Session Title: Instrument Mentor/Data Quality Session
Session Date: Tuesday, March 17, 2015
Session Time: 7:30–9:00 p.m.
Summary Authors: Doug Sisterson and Randy Peppler

Main Discussion

Instrument Mentors: The first part of the meeting was devoted to ARM Instrument Mentor roles and responsibilities and expectations. Overall, the ARM Climate Research Facility holds the ARM Instrument Mentors accountable for the end quality of their instrument's data.

Emphasis was placed on the timely reporting and resolution of instrument issues to the ARM Infrastructure and data quality issues to the ARM Facility Users; providing instrument documentation for on-site operations teams; and engaging the scientific community on instrument upgrades, new technologies, and unmet measurement support.

At the very heart of these issues is the common thread of understanding and documenting measurement uncertainty. Mentors have provided information that helps to understand measurement uncertainty determined from instrument calibrations; but nearly all of the ARM instruments do not address environmental factors that contribute to measurement uncertainty.

Data Quality Office: DQ Office provided an overview of its mission to ensure that the quality of the data collected by the instruments and derived through value-added products (VAPs) is of the highest possible quality. A refresher on the forms that the DQ Office uses to perform its daily operations was discussed that included Data Quality Assessments (DQA), Data Quality Problem Report (DQPR), and Data Quality Reports (DQR). The purpose and proper use of these forms was discussed. Further discussion on the historical DQR review took place with the key point that 65% of all DQRs prior to January 1st, 2015 need to be modified or require further review. The last few topics were covered very quickly with little feedback.

Key Findings

Instrument Mentors: Specific expectations were provided for the four main ARM Facility groups that Mentors interact with:

- ARM Engineering – Developers that assist in the development of collections, ingests, and VAPS, and Site Data System that develop data communication requirements and ensure cyber security);
- Data Quality Office – that assist in development of high-level automated data quality review algorithms and weekly reviews of all instrument data streams;
- Site Operations – require documentation and training for on-site operators to operate, maintain, and calibrate each instrument in the field; and
- Users – sometimes Users contact Mentors about more information about their instrument data and metadata. Occasionally, Mentors are invited to be co-authors of journal articles.

Data Quality Office:

- Sometimes one cannot find problems with their instrument until they are doing the science.

- o Need to have feedback from the science community on undocumented problems they find.
- It was brought up that we do not have data on when the generator at MAO is running. Site ops personnel indicated that they were storing the data on a logger; it just needs to be ingested.
    - o Connor Flynn indicated that he would work to bring that datastream in through the Aerosol Observing System harmonization work he is doing.
- There is a need to place images and documents in the Data Quality Reports.

Needs

Instrument Mentors: Mentors were challenged to identify such errors and think about ways to address environmental factors that affect measurements that have not been addressed during calibrations so that a complete description of measurement uncertainty for their instruments can be addressed.

Future Plans

Instrument Mentors: Also, interest was expressed in holding an Instrument Mentor Team meeting this summer at the SGP to include instrument training/refresher opportunities, similar to the one that was held several years ago.

Data Quality Office:

- Contacting mentors for help with reviewing and revising old DQRs.
- Contacting mentors for help in updating our metrics tables.

Action Items

Instrument Mentors: Mentors were also asked to provide feedback about aspects of their jobs that are difficult to accomplish. They were asked to provide suggestions to the ARM Instrument Coordinator what ARM can do to help them do their jobs better (i.e., what processes should be streamlined).