

Note: Last day analyzed is 6/30/2020 for STA and 9/27/2014 for STB. List is updated on 10/1/2022.

The event list is compiled by Dr. Lan Jian (lan.jian@nasa.gov) for reference purpose. Not all the desired data are available, such as the particle composition data, for event identification. Some of the event identifications are arguable. The interaction region is the focus and the continuous rise of fast wind beyond the interaction region is not included. For event details and ambiguous event, please consult Dr. Lan Jian. If there is a shock at the edge (see the shock list), the time is usually set at the closest minute.

The criteria of event classification are published in the following papers. The results of STEREO SIR survey in 2007-2016 are published in the 2019 Solar Physics paper.

**L. K. Jian, J. G. Luhmann, C. T. Russell, A. B. Galvin, Solar-Terrestrial Relations Observatory (STEREO) Observations of Stream Interaction Regions in 2007-2016: Relationship with Heliospheric Current Sheets, Solar Cycle Variations, and Dual Observations, Solar Phys., 294, 31, doi: 10.1007/s11207-019-1416-8, 2019.**

L.K. Jian, C.T. Russell, J.G. Luhmann, A.B. Galvin, K.D.C. Simunac, Solar Wind Observations at STEREO: 2007 – 2011, Amer. Inst. Phys. Proceedings of Solar Wind 13, 1539, 191-194, doi: 10.1063/1.4811020, 2013.

L. Jian, C.T. Russell, J.G. Luhmann, and R.M. Skoug, Properties of Stream Interactions at One AU during 1995 – 2004, Solar Phys., 239, 337-392, 2006.

### List of Stream Interaction Regions Observed by STEREO A/B

Comparison pair #	# of Spacecraft	Start time [Doy Month/Day HH:MM]	End time	$P_{tmax}^1$ time	$P_{tmax}$ [pPa]	$B_{max}$ [nT]	$N_{pmax}^2$ [ $cm^{-3}$ ]	$V_{min}$ [km/s]	$V_{max}$ [km/s]	
<b>2007</b>										
1	A	56 02/25 17:40	60 03/01 01:10	57 02/26 02:15	185	13.3	62.9	294	693	
	B	63 03/04 18:50	66 03/07 20:00	65 03/06 04:58	193	10.3	23.9	329	652	
2	A	63 03/04 15:50	66 03/07 20:00	65 03/06 10:46	142	11.0	18.8	344	693	
	B	70 03/11 10:27	73 03/14 06:10	71 03/12 12:53	358	16.7	71.8	304	726	
3	A	70 03/11 03:47	73 03/14 06:30	70 03/11 21:53	230	13.1	52.3	311	728	
	B	82 03/23 07:53	87 03/28 12:00	84 03/25 04:21	166	15.1	45.6	277	645	
4	A	82 03/23 03:10	87 03/28 12:00	83 03/24 22:16	128	12.2	48.5	268	612	
	B	90 03/31 22:14	92 04/02 13:35	91 04/01 05:48	246	13.7	37.8	309	614	
5	A	88 03/29 13:30	93 04/03 08:00	92 04/02 09:44	174	12.5	32.3	323	686	
	B	99 04/09 02:00	99 04/09 16:34	99 04/09 03:52	272	20.2	62.6	294	489	
6	A	98 04/08 14:49	99 04/09 12:00	98 04/08 20:55	215	15.7	60.6	295	534	
	B	112 04/22 06:10	113 04/23 13:30	113 04/23 01:06	356	13.3	35.7	294	528	

6	A	111 04/21 18:59	113 04/23 06:54	112 04/22 12:09	201	14.6	49.8	298	608
	B	116 04/26 15:55	119 04/29 15:20	116 04/26 18:57	117	10.3	20.6	382	689
7	A	116 04/27 06:00	119 04/29 14:00	117 04/27 21:49	153	9.5	18.7	393	713
	B	127 05/07 09:43	128 05/08 14:12	127 05/07 13:53	481	23.3	47.3	329	702
8	A	127 05/07 08:12	128 05/08 20:40	127 05/07 13:07	409	20.1	70.2	308	663
	B	137 05/17 21:23	139 05/19 12:30	138 05/18 12:12	378	16.8	30.7	301	691
9	A	137 05/18 02:00	139 05/19 15:40	138 05/18 20:04	347	20.1	87.0	289	675
	B	151 05/31 18:00	156 06/05 00:00	153 06/02 09:49	164	12.8	25.1	286	631
10	A	151 05/31 09:10	156 06/05 00:00	155 06/04 14:51	144	14.3	30.5	291	548
	B	163 06/12 16:00	166 06/15 01:00	165 06/14 10:15	174	12.5	17.1	292	647
11	A	164 06/13 16:00	166 06/15 12:00	165 06/14 18:23	206	13.4	32.7	302	637
	B	172 06/21 06:00	174 06/23 09:00	173 06/22 05:47	220	12.8	43.3	359	664
12	A	172 06/21 05:47	175 06/24 15:00	173 06/22 19:07	158	9.9	16.5	365	552
	B	179 06/29 08:45	181 06/30 12:11	180 06/29 14:07	160	10.8	24.6	346	592
13	A	180 06/29 11:00	182 07/01 18:00	180 06/29 22:13	164	12.5	44.9	304	533
	B	184 07/03 03:30	185 07/04 08:00	184 07/03 16:55	217	10.5	17.8	332	667
14	A	185 07/04 00:00	185 07/04 22:09	185 07/04 08:24	225	16.0	37.7	329	634
	B	191 07/10 15:00	192 07/11 07:45	191 07/10 18:09	321	19.5	37.0	303	716
15	A	192 07/11 03:44	192 07/11 20:22	192 07/11 17:08	364	23.1	54.1	298	628
	B	194 07/13 22:00	196 07/15 05:40	195 07/14 09:31	176	11.3	41.8	351	592
16	A	195 07/14 04:00	196 07/15 14:00	196 07/15 07:18	119	12.4	16.0	348	605
	B	200 07/20 01:20	201 07/20 18:04	201 07/20 03:31	350	16.7	46.3	296	599
17	A	201 07/20 08:30	203 07/22 06:00	202 07/21 01:39	162	12.2	52.4	301	472
	B	207 07/26 01:40	208 07/27 02:30	207 07/26 13:56	278	13.5	37.1	293	490
18	A	207 07/26 23:00	208 07/27 22:30	208 07/27 04:31	309	17.8	80.7	303	483
	B	209 07/28 14:25	211 07/30 10:00	209 07/28 22:32	129	9.1	16.3	327	604
19	A	210 07/29 02:38	212 07/31 04:00	210 07/29 08:25	146	14.9	42.7	370	695
	B	217 08/06 02:30	219 08/07 05:00	218 08/06 12:18	261	14.8	24.9	307	699
20	A	218 08/06 18:00	220 08/08 14:40	219 08/07 09:17	285	19.9	70.7	285	635
	B	222 08/10 14:00	223 08/11 17:00	223 08/11 05:23	191	14.0	21.3	367	636
21	A	226 08/14 11:02	227 08/15 03:00	226 08/14 20:37	175	13.7	32.9	331	486
	B	236 08/24 14:16	238 08/26 18:10	236 08/24 22:17	195	11.5	32.0	312	722
22	A	237 08/25 20:30	240 08/28 12:00	237 08/25 23:20	224	15.8	61.3	302	670
	B	242 08/30 23:50	245 09/02 00:10	243 08/31 18:34	136	10.5	27.1	308	666
22	A	244 09/01 14:00	247 09/04 01:00	246 09/03 09:35	219	12.1	21.1	345	696

	24	A	258 09/15 01:40	258 09/15 18:20	258 09/15 07:27	326	20.3	52.0	297	576
23	24	B	262 09/19 18:15	263 09/20 14:30	262 09/19 19:48	248	15.4	47.7	377	619
	25	A	264 09/21 13:35	266 09/23 11:32	266 09/23 04:49	208	14.5	49.5	298	662
24	25	B	269 09/26 15:45	272 09/29 7:55	269 09/26 18:45	186	13.3	46.2	362	700
	26	A	271 09/28 14:20	273 09/30 11:09	273 09/30 05:10	257	11.9	40.3	365	639
25	27	A	291 10/18 16:46	293 10/20 16:00	292 10/19 08:59	294	16.8	51.5	303	706
	26	B	289 10/16 04:00	291 10/18 12:00	290 10/17 10:55	126	11.3	13.9	316	694
26	27	B	297 10/24 11:20	298 10/25 11:06	297 10/24 23:26	147	11.7	24.3	350	663
	28	A	298 10/25 18:04	299 10/26 15:17	298 10/25 21:28	169	12.9	45.3	387	659
27	29	A	314 11/10 05:00	315 11/11 12:00	314 11/10 18:37	198	12.3	32.4	308	566
	28	B	315 11/12 00:14	317 11/13 22:00	316 11/12 11:26	153	10.5	20.3	303	610
	30	A	317 11/13 18:00	320 11/16 03:30	318 11/14 14:39	244	14.6	25.6	355	740
28	29*	B	323 11/19 13:49	325 11/21 04:00	323 11/19 22:46	320	17.1	48.9	331	670
	30	B	327 11/23 08:00	328 11/24 15:00	327 11/23 20:48	131	8.9	14.9	397	587
	31	B	342 12/09 05:58	344 12/10 11:46	343 12/09 16:21	325	15.9	31.2	299	699
	31	A	345 12/11 18:00	347 12/13 04:10	346 12/12 18:46	265	15.6	38.3	310	677
	32	B	350 12/16 00:16	350 12/16 20:44	350 12/16 08:21	258	12.5	31.6	359	610
29	32	A	352 12/18 06:00	353 12/19 14:00	353 12/19 00:41	128	12.1	37.5	343	547
	33	A	354 12/20 19:30	355 12/21 14:30	355 12/21 01:06	157	14.8	18.6	466	693

## 2008

	1	A	6 01/06 06:00	8 01/08 01:48	6 01/06 21:34	318	19.1	44.7	294	736
	2	A	14 01/14 18:48	17 01/17 00:00	15 01/15 15:48	155	11.6	12.5	347	733
	3	A	32 02/01 20:00	38 02/06 12:00	35 02/04 18:06	148	11.0	40.9	289	767
	4	A	42 02/11 00:00	44 02/13 04:40	43 02/12 03:52	216	15.3	37.7	346	777
	5	A	56 02/25 06:00	57 02/26 20:00	56 02/25 14:45	84	9.2	15.4	340	519
	6	A	60 02/29 16:00	63 03/03 03:15	61 03/01 00:21	236	16.1	78.4	298	846
	7	A	68 03/08 18:16	70 03/09 19:50	69 03/09 12:50	375	22.1	65.2	354	648
	8	A	87 03/27 20:00	90 03/29 18:14	88 03/28 08:48	177	14.1	48.0	323	728
	9	A	97 04/06 08:52	99 04/08 07:35	99 04/08 02:07	251	14.2	17.2	302	607
	10	A	115 04/24 13:07	116 04/25 04:00	115 04/24 14:57	395	20.9	84.5	357	713
	11	A	122 05/01 14:00	123 05/02 17:30	123 05/02 00:27	91	8.0	33.5	337	516
	12	A	142 05/21 00:41	145 05/24 06:00	142 05/21 10:03	184	14.2	64.5	297	669
	13	A	150 05/29 04:00	152 05/30 22:00	150 05/29 19:35	138	14.2	44.8	336	515

