



## **Polar ozone and UV radiation at southern sub-polar latitudes in the period 1997-2005**

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In the last years, the Southern Hemisphere middle and subpolar latitudes regions have been affected by polar vortex occurrences with depleted ozone air masses. Important increases of ultraviolet B radiation (UV-B), have been observed in the southern regions of the southern hemisphere. In the present work the variability of total ozone and UV radiation from TOMS were analyzed as a function of vortex occurrences over southern subpolar regions during the 1997-2005 period. In order to quantify the occurrences of the vortex in these regions, the position of the vortex was determined in the quasi-conservative coordinate system (equivalent latitude, potential temperature). The impact of vortex occurrences on UV radiation and ozone was determined by the comparison between the values inside the vortex and a climatology obtained from values outside the vortex over the studied period. The climatology of UV radiation is calculated for TOMS's reflectivity conditions lower than 7% (clear sky situations). A relaxed condition of the reflectivity value was considered for UV values inside the vortex (quasi-clear sky condition), corresponding to statistically similar UV values. The heterogeneous ozone loss during vortex occurrences was estimated using a numerical model called ATOLL, based on the coupling of a transport scheme with a parameterization of homogenous and heterogeneous chemical processes affecting ozone. The ozone loss was integrated over the 400-600 K altitude range. The relationship between UV changes, total ozone and integrated heterogeneous ozone loss was then analyzed as a function of equivalent latitude.