

Impact of the IMF conditions on the high latitude geomagnetic field fluctuations at Swarm altitude

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Several space-plasma media are characterized by turbulent fluctuations covering a wide range of temporal and spatial scales from the MHD domain down to the kinetic region, which substantially affect the overall dynamics of these media. In the framework of ionosphere-magnetosphere coupling, magnetic field and plasma disturbances are driven by different current systems responsible for the coupling. These disturbances manifest in the plasma parameters inhomogeneity and in the magnetic field fluctuations, which are capable of affecting the ionospheric conditions.

The present work focuses on the analysis of the statistical features of high latitude magnetic field fluctuations at Swarm altitude. The multi-satellite mission, Swarm, is equipped with several instruments which observe electric and magnetic fields as well as ionospheric parameters of the near-Earth space environment. Using these data we investigate the scaling properties of the magnetic field fluctuations at ionospheric altitude and high latitudes in the Northern and Southern hemispheres according to different interplanetary magnetic field conditions and Earth's seasons. The aim of this work is to characterize the different features of ionospheric turbulence in order to better understand the nature and possible drivers of magnetic field variability and to discuss the results in the framework of Sun-Earth relationship and ionospheric polar convection.

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