

FEASIBILITY STUDY OF SHORT-TERM STORM FORECASTING OVER THE GULF OF MEXICO BY BLENDING SATELLITE-BASED EXTRAPOLATION FORECASTS WITH NUMERICAL WEATHER PREDICTION RESULTS

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Deep convection over the ocean poses a potentially great danger for trans-oceanic flights, as tragically demonstrated by the Air France Flight 447 accident of 2009. This paper describes a forecasting system that will produce 0-12 hr convective forecasts over the Gulf of Mexico domain using a blending technique that combines satellite-based extrapolation forecasts with Numerical Weather Prediction (NWP) model forecasts.

Closely following the steps of the Federal Aviation Administration (FAA) Aviation Weather Research Program (AWRP) CoSPA development, a forecasting system is being developed to blend satellite-derived rain rate and cloud top height with their corresponding fields derived from the Global Forecasting System (GFS) NWP model. Forecasts will be computed over the 0-12 hr time frame within a domain that encompasses the greater Gulf of Mexico and parts of the continental United States. Tests of various extrapolation techniques have been completed and an optimum technique has been selected. Both the extrapolated and the GFS rain rate forecast performance statistics have been compiled. Considering the relative strength of the NWP model and the satellite-based extrapolation forecasts, a dynamical-weighting technique, similar to what is being used in CoSPA, is being tested. The weights are determined by past performance of extrapolation and model forecasts as a function of forecast lead time. A prototype blended forecasting system for oceanic convection using dynamical-weighting techniques is under construction and preliminary results of the blended forecasting system will be reported at the conference.