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Solar - Geophysical Data

NO. 398 OCTOBER 1977

Part II (Comprehensive Reports)

**DATA FOR
APRIL 1977
MARCH 1977
& MISCELLANEA**

**NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO**

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado 80302.

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To standardize referencing these reports in the open literature, the following format is recommended:

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SOLAR - GEOPHYSICAL DATA

No. 398

Issued in two parts

Helen E. Coffey, Editor

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Solar - Terrestrial Data Services Division

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Note: A = Part I, B = Part II.

385A 22 listed under 1976 Aug shows that data for August 1976 were contained in *Solar-Geophysical Data Number 386 - Part I* beginning on page 22.

APRIL 1977 DATA

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ACTIVE REGIONS
CARRINGTON ROTATION 1653
(March 23 - April 20, 1977)

Region No.	Coordinates		Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1652	Activity at West Limb
	Lat.	Long.					
1	43°S	334°	-3	1	x	(4)	disappeared
2	21 N	312	0	1	x		decreasing
3	17 S	305	>6	1	x		disappeared
4	15 N	263	+3	1	x		disappeared
5	26 N	258	>6	1	x		decreasing
6	29 N	250	>6	1	x		decreasing
7	19 N	244	-4	1	x		stable
8	35 N	150	0	1	x		disappeared
9	26 N	143	-4	1	x		decreasing
10	32 N	138	>6	1	x		dispersed
11	0	134	>6	1	x		dispersed
12	25 S	73	-5	1	x		stable
13	25 S	60	0	2			decreasing
14	26 N	50	0	1	x		disappeared
15	25 N	46	-1	1	x		disappeared
16	20 S	27	>6	4			decreasing
17	22 S	16	>6	1	x		decreasing

ACTIVE REGIONS

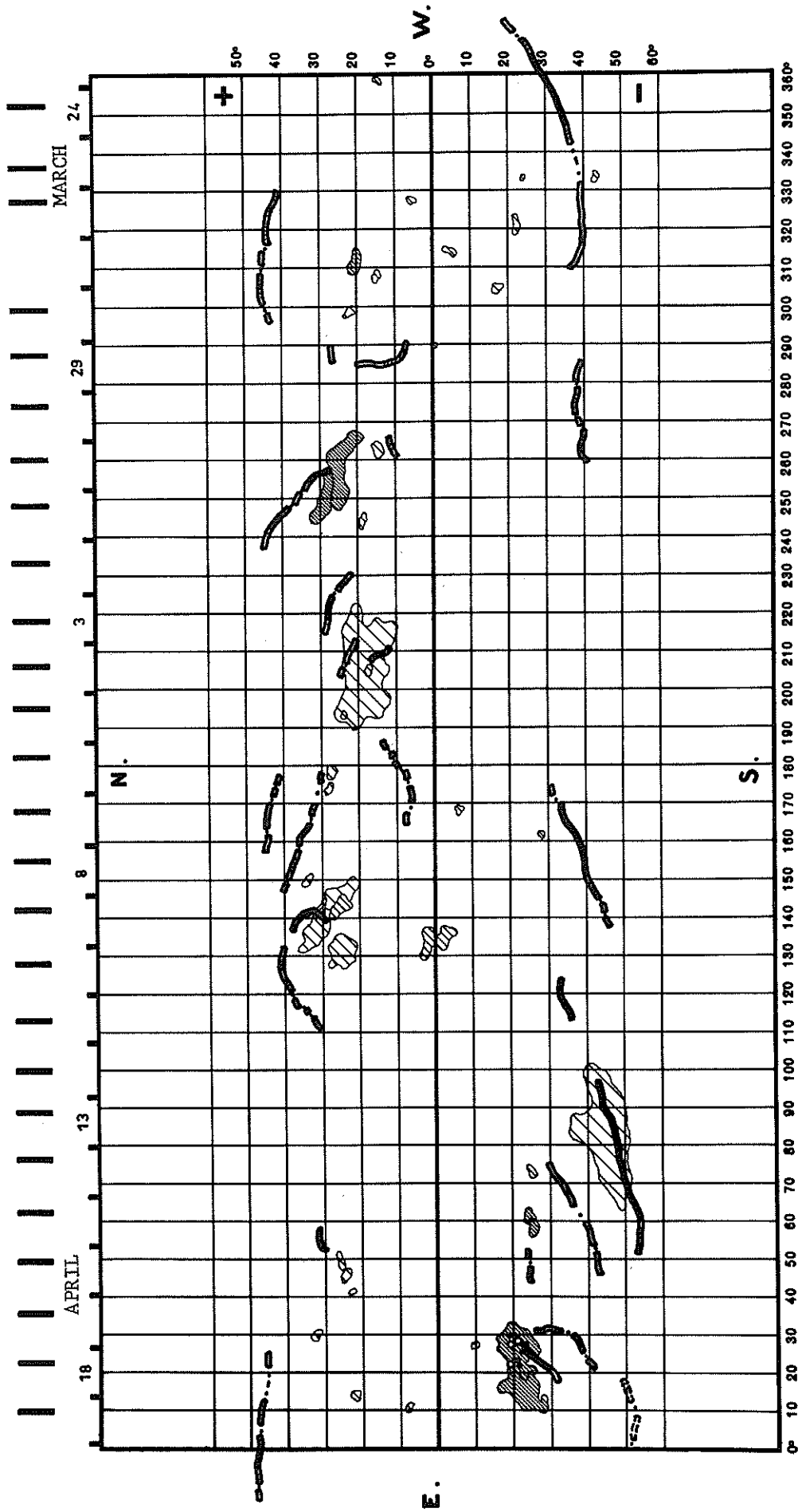
CARRINGTON ROTATION 1654

(April 20 - May 17, 1977)

Region No.	Coordinates		Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1653	Activity at West Limb
	Lat.	Long.					
1	44° S	270°	-2	1	x		disappeared
2	23 N	261	>6	1	x	(5)	decreasing
3	30 N	254	>6	1	x	(6)	decreasing
4	20 N	245	>6	1	x	(7)	dispersed
5	27 N	242	>6	1	x	(5+6)	decreasing
6	34 N	227	0	1	x		disappeared
7	23 S	198	>6	2			decreasing
8	11 S	193	+3	1	x		decreasing
9	25 N	139	0	2			dispersed
10	20 N	128	-2	2			decreasing
11	32 N	128	>6	3			decreasing
12	35 N	118	+6	2			decreasing
13	16 S	112	+3	1	x		disappeared
14	16 N	108	-4	1	x		increasing
15	24 S	66	+1	2			decreasing
16	19 N	65	+4	1	x		disappeared
17	26 S	61	+4	1	x		disappeared
18	22 S	31	>6	1	x	(16)	dispersed
19	30 N	19	+2	1	x		decreasing
20	21 S	17	>6	3			decreasing
21	28 S	10	>6	1	x	(17)	decreasing
22	22 S	3	+3	1	x		dispersed
23	36 N	3	-4	2			increasing

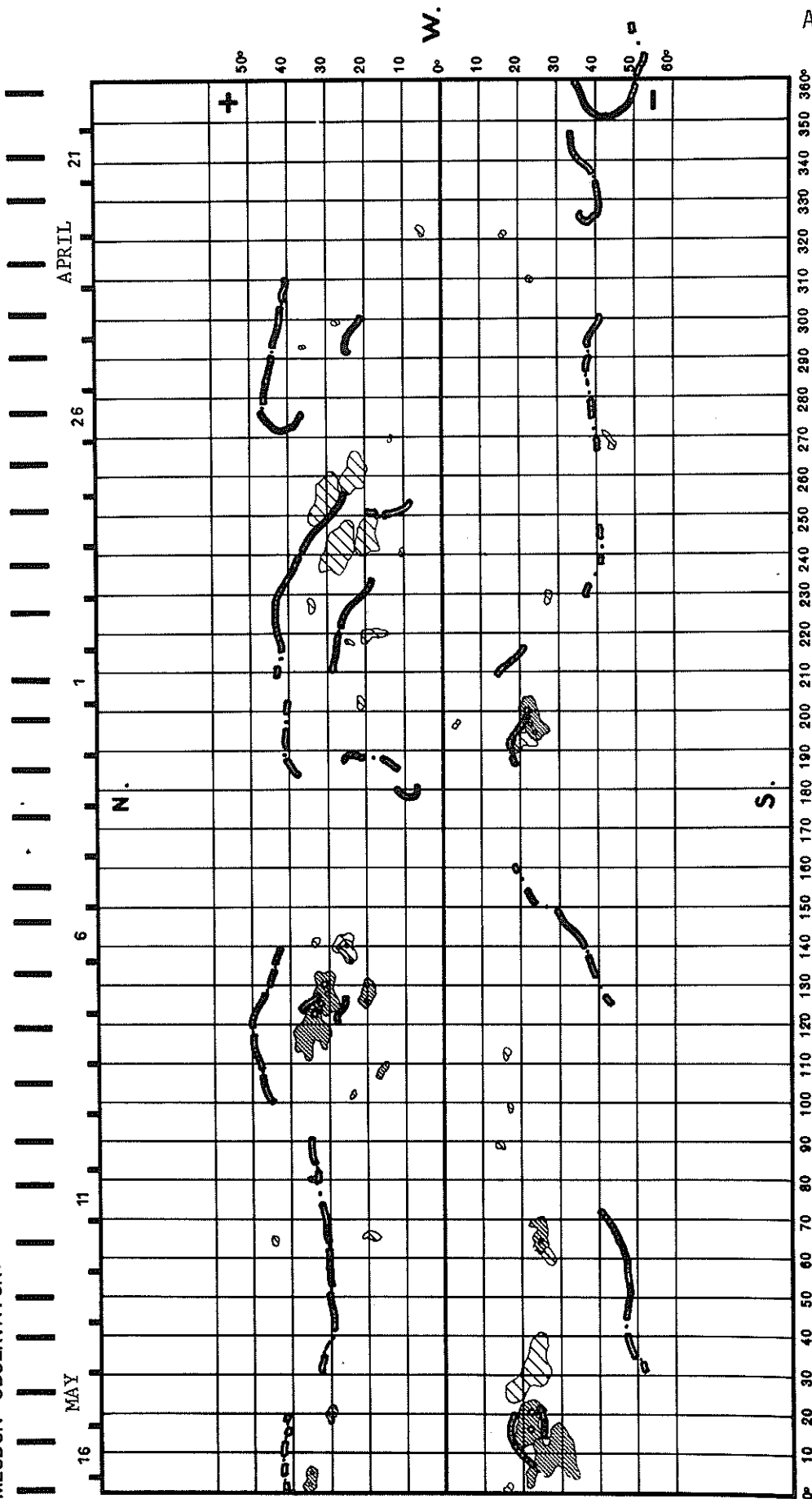
SYNOPTIC SOLAR MAP
CARRINGTON ROTATION 1653
MARCH 23 TO APRIL 20, 1977

MEUDON OBSERVATORY



SYNOPTIC SOLAR MAP
CARRINGTON ROTATION 1654
APRIL 20-MAY 16, 1977

MEUDON OBSERVATORY



8
Apr 77

H α SOLAR FLARES

APRIL 1977

OBSERVATORY	OBSERVED UT				LOCATION				DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	GEOGRAPHIC PLATE REGION			CMP. DAY	COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk		CORR AREA Sq. Deg.
					LAT.	MER. DIST.											
843 CATA	01	0000	0043	NO FLARE	PATROL												
	01	0201	0232	NO FLARE	PATROL												
	01	1937	2148	NO FLARE	PATROL												
	01	2200	2210	NO FLARE	PATROL												
	02	2150	2152	NO FLARE	PATROL												
	03	0750	0800	NO FLARE	PATROL												
	03	0800E	0800	0815D	N23 W33	.691	14701	31.9	150	-F	2	0800	84	1.2	Y5		
	03	0815	0825	NO FLARE	PATROL												
	03	0835	0850	NO FLARE	PATROL												
	03	0920	0930	NO FLARE	PATROL												
844 CATA	03	0950	1000	NO FLARE	PATROL												
	03	1015	1025	NO FLARE	PATROL												
	03	1203	1208	NO FLARE	PATROL												
	03	2018	2107	NO FLARE	PATROL												
	03	2114	2129	NO FLARE	PATROL												
	04	1215	1220	1240	N30 E77	.990	14713	10.3	25	F	2	1220	112		Y5		
	IMP	1	NO	LVOV1													
	845 HTPR	05	1608	1611	1618	N19 W52	.840	14717	1.8	10	-F	C	1611	20	.3	Y5	
846 HTPR	05	1640	1642	1645	N19 W52	.840	14717	1.8	5	-F	C	1642	30	.4	E Y5		
	05	2113	2133	NO FLARE	PATROL												
	05	2225	2234	NO FLARE	PATROL												
	06	1629	1653	NO FLARE	PATROL												
	06	1659	1705	NO FLARE	PATROL												
847 RAMY	06	2007E	2010	2021	N18 W68	.947	14717	1.7	140	-F	3	C	127		OE Y5		
	06	2055	2102	NO FLARE	PATROL												
	07	0237	0245	NO FLARE	PATROL												
GRP63848 KODA HANI	07	0246	0249	0302	N17 W71	.961	14717	1.8	16	1N	P	0246	405	4.2	DH		
	07	0246	0249	0300	N15 W70	.954	14717	1.9	14	1N							
	07	0254E	0254U	0304D	N19 W72	.967	14717	1.7	100	-F	V	0254	80	1.8	CDH		
	07	0950	1045	NO FLARE	PATROL												
	07	1050	1145	NO FLARE	PATROL												
	07	1949	2021	NO FLARE	PATROL												
	07	2101	2109	NO FLARE	PATROL												
	08	1859	2057	NO FLARE	PATROL												
	08	2114	2142	NO FLARE	PATROL												
	09	0358	0400	NO FLARE	PATROL												
	09	0500	0503	NO FLARE	PATROL												
	09	0707	0730	NO FLARE	PATROL												
	09	0930	0940	NO FLARE	PATROL												
	09	2039	2106	NO FLARE	PATROL												
	10	0726	0826	NO FLARE	PATROL												
	849 LOCA	11	0945E	0950	1020	S21 E88	.998	14726	18.0	350	-N	V				Y5	
	850 KHAR	11	1103E		1123D	S19 E90	.999	14726	18.2	200	-F	P				Y5	
11		1817	1825	NO FLARE	PATROL												
12		0500	0502	NO FLARE	PATROL												
12		0600	0618	NO FLARE	PATROL												
12		0703	0758	NO FLARE	PATROL												
GRP63851 MONT HTPR ATHN LOCA ZURI RAMY	12	0932>9	0950+8	1037	S21 E82	.986	14726	18.5	65	18			160		E		
	12	0932	0950	1033	S21 E86	.995	14726	18.8	61	28	C	0950	400				
	12	0944	0958	1027	S21 E82	.986	14726	18.6	43	18	C	0958	150		E		
	12	0947	0951	0955	S23 E75	.961	14726	18.0	8	18	V						
	12	0955E	0955	1050	S20 E78	.973	14726	18.3	550	28	C	0955	163	8.8			
	12	1026E	1026	1036D	S21 E82	.986	14726	18.6	100	1N	P	1026	60				
	12	1029E	1030U	1150	S15 E85	.994	14726	18.8	810	-F	3	C		96			
	12	1812	1826	NO FLARE	PATROL												
	12	2051	2103	NO FLARE	PATROL												
	852 WORO	12	2317	2319	2324	S19 E69	.929	14726	18.1	7	-N	C	2319	45		Y5	
13		0200	0209	NO FLARE	PATROL												
13		0550	0612	NO FLARE	PATROL												
13		0627	0636	NO FLARE	PATROL												

H α SOLAR FLARES

APRIL 1977

OBSERVATORY	OBSERVED UT				LOCATION				DURATION MIN	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS		
	DATE 1977 APR	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	GEOGRAPHIC FLARE REGION	CNR DAY		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.			
					LAT.	MER. DIST.												
GRP63853	13	1130+1	1133+2	1146	S21	E66	.910	14726	18.4	16	-F			40				
HTPR	13	1130	1135	1150	S22	E67	.917	14726	18.5	20	-F	C	1135	40	1.0			
MONT	13	1131	1133	1141	S21	E66	.910	14726	18.4	10	-F	C	1133	40				
GRP63854	13	1216+9	1220	1251	S21	E66	.910	14726	18.5	35	-N			50			E	
			1239+1															
HTPR	13	1216	1220	1256	S22	E66	.911	14726	18.5	40	-F	C	1220	30	.7			
MONT	13	1227	1240	1251	S21	E66	.910	14726	18.5	24	-N	C	1240	60		E		
MCMA	13	1237	1239	1250	S21	E66	.910	14726	18.5	13	-N	C	1239	40	1.0	E		
855 MCMA	13	1317	1320	1328	S19	E63	.888	14726	18.3	11	-N	C	1320	30	.7	OH Y5		
GRP63856	13	1339+4	1346+1	1358	S21	E62	.882	14726	18.2	19	-N			40	.9		EH	
MONT	13	1339	1346	14000	S21	E65	.903	14726	18.4	210	-N	C	1346	60		E		
HTPR	13	1342	1347	1356	S21	E61	.874	14726	18.1	14	-F	C	1347	20	.4	E		
MCMA	13	1343	1347	1358	S20	E60	.865	14726	18.1	15	-N	C	1347	40	1.0	EH		
GRP63857	13	1449+2	1452+2	1505	S21	E60	.866	14726	18.1	16	-F			25	.5			
HTPR	13	1449	1454	1512	S22	E60	.867	14726	18.1	23	-F	C	1454	20	.4	O		
MCMA	13	1451	1452	1457	S21	E60	.866	14726	18.1	6	-F	C	1452	30	.6	E		
858 HTPR	13	1513	1514	1520	S21	E62	.882	14726	18.3	7	-F	C	1514	10	.2	O Y5		
GRP63859	13	1535+0	1538+0	1544	S21	E63	.889	14726	18.4	9	-F			30	.7			
HTPR	13	1535	1538	1545	S21	E64	.896	14726	18.4	10	-N	C	1538	30	.7	E		
MCMA	13	1535	1538	1542	S21	E62	.882	14726	18.3	7	-F	C	1538	30	.7	O		
860 MCMA	13	1550	1552	16040	S21	E62	.882	14726	18.3	140	-N	C	1552	40	.9	EH Y5		
GRP63861	13	1612		16150	S21	E61	.874	14726	18.2	3	-F			50	1.1		E	
HTPR	13	1612		16140	S21	E63	.889	14726	18.4	20	-F	C	1614	30	.7			
MCMA	13	1613E		16150	S22	E59	.858	14726	18.1	20	-N	P	1613	70	1.5	E		
GRP63862	13	1715	1728+1	1815	S20	E61	.873	14726	18.3	60	-N						Z	
MCMA	13	1715	1728	1815	S21	E61	.874	14726	18.3	60	-B	C	1728	50	1.1	E		
RAHY	13	1727E	1729	17360	S20	E62	.881	14726	18.4	90	-F	2 C		128		Z F		
	13	1926	1950	NO FLARE	PATROL													
	13	2038	2046	NO FLARE	PATROL													
	13	2104	2130	NO FLARE	PATROL													
GRP63863	13	2130+0	2132+0	2255	S20	E58	.848	14726	18.2	85	1N			130	2.5		E	
			2208															
PALE	13	2130	2132	0000	S21	E59	.858	14726	18.3	50	1N	3 V		132		DEDE		
PALE	13	2130	2132	21440	S21	E59	.858	14726	18.3	140	1N	3 C		132		DEDE		
VORO	13	2205	2208	2244	S19	E57	.838	14726	18.2	39	1B	C	2226	206	4.1	E		
PALE	13	2218E	2220U	22550	S21	E59	.858	14726	18.4	370	-F	3 C		41		DE		
GRP63864	13	2332+2	2339+5	2359	S21	E57	.840	14726	18.3	27	1N						EKU	
VORO	13	2332	2341	0002	S19	E57	.838	14726	18.3	30	1B	C	2338	251	5.0	EK		
CULG	13	2333	2339	2358	S23	E57	.843	14726	18.3	25	-N	C	2339	100	1.8			
PALE	13	2334	2344	2359	S21	E58	.849	14726	18.3	25	2F	3 C		379		UDE		
PALE	13	2334	2344	23490	S21	E58	.849	14726	18.3	150	2F	3 V		379		UDE		
	14	0600	0609	NO FLARE	PATROL													
865 UPIC	14	0650E		0655U	S22	E53	.806	14726	18.3	50	-F	P	0650	41		B Y5		
866 MCMA	14	1254	1255	1304	S20	E48	.752	14726	18.1	10	-F	C	1255	20	.3	O Y5		
GRP63867	14	1611+6	1617	1646	S21	E50	.774	14726	18.4	35	-N			70	1.1		EL	
			1623+1															
MCMA	14	1611	1623	1650	S21	E47	.743	14726	18.2	39	-N	C	1623	50	.7	EL		
HTPR	14	1617	1617	1621	S20	E55	.821	14726	18.8	4	-F	C	1617	20	.3			
HTPR	14	1618	1624	1642	S21	E50	.774	14726	18.4	24	-N	C	1624	100	1.3	E		
868 MCMA	14	1831	1834	1858	S21	E46	.732	14726	18.2	27	-N	C	1834	70	1.1	E Y5		
869 MCMA	14	2020	2030	2040	S21	E45	.721	14726	18.2	20	-F	C	2030	50	.7	E Y5		
870 MCMA	14	2105	2108	2135	S21	E45	.721	14726	18.3	30	-B	C	2108	80	1.2	E Y5		
GRP63871	14	2211	2214+1	2228	S22	E45	.724	14726	18.3	17	-F			50	.7		F	
CULG	14	2211	2215	2230	S23	E44	.716	14726	18.2	19	-F	C	2215	40	.6			
MANI	14	2214E	2214U	2225	S21	E46	.732	14726	18.4	110	-N	V	2214	70	1.0	F		

