

## ***Interactive comment on “Comment on “Invariability of relationship between the polar cap magnetic activity and geoeffective interplanetary electric field” by Troshichev et al. (2011)” by Peter Stauning***

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Comments to MS <https://doi.org/10.5194/angeo-2020-52> Title: Comment on “Invariability of relationship between the polar cap magnetic activity and geoeffective interplanetary electric field” by Troshichev et al. (2011) Author: Peter Stauning, Danish Meteorological Institute, Lyngbyvej 100, Copenhagen.

Author (Dr.Stauning) “encloses” that parameters  $\alpha$ ,  $\beta$  and  $\varphi$  presented in [Troshichev et al., 2006] were derived with use of the GSE (Geocentric Solar Ecliptic) represen-

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tation instead of the GSM (Geocentric Solar Magnetosphere) representation. Basing on this “discovery” he makes the conclusion that the unified PC method described in [Troshichev et al., 2006] is invalid and this mistake has caused a trail of incorrect relations and wrong conclusions extending since 2006 up to now (2020). In reality, the paper [Troshichev et al., 2006] describes the main principles and procedures used in the unified PC index derivation method. Just this method was approved as the best method by the IAGA Division V-DAT at special meeting in Vienna in May 2010. Before the meeting a special Task Force team fulfilled the comprehensive analysis of three competitive methods: DMI official, Dr.Stauning private, and AARI method (see [McCreadie and Menvielle, 2010]). The new PC index was endorsed by IAGA as a new index of magnetic activity basing on the IAGA Division V-DAT recommendation. The paper [Troshichev et al., 2006] included also some figures with aim to illustrate the proposed procedures. In 2009 Dr. Stauning found that illustrations were made with use of the GSE instead of GSM. As a result, all parameters  $\alpha$ ,  $\beta$  and  $\varphi$  were recalculated with use of GSM, and just these parameters were used in all subsequent analyses. As this takes place the main principles and procedures put forward in [Troshichev et al., 2006] remained unchanged. Since parameters  $\alpha$ ,  $\beta$  and  $\varphi$  obtained with use of GSE or GSM were not principally distinct, the Figures in the paper remained without changes. Dr. Stauning was informed about this situation in 2009. It should be particularly emphasized that the PC index is calculated at present with use of GSM derived parameters and Dr. Stauning perfectly knows about it. Nevertheless, he calls into question the approved method with referring to old illustrations. The validity of the unified PC derivation method has been perfectly testified by its close relationships with magnetospheric disturbances. At present PC index is very popular: according to Research Gate above 1500 persons read every year publications on the IAGA endorsed PC index. Taking into account all these circumstances my conclusion is the following: the Dr.Stauning’s papers do not have scientific value and are not worthy of publication.

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