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Part II (Comprehensive Reports)

NO. 502 JUNE 1986

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DECEMBER 1985

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C O N T E N T S

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C O N T E N T S

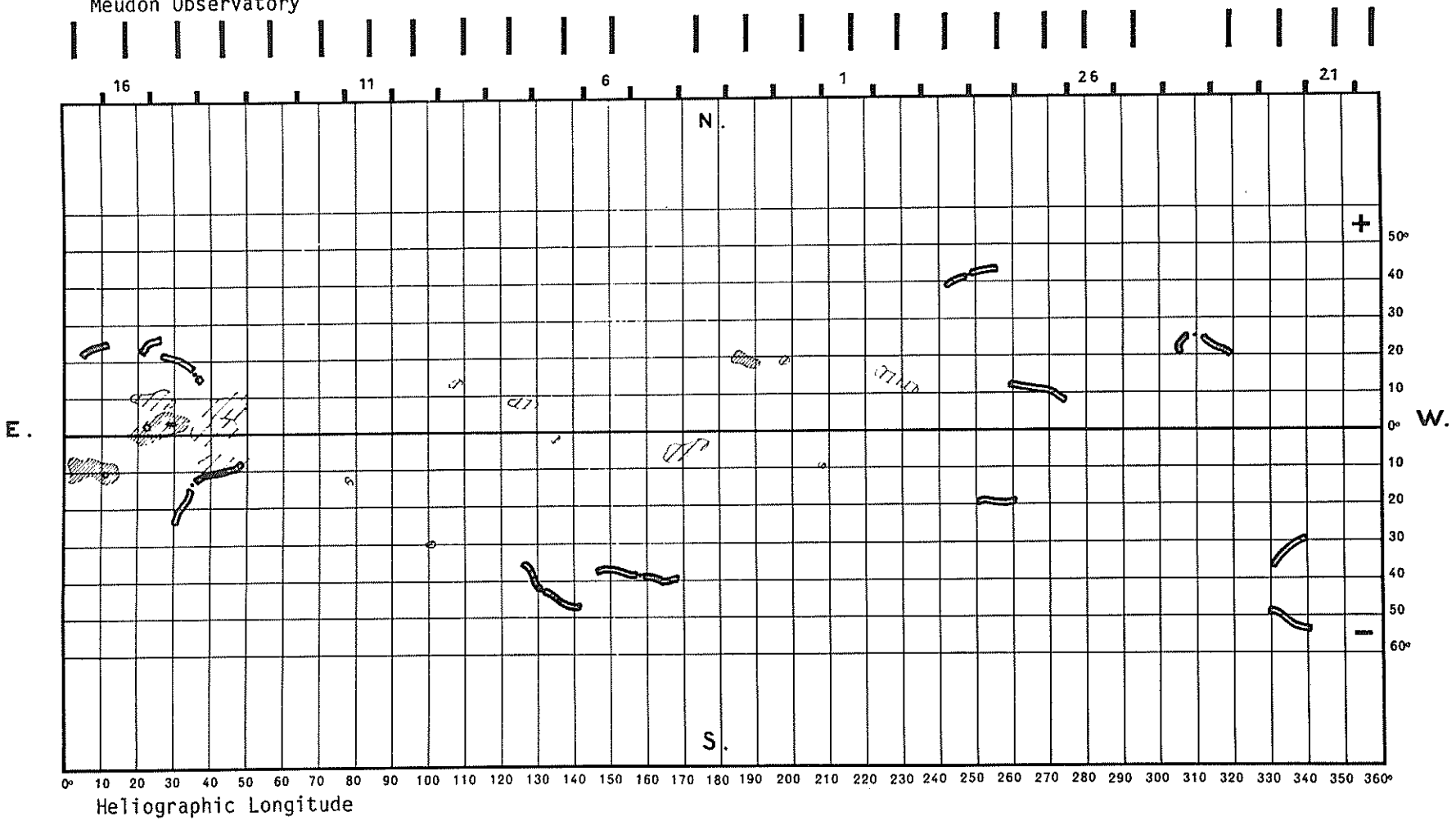
Comprehensive Reports DATA FOR DECEMBER 1985 Number 502 Part II

CARTE SYNOPTIQUE

CARRINGTON ROTATION NUMBER 1769
(20 November to 17 December 1985)

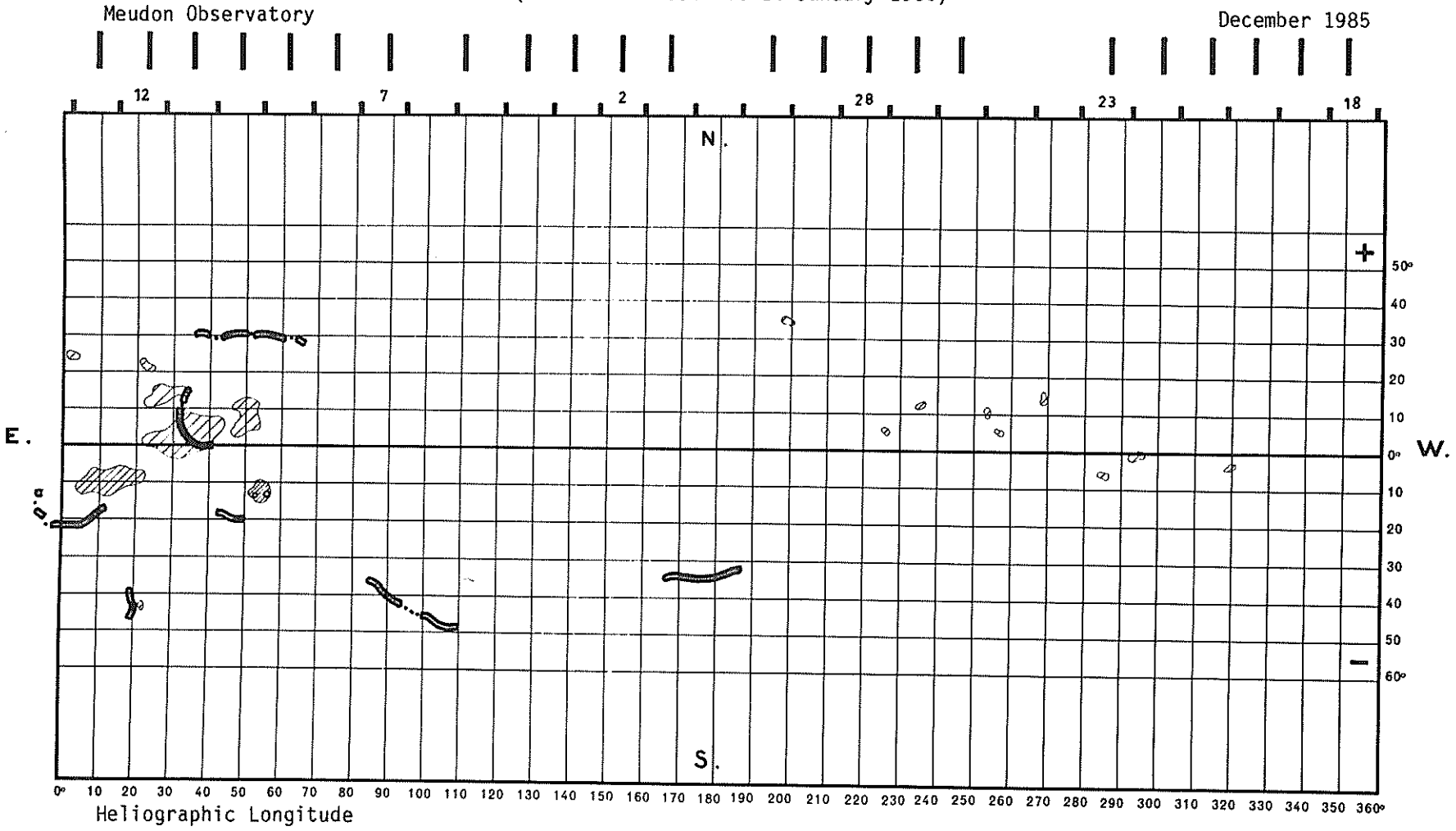
Meudon Observatory

November 1985



CARTE SYNOPTIQUE

CARRINGTON ROTATION NUMBER 1770
(17 December 1985 to 14 January 1986)



CARTE SYNOPTIQUE

ACTIVE REGIONS
CARRINGTON ROTATION 1769

(20 NOVEMBER to 17 DECEMBER 1985)

Region No.	Coordinates Lat.	Long.	Imp	Age at CMP (Days)	Spotless Region	Region No. in Rotation 1768	Activity at West Limb
1	14°N	228	1	>6	x		decreasing
2	19°N	187	1	-3	x		stable
3	5°S	171	1	>6	x		dispersed
4	8°N	126	1	+1	x		decreasing
5	8°N	44	1	>6	x		dispersed
6	3°N	25	3	>6			decreasing
7	10°N	24	1	>6			dispersed
8	8°S	7	3	+6			decreasing

CARTE SYNOPTIQUE

ACTIVE REGIONS
CARRINGTON ROTATION 1770

(17 DECEMBER to 14 JANUARY 1986)

Region No.	Coordinates Lat.	Long.	Imp	Age at CMP (Days)	Spotless Region	Region No. in Rotation 1769	Activity at West Limb
1	12°S	54	3	+1			stable
2	8°N	50	1	>6	x		dispersed
3	3°N	33	1	>6	x		dispersed
4	22°N	22	1	-3	x		dispersed
5	9°S	13	1	>6	x		decreasing

