November Overview

By: Samantha Borisoff, Climatologist

Northeast Regional Climate Center

Late First 32°F Freeze

Location	Average Date of First 32°F Freeze (based on 1981-2010)	This Year	Earliest	Latest
Caribou, ME	Sep. 23	Sep. 30	Sep. 3	Oct. 17
Concord, NH	Sep. 27	Oct. 13	Aug. 29	Oct. 25
Elkins, WV	Oct. 6	Oct. 2	Sep. 14	Nov. 2
Burlington, VT	Oct. 7	Oct. 17	Sep. 13	Nov. 1
Albany, NY	Oct. 8	Oct. 17	Sep. 14	Nov. 12
Portland, ME	Oct. 8	Nov. 1	Sep. 14	Nov. 11
Binghamton, NY	Oct. 9	Oct. 16	Sep. 20	Nov. 5
Hartford, CT	Oct. 11	Nov. 1	Sep. 20	Nov. 11
Syracuse, NY	Oct. 12	Oct. 17	Sep. 13	Nov. 13
Beckley, WV	Oct. 13	Oct. 25	Sep. 4	Nov. 12
Rochester, NY	Oct. 14	Nov. 7	Sep. 17	Nov. 14
Scranton, PA	Oct. 14	Oct. 17	Sep. 21	Nov. 15
Dulles Airport, VA	Oct. 15	Nov. 10	Sep. 24	Nov. 11
Allentown, PA	Oct. 16	Nov. 7	Sep. 24	Nov. 13
Williamsport, PA	Oct. 16	Nov. 1	Sep. 22	Nov. 17
Worcester, MA	Oct. 16	Nov. 7	Sep. 19	Nov. 12
Pittsburgh, PA	Oct. 18	Oct. 31	Sep. 19	Nov. 21
Buffalo, NY	Oct. 20	Nov. 7	Sep. 23	Nov. 26
Atlantic City, NJ	Oct. 21	Nov. 10	Sep. 24	Dec. 10
Huntington, WV	Oct. 21	Oct. 26	Sep. 24	Nov. 21
Charleston, WV	Oct. 22	Nov. 10	Sep. 29	Nov. 23
Providence, RI	Oct. 24	Nov. 9	Sep. 30	Nov. 19
Baltimore, MD	Oct. 28	Nov. 10	Oct. 4	Dec. 11
Islip, NY	Oct. 28	Nov. 10	Oct. 9	Nov. 15
Erie, PA	Oct. 30	Nov. 9	Oct. 3	Dec. 4
Harrisburg, PA	Oct. 30	Nov. 10	Sep. 24	Dec. 2
Wilmington, DE	Oct. 31	Nov. 10	Sep. 27	Nov. 24
Bridgeport, CT	Nov. 4	Nov. 10	Oct. 9	Nov. 26
Philadelphia, PA	Nov. 6	Nov. 10	Oct. 5	Dec. 11
Boston, MA	Nov. 9	Nov. 10	Oct. 5	Dec. 6
Newark, NJ	Nov. 9	Nov. 10	Oct. 8	Dec. 2
Washington, DC	Nov. 18	Nov. 10	Oct. 10	Dec. 22
Kennedy Airport, NY	Nov. 19	Nov. 10	Oct. 19	Dec. 17
Central Park, NY	Nov. 20	Nov. 10	Oct. 15	Dec. 22
LaGuardia Airport, NY	Nov. 24	Nov. 10	Oct. 19	Jan. 4

