New York and Pennsylvania Severe Weather Awareness Week April 24th to April 30th, 2016

Tornadoes

Kat Hawley
NOAA's National Weather Service
Binghamton NY

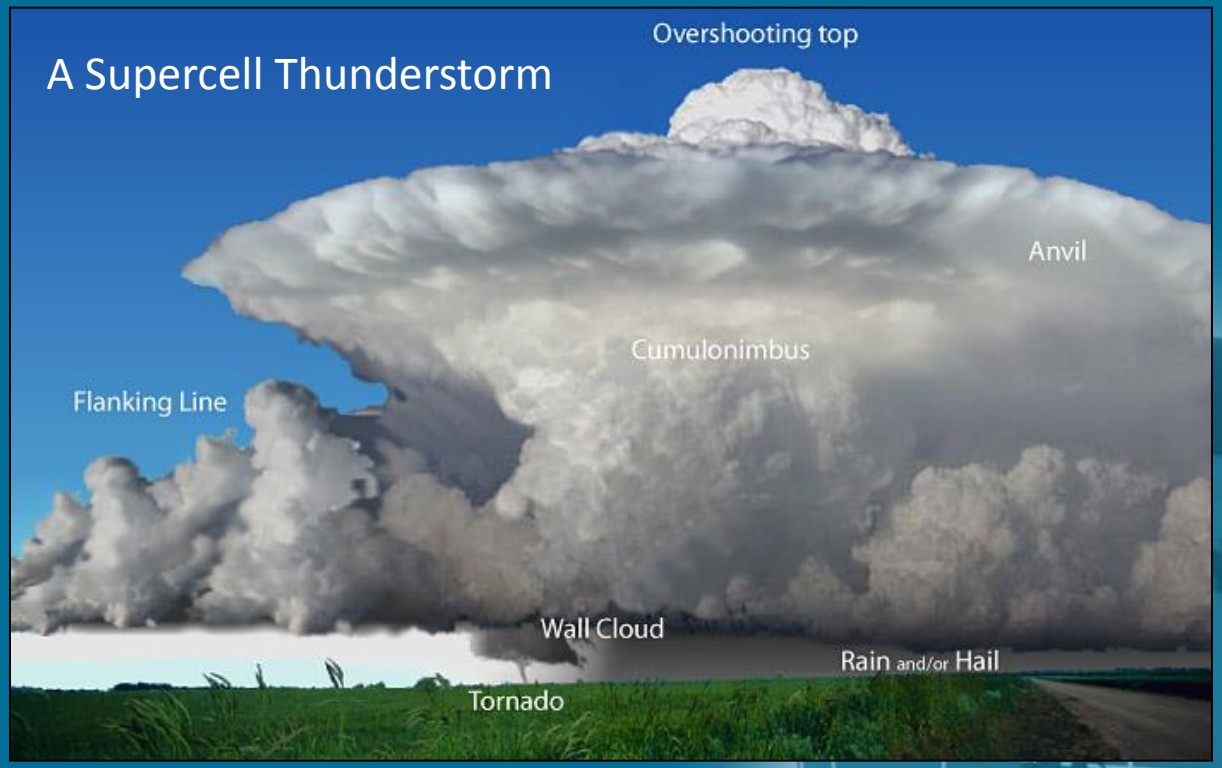
Introduction to
Severe Weather Awareness Week 2016
Tornado

- What is a tornado?
- What is the average number tornadoes per year per state?
- What is the life cycle of a tornado?
- What is the Enhanced Fujita Scale?
- Tornado Tracks
- Damage from local tornadoes
- Tornado Safety

Tornado

A tornado is a violently rotating column of air attached to a thunderstorm base and is in contact with the ground

- Tornadoes typically form from organized thunderstorms called supercells
- However, tornadoes can form within a line of storms.
- Tornadoes usually follow after the development of a wall cloud.
- A visible (condensation) funnel does not have to touch the ground to be a tornado.



Tornado

Photo: Andrew Arnold

Hopkins Cty, KY F4 tornado by Leonard Costanzo

Tornadoes come in all shapes and sizes.

