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Multi-seasonal OH and (HO_2+RO_2) observations in the coastal Antarctic boundary layer

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The OH radical is a central driver of tropospheric chemistry through its role as an atmospheric oxidant. At high latitudes, the "classic" primary OH source (via reaction of electronically excited O(^{1}D) atoms with water molecules) is enhanced by the influence of HO_x precursors (HCHO, H_2O_2, HONO) emitted from the snowpack. Further, snowpack-released NO_x influences OH:HO_2 and OH:RO_2 ratios as well as concentrations.

During 2007, a chemical ionistation mass spectrometer (CIMS) was operated at Halley research station in coastal Antarctica throughout a full calendar year. Measurements for OH and (HO_2+RO_2) were made in each season. Here we present the data, and compare them with equivalent measurements at other polar (Arctic and Antarctic) locations. A first interpretation is made in terms of the prevailing meteorological conditions and ambient chemistry.