



Spotter Concepts



John De Block

**Warning Coordination
Meteorologist**



**U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service – Birmingham, AL**



Why are we here?



PROTECT LIFE AND PROPERTY

helping you make informed decisions



Disclaimer



This is **NOT** storm **CHASER** training!

The National Weather Service encourages everyone, at **ALL** times, to

SEEK SHELTER

when threatened by hazardous weather!

03/12/2008



Why do we need spotters?



•GROUND TRUTH!

•*Radar limitations* (beam height & resolution...effective resolution decreases with distance...radars do not see tornadoes)

©2001 Chris Kridler
ry.com

•Very high percent of *weak tornadoes* (radar signatures less defined)

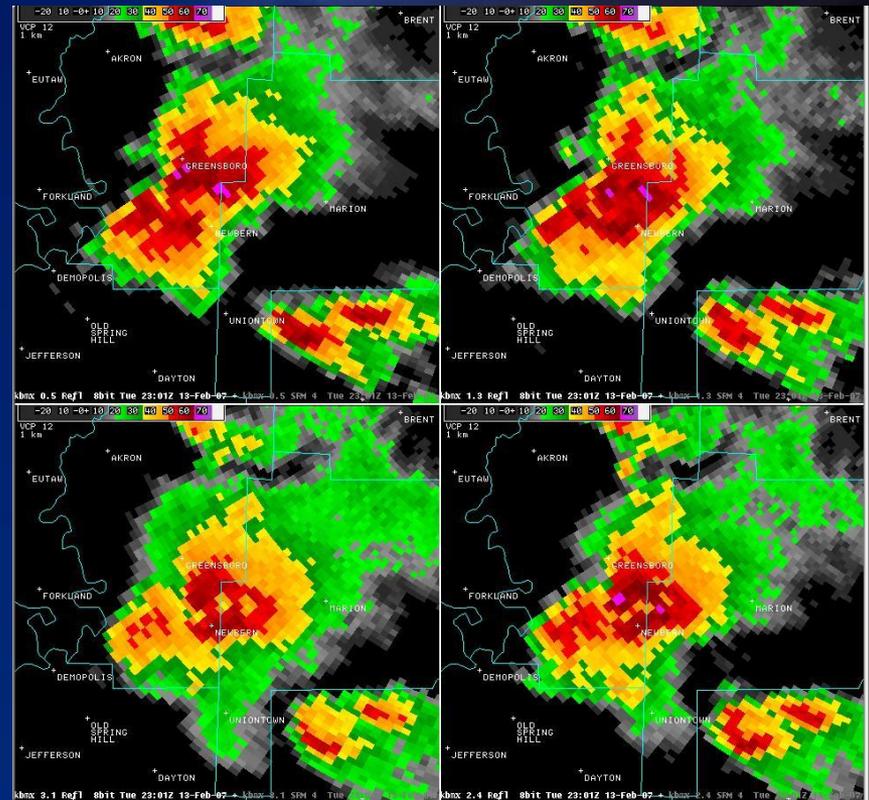
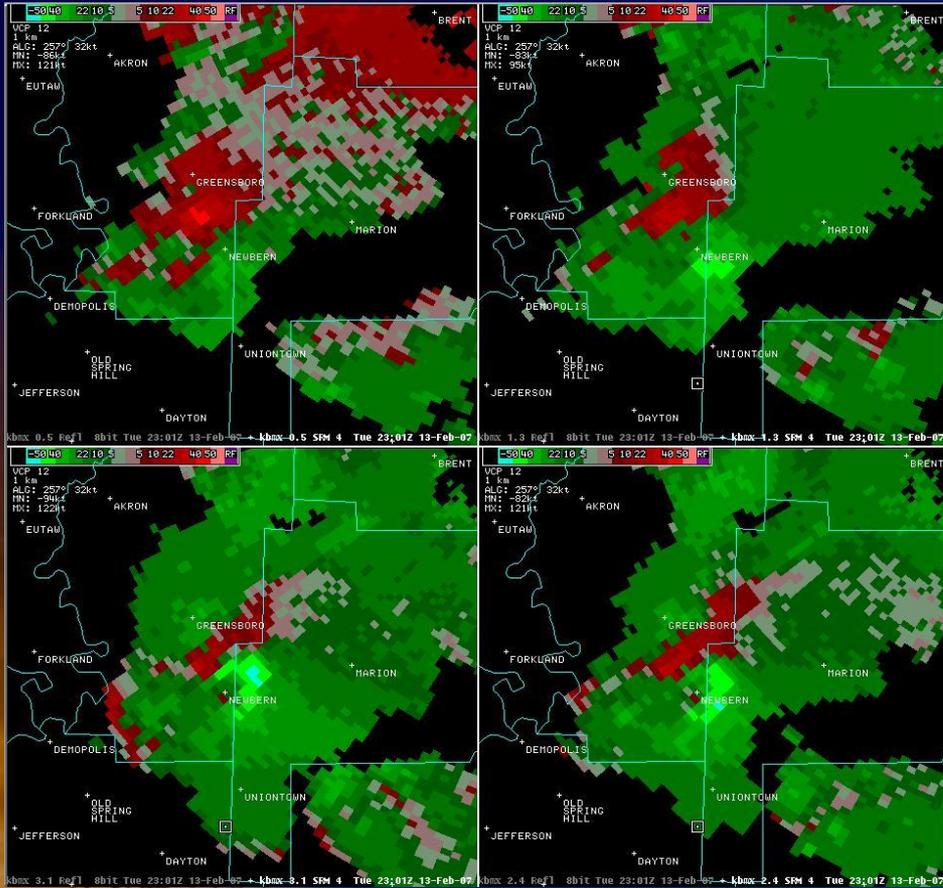
•*Real-time verification* improves warning accuracy

•Reports add credibility, enhances public response





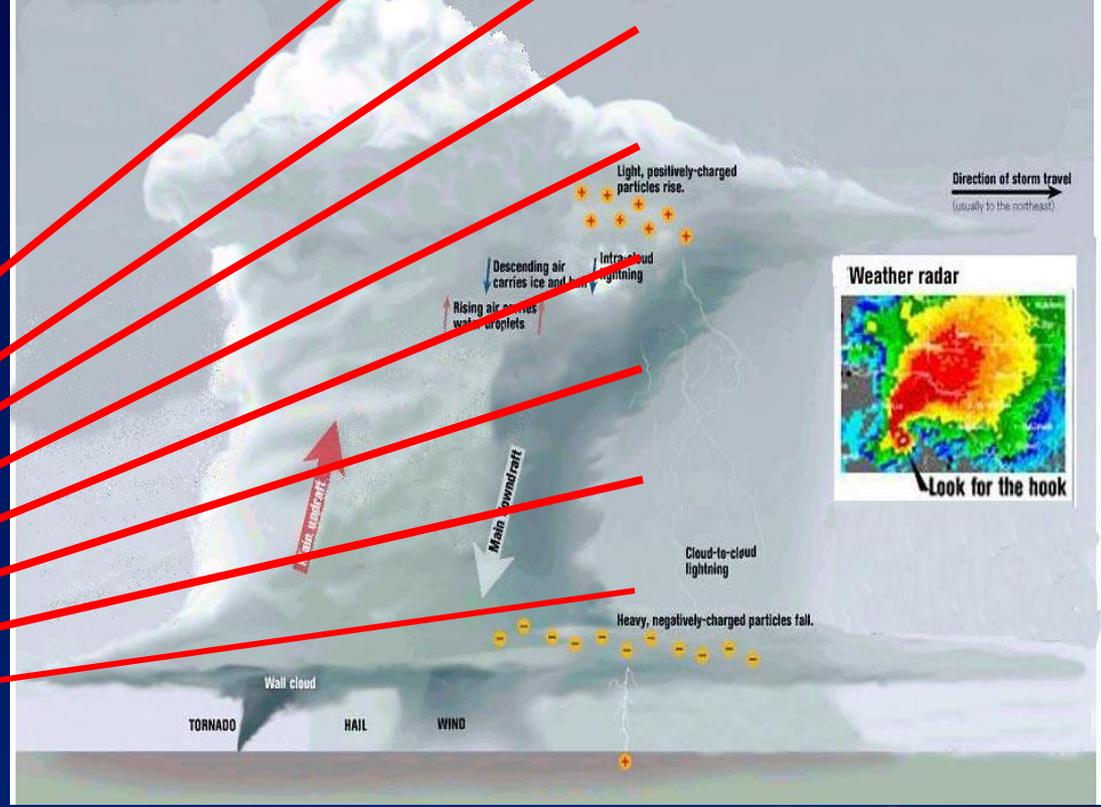
Why Are Storm Spotters Important?



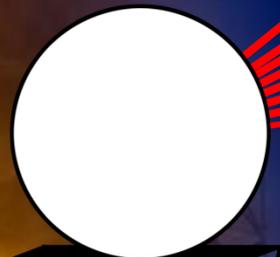
Doppler radar imagery from Newbern Tornado, February 13, 2007



Supercell thunderstorm



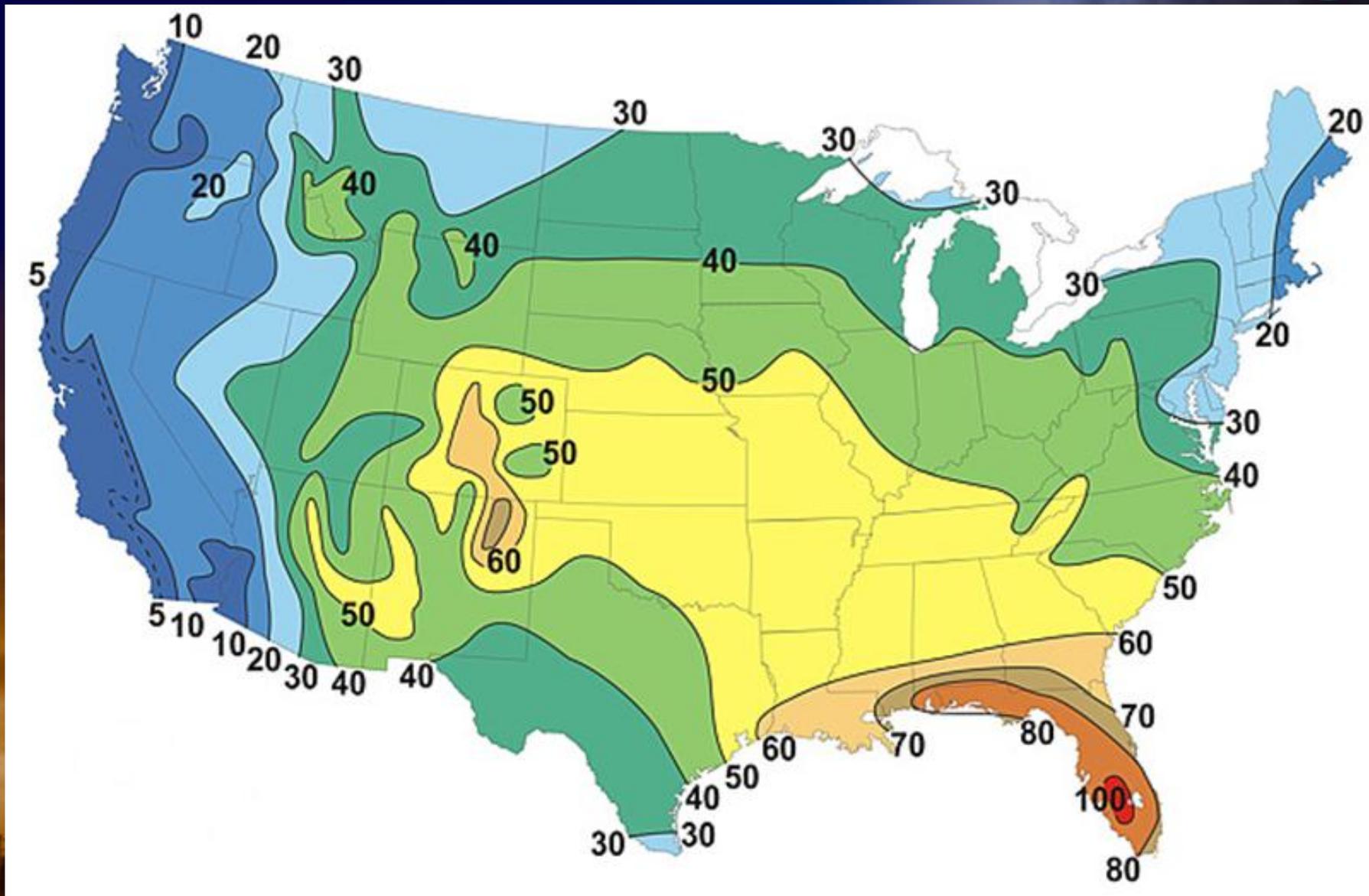
STORMS ARE 3-DIMENSIONAL



RDA



Thunderstorm Climatology

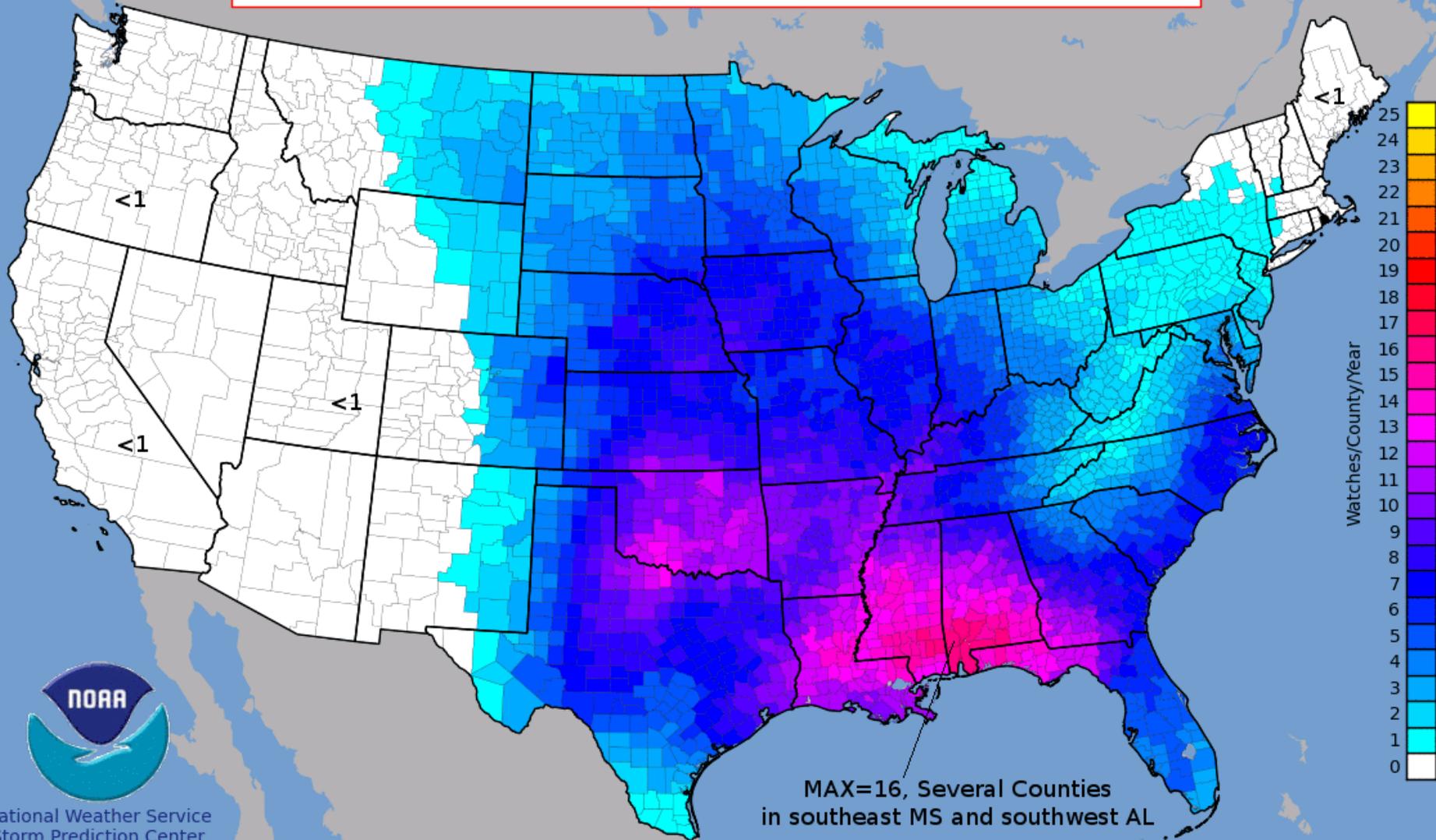




Tornado Alley ?

