

Project:

Project title: **Pollution transport towards the Arctic**

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Project summary

Climate change is proceeding fastest in the Arctic than anywhere else on the planet, which raises concerns because of the possible implications for the global planet. While there are several open questions concerning the processes governing the fast warming in the Arctic, one key hypothesis is that short-lived species (including tropospheric ozone and aerosols) influence the Arctic climate in several ways either directly through radiative forcing and indirectly by influencing the clouds and the snow/ice albedo. In particular, the role of light absorbing aerosols (such as black carbon that are emitted by both anthropogenic sources and biomass burning) remains largely unknown. In this project, we propose to explore two specific questions, including (i) the pathways for long range transport of aerosol and ozone-related pollution from the northern mid-latitudes to the Arctic and (ii) the impact of the boreal wildfires on the Arctic atmospheric composition.

We will address these questions using conjointly the fully coupled model of aerosol-chemistry-climate ECHAM5-HAMMOZ as well as data collected in the frame of the “Polar Study using Aircraft, Remote Sensing, Surface Measurements and Models, of Climate, Chemistry, Aerosols, and Transport” (POLARCAT) experiment. In this project, we are seeking to explore the influence of different model resolution on the transport of pollution towards the Arctic.

This project corresponds to a modelling component of the “Pollution transport towards the Arctic” project which is funded by the Swiss National Science Foundation.