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**
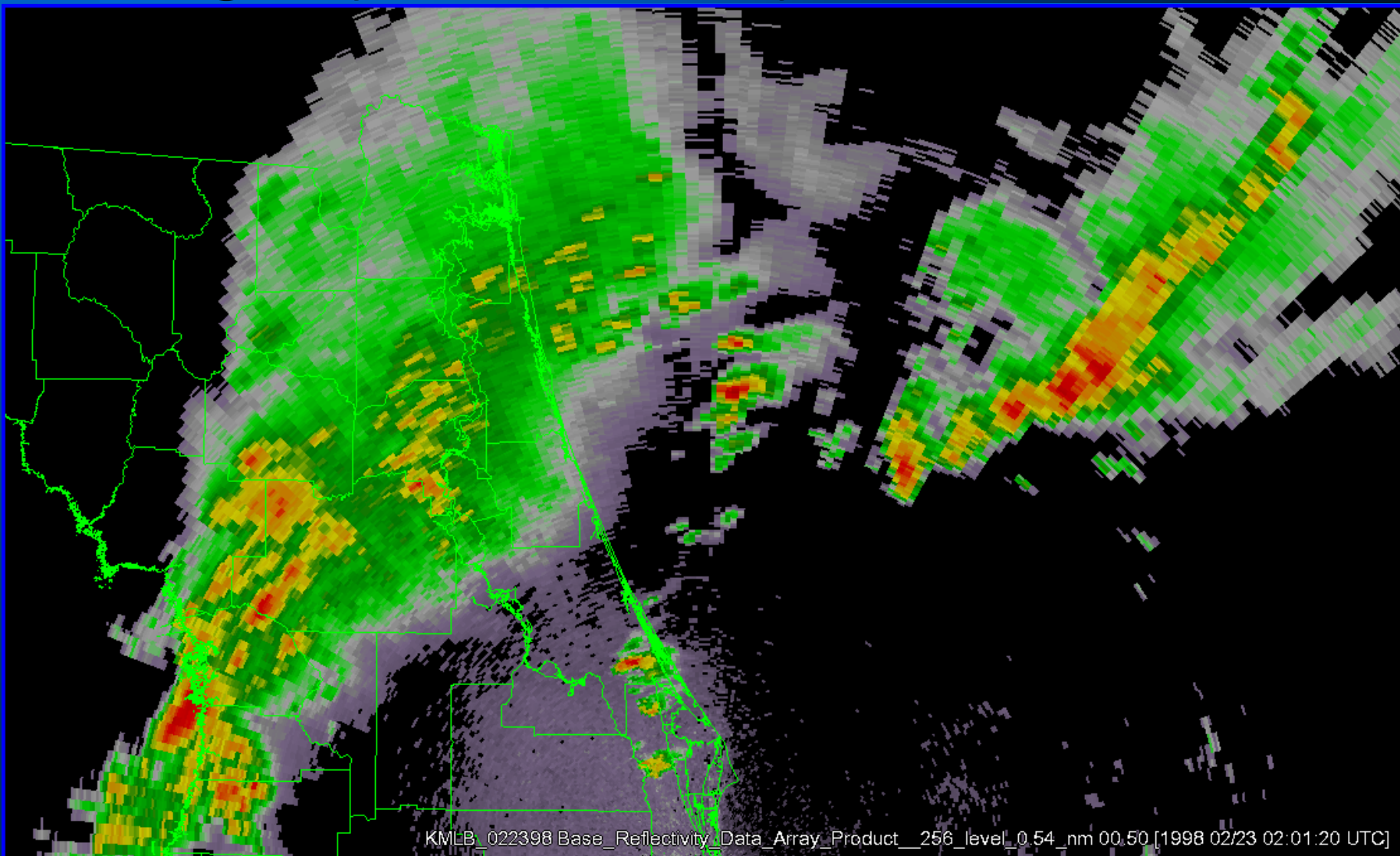
Preparation for testing

