



# Prevailing Winds

Volume 2, Issue 2

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## NWS Taunton Provides On-site Support for July 4th Activities in Boston

by Joseph DelliCarpini, Science Operations Officer

Staff at WFO Taunton, MA provided on-site Decision Support Services (DSS) for the War of 1812 Commemoration in Boston which was held during the week leading up to July 4<sup>th</sup>. It also included the annual Boston Pops concert and fireworks display. Weather support was critical to land, water, and aviation activities with the safety of visitors numbering in the millions paramount.

WFO Taunton forecasters staffed Unified Command Centers (UCC) at the U.S. Coast Guard District 1 Headquarters and at Fisher College in Boston. Well over a dozen federal, state, and local agencies participated in the UCC's established for public safety, including the U.S. Coast Guard, U.S. Navy, FBI, FEMA Region 1, Massachusetts Emergency Management Agency, Massachusetts State Police, and City of Boston Emergency Services.

This was the first time WFO Taunton provided on-site DSS for a major event since the Democratic National Convention in 2004. The office's newly formed DSS Team, under the leadership of Warning Coordination Meteorologist **Glenn Field** and General Forecaster **Rebecca Gould**, began planning for this event in January. This included frequent coordination with UCC partners as well as the development of an internal operations plan for the staff.

The nationally televised July 4<sup>th</sup> Boston Pops Concert and Fireworks display became an opportunity to showcase the importance of DSS with respect to public safety. That evening, severe thunderstorms formed over New Hampshire and headed southeast toward Boston. The thunderstorms weakened as they drew closer but presented a significant lightning risk for the half million people on the Esplanade, in addition to the nearly 200,000 people who gathered for the fireworks display on the other side of the Charles River in Cambridge. At the UCC, General Forecaster **Stephanie Dunten** stayed in close contact with WFO Taunton forecasters on NWSChat and by telephone and was able to brief Incident Commanders frequently throughout the evening. Based upon her briefings, the decision was made to evacuate people on the Esplanade to nearby tunnels on Storrow Drive as the storms drew closer.



**Above:** Cloud-to-ground lightning strikes about two miles from the Esplanade venue in Boston on the evening of July 4, 2012. (Photo by Patrick Flanagan)

Cont'd on page 2

## Cont'd from pg 1...DSS support



Cloud to ground lightning was observed soon thereafter as seen in the photo. An "all clear" decision was made once the threat of lightning had passed and the concert and fireworks resumed safely.

As a consequence of their outstanding support, WFO Taunton has been asked to provide on-site DSS in the future for the July 4<sup>th</sup> Esplanade events. Feedback on NWS services was overwhelmingly positive from all key players. Letters of appreciation were received from several officials including the Director of the Massachusetts Emergency Management Agency and David Mugar, a philanthropist who sponsors the July 4<sup>th</sup> Boston Pops concert and fireworks on the Esplanade each year.

## Winter Safety Tips

by Alan Dunham, Observation Program Leader

The heat and humidity of summer is rapidly fading into memory, the leaves are showing their vibrant fall colors, there is a nip in the air and soon the white flakes of winter will be falling. Now is the time to begin planning and making preparations to stay safe this winter.

Since we all live in New England, we can be reasonably assured that there is a possibility that we will see at least one, if not several, good size snowstorms that could leave you without power for a few hours to a few days. Now is the time to make you home winter -ready as well as prepare an emergency kit.

To make your home winter-ready you should make sure you have fresh batteries for your smoke and carbon monoxide detectors. If you use a wood or pellet stove make sure you have your chimney cleaned before you start firing it up regularly. Also, you may want to have your stove inspected to make sure it is in good working order and that there are no leaks which will allow carbon monoxide to seep into your home. You should also make sure all your gutters are cleaned to lessen the chances of having any ice dams form as the snow on your roof melts.

As for an emergency kit, your kit should include the following: flashlights with extra batteries, a battery operated portable radio as well as a battery operated NOAA Weather Radio, a first aid kit, a 3 day supply of water (one gallon per person per day), as well as fully charged fire extinguishers.

Should you lose power during a storm, there are certain "dos and don'ts" to follow. Do use battery powered lanterns. Avoid using candles or oil based lanterns as these pose an increased risk of fire. If you have a gas stove DO NOT use the stove to try and heat your house. Using your gas stove/oven as a source of heat greatly increases the chance of fire AND carbon monoxide poisoning. If you have a portable generator make sure that you

run the generator outside well away from the windows. DO NOT run your generator in your garage as it is a potential fire hazard. Also, if you have a garage that is attached to your house, deadly carbon monoxide WILL seep into your home.

For other ideas to make your home winter storm ready you can contact your local American Red Cross chapter or your local emergency management office for ways to get your home ready for winter.

It is also possible that you may be stuck in a vehicle during a particularly severe winter storm, so it does not hurt to have an emergency kit for your car as well. Your kit should contain: a container of kitty litter, blanket or sleeping bag, small folding shovel, road flares, a small candle, windshield scraper, small first aid kit, jumper cables, as well as candy or energy bars and water in case you get stuck in your vehicle.

