



**NATIONAL
WEATHER
SERVICE**

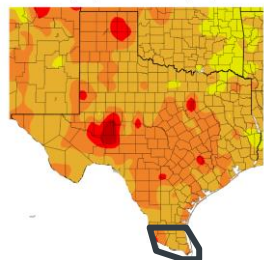
January to March (Late Winter to early Spring) 2025 Outlook: Perspective for the Lower Rio Grande Valley/Deep S. Texas Region

December 23, 2024

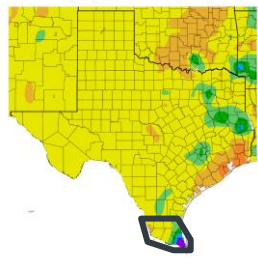
Andrei Evbuoma, Barry Goldsmith, & Rodney Chai
NWS Brownsville/Rio Grande Valley, Texas

Some cool/cold air may begin the New Year, but forecast for warmer and drier than normal conditions Jan-Mar remains intact; wildfire growth potential, water supply issues, cold fronts, and hazardous marine cold fronts remain in focus

Departure from Normal Temperature (F)
12/1/2024 – 12/20/2024



Departure from Normal Precipitation (in)
12/1/2024 – 12/20/2024



December 2024: Top Five Warmest; Wet for the lower Valley but Generally Dry Elsewhere

Maximum 22-Day Mean Avg Temperature for Brownsville Area, TX (ThreadEx)

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

Rank	Value	Ending Date	Missing Days
1	72.0	1889-12-22	0
2	71.9	2021-12-22	0
3	70.3	1970-12-22	0
4	70.1	1920-12-22	17
5	69.9	1948-12-22	0
6	69.7	1933-12-22	0
7	69.5	2024-12-22	0
8	69.4	2012-12-22	0
9	68.9	1939-12-22	0
10	68.8	1984-12-22	0

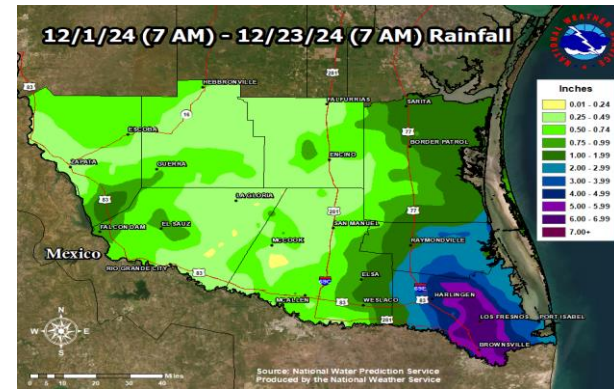
Period of record: 1878-01-01 to 2024-12-22

Maximum 22-Day Total Precipitation for Brownsville Area, TX (ThreadEx)

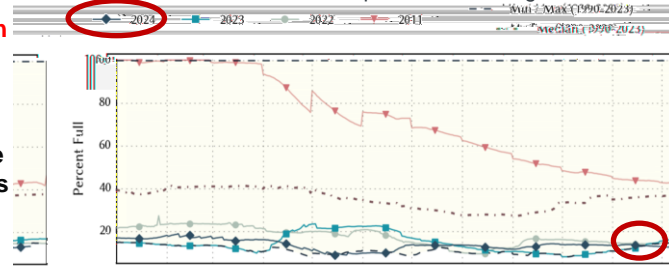
Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	6.95	1940-12-22	0
2	5.59	1926-12-22	0
3	5.49	1937-12-22	0
4	5.42	2009-12-22	0
5	4.93	2024-12-22	0
6	4.79	1887-12-22	0
7	4.30	1915-12-22	0
8	3.95	1965-12-22	0
9	3.85	1905-12-22	0
10	3.68	1943-12-22	0

Period of record: 1878-01-01 to 2024-12-22



Top Image: Observed rainfall amounts from December 1-23 (7 AM), 2024. Cameron County was “jackpot” for the rainfall, while Hidalgo/Brooks west to Zapata were on the drier side. The pocket of 1+ inch of rain in southern Zapata on this map was overestimated from radar-indicated rainfall well above the surface on Dec. 7, much of which dried up before reaching ground.



Latest data from the Rio Grande Reservoirs (Texas Share) continue to indicate 2024 levels are at or below 30 year lows (and near records). Total values increased slightly as of late. Moving into January, values are expected to hold steady with maybe slight decreases.

Image: Texas Water Development Board

With a week left in December and this week expected to be **anomalously warm** (nationwide and here in the RGV), December 2024 across the Valley will likely finish in the **top 5 to 10 warmest on record**.

After a dry/tranquil month in November, the heavens opened up in early December mainly in Cameron County, with a **couple of heavy rain events to start the month: one on December 3rd and another on December 6th**. Once again, **Cameron and Willacy Counties were jackpot** with the heavy rainfall. Mid/Upper Valley were left out of the heavy rainfall production. Monthly anomalies for Brownsville and Harlingen will finish among the **top five wettest on record**.

Because of the lack of rainfall for the mid/upper valley, the Falcon Reservoir remains in dire condition. As of late December, combined shares at the Falcon Reservoir was up slightly from the previous month at 13.4%, **up 0.3%** from November’s 13.1%, levels. As of December 23, shares still remained at/near record lows on par with 2022 and above 2023 levels.

