

Basic SKYWARN Training

NWS Binghamton

www.weather.gov



NWS Mission

- Protect life and property and enhance the national economy.
- Issue warnings and forecasts for all types of weather; Severe or benign.
- Maximize public response and empower people to make informed choices.
- Collect, process, quality control and distribute weather data.
- Provide spotter training and community education.

Training Objectives

- Learn all *reportable* weather criteria.
- Tips on good severe weather reporting.
- Learn the basic SKYWARN process.
- Severe weather safety tips.
- Severe thunderstorm components and what kind of damage they cause.
- Visual clues for spotting differences between tornadic and non-tornadic storms.
- Flood and winter weather reporting.

Why SKYWARN and Severe Weather Spotters?

- Real time reports assist the national weather service in our warning decisions.
- SKYWARN provides a backbone of emergency communications.
- You help provide the citizens of your community with potentially life saving information.
- Your information may be the reason a warning is issued, and provides credibility to the warning.
- The trained eye of the storm spotter is still our greatest asset!

Reporting Severe Weather



Definitions

- **Severe thunderstorm** - A storm that produces wind gusts of 58 or more mph **and/or** hail 3/4" in diameter or larger. Statistically, the most structural damage occurs with winds > 58 mph.
- **Tornado** - A violently rotating column of air, usually attached to a thunderstorm, and **in contact with the ground**.
- **Funnel cloud** - A rapidly rotating, funnel shaped cloud extending down from a thunderstorm base, but **NOT in contact with the ground**.

More Definitions

- **Flash flood** - A rapid rise in stream, creek and small tributary river levels, usually within 6 hours of a heavy rain event, or other factor such as a dam break or ice jam.
- **Watch** - atmospheric conditions favor (or are becoming favorable for) the development of severe weather.
- **Warning** - severe weather has developed and is imminent to the area.

Severe Weather Reports

A summary of the basics

- Tornadoes
- Funnel clouds
- Wind damage and speed estimates
- Hail of any size
- Flooding

Rules of Reporting

Urgent Reports

- Tornado
- Funnel cloud
- Flooding of roads or homes

Reporting Rules...cont.

High Priority Reports

- Wind damage to structures, power lines, poles, trees, etc.
- Injuries or deaths resulting directly from severe weather or it's damage.
- Wind speed estimates of 50 mph or greater.
- Heavy rainfall of 1 inch or more per hour.
- Hail of 3/4" diameter or larger.
- Wall clouds (rotating or not).

Reporting Rules...cont.

Lower Priority Reports

- Hail sizes less than 3/4". Do NOT use the term "marble."
- Estimated wind speeds 35 to 50 mph.

Reporting Rules...cont.

