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ENVIRONMENTAL DATA SERVICE

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Solar - Geophysical Data

NO. 393 MAY 1977

Part II (Comprehensive Reports)

**DATA FOR
NOVEMBER 1976
OCTOBER 1976
& 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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SOLAR - GEOPHYSICAL DATA

No. 393

Issued in two parts

Helen E. Coffey, Editor

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Solar - Terrestrial Data Services Division

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NOVEMBER 1976 DATA

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ACTIVE REGIONS
CARRINGTON ROTATION 1647

(October 10 - November 7, 1976)

Region No.	Coordinates		Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1646	Activity at West Limb
	Lat.	Long.					
1	26°N	309°	>6	1	x		decreasing
2	28 S	288	+4	4			decreasing
3	10 S	265	>6	2			
4	22 N	234	-3	1	x		disappeared
5	24 S	211	>6	1	x		decreasing
6	29 N	191	+2	4			decreasing
7	6 N	176	+6	1	x		disappeared
8	18 N	128	>6	1	x		dispersed
9	29 S	121	+5	2		(11)	decreasing

ACTIVE REGIONS

CARRINGTON ROTATION 1648

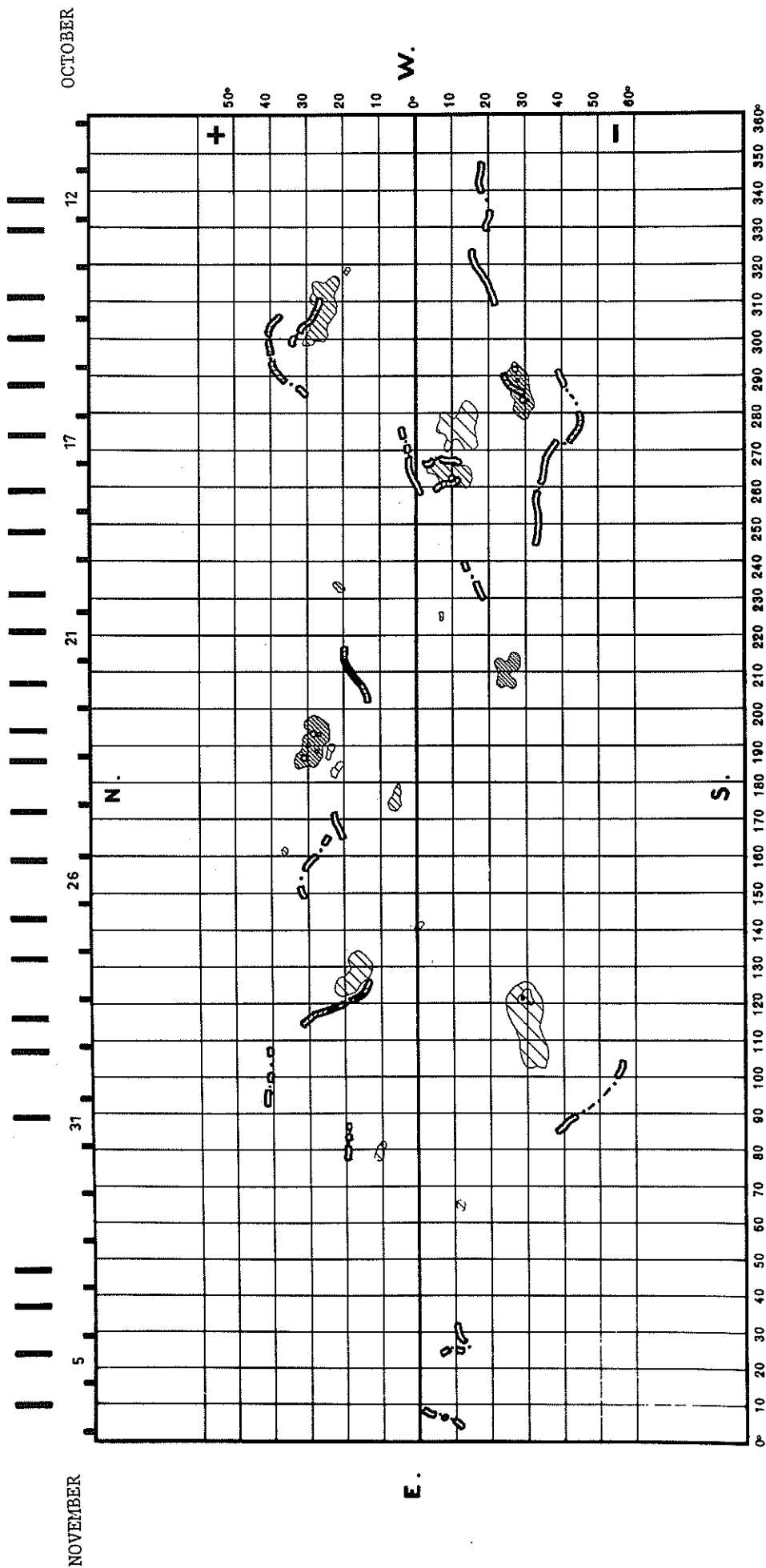
(November 7 - December 4, 1976)

Region No.	Coordinates		Age at CMP	IMP.	Spot- less Region	Region No. in Rotation 1647	Activity at West Limb
	Lat.	Long.					
1	22°N	295°	-4	1	x	(6)	increasing
2	5 S	240	>6	1	x		dispersed
3	30 N	183	>6	1.	x		dispersed
4	10 N	145	>6	3			decreasing
5	30 N	127	>6	1	x		dispersed

6
Nov 76

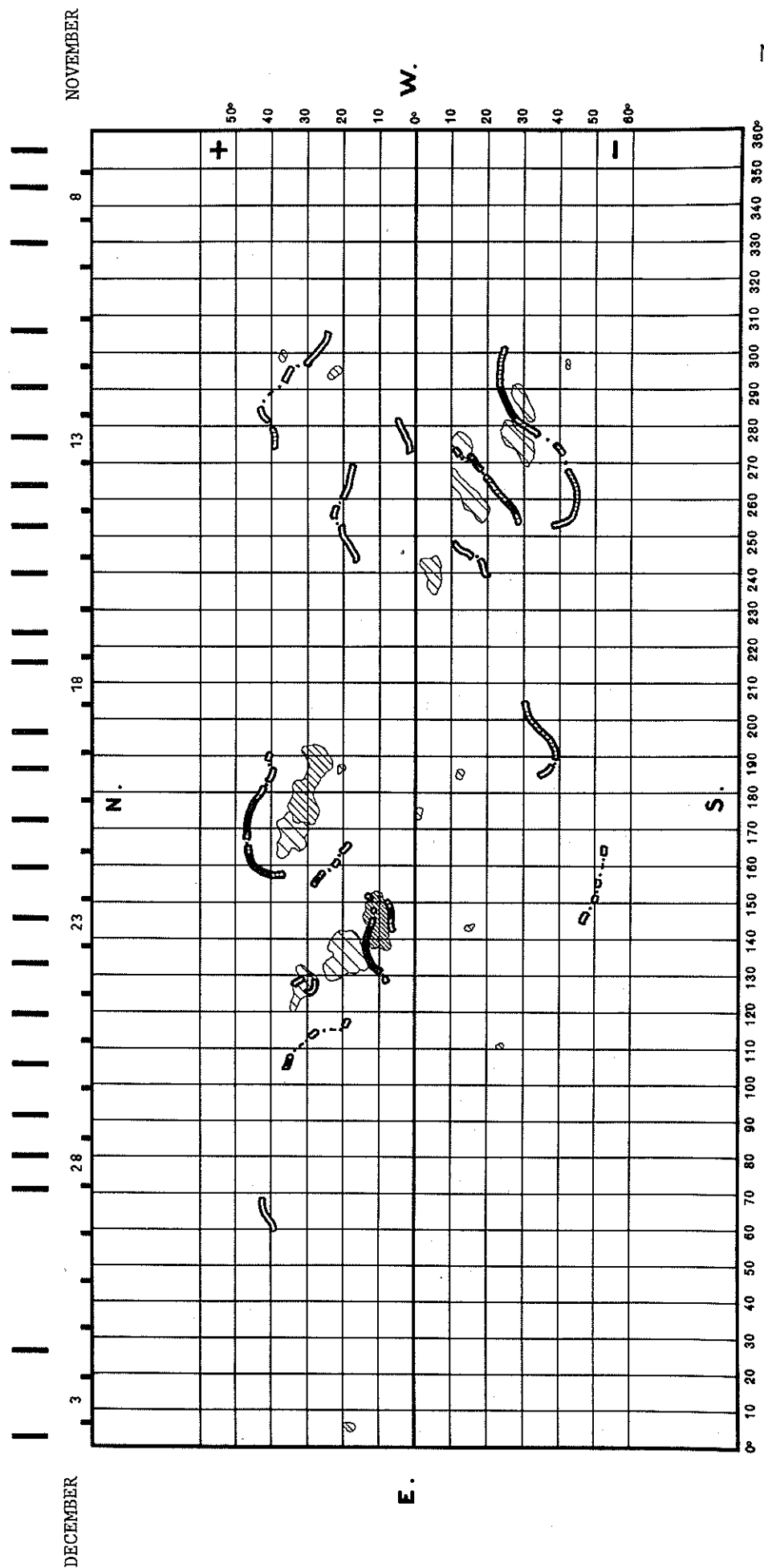
SYNOPTIC SOLAR MAP
CARRINGTON ROTATION 1647
OCTOBER 10 TO NOVEMBER 7, 1976

MEUDON OBSERVATORY



SYNOPTIC SOLAR MAP
CARRINGTON ROTATION 1647
NOVEMBER 7 TO DECEMBER 4, 1976

MEUDON OBSERVATORY



H α SOLAR FLARES

NOVEMBER 1976

OBSERV- ATORY	OBSERVED UT				LOCATION				DURA- TION	IMPOR- TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	GEOGRAPH- IC PLAGE REGION			CMP. DAY	COND	TYPE	TIME UT	MEAS. AREA		CORR AREA
					LAT.	MER. DIST.											
	1976																
	NOV																
	J1	0056	0127	NO FLARE PATROL													
	J1	1124	1132	NO FLARE PATROL													
	J1	2125	2146	NO FLARE PATROL													
	J1	2218	2310	NO FLARE PATROL													
	J2	0231	0242	NO FLARE PATROL													
	J2	0248	0602	NO FLARE PATROL													
	J2	0618	0634	NO FLARE PATROL													
	J2	0655	0705	NO FLARE PATROL													
	J2	0905	0915	NO FLARE PATROL													
	J2	0925	0935	NO FLARE PATROL													
	J2	1048	1055	NO FLARE PATROL													
	J2	1100	1115	NO FLARE PATROL													
	J2	1120	1126	NO FLARE PATROL													
	J2	1135	1145	NO FLARE PATROL													
	J2	1215	1225	NO FLARE PATROL													
	J2	1420	1431	NO FLARE PATROL													
	J2	1519	1636	NO FLARE PATROL													
	J2	2035	2050	NO FLARE PATROL													
	J2	2112	2253	NO FLARE PATROL													
	J2	2256	2331	NO FLARE PATROL													
	J2	2334	0025	NO FLARE PATROL													
	J3	1510	1603	NO FLARE PATROL													
	J3	1618	1636	NO FLARE PATROL													
	J3	1650	1659	NO FLARE PATROL													
	J3	2107	2328	NO FLARE PATROL													
	J3	2332	0000	NO FLARE PATROL													
	J4	0228	0237	NO FLARE PATROL													
	J4	0248	0315	NO FLARE PATROL													
	J4	1744	1803	NO FLARE PATROL													
	J4	1833	1907	NO FLARE PATROL													
	J5	0227	0235	NO FLARE PATROL													
	J5	1608	1620	NO FLARE PATROL													
	J5	1626	1742	NO FLARE PATROL													
	J5	2010	2016	NO FLARE PATROL													
	J5	2045	0015	NO FLARE PATROL													
	J6	0020	0103	NO FLARE PATROL													
	J6	0112	0250	NO FLARE PATROL													
	J6	2010	2051	NO FLARE PATROL													
	J6	2114	2125	NO FLARE PATROL													
	J6	2129	2204	NO FLARE PATROL													
	J6	2209	0115	NO FLARE PATROL													
	J7	0130	0315	NO FLARE PATROL													
	J7	0319	0320	NO FLARE PATROL													
	J7	1540	1655	NO FLARE PATROL													
	J7	1658	1837	NO FLARE PATROL													
	J7	1639	1852	NO FLARE PATROL													
	J7	1856	1919	NO FLARE PATROL													
	J7	1934	1954	NO FLARE PATROL													
	J7	2020	2033	NO FLARE PATROL													
	J8	0126	0131	NO FLARE PATROL													
	J8	0200	0309	NO FLARE PATROL													
	J8	1640	1701	NO FLARE PATROL													
	J8	1725	1756	NO FLARE PATROL													
	J8	1818	1841	NO FLARE PATROL													
	J8	1947	2055	NO FLARE PATROL													
	J9	0215	0231	NO FLARE PATROL													
	J9	0255	0311	NO FLARE PATROL													
	J9	2102	2210	NO FLARE PATROL													
	J10	0429	0438	NO FLARE PATROL													
	J10	0514	0544	NO FLARE PATROL													
	J10	0600	0613	NO FLARE PATROL													
	J10	1618	1635	NO FLARE PATROL													
	J10	1645	1750	NO FLARE PATROL													
	J10	1641	2233	NO FLARE PATROL													
	J10	2309	0237	NO FLARE PATROL													
	J11	0248	0253	NO FLARE PATROL													
	J11	0259	0307	NO FLARE PATROL													
	J11	0350	0432	NO FLARE PATROL													
	J11	0504	0506	NO FLARE PATROL													
	J11	0546	0555	NO FLARE PATROL													
	J11	0608	0616	NO FLARE PATROL													
	J11	0631	0644	NO FLARE PATROL													
	J11	0905	0917	NO FLARE PATROL													
	J11	2024	2043	NO FLARE PATROL													
	J11	2045	2210	NO FLARE PATROL													
	J11	2229	0233	NO FLARE PATROL													
	J12	0234	0241	NO FLARE PATROL													

OBSERVATORY	OBSERVED UT				LOCATION				DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	MGMATH PLAGE REGION			GMP DAY	COND	TYPE	TIME UT	MEAS. AREA		CORR AREA
					LAT.	MER. DIST.											
	12	0242	0333	NO FLARE PATROL													
	12	1655	1711	NO FLARE PATROL													
	12	1713	1730	NO FLARE PATROL													
	12	1813	1822	NO FLARE PATROL													
	12	1333	1901	NO FLARE PATROL													
	12	1911	2123	NO FLARE PATROL													
	12	2142	2153	NO FLARE PATROL													
	12	2159	2212	NO FLARE PATROL													
	12	2220	2240	NO FLARE PATROL													
	13	0205	0226	NO FLARE PATROL													
	13	0234	0318	NO FLARE PATROL													
	13	2029	2035	NO FLARE PATROL													
	13	2038	2201	NO FLARE PATROL													
	13	2204	2243	NO FLARE PATROL													
	13	2252	2335	NO FLARE PATROL													
	14	1940	2234	NO FLARE PATROL													
	15	1943	1956	NO FLARE PATROL													
	15	2020	2103	NO FLARE PATROL													
	15	2114	2225	NO FLARE PATROL													
	15	2233	2300	NO FLARE PATROL													
	15	2305	2325	NO FLARE PATROL													
	15	2347	2356	NO FLARE PATROL													
	16	0003	0011	NO FLARE PATROL													
	16	0013	0018	NO FLARE PATROL													
	16	0118	0133	NO FLARE PATROL													
	16	0135	0139	NO FLARE PATROL													
	16	0157	0228	NO FLARE PATROL													
	16	0234	0328	NO FLARE PATROL													
	16	2102	2344	NO FLARE PATROL													
	17	0124	0138	NO FLARE PATROL													
	17	0144	0152	NO FLARE PATROL													
	17	0215	0351	NO FLARE PATROL													
626 CULG	17	0226	0233	0242	N10	E90	1.000	14528	23.9	16	-F	C	0234	40		Y5	
627 HTPR	17	1038	1044	1048	N14	E80	.984	14528	23.4	10	-F	C	1044	40	D	Y5	
628 HTPR	17	1115	1117	1124	N22	W72	.953	14518	12.1	9	-F	C	1117	20	E	Y5	
629 RAMY	17	1845		1906	N13	E79	.981	14528	23.7	21	-F	4 C			OE	Y5	
	18	0204	0428	NO FLARE PATROL													
	18	0440	0614	NO FLARE PATROL													
630 HTPR	18	0713	0724	0800	N23	W85	.995	14518	11.9	47	-F	C	0724	40	D	Y5	
631 HTPR	18	1515	1518	15410	N23	W90	1.000	14518	11.9	260	-N	C	1518	20	E	Y5	
632 RAMY	18	1730	1736U	1742	N13	E55	.823	14528	22.9	12	-F	4 C		79		Y5	
	18	1916	1946	NO FLARE PATROL													
	18	2000	2009	NO FLARE PATROL													
	18	2013	2307	NO FLARE PATROL													
	18	2310	0338	NO FLARE PATROL													
	19	0443	0452	NO FLARE PATROL													
	19	0513	0532	NO FLARE PATROL													
633 HTPR	19	0952	1003	1040	N13	E50	.772	14528	23.2	48	-F	C	1003	40	.6	E Y5	
GRP63634	19	1500>9	1515+1 1522+2	1535	N12	E49	.760	14528	23.3	35	-N					HKR	
RAMY	19	1500	1522	1534	N13	E49	.762	14528	23.3	34	-N	4 C		141		F R	
MCMA	19	1502	1516	1540	N12	E48	.749	14528	23.2	38	-N	C	1516	40	.6	EH	
HTPR	19	1510	1515	1527	N13	E50	.772	14528	23.4	17	-N	C	1515	80	1.2	E,K	
RAMY	19	1515E	1524U	1535D	N12	E59	.859	14528	24.1	200	-N	4 V		159		F R	
GRP63635	19	1603+0	1605+2	1617	N11	E47	.736	14528	23.2	14	-N			70	1.0	EH	
RAMY	19	1603	1607	1611D	N12	E49	.760	14528	23.3	80	-N	4 C		88		DE	
MCMA	19	1603	1605	1617	N10	E46	.723	14528	23.1	14	-N	C	1605	50	.7	EH	
	19	1936	1946	NO FLARE PATROL													
	19	1956	2250	NO FLARE PATROL													
	19	2258	2355	NO FLARE PATROL													
	20	0302	0310	NO FLARE PATROL													
	20	0312	0325	NO FLARE PATROL													

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H α SOLAR FLARES

NOVEMBER 1976

OBSERV- ATORY	OBSERVED UT				LOCATION					DURA- TION	IMPOR- TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	MCMATH PLAGE REGION	CNR DAY			COND	TYPE	TIME UT	MEAS. AREA	CORR AREA	
					LAT.	MER. DIST.											
GRP63636 RAMY RAMY	20 20 20	1230E 1230E 1235E	1240+1 1240 1241U	12480 12480 12480	N12 N12 N13	E34 E36 E33	.574 .601 .564	14528 14528 14528	23.1 23.2 23.0	18 180 130	-N -N -N				100 95 95	1.2	FR F R F R
GRP63637 RAMY RAMY	20 20 20	1250E 1250E 1250E	1254+2 1256 1254	12580 12580 12580	N13 N13 N14	E41 E41 E41	.668 .668 .671	14528 14528 14528	23.6 23.6 23.6	8 80 80	-F -F -F				50 47 47	.7	R R R
	20 20 20 21 21 21 21 21 21 21 21 21	1630 1656 1817 0135 0212 0323 1545 1620 1830 2257 2330	1652 1704 2330 0145 0307 0328 1617 1815 2021 2313 2355	NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE	PATROL PATROL PATROL PATROL PATROL PATROL PATROL PATROL PATROL PATROL PATROL												
638 CULG	22	0232	0235	0249	N11	E21	.386	14528	23.7	17	-F		C	0240	40		E Y5
	22 22 22 22 23 2																

H α SOLAR FLARES

NOVEMBER 1976

OBSERV- ATORY	OBSERVED UT				LOCATION				DURA- TION	IMPOR- TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX		CENTRAL DISTANCE	MCMATH PLAGE REGION			CHM. DAY	COND.	TYPE	TIME UT	MEAS. AREA		CORR AREA
					LAT.	MER. DIST.											
1976 NOV																	
	30	1506	1554	NO FLARE	PATROL												
	30	1555	1634	NO FLARE	PATROL												
	30	1649	1808	NO FLARE	PATROL												
	30	1832	1837	NO FLARE	PATROL												
	30	2016	0000	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 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.

