

JANUARY 2008 NUMBER 761 - Part II



# Solar-Geophysical Data comprehensive reports

Data for July 2007 and Miscellaneous  
Explanation of Data Reports Issued as Number 515 (Supplement) July 1987

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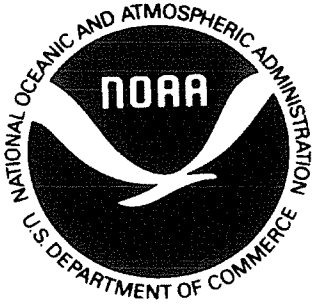
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NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE,  
DATA, AND INFORMATION SERVICE

NATIONAL GEOPHYSICAL  
DATA CENTER

BOULDER,  
COLORADO



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JANUARY 2008 NUMBER 761 - Part II

# **Solar-Geophysical Data comprehensive reports**

Data for July 2007

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**NATIONAL GEOPHYSICAL DATA CENTER**

Christopher G. Fox, Director

Boulder, Colorado

# SOLAR-GEOPHYSICAL DATA

Number 761

(Issued in Two Parts)

Editor: Edward H. Erwin

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Solar-Terrestrial Physics Division

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**INCLUDING:**  
**ACE SOLAR WIND, INTERPLANETARY MAGNETIC FIELD AND PARTICLES**  
**-- MONTHLY PLOTS**

## DETAILED INDEX OF OBSERVATIONS PUBLISHED IN SOLAR-GEOPHYSICAL DATA

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A.6f	Active Prominences and Filaments	759B 17	760B 19	761B 19					
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A.8aa	2800 MHz- Solar Flux (Penticton)	754A 24	755A 23	756A 24	757A 24	758A 23	759A 24	760A 23	761A 24
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The entry "748A 48" under Oct, for example, means the sunspot drawings for Oct appear in SOLAR-GEOPHYSICAL DATA No 748, Part I, and that they begin on page 48, "A" denotes Part I and "B", Part II. Blanks indicate data not yet received and dashes mark unavailable data.

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H $\alpha$  SOLAR FLARES

5  
Jul 07

JULY 2007

Grp #	Sta	Start Day (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/		Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks	
							USAF Region	CMP Mo Day						Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)		
		08 0318		0404	No Flare Patrol													
0003	LEAR	08 0402	0432	0443	S08	E77	10963	07	13.9	41	SF	3	E		57		EF	
0004	LEAR	08 0448	0449	0455	S08	E77	10963	07	14.0	7	SF	3	E		22		EF	
0005	LEAR	08 0456	0500	0509	S07	E79	10963	07	14.1	13	SF	3	E		16		EF	
0006	LEAR	08 0511	0547	0603	S07	E77	10963	07	14.0	52	SF	3	E		26		EF	
0007	LEAR	08 0620	0621	0626	S06	E75	10963	07	13.9	6	SF	3	E		12		F	
		08 0946		0947	No Flare Patrol													
		08 0956		1004	No Flare Patrol													
		08 1012		1014	No Flare Patrol													
		08 1017		1018	No Flare Patrol													
		08 1031		1041	No Flare Patrol													
		08 1044		1048	No Flare Patrol													
		08 1050		1051	No Flare Patrol													
		08 1118		1119	No Flare Patrol													
		08 1200		1201	No Flare Patrol													
		08 1417		1533	No Flare Patrol													
		08 1621		1648	No Flare Patrol													
		08 1711		1730	No Flare Patrol													
0008	HOLL	08 1747	1748	1752	S07	E71	10963	07	14.0	5	SF	3	E		11			
0009	HOLL	08 1753	1757	1807	S07	E71	10963	07	14.1	14	SF	3	E		44			
0010	HOLL	08 1814	1820	1827	S08	E74	10963	07	14.3	13	SF	3	E		30		E	
0011	HOLL	08 1951	1951	1956	S07	E70	10963	07	14.1	5	SF	3	E		14			
0012	HOLL	08 2330	2336	2342	S07	E68	10963	07	14.1	12	SF	3	E		14			
		08 2346		2400	No Flare Patrol													
		09 0000		0328	No Flare Patrol													
0013	LEAR	09 0418	0437	0455	S07	E62	10963	07	13.8	37	SN	3	E		68		F	
0014	SVTO	09 0435	0437	0441	S04	E74	10963	07	14.7	6	SF	3	E		46			
0015	LEAR	09 0456	0542	0629D	S07	E62	10963	07	13.8	93D	SF	3	E		70		FH	
0016	SVTO	09 0537	0538	0541	S04	E71	10963	07	14.5	4	SF	3	E		28			
0017	SVTO	09 1521	1524	1528	N00	E63	10963	07	14.3	7	SF	3	E		10			
0018		09 1619	1620	1626	S04	E59	10963	07	14.1	7	SF				28		E	
	HOLL	09 1619	1620	1625	S07	E59	10963	07	14.1	6	SF	3	E		24		E	
	SVTO	09 1619	1620	1627	S01	E59	10963	07	14.1	8	SF	3	E		31			
0019	SVTO	09 1712	1715	1723	S02	E59	10963	07	14.1	11	SF	3	E		26			
0020	HOLL	09 1805	1807	1809	S07	E58	10963	07	14.1	4	SF	3	E		10		E	
0021	HOLL	09 1907	1909	1921	S07	E56	10963	07	14.0	14	SF	3	E		24		E	
0022	HOLL	09 1947	1947	1952	S07	E57	10963	07	14.1	5	SF	3	E		12		E	
0023	HOLL	09 2000	2000	2009	S07	E57	10963	07	14.1	9	SF	3	E		10		E	
0024	HOLL	09 2035	2039	2044	S07	E54	10963	07	13.9	9	SF	3	E		15		FH	
0025	HOLL	09 2109	2117	2125	S07	E54	10963	07	13.9	16	SF	3	E		52		FH	
		09 2245		2350	No Flare Patrol													
0026	LEAR	10 0020	0031	0043	S07	E54	10963	07	14.0	23	1F	3	E		112			







8  
Jul 07

H $\alpha$  SOLAR FLARES

JULY 2007

Grp #	Sta	Start Day (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/		Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks
							USAF Region	CMP Mo Day						Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
		31 0253		0455	No	Flare	Patrol										
		31 0548		0622	No	Flare	Patrol										
		31 1648		1653	No	Flare	Patrol										
		31 1657		1714	No	Flare	Patrol										
		31 1727		1747	No	Flare	Patrol										
		31 1913		1928	No	Flare	Patrol										
		31 2306		2316	No	Flare	Patrol										
		31 2325		2400	No	Flare	Patrol										

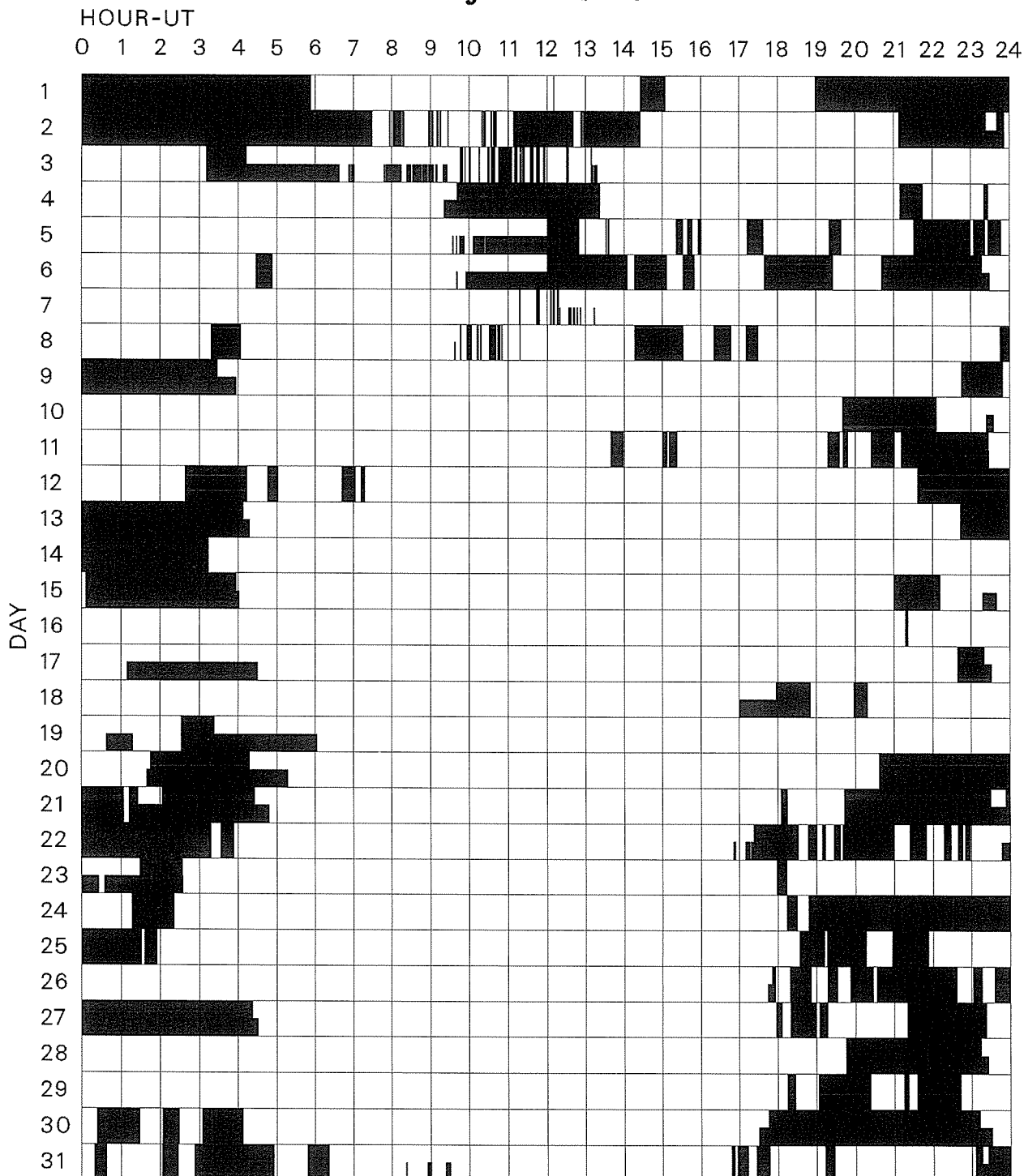
"Remarks"

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A = Eruptive prominence whose base is less than 90 degrees from central meridian.<br/>         B = Probably the end of a more important flare.<br/>         C = Invisible 10 minutes before.<br/>         D = Brilliant point.<br/>         E = Two or more brilliant points.<br/>         F = Several eruptive centers.<br/>         G = No visible spots in the neighborhood.<br/>         H = Flare accompanied by high-speed dark filament.<br/>         I = Active region very extended.<br/>         J = Distinct variations of plage intensity before or after the flare.<br/>         K = Several intensity maxima.<br/>         L = Existing filaments show signs of sudden activity.<br/>         M = White-light flare.<br/>         N = Continuous spectrum shows effects of polarization.</p> | <p>O = Observations have been made in the H and K lines of Ca II.<br/>         P = Flare shows Helium D3 in emission.<br/>         Q = Flare shows Balmer continuum in emission.<br/>         R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.<br/>         S = Brightness follows disappearance of filament in same position.<br/>         T = Region active all day.<br/>         U = Two bright branches, parallel or converging.<br/>         V = Occurrence of an explosive phase; important, expansion within roughly 1 minute that often includes a significant intensity increase.<br/>         W = Great increase in area after time of maximum intensity.<br/>         X = Unusually wide H-alpha line.<br/>         Y = System of loop-type prominences.<br/>         Z = Major sunspot umbra covered by flare.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Observation Type: C=Cinematographic, E=Electronic, P=Photographic, V=Visual

