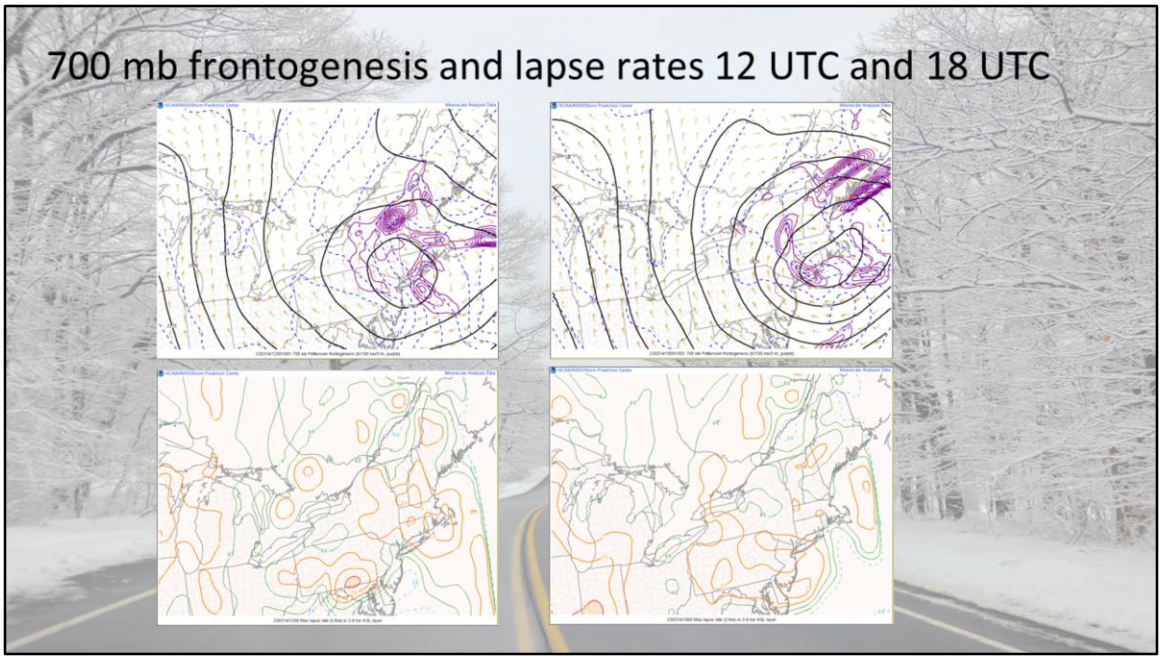
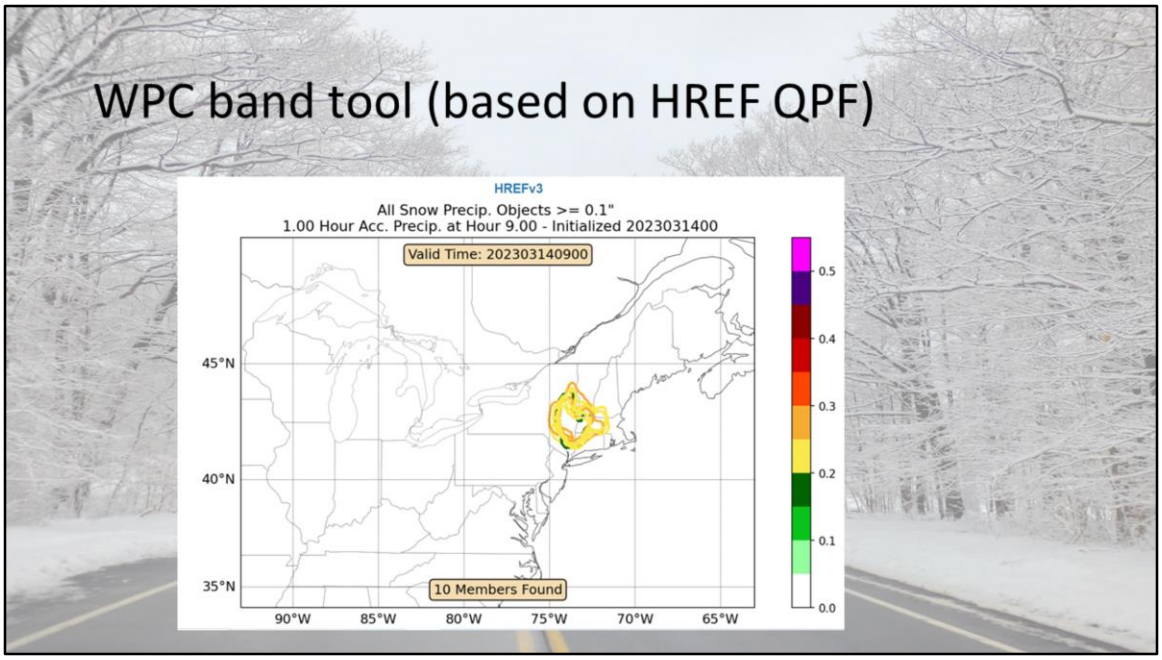
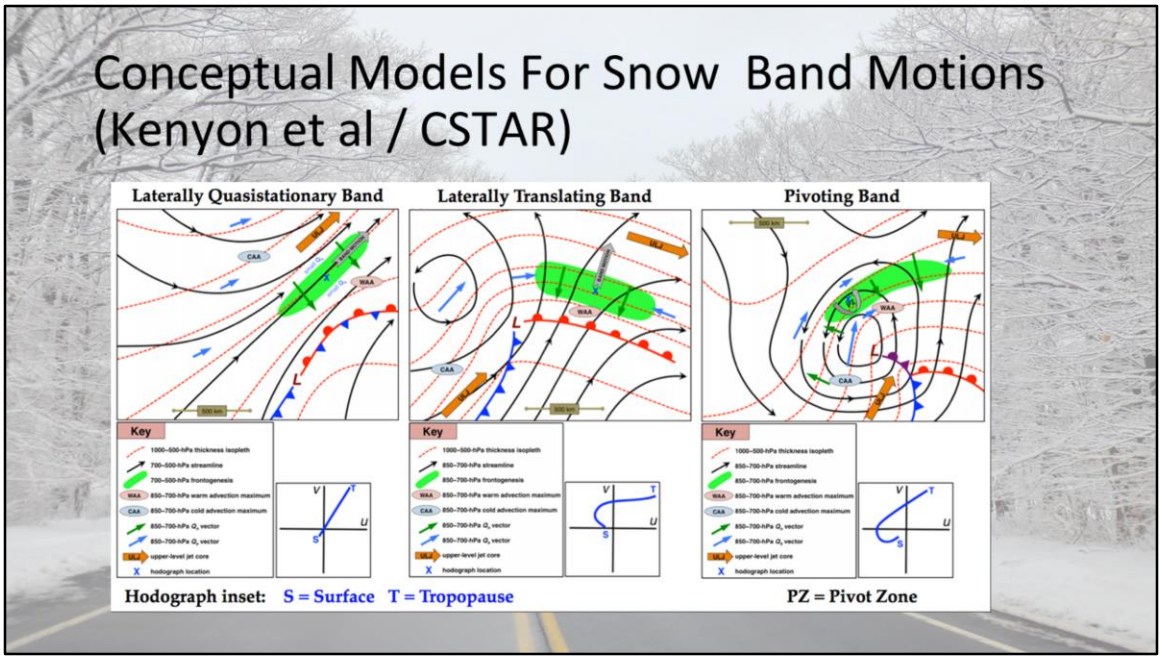


