

Reviewer's comments to the paper by Sotomayor-Beltran "Emergence of a localized total electron content..."

Total electron content (TEC) enhancements during ionospheric storms of 2017 and 2015 are analyzed in the paper. The author uses his own method of determining deviations in TEC during a storm from quiet conditions. In the majority of ionospheric storm studies, the deviations in foF2 or TEC are studied comparing observed values of the studied parameter with its values during the preceding quiet days, or with a median. The author presents a brief discussion of the method used in the paper (Section 2), however the description is not clear. As far as I understand, for each spatial cell of the data, the 8-day running window is used to calculate the median (X). However, the median is not mentioned later in the text. The formulae (1) and (2) for the upper and lower bounds (UB and LB, respectively) relate UB and LB to μ and σ ($UB = \mu + \sigma$ and $LB = \mu - \sigma$), "... were μ and σ are the mean and standard deviation, respectively". One could understand from this determination that μ is a mean deviation. However then formulae (1) and (2) became senseless, because UB and LB would have a dimension of errors, but not of absolute values of TEC. If the author means that μ is a mean value, then it is not clear how it has been obtained. Probably, X should stand in formulae (1) and (2) instead of μ . Then at least, the formulae would be understandable.

The description of the results begins from an error. In the first paragraph of Section 3, Figure 1 is considered. In this paragraph, March 7 and March 8 are mentioned while considering this figure. However, it follows from the caption to Figure 1 that the figure contains data for September, 2017. Obviously, March 7 and March 8 in the text should be September 7 and September 8, respectively.

Figure 1 does not have dates at the abscissa (only numerals 2), so it is impossible to relate the behavior of geomagnetic and interplanetary indices to UT and dates and to compare this behavior with the TEC data shown in Fig. 2.

The main result is that the author has found during the September 2017 storm not only an enhancement of the equatorial ionospheric anomaly, but also a localized TEC enhancements (LTE). No such enhancements are detected during the storm of March 2015, which is of the same intensity as the September 2017 storm. However, the presence of LTE was detected during the August 15, 2015 storm of lower intensity.

Since ionospheric storms are very different from each other in the ionospheric behavior in time and space, I think that information on foF2 or TEC behavior during any storm is valuable and deserves publication, but only if it is presented in the proper form. The results obtained in this paper could be published, but the paper should be substantially revised to make the publication possible.

Besides the comments made above, I think that a figure similar to Figure 1 should be included for the March 2015 storm in order to make it possible to compare the data in Fig. 4 with the behavior of geomagnetic and interplanetary indices.

The language of the paper is poor and needs a serious improvement.

My recommendation is a major revision.