Northeast Winter Storm

Winter Weather Experiment LANTERN

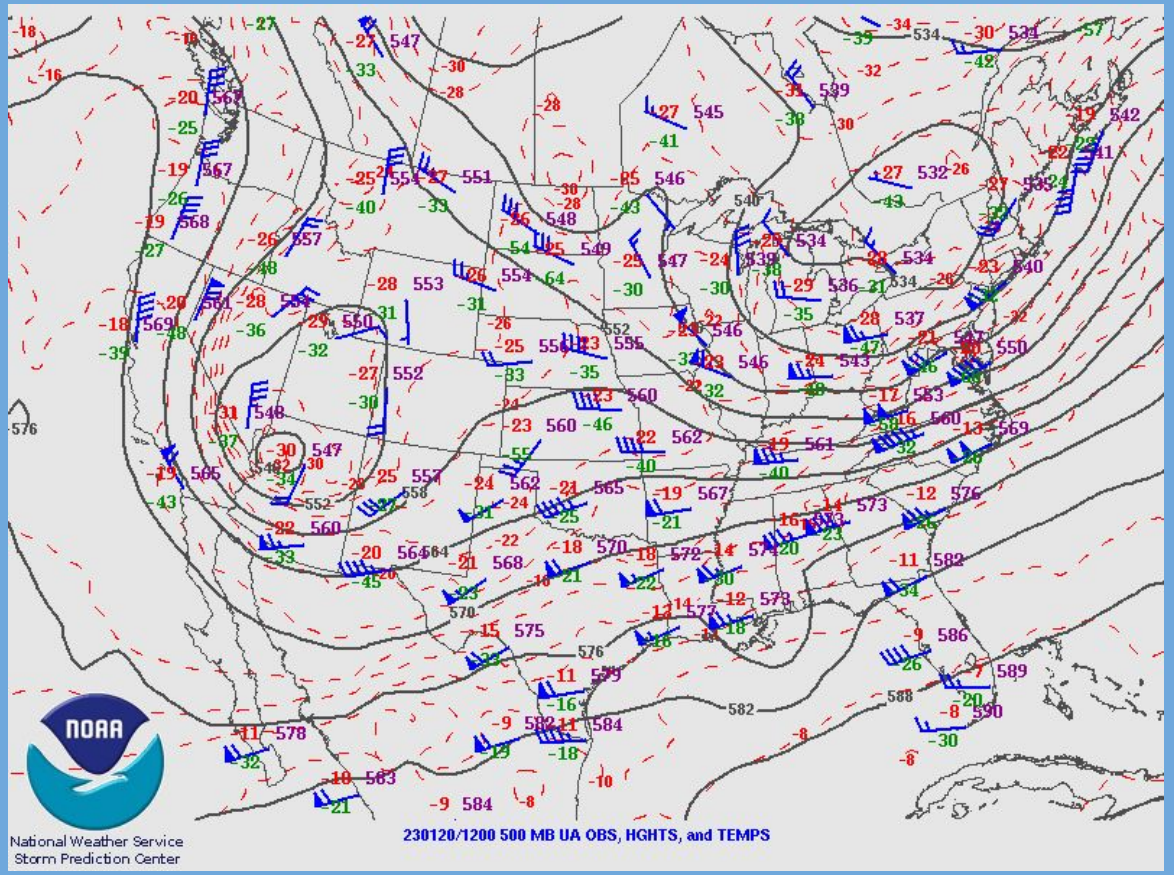
David King

January 23-24, 2023
12z to 12z

Outline

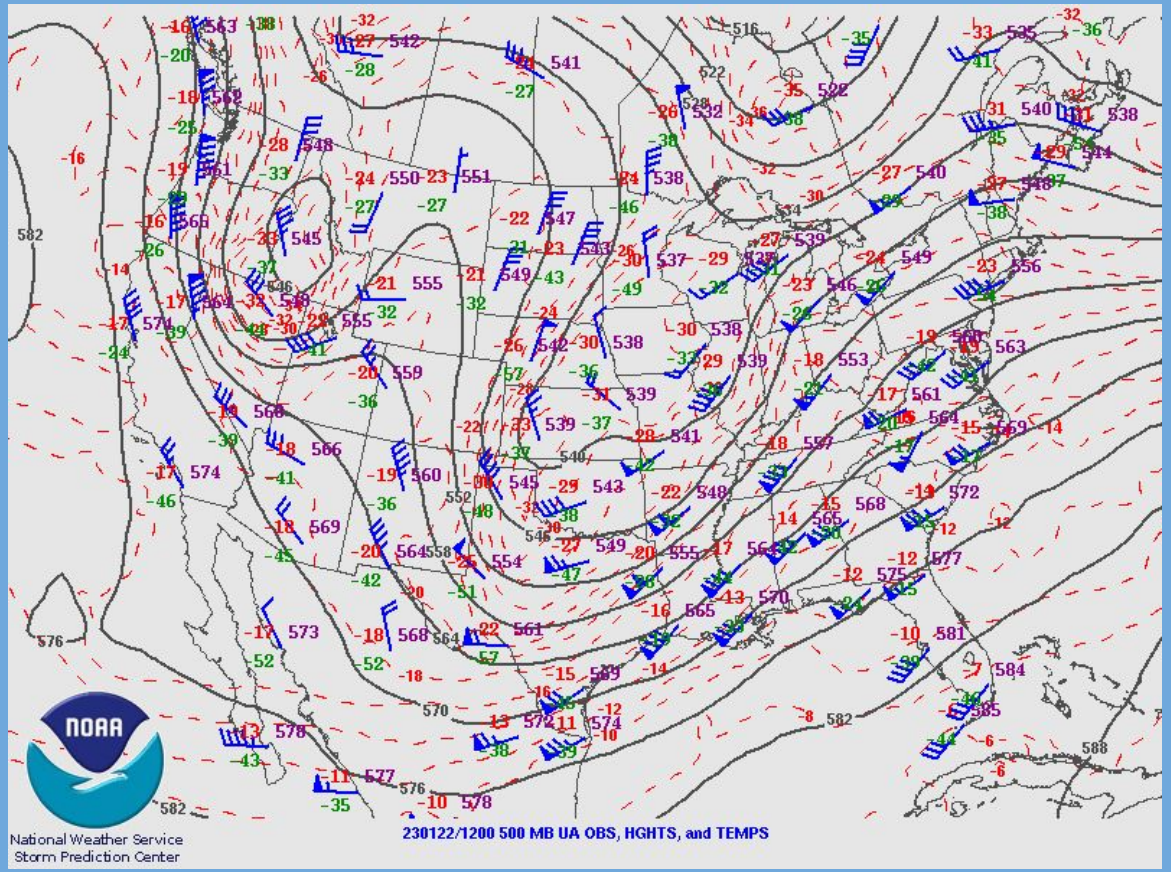
- Welcome
- Overview of the Event
- Day 3 Review
  - Quick weather briefing - GFS
  - Google Questionnaire
  - Discussion
- Day 2 Review
  - NAM Nest
- Day 1 Review
  - HRRR

12z Lead-up



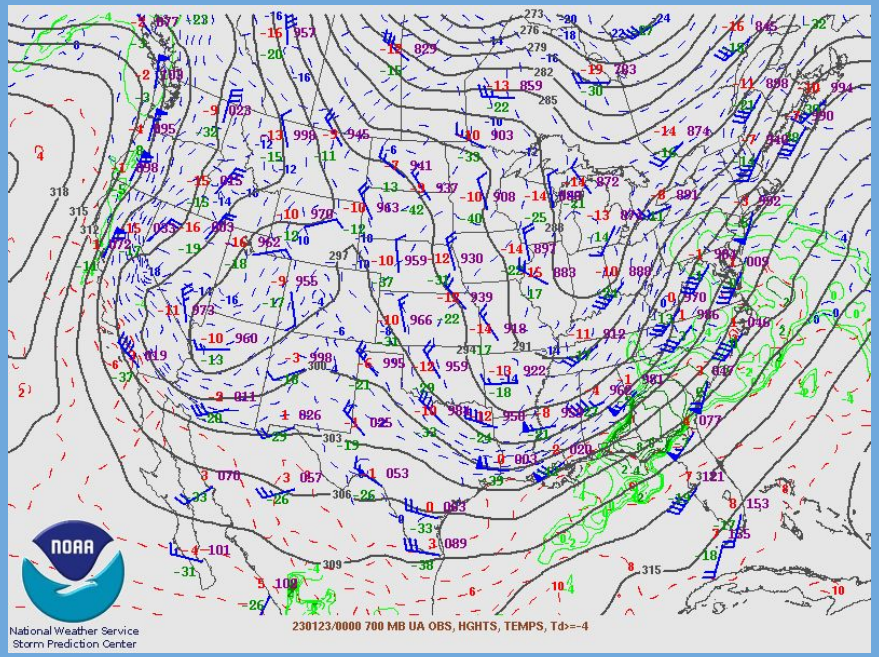
Fri Jan 20, 2023 at 12z

Day Before: 12z Lead-up



Sun Jan 22, 2023 at 12z

Day Before: Jan 23rd at 00z



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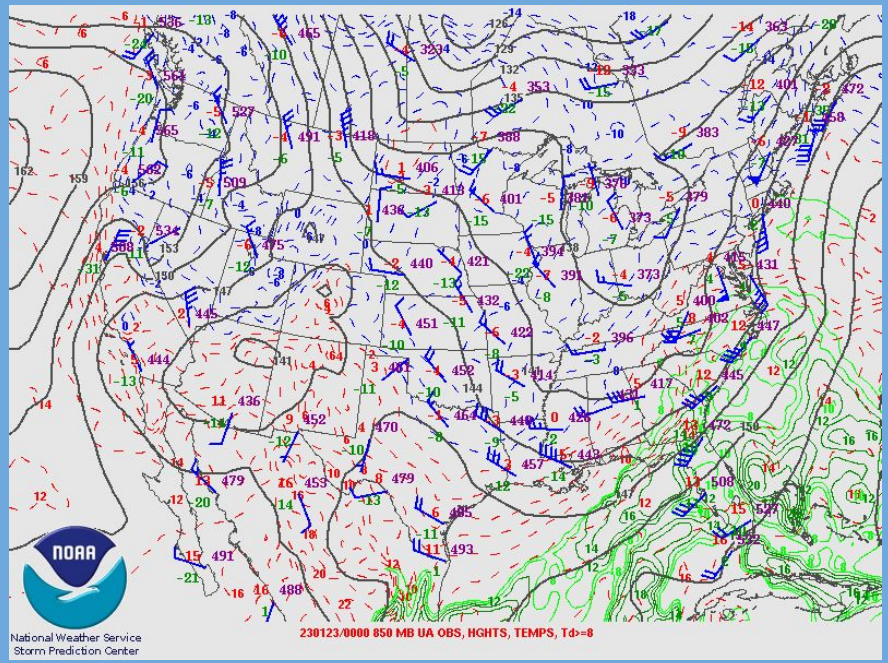
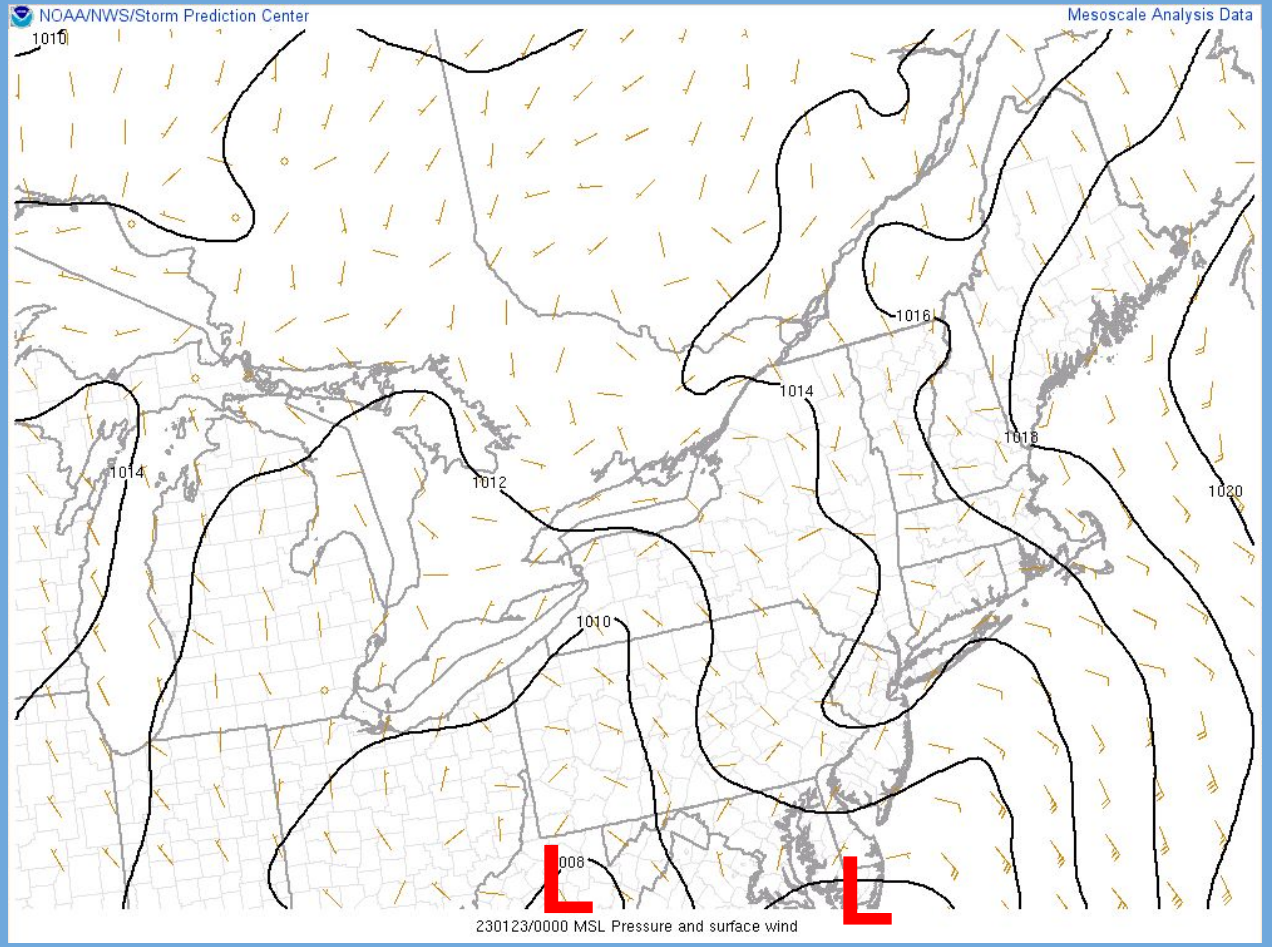
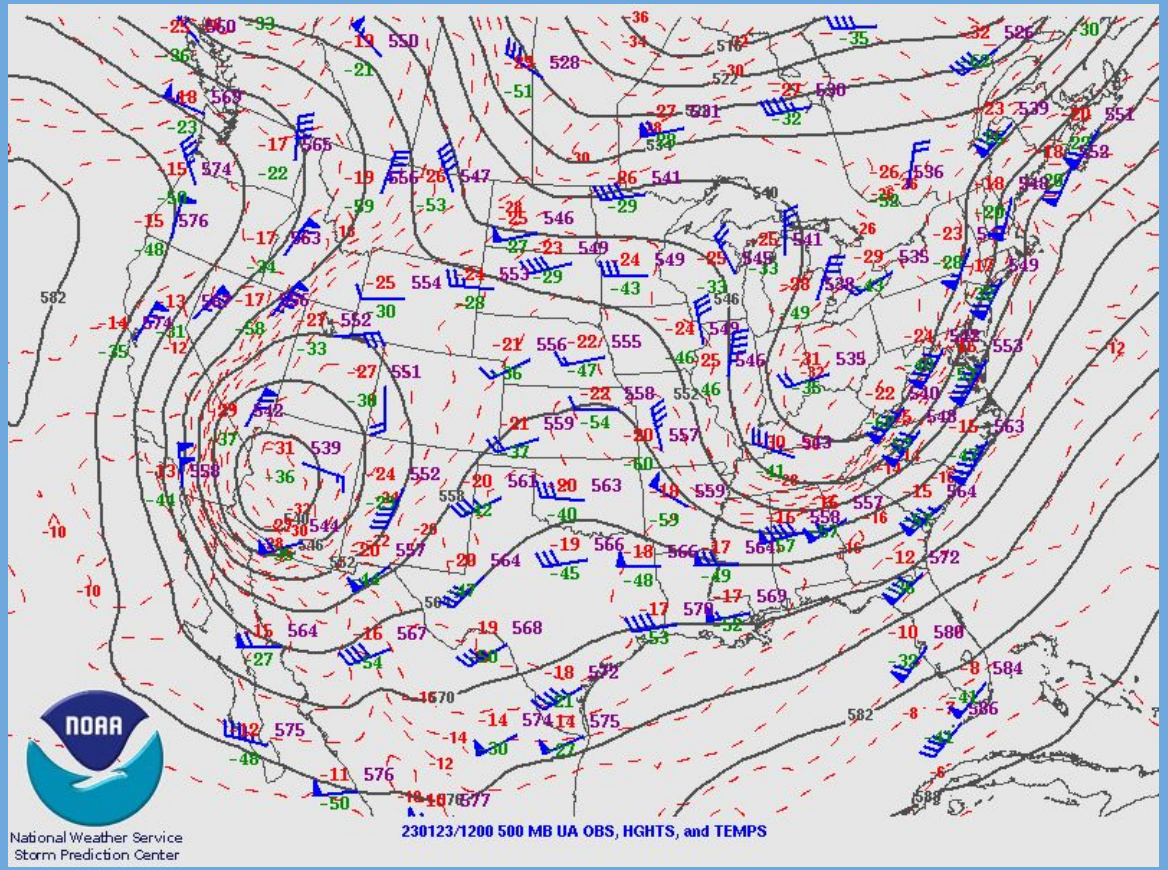


