Three ground-truth assessments of the WVSS-II systems were conducted during periods in November 2009, May 2010, and August 2010. The WVSS-II humidity data were compared with rawinsonde and ground based remote sensing systems.

### VALIDATION OBSERVING SYSTEMS

Observations taken from CIMSS’ portable “AERIbago” vehicle 24 hours/day included:
- Surface temperature, dewpoint temperature and wind
- NWS standard ceilometer
- A GPS receiver for TPW (GPS-TPW)
- An upward looking Atmospheric Emitted Radiance Interferometer (AERI) to measure boundary layer temperature / moisture every 6-7 minutes.
- A Vaisala RS92 GPS rawinsonde system.

Data are available at:

A list of all aircraft data were collected from the NOAA WOD MADIS data system for use in the assessments.

Rawinsonde observations were taken three times each night, one immediately before the majority of the UPS arrivals (~0240 UTC), another between the descent/ascents rush (~0045 UTC) and a third after the majority of departures (~0915 UTC).

- On Mondays and Fridays, scheduling of WVSS-II equipped aircraft by UPS sometimes supported only 2 launches.
- Typically, about 5-10 aircraft co-locations were available daily.
- Night observations eliminate the need to make “radiation corrections” to raw data

### ASSSESSMENT PROCEDURES

1. WVSS-II data problems described previously have been addressed:
- Data processing hardware replaced with digital systems that are unaffected by temperature
- Issues regarding water accumulating in intake tubes corrected.
- All moisture was removed from laser chambers.
- Every laser was tested for long-term stability before use.
- Test systems were independently assessed.
- Validation performed in independent chambers at the University of Wisconsin.
- Chamber at Deutscher Wetterdienst.
- Large target aircraft for research aircraft.
- Reporting Precision issues resolved on all UPS aircraft.

2. Because the objective of the experiment was to assess the difference in good quality reports made by both the aircraft and rawinsonde systems:
- All the assessments of moisture profiles were made primarily in terms of Mixing Ratio
- Specific Humidity
- The water vapor parameter the WVSS-II measures is D8.

### ACKNOWLEDGMENTS

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