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Frederick B. Dent, Secretary
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Robert M. White. Administrator
ENVIRONMENTAL DATA SERVICE
Thomas S. Austin, Director

Solar - Geophysical Data

NO. 354 FEBRUARY 1974

Part I (Prompt Reports)

DATA FOR
JANUARY 1974
DECEMBER 1973

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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SOLAR - GEOPHYSICAL DATA

No. 354

Issued in two parts

Hope I. Leighton, Editor

J. Virginia Lincoln, Director
Solar - Terrestrial Data Services Division

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ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JANUARY 1974

Jan. 1974	TIME OF ISSUE UT	GEOALERT
01	0300	WWA001 010300Z 91231 10000 20750 30110 40000 NO FLARES OBSERVED 80601 77771 SPOTNIL SOLQUIET
02	0200	WWA002 020200Z 91201 1XXX1 20740 30100 40000 NO FLARES OBSERVED 80602 77771 21016 QUIET SOLQUIET
03	0300	WWA003 030300Z 91202 10150 20760 30070 40000 30615 03000 80603 77773 30615 QUIET SOLQUIET MAGQUIET
04	0230	WWA004 040230Z 91203 10130 20760 30060 4XXXX 18106 01000 80604 77773 31815 QUIET SOLNIL
05	0300	WWA005 050300Z 91204 10140 20750 30080 40000 33114 00000 80605 77773 33114 QUIET SOLQUIET MAGQUIET
06	0300	WWA006 060300Z 91205 10110 20750 30100 40000 34515 00000 80606 77771 34515 QUIET SOLQUIET MAGQUIET
07	0300	WWA007 070300Z 91206 10000 20770 30080 40000 35815 01000 80607 77772 SPOTNIL SOLQUIET MAGQUIET
08	0300	WWA008 080300Z 91207 10140 20790 30020 40000 12207 00000 80608 77772 12207 QUIET SOLQUIET MAGQUIET
09	0300	WWA009 090300Z 91208 10320 20820 30060 40000 10608 00000 27210 01000 80609 77772 10608 QUIET 27210 QUIET SOLQUIET MAGQUIET
10	0300	WWA010 100300Z 91209 10420 20880 30050 40000 40606 00000 25811 00000 29012 01000 15411 00000 80610 77772 40606 QUIET 25811 QUIET 29012 QUIET 15411 QUIET SOLQUIET MAGQUIET
11	0300	WWA011 110300Z 91210 10610 20920 30100 40000 42008 01000 24509 00000 27414 00000 14113 00000 80611 77772 42008 QUIET 24509 QUIET 27414 QUIET 14113 QUIET SOLQUIET MAGQUIET
12	0300	WWA012 120300Z 91211 10630 20950 30060 40000 43107 00000 23309 00000 26213 00000 12912 00000 80612 77772 43107 QUIET 23309 QUIET 26213 QUIET 12912 QUIET SOLQUIET MAGQUIET
13	0300	WWA013 130300Z 91212 10711 20980 30030 40000 44607 00000 21910 00000 24813 01000 11511 00000 27316 01110 80613 77772 44607 QUIET 21910 QUIET 24813 QUIET 11511 QUIET 27316 QUIET SOLQUIET MAGQUIET
14	0300	WWA014 140300Z 91213 10781 20990 30030 40000 46006 01000 20811 00000 23515 00000 25717 02000 25009 00000 80614 77773 46006 QUIET 20811 QUIET 23515 QUIET 25717 ERUPTIVE 25009 QUIET SOLQUIET MAGQUIET
15	0300	WWA015 150300Z 91214 11022 20990 30050 40000 47907 00000 30711 00000 22214 00000 24417 00000 26712 01000 41909 01000 25714 00000 80615 77772 47907 QUIET 30711 QUIET 22214 QUIET 24417 QUIET 26712 QUIET 41909 QUIET 25714 QUIET SOLQUIET MAGQUIET
16	0300	WWA016 160300Z 91215 10761 20950 30150 40000 49007 12010 25413 00000 31812 00000 43108 04000 20916 00000 24617 00000 23117 00000 LARGE LIMB FLARE OCCURRED 15/1056Z AT N10W86 NO PROTONS EXPECTED 80616 77772 43108 ERUPTIVE 49010 CAUTION OTHER GROUPS QUIET MAGALERT RECURRENT 16/17
17	0300	WWA017 170300Z 91216 10932 20930 30101 40000 33212 00000 44909 00000 30416 00000 41117 00000 21717 02000 32511 00000 23914 00000 80617 77772 23914 CAUTION 49010 CAUTION OTHER GROUPS QUIET SOLQUIET
18	0300	WWA018 180300Z 91217 10780 20920 30171 40000 34612 00000 46309 01000 31816 00000 20417 00000 22614 00000 TWO IMPORTANCE 2 ERUPTIVE PROMINENCES WERE REPORTED - ONE AT 17/1253Z LOCATED NE07, THE OTHER AT 17/1925Z LOCATED NW07. NO PROTONS EXPECTED. 80618 77773 22614 CAUTION OTHER GROUPS QUIET SOLQUIET MAGNIL
19	0300	WWA019 190300Z 91218 10943 20900 30170 40000 36011 00000 33115 00000 31015 00000 21415 01000 35311 00000 42606 00000 40704 00000 A MINOR GEOMAGNETIC DISTRUBANCE IS IN PROGRESS BUT HAS NOT REACHED STORM INTENSITY 80619 77772 36011 QUIET 33115 QUIET 31015 QUIET 21415 QUIET 35311 QUIET 42606 QUIET 40704 QUIET SOLQUIET MAGQUIET
20	0300	WWA020 200300Z 91219 10911 20890 30060 40000 37612 01000 34515 00000 32316 02000 30315 00000 42405 02000 40514 00000 80620 77773 37612 QUIET 34515 QUIET 32316 QUIET 30315 QUIET 42405 QUIET 40514 QUIET SOLQUIET MAGQUIET
21	0300	WWA021 210300Z 91220 10590 20870 30100 40000 35815 00000 33416 00000 31415 01000 43706 03000 80621 77773 35815 QUIET 33416 QUIET 31415 QUIET 43706 QUIET SOLQUIET MAGQUIET
22	0300	WWA022 220300Z 91221 10571 20820 30140 40000 34617 00000 32414 00000 45107 02010 33813 00000 80622 77771 34617 QUIET 32414 QUIET 45107 QUIET 33813 QUIET SOLQUIET MAGQUIET

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JANUARY 1974

JAN. 1974	TIME OF ISSUE UT	GEOALERT
23	0300	WWA023 230300Z 91222 10370 20880 30040 40000 35918 00000 46406 15010 35116 04000 CLASS ONE FLARES FROM REGION AT N06W64 AT 22/1603Z, 22/1744Z and 22/1918Z. CLASS M1 FLARE FROM THIS REGION AT 22/0845Z. NO PROTONS EXPECTED. 80623 77772 46406 ERUPTIVE 35116 CAUTION SOLQUIET MAGQUIET
24	0300	WWA024 240300Z 91223 10540 20840 30050 40000 37118 00000 47607 07000 36517 04000 80624 77770 47607 ERUPTIVE SOLQUIET MAGQUIET
25	0300	WWA025 250300Z 91224 10000 20800 30030 40000 SPOTNIL 80625 77772 SOLQUIET MAGQUIET
26	0300	WWA026 260300Z 91225 10000 20770 30286 40000 MINOR MAGSTORM HAD GRADUAL BEGINNING AT 25/05XX 080626 77773 SPOTNIL SOLQUIET MAGALERT 26/27
27	0300	WWA027 270300Z 91226 10121 20740 30262 40000 30917 03000 MINOR GEOMAGNETIC STORM COUNTINUES 80627 77773 30917 QUIET SOLQUIET MAGALERT 27/XX
28	0300	WWA028 280300Z 91227 10000 20730 30292 40000 NO FLARES OBSERVED. MINOR GEOMAGNETIC STORM CONTINUES 80628 77773 SPOTNIL SOLQUIET MAGALERT 28/29
29	0300	WWA029 290300Z 91228 10000 20730 30142 40000 NO FLARES OBSERVED. THE MINOR GEOMAGNETIC DISTURBANCE IS DECREASING. 80629 77772 SPOTNIL SOLQUIET MAGALERT 29/XX
30	0300	WWA030 300300Z 91229 10000 20730 30172 49910 NO FLARES OBSERVED 80630 77772 SPOTNIL SOLQUIET MAGALERT MINOR 30/31
31	0300	WWA031 310300Z 91230 10141 20730 30101 40120 32301 00000 80631 77772 32301 QUIET SOLQUIET MAGNIL

RELATIVE SUNSPOT NUMBERS

ZURICH, R_Z

1973 PROVISIONAL — 1974

DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	7	40	65	24	8	26	36	89	68	31	46	18
2	17	38	79	46	8	25	28	129	66	33	20	15
3	22	35	93	64	16	29	21	135	52	23	24	13
4	21	32	93	77	14	24	28	127	50	20	0	12
5	41	22	75	92	7	32	34	108	44	0	0	8
6	32	32	75	68	16	44	40	84	38	0	0	0
7	34	38	76	82	37	46	42	77	70	0	0	0
8	53	50	71	52	34	44	40	72	22	0	7	29
9	60	53	68	30	28	34	38	75	23	0	8	36
10	61	67	65	25	35	30	27	62	8	0	16	44
11	59	69	62	26	60	23	23	42	0	7	9	49
12	80	92	46	18	58	14	0	27	0	0	9	60
13	83	79	41	7	52	15	0	0	8	9	8	45
14	85	78	37	7	51	9	0	0	10	11	8	74
15	74	73	35	25	46	16	0	8	16	12	17	77
16	54	64	29	33	41	9	0	33	18	13	26	64
17	36	52	16	34	34	22	0	20	19	12	40	65
18	28	44	15	41	18	36	7	16	15	16	47	52
19	18	34	32	42	38	23	7	8	0	22	41	58
20	30	23	42	32	46	8	7	30	0	16	49	49
21	31	20	45	52	75	8	15	39	0	23	52	37
22	25	30	67	53	61	14	10	48	20	29	52	36
23	33	37	72	47	48	0	17	58	38	39	52	28
24	38	29	73	57	48	9	22	63	36	37	52	16
25	48	27	67	64	47	14	28	82	53	38	60	0
26	37	23	67	46	43	8	38	82	59	54	68	8
27	36	32	67	51	38	9	37	83	53	56	26	0
28	36	43	60	32	39	10	47	80	66	54	14	8
29		46	54	23	51	17	56	75	70	54	0	7
30		50	42	21	33	11	64	71	63	55	0	0
31		56		17		22	82		37		0	0
MEAN	42.1	45.4	57.6	41.5	37.6	20.4	25.6	60.8	33.0	22.1	24.2	29.3

1972 yearly mean = 68.9

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1973 — 1974

DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	88.6	99.5	119.0	111.9*	85.2	90.9	86.9	114.9	109.0	87.0	86.9	71.5
2	88.6	101.6*	118.1*	115.0*	83.1	93.1	86.8	129.2*	106.1	83.9	86.3	73.2
3	93.1	97.8*	129.4	117.3	81.5	93.5	85.0	136.5	103.5	81.1	82.7	73.3
4	94.1*	96.6	122.3	115.9*	81.0	94.9	86.2	135.0*	94.9	77.4	78.6	72.5
5	94.3	94.8	117.7	115.0*	82.5	97.9	85.1	135.1*	90.6*	73.9	73.6	72.1
6	95.3*	98.9	112.7*	109.7	85.1	99.4	88.8	130.9	85.9	73.2	70.9	74.7
7	98.5	92.2	110.3	103.4	85.3	99.9	90.8	121.7*	82.2	72.1	70.4	76.0
8	100.5	98.9*	121.0	100.0	87.4	97.6*	87.5	115.7	80.1	70.4	70.9	79.7
9	100.9	104.7*	120.5	95.1	88.9	98.6*	87.1	113.1*	79.1	70.4	71.2	84.9
10	102.1*	105.6*	115.5	90.9*	91.0	100.5	83.4	106.7*	77.0	70.7	72.3*	89.2
11	101.2	113.4	110.3*	87.0	92.9	94.0	78.9	96.8	74.9	71.2	71.9	91.0*
12	104.6*	114.5	130.4*	86.8	93.6	85.4	76.3	89.5	72.0	70.7	72.5	94.6
13	104.7*	118.9	99.4*	85.2	96.3	80.3	74.7	84.6	70.5	72.6	73.1	94.8*
14	105.6	114.0*	92.7*	89.3	97.7*	79.5	74.1	82.9	72.7	73.8	73.8	98.7
15	104.7	107.1*	89.5	90.1	98.2	78.7	72.6	82.6	75.7	75.0	76.6	91.8
16	98.7	106.9	85.0	89.5	95.2	79.5	74.1	83.9	75.6	75.6	79.7	90.0
17	94.2	101.5	82.1	91.4	89.8	78.1	75.0	81.8	79.5	75.3	82.1	89.2
18	90.7	94.9	80.9	95.4	91.4	83.6	75.3	84.6	78.3	75.5	84.9	87.1
19	88.9	96.7*	82.8	99.4	99.2	81.6	75.4	86.6	76.7	75.4	87.8	85.8
20	89.4	91.0	86.4	104.7*	105.4	79.5	76.8	92.0	73.4	76.8	89.9	84.4
21	89.9	87.4	95.2	102.2	108.8	79.4	80.4*	94.9	80.0	80.7	97.6	79.7
22	89.7	90.3	105.0	103.1	109.4	77.6	80.4	99.5	85.0	84.7	96.7*	83.5*
23	91.4	87.1	109.2	99.6	108.8	78.6	81.8	103.9	89.9	86.5	96.0	81.0
24	93.6*	89.4	109.0*	104.5	106.1	81.6	85.3	106.2	97.6*	87.0	98.1	77.8
25	97.2	90.0	109.2*	104.7	101.3	83.8	88.9	112.7	101.0	88.0*	97.6	74.1
26	95.6	88.6	110.1*	101.1	100.3	85.0	91.2	115.5	101.0	91.8*	92.9	71.5
27	98.2	92.0	111.6*	99.9	94.8	85.5	95.1	115.9	101.7*	88.8	88.6	70.7
28	100.9*	94.2	112.6	94.1	95.2	84.2	97.5	118.1	100.7	90.7	81.7*	70.8
29		99.0	109.5*	93.3	95.1	89.5*	100.8	116.5	99.1	94.9	76.4	70.7
30		102.8	106.2*	90.8	94.1*	86.1	101.3	116.5*	97.4*	95.7*	74.1	70.8
31		110.3		87.2		86.6	109.6		90.5		72.0	71.3
MEAN	96.3	99.4	105.8	99.1	94.2	87.2	84.9	106.8	87.1	79.7	81.5	80.4

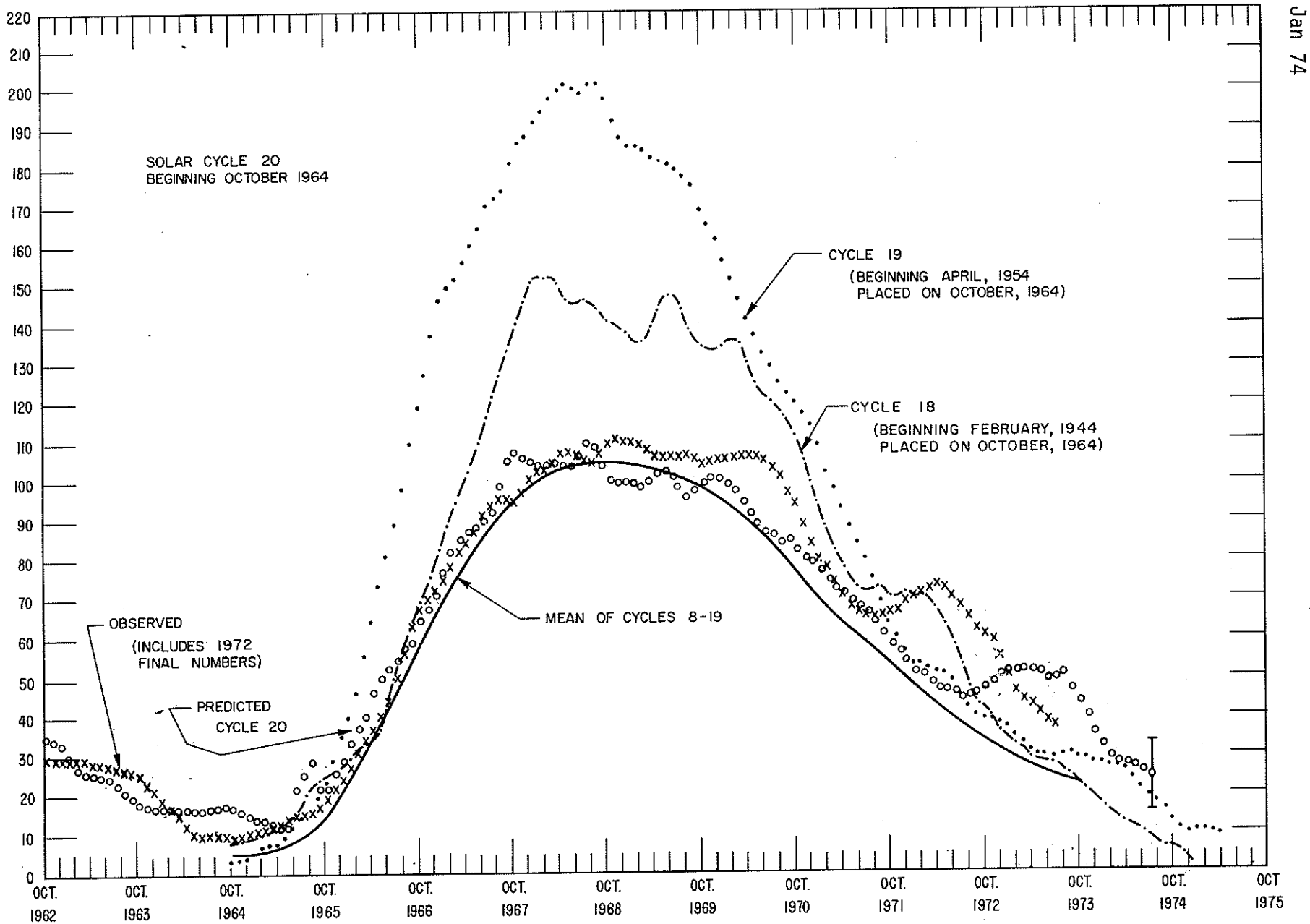
* adjusted for burst

DAILY SOLAR INDICES

JANUARY 1974

JAN. 1974	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$		AFCRL 15400	AFCRL 8800	AFCRL 4995	OTTAWA 2800	AFCRL 2695	AFCRL 1415	AFCRL 606	AFCRL 410	AFCRL 245
1	1	15	18	3	73.9	521	268	118	71.5	70.0	48.5	36.0	17.9	7.2
2	2	16	15	16	75.7	520	270	123	73.2	72.4	53.2	35.8	22.0	8.3
3	3	17	13	14	75.8	519	271		73.3	71.2	49.5	35.0	21.3	8.0
4	4	18	12	12	75.0	523	275	125	72.5	71.3	50.3	35.6	21.3	8.0
5	5	19	8	5	74.6	522	268	121	72.1	71.0	49.2	36.4	20.9	8.3
6	6	20	0	0	77.3	519	272	126	74.7	73.8	50.9	36.2	21.7	8.2
7	7	21	0	7	78.6	519	274	129	76.0	74.2	51.5	36.6	21.1	8.1
8	8	22	29	23	82.4	522	278	133	79.7	79.6	55.0	39.0	23.1	7.8
9	9	23	36	31	87.8	524	284	132	84.9	82.1	59.6	39.4	24.0	8.5
10	10	24	44	41	92.2	526	286	133	89.2	86.7	62.3	39.8	24.2	8.9
11	11	25	49	48	94.1*	526	285	132	91.0*	90.3	66.1	38.1	26.2	11.3
12	12	26	60	53	97.8	525	285	134	94.6	92.4	71.3	41.2	28.8	9.8
13	13	27	45	47	98.0*	519	275	135	94.8*	93.2	71.0	43.7	24.7	9.7
14	14	1	74	70	99.0	519	275	140	98.7	95.0	70.2	45.0	26.7	11.5
15	15	2	77	75	94.9	519	268	136	91.8	93.1			21.9	13.6
16	16	3	64	67	93.0	520	272	133	90.0	90.0	67.6	45.3	25.5	9.8
17	17	4	65	61	92.2	522	279	132	89.2	89.1	66.2	46.1	27.0	9.8
18	18	5	52	64	90.0	517	274	128	87.1	86.7	66.0	46.4	26.7	9.3
19	19	6	58	55	88.6	516	268	125	85.8	85.7	64.2	43.5	20.1	8.8
20	20	7	49	53	87.2	516	273	124	84.4	84.0	62.4	42.8		9.0
21	21	8	37	30	82.3	519	265	123	79.7	79.6	57.6	40.1		8.5
22	22	9	36	35	86.2*	516	266	130	83.5*	84.0	57.9	38.8	19.0	8.3
23	23	10	28	26	83.6	514	262	127	81.0	81.4	55.1	37.2	19.2	8.3
24	24	11	16	8	80.3	522	264	127	77.8	77.0	51.0	34.6	17.4	8.2
25	25	12	0	0	76.5	504	260	118	74.1	72.2	49.5	35.5	17.8	7.9
26	26	13	8	1	73.8	519	256	120	71.5	69.3	46.9	34.5	17.2	7.9
27	27	14	0	0	72.9	517	254	119	70.7	70.4	47.7	35.1	16.8	7.6
28	28	15	8	1	73.0	515	254	118	70.8	69.3	48.8	34.5		
29	29	16	7	1	72.9	516	261	117	70.7	69.6	47.5	35.8	17.0	7.7
30	30	17	0	2	73.0	516	264	118	70.8	70.8	48.3	35.1	17.3	8.1
31	31	18	0	1	73.4	515	262	119	71.3	68.2	49.2	34.6	17.7	7.9
MEAN			29.3	27.4	83.1	519	270	127	80.4	79.5	56.5	38.6	21.6	8.8

* Corrected for burst.



PREDICTED AND OBSERVED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 20

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1964										9.6	10.2	11.0
1965	11.7	12.0	12.5	13.6	14.6	15.0	15.5	16.4	17.4	19.7	22.3	24.5
1966	27.7	31.3	34.5	37.4	40.7	44.6	50.3	56.6	63.1	67.6	70.2	72.7
1967	75.0	78.8	82.2	84.6	87.4	91.3	94.1	95.3	95.3	95.0	97.1	100.6
1968	102.6	102.9	104.7	107.2	107.6	106.6	105.2	104.8	107.0	109.9	110.6	110.1
1969	110.0	109.6	108.0	106.4	106.2	106.1	105.8	106.4	105.4	104.1	104.6	104.9
1970	105.6	106.0	106.2	106.1	105.8	105.3	103.8	101.0	97.2	93.9	89.4	84.1
1971	80.4	77.8	74.4	70.9	68.1	66.7	65.4	64.6	65.8	66.2	66.8	69.4
1972	70.8	71.2	72.4	73.4	72.9	70.5	68.1	65.4	62.0	60.3	58.5	54.8
1973	50.3	45.8	43.6	42.3	40.3	38.6	37.2	36.6 (2)	35.8 (4)	34.3 (5)	32.6 (5)	31.0 (6)
1974	29.7 (6)	28.4 (7)	27.5 (8)	26.8 (8)	26.3 (8)	25.5 (9)	24.2 (9)	22.7 (9)	21.1 (9)	19.8 (9)	18.4 (10)	17.4 (10)
1975	16.6 (10)	15.7 (10)	15.0 (10)	14.5 (9)	13.9 (9)	13.5 (10)	13.3 (11)					

For each month, the upper figure is the observed or predicted Zürich smoothed sunspot number. The lower figure in parenthesis is the corresponding absolute value of the 90% prediction interval, an indication of the uncertainty above and below the predicted number. Observed numbers are those with no prediction intervals. The observed smoothed sunspot numbers are based on final Zürich numbers through 1972.

The predicted sunspot numbers are derived from a regression analysis based on cycles 8 through 19. Tests indicate that earlier cycles are from a different statistical population. From July 1968 - February 1970 a regression analysis based on cycles 1 through 19 was used because it had not then been proven that two populations exist.

SOLAR FLARES

PARTIAL LISTING

Solar Flares for which at least one observatory has assigned a numerical importance of "1" or greater.

JANUARY 1974

OBSERVATORY	OBSERVED UT: DATE JAN	START	END	MAX. PHASE	LOCATION: APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. CONO.	TYPE	MEASUREMENTS: TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
CATA	08	1220E	1220D	1220	S16	E78	.976	12694	14.4		1F			1220	.58			(135)	
RAMY	08	1230	1246	1234	S04	E82	.990		14.7	16	SN	3	C						DE
TEHR	08	1231	1241D	1234	S07	E76	.969		14.2	100	SF	2	C		.12				
CANR	10	0930	0934D	0934	S17	E88	.999		17.0	40	SN		V	0934	.41				
CATA	10	0944E	1000D	0944	S24	E90	1.000	12702	17.2	160	1F			0944	1.44			(135)	A
MONT	10	0951E	1004	1000	S17	E85	.995		16.8	130	SN		C	1000	.21				D
MONT	12	1028	1045	1033	S19	E80	.982		18.4	17	SB		C	1033	.72				
CANR	12	1028	1045	1032	S17	E83	.990		18.7	17	1B		V		.72				
CRON	12	1030E	1050		S19	E84	.992	12703	18.7	200	1N		V						
CANR	15	1050	1124	1056	N07	W88	1.000	12686	8.9	34	2N		V	1100	1.65	6.40			
CANR	15	1050	1124		N07	W88	1.000		8.9	34				1118		.70			
MONT	15	1055	1116	1105	N07	W87	.999		8.9	21	SN		C	1105	.41				
ATHN	15	1056E	1120	1056U	N19	W80	.988		9.5	240	SN	2	V		.66				F
WENO	20	1332E	1420		N06	W29	.515	12708	18.4	480	1N		V		5.16				B
PALE	22	1911	1936	1920	N09	W62	.894	12708	18.1	25	1F	2	C		2.26				F
RAMY	22	1918	1930	1922	N06	W60	.874	12708	18.3	12	1N	4	V		1.86				DE
PALE	31	2133	2141D	2138U	S05	E45	.705	12723	4.3	80	1F	2	C		1.44				F

"Remarks":
A = Eruptive prominence, base at >90°
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 spots visible in the neighborhood.
H = Flare with high velocity dark surge.
I = Very extensive active region.
J = Plage with flare shows marked intensity variations.
K = Several intensity maxima.
L = Filaments show effects of sudden activation.
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 Hα line.
S = Brightening follows disappearance of filament (same position).
T = Region active all day.
U = Close and somewhat parallel bright filaments (|| or Y shape).
V = Occurrence of an explosive phase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα emission.
Y = Onset of a system of loop-type prominences.
Z = Major sunspot umbra covered by flare.

Note: Catania and Capri-S express Maximum Intensities in percent of the local undisturbed chromosphere instead of percent of the local continuum. Parentheses are used to indicate this difference.

SOLAR FLARES

Date, time (UT) and coordinates of Subflares not included in preceding table.

JANUARY 1974

02	0520E	S15	E08	02	1029E	N13	W08	02	1100	S15	E04	02	1107	S16	E01	03	1939E	S12	E87
06	2231E	S15	W57	08	0101	S22	E54	08	1144	N07	E15	08	1144	N08	E15	08	1145E	N18	E16
08	1543	S07	E79	09	2040	S18	E90	09	2046E	S16	E90	10	0311E	S18	E90	10	0912	N09	W10
10	1108	S13	E54	10	1455E	N12	E48	11	0825	N05	W32	11	0830E	N04	W23	11	1314	S08	E38
12	0657E	S12	E56	12	0918	S19	E80	12	1015	S12	E56	12	1015E	S13	E56	12	1805	S09	E20
13	1609E	N05	W57	13	1610E	N05	W56	13	1625	S16	E62	13	1654E	S16	E62	13	1654E	S17	E58
14	1430	N03	W14	14	1650E	N04	W71	15	0059	N10	W20	15	0117E	N06	W80	15	0212	N04	W78
15	0619E	N07	W84	15	0627	N09	W23	15	0702	N07	W86	15	0712	N04	W80	15	0716E	N04	W75
15	0758E	N07	W86	15	0828E	N07	W88	15	0857	N07	W85	15	0922	N10	W20	15	1128	S14	E60
15	1422E	N07	W84	16	0932	N13	W42	16	1037	S13	E51	16	1049	S13	E49	16	1100	S18	E23
16	1945	S19	E21	17	0344	N12	W50	17	1030	S19	W07	18	0206	N07	W65	18	1124	N10	W73
19	0526	S18	W13	19	0857	S15	W62	19	0859E	S14	W64	19	0900	S15	W64	20	0330	N07	W26
20	1325E	N13	W11	20	1836	S16	W07	20	1837E	S16	W05	20	2254	N07	W37	21	0945	N07	W41
21	1838	N14	W25	21	1839	N13	W26	21	2049	N07	W47	21	2244E	N06	W50	21	2307E	N06	W52
22	0834	N07	W55	22	0840	N05	W56	22	0846E	N07	W55	22	0919E	N07	W56	22	1053	S16	W44
22	1143	N05	W60	22	1155	N04	W59	22	1155E	N04	W60	22	1157	N07	W58	22	1200E	N07	W59
22	1329	N05	W60	22	1335	N05	W59	22	1450E	S16	W50	22	1450E	N26	W40	22	1450E	N07	W60
22	1745E	N05	W61	22	1922	N16	W39	22	1923	N13	W42	22	2024E	N09	W62	22	2117E	N08	W62
22	2328E	S17	W50	22	2328E	S17	W50	22	2340E	N08	W62	23	0045E	S14	W53	23	0055	S14	W53
23	0109E	N07	W66	23	0109	N08	W64	23	0144E	N08	W64	23	0207	S17	W55	23	0959	N07	W69
23	1001	N07	W72	23	1010	N12	W78	23	1028	N07	W72	23	2044	N17	W55	24	1200	S15	W90
26	1025	S00	W17	26	1026	S17	W01	26	1104	S17	W01					26	1106	S00	W17

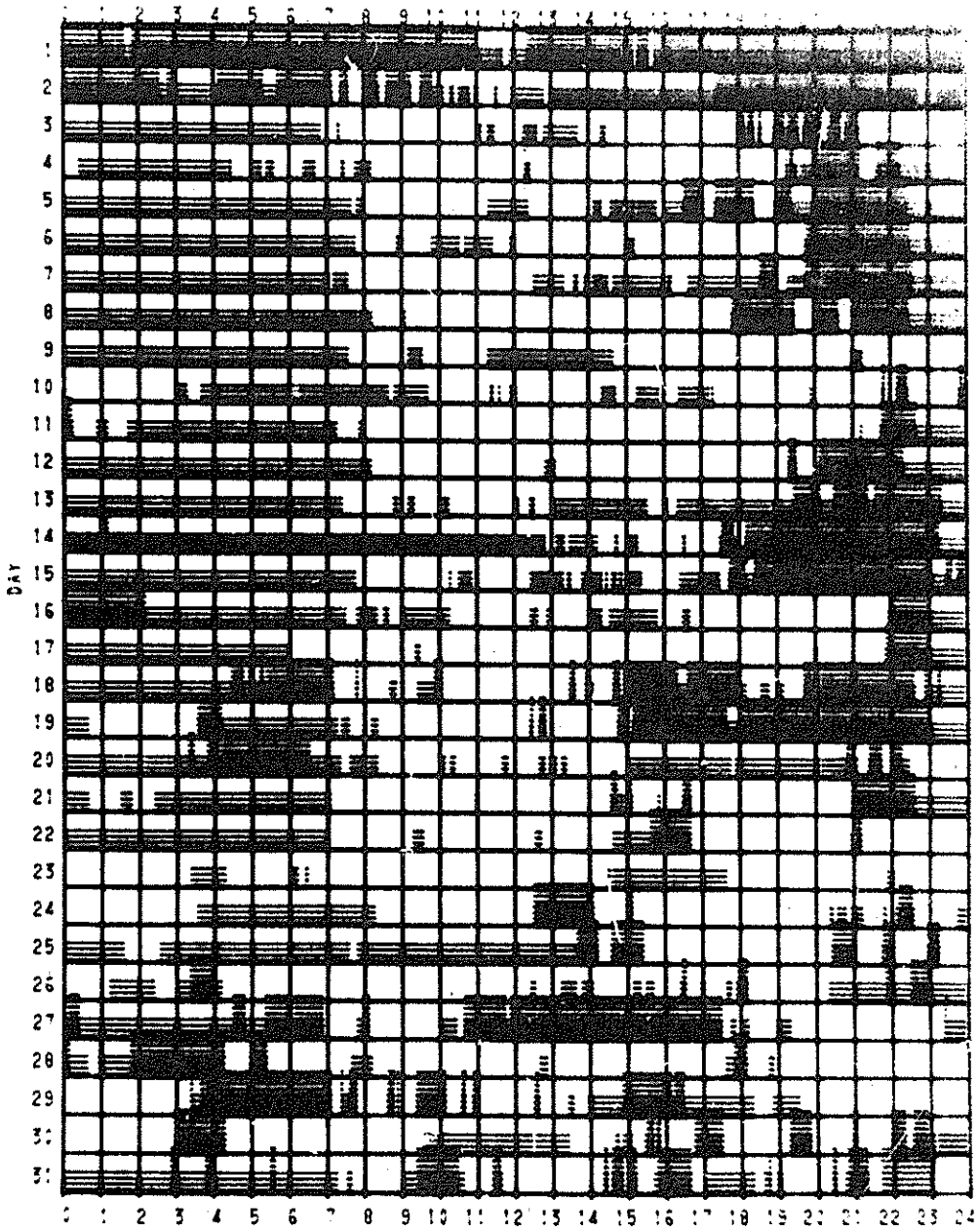
04	1531	N16	E01	08	1535	S08	E77
10	1025	S09	E90	11	1315	S09	E38
12	1838	S19	E77	14	1229E	N06	W73
15	0239	N04	W78	15	0758E	N07	W90
15	1340	N10	W11	16	1101	S17	E23
18	1851E	S17	E12	20	0647E	N06	W27
21	1838	N14	W25	22	0831E	S16	W44
22	1100	N07	W57	22	1329	N05	W60
22	1745E	N05	W61	23	0102E	S16	W53
23	1001	N07	W72	24	1905	S15	W90
26	1616	S16	W05				

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

JANUARY 1974

HOUR–UT



Observatories included in total patrol:

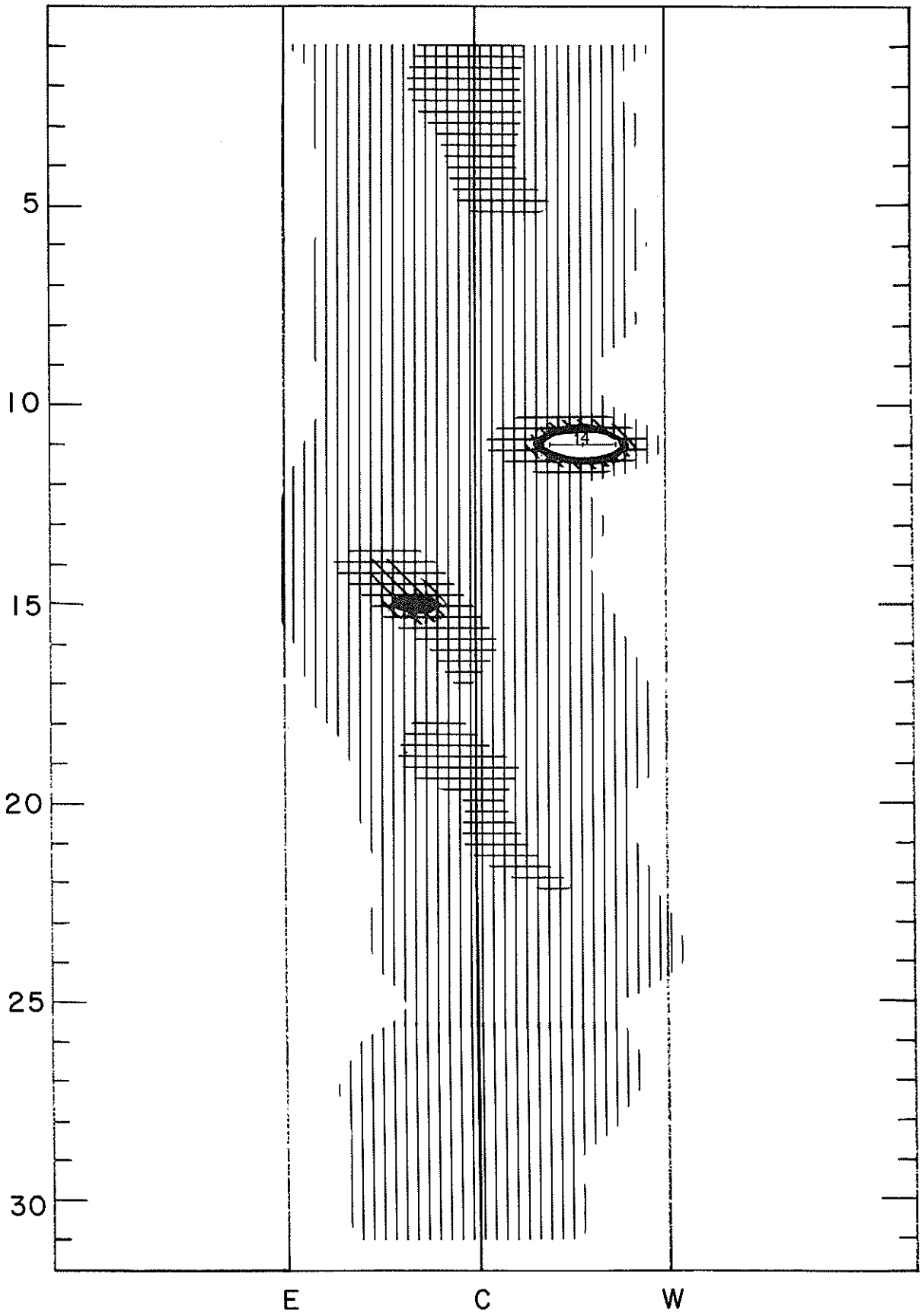
Athenes	Catania	Manila	Palehua	Upice
Bucharest	Gran Canaria	McMath-Hulbert	Ramey	Wendelstein
Carnarvon	Herstmonceux	Monte Mario	Tehran	

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
INTERFEROMETRIC OBSERVATION

JANUARY 1974

Nançay 169 MHz

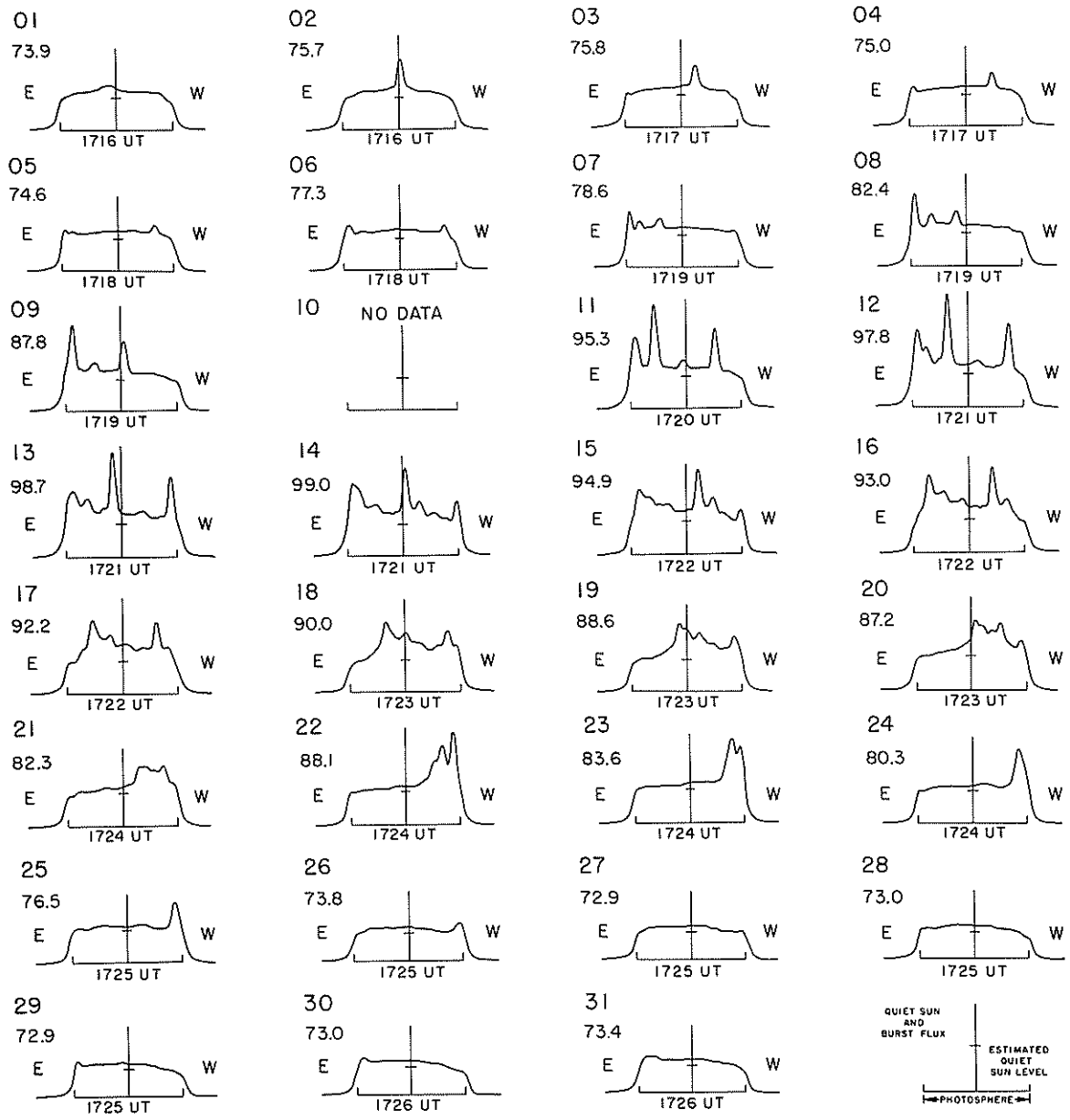


EAST-WEST SOLAR SCANS

JANUARY 1974

ALGONQUIN RADIO OBSERVATORY
CANADA

10.7 cm
Fan-Beam with 1.5 minutes of arc
E-W Resolution

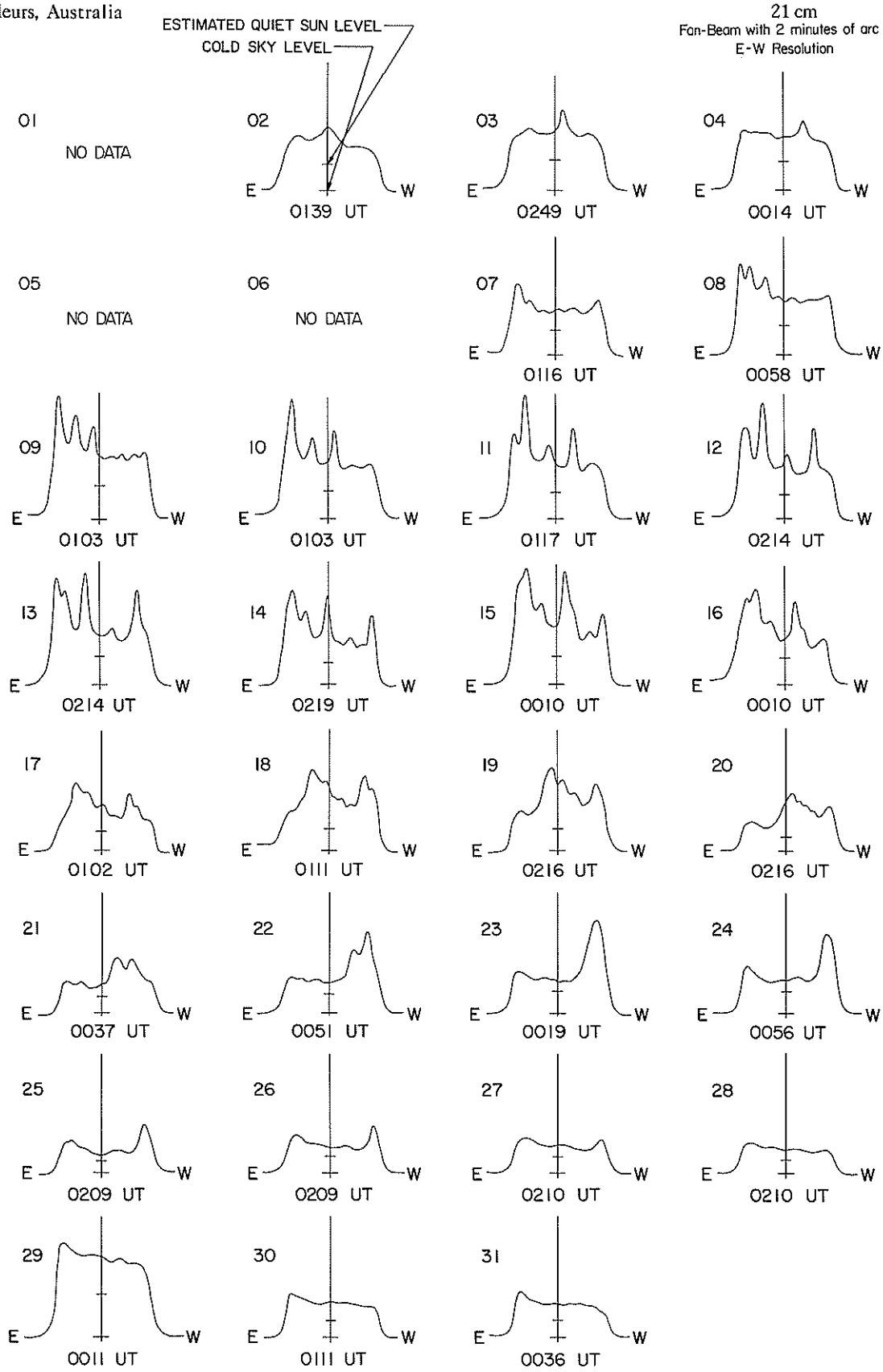


EAST-WEST SOLAR SCANS

JANUARY 1974

Fleurs, Australia

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



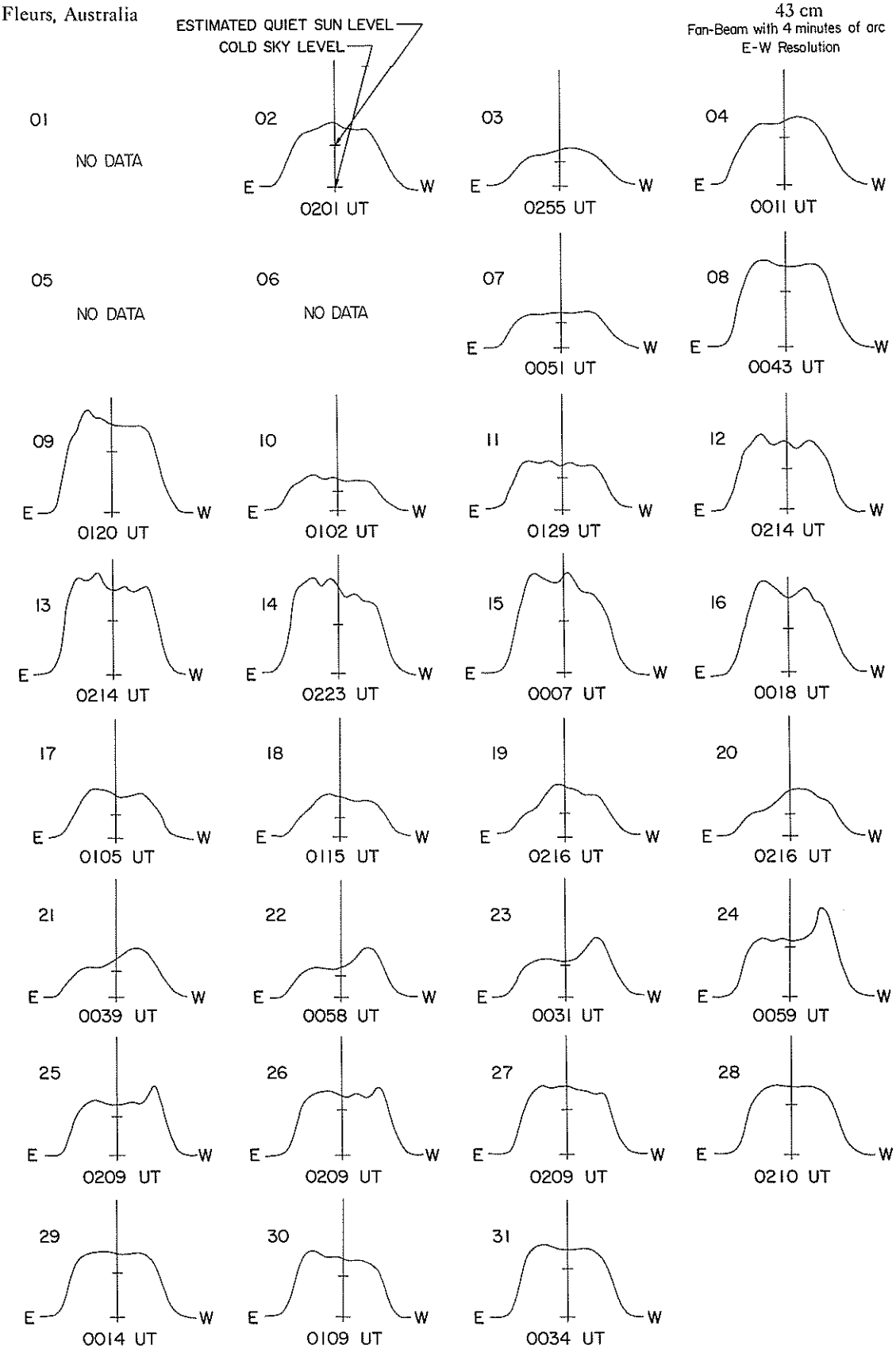
16
Jan 74

EAST-WEST SOLAR SCANS

JANUARY 1974

Fleurs, Australia

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



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1974

JAN. 1974	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
2	2695 CRON	3	0807	0809	4	4.0	1.0		
	2800 OTTA	24	1535	1615	40	1.1	0.5		
	2800 OTTA	24	1615		360 D	1.1			
4	2695 CANR	3	1732.5	1734	2.5	4.0	1.0		
5	2695 CANR	3	1717.5	1719.5	3	3.0	1.0		
	2695 CANR	3	1726.5	1729	4	4.0	1.0		
7	2800 OTTA	27	1715		60	.8	0.7		
	2800 OTTA	24	1715	1725	10	.8	0.4		
	2695 CANR	3	1721	1722.5	2.5	4.0	1.0		
	2800 OTTA	24	1725		45	.8			
	2800 OTTA	26	1810		5	.8	0.4		
9	2695 PENT	20	2038	2058	70	.8	0.5		
	2695 BOUL	3	2230.5	2231.5	2	4.0	1.0		
10	2695 CANR	3	1108	1109.5	2.5	3.0	1.0		
	2800 OTTA	24	1420	1427	7	1.6	0.7		
	2800 OTTA	24	1427		56	1.6			
	2800 OTTA	24	1523	1536	13	1.2	0.6		
	2800 OTTA	24	1536		390 D	1.2			
	2695 CANR	3	1636.5	1638	2	3.0	1.0		
11	2800 OTTA	20	1533	1540	40	1.2	0.6		
	2695 CANR	8	1633.5	1634.5	1.5	3.0	1.0		
	2800 OTTA	21	1700 E	1745	90 D	1.2			
	2800 OTTA	1	1720	1720.3	2	1.6	0.6		
	2800 OTTA	20	1830	1900	120	1.2	0.6		
	2695 BOUL	3	1845	1846	2.5	4.0	1.0		
12	2695 CANR	8	1028	1031.5	3.5	65.0	20.0		
	2695 CANR	8	1305.5	1306.5	2.5	4.0	1.0		
	2695 CANR	8	1320.5	1321.5	2	5.0	1.0		
	2695 CANR	3	1338.5	1339.5	2	3.0	1.0		
	2800 OTTA	21	1720	1813	90	1.8	0.9		
	2800 OTTA	2	1837	1838	2.5	2.6	1.0		
	2695 BOUL	3	1837	1838	2	3.0	1.0		
	2800 OTTA	1	2052.5	2053	1.5	6.4	3.2		
	2695 BOUL	8	2052	2052.5	2	9.0	4.0		
	8800 SGMR	1	2052.5	2052.9	.7	4.4	.9		
	2695 SGMR	1	2052.3	2052.9	1	7.4	1.5		
	2695 PENT	31	2054	2057	20	- .9	-0.5		
13	2695 CRON	3	0531.5	0532.5	4	11.0	2.0		
	2800 OTTA	23	1557	1614	65	2.2	1.1		
	2800 OTTA	8	1620.3	1620.5	.5	1.0	0.5		
	2800 OTTA	22	1845	1915	55	1.2	0.6		
	2695 PENT	20	1950	2040	92	1.8	1.0		
14	8800 MANI	3	0332.6	0333	1.2	37.1	5.9		
	2695 CRON	8	0331	0333	4.5	16.0	4.0		
	2695 MANI	3	0332.3	0333	3.2	11.8	4.2		
	2695 PENT	26	1845		40	1.6	0.8		
	2800 OTTA	26	1905		20	1.8	0.9		
15	2695 CANR	3	0951.5	0953	2.5	3.0	1.0		
	2695 CANR	45	1047	1055.5	140	41.0	6.0		
	2695 CRON	8	1053.5	1054	1.5	33.0	14.0		
16	2695 CRON	3	0629	0631.5	3.5	6.0	2.0		
	2800 OTTA	27	1519		43	1.0	0.7		
	2800 OTTA	24	1519	1520	1	1.0	0.5		
	2800 OTTA	24	1520		18	1.0			
	8800 SGMR	3	1532.3	1532.4	.2	14.2	4.3		
	2695 SGMR	3	1532.3	1532.4	.2	25.5	7.7		
	2800 OTTA	26	1538		24	1.0	0.5		
	2695 SGMR	1	1705	1705.2	.4	4.1	1.2		
	8800 SGMR	2	1715.8	1716.9	1.6	7.0	2.1		
	2695 SGMR	2	1715.5	1715.8	1.8	9.9	3.0		
18	2800 OTTA	20	1830	2000	210 D	3.4			
19	2695 CANR	3	1731	1701.5	2	5.0	2.0		
20	2800 OTTA	20	1836	1837	17	1.4	0.6		
21	2800 OTTA	20	1838	1845	40	.8	0.4		
	2800 OTTA	40	2048	2055	8	3.0			
	2695 BOUL	3	2153.5	2154.5	3	4.0	1.0		
	2695 BOUL	8	2234	2234.5	1.5	6.0	2.0		
22	2800 OTTA	20	1520	1630	135	2.6	1.3		
	2800 OTTA	27	1825		140	1.6	1.3		
	2800 OTTA	24	1825	1842	17	1.6	0.8		
	2800 OTTA	24	1842		90	1.6			
	2800 OTTA	26	2012		33	1.6	0.9		
	2695 PENT	20	2102	2122	50	.8	0.4		
23	2800 OTTA	27	1800		180	1.8	1.4		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1974

JAN. 1974	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
	2800 OTTA	24	1800	1840	40	1.8	0.9		
	2800 OTTA	24	1840		105	1.8			
	2800 OTTA	26	2025		35	1.8	0.9		
30	2800 OTTA	20	1710	1730	40	1.2	0.6		
	2695 PENT		1710	1730	40				NULL
31	2800 OTTA	20	1722	1735	28	.6	0.4		
	2695 PENT		1722	1735	28				NULL
	2695 PENT	24	2128	2140	12	.8	0.4		
	2695 PENT	24	2140		95 D	.8			

Observatories:

BOUL = Boulder
CANR = Canary Islands
CRON = Carnarvon
OTTA = Ottawa ARO
MANI = Manila
PENT = Penticton
SGMR = Sagamore Hill

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
32 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
49 Major +

PIONEER VIII

JANUARY 1974

Date Jan. 1974	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1] U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (days)	IP E-FIELD[2] 400 Hz (mv)	IP MAGNETIC FIELD[3] |B| (λ)	φ (°)	Condition	COSMIC RAY PROTONS[4] (particles/sec) >13.9 Mev	>64 Mev
1	2200-2327	2200	131.9	539	---	0.266	9.7	0.641	11.5	296		7.83	1.31
		2300		545	---	.454		.545	10.9	319		7.55	1.23
2	2145-2327	2200	132.	535	---	.044	9.8	.272	5.7	290		7.63	1.29
		2300		513	---	---		.336	5.6	294		7.62	1.41
3	2204-2355	2200	132.1	467	---	---	9.7	.294	4.8	329		7.75	1.4
		2300		477	---	---		.446	5.	321		7.66	1.44
4	1057-1251	1100	132.2	400	---	.031	9.6	.52	2.5	336		7.7	1.39
		1200		392	---	---		.61	2.3	270		7.64	1.39
6	2200-2335	2200	132.5	412	---	.045	9.7	.554	9.4	326		8.16	1.25
		2300		422	---	---		.61	8.9	311		8.1	1.1

[1] Wolfe - NASA/ARC.
[2] Scarfe - TRW, Inc.
[3] Ness - NASA/Goddard & Mariani - Univ. of Roma
[4] Webber - Univ. of N.H.

