July 2025 Monthly Flood Monitoring Report

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State of the Flood Team (NOAA/NESDIS/NCEI and Partners)

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General Synopsis

This July, an extensive analysis of 4,100 river gauges across the country, revealed over 9% of these monitoring stations (388) reported some level of flooding. A breakdown of these numbers (Figure 1) shows 235 stations, accounting for 5.7% of the total, experienced minor flooding at various times. Fourteen of these stations recorded major flooding events, concentrated in Texas, North Carolina, Montana, and the Northeast Corridor.

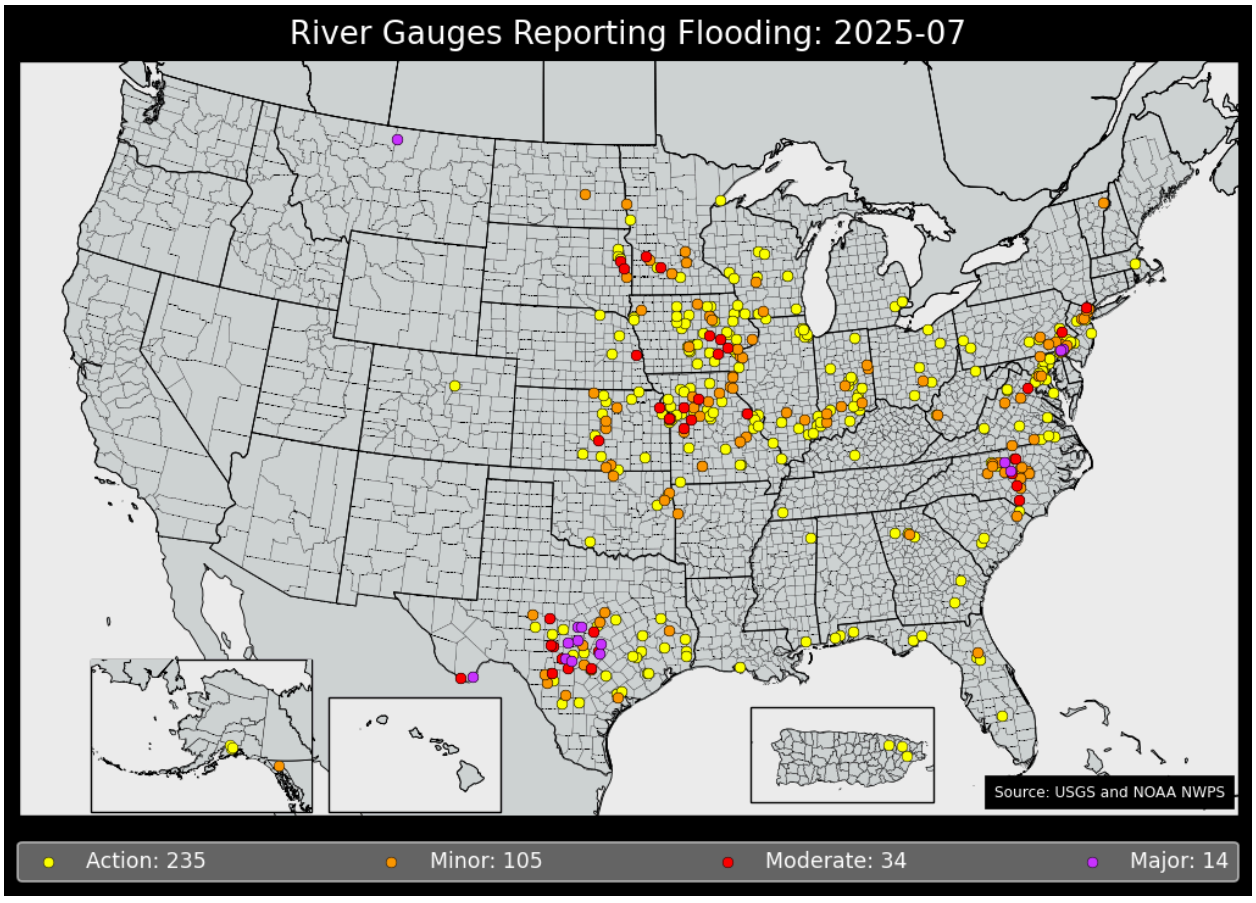

Figure 1: River gauges in the United States reporting flooding in the month of July. The maximum category reached at any point in the month is plotted.

During the month of July, the National Weather Service issued 1,434 flash flood warnings across the United States. Of these, 17 were categorized as Flash Flood Emergencies, occurring in Texas, Pennsylvania, and Illinois (Figure 2). This is the second highest number of flash flood

warnings issued in July, only preceding 2021 (1,439). Preliminary reports from the NWS indicate over 2,000 instances of flash flooding, including hundreds of water rescues, and numerous injuries and fatalities (Figure 3). As a result of higher than normal rainfall, many areas of the United States, including parts of North Carolina, New Mexico, Texas, and Colorado experienced a 1 in 100 year flooding event during some part of July (Figure 4).

