



FlyATM4E

“Flying Air Traffic Management for the benefit of environment and climate”

Concept Note

- Funded by the European Commission
- Call: H2020-SESTAR-2019-2
- SESAR-ER4-15-2019: Environment and Meteorology for ATM
- 1st June 2020 – 30 Nov. 2022
- GA number: 891317
- Coordinator: [Dr. Sigrun Matthes \(DLR\)](#)

Media

- Project’s website: www.FlyATM4E.eu
- Twitter: [@FlyATM4E](#)
- [LinkedIn Page](#)
- [LinkedIn Group](#)

Project Summary

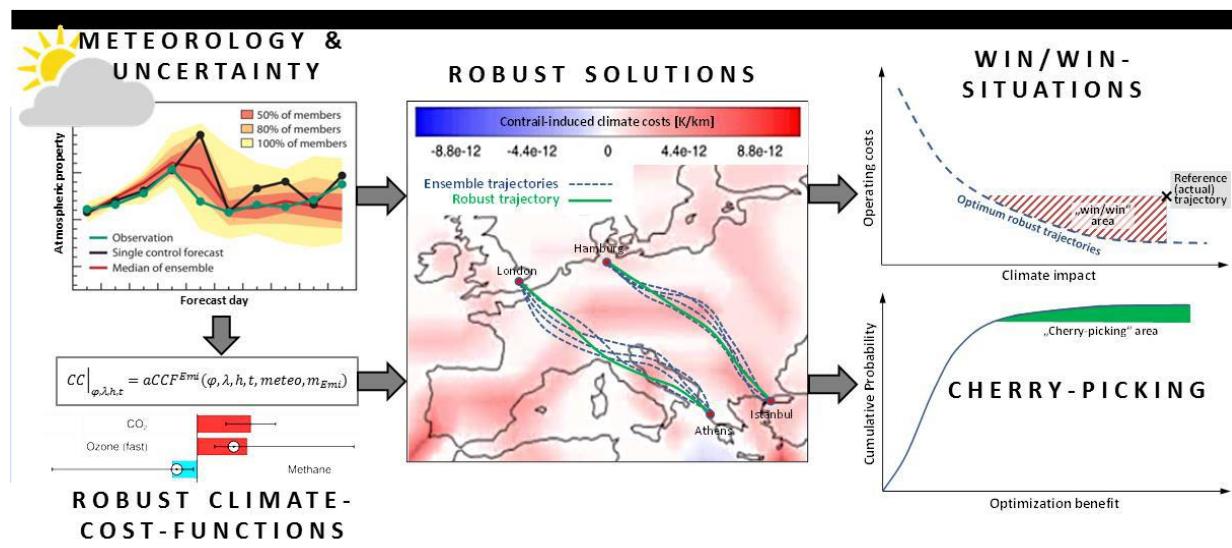
The main objective of the FlyATM4E project is to assess climate impact of aviation, including its associated uncertainties, and develop methods for the optimization of aircraft trajectories in order to identify promising climate-impact mitigation options. Overall, seeking to reduce the climate impact of aircraft operations.

FlyATM4E will develop a concept to identify climate-optimised aircraft trajectories which enable a robust (in the sense of behaving stable when facing uncertainties) reduction in aviation’s climate impact. Climate optimization will take into account CO2 and non-CO2 effects, such as contrails and contrail-cirrus, water vapour, NOx and particulate emissions. FlyATM4E will characterise those atmospheric situations that lead to climate impact despite uncertainties in atmospheric behaviour, which can be captured by ensemble probabilistic forecasts. It will further identify those aircraft trajectories in which there is a large potential to reduce the climate impact with only little or even no cost changes (“Cherry-Picking”) and those situations where both, climate impact and costs can be reduced (“Win-Win”). As a synthesis, FlyATM4E will deepen in the understanding of ATM possibilities to reduce aviation’s climate impact, but moreover how to implement such eco-efficient trajectories. To this end, the FlyATM4E consortium builds on its expertise covering the whole spectrum from atmospheric science and climate research to aviation operations research and aircraft trajectory optimisation.”

Project Specific Goals:

- To develop advance concepts to assess the climate impact of ATM operations which integrates an adequate representation of uncertainties, including CO₂, contrails, ozone, methane and water vapour climate effects, from weather forecast as well as climate science, and to provide concepts for climate information enabling eco-efficient aircraft trajectories.
- To investigate aviation's climate impact mitigation potential by developing robust flight planning algorithms through integration of uncertainties from the climate impact analysis and ensemble weather forecasts in ATM.
- To identify eco-efficient aircraft trajectories and related weather situations, which enable a reduction of both climate impact and operational costs ("Win-Win") by avoiding ATM inefficiencies; or which largely reduce the climate impact of aviation at almost unchanged costs by avoiding extreme climate sensitive regions ("Cherry-Picking").
- To provide recommendations for target stakeholders on policy actions and supporting measures to implement eco-efficient aircraft trajectories enabled by a better understanding of the climate impact of individual aircraft trajectories.

Concept and Methodology



Consortium

Participant No	Participant organisation name	Country
1 – DLR (Coordinator)	 German Aerospace Center (DLR)	Germany
2 – TU Delft	 Technische Universiteit Delft (TU Delft)	Netherlands
3 – TUHH	 Technische Universität Hamburg (TUHH)	Germany
4 – UC3M	 Universidad Carlos III de Madrid (UC3M)	Spain