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The influence of the solar activity chaotic component on a magnetosphere dynamics

O.D. Zotov (1), B.I. Klain (2), N.A. Kurazhkovskaya (3)

(1), (2), (3) Borok Geophysical Observatory of Schmidt Institute of Physics of the Earth of the Russian Academy of Science, 152742 Borok, Yaroslavl, Nekouz, Russia, email: knady@borok.adm.yar.ru

The magnetosphere can be viewed as dynamic system, on which the external force operates, and this force composes of a quasi-periodic and chaotic components. It is known, that dynamics of the average annual Ap-index values (AP) is contains the 11-year's quasi-periodic component, but has features distinguishing it from dynamics of average annual values of the solar activity (SN). For example, dynamics of the Ap-index has a maximum in the decay phase of the solar activity. In this paper was investigated the influence of the solar activity chaotic component on dynamics of a magnetosphere. For this purpose the method of no dynamic threshold scanning was used. Dynamics of average daily values of the solar activity chaotic component (number of Wolf sunspots without additive component of the 11-year's solar cycle variation - SNH) and dynamics of average daily values of a magnetosphere activity of the Earth (AP) with 1932 for 2000 was considered. An explored (input) row SNH(i)) is compare on a given level S so, that a converted (output) row Y(i))=1 if SNH(i-1) $<$ S and SNH(i) $>$ S else Y(i) = 0. For each level of a comparison there is a correlation factor (K) between average annual rows Y and AP. It was shown, that the dependence K(S) has a maximum Kmax = 0.65, thus a row Y has the typical features of Ap-index dynamics. The effect of a stochastic resonance (SR) at use of a method of nonlinear dynamic scanning was detected. The obtained results are shown, that dynamics of a magnetosphere are determined by exterior noise properties, and allow to assume, what exactly chaotic component of solar activity shapes features of the magnetospheric activity dynamics. The work was supported by the Russian Foundation of Basic Researches (project 03-05-64545).