



**NATIONAL
WEATHER
SERVICE**

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

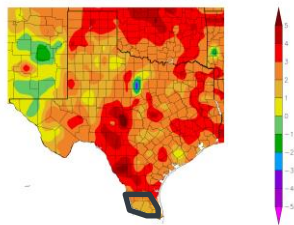
April 29, 2024

Barry Goldsmith and Andrei Evbuoma

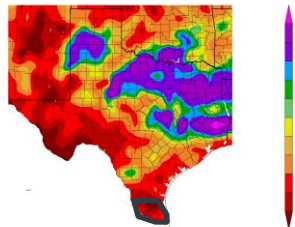
NWS Brownsville/Rio Grande Valley, Texas

Expectations of Warmer and Drier Trends Continue as
El Nino "Flips" towards a La Nina

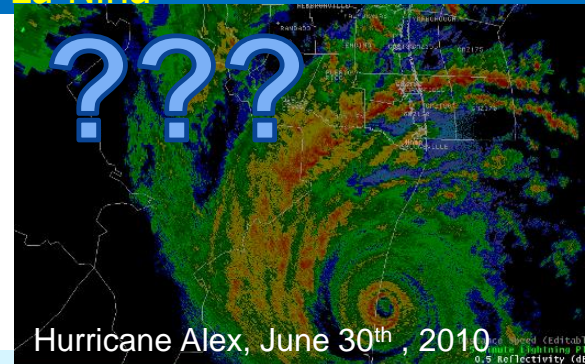
Departure from Normal Temperature (F)
3/30/2024 - 4/28/2024



Percent of Normal Precipitation (%)
3/30/2024 - 4/28/2024



**Warm and dry
trends continue,
but could early
tropical season
eliminate dryness
concerns?**



Generated 4/29/2024 at HRRC using provisional data.

NOAA Regional Climate Centers

Generated 4/29/2024 at HRRC using provisional data.

NOAA Regional Climate Centers



NATIONAL WEATHER SERVICE

April 2024: Heat and Humidity Built as Region Missed North/East Texas Storms

- Upper level disturbances that produced copious rainfall across north, east, and southeast Texas in April left the RGV dry.
- Meanwhile, **warmer-than-average temperatures persisted**, with year-to-date averages among the **top ten warmest on record across the region** (January 1 through April 28 – below).
- Rio Grande reservoirs that serve Texas remained **at or near record calendar-day lows at the end of April** (lower right).

Maximum 119-Day Mean Avg Temperature for Brownsville Area, TX (ThreadEx)

Maximum 119-Day Mean Avg Temperature for McAllen Area, TX (ThreadEx)

Click column heading to sort ascending, click again to sort descending

Click column heading to sort ascending, click again to sort descending

Rank	Value	Ending Date	Missing Days
1	72.2	2020-04-28	0
2	71.4	2000-04-28	0
3	70.9	2012-04-28	0
4	70.4	2024-04-28	1
5	70.0	1972-04-28	0
6	69.1	1908-04-28	0
7	69.0	1952-04-28	0
8	69.0	1916-04-28	1
9	68.9	2008-04-28	0
10	68.5	1904-04-28	0

Rank	Value	Ending Date	Missing Days
1	72.8	2020-04-28	0
2	72.4	2000-04-28	0
3	71.3	2012-04-28	0
4	71.2	2016-04-28	0
5	70.3	1972-04-28	0
6	70.2	2024-04-28	0
7	70.2	2008-04-28	0
8	69.2	1952-04-28	0
9	67.5	1980-04-28	0
10	67.5	1976-04-28	0

Period of record: 1878-01-01 to 2024-04-28

Period of record: 1941-06-01 to 2024-04-28

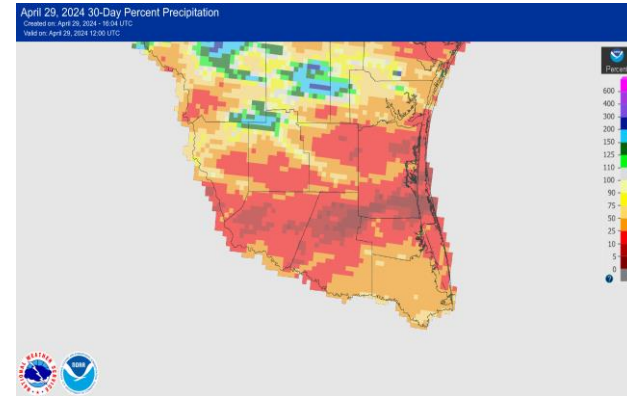
Maximum 119-Day Mean Avg Temperature for HARLINGEN, TX

Click column heading to sort ascending, click again to sort descending

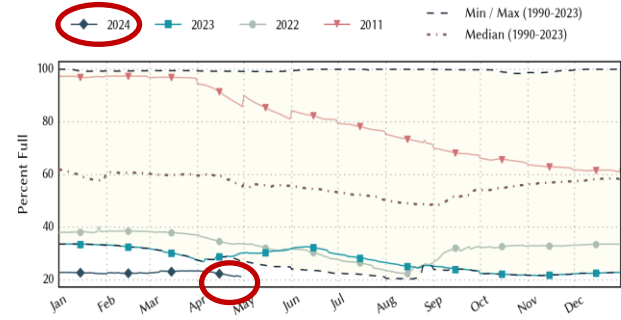
Rank	Value	Ending Date	Missing Days
1	72.2	2020-04-29	6
2	70.9	2000-04-29	4
3	70.0	2012-04-29	4
4	69.8	1916-04-29	5
5	69.1	1952-04-29	1
6	69.0	2024-04-29	0
7	68.8	1944-04-29	7
8	68.4	1932-04-29	1
9	68.3	2016-04-29	8
10	67.8	2008-04-29	6

Period of record: 1912-02-07 to 2024-04-29

Note: For April (through the 28th), Brownsville, Harlingen, and McAllen average temperatures ranked in the top 20; Brownsville was 8th warmest and Harlingen/McAllen 18th warmest.



April 1-28, 2024 percentage of average rainfall. All but a small area of northern Jim Hogg County was 5 to 50% of average rainfall (average April rainfall is 1 to 1.5 inches).



