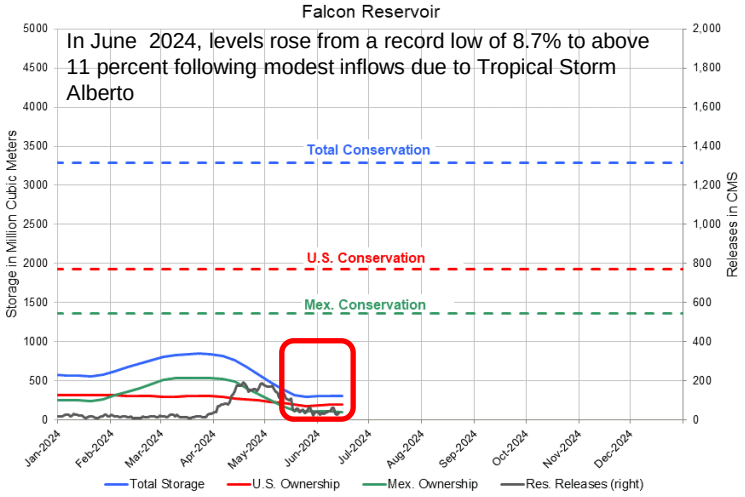


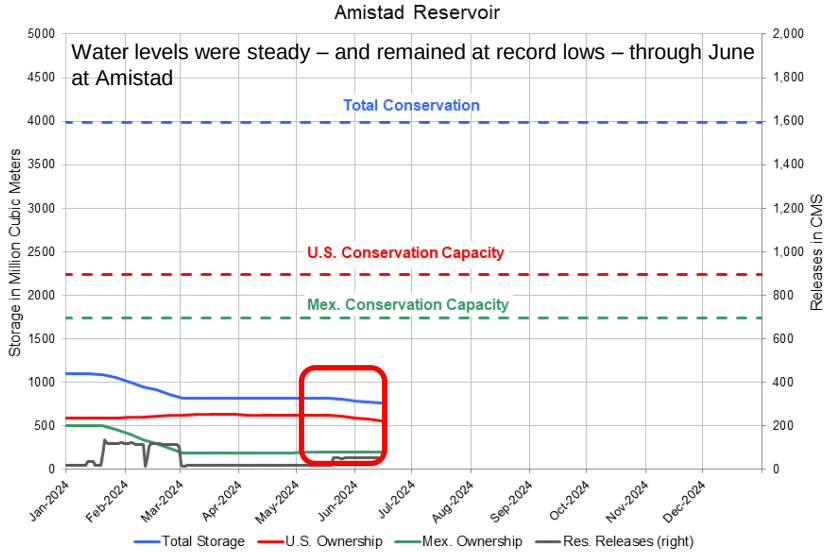
September



Above: National Multi-Model Ensemble (NMME) forecast for monthly rainfall rate departures from average. Orange/maroon colored areas indicate below average; green and blue colored areas indicate above average. Note the spreading of darker green – even blue - into Texas and northeast Mexican coast in August/September.

