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Influence of the Solar activity on the total ozone content

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A response of the ozone in the atmosphere to Solar radiation variability has been studied. Measurements of Solar ultraviolet irradiance are performed at Stara Zagora

(42˚ 25’ N, 25˚ 37’ E), Bulgaria with a spectrophotometer “Foton”. The instrument measures the direct sunlight in the range 290-360 nm with 1 nm resolution. The dependence of the UV irradiance on the ozone is investigated using clear sky data at specific Solar zenith angles. The Solar activity impact on the atmospheric ozone can be explained with:

1. The changes of atmospheric circulation and temperature which should lead to total ozone content (TOC) changes.
2. Direct influence of the Solar UV radiation on the production and distruction in the ozone layer.

Maximum Solar activity represented by enhanced levels of Solar radiation is distributed within the spectral intervals which we have used for calculation of TOC.

The amount of ozone grows with increase of Solar activity. The correlation mechanisms seems to connect with the change of Solar UV emission level during the variability of Solar activity.