

A Review of Southern New England Tornadoes Including the November 13, 2021 Outbreak

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ABSTRACT

Twenty-seven tornadoes that occurred in southern New England between 2018 and 2021 were analyzed to update previous studies which reviewed tornado environments and radar signatures. The updated study confirmed the previous findings. Tornadoes were most often associated with the presence of a closed upper low near southern Ontario, in an environment featuring low instability, strong wind shear, tropical moisture, and the presence of a low level boundary to induce spin-up. Radar signatures included a well-defined rotational couplet (best detected within 40 nautical miles of the radar) along with high reflectivity and in some cases, a Tornado Debris Signature.

This presentation will give a brief overview of the previous studies' work and will focus on the results of the updated study. We will examine the tornado outbreak that occurred on November 13, 2021 to further illustrate the results of the study.

PRESENTER'S BIO

Joe DelliCarpini is the Science and Operations Officer at the National Weather Service's Boston office in Norton, MA and has over 30 years of forecasting experience. Joe's main role is to oversee the office's science program, which includes research and staff training. He also provides training for the staff of four meteorologists at the Center Weather Service Unit located at the Boston Air Route Traffic Control Center in Nashua, NH.

Joe is a native of the New York City area and received a Bachelor of Science Degree in Meteorology from the State University of New York at Oswego. His career with the National Weather Service began as a Student Trainee in Boston while completing his undergraduate degree. Upon graduation, he worked at the Binghamton, New York Weather Forecast Office for five years and then

returned to southern New England as a Hydrologic Forecaster at the Northeast River Forecast Center in Taunton. He transferred back to the Boston Weather Forecast Office as a Meteorologist and then as a Lead Meteorologist before being promoted to Science and Operations Officer in 2007.

Joe's interests include aviation and coastal meteorology. He is involved with several national teams related to aviation, tropical, winter weather, and coastal inundation forecasting. Joe led the implementation of the office's Decision Support Services program which provides information to core partners and established strong working relationships with federal, state, and local partners including the broadcast media.

Coastal Erosion Effects on Landforms, Development, and Infrastructure in Storms

Rebecca Haney
Massachusetts Office of Coastal Zone Management
Boston, MA

ABSTRACT

Each storm affects the coast in Massachusetts differently, depending on the direction and intensity of winds, size of the waves, length of the storm, surge height, timing relative to astronomical high tides, and patterns of coastal erosion. In this talk, the differences in how coastal landforms erode will be discussed to identify why some areas are more prone to structural damage, even in minor coastal storms.

PRESENTER'S BIO

Rebecca Haney is a Certified Floodplain Manager and the coastal geologist for the Massachusetts Office of Coastal Zone Management. Her responsibilities include research and policy development for coastal hazards, providing technical support to local officials through CZM's Coastal Resilience Grant Program, providing technical assistance to coastal communities, other agencies, and the public on issues related to coastal geology, physical processes and techniques for mitigating impacts to coastal resources. She also leads the Massachusetts Coastal Storm Damage Assessment Team. Rebecca has Bachelors and Masters Degrees in Geology and has been with CZM more than 29 years.

High Wind Forecasting Rules of Thumb for Southern New England

Kevin Cadima
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Boston/Norton, MA

ABSTRACT

High winds are no stranger to southern New England. Episodes of synoptic-scale strong to damaging wind gusts occur with varying frequency across southern New England, with a focus from fall through early spring. This presentation will discuss some high wind forecasting rules of thumb that have been developed at WFO Boston over the years. Some examples and brief case studies of high wind events for different wind directions will be given.

PRESENTER'S BIO

Kevin Cadima is a senior forecaster with the National Weather Service in Boston/Norton. His interest in weather began during the Blizzard of '78 and was the trigger for him wanting to pursue a career in meteorology. Kevin studied meteorology at Lyndon State College in Vermont and earned a B.S. degree in meteorology in 1989.

Kevin's career with the National Weather Service began as a student intern at the New York City Forecast Office during the summer of 1988. After returning to college to complete his senior year, Kevin began a full time position as a meteorologist at the NWS in Binghamton, NY. He also worked as a general and lead forecaster at the NWS in Burlington, VT for 11 years and has been in his current position in Norton since 2005. Kevin is involved in the verification program, the training and science teams, and leads the office's operations team.

