

# Effects of Anthropogenic Stratospheric Ozone Changes on Tropospheric Oxidation Capacity: Simulations with ICON-ART

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The ICOSahedral Non-hydrostatic (ICON) modelling system was developed by DWD and MPI-M to study various weather forecast and climate applications. The Aerosol and Reactive Trace Gases (ART) submodule, integrated within ICON, was contributed by KIT to analyze composition interactions in the atmosphere. ICON-ART model configurations employ flexible options for horizontal and vertical grids and allow seamless predictions from local to global scales. Accordingly, ICON-ART provides more comprehensive understanding of atmospheric processes. Here, we present a collection of outcomes obtained from different ICON-ART configurations, focusing on the impact of anthropogenic changes in stratospheric ozone or tropospheric temperature changes on tropospheric OH. For this, we performed and analyzed a couple long-term simulations based on AMIP and another considering 4K increase in tropospheric temperatures affecting chemistry. Through analysis of simulations without/with interactive ozone, we investigate the changes in OH concentrations and find the significant role for stratospheric ozone in how ozone influences OH.

**Primary authors:** Dr SATITKOVITCHAI, Khompat (Institute of Meteorology and Climate Research, Karlsruhe Institute of Technology (KIT)); Dr VERSICK, Stefan (Institute of Meteorology and Climate Research, Karlsruhe Institute of Technology (KIT)); Prof. BRAESICKE, Peter (Institute of Meteorology and Climate Research, Karlsruhe Institute of Technology (KIT)); Dr RUHNKE, Roland (Institute of Meteorology and Climate Research, Karlsruhe Institute of Technology (KIT))

**Presenter:** Dr SATITKOVITCHAI, Khompat (Institute of Meteorology and Climate Research, Karlsruhe Institute of Technology (KIT))

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