

Rio Grande Valley Summer 2024 Review

Summer 2024 Weather Story for the Rio Grande Valley:
Rains Return in June-July but Sweltering Heat is Maintained

Tropical Cyclones/Energy Disturbances Bring Welcome Rain but Water Supply Crisis Holds

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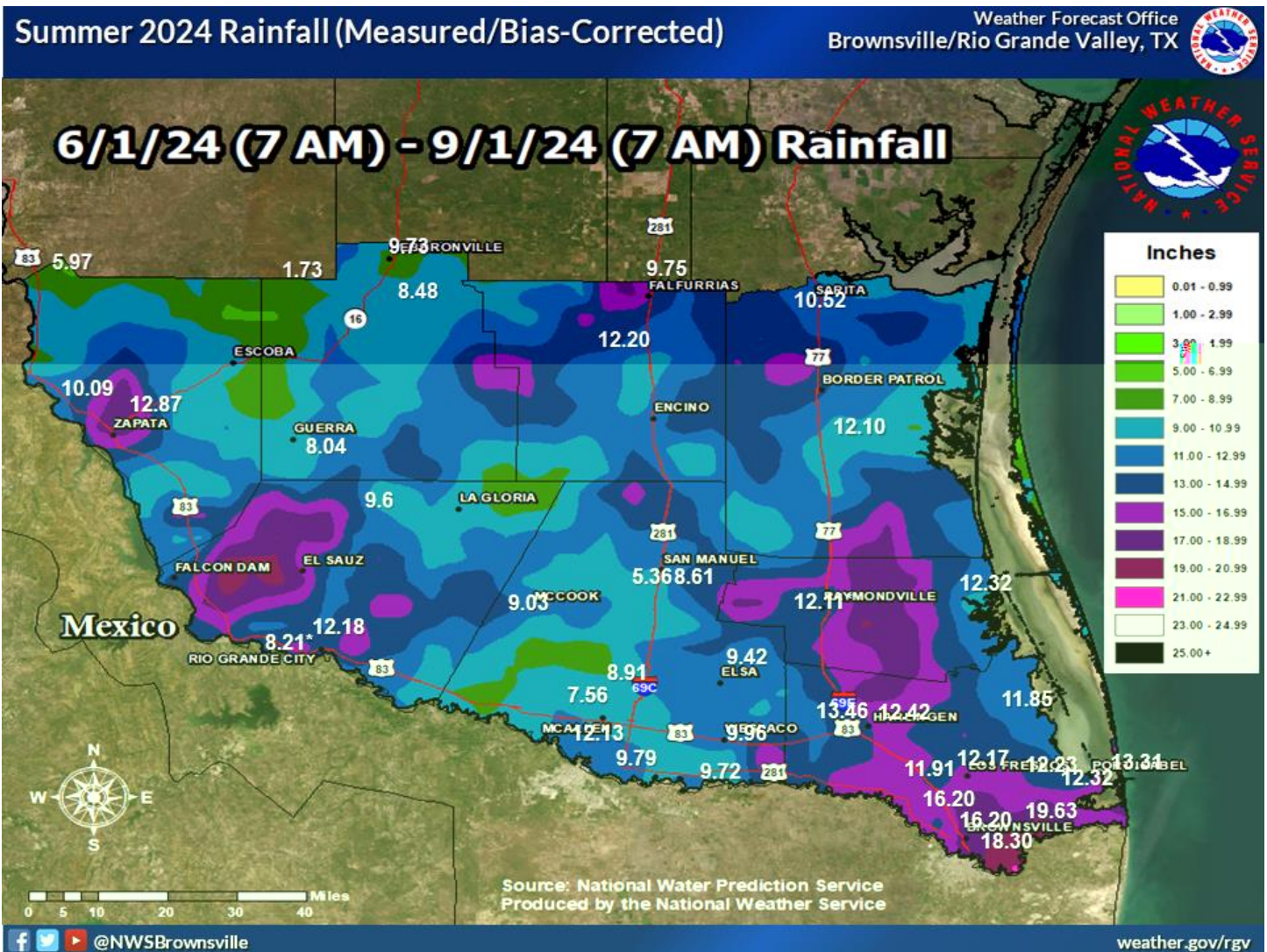


Figure 1: Welcome and locally beneficial rainfall arrived after June’s very hot start. Above to much above average rainfall quenched the drought, but largely missed the watershed locations necessary to recharge Amistad and Falcon International Reservoir. Annotated values are a combination of CoCoRaHS, ASOS (NWS), AWOS (FAA), and the Texas Mesonet.



Maximum 92-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	88.6	2023-08-31	0
2	87.9	2019-08-31	0
3	87.5	2018-08-31	0
4	87.2	2022-08-31	0
5	87.1	2024-08-31	2
6	86.9	1998-08-31	0
7	86.4	1980-08-31	0
8	86.3	1982-08-31	0
9	86.1	2012-08-31	0
10	86.0	2005-08-31	0

Period of record: 1878-01-01 to 2024-09-12

Maximum 92-Day Mean Avg Temperature for McAllen Area, TX (ThreadEx)
Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	90.8	2009-08-31	0
2	90.1	2017-08-31	0
3	90.0	2018-08-31	3
4	89.9	1998-08-31	2
5	89.6	2016-08-31	0
6	89.5	2023-08-31	0
7	89.3	2019-08-31	0
8	88.8	2012-08-31	0
9	88.6	2024-08-31	0
10	88.5	2015-08-31	0

Period of record: 1941-06-01 to 2024-09-12

Maximum 92-Day Mean Avg Temperature for RAYMONDVILLE, TX
Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	88.6	2023-09-01	11
2	88.2	1998-09-01	3
3	88.0	1947-09-01	0
4	87.7	1953-09-01	0
5	87.2	1980-09-01	3
6	87.0	2024-09-01	14
7	86.8	2009-09-01	4
8	86.8	2022-09-01	12
9	86.6	2005-09-01	2
10	86.5	1969-09-01	0

Period of record: 1913-01-01 to 2024-09-09

Maximum 92-Day Mean Avg Temperature for PORT MANSFIELD, TX
Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	86.0	2023-09-01	5
2	85.3	2009-09-01	10
3	85.2	2005-09-01	6
4	85.0	2024-09-01	11
5	84.8	2016-09-01	2
6	84.7	2017-09-01	3
7	84.7	2018-09-01	9
8	84.5	2011-09-01	5
9	84.3	1958-09-01	7
10	84.2	1969-09-01	1

