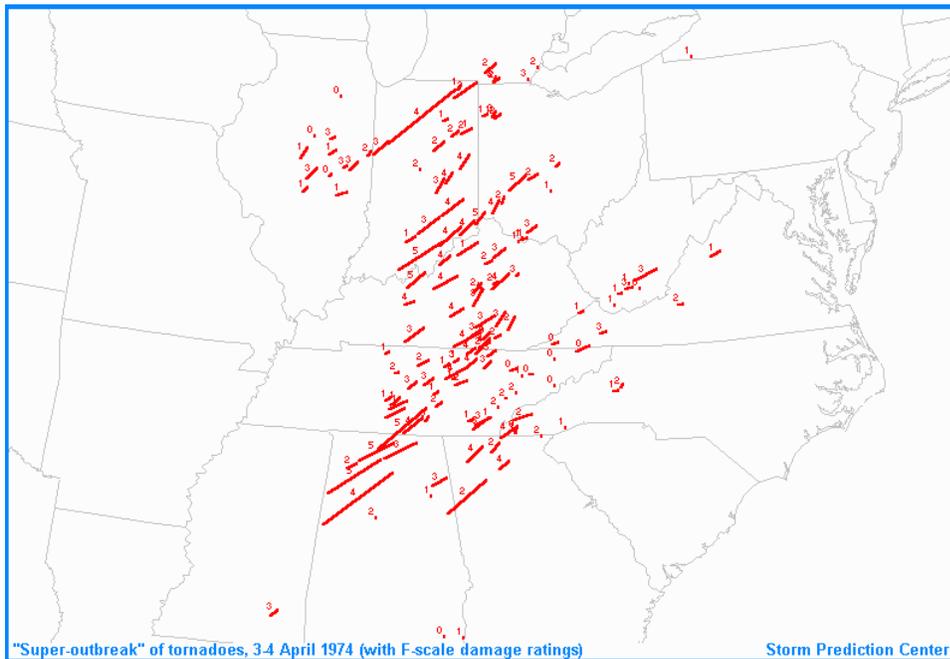


When Nature Strikes – Tornadoes

Introduction

Perhaps the most terrifying natural hazards are tornadoes. “Sudden,” “huge,” “devastating,” “unpredictable” – these only partly describe why people fear these storms. Unlike hurricanes, which can affect large regions over many hours or days, tornadoes are relatively small and short-lived. But some can last for hours and leave widespread death and destruction in miles-long paths. Damage can seem to be random: houses on one side of a street may be ripped apart, yet those on the other side are unaffected. Most are single events, but some occur in clusters that include dozens of separate events, such as the “Super-Outbreak of 1974.



http://www.spc.noaa.gov/faq/tornado/apr03_74.gif

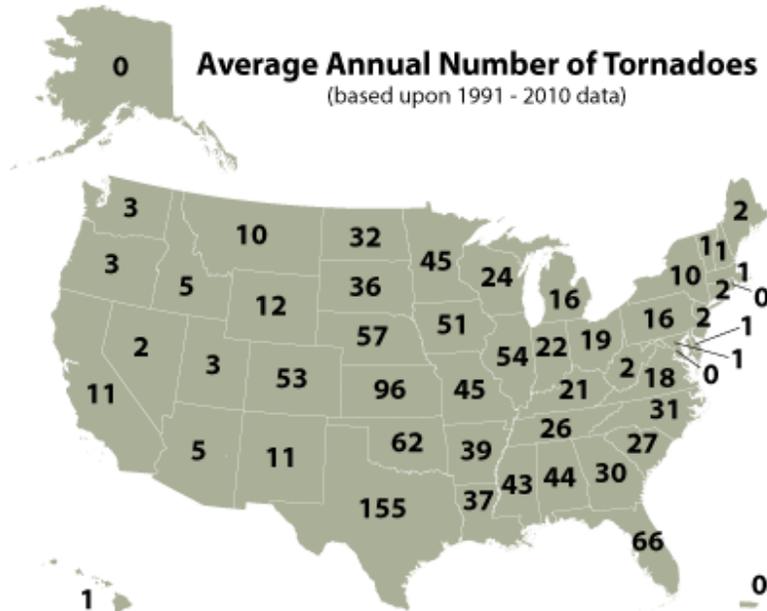
A tornado is, basically, a violently rotating column of air ([vortex](#)) descending from thunderstorms. [Enhanced Fujita Scale.](#) Like many weather events, thunderstorms which may spawn tornadoes follow a characteristic [life cycle](#). There are also “[tornado look-alikes](#)” which people may confuse with actual tornadoes.

