

Recent Progress on the Automatic Quality Control of ELDORA Data

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Introduction

A process for automatic quality control of the data collected by the Electra Doppler Radar (ELDORA) is under development. Fields and techniques have been introduced that are thought to be good candidates for inclusion in an algorithm to automatically remove noise and non-weather returns. This poster presents the performance of an early version of the algorithm when it is run on data collected by the ELDORA during five field programs.

Current Algorithm			
Field Name	Field Description	Threshold	
NCP	Normalized Coherent Power – effective at removing noise (ELDORA only)	< 0.2	
Ground Gate Probability	Determined by elevation angle, aircraft altitude, and beamwidth (flat surface only)	> 0.7	
Spectral Width Reflectivity Ratio	Ratio of spectral width to linear radar reflectivity factor (SW / Z)	> 0.6	
Speckles	Small areas of isolated echoes – can be along a ray or on adjacent rays	≤ 5 gates	

Verification

The cases were chosen to test the algorithm in a variety of different environments. The range of weather conditions is ideal for determining where the algorithm performs well and where it needs work. Each case also has the benefit of having been manually edited by a radar meteorologist, which provides a truth dataset against which to verify the algorithm.

A baseline field was first produced with basic noise and ground removal done using solo. This is because noise constitutes most of a raw sweep and any statistics calculated would be overwhelmed by the large amount of bad data. Starting from a point where the obvious bad gates have been removed makes the measures and their comparisons more meaningful.

Field Program	Date	Description
VORTEX	16 May 1995	Tornadic supercell
IHOP	11 Jun 2002	Pre-convective boundary layer
BAMEX	23 Jun 2003	Mesocyclone in MCS
RAINEX	22 Sep 2005	Mature hurricane (Rita)
T-PARC/TCS08	14 Sep 2008	Pre-depression tropical convection

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