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Stratospheric NO2 over Antarctica - 9 years of observation with GASCOD Spectrometer

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GASCOD (Gas Analyzer Spectrometer Correlating Optical Differences), installed at the Italian Antarctic Station Terra Nova Bay (TNB) - 74.69S, 164.12E - since 1995, carried out a full dataset of zenith scattered light measurements also during 2004. With the application of DOAS methodology to the collected data, the slant column values for nitrogen dioxide are obtained. The application of the AMEFCO RT model allows for the retrieval of the NO2 Vertical Column Density (VCD). The stratospheric Nitrogen Dioxide seasonal variation, with the maximum in the summer and the minimum towards the winter months, is respected. The time series of NO2 vertical columns obtained during the whole period of activity of GASCOD at TNB are presented. The variations in the behaviour of stratospheric NO2 during the Sudden Stratospheric Warming (SSW) occurred in Antarctica, during 2002, is highlight. The strong correlation of NO2 VCD with the potential vorticity (PV) at  = 500 K and the atmospheric temperatures at the same level is analyzed and discussed for the nine years of measurements at TNB.

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