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On the variations of the relativistic electrons in outer radiation belt

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Recently the relations between relativistic electrons on geosynchronous orbit and solar wind velocity were reported using long time data set (Reeves et al., JGR, 2010JA015735). Here we use data sets on electrons and partially on protons from low orbit to deduce relations of the particle flux in outer belt with interplanetary characteristics. Relativistic electron measurements on board of low altitude satellite SERVIS-1 at $\sim$ 1000 km (described by Kodaira et al., Proc. 29th ICRC, Pune, 2005) from December 2003 to March 2005 were used for investigation of the solar wind, IMF and magnetic activity influence on electron intensity at L=4.0, 5.0, 6.6 and 8.0. Daily maximum counting rates over Brazilian magnetic anomaly were found for the down and dusk local sectors. Data analysis allows to suppose that relativistic electron intensity increased due to two mechanisms. Correlation with Kp index reflects electron acceleration during magnetospheric substorms, while solar wind input is obliged to the pulsations of Pc5 range transferred from solar wind to the magnetosphere. Resonance of the pulsations with electrons at magnetic drift frequencies results in particle earthward radial drift with conservation of the magnetic moment and consequently with particle acceleration. In addition, energetic electron and proton data measured on lower orbit (CORONAS-F, $\sim$ 500 km, August 2001 – January 2005) are analyzed and discussed. Work is supported by VEGA grant agency project 2/0081/10.