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Assessment of hydrogen peroxide in the coastal Antarctic boundary layer

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As part of the Chemistry of the Antarctic Boundary Layer and the Interface with Snow (CHABLIS) project, gas and snow-phase hydrogen peroxide (H_2O_2) and organic hydroperoxides were measured at an Antarctic coastal site (the British Antarctic Survey Base, Halley) with the aim of understanding the concentrations of these species in the remote troposphere and to investigate their interaction with the snow-pack. The campaign included an intensive austral summer campaign in 2005.

H_2O_2 is closely related to the cycles of O_x, HO_x and NO_x in the troposphere. Hydroperoxides are secondary products formed during the oxidation of organic compounds and therefore influence the oxidative capacity of the atmosphere because they are precursors to, and sinks for, OH and HO_2. Interpretation of this multi-phase dataset also offers further understanding of post-depositional processes to aid the validation of ice core records. The observations of H_2O_2 obtained from Antarctica will be presented and discussed on daily, synoptic, seasonal and inter-annual timescales. Interpretation of these observations is extended by using a global atmospheric chemistry transport model (GEOS-CHEM).