

Arctic ozone loss during the exceptionally cold winter 2015/16 as determined by Match and the ATLAS model

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During December 2015 to January 2016 temperatures in the Arctic stratosphere have been lower than in any other winter since the beginning of the satellite era. As a consequence the volume of stratospheric air (V_PSC) with temperatures below the threshold for the existence of polar stratospheric clouds, averaged over the winter, reached a new record for the Arctic. From mid-January until the major warming in mid-March we performed an ozonesonde Match campaign in order to quantify the amount of chemical ozone loss. Runs of the Chemical Transport Model ATLAS were performed in parallel to examine the ozone chemistry of this winter in detail. The runs show a very good agreement with measurements by the MLS satellite instrument and ozonesondes for this winter. We will discuss the temperature development, its influence on activating chlorine compounds, on denitrification, dehydration and ozone loss. We will present the results of the ozonesonde campaign and compare them with the outcome of the ATLAS model.