

## Historic and Anomalous June Severe Weather Period in the Deep South

The past month, June 2023, has seen unprecedented, historically destructive severe weather for our area. Several factors contributed to this series of damaging weather events. Before discussing what was different this month, it can be helpful to examine what we might consider to be the expectation for June. The summer months across the Deep South are not immune to severe storms. In fact, this region receives quite a bit of severe weather almost each June. Afternoon heat and humidity provide sufficient instability for thunderstorms to develop and when certain ingredients align strong, gusty winds often occur. This can result in isolated to scattered damage, mainly to trees and other outdoor vegetation. When taking a look at what transpired during the periods from June 10th to 19th and June 25th to 27th of 2023, it quickly becomes apparent this was a series of weather events that was exceptionally rare for the month of June.

The overall weather pattern was characterized by a generally flat ridge across Mexico that extended eastward into the Gulf of Mexico. An anomalous upper trough and upper low were situated across the Great Lakes region with additional ridging that was over the Northern Plains and extended into Canada. These prominent features caused the overall regime to persist in this general configuration for an extended period of time. Additionally, the position of features caused the winds in the middle and upper portions of the atmosphere to become very strong for this time of the year. On two occasions, the Jackson upper air observation measured record high wind speeds at the 500 mb level (around 3.5 miles above the surface) in the middle of this active stretch. This enhanced belt of strong winds in the mid and upper portions of the atmosphere was also likely made more intense as a developing El Nino event enhanced the strength of the subtropical jet stream. In such a fast flow regime, multiple weather disturbances were able to traverse the region, which helped to provide needed lift for thunderstorm development each day. There was also a plentiful supply of very warm and moist air, which kept the atmosphere primed for thunderstorm development, even in the wake of previous storms. The combination of these factors, including extreme atmospheric instability coinciding with strong to very strong wind shear, led to the unprecedented June severe weather experienced across our region. Such conditions were more representative of April and early May in our region, and one could make an argument that such a stretch of damaging weather is rare even during our typical severe weather season.

The overall result of this pattern was a historic period of severe weather events across the region. Here are some notable records and statistics about these storms covering the period June 10-27, 2023:

- **Record largest June hailstone, second largest all-time hailstone in the state of Mississippi**, measuring 4.88" per NWS Jackson and Mississippi State Climatologist survey, fell on June 14, 2023 around 1 PM near Brooksville. This hailstone was just shy of the all-time state record of 5" which fell on April 10, 1962 in Lafayette County. The previous June record was 3", which occurred both in Alcorn County on June 29, 1979 and Grenada County on June 13, 1970.
- **Strongest Mississippi June tornado in at least 66 years**. The Jasper County EF-3 on the night of Sunday, June 19, 2023 had estimated maximum wind speeds of 150 MPH.

No other F3/EF3 or greater tornado has occurred in Mississippi in the month of June since the introduction of the Fujita scale in 1971 or the introduction of the Enhanced Fujita scale in 2007. Four tornadoes, two in June 1916, one in June 1950, and one in June 1957 were retroactively rated F3. No pre-Fujita scale Mississippi tornadoes have ever been retroactively rated higher than F3.

- **Most June tornadoes in the state of Mississippi.** 19 tornadoes have been confirmed across the state of Mississippi so far in June 2023, easily surpassing the previous June record of 7 tornadoes in June 1974. Three of these tornadoes were strong (EF2+), including the Florence-Thomasville EF2 tornado on 6/18, the Jasper County EF3 tornado on 6/18, and the Moss Point EF2 tornado on 6/19.
- **Most June tornadoes in the NWS Jackson CWA.** 17 tornadoes have been confirmed in the NWS Jackson County Warning Area so far in June 2023, surpassing the previous June record of 6 tornadoes in June 1974 and June 1989. Two of these tornadoes were strong (EF2+), including the Florence-Thomasville EF2 tornado and the Jasper County EF3 tornado, both on the evening of June 18th.
- **Record all-time highest wind gust at Jackson,** 76 MPH, observed at 11:03 PM on the night of June 25, 2023 at the Jackson Medgar-Wiley Evers International Airport.
- **Second most Local Storm Report products sent in a single month from NWS Jackson.** 467 preliminary local storm report products have been sent so far during June 2023, second only to April 2011 when two major tornado outbreaks impacted our region.
  - Of these, many reports were of what is referred to as “significant” or particularly destructive events.
- Wind damage was reported on fourteen days this month. The damaging winds were widespread and cumulative. There were several cases of wind swaths of 80+ MPH which caused corridors of more focused high-end tree and power line damage.
- Severe (quarter size or larger) hail was reported on nine days this month. Golfball size or larger hail was reported on five days, and greater than 3” diameter (previous June record size) was reported on two days.
- NWS Jackson issued 221 Severe Thunderstorm Warnings, 14 Tornado Warnings, 7 Flash Flood Warnings, and 21 Severe Thunderstorm or Tornado Watches during this period.
  - During a consecutive 24 hour and 17 minute period from 12:43 PM June 14th to 1:00 PM June 15th, there was at least one Severe Thunderstorm Warning in effect in the NWS Jackson County Warning area.
- Two lives were lost - one in Canton when damaging winds downed a tree on a carport during the early morning hours of Friday, June 16th and another in an EF3 tornado in Jasper County the night of Sunday, June 19th.
  - This was the first fatality from a June tornado in the NWS Jackson County Warning Area since June 28, 1957 (Noxubee County) and the first in the state of Mississippi since June 11, 1959 (Coahoma County).
  - At least 30 more people were injured during the month, 25 in the Jasper County EF3 tornado on June 18th, 3 due to falling trees on the morning of June 16th, and 2 due to falling trees in Jones County shortly after midnight on June 27th.

