

The Role of Interplanetary Shocks for Accelerating MeV Electrons

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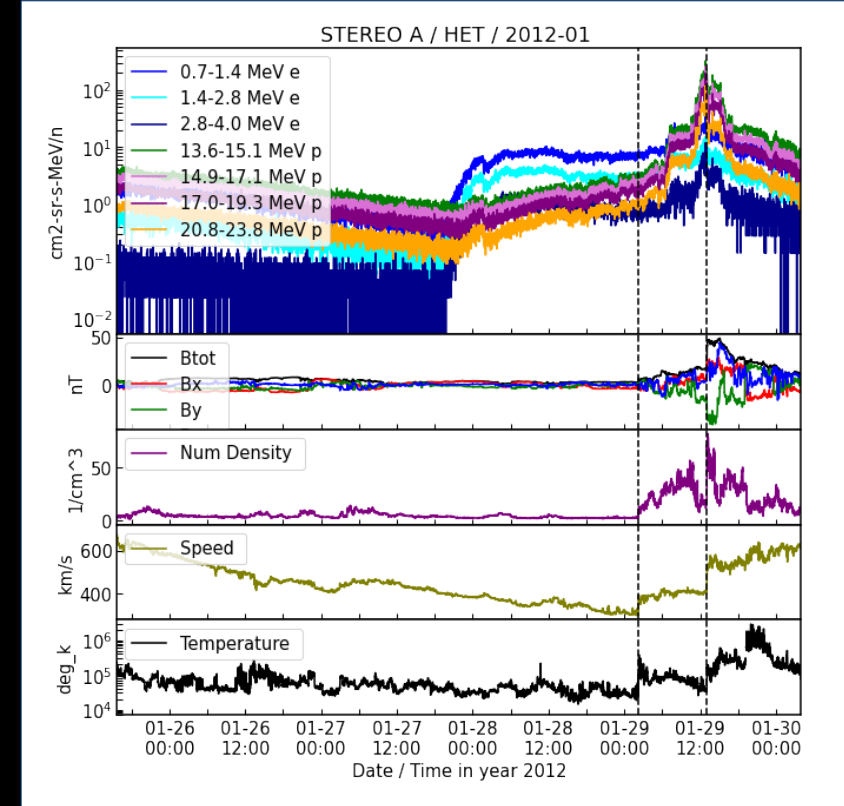
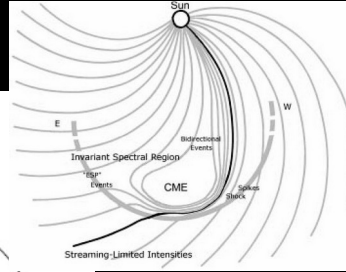
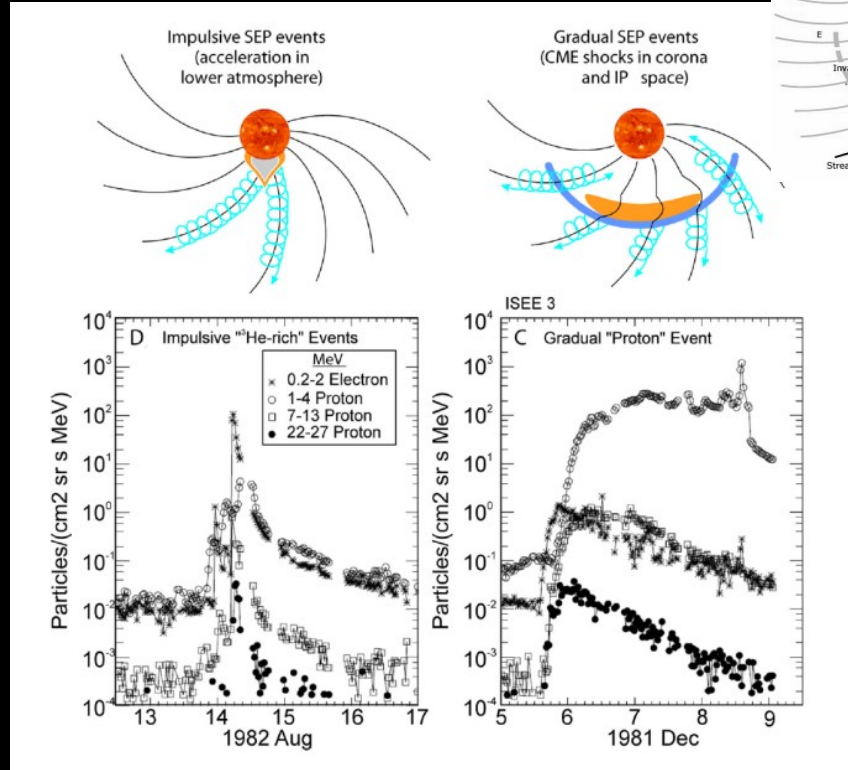
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SEP vs ESP events:



Reames 1999

Filtering method:

- In order to determine if a statistically significant change in electron intensities is observed at the time of shock crossing, we apply a filtering method.