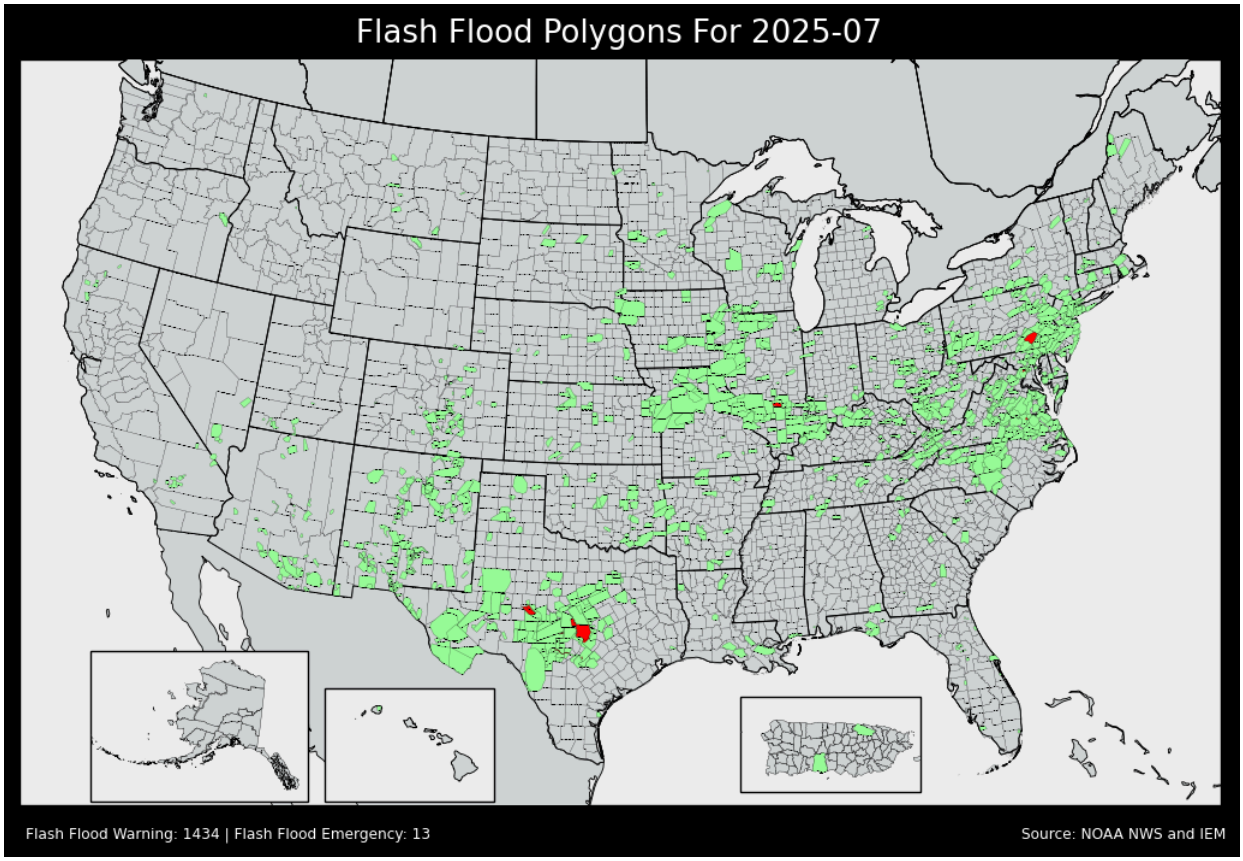

Figure 2: Locations of Flash Flood Warnings and Emergencies issued by the National Weather Service in July 2025.

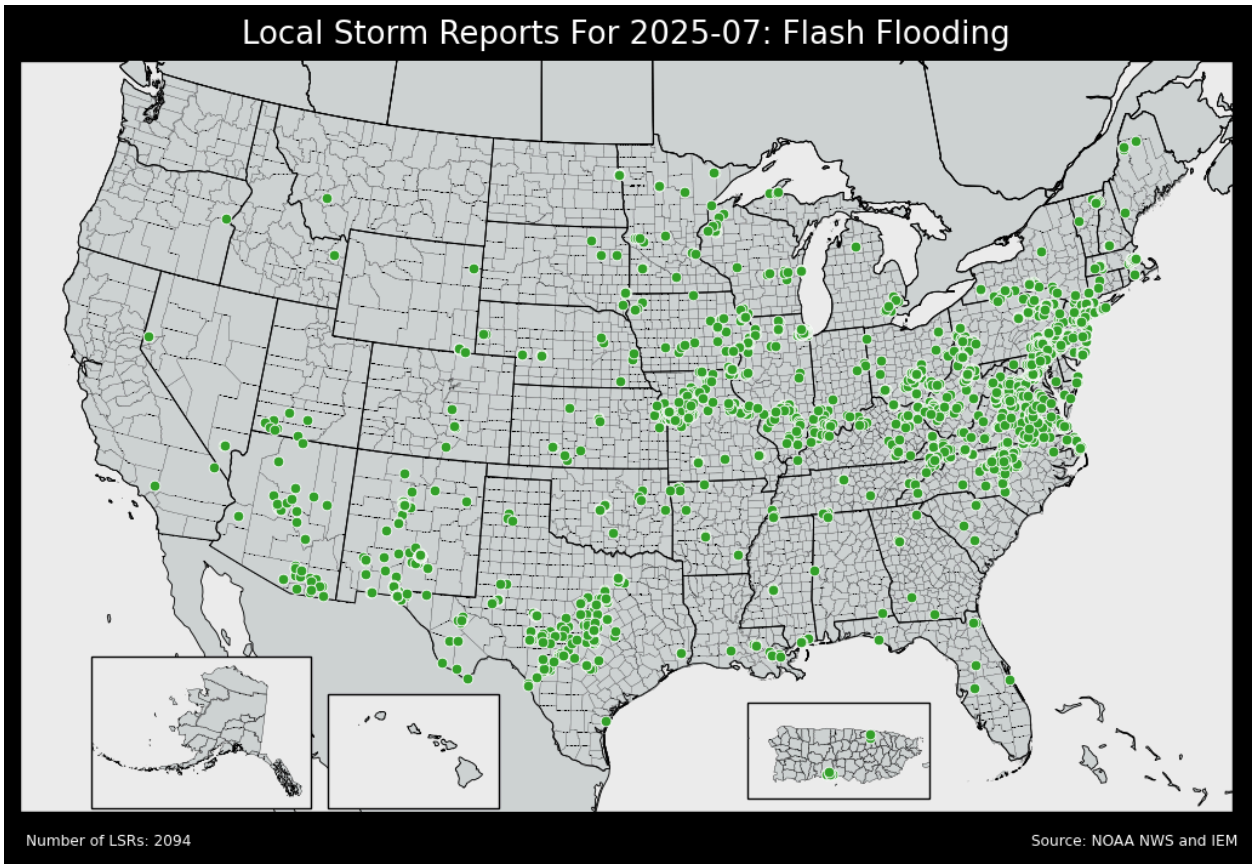

Figure 3: Preliminary locations of Flash Flooding, reported to the National Weather Service in July 2025.