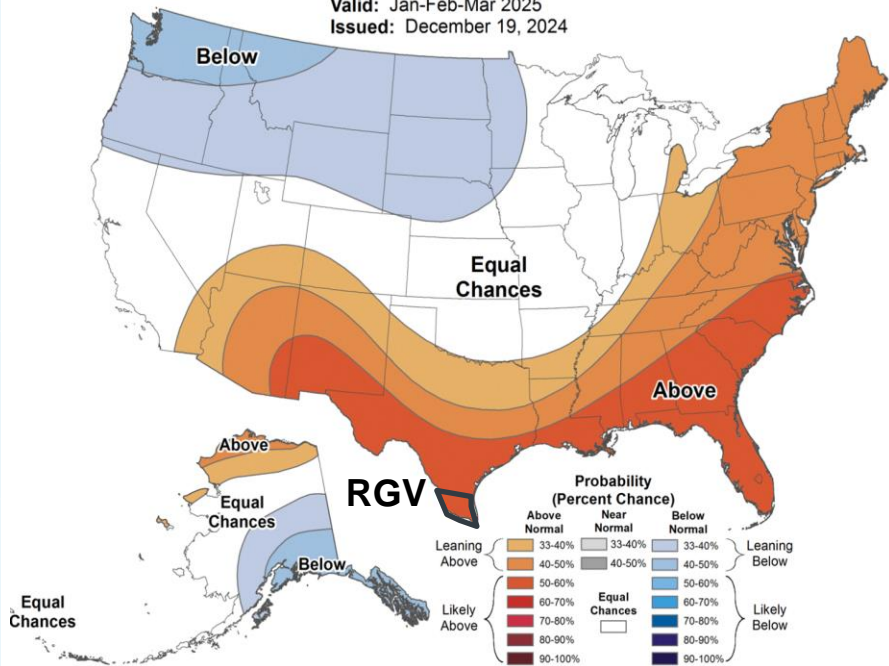


Seasonal Forecast, January – March 2025 USA



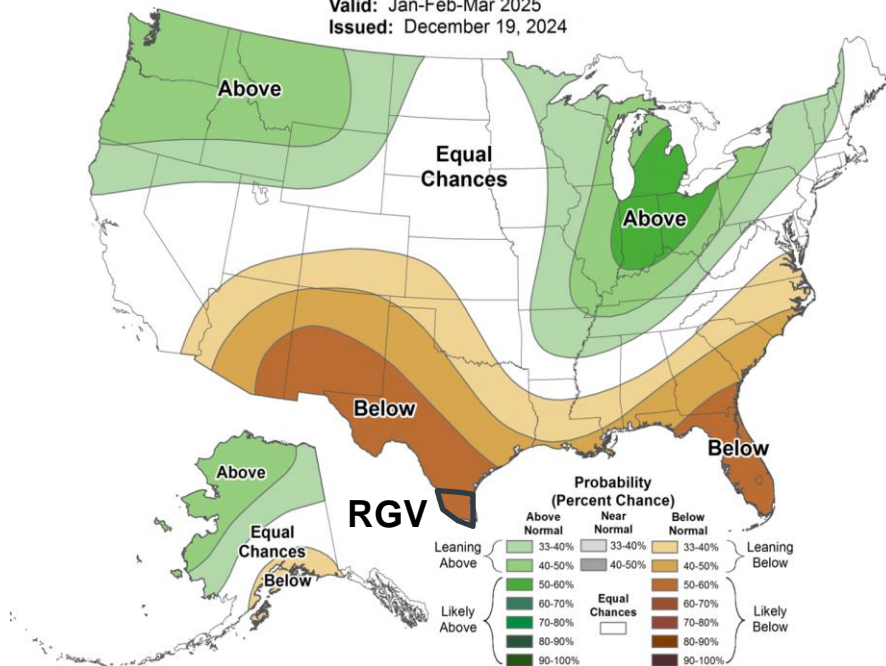
Seasonal Temperature Outlook

Valid: Jan-Feb-Mar 2025
 Issued: December 19, 2024



Seasonal Precipitation Outlook

Valid: Jan-Feb-Mar 2025
 Issued: December 19, 2024



Key Takeaways: January-March (Winter-early Spring 2025) Outlook

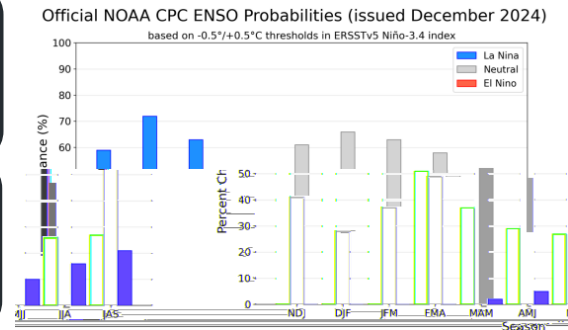
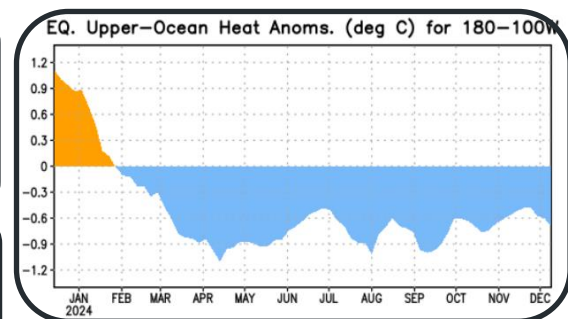
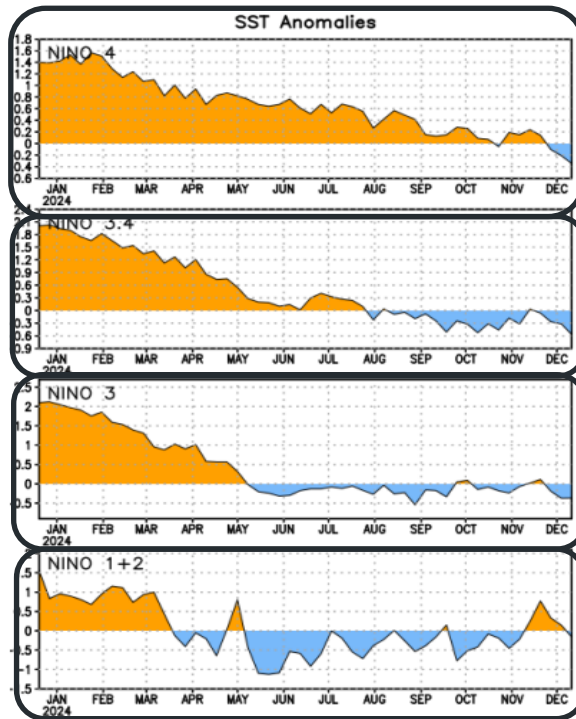
- **January-March 2025 is expected to average out warmer and drier than normal** for Deep South Texas and the Rio Grande Valley. **Drought/dryness** concerns will increase through the Winter and early Spring Season, with **cooler** and especially **drier** air intrusions increasing.
- Falcon and Amistad remained **near historic lows at the end of December. Confidence is near-certain (~100%) on total storage remaining at or near record lows through March.**
- Confidence remains **medium-high (60-80%)** that **temperatures will run normal to warmer than normal** from January through March. Confidence also remains **medium-high (60-80%)** on a **drier than normal outcome** for the period. Confidence is **high (70-90%)** that **drought/dryness** will continue to expand over Deep South Texas and the Rio Grande Valley through March.
- Though warmer than normal temperatures are favored through the remainder of the Winter Season, a **significant cool/cold snap (i.e. Arctic Air) could reach the region sometime between January and mid-February!**
- As we transition into the Winter Season, **cold fronts** should become more frequent and progressively stronger in time. **Wildfire spread will become an issue and difficult to dangerous boating and beach conditions will continue through March 2025!**



The “Why” of the Forecast: La Nina is beginning to emerge; soil moisture, long-term trends, intraseasonal variability, and other key climate teleconnections to play a factor

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	0.4	0.2	0.0	-0.1	-0.2	-0.2		

- With a La Nina beginning to develop, **warmer than normal temperatures** are favored through March and potentially longer. Additionally, this setup favors a **drier trend in the pattern persisting through the Winter Season**.
- Despite the ENSO trend of a La Nina developing, other important **teleconnections (i.e. AO/Arctic Oscillation, PNA/Pacific North American Oscillation), polar vortex (PV) strength, northern hemisphere snow cover** could play a **vital role in intraseasonal variability** leading to an anomalous weather event such as a **major cold snap or ice storm** this cool season!
- **Wildfire season** could come into better focus later this Winter as **drought/dryness** trends continue to **increase!**