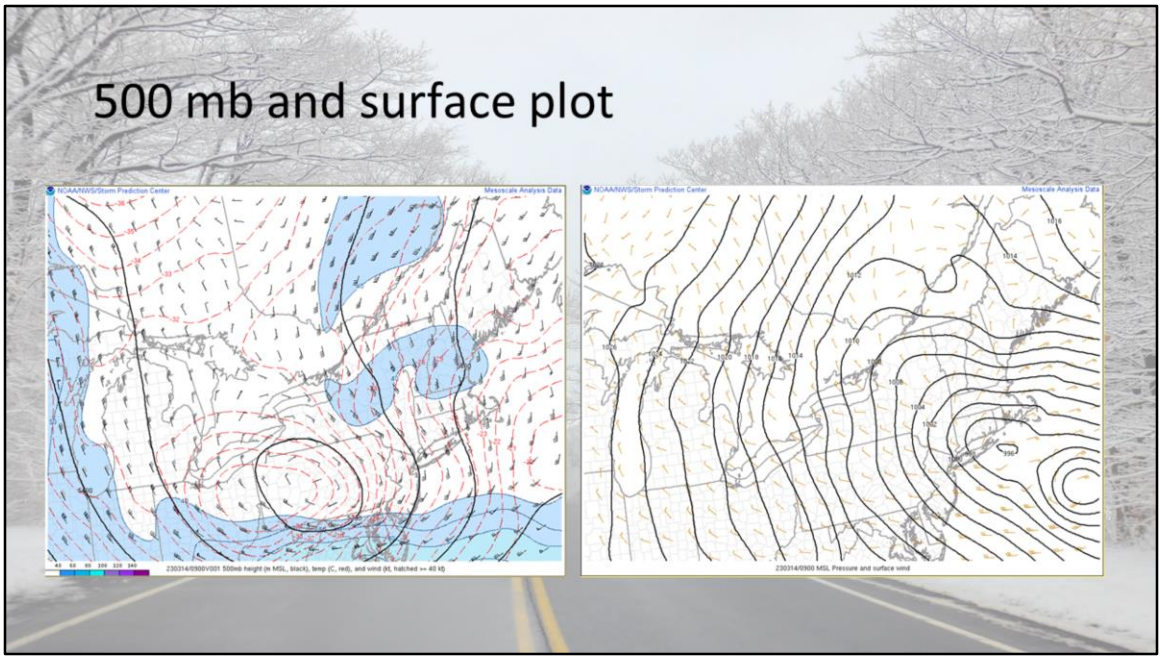
Banding potential with the 14 March, 2023 was obviously high. The main questions would be exactly where the most intense banding would develop, how precipitation intensity would effect precipitation type, and how the bands would move. The 700 mb heights, temperatures and frontogenesis shown on this slide indicated a favorable configuration for banding across eastern New York. 2-6 km lapse rates generally greater than or equal to 6.5 degrees C per km indicated reduced stability near and above the frontal zone, which would favor that upward associated with the frontogenesis would also be associated with intensified frontal circulations, leading to intense banding.



