



Winter 2023/2024 Outlook: Perspective for the Lower Rio Grande Valley/Deep S. Texas Region



**NATIONAL
WEATHER
SERVICE**

November 22, 2023

Barry Goldsmith, NWS Brownsville/Rio Grande Valley, Texas

November Brought a Wet and Relatively Cool Pattern. Will Winter Follow Suit?

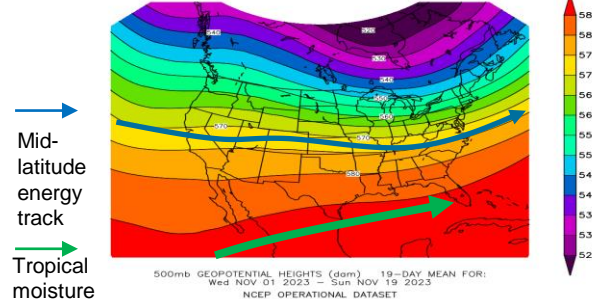
Courtyard by Marriott South Padre Island • EnjoySPI.com • 2023-11-14 15:55:28

"King" tide + tidal run-up from "Texas Nor'easter", Nov. 14, 2023

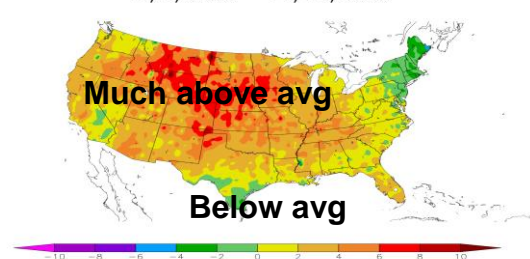


Photo credit: Courtyard by Marriott, South Padre Island

El Niño Pattern Dominated November 2023



Departure from Normal Temperature (F)
11/1/2023 - 11/19/2023



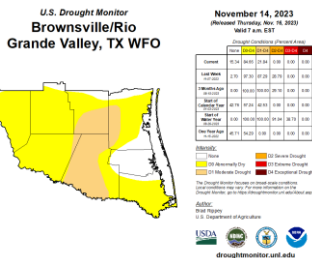
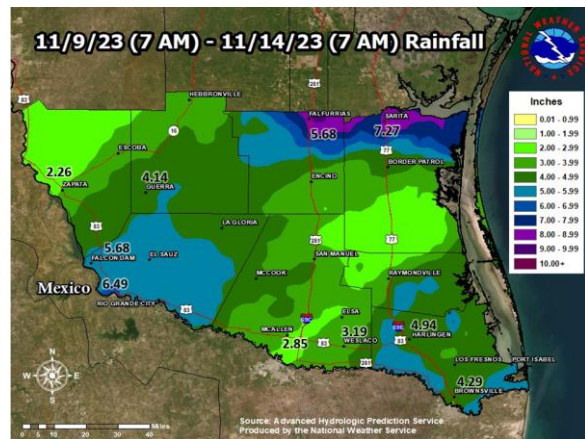
Generated 11/20/2023 at HPRCC using provisional data. NOAA Regional Climate Centers



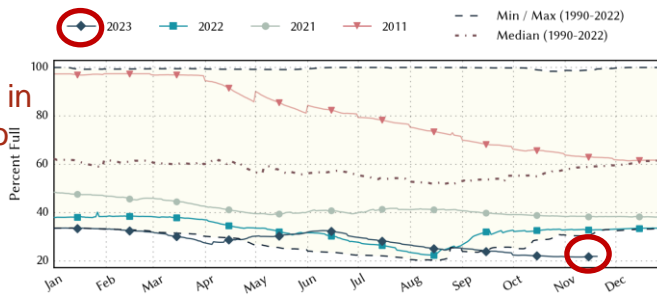
NATIONAL WEATHER SERVICE

November 2023: Wetter...A Bit Cooler

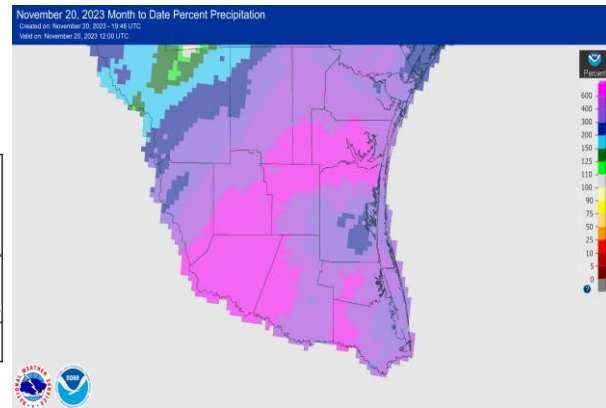
- **El Niño's "Classic"** pattern arrived for November 10-14, dropping steady rain that added up to much above average values (right) and kept temperatures down
- **Drought improved a bit more**, with Moderate (Level 1) remaining only in Hidalgo and Brooks County. The slow-draining rains were great for yards and gardens and brought some water to depleted ponds – but much of the water was rapidly absorbed by thirsty soils – with more needed.



Despite the additional helpful Valley rains, inflows from runoff farther north in Texas and tributaries that feed the Rio Grande only provided small rises to Falcon, with continued slow falls at Amistad. The Texas share of conservation along the Rio Grande **remained at record** low levels for late November.