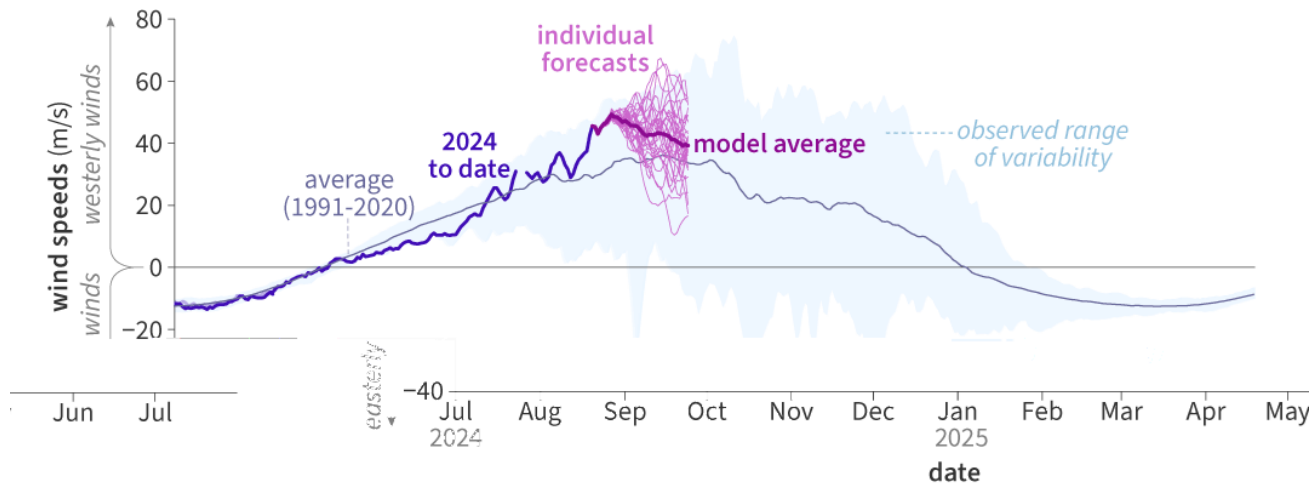


*Above right: Oceanic Niño Index. Values below -0.5 (light blue) for five consecutive 3-month periods indicated La Niña. El Niño (red, +0.5) officially began in April-June 2023, reached strong levels (+1.5) by August-October 2023, strengthened further through November-January, then weakened rapidly through early summer. Neutral conditions arrived for April-June 2024.

Polar Vortex is expected to remain strong through January

Polar vortex winds predicted to be stronger than average into January

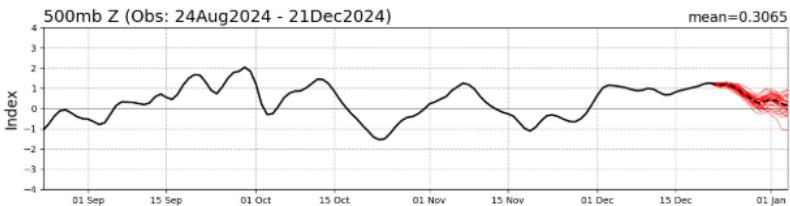
60°N, ~19 miles/30 kilometers altitude (10-hPa pressure level)



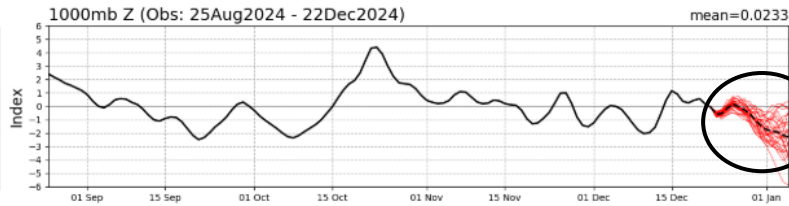
- Risk for a modest cold snap through at least the first half of January is **low-medium (20-50%)** as the polar vortex remains strong.

Key teleconnections indicate increased risks for cold air intrusions to impact a large part of the U.S. during the first part of January

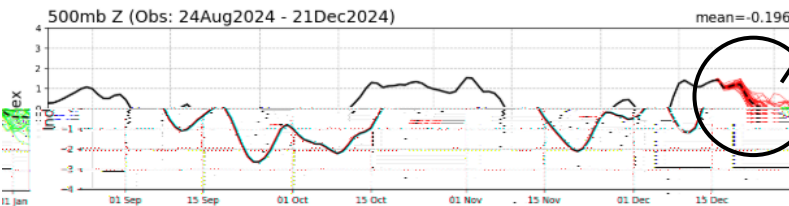
PNA Index: Observed & GEFS Forecasts



AO Index: Observed & GEFS Forecasts



NAO Index: Observed & GEFS Forecasts



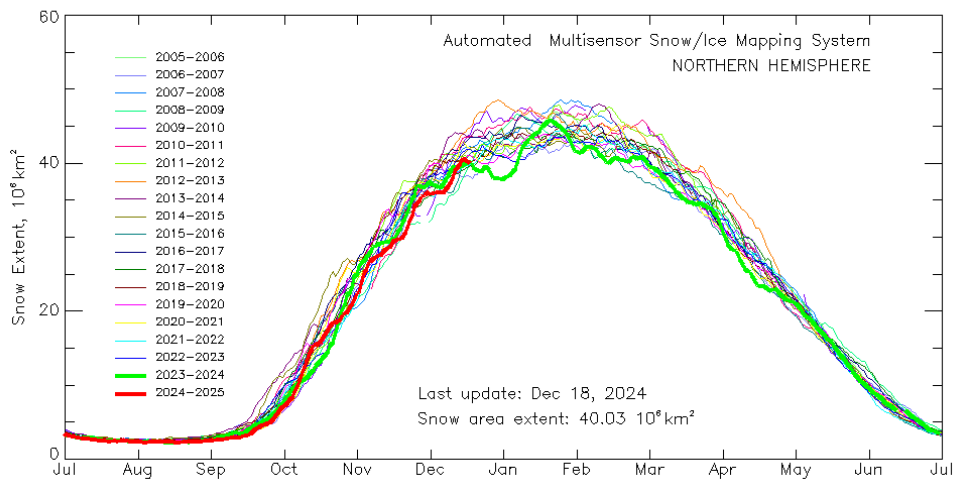
Cold Signal

- Despite a strong polar vortex in place, a negative trending Arctic Oscillation (AO) and North Atlantic Oscillation (AO) suggest the **increased risk** for a cold snap to take place over a large part of the U.S. to start the New Year. Great risk lies along and east of the Rockies.
- This could bring **cooler/colder temperatures** at times to the RGV.
- Despite the occasional chances for cooler/colder temperatures in the RGV, the region should still average **warmer than normal** Jan-Mar. **Nothing extreme is expected at this time through the first half of January.**

