

National Weather Service - Birmingham, AL weather.gov











Topics Coming Up

- About the National Weather Service (NWS)
- Storm spotter basics:
 Definitions, identification & reporting
- Severe weather readiness:
 Tools & tips for being informed & prepared

Note: This is **not** storm chaser training!



Section One



ABOUT THE NATIONAL WEATHER SERVICE (NWS)



National Weather Service



Provide weather, water & climate data



Forecasts, weather alerts, decision support services, research & community outreach



Operate 24/7/365 weather.gov

the National Weather Service

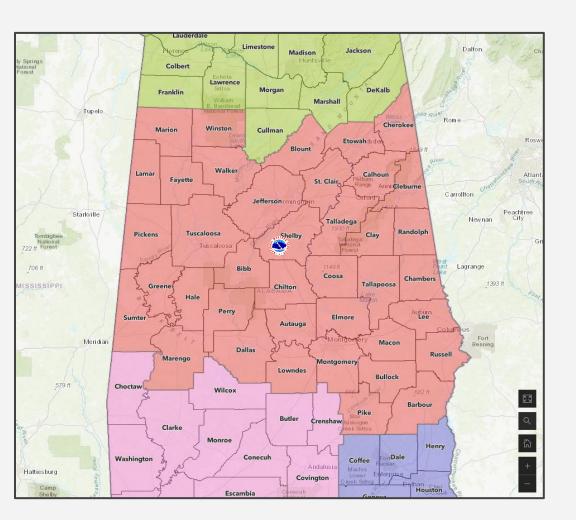






Specialized national centers: severe thunderstorms, hurricanes, space, aviation, climate, oceans

Local weather and regional river forecast offices nationwide + U.S. territories





NWS Birmingham, Alabama

39 counties served



Section Two



STORM SPOTTER BASICS: DEFINITIONS, IDENTIFICATION & REPORTING





Your Role as a Storm Spotter



Provide accurate, ground-truth reports



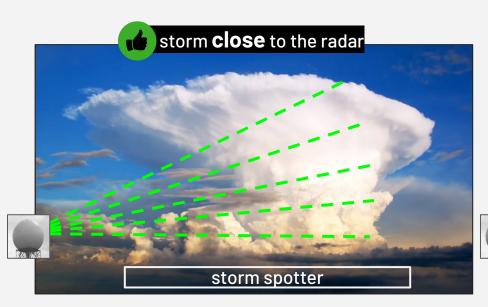
Supplement data from various weather instruments & tools available to the NWS



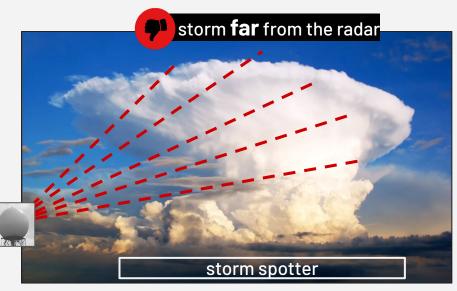
Provide actionable info. for NWS **warning decisions** and people downstream

Your Role as a Storm Spotter Radar Doesn't See Everything!





NWS meteorologists can better analyze the storm, but what exactly is happening at and near the ground?



More investigative work required by NWS meteorologists. The question about what is happening at and near the ground grows!

Severe Thunderstorm Criteria 🗘



any combination of:



tornado



hail 1" or larger



winds of 58+ mph

What to Report









LOWERINGS rotating wall cloud funnel cloud tornado



HAIL OF ANY SIZE measure or reference a common item like a coin or sports ball





DAMAGING WINDS downed healthy trees or large branches

damage to buildings, infrastructure, or other property



FLOODING areas where flooding is uncommon or notable

structures affected or roads impassable

What NOT to Report a Few Examples...





What you see on your radar app. or weather models



Lightning



A "heavy storm" or "mean-looking sky"



Routine ponding of water on roads or in ditches



Patio umbrella, trash can, twigs, etc. blown around



How to Make a Report



PHONE: 205-664-3010, then select

option 2. Tip: Save as a contact
"SKYWARN" in your smartphone



FACEBOOK & X: Direct message or tag, #alwx



SPOTTER CHAT & AMATEUR RADIO:

<u>alert-alabama.org</u>, then click on the storm spotter chat tab



BE BRIEF, CONCISE & ACCURATE:

what, when, where + photo or video if you can do so safely

Storm Spotter Chat

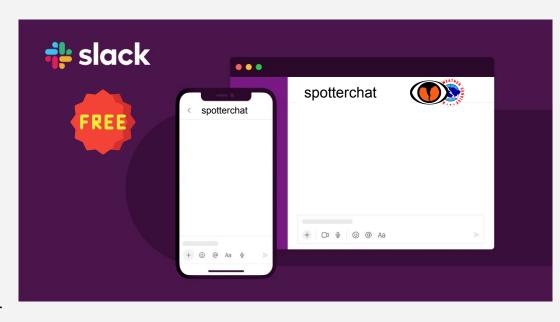




A real-time communication tool, serving as a direct line to other storm spotters & NWS
Birmingham. Share photos & video!