NOVEMBER 1976			DAILY FLARE INDICES					
			Includes all Flares					
Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.
761101	0.00	22.1	761111	0.00	16.6	761121	0.00	17.9
761102	0.00	14.2	761112	0.00	18.9	761122	5.92	20.4
761103	0.00	19.9	761113	0.00	20.1	761123	0.00	18.6
761104	0.00	22.5	761114	0.00	21.1	761124	0.00	12.8
761105	0.00	18.8	761115	0.00	21.1	761125	0.00	19.0
761106	0.00	17.1	761116	0.00	19.4	761126	0.00	15.9
761107	0.00	18.2	761117	3.58	22.0	761127	0.00	15.1
761108	0.00	20.9	761118	6.54	12.0	761128	0.00	20.8
761109	0.00	22.3	761119	7.46	19.5	761129	0.00	19.1
761110	0.00	14.4	761120	6.33	17.9	761130	0.00	12.3

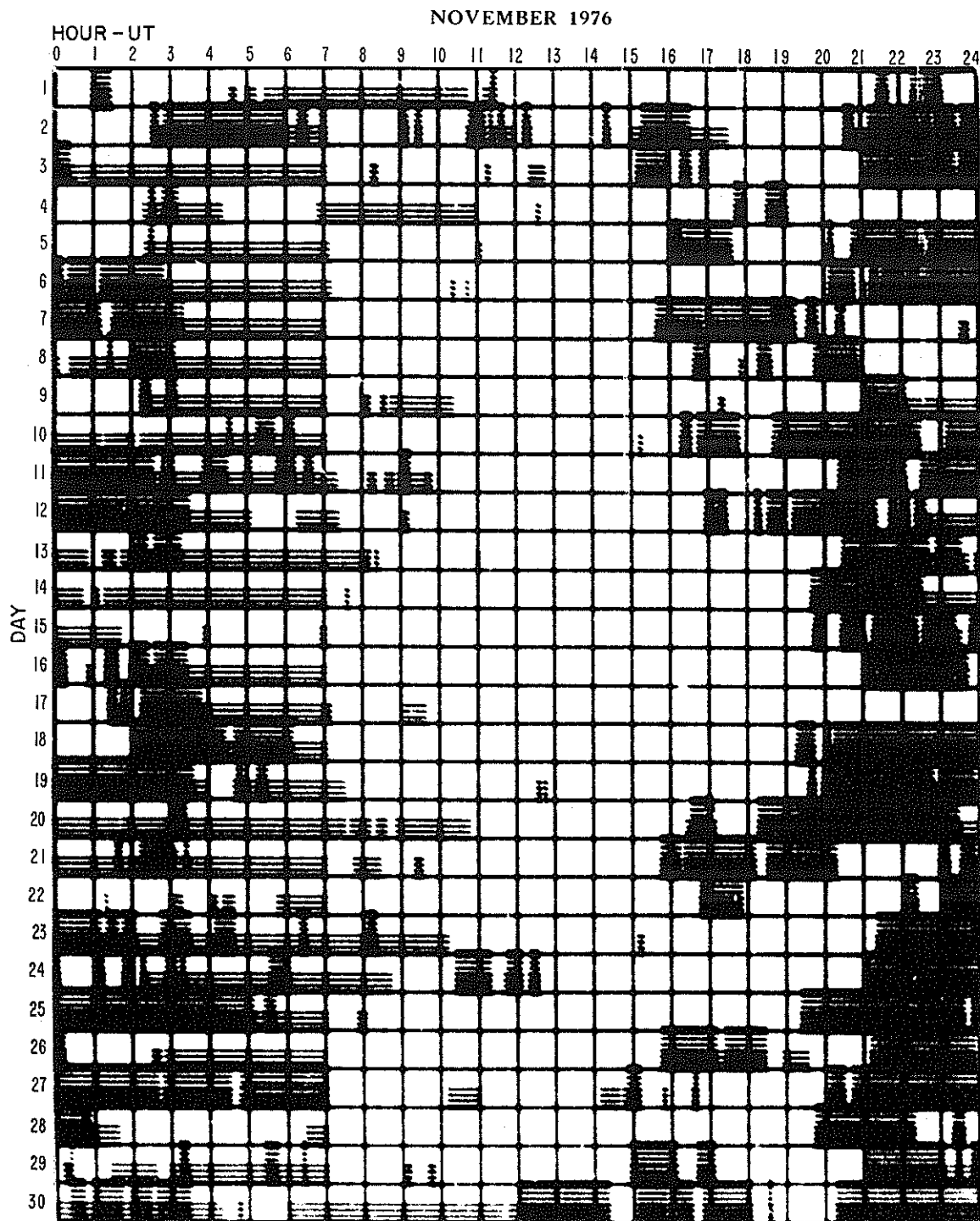
When no Flare Index is given, it is 0 for that day.

Errata: The data for Oct. 1976 in SGD issue 392 Part II p. 12 lacked the last day's data. The missing data are:

Date	761031	Flare Index	0.00	HR. OBS.	15.5
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INTERVALS OF NO FLARE PATROL OBSERVATION FOR PRECEDING SOLAR FLARE TABLE



Observatories included in total patrol:

Athens	Haute Provence	Istanbul	McMath-Hulbert	Ramey
Bucharest	Herstmonceux	Kodaikanal	Mitaka	Tehran
Catania	Huancayo	Locarno	Monte Mario	Upice
Culgoora	Hurbanovo	Manila	Palehua	Wendelstein
				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 NOVEMBER 1976

NOV 1976	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm ⁻² Hz ⁻¹		INT	POLARIZATION OR REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
1	260 ONDR	8 S	1036.3	1036.3	0.3	6			
2	207 VORO	4 S/F	0039	0039.5	1	160			
	9240 ARCE	4 S/F	0815.3	0817.2	3				
	9240 ARCE	1 S	0815.7	0815.9	0.8				
4	930 BORD	8 S	0740.8	0740.8	0.1	10	2		
5	930 BORD	8 S	0805.8	0805.8	0.1	8	1		
	930 BORD	8 S	0918.7	0918.7	0.1	12	1		
	930 BORD	8 S	1428.2	1428.2	0.1	8	1		
	930 BORD	41 F	1435	1435.3	2	17	2		
6	260 ONDR	2 S/F	1134.5	1135	0.8	10			
	536 ONDR	8 S	1313.3	1313.3	0.3	11			
9	9240 ARCE	4 S/F	0845.7	0845.8	0.8				
	9240 ARCE	2 S/F	0908.3	0908.8	1.5				
10	3100 CRIM	2 S/F	1144	1146	6	8	3		
	260 ONDR	8 S	1248.2	1248.2	0.3	15			
11	536 ONDR	8 S	1244.2	1244.2	0.3	36			
12	9240 ARCE	40 F	0809.8	0812.2	4.5				
	9240 ARCE	45 C	0824.6	0825	3				
	9240 ARCE	40 F	1103.7	1105.5	19.6				
	3100 CRIM	2 S/F	1104	1105	6	9	3		
13	9240 ARCE	4 S/F	0814.6	0815.1	1.4				
15	930 BORD	8 S	1335.7	1335.7	0.1	12	1		
16	9240 ARCE	20 GRF	0739.9	0853.4	227				
17	930 BORD	8 S	0830.8	0830.8	0.1	12	1		
	2800 OTTA	32 ABS	2037	2046	63	-2.2	-1.1		
18	207 VORO	4 S/F	0129	0130	2	36			
	207 VORO	4 S/F	0202	0203	1	28			
	207 VORO	4 S/F	0205	0206	1.5	158			
	127 TORN	45 C	0801	0801.8	6.7	70	4		
	260 ONDR	1 S	0934.3	0934.3	0.2	3.5			
	260 ONDR	4 S/F	1012.4	1012.8	0.5	21			
	228 HARS	48 C	1141.2	1142.5	2.7	80 U	30 U		
	260 ONDR	45 C	1141.4	1142.3	3	18	5		
	808 ONDR	1 S	1143.7	1143.7	0.2	5			
	536 ONDR	2 S/F	1143	1143.8	1.5	5.6			
	808 ONDR	1 S	1234.4	1234.4	0.2	4			
	536 ONDR	1 S	1234.6	1234.6	0.2	2			
	260 ONDR	1 S	1235	1235	0.2	2.5			
	260 ONDR	45 C	1335.2	1336	4	10	3		
	2695 PENT	20 GRF	2116	2127	35	1.4	0.7		
	2695 PENT	1 S	2235.5	2236.2	1.5	2	1		
	207 VORO	44 NS	2300		240		7		
19	200 HIRA	45 C	0050.9	0052	2.5	450	100		SL
	207 VORO	45 C	0051	0052	2	205			
	100 HIRA	45 C	0051.5	0052.2	1	220	80		HL
	500 HIRA	45 C	0051.5	0052.3	1	12	5		SL
	200 HIRA	45 C	0253	0253.5	1.5	150	30		ML
	500 HIRA	45 C	0253	0253.7	1.5	6	2		ML
	207 VORO	4 S/F	0253	0253.5	1.5	135			
	260 ONDR	44 NS	0810 E		379 D	115	10		
	100 GORK	43 NS	1015		68		5		
	245 SGMR	44 NS	1145 E	1315.2	568 D	208.6			
	410 SGMR	44 NS	1145 E	1316.6	568 D	92.8			
	606 SGMR	44 NS	1145 E	1313.1	568 D	27.5			
	127 TORN	43 NS	1155 U	1325 U	165 D				
	237 TRST	41 F	0852.4	0852.5	0.6	120			R
	100 GORK	46 C	0852.5	0853.1	1.4	40 D			
	100 GORK		0852.5	0853.7		20			
	9240 ARCE	20 GRF	0928	0929.1	7.5				
	650 GORK	3 C	0946.6	0946.8	0.4	16	5		
	650 GORK	45 SF	0957.7	0959.7	3.3	8.1	1.5		
	950 GORK	1 S	0958.1	0959	2	2	1		
	100 GORK	46 C	0958.6	0958.7	2.1	40 D			
	100 GORK		0958.6	0959.1		40 D			
	100 GORK		0958.6	1000.1		25			
	127 TORN	7 C	0958.7	0959.2	2.8	27	9		
	950 GORK	1 S	1012.6	1012.7	0.3	1.3	.6		
	127 TORN	27 RF	1012 U	1048.3	46 U	8.5	3.4		
	127 TORN	8 S	1044.3	1044.7	1	45 D	20 U		
	536 ONDR	27 RF	1140	1312.8	149	22	5		

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SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES NOVEMBER 1976

NOV 1976	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		
	234 POTS	45 C	1204	1322	161 D	70			
	113 POTS	45 C	1212	1436	148 D	200			
	2800 OTTA	22 GRF	1302	1518	260	4.8	2.4		
	1415 SGHR	46 C	1305.9	1330.6	36.3	90	19.1		
	1470 POTS	46	1305	1331	37	47			
	808 ONDR	27 RF	1308	1323.2	62	25	10		
	930 BORD	40 F	1311	1328.8	122	62	10		
	200 HIRA	44 NS	2120 E	0306	600 D	60	10		SL
	207 VORO	44 NS	2300	0150	240	2.5	14		
	1415 SGHR	46 C		1333.4		95.4			
	100 GORK	43 NS	0619		180		5		
	260 ONDR	44 NS	0825 E		355 D	9			
	245 SGHR	43 NS	1823.5	1906.8	168.50	74.2			
	200 HIRA	44 NS	2120 E	2230	600 D	130	10		SL
	207 VORO	44 NS	2300		240		11		
	2695 PENT	20 GRF	2128	2132	12	1.2	0.6		
21	100 GORK	43 NS	0618		342 D		5		
	127 TORN	44 NS	0650 E	1306.5	450 D	58 D			
	221 ABST	44 NS	0731.5	0732.5	90	15			
	260 ONDR	44 NS	0800 E		370 D	34	3		
	245 SGHR	44 NS	1147 E	1310.4	195.10	113.1			
	221 ABST	45 C	0730.5	0732.5	2	36	14		
	127 TORN	46 C	0810.8	0815.3	6.5	150 D	15		
	127 TORN	45 C	0831	0833	3.2	29	9		
	127 TORN	7 C	0957	0958	2.2	16	3.7		
	207 VORO	42 SER	2335	2348	20	19			
22	100 GORK	44 NS	0600 E		360 D		5		
	930 BORD	8 S	0756.3	0756.3	0.1	10	1		
	260 ONDR	42 SER	0929	1020.8	107.	7			
	9240 ARCE	2 S/F	0933.6	0933.9	1				
	930 BORD	3 S	1239	1240.8	5	11	3		
23	207 VORO	43 NS	0120	0240	100	11	8		
	3100 CRIM	2 S/F	0705	0708	10	6	2		
	260 ONDR	42 SER	0750	0756	24	10			
	260 ONDR	42 SER	1031	1048.8	26	8			
	260 ONDR	4 S/F	1228.3	1229.2	1.5	35			
	207 VORO	42 SER	2330	2338	17	35			
24	207 VORO	43 NS	0150	0240	70	10	8		
	260 ONDR	44 NS	0755 E		379 D	6			
25	3100 CRIM	2 S/F	0749	0915		2			
	1420 ARCE	20 GRF	0826.2	0834	13.5				
	9240 ARCE	40 F	0829.1	0829.3	4				
	9240 ARCE	40 F	0914	0917	6.5				
26	260 ONDR	42 SER	0800		22	5			
	260 ONDR	43 NS	1104	1259.5	186 D	20			
28	18 MCMA	6 S	1632	1633	2				
29	9240 ARCE	3 S	1101.6	1102	0.7				

Reports received from the following observatories:

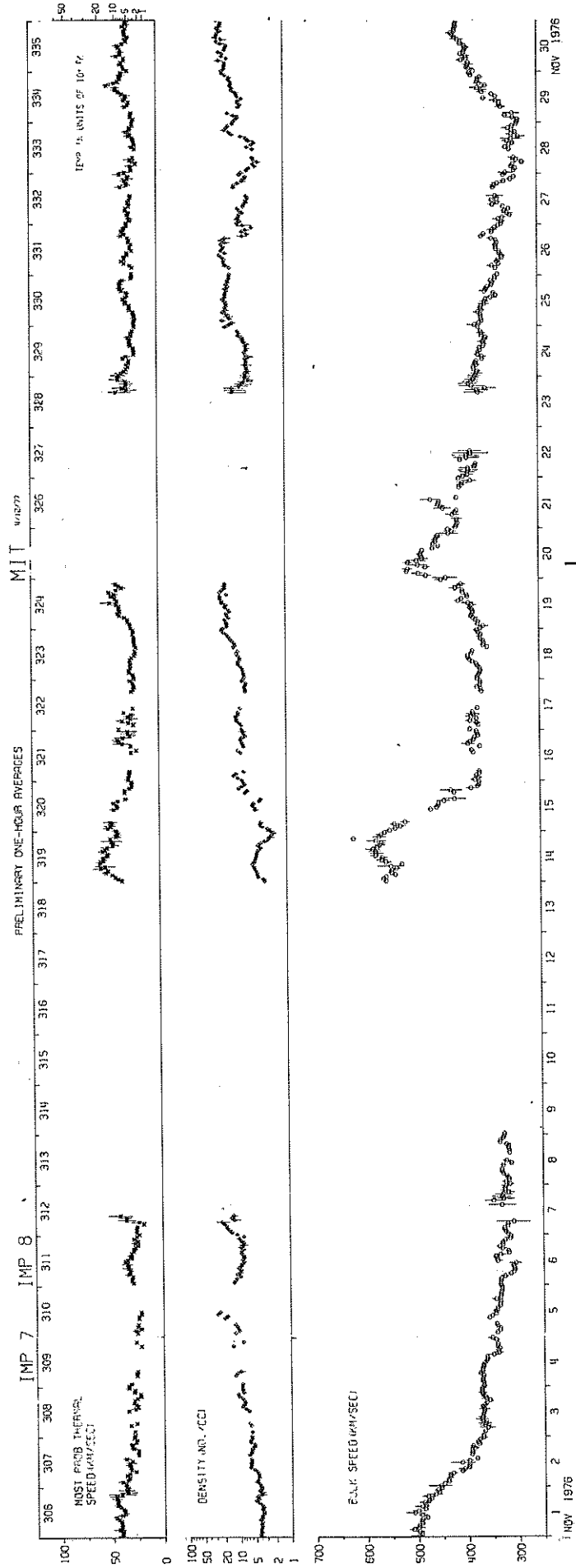
ARCE = Arcetri	DWIN = Dwingelloo	KIEV = Kiev	OTTA = Ottawa	SYDN = Sydney
BERL = Berlin-Adlershof	GORK = Gorky		PENT = Penticton	TORN = Torun
BORD = Bordeaux	HARS = Harestua	MANI = Manila	POTS = Potsdam	TYKM = Toyokawa
BOUL = Boulder	HIRA = Hiraio	MCMA = McMath-Hulbert	SAOP = Sao Paulo	TRST = Trieste
CRIM = Simferopol	HUAN = Huancayo	ONDR = Ondrejov	SGMR = Sagamore Hill	VORO = Voroshilov (Ussurisk)
	IRKU = Irkutsk			