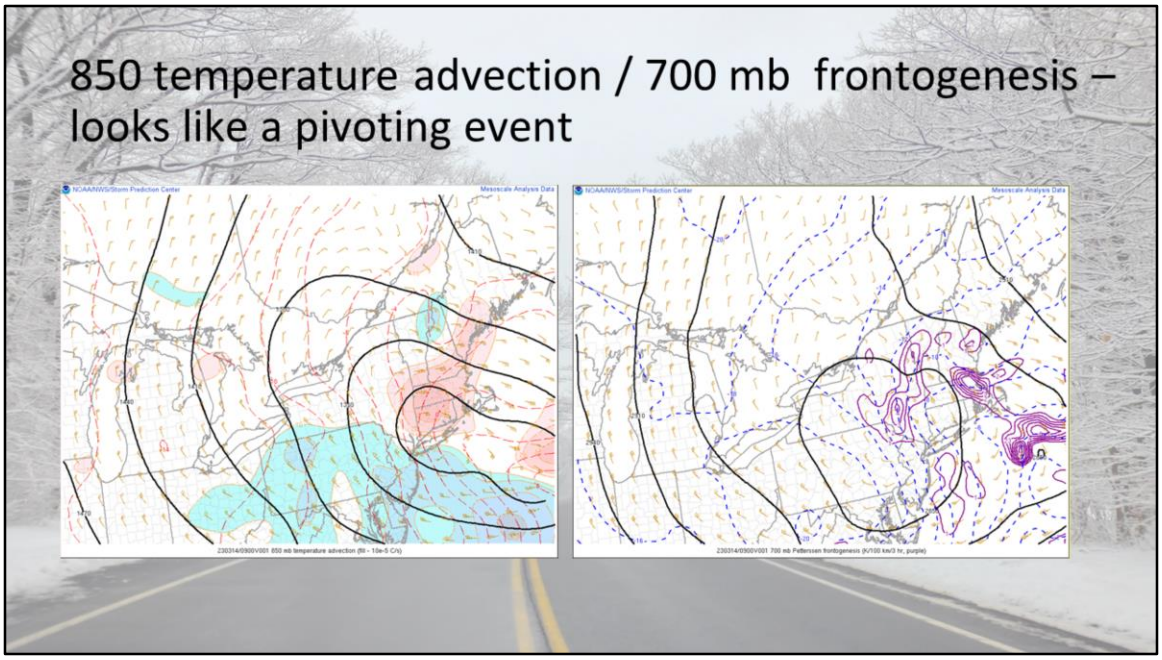
This slide shows locations where the high resolution models in the high resolution ensemble forecast (HREF) were predicting precipitation rates greater than 0.1 inches per hour, in the form of snow. This graphic can be used as a proxy for heavy snow band occurrence. For forecasts valid at 14z, the highest probabilities for intense banding appeared to be over eastern New York and western New England.