# INTERVALS OF NO FLARE PATROL OBSERVATION FOR PRECEDING SOLAR FLARE TABLE

## JULY 2007



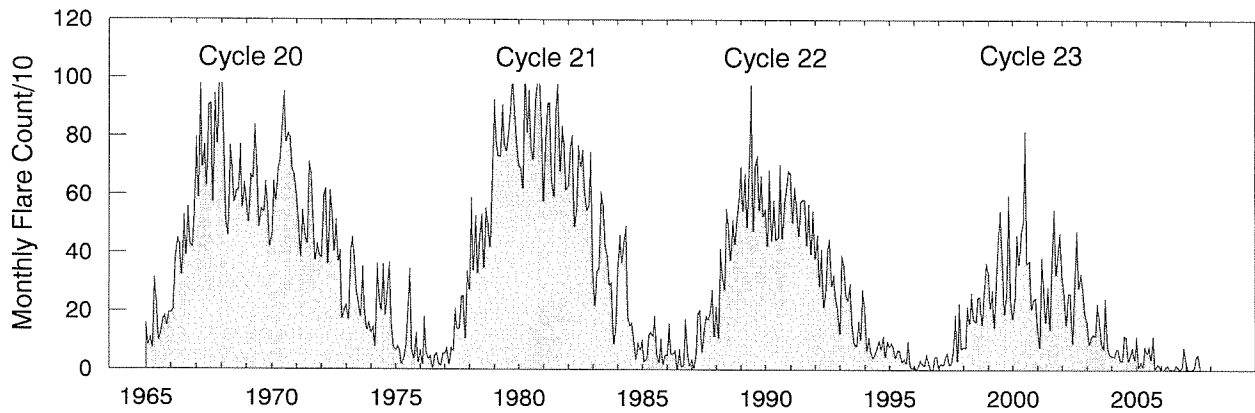
Times of no flare patrol, shown here as shaded areas, combine reports from the stations listed below. Portions of a panel completely shaded mark dates and times of no patrol of any kind (neither visual or cinematographic): portions of a panel with only the bottom half shaded mark times of only visual patrol.

Holloman  
Kharkov

Learmonth  
Kanzelhoehe

San Vito

## Monthly Counts of Grouped Solar Flares Jan 1965 - Jul 2007



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1965	158	85	110	74	315	231	99	127	173	184	150	193	1899
1966	194	205	390	449	429	323	528	391	558	432	417	543	4859
1967	796	589	1009	694	771	629	907	911	573	946	775	1109	9709
1968	1037	773	519	460	768	697	573	611	616	772	556	640	8022
1969	581	504	669	655	839	694	489	551	540	643	566	422	7153
1970	466	646	578	688	722	836	954	780	811	797	687	667	8632
1971	598	505	387	546	461	430	713	673	518	375	431	394	6031
1972	384	599	621	361	614	541	404	515	371	408	175	210	5203
1973	221	171	410	453	388	270	232	182	353	201	136	163	3180
1974	127	148	79	364	255	204	360	187	270	366	153	81	2594
1975	68	82	69	19	42	85	196	346	68	38	127	25	1165
1976	69	18	180	60	38	48	6	47	57	23	13	55	614
1977	54	77	18	76	64	210	140	140	250	252	107	336	1724
1978	274	588	338	526	330	460	533	346	554	499	418	648	5514
1979	926	781	731	731	907	772	750	821	901	1018	888	786	10012
1980	703	689	621	1092	811	956	763	720	924	988	1027	838	10132
1981	578	782	914	915	658	592	893	982	680	836	773	615	9218
1982	631	766	803	490	553	769	696	753	615	544	564	748	7932
1983	332	220	337	346	609	561	427	389	289	298	88	152	4048
1984	353	461	366	440	492	185	151	161	95	36	92	69	2901
1985	104	29	38	119	129	116	185	53	25	108	19	50	975
1986	51	158	54	56	68	3	71	12	14	174	56	13	730
1987	36	7	52	192	205	61	132	185	172	198	273	114	1627
1988	217	109	413	328	274	551	502	375	513	429	518	587	4816
1989	695	544	672	488	691	977	474	699	733	547	665	526	7711
1990	550	424	684	442	580	445	454	703	449	574	623	682	6610
1991	672	503	625	570	458	574	582	581	425	565	396	544	6495
1992	380	462	287	412	214	271	413	447	287	325	248	206	3952
1993	123	392	357	262	237	296	154	92	82	167	104	275	2541
1994	217	67	111	60	40	56	81	101	72	117	45	99	1066
1995	82	95	77	42	69	66	29	37	23	99	14	6	639
1996	14	3	15	34	21	16	54	31	3	0	44	45	280
1997	8	22	18	43	59	18	26	75	188	31	228	74	790
1998	78	76	216	161	264	177	164	248	249	155	268	367	2423
1999	330	212	271	145	330	466	544	368	192	264	598	243	3963
2000	175	248	462	362	473	505	818	364	372	208	241	246	4474
2001	147	77	383	284	164	282	137	376	549	325	405	468	3597
2002	318	261	155	263	259	91	318	474	280	329	279	196	3223
2003	164	87	112	122	117	226	181	94	73	245	78	53	1552
2004	49	47	71	72	32	33	118	112	30	54	76	34	728
2005	114	10	28	11	82	56	81	35	114	4	20	16	571
2006	4	0	11	16	4	2	1	17	11	3	12	78	159
2007	29	2	1	2	9	47	53						143

The term 'grouped' means observations of the same event by different sites were lumped together and counted as one.

S O L A R R A D I O E M I S S I O N  
Outstanding Occurrences

11  
Jul 07

J U L Y                      2 0 0 7

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
							Peak (10 -22 W/m <sup>2</sup> Hz)	Mean		
08	33	UPIC	2 S/F	0737.0	0737.5	1.0				
	33	UPIC	2 S/F	0843.5	0844.5	1.5				
	33	UPIC	3 S	1643.0	1643.2	0.5				
	245	SGMR	8 S	2104.0	2104.0		U	480.0		QL=4 ST=2 TYP=3
	245	PALE	8 S	2105.0	2105.0		U	410.0		QL=4 ST=2 TYP=3
10	┌	245	SGMR	43 NS	1348.0	1349.0	156.0	120.0		QL=4 ST=2 TYP=1
		245	SGMR	43 NS	1348.0	1349.0	612.0	120.0		QL=4 ST=1 TYP=1
	┌	245	PALE	43 NS	1811.0	1811.0	60.0	140.0		QL=4 ST=2 TYP=1
		245	PALE	43 NS	1811.0	1811.0	349.0	140.0		QL=4 ST=1 TYP=1
		2800	HIRA	1 S	0059.0	0100.0	2.0	10.0		
		2800	HIRA	1 S	0332.0	0333.0	1.0	10.0		
		245	SGMR	8 S	1216.0	1216.0		U	120.0	QL=4 ST=2 TYP=3
		245	SGMR	8 S	1259.0	1259.0	1.0	140.0		QL=4 ST=2 TYP=3
	┌	245	SGMR	8 S	1325.0	1325.0		U	130.0	QL=4 ST=2 TYP=3
		245	SVTO	8 S	1325.0	1325.0		U	110.0	QL=4 ST=2 TYP=3
		245	SGMR	8 S	1413.0	1413.0		U	100.0	QL=4 ST=2 TYP=3
		245	SGMR	8 S	1541.0	1541.0		U	110.0	QL=4 ST=1 TYP=3
		245	SGMR	8 S	1801.0	1801.0		U	130.0	QL=4 ST=2 TYP=3
		245	PALE	8 S	1805.0	1805.0		U	110.0	QL=4 ST=2 TYP=3
	11	┌	245	LEAR	8 S	0535.0	0535.0		U	110.0
245			SVTO	8 S	0535.0	0535.0		U	100.0	QL=4 ST=2 TYP=3
19		33	UPIC	3 S	0803.0	0803.5	1.0			

Reports are received routinely from the following observatories:

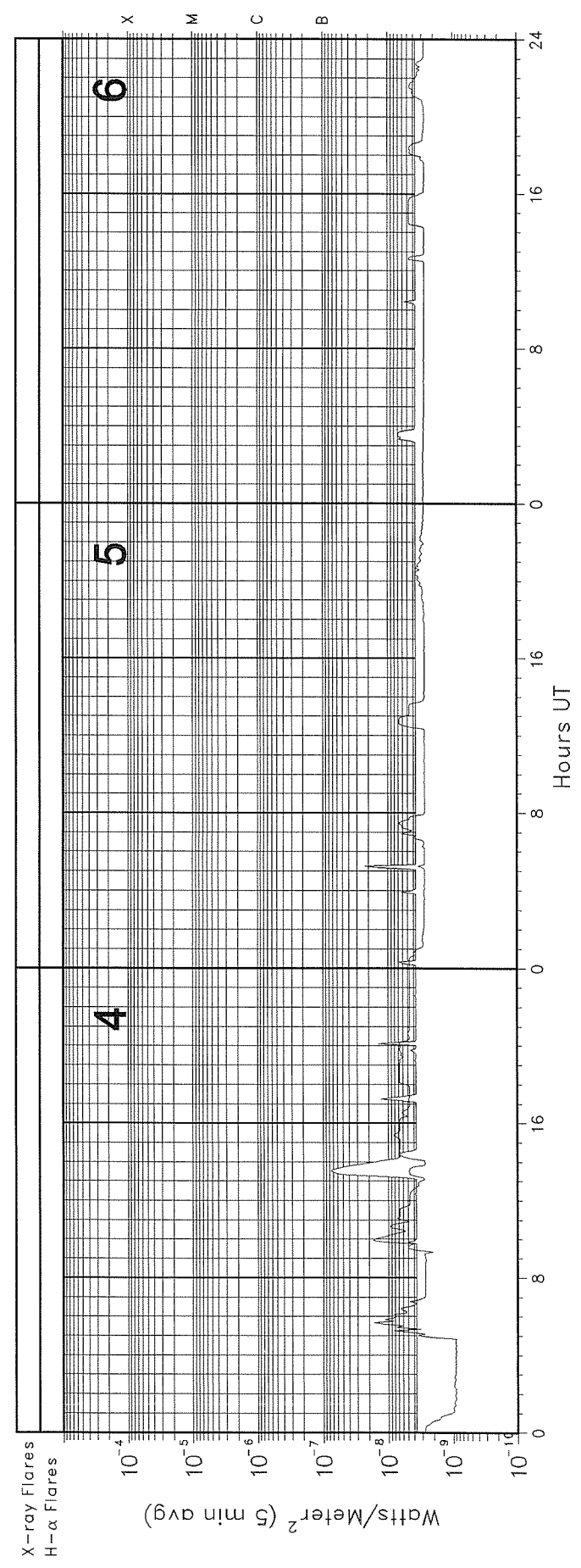
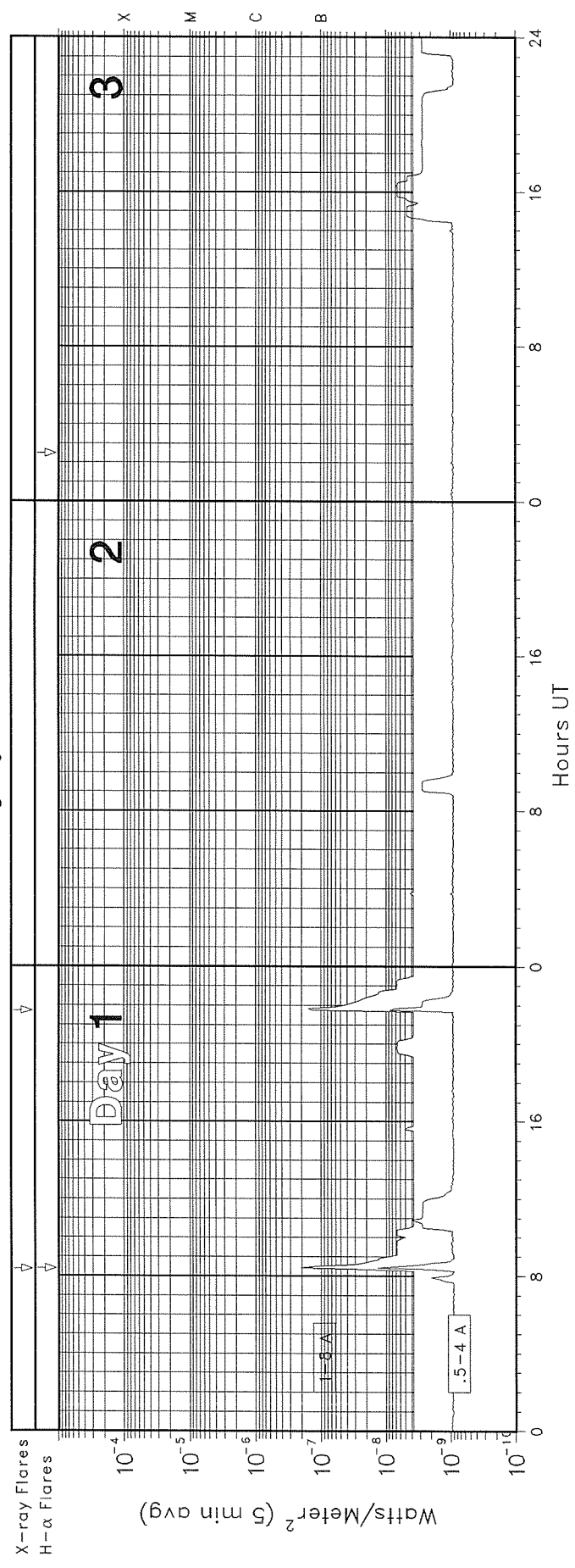
CUBA = Havana	LEAR = Learmonth	SGMR = Sagamore Hill
GORK = Gorky	PEKG = Peking	SVTO = San Vito
HIRA = Hiraiso	PALE = Palehua	TORN = Torun
IZMI = IZMIRAN	PENT = Penticton	UPIC = Upice