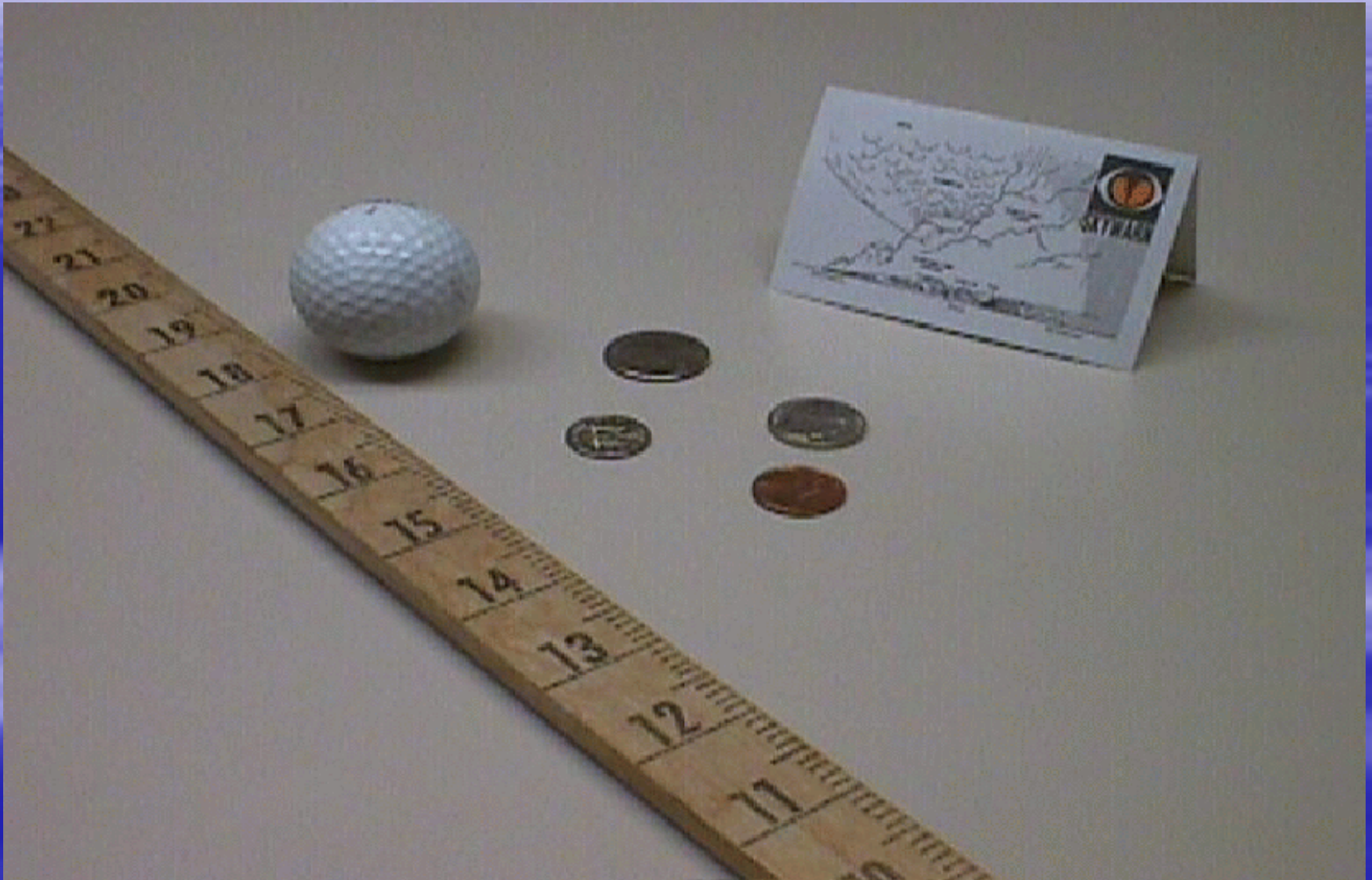
Do NOT Report

- Lightning strikes (ALL thunderstorms have lightning, or they wouldn't be thunderstorms!) We have the ability to monitor strikes nationwide at the weather service.
- Temperature, LIGHT rain, fog, "dark sky", etc.

Hail Size Diameters

■ Penny/dime/(severe)	0.75"
■ Nickel	0.88"
■ Quarter	1.00"
■ Half dollar	1.50"
■ Golf ball	1.75"
■ Hen egg	2.00"
■ Tennis ball	2.50"
■ Baseball	2.75"
■ Grapefruit	4.00"
■ Softball	4.50"

Good Choices to Measure Hail Size



Estimating Wind Speed

Beaufort Scale

- 25 - 31 mph large branches in motion; Whistling in telephone wires.
- 32 - 38 mph whole trees in motion.
- 39 - 54 mph twigs and small limbs break off trees; Wind impedes walking.
- 55 - 72 mph damage to chimneys and antennas; Pushes over shallow-rooted trees.
- 73 - 112 mph peels surface off roofs; Windows broken; Mobile homes overturned.
- 113 + mph roofs torn off homes; Weak buildings and mobile homes destroyed; Large trees uprooted.

