

JUNE 2004 NUMBER 718 - Part II



Solar-Geophysical Data comprehensive reports

Data for December 2003 and Miscellaneous
Explanation of Data Reports Issued as Number 515 (Supplement) July 1987

NEW DATA:

**ACE Solar Wind, Interplanetary Magnetic Field and
Particles -- Monthly Plots**

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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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Solar-Geophysical Data comprehensive reports

Data for December 2003 and Late Data

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SOLAR-GEOPHYSICAL DATA

Number 718

(Issued in Two Parts)

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

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The entry "712A 44" under Oct 03, for example, means that the sunspot drawings for Oct 03 appear in SOLAR-GEOPHYSICAL DATA No. 712, Part I, and that they begin on page 44. "A" denotes Part I and "B", Part II. Blanks indicate data not yet received and dashes mark unavailable data.

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H α SOLAR FLARES

DECEMBER 2003

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks	
																Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)		
0004	KANZ	14	0919E	0919E	0923	N00	E25	10520	12	16.2	4D	SF		2	E					
		14	1327		1412			No Flare Patrol												
		14	2351		2352			No Flare Patrol												
		15	1016		1051			No Flare Patrol												
		15	1110		1111			No Flare Patrol												
		15	1120		1121			No Flare Patrol												
		15	1123		1124			No Flare Patrol												
		15	1138		1139			No Flare Patrol												
		15	1308		1310			No Flare Patrol												
		15	1451		1537			No Flare Patrol												
		15	1607		1634			No Flare Patrol												
		15	1733		1737			No Flare Patrol												
		15	1820		1827			No Flare Patrol												
		15	2029		2117			No Flare Patrol												
		15	2354		2400			No Flare Patrol												
		16	0131		0153			No Flare Patrol												
		16	1101		1141			No Flare Patrol												
		16	1147		1219			No Flare Patrol												
		16	1314		2259			No Flare Patrol												
		17	0008		0022			No Flare Patrol												
0005	LEAR	17	0307	0307	0333	N08	E72	10525	12	22.5	26	SF		3	E		35		F	
0006	KANZ	18	0834	0834	0846	N10	E52	10525	12	22.3	12	SF		2	E					
0007		18	09241	09283	0938	N08	E52	10525	12	22.3	14	SF					46		F	
	KANZ	18	0924	0928	0940	N09	E52	10525	12	22.3	16	SF		2	E					
	LEAR	18	0925	0931	0935	N08	E53	10525	12	22.4	10	SF		3	E		46		F	
0008	KANZ	18	1200	1205	1207	N10	E50	10525	12	22.2	7	SF		2	E					
0009		18	12304	1236	1241	N10	E48	10525	12	22.1	11	SF					16			
	KANZ	18	1230	1236	1242	N10	E50	10525	12	22.3	12	SF		2	E					
	SVTO	18	1234	1236	1240	N10	E47	10525	12	22.0	6	SF		3	E		16			
0010	KANZ	18	1347	1348	1354	N09	E49	10525	12	22.2	7	SF		2	E					
		18	1457		1501			No Flare Patrol												
0011	HOLL	18	2018	2019	2022	N11	E47	10525	12	22.4	4	SF		3	E		14			
0012	HOLL	18	2217	2217	2221	N10	E46	10525	12	22.4	4	SF		3	E		12		F	
0013	LEAR	19	0026	0027	0031	N09	E47	10525	12	22.5	5	SF		3	E		19		FH	
0014	LEAR	19	0105	0105	0119	N08	E46	10525	12	22.5	14	SF		3	E		41		FH	
0015	LEAR	19	0218	0220	0224	N09	E46	10525	12	22.5	6	SF		3	E		34		FH	
0016	LEAR	19	0619	0619	0625	N10	E47	10525	12	22.8	6	SF		3	E		16			
0017	LEAR	19	0659	0702	0706	N09	E43	10525	12	22.5	7	SF		2	E		19		FH	
0018		19	08054	08095	0842	N09	E42	10525	12	22.5	37	SF					54		FH	
	KANZ	19	0805	0814	0840	N09	E41	10525	12	22.4	35	SN		2	E					
	LEAR	19	0807	0810	0850	N10	E44	10525	12	22.6	43	SF		2	E		71		FH	
	SVTO	19	0809	0809	0835	N08	E40	10525	12	22.3	26	SF		3	E		36		F	
0019	LEAR	19	0813	0814	0818	N09	E90	10528	12	26.1	5	SF		2	E		22		H	
0020	KANZ	19	1223	1230	1239	N09	E37	10525	12	22.3	16	SN		2	E					
		19	1404		1426			No Flare Patrol												
		19	1443		1447			No Flare Patrol												
0021	HOLL	19	1645	1646	1653	N10	E36	10525	12	22.4	8	SF		3	E		53		F	
0022	LEAR	20	0010	0011	0020	N08	E32	10525	12	22.4	10	SF		3	E		13		FH	

DECEMBER 2003

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks
															Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	
0023	LEAR	20	0156	0157	0205	N08	E31	10525	12 22.4	9	SF		2	E		35		FH
0024	KANZ	20	0946	0948	0949	N07	E25	10525	12 22.3	3	SF		2	E				
0025	KANZ	20	1242	1245	1252	N08	E22	10525	12 22.2	10	SF		2	E				
		20	2033		2057	No Flare Patrol												
0026	LEAR	21	0242	0244	0312	N09	E46	10528	12 24.6	30	SF		3	E		85		F
0027	LEAR	21	0413	0414	0417	S24	E89	10530	12 28.0	4	SF		3	E		36		
0028	LEAR	21	0620	0620	0626	N08	E12	10525	12 22.2	6	SF		3	E		21		FH
		21	1441		1453	No Flare Patrol												
0029	LEAR	22	0042	0045	0052	N08	E41	10528	12 25.1	10	SF		3	E		32		F
		22	0119		0320	No Flare Patrol												
0030	LEAR	22	0653	0654	0705	N07	E28	10528	12 24.4	12	SF		3	E		22		
		22	1025		1417	No Flare Patrol												
0031	HOLL	22	1943	1949	2013	N09	E23	10528	12 24.5	30	SF		3	E		64		F
0032	HOLL	22	2036	2042	2046	S18	E51	10530	12 26.7	10	SF		3	E		21		F
		23	0128		0141	No Flare Patrol												
0033	LEAR	23	0650	0650	0654	N11	E23	10528	12 25.0	4	SF		3	E		30		
0034	LEAR	23	0731	0733	0746	N11	W10	10525	12 22.6	15	SF		3	E		30		F
0035		23	0805	0810	0818	N09	E16	10528	12 24.5	13	SF					48		
	KANZ	23	0805	0815	0818	N09	E17	10528	12 24.6	13	SF		2	E				
	LEAR	23	0808	0810	0817	N09	E16	10528	12 24.5	9	SF		3	E		48		
0036	KANZ	23	1015	1019	1103	N07	W15	10525	12 22.3	48	1F		2	E				
		23	1357		1417	No Flare Patrol												
0037	KANZ	24	0803	0809	0818	N07	E02	10528	12 24.5	15	SF		2	E				
0038	KANZ	24	1001	1004	1014	N03	W44	10531	12 21.1	13	SF		2	E				
		24	1224		1439	No Flare Patrol												
		24	1451		1755	No Flare Patrol												
		24	1800		1842	No Flare Patrol												
		24	2039		2209	No Flare Patrol												
0039	LEAR	24	2316	2316	2329	N09	E00	10528	12 25.0	13	SF		2	E		18		F
0040	LEAR	24	2350	2402	2408	N09	W05	10528	12 24.6	18	SF		3	E		23		FH
0041	LEAR	25	0154E	0154	0219	S15	E03	10532	12 25.3	25D	SF		3	E		37		F
0042	LEAR	25	0216	0216	0223	N09	W36	10525	12 22.4	7	SF		3	E		16		FH
0043	LEAR	25	0226	0230	0252	N09	W01	10528	12 25.0	26	SF		3	E		63		FH
0044	LEAR	25	0232	0235	0239	N09	W36	10525	12 22.4	7	SF		3	E		13		FH
0045	LEAR	25	0256	0302	0318	N09	W37	10525	12 22.3	22	SF		3	E		79		FH
0046	LEAR	25	0347	0347	0352	N09	W02	10528	12 25.0	5	SF		3	E		23		FH
0047	LEAR	25	0400	0401	0410	N09	W38	10525	12 22.3	10	SF		3	E		65		FH

DECEMBER 2003

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp Opt	Xray	Obs See	Type	Area Measurement			Remarks	
																Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)		
0048	LEAR	25	0522	0527	0544	N11	W39	10525	12	22.3	22	SF		3	E		34		FH	
0049		25	0754	0823	0904	N09	W04	10528	12	25.0	70	SF					69		FH	
	LEAR	25	0754	0823	0901	N09	W04	10528	12	25.0	67	SF		3	E		69		FH	
	KANZ	25	0759	0825	0908	N09	W05	10528	12	24.9	69	SF		2	E					
0050	KANZ	25	1145	1153	1207	N07	W13	10528	12	24.5	22	SF		2	E					
		25	1359		1418	No Flare Patrol														
		25	1455		1538	No Flare Patrol														
		25	1958		2006	No Flare Patrol														
		25	2151		2308	No Flare Patrol														
		25	2325		2400	No Flare Patrol														
		26	0000		0045	No Flare Patrol														
		26	0237		0301	No Flare Patrol														
		26	0310		0315	No Flare Patrol														
		0051	SVTO	26	1027	1038	1114	N08	W22	10528	12	24.8	47	1F		3	E		102		F
0052	HOLL	26	1619	1621	1630	N09	W29	10528	12	24.5	11	SF		3	E		30		F	
0053	HOLL	26	1921	1928	1945	N09	W30	10528	12	24.5	24	1N		3	E		164		F	
		26	2137		2242	No Flare Patrol														
		27	1452		1511	No Flare Patrol														
		28	1225		1351	No Flare Patrol														
		29	0112		0405	No Flare Patrol														
		29	1030		1225	No Flare Patrol														
		29	1303		1419	No Flare Patrol														
		30	1030		1238	No Flare Patrol														
		30	1247		1450	No Flare Patrol														
		30	1504		1604	No Flare Patrol														
		30	1649		1658	No Flare Patrol														
		30	1839		1844	No Flare Patrol														
		30	2131		2230	No Flare Patrol														
		31	0416		0459	No Flare Patrol														
		31	1031		1447	No Flare Patrol														
31	1500		2224	No Flare Patrol																

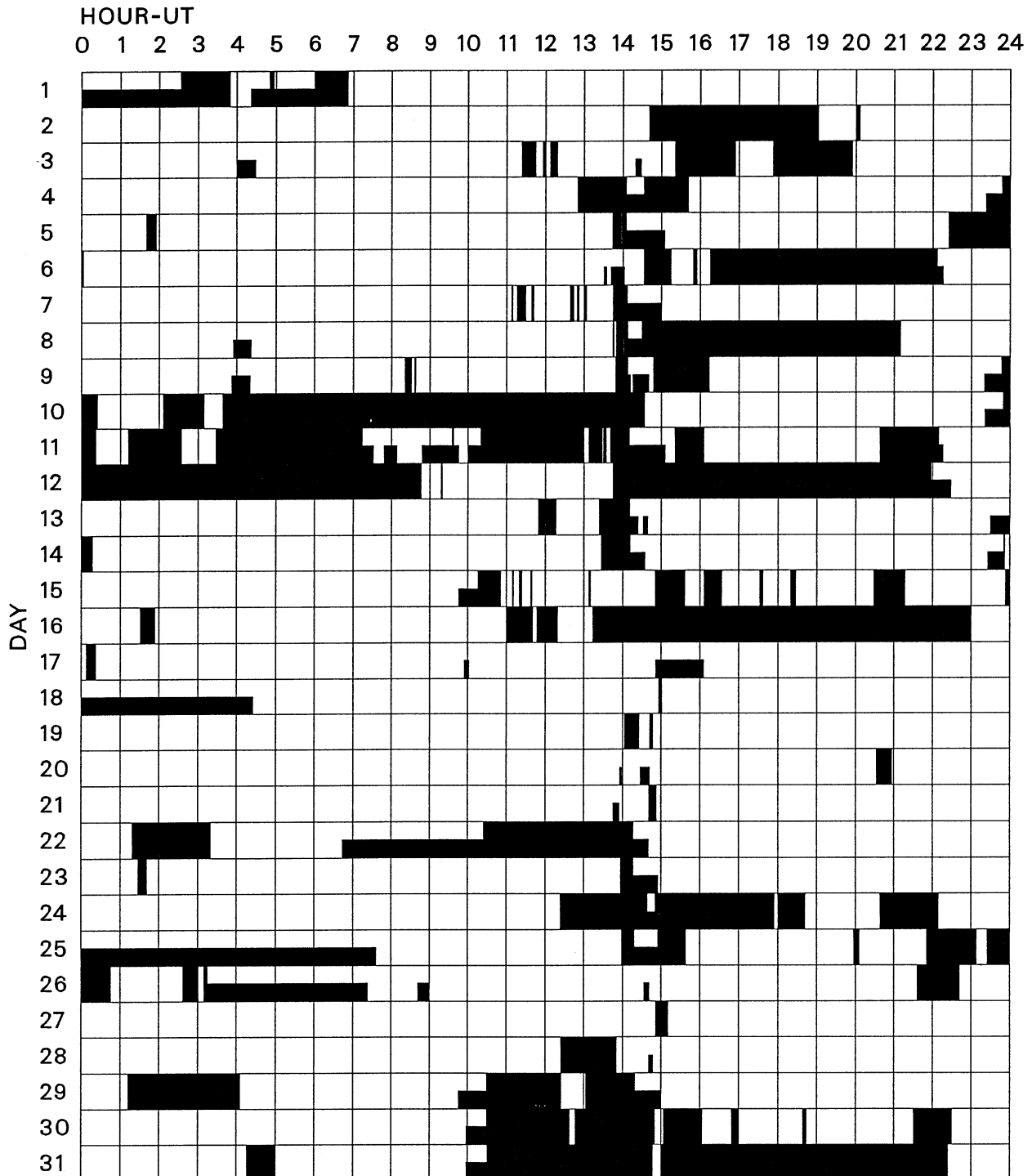
"Remarks"

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

DECEMBER 2003



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.