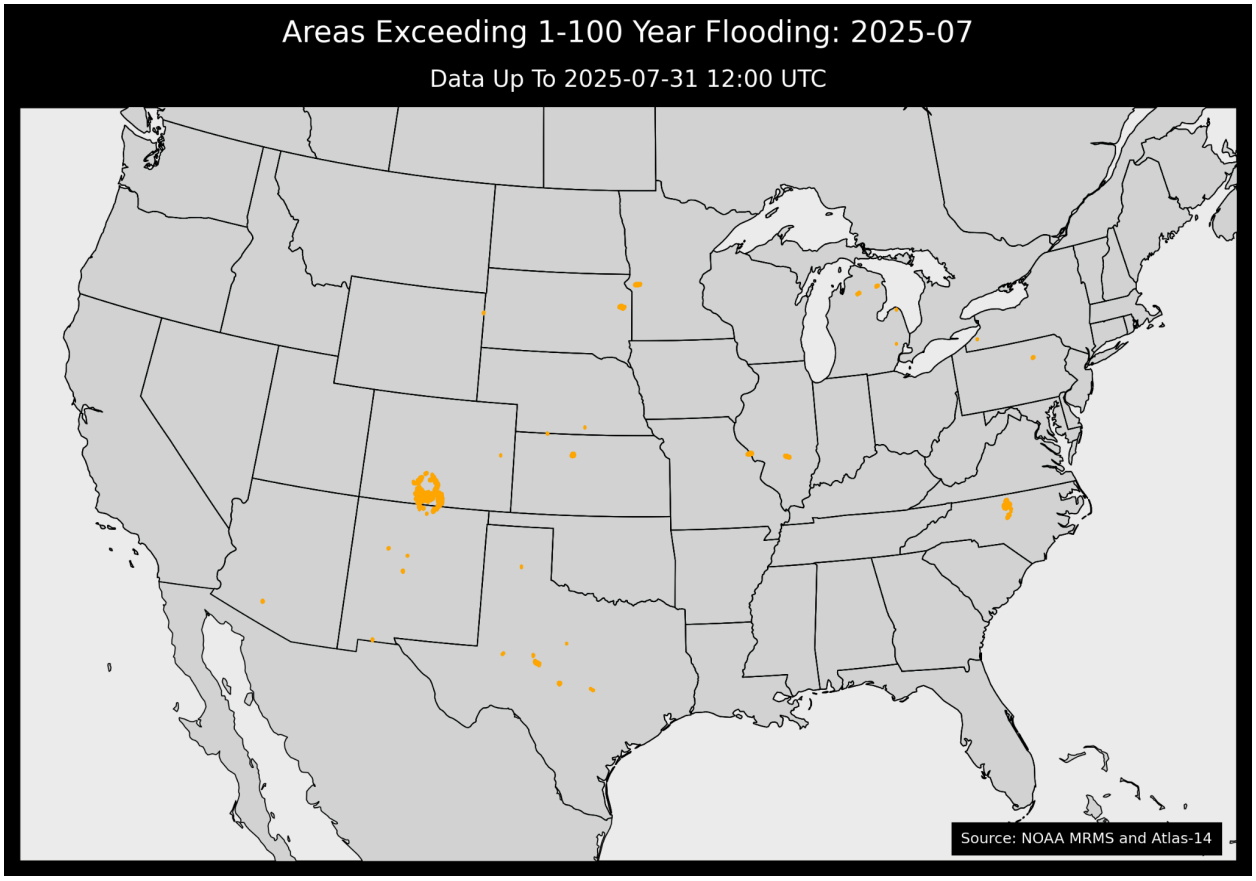

Figure 4: Areas in the Contiguous US experiencing a 1 in 100 year Flood Event, using 24 hour summaries for each day in July.

Notable Events

- *Texas Hill Country, July 4th-6th and July 13th-14th*

Precipitation from a mesoscale convective complex, amplified by moisture from the remnants of Hurricane Barry, led to catastrophic rainfall and flooding over many areas of the Texas Hill Country and over 130 fatalities. Many water rescues were performed, most notably on the morning of July 4th, when 6.5 inches of rain fell in 3 hours, prompting the rescue of over 200 people using helicopters and boats. One of the most impacted areas was along the Guadalupe River in Kerr County, where at least 100 people perished, including 27 people camping at Camp Mystic. Aerial images from NOAA indicate the destruction caused along the camp before and after the event (Figure 5).

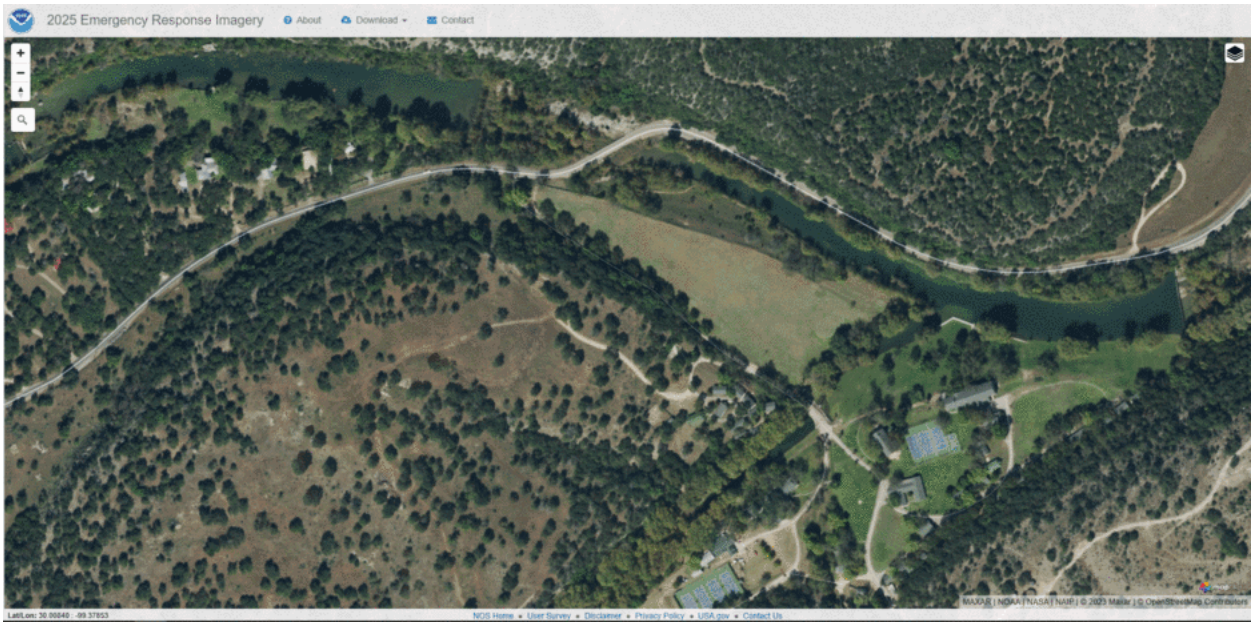

Figure 5: Aerial image before and after of Camp Mystic along the Guadalupe River in Kerr County, TX. More images here: https://storms.ngs.noaa.gov/storms/2025_eri/index.html#9.04/30.7506/-98.2455

Precipitation totals over a two day period indicated over 16 inches of rain fell in some parts, corresponding to over 4 months worth of rain fall in just a few days (Figure 6). Compared against NOAA's Atlas-14 flood intervals, about 270 square miles of Texas experienced a 1 in 100 year flooding event, with a few areas of Mason County experiencing a 1 in 1000 year flood (Figure 7). Nearly 2 dozen river gauges in the area reported flooding on July 4th and 5th, four of which indicated moderate flooding, and 5 major flooding. The river gauge located in Kerrville, TX, rose rapidly on the morning of July 4th to 34 feet, showing major flooding impacts for a brief period of time (Figure 8). In nearby Hunt TX, another river gauge recorded a 26 foot rise in 45 minutes before failing when it crested at 37.52 feet. This value, if verified, would beat its previous record of 36.6 feet, set in 1932.

