



FAMOUSLY HOT

FORECASTS



Fall/Winter 2023-24

Inside this issue:

Unusual Severe Weather Year	1
Recap of Hurricane Season	4
2023 Student Volunteers	6
Augusta Wet Year	8
In Memory — Doug Anderson	10

2023 An Unusual Year for Severe Weather

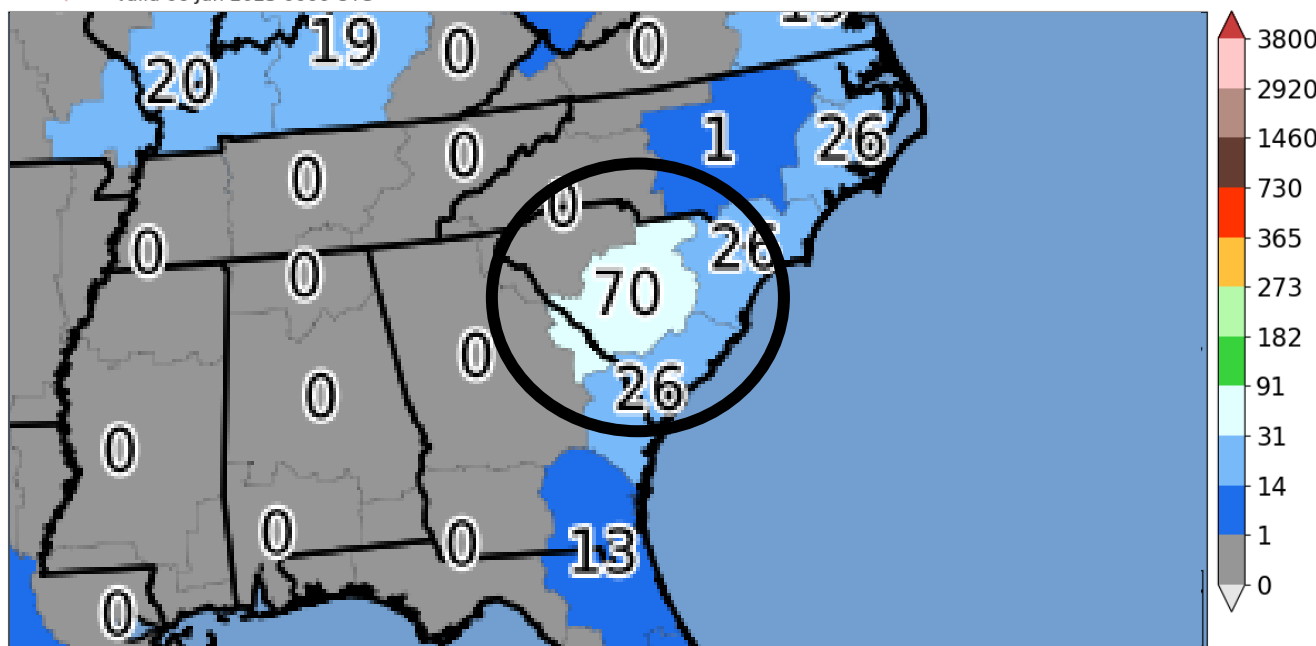
by Pierce Larkin - Meteorologist

Our severe weather season typically begins in late winter and early spring, lasting until July. The majority of our severe weather warnings, on average, are issued between April, May, June, and July. However, this was an extremely unusual year overall for severe weather. The year started off with a bang, with two severe weather events within the first 12

days of January. Thereafter, it became relatively quiet until March. And after that? We had one of quietest Spring severe weather seasons on record. Between March 28 and June 7, we went a record 70 consecutive days without issuing either a Tornado or Severe Thunderstorm Warning. That we know of, this is the longest such streak in the Spring in the history of our office.