Download Slack app. to smartphone, tablet, desktop

Managed & moderated by ALERT alert-alabama.org



Storm Spotter **Safety**







Be aware of your surroundings:Dangers from the storm and traffic



Think ahead: Know the direction and speed of the storm, consider the potential for other nearby storms, have an escape route

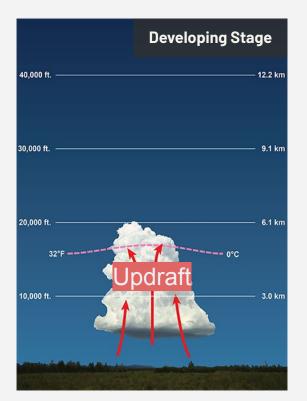


Know the challenges: Visibility, type of storm you are viewing, your location relative to the storm, road network

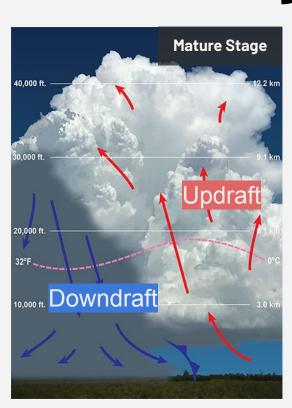
Thunderstorm Life Cycle



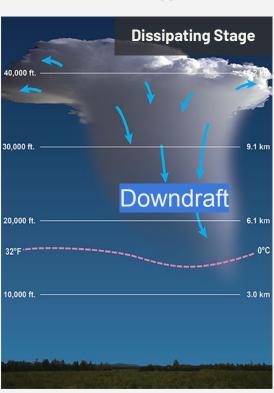




vertically growing cloud



hail, wind, tornado, flood, and lighting hazards



decaying cloud, still a risk of a couple lightning strikes 17

Severe Thunderstorm Ingredients: SLIM





Shear (wind shear)



<u>L</u>ift



Instability



Moisture



Severe Weather Outlook





Risk Levels

General Thunder

Severe* Storms are not expected

Any thunderstorms could still produce gusty winds and small hail 1

Marginal (MRGL)

Severe storms will produce hail, damaging winds and/or possibly tornadoes

Isolated Severe Storms are Possible

Slight (SLGT)

Severe storms
will produce
hail, damaging
winds, and/or
tornadoes

Isolated to Scattered Severe Storms are Expected 3

Enhanced (ENH)

Several severe storms will produce very large hail, damaging winds, and/or tornadoes

Scattered to Numerous Severe Storms are Expected 4

Moderate (MDT)

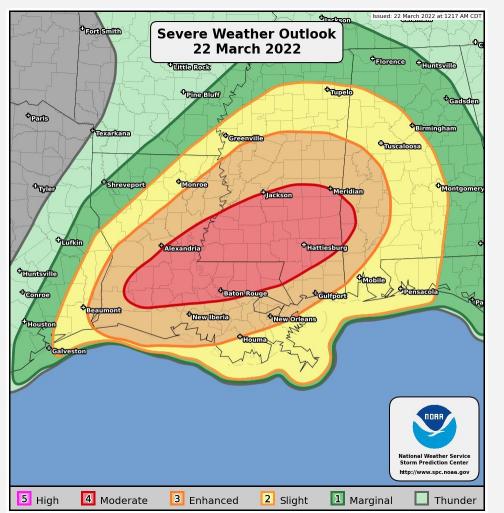
Many severe storms will produce very large hail, damaging winds, and/or tornadoes

Scattered to Numerous Severe Storms are Expected 5

High (HIGH)

Severe storm outbreak will produce tornadoes, damaging winds, and/or very large hail

Numerous Severe Storms are Expected





Severe Weather Outlook



Available:

Daily-spc.noaa.gov

When in effect- weather.gov/bmx

Weather Alerts Watch vs. Warning





Severe storms may develop in your area over the coming hours.

Stay updated!





