U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Anthony J. Calio, Administrator

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
William P. Bishop, Acting Assistant Administrator

Solar - Geophysical Data

Part II (Comprehensive Reports)

NO. 501 MAY 1986

DATA FOR
NOVEMBER 1985

Michael A. Chinnery, Director
NATIONAL GEOPHYSICAL DATA CENTER
BOULDER, COLORADO

International Standard Serial Number: 0038-0911
Library of Congress Catalog Number: 79-640375 //r81

For sale through the National Geophysical Data Center, NOAA/NESDIS, E/GC2, 325 Broadway, Boulder, Colorado 80303. 1986 Subscription Price for the U.S.: $70.00 annually for both Part I (Prompt Reports) and Part II (Comprehensive Reports) or $35.00 annually for either part. Annual supplement containing explanation is included. Foreign subscriptions: For 1986 issues -- $106.00 for both parts or $53.00 for either part. We require prepayment for all orders. Please include with your request a check or money order payable in U.S. currency to the Department of Commerce, NOAA/NGDC. Any bank charges should be paid by the subscriber. Payment may be made through an American Express, Mastercard or VISA credit cards. Please include the correct name of credit card holder, card number and expiration date. Prices are subject to change. NGDC phone number: (303)497-6135 (FTS 320-6135).

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar-Terrestrial Physics, NOAA/NESDIS/NGDC, E/GC2, 325 Broadway, Boulder, Colorado 80303 U.S.A.

BACK ISSUES OF "SOLAR-GEOPHYSICAL DATA"

Reel#	Coverage	Medium	Reel#	Coverage	Medium	Reel#	Coverage	Medium
1	Jan 56 - Dec 56	Microfilm	9	Jan 64 - Dec 64	Microfilm	17	Jul 69 - Dec 69	Microfilm
2	Jan 57 - Dec 57	Microfilm	10	Jan 65 - Dec 65	Microfilm	18	Jan 70 - Jun 70	Microfilm
3	Jan 58 - Dec 58	Microfilm	11	Jan 66 - Sep 66	Microfilm	19	Jul 70 - Dec 70	Microfilm
4	Jan 59 - Dec 59	Microfilm	12	Oct 66 - Dec 66	Microfilm	20	Jan 71 - Jun 71	Microfilm
5	Jan 60 - Dec 60	Microfilm	13	Jan 67 - Dec 67	Microfilm	21	Jul 71 - Dec 71	Microfilm
6	Jan 61 - Dec 61	Microfilm	14	Jan 68 - Jun 68	Microfilm	22	Jan 72 - Jun 72	Microfilm
7	Jan 62 - Dec 62	Microfilm	15	Jul 68 - Dec 68	Microfilm	23	Jul 72 - Dec 72	Microfilm
8	Jan 63 - Dec 63	Microfilm	16	Jan 69 - Jun 69	Microfilm		1973 - 1984	Microfiche

Microfilm are available at $30.00 per reel; microfiche at $40.00 per year; $1,000.00 for above set. Back issues in booklet form are available, as long as the stocks exist, at $4.00 for either part plus a $3.00 handling charge per order. Any entire year of back issues in booklet form is available at the current annual subscription rate, as long as the stocks exist. Please add a ten dollar ($10.00) handling fee for non-U.S.A. orders. Prices are subject to change.

ISSN #0038-0911

S O L A R - G E O P H Y S I C A L D A T A

NUMBER 501

(Issued in Two Parts)

Editor: Helen E. Coffey

Chief: Joe H. Allen
Solar-Terrestrial Physics Division

Staff: John A. McKinnon
Daniel C. Wilkinson
Viola W. Miller
Carol Weathers
Charles T. Shanks

C O N T E N T S

PART I (PROMPT REPORTS)

Page

DETAILED INDEX FOR 1985-86 2

DATA FOR APRIL 1986 . . . . . 3- 22

DATA FOR MARCH 1986. . . . . 23- 72

LATE DATA. 73-138
Solar Radio Spectral Culgoora February 1986
Hourly Equatorial Dst December 1985
Sudden Commencements February 1986
Calcium Plage Regions December 1983-June 1984
Calcium Plage Maps June-October 1985

PART II (COMPREHENSIVE REPORTS)

Page

DETAILED INDEX FOR 1985-86 2

DATA FOR NOVEMBER 1985 . . . . . 3- 21

MISCELLANEOUS DATA 23- 38
Inventory of Data in the IAU **Quarterly Bulletin on Solar Activity**
Descriptive Text
Inventory of Data in the Meudon Observatory **Cartes Synoptiques**
Descriptive Text (en francais)

Published with partial support from ONR (N00014-86-F-0049).

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

CODE	KIND OF OBSERVATION	SEP 85	OCT	NOV	DEC	JAN 86	FEB	MAR	APR
A.	**SOLAR AND INTERPLANETARY PHENOMENA**								
A.1	Sunspot Drawings	495A 26	496A 28	497A 26	498A 30	499A 34	500A 29	501A 27	
A.2aa	Internat. Provisional Sunspot Numbers	494A 7	495A 7	496A 7	497A 7	498A 7	499A 9	500A 9	501A 7
A.2c	American Sunspot Numbers	494A 7	495A 7	496A 7	497A 7	498A 7	499A 9	500A 9	501A 7
A.3a	Mt. Wilson Magnetograms	495A 26	496A 28	497A 26	498A 30	499A 34	500A 29	501A 27	
A.3b	Mt. Wilson Sunspot Magnetic Class	495A 56	496A 59	497A 57	498A 61	499A 65	500A 57	501A 58	
A.3c	Kitt Peak Magnetograms	495A 26	496A 28	497A 26	498A 30	499A 34	500A 29	501A 27	
A.3d	Mean Solar Magnetic Field (Stanford)	494A 20	495A 21	496A 23	497A 22	498A 24	499A 30	500A 24	501A 22
A.3e	Stanford Magnetograms	495A 26	496A 28	497A 26	498A 30	499A 34	500A 29	501A 27	
A.4	H-alpha Filtergrams	495A 26	496A 28	497A 26	498A 30	499A 34	500A 29		
A.5	Calcium Plage Photographs/Drawings	Aug 84-Jun 85 in 499A131; Jul-Oct 85 in 501A123							
A.5a	Calcium Plage and Sunspot Regions	Dec 83-Jun 84 in 501A 79							
A.5b	Daily Calcium Plage Indices	Dec 83-Jun 83 in 501A 83							
A.6	H-alpha Synoptic Charts	495A 24	496A 26	497A 24	498A 26	499A 32	500A 26	501A 24	
A.6b	Active Region Carte Synoptique (Paris)	499B 22	500B 4	501B 4					
A.6c	Stanford Solar Mag Field Synoptic Maps	495A 25	496A 26	497A 25	498A 27	499A 33	500A 27	501A 25	
A.6d	Kitt Peak Solar Mag Field Synoptic Maps	499A 84	499A 85	499A 86	499A 87	499A 88	500A 28	501A 26	
A.6e	Mass Ejections from the Sun	499B 17	500B 29	---					
A.6f	Active Prominences and Filaments	499B 18	500B 30	501B 20					
A.7g	Kitt Peak Helium Synoptic Maps	May 85 in 491A 27							
A.7h	Coronal Line Emission (Sacramento Peak)	495A 26	496A 28	497A 26	498A 30	499A 34	500A 29	501A 27	
A.8aa	2800 MHz - Solar Flux (Ottawa)	494A 7	495A 7	496A 7	497A 7	498A 7	499A 9	500A 9	501A 7
A.8ac	2800 MHz - Adj. Solar Flux (Ottawa)	494A 7	495A 7	496A 7	497A 7	498A 7	499A 9	500A 9	501A 7
A.8g	Adjusted Daily Solar Fluxes (Sagamore)	494A 7	495A 7	496A 7	497A 7	498A 7	499A 9	500A 9	501A 7
A.10a	Interferometric Chart -169 MHz- Nancay	494A 14	495A 15	496A 14	498A 78	498A 14	500A 81	500A 16	---
A.10c	East-West Scans - 21 cm - Fleurs	494A 17	495A 18	496A 17	497A 16	498A 17	---	---	501A 16
A.10d	East-West Scans - 43 cm - Fleurs	494A 18	495A 19	496A 18	497A 17	498A 18	---	---	501A 17
A.10e	East-West Scans - 10 cm - Ottawa	494A 16	495A 17	496A 16	497A 15	498A 16	499A 19	500A 18	501A 15
A.10f	East-West Scans - 3 cm - Toyokawa	494A 15	495A 16	496A 15	497A 14	498A 15	499A 18	500A 17	501A 14
A.11g	Solar X-ray GOES (graphs/event table)	499B 12	500B 21	501B 3					
A.12e	Solar Particles (IMP H & J)	Apr-Dec 83 in 491B 80							
A.13d	Solar Wind from IP Scintillations	Dec 84 in 486A 92							
A.13e	Solar Plasma (IMP H & J)	Jul 84-Mar 85 in 494B158							
A.13f	Solar Wind (Pioneer 12)	Aug 83-Jan 84 in 487A 82							
A.16a	SMM Solar Irradiance	Dec 84 in 490B 18							
A.16b	NIMBUS Solar Irradiance	Nov 78-Oct 84 in 499B 26							
A.17	Interplanetary Mag Field (Pioneer 12)	Dec 84 in 488A 80							
A.17c	Inferred Interplanetary Magnetic Field	494A 77	494A 77	496A 21	497A 19	498A 21	499A 27	500A 21	
B.	**IONOSPHERIC RADIO PROPAGATION PHENOMENA**								
B.52	Field Strength Graphs - North Atlantic	495A 68	496A 76	497A 70	498A 74	499A 76	500A 74	501A 70	
B.53	Quality Indices on Paths to Germany	495A 70	496A 75	497A 72	498A 73	499A 78	500A 76	501A 72	
C.	**SOLAR FLARE-ASSOCIATED EVENTS**								
C.1a	H-alpha Flares	494A 12	495A 12	496A 12	497A 12	498A 12	499A 14	500A 14	501A 12
C.1ba	H-alpha Flare Groups	499B 4	500A 6	501B 6					
C.1d	Flare Patrol Observations	494A 13	495A 14	496A 13	497A 13	498A 13	499A 17	500A 15	501A 13
C.1d	Flare Patrol Observations	499B 7	500B 12	501B 8					
C.3	Radio Bursts Fixed Freq.	499B 9	500B 14	501B 10					
C.3	Radio Bursts Fixed Freq. Selected	494A 19	495A 20	496A 19	497A 18	498A 19	499A 20	500A 19	501A 18
C.4d	Radio Bursts Spectral (Culgoora)	499A 90	499A 90	499A 90	499A 90	499A 67	501A 74	501A 62	
C.4e	Radio Bursts Spectral (Weissenau)	495A 58	496A 64	497A 61	498A 65	499A 67	500A 63	501A 62	
C.4f	Radio Bursts Spectral (Sagamore Hill)	495A 58	496A 64	497A 61	498A 65	499A 67	500A 63	501A 62	
C.4i	Radio Bursts Spectral (Bleien)	---	---	---	---	---	500A 63		
C.4k	Radio Bursts Spectral (Learmonth)	495A 58	496A 64	497A 61	498A 65	499A 67	500A 63	501A 62	
C.4l	Radio Bursts Spectral (Palehua)	495A 58	496A 64	497A 61	498A 65	499A 67	500A 63	501A 62	
C.6	Sudden Ionospheric Disturbances	494A 57	496A 62	497A 60	498A 64	499A 66	500A 60	501A 60	
D.	**GEOMAGNETIC & MAGNETOSPHERIC PHENOMENA**								
D.1a	Geomagnetic Indices	495A 64	496A 71	497A 66	498A 68	499A 72	500A 70	501A 66	
D.1ba	27-day Chart of Kp Indices	495A 66	496A 73	497A 68	498A 70	499A 74	500A 72	501A 68	
D.1c	27-day Chart of C_9	498A 71	498A 71	498A 71	498A 71				
D.1d	Principal Magnetic Storms	495A 67	496A 74	497A 69	498A 72	499A 75	500A 73	501A 69	
D.1f	Sudden Commencement/Solar Flare Effects	496A 80	497A 76	498A 83	500A 84	500A 84	501A 78		
D.1g	Equatorial Indices Dst	497A 75	500A 82	500A 83	501A 77				
F.	**COSMIC RAYS**								
F.1a	Cosmic Ray Neutron Counts (Deep River)	499A120	499A121	499A122	499A123	500A 80	500A 67		
F.1b	Cosmic Ray Neutron Counts (Climax)								
F.1e	Cosmic Ray Neutron Counts (Alert)	499A120	499A121	499A122	499A123	500A 80	500A 67		
F.1h	Cosmic Ray Neutron Counts (Thule)	495A 63	496A 67	497A 65	498A 67	499A 71	500A 67		
.1i	Cosmic Ray Neutron Counts (Kiel)	494A 63	496A 67	497A 65	498A 67	499A 71	500A 67	501A 65	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	495A 63	496A 67	497A 65	499A123	499A 71			
F.1l	Cosmic Ray Neutron Counts (Huancayo)	Mar 85 in 491A 85							
F.1m	Cosmic Ray Neutron Counts (Predigtstuhl)	495A 63	496A 67	497A 65	498A 67	500A 80	500A 67		
H.	**MISCELLANEOUS**								
H.60	IUWDS Alert Periods	494A 4	495A 4	496A 4	497A 4	498A 4	499A 5	500A 5	501A 4

The entry "495A 26" under Sep 1985, for example, means that the sunspot drawings for Sep 1985 appear in SOLAR-GEOPHYSICAL DATA No. 495, Part I, and that they begin on page 26. "A" denotes Part I and "B", Part II. Blanks indicate data not yet received and dashes mark unavailable data.