14	A	160 06/08 15:00	161 06/09 21:00	161 06/09 00:05	144	13.3	37.0	312	590
15	A	168 06/16 06:00	169 06/17 18:36	169 06/17 05:14	164	11.9	33.8	313	681
16	A	178 06/26 00:00	179 06/27 03:47	178 06/26 10:46	89	8.0	31.3	315	487
17	A	179 06/27 18:00	181 06/29 08:00	180 06/28 14:46	86	9.3	6.8	344	600
18	A	194 07/12 06:00	198 07/16 16:00	195 07/13 13:56	79	11.5	16.1	294	687
19	A	205 07/23 08:00	209 07/26 16:00	207 07/25 10:12	122	11.9	46.8	292	552
20	A	215 08/02 14:00	216 08/03 18:00	215 08/02 23:25	90	9.1	22.9	293	435
21	A	220 08/07 18:10	225 08/12 00:00	224 08/11 04:00	91	10.5	25.8	306	689
22	A	233 08/20 12:00	234 08/21 16:00	233 08/20 22:50	267	13.9	83.7	331	633
23	A	251 09/07 23:38	252 09/08 16:00	252 09/08 07:35	136	11.5	18.0	402	721
24	A	260 09/16 13:49	261 09/17 20:00	261 09/17 03:22	192	14.4	54.6	331	607
25	A	277 10/03 00:00	280 10/06 00:00	279 10/05 04:31	129	12.0	22.4	295	799
26	A	286 10/12 17:12	288 10/14 18:00	287 10/13 18:36	189	12.9	29.5	310	574
27*	A	305 10/31 03:24	306 11/01 08:00	305 10/31 17:42	338	19.5	90.5	305	664
28	A	314 11/09 00:38	314 11/09 21:04	314 11/09 15:08	248	15.7	76.5	304	593
29*	A	333 11/28 16:44	334 11/29 20:00	334 11/29 00:04	314	19.9	87.1	298	569
30	A	341 12/06 05:42	342 12/07 09:00	341 12/06 15:33	164	15.0	31.7	307	552
1	B	3 01/03 07:45	5 01/05 00:00	3 01/03 22:21	386	19.1	27.7	298	741
2	B	10 01/10 03:00	11 01/11 02:00	10 01/10 12:25	134	9.4	30.3	387	654
3	B	29 01/29 21:50	31 01/31 11:00	30 01/30 08:27	301	19.0	29.3	303	732
4	B	40 02/09 03:22	40 02/09 18:42	40 02/09 09:26	387	17.7	51.1	356	716
5	B	57 02/26 22:21	59 02/28 09:14	58 02/27 07:53	313	18.6	47.1	312	702
6*	B	65 03/06 05:00	67 03/07 07:54	66 03/06 19:22	325	17.1	55.4	323	732
7	B	84 03/24 21:00	85 03/25 17:00	85 03/25 02:03	206	15.0	25.8	412	701
8	B	92 04/01 20:00	95 04/04 07:42	93 04/02 05:44	184	11.5	21.7	300	708
9	B	106 04/15 08:40	107 04/16 07:00	106 04/15 12:09	127	12.2	16.5	417	668
10	B	112 04/21 22:00	113 04/22 22:40	113 04/22 19:38	258	12.6	20.8	364	621
11	B	133 05/12 16:43	136 05/15 02:00	135 05/14 13:25	107	10.3	22.0	316	604
12	B	139 05/18 23:00	141 05/20 06:00	140 05/19 17:46	245	12.9	16.3	354	689
13	B	148 05/27 00:50	149 05/28 05:00	148 05/27 11:35	189	13.7	40.0	304	477
14	B	151 05/30 02:00	151 05/30 23:00	151 05/30 10:16	121	13.0	16.2	435	677
15	B	164 06/12 21:35	167 06/15 08:10	165 06/13 19:08	180	12.7	27.0	339	760
16	B	176 06/24 13:00	180 06/28 16:00	177 06/25 04:57	249	16.9	37.0	293	660
17	B	191 07/09 11:25	192 07/10 21:00	192 07/10 07:54	165	14.3	35.0	288	620

18	B	201 07/19 07:28	201 07/19 23:00	201 07/19 14:25	264	12.2	37.0	320	442
19	B	202 07/20 22:27	203 07/21 10:31	203 07/21 00:22	208	15.4	37.7	397	645
20	B	207 07/25 12:00	208 07/26 12:00	207 07/25 20:02	124	9.4	23.0	349	539
21	B	219 08/06 21:17	220 08/07 16:00	220 08/07 02:35	311	15.2	31.7	334	705
22	B	229 08/16 01:16	229 08/16 14:00	229 08/16 03:15	290	17.9	43.7	348	549
23	B	245 09/01 03:40	246 09/02 02:20	245 09/01 11:55	207	14.4	38.5	304	604
24	B	255 09/11 17:00	257 09/13 11:00	256 09/12 20:12	182	12.8	24.0	292	602
25	B	272 09/28 02:25	273 09/29 16:00	272 09/28 16:01	146	10.5	33.3	309	672
26	B	281 10/07 20:00	284 10/10 06:00	283 10/09 03:38	205	12.5	28.4	288	600
27	B	298 10/24 15:10	301 10/27 12:00	300 10/26 15:56	171	13.0	22.5	294	727
28	B	308 11/03 12:00	310 11/05 16:00	309 11/04 18:57	129	8.2	19.3	294	540
29	B	316 11/11 21:10	318 11/13 00:00	317 11/12 03:05	111	11.7	15.8	313	521
30	B	326 11/21 21:17	328 11/23 21:00	327 11/22 02:43	124	12.0	29.9	298	609
31	B	335 11/30 18:21	336 12/01 17:00	336 12/01 01:21	159	12.6	31.7	295	534
32*	B	342 12/07 04:35	345 12/10 00:00	344 12/09 01:49	397	20.5	49.7	285	603
33	B	353 12/18 12:00	355 12/20 14:00	354 12/19 12:32	110	9.3	11.8	311	598
34	B	362 12/27 16:55	363 12/28 16:00	363 12/28 02:29	170	14.5	32.3	293	504

## 2009

1	A	4 01/04 21:00	7 01/07 06:00	5 01/05 18:18	95	11.0	20.9	301	562
2	A	32 02/01 18:00	34 02/03 18:00	34 02/03 05:55	63	8.1	12.4	313	539
3	A	48 02/17 08:00	49 02/18 01:55	48 02/17 20:14	283	17.5	63.5	291	625
4	A	55 02/24 16:00	59 02/28 08:00	56 02/25 05:51	117	11.3	33.4	304	524
5	A	62 03/03 04:00	64 03/05 06:00	63 03/04 08:43	92	11.2	13.6	322	476
6	A	68 03/09 20:17	70 03/11 00:00	69 03/10 11:12	211	12.8	44.6	312	567
7	A	73 03/14 20:00	76 03/17 00:00	75 03/16 02:17	97	10.2	17.8	333	626
8	A	82 03/23 02:00	84 03/25 00:00	82 03/23 22:33	94	10.2	21.1	287	450
9	A	100 04/10 22:00	104 04/14 06:00	102 04/12 19:08	99	11.3	22.8	284	528
10	A	109 04/19 16:00	111 04/21 10:00	110 04/20 07:04	218	14.8	58.4	295	476
11	A	129 05/09 04:00	130 05/10 09:00	129 05/09 11:32	292	18.5	76.3	303	559
12	A	151 05/31 08:13	153 06/02 16:00	151 05/31 15:33	131	12.6	40.4	279	585
13	A	171 06/20 00:00	172 06/21 13:00	171 06/20 09:13	69	7.8	27.5	298	393
14	A	175 06/24 15:00	176 06/25 10:00	176 06/25 00:38	88	10.4	13.9	327	488
15	A	178 06/27 13:00	181 06/30 05:15	179 06/28 07:39	140	11.7	39.9	305	619

16*	A	192 07/11 10:00	195 07/14 08:00	194 07/13 16:06	182	15.7	54.0	288	557
17	A	198 07/17 02:02	199 07/18 12:00	199 07/18 00:08	150	10.4	18.8	321	566
18	A	204 07/23 00:00	205 07/24 22:00	204 07/24 00:15	83	9.0	29.1	263	387
19	A	206 07/25 12:00	208 07/27 12:00	207 07/26 15:11	113	12.3	19.4	302	569
20	A	222 08/10 17:00	224 08/12 07:00	223 08/11 10:32	172	13.1	53.1	301	577
21	A	233 08/21 20:30	234 08/22 20:00	234 08/22 10:59	136	9.8	34.8	275	394
22	A	248 09/05 02:00	248 09/05 18:00	248 09/05 06:56	69	8.6	26.3	305	424
23	A	251 09/08 05:31	252 09/09 11:00	251 09/08 09:19	196	14.8	68.4	333	500
24	A	260 09/17 18:00	262 09/19 09:20	260 09/17 23:45	58	7.9	23.8	270	423
25	A	288 10/15 02:00	289 10/16 09:00	288 10/15 17:58	58	6.4	20.5	247	343
26	A	303 10/30 18:00	304 10/31 22:00	304 10/31 15:29	135	9.9	16.9	347	597
27	A	321 11/17 16:58	322 11/18 8:30	322 11/18 00:17	92	9.3	21.5	290	448
28	A	326 11/22 18:00	328 11/24 6:00	327 11/23 09:41	50	7.4	17.9	254	364
29*	A	329 11/25 16:00	330 11/26 11:00	330 11/26 00:08	155	18.0	34.6	301	417
30	A	333 11/29 8:00	335 12/1 4:9	334 11/30 00:44	86	9.1	22.9	309	623
31	A	355 12/21 21:00	356 12/22 23:51	356 12/22 05:49	181	12.2	49.8	274	627
32	A	361 12/27 5:15	362 12/28 3:30	361 12/27 15:58	52	7.4	11.1	316	417
1	B	4 01/04 12:00	6 01/06 12:00	5 01/05 20:51	94	10.2	24.7	294	539
2	B	14 01/14 04:00	15 01/15 08:00	14 01/14 12:29	364	13.3	33.1	344	623
3	B	23 01/23 11:00	24 01/24 04:00	23 01/23 15:07	139	14.2	34.8	273	428
4	B	32 02/01 12:00	35 02/04 12:00	34 02/03 06:42	141	10.3	27.5	283	439
5	B	41 02/10 13:15	42 02/11 10:21	41 02/10 22:44	221	18.0	38.5	299	601
6	B	54 02/23 22:00	56 02/25 02:00	55 02/24 10:07	202	9.7	22.2	306	560
7	B	68 03/09 15:45	69 03/10 14:47	69 03/10 07:07	325	18.6	48.7	288	577
8	B	75 03/16 18:00	77 03/18 06:00	76 03/17 20:20	120	10.4	15.8	294	467
9	B	81 03/22 22:00	84 03/25 06:00	83 03/24 14:38	129	9.7	20.0	297	515
10	B	89 03/30 00:00	91 04/01 18:00	89 03/30 13:24	107	12.3	21.1	272	554
11	B	94 04/04 06:00	95 04/05 12:00	94 04/04 17:09	74	8.5	16.6	301	484
12	B	102 04/12 22:00	104 04/14 20:30	103 04/13 10:27	191	13.7	29.3	291	565
13	B	121 05/01 20:00	123 05/03 11:00	122 05/02 12:00	91	8.1	22.7	301	500
14	B	138 05/18 19:00	140 05/20 10:00	139 05/19 12:47	304	15.2	33.0	299	571
15	B	156 06/05 09:30	157 06/06 14:00	157 06/06 00:42	224	13.6	54.8	285	419
16	B	172 06/21 13:00	173 06/22 08:00	172 06/21 21:35	153	13.6	47.6	290	416

