

Influence of solar wind and total ozone on the temperatures of the troposphere and stratosphere

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The correlation between global atmosphere and solar magnetic activity is evident though the cause is not clear. In this presentation, we analyze the vertical structure of the global atmosphere to examine the cause on the basis of the previous observations [1].

The OMNI2 solar wind data as well as the aa index data were used to detect the influence of the solar wind on the vertical temperature distribution. The period examined was 2000-2013, and the atmospheric temperature data was obtained from RSS/MSU.

In the analysis, the following factors were taken into account: 1) EPP-NO_x effects on ozone at low latitudes may be comparable to the effects of solar UV radiation [Callis et al., 2000, 2001; Langematz et al., 2005; Rozanov et al., 2005]. 2) Change distribution of tropopause level and total ozone in the Sea of Okhotsk are correlated.

From analyses of OMNI2 and RSS/MSU we suggest that changes in stratospheric ozone due to the influence of the solar wind affects the climate of the troposphere.

References

[1] K. Itoh, JpGU 2008-2012

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