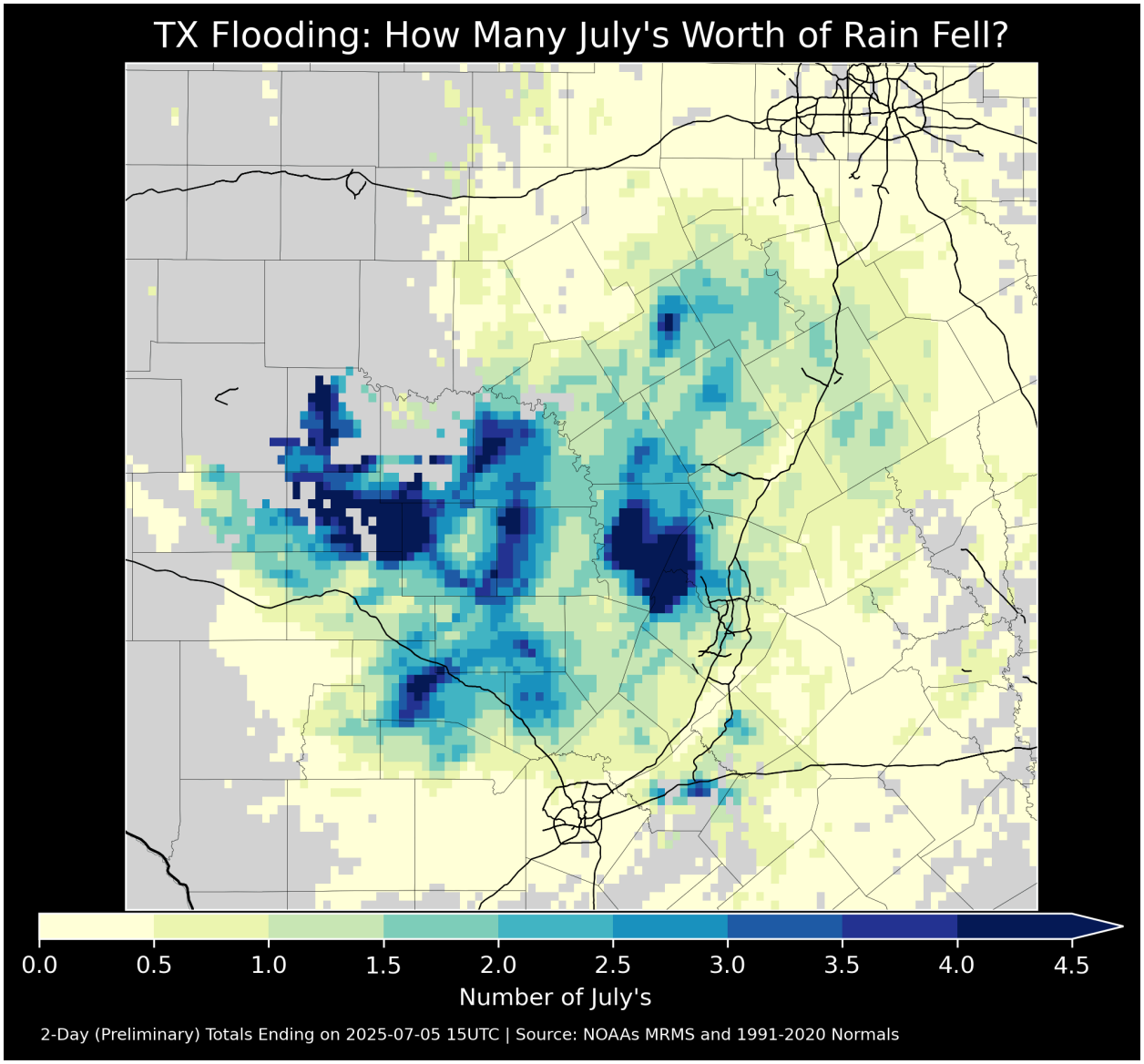

Figure 6: 2-Day precipitation summaries from MRMS compared to 1991-2020 precipitation normals for July.

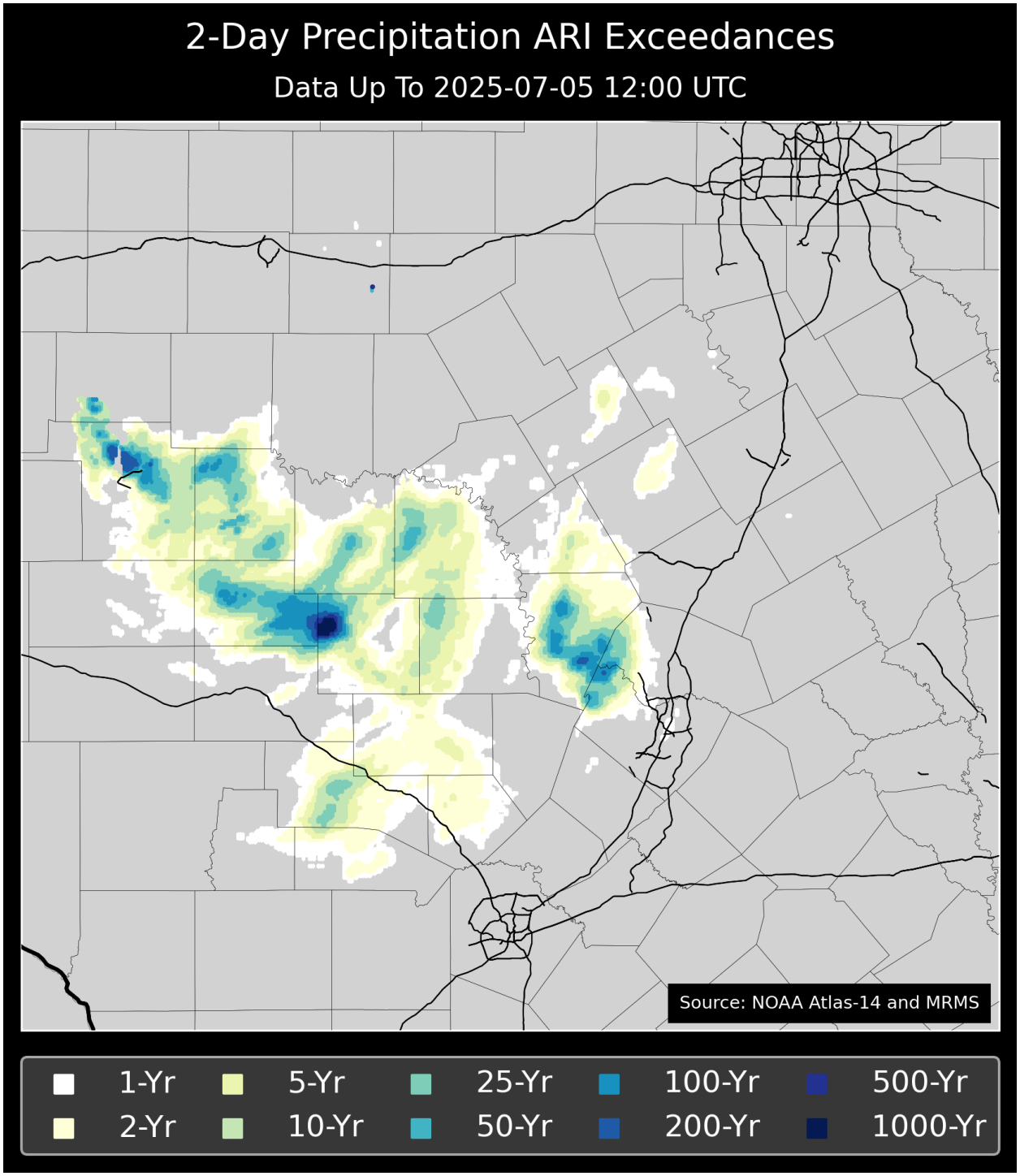

Figure 7: 2-Day precipitation summaries from MRMS exceeding certain Atlas-14 Annual Recurrence Interval Thresholds. Data is between July 3rd at 12 UTC and July 5th at 12 UTC.

