Working Group Report Out

Name of WG: Meteorology

Name of Leader(s): Dave Goodrich, John Sadler

Participants: Elenora Demaria, Pat Starks, Cathleen Hapeman, Nick Webb

WG discussed pending QA questions, and Pat Starks will see if the Oklahoma Mesonet will share their QA protocols and code. WG had some consensus that QA needed to happen locally, rather than at the NAL central archive, so there would need to be standardized guidance that could be implemented across the LTAR but locally. QA tiers, for the purposes of organizing discussion, can be considered as follow.

1. Limit tests, either in datalogger programming or near-real-time post-processing

2. If available, redundant sensors comparisons could be implemented at either stage in #1.

3. Nearest comparable weather station comparisons could be implemented in the timeline as the local site capabilities permit. At some sites, the nearest neighbor is within near-real-time post-processing distance, but in others, this would be a periodic retrospective QA step.

Multiple-sensor comparisons would necessarily depend entirely on local conditions, but opportunities exist for very powerful examinations of comparability, coherence, correlation, and trend analyses of, primarily, differences among sensors. A two-way comparison can easily determine if the sensors have become different (more so than before), and a three- or more-way comparison can detect very small anomalies, and also identify the wayward sensor.

WG discussed the issue of frequency of measurement and acknowledged the interactions among dynamics of the parameter of interest, the response characteristics of the sensor, and the current and future needs for the data.

Wind speed – 3-second maximum for gust (NOAA definition of a gust) reporting for comparison to NOAA data and some cooperative networks.

Air temperature/Relative Humidity – 5 to 15-min data are obtained at most known stations, with 1-min data obtained at JER for comparison or use in LTER (raising the question of what their guidance is)

Rainfall – Most sites with interest in rainfall dynamics obtain data on 1-min or 2-min basis. Some legacy stations report on 15-min basis, and historically, most data are daily, with the higher-grade data being hourly.

Radiation parameters – highly dynamic parameters, but many uses are simply longer-term totals or averages. If there is an interest in cloud-edge-passage analyses, then higher-frequency data could be considered.

One site mentioned they produced weather data output specifically at times and in format for direct ingest by a model. The variety of models probably precludes a universal choice for this idea, but it does illustrate a specific use of the data to consider.

Summary of Discussion:

Decisions Made:

Next Steps: Survey each location as to what frequency they are currently using for all the met variables (query instrument, sample time, reporting time, latency time) and type of data logger used. Ask each location if they have well developed QA/QC. If a group agrees they want to set up according to another location the opportunity exists to use common QA procedures and programs.

Top 3 Priorities for the coming year:

1. Develop sampling guidelines and have sample data logger programs available with first stage QA
2. Develop and complete second stage QA/QC guidelines and programs
3. Vet and further develop metadata requirements draft produced by Jeff Campbell and ask each location to complete as much as they can of the metadata.