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Interactive comment on "Wavelet analysis of the magnetotail response to solar wind fluctuations during HILDCCA events" *by* Adriane Marques de Souza Franco

Adriane Marques de Souza Franco

adrianemarquesds@gmail.com

Thank you for all corrections and suggestions, we have included them in the manuscript in purple color. The answer for each question you can find below.

1- Page 2, lines 2-3: I do not understand the statement that substorms do not have relation with high AE values, please specify this.

It was included on page 2, line 3.

2- Page 2, line 7: I would add, when compared with SUBSTORMS OCCURING during . . .

We are referring to geomagnetic storm because the authors of the reference cited (Guarnieri et al., 2006) compared HILDCAA events with geomagnetic storm.

3- Page 2, line 7: In the sentence starting: "However, . . . " does the energy here refer to the energy input to the magnetosphere? (e.g., as estimated by the epsilon parameter)

We are referring to the energy input from particle precipitation into the ionosphere. We have explained it in the paper (page 2, lines 8-9).

4- Page 2 line 23: Authors could justify here why Bx component in the tail is a relevant parameter to use in this study.

It was included in page 2, lines 30-31.

5- Page 2,line 23 :In paper it is also referred often to "energetic periods" when Bx features are described, this could be also opened more what authors mean by this exactly (e.g. page 6, line 6).

It now can be seen in page 6, line 4.

6- Page 2, line 26: Please give more information where Cluster data was obtained, instrument and its time resolution.

It was included in page 2, lines 28-29.

7- Page 6, top: Wouldn't it be also interesting to focus specifically on distributions at smaller periods < 2 hours since that is where plenty of activity happens during substorms?

We have only 9 Cluster crossings, than would be a few numbers of periods to analyses if we restrict to this range. In the Cluster Bx data we have found 10 periods < 2 hours.

8- Page 6, line 5: not sure what energetic Bz period means? Is this a period when Bz was strongly negative

We are referring to periods of most integrated energy along the time series, identified by the GWS as it was observed in the present manuscript.

9- I would place the first part also under some subsection, similar to 4.1 and 4.2, titled e.g., "Periodicities in the Bx geomagnetic component"

We appreciate the suggestion. We have included the subsection in the paper.

10- Section 4.1: Aren't correlations at âĹij3 hours consistent with normal substorm loadingunloading cycle?

Yes, it is consistent with value found by Borovsky et al. (1993) ~2.73 hours. We have included a comment about it in page 6, lines 11-12.

11- Conclusions: would be good to write open CWT.

Actually we have defined it in section 3 as XWT (Cross Wavelet Transform), now we have corrected it in the conclusion.

12- Figure 1: Does this event fulfill requirement that AE should not drop < 200 nT for > 2 hours? There seem to be a longer very low AE period in the middle. Would be good to add 200 nT line in the figure.

We have added the 200 nT line in the figure, and commented it in page 3, lines 10-11.

13- Figure 6: what are the color bar referring to in this figure? Shouldn't correlation be presented from 0-1 or from 0-100%?

Color bar represents the correlation, and it is presented in nT^2 because it is computed using two temporal series that have nT as unit.

Please also note the supplement to this comment:
https://www.ann-geophys-discuss.net/angeo-2019-70/angeo-2019-70-AC2-supplement.pdf

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