Period of record: 1958-02-07 to 2024-09-13

Maximum 92-Day Mean Avg Temperature for RIO GRANDE CITY, TX
Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	90.1	2023-09-01	2
2	89.5	2009-09-01	2
3	89.2	1996-09-01	5
4	89.1	1901-09-01	0
5	89.1	1997-09-01	7
6	88.9	2022-09-01	4
7	88.8	2019-09-01	2
8	88.8	1999-09-01	5
9	88.8	1928-09-01	0
10	88.7	2001-09-01	13
11	88.7	1902-09-01	2
12	88.6	2017-09-01	3
13	88.4	2000-09-01	5
14	88.4	1948-09-01	1
15	88.2	1947-09-01	1
16	88.2	1958-09-01	0
17	88.1	2024-09-01	8
18	88.1	2018-09-01	1
19	88.0	1946-09-01	0
20	88.0	1960-09-01	0

Period of record: 1897-01-01 to 2024-09-13

***For stations with 15 or fewer days missing.**

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Figure 2. Despite helpful rains in parts of June, July, and late August, sweltering temperatures between June and August ensured a top-five hottest 2024 would become more certain. For all but Rio Grande City, temperatures ranked among the top ten hottest on record for the period for most available Rio Grande Valley locations.

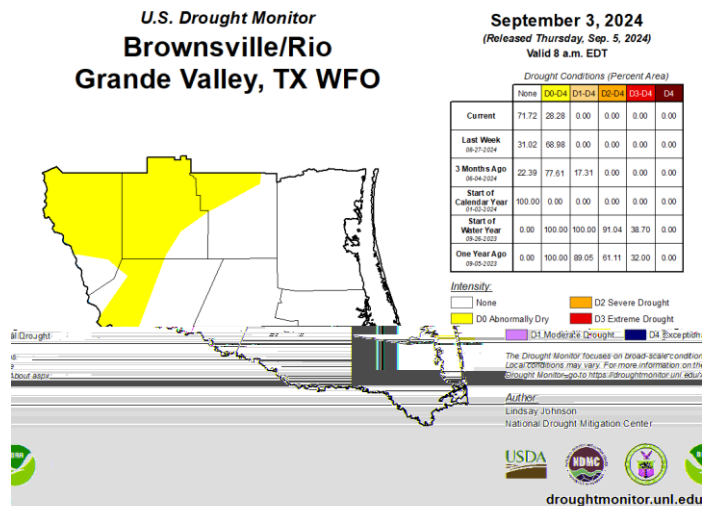
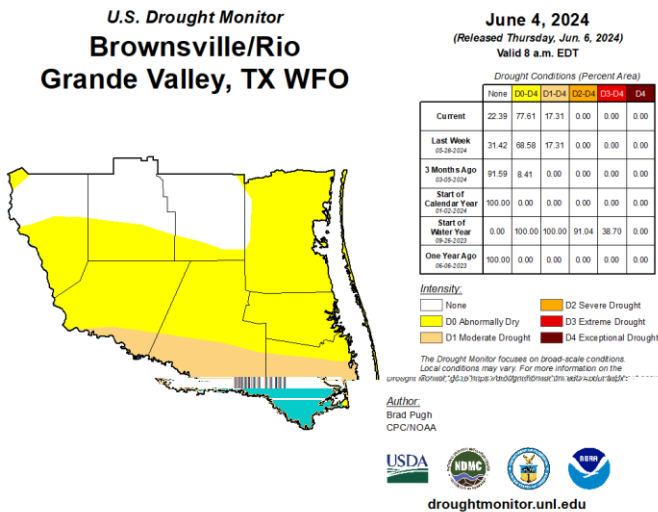


Figure 3. U.S. Drought Monitor general improvement from June 4th, 2024 (left) and September 3rd, 2024 (right). Overall, the most beneficial and heavier rain favored locations from eastern Starr/Brooks to the coast. By the start of August, drought was removed from all areas – but a dry and top-ten hottest August for most returned periodic dryness (yellow).