Severe Weather Cloud Formations in Central NY and Northeast PA

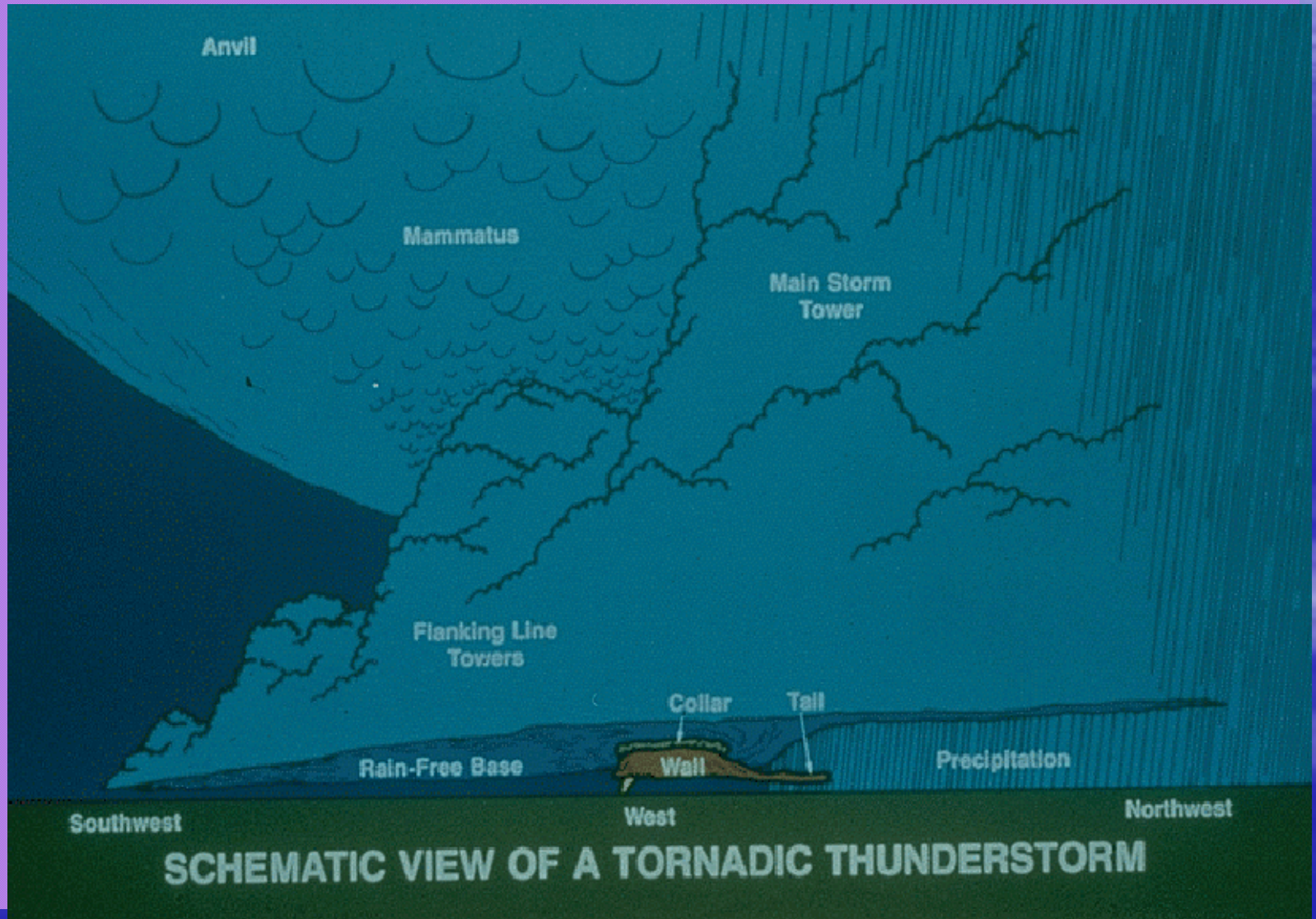
Wall Clouds



Shelf Clouds

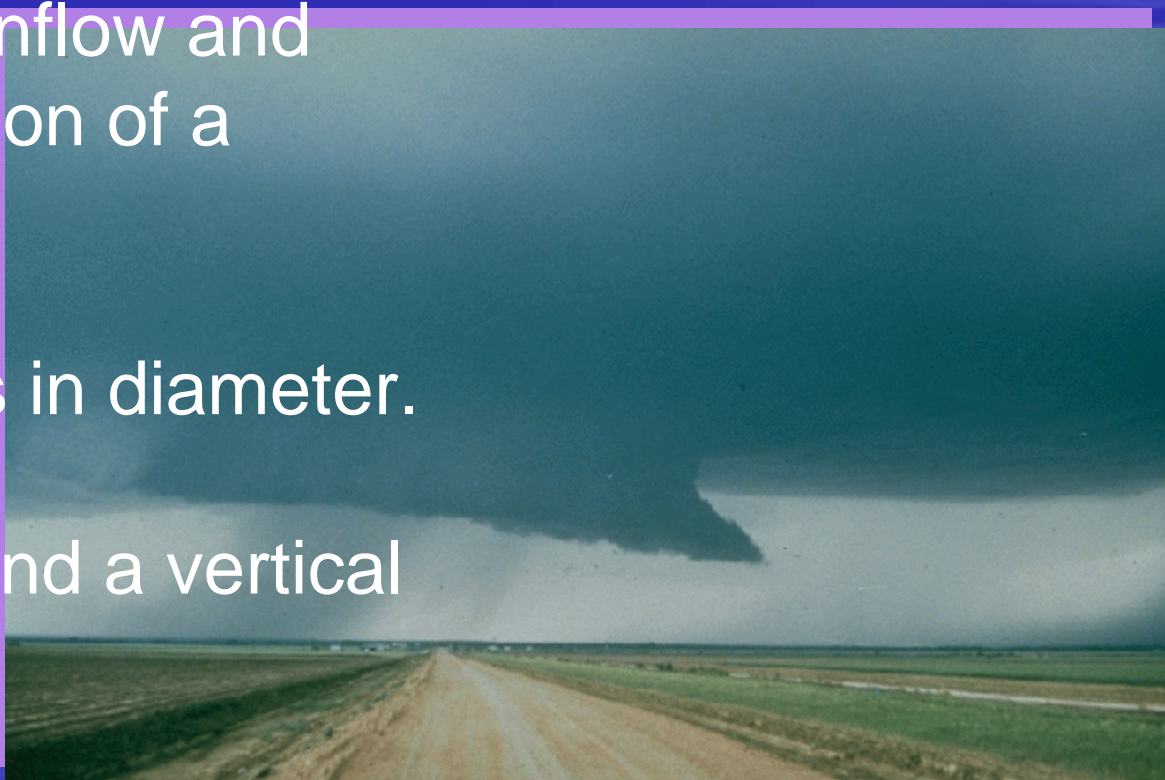


The Severe Thunderstorm



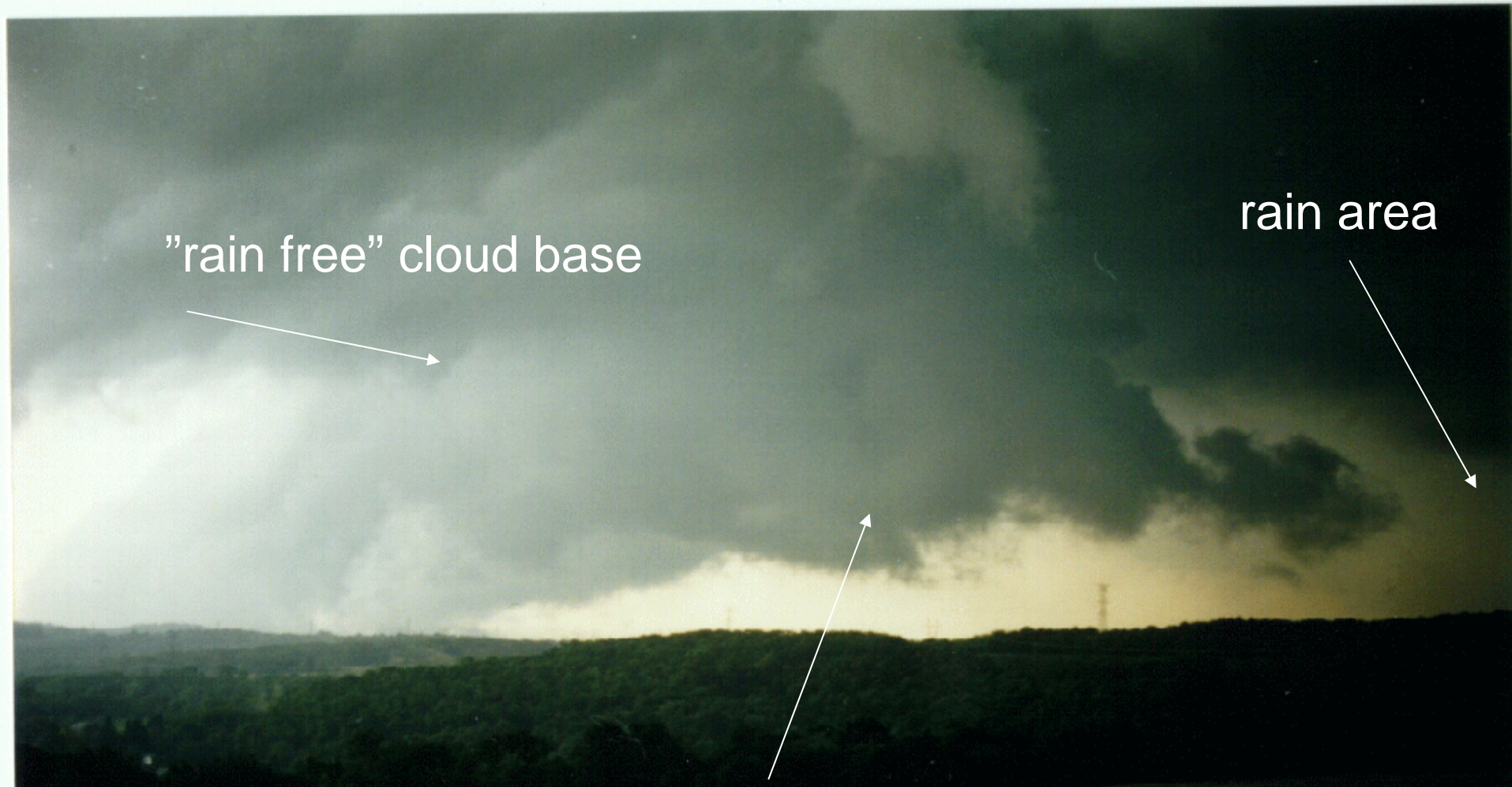
Wall Clouds

- An isolated cloud lowering usually attached to the rain-free part of a thunderstorm.
- Indicate the area of inflow and strongest upward motion of a thunderstorm.
- Typically 1 to 2 miles in diameter.
- May be rotating around a vertical axis!



Wall Cloud Clues

Wall cloud in Central NY, near the Binghamton Regional Airport.



"rain free" cloud base

rain area

Wall cloud (watch for rotation!)

Wall Clouds Rotate Like a Top

- Notice the developing funnel cloud



Shelf Clouds

- Long and wedge shaped
- Formed by rain cooled air descending out of thunderstorm.
- Indicates leading edge of air moving away from thunderstorm.
- May bring strong to damaging wind gusts and driving rain upon passage.
- Can easily be confused with a wall cloud.
- Does not rotate.



