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# Long-term changes in the dynamical containment of Antarctic ozone depleted simulated with chemistry-climate models

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Long-term changes in climate will affect stratospheric dynamics which in turn are likely to affect the dynamical containment of Antarctic ozone depletion. Previous analysis has shown that the dynamical properties of the Antarctic vortex provide strong constraints on the area within which chemical ozone depletion can occur (Bodeker *et al.*, 2002). Furthermore, recent studies have shown that temperatures close to the vortex edge exhibit strong control over the size of the Antarctic ozone hole (Newman *et al.*, 2004). These temperatures, which affect both the size of the Antarctic ozone hole and the strength of the polar night jet, will also be affected by changes in climate. These interactions between climate change and polar ozone chemistry (e.g. through changes in temperature), together with changes in the dynamical containment of Antarctic ozone depletion, will modulate the impact of the Antarctic ozone hole on southern midlatitudes. A number of chemistry-climate model runs, performed within the framework of CCMval, will be used to investigate how changes in the dynamical containment of Antarctic ozone depletion will change over the coming decades and how these changes, together with a recovering ozone hole, will affect southern midlatitude ozone. Daily meridional profiles (by equivalent latitude) of the meridional impermiability, $\kappa$ (Bodeker *et al.*, 2002), based on NCEP/NCAR reanalyses, and of total column ozone, based on the NIWA assimilated total column ozone data base (Bodeker *et al.*, 2005), will be calculated over the period 1979 to 2005. These will be compared with similar meridional profiles calculated using the output from the CCMs to verify the extent to which the models can capture past observed behaviour. Similar analyses based on output from CCM runs into the future will be used to assess how the interplay of chemistry and changes in the temperature of structure of the stratosphere will affect the future dynamical containment of Antarctic ozone depletion.