850 mb

Day Before: Jan 23rd at 00z

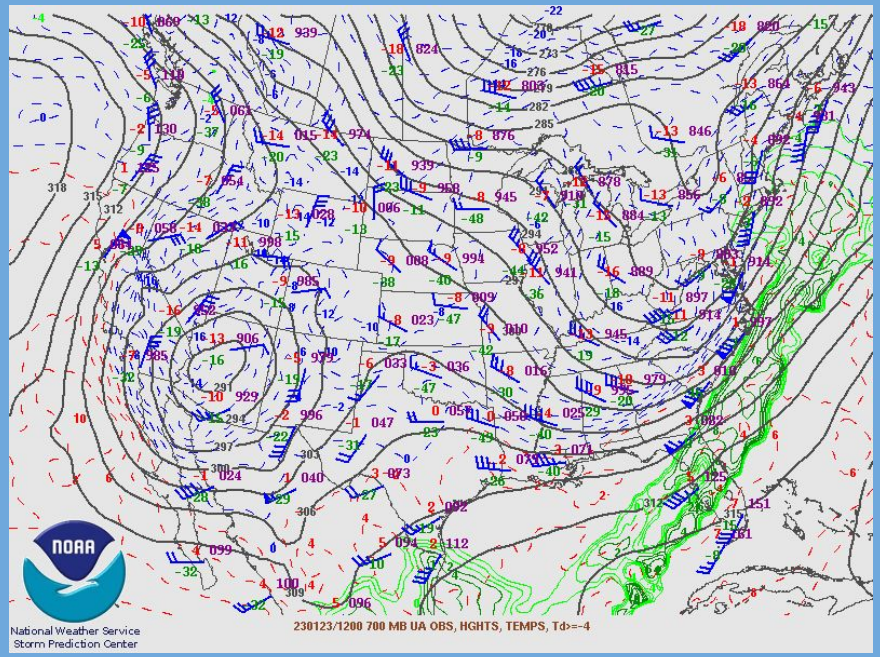


The Event:



Mon Jan 23, 2023 at 12z

The Event: Jan 23rd at 12z



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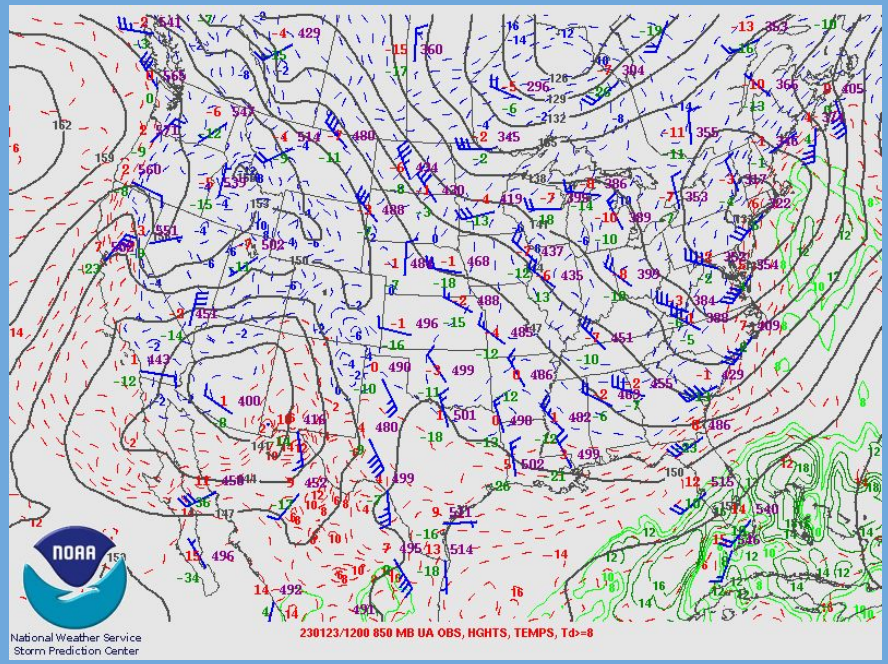
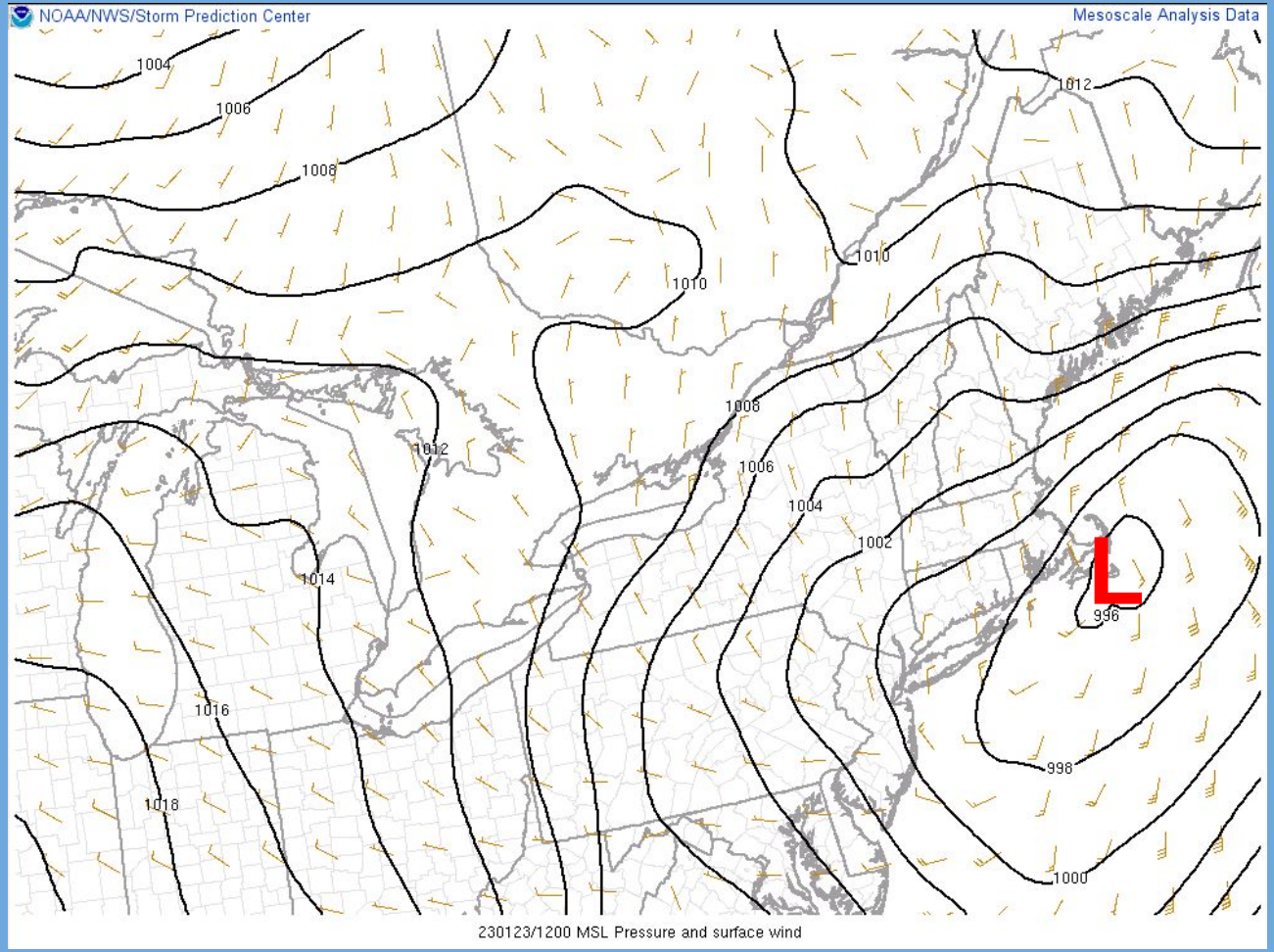
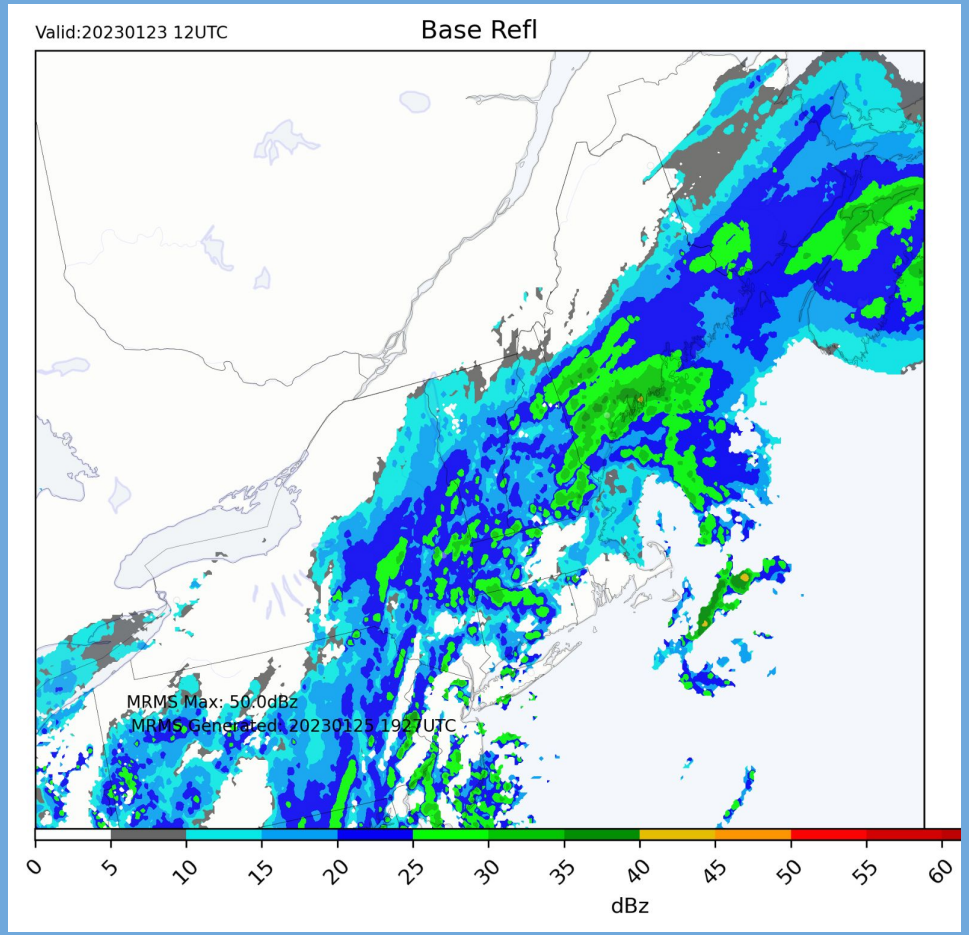


850 mb

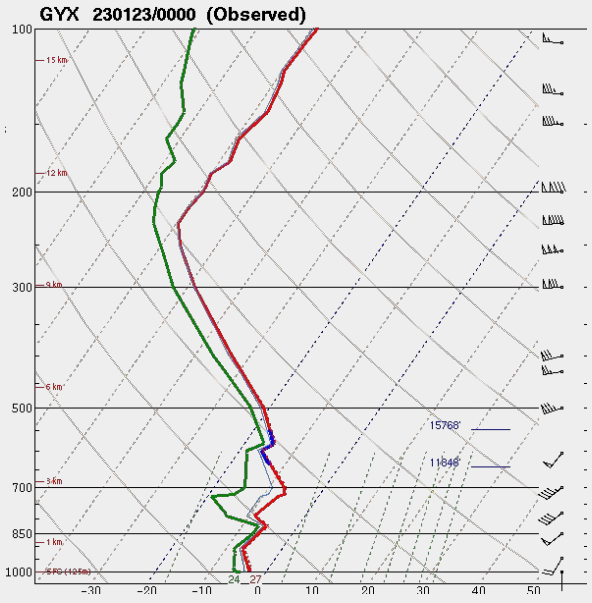
12z Lead-up


NOAA/NWS/Storm Prediction Center
Mesoscale Analysis Data
1004
1006
1008
1010
1012
1014
1016
1018
1000
1002
996
998
230123/1200 MSL Pressure and surface wind

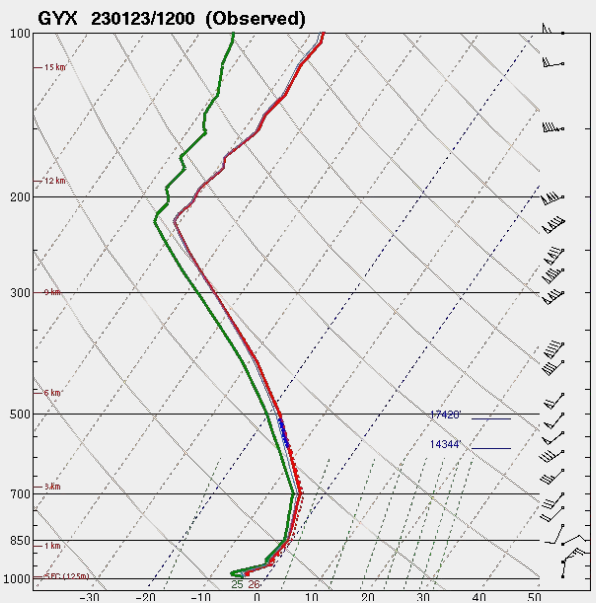
Event Reflectivity



Soundings: GYX



00z Sun Jan 23, 2023



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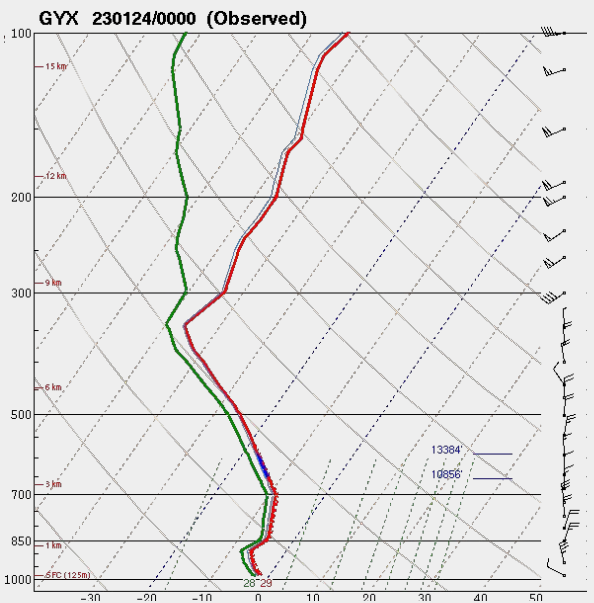

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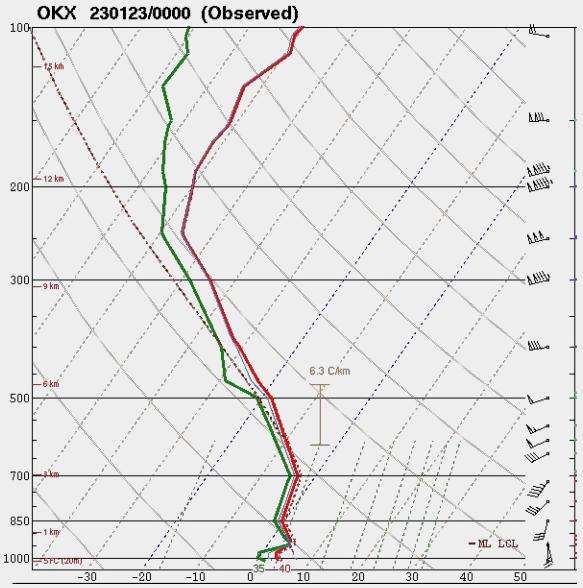
Soundings: OKX



