



# FAA Multi-Radar Multi-Sensor (MRMS) System



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FEDERAL AVIATION ADMINISTRATION

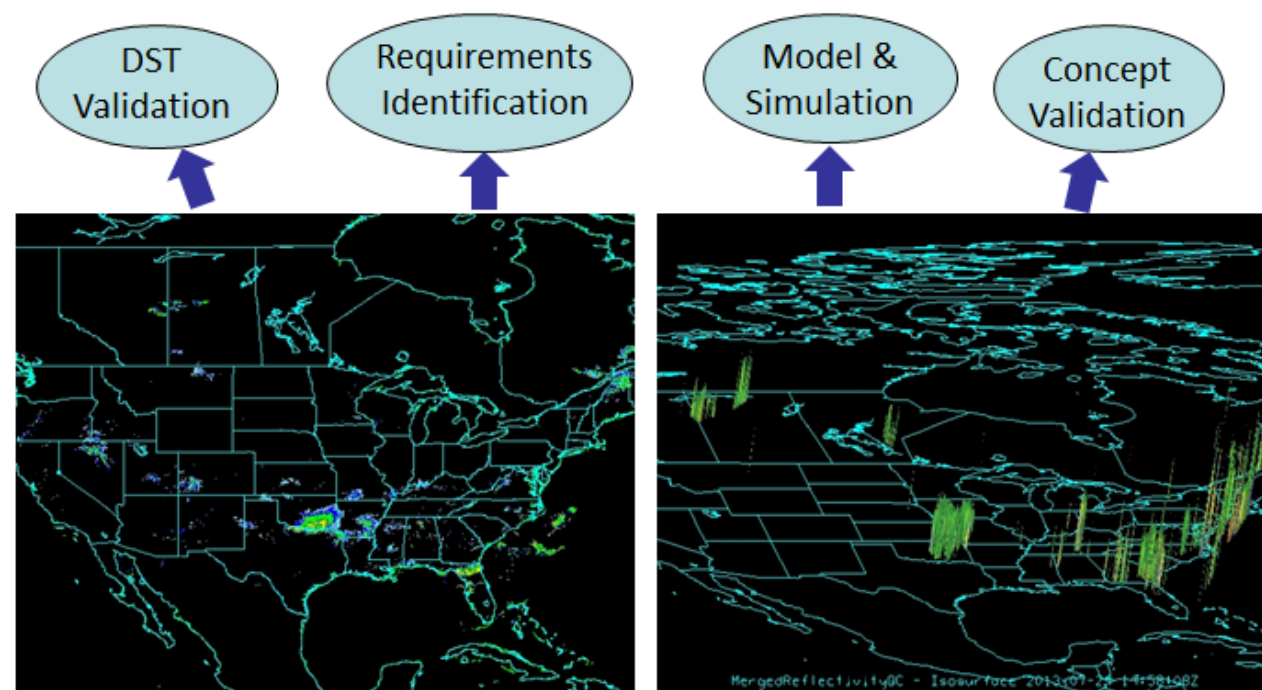
## Abstract

The Federal Aviation Administration (FAA) William J. Hughes Technical Center (WJHTC) Multi-Radar Multi-Sensor (MRMS) System integrates data streams from operational weather radars including the CONUS and Canada, surface and upper air observations, as well as satellite and forecast models.

