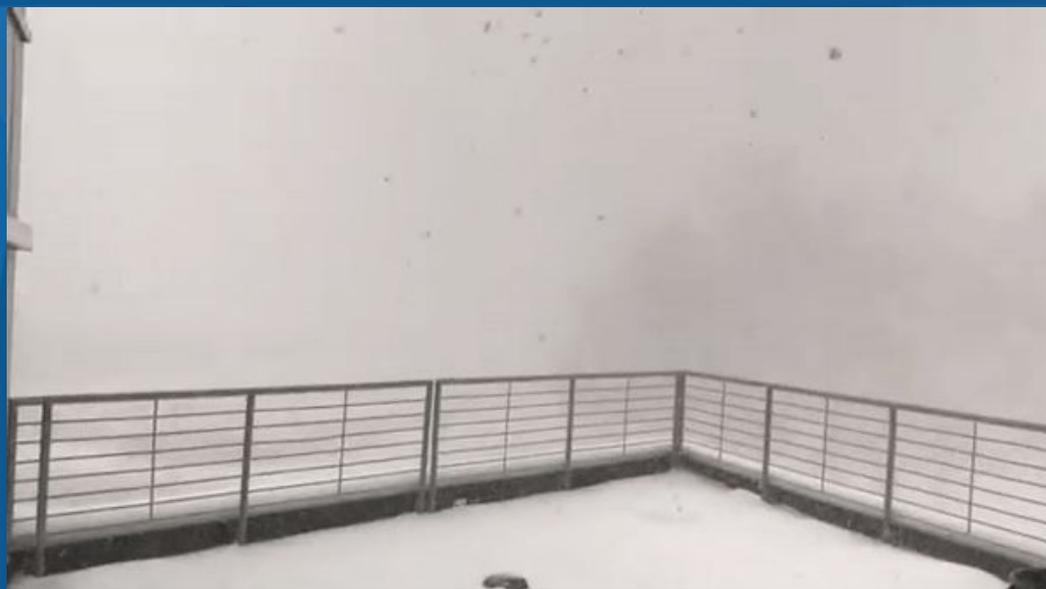




Skywarn Weather Spotter Training

2020 – 2021 Autumn & Winter Sessions



Frostbite & Hypothermia
Freezing Rain, Snow, Sleet



#FallSafety #WinterSafety
Turn Around Don't Drown

www.weather.gov/safety/winter



Outline

Skywarn Reporting Criteria

Weather Ready Nation

Facts about the NWS Albany County Warning Area (CWA)

Winter 2020-2021 outlook

Winter Weather events

Winter Weather forecasting criteria

Who, What, Where, When & How to Report to us

Conclusion



Skywarn Spotter Information Sheet



NATIONAL WEATHER SERVICE, NOAA
ALBANY, NY
SKYWARN INFORMATION SHEET



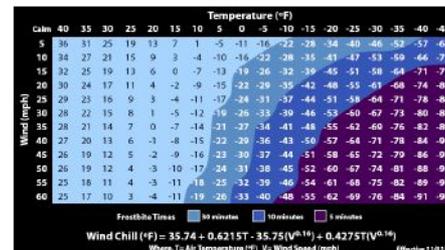
Winter Weather Spotter Field Guide	https://www.weather.gov/media/safety/Winter_Storms2008.pdf
Email	alb_stormreport@noaa.gov
NWS Albany	www.weather.gov/Albany
Twitter	@NWSAlbany
Facebook Page	https://www.facebook.com/NWSAlbany
NOAA Weather Radio	www.nws.noaa.gov/nwr
Storm Prediction Center	www.spc.noaa.gov
NWS Online Weather School	www.weather.gov/jetstream
Weather Prediction Center	wpc.ncep.noaa.gov
River Flood Monitoring	water.weather.gov/ahps
CoCoRaHS	www.cocorahs.org
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:

SNOWFALL	After 1 inch of new snow, measurements every 6-hours and then final storm total at the conclusion of the event. Snowfall rates (+1" per hour). In addition, note and report when precipitation type changes.
FREEZING RAIN	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)
THUNDER SNOW	Location and time of occurrence
WIND SPEEDS	Report wind speeds greater than 40 mph
RAINFALL	Report when you receive one inch (and then at least every inch thereafter)
FUNNEL CLOUD	A "rotating" appendage descending from the base of a cumulonimbus cloud, but not touching the ground. If possible, always look at the area beneath the funnel cloud for flying debris. If flying debris is observed, it is a tornado.
TORNADO	Violently rotating column of air descending from a cumulonimbus cloud and touching the ground. Look for flying debris. If possible, report any injuries or fatalities
HAIL	Report hail 0.75 or larger. Specify the diameter based on the hail scale.
FLOODING	Any flooding including streams out of their banks, water over road, water in basement or any ice jam flooding. Report deepest water depth (estimate if necessary).
DAMAGE	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



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
- 73-112 MPH.....Roof surfaces damaged; windows broken; light mobile homes moved or overturned; moving vehicles pushed off road
- 113-157 MPH.....Roofs torn off; weak buildings and mobile homes destroyed
- ≥158 MPH.....Severe damage; cars lifted completely off ground

DEFINITIONS

Hazardous Weather Outlook	Hazardous winter weather conditions are possible in the next 2-5 days. Stay tuned to local media and NOAA Weather Radio All Hazards for updates.
Watch	Hazardous impact conditions are possible within the next 36-48 hours. Prepare now!
Warning	Life-threatening impact conditions have begun or will begin within 24 hours. Act Now!
Advisory	These events will be an inconvenience. However, if caution is not exercised, it could become life-threatening.
Flooding	Flooding typically occurs when prolonged rain falls over several days, when intense rain falls over a short period of time, or when an ice or debris jam causes a river or stream to overflow onto the surrounding area. Flooding can also result from the failure of a water levee or dam, as well. The most common cause of flooding is water due to rain and/or snowmelt that accumulates faster than soils can absorb it or rivers can carry it away. Flash floods generally develop within 6 hours of the immediate cause and exhibit a rapid rise of water over low-lying areas.
Ice Jam	Pieces of floating ice carried with a stream's current that accumulate and block the movement of water. The water that is held back may cause flooding or flash flooding upstream. If the jam suddenly breaks then flash flooding may occur downstream.
Funnel Cloud	Cold air funnels form beneath showers or weak thunderstorms when the air aloft is especially cold. They are much less violent than other types of tornadoes.
Downburst	A strong downdraft with an outrush of damaging wind on or near the ground Macroburst – swath of damaging wind more than 2.5 miles wide Microburst – swath of damaging wind 2.5 miles or less



Weather-Ready Nation

A network of external organizations working with NOAA.

The network of committed partners to carry out the goal of WRN include (but not limited to):

- o *Government Agencies*
- o *Private Sector*
- o *Emergency Managers*
- o *Researchers*
- o *Media*
- o *SKYWARN Spotters*
- o *YOU!*



The purpose of the Weather-Ready Nation initiative is to save more lives and livelihoods. By increasing the nation's weather-readiness, the country will be prepared to protect, mitigate, respond to and recover from weather-related disasters.



Winter Weather Safety

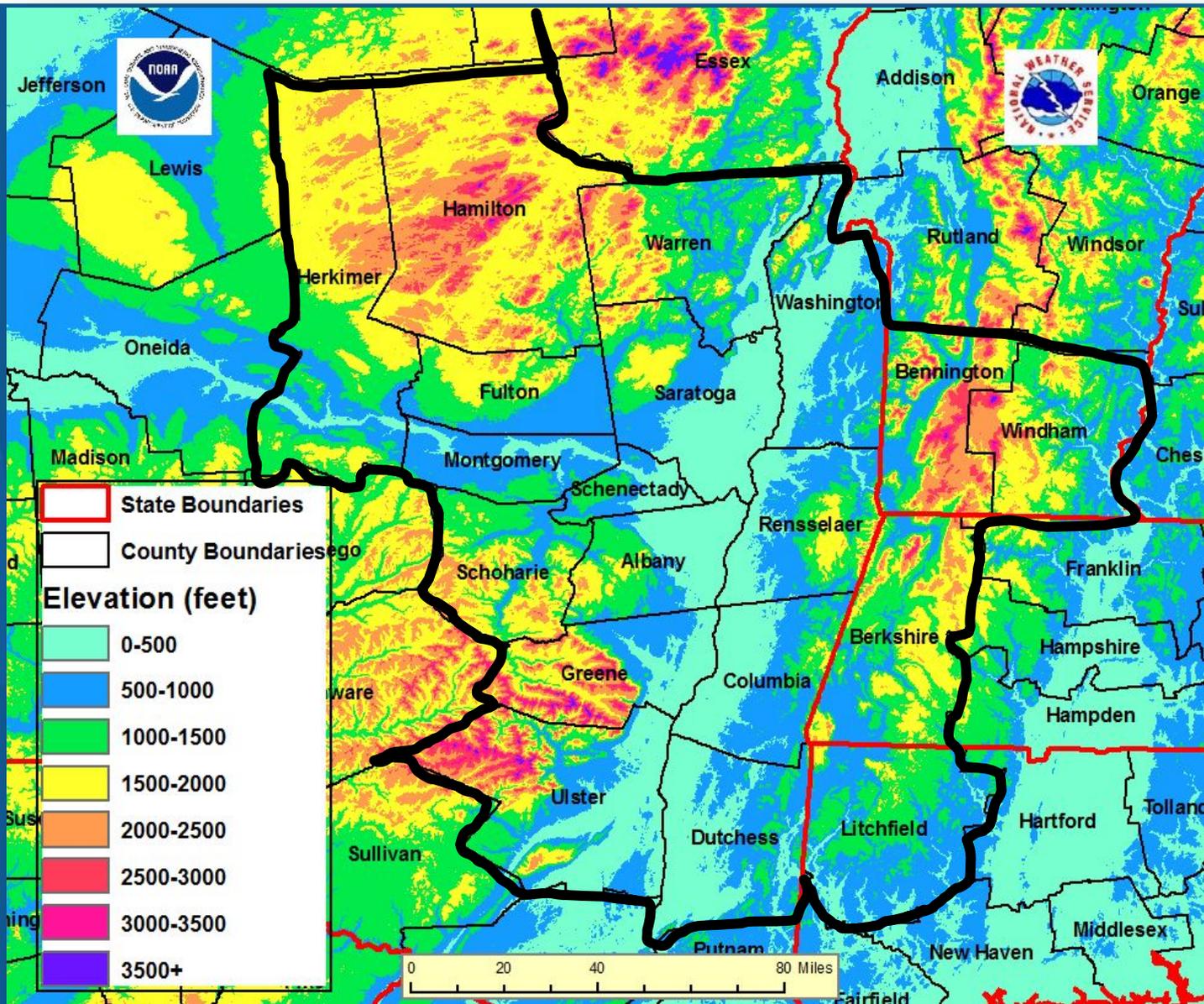
- W**ear warm clothing
- I**ce (Don't slip and fall)
- N**o reports, unless its safe
- T**ravel only when necessary
- E**mergency kit
- R**adio (NOAA Weather Radio All Hazards)



Your Safety is ALWAYS #1



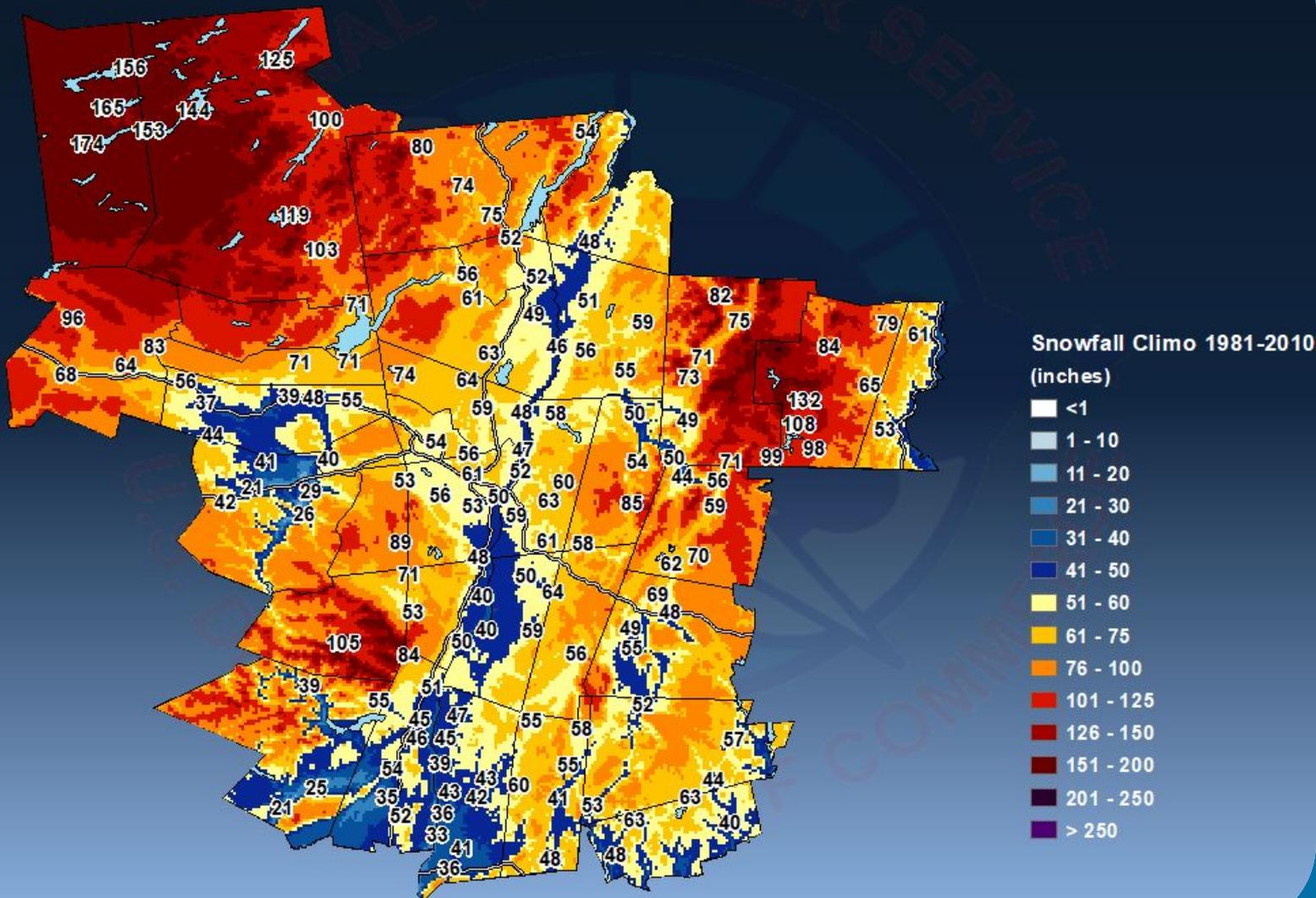
Local Topography – Albany Forecast Area





Snowfall Climatology – Albany Forecast Area

Seasonal Snowfall Climatology 1981-2010



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.



Winter Outlook

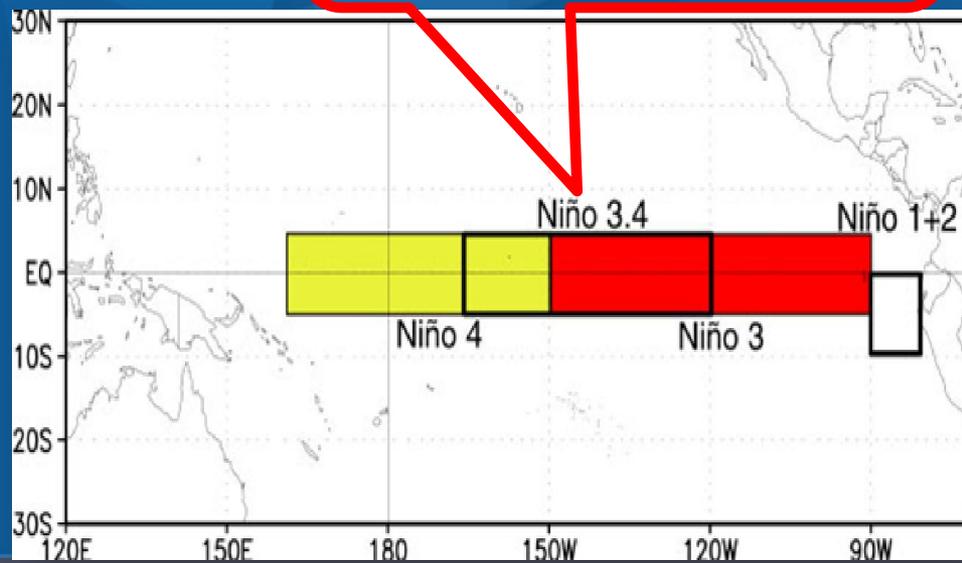


El Niño/La Niña

What is **El Niño??** □ This is when sea surface temperature anomalies (values that are not at average) are positive...or above normal of a value of 0.5 C or higher in the Niño 3.4 Region for at least one month in-conjunction with other long term criteria's.

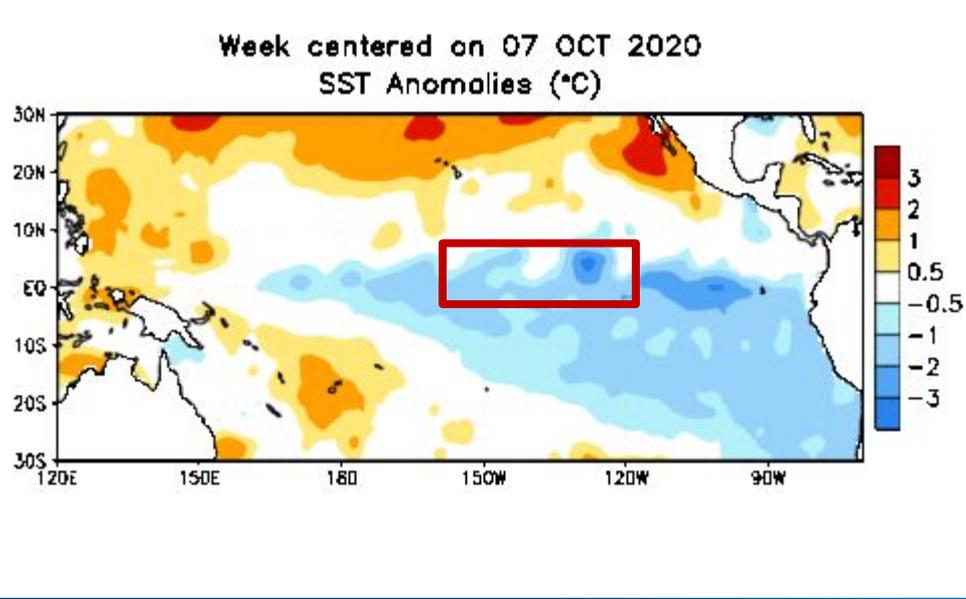
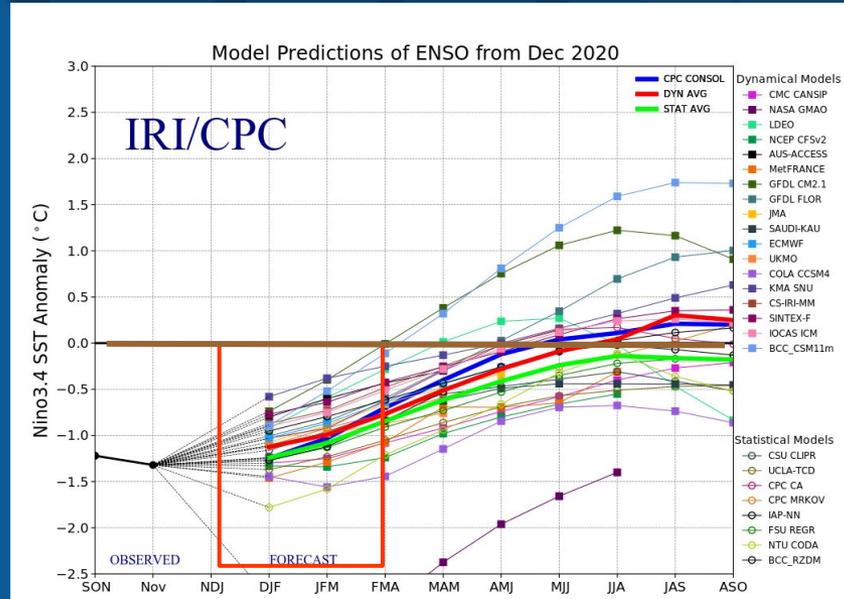
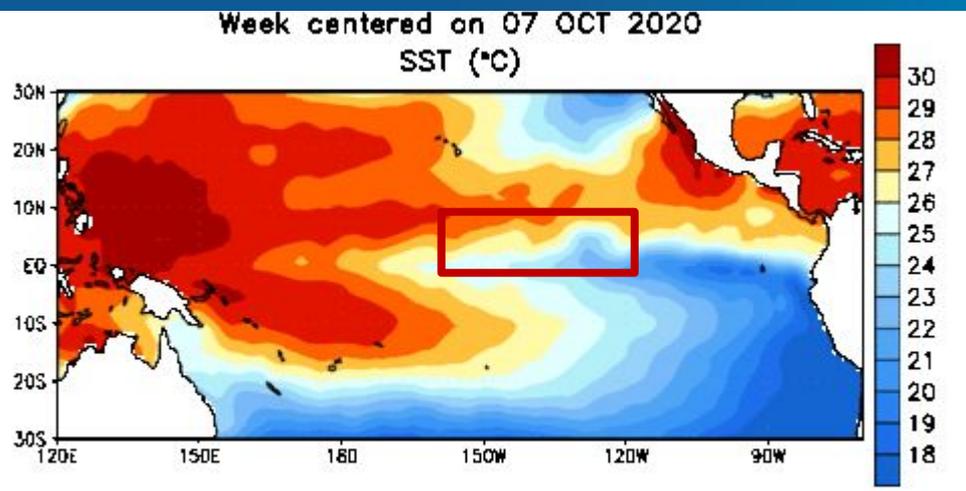
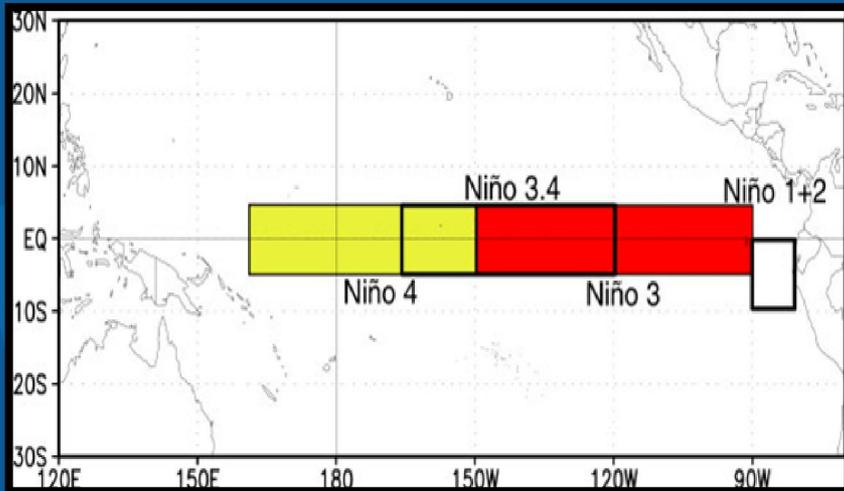
What is **La Niña??** □ This is when sea surface temperature anomalies are negative...or below normal of a value of -0.5 C or lower in the Niño 3.4 Region for at least one month in-conjunction with other long term criteria's.

