The Development of Data Assimilation System for the Regional Rapid-Refresh Model within the Enterprise Integrated Aviation Weather System (eIAWS™)

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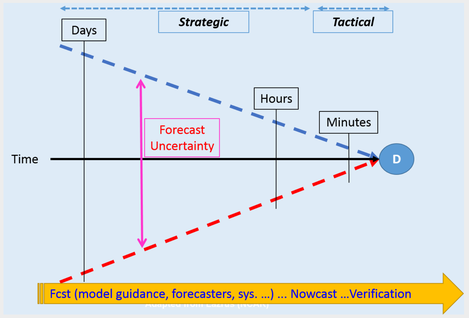
Background

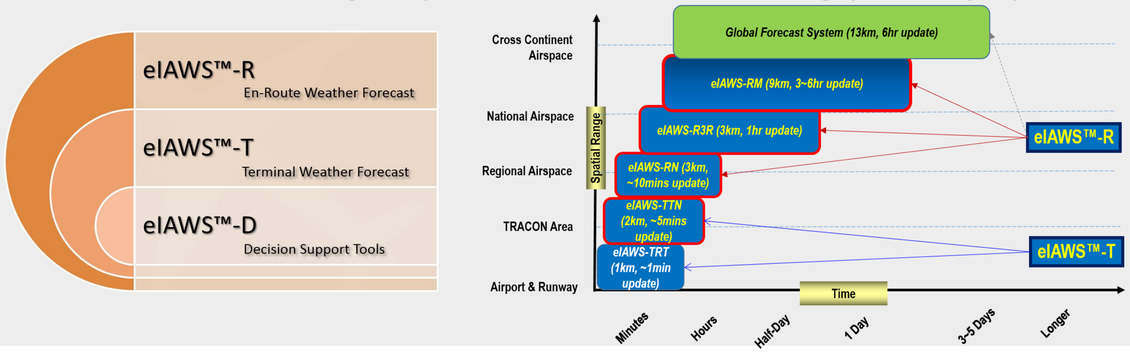
Nature of Aviation Weather Forecast



Science-driven forecast process for a continuous stream of high-res, operational-significant aviation weather information from days to within minutes of decision making.

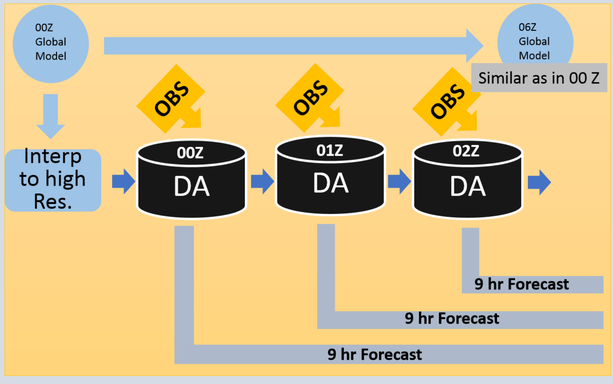
To be optimized for Air Traffic Management (ATM)-specific decision-making through comprehensive integration of forecast results and decision making behavior

eIAWS™ core Modules covering the operational ATM/ATC decision making spatial-tempo spectrum



Regional Rapid Refresh (3R) – eIAWS™-R3R

Need hourly update high resolution weather forecast up to 9 hours that covered East China Air Traffic Control area to support the decision making of strategic operation of air traffic management and air flight.
Each component needs to be carefully designed due to limited computing resources at customer side.

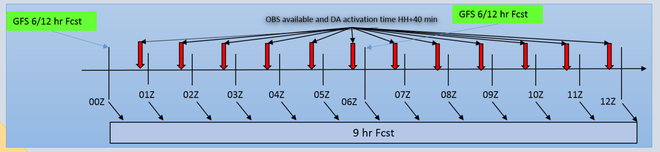


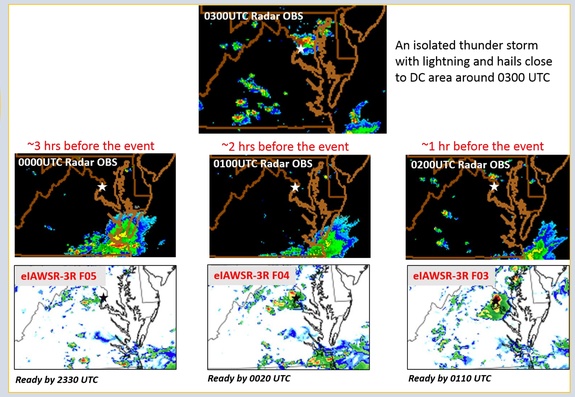
Requirement of DA system:

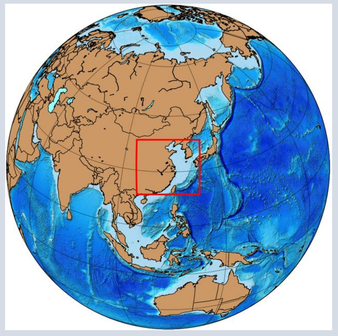
- Reliable, fast ingest and quality controlled observations
- Easy to tailor with numerical models
- Capability of ingest varies types of observations
- Fast, efficiency and easy to maintain

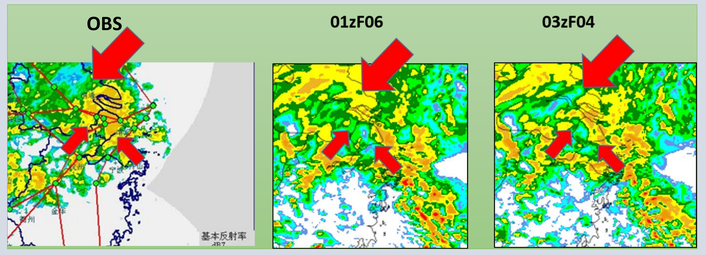
Preliminary Results

- ❑ The community Gridpoint Statistical Interpolation (GSI) is used to assimilate various observations into the system
- ❑ Data assimilated including conventional surface and upper air observations, radar, aircraft and satellite.









Future developments

- ➢ Fully developed DA system tailorable to different numerical prediction model and customer requirements
- ➢ Special treatment of aviation related data to support ATM specific decision making

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