First 32°F freeze later than usual at 30 major climate sites

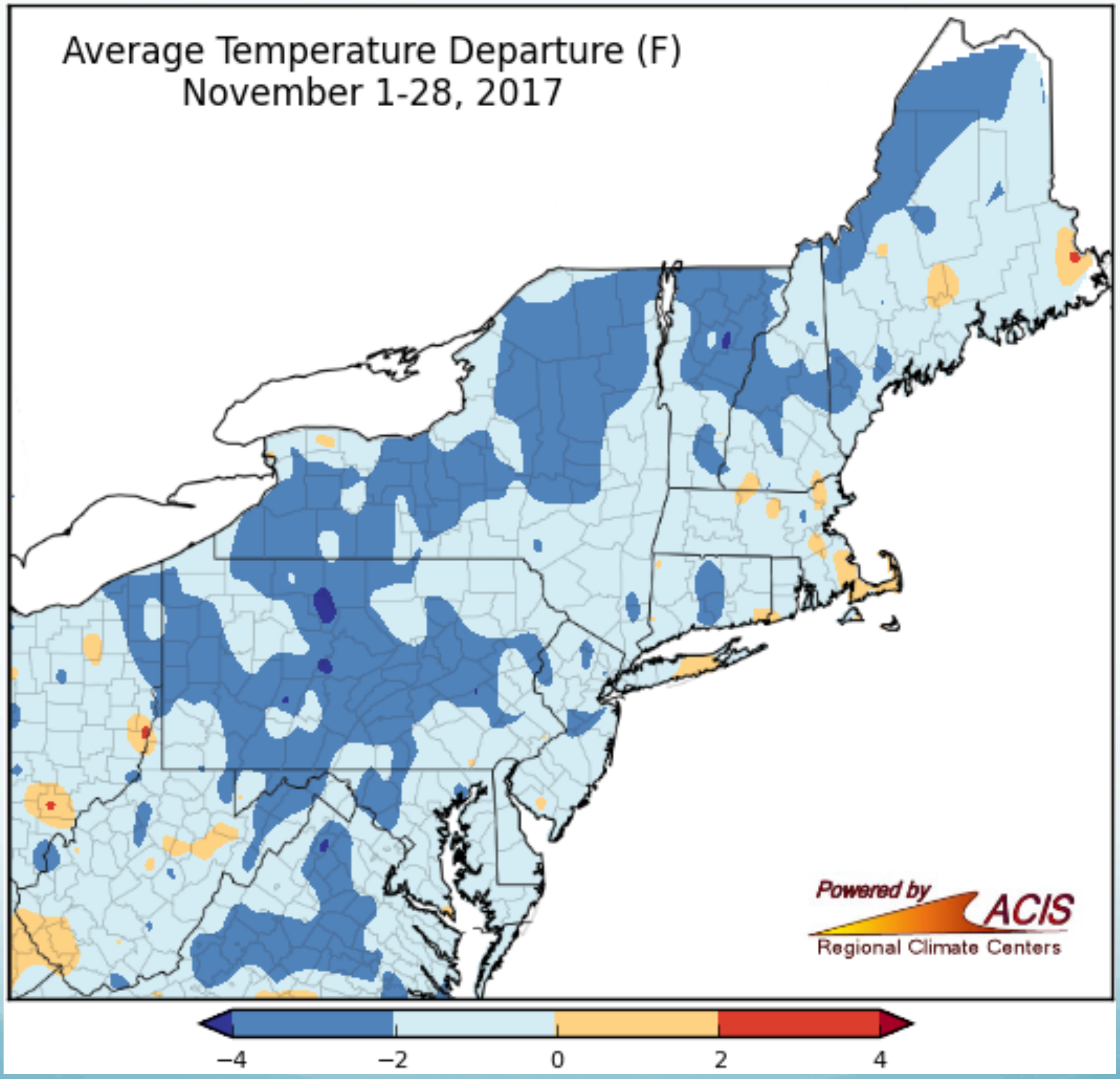
November 7:

- Rochester's 2nd longest frost-free season since 1872
- Buffalo's 5th longest since 1874
- 212 days (Apr. 8 to Nov. 7) at both sites

November 10 and 11:

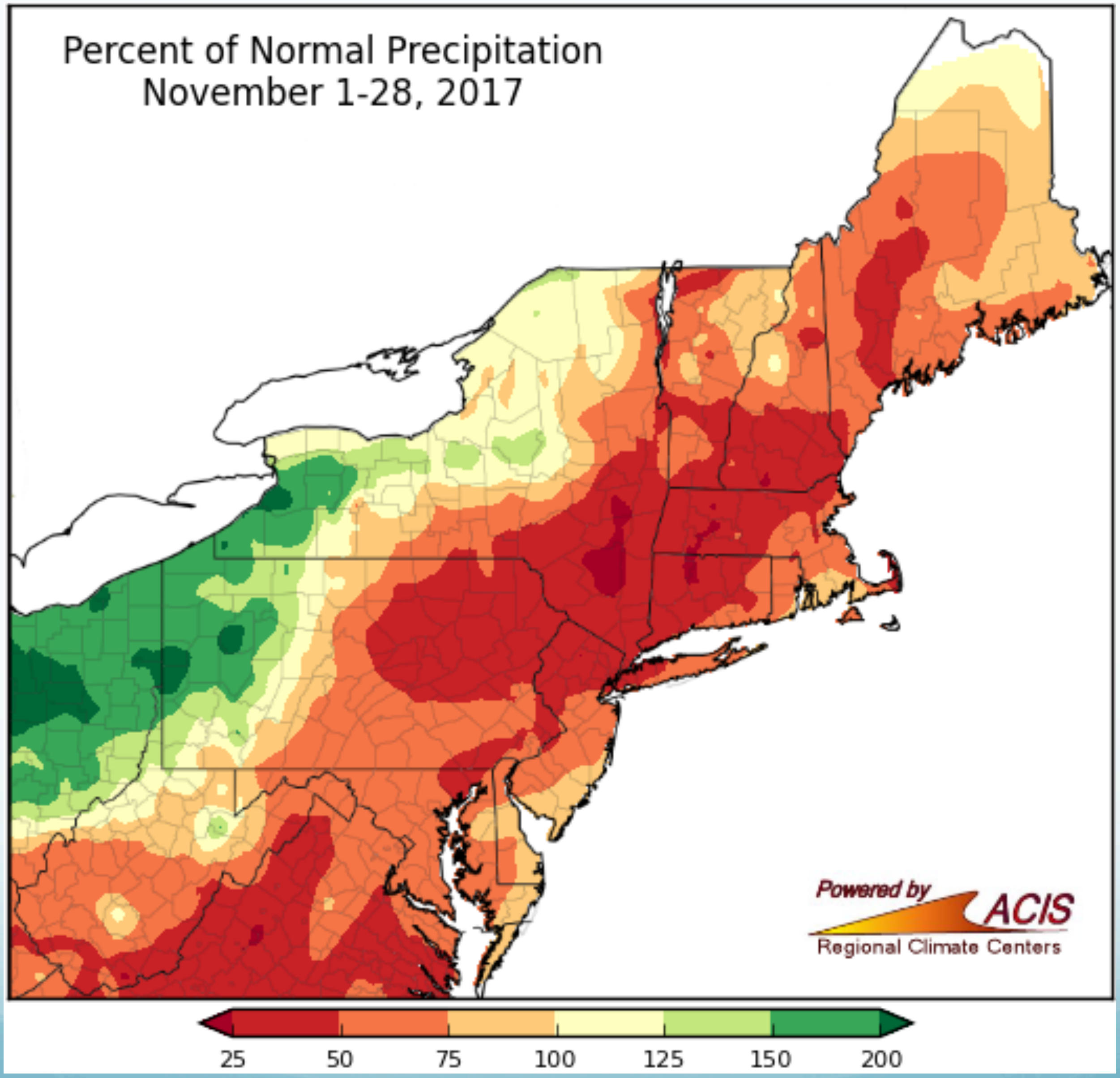
- Dulles Airport – one day away from tying record for latest first freeze
- First time on record (since 1963) Dulles and Washington National had their first freeze on the same day

November Temperatures



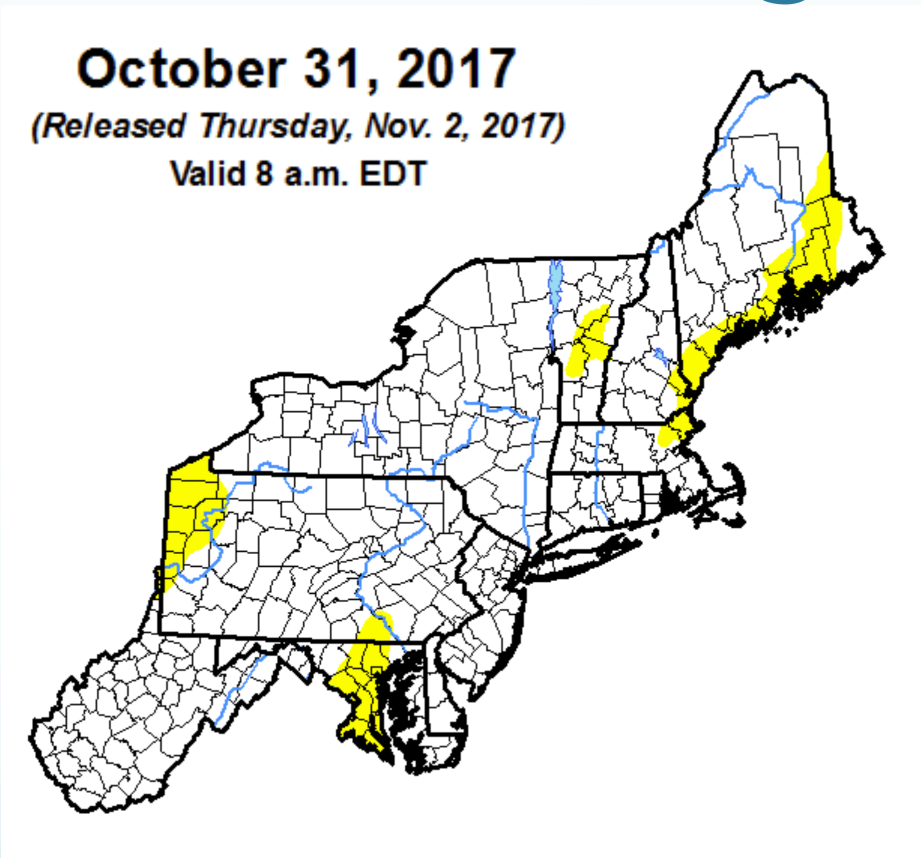
From 4°F below normal to 2°F above normal

