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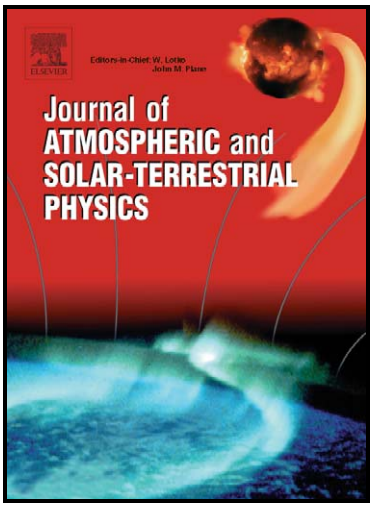

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Correction to "Solar sources and geospace consequences of interplanetary magnetic clouds observed during solar cycle 23"

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Abstract

The paper, "Solar sources and geospace consequences of interplanetary magnetic clouds observed during solar cycle 23" (Gopalswamy et al., 2008) contains some unfortunate errors in one of the Figures (Fig.4) and the Electronic Table. This note is to correct these errors.

Keywords: coronal mass ejections, magnetic clouds, geoeffectiveness, interplanetary shocks.

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One of the Figures (Fig. 4) in "Solar sources and geospace consequences of interplanetary magnetic clouds observed during solar cycle 23" by Gopalswamy et al. (2008, JASTP, Volume 70, Issues 2-4, February 2008, Pages 245-253 – Paper1) is incorrect because of a software error in the routine that was used to make the plot. The source positions of various magnetic cloud (MC) types are therefore not plotted correctly. Figure 1 replaces Fig. 4 in Paper 1 and is now plotted correctly.

The Electronic Table in Paper 1 also contains some typographical errors and missing comments. We have now corrected these errors. In the original paper, we have referred to the Table as "The list of 99 MCs are given in the electronic supplement with the following sets of information: ..." However, the electronic supplement is not linked to the original article. Therefore, the Electronic Table of Paper 1 is the Table 1 in this note. The changes resulting from the corrections in Table 1 are very minor in various Figures, so we have not replaced the figures.

Acknowledgments

We thank P. Mäkelä for pointing out some of the errors in Table 1.

Table Captions

Table 1. List of 99 magnetic clouds of solar cycle 23 (1996 – 2005 inclusive) and their properties.

Figure Captions

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Figure1. Time evolution of solar source latitudes of MCs. The three phases of the solar cycle (Rise, Max, Decl) are delineated by the vertical dashed lines. The four types of MCs are distinguished: fully south (FS), fully north (FN), south-north (SN) and north-south (NS) clouds. The number of MCs in each cloud type in the rise, maximum, and declining phases: 4,7,10 (NS); 19, 15,5 (SN); 9,7,4 (FN); 8,5,6 (FS). The monotonic decrease in MC latitudes from the minimum to declining phases is evident. The control of the solar global field decreases from solar minimum to maximum, which might explain why CMEs originating close to 50° Latitude can arrive at 1 AU as MCs. This is the corrected version of Fig. 4 in Paper1.

