Geophysical Research Abstracts, Vol. 9, 00723, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-00723

Energy deposition and ionisation in the Earth's atmosphere during powerful solar energetic particle events

V.S. Makhmutov (1), G.A. Bazilevskaya (1) and A.K. Morzabaev (2)

(1) Lebedev Physical Institute RAS, 119991, Moscow, Russia, (makhmutv@sci.lebedev.ru),
(2) Euroasian National University, 010008, Astana, Kazakhstan

The solar energetic particles (SEPs) effect in the Earth's atmosphere is presented and considered in terms of energy deposition and ionisation produced by SEPs passing through the atmosphere. We choose the most powerful solar energetic particle events recorded in the Earth environment during 1956-2005. Evaluation of SEPs energy spectra was done on the basis of peak particle fluxes measured during these events by different instruments in the 10 MeV - few GeV energy range. We performed Monte Carlo simulations using GEANT4 to determine energy deposition and ion production rate in the atmosphere during selected events. We discussed the cutoff-rigidity dependence obtained results.