Things to Know

- A PDF version of these slides with speaker notes, URLs and other resources are available on our Spotter Webpage.
  https://www.weather.gov/ind/spotter

- Use the camera on your smart phone to scan QR Codes for most websites shown in this presentation.

- Central Indiana SKYWARN Spotters DO NOT receive spotter ID numbers and are considered volunteers

SKYWARN
WEATHER.GOV

Presentation Outline

I. What is required from Skywarn Spotters

II. Basic Weather Information, Terms and Reporting Procedures

III. Tornadoes and Severe Thunderstorm Winds, Hail and Lightning

IV. Basic Meteorology and Radar Terms and Concepts

V. Storm Types and Associated Severe Weather

VI. Tornado “Look A likes”

VII. Spotter Resources

What is Required to be a Spotter?

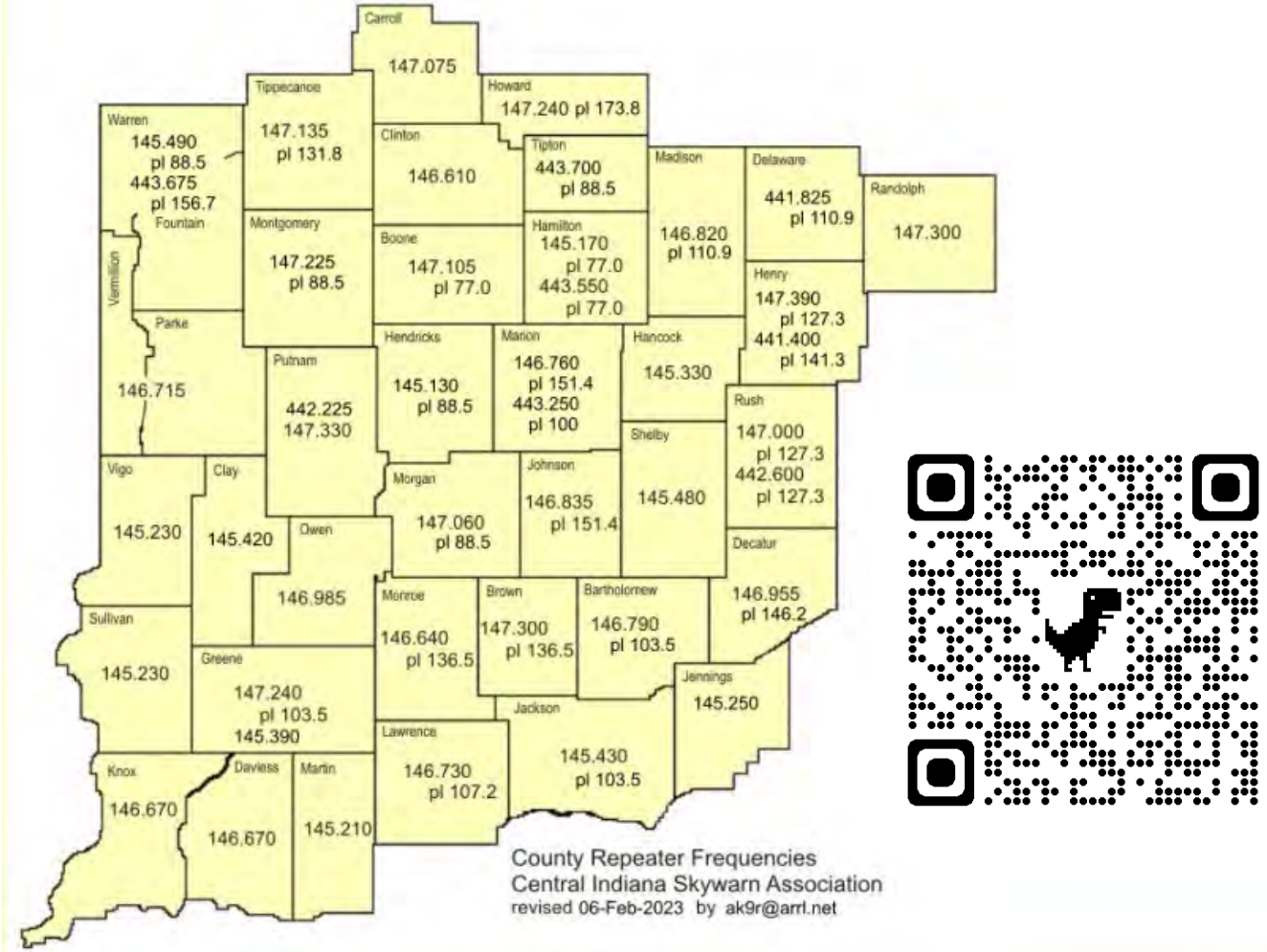
- Anyone can be a spotter. Complete training every 1 to 3 years
- Become knowledgeable about all forms of severe weather, know what to look for and know how to report what is observed
- Spotters play a critical role in the NWS warning process by adding credibility and confidence to NWS Warnings with ground truth that supports radar signatures
- Relay timely, accurate and credible reports that can help the NWS in warning decisions, EMA Directors and first responders allocate resources faster, and ultimately help save lives.
- ***PLEASE MAKE REPORTS!*** Many times we hear nothing from our spotters

Central Indiana Skywarn Association

Central Indiana Amateur Radio Operations

- Amateur radio operators help the NWS as weather spotters but also serve as our backup for communications if primary systems fail

- Information for amateur radio operators across Central Indiana can be found at : https://w9nws.org/



SKYWARN Spotter Basic Weather Information, Terms and Reporting Procedures

Why are Spotters Important?

Spotters and EMA are a vital part of the warning process

- Spotters are our eyes and ears
- Your report makes a difference in the warning process.
- People react faster when warnings are supported by reliable ground truth
- You are **serving** the Warning Team, Your Community and Neighboring Counties

SKYWARN

Spotters Need to be Aware

Help Spread the Word, Most People Do Not Know This Information

Outdoor Warning Sirens

Meant as an alert for people that are **OUTDOORS**

NOT intended to wake you up

Activation varies by location

Check with you local city or county government for policy

Outlooks, Watches and Warnings

Spotters Need to Know When to Be Ready and When to take Action

Local Hazardous Weather Outlook (HWO)

Outlook and awareness information issued daily by each NWS office

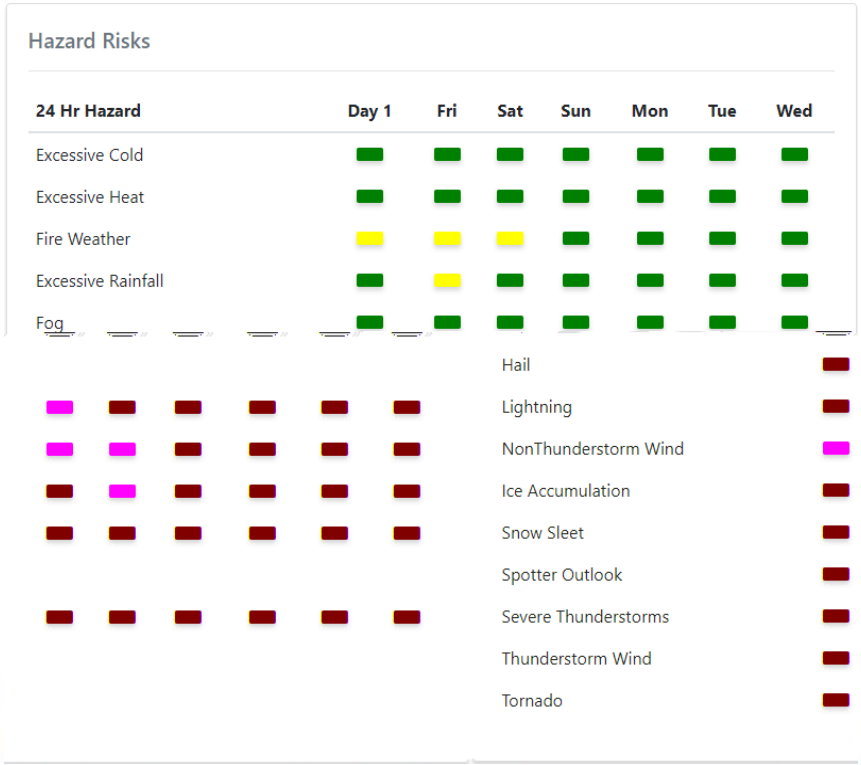
- Hazards and timing of impacts today and tonight
- Hazards Day 2 to Day 7
- Spotter information stating when and if spotters will be needed

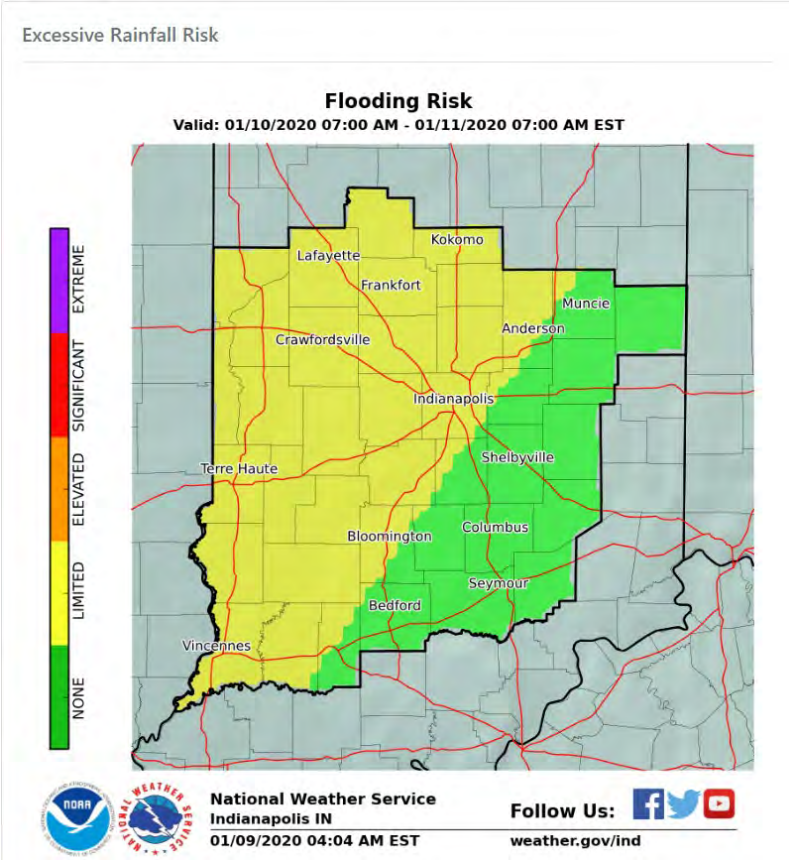
```
.DAY ONE...TODAY AND TONIGHT.

A SIGNIFICANT SEVERE WEATHER OUTBREAK IS EXPECTED IN THE OHIO
VALLEY TODAY.

THUNDERSTORMS THAT DEVELOP ON THE WARM FRONT THIS MORNING COULD
BECOME SEVERE. THE MAIN THREAT IS LARGE HAIL.

THUNDERSTORMS THAT DEVELOP IN THE WARM SECTOR THIS AFTERNOON WILL
BECOME SEVERE. TORNADOES...DAMAGING WINDS...AND LARGE HAIL ARE ALL
POSSIBLE...AND A FEW OF THE TORNADOES COULD BE STRONG AND LONG-
LIVED. SEVERE WEATHER COULD OCCUR ANYWHERE IN THE OUTLOOK
AREA...BUT THE GREATEST THREAT WILL BE EAST OF INTERSTATE 65 AND
SOUTH OF THE BLUEGRASS PARKWAY.

A SQUALL LINE MAY DEVELOP ALONG THE COLD FRONT LATE THIS AFTERNOON
AND INTO THIS EVENING. DAMAGING WINDS WILL BE THE MAIN THREAT WITH
THE SQUALL LINE...BUT ISOLATED TORNADOES WILL ALSO BE POSSIBLE.

.DAYS TWO THROUGH SEVEN...SATURDAY THROUGH THURSDAY.

LIGHT SNOW SHOWERS ARE POSSIBLE EARLY SUNDAY MORNING AND AGAIN ON
SUNDAY NIGHT AND EARLY MONDAY...MAINLY NORTH OF THE I 64 CORRIDOR.
ACCUMULATIONS ARE NOT EXPECTED AT THIS TIME.

THERE IS A CHANCE OF THUNDERSTORMS ON THURSDAY...MAINLY NORTH OF
THE I 64 CORRIDOR.

.SPOTTER INFORMATION STATEMENT...

SPOTTERS ARE ENCOURAGED TO REPORT ANY HAIL THAT OCCURS WITH THE
STORMS THIS MORNING. SPOTTER NETWORK ACTIVATION IS LIKELY THIS
AFTERNOON AND EVENING.
```

Outlooks, Watches and Warnings

Spotters Need to Know When to Be Ready and When to take Action

- ***Local Graphical Hazardous Weather Outlook (GHWO)***
  - **Graphical depiction of potential hazards**
  - **Where and When Easily Visualized**

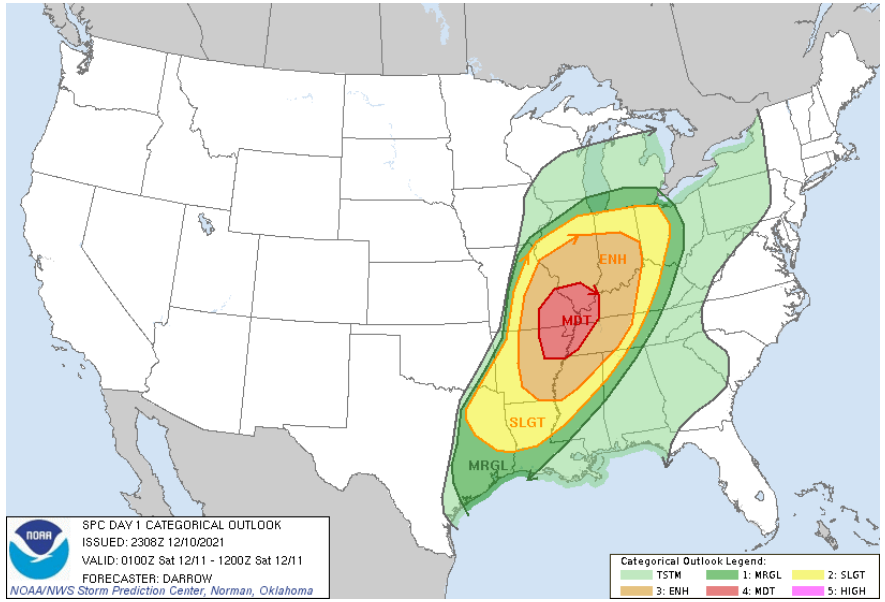




Outlooks, Watches and Warnings

Spotters Need to Know When to Be Ready and When to take Action

Storm Prediction Center (SPC) Outlooks



Storm Prediction Center Convective Outlooks
Days 1,2,3 and Days 4-8 combined

Understanding Severe Thunderstorm Outlook Categories

LEVEL	CATEGORY	DETAILS	SUMMARY	How many severe storms are possible?	How bad could the worst storms be?
	General Thunderstorm	Although severe weather is not expected, ***all*** thunderstorms can produce deadly lightning, gusty winds, and small hail.	No severe thunderstorms expected	None – Numerous	Similar to storms your area experiences many times per year
1	Marginal (MRGL)	**Some storms could be capable of damaging winds and severe hail. Localized tornado threat could develop.**	Isolated severe storms possible	None – Numerous	Similar to storms your area may experience several times per year
2	Slight (SLGT)	**Increased confidence that some storms will contain damaging winds, severe hail, and/or tornado potential.** *A few severe storms could be significant*	Isolated to scattered severe storms expected	None – Numerous	Similar to storms your area may experience a few times per year
3	Enhanced (ENH)	**High confidence that several storms will contain damaging winds, severe hail, and/or tornadoes.** *Several severe storms could be significant*	Scattered to numerous severe storms expected	None – Numerous	Similar to intense storms your area may only experience once or twice per year
4	Moderate (MDT)	**High confidence that many storms will contain damaging winds, severe hail, and/or tornadoes.** *Several severe storms likely to be significant*	Scattered to numerous severe storms expected	None – Numerous	Similar to intense storms your area may only experience once per year or less
5	High (HIGH)	**High confidence that an outbreak of storms will contain tornadoes, damaging winds, and/or severe hail.** *Tornado outbreak and/or widespread damaging winds*	Numerous severe storms expected	None – Numerous	Very intense storms your area may only experience once or twice in a lifetime

DEFINITIONS

Severe Storm

Any storm that contains at least one of the following:

- **Wind gusts of at least 58 mph**
- **Hail at least one inch in diameter**
- **Tornado**

Significant Severe

Any of the following hazards:

- **Wind gusts of at least 75 mph**
- **Hail at least two inches in diameter**
- **Tornado of at least EF-2 rating**

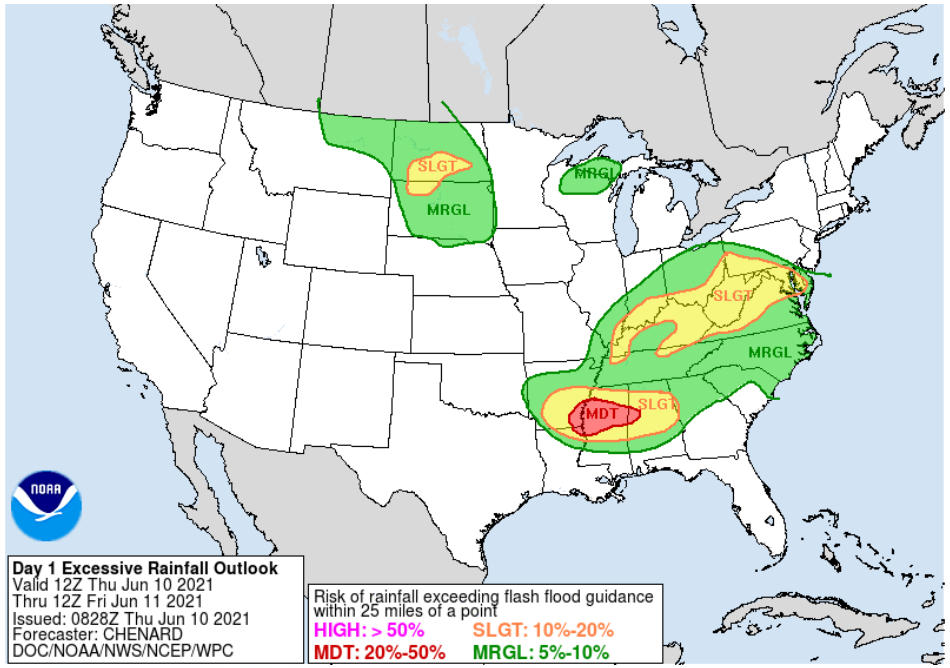
spc.noaa.gov | weather.gov

Outlooks, Watches and Warnings

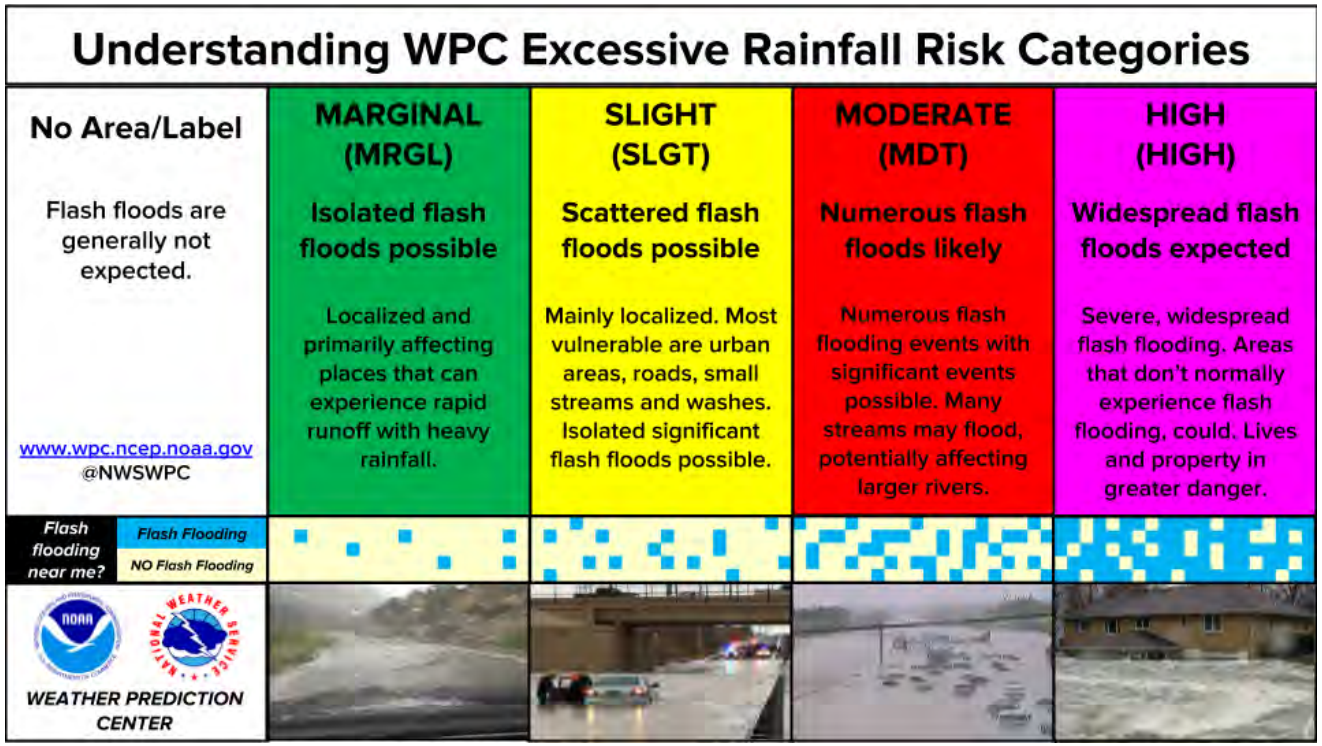
Spotters Need to Know When to Be Ready and When to take Action

