



# NWS Albany Fall/Winter 2023-24 Skywarn Spotter Training

Presenters:



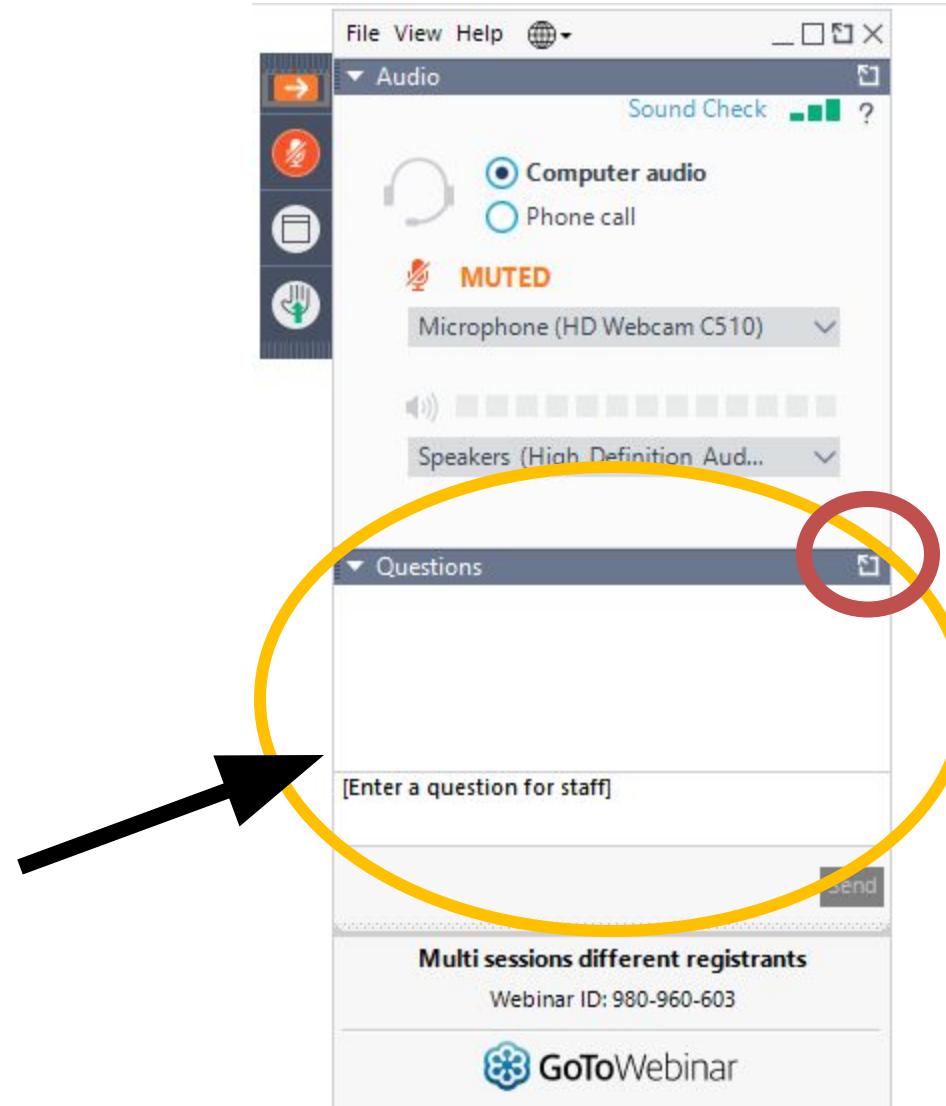
[www.weather.gov/safety/winter](http://www.weather.gov/safety/winter)



# How to Ask a Question

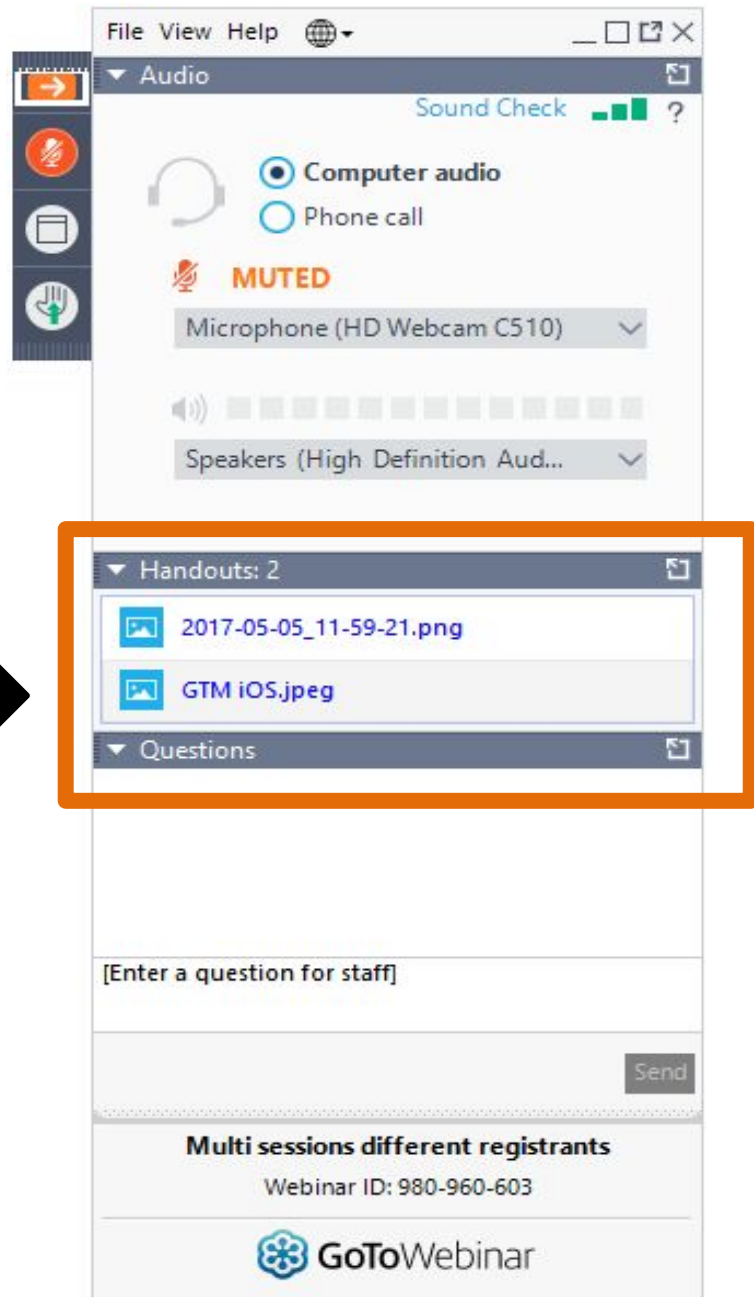
*Type a question in the “questions” box. These will only be seen by the presenters.*

- Click square icon in the top right corner to “undock” it from the dashboard.





# Handouts



**Your completion certificate and Albany Spotter Information Sheet are in the 'Handouts' section. Save/Download each of these handouts before leading the session!**

**Where are you from?**

**Enter your location (city, state, county) in the 'Questions' box.**



# Outline

- About the National Weather Service at Albany, New York
- Weather Ready Nation
- Fall/Winter/Spotter Safety
- Winter 2023-2024 Outlook
- Winter Weather Precipitation Types and Events
- Short Break
- Winter Weather Products and Forecasting Criteria
- Winter Flood Events
- Who, What, Where, When and How to Report to Us
- CoCoRaHS/mPING
- Quiz
- Certificates/Conclusion





# Who We Are...

**Office is located at the University at Albany ETEC building (Emerging Technology and Entrepreneurship Complex)**

## **Staff Consists of:**

- **Management:**
  - Meteorologist-in-Charge (MIC)
  - Warning Coordination Meteorologist (WCM)
  - Science & Operations Officer (SOO)
  - Electronic Systems Analyst (ESA)
- **13 General/Lead Meteorologists**
- **3 Electronics Technicians**
- **Information Technology Officer (ITO)**
- **Observing Program Leader (OPL)**
- **Senior Service Hydrologist (SSH)**
- **Administrative Support Assistant (ASA)**

**Operate 24 hours a day, 7 days a week, 365 days a year**





# Who Do We Forecast For?

We forecast for portions of four states (NY, VT, MA, CT)

Consists of:

- 15 Counties in NY
- 2 Counties in VT
- 1 County in MA
- 1 County in CT

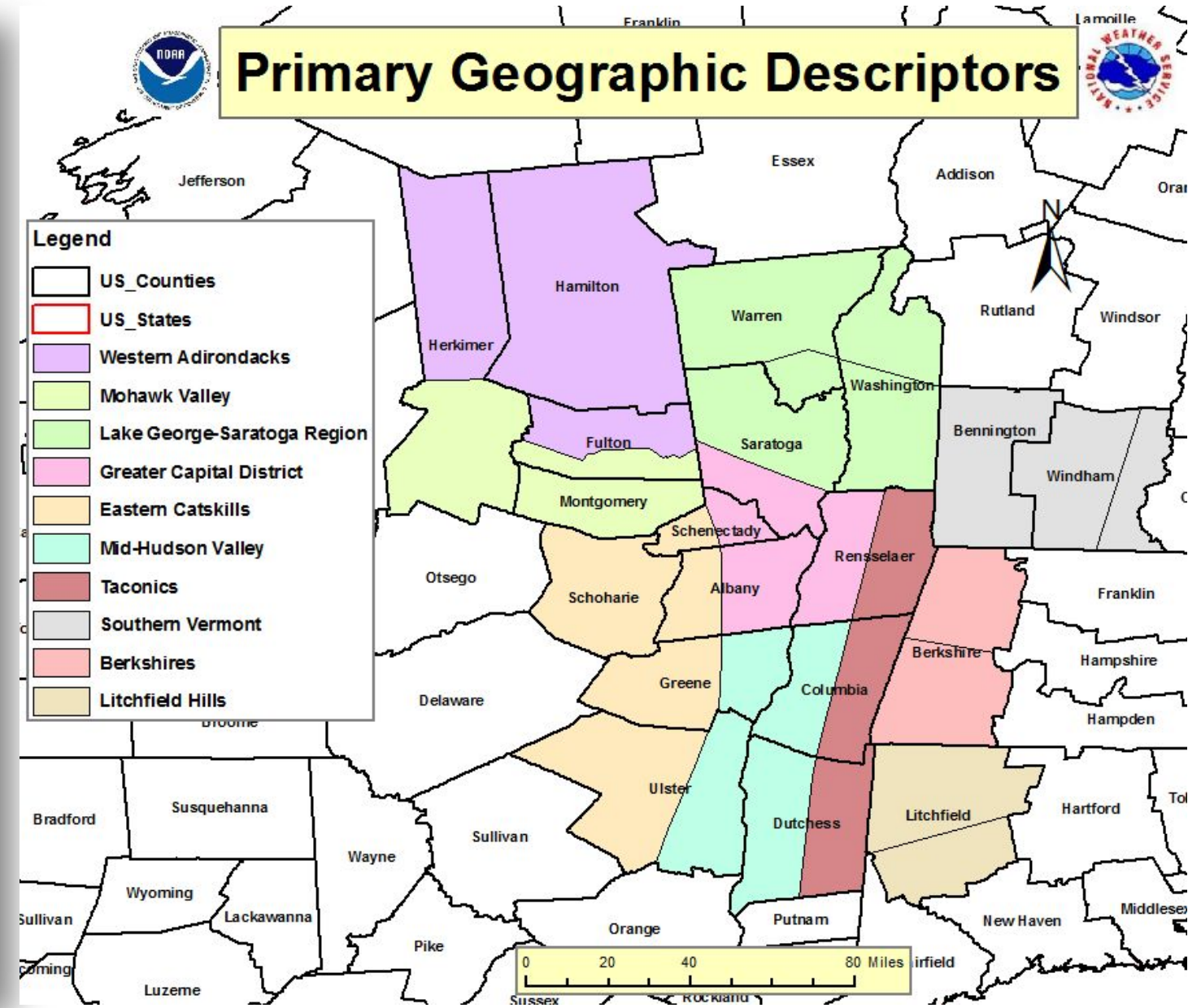
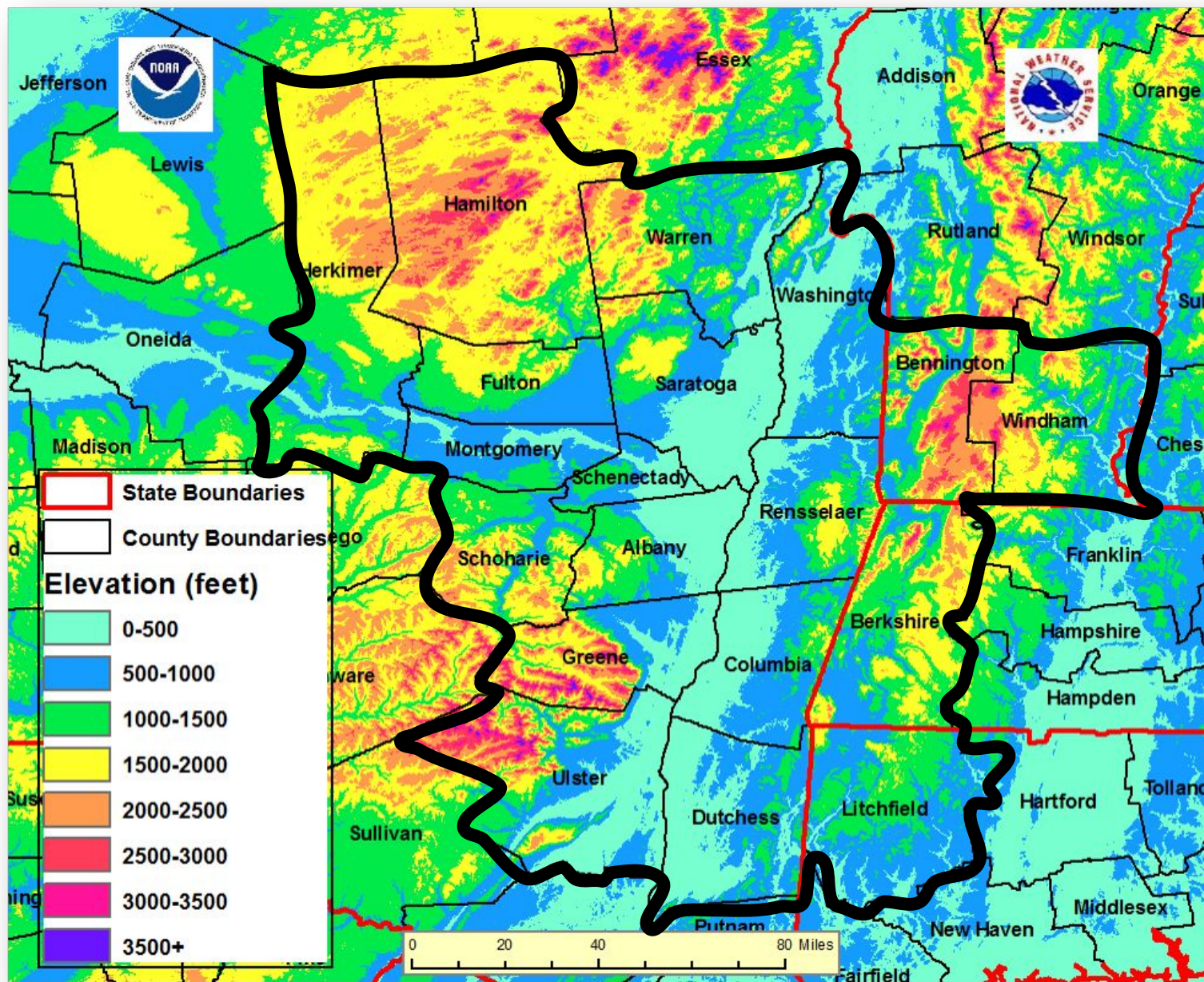
We border 6 other offices (Buffalo, Burlington, Binghamton, Gray/Portland, Boston, Upton)

We are the state liaison office for New York State





# NWS Albany Coverage Area





# Weather Ready Nation

- **NOAA's Weather-Ready Nation is about readying your community for extreme weather, water, and climate events.**
  - Devastating impacts of extreme events can be reduced by taking advanced action
- **What is NOAA doing to build a Weather-Ready Nation?**
  - NOAA's National Weather Service is transforming its operations to help America respond. Offices now provide forecast information in a way that better supports emergency managers, first responders, government officials, businesses and the public make fast, smart decisions to save lives and property and enhance livelihoods.
  - NOAA's Office of Oceanic and Atmospheric Research and National Environmental Satellite, Data, and Information Service are moving new science and technology into National Weather Service operations that will improve forecasts and ultimately increase weather-readiness.
- **What can you do to help us build a Weather-Ready Nation?**
  - Building a Weather-Ready Nation requires action from other government agencies at the national, state, and local levels, America's Weather Industry, emergency managers, researchers, the media, nonprofits, and businesses. Any organization committed to serving as an example and engaging their stakeholders to make this country ready, responsive, and resilient can be an Ambassador.
  - Weather-Ready Nation can help start a dialog within our local communities that will ultimately reduce the risk of being adversely impacted by extreme weather and water events and increase community resilience (the ability to recover) for future extreme events.
  - Whether talking about preparedness and resilience in your home, office, at community centers, within schools or local businesses, on your website, or on social media, **you** will be helping to spread the word, inspire others to take action, and helping our great nation become more weather-ready.







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**W**ear warm clothing  
**I**ce (Don't slip and fall)  
**N**o reports, unless it's safe  
**T**ravel only when necessary  
**E**mergency kit  
**R**ely on only dependable sources  
 for weather information

**Your Safety is ALWAYS #1**

**5 Things to Know**  
about Winter Weather Forecasts

- 1** Snow or ice totals can vary greatly over short distances  
A heavy snow band may form, dropping more snow in one location while significantly less snow falls just a few miles away.  
*Example: Boston 24.6", New York City 9.8" (January 2015 Blizzard)*
- 2** Winter forecasts can change frequently  
Forecasts may change as new model data becomes available. Always check [weather.gov](http://weather.gov) for the latest information.
- 3** Focus more on the winter storm's impacts  
Don't focus too much on exact numbers, and consider the full range of possibilities.
- 4** Know your winter weather terminology  
If a Watch is issued, get prepared for hazardous weather. If a Warning or Advisory is issued, take action – hazardous weather is occurring or will occur soon.
- 5** Rely on a dependable source for weather info  
Choose your information sources wisely, and follow a name or organization you know and trust.

For more information on winter weather safety, visit: [weather.gov/winter](http://weather.gov/winter)



# Fall/Winter/Spotter Safety

## DRIVING DURING STRONG WINDS



Maintain a safe distance from high-profile vehicles



Keep a firm grip on the wheel with both hands



Look out for fallen/falling trees, powerlines, or debris



Use caution on bridges and overpasses

weather.gov



## WINTER DRIVING

Each year, weather-related crashes cause more than 6,000 deaths and 480,000 injuries.

If the outside temperature is near freezing, drive like you're on ice. You may be!



National Oceanic and Atmospheric Administration

U.S. Department of Commerce

National Weather Service  
Albany, New York



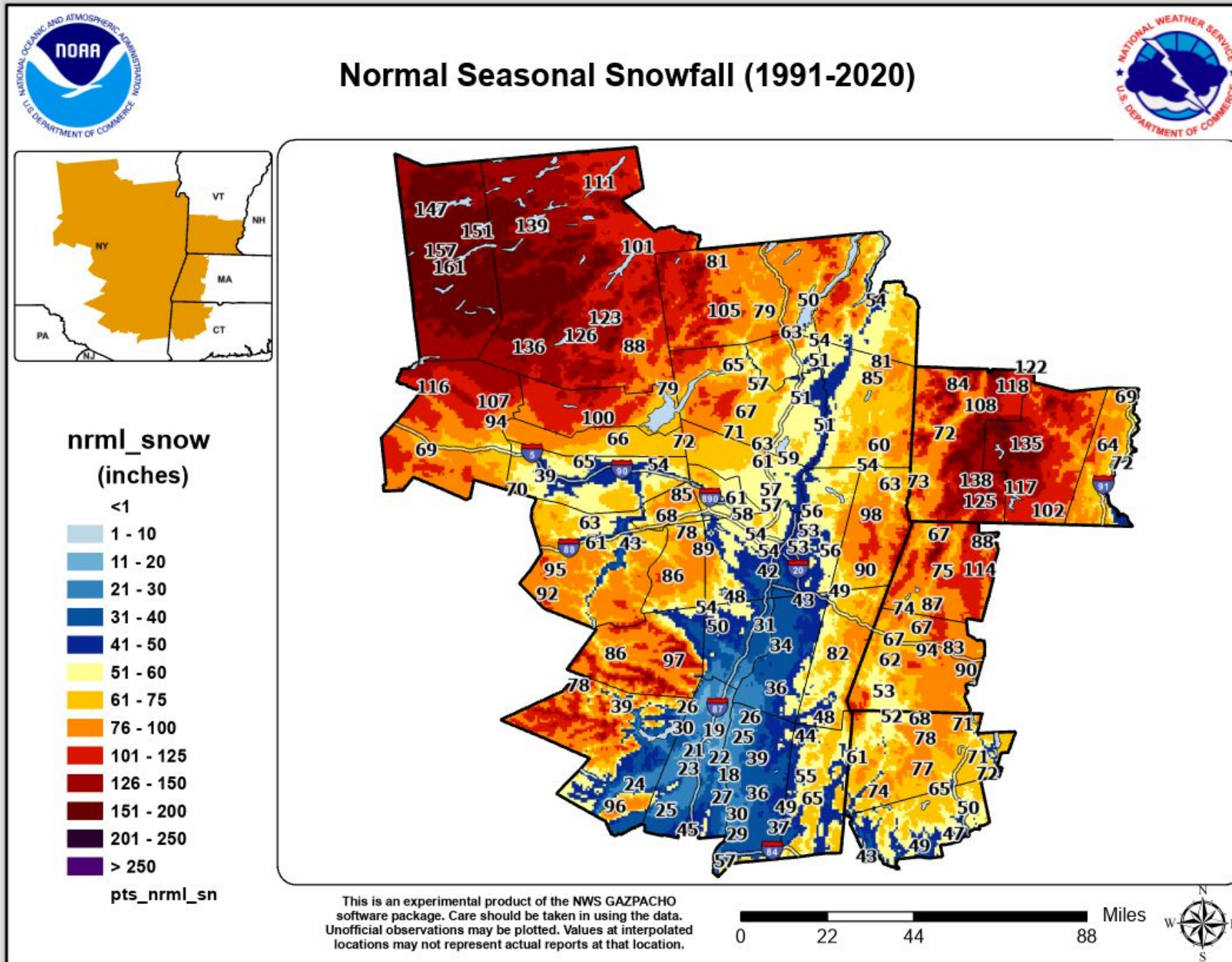
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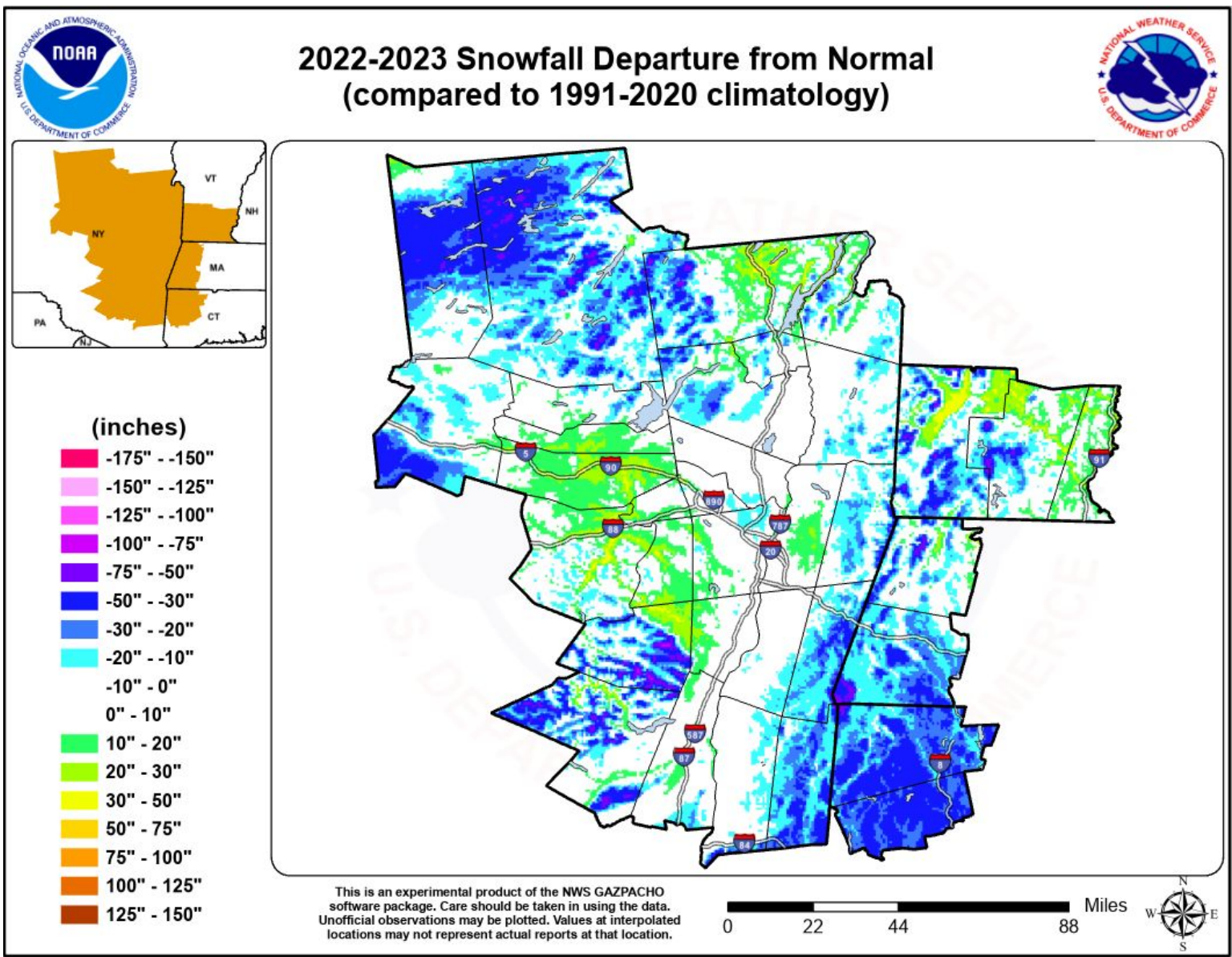
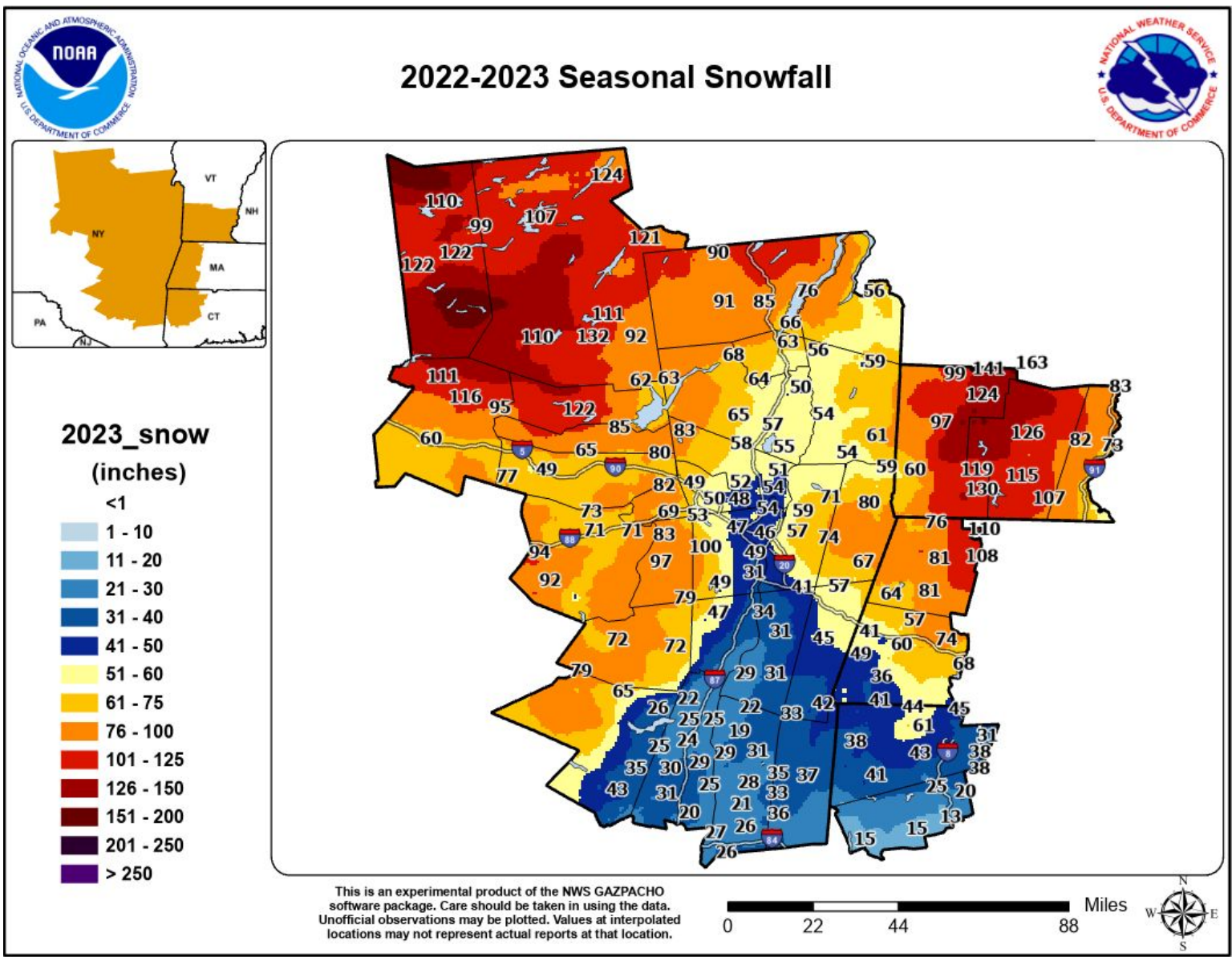