C O N T E N T S

Comprehensive Reports DATA FOR NOVEMBER 1985 Number 501 Part II

MEUDON CARTE SYNOPTIQUE Page
Active Regions and Filaments. 4
Synoptic Solar Maps 5

SOLAR FLARES
H-alpha Solar Flare Groups. 6- 7
Intervals of No Flare Patrol Observation. 8
Number of Solar Flares August 1966-November 1985 9

SOLAR RADIO BURSTS AT FIXED FREQUENCIES. 10-12

INTERPLANETARY SOLAR PARTICLES AND PLASMA
(Data unavailable at time of publication.)

SOLAR X-RAY RADIATION FROM GOES SATELLITE Graphs 13-17
Preliminary Event List. 18
Preliminary Daily Average Background 19

MASS EJECTIONS FROM THE SUN (None observed.)

ACTIVE PROMINENCES AND FILAMENTS 20-21

SOLAR IRRADIANCE (Data unavailable at time of publication.)

C A R T E S Y N O P T I Q U E

A C T I V E R E G I O N S
CARRINGTON ROTATION 1768

(24 OCTOBER to 24 NOVEMBER 1985)

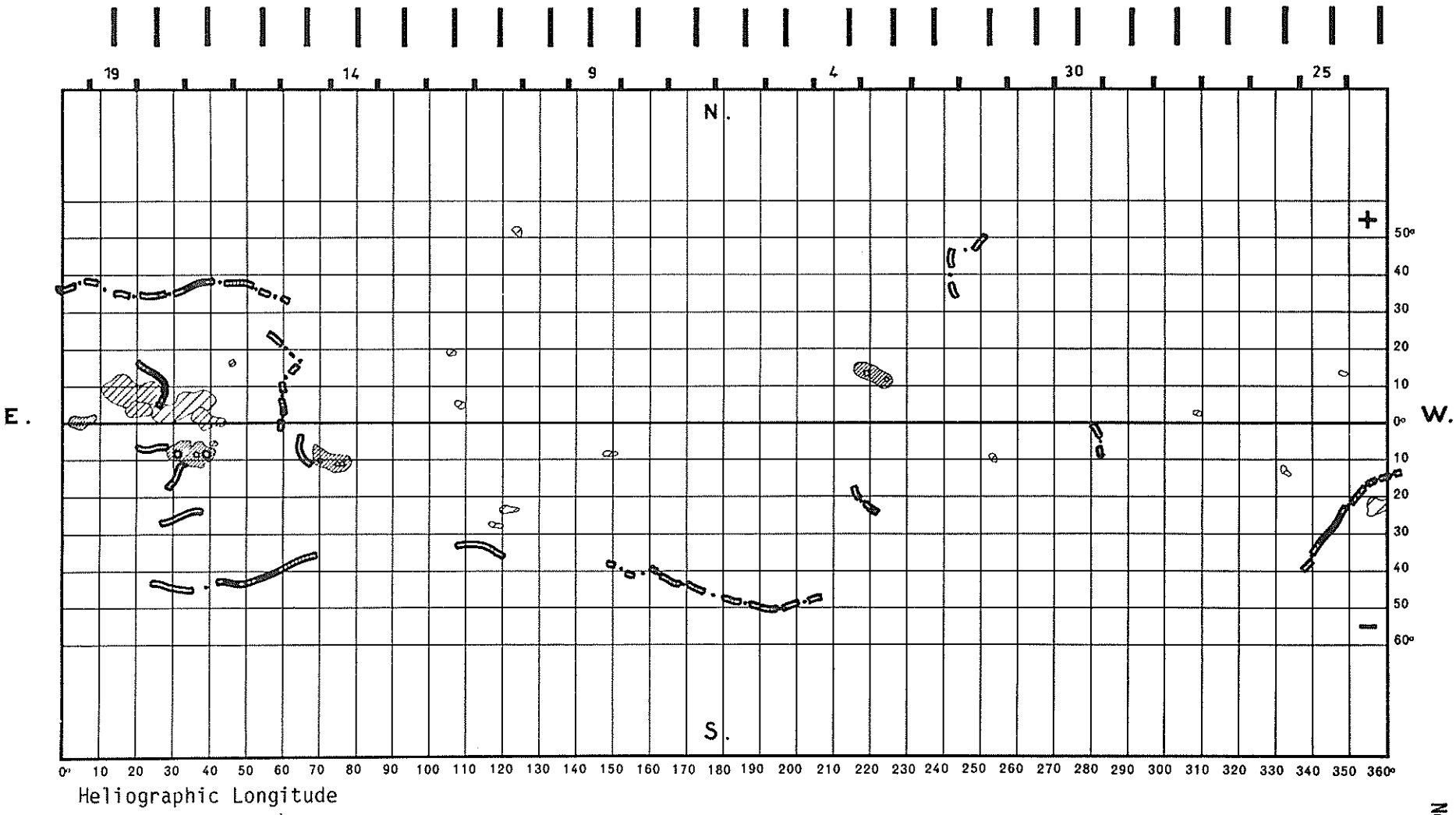
Region No.	Coordinates Lat.	Long.	Imp	Age at CMP (Days)	Spotless Region	Region No. in Rotation 1767	Activity at West Limb
1	23°S	356	1	>6	x		disappeared
2	13°S	333	1	+5	x		disappeared
3	14°N	221	2	+3			stable
4	10°S	73	3	>6			decreasing
5	2°N	39	1	>6	x		decreasing
6	8°S	35	4	+6			decreasing
7	5°N	33	1	>6	x		decreasing
8	4°N	20	1	>6	x		decreasing
9	9°N	19	1	>6	x		decreasing
10	1°N	5	1	+6	x		dispersed

CARTE SYNOPTIQUE

CARRINGTON ROTATION NUMBER 1768
(24 October to 20 November 1985)

Meudon Observatory

October 1985



5 Nov 85

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

NOVEMBER 1985

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
		01	1403		1409	No Flare Patrol														
		01	1436		1455	No Flare Patrol														
		01	1513		1514	No Flare Patrol														
		01	1530		1550	No Flare Patrol														
		01	1639		1649	No Flare Patrol														
		01	1704		1737	No Flare Patrol														
		01	2222		2228	No Flare Patrol														
		03	1006		1119	No Flare Patrol														
		03	1327		1344	No Flare Patrol														
		05	2048		2152	No Flare Patrol														
		06	0945		1024	No Flare Patrol														
0001	RAMY	07	1741E		1803	N14	W52	4700	11	3.8	22D	SF			3	C		25		F
0002	CULG	08	0127	0136	0151D	N10	W59	4700	11	3.6	24D	SN				P		60	1.1	D
0003		08	0337*	0352*	0418	N13	W59	4700	11	3.7	41	SF						43	1.2	DK
	CULG	08	0337	0413	0440	N11	W59	4700	11	3.7	63	SN				C		60	1.2	DK
	LEAR	08	0346	0352	0356	N14	W59	4700	11	3.7	10	SF			3	C		37		
	LEAR	08	0410	0413	0417	N13	W60	4700	11	3.6	7	SF			2	C		32		
0004	RAMY	08	1158	1158	1210D	N15	W62	4700	11	3.8	12D	SF			3	C		30		
0005	HOLL	08	2108	2108	2113	N14	W66	4700	11	3.9	5	SF			3	C		15		
		09	1516		1553	No Flare Patrol														
		09	1603		1610	No Flare Patrol														
0006	LEAR	11	0516	0521	0527	S11	E52	4701	11	15.1	11	SF			3	C		32		
0007		11	09216	0929	0945	S10	E48	4701	11	15.0	24	SF						32		E
	LEAR	11	0921	0929	0945	S10	E49	4701	11	15.1	24	SF			3	C		34		
	HTPR	11	0927		0944D	S10	E48	4701	11	15.0	17D	SF				C	0929	30		E
		11	1909		1910	No Flare Patrol														
0008	CATA	12	0835	0835	0910	S09	E34	4701	11	14.9	35	SN			2	C	0835	56	.7	
		12	1316		1412	No Flare Patrol														
		12	1438		1442	No Flare Patrol														
		12	1547		1552	No Flare Patrol														
		12	1922		1924	No Flare Patrol														
0009	HTPR	13	1348	1352	1358	S09	E60	4703	11	18.1	10	SF				C	1352	30		E
		13	1510		1514	No Flare Patrol														
		13	1527		1530	No Flare Patrol														
0010		13	17058	17124	1728	S08	E57	4703	11	18.0	23	SN	C	1.3				38		F
	HOLL	13	1705	1712	1722	S09	E57	4703	11	18.0	17	SF	C	1.3	3	C		30		F
	RAMY	13	1713	1716	1735	S07	E57	4703	11	18.0	22	SN			3	C		46		
		13	2034		2039	No Flare Patrol														
		13	2046		2052	No Flare Patrol														
		13	2116		2140	No Flare Patrol														
		13	2206		2215	No Flare Patrol														
		13	2314		2342	No Flare Patrol														
0011	PURP	14	0124E	0147U	0242	S09	E53	4703	11	18.0	78D	SF				C	0147	64	1.1	D
0012	HTPR	14	1206	1207	1210	S09	E45	4703	11	17.9	4	SF				C	1207	20		
0013	HTPR	14	1457	1500	1504	N04	E50	4702	11	18.4	7	SF				C	1500	10		
		14	1556		1605	No Flare Patrol														
		14	2023		2041	No Flare Patrol														
0014		15	0300	0307*	0348	S09	E38	4703	11	18.0	48	1N						94	2.2	E
	MITK	15	0300	0307	0359	S08	E40	4703	11	18.1	59	1N				C	0307	160	2.2	E
	LEAR	15	0329E	0332	0337	S10	E37	4703	11	17.9	8D	SF			3	C		27		

