



# Shade Tree News

Your source for weather information - tailored to your needs

A quarterly publication from Shade Tree Meteorology, LLC

## Inside this issue:

- January 2015 Highlights
- Flood safety
- Looking ahead to spring

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February 2015

Volume 1, Issue 1

## Data sources and Forensic Meteorology

The biggest upgrade to the dimensional pic-radar network across the United States since the advent of Doppler radar was completed in April 2013. Conventional Doppler radars at all sites across the U.S. were upgraded to dual-polarized Doppler radar, a technology that was more than a decade in the making.

What's the difference? All radars work by emitting electromagnetic (usually microwave) pulses. The pulses bounce off of particles in the atmosphere and are returned back to the radar. Conventional Doppler radars can also detect whether the reflecting particles are moving towards or away from the radar. This utility is exceptionally useful during severe weather, and particularly sensing rotation in thunderstorms. However, conventional Doppler radars emit pulses in only one direction, as shown in the picture above. This results in a one-

dimensional picture of particles in the atmosphere.

Dual-polarized, or dual-pol, technology allows the user to get a two-dimensional picture of particles which reflect signal back to the radar (picture on the right). Computer algorithms can then process these perpendicular signals to give a much better idea of the size and shape of reflecting particles.

The utility of this new technology in the forecasting arena is only just now beginning to be understood. It is now possible to determine not only precipitation intensity, but now also precipitation type as well. This is extremely useful during the winter when precipitation type can change from rain, to sleet or freezing rain, to snow, and back again over very short time periods.

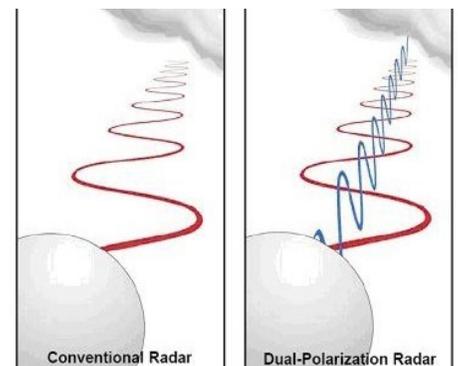


Fig. 1: Diagram showing the difference between conventional Doppler radar and Dual-polarized Doppler radar (image courtesy of NWS/Radar Operations Center).

This very same technology also has applications in forensic meteorology. With the dual-polarization radar archive now available at the National Climatic Data Center, it is possible for us to look at past cases where mixed precipitation may have played a role. This can be useful, for example, in cases where there is some question as to what type and how much ice was present at the site of a fall. The technology can also be used to better estimate precipitation rates that were occurring during flooding events.



## News from NOAA: January 2015 Highlights

Those of us in the northeast United States may be remembering January 2015 as a month characterized by cold and snowy conditions, however, west of the Continental Divide, many locations saw warmer than normal conditions. In fact, 7 states reported a top-ten warm January.

Many parts of the United States were drier than average. Drought on the west coast continues, and San Francisco reported no measureable precipitation during January for the first time on record.

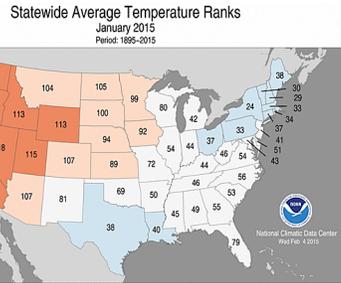


Fig. 2: Statewide average temperature ranks for January 2015 (source: <http://www.ncdc.noaa.gov/sotc/service/national/Statewidetrnk/201501-201501.gif>)

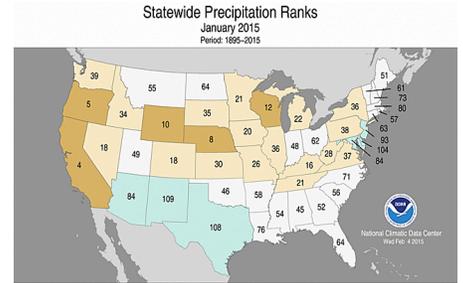


Fig. 3: Statewide precipitation ranks for January 2015 (<http://www.ncdc.noaa.gov/sotc/service/national/Statewidetrnk/201501-201501.gif>)

A major nor'easter impacted the east coast of the United States this month as well, bringing coastal flooding and blizzard conditions to parts of New England. While the New York metropolitan region escaped the worst of it, there was still 9.8 inches at New York's Central Park, and 10.7 at John F. Kennedy International

Airport. Further east, Boston received 24.4 inches of snow from the storm, the top 6th highest snowfall for that city.

