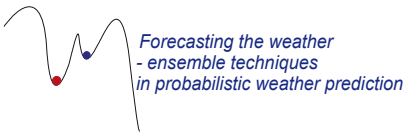
EMS Annual Meeting Abstracts
Vol. 8, EMS2011-617, 2011
11th EMS / 10th ECAM



Mesonet Implementations for Improved Surface Observation Intelligence

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Environmental observations play a critical role in serving many national and regional interests, yet there are significant gaps in national and regional weather monitoring capabilities around the world. Adequate weather and lightning detection observations could greatly improve public safety, energy efficiency, agriculture, security, transportation and other important functions. A robust weather observing network, or mesonet, is part of the critical infrastructure needed for modern society, just like roads, rails, telecommunications networks, water distribution systems, etc.

Meteorological observations on the mesoscale (i.e. local/regional/national scale) are of greatest importance as evidenced by the fact that the majority of weather impacts and related economic impacts are associated with mesoscale events such as tornadoes, cyclones, thunderstorms, fronts, squall lines and other phenomena. The importance of these events only becomes greater within the broader context of climate change.

The development of comprehensive densely spaced observing systems can establish the critical information repositories needed to improve: short- and medium-term weather and wind forecasting down to local scales, climate monitoring on a regional basis, as well as decision support capabilities including nowcasting, advanced severe weather warning, plume dispersion modeling and air quality forecasting, to name a few.

This presentation will outline the major building blocks of a mesonet program and discuss best practices for a multi-tiered, multi-faceted “network of networks” approach that maximizes the value derived from leveraging existing assets and serves multiple needs.