

Transitioning the NASA Aircraft Icing Threat Capability to NOAA Operations

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Abstract

Aircraft icing is a major hazard to aviation and no phase of aircraft operations is immune to the threat. This proposal addresses a high National Weather Service (NWS) priority to improve the diagnosis of dangerous aircraft icing conditions for the aviation community. A capability to determine the in-flight icing (IFI) threat to aircraft has been developed that uses satellite derived cloud parameters. The methods are applicable to cloud parameters now commonly retrieved in real-time from meteorological satellite data, and are particularly well suited for application to the high spatial and temporal resolution operational cloud products from the GOES-R ABI. Verification studies indicate that relative to traditional icing forecasting techniques based on NWP analyses, the satellite methods significantly improve the resolution of icing conditions, including the dangerous conditions found to be associated with several recent aviation incidents and accidents. The objectives of this proposal are to (1) integrate a state of the art satellite based icing algorithm into the NOAA GOES-R Proving Ground (PG) processing system at the Cooperative Institute for Meteorological Satellite Studies (CIMSS), (2) validate and tune the algorithm, if necessary, using icing PIREPS as guidance, (3) generate and deliver satellite-based flight icing threat (S-FIT) products to the major NWS aviation weather forecast offices and to the PG with the current CIMSS product suite, (4) develop training materials for the S-FIT products, and (5) participate in and conduct S-FIT product evaluations to acquire feedback. The expected benefits to the NWS and the aviation community include better definition and situational awareness of the in-flight icing threat, improved icing forecasts, and the potential for safer, more efficient aviation.