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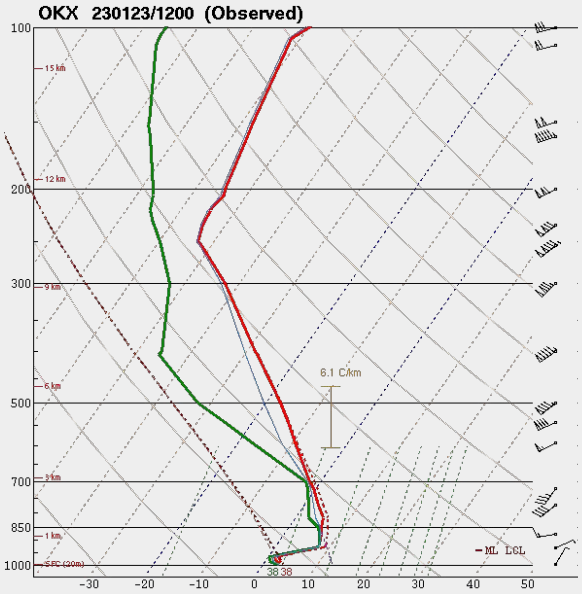

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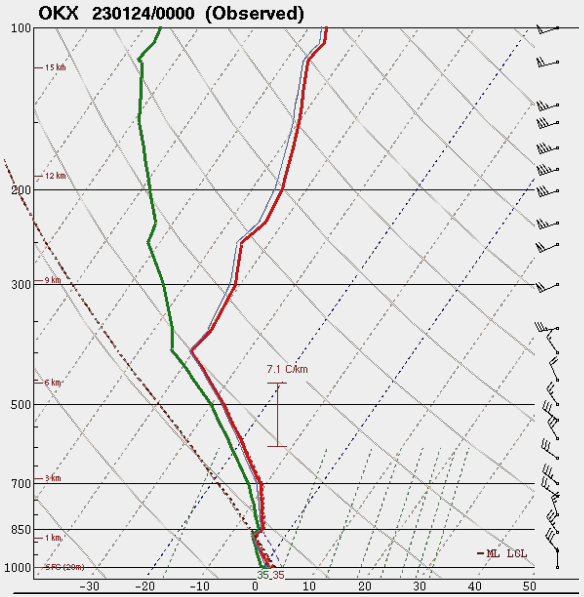
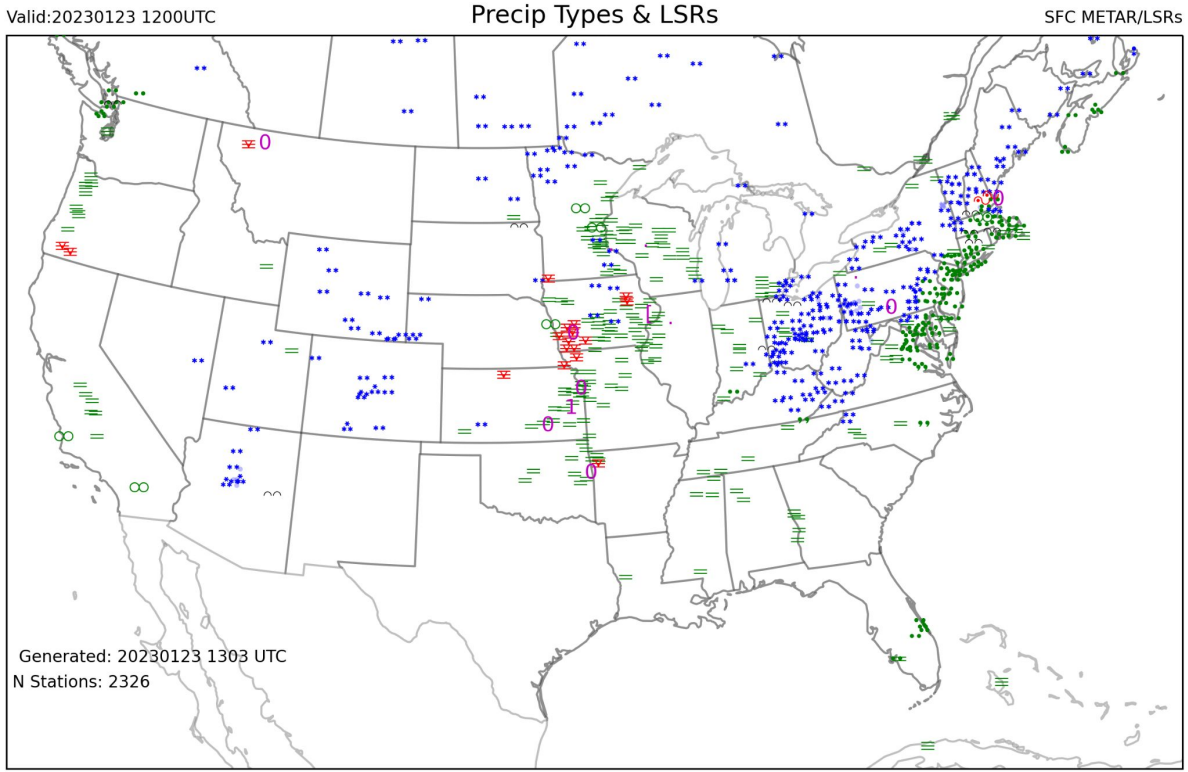
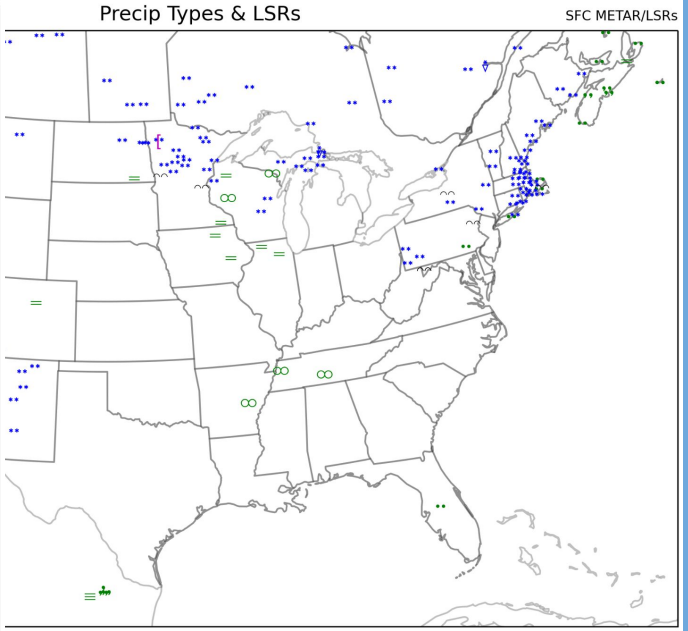