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

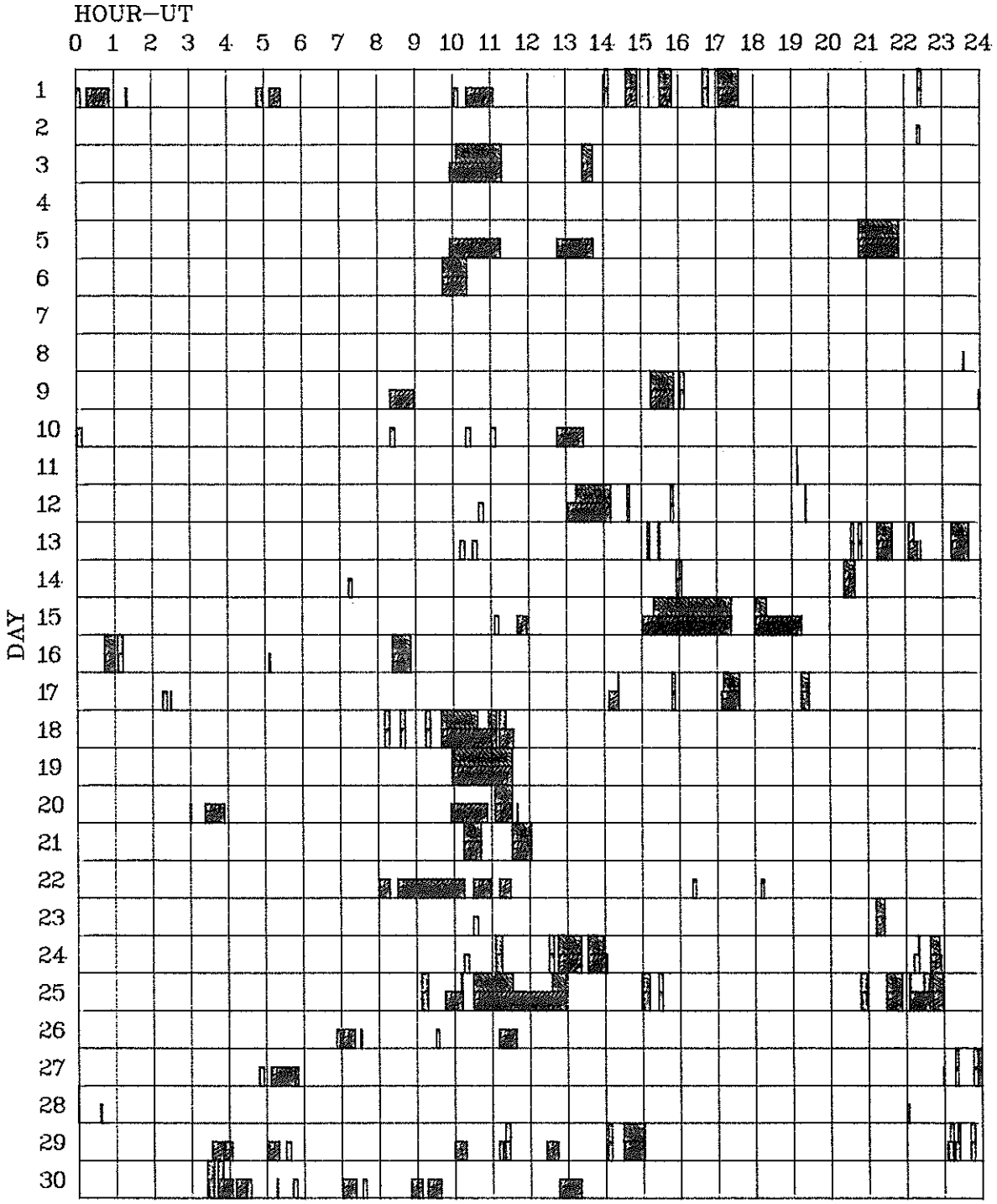
NOVEMBER 1985

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
		15	1520		1724	No Flare Patrol														
		15	1801		1820	No Flare Patrol														
0015	CULG	15	1930	1944	2004D	S03	E26	4703	11	17.7	34D	SF				P		60	.7	D
		16	0044		0101	No Flare Patrol														
		16	0105		0114	No Flare Patrol														
0016	CULG	16	0516	0528	0644	N07	E31	4702	11	18.5	88	SN				C		140	1.6	E
		16	0824		0853	No Flare Patrol														
		17	1423		1424	No Flare Patrol														
		17	1549		1554	No Flare Patrol														
		17	1711		1737	No Flare Patrol														
		17	1915		1928	No Flare Patrol														
0017	CULG	17	2121	2131	2151	S09	W06	4703	11	17.4	30	SF				C		120	1.2	E
		18	0811		0819	No Flare Patrol														
		18	0836		0844	No Flare Patrol														
		18	0916		0924	No Flare Patrol														
		18	0941		1039	No Flare Patrol														
		18	1056		1109	No Flare Patrol														
		18	1113		1124	No Flare Patrol														
0018	PEKG	19	0547	0604	0632	S02	W02	4704	11	19.1	45	SN				C	0604	126	1.3	E
		19	0958		1134	No Flare Patrol														
		20	1106		1134	No Flare Patrol														
0019		20	16361	16451	1710	N02	W10	4704	11	19.9	34	SN						40		FU
	RAMY	20	1636	1645	1724	N01	W09	4704	11	20.0	48	SN			3	C		59		F
	HOLL	20	1637	1646	1656	N02	W10	4704	11	19.9	19	SF			3	C		21		U
		21	1016		1044	No Flare Patrol														
		21	1133		1204	No Flare Patrol														
		23	2113		2127	No Flare Patrol														
		24	1106		1117	No Flare Patrol														
		24	1231		1239	No Flare Patrol														
		24	1246		1323	No Flare Patrol														
		24	1333		1358	No Flare Patrol														
		24	2220		2222	No Flare Patrol														
		24	2239		2254	No Flare Patrol														
		25	0908		0919	No Flare Patrol														
		25	1011		1014	No Flare Patrol														
		25	1031		1134	No Flare Patrol														
		25	1236		1258	No Flare Patrol														
		25	1459		1512	No Flare Patrol														
		25	1526		1533	No Flare Patrol														
		25	2048		2059	No Flare Patrol														
		25	2129		2154	No Flare Patrol														
		25	2205		2208	No Flare Patrol														
		25	2228		2239	No Flare Patrol														
		25	2242		2259	No Flare Patrol														
		27	2318		2323	No Flare Patrol														
		27	2347		2354	No Flare Patrol														
		27	2356		2400	No Flare Patrol														
		28	0000		0000	No Flare Patrol														
		29	1121		1129	No Flare Patrol														
		29	1404		1411	No Flare Patrol														
		29	1429		1503	No Flare Patrol														
		29	2309		2315	No Flare Patrol														
		29	2321		2325	No Flare Patrol														
		29	2342		2349	No Flare Patrol														
		30	0325		0336	No Flare Patrol														
		30	0342		0351	No Flare Patrol														

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

NOVEMBER 1985



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

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

NUMBER OF SOLAR FLARES
(From the Grouped Flare Listings)

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

*Preliminary

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

NOVEMBER 1985

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remarks
01	2950	GORK	20	GRF	1128.0	1137.1	19.7	1.1	.5		
02	930	BORD	8	S	1451.0	1451.2	.3	17.0	2.0		
04	930	BORD	41	F	0813.2	0813.6	.4	21.0	2.0		
	930	BORD	8	S	1253.6	1253.8	.5	79.0	3.0		
05	930	BORD	8	S	0805.3	0805.5	.3	26.0	3.0		
	930	BORD	8	S	1110.0	1110.1	.3	15.0	2.0		
	930	BORD	8	S	1305.7	1305.8	.2	18.0	2.0		
	29	UPIC	1	S	1342.0	1342.2	.6				
	33	UPIC	1	S	1342.1	1342.3	.4				
06	930	BORD	41	F	0803.2	0804.0	1.0	50.0	3.0		
	930	BORD	41	F	1213.4	1213.7	.5	43.0	3.0		
	930	BORD	8	S	1304.5	1304.8	.3	24.0	2.0		
	930	BORD	41	F	1405.6	1405.7	.6	11.0	2.0		
	930	BORD	41	F	1606.0	1606.2	.4	26.0	2.0		
07	260	ONDR	44	NS	0803.0E	1237.0	357.0D	6.0			
	930	BORD	41	F	0804.4	0804.7	.4	49.0	2.0		
	930	BORD	8	S	1017.8	1017.9	.2	20.0	2.0		
	930	BORD	8	S	1310.8	1310.9	.2	32.0	2.0		
	930	BORD	8	S	1554.0	1554.2	.2	11.0	2.0		
	3750	TYKW	20	GRF	2205.0	2219.0	60.0	3.0	1.5		
	2000	TYKW	20	GRF	2210.0	2220.0	50.0	1.5	.7		
08	1000	TYKW	45	C	0109.5	0110.1	1.5	5.0	.7		
	3750	TYKW	45	C	0111.8	0112.3	1.0	3.0	.7		
	1000	TYKW	5	S	0111.8	0112.3	1.0	4.5	.5		
	2000	TYKW	5	S	0111.8	0112.3	1.0	8.0	1.5		
	9400	TYKW	5	S	0112.0	0112.2	.5	4.0	1.0		
	500	HIRA	42	SER	0303.6	0307.0	3.5	6.0			0
	9400	TYKW	20	GRF	0330.0	0350.0	90.0	2.0	1.0		
	3750	TYKW	21	GRF	0340.0	0351.0	120.0	2.0	1.0		
	2000	TYKW	21	GRF	0340.0	0355.0	120.0	1.5	.7		
	1000	TYKW	20	GRF	0340.0	0405.0	120.0	1.5	.7		
	2000	TYKW	45	C	0402.0	0403.9	4.0	2.0	1.0		
	3750	TYKW	20	GRF	0402.0	0405.0	35.0	1.0	.5		
	2000	TYKW	29	PBI	0406.0		65.0	1.0	.5		
	930	BORD	41	F	0804.0	0804.4	.5	40.0	2.0		
	260	ONDR	42	SER	0942.0	1006.5	24.5	3.0			
	930	BORD	8	S	1122.8	1122.9	.3	40.0	2.0		
	930	BORD	46	C	1316.4	1316.6	.6	68.0	4.0		
	930	BORD	41	F	1349.8	1349.9	.4	20.0	3.0		
	930	BORD	41	F	1456.2	1456.6	.4	13.0	3.0		
10	930	BORD	8	S	1155.4	1155.6	.4	18.0	2.0		
	810	KRAK	8	S	1300.7	1300.7	.1	13.0			
	930	BORD	46	C	1522.8	1523.0	.6	89.0	3.0		
11	260	ONDR	44	NS	0800.0E	0944.8	321.0D	37.0			
	2000	TYKW	5	S	0557.3	0557.6	1.5	2.0	.5		
	9400	TYKW	5	S	0557.3	0557.6	1.5	6.0	1.5		
	1000	TYKW	5	S	0557.3	0557.6	1.0	1.0	.3		
	3750	TYKW	5	S	0557.3	0557.6	1.5	1.5	.5		
	2800	OTTA	20	GRF	1725.0	1750.0	75.0	1.0	.5		
	500	HIRA	8	S	2357.3	2357.6	.3	6.0			WR
12	3750	TYKW	20	GRF	0040.0	0050.0	50.0	1.0	.5		
	500	HIRA	8	S	0309.0	0309.1	.4	13.0			WR
	3750	TYKW	21	GRF	0345.0	0404.0	120.0	2.0	1.0		
	3750	TYKW	20	GRF	0443.0	0454.0	60.0	2.0	1.0		
	930	BORD	41	F	0737.6	0737.9	.6	59.0	3.0		
	260	ONDR	42	SER	1101.0	1101.5	1.0	53.0			
	3750	TYKW	21	GRF	2210.0	2230.0	90.0	2.0	1.0		
	3750	TYKW	20	GRF	2303.0	2316.0	35.0	1.5	.7		
13	2800	OTTA	22	GRF	1700.0	1700.0	25.0	1.4	.5		
14	260	ONDR	43	NS	1214.5	1214.8	97.5	16.0			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

NOVEMBER 1985

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remarks
14	245	LEAR	43	NS	2151.0	0334.1	755.0D	10.0			QL=6 ST=2 TYP=1
	2000	TYKW	20	GRF	0110.0	0140.0	120.0	1.0	.5		
	3750	TYKW	20	GRF	0112.0	0145.0U	105.0U	2.0	1.0U		INTERFERENCE
	1000	TYKW	20	GRF	0115.0	0150.0	120.0	1.0	.5		
	9400	TYKW	5	S	0324.5	0324.8	1.0	6.0	1.5		
	260	ONDR	40	F	1116.0	1116.3	1.0	1.0			
15	200	GORK	44	NS	0548.0E		183.0D		5.0		
	260	ONDR	44	NS	0757.0E	1000.6	357.0D	4.0			
	2800	OTTA	27	RF	1425.0		190.0	1.6	1.2		
	2800	OTTA	24	R	1425.0	1530.0	65.0	1.6	.6		
	2800	OTTA	24P	R	1530.0		100.0	1.6			
	930	BORD	8	S	1601.2	1601.3	.4	13.0	2.0		
	2800	OTTA	26	FAL	1710.0	1735.0	25.0	-1.6	- .8		
	2800	OTTA	260	FAL	1800.0	1830.0	30.0	-1.2	- .6		
16	930	BORD	41	F	0735.2	0735.4	.8	64.0	4.0		
17	500	HIRA	6	S	0112.2	0112.5	1.0	8.0	2.0		0
	500	HIRA	8	S	0341.6	0341.6	.3	4.0	3.0		0
	2800	OTTA	27	RF	1320.0		140.0	1.4	1.1		
	2800	OTTA	24	R	1320.0	1340.0	20.0	1.4	.7		
	2800	OTTA	24P	R	1340.0		80.0	1.4			
	2800	OTTA	26	FAL	1500.0	1540.0	40.0	-1.4	- .7		
18	2000	TYKW	5	S	0215.0	0216.1	3.0	1.5	.5		
	930	BORD	41	F	0806.5	0806.7	.4	30.0	3.0		
	930	BORD	41	F	1312.9	1313.4	.6	91.0	3.0		
19	500	HIRA	8	S	0122.6	0122.7	.4	2.0	1.0		0
	930	BORD	41	F	0817.6	0817.8	1.1	14.0	2.0		
	930	BORD	8	S	1102.7	1102.8	.3	63.0	2.0		
	930	BORD	8	S	1318.1	1318.2	.3	25.0	2.0		
	930	BORD	41	F	1322.7	1322.8	.4	20.0	3.0		
	930	BORD	8	S	1428.8	1428.9	.3	15.0	3.0		
20	930	BORD	8	S	1112.0	1112.1	.2	19.0	2.0		
	930	BORD	8	S	1233.2	1233.2	.4	25.0	2.0		
	930	BORD	8	S	1312.1	1312.2	.3	18.0	2.0		
21	930	BORD	41	F	0808.2	0808.6	.8	16.0	4.0		
	930	BORD	8	S	1102.4	1102.6	.4	23.0	3.0		
	930	BORD	8	S	1210.8	1211.0	.4	45.0	2.0		
	930	BORD	41	F	1308.2	1308.3	.5	32.0	3.0		
	930	BORD	8	S	1435.1	1435.2	.3	128.0	2.0		
	930	BORD	8	S	1448.1	1448.3	.4	41.0	3.0		
	930	BORD	41	F	1558.2	1558.6	.4	61.0	3.0		
22	930	BORD	41	F	0806.8	0806.8	.5	35.0	3.0		
	930	BORD	41	F	0811.4	0811.9	.6	58.0	4.0		
	33	UPIC	4	S/F	0927.0	0927.5	.8				
	260	ONDR	40	F	1006.5	1007.0	1.0	2.0			
	33	UPIC	2	S/F	1010.2	1010.4	.5				
	2950	GORK	1	S	1051.5	1052.3	1.8	1.6	.8		
	930	BORD	41	F	1058.4	1058.7	.7	41.0	3.0		
	930	BORD	41	F	1108.4	1108.7	.6	455.0	3.0		
	260	ONDR	8	S	1109.7	1109.8	.3	2.0			
	260	ONDR	40	F	1148.7	1148.7	1.5	8.0			
	260	ONDR	8	S	1204.4	1204.5	.2	5.0			
	260	ONDR	40	F	1225.5	1225.6	.3	4.0			
	260	ONDR	40	F	1247.8	1248.0	1.2	8.0			
	930	BORD	42	SER	1254.0	1303.9	10.1	33.0	2.0		
	808	ONDR	1	S	1257.0	1257.2	.5				
	930	BORD	8	S	1429.8	1429.9	.2	19.0	2.0		
	930	BORD	41	F	1515.0	1515.3	.6	178.0	3.0		
23	930	BORD	41	F	1043.1	1043.5	.7	19.0	3.0		
26	930	BORD	41	F	1130.6	1130.7	.7	22.0	2.0		
	808	ONDR	1	S	1202.0	1202.1	.3				
	930	BORD	8	S	1314.2	1314.5	.5	69.0	4.0		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