H - ALPHA SOLAR FLARES

DECEMBER 1985

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0001	CATA	02	1240	1245	1245D	S04	E79		12	8.4	5D	1F			2	P	1245	56		
		02	2013		2025	No Flare Patrol														
		05	1419		1424	No Flare Patrol														
		05	1925		1929	No Flare Patrol														
		05	2117		2133	No Flare Patrol														
		05	2159		2204	No Flare Patrol														
0002	HTPR	06	0827E		0925	N25	W33	4706	12	3.8	58D	SF				C	0844	40	.4	E
0003	HTPR	06	1005		1045D	N25	W34	4706	12	3.8	40D	SF				C	1013	40	.5	E
		06	1612		1623	No Flare Patrol														
		06	1722		2017	No Flare Patrol														
		07	1552		1608	No Flare Patrol														
		07	1635		1653	No Flare Patrol														
		08	1031		1114	No Flare Patrol														
		09	1026		1049	No Flare Patrol														
		09	1101		1102	No Flare Patrol														
		09	1316		1408	No Flare Patrol														
		09	1458		1508	No Flare Patrol														
		09	2148		2153	No Flare Patrol														
		10	0642		0643	No Flare Patrol														
0004	CATA	10	0840E	0840	0850	N01	E73	4708	12	15.8	10D	SN			2	P	0840	39		
		10	1005		1038	No Flare Patrol														
		10	1045		1049	No Flare Patrol														
		10	1107		1114	No Flare Patrol														
		10	1131		1219	No Flare Patrol														
		10	1227		1356	No Flare Patrol														
0005	HOLL	10	1736	1741	1752	N00	E67	4708	12	15.7	16	SF			3	C		26		H
		10	2011		2021	No Flare Patrol														
0006	HTPR	11	0924	0926	0929	N03	E65	4708	12	16.2	5	SF				C	0926	20	.5	E
0007	HTPR	11	1136	1146	1153	N08	E50	4708	12	15.2	17	SF				C	1146	30	.5	
0008	HTPR	11	1417	1418	1440	N03	E60	4708	12	16.1	23	SN				C	1418	50	1.0	E
0009		11	21114	21183	2132	N05	E54	4708	12	15.9	21	1F	C	1.1				124		F
	HOLL	11	2111	2121	2145	N04	E55	4708	12	16.0	34	1F	C	1.1	3	C		159		F
	PALE	11	2115	2118	2120	N06	E56	4708	12	16.1	5	SF	C	1.1	3	C		89		F
	RAMY	11	2126E		2127D	N05	E52	4708	12	15.8	1D	1F	C	1.1	2	C				
0010	PURP	12	0254E	0256	0307	N03	E45	4708	12	15.5	13D	SB				C	0256	63	.9	D
0011	LEAR	12	0409E	0414	0424	N05	E50	4708	12	15.9	15D	SF			3	C		47		F
0012		12	08547	09054	0924	N05	E41	4708	12	15.4	30	SN						39	.8	EF
	HTPR	12	0854	0905	0933	N04	E42	4708	12	15.5	39	SN				C	0905	60	.8	E
	LEAR	12	0901	0909	0916	N06	E40	4708	12	15.4	15	SF			3	C		18		F
0013		12	1036	1048*	1200	N04	E41	4708	12	15.5	84	SB						50	.7	EK
	HTPR	12	1036	1048	1200	N04	E41	4708	12	15.5	84	SB				C	1125	50	.7	EK
	HTPR	12	1036	1125	1200	N04	E41	4708	12	15.5	84	SB				C	1125	50	.7	EK
		12	1547		1559	No Flare Patrol														
0014	LEAR	12	2249	2249	2252	N05	E39	4708	12	15.9	3	SF			3	C		24		F
		13	2145		2149	No Flare Patrol														
0015	LEAR	14	0536	0536	0543	N06	E16	4708	12	15.4	7	SF			3	C		26		F
0016	HTPR	14	1047	1049	1057	N01	E20	4708	12	15.9	10	SF				C	1049	20	.2	E

H - ALPHA SOLAR FLARES

DECEMBER 1985

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0017		14	12451	1252*	1316	N03	E10	4708	12	15.3	31	SN	C 1.9				111	1.5	EF1U
	RAMY	14	1219E	1231U	1252	N02	E04	4708	12	14.8	33D	SF		2	C		26		
	HTPR	14	1245	1252	1330	N04	E15	4708	12	15.6	45	SB			C	1252	150	1.5	E1U
	RAMY	14	1246	1305	1325	N03	E12	4708	12	15.4	39	SB	C 1.9	3	C		156		F
0018	HTPR	14	1354	1357	1404	N01	E18	4708	12	15.9	10	SF			C	1357	60	.6	E
0019		15	0606	0607	0622	N02	E08	4708	12	15.8	16	SN	C 1.1				40	.5	F
	LEAR	15	0606	0607	0621	N03	E08	4708	12	15.8	15	SN	C 1.1	3	C		28		F
	PURP	15	0613E	0613U	0623	N01	E08	4708	12	15.8	10D	SN			P	0613	51	.5	
0020	HTPR	15	0912	0918	0923	S01	E08	4708	12	16.0	11	SF			C	0918	10	.1	
0021	HTPR	15	0955	1008	1030	S01	E05	4708	12	15.8	35	SF			C	1008	20	.2	E
0022	HTPR	15	1136	1416	1453	S08	E28	4709	12	17.6	197	SN			C	1416	10	.1	
0023	HTPR	15	1151	1220	1253	S01	E04	4708	12	15.8	62	1N			C	1220	220	2.2	E1
0024		15	14577	1503	1508	N04	E04	4708	12	15.9	11	SN					15	.2	
	HTPR	15	1457	1503	1508	N02	E04	4708	12	15.9	11	SF			C	1503	10	.1	
	HTPR	15	1504		1526D	N06	E05	4708	12	16.0	22D	SN			C	1514	20	.2	
		15	1527		1559	No Flare Patrol													
		15	1800		1812	No Flare Patrol													
		15	2027		2209	No Flare Patrol													
0025	HOLL	15	2216	2217	2233	S09	E22	4709	12	17.6	17	SB	C 2.4	3	C		75		H
		15	2252		2309	No Flare Patrol													
0026		16	03261	03272	0346	S08	E17	4709	12	17.4	20	SF	C 1.9				114	1.2	EF
	PURP	16	0326	0328	0336D	S10	E16	4709	12	17.3	10D	SF			C	0328	111	1.2	
	MITK	16	0327	0327	0352	S08	E18	4709	12	17.5	25	SN			C	0327			E
	LEAR	16	0327	0329	0341	S05	E17	4709	12	17.4	14	SF	C 1.9	3	C		117		F
0027	LEAR	16	0352	0354	0358	S06	E18	4709	12	17.5	6	SF		3	C		37		H
0028		16	0526	0529	0546	S08	E16	4709	12	17.4	20	1N	C 2.2				192	2.3	EF
	LEAR	16	0526	0529	0536	S05	E16	4709	12	17.4	10	SN	C 2.2	3	C		167		FE
	PURP	16	0528E	0529	0557	S10	E15	4709	12	17.3	29D	1N			C	0529	216	2.3	
0029	HTPR	16	0911	0918	0940	S08	E14	4709	12	17.4	29	SF			C	0918	40	.4	E
0030	HTPR	16	0947	0948	0955	N01	W09	4708	12	15.7	8	SF			C	0948	10	.1	
0031	HTPR	16	1005	1007	1057	S08	E13	4709	12	17.4	52	SF			C	1007	10	.1	
0032		16	13164	13197	1332	S10	E12	4709	12	17.4	16	SF					15	.2	E
	HTPR	16	1316	1319	1325	S10	E14	4709	12	17.6	9	SF			C	1319	10	.1	
	HTPR	16	1320	1326	1340	S10	E11	4709	12	17.4	20	SF			C	1326	20	.2	E
0033	HTPR	16	1349	1349	1351	S10	E14	4709	12	17.6	2	SF			C	1349	10	.1	
		16	1505		1507	No Flare Patrol													
0034	HOLL	16	1835	1839	1849	S08	E09	4709	12	17.4	14	SF		3	C		33		
		16	2144		2156	No Flare Patrol													
0035		16	2246	22472	2258	S08	E06	4709	12	17.4	12	SF	C 1.1				52		EF
	LEAR	16	2246	2247	2303	S06	E06	4709	12	17.4	17	SF	C 1.1	3	C		93		FE
	PALE	16	2246	2248	2255	S09	E06	4709	12	17.4	9	SF	C 1.1	3	C		35		F
	HOLL	16	2246	2249	2256	S09	E05	4709	12	17.3	10	SF	C 1.1	3	C		28		F
0036		16	2343	2348	2415	S06	E08	4709	12	17.6	32	SN					30		E
	LEAR	16	2343		2356	S04	E09	4709	12	17.7	13	SF		3	C		30		
	MITK	16	2344E	2348	2434	S08	E08	4709	12	17.6	50D	SN			C	2348			E

H - ALPHA S O L A R F L A R E S

DECEMBER 1985

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0037	LEAR	17	0316	0318	0326	S07	E03	4709	12	17.4	10	SF			3	C		68		F
0038	LEAR	17	0407	0410	0417	S06	E03	4709	12	17.4	10	SF			3	C		54		F
0039	TACH	17	0512E		0519D	S09	W04	4709	12	16.9	7D	1N				C	0517	265	2.8	E
0040	HTPR	17	1245	1250	1258	S09	E03	4709	12	17.7	13	SF				C	1250	20	.2	
		17	2131		2207	No Flare Patrol														
0041		18	1005*	1005*	1051	N05	W42	4708	12	15.3	46	SN						79	1.1	
	HTPR	18	0944E		1050	N04	W44	4708	12	15.1	66D	SF				C	1000	10	.1	
	CATA	18	0950E	1005	1025	N03	W42	4708	12	15.3	35D	SN			2	P	1005	112	1.6	
	CATA	18	1005	1015	1110	N06	W45	4708	12	15.0	65	SN			2	C	1015	84	1.2	
	CATA	18	1015	1015	1055	N07	W39	4708	12	15.5	40	1N			2	C	1015	169	2.3	
	HTPR	18	1015	1037	1054	N04	W40	4708	12	15.4	39	SF				C	1037	20	.3	
0042	HOLL	18	2107E	2107U	2114	N03	W39	4708	12	16.0	7D	SF			3	C		76		F
		19	2257		2307	No Flare Patrol														
0043	HOLL	20	1638	1638	1651	N00	W65	4708	12	15.8	13	SF			3	C		13		FH
0044	HOLL	20	1653	1656	1710	N01	W66	4708	12	15.8	17	SF			3	C		38		
0045	LEAR	21	0634	0643	0648	S08	W57	4709	12	17.0	14	SF			3	C		28		F
		21	1534		1548	No Flare Patrol														
		22	1359		1419	No Flare Patrol														
		24	1829		1834	No Flare Patrol														
		25	2136		2138	No Flare Patrol														
		26	1301		1418	No Flare Patrol														
		27	0320		0333	No Flare Patrol														
		27	1249		1329	No Flare Patrol														
		28	0435		0454	No Flare Patrol														
		28	0503		0520	No Flare Patrol														
		28	0528		0537	No Flare Patrol														
		28	0545		0552	No Flare Patrol														
		28	1301		1419	No Flare Patrol														
		28	2135		2349	No Flare Patrol														
		29	1016		1139	No Flare Patrol														
		29	1211		1419	No Flare Patrol														
		29	1536		1545	No Flare Patrol														
		31	1000		1022	No Flare Patrol														
		31	2113		2116	No Flare Patrol														
		31	2141		2229	No Flare Patrol														