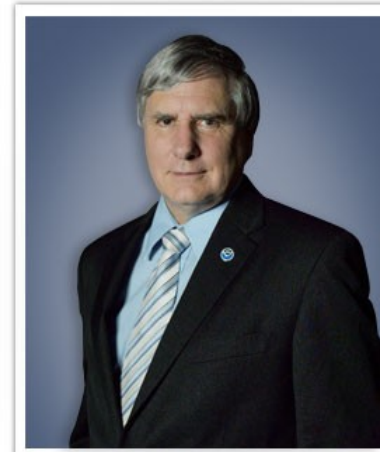


**“ Now is the time to begin planning and making preparations to stay safe this winter.”**



# MIC Musings

by Robert Thompson, Meteorologist-in-Charge



## A New Year!

October 1 marked the start of a new year for us – fiscal year that is. In preparation for a new fiscal year, we have been going through our annual ritual to hash out goals for the new year. Some of these might interest you.

**Decision Support Services:** Ever since the birth of our nation's weather service in the Signal Corps days, we've been providing information to others to help them make informed decisions. Over 140 years later, we continue to work closely with our partners to facilitate the provision of weather information for the protection of life and property as well as to enhance our nation's economy. That is our mission! This year we are striving to bring such decision support services to a new level. Our service area is very active with numerous outdoor venues that can attract hundreds, if not thousands, of people on any given day. These include regattas, fairs, the larger flea markets, sporting events, major charitable fund raising walks, etc. Our watches, warnings, and advisories certainly help planners to be alert for weather that might impact public safety. However, our 2013 goal is to take this to a new level by having a forecaster dedicated to monitoring for any significant weather developments that may prompt public safety decisions on the part of local emergency managers or event planners.

**Coastal Storm Impacts:** Southern New England is periodically buffeted by coastal storms – sometimes tropical cyclones and more frequently Nor'easters. Coastal flooding from these storms can be quite and hence this has been an area of special focus for our office. With the help of a GIS student this summer, reference coastal inundation maps have been formulated for the Massachusetts coastline and should soon be available on our web page. This resource will allow coastal emergency managers and other decision-makers to better assess the potential impact from predicted storms and make better informed decisions on pre-staging assets, establishing contingency staffing, identifying evacuation zones, etc. This office along with the Massachusetts Coastal Zone Management Agency, has also pioneered a new software tool, called Storm Reporter, for collecting coastal inundation, damage, and erosion data immediately after storms. The information can help us make better warning decisions for subsequent tide cycles and will provide a valuable database for future research on coastal storm impacts. One of this year's initiatives is to train our coastal Skywarn spotters to report information from coastal storms via this tool. And in an effort to extend our outreach arm, we will be embarking on a collaboration effort with Sea Grant offices. This project, being championed by NOAA's North Atlantic Regional Team, is expected to open up new partnerships between the NWS and coastal resource managers.

**Urban Flash Flooding:** Flash flooding in urban areas has proved to be one of our greatest challenges. In a heavily urbanized area with impervious ground surfaces and drainage systems easily overtaxed, the response to heavy rain can be extremely rapid and dramatic. Flash flooding in Fall River on September 5, 2012 highlights the issue. Flash flood warning criteria was likely met within 30 minutes of the first raindrops hitting the ground! Like a number of other Southern New England cities, a combined runoff-sewer infrastructure and timing with respect to high tide exacerbated the impact. To start attacking this issue, our office will be conducting an inventory of urban areas to establish a first cut at guidance to our forecasters on how much rainfall in what amount of time is likely to initiate flooding fast and furious enough to warrant a Flash Flood Warning. Those thresholds will vary depending upon the character of the urban surfaces and robustness of the drainage infrastructure. The next step will be to provide maps for forecasters to easily overlay these especially vulnerable locations. A parallel initiative is to push the envelope of our meteorological understanding into the realm of what NWS forecasters refer to as "warning on forecast." The goal, and it is an ambitious one, is to develop forecast techniques robust enough to give forecasters higher confidence of excessive rainfall over

**“Our 2013 goal is to take [DSS] to a new level by having a forecaster dedicated to monitoring for any significant weather developments that may prompt public safety decisions...”**

localized areas an hour or more before they actually. For some of our urban areas, this may equate to issuing warnings even before the rain actually starts falling (or at least falling at intense rates).

In the end our goals are all about getting the word on hazardous weather out to people who need to respond for their own safety, the safety of others, and/or the mitigation of property loss. Thus, although your National Weather Service is continually changing to achieve a higher level of service, our mission to save lives and protect property remains constant.

# My Cell Phone just Alerted Me about a Warning!

by Glenn Field, Warning Coordination Meteorologist



Some of you may have already noticed that your new smart phone alerted you to a Flash Flood Warning in your area. Or, you may have been driving across the country, humming to your favorite tunes, and then been interrupted by your cell phone making a strange noise. Good thing you pulled over to safely investigate it—your phone had alerted you to a tornado a few miles away in the same county you were driving through!

Beginning in late June 2012, the Wireless Association and the wireless industry joined the Federal Communications Commission (FCC) and Federal Emergency Management Agency (FEMA) to offer Americans a robust and reliable wireless emergency alert system.

Wireless Emergency Alerts (WEA), ranging from AMBER Alerts to local emergencies requiring evacuation to extreme weather warnings are available from most wireless providers, representing nearly 97% of subscribers. [WEA is also known as the Commercial Mobile Alert System (CMAS) and the Personal Localized Alerting Network (PLAN).] The following National Weather Service (NWS) Warnings

will automatically be alerted on these phones:

- Tornado and Flash Flood Warnings
- Blizzard and Ice Storm Warnings
- Hurricane, Extreme Wind, and Dust Storm Warnings
- Tsunami Warnings

The reason that Severe Thunderstorm Warnings are not included in this list, at least for the time being, is that although they can sometimes produce life-threatening downbursts or huge hail, they also are issued for low-end (1" diameter hail / 58 mph wind gust) events and nationwide there are too many of these issued to warrant the WEA alert to go off. It wouldn't be good if people became immune to these alerts and disregarded them!

