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# Shade Tree News

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## How a NOAA Weather Model can Help with Wildfires

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Written by: Kelly Cebulko

At the beginning of September, over 875 wildfires sparked by 14,000 lightning strikes have burned more than 1.46 million acres since August 15. Smoke from these wildfires have spread from coast to coast, and many have looked to a NOAA weather model for guidance on how it might impact their area.

While the High Resolution Rapid Refresh-Smoke model (HRRR-Smoke) is still experimental, many are using it to determine everything from the weather to when to schedule school recess. The HRRR-Smoke is the first numerical weather prediction model in the U.S. that forecasts smoke's impact on a number of weather variables. Utilizing satellite observations, the HRRR-Smoke can predict the movement of smoke across the country for 48 hours, showing how the weather will impact the smoke and vice-versa.

HRRR-Smoke is especially valuable for those downwind of a fire, allowing wildfire managers to move or redeploy crews based on where the heavy smoke will be. Scientists are using the model for research and using its forecast to schedule maintenance on air quality instruments. The information gained from this model will help NOAA scientists build the next generation of air quality models. To see the latest HRRR-Smoke model visualization, visit <https://hwp-viz.gsd.esrl.noaa.gov/smoke/index.html>.



A tower of smoke rising from the Azusa, California, "Ranch2" wildfire during 100-degree heat, on August 15, 2020. Fire-generated "pyrocumulus" clouds carry smoke high into the atmosphere, where it can travel thousands of miles from its source. Credit: Russ Allison Loar/Flickr Creative Commons

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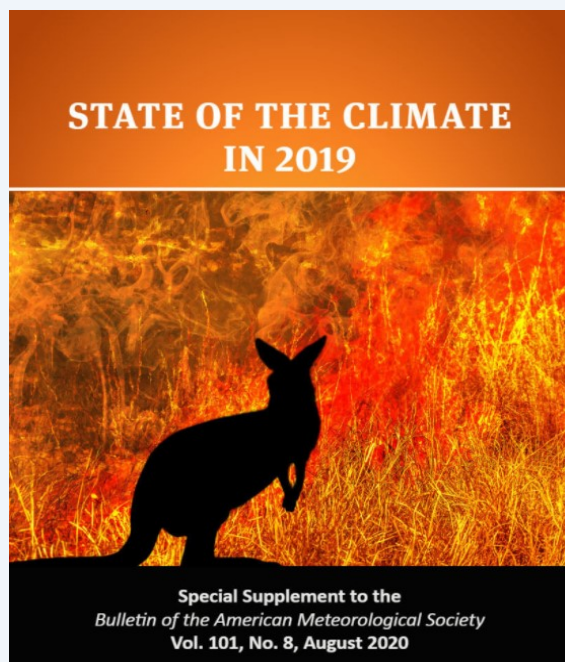
#### DID YOU KNOW?

*October 9 is Fire Prevention Day!*



## State of the Climate in 2019

Written by: Kelly Cebulko



Every summer, an international, peer-reviewed publication is released as the authoritative annual summary of the global climate. This year marked the 30th annual issuance of the report, which is based on the contributions of over 500 scientists from more than 60 countries. Read the full report [here](#), and some of the highlights below:

- **Greenhouse gases were highest on record.**
- **Global surface temperatures were near-record high.** Global surface temperatures were 0.79-1.00 °F above average, placing 2019 as one of the three warmest years since records began in the mid-late 1800s. *Note: The six warmest years have all occurred the past six years. Each decade since 1980 has been warmer than the preceding decade.*
- **Sea surface temperatures were near-record high**— the second highest on record, surpassed only by 2016.
- **Global sea level was highest on record** - for the *eighth* consecutive year, global average sea level rose to a new record high and was about 3.4 inches (87.6 mm) higher than the 1993 average, the year that marks the beginning of the satellite altimeter record.
- **The Arctic continued to warm; minimum sea ice extent was near-record low. Antarctica was near-record warm, and its trend in low sea ice extent continued.**
- **Tropical cyclones were well above average overall** with 96 named tropical storms during the Northern and Southern Hemisphere storm seasons (14 above average), with 5 of those reaching Category 5 intensity. In the North Atlantic basin, Hurricane Dorian caused unprecedented and tremendous devastation, with over 200 fatalities and damages totaling \$3.4 billion in the Bahamas.
- **The contiguous United States observed its second wettest year on record**, behind 1973.
- **Approximately 5 million hectares were burned in eastern Australia** from very large bushfires that impacted the area from September into early 2020.



## 2020 Severe Weather Recap

Written by Alicia Wasula

In our April newsletter, Kelly discussed how the active period of severe weather during April 2020 was a great example of how lives were saved due to clear and accurate forecasts and warnings, collaboration with emergency managers, and communication with the public.