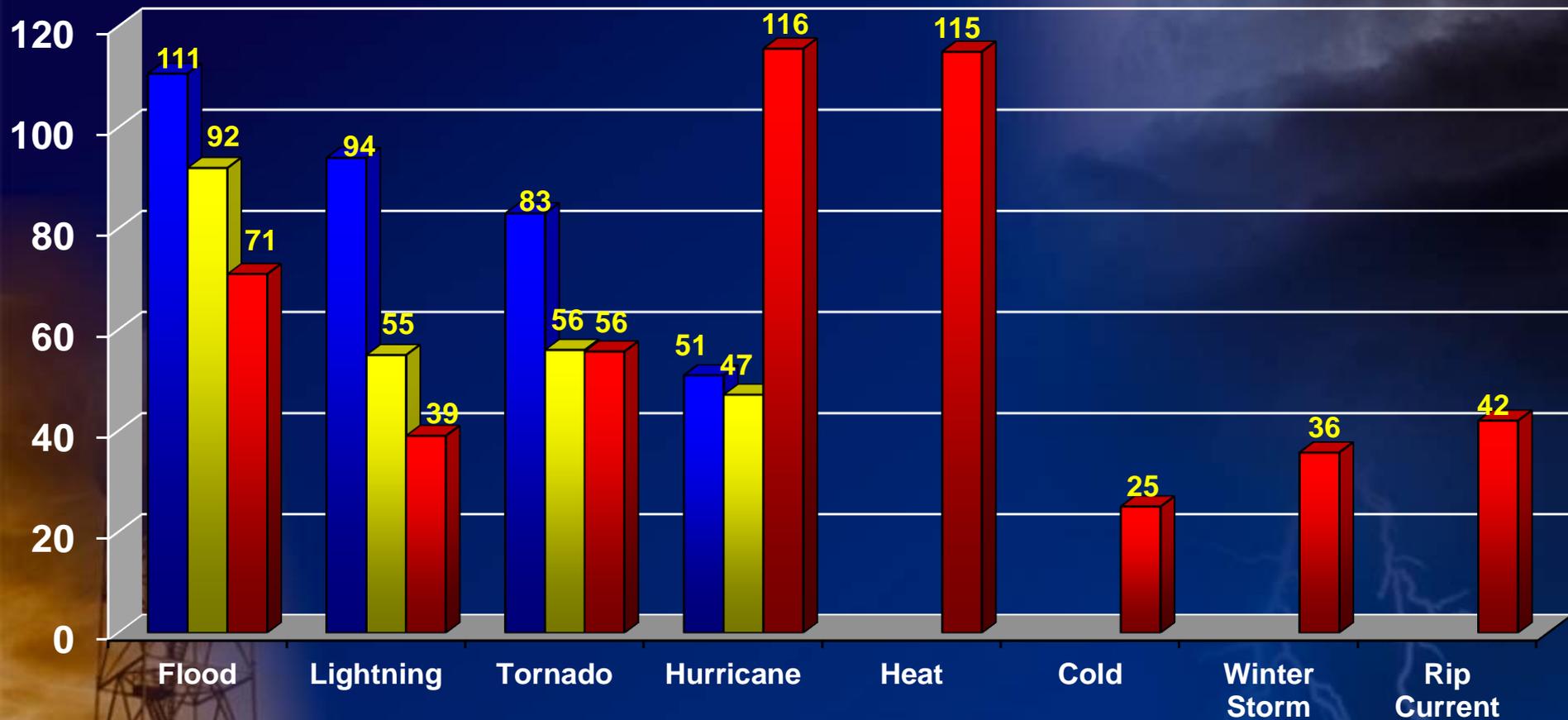


Average Annual Number of SPC Tornado Watches per County (1999-2008)





U.S. Weather Fatalities Per Year 2001 - 2010



■ 60 year ave. ■ 30 year ave. ■ 10 year ave.



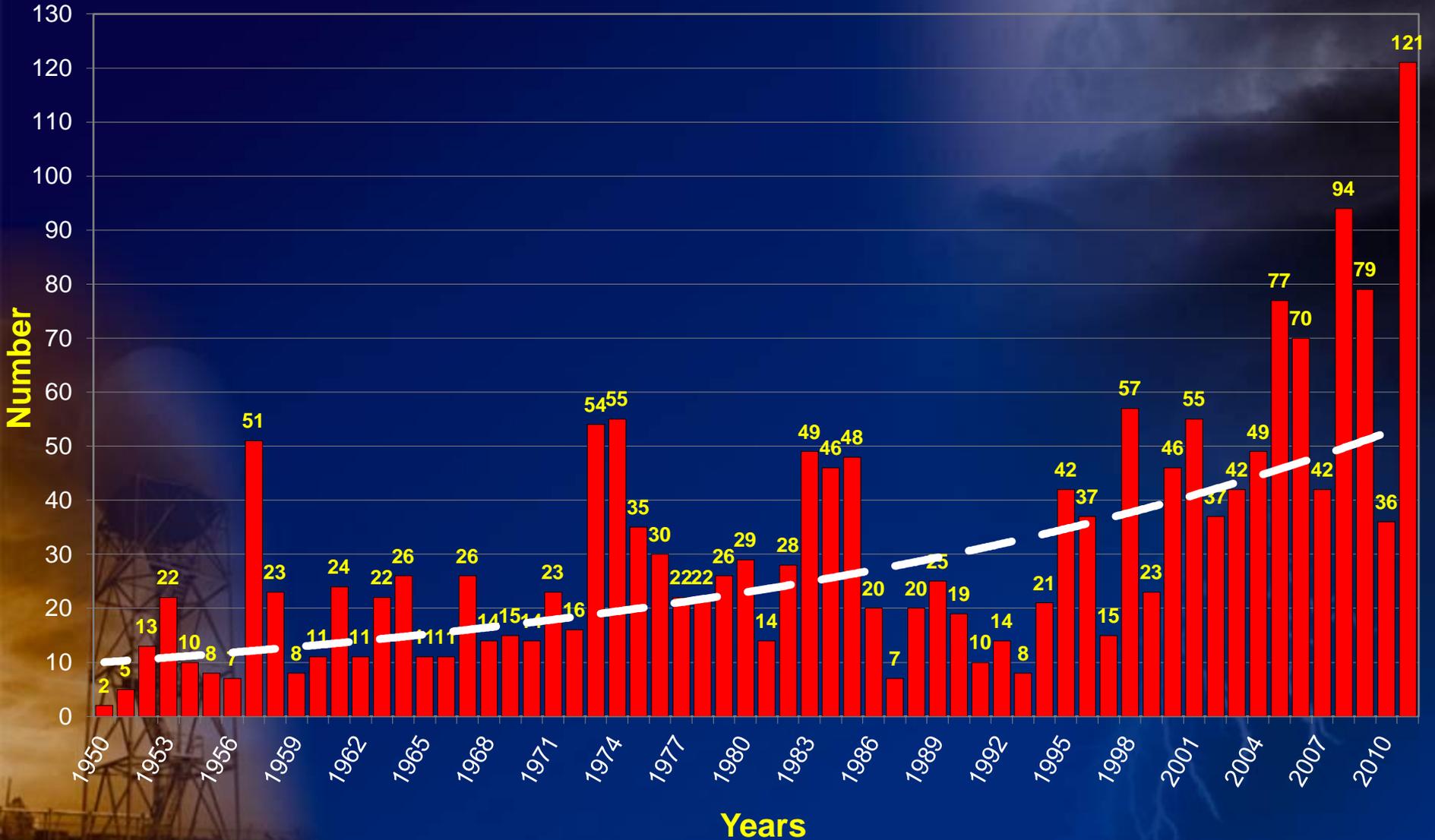
Alabama's Climatology

- ***We live in one of the most active weather areas in the world!***
 - tornadoes, hurricanes, floods, droughts, and even snow/ice on rare occasions
- **One of the wettest places in U.S.**
 - 50 to 60 inches of rainfall on average
 - Jan 1 - Sep 15 2011, 42.67 inches
 - Last year at this time, 37.59 inches
 - Normal for this time, 38.77 inches
- **Hot humid summers and mild wet winters**



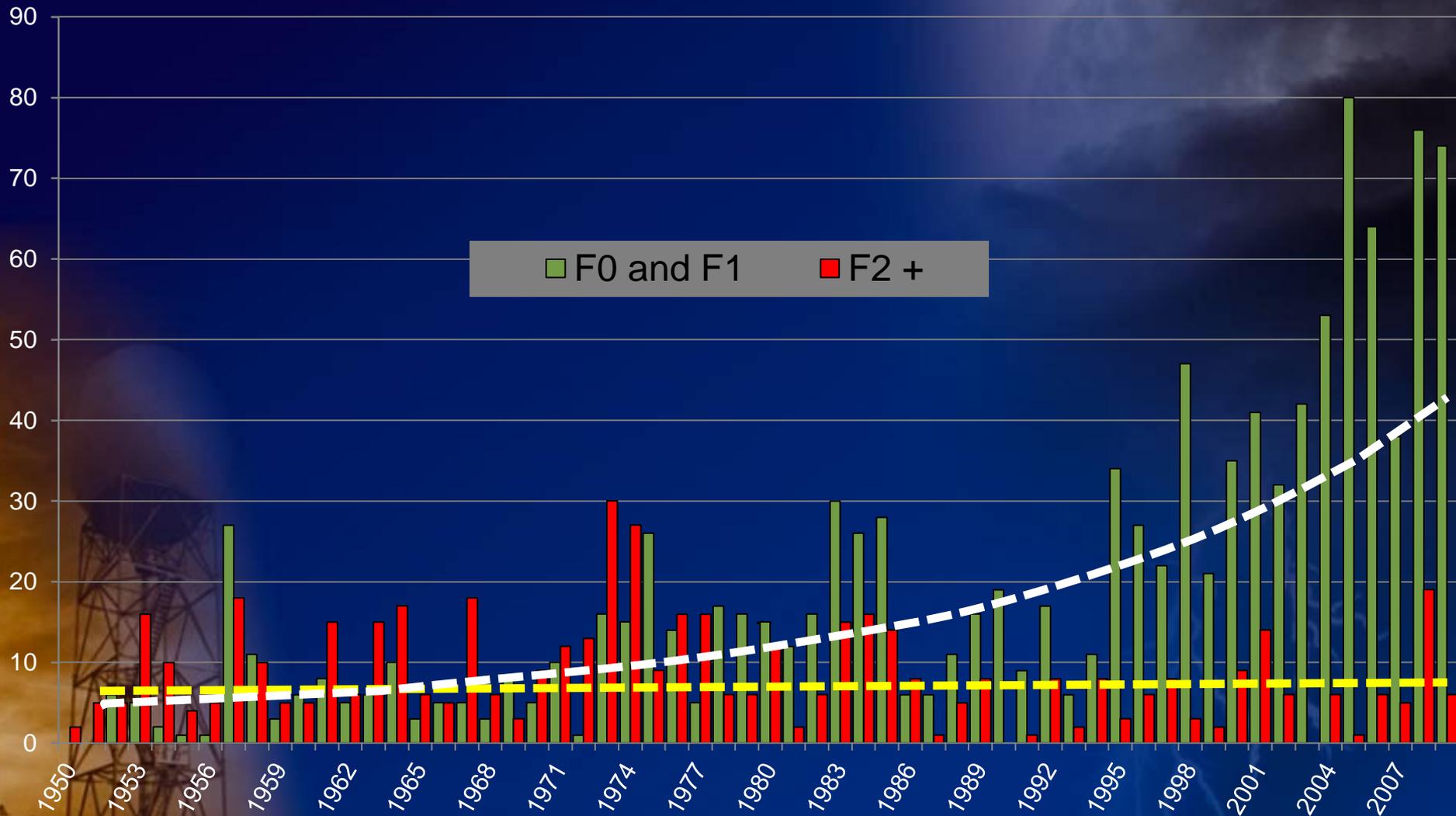


Alabama Tornado Count By Year 1950-2011*



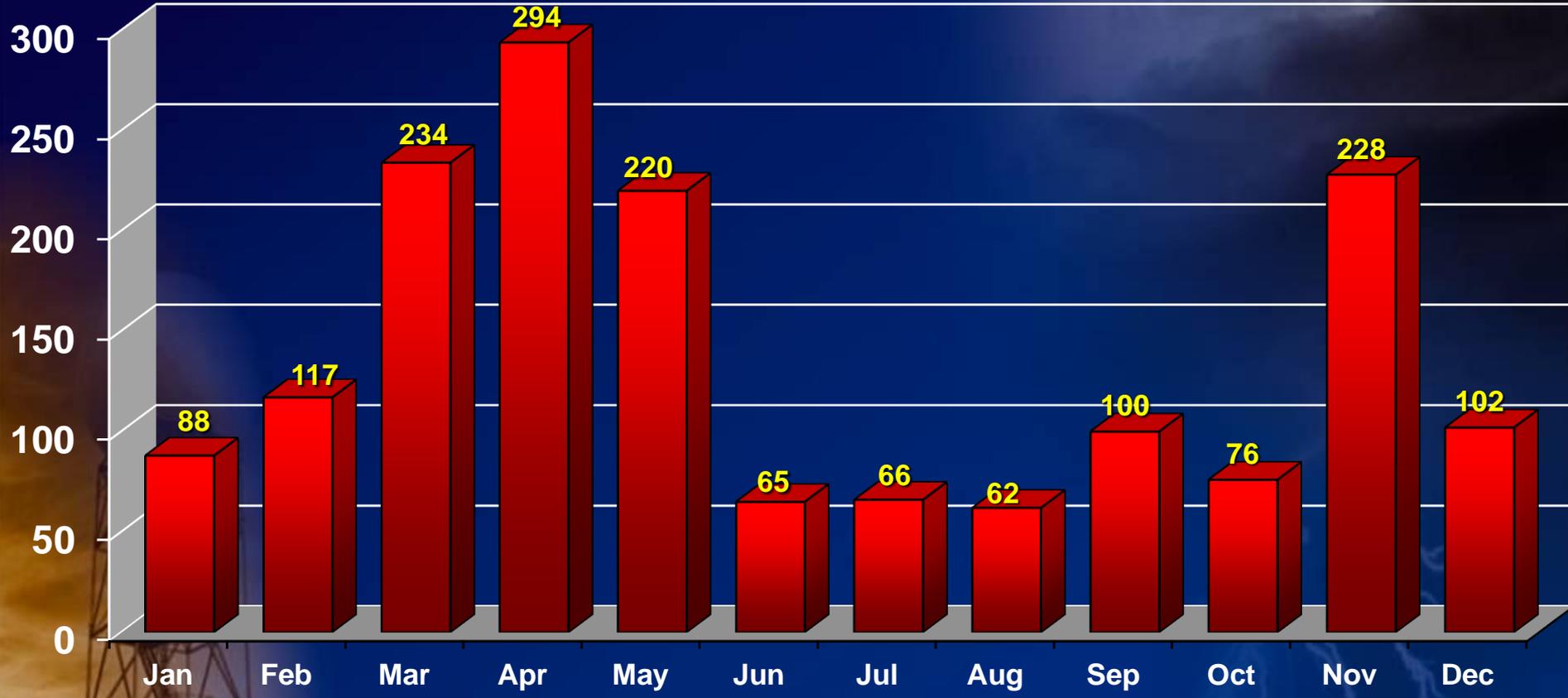


Weak Tornadoes VS Strong Tornadoes 1950-2009





Tornadoes By Month 1950 - 2009





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Forecast: Severe weather possible Tuesday, Wednesday across central Alabama