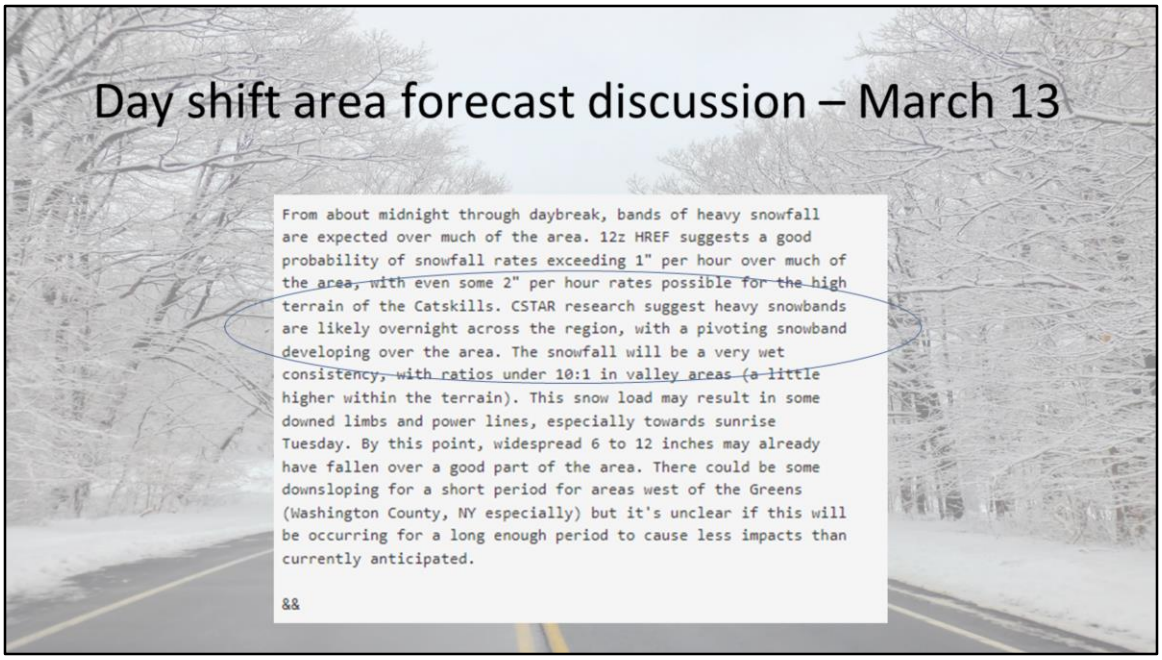
Given that banding would be almost a certainty with this case, forecasters had to determine the most likely band motions that would occur. This slide shows schematics from CSTAR-funded research on snow band motions that indicate the relationship between the flow pattern and band motion. All three types (laterally quasi stationary, laterally translating and pivoting) can produce heavy snow.