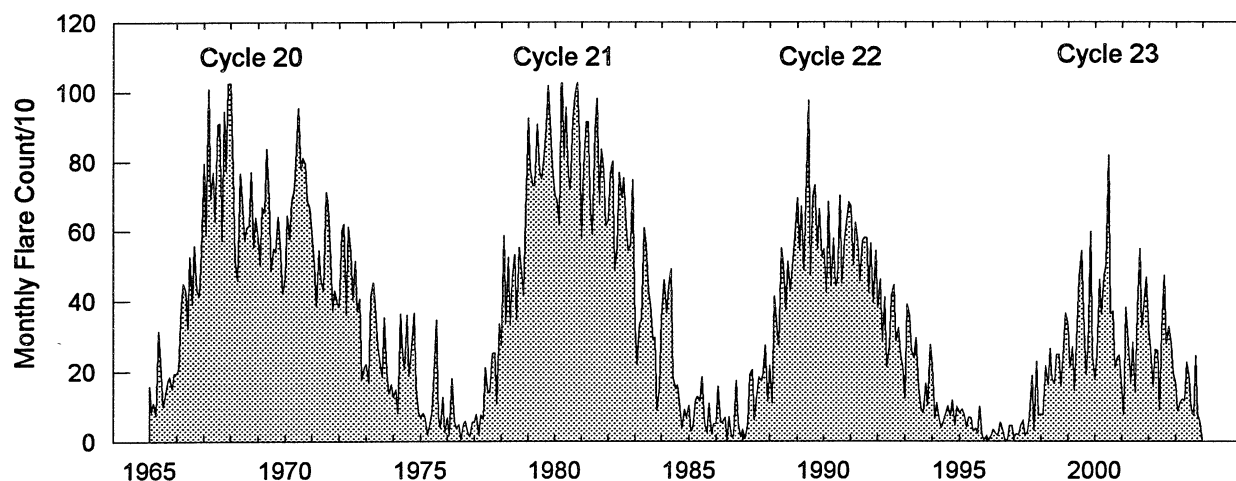
Holloman
Kanzelhoehe

Learmonth

San Vito

Monthly Counts of Grouped Solar Flares

Jan 1965 - Dec 2003



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

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

DECEMBER 2003

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
							Peak (10 -22 W/m ² Hz)	Mean		
01	127	TORN	44 NS	0730.0E		390.0D		6.0		V=0, DISTURBED
	245	SGMR	8 S	1713.0	1713.0	U	99.0			QL=4 ST=2 TYP=3
	2800	PENT	29 PBI	1833.0	1840.0	54.0	7.0			
02	204	IZMI	43 NS	0700.0		300.0D		20.0		
	127	TORN	44 NS	0730.0E		320.0D		17.0		V=1, DISTURBED
	235	CUBA	44 NS	1600.0E		240.0D		10.0		
	280	CUBA	44 NS	1600.0E		240.0D		17.0		
	2840	PEKG	5 S	0758.0	0800.5	9.0	29.3			
	2950	GORK	3 S	0759.2	0800.7	3.8	40.0			
	9100	GORK	4 S/F	0759.4	0800.5	4.0	26.0			
	3000	IZMI	20 GRF	0759.7	0800.7	1.7	31.0	15.4		
	2695	SVTO	8 S	0800.0	0800.0	1.0	29.0			QL=4 ST=2 TYP=3
	4995	SVTO	8 S	0800.0	0800.0	1.0	54.0			QL=4 ST=2 TYP=3
	8800	SVTO	8 S	0800.0	0800.0	U	25.0			QL=4 ST=2 TYP=3
	2950	GORK	46 C	0936.4	0939.6		20.0			
	2950	GORK	46 C	0936.4	0937.9	4.8	30.0			
	9100	GORK	46 C	0936.8	0939.6		11.0			
	9100	GORK	46 C	0936.8	0937.9	3.8	14.0			
	3000	IZMI	42 SER	0936.9	0937.9	7.7	17.0			
	9100	GORK	2 S/F	0942.9	0943.6	2.1	13.0			
245	SVTO	8 S	0943.0	0943.0	U	86.0			QL=4 ST=2 TYP=3	
2950	GORK	2 S/F	0943.0	0943.9	1.9	52.0				
204	IZMI	25 R	1018.0		102.0D		40.0			
2800	PENT	40 F	2058.0	2105.0	27.0	3.0				
03	204	IZMI	44 NS	0700.0E		300.0D		25.0		
	127	TORN	44 NS	0730.0E		390.0D		15.0		V=2
	235	CUBA	44 NS	1315.0E		510.0D		9.0		
	280	CUBA	44 NS	1315.0E		510.0D		26.0		
	500	HIRA	8 S	0407.0	0407.0	1.0	10.0			WR
	204	IZMI	41 F	0712.4	0713.1	1.0	104.0			
	245	SVTO	8 S	0919.0	0919.0	U	80.0			QL=4 ST=2 TYP=3
	245	SVTO	8 S	0936.0	0938.0	2.0	71.0			QL=4 ST=2 TYP=3
	245	SGMR	8 S	1535.0	1535.0	U	65.0			QL=4 ST=2 TYP=3
	245	SGMR	8 S	1615.0	1615.0	U	72.0			QL=4 ST=2 TYP=3
	2800	PENT	3 S	1630.0	1636.0	11.0	3.0			
	245	SGMR	8 S	1812.0	1812.0	U	55.0			QL=4 ST=2 TYP=3
	245	SGMR	8 S	2002.0	2002.0	U	55.0			QL=4 ST=2 TYP=3
	245	PALE	8 S	2003.0	2003.0	U	57.0			QL=4 ST=2 TYP=3
04	204	IZMI	44 NS	0700.0E		300.0D		30.0		
	127	TORN	44 NS	0730.0E		390.0D		95.0		V=1
	235	CUBA	44 NS	1340.0E		320.0D		7.0		
	280	CUBA	44 NS	1340.0E		320.0D		23.0		
	2840	PEKG	1 S	0108.0	0111.2	7.0	6.6			
	2800	HIRA	8 S	0431.0	0431.0	1.0	20.0			WR
	245	SVTO	4 S/F	0657.0	0700.0	3.0	98.0			QL=4 ST=2 TYP=3
245	SGMR	8 S	1702.0	1702.0	U	75.0			QL=4 ST=2 TYP=3	
05	204	IZMI	44 NS	0700.0E		300.0D		20.0		
	127	TORN	44 NS	0730.0E		390.0D		23.0		V=1
	235	CUBA	44 NS	1330.0E		450.0D		9.0		
	280	CUBA	44 NS	1330.0E		450.0D		29.0		
	204	IZMI	41 F	1017.8	1018.3	0.9	87.0			
	33	UPIC	46 C	1048.0	1051.5	4.5				UNCERTN
204	IZMI	42 SER	1152.0	1152.1	0.6	34.0				
06	245	PALE	43 NS	0143.0	0311.0	108.0	240.0			QL=4 ST=2 TYP=1
	410	PALE	43 NS	0206.0	0218.0	85.0	350.0			QL=4 ST=2 TYP=1
	610	PALE	43 NS	0229.0	0230.0	8.0	570.0			QL=4 ST=2 TYP=1
	610	PALE	43 NS	0301.0	0315.0	30.0	130.0			QL=4 ST=2 TYP=1
	500	HIRA	7 C	0007.0	0016.0	31.0	250.0			MR
	245	PALE	48 C	0008.0	0012.0	4.0	68.0			QL=4 ST=2 TYP=8
	245	PALE	8 S	0008.0	0008.0	U	63.0			QL=4 ST=2 TYP=3
	410	PALE	48 C	0009.0	0012.0	4.0	160.0			QL=4 ST=2 TYP=8
	410	PALE	8 S	0009.0	0010.0	2.0	79.0			QL=4 ST=2 TYP=3
	2840	PEKG	1 S	0009.0	0012.0	5.0	4.8			
610	PALE	8 S	0010.0	0010.0	U	55.0			QL=4 ST=2 TYP=3	

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

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Dec 03

D E C E M B E R 2 0 0 3

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks	
							Peak (10 -22 W/m 2 Hz)	Mean			
06	610	PALE	4 S/F	0010.0	0012.0	3.0	130.0			QL=4 ST=2 TYP=3	
		500 HIRA	47 GB	0145.0	0221.0	132.0	695.0			SR	
	610	PALE	48 C	0216.0	0221.0	5.0	700.0			QL=4 ST=2 TYP=8	
		PALE	49 GB	0216.0	0221.0	6.0	1000.0			QL=4 ST=2 TYP=6	
		33 UPIC	46 C	1024.0	1028.5	5.0					
2800	PENT	21 GRF	1917.0	1925.0	15.0U	3.0					
07	127	TORN	44 NS	0750.0E		170.0D		6.0		V=0	
	235	CUBA	44 NS	1530.0E		155.0D		6.0			
		CUBA	44 NS	1530.0E		155.0D		21.0			
09	280	CUBA	44 NS	1330.0E		330.0D		16.0			
	204	IZMI	42 SER	0711.4	0711.8	0.8	28.0				
	204	IZMI	42 SER	0958.5	0958.6	0.4	15.0				
	204	IZMI	41 F	1022.9	1023.6	2.8	64.0				
	127	TORN	48 C	1110.4	1112.8	3.7	240.0	50.0			
		204	IZMI	42 SER	1110.6	1111.9	4.1	13.0			
		33	UPIC	45 C	1111.0	1111.5	2.5				
	204	IZMI	41 F	1112.3	1112.6	1.1	165.0				
10	127	TORN	43 NS	1043.0		77.0		4.0		V=1	
	235	CUBA	44 NS	1330.0E		330.0D		4.0			
		CUBA	44 NS	1330.0E		330.0D		17.0			
	204	IZMI	41 F	1119.5	1119.7	0.4	74.0				
11	33	UPIC	4 S/F	1004.5	1005.5	1.5					
12	127	TORN	43 NS	0830.0		320.0		6.0		V=0	
	245	SVTO	49 GB	1020.0	1021.0	1.0	720.0			QL=4 ST=2 TYP=6	
	9500	CUBA	20 GRF	1407.0E	1407.0	91.0D	24.0	12.0		SUNRISE	
13	235	CUBA	44 NS	1403.0E		412.0D		4.0			
		CUBA	44 NS	1403.0E		412.0D		16.0			
	245	SVTO	8 S	1345.0	1345.0	U	150.0			QL=4 ST=2 TYP=3	
14	127	TORN	43 NS	0840.0		255.0		6.0		V=0	
	245	SVTO	8 S	0800.0	0801.0	2.0	100.0			QL=4 ST=2 TYP=3	
		LEAR	8 S	0801.0	0801.0	1.0	100.0			QL=2 ST=2 TYP=3	
	204	IZMI	42 SER	0805.1	0812.0	32.0	166.0				
	245	LEAR	8 S	0853.0	0854.0	2.0	52.0			QL=2 ST=2 TYP=3	
	245	SVTO	8 S	0854.0	0854.0	U	54.0			QL=4 ST=2 TYP=3	
	204	IZMI	42 SER	0901.8	0907.2	36.6	36.0				
	245	LEAR	8 S	0907.0	0907.0	U	75.0			QL=2 ST=2 TYP=3	
	245	SVTO	4 S/F	0907.0	0907.0	3.0	88.0			QL=4 ST=2 TYP=3	
	204	IZMI	42 SER	0910.6	0911.3	1.5	23.0				
127	TORN	45 C	0913.3	0914.0	2.6	50.0	20.0				
15	127	TORN	43 NS	0810.0		350.0		6.0		V=2	
	204	IZMI	43 NS	0930.0		150.0D		20.0			
	235	CUBA	44 NS	1325.0E		395.0D		5.0			
		CUBA	44 NS	1325.0E		395.0D		20.0			
	500	HIRA	8 S	0410.0	0410.0	1.0	10.0			0	
245	SVTO	4 S/F	0642.0	0643.0	3.0	53.0			QL=4 ST=2 TYP=3		
16	33	UPIC	45 C	1423.0	1423.5	1.5					
17	2840	PEKG	5 S	0304.0	0306.8	9.0	20.1				
		HIRA	8 S	0307.0	0307.0	2.0	30.0			0	
	1415	SGMR	8 S	1258.0	1258.0	1.0	65.0			QL=2 ST=2 TYP=3	
18	127	TORN	43 NS	1000.0		240.0		7.0		V=0	
		235	CUBA	44 NS	1400.0E		180.0D		9.0		
			CUBA	44 NS	1400.0E		180.0D		26.0		
	2840	PEKG	1 S	0127.0	0128.5	4.0	3.4				
	2840	PEKG	5 S	0807.0	0809.3	4.0	125.5				
	245	SVTO	8 S	0809.0	0809.0	U	53.0			QL=4 ST=2 TYP=3	
	410	SVTO	8 S	0809.0	0809.0	U	97.0			QL=4 ST=2 TYP=3	
	2695	SVTO	8 S	0809.0	0809.0	U	58.0			QL=4 ST=2 TYP=3	
3000	IZMI	7 C	0809.2	0809.3	0.2	38.0	14.9				

