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Sensitivity Study of Halogen Chemistry on Ozone Formation under Moderate Polluted Concditions

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In order to quantify the interaction of halogen species with ozone the gas phase mechanism RADMKA was extended by a halogen mechanism. This mechanism handles the most important reactions dealing with halogen species in the troposphere.
Box model runs are used to explore the sensitivity of the ozone concentration to the individual compounds and for different chemical regimes.
The halogen mechanism was also included to the model system COSMO-ART (Vogel et al., 2009). COSMO-ART is an enhanced model system to simulate the spatial and temporal distributions of reactive gaseous and particulate matter. It is used to quantify the feedback processes between aerosols and the state of the atmosphere on the continental to the regional scale with two-way interactions between different atmospheric processes. The model system is applied to an ozone episode in Europe in June 2006 to investigate the impact of iodine emissions on ozone. In contrast to previous applications where only iodine emissions from macroalgal species were taken into account the emissions of iodine are calculated using the new parameterization of Carpenter et al., 2012. In this parameterization the marine iodine emissions are dependent ozone concentration, the surface ocean iodide concentration and on the wind speed.