

The relation between solar activity and cosmic rays at the Earth orbit

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The study of the relation between the solar activity and the characteristics of cosmic rays at the Earth orbit is very helpful in the analysis of auroral and magnetospheric phenomena and in solving the applied problems of solar-Earth relations.

In our paper the results of regression analysis of sunspots and solar cosmic rays proton fluxes data obtained during solar cycles 19-22 are presented. It is shown that there is no correlation between the Wolf numbers and solar cosmic rays proton fluxes integrated over solar proton events, month, quarter, half-year and one year.

The correlation coefficient between the yearly Wolf numbers and the yearly fluences of protons of 30 MeV higher energy was found to be ~ 0.35 . The better result (~ 0.64) was obtained for the case of the correlation between the Wolf numbers and the logarithms of solar cosmic rays proton fluences.

So the conclusion of the expediency to use the solar activity index other than Wolf numbers was made. We suggest to use for this purpose the flux of radio emission of 10.7 cm wavelength.