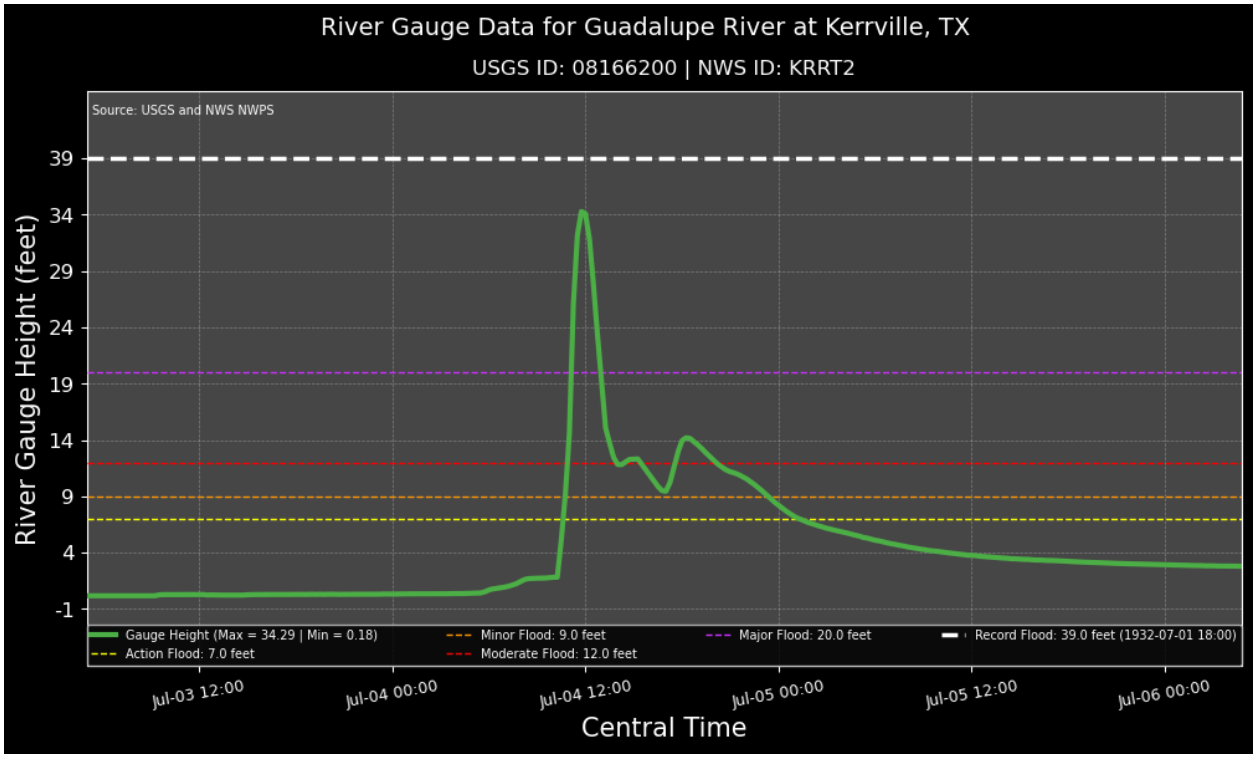

Figure 8: Hydrograph for river gauge on the Guadalupe River in Kerrville, TX, where it experienced major flooding for a brief time on July 4th, cresting to over 34 feet.

Just a few days later, in the middle of July, an additional 5 to 6 inches fell in the area, prompting more water rescues and swelling the rivers once more. 10 river gauges in the area reported flooding again, and while none reached the major flood stage, four reached moderate stage. One particular gauge on the San Saba River in TX crested on both July 5th and July 13th 2025, indicating major and moderate flooding, respectively (Figure 9). It crested to 34.27 feet on the 5th, then again at just under 31 feet on the 13th.

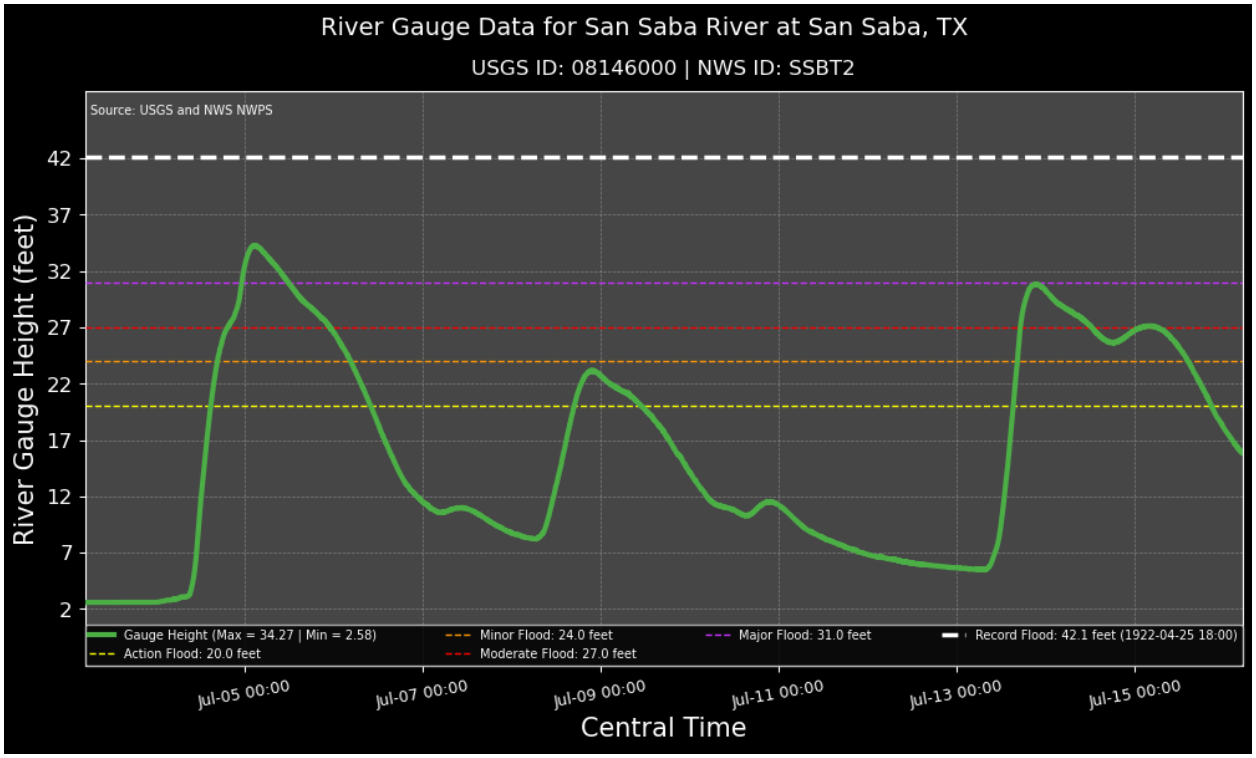

Figure 9: Hydrograph for river gauge on San Saba River, where it experienced moderate to major flooding on July 5th, 2025 and July 13th, 2025.