Published: Monday, April 25, 2011, 7:10 PM

[Home](#) > [Breaking News from The Birmingham News](#) > [Weather](#)

Metro Birmingham forecast: Growing threat of severe weather over next 48 hours

Published: Tuesday, April 26, 2011, 6:07 AM Updated: Tuesday, April 26, 2011, 6:07 AM

[Home](#) > [Breaking News from The Birmingham News](#) > [Weather](#)

Forecast: Severe weather expected across central Alabama Wednesday

Published: Tuesday, April 26, 2011, 8:10 PM Updated: Tuesday, April 26, 2011, 8:13 PM



Historic Tornado Outbreak

April 27, 2011



The Birmingham News

News



Historic Tornado Outbreak ***April 27, 2011***



[Home](#) > [Breaking News from The Birmingham News](#) > [Weather](#)

Updated: Metro Birmingham morning storm just "Round One," National Weather Service says

Published: Wednesday, April 27, 2011, 10:23 AM Updated: Wednesday, April 27, 2011, 3:13 PM

[Home](#) > [Breaking News from The Birmingham News](#) > [Weather](#)

Birmingham area closings: A list of schools, businesses, churches closing due to storms (updated)

[Home](#) > [Breaking News from The Huntsville Times](#) > [Weather](#)

More severe weather expected throughout Tennessee Valley

Published: Wednesday, April 27, 2011, 12:53 PM Updated: Wednesday, April 27, 2011, 1:58 PM





Historic Tornado Outbreak April 27, 2011



HAL YEAGER 2011

The Birmingham News



Historic Tornado Outbreak



**BAMA
RISING**

A BENEFIT CONCERT FOR
ALABAMA TORNADO RECOVERY

PRESENTED BY

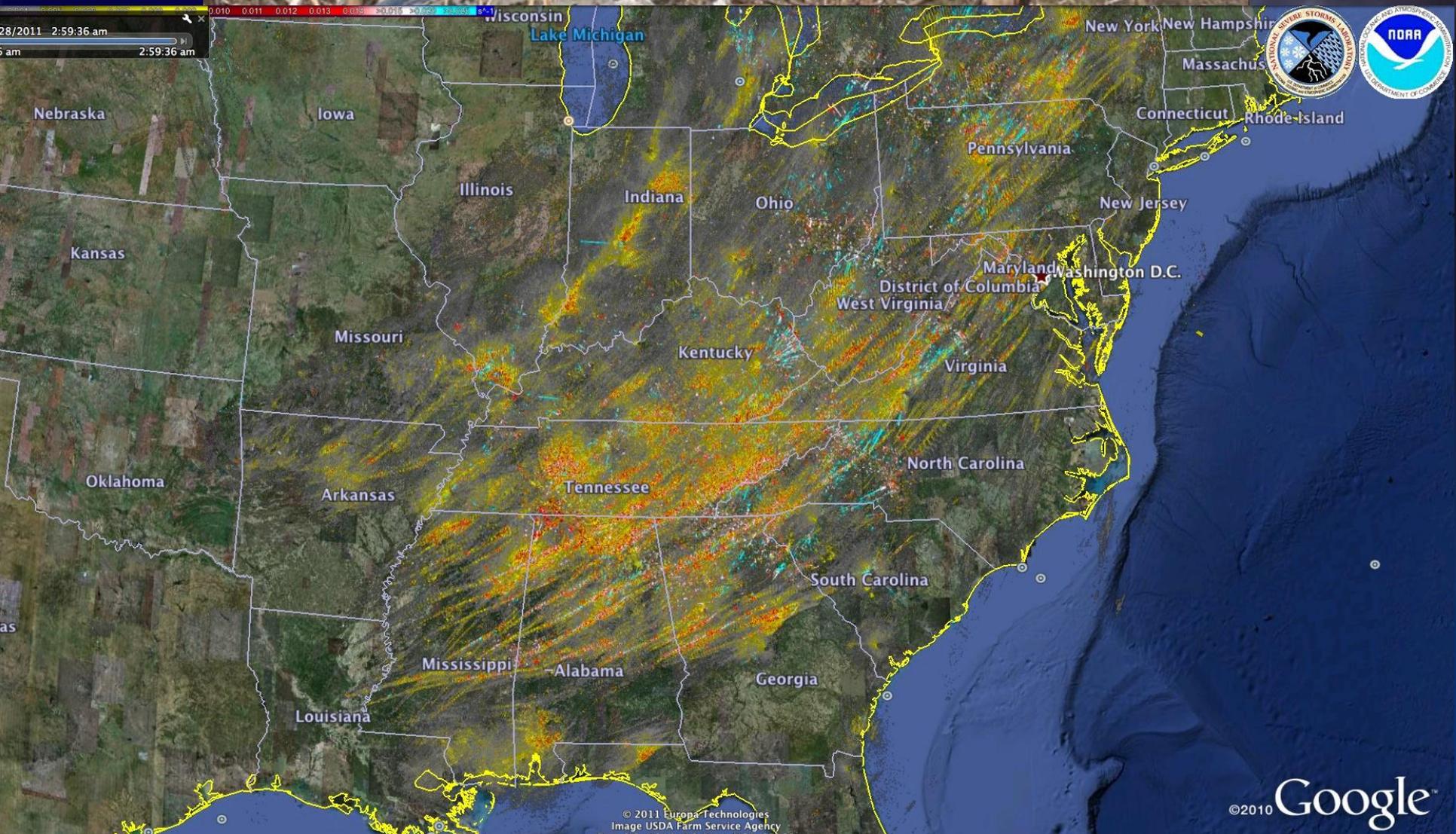




Historic Tornado Outbreak April 27, 2011



4/28/2011 2:59:36 am
2:59:36 am



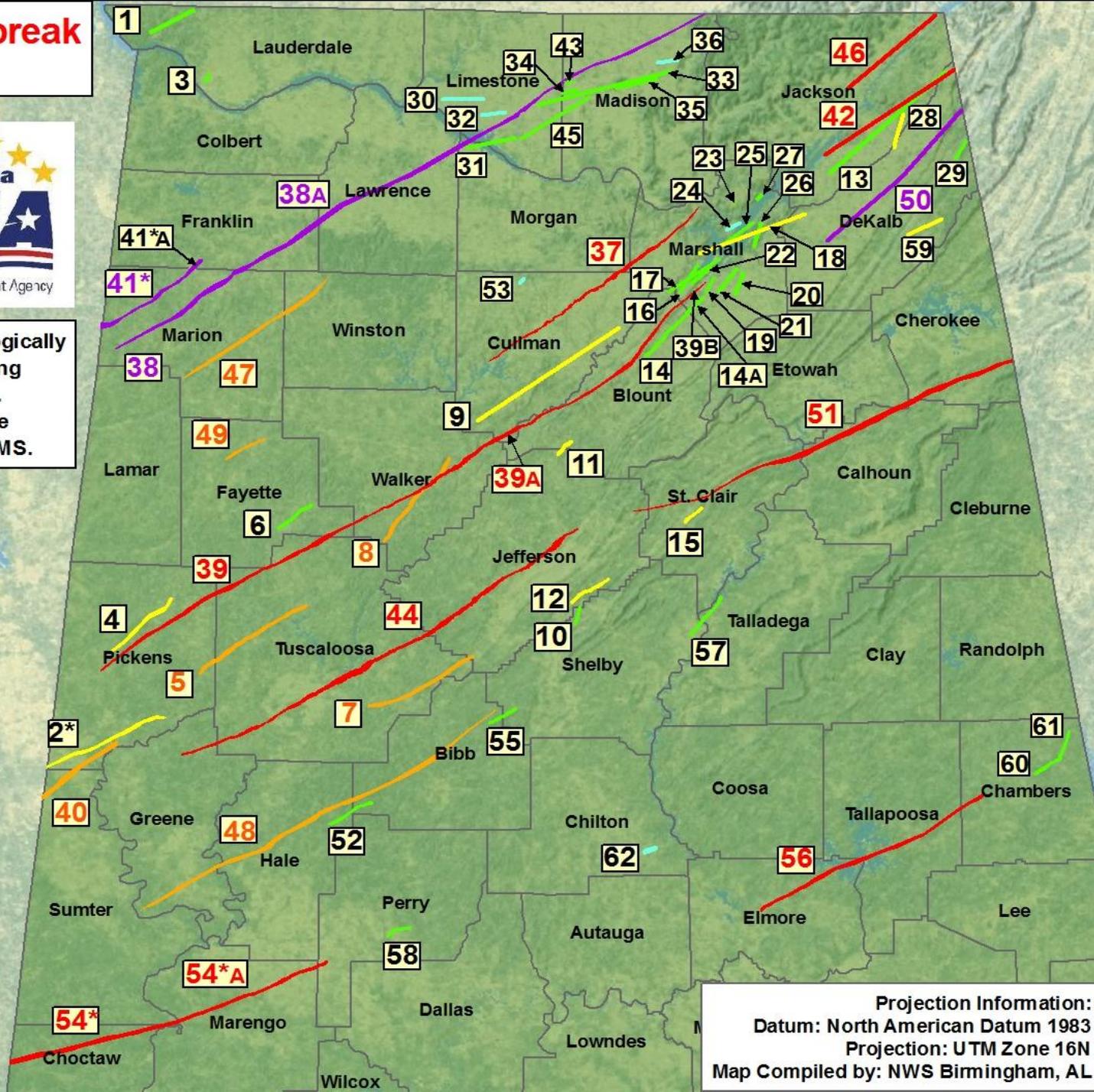
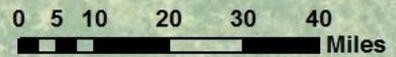
Historic Tornado Outbreak April 27, 2011



Tornadoes are numbered chronologically by time of touchdown beginning on the morning of April 27th.
*Tornadoes 2, 41, and 54 were ranked EF-2, EF-5, and EF-4 in MS.

EF-Rating

- EF-5
- EF-4
- EF-3
- EF-2
- EF-1
- EF-0



Projection Information:
Datum: North American Datum 1983
Projection: UTM Zone 16N
Map Compiled by: NWS Birmingham, AL



Historic Tornado Outbreak ***April 27, 2011***



A Record Setting Event

- 2** Second deadliest Alabama Outbreak (1932)
- 5** Fifth deadliest US Tornado Outbreak
- 5** Five of the top 10 longest track tornadoes in AL
- 11** Violent tornadoes in a single day
- 37** Thirty year average number of tornadoes per year
- 38** Violent tornadoes 1950 – 2010
- 45** Most tornadoes in a single day record, April 15th
- 62** Most tornadoes in a single day
- 121** Through April – breaking annual record of 94
- 129** Second longest AL tornado track - Cordova
- 1206** Miles of tornado track in Alabama



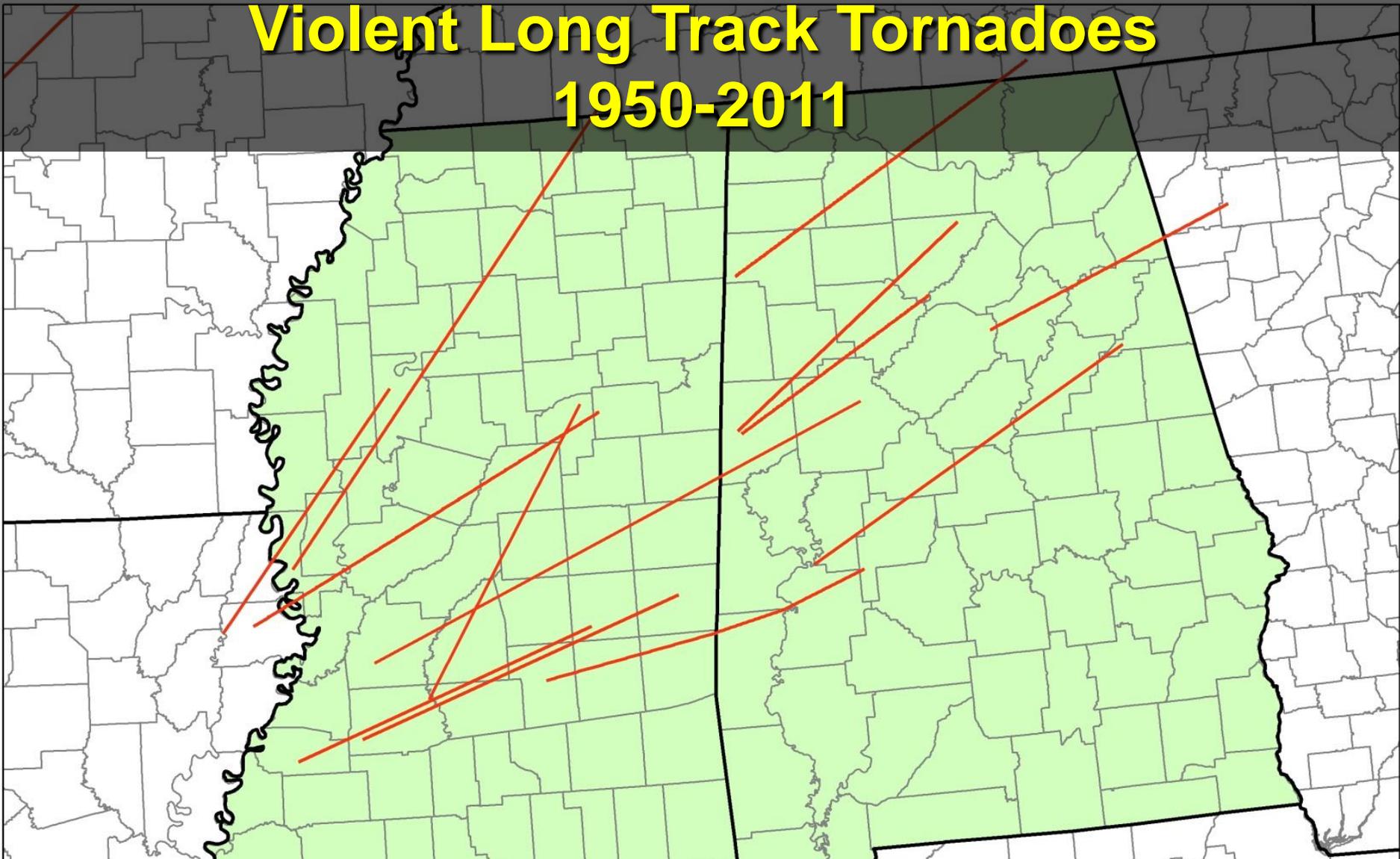
Historic Tornado Outbreak

April 27, 2011



Violent Long Track Tornadoes

1950-2011





Why do we need spotters?





Spotter Principles



- **Personal safety is the primary objective of every spotter.**
- **Adhere to the concept of ACES at all times.**
- **Obey federal, state, and local laws and directives from public safety officials.**
- **Never put yourself in harm's way.**



ACES



- **Awareness**
- **Communication**
- **Escape Route**
- **Shelter**





How to Get Weather Information

**NOAA WEATHER RADIO
S.A.M.E.**



BATTERY/CRANK RADIO



COMPUTER

TELEVISION

CAR RADIO



CELL PHONE



Important Definitions

- **Watch** - Atmospheric conditions are favorable (or could become favorable) for the development of thunderstorms which could produce severe weather – remain alert.
- **Warning** - Severe weather has occurred or is likely to occur – take protective action.



