

An Investigation to Assess the Robustness of Aircraft Radar Data

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Bow echoes are widely studied due to the high winds and damage that accompany them. In recent years, aircraft radar data has been used to study these storms. An issue with the aircraft radar data is that it is difficult to examine a large number of cases due to the time-intensive nature of hand editing. We present a case study of a bow echo that occurred on July 5-6th, 2003 during the BAMEX field campaign. Our goal is to take the raw data and compare a hand edited version with an automated version to determine at what level of editing we lose the radar signal. This editing was performed using the Soloi program. Automated scripts were set to edit out 80, 90 and 99 percent of the unusable data to test the level of where storm degradation occurs and give a noticeable difference between edits. A wind and pressure retrieval was performed to compare and quantify the difference in edits. Finally, a consistency check value was calculated to check the reliability of the pressure values. We will demonstrate that automated editing is comparable to hand editing, which allows for more efficient analysis of storms. Greater understanding of the life cycle of the bow echo will improve warning lead time and mitigate the loss of human life and property.