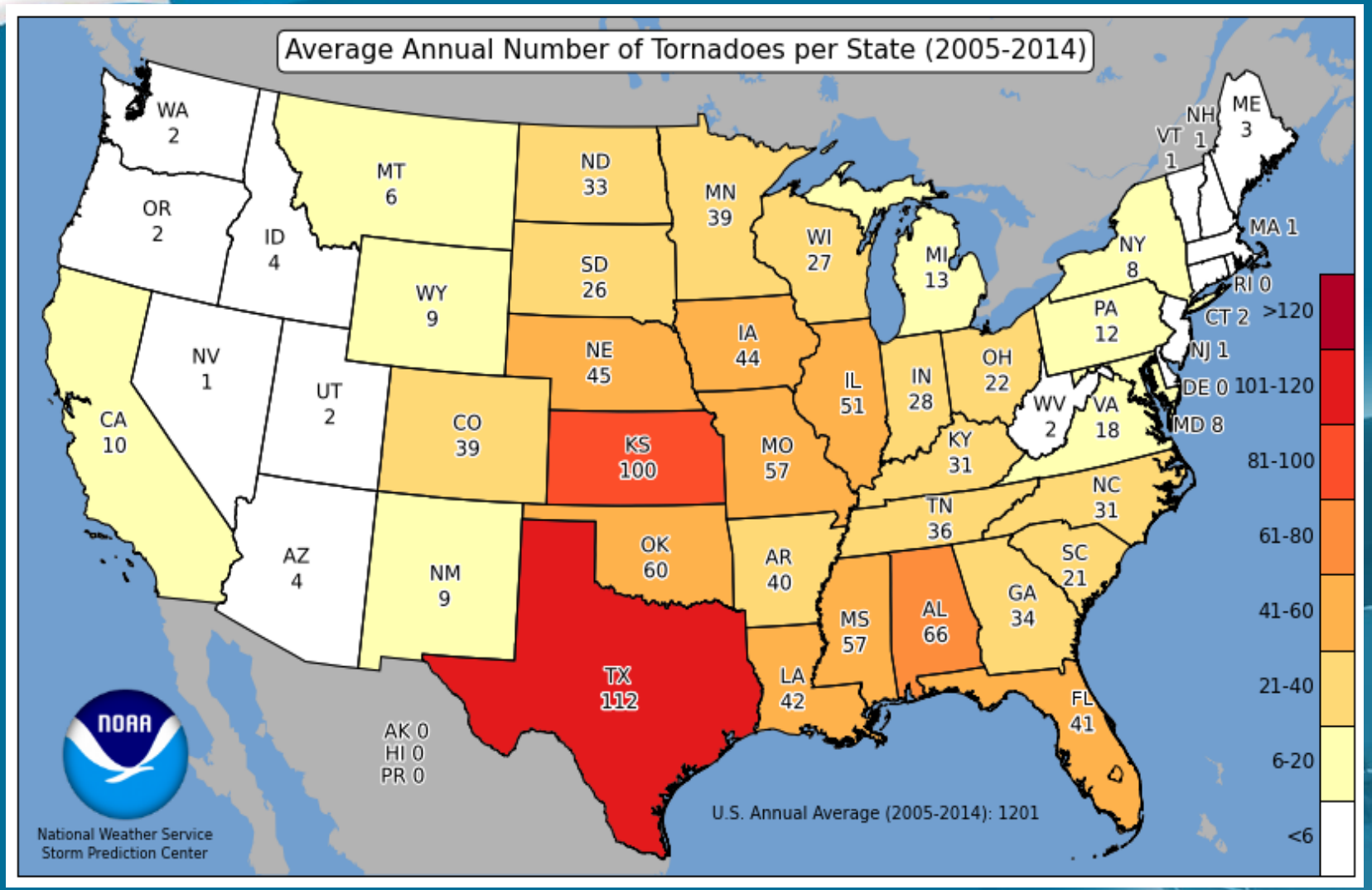
Tornadoes form all over the country and all times of the year.

Tornadoes can cause billions of dollars in damages.

All tornadoes large and small can be deadly if one does not take proper safety precautions.

Credit: Mary Cornish
Near Reading Center
North of Watkins Glen, NY
7/13/14 ~ 4:45 PM

Tornado


Average Annual Number of Tornadoes per State (2005-2014)
WA 2
OR 2
CA 10
ID 4
NV 1
MT 6
WY 9
UT 2
AZ 4
CO 39
NM 9
ND 33
SD 26
NE 45
KS 100
OK 60
TX 112
MN 39
IA 44
MO 57
AR 40
LA 42
WI 27
IL 51
MS 57
MI 13
IN 28
KY 31
TN 36
AL 66
OH 22
WV 2
GA 34
FL 41
SC 21
NC 31
VA 18
PA 12
NY 8
MD 8
DE 0
NJ 1
CT 2
RI 0
MA 1
VT 1
NH 1
ME 3
AK 0
HI 0
PR 0
U.S. Annual Average (2005-2014): 1201
National Weather Service
Storm Prediction Center
>120
101-120
81-100
61-80
41-60
21-40
6-20
<6

Tornado

There are 3 stages in a tornado's life.