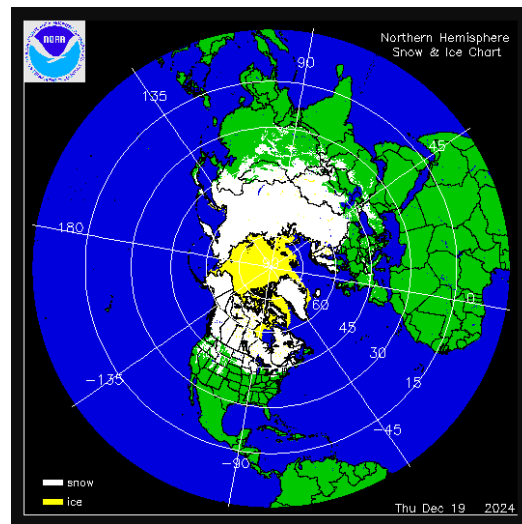


Northern Hemispheric Snow Cover Extent Maps and Charts

Daily snow extent and anomalies



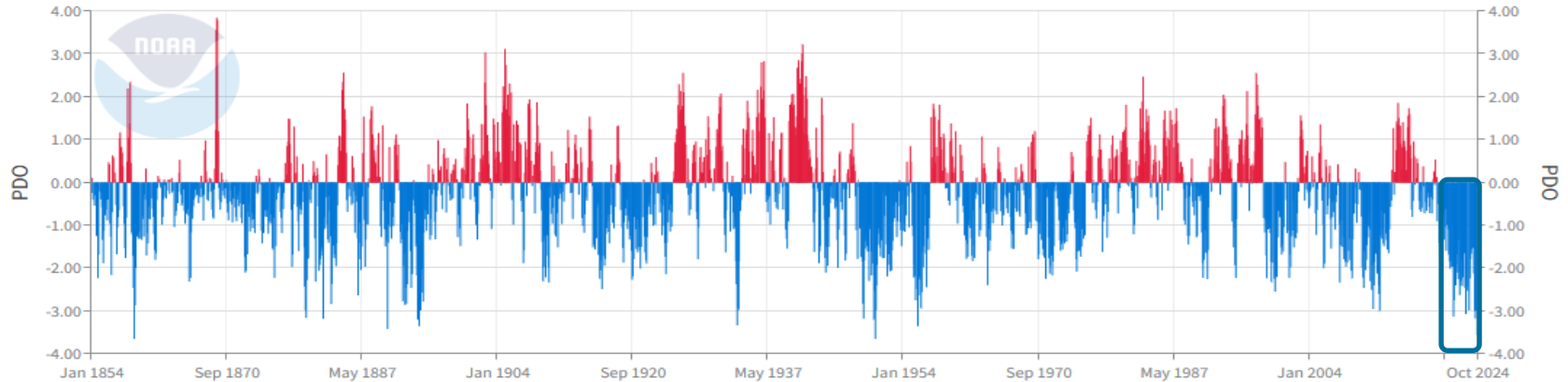
Latest snow map



- The **location and extent of snow cover in the northern hemisphere** could serve as a key indicator of how **strong** the **cold fronts** from the north become through mid February!
- Month-over-month, there has been an increase in snow cover over the northern hemisphere including Eurasia/Siberia, Alaska, north-central and northwestern parts of the U.S., and Canada.

The “Why” of the Forecast: Pacific Decadal Oscillation (PDO) remains in Sharp Negative Phase

Pacific Decadal Oscillation (PDO)



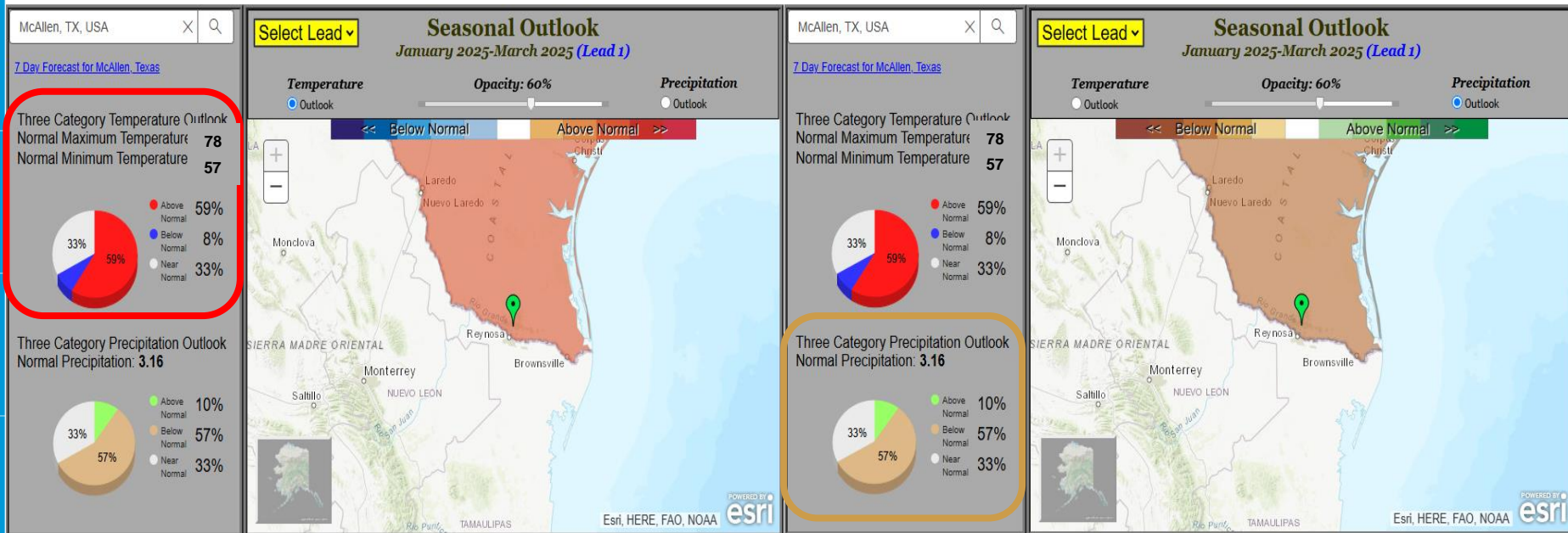
Source: <https://www.ncei.noaa.gov/pub/data/cmb/ersst/v5/index/ersst.v5.pdo.dat>

Powered by ZingChart

- The 2021-2024 **prolonged and strong negative PDO has persisted**, and should remain the case headed into the expected La Niña period. This **increases confidence** for a **drier and warmer than normal pattern persisting through the Winter Season.**
- The sharply negative PDO combined with the developing La Niña adds confidence to an increasingly dry (and still warm) forecast as we approach the end of 2024 and beginning parts of 2025. **Confidence is high** for sharply negative PDO to maintain through the end of the year and into the beginning parts of 2025.



The January-March 2025 Outlook: Rio Grande Valley (McAllen as Anchor Point)



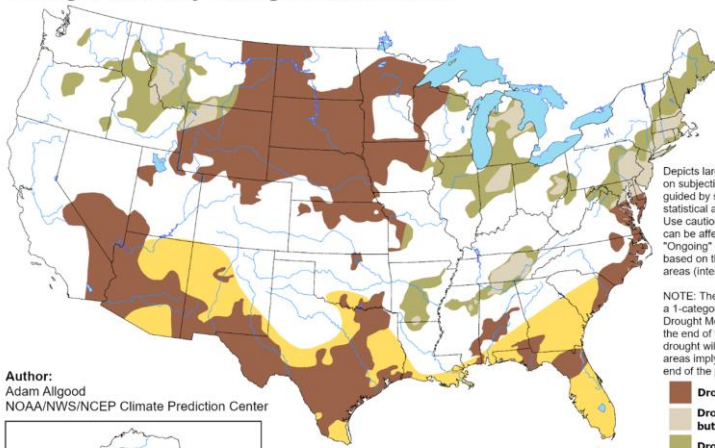
- **Temperature:** **Warmer than normal temperatures** likely to persist Jan-Mar (Confidence: Medium-High). RGV averages: Afternoon – Lower 70s in early January rising to the lower 80s by the end of March. Wake-up: Low 50s through mid-January rising to the lower 60s by the end of March
- **Precipitation:** **Drier than normal conditions** are expected for Jan-Mar (Confidence: Medium-High). RGV averages: 2.8-3.6 inches (most of the rain typically falls in March).



