

Scaler data from the Pierre Auger Observatory and solar activity

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The modulation of low-energy cosmic rays reflects interplanetary magnetic field variations and can provide information on solar activity in the past. The secondary particles, which originate from the interaction of cosmic rays with the atmosphere, can be revealed by an array of ground detectors. In this study, we present the investigation of the low-threshold rate (scaler) time series recorded in 16 years of operation by the surface detectors of the Pierre Auger Observatory in Malargüe (Argentina). Using advanced spectral methods we extracted the significant variations from the series with periods ranging from the decadal to the daily scale. In order to investigate the possible solar origin of the detected modulations, besides the number and surface area of sunspots, we considered the absolute value and the radial component of the heliospheric magnetic field, along with the coronal magnetic field.