NOVEMBER 1985

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remarks
26	930	BORD	41	F	1415.4	1415.8	.5	25.0	3.0		
27	930	BORD	41	F	0811.2	0811.5	.6	109.0	4.0		
	930	BORD	8	S	0828.0	0828.1	.3	14.0	2.0		
	808	ONDR	8	S	0856.2	0856.2	.2				
	260	ONDR	42	SER	0942.0	0944.0	6.0	3.0			
	260	ONDR	42	SER	1020.8	1036.7	26.2	4.0			
	536	ONDR	8	S	1049.0	1049.0	.3	4.0			
	930	BORD	8	S	1258.1	1258.3	.3	46.0	2.0		
28	260	ONDR	43	NS	1134.5	1236.0	77.5	41.0			
	930	BORD	8	S	0741.4	0742.1	.7	99.0	2.0		
	930	BORD	41	F	1252.5	1255.7	3.4	9.0	3.0		
	930	BORD	8	S	1305.4	1305.7	.5	119.0	3.0		
29	260	ONDR	43	NS	1155.0	1155.5	6.5	55.0			
	930	BORD	46	C	0802.1	0802.5	.7	385.0	7.0		
	536	ONDR	42	SER	1033.0	1033.2	1.3	18.0			
	808	ONDR	8	S	1033.0	1033.4	.3				
	260	ONDR	42	SER	1033.3	1033.4	1.5	4.0			
	260	ONDR	46	C	1045.8	1047.8	2.5	39.0			
	536	ONDR	46	C	1046.0	1047.3	1.7	26.0			
	808	ONDR	40	F	1046.0	1047.5	1.8				
30	536	ONDR	8	S	1025.5	1025.5	.1	14.0			

Reports are received routinely from the following observatories:

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

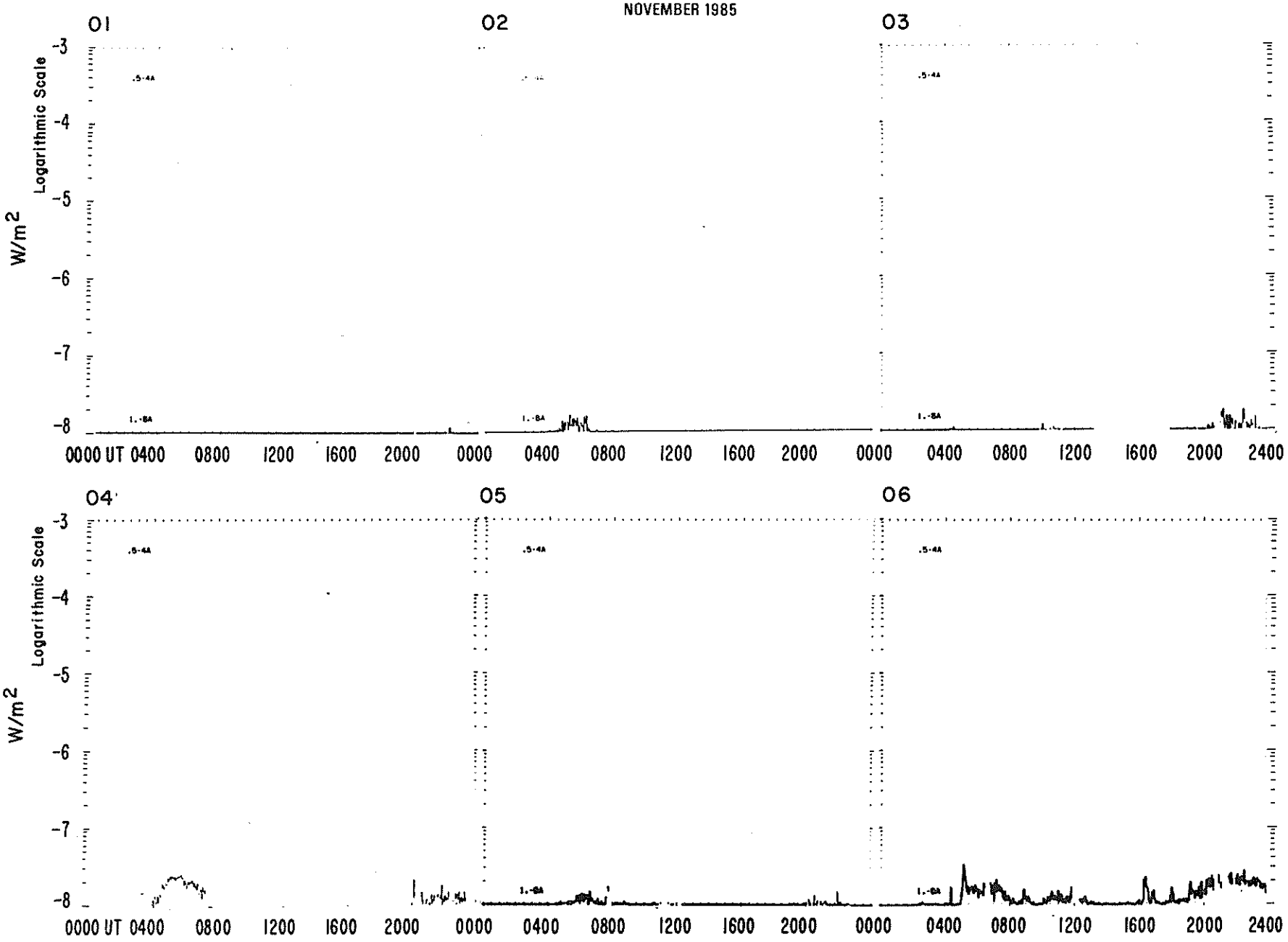
Explanation of Type Code:

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

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

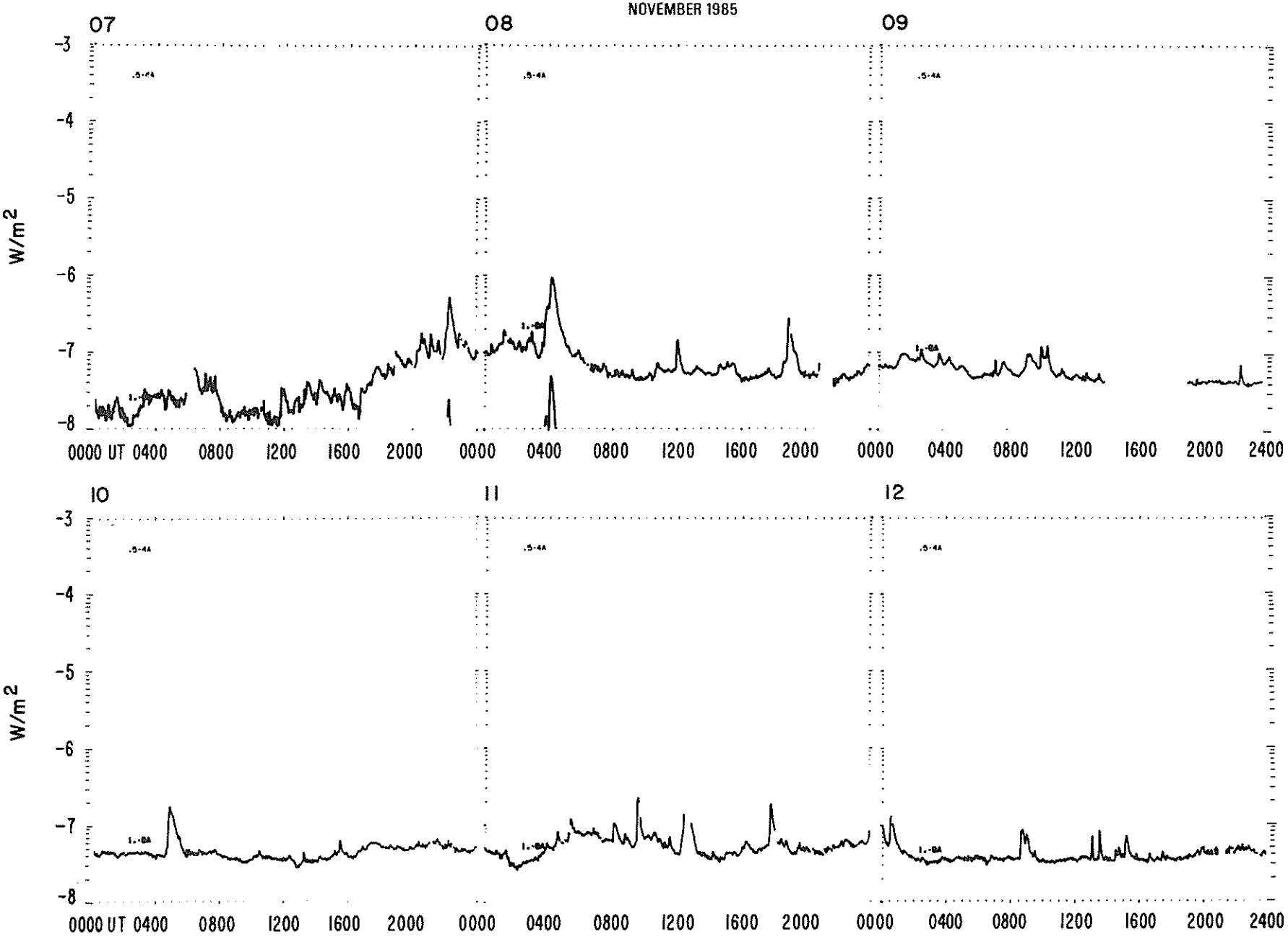
GOES 6 X-RAYS

NOVEMBER 1985



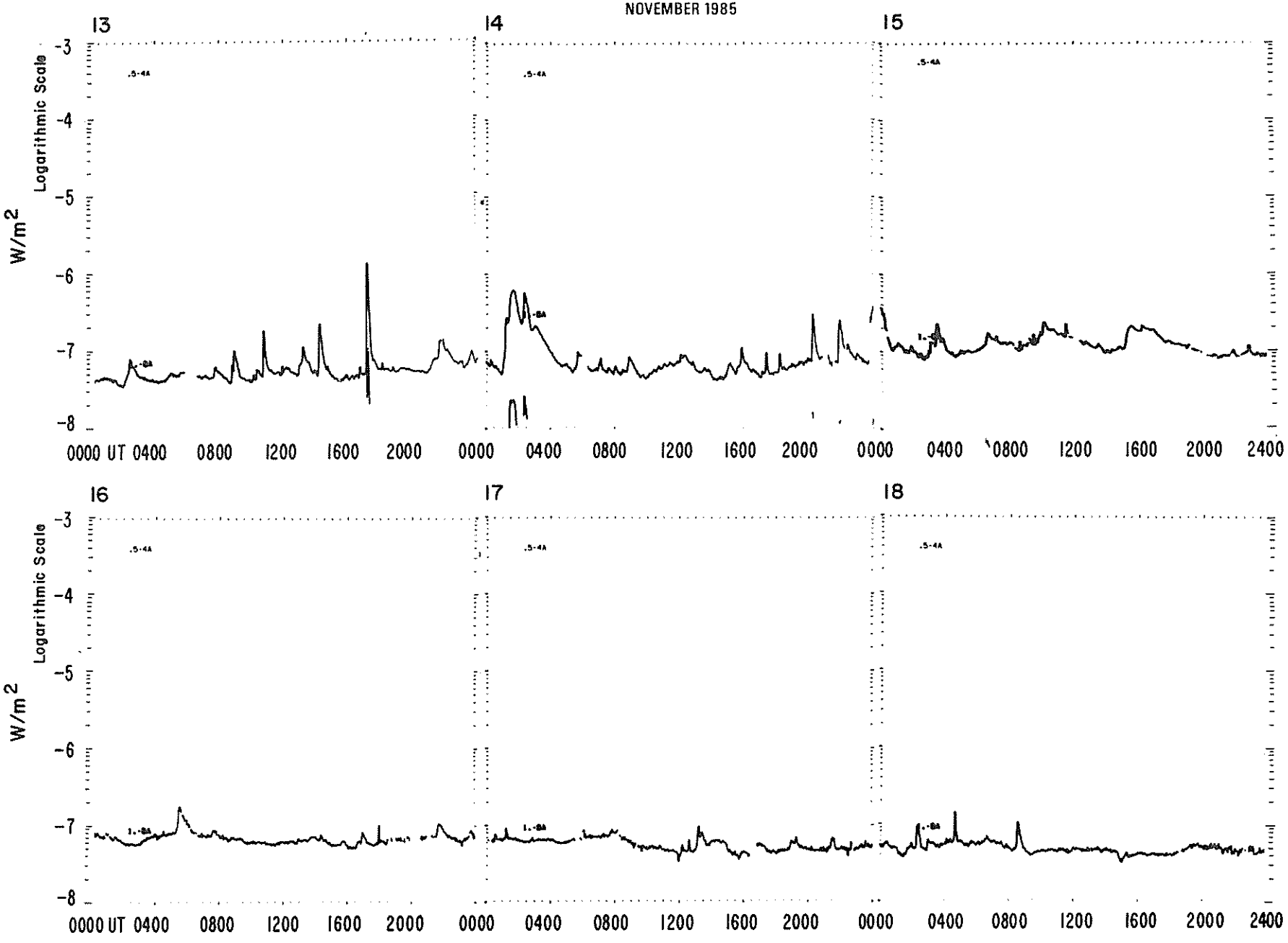
GOES 6 X-RAYS

NOVEMBER 1985



GOES 6 X-RAYS

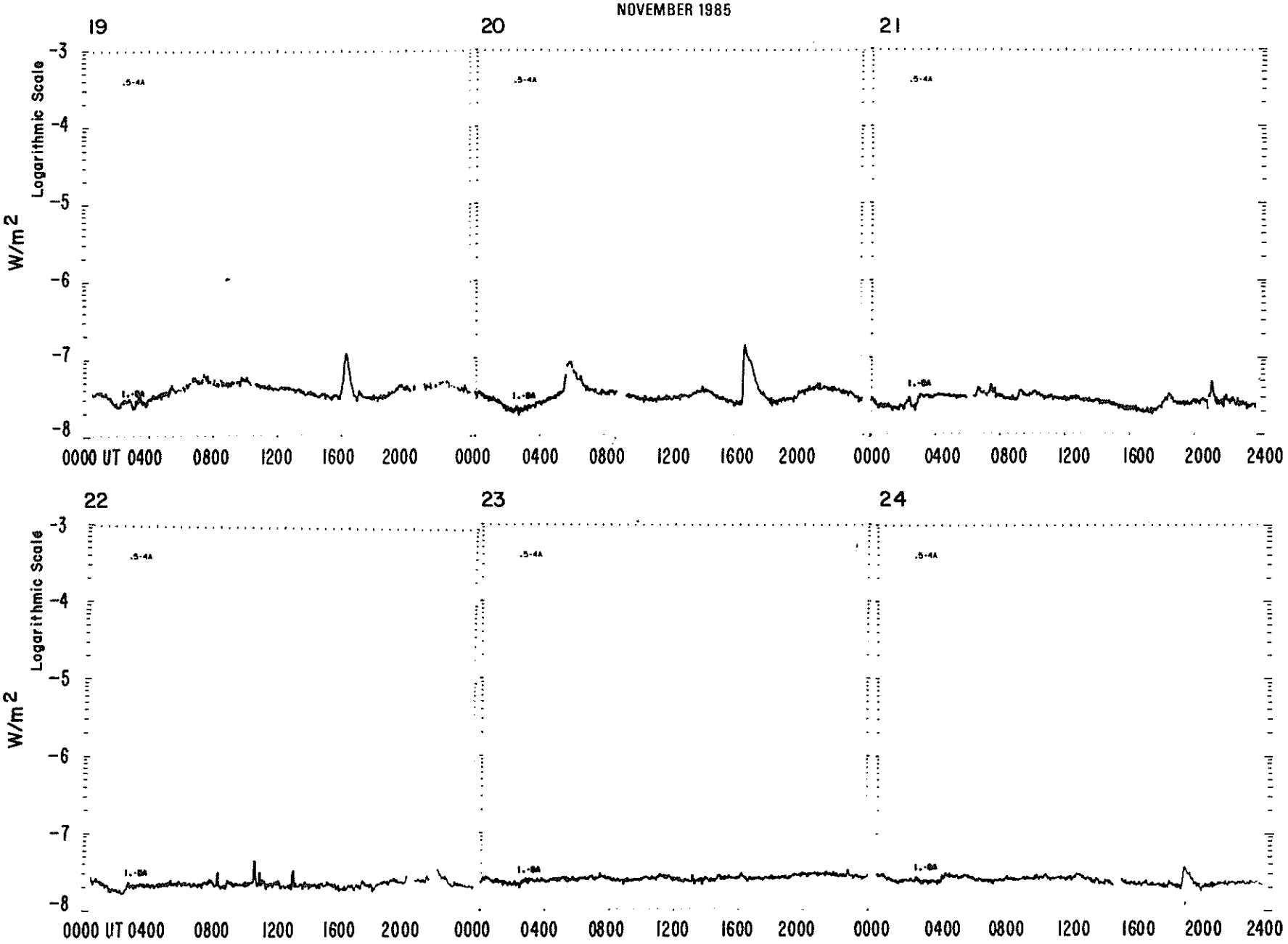
NOVEMBER 1985



15 Nov 85

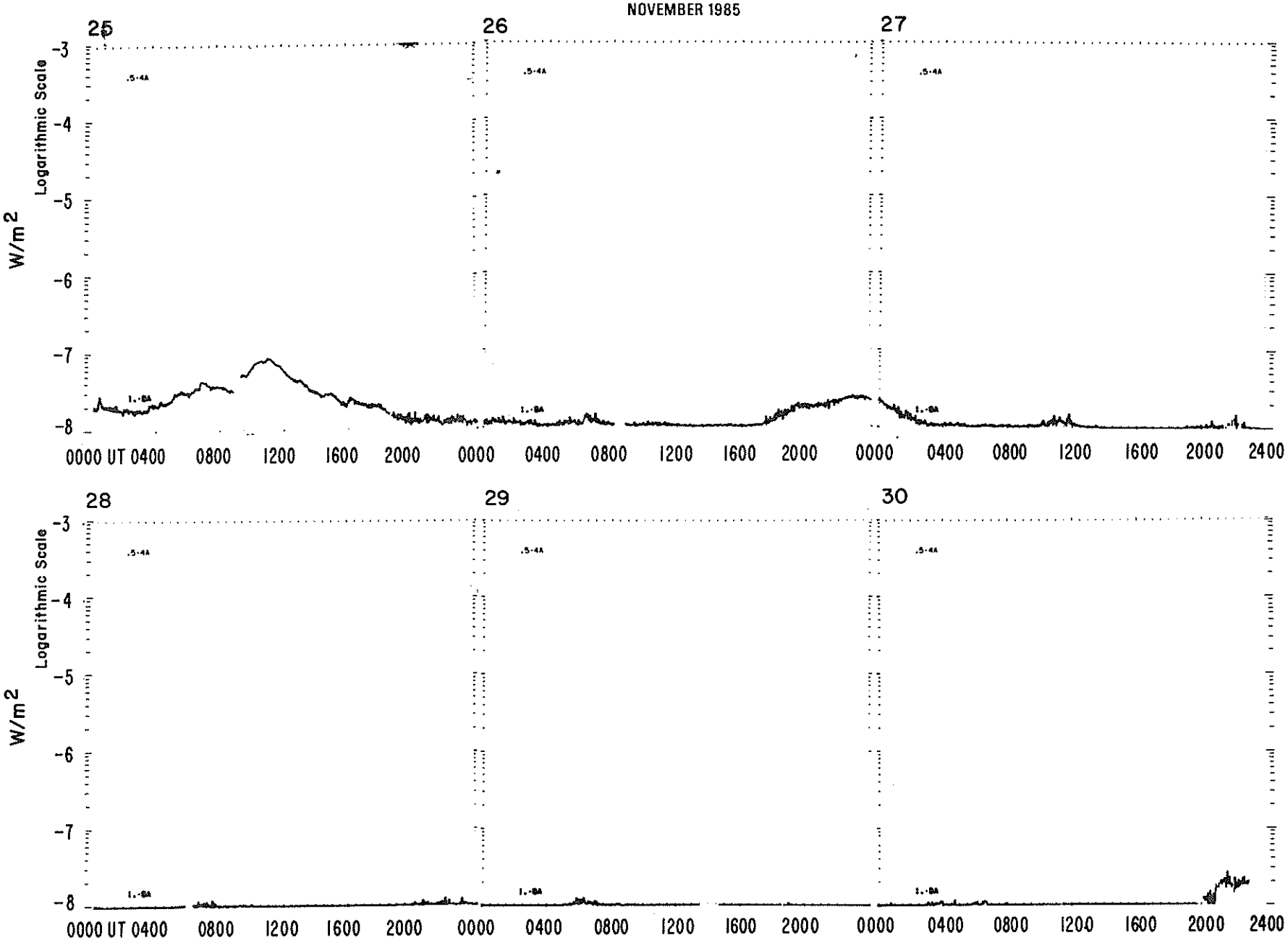
GOES 6 X-RAYS

NOVEMBER 1985



GOES 6 X-RAYS

NOVEMBER 1985



17 Nov 85

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

Preliminary Listing

November 1985

Day	Start (UT)	Max (UT)	End (UT)	Lat CMD	NOAA/ USAF Region	Imp Opt	Xray
07	1643	2032	2053				B1.8
07	2101	2106	2112		4700		B1.0
07	2158	2214	2224				B5.4
07	2248	2252	2257				B1.8
08	0108	0113	0123				B2.0
08	0410	0413	0417	N13 W60	4700	SF	B9.8
08	1158	1158D	1210	N15 W62	4700	SF	B1.5
08	1850	1856	1904				B3.0
08	2108	2108	2113	N14 W66	4700	SF	B1.1
09	1002	1007	1014				B1.2
09	1026	1029	1032				B1.2
10	0445	0454	0511				B1.8
11	0516	0521	0527	S11 E52	4701	SF	B1.2
11	0757	0800	0813				B1.0
11	0921	0929	0945	S10 E49	4701	SF	B2.3
11	1210	1225	1312	S09 E48	4701	SN	B2.2
11	1739	1747	1755				B2.0
12	0029	0035	0043				B1.3
12	1329	1333	1335				B1.0
13	0847	0850	0857				B1.1
13	1035	1041	1046				B1.8
13	1303	1308	1315				B1.0
13	1405	1412	1417				B2.2
13	1702	1711	1715		4703		C1.3
13	2250	2253	2255				B1.0
14	0109	0140	0159				B6.4
14	0218	0223	0234				B6.0
14	0705	0708	0710				B1.0
14	1549	1554	1558				B1.2
14	1721	1725	1728				B1.1
14	1811	1815	1819				B1.1
14	2012	2018	2023				B3.2
14	2150	2158	2206				B2.5
14	2345	2359	0015				B3.8
15	0322	0329	0337		4703		B2.3
15	0508	0511	0513				B1.4
15	1126	1129	1131				B2.1
17	0111	0114	0116				B1.0
18	0214	0219	0227				B1.1
18	0438	0440	0458	S10 W41	4701	SN	B1.5
18	0827	0833	0841				B1.0
20	1637	1646	1656	N02 W10	4704	SF	B1.5

Preliminary GOES-6 Data
Daily Average X-ray Background

December 1984 - November 1985

	1984 DEC	1985 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	B1.1	B0.0	B0.2	B0.1	B0.3	B1.6	B0.1	B1.1	B0.5	B0.1	B0.0	B0.0
2	B0.7	B0.0	B0.3	B0.0	B0.3	B1.7	B0.5	B1.0	B0.5	B0.1	B0.0	B0.0
3	B0.7	B0.0	B0.4	B0.0	B0.2	C1.1	B0.7	B0.9	B0.4	B0.1	B0.0	B0.1
4	B0.5	B0.0	B0.2	B0.0	B0.4	B7.7	B0.7	B0.8	B0.4	B0.1	B0.0	B0.1
5	B0.3	B0.0	B0.2	B0.0	B0.3	B0.3	B1.8	B1.0	B0.4	B0.2	B0.0	B0.0
6	B0.2	B0.0	B0.2	B0.0	B0.1	B0.8	B2.9	B1.1	B0.4	B0.2	B0.0	B0.1
7	B0.2	---	B0.3	B0.0	B0.0	B1.5	B1.0	B3.2	B0.6	B0.1	B0.1	B0.2
8	B0.2	B0.0	B0.4	B0.1	B0.0	B1.2	B1.0	B4.1	B0.6	B0.1	B0.0	B0.6
9	B0.5	B0.0	B0.3	B0.0	B0.0	B1.8	B1.0	B3.1	B0.5	B0.0	B0.0	B0.5
10	B1.0	B0.0	B0.3	B0.0	B0.0	B1.6	B1.2	B4.1	B0.3	B0.0	B0.0	B0.4
11	B1.0	B0.0	B0.2	B0.1	B0.0	B1.9	B1.0	B3.2	B0.2	B0.0	B0.0	B0.5
12	B0.6	B0.0	B0.1	B0.1	B0.0	B1.2	B1.0	B3.5	B0.1	B0.1	B0.0	B0.4
13	B0.4	B0.3	B0.1	B0.1	B0.0	B2.0	B0.9	B3.4	B0.0	B0.5	B0.0	B0.5
14	B0.5	B0.4	B0.1	B0.1	B0.0	B2.0	B0.7	B1.5	B0.0	B0.2	B0.3	B0.6
15	B0.6	B0.4	B0.1	B0.1	B0.0	B1.9	B0.7	B0.7	B0.0	B0.1	B1.2	B1.3
16	B0.5	B0.5	B0.1	B0.0	B0.0	B2.1	B0.6	B0.2	B0.0	B0.1	B0.9	B0.7
17	B0.5	B1.0	B0.2	B0.1	B0.0	B1.9	B0.5	B0.2	B0.0	B0.0	B1.0	B0.5
18	B0.3	B0.7	B2.3	B0.2	B0.1	B1.8	B0.3	B0.1	B0.0	B0.0	B0.5	B0.4
19	B0.3	B0.6	B1.8	B0.3	B0.1	B1.3	B0.2	B0.1	B0.0	B0.1	B0.6	B0.4
20	B0.2	B4.7	B0.8	B0.2	B0.1	B1.3	B0.1	B0.1	B0.0	B0.1	B0.7	B0.3
21	B0.3	B9.5	B0.5	B1.9	B1.0	B1.4	B0.1	B0.1	B0.1	B0.3	B0.9	B0.3
22	B0.2	B2.9	B0.5	B0.7	B2.9	B0.9	B0.1	B0.1	B0.1	B0.0	B2.4	B0.2
23	B0.2	B2.7	B0.2	B0.7	B3.8	B0.8	B5.5	B0.1	B0.4	B0.0	B1.8	B0.2
24	B0.2	B1.3	B0.1	B0.5	C1.0	B0.8	B1.3	B0.1	B0.1	B0.0	B3.5	B0.2
25	B0.2	B0.8	B0.1	B0.4	B5.5	B0.7	B0.1	B0.5	B0.1	B0.0	B3.4	B0.2
26	---	B0.6	B0.1	B0.4	B2.5	B0.5	B0.1	B1.0	B0.1	B0.1	B2.3	B0.1
27	B0.2	B0.1	B0.1	B0.3	B1.2	B0.5	B0.2	B1.0	B0.1	B0.0	B1.4	B0.1
28	B0.2	B0.0	B0.1	B0.4	B1.0	B0.4	B0.3	B0.8	B0.1	B0.0	B0.8	B0.0
29	B0.1	B0.0		B0.3	B1.4	B0.4	B0.9	B0.8	B0.1	B0.1	B0.7	B0.0
30	B0.2	B0.0		B0.3	B0.9	B0.3	B0.7	B0.8	B0.1	B0.0	B0.1	B0.0
31	B0.1	B0.0		B0.3		B0.0		B0.7	B0.5		B0.0	