17	B	177 06/26 04:00	178 06/27 00:00	177 06/26 10:00	94	10.0	29.7	307	399
18	B	199 07/18 11:35	200 07/19 02:09	199 07/18 16:47	261	19.2	64.1	355	574
19	B	225 08/13 06:00	228 08/16 04:00	226 08/14 04:22	161	12.0	40.3	277	566
20	B	255 09/12 00:00	255 09/12 21:00	255 09/12 10:05	104	13.3	14.1	317	519
21	B	265 09/22 08:00	267 09/24 16:00	267 09/24 05:44	180	9.0	30.6	274	364
22	B	279 10/06 05:23	280 10/07 12:00	280 10/07 00:42	115	14.4	21.4	283	487
23	B	299 10/26 11:28	300 10/27 09:21	300 10/27 01:31	100	8.8	22.6	295	383
24	B	307 11/3 01:08	308 11/4 12:00	307 11/03 06:54	64	8.6	18.9	310	509
25	B	319 11/15 00:00	320 11/16 09:00	319 11/15 22:21	135	10.7	16.3	307	619
26	B	333 11/29 20:00	335 12/1 16:00	335 12/01 02:36	58	10.2	11.5	293	487
27	B	342 12/8 18:30	344 12/10 06:00	343 12/09 07:51	83	9.1	13.0	291	482
28	B	346 12/12 20:05	347 12/13 19:50	347 12/13 05:29	85	8.7	14.7	340	617
29	B	353 12/19 23:00	355 12/21 15:00	354 12/20 14:06	60	9.3	21.3	276	430

## 2010

1	A	2009 365 12/31 12:53	1 1/1 16:00	2009 365 12/31 22:53	96	10.0	29.4	293	385
2	A	6 1/6 21:44	8 1/8 6:00	7 01/07 17:35	91	11.2	25.8	286	398
3	A	15 1/15 7:00	16 1/16 20:00	16 01/16 00:08	168	14.5	49.2	258	497
4	A	22 1/22 02:00	23 1/23 02:46	22 01/22 10:48	101	11.5	37.3	343	445
5	A	24 1/24 12:30	26 1/26 06:00	24 01/24 17:02	151	11.9	54.1	301	554
6	A	33 2/1 6:46	35 2/4 2:00	34 02/03 09:27	60	8.1	11.7	299	455
7*	A	36 2/5 3:33	38 2/7 10:30	36 02/05 06:23	155	14.9	45.5	352	614
8	A	41 2/10 04:00	44 2/13 08:00	43 02/12 13:51	96	10.1	11.8	319	596
9	A	51 2/20 12:00	54 2/23 00:00	53 02/22 02:08	151	10.2	19.8	371	727
10	A	70 3/11 19:9	71 3/12 8:12	70 03/11 22:43	350	20.4	75.5	351	637
11	A	81 3/22 4:00	82 3/23 21:00	81 03/22 18:53	123	13.2	27.0	305	531
12	A	89 3/30 02:00	90 3/31 16:00	89 03/30 17:36	159	13.7	33.1	298	496
13	A	94 4/4 01:10	94 4/4 13:21	94 4/4 4:42	302	19.2	48.0	358	557
14	A	98 4/8 08:00	103 4/13 00:00	99 4/9 13:06	84	8.3	15.0	345	626
15	A	121 5/1 09:00	123 5/3 13:05	121 5/1 16:35	103	11.3	34.9	319	579
16	A	126 5/6 15:30	128 5/8 9:24.12	128 5/8 04:11	325	18.0	34.7	328	688
17	A	138 5/18 23:32	140 5/20 03:00	139 5/19 13:03	150	13.3	29.0	301	470
18	A	144 5/24 8:00	145 5/25 12:00	145 5/25 00:27	227	14.0	56.5	327	619

19	A	155 6/4 3:30	156 6/5 7:30	155 6/4 13:04	205	18.3	43.9	318	670
20	A	159 6/8 01:00	159 6/8 23:00	159 6/8 16:04	133	11.6	19.2	415	633
21	A	165 6/14 14:00	166 6/15 11:35	166 6/15 08:53	245	15.0	30.8	329	645
22	A	171 6/20 09:00	172 6/21 13:00	171 6/20 23:35	228	17.2	59.4	329	585
23	A	181 6/30 18:26	182 7/1 16:00	182 7/1 08:41	198	14.5	47.1	297	519
24	A	183 7/2 15:00	185 7/4 06:00	184 7/3 07:49	125	11.0	15.0	320	545
25	A	210 7/29 08:00	217 8/5 00:00	212 7/31 18:05	95	11.3	30.6	285	688
26	A	223 8/11 03:00	224 8/12 08:00	224 8/12 00:34	78	9.3	14.7	346	561
27	A	241 8/29 22:48	243 8/31 12:00	242 8/30 21:09	188	19.5	45.9	291	588
28	A	267 9/24 15:00	269 9/26 01:00	268 9/25 10:50	85	9.3	16.6	301	467
29	A	269 9/26 18:00	271 9/28 21:00	270 9/27 12:52	74	9.8	20.8	330	585
30	A	275 10/2 15:06	276 10/3 05:00	275 10/2 19:08	138	13.4	35.0	396	621
31	A	292 10/19 22:00	294 10/21 18:00	294 10/21 1:21	92	11.0	19.1	301	486
32	A	303 10/30 8:00	304 10/31 10:4	304 10/31 00:47	275	19.2	48.9	262	632
33	A	311 11/7 2:25	312 11/8 2:00	311 11/7 15:40	287	16.3	69.6	335	580
34	A	317 11/13 22:00	320 11/16 19:26	320 11/16 11:29	156	13.3	26.9	297	516
35	A	325 11/21 19:00	328 11/24 07:00	327 11/23 03:26	119	12.3	35.0	280	559
36	A	338 12/4 0:10	341 12/7 18:00	339 12/05 20:16	89	10.6	26.0	282	544
37	A	362 12/28 6:00	363 12/29 18:00	363 12/29 02:03	60	7.3	19.1	322	421
1	B	2009 365 12/31 19:00	2 1/2 7:00	1 1/1 11:59	52	7.7	12.7	304	475
2	B	5 1/5 21:36	6 1/6 19:00	6 1/6 16:02	262	17.2	29.1	302	625
3	B	15 1/15 8:00	16 1/16 14:00	15 1/15 14:16	169	9.9	18.4	325	593
4	B	24 1/24 08:00	26 1/26 00:56	25 1/25 02:23	109	9.1	20.8	297	489
5	B	31 1/31 20:50	33 2/2 18:00	32 2/1 09:43	163	11.0	12.5	387	739
6	B	44 2/13 11:52	45 2/14 7:50	44 2/13 18:45	106	14.7	17.9	300	492
7	B	55 2/24 03:00	56 2/25 12:00	55 2/24 13:24	90	10.5	30.1	281	427
8	B	60 3/1 18:00	62 3/3 10:00	61 3/2 08:10	218	15.2	21.2	296	680
9	B	69 3/10 16:00	70 3/11 8:49	69 3/10 23:57	184	14.0	39.6	298	638
10	B	78 3/19 5:25	79 3/20 10:51	79 3/20 01:55	219	15.4	32.4	278	450
11	B	87 3/28 4:40	92 4/2 16:00	91 4/1 23:17	102	11.1	15.6	336	627
12	B	98 4/8 3:00	99 4/9 12:00	98 4/8 16:28	80	9.0	15.8	287	499
13	B	110 4/20 22:00	111 4/21 17:00	111 4/21 10:03	64	8.4	21.1	316	530
14	B	117 4/27 12:00	118 4/28 06:00	117 4/27 19:40	385	22.6	44.9	287	677



15	B	125 5/5 17:00	127 5/7 05:00	126 5/6 2:32	148	14.6	29.8	292	613
16	B	135 5/15 1:19	135 5/15 22:49	135 5/15 3:55	257	18.2	49.1	293	674
17	B	140 5/20 8:15	142 5/22 0:0	141 5/21 2:50	86	9.4	15.5	305	466
18	B	144 5/24 02:00	147 5/27 6:00	NaN	NaN	NaN	14.8	300	754
19	B	153 6/2 04:00	153 6/2 20:47	153 6/2 14:08	132	12.2	26.5	325	585
20	B	162 6/11 4:42	163 6/12 4:59	162 6/11 23:34	222	13.8	26.8	343	647
21	B	172 6/21 9:50	173 6/22 5:42	172 6/21 15:26	199	15.5	45.4	303	484
22	B	176 6/25 13:00	177 6/26 18:00	176 6/25 23:46	99	8.7	11.5	345	597
23	B	189 7/8 16:42	190 7/9 11:04	190 7/9 05:42	350	23.7	49.0	297	610
24	B	201 7/20 00:00	204 7/23 20:00	203 7/22 22:10	116	9.2	28.0	305	502
25	B	223 8/11 9:32	224 8/12 8:39	223 8/11 18:15	186	12.3	22.6	295	445
26	B	230 8/18 19:00	232 8/20 10:28	231 8/19 21:43	163	10.9	18.7	309	655
27	B	244 9/1 1:00	245 9/2 0:00	244 9/1 8:08	64	10.1	18.2	292	437
28	B	255 9/12 5:27	256 9/13 10:00	255 9/12 9:48	107	10.2	21.4	295	439
29*	B	258 9/15 22:00	260 9/17 13:48	259 9/16 0:21	135	13.0	32.6	289	649
30	B	272 9/29 9:30	275 10/2 8:10	273 9/30 10:51	73	8.7	16.9	286	442
31	B	278 10/5 8:00	282 10/9 16:00	282 10/09 00:51	103	8.3	14.0	302	428
32	B	285 10/12 22:00	287 10/14 18:00	286 10/13 4:47	76	8.8	13.4	319	529
33	B	290 10/17 3:00	290 10/17 18:55	290 10/17 10:43	173	14.4	17.3	424	706
34*	B	311 11/7 19:05	314 11/10 00:28	312 11/8 2:12	256	17.7	33.6	310	602
35	B	318 11/14 1:00	319 11/15 00:00	318 11/14 11:43	85	8.5	17.2	384	558
36	B	326 11/22 7:00	327 11/23 12:00	326 11/22 18:28	90	11.1	20.8	349	516
37	B	337 12/3 6:00	340 12/6 01:00	338 12/4 01:57	113	10.0	30.0	320	705
38	B	346 12/12 10:00	347 12/13 19:30	347 12/13 06:26	100	8.7	10.9	410	660
39	B	363 12/29 11:24	365 12/31 18:60	363 12/29 14:04	300	12.8	39.1	339	730

## 2011

1	A	4 1/4 9:10	8 1/8 00:00	4 01/04 13:39	143	14.6	45.4	281	459
2	A	12 1/12 12:03	14 1/14 8:00	12 1/12 14:17	148	11.7	50.3	317	546
3	A	19 1/19 02:00	21 1/21 13:38	19 1/19 18:43	67	7.8	19.0	391	606
4	A	23 1/23 17:06.05	25 1/25 0:06.45	24 1/24 10:30	194	16.7	28.4	313	623
5	A	38 2/7 4:00	39 2/8 00:00	38 2/7 13:50	173	15.2	31.2	304	541
6	A	39 2/8 23:00	41 2/10 08:00	41 2/10 01:10	120	10.8	16.1	369	733
7	A	61 3/2 04:00	64 3/5 08:00	63 3/4 05:27	145	15.1	25.8	279	569