Explanation of Type Code:

1 Simple 1	7 Minor +	24 Rise	30 Post Burst Increase A	43 Onset of Noise Storm
2 Simple 1F	8 Spike	25 Rise A	31 Post Burst Decrease	44 Noise Storm in Progress
3 Simple 2	20 Simple 3	26 Fall	33 Absorption	45 Complex
4 Simple 2F	21 Simple 3A	27 Rise and Fall	40 Fluctuation	46 Complex F
5 Simple	22 Simple 3F	28 Precursor	41 Group of Bursts	47 Great Burst
6 Minor	23 Simple 3AF	29 Post Burst Increase	42 Series of Bursts	48 Major
1A Simple 1A		4A Simple 2AF	24PF Post Rise F	27F Rise and Fall F
3A Simple 2A		4O Rise Only	16A Fall A	27AF Rise and Fall AF
21A Simple 3A GRF		4OF Rise Only F	26O Fall Only	31A Post Burst Decrease A
2A Simple 1AF		4P Post Rise	26F Fall F	32A Absorption A

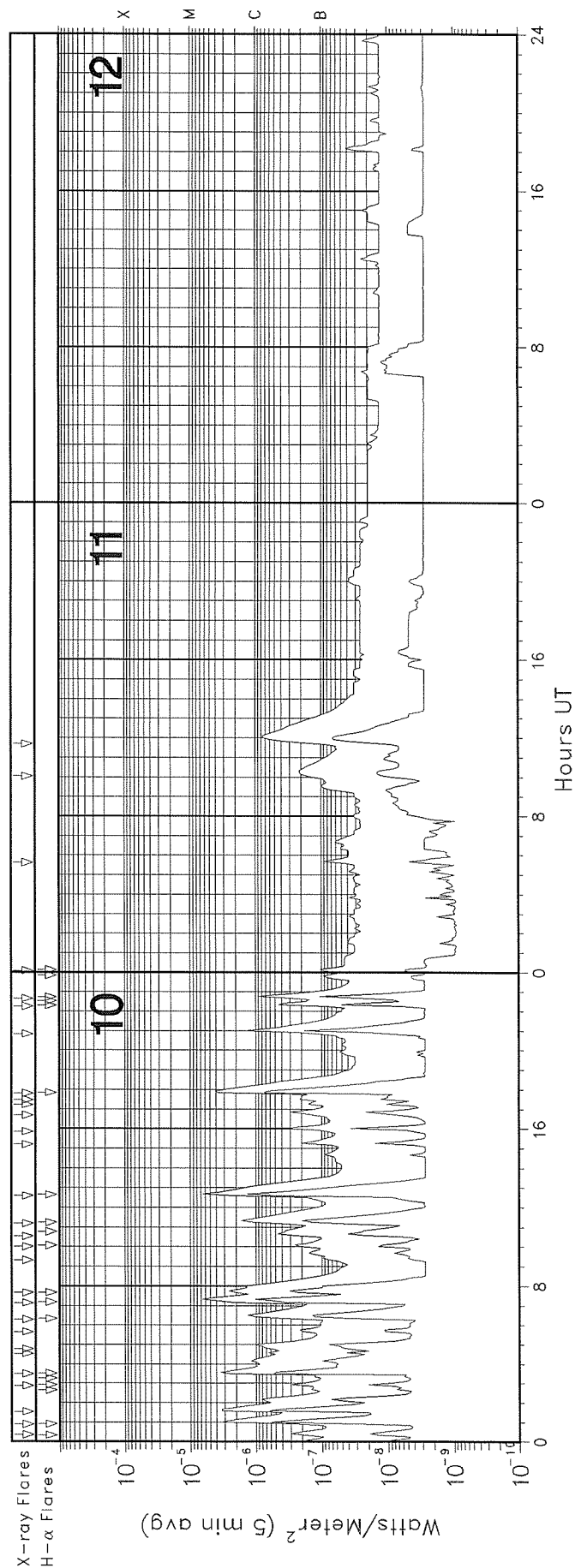
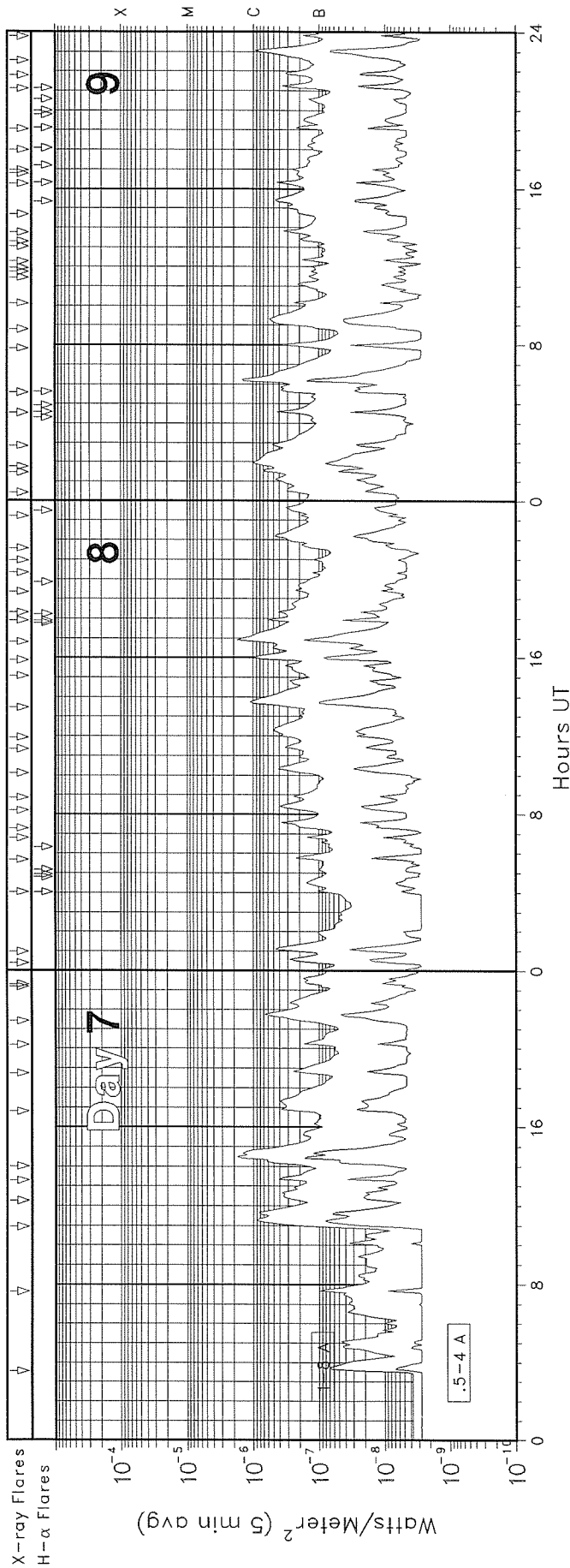
RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Penticton, Canada 2800 MHz; and Hiraiso, Japan 500 and 200 MHz.