What will the remainder of the winter hold? Stay tuned!

Source: <http://www.ncdc.noaa.gov/sotc/summary-info/national/2015/1>

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<https://www.surveymonkey.com/s/BT78CBP>

## Building a Weather-Ready Nation

NOAA and the National Weather Service are in the process of developing a web-based platform that will deliver the high-resolution products that NWS forecasters generate.

There is currently an experimental version of the platform that all users can have access to and review.

The platform allows users to overlay various products (including radar, satellite current warnings, model forecasts, surface observations, river gauge levels, and many others) on a zoom-able terrain map of the United States.

This platform will allow users easy access to numerous products that are issued by the National Weather Service, plus some of the raw data that is used to make the forecasts. This platform will be an improvement over the cur-

rent National Weather Service website (<http://www.weather.gov>) because it will be much easier to navigate than the current page, while at the same time providing more detailed information to the users.

The experimental EDD can be found at: <http://preview.weather.gov/edd/>. A YouTube video tutorial can be



Fig. 4: Sample NWS EDD display showing current warnings and radar overlaid on a map of the northeast.

found here: <https://www.youtube.com/watch?v=cAsIXzpt3e8>.

Please do take a look at this experimental platform: it will be the next generation method of keeping the public informed and prepared for weather hazards.

Source: [http://www.erh.noaa.gov/r/x/edd/EDD\\_Guide.pdf](http://www.erh.noaa.gov/r/x/edd/EDD_Guide.pdf)



Shade Tree Meteorology, LLC is proud to serve as a Weather-Ready Nation Ambassador

## Hazardous Weather Preparedness

Did you know that March 15-21 is Flood Safety week in New York State (and many others)?

Flooding can occur at any time of year, however we in the Northeast can be more prone during the spring when winter snow pack in the mountains melts and runs off into rivers and streams. If temperatures are much warmer than normal over a period of several days, an ice on local rivers can rapidly break up as well, causing ice jam flooding as it moves downstream.

Some floods occur rapidly, with very little warning (e.g. an ice jam sudden forms), whereas other flooding occurs with much more time to prepare (e.g. heavy rain over several days works its way through the stream and river network).

There are several ways that you can prepare yourself, both at home and at work, if you know that flooding is an imminent hazard. First and foremost, evacuate yourself and

your loved ones to higher ground. **Do not attempt to walk or drive through flood waters!!!** The undercurrents in flooded areas can be very strong; strong enough to carry away vehicles.

There are several precautions you can take if you are in a known flood-prone area. Elevate your belongings, as well as any critical wiring and utilities in your basement. Check to make sure your sump pump is working. Consider installing a water alarm to alert you if water is accumulating in your basement.

Standard homeowners insurance policies often do not cover flooding, however flood insurance can be purchased through the National Flood Insurance program.

Remember to stay up-to-date on the latest flood watches and warnings by visiting <http://www.weather.gov>. A flood watch means that flooding is possible in your area. A flood warning means that flooding is occurring

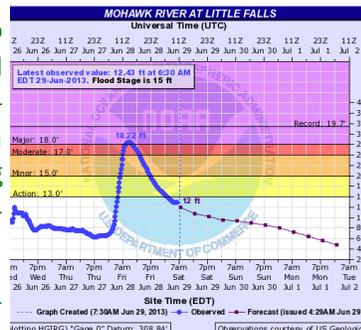


Fig. 5: Hydrograph showing major flooding on the Mohawk River in June 2013 (<http://www.weather.gov/aly>)



Fig. 6: Flooding in upstate New York after Tropical Storm Irene in August 2011 (<http://inhabitat.com/nyc/wp-content/blogs.dir/2/files/2011/08/upstate-ny-irene-flooding1->

and you should evacuate to higher ground. Flash flood watches and warnings also mean that flooding is possible (watch) or imminent (warning); however flash floods are so named due to their rapid onset, so quick action may be required.