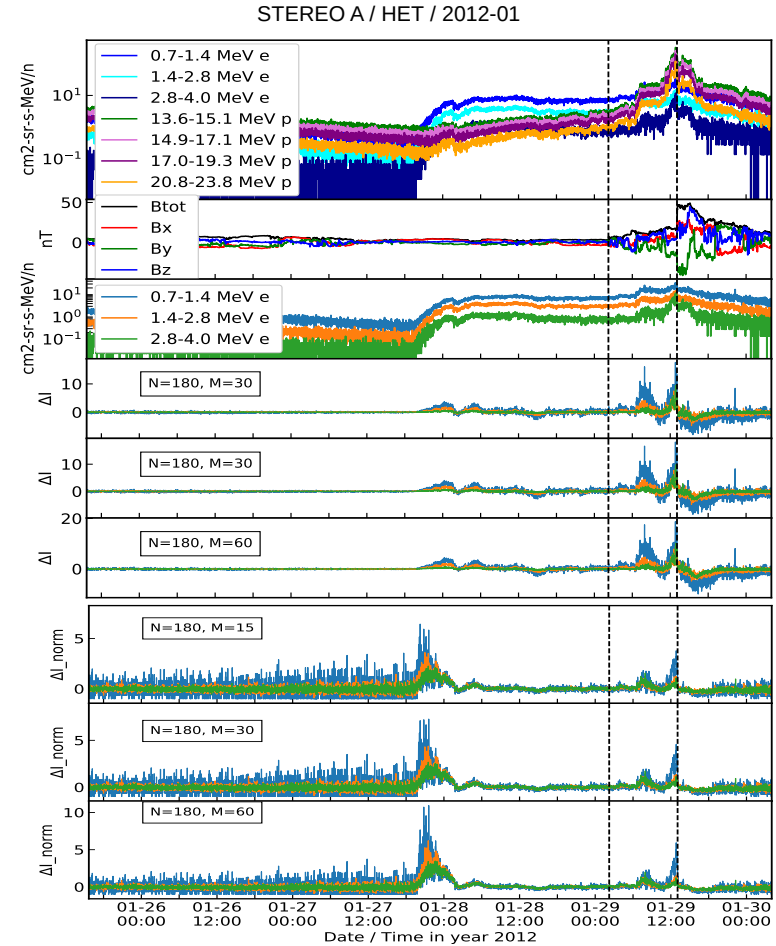
$$\Delta I(t_i; N, M) = I(t_i) - \frac{1}{N} \sum_{n=i-N-M}^{i-1-M} I(t_n)$$