The January-March 2025 “Droughtlook”

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

Valid for December 19, 2024 - March 31, 2025
Released December 19, 2024



Author:
Adam Allgood
NOAA/NWS/NCEP Climate Prediction Center



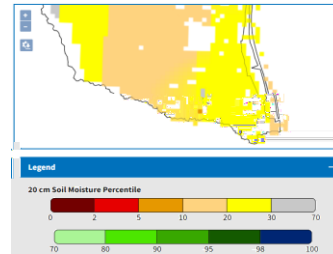
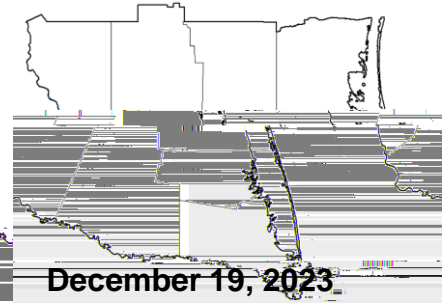
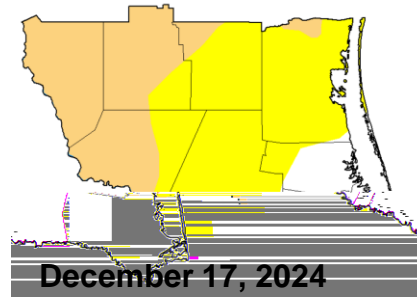
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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



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.

Source(s): NationalSoilMoisture.com

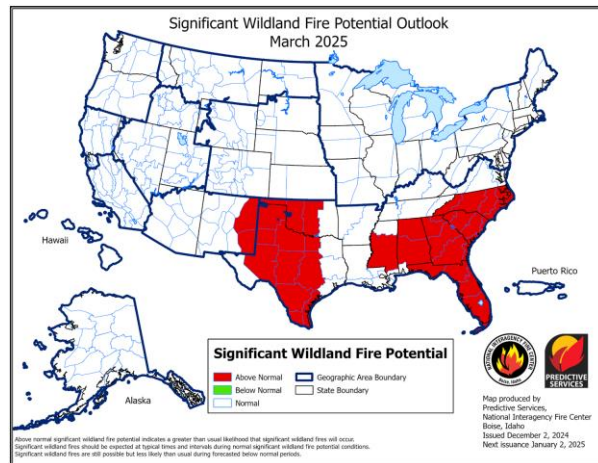
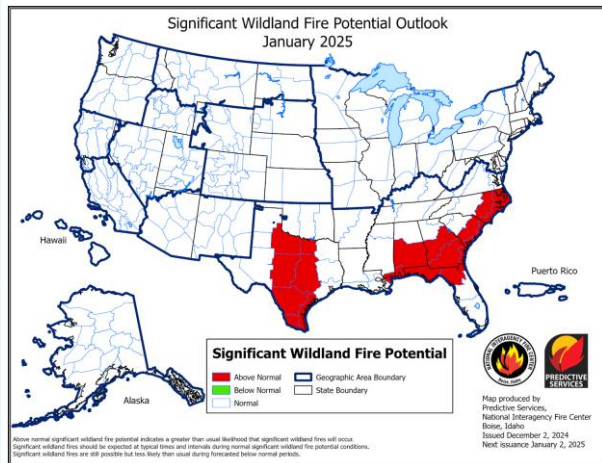
Drought Classification

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

- **Year-over-Year (YoY) drought/dryness** over Deep South Texas and the Rio Grande Valley is greater this year compared to last year. Rain has just been hard to come by for the mid/upper valley, where a D0-D1 drought is in place.
- Factoring in a developing La Nina and climatological trends, the latest seasonal outlook continues to suggest the **expansion of dryness/drought** across the lower/mid Valley through the upcoming Winter Season.



Wildfire Concerns Remains Elevated This Winter Season; Continue To Monitor Trends Through Early 2025



- **Green to Transitional Green** was observed across most of Deep South Texas and the Rio Grande Valley in late December with mainly **Above Normal** moisture levels present.
- Moisture levels will likely **trend** more towards **Normal Levels** in January. In the coming weeks, moisture levels will continue to be largely dependent on rain chances, the strength and number of cold frontal passages vs. days with a return flow out of the south boosting relative humidity (RH) values.
- Trends towards **dry moisture levels** are likely to continue through the winter. How quickly we get to **dry levels** remains the question??
- **Bottom line:** **Wildfire concerns** will continue to **increase** as we head deeper into the Winter Season and especially into March, as soils become **drier** and **cool fronts** become more frequent and at times stronger. The **National Interagency Fire Center (NIFC)** has all of Deep South Texas outlook under an **“Above Normal Potential”** in its **Wildland Fire Potential Outlook**.



Herbaceous Fuel Loading
Map for Texas (December
19, 2024)





Wildfire Prevention Review

- This remains critical through the winter and especially into March, as Moderate (level 1) drought has expanded into the upper Valley and eastern Brush Country. The greater threat would begin in January as **Severe (Level 2) Drought should arrive** in some areas, and **Extreme (Level 3) Drought may develop by February and March.**
- 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

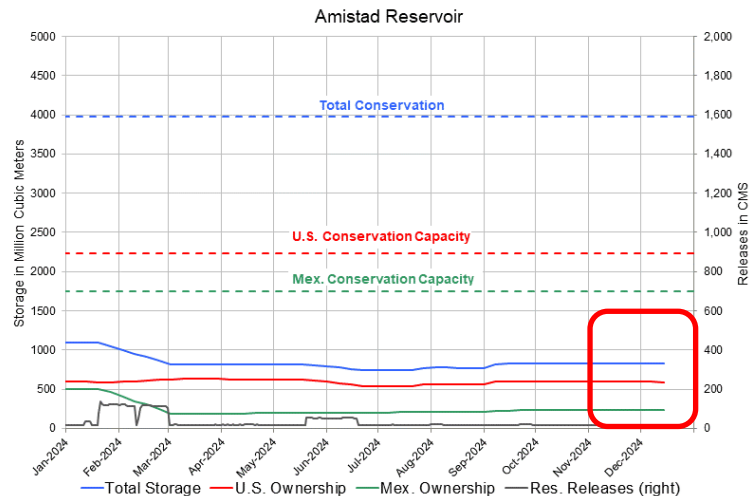
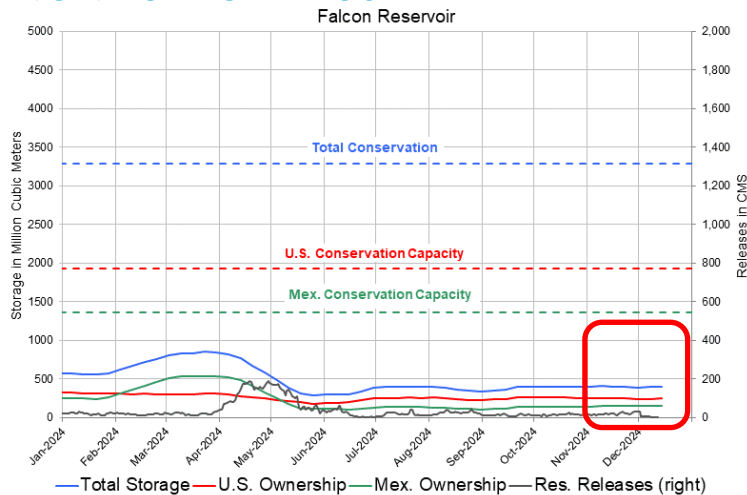
- Tenga cuidado de no arrastrar cadenas de remolque que podrían provocar chispas.
- No se estacione sobre césped seco.
- Evite las quemaduras al aire libre y revise las pilas recientemente quemadas para detectar brotes de fuego.
- Elimine la vegetación muerta alrededor de tu casa.
- Tenga cuidado soldar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