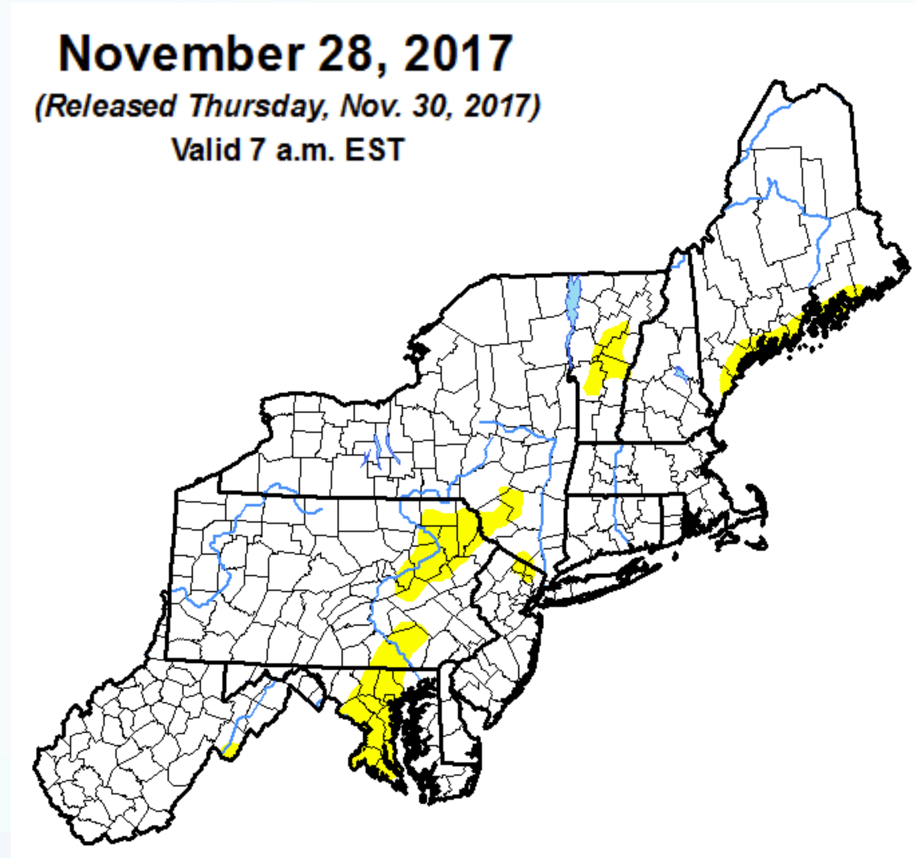
November Precipitation



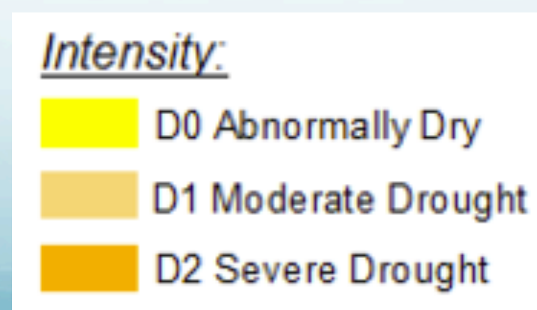
From less than 25% of normal to more than 200% of normal

