

Thundersnow Often Means Lots of Snow

December 18 2006

It's rarely a good sign when a snowstorm produces lightning and thunder, according to University of Missouri-Columbia atmospheric scientists, who warn that such weather behavior is often the precursor to a bigger problem: lots of snow.

As winter begins, MU researchers in the College of Agriculture, Food and Natural Resources (CAFNR) have determined that a heavy accumulation of snow is more likely to occur when a snowstorm is accompanied by flashes of lightning and crashes of thunder, referred to as thundersnow.

In their study, Christina Crowe, an undergraduate student, and Patrick Market, associate professor of atmospheric science in CAFNR, examined the Midwest portion of the United States - between the Rocky and Appalachian Mountains. Excluded were mountainous and lake regions due to their geographical characteristics, which often affect weather patterns.

Results indicated that within a 68-mile radius of where thundersnow occurred:

- six or more inches of snow fell 86 percent of the time;
- 10 or more inches fell 45 percent of the time; and
- the maximum amount of accumulation was recorded 36 percent of the time.

"When lightning and thunder occur, someone close is receiving a significant amount of snow," Market said.

Crowe and Market, through a National Science Foundation grant, analyzed accumulation levels over a 30-year time period, 1961-90. With data from airport reporting and cooperative climate observer stations, they focused on 22 storms throughout the upper Midwest. Snowfall levels were categorized as significant (six or more inches) and extreme (10 inches or more). In 19 of the 22 cases, significant or extreme accumulations accompanied thundersnow - somewhere in the area during a 24-hour period.

Crowe and Market said the information will allow weather forecasters to more accurately predict accumulation levels during snowstorms.

"If forecasters see that there's thundersnow, they will know there's a greater chance for heavy snow in their area," Crowe said. "It signifies that the storm is a snow producer."

Market said thundersnow is rare and occurs only in the Midwest about 12 times per year. It most recently happened last month in Columbia and parts of Missouri as a major snowstorm crippled the area. The storm left about 16 inches of snow, closing roads, schools and businesses along its path.

The study, "An Investigation of Thundersnow and Deep Snow Accumulations," will be published in the Dec. 22 issue of *Geophysical Research Letters*.

Source: University of Missouri-Columbia

Citation: Thundersnow Often Means Lots of Snow (2006, December 18) retrieved 25 April 2024 from <https://phys.org/news/2006-12-thundersnow-lots.html>

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