



## **Ulysses at solar minimum: energetic particle observations from the third southern polar pass**

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One of the key findings from Ulysses' first high-latitude passes in 1994-95 was the presence of recurrent energetic particle increases at latitudes well above the region where fast and slow solar wind streams interact to form CIRs and local particles are accelerated locally at the associated forward and reverse shocks. This in turn led to important new insights into the latitudinal transport of particles perpendicular to the average heliospheric magnetic field. In this paper we report on recent particle observations from the COSPIN Low Energy Telescope acquired as Ulysses returned to high southern latitudes during the third solar orbit, and compare them with the earlier data. In particular, we focus on the nature of the observed particle increases as Ulysses once again climbed above the Heliospheric Current Sheet and into the fast solar wind, and relate them to the underlying heliospheric structure. We find clear differences between the particle signatures observed during the first and third southern polar passes, even though these occurred at a similar (near-minimum) phase of the solar cycle. The recent data reflect the more active declining phase of solar cycle 23 compared with cycle 22, with a less regular pattern of intensity increases and a larger contribution from transient events.