Excessive Rainfall Outlooks

- General awareness of heavy rain and flash flooding potential and trends. Similar to SPC
  - Weather Prediction Center (WPC) issues Excessive Rain Outlook (ERO) for the entire country



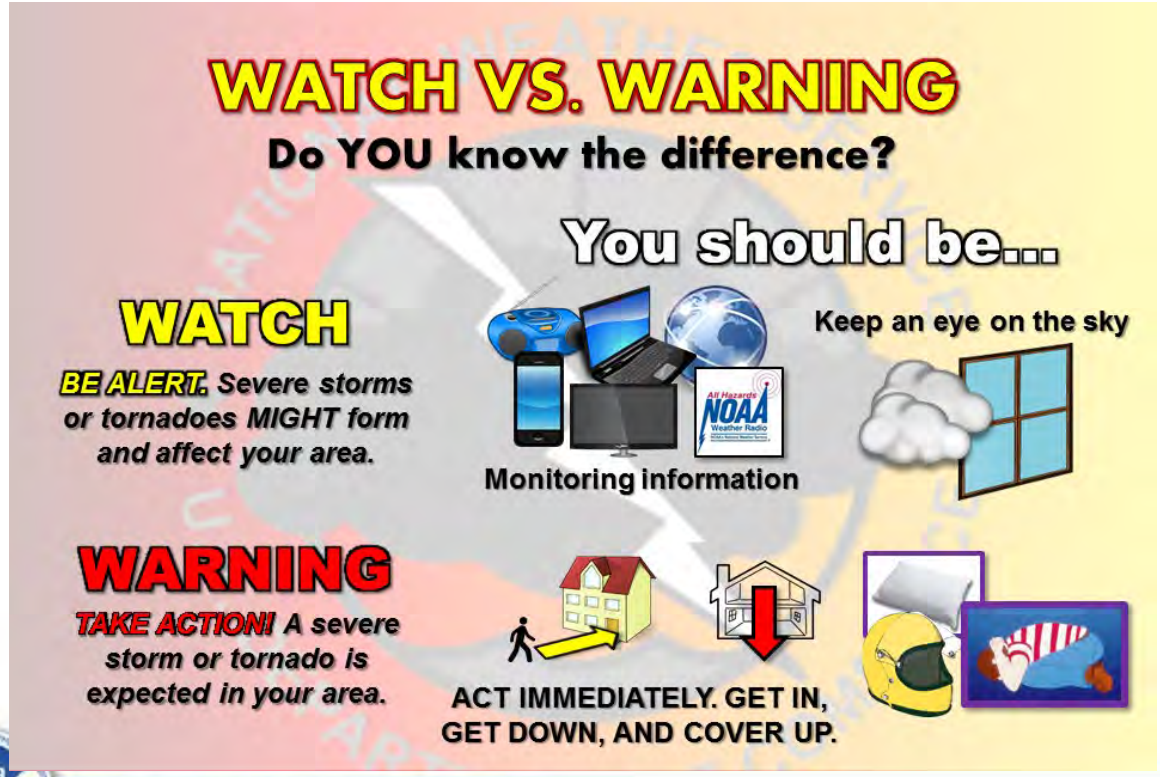
Weather Prediction Center Excessive Rain Outlooks
Issued for Days 1-7

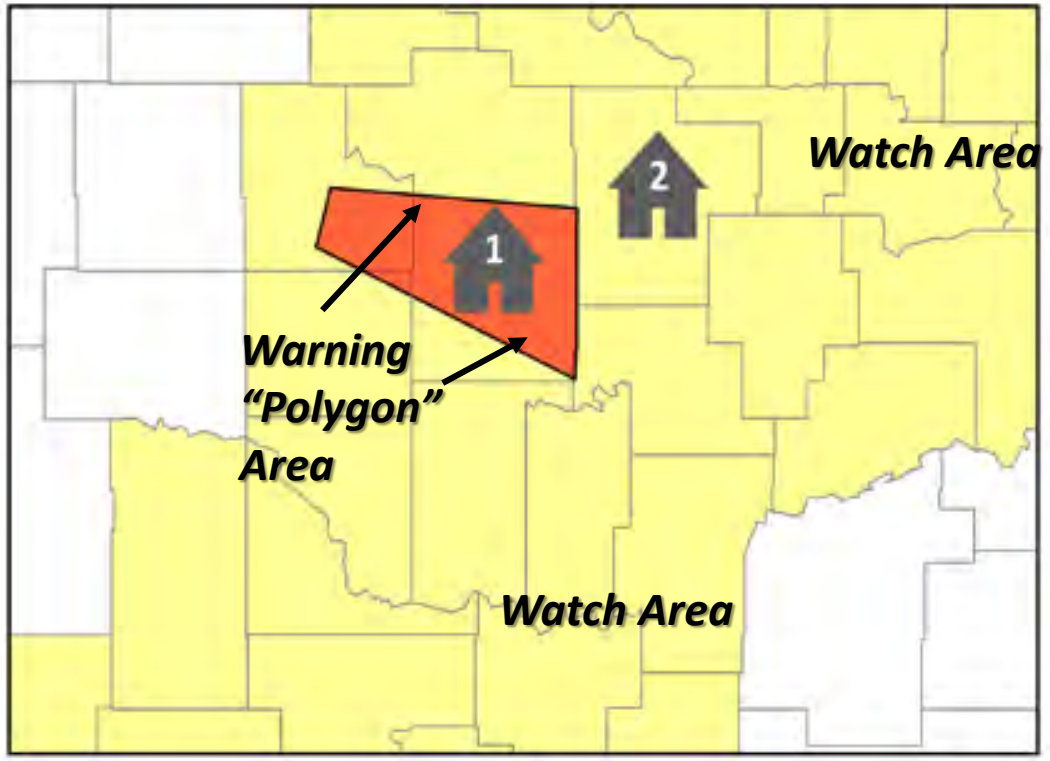


Outlooks, Watches and Warnings

Spotters Need to Know When to Be Ready and When to take Action

- **Watch** - Covers large areas and usually issued "hours" ahead of severe weather
- **Warning** - Covers small areas and usually issued "minutes" ahead of severe weather



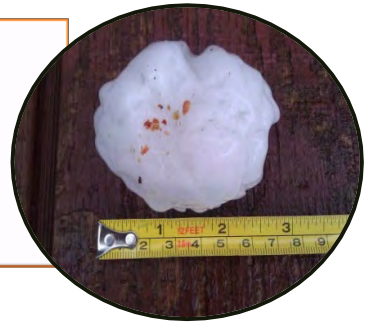


Outlooks, Watches and Warnings

Spotters Need to Know When to Be Ready and When to take Action

Severe Thunderstorm Warning

- Thunderstorm wind gusts ≥ 58 mph & or:
- Hail ≥ 1 inch in diameter



Tornado Warning

- Doppler Radar indicated strong rotation
- Confirmed reports of a tornado
- Confirmed reports of funnel cloud in a favorable environment for tornadoes and radar support

Flash Flood Warning

- 6 inches or more of flowing water over roadways
- A rapid rise in water that is a threat to life & property

STORM PLANNING TIMELINE

A few days out

If the forecast calls for severe weather in a few days, start preparing now.

- Make sure that you have emergency supplies
- Know your safe places
- Have a family communication plan

The day before

The day before, forecast accuracy continues to improve.

- Adjust plans
- Make sure your phone can receive WEAs
- Ensure your shelter is clean and accessible

The day of

Remain vigilant and aware of any active Watches. A Warning may be issued at a moment's notice!

- Remind your family of the communication plan
- Know how to evacuate and/or get to safety from wherever you are
- When a Warning is issued, you may only have seconds to take action!

weather.gov

NOAA

Spotter Reporting Procedures

An Effective Spotter Report Should:

- Be timely, accurate, detailed but concise
- Be Reported in a clear and calm voice

- Follow specific guidelines
  - Who you are: Trained NWS Skywarn spotter (No Spotter ID)
  - What you have witnessed: Tornado, moving northeast
  - When the event occurred: Ongoing right now
  - Where the event occurred: I-74 and highway 75 Jamestown, looking north, possibly about two miles. Thin, rope shape, debris being lofted.

What is a Tornado?

Basic Definition, But Not All Tornados Are The Same

- Violently rotating columns of air descending from thunderstorm clouds and ***in contact with the earth***
- Often visible as a funnel shaped cloud, but not always
- Winds can be as high as 200+ MPH (EF5)
- ***Usually*** less than a few hundred yards wide, last a few minutes, and trace a path of 1 mile or less

Tornado Ratings

Low End of EF-Scale ~ 94% of Indiana Tornadoes (EF0/EF1 ~ 85%) Since 1950

EF Rating	Wind Speeds	Expected Damage
EF-0	65-85 mph	"Minor" damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.
EF-1	86-110 mph	"Moderate" damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.
EF-2	111-135 mph	"Considerable" damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.

Tornado Ratings

High End of EF-Scale ~ 6% of Indiana Tornadoes (Only 3 EF5s Since 1950)

EF-3	136-165 mph	**"Severe" damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose bark.**
EF-4	166-200 mph	**"Extreme" damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.**
EF-5	> 200 mph	**"Massive/Incredible" damage: well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees usually completely debarked, stripped of branches and snapped.**

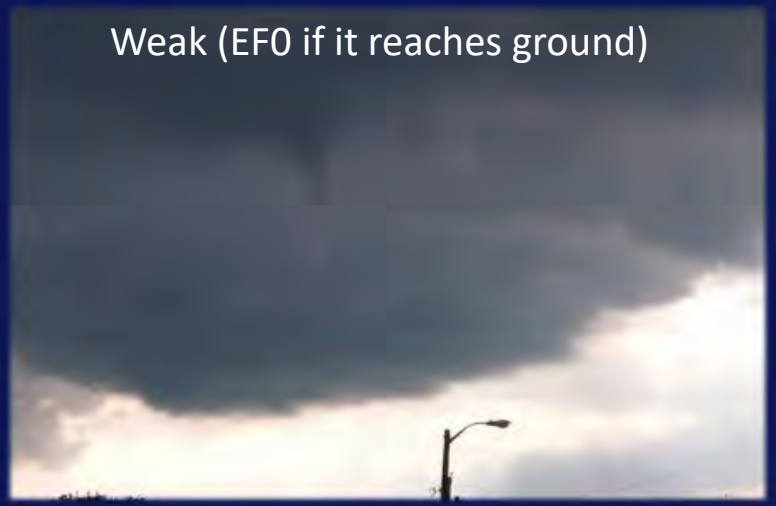





Tornado Types and General Strengths

Cold Air Funnel

Weak (EF0 if it reaches ground)

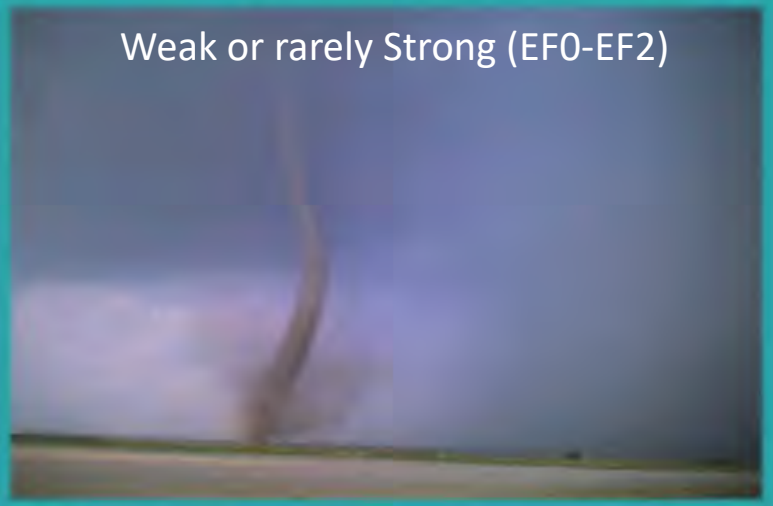


Action: report to NWS, monitor movement, be prepared to shelter indoors

- Originates near a strong low pressure system and weak surface boundaries
- Forms at the cloud base of a developing shower, often without thunder or lightning present
- Rarely reach the ground, but can create weak EF-0 damage if a tornado occurs

Landspout Tornado

Weak or rarely Strong (EF0-EF2)



Action: seek shelter, report to NWS, monitor weather closely

- Originates when an updraft from a thunderstorm moves over a surface boundary
- Rotation starts at the ground and originates from the boundary, not the storm itself
- Typically short-lived, weak, and difficult to detect on radar

Supercell Tornado

Strong to Violent (EF2-EF5)

Action: seek shelter immediately, report to NWS when safe

- Originates from a rotating updraft in a supercell thunderstorm
- Rotation is typically a result of vertical wind differences
- Typically longer-lived, stronger, and more pronounced on radar
- Responsible for most tornado fatalities in the U.S.

@NWSIndianapolis

Tornado Types and General Strengths

Landspout or Non-Supercell Tornadoes






Tornado Types and General Strengths

Supercell Tornadoes

Observing and Reporting Tornadoes

- Be extremely cautious. Safety first!
  - Report immediately, as soon as safely possible

- Any rotation on ground? (Most Important!)
  - Don’t assume on ground if view is obscured
  - How long has it been on ground?
  - Start and end times if known
  - Approximate width and path length

- Extent and amount of damage
  - Don’t assume it’s from a tornado if you do not see it happen. Just report what you see!

Nighttime Tornadoes

Very Dangerous!

CAUTION!

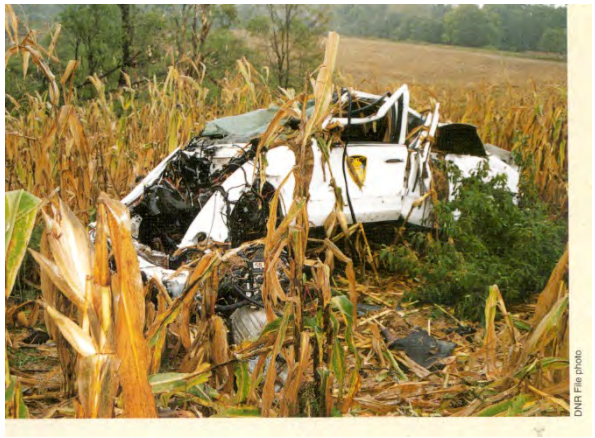
Nocturnal tornadoes are twice as likely to be deadly compared to daytime tornadoes!

Need radar support and complete understanding of atmosphere to know where a tornado might be!

Lightning/Transformers/Power line flashes may help identify possible tornadoes

Tornado and Thunderstorm Safety

Severe Thunderstorms Can Be deadly Too. Seek Shelter From All Severe Thunderstorms



Personal safety is your primary objective!

Shelter in a sturdy building away from windows on the lowest floor, interior room or closet

Cover your head with hands, blanket, pillow, etc.

Mobile home – find a safer building long before storm arrives, preferably when a watch is issued

In vehicle during a tornado – Seek safe buildings; drive away if possible; abandon to ditch as last resort

Estimating Thunderstorm Wind Speeds

Wind Speed (mph)		Effects on Land
25-31		Large branches of trees in motion; whistling heard in wires
32-38		Whole trees in motion; resistance felt in walking against the wind.
39-46		Twigs and small branches broken off trees.
47-54		Slight structural damage occurs; slate roofs blown off
55-63		Tree limbs broken, structural damage occurs.
64-72		Trees broken; usually with widespread damage.
72 or higher		Violence and destruction.

Reporting Wind Damage

Let us know when you observe any damage such as:

- Tree Damage
  - Extent of damage (one or more, full tree or limbs, large area of woods)
  - Uprooted or snapped
  - Height, diameter, general size
  - Health of tree or limbs. Look for signs of rot

- Utility lines or poles down
- Outbuildings or vehicles overturned
- Loss of roofing materials, siding, windows, etc
- Any other significant wind or damage noted

Reporting and Measuring Hail

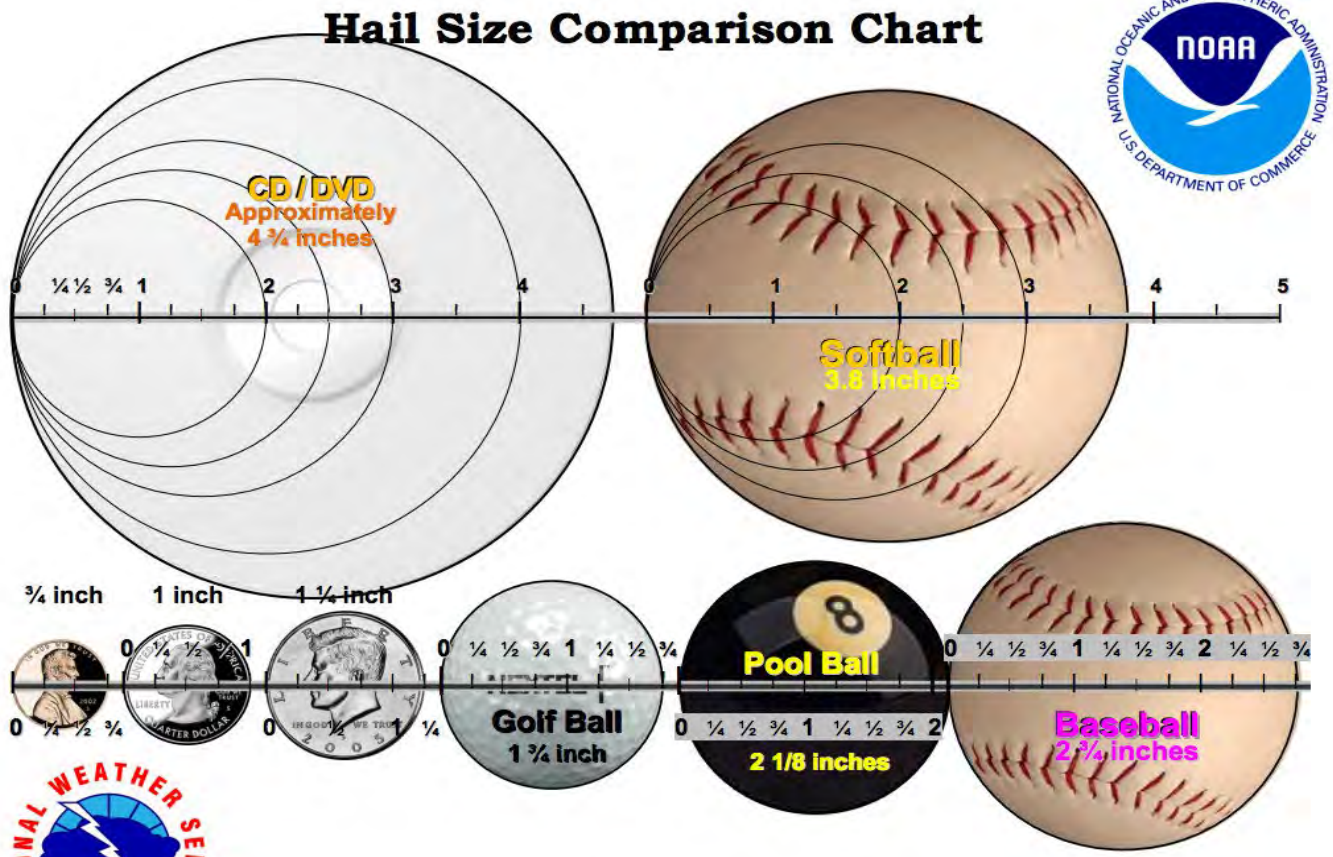
Let us know when hail approaches or exceeds the size of a penny or dime (larger than ½”)

- Select the largest stone(s) you can find
- Measure across the widest part of the stone
- Report diameter of largest stone
- Protect yourself, stay indoors until safe!