The alerts come in the form of a short, concise text message, but they are differentiated from a regular text message because they include a special tone and vibration, both repeated twice. Cell phone towers that are within the county being warned will broadcast the alerts every 5 minutes. If you have already received and acknowledged the alert on your phone, you will not continue to be alerted of the same warning. By broadcasting it every 5 minutes, it is great for alerting people that are just driving into a warned area. There are no fees/charges for this service (does not count as a text message). And, no, your location is not being tracked by anyone – it's just like a warning message on TV – like WEA, TV stations don't know exactly who is tuned in. Also, WEA alerts are delayed until you finish a conversation that you are on – your phone call will not be interrupted.

The NWS issues warnings for smaller areas, called polygons. Currently, the software program isn't capable of narrowing down the alert for just those cell phones located within the polygon – it warns for the whole county code. Please keep this in mind... Worcester County, MA for example, is a big county... you may need to investigate further and determine if you are in the direct path. Your best use of WEA is to immediately seek additional information about the imminent threat impacting your area.

**“ Wireless Emergency Alerts (WEA) are emergency messages sent by authorized government alerting authorities through your mobile carrier. Government partners include local and state public safety agencies, FEMA, the FCC, the Department of Homeland Security, and the National Weather Service.”**

Cont'd on page 5

## Cont'd from pg 4...Cell Phone Alerts

If you do not have a WEA-enabled phone, you can still rely on other means of receiving NWS emergency notifications. This includes NOAA Weather Radio, news media coverage, the Emergency Alert System (EAS) on radio and TV broadcasts, social media, and other alerting methods offered by state public safety agencies.

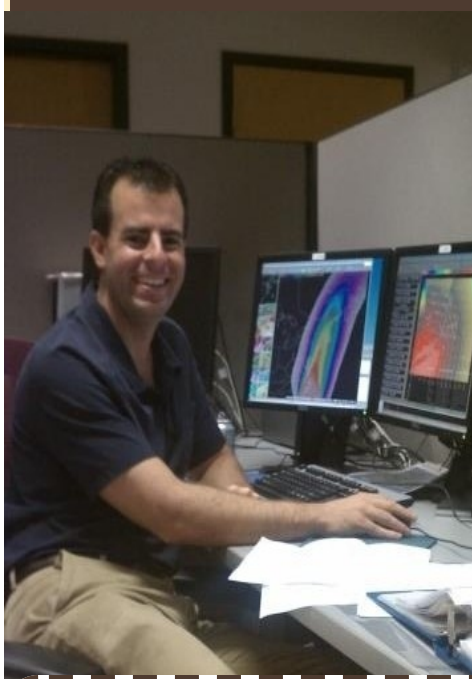
**For more information on the WEA as relates to NWS warnings, please visit:**

<http://www.weather.gov/wirelessalerts>

**Information on the overarching architecture of the system:**

<http://www.fema.gov/integrated-public-alert-and-warning-system>

### Getting to know your NWS Team: Hayden Frank, Lead Forecaster



Hayden Frank is a senior meteorologist with the National Weather Service in Taunton, MA. He is the Doppler Radar and Fire Weather Focal Point at the office. He also works on various other programs, including StormReady, research, and many different outreach projects.

Hayden was born in Philadelphia, PA and always had a love for meteorology from a very young age. He graduated from the Pennsylvania State University in 1998 with a Bachelor's Degree in Meteorology. After graduation, Hayden accepted a temporary job with the National Weather Service in Tulsa, OK. Six months later, he became a permanent National Weather Service employee with the office in Wichita, KS before transferring to Taunton in 2003. Hayden loves all kinds of weather, but always had a special interest in snowstorms, so living in New England is a perfect fit for him. In November 2008, he married Sara Vecchio Frank in Cazenovia, New York. The couple resides happily in Brookline, Massachusetts and had their first child during the summer of 2010.



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[http://www.facebook.com/  
US.NationalWeatherService.Boston.gov](http://www.facebook.com/US.NationalWeatherService.Boston.gov)

# The Gridlock Storm 5 Year Anniversary: December 13th 2007

By: Hayden Frank, Senior Forecaster



It is hard to believe that this December will mark the 5 year anniversary of the infamous gridlock storm in Southern New England. December 13, 2007 will always be remembered in this region, but not for extreme snowfall amounts or blizzard conditions. What made this storm infamous was the exact timing of the heavy snow and its disastrous impact on the evening rush hour.

The storm was well forecast by the National Weather Service in Taunton. The Hazardous Weather Outlook mentioned the potential for wintry weather as early as December 9, 2007. Winter Storm Warnings were issued the day before the event for an expected 6 to 10 inches of snow across most of Southern New England. In fact, the statement in the warning mentioned "A short duration, but high impact snowfall event with 1 to 2 inch per hour snowfall rates." The timing of the storm

was also very accurate, with the onset of the snow quickly developing between 10 am to 1 pm across the region.

Although the storm was well forecast, the timing and quick onset of heavy snow brought traffic that afternoon and evening to a standstill. The weather was dry through late morning, so most people went to work and school. Many employers opted to send their workers home just as the snow was beginning, but it was too late. In other cases, people that were sent home early decided to run errands, such as Christmas shopping. Once the snow moved in, visibilities quickly dropped to half a mile or less and roads quickly became snow covered.

