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Study of the Total Ozone Content over Bulgaria

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The dynamics of the total ozone content (TOC) over Bulgaria (middle latitude) has been studied, using ground based and satellite measurements. The ozone data are taken from the satellite experiments TOMS-Nimbus-7, TOMS-EP, GOME-ERS-2, as well as from the ground-based instruments: the filter device M124 and spectrophotometer Photon. The first one provides direct sun and zenith sky observations and measures daily average TOC values in Sofia. The spectrophotometer Photon, placed in Stara Zagora, measures the direct solar light in the range 290-360 nm with 1nm resolution.

The data analysis is based on the long-term ozone series. The variability of the TOC monthly mean values, measured by TOMS-Nimbus-7 (1979-1991) and by TOMS-EP (1996-2006) has been traced. The data demonstrate a negative trend (- 6.9 %) in the TOC course during the first interval. For 1996-2006 we receive an important result, showing that there isn't a statistically significant TOC trend over Bulgaria.

The comparison between the annual TOC satellite and ground-based data show a good agreement between them and clear expressed seasonal variations – abrupt maximum in the spring and a gently sloping decrease in the autumn. Seasonal dependence of the correlation coefficient between satellite and ground-based TOC data is investigated too.