

David Troyan and Michael Jensen
David Turner
Larry Miloshevich

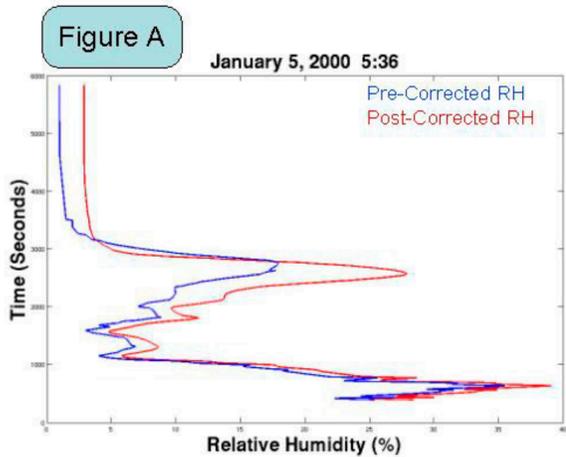
Brookhaven National Laboratory
University of Wisconsin-Madison
National Center for Atmospheric Research



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

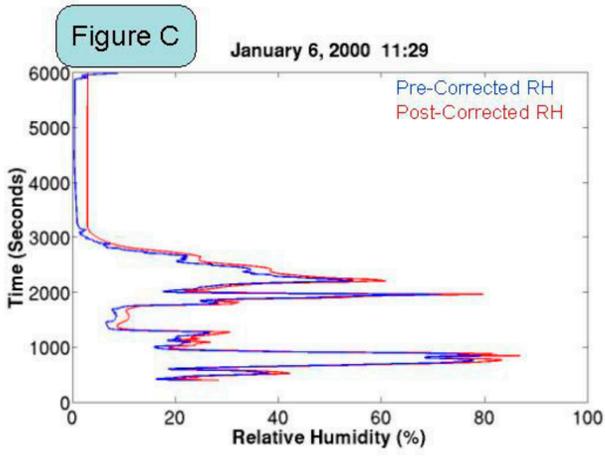
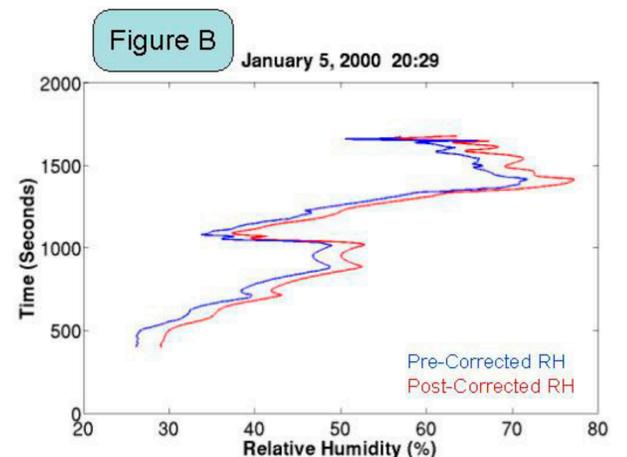
The Plan: To create an intermediate data product available from the ARM Archive that will be used as input into the Mergedsounding VAP. These new profiles will be created for all ARM radiosondes.

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://iop.archive.arm.gov/arm-iop/0pi-data/miloshevich/>



Take Home Messages:

1. The Mergedsounding 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 Mergedsounding 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.

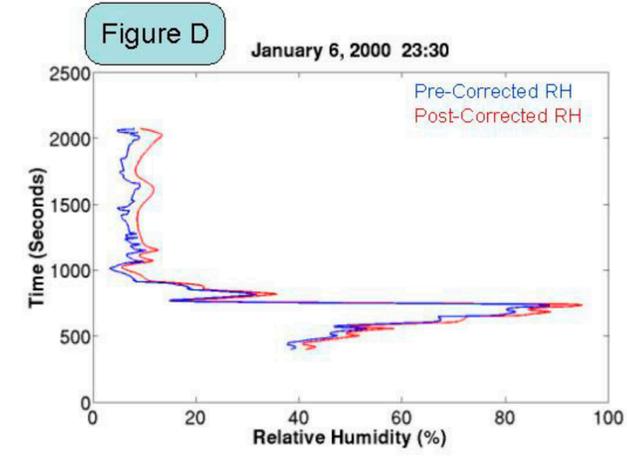


Table 1. Radiosonde classes used by the ARM Program since inception. All sondes are manufactured by Vaisala. The RH corrections will first be applied to the RS-80 sonde class, followed by the RS-90 and RS-92 sonde classes.

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. Mergedsounding files available from the ARM Archive. Collectively, there are 42 years of Mergedsounding for your use. These do not include the humidity corrections. File access is via the link:

Year	SGP	NSA	MAN	NAU	DAR	AMF
2008						China
2007						FKB
2006						NIM
2005	Feb	Jan	April	April		PYE
2004						
2003						
2002		April	Jun	June		
2001	May					
2000						
1999						
1998						
1997						
1996						
1995						
1994						
1993						
1992						

Sonde Class: RS 80 (blue), RS 90 (red), RS 92 (green)

	Date	Time	Integrated Water Vapor (in cm)		
			Post-Adjustment	Pre-Adjustment	Difference
Figure A	January 5, 2000	05:36	640.3	575.2	65.1
Figure B	January 5, 2000	20:29	908.4	832.2	76.2
Figure C	January 6, 2000	11:29	992.1	915.9	76.2
Figure D	January 6, 2000	23:30	848.1	792.9	55.2

<http://iop.archive.arm.gov/arm-iop/0pi-data/jensen/mergesonde/>

Site (Start Year)	96	97	98	99	00	01	02	03	04	05	06	07	08
SGP (1993)													
NSA (1997)													
MAN (1996)													
NAU (1998)													
DAR (2002)													
PYE (2005)													
NIM (2006)													
FKB (2007)													

Note: ECMWF is not available at SGP from 1993 to June 1996. Regular sonde launches were not made at NSA until 2002.

Legend: Red = Entire Year Available, Blue = Partial Year Available

E-mail Questions to:
David Troyan (Developer): troyan@bnl.gov
Mike Jensen(Translator): mjensen@bnl.gov

Wang, JH et. al. 2002. Corrections of humidity measurement errors from the Vaisala RS80 radiosonde -- application to TOGA COARE Data. *Journal of Atmospheric and Oceanic Technology*, 19: 981-1002.

Turner, DD et al. 2003. Dry bias and variability in Vaisala RS80-H radiosondes: The ARM experience. *Journal of Atmospheric and Oceanic Technology*, 20:117-132.

Miloshevich, LM et.al. 2004. Development and validation of a time-lag correction for Vaisala radiosonde humidity measurements. *Journal of Atmospheric and Oceanic Technology*, 21: 1305-1327.