

Weather Observing and Your Amateur Radio Hobby

*How to safely report severe weather events and help be part of the local
spotting network*

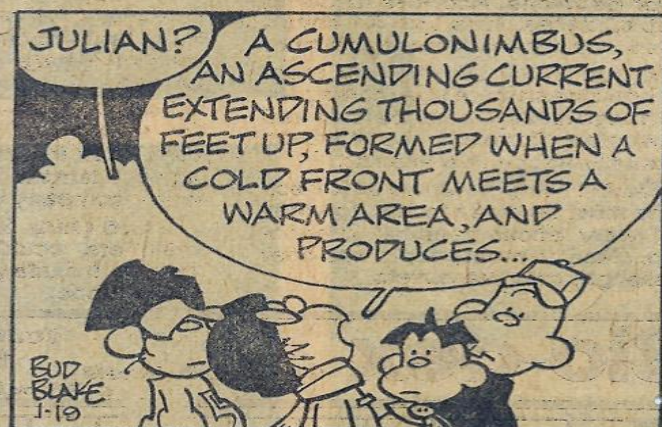
February, 2024



WD9IOK

Paul Havlik

TIGER



Bud Blake ©King Features Syndicate, Inc – 1979

- ▶ Are you a weather junkie?
- ▶ Is weather something you follow closely?
- ▶ Are you motivated by storms approaching?
- ▶ Does it get your adrenalin running?
- ▶ Do you operate a ham radio?



For some...it runs in our blood

- ▶ Weather observing started in my youth
- ▶ At home primitive weather station (1970)
- ▶ Graduated to a Heathkit weather station (1973)

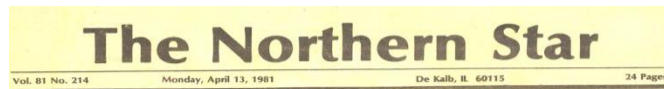


*50 years old
and still working!*



But Amateur Radio helped fill a void that I couldn't pursue...

- ▶ I spent two years studying to be a meteorologist before Calculus and higher math asked me to redirect my career path....
- ▶ But the **DESIRE** to be involved and observe never left my blood
- ▶ I earned my first ham licenses freshman year in college and then found the connection to the local ham radio weather spotters groups



Local scanner observer reports Skywarn work to media

Participates in 'Skywarn' Student alerts DeKalb area of foul weather

By Scott Williams

While hurricane-force winds were roaring through DeKalb the night of April 3, residents Charles and Pat Canon lost the electrical power in their home.

They turned on a battery-operated radio and tried in vain to tune in a Rockford weather station.

Nevertheless, the Canons were kept well informed of the developing DeKalb weather conditions. In fact, they received updates from cities all over northern Illinois.

The Canons had unknowingly tuned in Paul Havlik, an NIU student who operates an amateur emergency weather radio station from his 12th floor room in Grant Towers South residence hall.

"I always sort of wondered if anybody was really out there listening," Havlik said.

Havlik is part of an amateur radio project called Skywarn, operated in cooperation with the National Weather Service. Havlik said five NIU students, who are amateur radio operators, or

HAMS, work on the project.

Skywarn is a system by which HAM radio operators in northern Illinois work together to keep the public informed during emergency weather conditions.

A HAM in one county relays information of severe weather to HAMS in the counties where the weather is heading, Havlik said.

"Whenever a (severe weather) watch is issued, we go into action. That's the theory behind it," he said.

"What you heard last Friday (the night of the high winds) was the very first test of this system in a real situation."

Havlik, who has been a HAM radio operator for four years and with Skywarn since it was organized at NIU last year, said he was doing homework April 3 when he heard the announcement of the tornado watch.

The county Skywarn coordinator, a HAM in Sycamore, was out of town. Havlik said, "So I just took over the situation and we just started organizing it."

Havlik said many Skywarn members are certified with the National Weather Service as weather spotters, people trained to recognize threatening weather conditions.

Havlik said he also receives information from NIU's weather service in Davis Hall.

"Whenever a (severe weather) watch is issued, we go into action. That's the theory behind it," — Paul Havlik

"Within a matter of five minutes, I can have that radio down in my car, antennae on, and go out looking for a tornado," he said.

While demonstrating the Skywarn system, Havlik was informed by a fellow HAM radio operator of a burning car at the corner of Annie Glidden Road and Route 64. "There is a car on fire and no patrolman in sight," the HAM reported.

Havlik quickly contacted the DeKalb police and fire departments, who were on the scene seven minutes later.

He dismissed his action as just "one of the services HAMS provide."

"HAMS like to be a public service for any type of emergency," he said.

Havlik, also a reporter for WNIU-FM for the past two years, said he hopes to become a radio news reporter when he graduates in August.

The 22-year-old radio/television/film major said he has radio equipment at home worth about \$2,000. "My HAM radio hobby ties in with the weather. And it serves as a dual function. I find it exciting when there's something bearing down on us here."

Anybody within about a 50-mile range who has a radio scanner can pick up Skywarn, Havlik said.

But he cautioned citizens against being dependent upon the system during emergency situations.

"This is a brand new system so it still has some bugs in it. I still recommend that people listen to the National Weather Service and their local broadcasting media," he said.

Some of us just back into it....

- ▶ Monitoring local repeaters during severe weather
- ▶ Having some “background”, I was welcomed and learned how to “spot” and field report
- ▶ Ever since, I’ve tried to be actively involved in severe weather spotting and reporting
- ▶ Took regular weather training courses through the National Weather Service and other safety groups
- ▶ Learned a great deal about proper, safe observing and reporting techniques



Key objective today

- ▶ Share what it takes to be a good observer by being “weather aware”
- ▶ How to stay ahead of the storms and be ready when they arrive
- ▶ Typical weather spotting equipment
- ▶ Operating a safe, indoor station
- ▶ Knowing what and how to report what you see or measure
- ▶ Resources for training and participating

Be a good weather observer

- ▶ Stay on top of the main weather trends
 - We always get notice of what is coming
 - Local media
 - National Weather Service Internet or Radio
 - Specialty services
 - *Weather.com*
 - *Weather Underground*
 - *The Weather Channel*
 - *Your eyes!!!!*
 - *Learn to read the clouds!*



What is being “Weather Aware”

- ▶ Pay attention to the early forecast information
 - Advanced severe weather forecast information from the NWS is always available
 - Sometimes the impacted day can be targeted up to 5 – 7 days in advance
 - Refinements to the forecast occur each day
 - Local media tends to promote a few days ahead as well

NWS Severe Storms Forecast

The screenshot displays the National Weather Service (NWS) website. At the top, the NWS logo and the text "NATIONAL WEATHER SERVICE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION" are visible. Below this is a navigation bar with links: HOME, FORECAST, PAST WEATHER, SAFETY, INFORMATION, EDUCATION, NEWS, SEARCH, and ABOUT. The "FORECAST" link is highlighted in orange. A dropdown menu is open under "FORECAST", listing various weather categories: Local, Graphical, Aviation, Marine, Rivers and Lakes, Hurricanes, Severe Weather (highlighted with a red arrow), Fire Weather, Sun/Moon, Long Range Forecasts, Climate Prediction, and Space Weather. To the left of the dropdown is a search box with the text "Local forecast for 'City, St' or ZIP code". Below the search box is a "Get Weather" button. To the right of the dropdown, a news article titled "Snow in the Southern Rockies and High Plains; Heavy Rainfall Across South Florida" is partially visible. Below the navigation bar is a secondary navigation bar with links: FORECAST MAPS, RADAR, RIVERS, LAKES, RAINFALL, AIR QUALITY, SATELLITE, and PAST WEATHER. The main content area features a map of the United States with a color-coded forecast overlay. The map is titled "Created: 12/14/23 at 02:19 UTC". The map shows various regions highlighted in different colors, indicating different weather conditions or forecasts. A red arrow points from the "Severe Weather" link in the dropdown menu to the map area.

