



## **Large and sharp solar wind dynamic pressure variations as a source of geomagnetic field disturbances at the geosynchronous orbit**

**N. Borodkova** (1), G. Zastenker (1), M. Riazantseva (1,2) and J. Richardson (3)

(1) Space Research Institute Russian Academy of Sciences, Moscow, Russia (nbor@afed.iki.rssi.ru), (2) Skobeltsyn Institute of Nuclear Physics, Moscow State University, Russia, (3) Centre for Space Research, MIT, Cambridge, Massachusetts, USA

We present a comparison of large and fast solar wind dynamic pressure changes propagating from the Sun with disturbances in the magnetospheric magnetic field measured at geosynchronous satellites. More than 300 solar wind pressure events were selected for this study over a period exceeding 4 years. These fast and large solar wind pressure changes affect magnetosphere causing fast variations of the geomagnetic field magnitude in the outer magnetosphere. We find that increases (decreases) in the solar wind dynamic pressure always result in increases (decreases) in the geosynchronous magnetic field magnitude. The time delay in the dayside magnetosphere between the solar wind pressure change and the geomagnetic response is significantly affected by the inclination of the pressure front to the Sun - Earth line. The amplitude of the geomagnetic field variations strongly depends on the location of the GOES satellite relative to the noon meridian, with the maximum amplitude near noon. The effect of the solar wind dynamic pressure change on the ground magnetic field is also considered.