

# Variations of electric and meteorological values in the near ground atmosphere in Kamchatka during the solar events in October, 2003

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It is reasonable to consider the reaction of electric and meteorological processes in the near ground atmosphere during the solar events in October 2003 in a complex with other geophysical processes [Smirnov et al. 2013]. Hence, a wide set of different geophysical and meteorological values has been applied in the study, such as: quasi-static electric field intensity, electroconductivity, temperature, pressure, air humidity, wind velocity, geomagnetic indexes, cosmic and X-ray fluxes, which were simultaneously observed at Paratunka site from October 21 to October 31, 2003. This observation period includes a strong geomagnetic storm. Additionally we used the information on chronological sequence of solar events [Veselovskii et al. 2004]. A detailed analysis of diurnal variations of the mentioned above parameters has been carried out. It has been shown that electroconductivity and electric field intensity have strong dependence on air temperature and humidity both for fine weather conditions and for high solar and geomagnetic activity. Electroconductivity increase during two days before the geomagnetic storm on October 29-30 in the result of solar cosmic rays effect was discovered and its decrease during Forbush decrease of galactic cosmic rays (with corresponding intensification of electric field intensity). Anomalous air temperature and humidity increase was detected in the process of development of solar activity which resulted in the formation of clouds of different forms including cumulonimbus accompanied by lightning processes and showers (observation data of local meteorological station). Coincidence in time of disturbance of regular meteorological processes with the consequence of flashes accompanied by radiation intensification in the close ultraviolet band, spectrum visible and infrared segments, allow us to consider them as a source of additional energy inflow into the lower atmosphere. Complex analysis of all the phenomena during the considered period allowed us to distinguish clearly the effects of global and local sources in the global electric circuit.

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