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Cosmic rays recurrence during the early declining phase of solar cycle 24

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During the early declining phase of solar cycle 24 an enhanced variability associated with solar rotation was observed in cosmic rays intensity (measured by neutron monitors and space probes) and in solar wind and solar activity parameters. We notice that during the studied period this recurrence was quite stable. It was undoubtedly related to a periodical occurrence of large solar coronal hole near the South pole.

We analyze in situ data characterizing solar wind and search the parameter space to choose an optimal set of variables. These variables can influence the recurrent variation of cosmic rays related to the solar rotation period. Based on the above mentioned analysis, we solve the Parker's transport equation for different solar rotations taking into consideration those in situ measurements. The results of our calculation show high correlation with cosmic rays count rates from neutron monitors.

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