Days since Last Severe Thunderstorm Warning by NWS Office
Valid 06 Jun 2023 0000 UTC



Generated at 16 Jan 2024 7:26 AM CST in 17.99s

data units :: Days
IEM Autoplot App #92

Total days since a Severe Thunderstorm Warning had been issued. Source: Iowa Environmental Mesonet

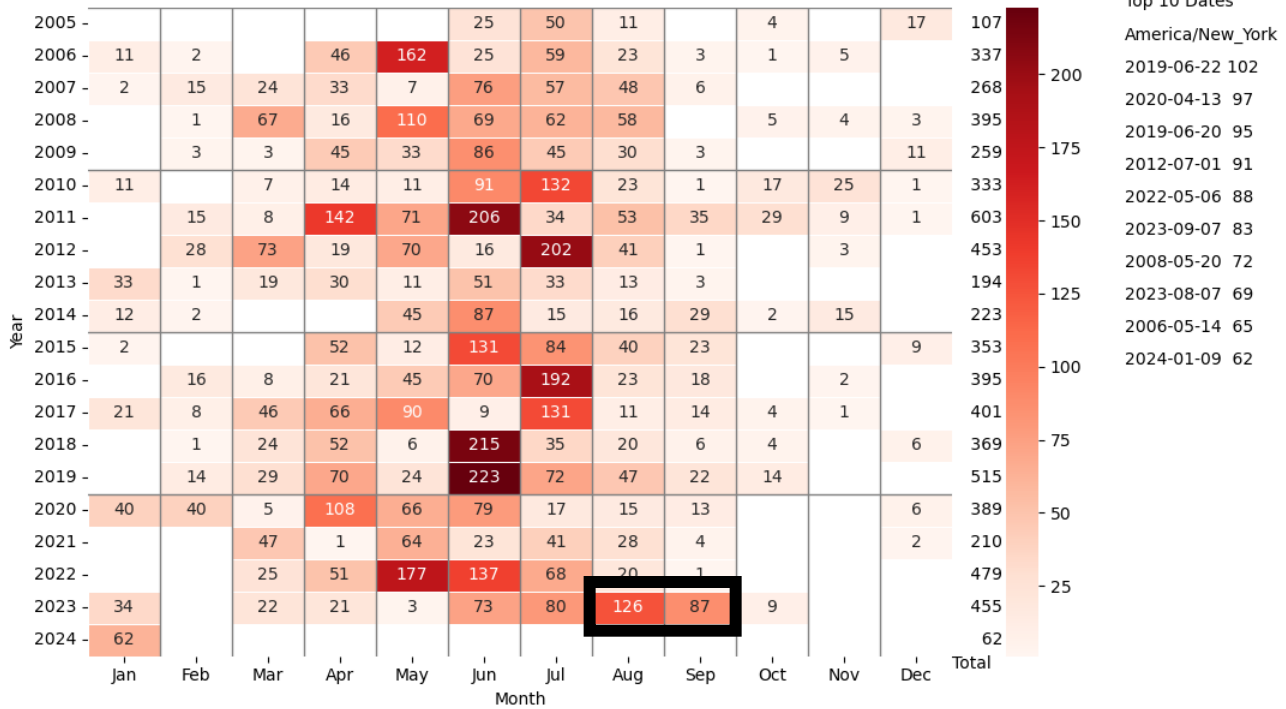
Unusual Year – Continued

We broke the streak on June 7, but the quiet streak would largely continue through June and July, with both months seeing below normal numbers of warnings. But this did not last. To top off this unusual year, the period of August 7 through September 7 will go down as the most active August & September severe weather periods in the history of our office. In this period, the office issued 50 convective warnings and received 213 reports of either hail or wind damage. This far and away exceeds any severe weather period we have had in these months since at least 2005. And even when we do have significant severe weather in those months, it is typically tied to tropical systems.



NWS [CAE] Columbia

Local Storm Reports (LSRs): Convective LSRs (Tornado, TStorm Gst/Dmg, Hail)