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Table

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	Magnetic Cloud (Sheath[f])											IP Shock			Dst min (Sheath[g])				Coronal Mass Ejection				
ID#	Date	Time	Dt	Bt		Bz		|Bz|		V	Type	Date	Time	V	Date	Time	Index		Date	Time	AW	V	Location
01	1995/02/08	05:48	19.0	12.4	(10.9)	-10.6	(-10.6)	10.6	(10.6)	410	SN	-----	-----	----	02/08	10:00	-80	(-41)	LASCO GAP		---	----	------
02	1995/03/04	10:48	17.0	12.8	(9.2)	-10.6	(-0.3)	10.6	(4.1)	443	FS	-----	-----	----	03/04	22:00	-90	(----)	LASCO GAP		---	----	------
03	1995/04/03	07:48	27.0	10.4	(10.6)	-3.0	(-2.0)	7.6	(8.8)	301	NS	-----	-----	----	04/04	07:00	-18	(-23)	LASCO GAP		---	----	------
04	1995/04/06	07:18	10.5	10.9	(7.6)	-1.4	(-6.1)	7.3	(6.1)	334	FN	-----	-----	----	----	----	----	(-18)	LASCO GAP		---	----	------
05	1995/05/13	10:54	5.5	13.4	(12.1)	7.3	(-2.1)	11.9	(8.7)	331	FN	-----	-----	----	05/13	14:00	-8	(-6)	LASCO GAP		---	----	------
06	1995/08/22	21:18	22.0	11.4	(8.2)	-9.3	(-7.3)	9.3	(7.3)	360	SN	-----	-----	----	08/23	05:00	-61	(-10)	LASCO GAP		---	----	------
07	1995/10/18	19:48	29.5	28.5	(21.2)	-21.2	(-20.9)	22.0	(20.9)	404	SN	-----	-----	----	10/19	00:00	-127	(-18)	LASCO GAP		---	----	------
08	1995/12/16	05:18	17.0	12.5	(10.9)	-2.7	(-9.3)	5.9	(9.3)	396	SN	-----	-----	----	----	----	----	(-44)	LASCO GAP		---	----	------
09	1996/05/27	15:18	40.0	15.7	(4.9)	-7.8	(-2.7)	13.2	(2.7)	370	SN	-----	-----	----	05/27	20:00	-33	(-12)	LASCO GAP		---	----	------
10	1996/07/01	17:17	17.0	13.8	(7.7)	-7.4	(-1.1)	8.7	(5.3)	355	SN	-----	-----	----	07/02	03:00	-20	(-3)	LASCO GAP		---	----	------
11	1996/08/07	12:18	22.5	8.1	(6.5)	-4.1	(-3.0)	4.1	(3.0)	344	FS	-----	-----	----	08/07	21:00	-23	(-8)	LASCO GAP		---	----	------
12	1996/12/24	02:48	32.5	12.9	(6.0)	-6.8	(0.9)	9.8	(4.2)	355	NS	12/23	16:00	400	12/25	13:00	-33	(----)	12/19	16:30	130	469	S13W10
13	1997/01/10	05:18	21.0	17.2	(9.4)	-15.1	(-6.0)	16.4	(6.0)	436	SN	01/10	00:52	454	01/10	10:00	-78	(----)	01/06	15:10	360	136	S18E06
14	1997/02/10	03:24	15.0	9.0	(13.4)	-7.7	(-5.7)	7.7	(5.7)	458	FS	02/09	12:40	629	02/10	11:00	-68	(-56)	02/07	00:30	360	490	S20W04
15	1997/04/11	05:36	13.5	22.5	(16.0)	9.7	(-7.7)	20.9	(8.8)	460	FN	04/10	17:45	352	----	----	----	(-82)	04/07	14:27	360	878	S28E19