# GOES X-RAY DETECTOR July 2007

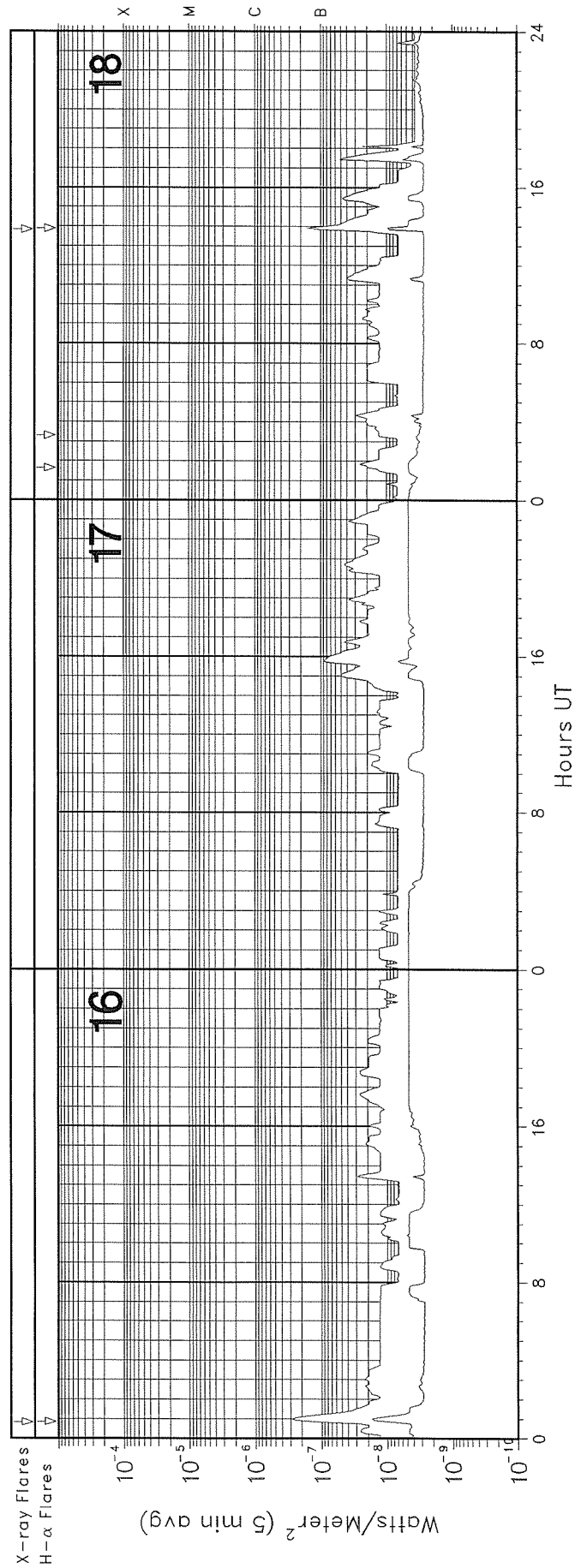
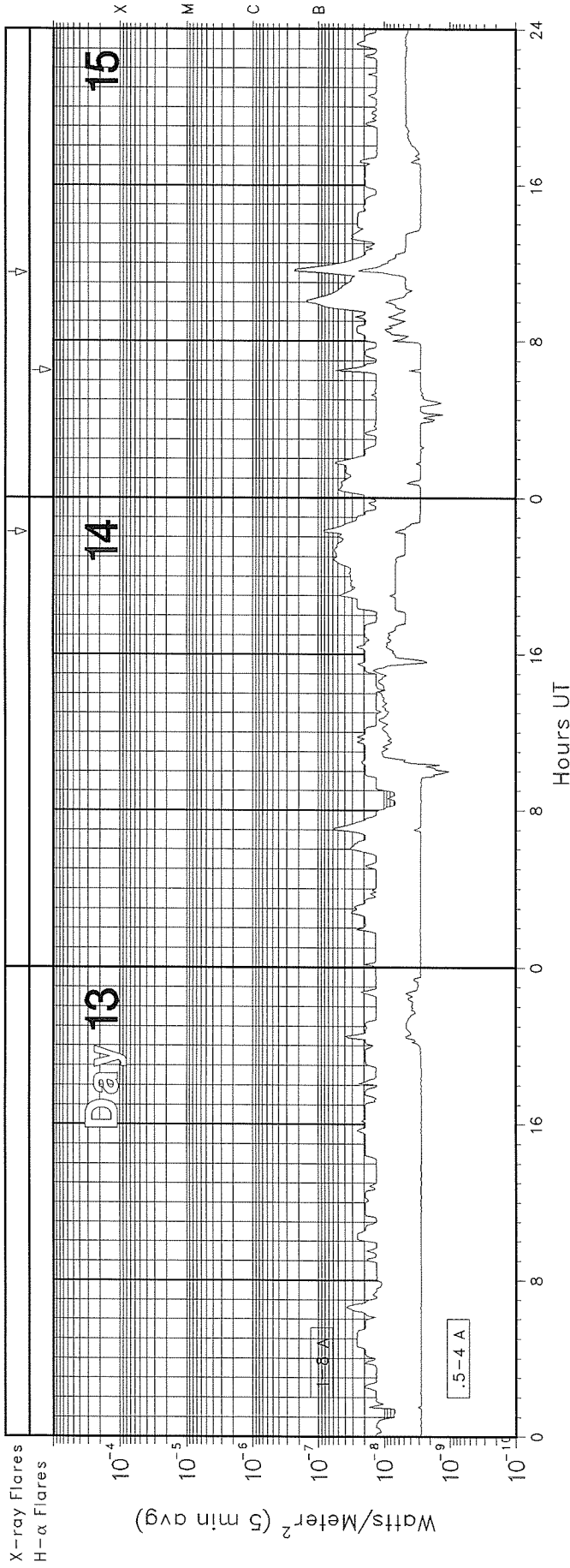


# GOES X-RAY DETECTOR

## July 2007



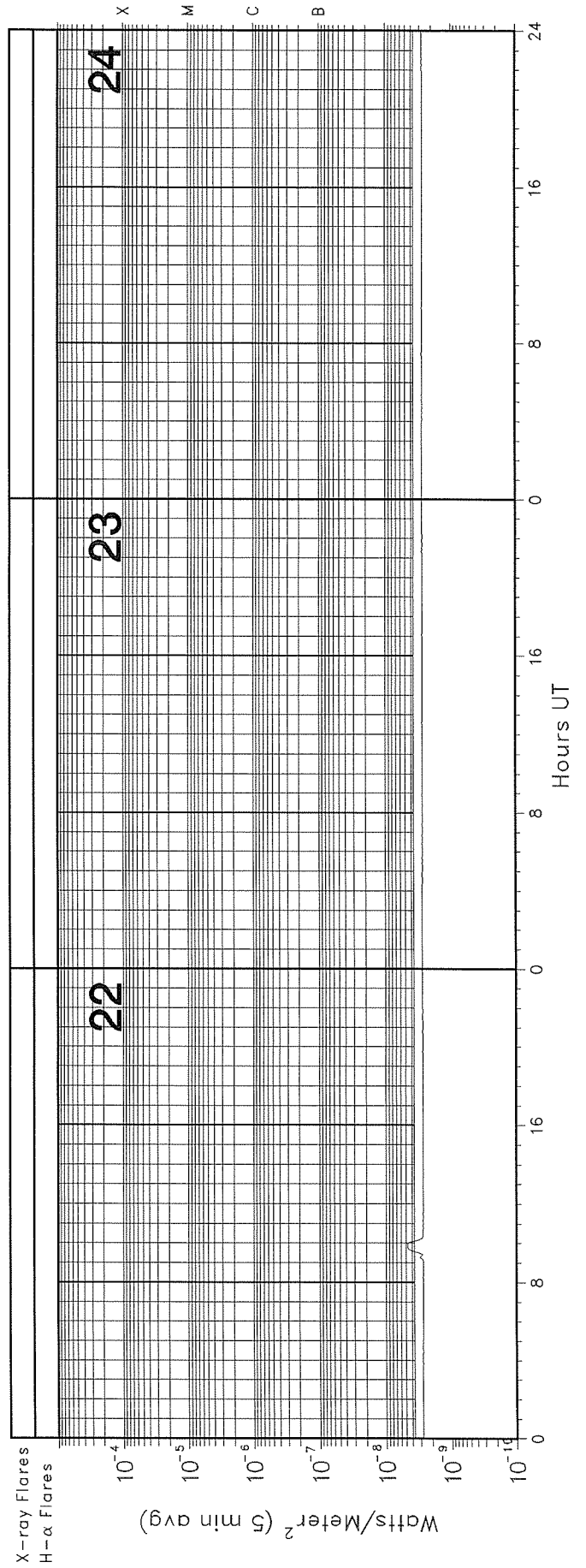
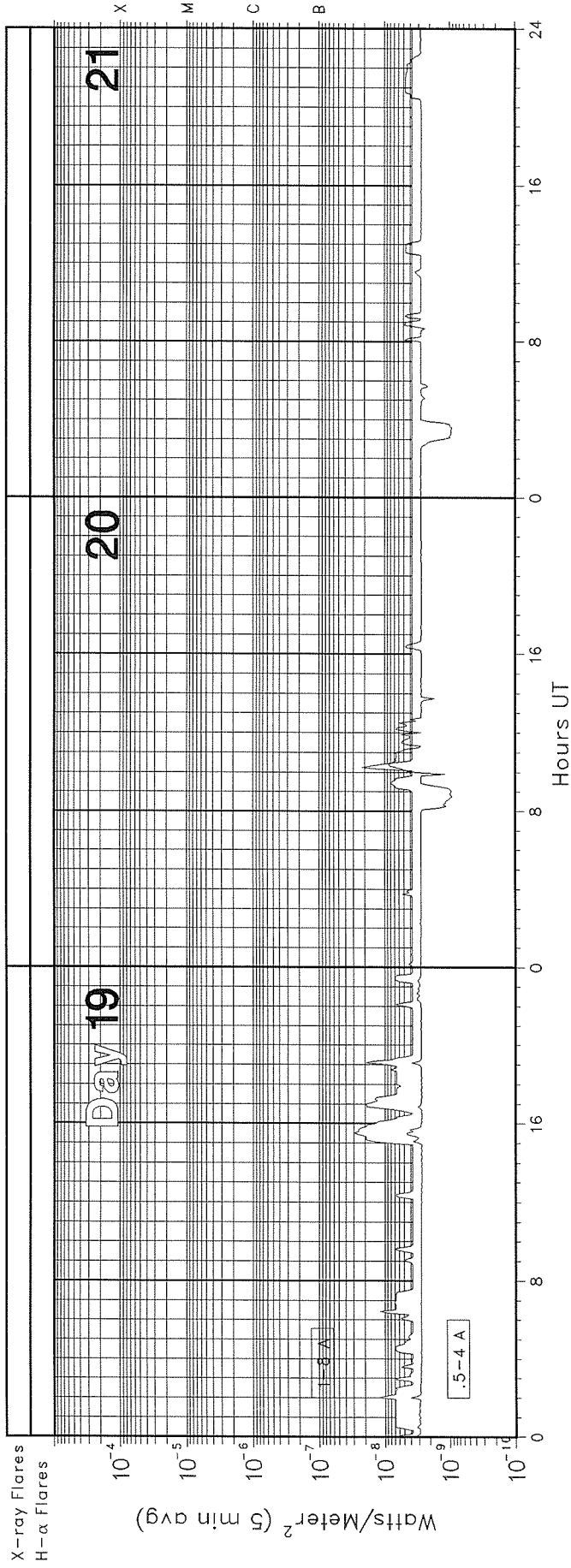
# GOES X-RAY DETECTOR July 2007