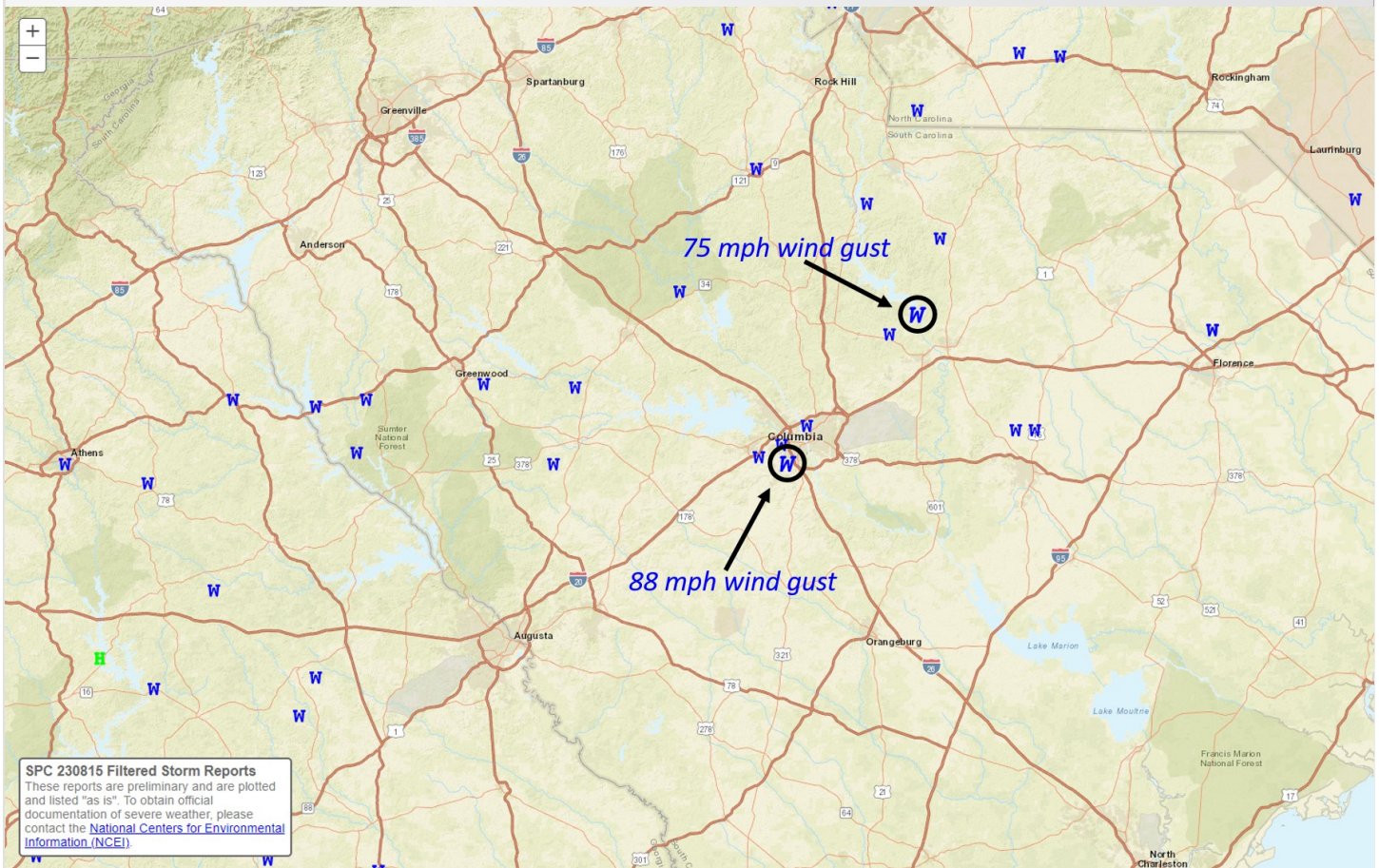
Generated at 16 Jan 2024 7:35 AM CST in 0.70s

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Local convective storm reports by month since 2005.
Source: Iowa Environmental Mesonet

In addition to this, Columbia Metropolitan Airport (CAE) observed its highest measured wind gust on record on August 15! Several microbursts occurred in a very favorable environment across the forecast area, with one falling directly over the airport. This caused a wind gust of 76 knots (88 mph) to be recorded, which set a station record for highest wind gust. There was an additional wind gust of 65 knots (75 mph) at Lake Wateree underneath another strong microburst.