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



November 1-20 percentage of average rainfall, 4 to 6 times "normal", in 2023



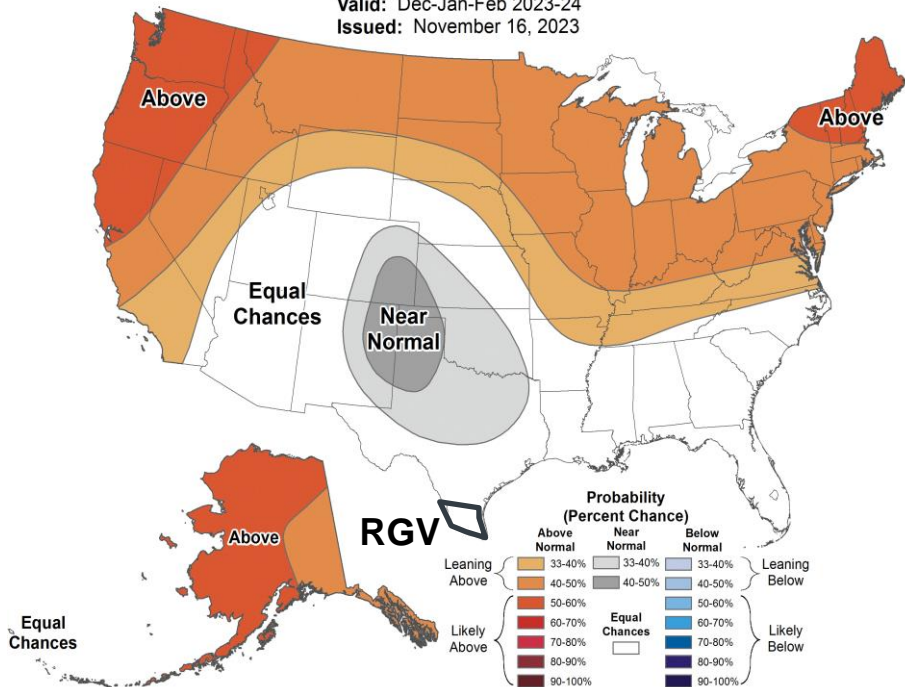
Seasonal Forecast, Winter 2023/2024 - USA



Seasonal Temperature Outlook



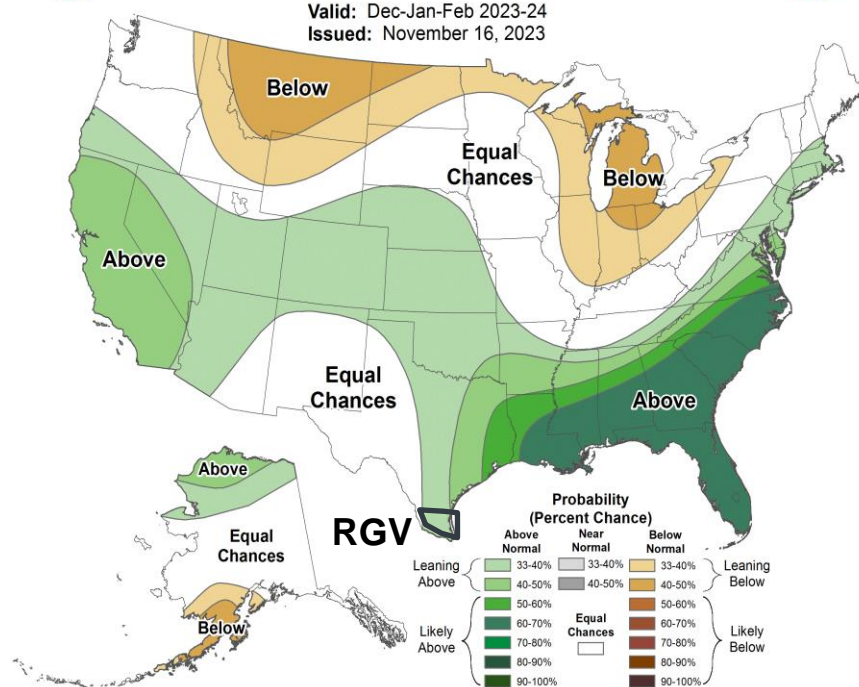
Valid: Dec-Jan-Feb 2023-24
 Issued: November 16, 2023



Seasonal Precipitation Outlook



Valid: Dec-Jan-Feb 2023-24
 Issued: November 16, 2023



Key Takeaways: Winter 2023/2024

Confidence is **low-medium** on rainfall outcomes, and **medium** on temperature outcomes. There is high uncertainty on the prevailing (average) signal that could enhance rainfall, or hold it back, despite the strong El Niño. Confidence is also **medium** on **dryness persistence and possible drought** into December and beyond. Another rain event similar to Nov. 10-14 would temporarily end dryness – at least through January. Breakdown:

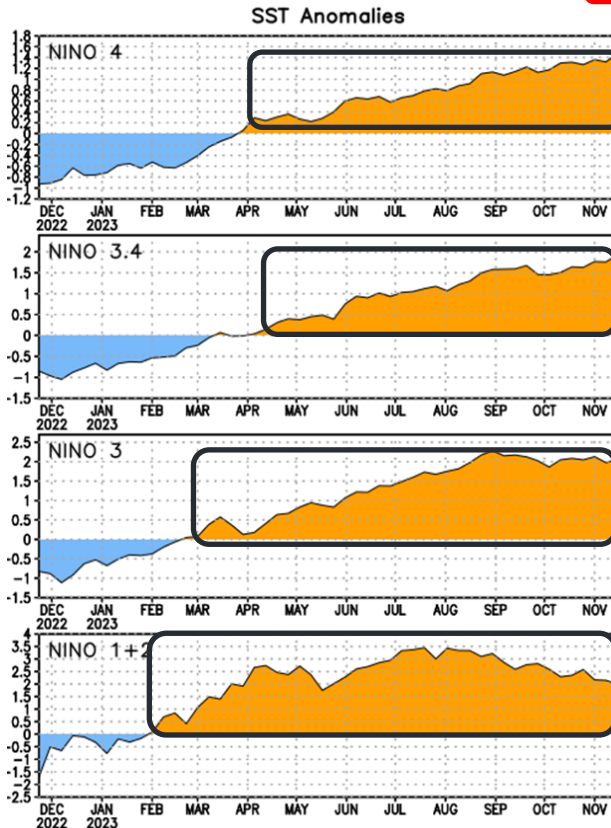
- El Niño influences combined with other “teleconnections” between oceans and atmosphere will **determine the eventual “sense” of winter**. There are slightly increased chances for **helpful rains** for the Valley’s detention/drainage system – less for the reservoir inflow region – and still a notable chance for **continued dryness**. Confidence is **medium** on either outcome.
- Reservoir levels at Falcon nudged upward by the end of November, but will still **near record lows for these dates** – values not seen since late November 2002. Inflows from additional rainfall would slowly increase reservoir levels; conversely, dry and warm periods could maintain modest evaporation rates through February. **Confidence is low on reservoir rises, but high on levels remaining well below average through winter.**
- **Stage 2 and 3 water conservation continued in more than a half-dozen RGV municipalities in late November. Status quo is likely through winter.**
- **Will it freeze?** While cold fronts of the “gray, drizzly” variety are expected several times through February, a hard freeze ($\leq 27^{\circ}\text{F}$) remains unlikely. Between **one and four freezes** may occur after December 15, (highest chances across the Brush Country) and **low wind chill (apparent temperature at or below 30°F) may occur one to four times as well.**
- Wintry precipitation (ice or snow) is very unlikely, but a **non-zero chance** exists – simply due to higher probability of precipitation, overall.

The “Why” of the Forecast: El Niño to Remain Strong; somewhat uncertain winter temperatures

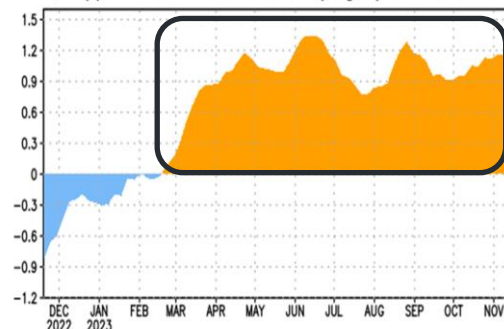
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7	-0.8	-1.0	-1.0
2022	-1.0	-0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.1	0.1	0.5	0.8	1.1	1.3	1.5			

- El Niño began to increase the subtropical jet (favored for precipitation) in mid November, but its frequency/persistence in providing repeated influx of moisture is unknown
- A repeating pattern of November 10-14, 2023, **would continue periodic notable rainfall, eliminate drought/dryness, and help local water supplies.**
- An infrequent pattern like November 10-14 – or return to relative dryness – would maintain drought/dryness and keep water supply reliance on minimal downstream flows from Falcon.

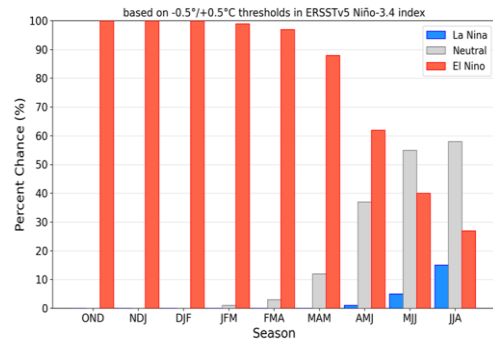
*Above right: Oceanic Niño Index. Values below -0.5 (light blue) for five consecutive 3-month periods indicated La Niña. El Niño (red, +0.5) officially began in April-June 2023, and reached strong levels (1.5) by August-October 2023.



EQ. Upper-Ocean Heat Anoms. (deg C) for 180–100W



Official NOAA CPC ENSO Probabilities (issued Nov. 2023)



The Winter 2023/2024 Outlook: Rio Grande Valley (McAllen as Anchor Point)

McAllen, TX, USA

7 Day Forecast for McAllen, Texas

Three Category Temperature Outlook
Normal Maximum Temperature: **72**
Normal Minimum Temperature: **51**

Above Normal	33%
Below Normal	33%
Near Normal	34%

Three Category Precipitation Outlook
Normal Precipitation: **3.34**

Above Normal	37%
Below Normal	30%
Near Normal	33%

Select Lead

Seasonal Outlook

December 2023-February 2024 (Lead 1)

Temperature Outlook Opacity: 60% Precipitation Outlook

Temperature Outlook: 34% Below Normal, 33% Above Normal

Map showing the Rio Grande Valley region, including Laredo, Nuevo Laredo, Brownsville, and Monterrey. The map is overlaid with a semi-transparent layer indicating the outlook. The Rio Grande is highlighted in green, and the surrounding areas are shaded in blue and orange.