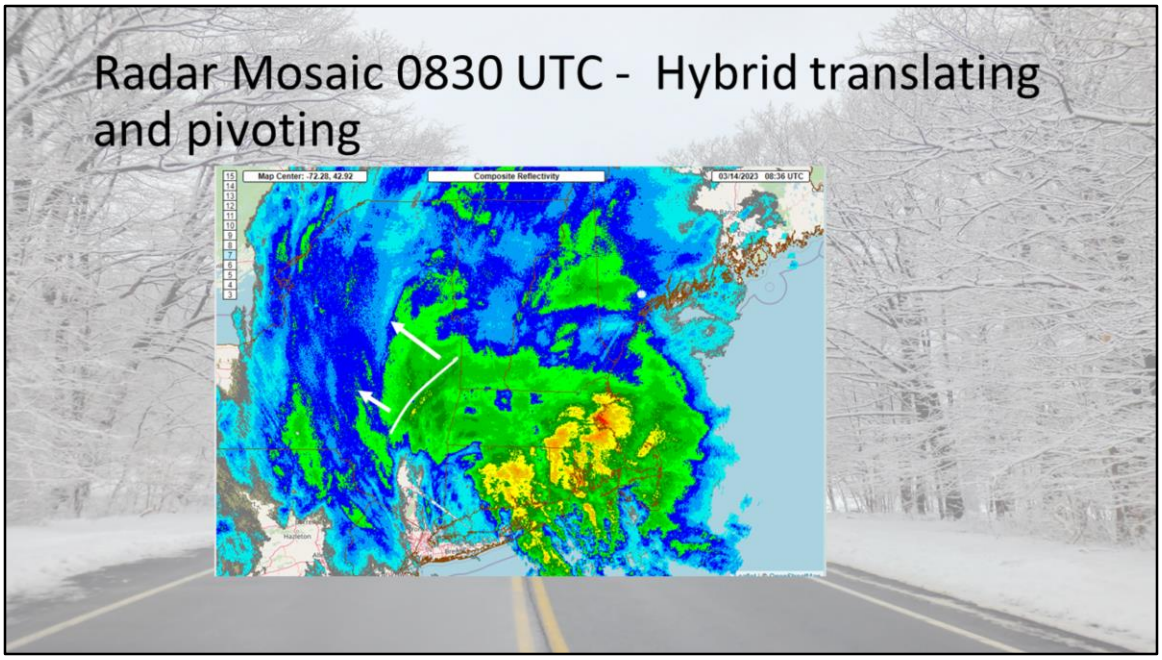
In this case, the pattern appeared most similar to the pivoting snow band conceptual model, with a closed mid-level low forecast to track just south of the area of interest, while surface low pressure developed to the east-southeast.



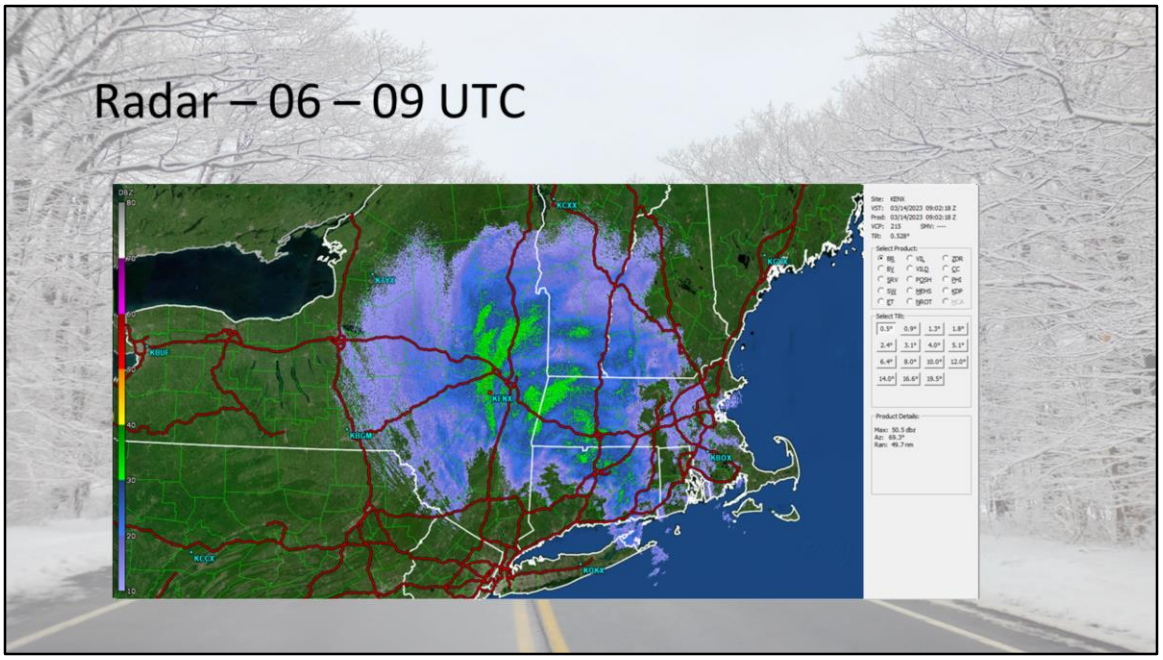
Patterns of temperature advection and lower-to-mid-level frontogenesis also appeared to most closely match the pivoting band conceptual model during the morning on the 14th.



