RECURRENT DEPRESSIONS OF GALACTIC COSMIC RAYS IN CIRS: 22-YEAR CYCLE

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Recurrent variations in the intensity of galactic cosmic rays are produced by the interplay of diffusion and particle drifts. The enhanced scattering and consequent small diffusion in the compressed field of Corotating Interaction Regions (CIRs) causes recurrent cosmic-ray depressions at the passage of CIRs. The picture of stable, strong CIRs with a small tilt angle of the Heliospheric Current Sheet (HCS), characteristic for the quiet heliosphere, changes as the Sun enters a more active phase. High speed streams are still observed but CIRs become less prevalent, and less dominant. The role particle drifts which was small for solar minimum, may become more important. We report on 3-D model simulations with a HCS resembling those observed at solar maximum. Our earlier 3-D works are extended to include a large tilt and a significant quadrupole moment of HMF, resulting in a 4-sector configuration. Latitudinal and recurrent longitudinal variations are discussed for the two polarity states of the 22-year cycle ($A < 0$ and $A > 0$). We find remarkable differences between the 26-day recurrent cosmic-ray variations predicted for $A > 0$ and $A < 0$. The magnitude of the 26-day wave turns out larger for the $A > 0$, in qualitative agreement with the so far unexplained findings of *Cane et al.* [GRL, **26**, 565, 1999], if the HCS happens to be placed asymmetrically.