

Spatial distribution of high latitude electric field irregularities

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We have built a spatial distribution of the fluctuation components of the ionospheric electric field for various conditions in the solar wind by the Dynamics Explorer 2 spacecraft measurements over the observational period of 540 days. The amplitude of the irregularities averaged over all the satellite passes appeared to be maximum in the dawn-noon sector, at the $\sim 80^\circ$ invariant latitude under $B_z IMF > 5$ nT and at $\sim 70^\circ$ under $B_z IMF < -5$ nT. The size scale of the irregularities (the distance between two neighboring maximums) is about 20 km; the fluctuation amplitude is comparable with the regular convection field. Whereas the regular field grows with the southward IMF the fluctuation field grows with the northward one. There is also a slight growth of the irregularity amplitudes with the solar wind velocity.