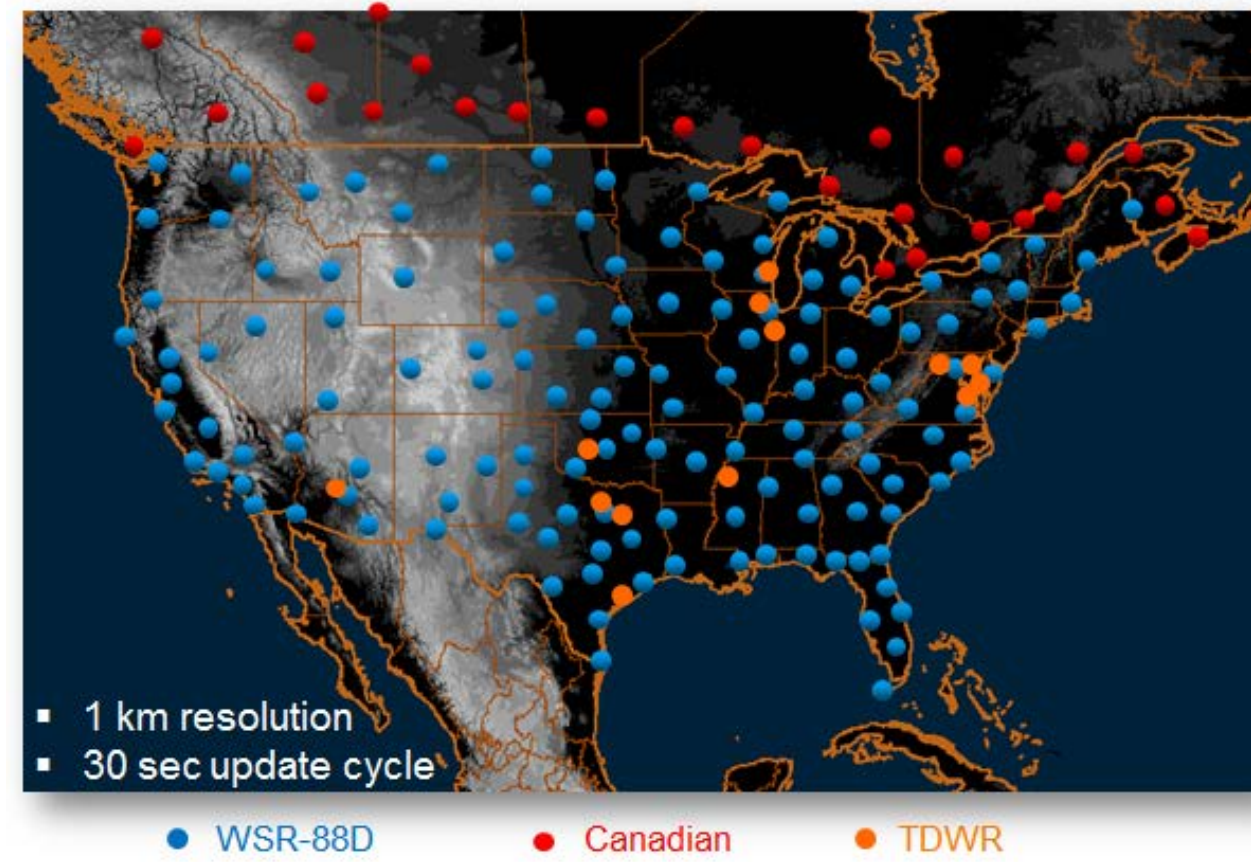
The system generates 3-D national radar mosaics every 30 seconds with 1 km horizontal resolution and advances techniques in quality control and icing detection. The 3-D radar mosaic technique is also implemented at the National Severe Storms Laboratory (NSSL) and at NOAA/NCEP for operational data assimilation and analysis into numerical weather prediction models that can support NextGen concepts.

The role of the FAA MRMS system is to facilitate research-to-operation developments for the aviation community. The system at the WJHTC facilitates evaluations of various MRMS products in an aviation environment, and provides valuable feedback to guide future Research and Development (R&D) efforts. The FAA system provides MRMS data to groups that utilize the product to design validation requirements for weather aviation products, which are then tested on real aviation traffic and weather data.

