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Impact sporadic sources of disturbances on the atmospheric electric field on Tien- Shan

Valentina Antonova, Sergey Kryukov, Vadim Lutsenko, and Andrey Malimbayev

Institute of Ionosphere of the National Center for Space Research and Technology, Almaty, Kazakhstan

(valanta@rambler.ru)

Results of the study of the impact of sporadic sources of disturbances on the state of the atmospheric electric field at the high-mountain Tien Shan station (3340 m above sea level, 20 km from Almaty) are presented. The absence of unitary variation (Carnegie curve) is the characteristic feature of diurnal changes in the atmospheric electric field under good weather conditions.

The most geoeffective sporadic sources of disturbances in the near-Earth space and the Earth's atmosphere are giant coronal mass ejections (CME), accompanied by Forbush effects in the intensity of galactic cosmic rays and by geomagnetic storms. Our studies were carried out taking into account the peculiarities of CME manifestations in the atmosphere and magnetosphere of the Earth. It was found that large magnetic storms affect the average level of the atmospheric electric field (increasing or decreasing it due to a change in the rigidity of the geomagnetic cutoff R_c), and also cause its fluctuations in the minute range ($10^{-3} \div 10^{-2}$) Hz. A significant decrease in the atmospheric electric field after CME is due to large Forbush effects during weak geomagnetic disturbances.

Anomalous changes in the atmospheric electric field on the eve and during earthquakes were recorded, which are unambiguously associated with the activation of seismic processes. Since the city of Almaty is surrounded by a number of potential sources of strong earthquakes, the problem of their prediction is actual for the city and its environs.