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# Exploring high resolution measurements of ozone depletion chemistry in coastal Antarctica through use of a 1D marine boundary layer chemistry model (MISTRA)

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Tropospheric Ozone Depletion Events (ODEs) have been known, for over 20 years, to occur in polar regions. During such events, ozone concentrations can fall from background amounts to below instrumental detection limits within a few minutes and remain suppressed for on the order of hours to days. The chemical destruction of ozone is driven by halogens (especially bromine radicals) that have a source associated with the sea ice zone. Although our knowledge of ODEs has increased greatly since their discovery, some of the key processes involved are not yet fully understood.

In 2007, year round measurements were made at the British Antarctic Survey station Halley, in coastal Antarctica, using a Chemical Ionisation Mass Spectrometer (CIMS). During specific periods in the spring the CIMS was configured to measure concentrations of BrO, Br2 and BrCl. In addition, concurrent measurements of surface ozone and local meteorology were made.

A 1D Marine Boundary Layer (MBL) chemistry model (MISTRA; von Glasow et al, 2002) has been modified to be representative of Antarctic conditions by implementing measurements from Halley station which include; aerosol size distribution and composition (Rankin and Wolff, 2003), local meteorology (Anderson et al., 2008), and chemistry in the model.

We present here an analysis of these datasets in terms of the broader meteorological situation at play during the onset and termination of ODEs, in a move towards developing a generalised picture for ODEs at Halley. In order to explore halogen release, we use the MISTRA model (in box model mode) to consider emissions from a specific source region, identified using HYSPLIT air parcel back trajectories.

## Please list some keywords

ozone depletion, halogen, MISTRA, Halley, Antarctica

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