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast for "City, St" or ZIP code
Enter location
Location History

Local
Graphical
Aviation
Marine
Rivers and Lakes
Hurricanes
Severe Weather
Fire Weather
Sun/Moon
Long Range Forecasts
Climate Prediction
Space Weather

Snow in the Southern Rockies and High Plains; Heavy Rainfall Across South Florida
will begin to impact portions of the Southern Rockies and High Plains today. Light to heavy snowfall will be possible today especially across southern Colorado and northern New Mexico. Meanwhile across the southeast, a front stalled in Florida will increase the threat for heavy to excessive rainfall over the next few days which could lead to isolated
[More >](#)

FORECAST MAPS RADAR RIVERS, LAKES, RAINFALL AIR QUALITY SATELLITE PAST WEATHER

Created: 12/14/23 at 02:19 UTC

www.weather.gov

NWS Storm Prediction Center

Current time (in UTC/GMT/Zulu): 02:46:13

[Site Map](#) [Organization](#) [About Us](#) [Mobile](#) [Feedback](#) [Local Forecast by ZIP/...](#)



Storm Prediction Center

N O A A / National Weather Service

[HOME](#) [NEWS](#) [SPC PRODUCTS](#) [WEATHER INFO](#) [FORECAST TOOLS](#) [RESEARCH](#) [OUTREACH](#) [NWS/NCEP](#)

Search SPC...



A Slight Risk of Severe Thunderstorms is Forecast for Sat (12/16)

Strong thunderstorms may impact the Florida Peninsula and Keys Saturday night, with a few possibly becoming severe and posing a risk for tornadoes and damaging wind gusts.

» For additional details, see the latest [Day 2 Convective Outlook](#).

[Overview](#) [Conv. Outlook](#) [Watches](#) [MDs](#) [Storm Reports](#) [Mesoanalysis](#) [Fire](#) [Hazards](#)



Hazard	Fri (12/15)	Sat (12/16)	Sun (12/17)	Mon (12/18)	Tue (12/19)	Wed (12/20)	Thu (12/21)	Fri (12/22)
Severe	No Severe	Slight	Marginal	No Area	No Area	No Area	No Area	No Area
Fire	No Critical	No Critical	No Area	No Area	No Area	No Area	No Area	No Area

[All Products](#) [Watches](#) [MDs](#) [Outlooks](#) [Fire](#)

[Thunderstorm Outlook](#)
– Issued: 12/16/2023 at 0037Z

[Day 1 Convective Outlook](#)
– **Categorical Risk: No Severe**
– Issued: 12/16/2023 at 0033Z

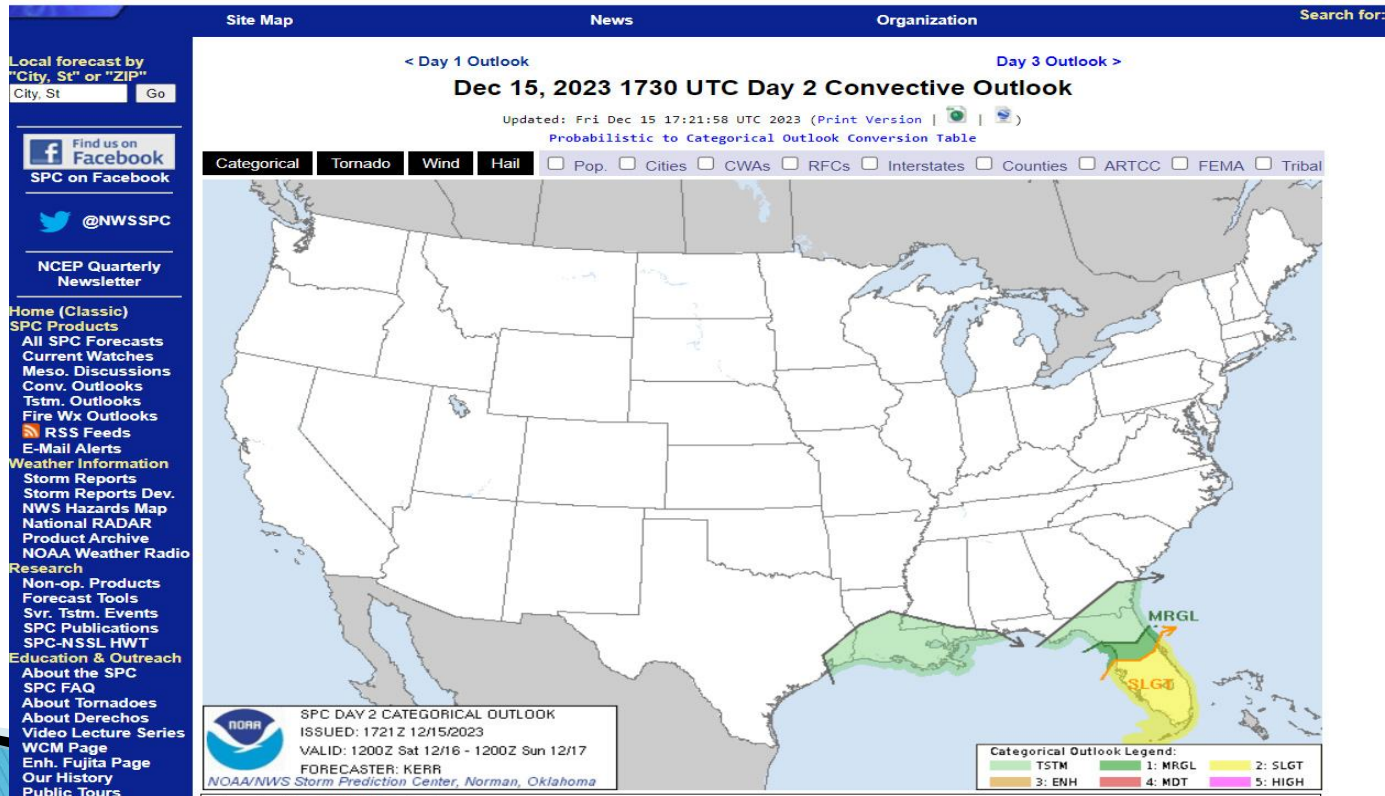
[Day 3-8 Fire Weather Outlook](#)
– **Categorical Risk: No Areas**
– Issued: 12/15/2023 at 2129Z

[Day 2 Fire Weather Outlook](#)
– **Categorical Risk: No Critical**
– Issued: 12/15/2023 at 1942Z

[Day 2 Convective Outlook](#)
– **Categorical Risk: Slight**
– Issued: 12/15/2023 at 1721Z



[Day 1 Fire Weather Outlook](#)
– **Categorical Risk: No Critical**
– Issued: 12/15/2023 at 1622Z

Storm Prediction Center Convective Outlook






Storm Prediction Center Education

Current time (in UTC/GMT/Zulu): 02:01:40 Site Map Organization About Us Mobile Feedback Local Forecast by ZIP/...

  **Storm Prediction Center**
NOAA / National Weather Service

HOME | NEWS | SPC PRODUCTS | WEATHER INFO | FORECAST TOOLS | RESEARCH | **OUTREACH** | MESSAGING

Search SPC...   


What's New


- » **September 8, 2023:** Soliciting Comments through October 5, 2023 on Expert Panel Report
- » **January 30, 2023:** A webpage highlighting the severe and fire weather statistics for 2022
- » **September 21, 2022:** Lightning climatology across the contiguous United States

More news [here](#)

Overview | Conv. Outlook | Watches | MDs | Storm Reports | Mesoanalysis | Fire

No Organized Severe Thunderstorms Forecast



 SPC Activity Chart
20231222/0158

Outreach Menu:

- » About
- » FAQ
- » WCM Page
- » About Tornadoes
- » About Derechos
- » Severe Weather Safety
- » Enhanced Fujita Scale
- » Video Lecture Series
- » History
- » NOAA Communications
- » Staff Listing
- » Public Tours

MDs | **Outlooks** | **Fire**

Storm Outlook
Issued: 58 minutes ago

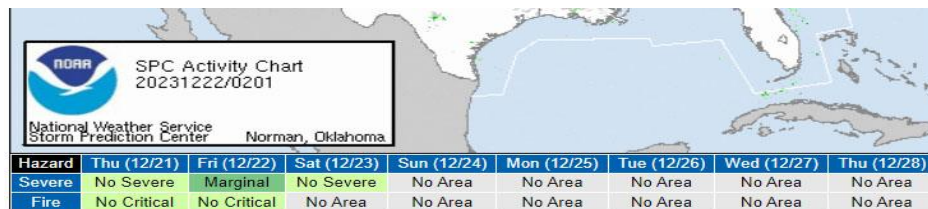
Convective Outlook
Categorical Risk: **No Severe**
Issued: 12/22/2023 at 0057Z

Weather Outlook
Categorical Risk: **No Areas**
Issued: 12/21/2023 at 2050Z

Day 2 Fire Weather Outlook
– Categorical Risk: **No Critical**
– Issued: 12/21/2023 at 1901Z

Day 2 Convective Outlook
– Categorical Risk: **Marginal**

SPC “Did You Know”



Severe Weather Climatology (1982-2011)



Severe Hail Probabilities: 22 Dec



More severe weather climatology data [here](#).