- *Central North Carolina (July 5th-7th)*

The remnants of Chantal stalled over central North Carolina for over 24 hours, leading to 8-12” of rainfall in the area. Multiple flood rescues were initiated by emergency managers, and 3 deaths were reported in Chatham County, just west of Raleigh. Seven river gauges noted flooding in the area, with two of them reporting major flooding. One particular gauge on the Eno river near Huckleberry Springs, an area in Durham, NC, crested over 23 feet, exceeding its previous record of 14.91 feet, set in 1989 (Figure 10). 24 hour precipitation estimates indicated over 350 square miles indicated a 1 in 100 year flood, with some isolated areas of Chatham, Orange and Alamance county experiencing a 1 in 1000 year flood (Figure 11).

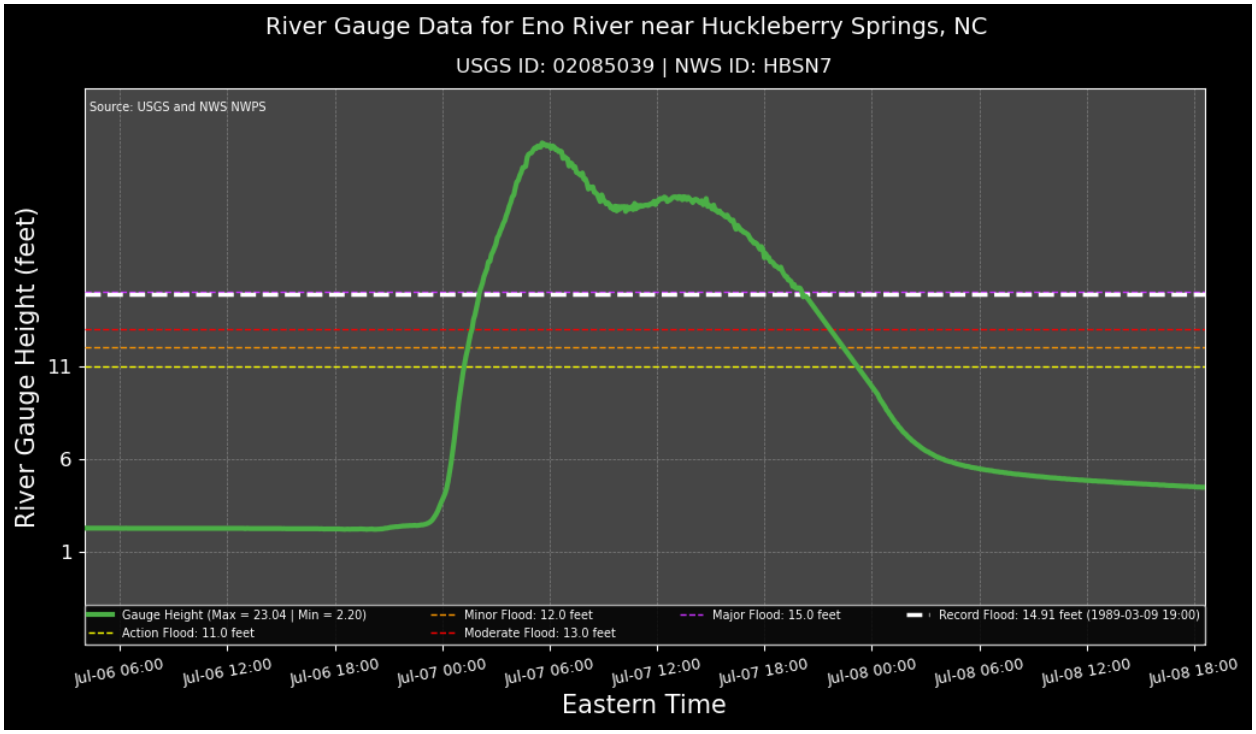

Figure 10: Hydrograph for river gauge on Eno River near Huckleberry Springs, NC, where it experienced major flooding on July 7th, 2025.

