

International Center for Enterprise Preparedness (INTERCEP)

Severe Winter Weather Outlook 2018-2019

Web Forum

On December 11, 2018, **Nelson Vaz**, *Warning Coordination Meteorologist* at the **National Weather Service (NWS)** in New York, discussed the winter weather outlook for 2018/2019. The presentation covered various factors that impact winter weather forecasts, as well as the kinds of information products available from the National Weather Service that can help organizations plan and prepare for winter storms.

Introduction

One of the goals of the **National Weather Service (NWS)** is to build a weather ready nation, and that means involving the private and public sectors, media, academia and other stakeholders. This includes outreach about the critical aspects of weather in terms of triggers and thresholds so that communities can prepare for weather hazards and become more resilient.

The goal of this presentation is to describe the current winter weather outlook, including the forecast issued by the NWS, and the latest weather products.

The National Weather Service is part of the Federal government and is under the Department of Commerce and the National Oceanic and Atmospheric Administration (NOAA). The mission of the NWS is to save lives, minimize property damage and enhance the national economy through the issuance of accurate and timely warnings, advisories, watches, and outlooks.

Forecast for the Current Winter Season – December-March

The season forecast is based on work done at the Climate Prediction Center. It incorporates long-range models, trends and patterns. A key factor is the strength of the El Niño and La Niña phenomena, which have a big impact on seasonal weather.

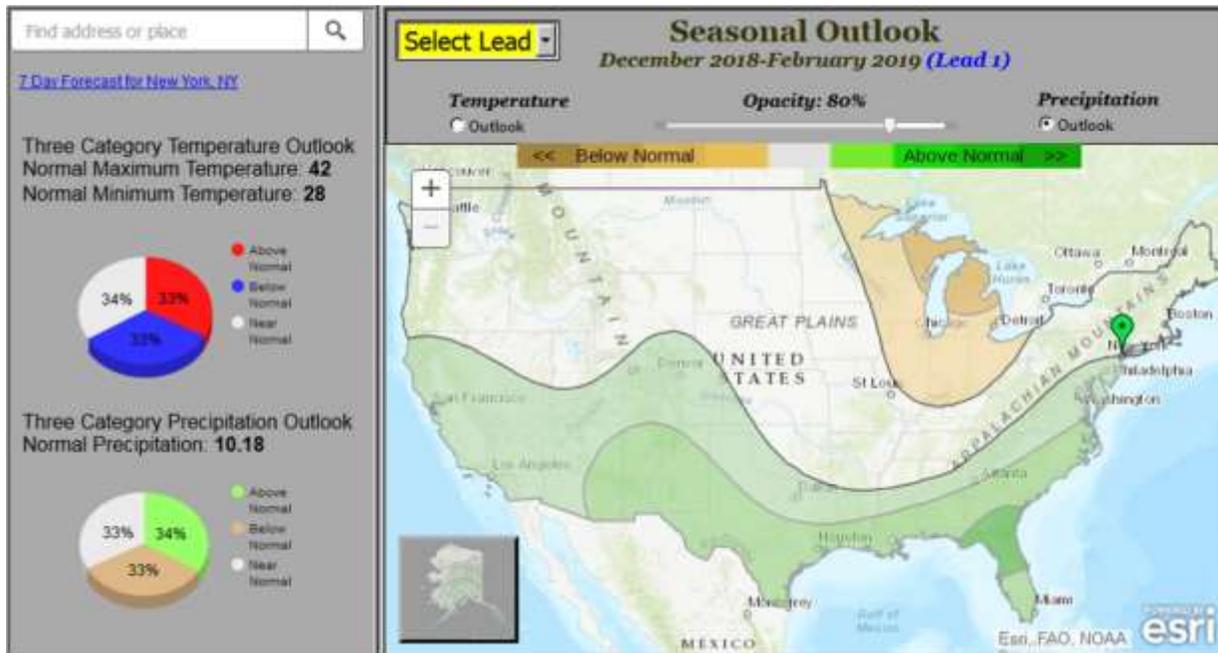
El Niño is a temperature anomaly in waters across the equatorial Pacific Ocean. An El Niño is said to occur when the ocean temperature is compared to a normal, 50 year range. Temperatures above normal are considered an El Niño event. If temperatures are below normal it is considered a La Niña event. For the last few months the temperatures in the region have been right around the average, maybe slightly above. The current expectation for the next few months is that there will be a weak El Niño.