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

DECEMBER 2003

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density (10 ⁻²² W/m ² Hz)		Int	Remarks
							Peak	Mean		
18	9100	GORK	21 GRF	0829.9	0933.9	138.5	24.0			
	3000	IZMI	40 F	0921.3	0923.3	4.4	7.0			
	2950	GORK	45 C	0922.4	0923.2		15.0			
	2950	GORK	45 C	0922.4	0925.2		8.0			
	9100	GORK	2 S/F	0922.4	0922.6	1.1	17.0			
	2950	GORK	45 C	0922.4	0922.7	4.0	13.0			
	9100	GORK	2 S/F	0924.6	0925.2	1.6	15.0			
	2800	PENT	40 F	1834.0	1838.0	9.0	5.0			
	1415	PALE	4 S/F	2231.0	2231.0	89.0	74.0			QL=4 ST=1 TYP=3
	2695	PALE	4 S/F	2231.0	2231.0	89.0	120.0			QL=4 ST=1 TYP=3
	4995	PALE	4 S/F	2231.0	2231.0	89.0	170.0			QL=4 ST=1 TYP=3
	8800	PALE	4 S/F	2231.0	2231.0	89.0	250.0			QL=4 ST=1 TYP=3
	15400	PALE	4 S/F	2231.0	2232.0	89.0	490.0			QL=4 ST=1 TYP=3
19	127	TORN	43 NS	0840.0		230.0		6.0		V=0
	245	LEAR	8 S	0009.0	0009.0	U	58.0			QL=4 ST=2 TYP=3
	245	PALE	8 S	0305.0	0306.0	1.0	100.0			QL=4 ST=2 TYP=3
	2840	PEKG	1 S	0807.0	0813.7	9.0	9.7			
	4995	SGMR	8 S	1644.0	1644.0	1.0	56.0			QL=2 ST=3 TYP=3
	4995	SGMR	8 S	1644.0	1644.0	1.0	56.0			QL=4 ST=2 TYP=3
	8800	SGMR	8 S	1644.0	1644.0	1.0	82.0			QL=2 ST=3 TYP=3
	8800	SGMR	8 S	1644.0	1644.0	1.0	82.0			QL=4 ST=2 TYP=3
	9500	CUBA	2 S/F	1644.0	1644.5	1.1	55.0	27.0		
	20	204	IZMI	42 SER	0946.5	1028.8	81.3	52.0		
9100		GORK	41 F	1003.0	1003.3	3.3	70.0			
9100		GORK	41 F	1003.0	1004.9		35.0			
9100		GORK	42 SER	1017.5	1019.5	17.5	15.0			
9100		GORK	42 SER	1017.5	1033.6		7.2			
2950		GORK	2 S/F	1032.8	1033.3	1.3	6.0			
9100		GORK	2 S/F	1042.4	1043.0	0.9	12.0			
2950		GORK	7 C	1042.4	1043.0		8.4			
2950		GORK	7 C	1042.4	1042.5	0.8	3.6			
245		SGMR	8 S	1711.0	1711.0	U	130.0			QL=4 ST=2 TYP=3
21	2800	HIRA	7 C	0241.0	0243.0	5.0	20.0			0
	2840	PEKG	5 S	0241.0	0242.5	9.0	16.1			
	245	LEAR	8 S	0517.0	0517.0	U	62.0			QL=4 ST=2 TYP=3
	245	SVTO	8 S	0733.0	0733.0	U	51.0			QL=4 ST=2 TYP=3
	410	SGMR	8 S	1249.0	1250.0	1.0	170.0			QL=4 ST=2 TYP=3
	410	SVTO	8 S	1250.0	1250.0	U	450.0			QL=4 ST=2 TYP=3
	245	SGMR	8 S	1550.0	1550.0	U	86.0			QL=4 ST=2 TYP=3
	2695	LEAR	4 S/F	2350.0	2350.0	10.0	98.0			QL=4 ST=1 TYP=3
22	127	TORN	43 NS	1000.0		240.0		6.0		V=1
	2840	PEKG	3 S	0040.0	0043.9	10.0	24.2			
	2800	HIRA	1 S	0042.0	0044.0	5.0	25.0			0
	610	LEAR	8 S	0043.0	0043.0	U	240.0			QL=4 ST=2 TYP=3
	610	PALE	8 S	0044.0	0044.0	U	210.0			QL=4 ST=2 TYP=3
	2840	PEKG	1 S	0647.0	0652.7	9.0	5.5			
	9100	GORK	4 S/F	0652.0	0653.7	3.5	22.0			
23	204	IZMI	43 NS	0700.0		300.0D		30.0		
	127	TORN	44 NS	0730.0E		390.0D		24.0		V=2
	245	SGMR	43 NS	1442.0	1617.0	95.0	64.0			QL=4 ST=2 TYP=1
	2840	PEKG	1 S	0452.0	0455.1	5.0	5.3			
	2840	PEKG	1 S	0458.0	0459.4	5.0	2.6			
	2840	PEKG	20 GRF	0646.0	0649.1	15.0	7.2			
	245	LEAR	8 S	0704.0	0704.0	U	62.0			QL=4 ST=2 TYP=3
	245	SVTO	8 S	0704.0	0704.0	U	55.0			QL=4 ST=2 TYP=3
	2840	PEKG	1 S	0728.0	0731.0	7.0	5.2			
	245	SVTO	8 S	0800.0	0800.0	U	53.0			QL=4 ST=2 TYP=3
	245	SVTO	8 S	0937.0	0937.0	U	55.0			QL=4 ST=2 TYP=3
	410	SVTO	8 S	0937.0	0937.0	U	29.0			QL=4 ST=2 TYP=3
	2950	GORK	22 GRF	0958.7	1013.3	53.3	15.0			
	2950	GORK	22 GRF	0958.7	1018.7		50.0			
	9100	GORK	20 GRF	1015.3	1027.4	27.0D	25.0			
	3000	IZMI	20 GRF	1017.6	1018.6	1.6	34.0	13.4		
127	TORN	48 C	1135.0	1148.6	17.2	180.0	45.0			

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

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Dec 03

DECEMBER 2003

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
							Peak (10 -22 W/m 2 Hz)	Mean		
23	[	245 SGMR	8 S	1438.0	1438.0	U	150.0			QL=4 ST=2 TYP=3
		245 SVTO	8 S	1438.0	1438.0	U	66.0			QL=4 ST=2 TYP=3
24	[	204 IZMI	44 NS	0700.0E		300.0D		20.0		
		127 TORN	44 NS	0730.0E		390.0D		60.0		V=1
		245 LEAR	8 S	2353.0	2353.0	U	120.0			QL=4 ST=2 TYP=3
25	[	204 IZMI	44 NS	0700.0E		300.0D		20.0		
		127 TORN	44 NS	0800.0E		360.0D		15.0		V=2
		2840 PEKG	3 S	0355.0	0359.8	17.0	23.9			
		245 LEAR	8 S	0608.0	0608.0	U	52.0			QL=4 ST=2 TYP=3
		204 IZMI	7 C	0842.1	0842.2	0.1	71.0			
26	[	204 IZMI	44 NS	0700.0E		300.0D		15.0		
		127 TORN	44 NS	1100.0E		180.0D		9.0		V=0
		2840 PEKG	5 S	0113.0	0116.6	7.0	21.2			
		2800 HIRA	8 S	0117.0	0117.0	2.0	20.0			0
		3000 IZMI	22 GRF	1025.1	1038.8	22.4	13.0	6.5		
		9500 CUBA	1 S	1715.0	1715.3	1.6	22.0	11.0		
		2800 PENT	40 F	1907.0	1926.0	25.0U	8.0			
		9500 CUBA	21 GRF	1922.0	1928.0	30.0	30.0	15.0		
		9500 CUBA	2 S/F	1922.2	1923.4	2.6	55.0	27.0		
		8800 SGMR	8 S	1923.0	1923.0	1.0	61.0			QL=4 ST=2 TYP=3
4995 SGMR	4 S/F	1923.0	1923.0	3.0	27.0			QL=4 ST=2 TYP=3		
27		127 TORN	43 NS	0840.0		190.0		8.0		V=0
28		2840 PEKG	1 S	0354.0	0356.3	6.0	5.9			
30	[	245 LEAR	43 NS	0403.0	0405.0	82.0	60.0			QL=4 ST=2 TYP=1
		245 LEAR	43 NS	0403.0	0405.0	1197.0	60.0			QL=4 ST=1 TYP=1
		204 IZMI	43 NS	0700.0		300.0D		10.0		
		127 TORN	44 NS	0730.0E		390.0D		10.0		V=2
		235 CUBA	44 NS	1400.0E		240.0D		13.0		
		280 CUBA	44 NS	1400.0E		240.0D		35.0		
		204 IZMI	25 R	0700.0E		18.0D		40.0		
		245 LEAR	8 S	0827.0	0827.0	U	57.0			QL=4 ST=2 TYP=3
		245 SVTO	8 S	0925.0	0925.0	U	58.0			QL=4 ST=2 TYP=3
		245 SVTO	8 S	1011.0	1011.0	U	52.0			QL=4 ST=2 TYP=3
		245 SVTO	8 S	1030.0	1030.0	U	58.0			QL=4 ST=2 TYP=3
		204 IZMI	41 F	1059.1	1059.2	0.6	18.0			
		245 SGMR	8 S	1247.0	1247.0	2.0	110.0			QL=4 ST=2 TYP=3
		245 SVTO	8 S	1247.0	1247.0	U	59.0			QL=4 ST=2 TYP=3
		245 SGMR	8 S	1416.0	1416.0	U	53.0			QL=4 ST=2 TYP=3
		245 SGMR	8 S	1527.0	1527.0	U	100.0			QL=4 ST=2 TYP=3
		245 SGMR	8 S	1540.0	1540.0	U	74.0			QL=4 ST=2 TYP=3
245 SGMR	8 S	1612.0	1612.0	U	56.0			QL=4 ST=2 TYP=3		
245 SGMR	8 S	1615.0	1616.0	1.0	210.0			QL=4 ST=2 TYP=3		
245 SGMR	8 S	1728.0	1728.0	U	67.0			QL=4 ST=2 TYP=3		
245 SGMR	8 S	1856.0	1856.0	U	51.0			QL=4 ST=2 TYP=3		
245 PALE	8 S	2134.0	2134.0	U	120.0			QL=4 ST=2 TYP=3		
31	[	204 IZMI	44 NS	0700.0E		300.0D		15.0		
		127 TORN	44 NS	0730.0E		390.0D		12.0		V=1
		245 SGMR	43 NS	1315.0	1354.0	96.0	130.0			QL=4 ST=2 TYP=1
		245 SGMR	43 NS	1315.0	1315.0	645.0	51.0			QL=4 ST=1 TYP=1
		245 SGMR	43 NS	1315.0	1330.0	645.0	70.0			QL=4 ST=1 TYP=1
		245 SGMR	43 NS	1315.0	1354.0	645.0	130.0			QL=4 ST=1 TYP=1
		245 SVTO	43 NS	1330.0	1354.0	50.0	110.0			QL=4 ST=2 TYP=1
		245 SGMR	43 NS	1555.0	1728.0	93.0	130.0			QL=4 ST=2 TYP=1
		245 SGMR	43 NS	1846.0	1923.0	127.0	67.0			QL=4 ST=2 TYP=1
		245 LEAR	8 S	0009.0	0009.0	U	96.0			QL=4 ST=2 TYP=3
		245 PALE	8 S	0009.0	0009.0	U	150.0			QL=4 ST=2 TYP=3
		500 HIRA	8 S	0220.0	0220.0	1.0	15.0			0
		500 HIRA	42 SER	0322.0	0322.0	7.0	15.0			0
		245 PALE	48 C	0324.0	0325.0	7.0	760.0			QL=4 ST=2 TYP=8
245 LEAR	8 S	0518.0	0519.0	1.0	69.0			QL=4 ST=2 TYP=3		
245 SVTO	8 S	0850.0	0850.0	U	62.0			QL=4 ST=2 TYP=3		
245 LEAR	8 S	0915.0	0915.0	1.0	180.0			QL=4 ST=2 TYP=3		

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

DECEMBER 2003

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks	
							Peak (10 -22 W/m 2 Hz)	Mean			
31	245	SVTO	8 S	0915.0	0916.0	1.0	240.0			QL=4 ST=2 TYP=3	
		LEAR	8 S	0929.0	0929.0	1.0	84.0			QL=4 ST=2 TYP=3	
	245	SVTO	8 S	0929.0	0929.0	1.0	110.0			QL=4 ST=2 TYP=3	
		LEAR	8 S	0939.0	0940.0	1.0	53.0			QL=4 ST=2 TYP=3	
	245	SVTO	8 S	0939.0	0939.0	1.0	76.0			QL=4 ST=2 TYP=3	
		SVTO	8 S	0951.0	0951.0	U	58.0			QL=4 ST=2 TYP=3	
	204	IZMI	25 R	1040.0		80.00		50.0			
		IZMI	42 SER	1115.3	1116.2	2.9	142.0				
	2800	PENT	29 PBI	1726.0	1728.0	6.00	16.0				
		245	SGMR	8 S	1728.0	1728.0	1.0	130.0			QL=4 ST=2 TYP=3
	610	SGMR	8 S	1728.0	1729.0	2.0	51.0				QL=4 ST=2 TYP=3
		2695	SGMR	8 S	1728.0	1728.0	1.0	22.0			QL=4 ST=2 TYP=3
	245	SGMR	8 S	1730.0	1730.0	1.0	110.0				QL=4 ST=2 TYP=3
		610	SGMR	8 S	1730.0	1731.0	1.0	91.0			QL=4 ST=2 TYP=3
	245	SGMR	8 S	1733.0	1733.0	U	83.0				QL=4 ST=2 TYP=3
		610	SGMR	8 S	1733.0	1733.0	U	25.0			QL=4 ST=2 TYP=3
	245	SGMR	49 GB	1821.0	1822.0	1.0	870.0				QL=4 ST=2 TYP=6
		235	CUBA	6 S	1821.3	1821.6	1.4	118.0	59.0		
	280	CUBA	6 S	1821.3	1821.6	1.4	507.0	254.0			
		245	PALE	49 GB	1822.0	1822.0	1.0	1000.0			QL=4 ST=2 TYP=6
	410	PALE	8 S	1822.0	1822.0	U	56.0				QL=4 ST=2 TYP=3
		410	SGMR	8 S	1822.0	1822.0	U	64.0			QL=4 ST=2 TYP=3
	2800	PENT	1 S	1920.0	1923.0	8.0	4.0				
245		PALE	8 S	1923.0	1923.0	1.0	60.0			QL=4 ST=2 TYP=3	
610	LEAR	49 GB	2246.0	2252.0	9.0	1300.0				QL=4 ST=2 TYP=6	
	610	LEAR	49 GB	2246.0	2252.0	74.0	1300.0			QL=4 ST=1 TYP=6	

Reports are received routinely from the following observatories:

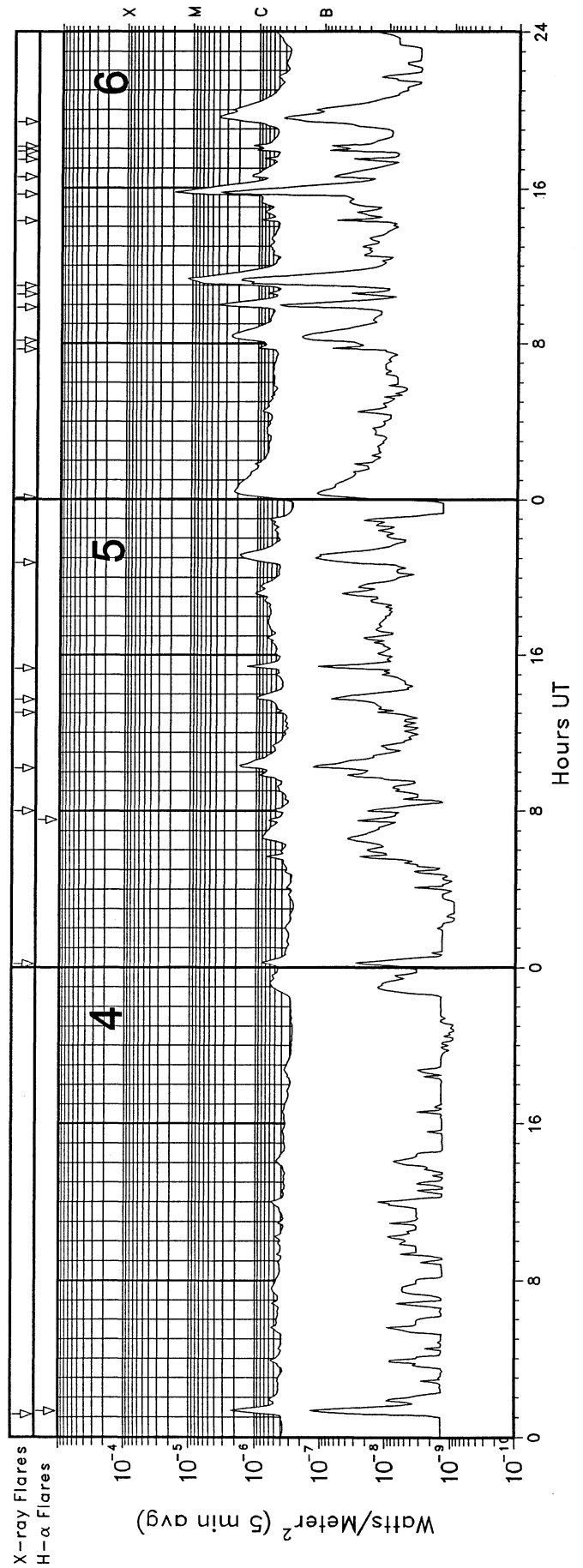
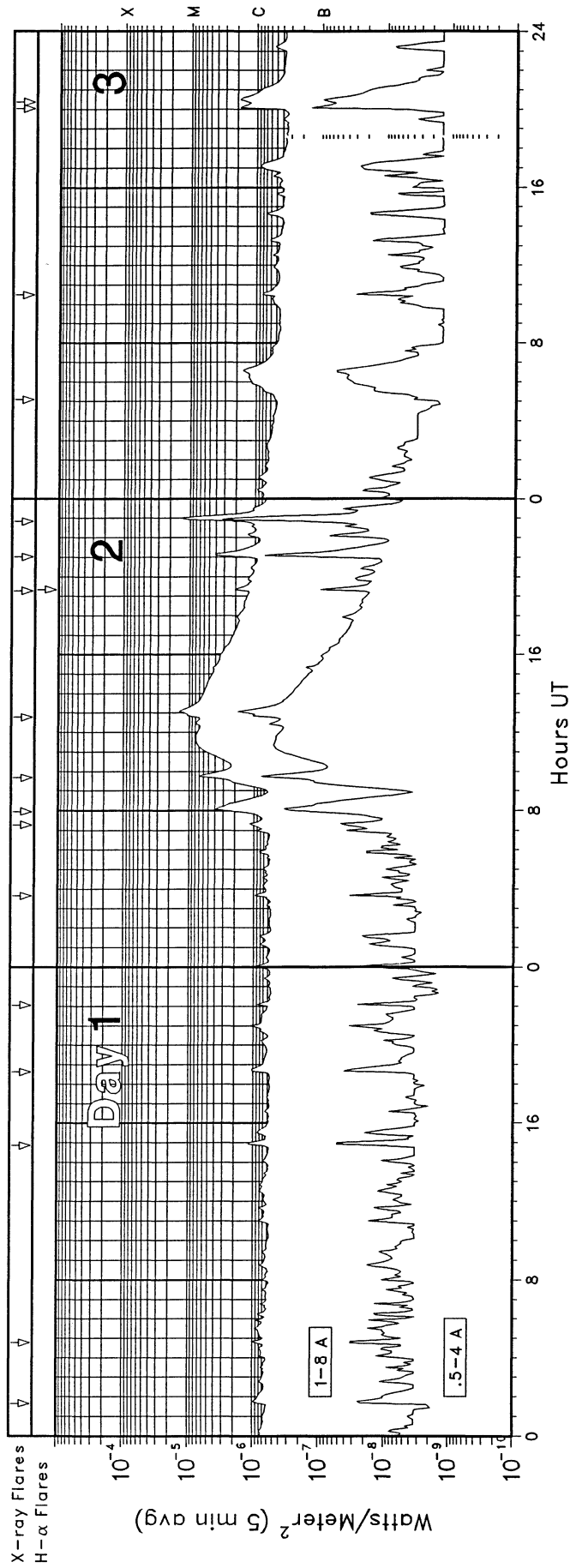
BERN = Berne	HUMN = Humain	ONDR = Ondrejov	SVTO = San Vito
CRIM = Crimea	IZMI = IZMIRAN	PEKG = Peking	TORN = Torun
CUBA = Havana	KISV = Kislovodsk	PALE = Palehua	TRST = Trieste
GORK = Gorky	KRAK = Krakow	PENT = Penticton	TYKW = Toyokawa
HIRA = Hiraiso	LEAR = Learmonth	POTS = Potsdam	UPIC = Upice
HUAN = Huancayo	NOBE = Nobeyama	SGMR = Sagamore Hill	

Explanation of Type Code:

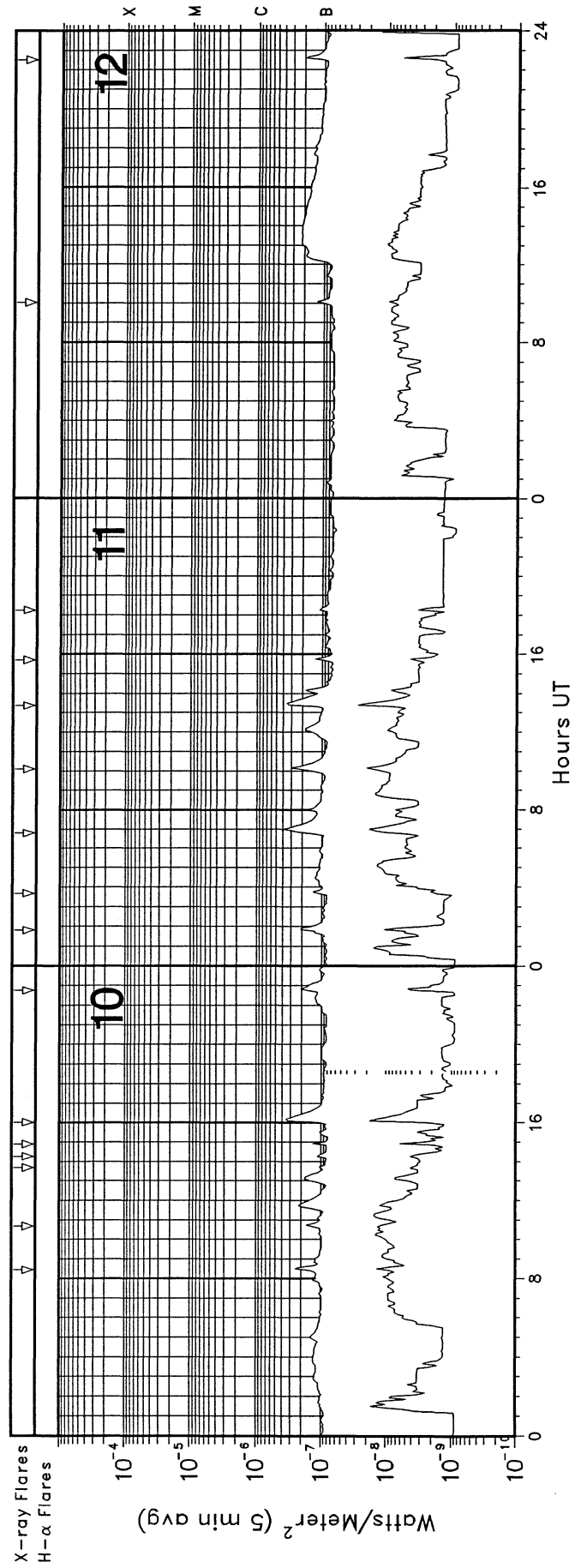
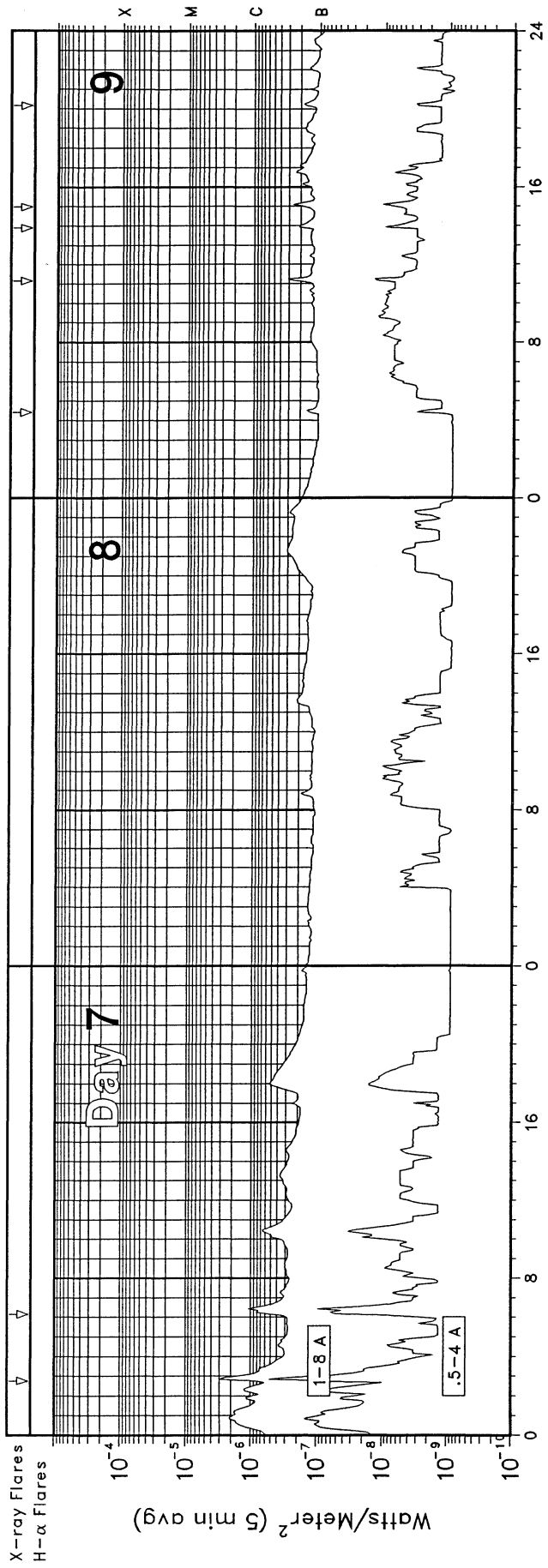
1 Simple 1	7 Minor +	24 Rise	30 Post Burst Increase A	43 Onset of Noise Storm
2 Simple 1F	8 Spike	25 Rise A	31 Post Burst Decrease	44 Noise Storm in Progress
3 Simple 2	20 Simple 3	26 Fall	33 Absorption	45 Complex
4 Simple 2F	21 Simple 3A	27 Rise and Fall	40 Fluctuation	46 Complex F
5 Simple	22 Simple 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	40 Rise Only	16A Fall A	27AF Rise and Fall AF	
21A Simple 3A GRF	40F Rise Only F	260 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.

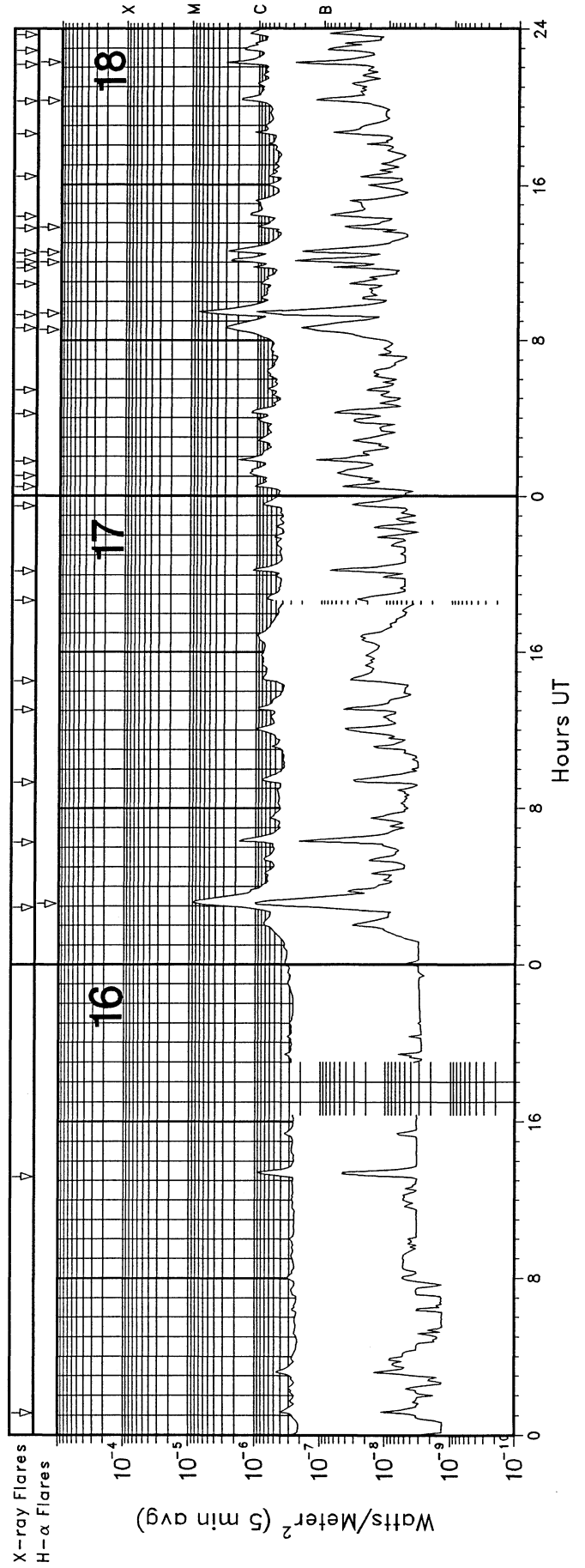
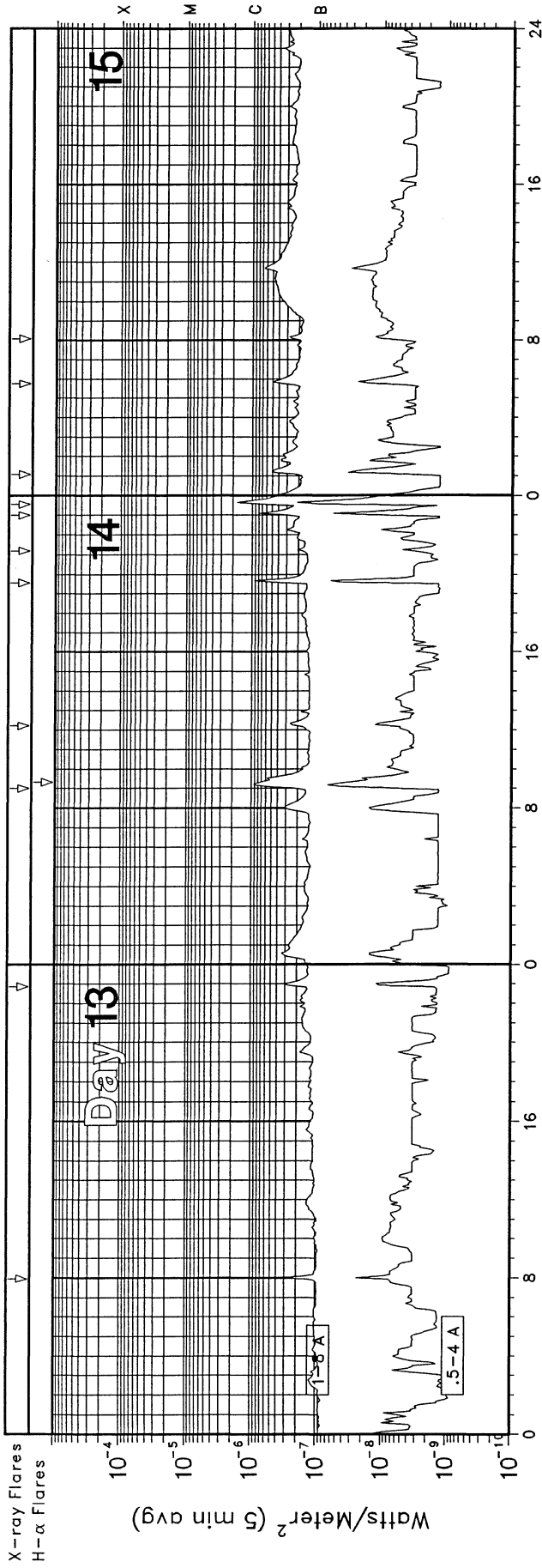
GOES X-RAY DETECTOR December 2003