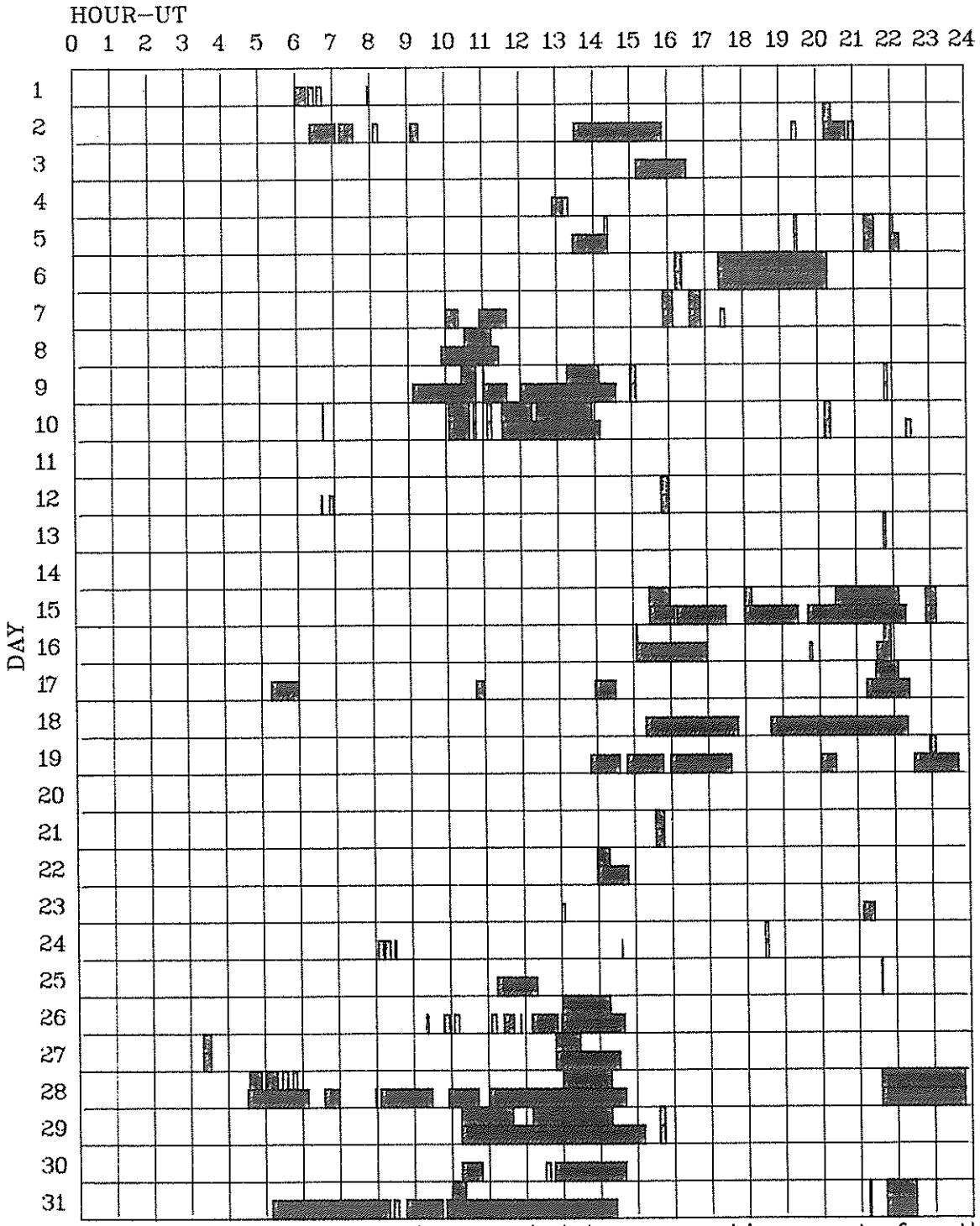
"Remarks":

A = Eruptive prominence whose base is less than 90° 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.
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.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

DECEMBER 1985



Times of no flare patrol, shown here as shaded areas, combine reports from the observatories listed below. Portions of a panel completely shaded mark dates and times of no patrol of any kind, that is, of neither visual nor cinematographic; portions of a panel with only the bottom half shaded mark times of strictly visual patrol.

Abastumani	Catania	Kanzelhoehe	Mitaka	Ramey
Athens	Haute Provence	Kharkov	Palehua	Tashkent
Bucharest	Holloman	Learmonth	Peking	Voroshilov
	Istanbul	Manila	Purple Mt.	Wendelstein

NUMBER OF SOLAR FLARES
(From the Grouped Flare Listings)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1966								391	558	432	417	543
1967	796	589	1009	694	771	629	907	911	573	946	775	1109
1968	1037	773	519	460	768	697	573	611	616	772	556	640
1969	581	504	669	655	839	694	489	551	540	643	566	422
1970	466	646	578	688	722	836	954	780	811	797	687	667
1971	598	505	387	546	461	430	713	673	518	375	431	394
1972	384	599	621	361	614	541	404	515	371	408	175	210
1973	221	171	410	453	388	270	232	182	353	201	136	163
1974	127	148	79	364	255	204	360	187	270	366	153	81
1975	68	82	69	19	42	85	196	346	68	38	127	25
1976	69	18	180	60	38	48	6	47	57	23	13	55
1977	54	77	18	76	64	210	140	140	250	252	107	336
1978	274	588	338	526	330	460	533	346	554	499	418	648
1979	926	781	731	731	907	772	750	821	901	1018	888	786
1980	703	689	621	1092	811	956	763	720	924	988	1027	838
1981	578	782	914	915	658	592	893	982	680	836	773	615
1982	631	763	783	480	540	769	696*	753*	616*	545*	565*	749*
1983	332*	220*	337*	346*	609*	561*	427*	395*	289*	298*	88*	152*
1984	353*	461*	366*	440*	492*	185*	151*	161*	95*	36*	92*	69*
1985	104*	29*	38*	118*	126*	113*	177*	48*	22*	106*	19*	45*

*Preliminary

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

DECEMBER 1985

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
02	3100	CRIM	20	GRF	1030.0	1159.0	140.0D	4.0			
03	3100	CRIM	25	R	0634.0	0918.0		10.0			
	430	KRAK	48	C	1207.7	1218.0	17.0	52.0	8.0		
04	3100	CRIM	24	R	0739.0	0836.0		4.0			
05	3100	CRIM	26	FAL	0908.0	0940.0		5.0			
	260	ONDR	40	F	1146.8	1146.9	.8	6.0			
06	260	ONDR	42	SER	1004.5	1008.0	3.8	5.0			
08	260	ONDR	8	S	1100.2	1100.2	.5	2.0			
09	234	POTS	4	S/F	1414.5	1414.6	4.5	200.0	25.0		
10	9100	GORK	1	S	0758.2	0758.6	.8	5.3			
	2950	GORK	1	S	0758.3	0758.7	.8	0.9	0.4		
	2950	GORK	1	S	0832.9	0833.4	1.3	0.9	0.4		
	2950	GORK	1	S	0835.1	0835.7	2.0	1.9	0.9		
	536	ONDR	8	S	1253.8	1253.8	.5	4.7			
11	260	ONDR	42	SER	1016.0	1016.0	2.5	2.0			
	536	ONDR	8	S	1143.2	1143.4	.4	6.0			
	2800	OTTA			1417.0E	1418.0	5.0D	1.6			
	2695	PENT	1	S	2109.0	2111.0	5.0	1.2	.6		
12	500	HIRA	42	SER	0030.4	0030.7	3.0	7.0			0
	245	LEAR	8	S	0612.6	0612.8	.2	32.0			QL=6 ST=2 TYP=3
	1415	LEAR	8	S	0840.1	0841.8	1.7	13.0			QL=6 ST=2 TYP=3
	2695	LEAR	8	S	0840.5	0841.8	1.3	15.0			QL=6 ST=2 TYP=3
	245	LEAR	47	GB	0840.6	0841.0	.5	55.0			QL=6 ST=2 TYP=5
	410	LEAR	8	S	0840.8	0841.0	.3	4.0			QL=6 ST=2 TYP=3
	4995	LEAR	8	S	0841.6	0841.8	.2	7.0			QL=6 ST=2 TYP=3
	8800	SGMR	47	GB	1556.5	1558.1	3.0	100.0			QL=1 ST=2 TYP=5
	500	HIRA	42	SER	2300.7	2304.9	4.5	15.0			WL
	200	HIRA	41	F	2304.3	2304.5	1.0	48.0			0
13	260	ONDR	40	F	1003.0	1003.5	1.8	5.0			
	260	ONDR	42	SER	1049.9	1051.0	2.0	5.0			
	536	ONDR	8	S	1134.8	1134.8	.1	1.6			
	536	ONDR	8	S	1204.5	1204.5	.1	4.0			
14	260	ONDR	43	NS	1246.5	1252.0	54.5D	12.0			
	2000	TYKW	20	GRF	0510.0	0555.0	130.0	2.0	1.0		
	3750	TYKW	20	GRF	0520.0	0555.0	100.0U	3.0	1.5		
	1470	POTS	4	S/F	1245.5	1251.8	9.1	22.0			
	536	ONDR	40	F	1246.0	1250.0	4.0	19.0			
	3000	POTS	4	S/F	1246.5	1252.0	8.0	19.0			
	234	POTS	4	S/F	1252.5	1253.2	1.1	260.0	10.0		
	68	POTS	41	F	1252.5	1253.4	5.7	2500.0	50.0		
	113	POTS	4	S/F	1252.9	1253.2	3.1	800.0	200.0		
	430	KRAK	8	S	1330.5E	1330.5U	.1U	20.0			
	810	KRAK	8	S	1330.8E	1330.8U	.1U	9.0			
15	500	HIRA	42	SER	0205.0	0206.0	1.8	5.0			WR
	9300	KISV	4	S/F	0604.9	0606.4	4.0	33.0			
	3750	TYKW	45	C	0605.0	0606.4	3.0	43.0	12.0		
	3100	CRIM	3	S	0605.0	0606.4	2.5	24.0	8.0		
	500	HIRA	45	C	0605.1	0605.6	2.5	85.0	10.0		WR
	15000	KISV	2	S/F	0605.4	0606.4	3.0	28.0			
	2695	LEAR	8	S	0605.5	0606.3		22.0			QL=6 ST=1 TYP=3
	5900	KISV	4	S/F	0605.5	0606.4	3.0	56.0			
	4995	LEAR	8	S	0605.8	0606.3		45.0			QL=5 ST=1 TYP=3
	8800	LEAR	8	S	0606.1	0606.3		25.0			QL=6 ST=1 TYP=3
	9400	TYKW	5	S	0607.0E	0607.0U	1.5D	6.0	1.5D		
	3750	TYKW	29	PBI	0608.0		15.0	1.0	0.5		
	430	KRAK	8	S	0936.2	0936.5	1.0	31.0			
	810	KRAK	8	S	0936.5	0936.5	.1	4.0			
	536	ONDR	40	F	0945.0	0946.0	1.0	34.0			
	430	KRAK	41	F	1005.7	1006.5	1.5	11.0			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