Not a Recommended Practice

Reporting and Measuring Hail

Use Common, Standard Size Objects When Reporting



Do Not Report "Marble Size" Hail!

0.25 inches	Pea	2.00 inches	Hen Egg
0.75 inches	Penny	2.50 inches	Tennis Ball
1.00 inches	Quarter	2.75 inches	Baseball
1.50 inches	Ping Pong Ball	3.80 inches	Softball
1.75 inches	Golf Ball	4.50 inches	Grapefruit

Reporting Flooding

Evaluate the situation and surroundings

Flash Flooding

- Rapidly rising water, lives in *immediate danger*
- “Unusual” type flooding
- Be careful using this phrase!

Streets, ditches, small streams/creeks flooding

- “Nuisance” or “Typical” flooding. Slower rise
- Report Street names, depth, flowing or standing
- Let us know if there is any visible debris

Flash Flooding Safety

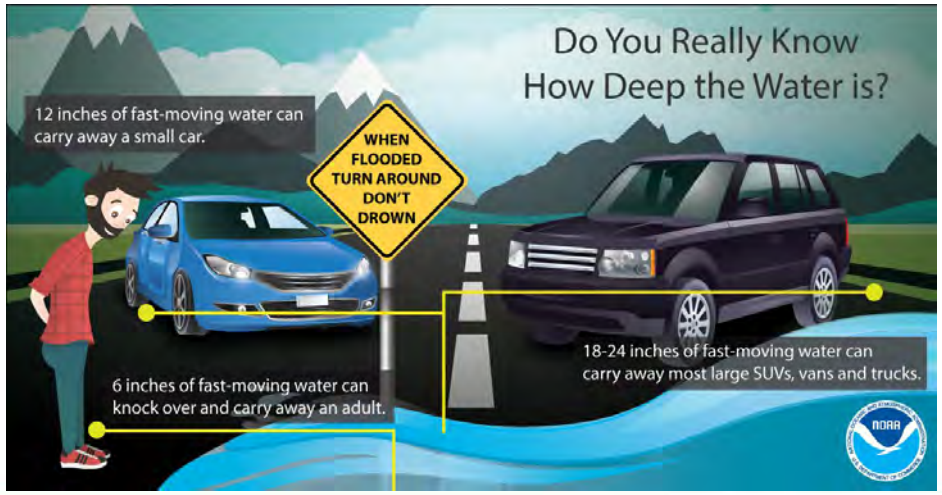
Turn Around Don't Drown®

Turn Around, Don't Drown!

Flash flooding is particularly dangerous at night

Flooding causes more fatalities each year than any other thunderstorm hazard

More than half of all flood-related drownings involve a vehicle



Reporting Lightning

No Need to Report. Get Inside a Sturdy Shelter

- Spotters do not need to report lightning!
- All thunderstorms have lightning by definition
- The amount of lightning does not necessarily relate to the severity of a storm
- Technology allows meteorologist to monitor lightning strikes in real time

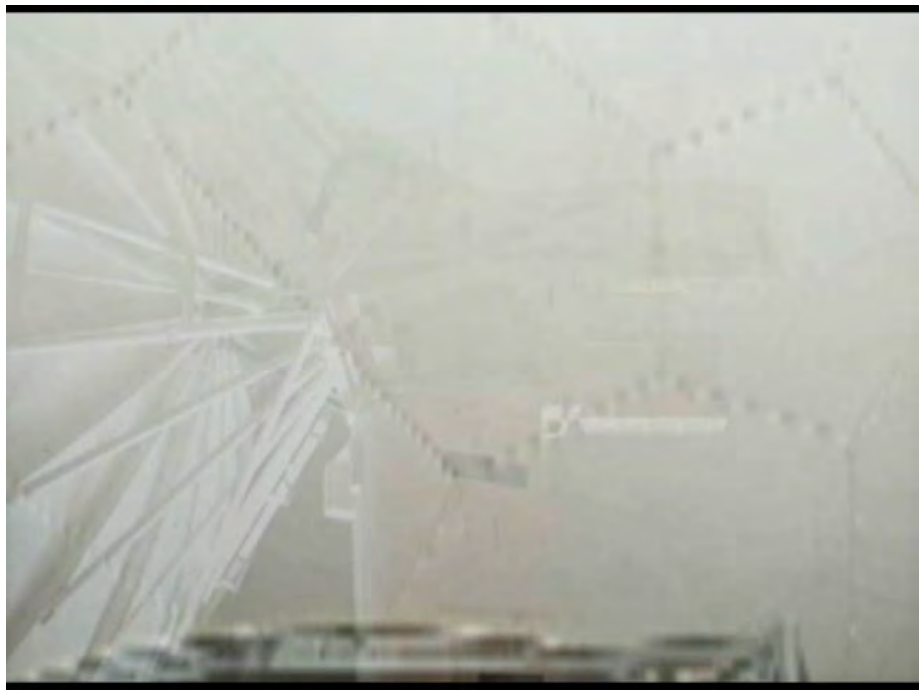
How do Spotters report to the NWS?

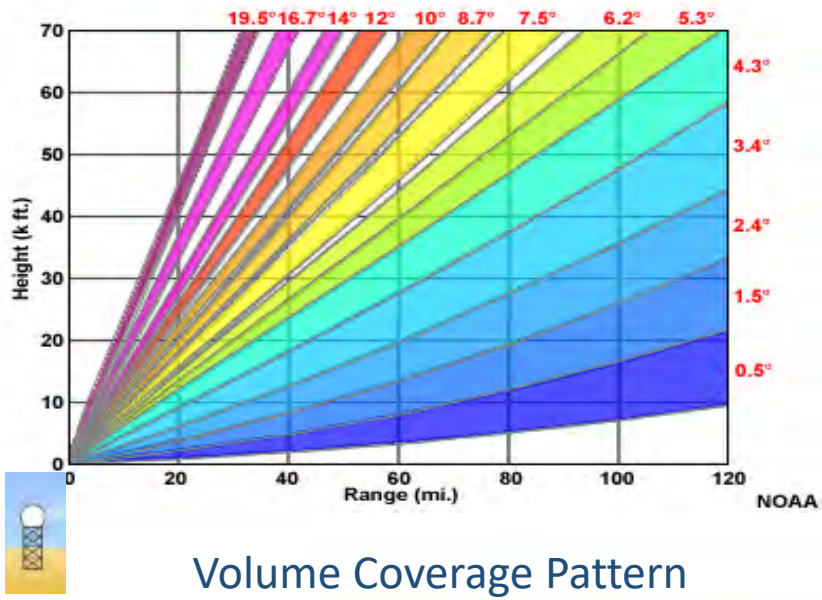
Contact Your Local NWS Office. Information Below is for NWS Indianapolis

- Call us @ 1-800-499-2133
  - Spotter reports only!
- Email photos with details to:
  - nws.indianapolis@noaa.gov
- Social Media
  - Twitter - @NWSIndianapolis
  - Facebook – @NWSIndianapolis
    - Hashtags - #INwx #NWSIND and any weather related terms such as #Hail or #Tornado
- Web Reports
  - inws.ncep.noaa.gov/report
  - mping.nssl.noaa.gov
- Amateur (HAM) Radio

Basic Meteorology for Spotters

WSR-88D Basic Operations

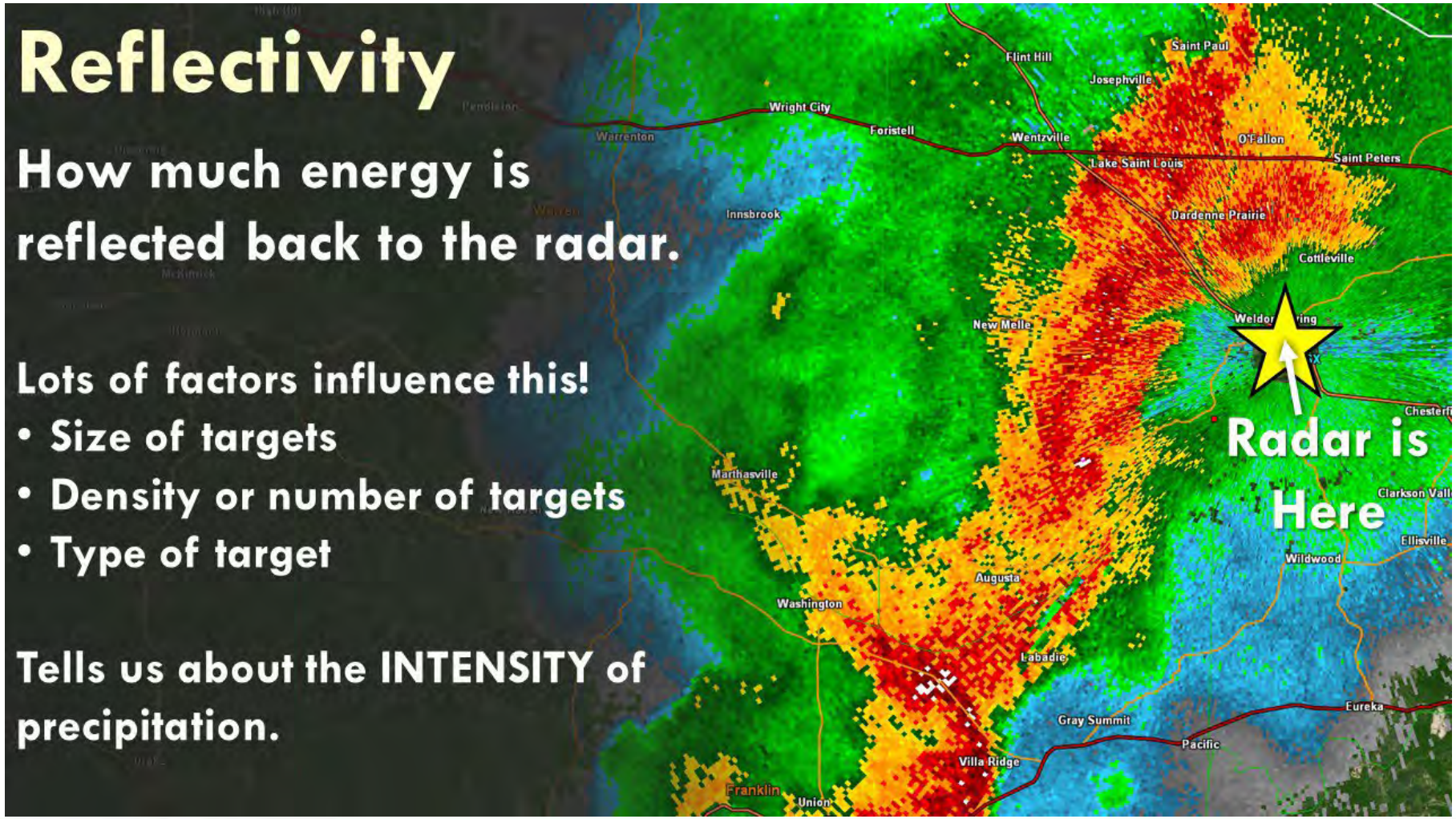




Volume Coverage Pattern

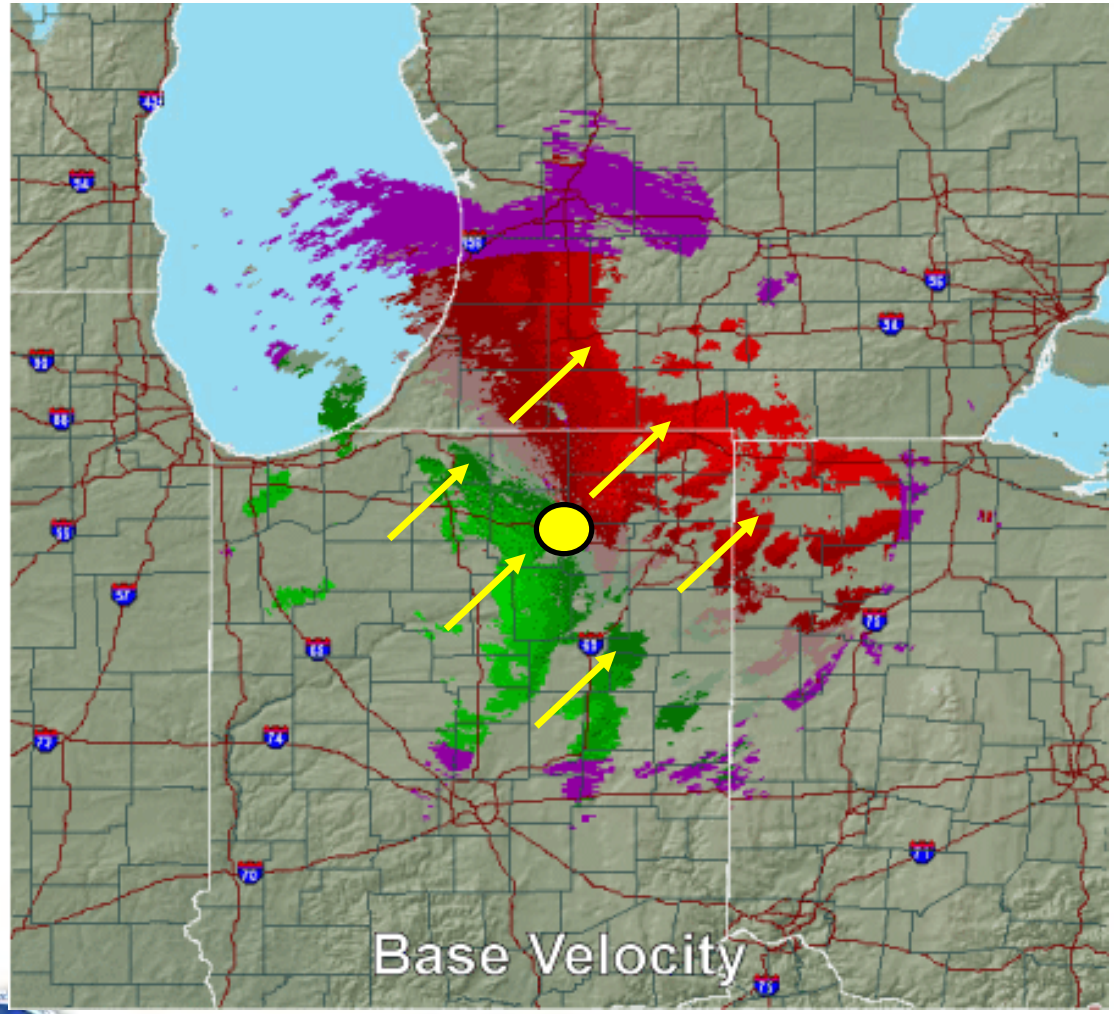
Basic Radar Display

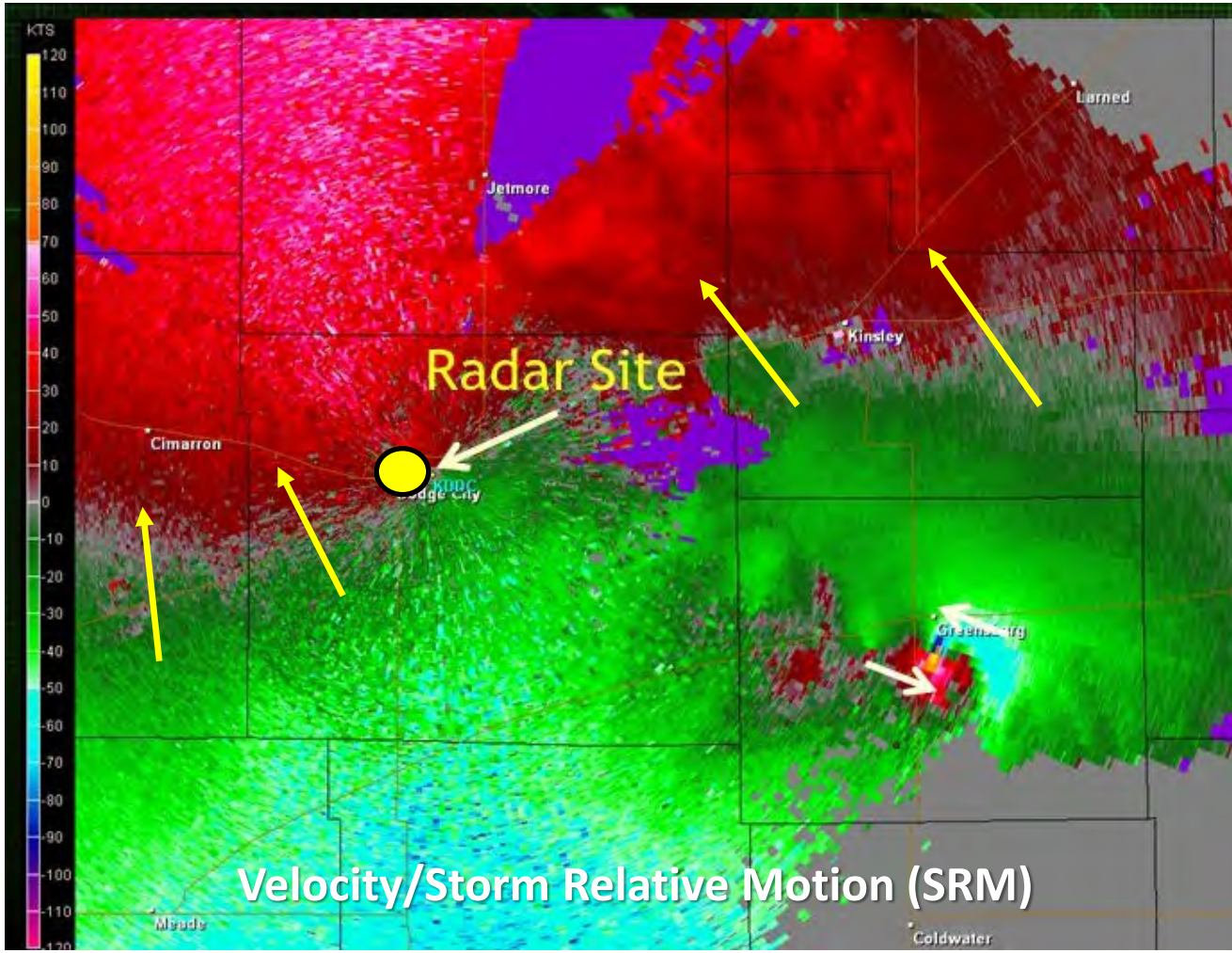
Base Reflectivity (BR) – Energy Returned to the radar



Basic Radar Display

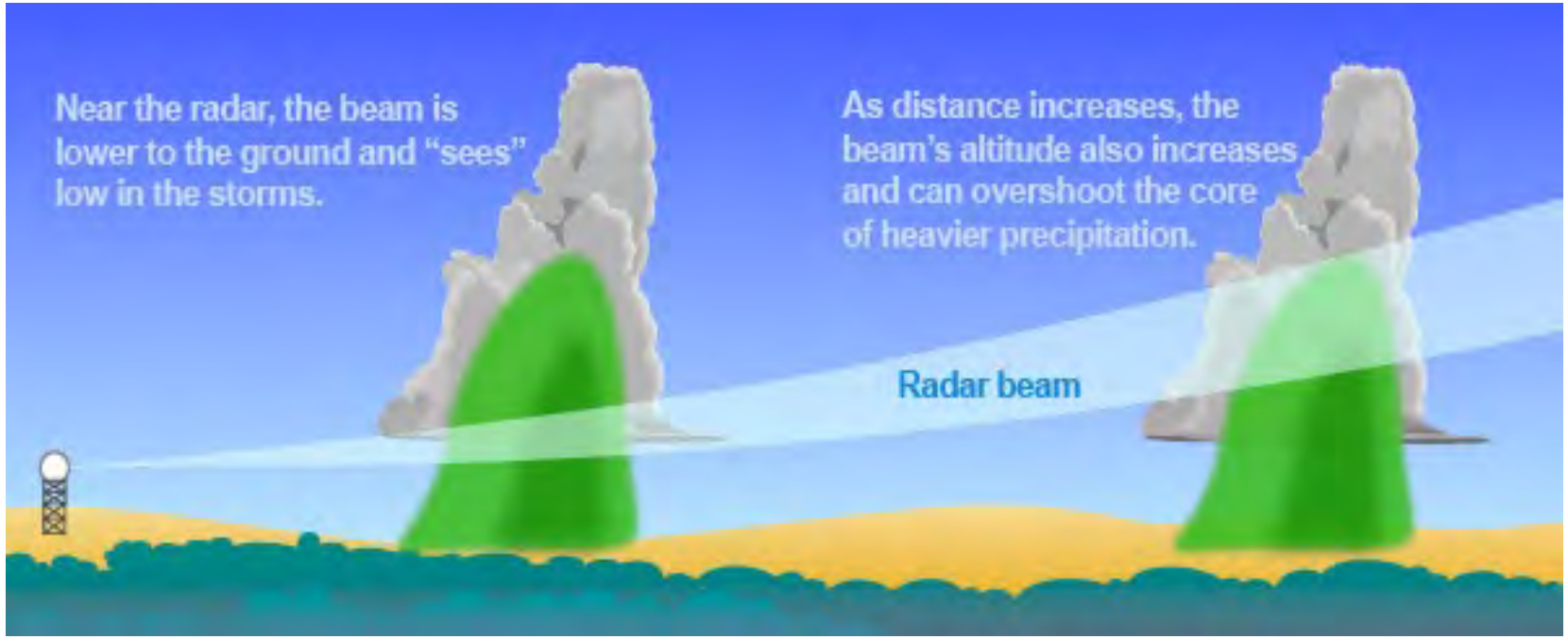
Base Velocity (BV) and Storm Relative Motion (SRM)

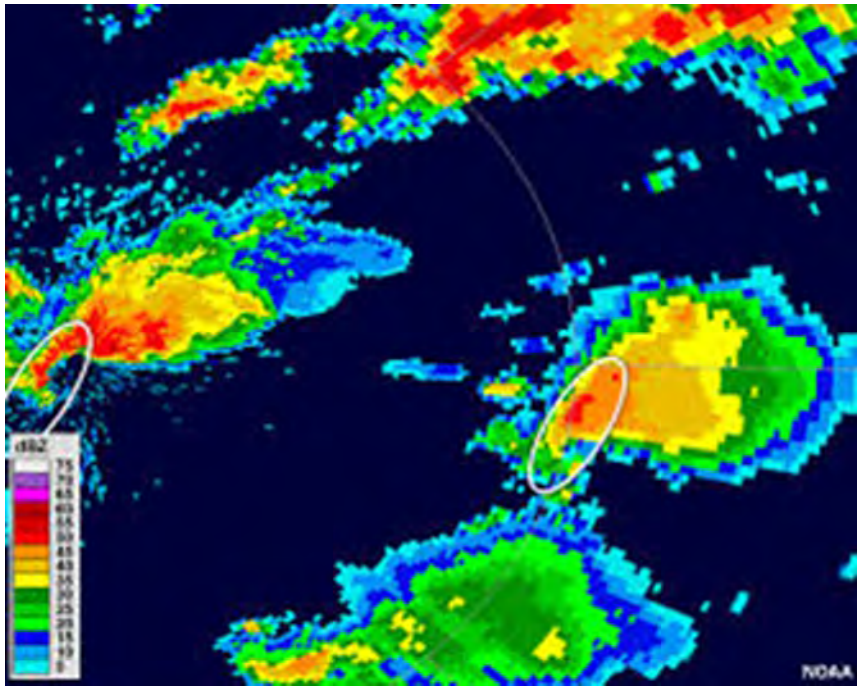




WSR-88D Limitations

This is One Reason Why Spotters are Important!





