Geophysical Research Abstracts
Vol. 21, EGU2019-1344, 2019
EGU General Assembly 2019

Irregularities in the lower stratospheric O_3 distribution and their relation to galactic cosmic rays

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Lower stratospheric ozone is of special interest to climatic studies due to its direct influence on the tropopause temperature, and correspondingly on Earth's radiation balance. Analysis of ozone, energetic particles and the geomagnetic records from the last 111 years has revealed that they all evolve synchronously with time. This coherence motivates us to propose a mechanism explaining the geomagnetic influence on the cosmic radiation reaching the lower atmosphere and its effect on near tropopause O_3. This mechanism allows for an understanding of the ozone's spatial-temporal variability during the past century, and its influence on the regional characteristics of climatic variations.

Acknowlwdgements: This research has been partially supported by the National Science Fund of Bulgaria, contract No. ДН 14/1 from 11.12.2017