

# Overrunning Precipitation



**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.

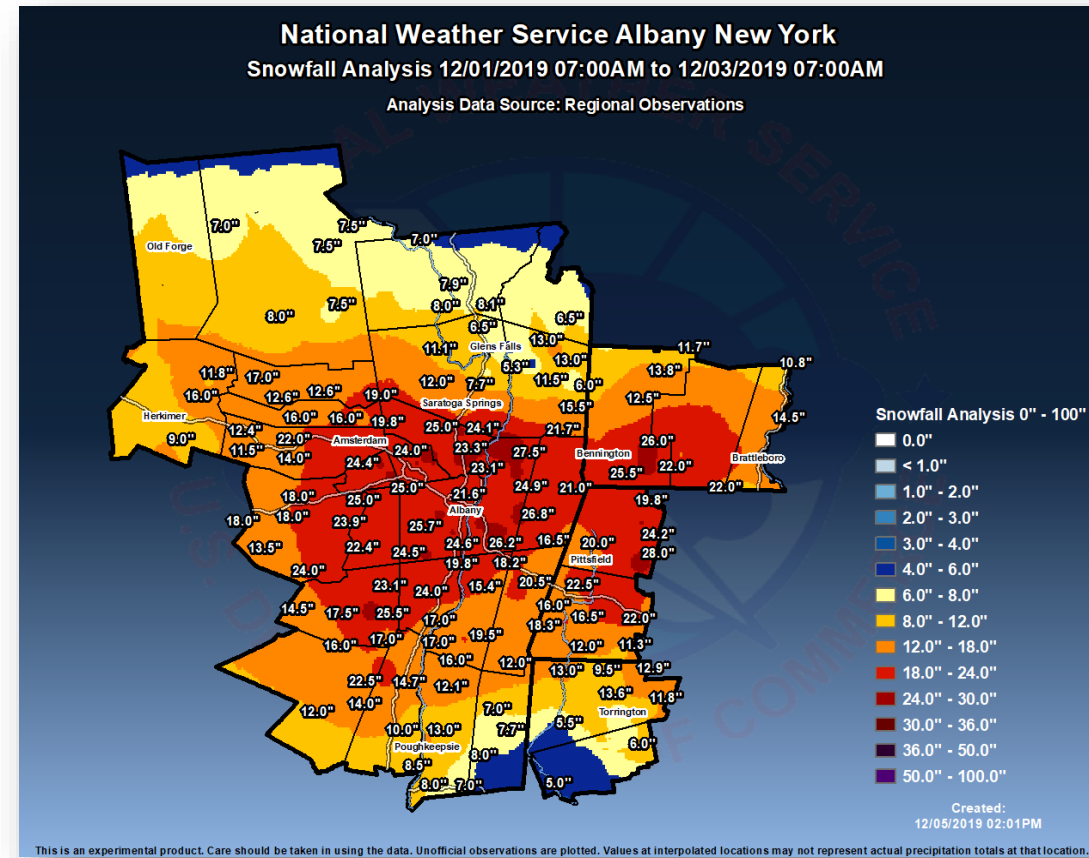
**3**

## Precipitation

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



The first half of the December 1-3, 2019 snow storm was due to overrunning and produce snowfall rates of 1-2 inches per hour



