

Weather influence on aviation

NO_x climate impacts via ozone and methane

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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 and depletion of methane. The relation of ozone enhancement and methane decrease depends on the transport pathways of the emitted species and the chemical regime. Hence weather largely influences these effects.

In a series of numerical simulations with the Earth-System model EMAC, the emitted NO_x and the chemical impacts such as ozone enhancement and methane depletion was tracked and tagged, forming a large data base linking weather data with aviation impacts.

Project Goals

Identification of relations between local weather data and the potential of a NO_x emission to enhance the climate impact of aviation via ozone and decrease the climate impact from aviation via the depletion of methane.

- Analysis of the variability in aviation NO_x climate impacts via ozone and methane.
- Identifying relations between weather data at the time of emission and the ratio between ozone and methane climate impacts.