# Snowfall Climatology (1991-2020) - Albany Forecast Area



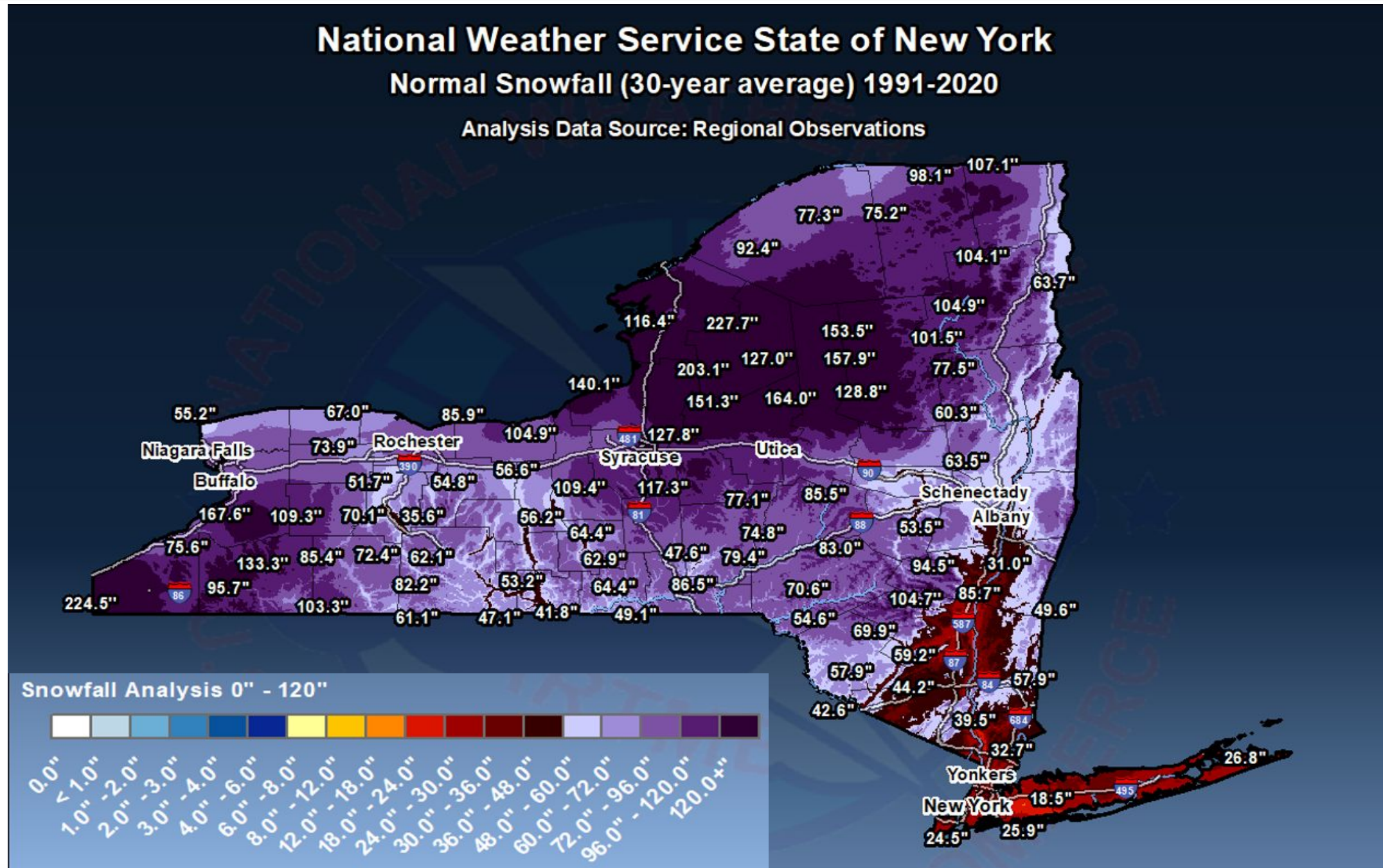


# 2022-2023 Seasonal Snowfall - Albany Forecast Area





# Snowfall Climatology (1991-2020) - New York State



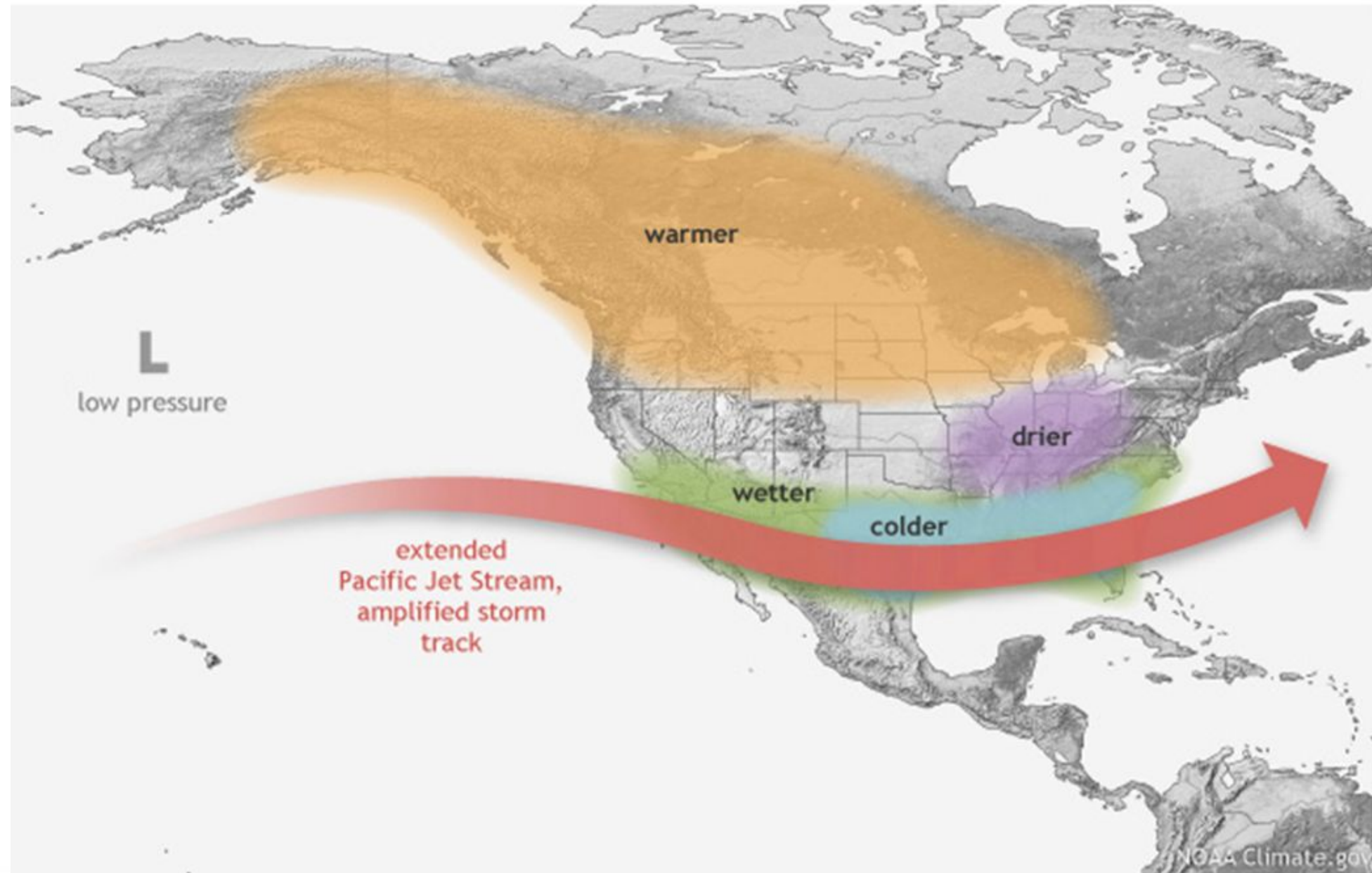


# 2023-2024 Winter Outlook

El Niño has emerged and is anticipated to continue through the Northern Hemisphere spring (with an 80% chance during March-May 2024)

**NOTE:** A single El Niño event will not result in all of these impacts, but El Niño increases the odds of them occurring.

## WINTER EL NIÑO PATTERN







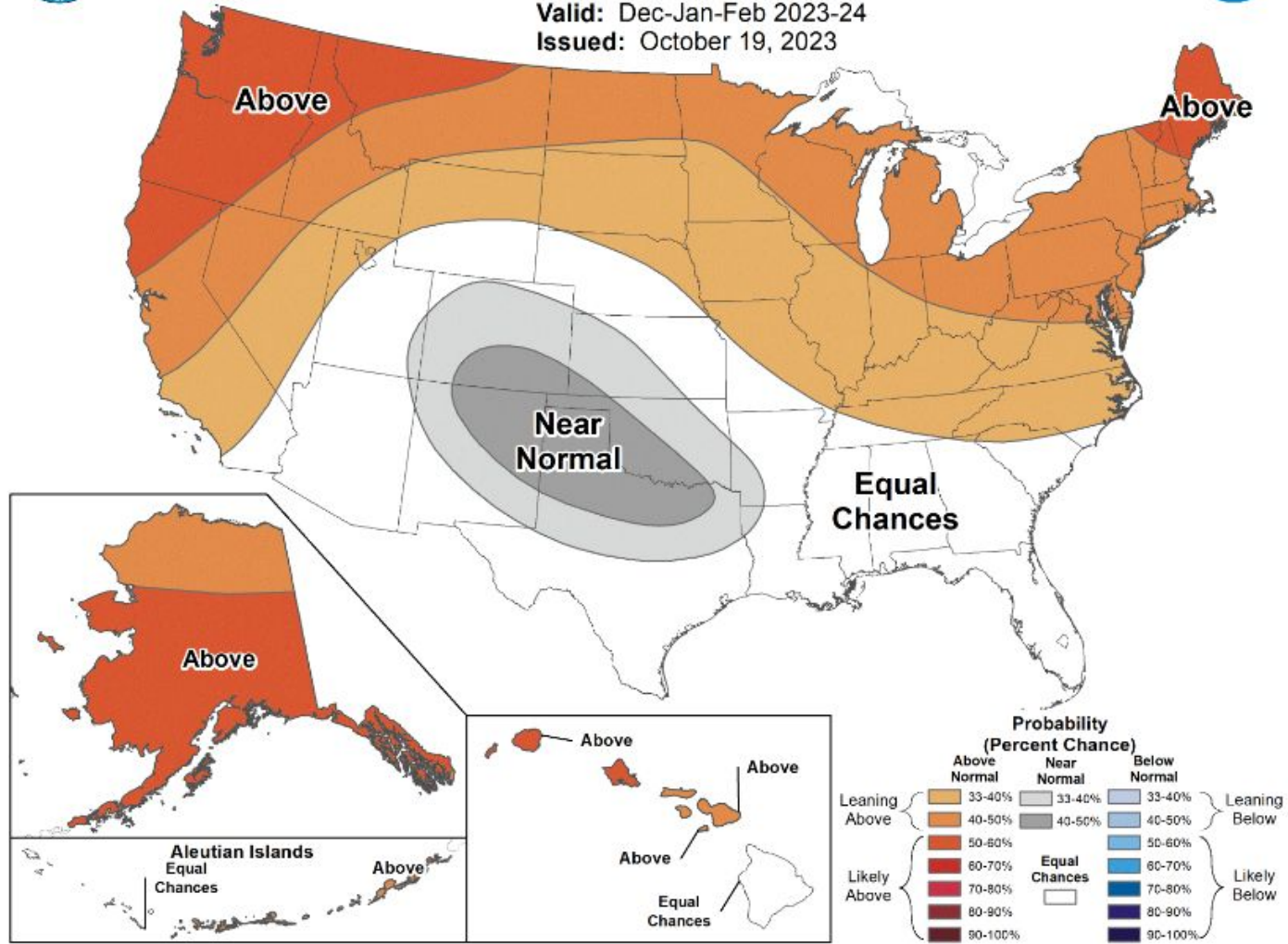
# 2023-2024 Winter Outlook



## Seasonal Temperature Outlook



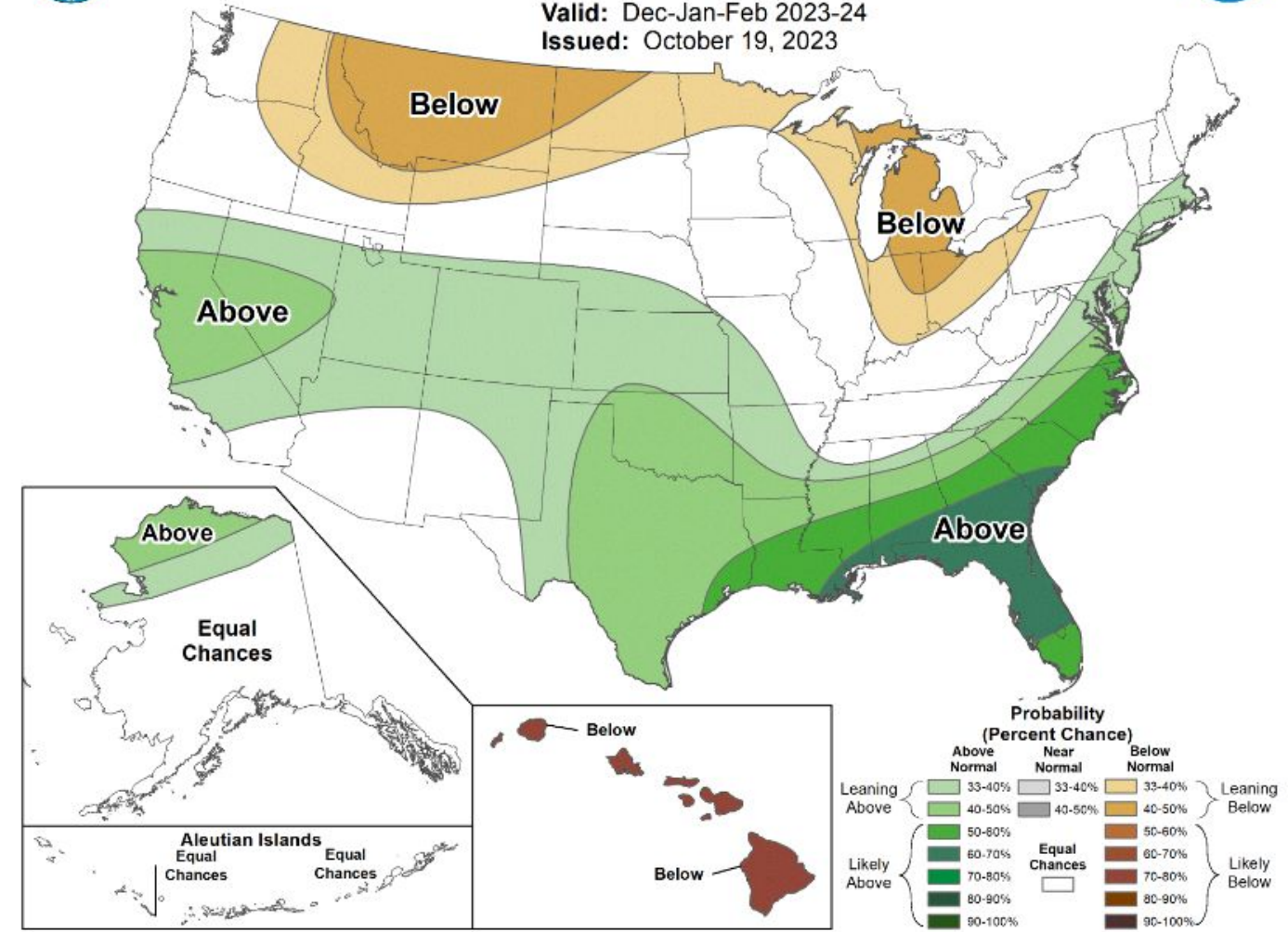
Valid: Dec-Jan-Feb 2023-24  
Issued: October 19, 2023



## Seasonal Precipitation Outlook



Valid: Dec-Jan-Feb 2023-24  
Issued: October 19, 2023





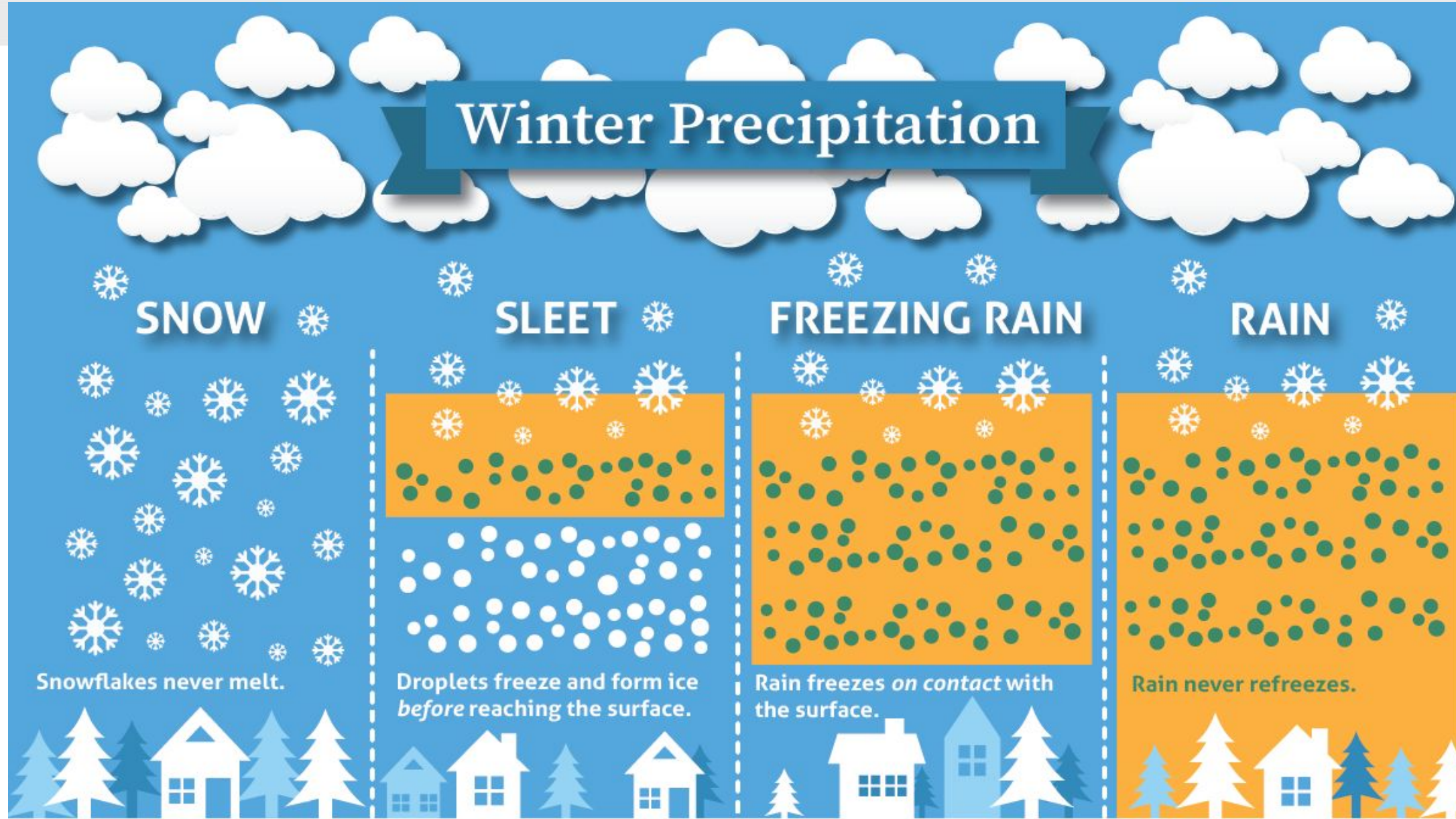
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# Winter Precipitation Types



■ At or Below 32°F

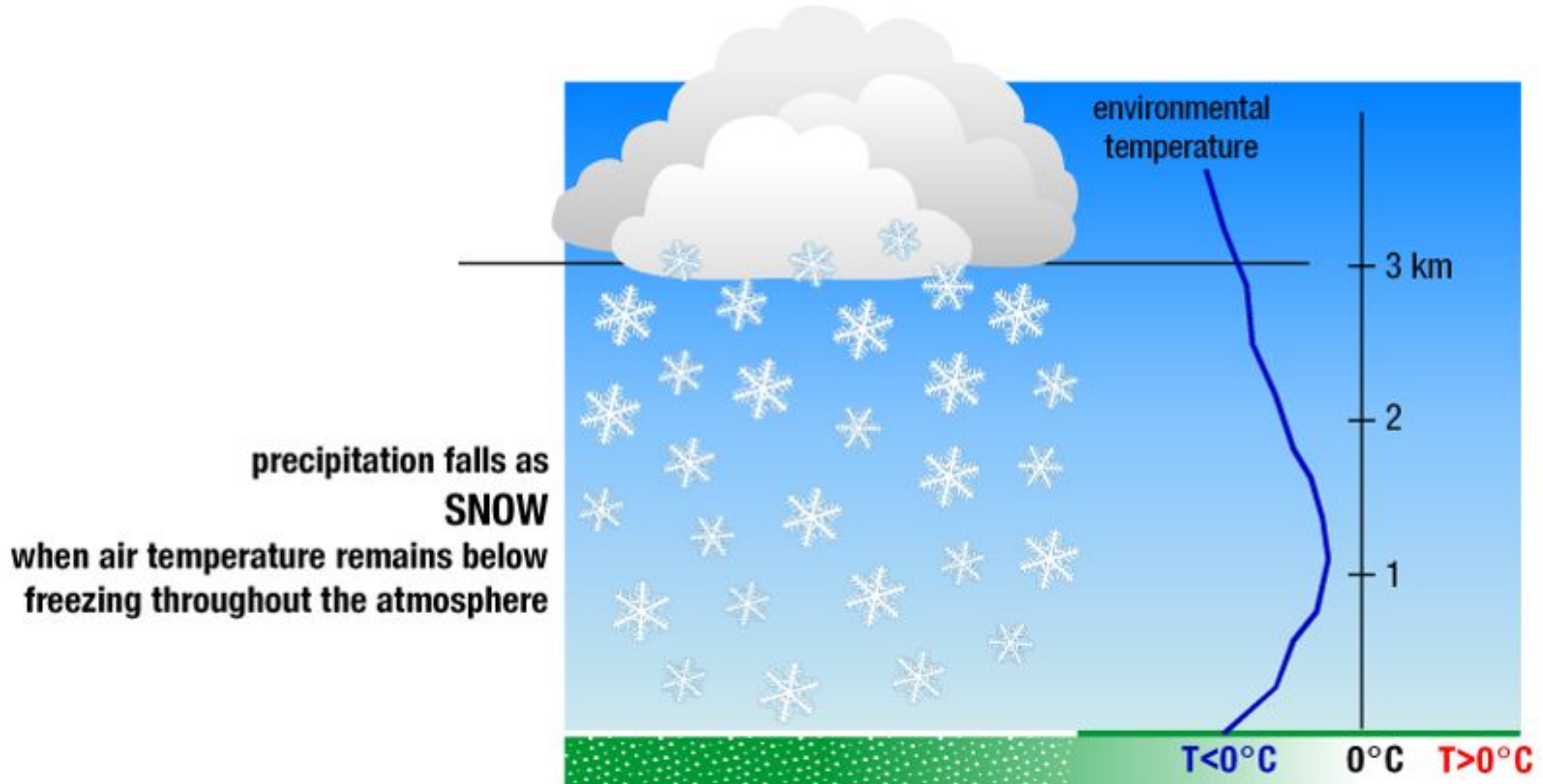
■ Above 32°F

[weather.gov](http://weather.gov)





# Snow





# Winter Hazards - Snow

## Impacts of Snow:

- Transportation issues: Slippery driving and walking conditions, airport closures, rail lines shut down.
- High Snowfall Rates: Rapid accumulation and near zero visibility ( 2"/hr = ¼ mile visibility or less).
- Early/Late Snows (Oct/Nov/May) : 3" of snow with leaves on trees = downed trees and widespread power outages.
- Blowing Snow: Drifting snow blown back onto previously cleared and treated roads causing slippery driving conditions.
- Prolonged accumulation periods (1-2 months) can lead to weight buildup on roofs and roof collapses.



Photo: Brett Rathbun, Meteorologist,  
NWS Albany, December 17, 2020



# Snow-Water Ratio

Heavy, Wet Snow

5:1 = 5" of snow melts to 1" of liquid

"Typical" Snow

10-12:1 = 10-12" of snow melts to 1" of liquid

Light, fluffy Snow

30:1 = 30" of snow melts to 1" of liquid

Light, fluffy snow = higher ratios  
Heavy, wet snow = lower ratios

**SNOW:RATIO**

The percentage of water within a sample of snow is called "snow ratio". An old rule of thumb was that for every 10 inches of snow, there would be 1 inch of water (10:1).

However, snow ratios can vary dramatically around the country and from event to event.

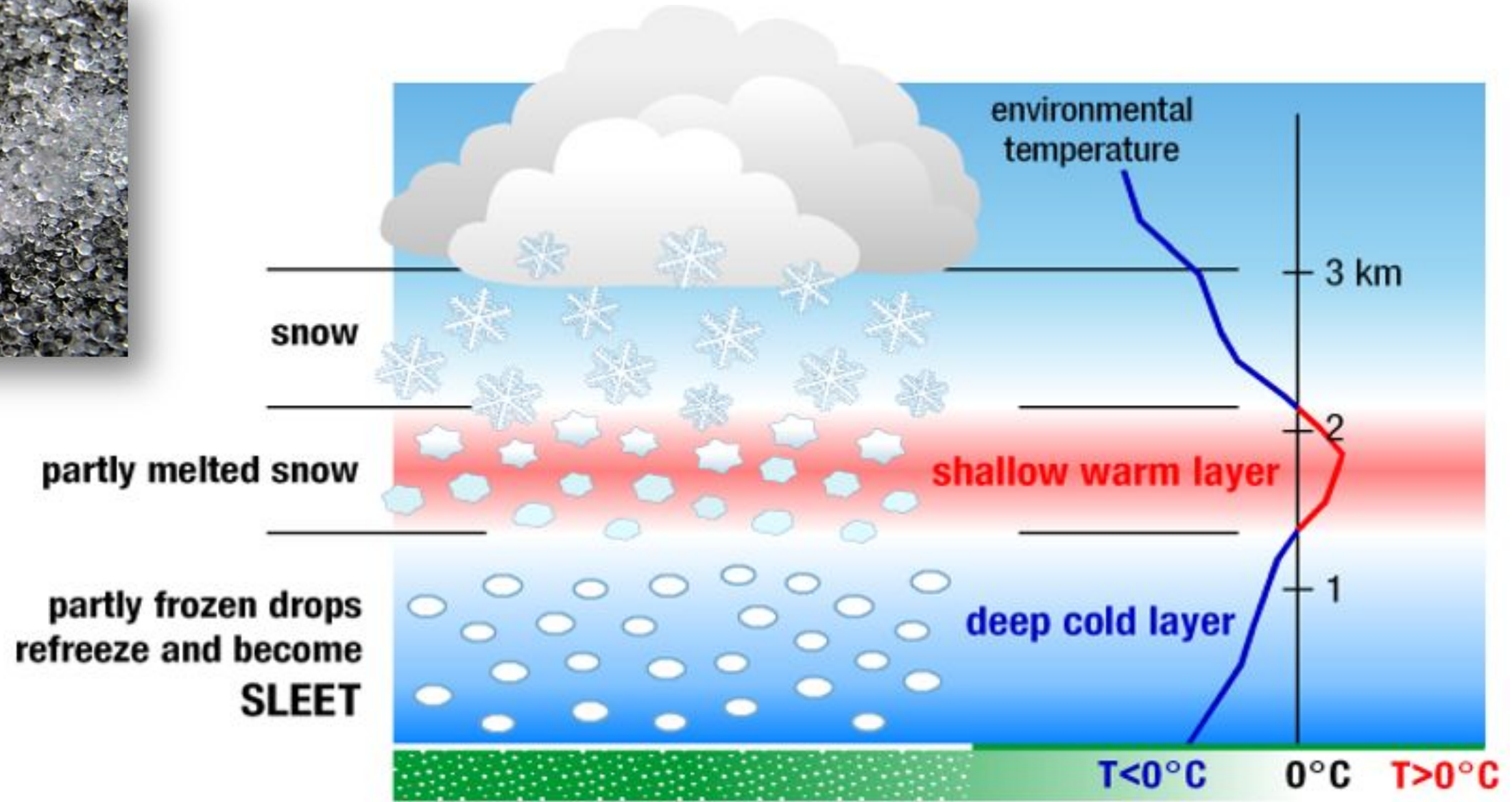
*Variables that affect snow ratio*

- Depth of the "warm" layer from the surface into the snow-producing cloud.
- Amount of ice in the snow-producing cloud.
- If it's windy, snowflakes can fracture, losing their "lacy" structure.
- Deep cold leads to higher snow ratios.



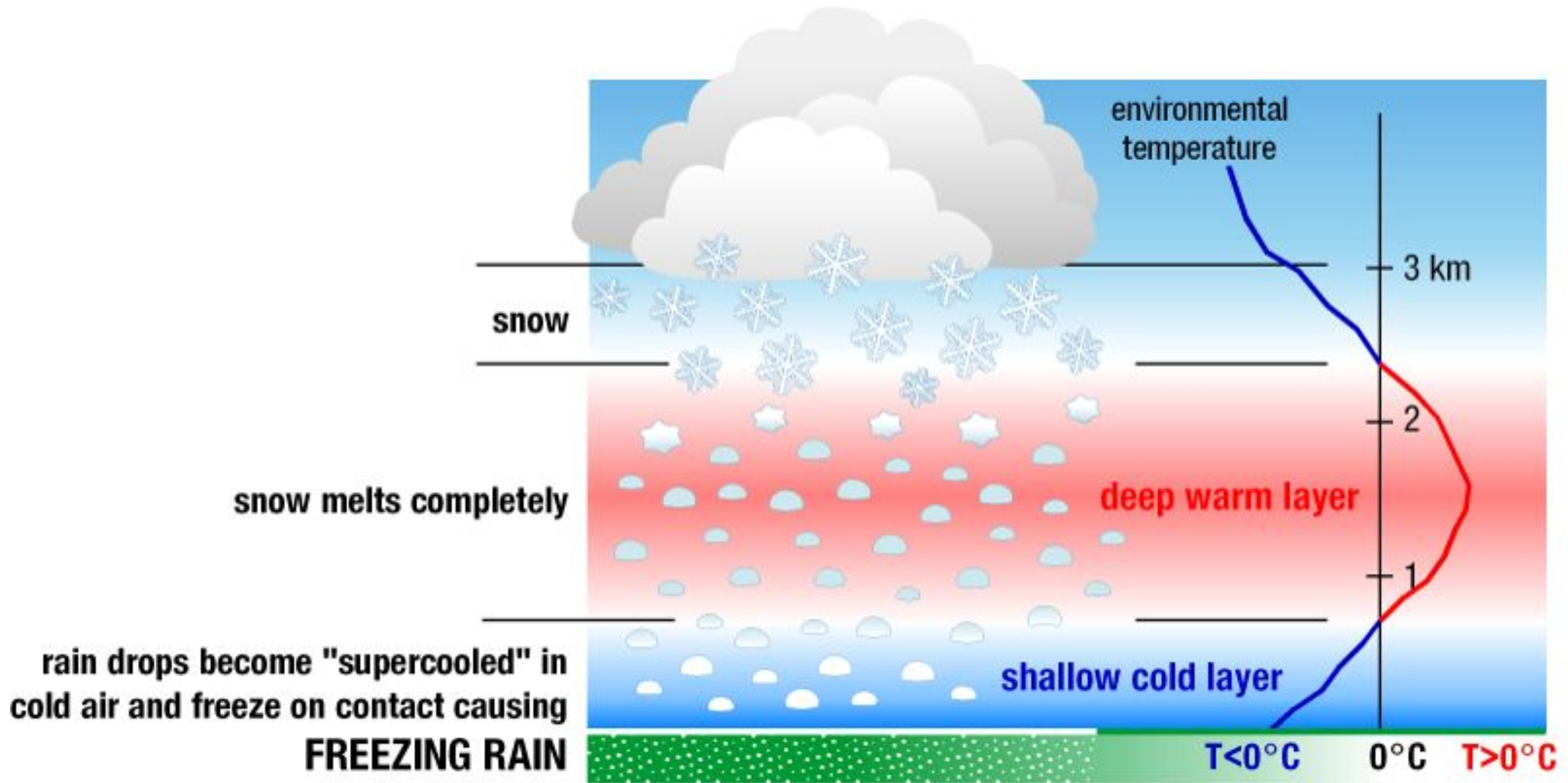


# Sleet





# Freezing Rain







# Winter Hazards - Freezing Rain

## Impacts of Freezing Rain/Ice:

- A trace of ice will cause slippery driving and walking conditions.
- One quarter inch of ice glaze accumulation on trees will start to bring down small branches.
- One half inch of ice glaze accumulation on trees and wires will cause numerous power outages (outages last a day or two).
- One Inch or more of ice glaze accumulation on trees and wires causes widespread power outages (outages may last a week – Dec 2008, Jan 1998).
- Any wind with the ice will make matters worse.