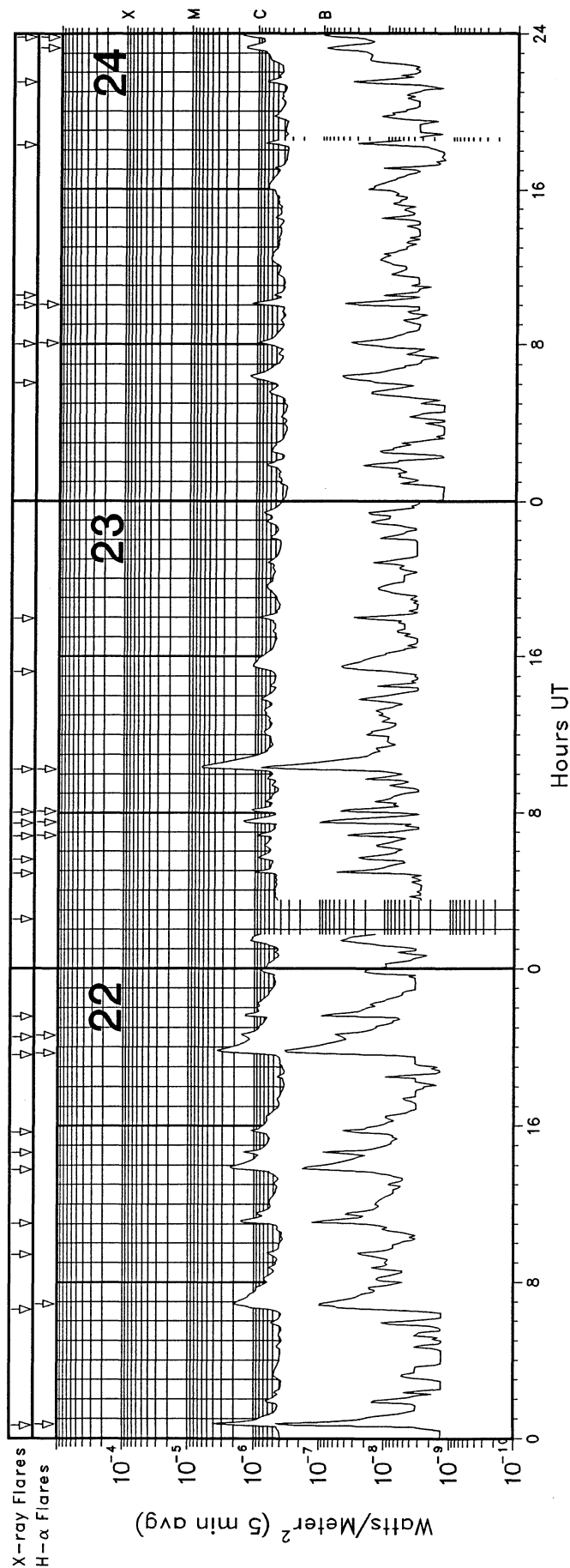
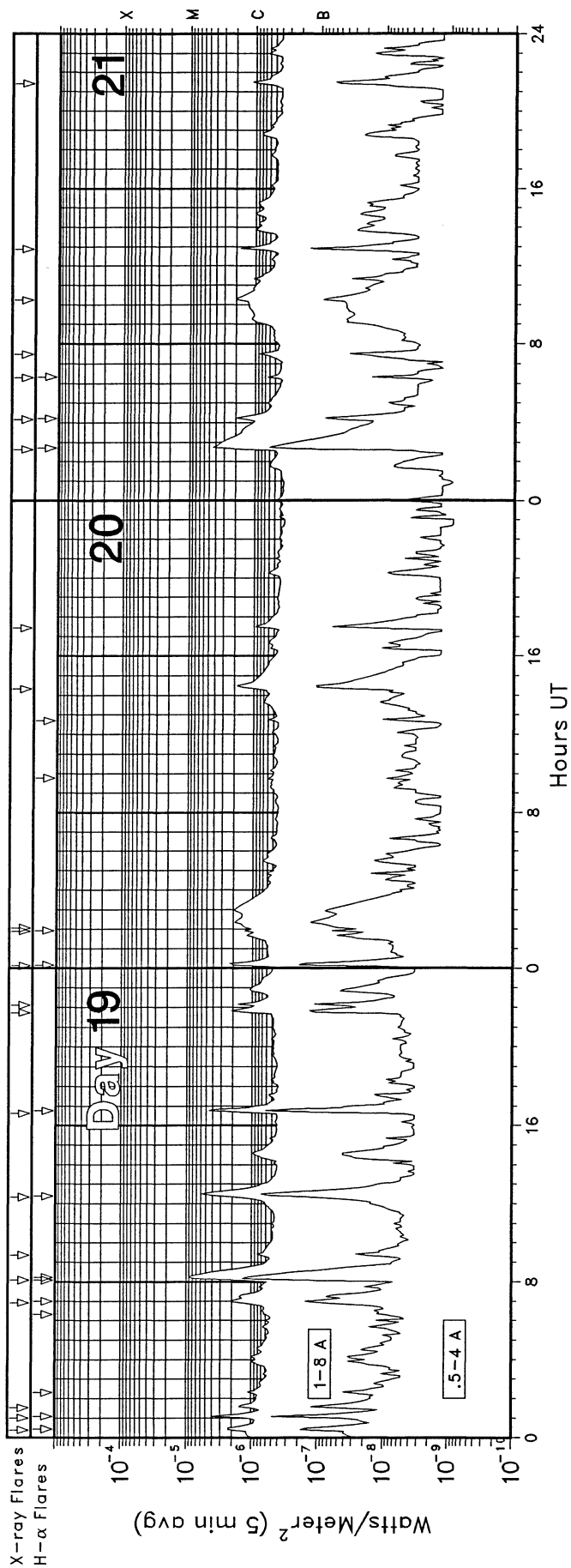
GOES X-RAY DETECTOR December 2003



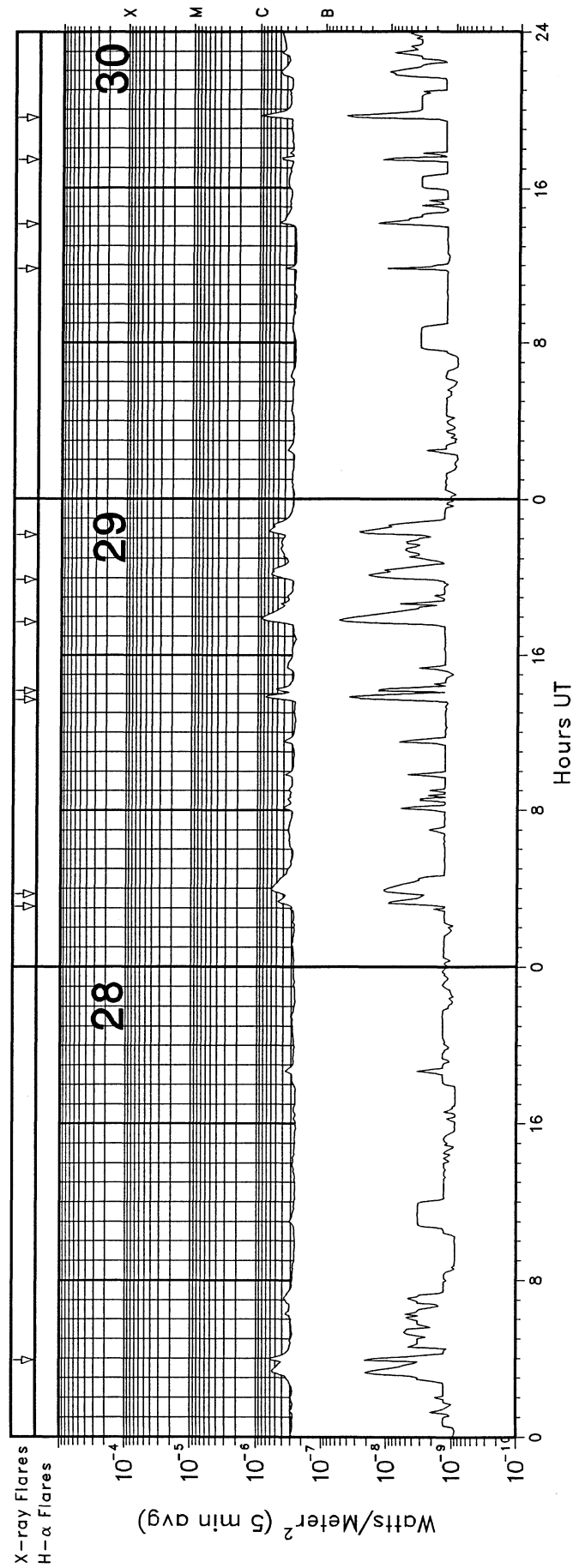
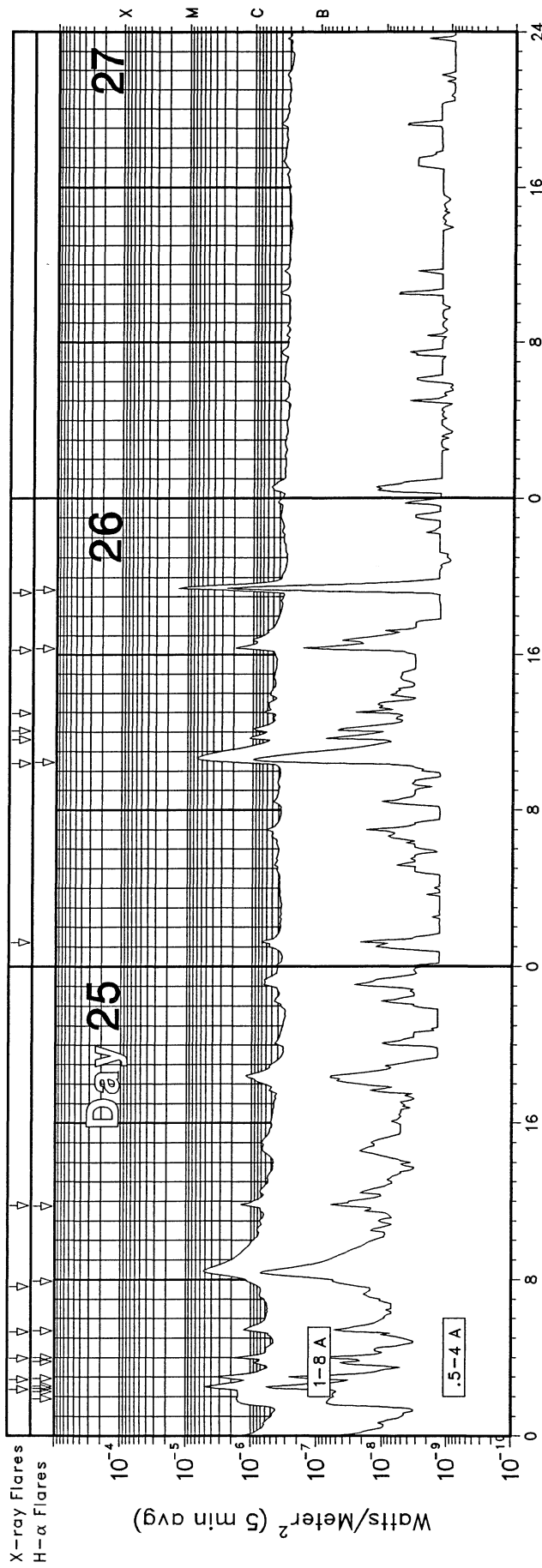
GOES X-RAY DETECTOR December 2003