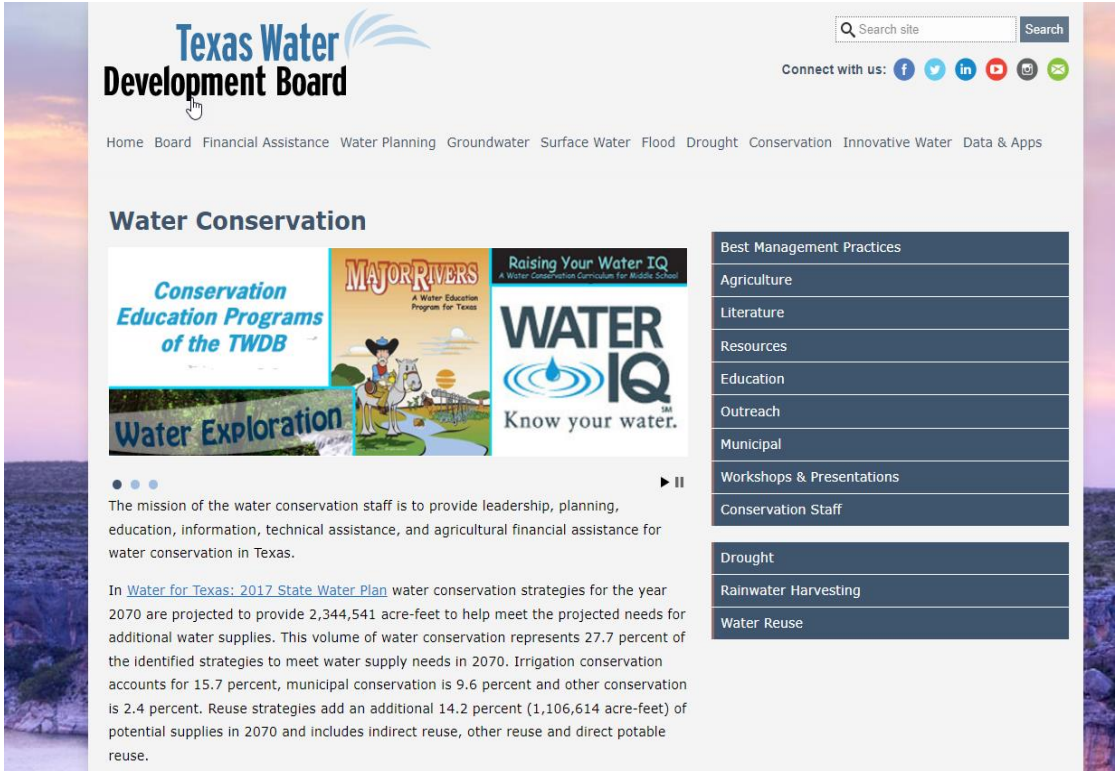
Amistad remained at Record Lows; Falcon Rose Slightly but Still Near Record Lows





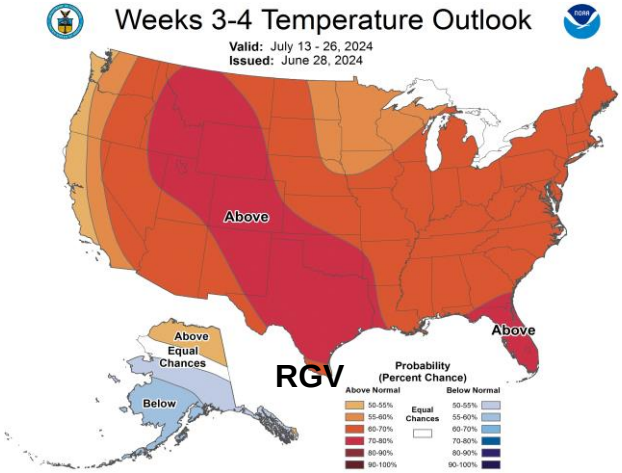
- Falcon came "off the floor" following Alberto – to **11.6%, up from 8.7%** on May 31st . This level was just a few ticks above prior records. The forecast that now **favors occasional inflows** from potential tropical activity suggests eventual rises through late summer – **assuming the remnant rains can reach the headwaters of the watershed**.
- **Amistad** remained at **all-time record lows in late June**. Levels were at **18.7% on June 27th** – down from **20.5 percent at the end of May.** Amistad's recovery **is fully dependent on inflow provided by tropical cyclones into the Rio Conchos and other northern Mexican tributaries**, as well as monsoon flow along the Rio Grande in the Permian Basin…aided by remnant tropical cyclone torrential rain. Should cyclones **track into central/southern Mexico vs. northern Mexico, Amistad may see little change or even further reduction** through late summer.

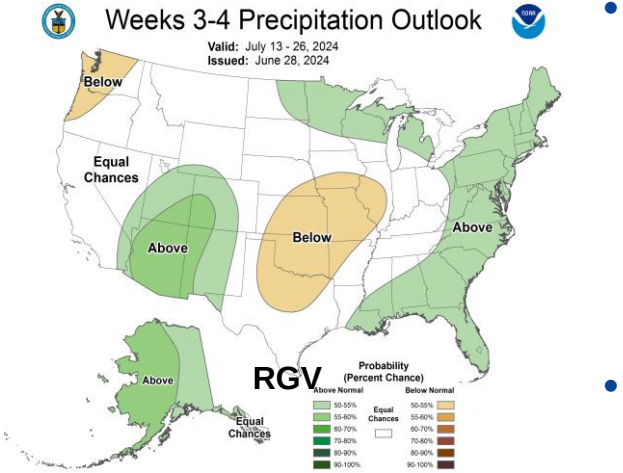
Water Conservation is Key Until Further Notice!

