April 23, 2012 Heavy Wet Snow Event

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Outline

- Large scale pattern
- Frontal scale forcing
- Observations
- Model guidance
- Dual polarization products







Sea-level pressure



700 mb heights and frontogenesis





Cross-sections





Radar reflectivity



Snowfall



Summary

- Heavy snow fell across portions of central NY and northern Pa as low pressure tracked up the east coast.
- The heaviest snow fell with an intense band of heavy precipitation, accompanied by rain changing to snow.
- Snowfall was highly elevation dependent, but even some lower elevation locations received snowfall in a small area.

Model temperature trends

L



Model surface temperature trends



MOS guidance trends



Reflectivity and observations – 04z





0.5 degree ZDR – 04z







Classification and melting level



Melting layer determination

Step 1: Identify Wet Snow Bins

• Along each radial from 4 through 10 degrees



Step 2: Construct Height vs. Azimuth Array

- Contains all wet snow bins from current volume scan plus:
 - Previous 2 volume scans for precip VCPs
 - Previous 5 volume scans for clear-air VCPs



Step 3: Compute Top and Bottom of ML

- Top
 - 80% wet snow bins below this height
- Bottom
 - 20% wet snow bins below this height
- Done for each radial and smoothed



Step 4: Not Enough Wet Snow Bins?

- Use the RPG-defined 0°C height
- Use the most recent RUC's 0°C height



RUC time-height temperature forecast



RUC forecast soundings



Summary

- The hydrometeor classification scheme failed during the change from rain to heavy wet snow on April 23, 2012 in southern NY.
- Failure was related to the incorrect determination of the melting level.
- The melting level was determined by the RUC forecast, which was poor.
- Forecasters should focus on base data, and only use the algorithm to confirm analysis from base data.