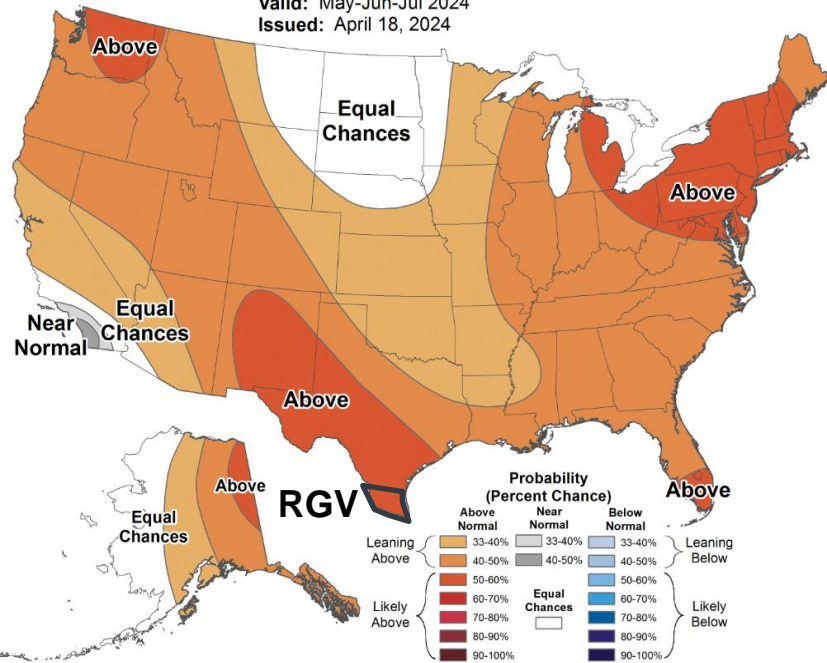
Texas share of Amistad, Falcon, Red Bluff Reservoirs. Credit: Texas Water Development Board



Seasonal Forecast, May – July 2024 USA

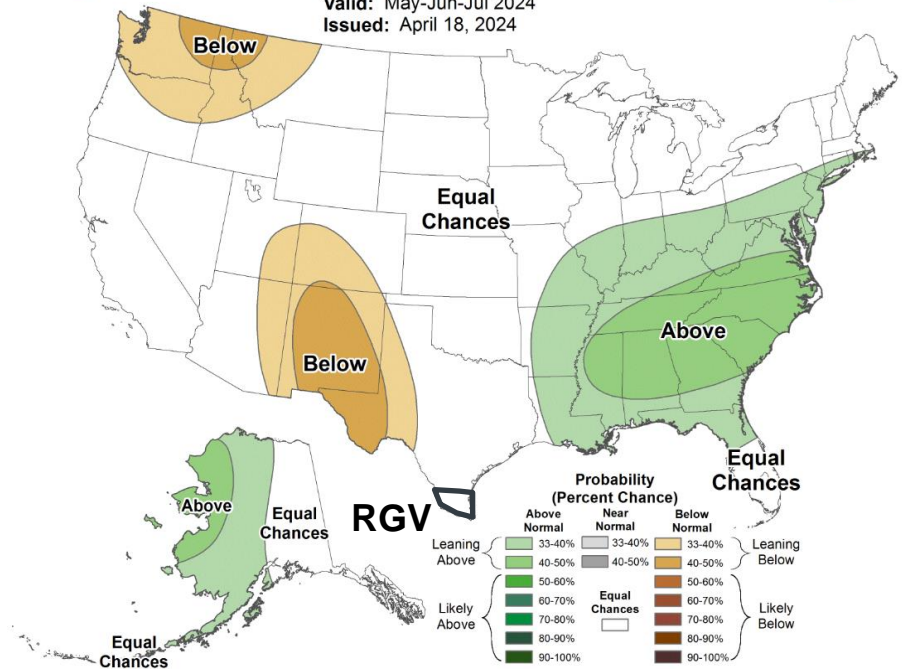
Seasonal Temperature Outlook

Valid: May-Jun-Jul 2024
 Issued: April 18, 2024



Seasonal Precipitation Outlook

Valid: May-Jun-Jul 2024
 Issued: April 18, 2024



Key Takeaways: May-July 2024 Outlook

Confidence is **medium-high** on temperature and rainfall outcomes. As we transition from El Niño to La Niña, there remains some uncertainty on the prevailing (average) signal that could enhance rainfall, or hold it back. Confidence is also **medium** on **dryness expansion or moderate to severe drought** redevelopment. Based on the lack of thunderstorm systems through the end of April, confidence has increased on a **less active May and early June compared to 2023**.

- Reservoir levels at Falcon remained leveled off in late April. Amistad total water levels at the end of April remained **at/near all-time record lows**. Confidence is increasing on warm and dry conditions across the reservoir inflow regions through spring and into early summer, with accelerating evaporation rates in May and June. **Confidence is near-certain on total storage remaining at or near record lows through early summer** based on the temperature/rain forecast.
- Remaining El Niño influences combined with other “teleconnections” between oceans and atmosphere will determine the eventual “sense” of weather through May, **but hopes of meaningful rainfall from widespread thunderstorms are dwindling**.
- **Stage 2 and 3 water conservation continued in several RGV municipalities in April, and Cameron/Hidalgo Counties issued [water-shortage disaster declarations](#). Worsening conditions are likely through early summer** if storms are infrequent.
- **100° days are likely to increase in May**, especially from Brooks/Hidalgo west to Zapata – then **increase in number and location to include Cameron-Kenedy County, in June. Dangerous “feels like” temperatures – 111° or higher** – are likely, on occasion, in June and July, **for a third year in a row**.
- That said, **dependency on tropical systems** in what’s expected to be an active season is **increasing** and could be the saving grace that puts a dent in dryness expansion. An early-season (June) event can’t be ruled out, but is unlikely now.

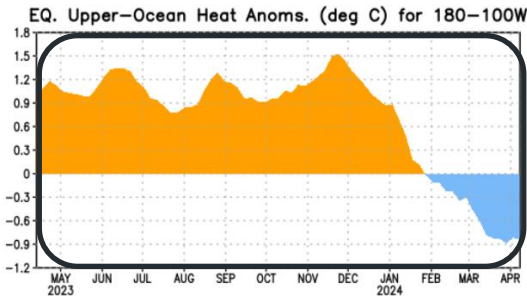
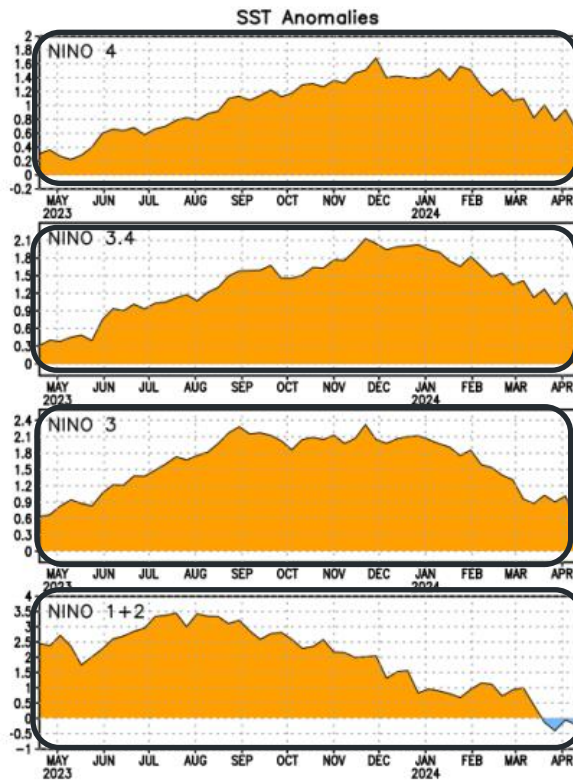