Shelf Cloud Clues

Shelf cloud from the side

Wedge like – slopes away

Rain Area

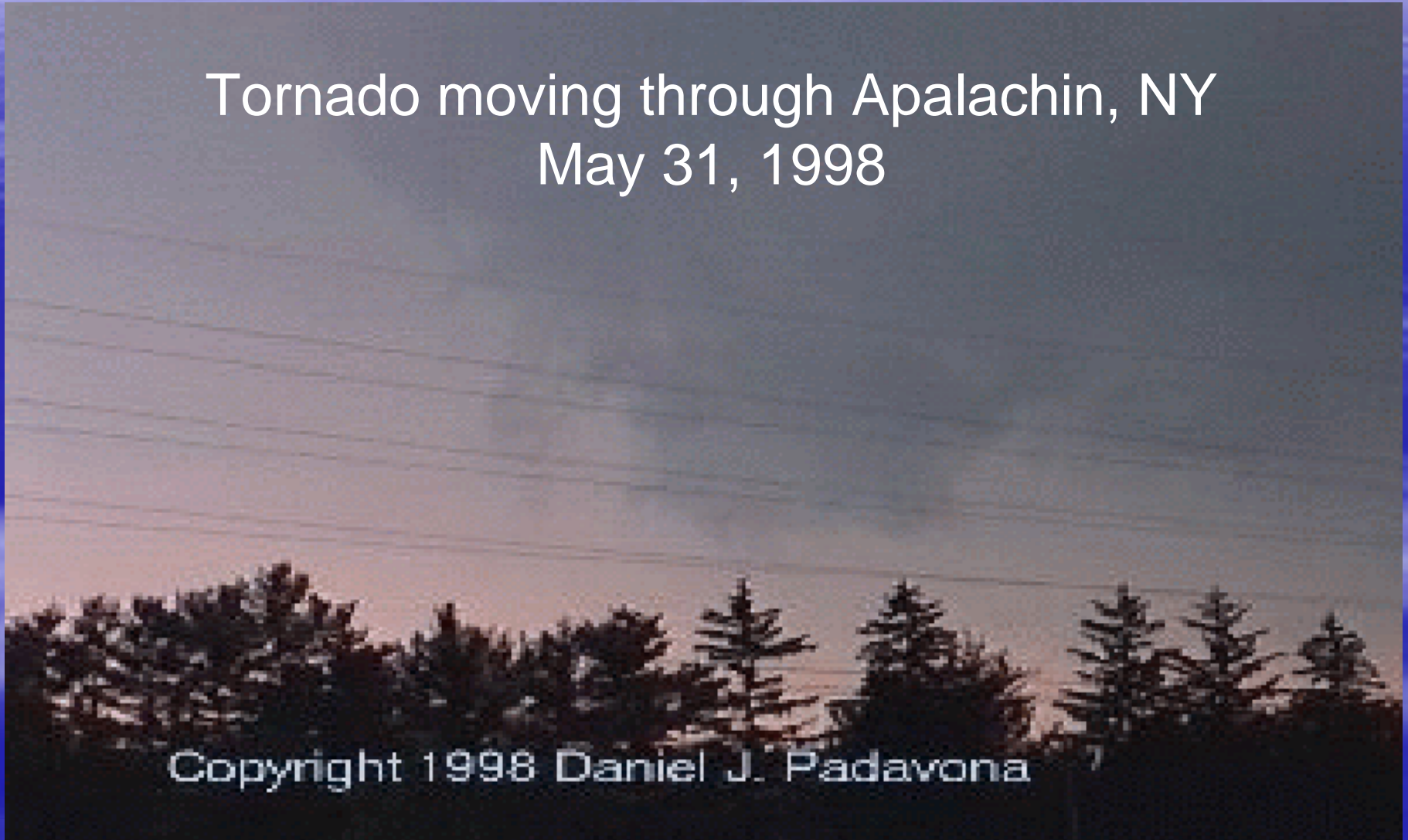


Shelf Clouds



Tornados and Funnel Clouds

Tornado moving through Apalachin, NY
May 31, 1998



Copyright 1998 Daniel J. Padavona

Tornado Near Norwich, NY

Spotted from the Chenango County fairgrounds

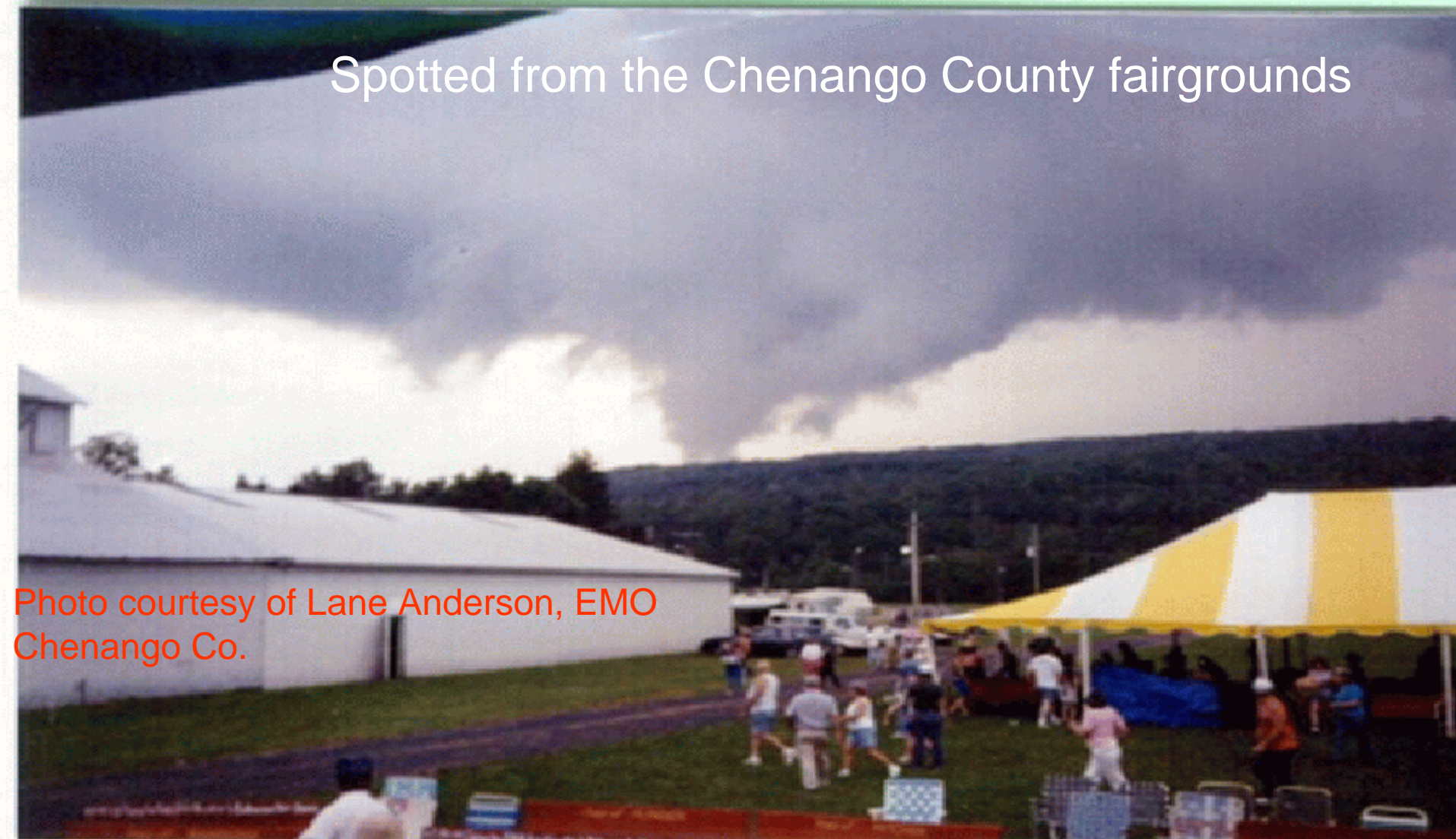


Photo courtesy of Lane Anderson, EMO
Chenango Co.

