Weather-Ready Nation
National Oceanic and Atmospheric Administration
Aware

October 2022

New Lightning Tool Tells a Striking Story

By: Aaron Treadway, NWS Lightning Safety Expert, and Maureen O'Leary, NWS Public Affairs

August 8, 2014: Lightning near Tucson, Arizona
Photo by John Batbie

NOAA's new Lightning Climatology tool for the continental U.S. shows when cloud-to-ground lightning flashes are historically most frequent for any location across the country.

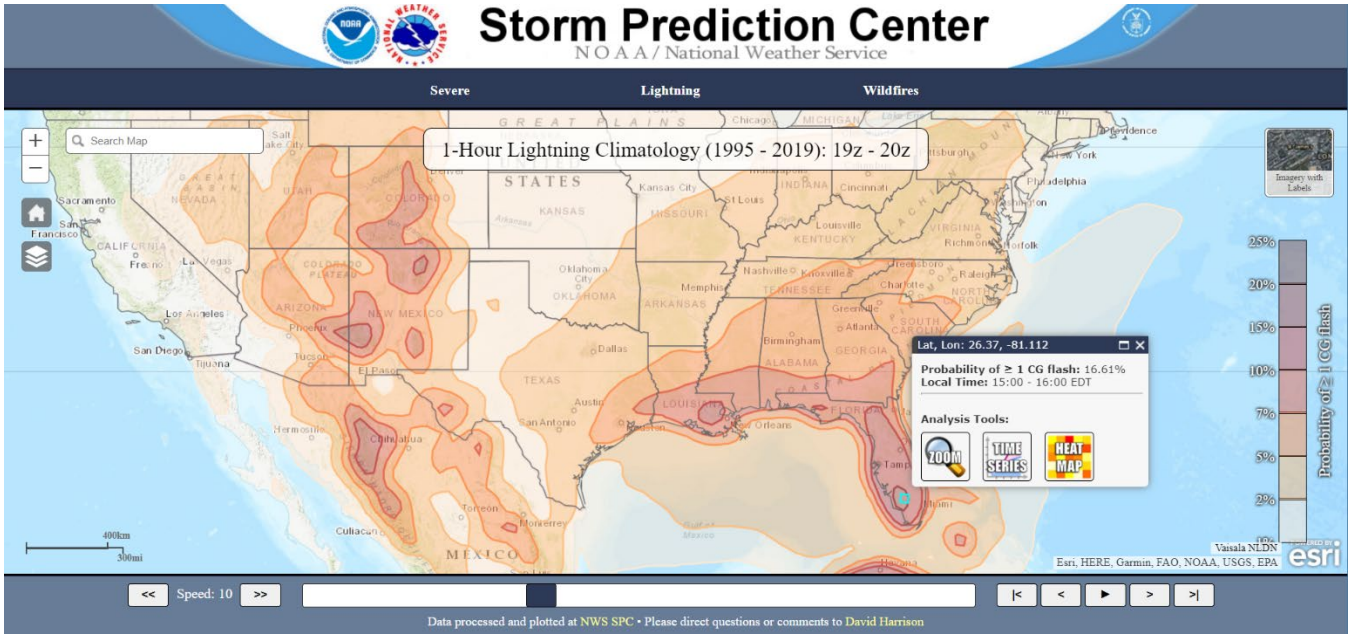
Data about long-term lightning trends, as well as dates and times of reduced lightning risk, can be useful in a wide range of ways for virtually everyone. Organizers and supporters of outdoor events, outdoor workers, the aviation industry, emergency managers and meteorologists who forecast fire weather — or anyone interested in thunderstorms and lightning — can all benefit.

While the Lightning Climatology tool helps identify how long-term plans may be impacted by thunderstorms, always check the weather forecast for short-term plans. Monitor your local radar for thunderstorms, which will help you know when to seek safe shelter.

"Our new tool tells a story about when and where chances for lightning may be higher, putting anyone outside at a greater risk," said Aaron Treadway, Severe Services Coordinator and lightning safety expert at NOAA's National Weather Service. "This climatology data will help people make more informed decisions that impact everything from safety to cost-savings, and could improve the chance for a successful event."