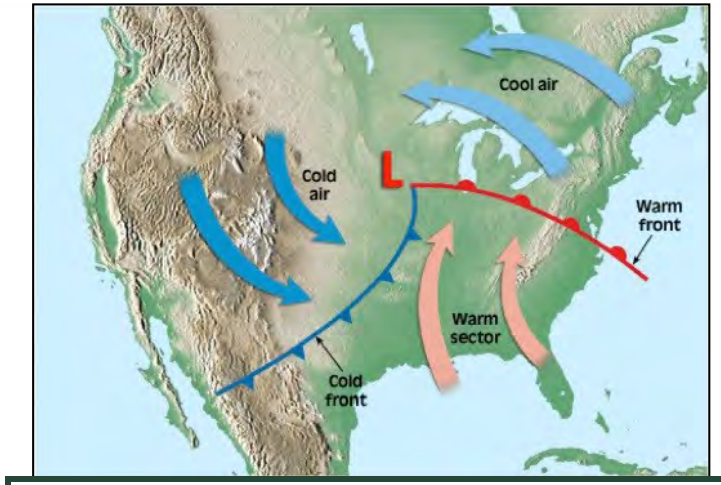
As the beam gets further away from the radar, the beam is scanning higher up in the atmosphere, which can "**overshoot**" the important parts of storms.

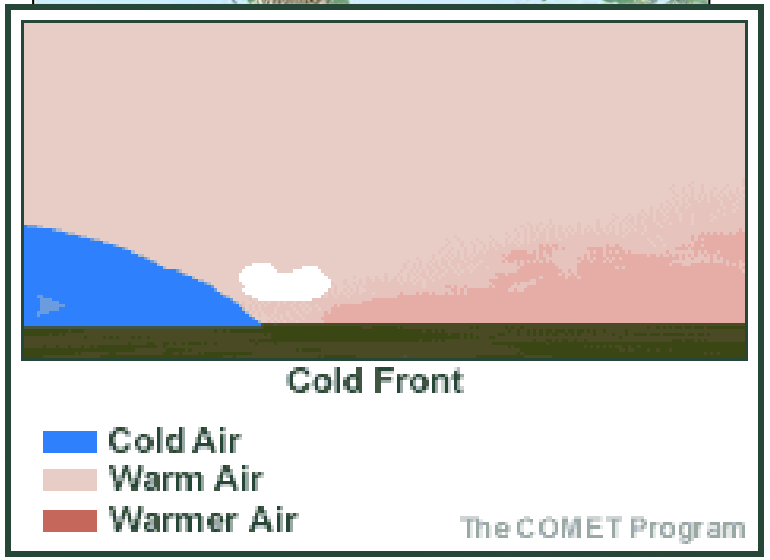
Strong storms far away from the radar may look weaker than they really are.

Thunderstorm Ingredients

How do Thunderstorms Develop?

- For <u>General</u> Thunderstorms to Develop:
  - Warm, moist air at the surface. Cooler, drier air aloft
    - This makes the atmosphere UNSTABLE and air will more easily rise on its own or helped by a front (CAPE)
    - Surface dew points are a measure of moisture and very important for thunderstorm development
  - Lifting mechanism or “Trigger”
    - Warm/cold fronts, outflow boundaries from other storms, jet stream, terrain
- For <u>SEVERE</u> Thunderstorms to Develop:
  - WIND SHEAR is Needed!
    - Speed and Directional shear help determine storm type

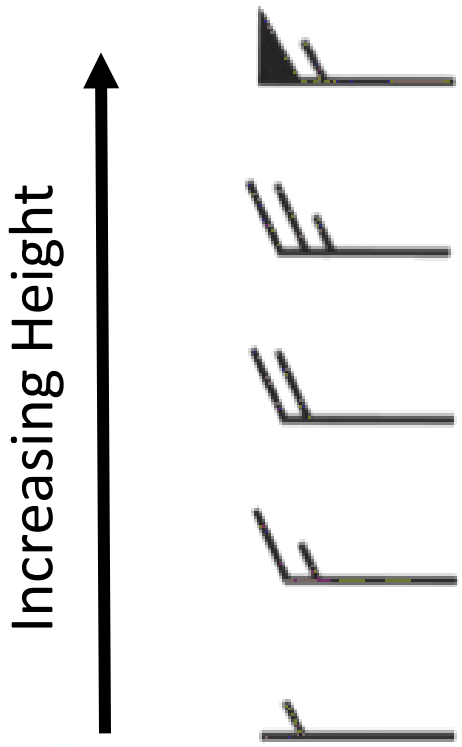


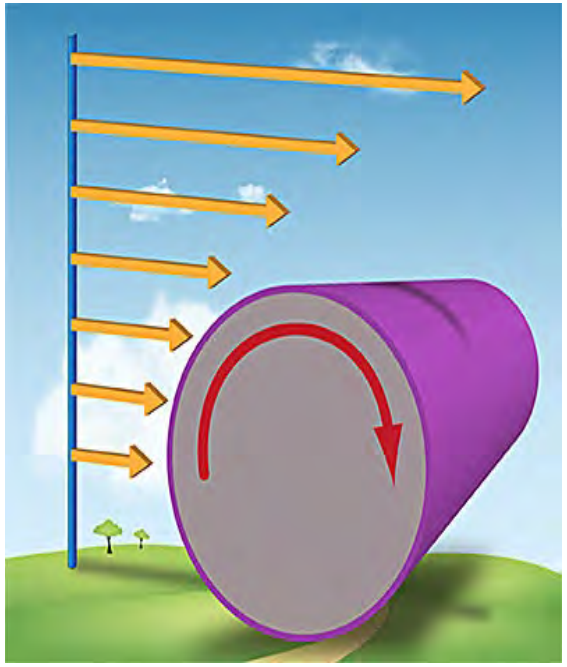


The Role of Wind Shear

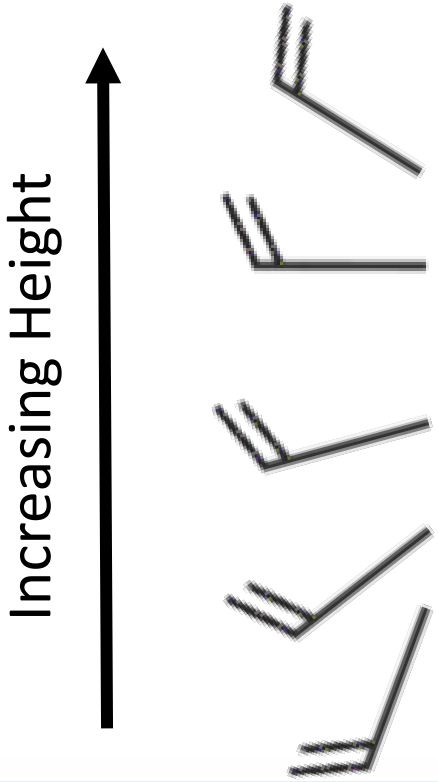
What is Wind Shear and Why is it Important to Know?

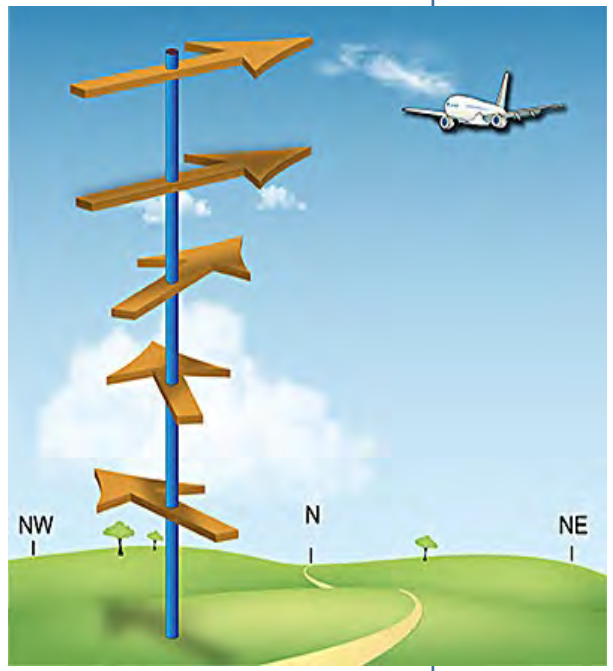
Speed Shear





Directional Shear

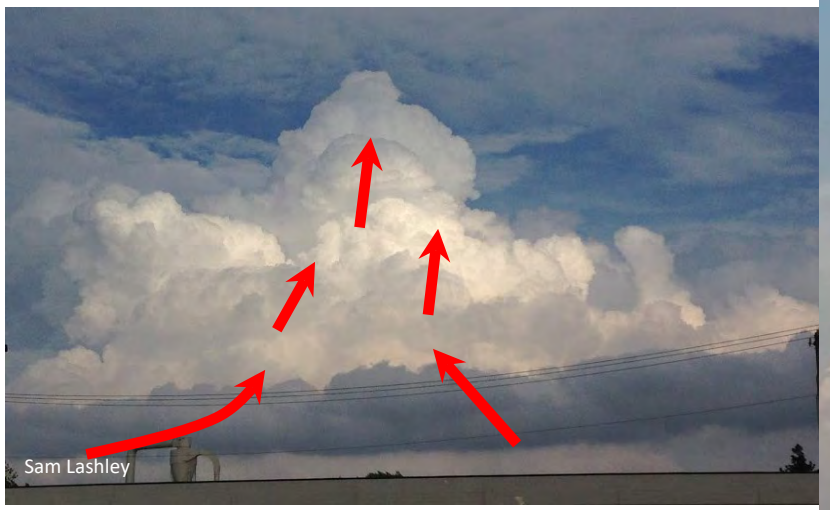




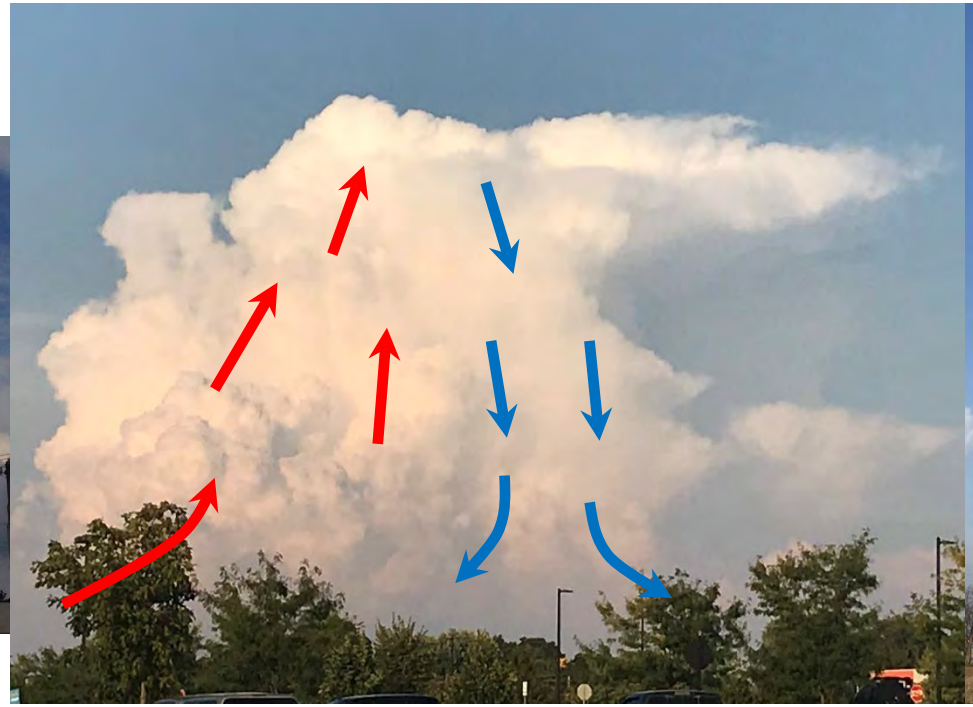
Has a strong influence on the type of thunderstorms that may develop