Stage 1
Developing Stage

- A wall cloud forms
- Rotations increases
- A RFD (Read Flank Downdraft) develops (the lower clouds clear out)

Stage 2
Mature

- This is when the tornado is the strongest
- A funnel is most likely visible
- The RFD continues (a horseshoe-shaped clearing)

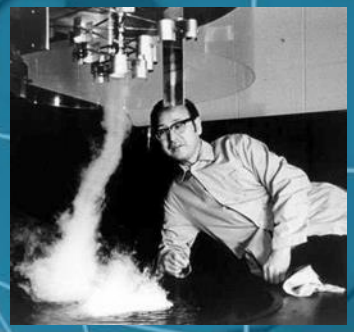
Stage 3
Dissipation

- The inflow to the storm is cut off
- The tornado shrinks and tilts
- Eventually dissipates

Tornado

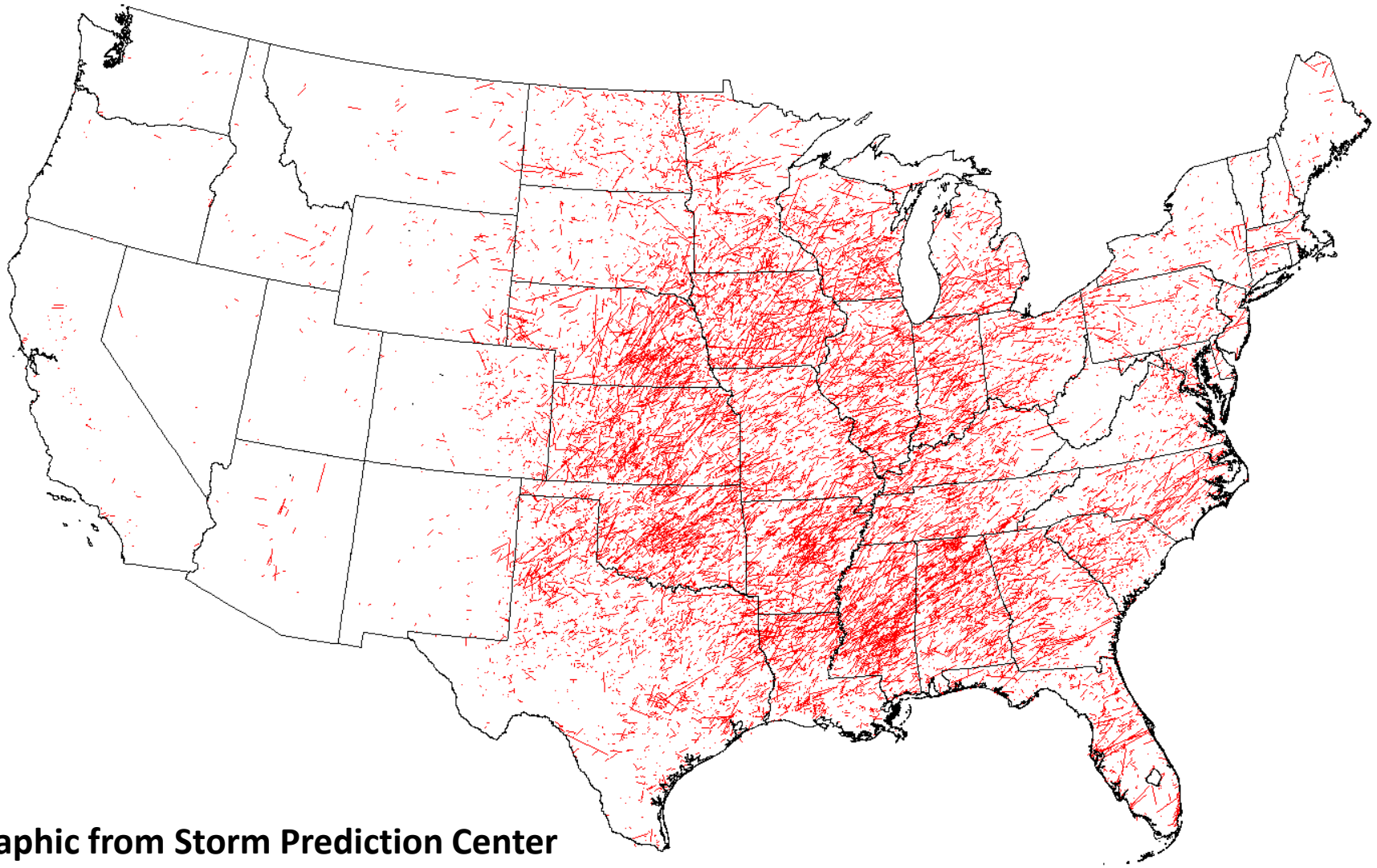
The Enhanced Fujita Scale
Tornadoes are classified by the intensity of damage it creates to objects.

