

Solar-heliospheric processes and the variability of energetic particle intensities

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Suprathermal and energetic particle intensities in the heliosphere vary on different time scales. While intermittent acceleration processes enhance variability, diffusive propagation typically reduces short-term fluctuations. Other aspects of propagation (e.g. intermittent wave activity or changes in magnetic connectivity) may, however, even enhance variability. The relative contributions of acceleration and propagation processes to variability change with the phase of the solar activity cycle, with heliospheric position, and also with particle species and energy.

Variability on time scales of months to years and its dependence on particle energy will be emphasized. Some useful quantitative measures of the fluctuating character of intensity time series will be introduced, mainly based on cumulative fluences and on auto- and cross-correlation schemes. Both inner heliospheric suprathermal to energetic particle intensity data and recent distant heliospheric Voyager results will be discussed.