ACTIVE PROMINENCES AND FILAMENTS

NOVEMBER 1985

Type	Day	Observed UT Start	End	Lat	CMD	Imp	Type	Sta	Remarks
APR	Nov 01	0750	1330	S22	W90		V	ATHN	
BSL	Nov 01	0800	0815	S10	E90	1-	C	CATA	
BSL	Nov 01	1230	1230D	S74	W90	1-	C	CATA	
BSL	Nov 04	1045E	1125D	S30	W90	1-	C	CATA	
AFS	Nov 05	0715	1345	N17	W18		V	ATHN	
DSD	Nov 05	0715	1345	N18	W18		V	ATHN	
BSL	Nov 05	0850E	0900	S22	W90	1-	C	CATA	
APR	Nov 05	1015	1345	S45	E90		V	ATHN	
BSL	Nov 05	1150	1155	N82	W90	1-	C	CATA	
APR	Nov 06	0850	0920	N10	W90		V	ATHN	
APR	Nov 06	0850	0920	N15	W90		V	ATHN	
BSL	Nov 07	1245	1250	S08	E90	1-	C	CATA	
BSL	Nov 08	0649	0711D	S06	E90	1	C	CULG	.04 R.
BSL	Nov 08	0850	0905	S28	W90	1-	C	CATA	
BSL	Nov 08	1030	1205	S08	E90	1-	C	CATA	
BSD	Nov 08	2347	0003	S01	E82	1	C	CULG	.04 R.
BSL	Nov 08	2347	0003	S01	E82	1	C	CULG	.04 R.
BSL	Nov 09	0805E	0805D	N50	E90	1-	C	CATA	
BSL	Nov 09	1230	1245D	N74	E90	1-	C	CATA	
APR	Nov 10	0600	1400	N13	E90		V	ATHN	
BSL	Nov 10	0720	0730	N85	E90	1-	C	CATA	
BSL	Nov 10	1020	1020D	S62	W90	1-	C	CATA	
APR	Nov 10	1050	1400	S21	E90		V	ATHN	
DSD	Nov 10	1250	1255	S10	E59		V	ATHN	
BSL	Nov 11	1050	1105	N05	E90	1-	C	CATA	
BSL	Nov 11	1115	1140	N05	E90	1-	C	CATA	
AFS	Nov 12	0655	1315	S09	E33		V	ATHN	
BSL	Nov 12	0750	0830	N05	E90	1	C	CATA	
BSL	Nov 12	0910	0930	S21	W90	1-	C	CATA	
ASR	Nov 12	0915	1315	N06	E90		V	ATHN	
APR	Nov 12	0915	1315	S07	E90		V	ATHN	
BSL	Nov 12	1145	1200	S58	E90	1-	C	CATA	
BSL	Nov 12	1145	1200	N78	W90	1-	C	CATA	
BSL	Nov 12	1230	1235	N66	W90	1-	C	CATA	
BSL	Nov 12	1235	1245	N68	E90	1-	C	CATA	
BSL	Nov 12	1240	1245	N83	E90	1-	C	CATA	
BSL	Nov 13	0840E	0845D	S36	E90	1-	C	CATA	
BSL	Nov 13	0945	1000	N48	W90	1-	C	CATA	
BSL	Nov 13	1230	1240	N87	E90	1-	C	CATA	
BSL	Nov 13	1230	1240	N64	W90	1-	C	CATA	
BSL	Nov 14	0820	0850	S68	E90	1-	C	CATA	
BSL	Nov 14	0840	0850	N68	E90	1-	C	CATA	
AFS	Nov 14	0930	1140	S09	E52		V	ATHN	
DSD	Nov 14	1110	1140	S10	E50		V	ATHN	
AFS	Nov 15	0730	1330	S09	E44		V	ATHN	
DSD	Nov 15	0730	1100	N03	E41		V	ATHN	
ADF	Nov 15	0730	1330	N04	E45		V	ATHN	
APR	Nov 15	0730	1330	S39	W90		V	ATHN	
ADF	Nov 17	0750	1120	S06	E03		V	ATHN	
ADF	Nov 17	0750	1120	S12	E04		V	ATHN	
BSL	Nov 18	0730E	0750	S65	E90	1-	C	CATA	
BSL	Nov 18	0805E	0810	N10	W90	1-	C	CATA	
BSL	Nov 18	0830E	0850	N62	E90	1-	C	CATA	
BSL	Nov 20	0900	0915	N45	E90	1-	C	CATA	
BSL	Nov 20	0930	0940	N34	W90	1-	C	CATA	

ACTIVE PROMINENCES AND FILAMENTS

NOVEMBER 1985

Type	Day	Observed UT Start	End	Lat	CMD	Imp	Type	Sta	Remarks
APR	Nov 21	0700	1415	N11	E90		V	ATHN	
ADF	Nov 21	0700	1415	S13	W44		V	ATHN	
ADF	Nov 21	0700	1415	N06	W37		V	ATHN	
BSL	Nov 21	1045E	1115D	S62	E90	1-	C	CATA	
BSL	Nov 21	1055	1125	S72	E90	1-	C	CATA	
BSL	Nov 21	1115	1125	N14	W90	1-	C	CATA	
APR	Nov 21	2136	2336	S39	W90	2	C	CULG	.06 R, 4 degrees.
BSL	Nov 22	0820E	0830D	S38	E90	1	C	CATA	
APR	Nov 23	0750	0845	N38	W90		V	ATHN	
BSL	Nov 23	0805	0825D	S24	W90	1-	C	CATA	
BSL	Nov 23	1005E	1010	N67	W90	1-	C	CATA	
BSL	Nov 23	1005E	1025	S12	W90	1-	C	CATA	
BSL	Nov 23	1015	1020	S84	E90	1-	C	CATA	
BSL	Nov 23	1020	1025	S62	E90	1-	C	CATA	
BSL	Nov 23	1025	1030	S74	W90	1-	C	CATA	
BSL	Nov 23	1030	1030D	S65	W90	1-	C	CATA	
BSL	Nov 23	1040E	1050	S65	E90	1-	C	CATA	
BSL	Nov 23	1210	1220	S74	E90	1-	C	CATA	
BSL	Nov 24	0700	0710D	S14	W90	1-	C	CATA	
BSL	Nov 24	0845E	0855	S83	E90	1-	C	CATA	
BSL	Nov 24	0845E	0900	S11	W90	1-	C	CATA	
BSL	Nov 24	0845E	0905D	S01	W90	1-	C	CATA	
BSL	Nov 24	0850	0855	S77	E90	1-	C	CATA	
BSL	Nov 24	0900	0905D	N02	W90	1-	C	CATA	
BSL	Nov 24	0915E	0925	N08	W90	1-	C	CATA	
BSL	Nov 24	0915E	0940D	S11	W90	1-	C	CATA	
BSL	Nov 24	0920	0940D	S13	W90	1-	C	CATA	
BSL	Nov 24	1005E	1015D	S11	W90	1-	C	CATA	
BSL	Nov 24	1055	1105D	S11	W90	1-	C	CATA	
BSL	Nov 24	1200	1210	N18	E90	1-	C	CATA	
APR	Nov 25	0923	1235	N21	W90		V	ATHN	
BSL	Nov 25	0940	0945	N05	W90	1-	C	CATA	
SDF	Nov 25	1030E	0725D	S48	W40	1	C	CATA	
SDF	Nov 25	1030E	0725D	N10	E25	1	C	CATA	
SDF	Nov 25	1030E	0725D	S14	E26	1	C	CATA	
SDF	Nov 25	1030E	0725D	S19	E45	1	C	CATA	
ADF	Nov 25*	0530	2044	N11	E28	3	C	CULG	*Overnight 18 degrees faint filament.
BSL	Nov 26	0945	0955	S83	E90	1-	C	CATA	
BSL	Nov 27	0745E	0810	N03	E90	1-	C	CATA	
BSL	Nov 27	0910E	0925	S19	W90	1-	C	CATA	
BSL	Nov 27	0935	0940D	N24	E90	1-	C	CATA	
BSL	Nov 28	0745E	0820	N51	W90	1-	C	CATA	
ASR	Nov 28	0950	1000	N11	E90		V	ATHN	
APR	Nov 28	0950	1000	S10	W90		V	ATHN	
BSL	Nov 28	1010	1020D	S29	E90	1-	C	CATA	
BSL	Nov 30	0945	1115D	N15	W90	1-	C	CATA	
BSL	Nov 30	1010	1015	S88	W90	1-	C	CATA	
BSL	Nov 30	1040	1100	N33	E90	1-	C	CATA	
BSL	Nov 30	1045	1105	S82	W90	1-	C	CATA	
BSL	Nov 30	1100	1115D	N46	E90	1-	C	CATA	
BSL	Nov 30	1125E	1245D	N15	W90	1-	C	CATA	

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

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

For more detail and information about Remarks, see SGD Supplement.

C O N T E N T S

Comprehensive Reports MISCELLANEOUS DATA Number 501 Part II

Page

IAU Quarterly Bulletin on Solar Activity
Inventory of Data 24
Descriptive Text. 25-33

Meudon Observatory Cartes Synoptiques de la Chromosphere Solaire et Catalogues des Filaments et des Centres d'Activite
Inventory of Data 34
Descriptive Text (en francais). 35-38

International Astronomical Union **QUARTERLY BULLETIN ON SOLAR ACTIVITY**

Inventory of CONTENTS

I. **Sunspots** -- 1917-1983 (current)

Daily Sunspot Numbers: 1917-1983
Daily Sunspot Numbers (Central Zone of the Solar Disk): 1967-1983
Daily Sunspot Area: 1956-1983

Character Figures -- 1917-1944
Calcium Flocculi
Bright and Dark Hydrogen Flocculi
Ultraviolet Radiation

Evolution of Sunspot Groups: -- 1947-1948

II. **Synoptic Charts of Solar Magnetic Fields** -- Dec 1969-1983 (current)
Mt. Wilson Solar Observatory

III. **Chromospheric Flares** -- 1934-1982 (current)

Also, Table of Active Regions -- Aug 1935-1982 (current)

IV. **Coronal Observations** -- 1947-1983 (current)

Currently includes Alma Ata, Kislovodsk, Lomnicky Stit,
Mt. Norikura, and Wendelstein Observatories

V. **Solar Radio Emission** -- 1947-1980 (current)

Daily Solar Radio Flux (many stations)
Outstanding Events
Nancay monthly chart
Toyokawa Solar Radio Active Region Maps
Some Spectral Data 1956-1968

Editor's Note: This publication is available from Dr. Hiei, Tokyo Astronomical Observatory, University of Tokyo, Mitaka, Tokyo, Japan. Also, WDC-A for Solar-Terrestrial Physics in Boulder holds paper copies and microfilm copies (available at the cost of copying).

IAU QUARTERLY BULLETIN ON SOLAR ACTIVITY Descriptive Text

I. SUNSPOT
Sunspot Relative Numbers and Sunspot-Areas

The first column gives the definitive international Sunspot-Numbers for the whole disk of the sun (Ri), established by the Sunspot Index Data Centre - Brussels on the basis of the observations of Locarno station as reference; the second that for the central zone (Ric) on the basis of the observations of Bruxelles-Uccle station with a cooperating network.

The diameter of the central zone is half that of the sun's disk.

The sunspot-areas Ac are determined at Catania, Ar at Roma, and Ai are evaluated by the Sunspot Index Data Center-Brussels from the observations from several observatories.

The apparent total area of the umbra plus penumbra is uncorrected for foreshortening and expressed in millionths of the solar disk.

II. SYNOPTIC CHARTS OF SOLAR MAGNETIC FIELDS
Mount Wilson Observatory

These Synoptic Charts are constructed from the digital data of the daily magnetograms obtained at the 150-foot Tower Telescope at Mount Wilson. The spectrum line employed is 5250.2, Fe I. The magnetograph at the Tower Telescope measures only the longitudinal component of the Zeeman effect. The aperture is a square, 12.5 arc seconds on a side, and the whole area of the sun is generally covered in one magnetogram with no overlapping.

Each Synoptic Chart is made up of computer-drawn segments from individual days' observations. There is no averaging done at any point from more than one day's observation.

The solid horizontal lines represent the equator, $\pm 20°$, $\pm 40°$, and $\pm 60°$ latitude. This is an equal-area projection, so that the line at the top of the chart represents the north pole, and the line at the bottom of the chart represents the south pole.

The Carrington longitudes are given at the bottom of the chart. The solid vertical lines represent each even 10 degrees in longitude.

Straight horizontal dashed lines represent the dividing line between regions where there are data and regions where there are no data due to incomplete observations.

Vertical dashed lines represent the dividing lines betwen observations from different days.

The longitude of central meridian at the time of observation is indicated by a short vertical line at the bottom of the chart and a caret at the top of the chart.

Black magnetic contour lines represent positive fields (Magnetic vector pointed toward the observer), and red contour lines represent negative fields. When a contour line represents a lower rather than a higher value, the line is dashed. Thus if there is a positive 10 gauss contour line that is solid surrounding a dashed contour line, the latter represents positive 10 gauss, and within it is less than positive 10 gauss. Thus rule applies only to contours which are not open at a boundary between two days observations.