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	MCNATH PLAGE REGION	CMP. DAY			COND.	TYPE	TIME UT	MEAS. AREA	CORR AREA	
					LAT.	MER. DIST.											
GRP63872	15	0153	0156+4	0222	S23	E43	.706	14726	18.3	29	-F				70	1.0	R
PALE	15	0153	0156	0214	S22	E42	.691	14726	18.2	21	-F	3	C		60		DE R
CULG	15	0157E	0200	0229	S24	E44	.720	14726	18.4	32D	-F		P	0200	80	1.3	
GRP63873	15	0851+6	0856+5	0930	S20	E38	.637	14726	18.2	39	1N						E
HTPR	15	0851	0856	0940	S21	E40	.665	14726	18.4	57	-N		C	0856	70	.8	E
TEHR	15	0857	0901	0916	S20	E36	.613	14726	18.1	19	1N	3	C		350		DE
LOCA	15	0905E		0930	S18	E37	.618	14726	18.2	25D	1F		S				B
874 MONT	15	1041	1056	1111	S22	E46	.735	14726	18.9	30	-F		C	1056	60		E Y5
GRP63875	15	1519+0	1520	1535	S20	E34	.588	14726	18.2	16	-F						EL
MCMA	15	1519	1528	1538D	S21	E33	.580	14726	18.1	19D	-F		C	1528	50	.6	EL
HTPR	15	1519	1520	1532	S20	E35	.601	14726	18.3	13	-F		C	1520	20	.2	
876 HTPR	15	1601	1609	1619	S19	E33	.571	14726	18.1	18	-F		C	1609	20	.2	Y5
GRP63877	15	1652	1704	1742	S19	E33	.571	14726	18.2	50	-F				40	.5	EL
HTPR	15	1652		1744D	S19	E33	.571	14726	18.2	52D	-F		C	1732	30	.3	E
MCMA	15	1655E		1720D	S20	E34	.588	14726	18.3	25D	-N		C	1658	50	.6	EL
HTPR	15	1659	1704	1717	S19	E34	.584	14726	18.3	18	-F		C	1704	30	.3	E
RAHY	15	1726E	1731U	1740	S18	E33	.566	14726	18.2	14D	-F	3	C		60		FDE
878 MCMA	15	1801E		1825	S20	E34	.588	14726	18.3	24D	-F		C	1803	60	.8	E Y5
	15	1950	1958	NO FLARE	S19	E28	.506	14726	18.2	19	-B		C	0221	54	.6	DJ Y5
	15	2007	2010	NO FLARE	S22	E35	.610	14726	18.9	24	-F		C	0714	30	.3	E Y5
	15	2040	2152	NO FLARE	S21	E26	.493	14726	18.3	70	-N						E
879 VORO	16	0219	0221	0238	S19	E28	.506	14726	18.2	19	-B		C	0221	54	.6	DJ Y5
880 HTPR	16	0711	0714	0735	S22	E35	.610	14726	18.9	24	-F		C	0714	30	.3	E Y5
GRP63881	16	0717+8	0731+1	0827	S21	E26	.493	14726	18.3	70	-N						E
ATHN	16	0717	0731	0820	S21	E22	.444	14726	18.0	63	1N		V		229		
HTPR	16	0725	0732	0827	S21	E26	.493	14726	18.3	62	-N		C	0732	60	.6	E
CATA	16	0740E	0810	0830D	S22	E32	.574	14726	18.7	50D	-N	2		0810	84	1.1	
GRP63882	16	1141+2	1144+4	1220	S19	E23	.440	14726	18.2	39	-N				50	.6	E
HTPR	16	1141	1145	1220	S20	E23	.448	14726	18.2	39	-B		C	1145	50	.5	E
MONT	16	1141	1144	1222	S19	E25	.467	14726	18.4	41	-N		C	1144	60		E
RAMY	16	1141	1148U	1157D	S18	E21	.407	14726	18.1	160	1N	2	C		206		FDE
MEUD	16	1143	1145	1200	S20	E23	.448	14726	18.2	17	-N		C	1145	50	.6	E
GRP63883	16	1722		1757	S19	E20	.402	14726	18.2	35	-N				110	1.2	
HTPR	16	1722		1747D	S19	E20	.402	14726	18.2	25D	-B		C	1728	150	1.5	E
PALE	16	1730E	1730U	1757	S19	E20	.402	14726	18.2	27D	-F	3	C		72		FDE
GRP63884	16	2109+0	2115+0	2141D	S20	E20	.410	14726	18.4	32	1N				300	3.3	
PALE	16	2109	2115	2141	S19	E18	.376	14726	18.2	32	1N	3	C		315		FDE
PALE	16	2109	2115	2129D	S19	E18	.376	14726	18.2	20D	1N	3	V		289		FDE
CULG	16	2129E		2212	S23	E25	.496	14726	18.8	43D	-N		P	2145	140	1.6	
GRP63885	16	2307+0	2315+3	0042	S21	E18	.396	14726	18.3	95	1B						F
MITK	17	0026E	0032	0042	S22	E19	.418	14726	18.4	160	-N		C	0032	70	.8	
PALE	16	2307	2316	0150	S21	E18	.396	14726	18.3	163	2B	3	C		554		DE F
HANI	16	2307E	2318U	2335D	S21	E17	.384	14726	18.2	28D	-N		V	2318	120	1.3	F
CULG	16	2311E	2315	0030	S22	E19	.417	14726	18.4	79D	1B		P	2315	200	2.2	
MITK	16	2325E		0004D	S20	E17	.374	14726	18.3	39D	1N		C	2325	270	3.1	F
886 PALE	17	0255E	0258	0318	S21	E17	.385	14726	18.4	23D	-F	3	C		40		Y5
GRP63887	17	1040	1047+3	1120	S20	E11	.310	14726	18.3	40	1N				270	2.8	FS
CATA	17	1040	1050	1106D	S20	E10	.300	14726	18.2	26D	1N	1		1050	224	2.4	
ATHN	17	1044E	1047	1130	S18	E13	.306	14726	18.4	46D	1B		V		328		
TEHR	17	1050	1059	1116	S21	E10	.314	14726	18.2	26	1N	3	C		318		FS
UPIC	17	1115E		1120U	S21	E11	.323	14726	18.3	5D	-F		P	1115	61		B
	17	1940	2113	NO FLARE PATROL													

OBSERVATORY	OBSERVED UT				LOCATION						DURATION MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	NOMATH PLAGE REGION	CMP DAY	COND			TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
					LAT.	MER. DIST.												
					1977	APR												
GRP63888	17	2210+2	2213+1	2227	S22	E08	.313	14726	18.5	17	-N						F	
NANI	17	2210E	2213	2227	S20	E07	.276	14726	18.4	17D	-N	V	2213	90	1.0	F		
CULG	17	2211	2213	2239	S24	E10	.356	14726	18.7	24	-N	C	2213	100	1.6			
PALE	17	2212	2214	2220	S21	E07	.292	14726	18.5	8	-F	3	C	80	.9			
	18	1609	1610	NO FLARE	PATROL													
	18	1625	1635	NO FLARE	PATROL													
	18	1645	1727	NO FLARE	PATROL													
	18	1738	1758	NO FLARE	PATROL													
889 MCHA	18	1801E		1814D	S22	E01	.286	14726	18.8	130	-F	C	1803	40	.4	E Y5		
	18	1953	1955	NO FLARE	PATROL													
	18	2112	2159	NO FLARE	PATROL													
GRP63890	19	0722+3	0739	0757	S21	H09	.308	14726	18.6	35	1N			230	2.5	E		
			0747+0															
HTPR	19	0722		0729D	S21	H09	.308	14726	18.6	7D	-F	C	0726	20	.2			
BUCA	19	0725		0801	S22	H09	.323	14726	18.6	36	1N	C	0742	322	3.5	E		
MITK	19	0735	0739	0753	S22	H08	.316	14726	18.7	18	-N	C	0739	140	1.5	E		
CATA	19	0740E	0747	0815D	S21	H09	.308	14726	18.6	35D	18	2	C	0747	281	3.0		
ATHN	19	0740E	0747	0750	S20	H15	.354	14726	18.2	100	-N	V		180				
891 LV0V	19	1456	1511	1524D	S20	H17	.377	14726	18.3	280	1N	C	1511	350	3.9	E Y5		
	19	1524	1558	NO FLARE	PATROL													
GRP63892	19	1604E	1626	1630D	S21	H18	.398	14726	18.3	26	-F						L	
MCHA	19	1604E		1629D	S22	H18	.409	14726	18.3	25D	-N	P	1608	100	1.1	EL		
RAMY	19	1623E	1626U	1630D	S20	H18	.388	14726	18.3	7D	-F	3	C	95		FDE		
	19	1630	1646	NO FLARE	PATROL													
	19	1919	2110	NO FLARE	PATROL													
GRP63893	20	0046E		0156	S21	H22	.447	14726	18.4	70	-N						EJ	
MITK	20	0046E		0200D	S23	H22	.465	14726	18.4	74D	-F	C	0055	4	.5			
VORO	20	0113		0151	S20	H22	.439	14726	18.4	38	1N	C	0120	197	2.2	EJ		
894 MITK	20	0610	0613	0627	S21	H21	.435	14726	18.7	17	-N	C	0613	60	.7	E Y5		
GRP63895	20	1634+3	1641+2	1705D	S22	H31	.564	14726	18.4	31	-N			60	.7	HL		
MCHA	20	1634E	1641	1705D	S22	H30												

APRIL 1977

H α SOLAR FLARES

APRIL 1977

OBSERV- ATORY	OBSERVED UT				LOCATION					DURA- TION	IMPOR- TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	MCNATH PLAGE REGION	CMP DAY			COND.	TYPE	TIME UT	MEAS. AREA	CORR AREA		
					LAT.	MER. DIST.												
1977 APR									MIN.					Mill. of Deak	Sec. Deg.			
916 MONT	30	0944	0957	1004	N34	E90	1.001	14749	7.2	20	-F	C	0957	40		D	Y5	
917 MONT	30	1009	1012	1019	N34	E90	1.001	14749	7.2	10	-F	C	1012	20			Y5	
918 MONT	30	1113	1117	1124	S23	E27	.531	14742	2.5	11	-F	C	1117	40			Y5	

"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 a 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 calcium II lines H and K.
 P = Flare shows helium D₃ in emission.
 Q = Flare shows the Balmer continuum in emission.
 R = Marked asymmetry in H α line suggests ejection of high velocity material.
 S = Brightness follows disappearance of filament (same position).
 T = Region active all day.
 U = Two bright branches, parallel (||) or converging (Y).
 V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
 W = Great increase in area after time of maximum intensity.
 X = Unusually wide H α line.
 Y = System of loop-type prominences.
 Z = Major sunspot umbra covered by flare.

APRIL 1977

DAILY FLARE INDICES
Includes all Flares

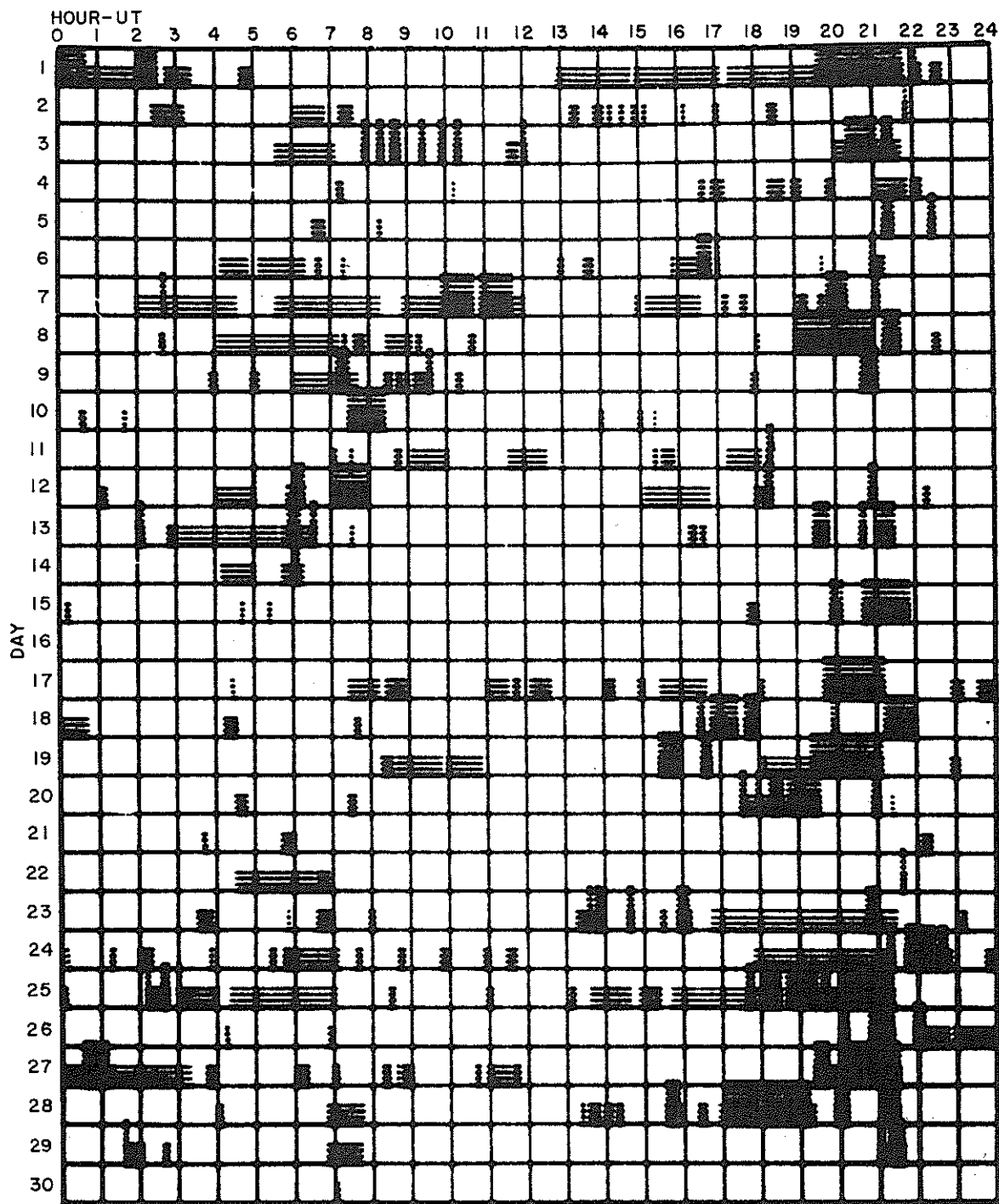
Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.
770401	0.00	20.4	770411	1.69	23.9	770421	28.18	24.0
770402	0.00	24.0	770412	14.36	22.3	770422	14.07	23.9
770403	1.95	21.8	770413	27.77	22.4	770423	1.07	23.0
770404	0.00	24.0	770414	13.41	23.9	770424	0.00	23.0
770405	3.83	23.5	770415	33.33	22.6	770425	0.00	20.6
770406	.85	23.4	770416	112.84	24.0	770426	1.73	22.9
770407	3.61	21.4	770417	49.86	22.5	770427	0.00	21.6
770408	0.00	21.6	770418	5.55	22.0	770428	0.00	20.7
770409	0.00	22.9	770419	62.01	21.3	770429	0.00	23.5
770410	0.00	23.0	770420	12.46	22.3	770430	5.07	24.0

When no Flare Index is given, it is 0 for that day.