McAllen, TX, USA

7 Day Forecast for McAllen, Texas

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Normal Maximum Temperature: **72**
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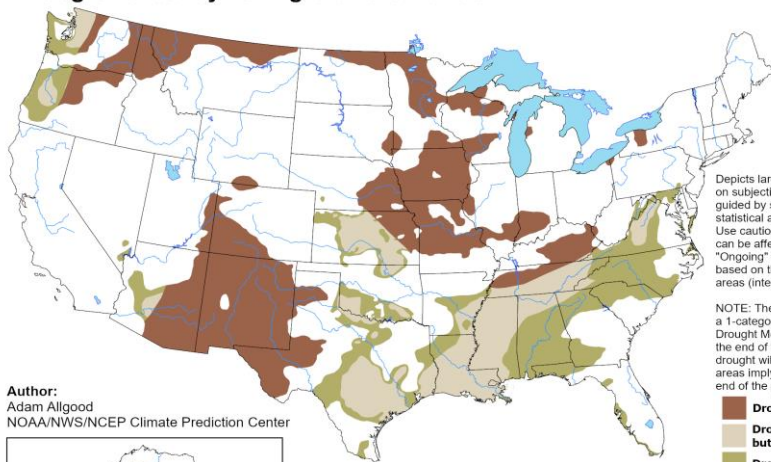
Above Normal	37%
Below Normal	30%
Near Normal	33%

- Temperature: **Equal chances for above, below, and average:** RGV averages: Afternoon – 75 early December, 68-72 Late December-late January, rising to the upper 70s by the end of February. Morning: 50-55, falling to 47 to 52 by the end of December through early February, then rising to the mid to upper 50s by end of February.
- Precipitation: A **37 percent chance of above average**, a **30 percent chance for below average**. RGV averages: 2.25 to 4 inches (from west to east).



The Winter 2023/2024 “Droughtlook”

U.S. Seasonal Drought Outlook Valid for November 16, 2023 - February 29, 2024
 Drought Tendency During the Valid Period Released November 16, 2023



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).

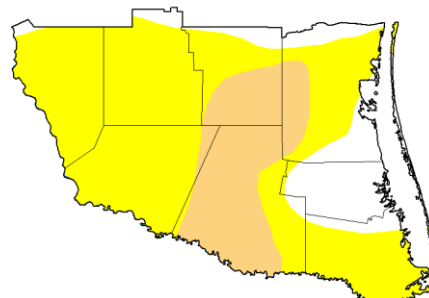
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

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

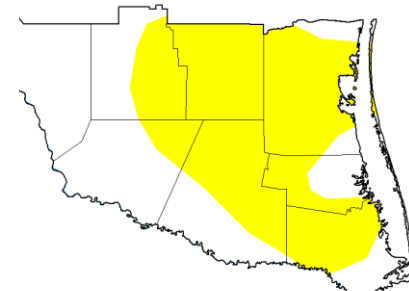


<https://go.usa.gov/3eZ73>

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 NOAA/NWS/NCEP Climate Prediction Center



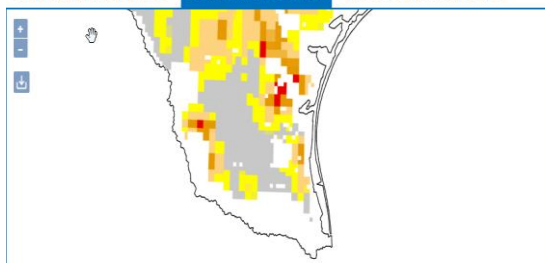
November 14, 2023



November 15, 2022

Drought Classification

0-100 cm Soil Moisture Percentile 20 cm Soil Moisture Percentile Root Zone Soil Moisture Percentile



