



Predictive Weather Display and Decision Support Interface for Flight Deck

NASA has developed a software-based innovation that provides a predictive weather display and flight trajectory decision support interface tool.

It is envisioned in the Next Generation Air Transportation System (NextGen) that weather forecasts will be available and assimilated into decision-making processes. The Flight Deck Predicted Weather Display and Decision Support Interface was developed to enhance a traditional cockpit display of traffic information. The interface supports the temporally coordinated viewing of dynamic extrapolations of forecast weather and projected Ownship position on planned or proposed trajectories. The latter allows the interface to be used in conjunction with possible future flight deck route assessment tools for in-flight trajectory planning. Concepts behind different methods governing users' interactions (see below) can be combined and applied to manipulating and displaying predicted weather forecast information on different platforms for different end users.

This technology is available for licensing from NASA's space program to benefit U.S. industry.

Technology Details

The Flight Deck Predicted Weather Display and Decision Support Interface is a suite of three methods that support the display of flight deck predicted weather and pilot weather-avoidance routing. The interface utilizes weather objects derived from various convective weather information sources and/or weather objects manually produced via in-house generation tools such as StormGen (also available for licensing from NASA). All three methods support the viewing of predicted weather forecasts over future time intervals and locations. They differ by the means which a user sets the predicted range and controls the viewing of the predicted forecast and Ownship position.

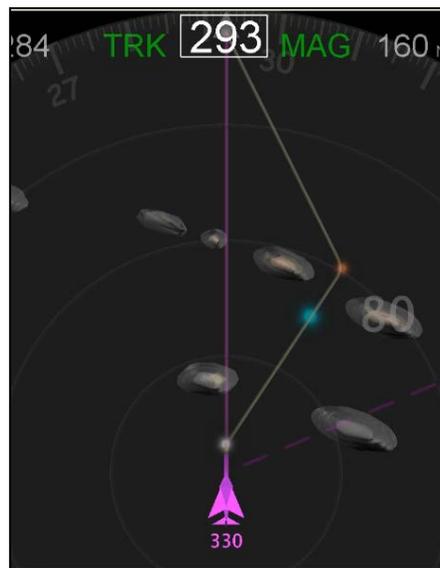
In the first method (Pulse), once a pilot selects a future temporal interval, or range, a repeating synchronous extrapolation of the weather and aircraft position over that range is automatically and repeatedly shown - much as one sees on TV weather reports. But this is an extrapolation into the future, not a recording of the past. In the second method (Slider), the pilot utilizes a slider to select a specific time ahead (e.g. 10 minutes in the future) at which to continuously monitor the predicted weather. In the third and final method (Route), the pilot can select a location along Ownship's future route, and monitor the weather predicted for when he or she reaches that location. These methods have their own specific situations in which they are most useful, and implementations of them are not exclusive.

Patent

This technology is protected by a pending U.S. Non-Provisional Patent Application. (Reference No. ARC-16833-1)

Benefits

- Can be displayed on different platforms for different users
- Three methods can be combined and applied for manipulating and displaying predictive weather forecast information
- Increased responsiveness with interface



Cockpit Situation Display with Weather Rerouting

Commercial Applications

- Airline Industry
- Transportation Safety Systems
- Department of Transportation
- Civil and Military Aviation
- Air Traffic Controllers