Extreme Lake Effect Snowstorms in Western New York in November and December, 2022

Joseph W. DelliCarpini
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Boston/Norton, MA

Michael Fries
NOAA / National Weather Service Forecast Office
Buffalo, NY

ABSTRACT - Joe

The Buffalo, NY area was hit by two “extreme” lake effect snow events on November 17-20 and December 23-25, 2022. The November event dumped more than 6 feet of snow in Buffalo’s southern suburbs and a record 24-hour snowfall total of 21.5” at the Buffalo Airport. The second event occurred during the Christmas holiday weekend and brought another 43” of snow to Buffalo. Several of the staff at NWS Buffalo were stranded at the office for 3 to 5 days!

This presentation will begin with a look at the basics of lake effect snow including how it forms. Next, we’ll show you how these impressive lake effect snow events unfolded by reviewing the weather pattern that was in place and examining some of the tools that were used to forecast the event, including model sounding data and high resolution model forecasts. We will show how NWS forecasters were able to message the events starting several days in advance.

ABSTRACT - Mike

Joe presented the meteorological side of things. I will show the historical context of the storms, but then concentrate more on the people/communication aspects. This includes our Decision Support Services, Social Media, and the office experience.

PRESENTERS' BIOS

Joe DelliCarpini is the Science and Operations Officer at the National Weather Service's Boston office in Norton, MA and has over 30 years of forecasting experience. Joe's main role is to oversee the office's science program, which includes research and staff training. He also provides training for the staff of four meteorologists at the Center Weather Service Unit located at the Boston Air Route Traffic Control Center in Nashua, NH.

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Michael Fries has been the Warning Coordination Meteorologist at the National Weather Service's Forecast Office in Buffalo, NY, for the past five years. His 18 years of government service include prior stops at the NWS in Pittsburgh, PA, Spokane, WA, and at the Hydrometeorological Prediction Center outside Washington, DC. Before entering government service, he also worked in Emergency Preparedness and Response at DTE Energy. Mr. Fries has provided support to the lower Great Lakes lakeshore communities of New York during recent historic water level episodes, generational lake effect snow events, and the most recent record breaking Christmas Blizzard of 2022. He worked the inland blizzard from Hurricane Sandy in Pennsylvania, Maryland, and West Virginia and he worked on a team that briefed the White House during Hurricanes Katrina and Rita in 2005. He also was deployed to support the response to Hurricane Florence in 2018.

Michael graduated with a Master of Science in Atmospheric and Oceanic Science from the University of Wisconsin-Madison and a Bachelor of Science in Meteorology with a minor in Mathematics from Saint Louis University.

NOAA's National Weather Service (NWS): Status Update and Vision for the Future

Michelle Mainelli
NOAA / National Weather Service Headquarters
Silver Spring, MD

ABSTRACT

The National Weather Service (NWS) mission is to provide weather, water and climate data, forecasts, warnings, and impact-based decision support services for the protection of life and property and enhancement of the national economy. Building a Weather-Ready Nation and accomplishing the mission requires a diversified organization. NWS Headquarters is in Silver Spring, MD. Nationwide, there are 6 Regional Headquarters; 9 National Centers (such as the National Hurricane Center, Storm Prediction Center, and Climate Prediction Center); 122 local Weather Forecast Offices (WFOs); 13 River Forecast Centers (RFCs); and 21 Center Weather Service Units (CWSUs). NWS employees work to support all aspects of keeping the public safe from weather, water, and climate hazards.

The NWS Director, Ken Graham, has issued his goals/strategies for the future, which are intended to transform the NWS into a more nimble, flexible, and mobile agency that is eye-to-eye with decision makers. "Ken's 10," as they are called, serve three overarching themes: 1) people as top priority; 2) improve our infrastructure to be resilient and reliable; and 3) transform our agency to meet current and future needs of society.

This presentation will provide a high level overview of NOAA and the NWS, as framed by the Weather Ready Nation construct and Ken's 10. It will also cover a sampling of current priorities, major programs and challenges.

PRESENTER'S BIO

Michelle Mainelli is currently the Acting NWS Deputy Director and has served in various roles in the NWS for more than 30 years.

Michelle most recently served as the Director of the Office of Dissemination at NWS headquarters since 2017, and over the last three years, she served as Acting Director for OPPSD, Office of Facilities, and Office of Observations. Prior to coming to NWS headquarters in 2016, she gained experience in several NWS field positions.

Michelle began career, in 1990, with the NWS as an intern at the WFO in St. Louis, Missouri and then worked at the National Hurricane Center for 15 years where she served in all three branches of the Center and held positions as Marine Forecaster and Hurricane Specialist. In 2008, she was selected as the Software Development Team Lead for NCEP Central Operations (NCO) Systems Integration Branch and was promoted to Branch Chief in 2010, and NCO Deputy Director in 2014.

Michelle holds a B.S. in Meteorology, a M.S. in Meteorology and Physical Oceanography, and a MBA in Technology Management.