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Apr 77

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

APRIL 1977



Observatories included in total patrol:

Athènes	Herstmonceux	Kiev	McMath-Hulbert	Tashkent
Bucharest	Huancayo	Kodaikanal	Meudon	Tehran
Catania	Hurbanovo	Locarno	Mitaka	Upice
Culgoora	Istanbul	Lvov	Monte Mario	Voroshilov
Haute Provence	Kharkov	Manila	Palehua	Wendeinstein
			Ramey	Zürich

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

APRIL 1977

APR 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
2	9100 ARCE	20 GRF	1134.7	1259.1	234				
	2800 OTTA	24 R	1435	1450	15	0.8	0.4		
	2800 OTTA	27 RF	1435		180	0.8	0.7		
	2800 OTTA	24P R	1450		125	0.8			
	2800 OTTA	26 FAL	1655	1735	40	-0.8	-0.4		
	2800 OTTA	240 R	1910	1940	30	1	0.5		
	2800 OTTA	24P R	1940		300 D	1			
5	930 BORD	8 S	0737	0737.1	.1	11	1		
	29 UPIC	2 S/F	0854.2	0854.6	.5				
	33 UPIC	2 S/F	0854	0854.4	.8				
	29 UPIC	2 S/F	1010.5	1010.9	.7				
	33 UPIC	2 S/F	1010.5	1010.9	.9				
	930 BORD	8 S	1146.5	1146.5	.1	20	1		
	29 UPIC	2 S/F	1443.1	1443.4	.4				
	33 UPIC	2 S/F	1443.3	1443.4	.3				
	33 UPIC	45 C	1546.6	1548.1	2				
	29 UPIC	45 C	1547	1547.4	1.3				
6	29 UPIC	2 S/F	0735.2	0735.3	.3				
	33 UPIC	2 S/F	0735	0735.1	.3				
	2800 OTTA	20 GRF	1958	2005	37	0.8	0.4		
7	1000 TYKW	5 S	0030.6	0030.8	.4	3	1		
	2000 TYKW	5 S	0030.6	0030.7	.4	1.3	.4		OR
	2930 VORO	49 GB	0110		17	1500			
	2000 TYKW	5 S	0141.3	0141.9	1.3	1.5	.5		OR
	700 SYDN	45 C	0141.8	0142.2	2.2				
	1000 TYKW	45 C	0141	0142.1	2	7	1		
	500 HIRA	45 C	0142	0144.5	3.5	13	5		0
	700 SYDN	2 S	0144	0144.5	1				
	2800 OTTA	20 GRF	1500	1615	210	2	1		
8	33 UPIC	2 S/F	0843.4	0843.6	1.1				
	29 UPIC	2 S/F	0843.5	0843.8	1				
	33 UPIC	2 S/F	0853.9	0854.1	.5				
	29 UPIC	2 S/F	0854	0854.2	.5				
9	1420 ARCE	8 S	1007.5	1007.6	0.5				
11	3100 CRIM	26 FAL	0916	1222	186	7	2		
	3100 CRIM	1 S	1211	1212	2	3	1		
	2800 OTTA	1 S	1211.5	1212	1	1.2	0.6		
	2800 OTTA	21 GRF	1211	1215	11	0.8	0.4		
	3100 CRIM	24 R	1238	1330	4				
	2800 OTTA	24 R	1425	1515	50	1.4	0.7		
	2800 OTTA	27A RF	1425		335	1.4	1.2		
	4995 SGMR	20 GRF	1435.3	1440.9	12.9	4.1	1.2		
	1415 SGMR	20 GRF	1437.5	1442	10.7	2.7	.6		
	2695 SGMR	20 GRF	1437.6	1441.1	10.5	5	1.5		
	2800 OTTA	45 C	1437	1441	7	1.6	0.8		
	2800 OTTA	24P R	1515		175	1.4			
	2800 OTTA	26 FAL	1810	2000	110	1.4			
	2800 OTTA	21 GRF	2104	2140	110 D	3.8			
	2800 OTTA	1A S	2112	2115.5	9	1.8	0.9		
	2800 OTTA	1 S	2116	2117	2	3.6	1.8		
12	2950 GORK		0933.4	0951 U	24.2U	80			
	4995 MANI	46 C	0944.4	0950.8U	12.6U	450 U	117 U		SUNSET
	1415 MANI	4 S/F	0946	0950.9U	13.2U	119 U	26.8U		SUNSET
	1420 ARCE	46 C	0946.2	0950.5	9.2				
	1420 ARCE		0946.2	0950.5	5.2				
	1420 ARCE		0951.4	0951.9	4				
	1420 ARCE	30 PBI	0955.4		112				
	1470 BERL	46	0946.3	0951	45	98			
	9500 BERL	4	0946.3	0951.2	98	960			
	8800 MANI	46 C	0946.4	0953 U	10.6U	490 U	136 U		SUNSET
	2695 MANI	4 S/F	0946.8	0950.94	10.24	260 U	54 U		SUNSET
	9100 ARCE	4 S/F	0946.8	0951.5	9.5				
	950 GORK		0946.8	0951 U	17.9U	66			
	930 BORD	45 C	0946	0950	20	370	45		
	536 ONDR	46 C	0946	0953	34	60	16		
	536 ONDR		0946	0950.5		39			
	536 ONDR		0946	0959.2		35			
	650 GORK	21 GRF	0947.5	0955.8	19.3	5.3	3.5		
	808 ONDR	46 C	0947.6	0950	18	240	49		
	808 ONDR		0947.6	0951.3		150			
	808 ONDR		0947.6	0958.2		30			
	808 ONDR		0947.6	1000		30			
	9100 GORK	49 GB	0947.7	0952.2U	8.2	394			
	9100 GORK	29 PBI	0947.7	1056.7	59.9	26	11		
	650 GORK	45 C	0949.1	0950.8	6.7	108	32		
	650 GORK		0949.1	0953.4		71			
	606 MANI	46 C	0949.3	0950.8U	6.1U	65 U	18.4U		SUNSET

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Apr 77

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

APRIL 1977

APR 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
	33 UPIC	32 ABS	0949.6	0954.3	41.4				
	29 UPIC	32 ABS	0949.7	0954.5	31.5				
	1415 HANI	8 S	0950.7	0950.8	0.2	40.7U	12.6U		SUNSET
	113 POTS	45 C	0950	1026	110	14	3		
	408 TRST	47 GB	0951.3	0953.7	5	33			
	408 TRST	48 NS	0952.5	0952.8	.4	440			
	200 GORK		0955	1037.2	39	40			
	200 GORK	48 C	0955	1022.2	44	74			
	228 HARS	45 G	0955.3	1000	13	42	8		
	260 ONDR	46 C	0955.3	1000	28	49	14		
	260 ONDR		0955.3	1021		40			
	260 ONDR		0955.3	1022.2		40			
	510 POTS	45 C	0955	0958.5	10	8.4	1		
	9100 ARCE	29 FAL	0956.3		110				
	100 GORK	41 F	0956.6	0957 U	8.5	40			
	100 GORK		0956.6	1002		40			
	650 GORK	4 SF	0956.7	1000	7.9	17	5.2		
	1420 ARCE	46 C	0956.9	1058.4	5.1				
	1420 ARCE		0956.9	1058.4	2.7				
	1420 ARCE		0959.6	1000	2.4				
	408 TRST	49 GB	0957.2	1000.1	12.3	65			
	33 UPIC	46 C	0958.9	0959.5	2.7				
	29 UPIC	46 C	0959.5	1002.9	4.6				
	127 TORN	27 RF	1000 U	1032	105 U	6			
	127 TORN	28 PRE	1009.5	1012	3.5	4.8	3		
	228 HARS	28 PRE	1011.5	1019	8	10	4		
	100 GORK	41 F	1012.9	1016.5	11.7	40			
	100 GORK		1012.9	1021.2		550			
	127 TORN	45 C	1013	1015.6	5	44	13		
	408 TRST	41 F	1013	1021.8	30.8	30			
	127 TORN	45 C	1018	1021.5	5.5	240			
	113 POTS	45 C	1018	1021	6.5	250	60		
	228 HARS	45 C	1019.5	1022	7.5	60	20		
	3000 BERL		1021 E	1023.80	24	4.9			
	260 ONDR	29 PBI	1023		67	7	2.3		
	127 TORN	7 C	1035	1037	3.6	14	7		
13	9100 GORK	20 GRF	0609.5	0612	12.9	6.4	3.2		
	33 UPIC	2 S/F	0647.6	0648.6	1.4				
	29 UPIC	2 S/F	0648.3	0648.6	.6				
	29 UPIC	46 C	0939.6	0942.5	3.1				
	33 UPIC	46 C	0939.8	0941.1	2.8				
	240 DHIN	45 C	1018	1018.2	.5	2	1		
	169 DHIN	45 C	1018	1018.2	.5	3	1		
	160 DHIN	45 C	1018	1018.2	.5	3	1		
	160 DHIN	45 C	1056.8	1057.5	1.4	3	1		
	240 DHIN	45 C	1056.8	1057.5	1.4	3	1		
	169 DHIN	45 C	1056.8	1057.5	1.4	3	1		
	2800 OTTA	1 S	1126.1	1127	1	2.6	1.3		
	1470 BERL	2	1126.2	1126.9	3.8	2.3			
	1420 ARCE	2 S/F	1126.3	1126.7	1.4				
	9500 BERL		1126.4	1126.8	1.1	5.7			
	3000 BERL	43	1126.8	1127.2	6.1	3.1			
	9100 ARCE	20 GRF	1126	1127.2	42				
	2800 OTTA	21 GRF	1126	1130	56	2.2	1.8		
	240 DHIN	45 C	1210	1211	2.2	1	1		
	169 DHIN	45 C	1210	1211	2.2	4	2		
	160 DHIN	45 C	1210	1211	2.2	4	2		
	9100 ARCE	24 R	1211.7		89				
	2800 OTTA	27 RF	1228		177	2.2	1.6		
	2800 OTTA	24 R	1228	1240	12	2.2	1.1		
	2800 OTTA	24P R	1240		78	2.2			
	2800 OTTA	26 FAL	1358	1525	87	-2.2	-1.4		
	2800 OTTA	240 R	1548	1615	27	1.4	0.7		
	4995 SGMR	20 GRF	1717.9	1751.9	64.1U	8.8	5.3U		SWF
	8800 SGMR	20 GRF	1718.2	1756.6	63.8U	13.3	8 U		SWF
	2695 SGMR	20 GRF	1718.2	1742.6	63.8U	6.9	4.1U		SWF
	2800 OTTA	24 R	1718	1725	7	2.1	0.5		
	2800 OTTA	27AFRF	1718		422	2.6			
	1415 SGMR	20 GRF	1721.4	1808.7	60.6U	2.4	1.4U		SWF
	2800 OTTA	24P R	1725		383	2.1			
	2800 OTTA	1 S	1742	1742.5	1	1	0.5		
	2800 OTTA	32A ABS	2130	2202	70	-4.2	-2.1		
	4995 BOUL	3 S	2203.5	2206	4.5	11	4		
	9400 HUAN	20 GRF	2203.8	2206.5	17	22.8	5.4		
	9400 TYKH	5 S	2205	2206.4	3	12	4		OR
	3750 TYKH	5 S	2205	2206.4	3	9	3		OR
	1000 TYKH	45 C	2205	2206.7	3	4	.8		
	1000 TYKH		2205	2206.1		3			
	2000 TYKH	45 C	2205	2206.6	6	7	2		07L
	2000 TYKH		2205	2206		7			10L
	2800 OTTA	4 S/F	2205	2206.5	6	10	2.6		
	1420 BOUL	4 SF	2205	2206.5	5	6	2		
	500 HIRA	5 S	2206	2206	.6	80	60		0
	2695 BOUL	3 S	2206.5	2207.5	4.5	9	3		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

APRIL 1977

APR 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
14	3750 TYKH	21 GRF	2208	2300	140	6	3		OR
	9400 TYKH	21 GRF	2208	2255	135	21	11		OR
	2000 TYKH	21 GRF	2211	2300	130	2	1		OL
	8800 MANI	45 C	2330.4	2336	7.6	39	12.2		
	3750 TYKH	21 GRF	2330	2340	35	6	3		OR
	9400 TYKH	21 GRF	2330	2344	35	23	12		OR
	4995 BOUL	45 C	2331.5	2335	5	28	9		
	9400 TYKH	5 S	2333	2333.3	2	30	10		OR
	3750 TYKH	5 S	2333	2333.9	2	5	2		OR
	3750 TYKH	5 S	2335	2336	2	4	1		OR
	9400 TYKH	5 S	2335	2336	2	35	12		05R
	1000 TYKH	45 C	2341	2343.5	4	15	1		
	2000 TYKH	5 S	2343	2343.5	1	.8	.3		OL
	2695 PENT	26 FAL	2348	2420	32	-2.6	-1.3		
14	2695 PENT	240 R	0030	0110	40	2.8	1.4		
	9400 TYKH	21 GRF	0535	0555	145 D	23	12 D		OR
	2000 TYKH	21 GRF	0535	0600	145 D	6	4.5 D		OL
	3750 TYKH	21 GRF	0535	0555	145 D	12	6 D		OR
	1000 TYKH	21 GRF	0535	0615	100	3.7	1.6		
	606 MANI	40 F	0537.5	0548.7	21.5	25.5	9		
	3100 CRIM	2 S	0539	0543	6	26	9		
	3100 CRIM	30 PBI	0545	0545	89	10	3		
	1415 MANI	46 C	0540.9	0555.7	17.3	109	20.5		
	4995 MANI	3 S	0541	0543.1	5.2	21.1	8.1		
	2695 MANI	40 F	0541	0555.7	18.2	105	22.3		
	9400 TYKH	5 S	0542.5	0543.1	1.5	7	2		OR
	3750 TYKH	5 S	0542	0543	5	11	3		OR
	2000 TYKH	45 C	0542	0549.2	10	60	11		SL
	500 HIRA	45 C	0545.6	0548.6	3.3	13	3		SR
	3100 CRIM	2 S	0552	0556	6	14	5		
	2000 TYKH	45 C	0552	0555.7	6	50	7		SL
	1000 TYKH	45 C	0552	0553.3	6	2	.8		
	9100 GORK		0553.3E		79.9E				
	500 HIRA	45 C	0555.3	0556.3	2	9	3		SR
	1420 ARCE	1 S	0924	0924.1	0.4				
	5730 IRKU	20 PRE	1335	1342	7.5	9			WL
	5730 IRKU	21 GRF	1342.5	1343	1.5	23			WL
	5730 IRKU	29 PBI	1344	1354	60 D	17			WL
	930 BORD	3 S	1602	1602	.3	9	2		
	2695 SGMR	20 GRF	1604	1621	34.5	4.1	2.5		
	2800 OTTA	20 GRF	1615	1623	25	1.4	0.7		
	4995 SGMR	20 GRF	1619.5	1622.4	19	4.8	2.9		
	2800 OTTA	27A RF	1825		105	1.4	1.1		
	2800 OTTA	24 R	1825	1840	15	1.4	0.7		
	2800 OTTA	20 GRF	1829	1834	13	1.8	0.8		
	2800 OTTA	24P R	1840		60	1.4			
	2800 OTTA	26 FAL	1940	2010	30	-1.4	-0.7		
	1420 BOUL	1 S	2055	2055.5	2	3	1		
	1400 SYDN	45 C	2204.9	2206.1	5.3				
	700 SYDN	1 S	2206.2	2206.3	.2				
	4995 BOUL	1 S	2210.5	2211.5	5.5	11	4		
	9400 HUAN	1 S	2211	2211.5	1	22.2	9.8		
15	2000 TYKH	20 GRF	0152	0159	100	2.5	1		OL
	1000 TYKH	20 GRF	0152	0159	30	1.1	.5		
	160 OHIN	44 NS	0735 E		404		1		
	169 OHIN	44 NS	0735 E		404		1		
	9100 ARCE	20 GRF	0844.2	0857	155				
	1420 ARCE	20 GRF	0846.5	0857.4	210				
	3100 CRIM	3 S	0847	0857	45	8	3		
	2800 OTTA	20 GRF	1125	1150	85	2.6	1.3		
	2800 OTTA	20 GRF	1300	1320	60	1.4	0.7		
	2800 OTTA	24 R	1400	1520	80	2.4	1.2		
	2800 OTTA	27AFRF	1400		320	2.4	1.8		
	2800 OTTA	24P R	1520		157	2.4			
	2800 OTTA	1 S	1705	1705.8	6	0.8	0.4		
	2800 OTTA	20 GRF	1720	1745	32	0.8	0.6		
16	2800 OTTA	26 FAL	1757	1920	83	-2.4	-1.2		
	245 SGMR	6 S	1919.6	1919.8	.5	11.1	3.3		5
	260 ONDR	44 NS	0645 E	1209	503	10			
	127 TORN	44 NS	0900 E	1427.4	360 D	20			
	245 SGMR	43 NS	1131	1227.2	583	35.7			
	3100 CRIM	3 S	0658	0731	120	11	4		
	3100 CRIM	29 PBI	0658	0731	120	11	4		
	3750 TYKH	20 GRF	0700	0740	60 D	6	4 D		OR
	2000 TYKH	20 GRF	0700	0740	60 D	4.5	3 D		10L
	500 HIRA	45 C	0721	0731.7	21	15	5		WL
	650 GORK	4 SF	0723.6	0731.6	13.2	19			
	200 HIRA	45 C	0723	0731	18	45	5		WR
	536 ONDR	45 C	0723	0731.5	19	21	11		
	808 ONDR	45 C	0726	0731.5	10	15	7		
	228 HARS	45 C	0728.3	0729.6	9	50 D	12 D		
	260 ONDR	45 C	0729	0731.5	11	27	12		

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SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

APRIL 1977

APR 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
17	2800 OTTA	23 GRF	1124	1145	86	2.4	1.6	1	R
	2800 OTTA	1 S	1143.2	1144	1	0.8	0.4		
	237 TRST	41 F	1315	1315.5	1	33			
	2800 OTTA	24 R	1324	1350	26	1.2	0.6		
	2800 OTTA	27 RF	1324		158	1.2	0.9		
	2800 OTTA	24P R	1350		75	1.2			
	237 TRST	41 F	1449	1449.8	1.1	20			
	2800 OTTA	26 FAL	1505	1602	57	-1.2	-0.6		
	2800 OTTA	20 GRF	1610	1640	60	0.8	0.4		
	2800 OTTA	21 GRF	1720	1730	65	3	1.2		
	4995 SGMR	22 GRF	1725.1	1728.5	60 U	5.1	3.4U		
	2695 SGMR	22 GRF	1725.2	1729.6	60 U	11	6.6U		
	2695 BCUL	3 S	1726	1729.5	16	7	2		
	2800 OTTA	1 S	1727.5	1728.5	2.5	6.6	2.2		
	1420 BOUL	1 S	1727.5	1728.5	2	2	1		
	8800 SGMR	22 GRF	1727.7	1733.4	60 U	10.3	6.2U		
	1415 SGMR	22 GRF	1727.9	1825	60 U	2.5	1.5U		
	18 MCMA	6 S	1841	1842	3				
	2800 OTTA	21 GRF	2106	2114	80	9	4.3		
	2800 OTTA	46F C	2108	2111	5.8	15.4	6.2		
	4995 BCUL	1 S	2109.5	2110.5	3	14	5		
	4995 SGMR	20 GRF	2241.4	2312.5	40.60	11.7U	7 U		
	2800 OTTA	1 S	2243	2244.5	2.5	1.2	0.6		
	2695 SGMR	22 GRF	2247.8	2316.4	34.20	8.5U	5.1U		
	2695 PENT	21 GRF	2300		170 D	11.2			
	2695 PENT	21 GRF	2308	2329	55	5.2	2.6		
	1420 BCUL	45 C	2310.5	2313.5	9.5	34	11		
	2695 PENT	45 C	2310.8	2316.3	11	17.8	8.2		
	4995 BOUL	45 C	2310	2313.5	9	12	4		
	9400 TYKW	20 GRF	2310	2320	140	14	7		OR
	1000 TYKW	45 C	2310	2316.6	40	30	3		
	2000 TYKW	45 C	2310	2316.3	10	20	8	05L	OR
	3750 TYKW	45 C	2310	2313.5	10	18	9		
	2000 TYKW	29 PBI	2320		160	5	2.5	2 SPA	
	4995 MANI	4 S/F	2311.2	2314.3	15.8	14.6	3.2		
	2695 MANI	4 S/F	2311.2	2314.3	15.8	22.8	6		
	1415 MANI	4 S/F	2311.4	2314.8	17.4	79	16.9		
	2695 BCUL	45 C	2312.5	2317.5	10	17	6		
	1415 SGMR	4 S/F	2312.6	2313.6	9.40	49.7	14.9U		
	606 MANI	4 S/F	2313.2	2315.7	15.3	29.5	8.8		
	606 SGMR	4 S/F	2316.6	2317.8	5.40	13.9	8.3U		
	410 SGMR	6 S	2320.9	2322.5	1.10	9.8	1. U		
	3750 TYKW	29 PBI	2320		160	5	3		
	2000 TYKW	20 GRF	0215	0240	120	1.3	1	OL	OR, 116032F
	3750 TYKW	20 GRF	0220	0240	120	3.5	2		
	3100 CRIM	26 FAL	0526	1015	289	5	2		
	260 ONDR	46 C	0747	0747.5	5	7	3		
	29 UPIC	2 S/F	0748.3	0749.1	1.3				
	33 UPIC	2 S/F	0748.9	0749.1	.9				
	3100 CRIM	3 S	1040	1045	60	7			
	3100 CRIM	29 PBI	1040	1045	60	7			
	1470 BERL	6	1041.7	1044.8	6.5	3.2			
	1420 ARCE	21 GRF	1042.1		82				
	9100 ARCE	20 GRF	1042.5	1053	128				
	9100 ARCE	25 R	1042.5		200				
	260 ONDR	46 C	1042	1047.5	6	31	9		
	9500 BERL	6	1043	1053	27	7.8			
	1420 ARCE	2 SF	1044	1045	2.5				
	260 ONDR	8 S	1111	1111	.5	13			
	2800 OTTA	26A FAL	1205	1855	410	4	2		
	2800 OTTA	32 ABS	1215	1335	140	-4.4	-2.2		
	2800 OTTA	20 GRF	2100	2115	62	1	0.5		
	500 HIRA	45 C	2210.4	2210.4	2	65	25		
	2800 OTTA	1 S	2210.5	2211	1.5	1.4	0.9	ML	
	2800 OTTA	21 GRF	2210	2220	22	1.4	0.7		
	2000 TYKW	5 S	2210	2211.5	6	1.3	.6	OL	
	1000 TYKW	5 S	2210	2212	6	.8	.3		
18	2800 OTTA	20 GRF	1725	1758	125	1.8	0.9		
19	3100 CRIM	22 GRF	0718	0740	57	5	2	OL OR OR	
	2000 TYKW	45 C	0720	0722.8	13	1.5	.6		
	3750 TYKW	20 GRF	0735	0742	35	4	2		
	9400 TYKW	20 GRF	0735	0742	40	4	2		
	2000 TYKW	20 GRF	0735	0742	35	1.7	1		
	3000 BERL	6	0735	0743	41	4.8			
	1470 BERL	6	0736	0740	29	1			
	9500 BERL	6	0737	0742.5	33	5.2			
	2800 OTTA	21 GRF	1457	1524	208	3.8	1.9		
	2800 OTTA	1 S	1509.1	1510.1	5	1.6	0.8		
	2800 OTTA	20 GRF	1940	1950	25	1.4	0.7		
20	9400 TYKW	20 GRF	0100	0130	90	4	2	OR OL	
	2000 TYKW	20 GRF	0100	0120	80	1	.5		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