The domain of the Niño 3.4 region lies between 5° S-5°N and 120°W-170°W





Pacific Ocean Data



DJF = December – January – February



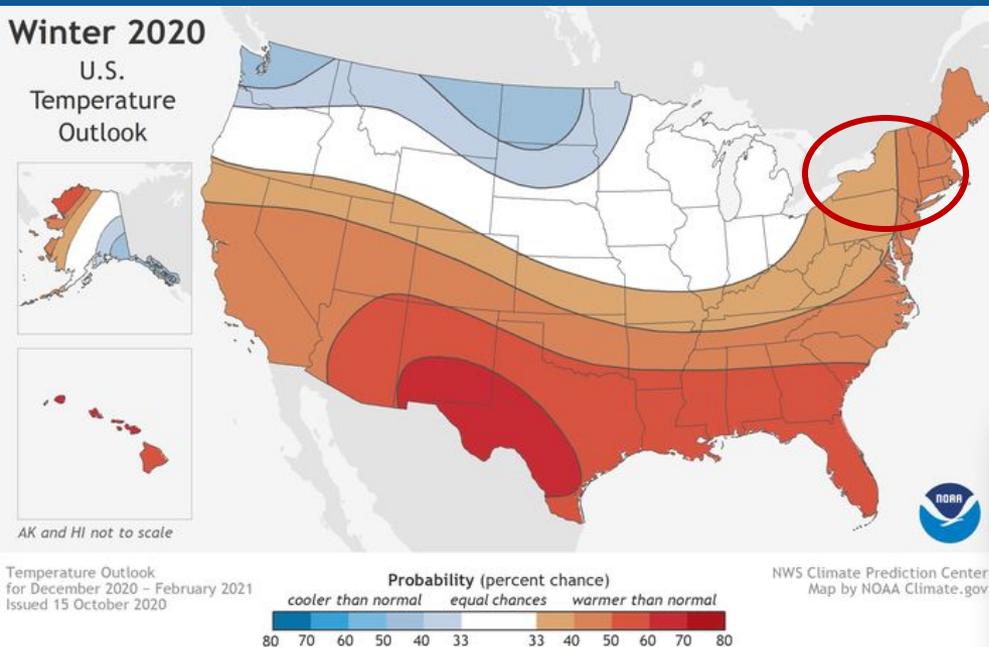
2020-2021 Winter Outlook

Probability Forecast

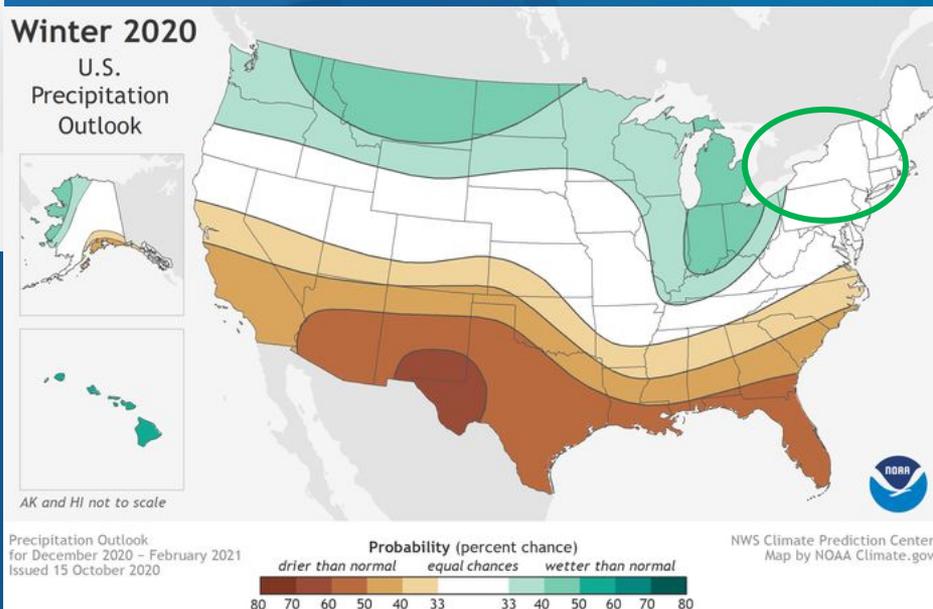
Temperatures -> warmer than normal

Precipitation -> equal chances

Winter 2020
U.S.
Temperature
Outlook



Winter 2020
U.S.
Precipitation
Outlook



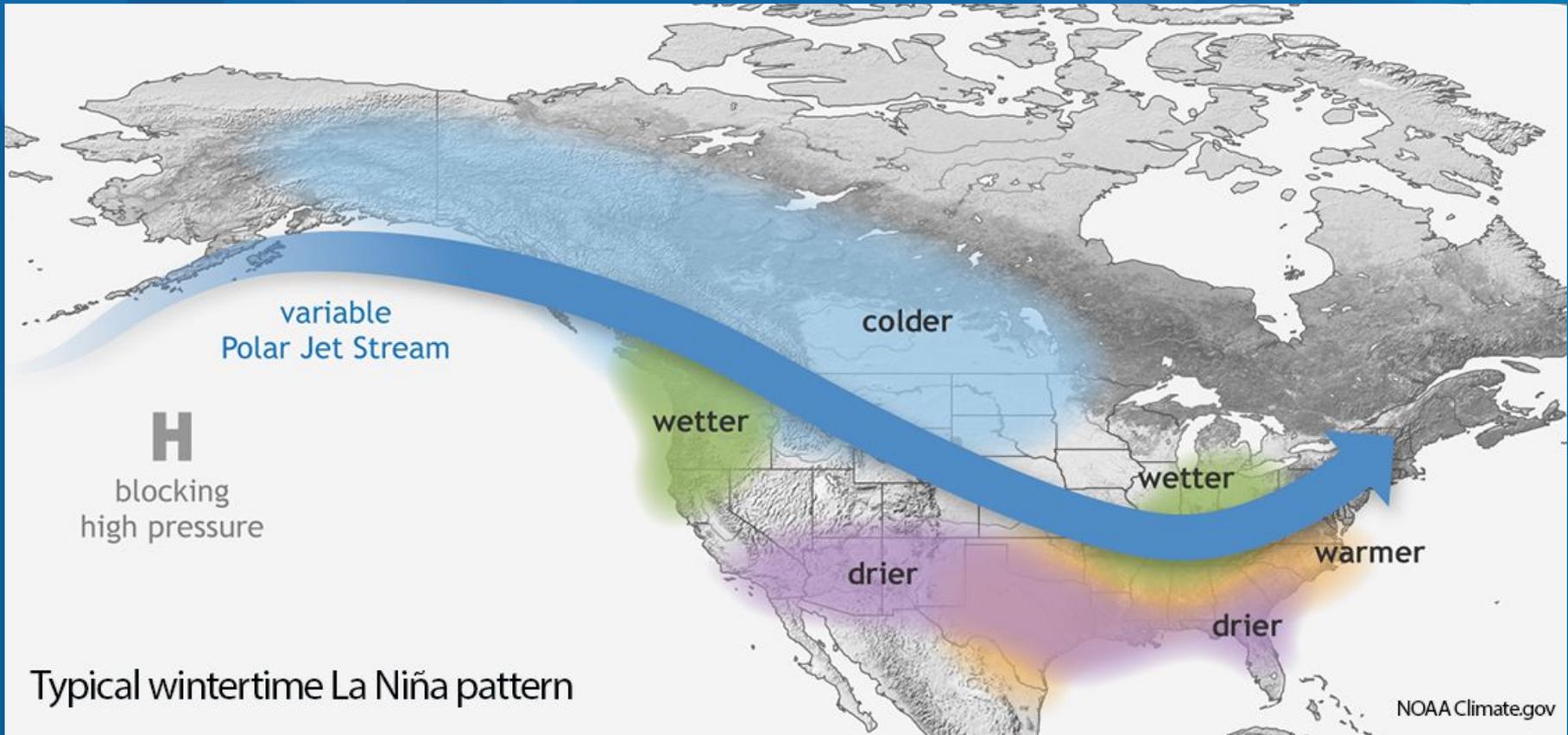
www.climate.gov/Winter2020



Winter 2020-2021 Outlook...What do those graphics mean for us?

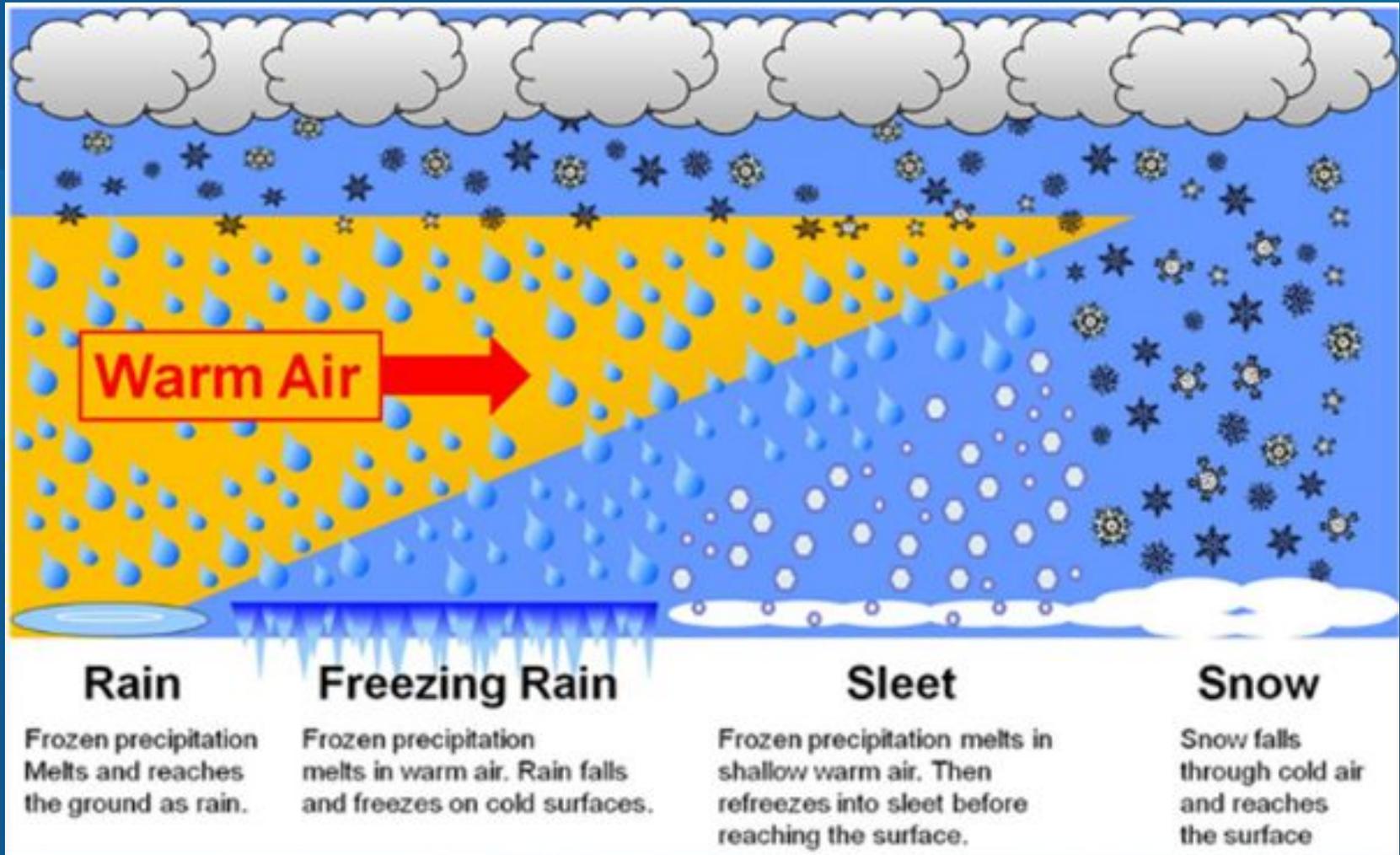
La Nina conditions are present.

La Nina is favored across the Northern Hemisphere this winter and continuing through spring 2021.





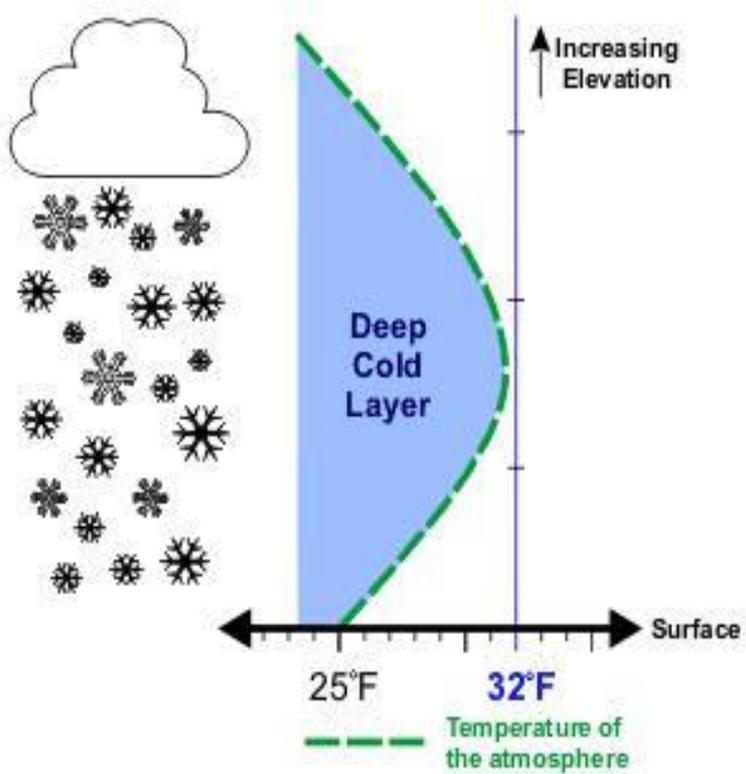
Winter Precipitation Types



We launch weather balloons at least twice a day from our forecast office!

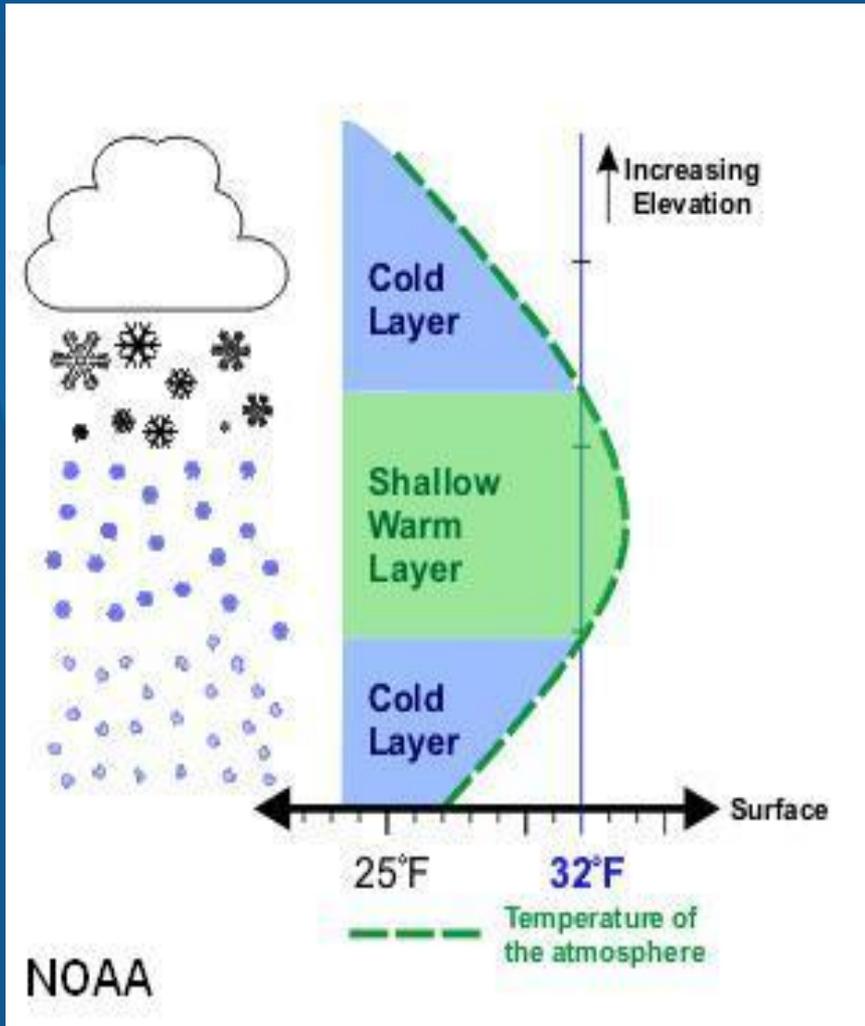


SNOW



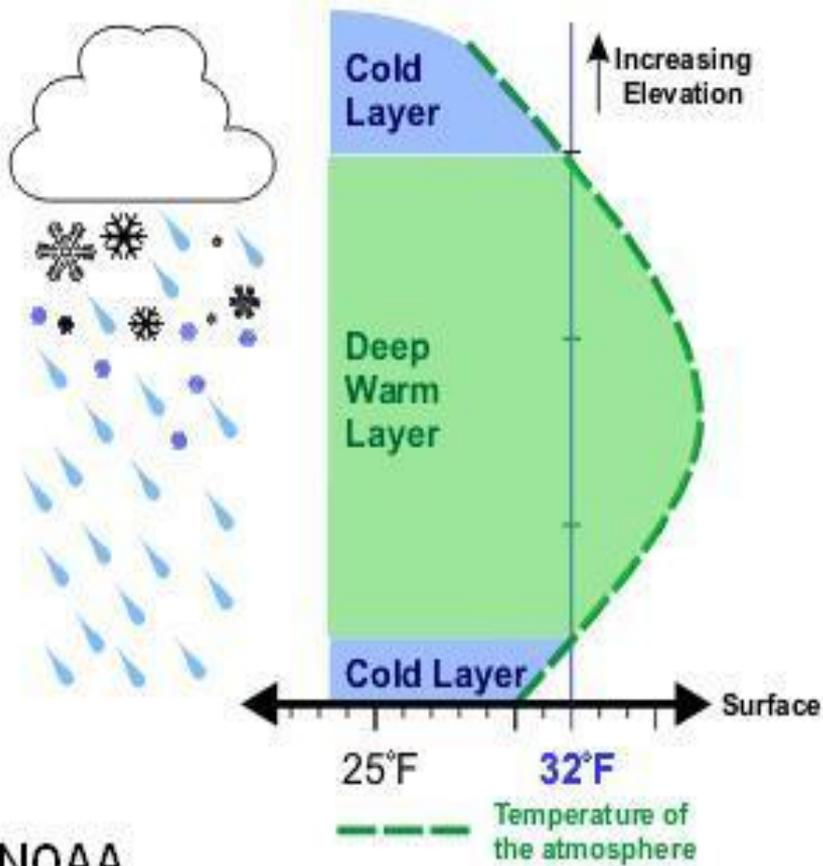


Sleet





Freezing Rain



NOAA



Photo, Ingrid Amberger, NWS Albany, NY



Snowfall Measurement Review

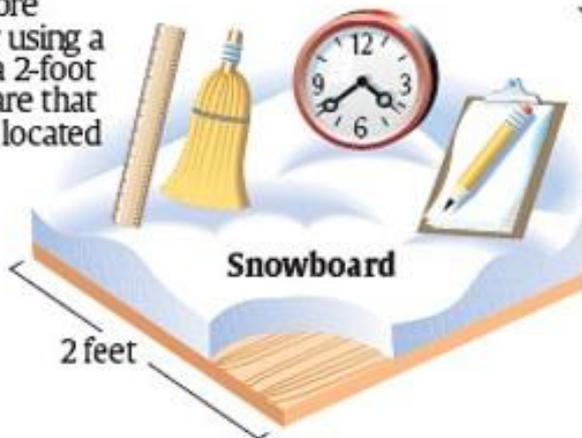
How to measure snow

You don't need a degree in meteorology to measure snow, just some basic equipment and a keen eye for observation. Snow reports from volunteer weather observers provide important data each day about snow cover as well as new snowfall.

1 Daily measurement of snow cover can be made by picking an open location away from pavement, buildings and trees. Push a ruler all the way to the ground and read the depth of the snow.



2 New snowfall can be measured more accurately by using a snowboard, a 2-foot wooden square that can easily be located during the snowstorm.