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 +

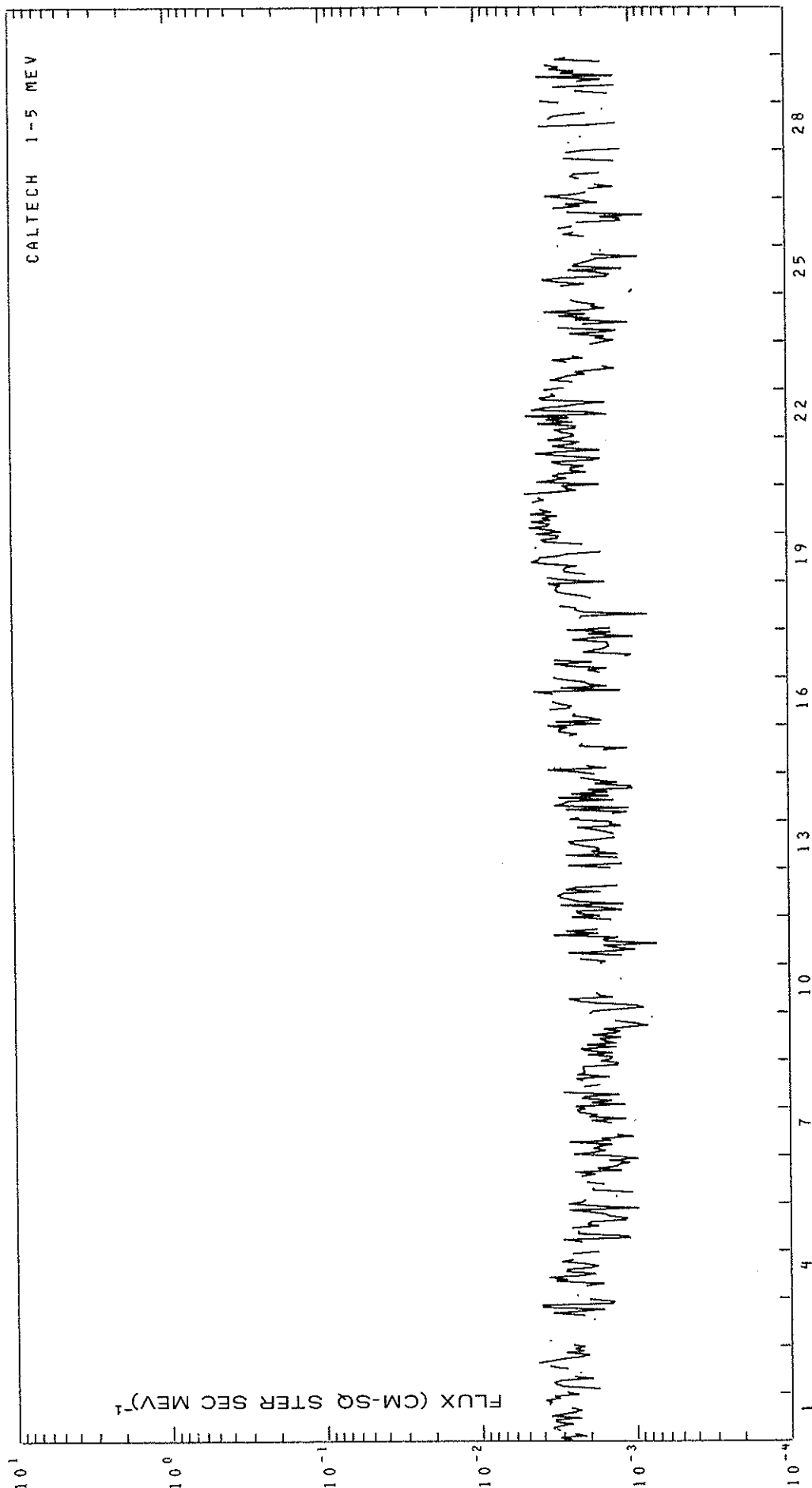
IMP 7 AND 8 SOLAR WIND PLASMA

NOVEMBER 1976



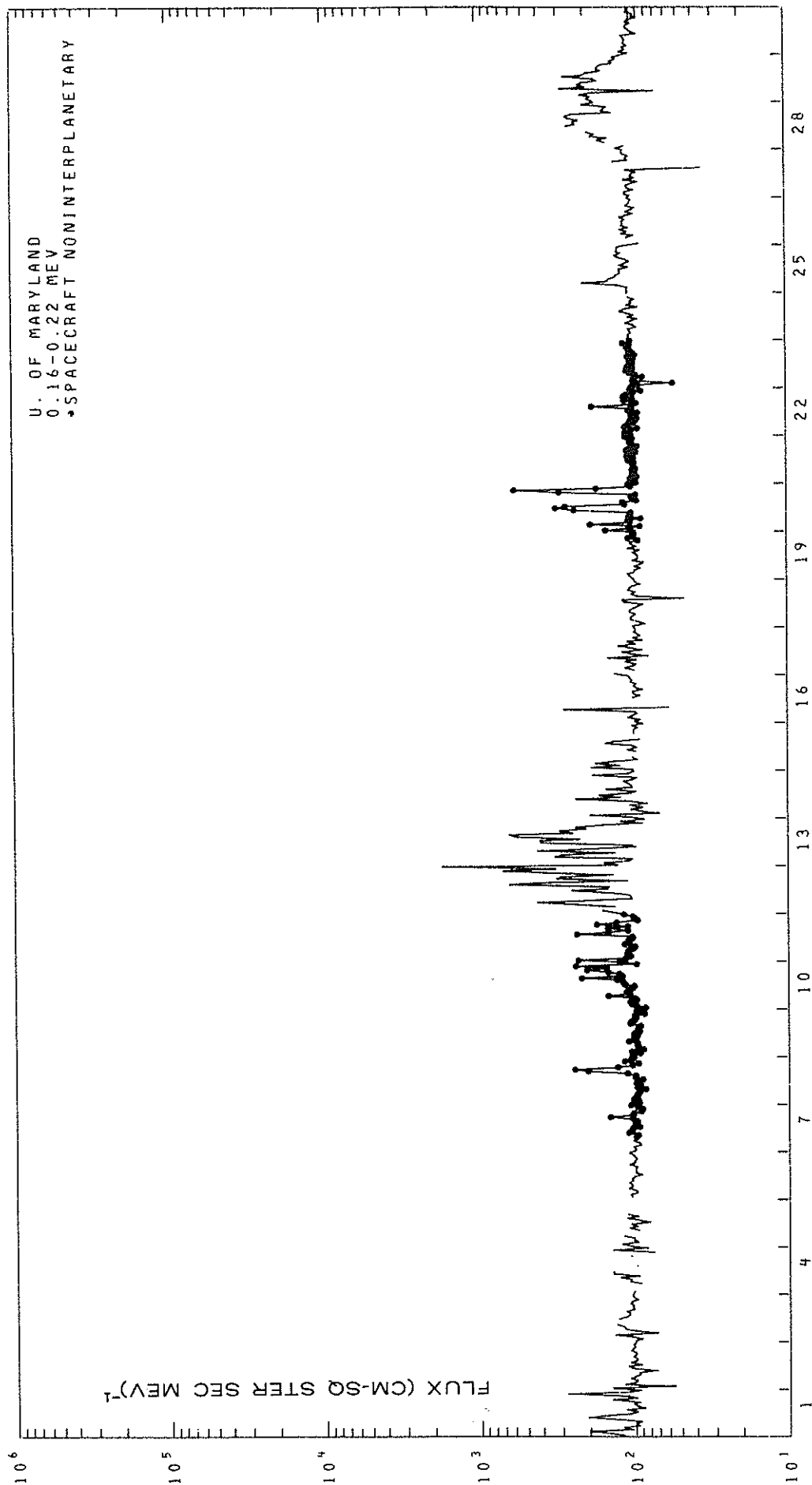
IMP 7 AND 8 ELECTRONS

NOVEMBER, 1976



IMP 7 AND 8 LOW ENERGY PROTONS

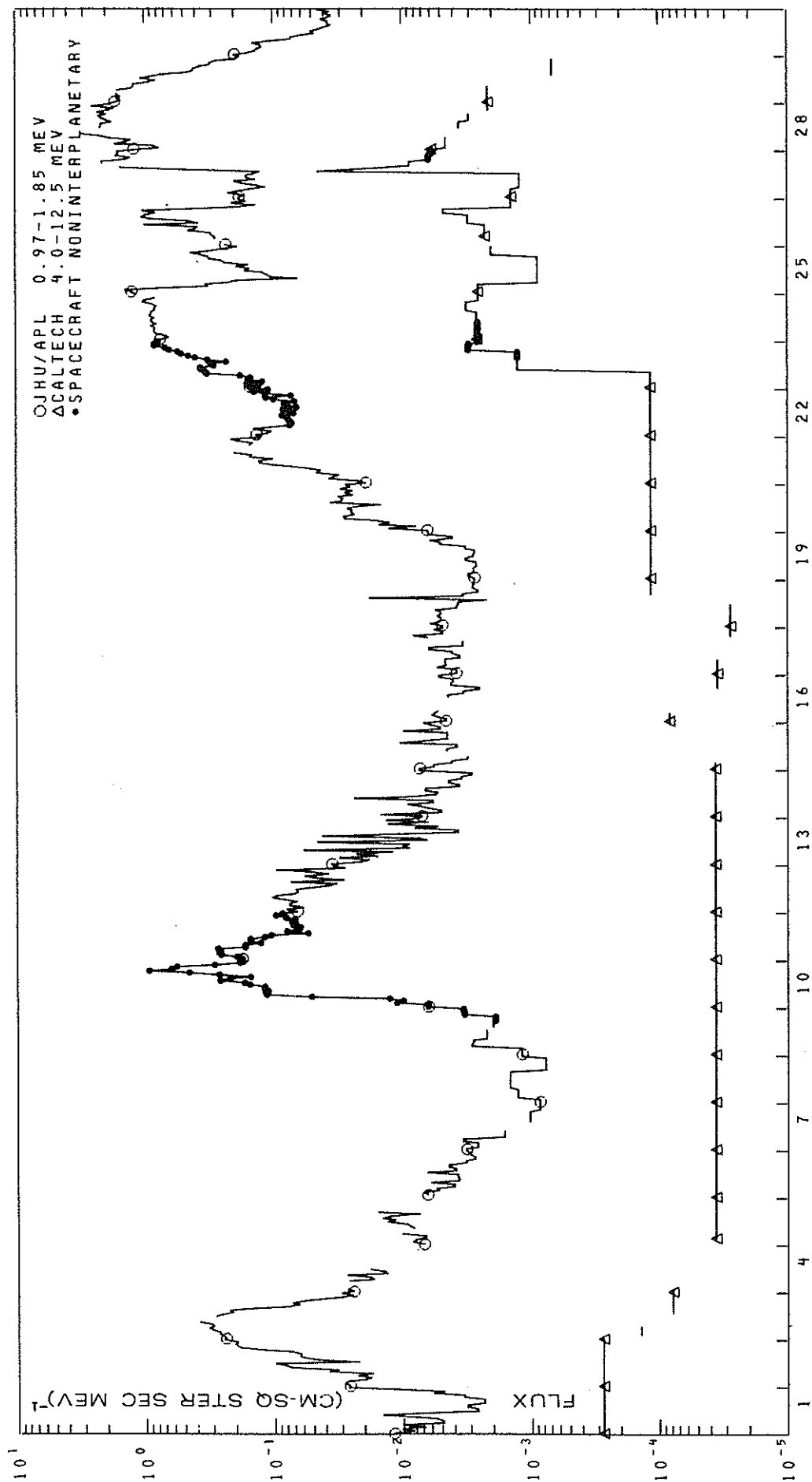
NOVEMBER, 1976



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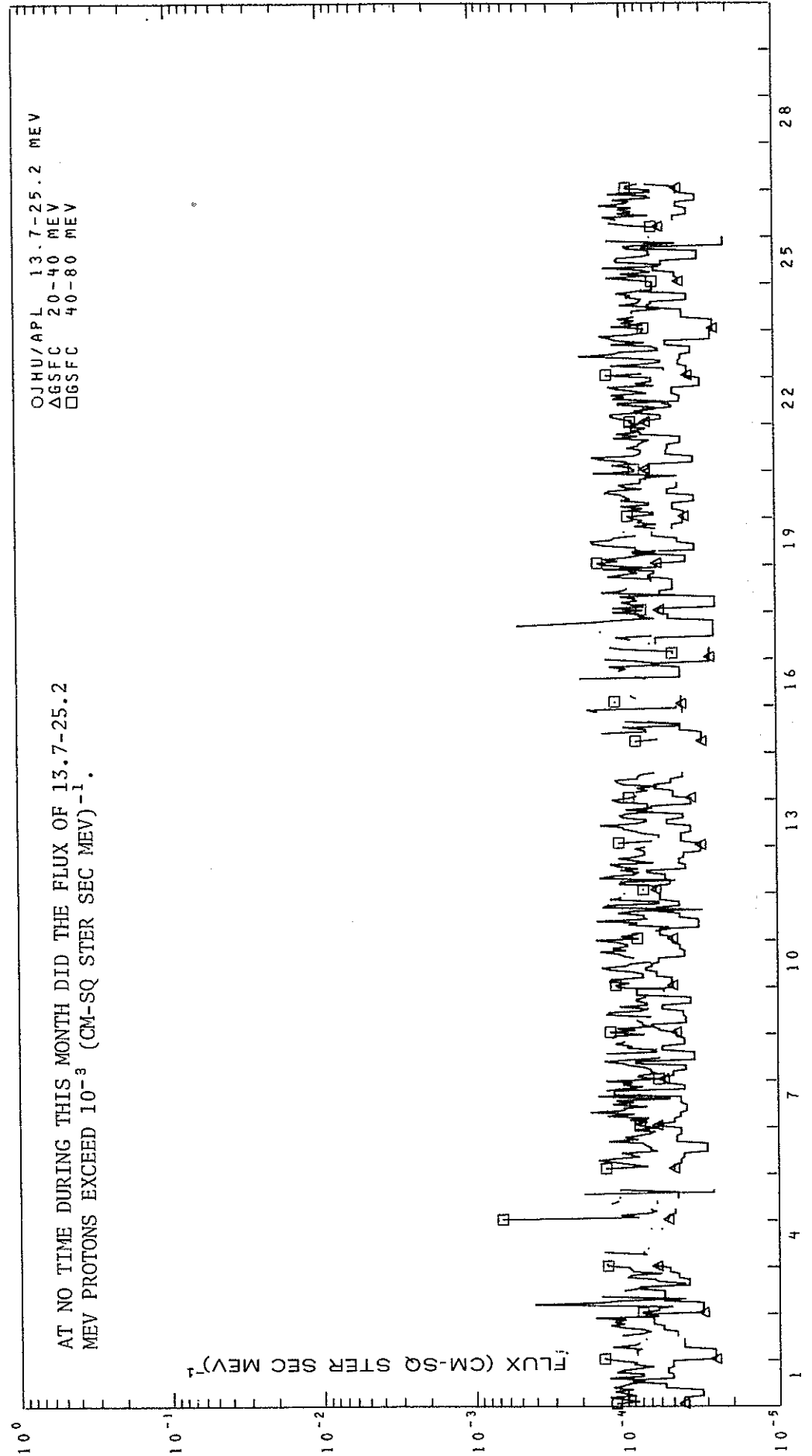
IMP 7 AND 8 INTERMEDIATE ENERGY PROTONS

