

Changes in the total electron content of the ionosphere during a geomagnetic storm August 31 – September 3, 2019 according to GPS data

Artem A. Kirilov

*Vladimir N. Sychev**

*Research Station of Russian Academy of Sciences in Bishkek City,
Bishkek, Kyrgyzstan*

**E-mail: sychev@gdir.ru*

Abstract [Резюме RUS](#)

This article considers changes in the total electron content (TEC) in the ionosphere during a moderate geomagnetic storm ($K_p = 4-6$) recorded in Kyrgyzstan between August 31 and September 3, 2019. This geomagnetic storm was recognized to be the longest-lasting among those registered in 2019. In order to obtain a quantitative assessment of changes arising in the ionospheric layer during such geomagnetic events, variations in the slope of the power spectrum of TEC fluctuations along the propagation path of the radio waves from GPS satellites to the receiving station were analysed. Using a sliding window method, the TEC time series was expanded in a Fourier series, and the slope of the power spectrum was calculated. As initial information, primary data provided by the GPS POL2 permanent station, which is a part of the IGS network, on the territory of Research Station of the Russian Academy of Sciences located in Bishkek were used. This station is equipped with a Javad Delta-3 receiver and a TPSCR.G3 high-precision antenna.

Keywords

magnetic storm, ionosphere, GPS, total electronic content, Fourier transform, power spectrum

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