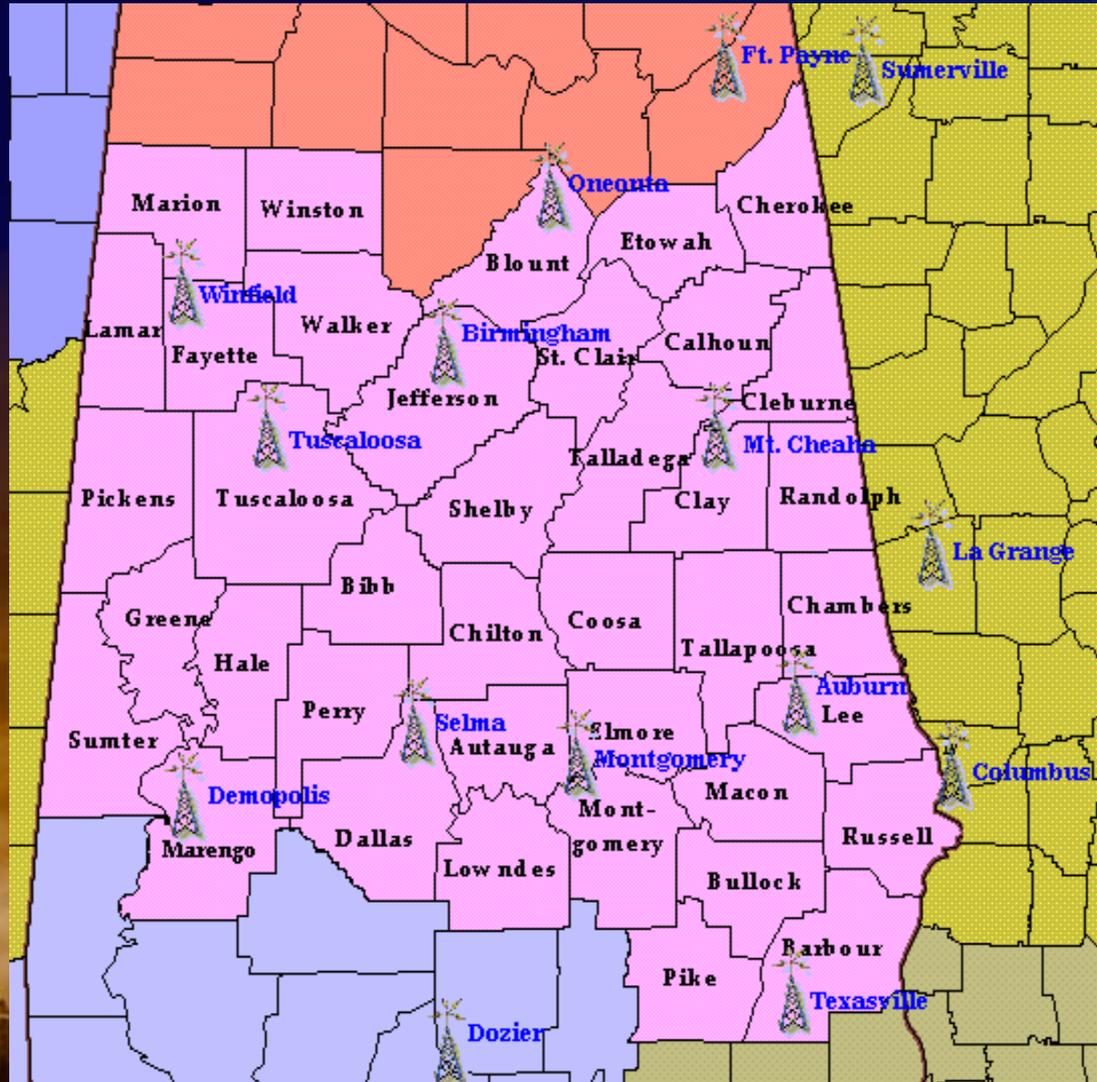
WATCH THE SKY!



TAKE ACTION!!!



NOAA Weather Radio



- 10 Transmitters across Central Alabama
- NOAA Weather Radio is the fastest way to get our warnings!!!

Birmingham, AL



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Search for:



NWS



All NOAA



Local forecast by

"City, St" or Zip Code

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Aviation Weather

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Radar Imagery

Nationwide

Birmingham

East Alabama

Regional Loop

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National

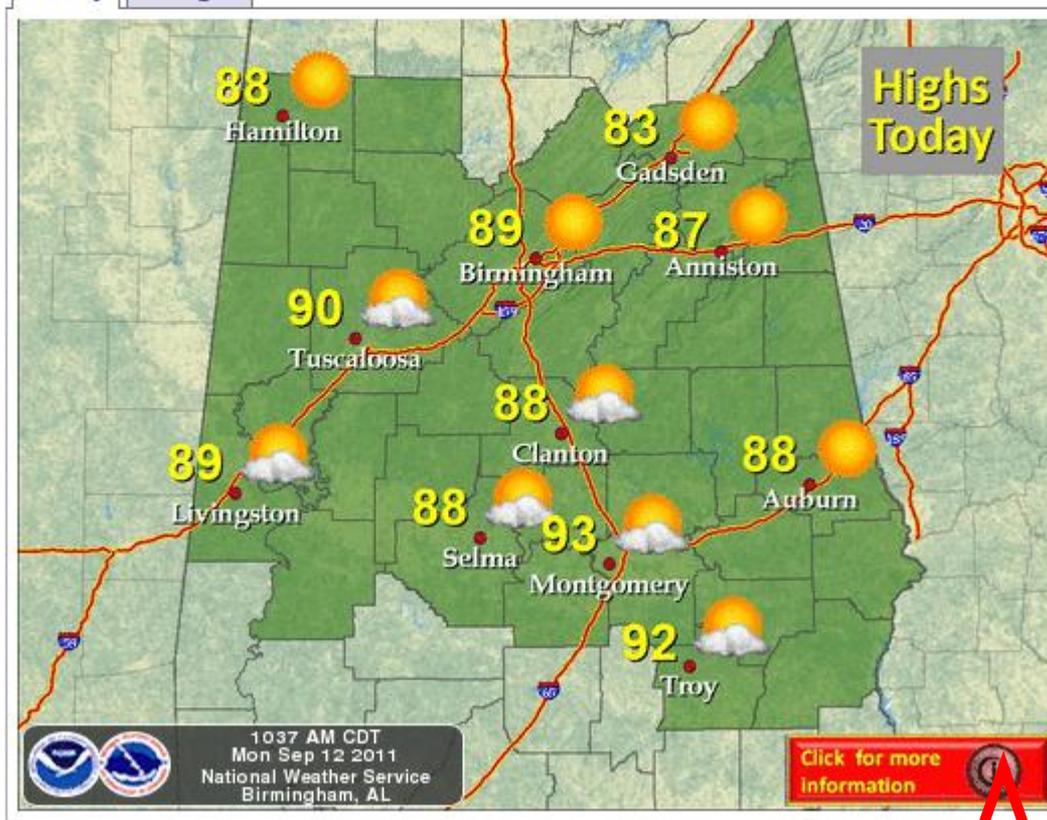
More...

Drought Statement

Top News of the Day

- Look for an Upcoming Storm Spotter Class Near You!
- Interested in Improving the Warning Process? Click [HERE](#)
- Being Prepared for the Worst in a Time of Disaster - Part 3
- Get Involved at the National Weather Association Annual Conference

Today



*Graphiccasts

*Hazardous Weather Outlook

*Multimedia Briefings

Watches & Warnings

Observations

Forecast Graphics

Rivers & Lakes

Climate

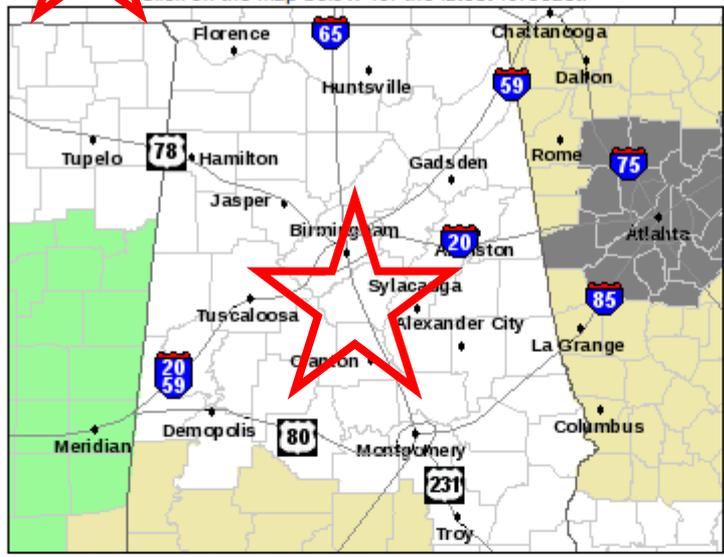
Multimedia Briefings

- National
- More...
- Drought Statement
- Weather Safety
- Get Prepared
- Weather Radio
- SKYWARN
- StormReady
- FloodReady
- Severe Weather Awareness Week
- Severe Weather Awareness Booklet
- Additional Info
- Tornado Database
- Storm Data
- Research & Outreach
- Product Guide
- Past Headlines
- Office Information

- Watches & Warnings
- Observations
- Forecast Graphics
- Rivers & Lakes
- Climate
- Multimedia Briefing



Click on the map below for the latest forecast.



[Read watches, warnings & advisories](#)

Zoom Out

[Air Quality Alert](#)

[Hazardous Weather Outlook](#)

[Short Term Forecast](#)

Last map update: Mon, Sep. 12, 2011 at 12:06:15 pm CDT

Latest Conditions in **Birmingham, AL** Choose Your Front Page City

Sep 12
11:53 am

83°F
(28°C)

A Few Clouds

Select A City:

Graphical Forecasts Radar Satellite Weather Map

LOCATION	TIME[cdt]	WEATHER	TEMP	DEWPT	RH %	WIND mph	PRESSURE	SUNRISE/SUN SET
Alex City	11:55 AM	Partly Cloudy	81°F	59°F	48%	NW 8	30.14 in	6:25 AM/6:56 PM
Anniston	11:53 AM	Partly Cloudy	82°F	64°F	55%	W 7	30.13 in	6:24 AM/6:56 PM
Auburn	11:55 AM	Fair	82°F	63°F	51%	N 7	30.12 in	6:23 AM/6:54 PM
Birmingham	11:53 AM	A Few Clouds	83°F	62°F	49%	W 7	30.15 in	6:28 AM/6:59 PM
Calera	11:53 AM	Fair	83°F	62°F	49%	W 9	30.14 in	6:28 AM/6:59 PM
Montgomery	11:53 AM	A Few Clouds	88°F	64°F	45%	NW 7	30.12 in	6:27 AM/6:57 PM
Troy	11:53 AM	Fair	86°F	63°F	48%	NW 10	30.14 in	6:25 AM/6:55 PM

Point Specific Information

*Watches

*Warnings



What To Report



Strong Winds or Wind Damage



Copyright Chuck Palmer



Estimating Wind Speed



25-31 mph - large branches in motion

32-38 mph – whole trees in motion

39-54 mph – twigs break off, wind impedes walking

55-72 mph – damage to chimneys and TV antennas, large branches broken and some trees uprooted

73-112 mph – removes shingles, windows broken, trailer houses overturned, trees uprooted

113+ mph – roofs torn off, weak buildings and trailer houses destroyed, large trees uprooted



Estimating Wind Speed

THE "SET" EFFECT.....

During a severe weather event, Stress, Excitement, and Tension levels are running high

The "SET" effect can alter your logic and reasoning abilities leading to exaggerated reports

A wind gust of 40 MPH during a fair weather day will not cause any great concern, but this same wind speed when experienced during a thunderstorm may seem like 60 MPH gust because of the SET effect.

When in doubt about your estimate, re-think it and try to remain calm and objective as possible. Use the table in the previous slide as a guide for accuracy, speed, and professionalism.

Courtesy Milwaukee Area SKYWARN Association, Inc. Original copyright 1998, updated 2/8/03.



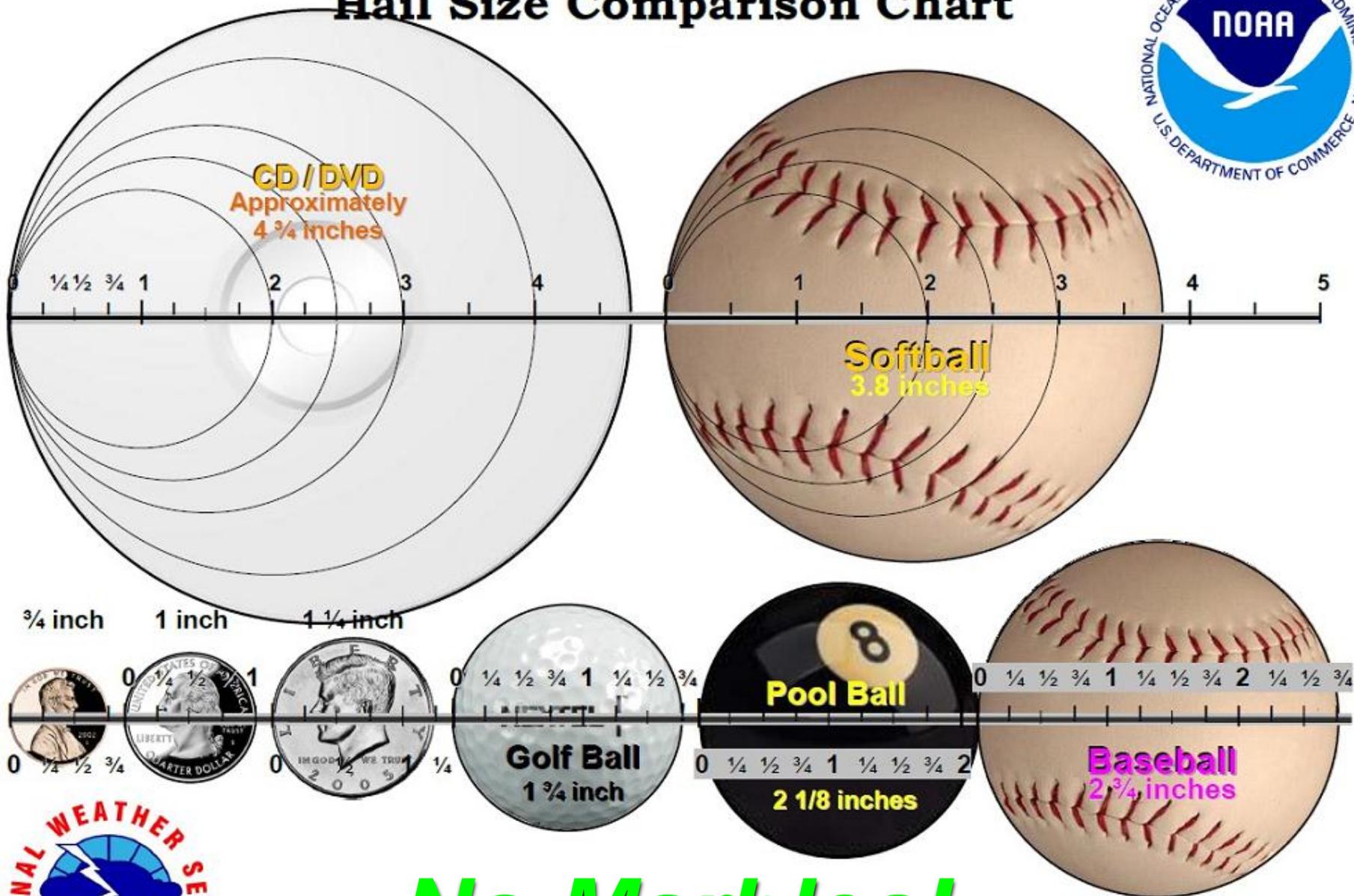
What To Report



What size are *your* marbles?



Hail Size Comparison Chart



No Marbles!







What To Report



Tornado, Funnel Cloud, or Wall Cloud



Copyright Eric O'Connor



What To Report



Flash Flooding

- A rapid rise out of banks flow in a river or stream that is a threat to life or property
- Approximately six inches or more of flowing water over a road or bridge and poses a threat to life or property
- Any amount of water in contact with, flowing into, or causing damage to an above ground building (does not include water seepage into basements)
- Three feet or more of ponded water that poses a threat to life or property

The above must occur within six hours of the causative event such as heavy rain, a dam break, or ice jam release



What To Report





What To Report



Urban Flooding





What To Report



Heavy Rain or High Water



NWS-La Crosse



What To Report



Snow or Ice Accumulation



**Your storm report
can be sent to the
NWS via the
Internet.**



Birmingham, AL



Submit a Storm Report

This interface is intended to be used solely for the relay of storm information to the NWS. Other comments or information should be sent to the [National Weather Service Birmingham, Alabama](#).

Event Location

Enter date/time/location of event. Please reference to major roadway or intersection for events within towns/cities.