Unusual Year – Continued



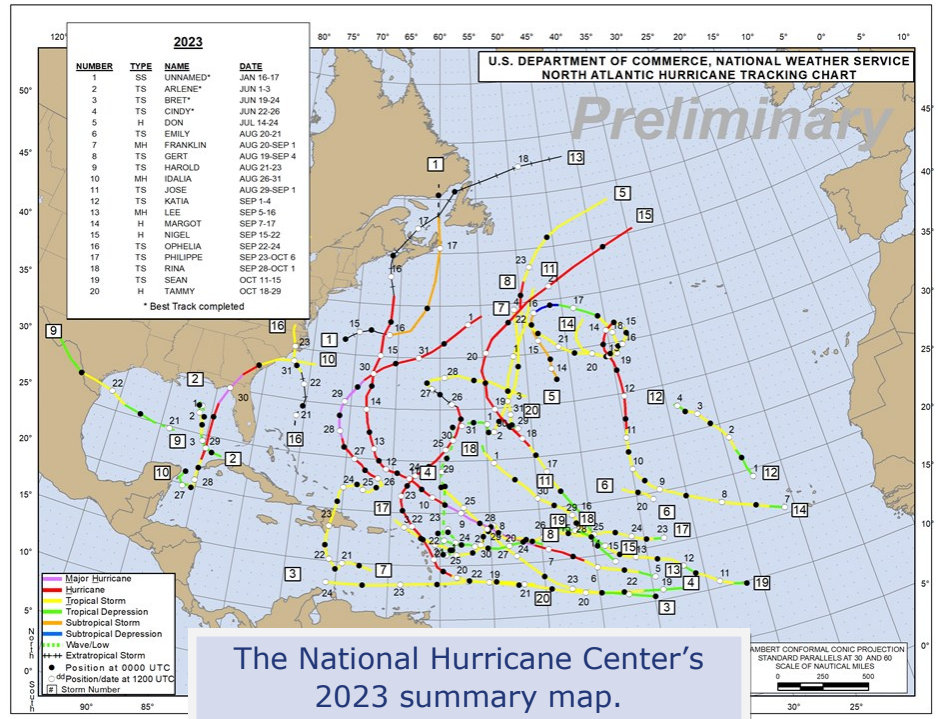
Storm reports from the severe weather event on August 15th. Source: SPC

All in all, it was a very odd year for severe weather. We quieted down in Oct-Dec to close out the year, which is fairly typical for us.

Recap of the 2023 Hurricane Season

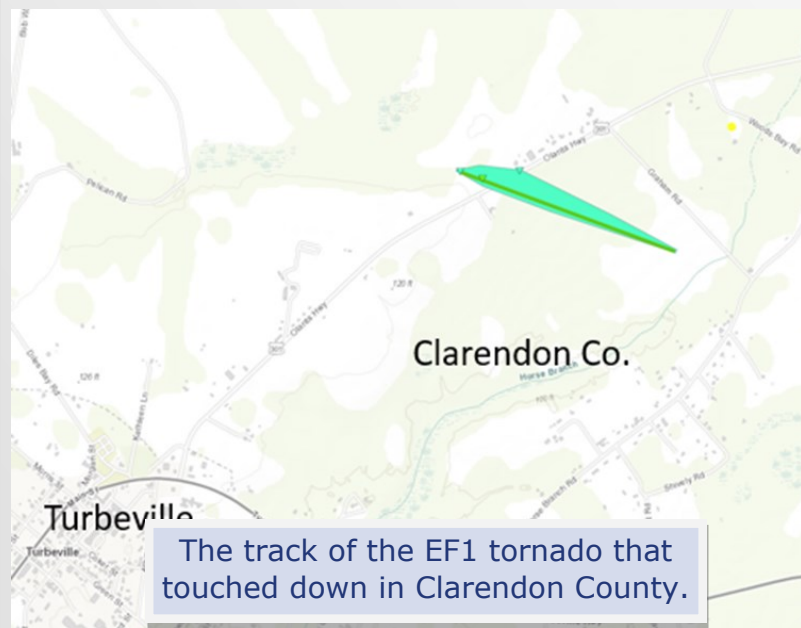
by Steve LaVoie - Meteorologist

The 2023 Atlantic hurricane season featured above normal tropical cyclone activity despite a developing El Niño, which typically hinders development in the basin. A significant contributing factor to the high activity was the anomalously warm ocean waters in the Main Development Region leading up to the season. Activity was comparable to the 2021 season with 20 namable storms (a subtropical storm formed off New England in January), 7 hurricanes, and 3 major (Category 3-5) hurricanes. The twenty namable storms makes this year tied with 1933 as the 4th most active season since 1851. As of December 1st, the season has resulted in an estimated 3.09 billion dollars in damage but just 13 direct (3 indirect) fatalities.



The National Hurricane Center's 2023 summary map.

The most notable system of the season was Idalia which made landfall in the Big Bend region of Florida as a strong Category 3 Major Hurricane on August 30th. Idalia was also the most significant tropical cyclone to impact our forecast area when it passed to our southeast through the Charleston County Warning Area (CWA) as a weakening tropical storm.



The track of the EF1 tornado that touched down in Clarendon County.

