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FOR IMMEDIATE RELEASE
Attention: Editor

The following is a joint news release from the American Meteorological Society and Northern Illinois University.

NIU researchers say nighttime tornadoes are worst nightmare

Twisters that occur from midnight to dawn are 2.5 times more likely to kill

Walker Ashley

DeKalb, IL – A new study by Northern Illinois University scientists underscores the danger of nighttime tornadoes and suggests that warning systems that have led to overall declines in tornado death rates might not be adequate for overnight events, which occur most frequently in the nation's mid-South region.

Over the past century, the tornado death rate has declined, in large part because of sophisticated forecasting technology and warning systems. But the researchers found that the nighttime tornado death rate over the past century has not shared the same pace of decline as the rate for daytime tornadoes.

"The proportion of nocturnal fatalities and killer tornado events has increased during the last half century," said lead author Walker Ashley, an NIU meteorologist and professor of geography. "Unfortunately, this nocturnal fatality rate appears to be a major factor for the stalled decline in national tornado-fatality tallies during the past few decades."

Ashley, NIU Geography Chair Andrew Krmenec and Research Associate Rick Schwantes published their study in the October issue of the American Meteorological Society's journal, "Weather and Forecasting."

The study found that from 1950 to 2005, 27 percent of tornadoes in the United States were nocturnal, yet 39 percent of tornado fatalities and 42 percent of killer tornado events occurred at night.

Ashley predicts that annual tornado fatalities might begin to rise. In 2007 alone, 80 tornado

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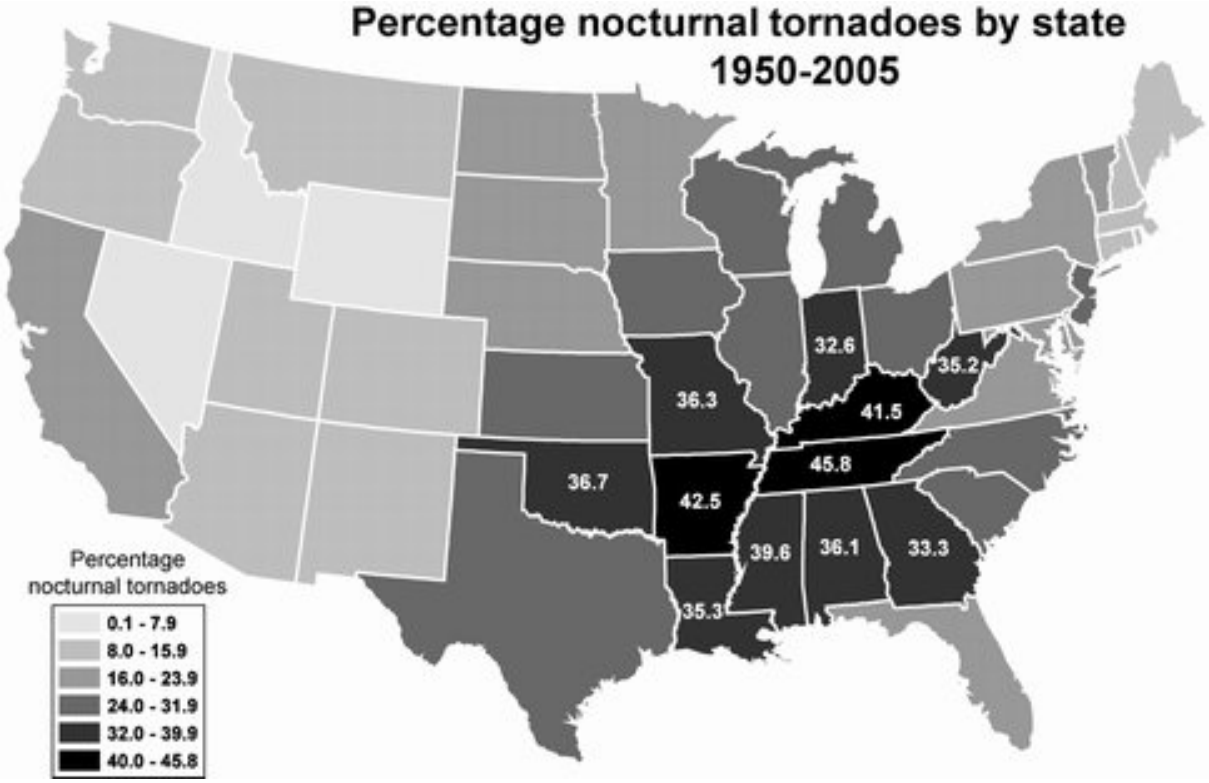

fatalities were recorded, with 59 of those fatalities occurring between sunset and sunrise. Nineteen of 26 killer tornadoes that year occurred at night. So far this year, 123 tornado fatalities already have been recorded—nearly double the annual average.

"The tornado death rate has bottomed out and is probably going to increase due to several factors," Ashley said. "Because of population growth and development patterns, including urban sprawl, tornado risk to the populace has increased in recent decades. Tornadoes are impacting larger populations that are more spread out, resulting in higher tornado death tallies."

The most dangerous window of time for a tornado, according to the study findings, is the period from midnight to sunrise. Tornadoes during this time period are 2.5 times as likely to kill as those occurring during the daytime hours.

People are more vulnerable during nighttime events because:

- Tornadoes are difficult for the public and trained spotters to see.
- People are more likely to be asleep.
- People are more likely to be in structures that are more susceptible to damage, such as single-family homes and mobile or manufactured homes as opposed to schools and large office or workplace buildings. (Nearly 61 percent of tornado fatalities in mobile homes take place at night.)

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- Warning sirens are designed to mitigate hazards for people outdoors and are less effective at reaching those indoors.

"Because most people go to bed after the late evening news, they are sleeping and unaware of televised weather alerts," Ashley said. "And warning sirens give us a false sense of security. They're not designed for warning people who are already indoors. We're not seeing a forecasting problem but rather a communication breakdown.

"Scientists, along with emergency managers and people living in tornado-prone areas, must work together to solve this problem," he added. "Right now, the best alert option during this overnight period is a weather radio."

A relatively small proportion of American households own weather radios, though they are widely available, cost as little as $25 and come equipped with alarms.

As Ashley noted in previous studies, the nation's mid-South region is most vulnerable to nighttime tornadoes. In fact, while the "tornado alley" region of the Great Plains boasts the most frequent occurrence of tornadoes, most tornado fatalities occur in the mid-South region, which includes parts of Arkansas, Tennessee, Alabama and Mississippi.

Among the reasons for higher vulnerability: The southeast United States has the highest percentage of mobile-home stock compared with any other region east of the Continental Divide. The NIU meteorologist said 45 percent of all fatalities during tornadoes occur in mobile homes, compared to 26 percent in permanent houses.

The new study also finds that seasonal factors also come into play. The cool and spring-transition seasons from November to April have the highest nocturnal fatality rates, despite having relatively few tornado events. Daylight hours are at a minimum during these months. Also, storms that occur before the national peak in the severe storm season, which spans May and June, are more likely to catch people off guard.

"Nocturnal tornadoes are dangerous anywhere, but the danger is enhanced in the South," Ashley said. "There are more nocturnal events in the South than in the Great Plains. And the mobile-home density is much greater in the South as well. It's a combination of factors."

The American Meteorological Society (www.ametsoc.org) is the nation's premier scientific organization for those involved in the atmospheric and related sciences. For a copy of the paper, contact Tom Parisi (tparisi@niu.edu) or Stephanie Kenitzer (kenitzer@ametsoc.org).

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