00z Sun Jan 24, 2023

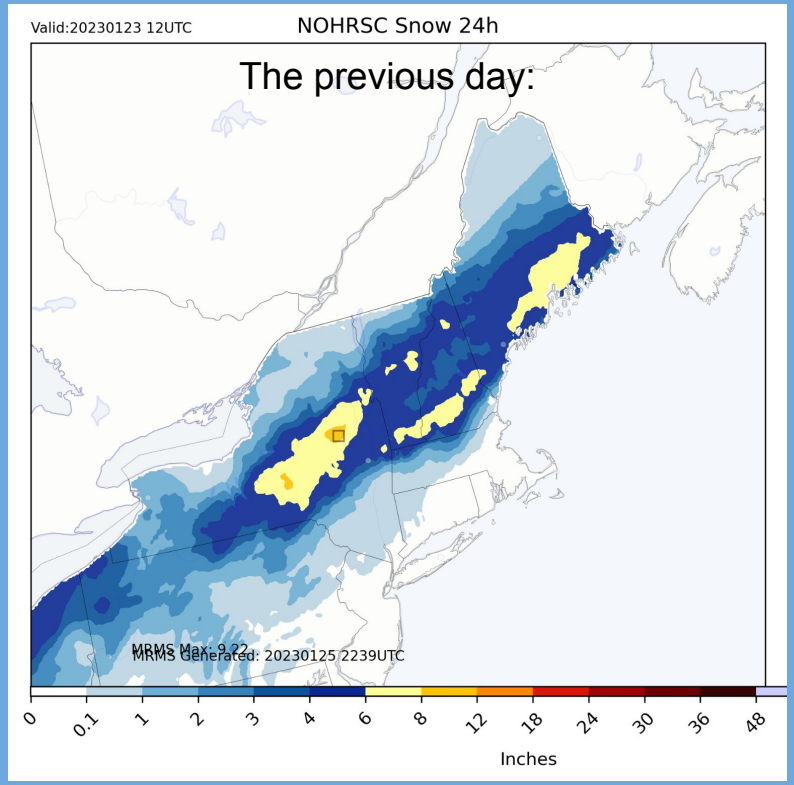
METAR reading

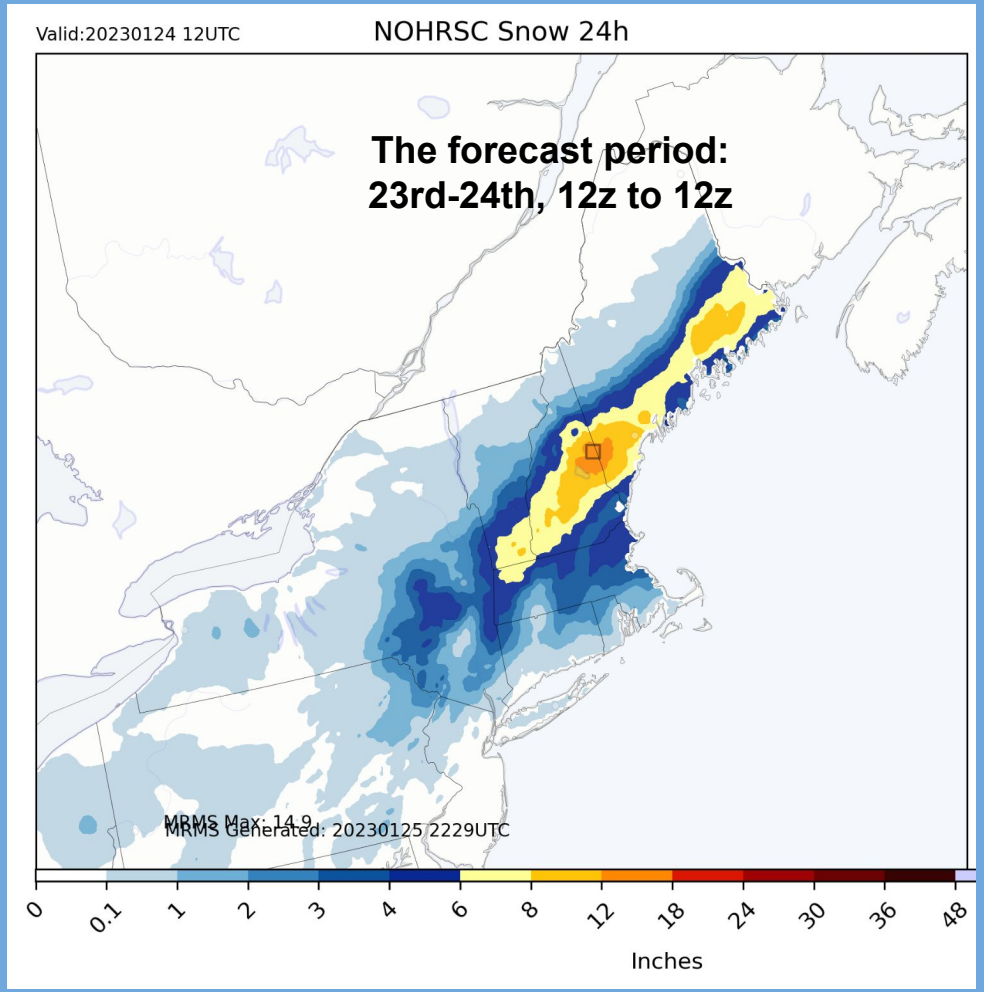




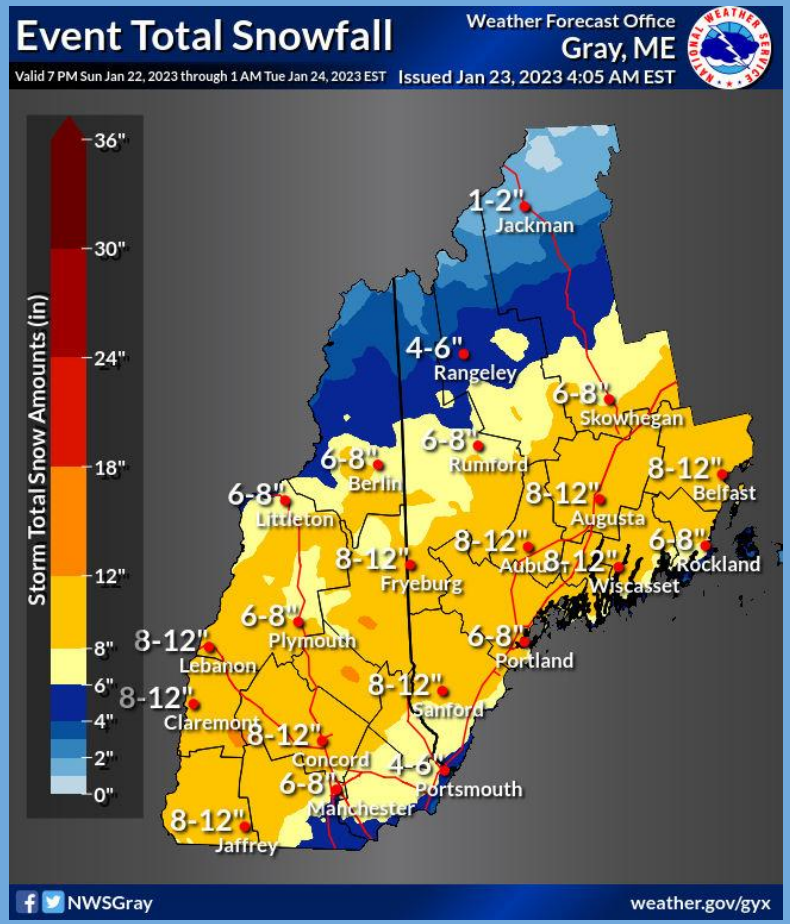
12Z ➡ 00z

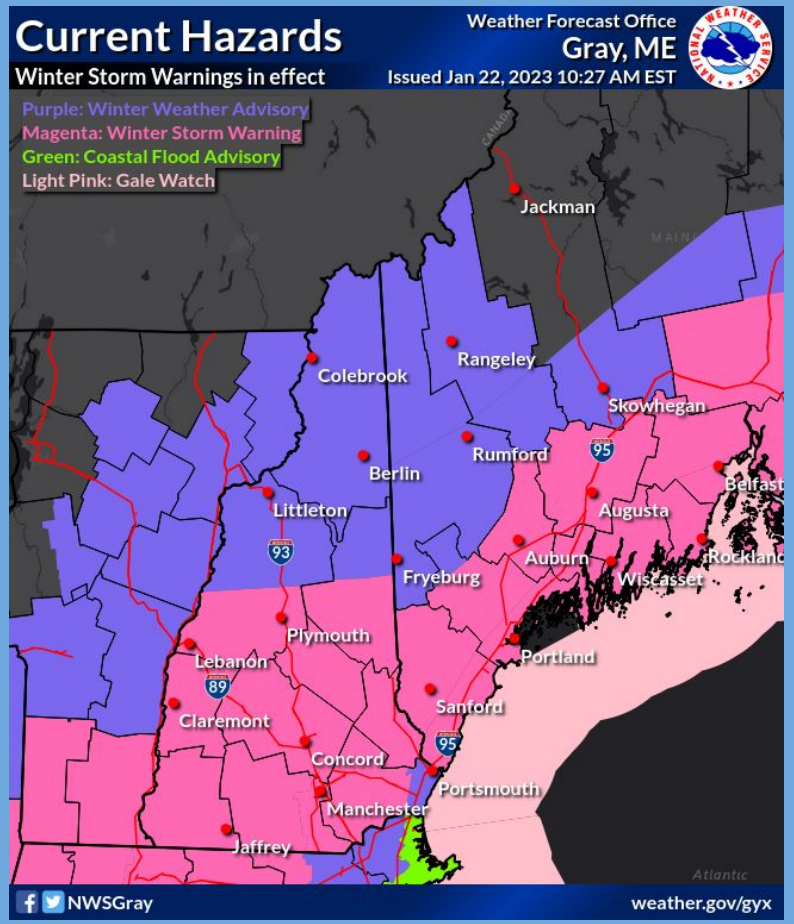
Total Snowfall





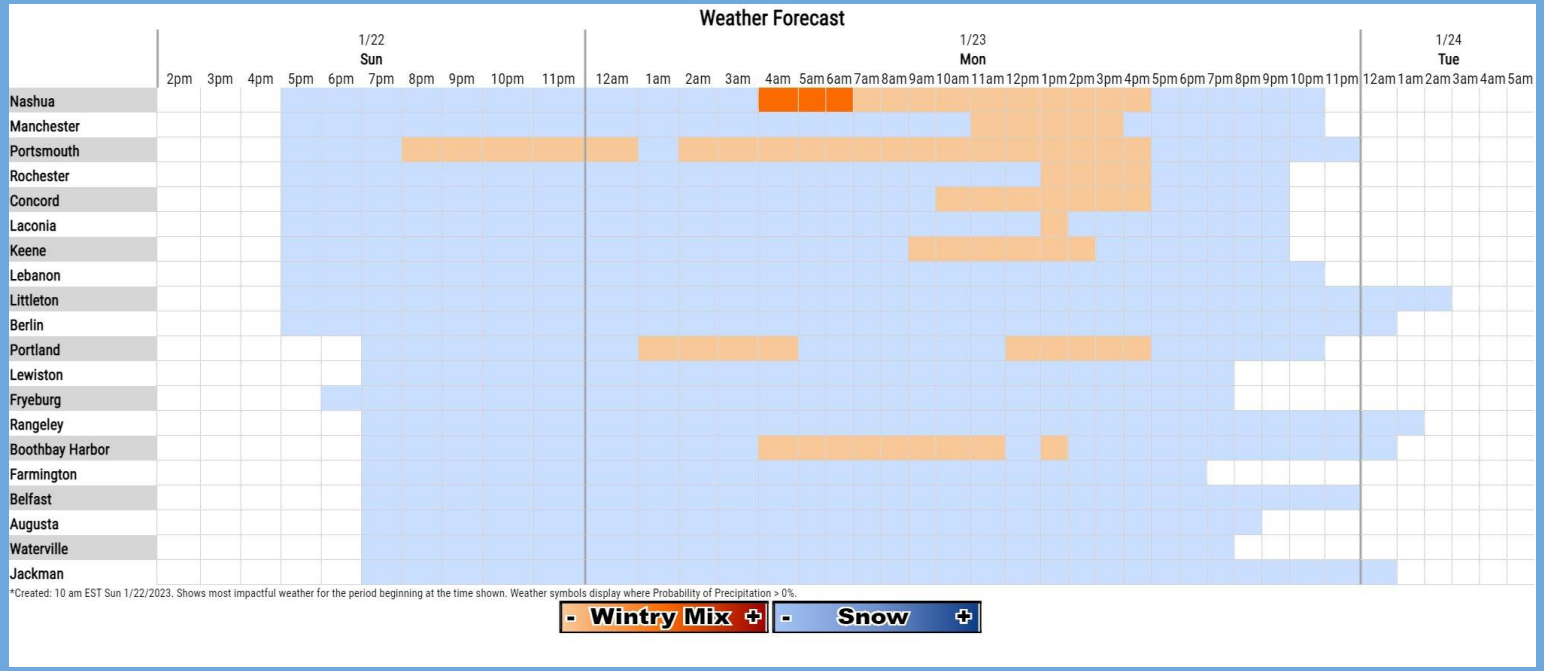
NWS Forecasts: Gray, ME





*Forecast Graphic from Day 1

NWS Forecasts: Gray, ME



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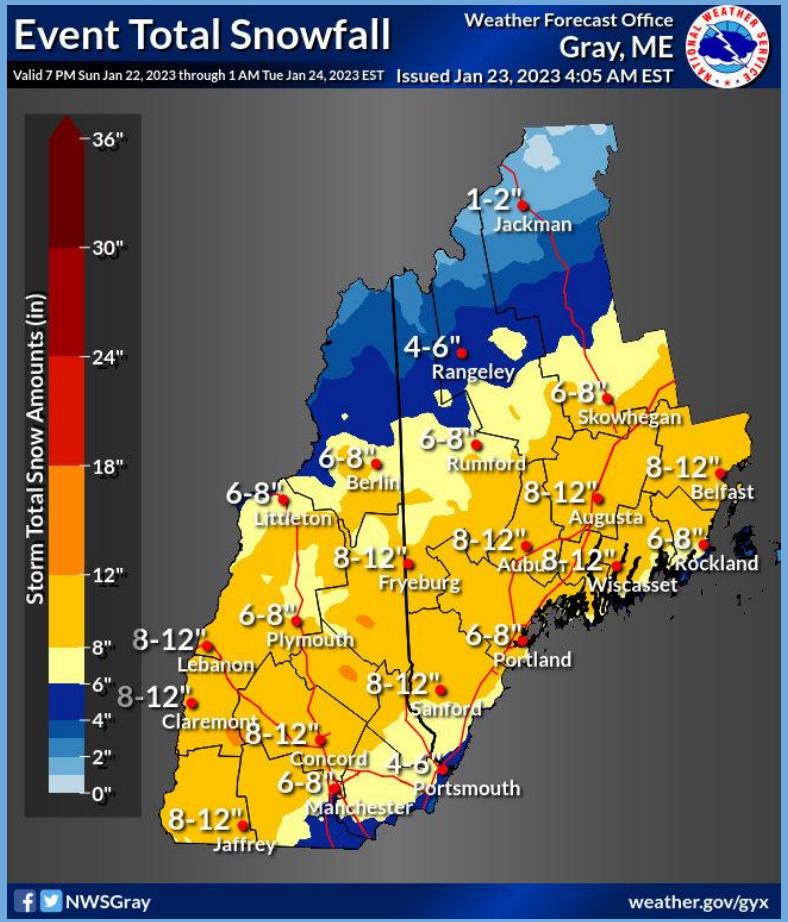
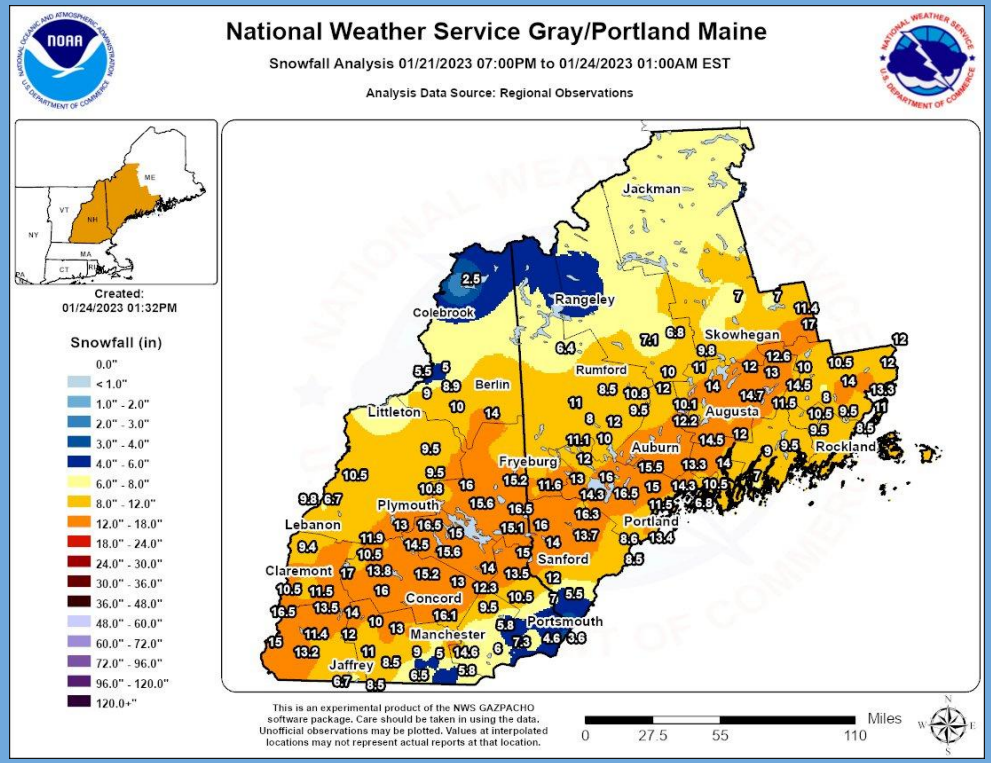
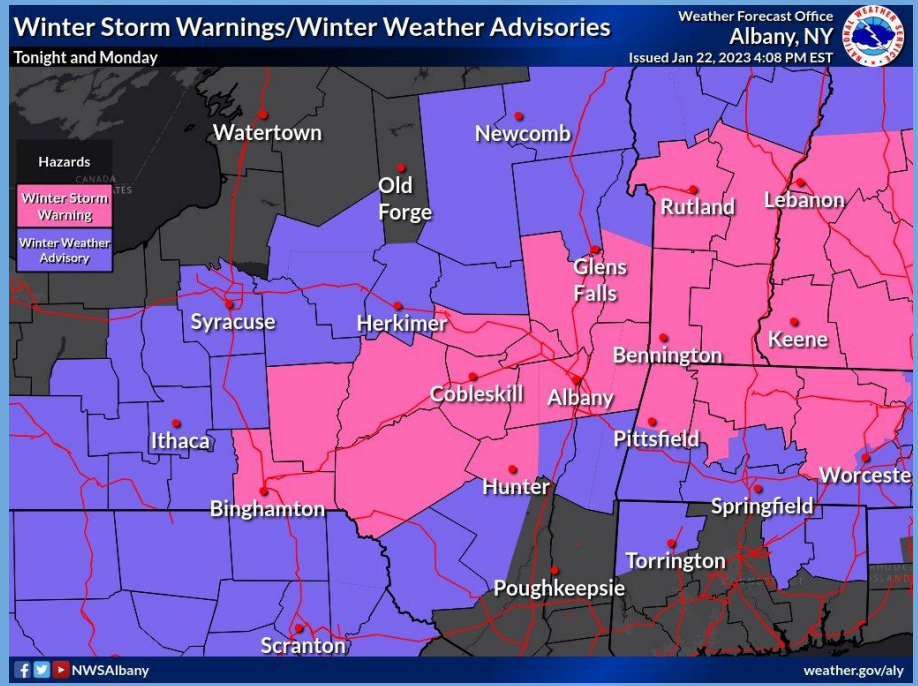


