

Referee #2

My comments on the paper ANGIO-2019-39, Investigation of effects of coronal mass ejections on ionospheric total electron content over Nsukka, south eastern Nigeria by A.A. Hanson, F.N. Okeke, K. Okpala

1. No list of CME and the main identification parameters (for example: Sun emission date, probable arrival time in the vicinity of the magnetosphere, terrestrial impact via the Dst index, etc.) is not present: **make a comprehensive table**

I simply note that a speed is present on the figures without any indication in the text on its origin: **insufficien**

**t**

2. Too little clarification on the calculation of VTEC (V = vertical) by the SCINDA receiver.

- How is VTEC obtained from STEC (S = Slant)? [I know the method but the authors do not address the subject and the problem of calibration of bias is important for absolute values].

- What is the rate of the measurements (1 pt per mn?)

- No inventory of 2012 measures It is important because we will see that it has a lot of interruptions in the series of measures and that not all CMEs are covered: **make a summary table**

3. With the observation of figures 1-13, it seems to me that there are many time periods without GPS measurements:

- The curves start at the beginning of the day, at different times (no nighttime values);

- Some curves are linear over several hours (Figure 10 between 9h and 14h for example): the 2 endpoints were connected by a straight line (?) which is not physical. It lacks a presence symbol of the measure.

4. No selection criterion between quiet day and disturbed day: Knowing the time of the CME ejection and an estimate of the mean speed of propagation in interplanetary space (see the data of ACE satellite in OMNIWEB, [https://omniweb.gsfc.nasa.gov/form/sc\\_merge\\_min1.html](https://omniweb.gsfc.nasa.gov/form/sc_merge_min1.html)).

On which magnetic index, the authors decide that it is 1 (or more) disturbed day?

5. In paragraph 2.1, the authors describe their work quickly

- On the search for enhancement of VTEC. Why only increases and not decreases (which they will observe later in some cases);

- The treatment is announced on hourly values: Is the round hour, an average over an hour? knowing that the comments in the text will involve half-hours (page 4, line 22 for example);

- The figures should connect the 24 time points. However, slope breaks indicate points (not present by a symbol) closer together: Put the approaches in coherence;

- are the enhancements to be taken into account all day long? No clarification from the authors on a minimum duration to choose an increase of the TEC: **to clarify**

6. On the set of figures 1-13.

- The 13 figures are drawn with a single identical model, which is not acceptable for many figures. Fortunately, the authors treat only a few cases, otherwise we would have hundreds of figures! Be imaginative and original on the graphs!

- The problem of connecting time points (no symbol reported) is not physical: I want to see your measurements on the graphs!
- The annotation 'TEC (TECU)' is not homogeneous in position, size and font;
- Adopt a single scale of VTEC variation that will highlight the seasonal variation that is currently visually masked;
- The scale of the abscissas is in UT hours: I would have liked a scale in local time to better identify the different phases in the day even if the difference is small (~ 30 min for 7.38°E longitude);
- 'TEC profile'?, The word 'profile' is rather reserved for the variation in altitude of the ionization.

7. The writing of the bibliography is correct (correct Valladares instead of Valludares).

#### 8. In summary

The authors have an irregular series of TEC measurements at an original position for an equatorial ionosphere (at this point the magnetic position is absent from the text). Exploitation work may be published. However, from my point of view, the work presented is not enough to be published. Faced with a real lack of measurements (electrical power cuts?) and the receiver is a SCINDA scintillator, I advise authors to add a study scintillation indices (S4 and sigma-phi) that will complement their TEC study and consolidate the contents. The authors will then be able to integrate their results with the NIGNET network measures for other publications.

**I reject the manuscript to the publication (Not acceptable)**