

COSMIC RAY MODULATION AND THE EVOLUTION OF THE SOLAR MAGNETIC FIELD

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The modulation of cosmic rays in the heliosphere is directly related to the structure and strength of the interplanetary magnetic field and ultimately is caused by variations of the solar magnetic field. Wang and Sheeley have successively used observations of the photospheric field to model interplanetary field variations throughout the solar cycle. In this study we examine how the field evolves, and the cosmic rays respond to these variations, for several interesting periods, including the onset of cycle 23. Also considered is the period after solar maximum when cosmic ray modulation (at rigidities above about 2 GV) was the greatest in solar cycles 21 and 22. We examine the rigidity dependence of the decrease at this time, the solar causes and address the question of the likelihood of this happening in cycle 23.