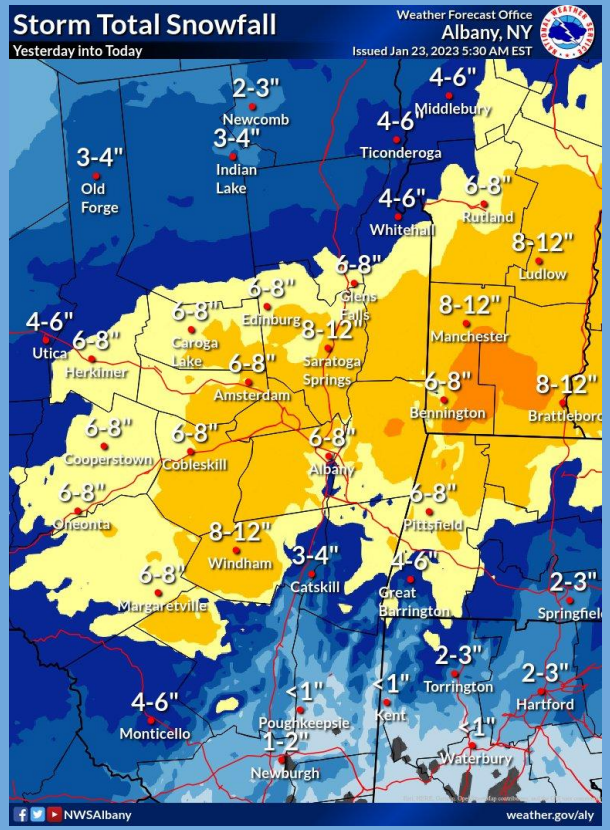


NWS Forecasts: Albany, NY

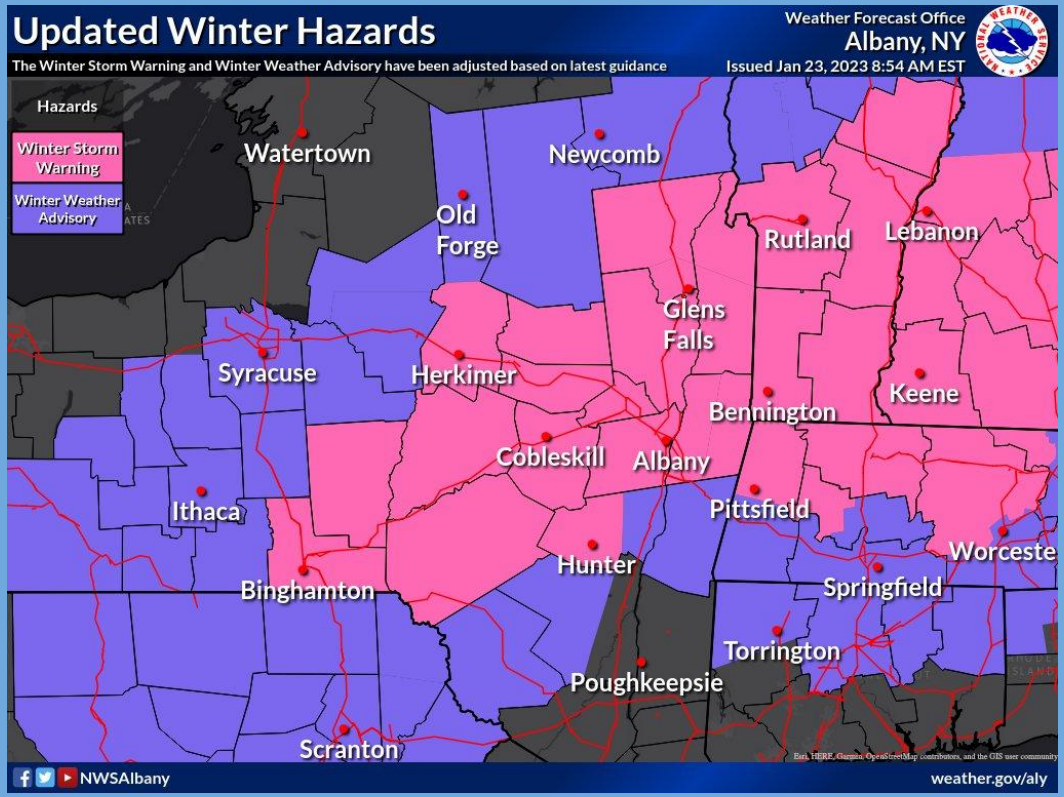
*Forecast Graphic from Day 2



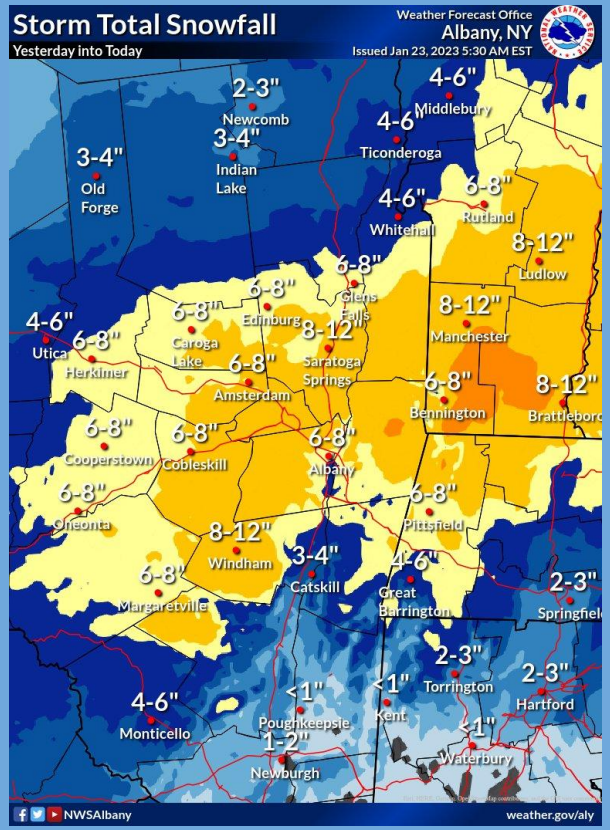
Updated NWS Forecasts: Albany, NY

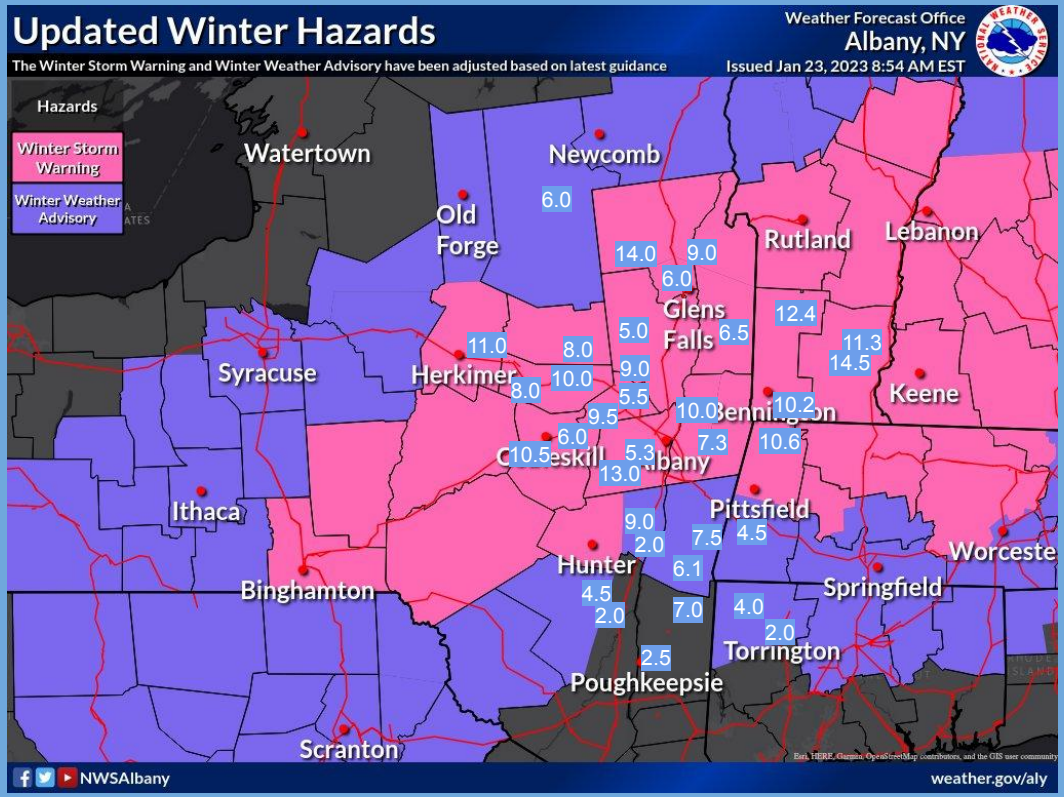


*Forecast Graphic from Day 1



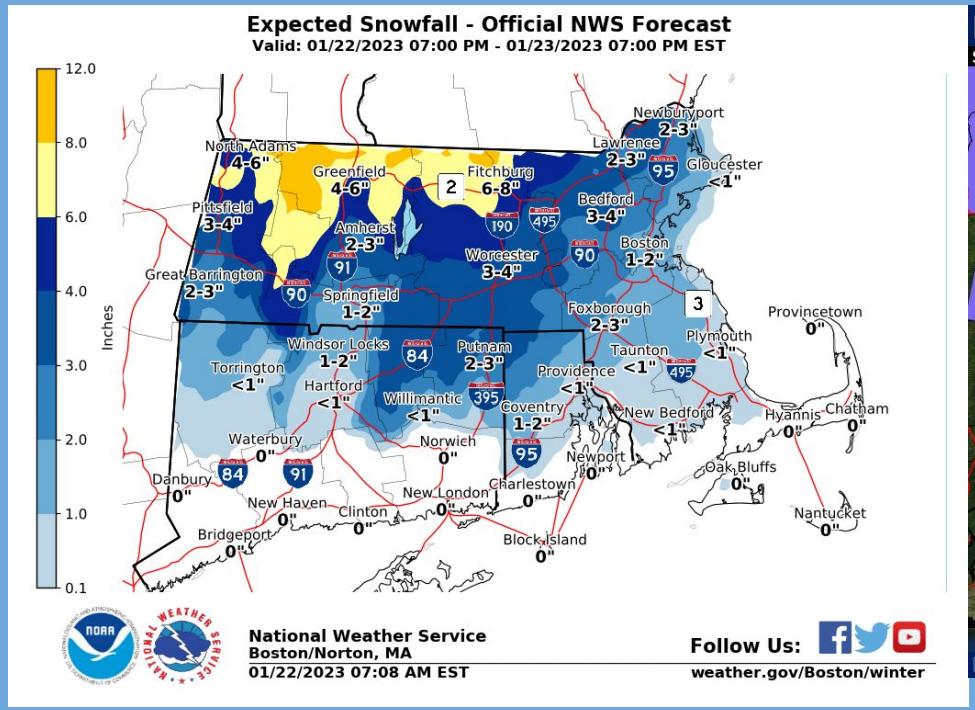
NWS Forecasts: Albany, NY

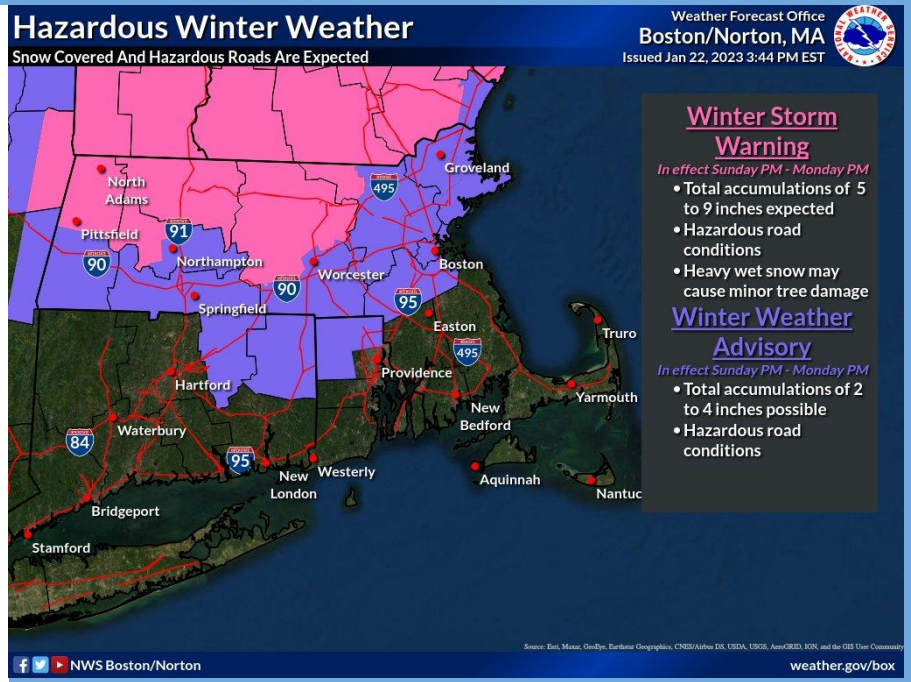




*snow amounts in inches as of 8 PM local on the 23rd

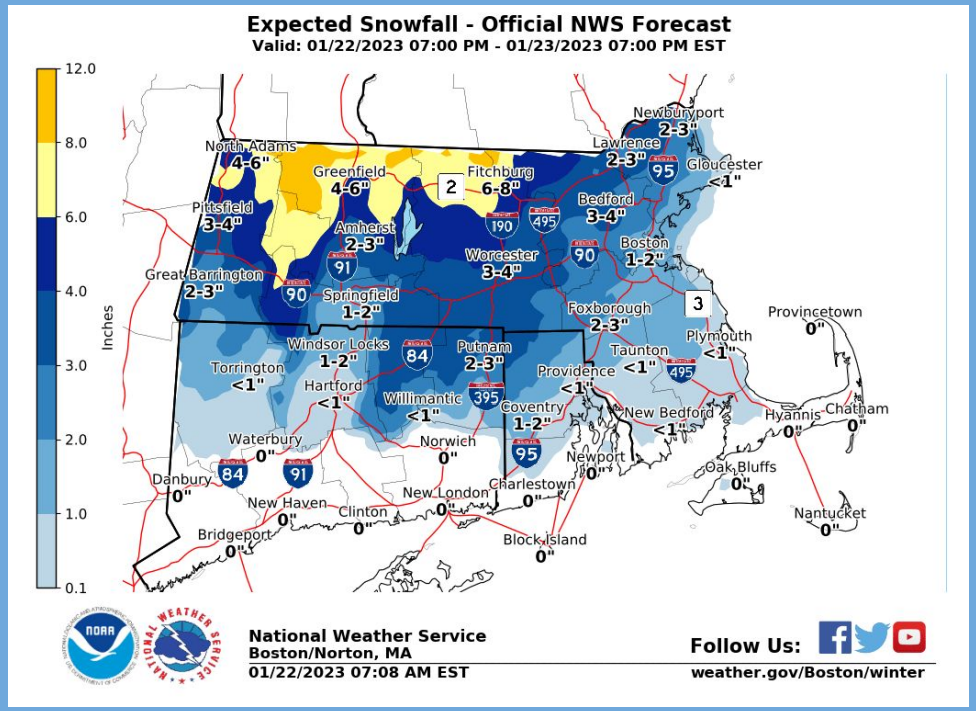
NWS Forecasts: Boston, MA

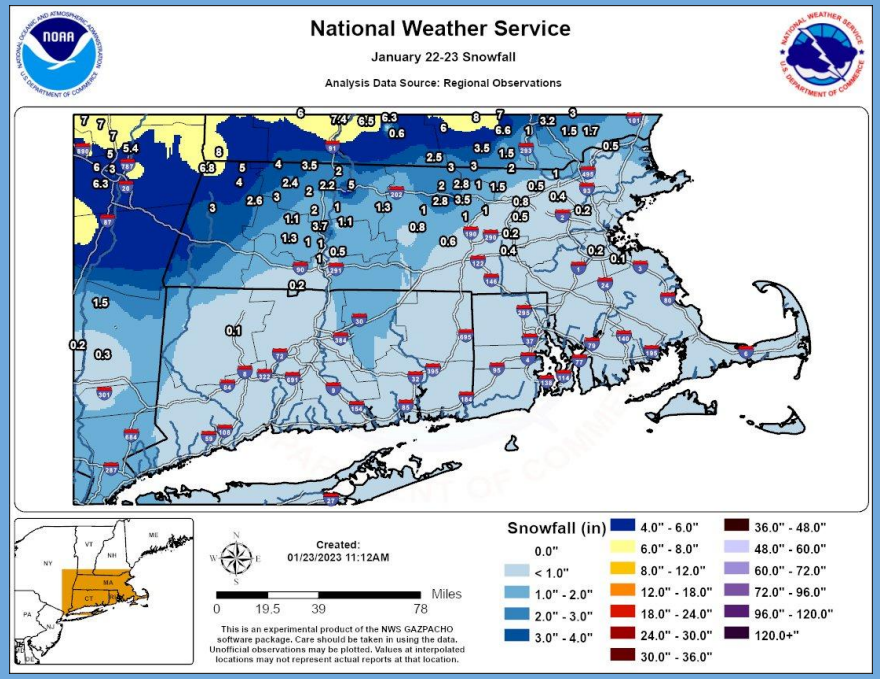




*Forecast Graphic from Day 2

NWS Forecasts: Boston, MA





January 22-24, 2023 Snowstorm

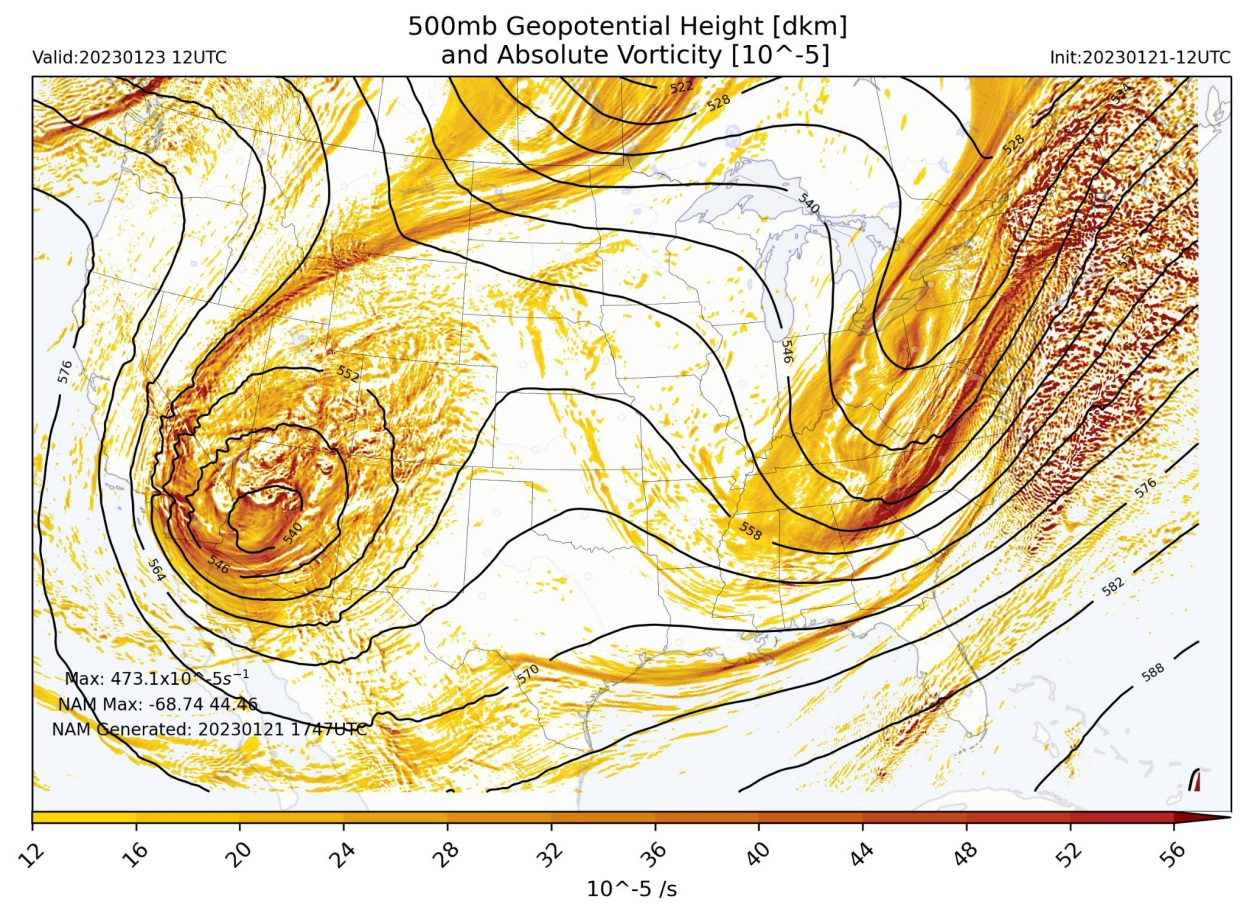
- Overall swath shape was well resolved
- Heaviest snow in Southern New Hampshire and Maine
- Struggled with snow to rain change over along the coast
    - Impacted snow totals

Forecasting Challenges:

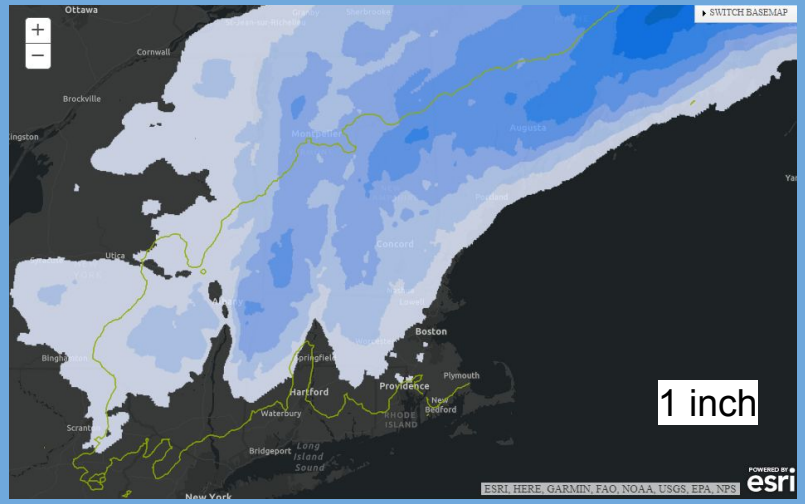
- Exact Snow Totals
- Timing
- Terrain influence
- Precipitation Type

