MADIS the Pathway to NWS Operations

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The Meteorological Assimilation Data Ingest System (MADIS), developed by The National Oceanic and Atmospheric Administration's (NOAA) Office of Atmospheric Research (OAR) and the National Weather Service (NWS), extends NOAA's observational networks by collecting, integrating, quality controlling (QC), and distributing observations from NOAA and non-NOAA organizations. MADIS leverages partnerships with international agencies; federal, state, and local agencies (e.g. state Departments of Transportation); universities; volunteer networks; and the private sector (e.g. airlines, railroads) to integrate observations from their stations with those of NOAA to provide a finer density, higher frequency observational database to NOAA and the greater meteorological community. MADIS has become a conduit for collecting and disseminating meteorological observations from NOAA and non-NOAA sources today MADIS ingests over 60,000 surface stations as well as upper-air datasets including satellite, wind profiler, radiometer, and automated commercial aircraft observations. MADIS is aligned with the National Mesonet (NM) program and the concept of from the ground up to capture data to fill in gaps in NOAA's data systems. MADIS adds value by quality controlling the observations, time matching the data, providing standardized units for measured values, and by simplifying access to the data by supplying a common interface for users to acquire the data. MADIS can also restrict access to data based on provider needs, which allows NOAA to use the data for research and operations without impacting the provider's business model.

MADIS started as a research project in 2001. In 2007 the NWS and OAR started the transition effort of moving MADIS to operations within the NWS. On January 21, 2015 NWS declared MADIS operational. The NWS' National Centers for Environmental Prediction (NCEP) Central Operations (NCO) as part of the Integrated Dissemination Program (IDP) houses MADIS and provides 24X7 support, the MADIS archive is housed at the National Environmental Satellite, Data, and Information Service (NESDIS) National Centers for Environmental Information (NCEI), and OAR's Global Systems Division is responsible for the continued evolution of the MADIS system.

NWS and other organizations see that MADIS is the pathway for quickly moving other observational systems into NWS operations. The blending of other observational systems into MADIS helps to strengthen not only the MADIS system but also the system that is being transitioned. Combining other observational systems into MADIS simplifies the architecture and reduces support costs while providing users a standardized interface for acquiring diverse meteorological data.

This talk with focus on the following systems that are currently being integrated into MADIS:

- The Federal Highway Administration's (FHWA) *Clarus* system.
- The NWS' Hydrometeorological Automated Data System (HADS)/Automated Flood Warning System (AFWS).
- The NWS' SNOw TELemetry (SNOTEL) data system.
- Aircraft Based Observations.
- One minute FAA ASOS data.

And other data and data systems being discussed as potential candidates for inclusion in MADIS.

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