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

Anonymous Referee #2

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The paper proposed by Araujo et al. introduces a new ionospheric index for Brazilian equatorial region using the Vz, calculated from digissonde h'F values, and tested mainly in summer conditions for the solar cycle 24. They show the relationship of Vz with the start time occurrence of irregularities, and stablishing a AV(1-5) index.

This paper is very interesting from my point of view, and could be published after some technical revision.

What's the difference between AV1 and AV2? Since it's not explained in all the paper. Also is not shown the statistics of AV1 and AV2, probably it could be important for Space Weather issues.

Also, I couldn't find some relation on the construction cof the AV index with the solar cycle. Probably if you (authors) could add a factor into your equation that could show the solar cycle index. Is properly understood that solar cycle affect the irregularity formation process, as well the season, so, when you are in solar maximum PRE (Vz) is well related with irregularities formation (as you mentioned in pag 8), however during solar minumum PRE (Vz) is not longer the best factor to initiate the irregularities. Also the time that the irregularities starts is different from solar maximum to solar minimum.

Why the statistics of other seasons are not shown in the paper? Do they show same behavior as Figure6? I found very interesting Figure 6 since it shows the relation of irregularities with time along 6 years data (from minimum to ascending fase of solar cycle). I believe that in order to develop an index you have to show the same statistic for the other 3 seasons (spring Equinox, fall equinox, and Winter solstice).

This AV index seems to be working properly for summer solstice, however is not possible to conclude, from the paper, that is effective for other seasons.

What happens if start of irregularities are observed at midnight and/or post-midnight hours? This AV index does not represent them.

Minor comments/revisions:

1. Pag. 1, Abstract, Line 22: "ionogramas" to "ionograms" .

2. Pag. 4, 3.1 AV Index Scale, Line 16: "plasma bubbles is more probab..." to "... are more pro...".

3. Pag 5, Line 10: Since Vzp = 53 so AV4 and not AV3.

4. Table 2: Below Vzp shouldn't be 53?

5. Pag 9, Line 4: "... in Figure 2, where..." change for Figure 3.

6. Pag 10, Lines 20 and 21: Please check the percentage numbers. For example: "Among those, 15% had..." change to "... 10%...". I believe that is related to the Figure

4, AV4, 2001.

7. Pag 12, Line 16: complete the paragraph "... of days that...".

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