

International Center for Enterprise Preparedness (InterCEP)

Severe Winter Weather Outlook for 2017: What to Expect and How to Prepare

Web Forum

On December 2, 2016, **Gary Conte**, Warning Coordination Meteorologist at the **National Weather Service**, led a web forum titled *Severe Winter Weather Outlook for 2017: What to Expect and How to Prepare*. His presentation and the discussion that followed are summarized below.

Hazards and Impacts the New York City Metropolitan Region Has Faced

The New York City metropolitan region has been recently impacted by severe winter weather events. It started 2016 with a blizzard that spanned a few days, Jan 22-24. Three of the top five snow storms in Central Park were recorded since 2006, in just the last ten years.

The highest winter weather impact for New York City was recorded on January 18, 2015 and it was due to ice. Up to one tenth of an inch of ice covered roads in the Tri-State area, but freezing rain can have a very large impact in terms of travel and walking. Emergency rooms in Suffolk County were full due to people falling, slipping, etc. In addition, a long period of subfreezing temperatures caused ice buildups in waters around New York City.

During this kind of weather, the vulnerabilities include driving, walking and flying, and emergency response is also impacted.

Freezing Rain and Sleet

Three winter precipitation types that can impact the area are:

- freezing rain (ice)
- snow
- sleet

Non-precipitation events include:

- High wind
- Extreme cold
- Dense fog
- Low wind chills
- Coastal flooding

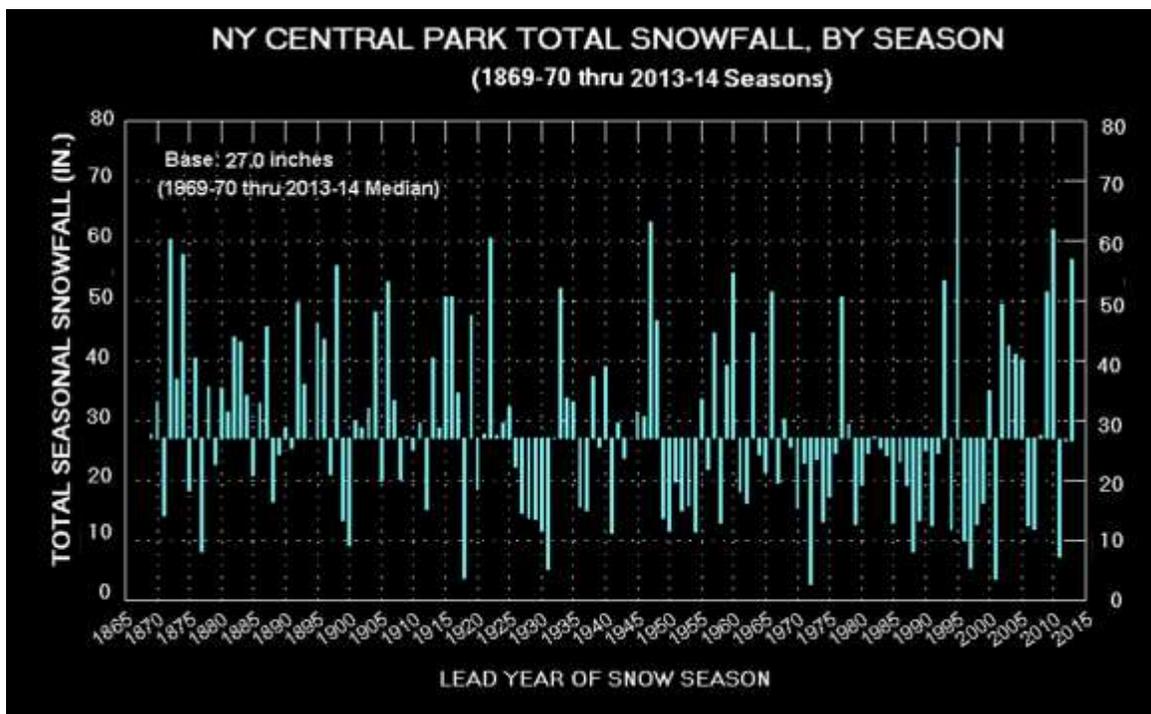
Winter weather events occur alone or in combination. Examples of the latter include:

- Heavy Snow and Strong Winds
- Extreme Cold and Low Wind Chills

The type of precipitation that falls to the surface depends on the depth of the melting layer.

As figure 1 shows, there was significant variation in terms of seasonal snowfall in the New York City region during the period 1869-2014, as measured in Central Park, with an average of 27 inches, a low of 2.8 inches, and a high of 75.6 inches.

Figure 1. New York Central Park Total Snowfall by Season (Inches)



Source: National Oceanic and Atmospheric Administration (NOAA), National Weather Service.

The most impactful sleet storm in the New York City area was recorded on February 14, 2007. Most of the impacts were related to mass transit, but also to walking and driving. The airline industry is also impacted during these events.

Freezing rain results when “ground” temperatures are 32 degrees or lower, not just when “air” temperature is 32 degrees or lower.

