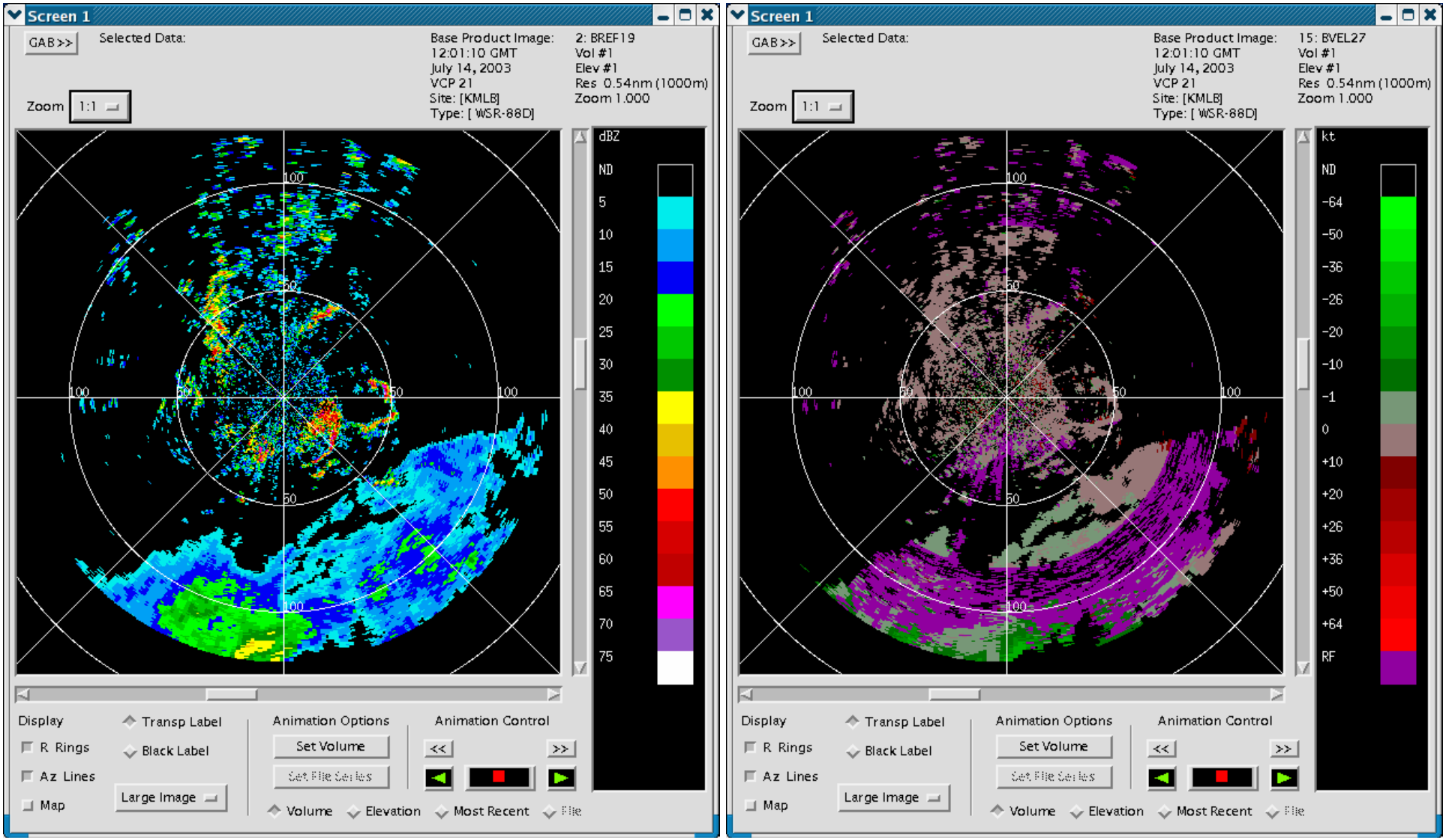
REC update: PDA review

- REC is a modular algorithm, that includes:
  - APDA (AP clutter Detection Algorithm)
  - PDA (Precipitation Detection Algorithm)
  - SCDA (Sea Clutter Detection Algorithm)
- AP mitigation algorithm originally designed to use a combination of APDA and PDA within EPRE
  - Removes contamination by clutter mixed with weather signals (not possible with APDA only)
  - Removes pure clutter left by the APDA
- Only APDA module is currently implemented

REC update: PDA review

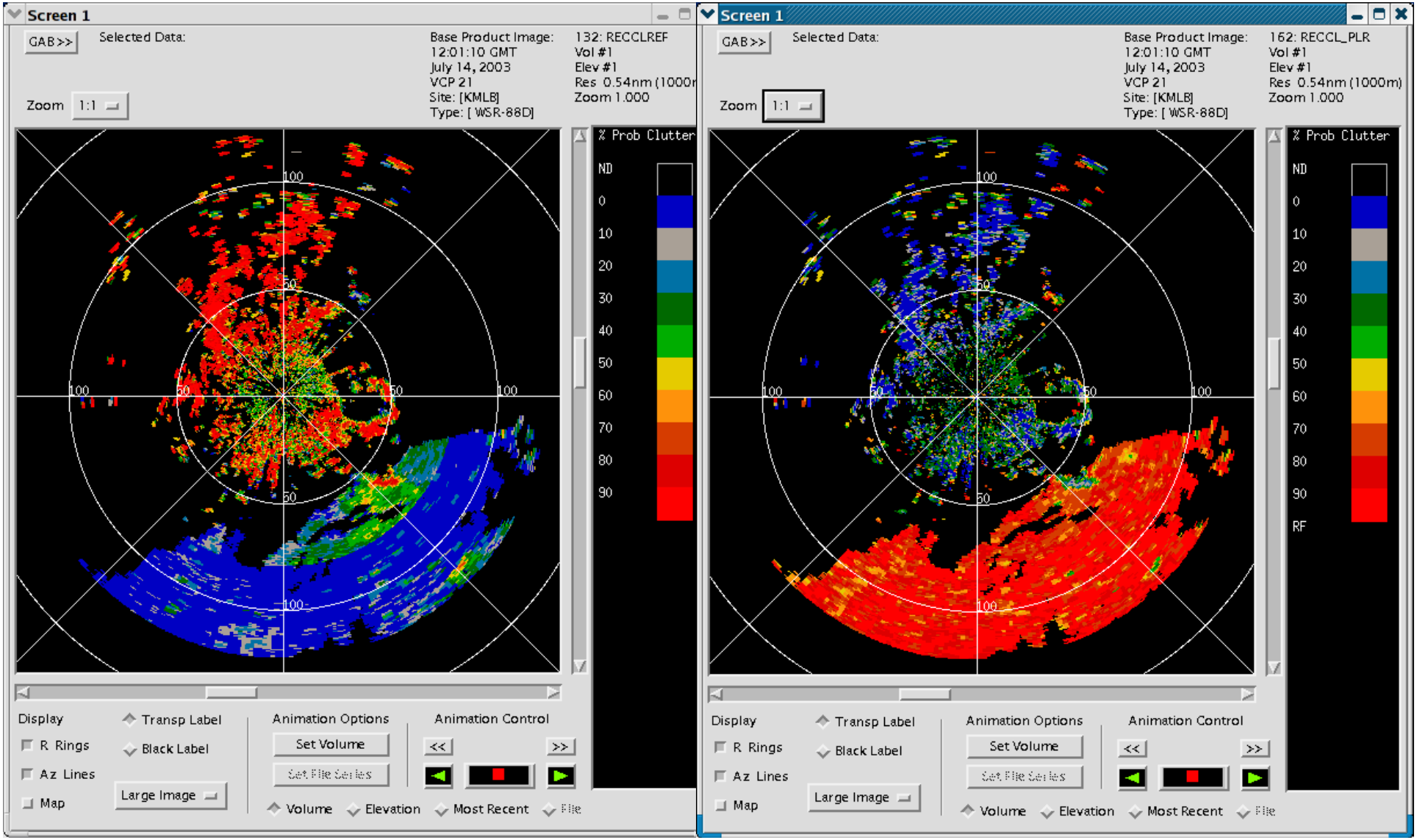
- PDA has been implemented in the ORPG CODE (version 7)
  - Allows testing in WSR-88D environment
  - Compare EPRE results with and without PDA
- The PDA module is easily enabled/disabled
  - ROC can perform IV and V without impacting operations

