

## ***Interactive comment on “Impact of magnetic storms on the global TEC distribution” by Donat V. Blagoveshchensky et al.***

**Donat V. Blagoveshchensky et al.**

maria.a.sergeeva@gmail.com

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Responses to Anonymous Referee #1.

Anonymous Referee #1

The data and observations are interesting. The paper may become acceptable for publication after incorporating the following comments.

1. In addition to the Figures presented, I suggest adding some graphs with the TEC data observation during storm time period together with the average of the observations on quiet days with  $\pm 1$  standard deviation.

RESPONSE: We added examples of observed and median TEC values (see new Fig.

C1

3a and Fig.3b). Median value serves as a quiet time reference.

2. In each graph from Figures 2 to 5, I suggest that the main and recovery phase of each geomagnetic storm be highlighted. For example, include a yellow and gray rectangle on each graph to represent the main and recovery phase of the storm.

RESPONSE: We marked the main, recovery phases (MP and RP) and the end of the storms ( $T_e$ ) with vertical lines in new Figure 1 (left column), Figure 2, Figure 3, Figure 5, Figure 6.

3. Figure 3: The resolution quality of this Figure is very poor.

RESPONSE: The original source-file had a good quality but it was reduced when converting to pdf. In the new version of the manuscript we change the organization of the figure (Now it is Figure 4): now there are three panels (columns), each of which shows the results for the particular storm. Left plots of each panel display variations in the Northern Hemisphere and right plots– in the Southern Hemisphere.

4. I suggest that it be discussed, clearly, how each phase of the storms (main and recovery phases) affect the ionosphere. The disturbances observed in the ionosphere during the storms were more pronounced during the main phase or recovery phase ???? Does the main and recovery phase affect the ionosphere in the same or different ways depending on the intensity of the storm ??? If necessary: a) include a new section to discuss only what was observed in the ionosphere during the main phase; b) subsequently do the same process for recovery phase.

RESPONSE: We agree with the comment. The issue is discussed in the new version of the manuscript in detail.

WE THANK THE ANONYMOUS REFEREE #1 FOR HIS OR HER VALUABLE COMMENTS ON OUR PAPER. WE ATTACH A NEW VERSION OF THE MANUSCRIPT TO THIS RESPONSE. THE CHANGES IN THE TEXT ARE IN BLUE FONT.

C2

Please also note the supplement to this comment:  
<https://www.ann-geophys-discuss.net/angeo-2018-4/angeo-2018-4-AC1-supplement.pdf>

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2018-4>, 2018.

C3

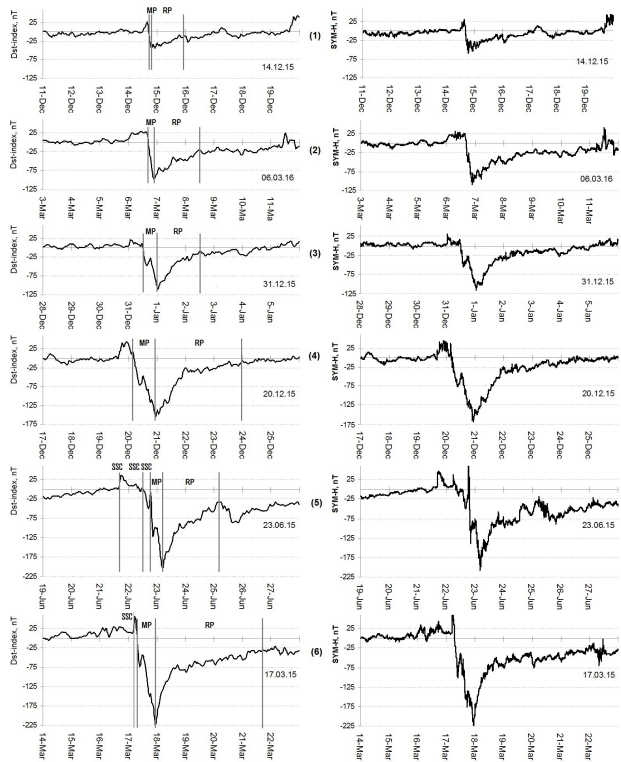


Fig. 1.

C4

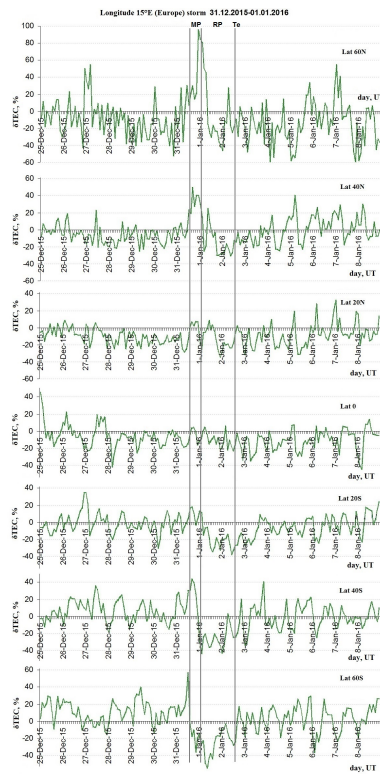


Fig. 2.

