



Modeling ozone loss in the Arctic winter 2006/2007

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The chemical transport model Oslo CTM2 is applied for studying the ozone loss of the Arctic winter 2006/2007. Oslo CTM2 is driven by ECMWF IFS forecast data with a 3-hour temporal resolution, and is run in 2.8x2.8 degrees horizontal resolution and 60-layer vertical resolution, extending to 0.1hPa. A comprehensive, updated microphysics scheme is used. A detailed comparison is carried out with ozone and ClO profiles from the AURA/MLS instrument.

Model vertical profiles are generated at the closest hour for each MLS profile. Horizontal interpolation for the profiles is done between the closest grid boxes, while vertically the model profiles are interpolated to the MLS pressure levels. This allows profile-by-profile comparisons.

Our modeled ozone loss of the polar Arctic vortex is estimated to a maximum of ~ 1.2 ppmv, or 32%, peaking in mid-March between 68hPa and 46hPa. The total ozone column is reduced by up to 10%. The vortex is defined as equivalent latitude north of 75N, based on the meteorological fields driving the model. The estimated ozone loss is lower than suggested by Rex et al. (unpublished EORCU report for winter 2006/07), but agree well with estimates based on ozone assimilation studies.