The gauss levels are ±5, ±10, ±20, ±40, ±80 gauss. Corrections are made to compensate for limb darkening or any other decrease in the brightness of the light but no corrections are made for possible geometrical effects such as the inclination to the line of sight of the line of force at high latitudes, and no corrections are made for the fact that the spectrum line is temperature sensitive. (cf. Howard and Stenflo, Solar Physics, 22, 402 (1972) for the necessary correction factor.)

Positions are generally accurate to about 12 arc seconds. Naturally there is some smearing of the data at high latitudes because of the geometry of the situation. Data greater than 40° from central meridian should be treated with some caution. Serious inaccuracies of fit at the boundary between two days' observations are normally due to rapid growth of a region.

Partial support for the observation and reduction of this material comes from the National Aeronautics and Space Administration through grant NGR 09-140-015, the National Science Foundation through grant AST 77-24752, and the U.S. Office of Naval Research through contract N00014-76-C-0113.

III. ERUPTIONS CHROMOSPHERIQUES BRILLANTES

N O T I C E

During two General Assemblies of IAU, at Sydney on 1973 and at Grenoble on 1976, our colleagues have had the opportunity of giving their opinion about flare observation and their reports published both in the "Quarterly Bulletin on Solar Activity" and in the "Solar Geophysical Data" at Boulder. The new layout, beginning on January 1st 1976, takes into consideration both the expressed wishes and the actual difficulties of this monitoring program of solar activity.

The report will show, in a chronological order, a list of all reported events whatever their importance. In fact since we claim to establish a complete and exact list of chromospheric flares, we run into the diversity of both the flaring phenomena and the actual observing conditions. Rather than deciding amongst various data in order to get an a priori adjustment of a flare model we wish to render a faithful account of all the observations: we see it as the only workable way since we do not actually have any unquestionable criteria for selecting someone amongst several observers.

Frequently, during simultaneous operations by several observers, events pass unnoticed by some of them. Concerning small events, we are not surprised. If the importance 1 or more is attributed to an event reported by a single observer and if possible, we request new pieces of information from other observers; finally, even if this event continues to be questionable, it will be at its right place in the flare list to which will be added all available pieces of information about it.

For an event reported by several observers, we show the actual uncertainty of the times of beginning and maximum and we print the figure of an area only for sufficiently self-consistent data. Consequently the reader is advised to be careful in using data reported by a single observer whatever would apparently be their quality: complementary data would be needed in order to understand more closely the actual evolution of the relevant event.

The WDC-C, at Meudon, and the WDC-A, at Boulder, cooperate very closely in the preparation of these lists of events; in this way, the grouping of reports by event and the final evaluation are identical in both bulletins. The staff of the WDC-C at Meudon has the final responsibility of this work.

Lastly, concerning the delay in printing, one should take into account the fact that "Solar Geophysical Data" is a monthly report of both preliminary data and independent series of final data. Printing a set of final data, concerning a full quarter, brings an additional delay in the printing of the "Quarterly Bulletin on Solar Activity".

P. Simon
Chairman, IAU Working Group on International Programs

TABLE 1 - CHROMOSPHERIC FLARES AND GAPS IN PATROL

The headline of the table shows the Month and the Year; the Day in the Month is in the first column. Each line reports:

- either a definite gap of the patrol; the break times are shown in the first columns,
- or a flare, according to the above description in the columns.

DEB — The time of a flare beginning ("Debut") is accompanied by: "x" sign if the beginning was reported by as single observer; "+" or ">" sign followed by one digit if the beginning was reported by several observers. In this case, as an example, 1324+5 means a beginning reported between 1324 and 1324+5 i.e., 1329). Likewise 1324 >9 means that the latest time reported is more than 9 minutes after 1324. Otherwise the reported time concerns the beginning of a survey of a flare already in progress.

MAXI — If the maximum is reported by several observers, its time is followed by a + or > sign and one digit with the same meaning as for a beginning.

FIN — End: a time followed by an "x" shows that the observer is supposed to have reported the end of the flare; if there are several such reports, the time "x" is the average of the significant times. A time without "x" is related to a patrol break of an event still in progress

LAT LON — Average of heliographic coordinates.

MEUDON — Number of an Active Center identified at Meudon (see Table 3).

MCMA — Number of an Active Center identified at the McMath Hulbert Observatory (according to SGD).

IMP. The importance takes into account both the area and the intensity according to the table below.

Corrected Area (square degrees)	Imp. Area	Intensity	Imp. Intensity
< 2.1	S		
2.1 - 5.1	1	Faint	F
5.2 - 12.4	2	Normal	N
12.5 - 24.7	3	Brilliant	B
>24.7	4		

If the reports do not agree, the area of importance will be a question mark "?" and, in the column "Observatories", the information will be shown (see OBSERVATOIRES).

AIRES They show at first apparent area in millionths of solar disk, then the corrected area in heliographic square degrees. The corrected area is not shown if the length of the arc from the flare to the center of the disk exceeds 65°. No area is reported if the data scattering is larger than 2 or if the flare was reported by a single observer (see the Notice).

REM 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 spot 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 or K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in H-alpha 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 (II) 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-alpha line.
Y = System of loop-type prominence.
Z = Major sunspot umbra covered by flare.

OBSERVATOIRES Their name is followed by an "x" if the flare has been entirely seen and by a "blank" in the opposite case.
In addition a letter shows the observing method:
C - Complete or almost complete cinematographic sequence.
P - Only one or few photographs.
V - Complete or almost complete visual sequence.
S - Fragmentary visual report.
A question mark "?" in the "importance" column is always the result of a questionable report of importance 1 or more. Very different conditions could occur:
- Reported importances show a too large scattering: all the separate importances are reported in this column.
- Disagreement on the classification of the event: an event reported as a flare by one observer is identified differently by another one (e.g., "BSL" Bright Surge at Limb).
- Among several operating observers, only one reports the event. The cinematographic observers have been requested to give a second look to their film. If the event is not confirmed (referred as NO), all the relevant observatories are quoted, their names being followed by a "2" if the second look is without any result, by a "1" if the observer does not answer.

The ordering number attributed to each flare in a Quarter is shown in the last column.

TABLE 2 - TIME OF THE CINEMATOGRAPHIC PATROL OF THE CHROMOSPHERE

Definite gaps, by all observing methods, have been shown in the above table. This table shows only the cinematographic patrol. Gaps of a duration shorter than 10 minutes are not taken into account.

TABLE 3. ACTIVE CENTERS

Among the active centers identified at Meudon, this table only shows the flaring ones. Their identification number consists of that of the relevant Carrington Rotation followed by an ordering number in this rotation (see the "Cartes Synoptiques de la Chromosphere" compiled at Meudon).

In order to help statistical studies, the McMath number of the corresponding plage is shown in the last column. As a matter of fact, the two series do not coincide exactly: one plage may not be numbered by one or the other Observatory or, more often, one plage of McMath corresponds to several of Meudon.

We recall all the active centers are listed according to the dates of their Central Meridian Passage; their longitides are given in degrees inside the relevant rotation. The age at the Central Meridian is given in days: a center born in the West has a negative age.

The column "Duree en rotation" (Duration as a number of rotations) shows the number of rotations for which a number is attributed by Meudon to this active center. According to its growth, an importance is attributed, increasing from 1 to 10.

Under the head line "Nombre d'Eruptions" (flare number) the first column "total" shows, for each center, the total number of reported flares. Sometimes it is written: 4 + 6(15) which means: 4 flares are related only to this center and 6 both to this one and to the center 15.

The second column ">S" shows only the flares of importance 1 or more for each center.

The last line, for a better understanding, recalls the flare numbers of both categories (total and >S) during the Quarter.

IV. CORONAL OBSERVATORIES

These are tables of the intensity of the solar corona in 5° angle increments around the limb of the Sun. Contributing Observatories: Alma Ata, Kislovodsk, Lomnicky Stit, Norikura, Wendelstein. Heliographic maps of the corona made at the Kislovodsk Station of the Pulkovo Observatory are also plotted.

V. SOLAR RADIO EMISSION

Observing Stations

1. Code names are consistent with those in Solar Geophysical Data (SGD), NOAA, Boulder, USA.
2. Std. CMP shows approximate UT of local noon. Two figures after each of Std. CMP may be used for estimating approximate observation time. For example, 1200,7,3 means that observations will be possible during the period between 1200-0700 and 1200+0700, and 1200-0300 and 1200+0300 near solstices in June and December respectively.
3. Underlined frequencies show that daily flux values are reported at these frequencies.

Daily and Monthly Means of Flux Density

1. Daily mean values are approximated by integers. Monthly mean values are approximated to tenths in the cases when the observations are complete, when the mean value is less than 10 solar flux units, or when number of days with no observation is only one for frequencies less than 1000 MHz. Mean values are not entered when number of days with no observation is greater than or equal to 4.

1 solar flux unit (s.f.u.) = $10^{-22}Wm^{-2}Hz^{-1}$.

2. Correction factors which are shown for frequencies greater than or equal to 500 MHz are derived from smooth spectrum connecting monthly means of absolutely calibrated values. They are marked with underlines when these values are consistent with those reported in the Final Report of the Working Group on the absolute solar radio flux calibration presented to the URSI General Assembly, Warsaw 1972 (cf. Solar Physics, 29, 243-262, 1973). The values of correction factor without underlines are regarded as provisional ones which are applicable only to the present 3 months.

Distinctive Events

Distinctive radio events are picked up when the reported peak flux near 10 cm (8 - 11.1 cm) is more than 20 s.f.u., or when Type IV on meter wavelengths is reported from spectral observations, or when a flare is reported of importance 2N or more.

Column 1: Date.
Column 2-5: Times of start, end, maximum and also durations are given by round numbers in minute.
Column 6: Peak flux density near 10-cm wavelength is given in solar flux units.
Column 7: Integrated 10-cm flux, i.e., "Mean flux' time' Duration' in units of 10 minutes. Unit is 600 sec times solar flux unit.
Column 8-9: The same as Columns 6 and 7 except the values are at peak or maximum flux in the frequency spectrum indicated in the Column 14 'Spectrum'.
Column 10-12: Reported intensity on dm, m and Dm wavelengths, checked by single frequency observations in some possible cases. Intensity classes are quite roughly defined as follows:

	Class 1	Class 2	Class 3
dm and m	5 - 50	50 - 500	> 500
Dm	5 - 20	20 80	80 - 300

Column 13: Shape of time profile. S-Simple, C=Complex, PR=Precursor, PI= Post-burst Increase.
Column 14: Frequency spectrum of the event. On dm, m and Dm wavelengths, reported spectral types are entered. On microwaves more than about 1 GHz, symbols are introduced which are explained by the following examples:
P5 -- means that the spectrum shows a peak at 5 GHz.
0.6\ -- means that the flux falls toward high frequency, and the flux at 0.6 GHz is entered in the columns 8-9 'Flux at fp'. It does not imply that no data are available below 0.6 GHz.
U1/9 -- means that the flux is minimum at 1 GHz and rises up to 9 GHz. The flux at 9 GHz then enters in the Column 8-9 'Flux at fp'.
/9 -- means the same case as above, but the frequency of minimum flux is not known. All we know is that the flux is maximum at 9 GHz and no observations are available at higher frequencies.
2-5 -- means that all we know is the flux is flat beteen 2 and 5 GHz.
Column 15: The first station name in the first line shows the origin of the selected data for fp and the following station names are entered arbitrarily. The station name with underline shows the origin of 10-cm values.
Column 16-17: Serial numbers of corresponding flares in SGD, and in this Quarterly Bulletin on Solar Actvity (QBSA). For the latter, 1204 means 4th event on the 12th.
Column 18-21: Values in QBSA are the same as those in SGD.

Important Bursts defined as having the following features are selected and underlined:

1. 10-cm peak flux is more than 500;
2. 10-cm integrated flux is more than 500 s.f.u.;
3. accompanied by m-Dm Type IV burst or outstanding particle event.

Activity Chart

This chart is the summary of solar activity near the boundary of chromosphere and corona observed by centimetric solar radio emissions, where the activity of active regions and the outstanding events are shown synoptically.

Active Regions

The intensity of each active region is expressed by the 'flux density on 3 cm' and the 'ratio of flux density 3-cm/8-cm' respectively.

o Flux density on 3 cm is less than 10 s.f.u.

Flux density on 3 cm is more than 10 s.f.u. The area is proportional to the flux density, or more precisely, Flux is equal to 278 times the square of 'a' where the side length 'a' is measured in unit of the length of one day on the chart. The square is open when the flux ratio 3-cm/8-cm is 0.7 or less.

Flux ratio 3-cm/8-cm is 0.8

0.9

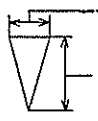
1.0

1.1 or more.

Approximate heliographic latitude and the number of Hale region are shown in the chart, which are based on the maps of sunspots and calcium plages as well as the 'Region of Solar Activity' in SGD. Radio data are based in the lambda 3-cm and 8-cm interferometers at Toyokawa.

10-cm Radio Bursts

Outstanding radio bursts listed on the table of 'Distinctive Events' are mapped in the following way:



Duration of the burst with extended time scale, the size length of one day is 100 minutes.
The height is proportional to the square root of Flux, where the size length of one day is 1000 s.f.u.

Emissive Regions at 169 and 408 MHz

Lower charts are the summary of radio activity in the lower corona based on the observations by the interferometers at Nancay.

1. 169 MHz. The beam-width is 3.8 arcmin. Daily distributions of intensity are plotted giving diagrams of evolution. Equal intensity levels have been drawn for intensities proportional to 0.6, 1.5 and 2. The first level corresponds to the Sun without any radio storm center. In each noisy radio region, the smoothed intensity around local noon is given in s.f.u.

2. 408 MHz. The beam width is 1.7 arcmin. Main lobe separation is about 25 arcmin. Position and intensity of centers are indicated. The intensity is given in s.f.u. In the cases of ambiguity about the position of the source owing to the multiple-beam scanning, the two possible positions are indicated by circles.