Event Time:	11	00	AM	<input checked="" type="radio"/> Central
Event Date:	Dec	17	2009	
County:	-- Select a County --			
Location (7 NW Mytown):	<input type="text"/>			

Event Type (Select all that apply)

Click box next to events you observed. Next, select appropriate sub-descriptor in pull down menus to describe event.

<input type="checkbox"/> Flood	--Select a flooding category--	
<input type="checkbox"/> Hail	--Select a Hail size--	
<input type="checkbox"/> High Wind Speed	--Select a Wind speed--	
<input type="checkbox"/> Tornado/Funnel Cloud	--Select a report--	
<input type="checkbox"/> Wind Damage	--Select a Wind Damage Descr--	
<input type="checkbox"/> Snow	--Select a snow total--	--Select a duration--
<input type="checkbox"/> Freezing Rain/Icing	--Select an ice total--	--Select a duration--
<input type="checkbox"/> Heavy Rain	--Select a rainfall total--	--Select a duration--

Additional Details

Provide any additional information that you feel is pertinent to your submission (500 characters maximum).

Local forecast by "City, St" or Zip Code

RSS Feeds

Current Hazards

Local

Nationwide

Outlooks

Submit Storm Reports

Forecasts

Local

Forecast Discussion

Activity Planner

Graphical

Tropical Weather

Fire Weather

Aviation Weather

Air Quality Forecast

Current Weather

Observations

Satellite Images

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Nationwide

Birmingham

East Alabama

Regional Loop

Climate

Local

National

More...

Daily Rainfall Plots

Weather Safety

Get Prepared

Weather Radio

SKYWARN

Request access to eSpotter at <http://espotter.weather.gov> and you will receive an e-mail (including password) granting E-Spotter privileges

•Trained spotters are encouraged to register and participate by transmitting non-critical information that does not pose a danger to life and property

Severe Weather Report Form
[Click Here for the Winter Weather Report Form](#)

Date & Time

Date: Sep / 15 / 2011 Time: 01 : 57 CDT Estimated Exact

Location

Select County, State: Shelby, AL (117) City/Town: Alabaster

Weather

Tornado
 Funnel Cloud
 Wall Cloud * Note if there is rotation in narrative.
 Hail Size:
 High Wind Wind Speed: MPH Measured Estimated
 Flood
 Flash Flood
 Other

Damage, Injuries, Narrative

Any Damage? Yes No
Was Anyone Hurt? Yes No
Please describe what you observed, movement and any associated damage, including injuries, 2500 characters maximum:

•Connections made to this system are monitored. Your e-mail address is used to verify that your are authorized to access the system, and to contact you to follow up on your eSpotter reports



BMX SPOTTER CHAT

Secure, internet-based chat, monitored by ALERT
<http://www.alert-alabama.org/spotterchat>



bmxbotspotterchat@muc.appriss.com

Conversation Options Send To

bmxbotspotterchat@muc.appriss.com

Topic:

(4:49:48 PM) nwsbmx2 entered the room.
 (4:49:48 PM) iembot entered the room.
 (1/3/2008 6:36:36 PM) iembot: BMX issues [Record Event Report \(RER\)](#) ... RECORD LOW TEMPERATURE SET AT TUSCALOOSA ...
 (1/3/2008 7:15:33 PM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/3/2008 7:17:57 PM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/4/2008 4:20:44 AM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/4/2008 4:30:17 AM) iembot: HUN issues [ELEVATED FIRE DANGER TODAY](#) for Colbert, Cullman, De Kalb, Franklin, Jackson, Lauderdale, Lawrence, Limestone, Madison, Marshall, Morgan [AL] till 3:00 PM CST
 (1/4/2008 5:56:52 AM) iembot: BMX issues [Red Flag Warning](#) valid at Jan 04, 12:00 PM CST for Autauga, Barbour, Bibb, Blount, Bullock, Calhoun, Chambers, Cherokee, Chilton, Clay, Cleburne, Coosa, Dallas, Elmore, Etowah, Fayette, Greene, Hale, Jefferson, Lamar, Lee, Lowndes, Macon, Marengo, Marion, Montgomery, Perry, Pickens, Pike, Randolph, Russell, Shelby, St. Clair, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Winston [AL] till Jan 04, 5:00 PM CST
 (1/4/2008 8:38:52 AM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/4/2008 10:23:40 AM) iembot: BMX issues [Hydrologic Outlook \(ESF\)](#) for Autauga, Barbour, Bibb, Blount, Bullock, Calhoun, Chambers, Cherokee, Chilton, Clay, Cleburne, Coosa, Dallas, Elmore, Etowah, Fayette, Greene, Hale, Jefferson, Lamar, Lee, Lowndes, Macon, Madison, Marengo, Marion, Montgomery, Perry, Pickens, Pike, Randolph, Russell, Shelby, St. Clair, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker [AL] till 7:00 AM CDT
 (1/4/2008 12:01:58 PM) iembot: BMX continues [Red Flag Warning](#) for Autauga, Barbour, Bibb, Blount, Bullock, Calhoun, Chambers, Cherokee, Chilton, Clay, Cleburne, Coosa, Dallas, Elmore, Etowah, Fayette, Greene, Hale, Jefferson, Lamar, Lee, Lowndes, Macon, Marengo, Marion, Montgomery, Perry, Pickens, Pike, Randolph, Russell, Shelby, St. Clair, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Winston [AL] till 5:00 PM CST
 (1/4/2008 1:19:16 PM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/4/2008 6:00:04 PM) iembot: BMX: ----- Jan 05, 2008 [GMT] -----
 (1/4/2008 6:00:04 PM) iembot: HUN: ----- Jan 05, 2008 [GMT] -----
 (1/4/2008 9:29:54 PM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/5/2008 4:30:35 AM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/5/2008 12:07:19 PM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/5/2008 6:00:04 PM) iembot: BMX: ----- Jan 06, 2008 [GMT] -----
 (1/5/2008 6:00:05 PM) iembot: HUN: ----- Jan 06, 2008 [GMT] -----
 (1/5/2008 9:19:12 PM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/6/2008 4:22:51 AM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (1/6/2008 12:38:59 PM) iembot: HUN issues [Hazardous Weather Outlook \(HWO\)](#)
 (4:49:48 PM) nwsbmx4 has set the subject to:
 (4:51:49 PM) nwsbmx2 has set the topic to: Weather
 (6:00:04 PM) iembot: BMX: ----- Jan 07, 2008 [GMT] -----
 (6:00:05 PM) iembot: HUN: ----- Jan 07, 2008 [GMT] -----

2 people in room

iembot
nwsbmx2

Available

Buddy List

Buddies Accounts Tools Help

- IEMChat Admin Team (4/8)
- Birmingham Chat Group (8/89)
- Birmingham EMA Chat Group (...)
- Chatrooms (8/8)

Available



I am a spotter from Elmore County. At 4:15 pm there was a tornado on the ground between Friendship and the west side of Tallassee...near crossroads of CR 8 and CR 149.

Spotters in Shelby and Jefferson counties...the NWS need your help in locating possible touchdowns across northeast Shelby and southeast Jefferson. The storms are clear now...so travel is safe. Please repond once any additional information has been discovered.

Who ya gonna call?

- Storm Spotter Line: **1-800-856-0758**
- Your local Emergency Management Office
- Amateur radio
 - Skywarn Net – **K4NWS**
- BMX Spotter Chat
- Call local law enforcement / 911 service

*** MOST IMPORTANT!!! BE AWARE OF YOUR SURROUNDINGS AND BE READY TO GET TO A PLACE OF SAFETY QUICKLY!!!**

The Effective Spotter Report

Key Components of a Spotter Report

- ✓ Your name
- ✓ Location of spotter
- ✓ Location of hazardous weather
- ✓ Type of hazardous weather
- ✓ Time of hazardous weather
- ✓ Duration of hazardous weather
- ✓ Contact information

The Effective Spotter Report

- Keep it brief
- Identify yourself as a NWS trained storm spotter
- Tell us WHO, WHAT, WHEN, AND WHERE
- Example:

MY NAME IS STORM MAN AND I AM A TRAINED STORM SPOTTER IN CALERA , ALABAMA, LOCATED IN SOUTHERN SHELBY COUNTY. AT 500 PM, I SPOTTED A TORNADO ON THE GROUND JUST SOUTH OF COUNTY ROAD 87, THAT JUST CROSSED INTERSTATE 65. NUMEROUS CARS HAVE BEEN DAMAGED, ALONG WITH POWERLINES AND NUMEROUS TREES DOWN, NEAR THIS COUNTY ROAD. MY GPS COORDINATES ARE...AND I CAN BE REACHED AT 555-5555.



The Effective Spotter Report



**It's a
twister!!**



Do not assume that if a warning is issued, the NWS knows for certain that severe weather has occurred. (we want to hear from you!)

Never assume your report is not important.

Do not exaggerate your report!





ACES



- Awareness
- Communication
- Escape Route
- Shelter

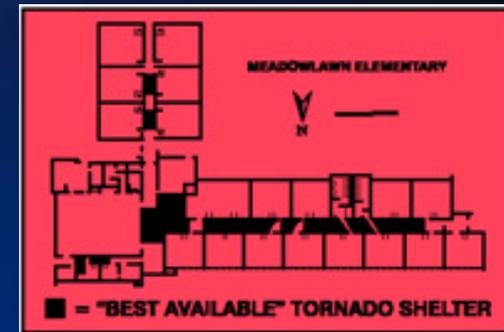




ACES



- Awareness
- Communication
- Escape Route
- Shelter



Spotter Safety

The safety of you and those around you is more important than any storm report or storm photo!

- ◆ **Personal safety is the primary objective of every spotter.**
- ◆ **ACES**
- ◆ **Spot WITH someone**
- ◆ **Obey federal, state, and local laws and directives from public safety officials.**
- ◆ **NEVER take shelter under a highway overpass**

Lightning Safety

- **Remain indoors and away from windows and electrical appliances**
- **If driving, the safest place is to be is to remain inside your vehicle**
 - **Don't park along fence lines, or near overhead electric/phone lines**
- **Avoid being the tallest object, stay away from other tall objects such as isolated trees.**
- **If you can hear thunder, you are in danger of being struck by lightning. Take shelter.**
- **WHEN IT ROARS, GO INDOORS!**

<http://xkcd.com/795/>

THE ANNUAL DEATH RATE AMONG PEOPLE WHO KNOW THAT STATISTIC IS ONE IN SIX.

Don't become another flood death statistic

❄ **NEVER CROSS WATER OF UNKNOWN DEPTH!**

unless absolutely sure the water depth is very shallow, the water is not moving, and the roadway is still intact...turn around and find an alternate route.

❄ **Water-filled roadways are difficult to see at night. Slow down! At BEST you may hydroplane.**

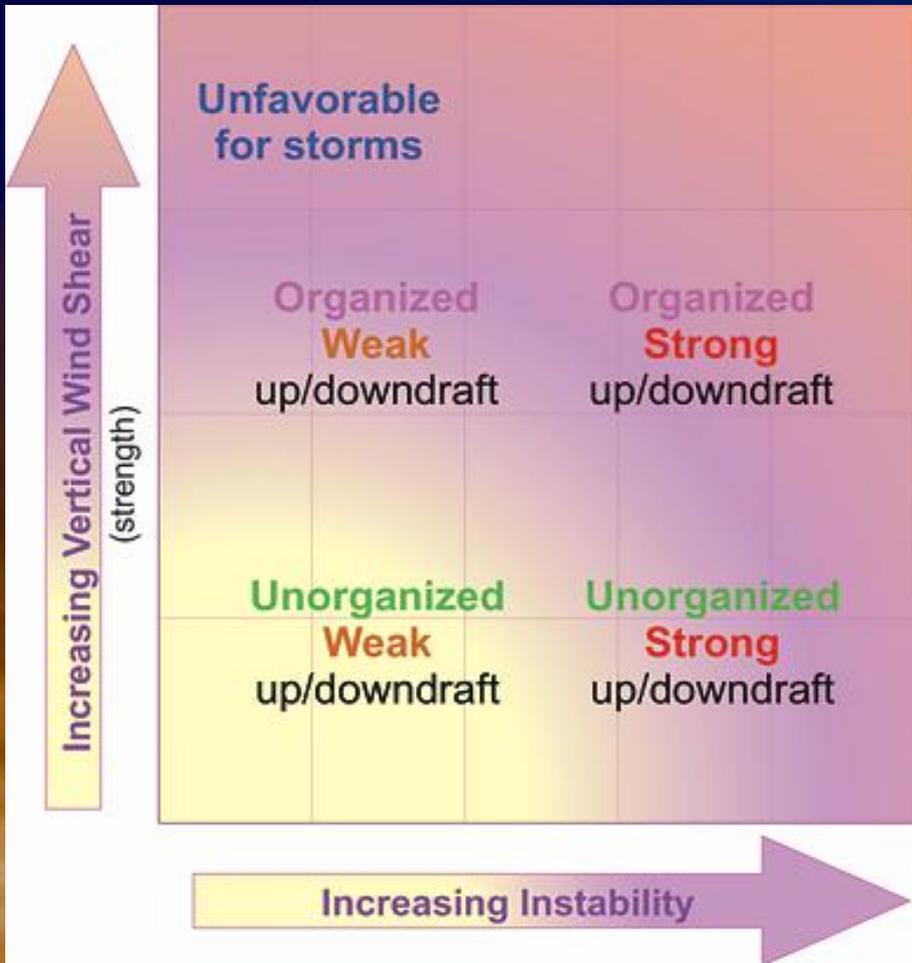
❄ **Two feet of running water can pick up and carry most vehicles (including trucks and SUVs).**

❄ **Never underestimate the incredible power and force of fast moving water.**

❄ **If water levels are up to a bridge, do not cross it as it may be damaged and unable to support the weight of your vehicle.**



Ingredients for Thunderstorm Formation



- Lift
 - Cold front
 - Warm front
 - Gust front / outflow boundary
 - Terrain (upslope flow)
 - Warm air rising
- Low Level Moisture
- Instability



Thunderstorm Types



- Multicell - ordinary storms with low severe threat
- Squall line - line of storms with moderate wind threat
- Supercell - rotating updraft with high severe threat
- Mini Supercell - small storm with rotating updraft, low wind/hail threat
- HP (high precipitation) Supercell - rotating updraft often times obscured by heavy rain, high severe threat