3 Frequent measurement is encouraged, clearing the snow no more than once every six hours.

4 When the snow stops falling, add up your measurements to come up with the total for the event.

Snowfall Measurements are rounded to nearest 0.1"



Snowfall & Water Equivalent Measurement Review

Step 1



Step 2

Snowfall: The accumulation of snow and ice in the last 24 hours - PRIOR to melting or settling.

Step 3





Types of Winter Storms





1. Overrunning

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

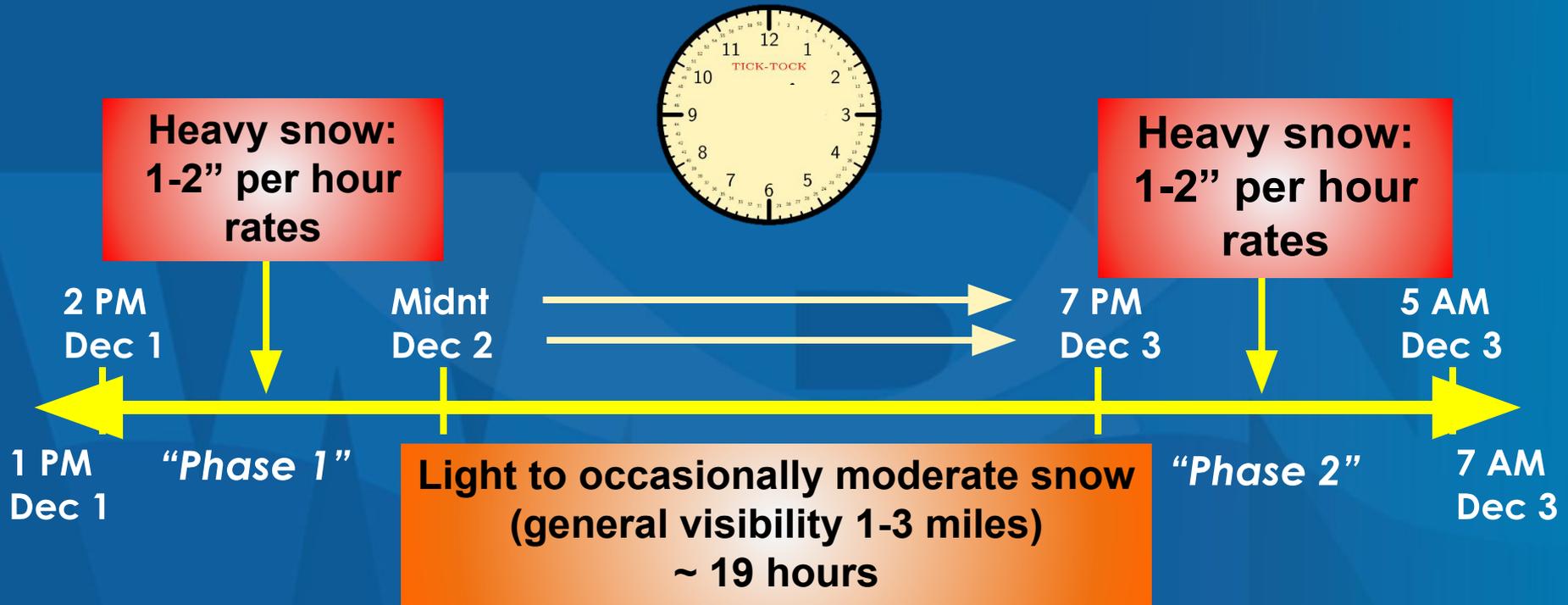
Rising warm air cools, forming low-topped clouds and steady rain, snow.



(Source: USA Today)



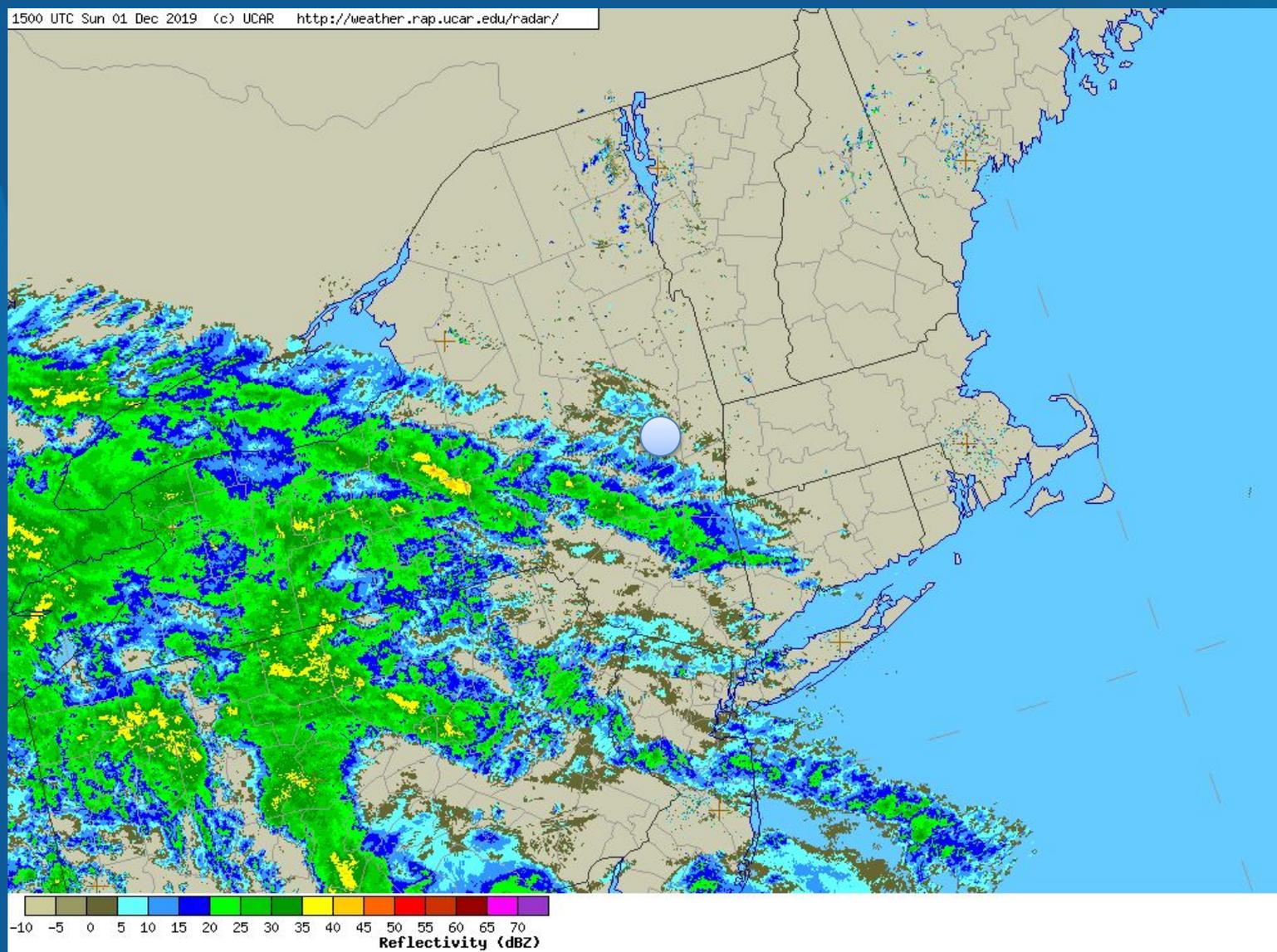
December 1-3, 2019





December 1-3, 2019

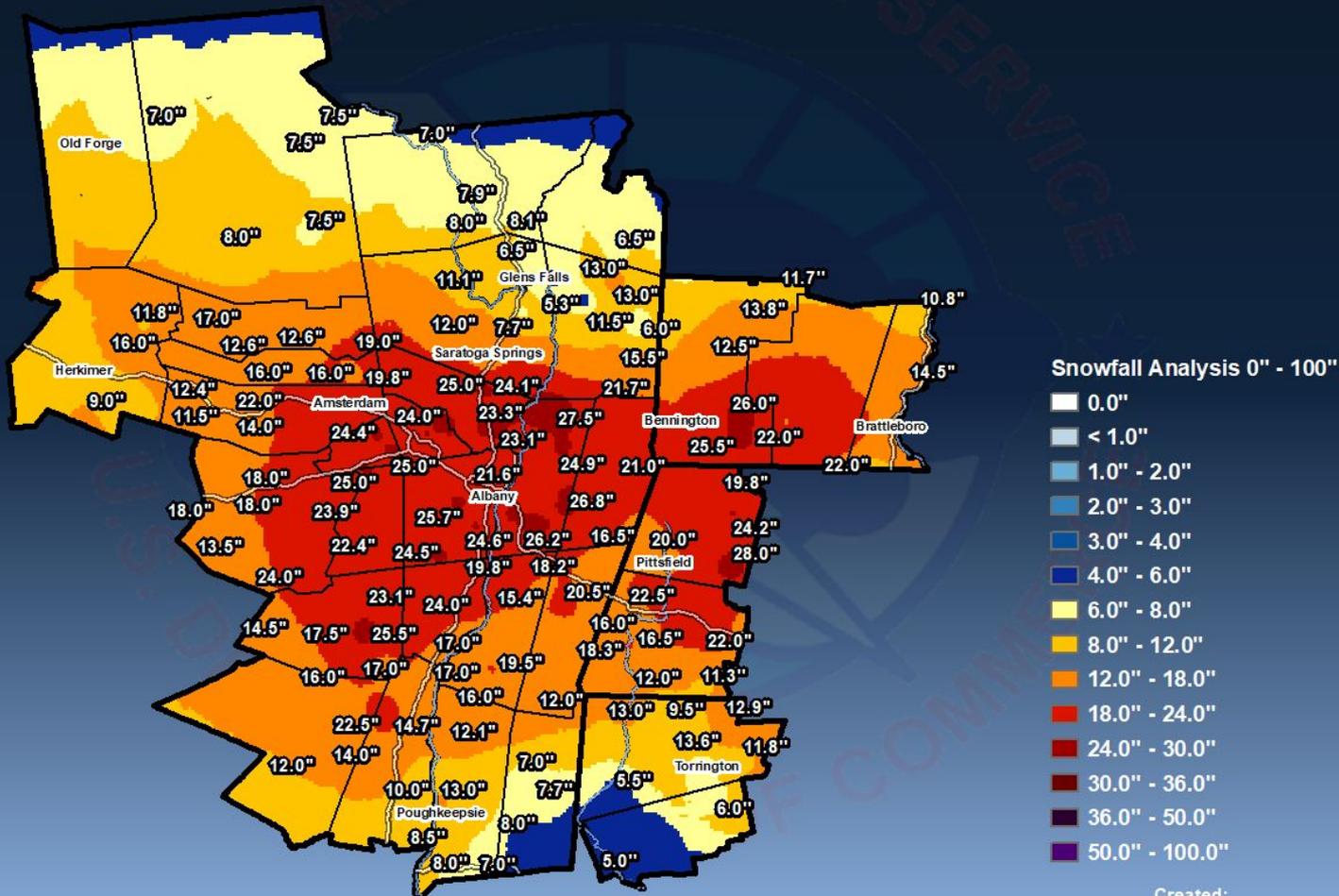
1500 UTC Sun 01 Dec 2019 (c) UCAR <http://weather.rap.ucar.edu/radar/>





December 1-3, 2019

National Weather Service Albany New York Snowfall Analysis 12/01/2019 07:00AM to 12/03/2019 07:00AM Analysis Data Source: Regional Observations



Created:
12/05/2019 02:01PM

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.



2. Alberta Clipper

1

Birth of a storm

Area of low pressure often forms east of mountains in Alberta, Canada.

2

Air movements

Cold outbreak reinforced behind storm as it moves across USA.

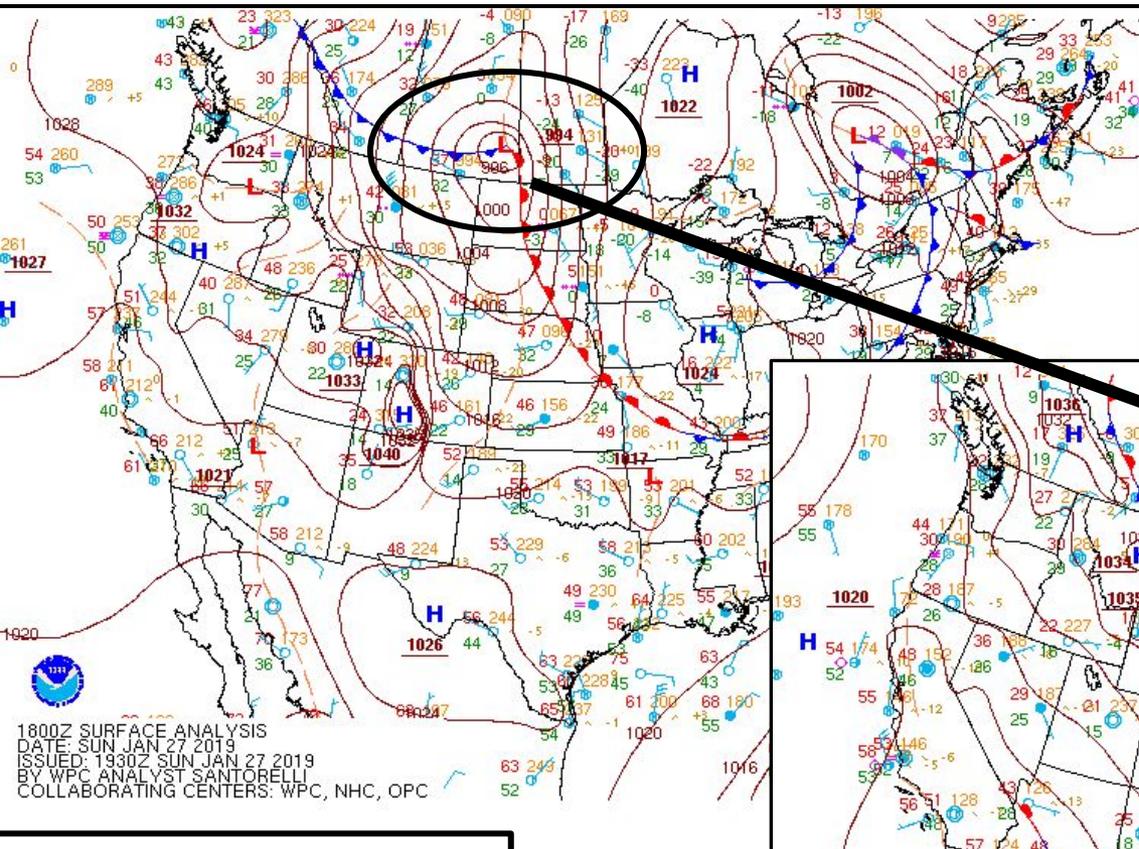


(Source: USA Today)

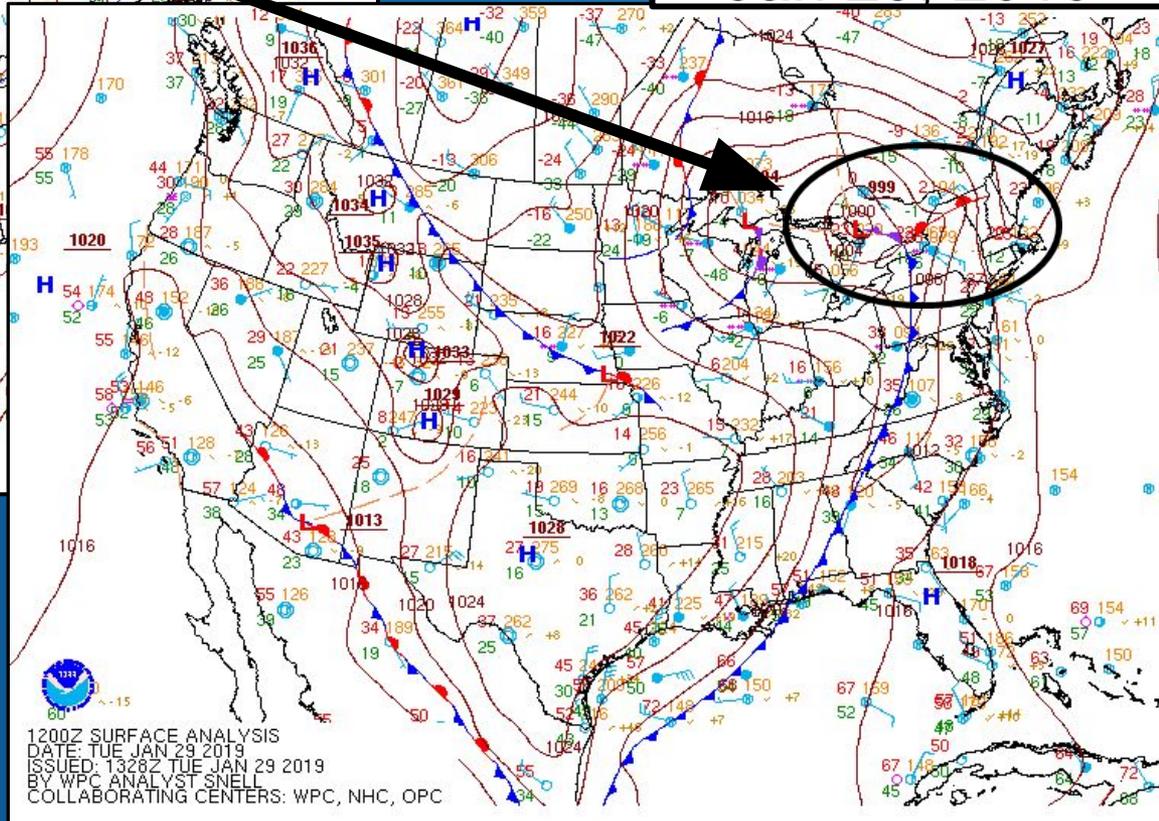


Alberta Clipper

Two days later reaches the Northeast
Jan 29, 2019



First develops in Alberta, Canada
Jan 27, 2019...



1200Z SURFACE ANALYSIS
DATE: TUE JAN 29 2019
ISSUED: 1328Z TUE JAN 29 2019
BY WPC ANALYST SNELL
COLLABORATING CENTERS: WPC, NHC, OPC



3. Nor'easters

1

The beginning:

Weak area of low pressure forms near the East Coast.



2

Winding up:

Warm, moist air surges west from Atlantic, cold air drops south as storm rapidly intensifies.



3

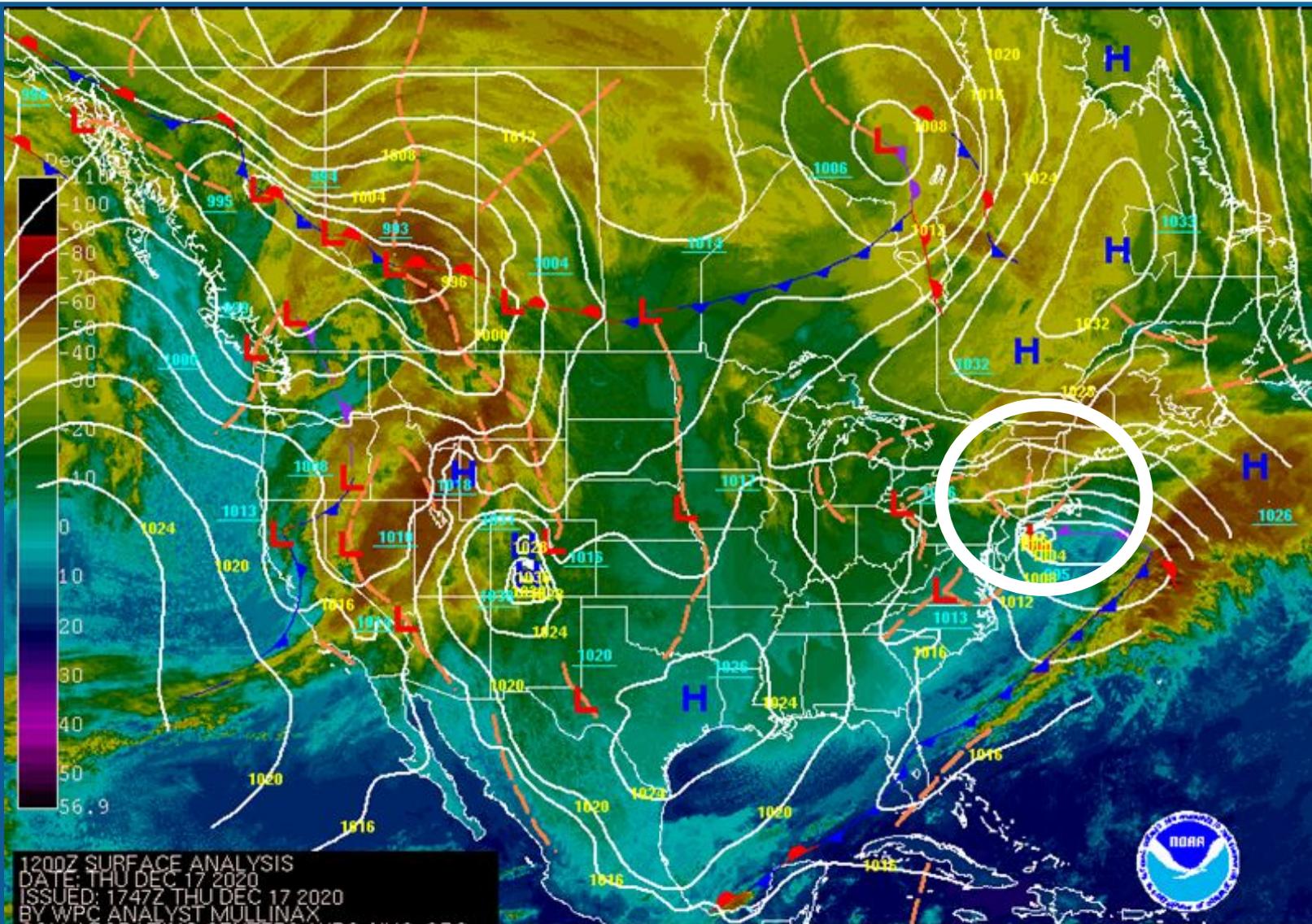
The fury:

Heavy rain, snow along with coastal flooding and strong northeast winds batter East.