NOVEMBER, 1976



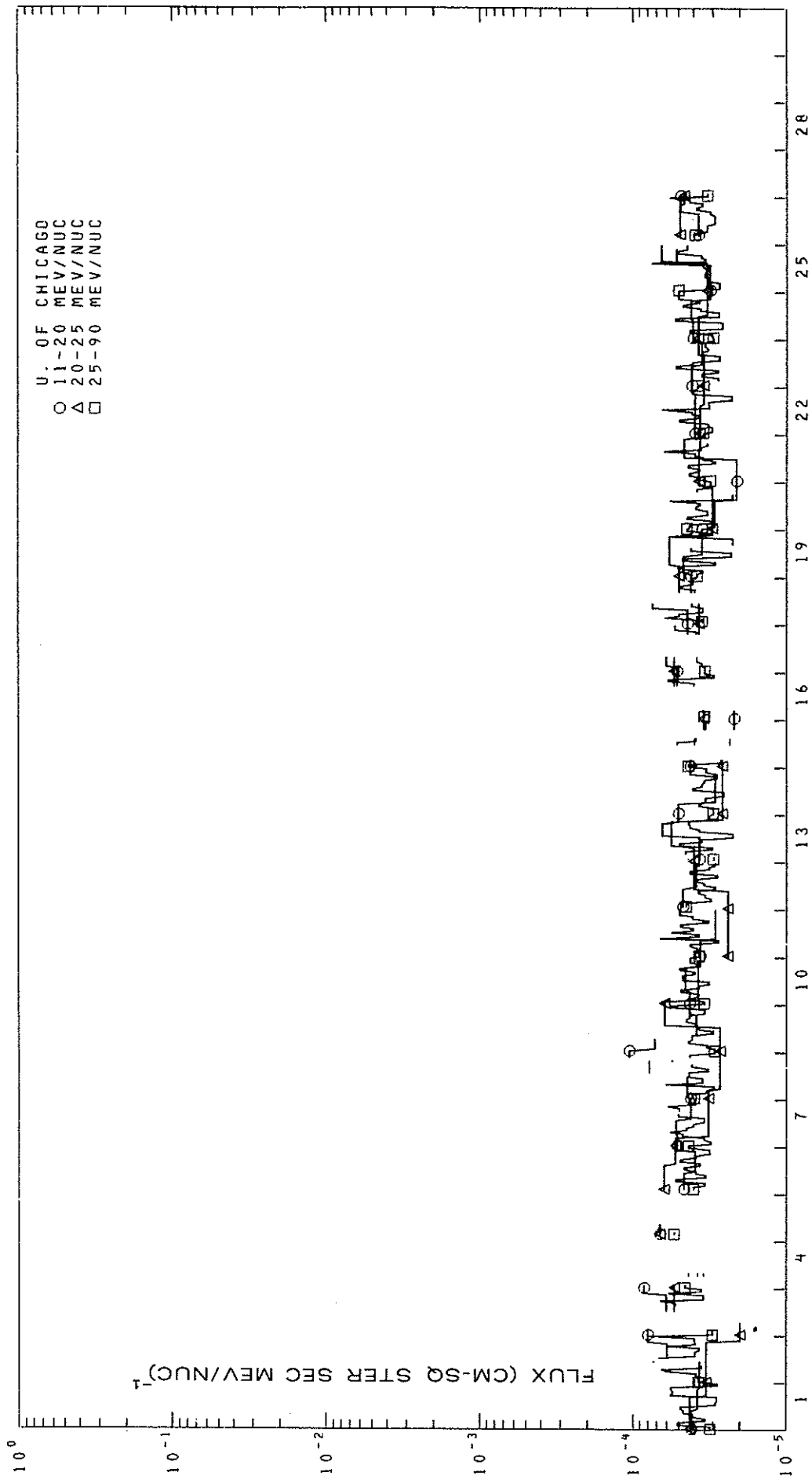
IMP 7 AND 8 HIGH ENERGY PROTONS

NOVEMBER, 1976



IMP 7 AND 8 ALPHA PARTICLES

NOVEMBER, 1976



OCTOBER 1976 DATA

Contents

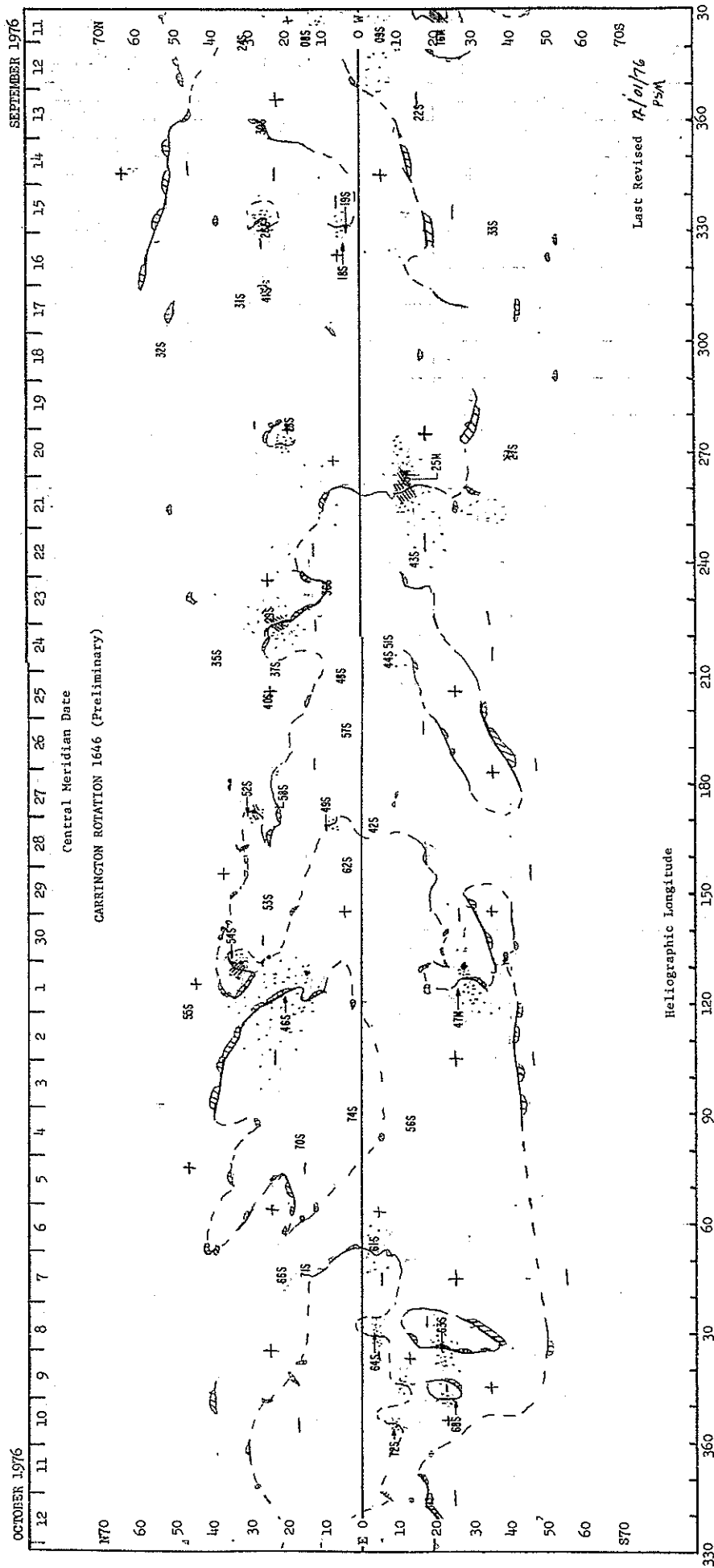
	Page
<u>Hα Synoptic Chart</u>	22-23
<u>Abbreviated Calendar Record</u>	24-31
<u>Regional Flare Index</u>	31

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ABBREVIATED CALENDAR RECORD

H α SYNOPSIS CHART

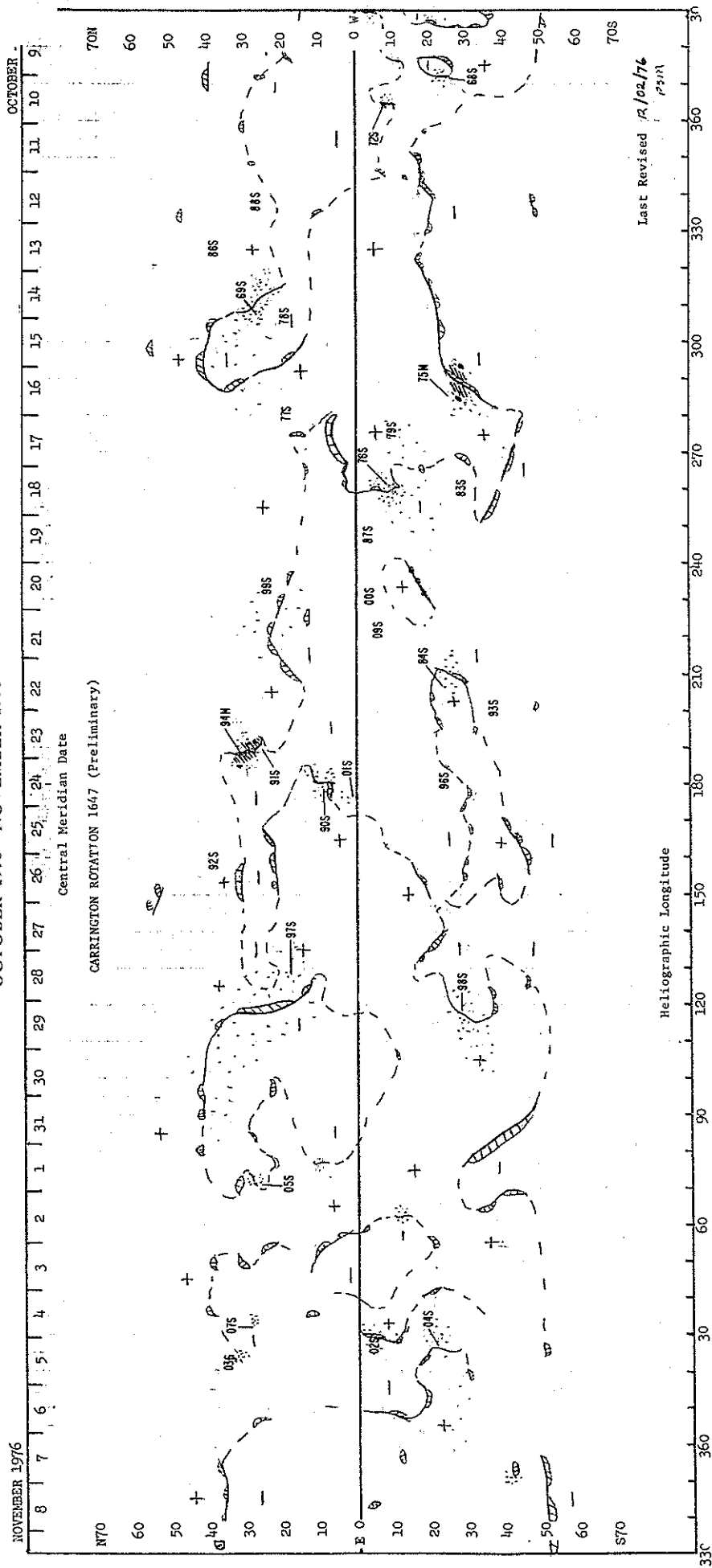
SEPTEMBER 1976 - OCTOBER 1976



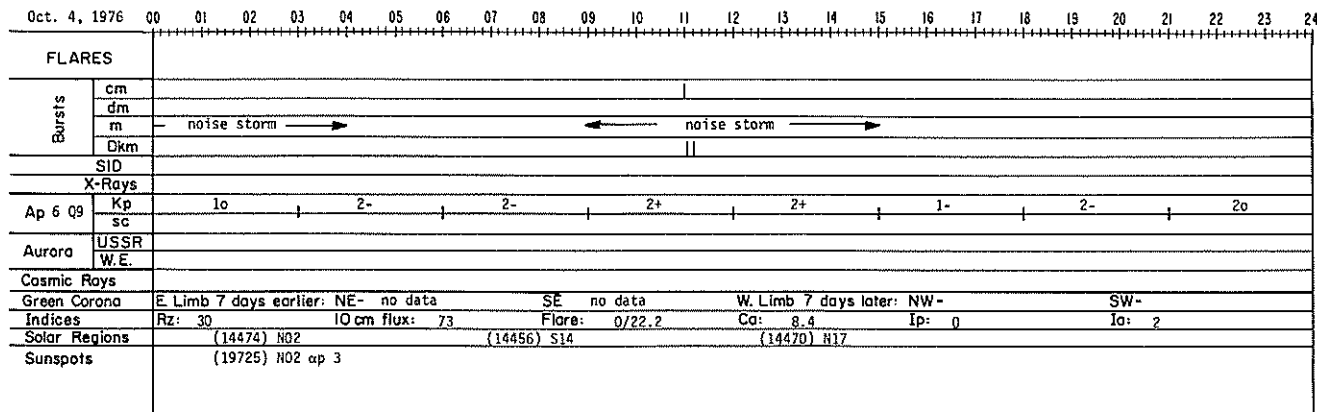
ABBREVIATED CALENDAR RECORD

H α SYNOPTIC CHART

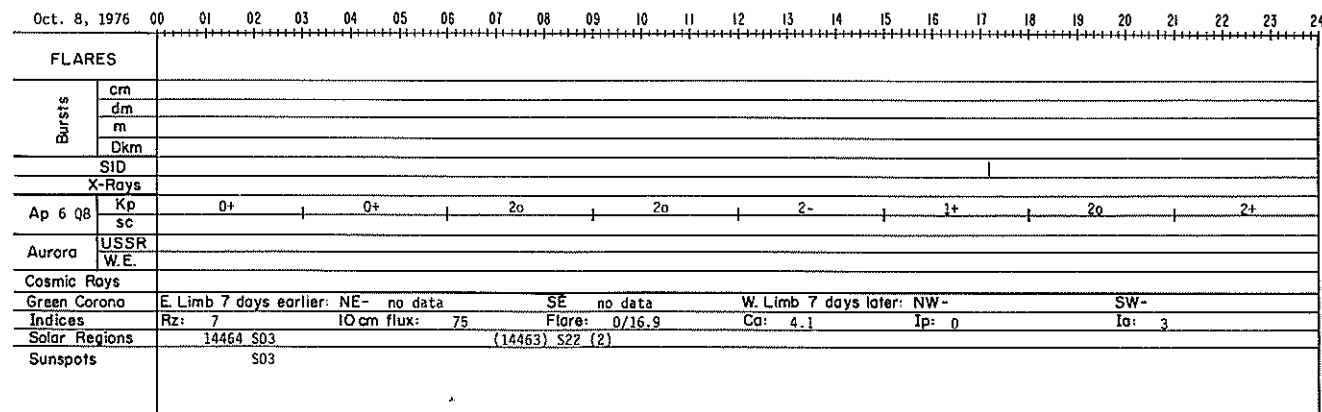
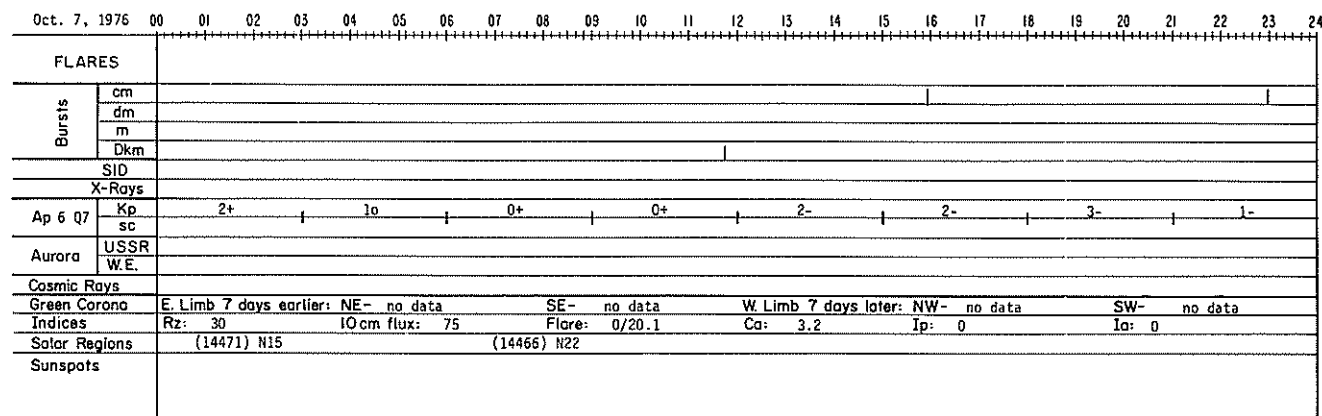
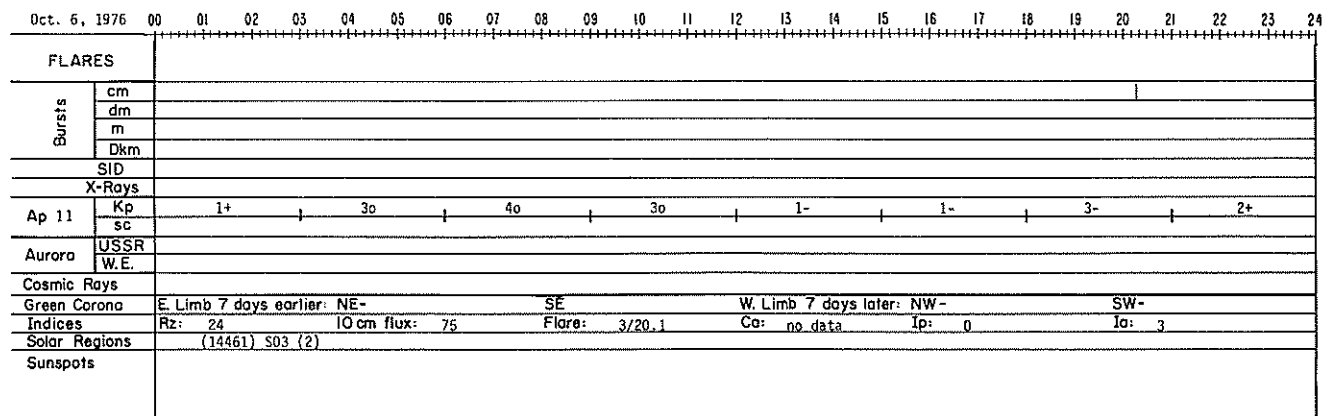
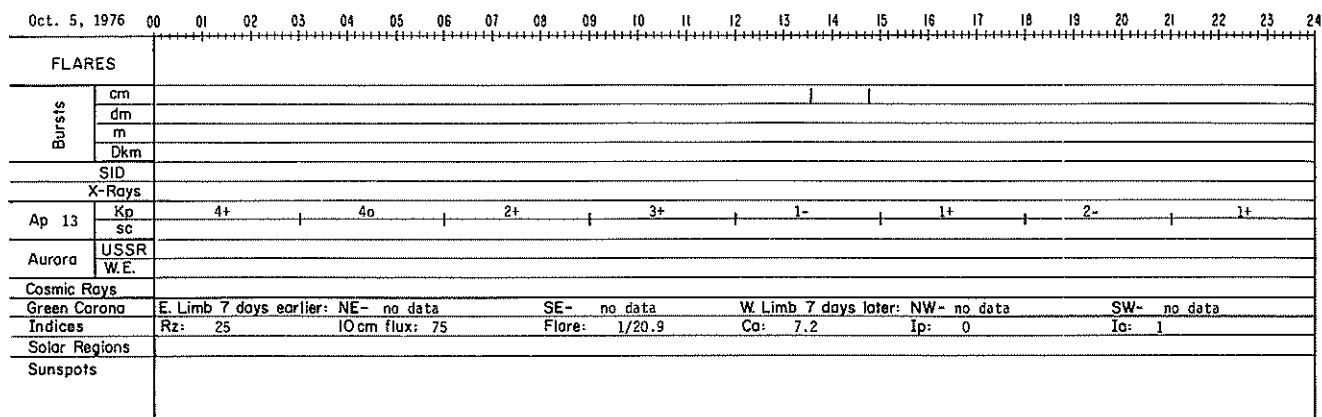
OCTOBER 1976 - NOVEMBER 1976



ABBREVIATED CALENDAR RECORD



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Oct. 9, 1976																									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	20		2+		1+		2-		20		1+		20		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- no data					SW- no data																											
Indices	Rz:	14	IOcm flux: 75					Flare: 0/19.1					Ca: 3.8					Ip: 0					Ia: 3																										
Solar Regions																																																	
Sunspots																																																	

Oct. 10, 1976 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	Kp	2-		2-		1+		1+		1-		2+		2-		3-									
	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: 0					IO cm flux: 75				Flare: 0/17.0				Ca: 5.4				Ip: 0				Ia: 1			
Solar Regions	14468 S25 (14472) S09																								
Sunspots	(19724) S22 α 3 19726 S23 α 1																								

Oct. 11, 1976																									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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Ap 8	Kp	4-			2-				10					1-					1+				2-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

Oct. 12, 1976																									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	3- 3o 1o 0+ 2- 2o 4o 5-																																															
	sc																																																
Aurora	USSR	φ = 56° 1900-2200 (HA1)																																															
	W.E.																																																
Cosmic Rays																																																	
Green Corona	E Limb 7 days earlier: NE- no data 25° SE W. Limb 7 days later: NW- no data SW- no data																																																
Indices	Rz: 13 10 cm flux: 74 Flare: 0/20.0 Ca: 7.1 Ip: 0 Ia: 2																																																
Solar Regions	(14488) N26																																																
Sunspots																																																	

Oct. 13, 1976 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

Oct. 14, 1976	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
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Oct. 15, 1976	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
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Oct. 16, 1976 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 29 Ø	Kp sc	6-		5-		5-		4-		3o		2+		3+		4-	
Aurora	USSR W.E.	φ = 58° 2300 (HR1)															
Cosmic Rays																	
Green Corona	E Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- no data SW- no data																
Indices	Rz: 28	10 cm flux: 78				Flare: 5/14.5				Ca: 12.9				Ip: 0		Id: 7	
Solar Regions	14475 S26 (14477) N18																
Sunspots	19728 S27 Bf 4																

28
Oct 76

Oct. 17, 1976		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 30 D3	Kp	3+ 4o 5+ 4+ 5+ 3+ 3o 4-																									
	sc																										
Aurora	USSR	$\phi = 60^{\circ}$ 1000 (R ₂ R ₁)																									
	W.E.																										
Cosmic Rays																											
Green Corono	E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data																										
Indices	Rz: 31 IOcm flux: 78 Flare: 0/17.0 Co: 13.5 Ip: 0 Io: 4																										
Solar Regions	14479 S10 (3)																										
Sunspots																											