Photo: Ingrid Amberger, NWS Albany, NY





# Snowfall Measurement Review



## Six Basic Steps for Properly

# MEASURING SNOW



Accurate and timely snowfall measurements are extremely important to your National Weather Service office, your community, local media, and many others. Here are the six steps you need to know for measuring snow:

### 3

#### Set-up



Set up before snow begins

Put your board out and mark it with the flag

### 4

#### Measuring Snow



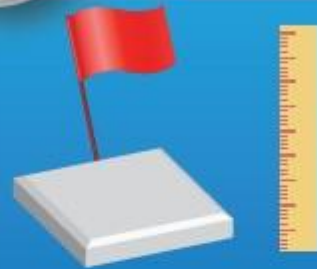
Record your total to the nearest tenth of an inch

Wipe the board off after measuring

Measure once daily at the same time, after measuring place the board on top of snow

### 1

#### Supplies



Ruler or yard stick  
24" X 24" white board, flag

### 2

#### Planning



Find an open area away from tall objects, but sheltered from wind

### 5

#### When Snow Stops



Measure as soon as the snow stops to avoid lower totals due to melting, settling and drifting

### 6

#### Reporting



SEND us your report!

**Snowfall measurements are rounded to the nearest 0.1"**



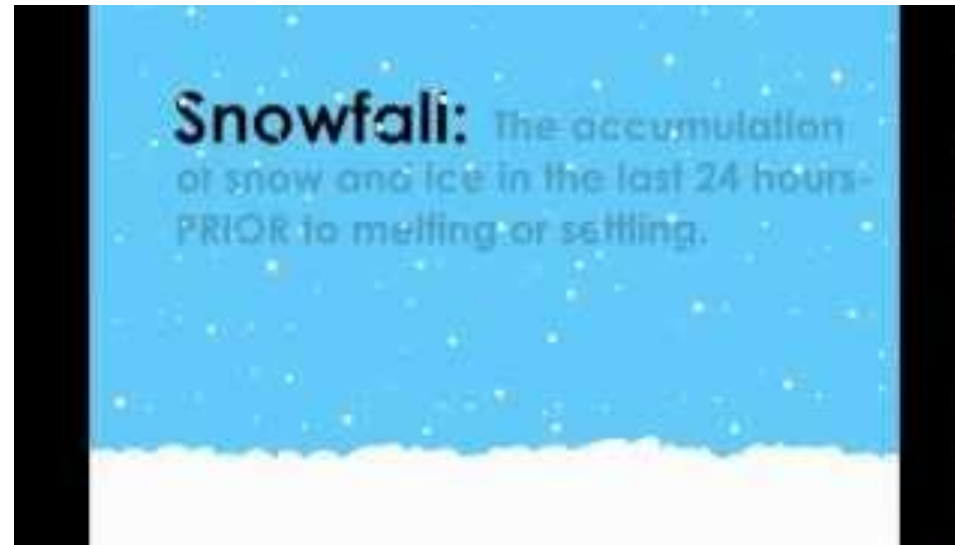


# Snowfall & Liquid Equivalent Measurement Review

## Step 1



## Step 2



## Step 3



**Snowfall measurements are rounded to the nearest 0.1"**



# Ice Accretion



## ICE ACCRETION



Add these two measurements, then take the average (divide by 2)



### Two ways to measure ice:

1. **radial** surface (such as from a tree branch)
2. **flat** surface (such as a metal post, railing or picnic table)

### How to measure:

1. **radial** surface: measure length from BOTH the right and left sides of the object to the edge of the ice; then take the average (see top left)
2. **flat** surface: measure from the base of the object to the top of the ice (see bottom left)

Send any reports to your local NWS office and note if it was measured on a radial or flat surface (if it is safe).

The National Weather Service forecasts for Flat Ice

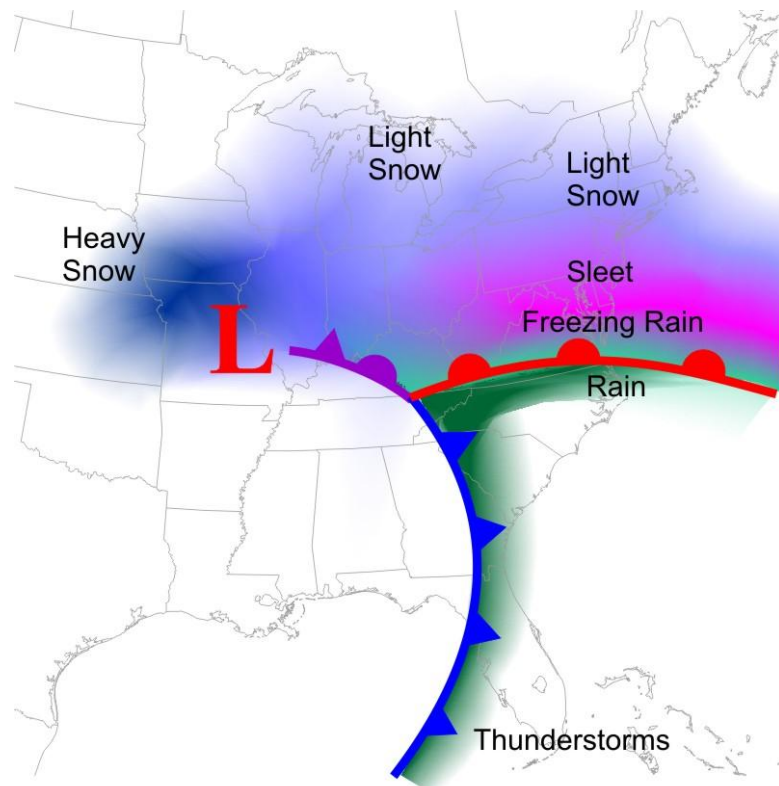




# Winter Weather Events - Overrunning

Also referred to as an area of precipitation ahead of a warm front

In the winter, many of these overrunning events contain snow and/or a wintry mix of precipitation



(Source: Dutton Institute - Penn State)

1

## Near the ground

Warm air flows north heading for dome of cold air at surface.

2

## Up and over

Lighter warm air is forced upward when it plows into cold, dense air.

3

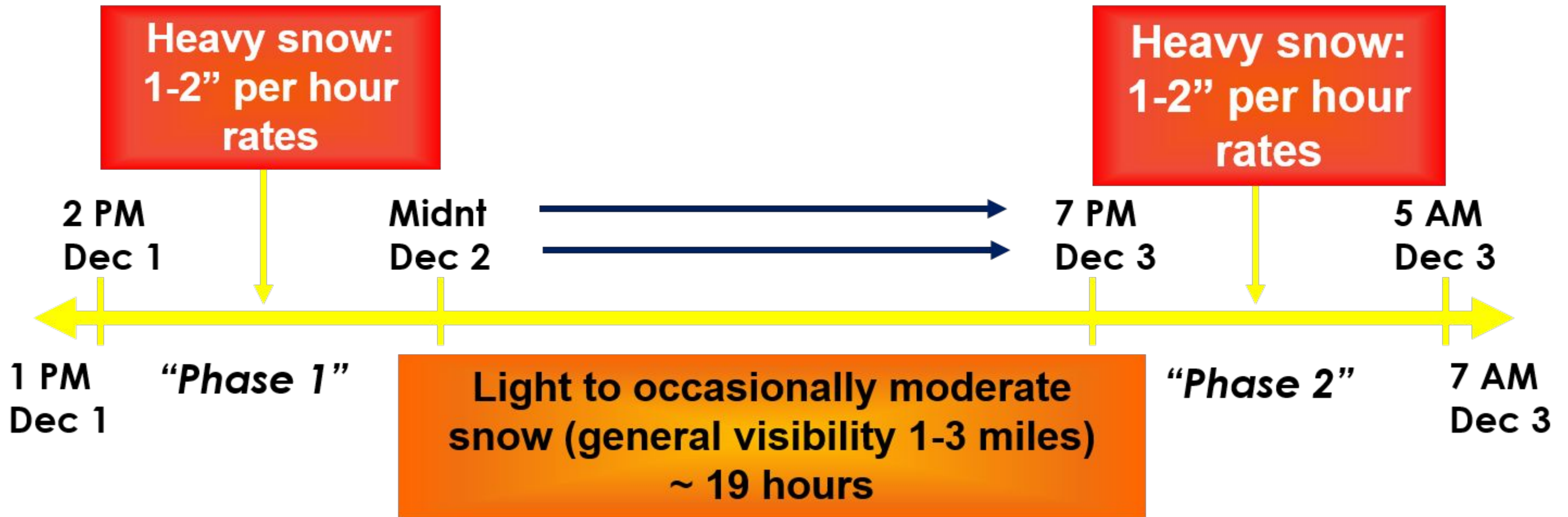
## Precipitation

Rising warm air cools, forming low-topped clouds and steady rain, snow.





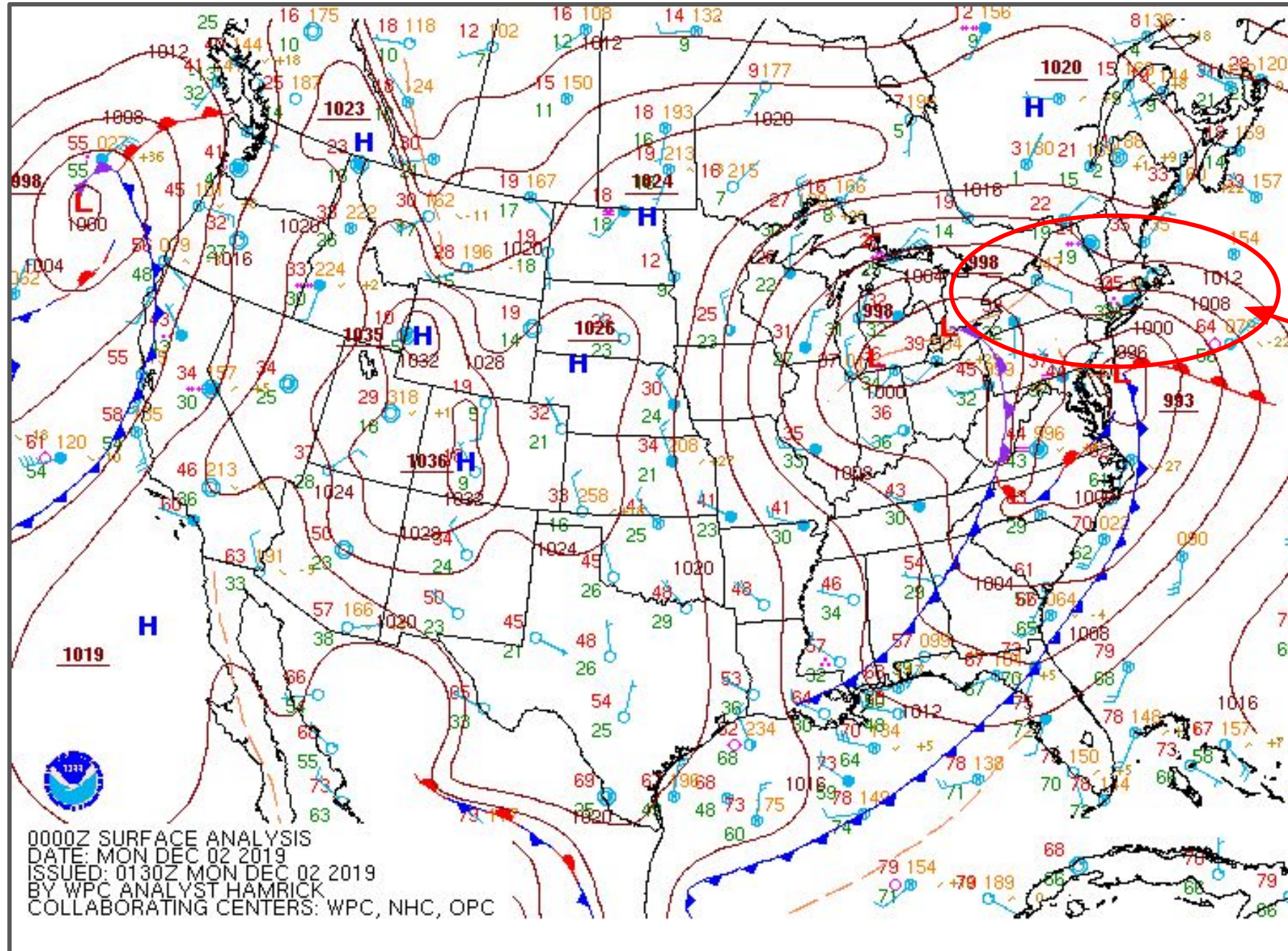
# Overrunning Example: December 1-3, 2019



**Snow during Phase 1 was due to overrunning**



# Overrunning Example: December 1-3, 2019

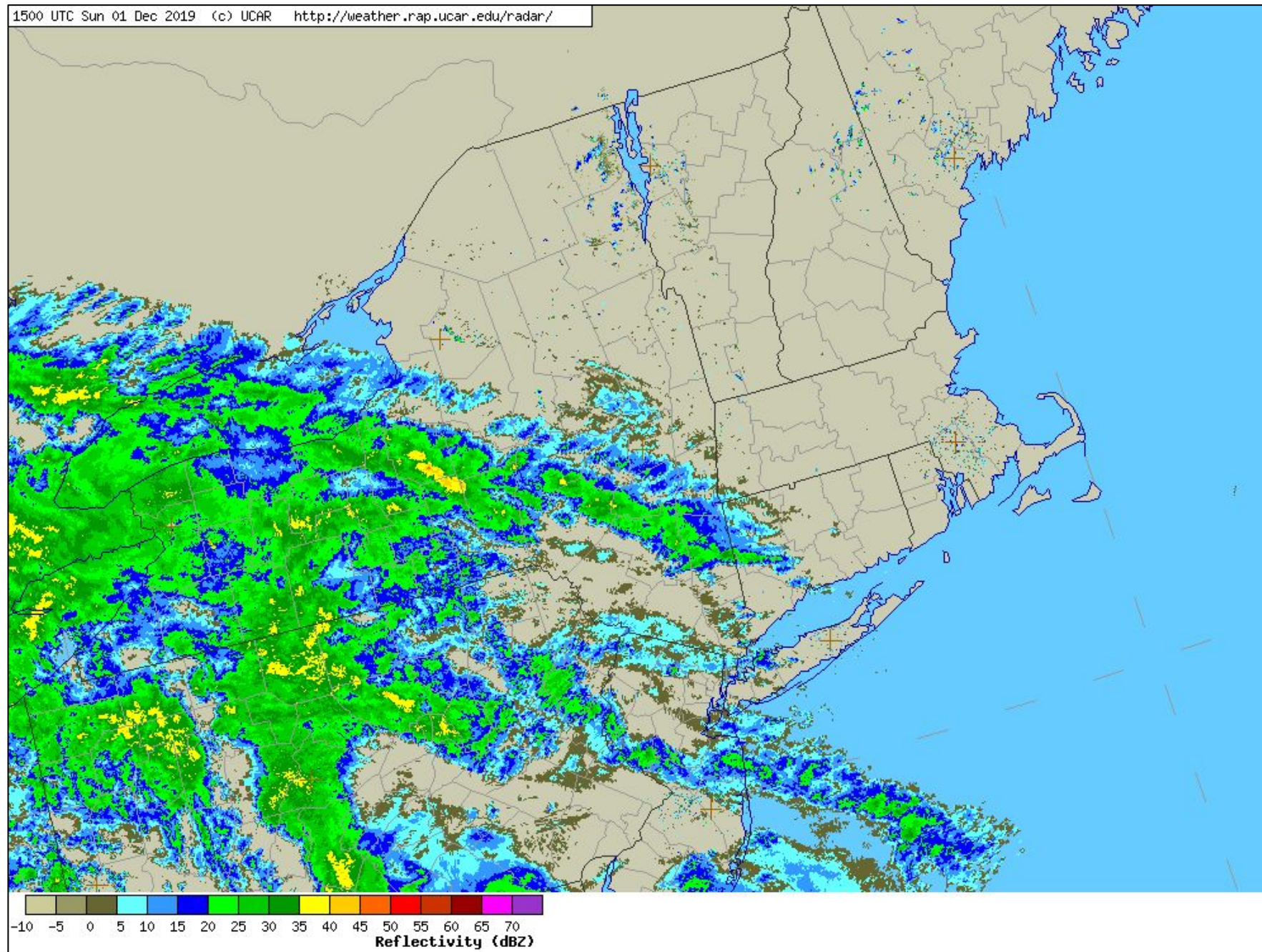


Widespread precipitation (mainly snowfall) occurred ahead of the approaching warm front





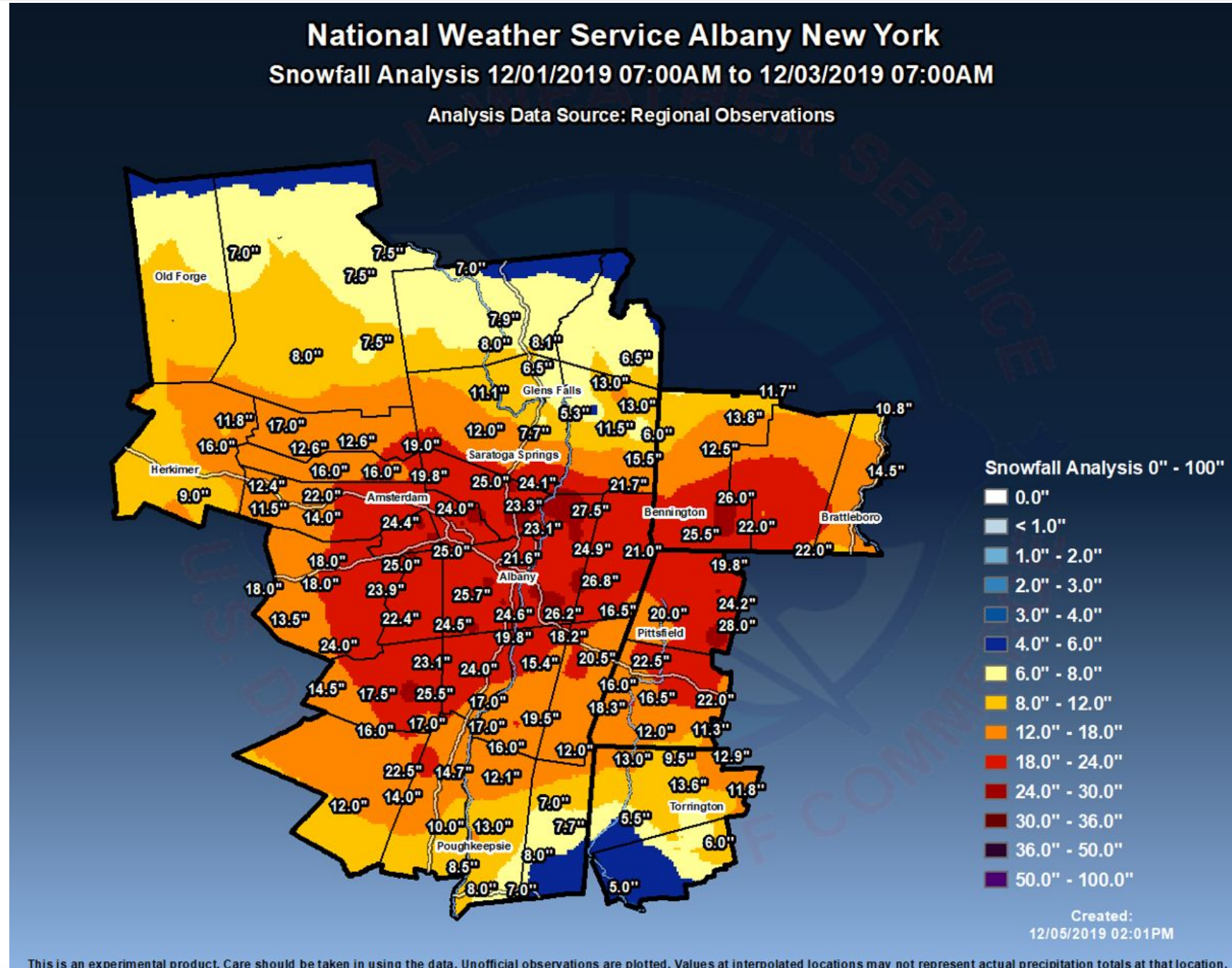
# Overrunning Example: December 1-3, 2019