Basic Thunderstorm Life Cycle

Little or No Wind Shear. Nearly Vertical Structure to Storms



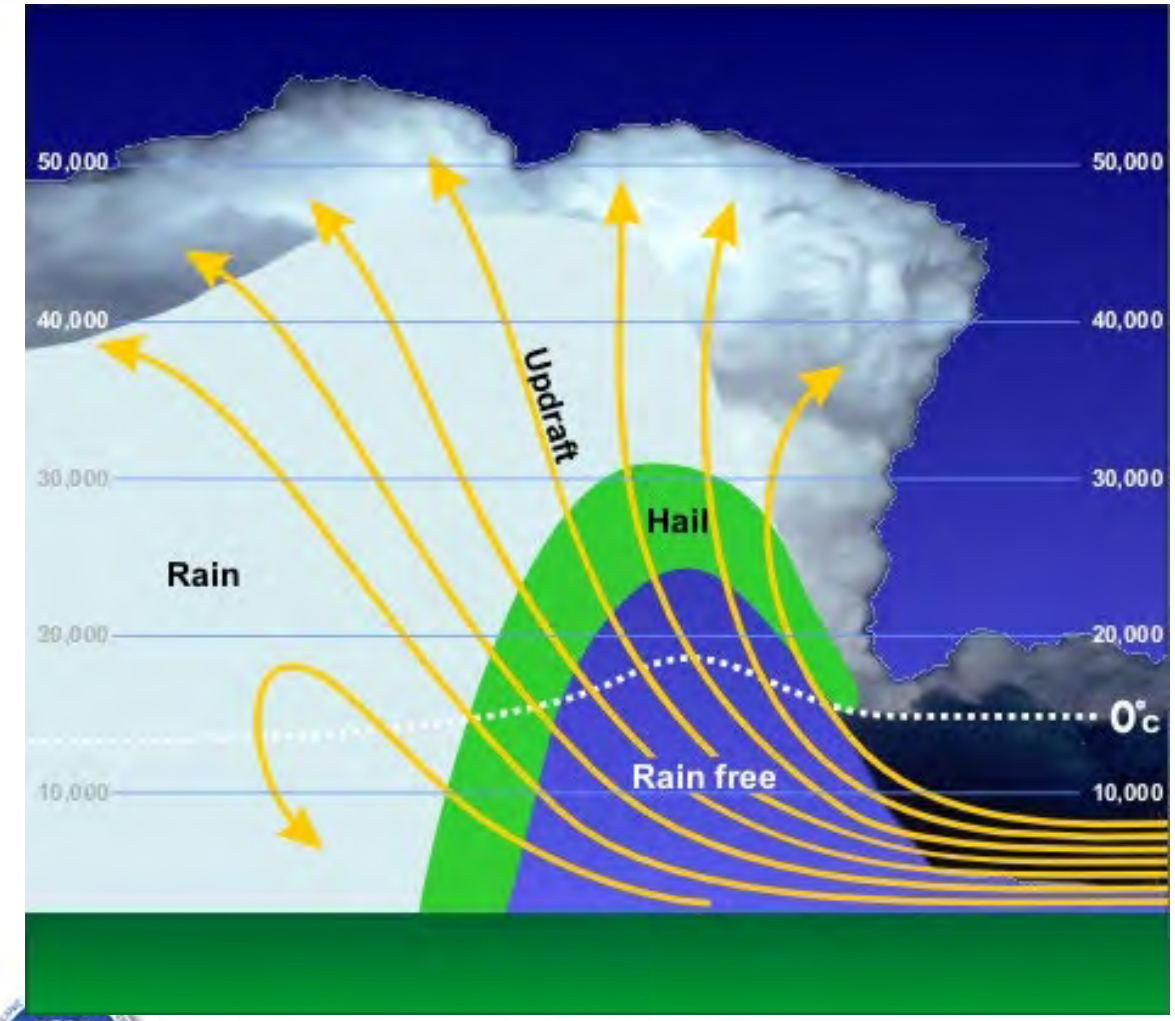
Developing
Towering Cumulus Stage

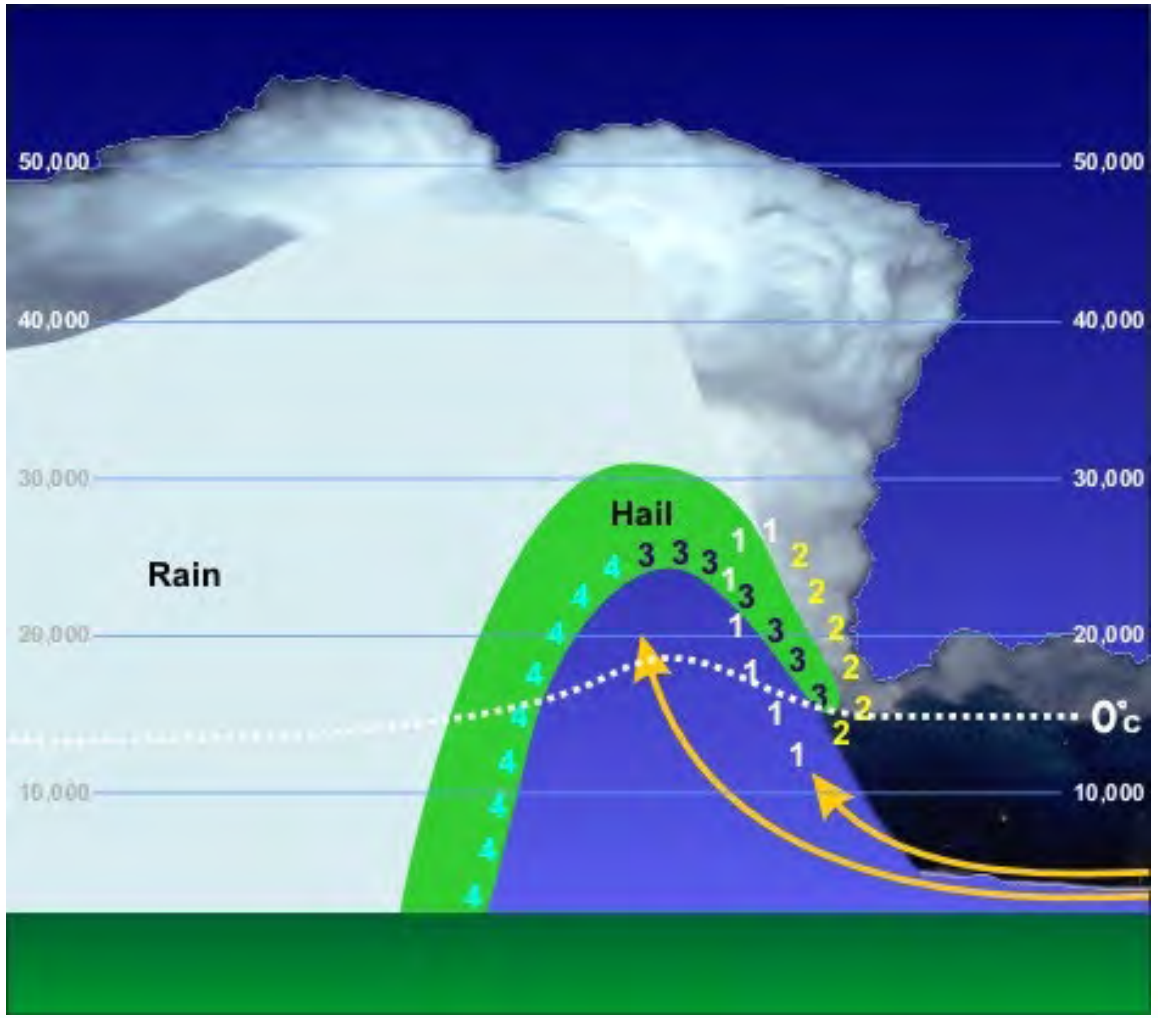


Mature
Cumulonimbus Stage

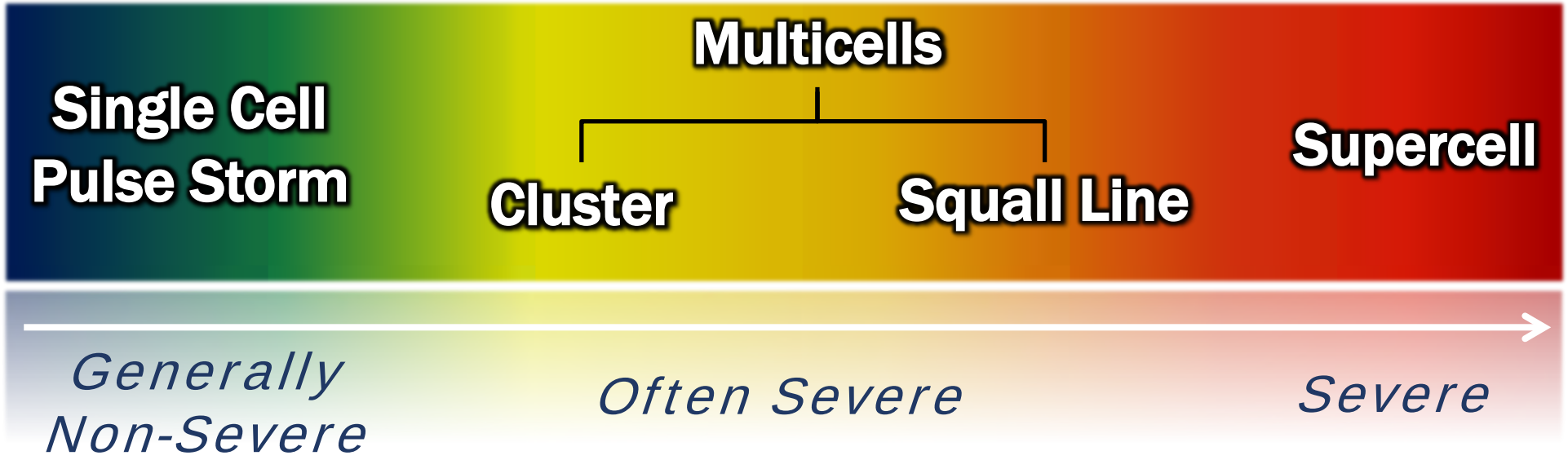
Dissipating
Downdraft/Outflow Stage

How Does Hail Form?





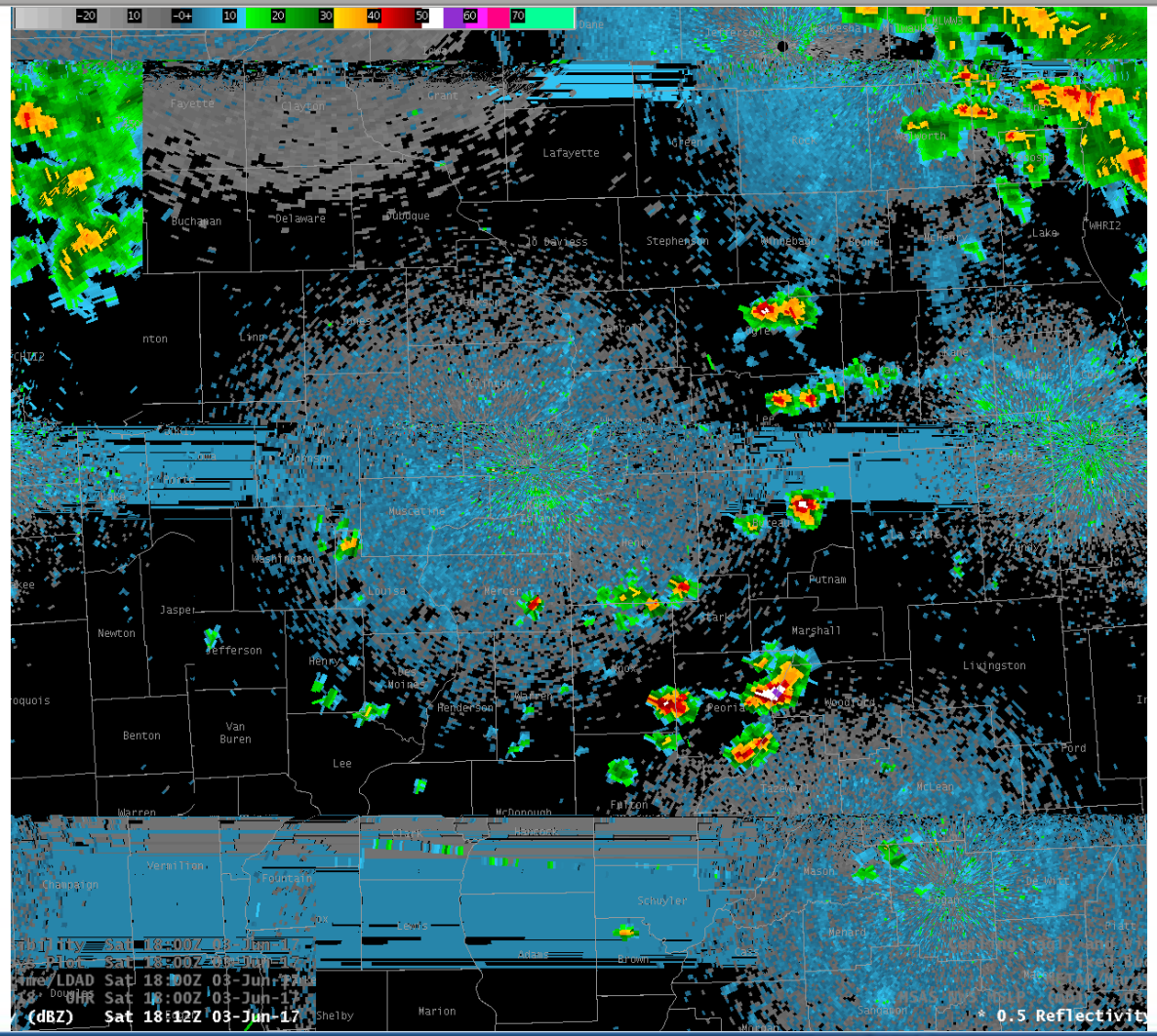
Thunderstorm Types and Severe Weather



- Storms don't always fit into these exact types
- Can change type one or more times during their existence
- Atmospheric conditions will determine type of storm

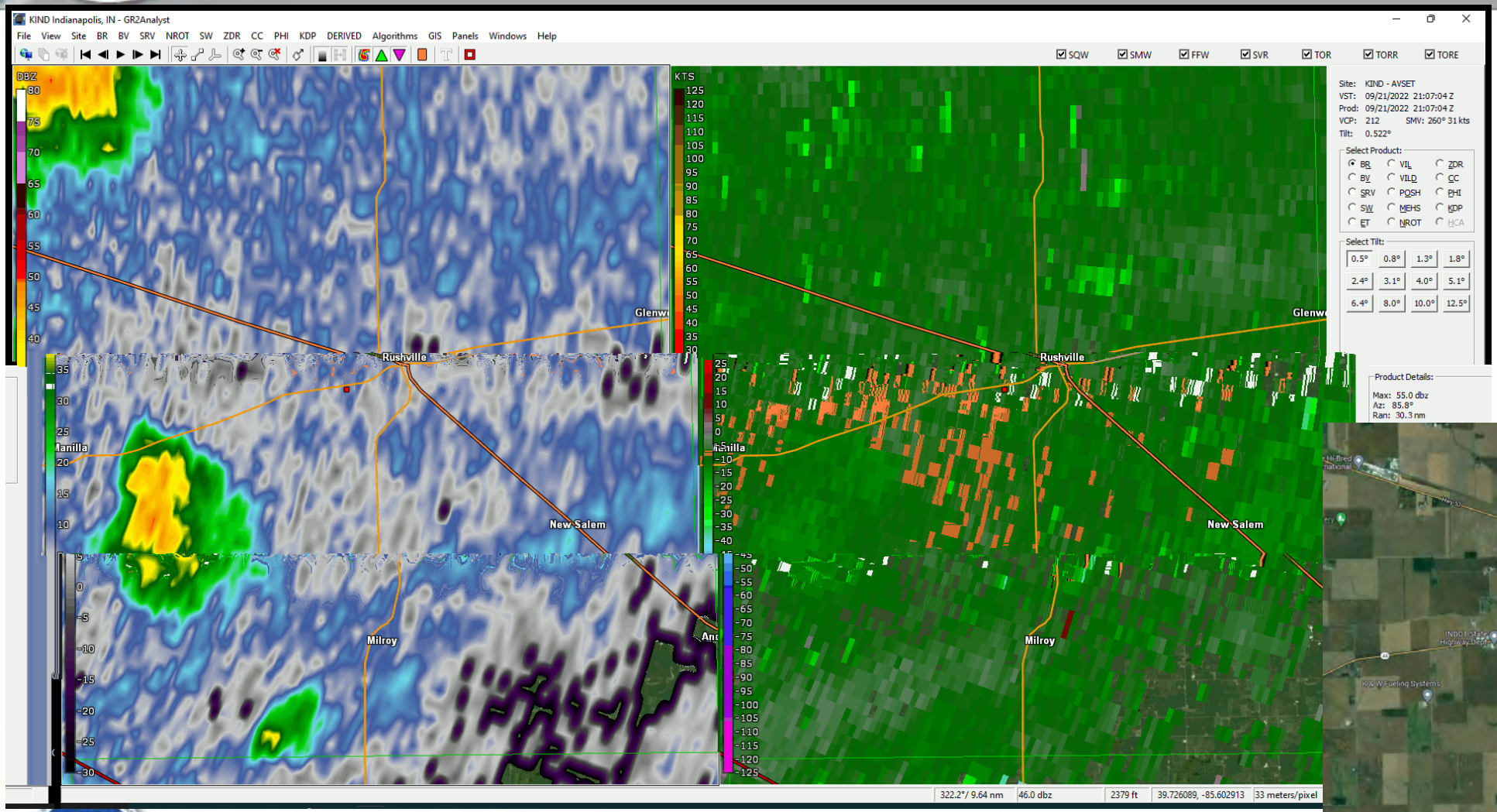
Single Cell or “Pulse” Storms

- Can have many storms at once
- “Outflow” boundaries possible
- Brief “downbursts” or
  “Microbursts” possible
- In a few cases, intersecting boundaries and new storms could lead to brief and weak tornadoes

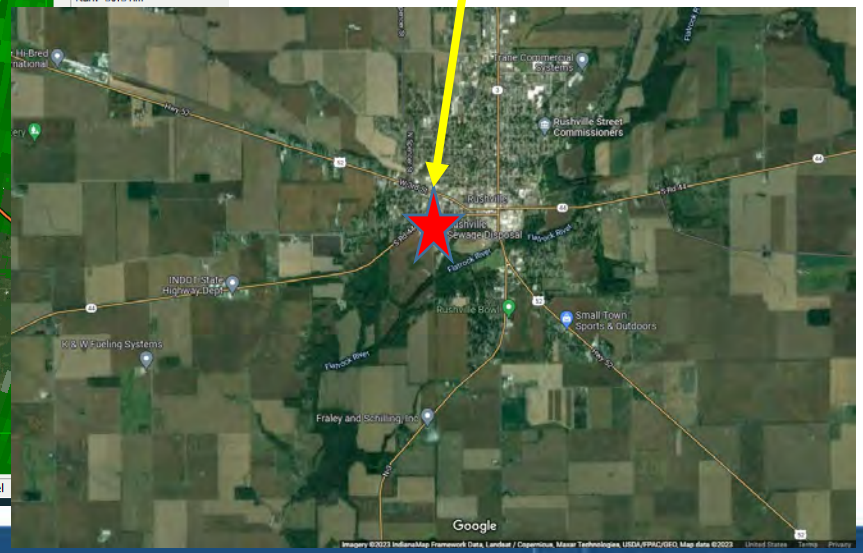


Pulse Storm with Microburst

Thunderstorm with a Fast Developing Microburst Over Rushville, IN

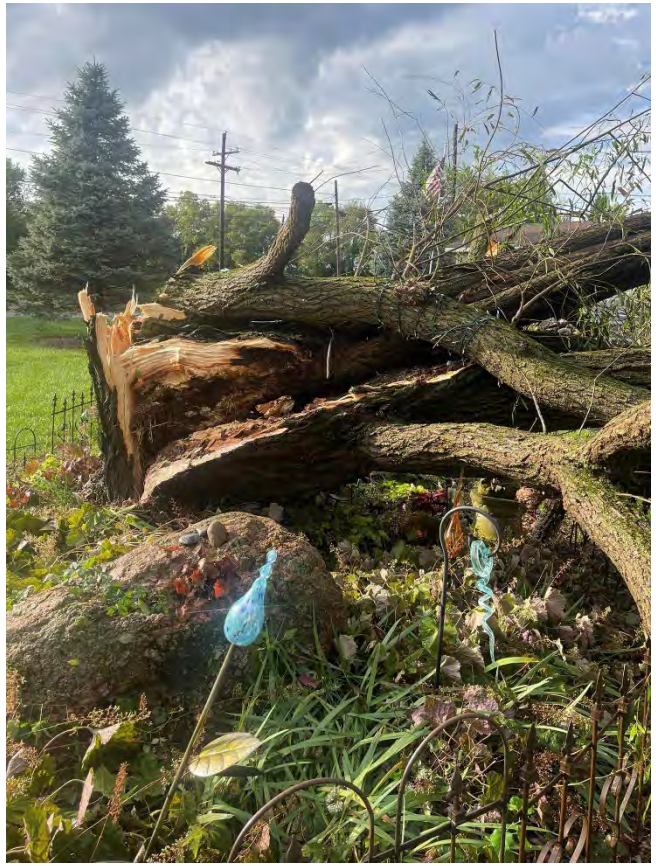


Location of Damage at Rushville Wastewater Plant

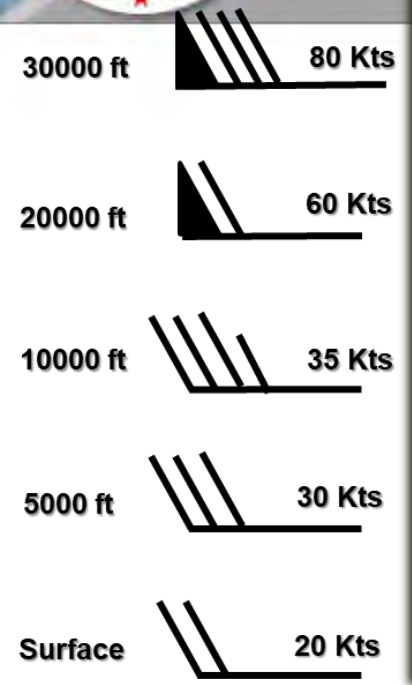


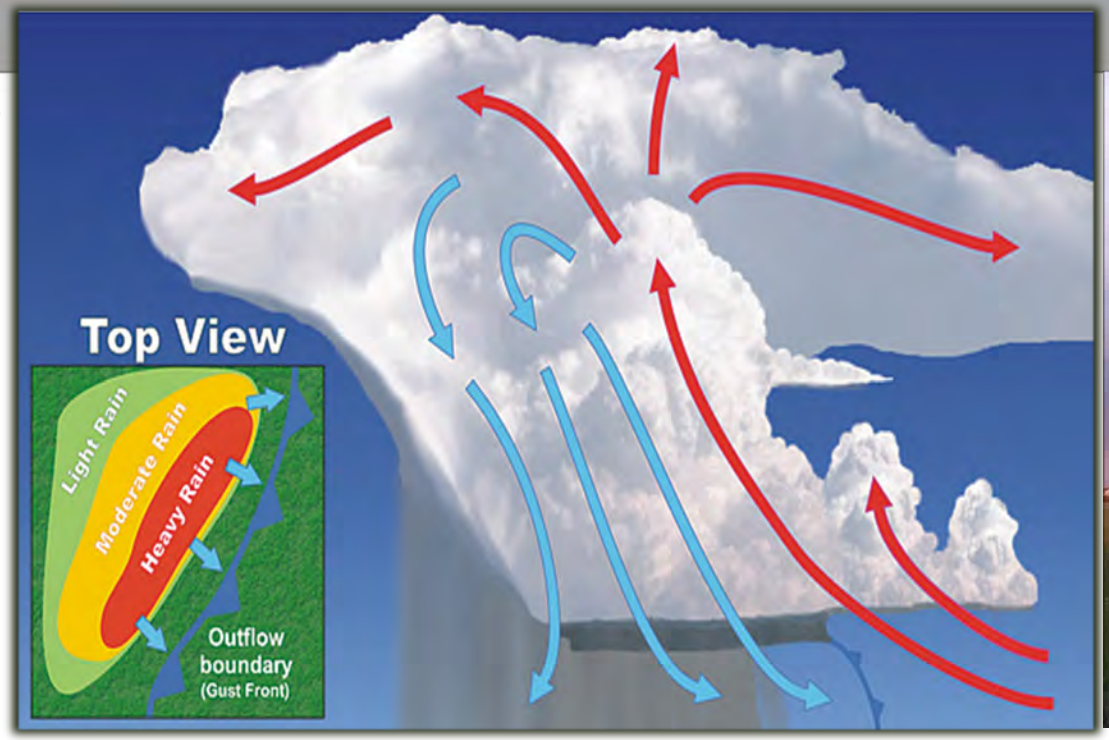
Pulse Storm with Microburst

Microburst Damage Usually Isolated and Mainly Trees, Utility Poles, Minor Structural Damage