# Alberta "Clipper" Low Pressure System



Albany, NY  
WEATHER FORECAST OFFICE

1

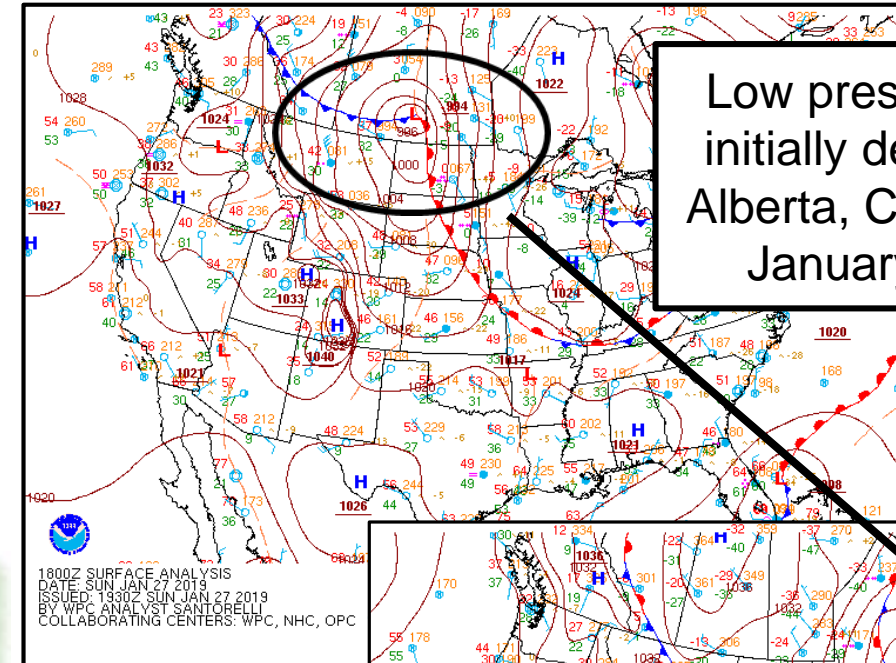
## Birth of a storm

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

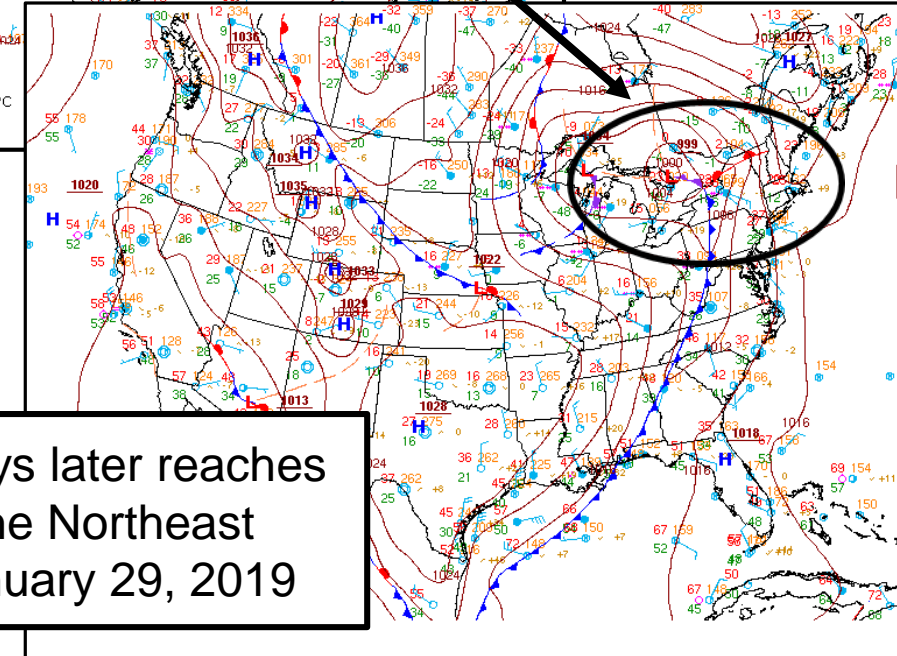
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## Air movements

Cold outbreak reinforced behind storm as it moves across USA.



Low pressure system initially develops over Alberta, Canada region January 27, 2019



2 days later reaches the Northeast January 29, 2019

Typically bring periods of snowfall and can even result some 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



## November 21, 2018 View from Corning Tower



A Nor'easter is a storm along the East Coast, so called because the winds over the coastal area are typically from the northeast.

1

## The beginning:

Weak area of low pressure forms near the East Coast.



2

## Winding up:

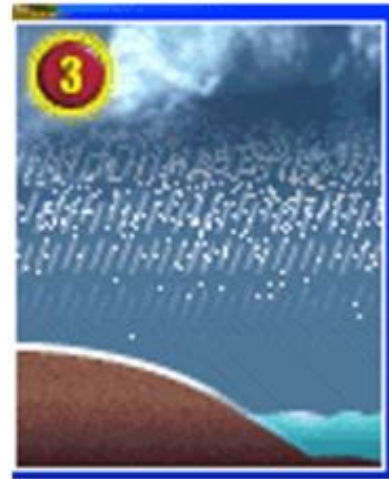
Warm, moist air surges west from Atlantic, cold air drops south as storm rapidly intensifies.