December 16-17, 2020

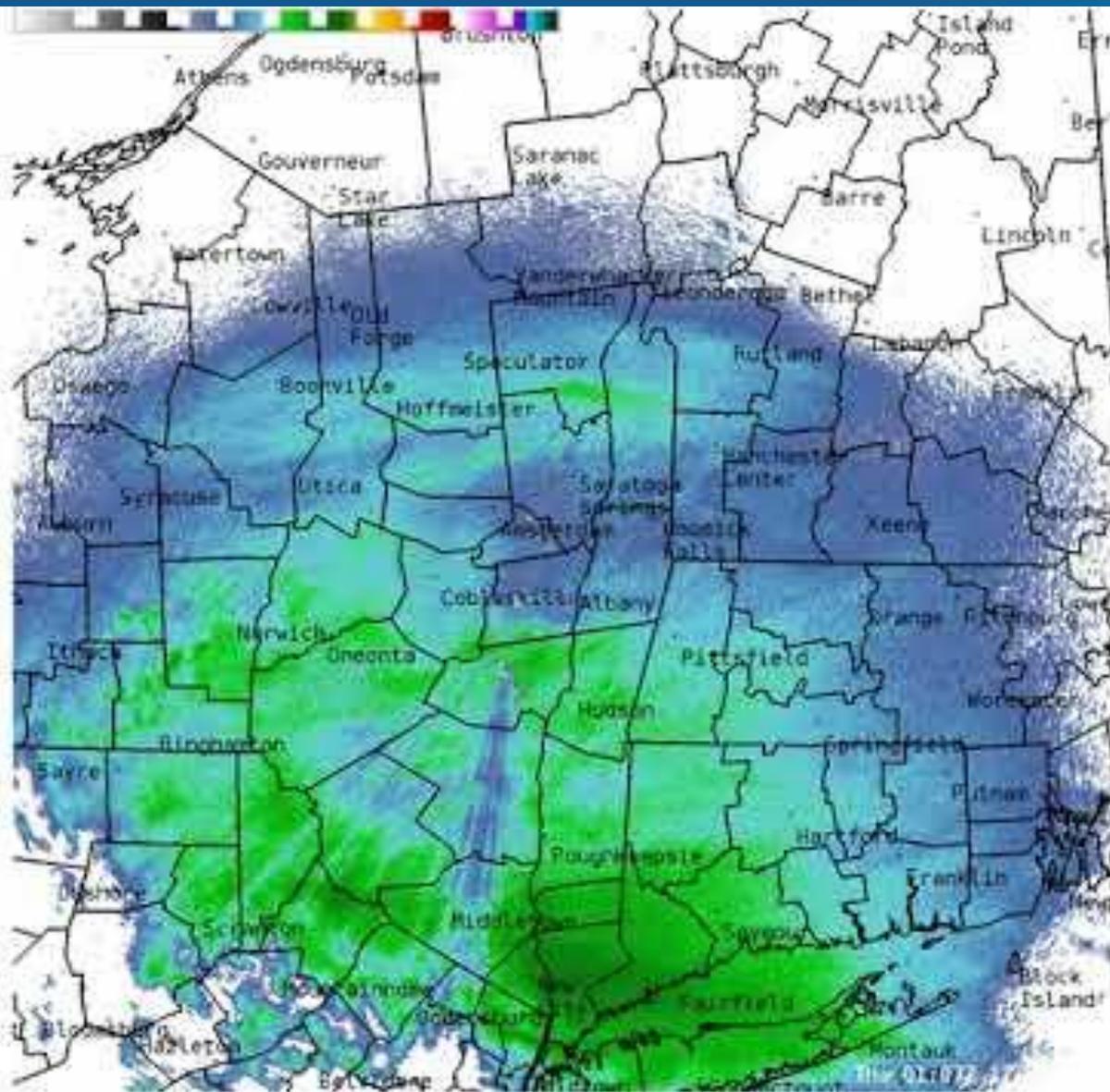




December 16-17, 2020

Band of very heavy snow set-up across the Capital District into the Mohawk Valley.

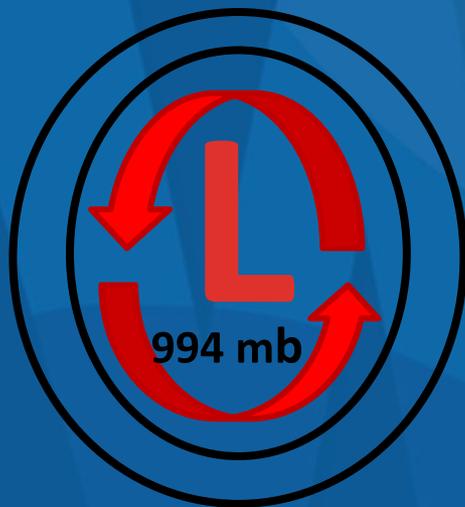
Snowfall rates ranged 2 – 4 inches for nearly 12 hours resulting in well over 2 feet of snow!





Bomb Cyclone (or Bombogenesis)

8 PM Wednesday



24 Hours Later...

8 PM Thursday



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



A Blizzard is...

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.

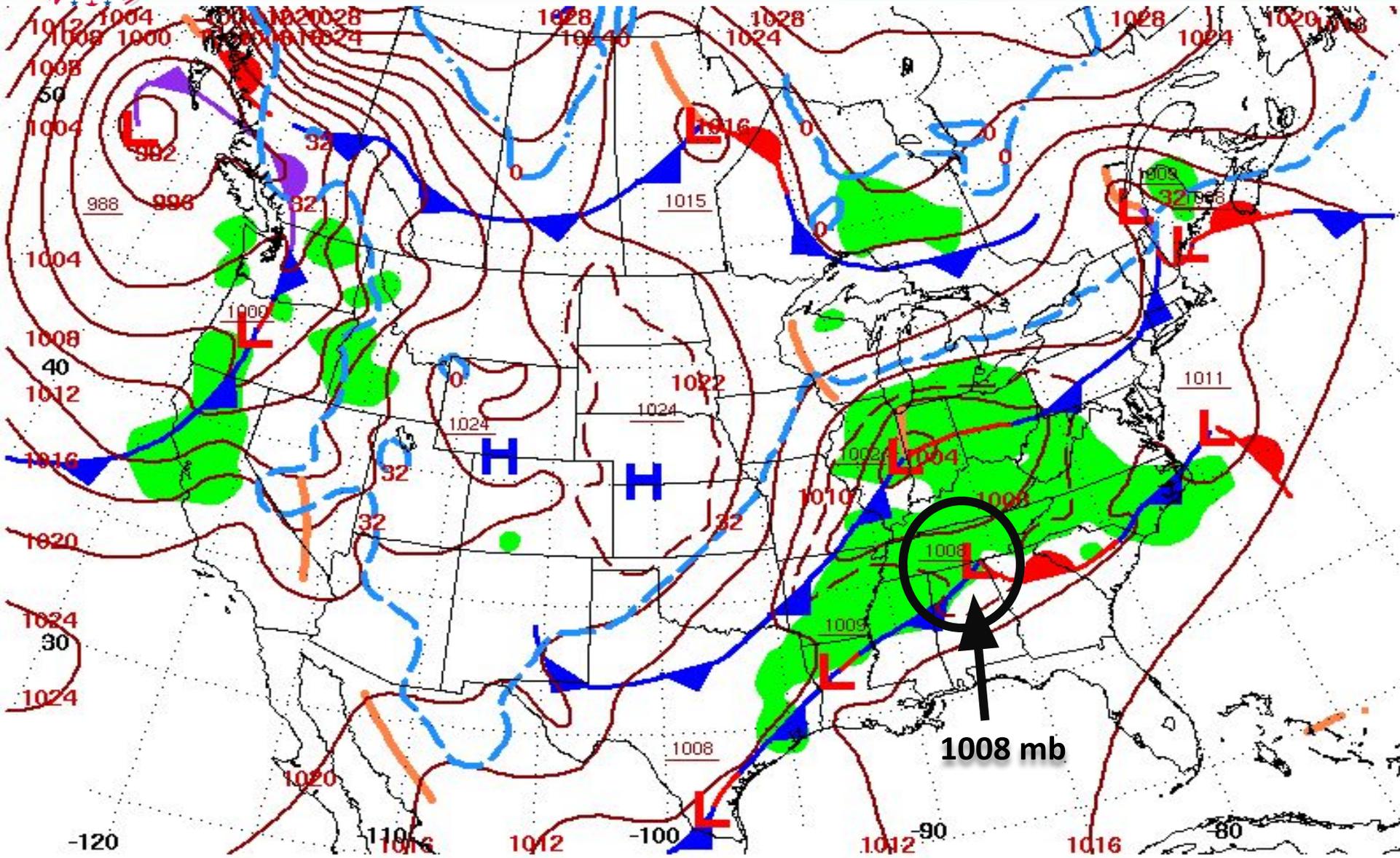


March 2018...

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2 	3
4	5	6	7	8 	9	10
11	12	13 	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31



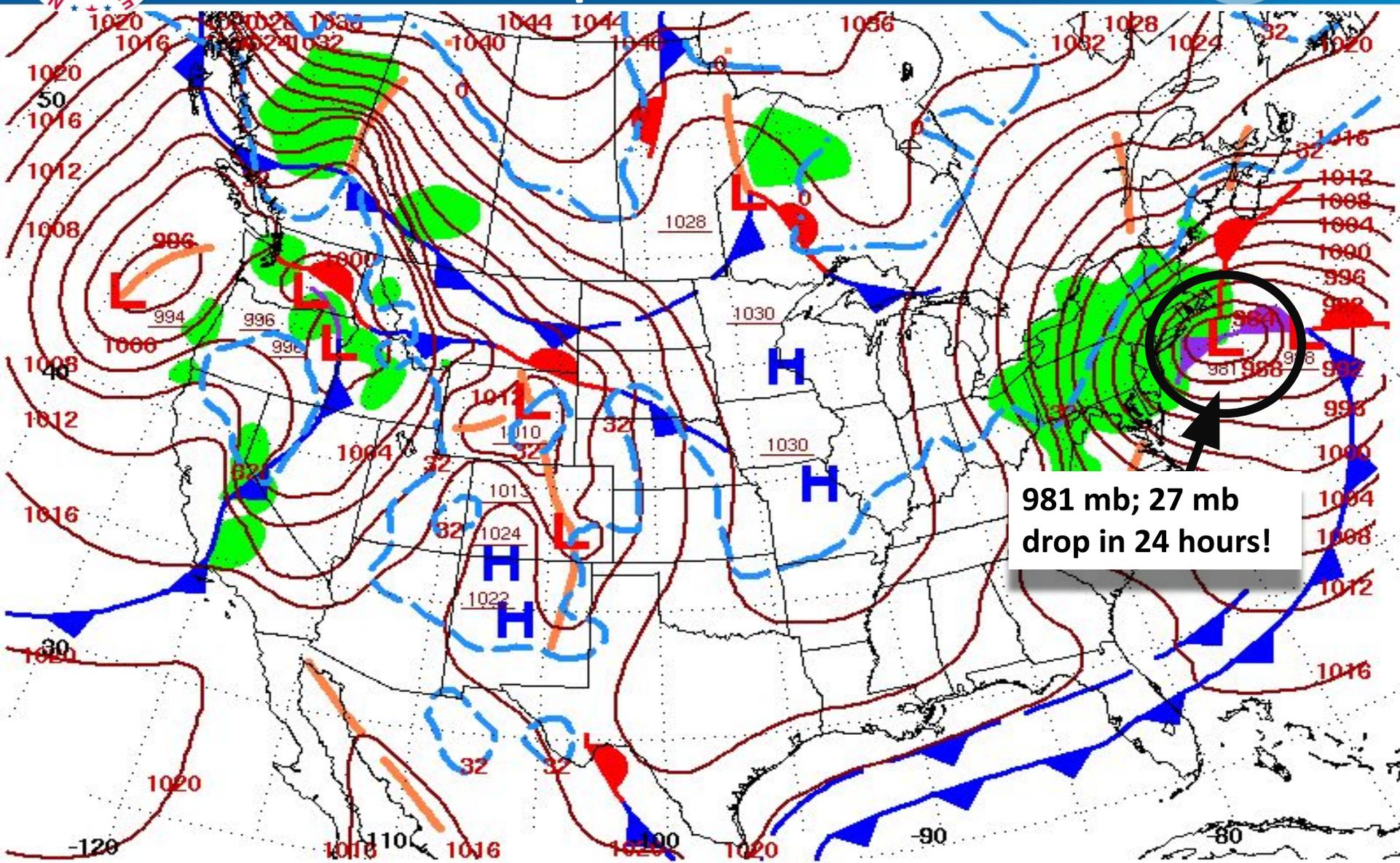
Surface Map 700 AM 3/1/2018



Surface Weather Map at 7:00 A.M. E.S.T.



Surface Map 700 AM 3/2/2018



981 mb; 27 mb
drop in 24 hours!

Surface Weather Map at 7:00 A.M. E.S.T.

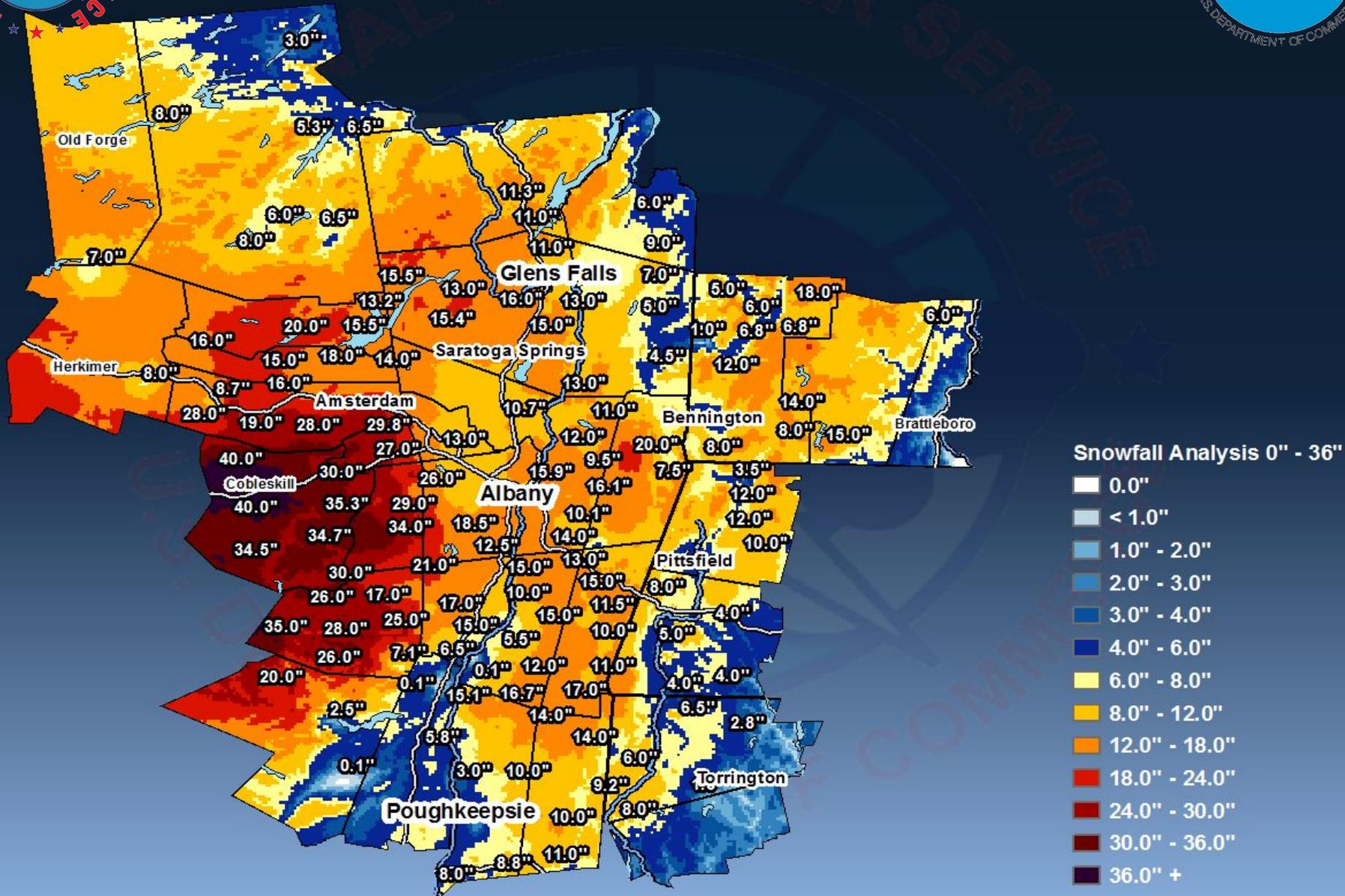


National Weather Service Albany, NY

Snowfall Analysis 03/01/2018 07:00PM to 03/03/2018 01:00AM



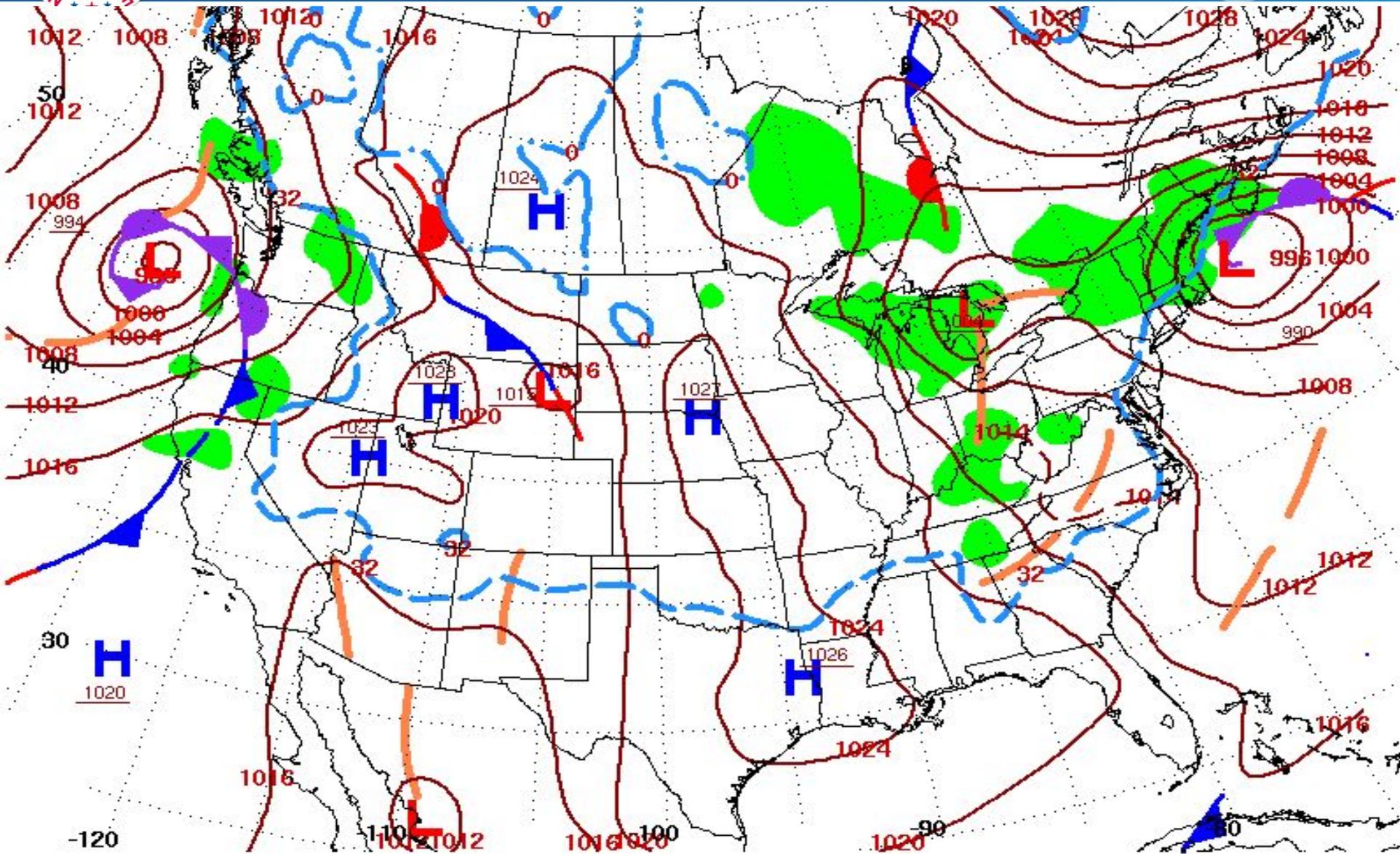
Data Source: Regional Observations(PNS)



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.