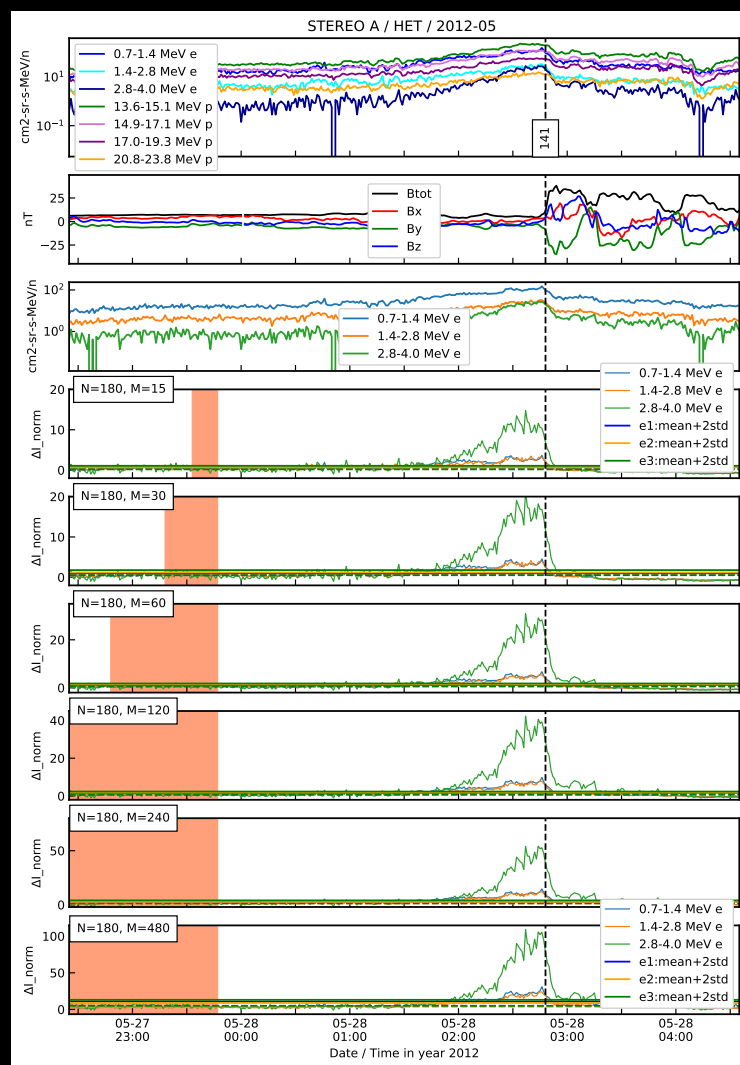
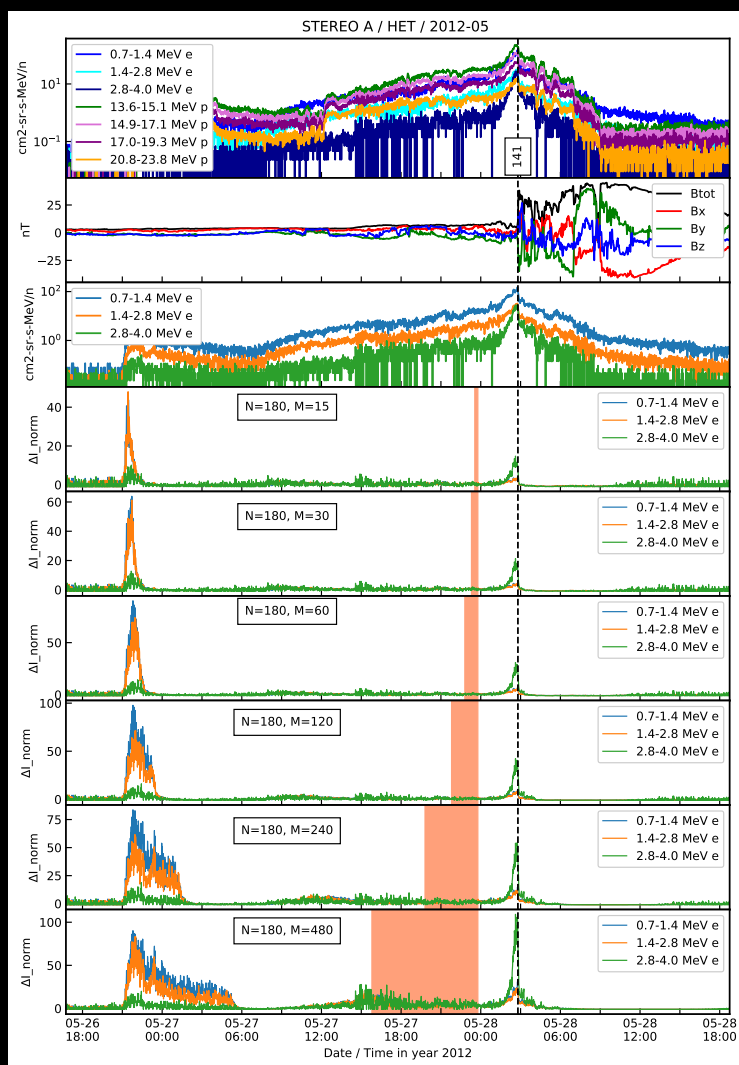
$$\Delta I_{\text{norm}}(t_i; N, M) = \frac{I(t_i)}{\frac{1}{N} \sum_{n=i-N-M}^{i-1-M} I(t_n)} - 1$$