C5

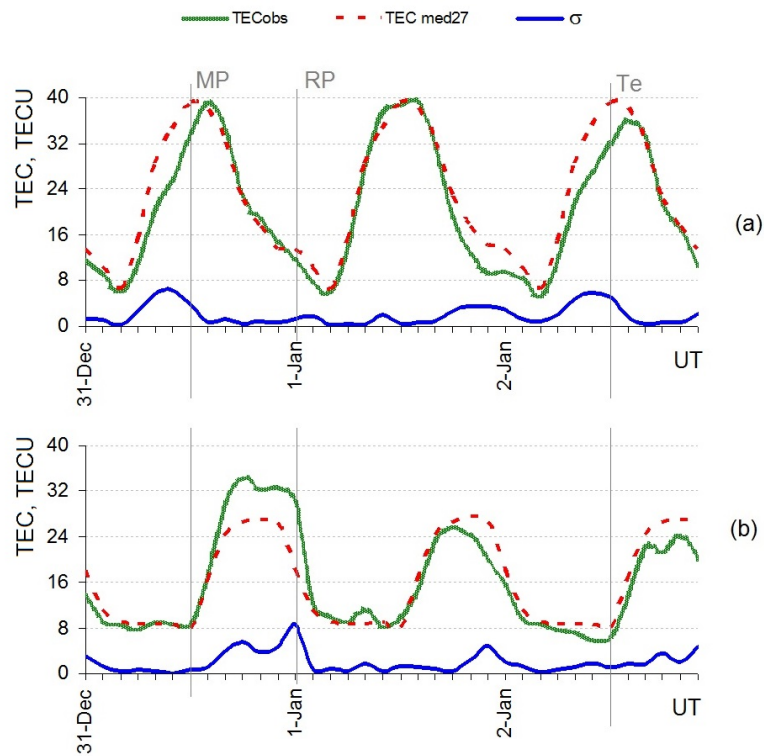


Fig. 3.

C6

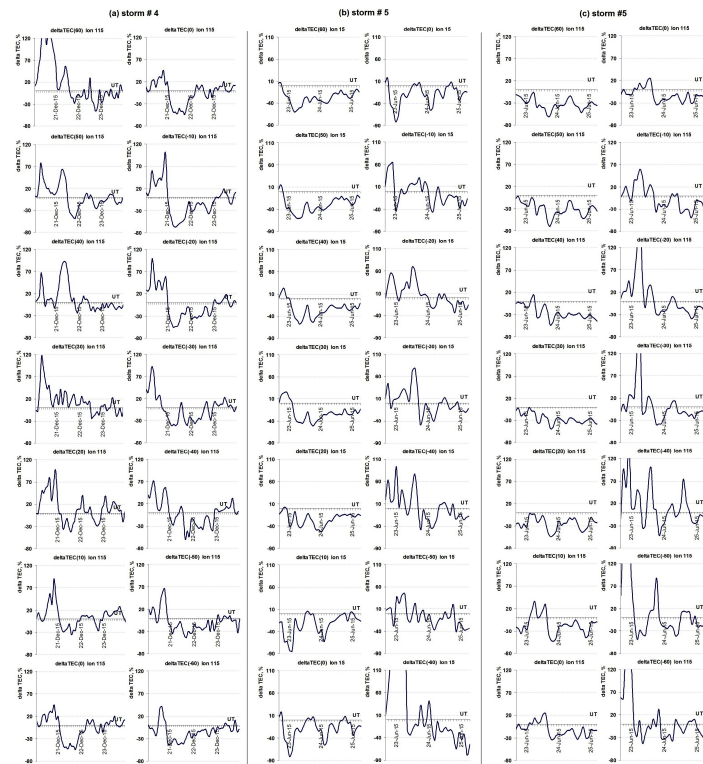


Fig. 4.