APRIL 1977

APR 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$		INT /	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
21	3750 TYKH	20 GRF	0100	0130	90	2	1		OR, 296024F
	260 ONDR	8 S	0825	0825.3	.5	16			
	260 ONDR	40 F	1034	1040.5	10	5	2		
	2800 OTTA	21 GRF	1625	1645	225	4	2.7		
	2800 OTTA	2 S/F	1638	1638.2	1	1.4	0.7		
	2800 OTTA	24 R	2050	2125	35	1.4	0.7		
	2800 OTTA	27 RF	2050		175	1.4	1.1		
	2800 OTTA	24P R	2125		105	1.4			
	2695 PENT	26 FAL	2310	2345	35	-1.4	-0.7		
	33 UPIC	2 S/F	0647.7	0648	.7				R
	29 UPIC	2 S/F	0648	0648.3	.6				
	3100 CRIM	22 GRF	0654	0705	33	4	1		
	3100 CRIM	25 R	0728	0730		4			
	3100 CRIM	20 GRF	0828	0850	48	3	1		
	3100 CRIM	20 GRF	0927	0939	84	2	1		
	234 POTS	45 C	1043.3	1043.7	.7	175	15		
	160 DMIN	45 C	1043.5	1044	.7	110	10		
	240 DMIN	45 C	1043.5		.7	300			
	169 DMIN	45 C	1043.5	1044	.7	190	10		
	237 TRST	41 F	1043.5	1043.8	.5	92			
	408 TRST	8 S	1043.7	1043.7	.1	23			
	33 UPIC	2 S/F	1043.9	1044.1	.6				
	260 ONDR	8 S	1043	1043.5	1	74			
	29 UPIC	2 S/F	1044.2	1044.4	.3				
	3100 CRIM	24 R	1116	1124		2			
	1470 BERL	2	1348	1348.6	3	5.4			
	3000 BERL	4	1348.2	1348.7	1.8	8.8			
	2800 OTTA	2 S/F	1348.5	1348.9	3	7.8	2		
	1420 BOUL	8 S	1348.5	1348	1	5	2		
	240 DMIN	45 C	1350.6	1351	.7	60	5		
	2695 BOUL	45 C	1350	1351.5	1.5	8	3		
	260 ONDR	8 S	1351	1351.3	1	84			
	260 ONDR	45 C	1412	1414	3	12	3		
	2800 OTTA	24 R	1440	1505	25	0.8	0.4		
	2800 OTTA	27A RF	1440		190	0.8	0.6		
	2800 OTTA	24P R	1505		115	0.8			
	245 SGHR	6 S	1530.3	1537.4	9.8	47.3	14.2		
	410 SGHR	6 S	1533.2	1536.8	5.5	54.8	16.4		
	4995 SGHR	1 S	1534.5	1538.6	4.8	9	2.7		
	2695 SGHR	1 S	1534.9	1538.7	4.5	5.3	1.6		
	1420 ARCE	1 S	1537.2	1538.6	3.8				
	2800 OTTA	1 S	1537.5	1538.8	2	3.6	1.8		
	7000 SAOP	8 S	1537.6	1538.1	1.2	6.9	3.4		
	237 TRST	41 F	1537.8	1537.9	.6	63			
	1415 SGHR	1 S	1537.8	1538.5	2.2	2.3	.7		
	1420 BOUL	1 S	1537	1538.5	2.5	3	1		
	9100 ARCE	1 S	1538.2	1538.9	7.5				
	2695 BOUL	1 S	1539	1539.5	2	3	1		
	2800 OTTA	45 C	1628.7	1629	1	3.6	1.8		
	2800 OTTA	26 FAL	1700	1750	50	-0.8	-0.4		
	2800 OTTA	8 S	1830.7	1831.2	0.6	0.8			
	500 HIRA	45 C	2040.6	2041.7	2.5	500	150		
	2800 OTTA	1 S	2040	2041.5	3	0.8	0.4		
	2800 OTTA	20 GRF	2102	2103	18	1	0.5		
	2800 OTTA	1 S	2118.8	2119	1	2	1		
	2695 PENT		2118.8	2119	1				
	2800 OTTA	20 GRF	2121	2138	70	1.4	0.7		
22	2695 HANI	3 S	0127.3	0128.5	4.3	28.6	11.4		OL 296054F
	4995 HANI	3 S	0127.4	0128.5	2.3	10.7	3.6		
	1415 HANI	2 S/F	0127.5	0128.5	1.5	6	1.7		
	2695 PENT	1 S	0127.8	0128.5	2	7	3.2		
	1400 SYON	1 S	0128.4	0128.5	1.1				
	1000 TYKH	5 S	0128	0128.5	1	1.5	.5		
	2000 TYKH	5 S	0128	0128.5	2	3	1		
	3750 TYKH	5 S	0128	0128.7	2	7	2		
	160 DMIN	45 C	0857.5	0857.7	.3	5	1		
	240 DMIN	45 C	0857.5	0857.7	.3	15	2		
	169 DMIN	45 C	0857.5	0857.7	.3	15	2		
	260 ONDR	8 S	0857	0857.3	1	13			
	240 DMIN	45 C	0938.4	0938.6	.5	8	2		
	169 DMIN	45 C	0938.4	0938.6	.5	4	2		
	160 DMIN	45 C	0938.4	0938.6	.5	9	2		
	260 ONDR	8 S	1029	1029.5	1	8			
	2800 OTTA	24 R	1135	1205	30	1.2	0.6		
	2800 OTTA	27A RF	1135		345	1.2	1.1		
	2800 OTTA	24P R	1205		295	1.2			
	260 ONDR	45 C	1206	1207.5	4	6	2		
	160 DMIN	45 C	1246.3	1248.5	2.5	20	2		
	240 DMIN	45 C	1246.3	1248.5	2.5	20	3		
	169 DMIN	45 C	1246.3	1248.5	2.5	25	2		
	260 ONDR	45 C	1246	1249	3	10	3		
	260 ONDR	45 C	1347	1349	3	9	2		
	2800 OTTA	20 GRF	1410	1420	30	1	0.7		

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SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

APRIL 1977

APR 1977	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
23	2800 OTTA	26 FAL	1700	1720	20	-1.2	-0.6		
	2800 OTTA	32 ABS	1730	1840	140	-1.4	-0.9		
	3100 CRIM	26 FAL	0745	1130		5			
	260 ONDR	45 C	0754	0758	6	8	3		
	930 BORD	46 C	0816	0817.2	2	23	5		
	930 BORD	46 C	0833	0833.2	1	18	2		
	260 ONDR	45 C	1430	1432	2	20	10		
	1420 BOUL	1 S	2123.5	2124	1.5	2	1		
	3100 CRIM	22 GRF	0653	0757	86	6	2		
	3100 CRIM	20 GRF	0833	0843	19	4	1		
24	3100 CRIM	24 R	0855	0910		4			
	930 BORD	8 S	0849.3	0849.3	.1	10	1		
	930 BORD	41 F	1448.9	1550.1	1.4	16	2		
25	1420 BOUL	8 S	2153	2153.5	1.5	4	1		
	3100 CRIM	20 GRF	0916	0924	64	3	1		
28	3100 CRIM	20 GRF	0646	0701	65	3	1		
	228 HARS	45 C	1205	1208	4	34	6		
29	700 SYDN	8 S	0008.5	0008.6	.2				
	930 BORD	46 C	1223.3	1223.8	1.4	13	2		
	930 BORD	46 C	1556.5	1557.6	1.2	42	3		
30	2800 OTTA	240 R	1320	1350	30	1	0.5		
	2800 OTTA	24P R	1350		540 D	1			
	2800 OTTA	20 GRF	1405	1455	145	1.4	0.7		

Reports received from the following observatories:

ARCE = Arcetri
BERL = Berlin-Adlershof
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol

DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraio
HUAN = Huancayo
IRKU = Irkutsk

KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
ONDR = Ondrejov

OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill

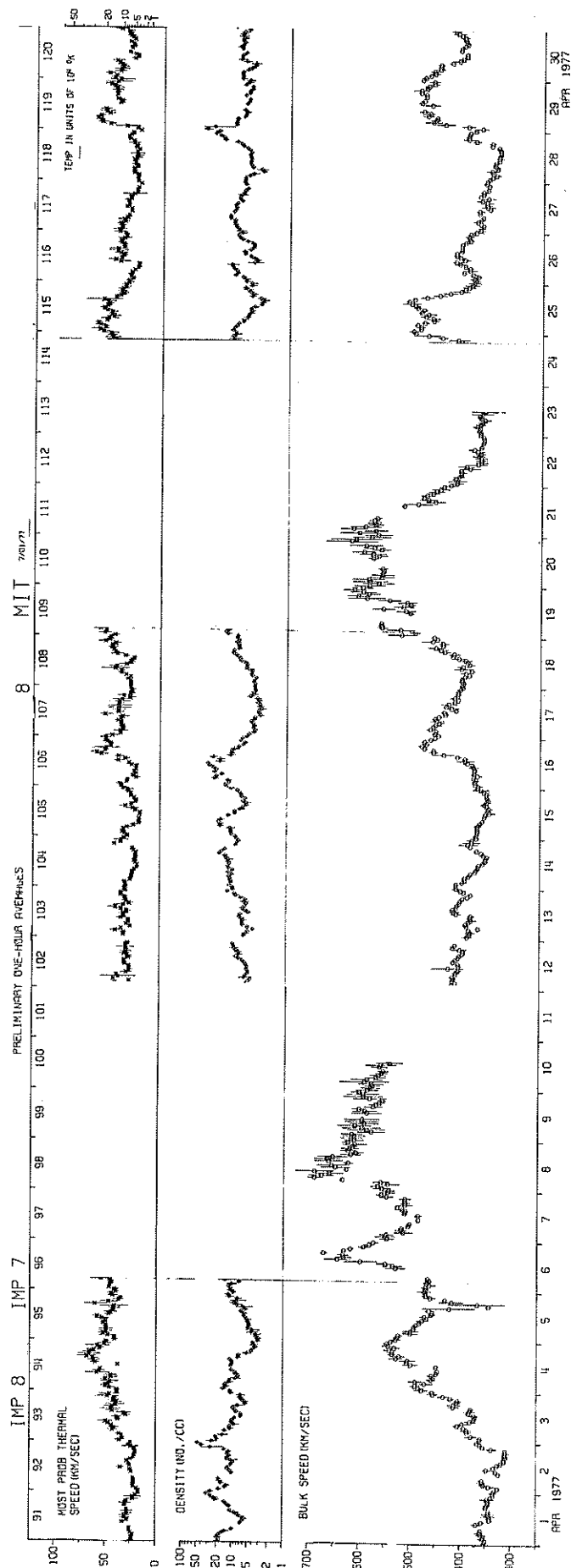
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov
(Ussurisk)

Explanation of Type Code:

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

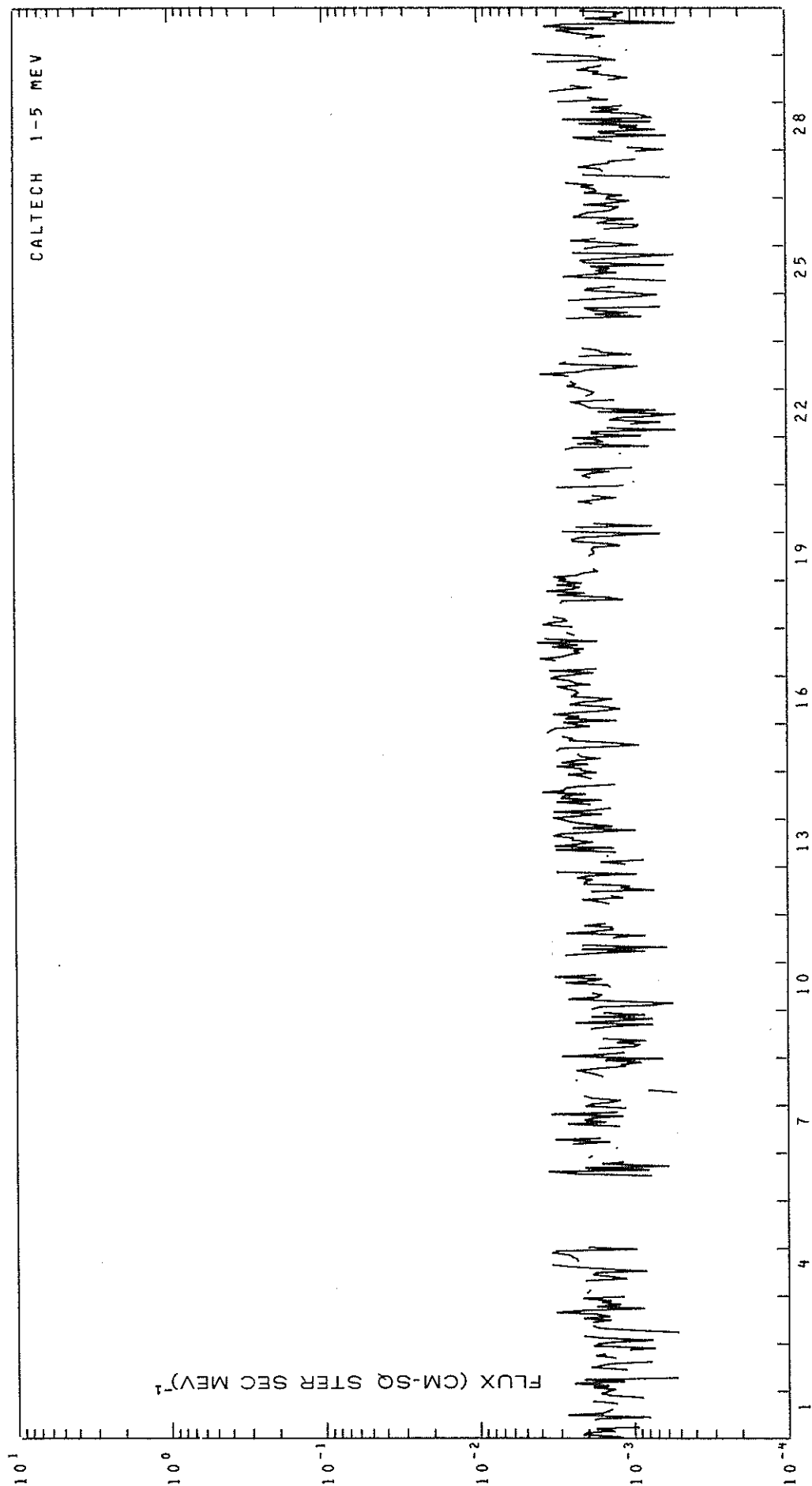
IMP 7 AND 8 SOLAR WIND PLASMA

APRIL 1977



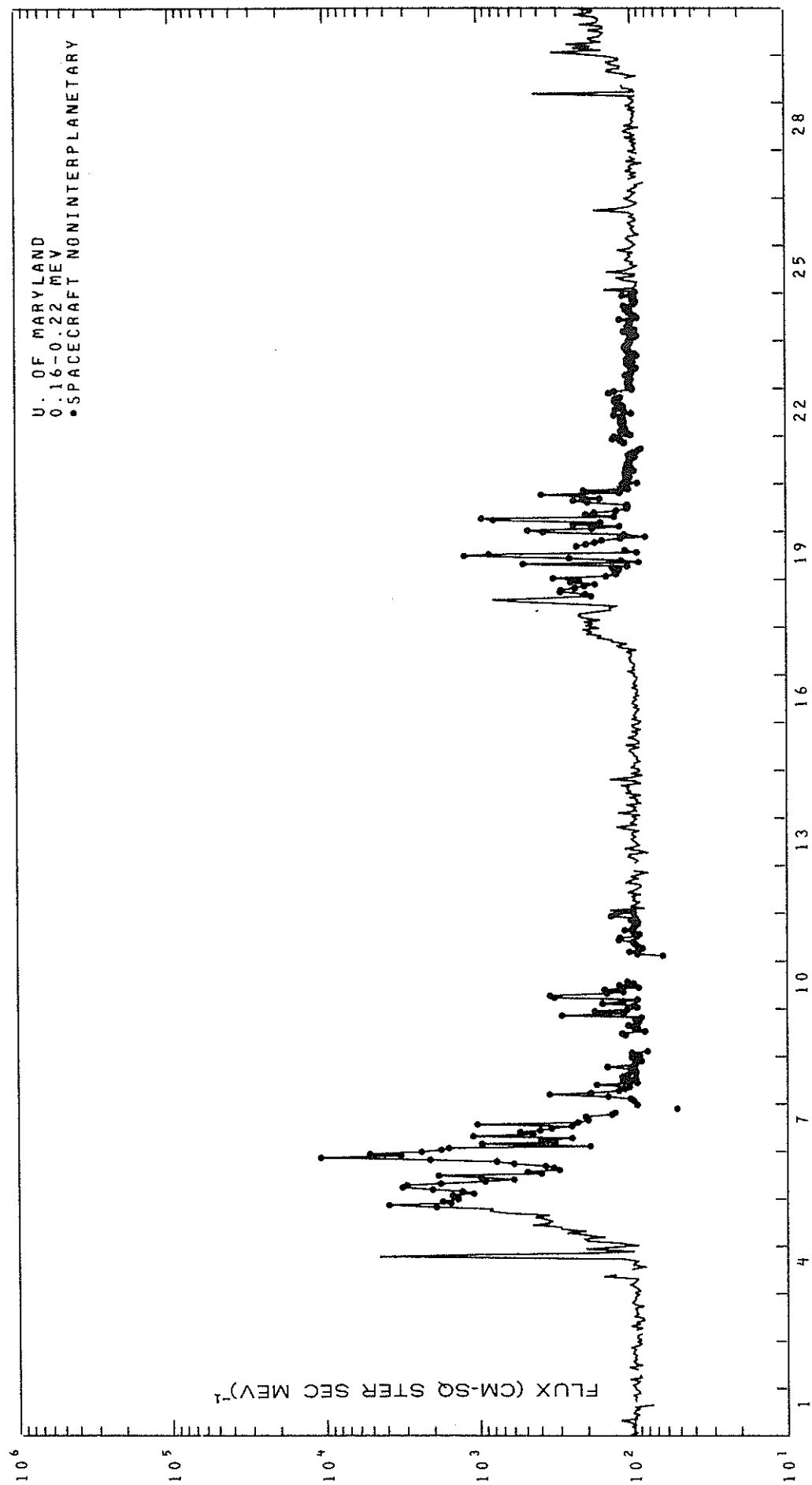
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IMP 7 AND 8 ELECTRONS APRIL, 1977