The “Why” of the Forecast:

ENSO Neutral on track to develop this Spring with La Nina on track to develop this Summer

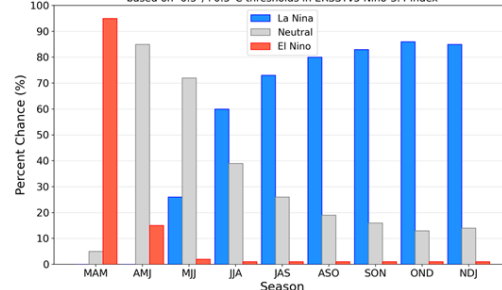
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7	-0.8	-1.0	-1.0
2022	-1.0	-0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.1	0.2	0.5	0.8	1.1	1.3	1.6	1.8	1.9	2.0
2024	1.8	1.5										

- Despite a weakening, but still moderate to strong El Niño in place, other teleconnections including a positive Arctic Oscillation (+AO) and a negative North American Oscillation (-NAO) stymied the sub-tropical jet and limited severe weather/rainfall production in April.
- The rapid transition to into ENSO Neutral favors hotter and drier conditions through early summer, but uncertainty remains on whether any thunderstorm “cluster” events can occur and produce localized average to above average rainfall in May or June. A tropical wave or cyclone cannot be ruled out in June, though “La Canícula” (dry upper level pattern in mid summer) may develop early.

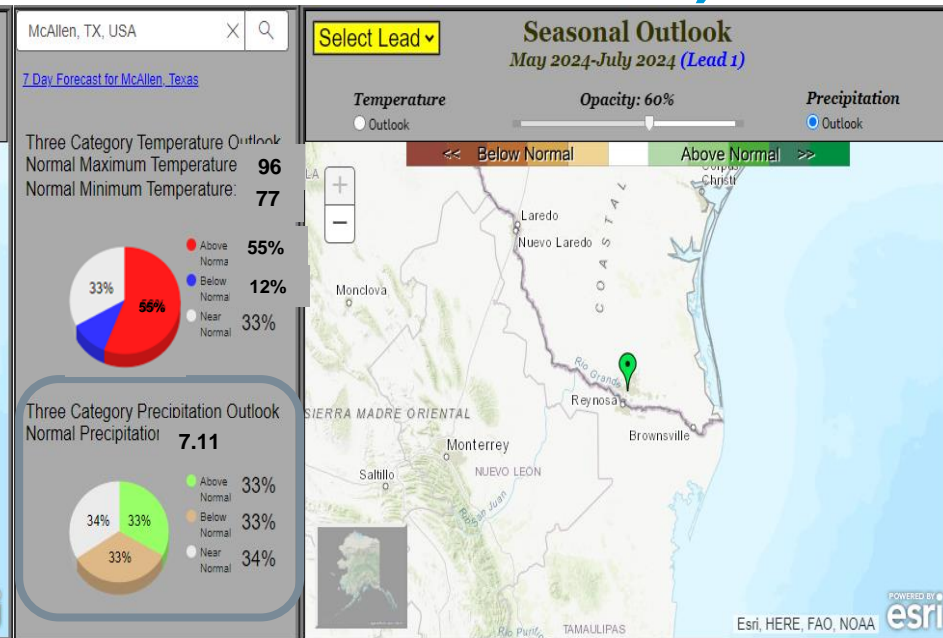
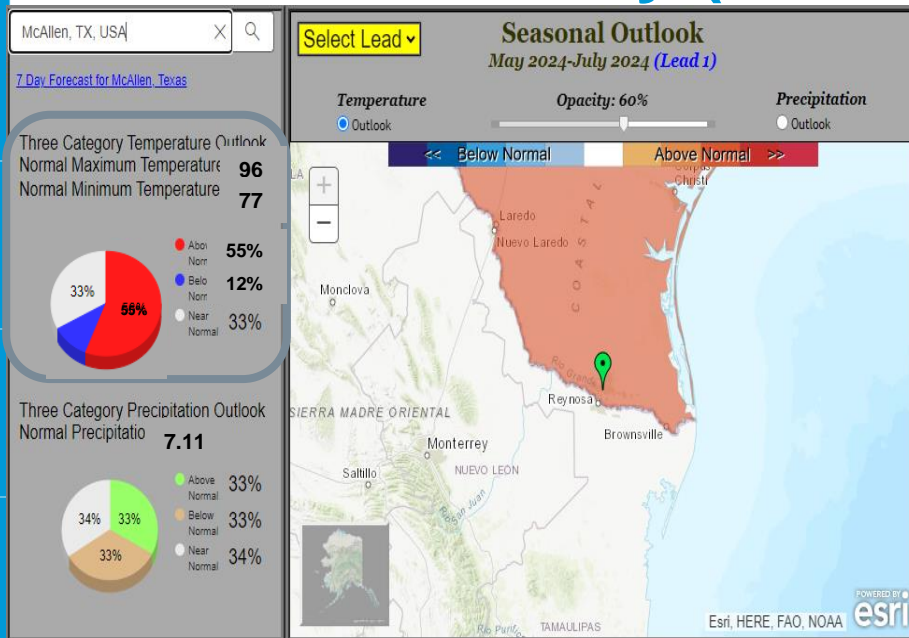


*Above right: Oceanic Niño Index. Values below -0.5 (light blue) for five consecutive 3-month periods indicated La Niña. El Niño (red, +0.5) officially began in April-June 2023, reached strong levels (+1.5) by August-October 2023, strengthened further through November-January 2023, weakened slightly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

Official NOAA CPC ENSO Probabilities (issued Apr. 2024)
based on -0.5/+0.5°C thresholds in ERSSTv5 Niño-3.4 index



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



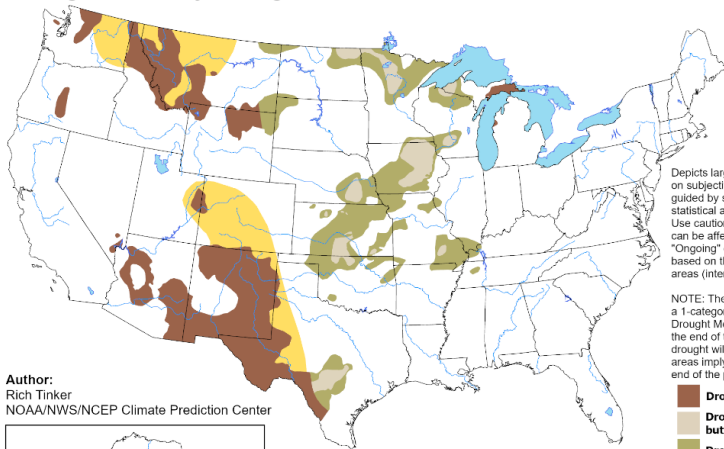
- **Temperature:** **Hotter than normal temperatures likely May-July (Confidence: Medium-High).** RGV averages: Afternoon – Around 90 at the start of May, rising to 98 to 102 in July. Wake-up: Around 70 in early May, rising to 75 to 80 from late June through July.
- **Precipitation:** **Equal chances for above, below, and average.** RGV averages: 7 to 8+ inches.