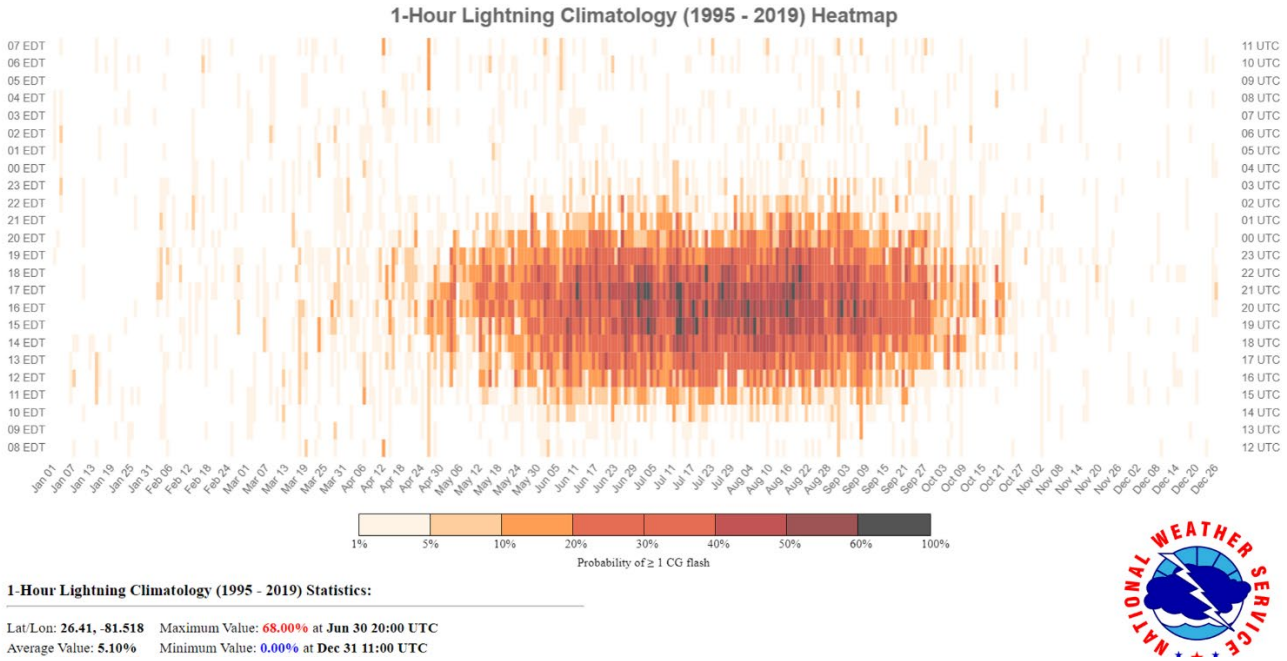
Emergency managers could use this tool to help with preparedness for large outdoor events. For example, a member of the emergency management community in Tampa, Florida could look at the outdoor calendar of events for the area. Comparing those dates and times using Lightning Climatology, they could find out how much lightning and thunderstorms could be expected during a 1-hour, 4-hour or 24-hour time period.

The data from this search show that mid-afternoon hours have the highest probability of lightning across the Tampa area for any day of the year. With this information, emergency managers could place additional emphasis on lightning safety messaging if an event is scheduled for a more lightning-prone time.



On the Lightning Climatology homepage, you can quickly determine the highest probability of cloud-to-ground lightning across the U.S. for any day of the year. (NOAA)

By drilling down on data for the Tampa area, you can open a Heatmap (the yellow and orange icon) to determine lighting activity for every hour throughout the year.



The Heatmap for Tampa, Florida shows lightning activity on average for each hour and days of the year. The darker the colors, the higher the probability of a lightning flash during that time. For most of the summer, there is at least a 30% chance of a lightning flash between 3PM EDT and 7pm EDT in Tampa (NOAA)

Lightning Climatology was launched by the Storm Prediction Center, a division of the National Weather Service, and is based on more than 20 years of lightning data from the National Lightning Detection Network. The tool will be updated annually as the previous year's quality controlled lightning data becomes available.

On average, about 25 million lightning flashes occur each year across the U.S. Lightning is possible all year long, with the peak months being June, July and August. Each year, on average, 300 people are struck by lightning with 30 fatalities. When you can hear thunder, lightning is nearby — and it can strike from as far as 10 miles away! During a thunderstorm, it is not safe to be outdoors. Remember our slogans, "When Thunder Roars, Go Indoors" and "See a Flash, Dash Inside."

For more tips, check out our lightning safety webpage.