- Due to extensive damage and frequent rounds of severe weather causing additional damage and inhibiting restoration efforts, some areas remained without power for several days and up to a week.
  - According to Entergy, more than 240,000 of their customers lost power, with over 600 poles damaged. Over 121 miles of power lines had to be replaced.
  - These impressive stats do not account for the areas outside of Entergy territory covered by local electric cooperatives.

Timeline of notable severe weather events in the NWS Jackson County Warning Area during June 2023:

- 6/10/2023
  - Scattered afternoon and early evening severe storms across Central Mississippi and Northeast Louisiana. A downburst occurred over portions of Ridgeland and Madison in southern Madison County, producing wind gusts up to 75 MPH.
- 6/11/2023
  - Isolated late evening severe storms across Northwest Mississippi and the Golden Triangle. 2" hail fell in Arcola.
- 6/12/2023
  - Isolated severe storms downed trees in the Jackson area, the Pine Belt, and in Tensas Parish, Louisiana.
- 6/14-15/2023
  - Multiple waves of intense thunderstorms produced widespread wind damage and very large hail across the region.
  - Private weather station near Alligator recorded a 81 MPH wind gust with a water tank blown into a car. Golf ball sized hail fell in this area.
  - March record hailstone for Mississippi (4.88" diameter) fell near Brooksville around 1 PM.
  - During the early afternoon, a swath of very high straight-line wind produced widespread damage from near Greenville and Belzoni through the Lexington and Kosciusko areas and through Kemper County into Alabama. Within this swath, an 82 MPH wind gust was measured at the Joe Williams Naval Outlying Field in western Kemper County.
  - Later in the afternoon, another swath of damaging straight-line wind tracked from northern Catahoula and southern Franklin parishes through the Fayette, Brookhaven, Monticello, and Hattiesburg areas. A 63 MPH wind gust was measured at the Hattiesburg Municipal Airport.
  - Additional storms developed and festered in the Jackson metro area during the early evening of the 14th and across the ArkLaMiss Delta through the late evening of the 14th into the early morning hours of the 15th. These storms gradually shifted southward to the I-20 corridor on the morning of the 15th and into south Mississippi by late morning.
- 6/16/2023

- During the early morning hours, a line of destructive thunderstorms produced widespread wind damage as it moved from North Louisiana eastward across Central and South Mississippi. Within this line of storms, two EF-1 tornadoes occurred in Warren and Hinds counties and there were pockets of straight-line wind gusts as high as 90 mph. One man died in Canton when a tree fell on a carport. A 62 MPH wind gust was observed at the Jackson Medgar Wiley Evers International Airport.
- Thunderstorms redeveloped during the late afternoon hours across North and Central Mississippi, producing hail up to 4 ¾" near Caledonia in Lowndes County and 4" near Cleveland - both larger than the June record largest hail for Mississippi prior to this year. Golfball size hail was reported in Yazoo and Newton counties. These storms also produced additional wind damage, some in areas that had already been impacted that same morning.
- 6/17/2023
  - Isolated severe storms produced wind damage in Scott, Adams, and Jones counties and quarter size hail fell in Adams County.
- 6/18-19/2023
  - A destructive cluster of storms moved across Southeast Arkansas and Northeast Louisiana during the early morning hours, producing widespread wind damage. Damage was most concentrated in Ashley County, where straight line wind gusts of 70 to 100 MPH were estimated to have occurred. Through the morning, storms spread southeastward through Central Mississippi resulting in additional wind damage and hail as large as 2.5" in diameter near Crystal Springs and 2" at Prentiss. A brief EF1 tornado occurred near Quitman during the late morning.
  - During the early evening hours, several supercell thunderstorms developed over Central Mississippi. These storms produced 13 tornadoes across Madison, Scott, Rankin, Smith, and Jasper counties. Two of these tornadoes were strong - an EF2 that tracked from near Florence to near the Thomasville community and an EF3 that occurred near Louin in Jasper County. The Jasper County tornado killed one person and injured 25 others. These storms weakened during the overnight hours, but not before producing one more EF0 tornado on the morning of the 19th in Columbia. Later in the afternoon, an EF2 would occur near Moss Point.
  - Flash flooding resulting from these widespread thunderstorms washed out a portion of MS Highway 427 in Neshoba County and entered a home near Conehatta in Newton County.
- 6/25-26/2023
  - A line of severe thunderstorms pushed from Arkansas southeastward across Central and Southeast Mississippi. Once again, widespread wind damage occurred along the path of these storms. An all-time record high wind gust of 76 MPH was observed at the Jackson Medgar Wiley Evers International Airport at 11:04 PM. Additionally, a 75 MPH wind gust was measured by a private weather station in Starkville. Quarter size hail also fell in a few areas. Two people were injured in Jones County when a tree fell on a mobile home.
- 6/27/2023

- A line of severe thunderstorms pushed southward along the Mississippi River, impacting portions of Southeast Arkansas, Northeast Louisiana, and West Mississippi. Several trees were downed along the path of these storms.