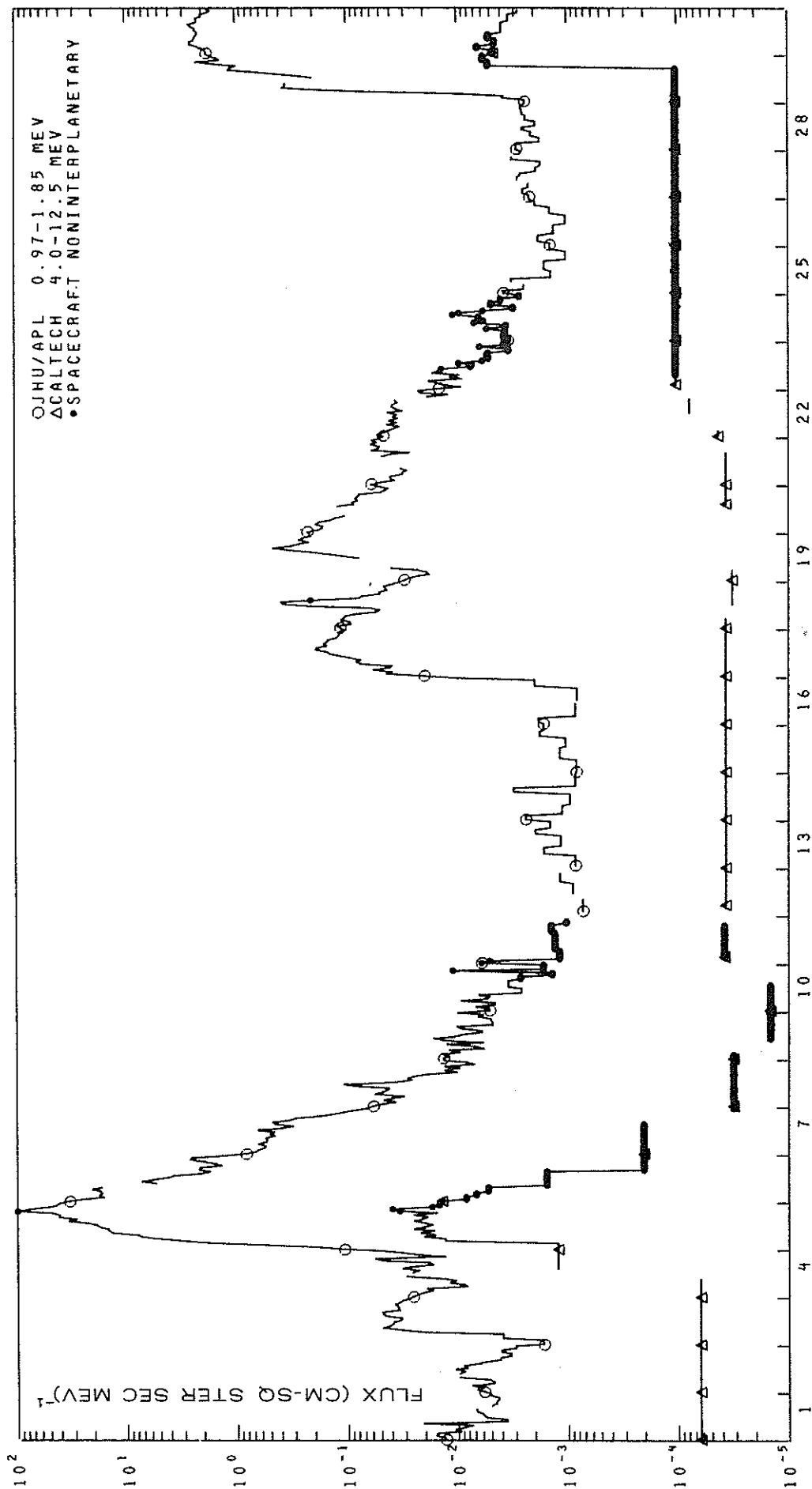
IMP 7 AND 8 LOW ENERGY PROTONS

APRIL, 1977



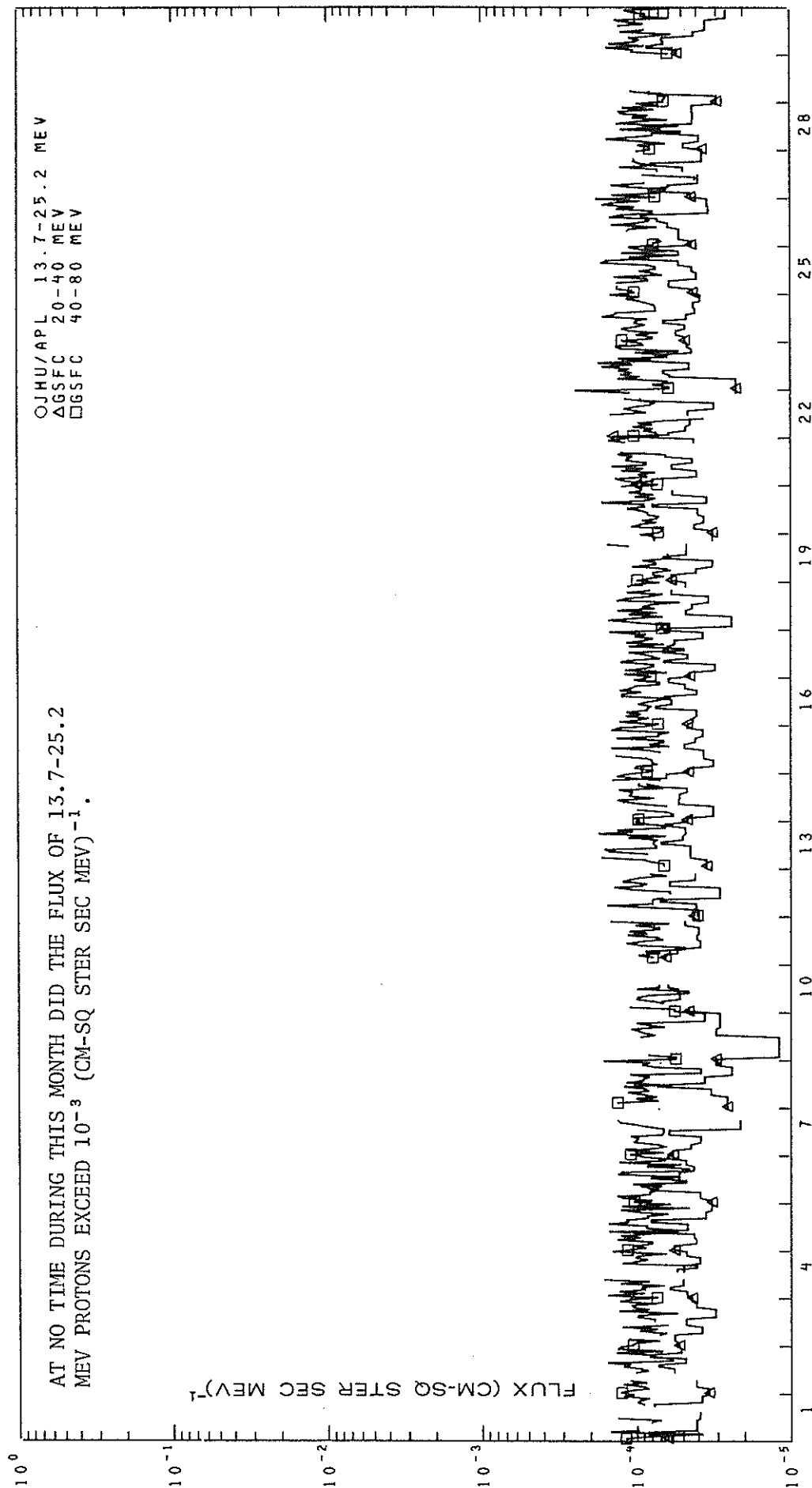
IMP 7 AND 8 INTERMEDIATE ENERGY PROTONS

APRIL, 1977



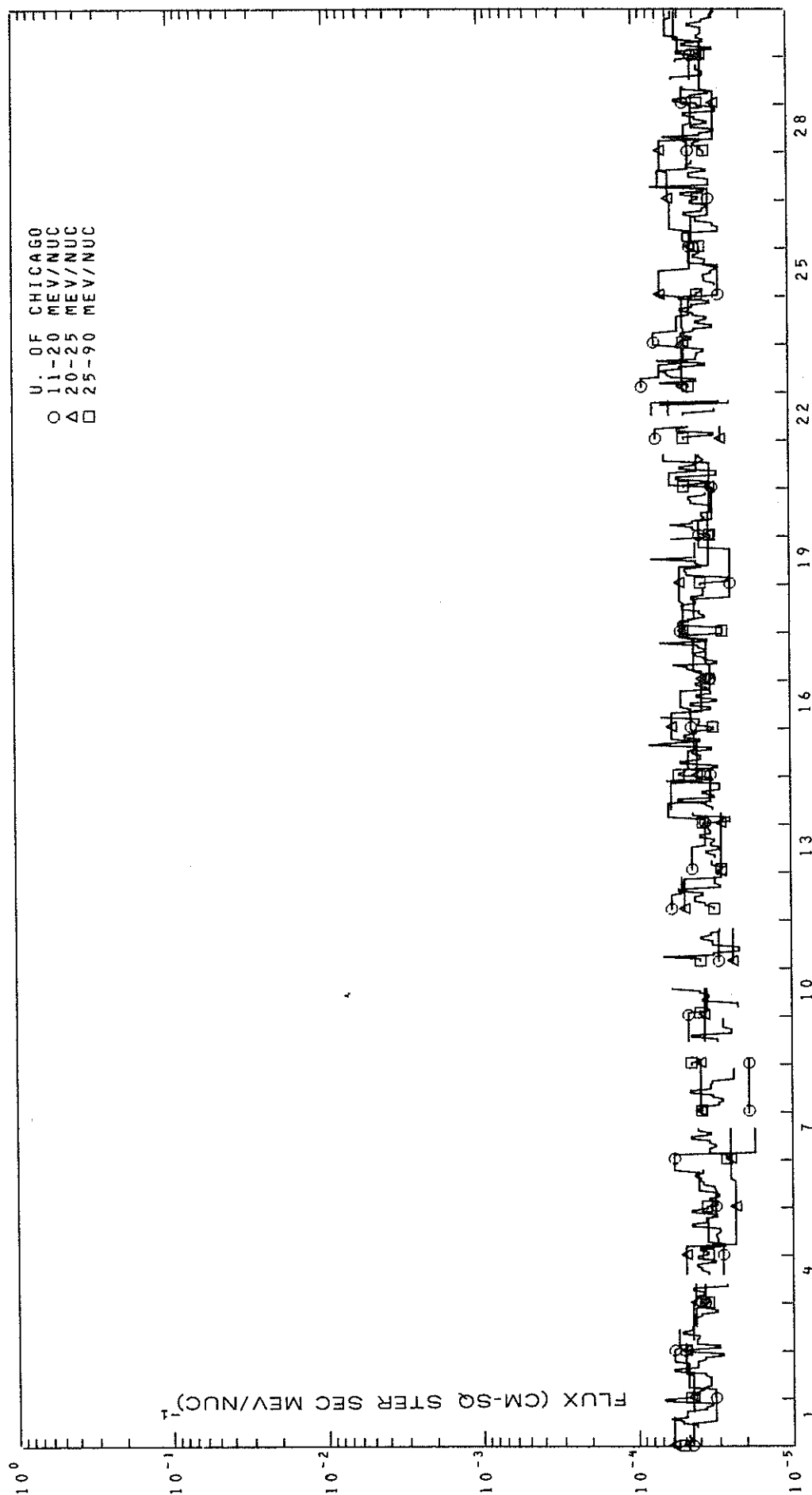
IMP 7 AND 8 HIGH ENERGY PROTONS

APRIL, 1977



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IMP 7 AND 8 ALPHA PARTICLES APRIL, 1977



COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA

X-RAY EMISSION LINE FLUXES

APRIL 1977

Si XII (5.82Å) Hourly Averages (-Log (flux), ergs/cm² s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	M	6.66	6.54	6.51	6.49	6.47	6.55	6.49	M	6.66	M	M	M	M	M	6.39	M	6.37	6.51	M	6.55	6.54	6.52	6.54
2	M	6.46	6.42	6.33	6.45	6.35	6.35	5.88	M	M	M	6.33	M	M	M	6.02	6.35	6.25	6.33	M	6.38	6.30	6.33	6.32
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
4	6.06	5.90	5.36	M	5.66	5.88	5.94	6.00	M	6.06	6.09	M	6.12	M	M	6.35	6.41	M	6.37	6.47	6.48	6.46	M	6.52
5	6.35	6.28	6.57	6.50	6.54	6.52	M	5.97	M	6.55	6.26	M	6.36	M	M	6.56	6.68	M	6.55	6.66	6.74	6.63	M	6.64
6	6.65	6.55	6.79	6.71	6.72	6.32	M	6.29	6.53	6.52	6.76	M	6.70	M	M	M	6.71	M	6.61	6.54	M	6.47	M	6.64
7	6.46	M	M	6.67	6.06	5.86	M	6.34	M	M	6.44	M	M	M	M	M	M	M	6.74	6.54	M	6.47	M	M
8	6.52	M	6.52	M	M	6.77	M	6.40	M	M	M	M	6.88	M	M	M	M	M	M	M	M	5.55	5.29	5.23
9	5.31	M	M	M	M	6.31	M	6.37	6.50	M	6.40	6.17	6.23	6.17	6.09	6.17	6.21	6.33	6.16	6.26	6.15	6.07	M	5.47
10	6.15	5.63	5.65	5.88	M	5.30	5.52	5.63	5.94	M	5.97	5.82	M	5.66	5.64	5.71	5.82	5.94	5.90	5.82	6.00	5.74	5.82	5.82
11	5.91	5.77	5.84	5.54	5.73	5.71	5.82	5.84	5.72	5.75	5.73	5.81	5.60	5.61	5.67	5.13	5.24	5.40	5.43	5.57	5.60	5.58	4.82	5.20
12	5.35	5.74	5.82	5.70	5.91	5.75	5.81	5.85	5.74	5.71	5.62	4.62	4.89	4.95	5.12	5.24	5.28	5.36	5.40	5.50	5.52	5.55	5.62	5.60
13	5.58	5.59	5.68	5.65	5.54	5.59	5.38	M	5.54	5.62	5.49	5.50	5.07	4.97	5.13	5.54	5.30	5.37	4.75	4.96	5.22	5.31	4.85	4.91
14	4.95	5.21	5.09	5.19	5.36	5.37	M	5.00	5.06	5.29	M	5.47	5.54	M	5.61	5.60	5.63	5.62	5.67	5.38	5.63	5.41	M	M
15	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
16	5.65	5.53	5.63	5.76	5.62	5.80	5.79	5.27	4.75	5.09	5.49	5.58	5.36	5.61	5.57	5.73	5.81	5.79	5.54	5.68	5.63	4.42	5.06	5.39
17	4.31	4.39	4.65	4.59	4.76	4.91	4.95	5.38	5.45	5.58	5.68	5.63	5.31	5.74	5.87	5.91	5.92	5.97	5.95	6.02	5.99	5.82	5.88	5.80
18	6.04	6.06	6.12	6.14	6.00	6.06	6.00	6.11	6.03	6.07	6.11	6.08	6.07	6.18	6.21	6.17	6.16	6.20	5.64	6.09	6.19	6.18	6.18	6.00
19	6.11	6.14	6.16	6.12	6.16	6.11	6.10	6.09	5.39	5.28	6.00	6.12	6.16	M	6.26	4.77	M	5.39	5.84	M	5.59	M	6.05	6.02
20	M	5.43	5.62	M	5.99	6.13	6.01	5.90	M	5.67	5.75	M	5.96	5.95	5.97	5.97	M	5.13	5.45	M	5.88	5.87	M	6.13
21	M	6.14	6.17	M	6.12	6.04	5.99	6.03	M	5.27	5.99	5.87	5.96	6.30	6.15	6.10	6.13	6.05	6.12	6.10	6.11	6.15	6.10	6.18
22	6.22	6.11	6.09	M	5.92	6.00	5.98	5.55	5.68	5.67	5.84	6.05	5.90	5.50	5.32	5.64	5.77	5.96	6.30	6.24	6.18	6.20	6.08	6.03
23	6.02	6.13	5.98	6.07	5.93	6.09	6.14	6.17	6.06	6.02	6.15	6.10	6.05	6.10	6.06	5.99	6.09	6.03	6.07	5.89	5.95	6.01	M	6.24
24	6.18	6.11	6.12	5.92	5.90	5.94	6.06	6.08	5.96	6.00	6.02	6.15	6.20	6.17	6.13	6.19	6.14	5.99	6.17	6.06	6.19	6.20	6.14	6.12
25	6.06	6.19	6.17	6.15	6.16	6.07	6.17	6.07	6.14	6.12	6.16	6.01	6.05	6.04	6.09	6.09	6.13	6.16	6.27	6.20	6.21	6.18	6.18	6.12
26	6.11	6.08	6.06	6.06	6.07	6.11	6.12	6.16	6.15	6.24	6.24	6.27	6.30	6.32	6.31	6.37	6.32	6.28	6.36	6.32	6.32	6.28	6.25	6.30
27	6.36	6.41	6.41	6.41	6.41	6.39	6.49	6.42	6.45	6.48	6.44	6.56	6.55	6.51	6.39	6.48	6.48	6.51	6.57	6.54	6.56	6.52	6.62	6.59
28	6.52	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M	6.08	6.11	6.14	6.16	6.24	6.27	6.36	6.42	6.45	6.56	6.52	6.58	6.53	6.45	6.46	6.42	6.43	6.43	6.37	6.40	6.44	6.42	6.35
30	6.33	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.

"M" denotes periods of missing data.

Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA
X-RAY EMISSION LINE FLUXES

APRIL 1977

Si XIV (6.18Å) Hourly Averages (-Log (flux), ergs/cm² s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.70	7.42	B	7.12	7.27	7.13	7.57	7.00	M	B	M	M	M	M	M	7.14	M	7.07	7.46	M	7.31	7.20	B	7.60
2	M	7.16	6.95	6.68	7.49	6.77	7.10	5.85	M	M	M	6.79	M	M	M	6.40	6.78	7.29	6.79	M	7.03	6.77	7.03	6.95
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
4	6.14	5.95	5.25	M	5.82	6.09	6.14	6.30	M	6.76	6.78	M	6.89	M	M	6.80	B	M	5.95	7.42	6.89	7.21	M	7.29
5	B	6.61	7.25	M	7.33	7.36	M	7.08	M	7.75	6.55	M	M	M	M	7.55	7.11	M	7.15	7.27	7.04	7.10	M	M
6	7.35	7.53	7.00	7.05	7.33	7.53	M	6.94	7.05	M	7.21	M	7.10	M	M	M	7.37	M	7.32	7.59	M	7.52	M	6.96
7	6.40	M	6.15	6.10	5.74	M	6.57	M	M	M	7.18	M	M	M	M	M	M	M	6.78	M	M	6.96	M	M
8	6.75	M	6.88	M	7.08	M	M	6.95	M	M	M	M	M	7.22	M	M	M	M	M	M	M	M	5.83	6.16
9	6.25	M	M	M	6.52	M	7.10	6.66	M	6.55	6.53	6.42	6.27	6.36	6.57	6.60	6.90	6.50	6.50	6.25	6.09	M	5.40	M
10	5.59	5.59	5.89	6.13	M	5.28	5.65	5.73	6.33	M	6.28	6.03	M	5.91	5.71	5.96	5.97	6.22	6.06	6.09	6.30	5.88	6.10	6.22
11	6.02	5.91	6.19	5.67	6.05	6.21	6.27	6.46	5.95	6.13	6.02	6.04	5.68	5.74	5.69	4.97	5.16	5.44	5.64	5.82	5.89	5.84	4.76	5.30
12	5.66	6.35	6.36	5.80	6.21	5.85	6.20	6.29	5.90	5.97	5.67	4.50	4.75	4.80	5.08	5.24	5.29	5.42	5.50	5.70	5.65	5.75	5.78	5.75
13	5.76	5.84	5.98	5.88	5.65	5.85	5.34	M	5.65	5.78	5.53	5.55	5.06	4.94	5.13	5.65	5.17	5.39	4.67	4.95	5.32	5.44	4.77	4.94
14	4.98	5.22	5.03	5.25	5.46	5.56	M	4.94	5.07	5.46	M	5.57	5.76	M	5.89	5.86	5.88	5.89	5.83	5.37	5.80	5.34	M	M
15	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
16	5.98	5.64	5.64	6.12	5.84	6.19	6.11	4.87	4.44	5.00	5.64	5.80	5.33	5.82	5.71	6.16	6.13	6.14	5.73	5.97	5.76	4.20	4.91	5.24
17	4.16	4.25	4.52	4.43	4.82	4.93	5.03	5.76	5.75	5.97	6.07	5.73	5.69	6.39	6.46	6.36	6.28	6.29	6.34	6.45	6.43	5.88	6.47	6.19
18	6.72	6.54	6.55	6.45	6.34	6.53	B	6.48	6.24	6.55	6.82	6.64	6.52	6.77	6.77	6.62	6.70	6.58	5.66	6.62	6.82	6.74	6.52	6.36
19	6.51	6.53	6.61	6.65	6.71	6.45	6.47	6.71	5.21	5.14	6.56	6.67	6.42	M	6.61	4.46	M	5.42	6.24	M	5.59	M	6.42	6.20
20	M	5.31	5.85	M	6.37	6.32	6.20	6.11	M	5.82	5.79	M	6.22	6.30	6.27	6.34	M	4.80	5.64	M	6.12	6.17	M	6.58
21	M	6.65	6.62	M	6.67	6.34	6.59	6.32	M	5.05	6.39	5.88	6.21	7.59	6.56	6.44	6.88	6.50	6.83	6.65	6.71	6.64	6.63	7.01
22	7.59	6.46	6.41	M	6.25	6.44	5.46	5.54	5.92	5.88	6.14	6.48	6.13	5.44	5.22	5.84	5.88	6.47	7.02	6.49	6.50	6.70	6.39	6.25
23	6.44	6.46	6.08	6.47	5.78	6.59	6.69	6.86	6.61	6.61	6.67	6.56	6.27	6.60	6.39	6.28	6.56	6.48	6.46	6.11	6.45	6.97	M	AP
24	6.79	6.60	6.63	6.14	6.11	6.38	6.63	6.51	6.39	6.45	6.43	6.63	6.82	6.55	6.59	6.60	6.59	6.55	6.99	6.60	6.68	7.04	6.64	6.39
25	6.39	6.71	6.82	6.98	6.75	6.43	6.66	6.46	6.56	6.56	6.89	6.22	6.57	6.38	6.54	6.97	6.65	6.77	6.76	6.83	6.69	6.67	6.58	6.27
26	6.54	6.60	6.56	6.42	6.53	6.38	6.57	6.57	6.56	7.12	6.76	7.16	6.90	6.90	6.90	7.07	7.54	7.05	6.90	7.66	6.95	6.97	6.79	7.04
27	7.04	7.08	7.70	7.22	7.11	7.09	B	7.24	7.11	7.22	6.98	B	7.38	7.15	7.62	7.05	7.17	B	7.33	7.42	7.27	B	7.33	7.56
28	7.15	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M	6.38	6.42	6.54	6.58	6.71	6.87	6.82	6.98	7.18	7.47	7.36	7.04	7.08	6.88	7.01	7.06	7.28	6.95	7.05	7.05	7.17	6.88	6.97
30	6.79	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.

"M" denotes periods of missing data.

Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

COLUMBIA OSO-8 GRAPHITE CRYSTAL SPECTROMETER DATA X-RAY EMISSION LINE FLUXES

APRIL 1977

Si XIII (6.64Å) Hourly Averages (-Log (flux), ergs/cm² s)

DAY/HR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.70	7.06	6.79	6.76	6.76	6.89	6.92	6.76	M 6.97	M	M	M	M	M	M 6.69	M 6.69	M 6.49	6.58	6.48	M 6.89	6.77	6.77	6.77	6.91
2	M	6.70	6.62	6.29	6.72	6.64	6.54	5.55	M	M	M 6.35	M	M	M	M	M 6.00	6.49	6.58	6.48	M 6.45	6.43	6.46	6.46	6.48
3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
4	5.71	5.54	4.86	M	5.41	5.71	5.73	5.90	M 6.08	6.18	M 6.32	M	M 6.32	M	M 6.53	6.68	M 6.61	6.80	6.90	6.83	M 6.84	M 6.84	M 6.84	M 6.84
5	6.40	6.27	6.83	6.68	6.78	6.84	M 7.03	M 7.03	M 6.69	6.12	M 6.30	M	M 6.30	M	M 6.89	7.00	M 7.01	6.87	6.76	6.75	M 6.98	M 6.98	M 6.98	M 6.98
6	6.89	6.89	7.05	6.99	6.95	6.68	M 6.37	6.78	6.90	7.21	M 6.44	M	M 6.44	M	M	M 6.96	M 6.96	M 7.03	7.34	M 6.61	M 6.61	M 6.61	M 6.61	M 6.61
7	6.02	M	5.63	5.77	5.26	M 6.06	M	6.06	M	6.42	M	M	M	M	M	M	M	M 6.43	6.67	M 6.36	M 6.36	M 6.36	M 6.36	M 6.36
8	6.71	M 6.58	M	M	M 6.78	M	M 6.32	M	M 7.00	M	M	M	M 7.00	M	M	M	M	M	M	M	M 6.57	6.33	6.43	M 6.43
9	6.63	M	M	M	M	M	M 6.32	M	M 6.55	6.88	M 6.22	6.10	6.12	6.01	6.11	6.08	6.04	6.25	6.19	6.17	6.00	5.76	M 5.76	M 5.76
10	5.24	5.26	5.40	5.74	M 4.89	5.22	5.39	5.90	M 5.86	5.55	M 5.44	5.33	5.55	5.55	5.33	5.55	5.57	5.76	5.58	5.66	5.86	5.45	5.71	5.73
11	5.74	5.52	5.76	5.29	5.69	5.59	5.78	5.89	5.53	5.70	5.55	5.71	5.31	5.27	5.31	4.61	4.76	5.06	5.21	5.42	5.45	5.41	4.31	4.86
12	5.18	5.76	5.91	5.44	5.86	5.45	5.73	5.77	5.59	5.65	5.34	4.13	4.32	4.40	4.70	4.88	4.94	5.09	5.18	5.34	5.33	5.41	5.51	5.40
13	5.47	5.50	5.62	5.56	5.16	5.51	4.98	M 5.36	5.49	5.22	5.26	4.71	4.59	4.82	5.28	4.83	5.03	4.32	4.61	4.94	5.10	4.38	4.55	M 4.55
14	4.59	4.86	4.64	4.85	5.02	5.14	M 4.65	4.74	5.13	M 5.29	5.47	M	5.54	5.48	5.54	5.48	5.54	5.53	5.52	5.01	5.47	5.04	M	M
15	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
16	5.50	5.33	5.29	5.66	5.49	5.81	5.76	4.60	4.88	4.69	5.36	5.49	5.03	5.54	5.43	5.73	5.81	5.81	5.36	5.66	5.42	3.87	4.57	4.90
17	3.75	3.87	4.18	4.09	4.44	4.55	4.64	5.33	5.37	5.57	5.72	5.43	5.22	5.81	5.99	6.02	5.95	6.04	6.06	6.13	6.02	5.55	5.90	5.73
18	6.15	6.26	6.25	6.07	6.02	6.15	6.22	6.20	6.03	6.08	6.32	6.29	6.17	6.33	6.33	6.30	6.34	6.32	5.32	6.19	6.43	6.24	6.14	5.98
19	6.06	6.14	6.23	6.28	6.31	6.01	6.17	6.13	4.93	4.79	6.10	6.38	6.12	M	6.26	4.10	M 5.05	5.80	M 5.20	M 5.20	M 5.20	M 6.18	5.77	M 5.77
20	M	4.90	5.46	M 6.10	5.97	5.85	5.79	M 5.47	5.46	M 5.47	5.46	M 5.88	5.88	5.88	5.84	5.85	M 4.44	5.22	M 5.77	5.77	M 5.77	M 6.25	M 6.25	M 6.25
21	M 6.25	6.24	M 6.22	5.93	6.00	5.85	M 4.68	6.01	5.51	5.77	6.45	6.07	6.03	6.21	5.92	6.24	6.13	6.24	6.13	6.21	6.05	6.05	6.24	M 6.24
22	6.33	6.06	6.03	M 5.77	5.97	5.03	5.10	5.40	5.39	5.67	6.00	5.71	5.05	4.81	5.41	5.49	6.02	6.43	6.13	6.11	6.21	6.01	5.90	M 5.90
23	6.03	6.05	5.65	6.02	5.47	6.16	6.30	6.33	6.17	6.23	6.26	6.17	5.98	6.23	6.11	5.98	6.18	6.09	6.13	5.78	6.07	6.09	M 6.36	M 6.36
24	6.33	6.21	6.25	5.79	5.73	5.93	6.12	6.18	6.04	6.09	6.06	6.30	6.35	6.17	6.14	6.16	6.25	6.36	6.37	6.23	6.35	6.33	6.30	6.08
25	6.10	6.35	6.36	6.23	6.31	6.11	6.26	6.18	6.21	6.23	6.32	5.85	6.21	6.08	6.12	6.20	6.20	6.23	6.39	6.37	6.32	6.31	6.27	5.95
26	6.19	6.22	6.18	6.13	6.07	6.01	6.21	6.25	6.26	6.50	6.36	6.47	6.54	6.51	6.49	6.59	6.57	6.47	6.52	6.45	6.46	6.35	6.49	M 6.49
27	6.65	6.70	6.04	6.65	6.66	6.69	6.73	6.74	6.71	6.84	6.76	6.84	6.92	6.84	6.52	6.76	6.74	6.75	6.86	6.83	6.79	7.05	6.96	6.95
28	6.90	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
29	M 5.92	5.98	5.98	6.05	6.19	6.28	6.44	6.53	6.64	6.79	6.71	6.74	6.62	6.57	6.70	6.66	6.56	6.59	6.60	6.63	6.70	6.60	6.61	M 6.61
30	6.52	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M

Note: "B" indicates the flux was below the cut-off levels.

"M" denotes periods of missing data.

Earlier data available from WDC-A for Solar-Terrestrial Physics cover the period July 1975 - August 1976.

MARCH 1977 DATA

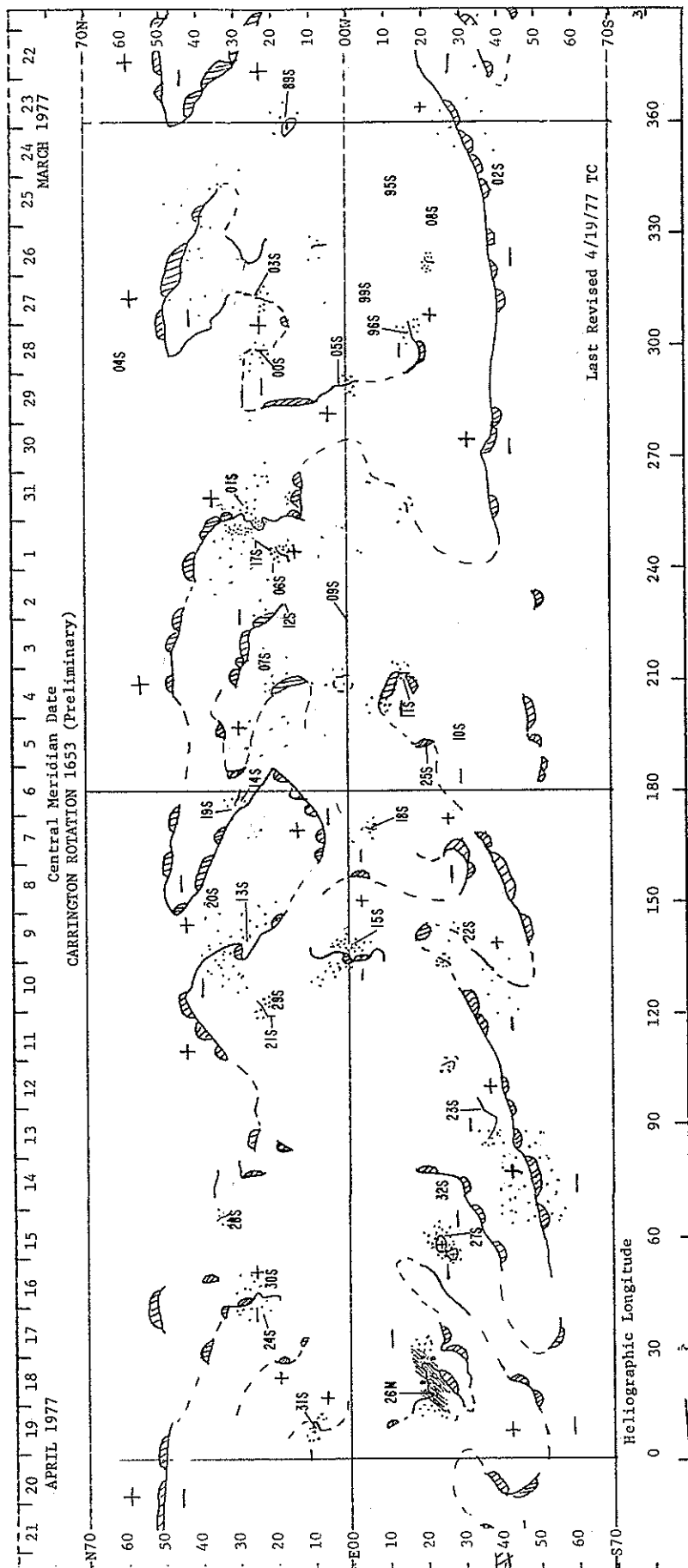
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<u>Abbreviated Calendar Record</u>	34-41
<u>Regional Flare Index</u>	41

