

Analysis of interplanetary shock associated geosynchronous magnetic field perturbations during the solar cycle 25

A.S. Lavrukhin 1 , K.B. Kaportseva 1 , A.O. Shiryayev 1,2

1. M.V.Lomonosov Moscow State University, Skobeltsyn Institute of Nuclear Physics, Moscow, Russia

2. M.V.Lomonosov Moscow State University, Faculty of Space Research, Moscow, Russia

Interplanetary shocks usually cause the sudden impulse / sudden commencement (SI/SC) of magnetic field on the Earth surface. The magnitudes of observed SI/SC's vary at different stations and are strongly influenced by various SC-associated magnetospheric current systems. Using only ground stations data it is difficult to estimate the contribution of magnetopause compression to SI/SC under the influence of an interplanetary shock and influence of its inclination on the magnetopause compression asymmetry. Thus it may be useful to use the geosynchronous spacecraft data. We have selected several SC/SI events during the ongoing 25th solar cycle, when the GOES 16, 17/18 spacecraft were located almost symmetrical about the x-axis on the dayside, to study the geosynchronous magnetic field perturbations on the dusk and dawn sides and compare the observed asymmetries to the calculated interplanetary shock inclination angle.