Oct. 18, 1976 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 19	Kp	5-			4o			4-			3o			3+			3-			3o			2o		
	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: 24 10 cm flux: 78 Flare: 0/21.6 Ca: 12.3 Ip: 1 Ia: 5																								
Solar Regions	14476 S09 (14483) S28																								
Sunspots	19729 S09 of 3 CMP Oct. 19																								

Oct. 19, 1976 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 7	Kp	0+ 00 0+ 2- 30 4- 20 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: 20 10cm flux: 77 Flare: 5/14.1 Ca: no data Ip: 0 Ia: 5																								
Solar Regions	(14487) S03																								
Sunspots																									

Oct. 20, 1976 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 7	Kp	30		20		2-		2-		10		2-		2-		2+									
	sc																								
Aurora	USSR																								
	W.E.																								
Cosmic Rays																									
Green Corona	E Limb 7 days earlier: NE- SE W Limb 7 days later: NW no data 310°, 335° SW-																								
Indices	Rz: 19	10 cm flux: 76				Flare: 0/17.2				Ca: 9.7				Ip: 0				Ia: 0							
Solar Regions	(14499) N23 (14500) S04																								
Sunspots																									

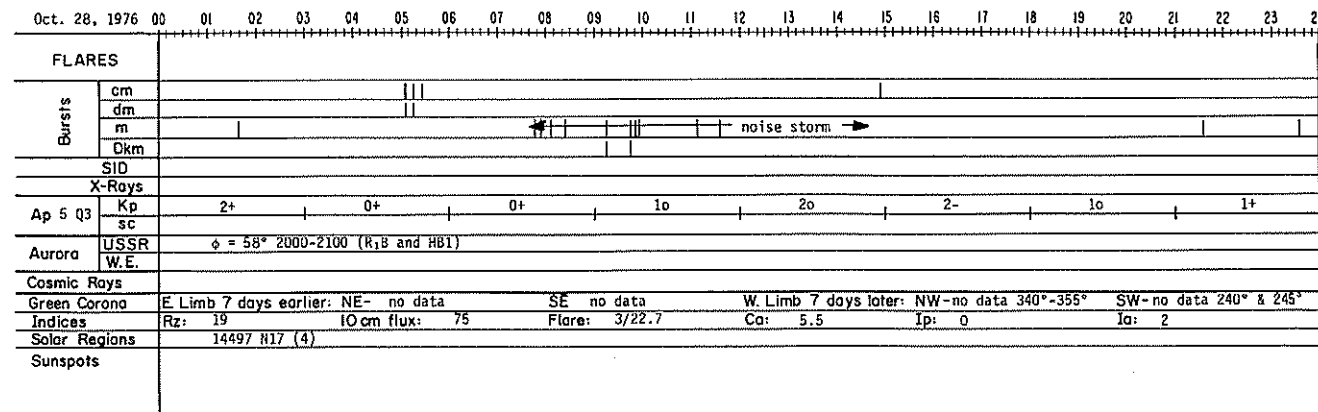
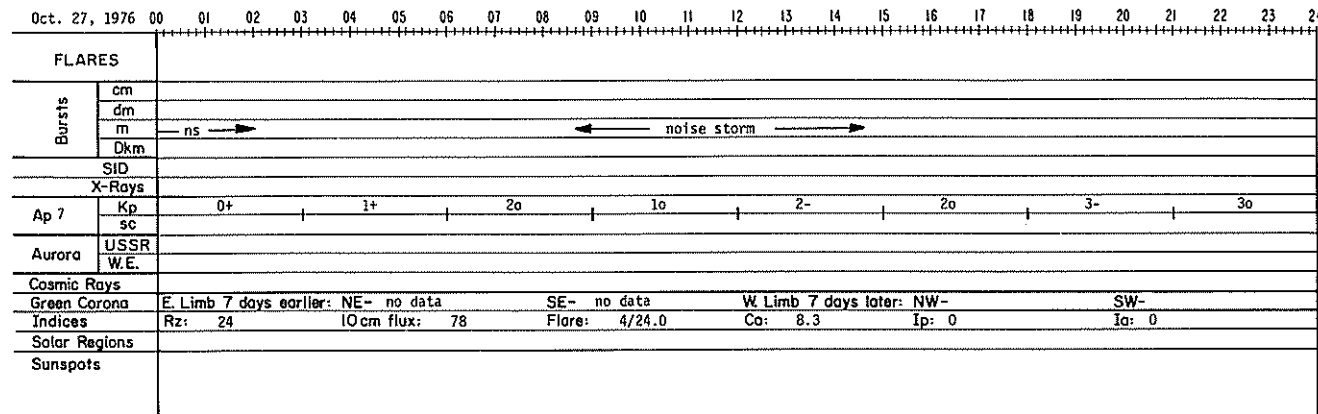
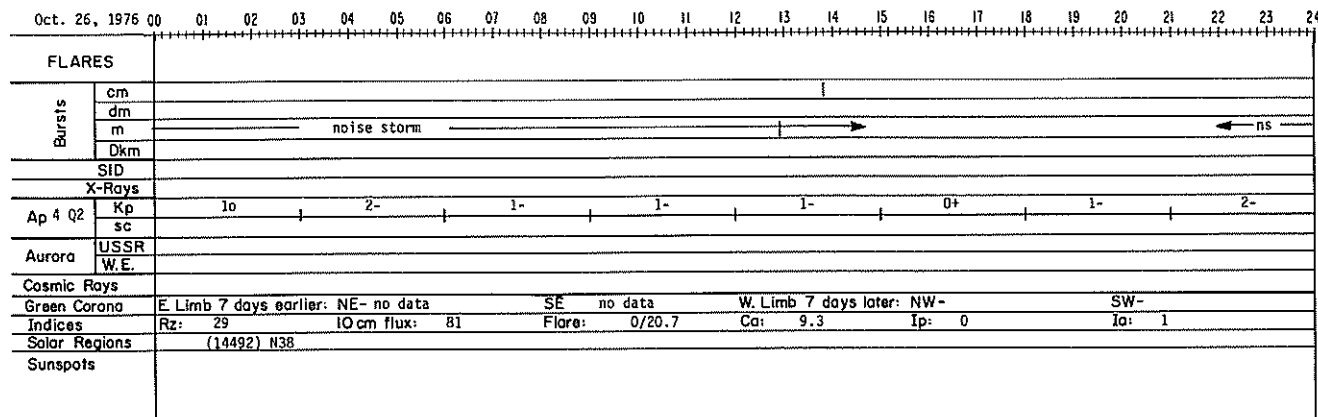
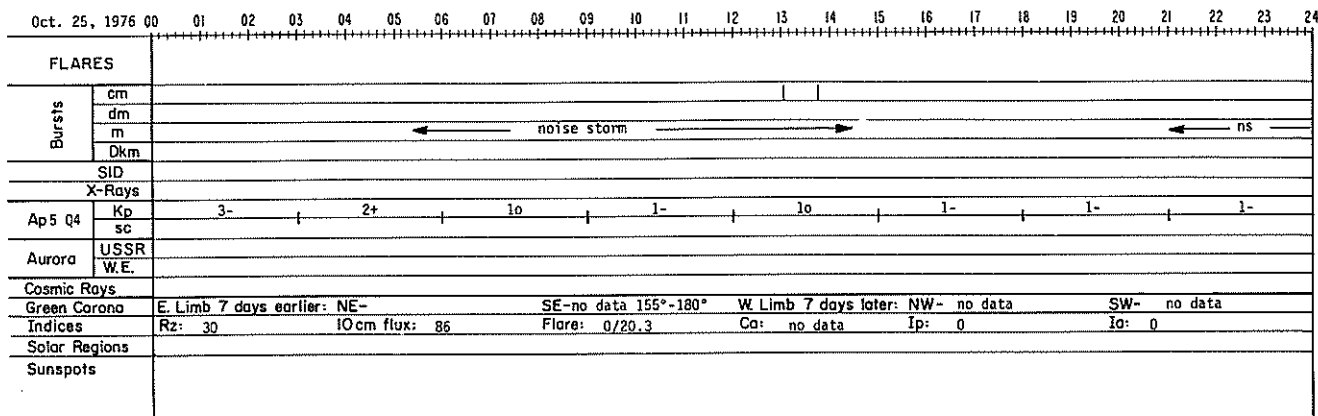
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Oct. 23, 1975	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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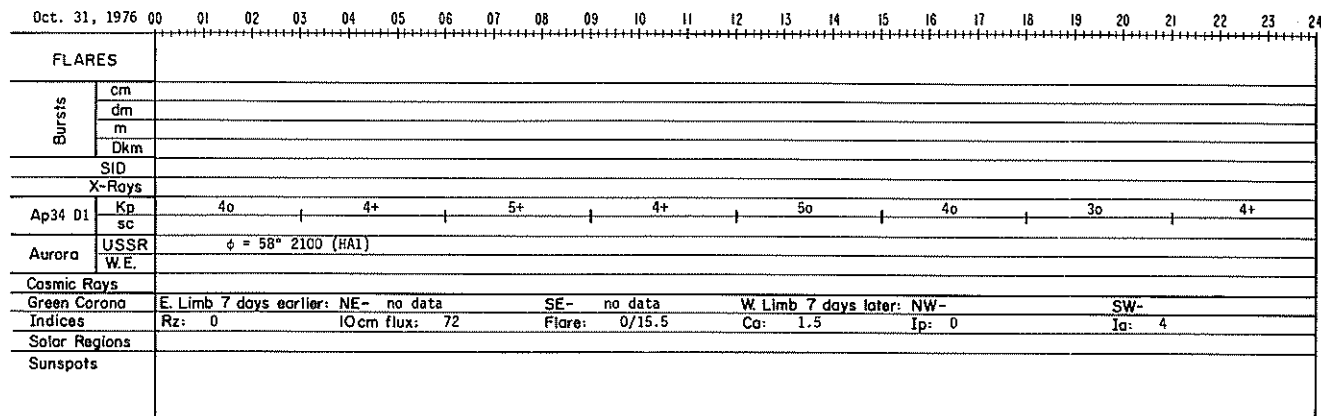
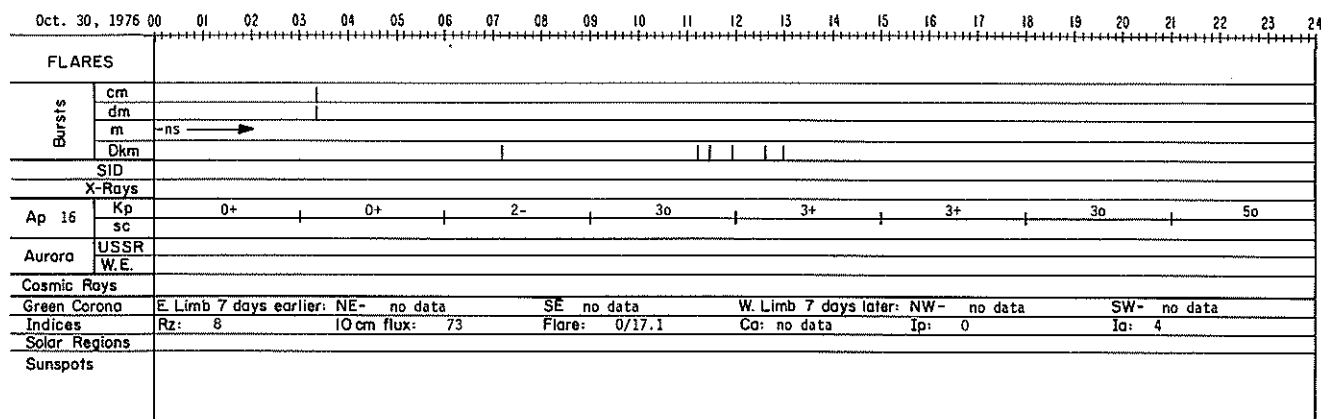
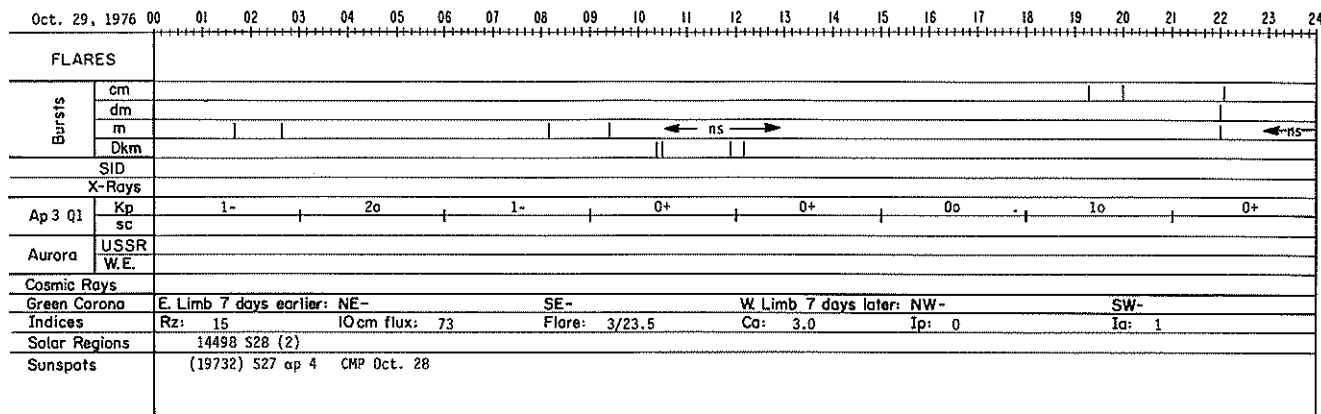
Oct. 24, 1976	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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0001-24, 1978															
FLARES															
Bursts	cm														
	dm														
	m														
	Dkm														
SID															
X-Rays															
Ap6 Q6K	Kp	1-	0+	1a	1a	1-	2-	3+	1+						
	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: 30	10 cm flux: 81		Flare: 0/21.8		Ca: no data			Ip: 0		Ia: 0			
Solar Regions		(14496) S24		14490 N08		(14501) N01									
Sunspots															

30
Oct 76



31
Oct 76



REGIONAL FLARE INDEX INCLUDES ALL FLARES

MC MATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
14454	N34	76/10/01.0	76/10/05	76/10/05	.51	.51	1
14468	S24	76/10/10.0	76/10/06	76/10/06	3.21	3.21	2
14475	S27	76/10/16.5	76/10/16	76/10/23	15.32	1.91	5
14476	S 9	76/10/18.3	76/10/13	76/10/15	9.91	3.30	4

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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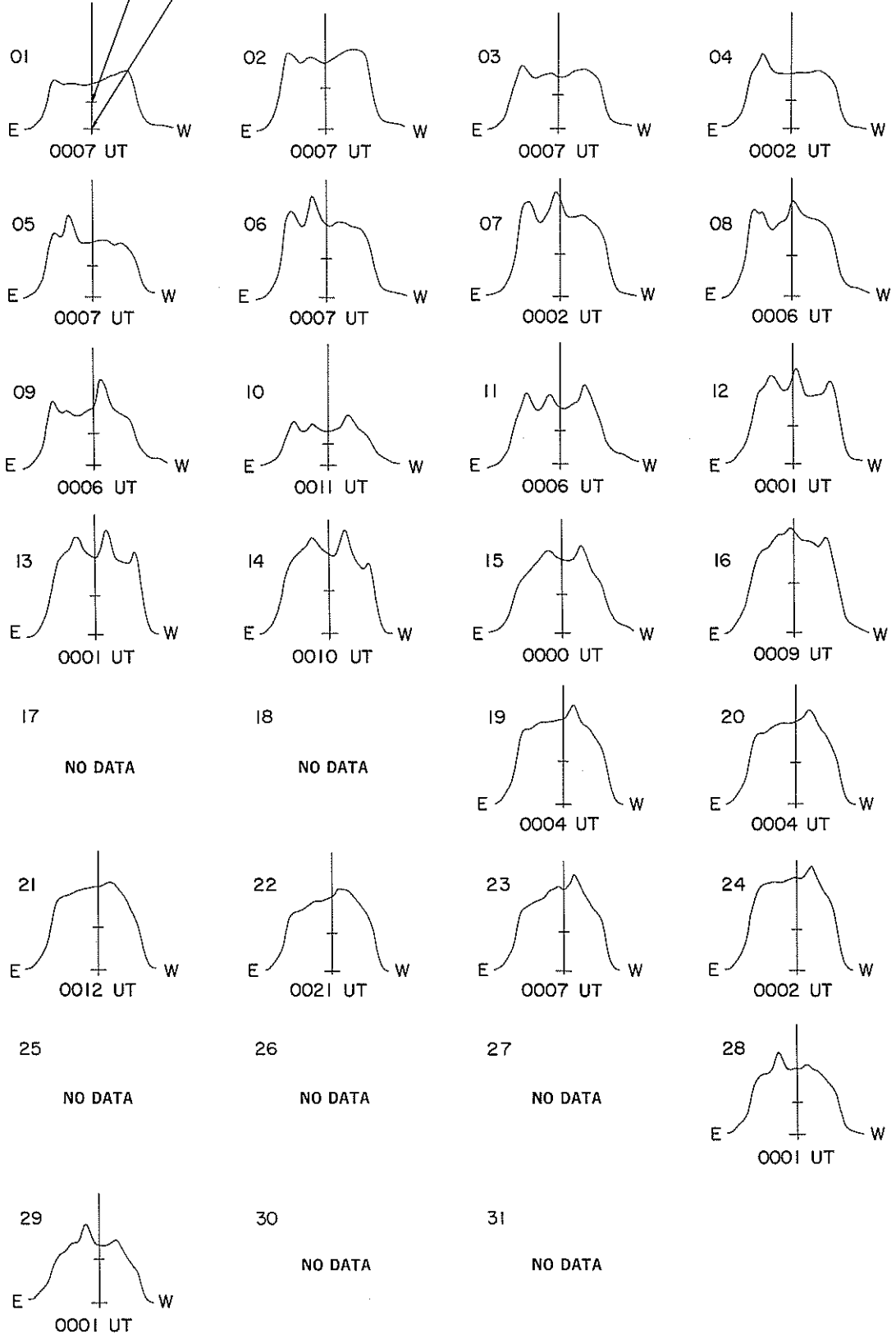
EAST-WEST SOLAR SCANS

