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FLYSAFE - Severe weather simulations to evaluate new warnings of meteorological hazards

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FLYSAFE is an Integrated Project of the 6th framework of the European Commission aiming at improving flight safety through the development of a Next Generation Integrated Surveillance System (NGISS). The NGISS will provide information to the pilot on a number of external hazards, with particular emphasis on weather, air traffic and terrain. One of its advantage will be the capability of displaying data about all three hazards on a single screen, facilitating rapid pilot assessment of the situation. In order to improve the accuracy of warnings provided to aircraft in flight, specialised tools for generating nowcasts of atmospheric hazards are under development: the Weather Information Management Systems (WIMSs). Four types of WIMSs feeding the NG-ISS were defined, each addressing one hazard: clear air turbulence, thunderstorms (CB), icing (ICE), and wake vortices. These products are generated by on-ground systems from observations and model forecasts. To evaluate the impact of these new kind of information during realistic in-flight conditions, as well as to test the NG-ISS abilities, severe weather high resolution simulations were performed. Meteorological synthetic outputs feed the WIMS, and a flight simulator including the NG-ISS. We focus here on synthetic ICE and CB WIMS diagnosed from two heavy precipitating events simulations in the vicinity of airports. The first one is a deep convection situation over the Paris Charles de Gaulle airport, on the 23rd of June, 2005. The second occurred on the 20th of September, 1999 during the Mesoscale Alpine Program (MAP-IOP2B) near the Innsbruck airport. These two simulated events will be discussed, as well as weather hazards provided by ICE and CB WIMSs.