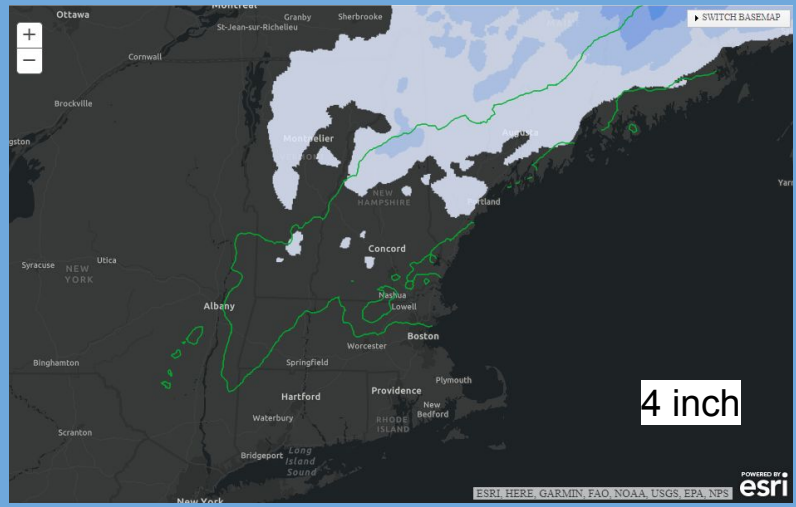
DAY 3

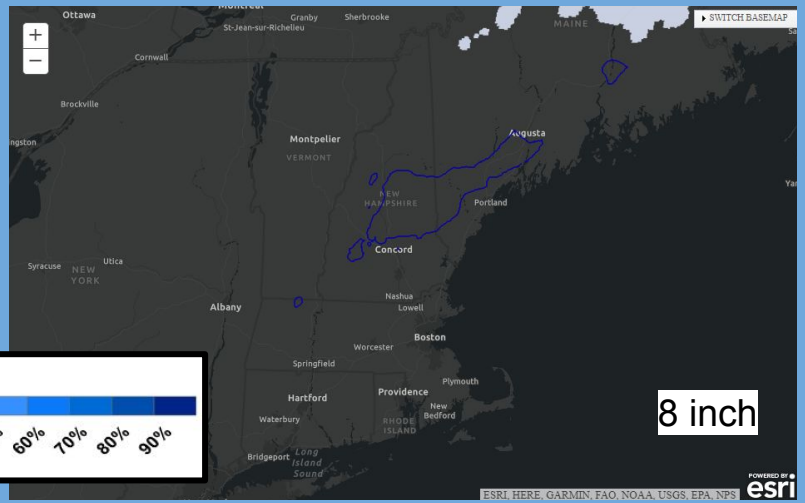
Quick short term review

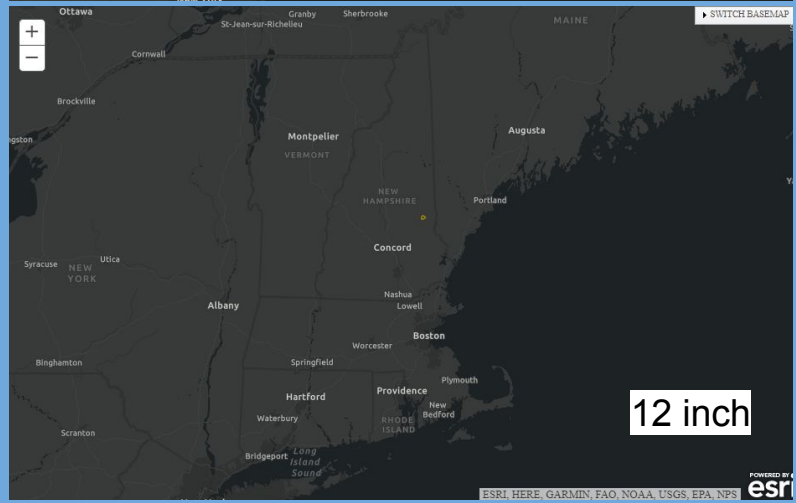


Probabilistic graphics

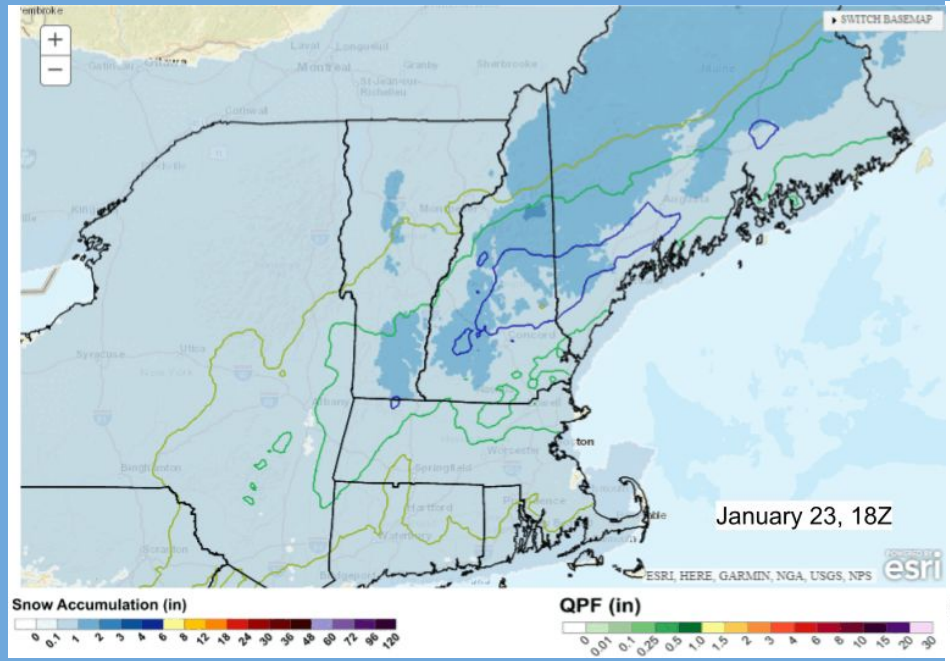




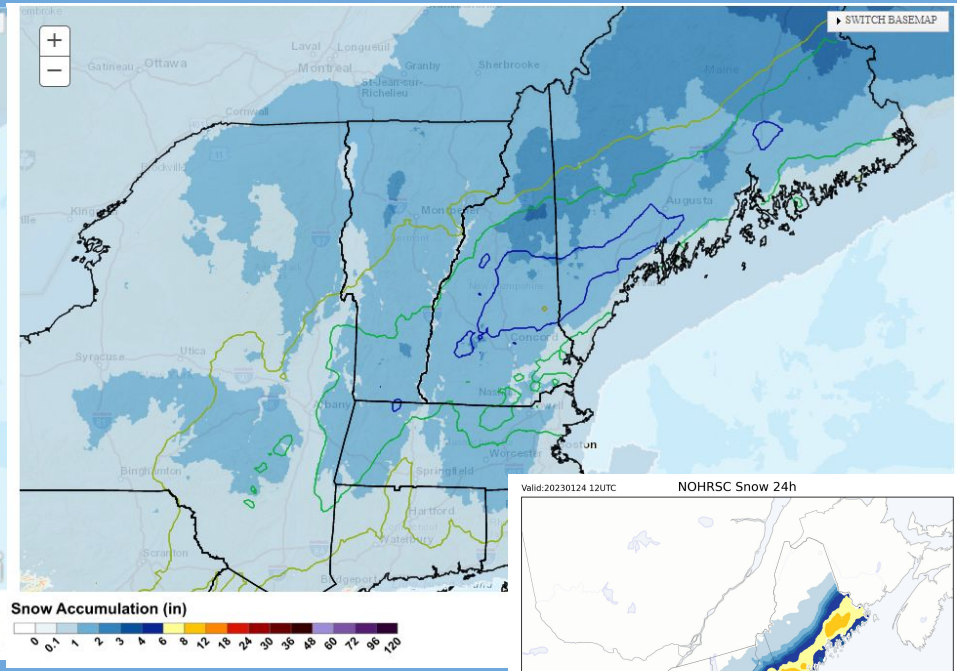




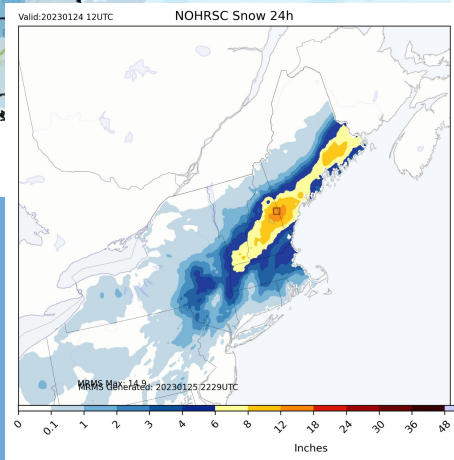
Deterministic graphics



NBM 4.1 6-hour Snowfall



NBM 4.1 24-hour Snowfall



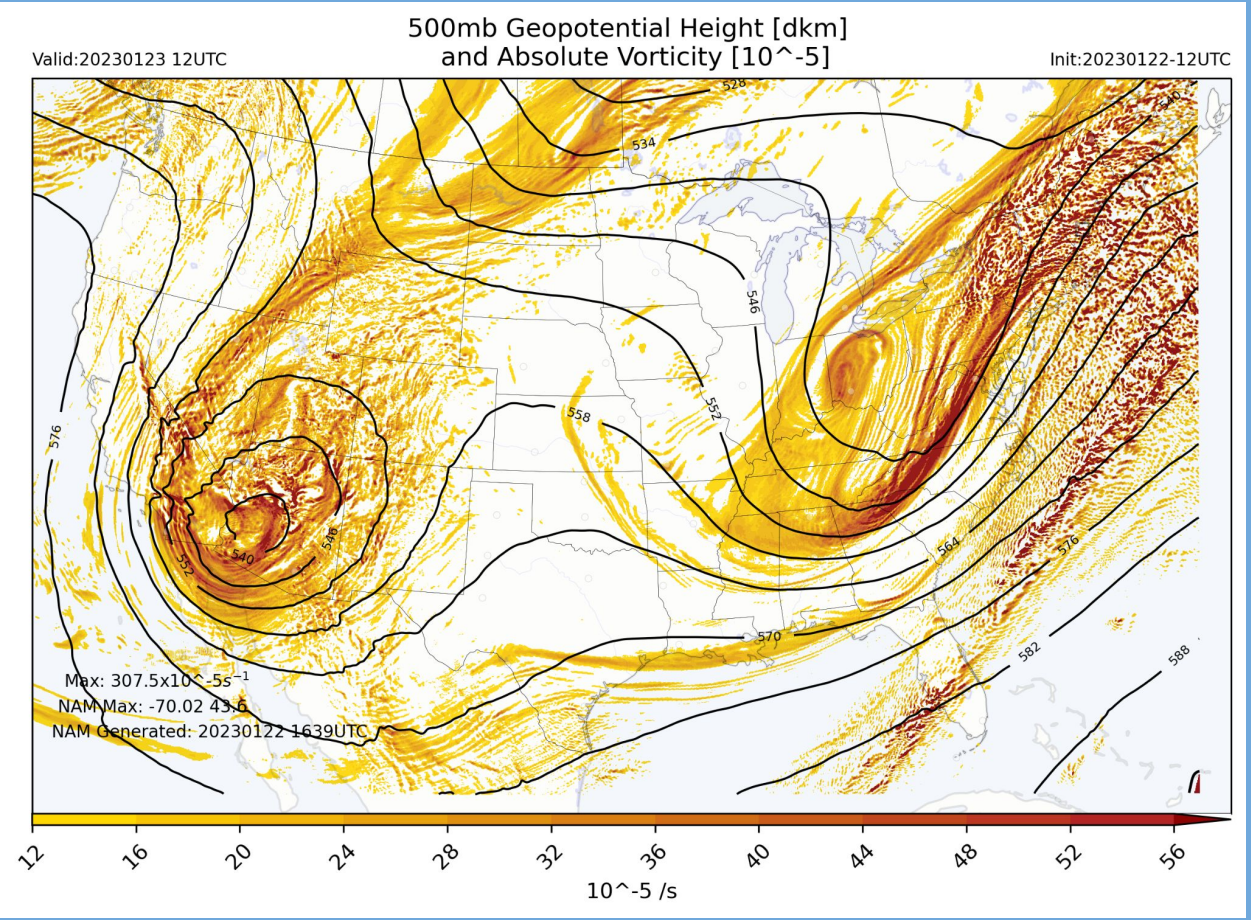
Day 3 Discussion Questions

- Thoughts on overall spatial extent?
- Impressions on higher end probabilities?
- Is there a threshold on Day 3 that influences confidence in a positive or negative way?
- What messaging would be utilized with the current Day 3 probabilities?
- Would you change your staffing model by what you saw in Day 3?

