Weather influence in aviation H_2O and NO_x climate impacts

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Project Overview

Aviation contributes to climate change in the order of 5%. Roughly a third is due to aviation nitrogen oxides (NO_x) emissions. NO_x emitted by aviation mixes with NO_x from other sources and leads to the formation of ozone. A major sink for aviation NO_x, and naturally H₂O, is rain-out. Hence the meteorology plays a major role in the climate impact of aviation NO_x.

In numerical simulations it is feasible to track and tag the emitted NO_x and the chemical products such as ozone. The relation between locally emitted H_2O/NO_x at cruise levels and its climate impact has been established in so-called climate change functions (CCF).

Thesis will be performed in cooperation with DLR

Project Goals

- Identification of the relations of local weather data with H_2O and NO_x climate change functions for representative weather situations
- Analysis of the variability in aviation NO_x and H₂O climate impacts
- Identifying relations between weather data at the time of emission and the respective climate impact
- Development of algorithm-based climate change functions



ATR20 total NOx, 12:00 UTC, 250 hPa, WP2



MSc Research Thesis Assignment



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Contributions the NO_x concentration