The May-July 2024 “Droughtlook”

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for April 18 - July 31, 2024
Released April 18, 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).

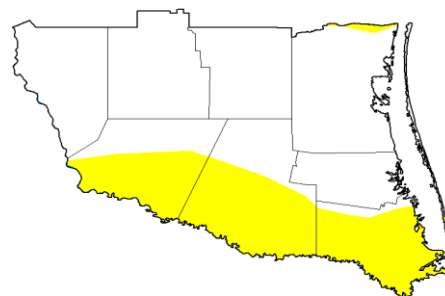
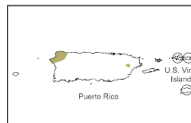
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

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

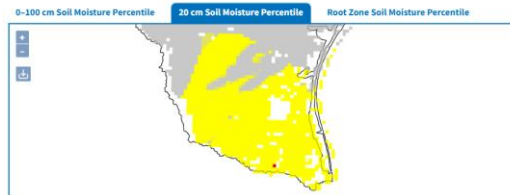


<https://go.usa.gov/3eZ73>

Author:
Rich Tinker
NOAA/NWS/NCEP Climate Prediction Center



April 23, 2024



April 25, 2023

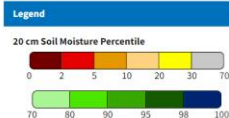
Drought Classification

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

This map shows the moisture content of the top 20 cm of soil compared to historical conditions, based on in situ (in the ground) measurements of soil moisture from a wide range of state and federal mesonets across the continental U.S. These data are then interpolated into a 4 km grid.

Red and orange hues indicate drier soils, while greens and blues indicate greater soil moisture.

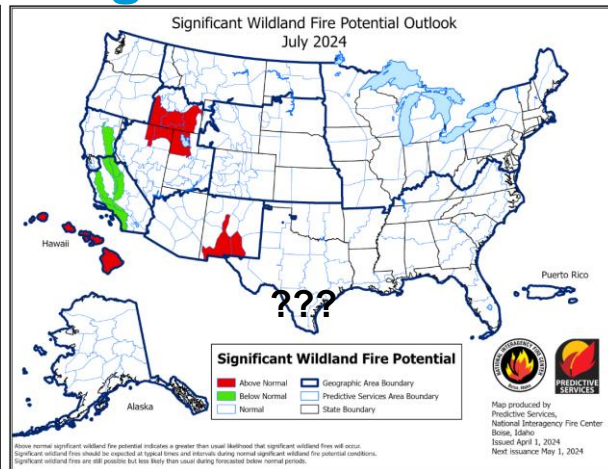
Sources: NationalSoilMoisture.com



- **Drought designation (D0-Abnormally Dry) developed over the RGV in April.** 4” (depth) soil moisture fell to 20-30 percent (abnormally dry) by late April.
- Continued **“lean” toward a hot and dry late spring/early summer** suggests **moderate, to potentially severe**, drought may develop across parts of the region, especially from Hidalgo/Brooks out to Zapata.
- **The forecast through early June remains a little uncertain** as upper level disturbances may bring one or two “coverage” rain events with fronts and/or tropical moisture feeds. If rains are **fleeting or nonexistent**, **drought will return**.



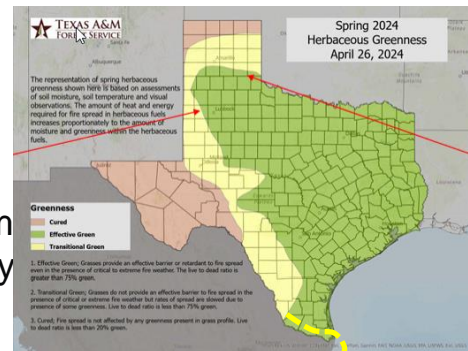
Wildfire Spread Potential Could Increase Through Mid Summer



Effective Green was present across all but Zapata and western Jim Hogg Counties at the end of April. **Transitional Green** was present there, but also likely developing cross the populated Rio Grande Valley (south of yellow dashed line).

May and June will continue to be highly dependent on “just in time” rainfall. Any rain would come in the form of thunderstorm systems. If such systems are seldom or not at all, wildfire growth potential could shift to **above average**. The most likely locations would be west of IH-69C/US 281. May and June typically are our most active period when it comes down to spring (non-tropical) thunderstorms.

Late June and perhaps July will be dependent on tropical systems.



Herbaceous Green/Curing Map for Texas (April 26th)





Wildfire Prevention Review

- This **remains critical** through autumn, especially if severe to extreme drought continues over fuel-loaded rangeland north of the populated Valley. The 300+ acre fire at Santa Ana NWR happened in September, as did a similarly large fire in Starr County.
- Continue to focus on **farm, ranch workers, and other persons who might drive hot vehicles** on parched brush on critical/near-critical days – especially low humidity, breezy days following fronts.



Infographics for Wildfire Prevention

Fire Weather SAFETY TIPS

- Be careful to not drag trailer chains that could cause sparks.
- Do not park on dry grass.
- Avoid outdoor burning and check recently burned piles for flare-ups.
- Clear out dead vegetation from around your home.
- Be careful when welding in dry grass.

