Geophysical Research Abstracts, Vol. 8, 00306, 2006
SRef-ID: 1607-7962/gra/EGU06-A-00306

Low electric Conductivity of the ground Surface as a Parameter, which could Influence polar Climate

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Peculiarity of the polar regions is the ground surface covered by ice and permafrost. Electric conductivity of ice and permafrost is very low and is less than its typical values at middle latitudes for several orders of magnitude (σ = 10^{-3}S m^{-1} in middle latitudes, σ = 10^{-10}S m^{-1} in polar regions). So, the effects of global electric field and currents are very specific in the polar regions. Analysis of experimental data demonstrated that the temperature of the stratosphere decreases during disturbances of the solar wind if conductivity of ground surface is low above places covered by ice. On the contrary–temperature of the stratosphere has positive correlation with energy of solar wind if conductivity of ground surface of the Earth is high. As for temperature of the troposphere it increases during disturbances of the solar wind in polar region. Increase of the annual values of the Earth's troposphere temperature observed during the last decades could be attributed partially to correspondent enhancement of the solar corona activity in the same period. It is possible to suggest the following sequence of the events: enhancement of the solar corona activity – increasing energy of the solar wind – increasing electromagnetic energy in the near-Earth space – changes of electric fields and currents in the near-Earth space – changes of distribution of temperature in the stratosphere and the troposphere.