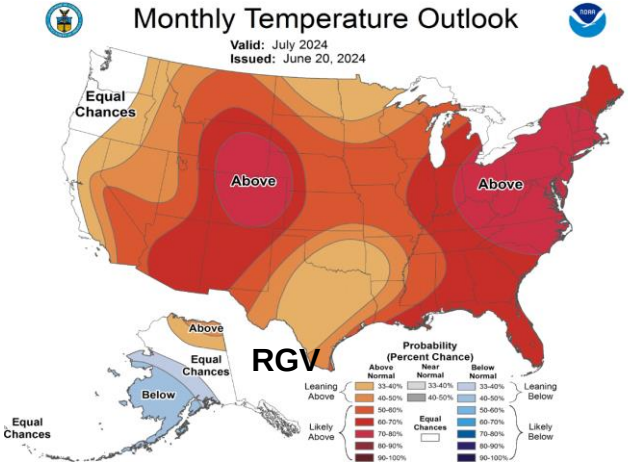


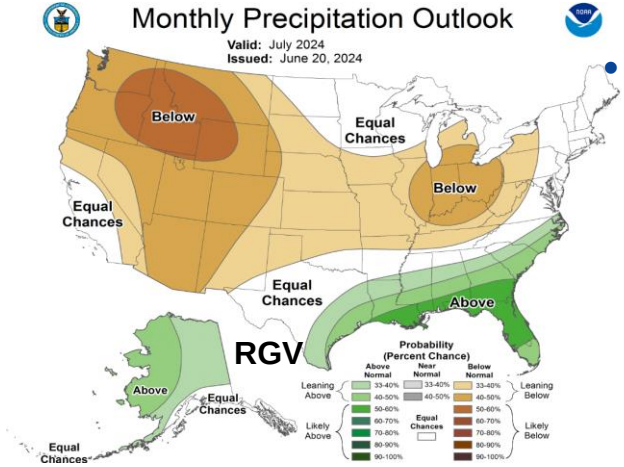
- "Stage 2/3" Restrictions continued through early summer 2024 and are likely to continue through at least July, based on inflows from Amistad and Falcon.
- Learn more at the Texas Water Development Board's Conservation Page