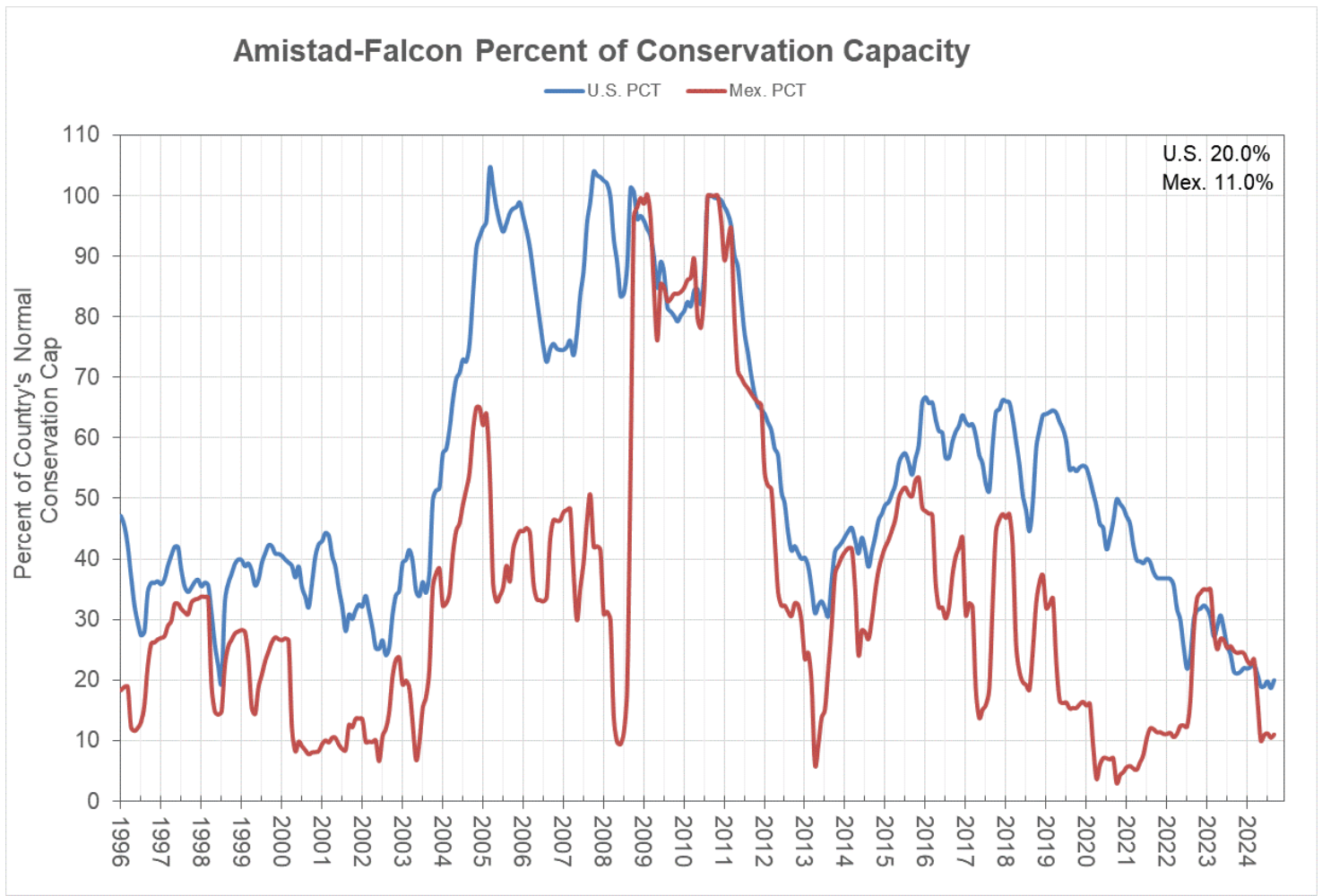


Figure 4. U.S. International Boundary and Water Commission (IBWC) combined percentage of conservation capacity for Amistad and Falcon International Reservoirs, as of the start of September 2024. The combined low values remained the lowest on record since each dam was constituted (Falcon in 1954; Amistad in 1971) – as meager inflows compared with average in late summer were insufficient to make a real dent in levels.

Month-by-Month Summary

June started where May left off – near record heat and oppressive apparent, or “feels like”, temperatures for which local values exceeded 115°F for a few hours across the populated Rio Grande Valley on June 4th and 5th. Ambient temperatures would peak between the 11th and 14th, with afternoon highs in the low to mid 100s from Brooks/Hidalgo to the Rio Grande Plains, and upper 90s closer to the coast – with the only local notable rain from afternoon thunderstorms in Hidalgo County on the 10th. The pattern would temporarily change the following week, as unseasonably strong Canadian high pressure moved across most of the eastern seaboard while a broad area of low pressure formed in the far western Caribbean and moved into the southwestern Gulf. The difference in pressure systems would produce a prolonged easterly fetch that brought high surf, dangerous rip currents, and ultimately tidal run-up to South Padre Island that began on June 18th. The broad low eventually consolidated into Potential Tropical Cyclone #1 a day earlier in the Bay of Campeche. The system would ultimately consolidate into Tropical Storm Alberto on the 19th – tightening the pressure gradient and bringing more coastal impacts to South Padre Island, including beach erosion. Gusty winds to tropical storm force (39 mph or higher) impacted the coastal portion of the region on the 19th, and farther inland on the 20th due to mixing of dry air into showers after Alberto made landfall near Tampico, Tamaulipas Mexico. The month’s first widespread rain dominated the 19th. Between the 18th and 20th, widespread 2 to 4” fell, with pockets of 4-6” across northern Brooks/Kenedy County and near McAllen. A detailed report can be found [here](#).

Additional rains fell through the 23rd, courtesy of another tropical wave that rolled across northern Veracruz and southern Tamaulipas a couple days following Alberto. The rains and relatively saturated ground that followed lowered daily temperatures closer to late June averages (mid to upper 90s by afternoon, upper 70s each morning) but the second-half of June shift was not enough to stop the month from ending up above average.

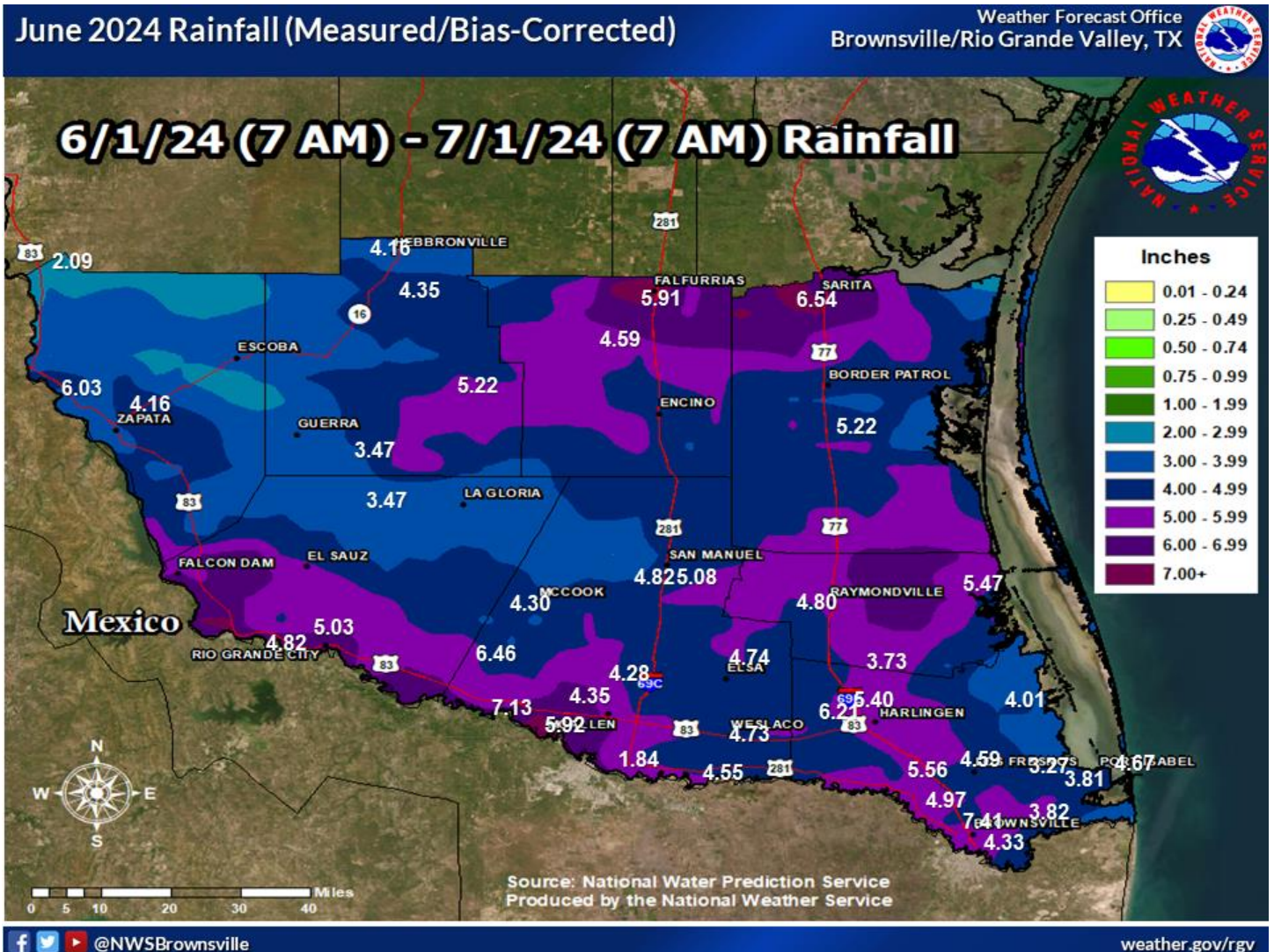


Figure 5. Measured and estimated rainfall for June 2024. Annotated values are a combination of CoCoRaHS, ASOS (NWS) and AWOS (FAA) four-day totals.