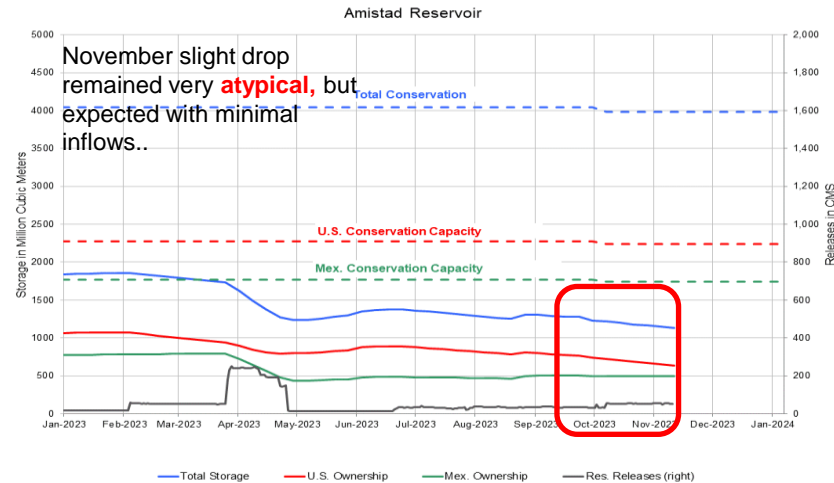
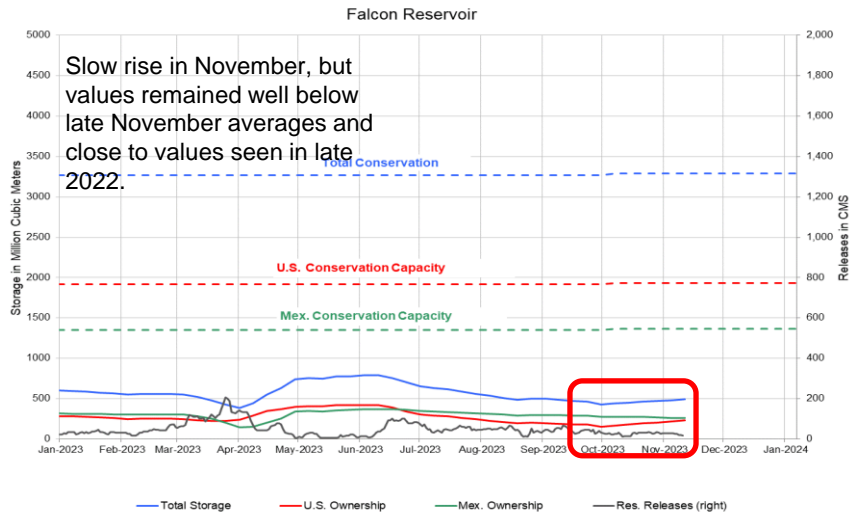
- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Drought improved again in November and was just a touch worse than a year ago. 4” (depth) Soil moisture had generally improved to 30-70% of average (from 5-30% in October). Much of the rain that fell between Nov. 10-14 was absorbed into the soil, explaining the incremental improvement.

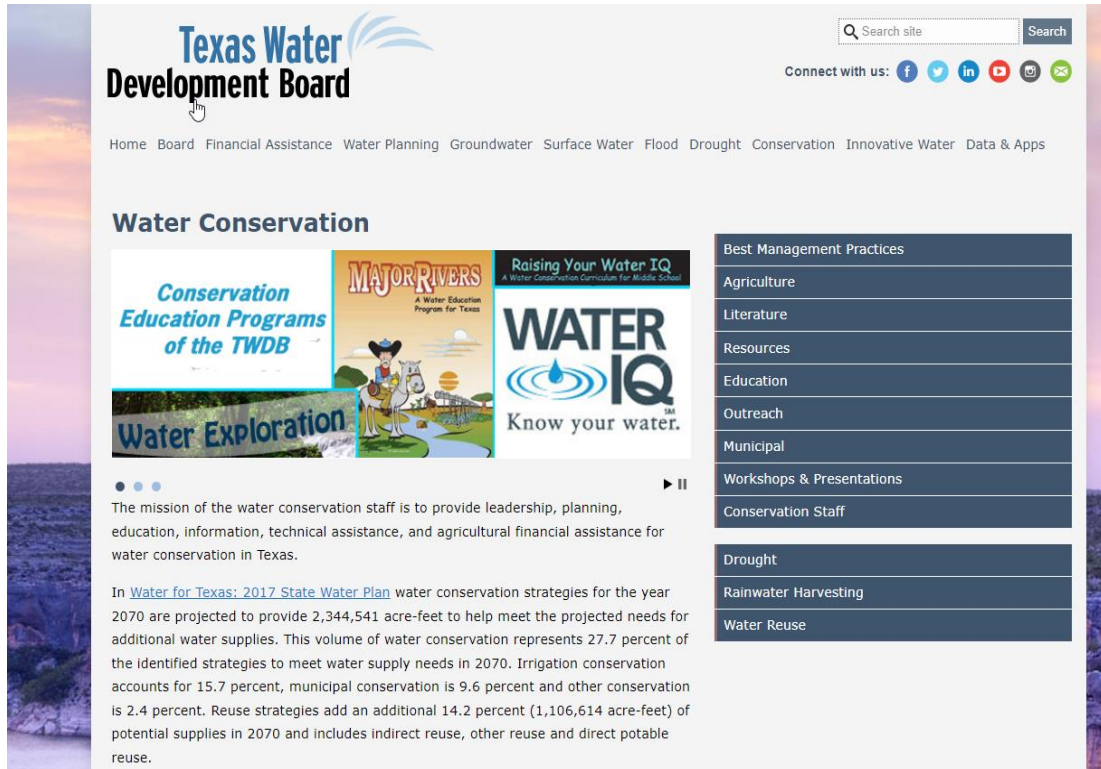
Winter remains uncertain as upper level disturbances may bring occasional “coverage” rain events with fronts and/or tropical moisture feeds. **If persistent rain falls**, dryness will end in Hidalgo/Brooks County in December. **If rains are fleeting**, and post-frontal dry and warm weather returns, conditions would hold at abnormal dryness through winter.



Amistad remained at Record Lows; Falcon still Close



Water Conservation is Key Until Further Notice!



The screenshot shows the Texas Water Development Board website. The header includes the logo, a search bar, and social media links. The main navigation menu lists: Home, Board, Financial Assistance, Water Planning, Groundwater, Surface Water, Flood, Drought, Conservation, Innovative Water, and Data & Apps. The 'Water Conservation' section features three featured items: 'Conservation Education Programs of the TWDB', 'Water Exploration', and 'Raising Your Water IQ: A Water Conservation Curriculum for Middle School'. A sidebar on the right lists various resources: Best Management Practices, Agriculture, Literature, Resources, Education, Outreach, Municipal, Workshops & Presentations, and Conservation Staff. Below this, there are sections for 'Drought' (Rainwater Harvesting, Water Reuse) 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

Water Exploration

MAJOR RIVERS
A Water Education Program for Texas

Raising Your Water IQ
A Water Conservation Curriculum for Middle School

WATER IQ
Know your water.

