

The Account of Solar Flares at Modeling of Ionospheric Effects of Geomagnetic Storm Sequence on September 9-14, 2005

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Earlier at modeling of ionospheric effects of geomagnetic storm sequence on September 9-14, 2005 a potential difference through polar caps, amplitude of field-aligned currents of the second region, their latitudinal shift, and also energy and flux of precipitating high energy particles were set as function of 3 hour Kp-

index of geomagnetic activity. Then we have carried out the calculations in which a potential difference through polar caps and field-aligned currents of the second region were set as function from AE-index with the minute resolution on time. Besides instead of model [1] for flux and energy of precipitating high energy particles we used the model [2]. It is necessary to note, that during the examined period of time five strong enough solar flares were observed. The effects of those solar flares were not taken into account in modeling calculations. Therefore in the given study we have carried out the investigations of solar flare effects at modelling of ionospheric effects of geomagnetic storm sequence.

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1. D. A. Hardy, M. S. Gussenhoven and R. Raistrick, Statistical and Functional Representations of the Pattern of Auroral Energy Flux, Number Flux, and Conductivity. *J. Geophys. Res.*, 1987, **92**, A11, 12275–12294.

2. Y. Zhang and L. J. Paxton, An empirical Kp-dependent global auroral model based on TIMED/GUVI FUV data. *J. Atmos. Solar-Terr. Phys.*, 2008, **70**, 8–9, 1231–1242.