DECEMBER 1985

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
15	536	ONDR	40	F	1006.0	1007.2	1.5	6.0			
	536	ONDR	8	S	1216.8	1216.9	.5	2.0			
	2800	OTTA	21	GRF	1425.0	1535.0	110.0	2.8	1.4		
	2800	OTTA	2	S/F	1529.5	1530.1	6.0	1.6	0.8		
┌	2800	OTTA	21	GRF	1805.0	1840.0	65.0	2.4	1.2		
└	2800	OTTA	2	S/F	1834.0	1835.8	6.0	2.4	0.9		
	245	LEAR	47	GB	2204.3	2204.5	.5	189.0			QL=6 ST=2 TYP=5
┌	2695	PENT	4	S/F	2216.0	2216.3	2.0	54.0	4.2		
├	2000	TYKW	45	C	2216.0	2216.4	1.5	30.0	10.0U		
├	1000	TYKW	45	C	2216.0	2216.4	1.5	130.0	30.0U		
├	1000	TYKW			2216.0	2216.7		125.0			
└	500	HIRA	45	C	2216.0	2216.6	1.5	60.0	30.0		MR
16	245	LEAR	43	NS	2153.0	0737.6	773.0D	23.0			QL=6 ST=2 TYP=1
	3750	TYKW	5	S	0012.0	0017.0	12.0	1.0	.5		
	500	HIRA	8	S	0243.6	0243.7	.5	4.0			WL
	500	HIRA	8	S	0259.2	0259.3	.5	20.0			WL
┌	2000	TYKW	21	GRF	0325.0	0340.0	55.0	1.0	.5		
├	9400	TYKW	21	GRF	0326.0	0329.0	40.0	2.0	1.0		
└	3750	TYKW	21	GRF	0326.0	0355.0	65.0	2.0	1.0		
┌	500	HIRA	45	C	0349.4	0351.5	2.5	110.0	20.0		WR
├	2000	TYKW			0350.0	0351.0		11.0			
├	3750	TYKW	45	C	0350.0	0351.0	2.5	3.0	1.0		
├	1000	TYKW	45	C	0350.0	0351.0	2.5	10.0	3.0		
├	1000	TYKW			0350.0	0351.7		8.0			
├	9400	TYKW	45	C	0350.6	0351.0	2.5	11.0	3.0		
├	2000	TYKW	45	C	0350.7	0351.8	2.0	23.0	3.0		
├	610	LEAR	8	S	0351.0	0351.1	.3	39.0			QL=6 ST=2 TYP=3
├	410	LEAR	47	GB	0351.0	0351.1	.3	119.0			QL=6 ST=2 TYP=5
├	8800	LEAR	8	S	0351.0	0351.1	.3	19.0			QL=6 ST=2 TYP=3
├	245	LEAR	49	GB	0351.0	0351.6	1.0	2199.0			QL=6 ST=2 TYP=6
└	1415	LEAR	8	S	0351.0	0351.8	1.1	28.0			QL=6 ST=2 TYP=3
	2000	TYKW	20	GRF	0454.0	0520.0	135.0	2.0	1.0		
	3750	TYKW	20	GRF	0455.0	0513.0	110.0U	3.0	1.5		
	260	ONDR	40	F	1003.5	1007.5	4.3	8.0			
	536	ONDR	8	S	1023.5	1023.5	.1	7.0			
┌	234	POTS	4	S/F	1301.1	1301.4	.7	110.0	10.0		
└	113	POTS	4	S/F	1301.1	1301.5	.8	320.0	40.0		
	113	POTS	4	S/F	1414.1	1414.4	.9	420.0	70.0		
	2800	OTTA	22	GRF	1650.0	1740.0	115.0	1.6	.8		
17	2800	OTTA	20	GRF	1450.0	1540.0	120.0	1.4	.8		
	2800	OTTA	20	GRF	1720.0	1800.0	60.0	1.4	.9		
	2800	OTTA	20	GRF	1840.0	1935.0	180.0	2.4	1.6		
	3750	TYKW	20	GRF	2340.0	0020.0	130.0	2.0	1.0		
	2000	TYKW	20	GRF	2340.0	0025.0	130.0	2.0	1.0		
18	500	HIRA	8	S	0119.3	0119.4	.7	4.0			0
	536	ONDR	8	S	0944.0	0944.0	.1	4.0			
	808	ONDR	41	F	1058.0	1102.5	4.5				
	536	ONDR	46	C	1059.0	1059.8	.1	3.0			
┌	536	ONDR	46	C	1102.0	1102.3	1.1	28.0			
└	808	ONDR	8	S	1102.5	1102.5	.2				
	2695	PENT	20	GRF	2053.0	2101.0	20.0	3.6	1.2		
19	810	KRAK	48	C	0807.5	0812.8	10.5	380.0D	60.0		
└	810	KRAK			0807.5	0814.0		380.0D			
	536	ONDR	8	S	1046.5	1046.5	.1	10.0			
┌	2000	TYKW	20	GRF	2326.0	2328.0	65.0	1.5	.7		
└	3750	TYKW	20	GRF	2326.0	2328.0	65.0	1.5	.7		
20	260	ONDR	8	S	1009.0	1009.0	.1	5.0			
	29	UPIC	1	S	1104.8	1104.8	.2				
	33	UPIC	1	S	1105.3	1105.4	.3				
	33	UPIC	2	S/F	1142.5	1142.6	.3				
	29	UPIC	1	S	1143.0	1143.1	.2				
┌	33	UPIC	3	S	1352.3	1352.6	.6				
└	29	UPIC	3	S	1352.4	1352.6	.5				
	2800	OTTA	21	GRF	1630.0	1655.0	120.0	2.8	1.4		
	2800	OTTA	1	S	1636.0	1639.0	4.0	.8	.4		
22	245	LEAR	47	GB	0715.6	0715.8	.5	71.0			QL=6 ST=2 TYP=5

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

DECEMBER 1985

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
23	810	KRAK	8	S	1145.2	1145.2	.1	1.0			
	430	KRAK	8	S	1145.3	1145.5	.2	2.0			
	810	KRAK	8	S	1151.7	1151.7	.1	1.0			
	430	KRAK	8	S	1152.3	1152.4	.5	18.0			
	536	ONDR	8	S	1243.3	1243.3	.2	9.0			
	536	ONDR	8	S	1251.5	1251.5	.1	9.0			
24	410	LEAR	8	S	0736.8	0737.1	.3	8.0			QL=1 ST=3 TYP=3
	245	LEAR	47	GB	0736.8	0737.1	.3	130.0			QL=1 ST=2 TYP=5
	430	KRAK	8	S	1128.4	1128.6	.5	10.0			
26	245	LEAR	47	GB	0635.1	0635.5	1.9	71.0			QL=6 ST=2 TYP=5
	410	LEAR	8	S	0635.3	0635.5	1.7	3.0			QL=6 ST=2 TYP=3
27	430	KRAK	41	F	1004.0	1005.4	3.7	4.0	2.0		
	430	KRAK			1004.0	1007.0		8.0			

Reports are received routinely from the following observatories:

ATHN = Athens
BERN = Berne
BORD = Bordeaux
CRIM = Crimea
DWIN = Dwingeloo
GORK = Gorky
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
IZMI = IZMIRAN
KISV = Kislovodsk
KRAK = Krakow
LEAR = Learmonth
MANI = Manila
NAGO = Nagoya
NOBE = Nobeyama
ONDR = Ondrejov
OTTA = Ottawa
PALE = Palehua
PEKG = Peking
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
UPIC = Upice

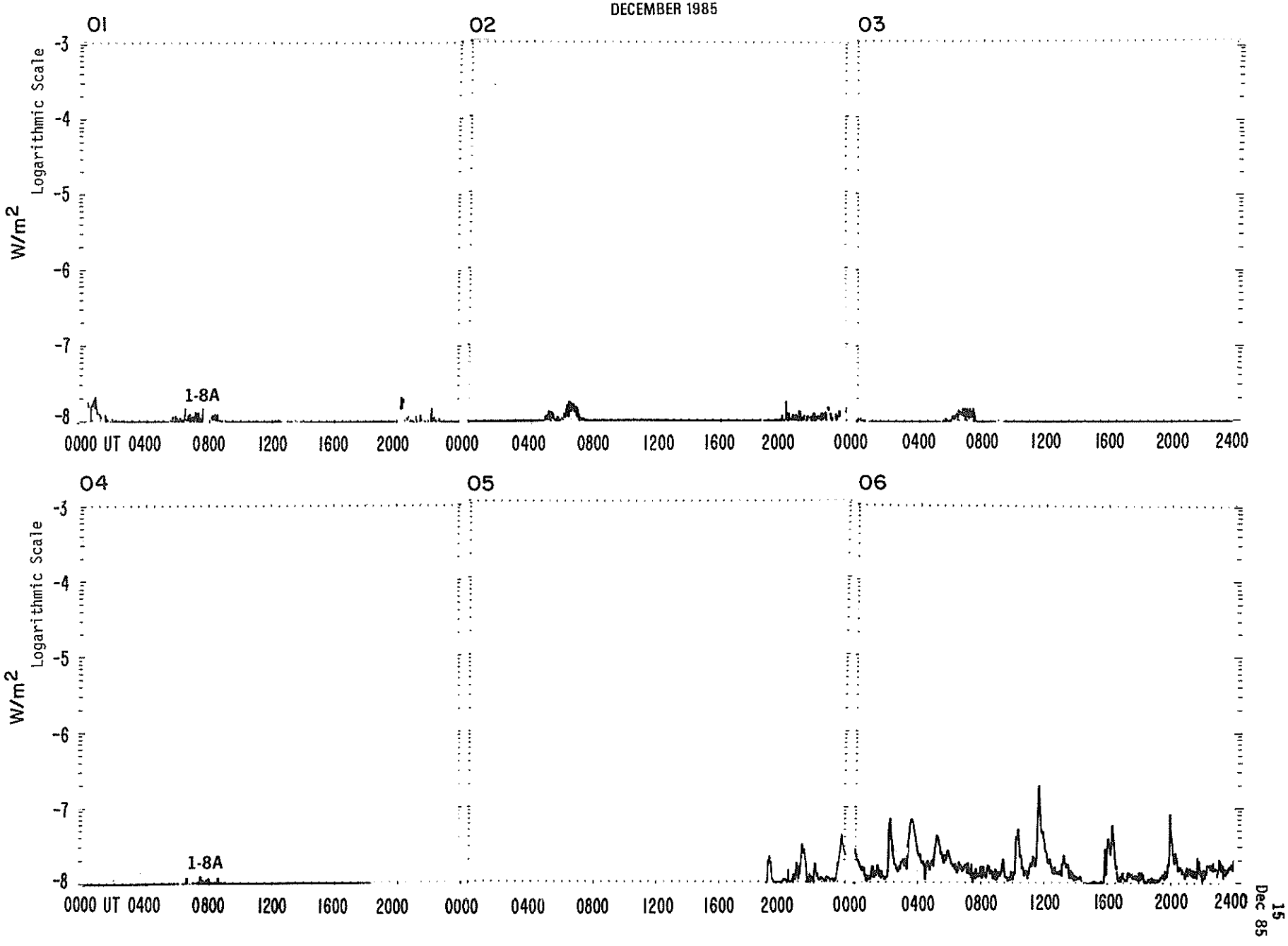
Explanation of Type Code:

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

1A Simple 1A
3A Simple 2A
21A Simple 3A GRF
2A Simple 1AF
4A Simple 2AF
240 Rise only
240F Rise only F
24P Post Rise
24PF Post Rise F
16A Fall A
260 Fall Only
26F Fall F
27F Rise and Fall F
27AF Rise and Fall AF
31A Post Burst Decrease A
32A Absorption A
46F Complex F

