



## **Chemistry and dynamics of the secondary ozone layer during the sudden stratospheric warming in the southern hemisphere in 2002, using WACCM-SD**

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A sudden stratospheric warming (SSW) will affect the chemistry and dynamics of the middle atmosphere, and up to the thermosphere. The major warmings occur roughly every other year in the northern hemispheric winter, but has only been observed once in the southern hemisphere, during the antarctic winter of 2002. In this paper we will investigate the effects of the 2002 southern hemispheric warming on the upper atmosphere, by using the National Centre for Atmospheric Research's Whole Atmosphere Community Climate Model with specified dynamics (WACCM-SD).

The secondary ozone layer at around 90km altitude will be the focus, and chemical compounds such as hydrogen, oxygen, carbon monoxide and nitric oxide will be studied as well as the temperature and zonal, meridional and vertical winds, all outputs from WACCM-SD.

Three reductions of the zonal mean zonal wind occurs before the final reversal from westerlies to easterlies winds defines the onset of the SSW. At about the same time, at 90 km altitude, an increase of O<sub>3</sub> can be seen, and a decrease of NO<sub>x</sub>, O, CO, H and temperature.