ESP = Earth-Sun Probe Angle.

PIONEER IX

JANUARY 1974

Date Jan. 1974	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1] U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (days)	IP E-FIELD[2] 400 Hz (mv)	IP MAGNETIC FIELD[3] |B| (λ)	φ (°)	Condition	COSMIC RAY PROTONS[4] (particles/sec) >13.9 Mev	>40 Mev
4	0026-0502	0100	-045.1	622	---	0.3	-2.97	0.26	6.5	347		6.4	1.07
		0200		648	---	.29		.29	5.5	328		6.29	1.17
		0300		691	---	---		.31	4.2	178		6.5	1.24
		0400		667	---	.33		.269	4.4	320		6.4	1.08
		0500		674	---	.37		.233	5.1	283		6.6	1.28
9	0031-0522	0100	-46.7	500	---	.068	-2.98	.28	9.	355		6.65	1.39
		0200		529	---	---		.32	9.2	350		6.67	1.34
		0300		512	---	---		.38	8.4	001		6.62	1.34
		0400		535	---	.114		.29	8.9	341		6.59	1.36
		0500		537	---	.102		.25	10.	350		6.66	1.21
11	1500-1600	1500	-47.4	462	---	---	-2.96	.3	4.9	283		6.65	1.17
16	0051-0538	0100	-48.8	392	---	.04	-2.91	.264	4.1	330		6.54	1.2
		0200		381	---	---		.3	4.	344		6.58	1.07
		0300		381	---	---		.25	4.2	345		6.	---**
		0400		389	---	.034		.325	4.6	348		5.	---**
		0500		391	---	.04		.32	4.5	352		8.	---**
23	0122-0534	0200	-51.7	572	---	---	-3.31	.13	8.8	112		6.	---**
		0300		563	---	.31		.14	11.6	106		6.	---**
		0400		569	---	---		.12	10.8	106		6.8	---**
		0500		555	---	.36		.14	10.1	125		6.8	---**
30	0455-0531	0500	-54.9	775	---	.3	-2.89	.18	8.8	288		6.35	1.14

[1] Wolfe - NASA/ARC
[2] Scarf - TRW, Inc.
[3] Sonett and Colburn - NASA/ARC
[4] Webber - Univ. of N.H.

ESP = Earth-Sun Probe Angle.

** Instrument in "Flare Mode"

Note: Data sampled hourly unless otherwise noted.

INFERRED IP MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1893	1971 DEC 20	T	A	A	A	A	A	A	A	T	T	T	T	–	T	T	T	T	T	T	T	T	T	T	–	T	T	T
1894	1972 JAN 16	T	A	A	A	A	T	T*	T	T	T	T	T	T	T	T	T	T	A	A	A	T	T	T	T	T	TA	A
1895	FEB 12	A	T	A	A	A	A	T	T	T	TA	A	–	A	T	T	T	T	TA	A	T	T	T	T	T	TA	A	A
1896	MAR 10	A	A	A	A	A	A	A	A	A	A	A	T	A	T	T	T	T	A	A	T	T	T	T	T	T	A	A
1897	APR 6	A	T	T	A	T	T	T	T	T	T	T	T	T	A	T	T	A	A	A	A	A	–	A	A	T	TA	A
1898	MAY 3	A	A	A	–	A	T	T	T	T	T	T	T	T	A	A	T	A	A	A	A	A	T	A	T	T	A	T
1899	MAY 30	A	A	*	A	A*	T	T	A	T	T	T	A	–	–	–	–	–	T	–	A	A	T	T	T	T	TA	A
1900	JUN 26	A	A	A	A	A	A	A	AT	T	T	T	TA	A	T	T	A	A	A*	A*	A	T*	T	T	T	T	T	TA
1901	JUL 23	A*	A*	A*	A	A	A	A	A*	T	T	A	A	A	–	A	T	T	T	T	T	A	T	T	T	T	A	–
1902	AUG 19	–	–	A	A	A	A	A	T	A	A	A	A	T	A	A	A	T	T	T	T	A	A	T	A	A	A	–
1903	SEP 15	A	T*	A	A	A	A	A	T	A	A	A	–	–	–	–	–	T	T	T	T	T	–	T	A	A	A	T
1904	OCT 12	T	–	–	A*	T	T	T	A	A	T	A	A	A	A	A	AT	T	AT	T*	T	–	A*	AT	T	T	*	A
1905	NOV 8	A	A	A	AT	AT	AT	T	T*	A	A	A*	AT	A	A	AT	T	T	TA	T	T	T	A	A	A	A	AT	T
1906	DEC 5	T	T	AT	–	–	T	T	AT	–	T	T	A	–	–	T	TA	A	T	T	T	A*	T	T	T	T	AT	T
1907	1973 JAN 1	T	T	T	T	T	T	T	–	AT	T	–	–	TA	A	A	A	A	A	T	–	–	T	–	T	–	T	T
1908	JAN 28	T	A	T	T	T	T	T	T	A	TA	A	A	AT	TA	AT	TA	AT	–	A	A	T	T	T	T	T	T	T
1909	FEB 24	T	T	TA	T	T	–	TA	A	A	T	A	A	A	AT	A	A	A	TA	A	A	TA	A	A	T	T	T	T
1910	MAR 23	T	T	T	A	T	T	T	TA	A	TA	A	A	–	A	A	TA	A	A	AT	T–	–	T	T	T	T	T*	T*
1911	APR 19	T	AT	T–	T	T	T	A	T	T	TA	A	A	A*	A	AT	TA	A*	T	A	TA	T*	AT	A	T	A	T	A*
1912	MAY 16	T	T	T	T	T	T	TA	T	A	AT	T	A	A	A	A	A	A*	A	A	A	A	T*	-A	A	–	T	T
1913	JUN 12	T*	T	–	T	T*	A	T	T*	T*	T	T	AT	A	A	T	–	T	A	A	A	A*	AT	–	T	A	A	T
1914	JUL 9	T	T	A	T	T	A	T*	T*	A	AT	–	A	T	TA	T	T	T	A	A*	A	A*	TA	A	TA	T*	T*	T
1915	AUG 5	T	A	A	AT	A	T	T*	T	*	AT	T	AT	T	A	TA	T	T	A	A	AT	A*	AT	A	A	TA	A*	A
1916	SEP 1	TA*	T	T	AT	A	TA*	A	*	T	T	T	A	A	A	T	T	T	A	T	A	A*	A	T*	A	A	A*	A
1917	SEP 28	A*	A	AT	T	A	A	A	A	A*	T*	AT	T	T	T*	T	T*	T*	T	A	T	A*	A	A	A	T	A	T	T
1918	OCT 25	T	T	TA	A	A	T	T*	A	A	A	A	A	T	T	T	T	TA	T	T	*	A	A	A	TA	T	–	A
1919	NOV 21	*	T	–	A	A	T	T	T*	TA	A	A	A	A	TA	T	T	T	T	*	T	T	T	T	T	A	A	T	T	–	T	A	TA	A	T
1920	DEC 18	TA	T	AT	A	A	T	T	AT	TA	A	T	A	*	A	A	A	*	AT	T	T	T	T	T	T	AT	*	T	T	T	T	–	T	A	T	–	T	T	A	TA	T	T	T	AT	TA	T	T	T	A	A	T	AT	T
1921	JAN 14	T	A	–	T	–	T	T	A	A	T	AT	A	A	A	A	A	–	A	A	–	AT	–	T	T	T	TA	–	*	–	A	T	T	T	–	A*																		

DECEMBER 1973 DATA

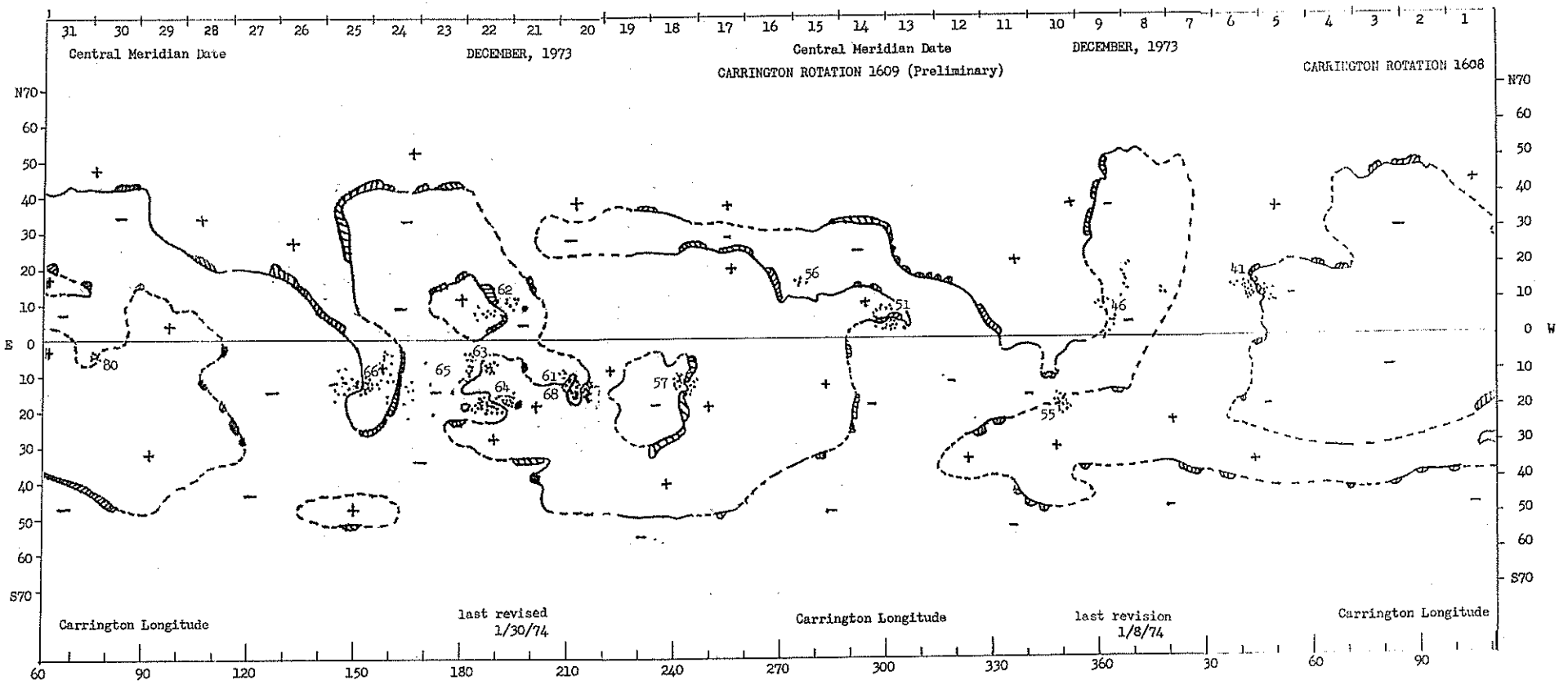
Contents

Errata: See page 91.

For explanations of the data contained herein see *Descriptive Text* published as supplement to February 1974 *Solar-Geophysical Data* (Number 354).

Hα SYNOPTIC CHARTS

DECEMBER 1973



DECEMBER 1, 1973 (P = 16.17, B_o = 0.85, L_o = 112.16)

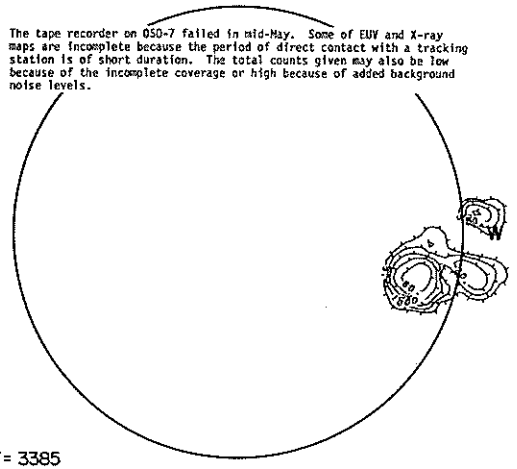
24
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A

Np

The tape recorder on OSO-7 failed in mid-May. Some of EUV and X-ray maps are incomplete because the period of direct contact with a tracking station is of short duration. The total counts given may also be low because of the incomplete coverage or high because of added background noise levels.



COUNT = 3385
ROLL = 6.3°
P-TH = 7.21

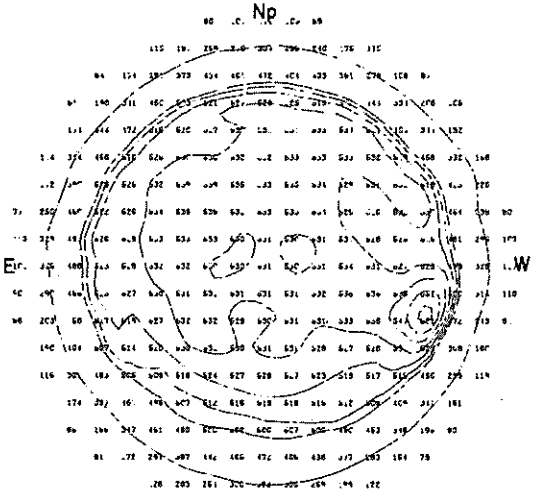
Sp
0655 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

Np



Sp
1645 UT

Contours in Intervals of 200° K

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

NO DATA

W

Levels
±5
±10
±20
±40
±80

Sp

STANFORD

9.1 cm

Np

E

Operation of the Stanford Microwave Spectroheliograph ceased August 31, 1973. The first map of the series was for July 4, 1959. Virtually gap-free data exist from 1964. These maps have been published in *Solar-Geophysical Data* from April 1960. Each year the data were placed on a 600 foot 9 track reel of magnetic tape and are available from R. N. Bracewell, Radio Science Laboratory, Stanford University, Stanford, California 94305.

W E

LOWEST CONTOUR = 40,000° K CONTOUR INTERVAL = 10,000° K

Sp
20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

N

NO DATA

S

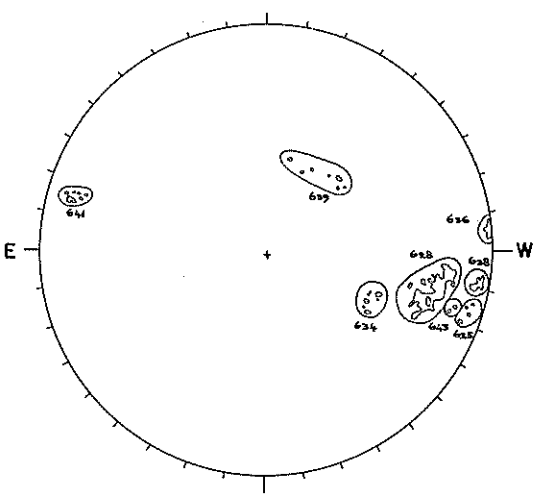
02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT

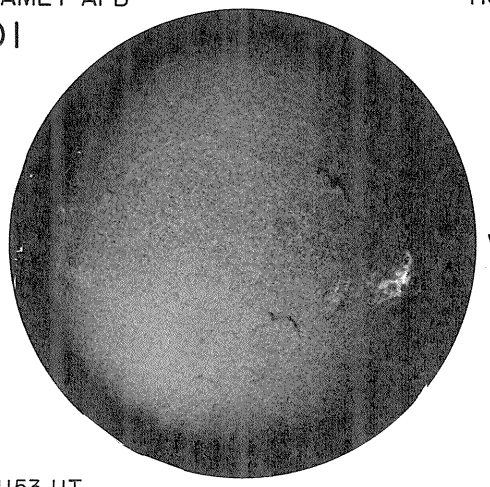
Np



FAIR	S
28-3300	-3.5
36-1100	-2.5

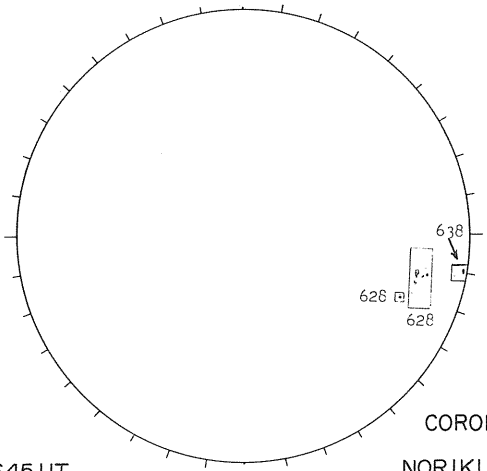
Sp
1500 UT

RAMEY AFB
OI



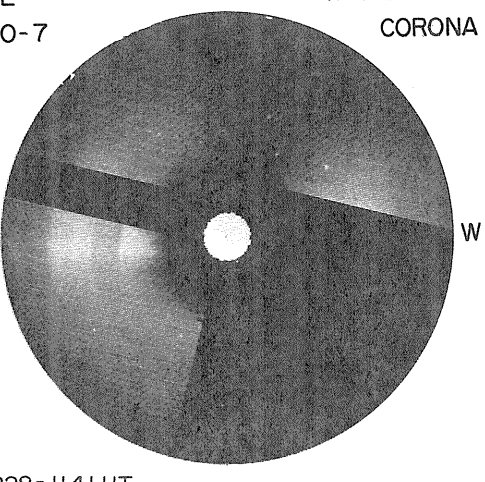
1153 UT

BOULDER
SUNSPOTS



CORONA
1645 UT
NORIKURA
NO DATA W LIMB

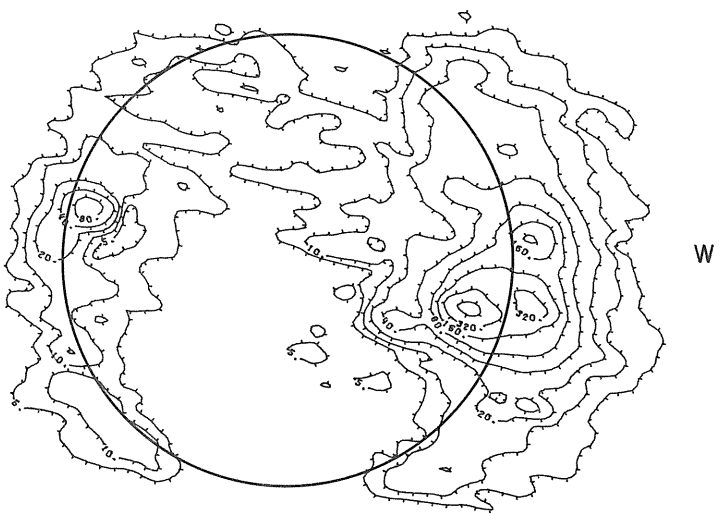
NRL
OSO-7
WHITE-LIGHT
CORONA



0228-1141 UT

NASA GSFC
OSO-7

FE XV
284A



COUNT = 25519
ROLL = 6.3°
P-TH = 7.21

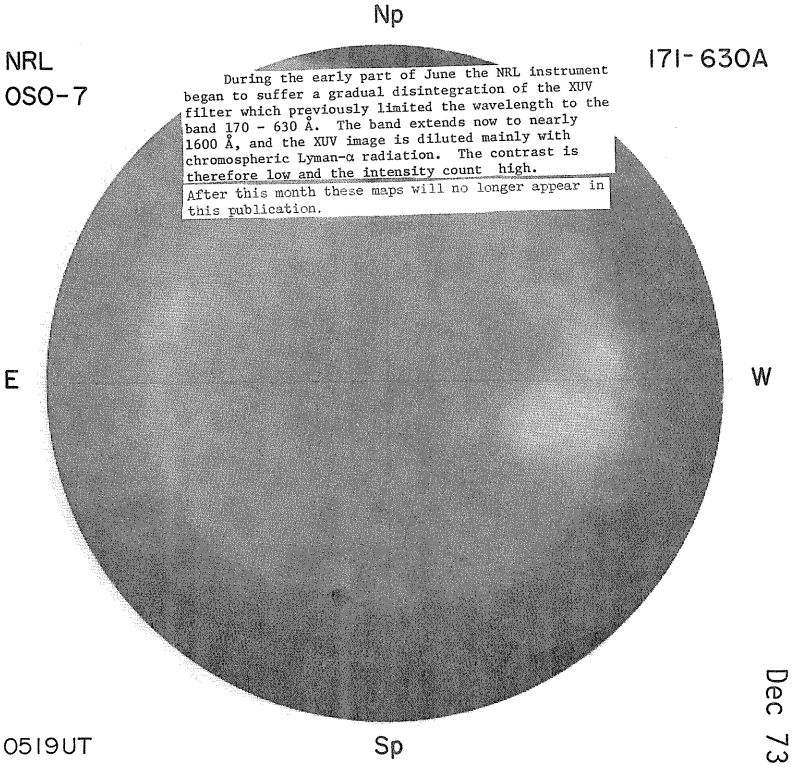
0655 UT

NRL
OSO-7

171-630A

During the early part of June the NRL instrument began to suffer a gradual disintegration of the XUV filter which previously limited the wavelength to the band 170 - 630 Å. The band extends now to nearly 1600 Å, and the XUV image is diluted mainly with chromospheric Lyman-α radiation. The contrast is therefore low and the intensity count high.

After this month these maps will no longer appear in this publication.



0519UT

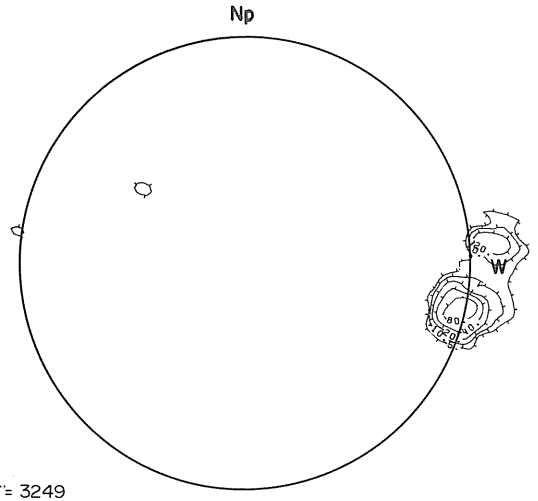
25
Dec 73

DECEMBER 2, 1973 (P = 15.78, B_o = 0.72, L_o = 98.98)

26 Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



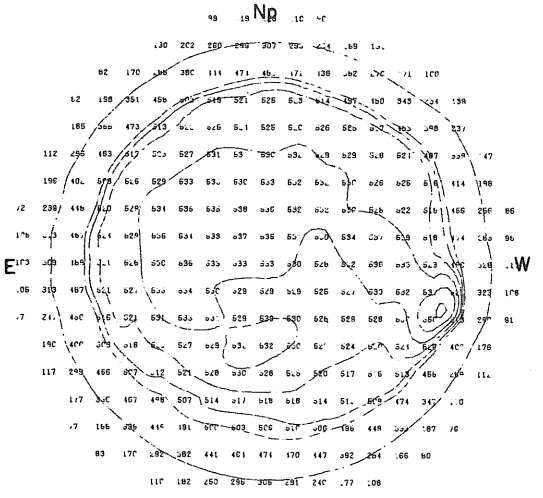
COUNT = 3249
ROLL = 6.2°
P-TH = 7.23

0540 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



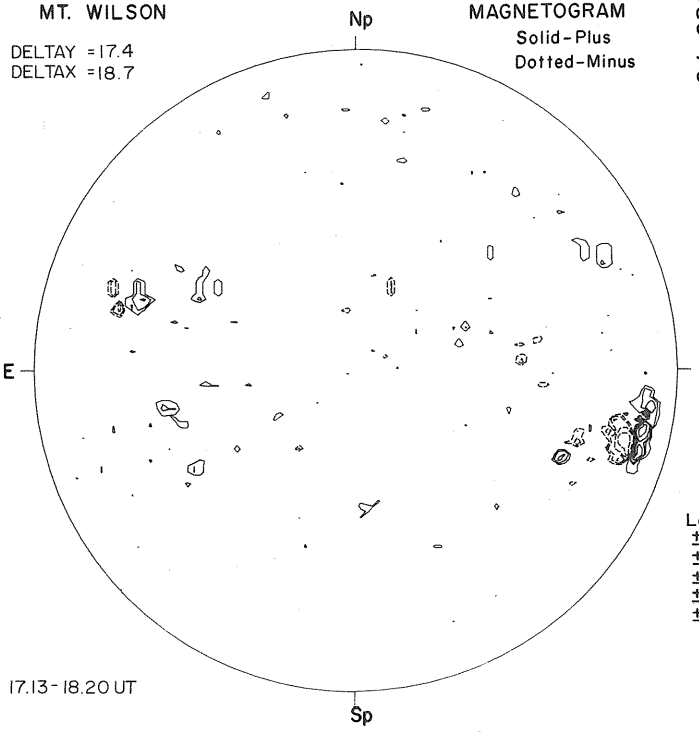
1631 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 18.7

MAGNETOGRAM
Solid - Plus
Dotted - Minus

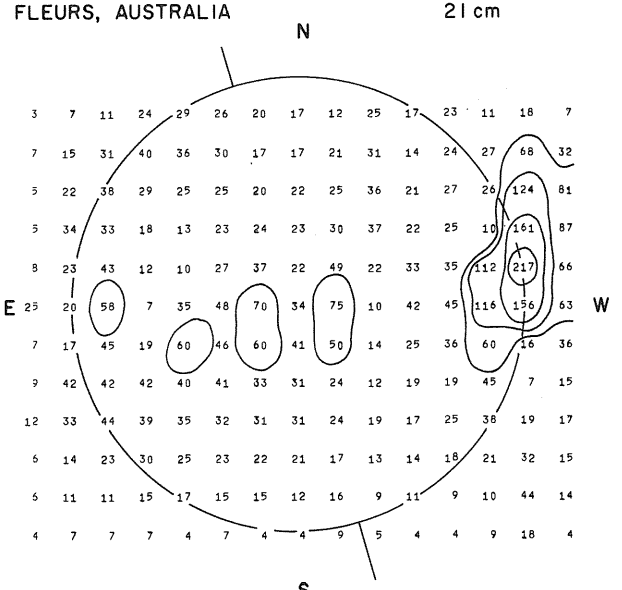


Levels
± 5
± 10
± 20
± 40
± 80

17.13 - 18.20 UT

FLEURS, AUSTRALIA

21 cm

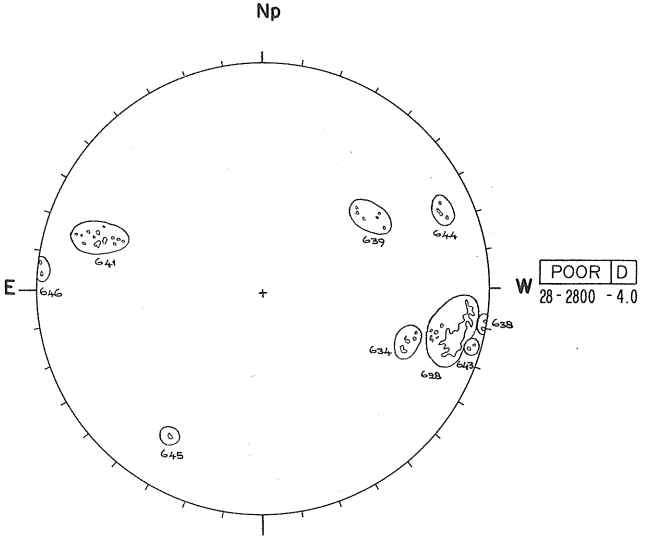


02 - 03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

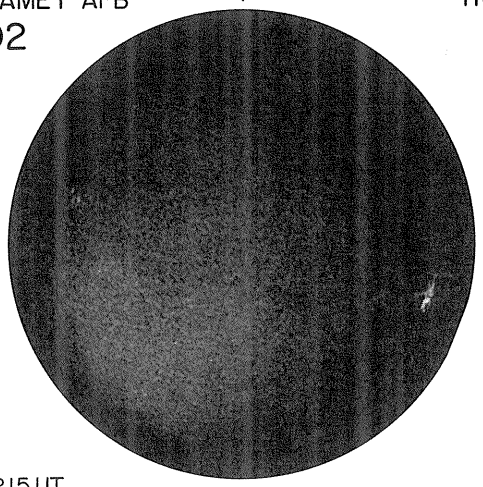
McMATH-HULBERT

CALCIUM REPORT



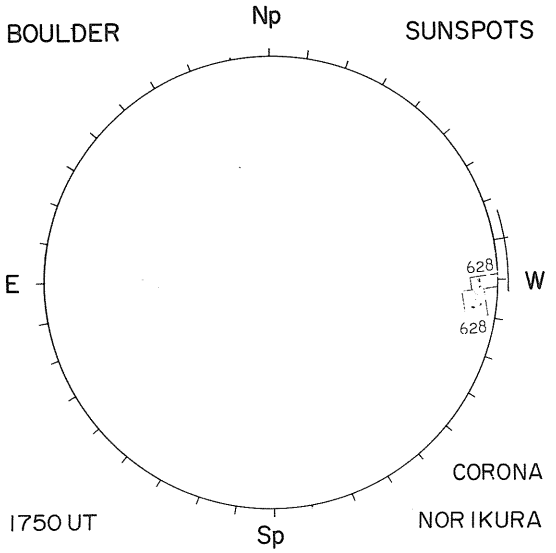
15:15 UT

RAMEY AFB
02



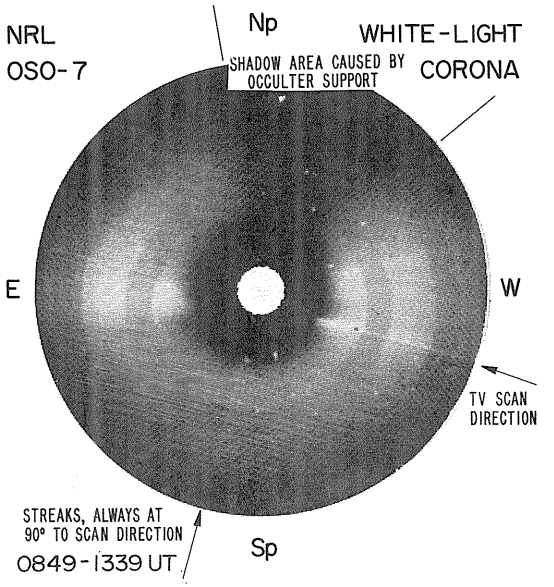
1215 UT

BOULDER



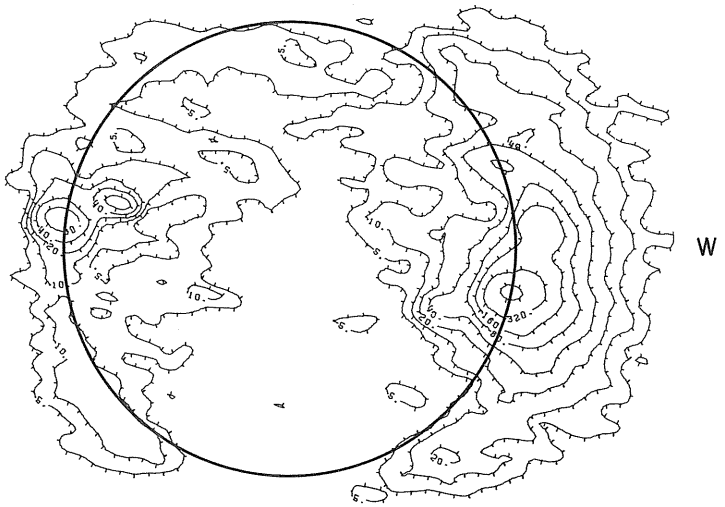
1750 UT

NRL
OSO-7



0849-1339 UT

NASA GSFC
OSO-7

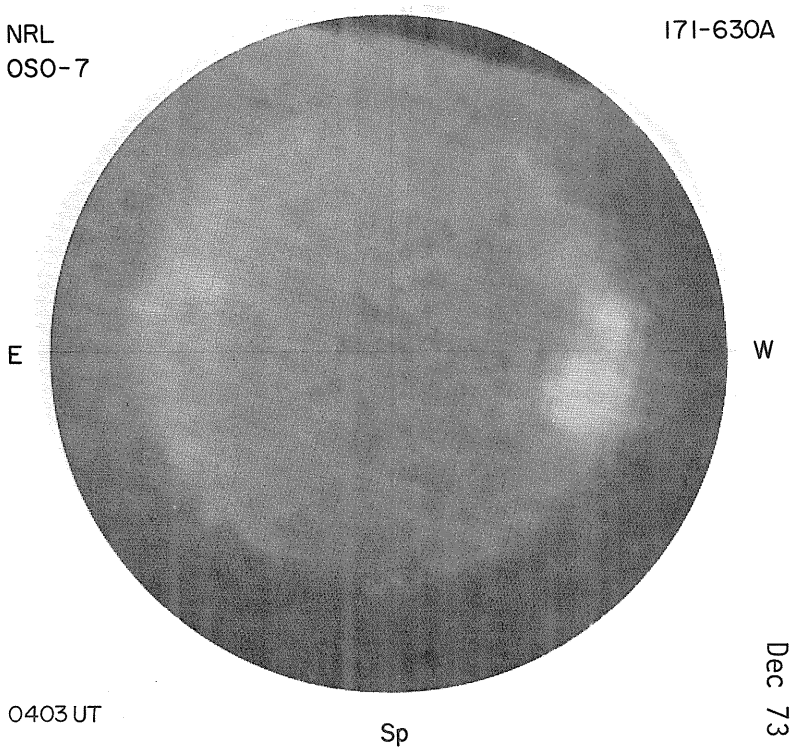


FE XV
284A

COUNT = 24470
ROLL = 6.2°
P-TH = 7.23

0540 UT

NRL
OSO-7



0403 UT

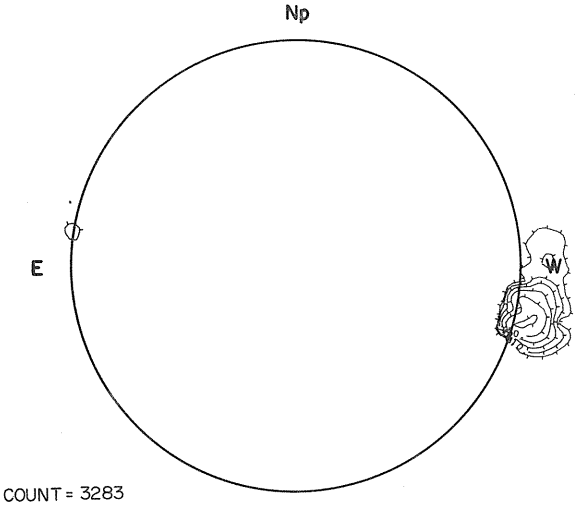
27
Dec 73

DECEMBER 3, 1973 (P = 15.39, B_o = 0.60, L_o = 85.81)

28 Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



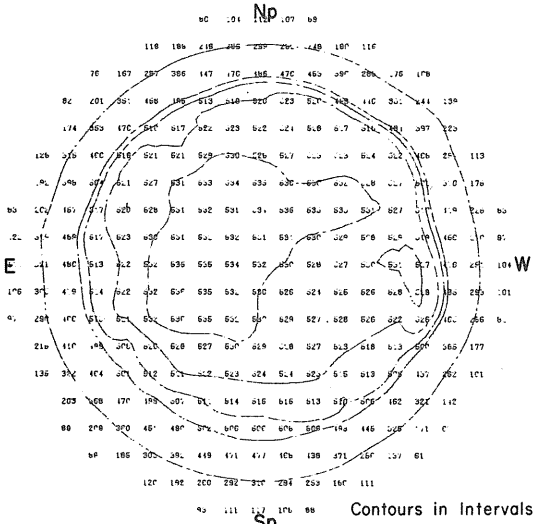
COUNT = 3283
ROLL = 6.2°
P-TH = 7.24

0427 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



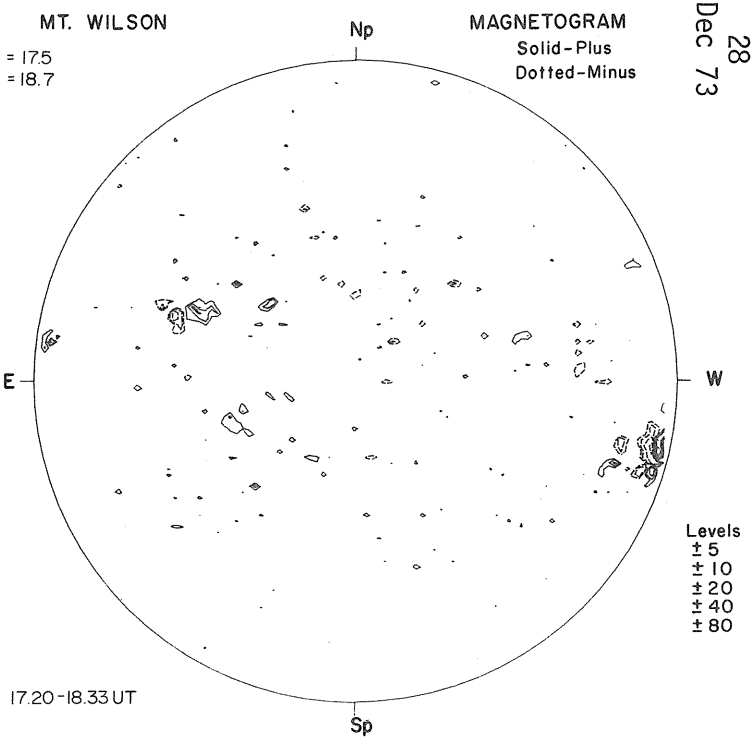
1509 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.5
DELTAX = 18.7

MAGNETOGRAM
Solid-Plus
Dotted-Minus

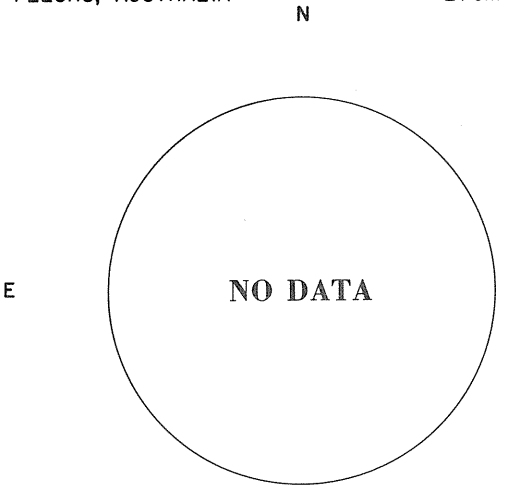


Levels
±5
±10
±20
±40
±80

17.20-18.33 UT

FLEURS, AUSTRALIA

21 cm

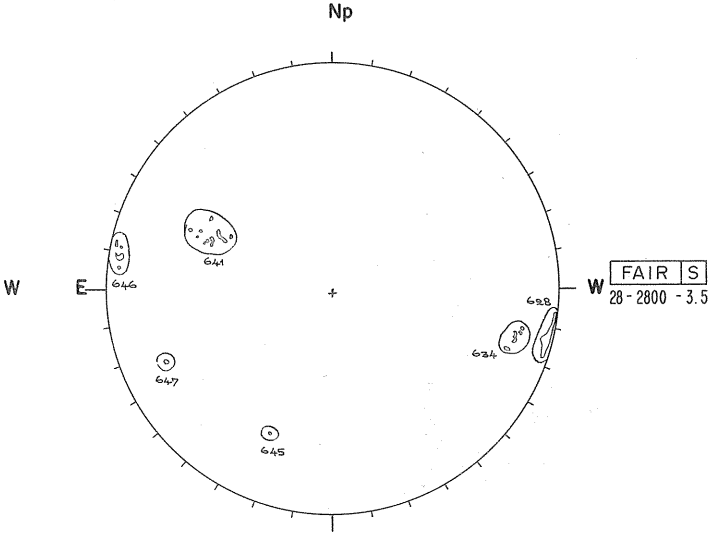


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

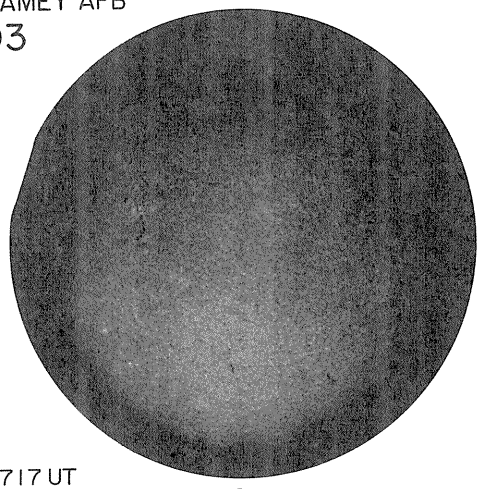
McMATH-HULBERT

CALCIUM REPORT

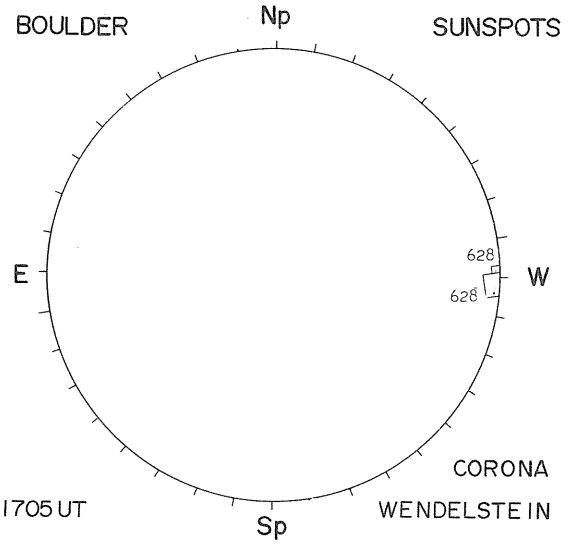


1445 UT

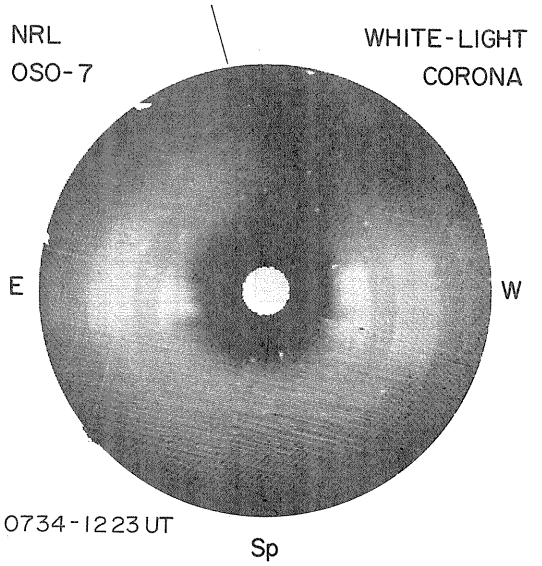
RAMEY AFB
03



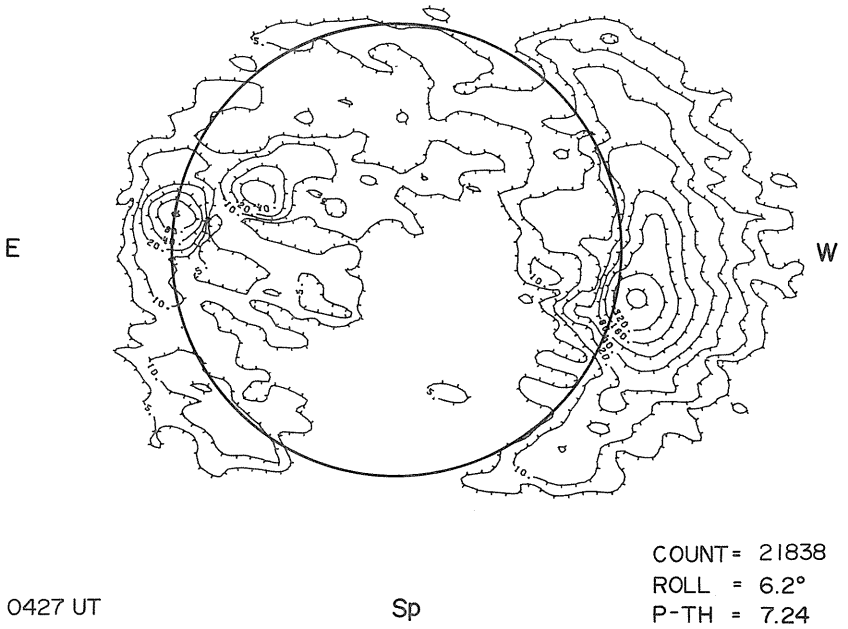
BOULDER



NRL
OSO-7



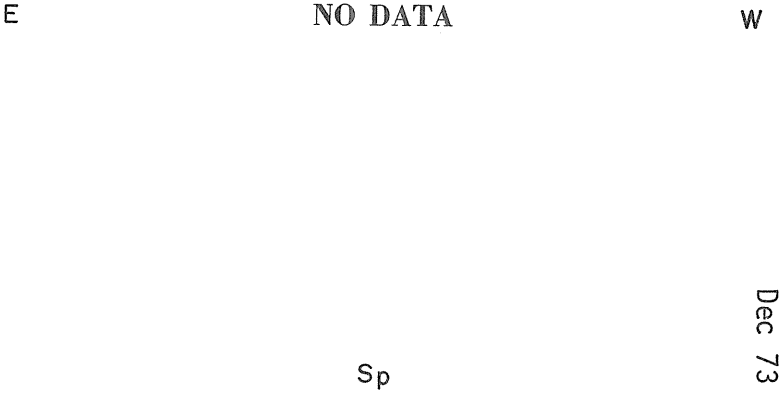
NASA GSFC
OSO-7



FE XV
284 A

COUNT = 21838
ROLL = 6.2°
P-TH = 7.24

NRL
OSO-7



171-630A

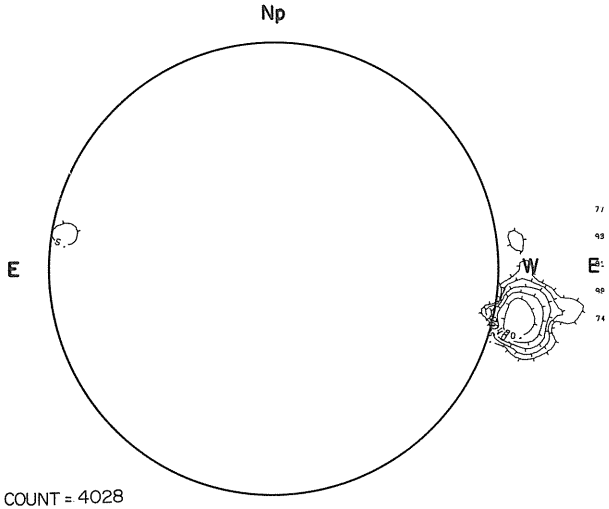
29
Dec 73

DECEMBER 4, 1973 (P = 14.99, B_o = 0.47, L_o = 72.63)