Remember to look for dust and debris! This can mean the difference between a “Tornado” or “Funnel Cloud” report.



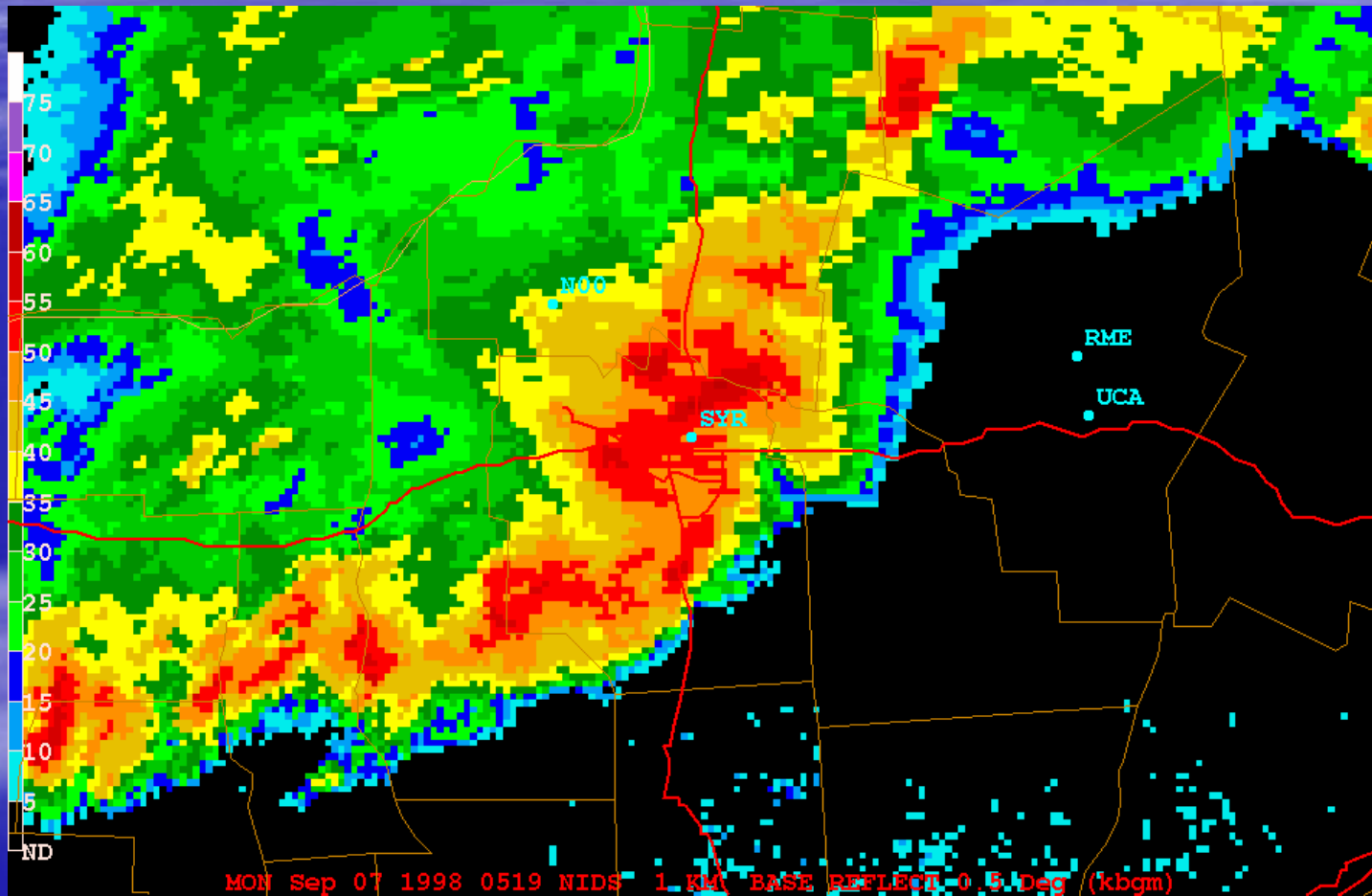
Tornado Identification Review

- Beware of natural and man-made tornado look a likes. (Smoke, “scud” clouds, rain shafts).
- Watch carefully for rotation about a vertical or near- vertical axis.
- Give it a minute or two.
- Remember to watch for dust and debris at ground level.
- If you see a rotating funnel shape obscured by a hill or ridge line, call it a tornado.
- If you are unsure, call anyway!

General Hazardous Weather Safety Tips

- Remain, or get indoors and keep away from windows during ALL thunderstorms, but especially when warnings are in effect.
- Seek higher ground during flooding, and never drive through water covered roads.
- It's all common sense!

