



Observed trends of polar stratospheric temperatures and vortex dynamics for the evaluation of Chemistry-Climate Models (CCMs)

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To evaluate Chemistry-Climate-Model (CCM) simulations of the past, trends derived from long-term observational data sets are needed. We present here updated trends of stratospheric temperatures and polar vortex parameters at polar latitudes from different observational datasets of the period 1957-2005.

While the 1980's and early to mid 1990's were characterised by a cooling of the polar stratosphere during winter and spring in both hemispheres, this trend has decreased by about 50% when including the most recent years due to a number of warm winters and springs during the past seven years. In the Antarctic, three recent springs (2000, 2002, and 2004) were warmer so that the downward trend estimates have become less negative or even positive. Long-term trends for the full period are much smaller. Consistent with the changes in temperature trend, the dynamically more active winters in the Arctic and Antarctic since the late 1990' led to an enhanced weakening of the polar vortex in winter, and to a reduction of both the increase in polar vortex intensity and the delay in spring breakdown. The long-term changes were smaller in amplitude and partly opposite to the trends since the 1980's.