8	A	67 3/8 9:00	68 3/9 2:00	67 3/8 14:14	181	11.9	39.3	341	677
9	A	73 3/14 6:00	74 3/15 19:00	73 3/14 19:22	161	8.4	5.7	385	703
10	A	89 3/30 6:06	90 3/31 12:37.17	89 3/30 17:5	276	17.5	67.6	300	590
11	A	115 4/25 00:00	117 4/27 13:00	116 4/26 09:32	130	13.7	29.8	287	490
12*	A	126 5/6 22:00	127 5/7 11:32.88	127 5/7 6:56	278	20.0	28.5	390	611
13	A	141 5/21 9:0.27	143 5/23 4:00	141 5/21 19:51	287	20.5	36.8	352	715
14	A	153 6/2 15:00	155 6/4 18:48.83	154 6/3 18:0	231	13.9	37.2	292	672
15	A	160 6/9 22:40.88	163 6/12 0:2.4	162 6/11 00:43	98	11.3	20.1	364	595
16	A	167 6/16 3:10.375	170 6/19 8:00	168 6/17 13:42	182	15.8	27.9	367	589
17	A	174 6/23 21:00	176 6/25 1:00	175 6/24 2:45	84	8.9	14.6	340	586
18	A	177 6/26 20:00	181 6/30 16:00	178 6/28 11:45	110	12.4	27.0	357	695
19	A	189 7/8 12:00	191 7/10 6:00	190 7/9 05:00	177	12.7	28.8	374	719
20	A	196 7/15 7:42	197 7/16 16:27.67	197 7/16 7:08	243	20.7	36.7	306	639
21	A	207 7/26 0:0	208 7/27 11:00	207 7/26 17:15	283	17.3	58.2	354	678
22	A	213 8/1 8:00	215 8/3 18:00	213 8/1 23:33	105	10.6	23.5	350	542
23	A	216 8/4 19:00	217 8/5 18:00	217 8/5 05:50	88	10.4	14.3	319	516
24	A	233 8/21 6:20	234 8/22 21:00	233 8/21 17:03	173	14.5	23.1	298	575
25	A	241 8/29 00:30	242 8/30 4:00	241 8/29 16:22	185	14.3	19.1	344	638
26	A	260 9/17 08:00	261 9/18 5:00	260 9/17 22:04	70	8.4	13.2	312	446
27	A	261 9/18 22:19	264 9/21 0:00	NaN	NaN	11.7	13.7	327	484
28	A	271 9/28 3:54.49	272 9/29 14:00	271 9/28 4:17	77	9.6	11.3	387	561
29	A	280 10/7 17:15.39	281 10/8 22:10	281 10/8 14:46	257	19.3	57.8	335	653
30	A	309 11/5 21:12.16	310 11/6 12:35.23	310 11/6 07:02	237	15.6	59.6	284	392
31	A	311 11/7 5:20	312 11/8 0:20	311 11/7 10:19	187	12.7	41.1	361	500
32	A	316 11/12 2:00	318 11/14 18:00	317 11/13 13:32	88	9.9	24.7	305	468
33*	A	319 11/15 21:00	321 11/17 08:00	320 11/16 18:04	49	8.8	11.1	341	416
?									
34	A	323 11/19 14:15	324 11/20 21:50.383	324 11/20 17:30	139	12.4	18.3	290	553
35	A	326 11/22 3:32	327 11/23 17:35.083	327 11/23 3:26	95	10.2	11.5	357	484
36	A	334 11/30 14:00	335 12/1 23:22	335 12/1 11:50	54	7.0	6.3	337	495
37	A	342 12/8 00:00	346 12/12 3:47.35	342 12/8 02:33	114	14.2	23.1	341	654
38	A	351 12/17 2:5.117	352 12/18 5:45	351 12/17 10:39	123	12.0	33.7	345	479
39	A	353 12/19 11:00	355 12/21 0:30	353 12/19 21:59	269	19.1	35.6	338	556

40	A	362 12/28 1:28.767	362 12/28 20:47.15	362 12/28 08:52	400	25.9	87.8	282	444
1	B	6 1/6 10:00	8 1/8 18:00	8 1/8 09:40	54	8.2	9.4	334	591
2	B	23 1/23 18:00	28 1/28 2:35	25 1/25 09:42	92	9.8	15.5	273	716
3	B	48 2/17 2:00	49 2/18 23:30	48 2/17 21:08	149	13.2	23.2	307	516
4	B	51 2/20 18:45	53 2/22 13:55	52 2/21 12:38	195	11.9	18.1	317	695
5	B	75 3/16 15:30	77 3/18 16:00	76 3/17 8:00	227	9.4	13.0	344	629
6*	B	82 3/23 13:37	84 3/25 2:30	83 3/24 4:27	173	16.6	21.3	388	751
7	B	99 4/9 22:00	102 4/12 2:00	100 4/10 21:26	140	14.1	21.4	289	450
8	B	103 4/13 6:55	104 4/14 8:00	103 4/13 22:25	97	11.4	9.3	350	539
9	B	107 4/17 5:00	108 4/18 18:00	108 4/18 02:40	204	11.1	29.8	303	457
10	B	113 4/23 12:10	114 4/24 11:7.35	113 4/23 19:30	290	18.2	33.8	358	638
11*	B	124 5/4 00:43	126 5/6 7:40	124 5/4 04:58	211	15.9	53.7	325	479
12	B	128 5/8 2:00	128 5/8 20:00	128 5/8 08:57	164	13.2	19.1	340	686
13	B	140 5/20 16:55	142 5/22 8:00	141 5/21 04:04	249	18.6	21.0	310	805
14	B	156 6/5 1:20	158 6/7 18:00	156 6/05 21:58	153	11.1	13.7	348	634
15*	B	167 6/16 19:36.38	168 6/17 2:12.39	167 6/16 22:55	443	24.9	53.2	346	663
16*	B	177 6/26 4:00	180 6/29 6:00	178 6/27 03:32	182	16.4	27.1	296	490
17	B	193 7/12 19:30	195 7/14 1:00	194 7/13 15:07	173	13.1	19.9	373	737
18	B	200 7/19 18:45	201 7/20 14:00	200 7/19 22:52	114	11.8	25.1	298	441
19	B	204 7/23 21:14	205 7/24 21:18	205 7/24 14:21	275	16.6	30.7	303	662
20	B	211 7/30 19:05	212 7/31 20:32	212 7/31 05:58	263	20.2	37.0	299	736
21	B	221 8/9 1:00	221 8/9 14:00	221 8/9 7:38	388	26.9	41.6	302	676
22	B	225 8/13 16:00	226 8/14 22:21	226 8/14 8:55	65	9.0	11.0	337	561
23	B	239 8/27 2:3.6	239 8/27 21:35	239 8/27 11:23	252	18.3	36.2	294	602
24	B	247 9/4 19:00	249 9/6 5:00	248 9/5 17:21	167	11.4	19.3	301	542
25	B	253 9/10 18:00	254 9/11 9:00	253 9/10 21:43	250	14.1	37.4	351	504
26*	B	264 9/21 1:27.21	265 9/22 2:00	265 9/22 01:41	100	12.6	12.7	332	630
27	B	286 10/13 10:00	288 10/15 18:00	287 10/14 16:52	63	6.8	8.4	291	431
28	B	334 11/30 12:40	336 12/2 8:00	335 12/1 18:10	148	11.1	16.6	286	587
29	B	346 12/12 2:00	347 12/13 4:52.325	346 12/12 17:23	218	14.7	19.6	287	434
30*	B	360 12/26 23:50.767	364 12/30 00:00	361 12/27 21:38	191	16.7	40.0	311	489

## 2012

1*	A	4 1/4 16:40	7 1/7 20:00	6 1/6 10:53	295	22.6	59.8	329	701
2	A	23 1/23 1:07	25 1/25 14:00	23 1/23 7:59	215	14.9	51.9	347	693
3	A	34 2/3 21:30	37 2/6 08:00	35 2/4 15:19	66	10.6	16.2	304	522
4*	A	51 2/20 19:17	52 2/21 7:15	52 2/21 3:59	290	24.0	59.4	314	426
5	A	56 2/25 12:00	59 2/28 23:20	57 2/26 01:44	130	12.5	27.3	301	555
6	A	68 3/8 22:00	70 3/10 10:00	69 3/9 12:53	285	19.6	46.1	266	624
7	A	74 3/14 6:50	75 3/15 14:00	75 3/15 3:12	84	10.0	23.3	348	525
8	A	95 4/4 10:40	96 4/5 8:44	95 4/4 18:25	145	14.8	28.6	288	454
9*	A	109 4/18 17:00	111 4/20 21:00	111 4/20 03:23	310	21.7	26.4	279	676
10	A	120 4/29 11:00	122 5/1 10:00	121 4/30 5:34	274	20.4	40.8	287	574
11?	A	131 5/10 10:00	134 5/13 3:00	132 5/11 7:4	181	15.5	36.0	264	414
12	A	135 5/14 3:30	136 5/15 6:00	135 5/14 11:21	124	15.3	37.7	314	584
13	A	137 5/16 0:4	138 5/17 1:00	137 5/16 7:55	241	15.8	31.6	356	660
14	A	164 6/12 4:00	165 6/13 18:00	164 6/12 20:40	329	21.1	62.3	329	795
15*	A	172 6/20 8:20	173 6/21 23:26	173 6/21 14:07	244	16.1	27.9	342	595
16	A	185 7/3 20:18	186 7/4 10:30	186 7/4 00:47	165	10.6	25.9	373	487
17	A	186 7/4 22:50	189 7/7 4:47	188 7/6 01:53	153	12.9	20.6	372	535
18	A	190 7/8 18:42	192 7/10 3:00	191 7/9 04:54	274	21.1	54.3	345	629
19	A	200 7/18 6:00	201 7/19 16:00	200 7/18 20:37	116	10.4	20.7	332	474
20	A	202 7/20 6:00	202 7/20 22:43	202 7/20 15:52	254	17.8	44.7	339	688
21	A	214 8/1 16:51.83	216 8/3 3:15.3	215 8/2 13:52	172	17.0	45.0	294	481
22	A	234 8/21 20:00	236 8/23 11:10	235 8/22 23:01	63	8.8	13.8	289	475
23	A	236 8/23 18:16	237 8/24 16:25	237 8/24 4:29	55	9.5	12.9	323	468
24	A	242 8/29 8:00	247 9/3 8:00	244 8/31 7:37	72	10.3	25.7	329	578
25	A	249 9/5 3:00	250 9/6 2:22	249 9/5 13:40	130	11.9	41.3	313	478
26	A	292 10/18 21:20	293 10/19 10:39	293 10/19 06:42	281	14.2	29.7	351	572
27	A	305 10/31 13:42	308 11/3 6:00	307 11/2 13:39	43	7.7	6.1	352	523
28	A	324 11/19 19:00	325 11/20 23:00	325 11/20 0:11	186	14.9	52.6	327	564
29	A	341 12/6 3:40.9667	343 12/8 00:00	341 12/6 22:38	136	11.6	18.8	281	398
30	A	353 12/18 21:00	355 12/20 6:00	354 12/19 2:19	184	15.6	49.4	325	496
31	A	355 12/20 22:00	357 12/22 21:00	356 12/21 22:54	88	10.1	22.0	367	515
32	A	362 12/27 5:12	364 12/29 14:00	363 12/28 20:12	166	15.8	16.2	297	567