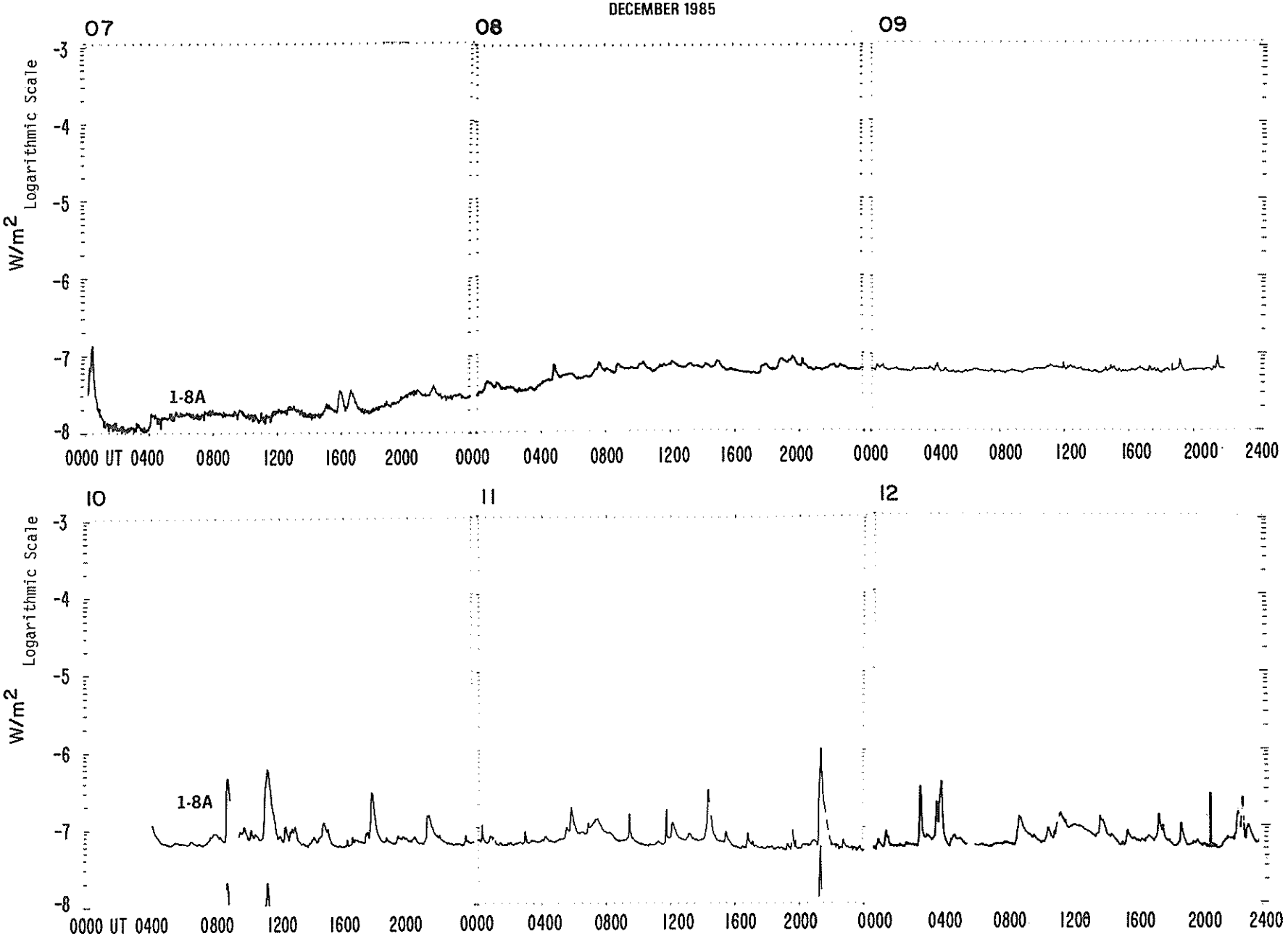
GOES 6 X-RAYS

DECEMBER 1985



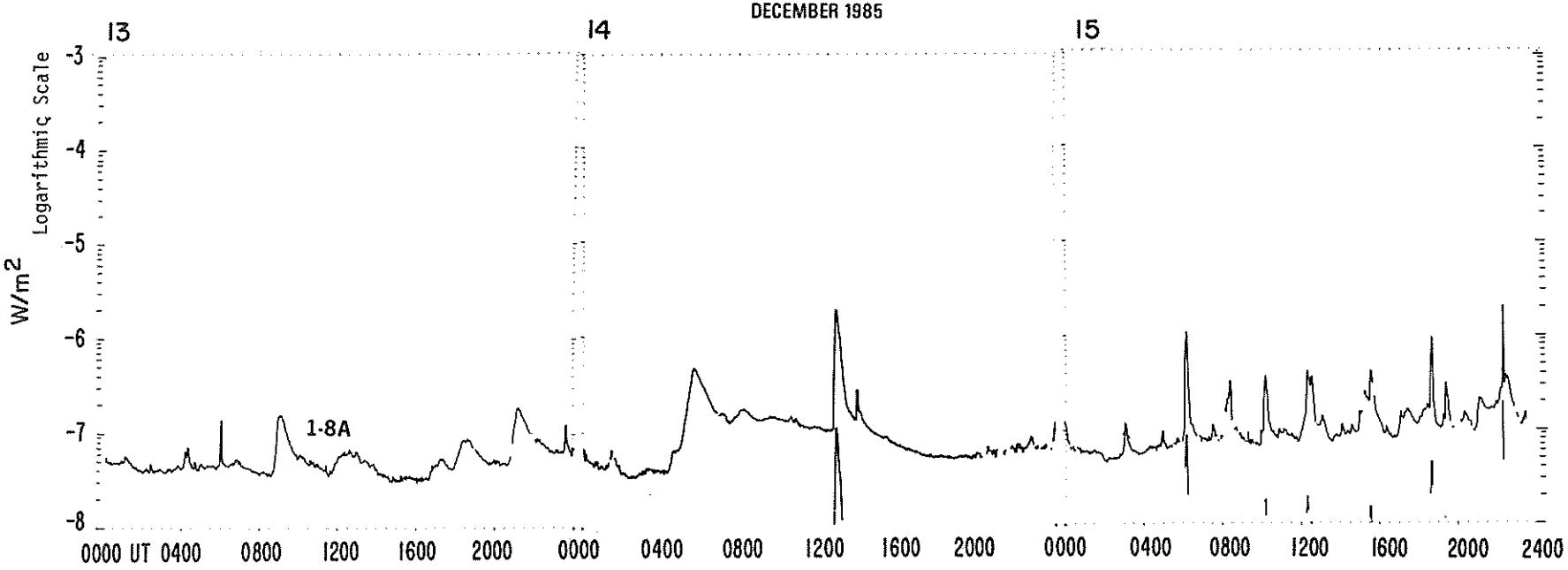
GOES 6 X-RAYS

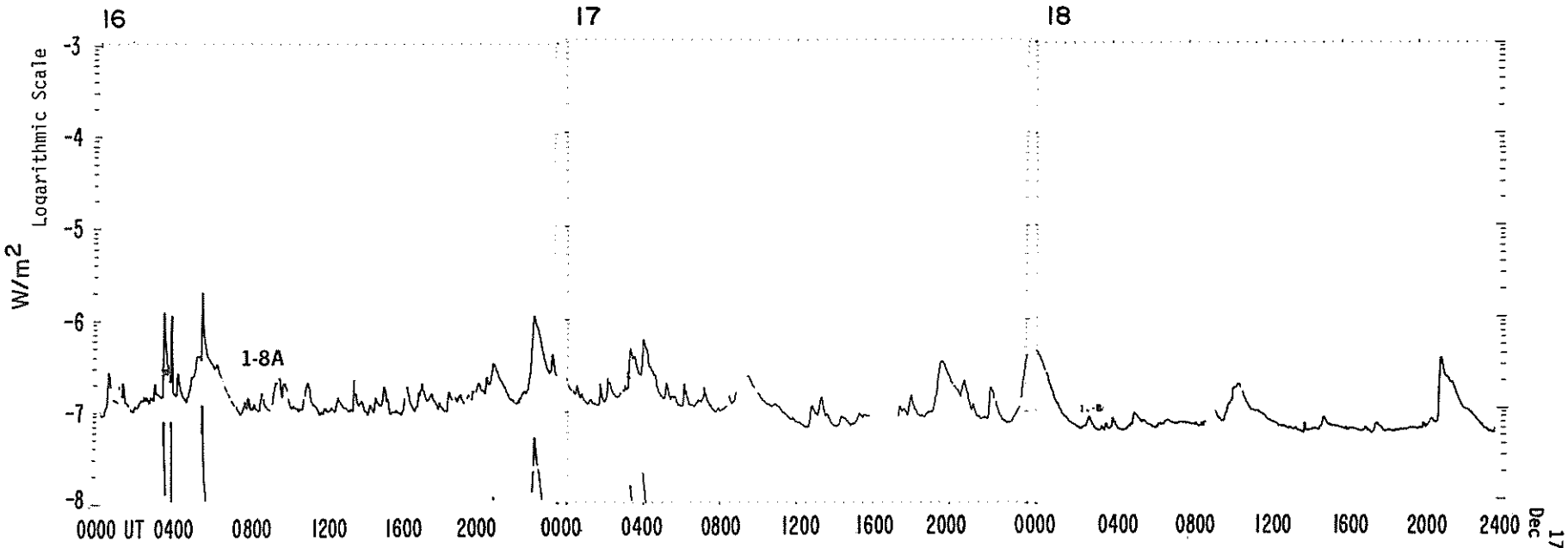
DECEMBER 1985



GOES 6 X-RAYS

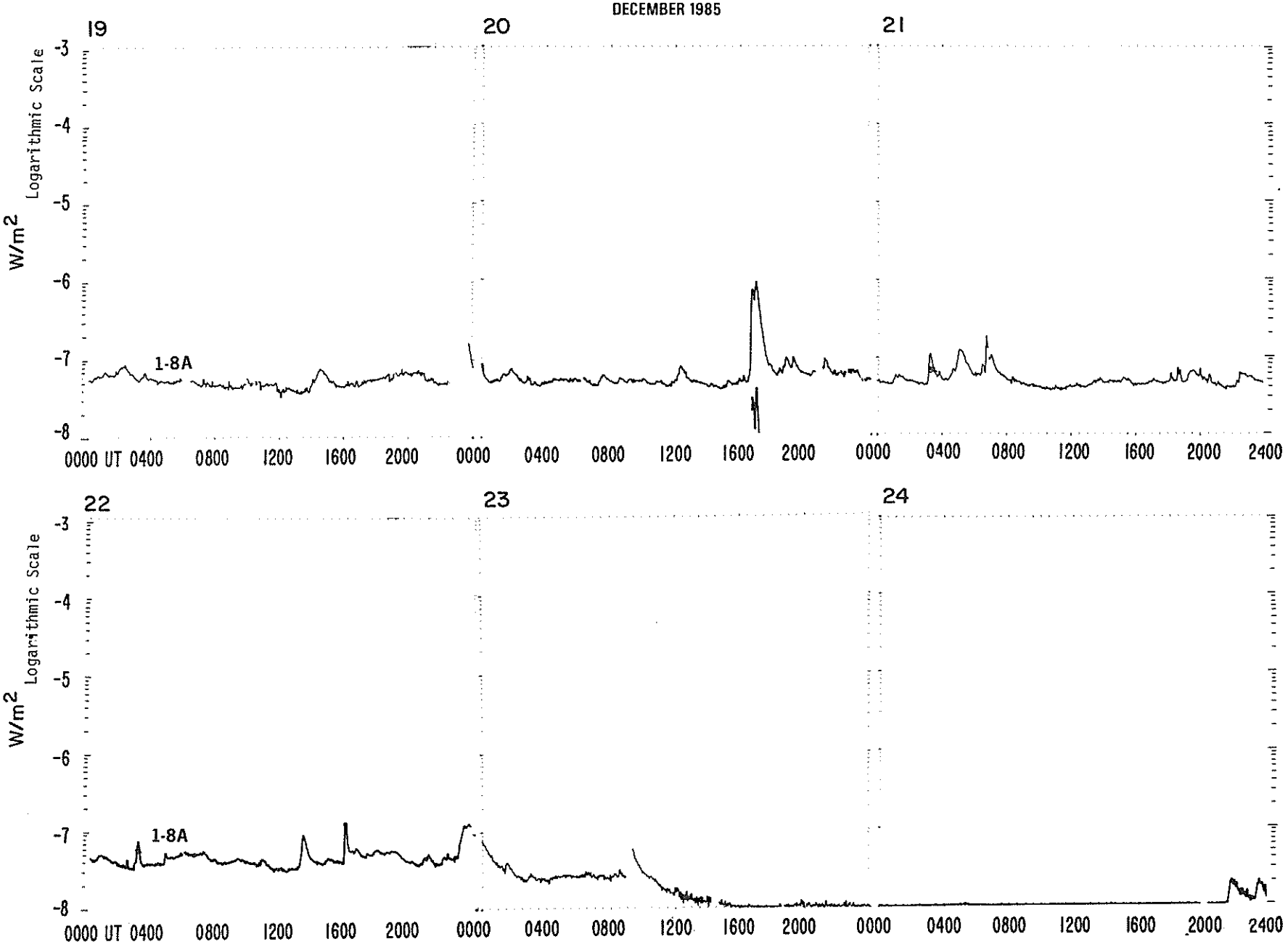
DECEMBER 1985





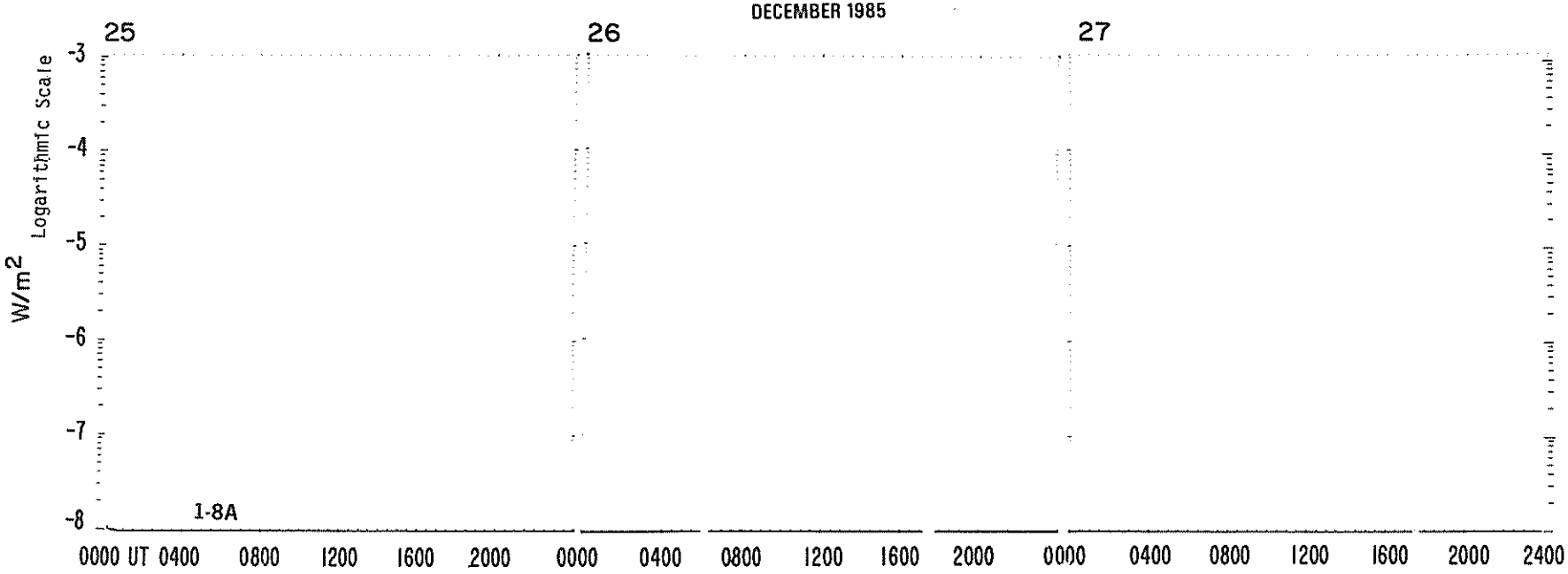
GOES 6 X-RAYS

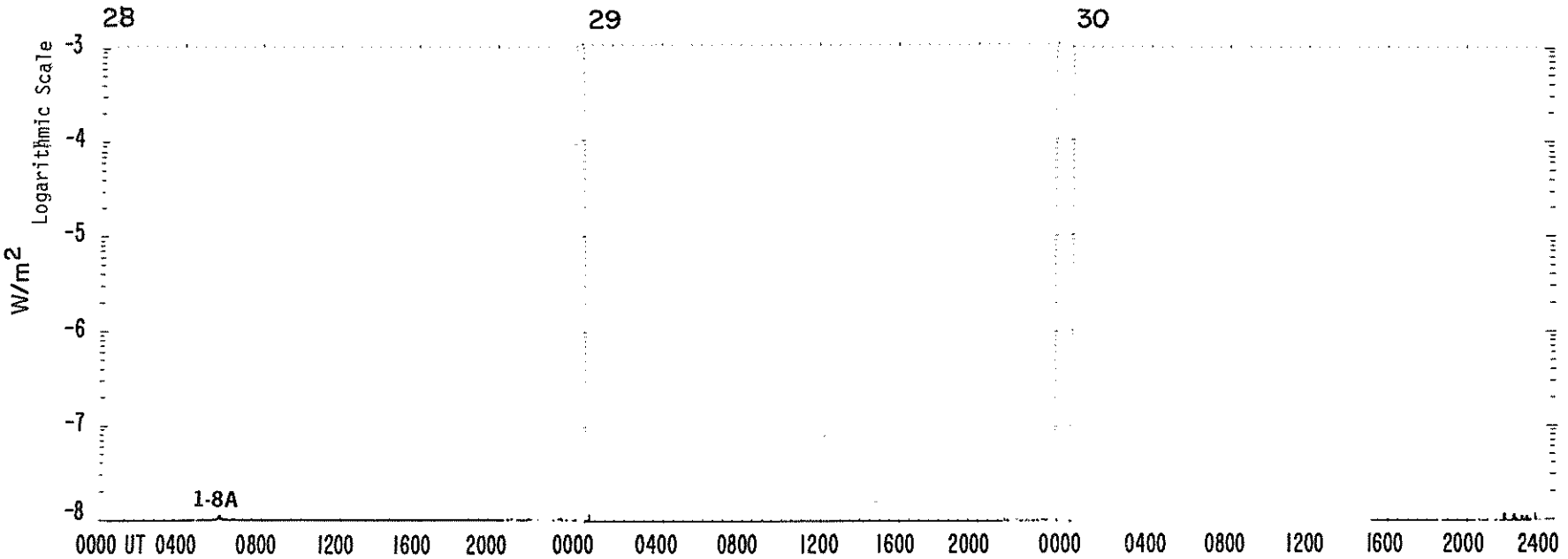
DECEMBER 1985

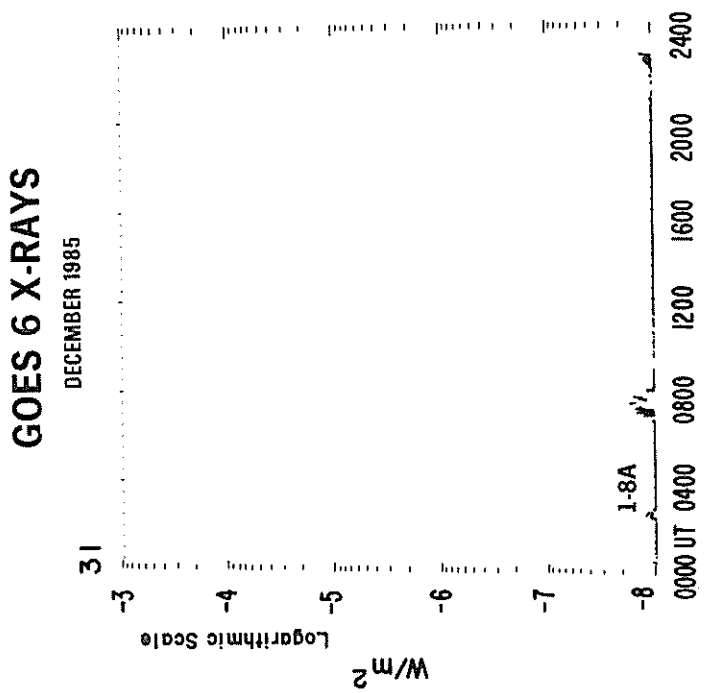


GOES 6 X-RAYS

DECEMBER 1985






GOES 6 X-RAYS
DECEMBER 1985
31
-3
-4
-5
-6
-7
-8
Logarithmic Scale
W/m2
1-8A
0000 UT
0400
0800
1200
1600
2000
2400

GOES S O L A R X-RAY F L A R E S

Preliminary Listing

December 1985

Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	Imp	Opt	Xray
06	1128	1138	1143						B2.0
07	0000	0027	0032						B1.4
10	0833	0841	0849						B4.6
10	1053	1109	1119						B6.0
10	1432	1440	1447						B1.2
10	1736	1741	1752	N00	E67	4708		SF	B2.9
10	2101	2106	2120						B1.4
11	0013	0017	0019						B1.0
11	0254	0257	0259						B1.0
11	0543	0549	0556						B1.8
11	0922	0926	0929						B1.5
11	1140	1144	1146						B1.9
11	1414	1420	1425						B3.4
11	1929	1933	1937						B1.0
11	2111	2121	2145	N04	E55	4708		1F	C1.1
12	0250	0256	0302						B3.3
12	0352	0357	0401						B2.2
12	0404	0414	0418						B3.8
12	0551	0555	0557						C7.3
12	1359	1403	1417						B1.3
12	1734	1740	1744						B1.5
12	1857	1902	1908						B1.1
12	2023	2026	2028						B1.2
12	2048	2057	2059						C2.7
12	2224	2231	2237						B1.7
12	2249	2249	2252	N05	E39	4708		SF	B2.5
13	0556	0602	0604						B1.5
13	0849	0906	0922						B1.7
13	2053	2108	2133						B1.8
13	2329	2333	2337						B1.3
14	0536	0536	0543	N06	E16	4708		SF	B4.6
14	1246	1305	1325	N03	E12	4708		SB	C1.9
14	1353	1358	1400						B2.8
14	2354	0000	0006						B1.2
15	0259	0304	0311						B1.2
