Using DQA or REC as a filter

Briefing for the TAC

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Objective

- To determine if pre-filtering input radar base data would improve the performance of the severe storm algorithms
- Project proposed by the SREC as an attempt to reduce algorithm false alarms
Project plan

- Three data quality configurations:
  - Legacy (none)
  - Data Quality Assurance (DQA) algorithm
  - Radar Echo Classifier (REC)
Project plan

- Algorithms tested:
  - Filtered Storm Cell Identification and Tracking Algorithm
  - Hail Detection Algorithm
  - Mesocyclone Detection Algorithm
  - Tornado Detection Algorithm
Project plan

- Testing done using an ORPG clone running Build8
- Modifications to ORPG required to make DQA and REC work with the severe storm algorithms
- Algorithm performance determined by comparing 3D output to radar base data for six test cases
Preparation for testing

- Not a simple task to get the severe storm algorithms to run on post-filtered DQA or REC data
- Needed to set up three different versions of ORPG Build8 – legacy, DQA, and REC configurations
- For MDA and TDA to run, needed to merge reflectivity and velocity data on the lowest elevation angles (the split cuts)
Test results

- While analyzing the first two test cases, discovered problems with the post-filtered data from REC and DQA.
- REC was removing substantial amounts of valid precipitation data, mostly for ranges >230 km.
- Post-filtered DQA data had problems with the split cuts.
Legacy reflectivity data
Post-filtered REC data
Legacy reflectivity data
Post-filtered DQA data
Project status

- Stopped data analysis
- Received recommendation from NCAR to modify the REC so that no data is filtered for ranges >230 km
- Problem with the split cuts will be corrected with implementation of ORDA
Future work

- Repeat the project using only ORDA data
- Use modified REC
- Perhaps extend testing to include NSSL’s QC Neural Network?