

SASBE Demo Study

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Temporal Drift in Measurement



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GRUAN Spatial Drift in Measurement



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Method

- Use Tobin-Borg best estimates of atmospheric column at the time of NPP overpass of SGP
 Data are from July-Dec 2012
- For each best estimate, interpolate nearest neighbor regular RAOBS launch to overpass time
- SGP had 4x daily launches during this period
- 2x daily launches simulated by considering only 0/12Z RAOBS as potential nearest neighbors



Infrared Profiling and In Situ Measurements



Sondes superimposed on timeseries of temperature retrieavals at different atmospheric levels from ancillary data



Profiles of residuals



Compare T and Q best estimates for:

- single simultaneous[†] sonde launch
- interpolating 4x daily sondes to overpass time
- interpolating 2x daily sondes to overpass time

[†] Tobin estimate used 2 sondes launched to bracket overpass time

Seven Sing raman lidar for water vapor



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Ensemble mean and variance



Using 2x daily synoptic raobs launch to generate WV SASBE with: •Simple interpolation in time (cyan) •SASBE with raman lidar (blue) •Also simple interpolation for 4x synoptic (red)

Demonstration for 20 best estimates with double dedicated sondes from Tobin and Borg; error bars show standard deviation, symbols and heavy line mean, between synoptic and dedicated SABSBEs for different synoptic recipes

Ensemble mean and variance (2)

November 2012 SGP bestEst, synoptic recipes vs. dedicated



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Ongoing work

- Integration with NPROVS+
- Updated dedicated launch inventory
- Utilizing different radiosonde processing schemes
 - LSSONDE: SGP
 - SONDEADJUST: only to 2009 (2008 for TWP), brief period in 2013 (has disappeared from ARM archive)
 - SONDEWNPN: all sites/years
 - GRUAN
- Developing quantitative performance metrics

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