MARCH 1977

Fleurs, Australia

ESTIMATED QUIET SUN LEVEL
COLD SKY LEVEL

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



EAST-WEST SOLAR SCANS

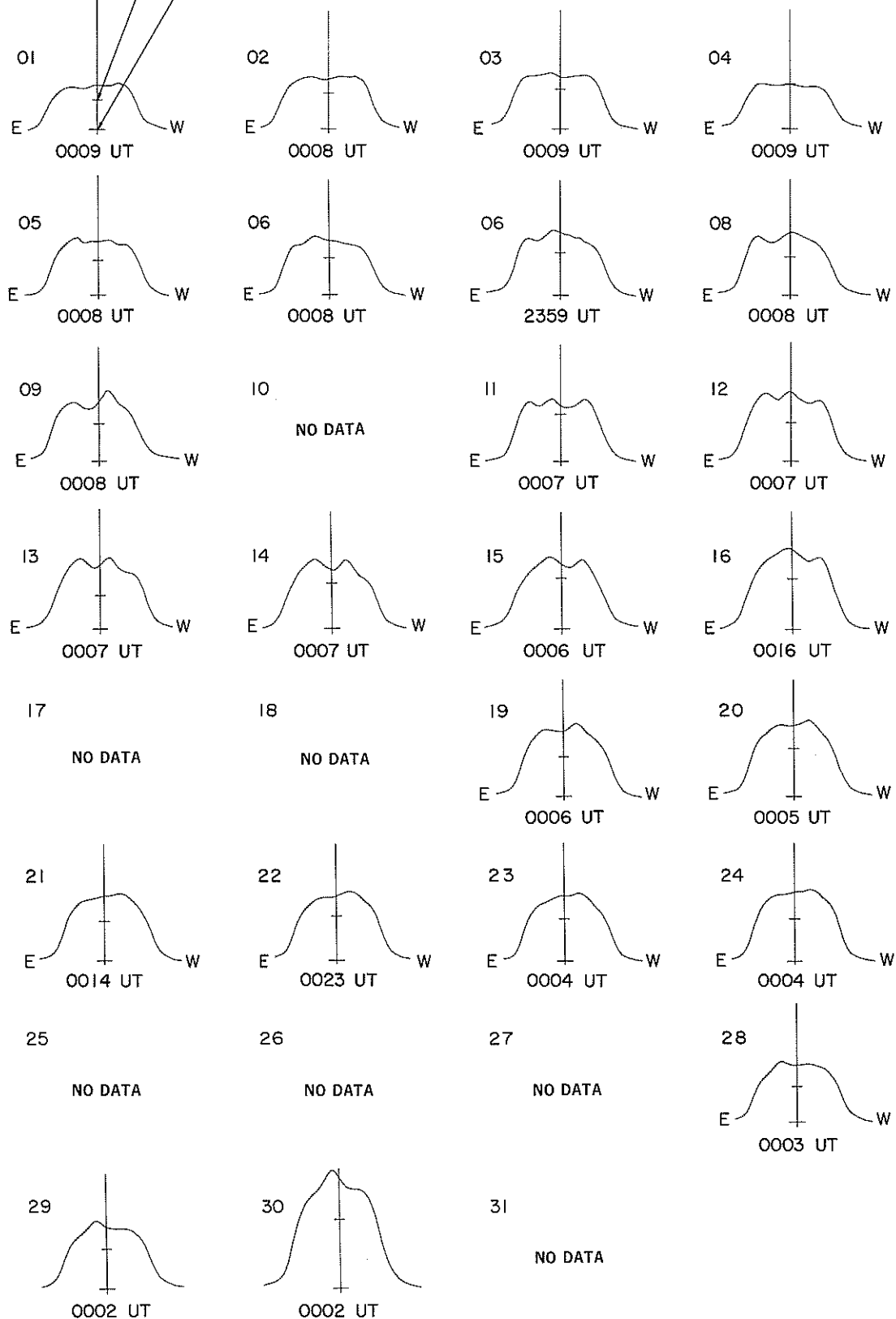
MARCH 1977

Fleurs, Australia

ESTIMATED QUIET SUN LEVEL

COLD SKY LEVEL

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

FEBRUARY 1977

37
Misc
Feb 77

	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE						
	START UT	END UT		DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND									
				START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT							
01	0000	0745	CULG CULG CULG CULG	0714	0714.5	1	0101.5 0116	0117.5	1				IIIB,W IIIG,U IIIG						
	2045	2400																	
02	0000	0746	CULG CULG										0020.5	0023				IIIGG,W	
	2046	2400																	
03	0000	0746	CULG CULG										0714					IIIB,W	
	2046	2400																	
04	0000	0729	CULG CULG																
	2046	2400																	
05	0000	0746	CULG CULG																
	2046	2400																	
06	0000	0746	CULG CULG																
	2046	2400																	
07	0000	0746	CULG CULG																
	2046	2400																	
08	0000	0746	CULG CULG CULG CULG CULG CULG CULG CULG CULG CULG	0333.5	0334.5	1	0332 0333.5 0355.5 0715.5	0332.5 0334.5 0357	1 1				IIIG,U IIIG IIIG,W,U IIIB,W IS,W IIIN,W IIIB,U IS						
	2046	2400							2046 2139 2139 2200				2200 2400						
									2209				2211	3	2209.5	2210.5	2	IIIG,V IIIGG	
													2322	2325.5	2				
09	0000	0731	CULG CULG CULG CULG CULG CULG CULG CULG CULG CULG	0500	0731	1	0000 0000 0444	0530 0731	1 1				IIIN IS,W IIIB,U IS,W IIIS UNCLF. IIIGG IIIS,W IIIG IS,W IIIGG IIIN,W						
	2046	2400							0530 0640 0716 2046 2150 2205 2226 2250				0731 0650 0721 2250 2152 2310 2229 2400	1 1 1 1 1 1					
10	0000	0746	CULG CULG CULG CULG CULG CULG CULG CULG CULG CULG CULG CULG CULG				0003 0218 0348 0356 0411.5 0453 0732 0737.5	0415 0400 0412 0505 0732.5	2 1				IIIB,W IIIB,W IIIN,W IIIGG,V IIIG IS,W IIIG,W IIIB,W IIIG,W IIIGG,U IIIB,W IIIB,W IIIGG,V,U IIIG,V,U IIIGG IIIB						
	2046	2400							2051 2053.5 2057 2104.5 2107.5 2128.5 2131.5 2341				2052 2056	2	2054	2056	1		
11	0000	0746	CULG CULG CULG CULG CULG CULG	0740	0741	1	0019.5 0053.5 0720 0739	0746 0055 0739 0746	1 1 1				IIIN,W IIIG IS,W IS CONT,P UNCLF						
									0740				0741	2					

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Misc
Feb 77

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

FEBRUARY 1977

	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT			START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	
11	2046	2400	CULG CULG CULG CULG CULG CULG	2046	2400		0742.5 2046 2046	0744 2400 2400	1 1 1				IIIGG IS,DC IIIS IS,W IIIB IIIG
				2232.5	2233	1	2123 2232.5		1 1	2232.5	2233.5	1	
12	0000	0746	CULG CULG CULG CULG CULG	0000	0746		0000 0000 0244.5 0733	0746 0746					IIIS,W IS,W IS,DC IIIB IIIG
	2046	2400		2046	2400		2046 2046	2400 2400	2 1				IS,W IIIS
13	0000	0746	CULG CULG CULG CULG CULG	0000	0746		0000 0000 0500 2046	0746 0500 0746 2400					IS,W IIIS,W IIIN,W IIIN,W
	2046	2400					2046 2119 2257 2304 2345.7	2400 2121 2300.5 2305 2347	1 2 2 1	2257 2304.5 2345.5	2300.5 2305 2346	1 1 1	IIIG IIIGG IIIG IIIG
14	0000	0731	CULG CULG CULG CULG CULG	0013.5	0014	1	0000 0000 0013 0020	0400 0731 0014 0023					IIIN,W IS,W IIIG IIIGG
				0023.5	0024.5	1	0023.5 0028.5 0534 0727.5	0024.5 0024.5 0534.5 0728	2 1 1 1	0023.5	0024	1	IIIG IIIB IIIG IIIG IIIS,W IS,W IIIN,W
	2046	2400	CULG CULG				2046 2046 2200	2200 2125 2400					
15	0000	0746	CULG CULG CULG CULG CULG	0400	0600		0000 0136 0320	0320 0615 0540					IIIN,W IS,W IIIS,W IS,W IIIN,W IIIB,W IIIG,W
	2046	2400	CULG CULG				0540 2057 2340	0746 2343					
16	0000	0746	CULG CULG CULG CULG CULG	0422	0422.5		0002.5 0230 0251	0410 0252					IIIB,W IIIN,W IIIG IIIG,W IIIG
							0439.5 0506 0623 0700	0440 0624	1 1 1 1	0506		1	IIIG IIIB IIIG IIIB IIIG
	2046	2400	CULG CULG CULG CULG CULG				0736 2046 2046 2136 2139	0737 2345 2400 2136.5 2140.5	1 1 1 2				IIIG IIIN,W IS,W IIIG,U IIIG,U
				2323 2325.5	2323.5 2327.5	1 1	2322.5 2325.5 2342	2323.5 2327.5 2344	1 1 1				IIIG IIIG IIIG
17	0000	0746	CULG CULG CULG CULG CULG				0140.5 0341 0437.5 0454.5	0342.5 0438	1				IIIB,W IIIG IIIG,W IIIG,W
	2046	2400					2057 2310	2057.5 2335					IIIG,W IIIN,W
18	0000	0746	CULG				0232.5		1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

FEBRUARY 1977

	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
	START UT	END UT		DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
				START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
18			CULG				0459						IIIB,W
			CULG				0528.5						IIIB,W
			CULG	0615	0616	1	0615	0616	1				IIIG,U
			CULG				0701						IIIB,W
			CULG				0716.5						IIIB,W
			CULG				0737.5	0739					IIIG,W
	2046	2400	CULG				2046	2155					IIIN,W
19	0000	0746	CULG				0745.5						IIIB,W
	2046	2125	CULG				2046	2111					IIIN,W
	2108	2400	CULG				2224	2225	1				IIIG
20	0000	0746	CULG	0302	0410								IS,W
			CULG				0427.5						IIIB,W
			CULG				0449.5						IIIB,W
			CULG				0523.5						IIIB,W
	2046	2400	CULG				2143	2303					IIIN,W
			CULG	2253	2257	1	2230	2400	1				IS
21	0000	0746	CULG				0000	0255	1				IS
			CULG				0102	0608					IIIN,W
			CULG				0249		2				IIIB
			CULG				0518	0520	2				IIIG
			CULG				0529		1				IIIB
	2046	2400	CULG				2108.5	2257					IIIN,W
22	0000	0745	CULG				0220.5						IIIB,W
			CULG				0509						IIIB,W
	2046	2400	CULG										
23	0000	0728	CULG				0008						IIIB,W
			CULG				0011						IIIB,W
			CULG				0110.5	0111					IIIG,W
			CULG				0542						IIIB,W
			CULG				0551	0552					IIIG,W
	2045	2314	CULG										
	2335	2400	CULG										
24	0000	0015	CULG										
	0130	0745	CULG				0649.5						IIIB,W
			CULG				0703.5	0704.5					IIIG,W
			CULG				0710	0745					IS,W
			CULG				2046						IIIB,W
	2045	2206	CULG				2110.5	2111					IIIG,W
			CULG										
	2233	2400	CULG										
25	0015	0032	CULG				0027.5	0028	1				IIIG
	0423	0745	CULG										
	2045	2400	CULG				2150.5	2151					IIIG,W
			CULG				2249.5	2250.5	1				IIIG
26	0000	0745	CULG										
	2045	2400	CULG										
27	0000	0745	CULG				0312.5	0314	1				UNCLF.
	2045	2400	CULG										
28	0000	0745	CULG										
	2045	2400	CULG				2058	2059.5	2				IIIG,U
			CULG				2214						IIIB,W

The symbols used in connection with the spectral type in describing the important bursts are as follows:

b = Single burst
 G = Small group (< 10) of bursts
 GG = Large group (> 10) of bursts
 C = Underlying continuum (particularly with type I)
 S = Storm in the sense of intermittent but
 apparently connected activity
 N = Intermittent activity in this period
 U = U-shaped burst of Type III

RS = Reverse slope burst
 DP = Drifting pairs
 DC = Drifting Chains
 H = Herringbone
 W = Weak
 P = Pulsations
 CONT = Continuum
 UNCLF = Unclassified activity

40
Misc
Jan 77

SELECTED SOLAR EVENTS JANUARY 1977

Culgoora

UT Date 1977	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions		Polar- ization	Inten- sity (1-3)		
				Central Dist. (R _g)	Position Angle (Deg.)				
JANUARY									
2	0000	0500	160	1.0	265	r	1	I	‡
	0301.5	0302.5	43.25 } 80 } 160 }	1.0	270 } 260 } 265 }	-	3 3 2	IIIG	*
2/3	2300	0500	80 } 160 }	1.1 } .9 }	320	l	1	I	‡ Type I emission continued from this source until 7th
4	0015.5		80	1.0	320	-	2	IIIB	*
12/13	2300	0500	80 } 160 }	.7	170	Varying	1	I	‡ Type I emission continued from this source until 21st
17/18	2300	0500	160	.9	20	l	1	I	‡ Type I emission continued from this source until 19th
23	2300	0500	160	.1	320	r	1	I	Persisted until 24th
28	2300	0500	160	.9	230	r	1	I	Persisted until 29th
31	0433	0500	80 } 160 }	1.1 1.0	50		1	I	

Days without Heliograph observations: Nil

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

‡ Type III activity associated with this region

SELECTED SOLAR EVENTS

FEBRUARY 1977

Culgoora

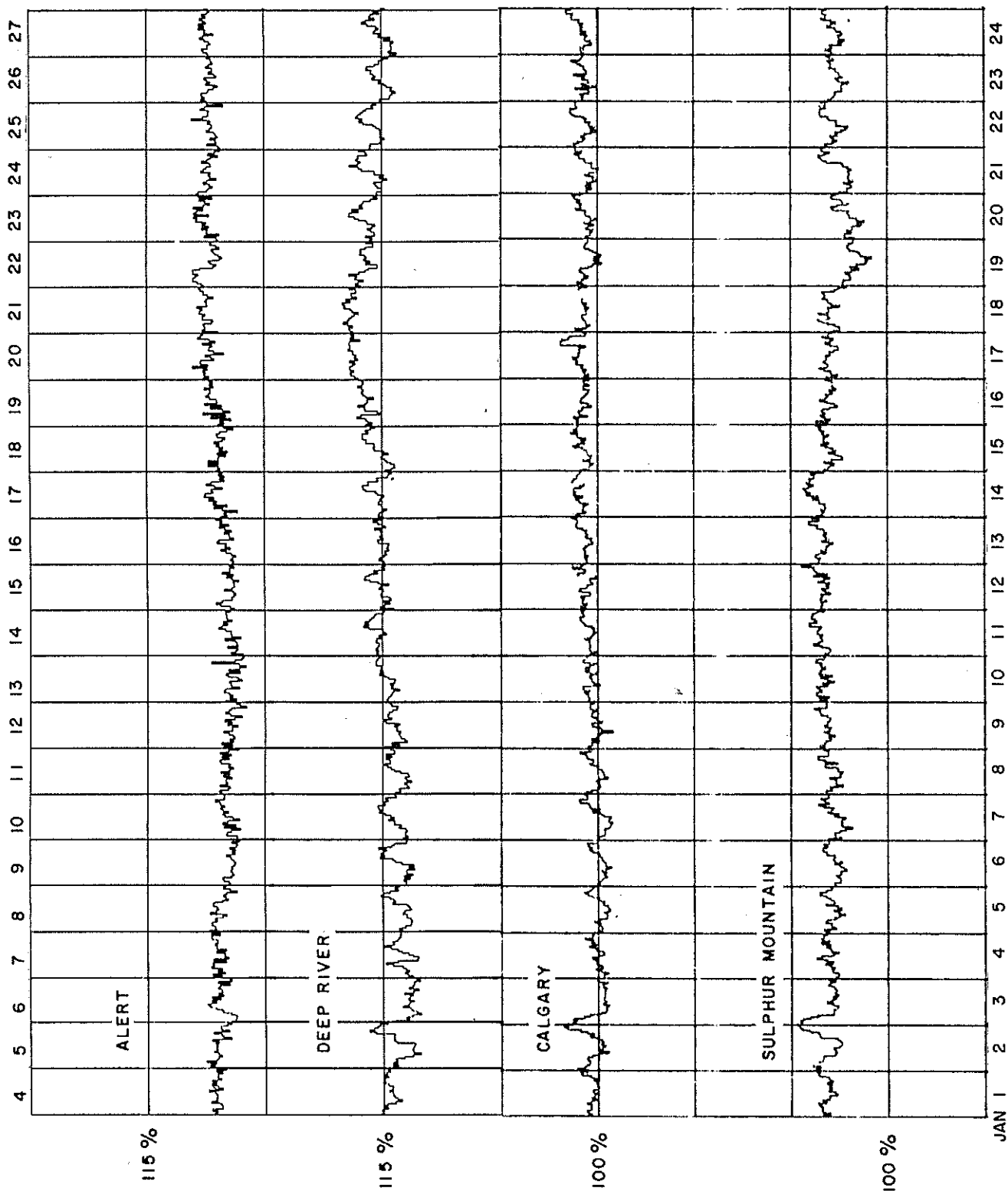
UT Date 1977. February	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions		Polar- ization	Inten- sity (1-3)		
				Central Dist. ($R_{\odot}$)	Position Angle (Deg.)				
8/9	2300	0500	80 160	1.1 1.0	130	Varying	1	I	Type III activity persisted until the 16th. Type III activity also associated with this region.
	2322	2325	80 160	1.1 1.0	130	0	2	IIIGG	*
10	0356	0400	80 160	1.5 1.2	60	0	2 1	IIIGG,V	*
11	0053	0055	80 160	1.0	270	0	2	IIIG	*
13	2300	0500	160	1.2	90	r	1	I	
	2304	2305	80 160	.5	0	0	1 2	IIIG	* Type I activity from this region persisted until 17th
19/20	2300	0500	160	1.1	220	0	1	I	
20/21	2300	0500	80 160	0	0	r	1	I	* Type III activ- ity also associa- ted with this region
27	0312	0314	80 160	1.0 0.8	220	0	1	unclf.	