- **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)**
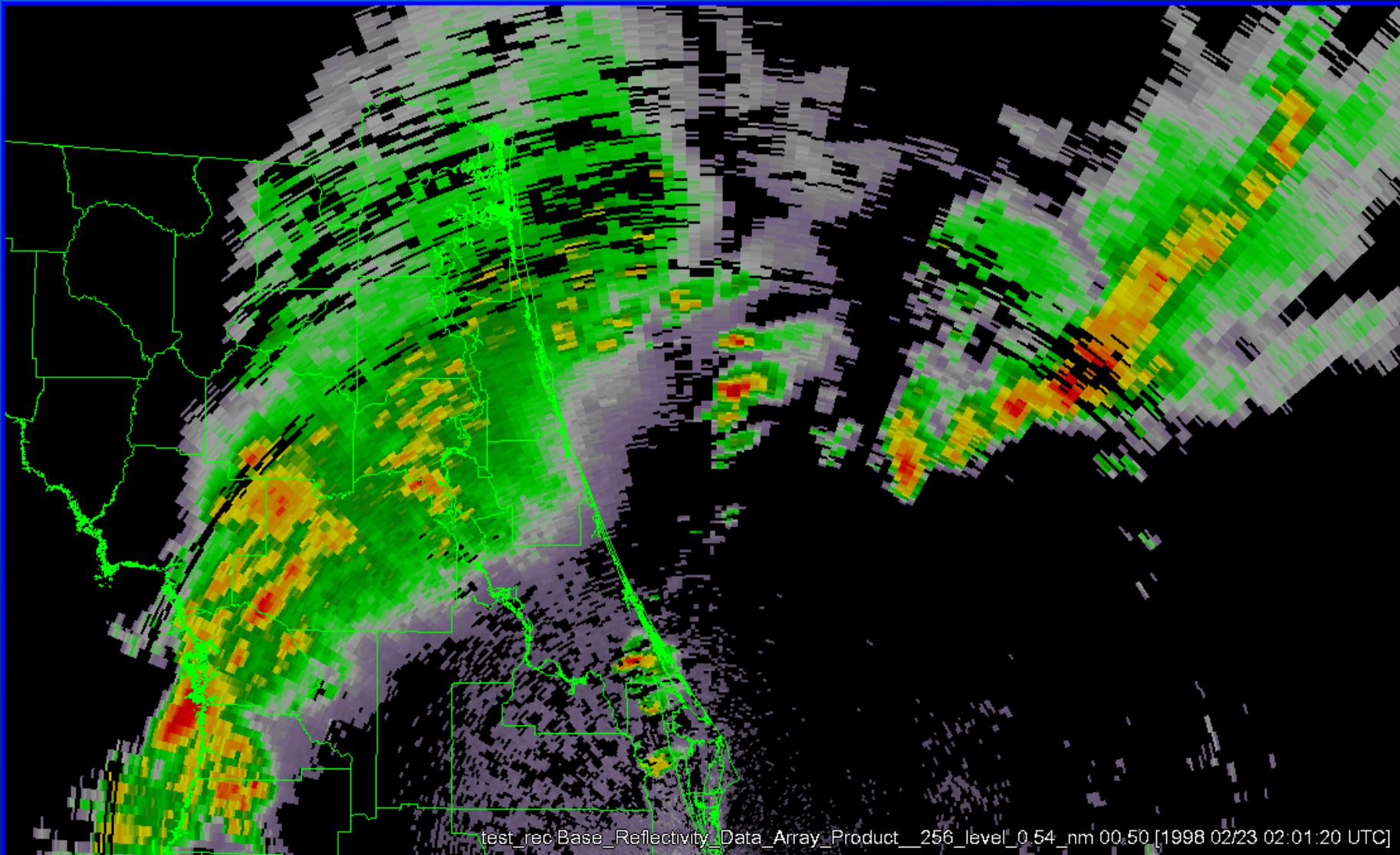
Test results