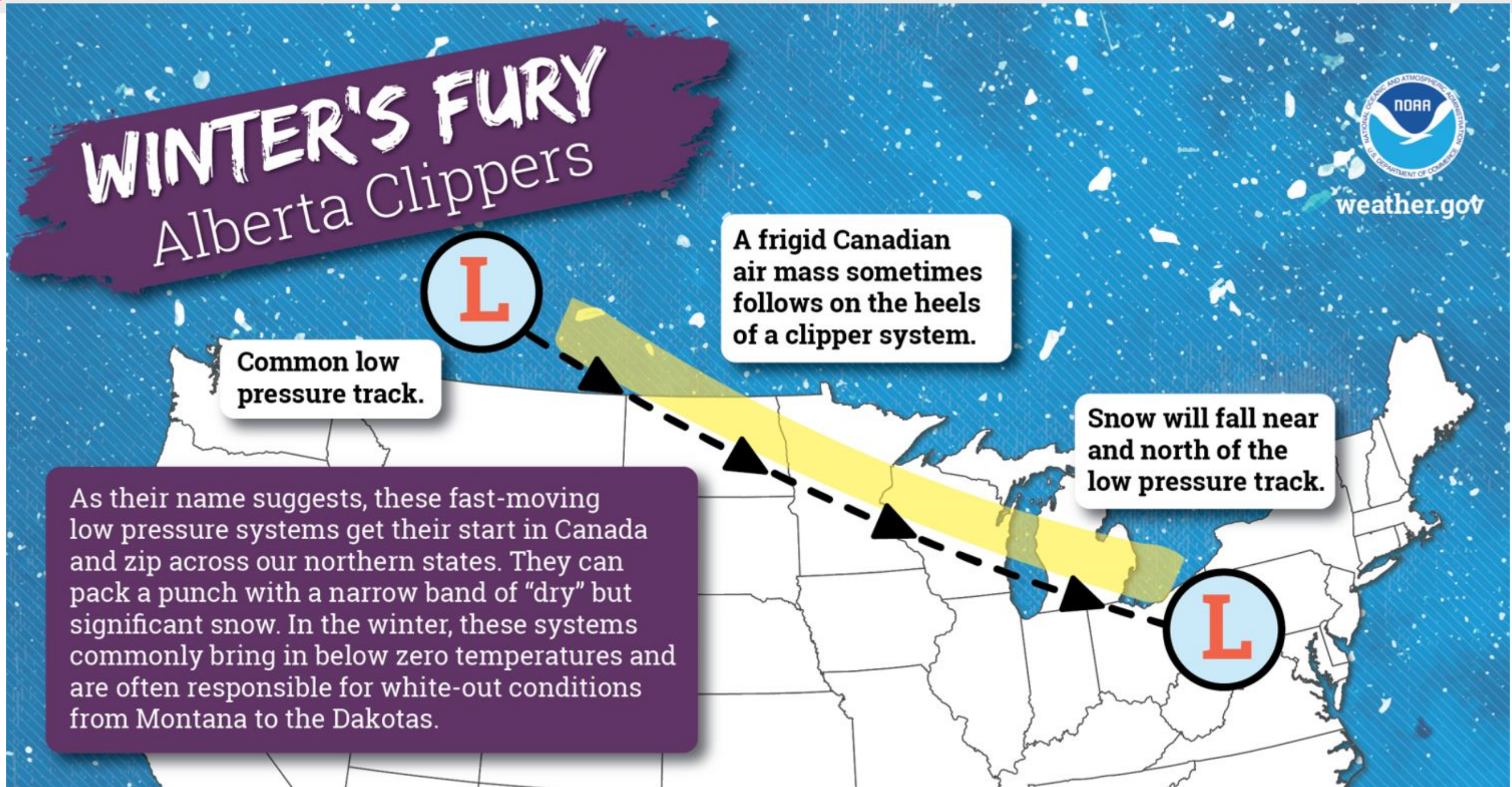


# Overrunning Example: December 1-3, 2019



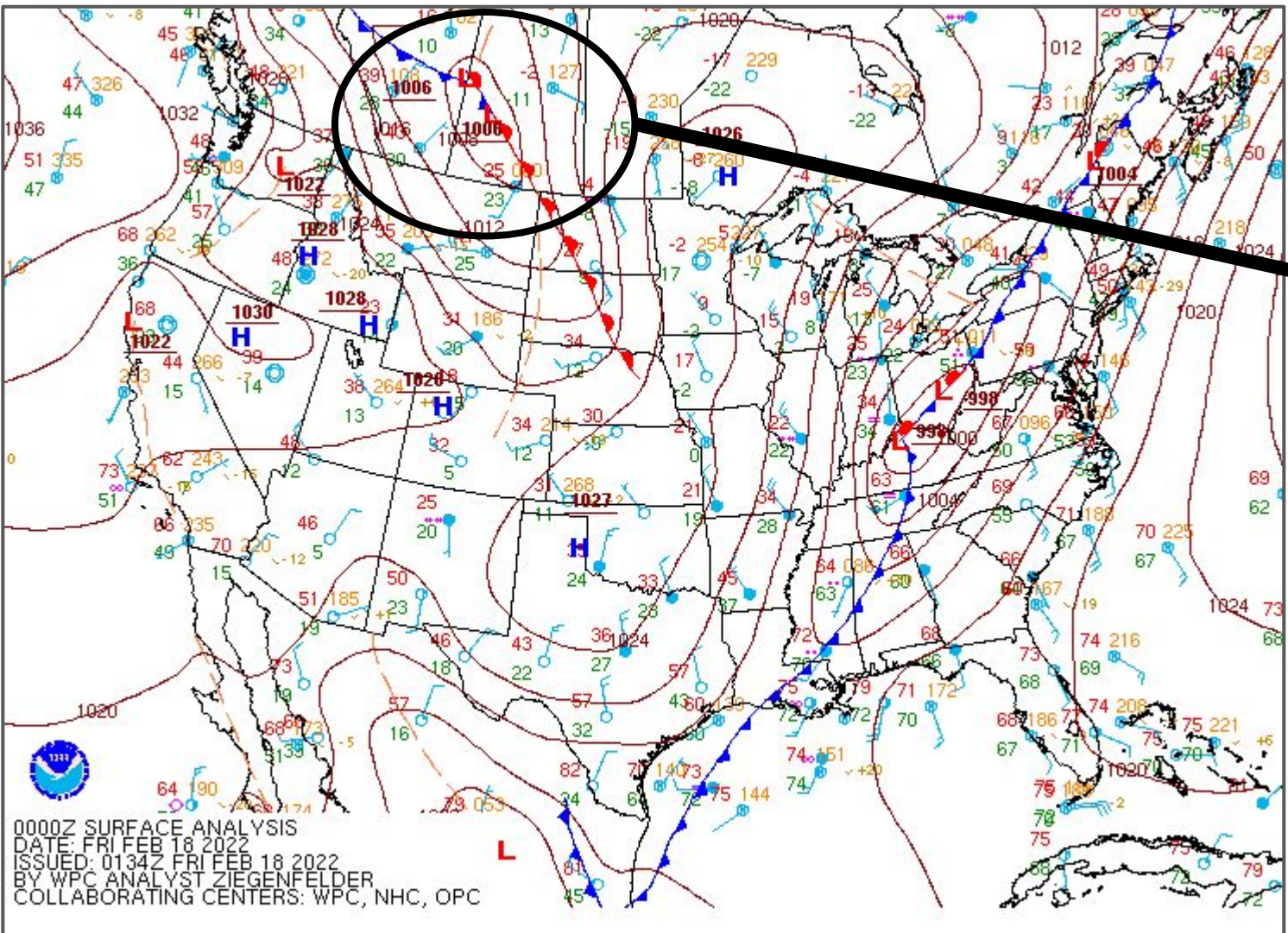


# Winter Weather Events - Alberta Clipper



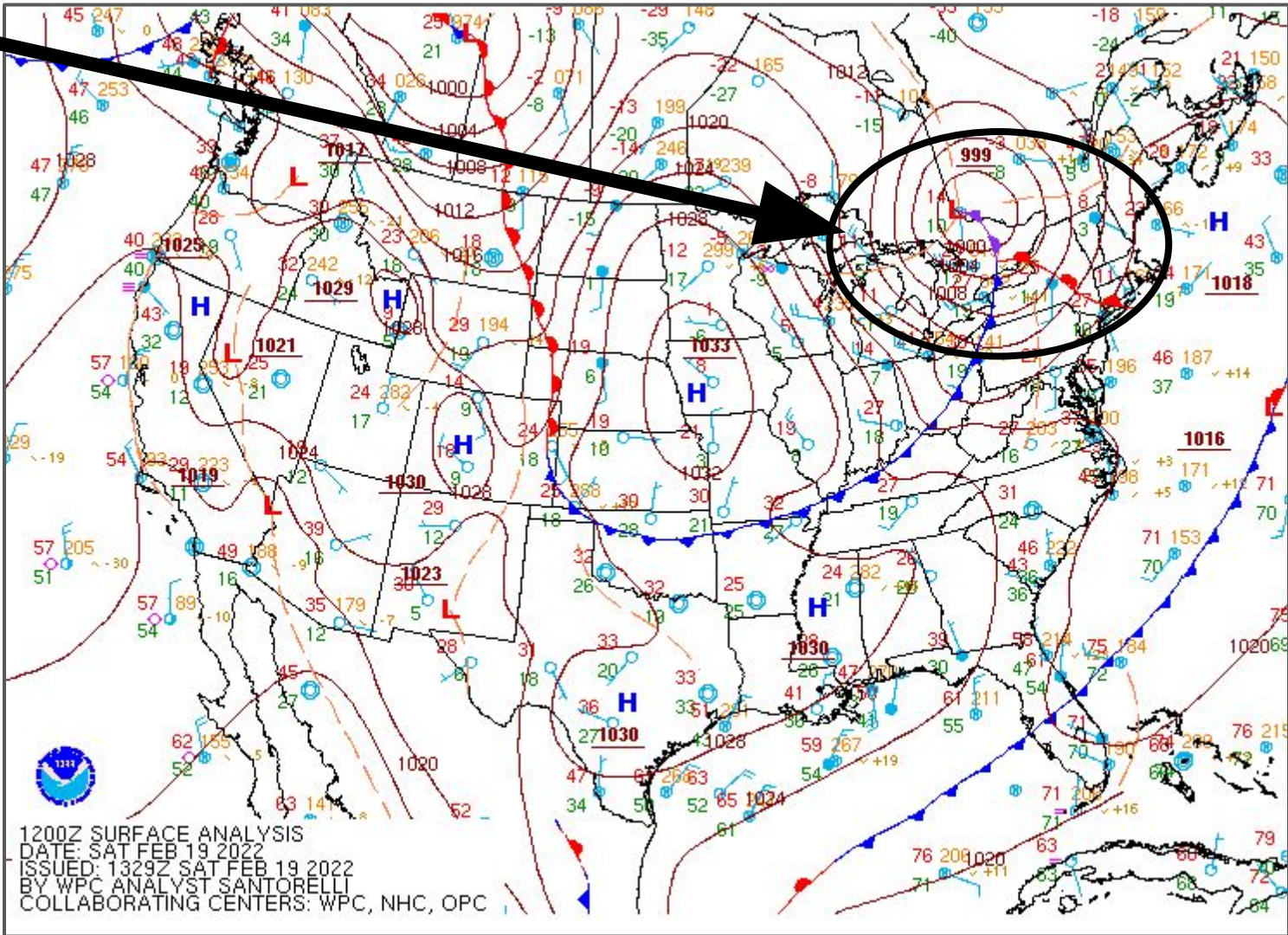


# Winter Weather Events - Alberta Clipper



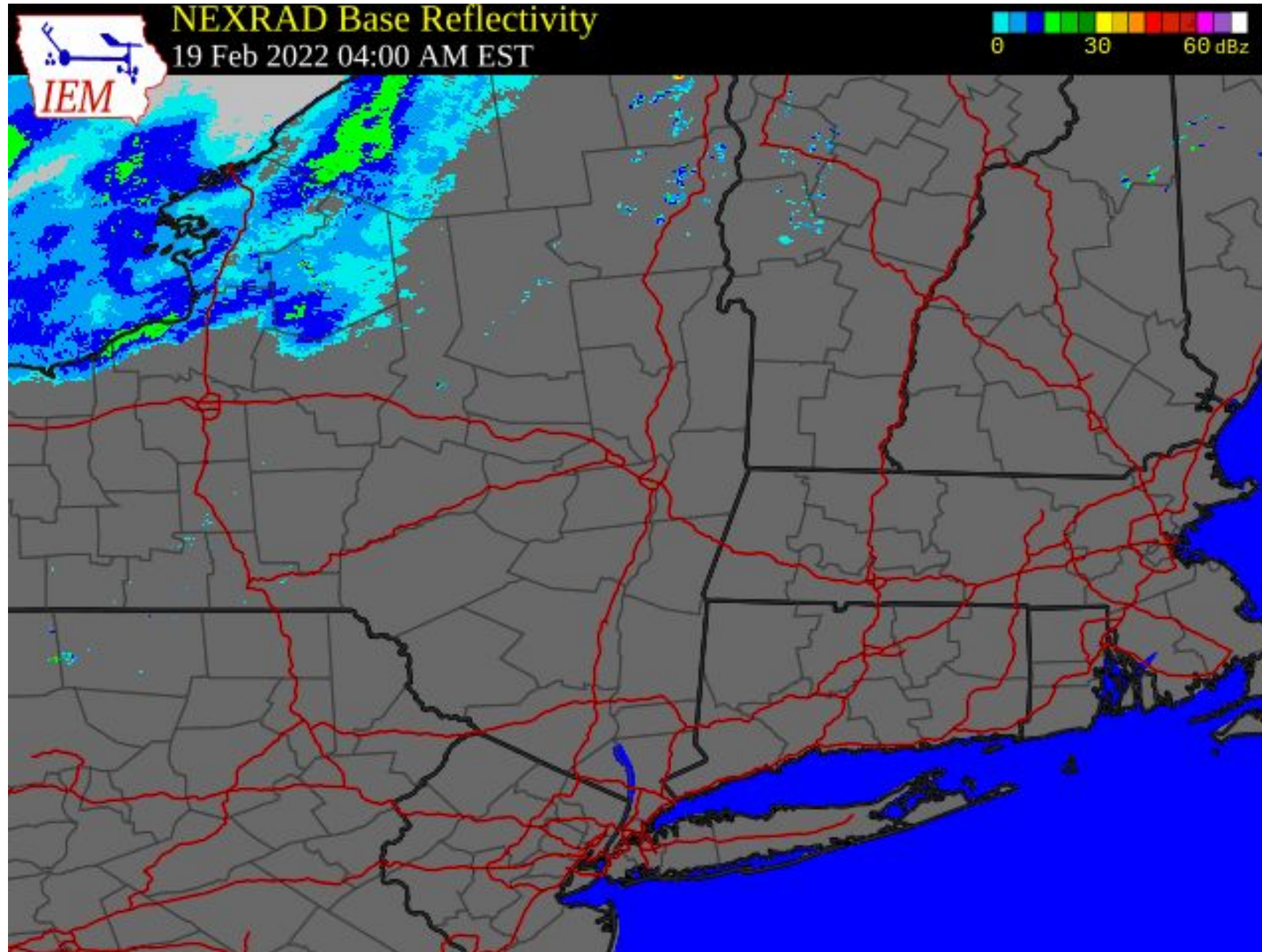
First developed in Alberta, Canada region during the evening hours on February 17, 2022...

Reaches the Northeast during the daytime hours on February 19, 2022 (36 hours later)





# Winter Weather Events - Alberta Clipper





# Winter Weather Events - Nor'easters

## WINTER'S FURY Nor'easters

Not many winter storms have the potential to bury 100 million people in 1-2 feet of snow in a single day. Nor'easters are notorious for packing big wind and copious amounts of moisture they get from the Atlantic. The heavily populated region between Washington D.C., Philadelphia, New York and Boston, the "I-95 Corridor," is especially impacted by Nor'easters.

Snow will fall to the west of the low pressure track.

Small variations in the track could lead to big differences in snow totals for cities.

Common low pressure track.



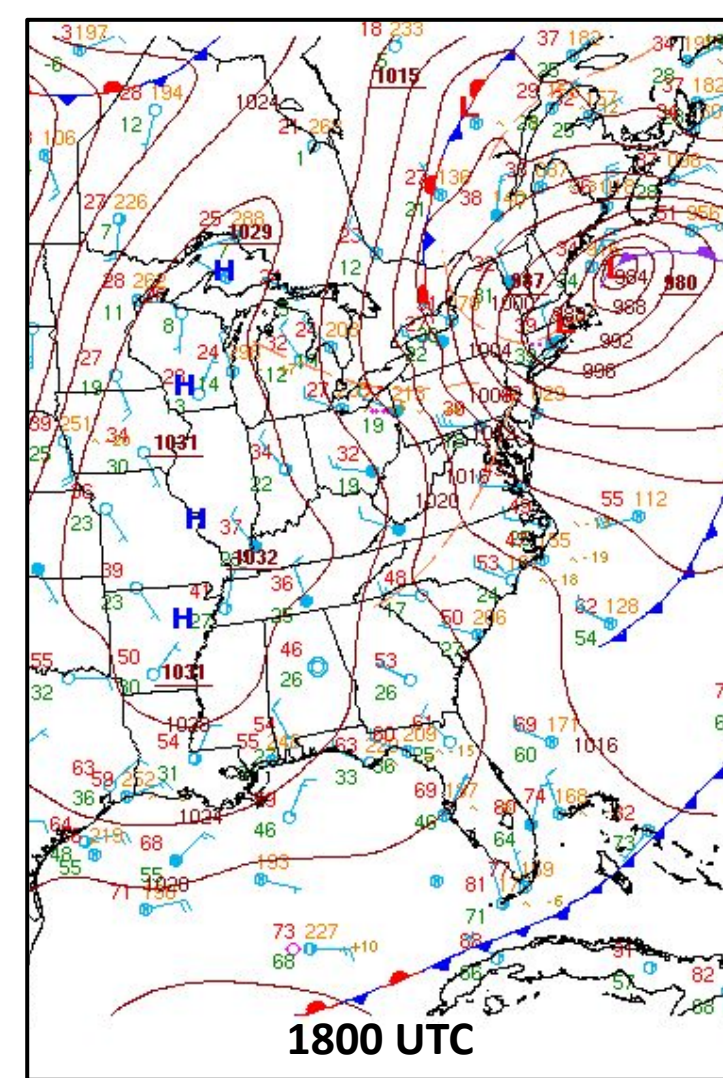
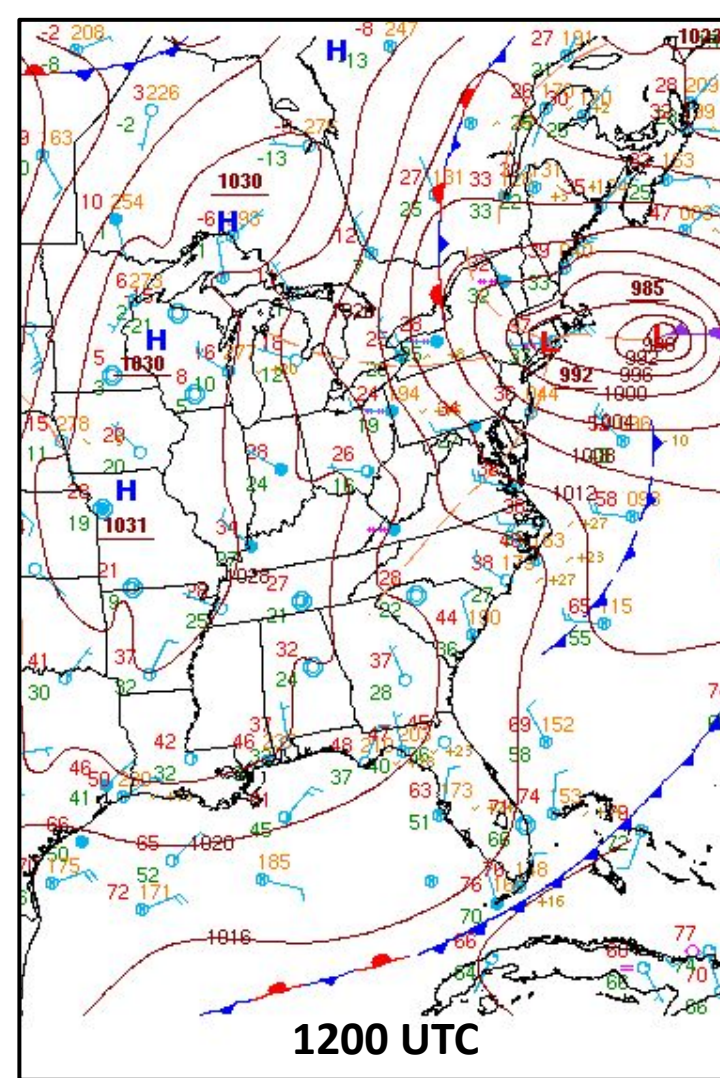
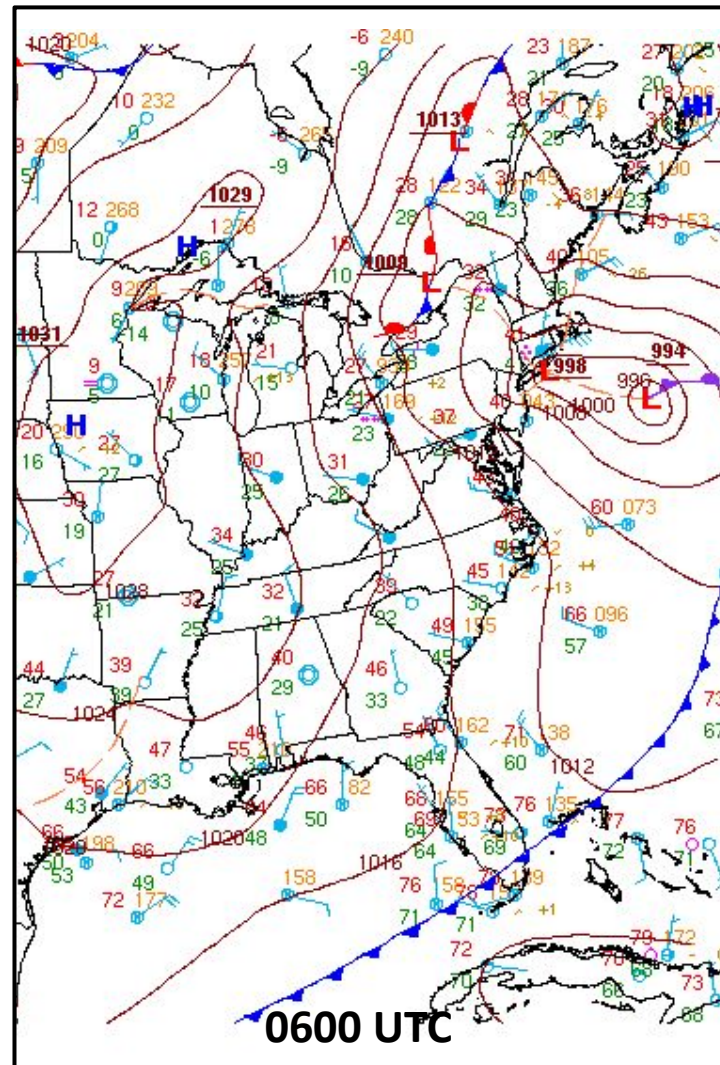
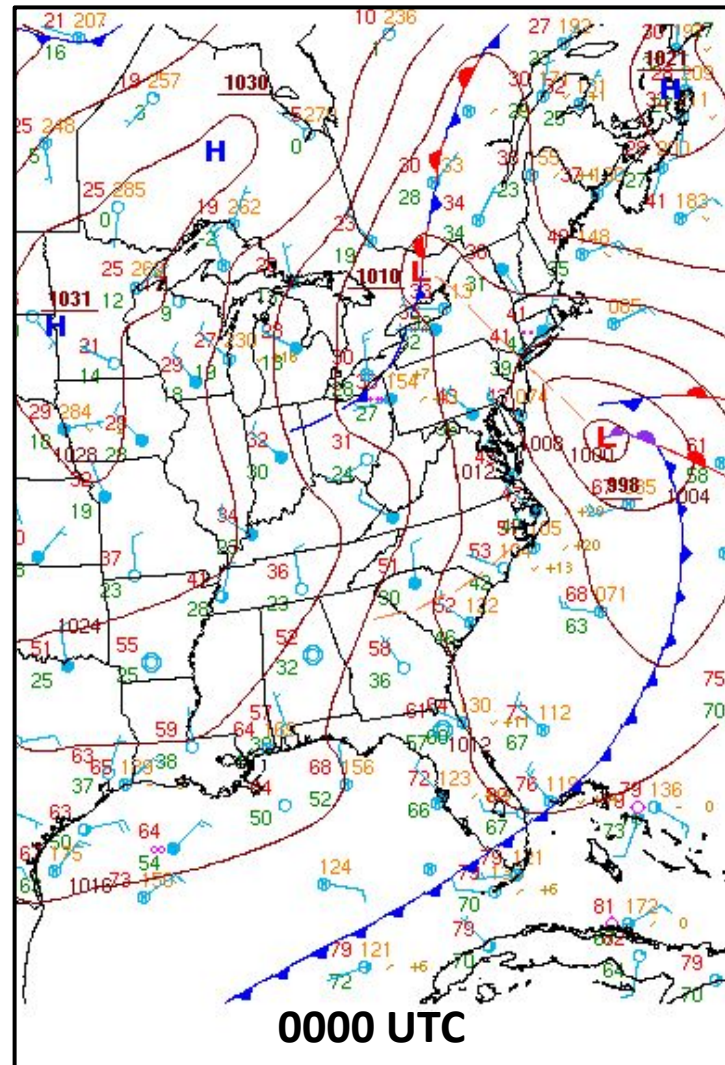
weather.gov





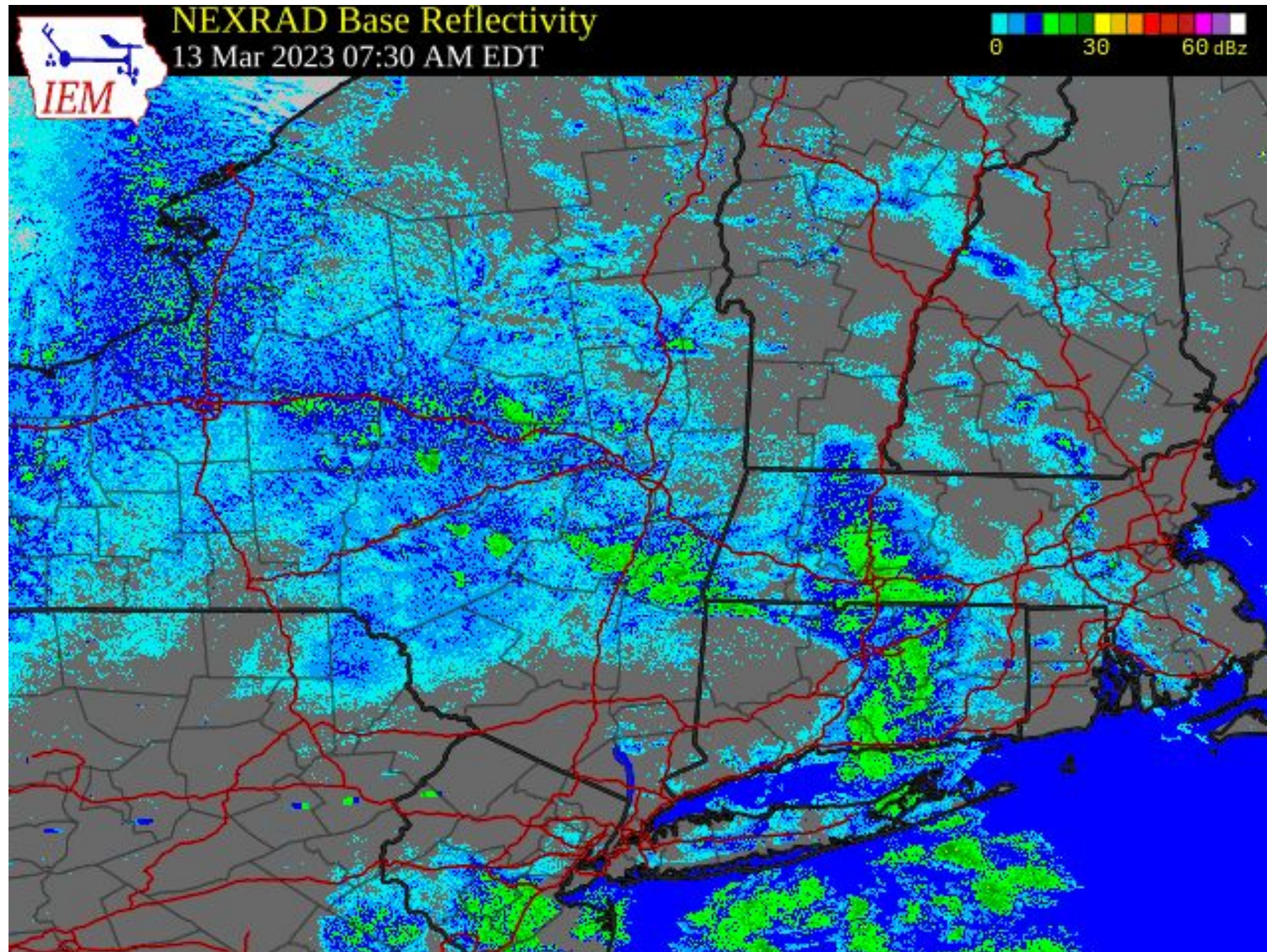
# Nor'easter Example: March 13-15, 2023

## Surface Maps: 00 UTC – 18 UTC 14 MAR 2023





# Nor'easter Example: March 13-15, 2023

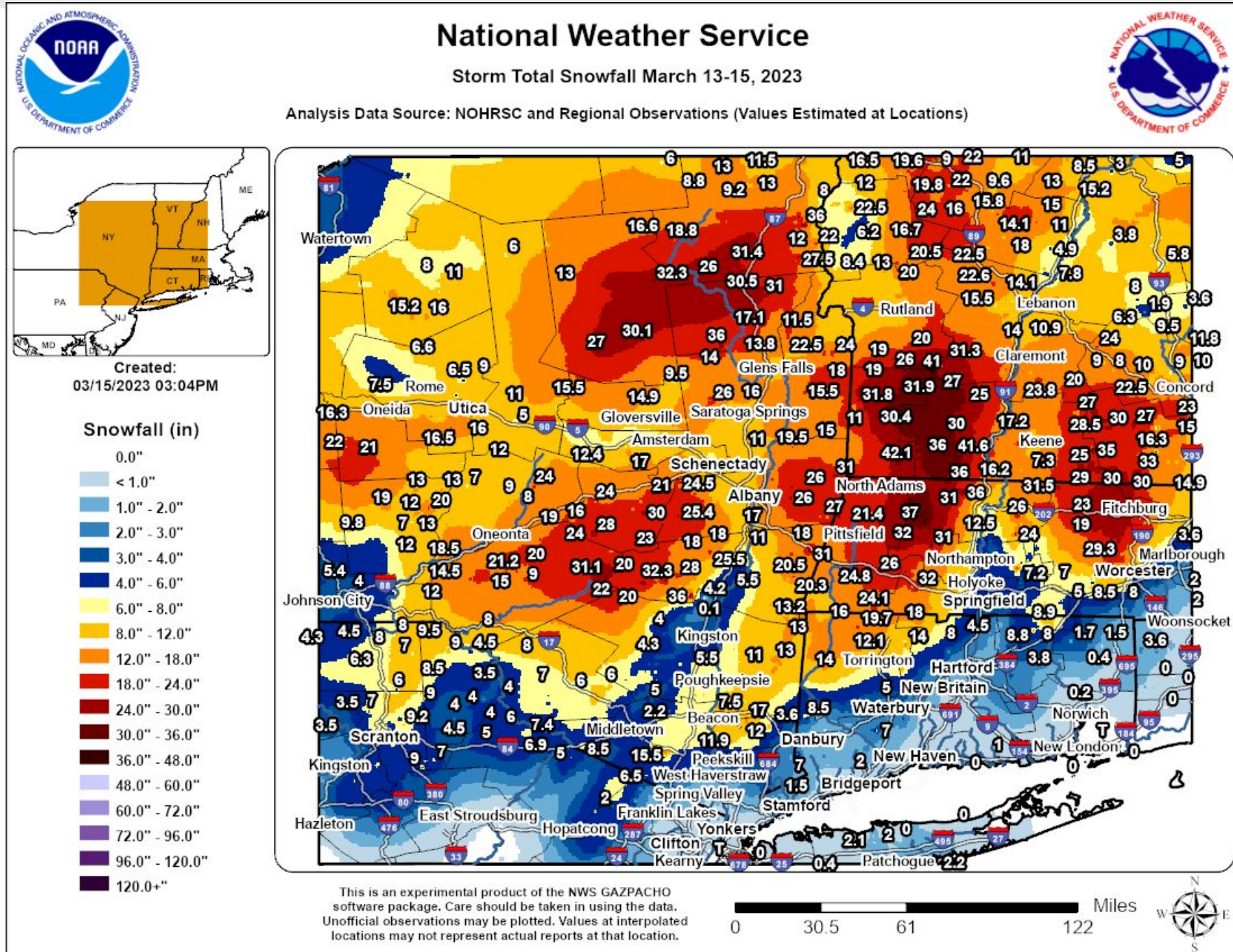




# Nor'easter Example: March 13-15, 2023

- Heaviest Snow:
  - Catskills
  - Eastern ADKs
  - Southern VT
  - Berkshires
  - Worcester Hills

- Lowest Snow Totals
  - Mid Hudson Valley
  - I-95 Corridor

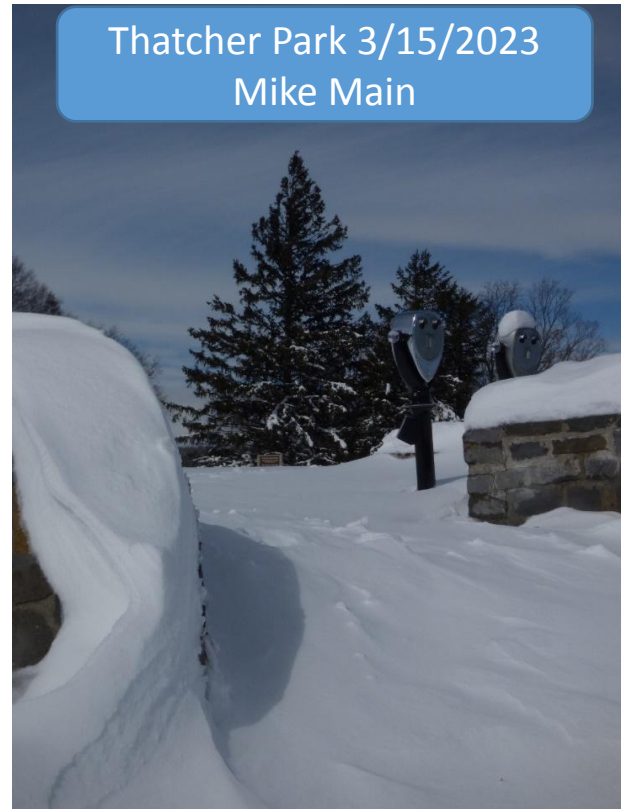
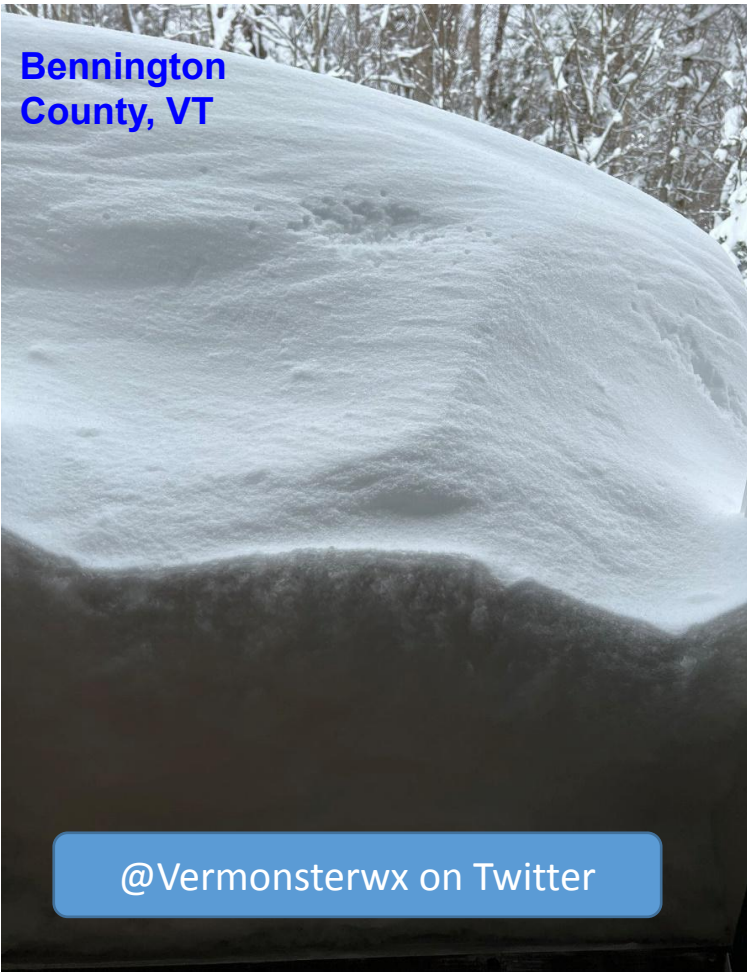






# Nor'easter Example: March 13-15, 2023

## Pictures



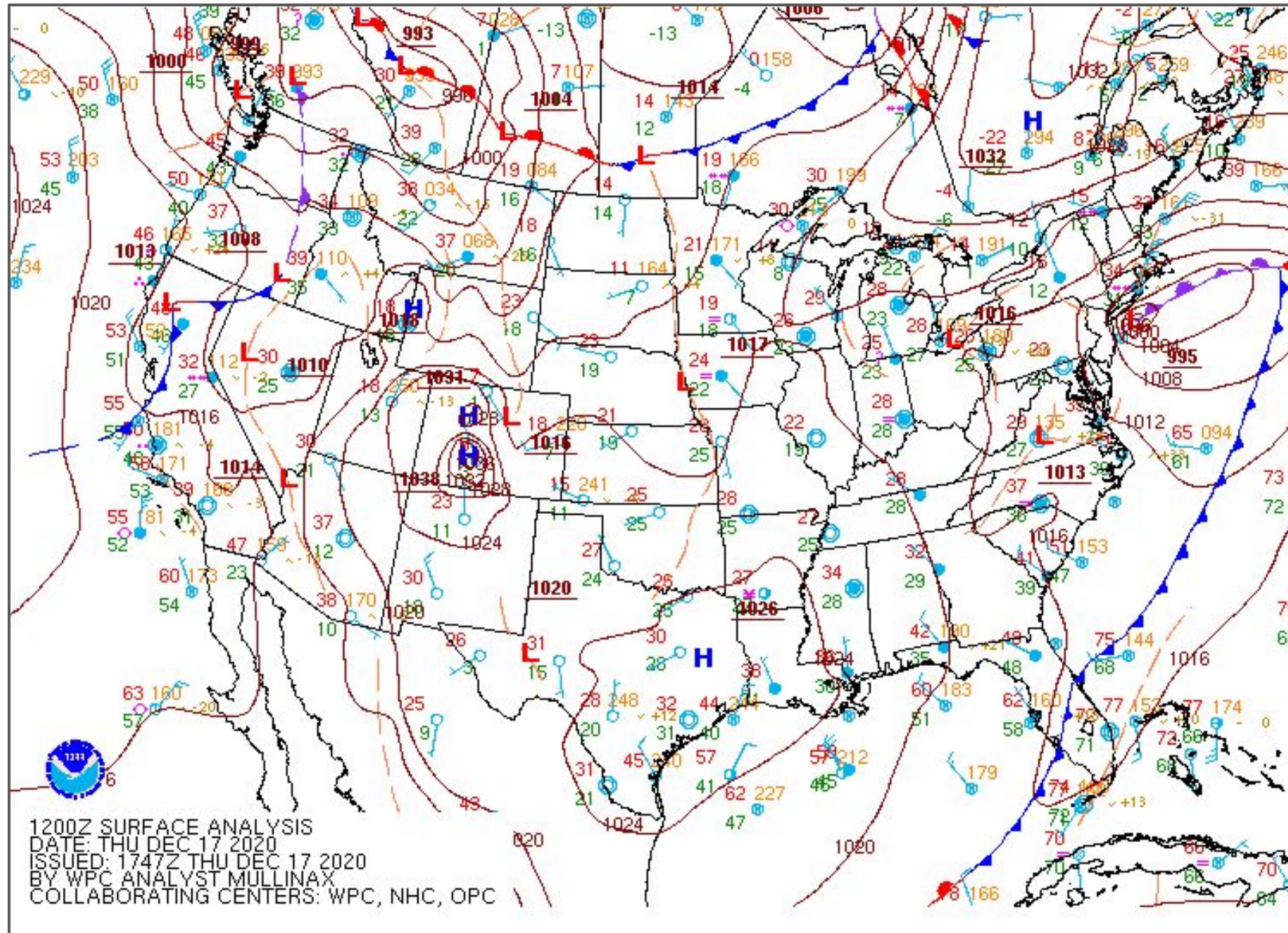
j\_knox  
West Dover, Vermont

@J\_knox on Twitter





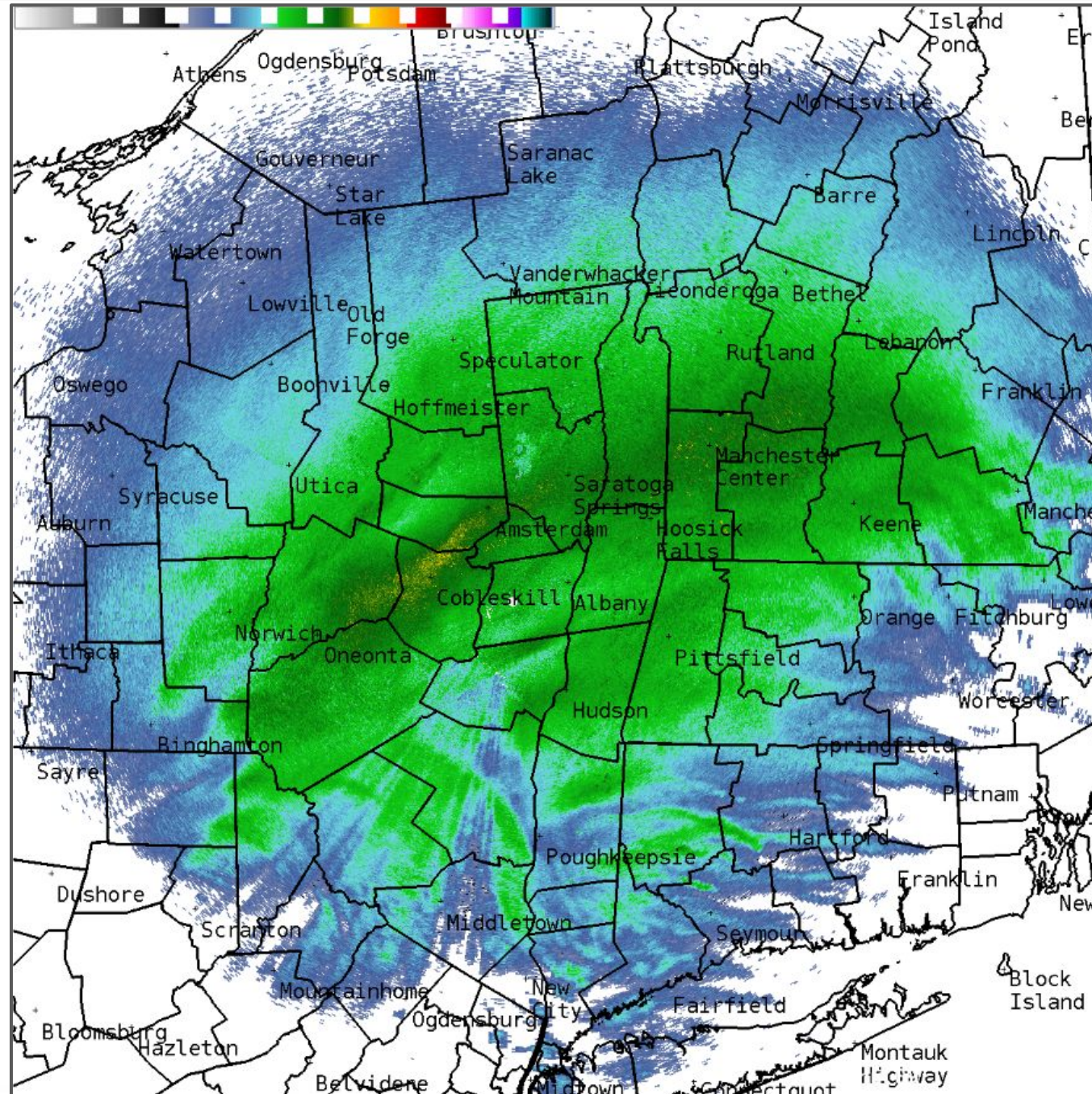
# Nor'easter Example: December 16-17, 2020





