Geophysical Research Abstracts, Vol. 8, 00351, 2006
SRef-ID: 1607-7962/gra/EGU06-A-00351

Cosmic ray intensity variation in response to different interplanetary solar structures

M.R. da Silva, E. Echer, W.D. Gonzalez, A. Dal Lago, L.E.A. Vieira, F.L. Guarnieri, A. De Lucas

Instituto Nacional de Pesquisas Espaciais, São Paulo, Brazil (marlos@dge.inpe.br / +55 12 3945-6808)

In this work we show that the secondary cosmic ray variations (neutron and muon) depends on the solar structures observed in the interplanetary medium. We analyzed interplanetary and cosmic ray-ground-based observations from 2001 to 2004. In order to do this, interplanetary magnetic field and solar wind plasma parameters, registered by the instruments on board the Advanced Composition Explorer - ACE satellite, and ground based cosmic ray data of the neutron monitors maintained by the Bartol Research Institute of the Delaware University, United States, and the muon scintillator telescope, installed in the Southern Space Observatory - SSO/RSU/INPE-MCT in São Martinho da Serra, Brazil, were used. We classified the interplanetary structures as: (a) interplanetary coronal mass ejection, (b) interplanetary shocks, (c) magnetic clouds, (d) corotating interaction regions, and (e) complex structures. We observed that during the passage of magnetic clouds, cosmic ray decreases are more intense than during the others structures. Thereafter, the cosmic ray response to the corotating interaction regions passage is the less intense. In spite of all efforts, it is not possible to satisfactorily explain the cosmic ray response during the passage of the interplanetary structures. Several models attribute the cosmic rays decreases to the particles scattering in the magnetic field turbulent area between the shock front and the ejection.