Example from Boston (KBOX), 14 July, 2003



APDA

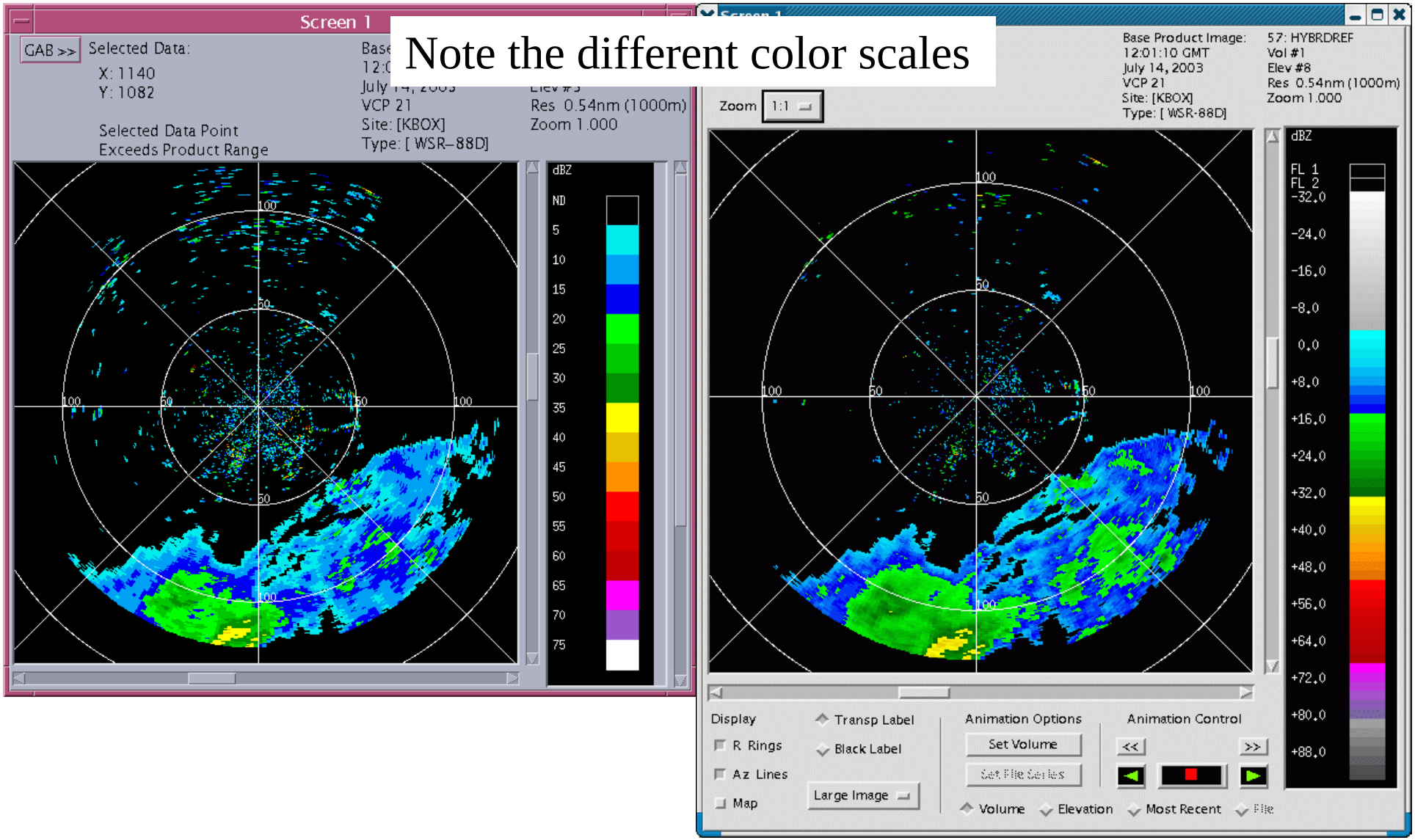
PDA (0 dBZ threshold)



