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Study of the anticorrelations between ozone and UV-B radiation using linear and exponential fits in Southern Brazil

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Ultraviolet radiation type B (UV-B 280-315nm) is well known by its damage to life on Earth, including the possibility of causing skin cancer in humans. However, the atmospheric ozone has absorption bands in this spectral radiation, reducing its incidence on Earth's surface. Therefore, the ozone amount is one of the parameters, besides clouds, aerosols, solar zenith angles, altitude, albedo, that determine the UV-B radiation intensity reaching the Earth's surface. The total ozone column, in Dobson Units, determined by TOMS spectrometer on board of a NASA satellite, and UV-B radiation measurements obtained by a UV-B radiometer model MS-210W (Eko Instruments) were correlated. The measurements were obtained at the Observatório Espacial do Sul - Instituto Nacional de Pesquisas Espaciais (OES/CRSPE/INPE-MCT) coordinates: Lat. 29.44oS, Long. 53.82oW. The correlations were made using UV-B measurements in fixed solar zenith angles and only days with clear sky were selected in a period from July 1999 to December 2001. Moreover, the mathematic behavior of correlation in different angles was observed, and correlation coefficients were determined by linear and first order exponential fits. In both fits, high correlation coefficients values were obtained, and the difference between linear and exponential fit can be considered small.

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