

## ***Interactive comment on “Defining scale thresholds for geomagnetic storms through statistics” by Judith Palacios et al.***

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### **General comments**

Dear Anonymous Referee 2,

About the patent topic, we should make a number of points clear:

First of all, patents are publicly available after the evaluation period, as it is our case. Probably the referee may need an explanation on how a patent procedure works. When a patent is sent for evaluation, it is checked on worldwide web databases and also in publications and technical notes about the topic. Patent is checked for clarity and concision (therefore all necessary math is explained in the patent text), with a number of iterations that has improved its quality. Therefore, the patent process is actually more

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strict than any other publication, and it has to guarantee novelty. After the evaluation period, patents can be checked and its content may be reproduced, but under certain conditions. A patent is other way to protect intellectual property, as any other applicable to a publication.

About the work clarity, the paper includes all the usual sections for a scientific article, and they are clearly explained and referenced. To improve the clarity, a new part comparing the new index with others has been added.

Second, the own patent's authors, by definition, cannot get any profit using data from their own patent.

Third, it is not stated as any kind of Ethical Issue at NHESS or its Editorial, neither in competing interests, to use an own patent for producing own data. The patent is properly referenced and mentioned on the paper.

The fourth point is that data produced under a patented method can be available under request. Embargoed data exist in every field but it is always assumed as admissible to produce scientific results and publications with them. In addition to this, different kind of proprietary data are used for scientific purposes. For instance, Earth observation data are usually obtained by purchase, and subsequently used for publication, as multispectral ground observation or meteorological data.

### **Specific comments**

Fifth, and most importantly, it is clearly stated (several times on the paper) that the method presented on this work can be applied to any other index; so, whoever is interested, may apply the method. The purpose of this paper is not ‘proposing a new index’, something obvious from the abstract to the end. All the previous discussion actually obscures the goal of the paper by a good amount.

### **Technical corrections**

Minor points:

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- About the Abstract, we consider that it is appropriate to put an introductory sentence about the natural hazard involved, since it is a multidisciplinary Journal.
- Page 1, Line 3: “These indices have some scale thresholds” has been substituted by “These indices usually have some associated scale thresholds”
- Page 1, Line 6: regional is mid-latitude. This has been incorporated to the Abstract.
- About the deleterious space weather effects, some references are already mentioned at that paragraph.
- Page 3, Line 15: For a ‘spike’ explanation (since they are not artificial spikes but ‘H-spikes’), please refer to Cid et al., 2015; Saiz et al., 2016, as already mentioned in the text.

About the distribution nomenclature (Page 1, Line 10; Page 5, Line 20), they are well described in the Discussion. Therefore please refer to <https://docs.scipy.org/doc/scipy-0.18.1/reference/stats.html> mentioned in the text. Anyway they have been clarified in the Abstract.

If you have any further suggestion that can actually improve the paper, please let us know. Thanks for your time.

Best regards,

The Authors

Please also note the supplement to this comment:

<https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2017-367/nhess-2017-367-AC2-supplement.pdf>

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2017-367>, 2017.

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