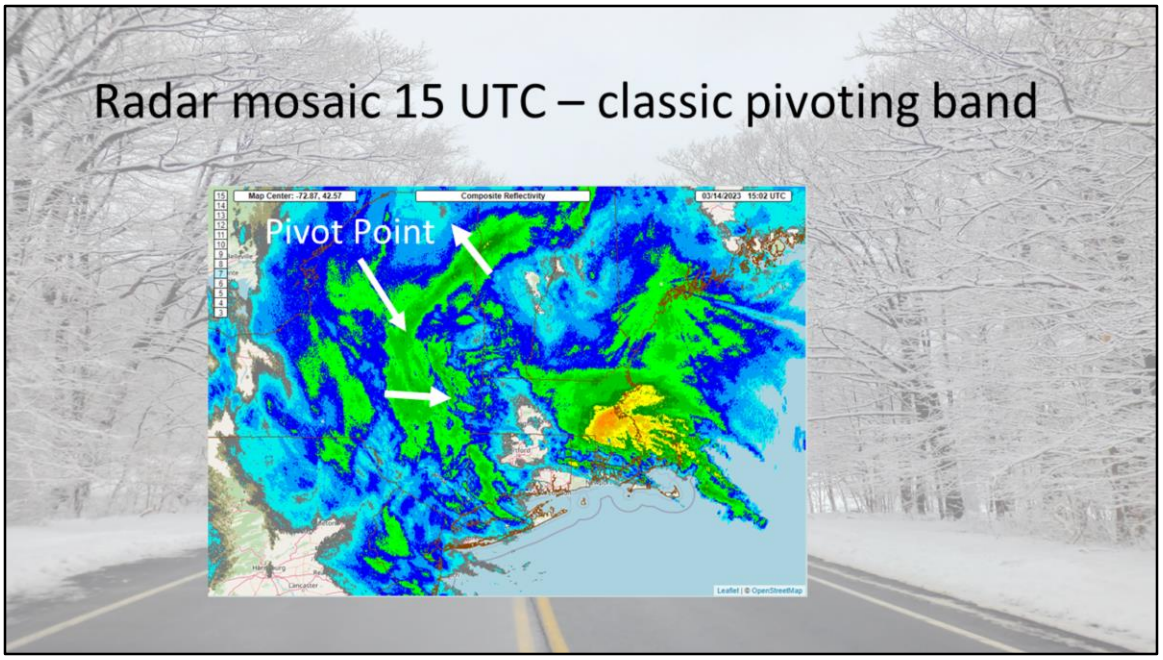
The National Weather Service Forecast Office at Albany anticipated the potential for banding, including a pivoting band, prior to the storm, as indicated by this segment of the area forecast discussion, issued prior to the storm.



