



Shade Tree News

Your source for weather information - tailored to your needs

A quarterly publication from Shade Tree Meteorology, LLC

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- Hurricane season 2014
- NOAA's Weather-Ready Nation Ambassador Program
- Winter Weather Preparedness

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November 2014

Inaugural Issue

Data sources and Forensic Meteorology

Did you know that the National Operational Hydrologic Remote Sensing Center (NOHRSC) provides estimates of snowfall across the United States?

The NOHRSC is a division of the National Weather Service whose mission is to aid in the protection of life and property by providing support for research and operations in the form of snow pack analyses (<http://nohrsc.noaa.gov>).

How is this achieved? For one, the NOHRSC maintains and operates an airborne snow survey program. Low-flying aircraft take measurements of Snow Water Equivalent (SWE) and soil moisture across 1900 flight lines which cover 29 states and 7 Canadian provinces (<http://www.nohrsc.noaa.gov/special/tom/gamma50.pdf>).

These airborne measurements, along with land-based and satellite snow measurements, are ingest-

ed into a physically-based model to generate snow analyses. The model output is then used to create various products for users. These include an interactive map, text discussions, and time series, among others.

On the interactive map, one can look at detailed analyses of quantities such as snow depth, snow water equivalent, snow melt, snow temperature, non-snow precipitation, and others.

Figure 1 shows the current snow pack depth across the United States. Even at this point in the fall, there is up to 8 inches of snow in the highest elevations of the Rocky Mountains.

In addition to having many applications for research and operational forecasting, NOHRSC snow analyses are

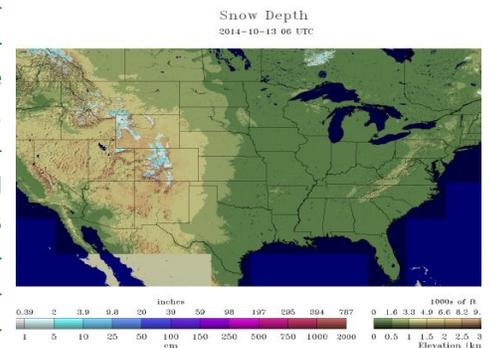


Fig. 1: NOHRSC estimates of snow depth across the coterminous United States for October 13, 2014.

very useful in forensic meteorology. In the northeast United States, land-based snowfall measurements can be sparse, and often vary widely in mountainous terrain. By supplementing these observations with satellite and airborne measurements, it is possible to get a better estimate of snowfall or snow depth at sites where there may not be a nearby representative land-based site.



News from NOAA: Hurricane Season 2014

How does the 2014 Atlantic Hurricane season look to be shaping up at this point? The main story of the 2014 Atlantic Basin hurricane season seems to be the lack of landfalling tropical systems along the Eastern Seaboard. But, how does this season compare to average? Although the season extends through the end of November, we can look at how 2014 stacks up against climatology thus far.

At press time, there were 7 named storms thus far in the Atlantic basin (a tropical system must have sustained winds of at least 39 miles per hour; it becomes a hurricane once the winds exceed 73 miles per

hour). Of those, only Arthur made landfall as a Category 2 hurricane along the outer banks, and later produced tropical storm force winds across Cape Cod and the Islands (Fig. 2).

At press time, Hurricane Gonzalo was impacting Bermuda as a Category 3 storm, but is not forecast to make landfall on the East Coast. On average (1966-2009), there typically 10 named storms (of which 6 are hurricanes) by mid-October (source: http://www.nhc.noaa.gov/climo/images/cum-average_Atl_1966-2009.gif)

So, the 2014 season is running only slightly below the average of

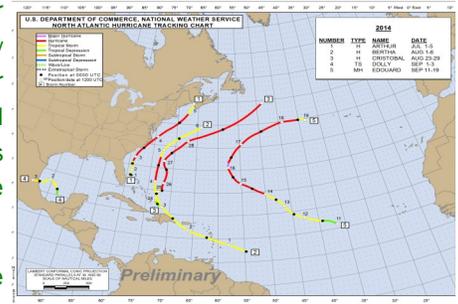


Fig. 2: Named tropical systems in the Atlantic basin as of Sept. 19 (source: <http://www.nhc.noaa.gov/data/tcr/Index.php?season=2014&basin=atl>)

number of named storms thus far. In terms of landfalling hurricanes along the East Coast, the Hurricane Research Division, a division of NOAA, reports that there are an average 1.7 landfalling hurricanes each season. Will November bring the season up to average? Stay tuned!

“Shade Tree Meteorology, LLC is pleased to announce our participation as an ambassador in NOAA’s Weather Ready Nation initiative.”

Building a Weather-Ready Nation

Shade Tree Meteorology, LLC is pleased to announce our participation as an ambassador in NOAA’s Weather Ready Nation initiative.

“The Weather-Ready Nation Ambassador™ initiative is the National Oceanic and Atmospheric Administration’s (NOAA) effort to formally recognize NOAA partners who are improving the nation’s readiness, responsiveness, and overall resilience against extreme weather, water, and climate events. As a WRN Ambassador, partners commit to working with NOAA and other Ambassadors to strengthen national resilience against extreme weather. In effect, the WRN Ambassador initiative helps unify the efforts across government, non-profits,

academia, and private industry toward making the nation more ready, responsive, and resilient against extreme environmental hazards. [Weather-Ready Nation](#) (WRN) is a strategic outcome where society’s response should be equal to the risk from all extreme weather, water, and climate hazards” (<http://www.nws.noaa.gov/com/weatherreadynation/>).



