



Comparison of Polar Cap (PC) index calculations.

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The Polar Cap (PC) index introduced by Troshichev and Andrezen (1985) is derived from polar magnetic variations and is mainly a measure of the intensity of the transpolar ionospheric currents. These currents relate to the polar cap antisunward ionospheric plasma convection driven by the dawn-dusk electric field, which in turn is generated by the interaction of the solar wind with the Earth's magnetosphere. Coefficients to calculate PCN and PCS index values from polar magnetic variations recorded at Thule and Vostok, respectively, have been derived by several different procedures in the past.

The first published set of coefficients for Thule was derived by Vennerstrøm, 1991 and is still in use for calculations of PCN index values by DTU Space. Errors in the program used to calculate index values were corrected in 1999 and again in 2001. In 2005 DMI adopted a unified procedure proposed by Troshichev for calculations of the PCN index. Thus there exists 4 different series of PCN index values. Similarly, at AARI three different sets of coefficients have been used to calculate PCS indices in the past.

The presentation discusses the principal differences between the various PC index procedures and provides comparisons between index values derived from the same magnetic data sets using the different procedures. Examples from published papers are examined to illustrate the differences.