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



Amistad and Falcon Reservoirs remains at or near Record Lows heading into the New Year



- **Falcon remained nearly steady**, ending late December at **12.7 percent** (up slightly from **12.3% in late November**). This level is just a few ticks above prior records. With dry season upon us, levels may not change much through March and could resume a drop.
- **Amistad remained steady and above all-time record lows in late December**. Levels were at **20.8% on December 19th** (same level of **20.9% from November 22nd**). With dry season upon us, levels may not change much through March.

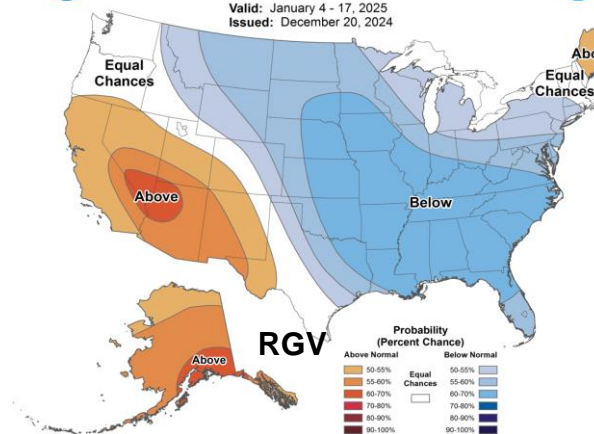
Water Conservation is Key Until Further Notice!

The screenshot displays the Texas Water Development Board (TWDB) website. At the top left is the TWDB logo. A search bar and social media icons (Facebook, Twitter, LinkedIn, YouTube, Instagram, RSS) are in the top right. A navigation menu includes: 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 educational materials: "Conservation Education Programs of the TWDB", "Water Exploration", "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: "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." This is followed by a link to "Water for Texas: 2017 State Water Plan" and a detailed paragraph about projected water conservation strategies for 2070, including irrigation (27.7%), municipal (9.6%), and reuse (14.2%) strategies. On the right side of the page, there are two vertical menus: "Best Management Practices" (Agriculture, Literature, Resources, Education, Outreach, Municipal, Workshops & Presentations, Conservation Staff) and "Drought" (Rainwater Harvesting, Water Reuse).

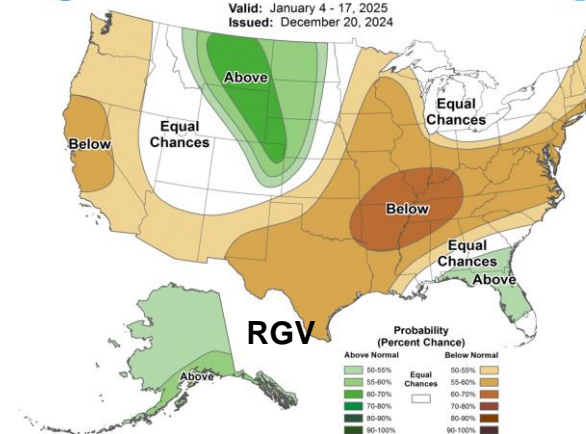
- “Stage 2/3” Restrictions continued through early December 2024 and are likely to continue **until further notice** based on inflows from Amistad and Falcon.
- Learn more at the [Texas Water Development Board’s Conservation Page](#)

January 2025: Confidence: Medium-High (60-80%) on Temperature and Precipitation Trends

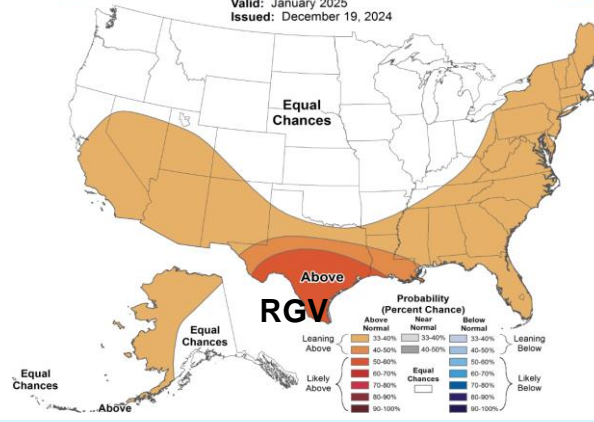
Weeks 3-4 Temperature Outlook



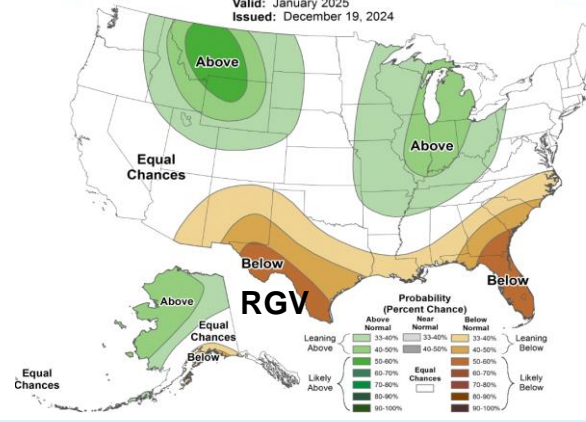
Weeks 3-4 Precipitation Outlook



Monthly Temperature Outlook



Monthly Precipitation Outlook



Cold signals are increasing to start the new year. Strong signals amongst forecast models of a -AO/negative Arctic Oscillation developing late December into the first part of January. This will allow for Arctic air to infiltrate the northern Rockies/northern-central Plains, and colder than normal temperatures to encompass much of the Lower 48 during the beginning parts of January.

