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FLYSAFE, nowcasting of in flight icing supporting aircrew decision making process

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FLYSAFE is an Integrated Project of the 6th framework of the European Commission with the aim to improve flight safety through the development of a Next Generation Integrated Surveillance System (NGISS). The NGISS provides information to the flight crew on the three major external hazards for aviation: weather, air traffic and terrain. The NGISS has the capability of displaying data about all three hazards on a single display screen, facilitating rapid pilot appreciation of the situation by the flight crew.

Weather Information Management Systems (WIMS) were developed to provide the NGISS and the flight crew with weather related information on in-flight icing, thunderstorms, wake-vortex and clear-air turbulence.
These products are generated on the ground from observations and model forecasts. WIMS supply relevant information on three different scales: global, regional and local (over airport Terminal Manoeuvring Area).

Within the flysafe program, around 120 hours of flight trials were performed during February 2008 and August 2008. Two aircraft were involved each with separate objectives :
- to assess FLYSAFE's innovative solutions for the data-link, on-board data fusion, data-display, and data-updates during flight;
- to evaluate the new weather information management systems (in flight icing and thunderstorms) using in-situ measurements recorded on board the test aircraft.

In this presentation we will focus on the in-flight icing nowcasting system developed at Météo France in the framework of FLYSAFE: the local ICE WIMS.
The local ICE WIMS is based on data fusion. The most relevant information for icing detection is extracted from the numerical weather prediction model, the infra-red and visible satellite imagery and the ground weather radar reflectivities.
After a presentation of the local ICE WIMS, we detail the evaluation of the local ICE WIMS performed using the winter and summer flight trial data.