30
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



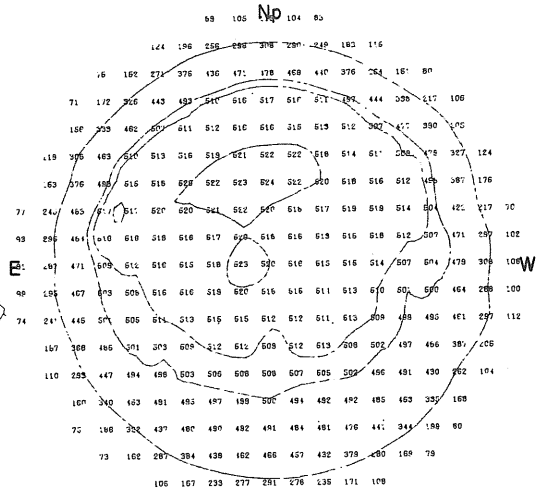
COUNT = 4028
ROLL = 6.6°
P-TH = 7.25

0448 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



1820 UT

Contours in Intervals of 200° K

MT. WILSON

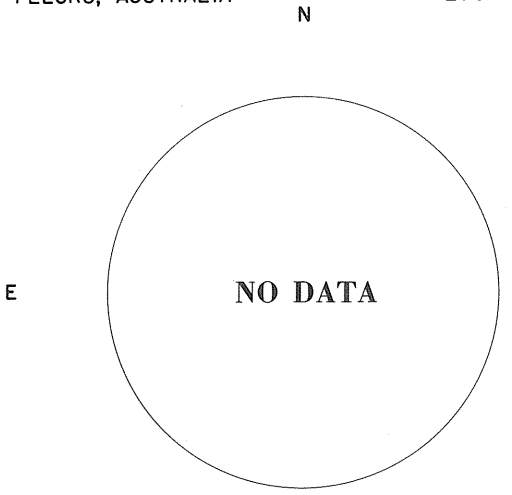
DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

Levels
±5
±10
±20
±40
±80

FLEURS, AUSTRALIA

21 cm

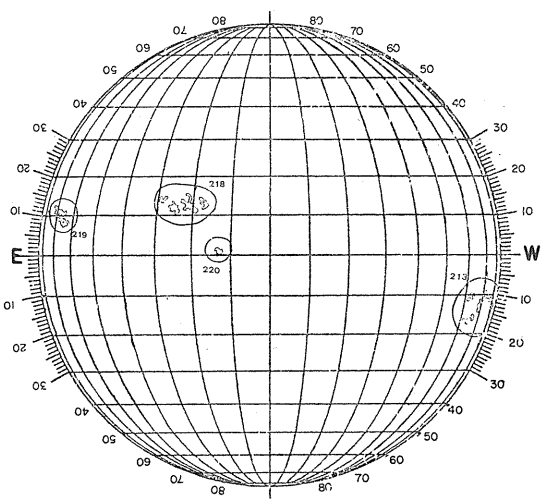


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

CALCIUM REPORT

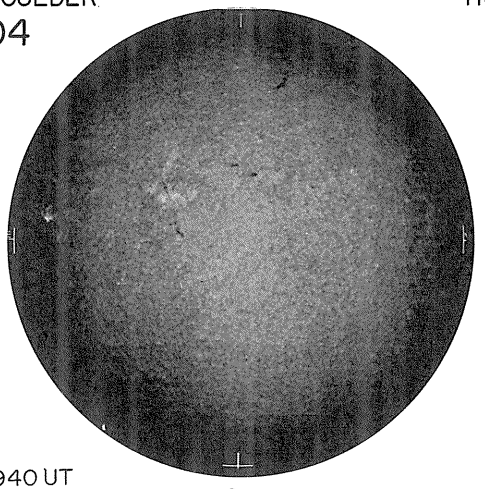
CATANIA



FAIR GD
13 - 4392 - - -

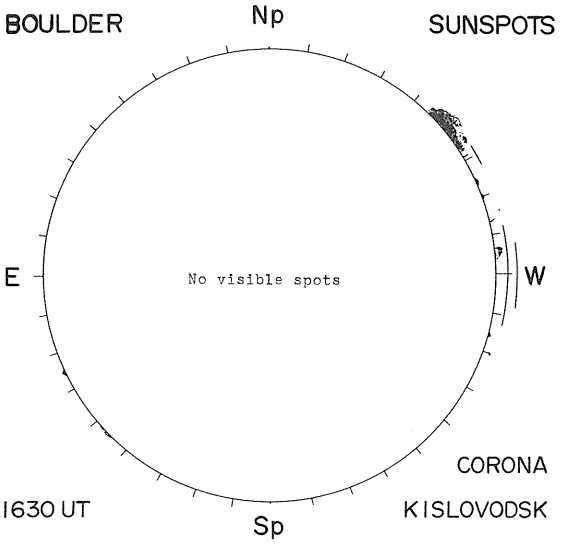
1110 UT

BOULDER
04



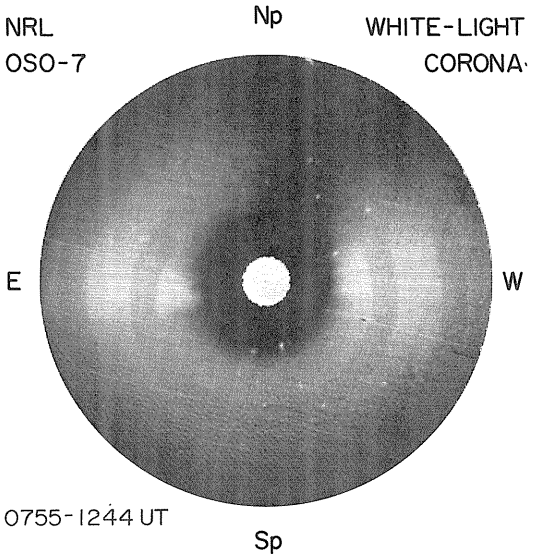
1940 UT

BOULDER



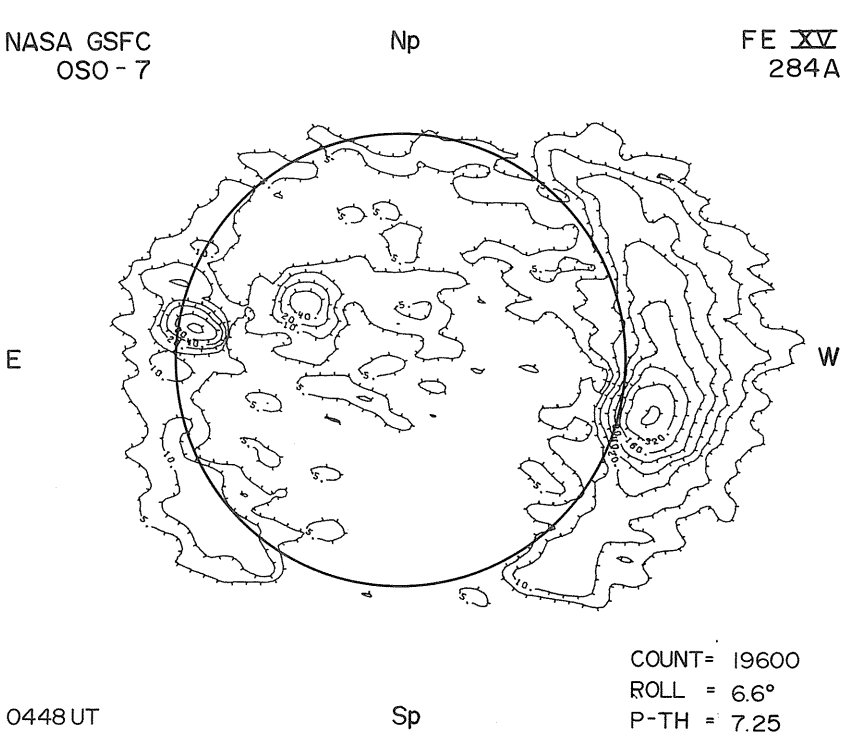
1630 UT

NRL
OSO-7



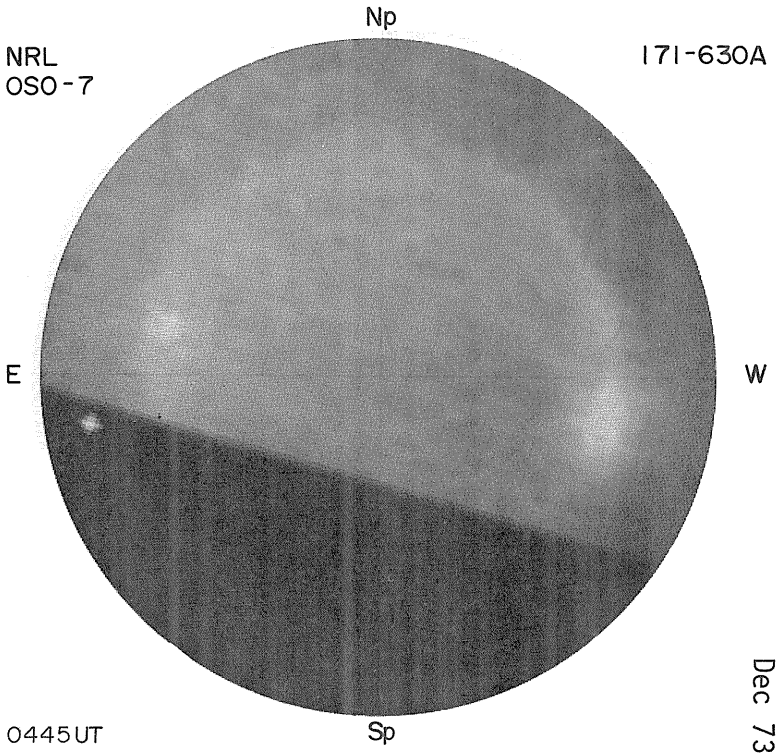
0755-1244 UT

NASA GSFC
OSO-7



0448 UT

NRL
OSO-7



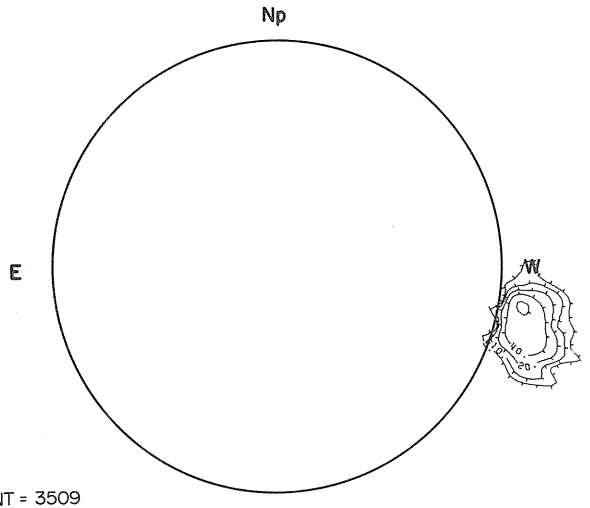
0445 UT

31
Dec 73

DECEMBER 5, 1973 (P = 14.59, B_o = 0.34, L_o = 59.45)

NASA GSFC
OSO-7

X-RAY
8-16A



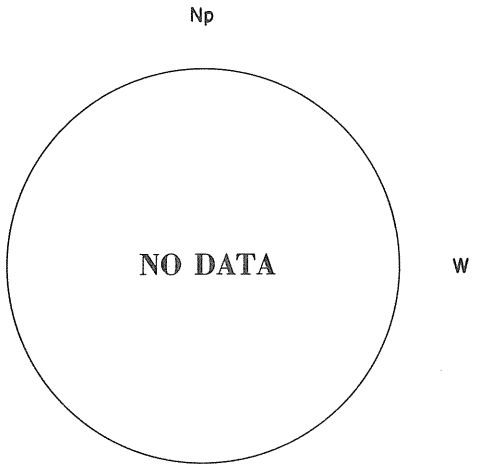
COUNT = 3509
ROLL = 7.5°
P-TH = 7.25

0505 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

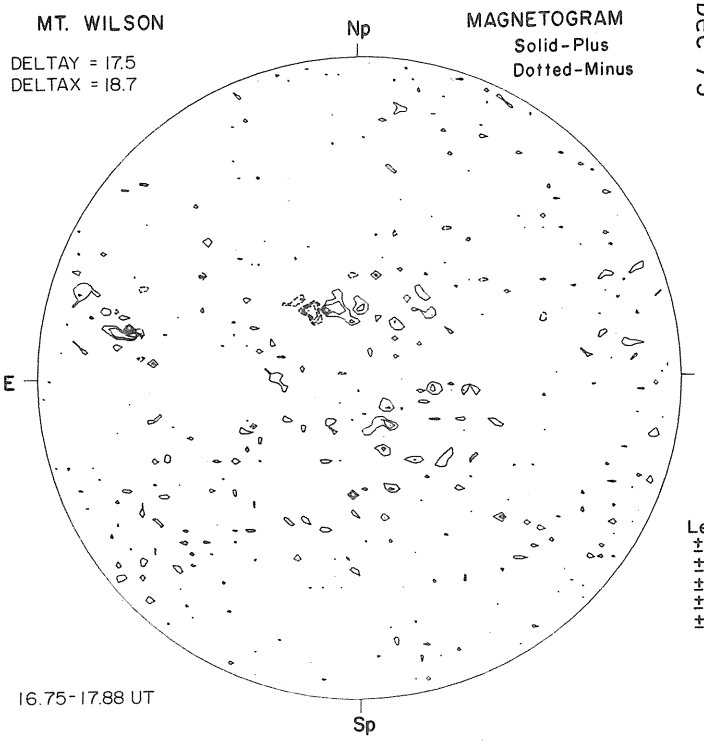


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.5
DELTAX = 18.7

MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

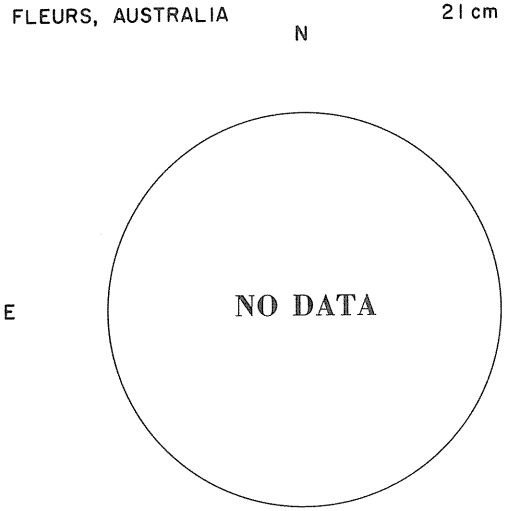
16.75-17.88 UT

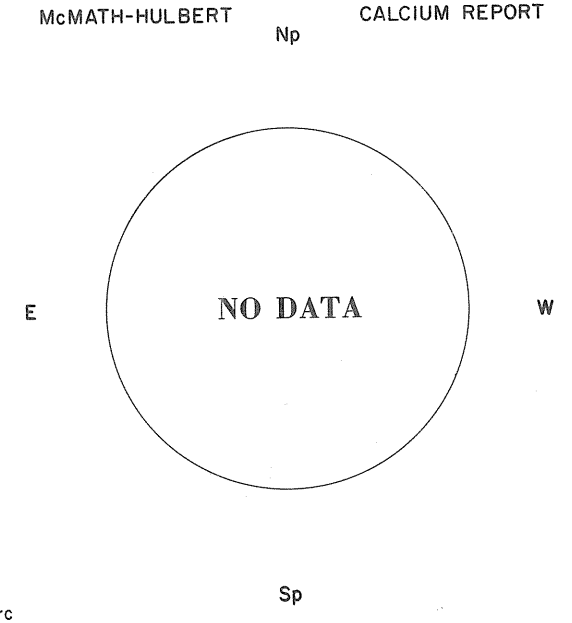
McMATH-HULBERT

CALCIUM REPORT

FLEURS, AUSTRALIA

21 cm

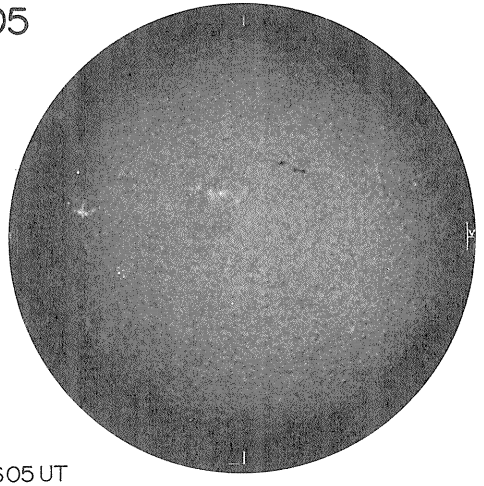




02-03 UT

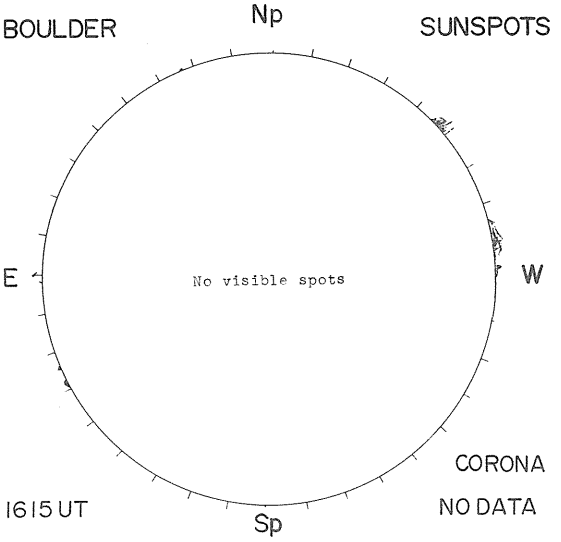
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

BOULDER
05



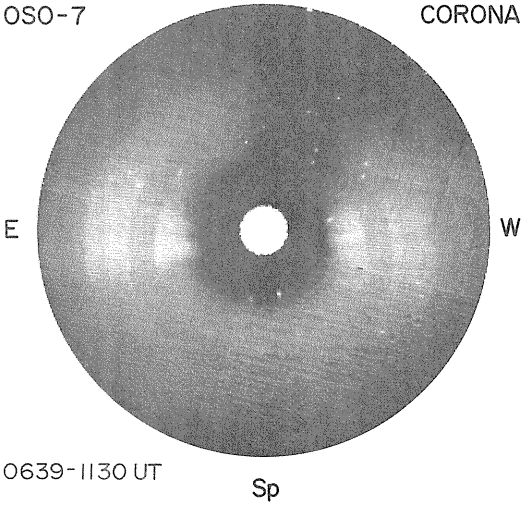
1605 UT

BOULDER



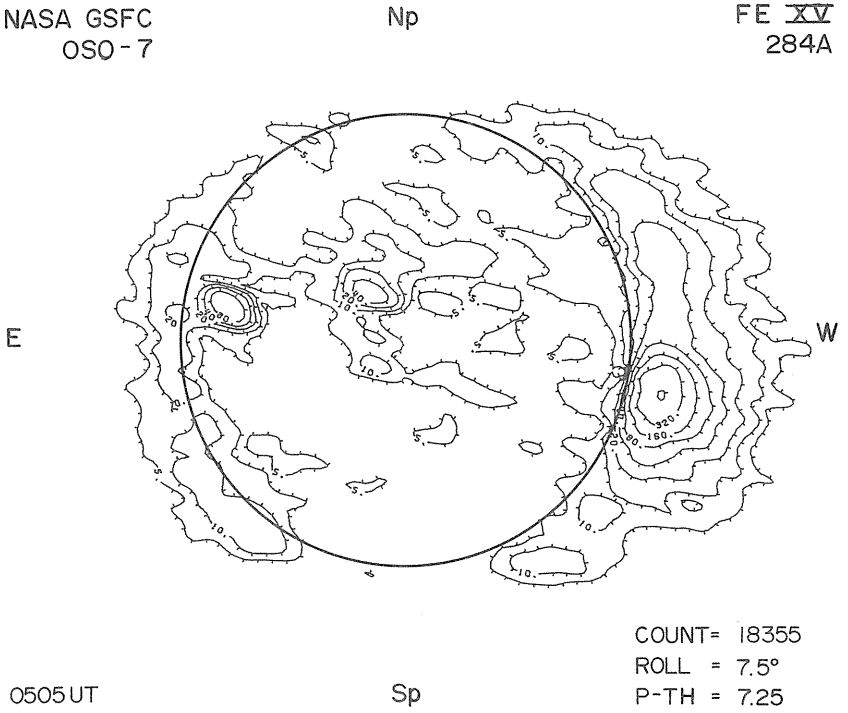
1615 UT

NRL
OSO-7



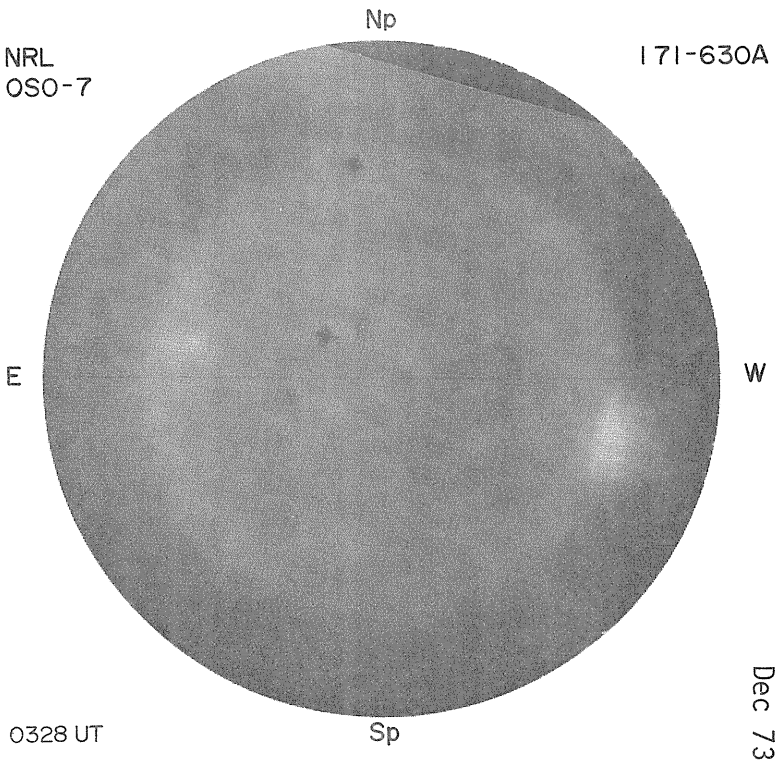
0639-1130 UT

NASA GSFC
OSO-7



0505 UT

NRL
OSO-7

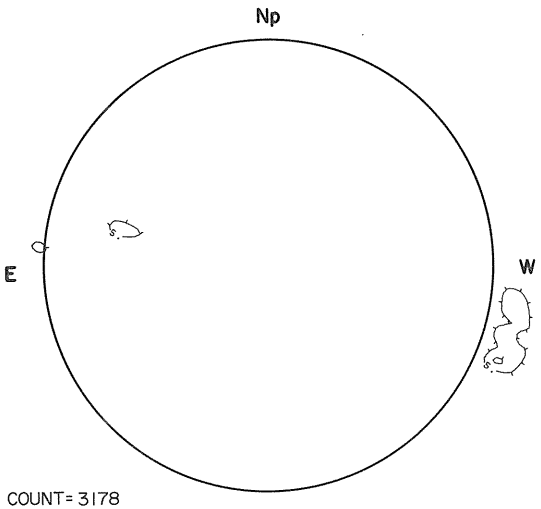


0328 UT

DECEMBER 6, 1973 (P = 14.18, B_o = 0.21, L_o = 46.27)

NASA GSFC
OSO-7

X-RAY
8-16A



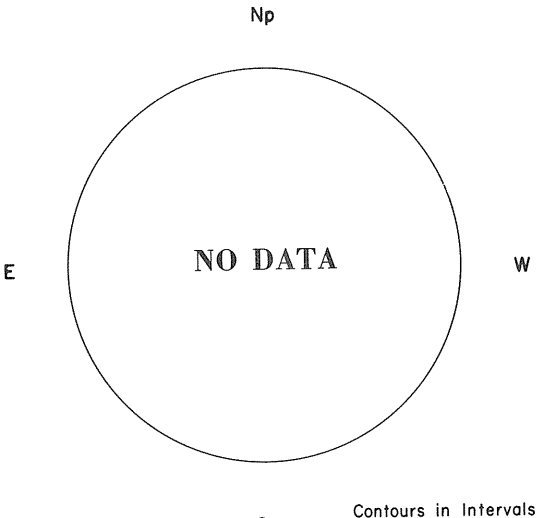
COUNT = 3178
ROLL = 8.4°
P-TH = 7.26

0526 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

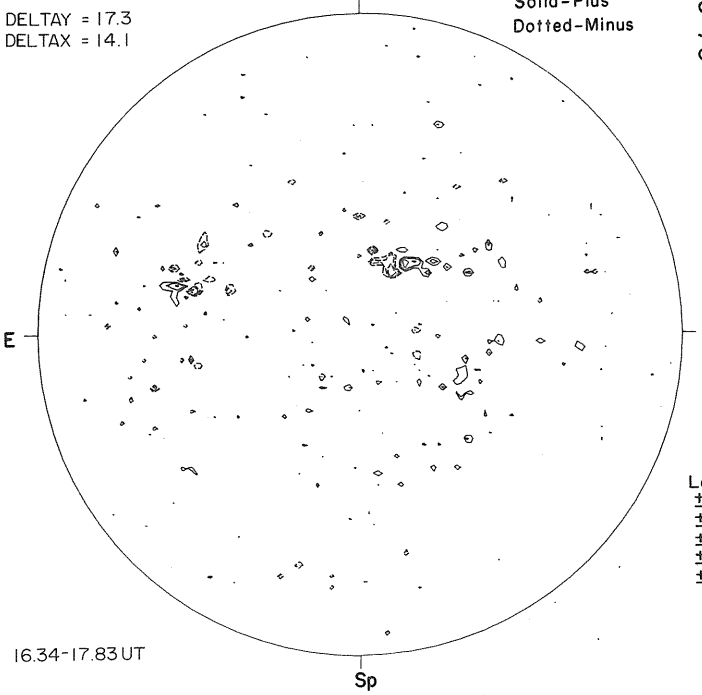


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.3
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

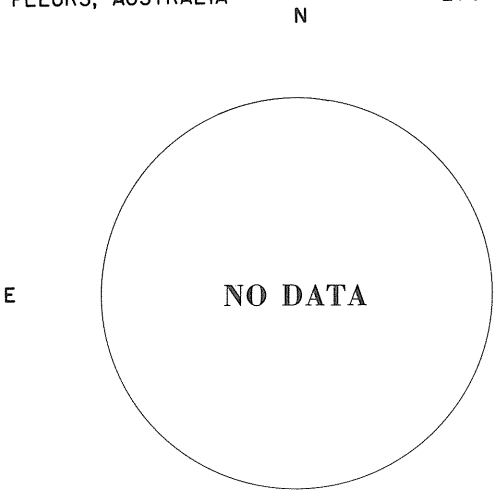


Levels
± 5
± 10
± 20
± 40
± 80

16.34-17.83 UT

FLEURS, AUSTRALIA

21 cm

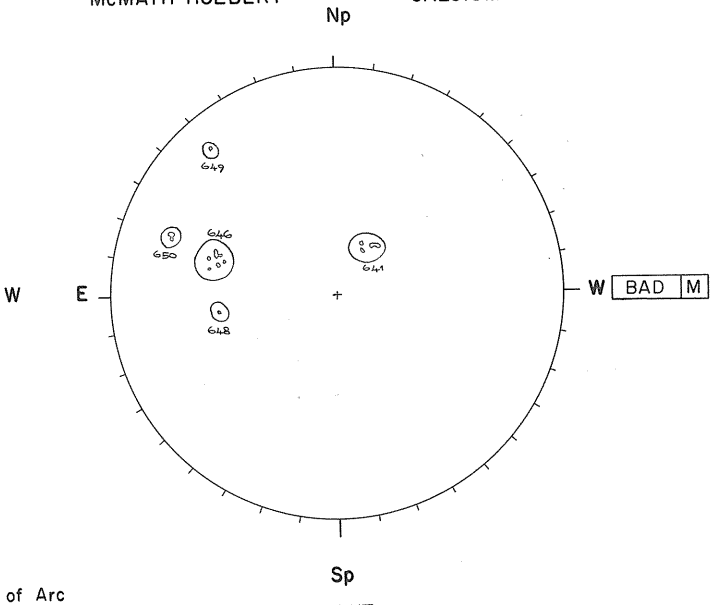


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

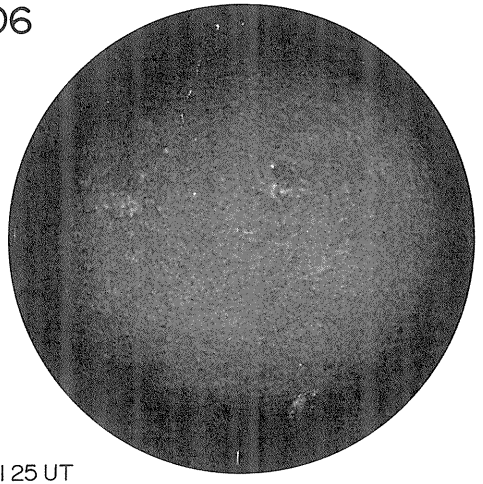
McMATH-HULBERT

CALCIUM REPORT



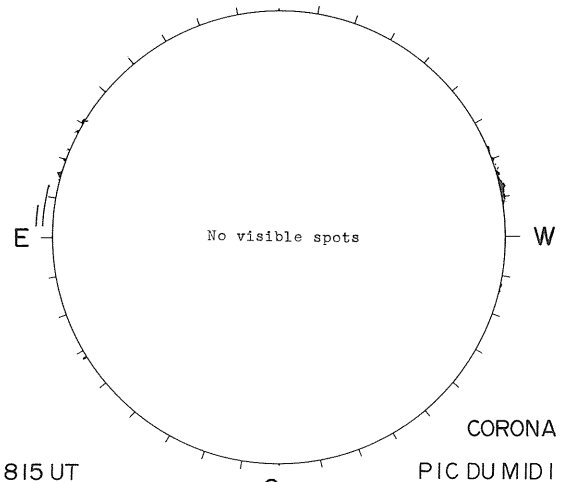
1730 UT

BOULDER
06



2125 UT

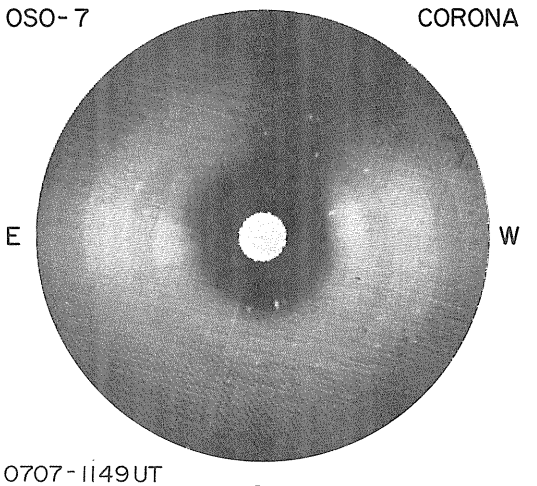
BOULDER



1815 UT

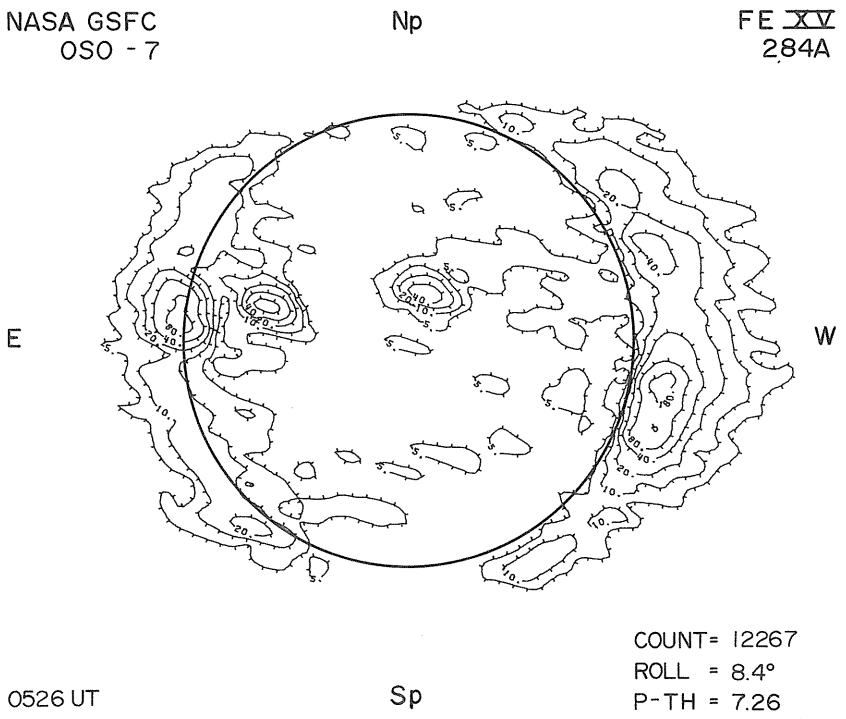
CORONA
PIC DU MIDI
NO DATA 95°-360°

NRL
OSO-7



0707-1149 UT

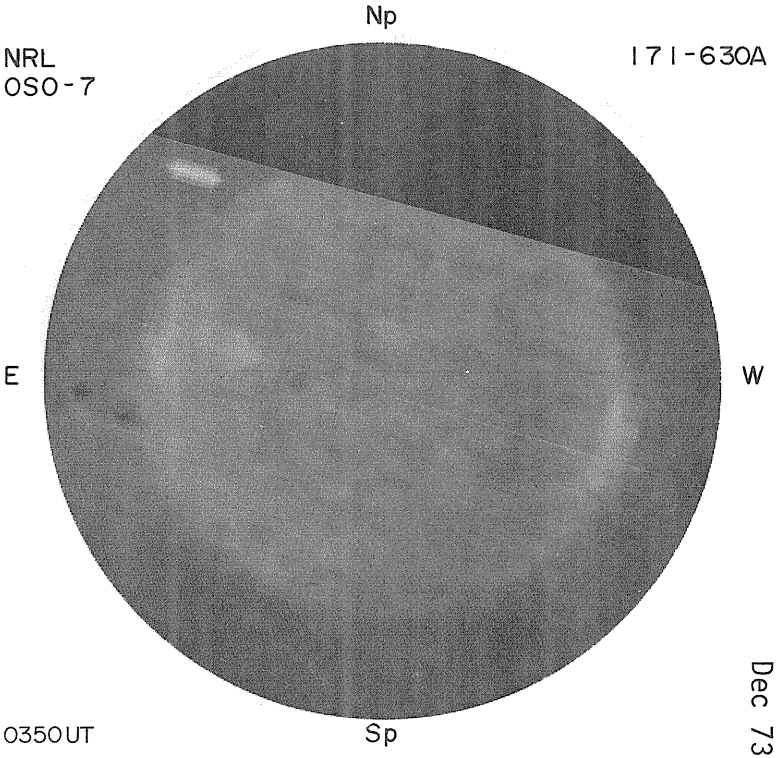
NASA GSFC
OSO - 7



0526 UT

COUNT= 12267
ROLL = 8.4°
P-TH = 7.26

NRL
OSO-7



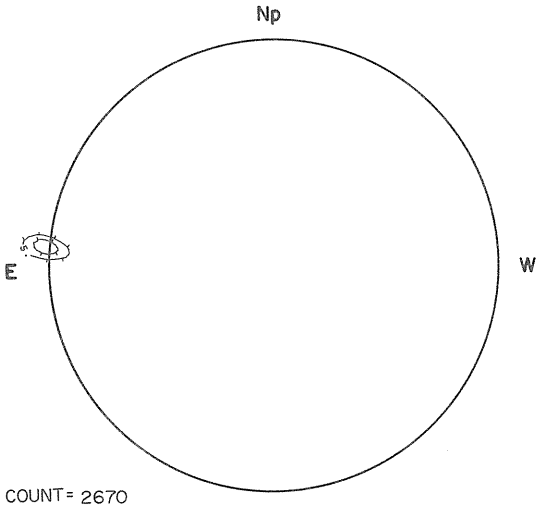
0350 UT

35
Dec 73

DECEMBER 7, 1973 (P = 13.76, B_o = 0.08, L_o = 33.09)

NASA GSFC
OSO-7

X-RAY
8-16A



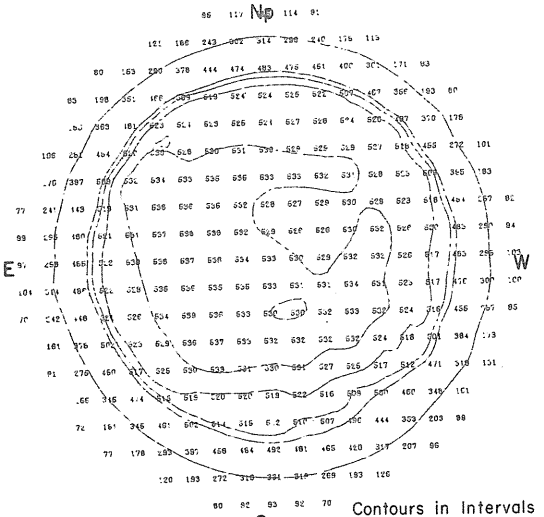
COUNT = 2670
ROLL = 9.3°
P-TH = 7.26

0406 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



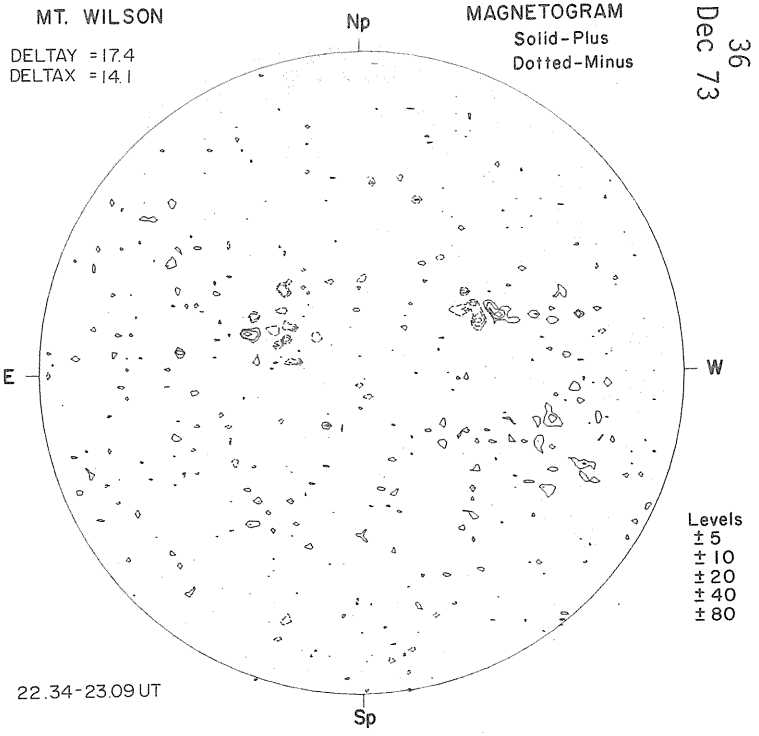
1941 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

22.34-23.09 UT

FLEURS, AUSTRALIA

21 cm

N

E

NO DATA

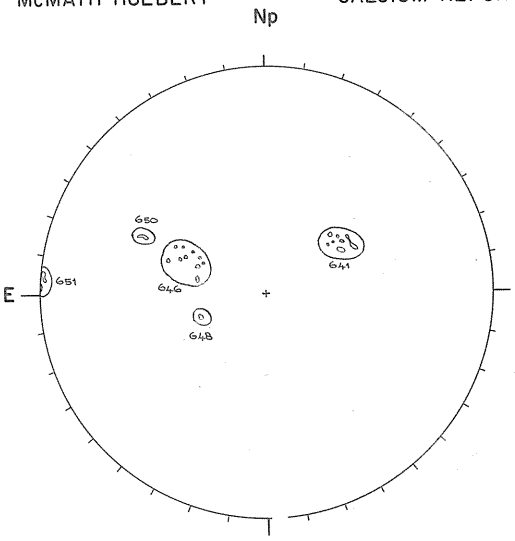
S

02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



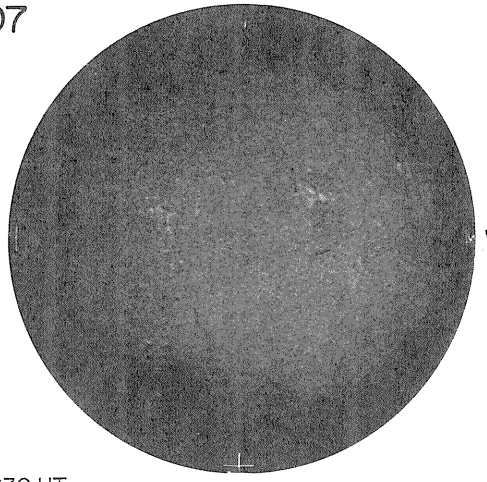
FAIR	M
51-0400 - 2.5	

1730 UT

BOULDER
07

Np

Hα



E

W

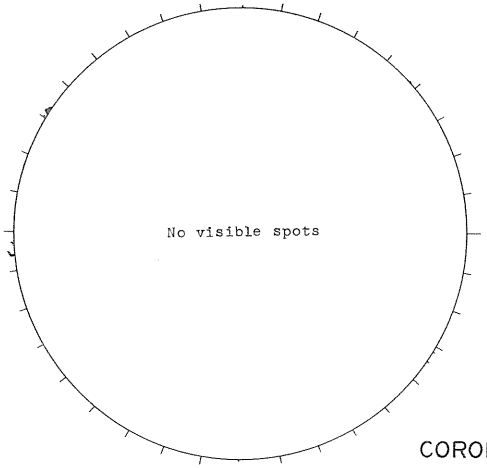
1630 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

CORONA

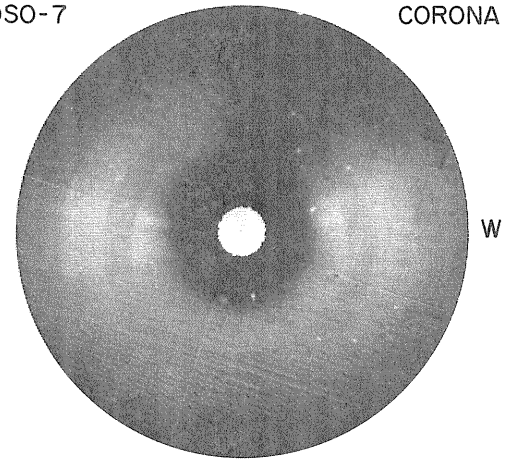
1630 UT

Sp

KISLOVODSK

NRL
OSO-7

WHITE-LIGHT
CORONA



E

W

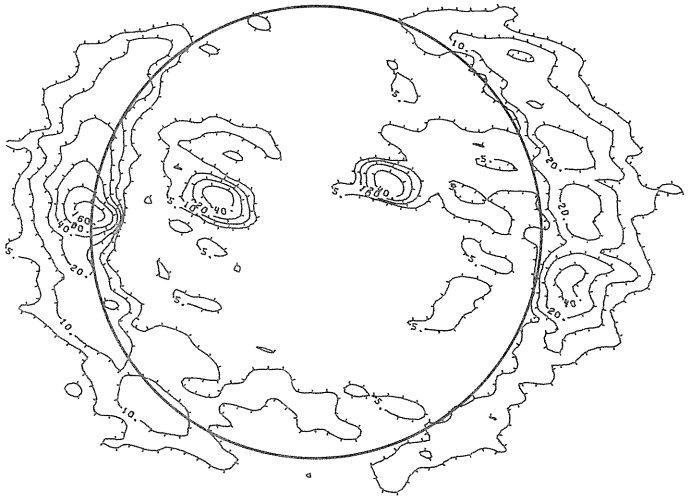
0548-1033 UT

Sp

NASA GSFC
OSO-7

Np

FE XV
284A



E

W

COUNT = 9401
ROLL = 9.3°
P-TH = 7.26

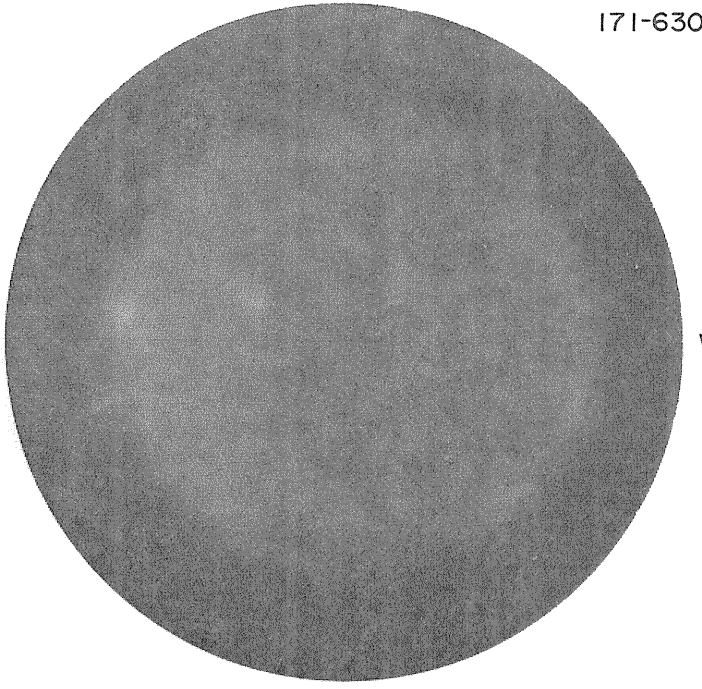
0406 UT

Sp

NRL
OSO-7

Np

171-630A



E

W

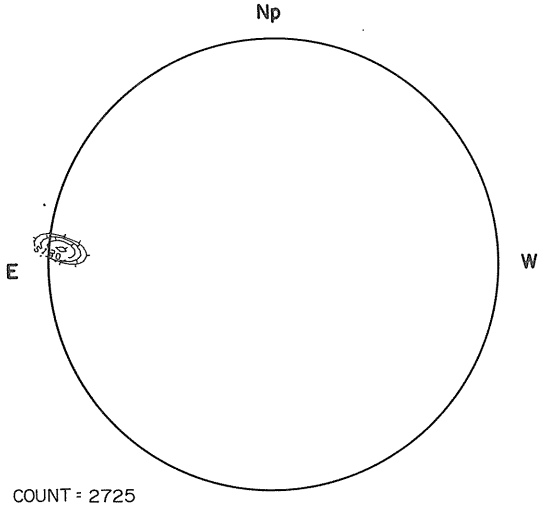
0235 UT

Sp

DECEMBER 8, 1973 (P = 13.34, B_o = -0.04, L_o = 19.92)

NASA GSFC
OSO-7

X-RAY
8-16A



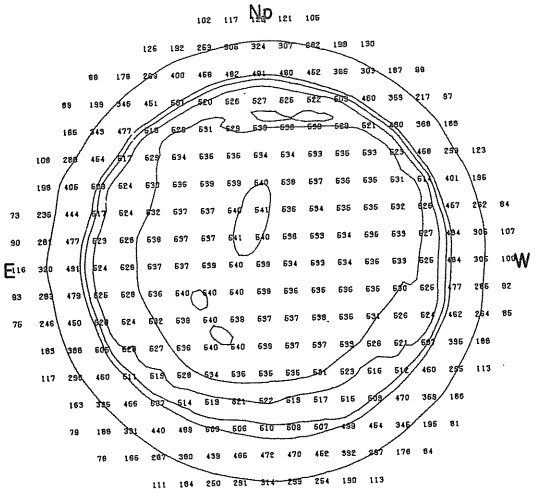
COUNT = 2725
ROLL = 10.0°
P-TH = 7.26

2154 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



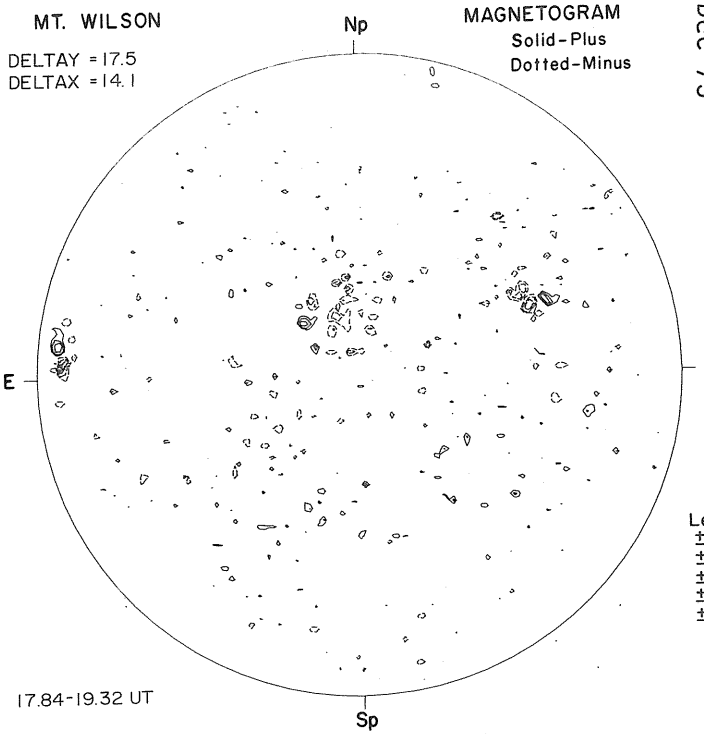
1700 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.5
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