Scale	MPH	Expected Damage
EF0	65-85	Light
EF1	86 -109	Moderate
EF2	110-137	Considerable
EF3	138-167	Severe
EF4	168-199	Devastating
EF5	200-234	Incredible



Tornado

Tornado tracks 1950-2014

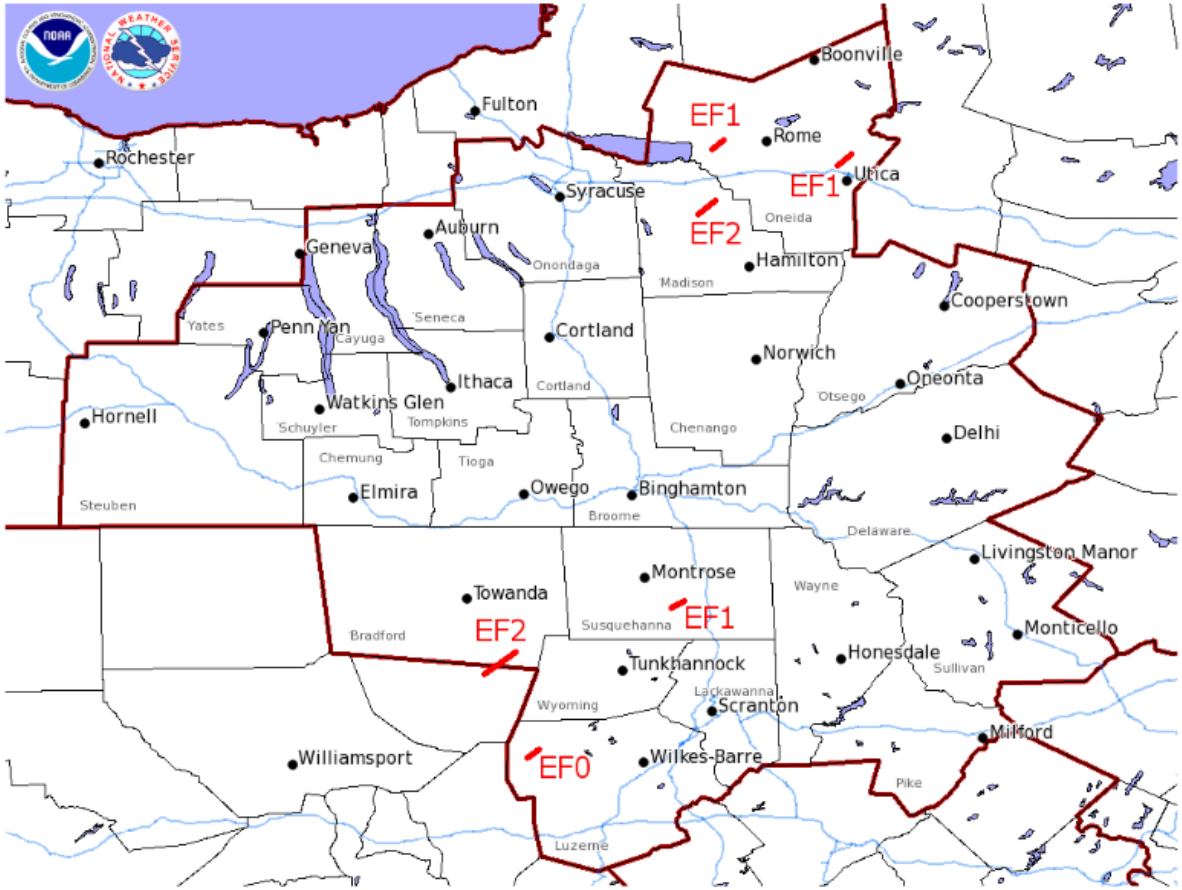


Graphic from Storm Prediction Center

Tornado

Outbreak from 2014

Tornado tracks – July 8, 2014



NY and PA Tornadoes

Tornadoes can tear homes apart and cause fatalities.

Damage from an EF1 and EF2 tornado in 2014

Tornado Safety

Practice, Practice, Practice a tornado drill!!!!

Take Cover!!

Inside…

First choice: Basement!

Find an area of sturdy protection. Cover yourself with a sleeping bag or mattress.

Second choice: Lowest floor, center room.

Find a small room, away from windows, usually a bathroom/closet. Crouch as low as possible to the floor. Face downward cover your head with your hands.

If you are in a mobile home… ***GET OUT!*** These are not safe. Have a plan!!!

Outside…

In a car:

Seek shelter in a sturdy building. DO NOT hide under an overpass.

Open Outdoors:

Lie flat and face down on the ground. Protect the back of you head with your arms. Get as far away from trees and cars as you can.

WATCH vs. WARNING

Watch- "Stand-by"

Conditions are favorable for severe weather in or near the watch area. Watches are issued for tornadoes, severe thunderstorms and flash floods. Issued by the Storm Prediction Center

Warning- "Activated"

The severe weather event is imminent or occurring in the warned area. Warnings are issued for tornadoes, severe thunderstorms, flash floods and river flooding. Issued by NWS Binghamton for central New York and northeast Pennsylvania.