Syracuse Derecho



State Fairgrounds - Sept. 1998





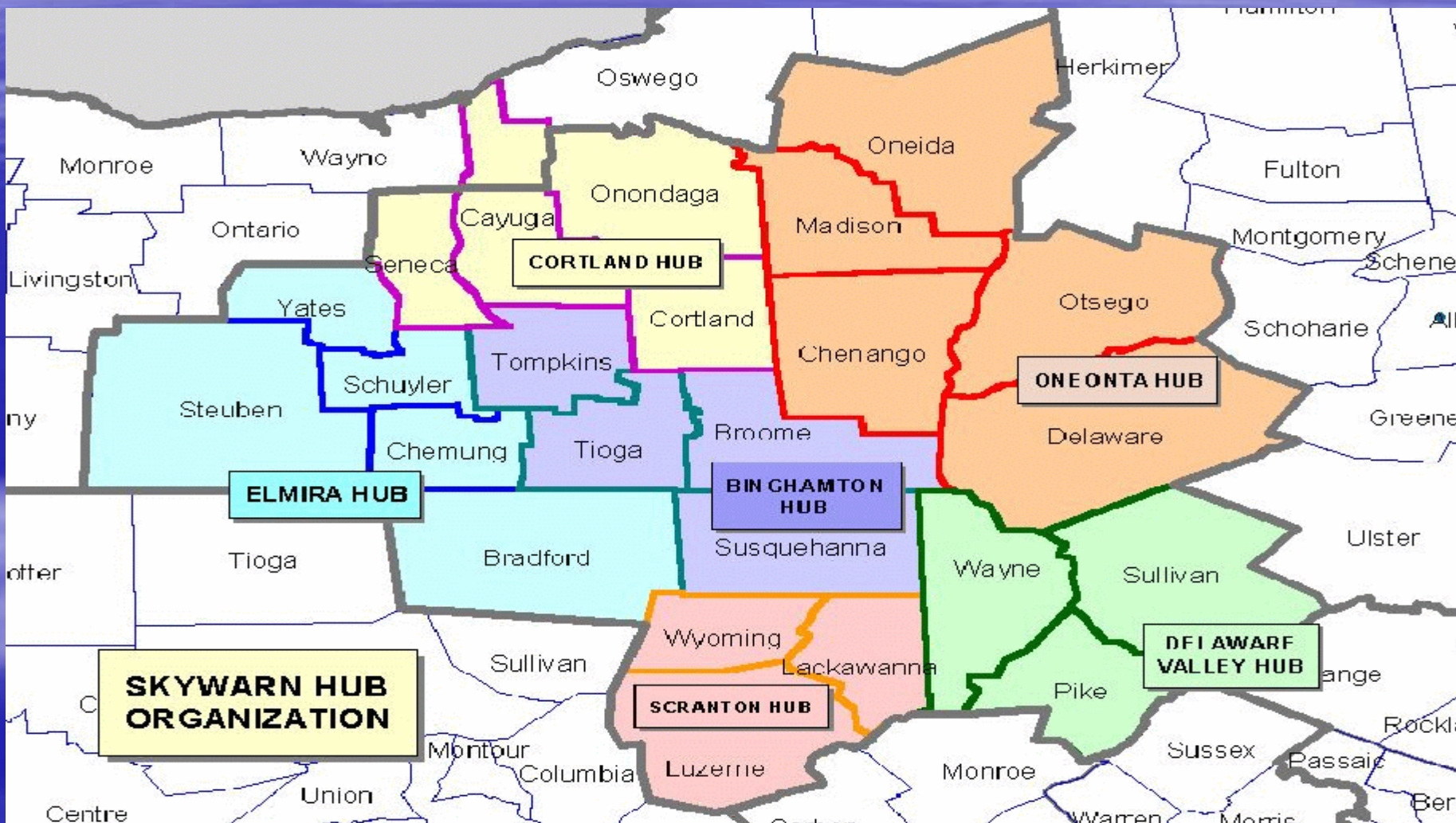
Tornado Safety Tips

- Go to a basement or the lowest level of the building. A hallway or interior room without windows is adequate if no basement.
- Get under a piece of sturdy furniture such as a workbench or heavy table or desk.
- Abandon a mobile home and go to a designated shelter or sturdy building immediately.
- Never try to out drive a tornado in a car or truck. Seek a building shelter immediately.
- If no shelter available, abandon your vehicle and get into a ditch or culvert, but be ready for flooding rain.
- Do not seek shelter under overpasses!

Lake Carey, PA June 2, 1998



NWS Binghamton SKYWARN Community

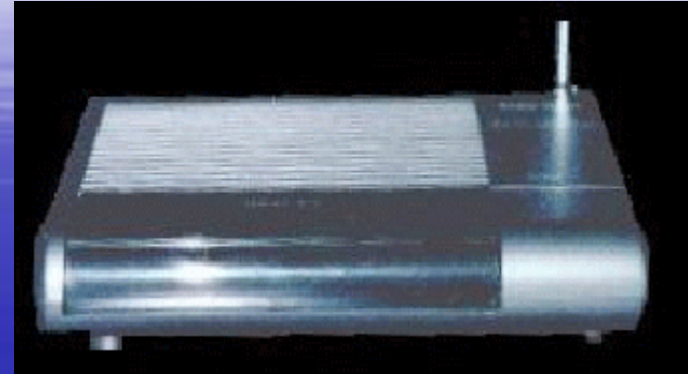


General Severe Weather Reporting Tips

- Remain calm.
- Address the SKYWARN net in a proper manner according to instructions provided by your county EC.
- Give just the facts of your observation.
- Be clear, and concise in your report.
- Use weather terms you've learned in this training.

Preparing Yourself for a Severe Weather Day

- Listen to NOAA Weather Radio, your #1 source for continuous weather information
- Check information on the world wide web.
- TV Broadcasts



BATH:	162.450 MHz
BEACH LAKE:	162.525 MHz
BINGHAMTON:	162.475 MHz
CANNESTEO:	162.425 MHz
COOPERSTOWN:	162.425 MHz
ELMIRA:	162.400 MHz
ITHACA	162.500 MHz
NORWICH:	162.525 MHz
STAMFORD:	162.400 MHz
SYRACUSE:	162.550 MHz
SCRANTON:	162.550 MHz
TOWANDA:	162.550 MHz
WALTON:	162.425 MHz

Get Ready!

