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# Antarctic Air over Southern Midlatitudes Following Vortex Breakdown in 1998

## Details

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## Abstract

After breakdown of the Antarctic vortex, ozone-depleted air is transported to southern midlatitudes. Examination of ozonesonde profiles for Lauder, New Zealand, for the month of December 1998, suggests that the 1998 Antarctic vortex breakdown had a noticeable impact on stratospheric ozone levels above New Zealand. To investigate this period, diabatic reverse domain filling calculations are performed for the parcels in southern midlatitudes (30-60°S, on a 1° latitude by 1° longitude grid). The trajectories are run back to 10 October 1998. It is assumed that the depletion processes within the vortex did not take place after this date. The parcels originating inside the vortex are labelled using potential vorticity values that define the vortex edge on 10 October 1998. Seven potential temperature surfaces are examined 400-700 K, with a 50 K difference. In the next step, the vortex parcels are initialized with depleted ozone mixing ratios. Assuming that the depleted ozone is a tracer, it is advected forward in time, and the decreases in midlatitude ozone levels due to the depletion process within the vortex, are calculated.

