PRESS RELEASE

First results of ClimOp published. The European project, led by Deep Blue, aims to reduce the aviation pollutant emissions

Driving electric vehicles in airports, optimizing flight routes, flying slow and low: these are some mitigation actions chosen to test their impact on climate

Now it is time for the operational phase: the selected mitigation strategies will be evaluated in a common air traffic scenario to compare their effectiveness and feasibility

Rome, 28/06/2021 - Flying causes pollution. The aeronautics sector is responsible for 1.9% of global greenhouse gas emissions and 2.5% of global carbon dioxide emissions, contributing to global warming by 5% (Anthropogenic Radiative Forcing)[1]. Despite the setback due to the pandemic, EUROCONTROL estimates a 53% increase in flights between now and 2040[2]. Pollution will increase too if no mitigation actions are taken: before the Covid-19 crisis, ICAO estimated that in 2040 the pollutant emissions from the aviation sector will be three times as many as in 2015[3]. And yet, if Europe wants to reach the goal of climate neutrality by 2050, as required by the European Green Deal, aviation will have to reduce its "climate footprint".

ClimOp (Climate assessment of Innovative Mitigation strategies towards Operational improvements in aviation) is an EU-funded project seeking a series of mitigation strategies to decrease the climate impact of the aviation sector (flights and airport operations, air traffic control and management). The objective is in line with the European Union's FlighPath 2050 goals related to the 75% reduction in CO2 emissions, and the 90% reduction in NOx emissions. Launched in 2020, the project is led by Deep Blue. The Consortium is composed of partners from different backgrounds: AMIGO (experts into climate risk management); SEA Group (who manages the airports of Milano Linate and Milano Malpensa); the International Air Transport Association (IATA); the Royal Netherlands Aerospace Center (Royal NLR); the Germany research centre for Aerospace, Energy and Transportation（DLR); the Delft University of Technology and the Istanbul Technical University.

In its first year, the project Consortium had identified the 11 most promising Operational Improvements (www.climop-h2020.eu/tackling-climate-change-with-greener-aviation-operations/) for cutting the aviation pollutant emissions. They were selected from the literature on the basis of criteria such as availability and robustness of the scientific data; the maturity of the technologies needed to implement them; a good cost / benefit ratio; a positive feedback from the stakeholders of the project Advisory Board (airlines, air traffic controllers, airports, air navigation service providers, policy makers, the European Passengers' Federation).

Many shall take effect immediately and would bring long and medium-term benefits since required no technological innovations or new regulations. So, for example, single-engine taxiing, E-taxi, hybrid taxi or converting the entire land fleet to electric. These mitigation actions cover ground operations, but most of the selected Operational Improvements are aimed at reducing emissions during Terminal Maneuvering Area, Network and in-flight operations. Here are some examples:

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1 D. S. Lee et al., "Transport impacts on atmosphere and climate: Aviation," Atmos. Environ., vol. 44, no. 37, pp. 4678 – 4734, Dec. 2010, doi: 10.1016/j.atmosenv.2009.06.005.

2 EUROCONTROL, "Five-Year Forecast 2020-2024 European Flight Movements and Service Units Three Scenarios for Recovery from COVID-19," 2020. Accessed: Nov. 18, 2020. [Online]. Available: https://www.eurocontrol.int/sites/default/files/2020-11/eurocontrol-five-year-forecast-europe-2020-2024.pdf.

3 https://ec.europa.eu/clima/policies/transport/aviation_en

favoring a continuous climb and descent operations could save more than one million tons of CO2 and 150 million euros in costs; flying slow and low is estimated to cut up to 10% aircraft emissions (non-CO2 emissions are disposed of more quickly in the lower atmosphere) with only an increase of 1% in operating costs, mainly fuel; scheduling intermediate stops on long-haul flights could lead to potential fuel savings varying from 5% to 25%. Other mitigation actions focused on regulations such as providing national or international incentives to promote more climate-friendly operations.

Although these Operational Improvements had already been taken into account by the aviation sector, they have been studied with different methodologies and in different scenarios, so cannot be compared. ClimOp aims to define a common air traffic scenario to assess the climate impact of each action under the same operational and technological conditions. That is quantifying the expected reduction in pollution in one simulated flight space modeled with flights, air traffic, aircraft and atmospheric data from the stakeholders. They are actively involved in the modeling process and will discuss effectiveness and feasibility of each Operational Improvements in working groups. The model development will occur this year and produce mature results by mid-2022. Then the Consortium will refine the Operational Improvements via several validation activities conducted with the stakeholders of the Advisory Board.

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