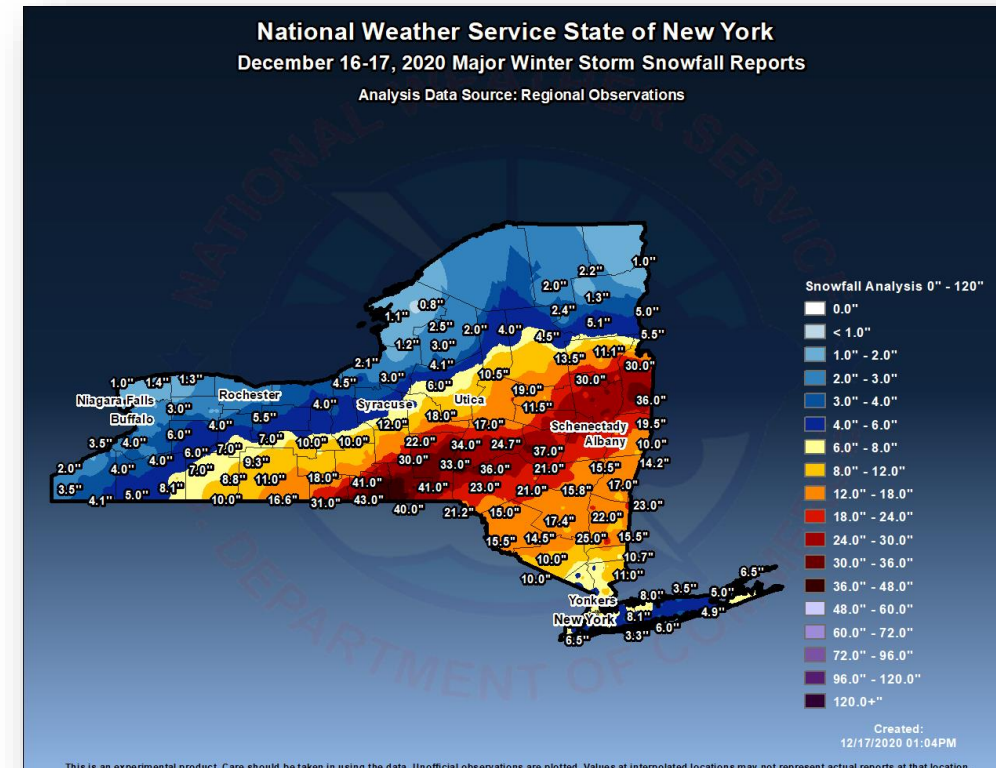
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## The fury:

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

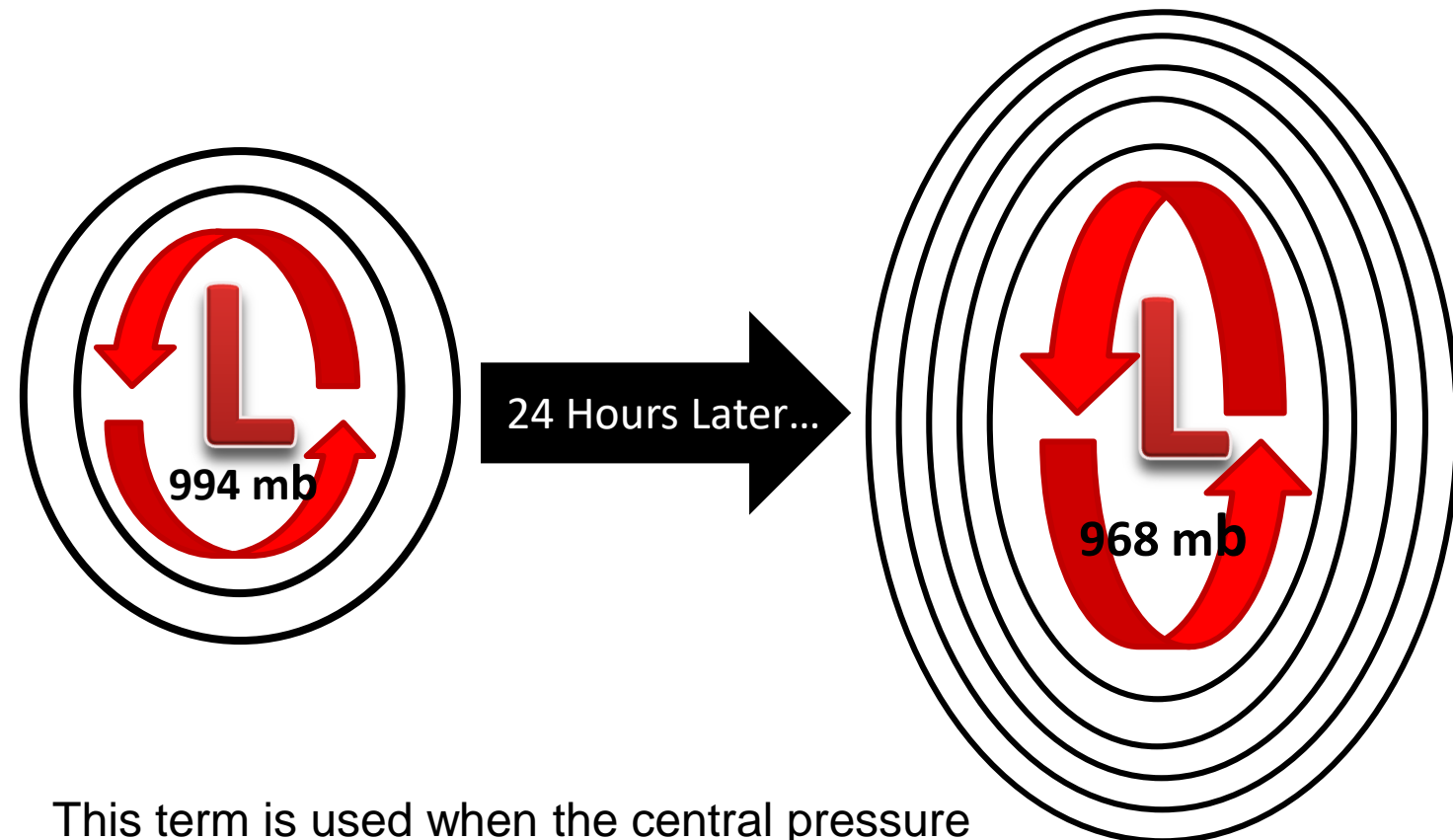