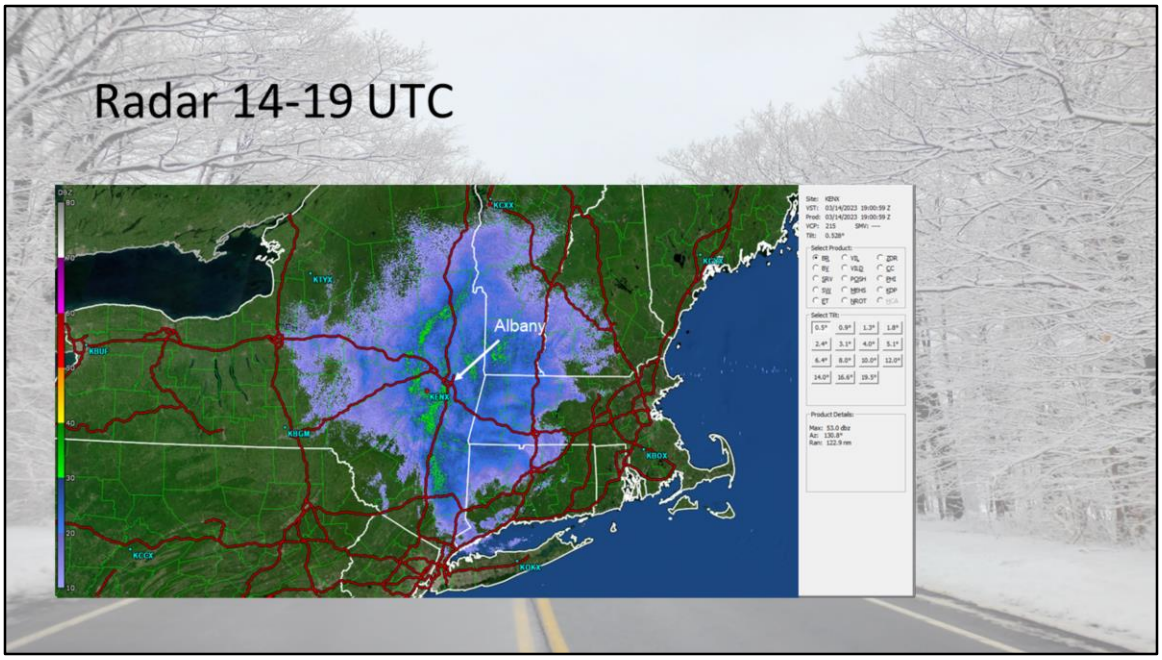
During the early morning hours on the 14th, bands of heavy precipitation (mainly snow) translated from southeast to northwest across the area. The bands began to pivot, with faster motion on the north side of the band vs. the south side. At this point, the band movement could best be classified as a hybrid between laterally translating and pivoting band motion.



By 09z UTC the bands were clearly pivoting, with a pivot point over eastern New York. This set the stage for some very heavy snow to fall just west of the immediately Albany area, although additional banding was also organizing across western New England and was producing very heavy snowfall rates in that area as well.

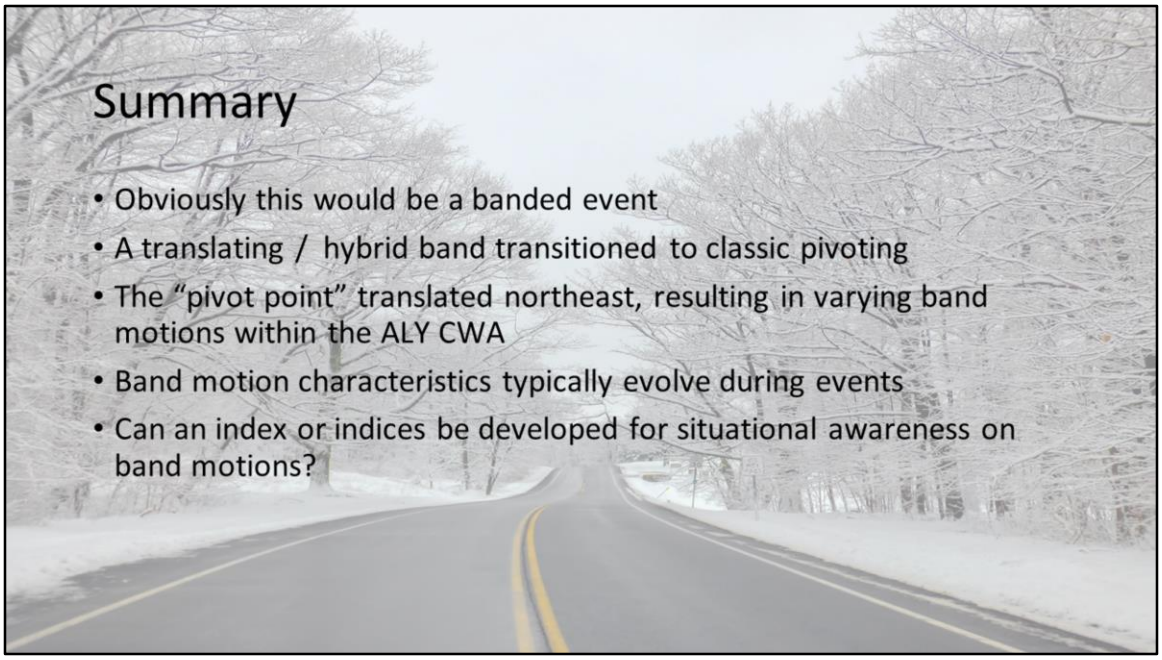


By late morning, a dominant pivoting snow band could be seen from central Vermont to the southern Adirondacks, southward to the Catskills. The snow band was translating from southeast to northwest to the northeast of pivot point and translating from west to east south of the pivot point. The pivot point itself was moving from southwest to northeast.