Drought Monitor





10% abnormally dry



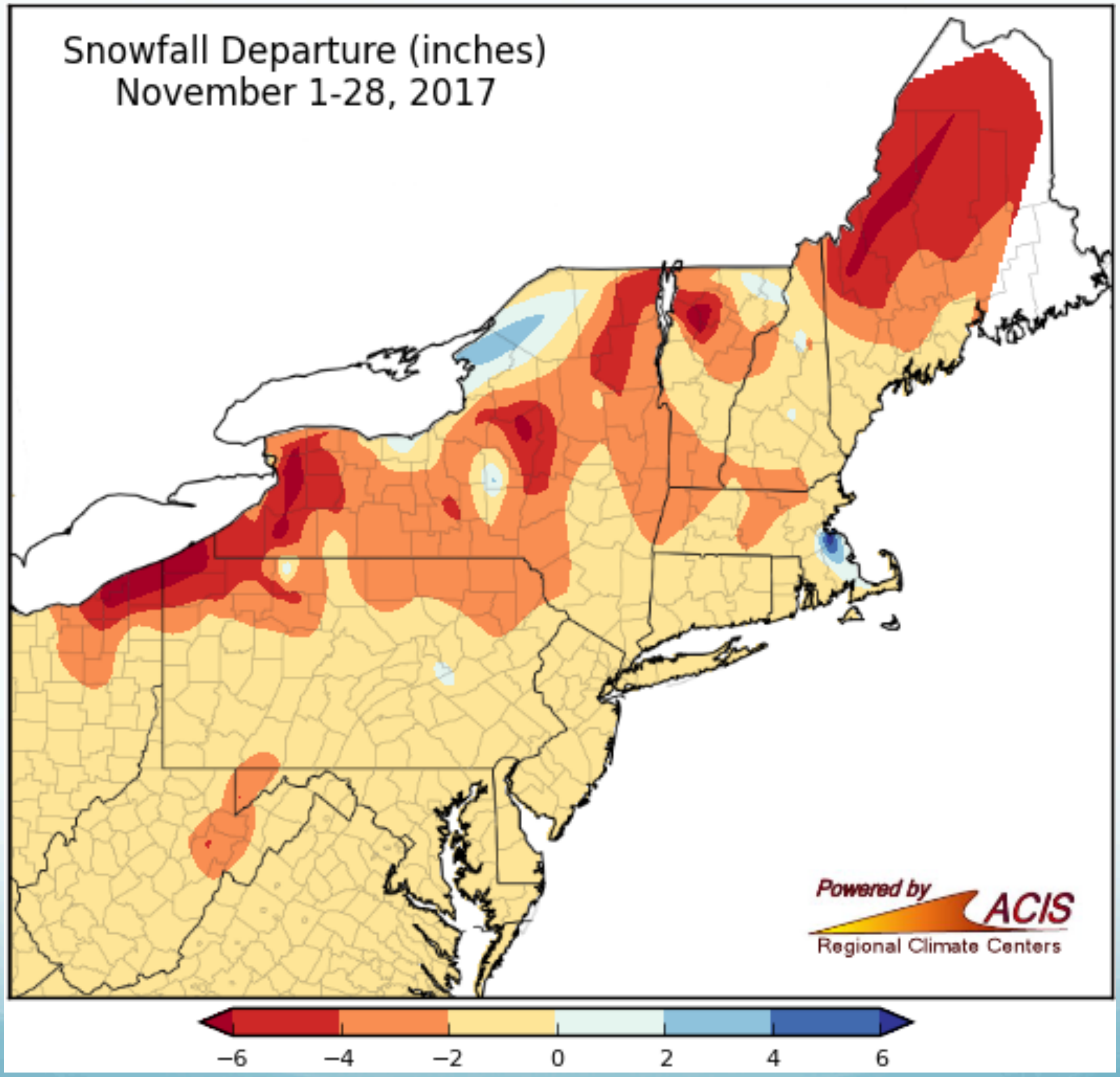
8% abnormally dry

November PA Severe Weather

Nov. 5: EF-1 tornado (above) and Erie had its greatest 1-day precipitation for November since 1873

