

Integration of Weather Information for Improved UAS/UAM Operation Planning



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AN AIRBUS COMPANY

Motivation

Weather impacts both safety and efficiency of air traffic operations

- Leading cause of delays for commercial air traffic in the US
- Leading cause of fatal accidents

UAM/UAS missions are more susceptible to weather hazards than traditional commercial air traffic

- Sensitivities to weather hazards
 - Precipitation
 - Wind
 - Turbulence
 - Icing
- Large variability of UAM/UAS performance characteristics

Weather data products available today are insufficient for strategic and tactical UAM/UAS mission planning

- Spatial and temporal resolution
- Refresh rate
- Inadequate (often unknown) accuracy - in particular, for low-altitude airspace (ground to 5,000 ft)



Test Site Opportunities for Improved Weather Integration for UAM

Development and validation of enhanced weather forecast products

- Confined airspace region allowing for more accurate modeling
- Ability to install enhanced instrumentation and sensors providing critical observation data
 - Assimilation into numerical weather prediction models
 - Forecast validation

Testing and validation of UAS/UAM sensitivities to weather hazards

- Performance degradation testing in controlled experimental conditions
- Modeling and validation of weather impact models specific to classes of UAS/UAM
- Development and validation of decision support tools



Metron Aviation Activities in UAM

Weather Translation Models

- Studying shortcomings of current aviation weather forecasts
- Reorienting Weather Translation models to address lower altitude airspace

Strategic Planning Tools

- Investigating resource allocation issues for the UAM environment
- Prototyping a strategic UAS/UAM airspace planning tool, which can be used in the UAM or UAM test range environments
 - Includes weather risk