2023 Tornado Watch Summary



Page last modified: December 21 2023 12:27 UTC

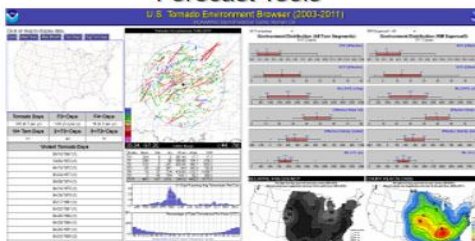
Did You Know?



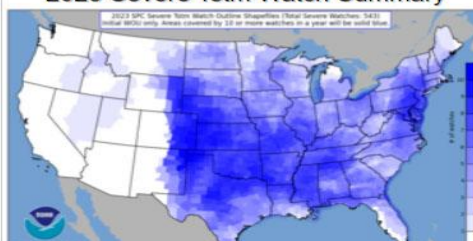
What's My Risk?



Forecast Tools



2023 Severe Tstm Watch Summary



Wildfire Climatology (1992-2015)



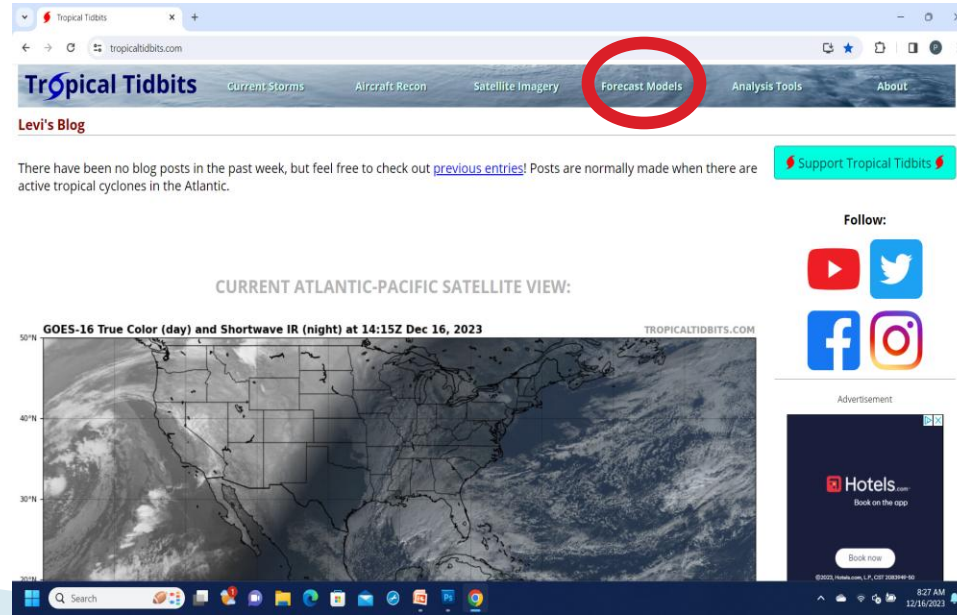
SPC Outlook Categories

Understanding Severe Thunderstorm Outlook Categories						
LEVEL	CATEGORY	DETAILS	SUMMARY	How many severe storms are possible?	How bad could the worst storms be?	DEFINITIONS
	General Thunderstorm	Although severe weather is not expected, <i>all</i> thunderstorms can produce deadly lightning, gusty winds, and small hail.	No severe thunderstorms expected		Similar to storms your area experiences many times per year	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
1	Marginal (MRGL)	Some storms could be capable of damaging winds and severe hail. Localized tornado threat could develop.	Isolated severe storms possible	None to 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. <i>A few severe storms could be significant</i>	Isolated to scattered severe storms expected	None to 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. <i>Several severe storms could be significant</i>	Scattered to numerous severe storms expected	None to Numerous	Similar to intense storms your area may only experience once or twice per year	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
4	Moderate (MDT)	High confidence that many storms will contain damaging winds, severe hail, and/or tornadoes. <i>Several severe storms likely to be significant</i>	Scattered to numerous severe storms expected	None to 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. <i>Tornado outbreak and/or widespread damaging winds</i>	Numerous severe storms expected	None to Numerous	Very intense storms your area may only experience once or twice in a lifetime	

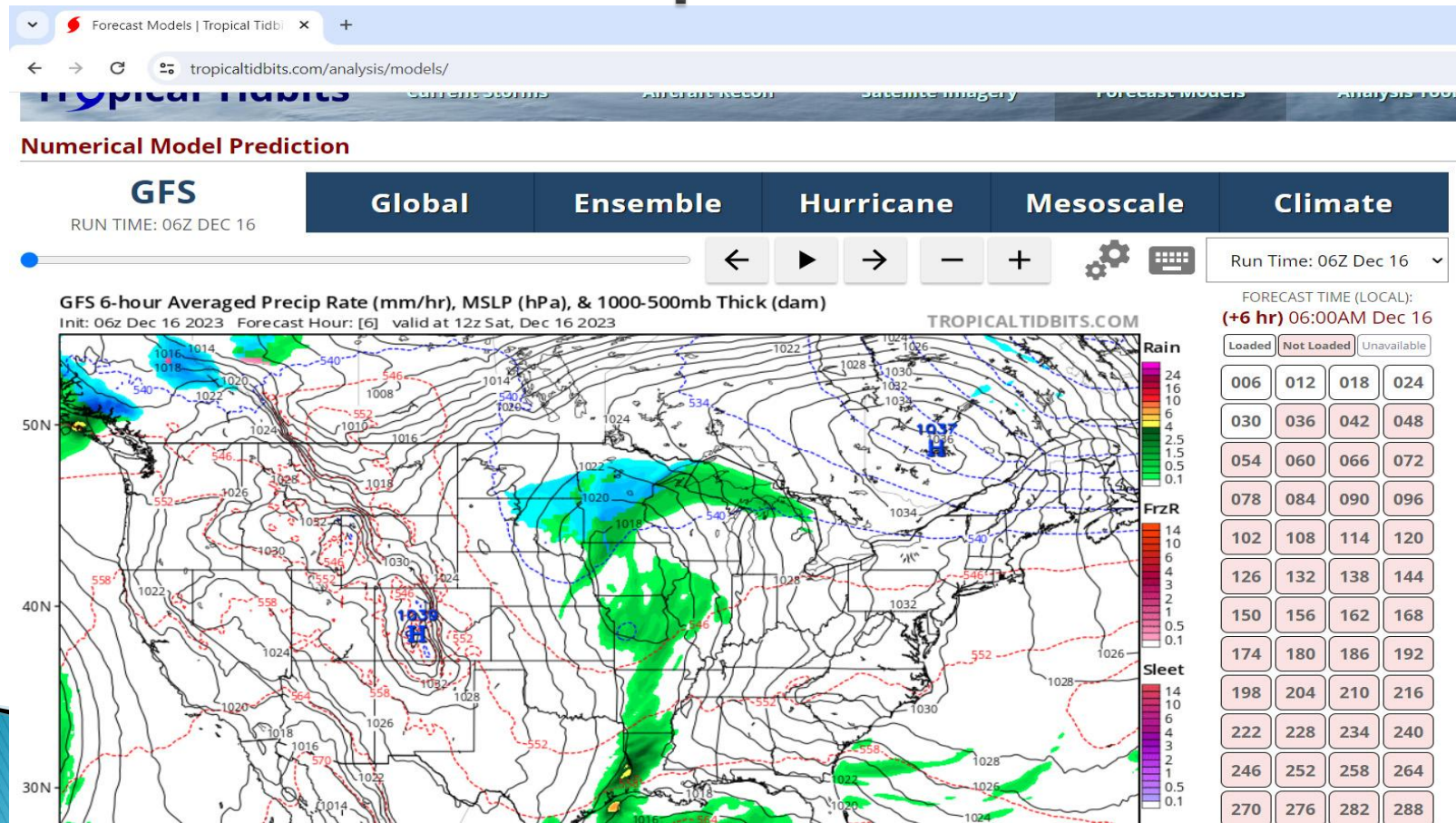
spc.noaa.gov | weather.gov

Get plugged into WX models!