Surface Map 700 AM 3/8/2018



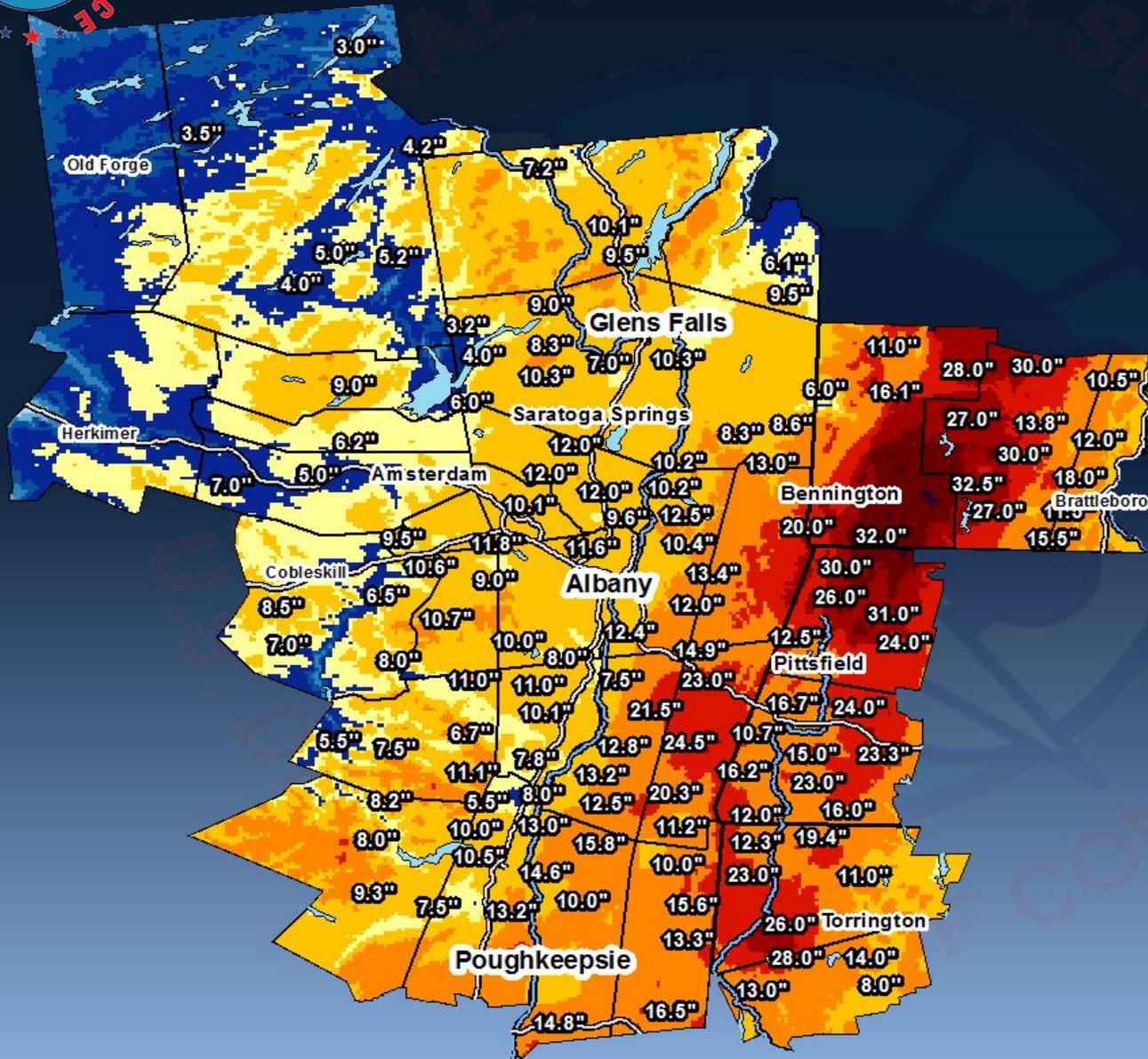
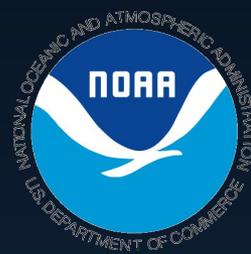
Surface Weather Map at 7:00 A.M. E.S.T.



National Weather Service Albany, NY

Final Snowfall from March 7-8, 2018 Nor'easter

Data Source: Regional Observations(PNS)

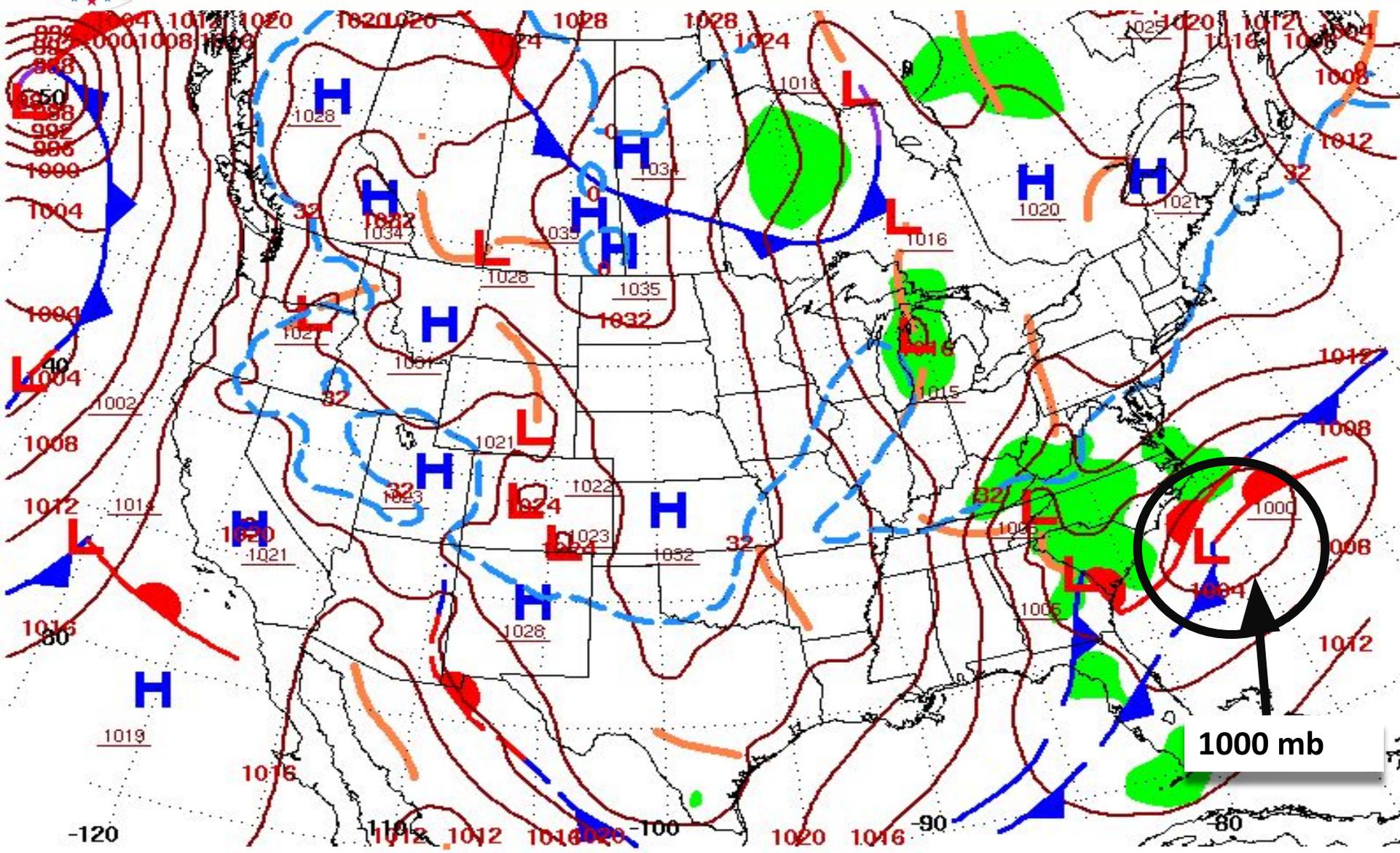


Snowfall Analysis 0" - 36"

- 0.0"
- < 1.0"
- 1.0" - 2.0"
- 2.0" - 3.0"
- 3.0" - 4.0"
- 4.0" - 6.0"
- 6.0" - 8.0"
- 8.0" - 12.0"
- 12.0" - 18.0"
- 18.0" - 24.0"
- 24.0" - 30.0"
- 30.0" - 36.0"
- 36.0" +



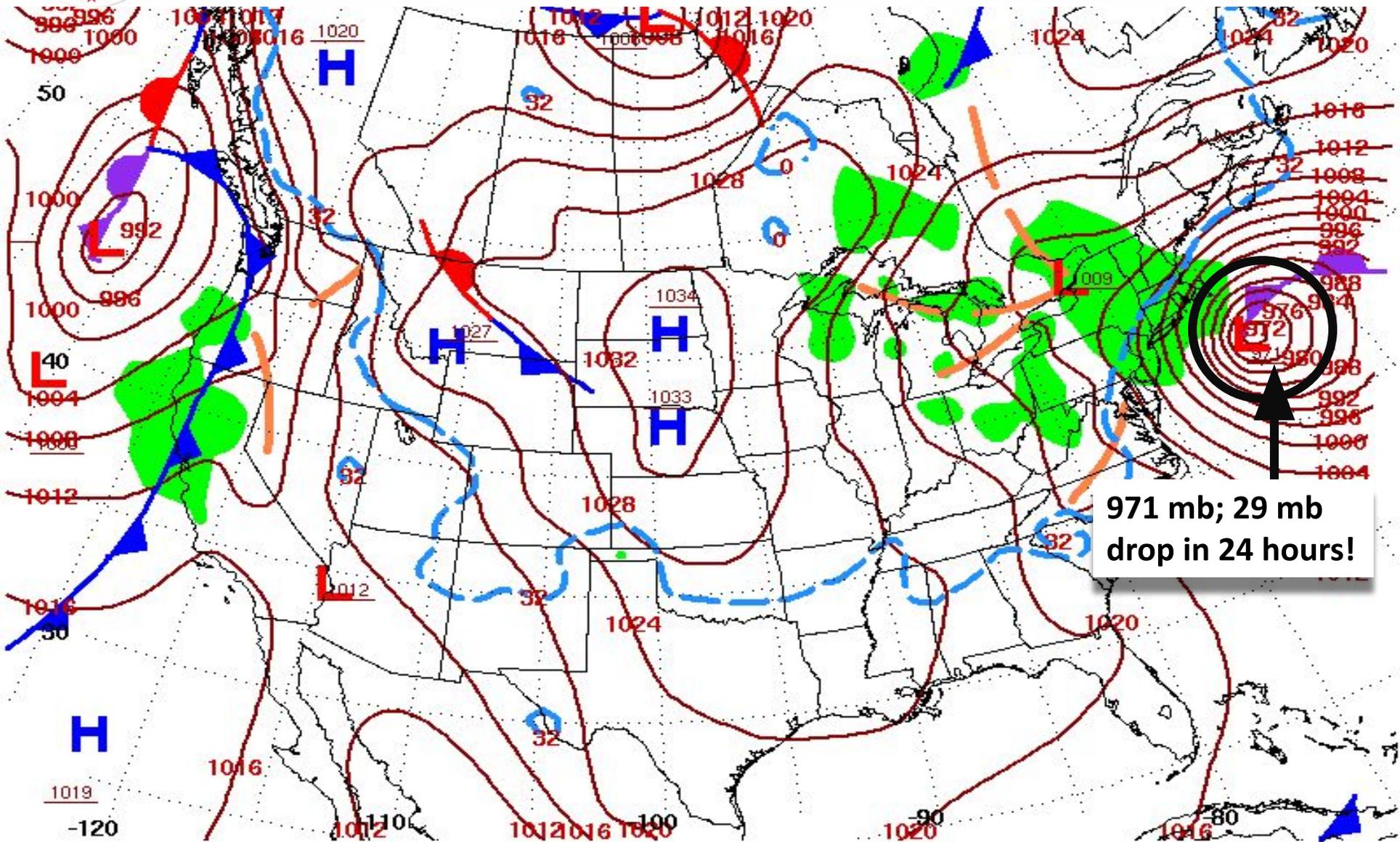
Surface Map 700 AM 3/12/2018



Surface Weather Map at 7:00 A.M. E.S.T.



Surface Map 700 AM 3/13/2018



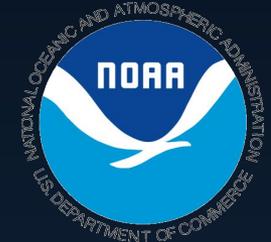
971 mb; 29 mb drop in 24 hours!

Surface Weather Map at 7:00 A.M. E.S.T.

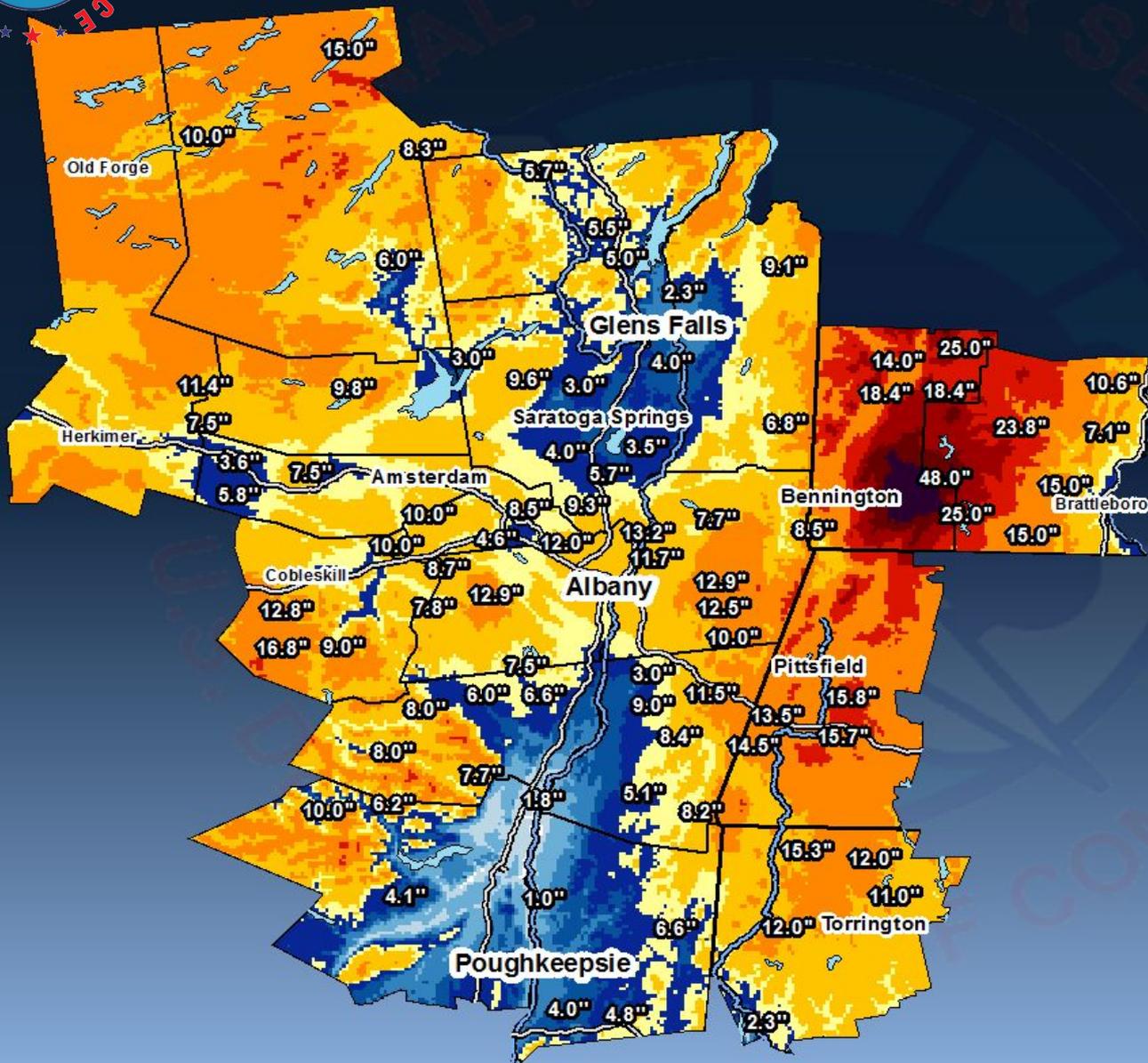


National Weather Service Albany, NY

Snowfall Analysis 03/12/2018 08:00PM to 03/15/2018 08:00PM



Data Source: Regional Observations(PNS)



Snowfall Analysis 0" - 36"



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.

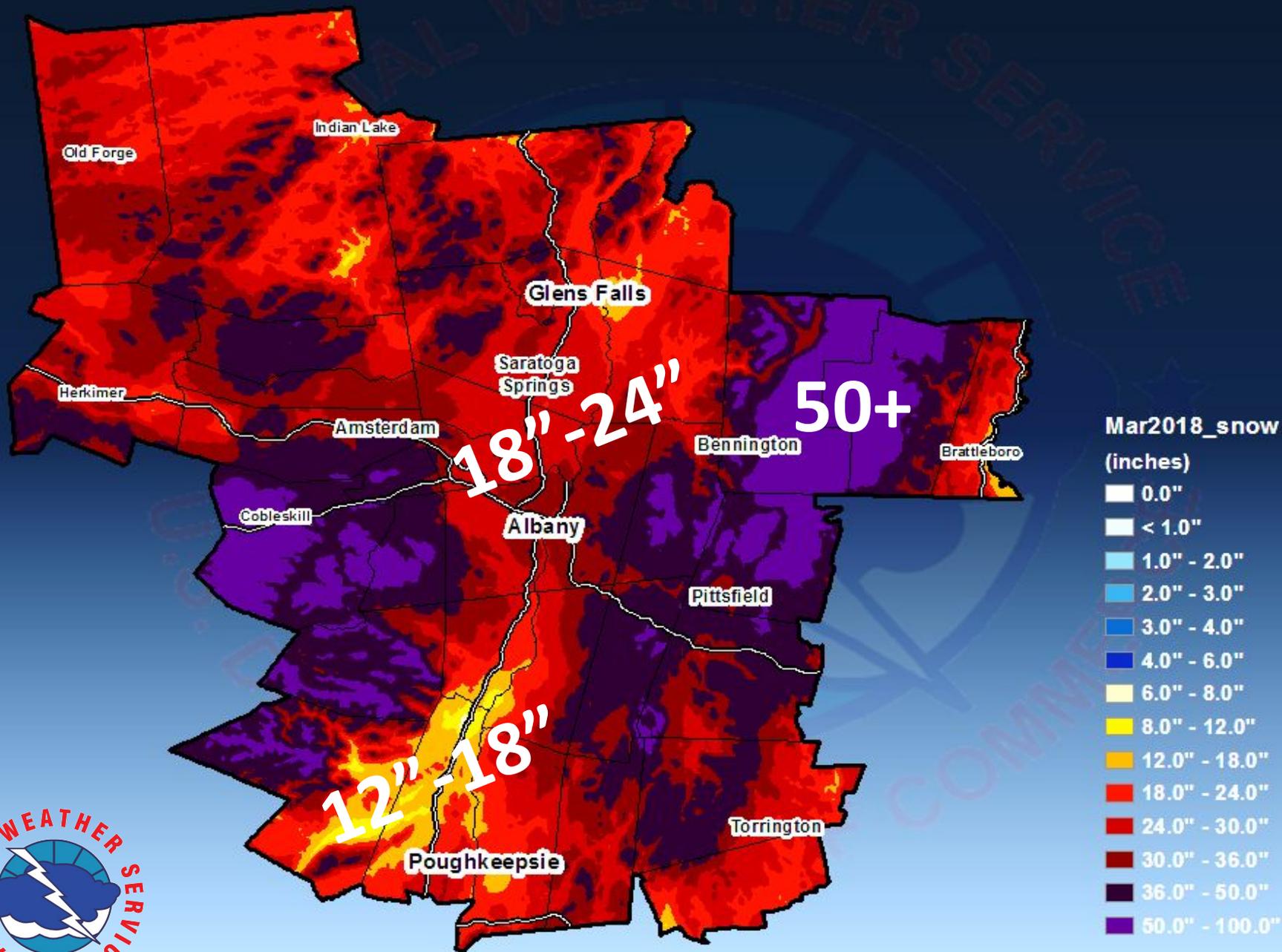


Woodford, VT March 15, 2018



Photo: Mike Evans, NWS Albany, NY

Combined Snowfall from three Nor'easters - March 2018





4. Lake Effect

1

Cold outbreak

Frigid air flows over warm water and is warmed from below. Moisture evaporates into the air.