Be sure to review your emergency plan with your family members and loved ones: have plans in place for communication if you are not together when flooding occurs. Plan in advance where you will meet if a disaster occurs in your area.

Source: <http://www.fema.gov/media-library/assets/documents/98102>

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## Did you know: Spring in the Northeast

While it may not feel or look like it outside right now, spring is on the horizon and will be here before we know it. Astronomical spring will arrive on March 20, 2015. Daylight savings time will begin even earlier, as we set our clocks ahead one hour on March 8. The later sunset will make it seem more like spring, even if the weather does not cooperate!

Leafout, the approximate date on which the deciduous trees develop leaves and begin the process of

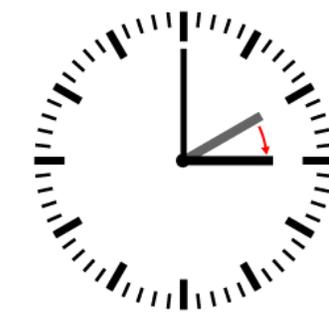


Fig. 7: The clocks will 'spring ahead' on March 8, 2015 ([http://en.wikipedia.org/wiki/Israel\\_Summer\\_Time](http://en.wikipedia.org/wiki/Israel_Summer_Time))

photosynthesis, is variable from year to year but typically occurs in mid-

to late April in New York's Capital Region. Further south, trees leaf out earlier, while north in the Adirondacks, leafout may occur much later.

As we in the Northeast know, spring weather can be highly variable. In Albany, the earliest 90+ degree day occurred on April 16, 2012, while the latest freezes occurred on May 27, 1968 and 1969. Back in 2002, 2.2 inches of snow fell in Albany on May 18!!!

Source: <http://www.weather.gov/aly>



## A Full-Service Forensic Meteorology Firm with a Team of Certified Consulting Meteorologists Specializing in Severe Weather Event Reconstruction

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### From the President's Desk

The big news from Shade Tree Meteorology this quarter is that Dr. Wasula successfully completed the American Meteorological Society certification process and is now a CCM! Congratulations Alicia! The CCM designation is issued by the Society to highly qualified meteorologists providing research and services to a variety of users of weather information in the private, public and academic sectors of the nation's weather enterprise.

If you want to know all of the weather factors that may have affected your court case and have the details of those factors explained in terms that make complex meteorological science clearly understandable by all, call us at Shade Tree Meteorology.

This year, Shade Tree Meteorology is looking forward to expanding our event forecasting services and widening the geographic extent of our forensic research services while, of course, maintaining the unparalleled quality of our services.

Extensive experience issuing forecasts and radar-based severe weather warnings translates into exceptional skill at reconstructing weather events as an expert weather witness. Clear, non-technical (but scientifically sound) explanations of the what, where, when, and why in thunderstorm events, flooding events, and winter storm events have proven extremely useful to clients in pretrial and courtroom testimony.

Our associates' credentials include:

**Four decades of experience as an operational weather observer, forecaster and forensic meteorologist**

- Training and experience on every weather radar system ever used operationally by the U.S. government, which operates the largest weather radar network in the world
- Three decades of experience in storm damage assessment
- Three decades of public speaking and report writing on the topic of weather
- Two decades of weather warning program management experience, across three National Weather Service offices, serving parts of 9 states

**Over a decade of experience as a researcher and teacher in the field of meteorology**

- Conducting cutting edge research supporting operational forecasting and warning operations
- Teaching meteorology to students ranging from beginning to advanced
- Explaining complex meteorology clearly, to every audience

### Note:

All articles contained in this newsletter are authored by our associates, and are the property of Shade Tree Meteorology, LLC, unless otherwise noted.

If you would like to disseminate all or a portion of this newsletter, we request that you contact us and we would be happy to work with you.

Do you have a question you would like answered in an upcoming issue of "Shade Tree News"? Please let us know!

Shade Tree Meteorology, LLC is a solar powered, green business. Our grid connected photovoltaic array produces one-and-a-half times as much energy each year as the business uses.