- ▶ All professional meteorologists use weather models to build forecasts
- ▶ You can tap into this and study the forecast models yourselves!
- ▶ www.tropicaltidbits.com



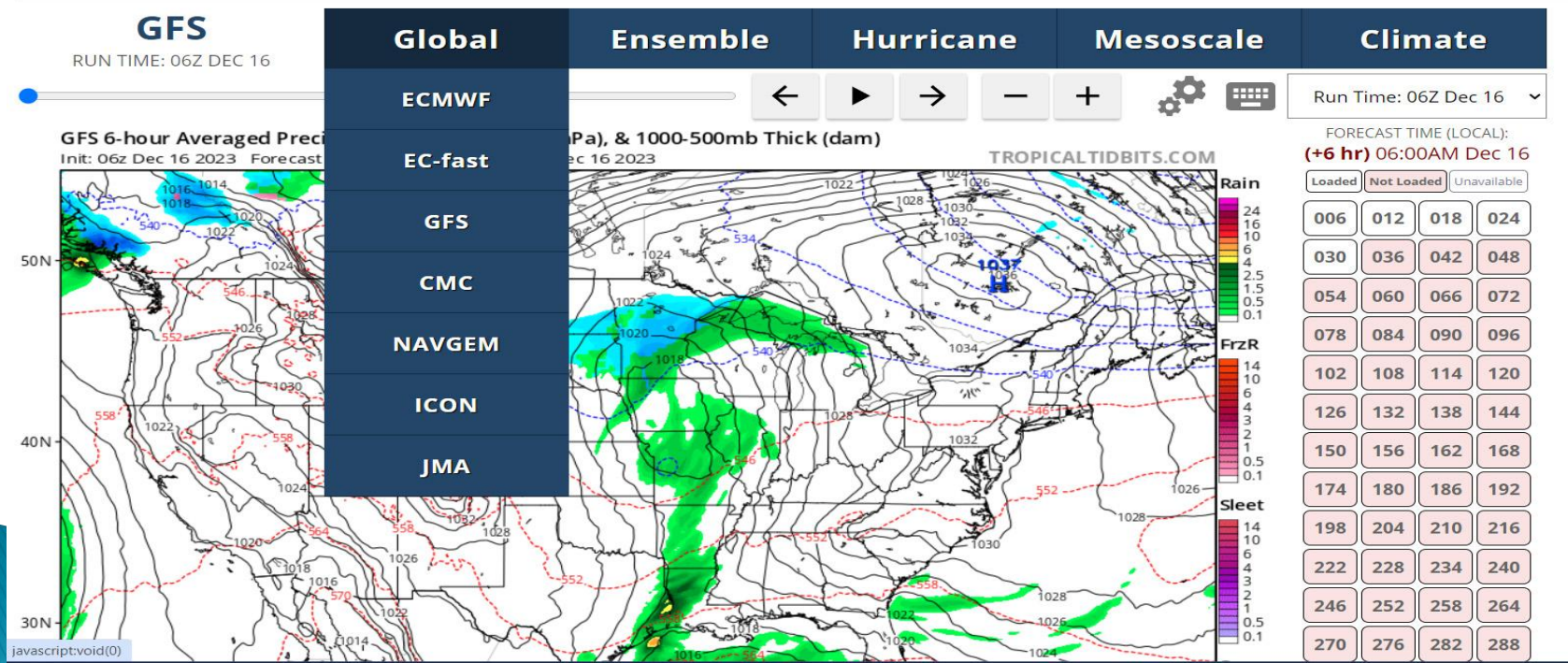
Models run out up to two weeks



Alternative Models



Numerical Model Prediction



Be ready before the storms arrive

- ▶ Storm fronts typically give you 24 hours notice (just read the clouds)
- ▶ Have your ham station ready to go and related equipment for observing
- ▶ Are you safe operating in case of lightning?

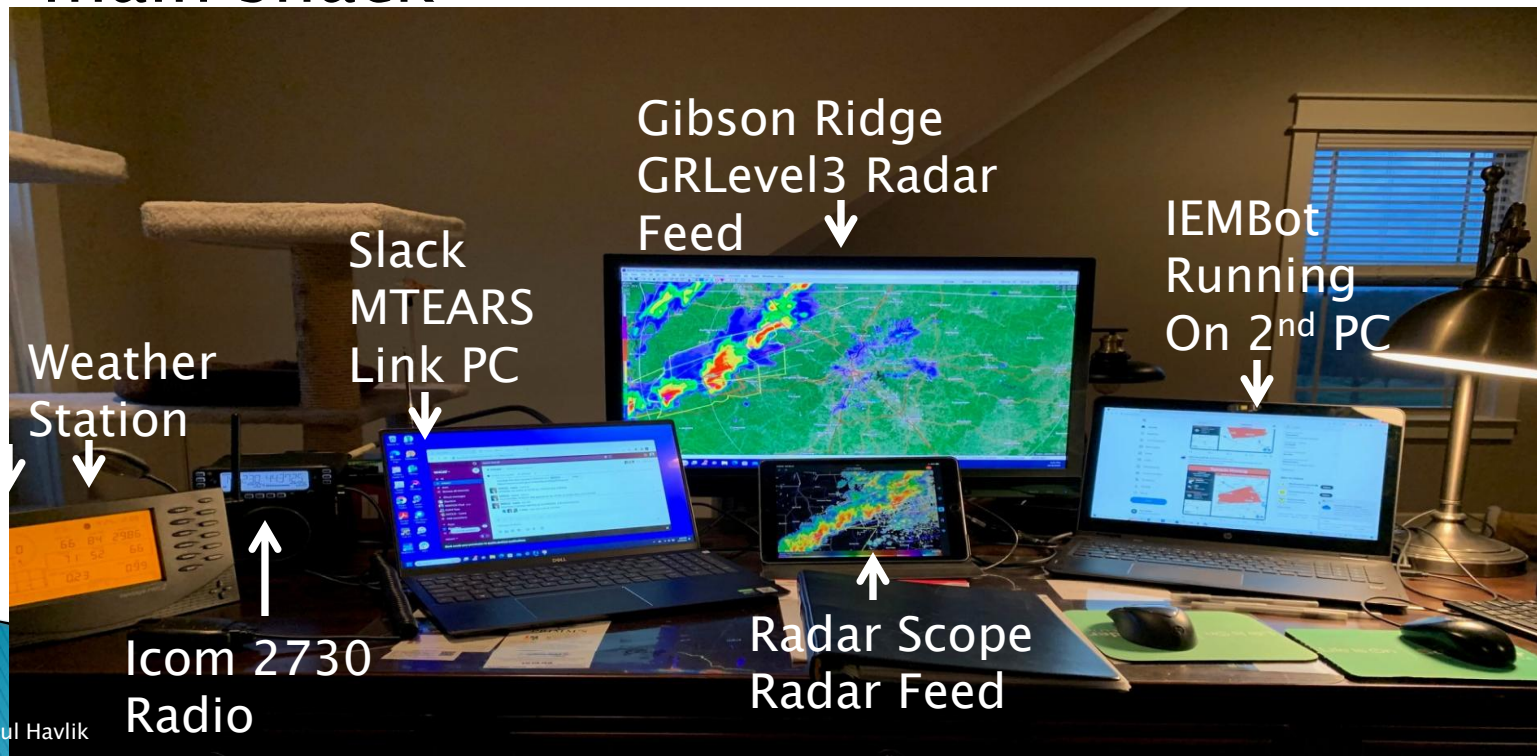


WD9IOK – Paul Havlik



My “weather shack”