Winter Weather Program Hosts Partners for Updates

The Winter Weather Program at NWS Headquarters held their annual Winter Partners Webinar on October 18th for over 250 people

The National Weather Service Winter Program, in partnership with the Weather Prediction Center (WPC), held their annual Winter Partners Webinar on October 18, 2022 to share updates with partners who have an interest in NWS winter weather products and services. This annual briefing drew over 250 participants this year from state and local governments, federal agencies both in and beyond NOAA, the private sector, the academic community and the broadcast community. The briefing covered many topics, including updates to the Winter Storm Severity Index (WSSI) and the Probabilistic WSSI, Impact-Based Warning tags for Snow Squall Warnings, updates on the Avalanche Weather Initiative, as well as the proposed heavy snow watch/warning criteria that is being evaluated this season and how it affects the experimental Winter Storm Outlook for this year. We also shared the overall vision of the Winter Weather Program and the latest safety and outreach materials.

Links to both the slide deck and the recorded briefing with Q&A are viewable and also available on the NWS Weather-Ready Nation Calendar.

WFO Shreveport Begins Student Deployment Program

By: Charlie Woodrum, Warning Coordination Meteorologist at Shreveport, LA

*University of Louisiana-Monroe Meteorology student, **Isiah Montgomery** (left), and Senior Meteorologist and IDSS Focal Point, **Chris Nuttall** (right), at a recent home football game against Nicholls St.*

In partnership with the University of Louisiana-Monroe (ULM), this fall, WFO Shreveport has begun a new student deployment shadowing program. The program offers the opportunity for ULM meteorology students to shadow and train with deployment-ready meteorologists from the Shreveport WFO.

WFO Shreveport has five major universities that request on-site support for university Emergency Management during various sporting events throughout the year. To complement the on-site presence of the office, meteorologists **Davyon Hill** and **Aaron Davis** proposed a deployment shadowing program for students starting this fall. Through this shadowing experience, the students will learn the skills needed by NWS meteorologists to support core partners, and better prepare them to provide decision support services in their future careers with NWS or other organizations within the broader Weather, Water, and Climate Enterprise.

As the program matures, the plan is for juniors and seniors within the program with deployment shadowing experience to help train incoming freshman and sophomore students. These students will also get the opportunity to shadow WFO operations as part of the shadowing program. WFO Shreveport will be on-site for most ULM games this Fall to get the program spun-up, and at least one game a year moving forward to help maintain consistency with the student program annually.

NWS Birmingham Supports DHS and Local EMs for SEAR 1 World Games Event

By: NWS Staff

The World Games (TWG) is an international sports event, held every four years, with over 30 unique sporting events. From tug-o-war to sumo wrestling and from korfball to orienteering, the events are spread across a range of sports disciplines, requiring the same level of training as the Olympics.

For nearly two weeks in July, the 2022 World Games was held in Central Alabama, with events spread across 14 venue sites, multiple outdoor entertainment districts, two counties, and a 2,000 square mile weather-impact coverage area. 3,400 athletes from 74 countries, an estimated 30,000 international guests, 3,300 volunteers, and dozens of first responders descended on the larger Birmingham metro area to compete and support this unique event.

*Meteorologist **Nathan Owen** briefs the ICP on a Severe Thunderstorm Watch, covering all venue sites, and approaching thunderstorms*

For this Special Event Assessment Rating (SEAR) 1 event, WFO Birmingham began working with the Department of Homeland Security and local county emergency management agencies in the summer of 2021. Over the course of many meetings, virtual training exercises, and a tabletop exercise, WFO Birmingham provided guidance on potential weather impacts for July in Central Alabama, flash flood hotspots near venue sites, and procedures to efficiently deliver forecasts to decision makers. The office developed and enhanced relationships across multiple agencies that proved vital to the success of the event.

Internally, WFO Birmingham staff developed strategies for staffing two deployment shifts each day at the Incident Command Post (ICP), increasing staffing levels at the office, communicating between the office and the EOC, and developing or revamping tools and products. Graphics were developed to highlight weather parameters in metric units for international attendees. Wet Bulb Globe Temperature was added to GFE to assist international athletes and coaches. Training was also provided to ensure the staff could interpret and brief on that new parameter. Most importantly, decision support procedures and products were reviewed and a plan developed for how to best provide support for a long term event that spanned two counties and was very vulnerable to typical summertime threats: excessive heat, lightning, gusty winds, microbursts, and flash flooding.

*Meteorologist-In-Charge **Chris Darden** briefs the ICP on potential thunderstorms and the heat-related impacts.*

During the 13 days of deployment, forecast packages were produced and sent to decision makers twice a day, highlighting threshold-based weather impacts over the next 48 hours. Email updates were produced every two hours, beginning around midday, highlighting near term radar trends. Dozens of impromptu briefings were conducted, in addition to twice daily standup briefings at the ICP. WFO Birmingham arranged ahead of time for a GOES-16 Satellite Mesoscale Sector to be placed over the area, access to AWIPS in the Cloud, and HYSPLIT runs with each forecast cycle for the area near the venue sites.