The snow fell at rates of up to 2 to 3 inches per hour during the afternoon and early evening hours. Many motorists on their way home became stuck on roads, and this prevented snow plows from being able to do their job. The end result was a complete gridlock across much of Southern New England. Particularly hard hit were the major metropolitan areas, where many were stranded on roads for more than 8 hours; including school buses filled with kids! Many people just abandoned their vehicles on area roadways, which blocked or completely shut down roads.

Despite the fact that the Gridlock Storm was well forecast, it shows that a significant and unexpected result can still occur. The National Weather Service continues to improve its ability to communicate weather information through briefings to relevant agencies, use of social media, and other new technologies. We strive not only to improve our abilities to issue more accurate forecasts, but better communicate that information so better decisions can be made based on our products.

**“ Motorists on their way home became stuck on roads, and this prevented snow plows from being able to do their job. The end result was complete gridlock across much of Southern New England.”**



## A Winter Disaster Kit for your Vehicle:

- Flashlight and batteries
- Maps
- Small First Aid Kit
- Sand Bag/Kitty Litter
- Tire Repair Kit
- Blanket or Sleeping Bag
- Hat and Mittens
- Shovel
- Tire Chains
- Windshield Scraper
- Booster/Jumper Cables
- Flares
- Air Pump
- Bottled water
- Fluorescent Distress Flag
- Non-perishable Foods

# Probabilistic Snowfall Graphics Coming this Winter to Southern New England

By: Frank Nocera, Senior Forecaster

Beginning this winter the Weather Forecast Office in Taunton, MA will be issuing experimental probabilistic snowfall graphics for much of Southern New England. The purpose of this new forecast is to provide our customers and partners with a product that expresses forecast uncertainty to better enhance Decision Support Services or DSS. Probabilistic snowfall graphics will better complement NWS deterministic snowfall graphics (only one possible forecast outcome), indicating areas of low and/or high uncertainty. NWS hazardous weather conference calls with our partners and customers frequently involve requests regarding forecast uncertainty, forecaster confidence, worst and best case scenarios etc.

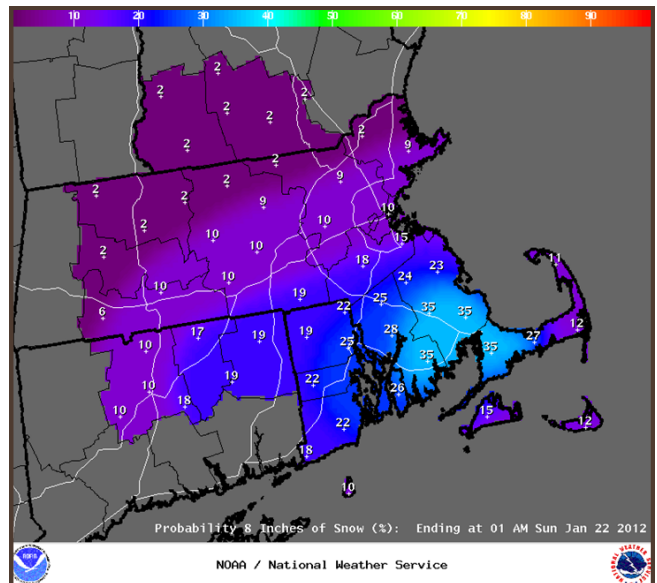
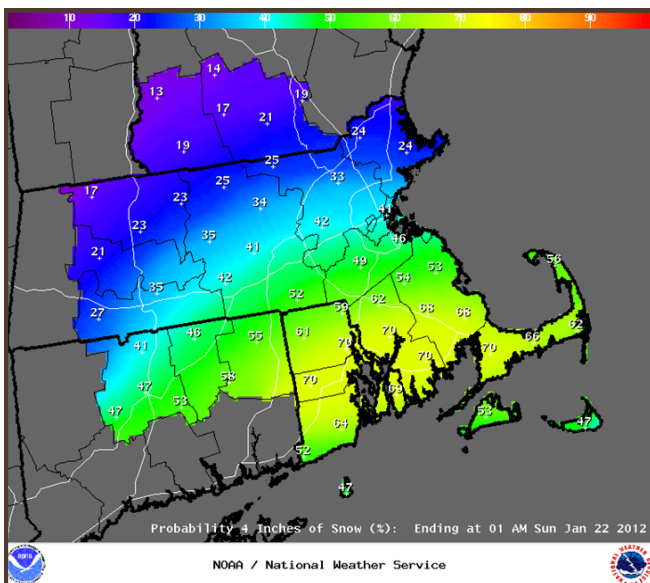
Probabilistic snowfall graphics will better convey this critical decision support service. Furthermore these graphics will provide forecasters an opportunity to better leverage probabilistic guidance that can't be expressed in text products. These probabilistic graphics have already been introduced in a few of our weather coordination conference calls during the 2011-2012 winter season to our key stakeholders (emergency managers, FEMA, DHS, USCG, DOT, school officials, utility companies and other decision makers) and their feedback has been overwhelmingly favorable.