16	1997/04/21	14:30	40.0	14.1	(11.1)	-7.6	(-6.5)	10.6	(6.5)	360	SN	-----	-----	----	04/22	00:00	-107	(-12)	04/16	07:35	113	87	S22E04
17	1997/05/15	09:06	16.0	25.4	(23.3)	-24.4	(-17.5)	24.4	(17.5)	450	SN	05/15	01:15	458	05/15	13:00	-115	(-100)	05/12	05:30	360	464	N21W08
18	1997/05/16	06:06	7.8	9.3	(19.5)	-4.9	(-3.4)	7.9	(10.5)	480	NS	-----	-----	----	05/16	17:00	-47	(-41)	comment #1		---	----	------
19	1997/06/09	02:18	21.0	14.0	(10.6)	-9.8	(-8.1)	9.8	(8.1)	370	SN	-----	-----	----	06/09	04:00	-84	(-40)	06/05	22:55	62	320	S35W17
20	1997/06/19	05:06	10.8	8.6	(6.7)	-7.2	(-2.1)	7.2	(2.1)	385	FS	-----	-----	----	06/19	11:00	-28	(-3)	comment #2		---	----	N40W05
21	1997/07/15	08:48	15.0	12.6	(9.8)	-11.1	(-3.7)	11.1	(6.2)	360	FS	07/15	04:30	355	07/15	21:00	-45	(----)	comment #3		---	----	------
22	1997/08/03	14:06	11.8	16.7	(10.7)	-10.7	(-3.7)	10.7	(4.1)	445	SN	-----	-----	----	08/03	19:00	-49	(-4)	07/30	04:45	360	124	N45E21
23	1997/09/18	00:30	60.0	13.2	(8.1)	-10.0	(-8.0)	10.0	(8.0)	320	SN	-----	-----	----	09/18	06:00	-56	(-45)	comment #2		---	----	N18W40
24	1997/09/22	00:48	16.5	18.3	(17.6)	6.2	(-4.0)	13.7	(7.9)	425	FN	09/21	04:10	417	----	----	----	(-36)	09/17	20:28	360	377	N30W10
25	1997/10/01	16:17	30.5	10.5	(29.3)	-2.3	(-15.5)	9.7	(25.0)	450	FN	10/01	01:00	490	----	----	----	(-98)	09/28	01:08	360	359	N22E05
26	1997/10/10	23:48	25.0	13.1	(14.6)	-9.5	(-11.1)	9.5	(11.1)	396	SN	10/10	16:00	473	10/11	04:00	-130	(-65)	10/06	15:28	174	293	S54E46
27	1997/11/07	15:48	12.5	18.0	(16.9)	-0.8	(-12.1)	14.4	(12.1)	440	FN	11/06	22:10	633	----	----	----	(-110)	11/04	06:10	360	785	S14W33
28	1997/11/08	04:54	10.0	16.0	(18.0)	3.6	(-0.8)	15.0	(14.4)	395	FN	-----	-----	----	----	----	----	(----)	11/06	12:10	360	1556	S20W55
29	1997/11/22	15:48	20.5	27.8	(27.2)	-13.1	(-1.7)	22.2	(16.6)	490	NS	11/22	09:10	497	11/23	07:00	-108	(-75)	LASCO GAP		---	----	------
30	1998/01/07	03:18	29.0	20.2	(14.6)	-1.1	(-10.4)	16.4	(10.4)	375	FN	01/06	13:30	397	----	----	----	(-77)	01/02	23:28	360	438	N24W42[h]
31	1998/01/08	14:54	6.7	11.7	(13.0)	-2.9	(-3.4)	4.7	(4.2)	355	SN	01/08	07:30	375	01/08	19:00	-22	(-15)	comment #4		---	----	------
32	1998/02/04	04:30	42.0	16.9	(9.6)	-7.4	(-6.7)	7.4	(6.7)	320	SN	-----	-----	----	02/04	14:00	-34	(-29)	comment #2		---	----	N29E15
33	1998/03/04	14:18	40.0	12.8	(8.5)	-7.0	(-5.1)	9.3	(5.1)	360	SN	03/04	11:05	449	03/04	22:00	-29	(-36)	02/28	12:48	169	176	S24W01
