

## Simulation of aerosol from the 2017 wildfire events in Canada above Europ

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The non-hydrostatic global modelling system ICON [1] is used for numerical weather prediction, climate projections, and for large eddy simulations. The integrated modelling framework ICON-ART [2] (ICOsaHedral Nonhydrostatic – Aerosols and Reactive Trace gases) extends the numerical modelling system ICON by modules for gas phase chemistry, aerosol dynamics and related feedback processes with clouds and radiation.

Here, ICON-ART will be used to study the aerosol observed over Europe originating from the Canadian wild fires that occurred in August 2017.

The aim of the study is to investigate which processes are responsible for the intrusion of the plume into the stratosphere that was observed end of August. Therefore several sensitivity studies are performed with different mechanisms to release the emission into the atmosphere. The simulation results will be compared to LIDAR measurements at several sites across Europe. We will present an analysis of our simulation results regarding the role of source heights, transport processes, and heating of the aerosol layer due to radiation.

[1] Zängl, G., et al. (2014), The ICON (ICOsaHedral Non-hydrostatic) modelling framework of DWD MPI-M: Description of the non-hydrostatic dynamical core. *Q.J.R. Meteorol. Soc.*, doi: 10.1002/qj.2378

[2] Rieger, D., et al. (2015), ICON-ART - A new online-coupled model system from the global to regional scale, *Geosci. Model Dev.*, doi:10.5194/gmd-8-1659-2015.