



Variations in radiation and photolysis rates in the southern midlatitudes due to ozone depletion over the Antarctica

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Lauder (45°S, 170°E), a research station located on the South Island of New Zealand, is a clean-air atmospheric observatory representative of southern mid-latitudes. Long-term records of various atmospheric chemical compounds have been measured here for up to three decades. We assess observations of selected atmospheric chemical species, including ozone, and their variability throughout the recording period. By utilizing these observational data and a photolysis scheme (FAST-JX) we will address how changes in the total ozone column and in aerosols at Lauder affect radiation and photolysis rates of different species. The results serve as a stepping stone towards constructing a single-column photolysis model for Lauder constrained with profiles of stable species (e.g. ozone, methane, CO, HCHO, halogen compounds, etc) measured at Lauder to derive variations and trends of shorter-lived species. One of our targets will be changes in the tropospheric oxidizing capacity in the Southern Hemisphere.