## December 16-17, 2020

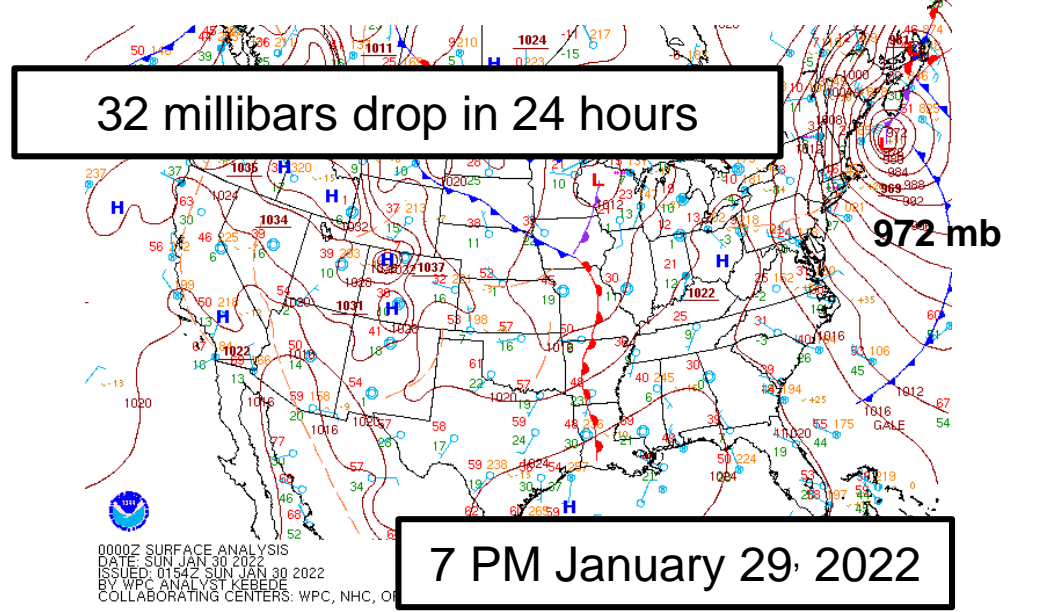
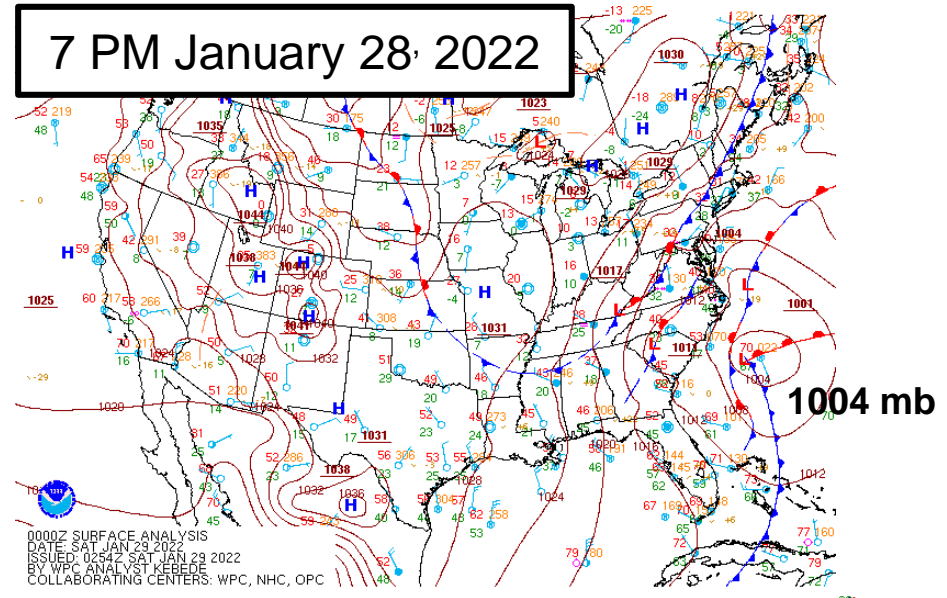




