



MIPAS-B observations inside a weak Arctic vortex in late winter 2009 compared to EMAC simulations

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According to statistical relationships involving the Quasi-Biennial Oscillation and the sunspot cycle the winter 2008/2009 should have been characterized by a cold and stable Arctic stratospheric vortex. In contrast, a major midwinter warming with record-breaking temperatures developed in January and February. Subsequently, the vortex did only recover to weak strength in March and April.

Arctic stratospheric limb emission spectra were recorded during a flight of the balloon version of the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS-B) from Kiruna (Sweden) on 11 March 2009 inside a weak polar vortex. The spectra have been analyzed mainly with regard to nitrogen- and chlorine-containing species as well as stratospheric tracers. Vertical shapes of the profiles and retrieved volume mixing ratios represent mixtures between typical late winter and mid-latitude conditions. Observations are compared and discussed with calculations performed with the 3-dimensional Chemistry Climate Model EMAC (ECHAM5/MESSy Atmospheric Chemistry).