This can lead to more thunderstorm activity, and that feeds back to the atmosphere and there is a change of climate patterns. These variables allow the NWS to make some hypotheses about seasonal weather.

Winter Weather Outlook: Precipitation and Temperature Outlook

The current **Precipitation Outlook** is shown in Figure 1. It shows two regions. In the southern U.S., and especially in the Gulf Coast, there is the potential for above normal precipitation. Conversely in the Great Lakes region the outlook suggests higher chances of less than normal precipitation. In the New York City area, a weak El Niño doesn't have a strong signal, and as shown in Figure 1, the New York City metropolitan area is on the edge of the region of the map with slightly higher chances for above normal precipitation.

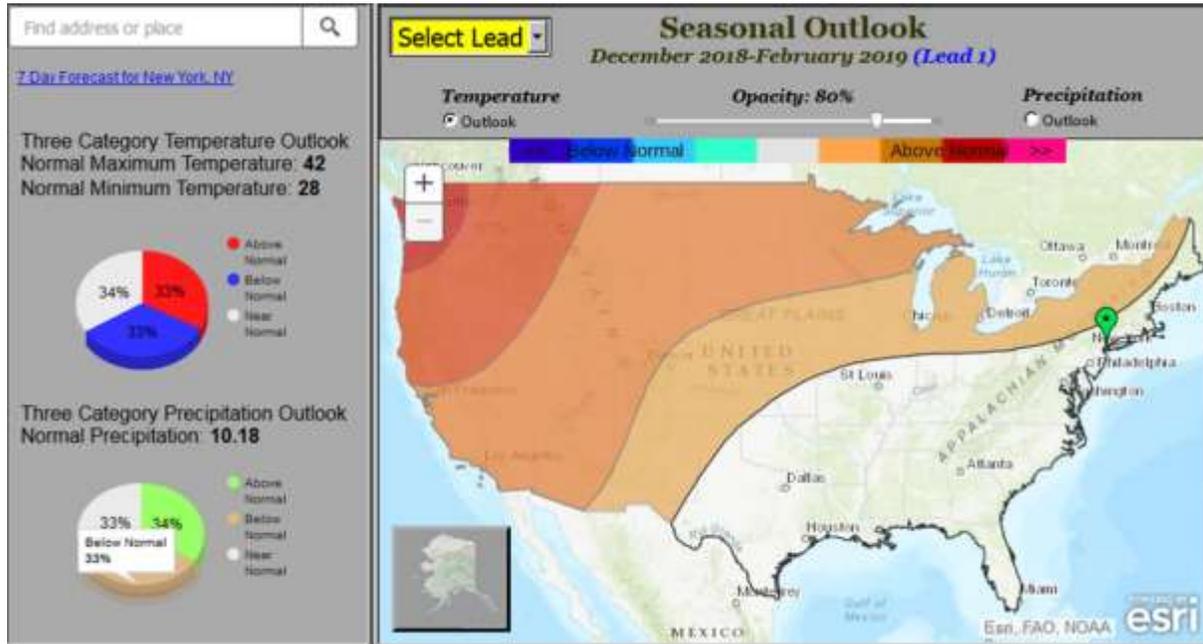
Figure 1. Seasonal Precipitation Outlook.



Source: National Weather Service, 2018.

Figure 2 shows the **Temperature Outlook**. The Western part of the country has higher chances of above normal temperatures. In the Northeast, including the New York City metropolitan area, there are equal chances of above, normal or below normal temperatures, so the signal is not strong. The North Atlantic has higher chances of slightly higher than normal temperatures.

Figure 2. Seasonal Temperature Outlook



Source: National Weather Service, 2018.

In terms of snowfall, the expectation of a weak El Niño suggests the western U.S., northern U.S. and Canada have a higher chance of drier weather with less than average snowfall. In the Northeast there are mixed signals and nothing currently stands out.

Another factor to consider is the North Atlantic Oscillation (NAO). When it is in a negative state it buckles the Jetstream well into Greenland, with above average temperatures there, and cold temperatures in the Southeast of the U.S., which can lead to disruptive storms. This is something the NWS assesses in the 7-10 day forecasts.

National Weather Service Products

The main weather products that the NWS provides to support its mission are:

- **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%

The NWS web page includes a map of the U.S. with forecasts for all regions. A user can click on a region to obtain the forecast. This is available at: www.weather.gov

We can skillfully predict the potential for heavy snow across a region 3 days in advance, but the exact location of heavy snow bands, rain/snow line, and western edge of snow may not be apparent until 1 to 2 hours in advance. Forecasters analyze satellite, radar, observations, and high-resolution models.