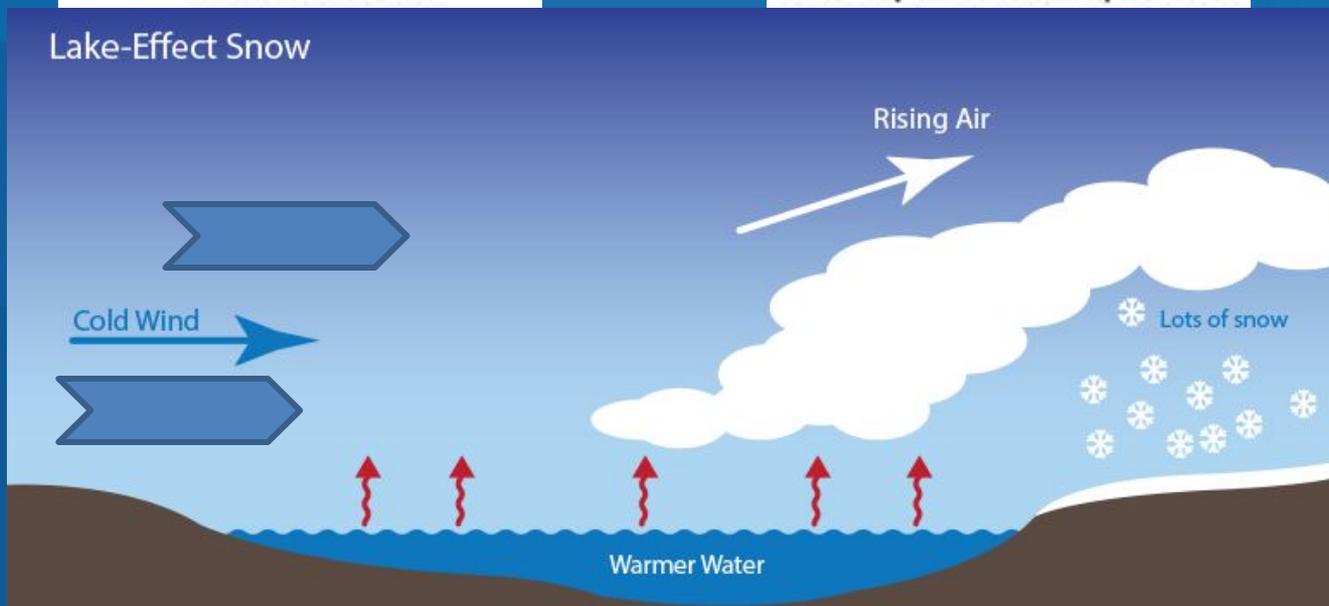


2

Heavy snow

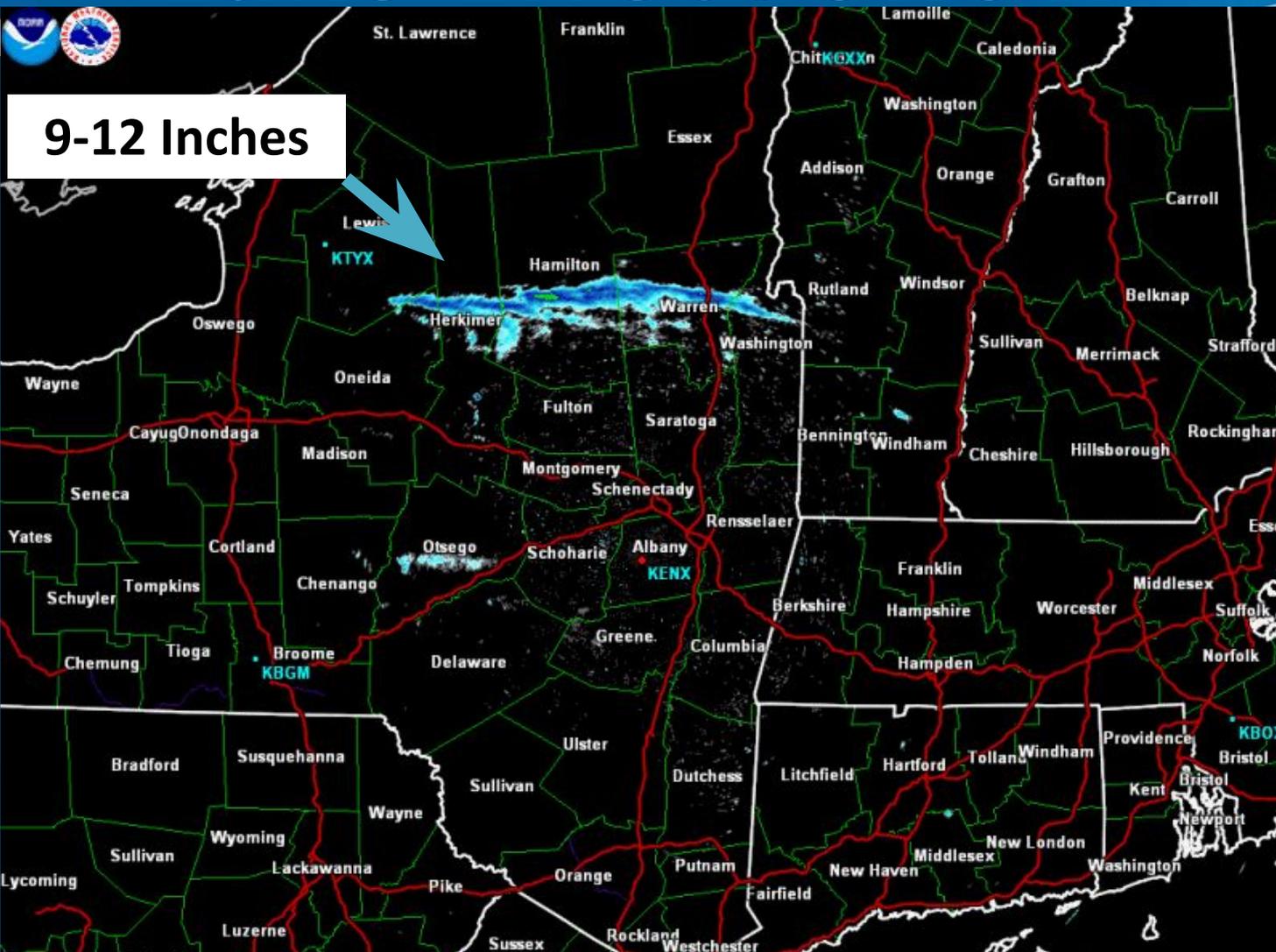
Warmer, more moist air rises downwind of lakes and often forms heavy snow squalls.

Lake-Effect Snow





Lake Effect Snow



9-12 Inches

February 2nd-4th, 2017

Radar Imagery the night of February 3rd, 2017



Snow-Water Ratio

Heavy Wet Snow

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

Typical Snow

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

Fluffy/Light Snow

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

Fluffier (light) snow = higher ratio

Heavy wet snow = lower ratio



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.





December 11-12, 2008 Ice Storm



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



Surface Temperatures

4 PM Dec 11

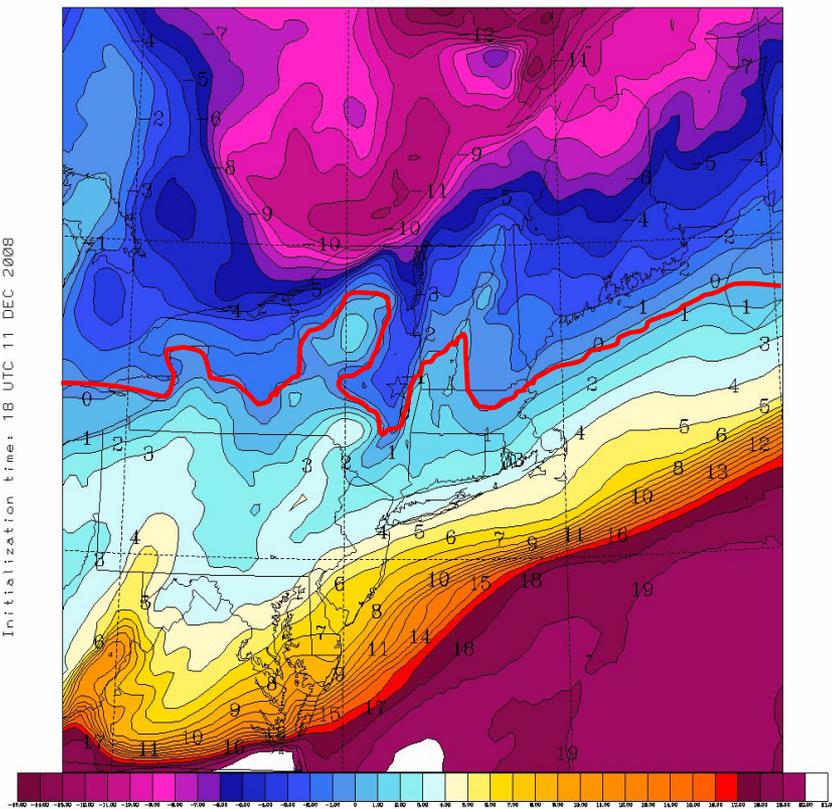
1 AM Dec 12

NARR Air Resources Laboratory
This product was produced by an Internet user on the NOAA Air Resources Laboratory's web site. See the disclaimer for further information (<http://www.ar1.noaa.gov/ready/disclaim.html>).

NAM12 Archive

METEOROLOGICAL DATASET INFORMATION

Initialization time: 18 UTC 11 DEC 2008



TEMPERATURE

TEMP (DEGC), LVL=1000., 21 UTC 11 DEC 2008 (+ 03 H)

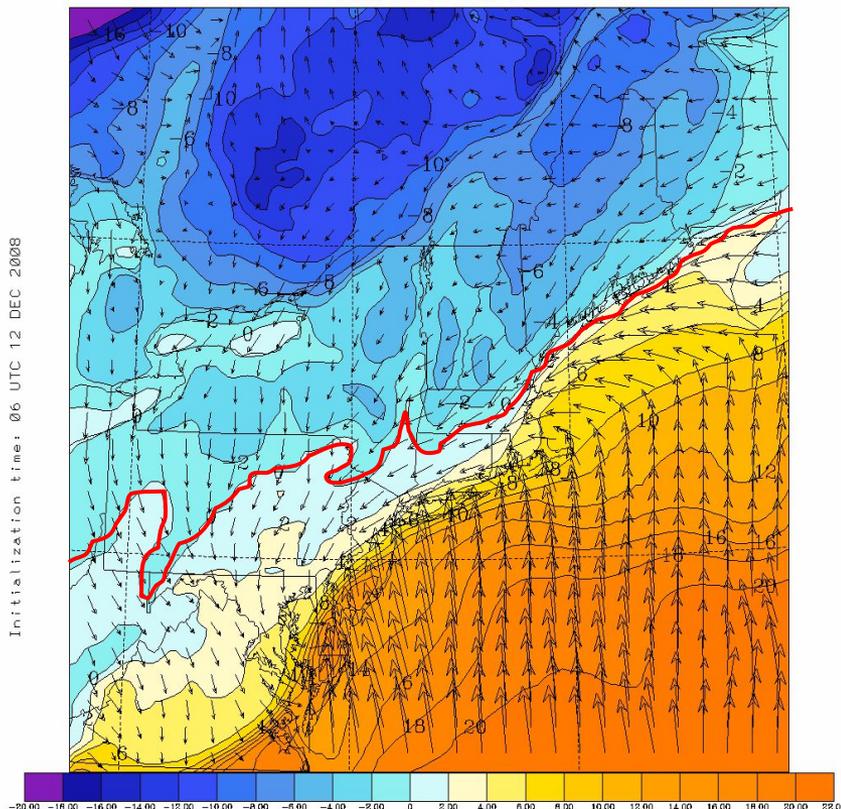
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION - AIR RESOURCES LABORATORY

NARR Air Resources Laboratory
This product was produced by an Internet user on the NOAA Air Resources Laboratory's web site. See the disclaimer for further information (<http://www.ar1.noaa.gov/ready/disclaim.html>).

NAM12 Archive

METEOROLOGICAL DATASET INFORMATION

Initialization time: 06 UTC 12 DEC 2008



WIND VECTORS

2 M TEMPERATURE

WVCT (KNTS), LVL= SFC , 06 UTC 12 DEC 2008 (+ 00 H) ^{.343E+02}
T02M (DEGC), LVL= SFC , 06 UTC 12 DEC 2008 (+ 00 H) ^{HMAXIMUM VECTOR}

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION - AIR RESOURCES LABORATORY



Ice Accumulations 12/11-12/2008

- | | | | |
|---------------------|------|---------------------|------|
| • Peru, MA | 1.0" | • Round Lake, NY | 0.6" |
| • Schenectady, NY | 0.9" | • Savoy, MA | 0.6" |
| • Colonie, NY | 0.8" | • Torrington, CT | 0.5" |
| • Feura Bush, NY | 0.8" | • Winsted, CT | 0.5" |
| • Middleburgh, NY | 0.8" | • Catskill, NY | 0.5" |
| • Richmondville, NY | 0.8" | • Brunswick, NY | 0.5" |
| • Woodford, VT | 0.8" | • Niskayuna, NY | 0.5" |
| • Albany, NY | 0.6" | • Readsboro, VT | 0.5" |
| • Clifton Park, NY | 0.6" | • Bellows Falls, VT | 0.5" |



Ice Storm December 11-12, 2008

- Up to 12" of snow and sleet accumulated in the southern Adirondacks.
- 2 to 4" of rain fell across the central and southeast Catskills, Berkshires and Litchfield Hills leading to widespread urban and small stream flooding with some river flooding.
- Impacts included power outages and road closures due to snapped and downed trees, power poles and wires. Some roads and power outages lasted up to a week! An estimated 1.7 million utility customers lost power at the height of the storm.
- The Red Cross opened shelters across the Greater Capital District.



December 29-30, 2019 Ice Impacts



Catskills



Berkshires



Helderbergs



How to Measure 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).



Snow Squall Warnings

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





Snow Squall - View from Corning Tower





Quick 5 Minute Break

AMBASSADOR™
WRN
WEATHER-READY NATION

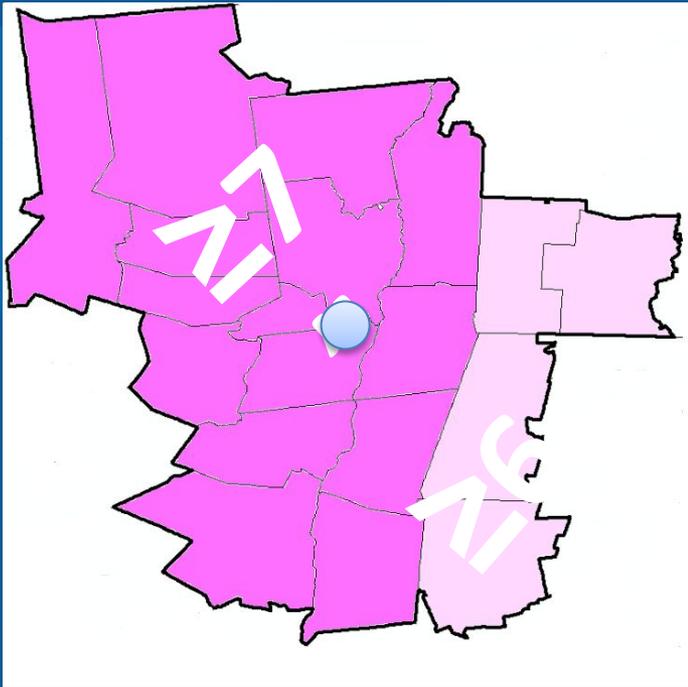


Winter Weather Forecasting and Thresholds

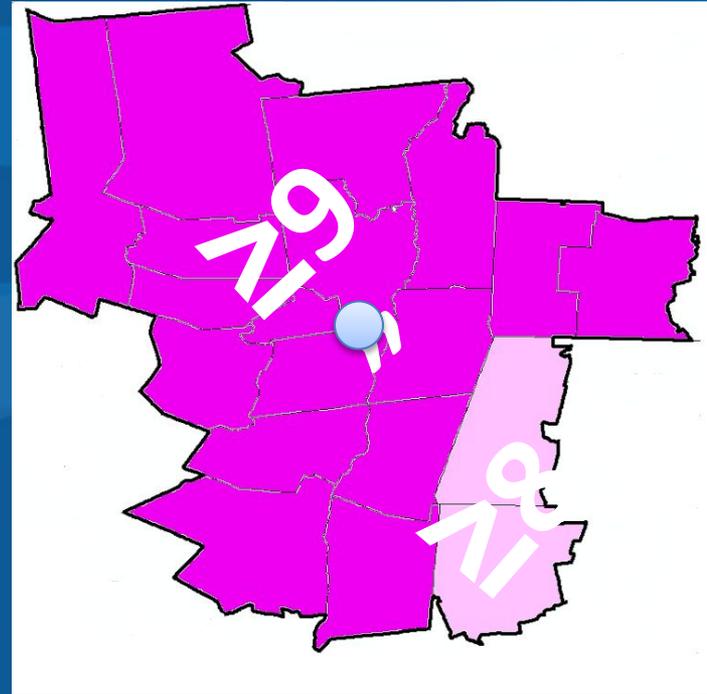


Winter Storm Warning Thresholds

Snowfall



12 hour criteria

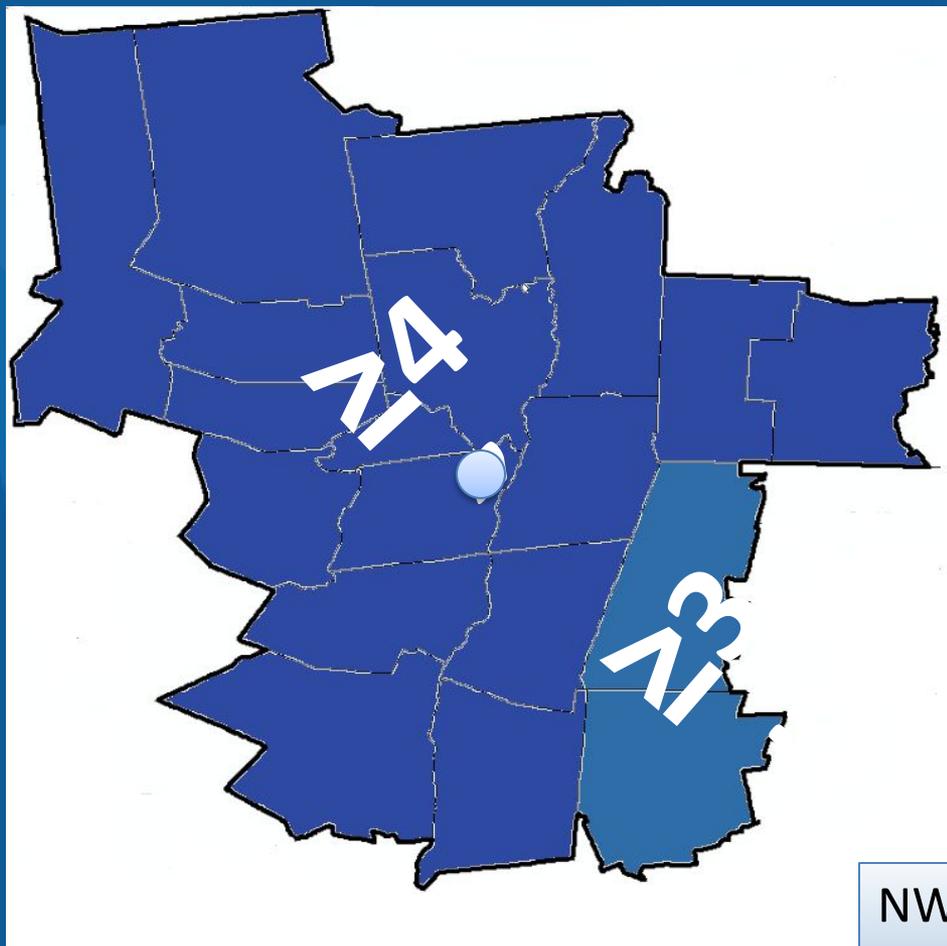


24 hour criteria



Winter Weather Advisory Thresholds

Snowfall

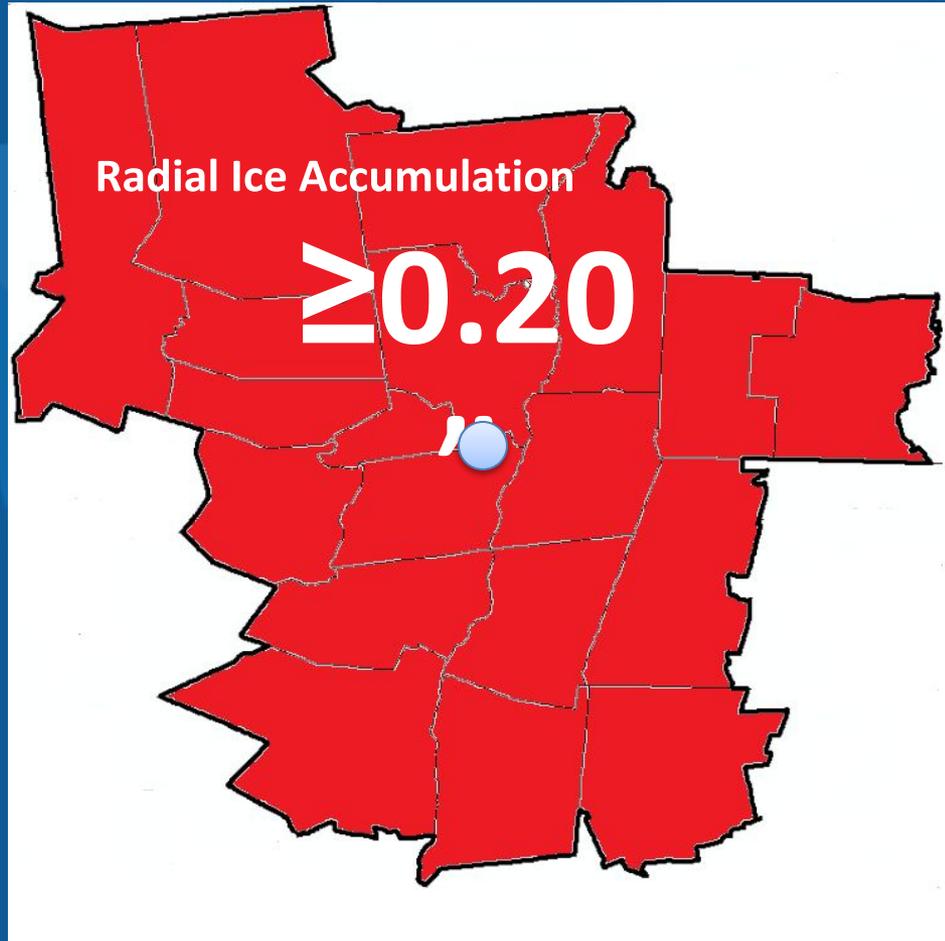


12 hour criteria

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



Ice Storm Warning Threshold



Flat Ice Accumulation ≥ 0.50 "



Wind Chill



NWS Windchill Chart



		Temperature (°F)																	
		40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97	
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	

Frostbite Times 30 minutes 10 minutes 5 minutes

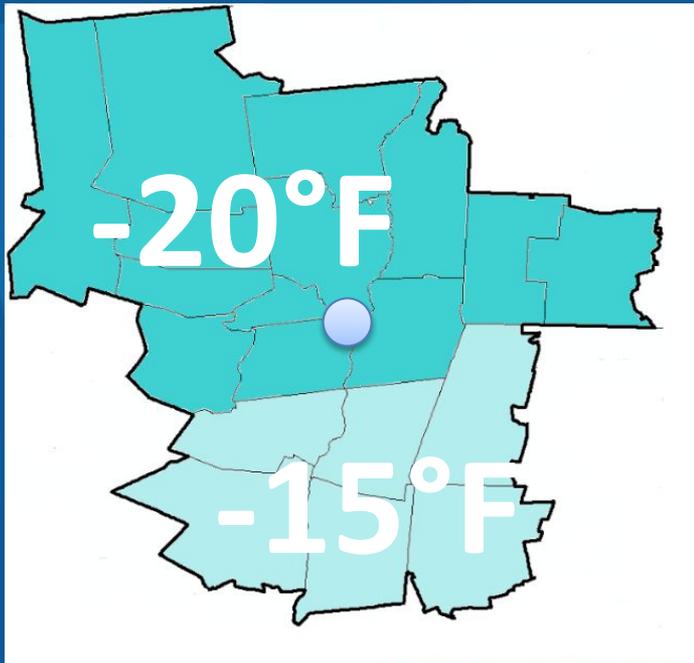
$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