- After a dry and hot start to June (continuation from May), easterly flow developed by mid month, culminating with PTC1/Alberto and other west-moving tropical waves between June 18-24.

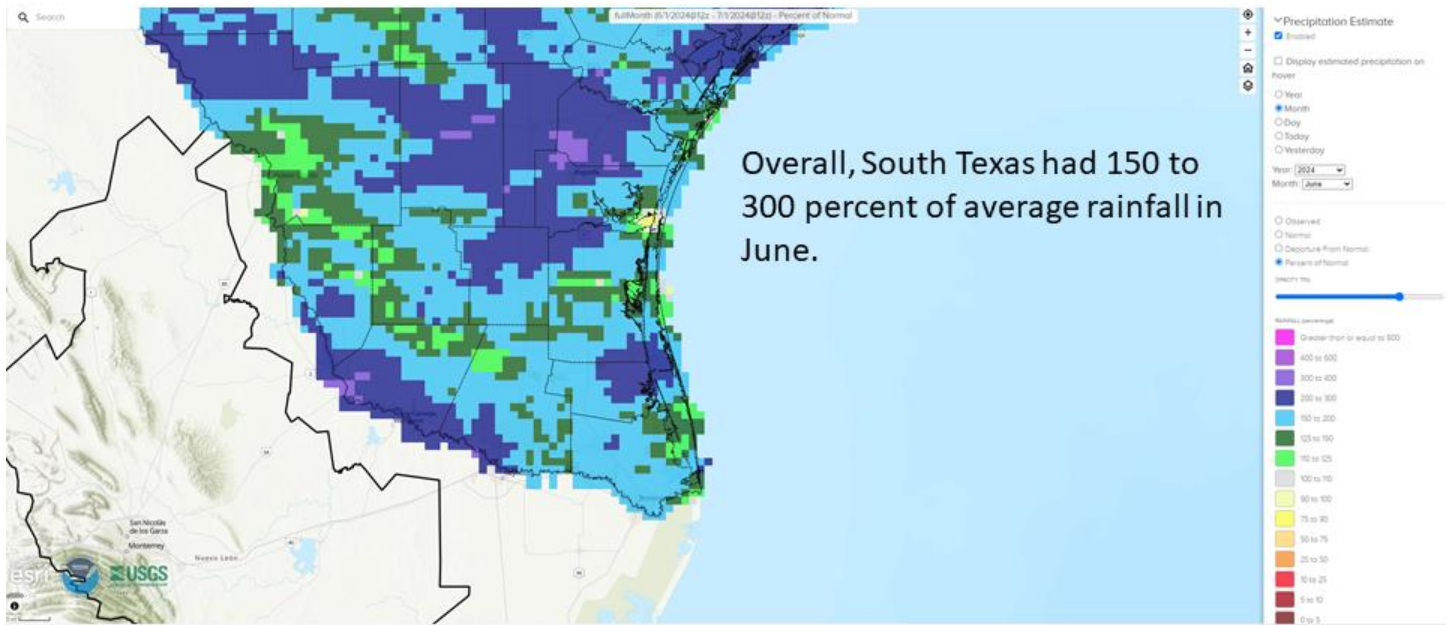


Figure 6. Departure from average rainfall for June 2024 across the south Texas Brush Country through the Lower Rio Grande Valley.

July is typically the peak of a combination of heat and low rainfall, and 2023 was such a case. 2024, however, broke that mold, as the expected pattern of general east to southeast atmospheric flow tapping the deep tropics of the Caribbean and southwest Gulf for August arrived a month earlier. In fact, the months would “flip” in 2024, with August featuring heat and limited rainfall as the steering pattern was more like a typical July (Figure 13, below) . Non-descript conditions started the month before weakened Tropical Storm Beryl approached on the 6th and 7th. Beryl recurved away from the Lower Texas coast – about 100 miles east of South Padre – on the 7th before ultimately making landfall on the middle Texas coast near Matagorda early on the 8th. Though precipitation was limited with Beryl, leftover moisture and weak upper level disturbances impacted the Lower Valley, ultimately dropping periodic heavy rainfall between the 8th and 12th. A period of slightly below average temperatures from the 13th through the 21st would be followed by more rounds of locally heavy – but beneficial – rainfall between the 22nd and 27th. Local minor flooding occurred, mainly from the 24th through 26th. Total rainfall (Figure 7) generally range from 5 to 10” from Brooks and Hidalgo County east to locations just east of IH-69E, and 3 to 6” elsewhere with higher pockets. For most areas, the rainfall ranked among the top five wettest July’s on record – and in the ballpark of July 2020 (Hanna) and 2021 (early month tropical wave), and just below 2008 (tropical waves and Hurricane Dolly).

For the month, temperatures ended up 0.5 to 2°F below average – a far cry from the searing July of 2023, when temperatures were generally 1 to 3°F *above* the 1991-2020 average – and ranked among the top ten at all locations.