1	B	6 1/6 12:13.23	8 1/8 18:29	8 1/8 5:4	164	11.8	22.1	287	422
2	B	24 1/24 3:30	28 1/28 4:00	26 1/26 6:07	88	9.8	19.2	299	566
3	B	34 2/3 5:46	34 2/3 15:20	34 2/3 10:16	261	18.4	63.0	362	472
4	B	40 2/9 14:15	42 2/11 12:40	41 2/10 3:20	206	15.9	28.7	294	618
5	B	51 2/20 10:27.67	54 2/23 3:38	52 2/21 13:23	215	13.3	27.8	288	594
6	B	64 3/4 6:00	66 3/6 20:55	65 3/5 8:01	141	9.8	16.2	296	466
7*	B	67 3/7 18:14.67	68 3/8 17:00	68 3/8 13:49	634	22.0	57.1	385	819
8	B	78 3/18 6:00	81 3/21 12:00	79 3/19 21:14	103	9.7	23.6	305	532
9?	B	82 3/22 23:00	84 3/24 6:00	84 3/24 1:44	136	9.2	10.4	308	437
10	B	93 4/2 8:00	96 4/5 10:00	94 4/3 2:48	75	8.3	9.5	362	679
11	B	104 4/13 12:00	107 4/16 10:00	105 4/14 12:50	261	19.8	23.8	280	776
12?	B	119 4/28 3:30	120 4/29 4:00	119 4/28 11:40	42	7.7	9.4	289	430
13	B	121 4/30 8:00	123 5/2 6:00	121 4/30 21:02	173	16.0	19.0	294	614
14*	B	128 5/7 1:7	130 5/9 12:00	129 5/8 17:1	474	28.0	72.3	311	515
15*	B	133 5/12 23:8.51	135 5/14 13:40	134 5/13 3:3	112	13.7	28.8	335	482
16	B	139 5/18 23:48	143 5/22 16:35	141 5/20 13:19	91	11.8	18.7	333	503
17	B	145 5/24 14:43	147 5/26 16:00	146 5/25 10:39	183	13.4	31.2	345	839
18	B	159 6/7 21:00	161 6/9 11:00	160 6/8 19:36	108	9.0	17.0	305	470
19	B	165 6/13 22:00	167 6/15 23:27	167 6/15 8:38	158	12.3	27.4	347	699
20	B	172 6/20 16:00	175 6/23 4:00	173 6/21 11:58	186	12.8	16.5	393	766
21	B	178 6/26 21:51	179 6/27 19:3.33	179 6/27 13:07	182	12.5	12.4	430	689
22	B	194 7/12 00:00	198 7/16 10:00	196 7/14 8:14	229	11.9	18.0	331	786
23	B	200 7/18 12:21	201 7/19 19:27	200 7/18 22:50	87	10.4	15.1	399	523
24	B	217 8/4 8:00	220 8/7 17:30	219 8/6 03:14	78	8.7	9.9	297	524
25	B	223 8/10 8:00	225 8/12 6:000	223 8/10 17:05	102	8.1	18.7	331	534
26	B	255 9/11 4:00	257 9/13 6:00	255 9/11 21:36	139	11.8	31.9	352	503
27?	B	263 9/19 7:26	265 9/21 10:00	263 9/19 19:18	116	7.9	16.7	293	397
28	B	274 9/30 7:54	276 10/2 15:25	275 10/01 05:05	98	9.8	10.2	382	611
29	B	278 10/4 19:4	280 10/6 8:00	279 10/05 16:00	141	11.0	39.5	374	582
30	B	283 10/9 0:00	284 10/10 8:00	283 10/09 05:52	105	12.0	22.3	323	441
31	B	314 11/9 7:30	315 11/10 7:00	314 11/9 20:17	114	12.4	21.2	279	385
32	B	335 11/30 2:00	337 12/2 8:00	335 11/30 15:11	83	9.1	11.6	291	443
33	B	341 12/6 21:00	343 12/8 2:00	342 12/7 7:57	78	9.4	8.3	374	655

34*	B	360 12/25 21:00	361 12/26 10:00	361 12/26 1:22	302	18.4	57.2	349	504
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**2013**

1	A	5 1/5 18:00	7 1/7 13:00	6 1/6 4:13	87	8.7	26.7	281	403
2	A	42 2/11 3:3	43 2/12 00:00	42 2/11 12:51	281	18.9	54.3	302	609
3	A	69 3/10 6:55	71 3/12 22:37	69 3/10 21:52	143	13.7	33.2	315	589
4	A	74 3/15 12:00	78 3/19 18:00	77 3/18 08:04	80	11.5	13.1	326	554
5?	A	81 3/22 15:30	82 3/23 22:00	82 3/23 06:02	85	9.3	15.5	295	384
6	A	97 4/7 16:21	98 4/8 8:41.5	97 4/7 20:37	333	21.8	62.2	302	663
7	A	108 4/18 16:00	109 4/19 14:19	109 4/19 8:16	123	12.3	15.0	383	575
8	A	120 4/30 4:17.7	121 5/1 3:52.1	120 4/30 10:26	267	15.3	57.2	388	691
9	A	126 5/6 00:00	127 5/7 00:00	126 5/6 11:59	218	15.6	34.4	369	649
10	A	129 5/9 2:00	131 5/11 12:00	130 5/10 13:49	73	10.9	10.2	390	609
11	A	136 5/16 5:22	137 5/17 00:05	136 5/16 13:8	604	30.0	92.2	336	590
12	A	153 6/2 3:27	155 6/4 16:00	154 6/3 16:28	311	19.6	41.1	303	672
13	A	161 6/10 8:46	162 6/11 14:05	162 6/11 01:17	212	16.5	27.3	387	753
14	A	182 7/1 23:42	186 7/5 23:12	184 7/3 06:02	206	16.4	12.7	287	710
15	A	189 7/8 17:35	191 7/10 7:20	190 7/9 5:21	134	12.2	44.8	371	556
16	A	198 7/17 0:00	203 7/22 16:00	199 7/18 16:14	270	17.5	56.2	292	633
17	A	216 8/4 13:42	218 8/6 14:18	217 8/5 04:45	122	13.4	26.5	330	581
18	A	224 8/12 13:46	228 8/16 17:30	226 8/14 20:53	86	10.8	16.8	327	587
19	A	239 8/27 8:00	241 8/29 7:52	240 8/28 2:13	111	13.0	34.1	319	552
20	A	245 9/2 2:20	246 9/3 8:00	245 9/3 01:08	119	11.0	22.5	333	430
21	A	254 9/11 8:00	255 9/12 22:45	255 9/12 05:15	100	9.9	14.9	308	523
22	A	257 9/14 12:00	258 9/15 21:30	257 9/14 16:30	96	10.7	34.2	332	553
23	A	267 9/24 8:00	268 9/25 12:00	267 9/24 16:13	147	14.6	37.1	321	579
24	A	272 9/29 12:55	274 10/1 14:2	273 9/30 10:34	120	11.4	26.1	255	440
25	A	297 10/24 10:00	299 10/26 2:25	298 10/25 16:59	170	13.9	20.3	292	604
26*	A	309 11/5 22:24	310 11/6 11:00	310 11/6 03:10	309	21.9	16.9	438	706
27	A	324 11/20 23:52	326 11/22 18:40	326 11/22 13:38	122	8.9	18.3	287	556
28*	A	330 11/26 9:00	332 11/28 12:00	331 11/26 19:07	91	12.3	25.4	323	557
29	A	346 12/12 23:30	348 12/14 14:00	347 12/13 12:46	83	9.6	19.0	279	433
30	A	349 12/15 7:00	351 12/17 16:7	350 12/16 05:50	206	16.2	43.7	348	631
31*	A	358 12/24 20:6	360 12/26 5:4	359 12/25 0:15	212	20.6	32.8	332	456

32	A	363 12/29 3:39	365 12/31 2:12	364 12/30 8:11	160	11.9	21.7	356	485
1	B	10 1/10 20:00	12 1/12 3:20	11 1/11 05:10	93	10.8	19.6	296	403
2	B	13 1/13 17:02	14 1/14 1:17	13 1/13 21:56	359	15.5	56.2	402	636
3	B	22 1/22 22:20	25 1/25 16:00	24 1/24 08:11	104	12.3	17.1	271	450
4	B	53 2/22 12:00	55 2/24 12:09	54 2/23 22:26	91	10.7	11.5	320	512
5	B	64 3/5 19:57	66 3/7 6:00	65 3/6 7:42	124	11.0	15.1	270	453
6	B	77 3/18 0:24	77 3/18 21:50	77 3/18 17:53	245	15.2	31.9	292	656
7	B	90 3/31 7:00	90 3/31 22:00	90 3/31 15:22	78	8.3	8.8	293	460
8*	B	99 4/9 6:40	102 4/12 7:20	100 4/10 01:35	63	10.5	17.4	273	436
9	B	103 4/13 01:00	104 4/14 18:30	103 4/13 16:43	164	11.7	22.3	320	672
10	B	132 5/12 2:00	135 5/15 0:00	132 5/12 12:14	105	11.7	19.6	331	611
11*	B	142 5/22 3:48	143 5/23 22:21	143 5/23 08:50	372	24.4	26.9	350	696
12	B	150 5/30 20:25	151 5/31 22:25	150 5/30 22:33	204	16.0	28.3	327	529
13	B	158 6/7 10:00	160 6/9 9:00	159 6/8 04:30	120	13.2	18.6	307	465
14	B	161 6/10 16:17	163 6/12 20:00	162 6/11 20:46	160	12.2	20.7	302	690
15	B	168 6/17 4:45	169 6/18 8:26	168 6/17 10:25	248	13.9	42.8	358	739
16	B	177 6/26 13:18	179 6/28 11:38	178 6/27 19:01	191	14.3	20.4	293	443
17	B	189 7/8 4:00	190 7/9 20:50	189 7/8 15:27	141	13.7	15.4	301	588
18	B	196 7/15 22:20	198 7/17 6:00	197 7/16 21:11	167	14.6	21.7	284	457
19*	B	206 7/25 23:44	207 7/26 14:00	207 7/26 07:27	96	11.7	5.7	322	598
20	B	217 8/5 9:21	219 8/7 5:1	217 8/5 9:50	164	16.8	20.5	305	538
21	B	222 8/10 12:00	223 8/11 14:49	223 8/11 12:18	239	16.0	21.2	300	600
22	B	232 8/20 6:27	233 8/21 19:59	233 8/21 1:31	213	14.6	23.8	324	719
23	B	263 9/20 18:42	264 9/21 18:00	264 9/21 07:09	171	15.2	27.4	287	521
24	B	274 10/1 6:00	275 10/2 16:00	274 10/01 23:03	220	11.2	22.6	273	434
25	B	277 10/4 18:00	280 10/7 15:25	279 10/6 08:03	69	8.4	13.9	275	435
26	B	290 10/17 18:10	291 10/18 13:34	290 10/18 03:38	91	9.7	11.6	291	396
27	B	304 10/31 12:00	306 11/2 5:30	304 11/01 08:54	131	13.7	26.1	306	543
28	B	324 11/20 13:00	326 11/22 6:00	325 11/21 09:14	223	8.9	14.2	300	488
29	B	331 11/27 3:45	332 11/28 7:30	331 11/27 13:13	86	10.8	15.3	317	523
30	B	335 12/1 19:33	337 12/3 18:00	336 12/2 10:16	184	9.4	16.9	353	611
31	B	349 12/15 1:8	350 12/16 6:49	349 12/15 09:41	158	13.0	17.8	303	498
32*	B	356 12/22 0:8	356 12/22 13:00	356 12/22 08:41	397	22.2	67.5	302	692

