

Lightning during PLOWS

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PLOWS Science Meeting

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Research Goals



- To improve understanding of lightning in wraparound region of Midwest cyclones
- Use the unprecedented data collected to improve upon conclusions in previously published papers.
 - Market et al. 2006
 - “Future work should address the relationship, in the short term, between lightning flashes and observed precipitation structures”

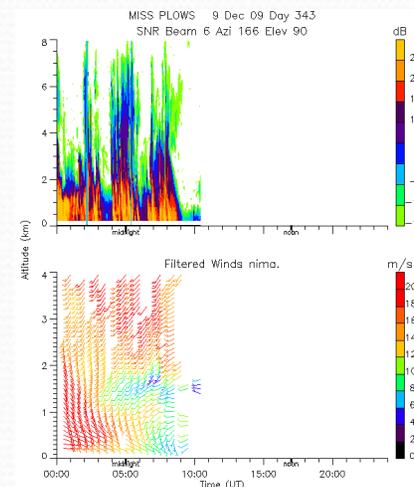
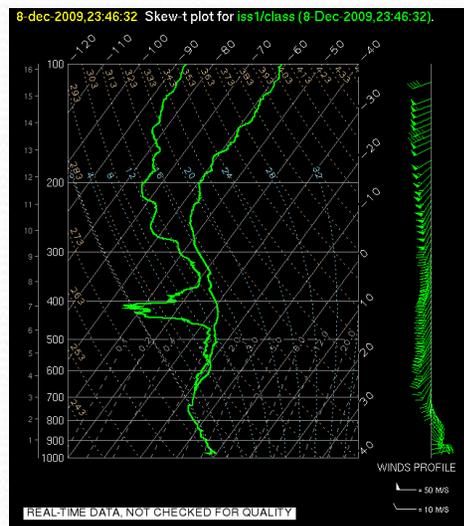


Science questions to be addressed

- 3) What are the thermodynamic and kinematic structures of these frontal systems and how do they evolve?
 - Specific thermodynamic and kinematic structures conducive for lightning
- 4) What instabilities and types of mesoscale forcing control the generation and evolution of precipitation substructures?
 - Which instabilities are most responsible for the convection that produces lightning?

Data to be used

- Soundings
- Profiler data
- Radar
- NLDN
- Flight data for non-lightning-producing bands
- Models





Google Earth



Future Work

- Draw up other overviews of the other IOPs in Google Earth
 - IOP 8- 30X more lightning
- Use the PLOWS data to analyze significant variables at the time of the lightning.
 - Height of the -10°C isotherm
 - CAPE
 - Precipitation intensity around the time of the lightning
 - Comparison with non-lightning events.