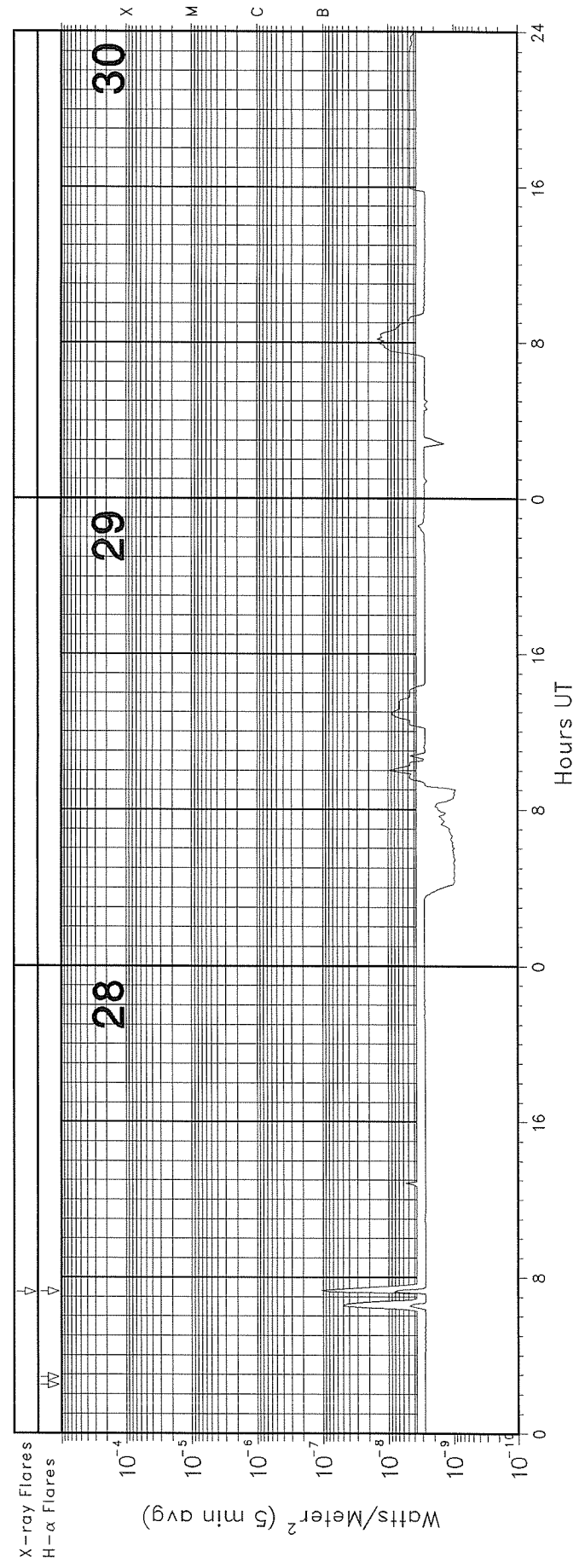
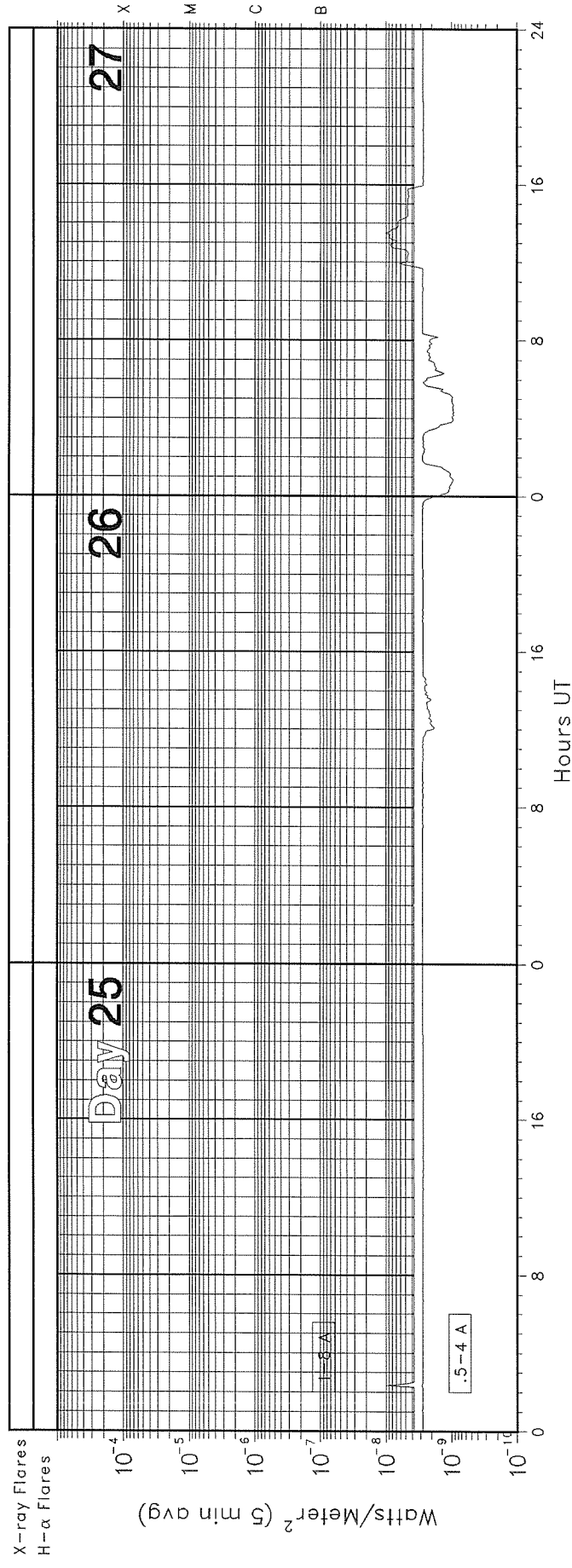
# GOES X-RAY DETECTOR

July 2007



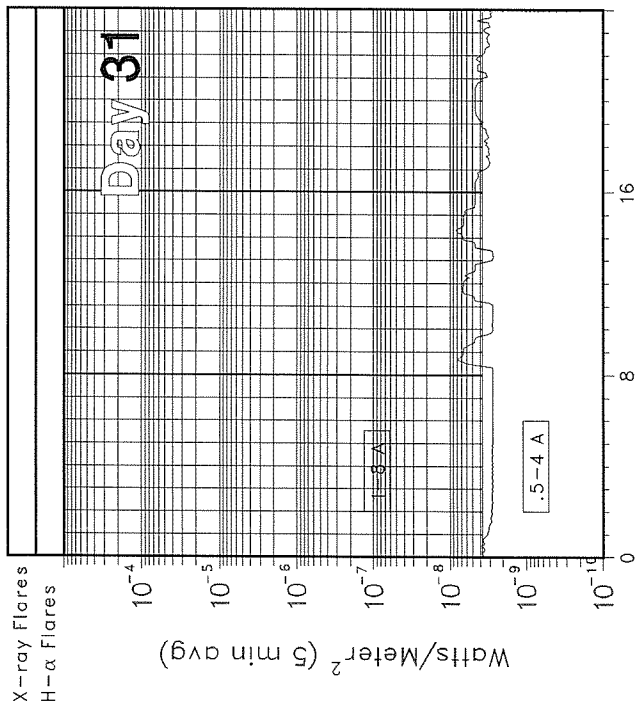
# GOES X-RAY DETECTOR

July 2007

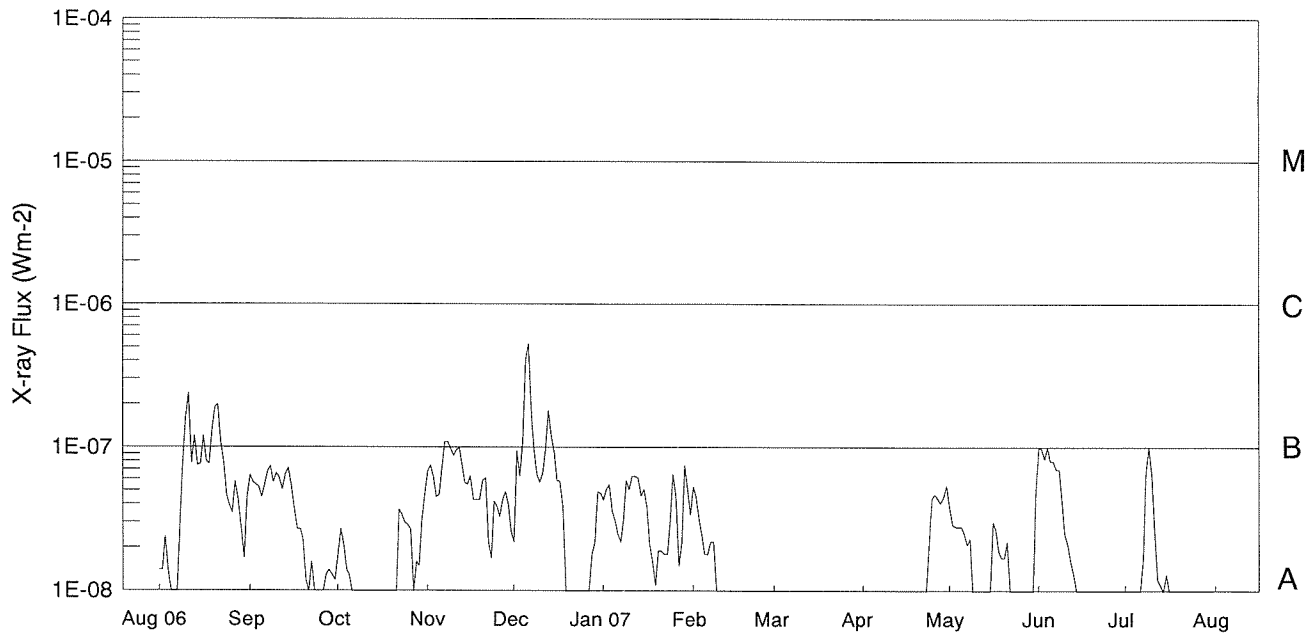


# GOES X-RAY DETECTOR

July 2007



# Preliminary GOES Satellite Daily X-Ray Background Aug 2006 - Jul 2007



Day	Aug 06	Sep	Oct	Nov	Dec	Jan 07	Feb	Mar	Apr	May	Jun	Jul
1	A1.4	A6.4	A1.8	A6.8	A2.2	A4.3	A5.3	<A1.0	<A1.0	A3.8	B1.0	<A1.0
2	A1.4	A5.7	A2.7	A7.5	A9.5	A5.1	A4.6	<A1.0	<A1.0	A2.9	A9.9	<A1.0
3	A2.4	A5.5	A2.1	A6.2	A6.3	A5.5	A3.3	<A1.0	<A1.0	A2.8	A8.3	<A1.0
4	A1.4	A5.3	A1.4	A4.5	B1.1	A3.6	A2.5	<A1.0	<A1.0	A2.8	B1.0	<A1.0
5	<A1.0	A4.5	A1.3	A4.7	B4.1	A3.1	A1.8	<A1.0	<A1.0	A2.8	A8.0	<A1.0
6	<A1.0	A5.5	<A1.0	A7.0	B5.3	A2.5	A1.8	<A1.0	<A1.0	A2.5	A8.0	<A1.0
7	<A1.0	A6.8	<A1.0	B1.1	B1.7	A2.2	A2.2	<A1.0	<A1.0	A2.1	A7.0	A1.7
8	A2.8	A7.4	<A1.0	B1.1	A9.7	A3.2	A2.2	<A1.0	<A1.0	A2.3	A7.0	A6.9
9	A7.6	A5.7	<A1.0	A9.8	A6.5	A5.9	<A1.0	<A1.0	<A1.0	<A1.0	A4.2	B1.0
10	B1.6	A6.6	<A1.0	A8.8	A5.7	A5.1	<A1.0	<A1.0	<A1.0	<A1.0	A2.5	A6.3
11	B2.4	A6.2	<A1.0	A9.6	A6.6	A6.3	<A1.0	<A1.0	<A1.0	<A1.0	A2.1	A2.4
12	A7.8	A5.1	<A1.0	B1.0	A9.8	A6.3	<A1.0	<A1.0	<A1.0	<A1.0	A1.6	A1.2
13	B1.2	A6.5	<A1.0	A7.5	B1.8	A6.1	<A1.0	<A1.0	<A1.0	<A1.0	A1.3	A1.1
14	A7.5	A7.2	<A1.0	A5.7	B1.2	A4.6	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
15	A7.7	A5.4	<A1.0	A5.5	A9.2	A5.1	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	A1.3
16	B1.2	A3.7	<A1.0	A6.3	A5.9	A3.8	<A1.0	<A1.0	<A1.0	A3.0	<A1.0	<A1.0
17	A8.0	A2.7	<A1.0	A4.3	A5.8	A2.1	<A1.0	<A1.0	<A1.0	A2.7	<A1.0	<A1.0
18	A7.7	A2.7	<A1.0	A4.3	A3.9	A1.6	<A1.0	<A1.0	<A1.0	A1.9	<A1.0	<A1.0
19	B1.3	A2.3	<A1.0	A4.3	<A1.0	A1.1	<A1.0	<A1.0	<A1.0	A1.7	<A1.0	<A1.0
20	B1.9	A1.2	<A1.0	A5.9	<A1.0	A1.9	<A1.0	<A1.0	<A1.0	A1.7	<A1.0	<A1.0
21	B2.0	<A1.0	<A1.0	A6.1	<A1.0	A1.9	<A1.0	<A1.0	<A1.0	A2.2	<A1.0	<A1.0
22	B1.1	A1.6	A3.7	A2.2	<A1.0	A1.8	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
23	A7.9	<A1.0	A3.4	A1.7	<A1.0	A1.8	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0	<A1.0
24	A4.6	<A1.0	A3.0	A4.2	<A1.0	A3.1	<A1.0	<A1.0	A2.2	<A1.0	<A1.0	<A1.0
25	A3.9	<A1.0	A2.9	A3.9	<A1.0	A6.5	<A1.0	<A1.0	A4.4	<A1.0	<A1.0	<A1.0
26	A3.5	<A1.0	A2.7	A3.3	<A1.0	A4.6	<A1.0	<A1.0	A4.7	<A1.0	<A1.0	<A1.0
27	A5.8	A1.3	<A1.0	A4.3	<A1.0	A1.5	<A1.0	<A1.0	A4.4	<A1.0	<A1.0	<A1.0
28	A4.4	A1.4	A1.6	A4.9	A1.8	A2.2	<A1.0	<A1.0	A4.1	<A1.0	<A1.0	<A1.0
29	A2.8	A1.3	A1.5	A4.0	A2.2	A7.5	<A1.0	<A1.0	A4.5	<A1.0	A1.0	<A1.0
30	A1.7	A1.2	A3.1	A2.6	A4.9	A5.1	<A1.0	<A1.0	A5.4	<A1.0	<A1.0	<A1.0
31	A4.5	<A1.0	A4.7	<A1.0	A4.8	A3.4	<A1.0	<A1.0	<A1.0	A5.1	<A1.0	<A1.0