# Bomb Cyclone (or Bombogenesis)



This term is used when the central pressure of a low pressure system decreases rapidly (at least 24 millibars/mb in 24 hours)





## WHAT'S A BLIZZARD?

-  BLOWING SNOW
- 35+ MPH WINDS 
-   $\leq 1/4$  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.

Sometimes, Nor-Easter's can become bombogenesis and result in blizzards.

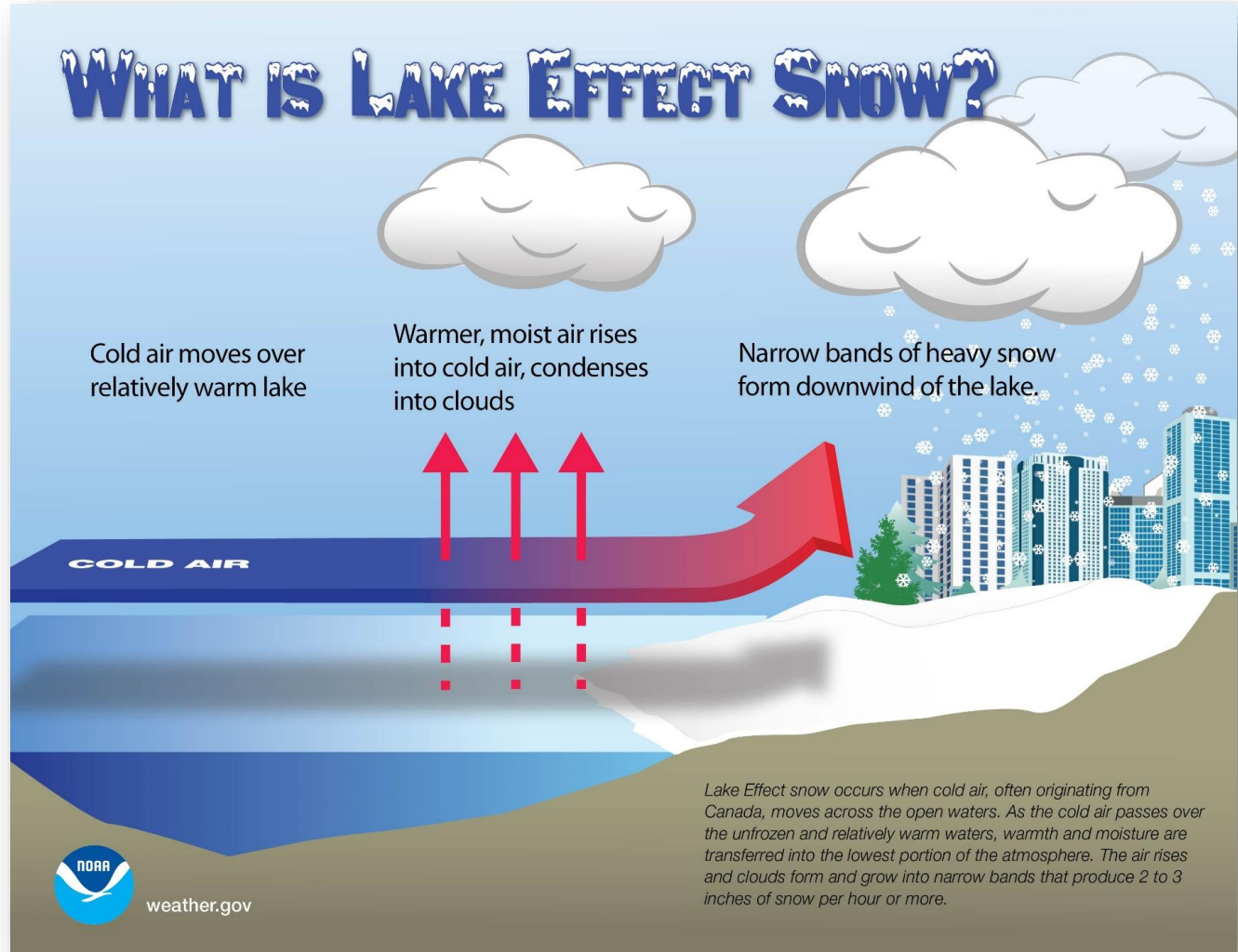


## WHAT IS LAKE EFFECT SNOW?

Cold air moves over relatively warm lake

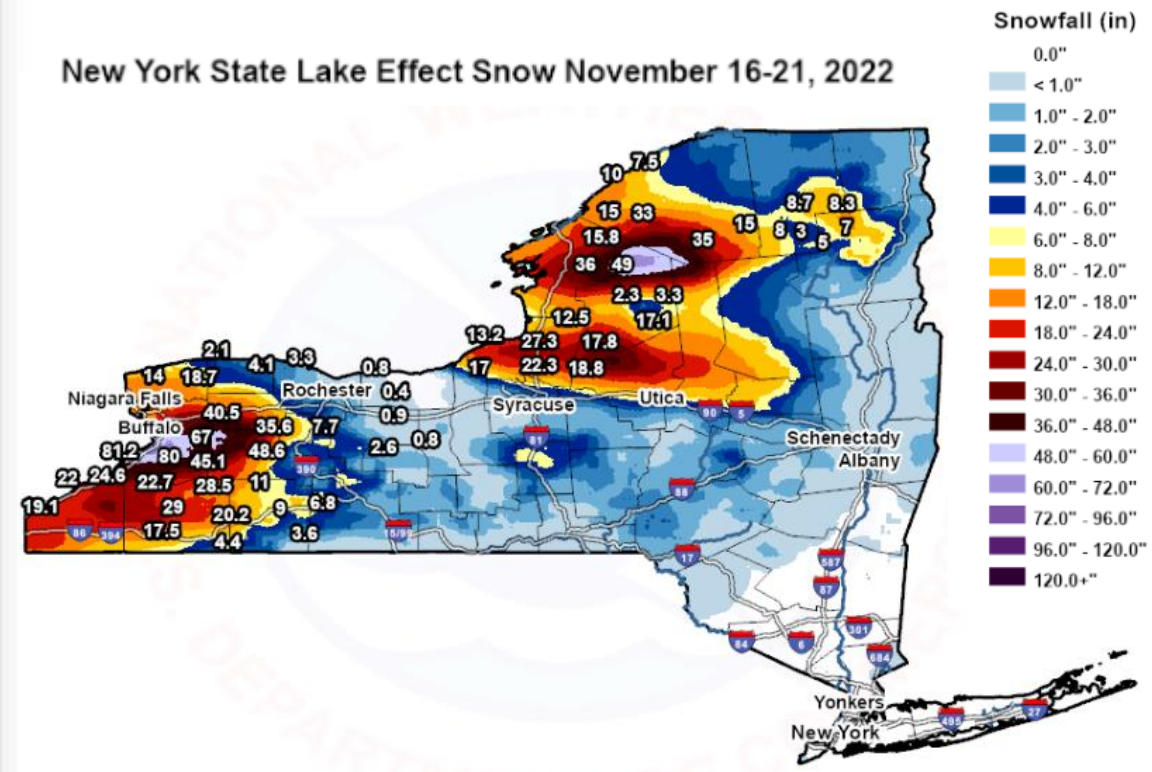
Warmer, moist air rises into cold air, condenses into clouds

Narrow bands of heavy snow form downwind of the lake.



