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Pollution impacts on Arctic O3 and CO distributions during POLARCAT summer campaign.

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The Arctic ozone budget is not well quantified and global models fail to reproduce seasonal cycles especially in summertime when anthropogenic and boreal forest fire emissions can contribute. One possible explanation is the underestimation of modelled ozone production in forest fires plumes. Long-range transport of anthropogenic pollution to the Arctic is also not well quantified.
This study focuses on analysis of the POLARCAT summer campaign which took place in Kangerlussuaq, Greenland in July 2008. During the campaign different air masses were sampled including clean northerly air, polluted plumes originating from anthropogenic sources in North American and forest fire plumes from Siberia and Canada. Measurements of O3 and CO collected by the ATR-42 aircraft as part of POLARCAT-France and the German DLR-Falcon aircraft as part of POLARCAT-GRACE are compared to satellite observations from the IASI (Infrared Atmospheric Sounding Interferometer) interferometer. Specific IASI validation flights are also used to validate the measurements. Both in-situ and satellite data are compared to results from the LMDz-INCA global chemistry model. Data from other campaigns such as NASA-ARCTAS and YAK flights in Siberia are also available for these comparisons.
Preliminary analyses of Lagrangian matches between aircraft measuring in the same air masses using the CiTTyCAT photochemical trajectory model are presented.