Original ROC HSR APDA only

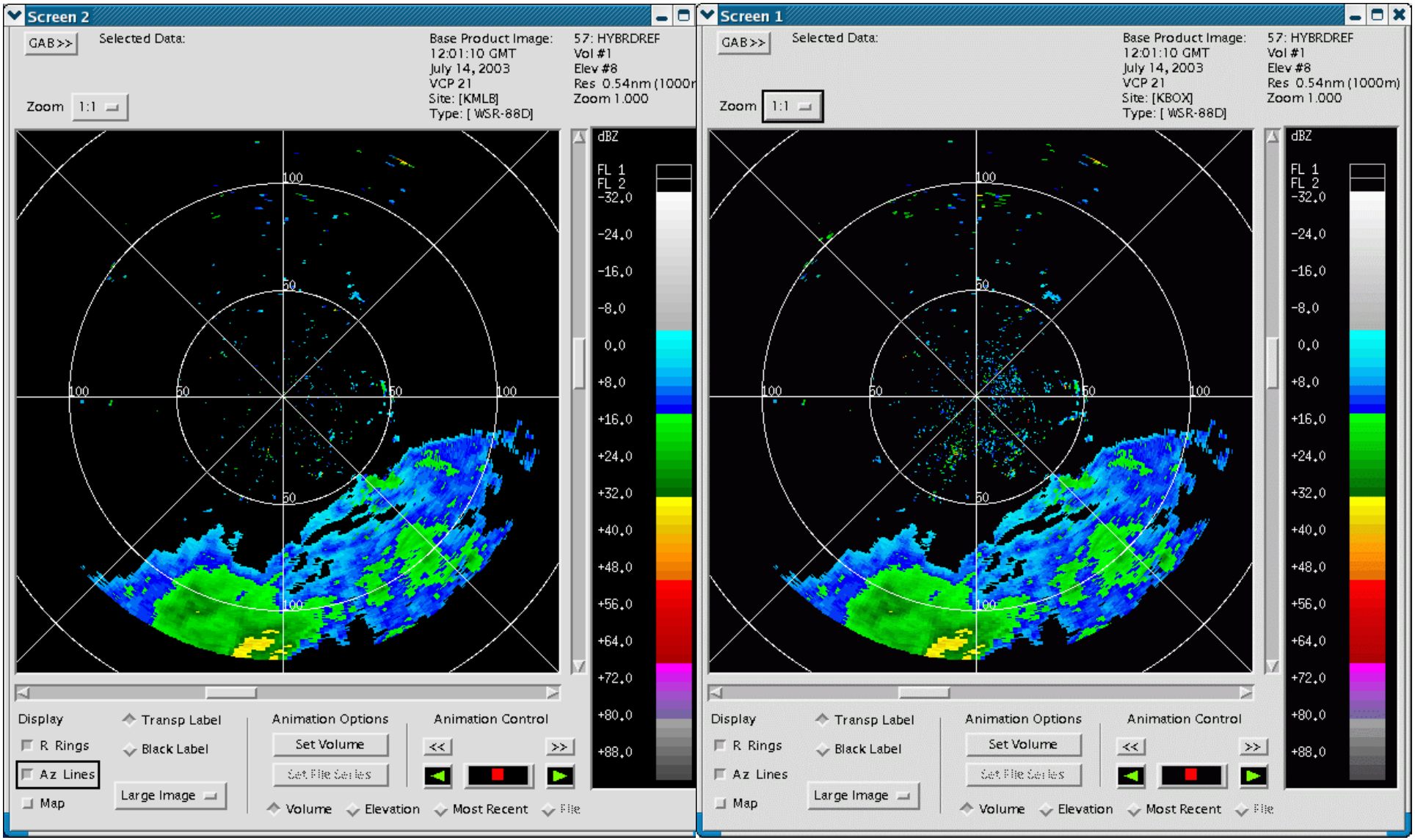
NCAR HSR APDA only

Note the different color scales



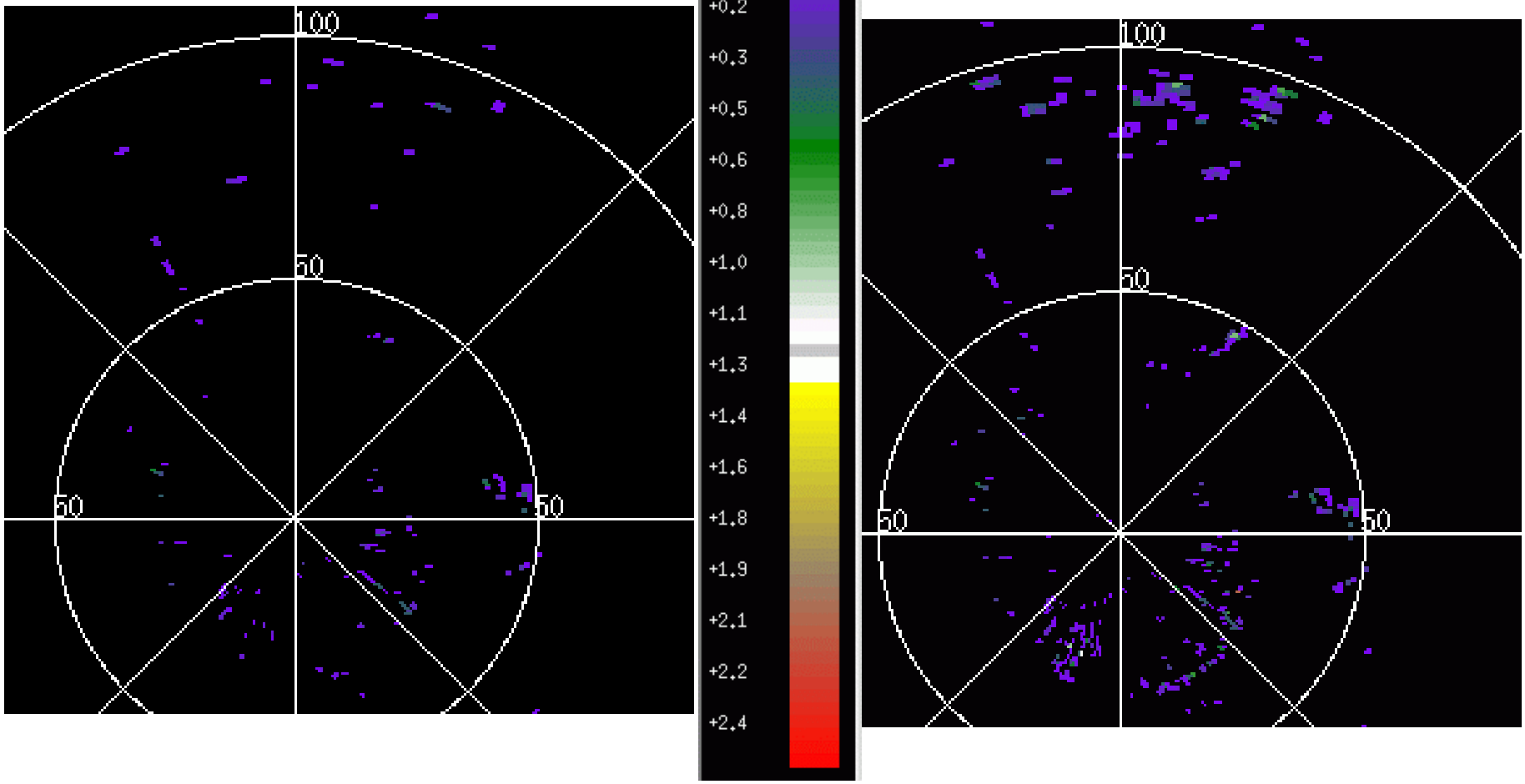
HSR with APDA and PDA

NCAR HSR APDA only



1 hour Accumulation with APDA and PDA

Spurious rainfall < 0.3 inch

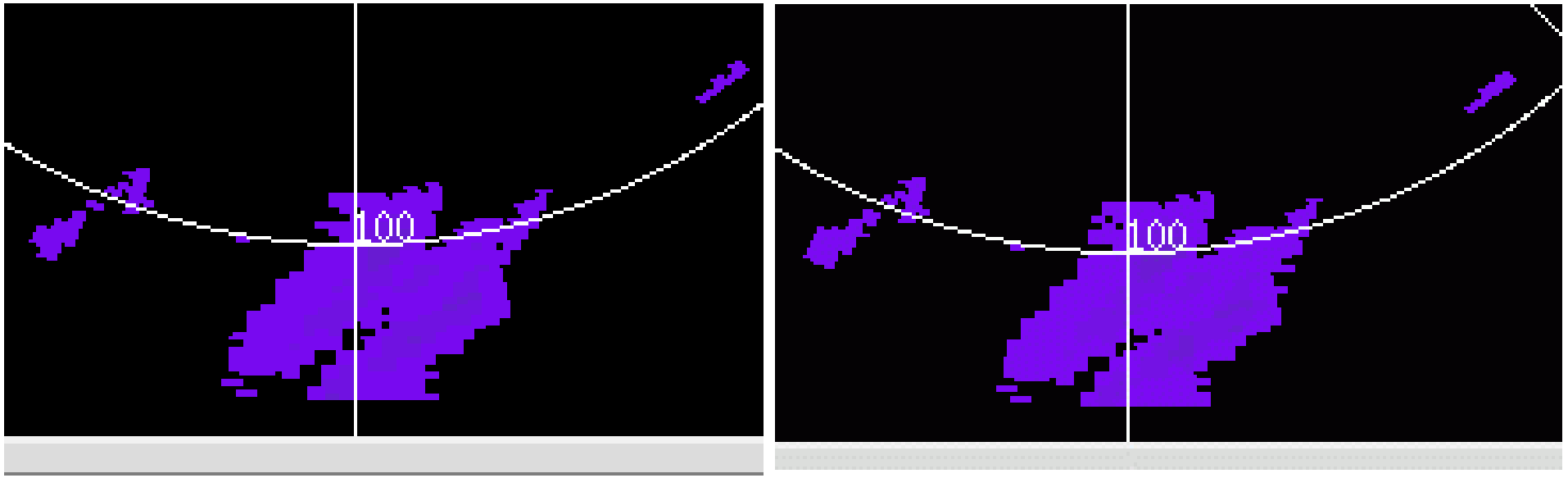


1 hour Accumulation APDA only