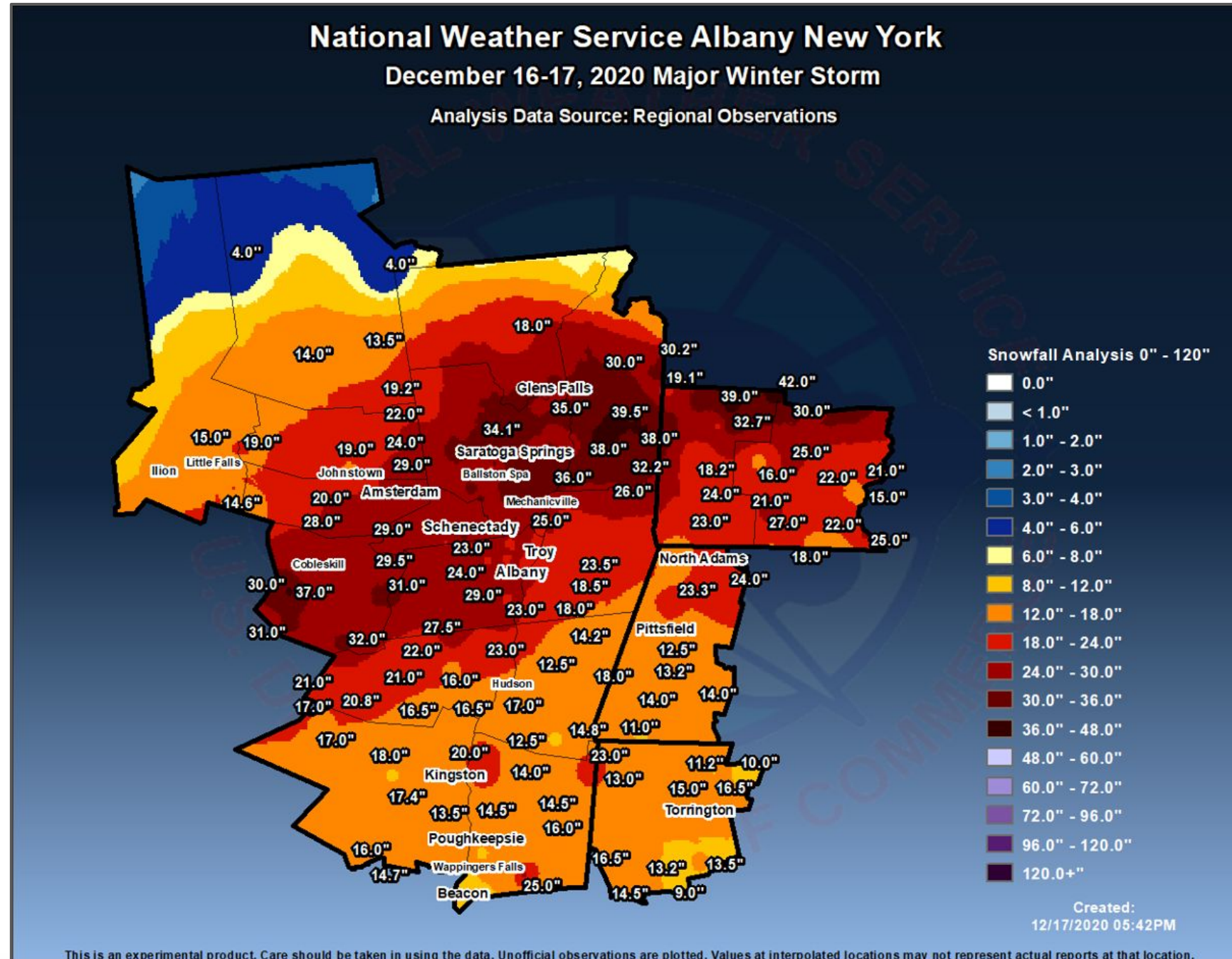
# Nor'easter Example: December 16-17, 2020

Radar



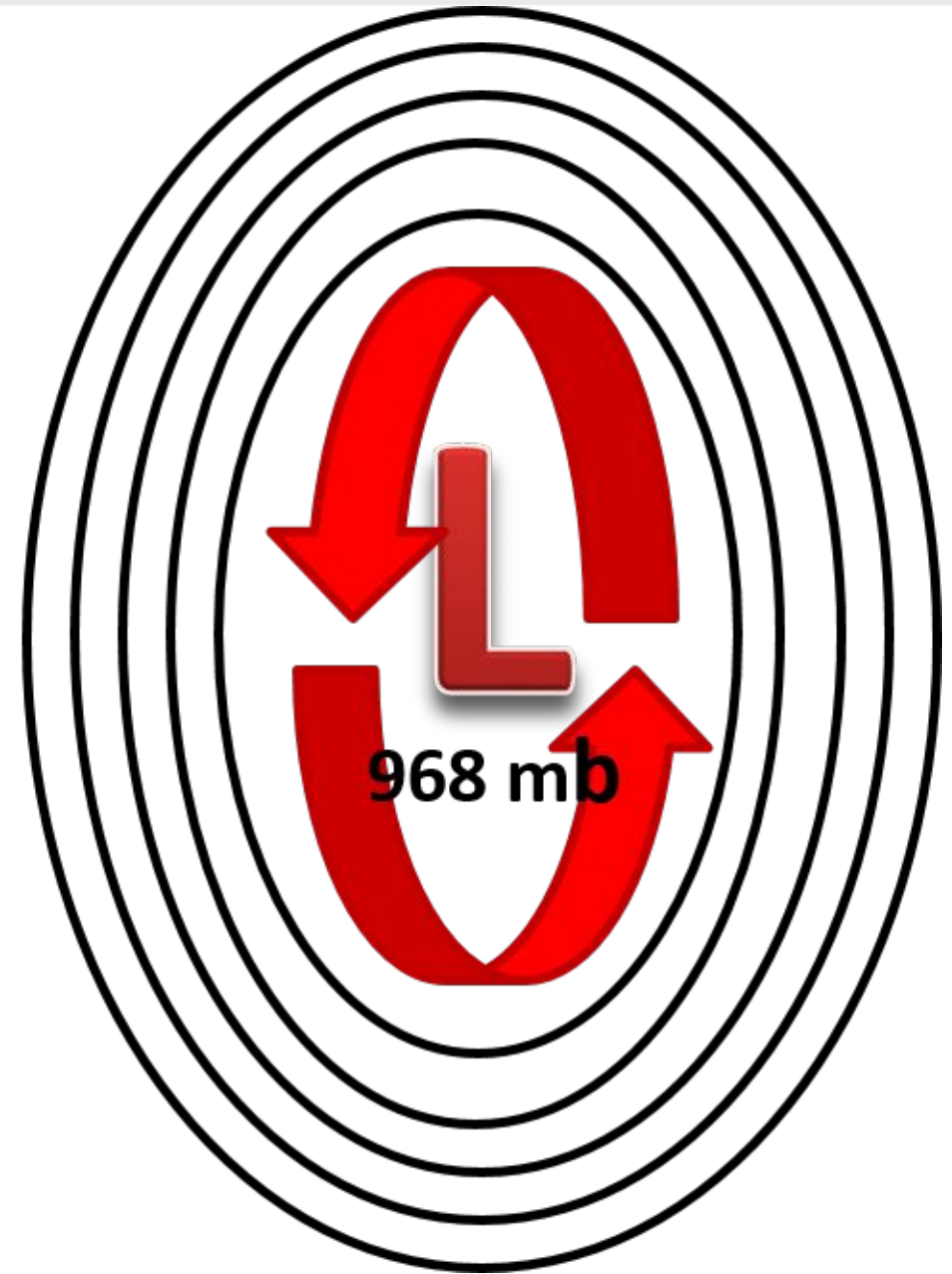


# Nor'easter Example: December 16-17, 2020





# Bomb Cyclone (or Bombogenesis)



**Bomb Cyclone:** When the central pressure of a low pressure system decreases by **at least** 24 millibars (mb) in 24 hours



**WHAT'S A BLIZZARD?**

-  **BLOWING SNOW**
- 35+ MPH WINDS** 
- ≤ 1/4 MI VISIBILITY** 
- FOR 3+ HOURS** 

WEATHER.GOV/WINTER 

**DID YOU KNOW THAT FALLING SNOW ISN'T NECESSARY FOR A BLIZZARD?**

A BLIZZARD THAT RESULTS FROM SNOW THAT HAS PREVIOUSLY FALLEN IS CALLED A GROUND BLIZZARD.



# Winter Weather Events - Lake-effect Snow

## WHAT IS LAKE EFFECT SNOW?

Cold air moves over relatively warm lake

Warmer, moist air rises into cold air, condenses into clouds

Narrow bands of heavy snow form downwind of the lake.

*Lake Effect snow occurs when cold air, often originating from Canada, moves across the open waters. As the cold air passes over the unfrozen and relatively warm waters, warmth and moisture are transferred into the lowest portion of the atmosphere. The air rises and clouds form and grow into narrow bands that produce 2 to 3 inches of snow per hour or more.*



weather.gov

## Impacts of Lake-effect Snow:

- Often narrow bands of snow off Lake Erie or Lake Ontario. Wind direction is important.
- Can have extreme snowfall rates (1" to 6" per hour)
- Most of the rest of New York State can be partly sunny and dry while lake effect areas are getting feet of snow.
- Problem on interstate highways where motorists can drive from dry road into white out.
- Leads to high annual snowfall averages in Buffalo, Rochester, Syracuse, Watertown and nearby areas.



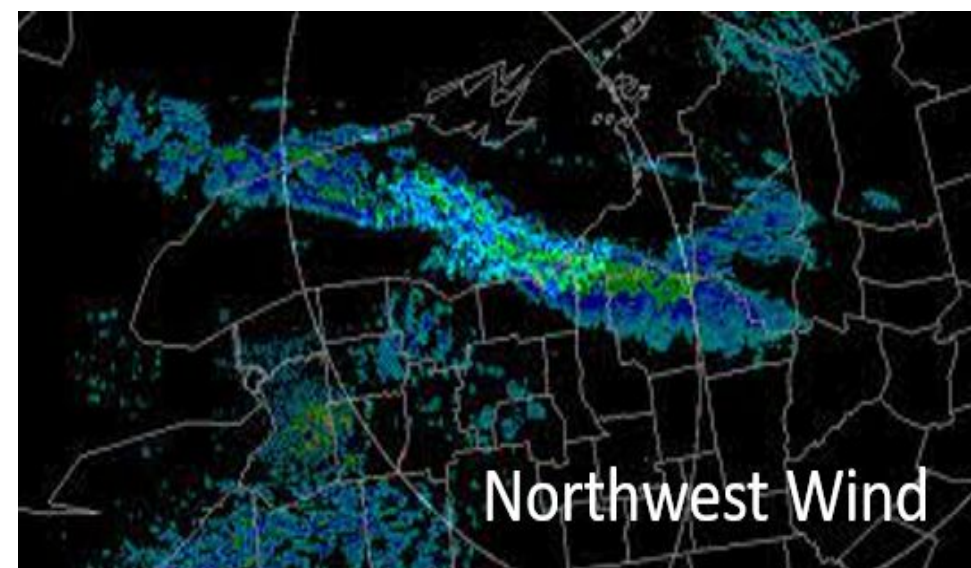
National Oceanic and Atmospheric Administration

U.S. Department of Commerce

National Weather Service  
Albany, New York



# Winter Weather Events - Lake-effect Snow



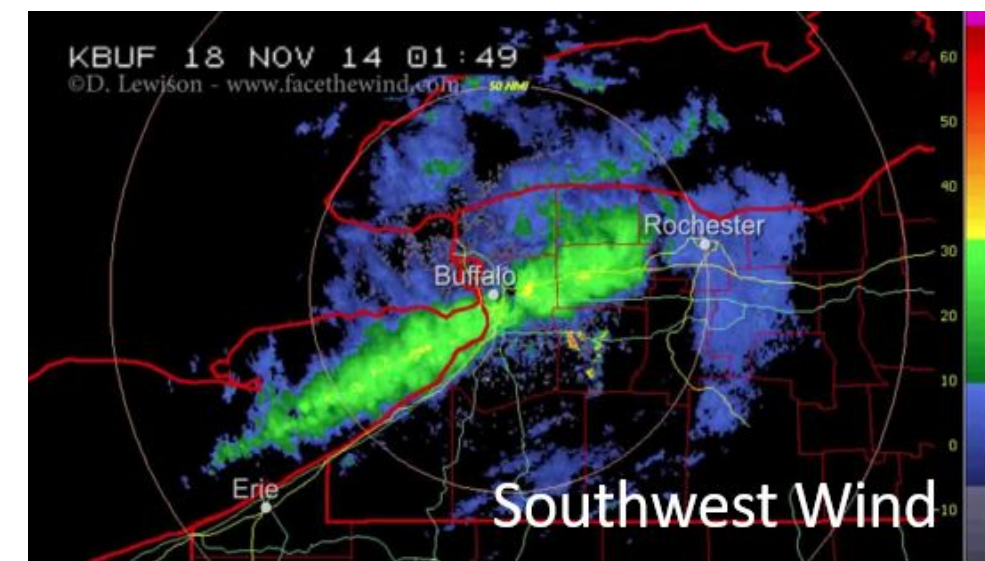
## Northwest Wind Favors:

- Mohawk Valley
- Eastern Catskills
- May extend into the Capital District and/or western Massachusetts



## West Wind Favors:

- Adirondacks
- May extend into Upper Hudson Valley and/or southern Vermont



## Southwest Wind:

- Band stays mainly north and west of the southern Adirondacks





# Winter Weather Events - Snow Squalls

## SNOW SQUALLS

- Intense bursts of snow and wind
- Short duration
- Whiteout visibility
- Rapidly deteriorating road conditions

### National Weather Service **SNOW SQUALL WARNINGS**

- Issued when a snow squall is occurring or imminent
- Typically in effect for 30-60 minutes in a small, targeted area
- Can trigger a Wireless Emergency Alert to your phone
- When issued, slow down or delay travel

weather.gov



National Oceanic and  
Atmospheric Administration

U.S. Department of Commerce

National Weather Service  
Albany, New York

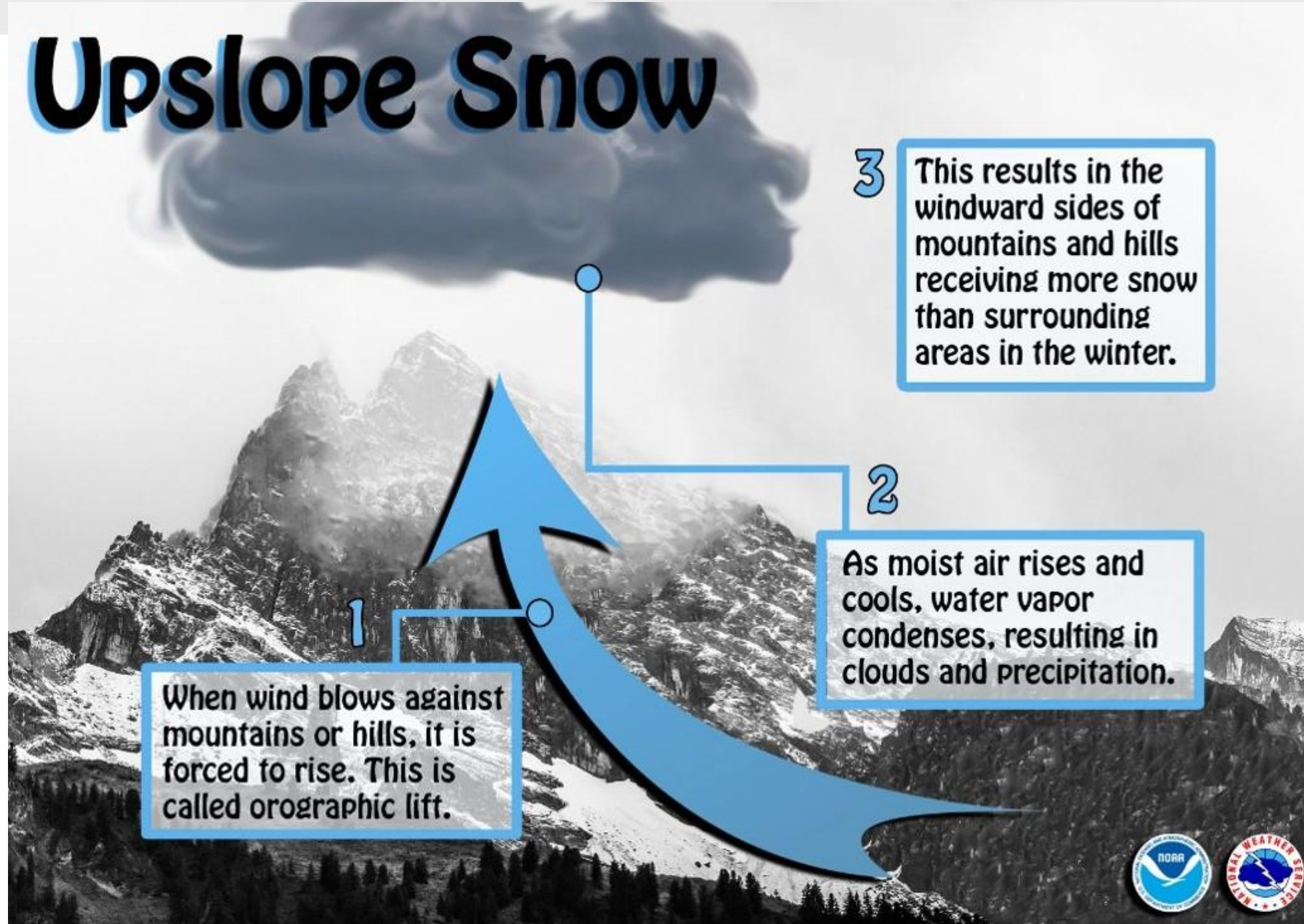


# Snow Squall - View from Corning Tower - Albany, NY - November 21, 2018





## Upslope Snow



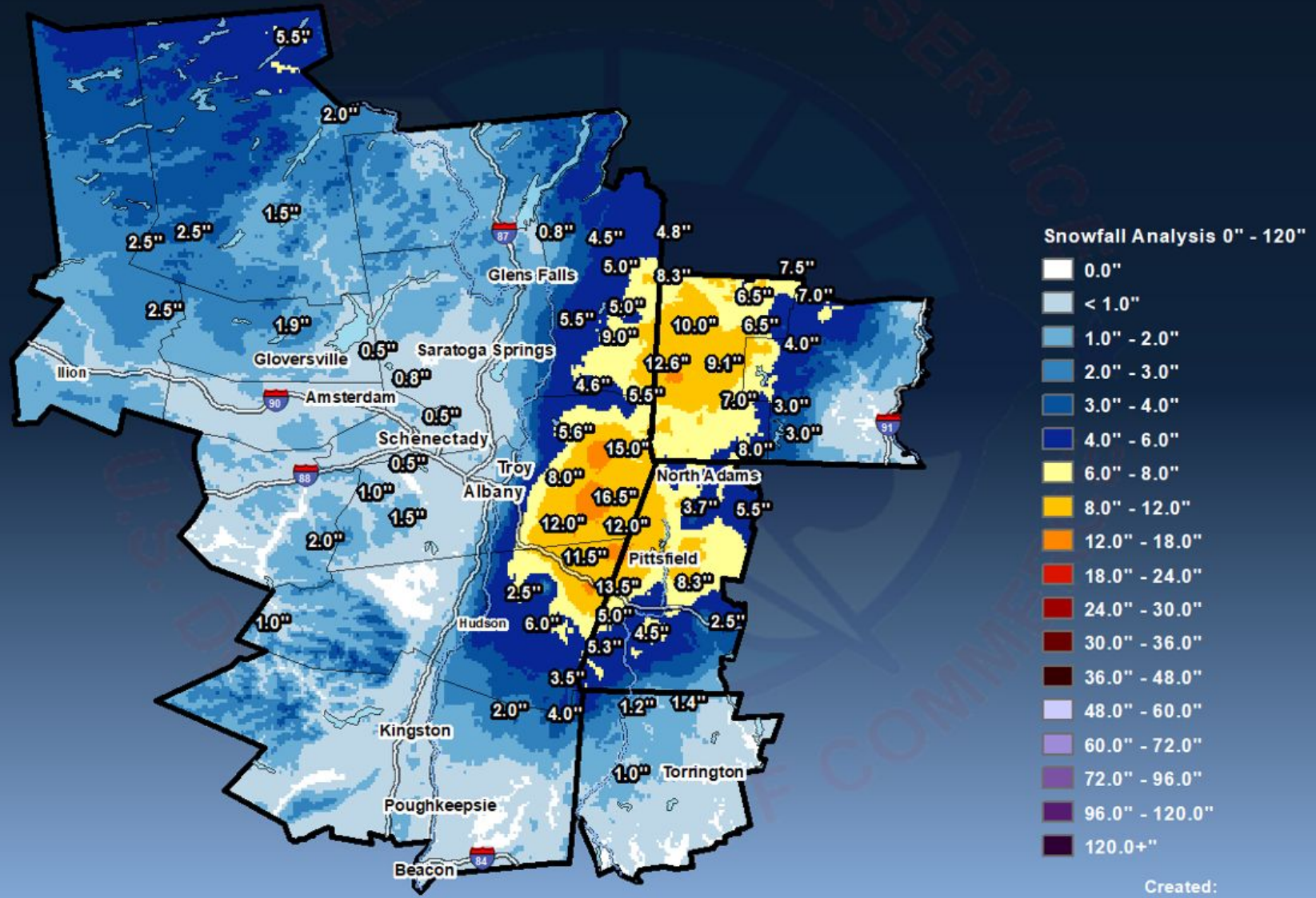


# Winter Weather Events - Upslope Snow

## National Weather Service Albany New York

Total Snowfall Friday-Saturday Nov 26-27, 2021

Analysis Data Source: Regional Observations



This is an experimental product. Care should be taken in using the data. Unofficial observations are plotted. Values at interpolated locations may not represent actual reports at that location.





# Winter Weather Events - Ice Storms

1

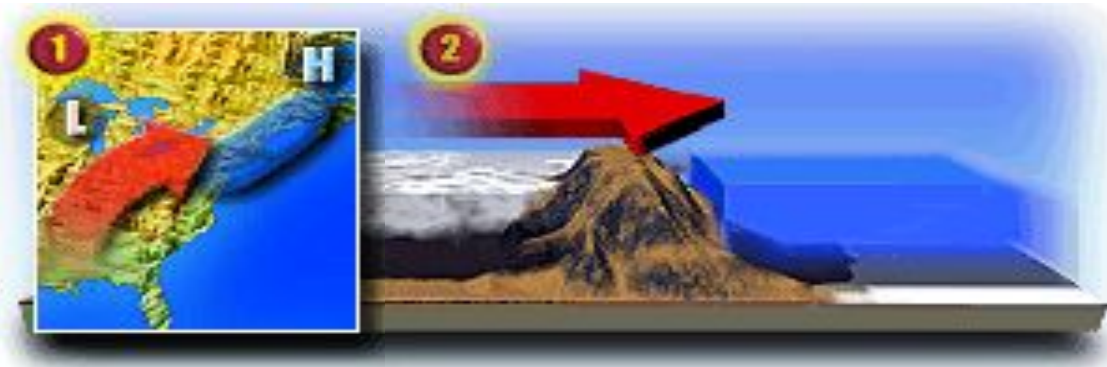
## Setting the stage:

High pressure banks cold air against mountains. Weak storm sends warm air northeast.

2

## The ice storm:

Warm air flowing above cold air condenses into rain that falls through cold air and freezes.



