Annales
Geophysicae
Discussions

Interactive comment on "Investigation of the ionospheric absorption response to flare events during the solar cycle 23 as seen by European and South African ionosondes" *by* Veronika Barta et al.

Anonymous Referee #2

Received and published: 9 March 2019

Comments on the manuscript Angeo-2019-14

'Investigation of the ionospheric absorption response to flare events during the solar cycle 23 as seen by European and South African ionosondes'

Submitted to Annales Geophysicae By Veronika Bartaet al.

General Comments: This work shows an analysis of ionospheric parameters in mid- and low-latitudes in relation to solar flares occurred in solar cycle 23. The authors investigated the radio wave absorption in D layer, in which they defined a dfmin pa-

rameter as a good qualitative measurement to analyze this absorption. They show an interest analysis with interesting results. However, the authors needs to organize the results and deepen in the physical discussions. Therefore, the authors need to improve significant modifications. This paper needs a major revision. Furhermore, the authors need to improve English significantly.

Major Comments: 1. Abstract: The abstract is not well written. I do not understand the main objective of this study. There are some typo English mistakes as "mimimum", "ionosopheric". The authors need to clarify better the purpose of this work. 2. Introduction (pag. 2, line 25): The solar flares cause an extra ionization in the D region, which causes an absorption of the HF waves, impairing the visualization of the E region in the data (ionograms, for example), and partially or totally in the F region. The authors affirm that there is an absorption in the E region, also. Please, clarify this part. 3. Introduction (pag. 3, line 32): It is necessary to define the fmim parameter; fmim of the F region, E region or both regions? The definition in the section "Method and data" is not enough to understand this part. The authors mention only the discussions about the fmim to be the minimum frequency of ionosphere, but in results (form of the data), I believe that fim refers to the F region. Please, clarify this part. 4. Results: The results are interesting. Although this absorption is well known in the ionospheric data (Denardini et al, 2017, doi: 10,116/s40623-016-0456-7, Sahai et al., cited by authors, and other authors), the relation with the solar zenith angle is present in different form. However, the results are arranged in numerous figures and presented with a confusing text. It would be better to present the figures together (for example Figures 1 and 2 are a single figure)? 5. Discussions and conclusions: The part of the discussion is actually a conclusion. The authors did not elaborate on the physical discussions. There are numerous studies about the subject of relation between flare solar and ionospheric parameters. I suggest that the authors to discuss further the results, that are very interesting, before being published in this journal.

Minor Comments: âĂ´ English needs to improve in all manuscript: grammar, typo

mistakes, absence of commas, and verbal agreement. âĂć Legend of the figures (1 up to 5) are very difficult to see.

Please also note the supplement to this comment:
https://www.ann-geophys-discuss.net/angeo-2019-14/angeo-2019-14-RC2-supplement.pdf