- **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**
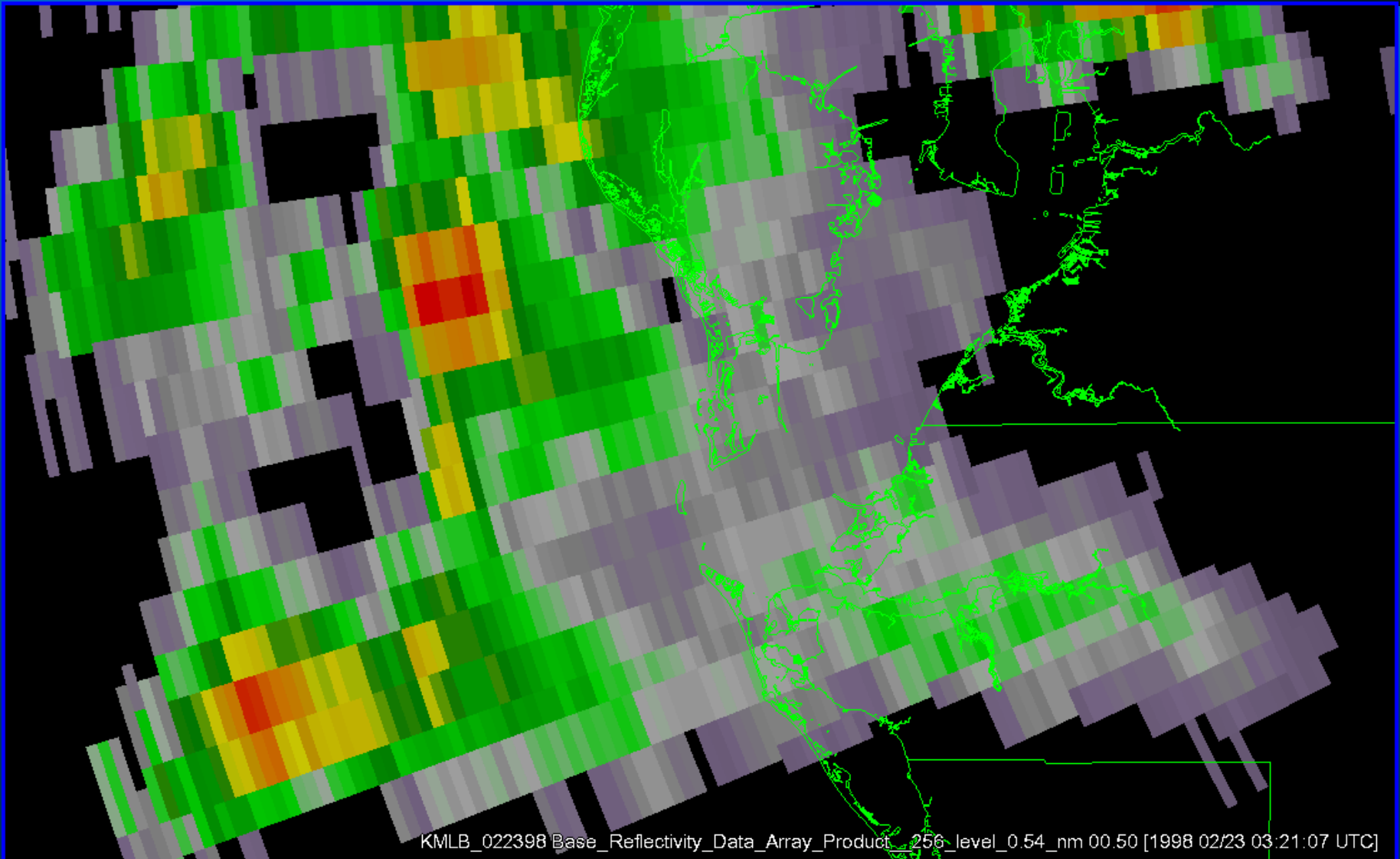
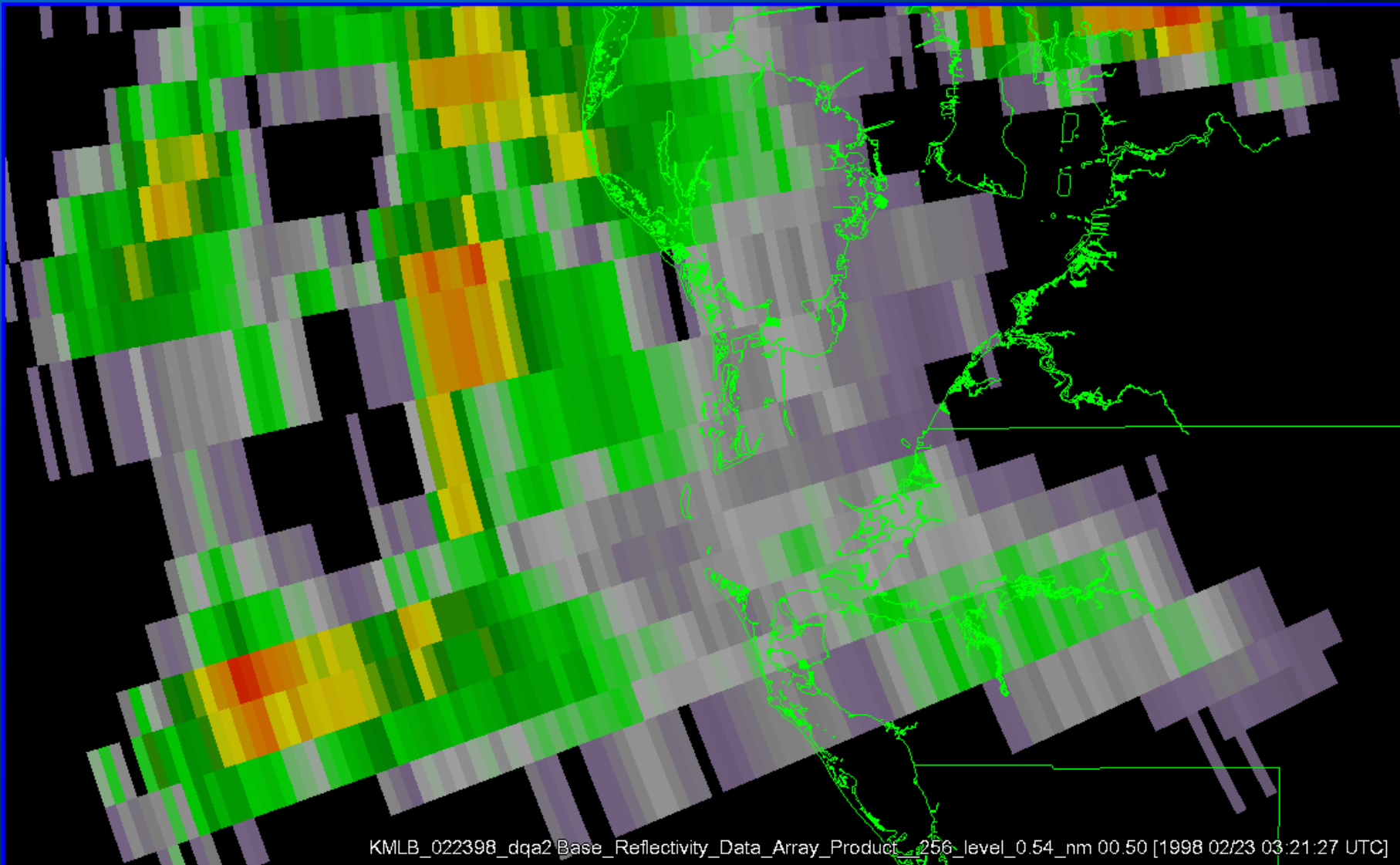# Legacy reflectivity data

KMLB_022398 Base_Reflectivity_Data_Array_Product__256_level_0.54_nm 00.50 [1998 02/23 02:01:20 UTC]

Post-filtered REC data

test_rec Base_Reflectivity_Data_Array_Product__256_level_0.54_nm 00.50 [1998 02/23 02:01:20 UTC]

Legacy reflectivity data

KMLB_022398 Base_Reflectivity_Data_Array_Product_256_level_0.54_nm 00.50 [1998 02/23 03:21:07 UTC]

Post-filtered DQA data

KMLB_022398_dqa2 Base_Reflectivity_Data_Array_Product_256_level_0.54_nm 00.50 [1998 02/23 03:21:27 UTC]

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?