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

We at Shade Tree Meteorology, LLC pledge to assist in this initiative by reaching out to our clients with information about preparedness for future weather hazards, information about current hazards (such as watches and warnings issued by the National Weather Service), and if necessary, response to past hazards.

This quarterly newsletter is our first of what we hope will be several initiatives as we work towards this goal of keeping you, our clients, prepared and ready to respond to potential hazards.

Hazardous Weather Preparedness

The NOAA/Climate Prediction Center seasonal outlooks for winter 2014-2015 were issued in mid-October. This year, the forecast for upstate New York is for a 30% chance of above normal temperatures, but with equal chances for above or below normal precipitation. These forecasts are made based upon the study of large-scale atmospheric and oceanic patterns which are known to have teleconnections, or relationships, to weather in other parts of the world. These include El Niño, the North Atlantic Oscillation, the Madden-Julian Oscillation in the tropics (<http://www.cpc.ncep.noaa.gov>).

Whatever the long-range forecast looks like, it is certain that we will have to deal with winter weather in the northeast United States at some point. Do you know how to prepare for winter weather?

Winter Weather Awareness Week in New York, Vermont, Massachusetts, and other

parts of the Northeast is November 3-7, 2014. It is a good time to review procedures for when winter storms occur.

Do you know the difference between a Winter Storm Watch, Warning and Advisory? A Watch is issued when conditions are favorable for winter weather between 12 and 36 hours in advance. A Warning means that accumulating snow, sleet or ice is expected in the next 12 to 24 hours (specific criteria vary geographically). A Winter Weather Advisory is issued when conditions will fall short of warning criteria, but are still expected to impact the public. A Blizzard Warning is issued when heavy snow and winds are expected to cause white-outs, drifting and severe wind chill. You can always find the latest forecast for your area by visiting the National Weather Service at <http://www.weather.gov>.

Make sure you are prepared by taking the following actions:



Fig. 3: NOAA/Climate Prediction Center Winter Temperature Outlook (<http://www.cpc.ncep.noaa.gov>)

Fig. 4: NOAA/Climate Prediction Center Winter Precipitation Outlook (<http://www.cpc.ncep.noaa.gov>)

stock your emergency kit with a battery-operated radio, flashlights, dried or canned food, water, first aid, extra medicine and baby items, and a fire extinguisher. You should also winterize your car and stock it with extra blankets, a first aid kit, sand or kitty litter (for traction), a shovel and scraper, maps, extra clothes, jumper cables and a tool kit. Always remember to charge your cell phone and carry it with you to have handy during an emergency. For more tips on preparing for winter weather, visit <http://www.nws.noaa.gov/os/winter/>.

“Whatever the long-range forecast looks like, it is certain that we will have to deal with winter weather in the northeast United States”

Did you know: Wind Chill

Wind chill is meant to provide a measure of the danger and discomfort a human will experience when exposed to wind and extreme cold. The original wind chill index was developed in the 1940s, and updated in 2001 using new technology to make a more accurate estimate of the impact of wind and cold on a human. For example, wind chill is calculated for temperatures and winds at a height of 5 feet, near face level, using known information about heat transfer and how heat is lost from the hu-

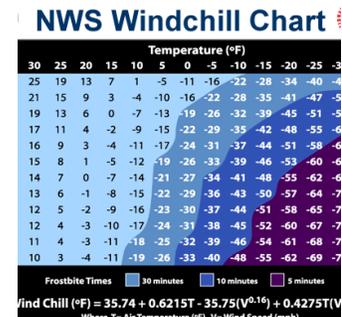


Fig. 5: Wind Chill Chart (<http://www.nws.noaa.gov/os/>)

man body, to give a more accurate measure of human discomfort than the original index (Osceveski and Bluestein 2005). The wind chill table in Figure 5 shows that at very cold temperatures, even light winds are enough to be dangerous to humans. You can learn more, as well as calculate wind chill for any temperature and wind speed, at <http://www.nws.noaa.gov/os/windchill/index.shtml>.

Osceveski and Bluestein, 2005: The New Wind Chill Equivalent Temperature Chart. *Bull. Am. Met. Soc.*, **86**, 1453-1458.



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From the President's Desk

With the addition of Dr. Alicia Wasula a year ago, Shade Tree Meteorology entered a new era. Until then, I did the meteorology and, while I hired a series of assistants to help with research and administrative chores, it was essentially a one person operation. While that expansion was, in part, driven by growing demand, it was in equal part driven by the opportunity to work with a colleague with impeccable credentials whom I have known since we worked together at the National Weather Service Office on the SUNY Albany campus over a decade ago.

The most important result of our collaboration over the past year is the fact that we work together on nearly every case that comes in, so our clients are getting the benefit of two highly qualified professional meteorologists evaluating each case from every perspective and providing top quality science based meteorological research and consultation. Another result of our collaboration has been a push to modernize and expand our business, including major upgrades to our website - making it mobile phone and tablet friendly among other things. This newsletter is the most recent manifestation of our collaboration, and we hope it will serve our clients as a source for a variety of weather related information. Please let us know what you'd like us to write about.

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.