The main impact from Idalia in the Midlands and CSRA was from rain. A swath of heavy rainfall fell over the Southeastern Midlands with the heaviest amounts occurring in the Holly Hill area in far Eastern Orangeburg County. Idalia also produced an EF1 tornado in our CWA near Turbeville in Clarendon County. Idalia accounts for the majority of the lost lives and property this season. In all, the major hurricane caused an estimated 2.5 billion dollars in damage and 7 direct (3 indirect) fatalities.

direct) fatalities.

2023 NWS Columbia Summer Students

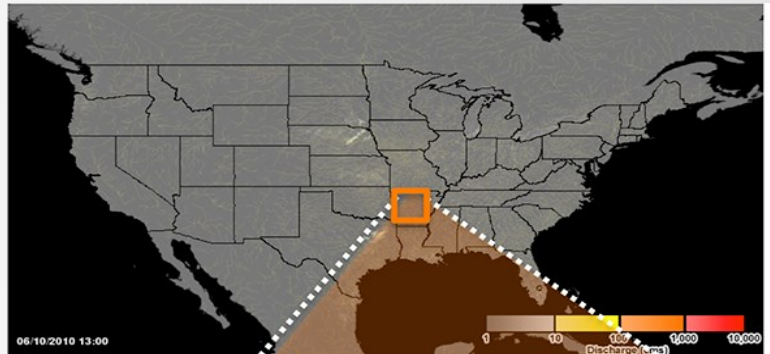
by Chris Rohrbach - Meteorologist

Every summer, college students majoring in atmospheric science or a related field volunteer at NWS Columbia as a part of our Student Internship Program. The program matches each student with a meteorologist mentor and a research project designed to improve forecast techniques used in the office. Students learn about operational weather forecasting both in the forecast office and through field work. Many of our summer interns have gone on to find careers within NOAA including at NWS Weather Forecast Offices, River Forecast Centers and others.

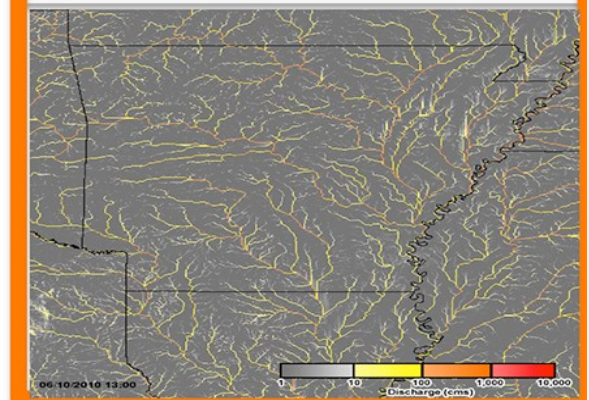
The office hosted three student volunteers this summer: Ben Peidl a rising senior in Meteorology at the University of North Carolina at Charlotte, Jack Kaiser a senior in Meteorology at the College of Charleston, and Zach Toleman also a rising senior in Meteorology at UNC Charlotte.

Each student spent time shadowing forecasters as they performed the different responsibilities within the office. With experience at the near term and long term forecast desks as well as aviation forecasting they were able to gain an understanding of the daily duties of a Weather Forecast Office (WFO). This year's students had the chance to accompany a NWS Columbia storm-survey team to survey damage from a severe thunderstorm on June 26th, 2023. Thunderstorm downburst winds caused a large swath of damage along the northern shores of Lake Murray, near Chapin, SC. There were also other opportunities for field work during their time with the office. Our students were able to participate in trips to Cooperative Observer Program (COOP) stations, the KCAE WSR-88D radar, and the Automated Surface Observing Systems (ASOS) at the Columbia Metropolitan Airport.

There were two exciting projects this year designed to help improve operational forecasting in central South Carolina and the CSRA. Ben completed a study on flood-prone areas in downtown Columbia, SC using a new dataset from the Flooded Locations And Simulated Hydrographs (FLASH) Project. FLASH is designed to improve the accuracy, timing, and specificity of flash flood warnings in the US, thus saving lives and protecting infrastructure. The goal of Ben's project is to determine critical FLASH thresholds where flash flooding is observed in some of the most flood prone locations of Columbia's urban environment. This is expected to improve lead time and decrease false alarm rates for flash flood warnings in Columbia.



Simulated surface water flows and return period



The [CREST hydrologic model](#) is used to produce forecasts of soil moisture, streamflow, and unit streamflow at 1 km/10 min resolution.