Best Management Practices

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

Drought

- Rainwater Harvesting
- Water Reuse

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.

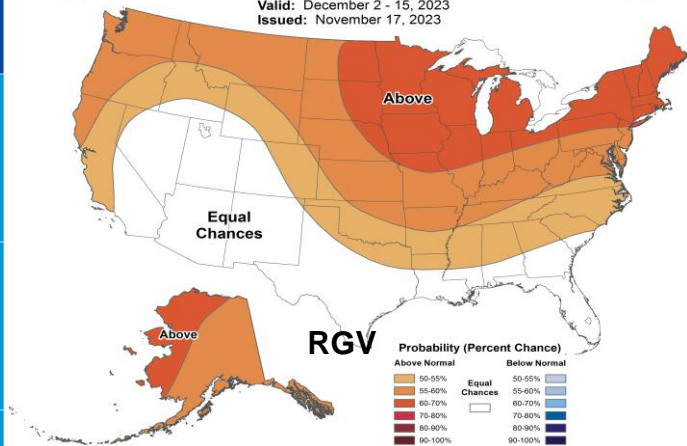
- With “Stage 2” Restrictions continued through autumn and are likely to continue until further notice, if based on input from Amistad and Falcon.
- Learn more at the [Texas Water Development Board’s Conservation Page](#)