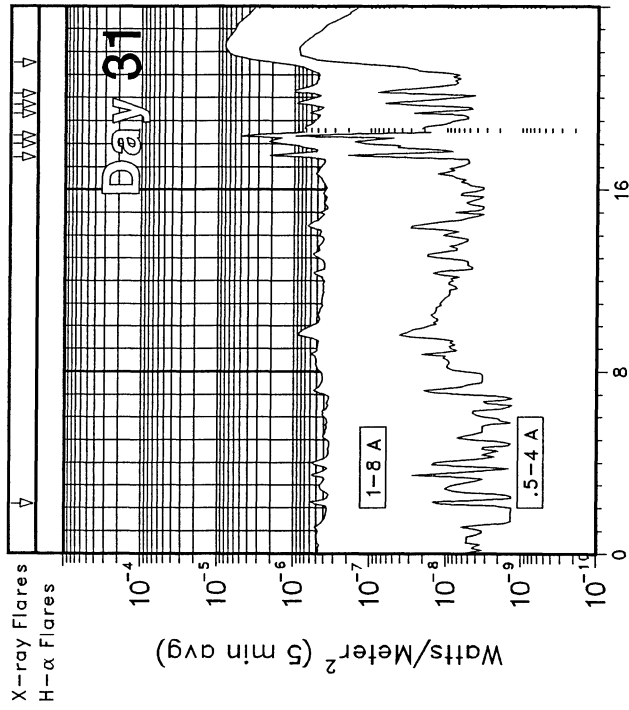
GOES X-RAY DETECTOR December 2003



GOES X-RAY DETECTOR December 2003



GOES X-RAY DETECTOR December 2003



GOES SOLAR X-RAY FLARES
 Preliminary Listing

21
 Dec 03

December 2003

Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Opt	Imp Xray	NOAA/USAF Region	Flux
01	0139	0144	0208				B9.6	10508	1.5E-03
01	0446	0449	0452				C1.3	10508	3.7E-04
01	1451	1503	1506				C1.3	10508	9.3E-04
01	1838	1843	1854				C1.1	10510	9.4E-04
01	2204	2209	2211				B9.4		3.5E-04
02	0339	0343	0347				C1.0		4.4E-04
02	0717	0720	0723				C1.3		4.2E-04
02	0757	0807	0817				C3.9	10508	3.7E-03
02	0940	0948	0954				C7.2	10508	5.1E-03
02	1247	1308	1322				M1.4	10508	2.4E-02
02	1917	1921	1929	S13	W63	SF	C2.0	10511	1.3E-03
02	2101	2109	2115				C5.0		2.9E-03
02	2250	2300	2307				M1.5	10508	9.2E-03
03	0505	0635	0651				C1.6		6.5E-03
03	1029	1033	1037				C1.0		3.9E-04
03	2003	2007	2017				C2.3		1.3E-03
03	2023	2034	2040				C1.8		1.7E-03
04	0108	0122	0128	S18	W59	SF	C2.2	10510	1.7E-03
05	0011	0016	0020				B8.4		4.0E-04
05	0800	0804	0807				B6.2		2.2E-04
05	1011	1019	1028				C1.8	10513	1.5E-03
05	1302	1305	1308				B5.3		1.7E-04
05	1343	1347	1357				C1.1		7.9E-04
05	1519	1527	1531				C1.5		7.7E-04
05	2045	2112	2122				C1.8		3.0E-03
06	0006	0027	0112				C2.2		7.0E-03
06	0742	0747	0753				C1.1		5.8E-04
06	0808	0824	0841				C2.5		4.0E-03
06	0951	1002	1010				C4.1		3.1E-03
06	1032	1036	1040				B7.5		3.2E-04
06	1058	1120	1128				M1.3		1.3E-02
06	1417	1422	1426				C1.0		4.3E-04
06	1539	1546	1553				M2.0		1.1E-02
06	1633	1638	1644				C1.5		7.9E-04
06	1727	1730	1733				C1.0		2.9E-04
06	1752	1757	1802				C1.2		5.4E-04
06	1807	1811	1813				C1.4		4.3E-04
06	1923	1939	1952				C4.1		5.1E-03
07	0246	0254	0301				C3.1		2.0E-03
07	0609	0627	0633				C1.1		1.2E-03
09	0425	0429	0433				B1.8		7.5E-05
09	1110	1115	1117				B4.2		1.3E-04
09	1354	1358	1404				B2.5		1.2E-04
09	1500	1505	1512				B2.7		1.6E-04
09	2009	2014	2022				B1.8		1.3E-04
10	0826	0833	0837				B2.9		1.5E-04
10	1041	1045	1048				B1.9		6.8E-05
10	1341	1344	1346				B1.4		3.4E-05
10	1415	1419	1421				B1.5		4.3E-05
10	1453	1457	1459				B1.7		4.4E-05
10	1601	1609	1622				B3.9		3.6E-04
10	2245	2249	2255				B2.3		1.2E-04
11	0148	0154	0158				B2.5		1.2E-04
11	0340	0345	0350				B1.4		7.5E-05
11	0647	0701	0713				B3.9		4.4E-04

Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Opt	Imp Xray	NOAA/USAF Region	Flux
11	1006	1011	1015				B3.2		1.5E-04
11	1322	1329	1343				B3.7		3.7E-04
11	1542	1546	1550				B1.3		5.6E-05
11	1814	1817	1821				B1.2		4.6E-05
12	1001	1005	1009				B1.3	10520	5.8E-05
12	2231	2239	2244				B2.2	10520	1.3E-04
13	0757	0802	0804				B4.4	10520	1.2E-04
13	2252	2300	2307				B3.2	10520	2.3E-04
14	0900	0913	0926				B9.5		1.0E-03
14	1213	1220	1227				B2.7		2.0E-04
14	1934	1940	1944				C1.1	10522	4.1E-04
14	2112	2116	2120				B2.1		9.1E-05
14	2300	2306	2313				B8.4		4.5E-04
14	2334	2340	2347				C2.0		9.4E-04
15	0105	0113	0126				B5.6		5.2E-04
15	0545	0552	0601				B4.9		4.2E-04
15	0805	0809	0814				B3.0		1.5E-04
16	0107	0111	0120				B4.0		2.8E-04
16	1313	1325	1332				C1.0		7.7E-04
17	0255	0313	0325	N08	E72	SF	C8.6	10525	1.0E-02
17	0615	0623	0630				C1.8		1.2E-03
17	0919	0928	0938				B8.2		8.2E-04
17	1303	1309	1316				C1.0	10521	6.8E-04
17	1432	1656	1715				B9.5		7.6E-03
17	1841	1845	1900				B6.7		7.0E-04
17	2011	2017	2023				C1.3	10525	6.9E-04
17	2330	2339	2344				B8.8		6.1E-04
18	0028	0032	0039				C1.1		6.5E-04
18	0101	0112	0126				C1.3		1.7E-03
18	0146	0151	0155				C2.1		8.5E-04
18	0412	0418	0427				C1.3		9.9E-04
18	0525	0528	0535				B7.3		4.0E-04
18	0839	0843	0847				C3.4		1.5E-03
18	0919	0931	0937	N08	E53	SF	C8.6	10525	5.5E-03
18	1053	1056	1107				B9.9		7.1E-04
18	1142	1147	1150				C1.4		4.8E-04
18	1200	1209	1211				C5.5		1.4E-03
18	1228	1237	1243	N10	E47	SF	C2.9	10525	1.9E-03
18	1343	1351	1359				C1.0		8.2E-04
18	1420	1429	1437				C1.4		1.2E-03
18	1624	1628	1632				B8.4		3.3E-04
18	1836	1840	1843				C1.4		4.4E-04
18	2016	2024	2030	N11	E47	SF	C1.9	10525	1.3E-03
18	2209	2216	2220	N10	E46	SF	C3.5	10525	1.5E-03
18	2252	2257	2308				C1.7		1.4E-03
18	2342	2346	2354				C1.3		8.9E-04
19	0023	0028	0035	N09	E47	SF	C2.5	10525	1.5E-03
19	0100	0107	0110	N08	E46	SF	C4.6	10525	1.6E-03
19	0131	0139	0141				C2.0		8.3E-04
19	0655	0703	0710	N09	E43	SF	C2.1	10525	1.6E-03
19	0805	0818	0830	N08	E40	SF	C9.3	10528	9.8E-03
19	0922	0926	0928				B9.1		3.0E-04
19	1220	1231	1239				C5.9	10525	4.5E-03
19	1637	1646	1653	N10	E36	SF	C5.4	10525	2.6E-03
19	2144	2149	2158				C2.3	10525	1.4E-03
19	2207	2211	2214				C1.8	10525	6.2E-04

GOES SOLAR X-RAY FLARES
Preliminary Listing

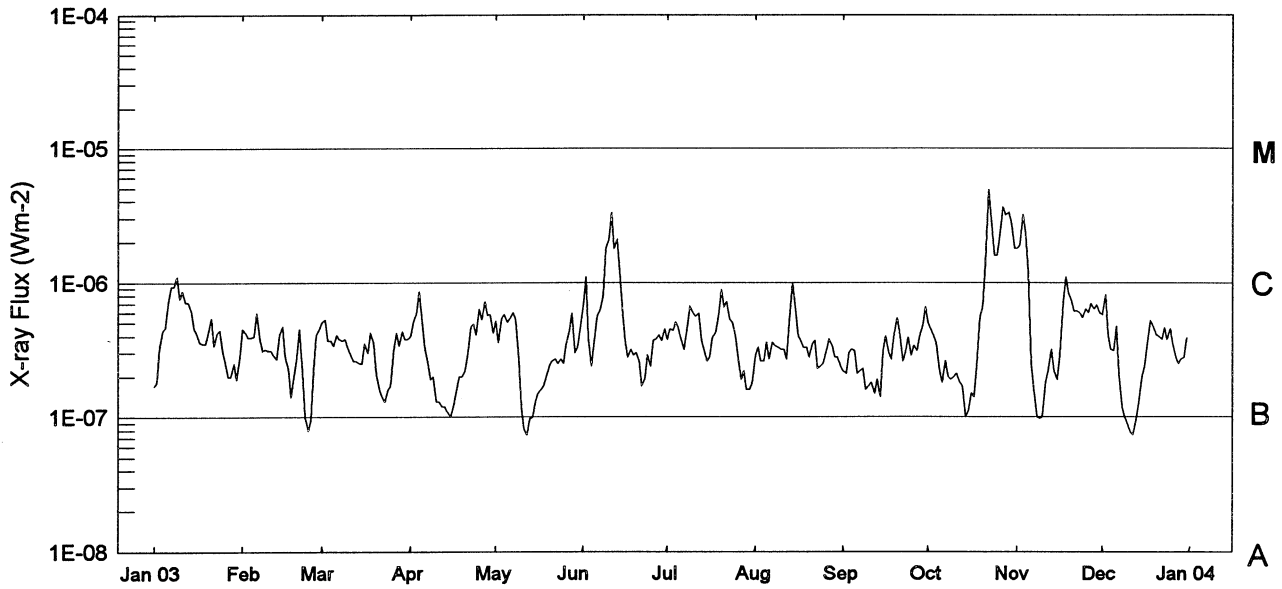
December 2003

Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Opt	Imp Xray	NOAA/ USAF Region	Flux
20	0007	0016	0020	N08	E32	SF	C2.6	10525	1.4E-03
20	0154	0158	0201	N08	E31	SF	C1.5	10525	5.4E-04
20	0204	0222	0243				C1.8	10525	3.6E-03
20	1419	1431	1438				C1.8	10525	1.6E-03
20	1726	1732	1740				B9.9		6.8E-04
21	0238	0246	0314	N09	E46	SF	C4.5	10528	6.8E-03
21	0410	0416	0421	S24	E89	SF	C2.0	10000	1.1E-03
21	0617	0621	0624	N08	E12	SF	B7.1	10525	2.5E-04
21	0728	0731	0734				B9.3	10528	3.0E-04
21	1014	1018	1025				C2.1	10525	1.2E-03
21	1253	1257	1301				C2.0	10528	7.0E-04
21	2124	2130	2136				C1.1	10528	7.0E-04
22	0039	0045	0049	N08	E41	SF	C5.5	10528	1.7E-03
22	0636	0654	0711				C2.2	10530	3.1E-03
22	0926	0930	0933				B7.0		2.6E-04
22	1102	1109	1117				C1.7	10528	1.2E-03
22	1346	1356	1406				C2.3	10528	2.2E-03
22	1438	1441	1443				C1.6	10528	4.2E-04
22	1541	1545	1549				C1.2	10528	5.0E-04
22	1937	1950	2004	N09	E23	SF	C3.7	10528	3.8E-03
22	2031	2041	2044	S18	E51	SF	C1.6	10530	1.1E-03
22	2133	2139	2143				C1.8	10528	7.8E-04
23	0231	0238	0245	N11	E25	SF	C2.1	10528	1.4E-03
23	0452	0457	0502				C1.1	10528	5.2E-04
23	0535	0543	0551				B8.7	10528	7.6E-04
23	0647	0651	0658	N11	E23	SF	B9.5	10528	5.4E-04
23	0728	0732	0743	N11	W10	SF	C1.6	10525	1.1E-03
23	0802	0809	0815	N09	E16	SF	C1.3	10528	7.6E-04
23	1014	1024	1035				C6.9	10525	5.9E-03
23	1513	1532	1600				C1.0		2.5E-03
23	1756	1801	1806				B9.5	10525	4.9E-04
24	0602	0627	0639				C1.2	10525	2.0E-03
24	0801	0806	0812				B9.5	10528	5.7E-04
24	0959	1006	1014				C1.2	10531	8.4E-04
24	1029	1033	1036				B6.1		2.3E-04
24	1816	1822	1829				B7.9	10525	5.1E-04
24	2130	2133	2136				B8.4	10528	2.6E-04
24	2349	0000	0005	N09	W05	SF	C1.8	10528	1.5E-03

Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Opt	Imp Xray	NOAA/ USAF Region	Flux
25	0222	0231	0237	N09	W01	SF	C5.3	10528	3.2E-03
25	0253	0301	0306	N09	W37	SF	C3.6	10525	2.0E-03
25	0357	0401	0406	N09	W38	SF	C1.9	10525	7.8E-04
25	0519	0527	0540	N11	W39	SF	C1.2	10525	1.3E-03
25	0738	0825	0932	N09	W04	SF	C5.3	10528	1.6E-02
25	1147	1150	1155				C1.5	10528	6.4E-04
26	0114	0118	0121				B8.6	10532	3.0E-04
26	1023	1040	1059	N08	W22	1F	C7.1	10528	1.1E-02
26	1137	1143	1150				C1.2	10528	7.6E-04
26	1204	1209	1215				C1.0	10528	6.1E-04
26	1258	1302	1309				B7.2	10528	4.3E-04
26	1614	1623	1632	N09	W29	SF	C1.8	10528	1.5E-03
26	1913	1928	1933	N09	W30	1N	M1.5	10528	7.8E-03
28	0354	0359	0405				B6.6	10528	3.8E-04
29	0304	0321	0327				B4.7	10532	5.3E-04
29	0343	0359	0421				B6.0	10532	1.2E-03
29	1341	1354	1359				B8.9	10525	6.7E-04
29	1409	1415	1421				B5.5	10528	3.5E-04
29	1743	1757	1813				B8.6	10528	1.3E-03
29	1954	2014	2038				B6.3	10528	1.4E-03
29	2211	2223	2248				B6.8	10528	1.3E-03
30	1148	1152	1155				B4.5		1.6E-04
30	1406	1411	1428				B5.2	10528	5.8E-04
30	1725	1729	1731				B7.9	10528	1.9E-04
30	1934	1940	1947				C1.0	10528	6.3E-04
31	0211	0215	0218				B6.5		2.5E-04
31	1725	1733	1736				C2.3		9.9E-04
31	1759	1808	1816				C2.2		1.9E-03
31	1821	1824	1826				M1.0	10528	1.9E-03
31	1918	1922	1926				B6.6		2.9E-04
31	1943	1947	1952				B9.9		4.7E-04
31	2010	2019	2029				C1.0		9.9E-04
31	2131	2217	2327				C8.3		4.4E-02

