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Corrigendum to

"The PC index: review of methods" published in Ann. Geophys., 28, 1887–1903, 2010

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In the paper "The PC Index: Review of methods." by H. McCreadie and M. Menvielle (Ann. Geophys., 28, 1887–1903, 2010), typographic errors and lack of precision in the text have been found. The corresponding corrections and clarifications are given below.

1. *Table 1: row; "DMI#4_2006" column; "Baseline"*

   Text added to clarify method:

   Daily quiet level (Xd, Yd): hourly value, minute value derived by quadratic interpolation

2. *Table 1: row; "DMI#4_2006" column; "normalisation coefficients"*

   "Linear coefficients derived by quadratic interpolation" should have been stated.

3. *p. 1890:*

   "Also the magnetic elements chosen were not the same as the Troshichev team (see Table 1)."

   This statement applies only to DMI#4_2006 and not to DMI#1_1991, DMI#2_2001 and DMI#3_2001.

4. *Table 2: row; "DMI#2_2001", column; "comments"*

   "Baselines defined from quiet winter levels for all geomagnetic field components at THL (qwdthl.dat)."

   Should read:

   "Baselines defined from quiet winter night levels for all geomagnetic field components at THL (qwdthl.dat)."

5. *p. 1891:*

   "Papitashvili et al. (2001) introduced a scale coefficient ($\xi = 1\,\mathrm{mmV}^{-1}$) to make the units of the index comparable with the merging electric field.

   Should read:

   "Papitashvili et al. (2001) introduced a scale coefficient ($\xi = 1\,\mathrm{m/mV}$) to make the units of the index dimensionless so the index was compatible with the merging electric field.

   Please note that the scaling value is used in the equations here because it has been used in the derivation of the index explicitly in Troshichev et al. (2006) Eq. (3). As the scaling factor is set to a value of 1 it is not actually required to obtain a number which is the PC index. It is only used to specify the units of the index. In fact the unit of the scaling factor drives the unit of the PC index: for instance, $\xi = 1\,\mathrm{nT\,m/mV}$ would lead to a PC index expressed in nT.

6. *p. 1892 under Eq. (7):*

   The words, "where F_k is the magnetic disturbance vector" should be replaced by "where F_k is the modulus of the magnetic disturbance vector".

7. *replace "Equation (8) and the following paragraph"*

$$F_k = \sum_{i=(k-1)d}^{j+i} \delta M_j \sin\gamma_j \mp \delta N_j \cos\gamma_j$$
$$\{j = 1, \ldots, d\}\{k = 1, \ldots, k_T\} \quad \text{and} \quad d = \tfrac{\kappa}{\tau}$$

τ denotes the sampling rate (minutes), subscript i denotes the sample identifier ($i = 1, \ldots\ \tau_T$) where the total number of samples in a given summation interval is τ_T, k denotes the summation interval (minutes), k_T denotes the total number of summations in one day; ξ is a

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scaling value that defines the unit in which the PC index is expressed (PC is dimensionless if $\xi = 1$ m/mV).

For example:

If the summation interval $\kappa = 15$ min and the sampling rate $\tau = 1$ min.

$d = 15/1 = 15, k_T = 1440/15 = 96$

$j = \{1, \ldots, 15\}, k = \{1, \ldots, 96\}$

For $\boldsymbol{F}_4$, $k = 4$

$i = (k-1)d = (4-1) \cdot 15 = 45$

$j + i = \{1, \ldots 15\} + 45 = \{46, \ldots 60\}$

8. Figure 5 aims at summarizing on the same schematic diagram the definition of all the elements that are referred to in the paper. The explanations given below clarify and complement the caption of this figure.

   The total magnetic field vector $\boldsymbol{F}$; the inclination I; the declination in degrees D_E, the horizontal component vector $\boldsymbol{H}$ and its modulus H, and the components in the geographic coordinate system X, Y, and Z are the classical magnetic elements used to describe the instantaneous geomagnetic field vector at point M, as determined, e.g., from absolute measurements at this point.

   When the geomagnetic variations are described in terms of deflection from a reference magnetic field, each element M is classically expressed as the sum of a baseline value (M_0, the value of the element for the reference field) and the deviation dM from this baseline. The baseline M_0 is generally chosen so that dM fluctuates around zero. If the magnetic variations in the horizontal plane are referred to the geographic frame, the horizontal components are expressed as $X = X_0 + dX$ and $Y = Y_0 + dY$; if they are referred to the frame where the vector unit for the "x"-axis is $\boldsymbol{H}_0/H_0$, the horizontal components are expressed as $H = H_0 + dH$ and $D_H = dD_H = H_0 \cdot \tan(D_E - D_{E,0})$, where D_H (expressed in nT) is the horizontal component in the easterly direction perpendicular to H_0; D_E and D_H are often referred to as D(deg) and D(nT), respectively, and it then comes $dD(nT) = H_0 \cdot \tan[D(\text{deg}) - D_0(\text{deg})]$. Although they are expressed in nT, dD_H and dD are also called "variations of the declination".

9. *Equation (18) should read:*

$$R = \frac{\Sigma(F_k - Fva)(E_m - Ema)}{\sqrt{\Sigma(F_k - Fva)^2 \Sigma(E_m - Ema)^2}} \tag{18}$$

10. *p. 1896:*

    "Papitashvili et al. (2001) were unable to locate the coefficients used by Vennerstrom (1991) and, therefore, recomputed these coefficients following Vennerstrom's method and used them for DMI#2_2001."

    Should read:

    Papitashvili et al. (2001) were unable to locate the original data used by Vennerstrom (1991) and, therefore, recomputed these coefficients following Vennerstrom's method and used them for DMI#3_2001.

11. *Reference to be added:*

Stauning, P., Troshichev, O., and Janzhura, A.: The polar Cap (PC) indices: Relations to solar wind parameters and global magnetic activity, J. Atmos. Solar-Terr. Phys., 70, 2246–2261, doi:10.1016/j.jastp.2008.09.028, 2008.