2023 NWS Columbia Summer Students

by Chris Rohrbach - Meteorologist

Jack and Zach partnered on a Synoptic Climatology project designed to examine large-scale weather patterns that lead to extreme heat and flooding in the region. By creating a database of extreme heat outbreaks in the forecast area they were able to compare synoptic weather patterns between events. Using the Daily Mean Composites tool from NOAA's Physical Sciences Laboratory they were able to create composite plots of environmental data to find large scale commonalities. By identifying patterns that bring the area extreme heat we hope to identify these signatures earlier in the forecast process, allowing additional time to message the danger of extreme heat. All of our students presented their projects at a local workshop held at the forecast office in August (pictured right). Zach also made a unique, five-part video series detailing his experience at NWS Columbia this past summer. In his videos he covers the synoptic patterns project he worked on, the office, and a look into what it's like to work an overnight shift. The video series is designed for prospective student volunteers to see what it's like to volunteer in the summer internship program. Interested students can watch the video series on YouTube which is also advertised on the national Student Opportunities in the NWS page.



Left to right: Jack, Ben and Zach (left to right) presenting their projects on their final day

Requirements

- Must be a United States citizen
- Must be enrolled full-time in an undergraduate or graduate program
- Must be majoring or minoring in Meteorology, Atmospheric Sciences, or a related field
- Must pass a security screening to have access to the building and computers

Duties

- Volunteer approximately 16 hours per week from approximately late May through early August.
- Gain valuable experience by shadowing forecasters in operations.
- Work on a collaborative research project focusing on the local forecast area.
- Participate in professional development and training opportunities.

If you are a full-time student, majoring or minoring in Meteorology, Atmospheric Sciences, or a related field and would like to learn more about volunteer opportunities at NWS Columbia please see the following website for more information. The site is updated in the late Winter on how to apply for the following summer's internships.

<https://www.weather.gov/cae/StudentVolunteerOpportunitiesCAE.html>

Augusta Sees Third Wettest Year on Record in 2023

by Leonard Vaughan - Senior Service Hydrologist

2023 was generally an above normal year for precipitation, with all sites seeing surpluses for rainfall. Even further, all sites outside of CUB saw rainfall totals at least 8" above normal for the year! However, no one had a year like Augusta did. At the Augusta airport, 62.72" of rain fell for the year, which is 18.63" above normal (44.09"). This makes 2023 the third wettest year on record for the site. This owes to persistent rainfall through much of the year, including multiple events that had daily totals of 2"+. What makes this even more unusual is the difference between Augusta and the other observing site in town, Daniel Field. Daniel Field only recorded 53.08" of rainfall for the year, which is above normal but is still less than Augusta by nearly 10". A lot of this is due to the differences in the convective season—basically whether a thunderstorm passes over both airports or just one. They are separated by about 10 miles, so this difference is reasonable especially on the scale of thunderstorms. Regardless, it was a very wet year for those of you in the Augusta area!

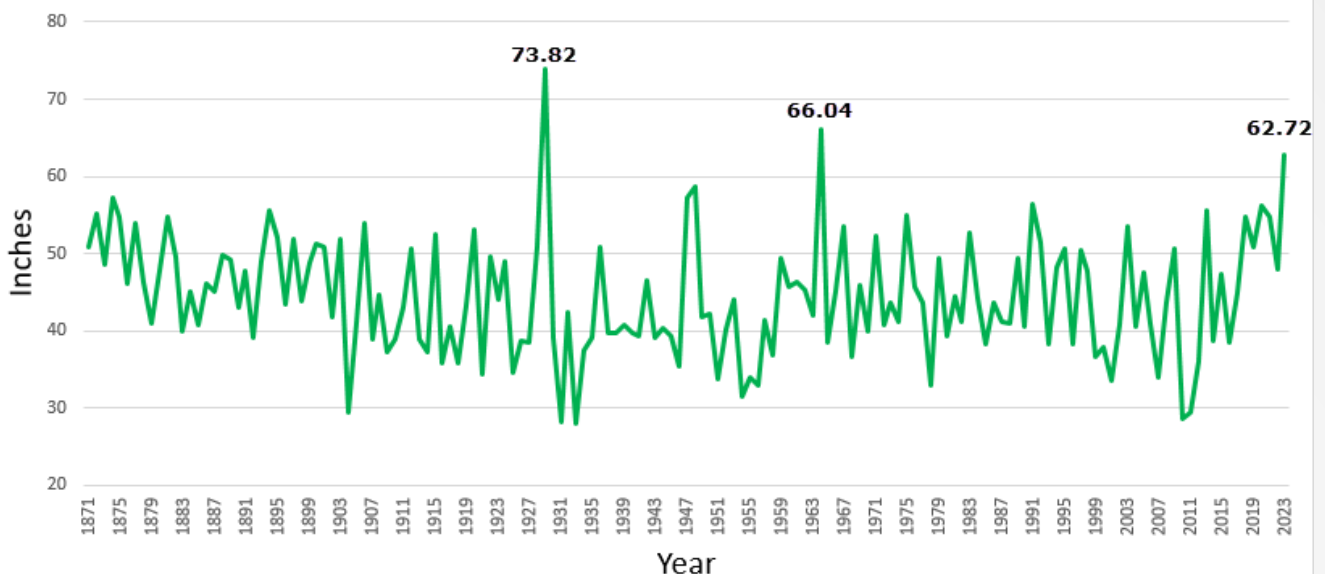
Maximum 1-Year Total Precipitation for Augusta Area, GA (ThreadEx)