**“The purpose of this new forecast is to provide our customers and partners with a product that expresses forecast uncertainty to better enhance Decision Support Services”**

In fact, we have already received some very positive feedback from one of our key stakeholders, FEMA Region 1, Department of Homeland Security: Ryan Black Jones –

***“I really like those experimental graphics with probability for different amounts of snowfall. I understand that they are still in testing and development, but they clearly convey some useful and easily understandable information.”***

Below are two examples of probabilistic snowfall graphics that were issued last year during a winter storm. The left-hand graphic is the probability of 4 inches of snowfall and the right-hand graphic the probability of 8 inches of snowfall. Both of these graphics indicate the greatest threat or highest risk area for heavy snowfall is across RI and especially Southeast MA.



Any questions or comments regarding these new experimental probabilistic snowfall graphics should be forwarded to Frank Nocera at [frank.nocera@noaa.gov](mailto:frank.nocera@noaa.gov)

**Winter Weather Preparedness Week: October 22nd — 26th**



Be sure to find  
**NWS Boston**  
on Twitter

<http://www.twitter.gov/NWSBoston>

## A Review of the 2012 Tornado Season

by Lance Franck, Graduate Student Volunteer

“In fact, a waterspout is by definition a tornado over water, however, it does not go into the tornado record books unless it hits land.”

The 2011 tornado season will be remembered for the EF3 tornado on June 1<sup>st</sup>. The 2012 tornado season will be remembered for two waterspouts that came ashore, making them tornadoes. In fact, a waterspout is, by definition, a tornado over water. However, it does not go into the tornado record books unless it hits land. On July 24<sup>th</sup>, a waterspout moved ashore in Plymouth, MA and on August 10<sup>th</sup>, a waterspout moved ashore on Block Island, RI. Both were officially confirmed as tornadoes.

On July 24<sup>th</sup>, a series of three waterspouts associated with a line of thunderstorms formed just offshore of Plymouth, MA. They moved rapidly onshore into the Manomet section of town just after 4 PM, causing minor damage at White Horse Beach. A window was ripped off its hinges and shattered. There was also damage to some awnings. This event was classified as an EF0 on the Enhanced Fujita (EF) Scale, with wind speeds estimated up to 65 M.P.H. These waterspouts were very shallow with respect to the vertical extent of the atmosphere and occurred on such a small scale (estimated to be about 50 feet wide), that they were undetectable on radar.

On August 10<sup>th</sup>, a small yet strong area of low pressure moved through the region. This resulted in convective rainbands moving onshore from south to north, similar to that of a landfalling tropical cyclone. A waterspout associated with a vigorous convective band came ashore near the southern tip of Block Island, just prior to 4 PM, and moved northeast over the island. There were several reports of trees down from the southern end of the island northeastward to

the New Shoreham area. Three witnesses also observed a “rotating column,” and heard an apparent “roaring” noise. This tornado was classified as an EF0 on the Enhanced Fujita (EF) Scale, with wind speeds estimated at 70 M.P.H. In fact, this was the first known touchdown of a tornado on Block Island.



**Above:** The Plymouth, MA waterspout just before coming ashore. Photograph Credit: Kevin Doyle.

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# Cont'd from pg 8...2012 Tornado Season

| Date     | State | County     | F/EF Scale | Injuries | Fatalities | Length (Miles) | Width (Yards) |
|----------|-------|------------|------------|----------|------------|----------------|---------------|
| 12/18/51 | MA    | Dukes      | 2          | 0        | 0          | 0.1            | 10            |
| 09/07/58 | MA    | Plymouth   | 0          | 1        | 1          | 0.1            | 10            |
| 07/21/62 | MA    | Essex      | 1          | 3        | 0          | 2.7            | 10            |
| 05/19/64 | MA    | Essex      | 1          | 0        | 0          | 2              | 300           |
| 06/09/65 | MA    | Plymouth   | 0          | 0        | 0          | 0.1            | 10            |
| 08/10/65 | MA    | Essex      | 1          | 0        | 0          | 3.6            | 10            |
| 07/01/68 | MA    | Essex      | 1          | 1        | 0          | 0.3            | 100           |
| 08/09/68 | MA    | Barnstable | 1          | 0        | 0          | 0.1            | 10            |
| 08/28/70 | MA    | Bristol    | 2          | 0        | 0          | 1              | 10            |
| 09/14/72 | MA    | Bristol    | 0          | 0        | 0          | 4.1            | 20            |
| 09/14/72 | RI    | Newport    | 0          | 0        | 0          | 2              | 10            |
| 08/22/77 | MA    | Barnstable | 1          | 2        | 0          | 0.1            | 10            |
| 09/16/86 | MA    | Plymouth   | 1          | 0        | 0          | 0.1            | 50            |
| 10/18/90 | RI    | Kent       | 1          | 0        | 0          | 4.5            | 73            |
| 08/20/97 | MA    | Plymouth   | 0          | 0        | 0          | 0.1            | 10            |
| 07/23/08 | RI    | Bristol    | 0          | 0        | 0          | 1.3            | 40            |
| 07/24/12 | MA    | Plymouth   | 0          | 0        | 0          | 0.1            | 15            |
| 08/10/12 | RI    | Washington | 0          | 0        | 0          | 4              | 20            |



**Above:** Tornado Statistics for the Massachusetts and Rhode Island coastline from 1950 to 2012 along side with a map of the plotted tornadoes that were near the coastline.

Waterspouts can and occasionally do move onshore, making them tornadoes. Even though a waterspout is typically weaker than a tornado, it should be taken just as seriously, especially by maritime interests. If you see a waterspout, do not move closer to investigate. If you are on a boat, head at a ninety degree angle to the apparent motion of the circulation. If you are a beachgoer, seek shelter, and follow tornado safety precautions. Although waterspouts and tornadoes are rare along the Southern New England Coastline, the entire area is susceptible to them, as demonstrated by the Block Island tornado.