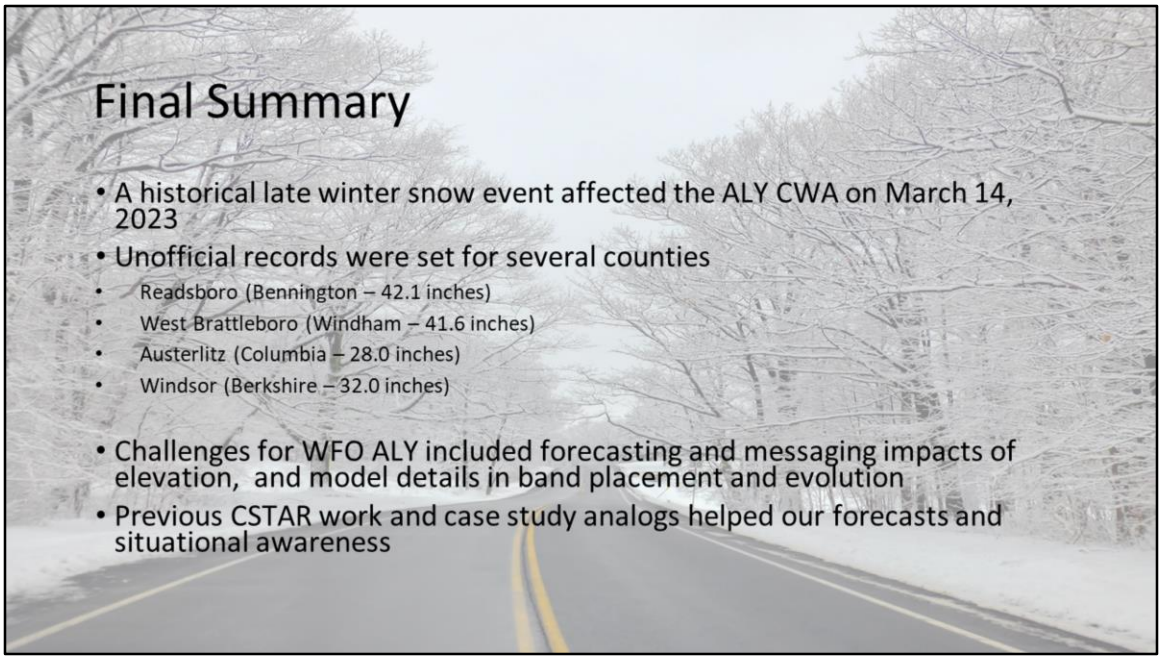
A view of eastern New York and western New England during the early and mid afternoon hours on the 14th showed the main band beginning to shift eastward across the Capital District (south of the pivot point). Snow had diminished in intensity for several hours near Albany during the late morning and early afternoon, however the snow would become heavy again from late afternoon to early evening as this band translated across the region.

This chart shows a subjective evaluation of the band motions associated with this storm from early morning through early evening on the 14th. Initially, the motion appeared to be a hybrid between laterally translating and pivoting, however by mid-morning this was clearly a classic, pivoting band. Band motions often evolve through the course of a storm as the flow pattern evolves.



Summary

- Obviously this would be a banded event
- A translating / hybrid band transitioned to classic pivoting
- The “pivot point” translated northeast, resulting in varying band motions within the ALY CWA
- Band motion characteristics typically evolve during events
- Can an index or indices be developed for situational awareness on band motions?


Final Summary
• A historical late winter snow event affected the ALY CWA on March 14, 2023
• Unofficial records were set for several counties
• Readsboro (Bennington – 42.1 inches)
• West Brattleboro (Windham – 41.6 inches)
• Austerlitz (Columbia – 28.0 inches)
• Windsor (Berkshire – 32.0 inches)
• Challenges for WFO ALY included forecasting and messaging impacts of elevation, and model details in band placement and evolution
• Previous CSTAR work and case study analogs helped our forecasts and situational awareness