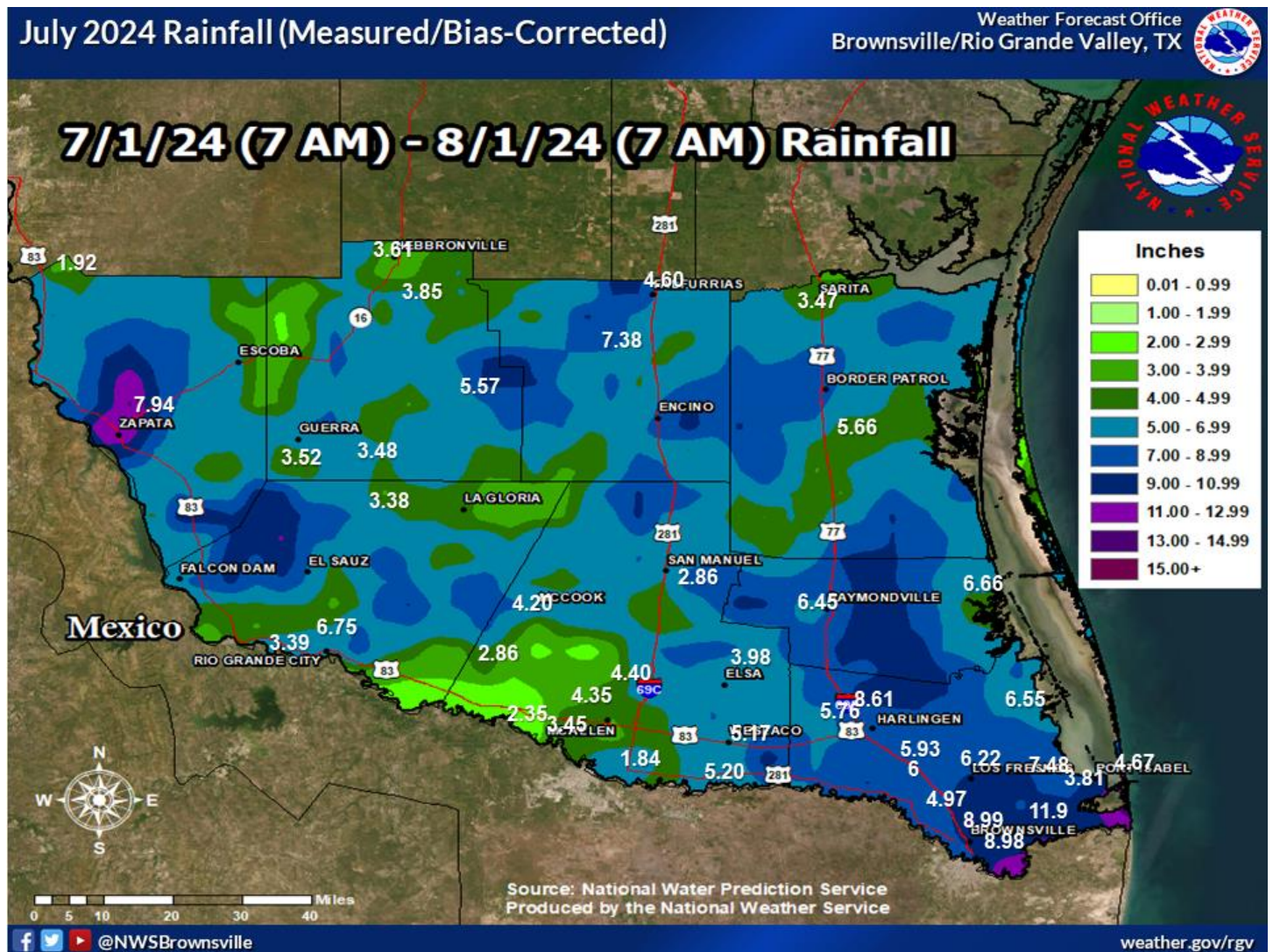


Figure 7. Measured and estimated rainfall for July 2024. Annotated values are a combination of CoCoRaHS, ASOS (NWS) and AWOS (FAA) four-day totals.



- Tropical Storm Beryl passed northeast of the area (July 7) with minimal rainfall, but residual moisture and weak disturbances from the July 8-12 dropped widespread rain across the region
- Another period of upper level disturbances helped induce locally heavy rainfall between the 22nd and 27th.

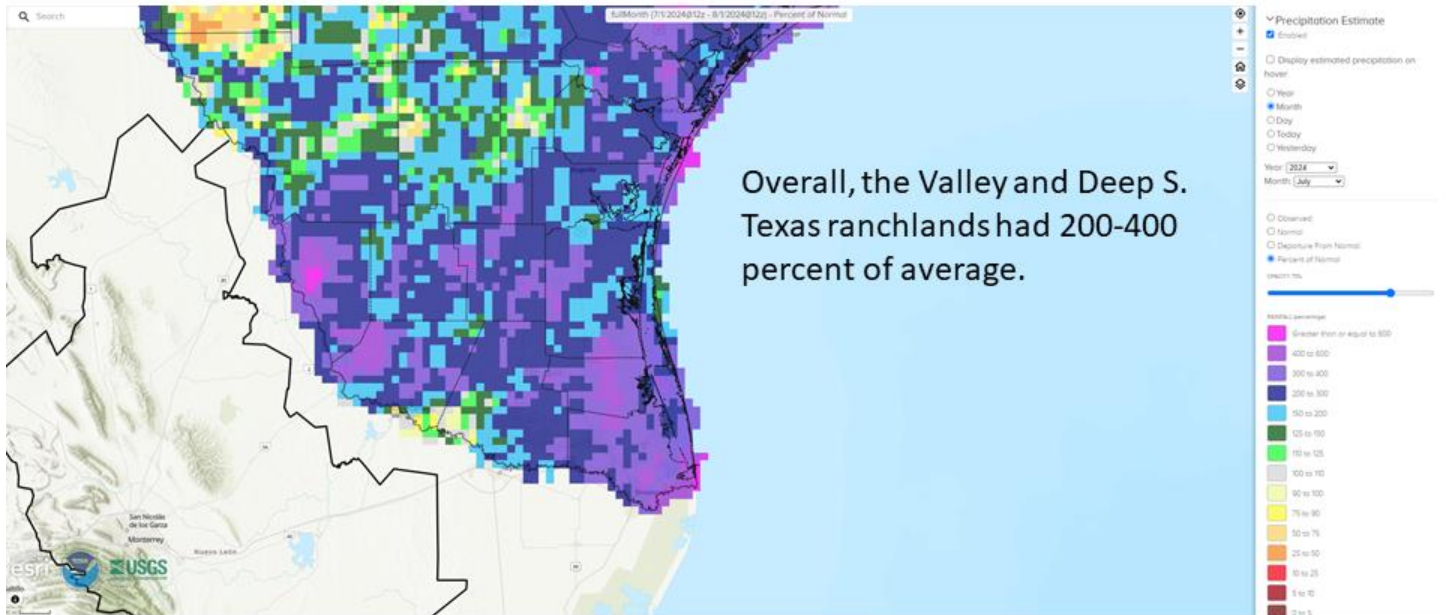


Figure 8. Departure from average rainfall for July 2024 across the south Texas Brush Country through the Lower Rio Grande Valley.

The mean upper level steering pattern helped tell the tale of June-July 2024. Unlike June-July 2023, when “[La Canicula](#)” (the pattern of the Dog Days of summer, which peaks between July 3 and August 11 each year), June-July 2024 features a pattern more familiar to September: A typical “La Canicula” was coupled with a robust western Atlantic ridge (this year, strong all the way to the Bahamas). Persistent east-southeast steering flow brought the repeated intrusions of deep tropical moisture from the Caribbean and southwest Gulf – resulting in the much wetter than average June-July period and holding temperatures down – a little.

