Multi-Radar/Multi-Sensor Tools for Aviation
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NSCL’s Multi-Sensor/Multi-Radar (MRMS) Aviation program and the Aviation Weather Testbed work to merge the best observation science with appropriate displays for users and post processing of varying sophistication. Using the same data sets, the focus is on providing information quickly for IDSS (impact-based decision support service) meteorologists using internal NWS displays and for pilots and air traffic flow managers (TFM) via web services or FAA internal displays.

MRMS is an automated system that rapidly and intelligently integrates data from multiple radars and radar networks, surface and upper air observations, and numerical weather prediction (NWP) models.

The top left image depicts an example of composite reflectivity data formatted for use by meteorologists and for TFM. The meteorologist is accustomed to viewing this data using color curves mapped to 0.5 dBZ resolution while TFM is accustomed to viewing the same data in six discrete bins of dBZ values. This feature is already available.

The bottom left image depicts radar reflectivity along a flight level (FL). MRMS currently depicts reflectivity in km above mean sea level. The aviation community uses FAA flight levels as its vertical coordinate. The collaboration is accelerating this development.

The upper right image depicts a feature where data age and confidence are easily accessible by decision makers and interrogated by post processing software as components of decision support services. This provides a rapid response to the question of data age asked in the air traffic management community.

The middle right image depicts one way MRMS can provide information about cloud bases and cloud vertical depth away from the airfield. Surface-based cloud observing systems are designed to provide cloud base and coverage information over and adjacent to the airfield. Clouds along arrival and departure paths can reduce air traffic safety and efficiency at distances up to 150 miles from the airport. Visualizations combined with decision support tools can provide alerts when clouds either reduce the number of aircraft per hour that can fly along an arrival or departure route or close the route.

It’s the same data!!

0.5 dBZ resolution for mets

Six categories for pilots and air traffic managers

Given my assigned altitude can I fly over, can I deviate between, or must I go around?

6 min ago 50 ± 10 dBZ

What is the confidence interval?

Coming by FY20
Cloud detection

Coming by FY21
How old is the data?

What is the confidence interval?