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General caveats and notes regarding use of STEREO/SIT ASCII data files

The Suprathermal Ion Telescope (SIT) is described in: Mason, G. M., A. Korth, P. H. Walpole, M. I. Desai, T. T. von Rosenvinge, and S. A. Shuman, "The Suprathermal Ion Telescope (SIT) for the IMPACT / SEP investigation", *Space Sci. Rev.*, DOI 10.1007/s11214-006-9087-9, April, 2007. These notes describe details and limitations of the ASCII data files posted on the Caltech SEP Instrument Suite on STEREO web site.

- These files contain intensities of the following ion species over a number of different energy windows: H, 4He, O, and Fe.
- Units: particles/(s cm2 sr MeV/nucleon)
- Ion species names and energy range for each intensity are given in the files and below
- 1-sigma errors for each rate due to counting statistics can be computed using the number of counts used for each rate bin, which are listed in the files. Counting statistics generally dominate the intensity uncertainties.
- in periods of very high intensity, e.g., comparable to the July 2000 "Bastille Day" event, or the 2003 "Halloween events", saturation in instrument electronics may result in inaccurate intensities; these effects almost always result produce intensities that are lower than the actual intensities.
- for H and He, the efficiency of detection is <100%, and may vary in time due to exposure of the instrument to radiation. If changes in the efficiency are detected, the intensities will be re-calculated and new Level 1 files posted. Since detection of efficiency changes requires detailed comparison with other instruments, these changes may be several months, or even longer, after the data is collected. When such updates are done, the data affected will be posted in future version of the data release notes.
- Because of SIT's low and possibly varying detection efficiency for H, is suggested that users use SEPT level-1 data for H intensities.
- SIT-A intensities are calculated with pulse-height data through 4/20/2011; after this date. onboard lookup tables are used, which increases statistical accuracy in intense periods.
- SIT-B intensities are calculated with pulse-height data through 5/10/2011; after this date. onboard lookup tables are used, which increases statistical accuracy in intense periods.

- BACKGROUND DURING QUIET PERIODS:
  - above ~1 MeV/nucleon all intensities are likely dominated by background during quiet periods. *During modest intensity increases it is strongly recommended to see if hourly rates show an increase from background before including those rates in, e.g., spectral calculations.*
  - background events in the telescopes produce background counts in the following boxes during quiet periods:

Species	SIT-A energy ranges affected (MeV/nucleon)	SIT-B energy ranges affected (MeV/nucleon)
H	0.91-1.81	0.64-1.81
4He	0.16 - 0.226 0.64 - 1.81	0.64 - 1.81
O	0.16 - 0.32 0.64 - 2.56	0.64 - 1.81
Fe	0.16 - 0.32 0.64 - 2.56	0.45 - 2.56

The intensities in each file are as follows:

H file:
Column 7: 0.320 - 0.452 MeV/n H intensity (1/(cm^2 s sr MeV/nuc))
Column 8: 0.452 - 0.640 MeV/n H intensity (1/(cm^2 s sr MeV/nuc))
Column 9: 0.640 - 0.905 MeV/n H intensity (1/(cm^2 s sr MeV/nuc))
Column 10: 0.905 - 1.280 MeV/n H intensity (1/(cm^2 s sr MeV/nuc))
Column 11: 1.280 - 1.810 MeV/n H intensity (1/(cm^2 s sr MeV/nuc))
Column 12: 1.810 - 2.560 MeV/n H intensity (1/(cm^2 s sr MeV/nuc))
Column 13: 2.560 - 3.620 MeV/n H intensity (1/(cm^2 s sr MeV/nuc))

4He file:
Column 7: 0.113 - 0.160 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))
Column 8: 0.160 - 0.226 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))
Column 9: 0.226 - 0.320 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))
Column 10: 0.320 - 0.452 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))
Column 11: 0.452 - 0.640 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))
Column 12: 0.640 - 0.905 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))

Column 13: 0.905 - 1.280 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))
Column 14: 1.280 - 1.810 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))
Column 15: 1.810 - 2.560 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))
Column 16: 2.560 - 3.620 MeV/n 4He intensity (1/(cm^2 s sr MeV/nuc))

O file:
Column 7: 0.113 - 0.160 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 8: 0.160 - 0.226 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 9: 0.226 - 0.320 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 10: 0.320 - 0.452 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 11: 0.452 - 0.640 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 12: 0.640 - 0.905 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 13: 0.905 - 1.280 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 14: 1.280 - 1.810 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 15: 1.810 - 2.560 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))
Column 16: 2.560 - 3.620 MeV/n O intensity (1/(cm^2 s sr MeV/nuc))

Fe file:
Column 7: 0.080 - 0.113 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 8: 0.113 - 0.160 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 9: 0.160 - 0.226 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 10: 0.226 - 0.320 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 11: 0.320 - 0.452 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 12: 0.452 - 0.640 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 13: 0.640 - 0.905 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 14: 0.905 - 1.280 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 15: 1.280 - 1.810 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 16: 1.810 - 2.560 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))
Column 17: 2.560 - 3.620 MeV/n Fe intensity (1/(cm^2 s sr MeV/nuc))