## From the Skywarn Training Desk

by William Babcock, Senior Forecaster

### Online Refresher Training

Has it been more than 5 years since you had spotter training? Are the classes we offer located too far away, or do they take place at inconvenient times? If so, it's time to look at the refresher training that we offer on our website:

[www.erh.noaa.gov/box/officePrograms/SkyWarn.shtml](http://www.erh.noaa.gov/box/officePrograms/SkyWarn.shtml)

The refresher training is a shortened version of our regular Skywarn class. You can, at your own pace, view the slides and listen to the narrator present the material.

You can then take the refresher training quiz at a separate link. When you pass this short quiz, the computer will send us a notice.

We can then send to you an updated card and spotter number.

- Marine Tides
- Climate
  - Local
  - National
  - More
- Digital
  - Bufkit Model Data
  - Calculators
  - Digital Forecasts
  - MOS Data
- Weather Maps
  - New England Maps
  - Hourly Data Plot
  - Snow Maps
- Office Programs
  - NWR - Broadcast In
  - Skywarn Program
  - Coop Program
  - Marine Program
- Descriptive

The screenshot shows the National Weather Service Forecast Office website for Boston, MA. The page is titled "National Weather Service Forecast Office Boston, MA". Under the "Skywarn Spotters" section, there are several links: "Prevailing Winds - April 2012", "Skywarn Refresher Training" (circled in red), and "Skywarn Refresher Training - Quiz" (circled in red). Other links include "The Skywarn Program", "How To Become A Spotter", "Training For This Year", "Reporting Criteria", "Questions and Answers", and "Snowfall Measuring - How To".

Cont'd on page 10

# Cont'd from pg 9...Skywarn Training

**Skywarn Spotters, don't forget to call the National Weather Service and report the following:**

- What you see (hail, wind, tornado, snow amounts etc.)
- Your location
- The time you witness the event
- And your spotter id

## We need accurate reports!

To the right are radar pictures of three thunderstorms that occurred in Western Massachusetts on August 9th, 2012. They are not the usual radar images that you would see on the Internet or on television. Most people are used to the "view from above" images that show red "blobs" moving across the region. (Actually, you can see the "blob" near the bottom of each image.)

These images are vertical cross-sections of the thunderstorms. As with the familiar radar images, light blue means the radar received just a little energy reflected back, which means just a few drops of rain. The red shaded areas are where a lot of energy was reflected back, or a lot of water and/or ice was detected in that area.

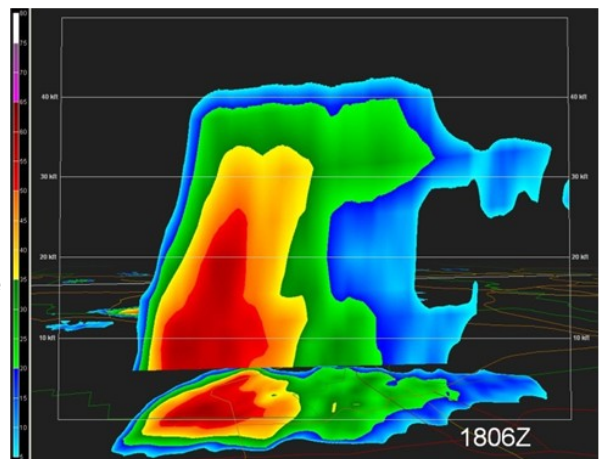
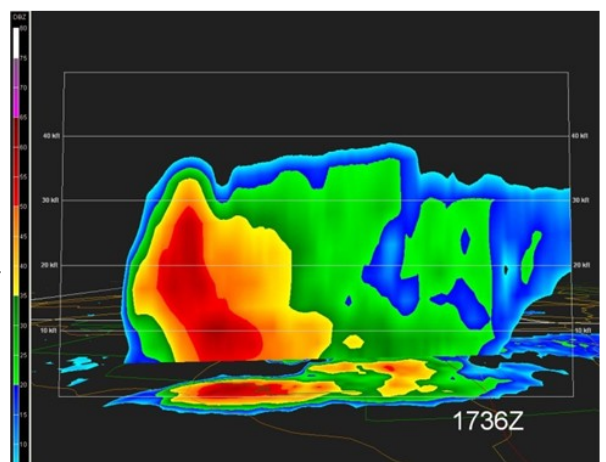
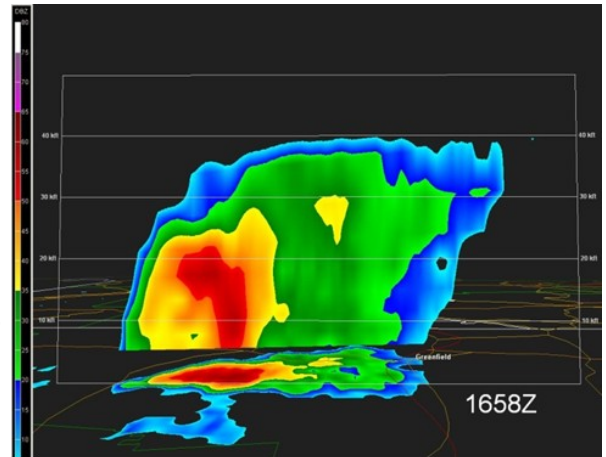
When the red-shaded areas climb higher than 20 thousand feet above the ground, and especially when higher than 25 thousand feet, we will be concerned that the thunderstorm may produce damaging wind gusts or hail. We may issue a Severe Thunderstorm Warning in that case.