July 2024: Confidence: Medium on Rainfall; Medium-High on Temperature



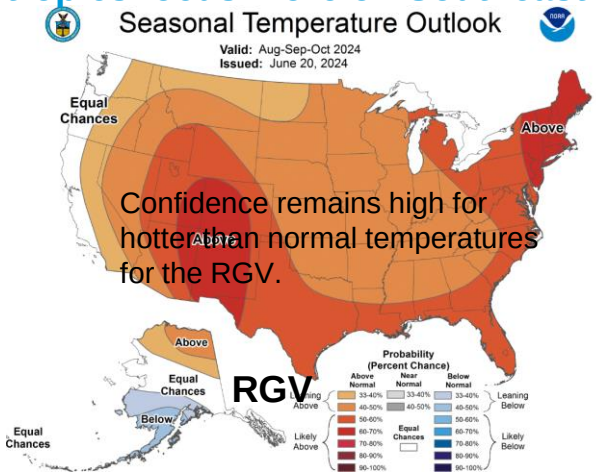




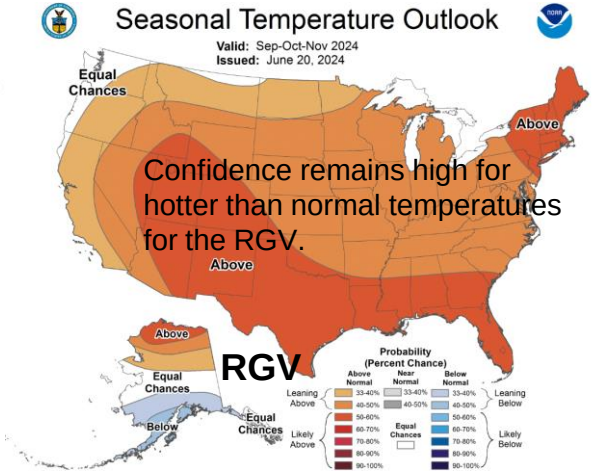


- Medium to long-range forecast models are suggesting the **heat ridge (core of the most intense heat)** to extend across the central and eastern parts of the U.S. – but perhaps oscillate toward the southern Rockies as well. Temperatures are expected to run **warmer than average** and perhaps well above average for much of July.
- Rather persistent **easterly/onshore winds** could provide a **few opportunities for showers and thunderstorms in July**.
- **Bottom Line:** While **TS Alberto brought beneficial rains and put a dent in the drought**, lessening the critical state of needed moisture from the tropics, **more rain from the tropics is needed** to offset the lack of non-tropical rainfall production expected July-September. **Look for the potential of additional tropical systems in the western Gulf from July-mid September**

Late Summer 2024-Autumn 2024: Hotter than normal trends to continue; Drier trends could increase as tropics focus more on Southeast and East U.S. Coast



Confidence remains high for hotter than normal temperatures for the RGV.



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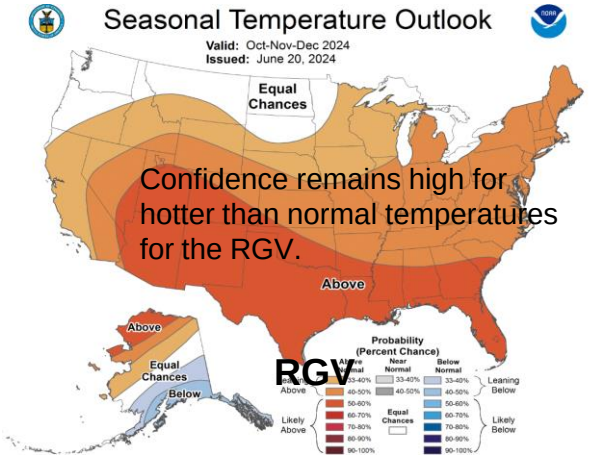

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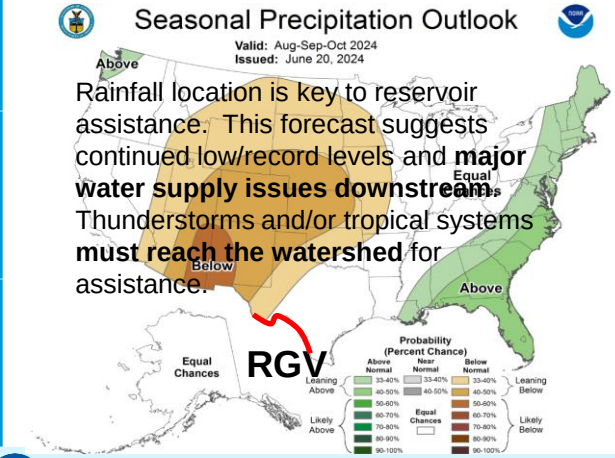
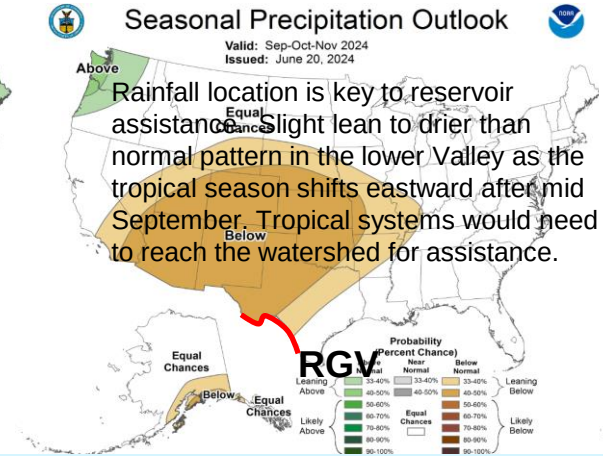
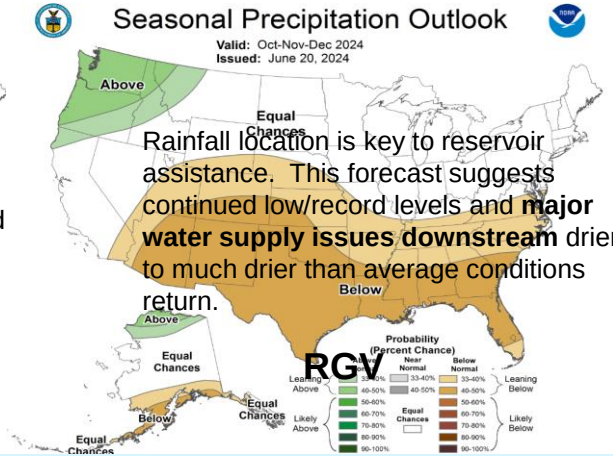