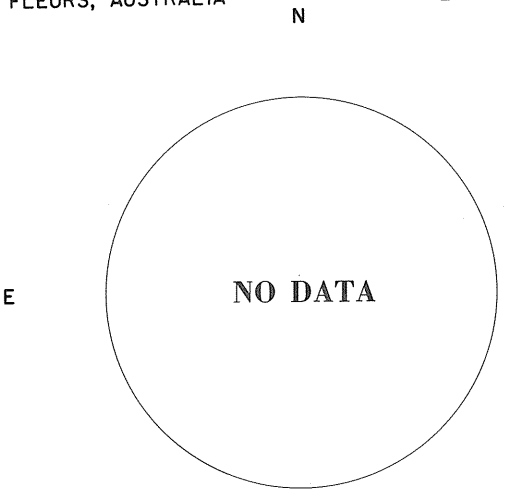


Levels
± 5
± 10
± 20
± 40
± 80

17.84-19.32 UT

FLEURS, AUSTRALIA

21 cm

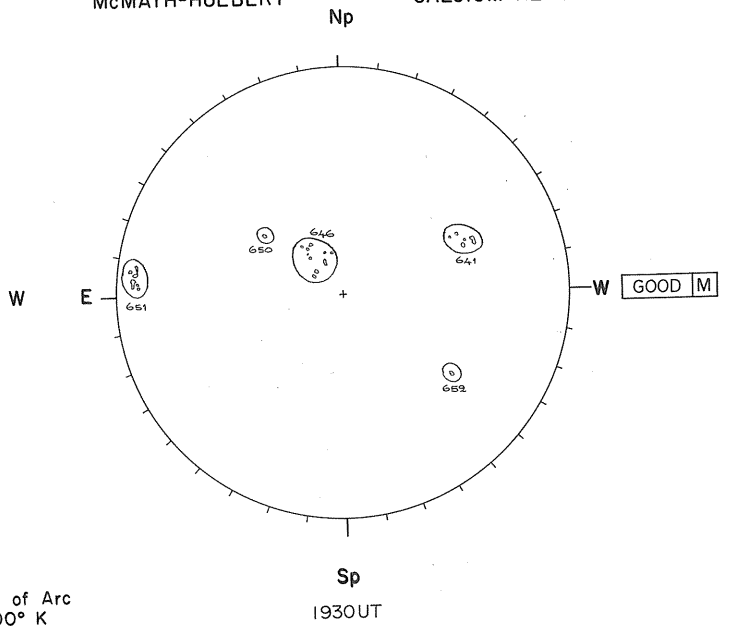


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

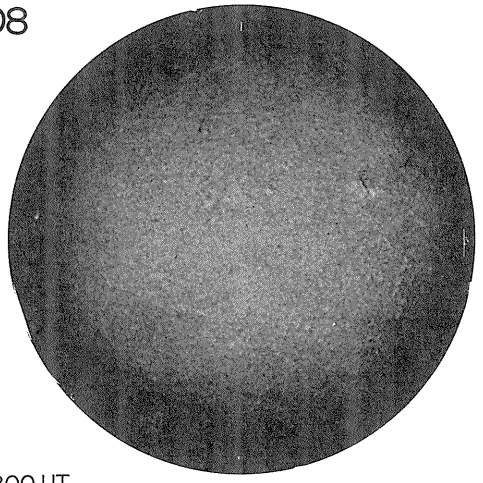
CALCIUM REPORT



GOOD | M

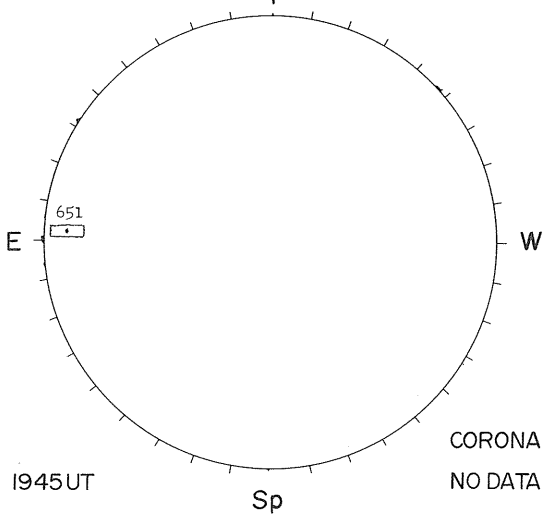
1930 UT

BOULDER
08



1800 UT

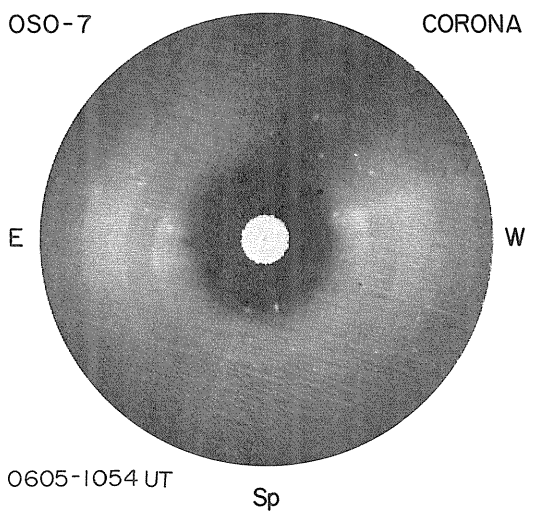
BOULDER



1945 UT

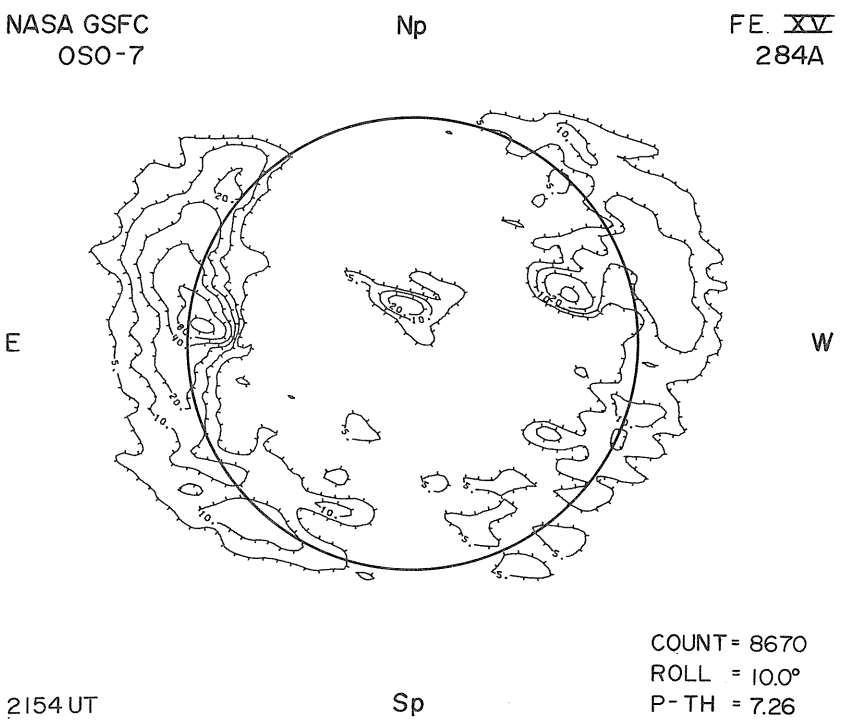
CORONA
NO DATA

NRL
OSO-7



0605-1054 UT

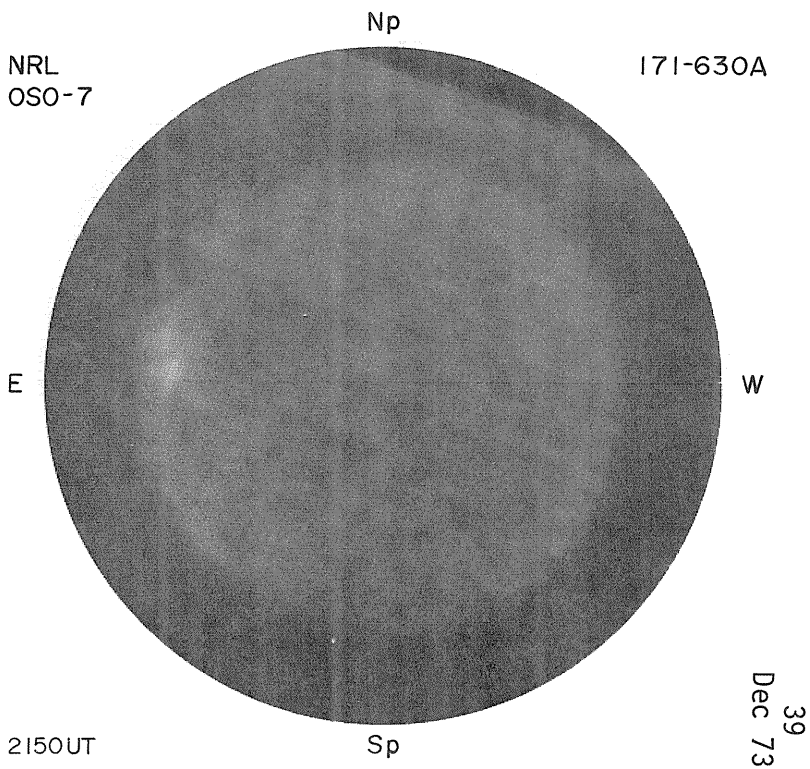
NASA GSFC
OSO-7



COUNT = 8670
ROLL = 10.0°
P-TH = 7.26

2154 UT

NRL
OSO-7

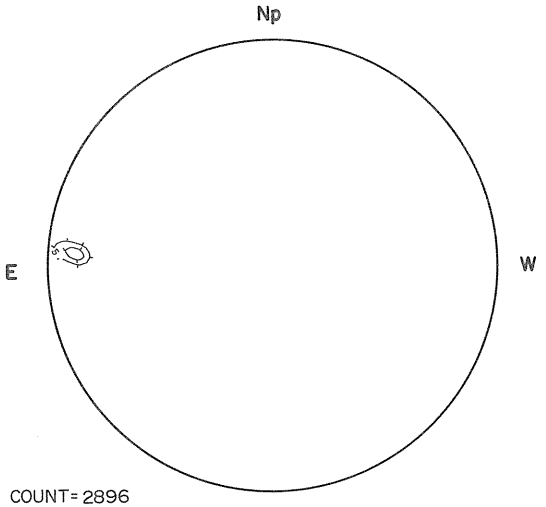


2150 UT

DECEMBER 9, 1973 (P= 12.92, B_o=-0.17, L_o= 6.74)

NASA GSFC
OSO-7

X-RAY
8-16A



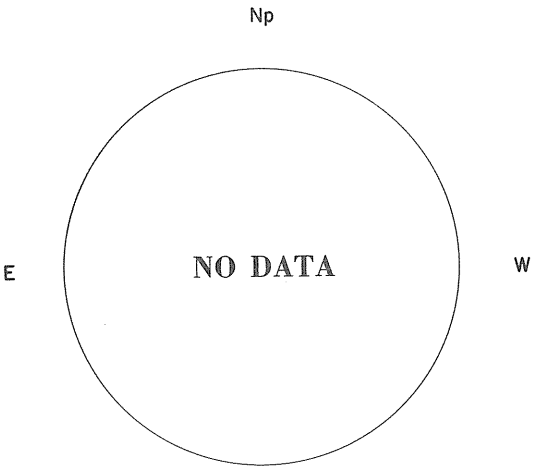
COUNT= 2896
ROLL =10.0°
P-TH =7.26

0315 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

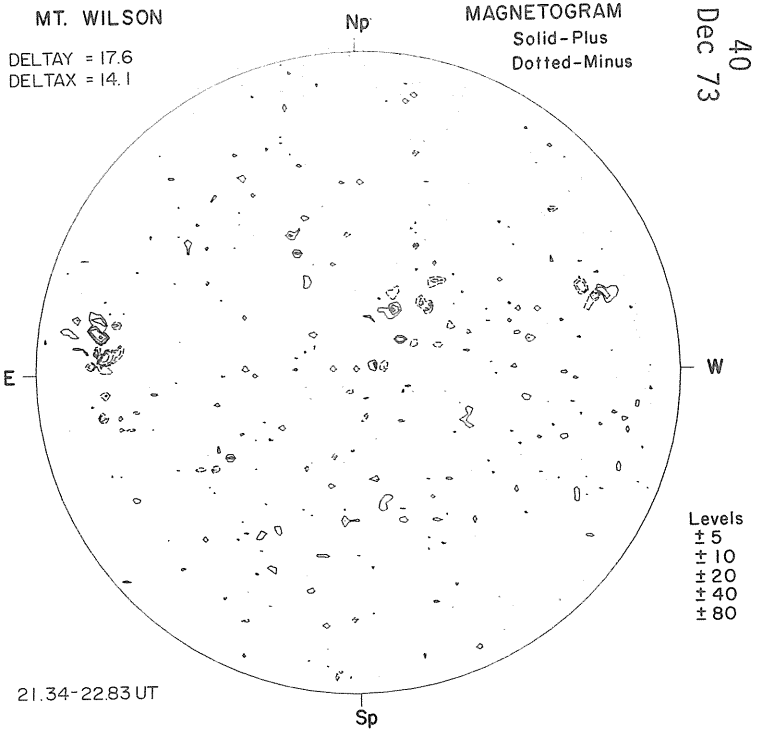


Contours in Intervals
of 200° K

MT. WILSON

DELTAY = 17.6
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

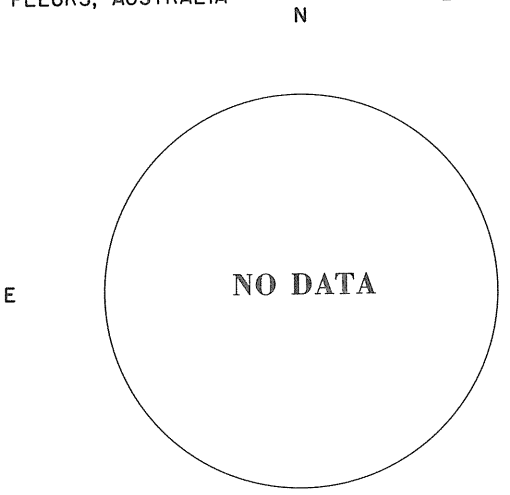


Levels
±5
±10
±20
±40
±80

21.34-22.83 UT

FLEURS, AUSTRALIA

21 cm

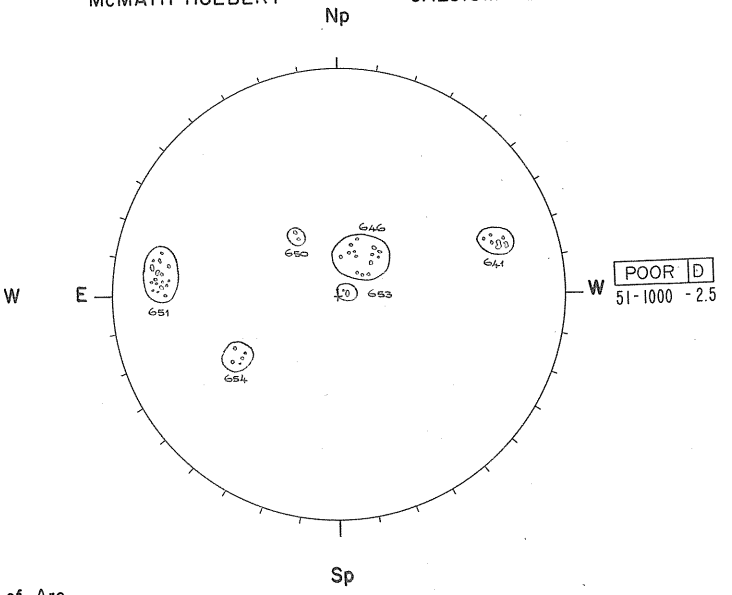


02-03 UT

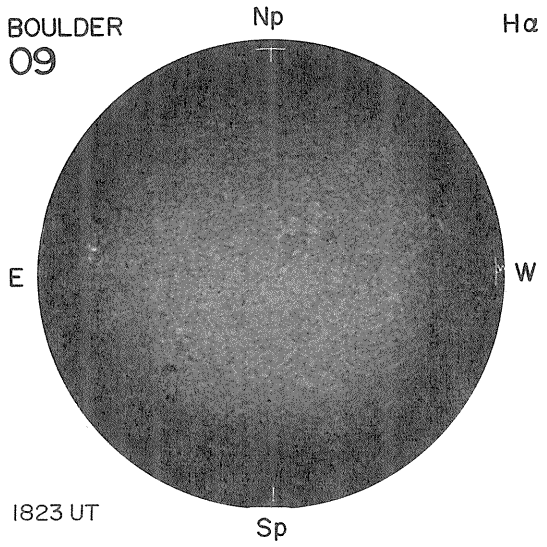
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

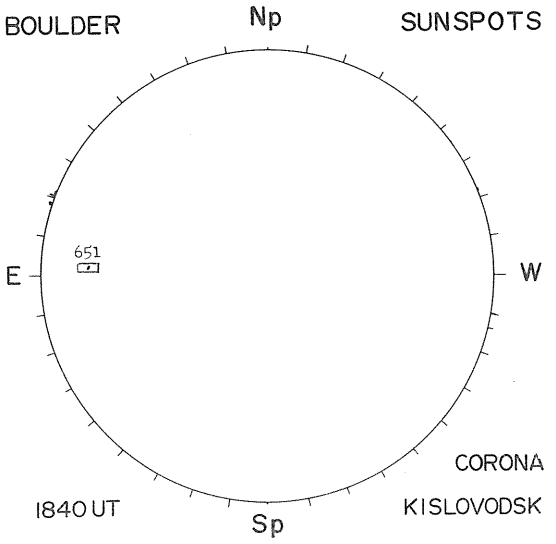
McMATH-HULBERT

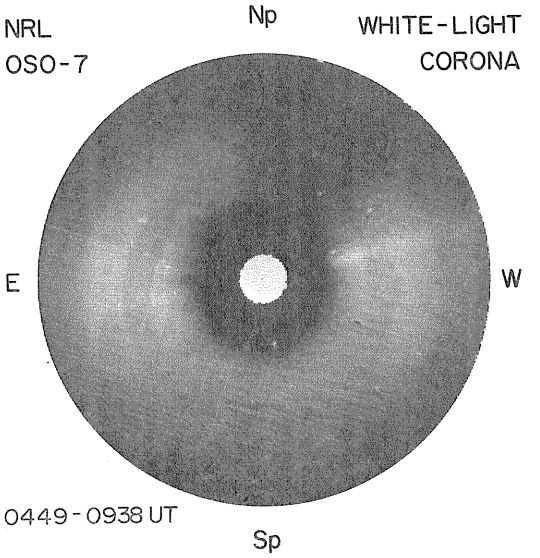
CALCIUM REPORT

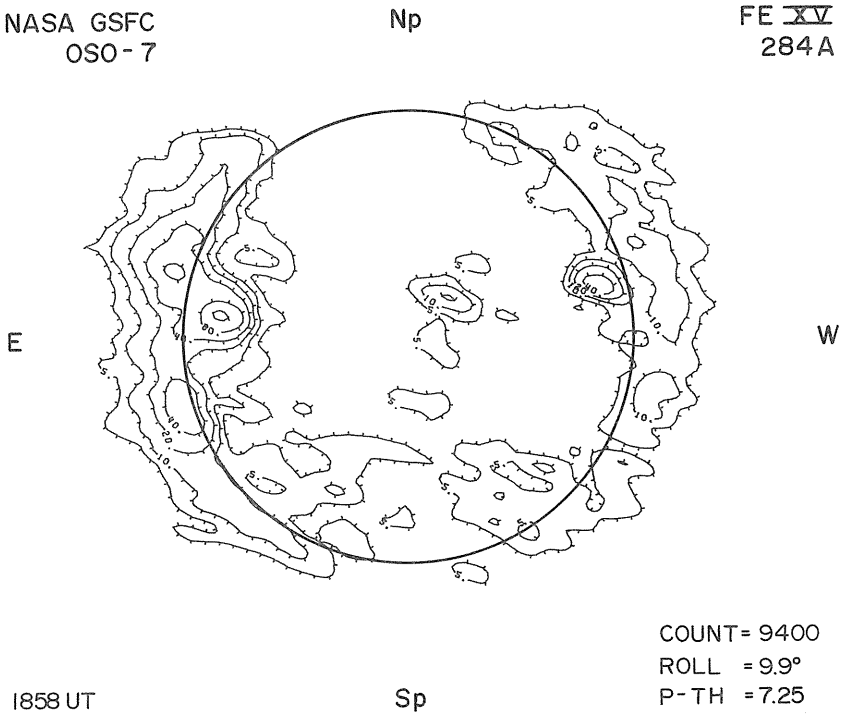


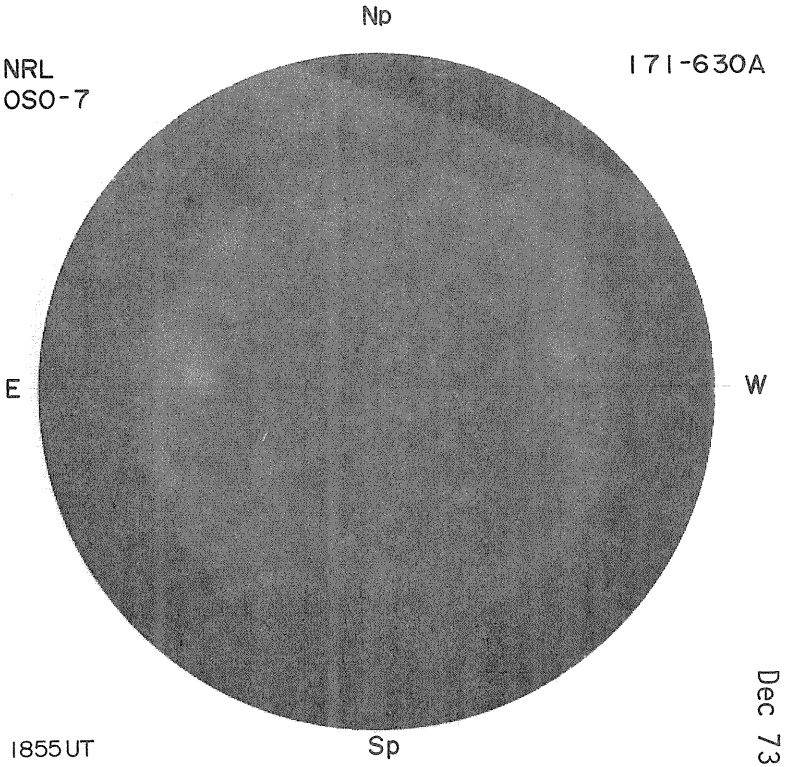
1530 UT


BOULDER
09
Np
Hα
E
W
1823 UT
Sp


BOULDER
Np
SUNSPOTS
651
E
W
CORONA
1840 UT
Sp
KISLOVODSK


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0449-0938 UT
Sp

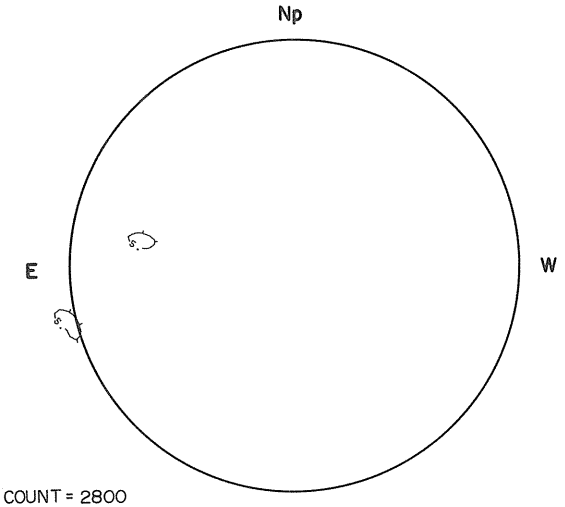

NASA GSFC
OSO-7
Np
FE XV
284A
E
W
COUNT= 9400
ROLL =9.9°
P-TH =7.25
1858 UT
Sp


Np
NRL
OSO-7
171-630A
E
W
1855 UT
Sp

DECEMBER 10, 1973 (P = 12.49, B_o = -0.30, L_o = 353.56)

NASA GSFC
OSO-7

X-RAY
8-16A



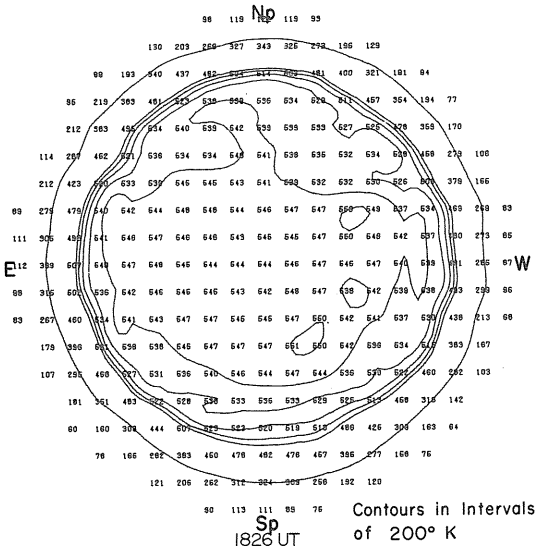
COUNT = 2800
ROLL = 9.8°
P-TH = 7.25

2059 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



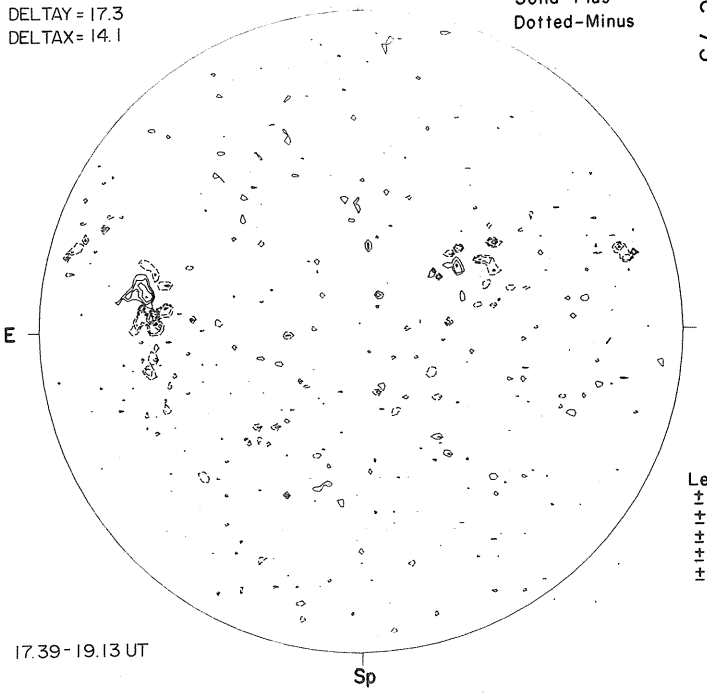
1826 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.3
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

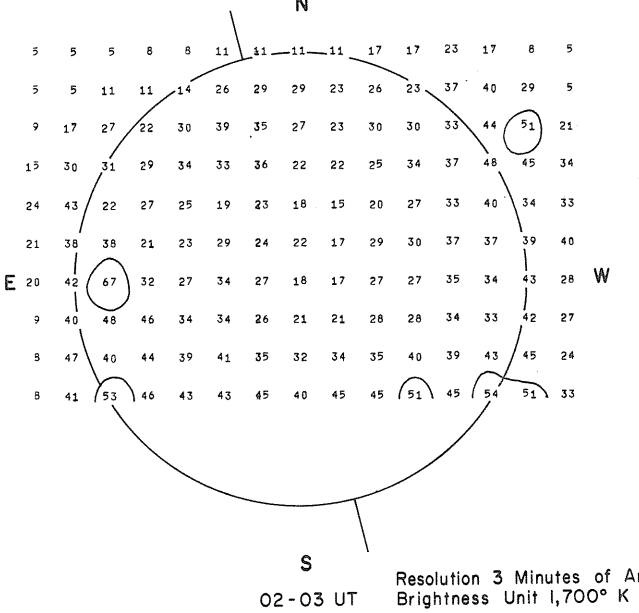
17.39-19.13 UT

McMATH-HULBERT

CALCIUM REPORT

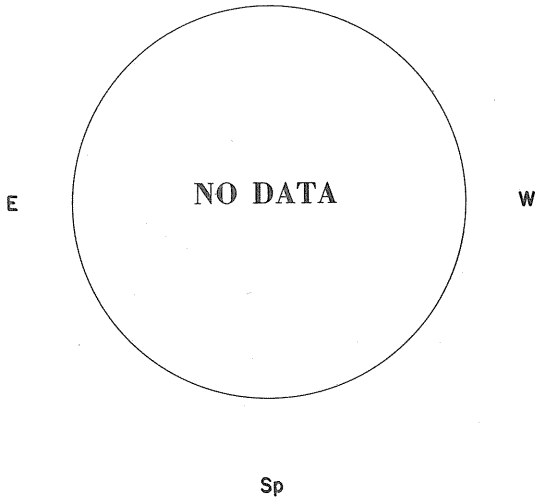
FLEURS, AUSTRALIA

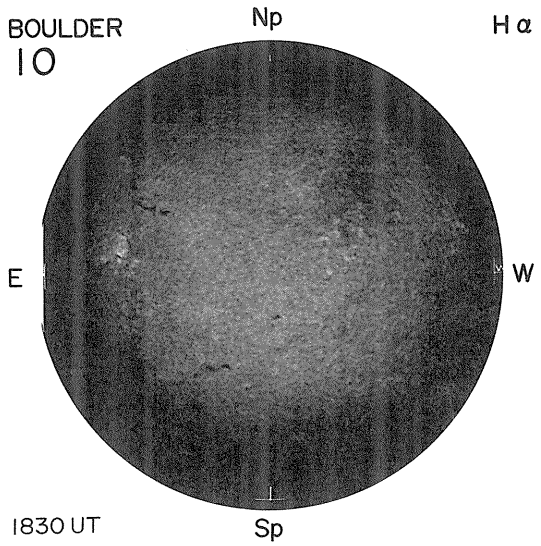
21 cm

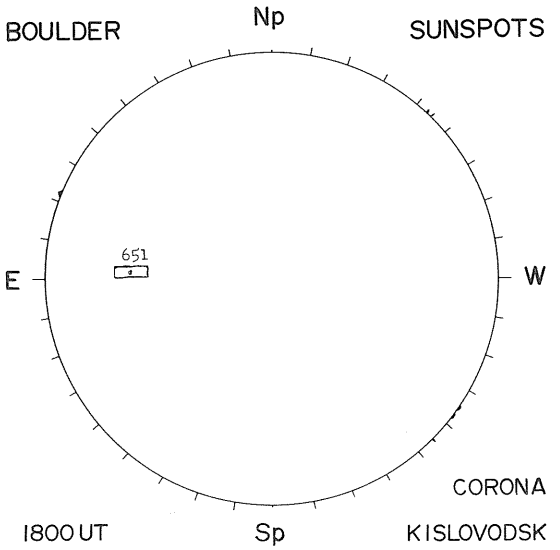


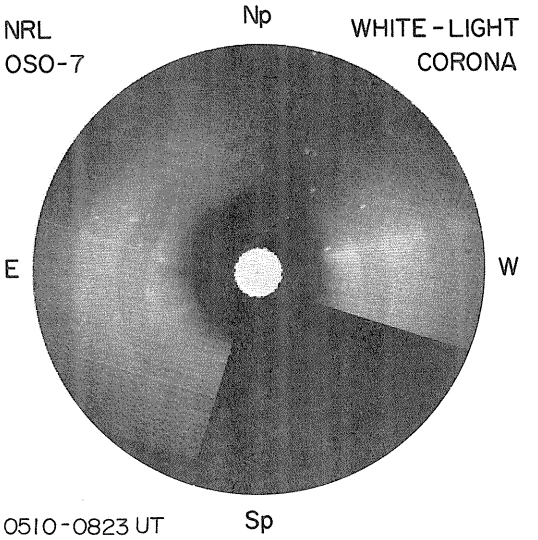
02-03 UT

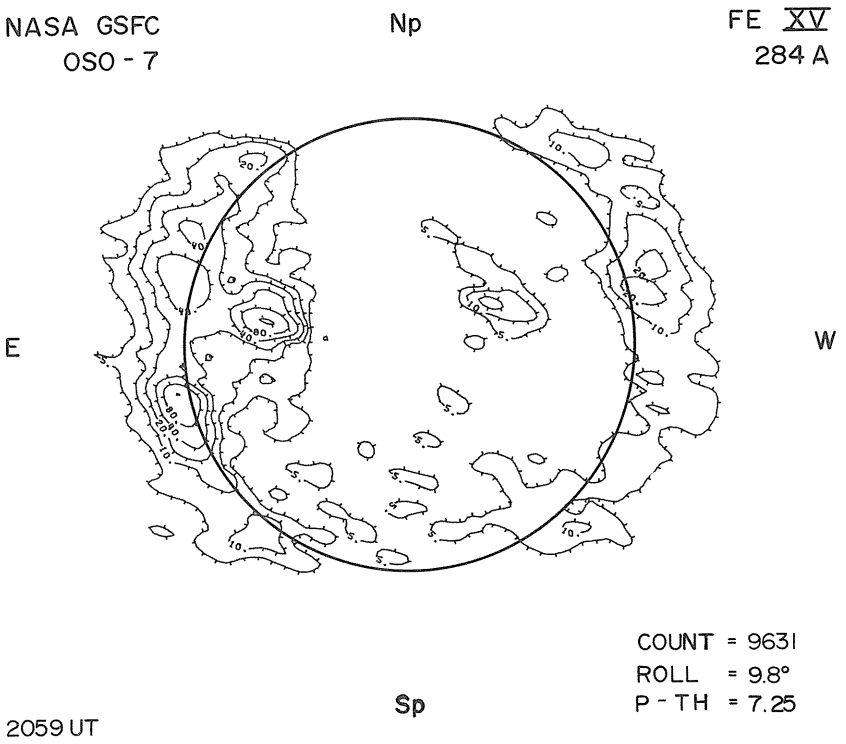
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

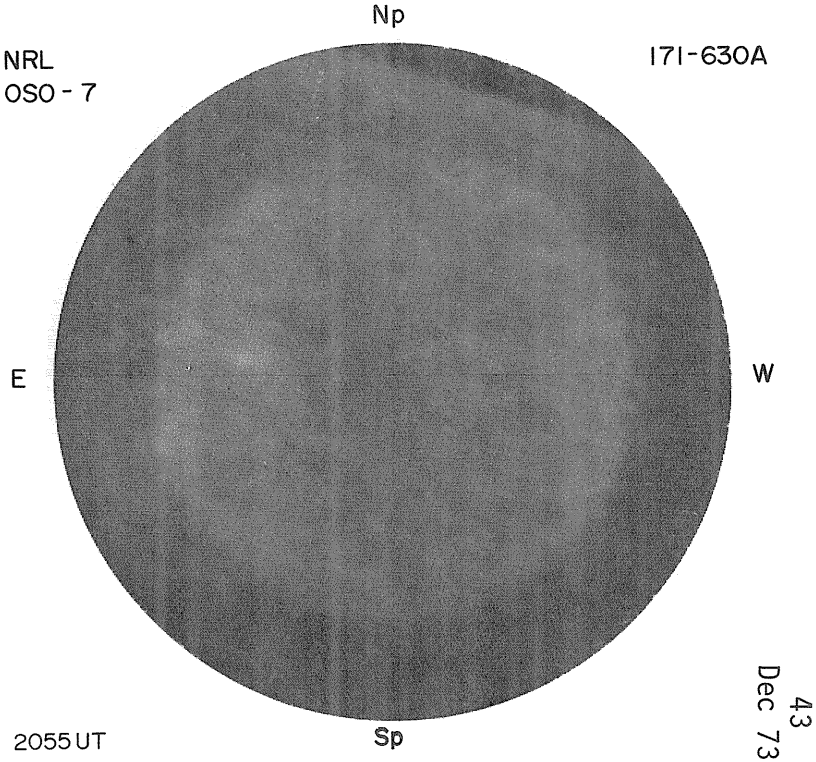



BOULDER
10
Np
Hα
E
W
1830 UT
Sp


BOULDER
Np
SUNSPOTS
651
E
W
CORONA
1800 UT
Sp
KISLOVODSK


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0510-0823 UT
Sp

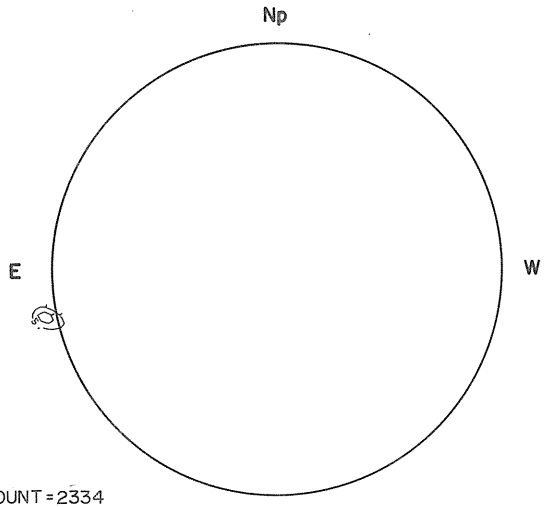

NASA GSFC
OSO - 7
Np
FE XV
284 A
E
W
COUNT = 9631
ROLL = 9.8°
P - TH = 7.25
2059 UT
Sp


Np
NRL
OSO - 7
171-630A
E
W
2055 UT
Sp

DECEMBER 11, 1973 (P = 12.05, B_o = -0.43, L_o = 340.39)

NASA GSFC
OSO-7

X-RAY
8-16A



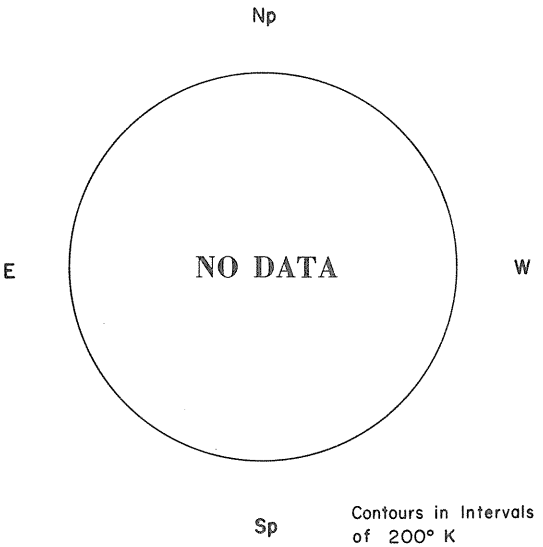
COUNT = 2334
ROLL = 9.6°
P-TH = 7.24

1943UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

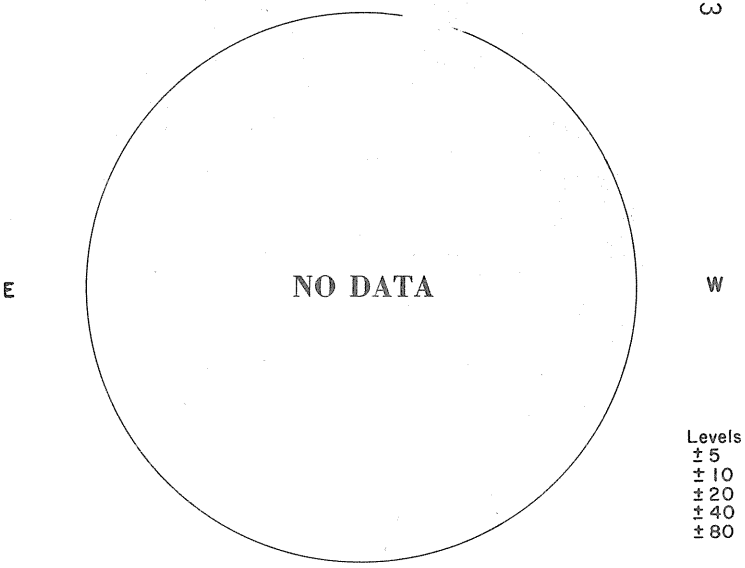


Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX =

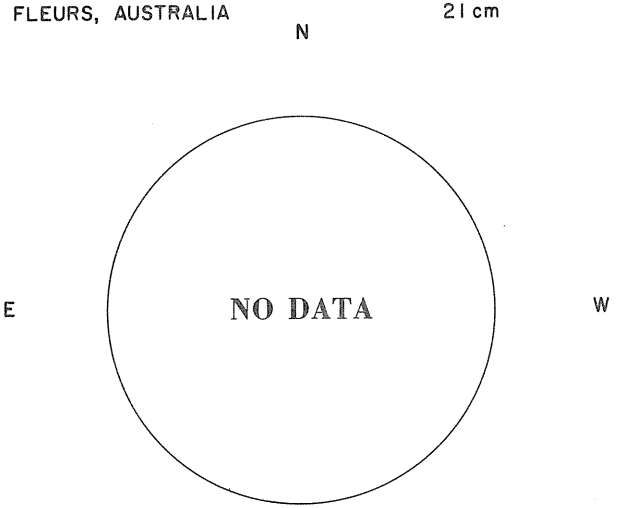
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

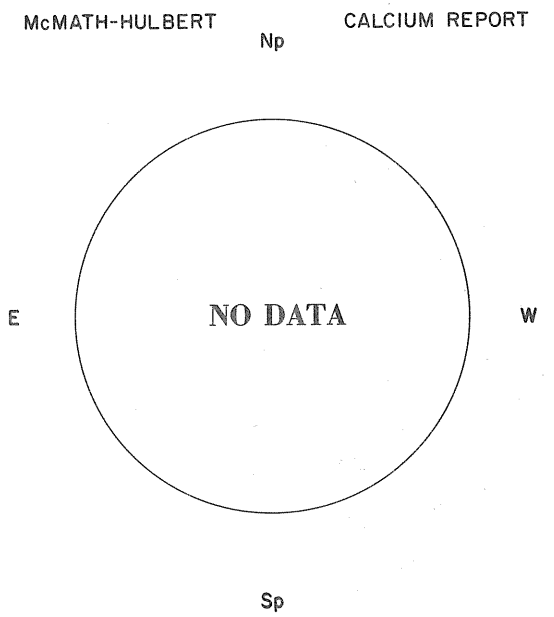


02-03 UT

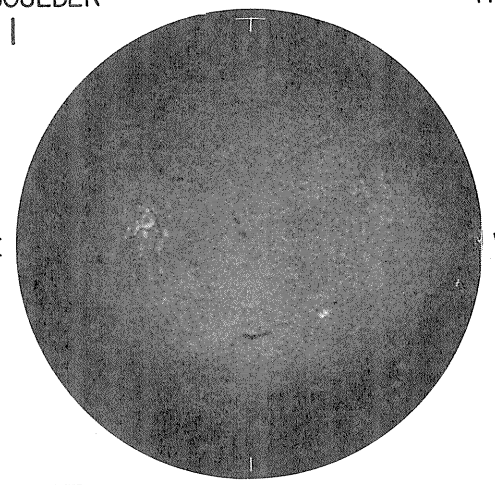
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT

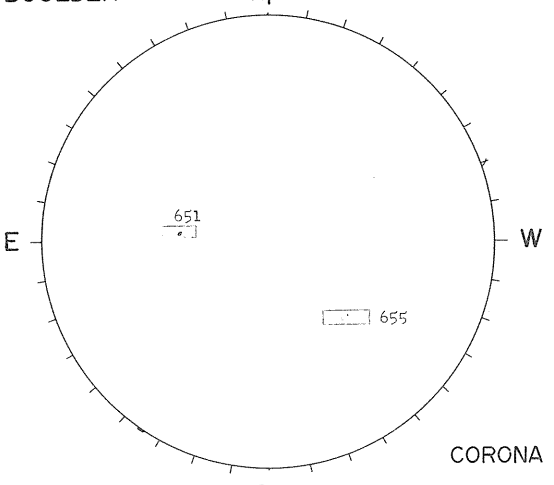


BOULDER
II



2049 UT

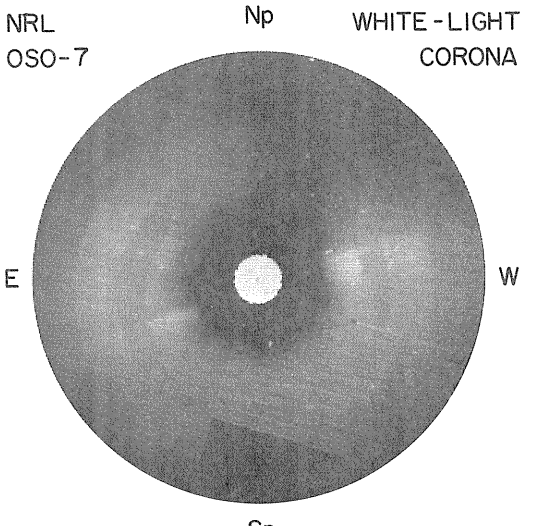
BOULDER



CORONA
NORIKURA

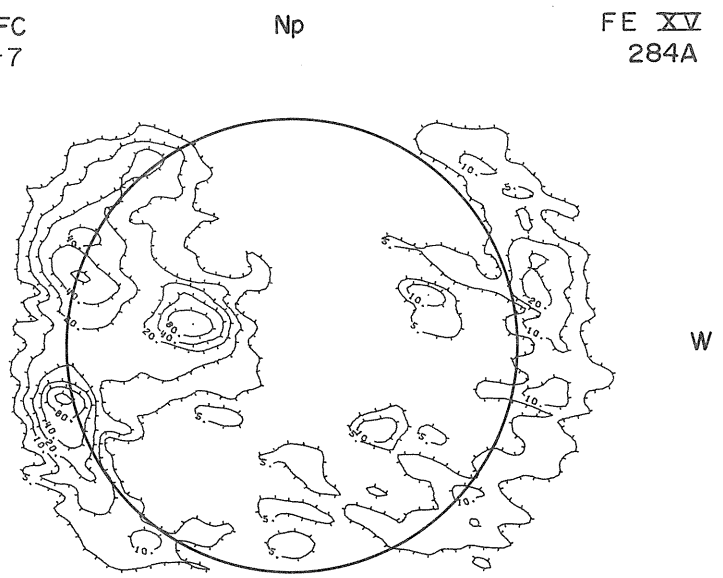
2040 UT

NRL
OSO-7



0356-0843 UT

NASA GSFC
OSO-7

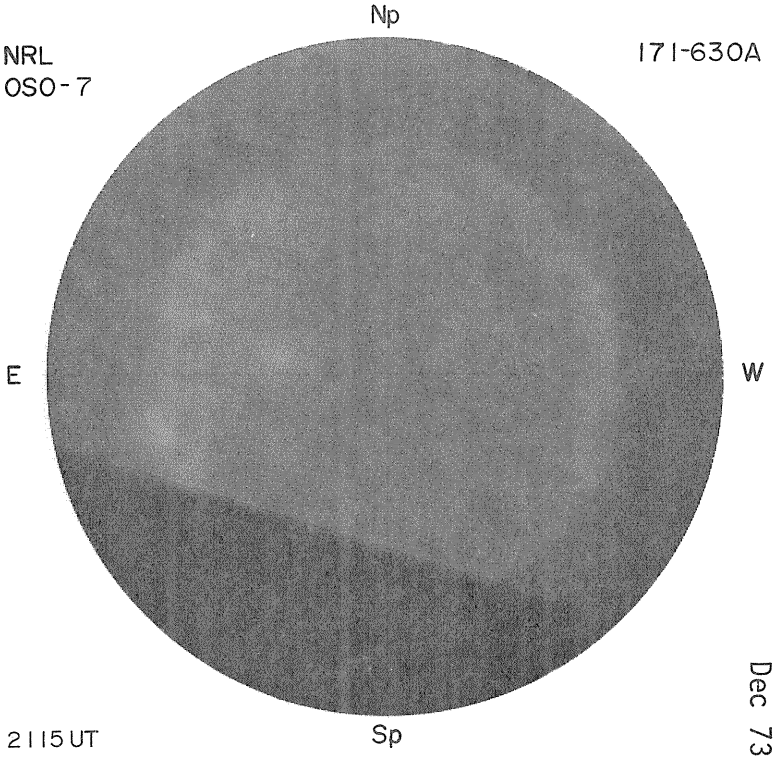


FE XV
284A

COUNT= 9486
ROLL = 9.6°
P-TH = 7.24

1943 UT

NRL
OSO-7

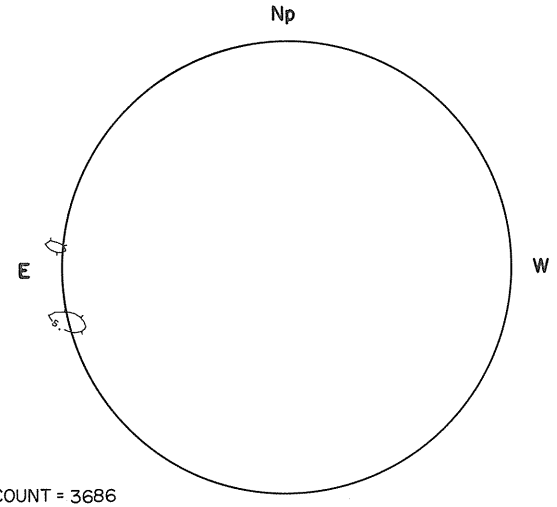


2115 UT

DECEMBER 12, 1973 (P = 11.61, B_o = -0.56, L_o = 327.21)

NASA GSFC
OSO-7

X-RAY
8-16A



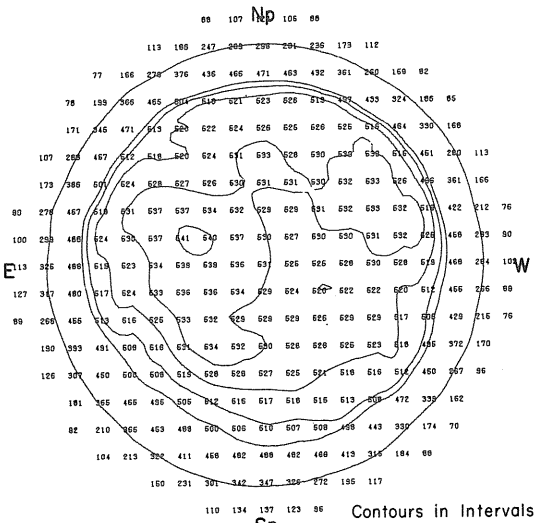
COUNT = 3686
ROLL = 9.4°
P-TH = 7.23

2139 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



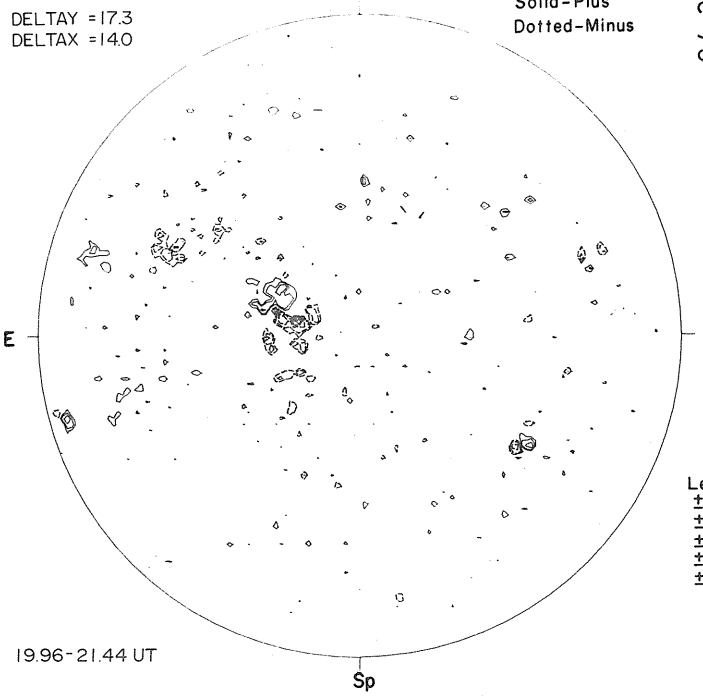
1516 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.3
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

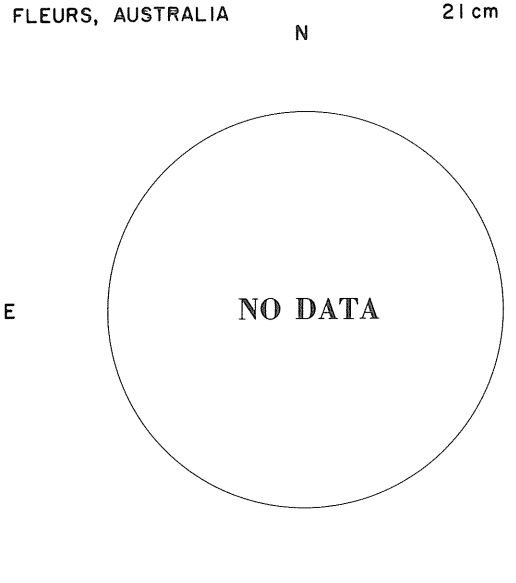


Levels
±5
±10
±20
±40
±80

19.96-21.44 UT

FLEURS, AUSTRALIA

21 cm

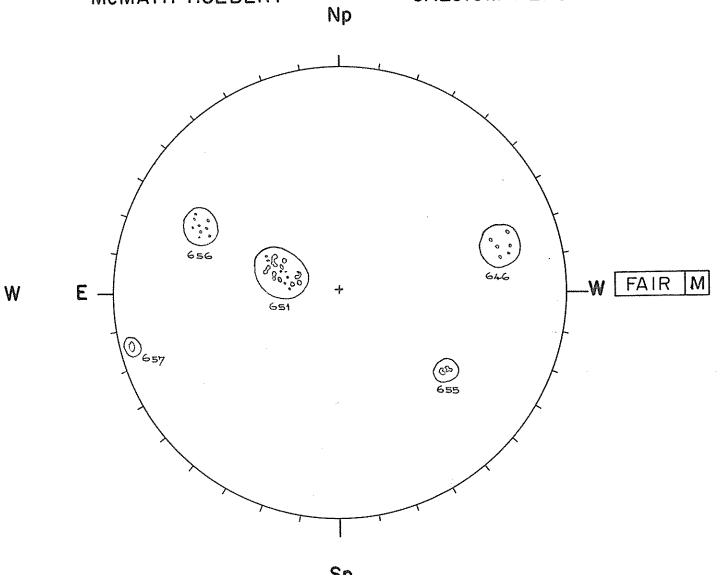


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



1530 UT

BOULDER
12

Np

Hα

E

W

1648 UT

Sp

BOULDER

Np

SUNSPOTS

651

E

W

CORONA

1855 UT

Sp

NORIKURA

NRL
OSO-7

Np

WHITE-LIGHT
CORONA

E

W

0415-0727 UT

Sp

NASA GSFC
OSO - 7

Np

FE XV
284 A

E

W

2139 UT

Sp

COUNT = 10871
ROLL = 9.4°
P-TH = 7.23

NRL
OSO-7

Np

171-630 A

E

W

2135 UT

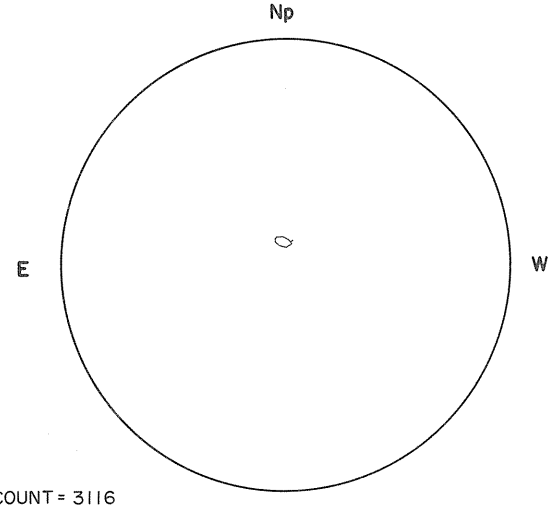
Sp

DECEMBER 13, 1973 (P = 11.17, B_o = -0.68, L_o = 314.03)

