Guadalupe River Flooding

July 4, 2025

Climavision

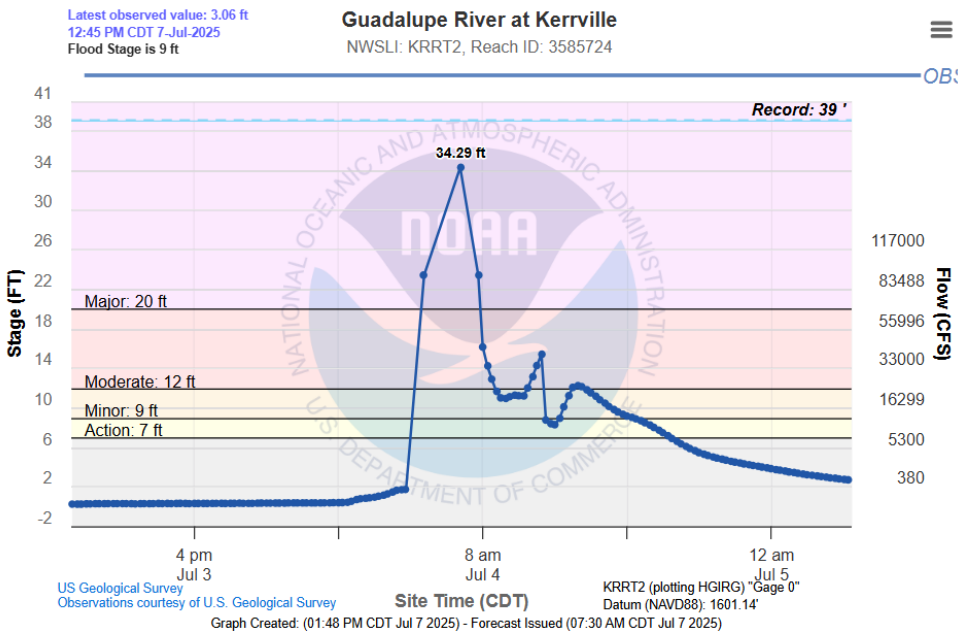
CASE STUDY

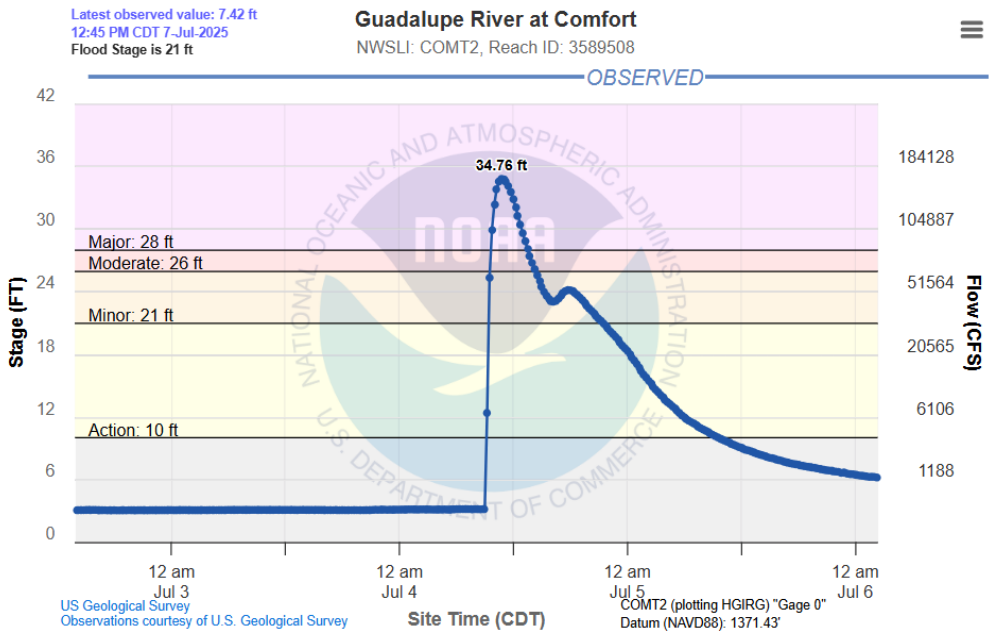
Climavision

July 4, 2025

Texas
Flooding

In the overnight hours of July 3-4, a complex of slow-moving thunderstorms developed over the Texas Hill Country, drawing upon deep moisture and the remnants of a tropical cyclone. These storms produced intense and persistent rainfall, with 10-12 inches of rain falling in just a few hours. The terrain in the area, combined with impervious soils due to recent drought conditions, led to an increase in runoff into rivers. As a result, rivers quickly rose, with the Guadalupe River in Kerr County reaching near record heights in the early morning hours of July 4, cresting around 5-6 am. This extreme flash flooding event caused significant damage and tragic loss of life.