Comparison pair #	# of Spacecraft	Start time [Doy Month/Day HH:MM]	End time	$P_{\text{tmax}}^1$ time	$P_{\text{tmax}}$ [pPa]	$B_{\text{max}}$ [nT]	$N_{\text{pmax}}^2$ [ $\text{cm}^{-3}$ ]	$V_{\text{min}}$ [km/s]	$V_{\text{max}}$ [km/s]	
<b>2014</b>										
1?	A	5 1/5 7:00	7 1/7 3:00	5 1/5 21:57	100	11.9	22.6	295	413	
2*	A	8 1/8 8:00	11 1/11 3:32	9 1/9 15:48	376	21.3	75.1	350	583	
3	A	20 1/20 19:21.83	23 1/23 22:00	21 1/21 20:23	226	17.2	24.8	300	832	
4*	A	46 2/15 5:50	48 2/17 16:15	47 2/16 8:20	344	20.6	31.3	308	728	
5	A	62 3/3 8:30	63 3/4 18:50	63 3/4 04:29	82	10.9	19.7	296	459	
6*	A	65 3/6 12:00	68 3/9 6:00	66 3/7 18:49	242	15.6	17.4	303	610	
7*	A	73 3/14 1:16	74 3/15 14:25	73 3/14 17:23	107	11.0	18.1	374	723	
8	A	114 4/24 7:00	115 4/25 17:15	115 4/25 13:9	142	12.0	19.2	276	494	
9	A	118 4/28 16:47	120 4/30 19:5	119 4/29 15:54	151	11.0	17.6	298	400	
10	A	126 5/6 2:37	127 5/7 2:00	126 5/6 9:43	171	16.0	17.3	328	482	
11	A	154 6/3 7:27	156 6/5 0:00	155 6/4 9:22	248	16.3	22.2	295	674	
12*	A	179 6/28 22:00	182 7/1 10:42	181 6/30 3:56	77	12.6	12.4	323	575	
13*	A	185 7/4 16:53	186 7/5 21:00	186 7/5 09:11	80	12.1	15.4	277	363	
14	A	197 7/16 18:45	204 7/23 0:00	202 7/21 13:46	77	10.3	14.7	299	535	
15	A	208 7/27 9:48	210 7/29 11:00	208 7/27 17:40	210	18.1	45.8	300	568	
16	A	214 8/2 8:00	217 8/5 8:00	215 8/3 23:34	87	10.5	22.1	299	491	
1*	B	2013 365 12/31 21:47	2014 2 1/2 17:38	2014 1 1/1 18:2	97	11.7	16.7	386	540	
2	B	8 1/8 21:30	14 1/14 20:00	11 1/11 07:48	67	9.7	18.7	285	452	
3	B	18 1/18 0:45	19 1/19 20:00	18 1/18 23:22	158	14.6	21.1	301	644	
4*	B	24 1/24 7:13	26 1/26 11:42	24 1/24 15:15	204	13.3	41.0	299	667	
5*	B	43 2/12 12:15	44 2/13 23:30	43 2/12 15:32	161	13.7	38.2	357	655	
6	B	88 3/29 17:8	90 3/31 9:44	89 3/30 12:13	109	11.1	18.9	297	351	
7	B	92 4/2 6:4	93 4/3 22:15	93 4/3 4:32	67	9.2	9.5	306	431	
8*	B	95 4/5 15:20	96 4/6 17:00	95 4/5 21:22	67	10.2	18.6	295	463	
9	B	107 4/17 18:00	109 4/19 13:42	108 4/18 21:36	70	8.5	8.3	274	360	
10	B	120 4/30 16:20	123 5/3 19:16	121 5/1 19:31	59	10.4	14.2	278	422	
11*	B	133 5/13 13:45	135 5/15 6:00	133 5/13 14:6	184	13.4	21.8	339	510	
12	B	139 5/19 1:43	140 5/20 6:00	139 5/19 14:8	61	10.0	9.0	295	434	
13	B	143 5/23 2:00	145 5/25 12:00	144 5/24 4:21	73	10.3	11.2	295	438	



14	B	156 6/5 10:52	158 6/7 16:45	157 6/6 09:39	250	17.3	21.8	299	709
15	B	166 6/15 15:00	168 6/17 16:00	167 6/16 21:46	212	13.1	14.2	287	438
16	B	169 6/18 21:00	171 6/20 8:30	170 6/19 13:2	63	7.9	13.5	306	432
17*	B	182 7/1 11:18	183 7/2 18:47	182 7/1 13:53	645	33.0	44.3	343	696
18	B	193 7/12 4:33	196 7/15 16:00	195 7/14 13:2	78	7.9	17.9	300	468
19	B	202 7/21 11:25	206 7/25 16:00	203 7/22 10:41	165	11.5	11.4	278	545
20	B	211 7/30 8:6	212 7/31 10:00	211 7/30 18:7	259	19.7	27.6	284	607
21	B	218 8/6 12:35	219 8/7 11:30	218 8/6 22:21	281	17.8	39.4	300	546
22	B	220 8/8 21:9	221 8/9 22:16	221 8/9 3:8	64	8.6	18.3	315	448
23*	B	221 8/9 22:35	223 8/11 1:30	222 8/10 10:58	192	13.7	47.0	344	644
24	B	236 8/24 11:10	238 8/26 17:35	238 8/26 7:38	153	12.0	13.9	280	487
25	B	250 9/7 1:00	251 9/8 21:00	NaN	NaN	12.7	3.4	339	594
26	B	256 9/13 1:00	257 9/14 4:36	256 9/13 07:42	175	9.3	11.7	345	537
27	B	265 9/22 14:00	265 9/22 23:20	265 9/22 17:35	172	13.1	10.3	283	428

### 2015

1	A	321 11/17 14:00	323 11/19 6:47	322 11/18 14:36	240	21.1	37.4	318	754
2	A	325 11/21 16:00	330 11/26 0:00	327 11/23 07:34	95	11.2	12.6	337	653
3	A	330 11/26 17:00	333 11/29 0:00	331 11/27 2:00	121	14.3	19.4	420	681
4*	A	335 12/1 19:00	337 12/3 19:00	336 12/2 12:35	233	23.5	41.3	300	642
5	A	344 12/10 0:00	348 12/14 0:00	347 12/13 7:45	132	14.7	26.9	298	481
6	A	354 12/20 20:00	357 12/23 0:00	355 12/21 18:47	196	16.0	23.7	307	709
7	A	357 12/23 21:00	359 12/25 3:30	358 12/24 10:38	77	10.0	9.1	390	661
8	A	365 12/31 2:00	2016 2 1/2 7:00	2016 1 1/1 11:02	78	10.3	13.0	339	487

### 2016

1	A	4 1/4 3:00	5 1/5 22:33	4 1/4 13:58	110	13.8	30.1	320	490
2	A	15 1/15 0:00	18 1/18 12:00	17 1/17 23:30	193	17.0	26.0	301	747
3	A	20 1/20 14:00	23 1/23 20:00	21 1/21 17:32	80	9.5	13.6	358	598
4	A	26 1/26 13:00	27 1/27 12:00	26 1/26 18:11	275	20.1	53.8	314	593
5	A	35 2/4 4:00	36 2/5 11:19	35 2/4 12:35	172	14.9	36.9	290	513
6	A	38 2/7 0:12	40 2/9 10:00	38 2/7 12:19	102	12.4	27.2	320	455
7	A	42 2/11 8:20	43 2/12 18:28	43 2/12 6:43	229	15.9	39.5	306	515
8	A	48 2/17 0:00	50 2/19 12:00	49 2/18 11:35	105	11.3	14.5	346	649

9	A	53 2/22 14:00	55 2/24 01:00	54 2/23 02:58	275	23.9	22.9	345	675
10	A	57 2/26 11:10	59 2/28 12:00	58 2/27 17:59	89	10.4	15.7	325	425
11	A	60 2/29 9:10	62 3/2 7:49	61 3/1 8:6	83	10.5	25.4	324	446
12	A	68 3/8 18:00	71 3/11 11:00	69 3/9 4:38	111	13.3	25.9	313	626
13	A	76 3/16 15:43	77 3/17 20:16	76 3/16 21:44	155	16.5	26.2	377	545
14	A	81 3/21 19:00	84 3/24 18:00	82 3/22 23:34	107	10.9	20.9	321	535
15	A	86 3/26 18:40	90 3/30 1:19	88 3/28 6:41	71	9.7	20.7	308	434
16	A	90 3/30 8:00	93 4/2 23:00	90 3/30 21:41	147	15.7	31.3	313	584
17	A	98 4/7 0:00	99 4/8 22:00	98 4/7 14:16	132	14.6	17.7	317	571
18	A	101 4/10 5:52	102 4/11 9:00	101 4/10 21:50	95	11.0	9.7	400	658
19	A	115 4/24 13:00	116 4/25 13:45	116 4/25 7:7	124	13.2	25.3	316	515
20	A	117 4/26 19:00	119 4/28 18:00	118 4/27 12:37	168	16.4	19.9	382	662
21	A	125 5/4 0:00	126 5/5 18:00	125 5/4 6:41	206	15.8	39.8	281	553
22	A	128 5/7 8:15	129 5/8 18:00	128 5/7 17:8	113	12.0	14.1	432	694
23	A	130 5/9 19:17	132 5/11 20:00	131 5/10 16:32	88	10.0	9.9	409	639
24	A	135 5/14 21:23	138 5/17 6:00	136 5/15 12:57	159	16.4	28.0	331	501
25	A	143 5/22 18:00	145 5/24 20:00	144 5/23 17:10	195	14.7	32.7	287	693
26	A	150 5/29 17:10	152 5/31 9:20	151 5/30 7:57	129	13.0	16.0	396	606
27	A	155 6/3 6:00	156 6/4 1:30	155 6/3 11:35	195	17.5	30.3	342	670
28	A	163 6/11 16:30	165 6/13 5:30	163 6/11 23:8	271	18.0	45.2	346	484
29	A	169 6/17 16:00	174 6/22 16:00	172 6/20 19:13	136	13.9	22.7	337	564
30	A	176 6/24 12:34	178 6/26 6:00	177 6/25 6:55	163	14.3	27.9	341	610
31	A	181 6/29 18:00	183 7/1 0:00	182 6/30 5:7	120	11.3	8.0	430	727
32	A	189 7/7 5:00	191 7/9 5:00	190 7/8 0:7	92	10.9	10.3	434	751
33	A	198 7/16 19:00	200 7/18 6:00	199 7/17 6:26	154	14.9	24.8	383	670
34	A	204 7/22 11:00	205 7/23 8:30	204 7/22 18:30	270	18.4	29.6	339	641
35	A	216 8/3 17:11	217 8/4 8:25	216 8/3 18:55	184	17.3	31.1	400	728
36	A	225 8/12 15:00	228 8/15 4:00	226 8/13 7:26	69	9.7	7.3	427	726
37	A	231 8/18 11:00	233 8/20 6:00	232 8/19 0:48	106	10.8	22.4	333	451
38	A	234 8/21 14:00	237 8/24 10:30	235 8/22 7:47	150	15.3	25.9	335	797
39	A	244 8/31 1:00	246 9/2 5:15	244 8/31 13:21	227	18.0	35.5	344	726
40	A	248 9/4 3:00	249 9/5 23:00	248 9/4 11:10	79	9.5	10.9	438	691
41	A	252 9/8 15:46	253 9/9 12:00	253 9/9 0:58	137	16.7	12.6	328	536
42	A	257 9/13 19:00	258 9/14 9:30	258 9/14 0:23	103	12.4	28.3	375	585
43	A	260 9/16 12:00	262 9/18 6:00	261 9/17 10:10	144	15.1	16.7	368	687

44	A	271 9/27 13:59	272 9/28 9:00	271 9/27 16:23	331	22.1	59.9	298	605
45	A	278 10/4 21:00	279 10/5 21:00	279 10/5 2:52	132	12.6	8.6	446	754
46	A	283 10/9 17:47	286 10/12 22:00	284 10/10 18:43	81	10.8	21.4	392	525
47	A	288 10/14 9:34	289 10/15 13:46	289 10/15 2:25	304	19.2	42.2	352	700
48	A	299 10/25 11:00	300 10/26 3:20	299 10/25 18:33	162	15.1	51.8	306	455
49*	A	303 10/29 1:4	305 10/31 8:28	303 10/29 15:17	284	24.6	44.5	350	574
50	A	312 11/7 21:42	313 11/8 17:00	313 11/8 6:10	187	15.9	37.5	333	468
51	A	316 11/11 20:00	318 11/13 17:33	317 11/12 10:0	150	16.4	22.0	343	782
52*	A	326 11/21 16:00	329 11/24 18:00	328 11/23 0:31	166	17.3	34.7	303	492
53	A	331 11/26 20:26	332 11/27 16:00	332 11/27 3:25	328	24.8	43.0	353	646
54	A	338 12/3 16:30	340 12/5 5:34	339 12/4 7:13	156	12.5	33.6	373	693
55	A	344 12/9 18:00	348 12/13 8:00	345 12/10 9:18	109	12.9	25.5	363	601
56	A	355 12/20 3:30	357 12/22 3:00	355 12/20 15:23	131	15.1	24.2	321	641
57	A	360 12/25 23:00	361 12/26 18:00	361 12/26 3:39	105	12.3	12.5	418	743