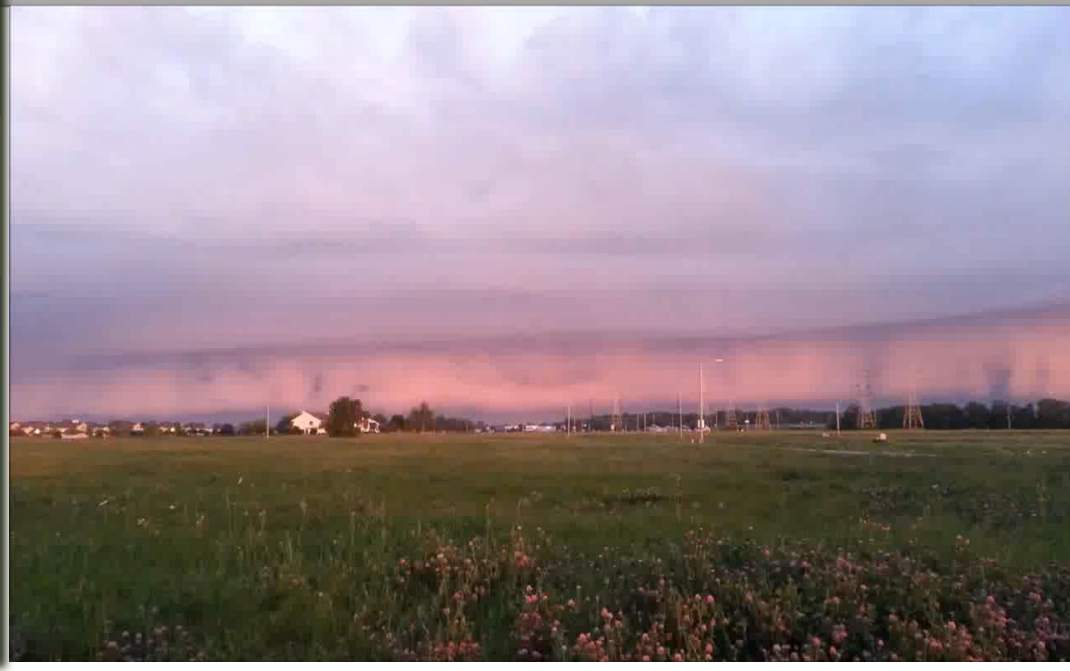


Multi-cell Thunderstorms/Squall Lines





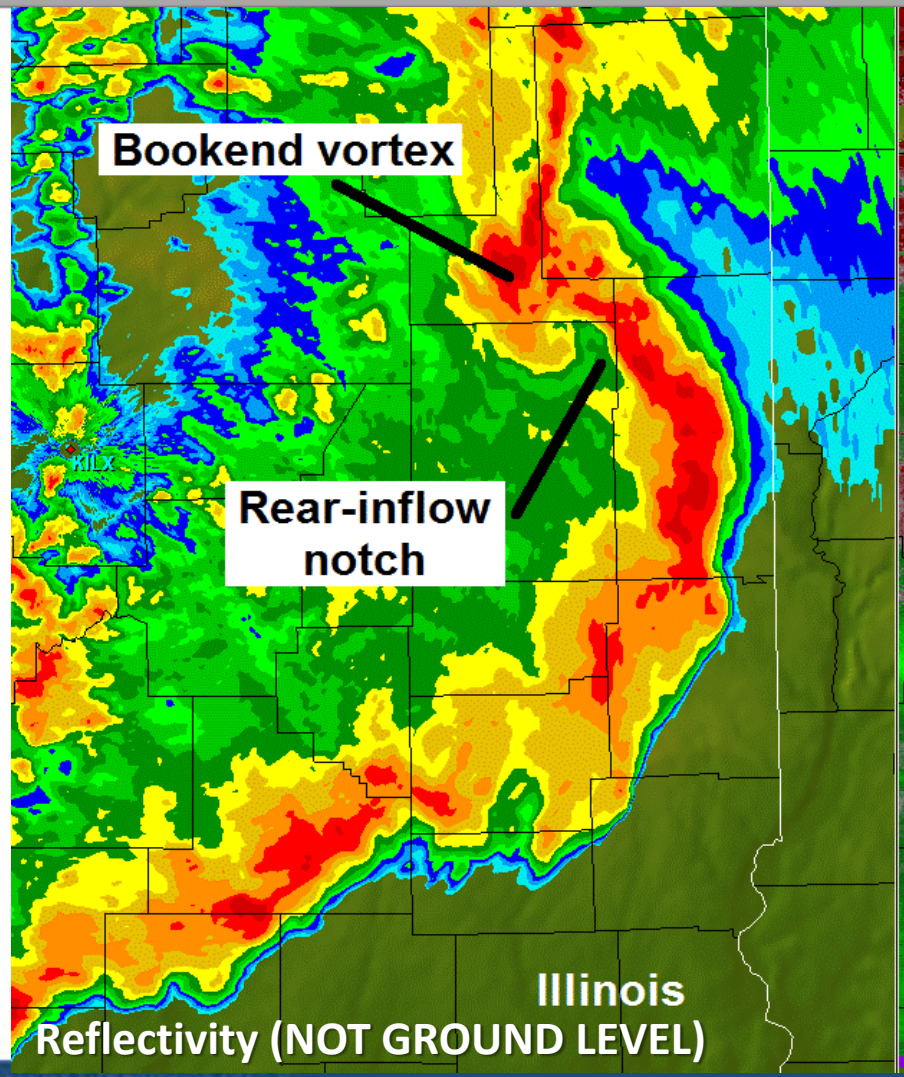
What You May See Coming at You

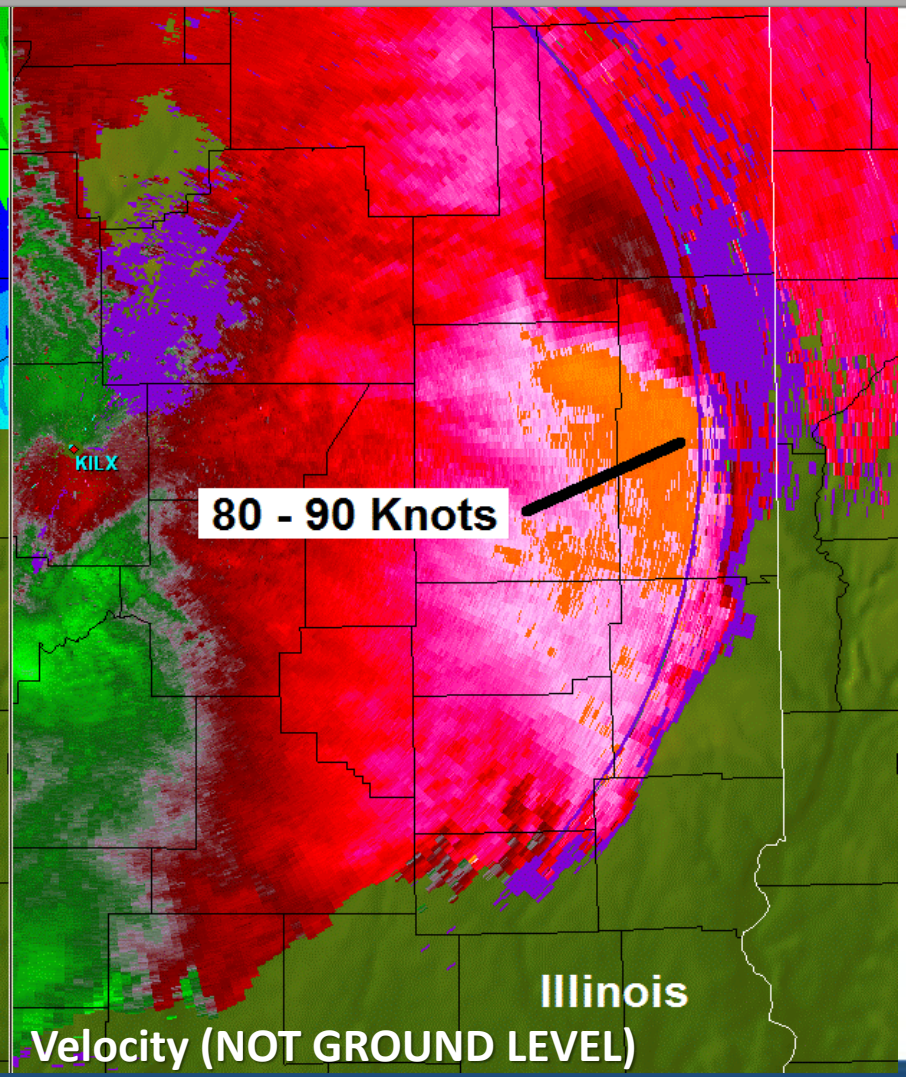


Overall Severe Weather Threat Level: **Moderate-High**

Multi-cell – Squall Line or Bow Echo

What You Might See on Radar – Fast Moving

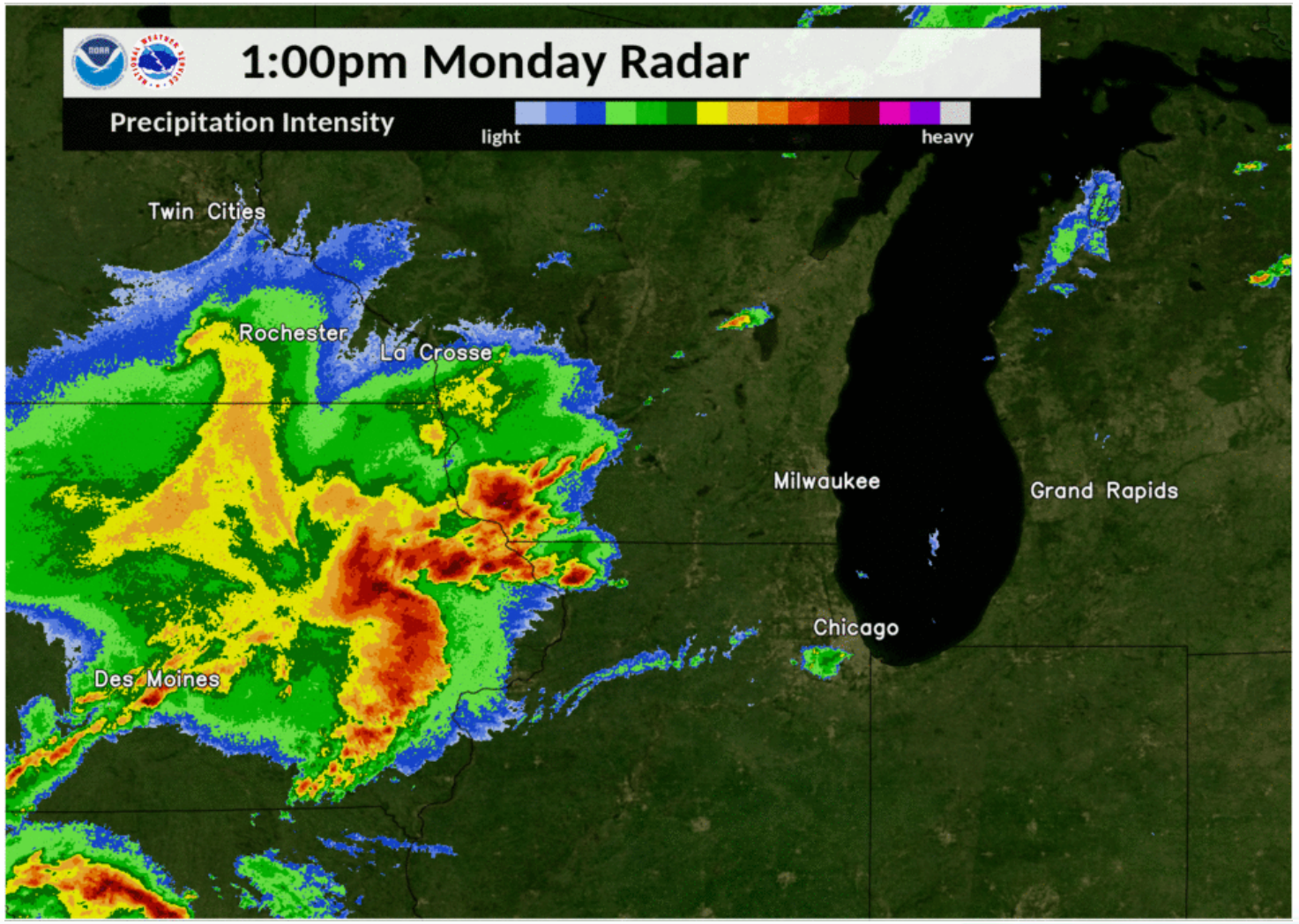




Multi-cell Line - Derecho

August 10th, 2020 Radar Loop

- Wind Damage covered more than 90,000 sq miles
- $11.5 Billion in damages
- 4 fatalities, hundreds of injuries
- Peak wind gusts 140 mph in Cedar Rapids, IA
- Severe winds lasted more than 30 minutes in some locations
- 26 tornadoes



Multi-cell Line - Derecho

August 10th, 2020 Derecho Wind Damage – As Destructive as a Tornado


Photo Credits: Dallas County EMA


Photo Credits: Darrell Werning

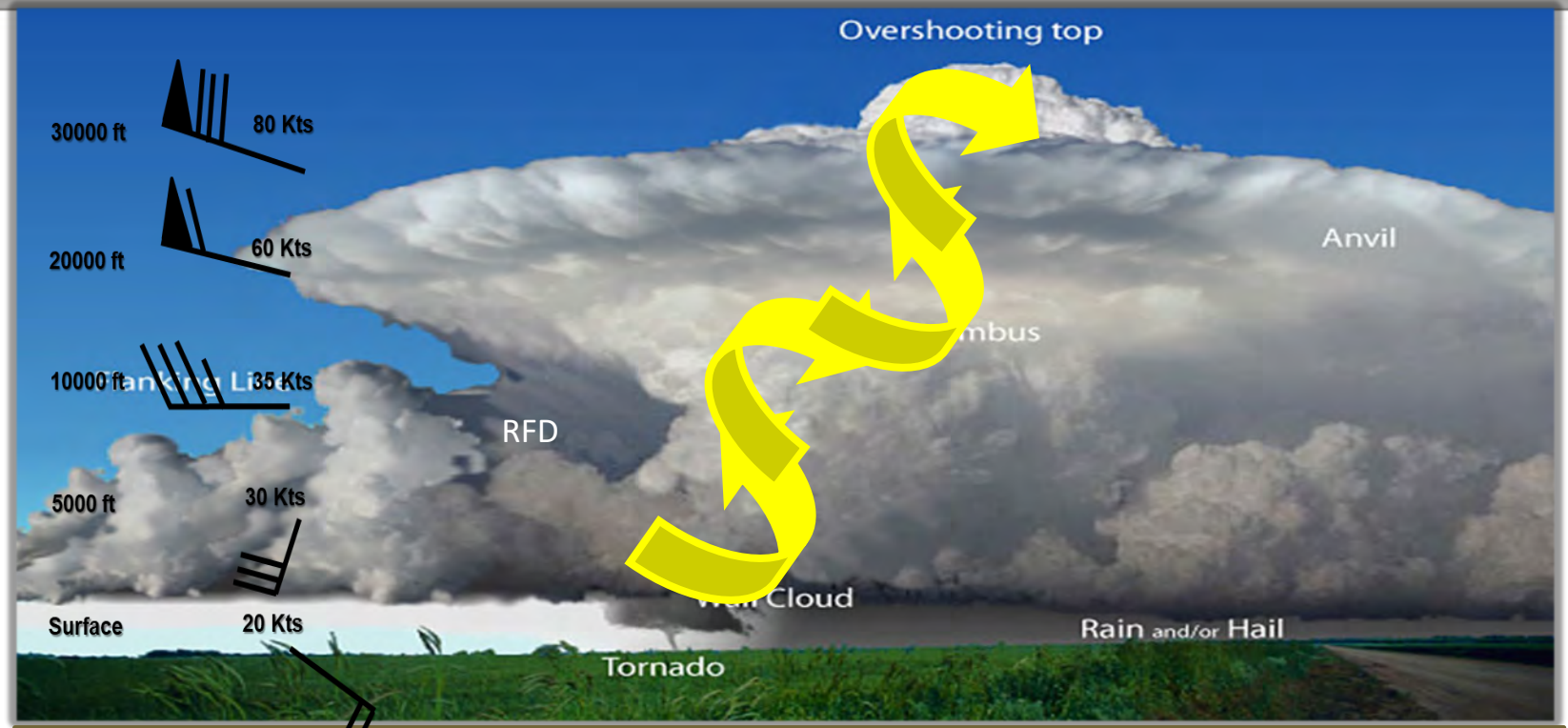

Wind damaged grain bin in Tama County. Courtesy of Kip Ladage


Photo Credit: Justin Gehrts

Supercell Thunderstorms

"Granddaddy" of Severe Storms – Most Deadly

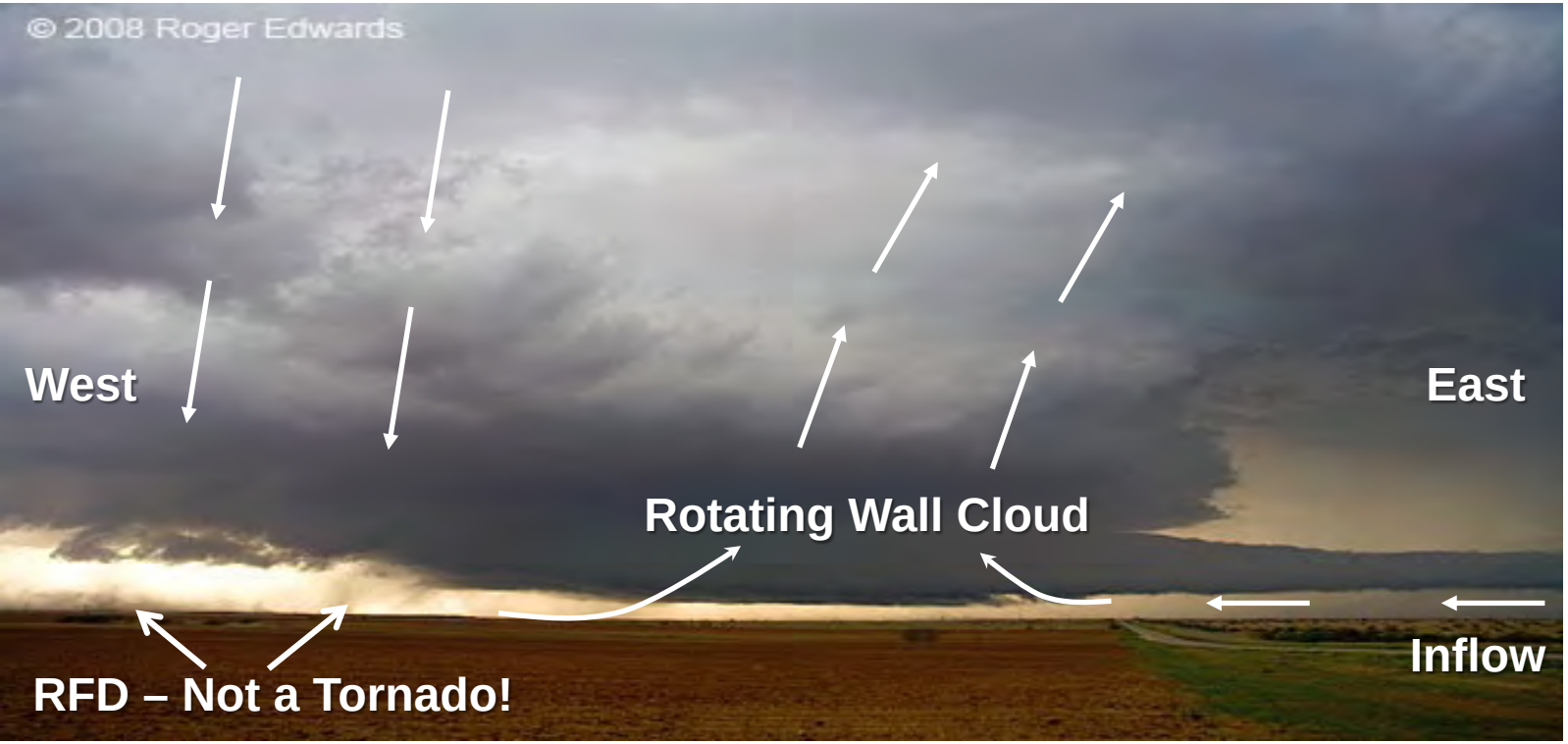
- ***Persistent*** rotating updraft
  - Vertical wind shear
    - Directional
    - Speed
- Rear-flank downdraft
- Wall Cloud
- Tornado
  - Long lived, violent possible
  - Responsible for most tornado fatalities

