Ann. Geophys. Discuss.,
https://doi.org/10.5194/angeo-2019-70-RC2, 2019

Annales Geophysicae Discussions
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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

Anonymous Referee #2

Received and published: 26 June 2019

This paper studies how Earth's magnetotail responds to solar wind fluctuations during HILDCAA events. The analysis and results in the paper seem robust, but there are several small things to consider and detail. Some parts language should be also improved, for which authors already have received several suggestions. Figures appeared partly to be of low quality or small, but could be also related to my browse.

In title there is a typo HILDCCA -> HILDCAA

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

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

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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)

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

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)

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

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?

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

Section 4:

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”

Section 4.1: Aren’t correlations at $\sim$3 hours consistent with normal substorm loading-unloading cycle?

Conclusions: would be good to write open CWT.

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.

Figure 6: what are the color bar referring to in this figure? Shouldn’t correlation be

presented from 0-1 or from 0-100%?

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