Radar Quality Control and Quantitative Precipitation Estimation Intercomparison Project Status

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Commission of Instruments, Methods and Observations (CIMO)
Upper Air and Remote Sensing Technologies (UA&RST)
Radar DQ is not just about QPE

• Nowcasting
  – Non-precipitating echoes/insects
  – Data Classification

• Radar Data for NWP
  – Reflectivity, radial velocity assimilation
  – VAD Winds
Segmenting the DQ Process

- Remove Artifacts
  - Cleaned Up 3D volume
- Estimating Surface/3D Radar Moments
- Estimating Surface 3D Precipitation
- Mosaicing Space-Time Estimation
First Intercomparison will assess artifact correction algorithms.
Doppler Filtering is popular
Fuzzy Logic Technique for Removal of Anomalous Propagation

Liping Liu, CMA
CAPPI is a classic technique to overcome ground clutter
Iso-range “Variance” as an intercomparison Metric

Accumulation – a winter season

log (Raingauge-Radar Difference)

No blockage
Rings of decreasing value

Difference increases range!

Daniel Michelson, SMHI
Variance Metric

Similar to before except area of partial blockage contributes to lots of scatter. Algorithms that are able to infill data should reduce the variance in the scatter!
What length of data sets are needed?

Highly Variable                              More uniform, smoother, more continuous

[Image: Radar data showing airplane tracks and QC fields]
1. Uniform weather
2. Doppler filter can filter weak weather

The data accumulates to uniform pattern with an area of blockage. Widespread snow. Urban (skyscrapers) and small terrain clutter. IRIS formatted data. 24 elevation angles. Doppler (dBZT, dBZc, Vr, SPW) at low levels. Range res = 1km or 0.5 km. Az res = 1 or 0.5 degrees.
BSCAN of Z accumulation with no filtering, Doppler and CAPPI
Probability Density Function of Reflectivity as a function of range
Spread of PDF (at constant range) for various cases and techniques...

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<th>RAW</th>
<th>CAPPI15</th>
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