Reviewer 2

The paper entitled 'Latitudinal variations of ionospheric-thermospheric responses to Geomagnetic Storms from Multi-Instruments' presents important results for the storm-time ionospheric variations. These variations are clearly explained throughout the text. The paper is recommended for publications after the below changes.

Dear Reviewer thanks for your suggestion and useful comments. We have tried to improve the discussion as per your comments.

Title: replace 'responses to Geomagnetic' to 'responses to the Geomagnetic'. Done

Abstract. Show in abstract in a line the aim of this paper. Done

Introduction: uniform the reference style in the text. Where ever cite in the text. Done

Line 51-53. What seasonal changes and what is the change? Enhancement/depletion

Ans: According to Stankov et al. 2010 and Gao et al. 2013 geomagnetic storm induce variable variation at different latitude depicting more negative storms in summer and positive storms in winter depending upon the local time of a specific region. (Stankov, S.M., Stegen, K., Warnant, R., 2010. Seasonal variations of storm-time TEC at European middle latitudes. Advances in Space Research. 48:1318–1325), (Gao, Q., Liu, L., Zhao, B., Wan, W., Zhang, M., Ning, B., 2008. Statistical study of the storm effects in middle and low latitude ionosphere in the East-Asian sector, Chinese Journal of Geophysics. 51:435–443)

Page 2. Line 60. Replace 'during storm conditions' with 'during the storm conditions'. Done

Page 4. Line 99-100. Show you aim also.

Ans: it is already mentioned in line 103-105.

103 Mannucci et al. 2008). This study comprises the understanding of the probable latitudinal
104 mechanisms that influence the variable ionosphere by studying the geomagnetic storms of June
105 2015 and August 2018 using multi-instrumental data. In the following section, we present a brief

Data and methods.

Change all the data links. Whether properly added. And working?

Ans: All the links are working.

Page 4, line 118. Add reference for Kp, 0-9. Done

Ans:

ıg the storm. The Kp index can provide a good descrij

of Kp is between 0 to 9 (Matzka et al. 2021). The PP

Page 5. Line 127. Replace ‘Fig. 1’ by ‘Figure 1’ and change all Fig. with Figure in the text. Done

Check all equations properly and their numbers also Done

Fig. 1. The geomagnetic line must be black or red. Done

Ans:

Explain more Fig 10 and 11 in the context of storms different phases and their local or UT hours. Done

Ans:

phase of both storms. In Figure 10 & 11, during the initial phase of geomagnetic storm of 2015 more abrupt enhancement was observed from 1800-2000 UT in comparison to 2018 geomagnetic storm’s initial phase that lasted roughly from 1900-2200 UT in the American region. The low-and

American sector during the main phase of both storms. Also, Australia and Oceania region exhibited somewhat comparable vTEC variation during the main phase of 2015 storms (Figure 10). Furthermore, vTEC enhancement was observed in 2018 between 0300-1400 UT (where peak was observed around 0700 UT) geomagnetic storm as well but it was less prominent compared to 2015 storm (Figure 10 & 11). During the recovery phase of both storms, larger variations were

Page 10 line 223. Insert here the explanation of both the storms in which solar phase. Done

Ans:

The geomagnetic storm of June 2015 occurred during the maximum phase of solar cycle 24, and it was the second largest known storm after the St. Patrick's storm. Whereas, 2018 geomagnetic storm took place in descending phase of solar cycle 24 and is third largest storm of aforementioned cycle. On 22 June 2015, two CMEs hit the Earth's magnetosphere at 05:45 UT and 18:35 UT.

Check all references to correctly cited. Done

Conclusion. Add one bullet on the equatorial ionospheric enhancement and its relation with EEJ and PPEF. Done

- PPEF enhancement suggested direct relation with vTEC increment at equatorial regions along with increased EEJ leading to higher vTEC values with greater separation between equatorial anomaly crests.

Check all references in the list to be properly added. Done

Reviewer 3

Please find the pdf also .