### 2017

1	A	1 1/1 14:00	4 1/4 10:00	3 1/3 14:54	218	18.0	27.2	333	720
2	A	6 1/6 8:00	9 1/9 4:00	7 1/7 3:28	97	11.1	16.4	366	719
3	A	18 1/18 9:16	19 1/19 5:10	18 1/18 13:59	326	21.4	57.0	291	436
4	A	20 1/20 5:30	22 1/22 3:00	20 1/20 10:53	209	18.6	27.0	385	752
5	A	27 1/27 22:00	30 1/30 4:00	28 1/28 10:12	88	10.3	14.1	402	729
6	A	31 1/31 16:17	32 2/1 14:00	32 2/1 1:34	147	14.3	18.9	414	712
7	A	34 2/3 2:00	36 2/5 22:00	35 2/4 16:4	77	8.6	10.0	374	622
8	A	42 2/11 17:46	45 2/14 18:00	43 2/12 3:26	198	18.7	42.0	298	538
9	A	49 2/18 2:00	51 2/20 12:00	50 2/19 9:10	112	12.5	14.9	340	700
10	A	56 2/25 6:40	57 2/26 18:00	57 2/26 1:5	100	11.0	23.4	314	491
11	A	58 2/27 5:30	59 2/28 19:00	58 2/27 16:5	136	14.0	24.4	361	547
12	A	61 3/2 8:00	63 3/4 13:00	61 3/2 21:9	92	9.5	14.5	368	574
13	A	69 3/10 3:3	73 3/14 8:00	70 3/11 21:42	119	10.3	30.2	298	603
14	A	74 3/15 20:00	76 3/17 10:46	75 3/16 20:34	108	12.4	16.8	368	661
15	A	76 3/17 19:00	78 3/19 0:00	77 3/18 7:20	101	11.2	12.2	449	724
16	A	87 3/28 8:00	92 4/2 14:40	90 3/31 0:47	89	8.8	17.9	313	493
17	A	95 4/5 11:43	97 4/7 9:25	96 4/6 13:11	282	18.1	29.8	304	759
18	A	101 4/11 20:19	103 4/13 6:16	103 4/13 1:52	176	16.0	33.2	410	750
19	A	109 4/19 5:00	110 4/20 19:10	109 4/19 12:25	136	14.1	28.2	296	637

20	A	124 5/4 17:18	125 5/5 20:00	124 5/4 23:31	342	21.1	39.6	304	598
21	A	129 5/9 10:30	130 5/10 2:20	129 5/9 14:45	567	28.2	46.0	377	748
22	A	137 5/17 4:18	139 5/19 10:23	138 5/18 4:32	140	14.6	31.2	290	482
23	A	143 5/23 6:30	144 5/24 13:00	143 5/23 20:25	223	14.3	35.1	293	461
24	A	156 6/5 8:00	157 6/6 15:30	156 6/5 22:41	206	16.2	21.6	378	736
25*	A	165 6/14 0:00	168 6/17 20:00	165 6/14 22:42	118	12.4	28.2	298	479
26	A	174 6/23 3:00	176 6/25 22:00	175 6/24 4:6	94	10.8	22.6	316	527
27	A	182 7/1 0:00	183 7/2 0:00	182 7/1 4:16	151	13.1	25.6	342	508
28	A	185 7/4 4:00	187 7/6 4:00	185 7/4 20:11	166	15.7	18.8	332	581
29	A	192 7/11 4:00	195 7/14 4:00	192 7/11 13:57	98	12.0	26.6	316	512
30	A	197 7/16 14:00	199 7/18 12:00	197 7/16 20:37	161	12.5	37.2	329	493
31	A	200 7/19 19:00	202 7/21 22:00	201 7/20 12:59	90	10.2	18.0	358	572
32	A	220 8/8 12:00	221 8/9 21:00	220 8/8 22:19	212	16.7	26.3	358	600
33	A	229 8/17 0:00	233 8/21 14:00	229 8/17 16:51	118	13.1	27.2	307	508
34	A	235 8/23 1:00	237 8/25 20:00	235 8/23 6:43	109	12.5	30.8	301	457
35	A	240 8/28 20:00	242 8/30 6:00	241 8/29 0:29	288	23.9	46.2	327	726
36*	A	246 9/3 21:00	249 9/6 0:00	247 9/4 8:58	151	16.2	28.1	333	603
37	A	256 9/13 16:50	257 9/14 18:00	257 9/14 0:29	223	20.0	36.7	359	582
38*	A	261 9/18 13:17	262 9/19 0:00	261 9/18 20:10	287	19.9	36.2	379	626
39	A	268 9/25 14:00	272 9/29 12:00	271 9/28 1:29	86	10.1	13.8	308	576
40	A	273 9/30 12:00	277 10/4 18:00	276 10/3 8:15	94	11.2	13.8	368	715
41	A	283 10/10 19:30	285 10/12 6:35	284 10/11 6:17	202	14.9	34.2	316	592
42	A	288 10/15 7:49	288 10/15 22:47.5	288 10/15 22:35	313	18.7	39.5	348	652
43	A	301 10/28 12:00	304 10/31 20:00	302 10/29 3:45	140	13.4	23.3	365	734
44	A	309 11/5 7:00	310 11/6 16:00	309 11/5 12:2	117	13.7	24.6	344	570
45	A	315 11/11 20:00	319 11/15 16:00	316 11/12 7:54	141	15.3	29.3	308	516
46	A	321 11/17 0:00	321 11/17 21:53	321 11/17 19:26	147	12.8	21.1	342	600
47	A	323 11/19 18:00	326 11/22 12:00	324 11/20 20:39	82	10.3	13.4	354	521
48	A	327 11/23 20:00	329 11/25 7:00	328 11/24 12:9	180	13.7	17.7	374	763
49	A	335 12/1 18:00	337 12/3 18:00	336 12/2 22:49	178	13.9	19.8	372	587
50*	A	341 12/7 16:00	343 12/9 19:00	342 12/8 8:59	176	13.5	21.9	365	689
51	A	348 12/14 0:00	350 12/16 0:00	348 12/14 19:3	170	16.4	20.6	323	632
52	A	354 12/20 4:00	358 12/24 0:00	356 12/22 13:19	106	12.0	14.2	337	767
53	A	363 12/29 4:00	365 12/31 22:00	364 12/30 21:1	127	13.8	30.3	335	704

## 2018

1	A	9 1/9 15:00	10 1/10 22:00	10 1/10 4:8	125	12.4	18.4	384	588
2	A	17 1/17 17:39	20 1/20 18:00	19 1/19 5:52	165	14.5	28.2	307	735
3	A	23 1/23 13:00	25 1/25 3:30	24 1/24 16:50	95	11.6	10.9	432	668
4	A	36 2/5 19:20	39 2/8 5:00	37 2/6 11:54	127	11.5	19.4	361	718
5	A	45 2/14 0:00	49 2/18 0:00	47 2/16 16:33	98	11.2	25.4	298	600
6	A	50 2/19 8:00	53 2/22 20:00	51 2/20 4:13	143	15.0	22.7	327	703
7	A	56 2/25 22:00	57 2/26 14:00	57 2/26 6:19	288	19.3	33.1	425	731
8	A	64 3/5 8:00	65 3/6 13:00	64 3/5 16:39	210	15.3	33.6	356	595
9	A	73 3/14 16:00	74 3/15 21:53	74 3/15 12:41	205	15.5	30.9	344	597
10	A	78 3/19 19:48	79 3/20 20:24	79 3/20 11:8	193	15.4	40.1	325	698
11	A	83 3/24 8:10	86 3/27 16:00	85 3/26 7:35	85	10.5	12.5	393	759
12	A	91 4/1 4:00	93 4/3 5:30	92 4/2 11:47	184	18.2	29.2	345	648
13	A	101 4/11 8:11	102 4/12 21:00	101 4/11 15:43	197	16.2	36.5	327	679
14	A	106 4/16 0:00	107 4/17 13:00	106 4/16 22:27	165	13.8	24.7	348	587
15	A	108 4/18 18:00	109 4/19 20:00	109 4/19 7:12	114	12.4	20.3	332	527
16	A	112 4/22 8:03	113 4/23 19:10	112 4/22 19:37	83	10.2	15.2	340	499
17	A	116 4/26 22:00	117 4/27 22:00	117 4/27 7:51	295	23.0	42.3	336	689
18	A	127 5/7 7:50	129 5/9 0:27	127 5/7 18:56	172	17.6	44.0	266	599
19	A	132 5/12 23:45	134 5/14 7:00	133 5/13 11:45	121	11.3	25.3	333	518
20	A	143 5/23 12:49	144 5/24 8:32	144 5/24 5:28	255	18.9	40.7	341	647
21	A	155 6/4 10:17	156 6/5 14:00	155 6/4 20:50	123	12.3	24.4	285	522
22	A	161 6/10 7:00	162 6/11 8:00	161 6/10 15:31	139	11.8	23.5	297	436
23	A	168 6/17 21:00	170 6/19 12:00	169 6/18 23:7	146	14.9	37.6	295	708
24	A	191 7/10 14:00	193 7/12 5:33	192 7/11 4:22	152	16.7	30.7	288	536
25	A	196 7/15 9:00	197 7/16 10:57	196 7/15 22:46	177	13.9	22.5	334	705
26	A	201 7/20 8:38	202 7/21 6:30	201 7/20 17:19	74	10.2	8.8	450	674
27	A	209 7/28 9:00	210 7/29 20:00	209 7/28 14:50	72	9.4	20.1	290	502
28	A	215 8/3 6:43	216 8/4 3:36	217 8/5 14:53	67	9.4	21.4	278	385
29	A	219 8/7 6:57	220 8/8 11:31	221 8/9 17:2	142	14.4	24.8	295	486
30	A	222 8/10 22:5	224 8/12 3:50	225 8/13 12:0	127	13.6	26.4	335	682
31	A	230 8/18 12:57	230 8/18 23:2	232 8/20 20:24	96	11.9	26.4	343	502
32	A	240 8/28 14:53	241 8/29 8:52	242 8/30 9:22	187	14.9	30.3	295	576
33	A	245 9/2 12:0	245 9/2 22:48	246 9/3 11:17	408	24.1	55.1	333	664
34	A	250 9/7 12:43	250 9/7 20:9	252 9/9 6:14	96	10.9	17.4	359	666

35	A	252 9/9 11:31	252 9/9 22:48	254 9/11 0:14	125	12.3	10.6	418	692
36	A	263 9/20 12:43	263 9/20 21:50	265 9/22 4:19	68	8.8	12.7	316	471
37	A	284 10/11 16:48	285 10/12 18:57	286 10/13 16:48	66	9.2	15.2	331	466
38	A	287 10/14 7:55	287 10/14 13:26	288 10/15 13:41	162	14.0	31.9	341	539
39	A	294 10/21 6:0	294 10/21 19:12	296 10/23 12:0	100	9.8	30.2	289	430
40	A	299 10/26 12:57	300 10/27 7:26	301 10/28 2:24	190	12.9	17.5	362	708
41*	A	305 11/1 23:31	306 11/2 11:17	307 11/3 1:26	185	17.8	30.5	341	572
42	A	307 11/3 20:10	308 11/4 8:53	310 11/6 2:38	153	13.0	27.9	324	565
43	A	315 11/11 0:0	316 11/12 2:24	317 11/13 14:53	85	10.2	29.1	280	447
44	A	317 11/13 19:55	318 11/14 17:46	319 11/15 11:31	78	7.9	25.5	312	427
45	A	321 11/17 13:55	323 11/19 5:31	325 11/21 16:5	111	10.3	27.1	290	417
46	A	326 11/22 1:12	326 11/22 14:53	332 11/28 1:26	82	8.8	27.0	324	575
47	A	334 11/30 23:31	335 12/1 22:34	337 12/3 6:29	80	8.9	20.7	323	541
48	A	342 12/8 14:30	343 12/9 19:55	344 12/10 18:0	172	13.0	29.0	337	472
49	A	351 12/17 8:24	351 12/17 11:46	352 12/18 7:26	99	11.4	19.3	326	431
50	A	357 12/23 15:36	358 12/24 1:12	358 12/24 5:17	199	15.1	28.9	397	647
51	A	362 12/28 21:50	363 12/29 8:10	363 12/29 22:5	168	17.0	38.7	312	442

