



The unified PC index: relation to the solar wind parameters and magnetospheric substorms

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A unified method for derivation of the PC index was elaborated in the Arctic and Antarctic Research Institute (St. Petersburg) and Danish Meteorological Institute (Copenhagen) to eliminate any influence of the calculation technique on the PCN and PCS indices obtained from data of magnetic observations at stations Thule (Greenland) and Vostok (Antarctica). The unified PC index is a measure of the interplanetary electric field, coupling with the magnetosphere, and can be regarded as a real characteristic of the solar wind electromagnetic energy loading into the magnetosphere. Statistical relationships between the solar wind parameters, unified PC indices, and AE indices of magnetic activity are examined to resolve such issues of Space Weather, as a role of the geoeffective merging electric field (MEF) and solar wind dynamic pressure (P_{SW}) in generation of magnetic disturbances, origin of the periodic magnetic substorms (sawtooth events), and influence of the current state of the magnetosphere on linkages between the solar wind parameters, polar cap electric potential and substorm activity.