Preliminary GOES Satellite Daily X-Ray Background Jan 2003 - Dec 2003

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Dec 03



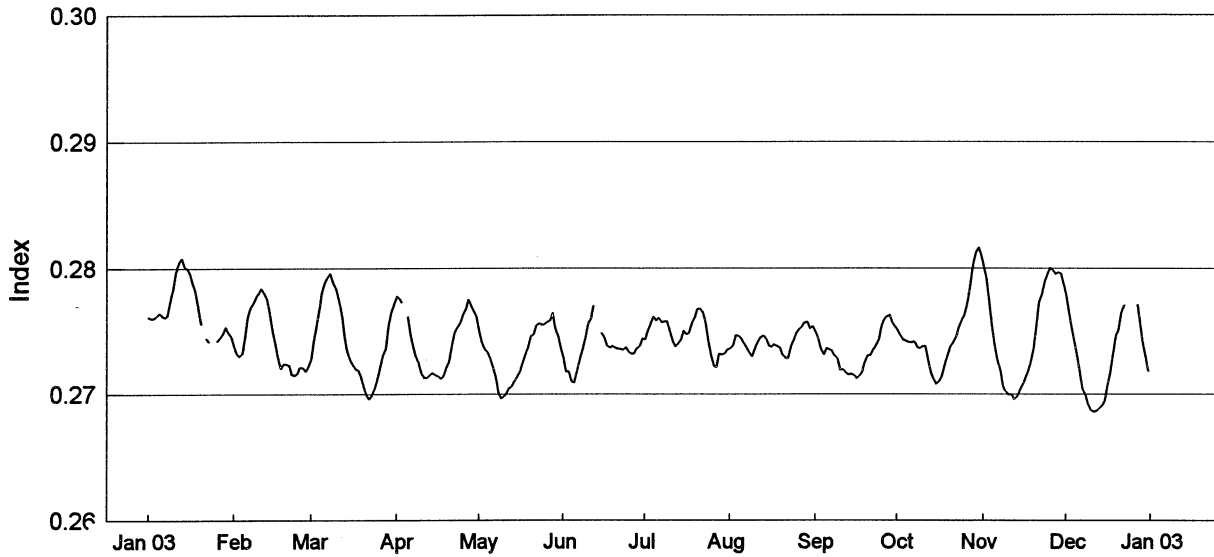
Day	Jan 03	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	B1.7	B4.5	B5.1	B4.0	B5.2	B6.8	B3.8	B2.9	B2.2	B5.0	C1.8	B5.8
2	B1.8	B4.2	B5.3	B5.1	B3.6	C1.1	B4.5	B3.3	B2.1	B4.4	C1.9	B8.1
3	B3.3	B3.9	B3.7	B5.9	B5.4	B3.8	B4.4	B2.6	B3.0	B4.0	C3.2	B4.1
4	B4.4	B3.9	B3.7	B8.6	B5.8	B2.4	B5.1	B2.6	B3.2	B3.5	C2.3	B3.2
5	B4.6	B4.0	B3.4	B5.1	B5.1	B3.6	B4.6	B3.6	B3.1	B2.2	C1.2	B3.1
6	B7.4	B5.9	B4.1	B3.3	B5.4	B5.7	B3.7	B2.7	B2.1	B1.8	B2.5	B4.7
7	B9.3	B3.8	B3.8	B2.5	B6.0	B6.2	B3.2	B3.6	B2.2	B2.6	B1.6	B2.1
8	B9.4	B3.1	B3.7	B1.9	B5.3	B7.9	B4.6	B3.4	B2.3	B2.0	B1.0	B1.2
9	C1.1	B3.2	B3.8	B2.0	B2.7	C1.8	B6.7	B3.3	B1.6	B1.9	A9.7	B1.0
10	B7.6	B3.1	B3.3	B1.3	B1.2	C2.1	B5.9	B3.2	B1.7	B2.0	B1.0	A8.7
11	B8.7	B3.1	B2.9	B1.3	A8.2	C3.3	B5.6	B3.2	B1.8	B2.1	B1.8	A7.7
12	B7.1	B2.9	B2.6	B1.2	A7.4	C1.8	B5.9	B2.7	B1.5	B1.8	B2.2	A7.4
13	B7.1	B2.7	B2.6	B1.2	A9.7	C2.1	B3.8	B6.0	B1.9	B1.7	B3.2	A9.7
14	B6.2	B4.1	B2.5	B1.1	B1.0	C1.2	B3.2	C1.0	B1.4	B1.0	B2.2	B1.3
15	B4.6	B4.7	B2.5	B1.0	B1.3	B5.8	B2.6	B6.8	B3.1	B1.1	B1.9	B2.0
16	B4.1	B2.8	B3.5	B1.2	B1.5	B3.6	B2.8	B4.0	B4.0	B1.5	B2.9	B2.4
17	B3.6	B2.3	B3.0	B1.5	B1.6	B2.8	B3.9	B3.7	B3.0	B1.4	B7.2	B3.8
18	B3.5	B1.4	B4.2	B2.0	B1.7	B3.2	B4.2	B3.3	B2.7	B2.4	C1.1	B5.2
19	B3.5	B1.9	B3.6	B2.0	B2.0	B2.9	B5.4	B3.3	B4.1	B5.6	B8.4	B4.6
20	B4.2	B2.8	B2.1	B2.2	B2.4	B3.0	B8.9	B2.8	B5.4	B6.5	B7.3	B4.1
21	B5.4	B4.5	B1.6	B2.9	B2.6	B2.6	B6.6	B3.5	B4.2	C1.4	B6.1	B4.0
22	B3.4	B2.2	B1.4	B4.7	B2.7	B1.7	B7.2	B3.7	B2.6	C4.9	B6.2	B3.8
23	B4.2	B1.0	B1.3	B4.9	B2.5	B1.9	B5.3	B2.3	B3.0	C3.0	B5.9	B4.6
24	B4.4	A8.0	B1.6	B4.1	B2.7	B2.9	B5.1	B2.4	B3.9	C1.6	B5.5	B3.8
25	B3.2	A9.4	B1.7	B6.4	B2.5	B2.4	B4.0	B2.5	B2.9	C1.6	B6.4	B4.5
26	B2.6	B2.2	B3.3	B5.3	B3.5	B3.7	B2.8	B3.1	B3.4	C2.2	B6.0	B3.5
27	B2.0	B4.1	B4.2	B7.2	B4.3	B3.8	B1.9	B3.8	B3.1	C3.6	B7.0	B2.8
28	B2.0	B4.5	B3.4	B5.7	B5.9	B4.1	B2.2	B3.4	B4.0	C3.2	B6.4	B2.5
29	B2.5		B4.3	B5.8	B3.0	B3.7	B1.6	B2.8	B4.8	C3.3	B6.8	B2.7
30	B1.9		B3.8	B4.2	B3.3	B4.5	B1.6	B2.8	B6.6	C2.8	B5.9	B2.8
31	B2.8		B3.8		B4.5		B1.8	B2.4		C1.8		B3.9

NOTE: * = Data not available.

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

Jan 2003 - Dec 2003
Version 9.1

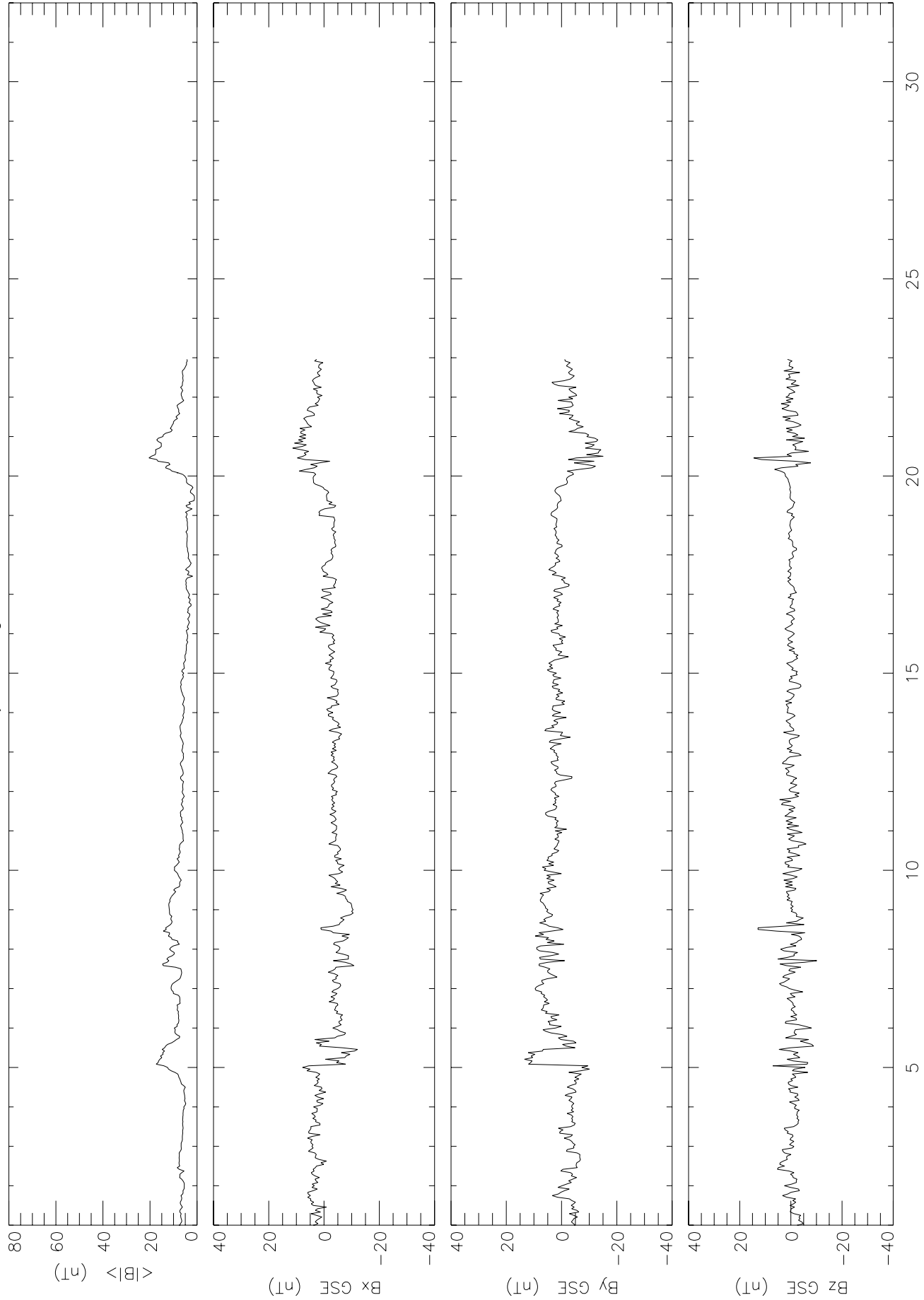
25
Dec 03



Day	Jan 03	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.2761	0.2738	0.2728	0.2778	0.2749	0.2729	0.2743	0.2736	0.2749	0.2751	0.2801	0.2777
2	0.2760	0.2732	0.2743	0.2776	0.2741	0.2718	0.2751	0.2739	0.2744	0.2746	0.2792	0.2764
3	0.2760	0.2730	0.2754	0.2772	0.2736	0.2718	0.2756	0.2747	0.2736	0.2743	0.2774	0.2750
4	0.2762	0.2732	0.2769	—	0.2733	0.2710	0.2761	0.2746	0.2731	0.2743	0.2752	0.2740
5	0.2764	0.2745	0.2781	0.2761	0.2728	0.2709	0.2758	0.2744	0.2737	0.2741	0.2738	0.2730
6	0.2762	0.2761	0.2789	0.2747	0.2722	0.2717	0.2760	0.2741	0.2736	0.2741	0.2727	0.2717
7	0.2761	0.2769	0.2793	0.2738	0.2713	0.2728	0.2757	0.2736	0.2734	0.2742	0.2719	0.2704
8	0.2762	0.2772	0.2796	0.2730	0.2701	0.2735	0.2758	0.2732	0.2730	0.2737	0.2706	0.2699
9	0.2775	0.2777	0.2788	0.2724	0.2697	0.2743	0.2758	0.2730	0.2728	0.2737	0.2702	0.2691
10	0.2784	0.2781	0.2784	0.2716	0.2698	0.2756	0.2749	0.2737	0.2720	0.2738	0.2700	0.2688
11	0.2797	0.2784	0.2776	0.2713	0.2700	0.2759	0.2742	0.2741	0.2719	0.2738	0.2700	0.2686
12	0.2805	0.2780	0.2763	0.2713	0.2705	0.2770	0.2738	0.2745	0.2717	0.2728	0.2696	0.2687
13	0.2808	0.2775	0.2746	0.2715	0.2706	—	0.2740	0.2746	0.2715	0.2717	0.2698	0.2688
14	0.2802	0.2765	0.2734	0.2717	0.2710	—	0.2743	0.2744	0.2716	0.2712	0.2702	0.2691
15	0.2800	0.2749	0.2728	0.2715	0.2714	0.2748	0.2750	0.2739	0.2715	0.2708	0.2707	0.2694
16	0.2796	0.2740	0.2724	0.2714	0.2718	0.2745	0.2747	0.2738	0.2713	0.2710	0.2712	0.2706
17	0.2788	0.2729	0.2720	0.2712	0.2725	0.2739	0.2748	0.2740	0.2714	0.2714	0.2717	0.2716
18	0.2782	0.2720	0.2719	0.2714	0.2731	0.2737	0.2756	0.2738	0.2717	0.2723	0.2724	0.2730
19	0.2771	0.2724	0.2714	0.2720	0.2738	0.2738	0.2760	0.2737	0.2725	0.2732	0.2737	0.2746
20	0.2755	0.2724	0.2705	0.2726	0.2746	0.2737	0.2767	0.2731	0.2731	0.2738	0.2754	0.2706
21	—	0.2723	0.2699	0.2738	0.2747	0.2736	0.2768	0.2729	0.2731	0.2740	0.2773	0.2764
22	0.2744	0.2716	0.2696	0.2748	0.2754	0.2736	0.2765	0.2728	0.2735	0.2746	0.2780	0.2771
23	0.2741	0.2715	0.2699	0.2753	0.2756	0.2735	0.2757	0.2737	0.2737	0.2752	0.2789	—
24	—	0.2716	0.2705	0.2756	0.2755	0.2737	0.2743	0.2743	0.2743	0.2758	0.2795	—
25	—	0.2721	0.2712	0.2762	0.2755	0.2734	0.2729	0.2749	0.2753	0.2762	0.2801	0.2781
26	0.2742	0.2721	0.2721	0.2767	0.2757	0.2732	0.2723	0.2751	0.2759	0.2770	0.2799	—
27	0.2745	0.2718	0.2730	0.2775	0.2758	0.2732	0.2721	0.2754	0.2762	0.2786	0.2795	0.2771
28	0.2748	0.2721	0.2736	0.2770	0.2764	0.2736	0.2732	0.2756	0.2763	0.2802	0.2797	0.2756
29	0.2753		0.2754	0.2766	0.2752	0.2738	0.2732	0.2757	0.2757	0.2811	0.2796	0.2741
30	0.2748		0.2764	0.2762	0.2745	0.2744	0.2732	0.2752	0.2753	0.2817	0.2786	0.2729
31	0.2745		0.2770		0.2736		0.2735	0.2754		0.2810		0.2717
Mean	0.2768	0.2742	0.2743	0.2741	0.2732	0.2736	0.2748	0.2742	0.2734	0.2748	0.2749	0.2728