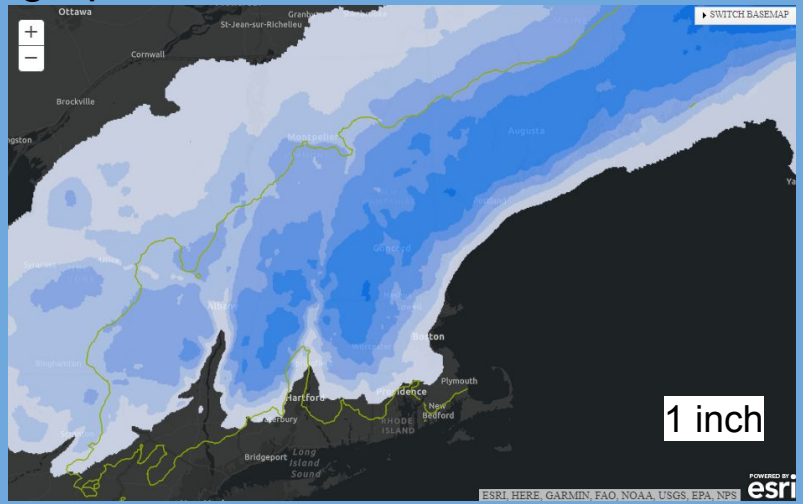
Model Evaluation

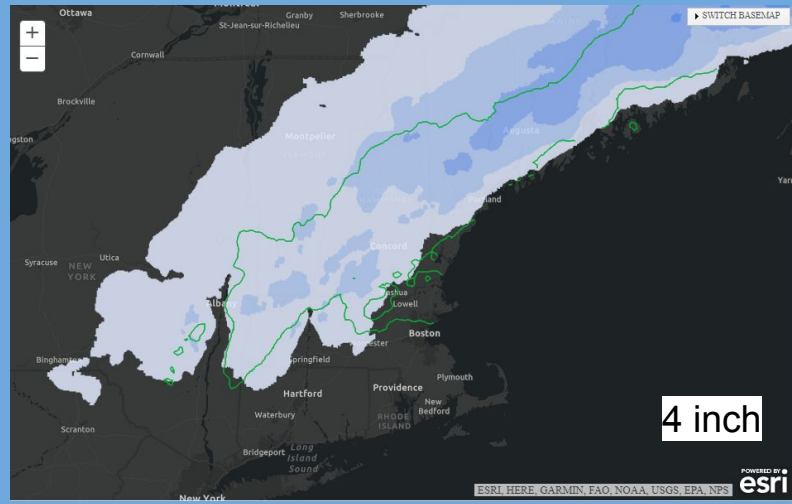
DAY 2

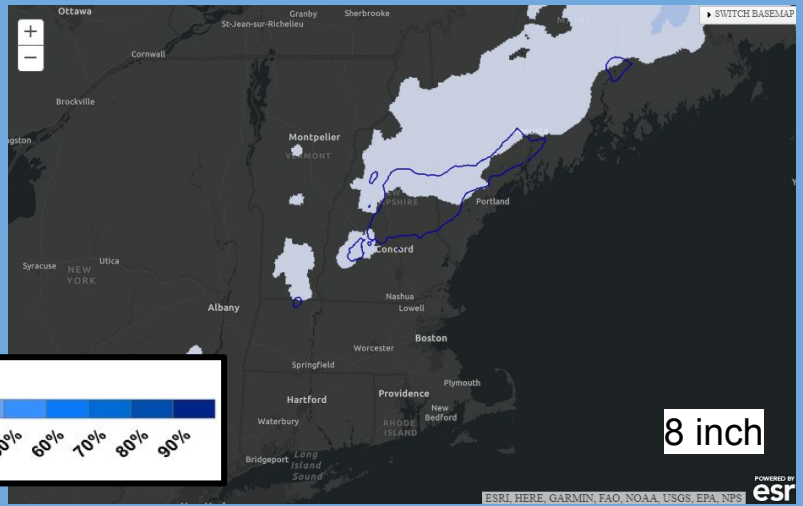
Quick short term review

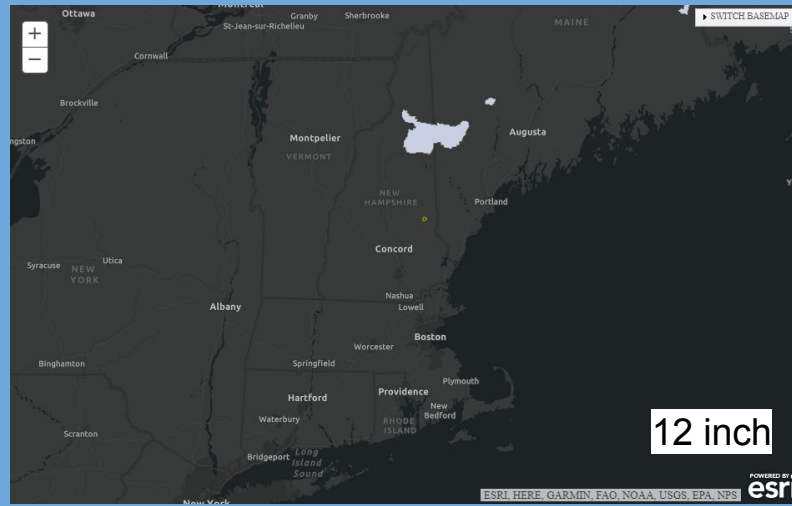


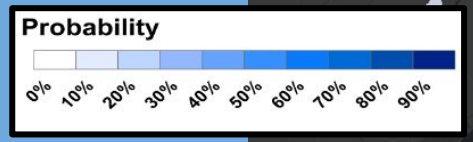
Probabilistic graphics



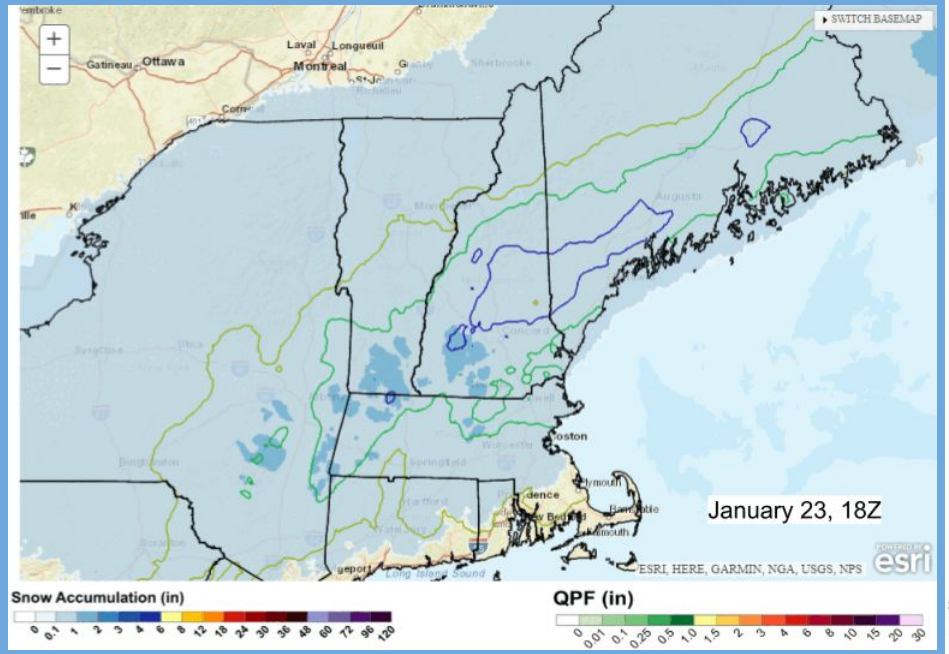




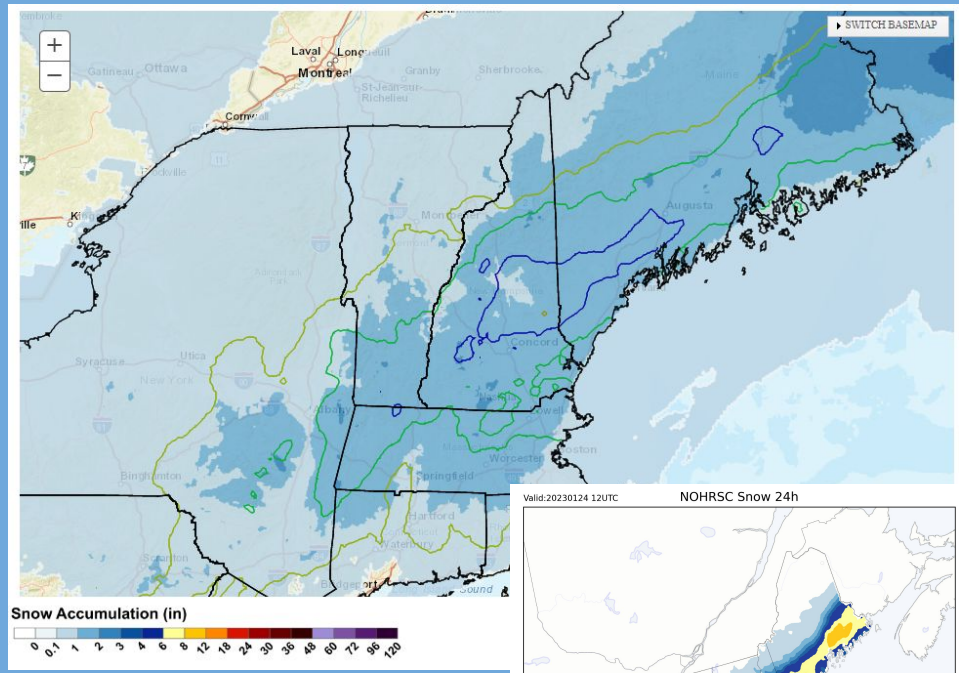




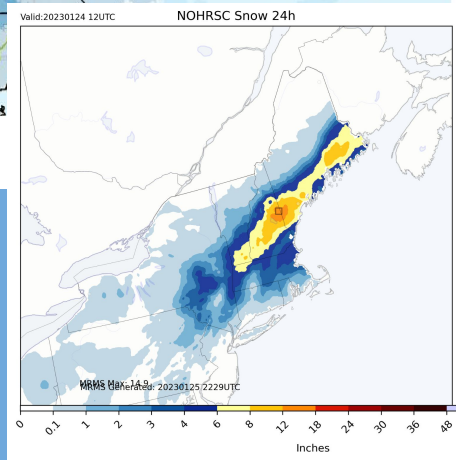
Deterministic graphics



NBM 4.1 6-hour Snowfall



NBM 4.1 24-hour Snowfall



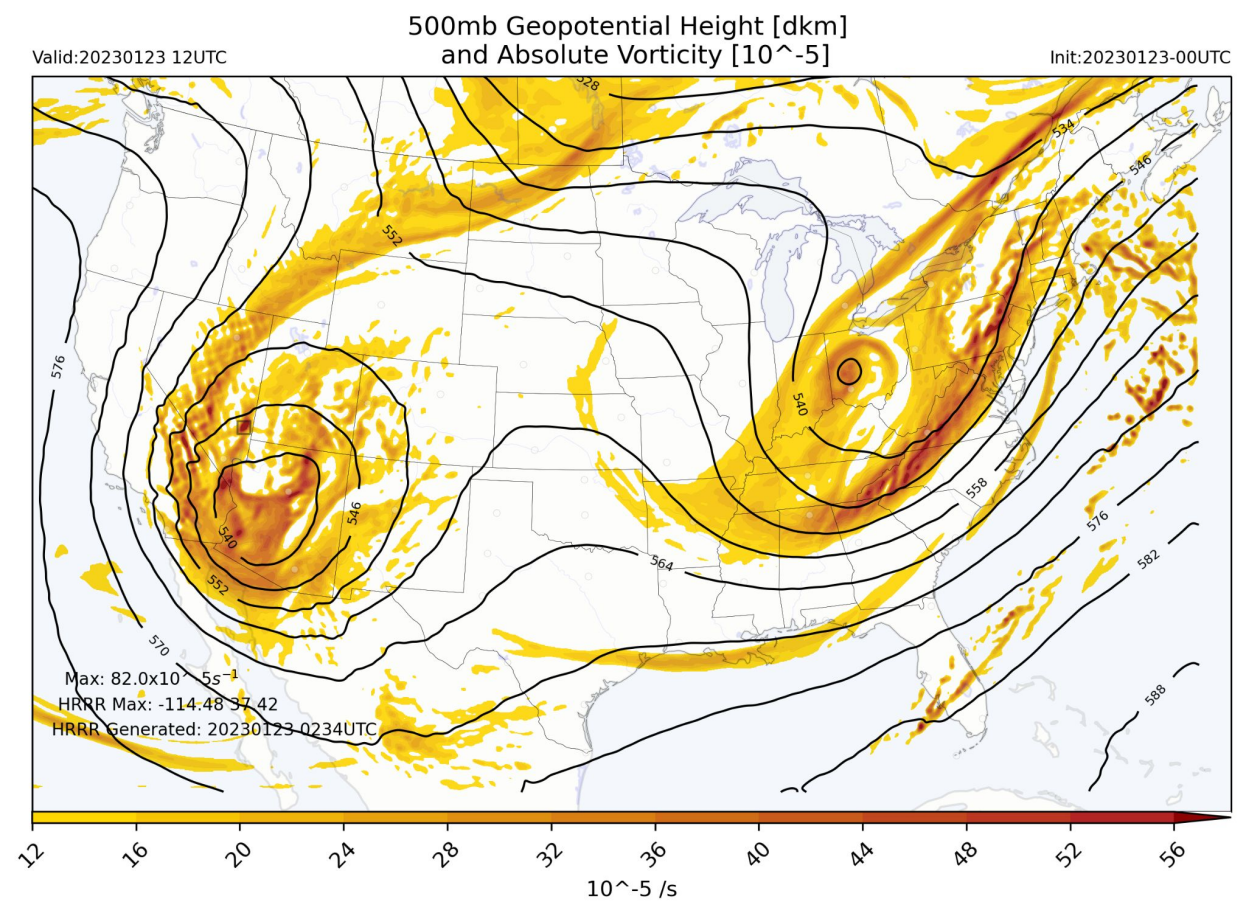
Day 2 Discussion Questions

- Spatial extent changes?
- Higher end probabilities increasing confidence?
- Were there major differences between this and Day 3 that would influence your forecast?
- How would the Day 2 probabilities change your office's messaging strategy?