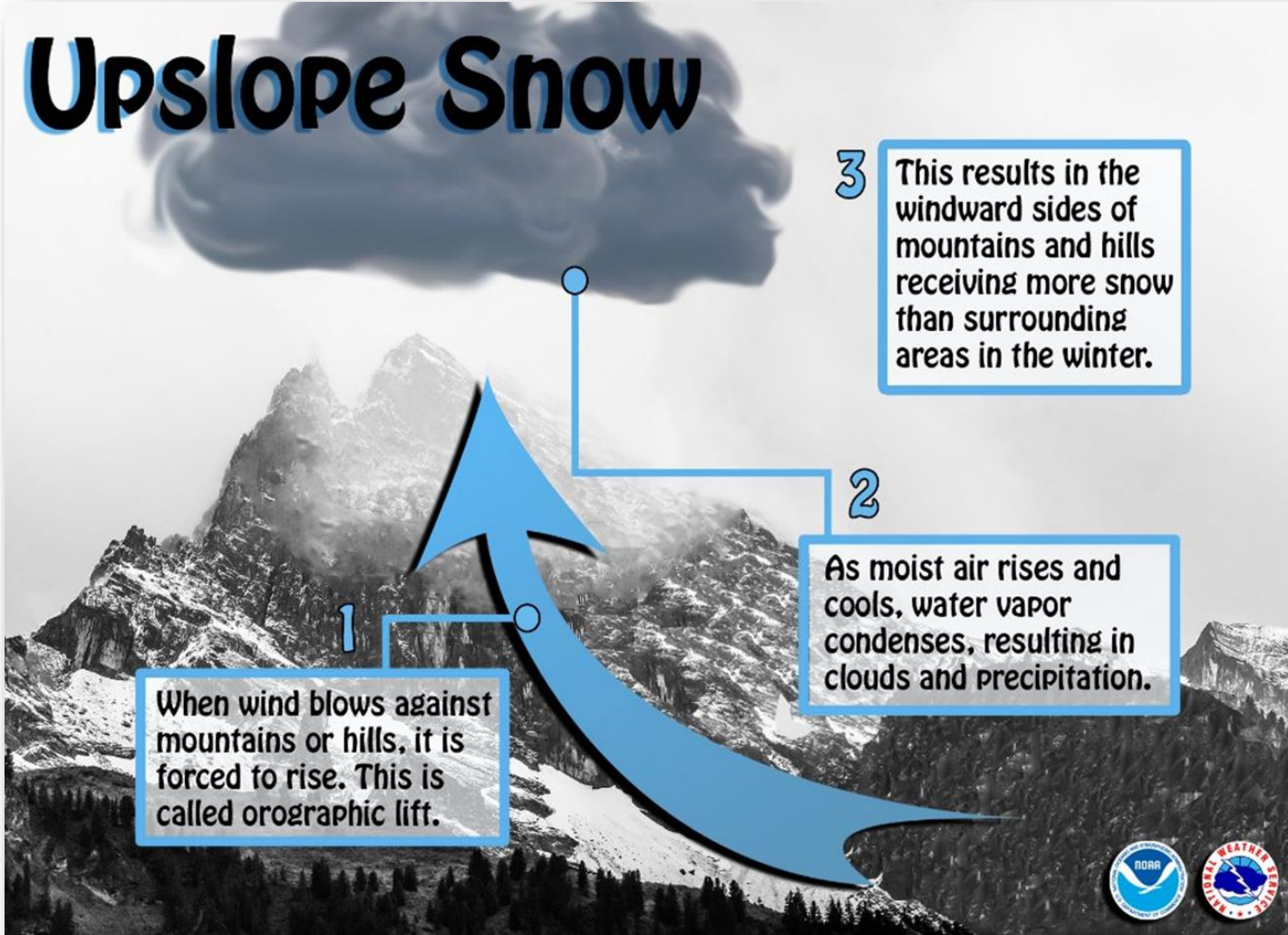
Lake Effect snow occurs when cold air, often originating from Canada, moves across the open waters. As the cold air passes over the unfrozen and relatively warm waters, warmth and moisture are transferred into the lowest portion of the atmosphere. The air rises and clouds form and grow into narrow bands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