34	1998/05/02	12:18	29.0	14.0	(20.3)	-12.3	(-10.3)	12.3	(10.3)	515	FS	05/01	21:20	615	05/02	18:00	-85	(-55)	04/29	16:58	360	1374	S18E20
35	1998/06/02	10:36	5.3	12.0	(7.9)	-2.6	(-3.1)	7.7	(3.1)	410	SN	-----	-----	----	06/02	13:00	-1	(-4)	05/31	04:26	112	683	N28E09
36	1998/06/24	16:47	29.0	17.7	(11.2)	-1.5	(-4.4)	16.3	(4.4)	460	SN	-----	-----	----	06/25	01:00	-25	(-12)	06/21	05:35	163	307	N16W38
37	1998/08/20	10:18	33.0	16.4	(13.4)	-12.9	(-11.6)	12.9	(11.6)	315	SN	08/19	17:32	320	08/20	21:00	-67	(-42)	LASCO GAP		---	----	------
38	1998/09/25	10:18	27.0	19.5	(28.5)	-5.6	(-15.3)	7.7	(15.3)	710	FN	09/24	23:15	620	----	----	----	(-207)	LASCO GAP		---	----	------
39	1998/10/19	05:06	9.5	25.6	(23.4)	-21.8	(-19.6)	21.8	(19.6)	383	FS	10/18	19:28	411	10/19	16:00	-112	(-85)	10/15	10:04	360	262	N22W01
40	1998/11/08	23:48	25.5	21.1	(35.6)	-13.4	(-6.6)	13.4	(24.0)	470	FS	11/08	04:42	721	11/09	18:00	-142	(-149)	11/05	20:44	360	1118	N22W18
41	1999/02/18	14:18	22.0	14.1	(27.9)	-6.2	(-23.7)	6.2	(23.7)	590	FS	02/18	02:46	600	02/18	18:00	-123	(-123)	LASCO GAP		---	----	------
42	1999/04/16	20:18	25.0	26.2	(11.9)	-14.7	(-1.0)	14.7	(3.4)	406	SN	04/16	11:10	470	04/17	08:00	-91	(----)	04/13	03:30	86	291	N16E00
43	1999/08/09	10:48	29.0	12.2	(9.2)	-1.2	(-7.9)	9.2	(7.9)	370	FN	08/08	17:50	405	----	----	----	(-47)	08/07	23:50	185	283	S28E03
44	1999/09/21	21:06	8.0	12.7	(9.5)	-6.9	(-4.2)	8.0	(4.2)	355	SN	-----	-----	----	09/22	02:00	-41	(-15)	comment #2		---	----	N14E19
45	2000/02/12	17:06	7.5	12.2	(21.0)	-2.3	(-14.7)	2.3	(14.8)	543	NS	02/11	23:28	674	----	----	----	(-133)	02/09	19:54	360	910	S17W40[i]
46	2000/02/21	09:48	27.5	17.3	(17.0)	-1.9	(-6.8)	14.9	(8.9)	380	FN	02/20	21:00	512	02/21	21:00	-26	(0)	02/17	21:30	360	728	S29E07[j]
47	2000/06/24	08:18	36.0	8.1	(18.3)	-0.1	(-10.5)	3.8	(10.5)	500	FN	06/23	13:00	613	----	----	----	(-34)	06/20	09:10	139	464	S30W30
48	2000/07/01	08:48	18.5	9.5	(7.4)	2.1	(-3.0)	7.5	(3.0)	420	FN	-----	-----	----	----	----	----	(-11)	comment #3		---	----	------
49	2000/07/15	06:48	7.5	9.7	(15.2)	-5.1	(-6.2)	5.1	(6.2)	650	FS	07/14	15:39	833	07/15	14:00	-57	(-34)	07/11	13:27	360	1078	N17E27
50[a]	2000/07/15	21:06	12.8	48.5	(51.9)	-21.2	(-48.1)	31.1	(48.1)	990	SN	07/15	14:18	1350	07/16	01:00	-301	(-289)	07/14	10:54	360	1674	N22W07