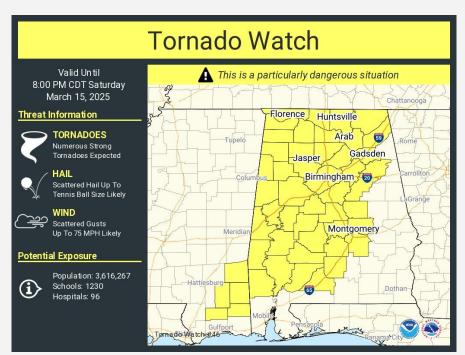
Severe storms have developed and are likely to affect your area soon.

Seek shelter!



Weather Alerts Watch vs. Warning







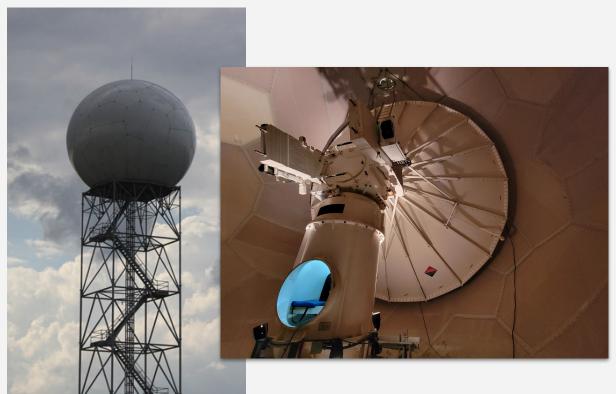
large area for 4-8 hours

small area for 30-60 minutes

Weather Radar





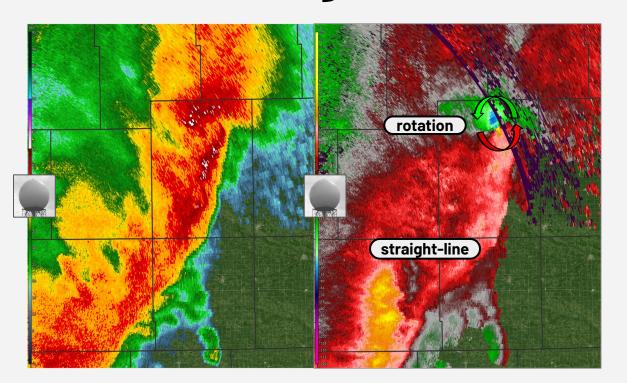


Tells us about storm:

- Location
- Strength & organization
- Movement
- Hazards/threats

Key Radar Products Reflectivity & Velocity





Reflectivity (left)

Shows location & intensity of precipitation. Bright colors indicate heavy precipitation.

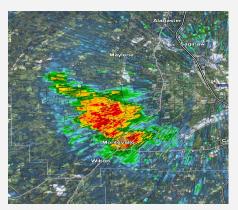
Velocity (right)

Shows wind speed & direction within areas of precipitation.
Used to assess **straight-line vs. rotational** winds. **Red** shows wind moving away from the radar, **green** shows wind moving toward the radar.

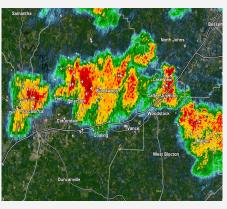
Thunderstorm Modes



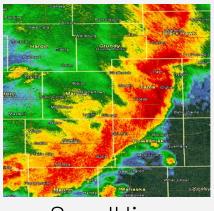




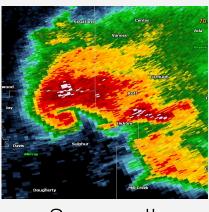
Single cell



Multicell



Squall line



Supercell

*has a <u>rotating</u>

<u>updraft</u>

Powerhouse Squall Line:





Derecho

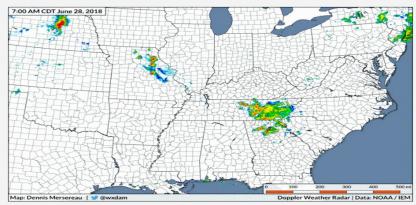
Produce long swaths of damaging to destructive straight-line winds

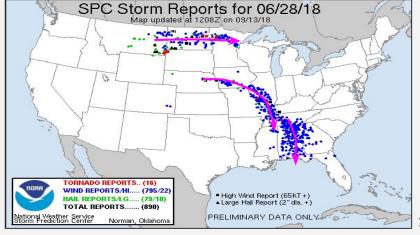
Can also produce tornadoes and large hail

Most recent derecho to affect Alabama was June 28, 2018

Criteria

- Consistent pattern of wind damage (time and area)
- Several measured wind gusts of 58+ mph
- 3 Cover a span of 250+ miles