Hazardous weather outlook.

- Outlines the threat for dangerous weather every day.
- Issued by 5 am.

Severe weather outlook statements.

- Details to the public the threat for severe thunderstorms or tornadoes.
- Issued by NWS BGM only as needed.
- Usually when there is a moderate to high risk for severe weather.

Storm Prediction Center Outlooks

- Day 1 and day 2 severe weather outlooks
- Shorter range thunderstorm development discussions (mesoscale discussions)
- Severe thunderstorm and tornado watches



Get Set!

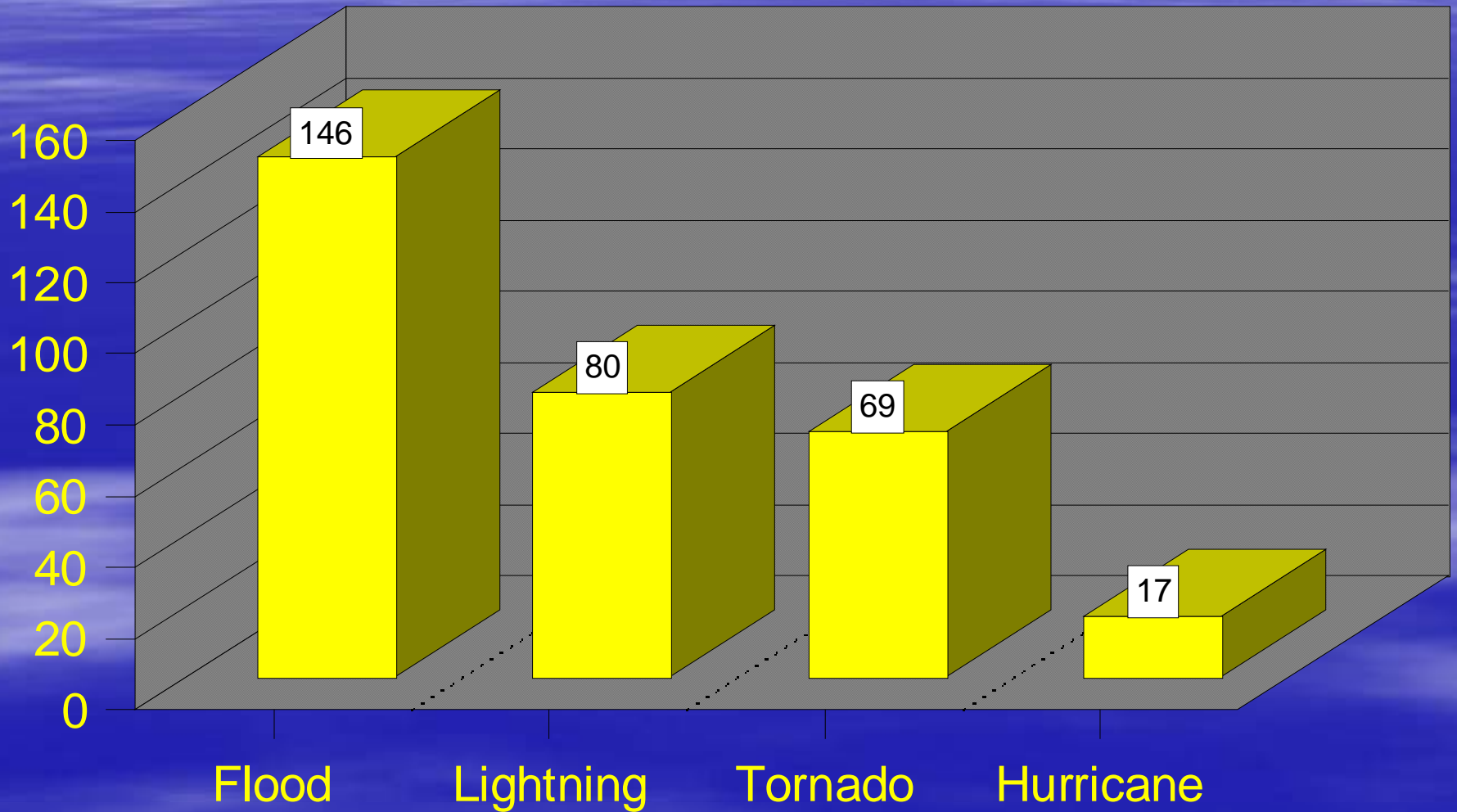
- Special weather statements, short term forecasts and severe thunderstorm or tornado watches outline more specific areas for potential severe weather development.
- Typically issued 3 to 6 hours ahead of an event.

Go!!

- Severe thunderstorm and tornado WARNINGS are issued.
- Pinpoint threats down to the county level.
- Provides estimated times of arrival of severe weather to cities and towns.
- YOU are automatically activated. Check into the net and be ready to report.
- Obtain any of this weather information via the NOAA weather radio and/or the web at www.weather.gov/bgm.

Weather Fatalities

1972-1991 Average per Year



Flood Safety

- Never try to cross flooded roads
- If you live near a flood prone stream or river, listen for updates during a flood watch and/or during periods of heavy rain

April 2005 Flooding



April 2005 Flooding



Courtesy Edwin Wesely for the River Reporter

April 2005 Flooding



April 2005 Flooding



Courtesy U.S. Geological Survey