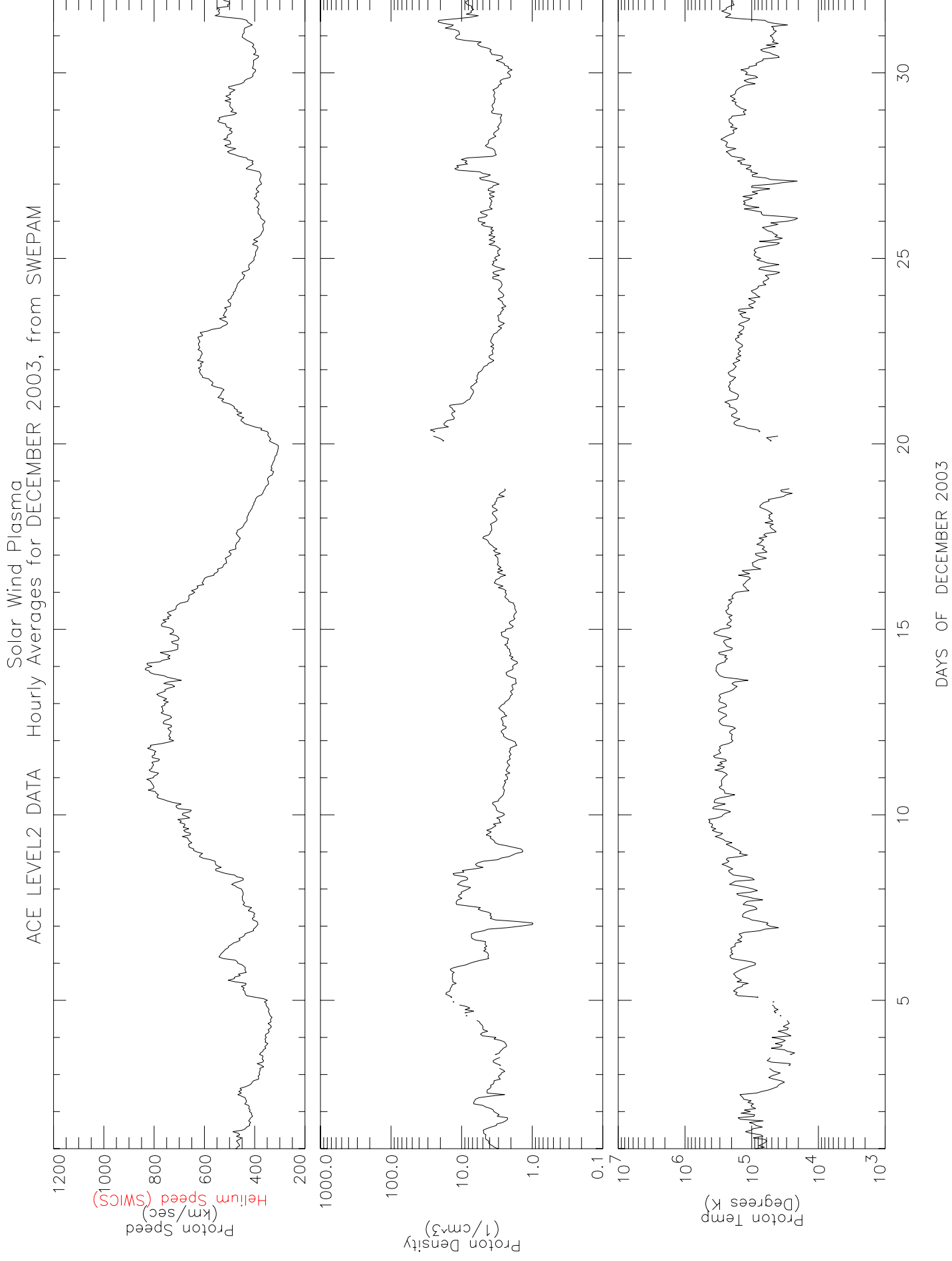
Data at: <http://www.sec.noaa.gov/ftpmenu/sbu.html>

ACE LEVEL2 DATA Interplanetary Magnetic Field Hourly Averages for DECEMBER 2003, from MAG

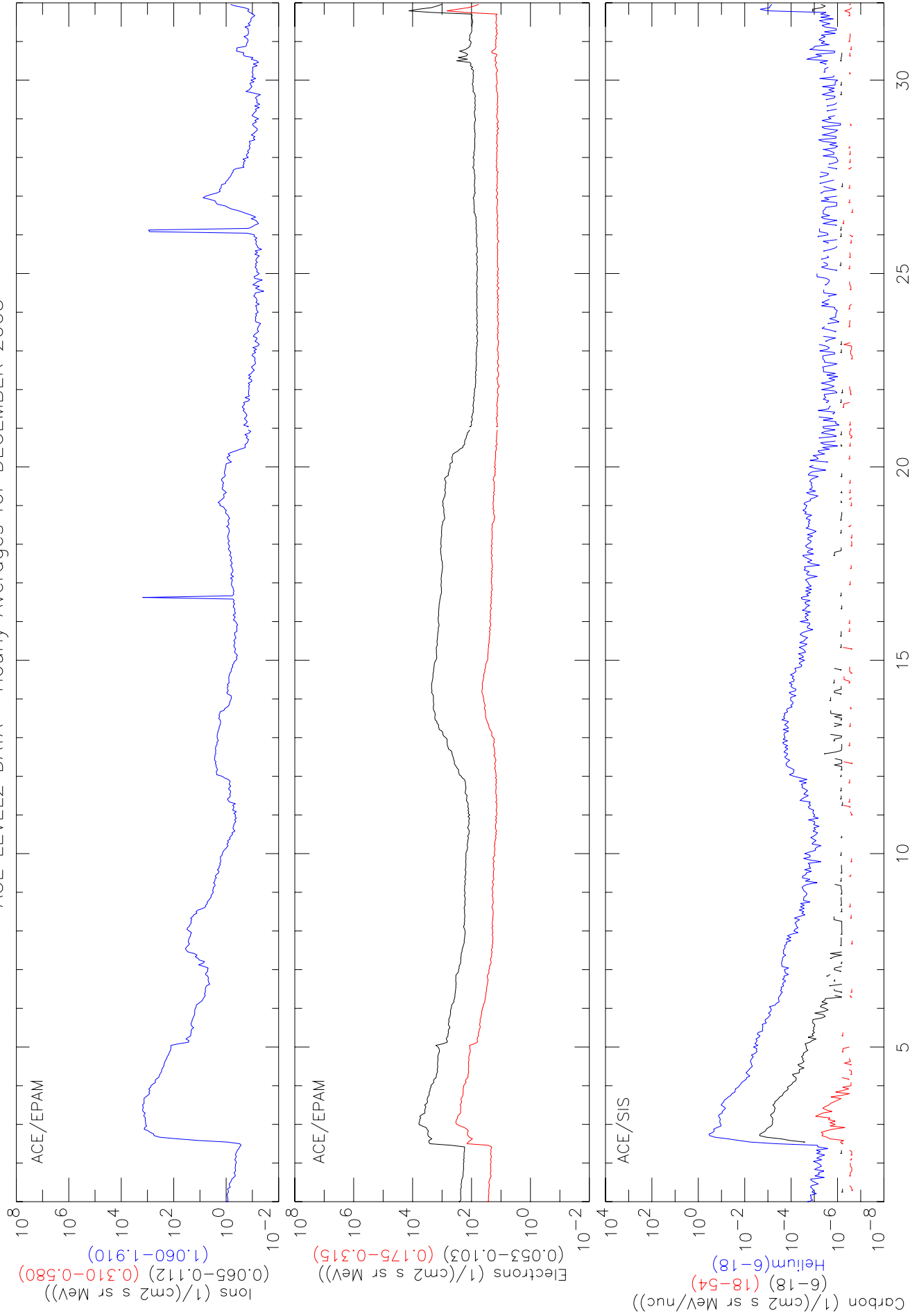


DAYS OF DECEMBER 2003

ACE LEVEL2 DATA Hourly Averages for DECEMBER 2003, from SWEPAM



Solar Energetic Particles
ACE LEVEL2 DATA Hourly Averages for DECEMBER 2003



DAYS OF DECEMBER 2003

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
DECEMBER 2003

First C2 Appearance		Central Width			Linear Fit			—2nd order speed— 20R	Accel m/s ²	Measurement	
Date	Time UT	Position Angle degree	Angular Width degree	Speed km/s	Initial km/s	Final km/s	Position Angle degree			Remarks	
2003/12/01	03:08:41	83	41	552	----	----	----	-----	79	Only 2 points	
2003/12/01	09:50:05	287	4	403	510	307	0	-37.8	286		
2003/12/01	10:50:06	328	14	303	----	----	----	-----	331	Only 2 points	
2003/12/01	12:50:05	236	19	533	424	642	1066	41.5	230		
2003/12/01	20:26:05	69	6	426	652	211	0	-66.4	64		
2003/12/02	00:26:05	72	6	488	599	387	0	-46.5	69	Only 3 points	
2003/12/02	05:50:05	293	11	756	937	591	0	-51.7	285		
2003/12/02	08:26:05	231	41	240	242	239	216	-0.5	228	Only C2	
2003/12/02	10:26:06	261	>32	----	----	----	----	-----	262	Only 1 points/C2	
2003/12/02	10:50:05	261	>150	1393	1300	1490	1447	18.5	267	Partial Halo	
2003/12/03	14:06:05	294	20	532	669	389	0	-24.2	293		
2003/12/03	18:06:05	195	95	347	162	527	527	12.3	199	Only C3	
2003/12/04	09:50:05	97	27	374	359	389	579	8.7	91	Only C2	
2003/12/04	19:50:05	94	6	529	517	540	716	10.7	94	Only 3 points/C2	
2003/12/05	04:06:05	90	30	403	380	427	590	8.5	88		
2003/12/05	20:42:31	227	41	294	257	330	383	4.6	234	Only C3	
2003/12/06	01:26:34	220	95	676	554	815	749	11.4	201		
2003/12/07	06:30:05	93	42	349	350	349	345	-0.2	89		
2003/12/07	22:30:05	227	82	392	480	307	0	-12.4	211		
2003/12/08	13:31:35	228	68	464	313	624	571	9.8	224		
2003/12/08	20:54:31	1	24	503	408	598	776	18.5	6		
2003/12/09	11:30:05	165	12	517	----	----	----	-----	166	Only 2 points	
2003/12/10	12:54:05	320	29	586	287	924	2079	177.2	322		
2003/12/11	04:54:05	345	15	341	358	323	243	-2.9	346		
2003/12/11	17:30:05	311	25	447	327	555	875	27.3	310		
2003/12/11	19:31:37	138	29	123	70	170	254	2.4	143		
2003/12/12	04:54:05	58	23	513	313	713	914	32.7	56		
2003/12/12	12:30:05	186	105	214	135	308	277	2.4	207		
2003/12/13	04:30:05	182	99	368	328	409	407	2.5	167		
2003/12/13	11:54:05	307	29	995	666	1342	1524	78.3	307		
2003/12/14	05:54:05	225	39	800	409	1176	1694	116.8	225		
2003/12/14	13:27:25	306	29	492	502	481	449	-2.2	308		
2003/12/15	10:30:21	145	60	208	----	----	----	-----	147	Only 3 points/C2	
2003/12/15	13:31:40	196	96	131	0	234	280	3.2	189		
2003/12/16	04:30:05	223	5	419	379	459	608	9.5	224		
2003/12/16	08:54:05	279	29	350	278	423	600	11.6	278		
2003/12/16	11:06:05	259	60	354	223	487	631	14.7	257		
2003/12/17	02:54:31	83	17	288	210	369	590	12.7	83		
2003/12/17	06:31:03	120	11	551	862	262	0	-144.4	123		
2003/12/17	09:54:30	103	15	350	440	253	0	-13.3	103		
2003/12/17	19:54:05	119	10	495	404	589	1198	52.5	123	Only C2	

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
DECEMBER 2003

First C2 Appearance		Central Width			Linear Fit			—2nd order speed—	Accel m/s ²	Measurement	Remarks
Date	Time UT	Position Angle degree	Angular Width degree	Speed km/s	Initial km/s	Final km/s	20R km/s			Position Angle degree	
2003/12/18	05:30:05	101	10	506	621	386	0	-16.7	100		
2003/12/18	07:54:05	231	4	619	----	----	----	-----	231	Only 2 points/C2	
2003/12/18	09:54:05	115	8	382	376	386	421	1.5	118	Only 3 points	
2003/12/19	15:54:05	265	35	239	298	174	0	-12.5	266		
2003/12/19	22:30:05	39	6	337	340	333	284	-1.6	38	Only 3 points	
2003/12/20	06:06:05	49	39	318	251	390	527	8.8	48		
2003/12/21	01:31:42	111	59	315	168	472	537	11.9	111		
2003/12/21	19:31:44	116	30	664	225	1122	1766	140.6	118		
2003/12/22	01:32:15	131	58	734	486	974	1369	76.2	117		
2003/12/22	07:54:05	85	17	494	818	200	0	-286.4	87	Only 3 points/C2	
2003/12/22	19:31:47	61	29	717	707	728	733	1.5	61		
2003/12/22	21:32:11	247	51	360	378	340	230	-3.8	267		
2003/12/23	09:06:05	265	36	329	346	312	0	-6.0	270		
2003/12/25	02:30:05	198	>201	519	579	454	435	-6.4	219	Partial Halo	
2003/12/25	09:06:05	257	57	176	107	246	829	27.7	257	Only C2	
2003/12/25	16:30:05	223	18	302	162	443	1389	78.5	222	Only C2	
2003/12/27	22:20:05	103	4	622	----	----	----	-----	103	Only 3 points	
2003/12/27	22:20:05	56	15	600	539	658	680	7.3	50		
2003/12/29	08:25:05	125	61	----	----	----	----	-----	117	Only 1 points/C3 Unable to measure	

If you use data from this catalog, please acknowledge as follows:

"This CME catalog is generated and maintained by the Center for Solar Physics and Space Weather, The Catholic University of America in cooperation with the Naval Research Laboratory and NASA. SOHO is a project of international cooperation between ESA and NASA."

CME heights are measured at the fastest segment of the leading edge

PA= Position Angle measured from Solar North in degrees (Counter clockwise)

ONLINE – Click on date to view java script movies

ONLINE – Click on time to see height-time digital files

ONLINE – Click on speed to view height-time plot

Numbers in 2nd order fit columns correspond to the speed at the last height of measurement and at a distance of 20 solar radii.