

Ionospheric TEC response to the solar flares during the descending phase of the solar cycle 24

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Ionospheric variability has been studied at different latitudes during the solar cycle-24. In the course of this cycle 24 on 6th September 2017, two powerful and strong solar flares of class X2.2 and X9.3 have been emitted by the Sun at 08:57 UT and 11:53 UT respectively. To examine the ionospheric response simultaneously at low, mid, and high latitudes during these two intense solar flare events, Total Electron Contents (TECs) values derived from Global Navigational Satellite System (GNSS) were investigated during the solar flare of 06th September 2017, which are the most remarkable flare events during the solar cycle-24. Our observations show a noticeable enlargement in TEC at low, mid, and high-latitude stations. Further, mean method has been used for the investigation of TEC variations due to solar flare at low, mid and high latitude and considered all PRN which has one to one correlation with the time of solar flares. This investigation aims to resolve the latitudinal spreading of total electron content values over all latitudes during such events, however, the enlargement in TEC seems to be reliant on the solar flare class too. The results exhibited that X-class flare effects were more pronounced at low latitudes in comparison to mid and high latitudes.

Keywords: Solar flare, GPS-TEC, North Pole, Space Weather; Ionosphere etc.