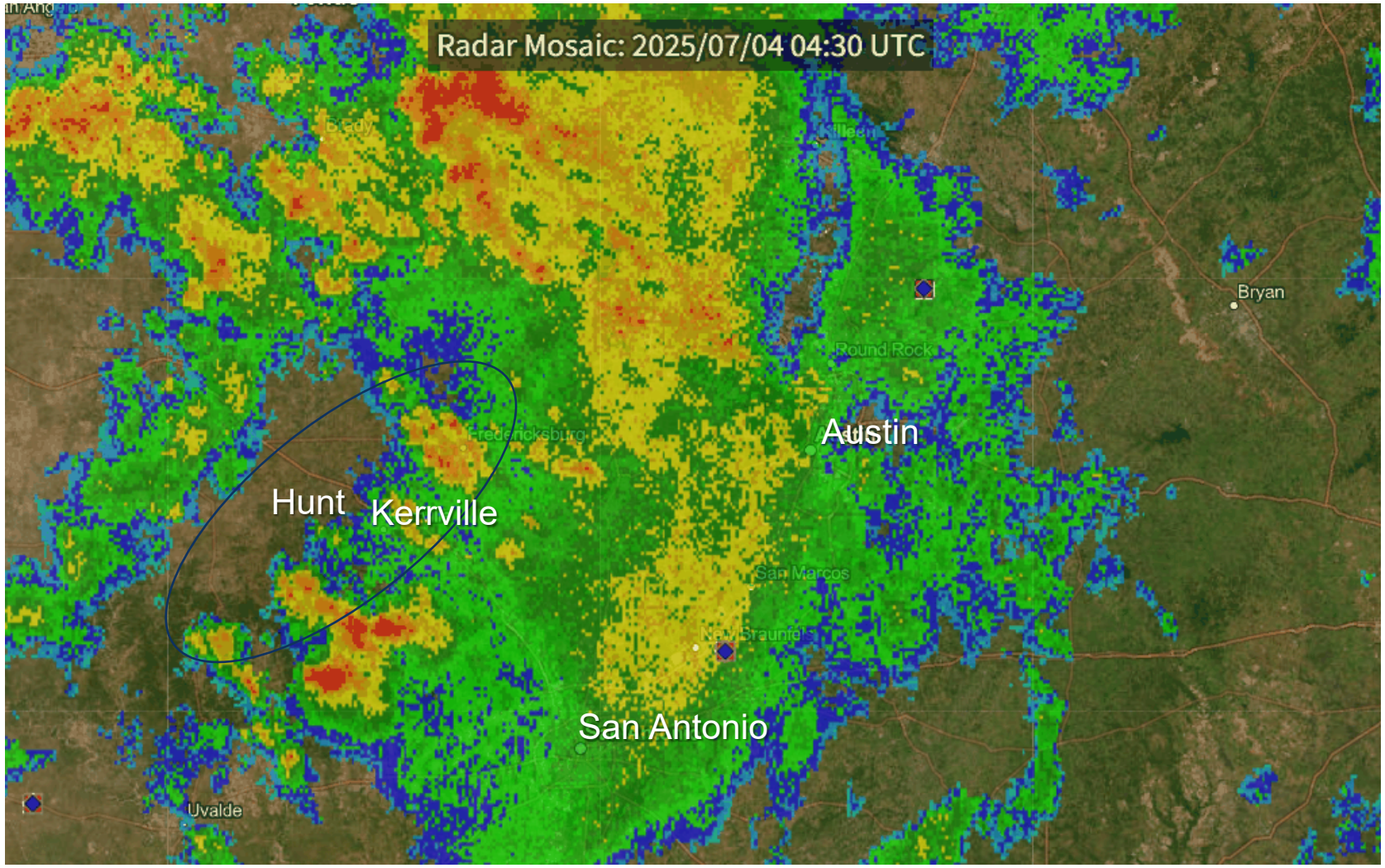


Climavision

CASE STUDY

July 4, 2025

Texas
Flooding



Climavision

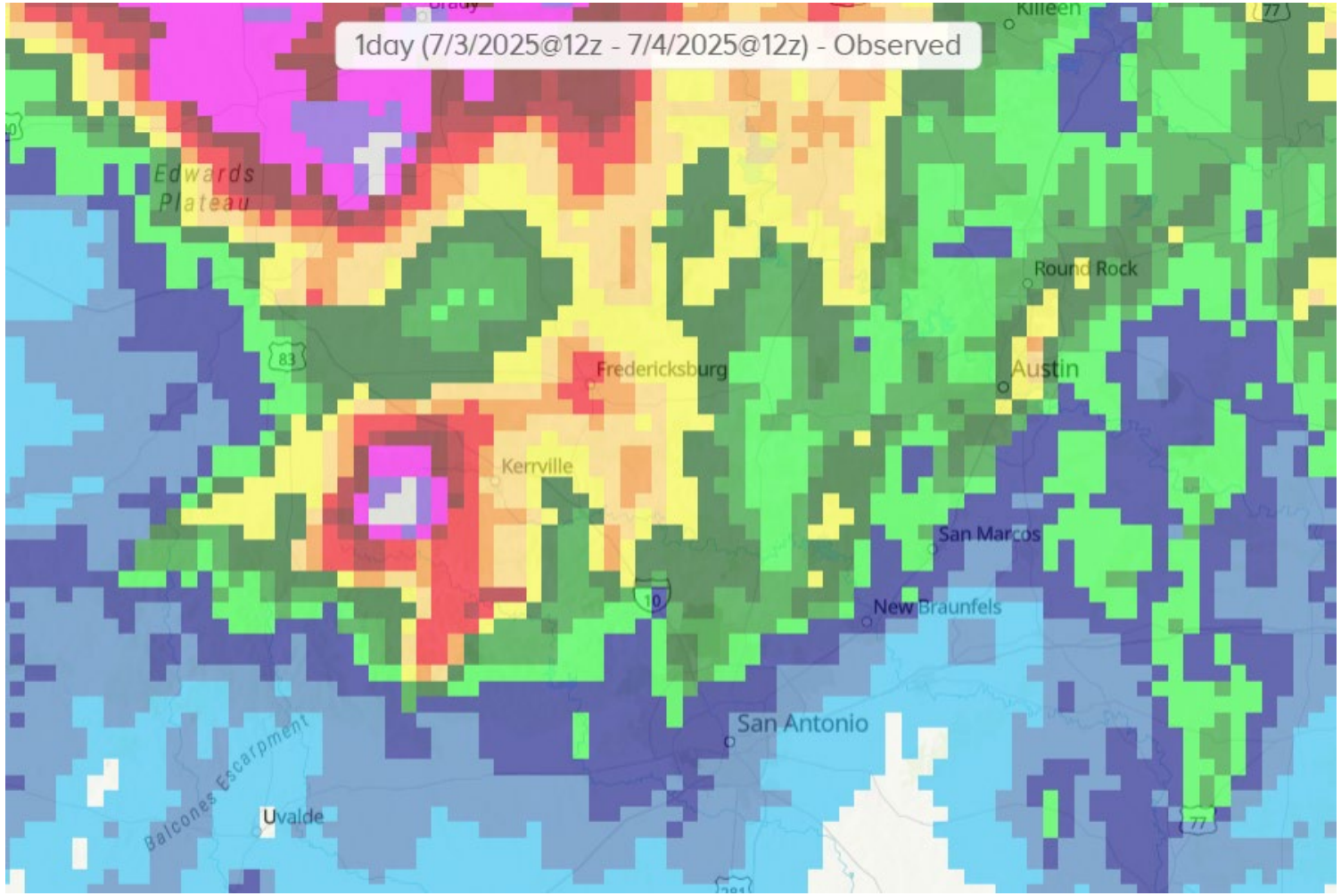
CASE STUDY

July 4, 2025

Texas Flooding

Total Rainfall

7am July 3 – 7am July 4



Credit: NOAA

Climavision

CASE STUDY

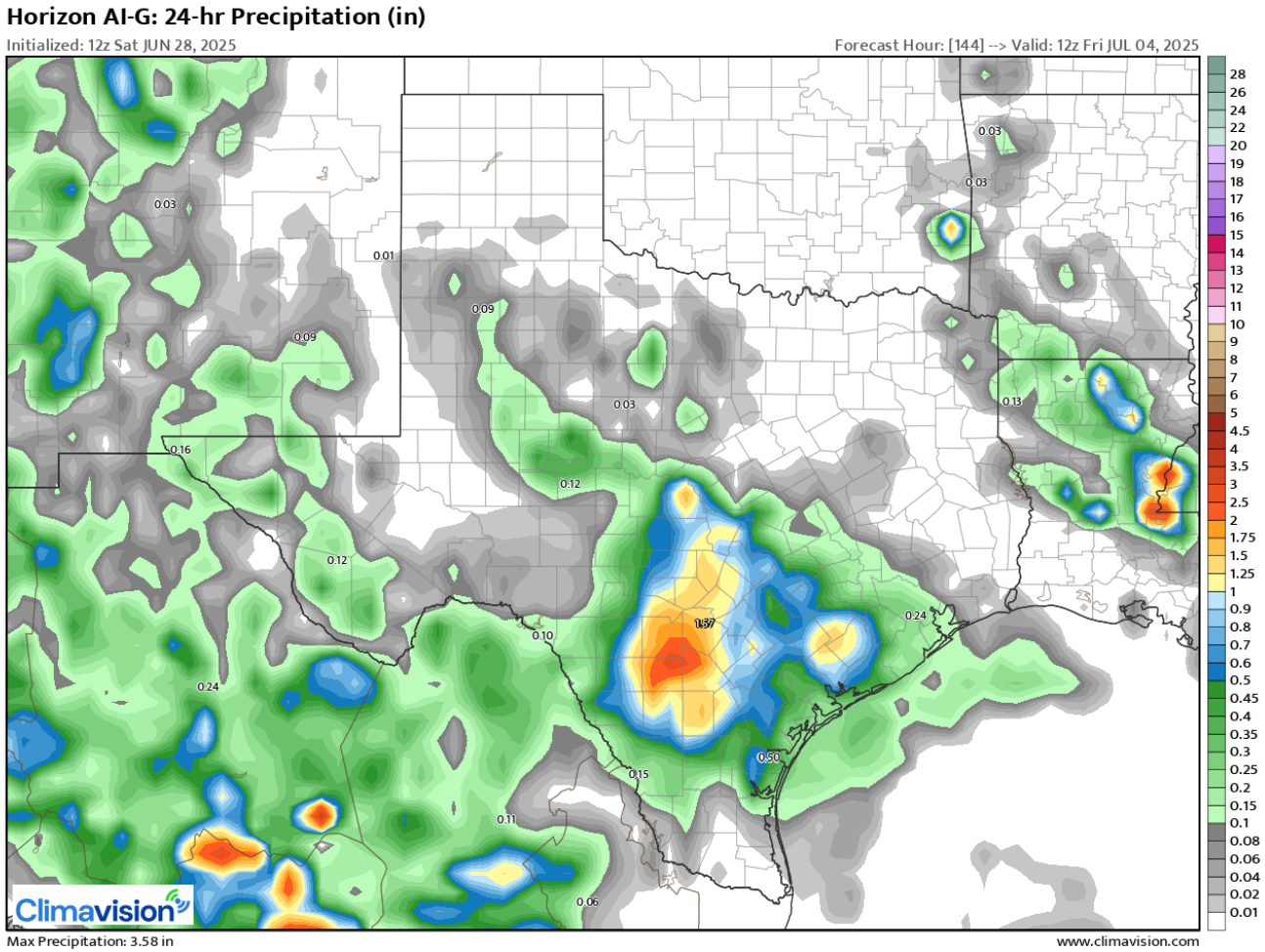
July 4, 2025

Texas
Flooding

Model Run time: 7AM CDT 28 June 2025

Forecast Valid time: 7AM CDT 3 July 2025 – 7AM CDT 4 July 2025

Climavision's Horizon AI Global model first indicated the potential for locally heavy rainfall amounts in Central Texas on the 12z run on June 28. At this time, other global models had broad areas of around 1 inch of rain across Texas, and some had no rain at all in the Hill Country. Horizon AI Global showed a bullseye of 3-4 inches of rain, which was too low, but this is a typical bias for all global models. This model run from June 28 was an early heads-up of the possibility almost 6 days ahead of the event.