Spurious rainfall > 1 inch

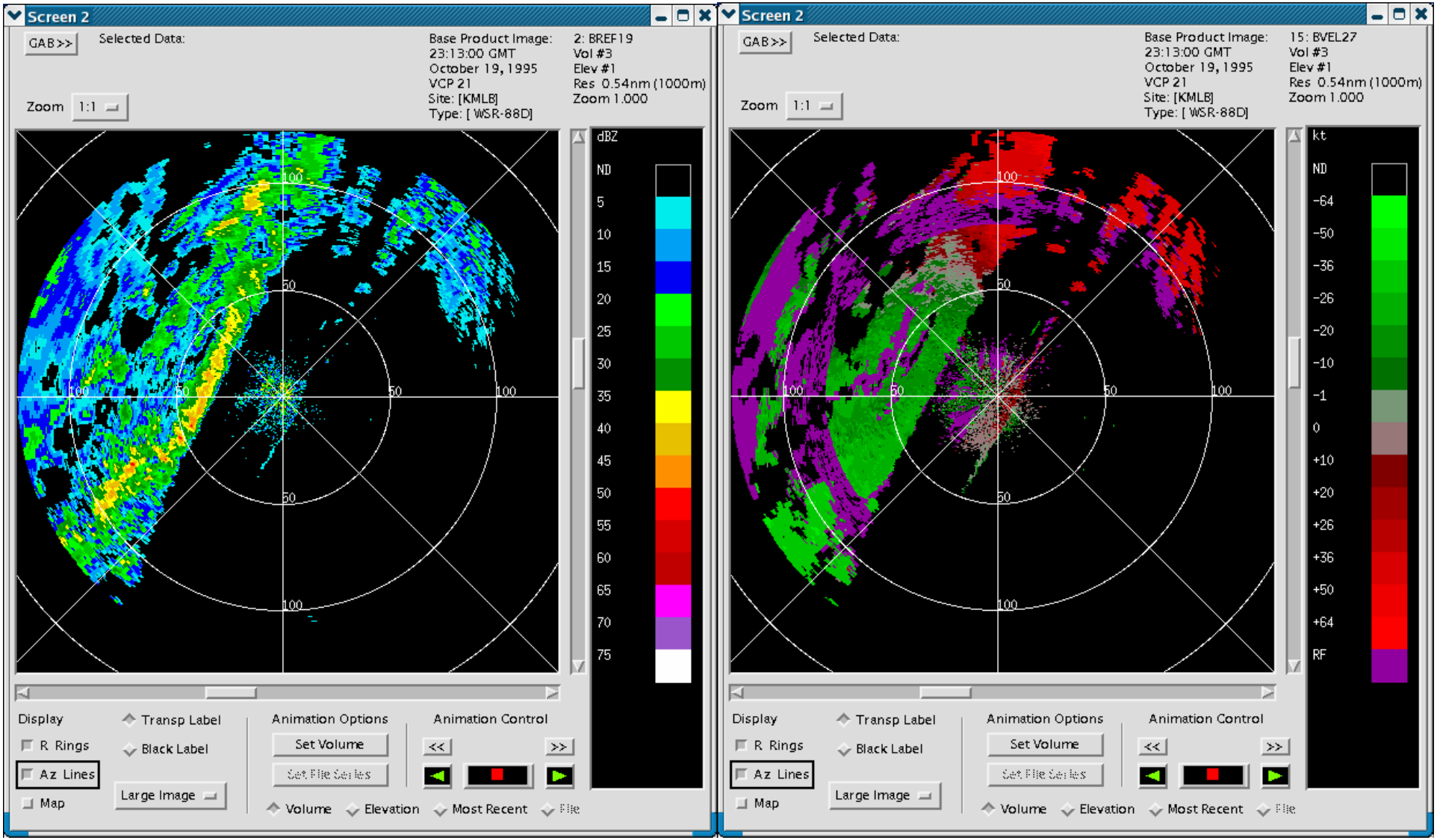
1 hour Accumulation with APDA and PDA

1 hour Accumulation APDA only



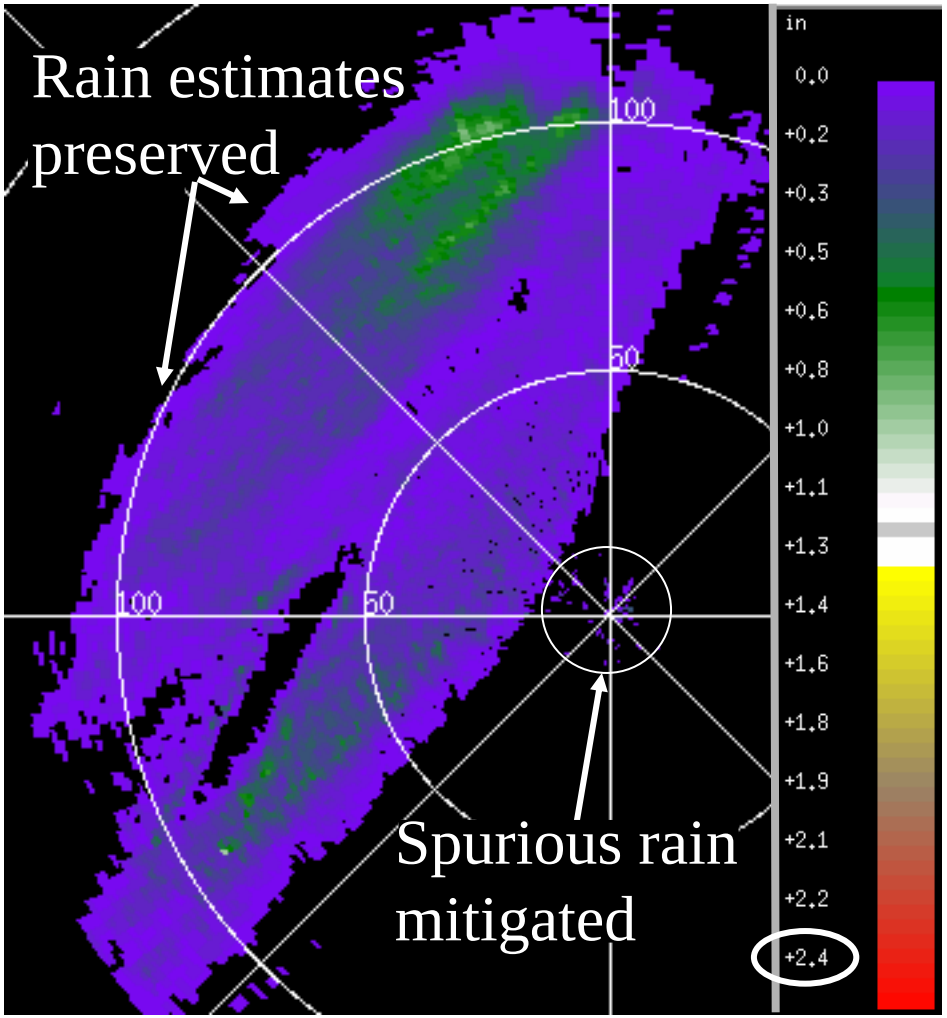
Rain accumulation preserved

Example from Chicago IL (KLOT), 19 Oct, 1995

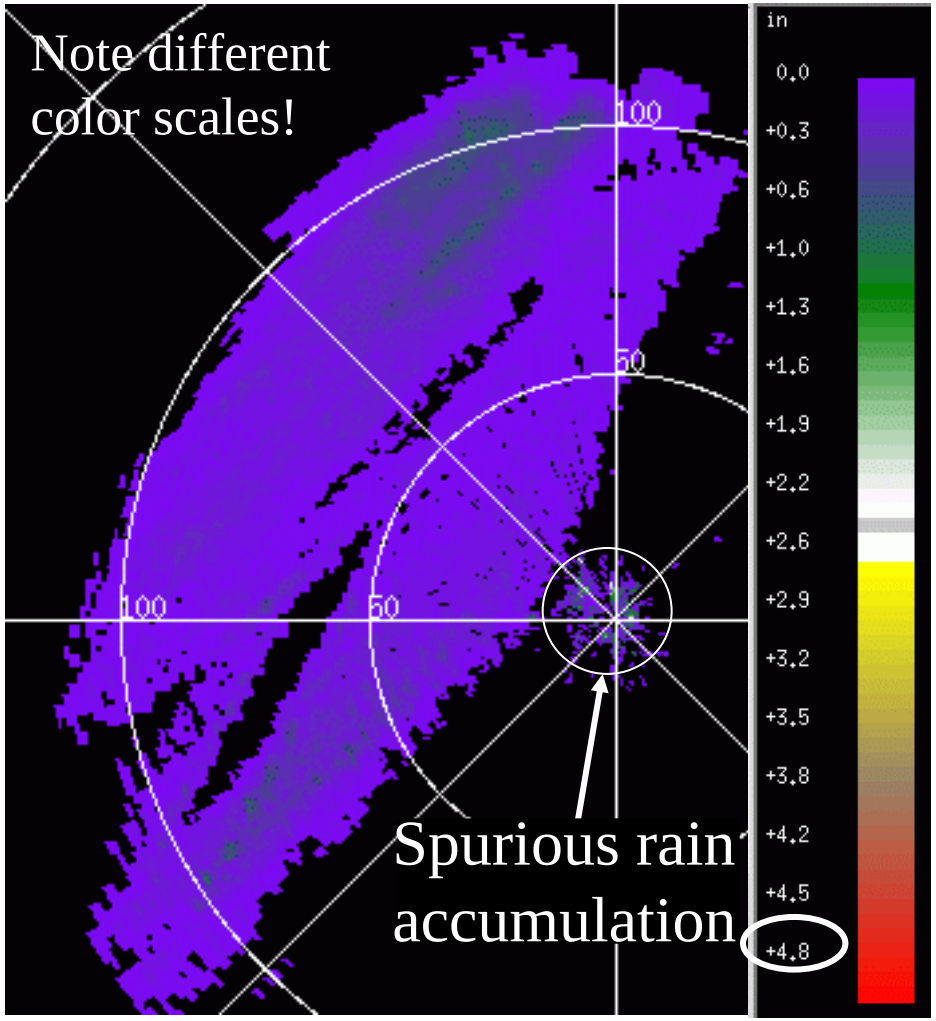


Chicago (KLOT) 4 hour total rain

APDA and PDA thresholds applied

