



Ionospheric variations during geomagnetic storms of 7-8 September, 2017

Barsha Dutta¹, Rumajyoti Hazarika², Bitap Raj Kalita³, Kalyan Bhuyan³,
Aditi Pandey¹ and Pradip Kumar Bhuyan³

¹Dibrugarh University Institute of Engineering and Technology,
Dibrugarh University, Dibrugarh 786004, Assam, India

²Jengraimukh College, Majuli, Assam, India

³Centre for Atmospheric Studies, Dibrugarh University, Dibrugarh 786004, Assam, India

E-mail: barshaduttakakoty@gmail.com; hrumajyoti@gmail.com; bitapkalita@gmail.com
kalyanbhuyan@gmail.com; aditipa0@gmail.com; pkbhuyan@gmail.com

Two very intense solar flares of magnitudes X2.2 and X9.3 erupted on September 6, 2017 at 09:10 UT and 12:02 UT triggering large space weather modulations on earth. We analyze the ionospheric response to the geomagnetic storm event that occurred post the flares on 7-8 September 2017 on four selected stations in the northern (Lhasa, Lucknow, Dibrugarh) and southern hemisphere (Cocos). This storm occurred just after the X9.3 solar flare on 6th September. The following figure represents the effect of the storm on Vertical Total Electron Content. It is seen that the VTEC increased significantly on 6-7 September in the northern hemisphere while TEC remained nearly uniform in the southern hemisphere. The TEC decreased on 8-10 September in the NH while in the SH, TEC decreased on 9th and then increased on 10th onwards. There is a sudden rise in the average VTEC on 11th September more than pre flare levels in all stations. Ionograms obtained over Cocos showed that for the solar flare day E layer disappears whereas, for geomagnetic storm days sporadic E is observed. The inter hemispheric asymmetric variation in TEC and E layer activities over COCOS are further examined using electron density profiles, maximum electron concentration (N_mF_2) and data from COSMIC, GRACE and SWARM satellites. The results from this comprehensive analysis will be presented.

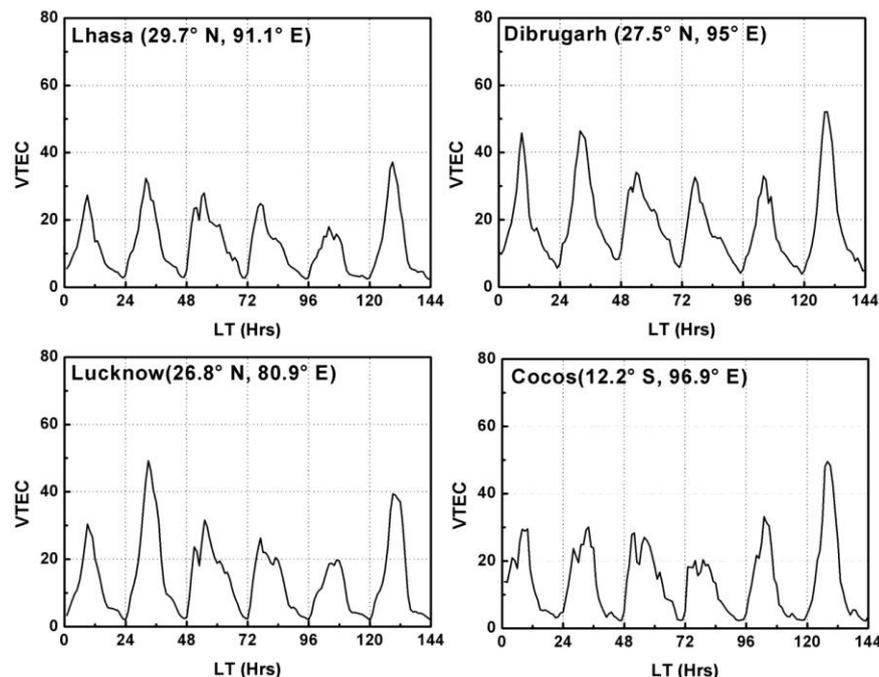


Fig. 1: Avg VTEC plots over four stations from 6th September to 11th September, 2017