Copyright Bob Henson

Multicell Thunderstorm

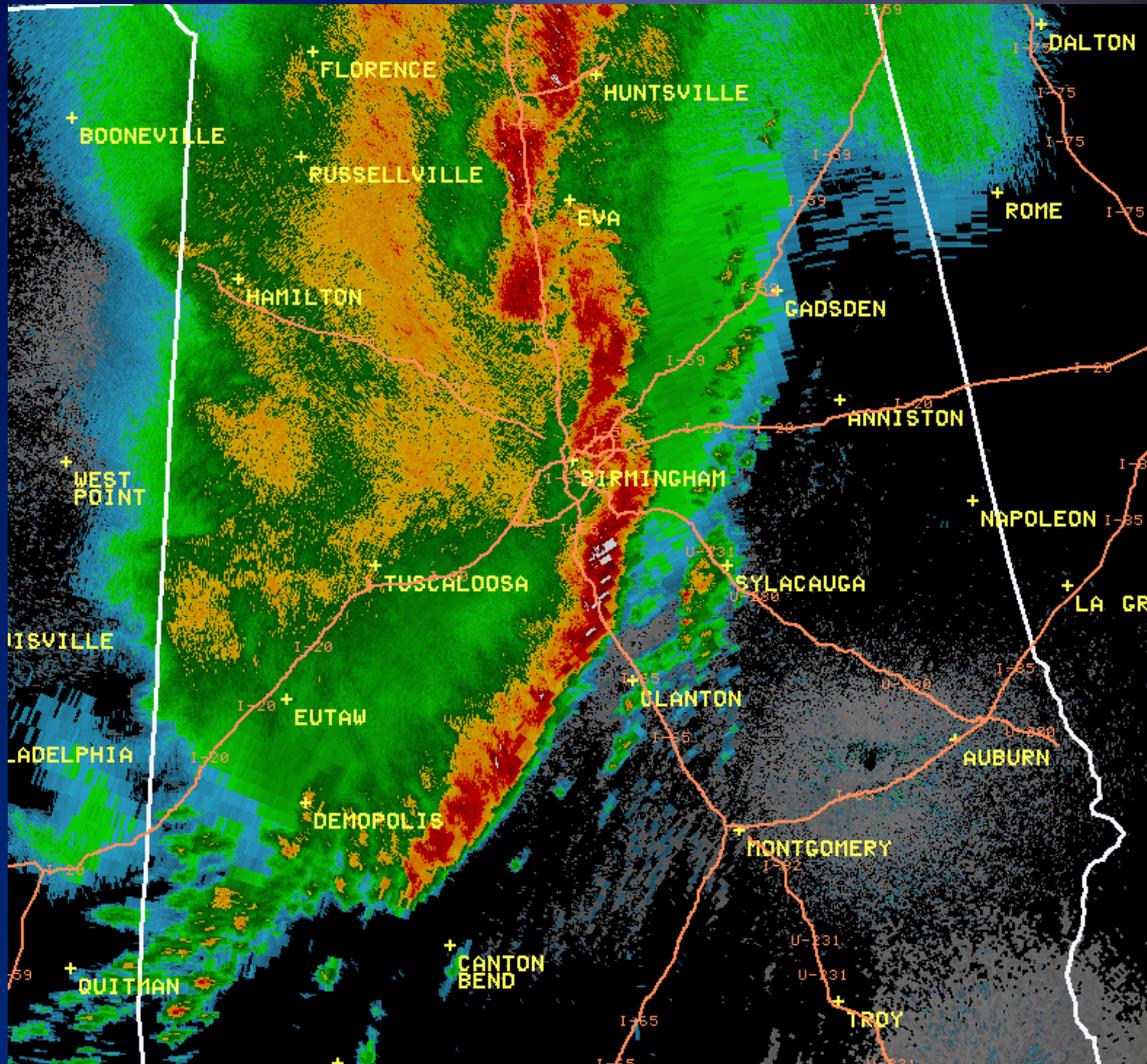
- **Series of cells moving as one unit**
- **Most common type of storm**





Multicell Line (Squall Lines)

- Long line of storms
- Gust front at the leading edge
- The “Worst is First”





Supercell Thunderstorm





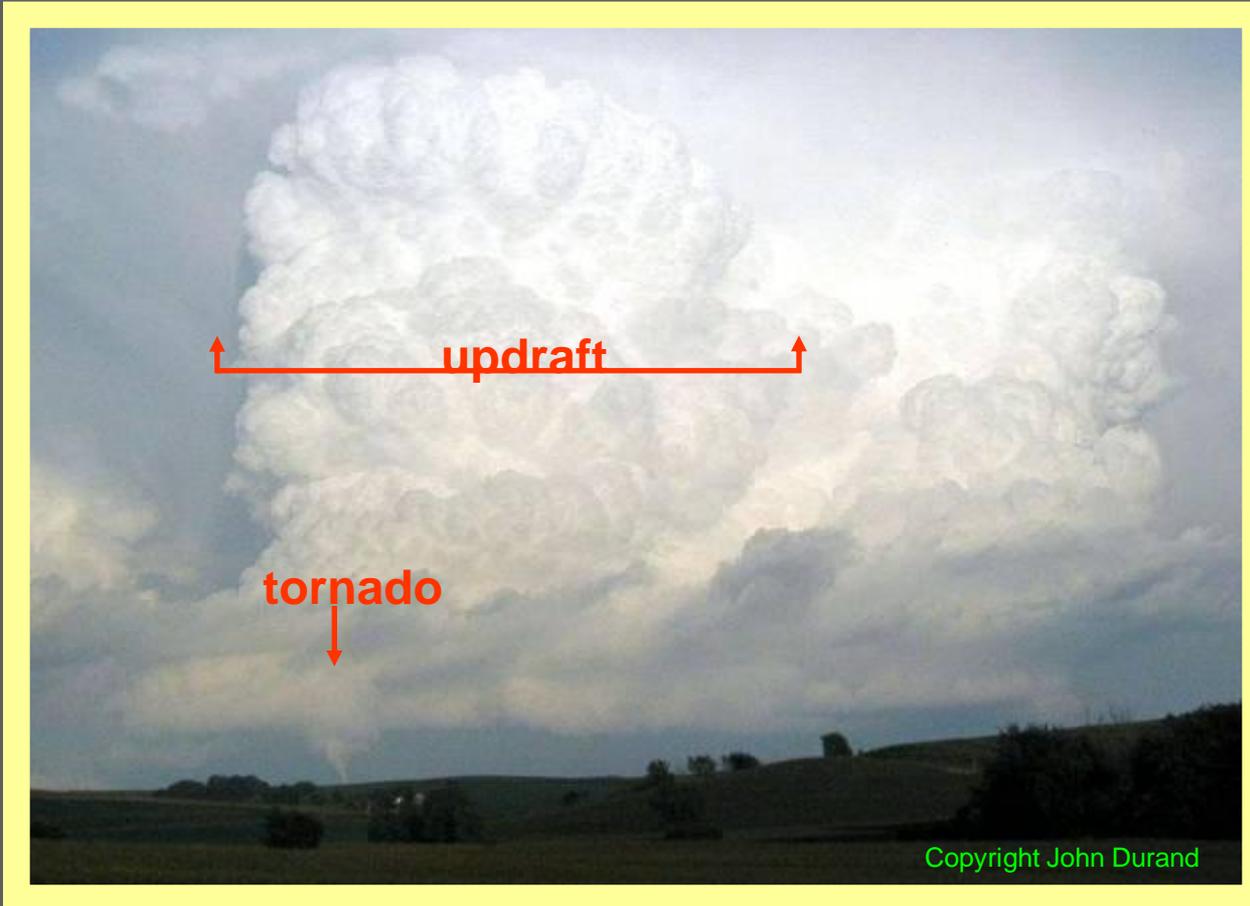
Updraft Characteristics



- “Back” side of storm
- Cumulus tower
- Rainfree base
- Upward cloud motion
- Supercell has rotating updraft



Supercell Thunderstorm



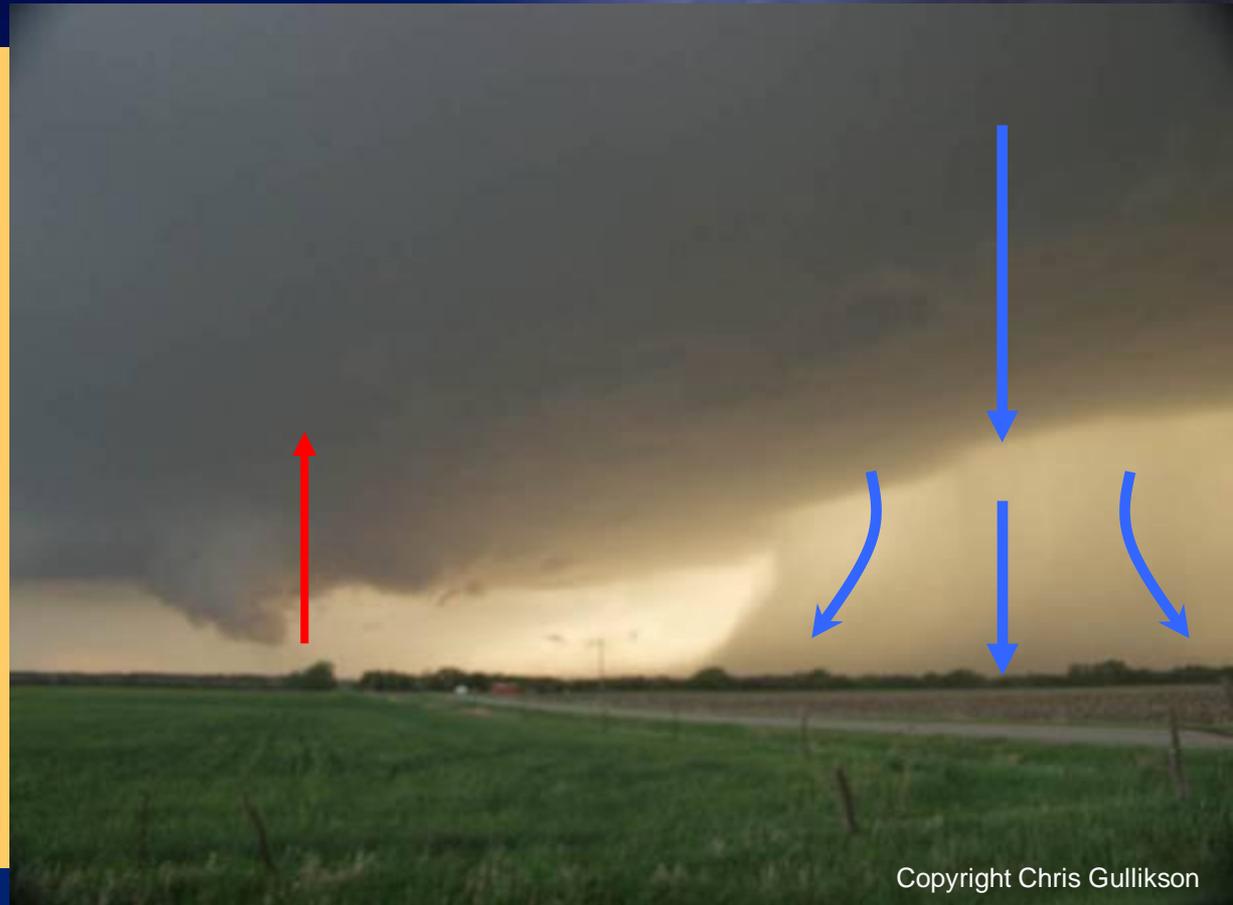
Copyright John Durand



Downdraft Characteristics



- “Front” side of storm
- Dark area of storm
- Rainfall region
- Downward motion
- Downburst/hail threat

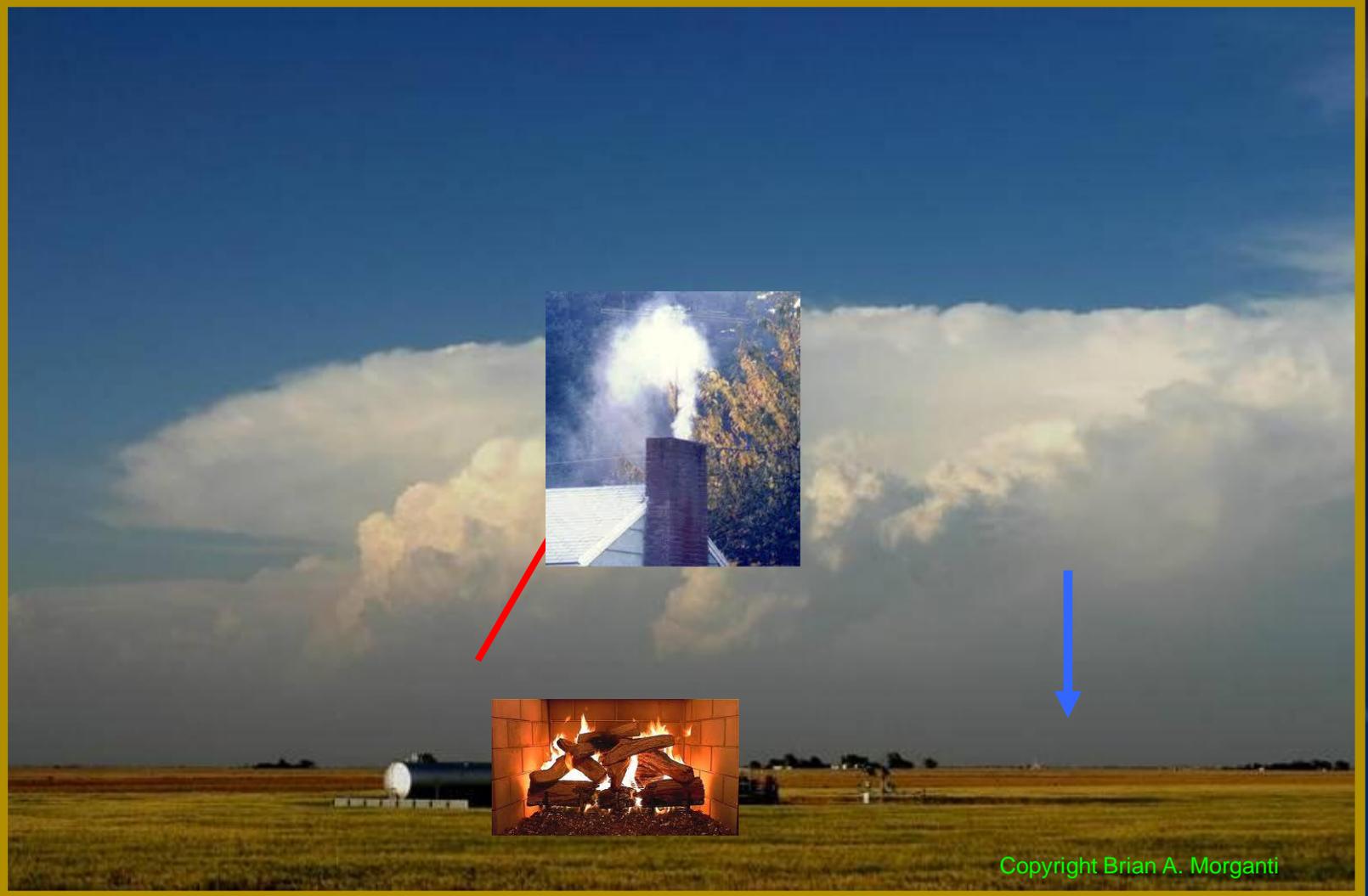


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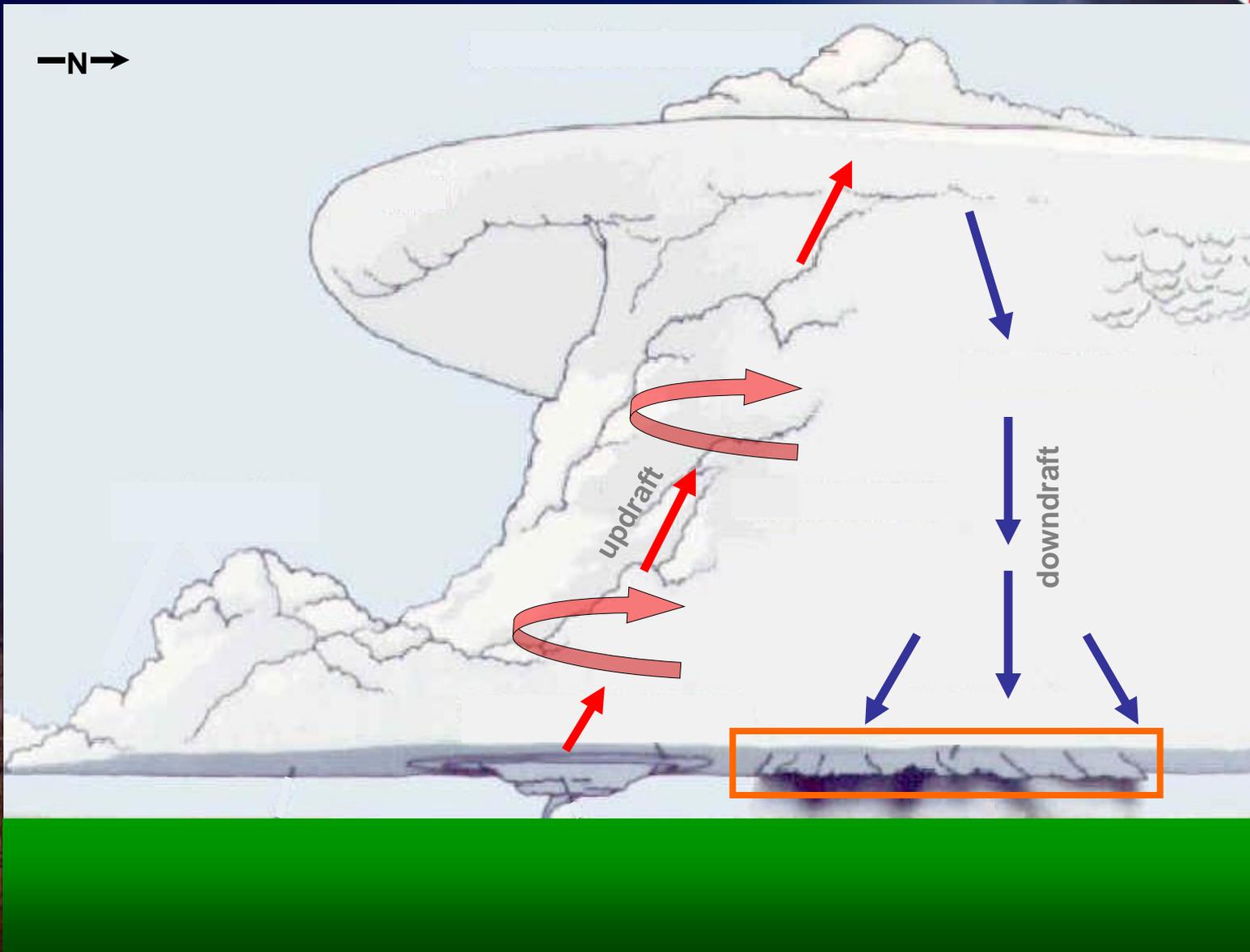
Updraft/Downdraft