The storm on November 15, 2018 provided an example of how just a couple of hours can make a significant difference in terms of the forecast for snow, sleet, and rain, as well as total snow.

The goal of the NWS is to provide information about the most likely scenarios, but there will always be fringe storms that are more challenging. A difference of a couple of degrees in temperature can mean the difference between snow and rain, so probabilistic ranges are adequate for organizations depending on risk tolerance. Some organizations/users may need only a 10% chance of a significant storm to exceed a threshold of action because that could stop their operations. Other organizations may have a higher risk tolerance.

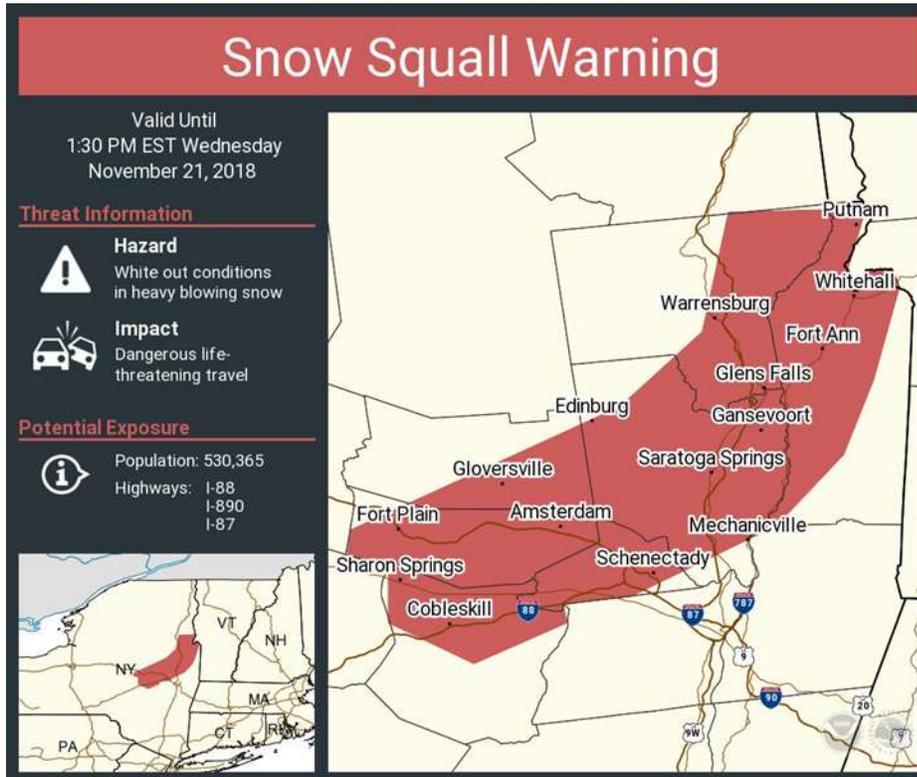
Snow Squall Warning: Newest Warning for This Winter

The NWS has added a **snow squall warning** to address concerns about the high number of vehicle fatalities (817 on average per year) related to winter weather. This figure is higher than the number of fatalities associated with tornadoes and other extreme weather events combined.

A snow squall refers to strong snow and wind conditions for a short time (30-60 minutes). Motorists may drive into these conditions and hit a wall of white with potentially icy roads. The result can be car pile ups, which happens once or twice a year in the northern U.S. and along the East Coast. The NWS will issue these warnings to alert people of these risks.

An example of a snow squall warning is shown in Figure 3.

Figure 3. Snow Squall Warning



Source: National Weather Service, 2018.

Additional Resources:

- National Weather Service – Homepage: <http://www.weather.gov/okx>
- National Weather Service – New York City: <https://www.weather.gov/okx/>
- National Weather Service – New York City – Winter Weather Forecasts: <https://www.weather.gov/okx/winter>
- National Weather Service – Facebook Page: <http://www.facebook.com/NWSNewYorkNY>
- National Weather Service – YouTube Channel: <https://www.youtube.com/user/NWSNewYorkNY>
- National Weather Service – Twitter Page: <https://twitter.com/NWSNewYorkNY>
- National Weather Service – Winter Weather Safety: <http://www.nws.noaa.gov/om/winter/index.shtml>