CARTES SYNOPTIQUES DE LA CHROMOSPHERE SOLAIRE
ET
CATALOGUES DES FILAMENTS ET DES CENTRES D'ACTIVITE

Synoptic Charts of the Solar Chromosphere and Catalog of the Filaments and the Active Centers

Inventory

Data Year	Vol.	Part	Meudon Observatory Publication
1919	VI	I	Descriptive Text -- Synoptic Charts plus Filament tables and summary statistical table.
1920	VI	II	
1921	VI	III	
1922-1924	VI	IV	
1925-1927	VI	V	
1928-1930	VI	VI	
1931	I	I	IAU Publication, Descriptive Text same as above.
1932	I	II	
1933	I	III	
1934	I	IV	
1935	I	V	
1936	I	VI	
1937	I	VII	
1938-1939	I	VIII	
1940-1944	I	IX	
1945-1947	II	I	UNESCO Publication, Descriptive Text New tables: Equatorial and Polar Filaments listing; Active Centers, 5° Zone Filament Activity; Disparition Brusque Listing.
1948-1950	II	2	
1951-1954	II	3	
1955-1957	III	1	Descriptive Text which refers to Vol II Part I text.
1957-1959	IV	1	New Descriptive Text, Filament table plus Active Centers No more Disparition Brusque separate listing. DBp, DB1-3, etc. begin in Filament table.
1960-1961	IV	II	
1962-1963	IV	III	
1964-1965	IV	IV	
1966-1967	V	I	
1968-1969	V	II	
1970-1971	V	III	
1972-1973	V	IV	
1974-1975	VI	I	New Descriptive Text, plots of filament positions for cycles 16-20; plots by rotation of eruptive activity; no longer UNESCO funded.
1976-1977	VI	2	
1978-1979	VI	3	
1980-1981	VI	4	
1982-1983	VI	5	

Editor's Note: This publication is available from Meudon Observatory, 92195 Meudon Principal Cedex, France. The WDC-A for Solar-Terrestrial Physics in Boulder holds paper copies and microfilm copies (available at the cost of copying).

OBSERVATOIRE DE PARIS

SECTION D'ASTROPHYSIQUE, A MEUDON

CARTES SYNOPTIQUES DE LA CHROMOSPHERE SOLAIRE

ET

CATALOGUES DES FILAMENTS ET DES CENTRES D'ACTIVITÉ

REMARQUES INTRODUCTIVES AU VOLUME VI

Les cartes synoptiques de la chromosphère solaire et les catalogues qui les accomagnent sont préparées et publiées à l'Observatoire de Paris - Meudon depuis 1919 (1), à partir d'images monochromatiques du spectre solaire (raie H α de l'hydrogène λ6563 Å et K du calcium ionisé λ3934Å) obtenues en France et dans plusieurs observatoires étrangers.

Les modifications formelles dues à l'apparition de certaines contraintes, à l'aménagement des présentations ont, dans le passé été marquées par un changement du numéro de Volume. Nous en conservons la tradition.

Le Volume VI qui est introduit ici a des cotes nouvelles pour s'adapter au standard commercial actuellement en vigueur. Ce nouveau format nous a néanmoins permis de conserver aux cartes les dimensions qu'elles ont toujours eues. La présentation nouvelle des catalogues s'adapte aux formats et caractères de l'I.B.M. de l'Institut National d'Astronomie et de Géophysique installé à Meudon. La mise "en mémoire" des mesures brutes de réduction des observations peut apporter, à long terme, à la fois une simplification du travail matériel et des possibilités nouvelles.

Dans chacun des fascicules de ce Volume seront groupés comme précédemment les documents relatifs à deux années consécutives :

- Les Cartes Synoptiques, par rotation solaire.
- Les Catalogues des filaments chromosphériques représentés sur chacune des cartes à l'exception du premier qui contient les informations relatives aux filaments dont la durée de vie était encore indéterminée à la fin du fascicule précédent.
- Les Catalogues des centres d'activité.
- En complément à ces catalogues, des graphiques, à l'échelle des cartes, de la répartition des éruptions chromosphériques qui ont été signalées au cours de chaque rotation.

(1) Voir le sommaire à la fin du fascicule.

Pour mémoire, en ce début de Volume, nous rappellerons les conventions adoptées dans la présentation de ces documents :

LES CARTES SYNOPTIQUES

Les méridiens et les parallèles héliographiques sont représentés par un quadrillage. Un phénomène représenté à la latitude ϕ a sa dimensions longitudinale agrandie proportionnellement à sec ϕ . Le méridien origine, la période et le numérotage des rotations sont ceux de Carrington. Une rotation commence à l'instant où le méridien origine coïncide avec le méridien central de l'hémisphère visible.

La longitude de Carrington du méridien central de l'hémisphère visible, pour chaque jour à 0 heure en temps universel, est indiquée par les petits traits à la partie supérieure de chaque carte ; les jours se déduisent des quelques dates indiquées en repère ; les mois portés à droite et à gauche de chaque carte sont ceux de la date du début et de la fin de la rotation ; les grands bâtonnets placés au-dessus de la carte indiquent la longitude du méridien central des images utilisées.

Chaque carte présente un dessin synthétique des filaments chromosphériques et des centres d'activité observés au cours de la rotation.

Filaments

Le dessin des filaments sur la carte doit représenter au mieux leur position, leur forme et le degré de persistance de leurs différentes parties.

Les traces de chaque filament sur la chromosphère sont pointées et relevées pour chaque jour de visibilité. La superposition des relevés permet de déterminer la position et la forme à donner au double trait schématique.

Les parties noircies à l'intérieur du double trait correspondent aux portions de filament ayant persisté plus des deux tiers de la durée totale de visibilité de la région dans laquelle il est situé ; les parties hachurées plus d'un tiers et moins de deux tiers de cette même durée, les parties blanches moins d'un tiers.

Les filaments isolés, de très petites dimensions et visibles sur un seul cliché n'ont pas été retenus.

Compte tenu du ralentissement polaire de la vitesse angulaire de rotation, de sa disposition et de son orientation, un filament peut être identifié comme étant le retour d'un filament d'une rotation précédente. Le chiffre inscrit près du filament indique alors qu'il s'agit du 2ème, 3ème... nième passage de l'objet.

Centres d'activité

Les taches sont figurées par de petits cercles de diamètre proportionnel à leur étendue. Le diamètre adopté correspond approximativement au diamètre maximum observé pendant que la tache traverse l'hémisphère visible du Soleil, mesuré sur nos clichés K_{1v} et ramené à l'échelle des cartes. Une tache dessinée avec le plus petit diamètre peut représenter une tache à la limite de visibilité sur les clichés ou simplement une tache petite et éphémère. Un seul cercle peut au contraire représenter un groupe de taches très serrées, il est alors placé au centre de figure du groupe représenté.

Nous figurons l'aspect de la plage faculaire au moment du développement maximum des taches qu'elle contient, lorsque ce maximum s'est produit durant le passage dans l'emisphère visible ; ou sinon celui qu'elle présente au jour où son éclat est maximum. La densité et l'éclat des plages sont marqués par quatre teintes de hachures, la plus foncée correspond aux plages les plus intenses, la plus claire indique une facule "dispersée".

LES CATALOGUES

Catalogue des Filaments

Ces tableaux contiennent, de gauche à droite :

- les numéros d'identification des filaments dans la rotation, les objets étant classés par longitude décroissante,
- les coordonnées : ce sont approximativement les coordonnéées moyennes du centre de figure de l'objet,
- les "importances" estimées dans une échelle de 1 à 10,
- les nombres exprimant en milliers de kilomètres la hauteur de la protubérance mesurée au bord Est (5ème col.) puis au bord Ouest (6ème col). Ces mesures peuvent être remplacées par des tirets lorsque le filament est absent au moment où la région qu'il occupe passe à l'un ou l'autre bord solaire, par des guillemets lorsque le filament est présent mais que la protubérance correspondante n'est pas mesurable,
- les disparitions brusques observées sur le disque (D.B.). Elles peuvent être partielles et notées D.B.p. ; elles peuvent être totales et l'indication D.B. est alors suivie d'un chiffre indiquant l'importance du phénomène dans une échelle de 1 à 3, pratiquement celle préconisée par l'"I.G.Y. Instruction Manual" (Part. IV - Solar Activity).

Les dates inscrites dans la parenthèse suivante sont :

- celle de la dernière observation où le filament a été visible
- celle de la première observation où le filament a cessé d'être visible

L'intervalle entre les deux dates indiquées est le plus souvent d'une journée, deux au maximum. La disparition peut aussi parfois être signalée entre deux observations d'une même journée.

- les indications relatives aux filaments ayant persisté plus d'une rotation solaire.

Le filament distingué par le signe Rf. est le retour d'un filament de la rotation précédente, le numéro de cette rotation et le numéro d'identification de l'objet sont portés après ce signe. Dans la plupart des cas il s'agit bien de la rotation précédente, néanmoins près du méridien origine, par suite de la rotation différentielle, il peut être question pour les cas situés aux basses latitudes d'un filament de la même rotation, pour ceux de hautes latitudes d'un filament visible deux rotations auparavant.

- les colonnes suivantes indiquent que le filament effectue son nième passage et le nombre total des rotations où il a pu être identifié.

Catalogue des Centres d'activité

Comme le catalogue des filaments, les tableaux contiennent, de gauche à droite :

- les numéros d'identification des centres dans la rotation, les objets étant classés par ordre de longitude décroissante
- les coordonnées : ce sont celles du centre moyen des plages faculaires pendant leur traversée du disque solaire
- l'âge au méridien central, calculé en jours. Il est plus grand que 6 jours pour les centres actifs dont la naissance est antérieure au passage au bord Est. Il est précédé du signe + quand le centre est né avant le passage au méridien central, du signe - s'il est né entre le méridien central et le bord Ouest
- l'«importance» du centre, exprimée dans une échelle de 1 à 10. Cet indice tient compte de la persistance, de l'intensité et de l'étendue de la plage faculaire, du nombre et des dimensions des taches, cette dernière notion étant la plus importante
- l'état du centre pendant son passage ; l'abréviation s. t. signale à l'attention un centre n'ayant montré au cours de son passage aucune tache visible sur les spectrohéliogrammes K_{1v}
- les renseignements relatifs aux récurrences : un centre actif reconnu comme retour d'un centre actif de la rotation précédente porte la mention Rc. ; le numéro de cette rotation et le numéro d'identification dans cette rotation sont portés après ce signe
- les observations de l'état du centre à son passage au bord Ouest du Soleil : "croît, décroit, passe sans tache, dispersé, disparu". Elles permettent, complétées par l'âge du centre, de reconstituer approximativement l'évolution du centre pendant son passage dans l'émisphère visible.
- le nombre des éruptions associées à chacun de ces centres. A la différence des précédents volumes ces nombres tiennent compte de toutes les éruptions, quelque soit leur importance, signalées par les Observatoires qui participent à la surveillance mondiale. Fournis par le "World Data Center C" de Meudon, ils proviennent du travail préparatoire aux nouvelles normes adoptées pour les publications des listes d'éruptions : "Quarterly Bulletin on Solar Activity" (1.1976) et "Solar Geophysical data", (1.1975).

En annexe aux catalogues des centres d'activité, des graphiques, à l'échelle des cartes, fournissent la répartition de l'activité éruptive au cours de chaque rotation par tranche de 2°5 de longitude et 2° de latitude. Seules ont été négligées les éruptions signalées à 90° de longitude.

Lorsque le nombre des éruptions pour un même élément de la carte dépasse 9, le code suivant a été utilisé :

A pour 10 éruptions
B pour 11 et 12 "
C de 13 à 15 inclus
D " 16 à 19 "
E " 20 à 24 "
F " 25 à 30 "
G " 31 à 37 "
H " 38 à 45 "
J " 46 à 54 "
K " 55 à 64 "
L " 65 à 75 "
M " 76 à 87 "
N " 88 à 100 "
P plus de 100

Pour 1974 et 1975 la répartition est la suivante :

	1974	1975	1974 + 1975
Nombre total d'éruptions	2 598 +	1 167 =	3 765
Éruptions à 90° de longitude	114 +	39 =	153 (4 %)
Total des éruptions reportées sur les graphiques	2 484 +	1 128 =	3612 (96 %)

Actuellement les Cartes et leurs Catalogues sont le plus souvent utilisés dans leur aspect descriptif de la composante lentement variable de l'activité solaire au niveau chromosphérique. Elles permettent en effet de replacer tout événement observé dans le paysage des structures à grande échelle de l'atmosphère solaire comme dans le contexte historique local.

Il ne faut cependant pas oublier que les Cartes Synoptiques étaient, à l'origine, destinées à l'étude des protubérances et de leur évolution. Dès 1948, l'ensemble des résultats obtenus par l'analyse des observations et des cartes de la période 1919-1937 a fait l'objet d'un volumineux mémoire (L. et M. d'Azambuja - Annales de l'Observatoire de Paris - Tome VI fasc. VII). La période de cinq cycles undecennaux consécutifs maintenant couverte par cette publication et la bonne homogénéité de son contenu en font un outil statistique unique. Aussi pour clore cette introduction, nous avons choisi de montrer le diagramme complet de l'activité des filaments construit sur l'ensemble des 757 cartes publiées, telle qu'avait été présentés les deux premiers cycles solaires dans le Mémoire de L. d'Azambuja (p. 52-53).

☆U.S. GOVERNMENT PRINTING OFFICE:1986—676-027/20012

WORLD DATA CENTER A
FOR
SOLAR-TERRESTRIAL PHYSICS

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

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