ENV and MET SESAR Exploratory Research projects: key findings and solutions workshop

FMP-Met: Meteorological Uncertainty Management for Flow Management Positions

POWERED BY sesar JOINT UNDERTAKING

The workshop "Environmental and meteorological SESAR Exploratory Research projects: key findings and solutions" took place in Università degli Studi di Napoli 'Parthenope', Italy, on July 6th, 2022. It was organized by the CREATE project consortium and had the participation of more than 80 attendants.

Speakers from the CREATE, FlyATM4E, ALARM, ISOBAR, FMPMET, SINOPTICA and DYNCAT projects presented the results obtained from their exploratory research projects after nearly two years of operation.

WORKSHOP PROGRAMME

MORNING SESSION

09:15 – 13:15 **The MET/ENV SESAR projects: key findings and solutions**
08:30 – 9:00: REGISTRATION
09:00 – 09:15 Welcome and opening session
09:15 – 09:40 CREATE – Innovative operations and climate and weather models to improve ATM resilience and reduce impacts, **A. Riccio**
09:40 – 10:05 FlyATM4E - Flying Air Traffic Management for the benefit of environment and climate, **S. Matthes**
10:05 – 10:30 ALARM – Multi-hAzard monitoring and early wARning system, **M. Soler**
10:30 – 10:50 Q/A session on CREATE, FlyATM4E & ALARM projects
10:50-11:05: COFFEE BREAK
11:05 – 11:30 ISOBAR – Artificial Intelligence Solutions to Meteo-Based DCB Imbalances for Network Operations Planning, **M. Sánchez**
11:30 – 11:55 FMP-Met - Meteorological uncertainty management for Flow Management Positions, **A. Franco**
11:55 – 12:20 SINOPTICA – Satellite-borne and IN-situ Observations to Predict The Initiation of Convection for ATM, **A. Parodi**
12:20 – 12:45 DYNCAT – Dynamic Configuration Adjustment in the TMA, **F. Abdelmoula**
12:45 – 13:15 Q/A session on ISOBAR, FMP-Met, SINOPTICA & DYNCAT projects
13:15-14:30: LUNCH BREAK

AFTERNOON SESSION:

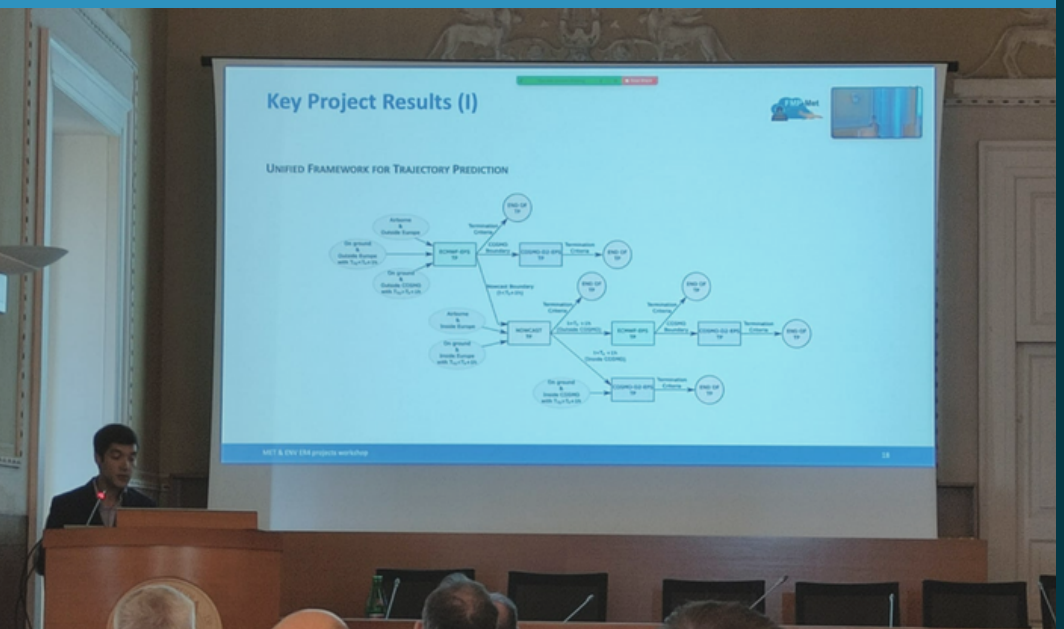
14:30 – 16:00 **Roundtable on synergies and exploitation**
The MET/ENV SESAR projects: lessons learned and future perspectives. What are the needs of future aviation and how cutting-edge innovative research can help to achieve a greener, safer, and more efficient aviation overall? How MET/ENV SESAR projects can be further exploited? How key findings could be brought at a higher maturity level? What recommendations should be kept in mind in future projects?

The FMP-Met project

Weather is difficult to predict even with the help of the latest in forecasting technology, but an accurate weather outlook is crucial for air traffic management (ATM). In this context, the framework for this project was the integration of MET forecast uncertainty information into the decision-making process for Flow Management Positions (FMP), an operational position that monitors the level of traffic in airspace sectors and coordinates flow measures when an excess of demand over capacity is detected. Thus, FMP-Met dealt with the provision of probabilistic traffic and capacity reduction forecasts under convective weather for a forecasting horizon of 8 hours (tactical traffic flow management).

THE KEY RESEARCH CHALLENGE

Analyzing the traffic flow management problem with an extended time horizon, in which the levels of uncertainty are important and, therefore, a probabilistic approach was required. In this analysis different probabilistic weather forecast products were used, with different lead times and coverage areas (the best products available at each time and location).



THE OVERALL OBJECTIVE

Providing the FMP with an intuitive and interpretable probabilistic assessment of the impact of convective weather on the traffic, up to 8 hours in advance, to allow better-informed decision making. The main outcome of the project was the development of a probabilistic methodology to forecast traffic congestion and traffic complexity to be used in conjunction with the tools currently employed by FMPs.

The FMP-Met concept to integrate weather uncertainty information into FMP tools was assessed positively by expert FMPs.

Expected benefits

- Support to take anticipated, appropriate, and timely tactical flow measures.
- Possibility of conducting what-if analyses, to have a preliminary evaluation of the impact of measures to be taken.
- Enhancement of ATM efficiency, which will ultimately reduce flight delays and improve passenger journeys.

The next steps in this research should lead to the development of a prototype tool, in close collaboration with FMPs, implementing the FMP-Met concept.

More information: **www.fmp-met.com**