



Ozone flux profile estimates within and above polar coastal ozone depletion events.

P. S. Anderson (1), A. E. Jones (1) and H. K. Roscoe (1)

(1) British Antarctic Survey

Ozone Depletion Events (ODEs) have been studied in both polar regions for a number of years. The broadscale mechanisms which govern their evolution is becoming clearer but the internal, near surface structure and regeneration of the ozone depleted air-mass is poorly understood.

Profiles of in situ ozone, wind vector and temperature have been taken at Halley Station, Antarctica (76°S 26°W), situated on a ice shelf in the south Weddell Sea. Halley is equipped with a Clean Air Laboratory (CASLab) and Instrument Clean Air Sector (ICAS), which provide additional measurements on the state of the chemistry and micro-meteorology of the boundary layer.

Two ODE case studies are presented which display similarity between the ozone and the temperature profiles, but with differing ozone structure. A combination of these profiles with ICAS turbulence measurements, acoustic radar data, and CASLab O₃ time series enables estimates of the ozone flux profile, both within the surface ODE and across the ODE-free atmosphere boundary. Measuring this entrainment flux across the top of the boundary layer is normally highly problematic: the top of the boundary layer is usually higher than typical mast based instrumentation, and other in situ platforms, such as aircraft, blimps or kites have their own difficulties. The O₃(z) and surface O₃(t) data provide valuable additional constraints to the flux estimates.