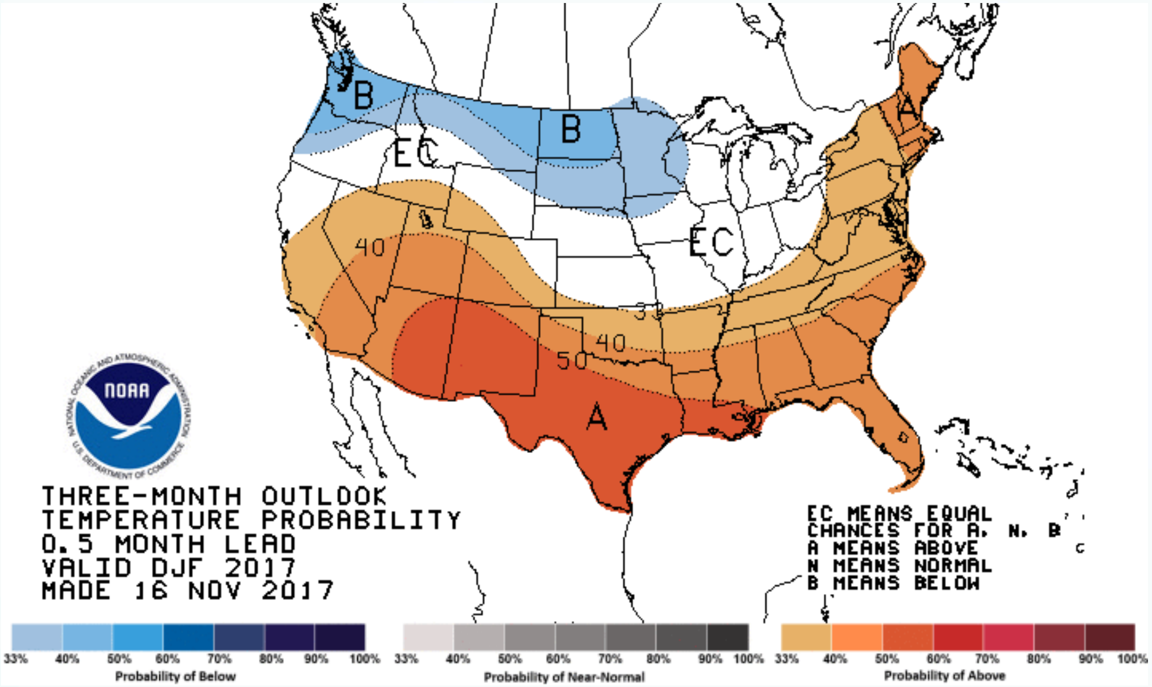
Nov. 19: Allegheny County – first November tornado and latest in calendar year since 1950

November Snowfall



From more than 6” below normal to 4” above normal

Winter Outlooks

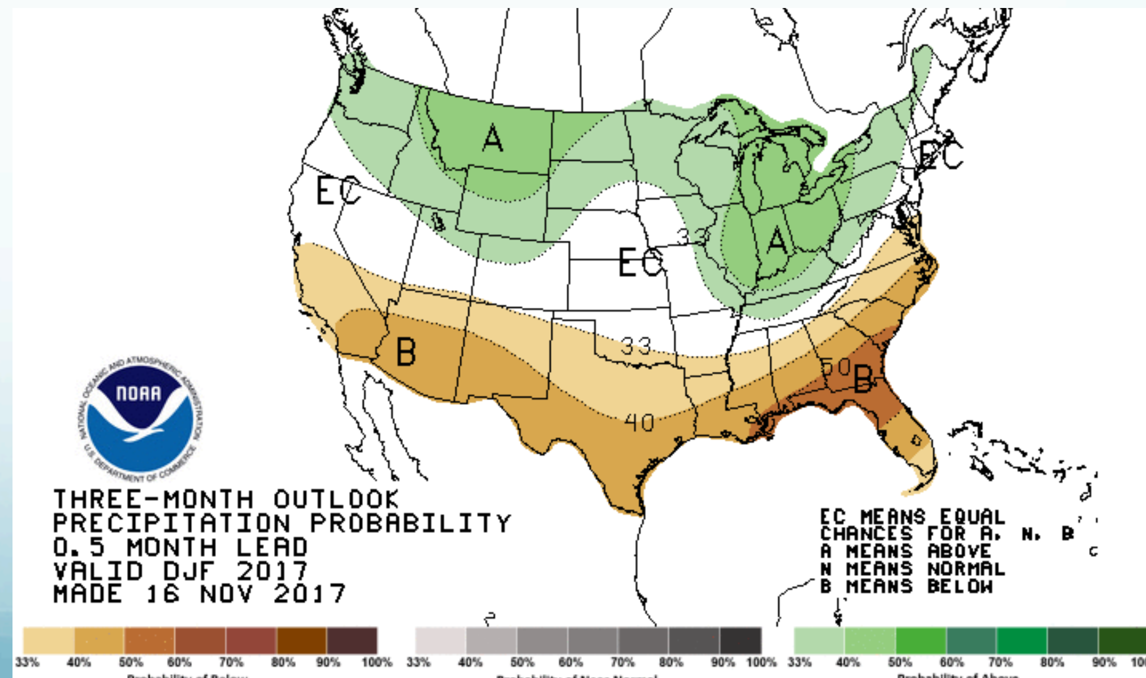


Increased chances of above-normal temperatures for entire Northeast (left)