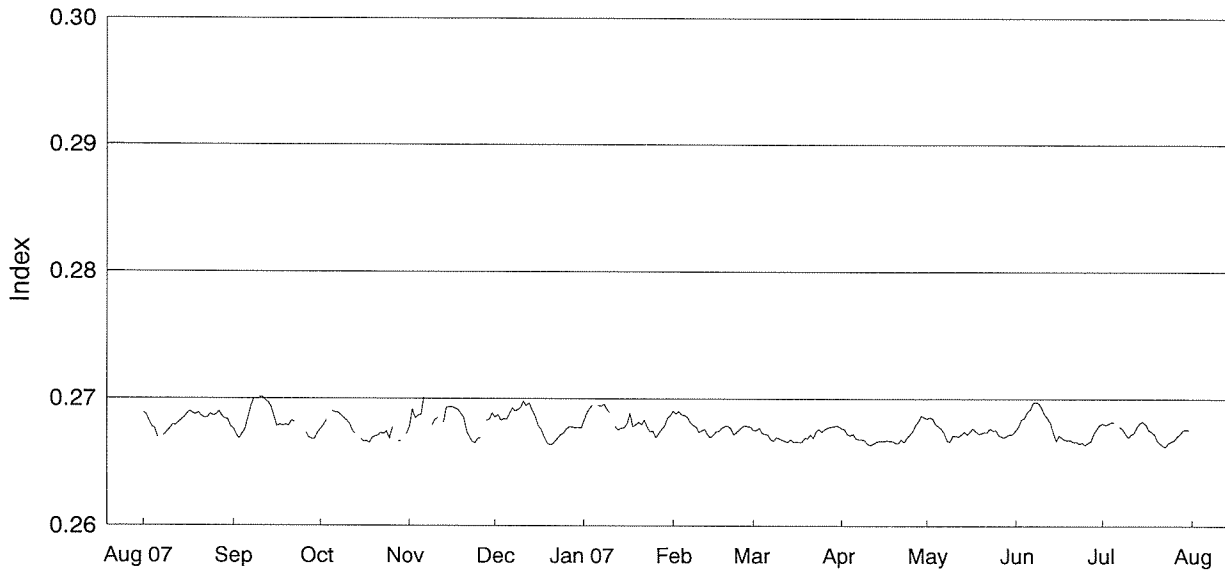
Levels below B1.0 are unreliable.



# NOAA Solar Ultraviolet (UV) MgII Core-to-Wing Index

## Aug 2006 - Jul 2007

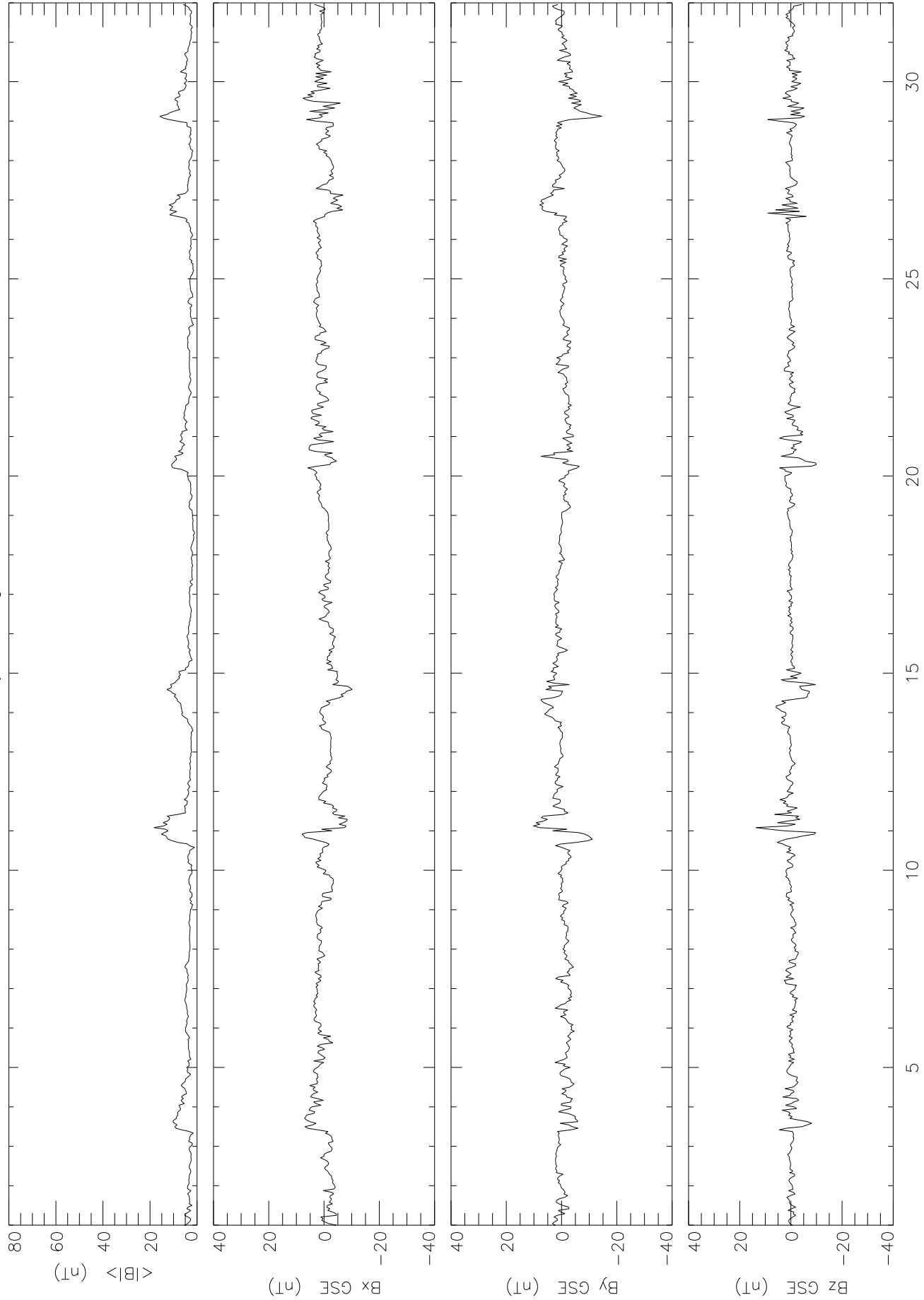
Version 9.1



Day	Aug 06	Sep	Oct	Nov	Dec	Jan 07	Feb	Mar	Apr	May	Jun	Jul
1	0.2689	0.2676	0.2676	0.2678	0.2685	0.2682	0.2691	0.2675	0.2677	0.2685	0.2676	0.2681
2	0.2687	0.2671	0.2680	0.2692	0.2687	0.2689	0.2688	0.2675	0.2676	0.2686	0.2678	0.2680
3	0.2682	0.2669	0.2683	0.2685	0.2683	0.2692	0.2690	0.2677	0.2672	0.2685	0.2684	0.2681
4	0.2678	0.2673	---	0.2687	0.2684	0.2695	0.2687	0.2673	0.2671	0.2680	0.2685	0.2682
5	0.2677	0.2676	0.2690	0.2688	0.2684	---	0.2687	0.2673	0.2673	0.2679	0.2690	0.2682
6	0.2669	0.2685	0.2689	0.2701	0.2689	0.2695	0.2685	0.2672	0.2669	0.2677	0.2692	---
7	---	0.2694	0.2689	---	0.2693	0.2694	0.2681	0.2669	0.2669	0.2673	0.2697	0.2678
8	0.2671	0.2700	0.2687	---	0.2690	0.2696	0.2679	0.2667	0.2668	0.2667	0.2698	0.2677
9	0.2674	---	0.2685	0.2680	0.2691	0.2692	0.2678	0.2670	0.2668	0.2666	0.2697	0.2673
10	0.2676	0.2701	0.2683	0.2684	0.2693	0.2689	0.2674	0.2669	0.2665	0.2671	0.2693	0.2670
11	0.2679	0.2701	0.2680	0.2685	0.2698	---	0.2675	0.2668	0.2664	0.2671	0.2688	0.2673
12	0.2679	0.2699	0.2675	---	0.2694	0.2678	0.2676	0.2667	0.2665	0.2671	0.2685	0.2674
13	0.2682	0.2697	0.2672	0.2682	0.2697	0.2676	0.2672	0.2666	0.2666	0.2672	0.2682	0.2678
14	0.2683	0.2693	---	0.2693	0.2691	0.2677	0.2670	0.2668	0.2667	0.2674	0.2674	0.2681
15	0.2685	0.2685	0.2668	0.2694	0.2686	0.2677	0.2672	0.2666	0.2667	0.2672	0.2667	0.2683
16	0.2688	0.2678	0.2666	0.2694	0.2679	0.2681	0.2674	0.2666	0.2667	0.2675	0.2672	0.2680
17	0.2690	0.2680	0.2667	0.2693	0.2676	0.2689	0.2675	0.2666	0.2668	0.2677	0.2670	0.2676
18	0.2688	0.2679	0.2665	0.2691	0.2671	0.2678	0.2677	0.2666	0.2667	0.2675	0.2668	0.2674
19	0.2688	0.2680	0.2669	0.2688	0.2666	0.2680	0.2679	0.2669	0.2667	0.2673	0.2668	0.2672
20	0.2689	0.2679	0.2671	0.2685	0.2664	0.2682	0.2679	0.2669	0.2666	0.2673	0.2668	0.2667
21	0.2686	0.2683	0.2671	0.2674	0.2664	0.2680	0.2677	0.2672	0.2666	0.2674	0.2666	0.2665
22	0.2685	0.2682	0.2673	0.2670	0.2667	0.2683	0.2672	0.2669	0.2668	0.2674	0.2667	0.2663
23	0.2685	---	0.2672	0.2666	0.2669	0.2678	0.2674	0.2675	0.2666	0.2677	0.2665	0.2663
24	0.2688	0.2677	0.2675	0.2665	0.2672	0.2674	0.2676	0.2676	0.2670	0.2675	0.2666	0.2666
25	0.2686	---	0.2669	0.2669	0.2673	0.2675	0.2678	0.2674	0.2672	0.2676	0.2664	0.2667
26	0.2687	0.2673	0.2678	0.2669	0.2676	0.2670	0.2679	0.2677	0.2675	0.2672	0.2666	0.2668
27	0.2690	0.2670	---	---	0.2678	0.2673	0.2678	0.2677	0.2680	0.2671	0.2667	0.2671
28	0.2686	0.2669	0.2667	0.2683	0.2678	0.2676	0.2678	0.2678	0.2683	0.2670	0.2673	0.2673
29	0.2684	0.2668	0.2667	0.2684	0.2677	0.2679		0.2678	0.2687	0.2672	0.2677	0.2676
30	0.2684	0.2673	---	0.2689	0.2678	0.2685		0.2679	0.2686	0.2672	0.2680	0.2676
31	0.2678		0.2672		0.2677	0.2687		0.2679		0.2673		0.2676
Mean	0.2683	0.2681	0.2675	0.2683	0.2681	0.2683	0.2679	0.2672	0.2671	0.2674	0.2677	0.2674

