ENERGY SPECTRUM OF THE 11-VARIATION OF GALACTIC COSMIC RAYS FOR DIFFERENT SOLAR MAGNETIC CYCLES

K. Iskra (1), M. Siluszyk (1), and M. V. Alania (1,2)

1. Institute of Mathematics and Physics of University of Podlasie, Siedlce, Poland 2. Institute of Geophysics of Academy of Sciences of Georgia, Tbilisi, Georgia iskra@ap.siedlce.pl, tel. +48 25 643 16 24 alania@ap.siedlce.pl

Neutron monitors data for 1957-1999 has been used to study the role of drift effect in the temporal changes of the energy spectrum index of the isotropic intensity variations for different qA>0 and qA<0 solar magnetic cycles. It is shown that the clearness various character in the changes of the profile of galactic cosmic ray intensity causing by drift effects for different solar magnetic cycles (pick and plateau profiles in qA<0 and qA>0, respectively) has not revealed in the changes of the energy spectrum index of the isotropic intensity variations of galactic cosmic rays. A comparison of the experimental results with the expected changes of the energy spectrum index of the isotropic intensity variations obtained from the theoretical modeling of Parker's 2D transport equation has been done. It is concluded that the decisive role in the 11-year variation of galactic cosmic rays (in the formation of the magnitudes of the amplitudes) belongs to the structural changes of the fluctuations of the interplanetary magnetic field. A rearrangement of the fluctuations of the interplanetary magnetic field strength from higher frequencies to the lower frequencies during the transition period of the maximum of solar activity to minimum must be a general reason of the 11-year variation of galactic cosmic rays.