Copyright Brian A. Morganti



Shelf Cloud

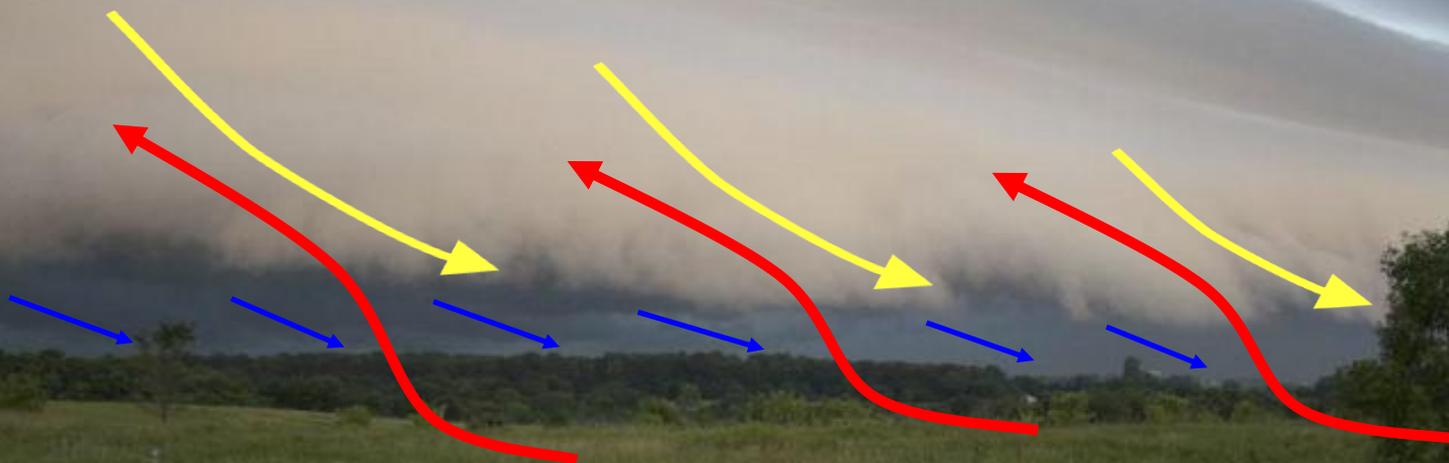




Shelf Cloud = Outflow



Slopes away from precipitation area



Near Genoa, MN - July 21, 2005
Photo by the Bob Oesterlin



Shelf Cloud

- Marks the leading edge of gust front
- Usually produced by rain cooled air
- Can be found on the FFD or RFD
- Usually in area of low level shear
- Slope down away from precipitation area
- Often associated with a squall line and is typically associated with damaging straight-line wind



Shelf Cloud

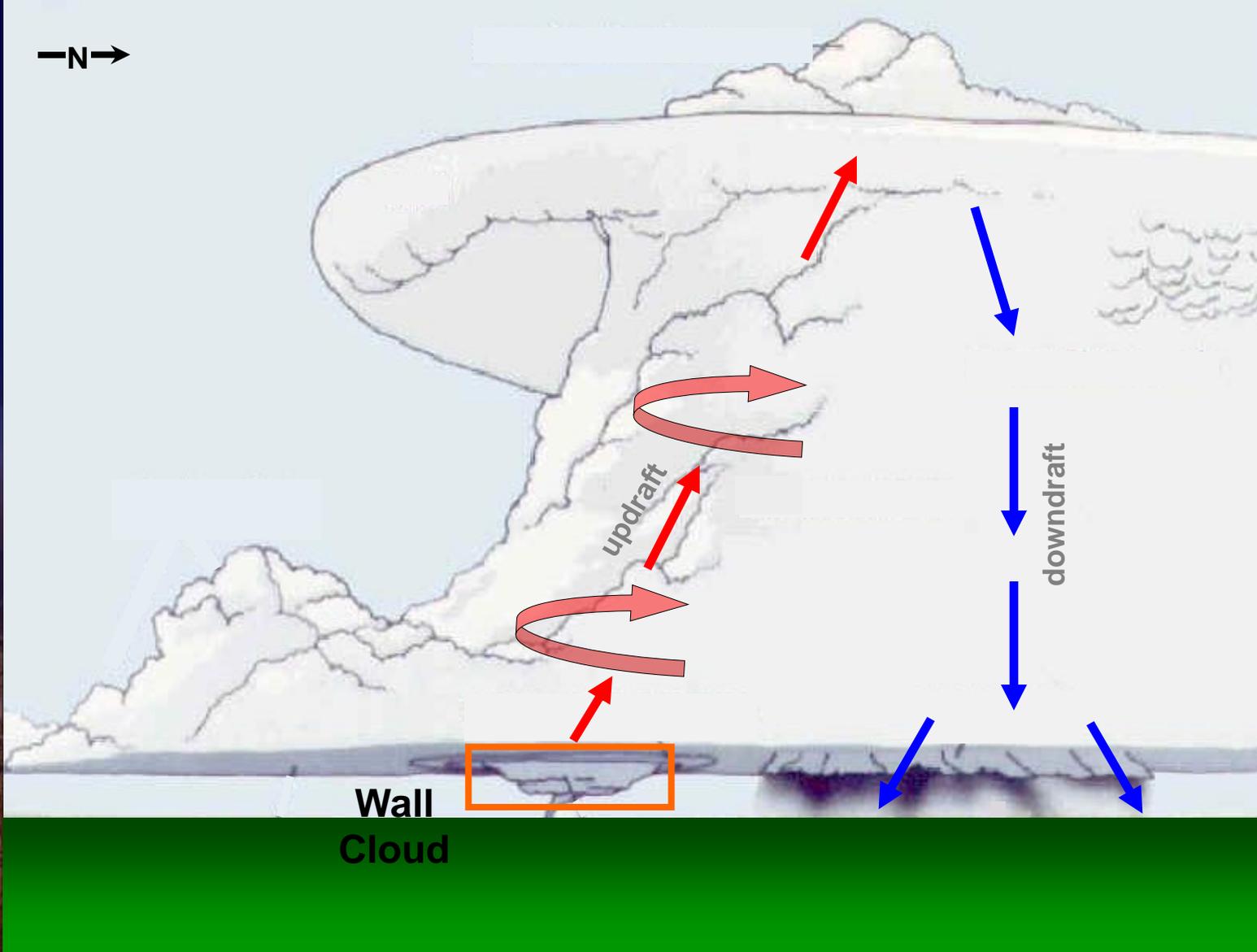
Clay County, AL 6/5/10



NWS Trained Storm Spotter Matt Stivers



Wall Clouds



Wall
Cloud



The Mesocyclone



A storm-scale region of rotation, typically 2-6 miles in diameter.

The circulation of a mesocyclone covers an area much larger than the wall cloud or tornado that may develop within it.



The Wall Cloud



- A localized, persistent, lowering of the cloud from the rain free base.
- Normally found on the south or southwest (inflow) side of the thunderstorm.
- May exhibit rapid upward and downward motion, as well as rotation. However, not all wall clouds rotate.



The Wall Cloud



- **Surface based inflow under the updraft**
- **Attached to cloud base**
- **Look for persistence**
- **May or may not rotate**
- **Look for vertical cloud motion**
- **Often slopes or points toward precipitation or downdraft**



Copyright Andy Kula



Wall Clouds



Ron Przybylinski



© 1997 Roger Edwards



NWS Boise Idaho



© 1999 Scott Blair



Wall Clouds

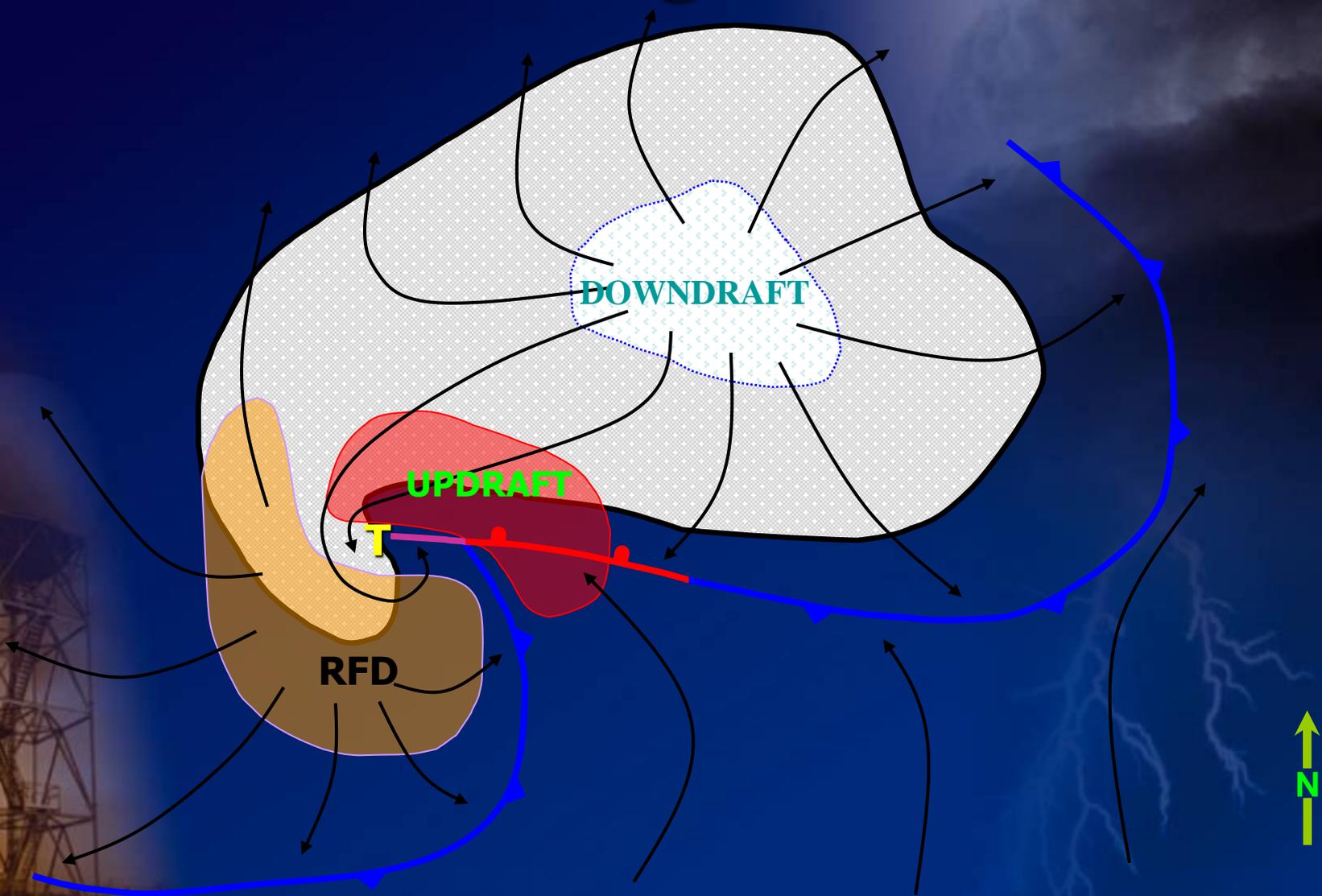


Wall Cloud / Shelf Cloud Summary

	Wall Cloud	Shelf Cloud
Associated with the updraft	Yes	No
Associated with the downdraft	No	Yes
Often slopes down toward the rain (downdraft)	Yes	No
Slopes down away from the rain (downdraft)	No	Yes
Sometimes associated with gustnadoes	No	Yes
Often associated with funnel clouds	Yes	No
Favored area for rotation	Yes	No



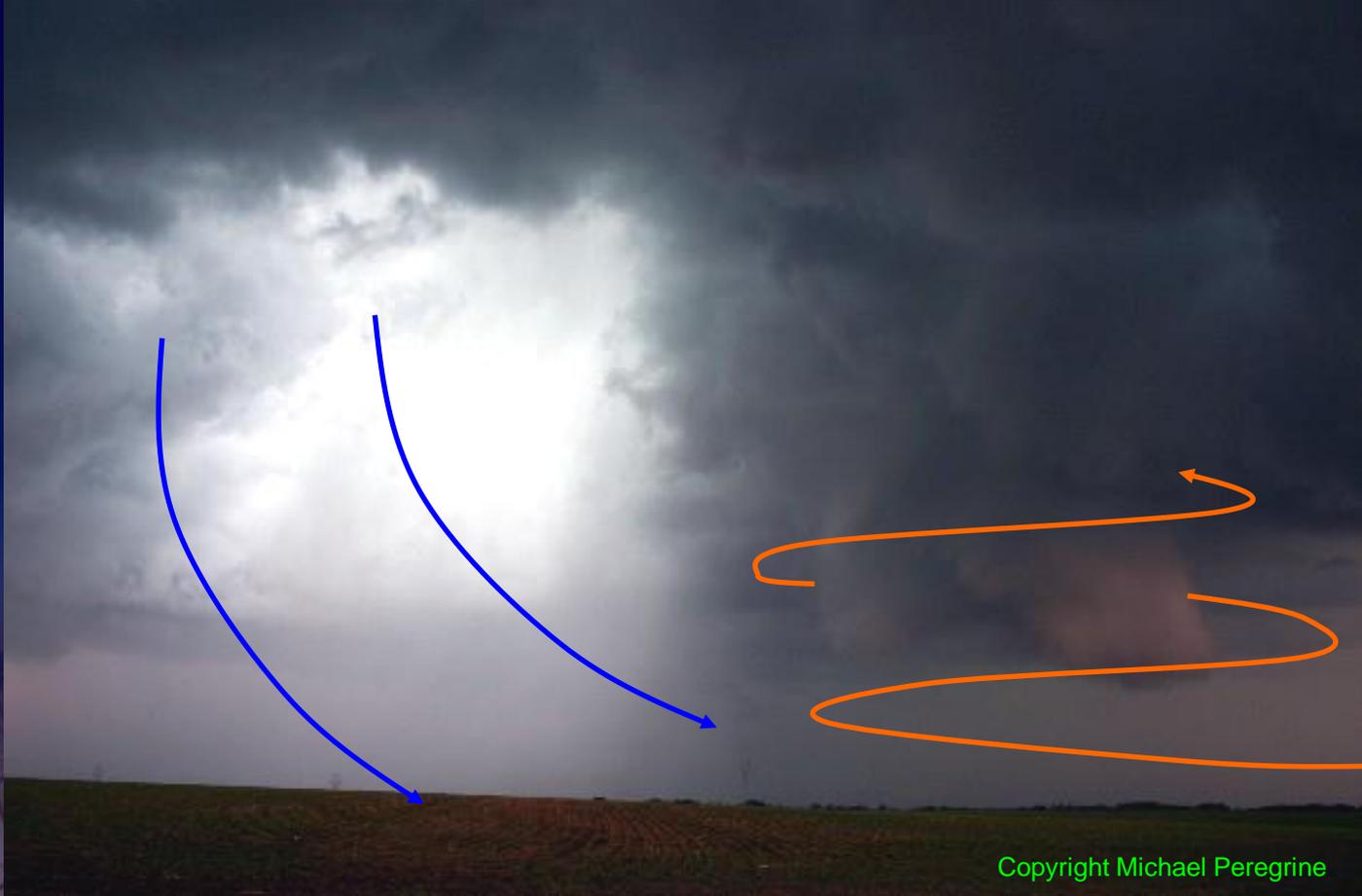
Updraft/Downdraft Tornadogenesis



(Top view)



