

Interactive comment on “On developing a new ionospheric plasma index for the Brazilian equatorial F region irregularities” by Laysa Cristina Araujo Resende et al.

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Responses to the Comment and/or Suggestions from Referee 1

Manuscript ‘On developing a new ionospheric plasma index for the Brazilian equatorial F region irregularities’ by Resende et al. submitted to the Annales Geophysicae.

We would like to acknowledge the comments given by the referee. We have carried out a revision of the manuscript taking into account all the referee’s comments and suggestions.

Comment:

C1

1. This paper reports relationship between vertical drift velocity (V_z) of the F layer and spread-F occurrence. Although the authors describe that a new index is introduced, the index is defined simply as magnitude of V_z . It is well-known that the spread-F occurrence strongly depends on V_z . This reviewer does not consider that introduction of the new index is valuable. However, the results in this study show that the spread-F occurrence is delayed at least 15 min from the time of V_z when V_z is less than 60 m/s, but that there is no time delay when V_z exceeds 60 m/s. This reviewer considers that these results are most important finding in this paper. Consequently, this reviewer recommends the authors to emphasize this point more in the revised manuscript so that this paper is worth publishing in this journal. Our response: Thanks to the reviewer for the suggestion. The exact explanation about the time difference between V_{zp} and irregularities occurrence is an open question. However, we added some assumptions based on previous works (page 16, lines 4-19).

Minor comments:

1. Describe which months are classified into summer, equinox, and winter. Our response: In page 4 (lines 9-11) is described this information.

2. Table 1: Each level of AV index is defined as vertical velocity larger than a threshold and smaller than another threshold. When the velocity is equal to the threshold, how the level is defined? Our response: Thanks to the reviewer for pointed this fact. We included the symbol equals where we consider the threshold in table.

Finally, we would like to take this opportunity to thank the reviewer for kindly evaluating our paper helping to greatly improve its quality.

Please also note the supplement to this comment:

<https://www.ann-geophys-discuss.net/angeo-2019-42/angeo-2019-42-AC2-supplement.pdf>

2019.

C3