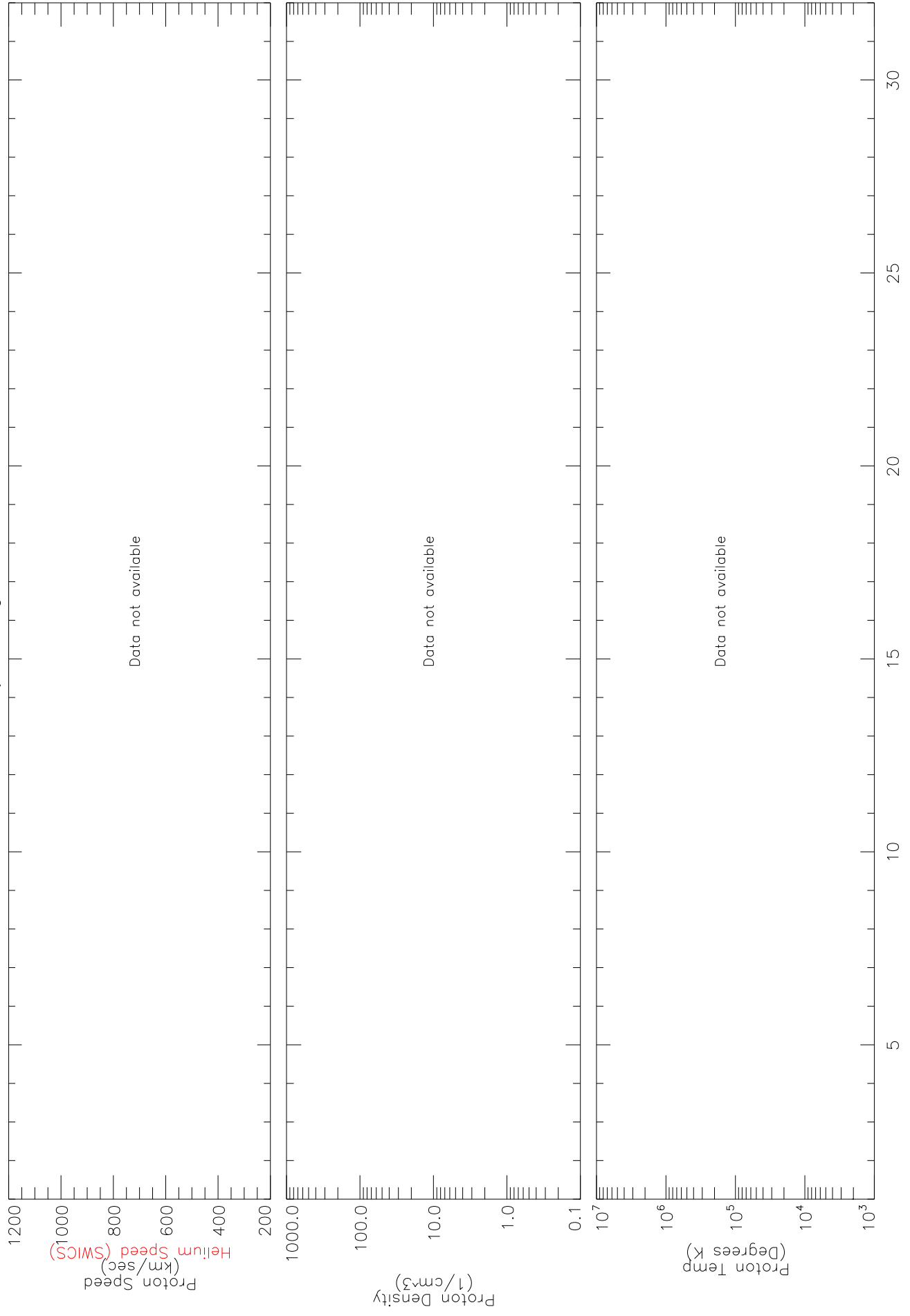
Data at: <http://www.sec.noaa.gov/ftpmenu/sbuv.html>

Interplanetary Magnetic Field  
ACE LEVEL2 DATA Hourly Averages for JULY 2007, from MAG



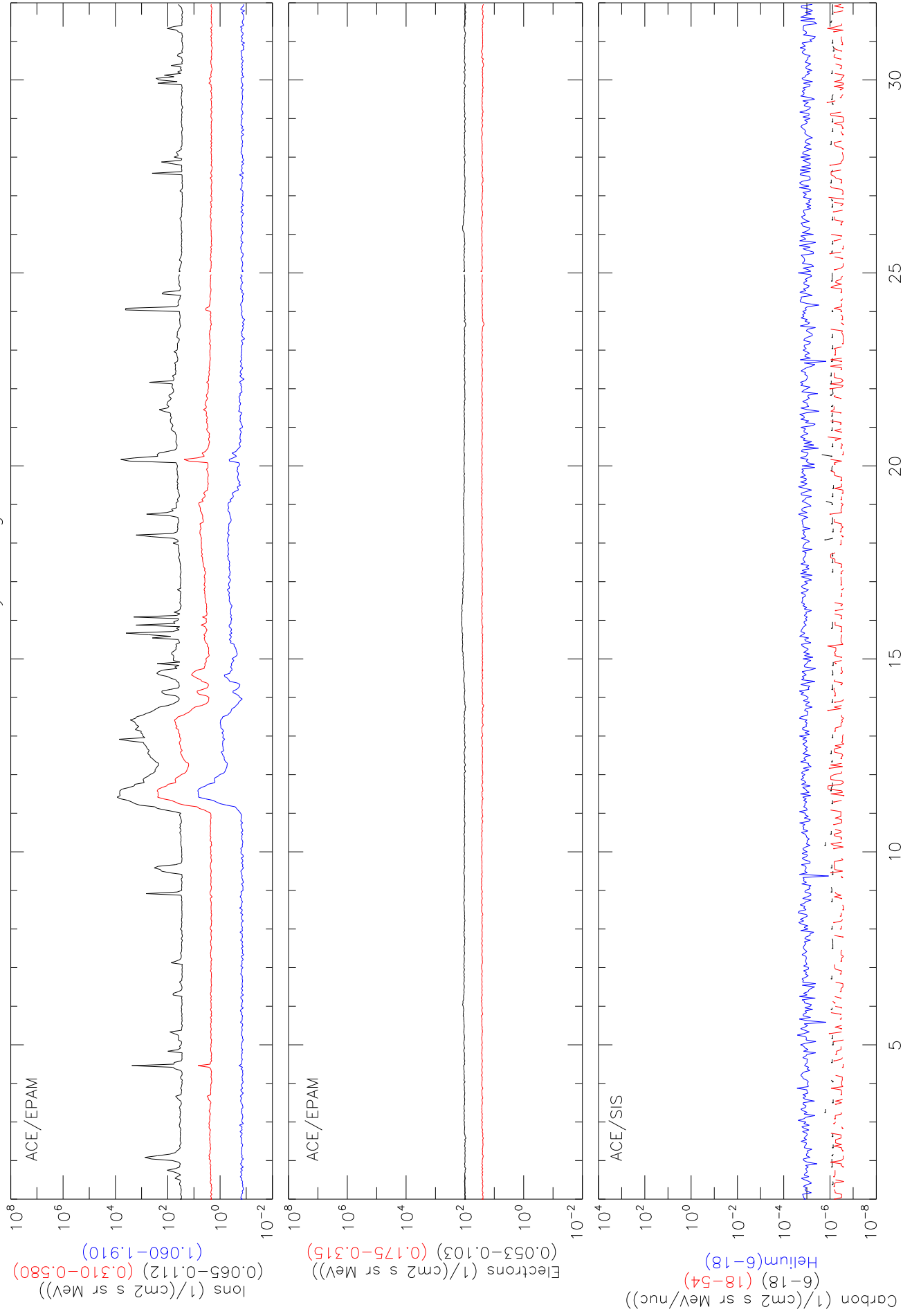
DAYS OF JULY 2007

ACE LEVEL2 DATA Solar Wind Plasma Hourly Averages for JULY 2007, from SWEPAM





# Solar Energetic Particles ACE LEVEL2 DATA Hourly Averages for JULY 2007



# SOLAR CORONAL MASS EJECTIONS (CMEs) FROM SOHO/LASCO

<http://cdaw.gsfc.nasa.gov/>

Center for Solar Physics and Space Weather (CSPSW) – The Catholic University of America/NRL/NASA  
JULY 2007

First C2 Appearance		Central Width			Linear Fit			Measurement		Remarks
Date	Time UT	Position Angle degree	Angular Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s	Accel m/s <sup>2</sup>	Position Angle degree	
2007/07/01	00:06:04	61	11	252	195	313	346	3.7*	68	
2007/07/01	04:30:04	291	24	324	353	293	287	-1.9*	281	Poor Event
2007/07/01	09:54:04	95	20	238	248	229	184	-1.2*	86	Very Poor Event
2007/07/01	14:06:05	66	13	265	154	377	456	8.6*	69	Very Poor Event
2007/07/01	19:31:44	15	13	192	31	368	1971	163.7*	18	Very Poor; Only C2 Only 3 points
2007/07/01	20:30:06	68	14	162	136	190	261	2.5*	69	Very Poor Event
2007/07/02	00:18:04	71	11	149	77	233	360	6.1*	71	Very Poor Event
2007/07/02	04:06:26	294	9	221	188	256	381	4.5*	293	Poor Event
2007/07/02	04:06:26	119	10	309	324	293	0	-5.2*	114	Very Poor; Only C2
2007/07/02	06:30:04	124	8	269	198	341	858	28.9*	121	Very Poor; Only C2
2007/07/02	06:30:04	67	21	265	258	272	272	0.4*	72	Poor Event
2007/07/02	10:06:26	116	10	308	220	400	531	9.7*	109	
2007/07/02	10:54:04	75	43	306	200	424	487	8.2*	83	Poor Event
2007/07/02	15:30:04	223	55	264	272	254	244	-0.6*	236	
2007/07/02	17:06:05	115	17	442	395	488	825	22.7*	113	Poor Event
2007/07/02	18:30:04	116	17	352	387	315	243	-3.7*	115	
2007/07/02	19:31:43	286	21	223	151	299	394	5.6*	281	Very Poor Event
2007/07/02	22:30:04	279	14	174	161	188	325	3.3*	278	Very Poor; Only C2
2007/07/03	16:54:04	160	9	116	104	126	277	2.8*	159	Very Poor ; Only C2
2007/07/03	18:30:04	74	11	204	166	239	453	8.5*	72	Very Poor Event
2007/07/03	21:54:04	278	11	187	159	212	476	9.0*	276	Very Poor Only C2
2007/07/04	11:30:04	119	15	457	484	429	406	-2.9*	110	
2007/07/04	18:54:04	107	11	310	148	483	1377	76.8*	106	Very Poor; Only C2
2007/07/05	15:54:05	122	14	351	359	341	280	-2.1*	117	Poor Event
2007/07/06	00:30:04	253	31	292	283	301	324	1.1*	251	Poor Event
2007/07/06	18:30:04	69	9	301	377	230	0	-39.8*	69	Very Poor; Only C2 Only 3 points
2007/07/06	21:30:04	69	27	126	192	57	0	-14.8*	69	Very Poor; Only C2
2007/07/07	01:54:04	73	21	166	217	110	0	-3.4*	77	Very Poor Event
2007/07/07	04:30:04	84	57	228	365	84	0	-36.7*	74	Poor Event; Only C2
2007/07/07	09:54:04	77	21	138	153	123	0	-3.7*	80	Poor Event; Only C2
2007/07/07	15:30:04	199	8	147	229	70	0	-47.0*	204	Very Poor; Only C2
2007/07/07	17:30:04	201	11	307	162	458	1204	59.0*	205	Very Poor; Only C2
2007/07/08	02:30:04	89	54	159	60	254	312	4.1*	94	Poor Event
2007/07/08	04:30:04	252	21	153	124	178	341	4.2*	255	Poor Event
2007/07/08	17:30:04	88	77	371	0	699	634	16.7	109	
2007/07/08	18:54:04	317	34	125	55	188	495	10.0*	319	Very Poor; Only C2
2007/07/09	04:30:06	8	116	115	90	140	191	1.2*	9	Poor Event
2007/07/09	04:54:04	83	27	470	377	576	539	6.2	80	
2007/07/09	08:54:04	107	23	420	222	642	608	14.1*	109	
2007/07/09	09:30:04	74	17	411	272	561	579	11.0*	79	
2007/07/09	13:54:04	179	6	315	464	169	0	-77.9*	178	Very Poor; Only C2
2007/07/09	14:54:04	239	12	354	345	364	405	1.9*	244	Poor Event
2007/07/09	18:06:04	92	18	226	0	416	534	12.1*	93	Poor Event
2007/07/09	19:54:04	106	12	385	277	505	472	6.9*	107	Poor Event
2007/07/09	21:08:05	58	69	279	137	429	488	9.0*	57	Poor Event
2007/07/09	22:06:04	100	15	182	163	201	203	0.6*	97	Poor Event
2007/07/09	23:06:04	239	21	519	325	710	1459	87.3*	238	Very Poor Event