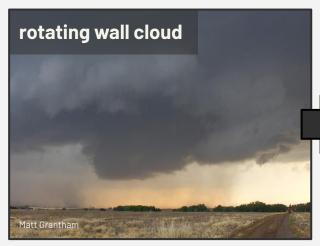




Severe Thunderstorm Key Features











- -Persistent, blocky lowering
- -Confirm rotation, if any
- -Note how it is changing
- -Visible rotation and rising motion
- -No ground contact

- -Visible rotation and rising motion
- -Confirmed ground contact

EF Scale (EF-0 to EF-5) **Example Assessment**

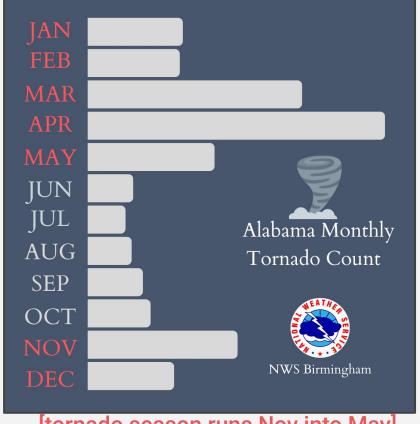


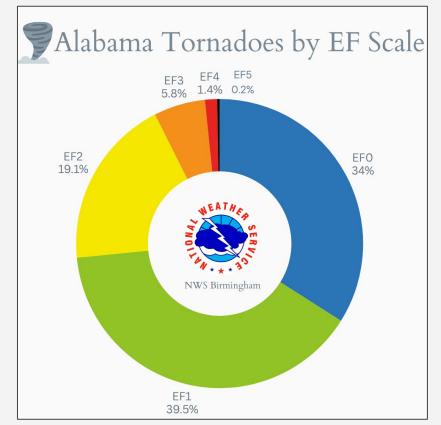


Alabama Tornado Stats









Additional

WEATHER ST.



Thunderstorm Features

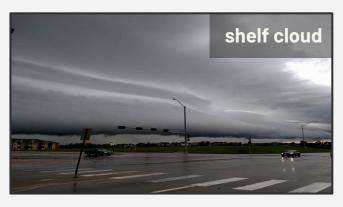


Low-hanging "scary-looking" clouds

They do not rotate; thus, not a tornado!



Concentrated area of descending wind and rain; can cause damage but is **not a tornado**



A long, low-hanging cloud

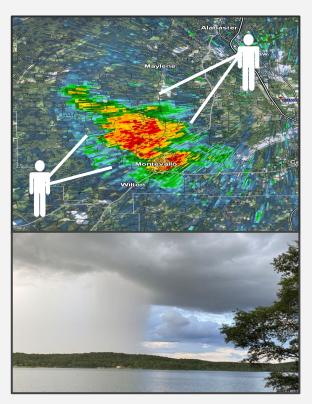
Marks the leading edge of gusty, rain-cooled air

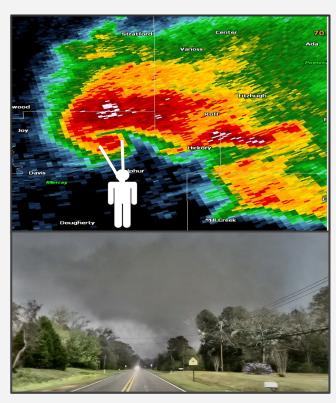
Turbulent motion, but **not a tornado**

Your Position vs. What to Expect









downburst

shelf cloud

low-visibility tornado it's Alabama, not Kansas!







Scenario: This patch of clouds is meandering above the treeline. You notice some minor rising and sinking motion, maybe even some twirling motion.



Credit: Calvin Vines







Scenario: This low-hanging cloud is quickly approaching your location. Turbulent motion is very clear to the eye. As it passes, there's a rush of gusty winds and cooler air. A couple large trees were blown down.





Scenario: You are looking northward at this storm.
After plotting your location on your radar app., you notice the lowering matches an area of weak rotation shown on your radar app.

Credit: Jennifer Sligh







SERVICE SERVIC

Spotter Poll #4

Scenario: You spot this chaotic feature not too far away. It looks a bit ragged but is quite ominous.

