Aircraft Flight Reports for Validating the French Icing Forecast Scheme SIGMA

The French icing tool SIGMA (System of Icing Geographic identification in Meteorology for Aviation) has been developed by Météo France to identify aircraft icing areas. Recent improvements by the evolution of the input data had to be validated.

Databases for validating icing tools mostly consist of pilot reports (PIREPs) but just a few of them are found over Europe. Météo France has identified a new way getting reliable flight data. This data was used to validate the icing product SIGMA.

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DATA BASE

A convention has been signed with SEFA, a famous French pilot school, for an exchange of data. Météo France provides information for the flight path preparation (e.g. radar pictures, significant weather charts, TAF/METAR messages) and an access to the SIGMA pictures of icing potential and severity forecasts. In exchange the pilots fill up a form via web access. This form provides the opportunity to report about icing conditions (location, severity, duration) and the accompanying weather phenomena. Data of three years is collected until now. This data is very useful for validating the icing tool SIGMA. Furthermore young pilots become aware of the importance and utility of transmitting hazardous weather situations via PIREP.







The data fusion takes into account the relevant information from each kind of input data. All data is combined to identify the icing potential conditions areas. The horizontal resolution is 1km on 10 vertical levels and available every 15 minutes.



REPORT: 20101124 DA42 80

LFLN N4625 E00400 1344

1405 80 N4617 E00318

1420 60 N4621 E00236

TS CB DZ Turb SN HL

LFBK N4614 E00222 1500 g 1

3 Years Database of Turboprop Aircraft Flights



Annual and daily repartition are correlated with the pilot school activity. Just a few cases of moderate and severe icing cases are observed. The information given in the flight preparation obviously help to avoid hazardous conditions. More icing cases are reported in winter. This is traced back to the fact that the flight levels usually used by these pilots are well adapted to icing conditions in winter (FL50 to FL100). In winter 2010, most icing cases are reported due to worst winter weather. A few reported cases are due to convection which could be easily avoided by the pilot.



Using this methodology, we calculate the Hit (True positive, TP), the False Alarm (False Positive, FP), the Correct Rejection (True Negative, TN) and the Miss (False Negative, FN).

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consider 15km around the plane