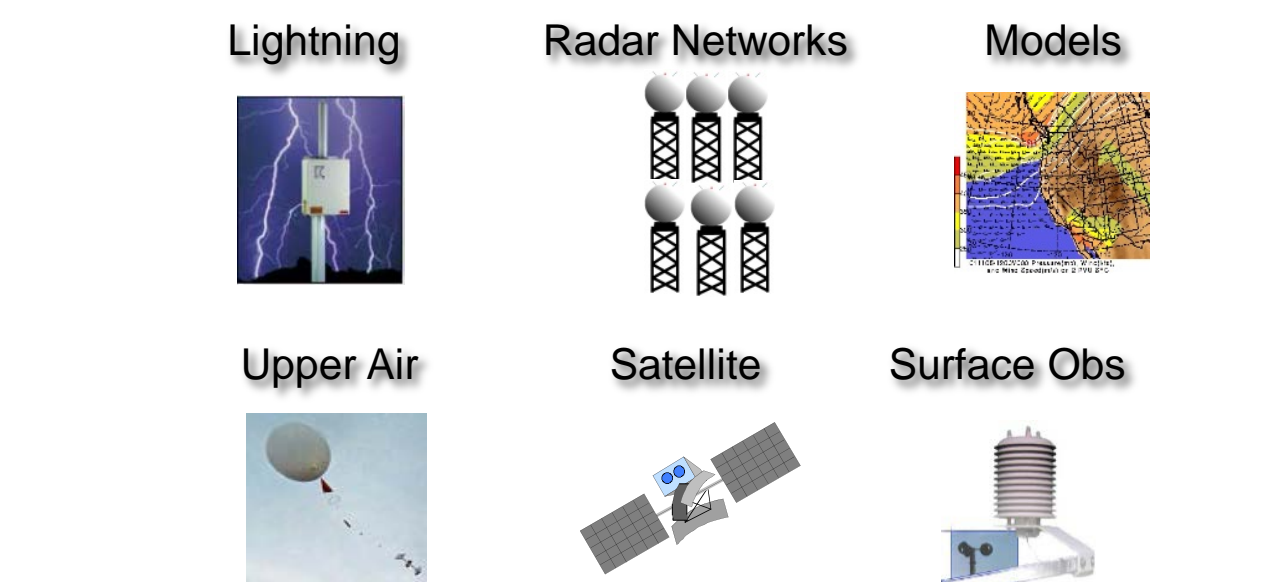
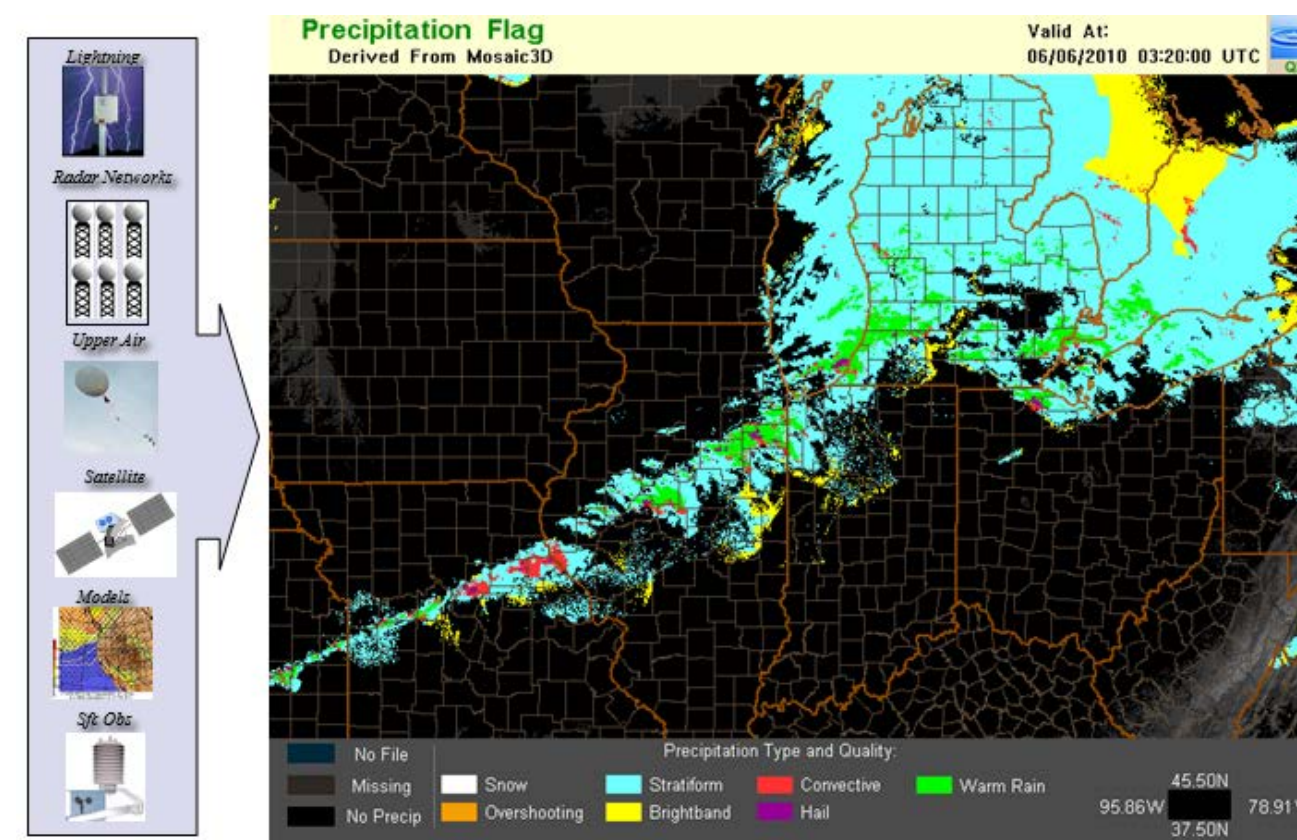
### "A Powerful 3D Weather Radar Capability"