48
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



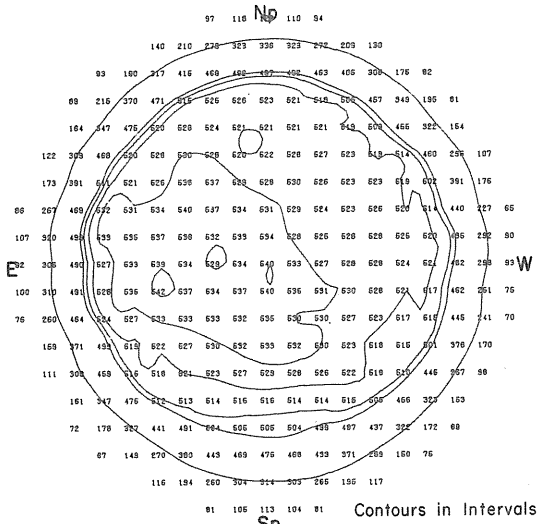
COUNT = 3116
ROLL = 9.2°
P-TH = 7.21

2023 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



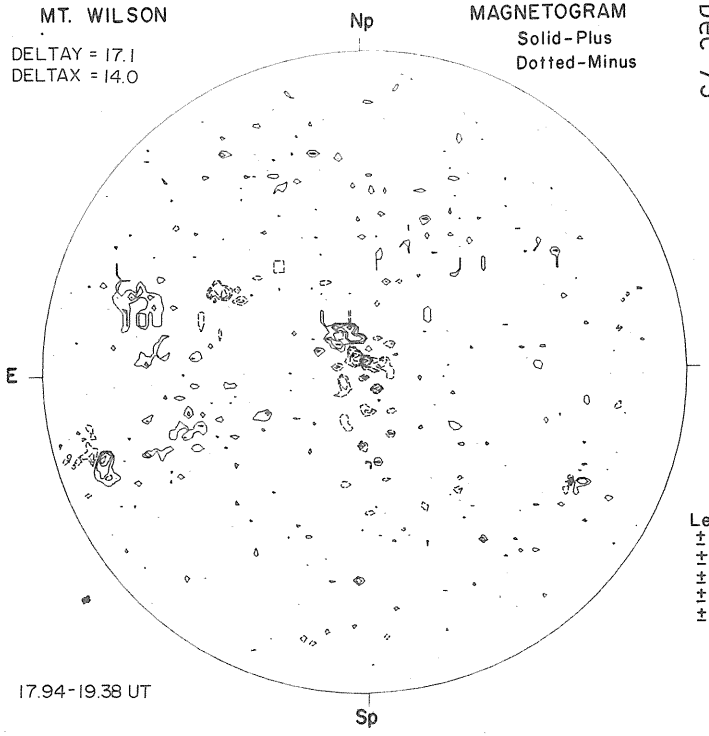
1825 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.1
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

17.94-19.38 UT

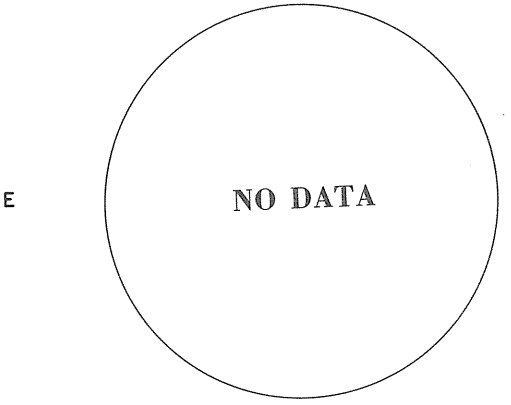
McMATH-HULBERT

CALCIUM REPORT

FLEURS, AUSTRALIA

21 cm

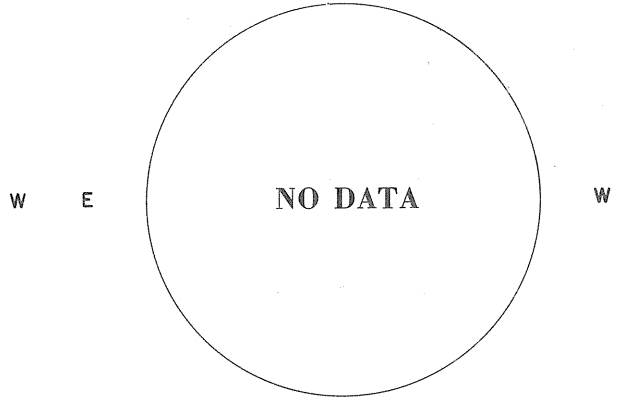
N



S

02-03 UT

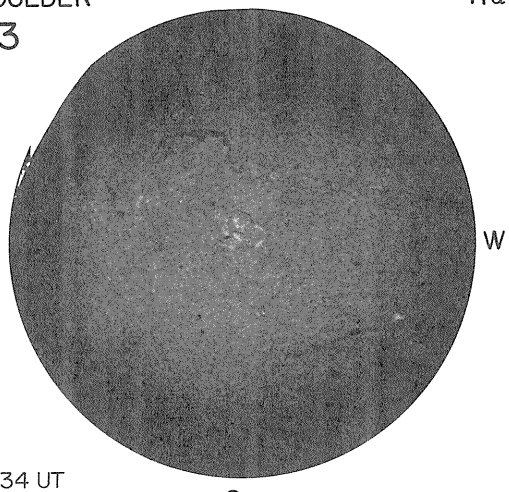
Np



Sp

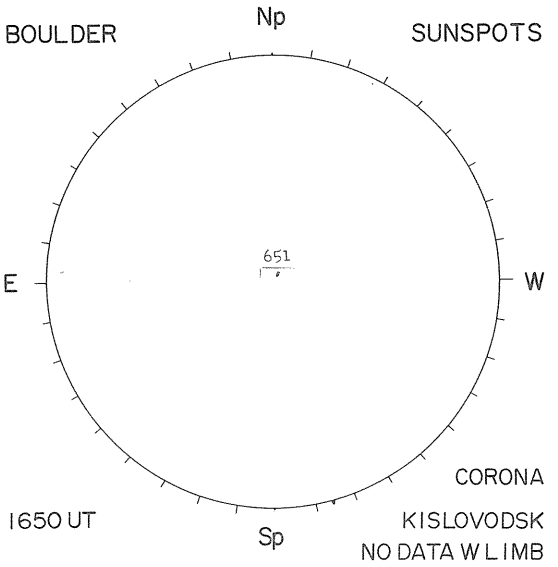
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

BOULDER
13



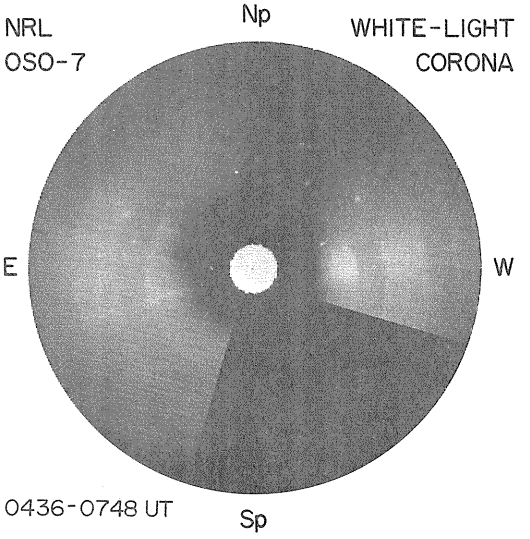
1934 UT

BOULDER



1650 UT

NRL
OSO-7

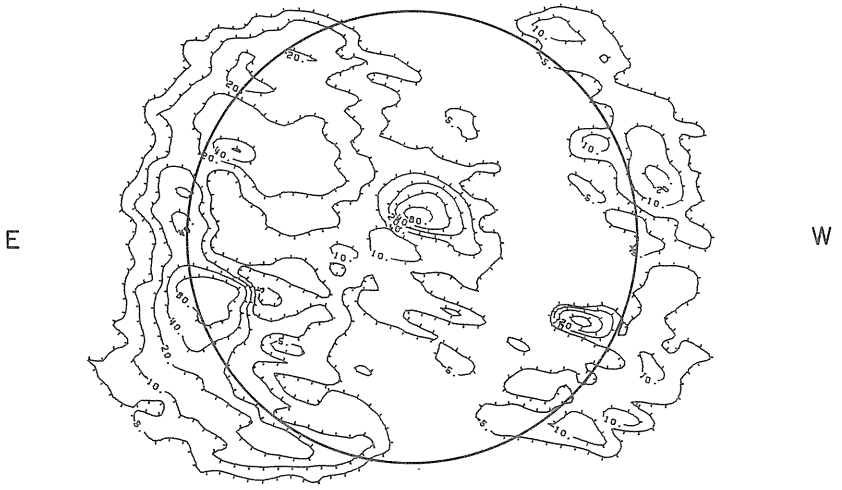


0436-0748 UT

Np

NASA GSFC
OSO-7

FE XV
284A



COUNT = 11759
ROLL = 9.2°
P-TH = 7.21

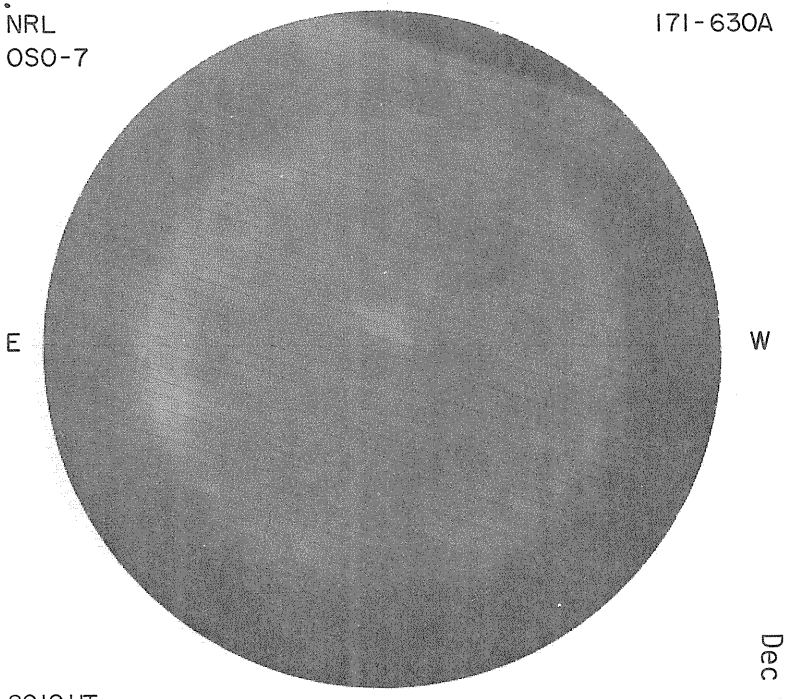
2023 UT

Sp

Np

NRL
OSO-7

171-630A



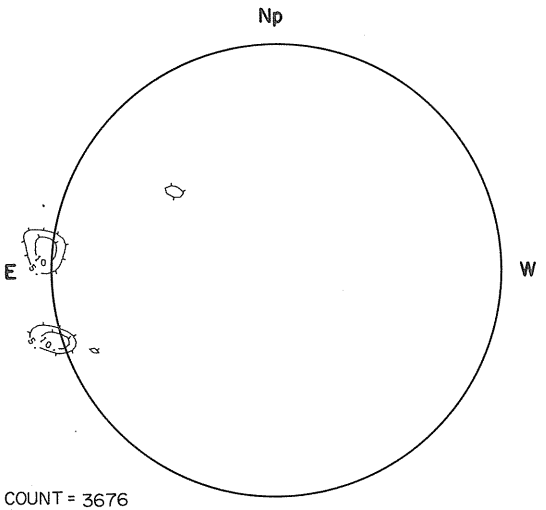
2019 UT

Sp

DECEMBER 14, 1973 (P = 10.72, B_o = -0.81, L_o = 300.86)

NASA GSFC
OSO-7

X-RAY
8-16A



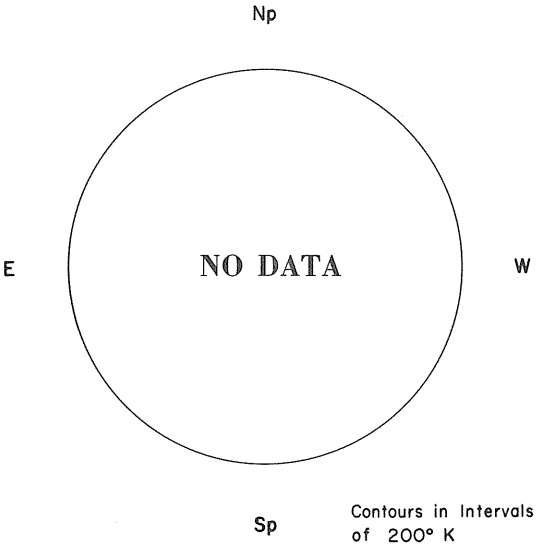
COUNT = 3676
ROLL = 8.3°
P-TH = 7.20

2043 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

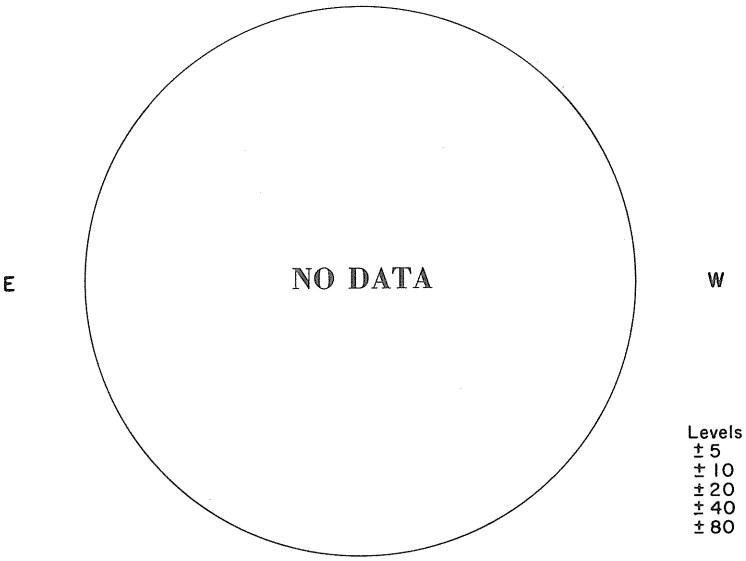


Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX =

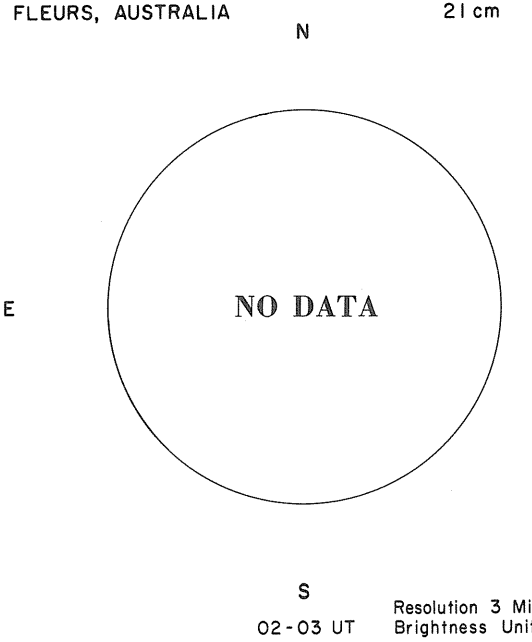
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

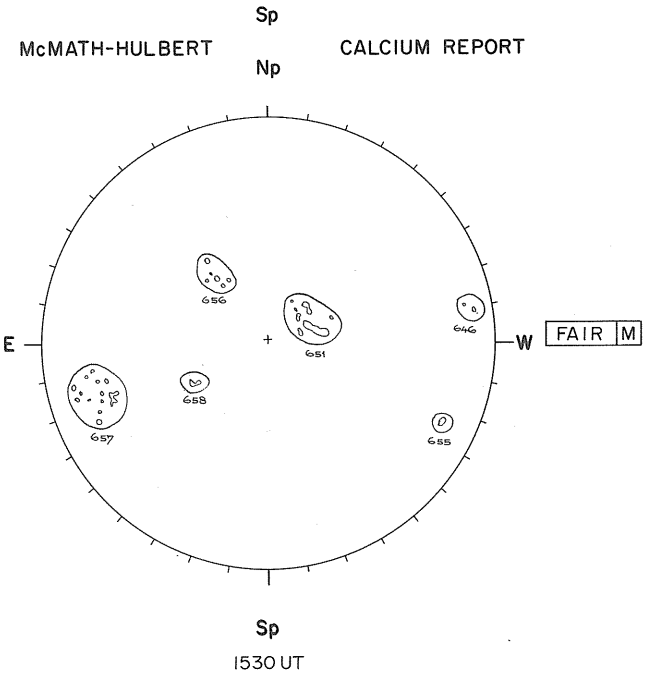


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

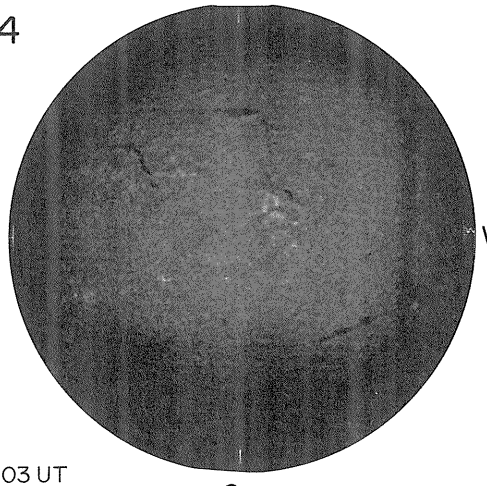
McMATH-HULBERT

CALCIUM REPORT



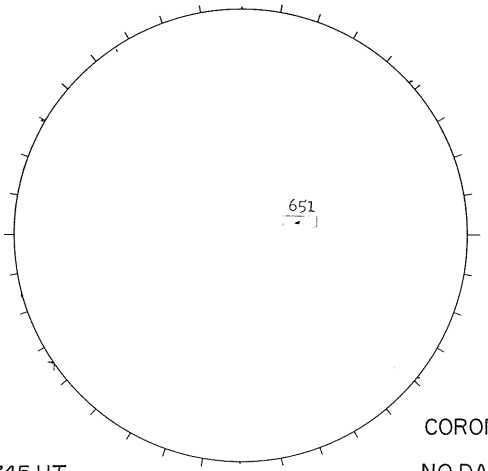
1530 UT

BOULDER
14



1803 UT

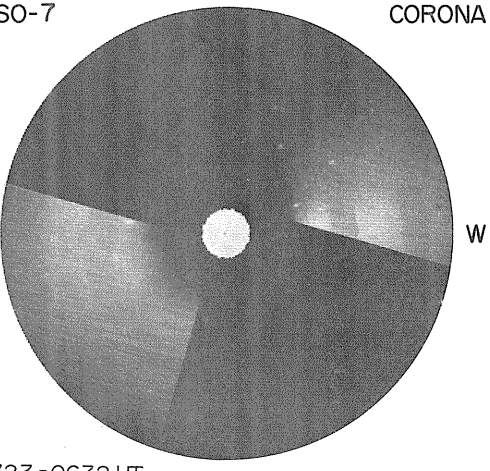
BOULDER



1745 UT

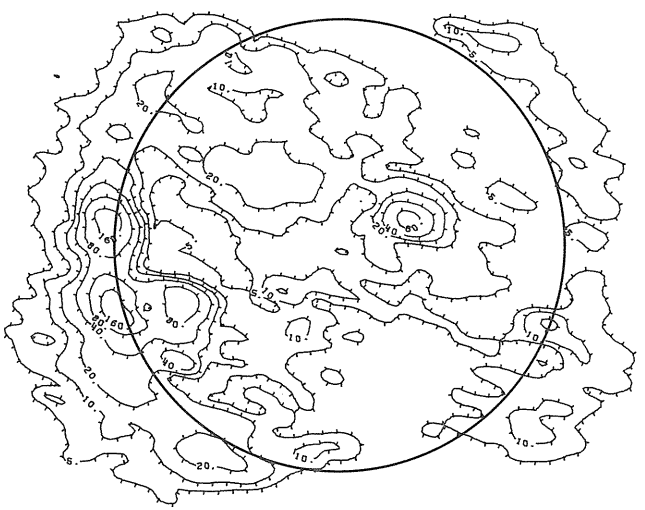
CORONA
NO DATA

NRL
OSO-7



0323-0632 UT

NASA GSFC
OSO-7

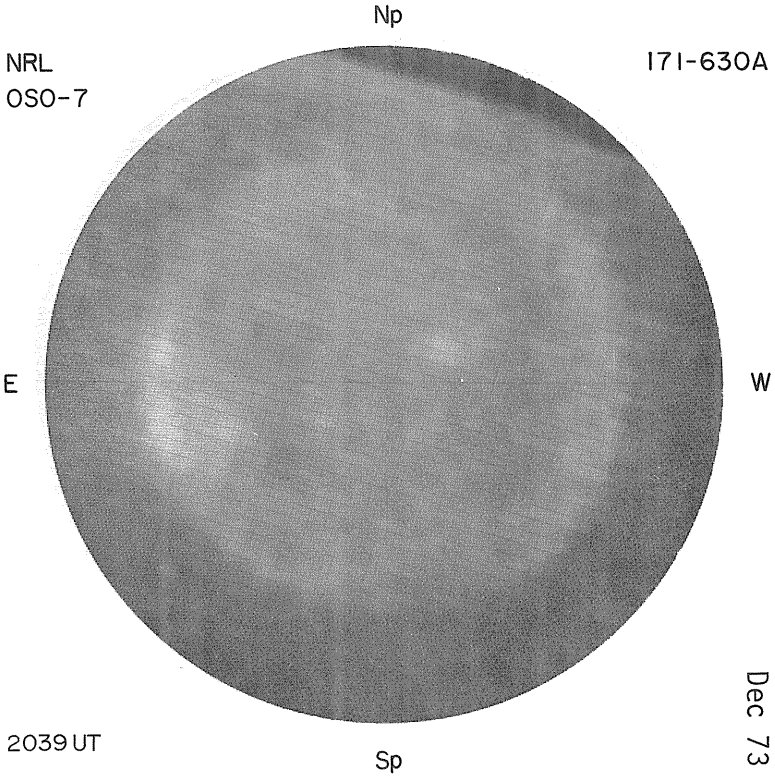


2043 UT

COUNT = 14950
ROLL = 8.3°
P-TH = 7.20

FE XV
284A

NRL
OSO-7

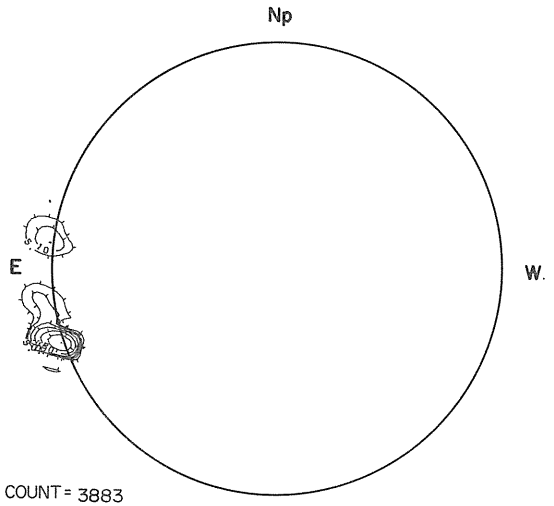


2039 UT

DECEMBER 15, 1973 (P = 10.27, B_o = -0.94, L_o = 287.68)

NASA GSFC
OSO-7

X-RAY
8-16A



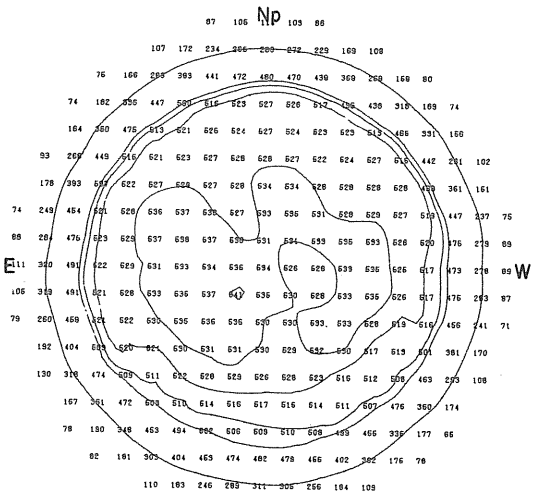
COUNT = 3883
ROLL = 6.5°
P-TH = 7.18

1927 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



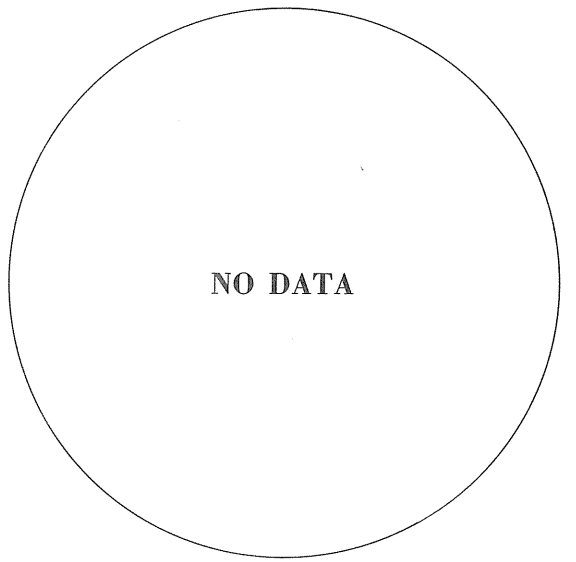
1635 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX =

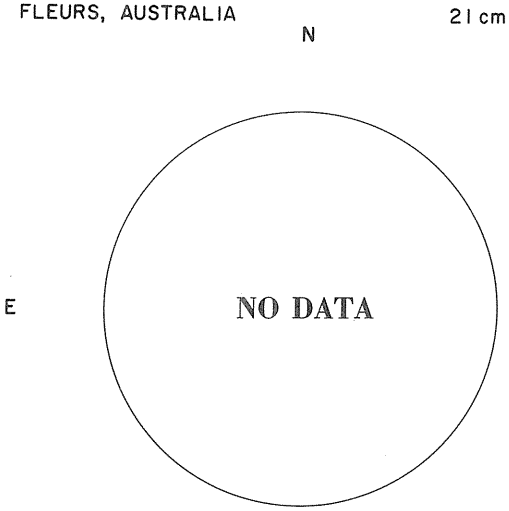
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

FLEURS, AUSTRALIA

21 cm

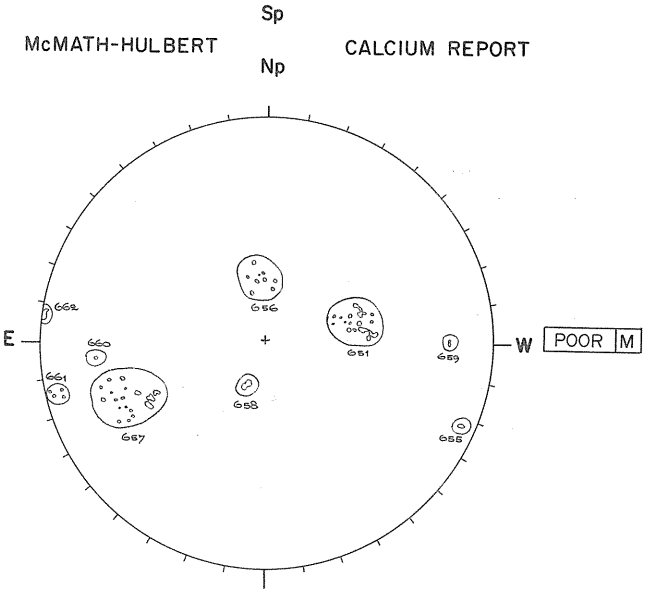


02-03 UT

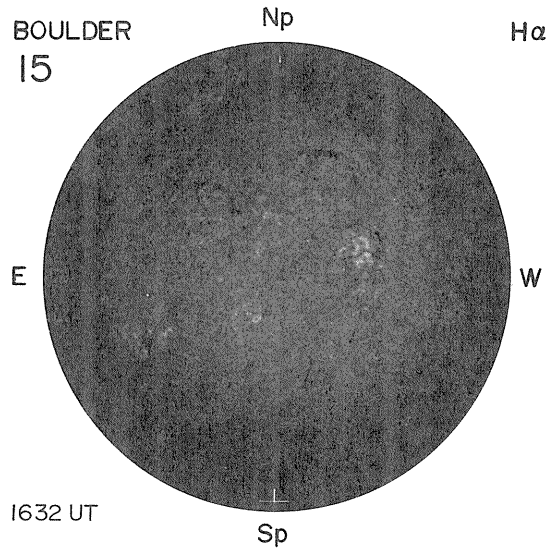
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

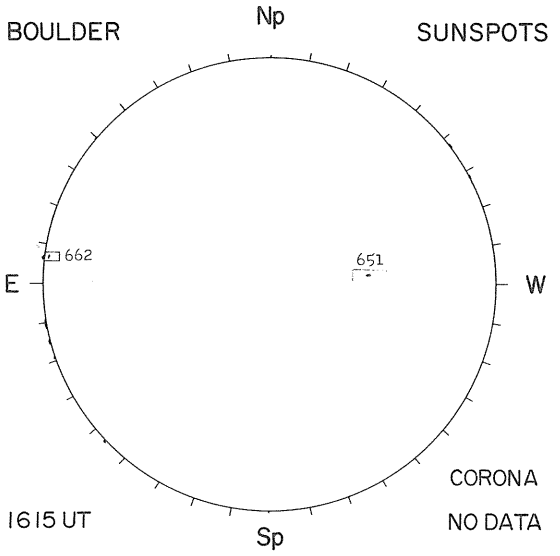
McMATH-HULBERT

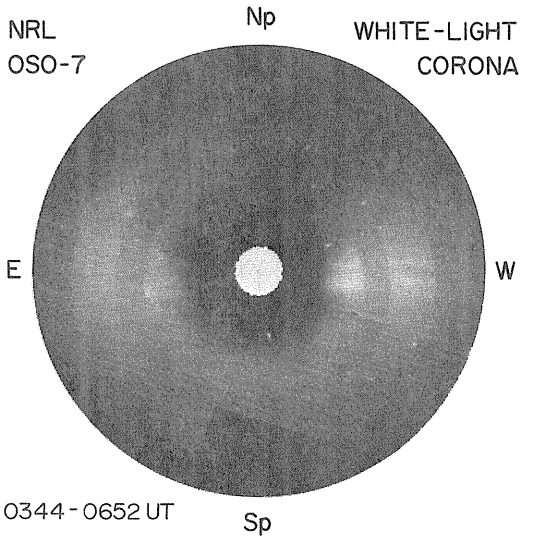
CALCIUM REPORT



1550 UT







Np

NASA GSFC
OSO-7

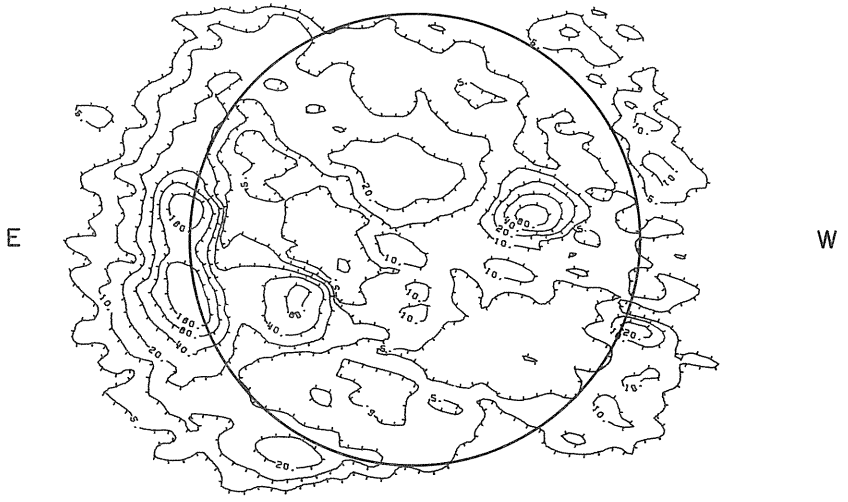
Np

FE XV
284A

NRL
OSO-7

Np

171-630A



COUNT = 17683
ROLL = 6.5°
P-TH = 7.18

E

NO DATA

W

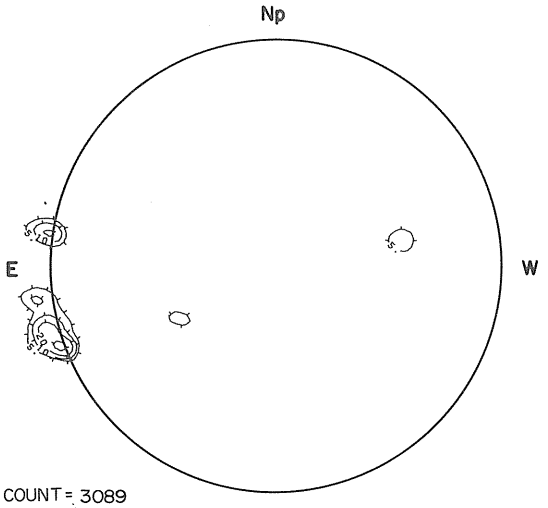
Sp

53
Dec 73

DECEMBER 16, 1973 (P = 9.82, B_o = - 1.07, L_o = 274.51)

NASA GSFC
OSO-7

X-RAY
8-16A



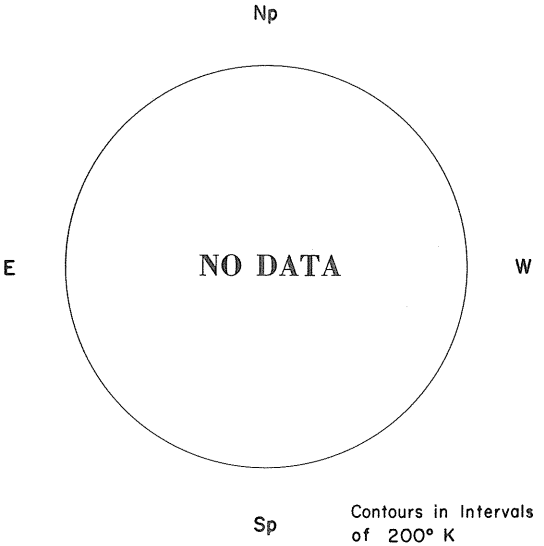
COUNT = 3089
ROLL = 5.7°
P-TH = 7.17

0358 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

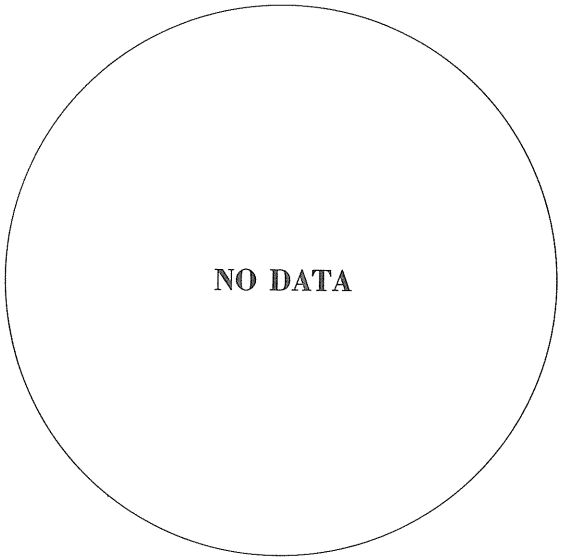


Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX =

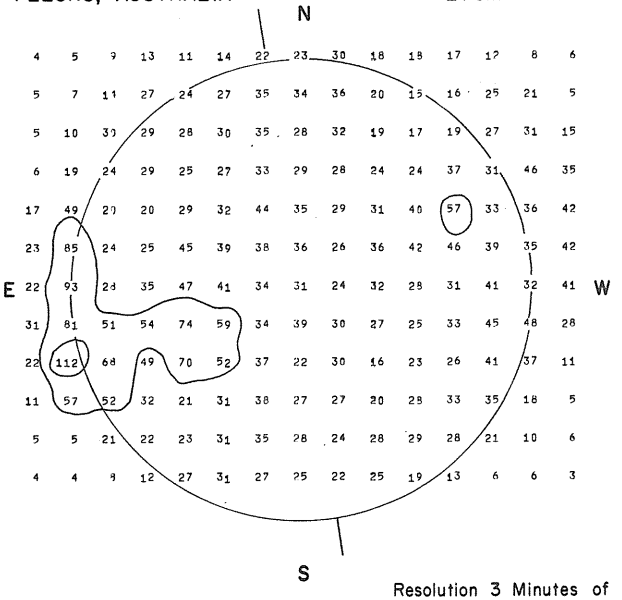
MAGNETOGRAM
Solid - Plus
Dotted - Minus



Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

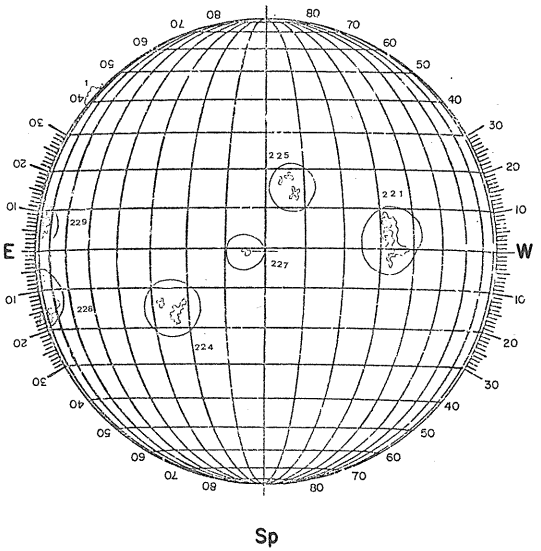


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

CATANIA

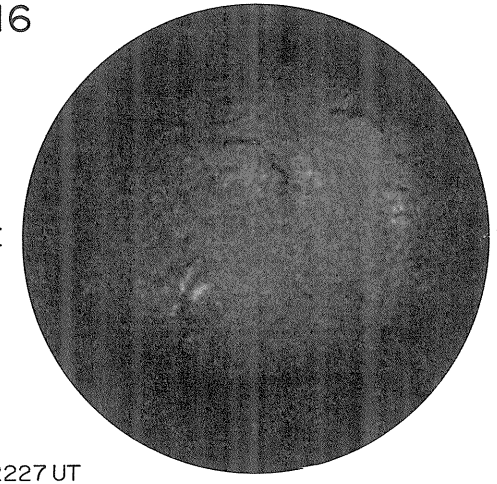
CALCIUM REPORT



FAIR	GD
28 - 1776	---
29 - 1537	---

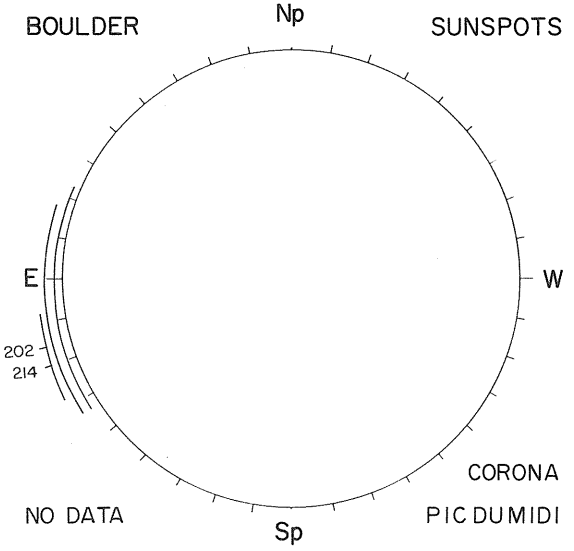
0815 UT

BOULDER
16



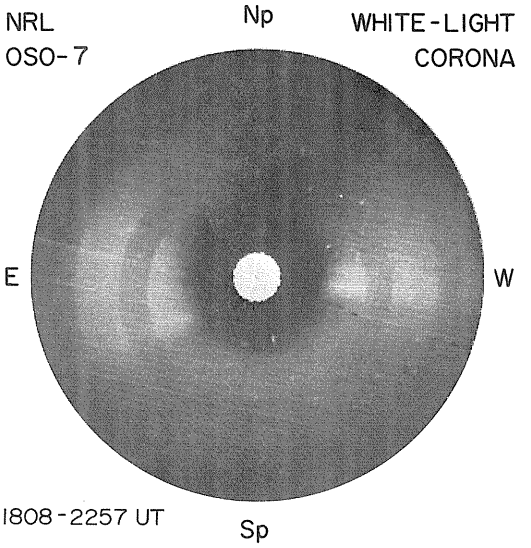
2227 UT

BOULDER



NO DATA

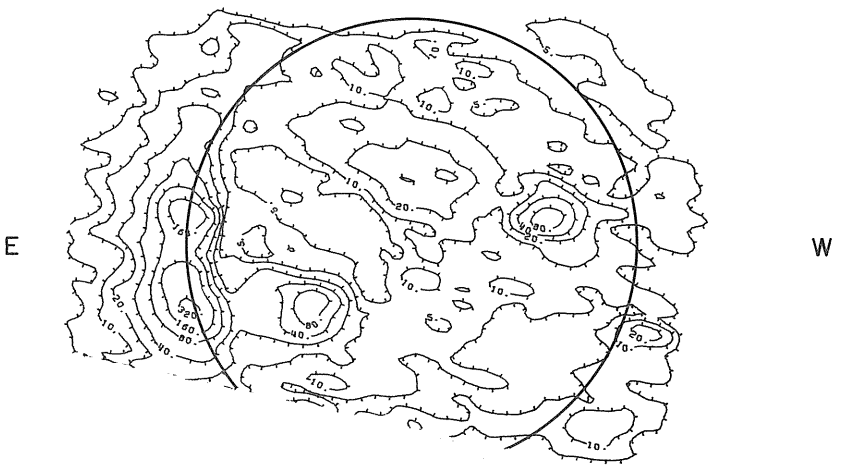
NRL
OSO-7



1808-2257 UT

NASA GSFC
OSO-7

FE XV
284A

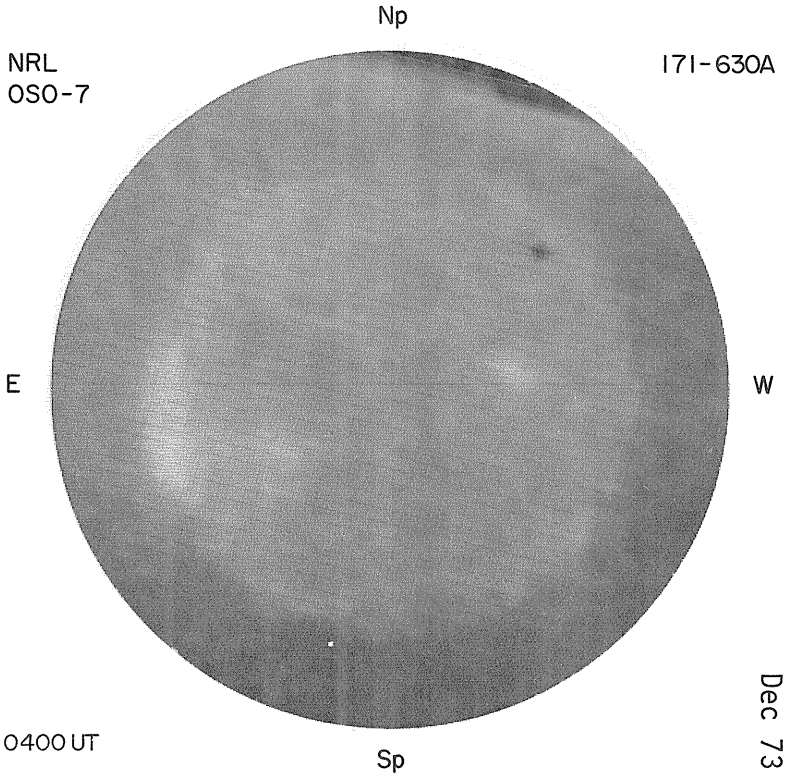


COUNT = 17368
ROLL = 5.7°
P-TH = 7.17

0358 UT

NRL
OSO-7

171-630A



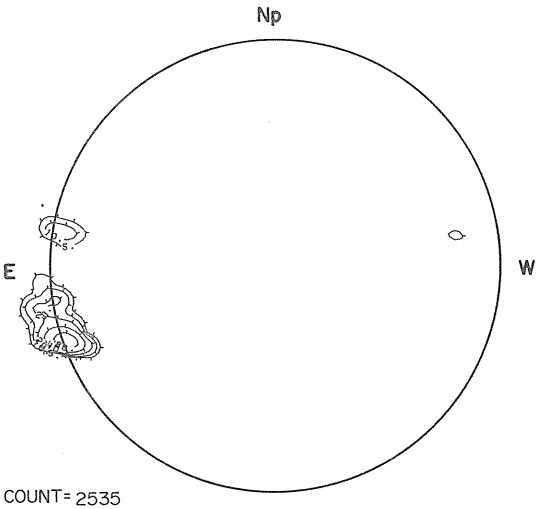
0400 UT

55
Dec 73

DECEMBER 17, 1973 (P = 9.36, B_o = -1.19, L_o = 261.33)

NASA GSFC
OSO-7

X-RAY
8-16A



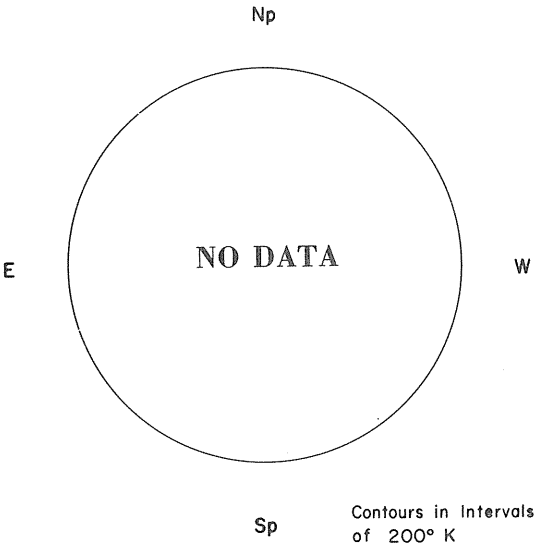
COUNT = 2535
ROLL = 3.6°
P-TH = 7.15

0424 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

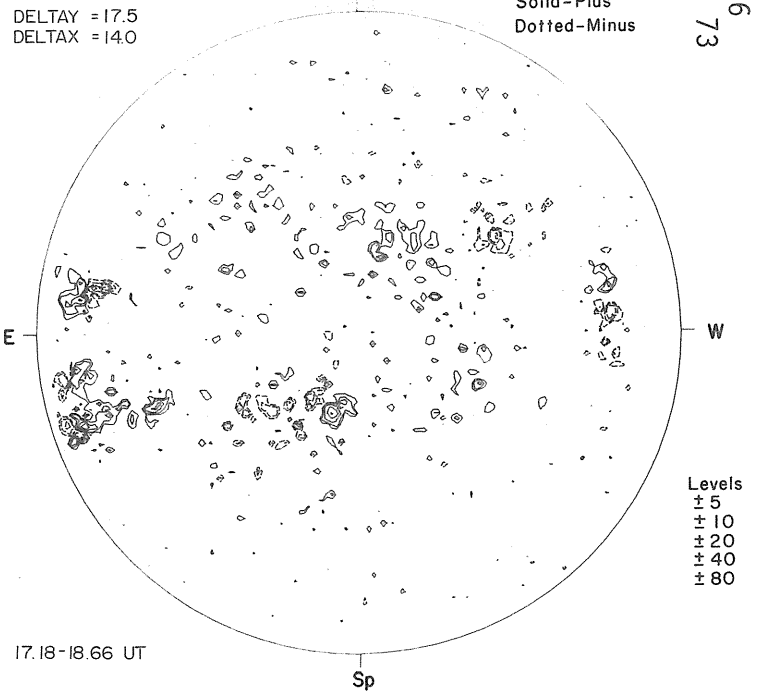


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.5
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