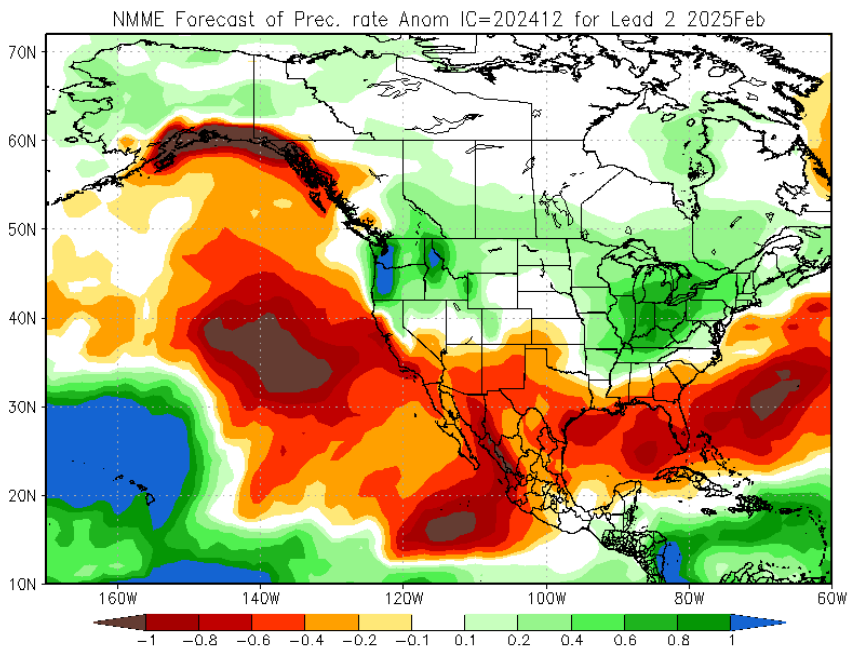
- For Deep South Texas and the RGV, **odds are increasing** for a **cold snap** to bring **below average temperatures** during the first few days of January (~Jan 1-4). However, it remains to be seen if a widespread freeze or Arctic Express event materializes during this period. **Confidence for colder changes to start the new year over the RGV: Medium-High (60-80%).**

- Longer range models are mixed on whether the cold air lingers or if temperatures moderate after Jan 4. There are signs of the -AO continuing and a -EPO/negative Eastern Pacific Oscillation developing during the first full week of January (Jan 5-11 timeframe), which favors additional cold air intrusions in the Lower 48. If the cold does linger, the questions are how far south does the cold make it and how extreme will it be? Right now, **confidence is medium (40-50%)** on the cold impacting the RGV during the first full week of Jan (**Jan 5-11**) and **low (10-30%)** during the second week of Jan (**Jan 12-18**) given the mixed signals.

- That said, Deep South Texas and the RGV is expected to average out normal to **warmer** and **drier** than normal for January, despite the potential for a cold snap or two during the 1st half of January.

Early Look: February 2025

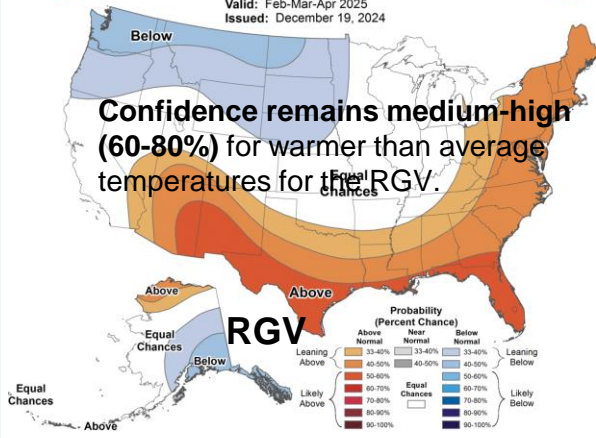
Potential rainfall rate anomaly, February 2025



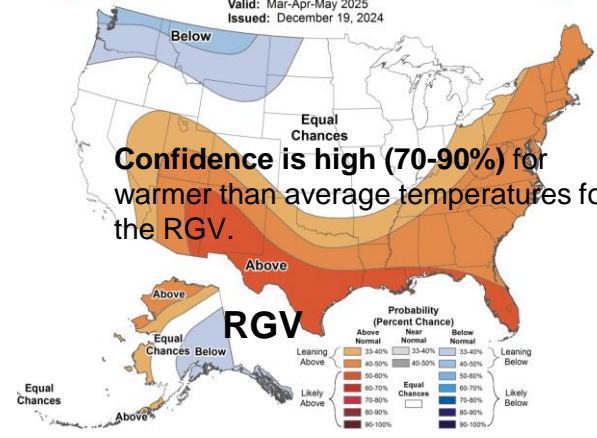
- This model's forecast for February strongly suggest a **dry pattern** (note the red color over the area and nearby brown colors) continuing. Confidence is rather high given that we're entering the heart of the dry season here!
- **Cold frontal boundaries** moving into Texas will continue! Most will likely be dry, but there could be some strong ones that reach Deep South Texas. Will continue to monitor the potential of a **major cold snap or two (Arctic Express)** to take place sometime in January through mid February!

Spring into early Summer 2025: Warmer than Normal Trends are Favored; Dry trends favored, but lessen slightly in time

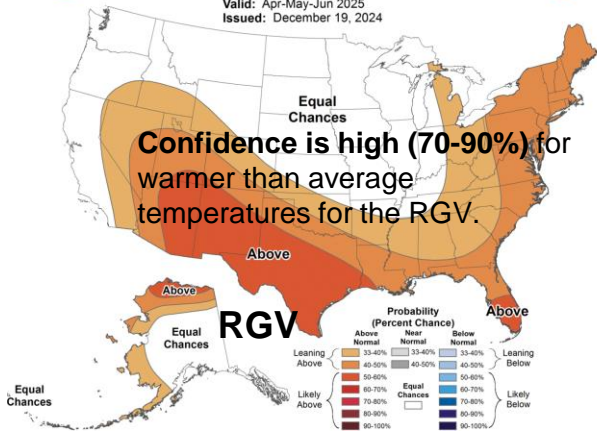
Seasonal Temperature Outlook
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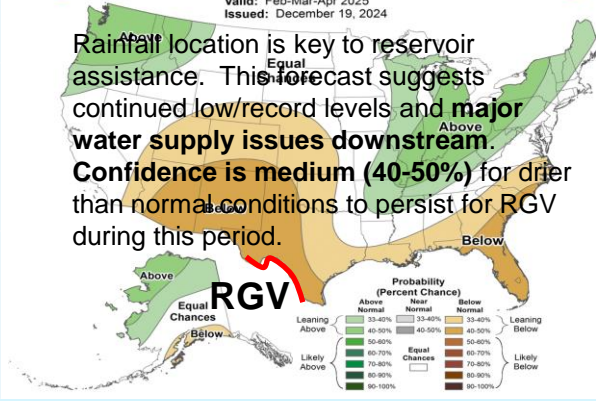
Seasonal Temperature Outlook
Valid: Mar-Apr-May 2025
Issued: December 19, 2024



