Review on "Evidence of vertical coupling: Meteorological storm Fabienne on 23 September 2018 and its related effects observed up to the ionosphere"

The authors reported a multi-instrument experiment to study the effects of tropospheric event on overlying neutral and ionized layers of the atmosphere.

The topic is relevant since there are still many open questions in connection with the troposphere - upper atmosphere (stratosphere, mesosphere, termosphere, ionosphere) coupling mechanisms. The present study is especially interesting because the investigated meteorological event (storm Fabian) occurred during the recovery phase of a moderate geomagnetic storm. Therefore, it is a very good candidate to investigate the effects caused by both events on the ionosphere in the same time. It gives the opportunity to compare the importance of the troposphere - ionosphere coupling with the impact of the geomagnetic storm. The topic corresponds to the profile of the journal, especially to this special issue.

However, I suggest to answer the following questions and comments before acceptance of the manuscript to publish.

General comments:

1. The authors give a very good review about the troposphere - upper atmosphere coupling in the introduction part. This very detailed summary/review could be complemented with a paragraph about the impact of the tropospheric events on the sporadic E layer because there are some very interesting papers which investigate and discuss this topic (e. g. Davis and Johnson 2005, Barta et al. 2017, Haldoupis 2018).

2. Page 8. line 17. “Around 15 UT the warm front brought light rain associated with stratiform clouds” It is not clear the date in this case for me.

3. Page 9. line 31-36: Please, discuss a little bit what we see on Fig. 5. and how it is related to the other observations.

4. Page 12. line 6-9: "Both values agree well through the studied interval and their matching can be explained by dominant contribution of F2 layer's electron contribution to the TEC and much less contribution of E layer's variability during studied days, even during the Fabienne event." Can you detail this explanation, please? Maybe it can be useful to show the variation of the foE parameter as well on Fig. 10.

5. Page 12. line 16-19.: "Geomagnetic disturbance started on 21 September at 21 UT. Frequency foF2 during night falls much faster than it is typical. Then foF2 oscillates and remain below 3.5 MHZ till almost noon when rapidly increases." The second part is related to the variation on the night 22/23 September? Please, indicate the date, because it is not clear for me.

6. Page. 13. line 40-41: "The spectral content changed with time and was different during the strong storm event compare to preceding and following day. " We can't see similar effect at 4.65 MHz. Can you give an explanation for that?

7. Page 14. line 30-32. "According to the evolution of Kp index and ionospheric plasma parameters (TEC and foF2) ionosphere was already in the recovery phase of the geomagnetic

storm. Nevertheless, the observed disturbances are induced both by geomagnetic storm and convective activity in the lower laying atmosphere. " Can you discuss in more details the convective activity effect on the TEC and/or foF2 and how it appears on Fig. 10.? I can not distinguish its impact from the geomagnetic storm in the case of these two parameters.

General comments to the Figures:

> Unfortunately, it is very difficult to see the following figures (especially in print version):
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> Fig. 3, Fig 6. and 7., Fig. 8, Fig. 14.
>
> Please, indicate the letters a, b, c etc. on the subplots where it is necessary.
>
> In some cases, when you show sequence of pictures it could help if you indicated the dates (in row e.g. on Fig 6 and 7) and the time (above the columns e.g. on Fig. 6 and 7)

Minor comments:

1. Sometimes the line spacing change in the manuscript: e.g. page 3. line ...7-8 / 9-10....; page 7. line ... 30-31 / 32-33

2. Page 3. line 16. The effects of gravity waves on in the ionosphere: in should be deleted

3. Page 4. line 1. On the longer term-term scale: one term should be deleted

4. Page 6. line 25. Kouba et al. (2008)