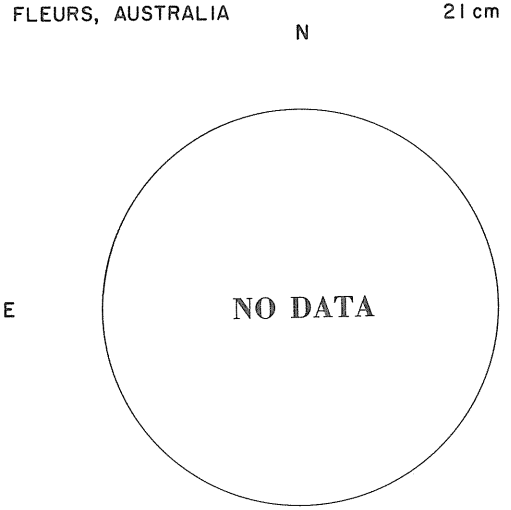


Levels
± 5
± 10
± 20
± 40
± 80

17.18-18.66 UT

FLEURS, AUSTRALIA

21 cm

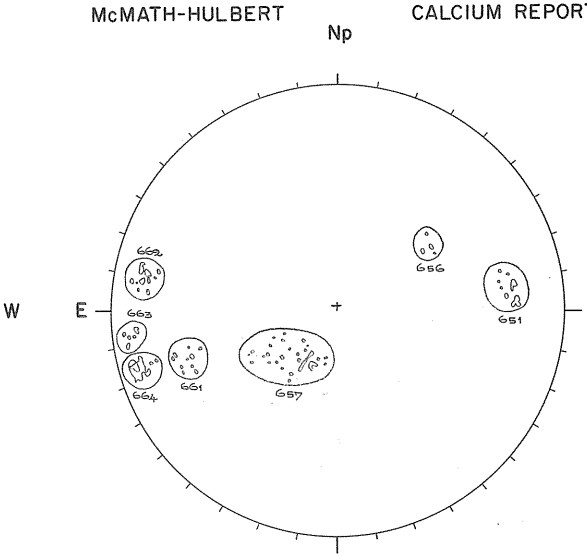


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

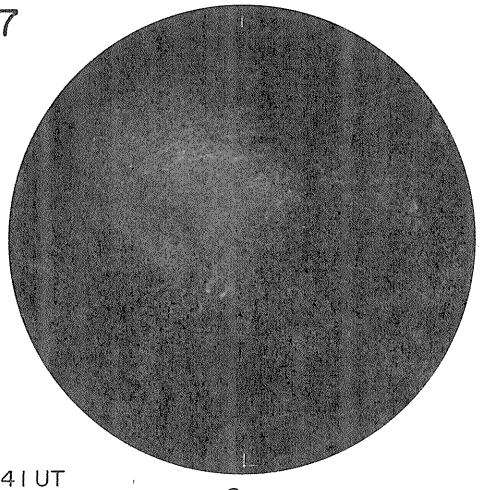
CALCIUM REPORT



POOR	M
62 - 1000	-2.5
64 - 1700	-3.5

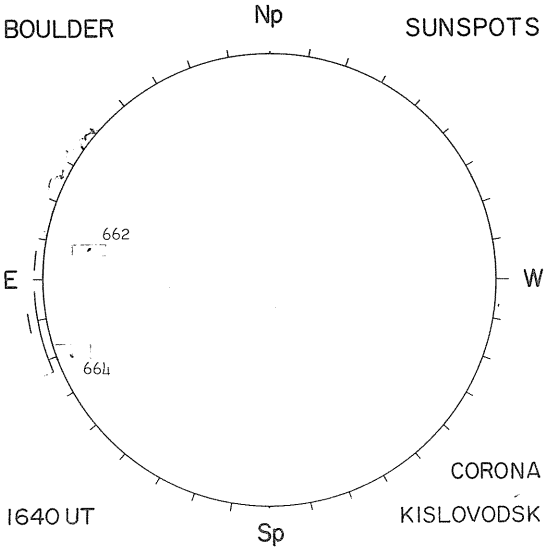
1520 UT

BOULDER
17



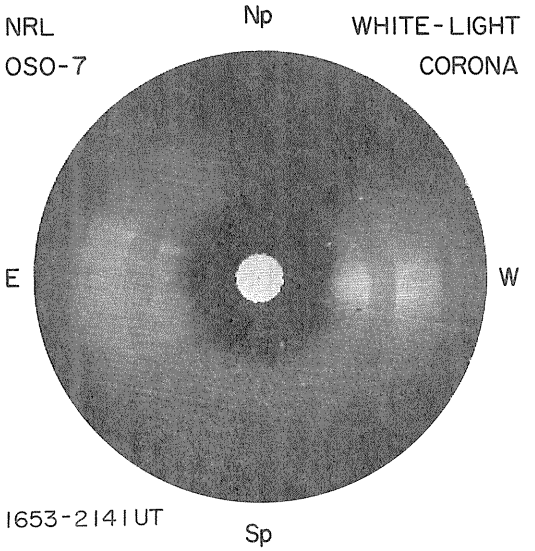
1641 UT

BOULDER



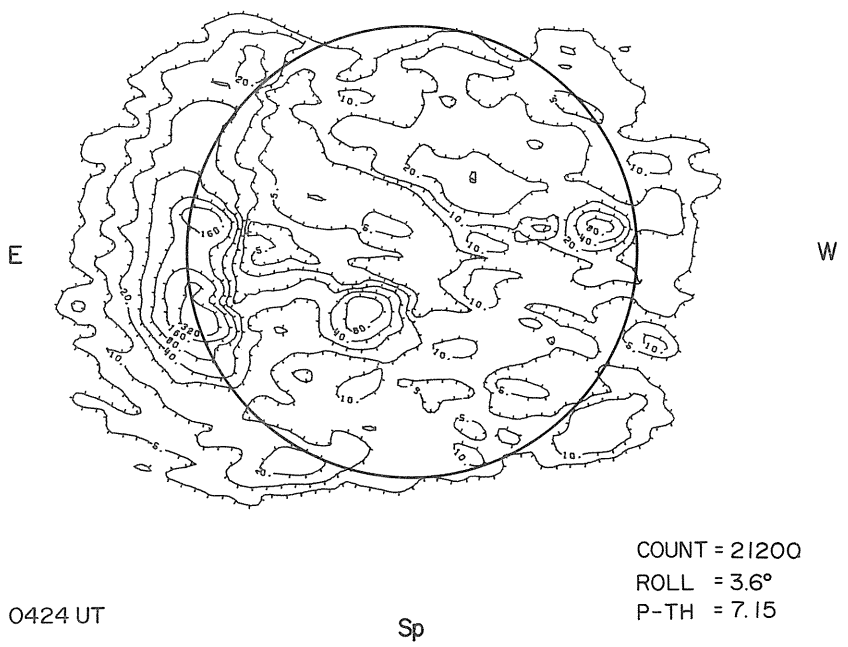
1640 UT

NRL
OSO-7



1653-2141 UT

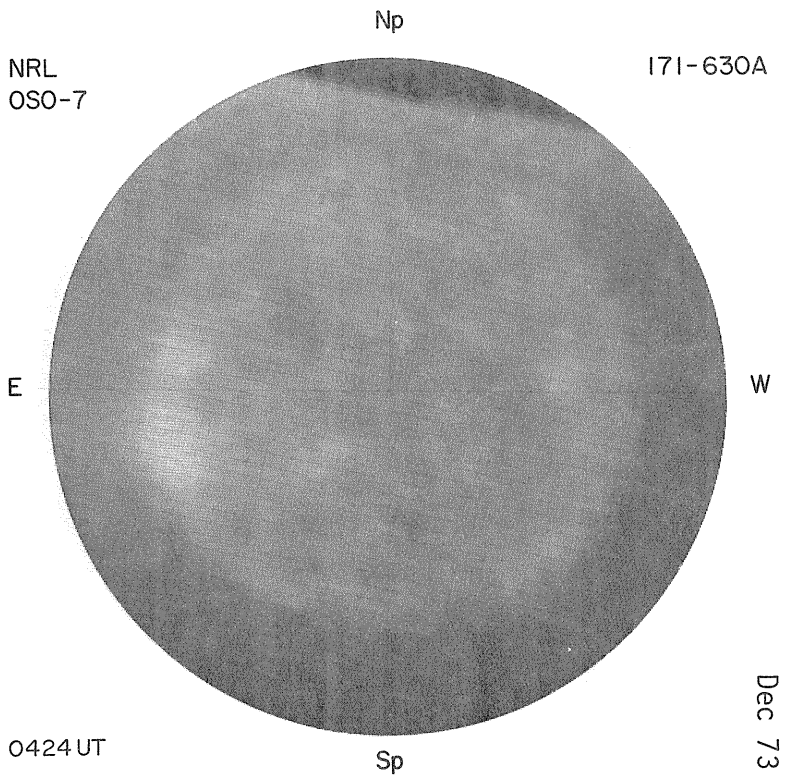
NASA GSFC
OSO-7



COUNT = 21200
ROLL = 3.6°
P-TH = 7.15

0424 UT

NRL
OSO-7

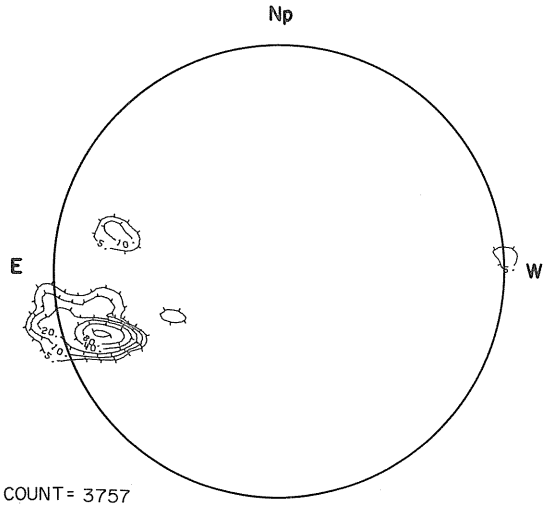


0424 UT

DECEMBER 18, 1973 (P = 8.90, B_o = -1.32, L_o = 248.16)

NASA GSFC
OSO-7

X-RAY
8-16A



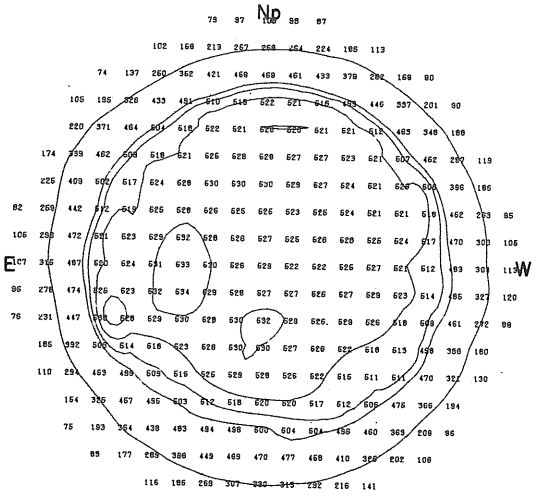
COUNT = 3757
ROLL = 0.9°
P-TH = 7.12

1715 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



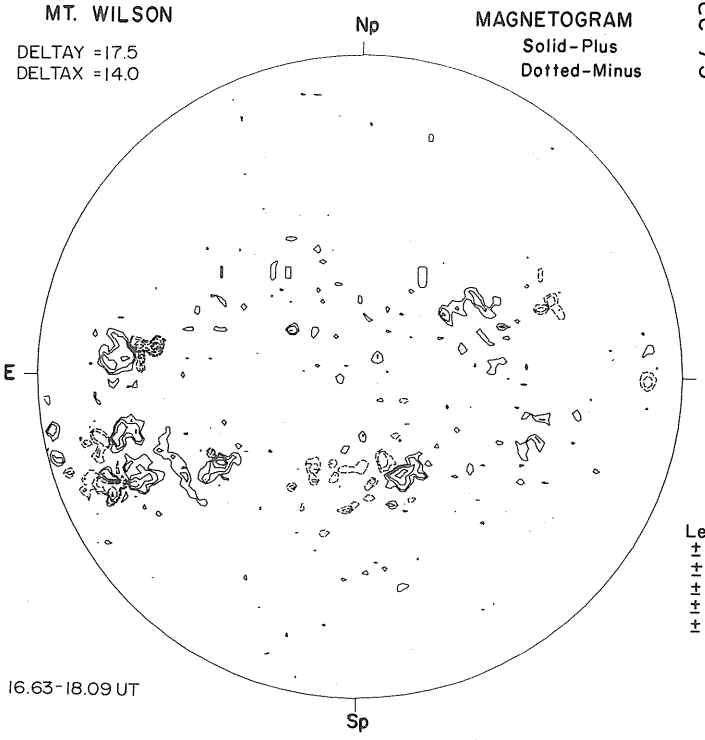
1613 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.5
DELTAX = 14.0

MAGNETOGRAM
Solid - Plus
Dotted - Minus

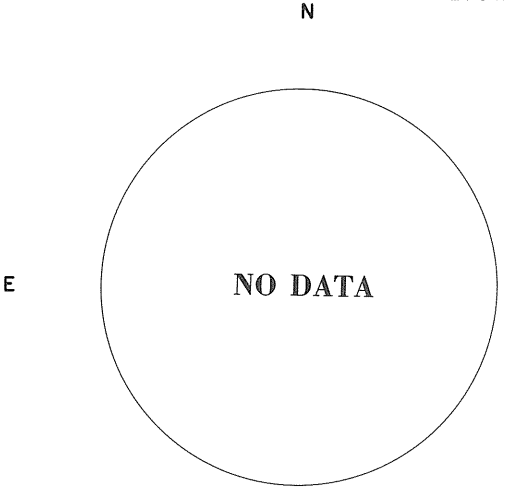


Levels
±5
±10
±20
±40
±80

16.63-18.09 UT

FLEURS, AUSTRALIA

21 cm

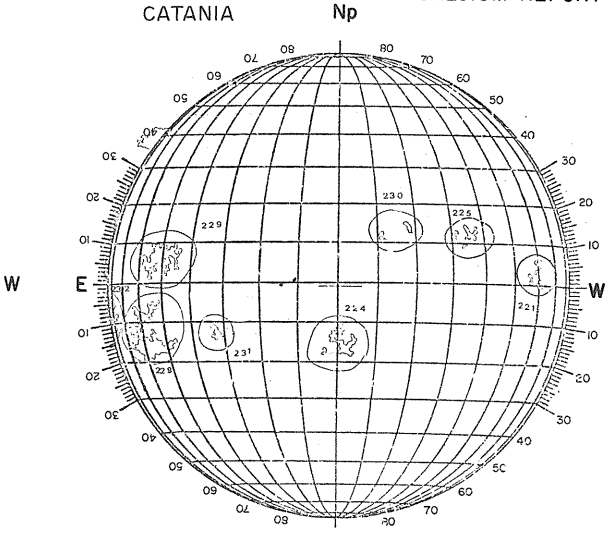


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

CATANIA

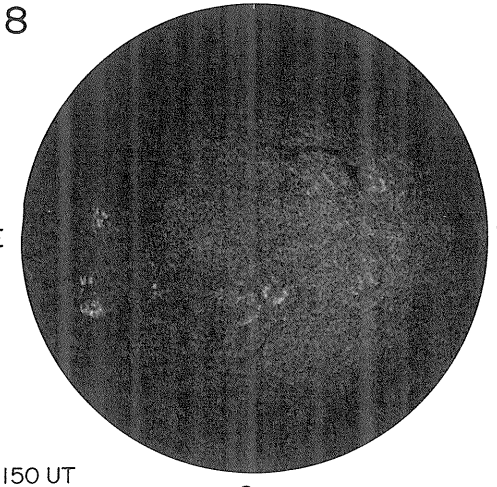
CALCIUM REPORT



FAIR	GD
29 - 2674	---
28 - 7087	---
32 - 5357	---

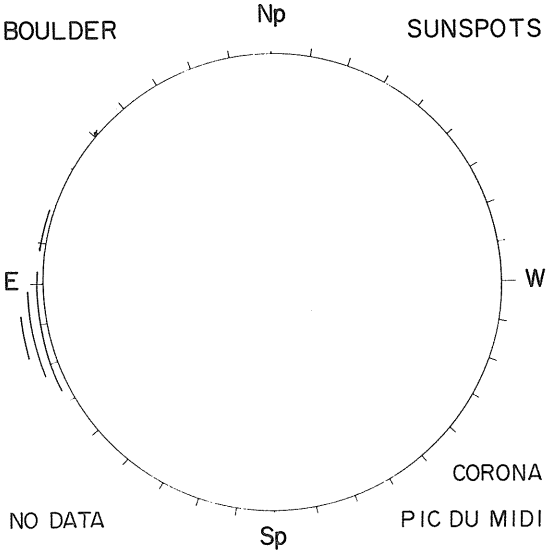
0815 UT

RAMEY AFB
18



1150 UT

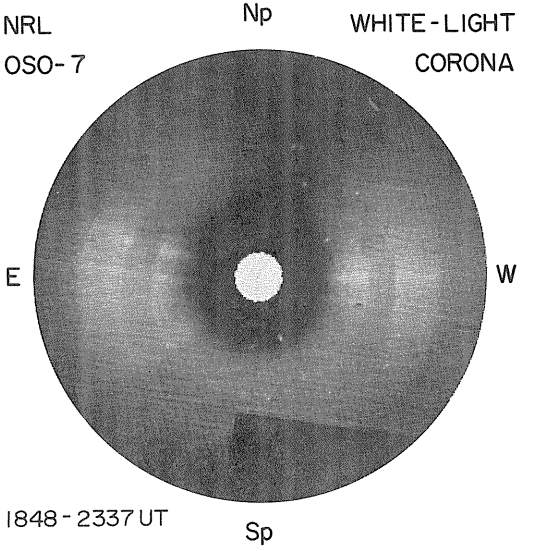
BOULDER



NO DATA

PIC DU MIDI

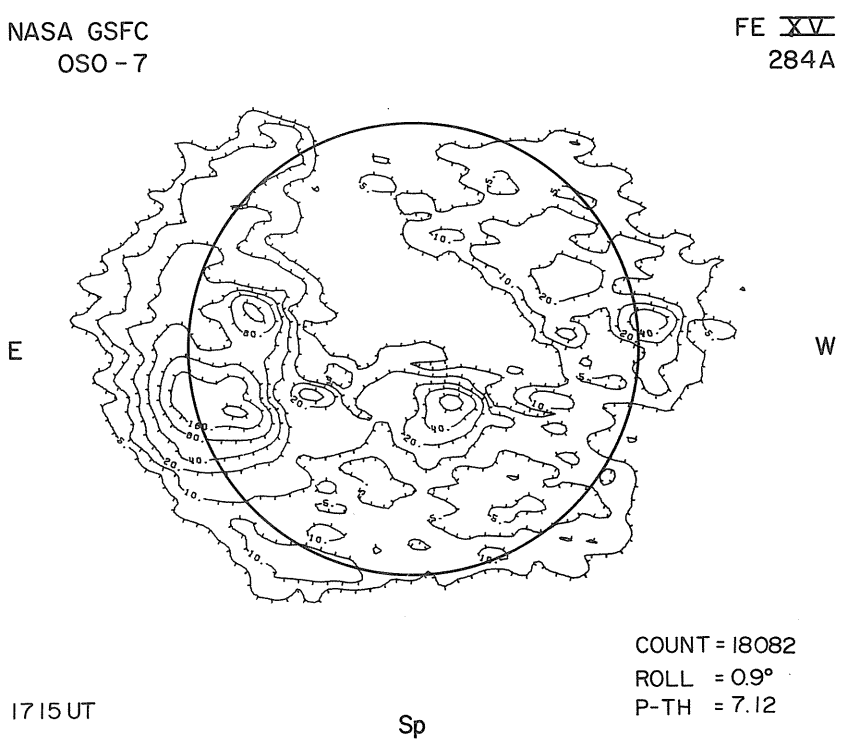
NRL
OSO-7



1848-2337 UT

NASA GSFC
OSO-7

FE XV
284A

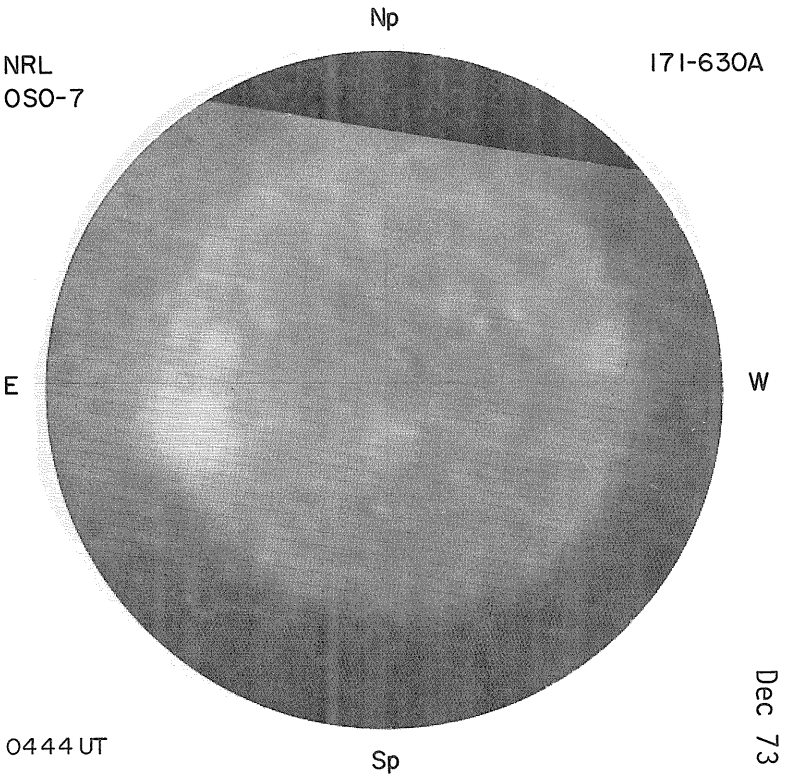


COUNT = 18082
ROLL = 0.9°
P-TH = 7.12

1715 UT

NRL
OSO-7

171-630A



0444 UT

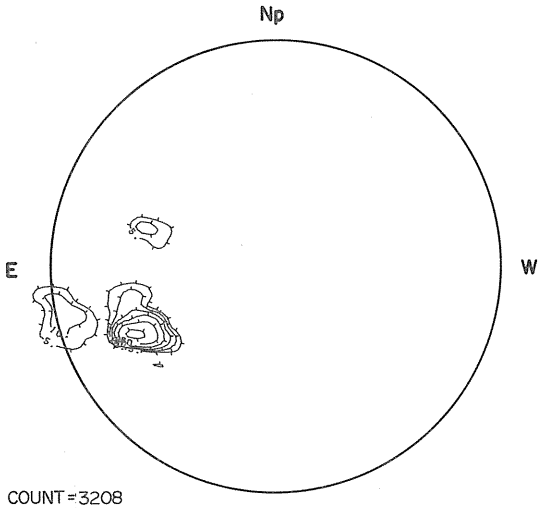
59
Dec 73

DECEMBER 19, 1973 (P = 8.43, B_o = -1.45, L_o = 234.99)

60
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



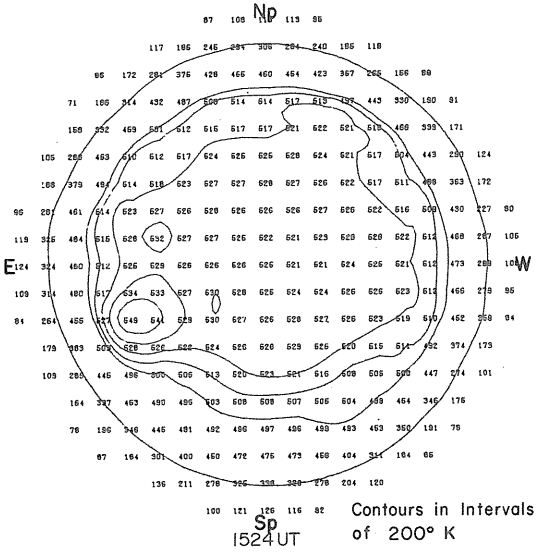
COUNT = 3208
ROLL = 0.3°
P-TH = 7.09

Sp
1555 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

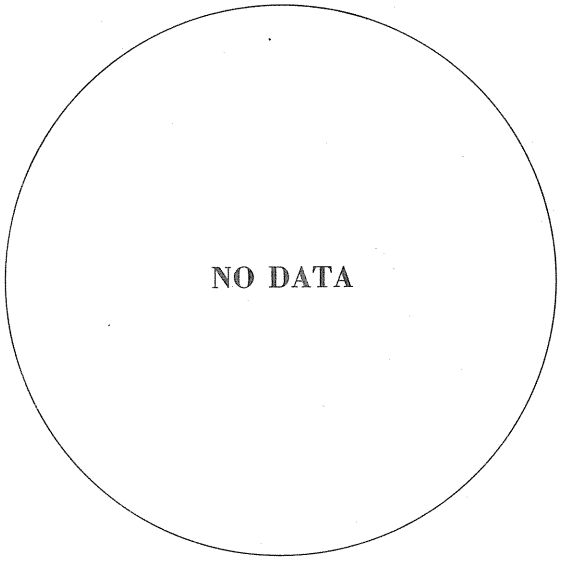


1524 UT

Contours in Intervals of 200° K

MT. WILSON

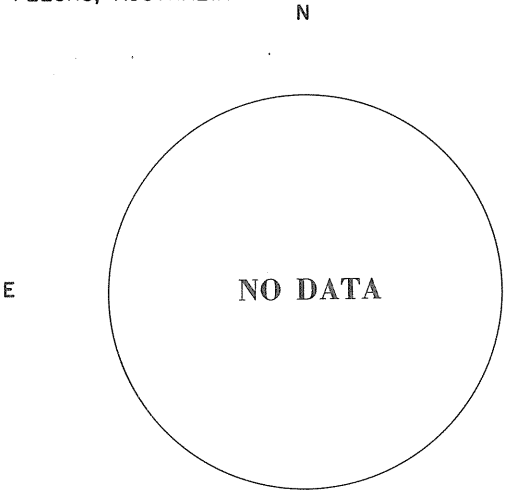
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

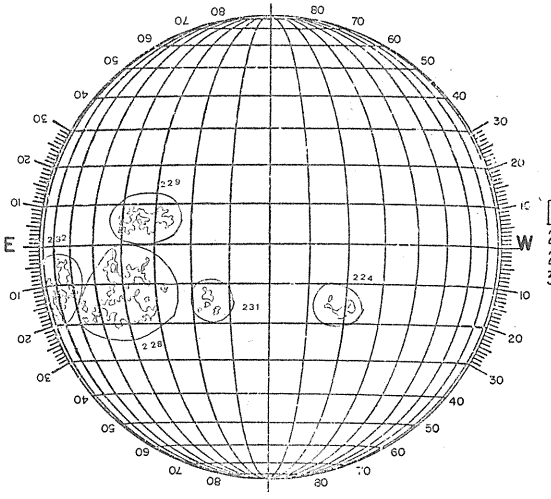


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

CATANIA

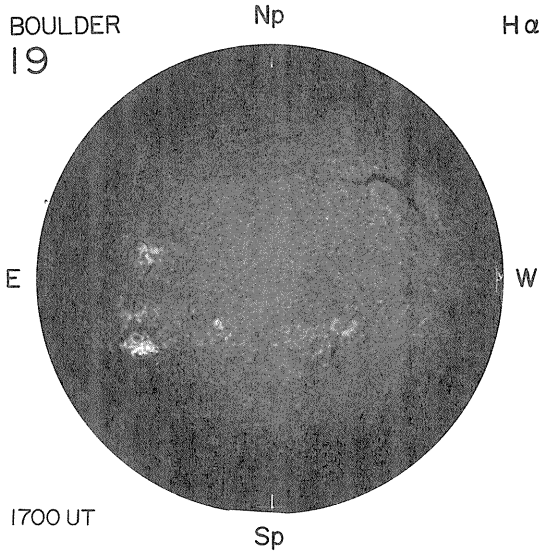
CALCIUM REPORT



FAIR	GD
29 - 2083	---
28 - 6001	---
32 - 5483	---

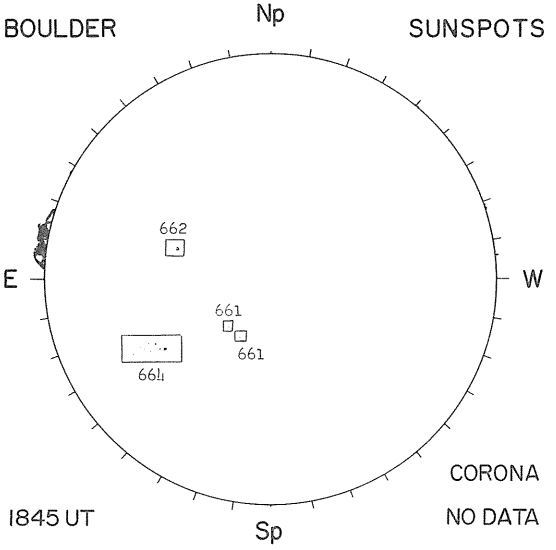
1320 UT

BOULDER
19



1700 UT

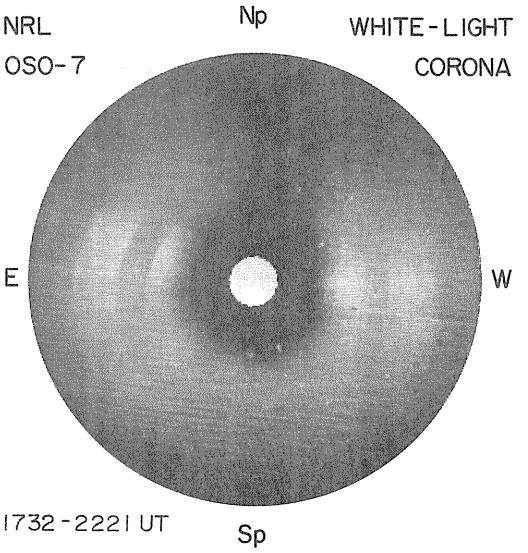
BOULDER



CORONA
NO DATA

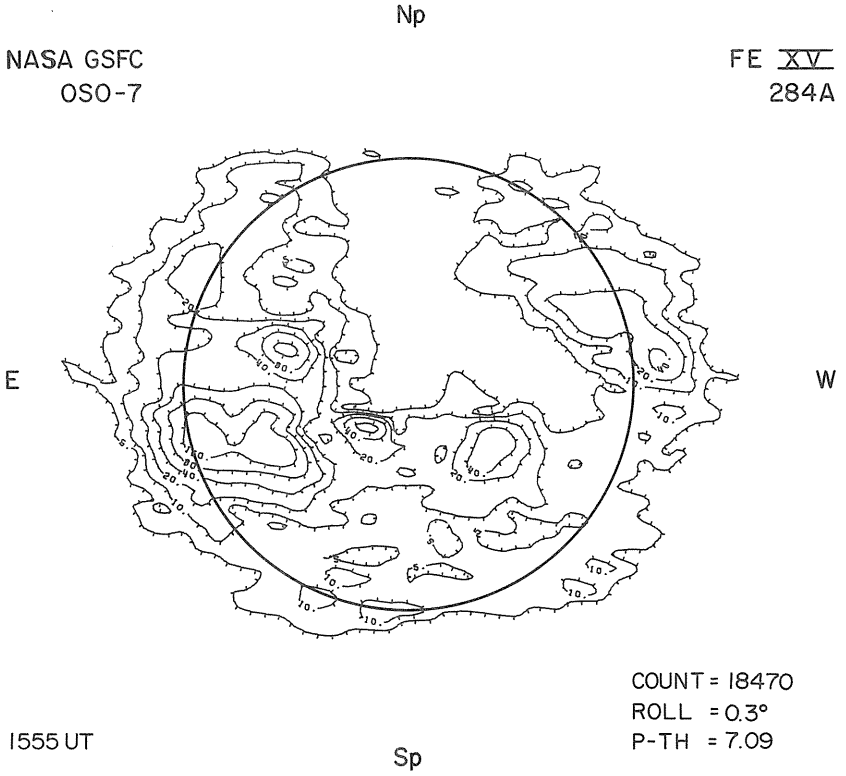
1845 UT

NRL
OSO-7



1732-2221 UT

NASA GSFC
OSO-7

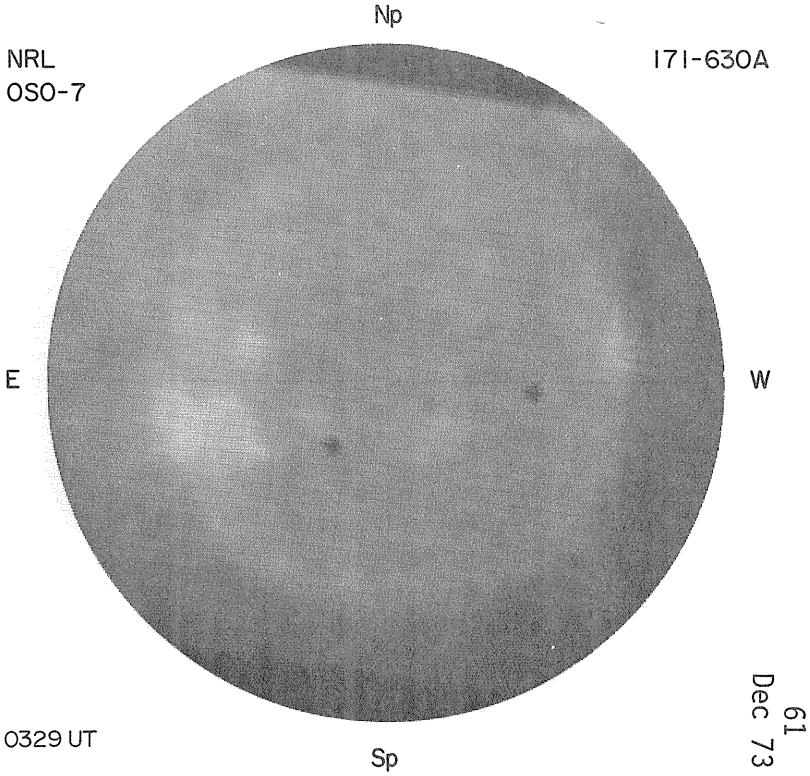


FE XV
284A

COUNT = 18470
ROLL = 0.3°
P-TH = 7.09

1555 UT

NRL
OSO-7



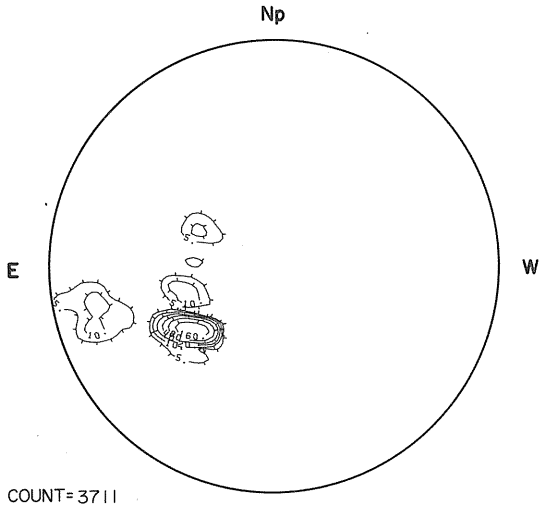
0329 UT

61
Dec 73

DECEMBER 20, 1973 (P= 7.96, B_o = -1.57, L_o = 221.81)

NASA GSFC
OSO-7

X-RAY
8-16A



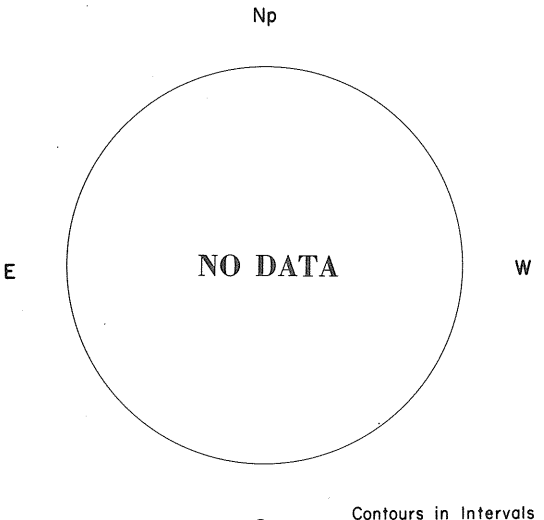
COUNT= 3711
ROLL = -0.1°
P-TH = 7.06

1618 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

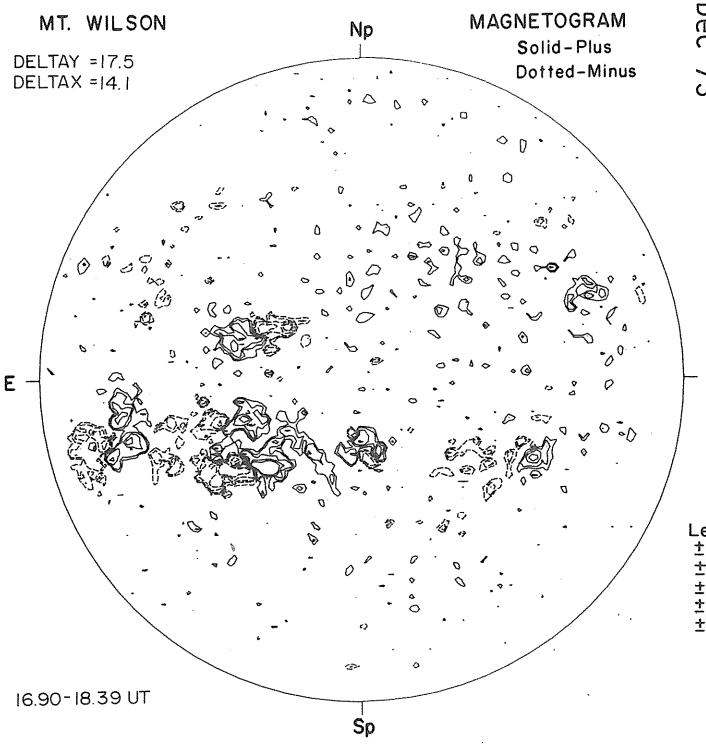


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.5
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

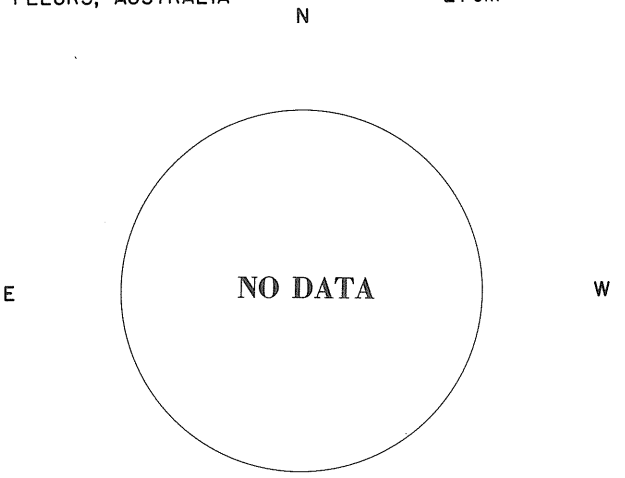


Levels
± 5
± 10
± 20
± 40
± 80

16.90-18.39 UT

FLEURS, AUSTRALIA

21 cm

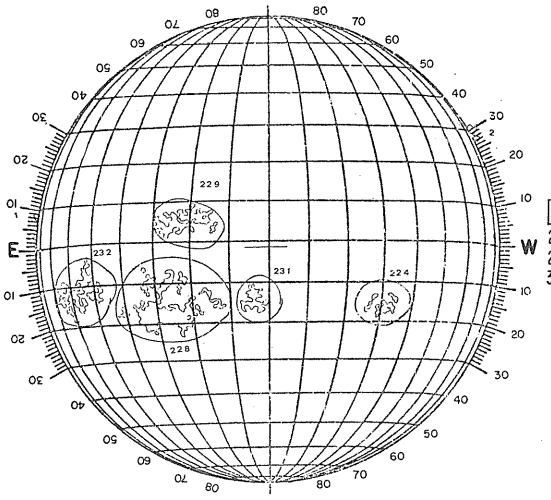


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

CALCIUM REPORT

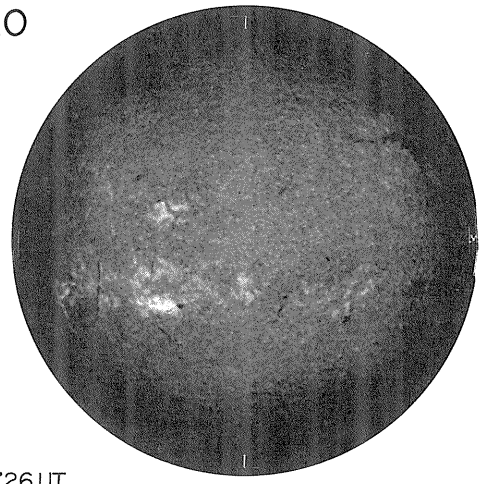
CATANIA



FAIR	GD
29-2141	---
28-5245	---
32-3771	---

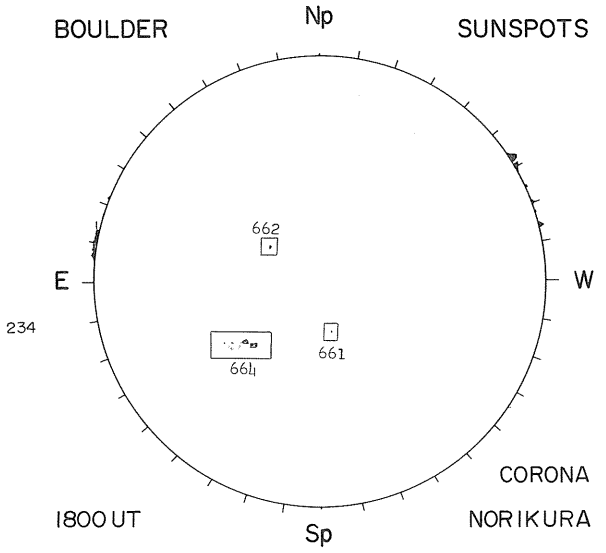
0937 UT

BOULDER
20



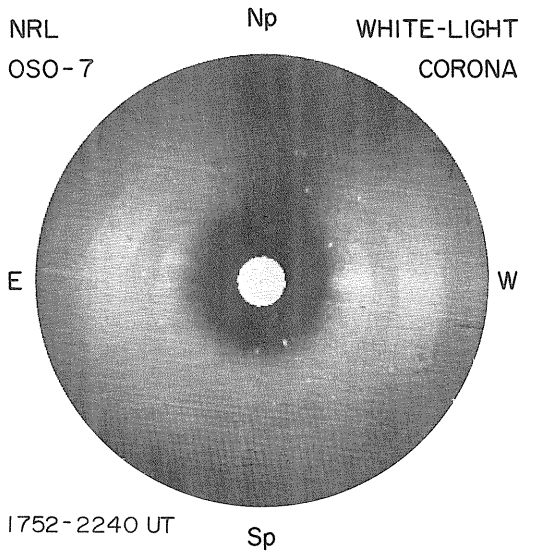
1726 UT

BOULDER



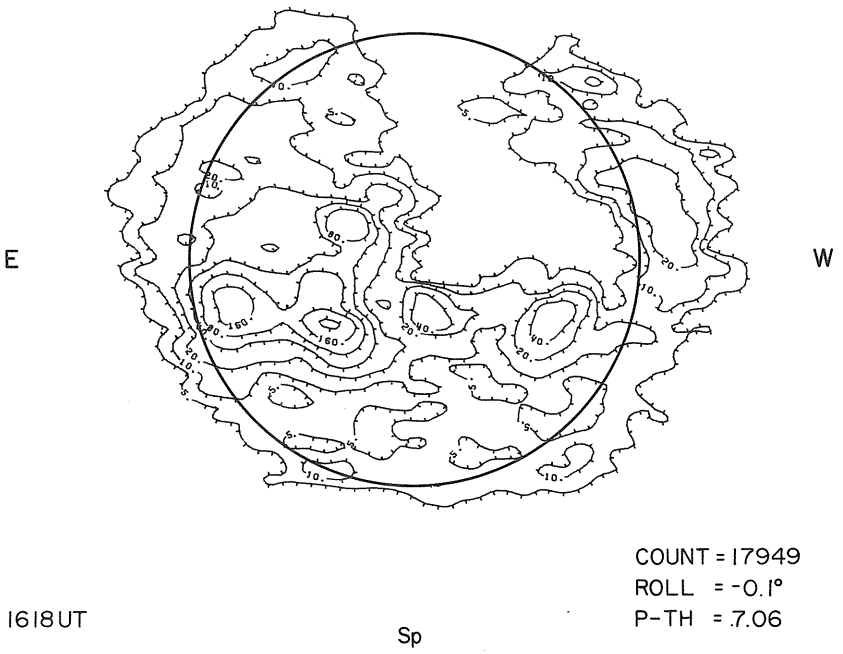
1800 UT

NRL
OSO-7



1752-2240 UT

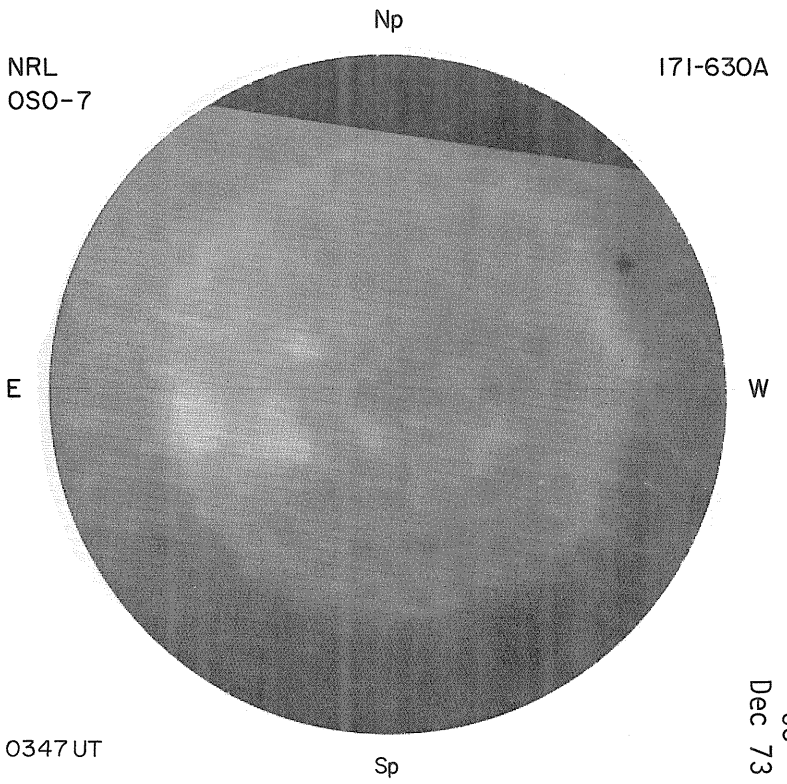
NASA GSFC
OSO-7



COUNT = 17949
ROLL = -0.1°
P-TH = 7.06

1618 UT

NRL
OSO-7



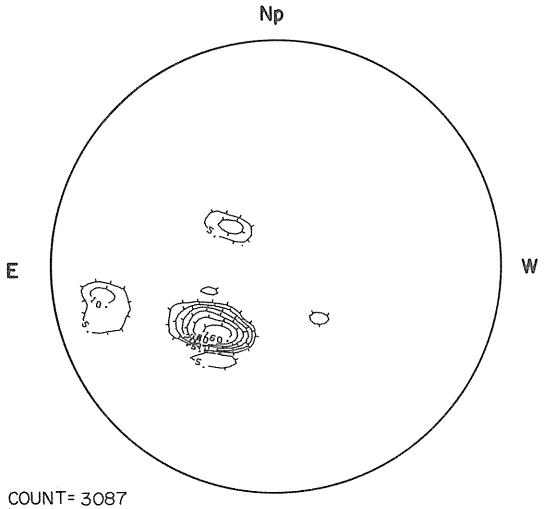
0347 UT

63
Dec 73

DECEMBER 21, 1973 (P = 7.49, B_o = -1.70, L_o = 208.64)

NASA GSFC
OSO-7

X-RAY
8-16A



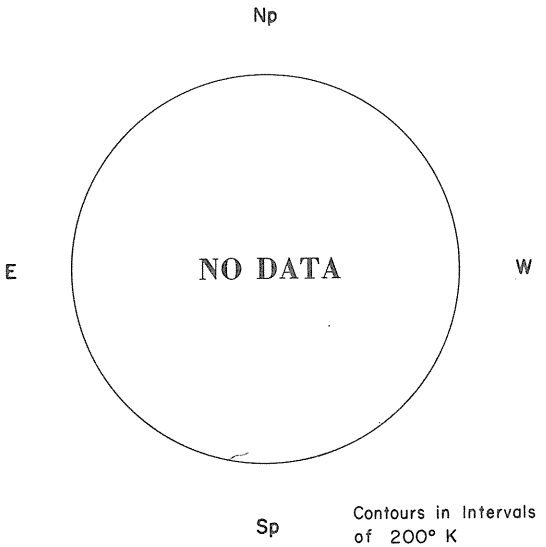
COUNT = 3087
ROLL = -0.3°
P-TH = 7.05

0231 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

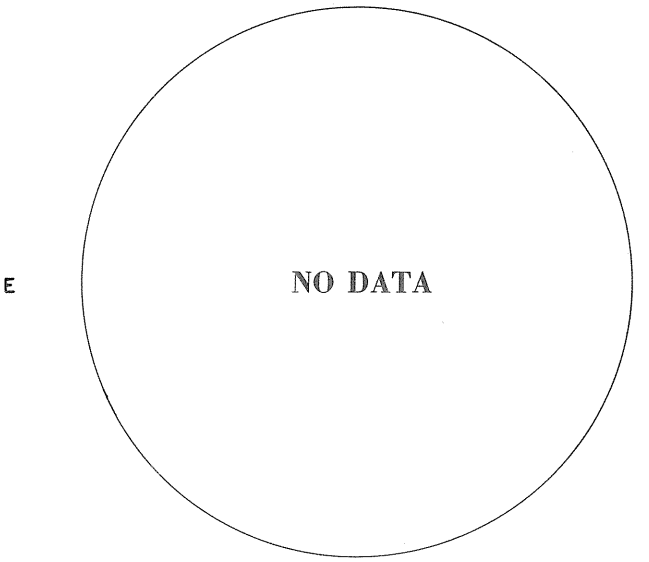


Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX =

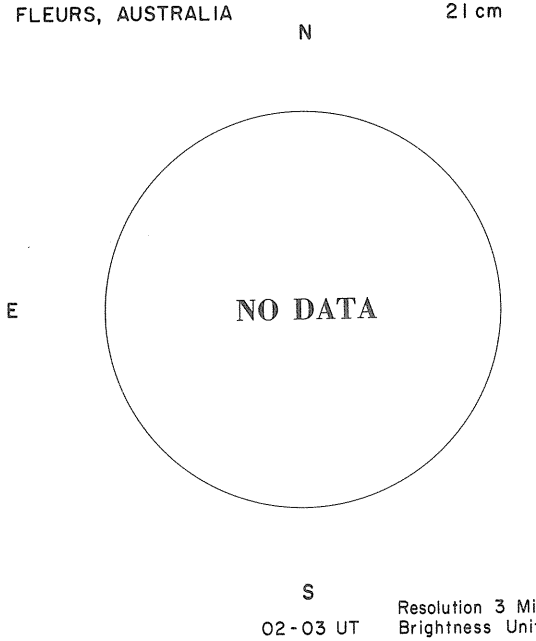
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

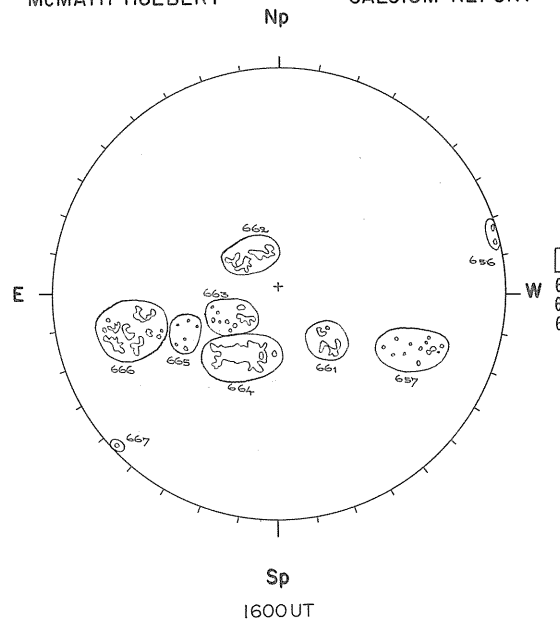


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

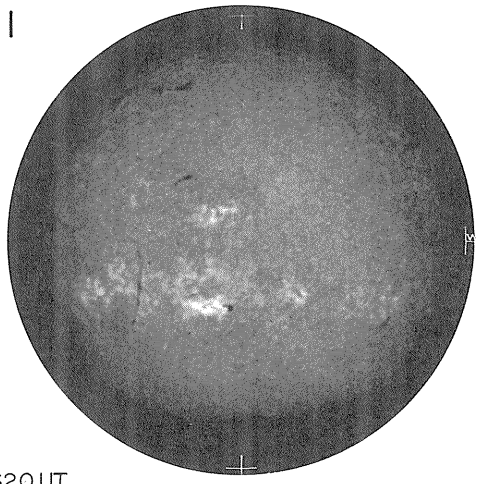
CALCIUM REPORT



POOR	M
62 - 1000	- 2.5
64 - 2700	- 3.5
66 - 2000	- 2.5

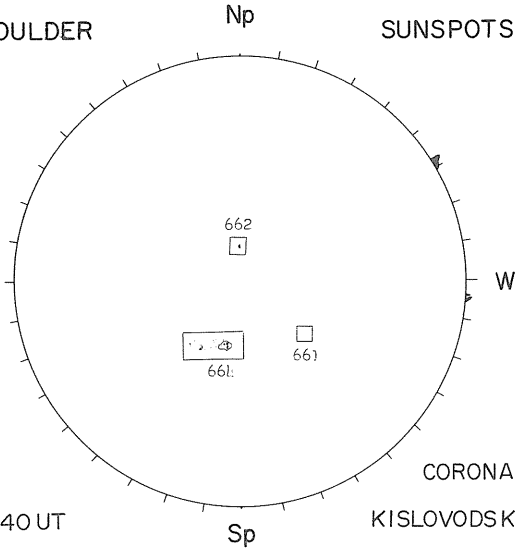
1600 UT

BOULDER
21



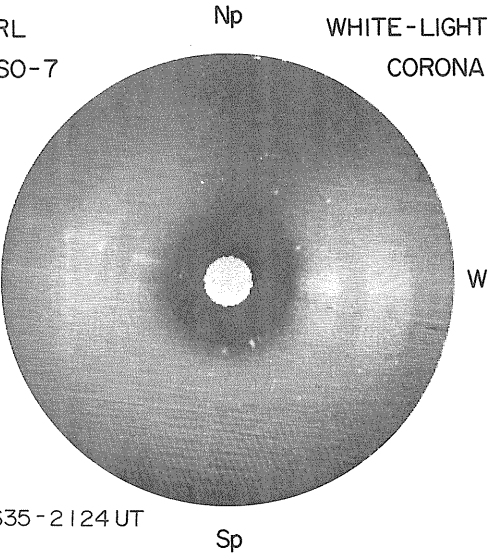
1620 UT

BOULDER



1640 UT

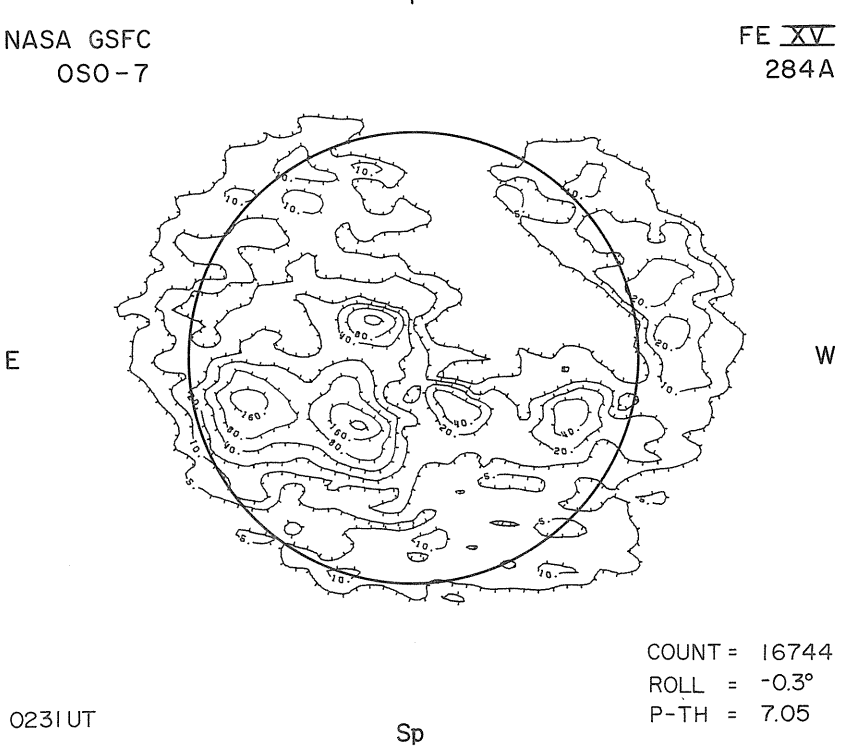
NRL
OSO-7



1635-2124 UT

NASA GSFC
OSO-7

FE XV
284A

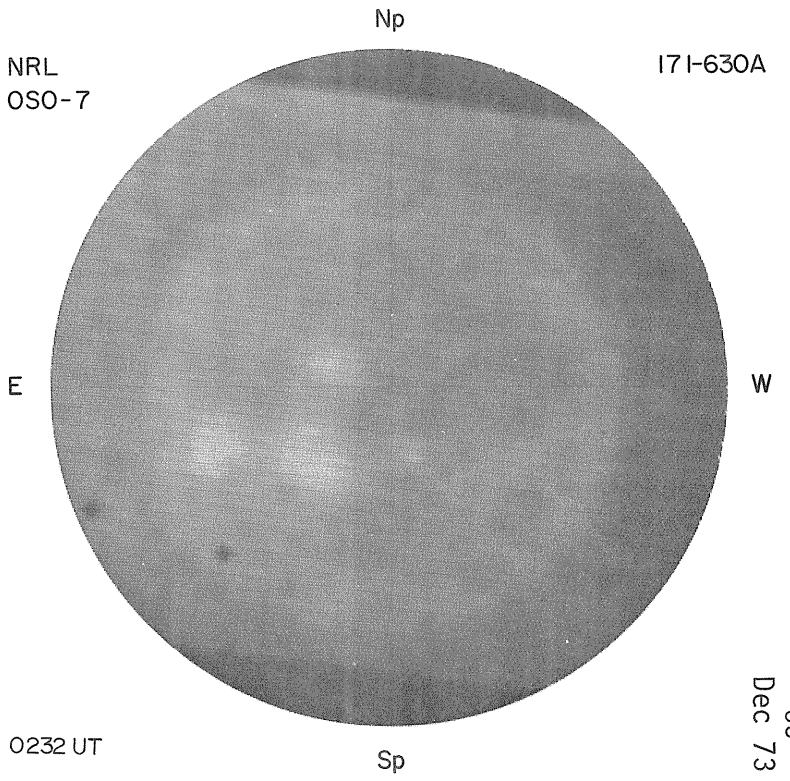


COUNT = 16744
ROLL = -0.3°
P-TH = 7.05

0231 UT

NRL
OSO-7

171-630A



0232 UT

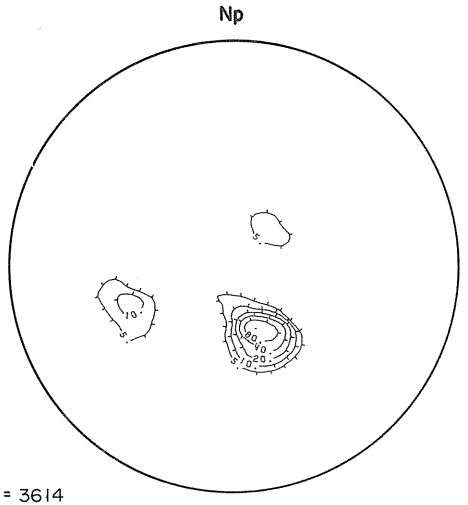
65
Dec 73

DECEMBER 22, 1973 (P = 7.02, B_o = - 1.82, L_o = 195.47)

