CORRECTED FLUXES OF MAGNETOSPHERIC ENERGETIC PARTICLES FOR 3 SOLAR CYCLES

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The MEPED instruments onboard the low-altitude polar orbiting NOAA/POES satellites have measured energetic particles since 1978, offering a nearly continuous series of energetic particle fluxes in the magnetosphere during three complete solar cycles. However, there are several problems in using these data for long-term studies. The most significant problem is that the solid state detectors of the MEPED instruments suffer significant radiation damage. This affects, e.g., to increase the effective energy thresholds of the instrument, leading to underestimated particle fluxes already a couple of years after satellite launch. Before the MEPED data can reliably be used in any long-term study the data has to be calibrated taking into account the decay of the detectors. In this paper we present an improved method for the calibrating of MEPED measurements, and give an estimate of energetic particle fluxes from 1978 to present.

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