Climavision

CASE STUDY

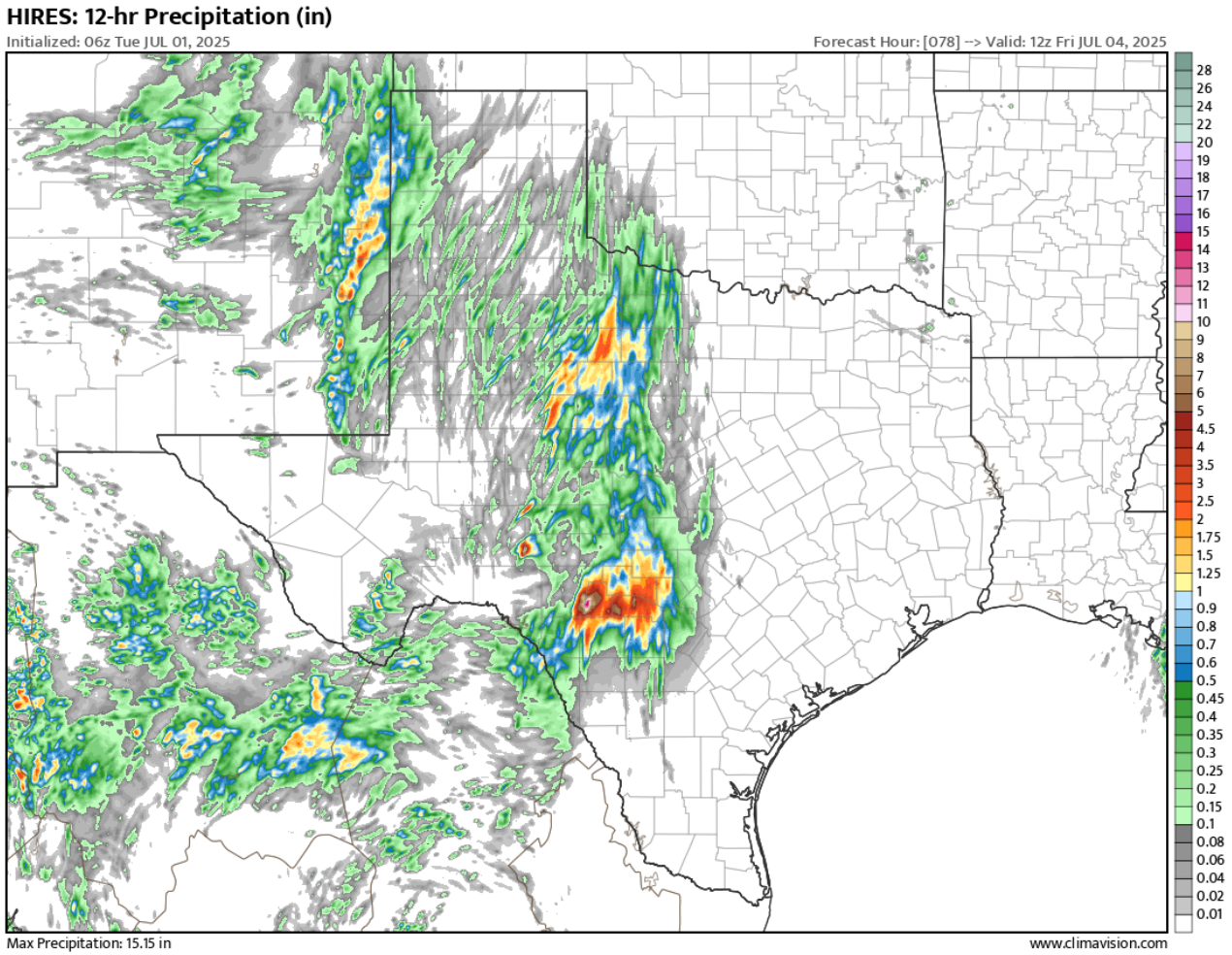
July 4, 2025

Texas
Flooding

Model Run time: **1AM CDT 1 July 2025**

Forecast Valid time: 7PM CDT 3 July 2025 – 7AM CDT 4 July 2025

On the 06z run on July 1, Climavision's HIRES forecast model first indicated the potential for localized heavy rainfall (near 12") during the early morning hours of July 4 in the Hill Country. Global models at this time were showing pockets of 3-6 inches possible in the Hill Country but were inconsistent with the placement, and other high resolution forecast models were not yet in range of the event.



