

## Responses to the Comment and/or Suggestions from Editor

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

### Comment:

- Thank you for the quick reply to the reviewer comments. I guess that your paper has significantly been improved. However, I have read the sentence on page 16 lines 4-19, which it was added to address the major concern from reviewer #1, and I guess it was not solved properly at all. Before considering your paper for publication, please, revise the paper again and improve your discussion. I agree with the reviewer #1 that the proposed index will be useful only when the  $V_z$  is very low, i.e., during the months when we have the low occurrence rate of EPBs.

*We would like to acknowledge the comments given by the editor. We improved the discussion in the part that Reviewer 1 had suggested. The Reviewer 1 mentioned that the  $V_{zp}$  and their relationship with the plasma bubbles is well known, and the most interesting factor to explore was the delay between the  $V_{zp}$  and the spread-F. Although we did not find the real reason why that delay occurs, we discussed this fact in terms of irregularity formation and their dynamics. In addition, we compare our results with very few studies discussing this topic.*

*Additionally, the purpose of this work is to show that it is possible to have an index that related the ionospheric parameters with the irregularity occurrences. This index can be incorporated into the products offered by the Space Weather program to facilitate the users to identify the occurrence of the irregularities by only colour scale. In this work, we would just like to show that for typical values of the  $V_{zp}$  parameter, the irregularity in ionograms occurs after at least 15 minutes. So, as future studies, we believe that this index will be useful to study the plasma irregularities seasonality, solar cycle, and plasma irregularities onset.*

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