As the “When Nature Strikes” video explains, scientists still do not understand why some storms produce the [funnel clouds](#) of tornadoes, but similar systems do not. Numerous [research projects](#) seek to understand why [mesocyclones](#) in [supercells](#) produce the most destructive and deadly tornadoes.

Development of a tornado appears to require three ‘ingredients’: [moisture in the air, an upward lift, and instability, the tendency to keep rising](#). Conditions forming tornadoes can develop so rapidly that an area where no vortex existed could, only a few minutes later, be impacted by [damaging winds](#), [hail](#), and [other hazards](#). Their speed and relatively small size make forecasting tornadoes very difficult.

Also, some tornadoes can build after dark, not only during the warmth of the daytime. There is little or no visible warning that a tornado is near in the dark of night. This is why every home, school, and business in areas where tornadoes often occur should have a [NOAA Weather Radio](#) or smart phone apps. Communities should have warning sirens and systems, and practice emergency response plans.

Tornadoes occur in most parts of the US, with the greatest frequency in the southeast.



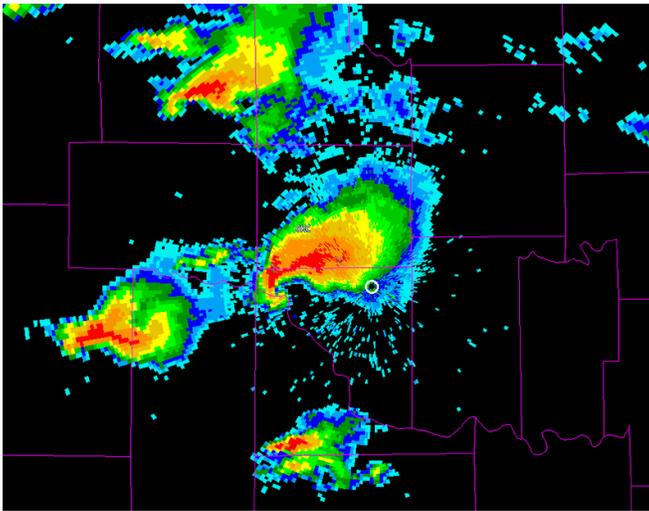
<http://www.srh.noaa.gov/jetstream/tstorms/tornado.htm>

The best weather technology to detect tornadoes is [Doppler radar](#). Doppler radars send out invisible beams of radio waves that bounce off clouds, falling rain or snow, and other parts of the atmosphere. The returning echoes are analyzed with sophisticated computer programs and displayed on screens so that meteorologists can interpret atmospheric conditions. The National Weather Service and others operate [Doppler radar sites](#) that cover almost all of the country.

What meteorologists look for to identify tornadoes is a “hook echo”. For example, one appears just to the left of the center in the image below. The circle represents location of the radar.

[Learn more about Doppler radar.](#)

<http://www.nssl.noaa.gov/education/svrwx101/tornadoes/detection/>



The NWS describes the intensity of tornado damage with the “[Enhanced Fujita Scale.](#)” In recent years, the NOAA’s National Severe Storms Laboratory (NSSL) has enhanced their hazardous weather forecasting and warning decision-making capabilities through [its Multi-Radar/Multi-Sensor Systems \(MRMS\)](#) project. MRMS combines data from multiple radars, surface and upper air observations, lightning detection systems, satellites, and computer forecast models. This has greatly improved the ability to recognize conditions involving tornadoes, turbulence, icing, and other weather hazards.

For an example of live television coverage of the passage of a tornado, view the Weather Channel’s account of the [Rowlett TX event on Dec 26, 2015](#). Here is an example of [storm shelter](#) that families can buy for when they need to respond to a tornado warning. Additional information about tornadoes is available from the [Tornado Project](#).