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PC index as an indicator of solar wind energy that entered into the magnetosphere: basis for the space weather monitoring

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The PC index has been introduced initially [Troshichev et al., 1988] as a characteristic of the polar cap magnetic activity related to the geoeffective interplanetary electric field EKL which was determined by formula of Kan and Lee [1979]. The recent studies showed that the PC index implication is more significant: the magnetospheric storms and substorms start only if the PC index reaches the definite threshold value ($\sim$ 2 mV/m for storms, and >1.5mV/m for substorms); the substorm growth phase duration and substorm intensity are determined by the PC growth rate and substorms are stopped as soon as PC index falls below 1-1.5 mV/m; the storm length is terminated by duration of period, when PC>2mV/m, the storm intensity being linearly related to the PC index averaged for the storm time interval; periodicity of saw-tooth substorms occurring under conditions of steadily high level of geoeffective interplanetary electric field is determined by duration of