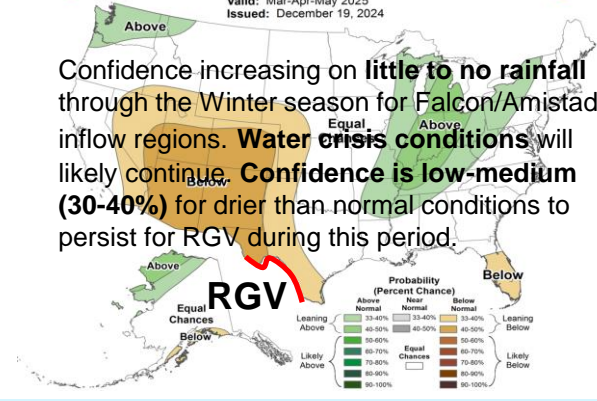
Seasonal Temperature Outlook
Valid: Apr-May-Jun 2025
Issued: December 19, 2024



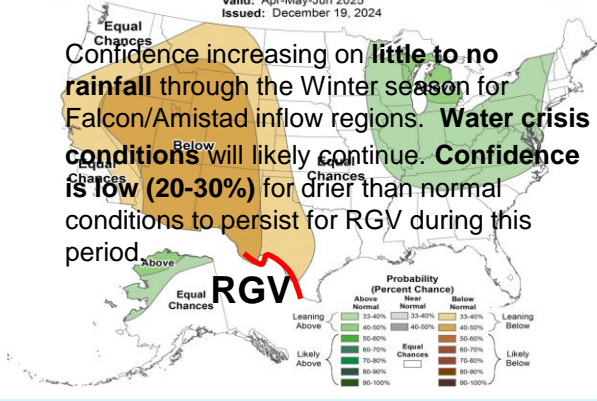
Seasonal Precipitation Outlook
Valid: Feb-Mar-Apr 2025
Issued: December 19, 2024



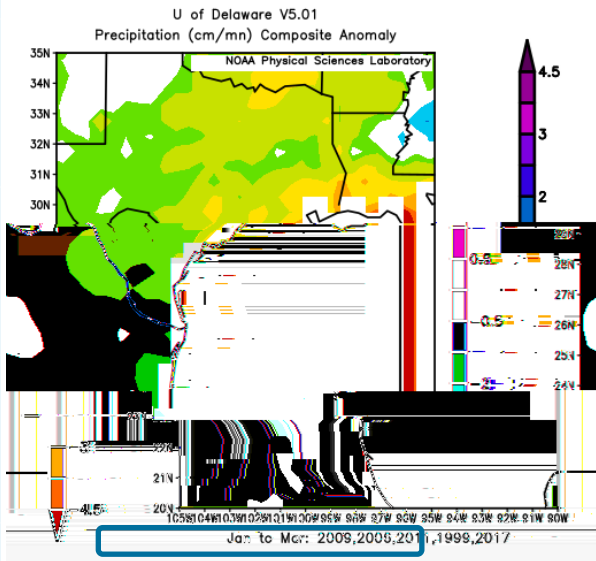
Seasonal Precipitation Outlook
Valid: Mar-Apr-May 2025
Issued: December 19, 2024



Seasonal Precipitation Outlook
Valid: Apr-May-Jun 2025
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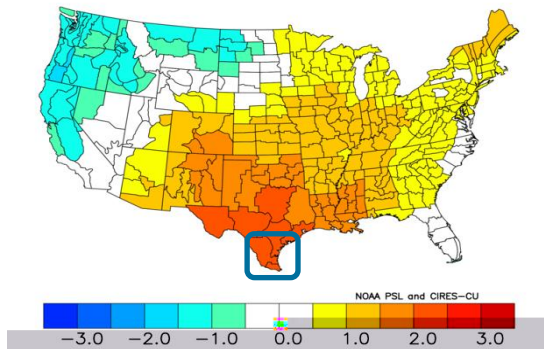


Comparing Similar El Niño to La Niña Episodes within the last 30 years; Jan-Mar Periods

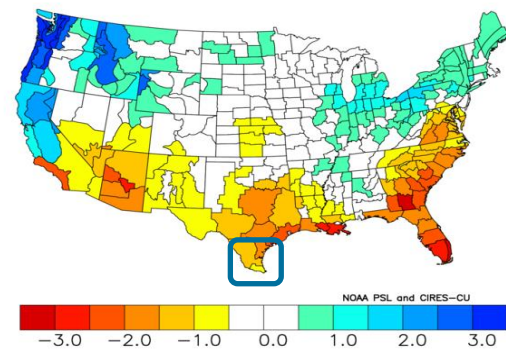


Composite departure from average rainfall for years of similar El Niño to La Niña transition episodes in the January-March window.

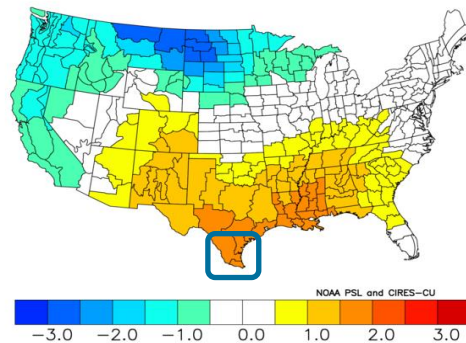
NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Jan to Mar 2009,2018,2011,2017,1999,2006
Versus 1991-2020 Longterm Average



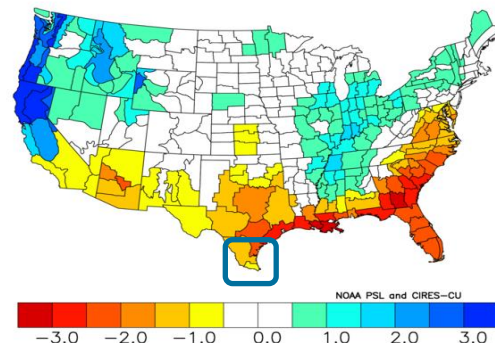
NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Jan to Mar 2009,2018,2011,1999,2017
Versus 1991-2020 Longterm Average



NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Jan to Mar 2009,2018,2011,2017,1999,2019,2005
Versus 1991-2020 Longterm Average



NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Jan to Mar 2006,2009,2018,2011,1999,2017,2019
Versus 1991-2020 Longterm Average



- **Top:** Composite temperature (left) and precipitation (right) anomalies for similar El Niño to La Niña transition episodes leading into January-March, since 1950.
- **Bottom Left:** Same, except added 2019 season. **Bottom Right:** Same, except added 2006 and 2019 seasons.



Bottom Lines

La Nina is on the verge of developing late December into the New Year. This will support **warmer than normal conditions** and **drier than normal conditions** through the remainder of the Winter Season. With tropical season over, **dryness** is expected to expand into Deep South Texas January-March.

Sufficient inflows from Mexican and International reservoirs serving the Lower Rio Grande watershed remain unlikely. The **combined share of water in Amistad and Falcon will likely to continue well below Stage 2 and 3 triggers (25% or less) until further notice.** Water conservation, smart irrigation, and rainwater harvesting are **critical actions to continue as we move into the dry season.**

Fire weather as well as drought/dryness concerns are expected to come into better focus January-March, as **soils continue to dry** and **cool/cold fronts** continue to increase. Farmers/ranchers should be ready to **implement fire safety rules!**

While **warmer** and **drier** than normal conditions are expected due to La Nina, it doesn't mean that an anomalous weather event such as a **major cold snap or ice storm** can't take place. **Be prepared to protect people, pets, plants, and pipes from a potential Arctic Outbreak through mid February.**