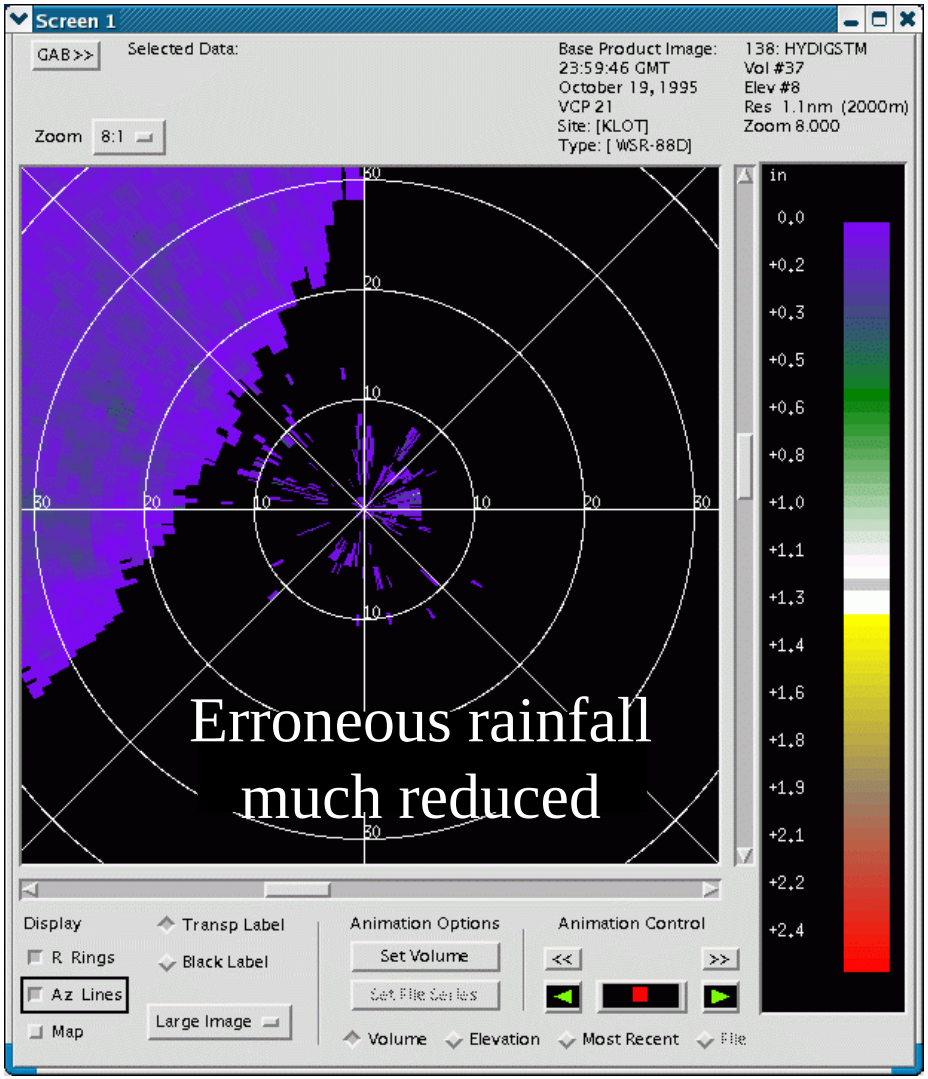


APDA threshold applied

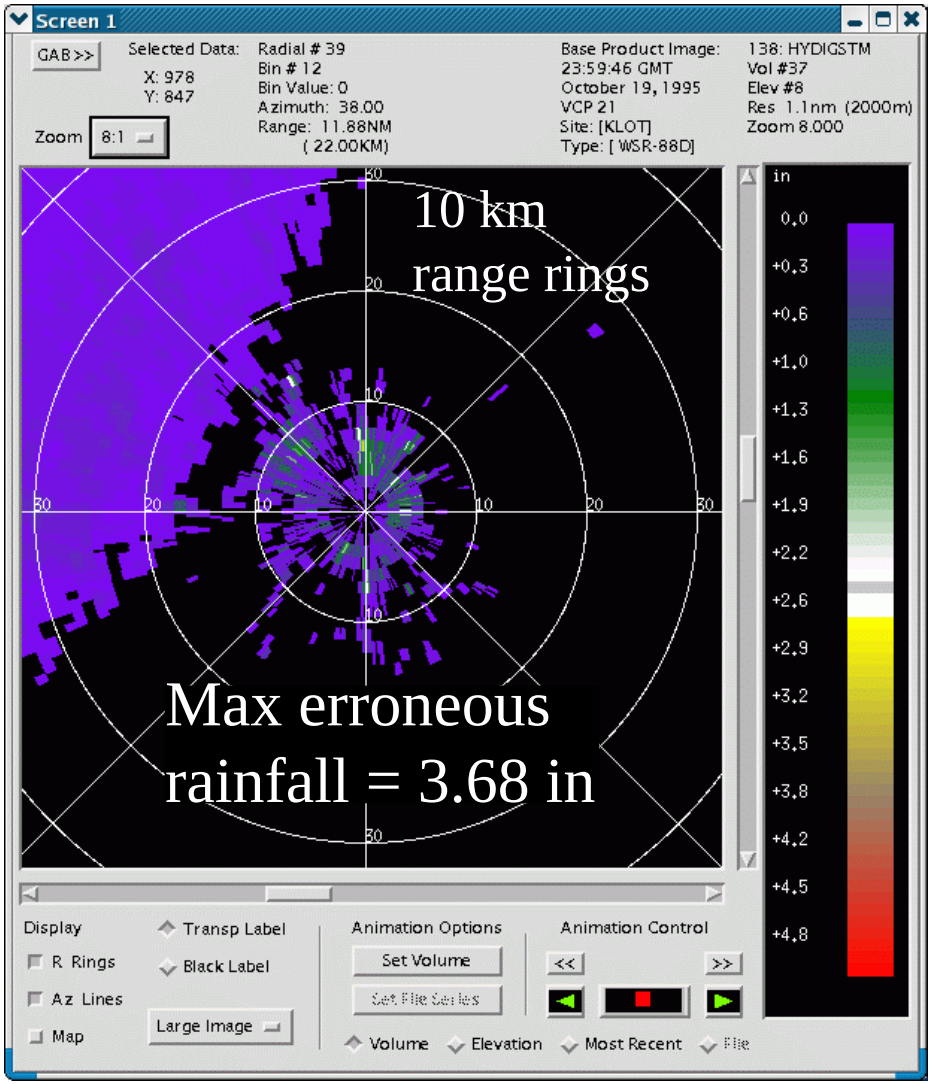


Chicago (KLOT) 4 hour total rain

APDA and PDA thresholds applied

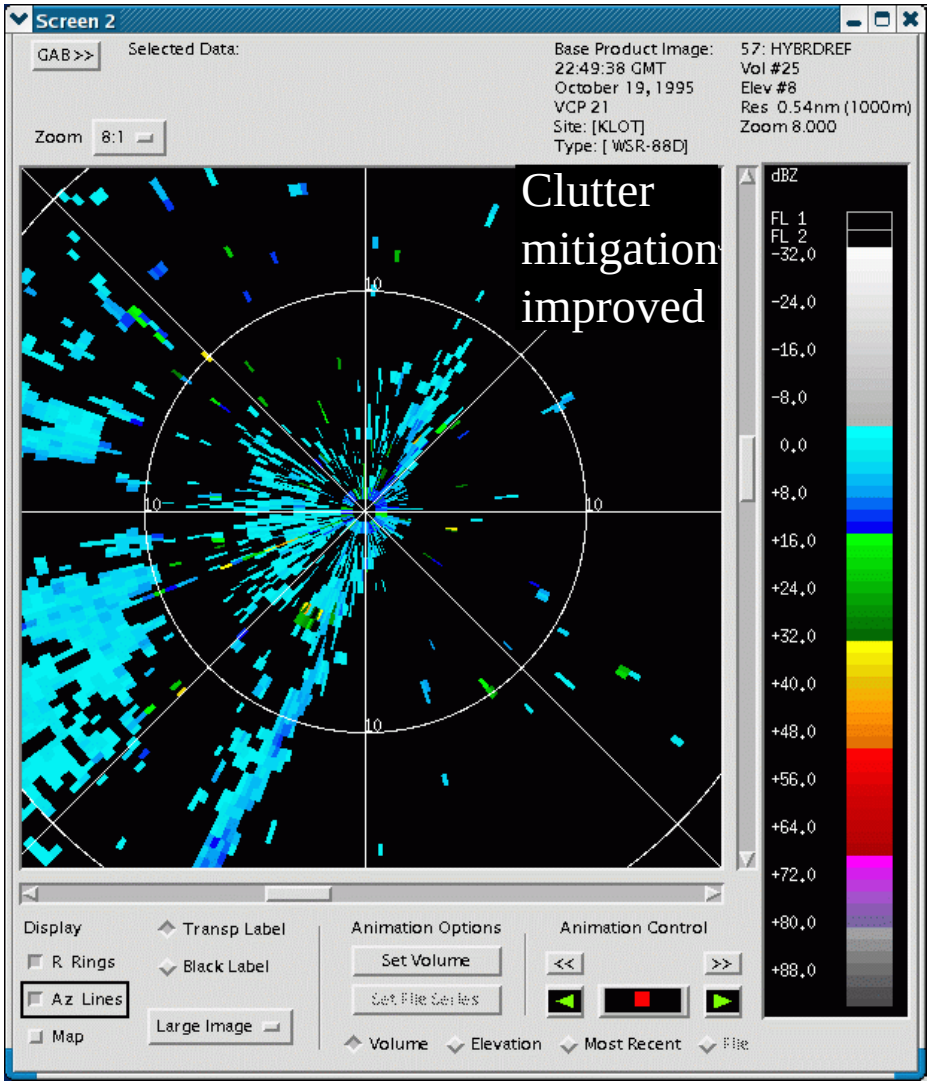


APDA threshold applied

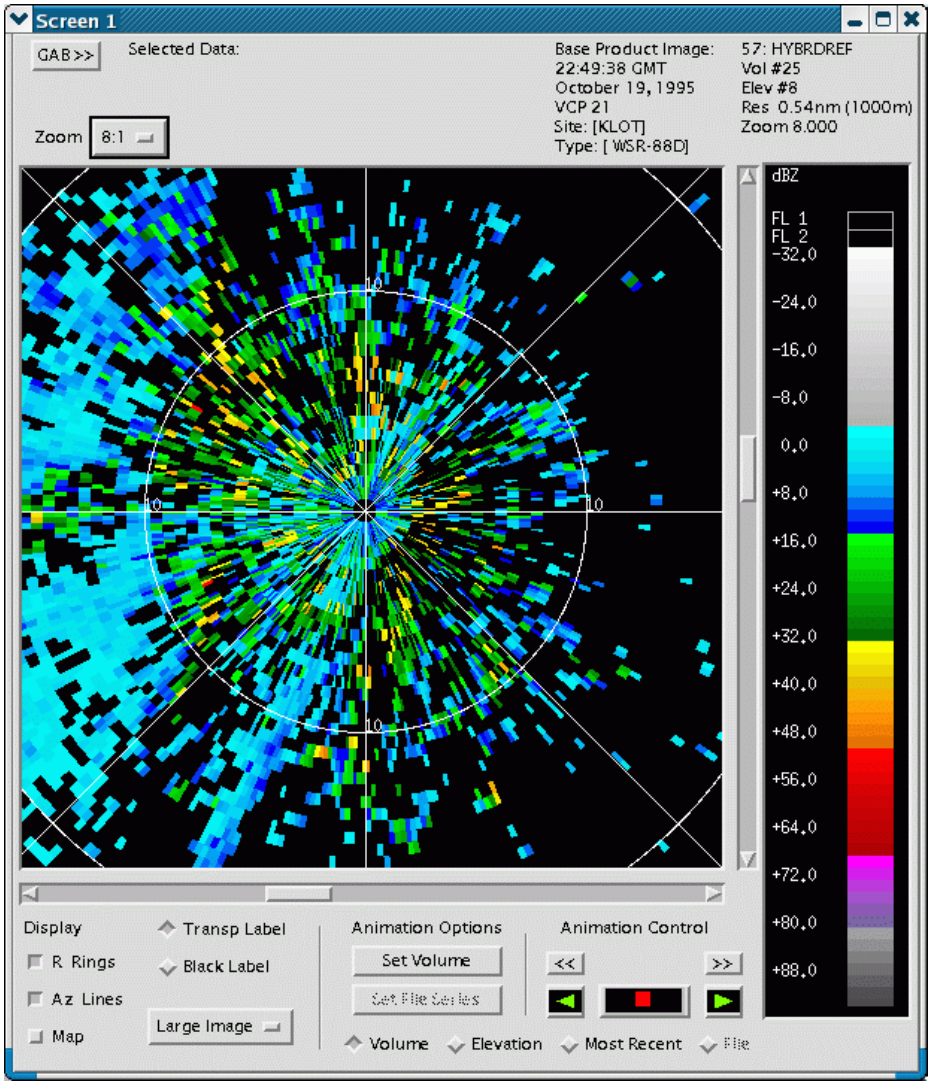


Chicago (KLOT) sample HSR (dBZ)

APDA and PDA thresholds applied