Increased chances of above-normal precipitation from West Virginia to northern Maine

Increased chance of below-normal precipitation for southeastern Maryland

Equal chances elsewhere (right)



Additional Resources

Winter Climate Patterns and Outlook

Northeast Region

November 2017

Typical La Niña Winter Pattern

The image above shows the typical pattern during La Niña winters. High pressure over the eastern North Pacific leads to increased blocking. The polar and Pacific jet streams tend to split around this area of high pressure and join over the Northwest U.S. The jet stream tends to be wave-like, with the active storm track along the northern states. This increases the likelihood of cooler, stormier conditions. Across the southern U.S., conditions tend to be drier and warmer. It is important to note that this is a schematic diagram representing general patterns and is not created from actual data. For more information, please visit: https://www.climate.gov/news-features/department/enso-blog.

A La Niña develops when sea surface temperatures are cooler than average in the equatorial Pacific for at least several months, altering tropical rainfall patterns and the global atmospheric circulation. This is important to North America because La Niña has an impact on our weather patterns, most predominantly in the winter.

Although each La Niña is different, there are some general patterns that are predictable. The jet stream flow tends to be very wave-like (see figure to left). An area of high pressure over the eastern North Pacific leads to increased blocking. The jet stream strength is variable, but usually enters North America in the northwestern U.S.

This pattern brings increased storminess and above-normal precipitation to the Ohio Valley, as the jet stream steers storms that direction. There is also an increased frequency of cold air outbreaks in the central U.S. Conversely, the South tends to experience below-normal precipitation and warmer-than-normal temperatures.

It is more difficult to define conditions in the Northeast because of other atmospheric and oceanic influences. This La Niña is expected to be weak and short-lived, so its impacts may be more variable and other factors may dominate the Northeast's weather patterns this winter.

Other Factors

Madden-Julian Oscillation

The Madden-Julian Oscillation (MJO) is a tropical disturbance that results in changes in clouds, rainfall, winds, and pressure across much of the global tropics. The disturbance moves eastward with time, traversing the planet in the tropics and returning to its starting point in about 30–60 days. This atmospheric disturbance is distinct from ENSO (El Niño–Southern Oscillation), which once established, is associated with persistent features that last several seasons or longer over the Pacific Ocean basin. There can be multiple MJO events within a season, so the MJO is best described as intraseasonal tropical climate variability (i.e. varies on a week-to-week basis). The MJO can be an important factor during the winter months as it often results in changes in the jet stream. This can impact the storm track, which affects precipitation including snowfall, and often can lead to cold air outbreaks. One way to view the MJO influence on the higher latitudes is to understand that it can produce impacts similar to those of ENSO, but typically only for 1–2 weeks before changing.

Arctic Oscillation

The Arctic Oscillation (AO) is an important type of climate variability. With its origin in the Northern Hemisphere, it can substantially impact conditions during winter for many areas, including eastern North America. Atmospheric air pressure conditions oscillate between two common patterns. In the positive phase, lower-than-average pressure over the Arctic and higher-than-average pressure over the surrounding region tends to keep cold air locked up within the polar region. When conditions flip to the negative phase, air pressure is higher than average over the Arctic and lower than average over the surrounding regions. This allows cold, dense air from the Arctic to push southward to locations in the middle latitudes. Flips back and forth between the positive and negative phases of the Arctic Oscillation occur routinely and result in changes in the jet stream, which affects temperature and precipitation. The AO is less predictable far in advance, so there is considerable uncertainty as to how much it will impact a given winter season.

North Atlantic Oscillation

The North Atlantic Oscillation (NAO), often considered a regional subset of the AO, is a prominent pattern of climate variability that can have a strong influence on weather over northeastern North America, Greenland, and Europe. The high latitudes of the North Atlantic Ocean generally experience lower air pressure than surrounding regions, while air pressure over the central North Atlantic Ocean is generally higher than surrounding regions. Phases of the NAO are defined by higher-than-normal air pressure in one of these regions and lower-than-normal air pressure in the other. These patterns affect weather all around the Atlantic by influencing the intensity and location of the jet stream and the storm tracks that follow it. During the positive phase, the eastern U.S. tends to be warmer and drier than average, while during the negative phase, cold and wetter (or snowier) conditions are observed. The NAO is less predictable far in advance, so there is considerable uncertainty as to how much it will impact a given winter season.