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Center for Solar Physics and Space Weather (CSPSW) – The Catholic University of America/NRL/NASA  
JULY 2007

First C2 Appearance		Central Width			Linear Fit			Measurement		Remarks
Date	Time UT	Position Angle degree	Angular Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s	Accel m/s <sup>2</sup>	Position Angle degree	
2007/07/10	07:54:04	83	23	178	122	237	426	7.1*	94	Very Poor Event
2007/07/10	12:30:04	89	12	244	265	220	0	-4.5*	93	Very Poor Event
2007/07/10	14:30:04	89	20	257	200	317	531	10.1*	91	Very Poor Event
2007/07/10	16:30:05	84	45	142	123	163	184	0.8*	92	Very Poor Event
2007/07/11	01:54:04	82	36	244	168	337	332	3.4*	90	Poor Event
2007/07/11	08:30:04	16	8	199	214	183	0	-9.0*	21	Very Poor; Only C2
2007/07/11	19:31:40	114	8	90	89	91	104	0.1*	112	Very Poor Event
2007/07/12	03:30:04	69	26	65	64	65	70	0.0*	74	Poor Event
2007/07/12	09:54:04	117	23	227	162	298	325	3.5*	113	Very Poor Event
2007/07/13	02:06:04	122	19	193	175	213	263	1.7*	120	Very Poor Event
2007/07/13	10:06:04	117	40	181	234	131	0	-6.7*	107	Very Poor Event
2007/07/14	01:54:04	102	91	312	212	413	445	6.4*	106	
2007/07/14	11:30:04	6	7	316	487	155	0	-92.2*	9	Very Poor; Only C2 Only 3 points;
2007/07/14	12:54:04	91	6	337	250	427	456	6.2*	90	Very Poor Event
2007/07/14	18:30:04	294	16	90	62	117	323	4.2*	295	Very Poor; Only C2
2007/07/15	07:31:41	88	8	340	282	398	578	11.5*	88	Very Poor Event
2007/07/15	11:54:04	132	18	68	60	77	196	1.5*	125	Very Poor; Only C2
2007/07/16	01:54:04	287	34	307	212	407	772	22.7*	288	Poor Event
2007/07/16	06:06:05	115	12	89	91	87	57	-0.2*	113	Very Poor Event
2007/07/16	06:54:04	0	6	496	284	725	1737	122.3*	1	Very Poor; Only C2 Only 3 points
2007/07/16	07:31:41	250	14	271	187	350	561	11.8*	255	Poor Event
2007/07/16	11:30:04	123	20	237	275	197	0	-5.7*	117	Poor Event
2007/07/16	14:06:04	129	27	290	196	385	480	8.0*	112	Poor Event
2007/07/17	18:54:28	122	24	230	232	228	219	-0.2*	117	Very Poor Event
2007/07/18	00:54:04	282	25	183	166	200	366	4.4*	286	Very Poor; Only C2
2007/07/18	10:30:16	277	15	109	110	108	55	-0.4*	283	Very Poor; Only C2
2007/07/18	11:30:04	113	8	218	149	296	366	5.2*	108	Very Poor Event
2007/07/18	11:54:06	258	8	128	41	223	248	2.5*	267	Poor Event
2007/07/18	18:06:04	109	6	267	310	218	0	-4.9*	108	Very Poor Event
2007/07/18	22:30:05	251	25	335	238	430	918	32.9*	251	Very Poor; Only C2
2007/07/19	10:30:20	255	14	224	254	190	57	-3.0*	264	Very Poor Event
2007/07/19	13:31:40	107	12	254	301	207	0	-6.1*	108	Very Poor Event
2007/07/19	14:54:04	134	8	173	96	249	1024	42.8*	131	Very Poor; Only C2
2007/07/19	15:06:04	68	10	151	138	165	459	7.8*	68	Very Poor; Only C2
2007/07/19	19:54:04	120	11	101	87	115	343	4.6*	116	Very Poor; Only C2
2007/07/19	20:58:41	253	8	194	146	247	302	3.1*	257	Poor Event
2007/07/19	20:58:41	272	17	176	179	172	44	-1.3*	271	Very Poor; Only C2
2007/07/19	22:30:04	109	28	96	53	143	661	18.0*	109	Very Poor; Only C2 Only 3 points
2007/07/20	00:30:04	105	8	295	367	221	0	-14.8*	108	Very Poor Event
2007/07/20	11:34:29	116	10	246	180	315	336	3.7*	108	Very Poor Event
2007/07/20	13:31:45	90	9	219	221	216	149	-1.1*	95	Very Poor; Only C2
2007/07/21	00:30:04	254	9	212	159	272	313	3.2*	265	Very Poor Event
2007/07/21	00:54:04	111	18	167	138	194	317	3.5*	108	Very Poor Event
2007/07/21	06:54:04	279	28	44	43	45	65	0.1*	282	Very Poor; Only C2

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JULY 2007

First C2 Appearance		Central Width			Linear Fit			Measurement		Remarks
Date	Time UT	Position Angle degree	Angular Width degree	Speed km/s	---2nd order speed--- Initial km/s	Final km/s	20R km/s	Accel m/s <sup>2</sup>	Position Angle degree	
2007/07/22	17:06:05	55	11	219	207	232	245	0.7*	55	Poor Event
2007/07/22	17:30:04	250	8	245	137	359	557	13.3*	254	Very Poor Event
2007/07/22	20:58:41	45	6	315	469	155	0	-94.7*	49	Very Poor; Only C2 Only 3 points
2007/07/22	21:30:07	83	22	272	268	276	307	1.0*	86	Poor Event
2007/07/23	01:31:41	106	34	79	117	46	0	-15.8*	102	Very Poor; Only C2
2007/07/23	02:06:04	59	13	221	239	204	169	-1.2*	71	Poor Event
2007/07/23	06:30:04	59	33	159	179	136	90	-1.0*	65	Poor Event
2007/07/23	17:06:04	239	22	321	286	359	368	2.4*	248	Very Poor Event
2007/07/23	22:30:04	105	42	468	473	463	454	-0.7*	104	Poor Event
2007/07/24	02:06:04	69	9	225	204	246	264	1.3*	75	Very Poor Event
2007/07/24	04:54:27	52	10	235	181	296	314	3.1*	58	Very Poor Event
2007/07/25	00:54:04	290	28	330	216	458	471	7.3*	284	Poor Event
2007/07/25	03:30:04	283	16	350	350	351	352	0.1*	279	
2007/07/25	04:30:04	351	7	255	131	391	1694	120.8*	349	Very Poor; Only C2 Only 3 points
2007/07/25	18:06:04	279	10	249	222	277	393	5.1*	278	Very Poor Event
2007/07/26	04:30:04	122	8	174	143	204	573	12.6*	122	Very Poor; Only C2
2007/07/26	07:31:43	124	12	279	282	277	262	-0.5*	121	Very Poor Event
2007/07/26	09:30:04	279	16	201	132	268	617	15.0*	283	Very Poor; Only C2
2007/07/26	16:06:04	146	10	261	290	232	0	-20.1*	144	Very Poor; Only C2 Only 3 points
2007/07/26	16:54:04	29	6	255	391	131	0	-120.2*	35	Very Poor; Only C2 Only 3 points
2007/07/26	17:30:04	62	18	261	68	474	2136	188.0*	59	Very Poor; Only C2 Only 3 points
2007/07/26	17:30:04	253	82	141	55	242	231	2.1*	242	Poor Event
2007/07/26	22:18:04	65	7	169	150	188	271	2.4*	67	Very Poor; Only C3
2007/07/27	11:54:04	127	13	109	135	85	0	-6.8*	130	Very Poor; Only C2
2007/07/27	17:06:04	254	26	303	212	412	385	4.4*	260	Poor Event
2007/07/27	20:06:04	246	11	285	225	347	406	5.0*	248	Very Poor Event
2007/07/27	21:30:04	107	13	131	142	119	0	-3.9*	108	Very Poor; Only C2
2007/07/27	21:54:04	244	6	314	263	360	672	17.3*	246	Very Poor Event
2007/07/27	23:54:04	269	57	351	384	316	251	-3.5	285	
2007/07/28	02:30:04	227	32	192	124	254	326	3.8*	227	Very Poor Event
2007/07/28	06:06:04	290	9	174	158	189	255	1.7*	282	Very Poor Event
2007/07/28	14:30:04	246	8	338	290	387	415	3.8*	250	Poor Event
2007/07/28	18:30:04	119	10	143	44	243	972	39.9*	116	Very Poor; Only C2
2007/07/29	00:30:04	68	58	374	406	341	325	-2.5*	74	
2007/07/29	01:31:40	280	149	669	728	610	609	-6.6	264	Partial Halo
2007/07/29	06:06:27	77	10	275	304	246	83	-3.6*	72	Poor Event
2007/07/29	08:30:04	156	8	496	748	248	0	-141.0*	154	Very Poor; Only C2
2007/07/29	13:31:41	141	7	350	330	372	765	20.5*	136	Very Poor; Only C2 Only 3 points
2007/07/29	14:06:04	157	7	230	399	60	0	-117.5*	156	Very Poor; Only C2 Only 3 points
2007/07/29	17:06:04	222	13	171	144	199	229	1.3*	222	Very Poor Event
2007/07/30	02:54:04	59	17	316	401	227	0	-19.6*	66	Very Poor Event
2007/07/30	04:54:04	Halo	360	563	643	479	492	-7.7	263	
2007/07/30	08:06:26	301	43	254	243	267	272	0.6*	298	

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JULY 2007

First C2 Appearance		Central Width			Linear Fit			---2nd order speed----		Accel	Measurement	
Date	Time UT	Position Angle degree	Angular Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s		m/s <sup>2</sup>	Position Angle degree	Remarks	
2007/07/30	12:06:04	238	28	246	195	291	332		3.0*	248	Poor Event	
2007/07/30	18:43:41	66	11	222	342	85	0		-7.8*	65	Very Poor Event	
2007/07/30	19:25:59	245	10	213	162	265	490		9.1*	251	Very Poor Event	
2007/07/31	00:54:18	159	9	81	----	----	----		-----	157	Very Poor; Only C2 Only 2 points	
2007/07/31	05:30:04	247	24	44	67	23	0		-6.3*	248	Very Poor; Only C2	
2007/07/31	09:30:04	88	38	193	163	224	292		2.4*	87		
2007/07/31	14:30:26	99	12	175	107	244	479		9.0*	95	Very Poor Event	

\* Acceleration is uncertain due to either poor height measurement or a small number of height-time measurements.

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