December 2023: Confidence: Medium on Rainfall



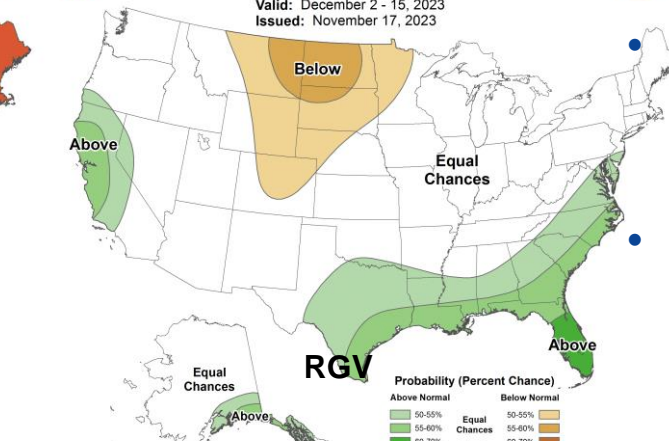
Weeks 3-4 Temperature Outlook

Valid: December 2 - 15, 2023
Issued: November 17, 2023



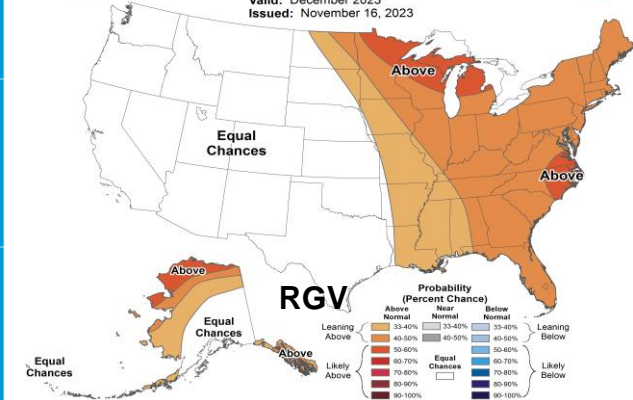
Weeks 3-4 Precipitation Outlook

Valid: December 2 - 15, 2023
Issued: November 17, 2023



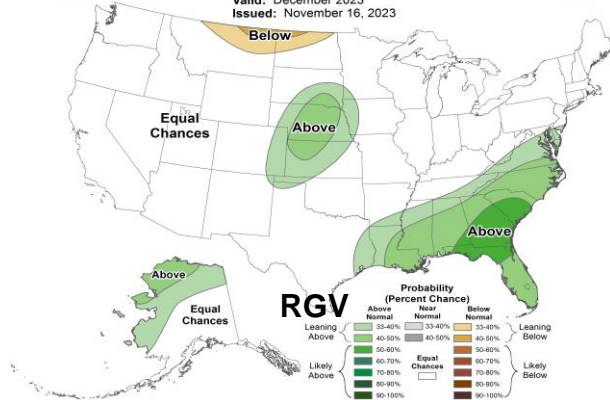
Monthly Temperature Outlook

Valid: December 2023
Issued: November 16, 2023



Monthly Precipitation Outlook

Valid: December 2023
Issued: November 16, 2023

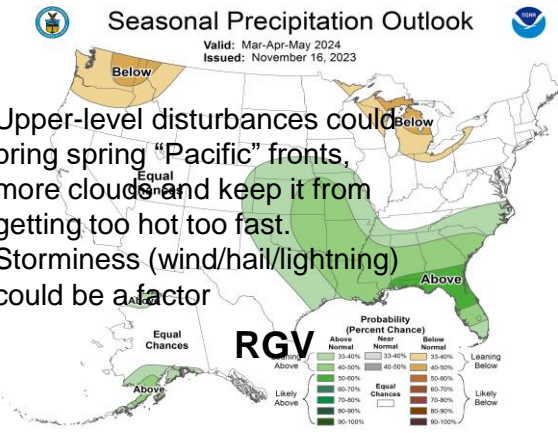
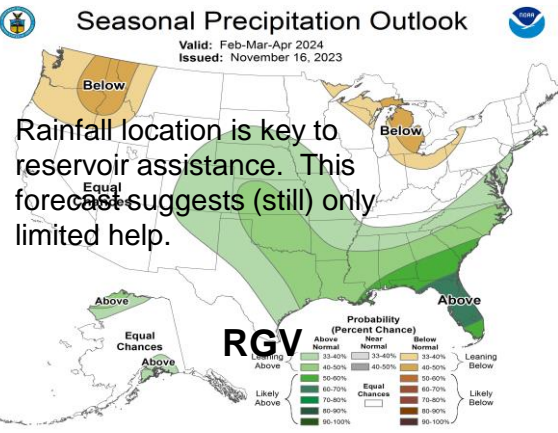
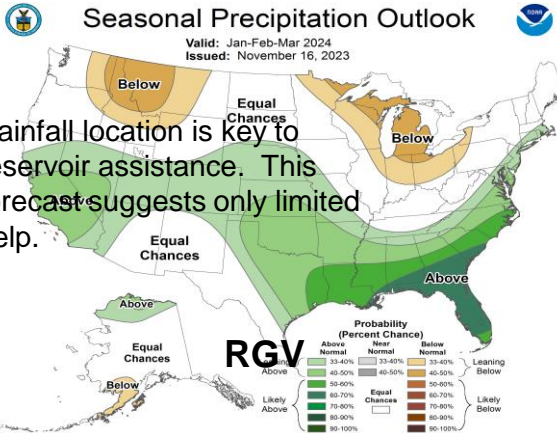
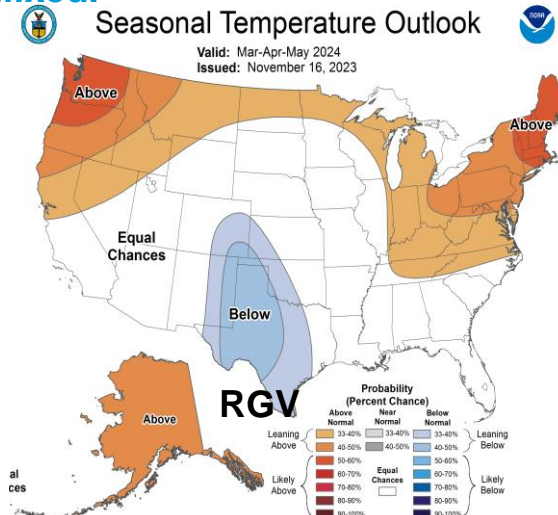
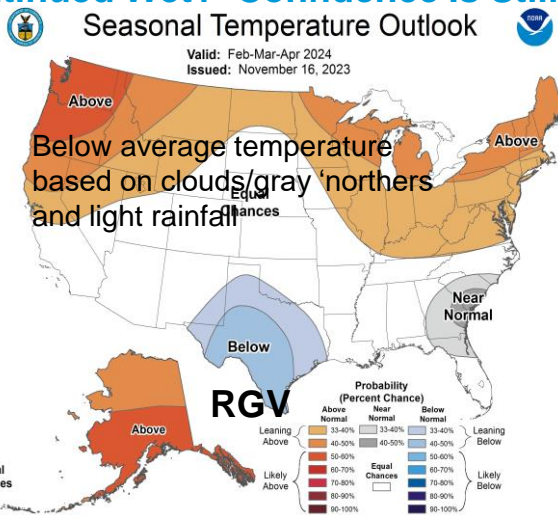
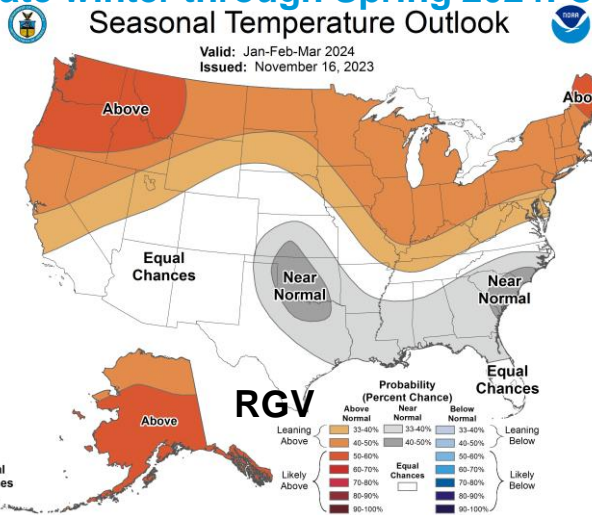


Bottom Line: The pattern will remain changeable, with more fronts and the potential for light to moderate rain events interspersed with warm and sunny periods.

