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## Simulation of the record Arctic stratospheric ozone depletion in 2020

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In Arctic winter/spring 2019/2020, the stratospheric temperatures were exceptionally low until early April and the polar vortex was very stable. As a consequence, significant chemical ozone depletion occurred in Northern polar regions in spring 2020. Here, we present simulations by the Chemical Lagrangian Model of the Stratosphere (CLaMS) that address the development of chlorine compounds and ozone in the polar stratosphere in 2020. The simulation reproduces relevant observations of ozone and chlorine compounds, as shown by comparisons with data from Microwave Limb Sounder (MLS), Atmospheric Chemistry Experiment - Fourier Transform Spectrometer (ACE-FTS), in-situ ozone sondes and the Ozone Monitoring Instrument (OMI). Although the concentration of chlorine and bromine compounds in the polar stratosphere has decreased by more than 10% compared to the peak values around the year 2000, the meteorological conditions in winter/spring 2019/2020 caused an unprecedented ozone depletion. The simulated lowest ozone mixing ratio was around 0.05 ppmv and the calculated partial ozone column depletion in the vortex core in the lower stratosphere reached 141 Dobson Units between 350 and 600 K potential temperature, which is more than the loss in the years 2011 and 2016 which until 2020 had seen the largest Arctic ozone depletion on record.