15	0606	0607	0621	N03	E08	4708		SN	C1.1
15	0805	0825	0827						B3.6
15	0915	0918	0920						B1.0
15	1004	1011	1016						B3.9
15	1214	1221	1236						B4.3
15	1455	1533	1542						B4.4
15	1659	1704	1711						B1.6
15	1700	1723	1742						B1.8
15	1833	1839	1842						C1.0
15	1918	1922	1928						B3.4
15	2057	2105	2123						B2.2
15	2216	2217	2233	S09	E22	4709		SB	C2.4
15	2352	2355	0001						B1.4
16	0029	0034	0041						B2.6
16	0103	0107	0112						B1.9
16	0116	0119	0123						B2.0
16	0257	0300	0302						B2.1
16	0327	0329	0341	S05	E17	4709		SF	C1.2
16	0352	0354	0358	S06	E18	4709		SF	C1.9
16	0408	0412	0418						B2.7
16	0503	0503	0513	S05	E16	4709		SF	B3.9
16	0526	0529	0536	S05	E16	4709		SN	C2.2
16	0909	0930	0953						B2.2
16	1043	1058	1108						B2.1
16	1321	1326	1331						B2.2
16	1427	1431	1440						B1.4
16	1453	1457	1504						B1.9
16	1603	1607	1611						B2.3
16	1643	1657	1704						B2.1
16	1815	1822	1832						B1.7
16	1835	1839	1849	S08	E09	4709		SF	B1.3
16	2015	2020	2027						B2.4
16	2028	2040	2124						B3.4
16	2246	2248	2303	S08	E06	4709		SF	C1.1
16	2343	0000	2356	S04	E09	4709		SF	B4.1
17	0027	0033	0038						B2.4
17	0141	0145	0148						B2.3
17	0205	0209	0218						B2.4
17	0316	0318	0326	S07	E03	4709		SF	B5.2
17	0354	0400	0413			4709			B6.4
17	0506	0512	0522						B2.4
17	0604	0608	0612						B2.1
17	0708	0711	0717						B2.0
17	0821	0829	0837						B1.9
17	0847	0913	1009						B3.0
17	1907	1933	2031						B3.6
17	2035	2043	2054						B2.6
17	2158	2206	2219						B1.8
17	2328	0002	2400						B4.0
18	1011	1031	1043						B1.9
18	2054	2105	2122			4708			B3.7
19	2324	2335	2346						B2.1
20	1653	1656	1710	N01	W66	4708		SF	B9.0
20	2107	2111	2116						B1.0
21	0307	0316	0326						B1.2
21	0634	0643	0648	S08	W57	4709		SF	B1.9
22	0257	0300	0302						B1.8
22	1549	1552	1602						B1.3

