RELATIONSHIP OF PCA EVENTS AND ENERGETIC ELECTRON PRECIPITATIONS WITH FLUXES OF PROTONS AND RELATIVISTIC ELECTRONS ON THE GEOSTATIONARY ORBIT

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The comparison of annual average values of PCA events appearance frequency (Fpca) and the precipitation frequency of energetic electrons (F), registered with the Tixie riometer (L = 5.6) [1], with the fluxes of protons and relativistic electrons on the geostationary orbit (GOES) during the 22 nd solar activity cycle is presented. A high correlation relation of the PCA events frequency with Jp proton fluxes is found. The highest correlation R(Fpca, Jp) > 0.97, has been obtained for energy intervals of 5 -10 and 10 - 30 MeV. It is in good agreement with the known dependence of the riometer absorption amplitude versus the protons energy in the PCA events and points to the true character of the PCA event frequency distribution during the 22 nd solar cycle. The distribution F during the solar cycle has a maximum on the decay phase (1994) associated with the activity of the coronal holes and high-speed solar wind streams [1]. The analogous but more sharp maximum is observed in relativistic electron fluxes by geostationary satellite data [2]. The highest non-linear correlation between the annual average values F and relativistic electron fluxes R[F, Je(>2MeV)] = 0.83 is shown. It allows to consider the energetic electrons as the initial population for the formation of relativistic electrons [2].

REFERENCES

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