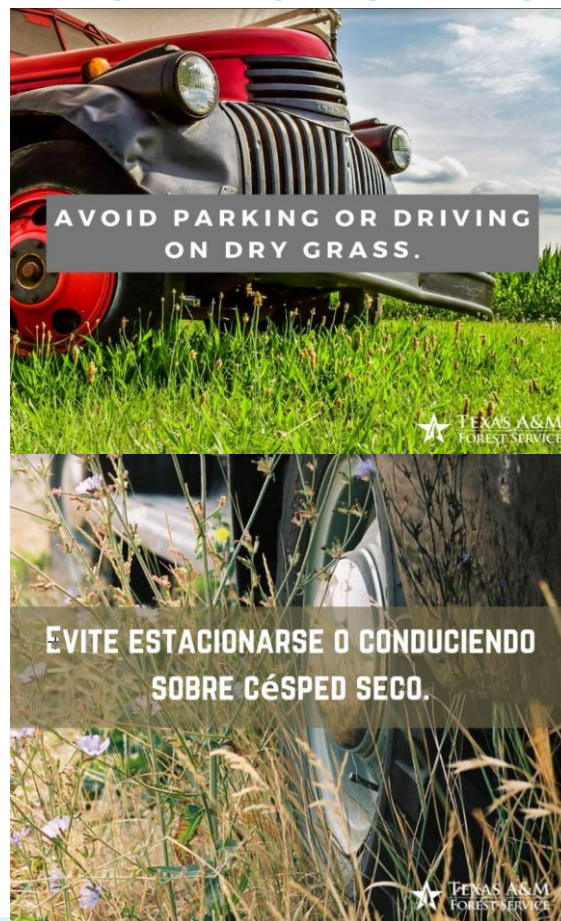


Consejos de Seguridad Contra Incendios

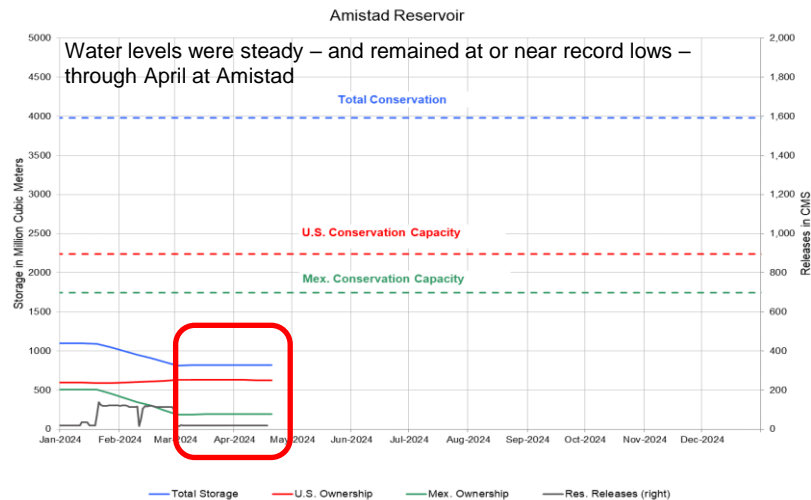
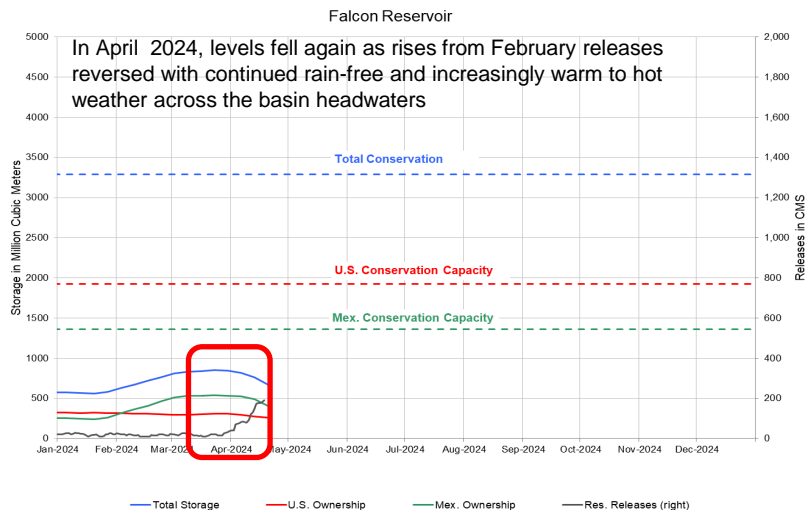
- Tenga cuidado de no arrastrar cadenas de remolque que podrían provocar chispas.
- No se estacione sobre césped seco.
- Evite las quemaduras al aire libre y revise las pilas recientemente quemadas para detectar brotes de fuego.
- Elimine la vegetación muerta alrededor de tu casa.
- Tenga cuidado soldar en hierba seca.



- ~50 in all (20 in Spanish)!
- Thanks to **Texas A&M Forest Service** for Many of These



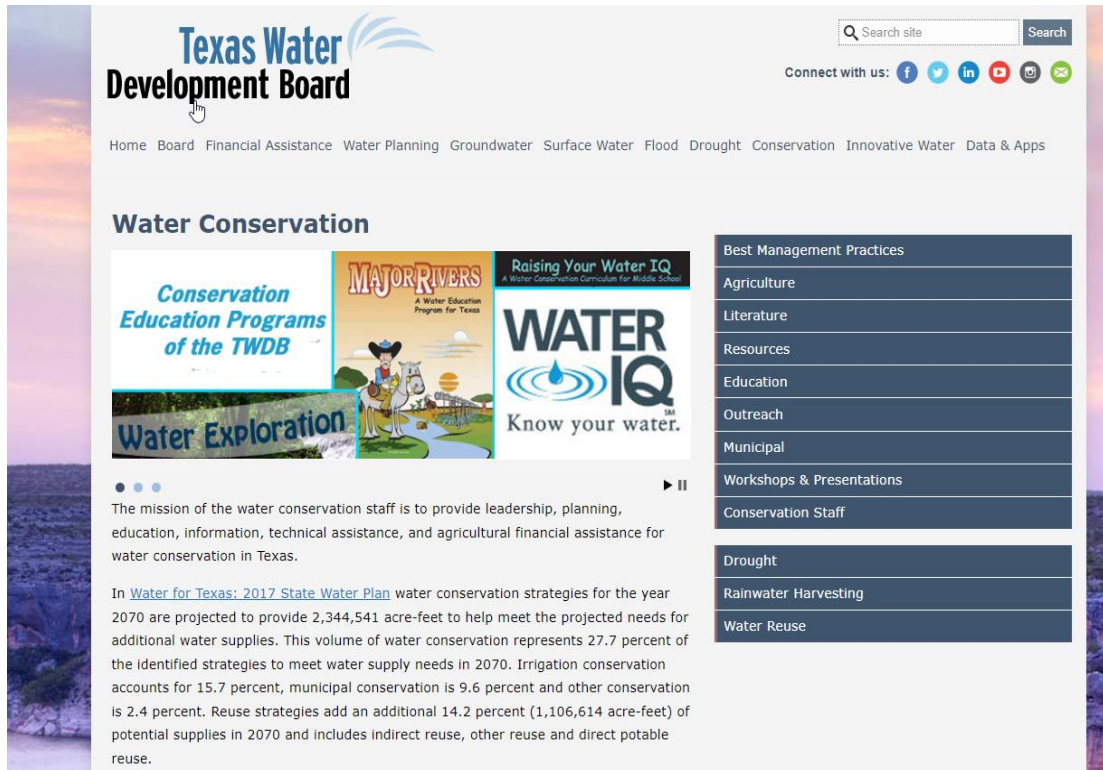
Amistad remained at Record Seasonal Lows; Falcon Fell Back



- Falcon resumed a steady drop in April due to lack of rainfall, no inflows, and increasing evaporation – to **17.1%, down from 25.9%** on March 25th. This level was just above record lows for this date. The forecast that favors below average rainfall in the watershed suggests **values will drop through late spring and early summer**, barring additional releases from Amistad, organized thunderstorm systems that develop in the watershed, or a late June tropical system.