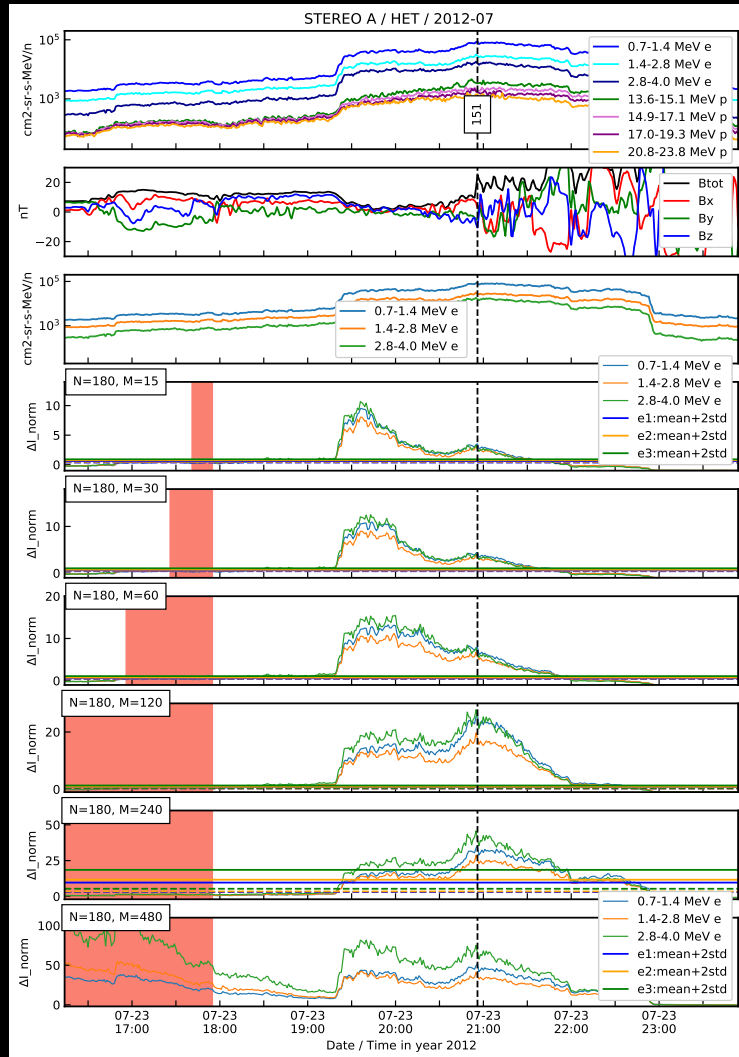
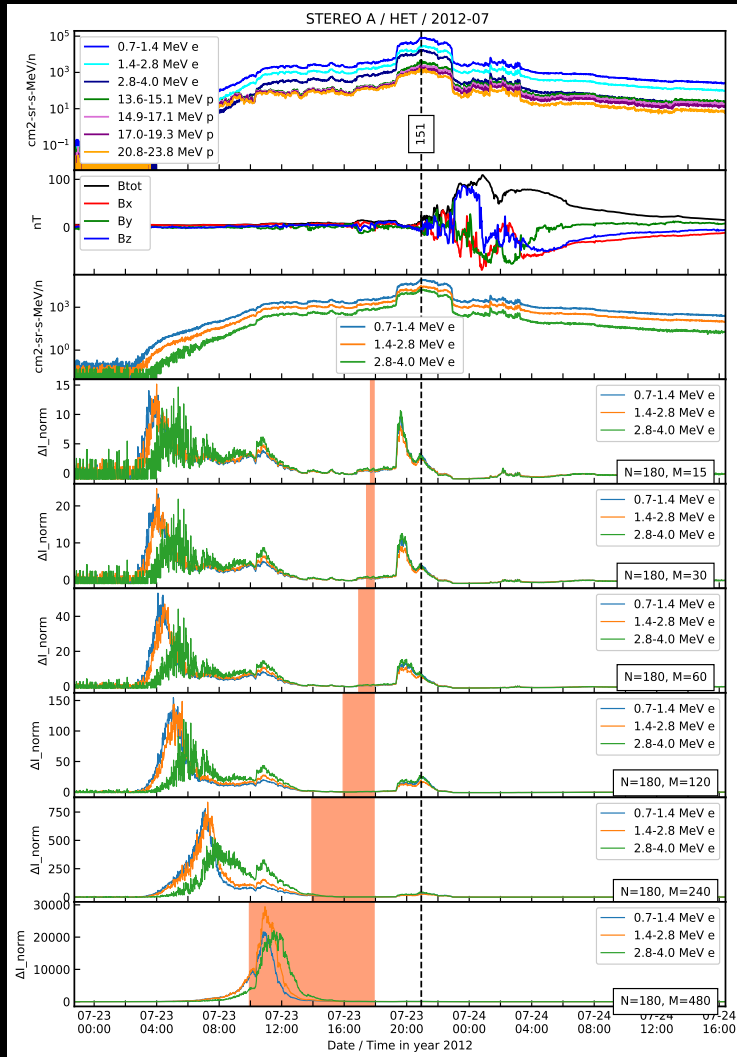
i : one minute HET data

N : the number of point averaging over

M : time lag







Summary:

- By scanning the whole data set of STEREO-A and STEREO-B, found a few cases of potential electron ESP events, especially in higher energies(MeV electrons).
- By applying the filtering technique with different time lags to our candidates, as a result we clearly see that shocks contributes to the energetic electron fluxes and in some cases also change the spectrum.

References:

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