ABBREVIATED CALENDAR RECORD

H α SYNOPTIC CHART

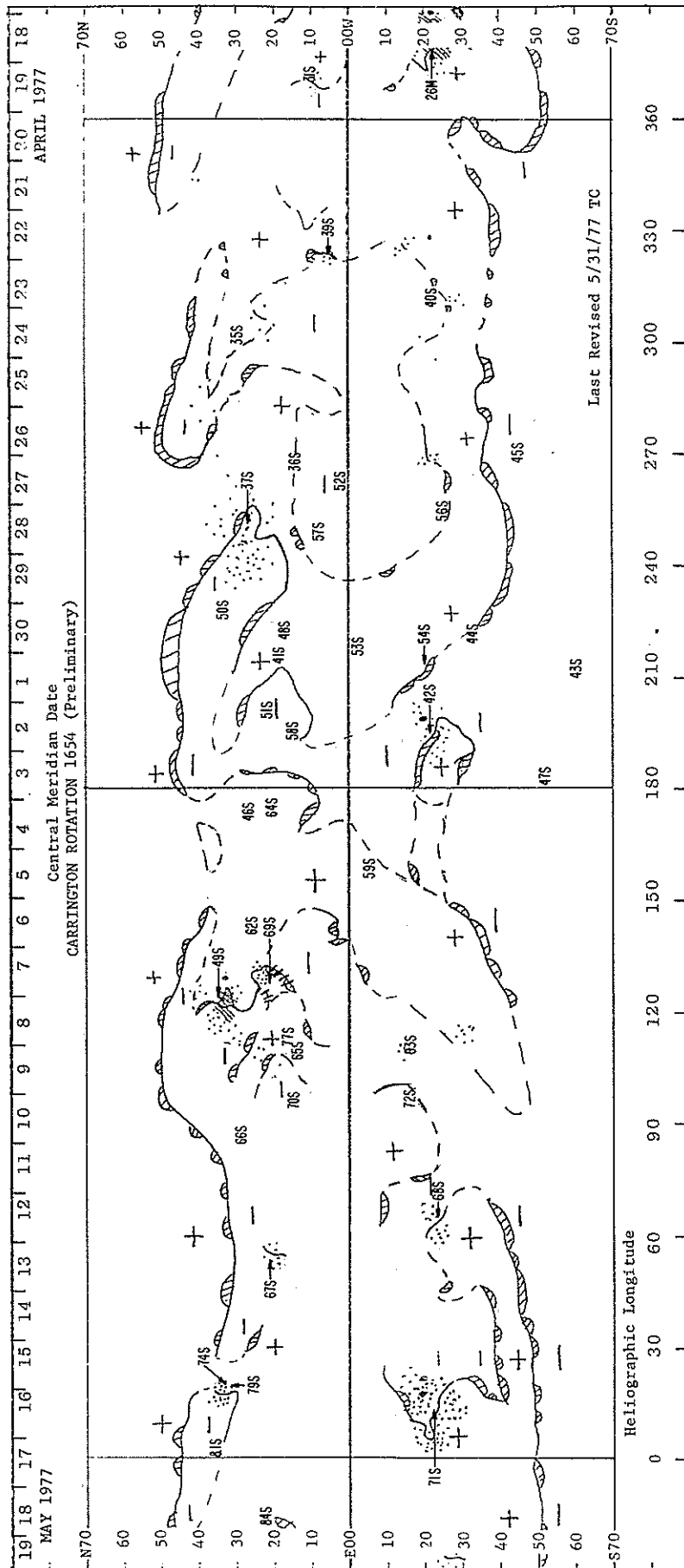
MARCH - APRIL 1977



ABBREVIATED CALENDAR RECORD

H α SYNOPTIC CHART

APRIL 1977 - MAY 1977



ABBREVIATED CALENDAR RECORD

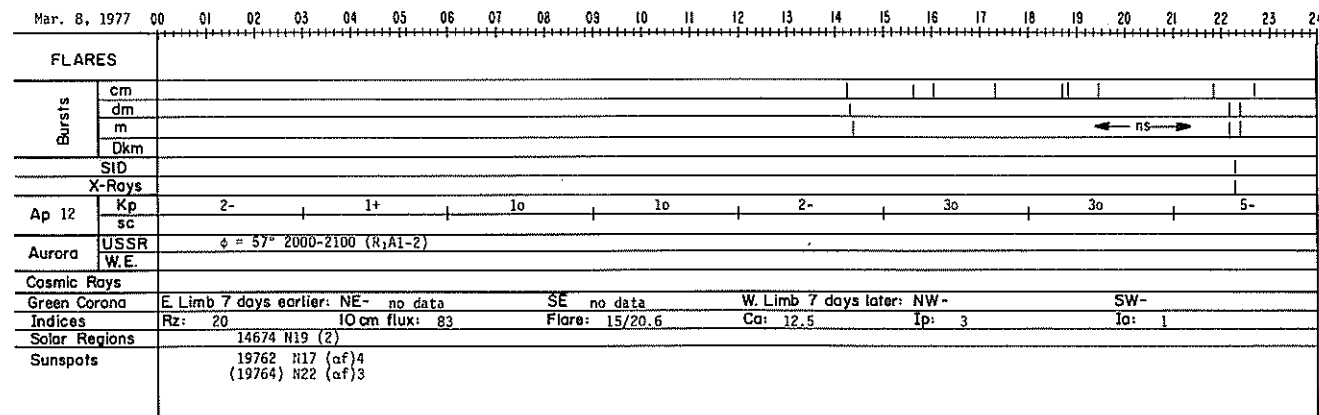
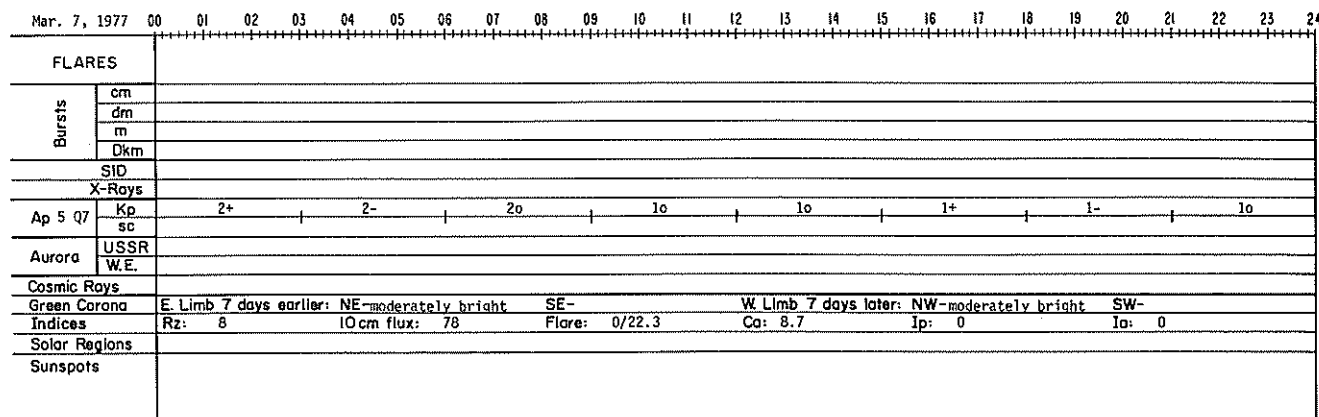
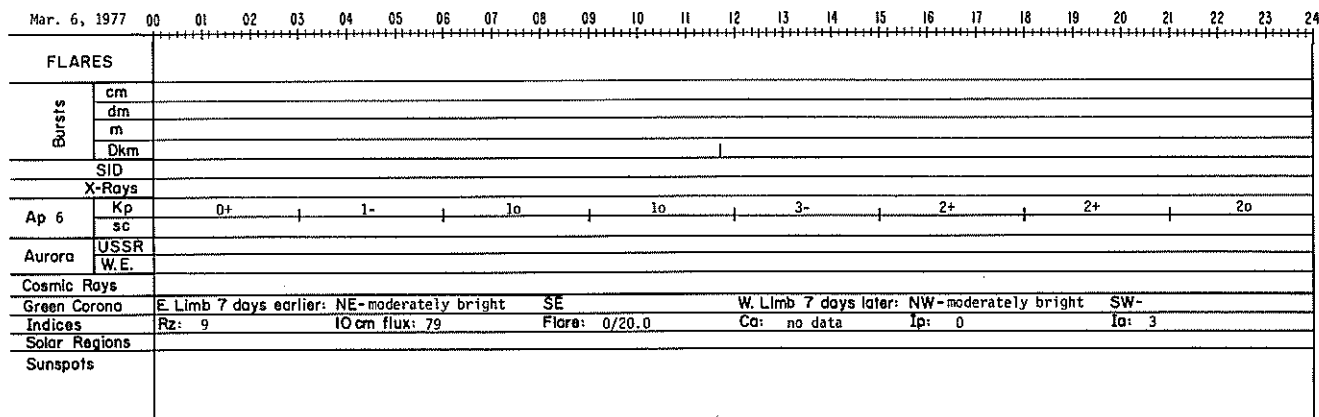
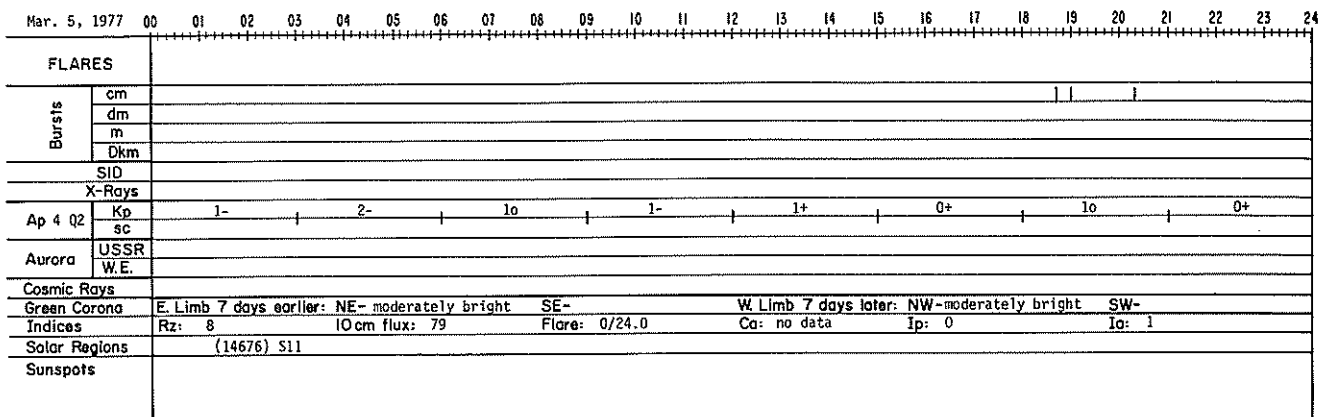
MARCH 1977

Mar. 1, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
FLARES																													
Bursts	cm																												
	dm																												
	m																												
	Dkm																												
SID																													
X-Rays																													
Ap 11	Kp	3o		1-				1o				2-				2-				2+				3+			4o		
	sc																												
Aurora	USSR																												
	W.E.																												
Cosmic Rays																													
Green Corona	E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data																												
Indices	Rz: 0 10cm flux: 74 Flare: 0/23.4 Co: 0.9 Ip: 0 Ia: 0																												
Solar Regions																													
Sunspots																													

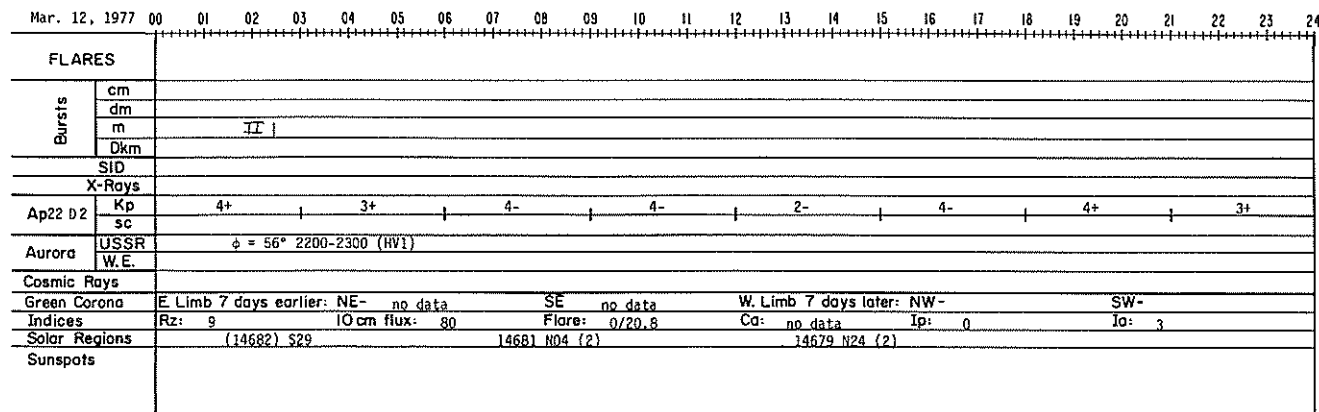
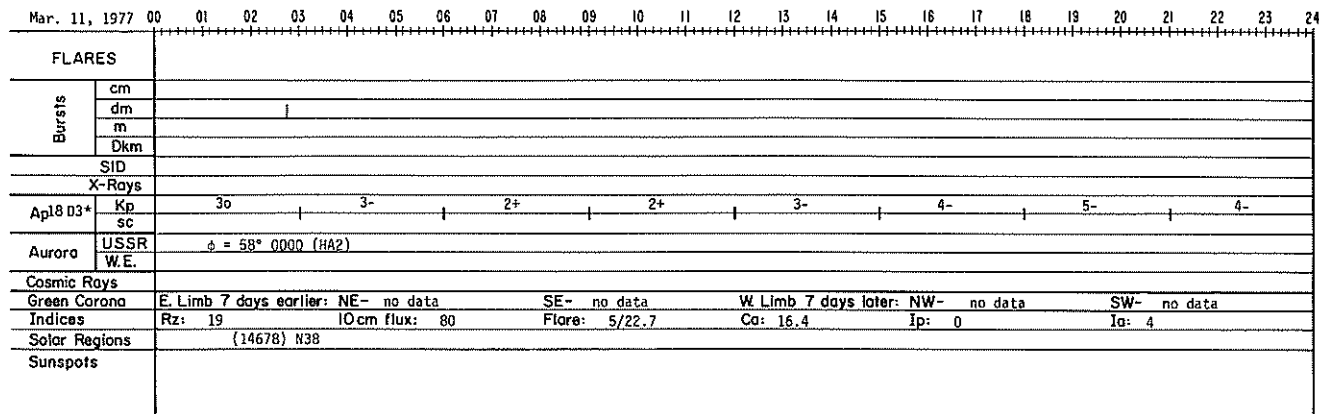
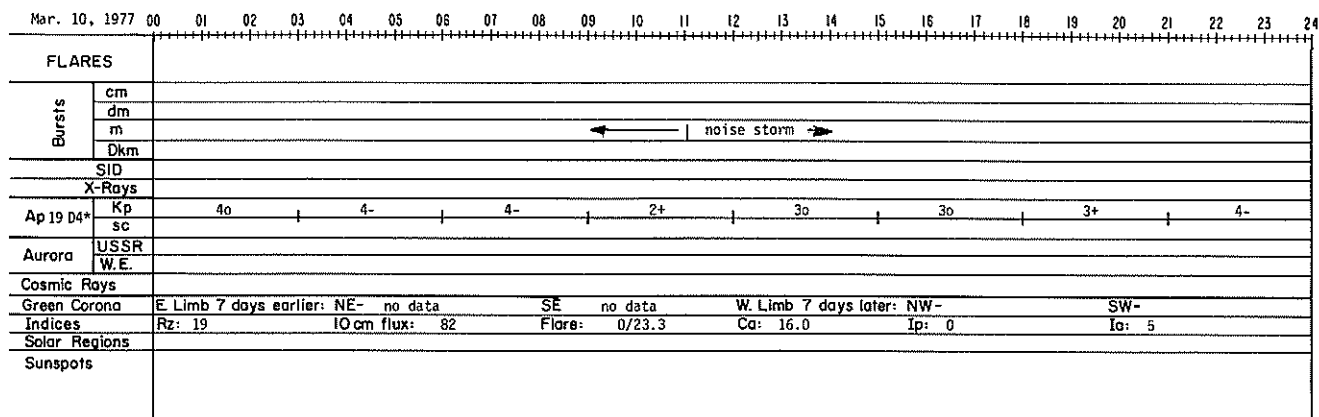
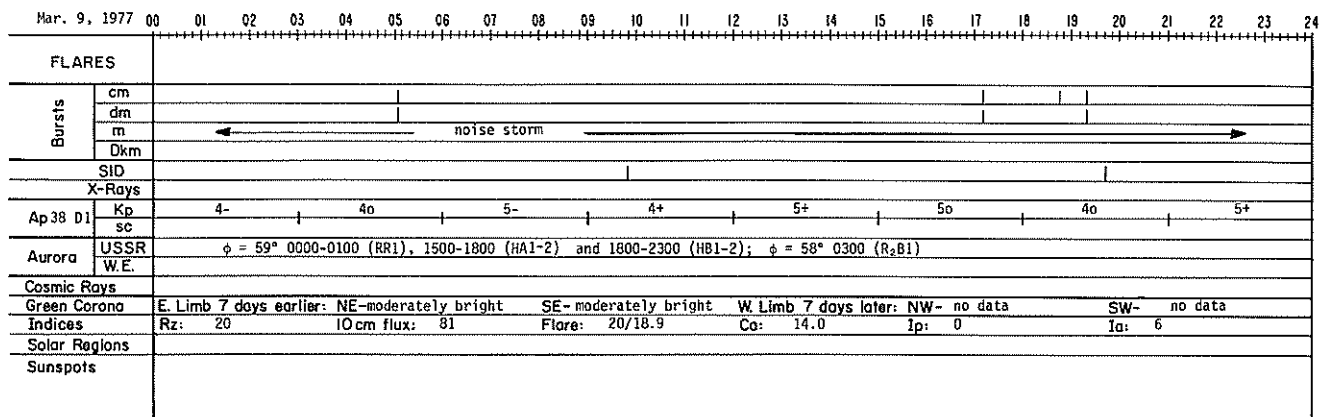
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FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap5 05	Kp	00				1-				1-				2-					1+								
	sc																										
Aurora	USSR																										
	W.E.																										
Cosmic Rays																											
Green Corona	E Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- SW-																										
Indices	Rz: 8 10 cm flux: 77 Flare: 0/23.0 Ca: 1.4 Ip: 0 Ia: 2																										
Solar Regions		(14670) S25																									
Sunspots																											

Mar. 3, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 4 Q4	Kp	2a			1a				1a				1a				1a			1-			0+			1-	
	sc																										
Aurora	USSR																										
	W.E.																										
Cosmic Rays																											
Green Corona	E Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data																										
Indices	Rz: 8 10cm flux: 76 Flare: 0/21.8 Co: 2.7 Ip: 0 Ia: 0																										
Solar Regions	{14761} S15 (14672) S03 14677 N26 19763 N26 (ap)3																										
Sunspots																											

Mar. 4, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap3 Q1	Kp	00 0+ 10 0+ 1+ 1- 1- 10																									
	sc																										
Aurora	USSR																										
	W.E.																										
Cosmic Rays																											
Green Corona	E Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW-moderately bright SW-																										
Indices	Rz: 8 IO cm flux: 78 Flare: 0/19.0 Ca: no data Ip: 0 Ig: 3																										
Solar Regions	(14566) N27 (2) (14667) S33																										
Sunspots																											



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Mar 77



Mar. 13, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 13	Kp	4+		3-		2o		2-		2-		2+		2+		4-											
	sc																										
Aurora	USSR	φ = 58° 0000 (HA2) and 2300-2400 (R1B2)																									
	W.E.																										
Cosmic Rays																											
Green Corona	E. Limb 7 days earlier: NE-moderately bright SE-moderately bright W. Limb 7 days later: NW-moderately bright SW-moderately bright																										
Indices	Rz: 8 10cm flux: 79 Flare: 0/19.7 Ca: 11.5 Ip: 0 Ia: 2																										
Solar Regions																											
Sunspots																											

Mar. 14, 1977		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
FLARES																									
Bursts	cm																								
	dm																								
	m																								
	Dkm																								
SID																									
X-Rays																									
Ap 12	Kp sc	4+		4+		3-		1c		1c		1+		1c		1+									
Aurora	USSR W.E.	φ = 59° 0000-0100 (HA1) and φ = 57° 0300 (RzR1)																							
Cosmic Rays																									
Green Corona	E Limb 7 days earlier: NE- moderately bright SE moderately bright W. Limb 7 days later: NW- SW- moderately bright																								
Indices	Rz: 7 10 cm flux: 78 Flare: 2/23.7 Ca: no data Ip: 0 Ia: 2																								
Solar Regions		14680 S43 (2)																							
Sunspots																									

Mar. 15, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 5 Q6	Kp sc	2- 1- 2+ 2o 2- 1+ 0+ 0o																									
Aurora	USSR																										
	W.E.																										
Cosmic Rays																											
Green Corona	E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW moderately bright																										
Indices	Rz: 0 10cm flux: 76 Flare: 0/24.0 Co: 8.1 Ip: 0 Ig: 1																										
Solar Regions		(14683) S10 (14684) S32 ,																									
Sunspots																											

Mar. 16, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 6 Q10	Kp sc	2- 2+ 2- 1o 1- 1o 2+ 2+																									
Aurora	USSR W.E.																										
Cosmic Rays																											
Green Corona	E Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- SW-																										
Indices	Rz: 0 10 cm flux: 75 Flare: 0/23.6 Ca: 6.6 Ip: 0 Ia: 0																										
Solar Regions		(14687) S19																									
Sunspots																											

Mar. 17, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 9	Kp	3- 2+ 1o 2o 2o 3o 3o 2-																									
	sc																										
Aurora	USSR																										
	W.E.																										
Cosmic Rays																											
Green Corona	E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW-																										
Indices	Rz: 0 10 cm flux: 75 Flare: 0/21.5 Ca: 4.6 Ip: 0 Ia: 0																										
Solar Regions																											
Sunspots																											

Mar. 18, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 11	Kp	4- 4- 2a 2a 3- 2- 2- 1+																									
	sc																										
Aurora	USSR	φ = 59° 1800-1900 (HA2); φ = 58° 2100-2400 (HA2)																									
	W.E.																										
Cosmic Rays																											
Green Corona	E. Limb 7 days earlier: NE- SE moderately bright W. Limb 7 days later: NW- no data SW- no data																										
Indices	Rz: 0 IO cm flux: 75 Flare: 0/20.9 Ca: no data Ip: 0 Ia: 3																										
Solar Regions	(14685) S03																										
Sunspots																											

Mar. 19, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 5 Q8	Kp	0+ 2- 1+ 0+ 0+ 1+ 2+ 2+																									
	sc																										
Aurora	USSR																										
	W.E.																										
Cosmic Rays																											
Green Corona	E. Limb 7 days earlier: NE- SE- moderately bright W. Limb 7 days later: NW- no data SW- no data																										
Indices	Rz: 0 10cm flux: 75 Flare: 0/23.6 Ca: 2.0 Ip: 0 Ia: 2																										
Solar Regions	14686 S21 (3) (14697) S29																										
Sunspots	S20 (19765) S30 { β } 3																										

Mar. 20, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Okm																										
SID																											
X-Rays																											
Ap 13	Kp	4o		2+			1+			2o			1+			2-			3o						4o		
	sc																										
Aurora	USSR																										
	W.E.																										
Cosmic Rays																											
Green Corona	E Limb 7 days earlier: NE- SE bright W Limb 7 days later: NW- no data SW- no data																										
Indices	Rz: 0 10 cm flux: 73 Flare: 0/23.2 Ca: 1.6 Ip: 0 Ia: 0																										
Solar Regions		14688 N18 (14698) N28																									
Sunspots																											