On January 18, 2015, there were significant impacts from freezing rain. Even small amounts can cause havoc. Icing, just a glaze, under a quarter of an inch, can have significant impacts on mass transit, driving and walking. Power lines become affected by half an inch of ice accumulation, and those impacts

increase dramatically when that increases to one inch. Under these conditions power lines are vulnerable and may come down, which can result in power outages.

Winter weather outlook

The first winter weather outlook was published on October 20, 2016 by NOAA’s Climate Prediction Center (CPC). It was updated on November 18. The CPC also issued a La Niña advisory. What does that typically mean? Overall, it means the New York City area is likely to see more transition type of storms, from snow to rain, or rain to snow with sleet from time to time.

Figure 2. Temperature Outlook December 2016 – February 2017

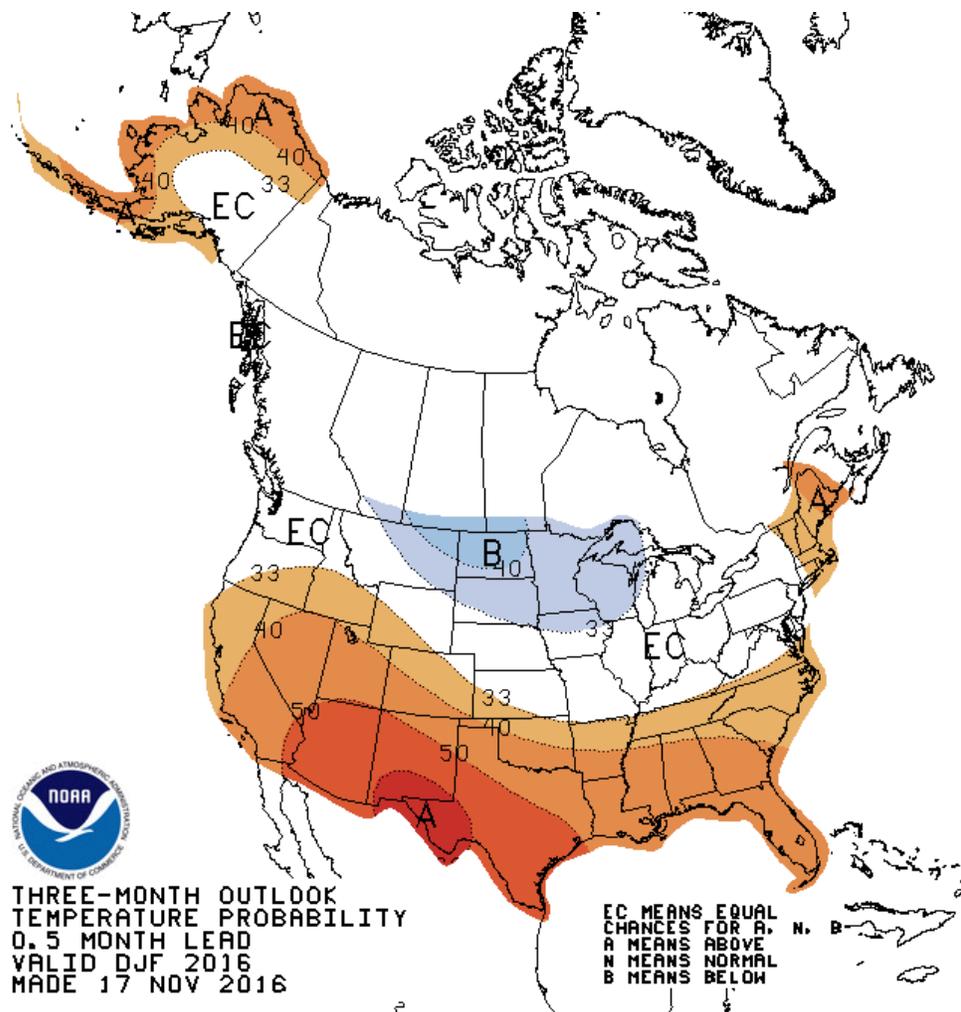


Image source: National Oceanic and Atmospheric Administration (NOAA), Climate Prediction Center.

