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Efficient use of MET data

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At the core of SESAR's Engage knowledge transfer network is the definition of various thematic challenges: new ideas suggested by the research community, not already included within the scope of an existing SESAR project. SESAR stands for Single European Sky ATM (Air Traffic Management) Research. SESAR research projects are funded by SESAR Joint Undertaking, and Engage knowledge transfer network is one of them.
One of the identified challenges investigates the betterment of aviation meteorology (MET). The main objective of this challenge is to improve overall ATM system performance by providing better user-support tools based on improved MET products. The focus is on the synergy of several methods and techniques in order to better meet the needs of operational users and to support aviation safety (e.g., through creating early warning systems) and regulation-makers (e.g., moving from text-based to graphical information provision).
All stakeholders may benefit from this synergy: Air Navigation Service Providers (e.g., sector reconfiguration and separation provision), airlines (e.g., storm avoidance), airport operators (e.g., airport management under disruptive events), and the Network Manager (e.g., demand-capacity balancing). The challenge is, therefore, to bring the following perspectives closer: (a) for meteorological/atmospheric science, the development of products tailored to ATM stakeholders' needs, which are unambiguous and easy to interpret; (b) for stakeholders, the identification of the most suitable information available and its integration into planning and decision-making processes.
At the challenge workshop the following topics for future development have been identified:
1. Very high-resolution, very short-range forecasts using numerical weather prediction models and observational data assimilation,
2. Quantifying the sensitivity of aviation operational processes to MET uncertainty, comparing these with other sources of uncertainty (e.g. aircraft in need of maintenance),
3. Incorporation of ensemble weather information into decision-support tools, adapted for different ATM stakeholders,
4. Accurate prediction of weather conditions (e.g. visibility, glide-path wind, storm cell path) influencing airport arrival and departure operations,
5. Consolidation of climate risk assessment methodologies for airports,
6. Creating a climate forecast 'baseline' for aviation from the IPCC UN panel report.