Session 2A: Interoperability, Compatibility and Accessibility Observation/Instrumentation Standards

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Synopsis

Mr. Dombrowski opened the discussion by posing the following questions:

- Standardization: How much, versus guidelines, and who validates?
- Who takes responsibility?
- Metadata: Should there be a national/global database?

The subsequent discussions included the following topics:

Metadata. There is a need for and an expectation of national standards being developed and eventually implemented. Second generation software for automated observing systems will include database fields and entries that capture metadata. In addition, these databases will include digital photographs depicting sensor siting and the immediate surrounding environment. NWS will be upgrading metadata for the Automated Surface Observing System (ASOS), Cooperative Observing Networks, as well as NEXRAD/WSR-88D. NWS plans are to collect/update their current metadata files and to make these data sets available to third parties. These data sets must identify the source/provider of the meteorological data as well as the metadata that is being collected and shared. The challenge will be how to create an incentive so providers will maintain and provide their metadata to other users.

Mesonets. What are some incentives to enlist mesonet participants and also have them comply with standards? One suggested incentive was for the government to cover communication costs in exchange for access to sensor data. Another incentive was the added value derived from processing the data and performing comparisons/error-checking with other reporting sites--basically, data quality control and assimilation. In Oklahoma, weather sensor data "piggy-backed" on the state law enforcement communications system, which, inturn, provided data to forecasters as well as local officers and state troopers. An aviation example of incentives was the meteorological community's need for water vapor data from commercial aircraft. The water vapor data improved aviation models and forecasts.

With regard to standards compliance, continual testing and monitoring will be necessary. However, strict compliance with standards as a test for entry into the national database will have to be balanced with having no data at all. The U.S. Department of Agriculture and road/highway interests are logical partners for expanding the networks for collecting surface meteorological data. The U.S. Department of Transportation is seeking assistance from the NWS on performance standards for their Environmental Sensor Systems (ESS) (also known as Road Weather Information Systems). The NWS could also benefit and learn from the Intelligent Transportation System (ITS) standards development process.

The NWS has asked the National Climatic Data Center (NCDC) to conduct a spatial density study in support of the New England COOP demonstration project. The NCDC study will focus on identifying data gaps in the COOP network.

Quality control of data.

- Data Reliability--users approach the issue of unreliable data in two ways. At the field operations/local level, users rely upon their individual familiarity with the data source/provider, known siting/location characteristics, biases, etc. If they are not familiar with these factors, then they attempt to locate information in any central databases that are available.

- Instrument calibration and maintenance--two very important functions in assessing data quality. With regard to calibration, state DOTs desire any guidance/guidelines on instrument calibration and sensor maintenance that can be applied to their ESS. Automatic data monitoring that flags and sends a message back to the provider on suspect data is very effective. In addition to built-in test algorithms, the ASOS has a staffed monitoring center with online diagnostics capabilities for these purposes. In the event of a problem, the monitoring center can dispatch electronic technicians to complete repairs and calibrate sensors.

Siting. ASOS siting was a collaborative effort between NWS and FAA. Determining appropriate siting on airfields was difficult due to many regulatory constraints (clearance from runways) and other considerations (power availability, inability to trench and lay new power, etc.). Ultimately, these limiting factors required some compromises. With regard to siting RWIS along highways, by and large, in-road sensor placement have driven siting of these systems. Thus, current siting is not optimal by meteorological standards and practices. Through more coordination between state DOTs and the local NWS offices, there is potential for leveraging resources and improving siting of future RWIS systems

Another consideration related to siting is the needs of the climate community. A major issue is to identify the actions that each agency should take and establish an appropriate timeframe for those actions.

The general consensus among the participants was recognition and likely acceptance of the WMO approach, where there are many guidelines, but few standards. This approach may be the key particularly for enlisting participation of non-government mesonets and access to other non-traditional observations.