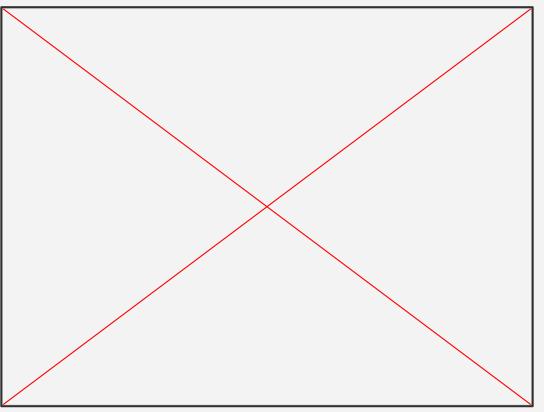


Credit: Adam Owens



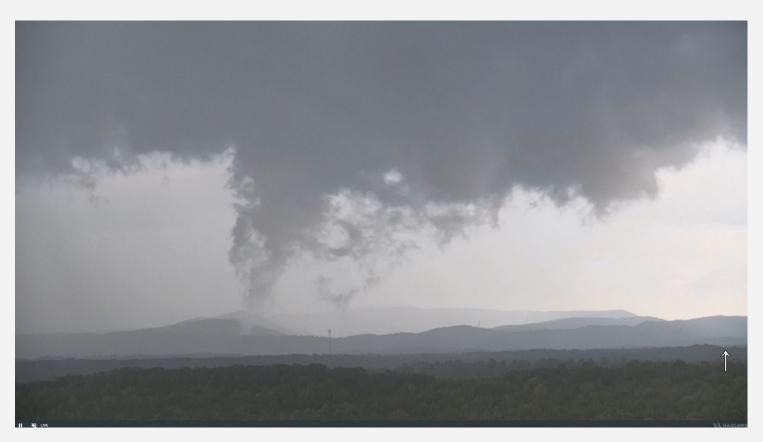


Scenario: You're monitoring this storm to your north. Your radar app. shows a potent storm. While trees somewhat obscure your view, the dark lowering looks quite interesting and persistent!











Section Three



SEVERE WEATHER READINESS: TOOLS & TIPS FOR BEING INFORMED & PREPARED

Essential Supplies





Have **multiple ways** to receive weather alerts:

- -weather radio
- -smartphone app. (media or EMA)
- -friends and family
- -broadcast/digital media



Have enough items to get you through at least 3 days on your own. Freshen up your kit each spring and fall. Don't forget your pets - ready.gov/kit





Smartphone Alerts

Free notifications! Make sure they are enabled under settings!

Will alert you to:

- tornado warnings
- severe thunderstorm warnings when baseball-sized hail or 80+ mph winds are possible
- flash flood warnings
 when significant or catastrophic
 flash flooding is possible



Put Your Knowledge to Use





You could save a life!

BE THE HERO

Share important weather information from reliable sources with friends, family, and those less informed.







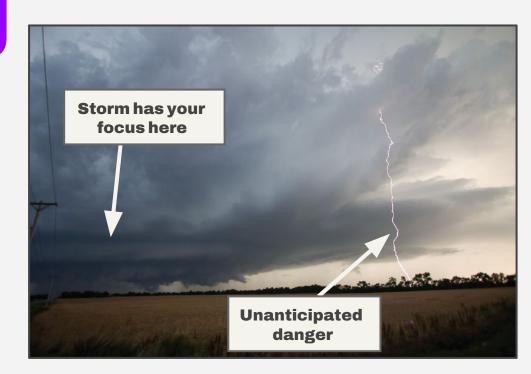
Lightning

Can be **fatal** or leave you with **lifelong injuries**

Can strike **several miles** from a storm - don't wait for rain!

Go to a building or hard-topped vehicle

Wait **30 minutes** after the last rumble of thunder before going back outside







Flooding

#1 weather-related killer

Over **half** of flood-related deaths occur in **vehicles**

You **can't see** if the ground or road are compromised

People often **underestimate** the power of flowing water

Turn around, don't drown!







Straight-line Winds

Fallen trees are a big concern!

Avoid locations of your home where large trees are **likely to fall toward** in high winds

Address large trees near your home, especially those that are weakened or shallow-rooted,

before storms threaten







Tornado

Go to an **interior room** on the **lowest floor** of a **sturdy** building and shield yourself

Additional options include a basement, certified safe room, or community shelter

Don't forget: Helmet, hard-soled shoes, heavy blanket, whistle or airhorn, flashlight, phone, pets







Bad Places to be During a Tornado

Manufactured/mobile homes

RVs, campers, tiny homes

Structures with large roof spans like gyms, auditoriums, and warehouses/distribution centers

Vehicles



Storm Spotter Certificate





+ Resources





Advanced class:

Deeper dive into radar signatures, storm structure, weather systems, forecasts & warnings...





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