## Are you ready for ICE STORMS?

- Trim weak or damaged branches around your home
- Don't leave vehicle wipers raised
- Have a week's worth of food and prescriptions
- Don't park your car under trees
- Keep devices charged



[weather.gov](http://weather.gov)



National Oceanic and  
Atmospheric Administration

U.S. Department of Commerce

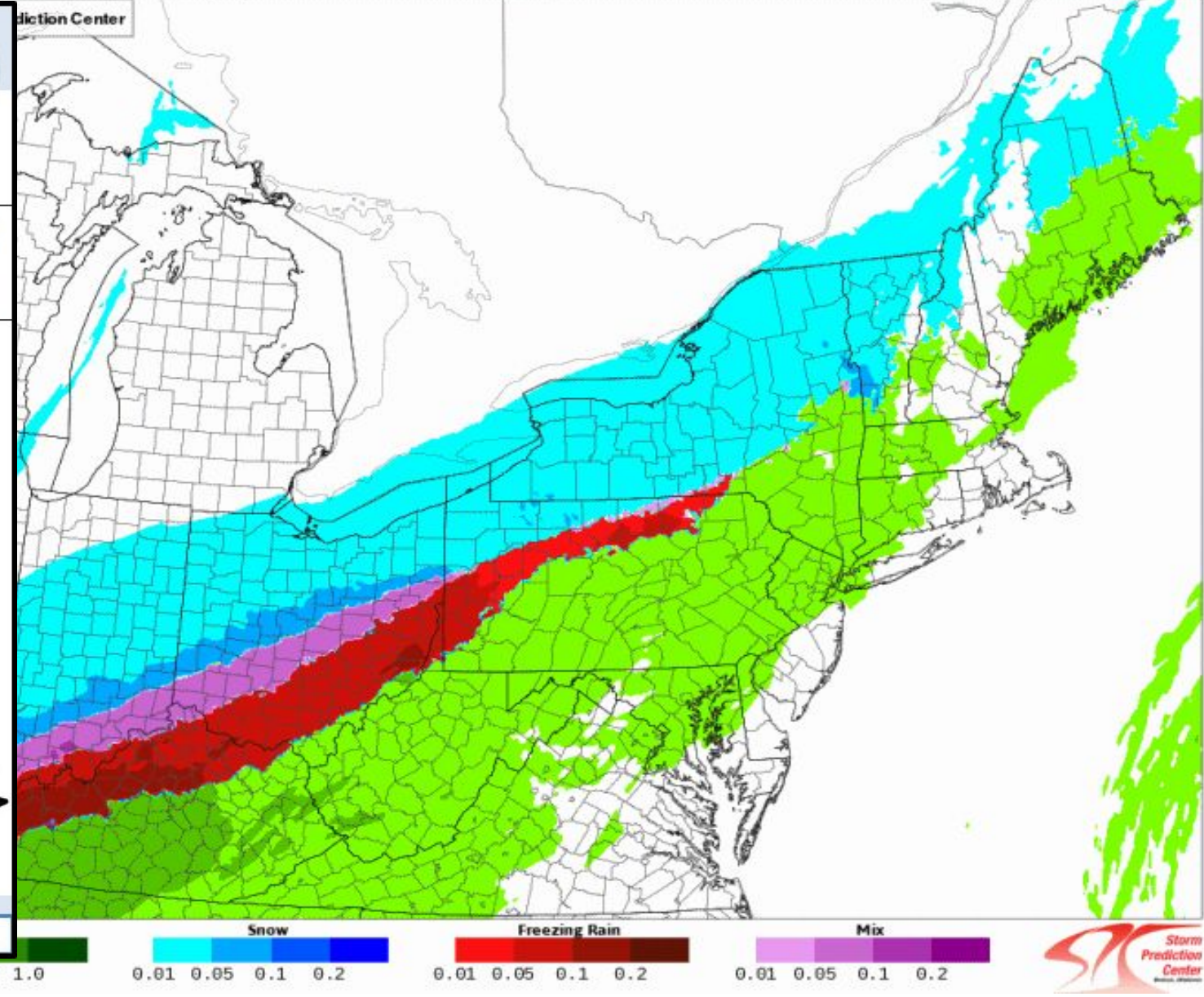
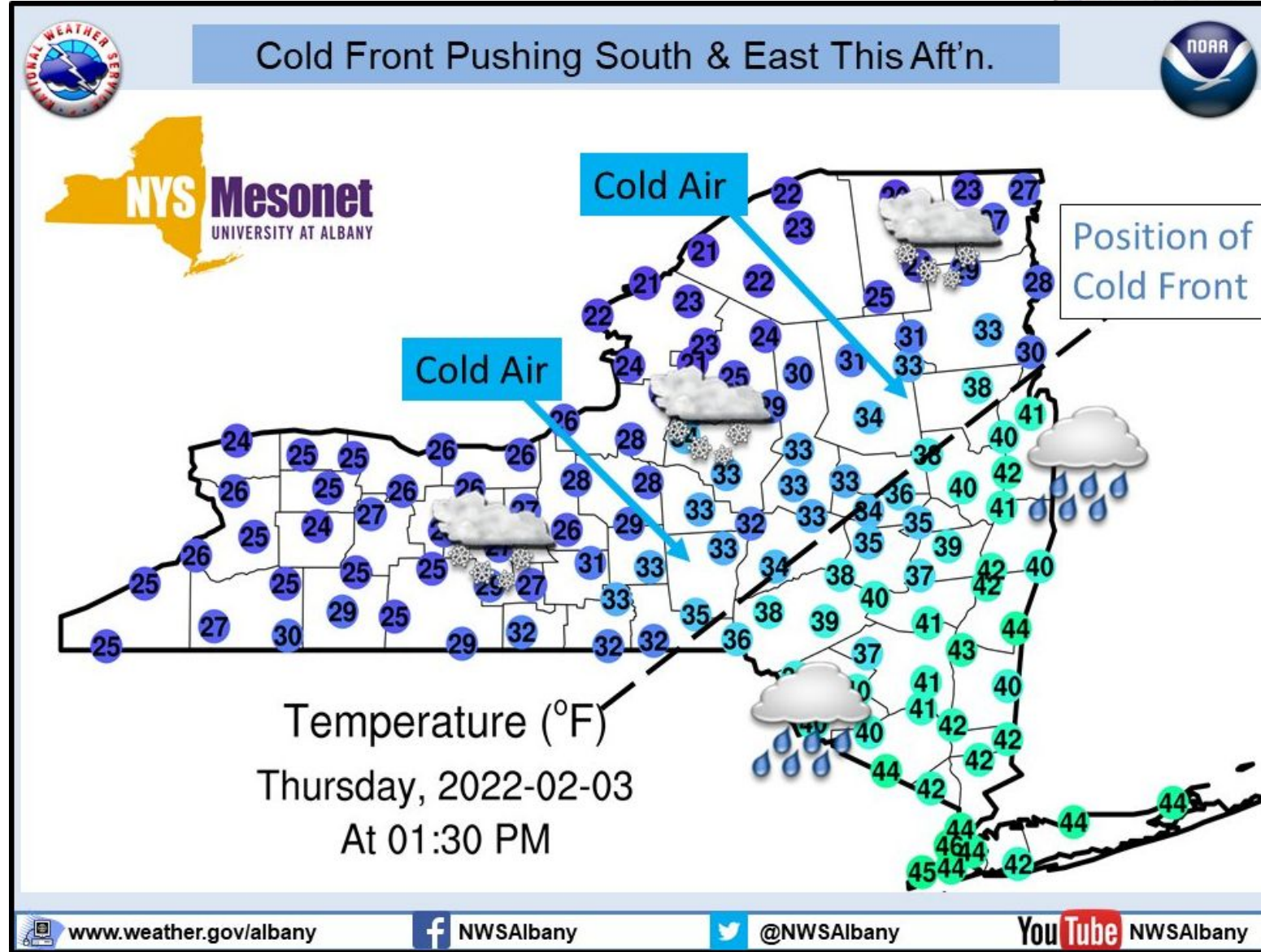
National Weather Service  
Albany, New York



# Ice Storm Example: February 3-4, 2022

HREF  
1-hr QPF (in) and dominant precipitation type, ensemble mean

Run: Thu 2022-02-03 00:00 UTC  
Valid: Thu 2022-02-03 18:00 UTC





# Ice Storm Example: February 3-4, 2022

Natio  
Snow

## Current Electrical Utility Outages (as of 8:45 a.m.)

Albany New York

o 02/04/2022 07:00PM EST

Observations



Created:  
02/09/2022 09:11AM

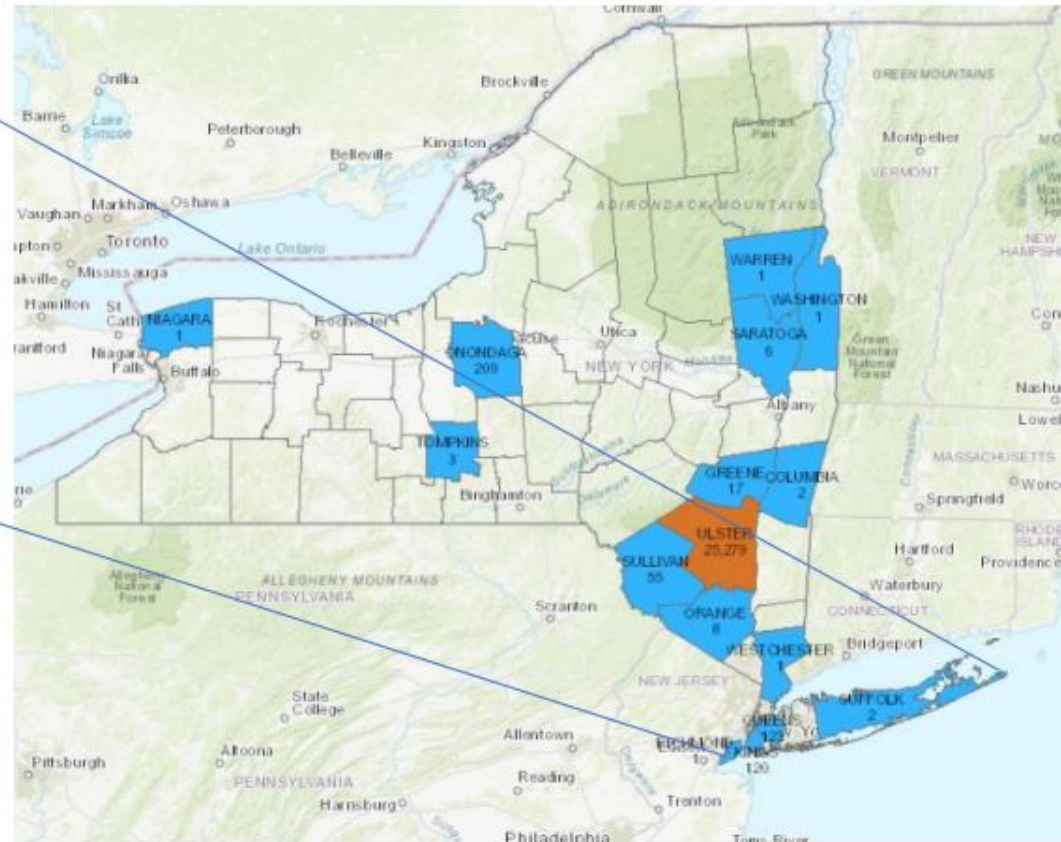
Snowfall (in)



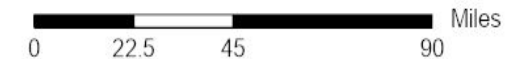
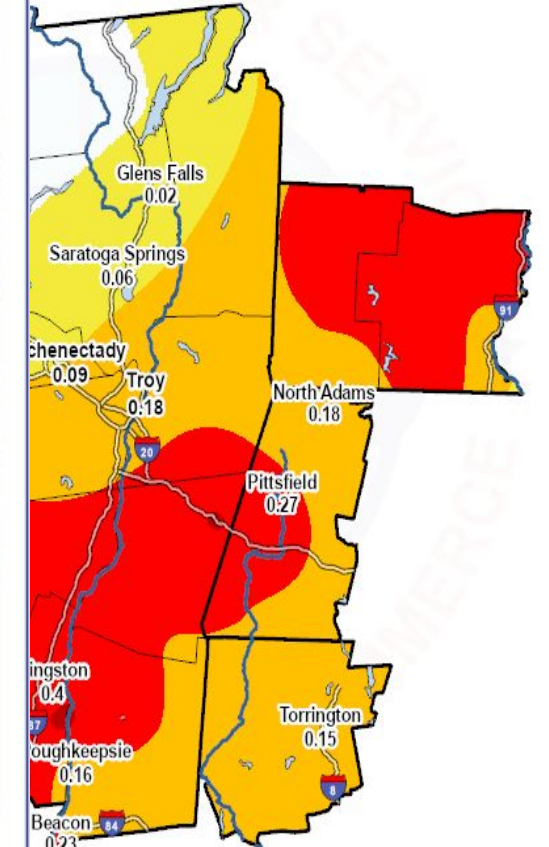
This is software  
Unofficial  
locations



[Return to Table of Contents](#)



Total Statewide Outages: **25,829**





# Ice Storm Example: February 3-4, 2022

## Pictures

Photo Courtesy  
of Jessica Jacques



Photo Courtesy of  
Dickon McPherson  
Esopus, NY



Kingston, NY from NY  
Thruway

Photo: NWS Albany  
Brett Rathbun



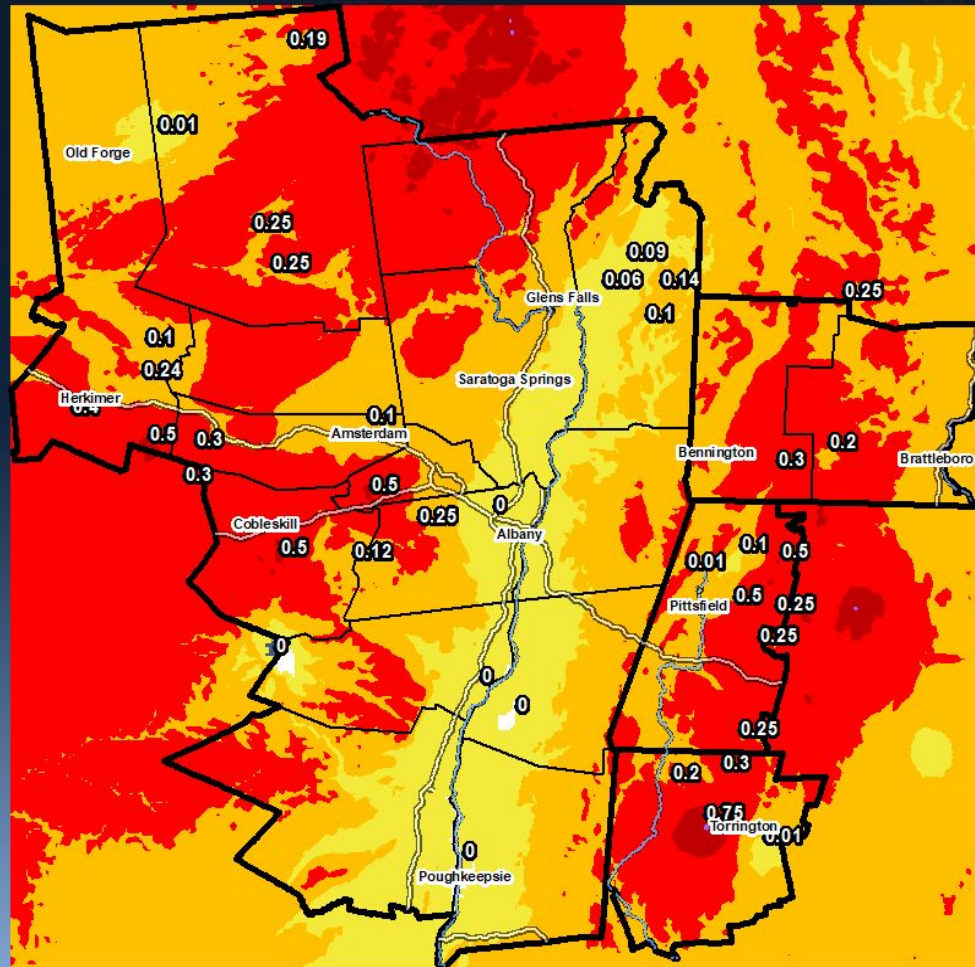
Kingston, NY  
Courtesy of Daily  
Freeman





# Ice Storm Example: December 29-30, 2019

National Weather Service Albany New York  
Ice Accumulation December 29-30, 2019  
Analysis Data Source: Regional Observations



IceAccum Analysis 0" - 2"  
 0.01" - 0.09"  
 0.10" - 0.24"  
 0.25" - 0.49"  
 0.50" - 0.74"  
 0.75" - 0.99"  
 1.00" - 2.00"  
 2.00" +

Created: 01/01/2020 05:29AM

This is an experimental product. Care should be taken in using the data. Unofficial observations are plotted. Values at interpolated locations may not represent actual precipitation totals at that location.



Catskills



Berkshires



Helderbergs



# Ice Storm Example: December 11-12, 2008



Photos: Ingrid Amberger and Neil Stuart, NWS Albany, NY





# Quick 5 Minute Break

AMBASSADOR™  
WWRN  
WEATHER-READY NATION





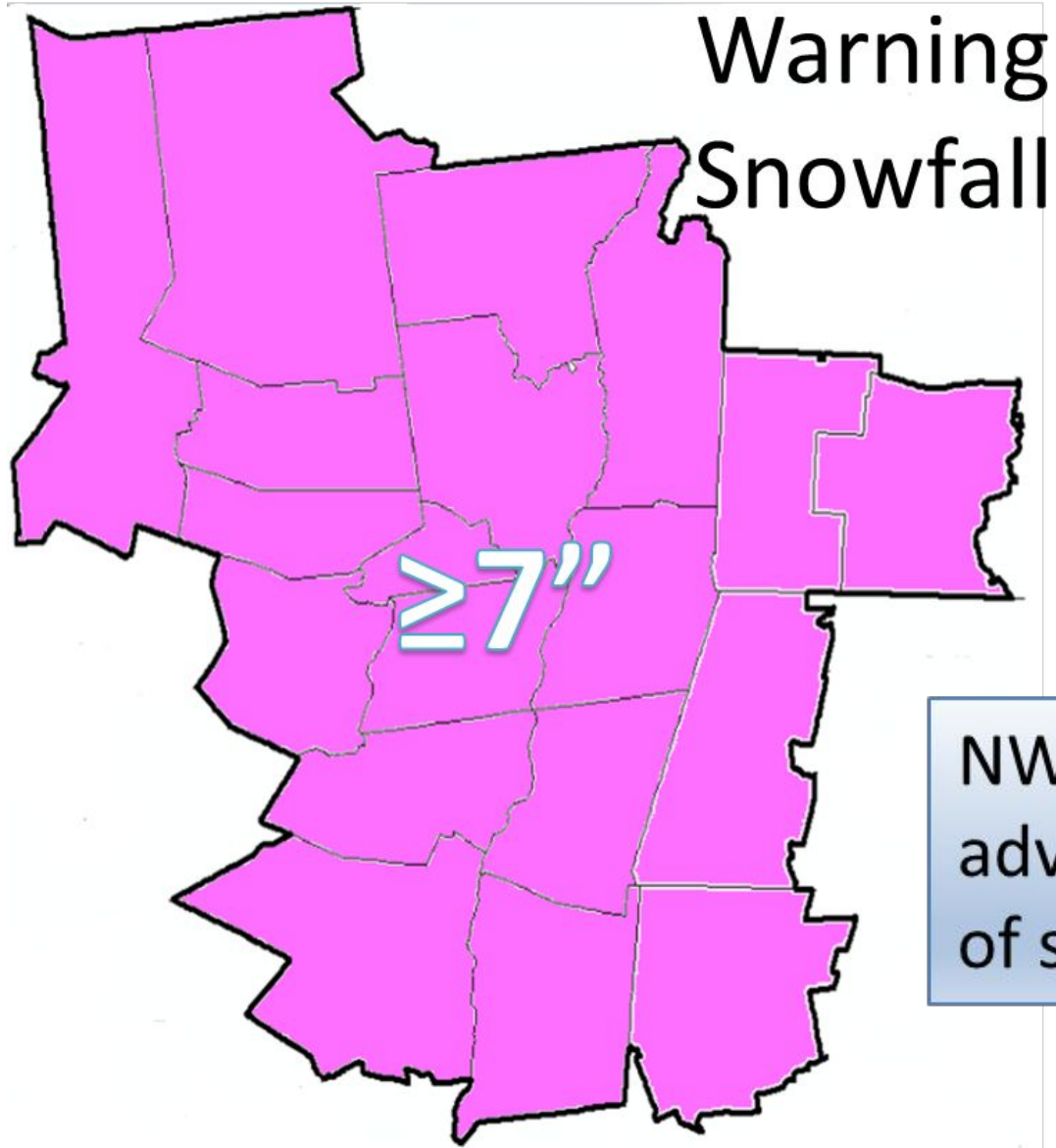
# Outline

- About the National Weather Service at Albany, New York
- Weather Ready Nation
- Fall/Winter/Spotter Safety
- Winter 2023-2024 Outlook
- Winter Weather Precipitation Types and Events
- Short Break
- **Winter Weather Products and Forecasting Criteria**
- Winter Flood Events
- Who, What, Where, When and How to Report to Us
- CoCoRaHS/mPING
- Quiz
- Certificates/Conclusion

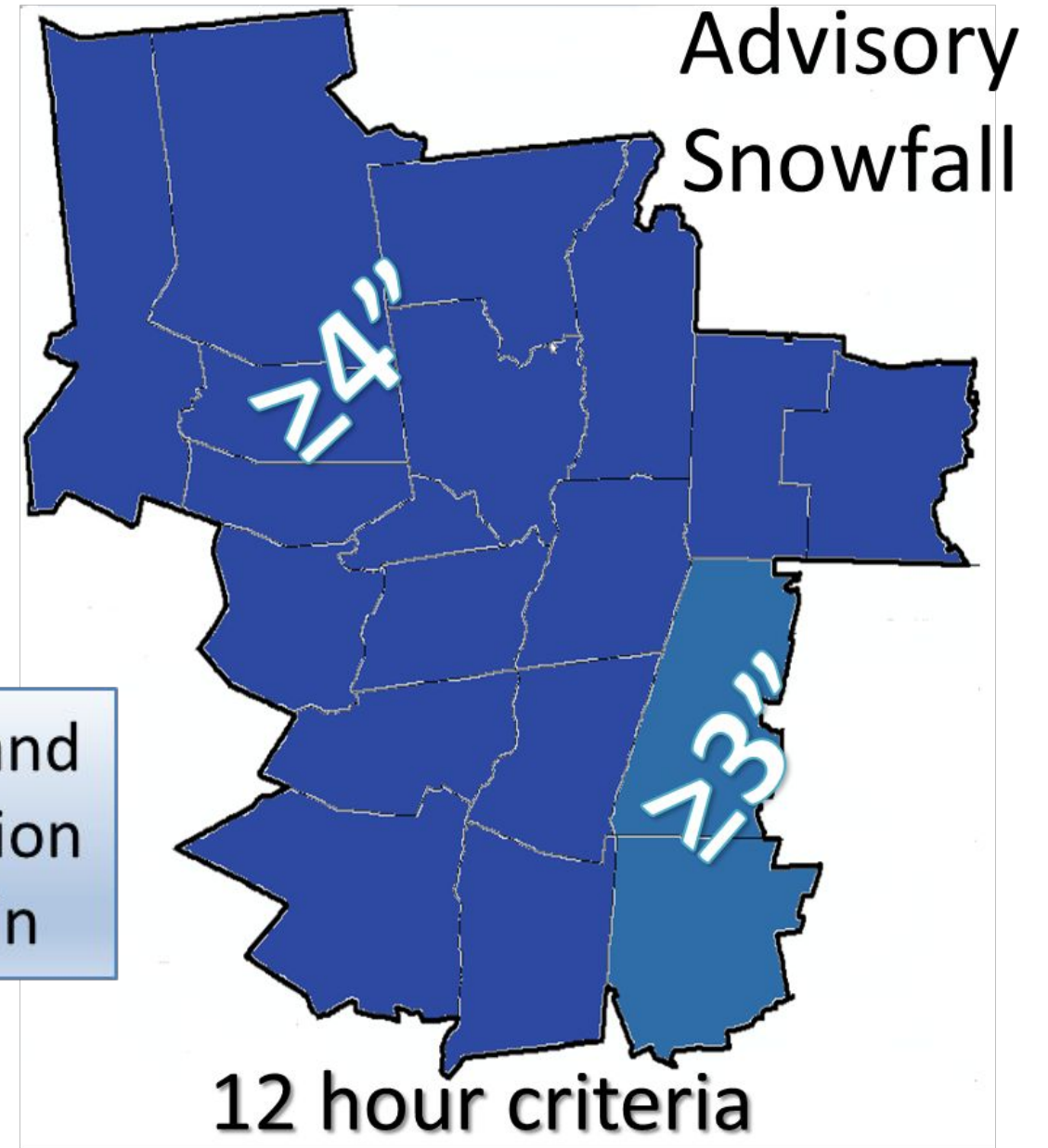




# Winter Weather Advisory/Winter Storm Warning Thresholds

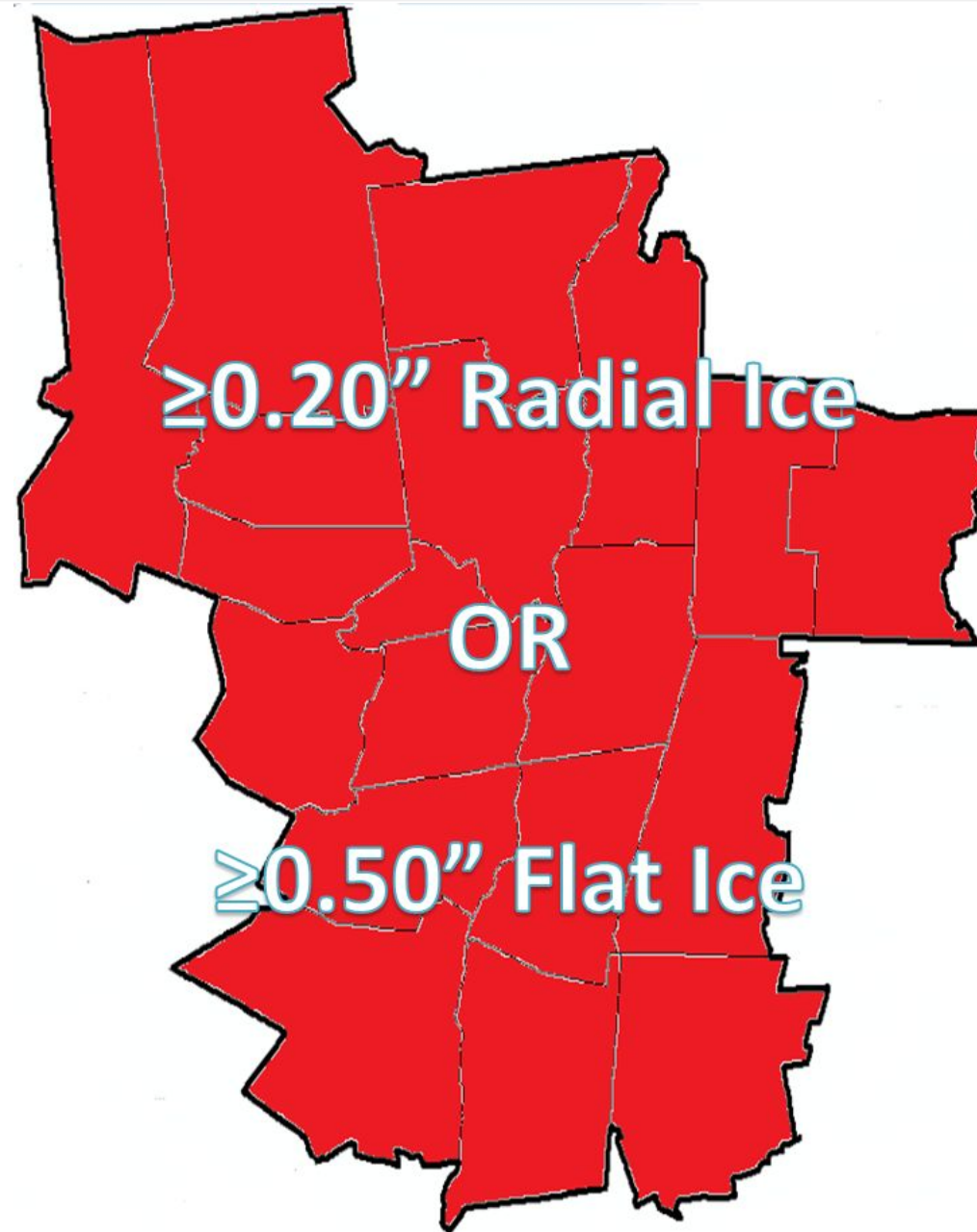


NWS can issue warnings and advisories for a combination of snow/sleet/freezing rain





# Ice Storm Warning Threshold





# Wind Chill

## NO WIND

98.6°F

Average temperature of the human body

Under calm conditions, the body radiates heat, creating a layer of warmth between our skin and the cold surroundings.



## The Science of Wind Chill



## WINDY

95°F

Hypothermia begins when our body temperature drops two to four degrees

But when it's windy, the moving air breaks up this insulating layer. It speeds up heat loss by whisking away the warmth from our skin.



Heat is moved away from our bodies.



[weather.gov/winter](http://weather.gov/winter)

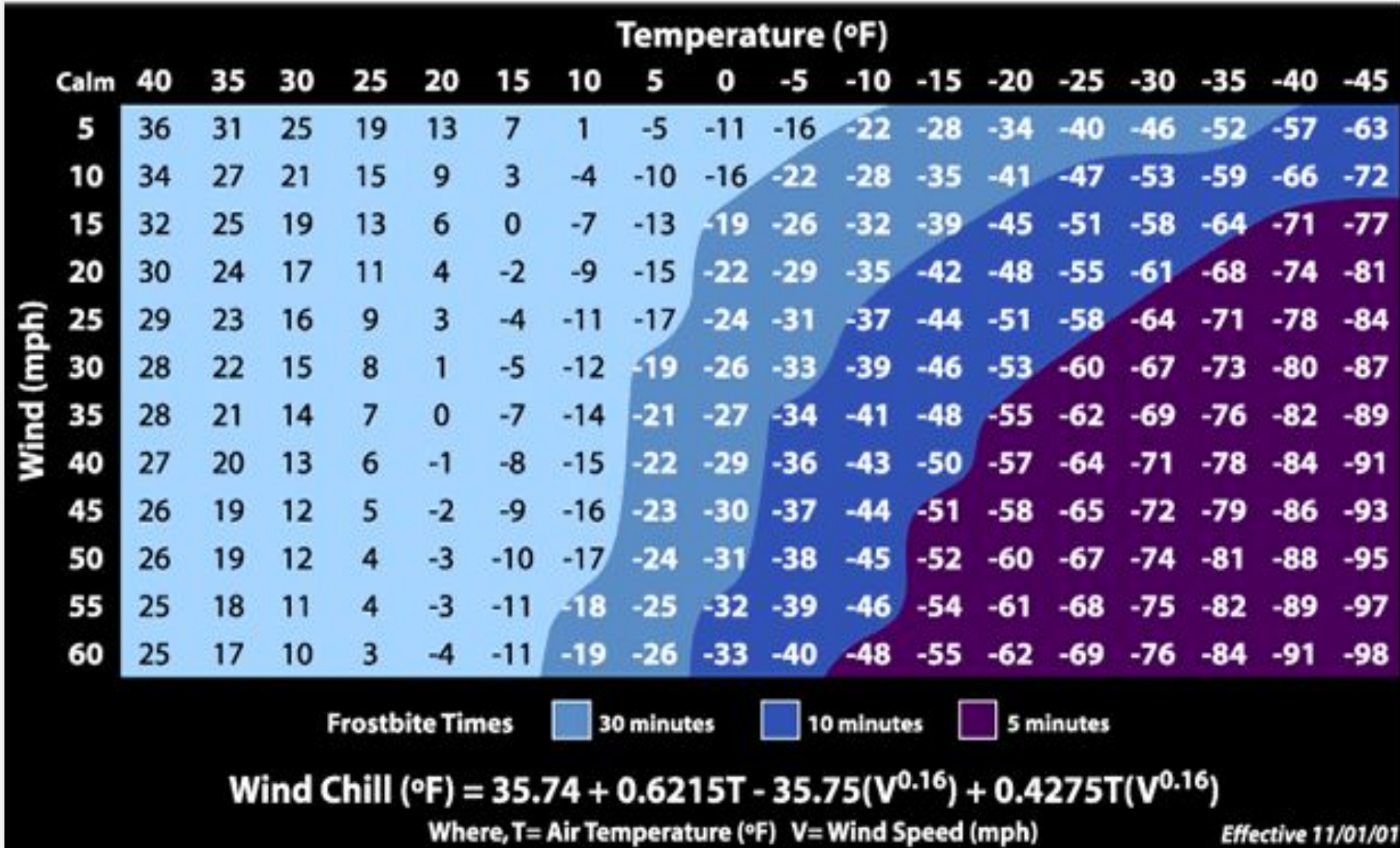




# Wind Chill



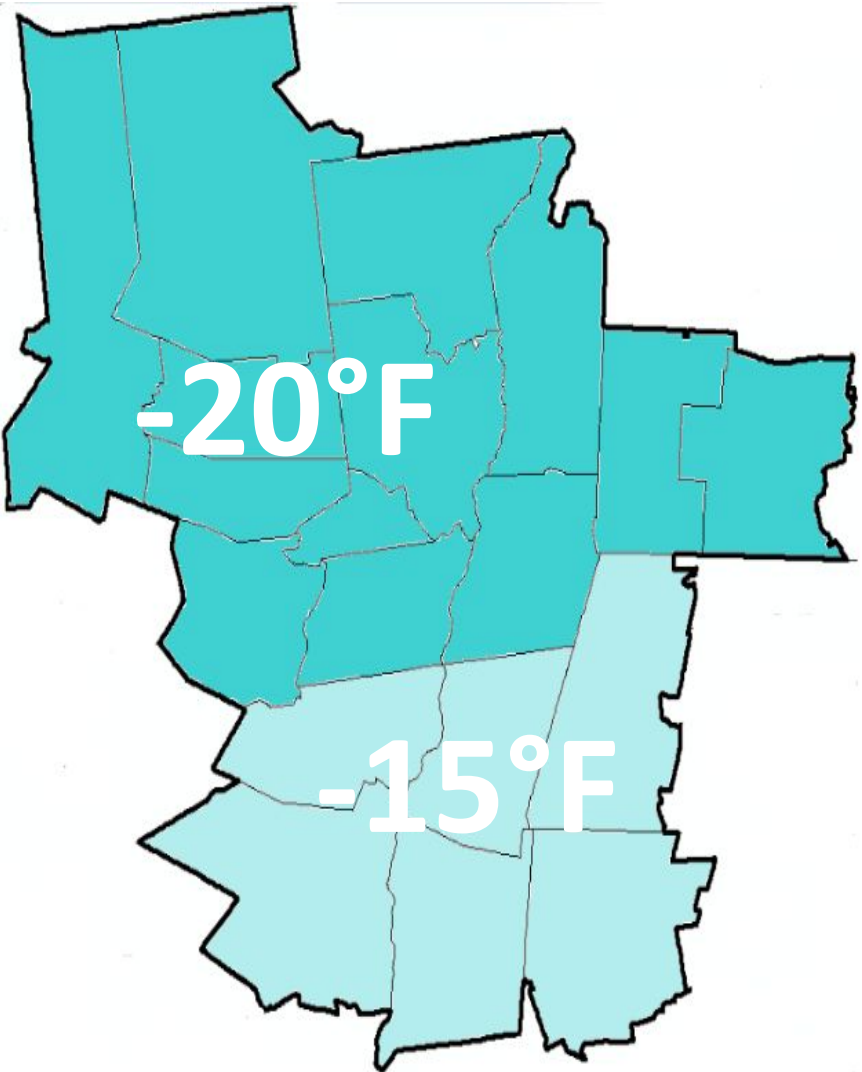
## NWS Windchill Chart



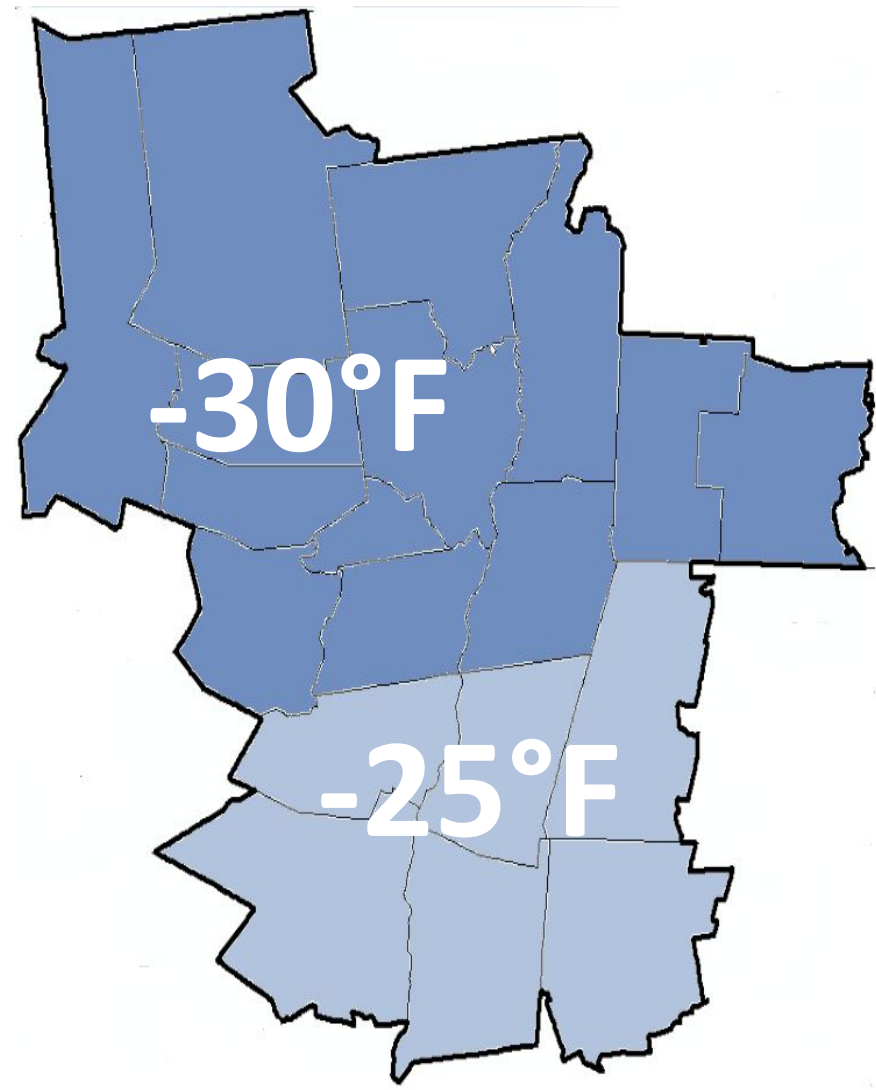




# Wind Chill Thresholds



**Advisory Criteria**



**Warning Criteria**

### Persistent Cold:

- Extreme cold period that lasts 3 days or more.
- **Statistical Component:** Daily Average Temperature is as least two standard deviations below normal coldest temperatures based on climatology for given location.
- **Impacts From Exceeding Design Standards:**
  - Frozen water mains under roads and sidewalks.
  - Frozen water pipes in houses, schools and other buildings.
  - Increase in fires due to alternative heating sources such as fireplaces, kerosene heaters, use of gas cooking stoves for additional heat, using torches to thaw water pipes, etc.
  - Increase in CO2 poisoning.

