



## **Simulation of recent climate change in Antarctic polar region**

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Over recent decades part of the Antarctic have experienced major climate change, with near-surface temperatures on the western side of the Antarctic Peninsula rising faster than anywhere else in the Southern Hemisphere. At the same time the Southern Hemisphere Annular Mode (SAM), which represents the principal mode of variability in the extra-tropics and high latitudes atmospheric circulation of the Southern Hemisphere, has been moving into its positive phase. From experimental data a good correlation has been highlighted between the trend on the SAM and the levels of stratospheric ozone. Other scientific works based on data analyses or model simulations point the attention on the dynamical impact of the stratosphere on the troposphere; in this context the trend in the SAM is seen as the downward propagation of a similar tendency shown by the stratosphere. Here we reproduce the seasonality, structure and amplitude of the trend on the stratospheric and tropospheric dynamics in the polar region by simulating the atmospheric response to the change of ozone in the polar region and of tropical SST (sea surface temperature) based on observed trends over the 18-year period from 1979 to 1997. The atmospheric mechanisms that transfer tropical oceanic signals to the upper latitudes is investigated.