



SIGMA: diagnosis and nowcasting of in-flight icing, improving aircrew awareness through FLYSAFE.

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SIGMA has been developed at Météo France for the detection of icing areas .

SIGMA (System of Icing Geographic identification in Meteorology for Aviation) is based on data fusion. The most relevant information for icing detection is extracted from the numerical weather prediction model, the infra-red satellite imagery and the ground weather radar reflectivities.

The quality of icing detection performed by SIGMA has been demonstrated by several evaluation and validation campaigns over Europe and USA.

SIGMA is now being adapted for direct use by Air Traffic Controllers, Airline Operation Centres and Aircraft Crew in the scope of the FLYSAFE project. FLYSAFE is an Integrated Project of the 6th framework of the European Commission consisting of 36 partners from the aviation industry, meteorological services, research centres and universities from the European Union and Russia. FLYSAFE addresses the three types of aviation threats, traffic collision, ground collision and adverse weather conditions. Its aim is to design a Next Generation Integrated Surveillance System (NG ISS), for aircraft, and to develop Weather Information Management Systems (WIMS) to provide aircraft with weather related information, in order to maintain and improve the safety of future aviation.

In the framework of FLYSAFE, new developments and improvements of SIGMA are taking place within the in-flight icing WIMS. These are possible because of recent new technologies which are becoming available :

- Higher temporal and spatial weather satellite resolution;
- New satellite elaborated products;
- 3D ground weather radar data;
- Finer temporal and spatial numerical weather prediction model resolution.

To illustrate the potential benefits of this new system on aircraft safety and air crew awareness, a case study is presented.