Rainfall location is key to reservoir assistance. This forecast suggests continued low/record levels and **major water supply issues downstream**. Thunderstorms and/or tropical systems **must reach the watershed** for assistance.

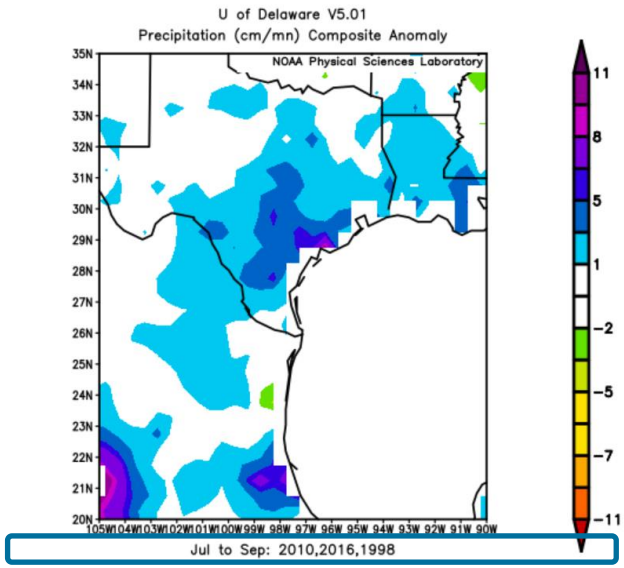


Rainfall location is key to reservoir assistance. Slight lean to drier than normal pattern in the lower Valley as the tropical season shifts eastward after mid September. Tropical systems would need to reach the watershed for assistance.