- ▶ Set up in my bonus room office and not in my main shack

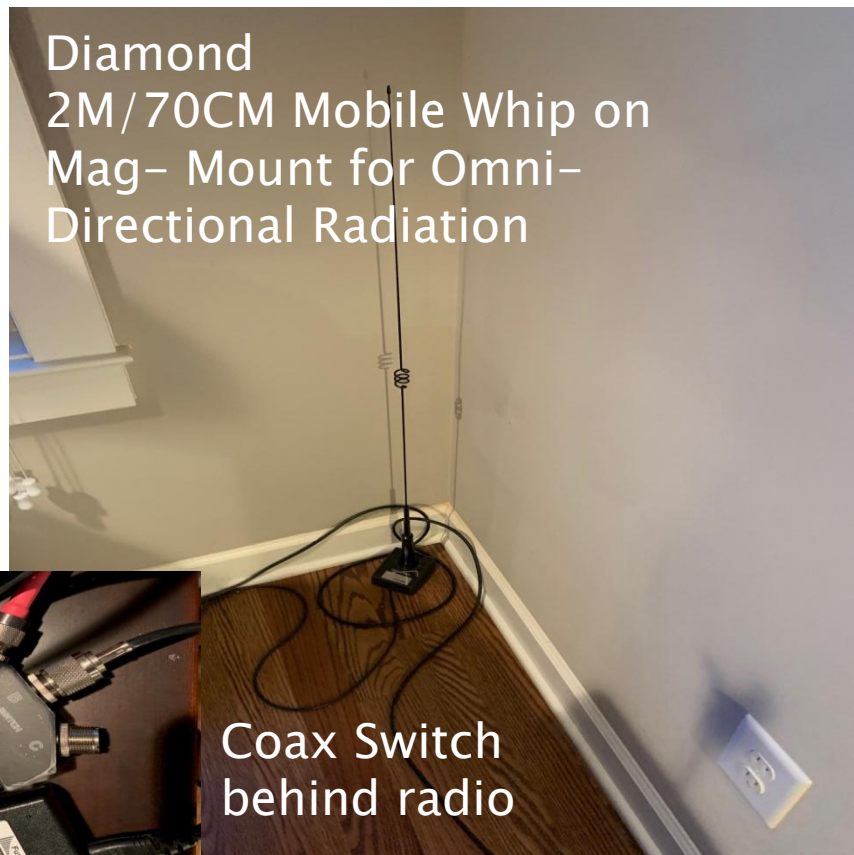


Indoor Antennas!!!!

Cushcraft 5 Element
2M/70CM Beam
(Pointed at 145.21 & MTEARS Hub)



Diamond
2M/70CM Mobile Whip on
Mag- Mount for Omni-
Directional Radiation



Coax Switch
behind radio

Former Franklin QTH Indoor Antenna Farm



Back-up Power – A necessity

- Samplex Power Supply
- Paradan Switch
- Bienno 20Ah Li Battery (#1)
- Voltage Monitor



- Bienno 20Ah Li Battery (#2)
- Voltage Monitor

HT Radios on standby if needed
WiFi is also on battery backup
and generator if needed

Observing

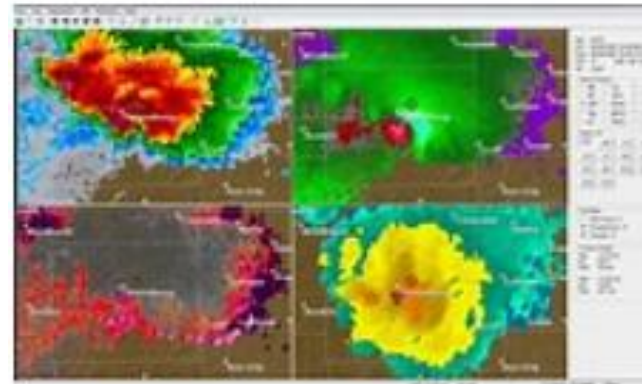
Do you have the tools to do it properly?

- ▶ Professional Type Weather Equipment for home reporting
 - Davis
 - Ambient Weather & others
- ▶ Simpler techniques
 - Manual Rain gauge
 - Hand-held Anemometer



Observing

- ▶ Online radar for *real-time* access
 - *Beware of weather radar feed latency* – seconds count during severe weather – know your source
 - ***Gibson Ridge GRLevel 3*** (\$79.95)
 - Access most tools the meteorologists have available –
Most NEXRAD Level 3 displays
 - Modifiable data displays
 - https://grlevelx.com/grlevel3_2/
 - Requires PC for display



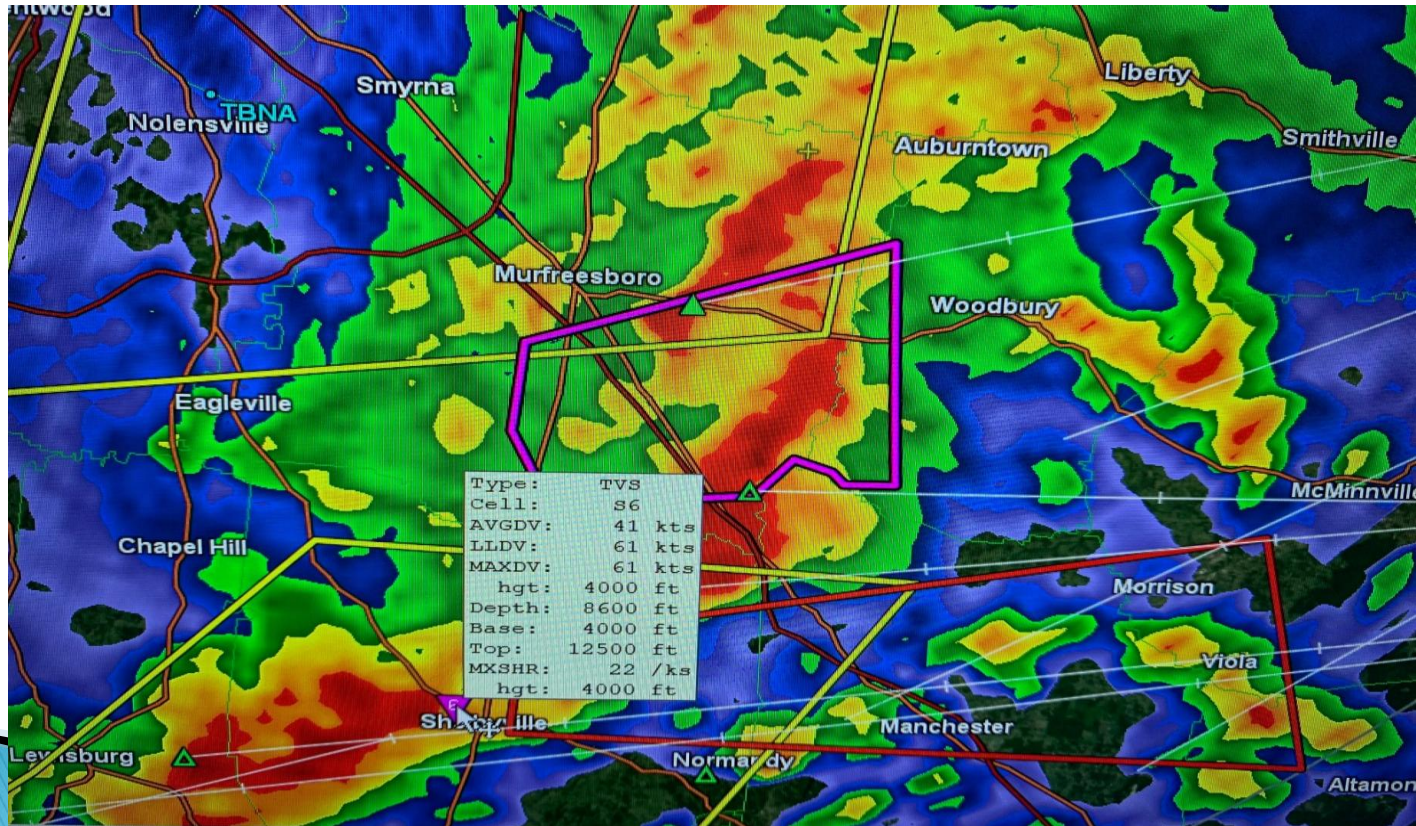
Observing

- *RadarScope*
 - Data provided by radar is preset for Tier 1
Pro Tier 1 – base level NEXRAD Radar (\$9.99) for app
Pro Tier 2 – Upgraded level (\$14.99 plus \$9.99/yr)
 - Available for all phones/pads etc.
 - Very portable
 - Check the app stores
- National Weather Service Radar
 - www.weather.gov
- Local media outlets and their feeds