- Amistad** remained at/near **all-time record lows in late April**. Levels were at **20.5% on April 29th** – about steady from **late March (20.7%)**. The late spring/early summer forecast strongly suggests **minimal inflows into Amistad while temperature and evaporation rates rise**. Without assistance, **levels are likely to fall into the upper teens in May and remain through July**.

Water Conservation is Key Until Further Notice!



The screenshot shows the Texas Water Development Board website. At the top left is the logo with the text "Texas Water Development Board". To the right is a search bar and social media icons for Facebook, Twitter, LinkedIn, YouTube, Instagram, and RSS. Below the logo is a navigation menu with links: Home, Board, Financial Assistance, Water Planning, Groundwater, Surface Water, Flood, Drought, Conservation, Innovative Water, and Data & Apps. The main content area is titled "Water Conservation" and features a carousel of three educational materials: "Conservation Education Programs of the TWDB", "MAJOR RIVERS A Water Education Program for Texas", and "Raising Your Water IQ A Water Conservation Curriculum for Middle School". Below the carousel is a paragraph stating the mission of the water conservation staff. To the right of the main content is a vertical menu with categories: Best Management Practices, Agriculture, Literature, Resources, Education, Outreach, Municipal, Workshops & Presentations, and Conservation Staff. Below this menu is a "Drought" section with sub-items: Rainwater Harvesting and Water Reuse.

Texas Water Development Board

Home Board Financial Assistance Water Planning Groundwater Surface Water Flood Drought Conservation Innovative Water Data & Apps

Water Conservation

Conservation Education Programs of the TWDB

MAJOR RIVERS
A Water Education Program for Texas

Raising Your Water IQ
A Water Conservation Curriculum for Middle School

WATER IQ
Know your water.

Water Exploration

The mission of the water conservation staff is to provide leadership, planning, education, information, technical assistance, and agricultural financial assistance for water conservation in Texas.

In [Water for Texas: 2017 State Water Plan](#) water conservation strategies for the year 2070 are projected to provide 2,344,541 acre-feet to help meet the projected needs for additional water supplies. This volume of water conservation represents 27.7 percent of the identified strategies to meet water supply needs in 2070. Irrigation conservation accounts for 15.7 percent, municipal conservation is 9.6 percent and other conservation is 2.4 percent. Reuse strategies add an additional 14.2 percent (1,106,614 acre-feet) of potential supplies in 2070 and includes indirect reuse, other reuse and direct potable reuse.

Best Management Practices

- Agriculture
- Literature
- Resources
- Education
- Outreach
- Municipal
- Workshops & Presentations
- Conservation Staff

Drought

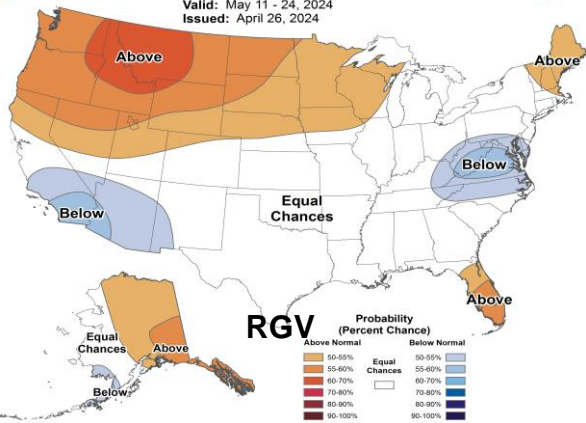
- Rainwater Harvesting
- Water Reuse

- “Stage 2/3” Restrictions continued through early winter and are likely to continue through at least June, based on inflows from Amistad and Falcon.
- Learn more at the [Texas Water Development Board’s Conservation Page](#)