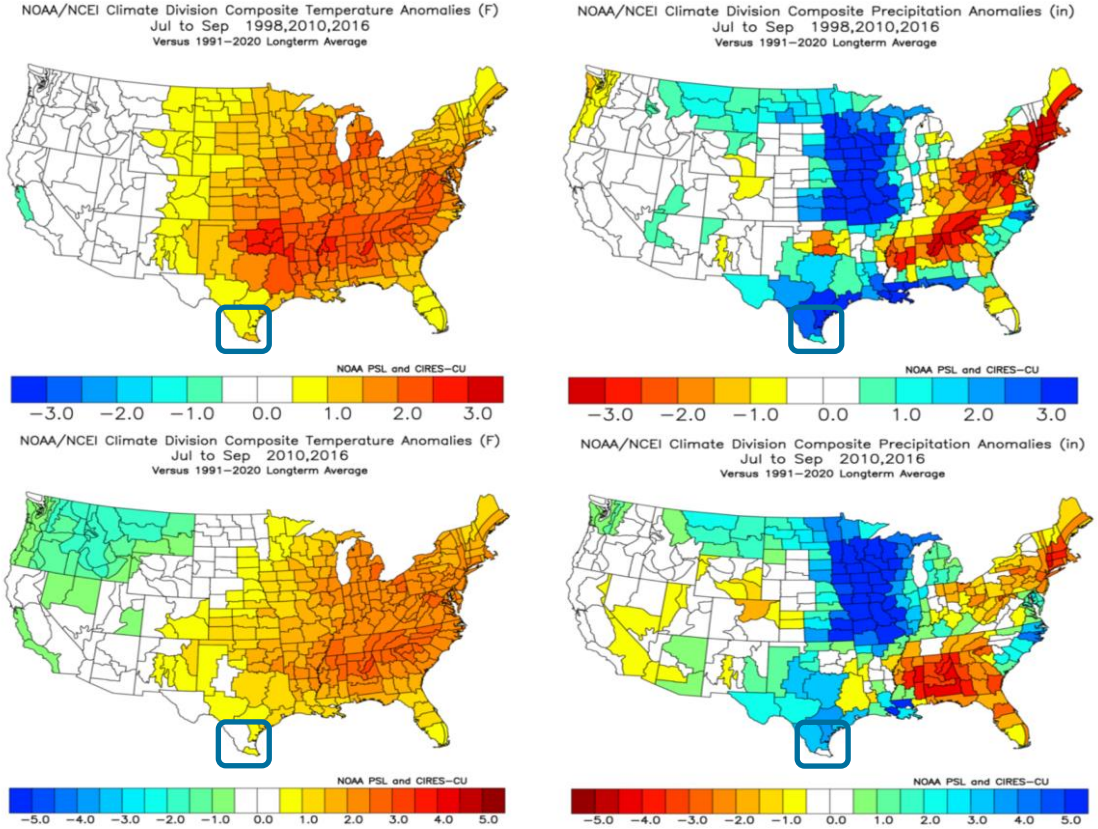


Rainfall location is key to reservoir assistance. This forecast suggests continued low/record levels and **major water supply issues downstream** drier to much drier than average conditions return.

Comparing Similar El Niño to La Nina Episodes within the last 30 years; July-September Periods



Composite departure from average rainfall for years where the Oceanic Niño Index (ONI) increased to moderate (1 to 1.4), strong (1.5 to 1.9), or “super” (≥2.0) levels prior to the July-September window.



- **Top:** Composite temperature (left) and precipitation (right) anomalies for moderate/strong/”super” El Niños leading into July-September, since 1950.
- **Bottom:** Same, except for most recent cases (2009/10 and 2015/16).

Bottom Lines

- **Normal to warmer than normal** conditions are likely to prevail through July. Medium to long-range forecast models suggest the **heat dome to be oriented to our north**, meaning that the **most intense heat will reside across portions of the central and southern U.S.** (north of the RGV and Deep South Texas) through at least early July.
- After a **record-shattering May and a top-five hottest June**, July-August will still be "seasonably" hot, but **may drop down the ranking scale a bit**. **September** will depend on whether rainfall will be average or below average. A **drier than average month would likely lead to a top-ten warmest month** for most. Heat safety continues to be paramount.
- Despite the small sample size, analog data of similar **El Nino** to **La Nina** years within the last 30 years suggest not only a normal to **warmer than normal pattern**, but the **potential** for a **wetter than normal July-September period.**
- **Tropical activity July-mid September?** Although **Tropical Storm Alberto addressed the drought situation** across the Rio Grande Valley and Deep South Texas ranchlands, water levels in our international reservoirs along the river **are still very low and more rain is needed** to offset the lack of non-tropical rainfall production expected through September.
- **IF** the heat ridge which is expected to be located to our north **persists** through a good portion of the summer, that can open up **opportunities for additional tropical systems/moisture to track into the region**. **Locally torrential rains associated with a tropical cyclone can quickly turn dryness into devastating floods in the RGV. Be ready!!**
- Sufficient inflows from Mexican reservoirs serving the Lower Rio Grande watershed remain unlikely during the July-September 2024 period. **Despite some improvements from TS Alberto, combined share of water in Amistad and Falcon will likely to continue well below Stage 2 and 3 triggers (25% or less) through at least July.** Water conservation, smart irrigation, and rainwater harvesting are **critical actions to continue**.
- There is an outside chance that reservoirs feeding the Rio San Juan fill sufficiently into July that releases would be necessary into the Lower Rio Grande east of Rio Grande City – and **could help provide some water to RGV communities**. Decisions would be made at the **bi-national state department level on distributions**.