

## ***Interactive comment on “From the Sun to the Earth: August 25, 2018 geomagnetic storm effects” by Mirko Piersanti et al.***

### **Anonymous Referee #1**

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Title: From the Sun to the Earth: August 25, 2018 geomagnetic storm effects

Authors: Piersanti et al., 2020

### General comments

This paper presents an end-to-end study of the geomagnetic storm on August 25, 2018. The analysis begins with an examination of the solar eruption to the effect in the magnetosphere-ionosphere coupled system and finally the ground effects. I find that the results are very interesting for the space weather science community and have direct practical consideration for providers/users of space weather services/information. Therefore, I recommend that the manuscript be excepted for publication after consid-

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erable modifications listed below:

### Specific comments

Page 3, Line 55-57: How is RODI different from ROTI (rate of change of TEC index)? Please explain for benefit of readers. After getting to the end of the paper, I find a detailed description of RODI computation. It would be worthwhile pointing out to the reader here that you have a detail description in the Appendix.

Page 4, Figure 1: I think it will be better to draw contours around the features than to use single post marks for the position.

Page 6, Figure 1: It's hard to see the Venus green triangle with the large green shaded area. I suggest changing the triangle to a different color.

Page 6, Figure one caption: There are two green areas 1 light and other darker. What does the dark green area represent?

Page 11, Figure 6: While RODI did recover on August 27, note that some high RODI values are still present in the Asia/Australia equatorial region. I think it is important to mention this feature in the text.

Page 11, Line 216: Why are you doing this? This may not be obvious to all readers; thus, it must be explained.

Page 12, Lines 242-244: My understanding is that IMTERMAGNET data is sampled at 1 second and filtered down to 1 minute to avoid aliasing effects. Can you comment on that?

Page 14, Figure 8: What is the longitudinal range for the green chain in North America? It seems quite spread out compared to the European-African chain.

Page 14, Lines 260-261: Please explain how the removal has been done. What baseline did you use for this process? Was a common baseline applied or did you do it separately for each station?

Page 17, Line 349-250: Did is occur in the same local time zone? What about consideration of seasonal effects?

Technical corrections

Page 3, Line 57: Geomagnetically Induced Current (GIC).

Page 3, Line 58: Change Geomagnetically Induced Current (GIC) to “GIC”.

Page 3, Line 71: Change “FoV’s” to Field of View (FoV).

Page 3, Lines 72-73: Delete (Field of View).

Page 5, Lines 106-107: Did you mean increase from 11 - 30 cm<sup>-3</sup>?

Page 5, Line 114: Change “overtook” to “overtaken”.

Page 7, Line 134: Add space between words “Space weather.” and “Its”.

Page 7, Line 158: Add space between words “model and “(Tsyganenko”.

Page 12, Lines 247-248: Delete one “... and the SuperDARN observations as well, ...”.

Page 15, Line 296: Change “... on turn ...” to “in turn”.

Page 16, Line 300: “... makes of GIC a DC current that flows into ...” change to “... makes the GIC a quasi-DC current compared to the ...”

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