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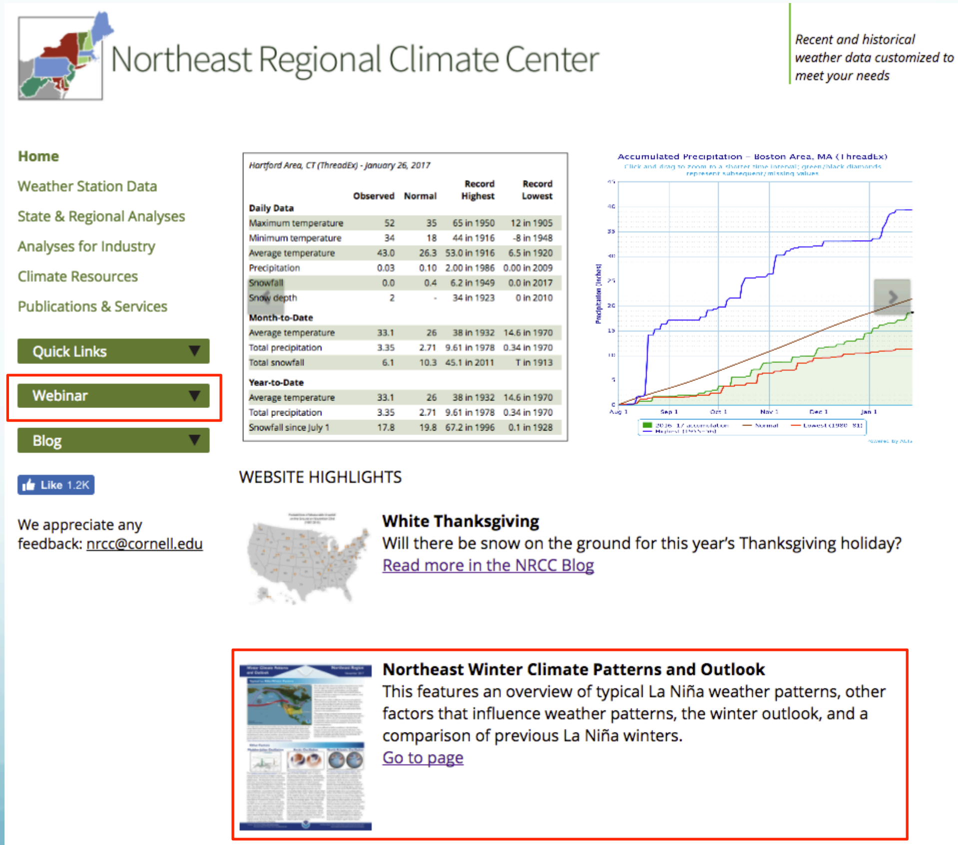
Northeast Region Winter Climate Patterns and Outlook | November 2017
www.drought.gov/drought/content/resources/reports

1. Northeast Winter Climate Patterns and Outlook
2. October webinar

Links to both on the NRCC homepage: www.nrcc.cornell.edu



	Observed	Normal	Record Highest	Record Lowest
Daily Data				
Maximum temperature	52	35	65 in 1950	12 in 1905
Minimum temperature	34	18	44 in 1916	-8 in 1948
Average temperature	43.0	26.3	53.0 in 1916	6.5 in 1920
Precipitation	0.03	0.10	2.00 in 1986	0.00 in 2009
Snowfall	0.0	0.4	6.2 in 1949	0.0 in 2017
Snow depth	2	-	34 in 1923	0 in 2010
Month-to-Date				
Average temperature	33.1	26	38 in 1932	14.6 in 1970
Total precipitation	3.35	2.71	9.61 in 1978	0.34 in 1970
Total snowfall	6.1	10.3	45.1 in 2011	T in 1913
Year-to-Date				
Average temperature	33.1	26	38 in 1932	14.6 in 1970
Total precipitation	3.35	2.71	9.61 in 1978	0.34 in 1970
Snowfall since July 1	17.8	19.8	67.2 in 1996	0.1 in 1928

Contact Information

- sgh58@cornell.edu or nrcc@cornell.edu
- 607-255-1751

Upcoming Webinars

- Thursday, December 21 at 9:30 am
  - Launch of the Northeast Drought Early Warning System (DEWS)
- Tuesday, January 30 at 9:30 am
  - TBD
- Tuesday, February 27 at 9:30 am
  - TBD

www.nrcc.cornell.edu