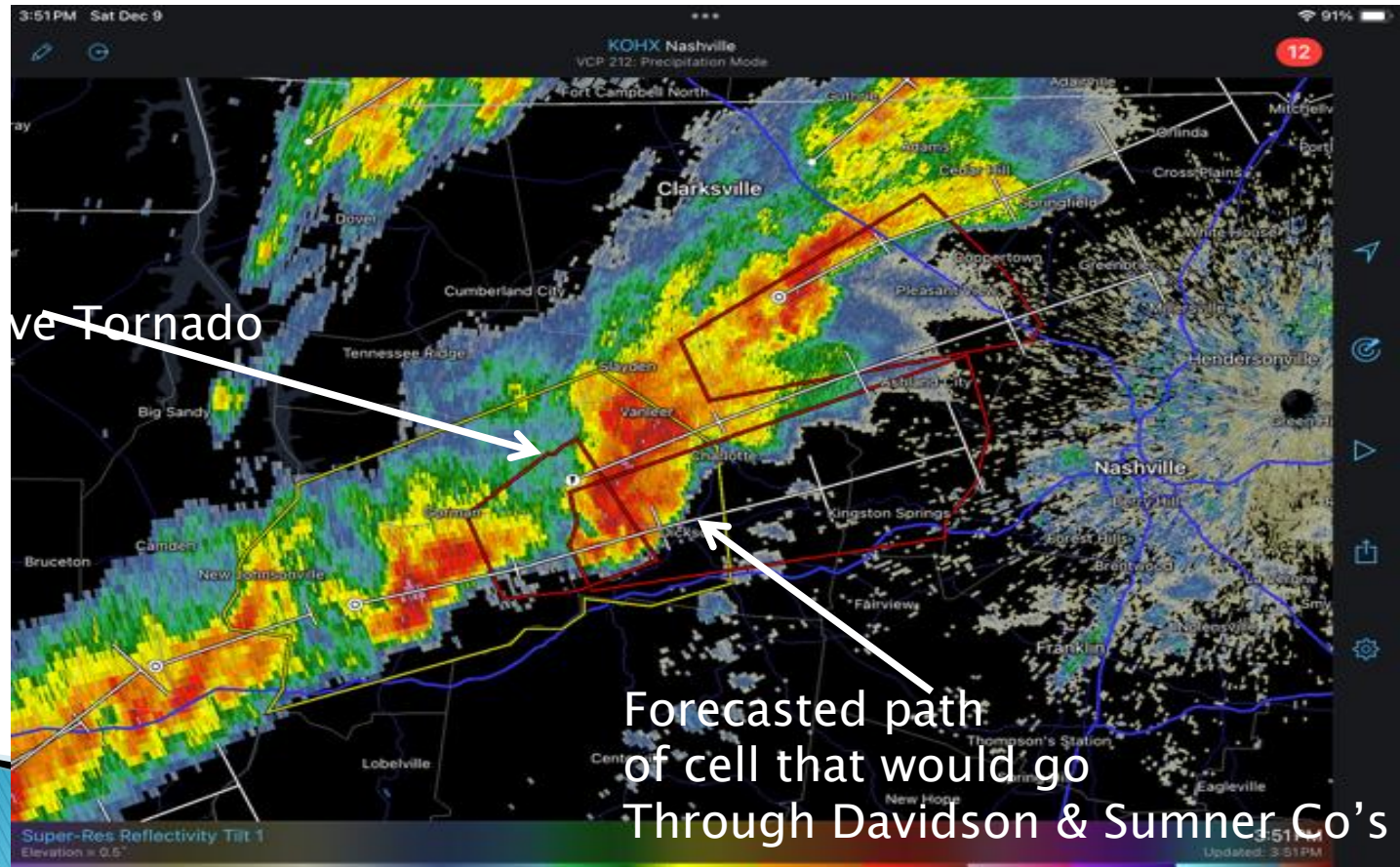
Readyville Tornado (RadarScope)

April 1, 2023 1:48 AM



Nashville Tornadoes – 12/9/23

(RadarScope)



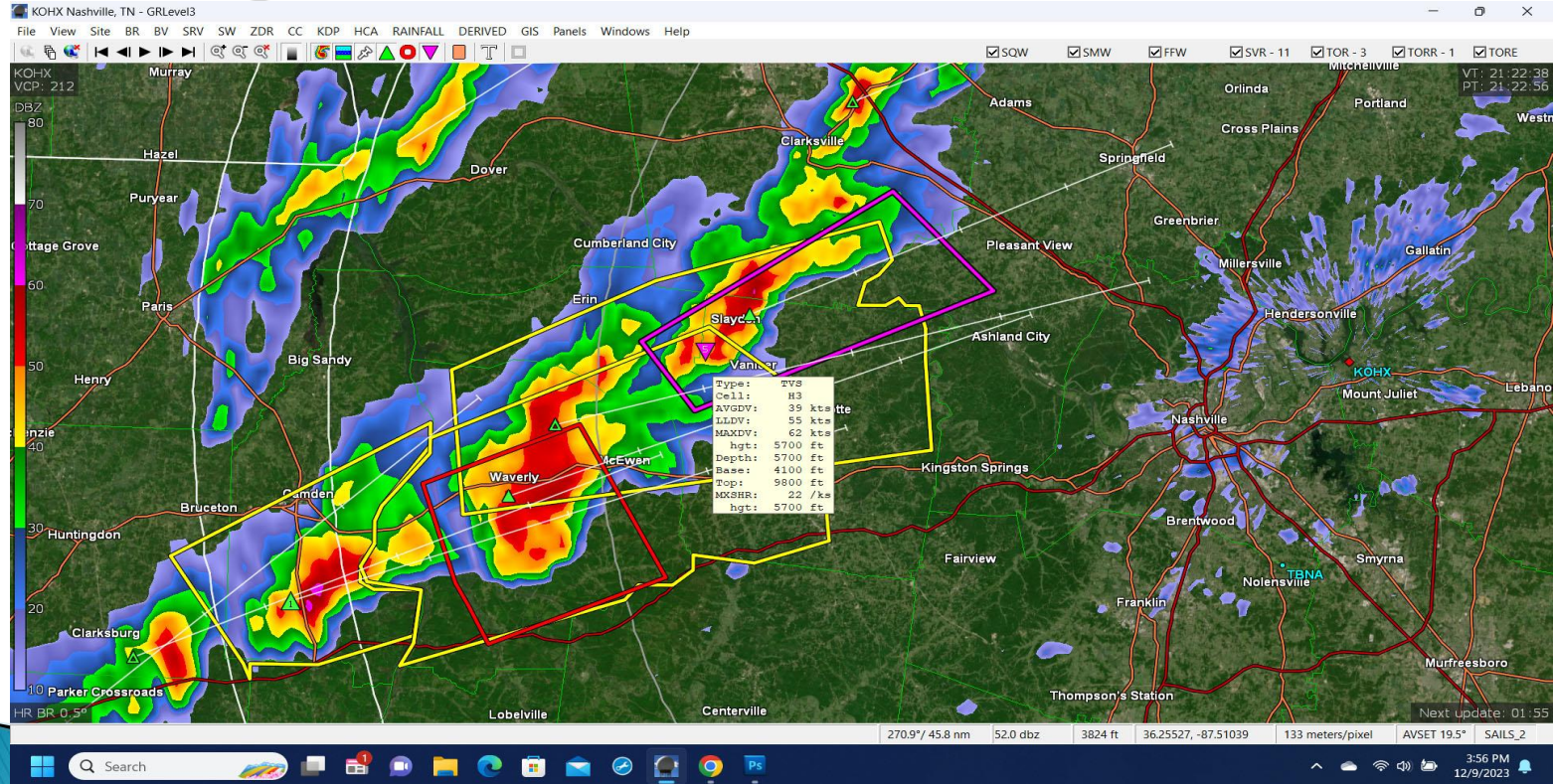
Nashville Tornadoes

(Gibson Ridge GR Level 3)



