

New observations of the total electron content over Ho Chi Minh City

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In January 2018, a Trimble NetR9 GNSS receiver was installed at Ho Chi Minh City International University (HCMIU), Vietnam National University, which is located at 10°52' N, 106°48' E in the geomagnetic equatorial region. This GNSS receiver continuously records data every 1s and 30 s every day over Ho Chi Minh City. From the obtained data, we estimated the total electron content (TEC) using the carrier-phase method which is a combination of code and phase measurements. The results present some features for the diurnal and seasonal TEC variations using this GNSS receiver during 2018 - 2019. The changes of TEC observed at HCMIU as well as other nearby stations and the same longitude region in the latest moderate geomagnetic storm G3 on August 2018 were investigated. Furthermore, we calculate the rate of change TEC index (ROTI) concerning time from the satellite signal phases. The distributions of ROTI over these two years of solar minimum show significant occurrences of scintillation, which are caused by small-scale ionospheric irregularities in the equatorial region during equinox months after sunset. The results presented indicate that the GNSS data recorded at HCMIU is a worthy reference dataset near the geomagnetic equator for further research about ionospheric monitoring.

Keywords: GNSS receivers, Total Electron Content (TEC), The rate of change of TEC index (ROTI), Geomagnetic storms, Scintillation