Days without Heliograph observations: Nil

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

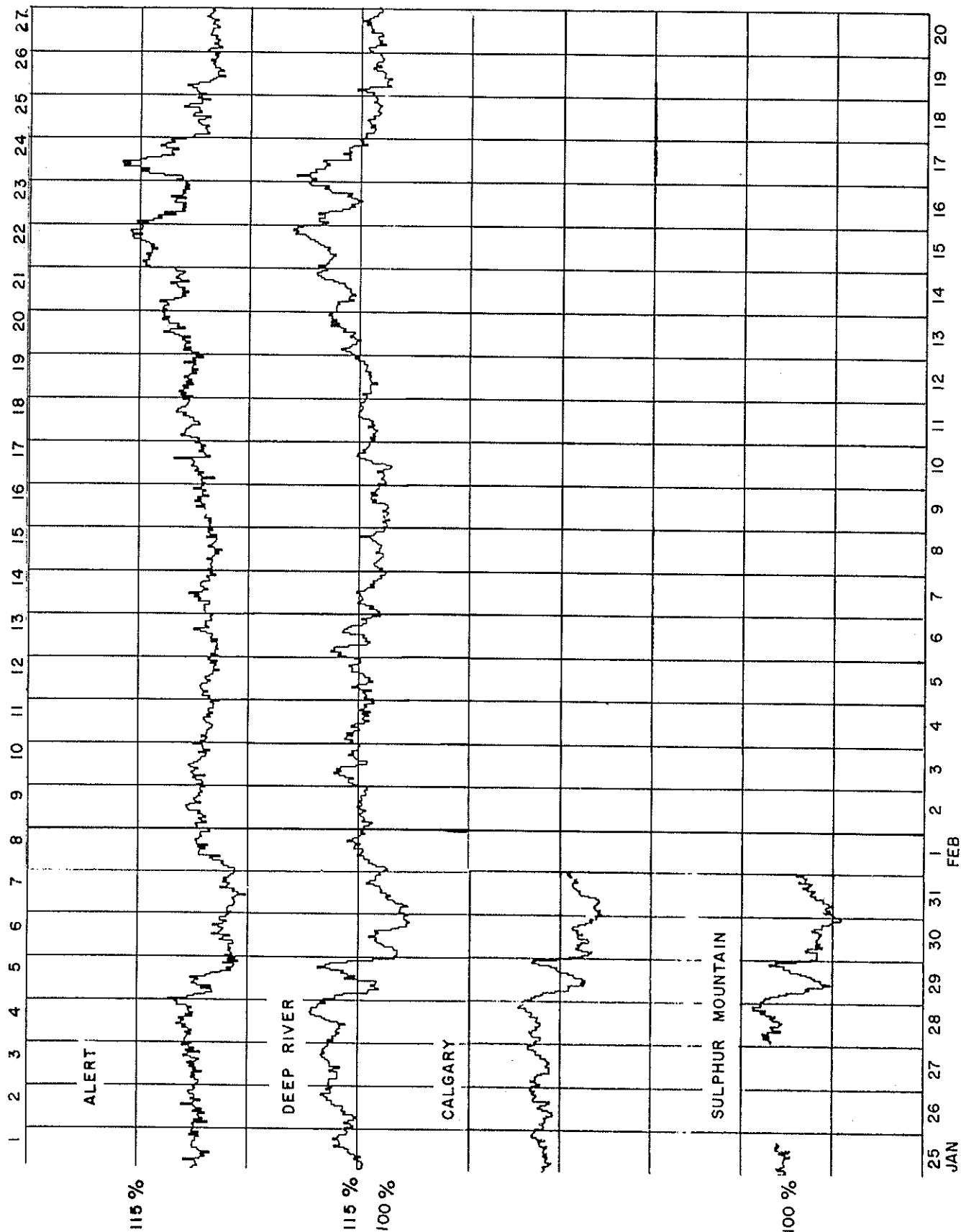
COSMIC RAY INDICES (Neutron Monitors)

Bartels Rotation 1961 (January 1977)



COSMIC RAY INDICES (Neutron Monitors)

Bartels Rotation 1962 (January - February 1977)



COSMIC RAY INDICES (Neutron Monitors)

JANUARY 1977

FEBRUARY 1977

	ALERT	DEEP RIVER	CALGARY	SULPHUR MT		ALERT	DEEP RIVER
Jan. 1977	Average cts/hr	Average cts/hr	Average cts/hr	Average cts/hr	Feb. 1977	Average cts/hr	Average cts/hr
1	7483.4	7062.2	11745.0	9062.8	1	7462.7	7058.3
2	7478.5	7041.0	11753.1	9075.8	2	7498.0	7061.5
3	7466.7	7002.3	11698.4	9054.4	3	7495.6	7093.8
4	7479.6	7027.5	11711.8	9048.6	4	7465.3	7072.0
5	7474.5	7029.1	11693.6	9038.3	5	7466.0	7067.6
6	7439.5	7033.6	11693.2	9024.5	6	7459.4	7087.0
7	7452.9	7049.2	11702.1	9023.7	7	7479.9	7043.0
8	7455.6	7037.7	11722.6	9038.5	8	7456.2	7024.4
9	7440.7	7044.7	11721.2	9062.6	9	7483.1(21)	7014.3
10	7436.5	7066.6	11760.4	9079.1	10	7496.4	7032.6
11	7443.7	7091.8	11767.2	9094.7	11	7530.5	7053.1
12	7443.6	7080.3	11783.0(23)	9084.4	12	7525.5	7055.0
13	7453.0	7075.9	11788.3	9084.5	13	7563.8	7118.4
14	7478.4	7085.9	11820.0(23)	9112.8	14	7568.5	7136.6
15	7472.2	7088.0	11794.2	9053.4	15	7664.7	7193.9
16	7486.5	7119.0	11791.6	9055.0	16	7572.9	7146.9
17	7508.9	7152.3	11825.2	9047.3	17	7622.1	7146.5
18	7513.6	7157.8	11790.0	9043.7	18	7499.0	7039.8
19	7507.2	7122.2	11759.4	8934.6	19	7468.9	7025.4
20	7515.6	7119.2	11783.5	8969.0	20	7458.8	7038.6
21	7504.0	7107.3	11769.9	9001.3	21	7467.1	7051.1
22	7498.5	7103.0	11804.1	9042.0	22	7494.3	7050.8
23	7502.8	7078.3	11792.8	9018.4	23	7499.7	7040.6
24	7513.0	7078.7	11811.2	9033.1	24	7504.3	7034.1
25	7501.4	7097.7	11817.5(23)	9024.0(18)	25	7510.2	7065.7
26	7502.8	7126.9	11829.1		26	7523.3	7075.5
27	7510.3	7155.0	11837.9		27	7557.1	7077.2
28	7534.3	7161.2	11889.1	9093.8(22)	28	7559.0	7118.4
29	7458.2	7091.4	11726.5	8968.4			
30	7415.6	6982.6	11563.2	8843.9			
31	7396.7	6997.8	11550.4	8863.2			
MEAN	7476.4	7080.0	11757.8	9030.1	MEAN	7512.6	7072.2

() Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

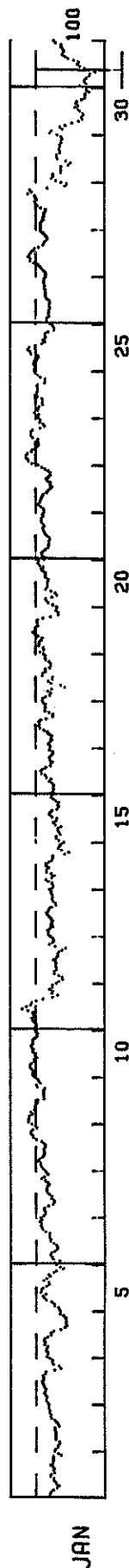
Thule, Alert, Calgary, Sulphur Mountain, Kiel and Climax Scaling Factors = 100.
Deep River Scaling Factor = 300.
Tokyo Scaling Factor = 128.

HOURLY EQUATORIAL DST VALUES (PROVISIONAL)

JANUARY 1977

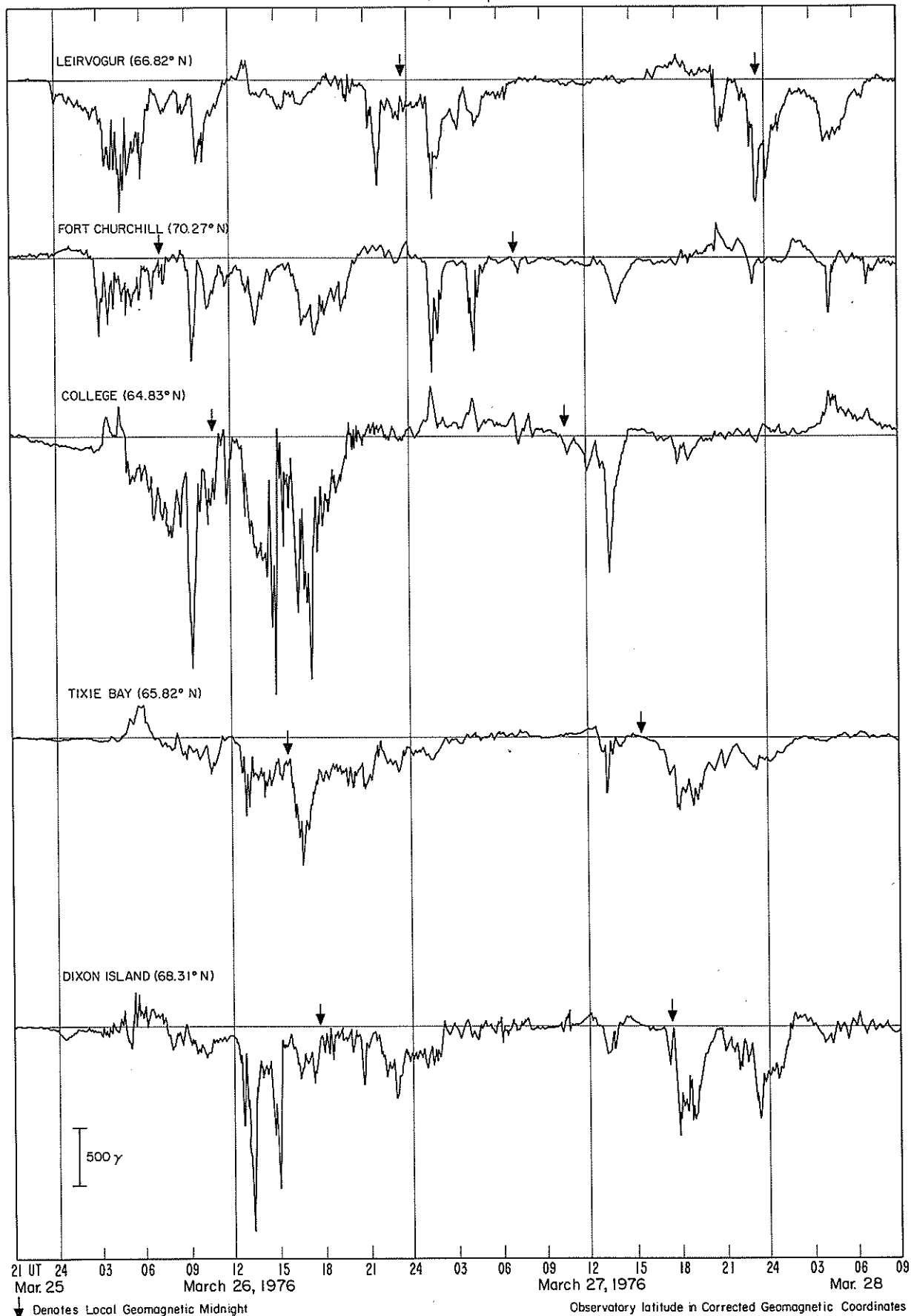
NASA/GODDARD SPACE FLIGHT CENTER

DAY	(Time-UT)																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-16	-17	-18	-21	-25	-27	-24	-23	-21	-21	-17	-18	-22	-21	-22	-20	-17	-20	-21	-20	-21	-30	-26	-22
2	-23	-26	-26	-28	-27	-23	-23	-23	-23	-23	-22	-22	-27	-26	-24	-22	-18	-17	-18	-16	-16	-15	-15	-15
3	-14	-12	-12	-13	-11	-10	-11	-12	-10	-9	-8	-7	-9	-9	-8	-11	-12	-22	-29	-27	-20	-19	-19	-16
4	-13	-14	-14	-12	-13	-13	-10	-11	-9	-10	-14	-18	-18	-21	-29	-34	-36	-35	-35	-35	-34	-32	-28	-28
5	-27	-26	-22	-21	-18	-12	-10	-8	-12	-6	-7	-8	-13	-16	-15	-9	-13	-17	-15	-21	-24	-32	-28	-24
6	-22	-26	-20	-19	-17	-18	-22	-25	-26	-24	-21	-17	-18	-16	-16	-16	-11	-8	-7	-6	-7	-5	-7	-6
7	-9	-11	-11	-10	-10	-15	-20	-22	-21	-18	-19	-16	-14	-13	-13	-14	-16	-14	-11	-7	-10	-15	-13	-11
8	-9	-7	-6	-6	-2	-5	-8	-10	-11	-10	-10	-11	-12	-10	-7	-1	2	3	5	5	3	-2	0	4
9	8	8	7	6	3	5	1	0	0	-1	-3	-3	-10	-10	-10	-10	-9	-11	-2	-1	-6	-4	-2	1
10	3	3	2	4	6	6	4	1	1	-2	0	0	3	2	4	5	3	3	2	0	-2	-3	-1	0
11	1	-1	-1	1	3	4	0	2	3	9	15	10	5	4	-1	-9	-20	-24	-19	-20	-16	-20	-20	-24
12	-27	-32	-31	-27	-22	-22	-24	-24	-23	-24	-23	-21	-24	-26	-26	-27	-31	-35	-23	-16	-20	-22	-20	-17
13	-15	-15	-14	-17	-20	-18	-19	-20	-18	-16	-14	-13	-15	-16	-19	-24	-23	-20	-19	-20	-19	-18	-18	-16
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15	-27	-24	-24	-25	-27	-26	-26	-30	-23	-21	-24	-25	-19	-16	-17	-19	-25	-27	-26	-27	-24	-20	-18	-19
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18	-9	-12	-17	-18	-15	-19	-34	-29	-18	-15	-20	-20	-8	-9	-12	-12	-17	-18	-18	-16	-12	-11	-11	-9
19	-5	-10	-9	-4	-5	-5	-7	-8	-3	0	3	0	0	-3	-3	-2	-2	-5	-18	-27	-27	-24	-25	-25
20	-20	-15	-13	-12	-19	-25	-23	-18	-12	-14	-14	-14	-15	-15	-12	-11	-12	-5	-7	-9	-5	-3	-4	-10
21	-11	-8	-7	-9	-12	-15	-16	-16	-16	-17	-16	-14	-11	-10	-9	-8	-10	-9	-7	-7	-7	-9	-8	-10
22	-10	-9	-6	-3	-5	-6	-7	-8	-9	-13	-15	-17	-19	-17	-18	-14	-13	-15	-17	-17	-15	-11	-7	-3
23	4	8	9	11	10	9	4	3	-1	-4	-4	-3	-3	3	5	5	5	3	-6	-11	-9	-5	-6	-4
24	-3	-4	1	-3	-4	-5	-5	-8	-9	-8	-2	-1	-2	-3	-2	-2	-3	-11	-12	-11	-6	-3	0	1
25	1	-1	1	2	1	-2	-4	-3	5	6	9	7	0	-8	-11	-9	-12	-12	-12	-15	-22	-22	-20	-17
26	-13	-13	-14	-16	-15	-16	-16	-17	-16	-16	-17	-16	-13	-12	-11	-11	-11	-10	-10	-10	-9	-10	-10	-12
27	-12	-11	-9	-7	-5	-3	2	6	6	9	7	5	3	1	-4	-9	-10	-12	-14	-13	-11	-9	-6	-6
28	-5	-6	-6	-7	-9	-10	-10	-10	-11	-12	-6	-2	0	1	-1	0	1	5	4	7	-14	-34	-36	-29
29	-23	-18	-20	-20	-25	-30	-29	-30	-38	-41	-35	-25	-24	-24	-28	-28	-27	-26	-28	-30	-30	-31	-29	-25
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31	-51	-59	-56	-56	-55	-62	-63	-69	-62	-56	-51	-48	-50	-44	-37	-34	-31	-32	-33	-31	-29	-29	-23	-21



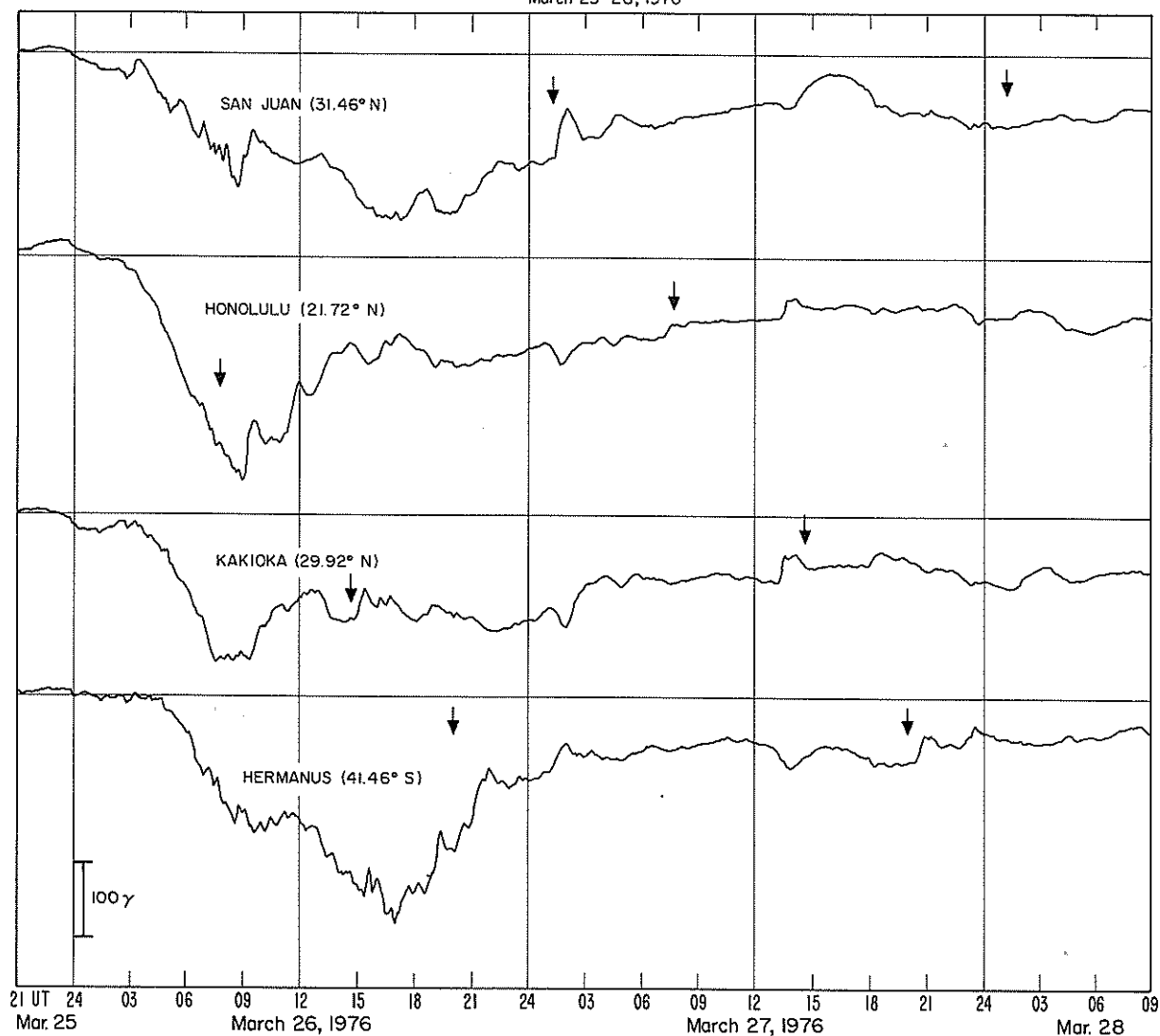
H-COMPONENT MAGNETOGRAMS OF GEOMAGNETIC STORMS