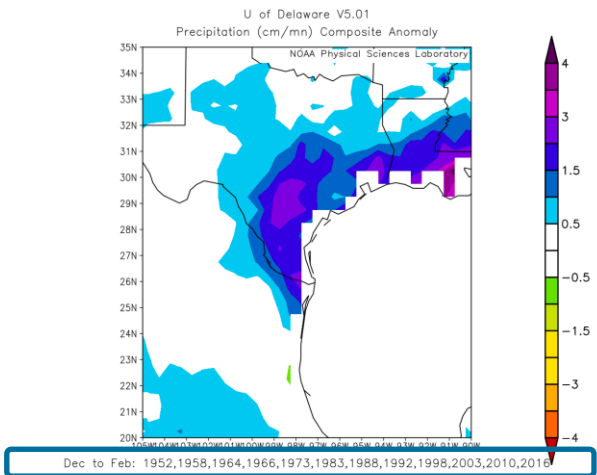
Confidence is **medium** for rainfall in December for the RGV. Rain events associated with upper level disturbance in the southern jet stream that tap the rich tropical moisture of the eastern tropical Pacific **could quickly push values above monthly averages** (1.25 inches), while stronger fronts could push moisture away and be **followed by up to ten days of dry air, reducing monthly rain to below average.**



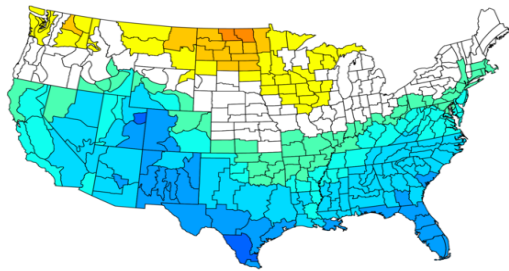
Late winter through Spring 2024: Continued Wet? Confidence Is Still Mixed.



Comparing Similar El Niño Episodes; December-February Periods

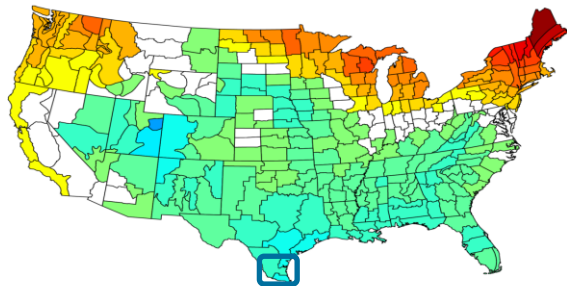


NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Versus 1991–2020 Longterm Average
Dec to Feb 1951–52, 1957–58, 1963–64, 1965–66, 1972–73, 1982–83, 1987–88, 1991–92, 1997–98, 2002–03, 2009–10, 2015–16.

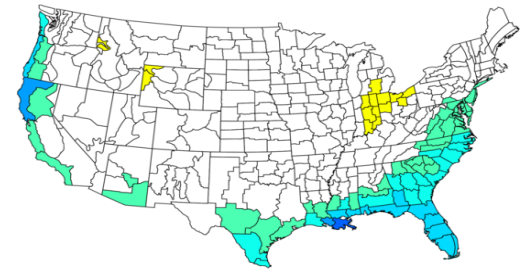


NOAA PSL and CIRES-CU

NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Dec to Feb 2009–10, 2015–16
Versus 1991–2020 Longterm Average

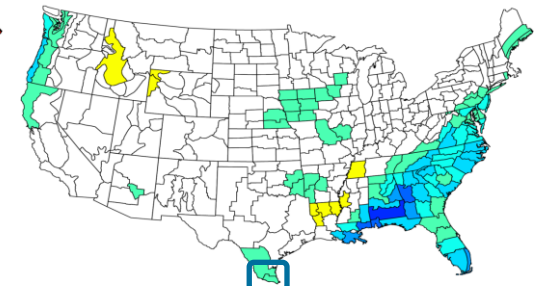


NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Versus 1991–2020 Longterm Average
Dec to Feb 1951–52, 1957–58, 1963–64, 1965–66, 1972–73, 1982–83, 1987–88, 1991–92, 1997–98, 2002–03, 2009–10, 2015–16.



NOAA PSL and CIRES-CU

NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Dec to Feb 2009–10, 2015–16
Versus 1991–2020 Longterm Average



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. Cutoff of rainfall on the coast is a map (mask) issue; the anomaly extends to the coast.

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

Bottom Lines

- Despite medium confidence for more rainfall, sufficient inflows from Mexican reservoirs serving the Lower Rio Grande watershed remain unlikely during the “cool” season. **Combined share of water in Amistad and Falcon should continue at or below Stage 2 triggers (25% or less) through winter.** Water [conservation](#), [smart irrigation](#), and [rainwater harvesting](#) are critical actions to continue.
- There will be **cold fronts and cold snaps**, likely to favor occasional, rather than frequent, chilly drizzle events. Sharp changes of 30 to 60 degrees (apparent temperature change) from day to day are likely several times. “Feels like” temperatures **could occasionally dip to or below 30**. A hard freeze is unlikely, but one to four freezes are possible – higher numbers across the Brush Country/King Ranch.
 - Pelicans roosting Bahia Grande north of the Gayman Bridge along SR-48 could be impacted following sharp ‘northers through early January, when accompanied by light rain/drizzle.
- **Drought Improvements may only be temporary** Future evolution will depend on rainfall directly on the RGV. Atmospheric moisture feeds along fronts would remove dryness (level “0”). However, fronts with limited moisture followed by prolonged spells of mild to warm weather with low humidity would maintain dryness. Confidence is low on which outcome occurs, but dryness may continue into early December, particularly in Hidalgo and Brooks County.