



Seasonal ozone behavior through ozone total column calculation model using UV Spectroradiometer at Southern Space Observatory: 2003 – 2005.

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A net of UV Radiometers was installed in South America sites as: Southern Space Observatory (29.4°S, 53.8°W) – Brazil, Rio Grande (32°S, 52°W) – Brazil, Punta Arenas (53.1°S, 71.0°W) – Chile and Concepcion (36.8°S, 73.1°W) – Chile, whose data are available for analysis through cooperation among Southern Regional Space Research Center, Federal University of Santa Maria, Takoshoku University and Rikkyo University of Japan. The data acquisition for the Total Ozone Column by inexpensive and not so sophisticated instruments such as UV Spectroradiometer and UV Radiometer is very important for stations which do not have expensive equipment like Spectrophotometer Brewer. The instruments used are in operation at Southern Space Observatory – OES/CRSPE/INPE – MCT, at southern Brazil. A mathematical model was found through comparison between effective ozone data measured by Spectrophotometer Brewer MKIII # 167 and UVB/UVA radiation ratio measured by Spectroradiometer MS 701. Only clean sky days over the Southern Space Observatory were analyzed for the period from January, 2003 to August, 2005. The analysis provided an exponential function $\text{Effective O}_3 = 5.497\text{EXP}(-0.00199*(\text{UVB}/\text{UVA}))$ with a significant correlation of 0.86 and an average difference around 3% was obtained between ozone total column calculated by Spectroradiometer and measured by Brewer. The results calculated by Spectroradiometer were compared with TOMS and presented average difference 5%. A seasonal variation on the ozone total column obtained by the model

presents maximum ozone in the spring and minimum ozone in the autumn which is the normal behavior of ozone for the analyzed Region.