Errors Encountered When Analyzing Radar and Storm Data

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Overview

- In 2014, 373 severe wind cases occurred within seven County Warning Areas: Huntsville, AL, Chicago, IL, Hastings, NE, Norman, OK, Albany, NY, Glasgow, MT, and Grand Forks, ND.
- Each case had winds speeds greater than 56 kts.
- Dual polarization radar images used to analyze Horizontal Reflectivity (DBZ), Doppler Velocity (BV), Normalized Rotation (NROT), and Correlation Coefficient ($\rho_{hv}$) for each case.

Key Findings/Results

- 72 cases with incorrect time reports.
- The average time error was 15 to 30 minutes after the event happened, while the extreme error was an hour.
- 3 cases with no Level-II radar data available.
- 102 cases of incorrect velocity recorded wind speeds when compared to Storm Data wind reports out of 111 cases measured.
- 52% of all cases studied had no errors.

Materials and Methods

- ArcMap was used to store and organize information for each case based on County Warning Areas listed in the Storm Events Database as determined by the National Weather Service.
- NOAA National Centers for Environmental Information NEXRAD Archive was used to determine which radar to use for each location. The archive was also used to download Level-II radar archives for each case.
- UCAR Mesoscale and Microscale Meteorology Laboratory Image Archive was used when the NOAA Archive had irretrievable data.
- GR2Analyst was used to analyze the downloaded files in order to analyze and classify each case according to the Smith 2012 paper.

Acknowledgements

I would like to thank Dr. Vogler and David Cook for leading the RCEU program. I would also like to thank the Alabama Space Grant Consortium, UAH College of Science, UAH Office of Provost, along with the UAH President and VP for Research for sponsoring this project.