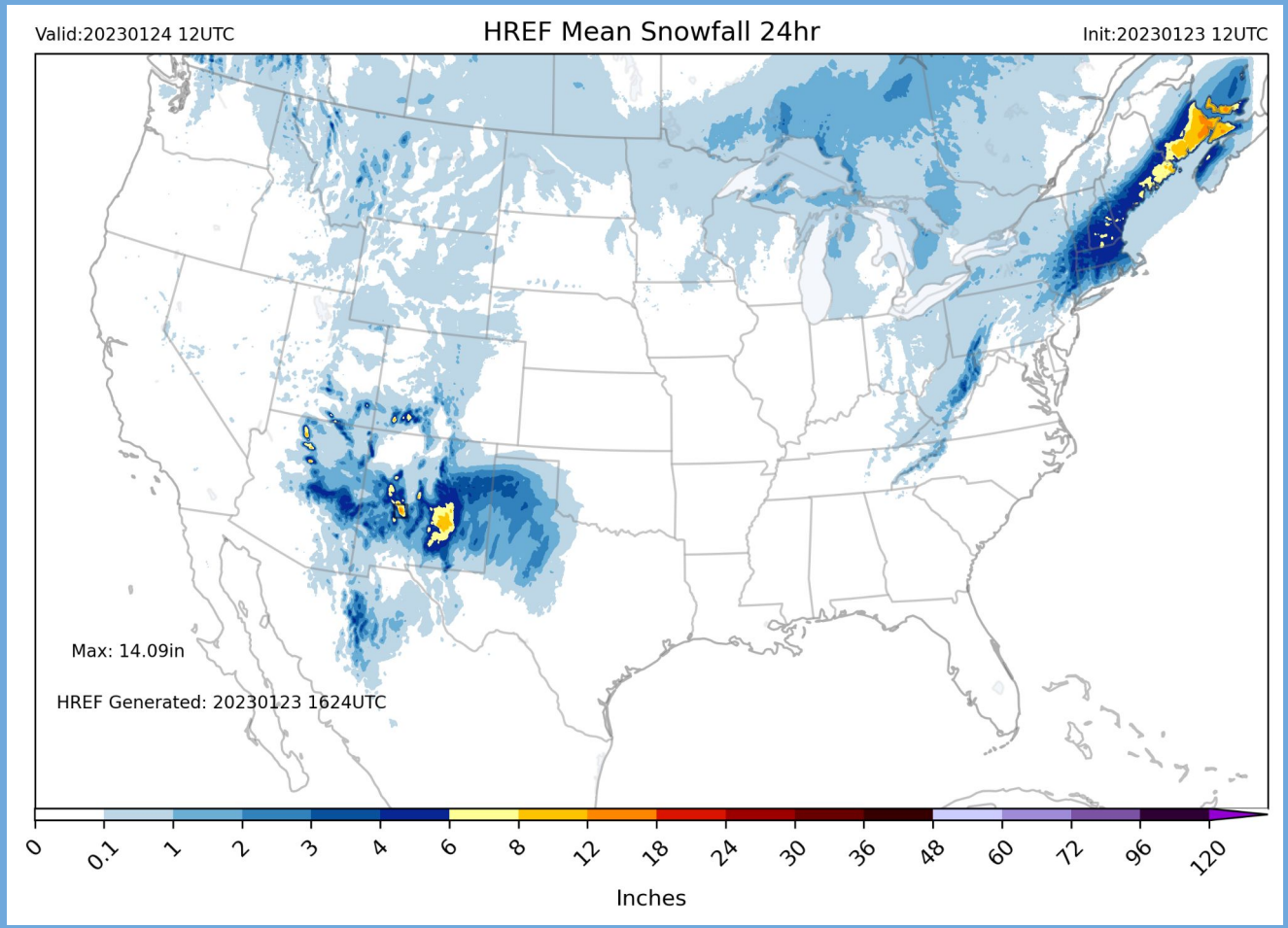
January 23-24, 2023
12z to 12z

DAY 1

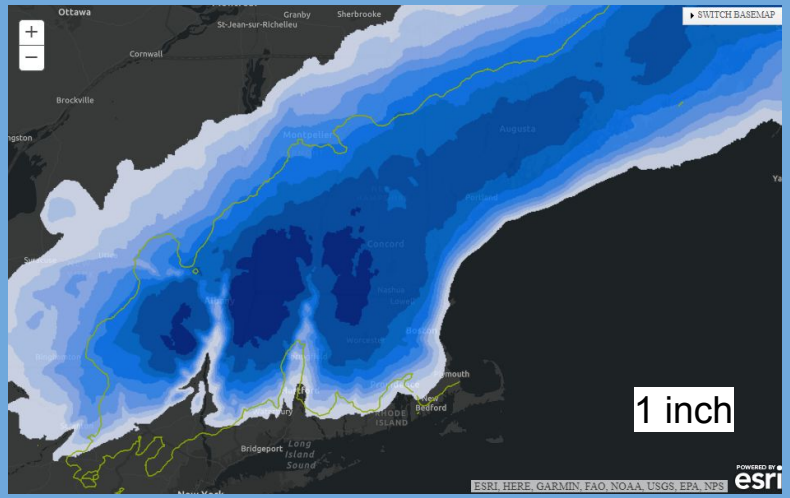
Quick short term review

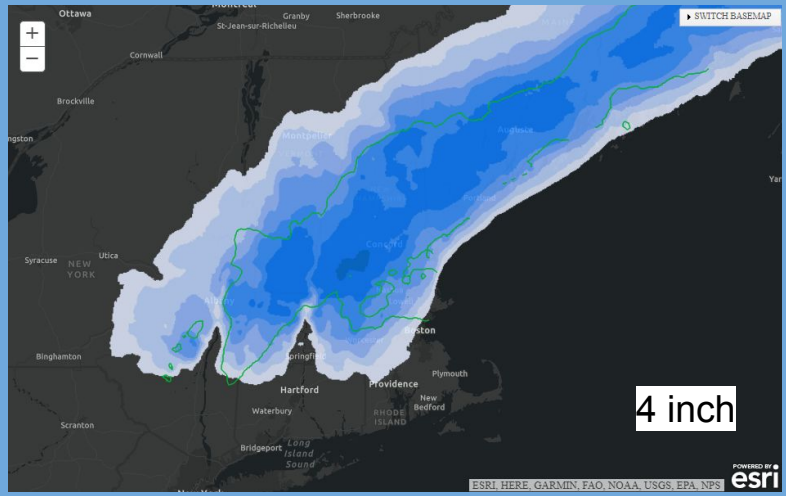


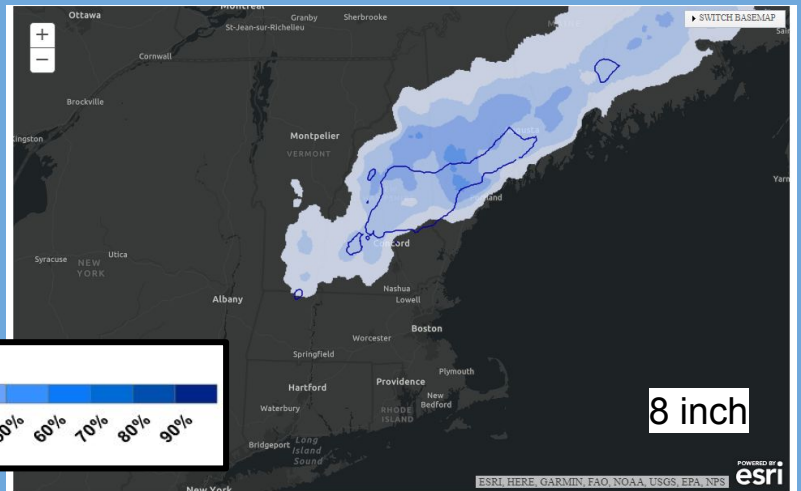
HREF 24-Hour Mean Snowfall

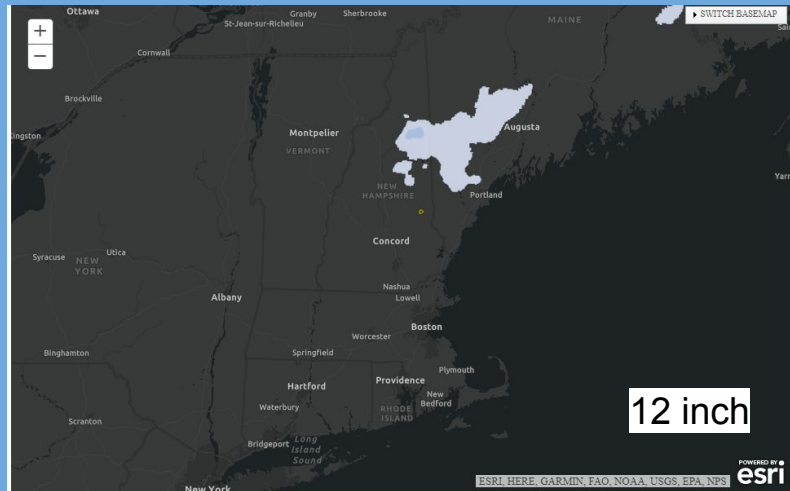


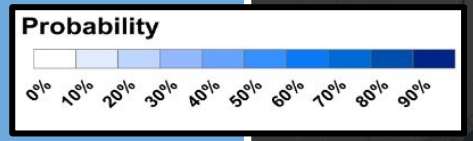
Probabilistic graphics



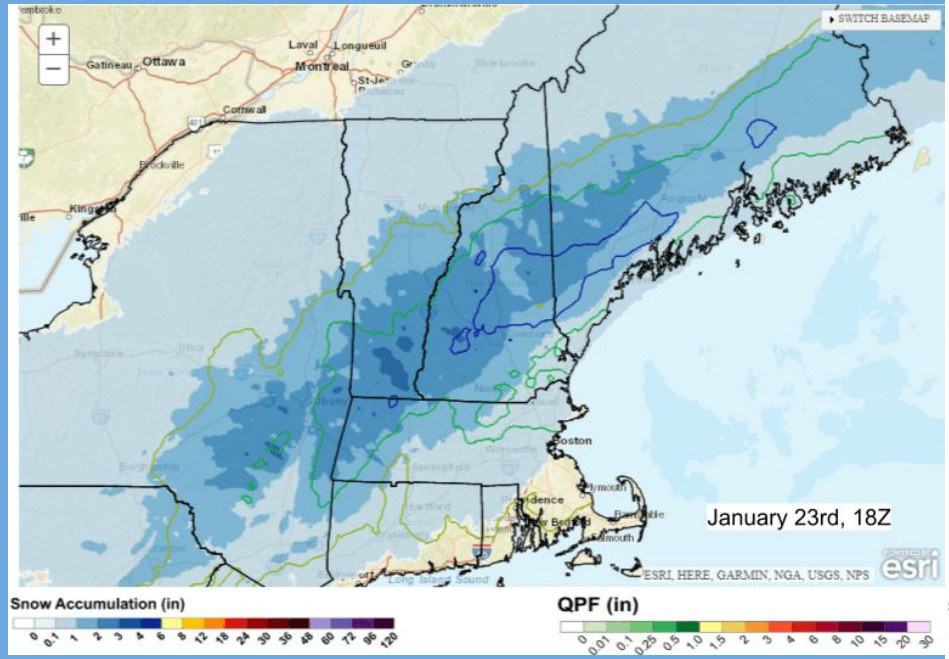




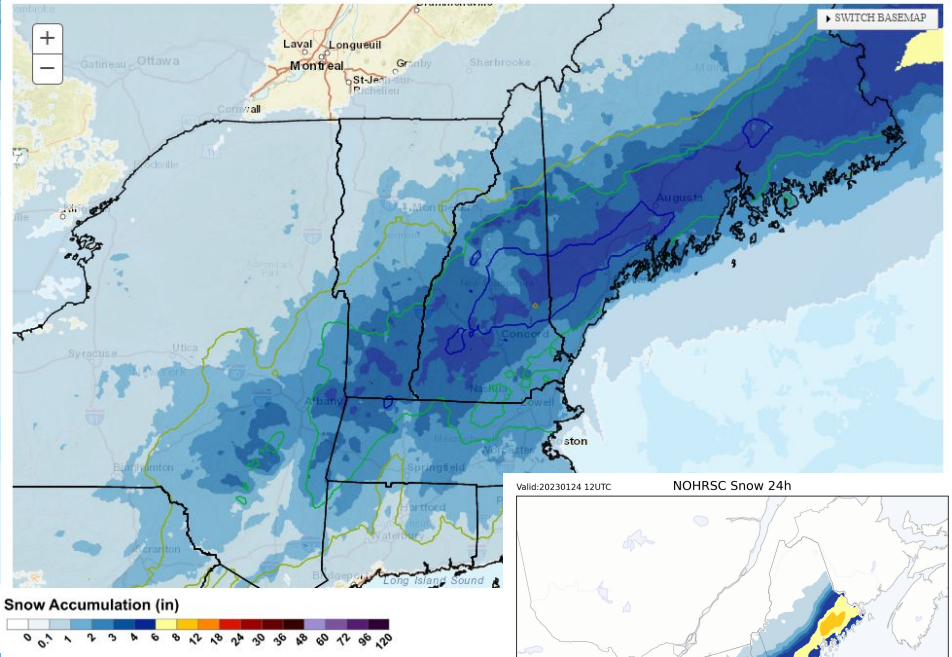




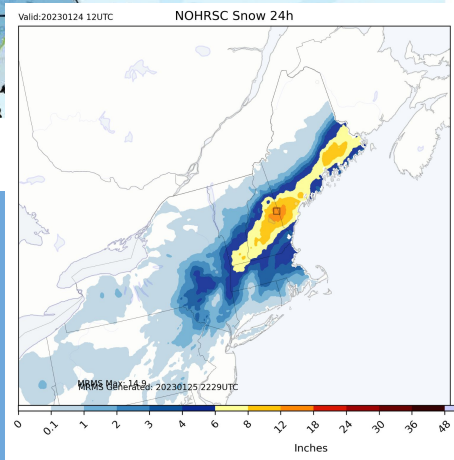
Deterministic graphics



NBM 4.1 6-hour Snowfall



NBM 4.1 24-hour Snowfall



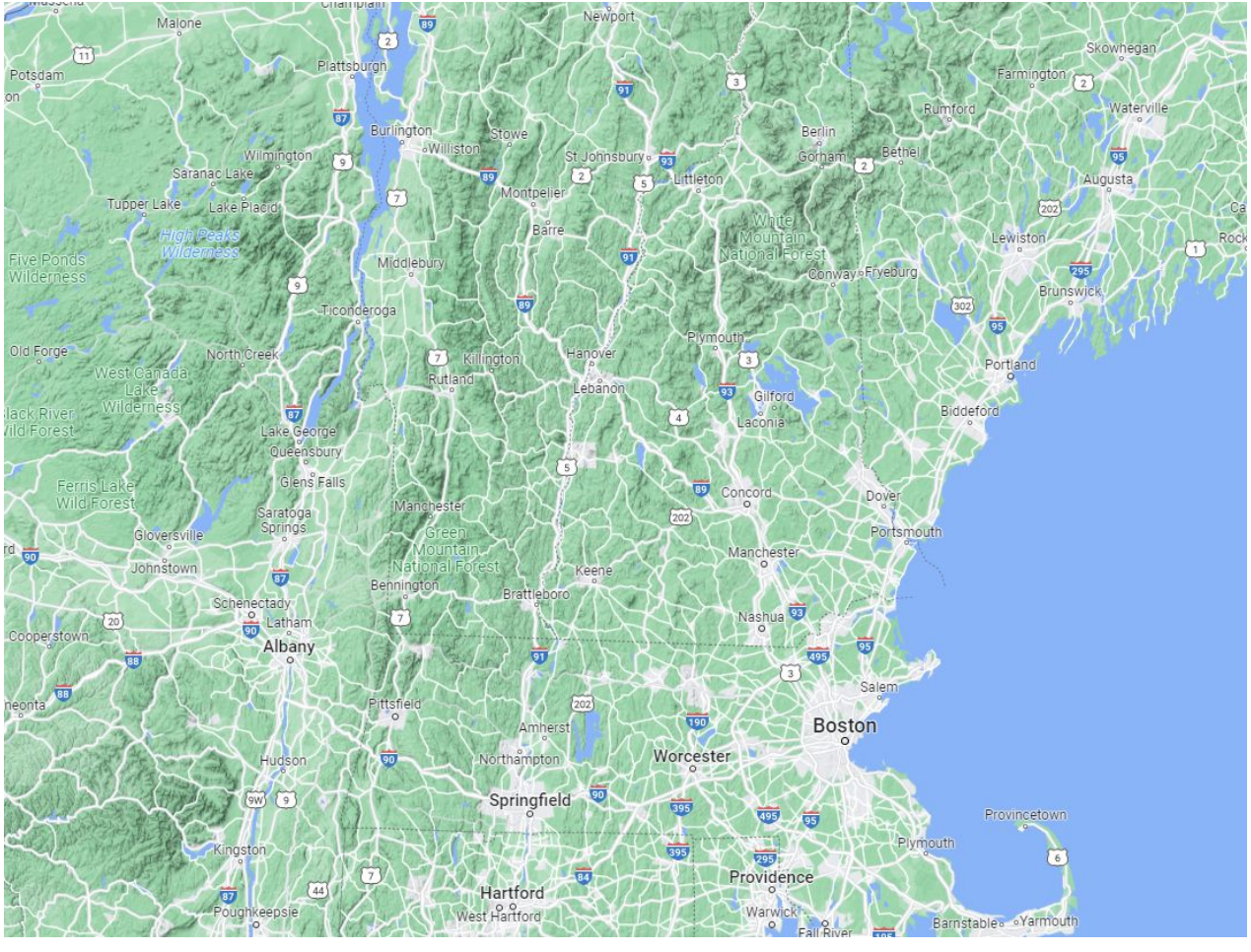
Day 1 Discussion Questions

- Final thoughts on spatial extent and storm total snowfall amounts? Probability amounts?
- Were there major differences between this and Day 2 that would influence your forecast? What about compared to Day 3?
- What overall impacts would/did the storm have on the communities?
- Did the NBM 4.1 give you enough information to adequately communicate the risk involved?
- Was there enough lead time from the model to help the forecast?

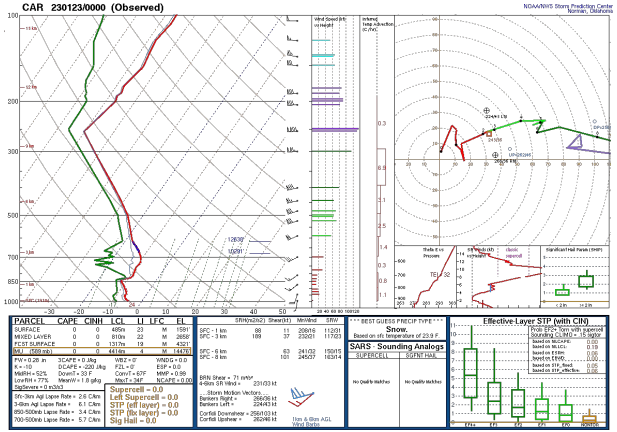
January 23-24, 2023
12z to 12z

Appendix

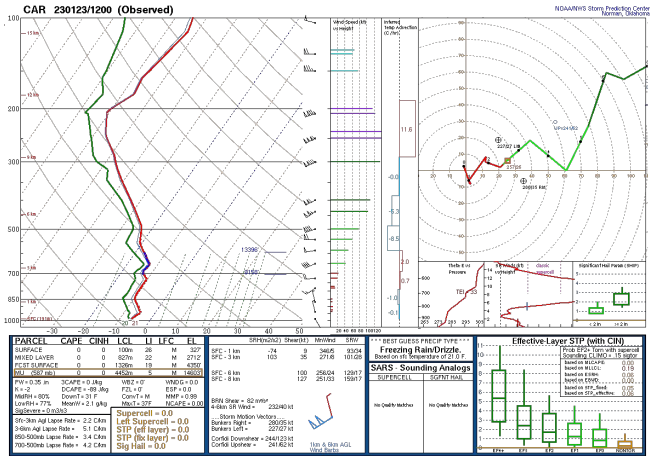
Topography


Malone
Potsdam
Plattsburgh
Newport
Skowhegan
Farmington
Rumford
Waterville
Burlington
Williston
Stowe
Berlin
Gorham
Bethel
Wilmington
Saranac Lake
St Johnsbury
Littleton
Augusta
Tupper Lake
Lake Placid
Montpelier
Barre
High Peaks Wilderness
White Mountain National Forest
Lewiston
Five Ponds Wilderness
Middlebury
Conway
Fryeburg
Brunswick
Ticonderoga
Old Forge
North Creek
Killington
Rutland
Hanover
Lebanon
Plymouth
Portland
West Canada Lake Wilderness
Gilford
Laconia
Biddeford
Lake George
Queensbury
Glens Falls
Concord
Dover
Ferris Lake Wild Forest
Saratoga Springs
Manchester
Green Mountain National Forest
Portsmouth
Gloversville
Johnstown
Keene
Manchester
Bennington
Brattleboro
Schenectady
Latham
Nashua
Albany
Cooperstown
Salem
Pittsfield
Amherst
Boston
Hudson
Northampton
Worcester
Springfield
Provincetown
Kingston
Plymouth
Providence
Hartford
West Hartford
Warwick
Poughkeepsie
Barnstable
Yarmouth
Fall River

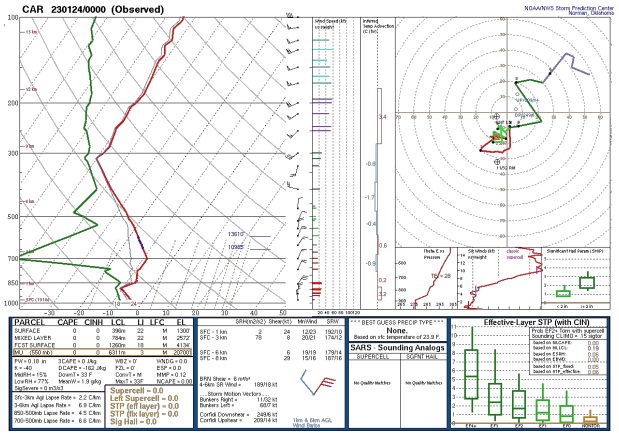
Soundings: CAR



00z Sun Jan 23, 2023



12z Sun Jan 23, 2023



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