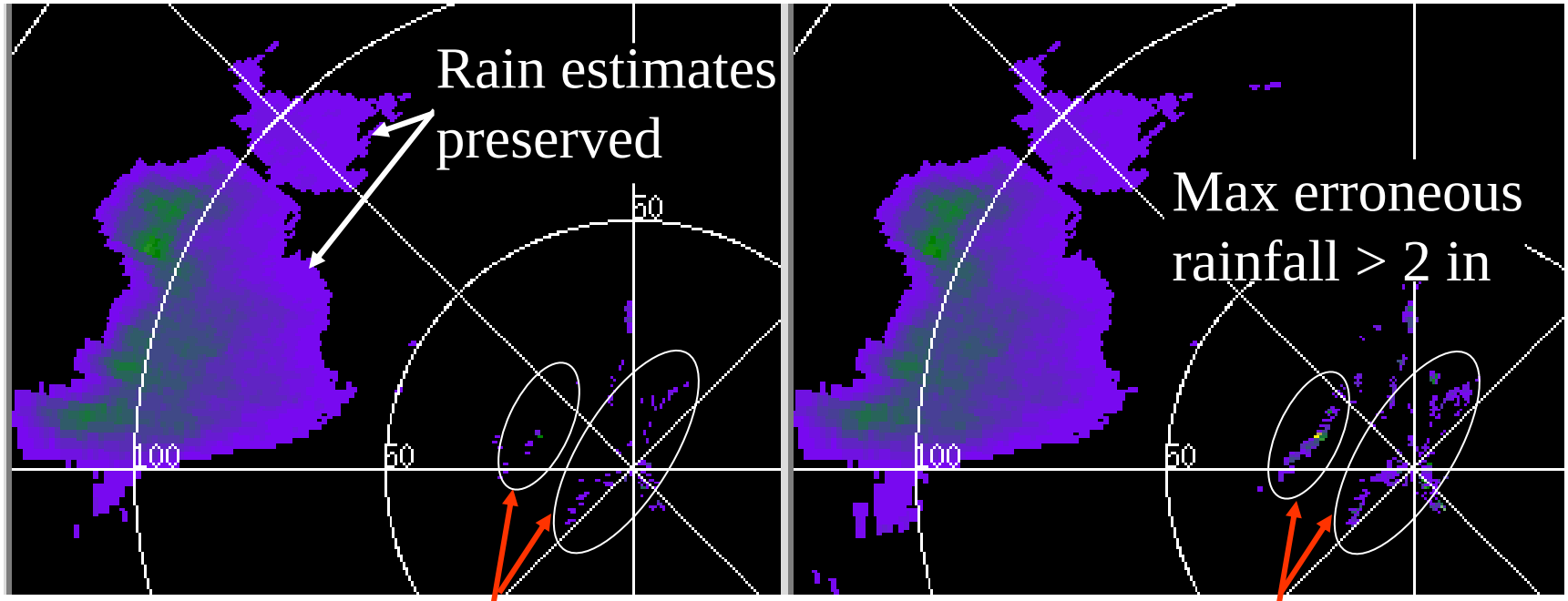
APDA threshold applied

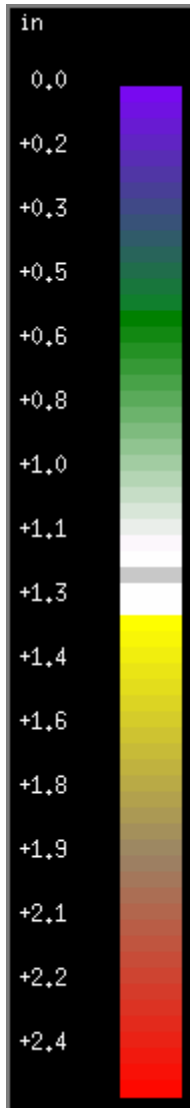


Sterling (KLWX) 4 hour total rain

APDA and PDA thresholds applied

APDA threshold applied





Spurious rain mitigated

Spurious rain accumulation

REC update

- Very long rainfall accumulations (12 - 24 hrs) were attempted without success
  - Stability of CODE prohibited long run times
  - Upgrades to CODE with PDA modifications (versions 8 and 9) have not produced usable precipitation products despite a multi-agency debugging effort
- Use of PDA shown to remove most spurious rainfall while preserving precipitation on 1 to 4 hour accumulations
- Longer integrations can be completed with IV & V
  - Radar data for cases suggested by ROC collected
  - Gage data collected for comparison

Improvements to REC

- Implement updates to APDA
  - Bug fixes
  - Improved membership functions (SPIN)
  - Sign variable removed
- Use long PRT velocity data in APDA
- Implement PDA if it passes IV & V scrutiny

Questions?

1 hour Accumulation APDA only

1 hour Accumulation with APDA and PDA