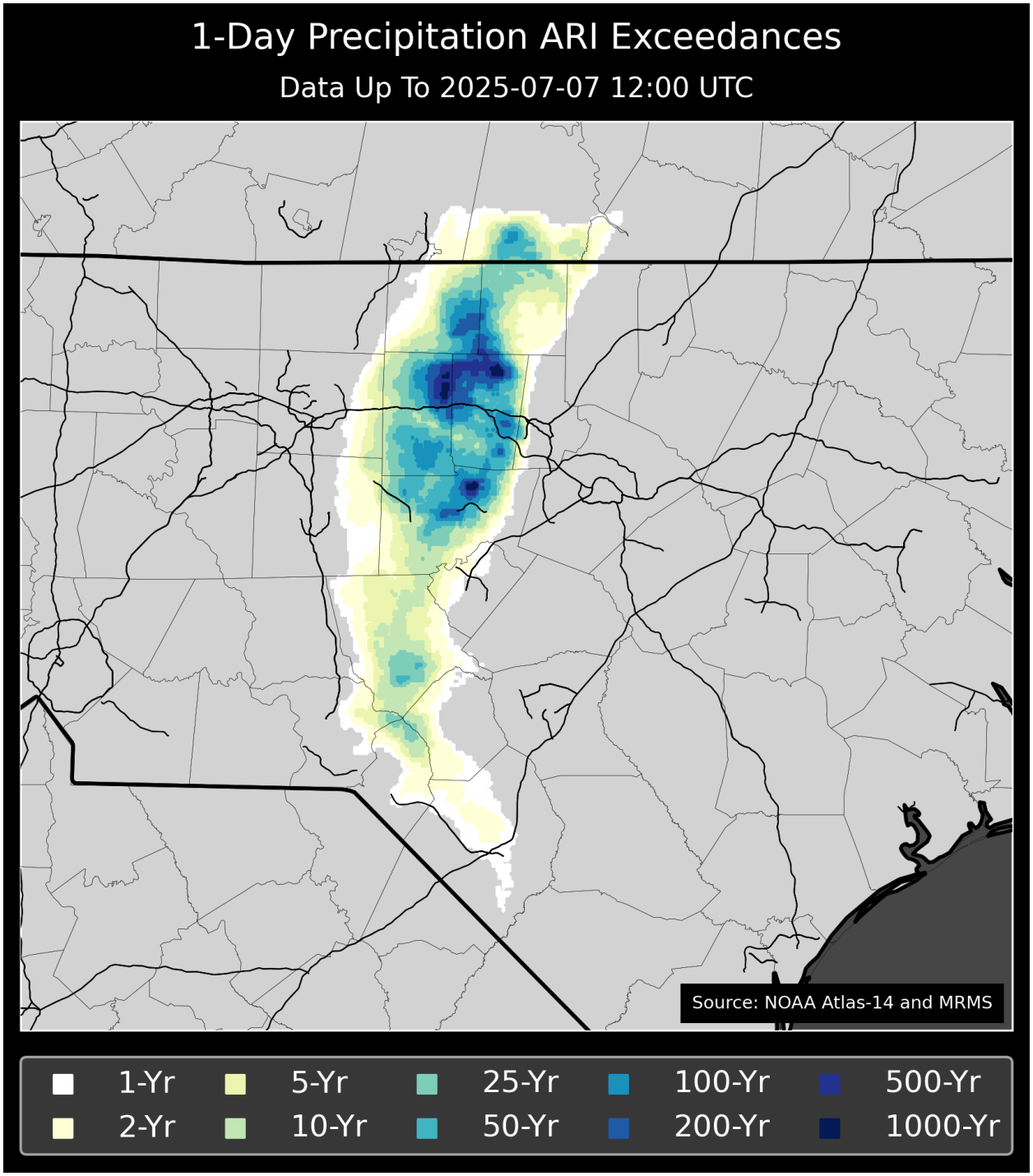

Figure 11: 1-Day precipitation summaries from MRMS exceeding certain Atlas-14 Annual Recurrence Interval Thresholds. Data is between July 6th at 12 UTC and July 7th at 12 UTC.

- *New Mexico (July 8th)*

Heavy monsoon rain over wildfire burn scars near Ruidoso, New Mexico, triggered flash flooding that killed three people, destroyed at least 200 homes and prompted over 80 water rescues. The Rio Ruidoso in Hollywood, NM crested at a record 18.55 feet, beating its previous record set in 2008 by 6 feet (Figure 12).

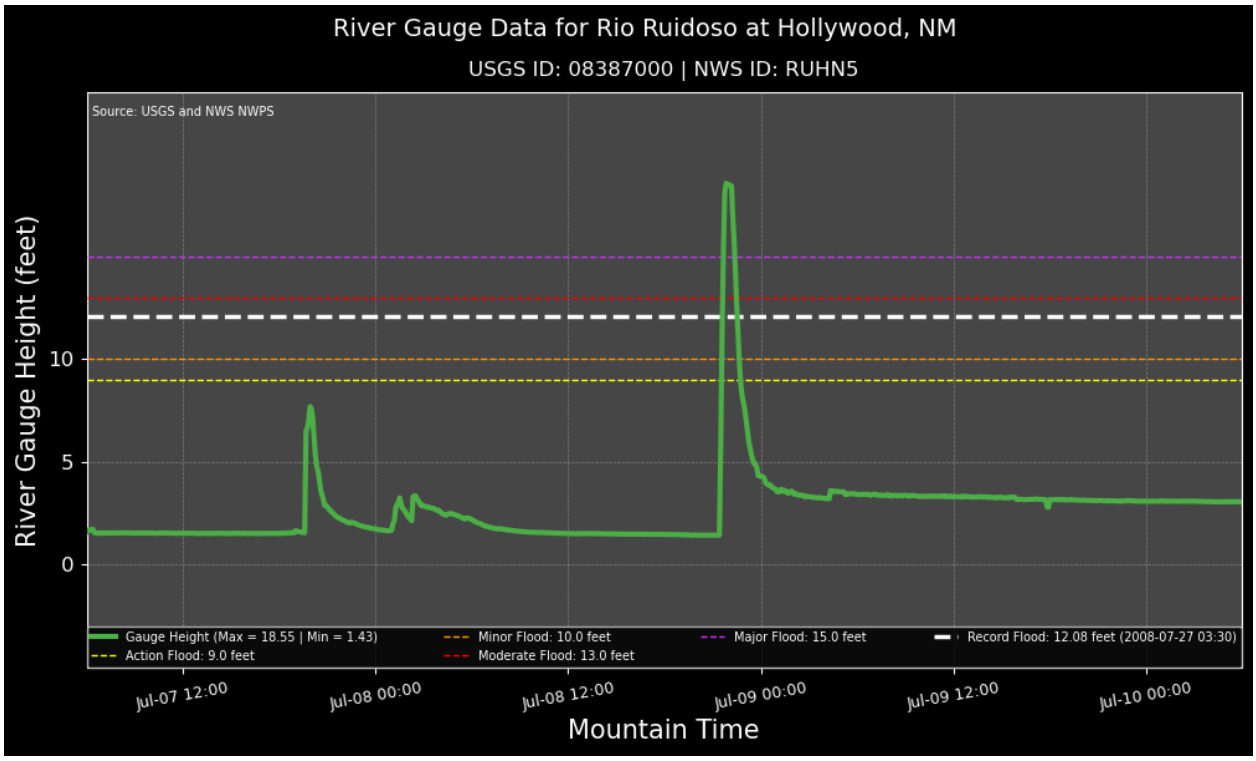

Figure 12: Hydrograph for river gauge on Rio Ruidoso near Hollywood, NM, where it experienced catastrophic flooding on July 8th, 2025, cresting at over 18 feet.

- *Northeast Corridor (July 14th - 15th and July 31st)*

Widespread convection ahead of a slow-moving cold front produced locally excessive rainfall including reports of 5-6 inches in parts of Pennsylvania, Virginia, and New Jersey, resulting in numerous reports of flash flooding - including a Flash Flood Emergency around Petersburg, VA and two flood fatalities near Plainfield, NJ. The system also dropped 3–6+ inches of rain across parts of the New York City metropolitan area, including more than 2 inches in one hour in Central Park—a July record. About 10 river gauges indicated flooding in the NY/NJ area, with a few reaching moderate stages. One particular gauge in New York City, located at the Bronx Botanical Gardens, crested at 3.78 feet, just shy of the 4 feet threshold for Major Flooding (Figure 13).

