Application of Humidity Corrections to ARM Radiosonde Data

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The Goal: To incorporate humidity corrections from Miloshevich (2004) into the Merged sounding VAP. There are two types of corrections found in this particular paper: (1) Dry-Bias and (2) Time-Lag.

The Plan: To create an intermediate data product available from the ARM Archive that will be used as input into the Merged sounding VAP. These new profiles will be created for all ARM radiosondes.

The Files: These files will be similar to those created by Miloshevich currently available from the ARM Archive. Miloshevich files have been created for the SGP (2000-2005). Follow the link to the files: http://dasp.archive.arm.gov/arm-cpp/qsi-data/miloshevich/

Take Home Messages:
1. The Merged sounding VAP’s first run has been completed for 42 combined years at all fixed and AMF sites. These files are at the ARM Archive.
2. The second version of Merged sounding using the corrected RH profiles will begin its run shortly.
3. An intermediate data product will be created for all Vaisala radiosondes: RS-80, RS-90, and RS-92.
4. Integrated water vapor differences between the original and adjusted RH profiles is significant.

What are the Specific Corrections Involved?
Miloshevich (2004) encompasses adjustments from Wang (2002). The corrections are:
W1. Ground-Check Error,
W2. Temperature Dependency Error,
W3. Contamination Correction,
W4. Basic Calibration Correction,
M1: Time-Lag Correction.

Table 1. Radiosonde classes used by the ARM Program since inception. All sondes are manufactured by Vaisala. The RH corrections will first be applied to all RS-80 sonde class, followed by the RS-90 and RS-92 sonde classes.

Table 2. A Summary of the figures above. The integrated water of both the pre-corrected and post-corrected RH profile for each are presented. The dry-bias correction of Wang and the time-lag adjustment of Miloshevich result in more liquid in the profiles.

Table 3. Merged sounding files available from the ARM Archive. Collectively, there are 42 years of Merged sounding for your use. These do not include the humidity corrections. File access is via the link:
http://dasp.archive.arm.gov/arm-cpp/qsi-data/jensen/mergesonde/

Figure A
Figure B
Figure C
Figure D

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