Nashville Tornadoes (2)

(Gibson Ridge GR Level 3)



Nashville Tornadoes (3)

(Gibson Ridge GR Level 3)



Outflow Boundary Shelf Cloud



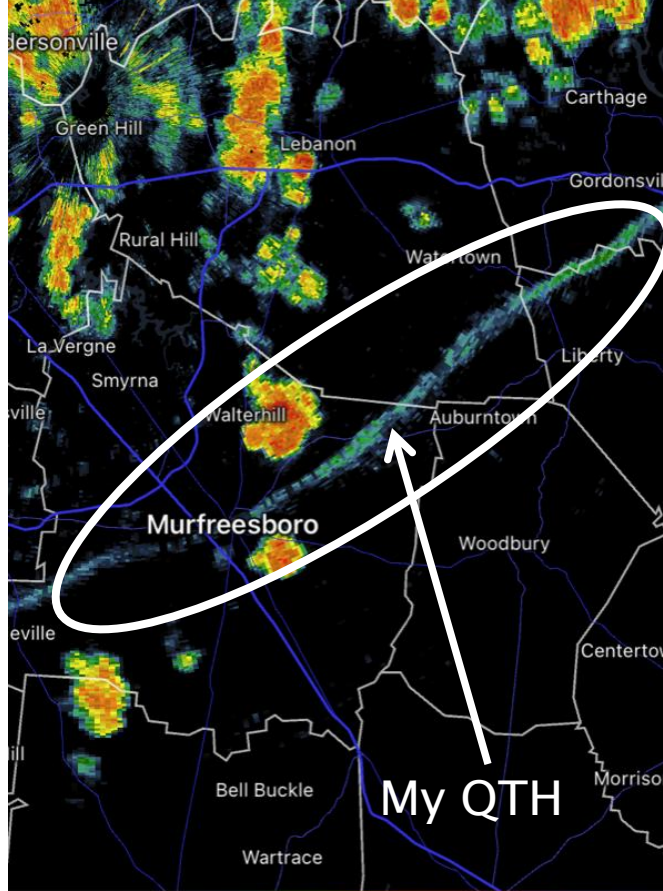
- ▶ Morning storm clouds approaching without visible thunderstorms

Outflow Boundary Shelf Cloud



Outflow Boundary On Radar

- ▶ Note radar indication almost over my QTH.
- ▶ Outflow boundary is generated by thunderstorms in the distance as they move southeast



Super-Res Reflectivity 1

Elevation = 0.5°

8:28 AM

Updated: 8:29 AM



Cell Phone Panorama



Weather Observing Caveats

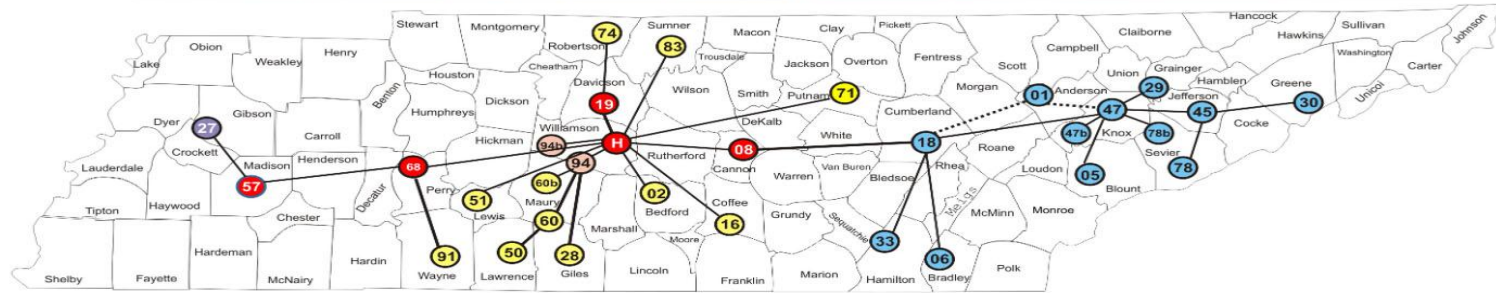
- ▶ Know what to do when severe weather occurs
 - ***Safety First***
 - Do not risk your life for pictures or views
 - ***Family First***
 - Do not venture out and leave your family at risk
 - ***Identify your safe place and your emergency plan***
 - What internal room is safest and your plan to quickly get there along with other emergency needs
 - i.e., helmets, flashlights, emergency radios, etc. See FEMA guidelines

Storm Reports – what are the meteorologists looking for?

- **Verification of the radar**
 - Ground truth – what can be visually confirmed
- **Storm related data** from local “trusted” observers and their networks
 - MTEARS
 - Skywarn Local County Networks within sponsored/volunteer County Systems
- Be a weather junkie **BUT** don't tie up the airwaves with the wrong information during a severe weather event. Time is of the essence to help relay information to the NWS and authorities

MTEARS

MIDDLE TENNESSEE EMERGENCY AMATEUR REPEATER SYSTEM



H 443.725 107.2 Nolensville - Hub
 01 441.925 100.0 Oak Ridge
 02 442.700 100.0 Deason
 05 443.900 100.0 Maryville
 06 442.025 100.0 Cleveland
 08 444.650 107.2 Short Mtn
 16 443.950 107.2 Tullahoma
 18 443.875 88.5 Crossville
 19 442.800 107.2 Nashville
 27 442.300 100.0 West Gibson Co.
 28 443.550 100.0 Pulaski
 29 443.225 100.0 Blaine
 30 441.850 100.0 Greeneville
 33 443.125 103.5 Signal Mtn
 45 443.725 100.0 Jefferson

47 442.500 100.0 Knoxville
 47b 444.500 100.0 West Knoxville
 50 443.400 100.0 Lawrenceburg
 51 444.850 100.0 Hohenwald
 57 444.450 123.0 Jackson
 60 442.725 100.0 Southport
 60b 443.175 100.0 Columbia
 68 442.850 107.2 Lobelville
 71 444.600 107.2 Cookeville
 74 443.900 107.2 Cross Plains
 78 444.900 100.0 Gatlinburg
 78b 444.000 100.0 Sevierville
 83 444.450 107.2 Gallatin
 91 443.950 100.0 Wayne Co.
 94 443.075 156.7 Heritage
 94b 443.475 107.2 Franklin

MTEARS 2-22-2023.PDF

This map is a visual and written record of significant changes to the MTEARS system recorded in February 2023 and since this map was last edited and published on 04-19-2022.

Removed 19b Pasquo. When it is restored to service it will be added back to the map. Moved system link for 60 Southport and 28 Pulaski to 94 Heritage. Dotted lines show variable link paths.

Link to 2022 MTEARS training by Laura Marler (N4CLO)

<https://www.youtube.com/watch?v=zZWDuizFb0c>

What is measured vs. observed?