66
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



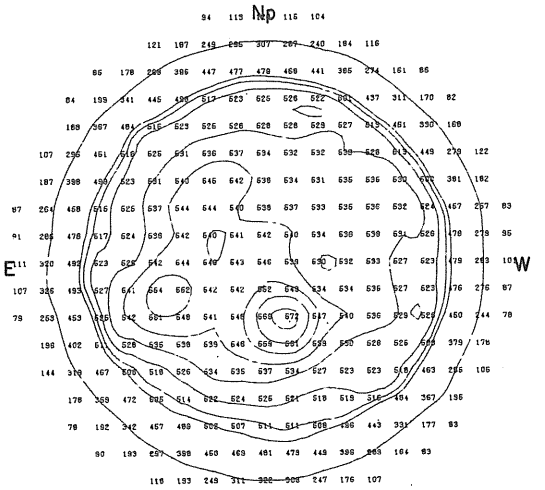
COUNT = 3614
ROLL = -0.0°
P-TH = 7.00

1518 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



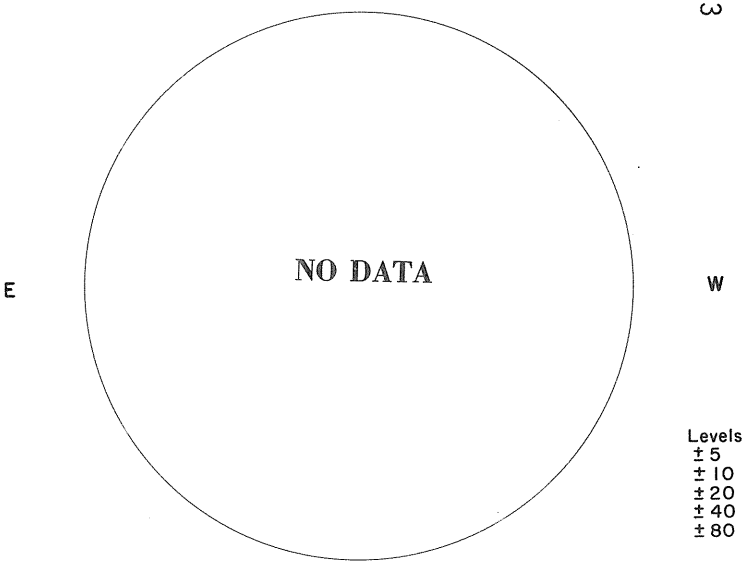
1639 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX =

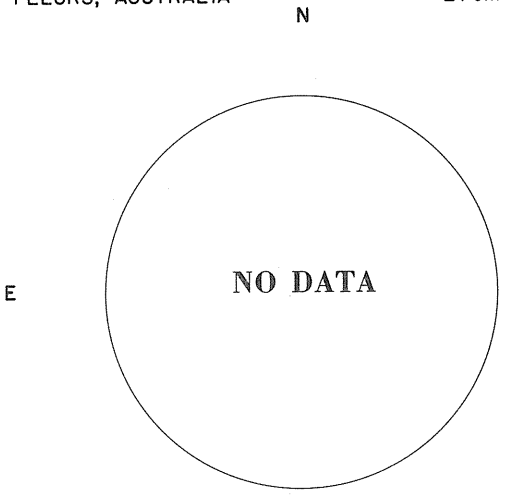
MAGNETOGRAM
Solid - Plus
Dotted - Minus



Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

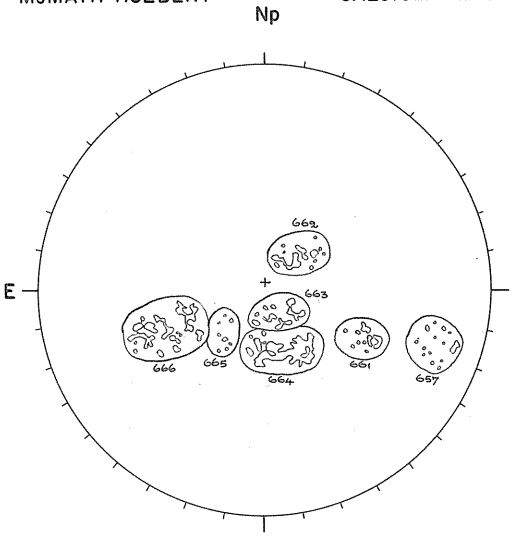


02 - 03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



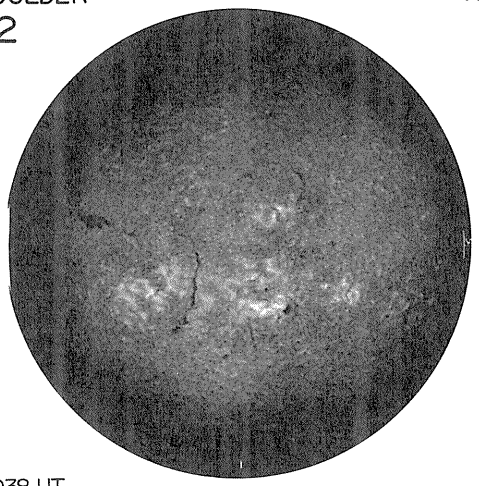
POOR	S
64 - 2700 - 3.5	
66 - 2600 - 2.5	

1830 UT

BOULDER
22

Np

H α



E

W

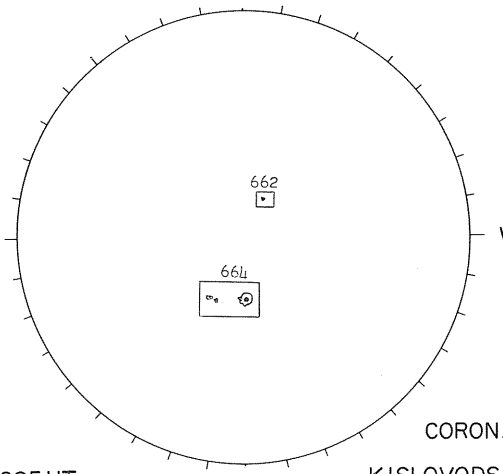
2038 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

CORONA

0025 UT

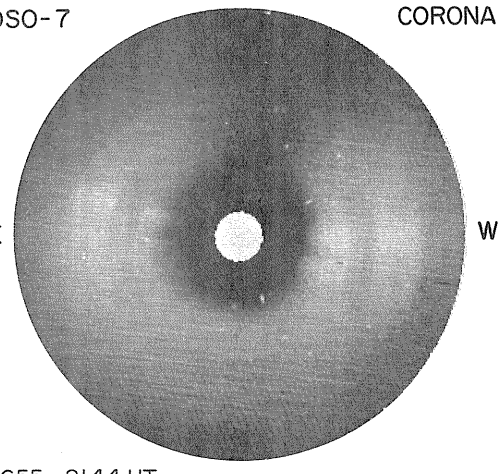
Sp

KISLOVODSK

NRL
OSO-7

Np

WHITE-LIGHT
CORONA



E

W

1655 - 2144 UT

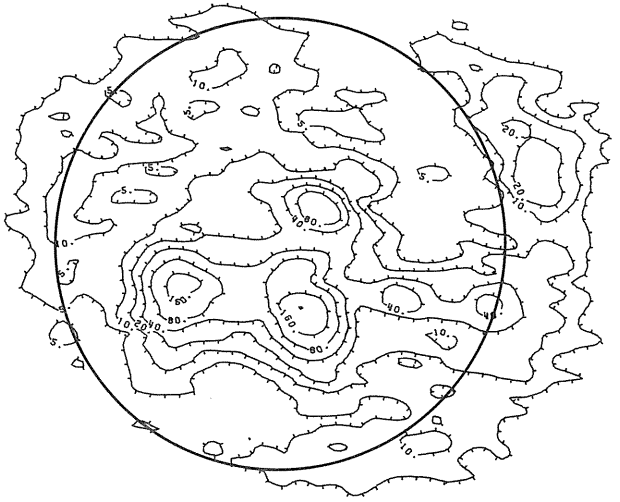
Sp

Np

171-630A

Np

NASA GSFC
OSO - 7



E

W

1518 UT

Sp

COUNT = 16787
ROLL = -0.0°
P-TH = 7.00

FE XV
284A

NRL
OSO-7

E

NO DATA

W

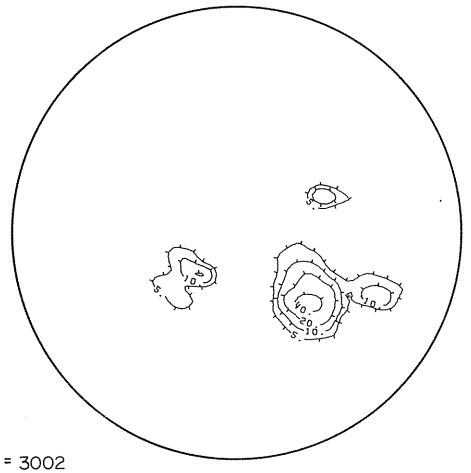
Sp

67
Dec 73

DECEMBER 23, 1973 (P = 6.55, B_o = -1.95, L_o = 182.29)

NASA GSFC
OSO-7

X-RAY
8-16A



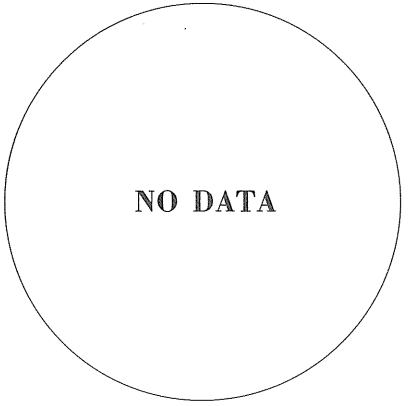
COUNT = 3002
ROLL = 0.4°
P-TH = 6.97

1402 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

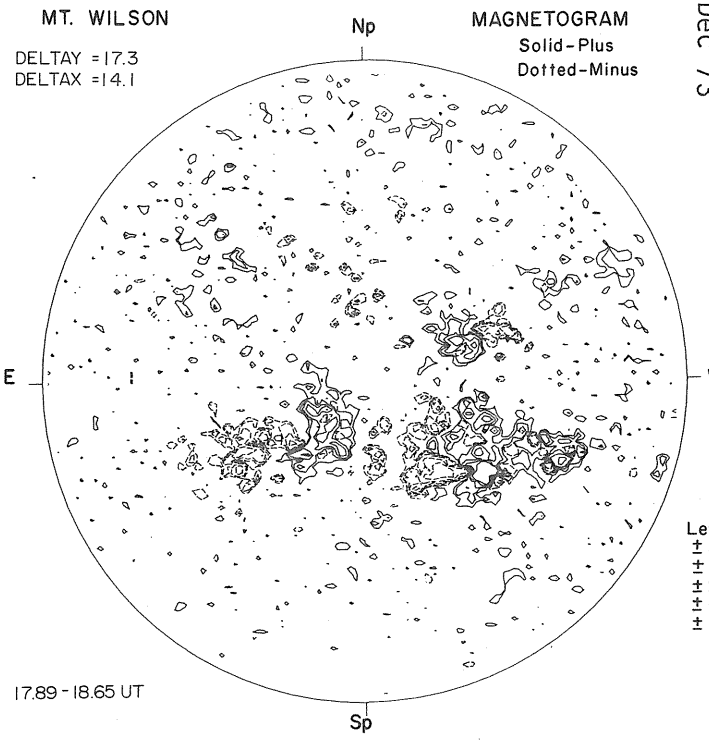


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.3
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

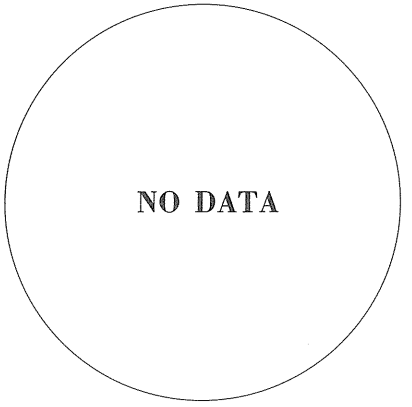


Levels
± 5
± 10
± 20
± 40
± 80

17.89 - 18.65 UT

FLEURS, AUSTRALIA

21 cm

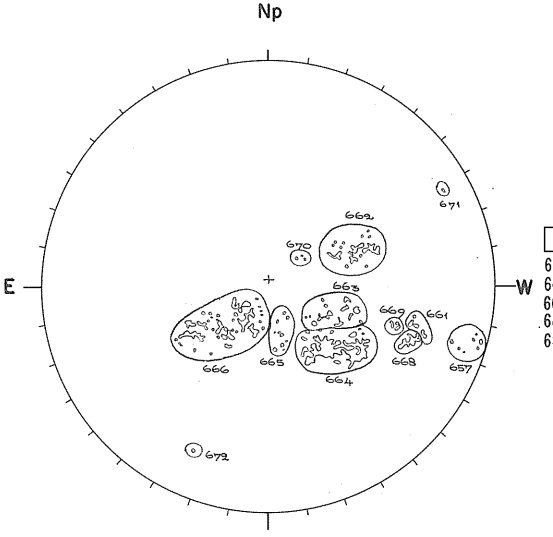


02 - 03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

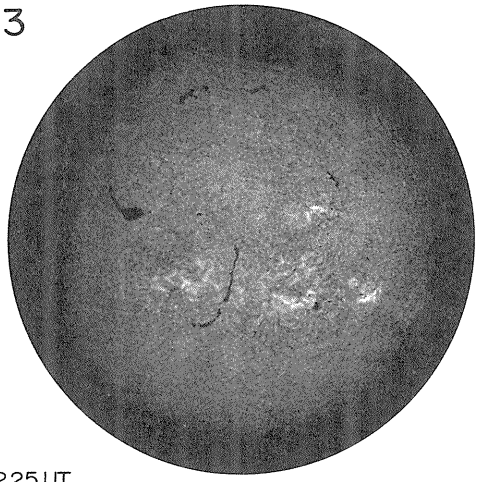
CALCIUM REPORT



GOOD	M
62 - 1000	2.5
64 - 2600	3.5
66 - 2400	2.5
68 - 0600	3.5
69 - 0300	2.5

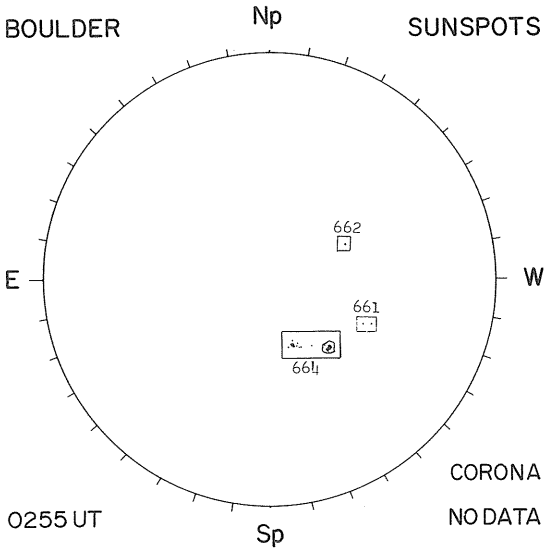
1900 UT

RAMEY AFB
23



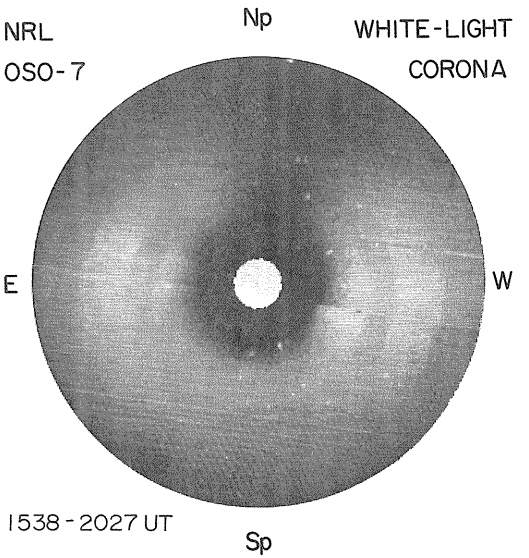
1225 UT

BOULDER



0255 UT

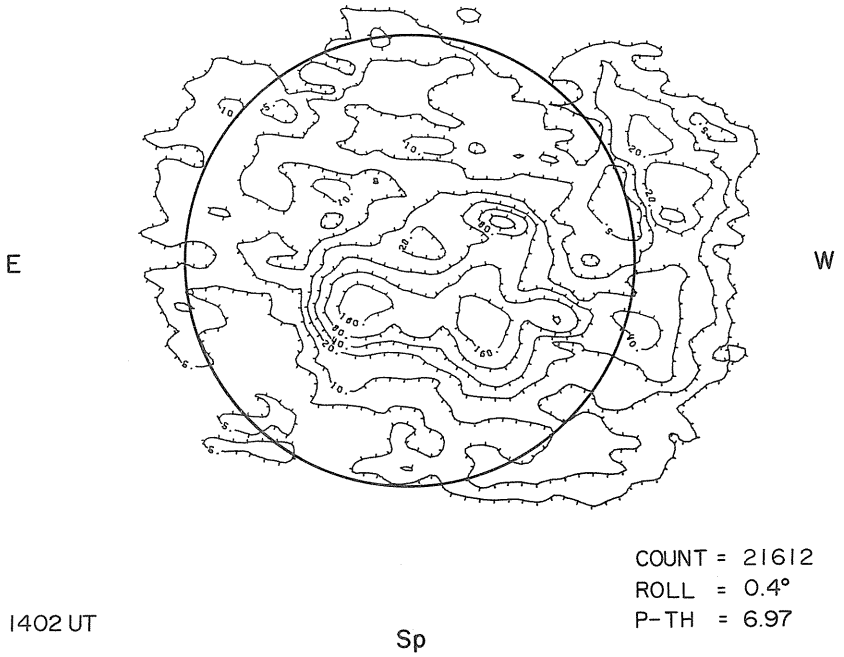
NRL
OSO-7



1538 - 2027 UT

Np

NASA GSFC
OSO - 7



COUNT = 21612
ROLL = 0.4°
P-TH = 6.97

1402 UT

Np

FE XV
284 A

NRL
OSO-7

E

NO DATA

W

Sp

171-630A

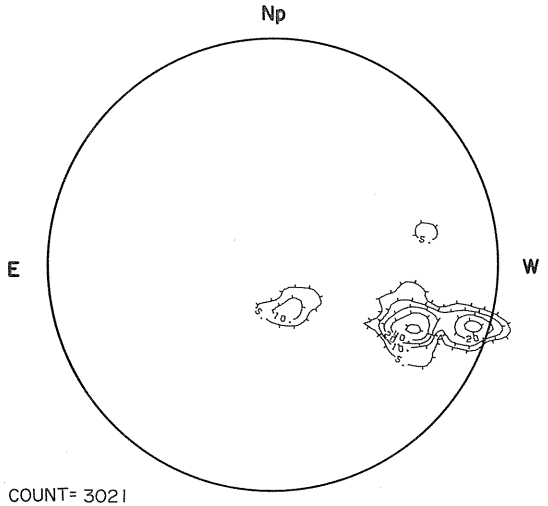
69
Dec 73

DECEMBER 24, 1973 (P = 6.07, B_o = -2.07, L_o = 169.12)

70
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



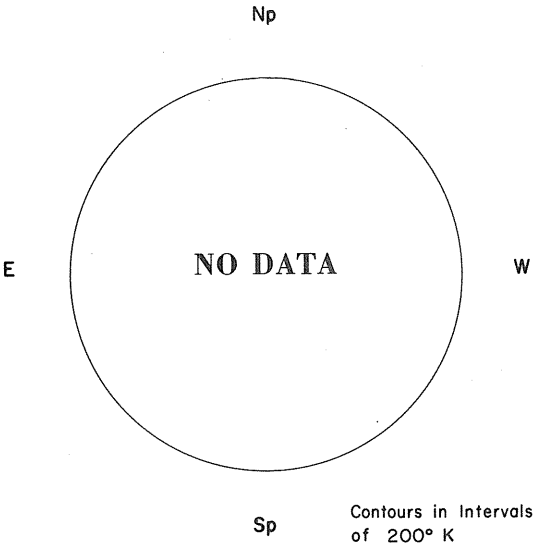
COUNT= 3021
ROLL = 1.2°
P-TH = 6.92

2050 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

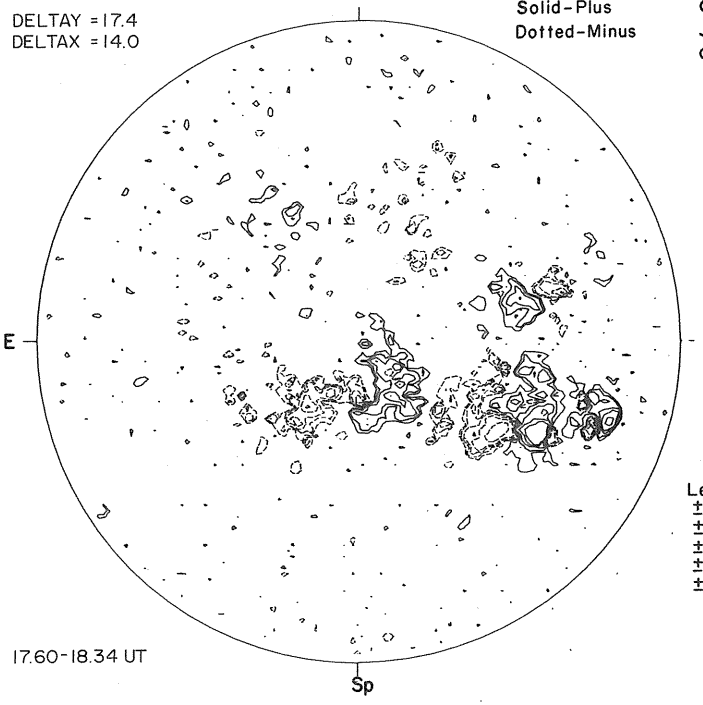


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

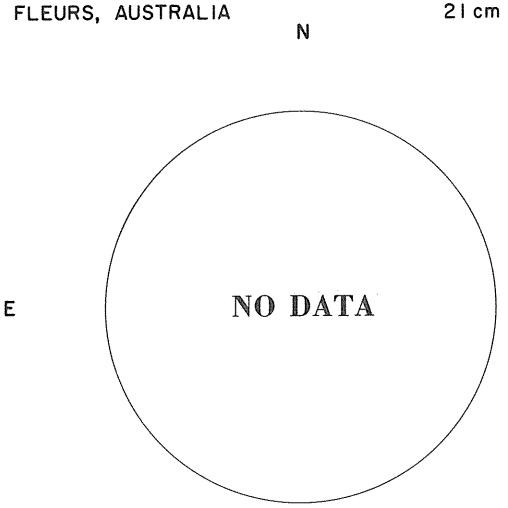


Levels
± 5
± 10
± 20
± 40
± 80

17.60-18.34 UT

FLEURS, AUSTRALIA

21 cm

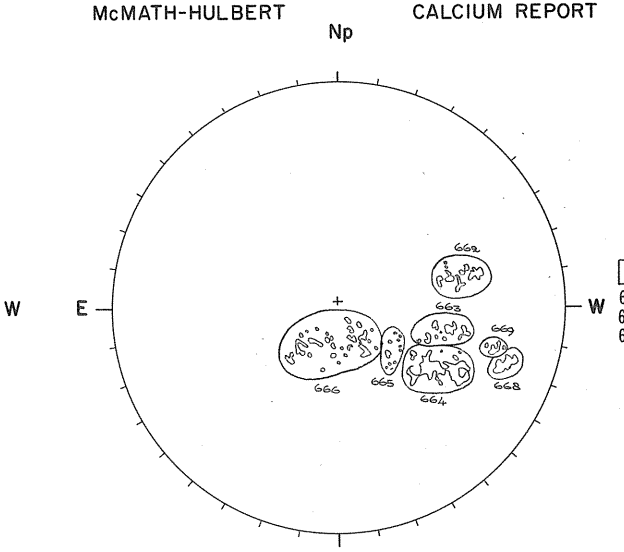


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

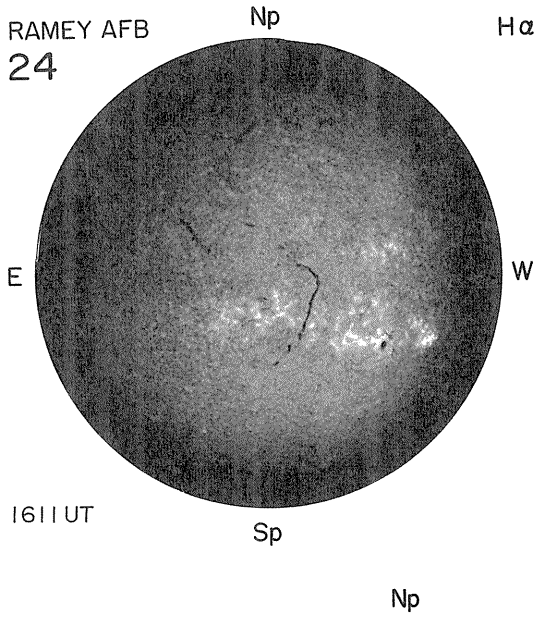
CALCIUM REPORT



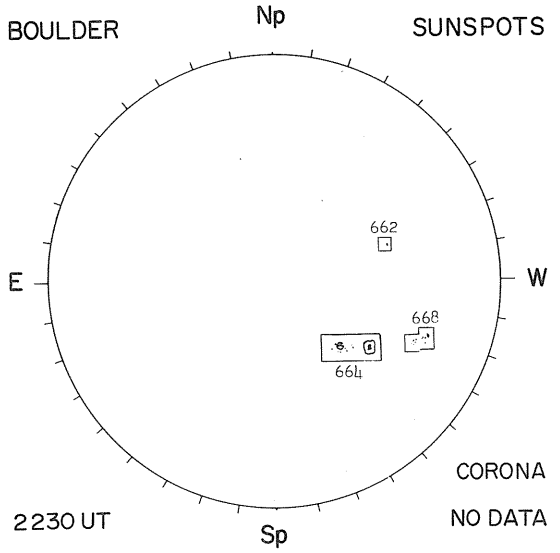
FAIR	M
64 - 2500	- 2.5
68 - 1000	- 3.5
69 - 0400	- 2.5

1510 UT

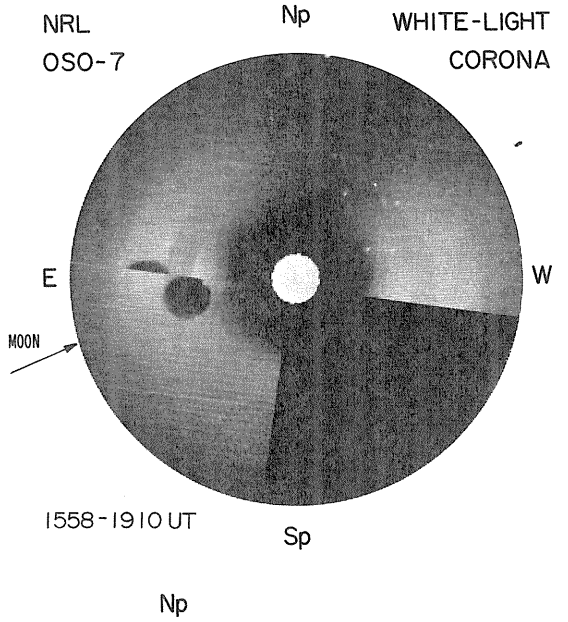
RAMEY AFB
24



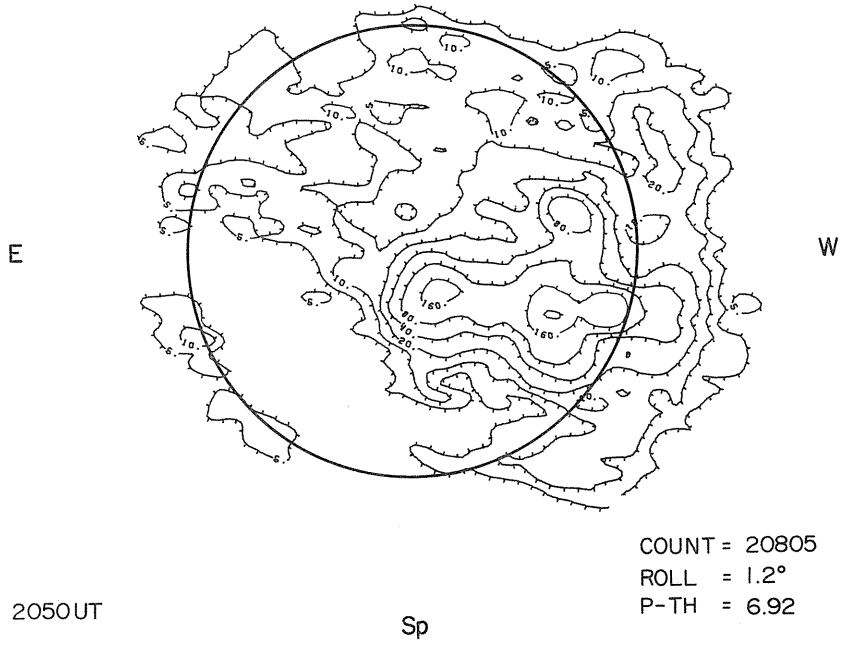
BOULDER



NRL
OSO-7

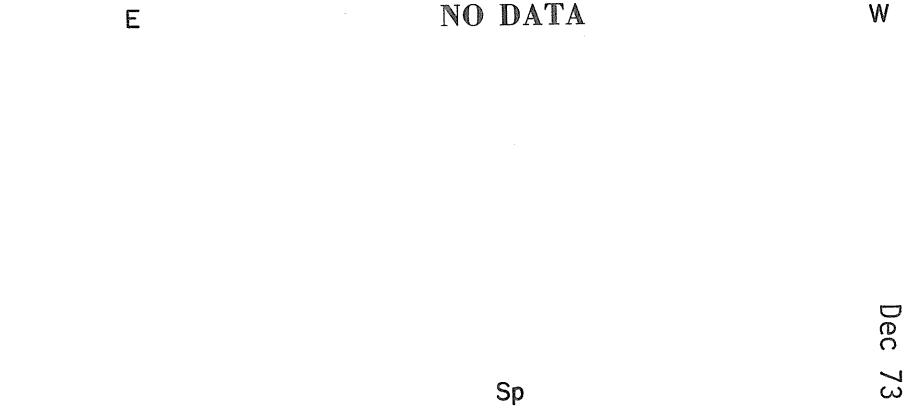


NASA GSFC
OSO - 7



FE XV
284A

NRL
OSO-7



171-630A

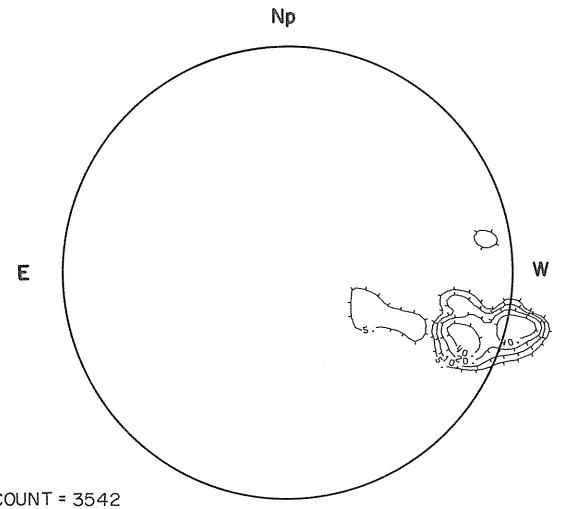
71
Dec 73

DECEMBER 25, 1973 (P = 5.59, B_o = -2.19, L_o = 155.95)

72
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



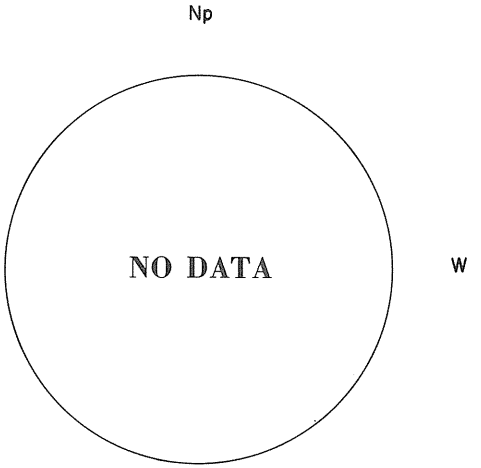
COUNT = 3542
ROLL = 1.7°
P-TH = 6.88

1933 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

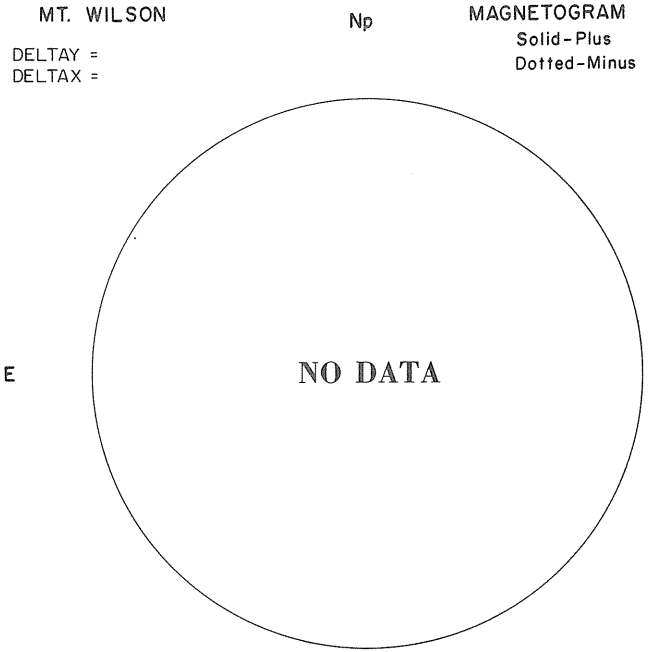


Contours in Intervals
of 200° K

MT. WILSON

DELTAY =
DELTAX =

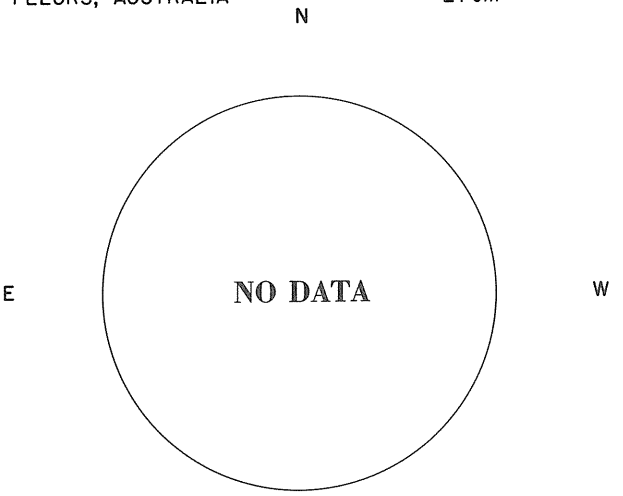
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

FLEURS, AUSTRALIA

21 cm

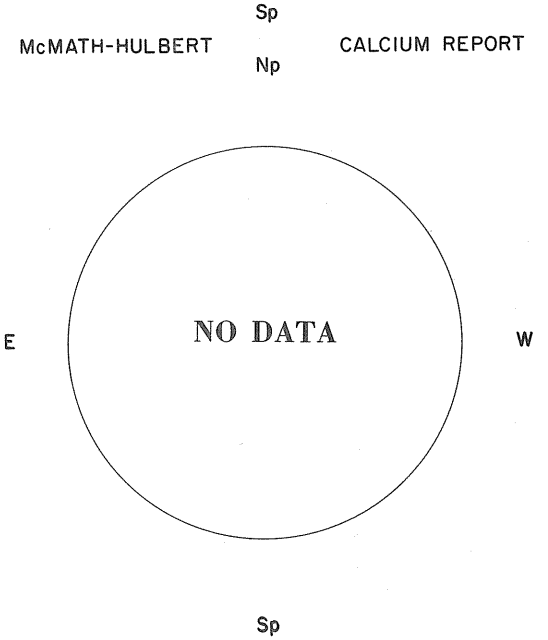


02-03 UT

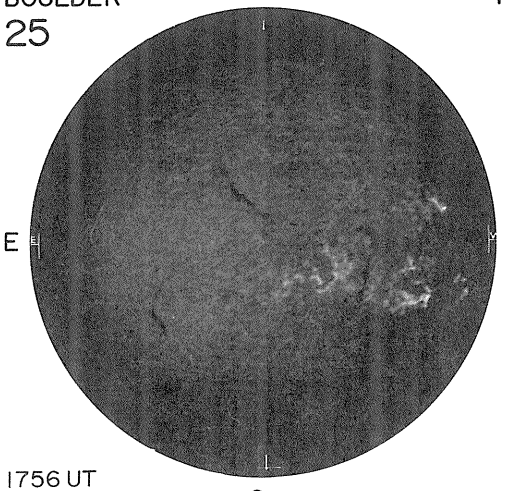
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



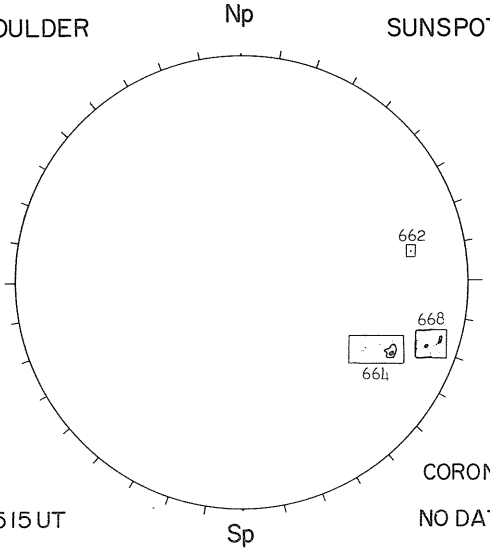
BOULDER
25



Hα

1756 UT

BOULDER

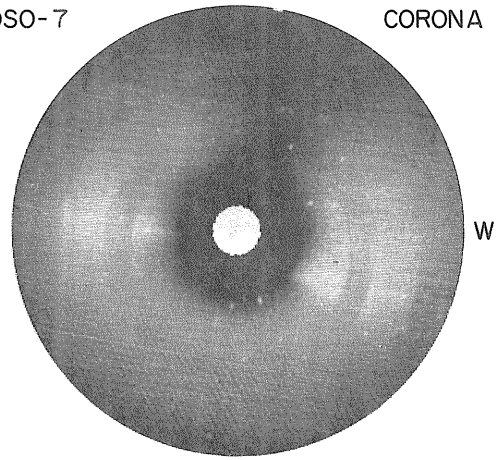


SUNSPOTS

CORONA
NO DATA

0515 UT

NRL
OSO-7

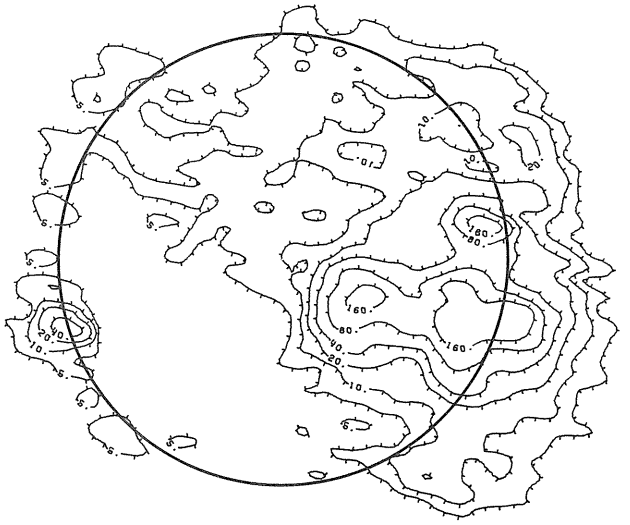


WHITE - LIGHT
CORONA

1305 - 1754 UT

NASA GSFC
OSO - 7

FE XV
284A

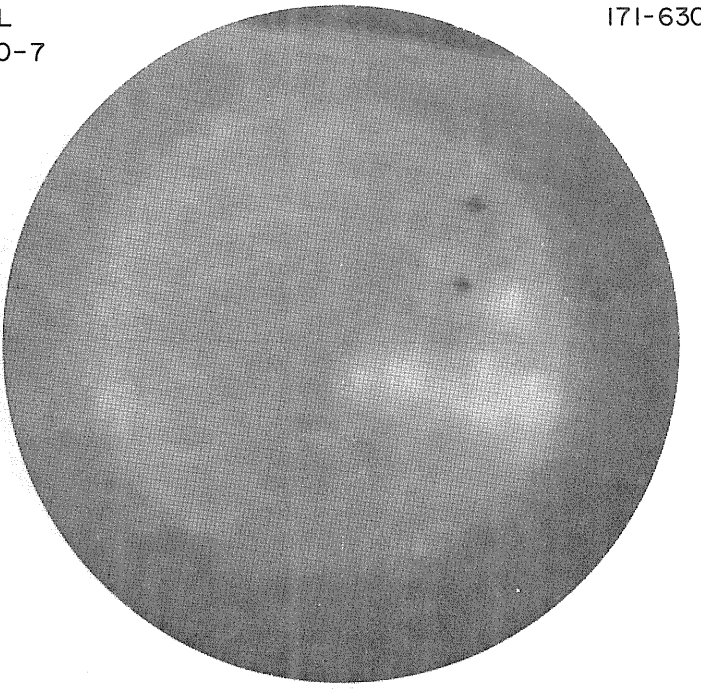


COUNT = 21022
ROLL = 1.7°
P-TH = 6.88

1933 UT

NRL
OSO-7

171-630A



1929 UT

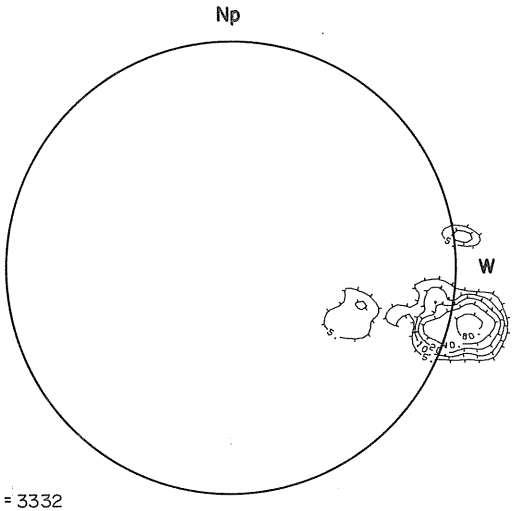
73
Dec 73

DECEMBER 26, 1973 (P = 5.11, B_o = - 2.32, L_o = 142.78)

74
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



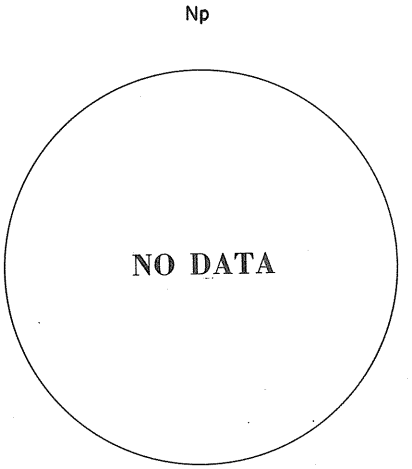
COUNT = 3332
ROLL = 2.3°
P-TH = 6.84

1952 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

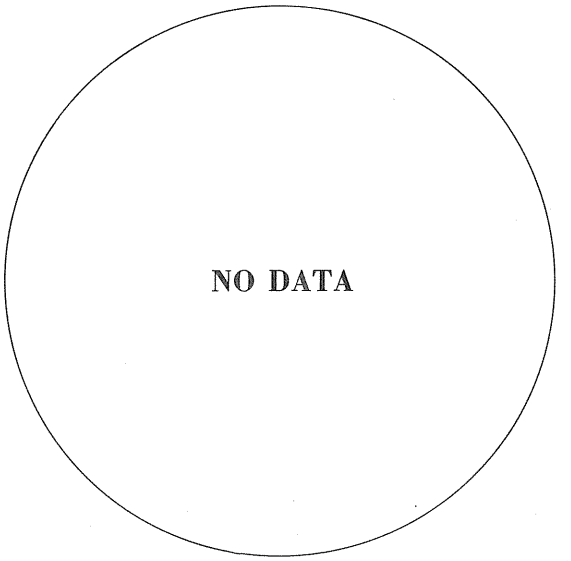


Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX =

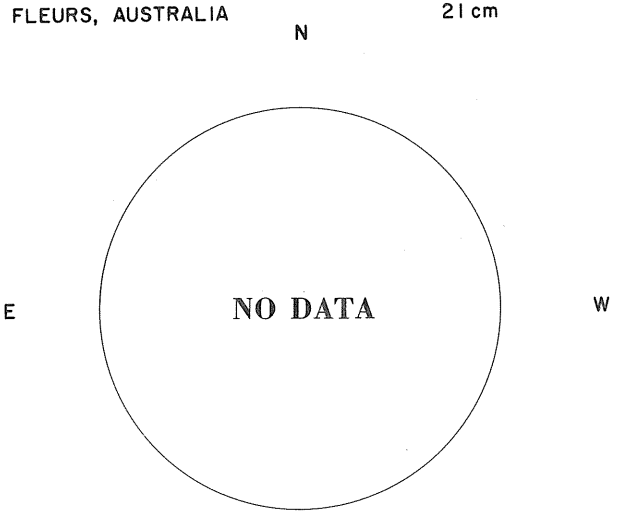
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

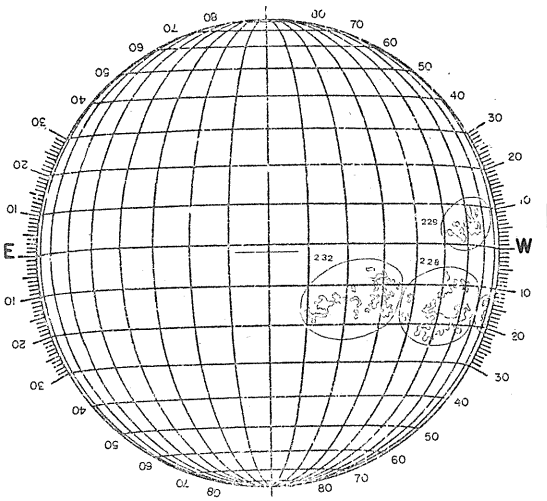


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

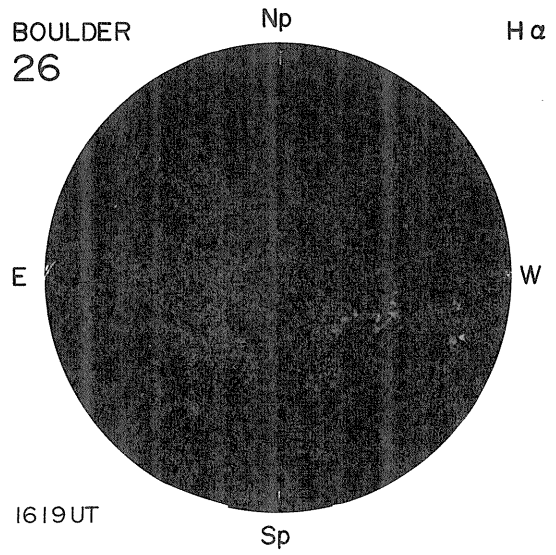
CATANIA

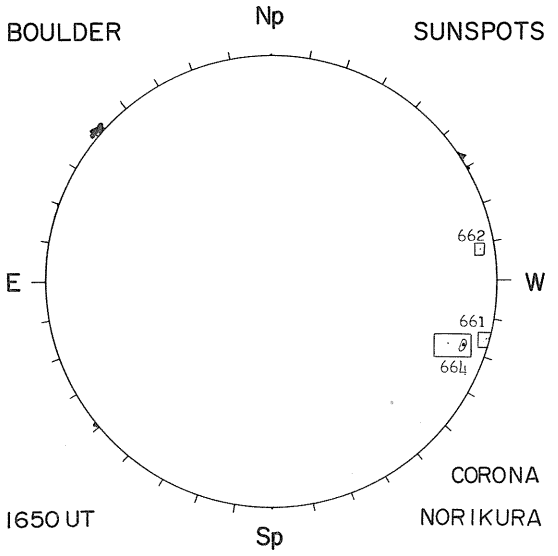
CALCIUM REPORT

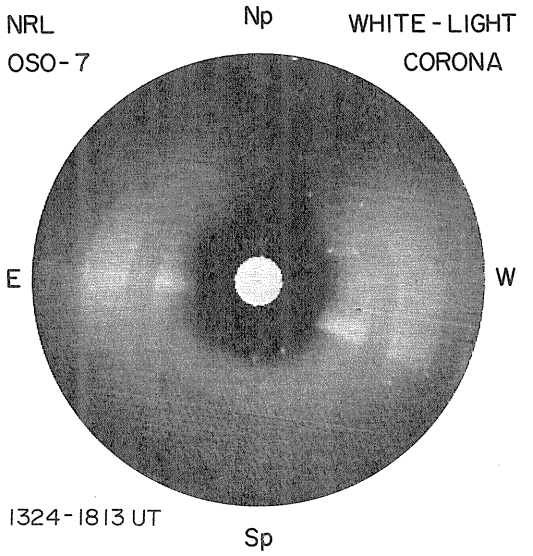


FAIR	EC
29 - 2253	---
28 - 4931	---
32 - 2785	---

0900 UT







Np

NASA GSFC
OSO-7

E

NO DATA

Sp

Np

FE XV
284A

W

NRL
OSO-7

E

Np

171-630A

NO DATA

W

Sp

75
Dec 73

DECEMBER 27, 1973 (P = 4.63, B_o = - 2.44, L_o = 129.61)

