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# Impact of convective activity on tropospheric chemistry during the HOOVER/COPS/TRACKS campaign

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We present a detailed analysis of the impact of convection on air quality and the redistribution of trace gases within the vicinity of a severe storm. We use the WRF-chem model including an aqueous phase chemistry mechanism for calculating explicitly the scavenging of trace gases.
Deep convective clouds can have a major impact on atmospheric chemistry as they can rapidly transport trace gases from the lower to the upper troposphere. At the same time, highly soluble species are efficiently scavenged due to uptake on hydrometeors and subsequent removal by precipitation. Furthermore, deep convection can influence atmospheric chemistry by changing UV fluxes and thus photochemical reaction rates as well as by the formation of NO molecules via lightning. All of these processes change chemical reaction pathways in the troposphere.
As part of the HOOVER/COPS/TRACKS campaign aircraft measurements of trace gases were made in the outflow region of a severe convective cell which developed ahead of a frontal system over Germany on 19 July 2007. This case study is employed to investigate the removal of pollutants from the atmosphere by scavenging processes. Furthermore, we focus our case study on modifications of chemical reaction pathways in the upper troposphere due to upward transport of boundary layer tracers as well as the release of trace gases such as H2O2 from ice particles.