

REAL TIME ADAPTIVE PROCESSING OF MULTISOURCE WEATHER DATA FOR IN-FLIGHT DECISION SUPPORT SYSTEM

Within the framework of Clean Sky JTI the Management of Trajectory and Mission (MTM) study proposed the use of a new avionic radar with polarization capabilities, data fusion of multi-source weather data, and trajectory optimization algorithms in order to provide pilots a DSS (Decision Support System) able to suggest trajectory solutions minimizing noise pollution and gas emissions (CO₂ and NO_x) in each flight phase.

Through the KLEAN project, a SW package implementing Advanced Weather Radar Post-processor (AWRP) and QAI (Quasi-Artificial Intelligence) agent algorithms for green trajectory optimization has been developed and deployed to an EFB (Electronic Flight Bag).

A data fusion tool for the adaptive processing of the information coming from different information sources has been developed within the WINFC project. A SW tool for simulating the information flow coming from different sources in case of unexpected weather and traffic scenarios has been developed and used for test and validation.

All the results from the above mentioned projects are inputs to the development of a software tool running on an EFB NEXIS able to process in real time all the information incoming on board for suggesting trajectory solutions to pilots to avoid no flight zones (i.e. dangerous weather areas revealed by the on-board polarimetric radar) with fuel consumption optimization. In flight measurements collected from a prototype X-band radar within the XWALD project will be used to validate the polarimetric signal processing chain and the polarimetric radar simulators.