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51	2000/07/28	21:06	13.0	14.8	(23.3)	-11.0	(-5.6)	11.0	(10.8)	471	NS	07/28	09:58	523	07/29	12:00	-71	(-46)	07/25	03:30	360	528	N06W08
52	2000/08/01	00:06	15.8	12.3	(11.6)	-5.1	(-6.9)	6.7	(6.9)	445	NS	07/31	18:00	410	08/01	18:00	-38	(-32)	comment #3		---	----	------
53	2000/08/12	06:06	23.0	32.9	(28.9)	-22.6	(-25.8)	22.6	(25.8)	567	SN	08/11	18:51	640	08/12	10:00	-235	(-93)	08/09	16:30	360	702	N11W11
54	2000/09/18	01:54	13.2	28.4	(37.9)	-0.7	(-20.1)	20.4	(24.8)	760	FN	09/17	17:00	900	----	----	----	(-201)	09/16	05:18	360	1215	N14W07
55	2000/10/03	17:06	21.0	17.7	(15.8)	-8.3	(-4.9)	13.9	(7.0)	409	NS	10/03	01:05	496	10/04	14:00	-94	(-79)	09/29	21:50	274	173	S22E53[k]
56	2000/10/13	18:24	22.5	12.9	(19.5)	-12.3	(-13.3)	12.3	(16.6)	395	NS	10/12	22:36	590	10/14	15:00	-107	(-71)	10/09	23:50	360	798	N01W14
57	2000/10/28	23:18	25.0	18.0	(15.2)	-15.7	(-9.1)	15.7	(9.1)	375	FS	10/28	09:35	467	10/29	04:00	-127	(-19)	10/25	08:26	360	770	N17W70
58	2000/11/06	23:06	19.0	15.2	(14.4)	-11.4	(-9.6)	11.4	(9.6)	535	SN	11/06	09:20	629	11/07	02:00	-152	(-159)	11/03	18:26	360	291	N02W02
59	2001/03/19	23:18	19.0	19.5	(18.7)	-17.2	(-10.8)	17.2	(10.8)	420	FS	03/19	11:30	472	03/20	14:00	-149	(-105)	03/16	03:50	281	271	N11W09
60[b]	2001/03/20	17:47	45.0	18.3	(19.5)	-13.2	(-17.2)	15.4	(17.2)	340	SN	-----	-----	----	----	----	----	(----)	--/-- --:--		---	----	------
61	2001/04/04	20:54	11.5	15.3	(19.3)	-3.6	(-2.9)	5.1	(6.9)	740	NS	04/04	14:40	922	04/05	08:00	-50	(-20)	04/02	22:06	244	2505	N19W73
62	2001/04/12	07:54	10.0	19.6	(33.7)	7.5	(-13.9)	11.1	(13.9)	670	FN	04/11	16:19	811	----	----	----	(-271)	04/10	05:30	360	2411	S23W09
63	2001/04/22	00:54	24.5	15.2	(10.1)	-11.7	(0.2)	11.7	(8.1)	395	FS	04/21	15:30	414	04/22	16:00	-102	(-11)	04/19	12:30	129	392	N20W20
64	2001/04/29	01:54	11.0	10.3	(19.4)	-5.2	(-7.2)	5.3	(9.7)	640	SN	04/28	05:02	820	04/29	03:00	-47	(-33)	04/26	12:30	360	1006	N17W00
65	2001/05/28	11:54	22.5	10.0	(14.0)	-8.1	(-6.3)	8.1	(6.7)	475	SN	05/27	14:52	723	05/28	19:00	-42	(10)	05/24	20:26	112	387	N07E29
66	2001/07/10	17:17	39.5	9.6	(5.2)	-6.8	(-4.9)	6.8	(4.9)	360	SN	-----	-----	----	07/11	01:00	-38	(-21)	07/09	02:30	77	213	S08E20
67[c]	2001/10/31	21:18	37.0	13.5	(11.1)	-12.3	(-6.9)	12.3	(6.9)	340	SN	10/31	13:47	407	11/01	11:00	-106	(-29)	10/27	08:05	---	----	N06W02
68	2001/11/24	15:48	21.5	22.0	(49.4)	4.3	(-24.8)	15.2	(32.0)	730	FN	11/24	05:50	1072	----	----	----	(-221)	11/22	23:30	360	1437	S17W36
69	2002/03/19	22:54	16.5	18.7	(20.2)	-5.3	(-11.0)	9.8	(16.5)	370	NS	03/18	12:33	504	03/20	13:00	-18	(-37)	03/15	23:06	360	957	S08W03
70	2002/03/24	03:48	43.0	20.0	(11.5)	-8.7	(-6.5)	15.1	(6.5)	440	SN	03/23	11:24	544	03/24	10:00	-100	(-86)	03/20	17:54	360	603	S17W20
71	2002/04/18	04:18	22.0	13.8	(30.5)	-11.2	(-19.6)	11.2	(19.6)	480	SN	04/17	10:47	505	04/18	08:00	-127	(-98)	04/15	03:50	360	720	S15W01
72[d]	2002/04/20	11:48	29.0	8.5	(22.4)	-7.9	(-13.4)	7.9	(13.4)	510	SN	04/19	08:00	809	04/20	19:00	-102	(-149)	04/17	08:26	360	1240	S14W34
73	2002/05/19	03:54	19.5	20.5	(18.7)	-10.0	(-5.8)	10.0	(8.8)	458	SN	05/18	19:51	578	05/19	07:00	-58	(-8)	05/16	00:50	360	600	S22E14
74	2002/05/23	23:24	17.5	11.3	(37.7)	-2.2	(-9.3)	3.1	(15.4)	730	SN	05/23	10:17	575	----	----	----	(-109)	05/22	03:50	360	1557	S30W34