Figure 3. Precipitation Outlook December 2016 – February 2017

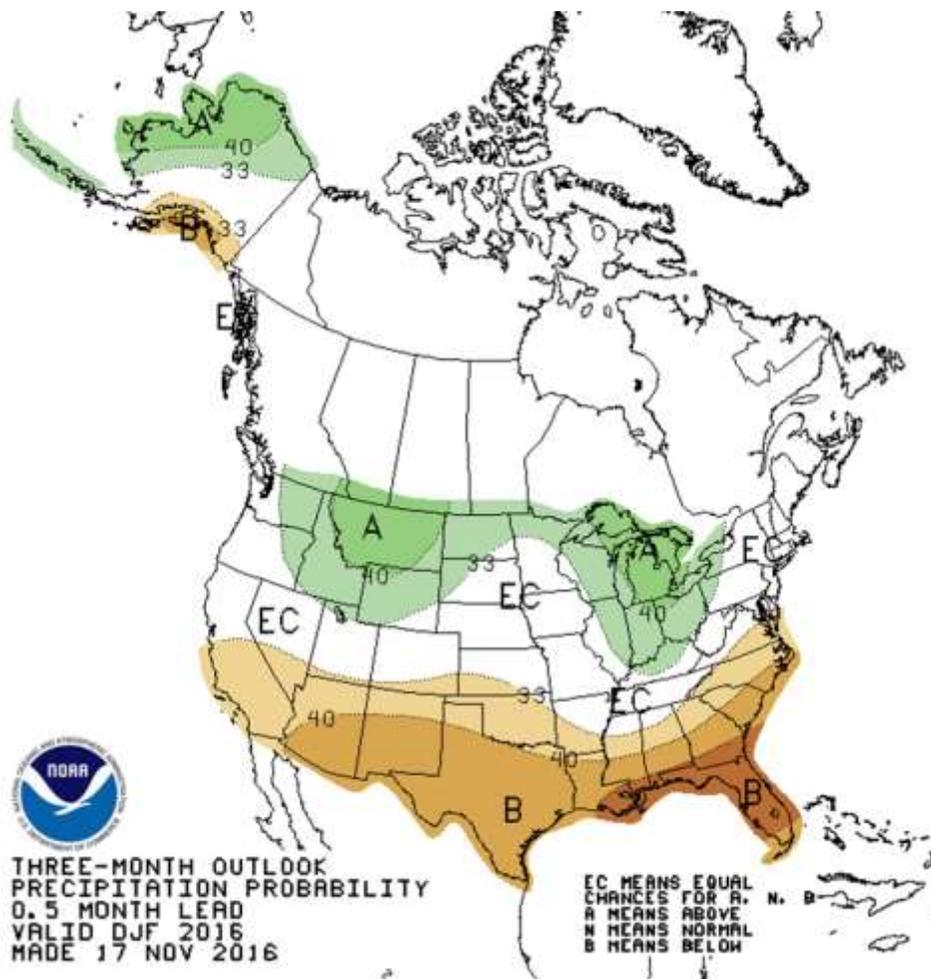


Image source: National Oceanic and Atmospheric Administration (NOAA), Climate Prediction Center.

Meteorological winter covers the months of December, January and February. The current outlook is for “equal chances,” which means that there is no clear climate signal for above, near normal, or below normal temperatures and the same is true of precipitation (i.e., the “same” chances of above, below or typical temperatures and precipitation). However, as with past winters, we will still need to be prepared for sleet and snow, and when that Jetstream dips for cold air, etc.

Preparing for winter weather

NOAA provides the following information to help communities prepare for winter weather:

- Outlooks (Get Ready)
 - Potential for significant events up to 7 days in advance
 - Forecaster confidence at least 30%

- Watches (Get Set)
 - Issued up to 36 hours in advance
 - Forecaster confidence at least 50%
- Warnings/Advisories (Go)
 - Issued up to 24 hours in advance
 - Forecaster confidence at least 80%

Given that New York City is very close to the polar Jetstream boundary, the region needs to be prepared for variability in winter weather, and for extreme events. Proximity to the polar Jetstream means the area can get surges of very cold air and low wind chills.

Snow accumulation potential web graphics are currently produced in DC, Baltimore, Philadelphia, Boston, New York City and other areas. Figure 4 shows a snow accumulation graphic for the New York City region. They were initially produced in 2014 and the National Weather Service is expanding coverage but they are not available everywhere yet. Eventually the whole country will be covered, but initially the focus has been on the Northeast.

Given the current state of science and monitoring for atmospheric conditions for snow, it's not until satellite and radar imagery is analyzed that the National Weather Service can provide information about how much snow will fall and where it will fall. The NWS can predict one or two hours in advance of a narrow band of snow affecting the Monday morning commute, which is something many people in New York City are concerned with, but it cannot make predictions three days in advance.

Ground temperatures are measured from road sensors that the New York State Thruway and New Jersey State DOT have deployed. They help meteorologists assess the potential for freezing rain. This helps with situational awareness since there can be a significant difference between air temperatures measured six feet above ground and surface/ground temperatures. The NWS is just beginning to make use of selected ground temperature measurements from the New York Thruway and New Jersey roads. The increased availability of such data would help the region be better prepared for winter weather events.

Figure 4. Snow Accumulation Potential, New York City Region – December 19-22, 2016.



Image source: National Oceanic and Atmospheric Administration (NOAA), National Weather Service.

Additional resources:

National Weather Service (NWS):

- Homepage: <http://www.weather.gov/okx>
- Facebook Page: <http://www.facebook.com/NWSNewYorkNY>
- YouTube Channel: <https://www.youtube.com/user/NWSNewYorkNY>
- Twitter Page: <https://twitter.com/NWSNewYorkNY>

Winter Storm Safety: <http://www.nws.noaa.gov/om/winter/index.shtml>