

High Resolution Surface Station Network in Severe Weather Forecasting

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On the afternoon and evening 17 June 2009, a severe weather event including tornadoes erupted over parts of Minnesota. Critical to forecasting and nowcasting this event was the use of the Mesowest, developed by the University of Utah and the NWS. Mesowest is an online resource which uses a variety of surface reporting stations and reporting networks (NWS, RAWS, SNOTEL, and CWOP) to create a geographic information system (GIS) based high resolution set of frequently refreshing data tailored to a user specified geographic area.

Mesowest utilizes a higher resolution dataset than is available from hourly ASOS (Automated Surface Observing Station) network reports. Station data are available and uploaded to the internet, with an option a user can specify how often to update the map, with 3 minutes being the quickest. Mesowest also features the ability to take individual components of a surface station report and allow them to be shown in an overlay format for fast viewing of data such as temperature (Fig. 1). The ability to use this resource as an accurate data source hinges on making sure any stations are not erroneously reporting data. Mesowest is able to point out which stations are 'suspected' having bad data by identifying the stations as such on the interactive map, such as the station just north of Stewartville, MN. (Fig. 1) Mesowest can also serve as a valuable resource for post storm analysis and case studies. An archive feature is available to obtain surface conditions from a user specified time and date, with all GIS layers available for plotting and subjective analysis.

Mesowest have proven its value by contributing to the successful intercept of severe storms on June 17th, 2009 by allowing the authors to locate mesoscale surface features faster than relying on traditional ASOS sources. The use of Mesowest has also been implemented as a remote sensing forecasting tool for the St. Cloud State Storm Chase Club as a key tool to improve forecasting skills in convective environments. Mesowest also could be of benefit as a forecasting tool for NWA members, broadcast and operation meteorologists particularly in short term forecasting and climatological applications.

Further information about Mesowest can be found at <http://mesowest.utah.edu> or by contacting Mesowest at atmos-mesowest@lists.utah.edu

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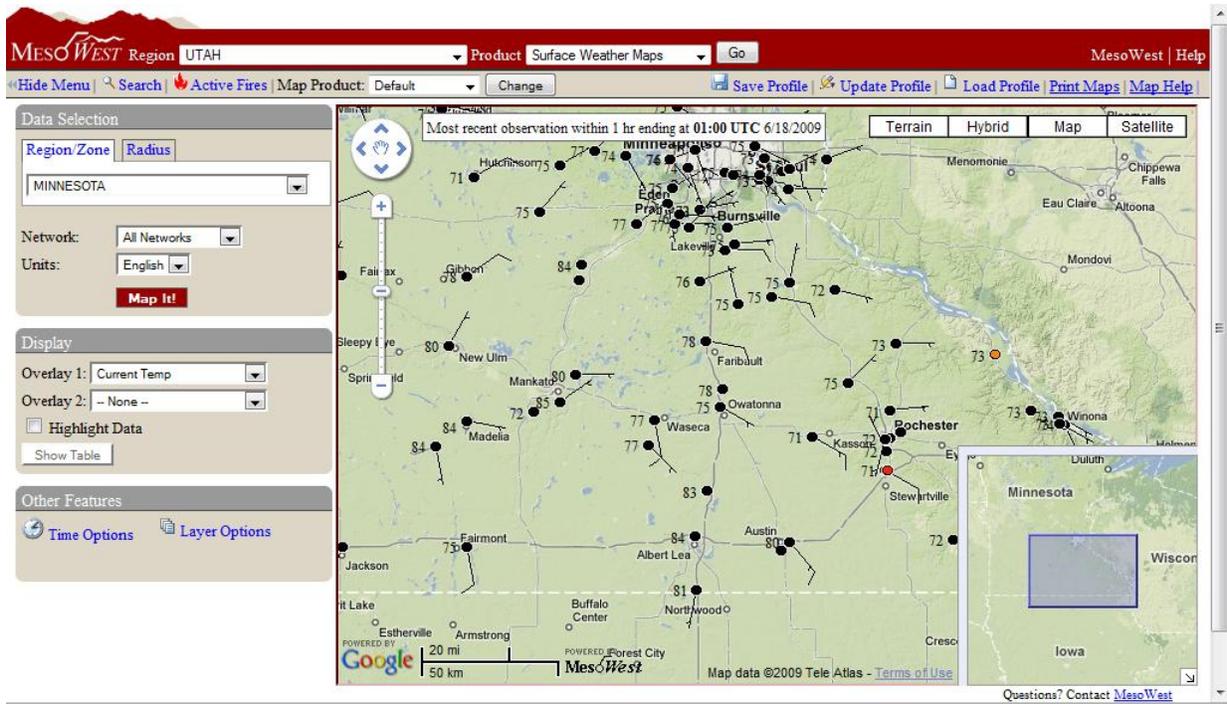


Figure 1 – Sample Mesowest Page. Conditions are from 1:00 UTC 18 June 2009 (Source: <http://mesowest.utah.edu>)