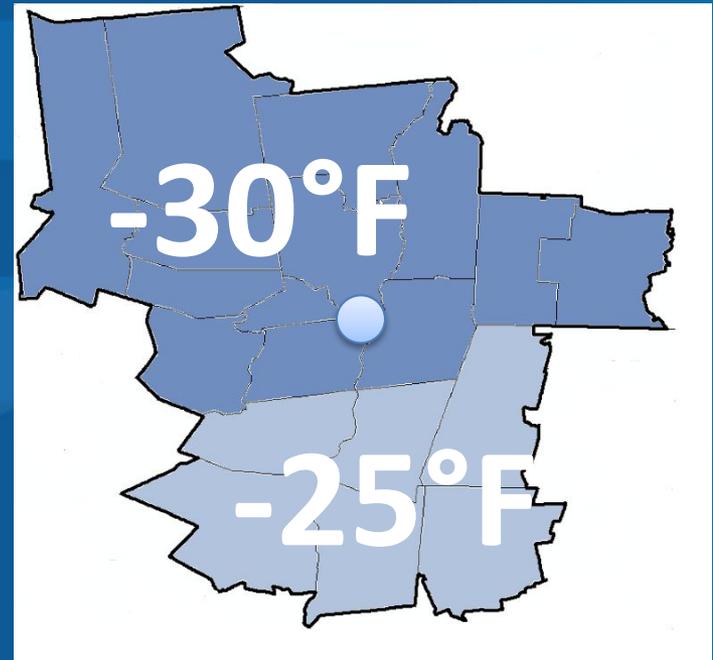
Effective 11/01/01



Wind Chill Thresholds



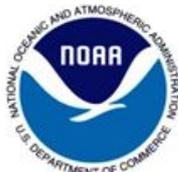
Advisory Criteria



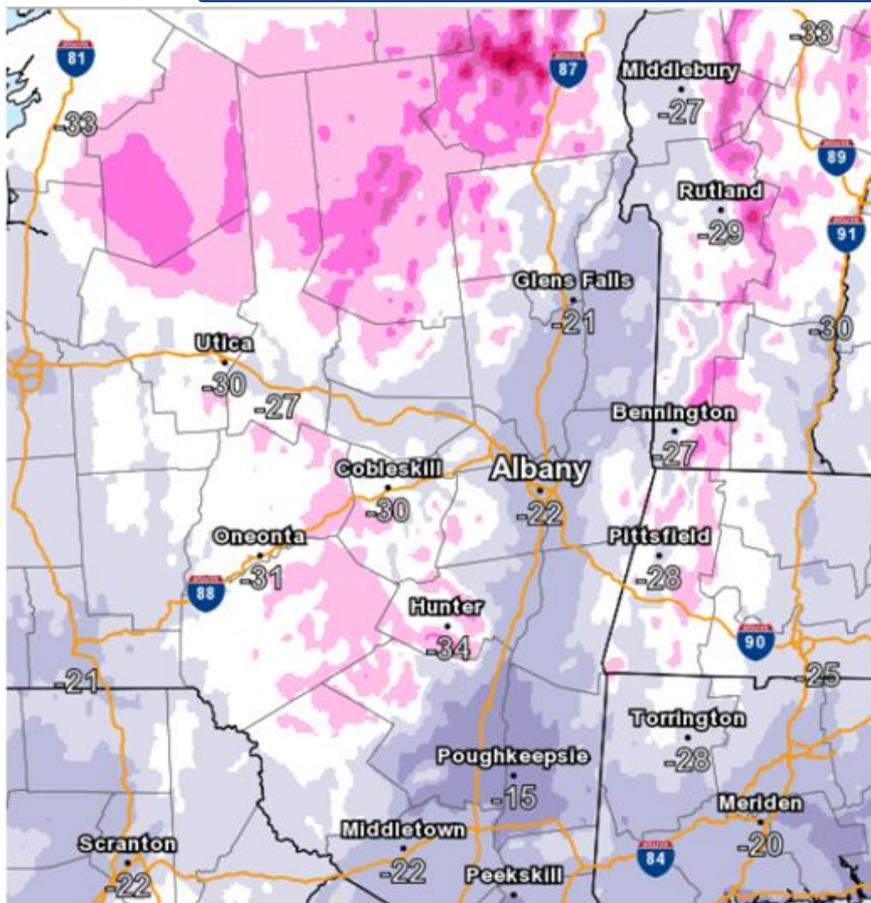
Warning Criteria



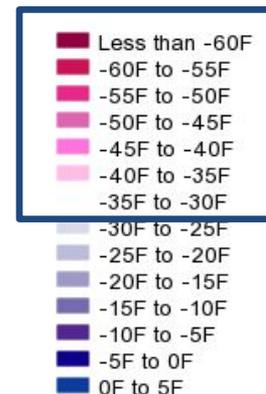
Wind Chill



Forecast Wind Chills
for Feb 13-14 2016



Lowest Wind Chills
Saturday night into
Sunday morning.



<http://www.weather.gov/albany>



Wind Chill



MASSACHUSETTS

...BERKSHIRE COUNTY...

2 SE ADAMS	-46.0	647 AM	2/14	CWOP
PITTSFIELD MUNICIPAL	-43.0	654 AM	2/14	ASOS
HARTMAN-AND-WEST AT	-36.0	652 AM	2/14	ASOS
3 NNE PITTSFIELD	-34.0	748 AM	2/14	CWOP
4 NNW SOUTH EGREMONT	-34.0	834 AM	2/14	CWOP
3 SW WILLIAMSTOWN	-32.0	737 AM	2/14	CWOP
1 NE GREAT BARRINGTO	-26.0	816 AM	2/14	CWOP
1 S STAMFORD	-19.0	704 AM	2/14	CWOP
1 SE PITTSFIELD	-16.0	743 AM	2/14	CWOP

NEW YORK

...ALBANY COUNTY...

1 W KNOX	-37.0	714 AM	2/14	CWOP
2 SSE DELMAR	-30.0	802 AM	2/14	CWOP
COHOES	-12.0	726 AM	2/14	CWOP

...COLUMBIA COUNTY...

2 N NIVERVILLE	-25.0	725 AM	2/14	CWOP
2 SSW CHATHAM	-25.0	704 AM	2/14	CWOP

...DUTCHESS COUNTY...

1 ENE CORNWALL ON HU	-27.0	747 AM	2/14	WXFLOW
FAIRVIEW	-25.0	819 AM	2/14	CWOP
1 NNW WAPPINGERS FAL	-21.0	733 AM	2/14	CWOP
2 SSW PLEASANT VALLE	-16.0	825 AM	2/14	CWOP
BEACON	-16.0	826 AM	2/14	CWOP

...FULTON COUNTY...

2 ESE JOHNSTOWN	-43.0	814 AM	2/14	SAI
2 SSE BROADALBIN	-37.0	731 AM	2/14	CWOP
IRVING POND	-24.0	725 AM	2/14	SNOCOR

...GREENE COUNTY...

4 NE FLEISCHMANN'S	-43.0	700 AM	2/14	CWOP
LANESVILLE	-13.0	659 AM	2/14	SNOCOR

...HAMILTON COUNTY...

1 ESE EAGLE BAY	-27.0	812 AM	2/14	CWOP
2 SE INDIAN LAKE	-22.0	749 AM	2/14	CWOP

...HERKIMER COUNTY...

1 WNW LITTLE FALLS	-41.0	715 AM	2/14	CWOP
BIG MOOSE	-32.0	719 AM	2/14	CWOP
DOLGEVILLE	-21.0	654 AM	2/14	CWOP

Observed Wind Chills
-35 F to -46 F
Sunday morning
2/14/2016



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



Winter Flood Events



Economic Impacts of Flooding

Flooding & flood related events cause greater damage and more fatalities than any other natural disaster.

Flood damages average \$3.3 billion annually.

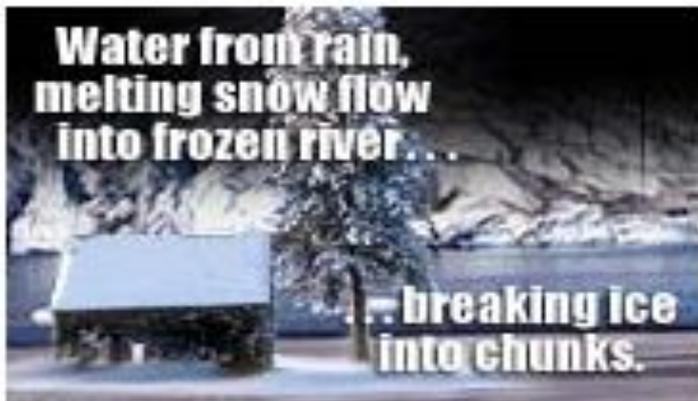
Flood-related fatalities reported as 94* in 2019.

Floods account for about 80% of all presidential disaster declarations.



How Ice Jams Form??

How ice jams form



Ice Jams Typically Occur Where the River's Transport Capacity is Exceeded

- 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 Jam



Accumulation of ice that restricts the flow of water; may contain some broken border ice pieces.

(Source: CRREL)



Break-up Jam



Accumulation of broken ice pieces that restricts the flow of water; may contain frazil ice or remnants of freeze-up jam.

(Source: CRREL)



When Does The Ice Break Up?

Basin Daily Average Temperature ≥ 42 °F

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

Caveat 1: A quick thaw will result in some ice jams and flooding if ice is thick enough (2006-2007). Long sunny period with diurnal freeze/thaw cycle can rot/weaken ice (2008-2009).

Caveat 2: Rainfall/snowmelt with a thaw will enhance the potential for break up jams as rising water helps to 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.



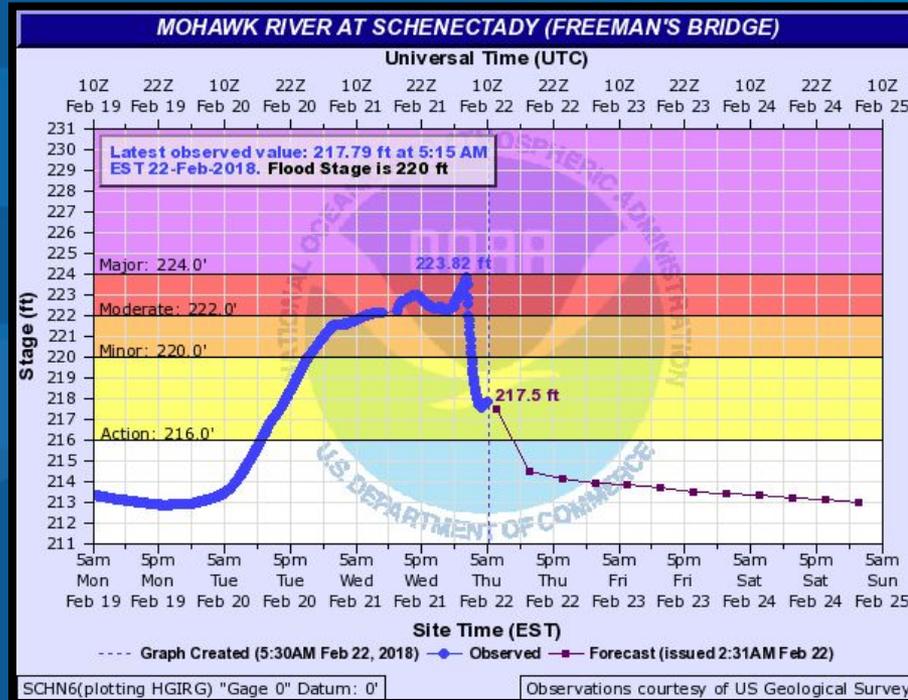
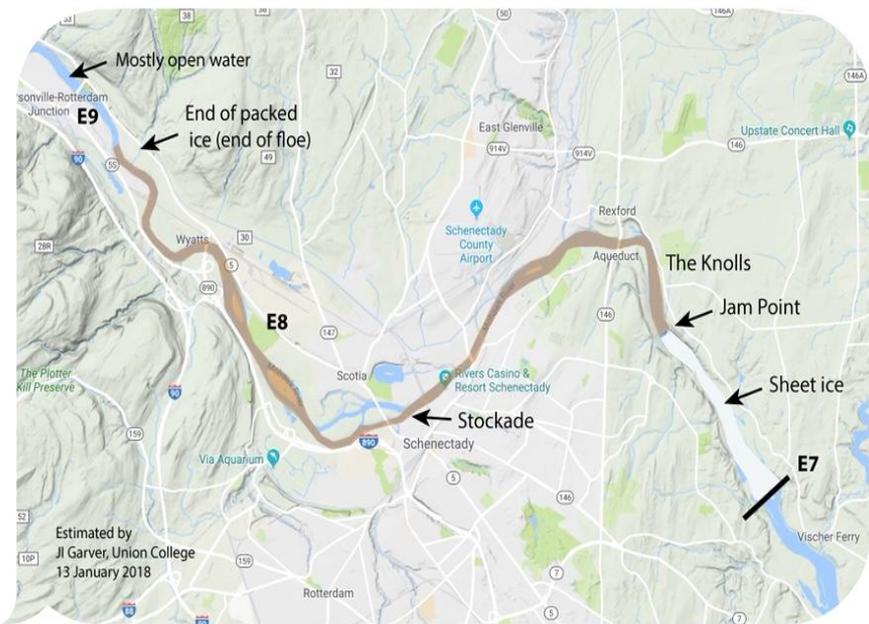
Looking west at the
Rexford Bridge. (January 2018)

Photo courtesy of Steve DiRienzo
Warning Coordination Meteorologist





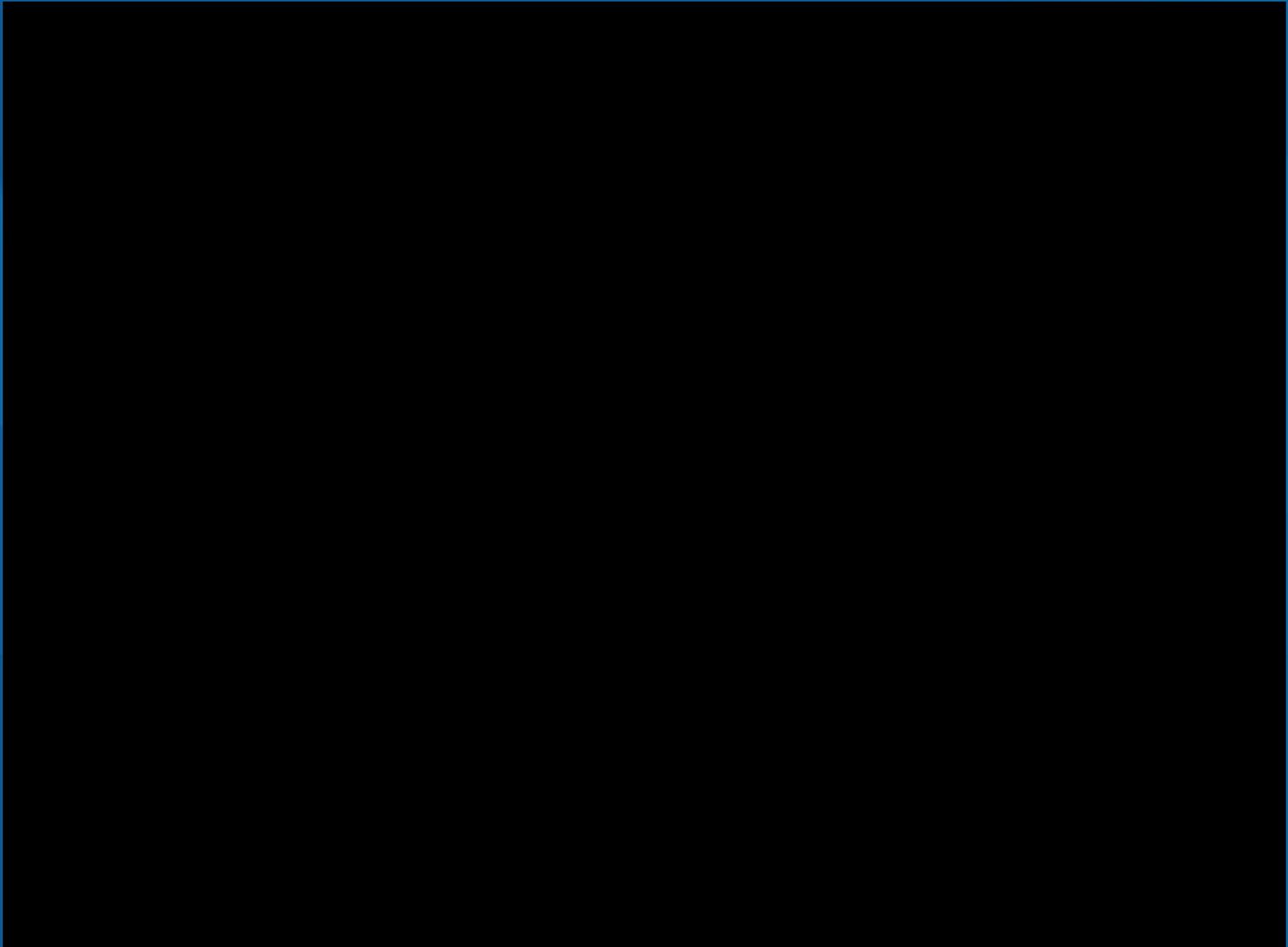
February 2018 Ice Jams



Jam Release during the overnight February 22, 2018



Ice Jam Breaking along the Mohawk





Jan. 24-25, 2019 Ice Jam Flooding

A surge of water and ice swept down the Hudson in the pre-dawn hours of Jan 25th, 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



Albany Times-Union



The Role of a SKYWARN Spotter...

How to receive information
and how to send us
information



SKYWARN Activation including Amateur Radio



Hazardous Weather Outlook
National Weather Service Albany NY
738 PM EDT Thu Oct 1 2020

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

.DAY ONE...Tonight.

Some patchy frost is possible across the southern Adirondacks overnight.

.DAYS TWO THROUGH SEVEN...Friday through Wednesday.

An early season accumulating snowfall is possible Monday night into Tuesday.

.SPOTTER INFORMATION STATEMENT...

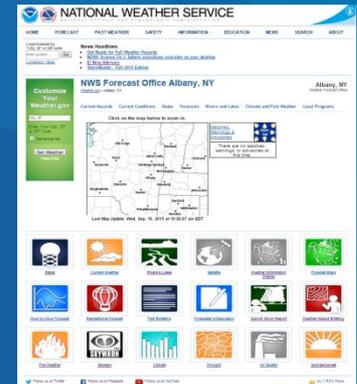
Spotters will be requested to relay snowfall reports to the National Weather Service in Albany while following all local, state and CDC guidelines.

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 800# or Mobile/Web Based Form (if NWS Net Control not available)



What happens when we issue a warning?



PUBLIC



www.weather.gov/aly



Weather Hazard Briefing



NATIONAL WEATHER SERVICE
NATIONAL SCIENCE FOUNDATION METEOROLOGICAL SERVICE

HOME | FORECAST | PAST WEATHER | SAFETY | INFORMATION | EDUCATION | NEWS | SEARCH | ABOUT

Local forecast by City, ZIP or ZIP code
[City, State, ZIP] [Go]
Local: Alp

News Headlines

- [Redesign of NWS Radar Web Page Effective on or about December 8, 2020](#)
- [Southeast Regional Operational Workshop 21 - Call for speakers](#)
- [Precipitation Plan for August is available](#)
- [Autumn Weather Safety](#)

MY FORECAST
Albany, NY
Sun Jan 10, 2021
Albany, NY
Weather Forecast Office

Winter Weather
Sun Jan 10, 2021 • Albany, NY • Winter Weather

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

A Few Clouds
50°F
10°C
[Sun] [Moon] [Clouds] [Snow] [Rain] [Thunder]

Tonight
Clear
Low: 30°F

Saturday
Partly Sunny
High: 59°F

Change Location

Probabilistic Snowfall Graphics
Winter Weather Severity Index

Hazards & Assessments

Weather Hazards
Map displays active and forecasted hazards and short-term forecasts in the lower 48 states.
1. Potential Flooding & Severe Weather Processes

Hazards Outlooks
The Weather Prediction Center issues an outlook of weather and climate related hazards in the United States for the next 3 to 7 days. The Climate Prediction Center issues the outlook for days 8 to 14.
[Map] [Forecast] [Discussion Outlooks]

Current Conditions

Surface Analysis
The Weather Prediction Center produces surface maps which display the analysis of highs, lows, fronts, troughs, surface isobars, cloud mass, and other data.

Regional Observations
[Map] [National Forecast Office]

Satellite
GOES and other satellite imagery

National Snow Analyses
Includes data on snow water equivalent, snow depth and melt. The data can be viewed for a given area for a two week period or a season.
NERC | [Observed Snow Maps](#) | U.S. Hydrology

Forecast & Guidance

Winter Weather Probability Charts
Describe the probability of snow and freezing rain, including of associated specific amounts issued by the Weather Prediction Center.
[Home Page & Info Discussion](#)

Snowfall Accumulations
Shows forecasted snowfall accumulations for a given time period.
2-Day Regional Snowfall Forecast
[Forecast Snowfall](#)
[Regional Growth Graphs](#)

Precipitation Forecasts
Shows forecasted precipitation for a given time period.
[Regional Flood Graphs](#)
[Southeast Storm Forecast Center \(SFC\) Forecast](#)

Short-Range Ensemble Forecast
Short Range Ensemble Forecast is produced by combining the 21 members NCEP SREF plus the operational NWS WRF for a total of 22 members. Some members are placed on high-impact, medium-scale guidance including winter weather.