C7

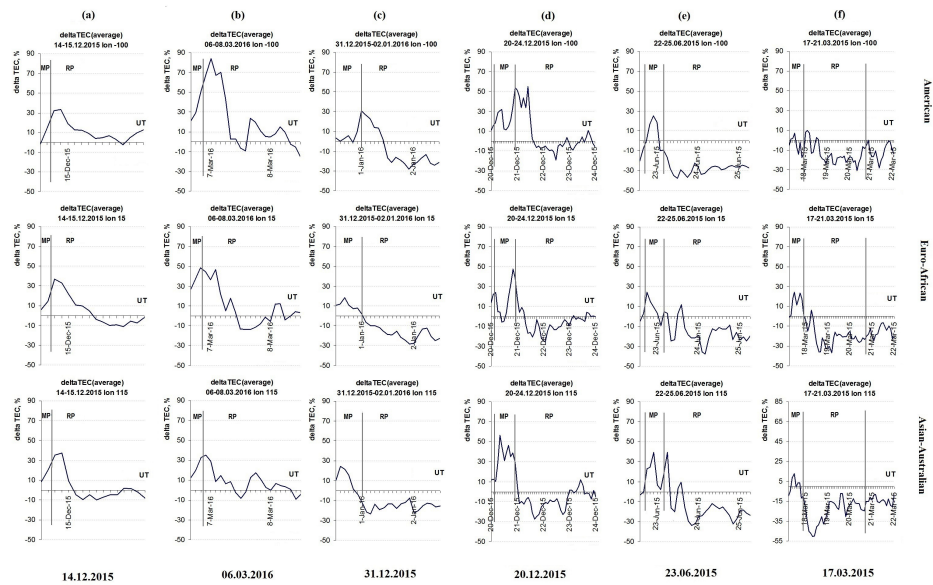


Fig. 5.

C8

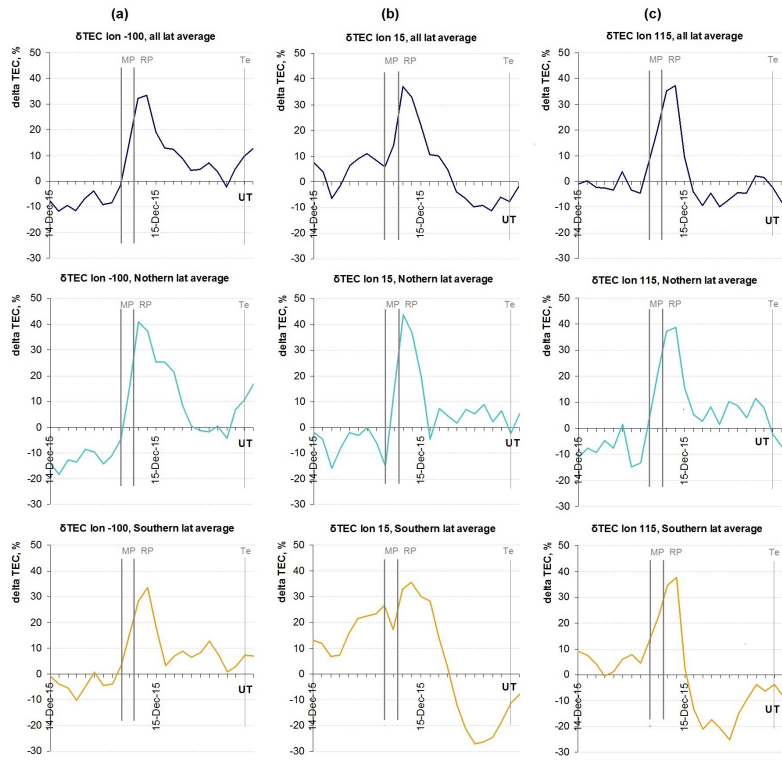


Fig. 6.

C9

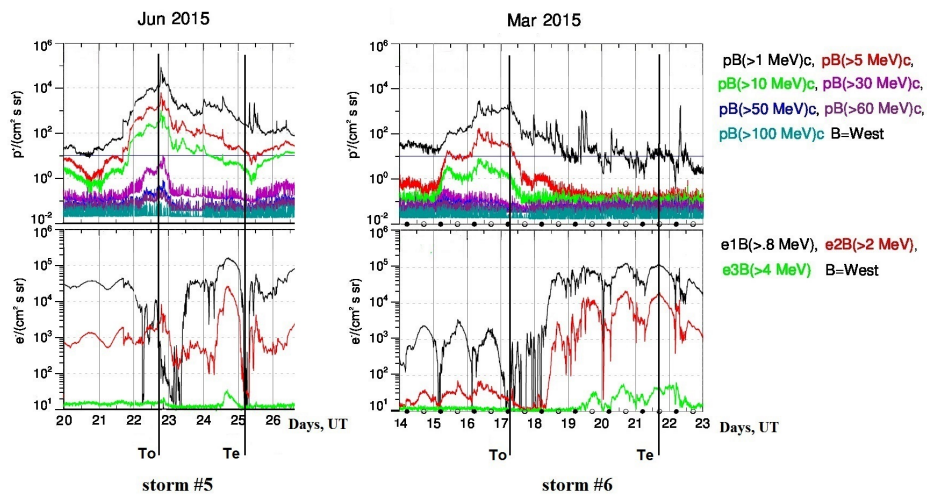


Fig. 7.

C10