Needless to say, drought/dryness was eliminated in all areas by the end of July. A far cry from the dryness/drought that began August of 2023.

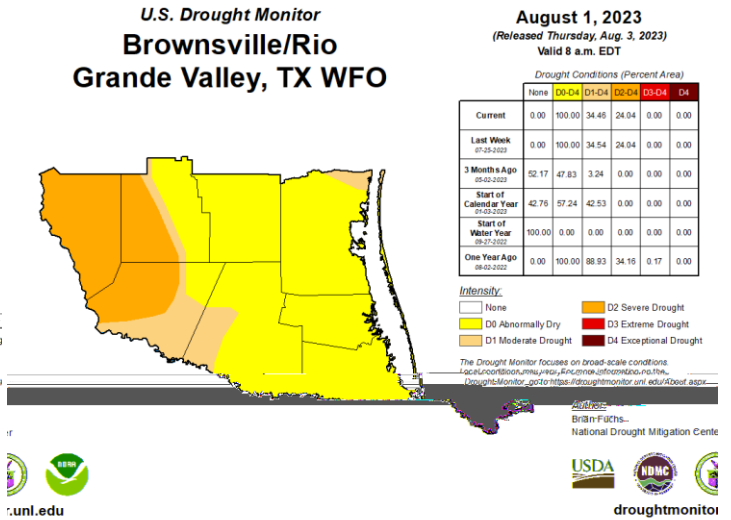
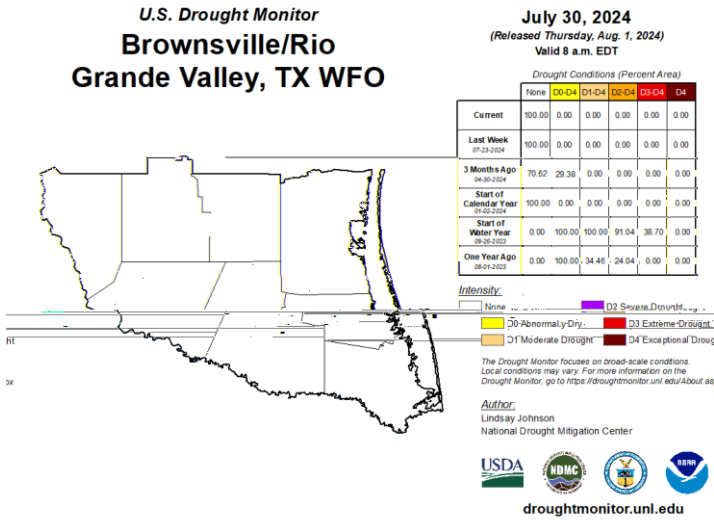


Figure 9. Drought monitor comparison between the end of July 2024 (left) and end of July 2023 (right).

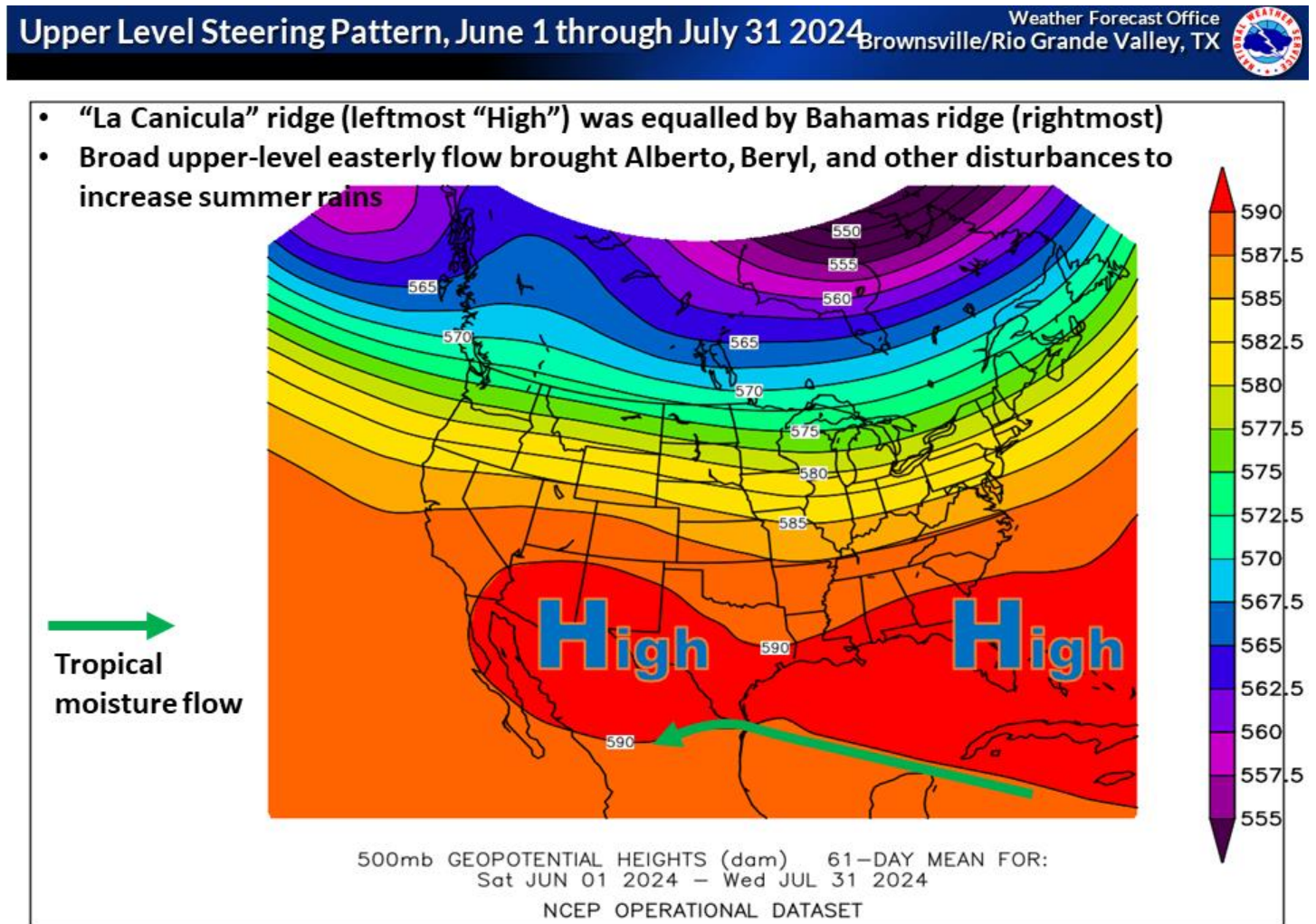


Figure 10. Average steering pattern at around 18,000 feet above the surface for June and July

August, for the most part, acted like it should. Following two consecutive months where rainfall ended up among the top-five to top-ten wettest on record, drier and hotter conditions returned for nearly all of the month. This is not unusual, as the first three weeks of August are among the lowest daily average rainfall values during the calendar year. Rain would return during the last few days of the month, mainly in western Starr County and portions of Cameron and Willacy County – again, a typical occurrence as average daily rainfall more than doubles from the first three weeks of the month.