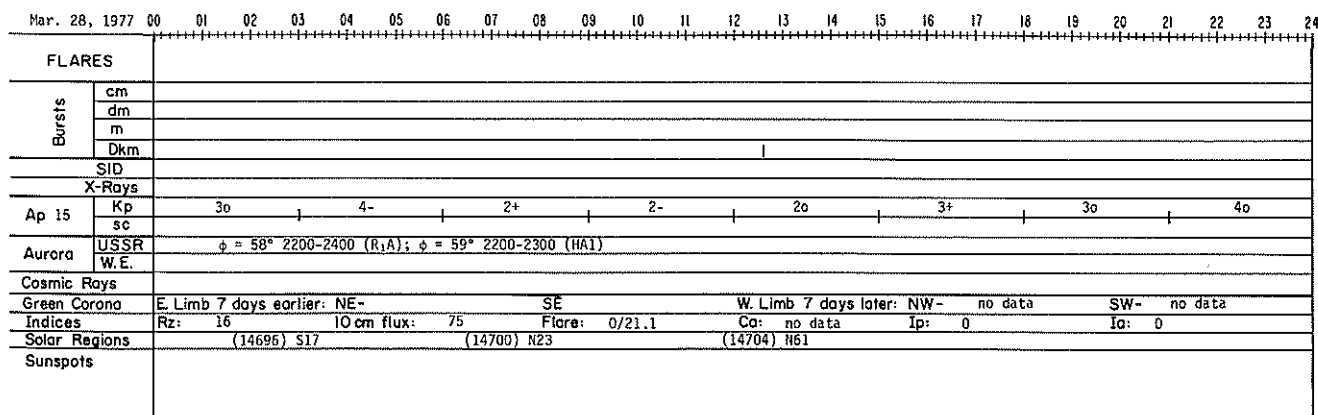
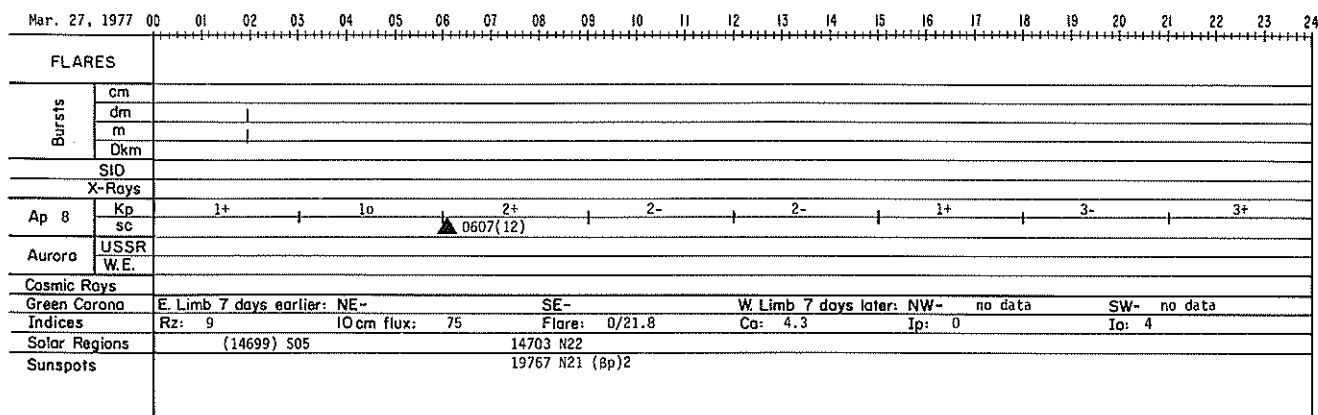
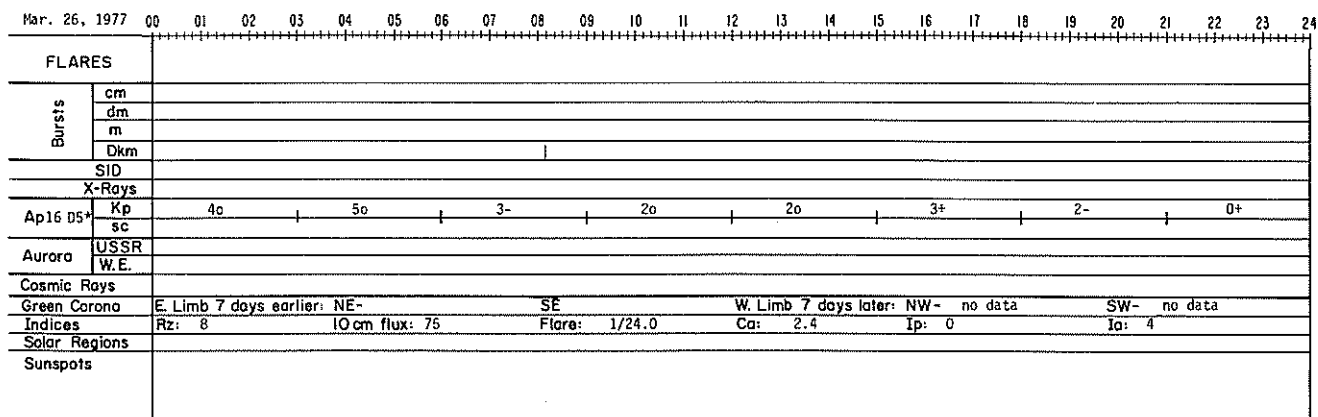
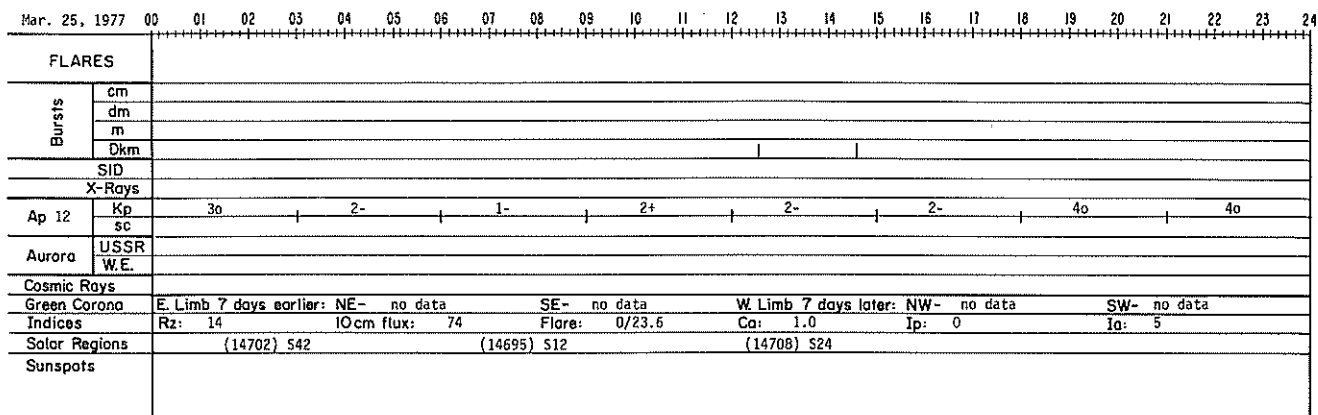
Mar. 21, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 10	Kp	1o 2o 1+ 1o 1+ 3- 4e 3+																									
Aurora	sc																										
	USSR W.E.	φ = 59° 2100 (HB1) and 2200 (HA1)																									
Cosmic Rays																											
Green Corona		E. Limb 7 days earlier: NE-						SE-						W. Limb 7 days later: NW- no data						SW- no data							
Indices		Rz: 0						10cm flux: 73						Flare: 1/22.4						Ca: 1.3 Ip: 0 Ia: 1							
Solar Regions																											
Sunspots																											

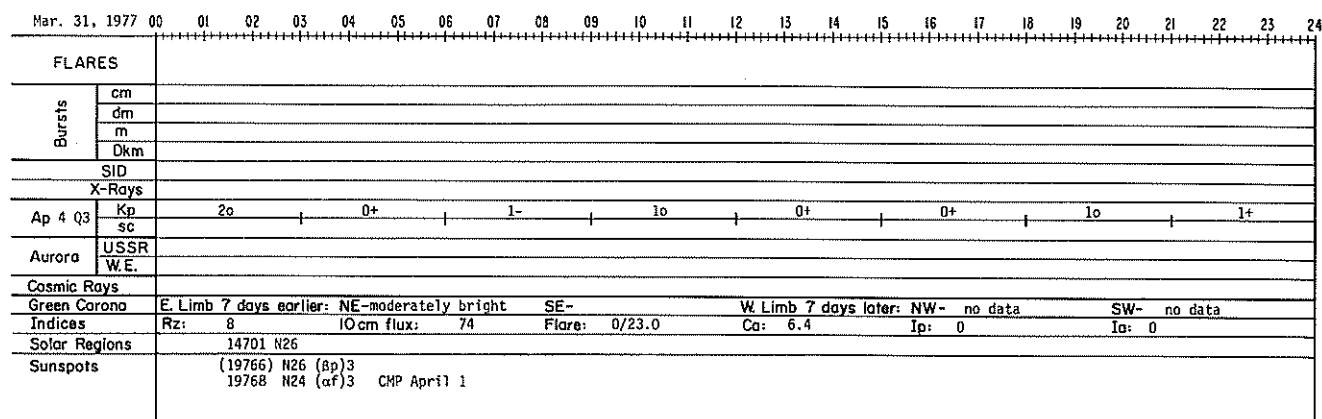
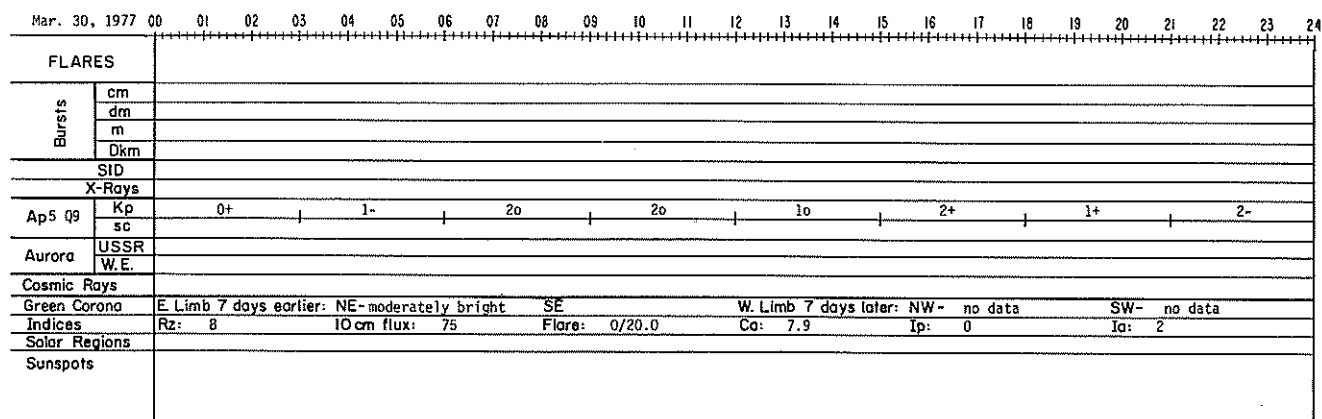
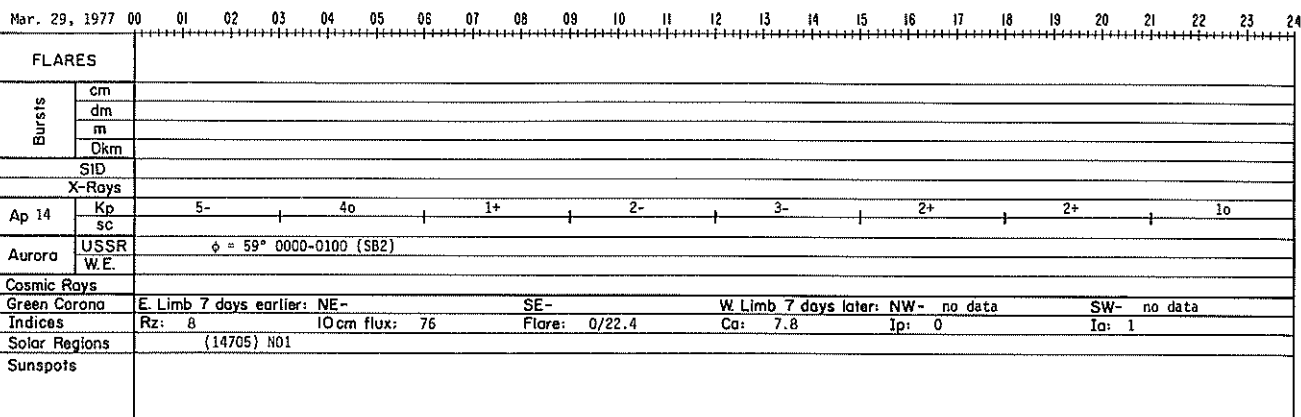
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FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 7	Kp	3- 2+ 3- 2o 1o 2o 1- 0o																									
	sc																										
Aurora	USSR																										
	W.E.																										
Cosmic Rays																											
Green Corona	E Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- no data SW- no data																										
Indices	Rz: 10 10 cm flux: 75 Flare: 0/23.9 Ca: 1.2 Ip: 0 Ia: 2																										
Solar Regions	(14690) S14																										
Sunspots																											

Mar. 23, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 14	Kp	2- 1+ 3o 2o 3o 3o 3+ 4o																									
	sc																										
Aurora	USSR	$\phi = 59^\circ$ 0100-0300 (SA2), 0400-0600 (HA2) and 1900-2200 (HB1-2)																									
	W.E.																										
Cosmic Rays																											
Green Corona	E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW-																										
Indices	Rz: 8	IO cm flux: 75 Flare: 0/21.6 Ca: 1.7 Ip: 0 Ia: 4																									
Solar Regions	(14689) N15																										
Sunspots																											

Mar. 24, 1977		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
FLARES																											
Bursts	cm																										
	dm																										
	m																										
	Dkm																										
SID																											
X-Rays																											
Ap 12	Kp	4+ 3o 2- 2- 2+ 2+ 2o 3-																									
	sc																										
Aurora	USSR	$\phi = 58^{\circ}$ 0100 (R2B3)																									
	W.E.																										
Cosmic Rays																											
Green Corona	E Limb 7 days earlier: NE- SE- W Limb 7 days later: NW- SW-																										
Indices	Rz: 7 10 cm flux: 75 Flare: 1/23.8 Ca: 2.2 Ip: 0 Ia: 2																										
Solar Regions																											
Sunspots																											

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Mar 77





REGIONAL FLARE INDEX
INCLUDES ALL FLARES

HC HATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
14666	N27	77/03/04.5	77/03/11	77/03/11	.85	.85	1
14674	N18	77/03/08.3	77/03/02	77/03/11	38.70	3.87	12
14686	S21	77/03/19.7	77/03/14	77/03/14	1.69	1.69	2
14698	N27	77/03/28.6	77/03/24	77/03/26	1.69	.56	2
14696	S16	77/03/28.1	77/03/21	77/03/21	.85	.85	1
14701	N26	77/03/31.7	77/04/03	77/04/03	1.95	1.95	1

Note:

Because of differences in method of calculation, the dates of Central Meridian Passage for the McMath Plage Regions vary somewhat from those given elsewhere. Any region not listed here produced no flares during its disk passage.

Miscellaneous Data

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Misc
Jun 77

SELECTED SOLAR EVENTS

JUNE 1977

Culgoora

UT Date 1977. June	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions		Polar- ization	Inten- sity (1-3)		
				Central Dist. (R ₀)	Position Angle (Deg.)				
2	0430	0433	43.25 } 80 } 160 }	1.5	295	0	2	unclf.	Possible II
4	2300	0500	80 } 160 }	1.2	95	ℓ	1	IS	This region persisted until 10th accompanied by type III activity.
	0044	0048	43.25 } 80 } 160 }	1.3	240	0	3	IIIG,V,U	*
6	0305	0306	43.25 } 80 } 160 }	.6	70	0	3 2 2	IIIGG	*Same region as type I.
23	0023	0032	80 } 160 }	1.2 1.1	90	0	2 1	II	
23/24	2300	0500	160	.5	180	r-R	1	IS	Type I persisted until 27th with varying polar- ization.
	0118	0122	43.25 } 80 } 160 }	.9	90	0	3 3 2	IIIG,V,U	*
24/25	2300	0500	80 } 160 }	1.2 1.1	55	ℓ	1	IS	Type I was visible on 24th but only at 160 MHz, then continued at 80, 160 MHz until 30th accompanied by type III activity

Days without Heliograph observations: Nil

*Other type III's observed from same position during the day.

SELECTED SOLAR EVENTS

45
Misc
Jun 77

Culgoora

JUNE 1977

UT Date 1977. June	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions		Polar- ization	Inten- sity (1-3)		
				Central Dist. (R ₀)	Position Angle (Deg.)				
28/29	2300	0500	80 160	.2 .2 .3 }	65 85 }	ℓ	1	I	Both regions on the 29th were doublets, only the first pro- ducing type III activity.
			80 160	.4 .3 .4 }	225 240 }	ℓ	1	I	
29/30	2300	0500	80 160 }	.7	25	ℓ	1	I	
			80 160 }	.6	50	r-unpol.	1	I	

Days without Heliograph observations: Nil.....

46
Misc
Jul 77

SELECTED SOLAR EVENTS

JULY 1977

Culgoora

UT Date 1977. July	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions		Polar- ization	Inten- sity (1-3)		
				Central Dist. (R _e)	Position Angle (Deg.)				
30/1	2300	0500	80 160	.8 .7	320	ℓ	1	I	This region persisted until 3rd.
2	0100	0500	160	1.2	70	Unpol-ℓ	1	I	This region persisted until 7th, the polar- ization changing to ℓ on 4th.
5/6	2300	0500	80 160 160	1.1 .9 1.0	315 300	ℓ	1	I	After 03 ^h 00 ^m second position only at 160 MHz.
7	0452	0454	43.25 80 160	1.0	320 315	0	3 2 2	IIIG	
10	0248	0316	43.25 80 160	1.3 1.1 .9	250	0	3 3 2	II	
19/20	2258	2345	80	1.5 to 4.0	43	0	1	IV Moving	
25	0353	0354	43.25 80 160	1.2 1.3 1.4	360	0	3 1 1	IIIB	

Days without Heliograph observations: Nil

*Other type III activity from this region during the day.

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

47
Misc
Jul 77

JULY 1977

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS (by Dr. A. Romana)

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

06 1037: A: NU KS LM; B: WN DB FU EB KA KY; C: WI NI VI MT CZ KG DU
06 1345: A: SO WN KG; B: WI NI CI CZ (si: A: LM)
29 0027: A: SO DO NU WN WI DB VI FU EB CI FR KA KS KY LM KG DU; B: NI MT SS

Sudden impulses found in the magnetograms (si)

none

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

25 0840 - 0848 SO

Very unusual events

none

UAG Series of Reports

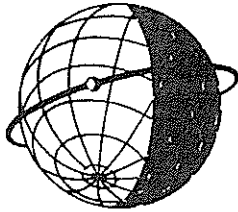
Prepared by World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado, U.S.A.

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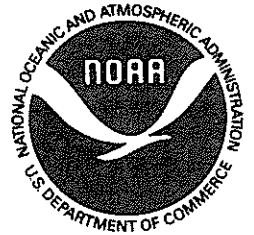
- UAG-48A "Synoptic Observations of the Solar Corona during Carrington Rotations 1580-1596 (11 October 1971 - 15 January 1973)", [Reissue with quality images] by R. A. Howard, M. J. Koomen, D. J. Michels, R. Tousey, C. R. Detwiler, D. E. Roberts, R. T. Seal and J. D. Whitney, E. O. Hulbert Center for Space Research, NRL, Washington, D. C. 20375 and R. T. and S. F. Hansen, C. J. Garcia and E. Yasukawa, High Altitude Observatory, NCAR, Boulder, Colorado 80303, February 1976, 200 pages, price \$4.27.
- UAG-49 "Catalog of Standard Geomagnetic Variation Data", prepared by Environmental Data Service, NOAA, Boulder, Colorado, August 1975, 125 pages, price \$1.85.
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WORLD DATA CENTER A

FOR

SOLAR-TERRESTRIAL PHYSICS



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