March 25-28, 1976

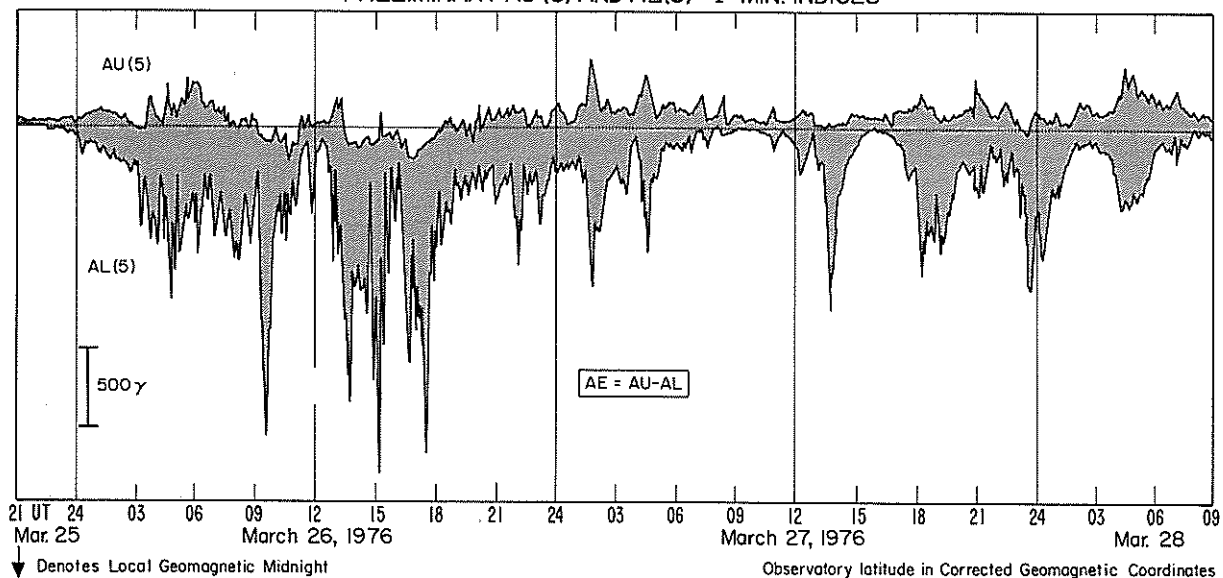


H-COMPONENT MAGNETOGRAMS OF GEOMAGNETIC STORMS

March 25-28, 1976



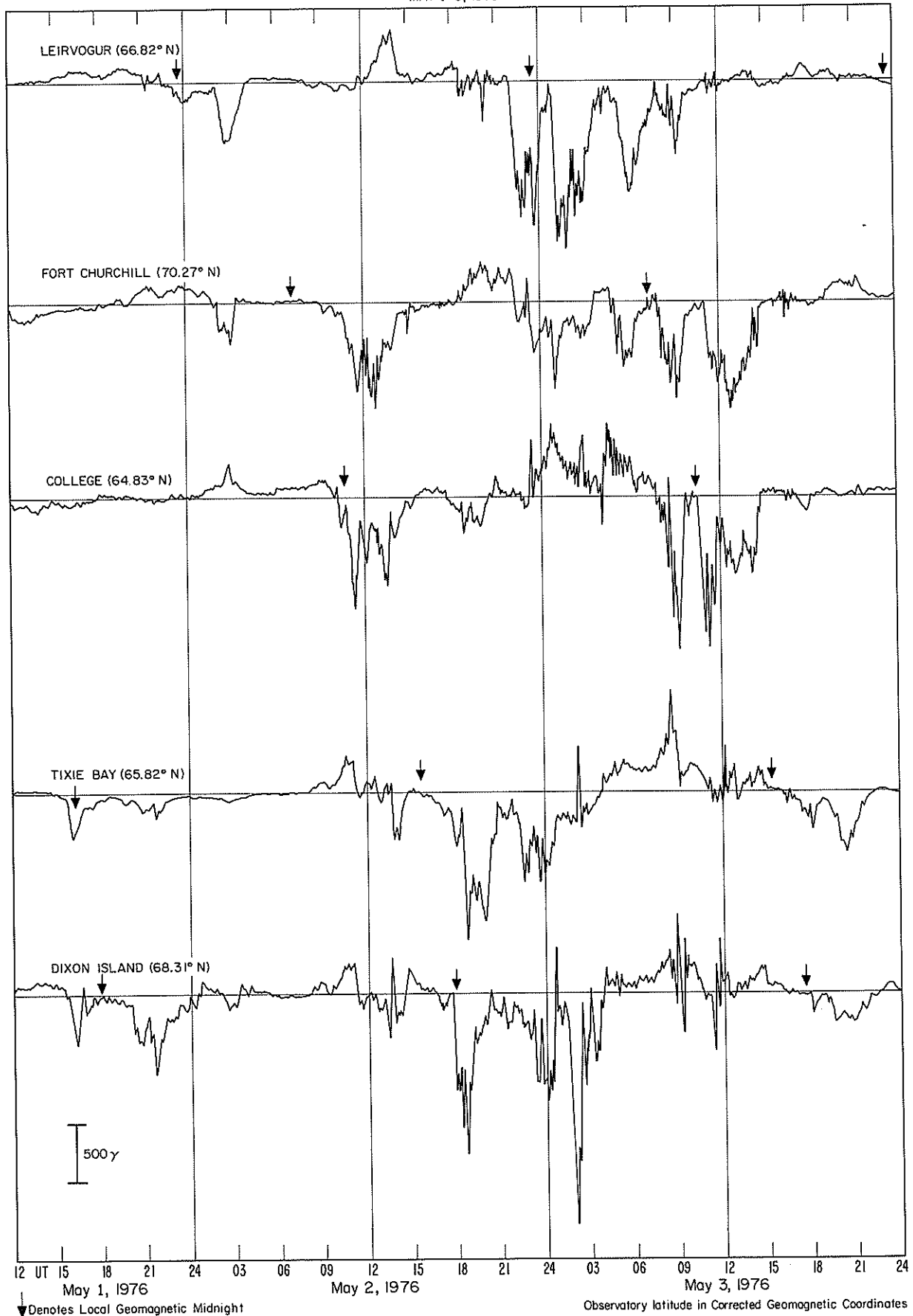
PRELIMINARY AU (5) AND AL (5) 1-MIN. INDICES



Observatory latitude in Corrected Geomagnetic Coordinates

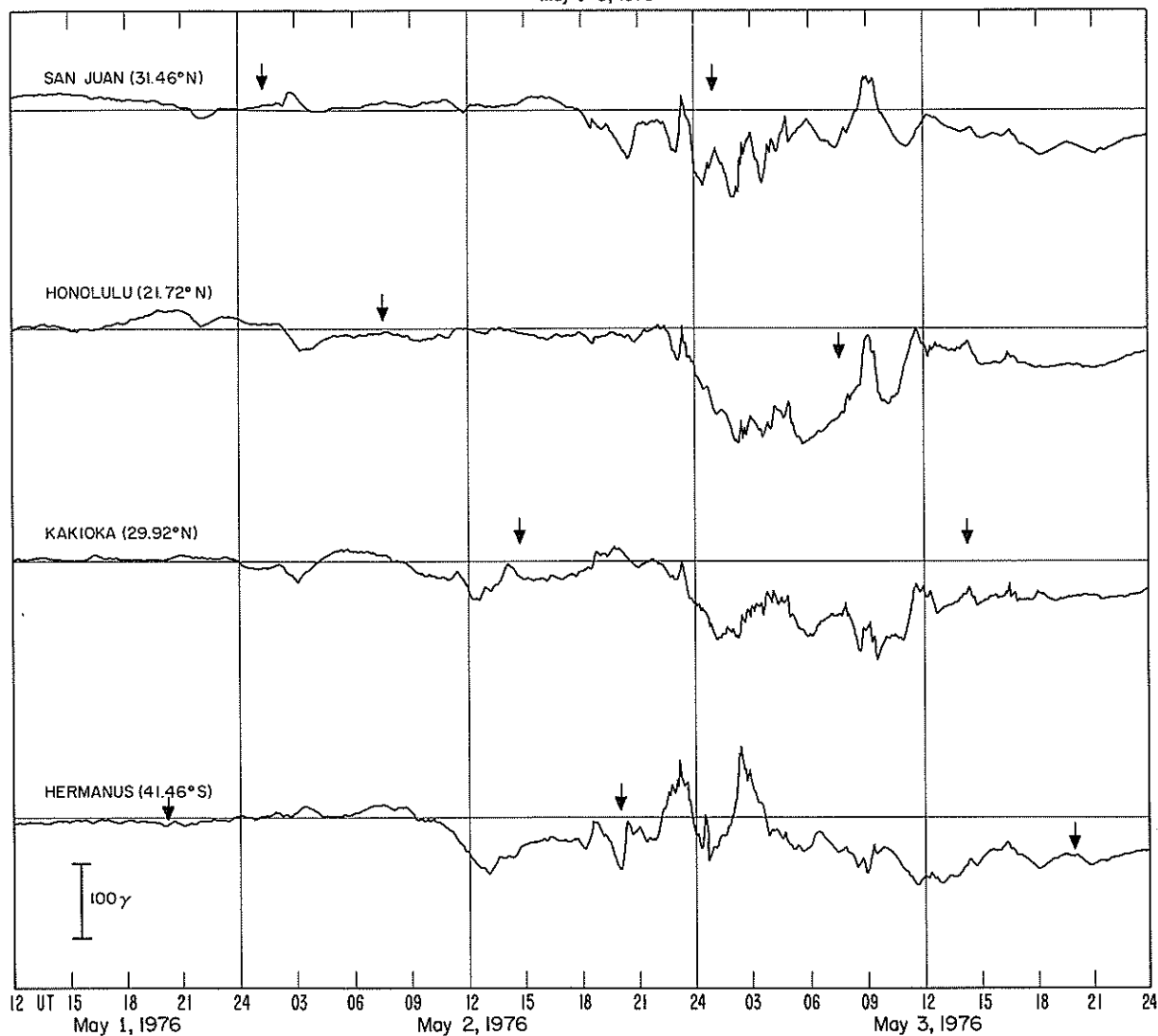
H-COMPONENT MAGNETOGRAMS OF GEOMAGNETIC STORMS

MAY 1-3, 1976

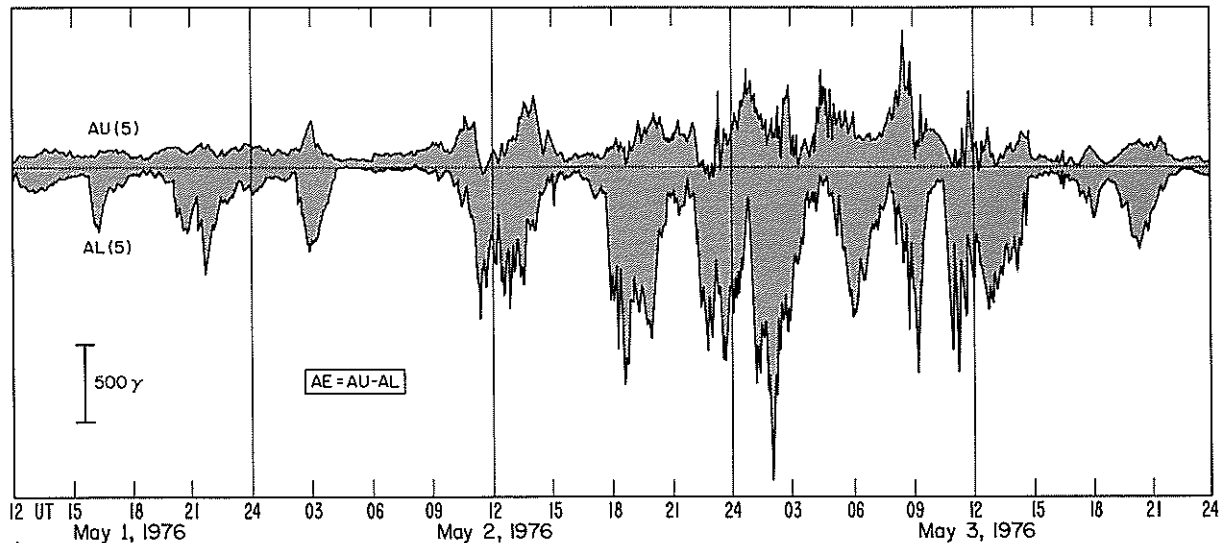


H-COMPONENT MAGNETOGRAMS OF GEOMAGNETIC STORMS

May 1-3, 1976



PRELIMINARY AU (5) AND AL (5) 1-MIN. INDICES



↓ Denotes Local Geomagnetic Midnight

Observatory latitude in Corrected Geomagnetic Coordinates

UAG Series of Reports

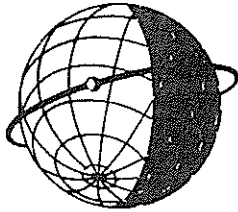
Prepared by World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado, U.S.A.

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- UAG-39 "Auroral Electrojet Magnetic Activity Indices AE (11) for 1971", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, February 1975, 144 pages, price \$2.05.
- UAG-40 "H-Alpha Synoptic Charts of Solar Activity For the Period of Skylab Observations, May, 1973-March, 1974", by Patrick S. McIntosh, NOAA Environmental Research Laboratories, February 1975, 32 pages, price 56 cents.
- UAG-41 "H-Alpha Synoptic Charts of Solar Activity During the First Year of Solar Cycle 20, October, 1964 - August, 1965", by Patrick S. McIntosh, NOAA Environmental Research Laboratories, and Jerome T. Nolte, American Science and Engineering, Cambridge, Massachusetts, March 1975, 25 pages, price 48 cents.
- UAG-42 "Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-80 MHz 10 December 1971 through 21 March 1975", by James W. Warwick, George A. Dulk, and Anthony C. Riddle, Department of Astro-Geophysics, University of Colorado, Boulder, Colorado 80302, April 1975, 49 pages, price \$1.15.
- UAG-43 "Catalog of Observation Times of Ground-Based Skylab-Coordinated Solar Observing Programs", compiled by Helen E. Coffey, World Data Center A for Solar-Terrestrial Physics, May 1975, 159 pages, price \$3.00.
- UAG-44 "Synoptic Maps of Solar 9.1 cm Microwave Emission from June 1962 to August 1973", by Werner Graf and Ronald N. Bracewell, Radio Astronomy Institute, Stanford University, Stanford, California 94305, May 1975, 183 pages, price \$2.55.
- UAG-45 "Auroral Electrojet Magnetic Activity Indices AE (11) for 1972", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, May 1975, 144 pages, price \$2.10.
- UAG-46 "Interplanetary Magnetic Field Data 1963-1974", by Joseph H. King, National Space Science Data Center, NASA Goddard Space Flight Center, Greenbelt, Maryland 20771, June 1975, 382 pages, price \$2.95.
- UAG-47 "Auroral Electrojet Magnetic Activity Indices AE (11) for 1973", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, June 1975, 144 pages, price \$2.10.

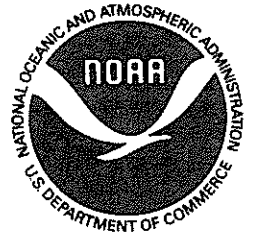
- UAG-48A "Synoptic Observations of the Solar Corona during Carrington Rotations 1580-1596 (11 October 1971 - 15 January 1973)", [Reissue with quality images] by R. A. Howard, M. J. Koomen, D. J. Michels, R. Tousey, C. R. Detwiler, D. E. Roberts, R. T. Seal and J. D. Whitney, E. O. Hulbert Center for 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.
- UAG-50 "High-Latitude Supplement to the URSI Handbook on Ionogram Interpretation and Reduction", by W. R. Piggott, British Antarctic Survey, c/o SRC, Appleton Laboratory, Ditton Park, Slough, England, October 1975, 292 pages, price \$4.00.
- UAG-51 "Synoptic Maps of Solar Coronal Hole Boundaries Derived from He II 304Å Spectroheliograms from the Manned Skylab Missions", by J. D. Bohlin and D. M. Rubenstein, E. O. Hulbert Center for Space Research, Naval Research Laboratory, Washington, D. C. 20375 U.S.A., November 1975, 30 pages, price 54 cents.
- UAG-52 "Experimental Comprehensive Solar Flare Indices for Certain Flares, 1970-1974", compiled by Helen W. Dodson and E. Ruth Hedeman, McMath-Hulbert Observatory, The University of Michigan, 895 Lake Angelus Road North, Pontiac, Michigan 48055 U.S.A., November 1975, 27 pages, price 60 cents.
- UAG-53 "Description and Catalog of Ionospheric F-Region Data, Jicamarca Radar Observatory (November 1966 - April 1969)", by W. L. Clark and T. E. Van Zandt, Aeronomy Laboratory, NOAA, Boulder, Colorado 80302 and J. P. McClure, University of Texas at Dallas, Dallas, Texas 75230, April 1976, 10 pages, price 33 cents.
- UAG-54 "Catalog of Ionosphere Vertical Soundings Data", prepared by Environmental Data Service, NOAA, Boulder, Colorado 80302, April 1976, 130 pages, price \$2.10.
- UAG-55 "Equivalent Ionospheric Current Representations by a New Method, Illustrated for 8-9 November 1969 Magnetic Disturbances", by Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado 80302 and Geophysical Institute, University of Alaska, Fairbanks, Alaska 99701, H. W. Kroehl, Data Studies Division, NOAA/EDS/NGSDC, Boulder, Colorado 80302, M. Kanamitsu, Advanced Study Program, National Center for Atmospheric Research, Boulder, Colorado 80303, J. H. Allen, Data Studies Division, NOAA/EDS/NGSDC, Boulder, Colorado 80302, and S.-I. Akasofu, Geophysical Institute, University of Alaska, Fairbanks, Alaska 99701, April 1976, 91 pages, price \$1.60.
- UAG-56 "Iso-intensity Contours of Ground Magnetic H Perturbations for the December 16-18, 1971 Geomagnetic Storm", by Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado 80302 and Geophysical Institute, University of Alaska, Fairbanks, Alaska 99701 (currently Guest worker at Data Studies Division, NOAA/EDS/NGSDC, Boulder, Colorado 80302), April 1976, 37 pages, price \$1.39.
- UAG-57 "Manual on Ionospheric Absorption Measurements", edited by K. Rawer, Institut für Physikalische Weltraumforschung, Freiburg, G.F.R., June 1976, 202 pages, price \$4.27.
- UAG-58 "ATS6 Radio Beacon Electron Content Measurements at Boulder, July 1974 - May 1975", by R. B. Fritz, Space Environment Laboratory (currently with Wave Propagation Laboratory), NOAA, Boulder, Colorado 80302 USA, September 1976, 61 pages, price \$1.04.
- UAG-59 "Auroral Electrojet Magnetic Activity Indices AE(11) for 1974", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, December 1976, 144 pages, price \$2.16.



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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."