Rivers & Lakes
The Advanced Hydrologic Prediction Service provides observations and forecasts for streams as well as precipitation information.
[Discussion Section](#)
[River Forecast Tool Product](#)

Interactive Snow Information
National Snowfall Information Remote Sensing Center produces modeled data of snow water equivalent, snow depth and more.
[National Snow Survey Program](#)

Probabilistic Winter Precipitation Guidance
A multi-model ensemble is utilized by the Weather Prediction Center to produce these products.
[About these products](#)
[Local Weather Probabilistic Graphics](#)

Ice Accumulation
Shows Forecast Ice Accumulations

Precipitation Forecasts
Quantitative Precipitation Forecasts issued by the Weather Prediction Center.
[Weather Prediction Center Discussion](#)

Short Range Ensemble Forecast Plume Viewer

Local Products

Winter Weather
[Winter-Warning-Advisory](#)

Non-Precipitation (Wind)
[Winter-Warning-Advisory](#)

Special Winter Statements

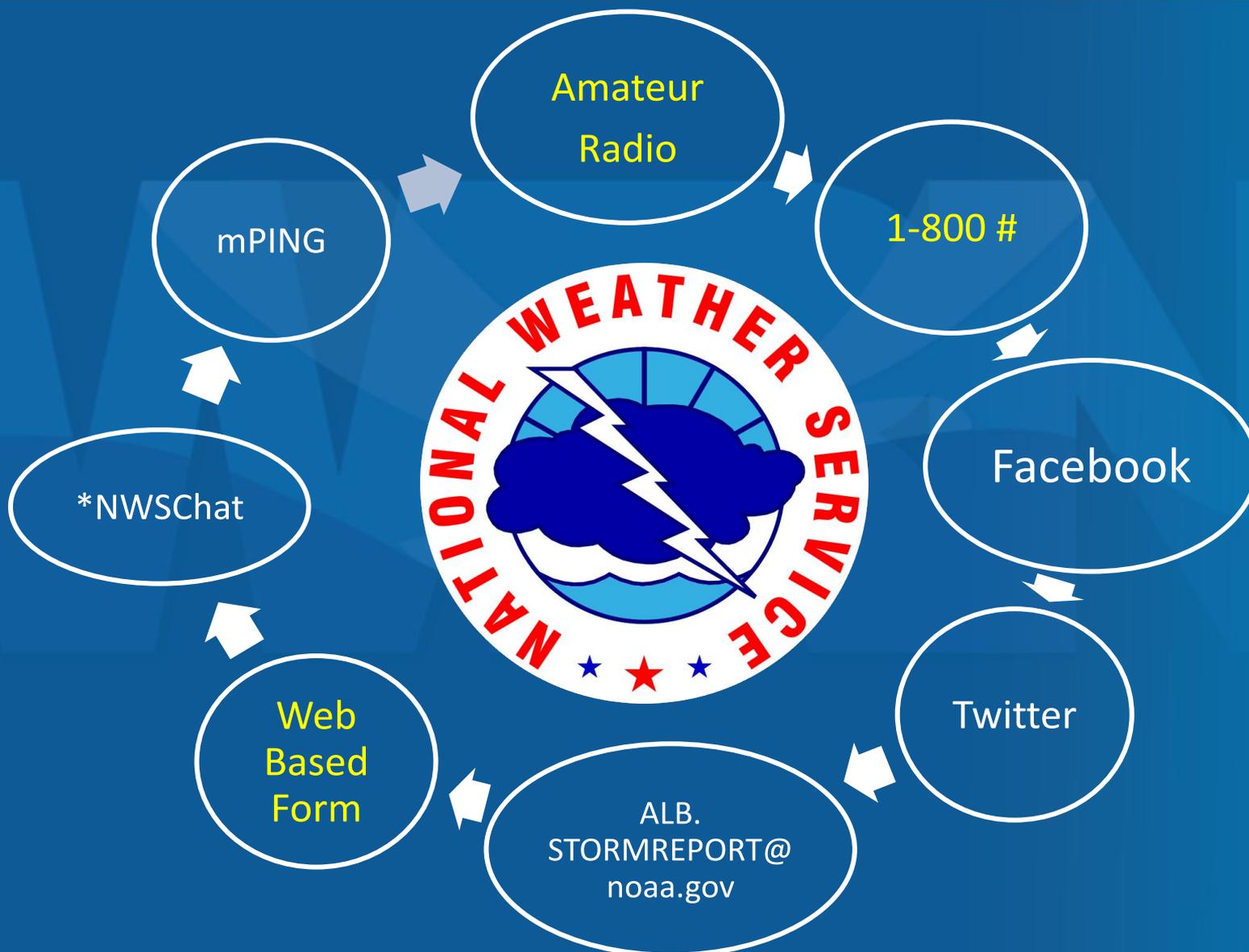
Area Forecast Discussion

Hazardous Weather Checkup

Definition and Transparency Information



How to Relay Your Report





Information & Links to Submit Storm Reports

via www.weather.gov/aly

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

Customize Your Weather.gov
 City, ST
 Enter Your City, ST or ZIP Code
 Remember Me
 Get Weather
 Privacy Policy

Radar
 Current Weather
 Rivers & Lakes
 Satellite
 Weather Information Display
 Forecast Maps
 Hour by Hour Forecast
 Winter Weather
 Forecaster's Discussion
 Recreational Forecast
 Text Bulletins
 Submit Storm Report
 Weather Hazard Briefing
 Fire Weather
 Skywarn
 Climate
 Drought
 Air Quality

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



www.facebook.com/NWSAlbany



www.twitter.com/NWSAlbany

[Online Storm Report Entry Form](#)



Example: @NWSAlbany steady light snow Granville, NY at 11AM



Making a Report

- Include your **name & contact info***

**This is all voluntary information, however, it would simplify with follow-up reports.*

- What are you reporting? Pictures are helpful, especially with ice jam flooding.

- When did it occur?

- Where did the event occur?



Reporting Criteria

Heavy Rain – Measured 1” or More

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



Ice Accumulation – Any glaze on surfaces

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

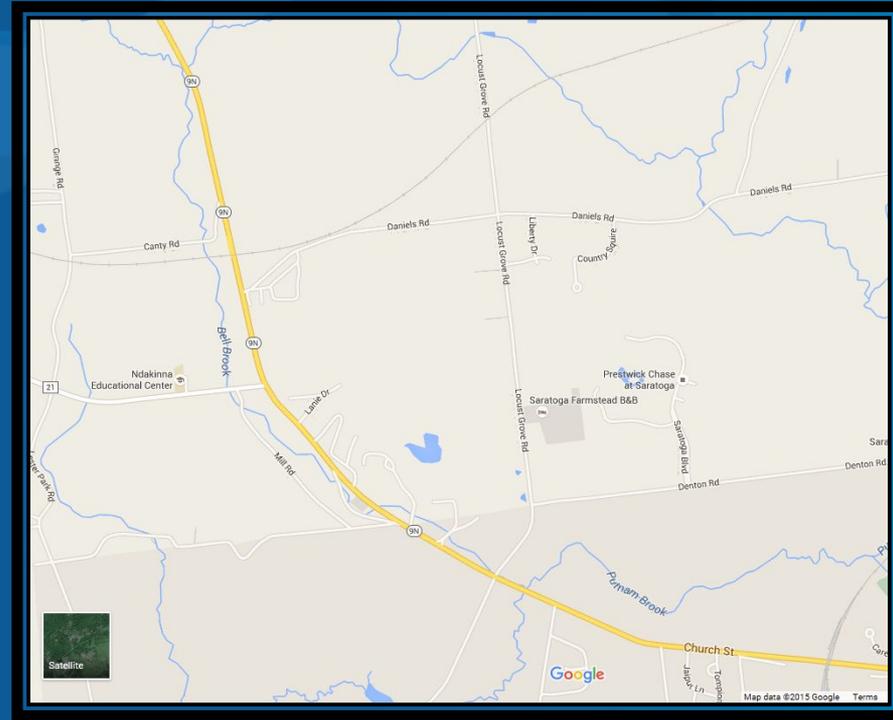
Storm Total Snowfall – At the end of the event





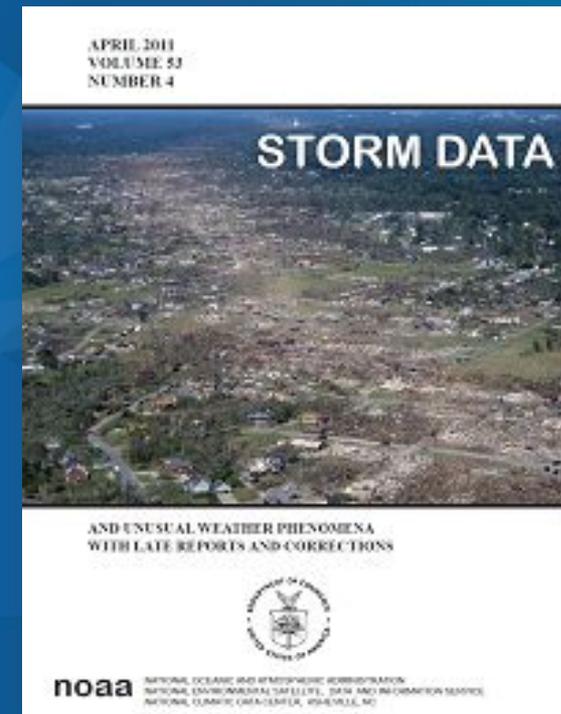
When Referencing Locations

Please be as specific as possible! You are the local expert – we are not as familiar with the roads/cities in your county. **Please reference the nearest intersection or block number, mile marker or even latitude/longitude.**





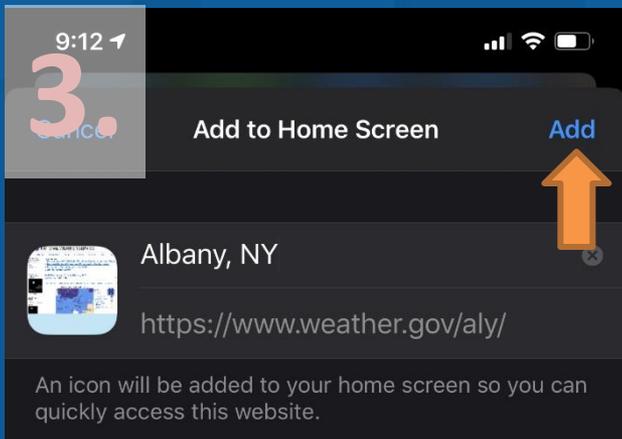
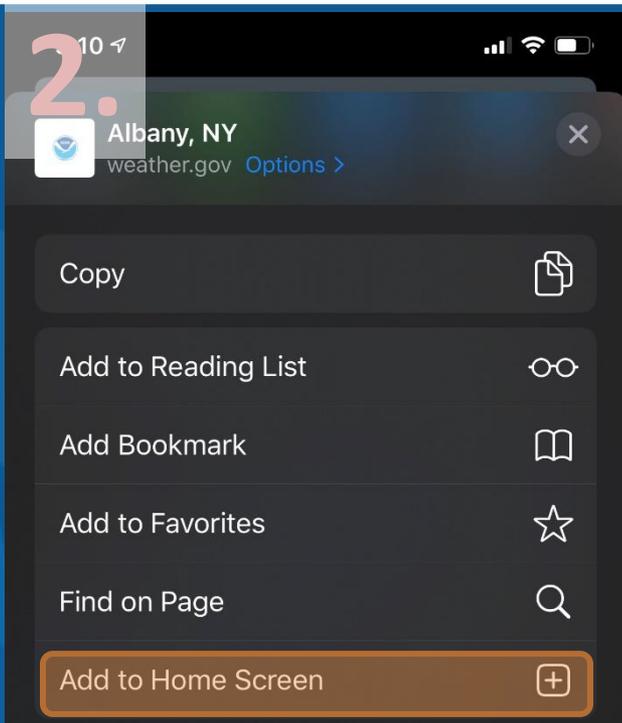
FEMA and Your Data



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



For the Smart Phone Savvy!



Weather.gov/{zipcode}



Other Weather Apps



Emergency - American Red Cross

American Red Cross Weather

E Everyone



Flood - American Red Cross

American Red Cross Weather

E Everyone



FEMA

Federal Emergency Management Agency (FEMA)

E Everyone

FEMA



mPing

University of Oklahoma Education

Unrated

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.](#)



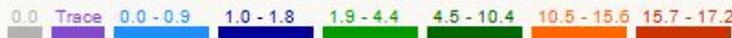


Join CoCoRaHS!

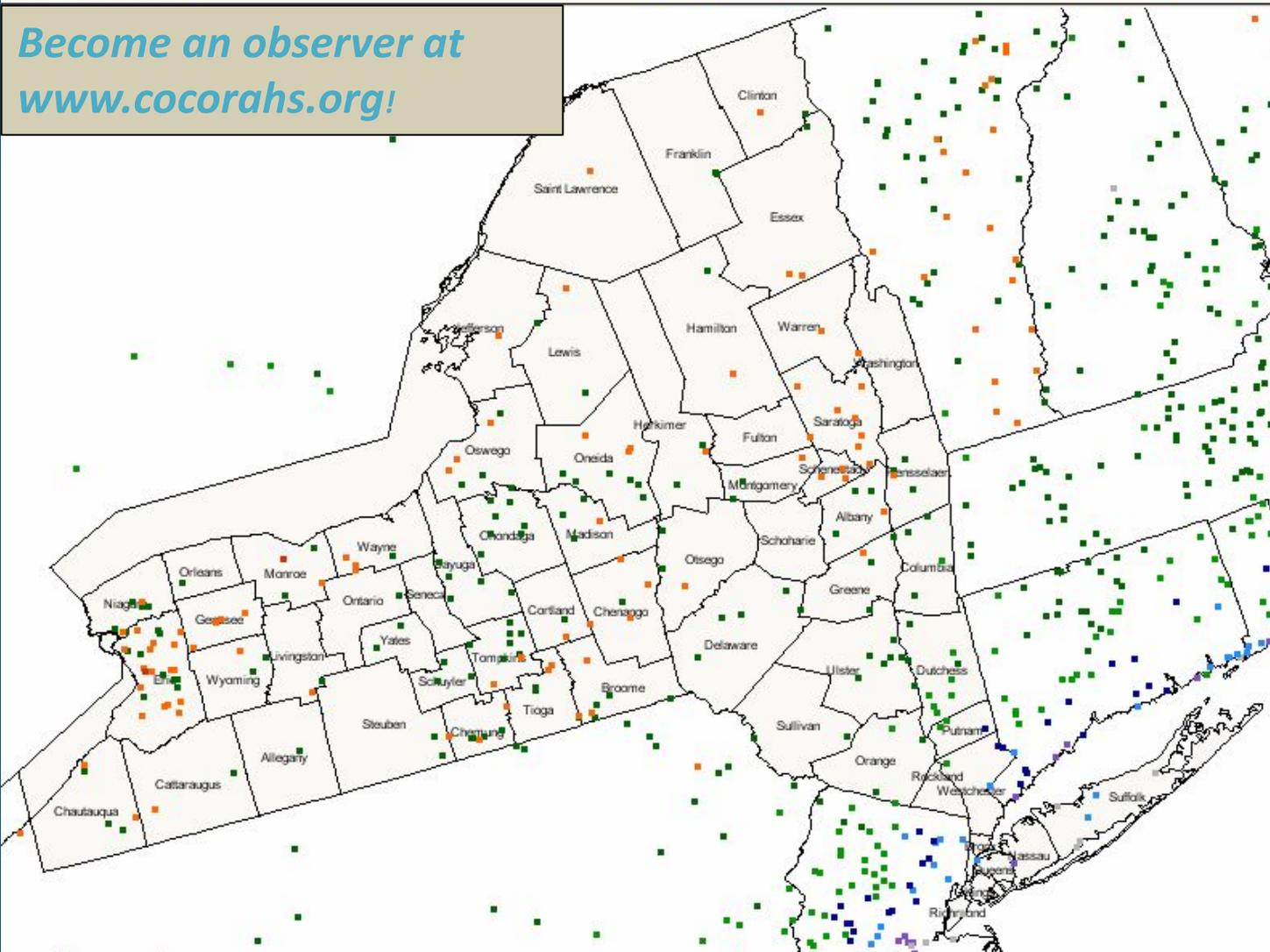


Daily Snow (inches x.x), for the 24 hour period ending ~7:00 am

New York 1/20/2019



*Become an observer at
www.cocorahs.org!*



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



TEST TIME

(5 questions)

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



**JUST
KIDDING!**



Question #1

When lighter warm air is moving over/forced over cold air forming low cloud tops that can result in snow or rain conditions, what kind of winter storm is this called?

- A. Overrunning
- B. Lake Effect
- C. Nor'easter
- D. Alberta Clipper



Question #2

Approximately what is the current snowfall depicted by this ruler?



- A. 14.0 inches
- B. 14.5 inches**
- C. 21.5 inches
- D. 22.0 inches



Question #3

If you measure 0.4" of ice on one side and 0.2" of ice on the other side of the branch, your radial ice is...

- A. 0.6"
- B. 6.0"
- C. 0.3"
- D. 3.0"

0.4"

0.2"

To convert radial ice accumulation to a flat surface:
 $0.3" / 0.4 = 0.75"$ of flat ice accumulation



Question #4

Which of the following is the correct and most helpful report listed below that will help us with ground truth?

- A. "I received 4 inches of snow in the past 6 hours."
- B. "I received 4 inches of snow in the past 6 hours near the intersection of Main St. and Mountain Ave. in Albany, NY."**
- C. "I think some clouds moved over my house and gave us some snow."
- D. "Hooray! The Giants beat the Patriots in the super bowl again!"



Question #5

Which of the following is an example of a bomb cyclone (or bombogenesis)?

- A. Central barometric pressure in a low pressure system dropping 30 mb in 24 hours.
- B. Central barometric pressure in a low pressure system dropping 30 mb in 48 hours.
- C. Central barometric pressure in a low pressure system increasing 30 mb in 24 hours.
- D. When a tornado is associated with a Nor'easter.



Skywarn Spotter Information Sheet



NATIONAL WEATHER SERVICE, NOAA
ALBANY, NY
SKYWARN INFORMATION SHEET



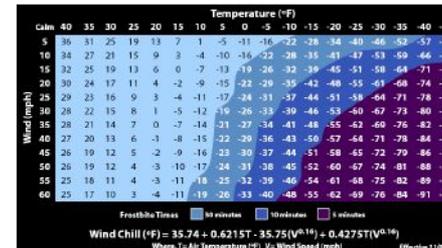
Winter Weather Spotter Field Guide	https://www.weather.gov/media/safety/Winter_Storms2008.pdf
Email	alb_stormreport@noaa.gov
NWS Albany	www.weather.gov/Albany
Twitter	@NWSAlbany
Facebook Page	https://www.facebook.com/NWSAlbany
NOAA Weather Radio	www.nws.noaa.gov/nwr
Storm Prediction Center	www.spc.noaa.gov
NWS Online Weather School	www.weather.gov/jetstream
Weather Prediction Center	wpc.ncep.noaa.gov
River Flood Monitoring	water.weather.gov/ahps
CoCoRaHS	www.cocorahs.org
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:

SNOWFALL	After 1 inch of new snow, measurements every 6-hours and then final storm total at the conclusion of the event. Snowfall rates (+1" per hour). In addition, note and report when precipitation type changes.
FREEZING RAIN	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)
THUNDER SNOW	Location and time of occurrence
WIND SPEEDS	Report wind speeds greater than 40 mph
RAINFALL	Report when you receive one inch (and then at least every inch thereafter)
FUNNEL CLOUD	A "rotating" appendage descending from the base of a cumulonimbus cloud, but not touching the ground. If possible, always look at the area beneath the funnel cloud for flying debris. If flying debris is observed, it is a tornado.
TORNADO	Violently rotating column of air descending from a cumulonimbus cloud and touching the ground. Look for flying debris. If possible, report any injuries or fatalities
HAIL	Report hail 0.75 or larger. Specify the diameter based on the hail scale.
FLOODING	Any flooding including streams out of their banks, water over road, water in basement or any ice jam flooding. Report deepest water depth (estimate if necessary).
DAMAGE	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



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
- 73-112 MPH.....Roof surfaces damaged; windows broken; light mobile homes moved or overturned; moving vehicles pushed off road
- 113-157 MPH.....Roofs torn off; weak buildings and mobile homes destroyed
- ≥158 MPH.....Severe damage; cars lifted completely off ground

DEFINITIONS

Hazardous Weather Outlook	Hazardous winter weather conditions are possible in the next 2-5 days. Stay tuned to local media and NOAA Weather Radio All Hazards for updates.
Watch	Hazardous impact conditions are possible within the next 36-48 hours. Prepare now!
Warning	Life-threatening impact conditions have begun or will begin within 24 hours. Act Now!
Advisory	These events will be an inconvenience. However, if caution is not exercised, it could become life-threatening.
Flooding	Flooding typically occurs when prolonged rain falls over several days, when intense rain falls over a short period of time, or when an ice or debris jam causes a river or stream to overflow onto the surrounding area. Flooding can also result from the failure of a water levee or dam, as well. The most common cause of flooding is water due to rain and/or snowmelt that accumulates faster than soils can absorb it or rivers can carry it away. Flash floods generally develop within 6 hours of the immediate cause and exhibit a rapid rise of water over low-lying areas.
Ice Jam	Pieces of floating ice carried with a stream's current that accumulate and block the movement of water. The water that is held back may cause flooding or flash flooding upstream. If the jam suddenly breaks then flash flooding may occur downstream.
Funnel Cloud	Cold air funnels form beneath showers or weak thunderstorms when the air aloft is especially cold. They are much less violent than other types of tornadoes.
Downburst	A strong downdraft with an outrush of damaging wind on or near the ground Macroburst – swath of damaging wind more than 2.5 miles wide Microburst – swath of damaging wind 2.5 miles or less



To Sign Up as a Volunteer



Digital Online Skywarn Participant Form (**optional**) :

<https://goo.gl/forms/XPJh5X6A0jIw2I2t1>



Skywarn Weather Spotter Training

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Thank You!

