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General caveats and notes regarding use of

STEREO/SIT Level-1 science data sets

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 Level-1 data posted on the STEREO/IMPACT web site.

- These files contain intensities of the following ion species over a number of different energy windows: H, 3He, 4He, C, O, NeS (= Ne + Mg + Si), Fe, and UH (nuclei with mass >80 AMU)

- Units: particles/(s cm2 sr MeV/nucleon)

- Ion species names and energy range for each intensity are given in the files and in the table below

- 1-sigma errors for each rate are based on counting statistics only: 1/sqrt(N) where N is the number of counts for that box.

- "UH" rates are extremely low and are dominated by instrument background

- 3He intensities of approximately <10% of the 4He intensity may be largely spillover of 4He and should not be trusted. To lessen spillover from 4He, the 3He rates capture only about 50% of the 3He, and should be used as a rough indicator only.

- 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 recommended that users use SEPT level-1 data for H intensities.

- 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
3He	0.64 - 2.56	0.64 - 1.81
4He	0.16 - 0.226 0.64 - 1.81	0.64 - 1.81
C	0.16 - 0.32 0.64 - 2.56	0.64 - 1.81
O	0.16 - 0.32 0.64 - 2.56	0.64 - 1.81
NeS	0.16 - 0.32 0.64 - 2.56	0.45 - 1.81
Fe	0.16 - 0.32 0.64 - 2.56	0.45 - 2.56
UH	All	All

SIT box descriptions.

UCB L1 Flux No.	title or species	Species box number	Nominal Emin (MeV/n)	Nominal Emax (MeV/n)
1	'H'	1	0.1600	0.2263
2	'H'	2	0.2263	0.3200
3	'H'	3	0.3200	0.4525
4	'H'	4	0.4525	0.6400
5	'H'	5	0.6400	0.9051
6	'H'	6	0.9051	1.2800
7	'H'	7	1.2800	1.8102
8	'H'	8	1.8102	2.5600
9	'H'	9	2.5600	3.6204
10	'H'	10	3.6204	5.1200
11	'H'	11	5.1200	7.2408
12	'H'	12	7.2408	10.2400
13	'3He'	1	0.1600	0.2263
14	'3He'	2	0.2263	0.3200
15	'3He'	3	0.3200	0.4525
16	'3He'	4	0.4525	0.6400
17	'3He'	5	0.6400	0.9051
18	'3He'	6	0.9051	1.2800
19	'3He'	7	1.2800	1.8102
20	'3He'	8	1.8102	2.5600
21	'3He'	9	2.5600	3.6204
22	'3He'	10	3.6204	5.1200
23	'4He'	1	0.0400	0.0566
24	'4He'	2	0.0566	0.0800
25	'4He'	3	0.0800	0.1131
26	'4He'	4	0.1131	0.1600
27	'4He'	5	0.1600	0.2263
28	'4He'	6	0.2263	0.3200
29	'4He'	7	0.3200	0.4525
30	'4He'	8	0.4525	0.6400
31	'4He'	9	0.6400	0.9051
32	'4He'	10	0.9051	1.2800
33	'4He'	11	1.2800	1.8102
34	'4He'	12	1.8102	2.5600
35	'4He'	13	2.5600	3.6204

36	'4He'	14	3.6204	5.1200
37	'4He'	15	5.1200	7.2408
38	'4He'	16	7.2408	10.2400
39	'C'	1	0.0283	0.0400
40	'C'	2	0.0400	0.0566
41	'C'	3	0.0566	0.0800
42	'C'	4	0.0800	0.1131
43	'C'	5	0.1131	0.1600
44	'C'	6	0.1600	0.2263
45	'C'	7	0.2263	0.3200
46	'C'	8	0.3200	0.4525
47	'C'	9	0.4525	0.6400
48	'C'	10	0.6400	0.9051
49	'C'	11	0.9051	1.2800
50	'C'	12	1.2800	1.8102
51	'C'	13	1.8102	2.5600
52	'C'	14	2.5600	3.6204
53	'C'	15	3.6204	5.1200
54	'C'	16	5.1200	7.2408
55	'C'	17	7.2408	10.2400
56	'O'	1	0.0400	0.0566
57	'O'	2	0.0566	0.0800
58	'O'	3	0.0800	0.1131
59	'O'	4	0.1131	0.1600
60	'O'	5	0.1600	0.2263
61	'O'	6	0.2263	0.3200
62	'O'	7	0.3200	0.4525
63	'O'	8	0.4525	0.6400
64	'O'	9	0.6400	0.9051
65	'O'	10	0.9051	1.2800
66	'O'	11	1.2800	1.8102
67	'O'	12	1.8102	2.5600
68	'O'	13	2.5600	3.6204
69	'O'	14	3.6204	5.1200
70	'O'	15	5.1200	7.2408
71	'O'	16	7.2408	10.2400
72	'NeS'	1	0.0400	0.0566
73	'NeS'	2	0.0566	0.0800
74	'NeS'	3	0.0800	0.1131
75	'NeS'	4	0.1131	0.1600
76	'NeS'	5	0.1600	0.2263

77	'NeS'	6	0.2263	0.3200
78	'NeS'	7	0.3200	0.4525
79	'NeS'	8	0.4525	0.6400
80	'NeS'	9	0.6400	0.9051
81	'NeS'	10	0.9051	1.2800
82	'NeS'	11	1.2800	1.8102
83	'NeS'	12	1.8102	2.5600
84	'NeS'	13	2.5600	3.6204
85	'NeS'	14	3.6204	5.1200
86	'NeS'	15	5.1200	7.2408
87	'NeS'	16	7.2408	10.2400
88	'Fe'	1	0.0283	0.0400
89	'Fe'	2	0.0400	0.0566
90	'Fe'	3	0.0566	0.0800
91	'Fe'	4	0.0800	0.1131
92	'Fe'	5	0.1131	0.1600
93	'Fe'	6	0.1600	0.2263
94	'Fe'	7	0.2263	0.3200
95	'Fe'	8	0.3200	0.4525
96	'Fe'	9	0.4525	0.6400
97	'Fe'	10	0.6400	0.9051
98	'Fe'	11	0.9051	1.2800
99	'Fe'	12	1.2800	1.8102
100	'Fe'	13	1.8102	2.5600
101	'Fe'	14	2.5600	3.6204
102	'UH'	1	0.04	0.0800
103	'UH'	2	0.08	0.1600
104	'UH'	3	0.16	0.3200
105	'UH'	4	0.32	0.6400
106	'UH'	5	0.64	1.2800
107	'UH'	6	1.28	2.5600