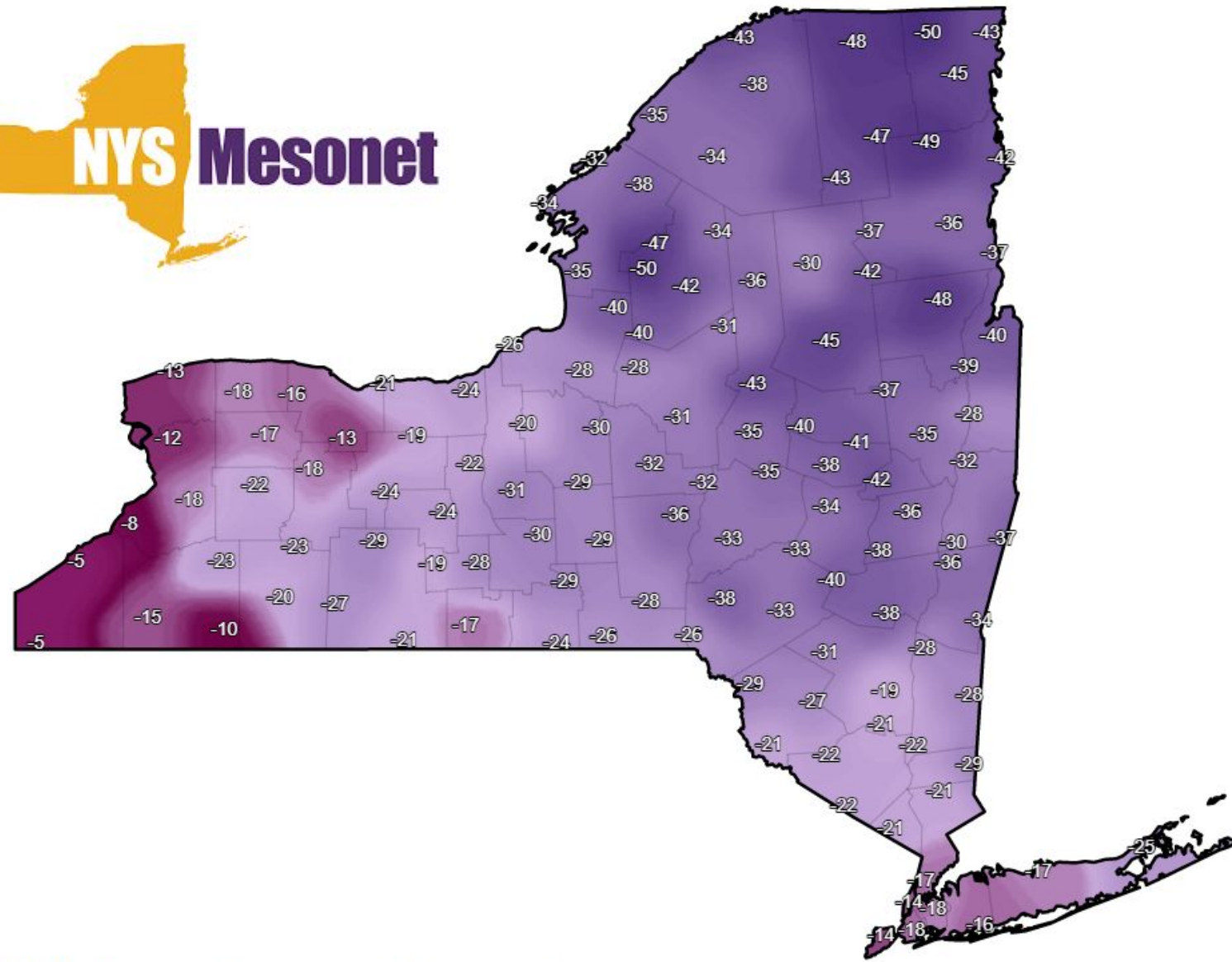
### Wind Chill

- Wind plus cold will remove heat from human body quicker than cold alone. Quicker onset of frostbite or hypothermia.
- -25°F Wind Chill will close schools.





# Arctic Cold: February 3-4, 2023



Today's Minimum Apparent Temperature

Feb 4, 2023 7:55 PM EST



## Lowest Wind Chill Values by County

Location	Wind Chills (F)	Location	Wind Chills (F)
Bennington: RT-9 Searsburg, VT	-51	Saratoga: Edinburg	-40
Windham: RT-9 Marlboro	-50	Washington: 5 S Whitehall	-40
Hamilton: Piseco, NY	-45	Albany: Medusa	-39
Schenectady: Duanesburg	-44	Warren: Glens Falls	-39
Herkimer: Cold Brook	-43	Rensselaer: Grafton	-39
Fulton: 2 ESE Johnstown	-42	Litchfield: Winsted	-38
Berkshire: Pittsfield	-41	Ulster: Kerhonkson	-36
Montgomery: Johnstown	-41	Columbia: Kinderhook	-35
Schoharie: 3 WSW Central Bridge	-41	Dutchess: Pawling	-31
Greene: Tannersville	-40		



# High Wind Events

**Wind Advisory:** Issued for sustained winds 31-39 mph for 1 hour or longer, or for gusts 46-57 mph

**High Wind Warning:** Issued for sustained winds of 40 mph or more for 1 hour or longer, or for gusts 58 mph or greater

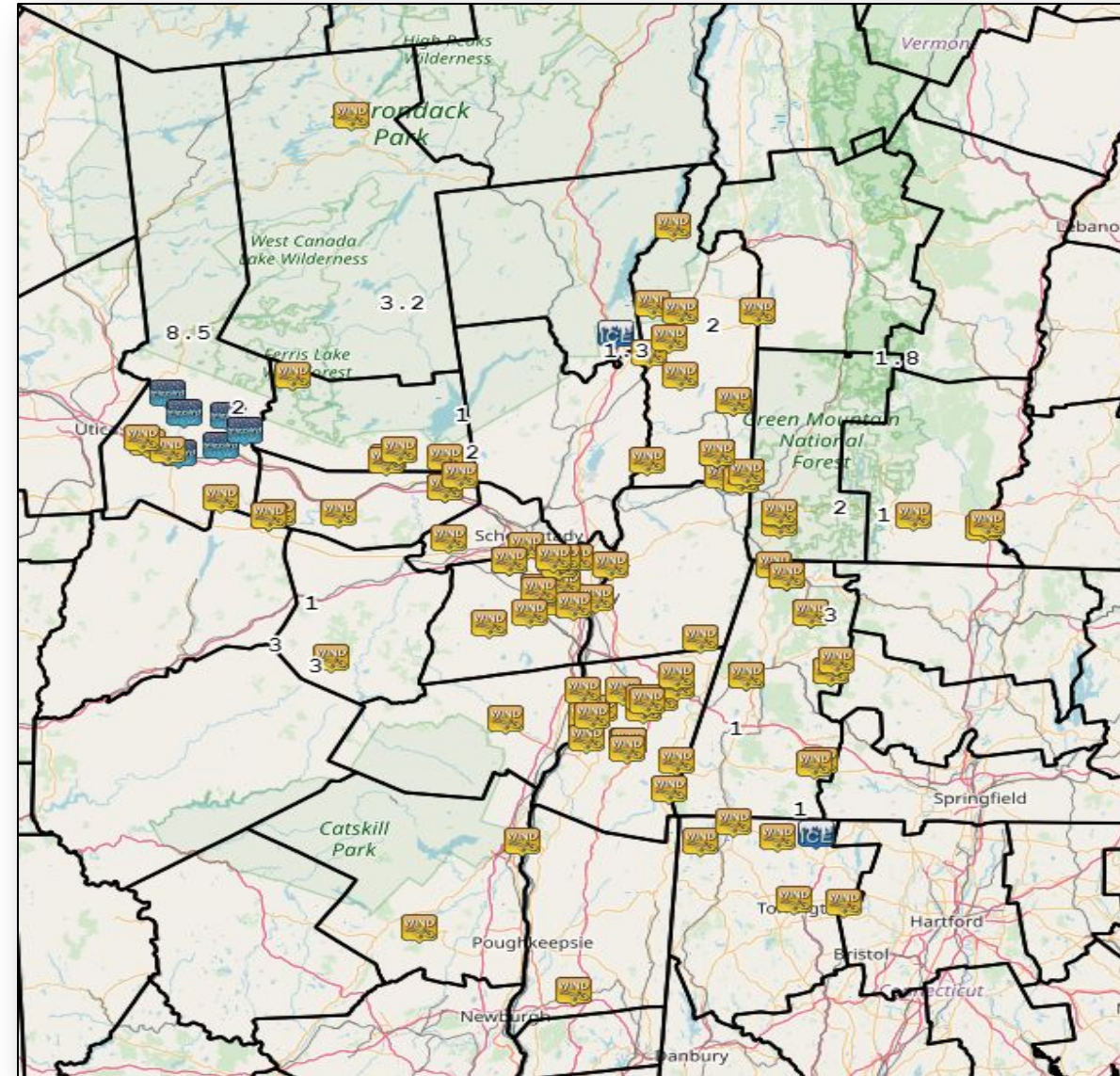
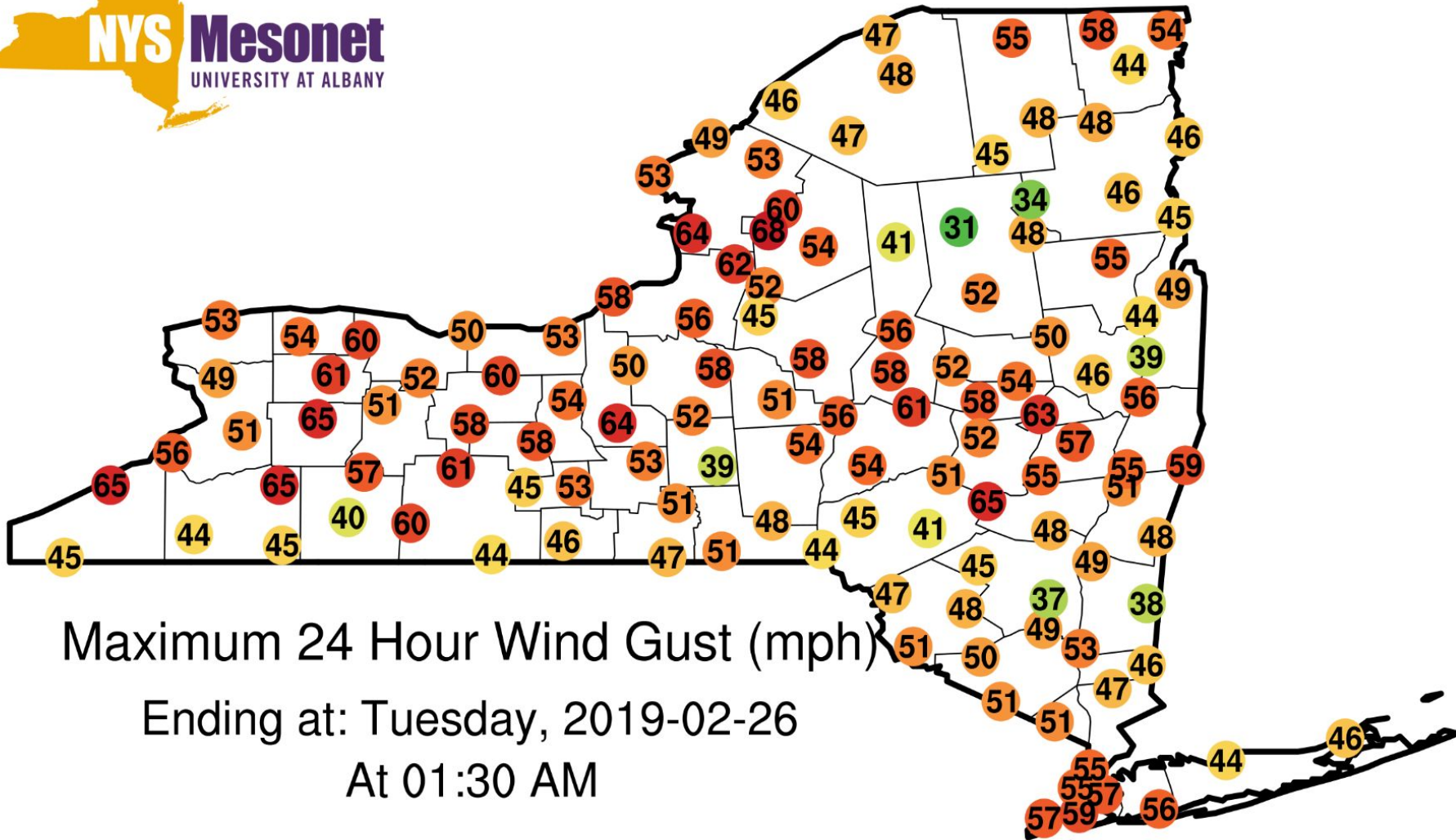
## Impacts of Wind:

- Winter storms are usually large and powerful.
- Summer wind storms (on average) tend to be more localized and isolated.
- Winter storms have the potential to cover large areas with strong winds and cause widespread power outages.





# High Wind Events: February 25, 2019



February 25, 2019 Storm Reports



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# Economic Impacts of Flooding

In 2021, floods and flash floods caused over 3 billion U.S. dollars worth of property and crop damage across the United States.

In 2021, there were a total of 146 fatalities reported due to flash floods and river floods in the United States (second most since 1995).

Source: Statista



## ICE JAMS

### WHAT ARE ICE JAMS?

They are chunks of clumped up ice blocking the flow of a river, stream, or creek.

### WHY DO THEY DEVELOP?

Runoff from snow melt and/or rainfall can cause rivers to swell and break up the ice.



### WHEN DO THEY OCCUR?

They typically occur in the springtime, but can happen during warm spells in the winter.

### WHERE DO THEY FORM?

Sharp bends, confluences, bridges, or other obstructions.



### WHAT ARE THE IMPACTS?

Upstream flooding from the water building behind the jam. Flash flooding due to rapid release of an ice jam.

[weather.gov/safety/flood](http://weather.gov/safety/flood)



## Ice Jams Typically Occur...

- Obstructions in the Channel – Islands, Locks, Bridge Piers, Docks.
- Changes in the Channel – Narrowing of the Channel, Bends, Gorges, Intact Ice Cover.
- Change in the Channel Depth – Deep water to Shallow water.
- Merger of River Channels.



# Freeze-Up vs Break-Up Jam



Freeze up: Extremely cold air over open water results in the rapid production of large amounts of river ice that can jam downstream

Break up: Warmer air begins to melt already formed river ice, breaking it into chunks and sends it downstream, occasionally causing jams

(Source: Earth Networks)





# When Does Ice Break Up?

River Basin *Daily Average Temperature*  $\geq 42$  °F

$$\text{Daily Average Temperature} = (\text{Max Temp} + \text{Min Temp}) / 2$$

Caveat 1: A quick thaw will result in some ice jams and flooding if ice is thick enough. Long sunny period with diurnal freeze/thaw cycle can rot/weaken ice.

Caveat 2: Rainfall/snowmelt with a thaw will enhance the potential for break up jams as rising water helps lift and break up the ice. A very short thaw with little or no rain/snowmelt may not be enough to break up thick ice.





# Winter Hazards - Ice Jams/Flooding

## Impacts of Ice Jams and Ice Jam Flooding:

- Prolonged cold periods cause thick buildup of ice on rivers and streams.
- Once thick ice builds, any thaw with melting snow and/or rain that causes rivers to rise, can cause ice jams.
- Rising water lifts and breaks up ice where it moves downstream and can jam up at favored locations like bridges, sharp bends in the river, narrows, etc.
- Jams act like dams and cause temporary lakes which can cause rapid flooding.
- If a jam lets loose, a flash flood (similar to a dam break) can happen downstream.



Ice Jam, Mohawk River, January 2018



Ice Jam Flooding, Mohawk River, March 2011



# January 24-25, 2019 Ice Jam Flooding

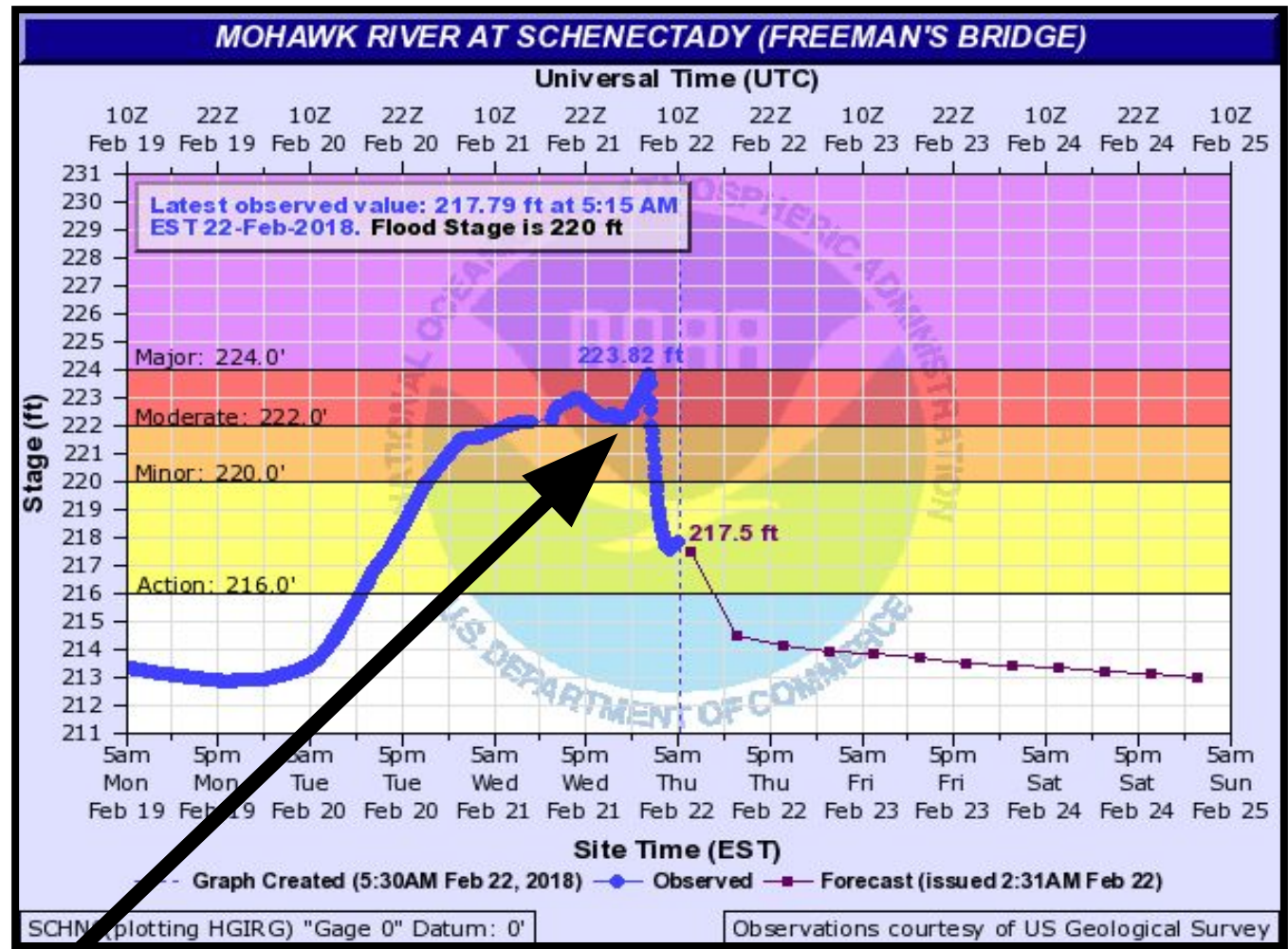
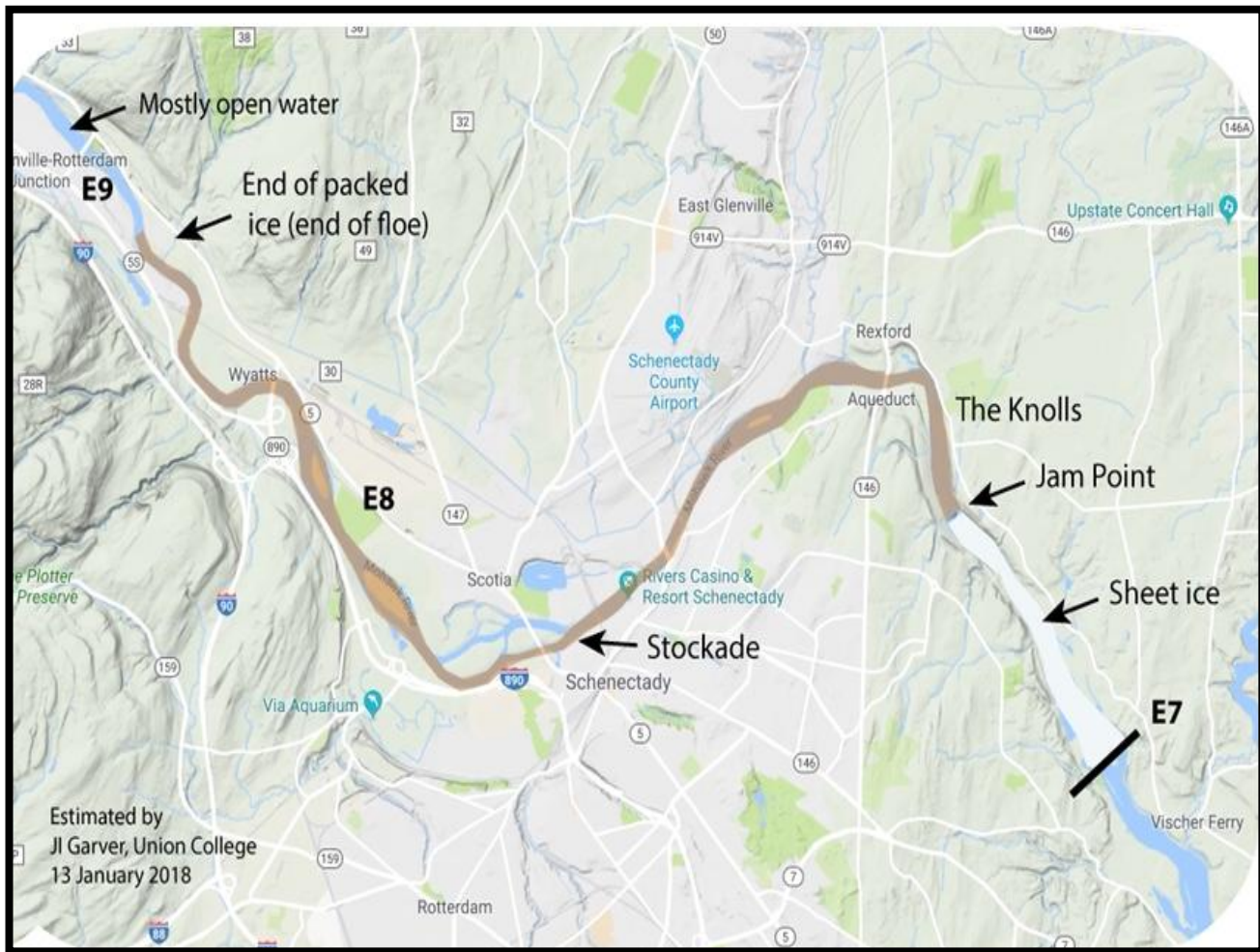
A surge of water and ice swept down the Hudson in the pre-dawn hours of Jan 25<sup>th</sup>, tearing 10 boats off their moorings and sending them over the Federal Dam in Troy

Some of the boats struck bridges, resulting in bridge closures during morning rush hour, including I-90





# February 2018 Ice Jam



Jam Release during the overnight February 22, 2018



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# What Happens When the NWS Issues a Warning?



**PUBLIC**



# WEA (Wireless Emergency Alerts)

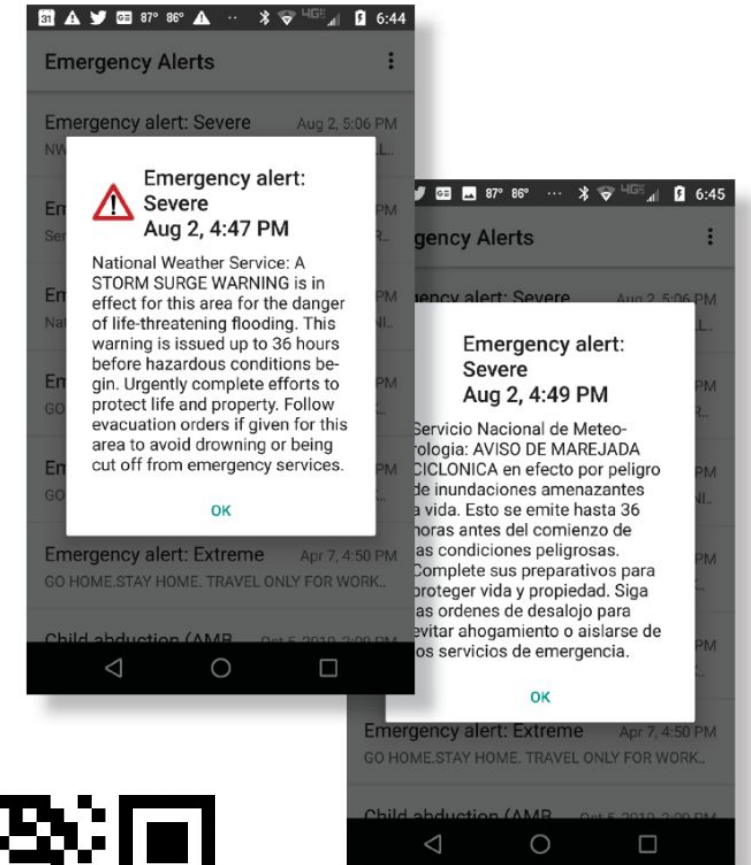
## Weather warnings on the go!

**WIRELESS  
EMERGENCY  
ALERTS  
CAPABLE**



Imagine this: You're driving down the highway, humming along to your favorite tunes, when the cell phone stowed in your bag suddenly makes a strange noise. To investigate, you take the next exit and safely pull over to check the screen. Good thing you did: Your phone just alerted you to a tornado a few miles away in same county you're driving through.

Sound plausible? It is. America's wireless industry is helping to build a Weather-Ready Nation through a nationwide text emergency alert system, called Wireless Emergency Alerts (WEA), which will warn you when weather threatens. [Read the rest of the article on NOAA.gov.](#)



Scan QR Code for more info!



# Skywarn Activation Including Amateur Radio



Spotters should use the quickest and most effective means available to send us reports

SKYWARN Amateur Radio Spotters should send reports to their County Net Control for relay to NWS ALY Net Control (if available) OR relay by phone or Mobile/Web Based Form (if NWS Net Control not available)

Hazardous Weather Outlook  
National Weather Service Albany NY  
615 AM EDT Mon Mar 13 2023

...WINTER STORM WARNING IN EFFECT FROM 8 PM THIS EVENING TO 8 AM EDT WEDNESDAY...

This Hazardous Weather Outlook is for northwestern Connecticut, western Massachusetts, east central New York and southern Vermont.

.DAY ONE...Today and tonight.

Please listen to NOAA Weather Radio or go to [weather.gov](http://weather.gov) on the Internet for more information about the following hazards.