- ▶ What are local storm spotter groups seeking?
 - **LISTEN TO NET CONTROL!!!**
 - Measured – Instrument based
 - Observed – Using your eyes
- ▶ Skywarn reporting guidelines
- ▶ Your local Skywarn net control information requests vs. national standards
 - The Local Middle Tennessee NWS Office will ask for liaison observers via NWS Chat 2.0 to look for certain types of data depending upon the circumstances at the time
 - Examples:
 - Different hail sizes
 - Measured Rainfall Amounts (Not Rainfall Rates)
 - Wind Speed validation
 - Their radar can see so much more with the newer Doppler systems and the local reports “fill in the holes” of what is happening at ground level
 - The farther you are from the radar, the less is seen by the radar at ground level

What should you report

Severe Weather	Flooding and Rainfall	Winter Weather
<p>Tornadoes, funnel clouds, wall clouds, and persistent cloud rotation.</p> <p>Structural damage from tornadoes or severe wind gusts.</p> <p>Any trees uprooted or downed.</p> <p>Multiple large healthy limbs downed (at least 3" in diameter).</p> <p>Hail of 1/2" diameter or larger.</p> <p>Hail covering the ground.</p> <p>Do not report lightning.</p>	<p>1" or more of rainfall in one hour or less (measured).</p> <p>Flooding that results in evacuations or rescues.</p> <p>Cars or trailers carried away by flood waters.</p> <p>Water entering the main level of homes or businesses.</p> <p>Roads closed or impassable due to high water.</p> <p>Rapidly rushing water across roadways.</p> <p>More than one foot of water across roads.</p> <p>Small streams overflowing their banks.</p>	<p>1" or more of snow per hour.</p> <p>1" or more of snow in the past 24 hours.</p> <p>When first measuring 2", 4", or 6" of snow.</p> <p>Storm total snowfall and snow depth.</p> <p>Any freezing rain or freezing drizzle.</p> <p>Any thunder or lightning associated with winter precipitation.</p>
<p>Include the following in your report:</p> <ul style="list-style-type: none"> Your name and spotter ID. Your exact location. <ul style="list-style-type: none"> 5 miles west of City A, or... Near the intersection of Route X and Road Y, or... Latitude and longitude coordinates. If observing a cloud feature, in what direction are you looking? Exact time of the event. <ul style="list-style-type: none"> If ongoing or lengthy, provide a start/end time. The weather event. 		

How should you report?

- ▶ Report promptly as the storm may interrupt communications
- ▶ Report BRIEFLY
 - *What you have seen*
 - *Where you saw it*
 - *When you saw it*
 - *What was it doing*
 - *Identify yourself and your location*

Weather Events

Although reporting criteria may vary slightly depending on the spotter network and local needs, these are the events the National Weather Service would like to know about as soon as possible

TYPE OF EVENT	WHEN TO REPORT	NWS WARNING CRITERIA/ ADDITIONAL INFORMATION
TORNADO	Always Report - ALSO CALL 911	Tornado Warning Issued. <i>Look for debris on the ground</i>
FUNNEL CLOUD/ WALL CLOUD	Always Report	<i>Look for organized, persistent, sustained rotation</i>
HAIL	Report if Half-inch size or larger**	Severe Thunderstorm Warning Issued: 1 inch diameter or larger. Always report the largest size hailstone
WIND GUSTS	Report if 50 mph or higher	Severe Thunderstorm Warning Issued: Sustained 40 mph. Gusts to 58 mph or greater. Specify estimate or measurement
HEAVY RAIN/ FLOODING	1.0" rain/hr or greater for urban areas. 1.5" rain/hr or greater for rural areas. Also Call 911 for flooding.	Flash Flood Warning issued: Flooding that impacts roads, homes or businesses.
STORM DAMAGE	Always Report	Damage to structures (roof, siding, windows, etc) Damage to vehicles (from hail or wind) Trees or large limbs down Power/telephone poles or lines down Damage to farm equipment, machinery Or any other significant damage

**Quarter size hail (1.00 inch) is considered as severe weather hail.

Again, reports should provide as much detail as possible to describe the where, when, how, etc of the event.

Commonly used hail sizes

Pea	.25 inch	Golf Ball	1.75 inch
Half-inch	.50 inch	Hen Egg	2.00 inch
Dime	.75 inch	Tennis Ball	2.50 inch
Nickel	.88 inch	Baseball	2.75 inch
Quarter	1.00 inch	Tea Cup	3.00 inch
Half Dollar	1.25 inch	Grapefruit	4.00 inch
Ping Pong Ball	1.50 inch	Softball	4.50 inch

General Guidelines for Estimating Wind Speeds

30-44 mph (26-39 kt)	Whole trees in motion. Inconvenient walking into the wind. Light-weight loose objects (e.g., lawn furniture) tossed or toppled.
45-57 mph (39-49 kt)	Large trees bend; twigs, small limbs break and a few larger dead or weak branches may break. Old/weak structures (e.g., sheds, barns) may sustain minor damage (roof, doors). Buildings partially under construction may be damaged. A few loose shingles removed from houses.
58-74 mph (50-64 kt)	Large limbs break; shallow rooted trees pushed over. Semi-trucks overturned. More significant damage to old/weak structures. Shingles, awnings removed from houses; damage to chimneys and antennas.
75-89 mph (65-77 kt)	Widespread damage to trees with large limbs down or trees broken/uprooted. Mobile homes may be pushed off foundation or overturned. Roof may be partially peeled off industrial/commercial/warehouse buildings. Some minor roof damage to homes. Weak structures (e.g., farm buildings, airplane hangars) may be severely damaged.
90+ mph (78+ kt)	Many large trees broken and uprooted. Mobile homes damaged. Roofs partially peeled off homes and buildings. Moving automobiles pushed off the road. Barns, sheds demolished.

What if I'm mobile during severe weather?

- ▶ SAFETY FIRST – Take care of yourself and your family to protect them BEFORE reporting severe weather events
- ▶ The same criteria is used mobile and portable as at home
- ▶ It's much harder to judge weather events driving
 - Your speed
 - Your visibility and direction of travel
 - Only report criteria that can be ground verified
 - *(Heavy rain and strong wind reports are not measured data reports)*
 - Unless you have portable equipment with you, the observed reporting structure is as shown earlier
 - *You can't measure rainfall rates from your car*....so don't report anything to net control UNLESS requested.
The radar shows the rain!!!!
- ▶ Follow net control guidelines and requests –
 - Some possible criteria
 - Downed trees
 - Power lines
 - Blocked roads
 - Local flooding (blocked roads) – turn around don't drown
 - Call 911 for non-weather related reports to help public safety officials

Middle Tennessee Weather Spotting

- ▶ We're blessed here in Middle Tennessee with an awesome network of weather observers, spotters and coordinators. Thanks to Laura, N4CLO, for plugging me into it via WCARES.
- ▶ It can be an outlet for your observing and support the public safety aspects of weather spotting through Amateur Radio's Skywarn System via MTEARS.

Resources

- ▶ National Weather Service Training – Nashville
 - <https://www.weather.gov/ohx//>
 - Watch for training programs
 - <https://www.weather.gov/education/>
 - Focus on weather safety
- ▶ Local Weather Skywarn
 - WCARES Skywarn Training
 - MTEARS

Resources (2)

- ▶ **NWS Nashville SitMap (Situation Report)**
 - Updated twice daily
 - Provides a summary of expected conditions and hazards
 - <https://www.weather.gov/media/ohx/briefing/SitRep.pdf>
- ▶ **Weather 101**
 - Held in the spring and fall
 - 2024 dates TBD
 - <https://www.weather.gov/ohx/weather101>
- ▶ **Weather Safety Basics (Formerly Spotter Training)**
 - Dates TBD by NWS Nashville
 - <https://www.weather.gov/ohx/weathersafety>
- ▶ **Severe Weather Awareness Day at Trevecca University**
 - February 24, 2024 (9 AM – 4 PM)
 - Stay for the afternoon session
 - <https://www.weather.gov/ohx/swad2024>

Resources (3)

▶ IEMBot Monitor

- All products for each NWS office, no sign up required, read-only. Must know name of NWS Field Office to select correct room. Depending on Internet speed there may be a delay of a few seconds to a few minutes for Watch or Warning products.
- <https://weather.im/iembot/>

▶ Nashville Severe Weather Twitter/X Site

- Covers only Williamson & Davidson counties. Now requires Twitter/X account to access.
- twitter.com/NashSevereWx

Resources (4)

- ▶ **NOAA Storm Prediction Center (shown earlier)**
 - <https://www.spc.noaa.gov/>
- ▶ **Severe Weather Features**
 - NWS OHX Meteorologist Chrissy Hurley Video
 - <https://www.youtube.com/watch?v=IS0ITMLig14>
- ▶ Online programs are available from many commercial sources as well as public safety programs
- ▶ Future weather presentations are being planned to help reinforce basic training and spotting techniques at future meetings

Special thanks for their assistance

- ▶ N4CLO – Laura Marler
- ▶ N1EMP – Douglas Lowe, Sr.
- ▶ N9APK – Clark Sell
- ▶ WA9JSI – Rich Galitz

- ▶ For image use from their application and site
 - Gibson Ridge
 - RadarScope
 - NOAA/NWS

Questions?

- ▶ Thank you for your attention