So far this year (as of early September), the preliminary tornado and hail report counts across the United States are running slightly below average, while high wind reports are above normal. The most active periods thus far include April, late June/early July, and late August when a derecho brought widespread wind damage across the Midwest and multiple events resulted in wind damage and a few tornadoes across the Northeast.

Unfortunately, 2020 has been the deadliest year since 2011 for tornadoes. As of September 9, 78 people have lost their lives as a result of tornadoes alone (this does not include other weather-related fatalities). A long-track tornado moved across Tennessee on (continued pg. 4)



### 10 Must-See Fall Foliage Spots

1. Door County, WI
2. White Mountains, NH
3. Finger Lakes, NY
4. Pocono Mountains, PA
5. Upper Peninsula, MI
6. Okanagan Valley, BC
7. Catskill Mountains, NY
8. Hocking Hills, OH
9. Green Mountains, VT
10. Jackson County, NC

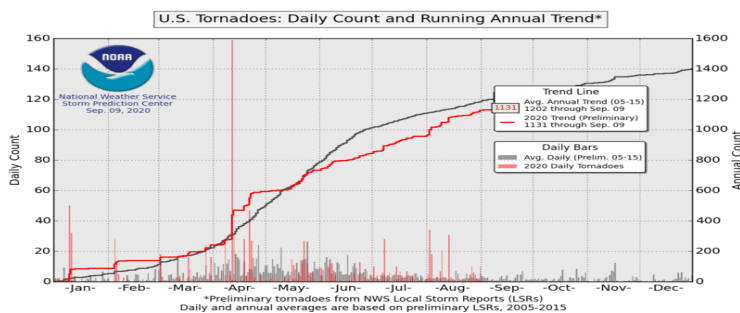


Figure 1 : Cumulative and daily tornado damage reports for 2020 (blue) and average (gray).

### News from Shade Tree Meteorology

We hope that this newsletter finds each of you well, and that you were able to enjoy some of this very unconventional summer season. I (Alicia) was able to enjoy some time at Acadia National Park with my family, and Kelly, after several date changes due to COVID, was married on August 14! From here on, you will see Kelly writing and posting as Kelly Cebulko, and no longer as Kelly Neugent. Her email address has also been updated to [kjc@shadetreemeteorology.com](mailto:kjc@shadetreemeteorology.com), although she will receive emails at her old address as well. *Congratulations, Kelly!*

In other news, the summer has brought us a variety of new cases which involve a number of weather hazards: flooding, high winds, and of course, slip and falls on ice. We encourage you to [contact us](#) if you have a case in which the weather may be important. We can construct a chronology of key weather events leading up to the time of the incident in your cases, as well as answer any questions you may have about weather conditions before, during and after an incident.

Although COVID has impacted everyone, we are thankful that our business model has made it possible to continue to provide uninterrupted service to our clients during this time. We thank you for your continued business.



across Tennessee on March 2, 2020, destroying numerous homes and killing 19 people. Of the 78 people who lost their lives this year, 36 were in mobile homes. These structures have long been known to be vulnerable to strong winds, and more needs to be done to regulate the construction of these homes and protect those who reside in them.

## Weather Ready Nation: Fall Weather Safety

Written by Alicia Wasula

We're only a few weeks into meteorological fall, and already we have seen so many people suffering due to hazardous weather. Tropical systems, such as Laura, can bring devastating flooding and storm surge, as well as tornadoes. Severe weather (high winds, hail and tornadoes) can continue to be a threat around the country, and of course the hot, dry conditions in the west contribute to dangerous wildfires which destroy property and sometimes take lives. Also, fog can become more frequent during the fall as the sun becomes weaker, creating hazardous driving conditions. As we also saw after Labor Day, early season snowstorms can create dangerous driving conditions as well, and cause downed trees and power outages (due to the leaves still being on the trees). We encourage everyone to review appropriate procedures for these hazards both at your place of business and with your family at home. This [presentation](#) has excellent tips to prepare for and use during periods of hazardous weather. Taking the time to review this with your colleagues and loved ones ahead of time can help save lives should hazardous weather occur.

### Fall weather preparedness tips:

- Review your workplace and family emergency plans
- Make sure your car has enough gas and is well maintained
- Check on the status of your emergency supply kit
- Prepare your car for early winter weather by stocking it with ice melt, blankets, ice scrapers and shovels
- Trim any low-hanging branches around your home
- Make sure campfires and fire pits are fully extinguished, and pay attention to guidance if you are under a Red Flag Warning
- Properly dispose of cigarette butts in an appropriate container
- Ensure your sources for receiving weather warnings (apps, NOAA Weather Radio, etc.) are working and up-to-date
- Conduct a home inventory for insurance purposes in case your home is impacted by strong winds, flooding, or fire.

**“I’ve learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.**

~Dr. Maya Angelou