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

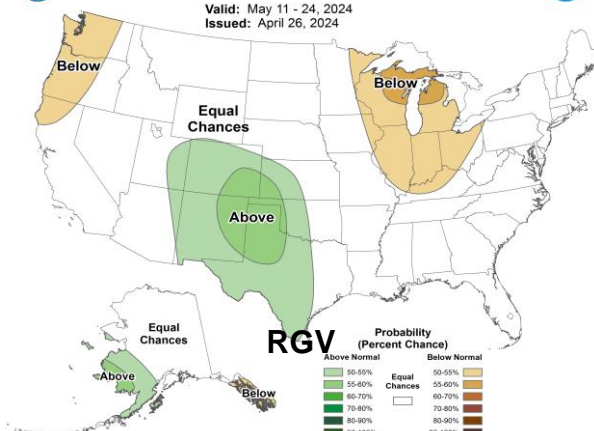
Weeks 3-4 Temperature Outlook

Valid: May 11 - 24, 2024
Issued: April 26, 2024



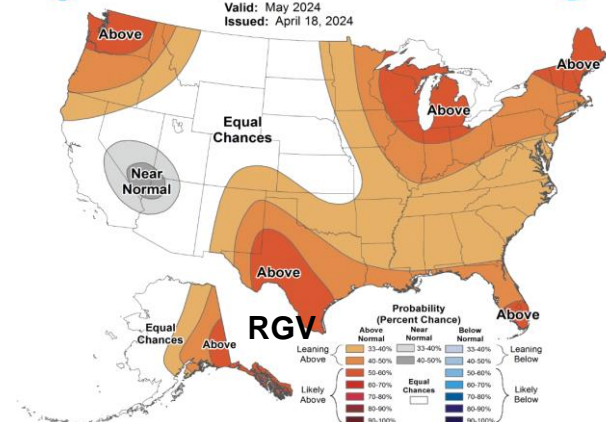
Weeks 3-4 Precipitation Outlook

Valid: May 11 - 24, 2024
Issued: April 26, 2024



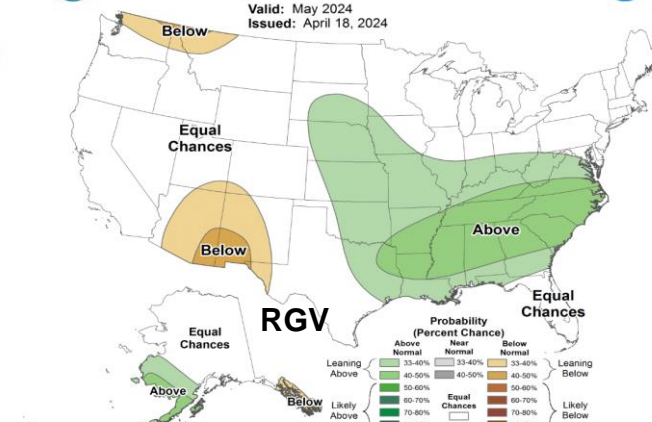
Monthly Temperature Outlook

Valid: May 2024
Issued: April 18, 2024



Monthly Precipitation Outlook

Valid: May 2024
Issued: April 18, 2024



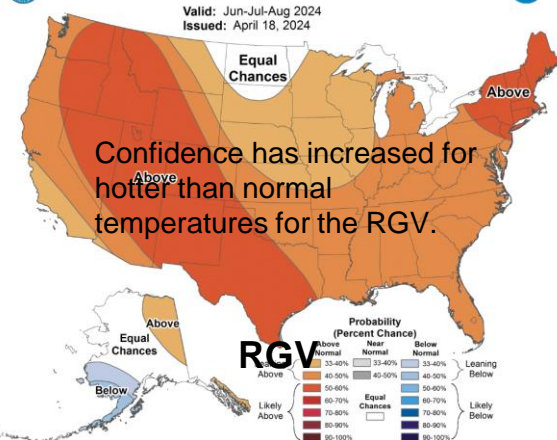
- **Bottom Line: The pattern continues to lean warmer and drier**, with continued weak frontal systems yielding to a mainly dry start to the month.
- Confidence in the rainfall forecast shown for **May** in the RGV is **low-medium**.
- Though April produced very little in the way of rainfall, May could provide one or two opportunities for showers and thunderstorms associated with upper level disturbances in the (southern) jet stream. If disturbances affecting the southern and central Great Plains **do not connect with the southern stream, dryness will increase/intensify**.

As thunderstorm potential wanes in June and July, our dependency on and the chance for tropical systems may increase and will need to be monitored closely.

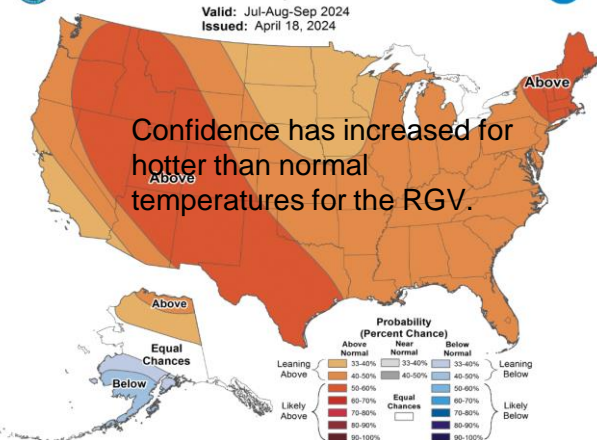


Summer 2024 into early Autumn 2024: Dryness and Heat Becoming More Likely; Tropical Season Dependency Critical

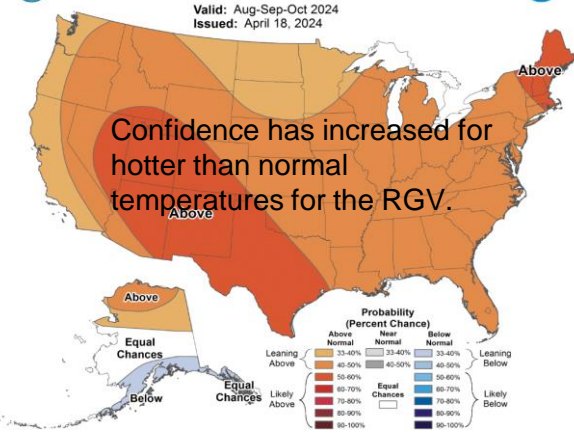
Seasonal Temperature Outlook
Valid: Jun-Jul-Aug 2024
Issued: April 18, 2024



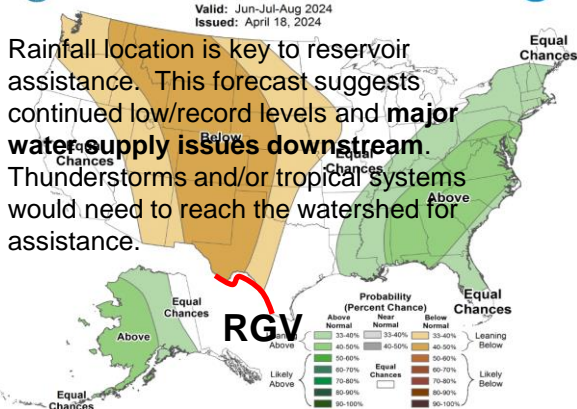
Seasonal Temperature Outlook
Valid: Jul-Aug-Sep 2024
Issued: April 18, 2024



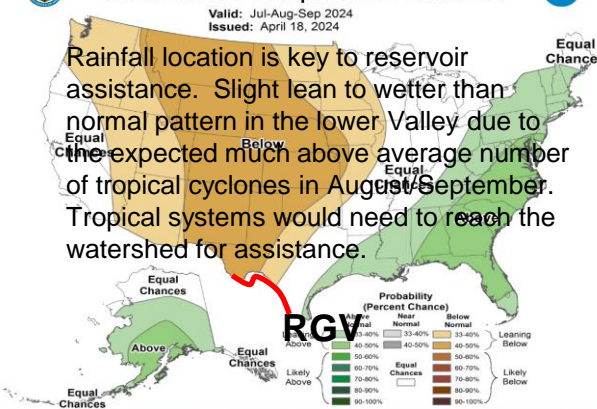
Seasonal Temperature Outlook
Valid: Aug-Sep-Oct 2024
Issued: April 18, 2024



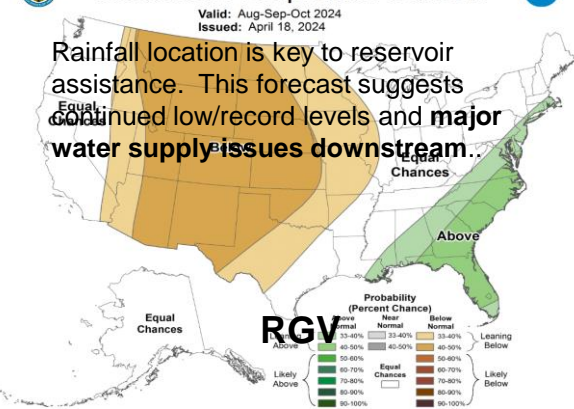
Seasonal Precipitation Outlook
Valid: Jun-Jul-Aug 2024
Issued: April 18, 2024