## Overview

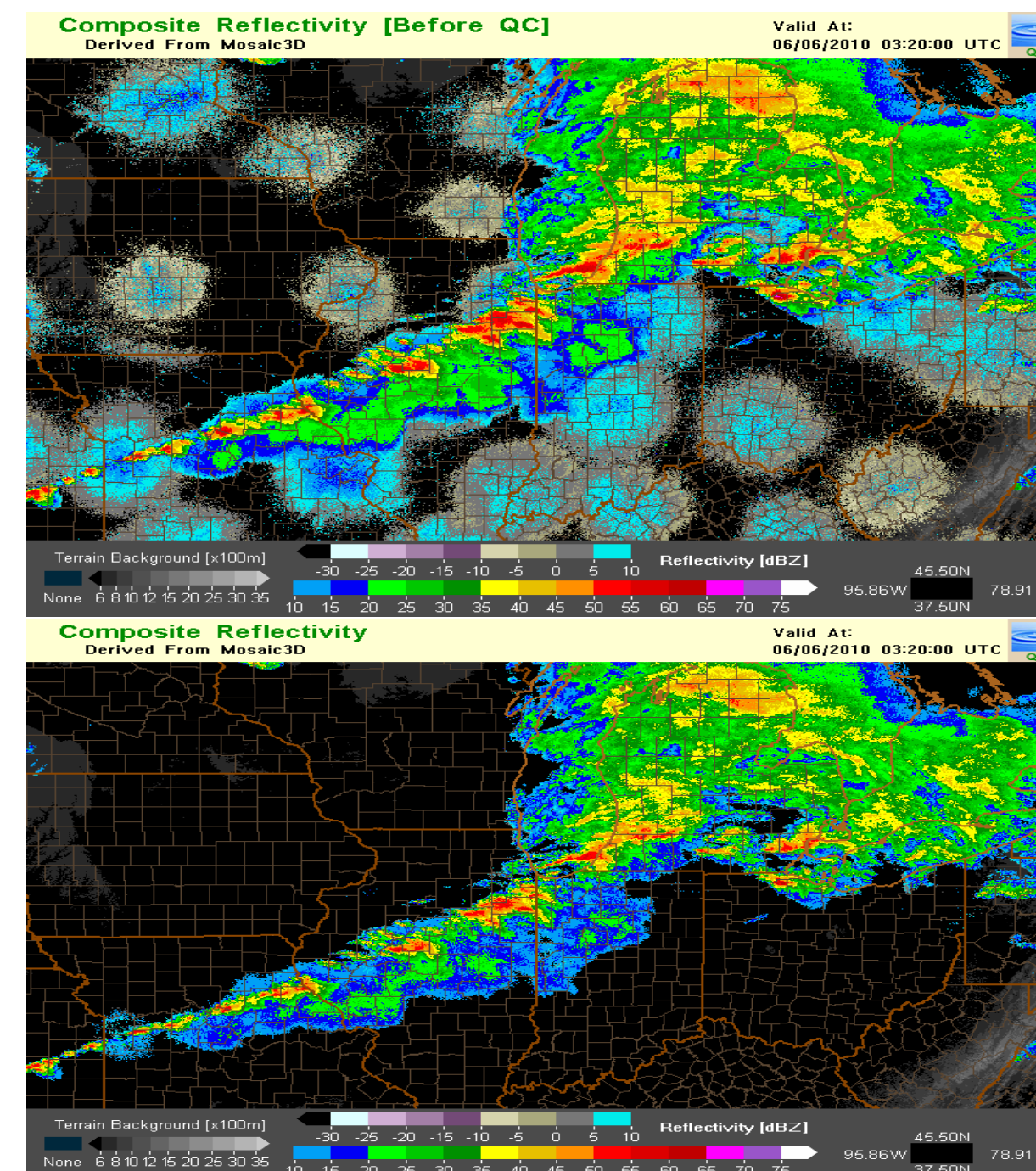


### MRMS Domain — Multi-Radar



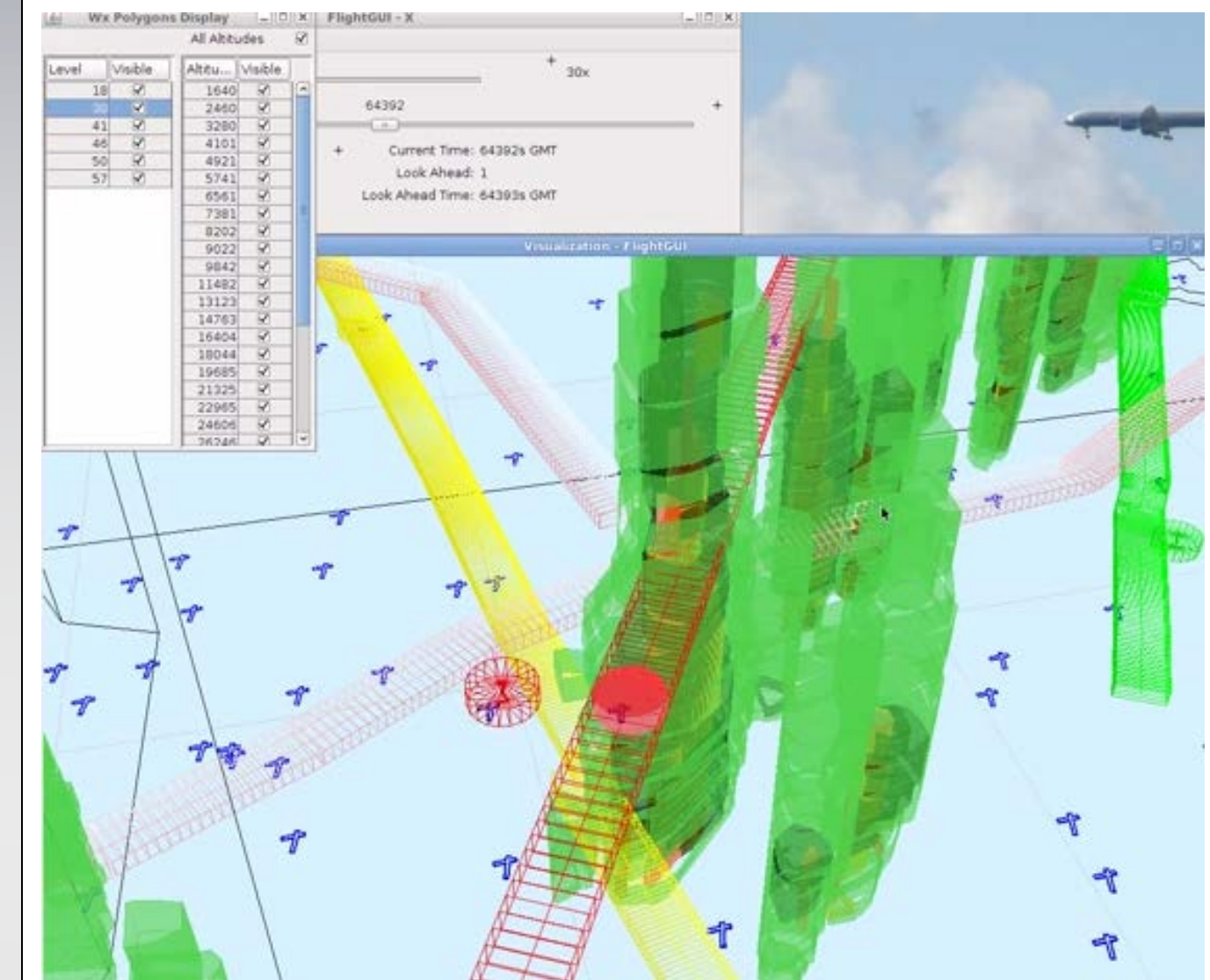
### MRMS Domain — Multi-Sensor

## Advancements in Polarimetric Radar Quality Control



Advanced polarimetric radar techniques are of particular interest for aviation weather applications. Studies utilizing MRMS data have shown that polarimetric radar data has improved the capability to discriminate between different types of hydrometeors (e.g., hail vs. rain and liquid vs. frozen precipitation in winter). This information is useful for airport deicing operations as well as for in-flight icing hazard warnings.

## MRMS in Aviation



### FliteViz 4D Weather

The FAA Concept Analysis Branch has developed an interactive four-dimensional (4D) visualization tool for analysis of practically any aviation concept. This tool overlays 3D MRMS products with real aviation traffic to examine flight deviations while encountering weather events.

### Acknowledgements

1. FAA Weather Engineering and Evaluation Branch
2. Data Transformation Corporation (DTC)
3. FAA Concept Analysis Branch  
<https://acy.tc.faa.gov/fliteviz>
4. National Severe Storms Laboratory (NSSL)  
<http://mrms.ou.edu>

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