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

Rank	Value	Ending Date	Missing Days
1	73.82	1929-12-31	0
2	66.04	1964-12-31	0
3	62.72	2023-12-31	0
4	62.23	1948-12-31	0
5	60.66	1912-12-31	0
6	57.19	1874-12-31	0
7	56.60	1947-12-31	0
8	56.41	1991-12-31	0
9	56.25	2020-12-31	0
10	55.55	2013-12-31	0

Period of record: 1871-02-01 to 2023-12-31

Augusta GA Precipitation (1871-2023)



In Memory — Doug Anderson

by Leonard Vaughn

The NWS Columbia Office lost a valued member of the office on December 14th, 2023. Douglas “Doug” Anderson passed away unexpectedly at the age of 61. He was the office’s Observing Program Leader (OPL). He was much loved by the staff, NWS Cooperative Program Observers, HAM Radio Community and anyone that he came in to contact with throughout his career. He had a warm spirit, infectious smile and was a stranger to no one.

Doug was born in Leadville, Colorado in 1962 but spent most of his childhood and teenage years growing up in Oregon. In the early 1980s Doug enlisted in the Air Force and served on active duty for 24 years. His military service included deployments to Kuwait during Operation Desert Storm, twice to Korea for Army support, Eielson Air Force Base in Alaska and Shaw Air Force Base in Sumter. His last duty position was as a Detachment Chief and his military decorations include the Meritorious Service Medal. After retiring from the Air Force, Doug worked as a DOD technician at Shaw AFB to



assist service members with the transition to the weather hub concept of operations. He later worked at the Columbia Metropolitan Airports Operations Group.

Doug was never one to take the easy road, his desire to join the NWS took him first to the National Weather Service Office in Bethel, Alaska in 2013 as a Meteorological Technician (HMT). He was later hired at the NWS Forecast Office in Columbia (CAE) in 2015 as an HMT. In 2020, Doug was promoted to the OPL position. Doug served as WFO Columbia’s NWSEO Steward from 2018 to 2023. Doug ran one of the best Cooperative Observing Networks in the NWS. He worked hard for his observers to receive the recognition they deserved for all of their hard work and dedication. With Doug’s help, several observers were awarded some of the highest awards for the NWS COOP Program. There were multiple Holm award and Jefferson (Highest Award) recipients for the Midlands and Central Savannah River Area.

In Memory — Doug Anderson

However, Doug was more than just another person who loved his job. He was a loving husband, father and grandfather. He was a member of Wise Drive Baptist Church in Sumter, SC and former Chief Operating Officer of the Sumter Y.M.C.A. He was an avid HAM operator, volunteer with the Audubon Society banding birds, gem enthusiast, nature lover and history buff. He loved spending time with his family camping whenever he had time. He loved searching the beaches of Oregon for Agates with his daughters.

It was said in his obituary that "his kindness towards people will never be forgotten". This is really all that you need to know about Doug. He never met a stranger and greeting each person as if he had known them his whole life. His generosity was abundant and he would give the shirt off his back for those in need. He is missed by all of the CAE staff, but the life he led and the friendship he shared will never be forgotten.