Preliminary GOES-6 Data
Daily Average X-ray Background

Day	Jan 85	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	B0.0	B0.2	B0.1	B0.3	B1.6	B0.1	B1.1	B0.5	B0.1	B0.0	B0.0	B0.1
2	B0.0	B0.3	B0.0	B0.3	B1.7	B0.5	B1.0	B0.5	B0.1	B0.0	B0.0	B0.1
3	B0.0	B0.4	B0.0	B0.2	C1.1	B0.7	B0.9	B0.4	B0.1	B0.0	B0.1	B0.0
4	B0.0	B0.2	B0.0	B0.4	B7.7	B0.7	B0.8	B0.4	B0.1	B0.0	B0.1	B0.0
5	B0.0	B0.2	B0.0	B0.3	B0.3	B1.8	B1.0	B0.4	B0.2	B0.0	B0.0	B0.0
6	B0.0	B0.2	B0.0	B0.1	B0.8	B2.9	B1.1	B0.4	B0.2	B0.0	B0.1	B0.1
7	---	B0.3	B0.0	B0.0	B1.5	B1.0	B3.2	B0.6	B0.1	B0.1	B0.2	B0.2
8	B0.0	B0.4	B0.1	B0.0	B1.2	B1.0	B4.1	B0.6	B0.1	B0.0	B0.6	B0.5
9	B0.0	B0.3	B0.0	B0.0	B1.8	B1.0	B3.1	B0.5	B0.0	B0.0	B0.5	B0.2
10	B0.0	B0.3	B0.0	B0.0	B1.6	B1.2	B4.1	B0.3	B0.0	B0.0	B0.4	B0.5
11	B0.0	B0.2	B0.1	B0.0	B1.9	B1.0	B3.2	B0.2	B0.0	B0.0	B0.5	B1.0
12	B0.0	B0.1	B0.1	B0.0	B1.2	B1.0	B3.5	B0.1	B0.1	B0.0	B0.4	B1.0
13	B0.3	B0.1	B0.1	B0.0	B2.0	B0.9	B3.4	B0.0	B0.5	B0.0	B0.5	B0.6
14	B0.4	B0.1	B0.1	B0.0	B2.0	B0.7	B1.5	B0.0	B0.2	B0.3	B0.6	B0.4
15	B0.4	B0.1	B0.1	B0.0	B1.9	B0.7	B0.7	B0.0	B0.1	B1.2	B1.3	B0.5
16	B0.5	B0.1	B0.0	B0.0	B2.1	B0.6	B0.2	B0.0	B0.1	B0.9	B0.7	B0.6
17	B1.0	B0.2	B0.1	B0.0	B1.9	B0.5	B0.2	B0.0	B0.0	B1.0	B0.5	B0.5
18	B0.7	B2.3	B0.2	B0.1	B1.8	B0.3	B0.1	B0.0	B0.0	B0.5	B0.4	B0.5
19	B0.6	B1.8	B0.3	B0.1	B1.3	B0.2	B0.1	B0.0	B0.1	B0.6	B0.4	B0.3
20	B4.7	B0.8	B0.2	B0.1	B1.3	B0.1	B0.1	B0.0	B0.1	B0.7	B0.3	B0.3
21	B9.5	B0.5	B1.9	B1.0	B1.4	B0.1	B0.1	B0.1	B0.3	B0.9	B0.3	B0.2
22	B2.9	B0.5	B0.7	B2.9	B0.9	B0.1	B0.1	B0.1	B0.0	B2.4	B0.2	B0.3
23	B2.7	B0.2	B0.7	B3.8	B0.8	B5.5	B0.1	B0.4	B0.0	B1.8	B0.2	B0.2
24	B1.3	B0.1	B0.5	C1.0	B0.8	B1.3	B0.1	B0.1	B0.0	B3.5	B0.2	B0.2
25	B0.8	B0.1	B0.4	B5.5	B0.7	B0.1	B0.5	B0.1	B0.0	B3.4	B0.2	B0.2
26	B0.6	B0.1	B0.4	B2.5	B0.5	B0.1	B1.0	B0.1	B0.1	B2.3	B0.1	B0.2
27	B0.1	B0.1	B0.3	B1.2	B0.5	B0.2	B1.0	B0.1	B0.0	B1.4	B0.1	B0.2
28	B0.0	B0.1	B0.4	B1.0	B0.4	B0.3	B0.8	B0.1	B0.0	B0.8	B0.0	B0.2
29	B0.0		B0.3	B1.4	B0.4	B0.9	B0.8	B0.1	B0.1	B0.7	B0.0	B0.2
30	B0.0		B0.3	B0.9	B0.3	B0.7	B0.8	B0.1	B0.0	B0.1	B0.0	B0.1
31	B0.0		B0.3		B0.0		B0.7	B0.5		B0.0		B0.2

MASS EJECTIONS FROM THE SUN

DECEMBER 1985

Sta	Day	Observed UT Start	Max	End	Location RA°	R/Ro	Freq or Wavelength	Kind of Event
WEIS	Dec 14	1251.3		1257.9			46-210 MHz	II Harmonic Reverse Slope

QUALIFIERS ON START, MAX AND END TIMES
D = event ended after tabulated time
E = event began before the tabulated time
U = uncertain time

REPORTING STATIONS
WEIS = Weissenau

TYPE OF EVENT
A = eruptive active region prominence
CB = coronal cloud bubble
D = coronal depletions
E = coronal enhancement
EL = coronal expanding loop
II = Type II radio burst
IVm = moving Type IV radio burst
Q = eruptive quiescent prominence
R = coronal ray or streamer
S = flare-surge if there is a known flare association
SP = flare-spray if there is a known flare association
* = movement may be caused by ionospheric refraction

DECEMBER 1985

Type	Day	Observed UT Start	End	Lat	CMD	Imp	Type	Sta	Remarks
BSL	Dec 01	0920	0935	N87	W90	1-	C	CATA	
BSL	Dec 01	0925	0940	S68	W90	1-	C	CATA	
BSL	Dec 01	0940	0950	S80	E90	1-	C	CATA	
BSL	Dec 01	1035	1045	S60	E90	1-	C	CATA	
BSL	Dec 01	1045	1100	S05	E90	1-	C	CATA	
BSL	Dec 01	1210	1230	S40	W90	1-	C	CATA	
BSL	Dec 02	1200	1215	N59	W90	1-	C	CATA	
BSL	Dec 03	1135	1150	S79	E90	1-	C	CATA	
BSL	Dec 03	1150	1200	N66	W90	1-	C	CATA	
BSL	Dec 03	1150	1200	S67	W90	1-	C	CATA	
BSL	Dec 03	1230	1240	S80	E90	1-	C	CATA	
BSL	Dec 04	1005	1015	S85	E90	1-	C	CATA	
BSL	Dec 04	1055	1105	S58	W90	1-	C	CATA	
AFS	Dec 05	0730	1415	N21	W22		V	ATHN	
AFS	Dec 05	0730	1415	N21	W24		V	ATHN	
DSD	Dec 05	0830E	0845	N20	W24	1-	C	CATA	
DSD	Dec 05	0855	1050D	N19	W23	1-	C	CATA	
APR	Dec 05	0900	1415	S08	E90		V	ATHN	
DSD	Dec 05	0920	1010	N20	W25	1-	C	CATA	
DSD	Dec 05	1030	1050D	N20	W25	1-	C	CATA	
BSL	Dec 05	1245	1250D	N59	W90	1-	C	CATA	
AFS	Dec 06	0700	1300	N20	W36		V	ATHN	
APR	Dec 06	0730	1300	S13	E90		V	ATHN	
BSL	Dec 06	1200	1200D	S80	E90	1-	C	CATA	
ASR	Dec 07	1155	1257	S06	E90		V	ATHN	
APR	Dec 08	0920	1345	S10	E90		V	ATHN	
BSL	Dec 09	0805	0815	N84	W90	1-	C	CATA	
ASR	Dec 09	0825	1145	N05	E90		V	ATHN	
APR	Dec 09	0825	1145	S10	E90		V	ATHN	
BSL	Dec 09	0825	0825D	S70	W90	1-	C	CATA	
BSL	Dec 09	0850E	0850D	S74	E90	1-	C	CATA	
BSL	Dec 09	1045E	1050	N64	W90	1-	C	CATA	
BSL	Dec 10	0755E	0805	N73	E90	1-	C	CATA	
BSL	Dec 11	0810	0830	N16	E90	1-	C	CATA	
ADF	Dec 11	0945	1140	N09	E54		V	ATHN	
BSL	Dec 11	1010E	1015	N35	E90	1-	C	CATA	
BSL	Dec 12	0825	0845	N17	E90	1-	C	CATA	
BSL	Dec 12	0910	0915	S28	W90	1-	C	CATA	
BSL	Dec 12	1005	1015	N63	W90	1-	C	CATA	
BSL	Dec 12	1245	1245D	N52	W90	1-	C	CATA	
SDF	Dec 13	1255E	0740	S02	E27	1	C	CATA	
ADF	Dec 16	0730	1400	N04	W11		V	ATHN	
ADF	Dec 16	0730	1400	N06	W18		V	ATHN	
ADF	Dec 16	0730	1400	N06	W04		V	ATHN	
AFS	Dec 16	0730	1030	N01	W02		V	ATHN	
ADF	Dec 16	0730	1400	S06	E16		V	ATHN	
AFS	Dec 16	0730	1400	S09	E15		V	ATHN	
BSL	Dec 16	0815	0825D	S76	E90	1-	C	CATA	
BSL	Dec 16	0825	0825D	N68	W90	1-	C	CATA	
APR	Dec 16	0915	1400	S22	W90		V	ATHN	
DSD	Dec 16	1010	1010D	S09	E07	1	C	CATA	
DSD	Dec 16	1010	1010D	S11	E07	1	C	CATA	
DSD	Dec 16	1025E	1025D	S09	E07	1	C	CATA	