### Which of these thunderstorms do you think produced damaging weather?

The 1658Z image has an overhang on one side. The red area in the 1736Z image almost reaches an altitude of 30 thousand feet. The red in the 1806Z image reaches 25 thousand feet altitude.

**Answer:** The thunderstorm in the 1806Z image brought a tree down on a house near Westfield MA. That damage actually occurred 16 minutes earlier when the storm was less impressive. There were no reports with the 1736Z storm over Goshen MA, or with the 1658Z storm near Shelburne MA. They may have produced wind damage, or just heavy rain. Absent any reports, we must assume it was heavy rain.

Radar shows us impressive storms and your reports tell us what is actually happening with those storms. These reports are vital to us and will inform us whether or not severe weather is occurring.



**Check out the link for more details about the Skywarn Program:**

<http://www.erh.noaa.gov/box/officePrograms/SkyWarn.shtml>

# An Update from WX1BOX: Amateur Radio Station at NWS Boston

By: Robert Macedo, SKYWARN Coordinator



**Above:** WX1BOX Amateur Radio Desk during SKYWARN Recognition Day 2011.

Greetings from the desk of WX1BOX, the Amateur Radio Station at the National Weather Service in Taunton. We'd first like to start by thanking all of the Amateur Radio and non-Amateur Radio SKYWARN Spotters who have supported us for many years through all the minor to significant events. The summer of 2012 brought several SKYWARN Activations with Amateur Radio Operations at the NWS Taunton Forecast Office. Some of the major incidents that SKYWARN Spotters and Amateur Radio Operators contributed to during the summer of 2012 included the Glastonbury, CT 100 MPH microburst, the Arlington, MA microburst from July 18<sup>th</sup> and the Flash Flood and Golf Ball Sized Hail event in Cheshire County, NH on May 29<sup>th</sup>. Also, some of the first reports of damage and high winds from Block Island, RI on August 10<sup>th</sup> came from Amateur Radio and via the Block Island Times, would later be confirmed that it was the first tornado touchdown ever recorded on Block Island. In each of these cases, Amateur Radio Operators and SKYWARN Spotters were the first to provide reports of the severity of these weather related situations and did so in near real-time. This allowed for high forecaster confidence in issuing follow-up warnings as well as storm verification of these situations that can be used for future severe

weather scenarios.

The NWS Taunton Amateur Radio station has been enhanced with a new computer installed right at the desk of WX1BOX. The station setup continues to have one 2 Meter/440 MHz dual band radio for voice and a second 2 Meter/440 MHz radio that is utilized for digital communications including Packet/Winlink capability. The second radio could be used with other digital radio modes in the future. A HF radio remains at the station and is utilized when required for HF communications. We continue to use Cell Phone Air Card Internet for the WX1BOX Amateur Radio Station and look to put 6 meter capability back into our Amateur Radio station.

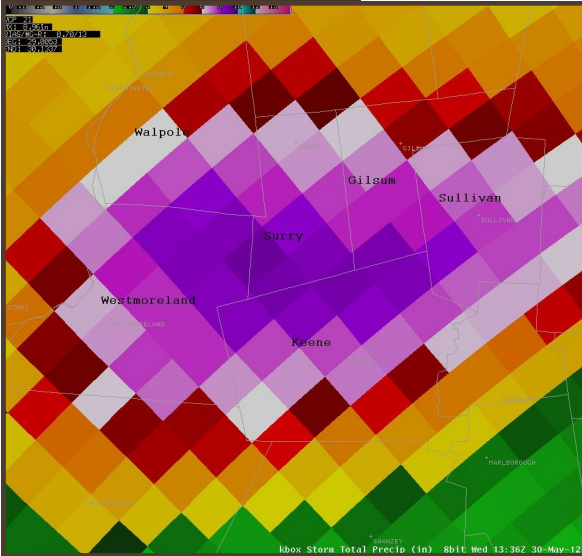
During SKYWARN Activations where the NWS Taunton Amateur Radio Station is active, the flow of activations can have periods of extended downtime interchanged with periods of very high activity monitoring the various modes to gather reports as storms develop and travel across the area. Various Amateur Radio Nets are monitored with Net Controls in their areas and at times, Net Control for certain nets will be run out of WX1BOX when required. There are approximately 2 dozen SKYWARN repeaters across the region. The repeaters in the area most impacted by severe weather are activated, so not every repeater is active during severe weather. Utilizing Radio linking protocols from the Internet called Echolink and IRLP (Internet Radio Linking Project), a conference network of repeaters and liaisons and individual stations are established via those modes and direct linking to specific SKYWARN repeaters can also be done via those modes.

In the past 18 months, we continue to expand our available capabilities for both Amateur Radio and non-Amateur Radio SKYWARN Spotters to reach us for reports. We have both a Twitter and Facebook feed that we utilize to keep folks informed of reports as they come in from various locations and as a means to post our coordination messages and events. We also continue to use our web site and our SKYWARN Announcement email list for pre- and post-storm information and updates on the SKYWARN program. To stay informed, you can join the SKYWARN Email Newsletter and storm notification email list. To join, send an email to [rmacedo@rcn.com](mailto:rmacedo@rcn.com) and we will get you on the email list.