Temperatures ran right around the 1991-2020 30-year averages – but related to the full period of record, were among the top-the hottest.

The combination of top-decile heat with limited rainfall returned abnormal dryness to most of the region before the end-of-month rains trimmed back the areas of concern.

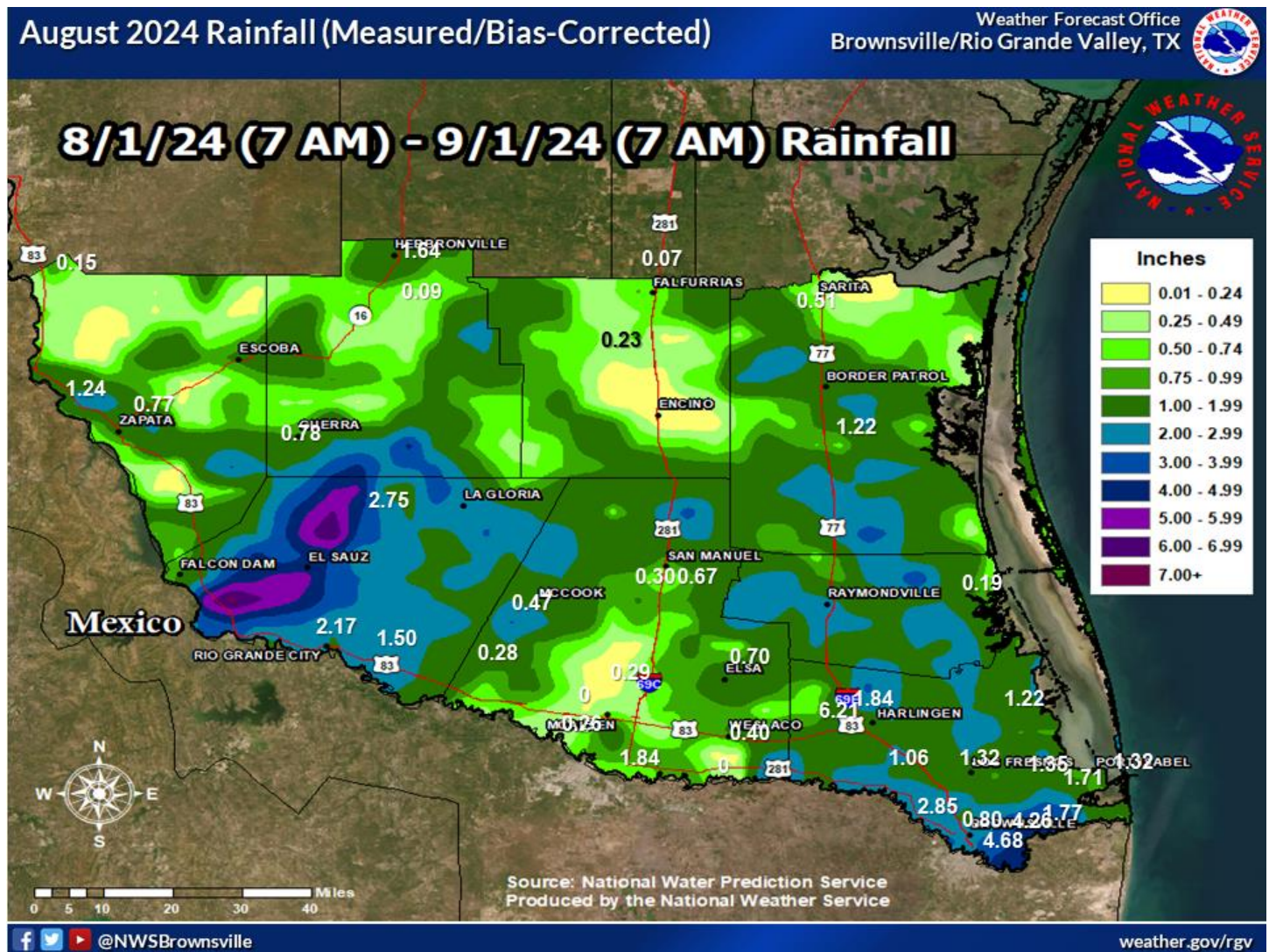


Figure II. Measured and estimated rainfall for August 2024. Annotated values are a combination of CoCoRaHS, ASOS (NWS) and AWOS (FAA) four-day totals.



- Other than Starr County (end of August), much of south Texas had below average rainfall
- Upper level ridge parked over Texas helped shut down/shunt tropical moisture the last week of month, when it weakened.