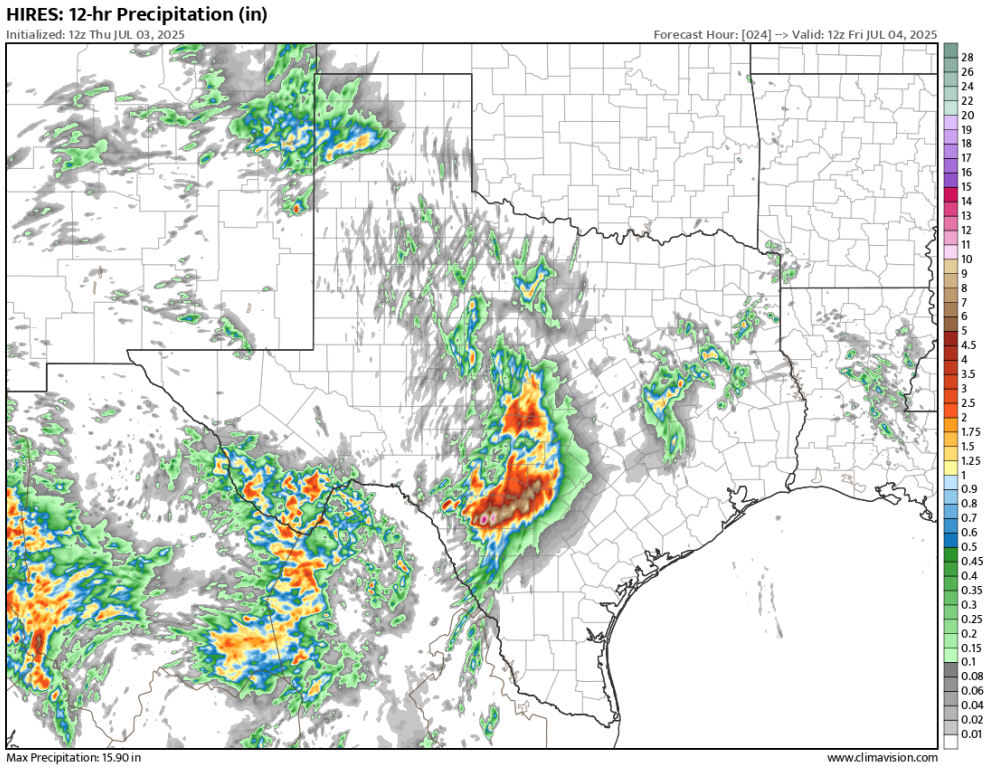
Climavision

CASE STUDY

July 4, 2025

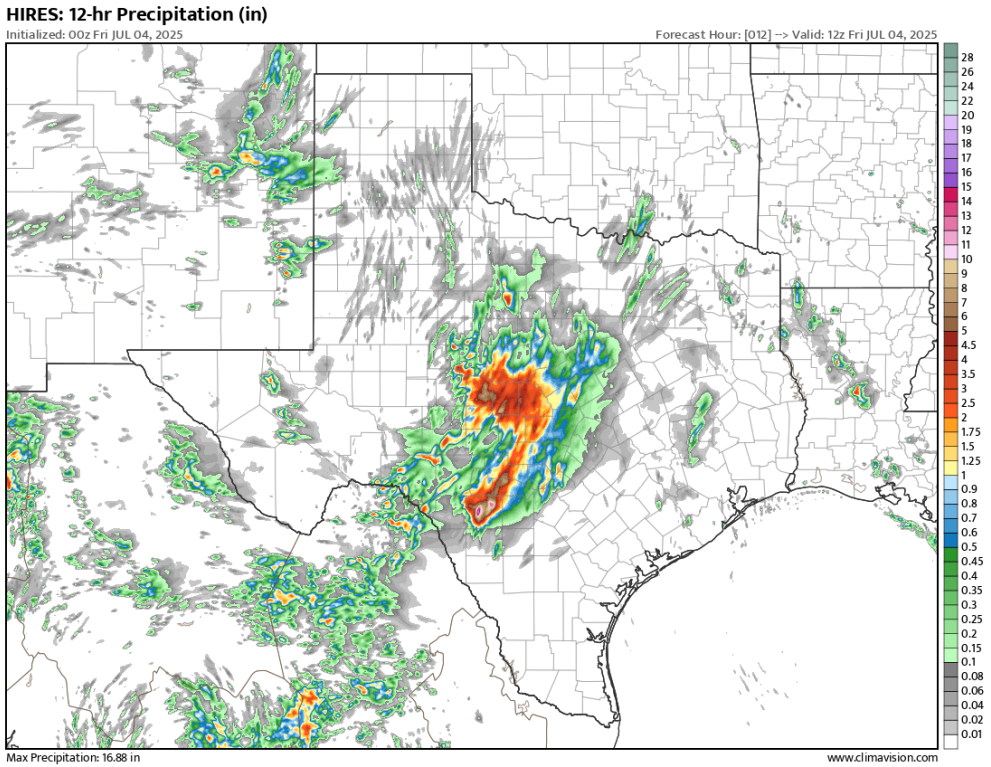
Texas
Flooding

Climavision's HIRES model locked into the forecast of very heavy rainfall over the Hill Country 24 hours before the event. The images below show the cumulative rainfall forecast for the evening/early morning hours on July 4. Both forecast model runs, 24 and 12 hours before the event, show widespread rainfall totals near 3-5 inches across Central Texas with isolated totals as high as 12 inches in parts of the Hill Country.



Model Run time: 12 UTC 03 July 2025

Forecast Valid time: 00 UTC 4 July 2025 - 12 UTC 4 July 2025



Model Run time: 00 UTC 4 July 2025

Forecast Valid time: 00 UTC 4 July 2025 - 12 UTC 4 July 2025

Climavision

CASE STUDY