## 2019

1	A	4 1/4 12:57	5 1/5 12:57	6 1/6 13:12	227	19.7	41.0	326	606
2	A	11 1/11 10:19	11 1/11 17:31	13 1/13 4:48	123	15.6	23.5	318	580
3	A	14 1/14 17:31	15 1/15 17:45	17 1/17 11:46	136	12.4	18.9	355	657
4	A	19 1/19 6:43	20 1/20 10:48	21 1/21 23:2	84	8.3	11.9	386	624
5	A	31 1/31 22:33	31 1/31 23:31	33 2/2 12:0	77	10.6	16.7	392	523
6	A	35 2/4 10:33	35 2/4 19:12	36 2/5 12:0	78	10.0	16.0	371	561
7	A	40 2/9 0:57	40 2/9 14:52	41 2/10 7:26	56	8.5	13.9	376	470
8	A	43 2/12 9:50	44 2/13 18:43	46 2/15 2:53	101	11.2	21.3	306	483
9	A	48 2/17 19:55	49 2/18 7:55	49 2/18 21:7	171	18.0	34.4	299	438
10	A	50 2/19 23:2	51 2/20 14:9	53 2/22 14:53	109	11.1	26.7	320	614
11	A	64 3/5 5:31	64 3/5 22:5	66 3/7 0:43	133	11.9	21.7	297	409
12	A	70 3/11 20:24	72 3/13 0:0	74 3/15 6:0	80	8.7	16.5	308	481
13	A	78 3/19 14:9	79 3/20 2:38	81 3/22 4:34	167	15.4	41.0	292	611
14	A	87 3/28 2:52	88 3/29 14:52	89 3/30 6:58	96	10.4	15.2	327	574
15	A	96 4/6 22:48	98 4/8 6:57	98 4/8 23:17	135	13.3	34.7	294	463
16	A	107 4/17 0:57	107 4/17 18:29	108 4/18 18:58	107	12.8	23.1	347	614

17	A	114 4/24 1:12	114 4/24 8:53	115 4/25 5:46	131	15.5	18.5	353	667
18	A	121 5/1 21:7	122 5/2 15:36	123 5/3 14:10	86	9.9	18.8	299	447
19	A	135 5/15 8:24	136 5/16 0:29	137 5/17 3:36	108	11.7	35.4	276	493
20	A	140 5/20 7:26	140 5/20 17:2	142 5/22 2:24	108	12.8	10.8	396	720
21	A	152 6/1 14:52	153 6/2 0:14	153 6/2 18:58	86	9.6	16.0	308	445
22	A	157 6/6 8:38	157 6/6 15:36	158 6/7 3:36	55	8.8	12.4	296	437
23	A	162 6/11 1:40	162 6/11 18:14	165 6/14 13:41	141	13.1	24.1	338	647
24	A	169 6/18 1:40	169 6/18 13:41	172 6/21 6:0	63	9.1	7.4	403	632
25	A	178 6/27 6:14	178 6/27 11:46	179 6/28 1:41	85	9.8	15.5	410	591
26	A	182 7/1 16:19	183 7/2 21:50	184 7/3 17:31	79	9.1	14.4	302	414
27	A	188 7/7 12:57	188 7/7 22:5	190 7/9 3:22	90	10.8	24.7	304	552
28	A	191 7/10 19:12	192 7/11 2:38	192 7/11 6:0	78	9.3	8.5	426	593
29	A	196 7/15 16:48	197 7/16 11:45	198 7/17 0:29	87	10.9	8.3	354	564
30	A	205 7/24 10:19	205 7/24 16:33	206 7/25 0:15	180	16.2	23.4	341	645
31	A	211 7/30 0:57	211 7/30 19:26	212 7/31 12:0	141	14.1	16.5	319	596
32	A	221 8/9 6:43	221 8/9 10:34	222 8/10 4:19	84	9.7	11.3	336	483
33	A	224 8/12 16:48	226 8/14 10:19	226 8/14 22:5	133	12.3	24.6	339	558
34	A	232 8/20 7:12	232 8/20 15:7	233 8/21 7:26	192	19.9	33.0	311	668
35	A	236 8/24 12:57	237 8/25 5:2	237 8/25 18:43	196	14.9	23.9	326	704
36	A	242 8/30 10:33	243 8/31 15:50	245 9/2 0:15	93	10.1	23.8	316	450
37	A	254 9/11 8:38	254 9/11 14:53	254 9/11 22:34	99	11.1	27.8	304	374
38	A	258 9/15 5:45	260 9/17 14:53	261 9/18 7:12	88	10.8	23.7	311	589
39	A	264 9/21 0:0	264 9/21 10:19	265 9/22 1:12	216	18.5	46.1	347	722
40	A	272 9/29 20:52	273 9/30 15:36	275 10/2 16:19	62	8.6	20.9	320	527
41	A	280 10/7 12:43	280 10/7 12:58	281 10/8 18:15	128	12.8	32.3	290	349
42	A	284 10/11 8:52	284 10/11 19:26	285 10/12 11:17	92	9.7	12.8	362	584
43	A	287 10/14 7:40	287 10/14 18:43	288 10/15 16:48	175	17.5	30.5	392	498
44	A	290 10/17 16:4	291 10/18 23:2	292 10/19 18:0	126	9.3	20.6	346	672
45	A	302 10/29 3:50	302 10/29 22:5	303 10/30 16:5	66	10.0	14.8	345	540
46	A	307 11/3 19:26	309 11/5 11:31	310 11/6 3:7	72	9.4	15.0	312	467
47	A	312 11/8 12:14	313 11/9 6:58	314 11/10 11:46	82	9.4	15.9	295	448
48	A	317 11/13 20:52	318 11/14 9:7	319 11/15 9:36	79	9.3	19.5	352	544
49	A	319 11/15 12:43	319 11/15 21:50	320 11/16 4:5	107	11.8	19.8	349	504
50	A	328 11/24 2:52	328 11/24 12:0	329 11/25 11:46	85	10.0	19.2	344	558
51	A	333 11/29 0:0	333 11/29 6:58	333 11/29 17:31	57	8.6	11.1	381	472

52	A	338 12/4 4:4	338 12/4 16:33	339 12/5 9:7	142	11.4	32.2	324	430
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**2020**

1	A	63 3/3 6:57	64 3/4 7:12	65 3/5 12:15	70	9.9	17.5	306	412
2	A	73 3/13 8:24	74 3/14 1:26	75 3/15 6:0	58	7.6	21.6	291	421
3	A	78 3/18 20:9	79 3/19 10:48	80 3/20 11:46	40	5.3	12.6	305	371
4	A	84 3/24 8:38	85 3/25 0:0	85 3/25 6:43	119	13.0	17.7	331	491
5	A	96 4/5 6:28	96 4/5 23:2	97 4/6 12:0	63	9.6	11.7	305	391
6	A	99 4/8 8:52	100 4/9 3:50	101 4/10 9:7	60	8.0	18.0	292	371
7	A	104 4/13 23:45	105 4/14 1:40	105 4/14 11:46	75	8.5	19.3	345	412
8	A	106 4/15 3:7	106 4/15 15:7	107 4/16 1:55	70	10.1	14.9	322	407
9	A	110 4/19 12:0	111 4/20 0:29	112 4/21 10:34	92	10.5	30.2	332	456
10	A	120 4/29 11:2	120 4/29 18:58	121 4/30 8:10	62	8.3	21.9	322	387
11	A	124 5/3 3:21	124 5/3 12:28	125 5/4 11:17	76	9.4	23.2	338	500
12	A	133 5/12 18:57	134 5/13 0:43	134 5/13 19:27	97	10.6	24.9	278	404
13	A	138 5/17 0:43	138 5/17 6:0	138 5/17 23:3	61	8.7	11.5	393	560
14	A	140 5/19 15:7	141 5/20 8:38	141 5/20 21:51	78	9.2	13.0	385	507
15	A	146 5/25 11:45	146 5/25 18:29	148 5/27 0:58	119	13.1	21.7	311	492
16	A	153 6/1 13:55	153 6/1 19:12	154 6/2 12:0	101	11.5	31.3	317	404
17	A	157 6/5 6:28	157 6/5 16:19	157 6/5 19:41	44	6.9	13.7	355	423
18	A	160 6/8 0:43	160 6/8 14:38	161 6/9 6:15	137	14.2	21.7	277	455
19	A	165 6/13 18:28	166 6/14 8:10	167 6/15 16:34	68	10.5	17.5	317	510
20	A	170 6/18 6:28	171 6/19 23:17	172 6/20 14:39	79	11.1	25.4	302	488

<sup>1</sup>  $P_{\text{tmax}}$  time: approximate stream interface time, because it is where the forces at the two sides of the interface are equal and in opposite directions.

<sup>2</sup>  $N_{\text{pmax}}$ : maximum proton number density.

Since 2008, as the two spacecraft were separated farther and farther away from each other, we do not number the pairs any more.

\* Hybrid event combined by a SIR and another solar wind structure like an ICME.

? Ambiguous event.

Records:



1. 6/9/2011: Change the start time of a SIR at STA from 2008 11/27 22:00 to 2008 11/28 16:44, where a forward shock occurred.
2. 3/19/2012: Add SIRs during Jan.-Sept. of 2011 at STB.
3. 4/4/2012: Add SIRs during Jan.-July of 2011 at STA.
4. 4/13/2012: Add SIRs during Oct.-Dec. of 2011 at STB.
5. 7/30/2012: Add SIRs during Aug.-Dec. of 2011 at STA.
6. 3/18/2013: Add SIRs during Jan.-Aug. of 2012 at STA.
7. 4/3/2013: Change the boundaries of 2/25/2012 SIR at STA.
8. 5/24/2013: Add SIRs during Jan.-Aug. of 2012 at STB.
9. 7/2/2013: Add SIRs in late Feb and early March of 2008 at STA because the plasma data became available after reprocessing.
10. 10/22/2013: Add SIRs during Sept.-Dec. of 2012 at STB.
11. 11/4/2013: Add SIRs during Sept.- Dec. of 2012 at STA.
12. 5/28/2014: Add SIRs during Jan.-June of 2013 at STA.
13. 9/4/2014: Add SIRs during 2013 at STB.
14. 9/25/2014: Add SIRs during July - Dec. of 2013 at STA.
15. 3/4/2015: Add SIRs during Jan. - June of 2014 at STA.
16. 12/3/2015: Add SIRs during Jan. - Sept. of 2014 at STB.
17. 11/9/2016: Add SIRs during July - August of 2014 at STA. Because the plasma data are only available for a few hours per day in the rest of 2014 and the Level 2 PLASTIC data of 2015 are in process, the event survey is only updated to 8/26/2014.
18. 7/15/2017: Update STA SIRs to the end of 2016, using Version 11 PLASTIC data and the new Level 2 merged data.
19. 8/28/2017: Add SIRs at STA before March 2007 using the updated plasma data.+A80A822
20. 1/25/2018: Update the SIR parameters throughout the list using the automatically selected values after despiking the data. Because some plasma data in the early years of the mission were changed in the PLASTIC data reprocessing after the analysis of the early events, some SIR parameters listed here are changed considerably. The start and stop time of SIRs are not changed. The  $P_{\text{max}}$  time are automatically selected now.
21. 11/2/2018: Update the list while writing the STEREO SIR paper. Fixed the stop time for Apr 18, 2012 SIR at STA; changed the identification of hybrid events for several events.
22. 2/19/2019: Add the citation of 2019 paper.
23. 4/9/2019: Update SIRs at STA to July 2018.
24. 10/1/2022: Update SIRs at STA to June 2020 with the assist of Dr. Tarik Salman.