Excessive heat quickly became the greatest concern. Local athletes and attendees, international guests not accustomed to summer in Alabama, and first responders outdoors for extended periods of time were all impacted by heat indices reaching as high as 110F. Safety officials were able to reallocate and increase drinking water resources, and reschedule certain events to cooler parts of the day. After several days of competition, daily heat related illness reports decreased.

On Saturday, July 9th, a line of severe storms moved through the Birmingham area, impacting all venues and outdoor entertainment districts set up for event attendees. This was the first weekend day of competition, and the first competition day for many outdoor venues. Attendance was expected to be high. The meteorologist at the ICP briefed regularly on the arrival time of thunderstorm impacts. Because of the increased vulnerability, NWS Birmingham coordinated early with the Storm Prediction Center to issue a Severe Thunderstorm Watch.

With the issuance of the watch, decision-makers responded by postponing outdoor competitions and sheltering attendees at venues and entertainment areas. A highly anticipated outdoor concert scheduled for that night was canceled. Damage to stages, equipment, and other temporary structures was observed at almost all venues. Roads near several venue sites flooded, with water spreading into one active competition arena. Storm impacts occurred before and during the time of the now canceled concert. The decisions to postpone events and cancel the concert likely saved lives.

WFO Norman & Oklahoma Forestry Services Provide Billings Fire Hotwash

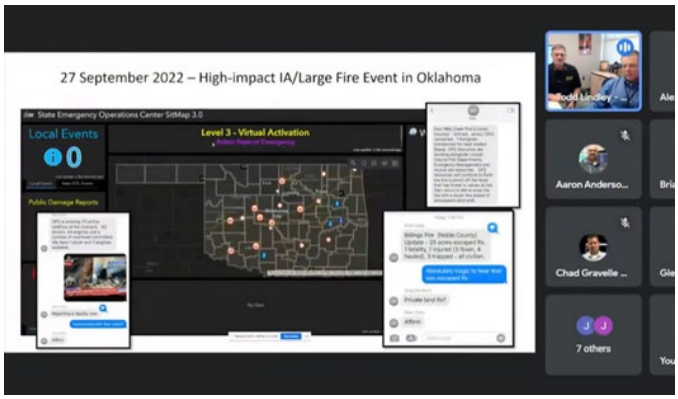
By: NWS Staff

A crash and a grass fire close I-35 in Oklahoma, Sep 27, 2022. (Source: Oklahoma Highway Patrol)

A high-impact wildfire episode occurred in central Oklahoma on 27 September 2022. The Billings Fire (Noble County, Oklahoma) was sparked by agricultural implements just upwind of Interstate 35. Smoke from the fire triggered an eight-vehicle chain reaction crash. The rapidly spreading fire subsequently burned through the crash site while some victims were still entrapped in their damaged vehicles. Tragically, one person died and seven people were injured.

Within 24 hours of this tragic event, WFO Norman partnered with Oklahoma Forestry Services' fire analyst, **Drew Daily**, to conduct an immediate after-action 'hotwash' of the meteorological factors that contributed to the event. On 28 September, Daily joined the WFO Norman staff on-site for the review which was hosted live in Google Meet with participation from neighboring WFOs in Wichita, Lubbock, and Midland, as well as the Science and Technology Services Division at Southern Region Headquarters.

During the hotwash, Mr. Daily emphasized that the fire environment had deteriorated in recent days due to accelerated drying compounded by marginal to poor overnight moisture recovery, and thus lower thresholds of fire weather were beginning to result in more dangerous fire behavior. The complexities of fire suppression and incident response in such critical fire environments was discussed, and forecasters gained an appreciation for how relatively benign weather situations can align with critically dry vegetative fuels to result in dangerous situations on the fire ground. Specifically, how fuels and topography work in unison to influence both direction of spread and fireline intensity, including transition to extreme fire behavior in a low-wind environment.



A screen capture from the hotwash virtual event

Given the intensifying drought, Oklahoma will see escalating fire danger until the area receives appreciable precipitation.

Aware

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Managing Editor: Monica Parker, Editors: Mark Tew, Doug Hilderbrand, Wendy Levine
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Subscribe/Unsubscribe: monica.parker@noaa.gov