

The Science Behind A Winter Nor'easter



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It's the middle of January and you just found out that a major nor'easter is heading toward your service area. Most of the public will race to the local grocery store, only to find bare shelves where milk and bread once existed. Snow and ice professionals, on the other hand, will spend that time preparing staff members and clients for the big storm.

Over the years, nor'easters have rivaled some of the most devastating hurricanes, resulting in billions in dollars of damage and causing widespread disruption. If you've lived anywhere along the Mid-Atlantic to New England coastline during the last decade, chances are you've witnessed several nor'easters producing snow, ice, flooding, rain and gusty winds.

Let's take a closer look at a winter nor'easter, the different forms they take, and some of the challenges and uncertainties snow and ice professionals face during the life cycle of the storm.

What is a nor'easter, anyway?

A nor'easter, named after its northeast onshore winds, is a rapidly developing area of low pressure off the East Coast of North America. These storms can occur at any time throughout the year, but the ones that have the biggest impact usually occur during the winter, due to the accumulation of snow, damaging winds and coastal flooding.

The storms usually originate between Georgia and New Jersey before tracking northeast, and often reach their maximum strength off the New England or Maritime Canada coast. The interaction between the polar jet stream (carrying cold Arctic air south and east) and the warm air moving north from the Gulf of Mexico and Atlantic Ocean gives the storm fuel for its growth.



There are two distinct types of nor'easters. Type A originates in the Gulf of

Mexico and quickly intensifies as it moves up the East Coast as a single storm. This type of nor'easter typically leads to a larger swath of affected areas. The Mid-Atlantic states are usually the hardest hit, and Type A nor'easters are less likely to result in big snows in New England. Examples include the superstorm of 1993 and the blizzard of 1996.

Type B nor'easters occur when a smaller, weaker low-pressure system over the Appalachian mountains evolves into a bigger, stronger low-pressure system off the East Coast. Examples include the blizzard of 2005 and the most recent blizzard in March 2017. These storms bring more concentrated, heavier snows to a particular area, often the New England states.

When a potential nor'easter approaches, you'll face a variety of challenges before, during and after the storm. As the Type B nor'easter is developing, you'll likely have to accept a certain amount of uncertainty in the forecast. They are particularly difficult to predict because they involve the interaction of two storms, and even a small change in atmospheric conditions can lead to drastic changes in the storm's development.

Cranking up the hype machine

Another challenge is all of the media hype and sensationalism that comes with a big storm. British author Patricia Wentworth once said, "Too much information can be as disconcerting as too little." The same logic can be applied to the multitude of weather forecasts viewed by the public. The variety of local news programs, the increasing influence of social media and the opinions of amateur weather enthusiasts can skew your understanding of what to expect at your location. Consulting with a professional meteorologist should provide the reliable information you need to know, when to expect the storm, schedule your crews and choose the proper equipment and deicer materials.



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In the heart of the storm, the biggest challenges a snow and ice professional will face include high snowfall accumulation rates, extreme cold, rain and snow lines, mixed precipitation and blowing snow from gusting winds. Scheduling crews can be an issue during a prolonged or slow-moving storm, as fatigue will commonly settle in due to the long hours. And even after the worst of the storm is over, there is still work to be done thanks to blowing and drifting snow, as well as the need for frequent ice checks and final clearing efforts.

Whether you average one or more 12-inch storms a year (like New England) or one every few years (like the Mid-Atlantic), every snow contractor along the East Coast will experience several nor'easters sooner or later. It's important to keep in mind that each storm is unique, and while many of them will develop in the same manner, their outcomes can be drastically different.

Overcoming the challenges and uncertainties that these storms present can make the difference between running a successful snow-removal operation and getting buried by the storm.

Nor'easter Facts

1. Nor'easters can occur at any time of the year but are most frequent and strongest between September and April.
2. Damage from some of the worst winter nor'easters can exceed a billion dollars.
3. Nor'easters can cause more damage than a hurricane, with a diameter that's three to four times larger. Their slower movement also puts larger areas of coastline at greater risk.
4. The March superstorm of 1993 – also known as the Storm of the Century – was the largest snowstorm in the United States over the last century, depositing more than 60 inches of snow in some spots, causing more than 300 fatalities, and resulting in \$6 billion to \$10 billion dollars of damage.