



Ozone loss in the Arctic stratosphere during the unusually cold winter 2004/2005

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Meteorological conditions during Arctic winter 2004/2005 were unusually cold during December and January and no signs for a warming are seen in late January. Rather, new record values of the geographical extent of temperatures below the nitric acid trihydrate (NAT) equilibrium are forecasted by the European Centre for Medium Range Weather Forecast (ECMWF). The size of the area covered by temperatures below the ice frost point is predicted to reach values about twice as large as the maximum values observed during the previous four decades. Over extended periods of time the low temperature areas were centred with the polar vortex such that air masses were continuously exposed to conditions sufficiently cold for the growth of NAT particles over several weeks. These meteorological conditions are favourable for severe denitrification of the lower stratosphere and large ozone losses can occur if the vortex remain moderately cold and stable into spring. Ozone loss during this winter is studied by the network of ozonesonde stations in the Arctic and northern mid-latitudes. An ozonesonde Match campaign was started in early January and will run until the end of the ozone loss season. We will present the evolution of the vortex average ozone profile through the winter and a detailed picture of the evolution of chemical ozone loss rates from the Match experiment. The 13 year time series of Arctic ozone loss and the 40 year series of the winter average volume of temperatures below the NAT equilibrium will be extended by the data from the Arctic winter 2004/2005. It will be discussed how the winter relates to a previously reported trend toward colder Arctic winters.