New York State Lake Effect Snow November 16-21, 2022



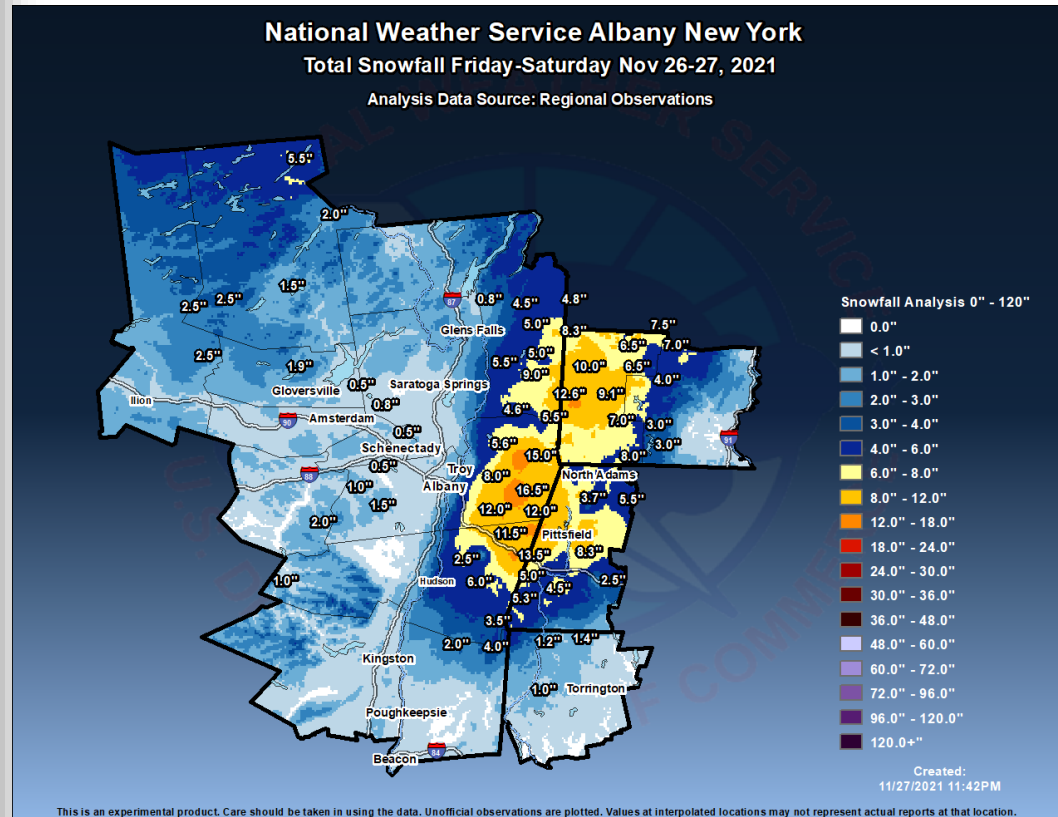


## Upslope Snow



## November 26-27, 2021

National Weather Service Albany New York  
Total Snowfall Friday-Saturday Nov 26-27, 2021  
Analysis Data Source: Regional Observations





1

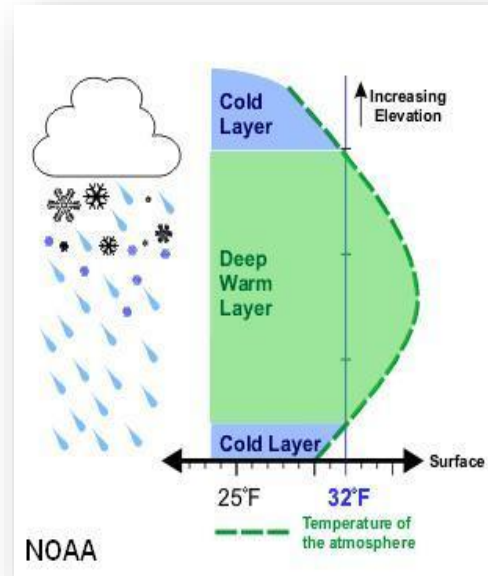
## Setting the stage:

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.



Kingston, NY - February 4, 2022



# Measuring Ice Accumulations/Accretion



Radial Ice Measurement		Flat Ice Measurement	
<p>Measure the ice thickness on both sides of the branch then add that up and divide by 2</p>	0.04"	0.10"	<p>Measure the ice thickness on a flat surface</p>
	0.10"	0.25"	
	0.20"	0.50"	
	0.30"	0.75"	
	0.40"	1.00"	
	0.50"	1.25"	
	1.00"	2.50"	
<p>Note: radial ice measurements are roughly 40% less than that of a flat ice measurement</p>			