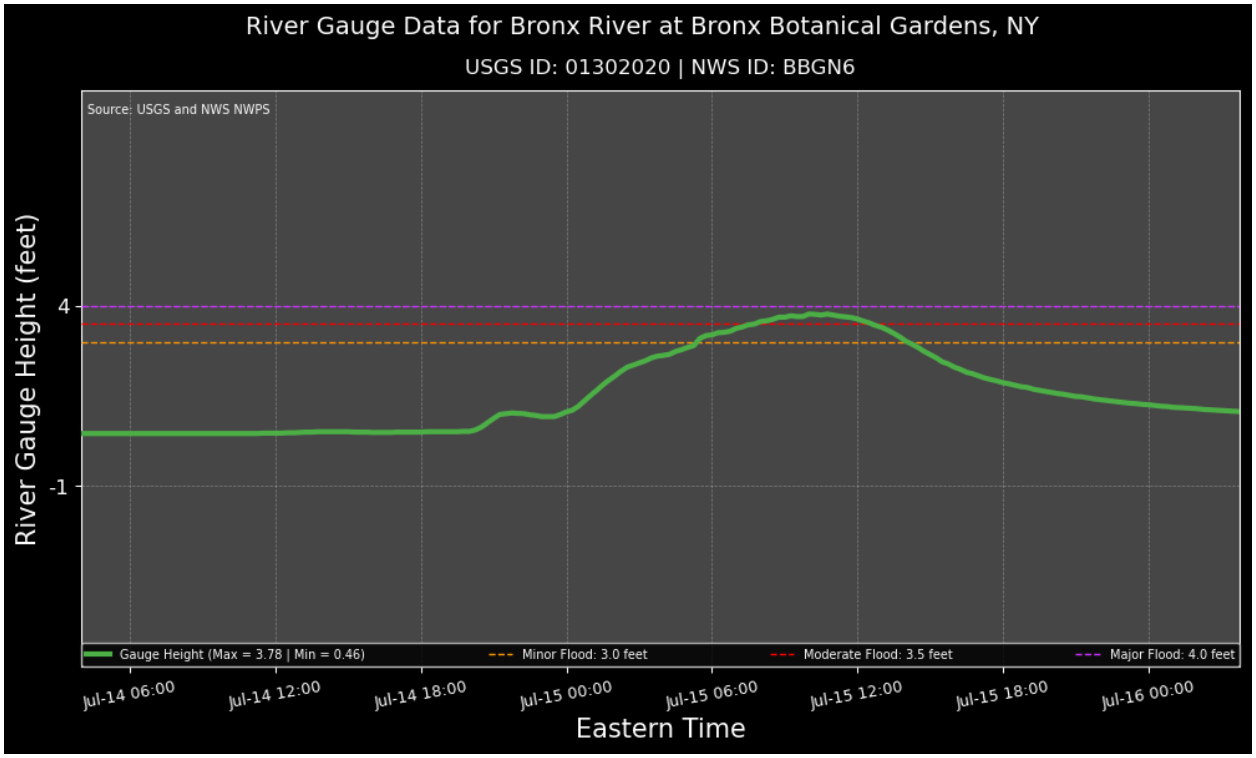

Figure 13: Hydrograph for river gauge on the Bronx River near the Botanical Gardens, where it experienced moderate flooding on July 15th.

Just a few weeks later, on July 31st, another convective system along the I-95 corridor brought rainfall rates exceeding 2 inches per hour, with up to 5 inches in New York City and 7 inches in parts of New Jersey. Flash flooding once again prompted emergency declarations in both states.

- *Tsunami Impacts in the Pacific (July 29th-30th)*

An 8.8 magnitude earthquake was recorded off the coast of the Kamchatka Peninsula in Russia in late July. One of the highest earthquakes ever recorded, this initiated a tsunami over much of the Pacific Ocean. One of the highest earthquakes ever recorded, the resulting tsunamis led to the National Weather Service issuing tsunami warnings for the entire state of Hawaii, as well as advisories for parts of the west coast and Alaska. By the evening of July 29th local time, water levels increased across coastal areas of Alaska and Hawaii. The fluctuation in water levels, indicating rapid wave heights from the tsunami, were recorded at most coastal stations in both Hawaii and Alaska. Seven tidal gauges owned by NOAA in Hawaii experienced higher than normal water levels from the waves. One particular gauge, located on Kahuliu Harbor, reached a maximum of 9.16 feet, briefly placing it at major flood level (Figure 14).

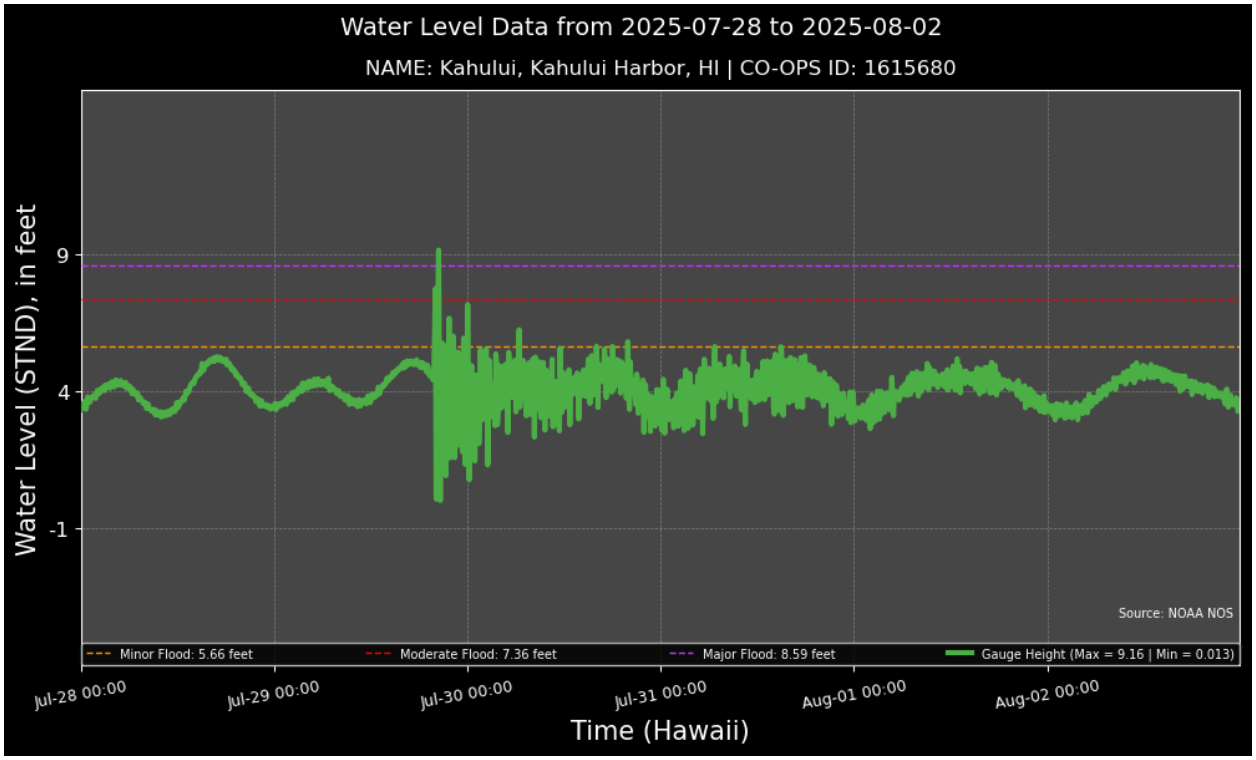

Figure 14: Water levels for tidal gauge on Kahului Harbor in Hawaii.