Seasonal Precipitation Outlook
Valid: Jul-Aug-Sep 2024
Issued: April 18, 2024



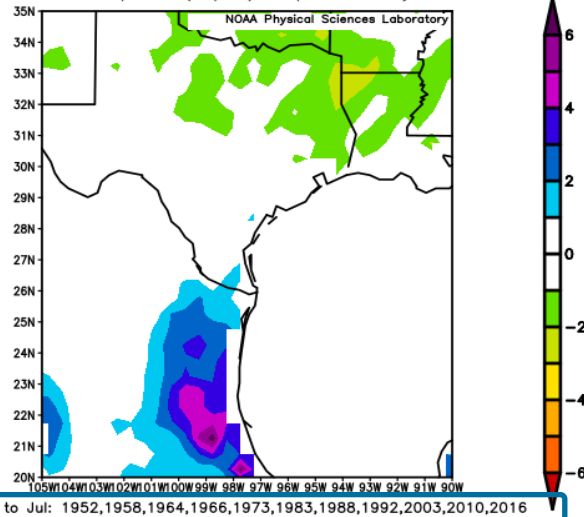
Seasonal Precipitation Outlook
Valid: Aug-Sep-Oct 2024
Issued: April 18, 2024



Comparing Similar El Niño to La Niña Episodes; May-July Periods

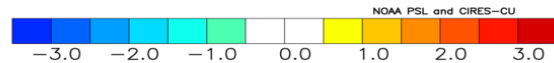
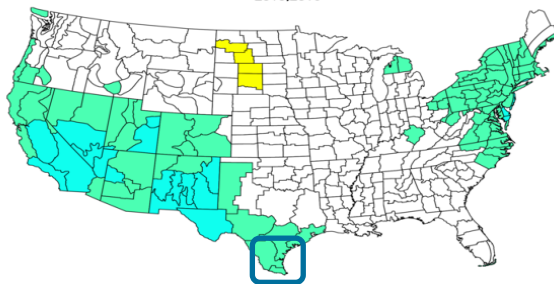


U of Delaware V5.01
Precipitation (cm/mn) Composite Anomaly

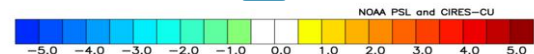
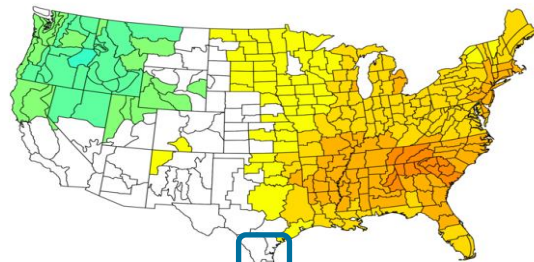


Composite departure from average rainfall for years where the Oceanic Niño Index (ONI) increased to moderate (1 to 1.4), strong (1.5 to 1.9), or “super” (≥ 2.0) levels prior to the May-July window.

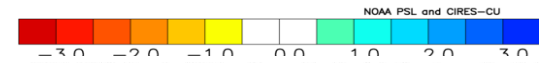
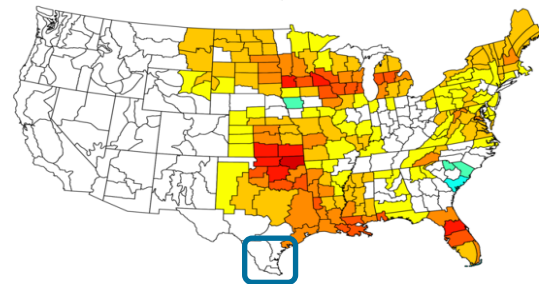
NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Versus 1991–2020 Longterm Average
May to Jul 1952,1958,1964,1966,1973,1983,1988,1992,1998,2003
2010,2016



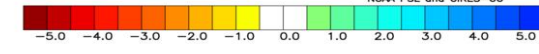
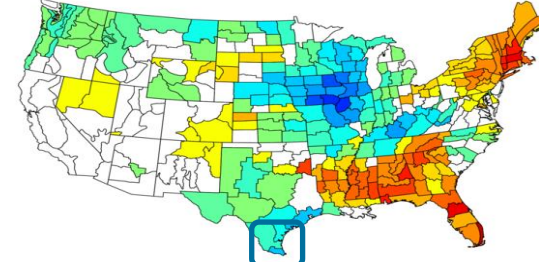
NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
May to Jul 2010,2016
Versus 1991–2020 Longterm Average



NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Versus 1991–2020 Longterm Average
May to Jul 1952,1958,1964,1966,1973,1983,1988,1992,1998,2003
2010,2016



NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
May to Jul 2010,2016
Versus 1991–2020 Longterm Average



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



Bottom Lines

- Sufficient inflows from Mexican reservoirs serving the Lower Rio Grande watershed remain unlikely during the May-July 2024 period. **Combined share of water in Amistad and Falcon now likely to continue well below Stage 2 and 3 triggers (25% or less) through at least June.** Water conservation, smart irrigation, and rainwater harvesting are **critical actions to continue.** A **water crisis in May or June** is becoming more likely for agriculture and some municipalities.
- It's **possible that drought develops/expands across some locations by late May and June.** Drought development will be predicated on **limited to no areawide thunderstorm events; multiple events would slow or hold off worsening drought.** Prolonged spells of warm to eventually hot weather with low to moderate humidity would bring severe-extreme (Level 2-3 of 4) drought as early as late May or June to parts of the area, particularly the Rio Grande Plains. The combination of increasing heat (evaporation) and very limited water releases would have **major impact on the crop and livestock industry.**
- The expectation that El Niño will quickly turn neutral this spring, and possibly flip to La Niña by late spring/early summer, could be a harbinger of wildfire spread potential – after a warm and dry April. **May-June begins a critical period.**
- **Severe Weather? May through June** offers the best opportunity, as surface temperatures warm with the sun and instability could increase. However, *much would depend on an active subtropical jet stream linking up with stronger mid-latitude systems.* **A drier pattern, especially in May, would reduce opportunity.** Because of these factors, **confidence is low.** Typical threats would be **hail**, followed by **damaging wind** and **flooding rain.**
- **Early tropical activity? June is always a wildcard.** In 2023, the active west-east subtropical jet (steering) that produced rainfall through June 8th ended immediately on **June 9th, when “La Canicula”**- the pattern of atmospheric high pressure that extends from Coahuila/Chihuahua southeast through the Valley and western Gulf, **brought searing heat, humidity – and no rain.** This is a favored pattern again this year, but a **brief pattern** shift could allow a **June 2018 event (tropical wave/trough)** to slide in from the east and **provide beneficial rain.**