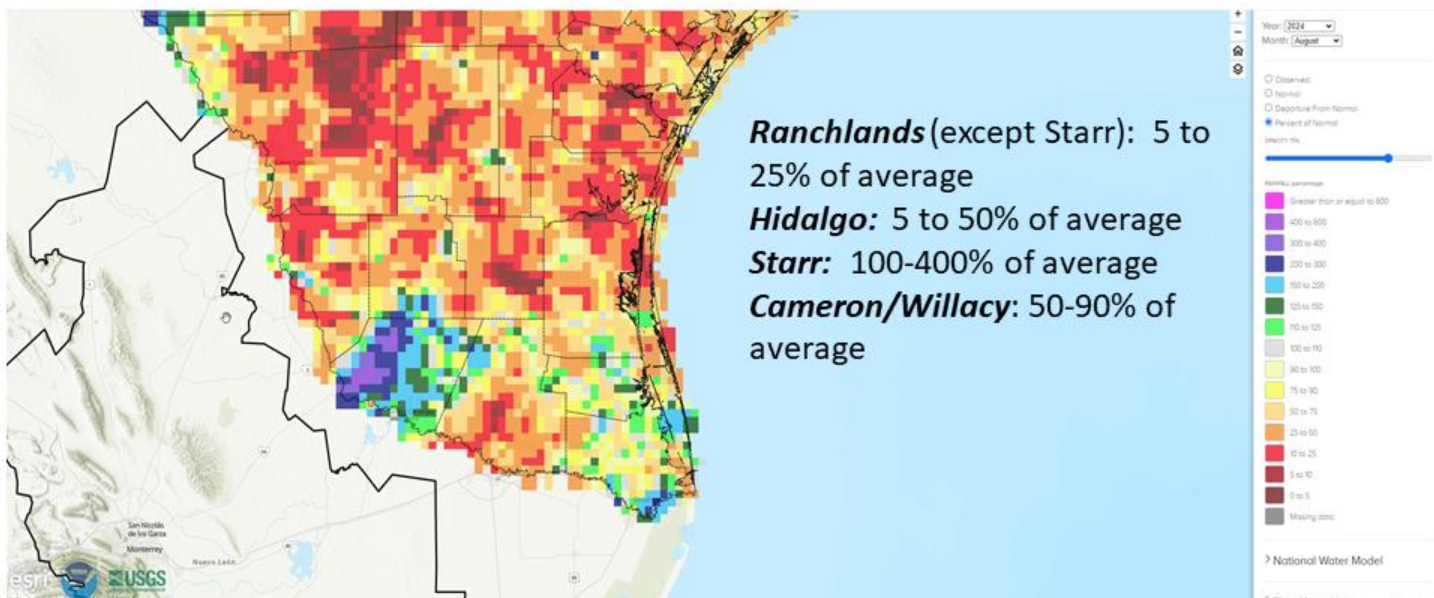


Figure 12. Departure from average rainfall for August 2024 across the south Texas Brush Country through the Lower Rio Grande Valley.

The upper level steering pattern returned to one expected from mid-July through early-mid August, as a broad “heat dome” covered the state for nearly all of the month (Figure 13). Many observation stations recorded a top-ten hottest August across the state.



- High pressure ridge shifted across all of Texas
- Eastern U.S. trough (gray dashed line) helped shut down/shunt tropical moisture south

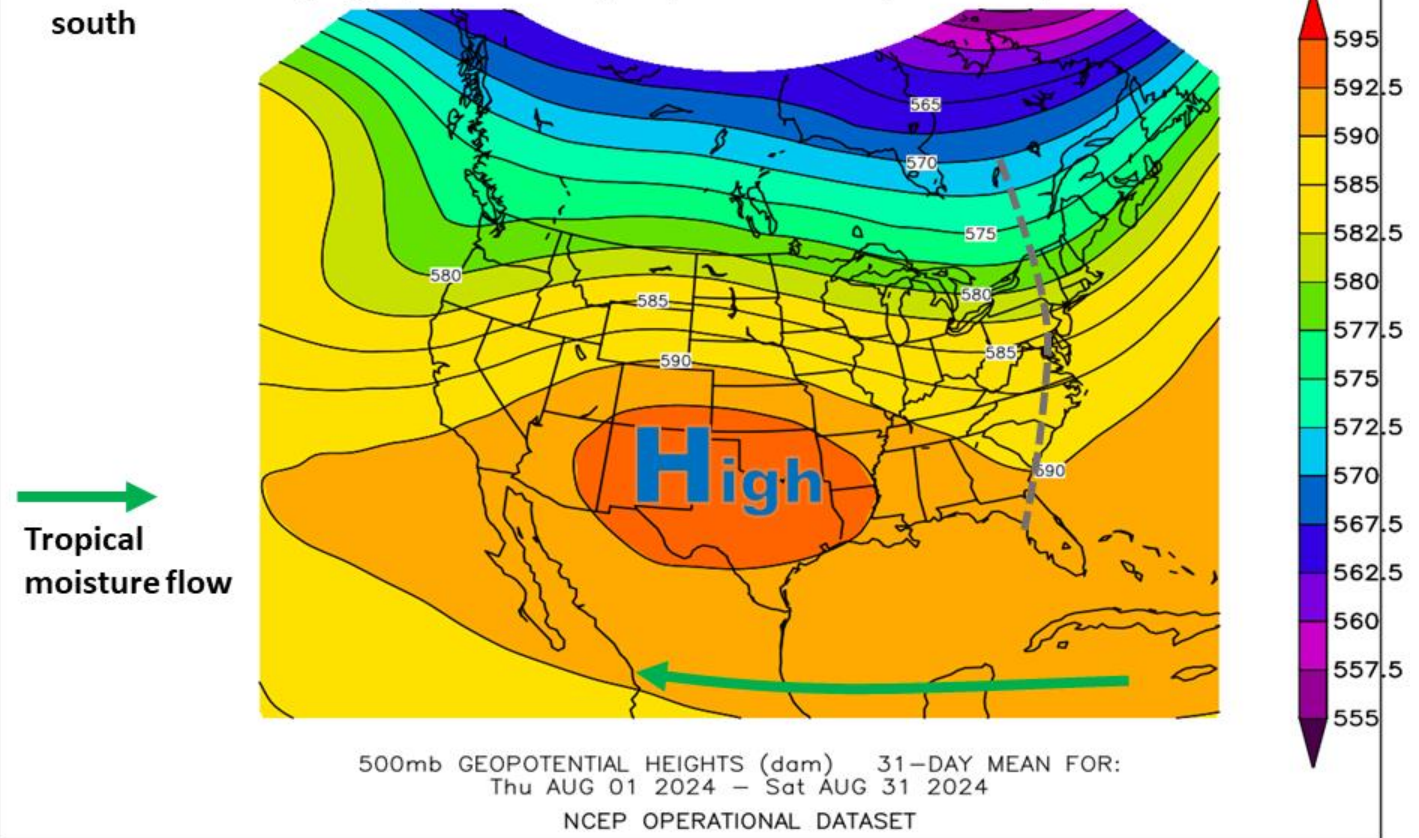


Figure 13. Average steering pattern at around 18,000 feet above the surface for August.

Summer 2024 provided necessary and beneficial rainfall following a record hot [late spring](#) that was severely stressing water resources across the region due to record low combined reservoir levels at Amistad and Falcon, which account for up to 90% of the agricultural and municipal water supply. The water, however, only temporarily replenished area retention/detention ponds – and the lack of remnants of a tropical cyclone over the headwaters/inflow region to each reservoir meant that mere “drops in the bucket” was provided from infrequent rain events that reached these areas. Following late August and early September rainfall, levels at Amistad had only risen from 19.3 to 20.1 percent (total share) of conservation capacity, while Falcon had only risen from 10.1 to 11.1 percent. The combined share remained at or near historic lows, and with a seasonal outlook favoring dryness in mid to late autumn, the need for smart water usage across the Lower Rio Grande Valley remained a front-and-center issue until further notice.



Photo taken in north Brownsville in late July following another round of beneficial rains during summer 2024.