**Learn more about the NWS's effort to become a Weather Ready Nation:  
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# Significant Flash Flooding Events during the Summer of 2012

By: Rebecca Gould, Nicole Belk, & Stephanie Dunten, Meteorologists



**Above:** The Storm total precipitation map from the NWS Taunton Doppler Radar. This map is showing that near 8 inches of precipitation fell near Surry, NH.

## May 29<sup>th</sup>

On May 29<sup>th</sup> a warm front moved through southern New Hampshire early in the morning, leaving the area in a very moist, warm, and unstable airmass. Later that afternoon a cold front began moving across western New York and approached southern New Hampshire. As the front made its way across this area, it set off showers and thunderstorms across much of eastern New York and western Massachusetts in an especially moist environment. Three high precipitation supercell thunderstorms eventually moved in the same path over central Cheshire County.

These thunderstorms each produced two to three inches of rain, with most of the rain falling over the central portion of the county, including the cities of Surry, Gilsom, and Keene. The NWS cooperative observer at Surry Mountain Dam recorded 6.91 inches of rain total, while the Taunton WSR-88D radar estimated storm total rainfall of up to

8 to 9 inches in less than a couple of hours. This resulted in flash flooding across much of this area.

Numerous roads were flooded and/or washed out throughout the area. Ferry Brook in Keene and the Ashuelot River both overflowed their banks. Route 9 in Sullivan was closed with cars stuck in the floodwaters. With many roads closed off some residents had issues traveling throughout the county.

Besides flooded roads, property damage occurred across the county. The Gilsom and Sullivan Elementary schools were closed due to flooding, and many basements in Keene were flooded as well. Several people were placed in a Red Cross Shelter overnight.



**Above:** Road damage on Route 9 in NH due to flash flooding on May 29<sup>th</sup>.

## August 12<sup>th</sup>

August 12<sup>th</sup> proved that hazardous weather can occur at any time. A stalled frontal boundary was set up across southern New Hampshire south into western Connecticut allowing for deep moisture to move into the area with dewpoints in the 70s. A few showers developed in the early morning hours along the frontal boundary and eventually expanded in coverage as well as intensity. Because the system hardly moved, several inches of precipitation fell across Hamden County. In fact, a spotter reported 3.91 inches of rainfall in Monson, MA.

“August 12th proved that hazardous weather can occur at anytime.”

Cont'd on page 13

# Cont'd from pg 12...Flash Flooding 2012

Numerous roads experienced severe flooding and became impassable early that morning. Beebe Road in Monson was the hardest hit with a large portion of the road completely washed out. Luckily, there were no reports of significant damage to any homes or vehicles. The time that this event occurred was between 6 to 9 am, which is anomalous as most flooding events occur in the afternoon hours.



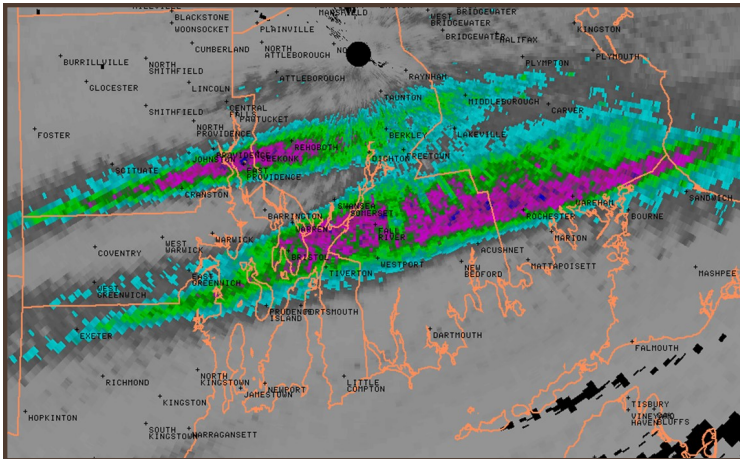
**Above:** Beebe Road in Monson, MA. had significant damage due to flash flooding on Aug 12th.

## Sept 5<sup>th</sup>

Major urban flash flooding occurred in the city of Fall River, Massachusetts with additional lesser flash flooding within Bristol County, MA. A slow moving cold front, combined with tropical moisture, which led to training showers and thunderstorms over portions of Rhode Island and southeast Massachusetts. The Doppler radar estimated that 3 to 5 inches fell in central Bristol County, including Fall River. In fact, a spotter in the city of Fall River reported a storm total of 5.24 inches of rainfall.

In Fall River, numerous streets throughout the city were inundated and closed due to flooding, some to depths of 4 to 5 feet. In the vicinity of Eastern Avenue, amateur radio reported 40 to 60 cars stuck in standing water, with at least 6 high water rescues. Fall River Emergency Management reported that at least 50 homes had been flooded to the 1<sup>st</sup> floor.

The NWS in Taunton not only issued a flash flood warning for this event, but upgraded it to a flash flood emergency. This was only the second time the WFO issued a flash flood emergency; the first time was during Hurricane Irene. The office realized the extent of the flooding that occurred through the help of social media and felt the emergency wording was warranted. Luckily, only property damage occurred and no one lost their life during this hazardous event.



**Above:** Storm total precip map based on the NWS Doppler Radar. This map is showing precip amounts near 2 to 4 inches.



**Above:** Significant flooding occurring in Fall River, MA.

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*Meteorologist in Charge:* Robert Thompson

*Warning Coordination Meteorologist:* Glenn Field

*Science and Operations Officer:* Joe DelliCarpini

*Editor:* Stephanie Dunten

## Counties in WFO BOX CWA

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