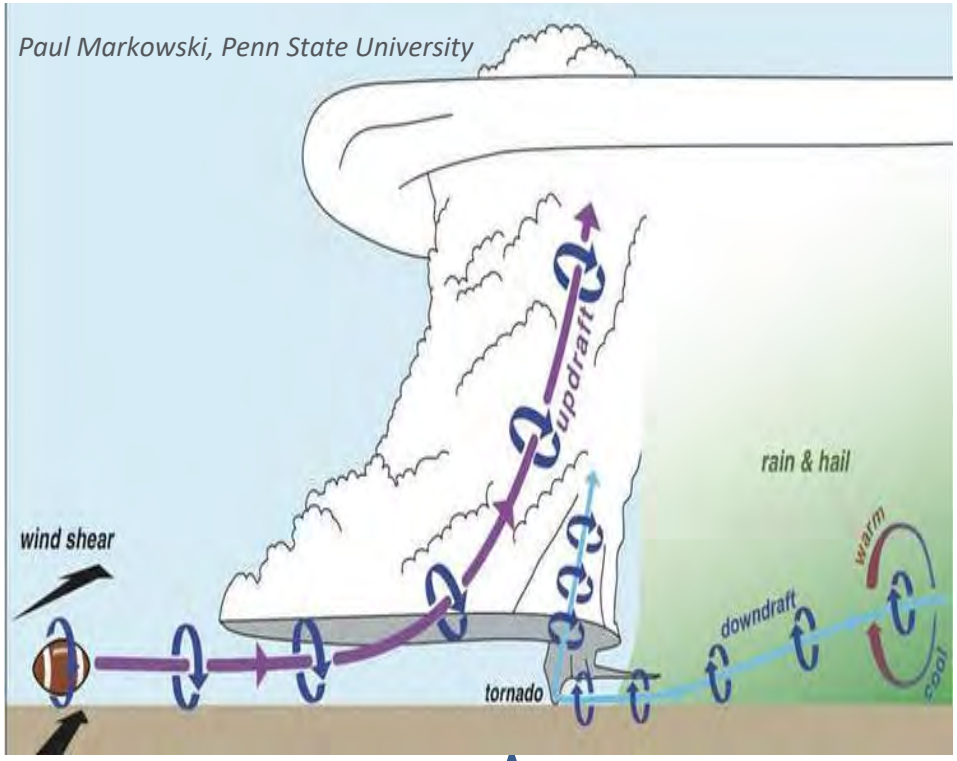


Overall Severe Weather Threat Level: **High**

Hail	Wind
Heavy Rain	Tornado

Supercell Features – Wall Clouds, Inflow and RFD





Looking north toward an east moving Supercell

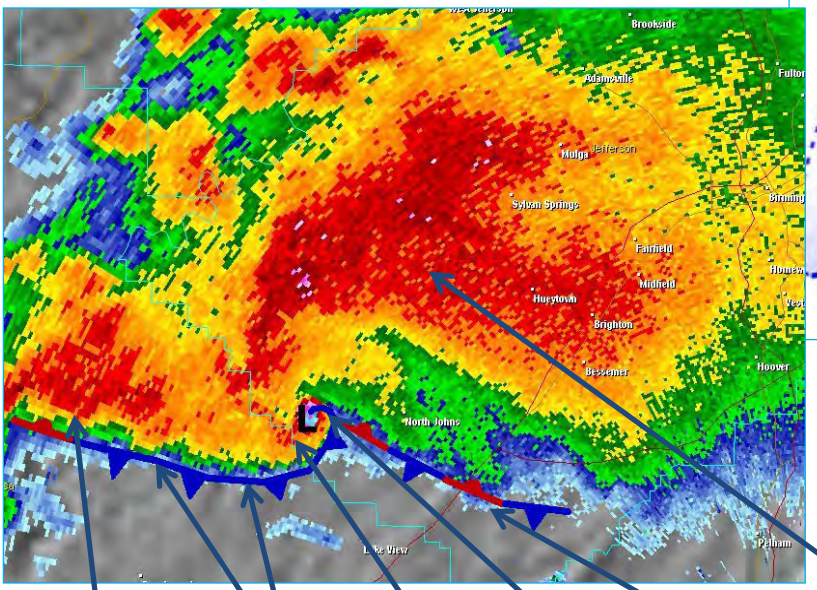
Spotter Position

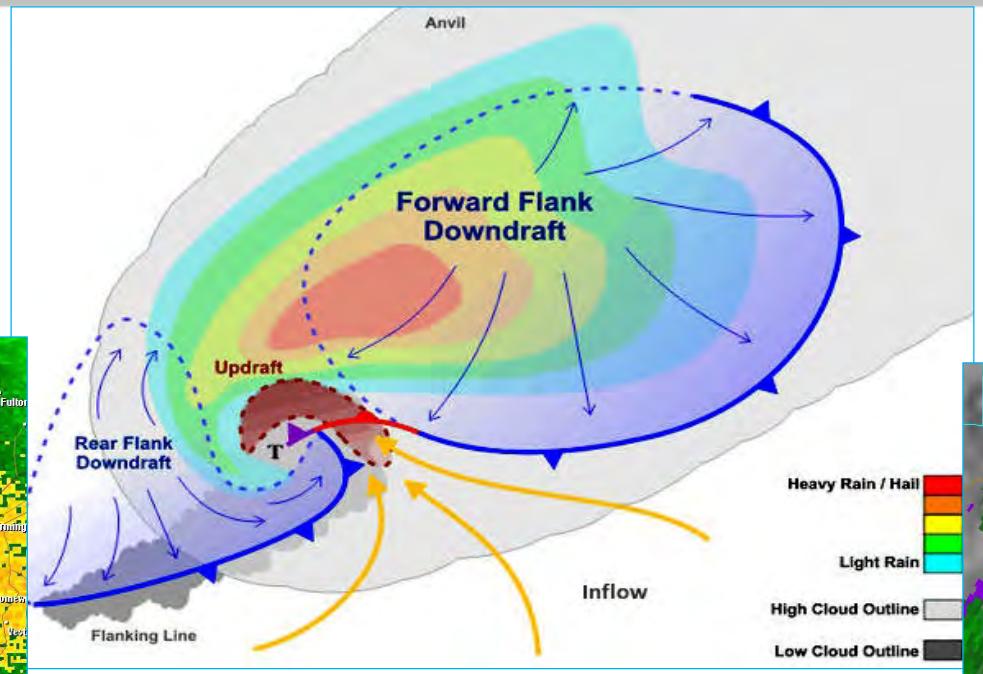
Supercell Funnel Clouds

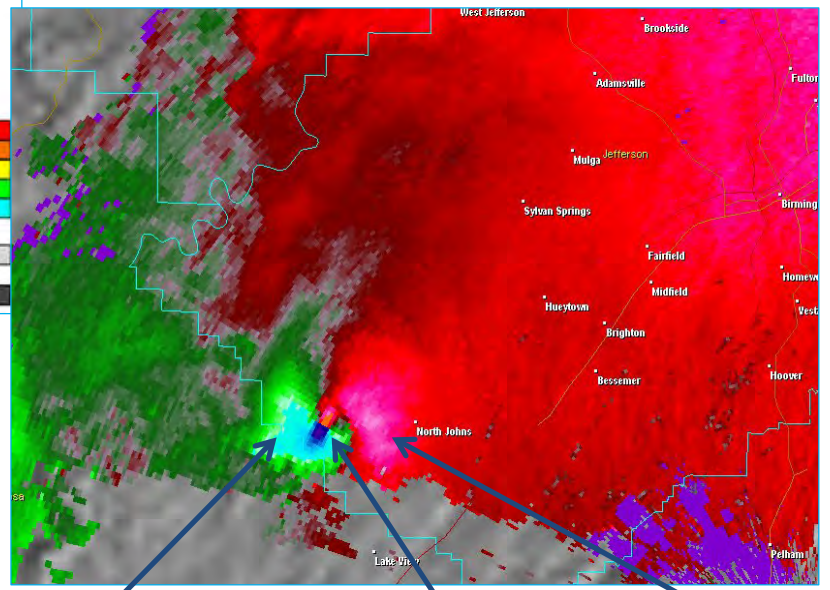
- Often precedes tornadoes
- Develops below rotating wall cloud
- Funnel or cone shaped, often smooth
- No rotation visible on the ground (not a tornado)
- Once rotation on ground is observed, it is a tornado

Let us know <u>immediately</u> any time you see a Wall Cloud and/or Funnel Cloud

Supercell Structure and Radar







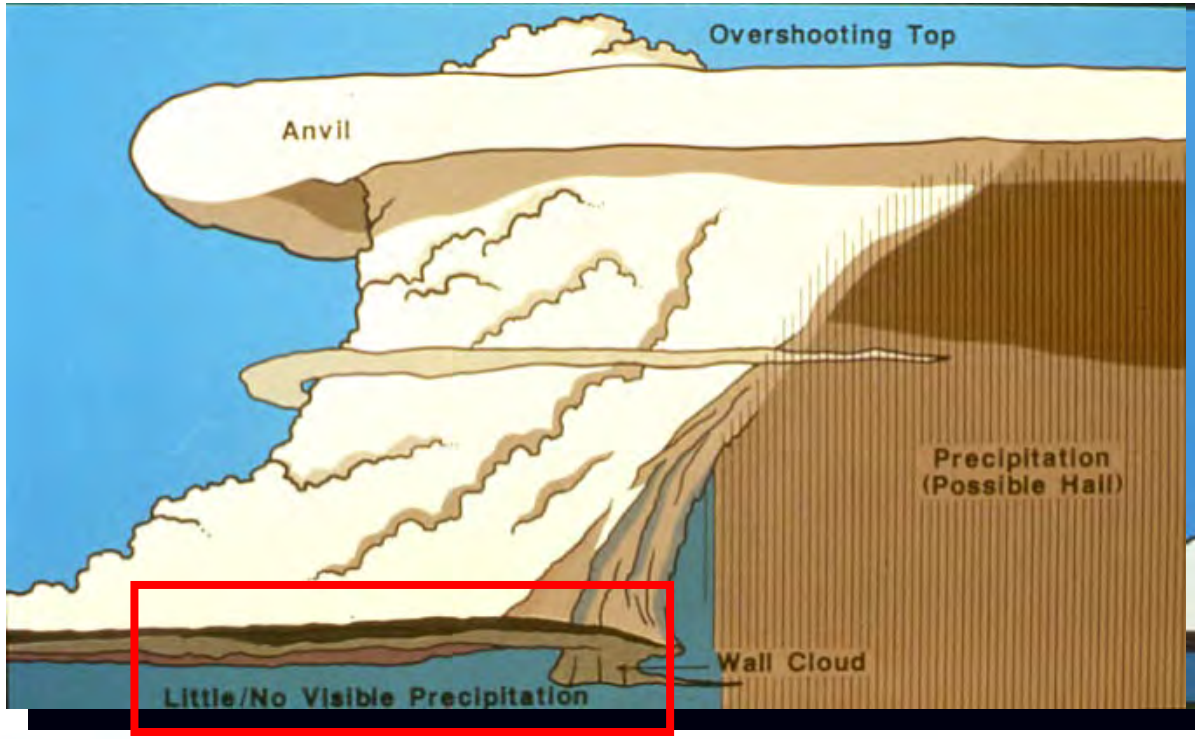
Flanking line | Leading edge RFD | Hook echo | Tornado TDS | Leading edge FFD | Hail Heavy Rain

RFD wrapping around mesocyclone on back side of storm | Low-level mesocyclone/ tornado location | SR inflow into updraft

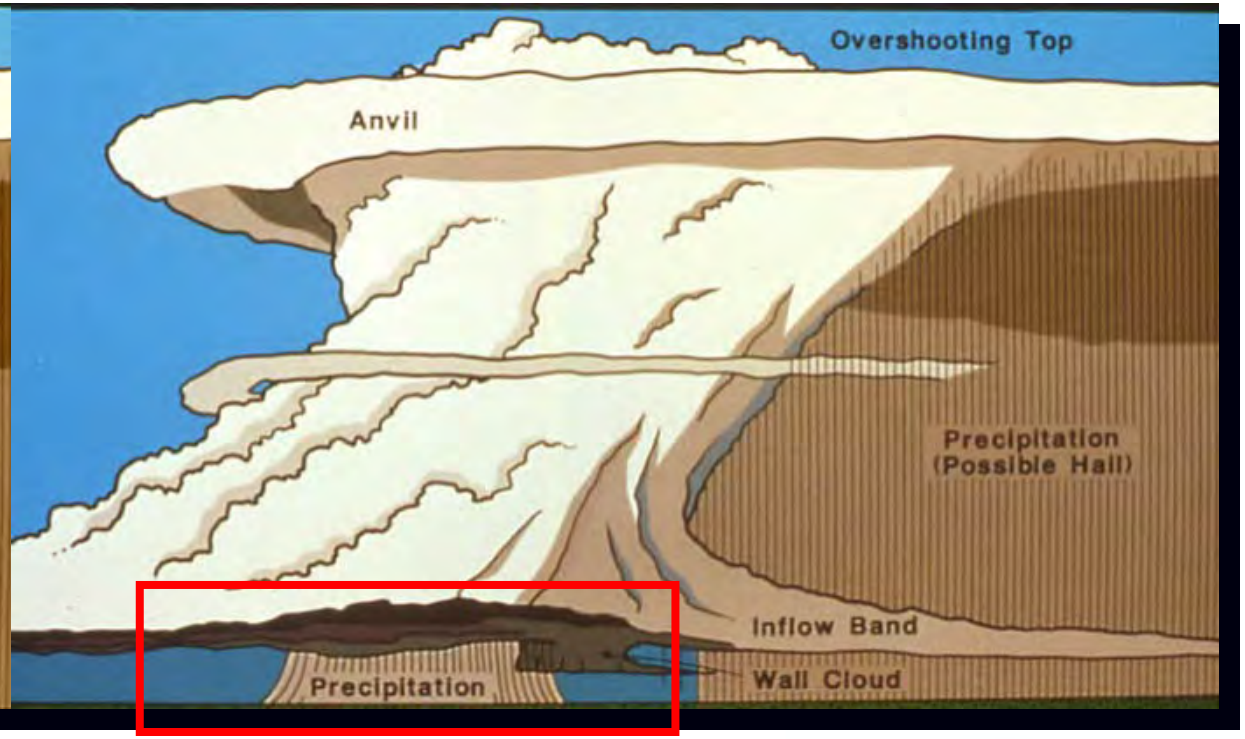
Classic vs “HP” Supercell

Tornadoes with HP Supercells will be rain wrapped

Classic Supercell

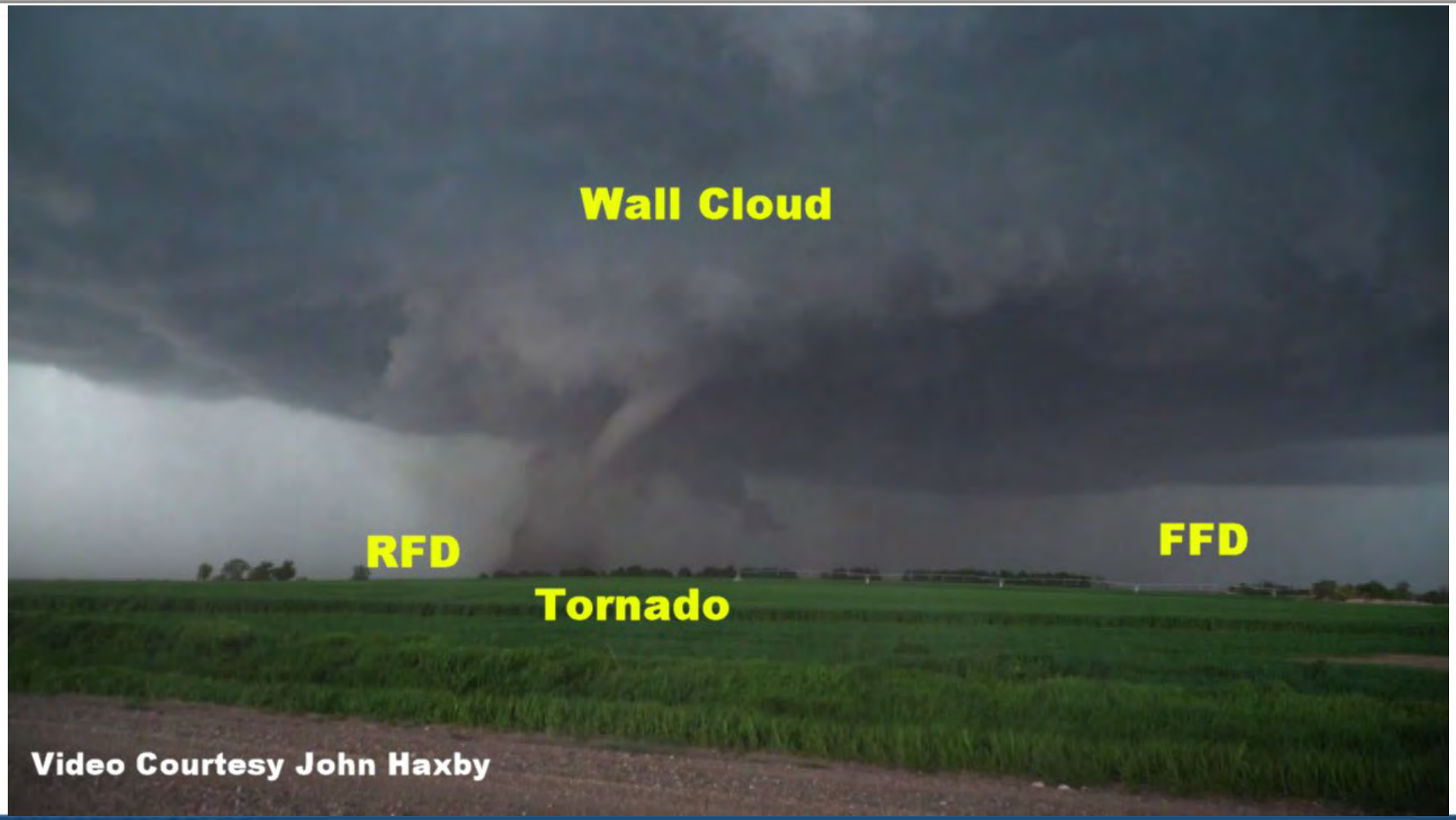


High Precipitation Supercell



Classic Supercell

Tornadoes with Classic Supercells are Usually Visible



HP Supercell in Oklahoma

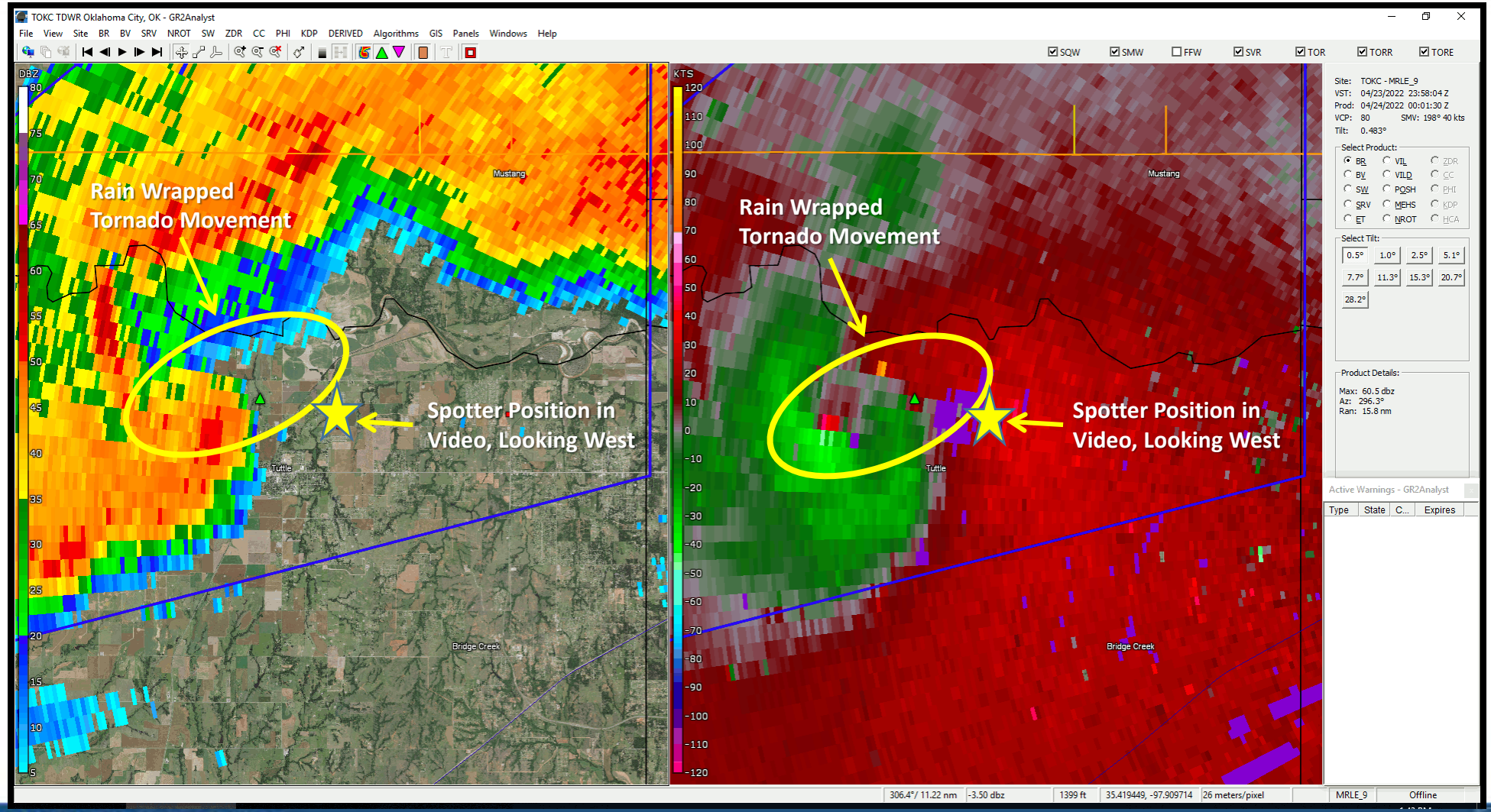
Tornadoes with HP Supercells will be rain wrapped and Not Easily Recognizable

