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Total column ozone loss during arctic winter 2005/06 and comparison to previous years

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Though first signs of stratospheric chemical ozone losses in the Arctic have been reported since 1990, the large activity of planetary waves in the northern hemisphere, and thus transport related changes of ozone total column, makes the evaluation of photochemical destruction far more difficult than in the southern hemisphere. To overcome the difficulty, several methods for removing the contribution of transport have been suggested, among those is the transport model approach. With this method, chemical ozone reduction is deduced from a comparison between ground based total ozone measurements and a 3D model simulation in which ozone is considered as a passive tracer. Using this method, total ozone reduction in the Arctic vortex is derived each winter since 1993/94 by comparing the SAOZ measurements to two 3D CTM Reprobus and Slimcat. The method allows to study the period of ozone destruction and the amplitude of the cumulative loss. The amplitude of the ozone loss is very sensitive to stratospheric temperature history during the winter and thus is highly variable from one winter to another. In general, strongest ozone losses are occurring during coldest winters while very little or no destruction could be observed during warmest. The cumulative loss is ranging from 5-10% during the warmest winters as in 1998/99, 2000/01 and 2001/02, to 30%-32% during coldest and longest ones as in 1994/95 and 1995/96. An average total loss of 20-24 % is found during the other cold winters starting generally in mid- or late January except during the winter of 2002/03, when it

started very early in the season, in late December when the sun is low above the horizon.. In this study, preliminary results for the winter 2005/06 will be presented. The focus will be put on the timing of the chemical ozone loss and on the ability of two 3D CTM (Reprobus and Slimcat) to reproduce the loss.