75	2002/08/01	11:54	10.7	14.2	(15.0)	-12.8	(-11.7)	12.8	(11.7)	454	SN	08/01	05:10	532	08/01	14:00	-51	(-20)	07/29	12:07	360	562	S10W10
76	2002/08/02	07:24	13.7	12.9	(15.4)	-8.4	(-12.4)	8.4	(12.4)	493	NS	08/01	23:05	505	08/02	23:00	-69	(-102)	07/29	23:30	130	360	N12W16
77	2002/09/03	00:18	18.5	16.4	(6.7)	0.5	(1.4)	13.9	(5.2)	360	FN	-----	-----	----	----	----	----	(----)	comment #4		---	----	------
78	2002/09/30	22:36	13.3	25.2	(25.6)	-14.6	(-9.1)	22.3	(18.8)	381	NS	09/30	07:13	345	10/01	17:00	-176	(-49)	09/28	11:06	79	678	N12E33
79	2003/03/20	11:54	10.5	12.0	(12.6)	-7.0	(-2.1)	7.0	(4.9)	650	FS	03/20	04:20	800	03/20	20:00	-64	(-20)	03/18	12:30	209	1601	S15W46
80	2003/06/17	17:47	14.5	19.3	(10.1)	-16.3	(-9.1)	16.3	(9.1)	490	NS	-----	-----	----	06/18	10:00	-141	(-81)	06/14	01:54	360	875	S17W15
81	2003/07/10	19:54	13.0	12.9	(8.2)	-11.8	(-2.7)	11.8	(2.9)	350	FS	-----	-----	----	07/11	11:00	-55	(10)	LASCO GAP		---	----	------
82	2003/08/18	11:36	16.8	16.0	(36.7)	-14.6	(-14.3)	14.6	(14.3)	498	FS	08/17	13:40	500	08/18	16:00	-148	(-125)	08/14	20:06	360	378	S10E02
83	2003/10/29	08:00	20.0	38.7	(28.1)	-13.8	(-12.0)	13.8	(12.0)	1500	NS	10/29	06:00	1850	10/30	01:00	-353	(-151)	10/28	11:30	360	2459	S16E08
84	2003/10/31	02:00	11.0	24.5	(31.7)	2.0	(-27.6)	18.2	(27.6)	1350	FN	10/30	16:20	1710	----	----	----	(-383)	10/29	20:54	360	2029	S15W02
85	2003/11/20	12:00	17.0	52.1	(30.9)	-45.1	(-5.5)	45.1	(13.8)	700	FS	11/20	07:28	650	11/20	21:00	-422	(-68)	11/18	08:50	360	1660	N00E18
86	2004/04/04	02:48	36	18.6	(10.3)	-2.3	(-8.7)	15.6	(8.7)	434	FN	04/03	08:49	400	----	----	----	(-112)	LASCO GAP		---	----	------
87	2004/07/22	15:24	7.8	18.7	(13.0)	-14.8	(-3.5)	14.8	(5.7)	500	NS	07/22	09:45	460	07/23	03:00	-101	(2)	07/20	13:31	360	710	N11E34
88	2004/07/24	12:28	24.5	22.6	(21.4)	-20.3	(-1.6)	20.3	(13.6)	573	NS	07/24	06:00	580	07/25	12:00	-148	(----)	07/22	08:30	195	899	N04E10
89	2004/08/29	18:42	26	14.8	(8.9)	-14.5	(-2.8)	14.5	(5.2)	393	NS	08/29	09:20	450	08/30	23:00	-126	(----)	08/26	12:30	206	184	S09W34
90	2004/11/08	03:24	13.3	43.2	(46.3)	-40.2	(-44.0)	40.2	(44.0)	674	SN	11/08	17:59	440	----	----	----	(-373)	11/06	02:06	214	1111	N07E00
91[e]	2004/11/09	20:54	6.5	40.5	(30.7)	-13.8	(-20.9)	38.1	(20.9)	800	NS	11/09	09:05	662	----	----	----	(-156)	11/07	16:54	360	1759	N09W17
92[e]	2004/11/10	03:36	7.5	30.2	(----)	-26.5	(----)	26.5	(----)	697	FS	11/09	18:24	775	11/10	10:00	-289	(----)	11/08	03:54	360	462	N08W28
93[f]	2005/05/15	05:42	16.5	55.7	(39.9)	-35.8	(-8.7)	35.8	(8.7)	843	SN	05/15	02:19	993	05/15	09:00	-263	(----)	05/13	17:12	360	1689	N12E11
94	2005/05/20	07:18	22	16.4	(10.3)	-8.1	(-10.0)	15.3	(10.0)	457	FN	05/20	04:00	475	----	----	----	(-103)	05/17	03:26	65	449	S15W00
95	2005/06/12	15:36	15.5	17.5	(24.9)	-16.4	(-15.9)	16.4	(15.9)	480	FS	06/12	06:59	369	06/13	01:00	-106	(-9)	06/09	14:36	260	377	N09E16
96	2005/06/15	05:48	26	12.7	(12.1)	-5.3	(-3.1)	10.5	(7.5)	486	SN	-----	-----	----	06/15	13:00	-54	(-30)	06/12	02:36	277	590	N06W24
97	2005/07/17	15:18	12.5	14.5	(14.0)	-6.8	(-7.5)	7	(11.7)	428	NS	07/17	01:23	520	07/18	07:00	-76	(-46)	Comment #2		---	----	S15W29
98	2005/10/31	02:54	17.5	12.7	(6.8)	-7.8	(-2.3)	10.7	(3.6)	373	NS	-----	-----	----	10/31	20:00	-75	(-9)	Comment #2		---	----	S21E03
99	2005/12/31	14:48	20	11.4	(5.7)	-2.9	(-3.7)	9.3	(3.7)	469	SN	12/31	01:00	575	12/31	19:00	-31	(-10)	12/28	03:30	139	381	S09E38

