

Dear Editor,

I have reviewed the revised version of the manuscript (MS) "Evolution of fractality in space plasmas of interest to geomagnetic activity" by Muñoz et al. submitted for possible publication in *Nonlinear Processes in Geophysics (NPG)* and found that it may be acceptable for publication in *NPG* following intermediate revisions. This MS presents the results from two recent papers published by the same authors (Domínguez et al., 2014, 2017) on fractal dimension analysis and MHD model simulation of Dst index, respectively. This is done in the first 4 sections and 8 figures of the present MS, while in the penultimate section before Conclusions and in the 9th figure of the MS they apply the former ideas on solar wind data around magnetic clouds. The latter are the only new results of the MS and it is a pity that the authors did not devote some more space to the analysis and discussion of the results from the solar wind data. Additionally, they keep referring to an abstract published in conference proceedings by Muñoz et al. (2016) to downgrade the originality of their findings. **So, I believe that this last reference should be omitted from the MS and the authors should spend a few more words on the magnetic clouds' analysis and results in order to justify the acceptance of their work in *NPG*.**

Comments

1. The MS largely summarizes the results from 2 recent papers by the authors using text and 8 figures from these papers. There is only 1 new section and 1 new figure for the magnetic cloud case in the whole MS. Moreover, the originality of the new results is limited by referring to a conference abstract by Muñoz et al. (2016). I would suggest to the authors to omit the reference by Muñoz et al. (2016), both in the text and References, and devote more text and figures for the magnetic cloud case (Section 5). For instance, they could at least explain what exactly solar wind data they analyze (are they IMF data?) and provide a new figure showing the corresponding solar wind time series. They could also discuss a bit more the details of the MC analysis and elaborate on the importance of their MC findings.
2. Section 3:
The author should clearly state here that by setting a threshold of -200 nT for the storm events (Figure 2) they focus on intense magnetic storms.
3. Section 3:
"Similar plots for 5 years of high geomagnetic activity were obtained (Domínguez et al., 2014). In general, storm states are found to have smaller fractal dimension than quiet states immediately before and after them, although there does not seem to be a clear correlation on the value of Dst itself (Domínguez et al., 2014). Thus, our statement on the decrease of the fractal dimension is an argument on its variation, rather than on its actual value."
This result agrees with the decrease in Tsallis entropy of the Dst index time series around intense magnetic storms found by Balasis et al. (2008).

Remarks

Abstract: please define the abbreviation "MHD"

Introduction:

Page 1, line 10: "leads" ---> "leading"

Page 1, lines 11-12: "of forecasting of space weather" ---> "of forecasting space weather"

Page 1, line 17: "broder" ---> "broader"

Page 2, line 22: please define the abbreviation "MHD"

Page 2, line 33: "magnetohydrodynamic (MHD)" ---> "MHD"

Section 2:

Page 3, line 16: please provide a link for the Dst index in the parentheses

Page 4, line 10: "versus de" ---> "versus the"

Section 4:

Page 6, line 12: please define the abbreviation "GOY"

Equations (2) and (3): please define the meaning of the "*" symbols

Page 7, lines 16-17: "Following the ideas in Domínguez et al. (2014), we focus only on the largest peaks in the ... time series". Why? What are these ideas? Please provide more explanations here

Page 9, line 12: "criteron" ---> "criterion"

Figure 9: what is the meaning of "ventana" in x-axis? please provide a proper label

Section 5:

Page 9, lines 18-19: please provide a link for ACE data in the parentheses

Conclusions:

Page 11, line 5: "variable width (Sec. ??)", please provide the correct number here

References

Balasis, G., I. A. Daglis, C. Papadimitriou, M. Kalimeri, A. Anastasiadis, and K. Eftaxias (2008), Dynamical complexity in Dst time series using non-extensive Tsallis entropy, *Geophys. Res. Lett.*, 35, L14102, doi:10.1029/2008GL034743.

Sincerely,