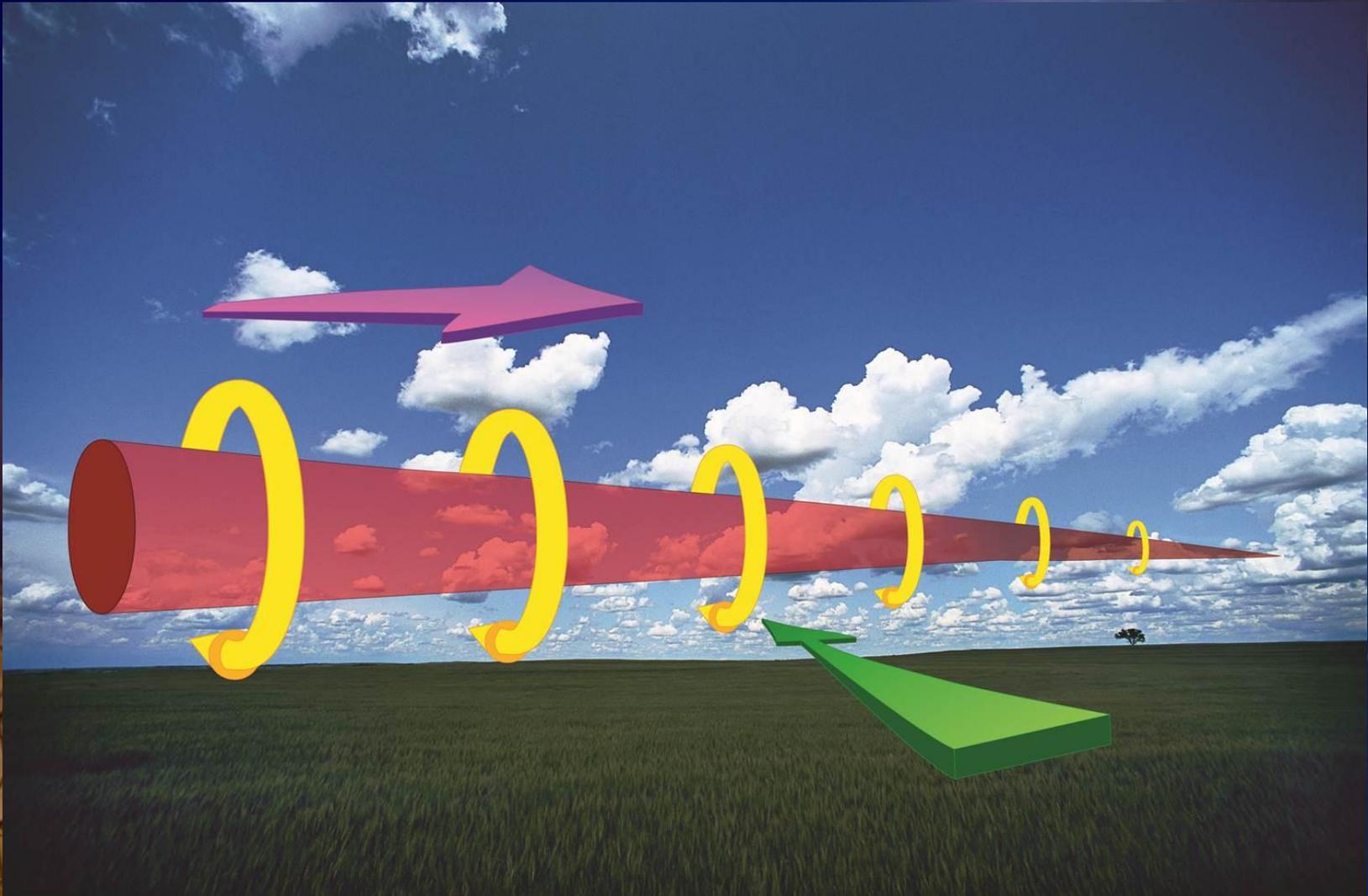
Rear Flank Downdraft



Copyright Michael Peregrine

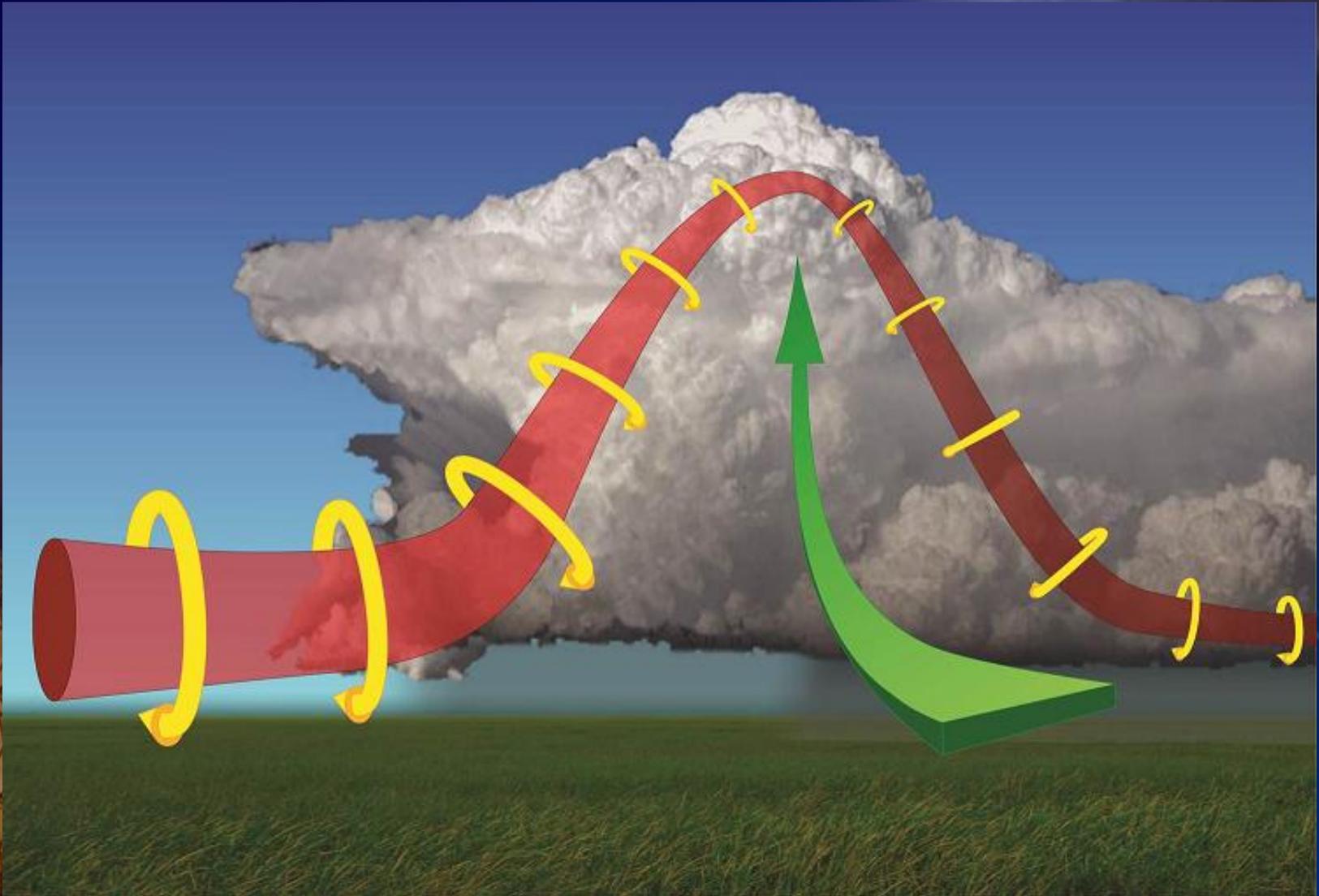


Tornado Formation





Tornado Formation



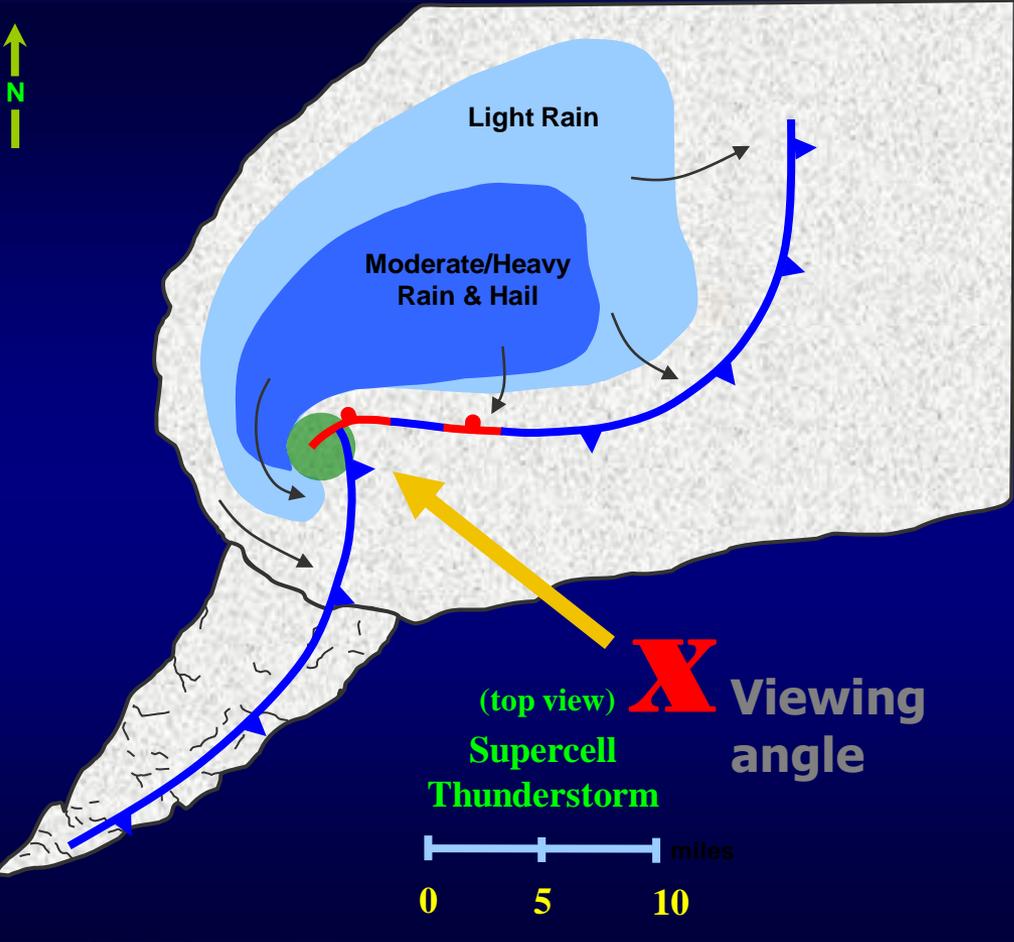


Tornado Formation





Spotter Location





Copyright Ken Dewey



05/26/2009

Copyright John De Block

Upper Level Storm Strength Clues



07/14/2004

Copyright Robert Heishman



Copyright R. Hay Cummins

Mid Level Storm Strength Clues



Copyright Mark Erk



Copyright Nicole Kelly



HP Supercell



Copyright Jon Davies



HP Supercell





Funnel Clouds



- A rotating, funnel-shaped cloud extending downward from a thunderstorm base.
- Usually located near updraft but can be found anywhere
- Attached to cloud base
- Exhibit rapid rotation and are most often laminar or smooth in appearance
- Do not reach ground



Copyright Steve Miller



Funnel Cloud



Copyright Paul Craven



Funnel Cloud



Copyright Jason Parkin KCCI



Funnel Cloud



Copyright Gene Moore



© 2004 Jim Bishop & Reed Timmer/Stormgasm.com



Copyright Jeff Piotrowski, Storm Productions, Inc.

Tornado

A violently rotating column of air extending from cloud base to the ground.



Copyright Eric O'Connor



Copyright Reed Timmer, Jim Bishop



Tornado



Copyright Mike Umscheid



photo courtesy of J. Bary Mott



Prattville, AL 2/17/08



Courtesy of Jay Fowler



Funnel Cloud or Tornado



Copyright Chris Gullikson



Funnel Cloud or Tornado?



Copyright Chris Gullikson



Funnel Cloud or Tornado?



Photos - Copyright Troy Humphrey





Funnel Cloud or Tornado?



January 21, 2010
Huntsville, AL
EF-2



Courtesy of WHNT

January 21, 2010
Huntsville, AL
EF-2



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Copyright Dave Chapman



FINAL EXAM



Special thanks to Dr. Tim Coleman and Mr. Brian Peters

Last Ditch Spotter Safety

- ◆ If a tornado approaches...
 - ◆ Move away at a right angles
 - ◆ GET TO SHELTER – the safest place is the basement, if a basement is not available, move to a small interior room away from windows
 - ◆ If no escape possible, abandon your vehicle for a sturdy shelter, or lay flat in a dry ravine or ditch away from your vehicle



FINAL EXAM



When will YOURS be?

- Know the difference between a shelf cloud and a wall cloud
- Know that funnel clouds usually do not form on a shelf cloud
- Know that a low hanging cloud in the shape of a funnel, if not rotating, is NOT a funnel cloud
- Call the NWS!
- STAY CALM! Don't exaggerate
- BE SAFE!



1-800-856-0758
Please Call in
Your reports!





We want your storm photos!!

SR-BMX.Pix@noaa.gov



Name, date, and details!

Do we have your permission to use the photo (with credits)?

We are interested in ALL weather pictures, as well as storm damage photos

The best photos or videos tend to be those with a wider view of thunderstorm structure, which gives perspective of the phenomenon relative to that of the entire thunderstorm.

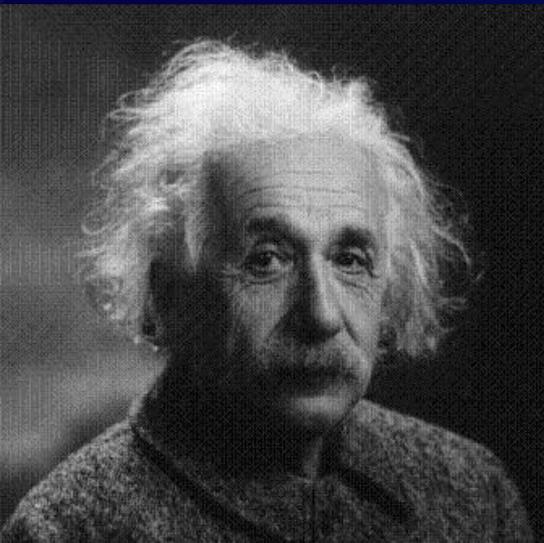


See the Spotter Information Sheet for a list of useful links

- **Spotter Certificates**
- **Training Materials**
- **Schedule**
- **“Spotter Links”**
- **Brochures**



Still Want to Know More?



- Storm Spotter Graduate School
- Web based seminar (webinar) getting into the meteorology of severe weather
- 6 PM November 15th, 2011
- Register by e-mail to:
John.DeBlock@noaa.gov





QUESTIONS, SUGGESTIONS, OR COMMENTS?

John.DeBlock@noaa.gov, (205) 664-3010

or visit our website at:

www.srh.noaa.gov/bmx

Spotters are the eyes and ears of the National Weather Service. Without your help, our job of warning would be very difficult.

We thank you for your participation!



The End



Copyright Doug Raflik

Questions or Comments?

John.DeBlock@noaa.gov