HP Supercell in Oklahoma

Tornadoes with HP Supercells will be rain wrapped and Not Easily Recognizable

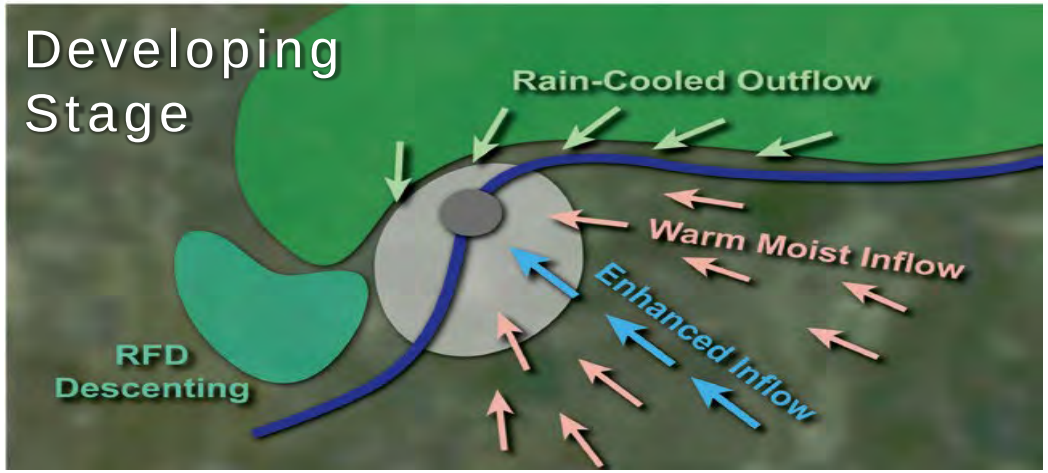
HP Supercell in Oklahoma

Tornadoes with HP Supercells will be rain wrapped



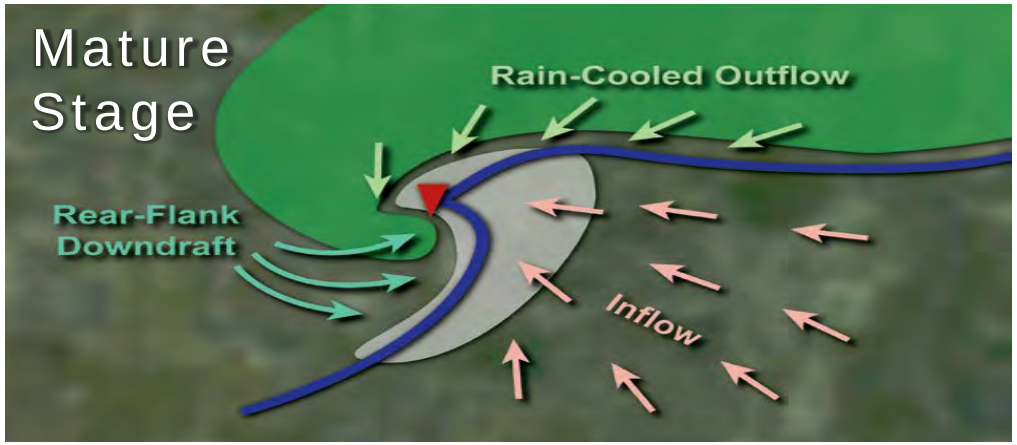
Visual Clues of Supercell Tornado Formation

Developing Stage – Don't be fooled by a rain shaft



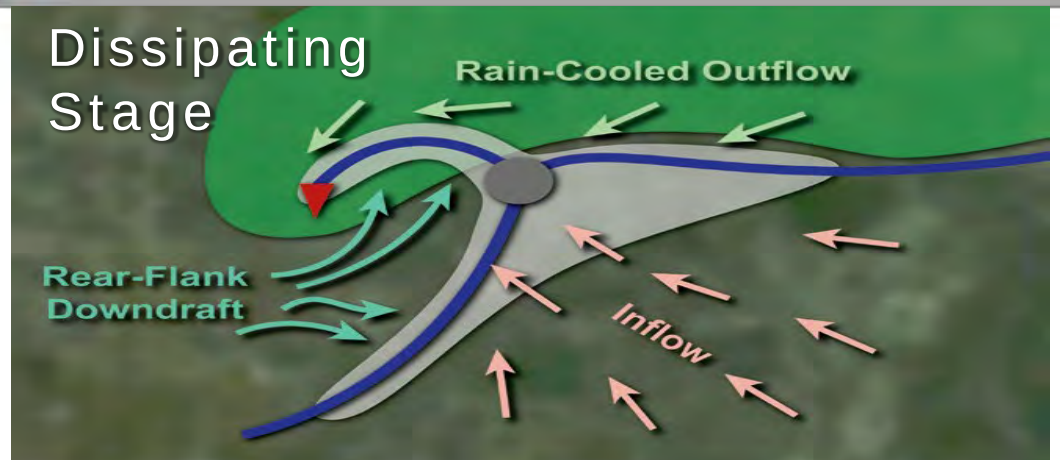
Visual Clues of Supercell Tornado Formation

Mature Stage of Henryville, IN Tornado – March 2nd, 2012



Visual Clues of Supercell Tornado Formation

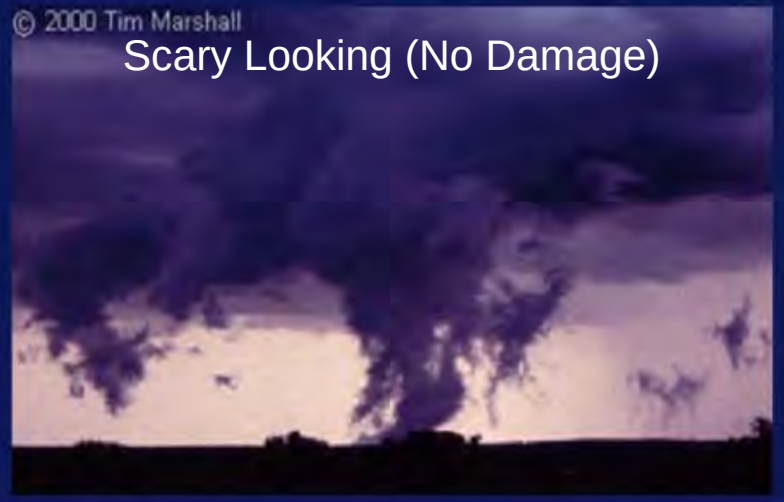
Dissipating Stage, possible cyclic stage with new tornado



Photos by Chuck Doswell and Roger Edwards

Tornado Look-a-Likes

Scud

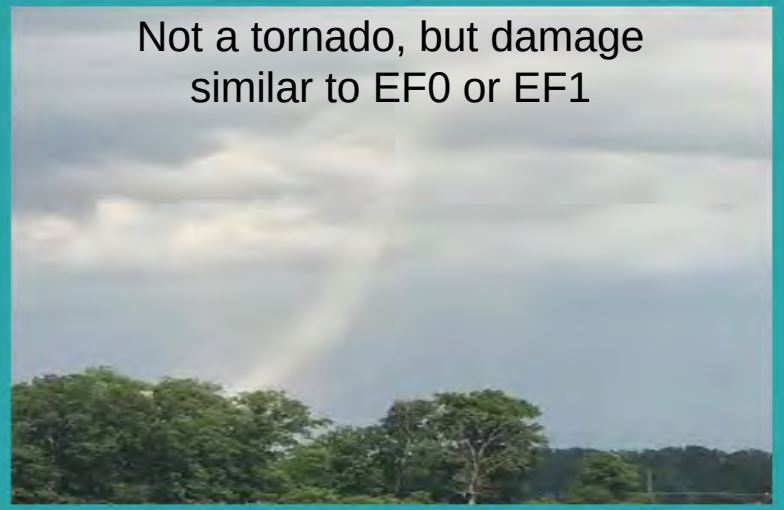


Scary Looking (No Damage)

Action: no action required. Be prepared to shelter indoors from rain and lightning

- Cloud fragments near the base of a thunderstorm that appear wind-torn and ragged
- May be moving slowly, but not rotating
- Often associated with gust fronts in general thunderstorms
- Are not necessarily associated with severe weather

Gustnado


Not a tornado, but damage similar to EF0 or EF1

Action: seek shelter if nearby, report to NWS, monitor weather closely

- Originates within the outflow boundary of a thunderstorm
- Spins up from the ground, rather than connecting to the thunderstorm's mesocyclone or updraft
- Typically brief, weak, and shallow

Dust Devil


Not a tornado, but damage similar to EF0 or EF1

Action: seek shelter to be safe, report to NWS, monitor closely

- Dust, dirt or sand raised from the ground in the form of a whirling column of air
- Rotation is typically a result of strong surface heating and temperature gradients on sunny days
- Typically brief and weak but heights can extend several hundred feet

@NWSIndianapolis

Tornado Look-a-Likes

Many Cloud Features Have Fooled Trained Spotters. *Look For Rotation!*

Tornado Look-a-Likes

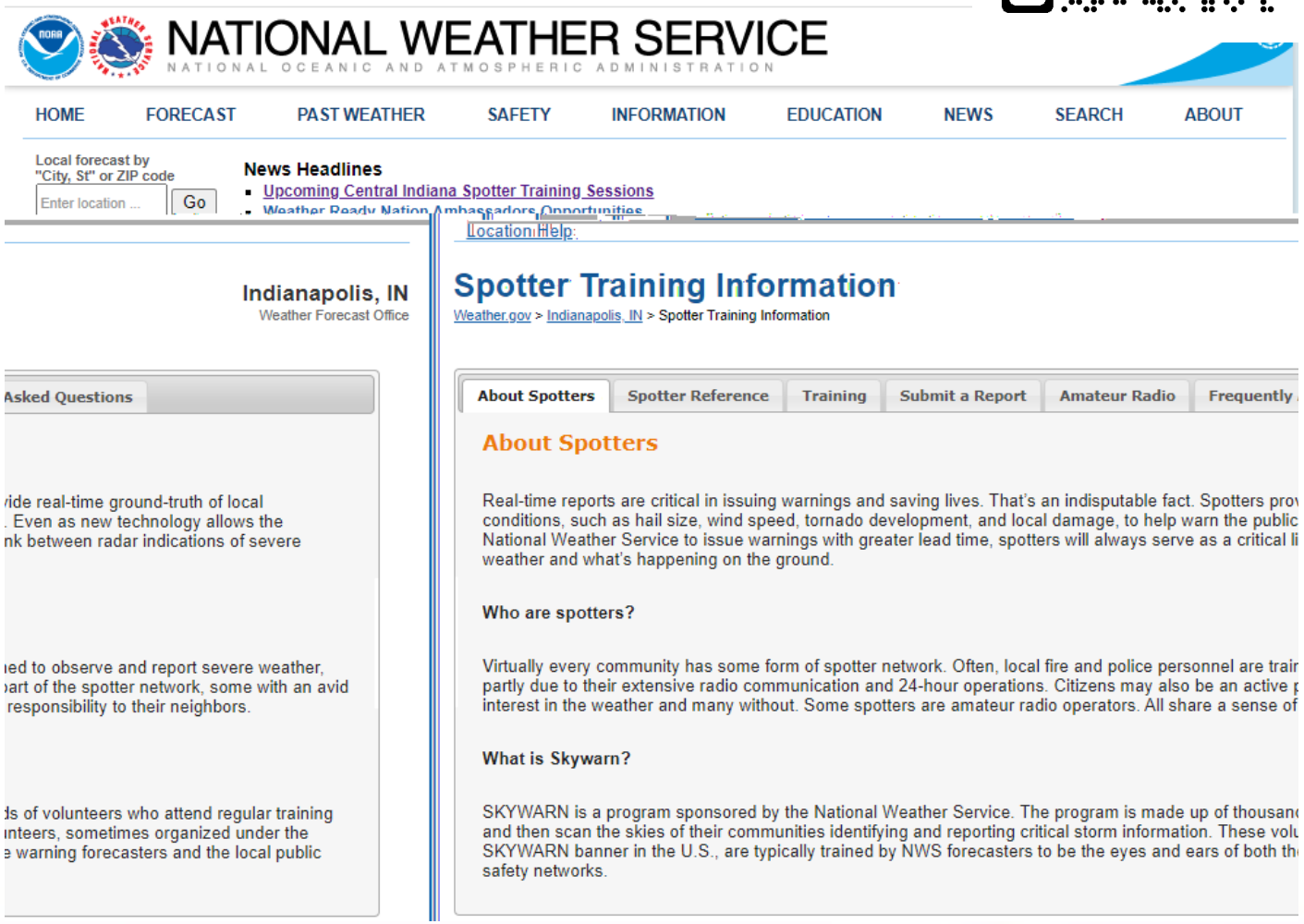
Gustnadoes are NOT Tornadoes. No Parent Cloud Connection

Spotter Resources

NWS Indianapolis Spotter Page

One Stop Shop for Spotters. Let us Know What Else You Might Need

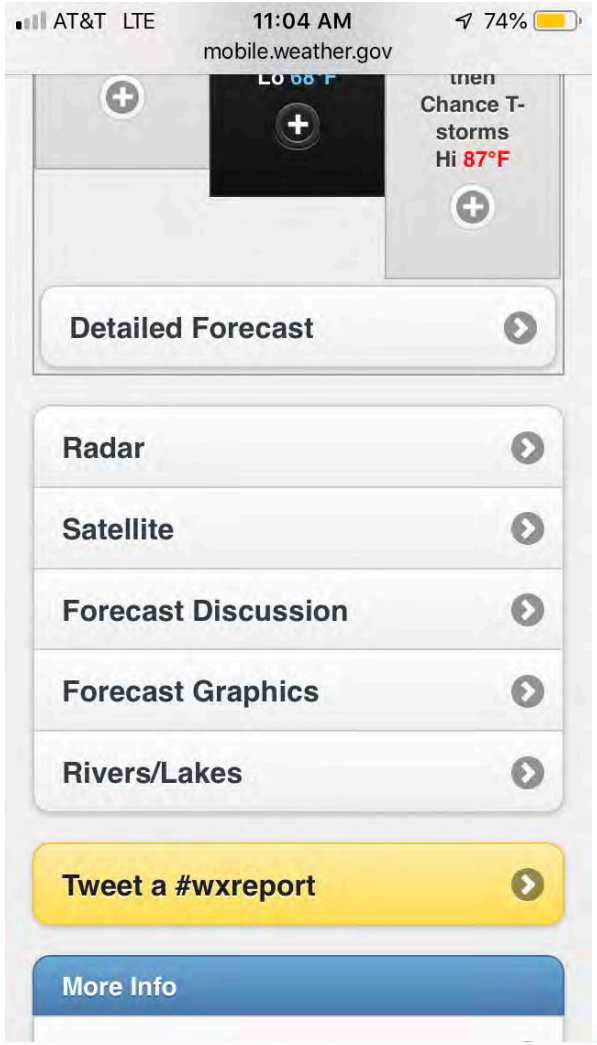
- Spotter Reference Materials
- Training
- Forecast Graphics
- Methods to Submit Reports
- Spotter Registration Form
- Amateur Radio Information
- FAQs



NWS Forecasts for Your Phone

"It acts like an App but it's not really an App"

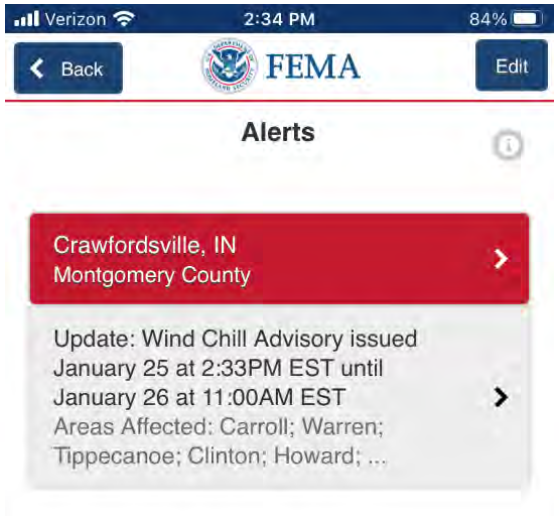
- Open Safari or Internet
- Go to mobile.weather.gov
- Enter Zip Code
- Look at forecast, Scroll down to Forecast Discussion if desired
- Save to your home screen and it will act like an App

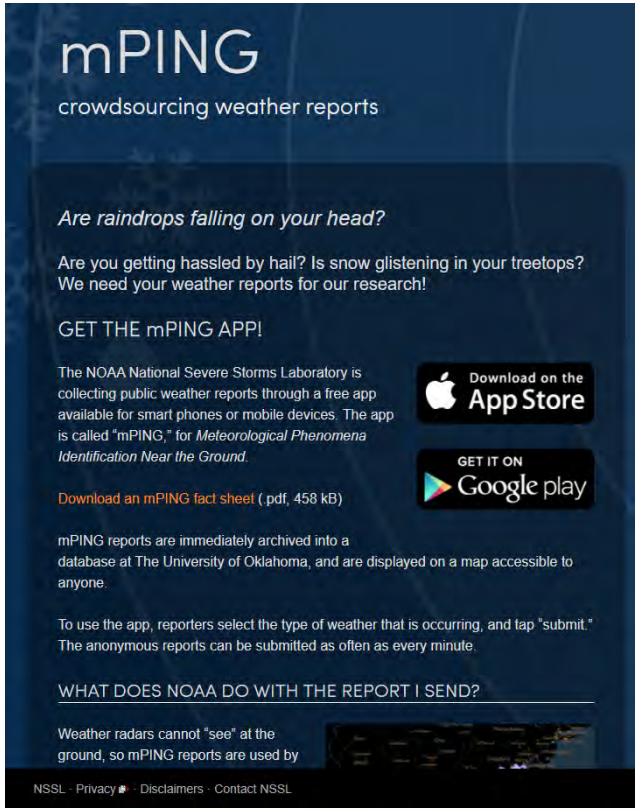


Other Possible Phone Apps

Available from your App Store – NWS Does Not Endorse any Apps

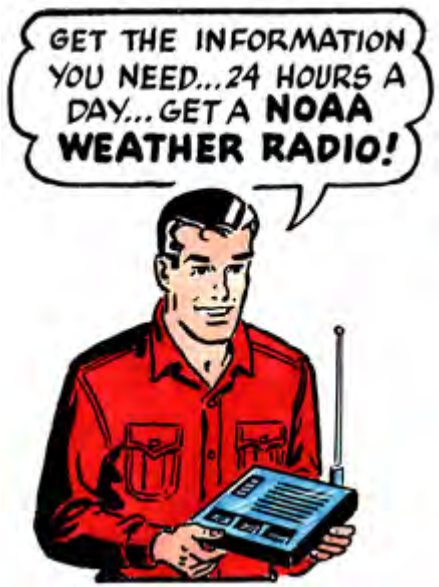
- **FEMA App for Warning Notifications**
  - https://www.fema.gov/
- **mPING for Precipitation Reports**
  - https://mping.nssl.noaa.gov/





NOAA All Hazards Weather Radio

Your Own Personal Weather Monitoring and Alert Device



All Hazards NOAA Weather Radio
NOAA's National Weather Service

Additional Easy Ways to Volunteer

- A grassroots, non-profit, community based, high density precipitation network
- Take daily precipitation measurements that are sent to the NWS and used by many
- Have a group who would be interested in participating? Contact us to set up a training session

Remember

- A PDF version of these slides with speaker notes and other resources are available on our Spotter Webpage.
  https://www.weather.gov/ind/spotter

- Central Indiana Skywarn Spotters DO NOT receive spotter ID numbers

- You are a volunteer, not “certified” or “official”. You cannot break laws or use this training as an excuse for unlawful acts

- Your safety is top priority, do not put yourself in harms way

SKYWARN
WEATHER.GOV

Important Last Item, Optional

You can do this now from your smart phone or from home on your computer

- **If you would like to be added to the NWS Indianapolis trained spotter database, remain in the database, or update your contact information, you will need to fill out our online registration form at the following link:**

- **https://forms.gle/oeCeSRdSQPPPXRj98**

- **Your information will be added to our internal spotter database and will not be shared with anyone**

- **This form is also available on the spotter webpage**

Reporting Methods and Questions

Don't forget this information

- Social Media (Facebook and Twitter)
  - @NWSIndianapolis
    - Hashtags - #INwx #NWSIND
- Spotter Reports Hotline - (800) 499-2133
- Submit Report via NWS Indy website (inws.ncep.noaa.gov/report)
- Email (nws.indianapolis@noaa.gov)
- Amateur Radio

Questions or comments on this presentation can be sent to:
Sam.Lashley@noaa.gov