ACTIVE PROMINENCES AND FILAMENTS

DECEMBER 1985

Type	Day	Observed UT Start	End	Lat	CMD	Imp	Type	Sta	Remarks
ADF	Dec 16	1030	1400	S08	E08		V	ATHN	
DSD	Dec 16	1040E	1040D	S09	E06	1-	C	CATA	
DSD	Dec 16	1055E	1115D	S10	E06	1-	C	CATA	
DSD	Dec 16	1100E	1115D	S12	E06	1-	C	CATA	
BSL	Dec 16	1135	1150	N60	W90	1-	C	CATA	
BSL	Dec 16	1140	1155	N72	W90	1-	C	CATA	
BSL	Dec 16	1240E	1245D	N02	E90	1-	C	CATA	
ADF	Dec 17	0730	1300	N04	W20		V	ATHN	
ADF	Dec 17	0730	1300	N07	W27		V	ATHN	
BSL	Dec 17	0850	0855	S86	W90	1-	C	CATA	
BSL	Dec 17	0900	0905	S89	W90	1-	C	CATA	
DSD	Dec 17	0950E	1005D	S12	W03	1	C	CATA	
BSL	Dec 17	0955	1005	S73	E90	1-	C	CATA	
BSL	Dec 17	1100	1110	N63	W90	1-	C	CATA	
BSL	Dec 17	1105	1115	N69	E90	1-	C	CATA	
BSL	Dec 17	1115	1135	N64	W90	1-	C	CATA	
BSL	Dec 17	1230	1235	S89	W90	1-	C	CATA	
BSL	Dec 17	1240	1245	S80	W90	1-	C	CATA	
ADF	Dec 18	0720	1330	S09	W16		V	ATHN	
BSL	Dec 18	0730E	0805	S09	W90	1-	C	CATA	
DSD	Dec 18	0805	0830D	S13	W14	1-	C	CATA	
ADF	Dec 18	1010	1330	N05	W31		V	ATHN	
BSL	Dec 18	1130E	1140D	S72	E90	1-	C	CATA	
BSL	Dec 18	1205	1245	S52	E90	1	C	CATA	
ADF	Dec 19	0815	1400	N05	W50		V	ATHN	
BSL	Dec 19	0855E	0900D	N65	E90	1-	C	CATA	
BSL	Dec 19	1035	1050D	N43	W90	1-	C	CATA	
APR	Dec 21	0905	0934	S06	W90		V	ATHN	
EPL	Dec 21	1130E	1130D	S17	W90	2	C	CATA	
BSL	Dec 22	1050	1055	S70	W90	1-	C	CATA	
BSL	Dec 22	1110	1125	S34	E90	1-	C	CATA	
BSL	Dec 23	0945	1010	N70	W90	1-	C	CATA	
BSL	Dec 25	0830	0900	S57	W90	1	C	CATA	
BSL	Dec 25	1035E	1040	S82	E90	1-	C	CATA	
BSL	Dec 25	1105E	1115D	N66	W90	1-	C	CATA	
BSL	Dec 26	0920	0920D	S63	W90	1-	C	CATA	
BSL	Dec 26	1040	1055	S72	E90	1-	C	CATA	
BSL	Dec 27	1115	1125	N78	W90	1-	C	CATA	
ASR	Dec 30	0815	0825	S42	E90		V	ATHN	
ASR	Dec 30	0830	0945	S30	E90		V	ATHN	
BSL	Dec 31	0910E	0910D	N23	W90	1-	C	CATA	
BSL	Dec 31	0910E	0910D	N01	W90	1-	C	CATA	

BSL = Bright surge at limb.
ADF = Active dark filament.
AFS = Active filament system.
APR = Active prominence region at limb.
ASR = Active surge region.
DSD = Dark surge on disk.
EPL = Eruptive prominence at limb.
SDF = Sudden disappearance of filament.

ATHN = Athens
BUCA = Bucharest
CATA = Catania
CULG = Culgoora
KODA = Kodaikanal
MANI = Manila
WEND = Wendelstein

For more detail and information about the Remarks, see the Supplement to Solar-Geophysical Data.

C O N T E N T S

Comprehensive Reports **MISCELLANEOUS DATA** Number 502 Part II

NOAA Space Environment Services Center

Solar Proton Events Affecting the Earth Environment
January 1976 – May 1986

PARTICLE EVENT						ASSOCIATED FLARE AND ACTIVE REGION					
Start		Maximum		Satellite Proton Flux* $(cm^2-s-sr)^{-1}$	Riometer Absorption decibels	Maximum		Importance		Disk Location	NOAA/ USAF Region Number
Date	Time UT	Date	Time UT			Date	Time UT	X-ray	Optical	°Lat °Long	
					1976						
Apr 30	2120	May 01	1700	12	0.0	Apr 30	2114	X2	2B	S09 W47	0700
					1977						
Sept 19	1430	Sept 19	2130	200	4.5	Sept 19	1054	X2	3B	N08 W58	0889
Nov 22	1400	Nov 22	1800	160	0.7	Nov 22	1006	X1	2N	N24 W38	0939
					1978						
Feb 13	0930	Feb 14	1000	850	6.3	Feb 13	0255	M7	0B	N22 W13	1001
Apr 11	1530	Apr 11	1630	0	3.2	Apr 11	1353	X2	2B	N19 W54	1057
Apr 29	0445	Apr 30	2000	1000	9.8	Apr 28	1306	X5	4B	N22 E41	1092
May 07	0420	May 07	0420	100	0.0	May 07	0330	X2	2B	N22 W64	1095
June 02	0730	June 02	0935	19	1.8	May 31	1009	M5	2B	N23 W50	1129
June 24	0900	June 25	0230	25	1.2	June 22	1709	M2	3B	N19 E18	1164
July 13	0300	July 13	1000	20	0.0	---	---	---	--	---	---
Sept 23	1035	Sept 24	0400	2200	9.6	Sept 23	0941	X1	3B	N35 W50	1294
Nov 10	2130	Nov 10	2140	38	0.0	Nov 10	0042	M1	2N	N17 E02	1385
					1979						
Feb 17	2020	Feb 17	2205	31	0.0	Feb 16	0200	X2	2B	N15 E48	1574
Apr 03	1600	Apr 03	2310	45	2.6	---	---	---	--	---	---
June 06	1850	June 07	0005	950	5.9	June 04	0409	X1	2B	N20 E34	1781
July 07	0015	July 07	1010	50	0.0	---	---	---	--	---	---
Aug 19	0850	Aug 20	0830	450	4.4	Aug 18	1343	X1	--	S08 E90	---
Aug 19	0850	Aug 20	1700	410	0.0	Aug 18	1343	X1	--	S08 E90	---
Aug 19	0850	Aug 21	0740	500	0.0	Aug18	1343	X1	--	S08 E90	---
Sept 15	1500	Sept 16	1200	60	0.0	Sept 14	0802	X2	--	N10 E90	1994
Nov 16	0430	Nov 16	1300	75	3.0	Nov 15	1639	M1	0B	N34 W25	2110
					1980						
Feb 06	1340	Feb 06	1850	12	1.0	---	---	---	--	---	---
July 17	2300	July 19	1930	100	2.0	July 17	0603	M3	1B	S12 E06	2562
					1981						
Mar 30	0900	Mar 30	2115	30	0.0	Mar 30	0049	M3	2N	N13 W74	2993
Apr 10	1745	Apr 11	1400	50	1.8	Apr 10	1655	X2	3B	N09 W40	3025
Apr 24	1515	Apr 24	2330	160	2.3	Apr 24	1400	X5	2B	N18 W50	3049
May 09	1200	May 10	2130	150	0.0	May 08	2252	M7	2B	N09 E37	3099
May 15	0300	May 16	1950	130	3.7	May 13	0425	X1	3B	N11 E58	3106
July 20	1430	July 20	1825	100	2.5	July 20	1329	M5	1B	S26 W75	3204
July 25	0600	July 25	1320	18	0.0	---	---	---	--	---	---
Aug 10	0115	Aug 10	0435	57	0.0	Aug 07	1916	M4	2B	S10 E24	3257
Oct 08	1235	Oct 11	0600	83	1.7	Oct 07	2308	X3	1B	S19 E88	3390
Oct 12	0700	Oct 13	2247	2000	6.3	Oct 12	0636	X3	3B	S16 E20	3390
Dec 10	0545	Dec 11	0900	65	0.0	Dec 09	1854	M5	3B	N12 W16	3496
					1982						
Jan 31	0055	Jan 31	1630	830	2.2	Jan 30	2358	X1	3B	S13 E19	3576
June 06	0245	June 06	0245	10	0.0	June 03	1146	X8	2B	S09 E72	3763
June 09	0040	June 09	0510	30	0.0	June 06	1637	X12	3B	S11 E26	3763
July 11	0700	July 13	1615	2900	12.5	July 09	0742	X9	3B	N17 E73	3804
July 22	2030	July 23	0220	240	3.0	July 22	1734	M4	0F	N29 W86	3804
Sept 05	2205	Sept 06	0100	66	1.0	Sept 04	0400	M4	3N	N11 E30	3886
Nov 22	1940	Nov 22	2140	40	0.0	Nov 22	1828	M7	1N	N11 W43	3994
Nov 26	0605	Nov 26	1500	25	3.0	Nov 26	0253	X4	2B	S11 W87	3994
Dec 08	0010	Dec 08	1000	1000	0.0	Dec 07	2354	X2	0B	S14 W81	4007
Dec 17	1845	Dec 18	0945	130	3.7	Dec 15	0202	X12	2B	S10 E24	4026
Dec 19	1920	Dec 20	0515	85	3.0	Dec 19	1624	M9	2B	N10 W75	4022
Dec 27	0600	Dec 27	1345	190	4.6	Dec 25	0752	X2	1B	S14 E31	4033

Solar Proton Events Affecting the Earth Environment--*continued*

PARTICLE EVENT						ASSOCIATED FLARE AND ACTIVE REGION					
Start		Maximum		Satellite Proton Flux* $(cm^2-s-sr)^{-1}$	Riometer Absorption decibels	Maximum		Importance		Disk Location	NOAA/ USAF Region Number
Date	Time UT	Date	Time UT			Date	Time UT	X-ray	Optical	°Lat °Long	
					1983						
Feb 03	1200	Feb 04	1620	340	3.9	Feb 02	0619	X4	3B	S19 W08	4077
June 15	0435	June 15	1800	18	0.0	June 14	---	---	--	S09 W90	4201
					1984						
Feb 16	0915	Feb 16	1005	660	0.8	Feb 16	---	---	--	S12 W95	4408
Feb 19	1310	Feb 21	1415	55	0.5	Feb 17	2301	X2	2B	N16 E82	4421
Mar 13	1440	Mar 13	1450	10	0.0	---	---	---	--	---	---
Mar 14	0405	Mar 14	0505	100	0.0	Mar 14	0334	M2	2B	S12 W42	4433
Apr 25	1330	Apr 26	1420	2500	17.0	Apr 24	0005	X13	3B	S12 E43	4474
May 24	1045	May 24	1140	31	0.0	May 24	1503	M6	2B	S09 E24	4492
May 31	1315	May 31	1415	15	0.0	May 31	1142	M1	--	S09 W90	4492
					1985						
Jan 22	0415	Jan 31	0550	14	0.0	Jan 21	2350	X4	2B	S08 W38	4617
Apr 25	1430	Apr 26	0600	160	1.1	Apr 24	0935	X1	3B	N06 E27	4647
July 09	0235	July 09	0325	140	0.0	July 09	0204	M2	1B	S16 W36	4671
					1986						
Feb 06	0825	Feb 07	1730	130	1.1	Feb 06	0625	X1	3B	S04 W06	4711
Feb 14	1155	Feb 15	0400	130	2.3	Feb 14	0929	M6	1B	N01 W76	4713

*Particle flux measured at >10 MeV at geosynchronous satellite orbit.

*U.S. GOVERNMENT PRINTING OFFICE: 1986-0-676-027/40000

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SOLAR-TERRESTRIAL PHYSICS

The ICSU Panel on WDCs has recommended that it would be appropriate courtesy to acknowledge in publications that data were obtained from the originating station or investigator through the intermediary of the WDCs. The following statement is suggested:

"Data used in this study were provided by WDC-A for Solar-Terrestrial Physics, NOAA E/GC2, 325 Broadway, Boulder Colorado 80303, USA."