[a]MC boundary may be at 19:00, [b] MC merged with preceeding MC forming a complex event. Possible eruption on 3/18 at 5:26 from S04W28, but the CME is not measurable., [c] CME is too faint to be measured. Solar source is a C6.3 flare at AR 9678 (N06W02) on 10/27 08:05. [d] MC boundary may be earlier, [e]MCs seem to have merged, the second shock seems to have crossed the first MC. Note that this is a super active region, so complex IP structure is expected.

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[f]Proton temperature is low only at 11:00 UT on 2005 May 15, which may be the MC boundary; then the cloud is FN and the storm is due to the sheath portion
[g]For non-shock events, a 12-h interval preceding MC onset taken as sheath.
[h] Based on SOHO/EIT image; the filament disapperance is from N47W03
[i]Alternate candidate is the CME on 02/10 from N30E04
[j] Possible merger with a preceding CME at 20:06 from S25W16 (speed 600 km/s)
[k] Confidence in the CME association is low
Comment #1 Unable to identify the CME due to the previous event
Comment #2 Unable to identify a clear CME but source is identified
Comment #3 Multiple CME candidates
Comment #4 No CME identification possible.

Explanation:
column 1: Identification number for MCs
column 2: Starting Date of Magnetic Cloud (MC), yyyy/mm/dd format
column 3: Starting time of MC, hh:mm format
column 4: Duration of MC in hours
column 5: Maximum value of magnetic field (Bt) during the MC interval in nT
column 6: Maximum value of magnetic field (Bt) during the Sheath interval in nT
column 7: Z-component of the magnetic field in the MC interval (minimum) (Bz) in nT
column 8: Z-component of the magnetic field in the Sheath interval (minimum) (Bz) in nT
column 9: Maximum absolute value of Bz within MC interval in nT
column 10: Maximum absolute value of Bz within Sheath interval in nT
column 11: MC speed in km/s
column 12: Type of MC: south-north (SN), north-south (NS), fully south (FS) and fully north (FN)
column 13: Starting date of the IP shock, mm/dd format
column 14: Starting time of the IP shock, hh:mm format
column 15: Speed of the IP shock in km/s
column 16: Peak date of the Dst index, mm/dd format
column 17: Peak time of the Dst index, hh:mm format
column 18: Dst index during the MC interval in nT
column 19: Dst index during the Sheath interval in nT
column 20: Coronal mass ejection (CME) date, mm/dd format
column 21: CME time, hh:mm format
column 22: CME width (AW) in degrees
column 23: CME speed (V) in km/s
column 24: Heliographic location of the solar source

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Figure

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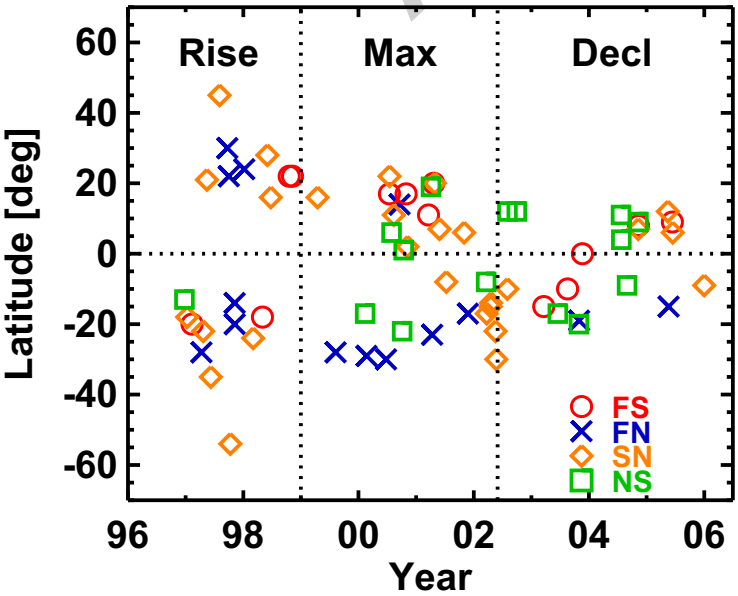
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