Winter Storm Warning.

.DAYS TWO THROUGH SEVEN...Tuesday through Sunday.

Please listen to NOAA Weather Radio or go to [weather.gov](http://weather.gov) on the Internet for more information about the following hazards.

Winter Storm Warning.

Strong winds are expected to continue Wednesday. Wind advisories may be needed.

**.SPOTTER INFORMATION STATEMENT...**

**Weather spotters are encouraged to report winter precipitation amounts to the National Weather Service in Albany New York.**





# Information and Links to Submit Storm Reports

**NWS Forecast Office Albany, NY**  
 Weather.gov > Albany, NY  
 Albany, NY  
 Weather Forecast Office

Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes | Climate and Past Weather | Local Programs

Click a location below for detailed forecast.

Watches, Warnings & Advisories  
 Lake Effect Snow Advisory  
 Small Craft Advisory  
 Hazardous Weather Outlook

Last Map Update: Sat, Dec. 10, 2016 at 10:28:08 am EST

**Submit Storm Report**

## Report Weather to the NWS Albany

Weather.gov > Albany, NY > Report Weather to the NWS Albany  
Albany, NY  
Weather Forecast Office

Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes | Climate and Past Weather | Local Programs

Please use one of the following to contact NWS Albany with your weather report...

e-mail: [Alb.stormreport@noaa.gov](mailto:Alb.stormreport@noaa.gov)

Facebook [www.facebook.com/NWSAlbany](http://www.facebook.com/NWSAlbany)

Twitter [www.twitter.com/NWSAlbany](http://www.twitter.com/NWSAlbany)

[Online Storm Report Entry Form](#)

**Example: @NWSAlbany 6" of snow as of 11 am, East Main Street, Granville, NY**

via [www.weather.gov/aly](http://www.weather.gov/aly)



# To View the Latest Weather Briefing from NWS



Weather Hazard Briefing



[Briefing](#) [Storm Reports](#) [Winter](#) [Thunderstorms](#) [Flooding](#) [Non-Precipitation](#)



## Latest Weather Briefing (PDF)

[Area Forecast Discussion \(Text\)](#)



**Major Winter Storm This Evening into Wednesday** March 13, 2023 4:26 PM  
For Eastern New York and Western New England

**Decision Support Briefing #5**  
→ As of 4:30 PM Monday, March 13, 2023

**Winter Weather Headlines**  
Entire forecast area under a Winter Storm Warning ahead of the Nor' Easter  
Issued Mar 13, 2023 4:29 PM EDT

**NEW Important Details/Updates**  
→ **Winter Storm Warnings** remain in effect for the entire area.  
→ Minor adjustments to snow totals.

National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

National Weather Service Albany, NY



# For the Smart Phone Savvy!

**1.** weather.gov

NATIONAL WEATHER SERVICE

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH

Local forecast by Albany, NY or ZIP code

News Headlines

- Replacement of RIDGE Radar Web Page Effective on or about Decemb
- Northeast Regional Operational Workshop 21 - Call for papers
- Precipitation Map for August is available
- Autumn Weather Safety

MY FORECAST Albany International Airport NY

NWS Forecast Office Albany, NY

Weather.gov > Albany, NY

Current Hazards Current Conditions Radar Forecasts Rivers and Lakes Climate and Past Weather

Click a location below for detailed forecast.

48°F  
9°C

A Few Clouds

Low: 38°F

Sunny High: 59°F

Latest Storm Information Local Radar Satellite

Text Product Selector (Selected product opens in new window)

Latest Text Products issued by ALY

Radar Current Weather Rivers & Lakes Satellite Forecast Maps Hour 1

Graphical Hazards Forecaster's Discussion Recreational Forecast Text Bull Submit Storm Report

Share Copy Bookmarks

**2.** Albany, NY weather.gov Options >

Copy

Add to Reading List

Add Bookmark

Add to Favorites

Find on Page

Add to Home Screen

**3.** Cancel Add to Home Screen Add

Albany, NY

https://www.weather.gov/aly/

An icon will be added to your home screen so you can quickly access this website.

App Shortcut on your Homescreen

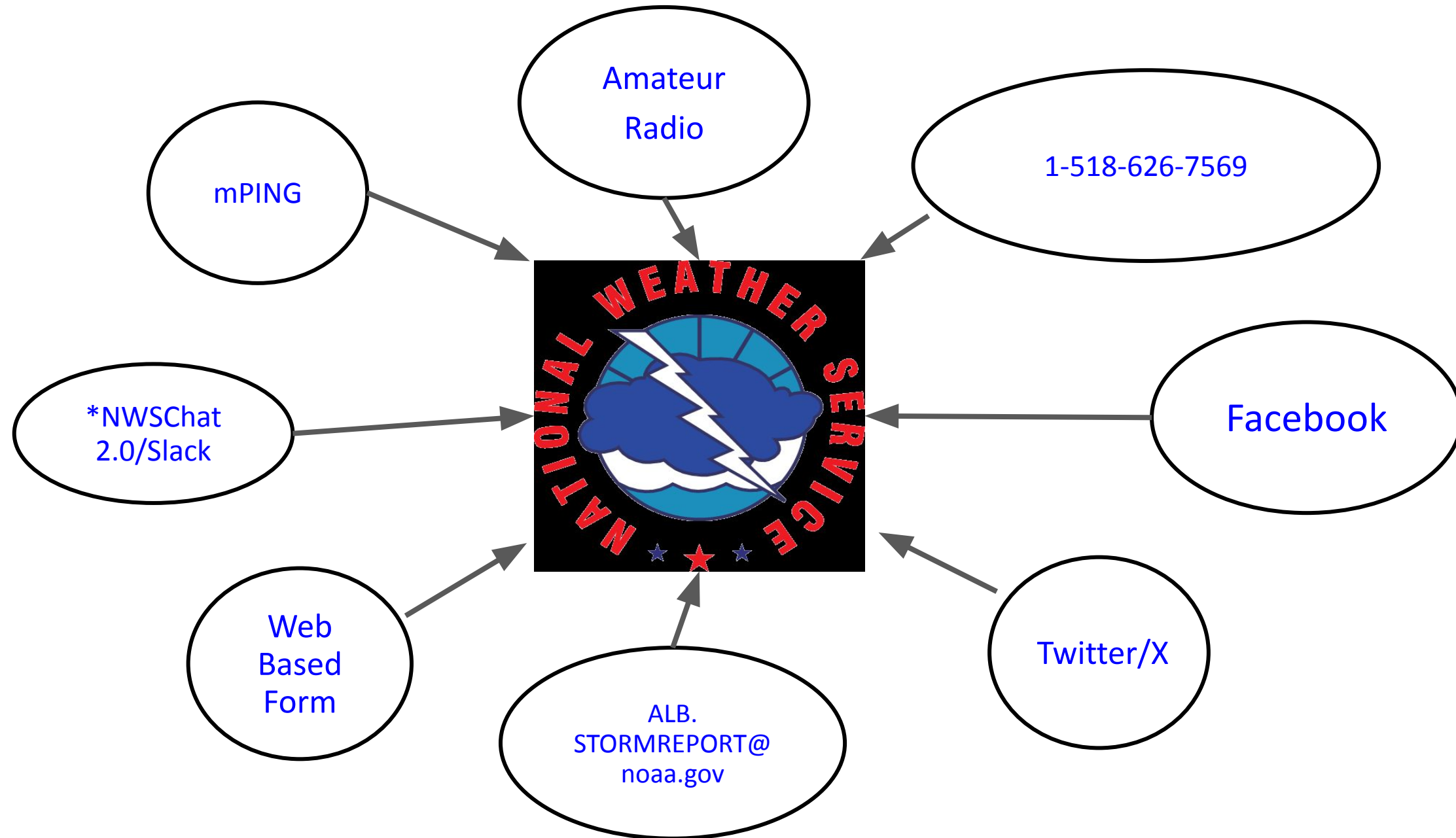
Albany, NY



Weather.gov/{zipcode}



# How to Relay Your Report





# Sending A Report

- What are you reporting? Pictures are helpful, especially with ice jam flooding.
- When did it occur?
- Where did the event occur?





# Reporting Criteria



**Ice Accumulation** – Any glaze or accumulation on surfaces (flat/radial?)

**Snow Accumulation** – First 1” or any accumulation not reflected in the forecast; Snowfall rates (1”+ per hour)

**Storm Total Snowfall** – Measure once every 6 hours and at the end of the event



**Heavy Rain** – Measured 1” or More

**Flooding** – Streams, creeks or rivers out of banks of flooding of roads from poor drainage

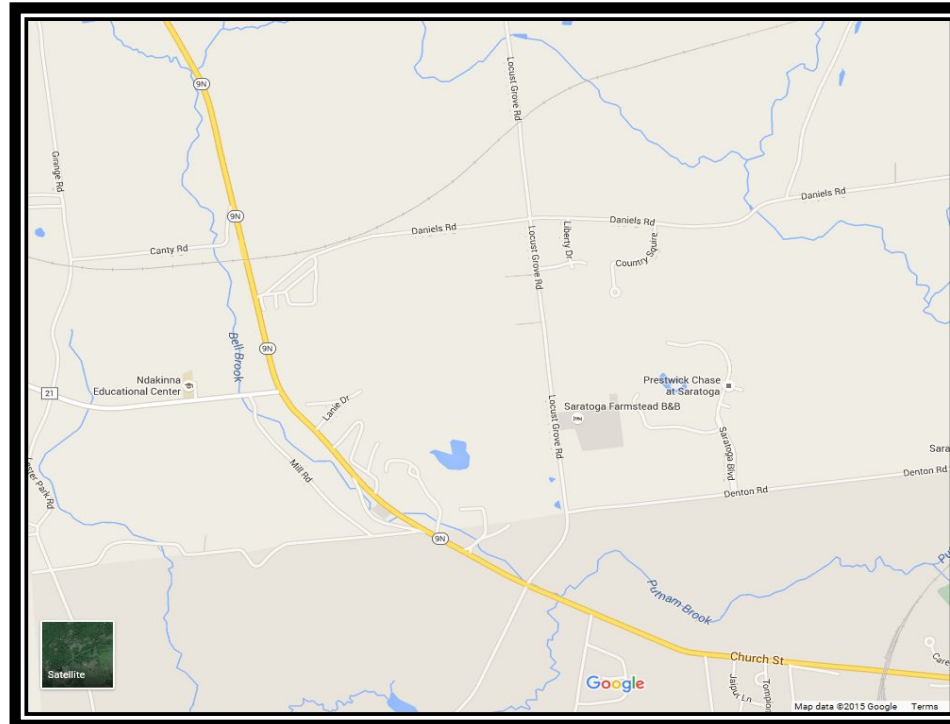




# When Referencing Locations

**Please be as specific as comfortably possible!**

**Reference the nearest street intersection or block number, mile marker or even latitude/longitude.**

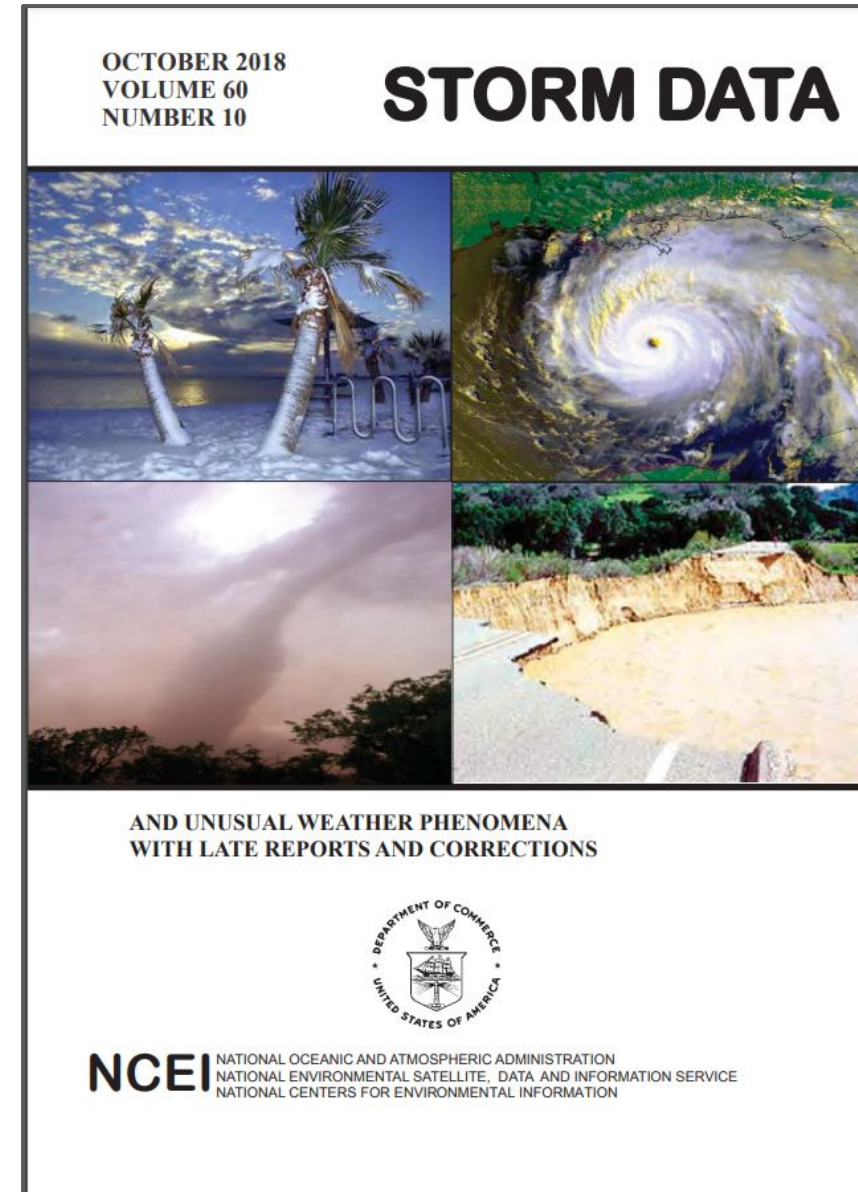




# Your Data Has to be Certified by the NWS to be Used For Disaster Assistance



We need high quality data.



<https://www.ncdc.noaa.gov/stormevents/>





# Outline

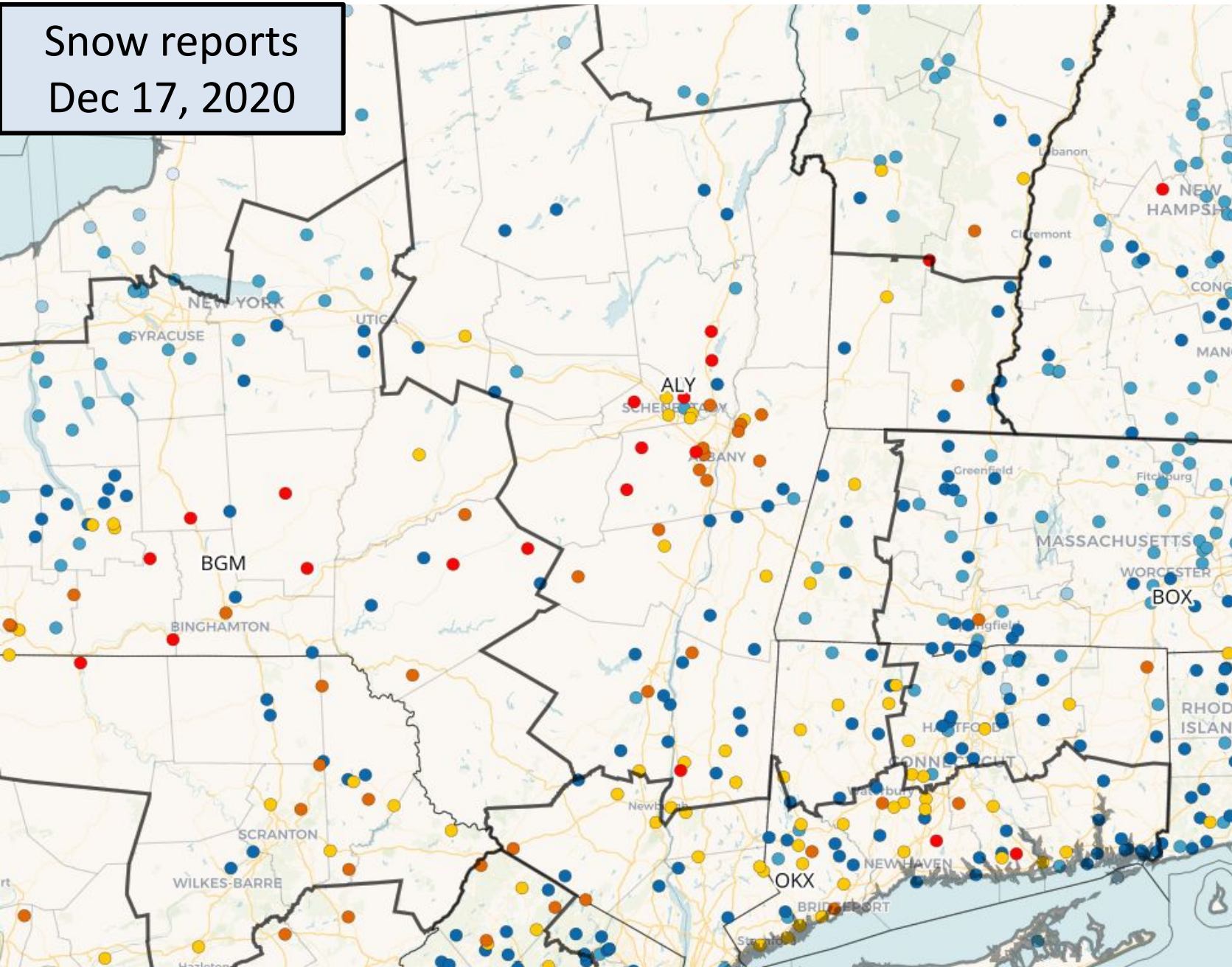
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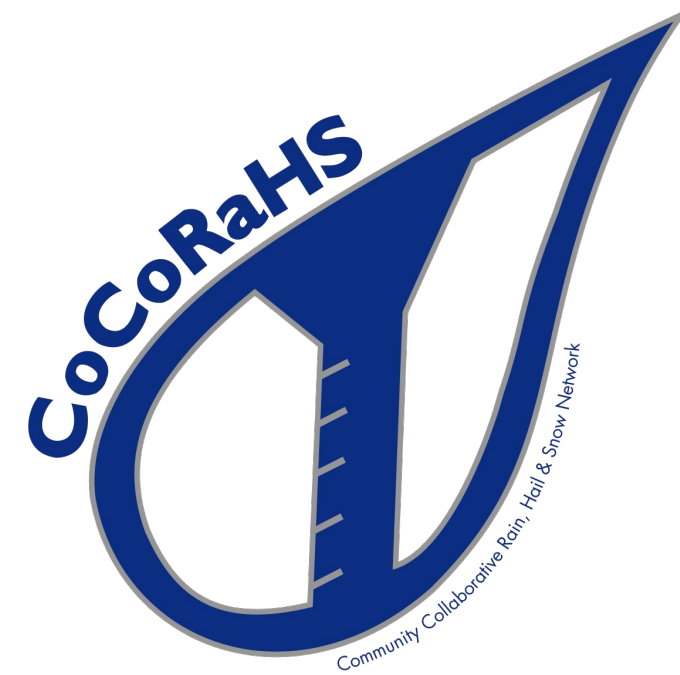
# Join CoCoRaHS!

Snow reports  
Dec 17, 2020



Join the community of over 300 CoCoRaHS observers across eastern NY & western New England!

Receive emails from NWS Albany with rain/snow maps & best measuring practices





# MPING App - Send Us Your Precipitation Type!





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Test Time!!

An 80% or higher is required to pass...



**JUST  
KIDDING!**



National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

National Weather Service  
Albany, New York



## Question #1

A(n) \_\_\_\_\_ weather pattern has emerged and the 2023-2024 Winter Outlook from the Climate Prediction Center favors \_\_\_\_\_ temperatures across the Albany Forecast Area.

**A. El Niño and Above Normal**

**B. El Niño and Below Normal**

**C. La Niña and Above Normal**

**D. La Niña and Below Normal**





## Question #2

**Which of the following steps for properly measuring snowfall is FALSE?**

- A. Find an open area away from tall objects, but sheltered from the wind**
- B. Measure the snowfall on a 24 x 24 inch board painted white**
- C. Measure as soon as the snow stops to avoid lower totals due to melting and/or compaction**
- D. Round your snowfall amount to the nearest 0.5"**





## Question #3

This type of weather event typically develops in southwestern Canada and are fast-moving low pressure systems that can bring a narrow band of significant precipitation, sometimes snow squalls, and are followed by a push of much colder, frigid air.

A. Nor'Easter

B. Overrunning

C. Alberta Clipper

D. Lake-effect Snow







## Question #4

The snowfall criteria for a Winter Storm Warning is...(assuming no mixed precipitation)

A. 4 inches

B. 7 inches

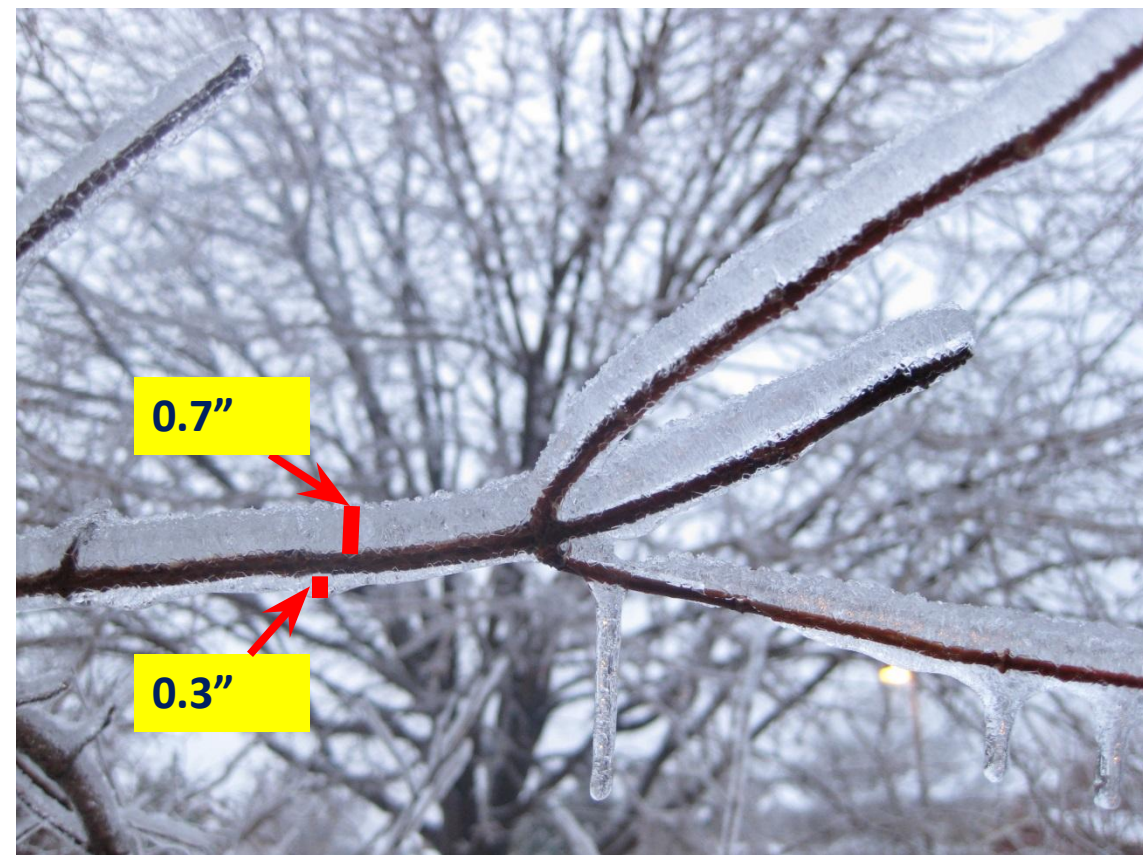
C. 10 inches

D. 12 inches





## Question #5



You measure 0.7" of an inch of ice on one side of a tree branch and 0.3" of an inch of ice on the other side. What is the correct 'radial ice' measurement?

**A. 0.5"**

**B. 0.2"**

**C. 1.0"**

**D. 2.1"**





## Question #6

Each of the following are ways you can submit reports to the National Weather Service EXCEPT...

A. Office Web Based Form

B. Facebook/Twitter

C. Email

D. TikTok





## Question #7

**Which of the following reports is the most helpful for the National Weather Service?**

- A. Precipitation just changed over to sleet at my parent's house.
- B. I just measured 3 inches of snow in my driveway but it stopped snowing 2 hours ago.
- C. Which teams do you think will be going to the Super Bowl?
- D. As of 6 pm, I measured 6.7 inches of snow near the intersection of Colby Street and Central Avenue in the City of Albany.





**Congrats!**

**Congrats! You all Passed and are now weather spotters!**

Three gold stars with a black outline and a sparkling texture are arranged around the word "Congratulations". One star is positioned above the 'C', another above the 't', and a larger one is centered below the word.  
**Congratulations**





# To Receive Your Certificate



**Virtual Sessions: Download the certificate files before exiting GoToWebinar**

**In-Person Sessions: We will send the certificate in a follow-up email**

**Note: The .DOC version of the certificate can be used to digitally sign your name on the certificate by 'double-clicking' on the box**

**You can also retrieve the certificate via this link:**  
<https://www.weather.gov/media/aly/Skywarn/SkywarnCertificate.pdf>



# Don't Forget Your Spotter Information Sheet!



NATIONAL WEATHER SERVICE, NOAA  
ALBANY, NY



## WINTER SKYWARN INFORMATION SHEET

Report Weather Spotter Line	1-518-626-7569
Winter Weather Spotter Field Guide	<a href="https://www.weather.gov/safety/winter">https://www.weather.gov/safety/winter</a>
Email	<a href="mailto:alb.stormreport@noaa.gov">alb.stormreport@noaa.gov</a>
NWS Albany	<a href="https://www.weather.gov/aly/">https://www.weather.gov/aly/</a>
Twitter	<a href="https://twitter.com/NWSAlbany">@NWSAlbany</a>
Facebook Page	<a href="https://www.facebook.com/NWSAlbany">https://www.facebook.com/NWSAlbany</a>
NOAA Weather Radio	<a href="https://www.weather.gov/nwr/">https://www.weather.gov/nwr/</a>
Storm Prediction Center	<a href="http://www.spc.noaa.gov">www.spc.noaa.gov</a>
NWS Online Weather School	<a href="http://www.weather.gov/jetstream">www.weather.gov/jetstream</a>
Weather Prediction Center	<a href="http://www.wpc.ncep.noaa.gov">www.wpc.ncep.noaa.gov</a>
River Flood Monitoring	<a href="http://water.weather.gov/ahps">water.weather.gov/ahps</a>
CoCoRaHS	<a href="http://www.cocorahs.org">www.cocorahs.org</a>
NWS Amateur Radio Frequency	Primary 146.64 MHz - Secondary 145.19 MHz

### IMPORTANT WEATHER TO REPORT

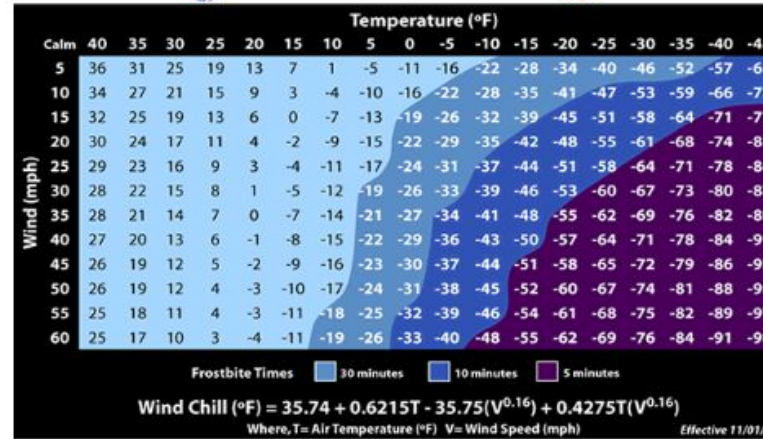
When you report, please give your location (including your county) and the time of the observation. Try to report as soon as possible after observing the event and *remember your safety comes first!* Please concentrate on the following phenomena:

<b>SNOWFALL</b>	After 1 inch of new snow, and then at 2 inches, 4 inches, and every 2 inches thereafter (e.g., 2, 4, 6, 9, 12, etc.). Then the final storm total at the conclusion of the event.
<b>FREEZING RAIN</b>	As soon as you observe the occurrence of freezing rain or freezing drizzle, especially if it starts to collect on objects. Call again if the ice accumulation exceeds 1/4 inch. (measure on flat surface)
<b>THUNDER SNOW</b>	Location and time of occurrence
<b>WIND SPEEDS</b>	Report wind speeds greater than 40 mph
<b>RAINFALL</b>	Report when you receive one inch (and then at least every inch thereafter)
<b>SNOW SQUALL</b>	Report snow accumulation (even if under an inch), road conditions (wet, snow-covered, icy), lowest visibility observed, and wind speeds.
<b>FLOODING</b>	Report any flooding you observe, including basement, road, stream, creek, and ice jam flooding. Report the name of the stream/creek, road number/name (if applicable) and depth
<b>DAMAGE</b>	Report all storm-related damage (large branches, fallen trees, structural damage, flood damage, etc.) Even if it is several days after the event.

### TIME TO FROSTBITE



## Wind Chill Chart



### ESTIMATED WIND SCALE

- 25-31 MPH.....Large branches in motion; whistling in telephone wires
- 32-38 MPH.....Entire trees in motion; slight difficulty walking against wind
- 39-54 MPH.....Twigs break off trees; wind generally impedes progress
- 55-72 MPH.....Damage to chimneys and TV antenna; large limbs/branches down

### DEFINITIONS

<b>Hazardous Weather Outlook</b>	Hazardous winter weather conditions are possible in the next 7 days. Stay tuned to local media and NOAA Weather Radio All Hazards for updates.
<b>Watch</b>	Conditions are favorable for the weather event in or near the watch area
<b>Warning</b>	The weather event is imminent or occurring in the warned area
<b>Advisory</b>	The weather event will be an inconvenience. However, if caution is not exercised, it could become life-threatening (mostly during the winter months)
<b>Flash Flood</b>	A flood caused by heavy rainfall in a short period of time, generally less than 6 hrs
<b>Flood</b>	Inundation caused by heavy rain which generally takes greater than 6 hrs to occur
<b>Snow Squall</b>	Intense, but limited duration, periods of moderate to heavy snowfall, accompanied by gusty surface winds resulting in reduced visibilities and whiteout conditions

### SKYWARN FAQs

- SKYWARN Spotter recertification - every 2 years
- SKYWARN Spotter webpage - <https://www.weather.gov/aly/skywarn>

**Virtual Sessions: Download the spotter information sheet before exiting GoToWebinar**

**In-Person Sessions: We will send the spotter information sheet in a follow-up email**





# Thank you For Attending!

Email: [alb.stormreport@noaa.gov](mailto:alb.stormreport@noaa.gov)



 [www.weather.gov/albany](http://www.weather.gov/albany)  [NWSAlbany](https://www.facebook.com/NWSAlbany)  [@NWSAlbany](https://twitter.com/NWSAlbany)  [YouTube NWSAlbany](https://www.youtube.com/NWSAlbany)