76
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A

Np

E

NO DATA

W

Sp

COUNT =
ROLL =
P-TH =

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

Np

E

NO DATA

W

Sp

Contours in Intervals
of 200° K

MT. WILSON

DELTAY =
DELTAX =

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

FLEURS, AUSTRALIA

N

21 cm

E

NO DATA

W

S

02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

Np

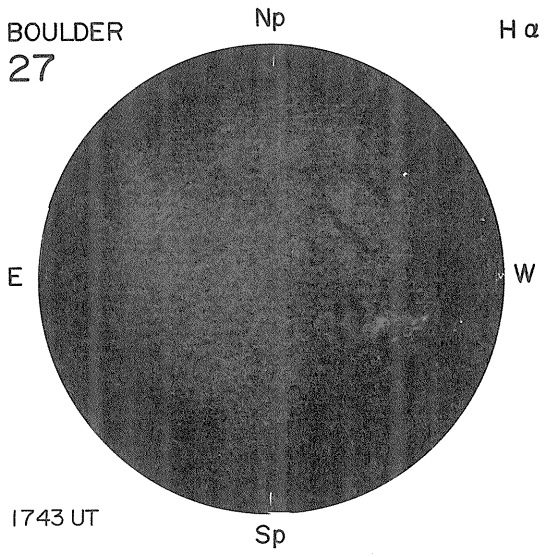
CALCIUM REPORT

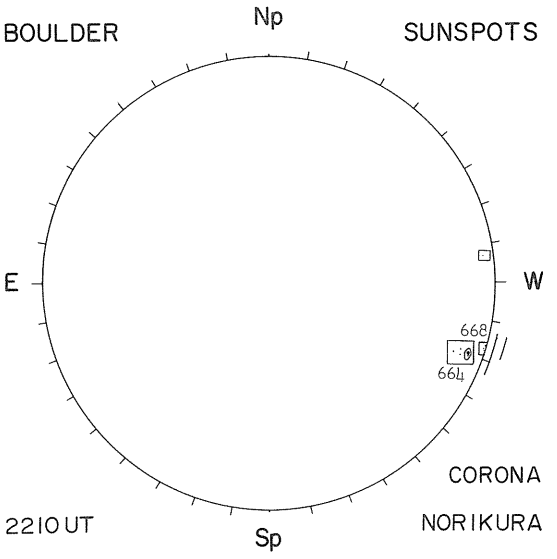
E

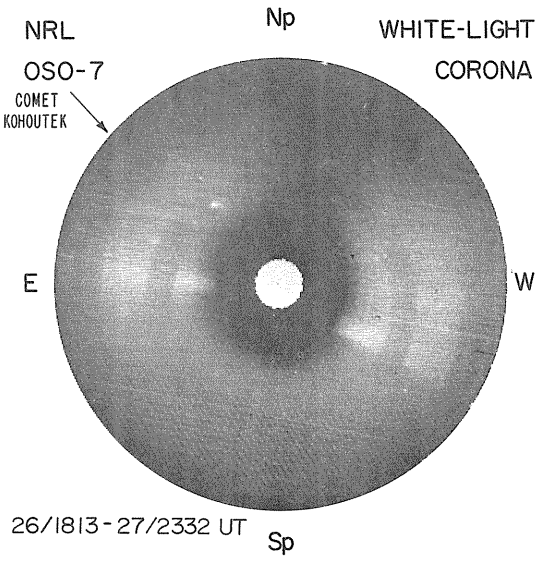
NO DATA

W

Sp







Np

NASA GSFC
OSO-7

E

NO DATA

Sp

Np

FE XV
284A

W

NRL
OSO-7

E

NO DATA

Sp

Np

171-630A

W

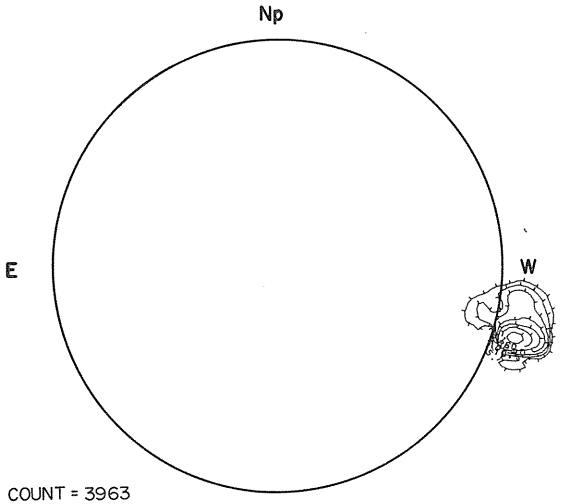
77
Dec 73

DECEMBER 28, 1973 (P = 4.14, B_o = - 2.56, L_o = 116.44)

78
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



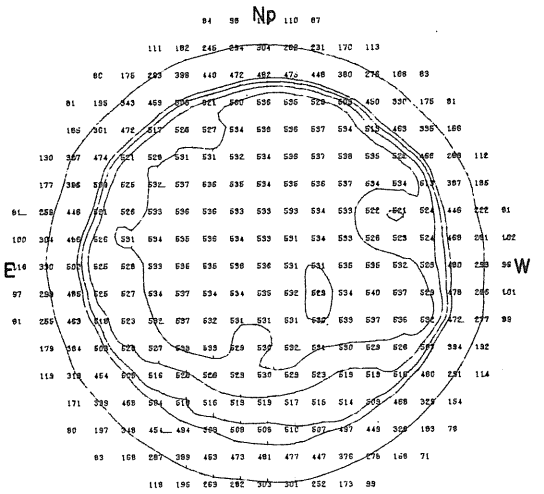
COUNT = 3963
ROLL = 3.1°
P-TH = 6.75

1715 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



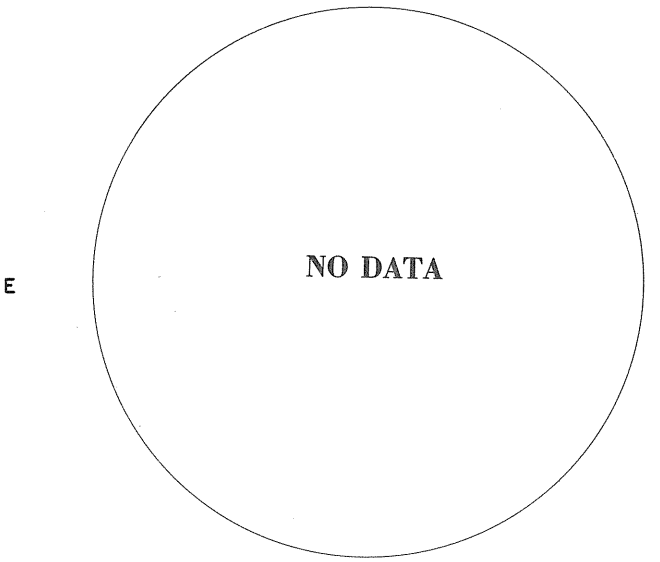
1601 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX=

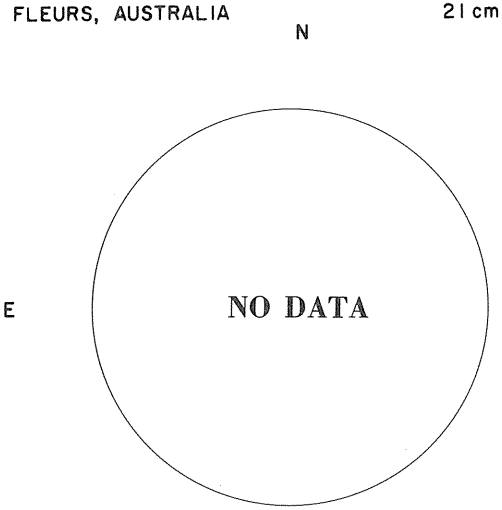
MAGNETOGRAM
Solid - Plus
Dotted - Minus



Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

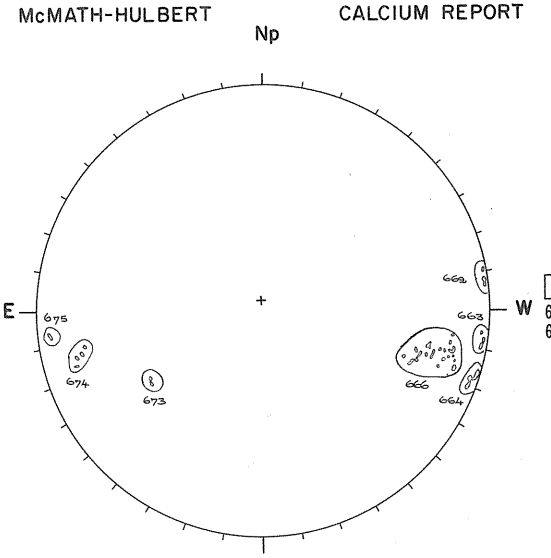


02 - 03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

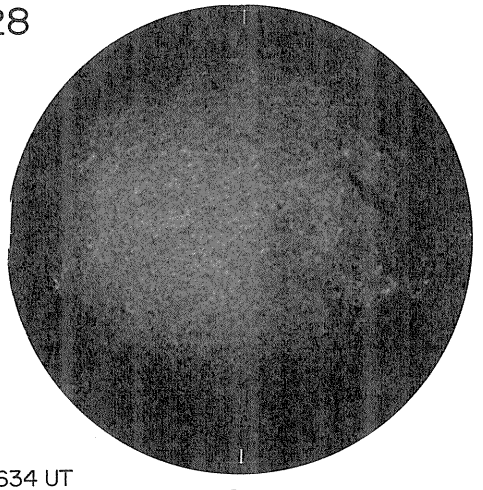
CALCIUM REPORT



POOR	S
63 - 0300	- 2.5
64 - 1000	- 2.5

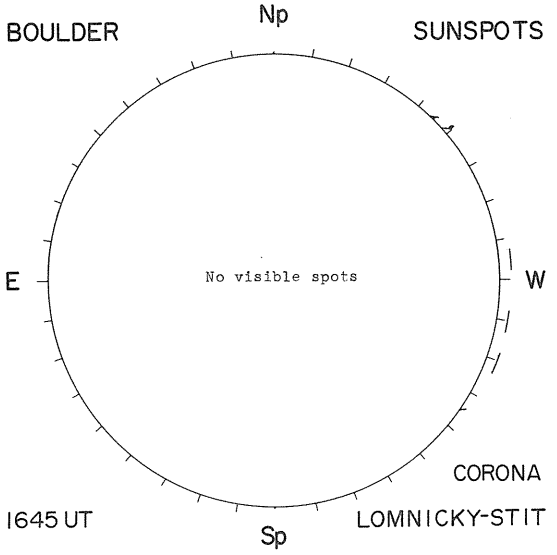
1712 UT

BOULDER
28



1634 UT

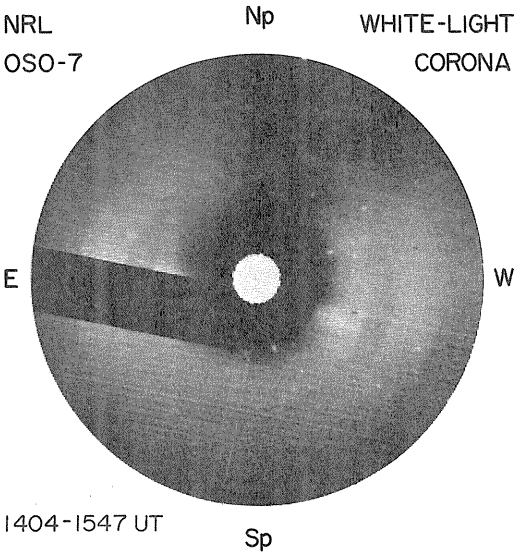
BOULDER



CORONA
LOMNICKY-STIT

1645 UT

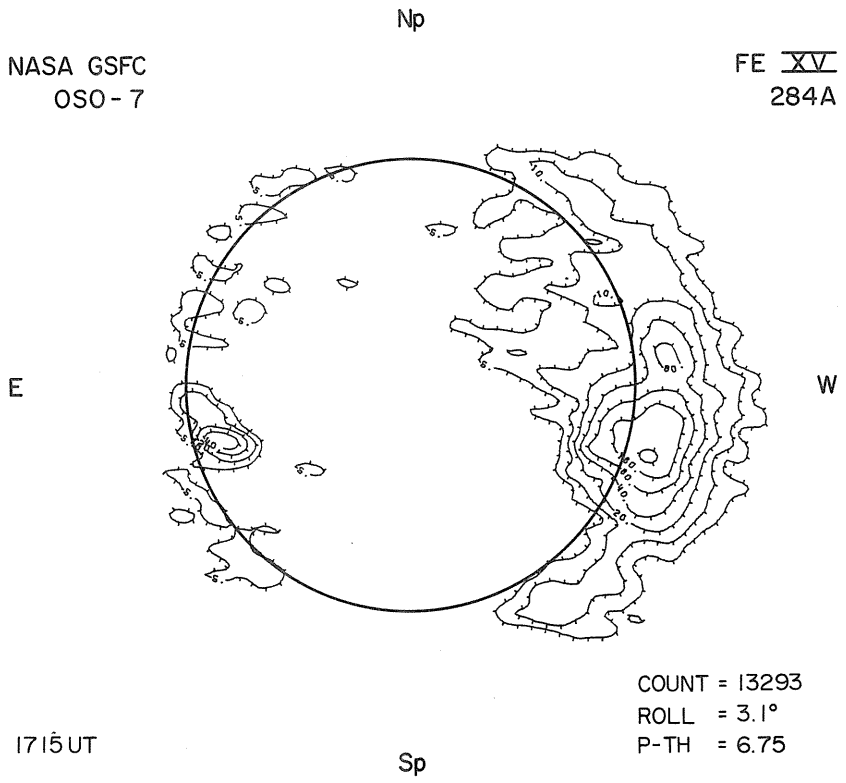
NRL
OSO-7



1404-1547 UT

NASA GSFC
OSO-7

FE XV
284A

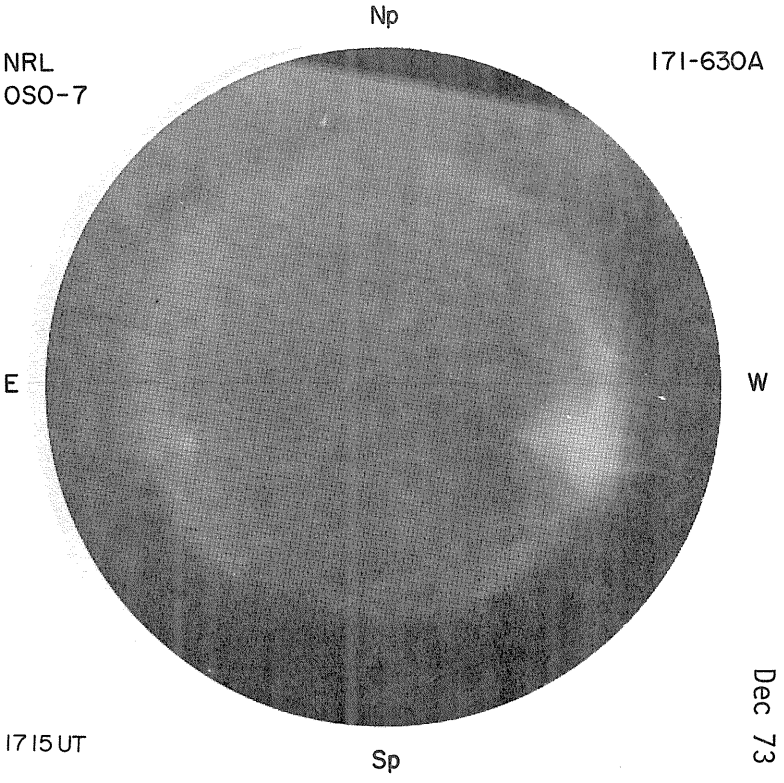


COUNT = 13293
ROLL = 3.1°
P-TH = 6.75

1715 UT

NRL
OSO-7

171-630A



1715 UT

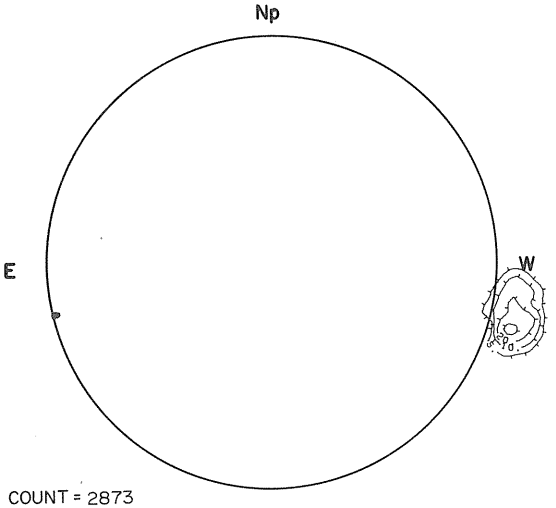
79
Dec 73

DECEMBER 29, 1973 (P = 3.66, B_o = -2.68, L_o = 103.26)

80
Dec 73

NASA GSFC
OSO-7

X-RAY
8-16A



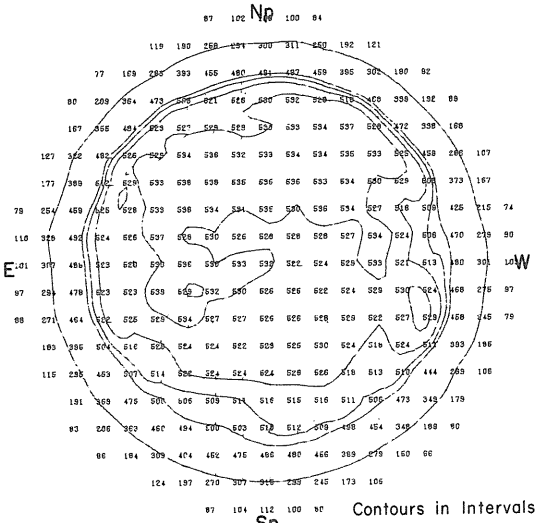
COUNT = 2873
ROLL = 3.5°
P-TH = 6.70

1738 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

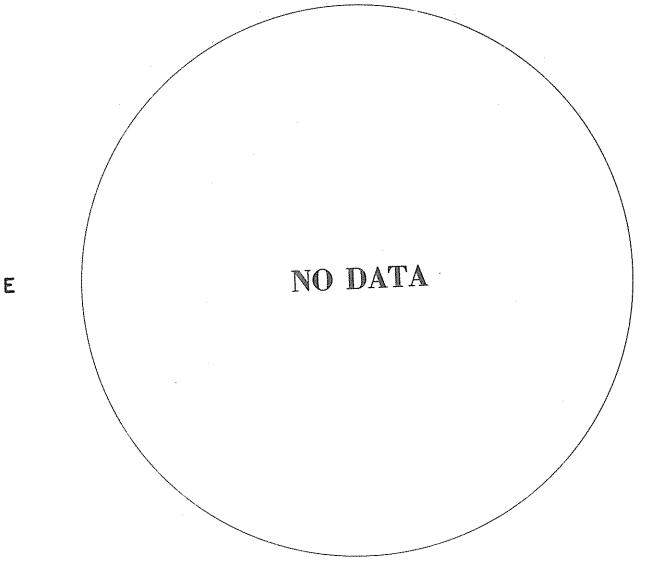


1531 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY =
DELTAX =

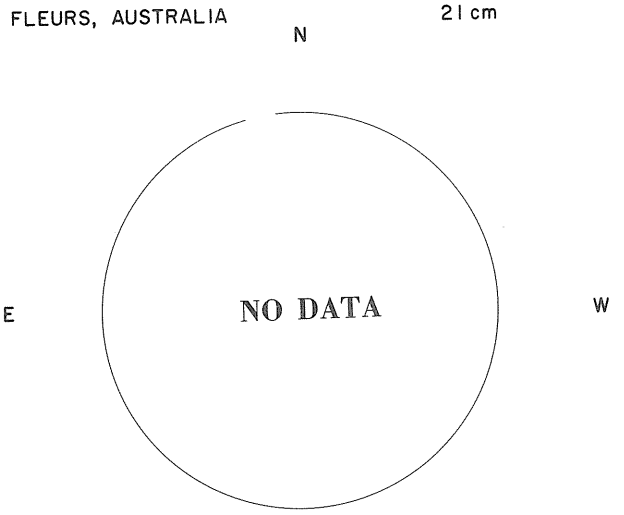


MAGNETOGRAM
Solid-Plus
Dotted-Minus

Levels
± 5
± 10
± 20
± 40
± 80

FLEURS, AUSTRALIA

21 cm

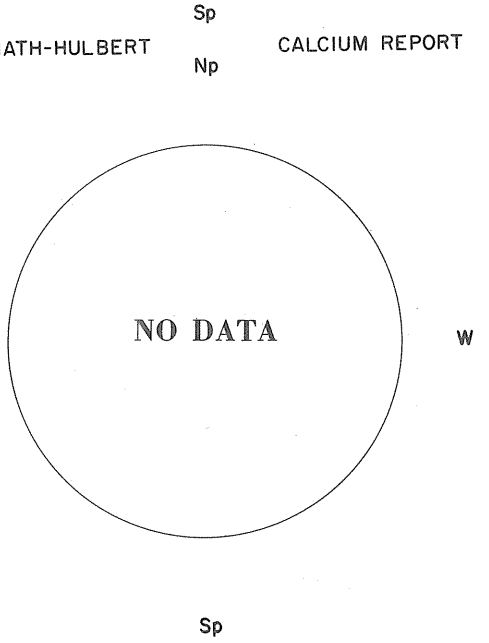


02-03 UT

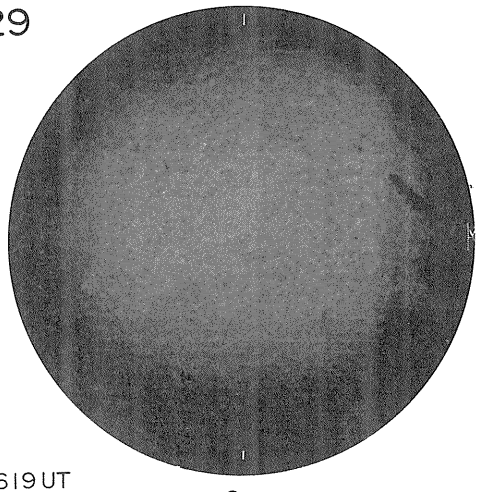
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

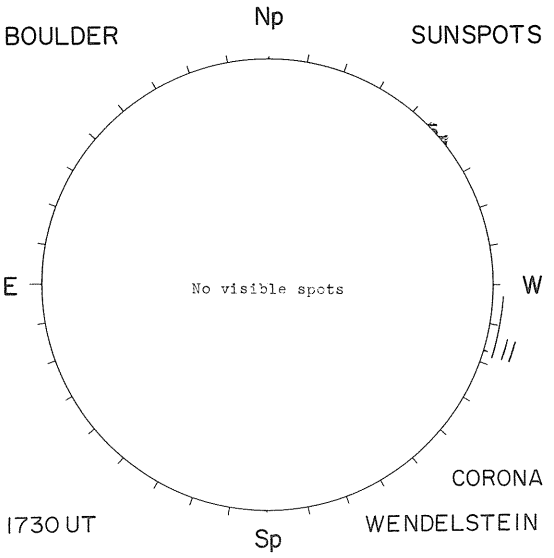
CALCIUM REPORT



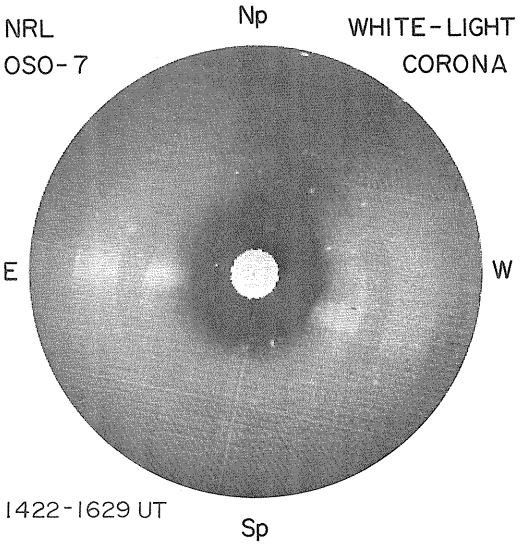
BOULDER
29



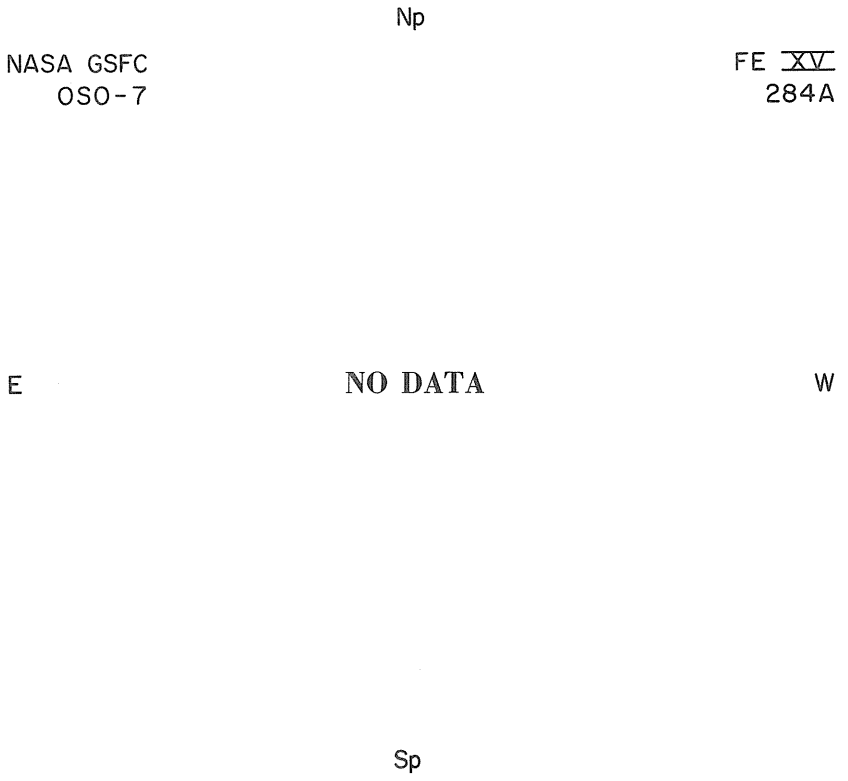
BOULDER



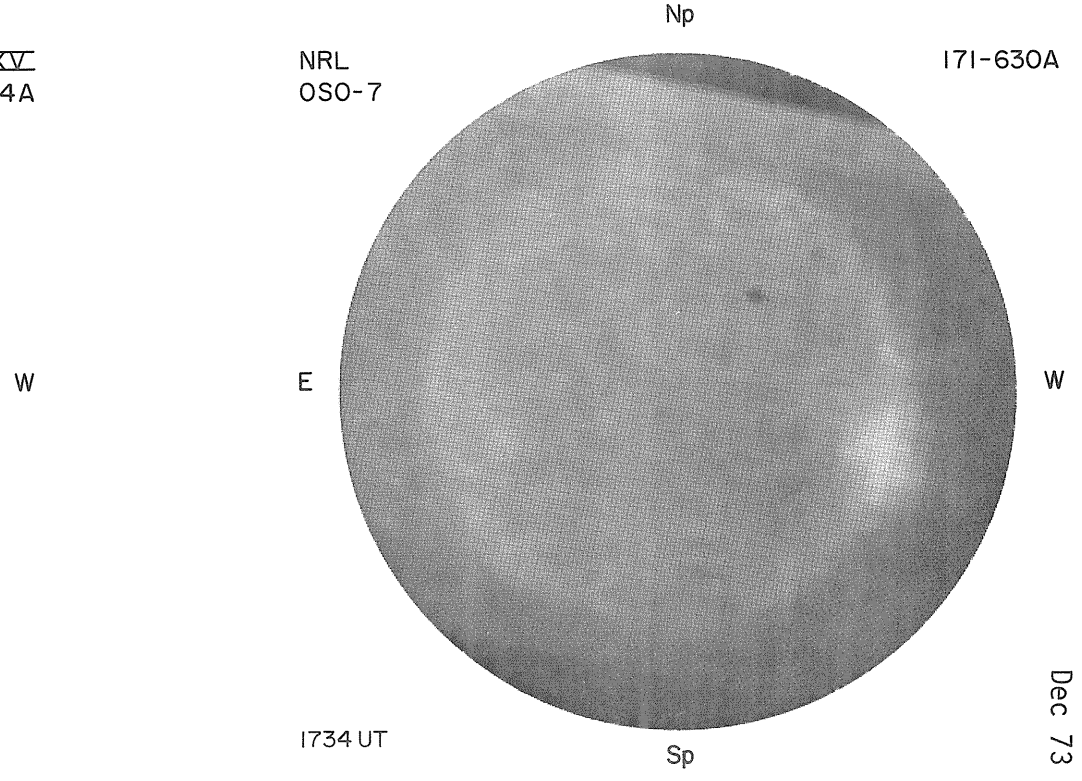
NRL
OSO-7



NASA GSFC
OSO-7



FE XV
284A



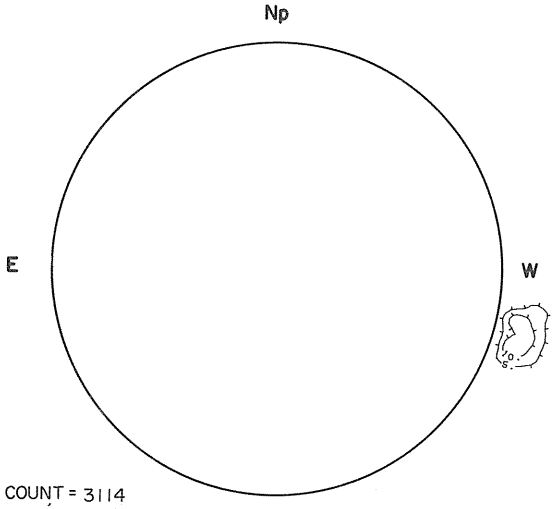
NRL
OSO-7

81
Dec 73

DECEMBER 30, 1973 (P = 3.17, B_o = - 2.80, L_o = 90.09)

NASA GSFC
OSO-7

X-RAY
8-16A



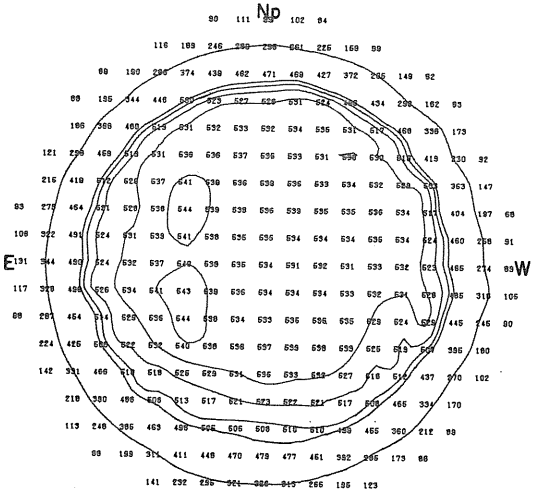
COUNT = 3114
ROLL = 3.9°
P-TH = 6.66

1621 UT

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm



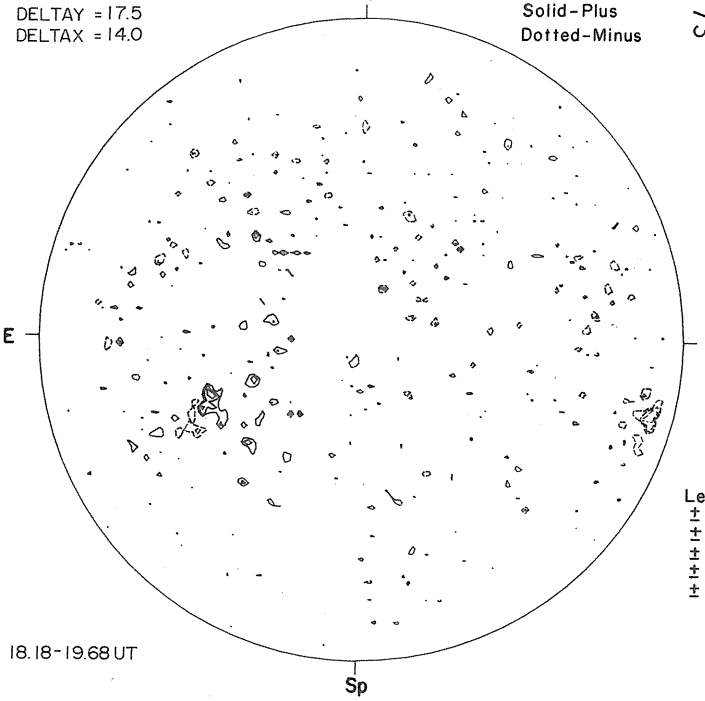
1654 UT

Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.5
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

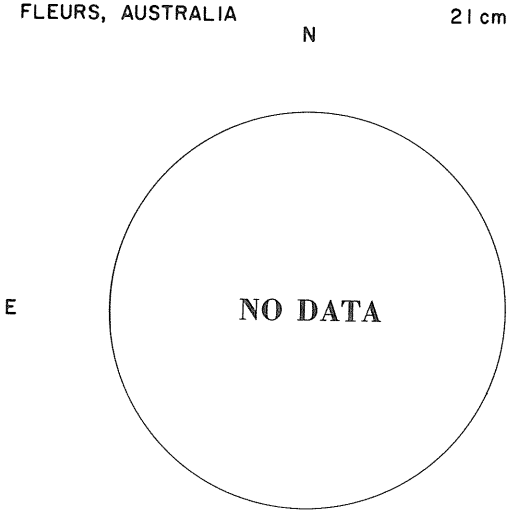


Levels
± 5
± 10
± 20
± 40
± 80

18.18-19.68 UT

FLEURS, AUSTRALIA

21 cm

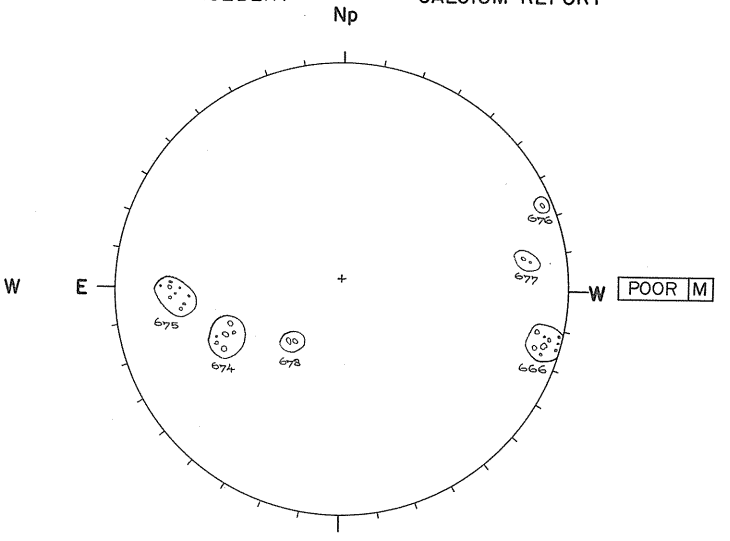


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

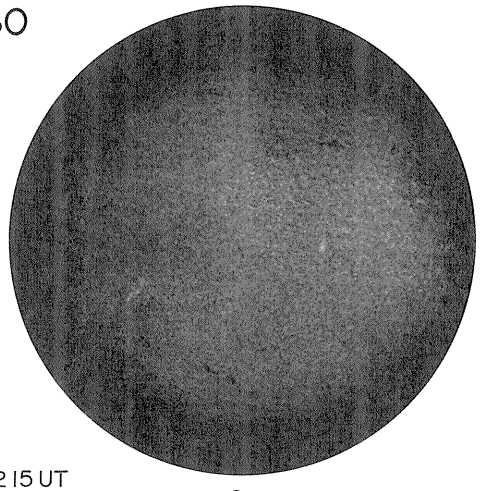
CALCIUM REPORT



POOR | M

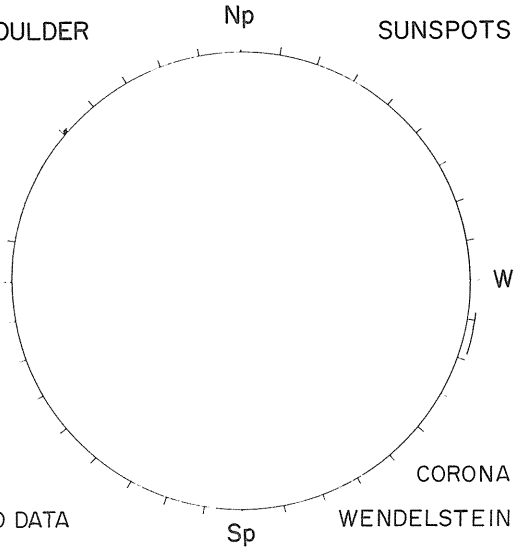
1645 UT

RAMEY AFB
30



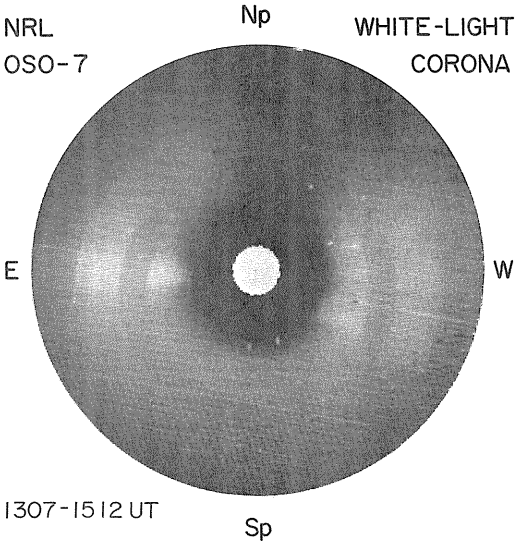
1215 UT

BOULDER



NO DATA

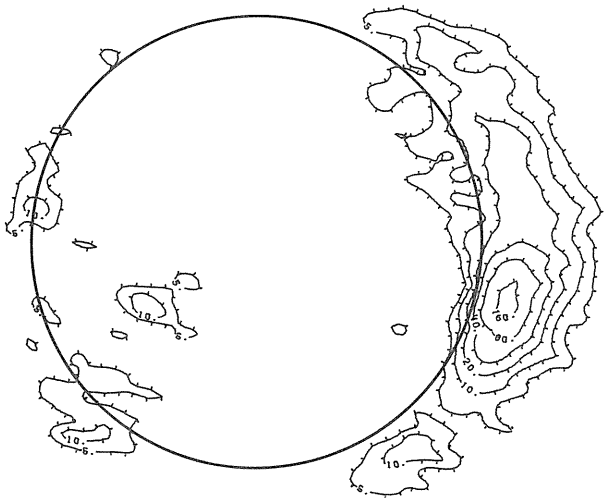
NRL
OSO-7



1307-1512 UT

NASA GSFC
OSO-7

FE XV
284A

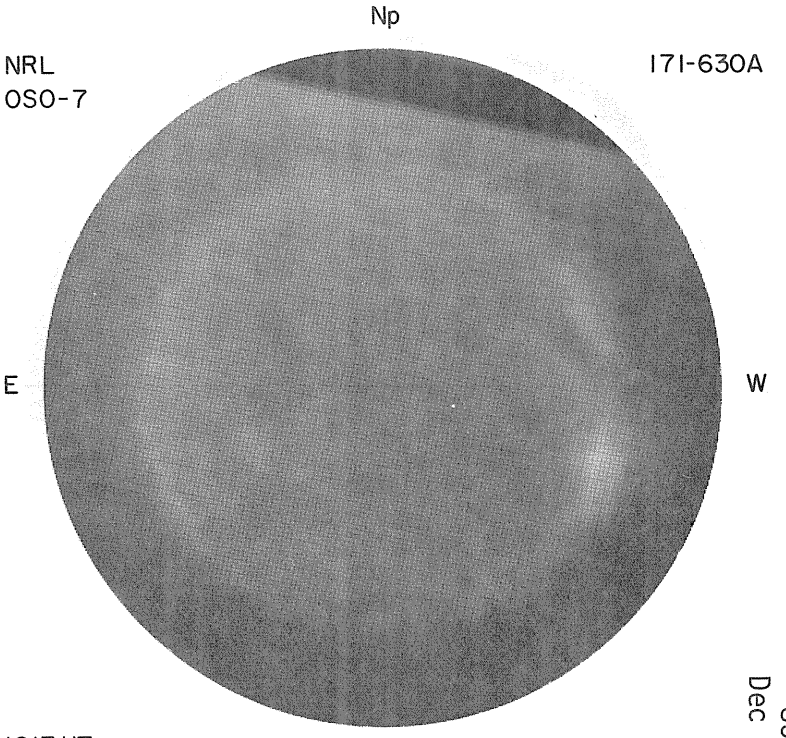


COUNT = 8089
ROLL = 3.9°
P-TH = 6.66

1621 UT

NRL
OSO-7

171-630A



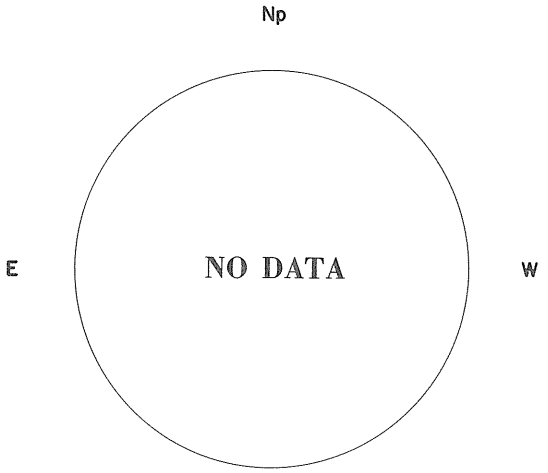
1617 UT

83
Dec 73

DECEMBER 31, 1973 (P = 2.69, B_o = -2.92, L_o = 76.92)

NASA GSFC
OSO-7

X-RAY
8-16A

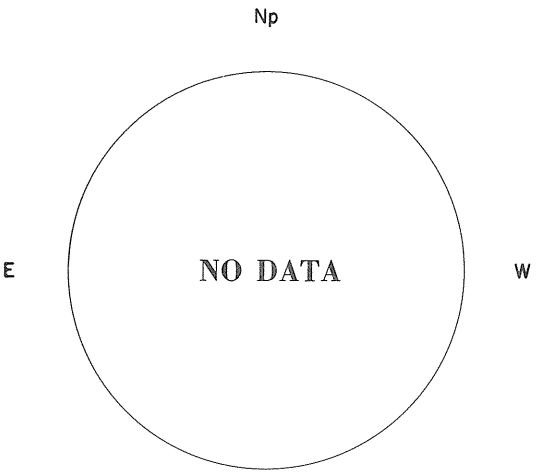


COUN
ROLL =
P-TH =

Counts per 0.125 sec.

PROSPECT HILL
AFCRL

8.6 mm

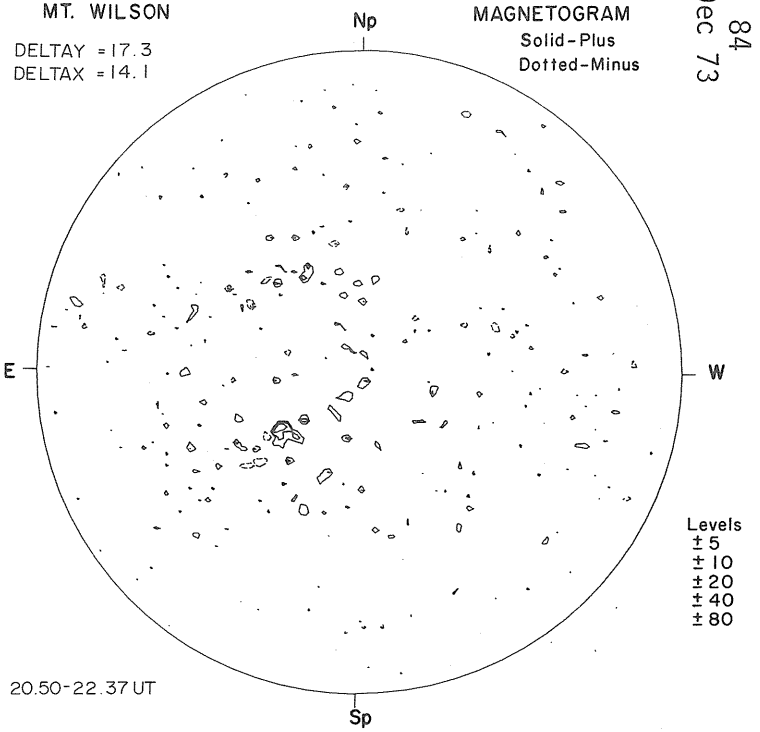


Contours in Intervals of 200° K

MT. WILSON

DELTAY = 17.3
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

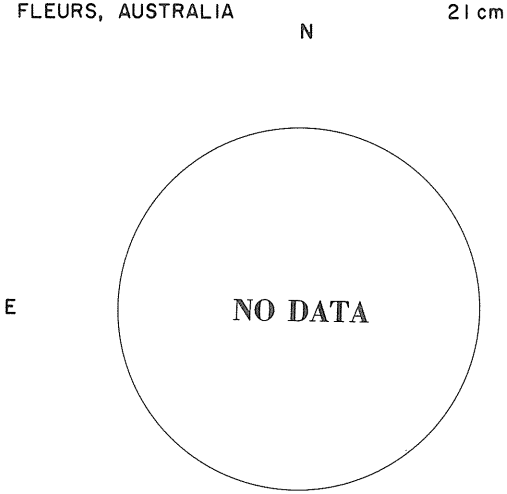


Levels
± 5
± 10
± 20
± 40
± 80

20.50-22.37 UT

FLEURS, AUSTRALIA

21 cm

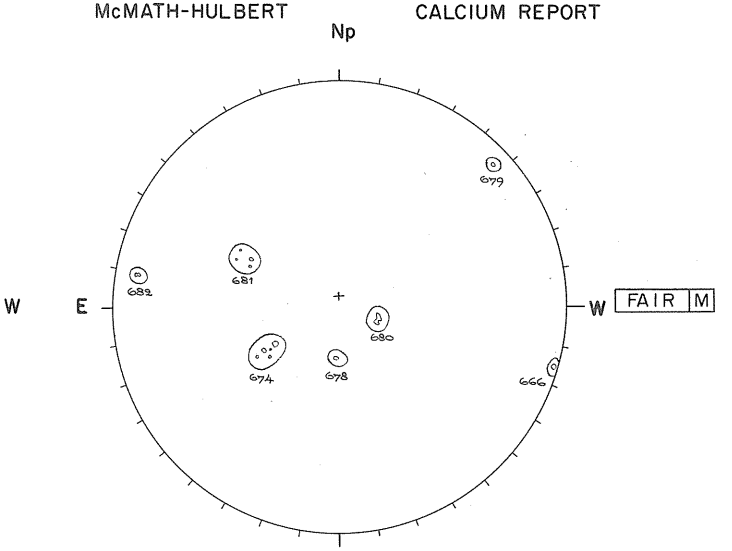


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

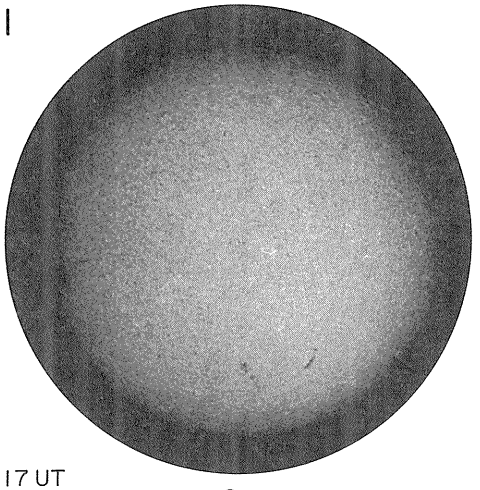
McMATH-HULBERT

CALCIUM REPORT

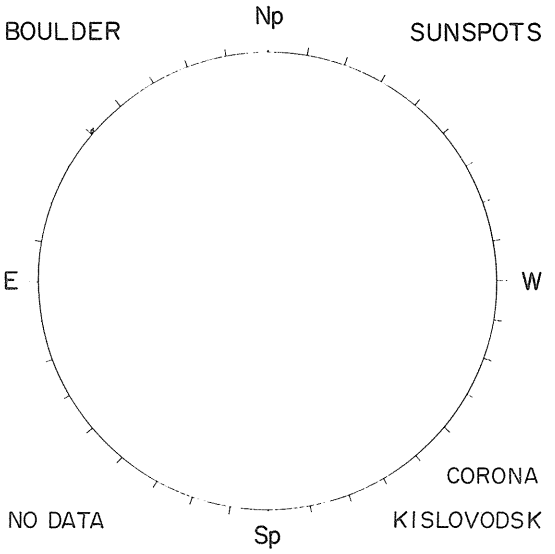


1550 UT

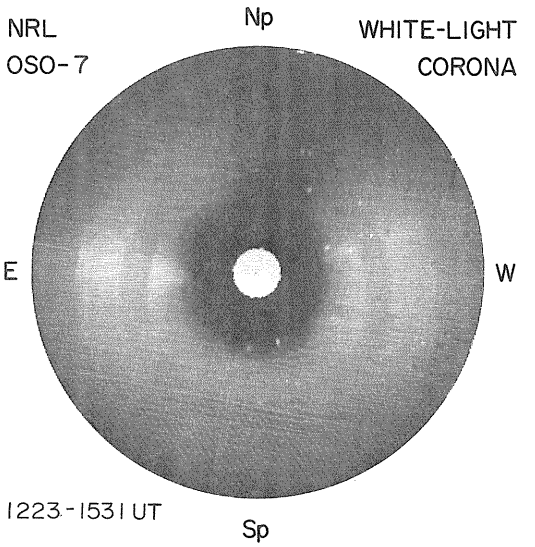
RAMEY AFB
31



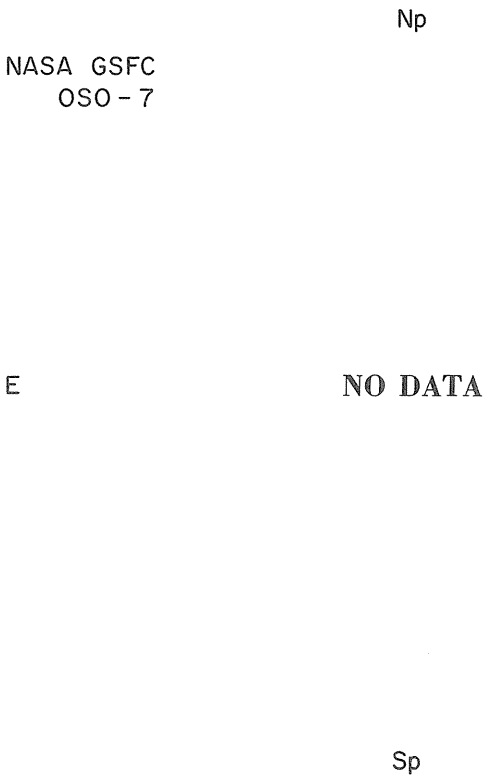
BOULDER



NRL
OSO-7

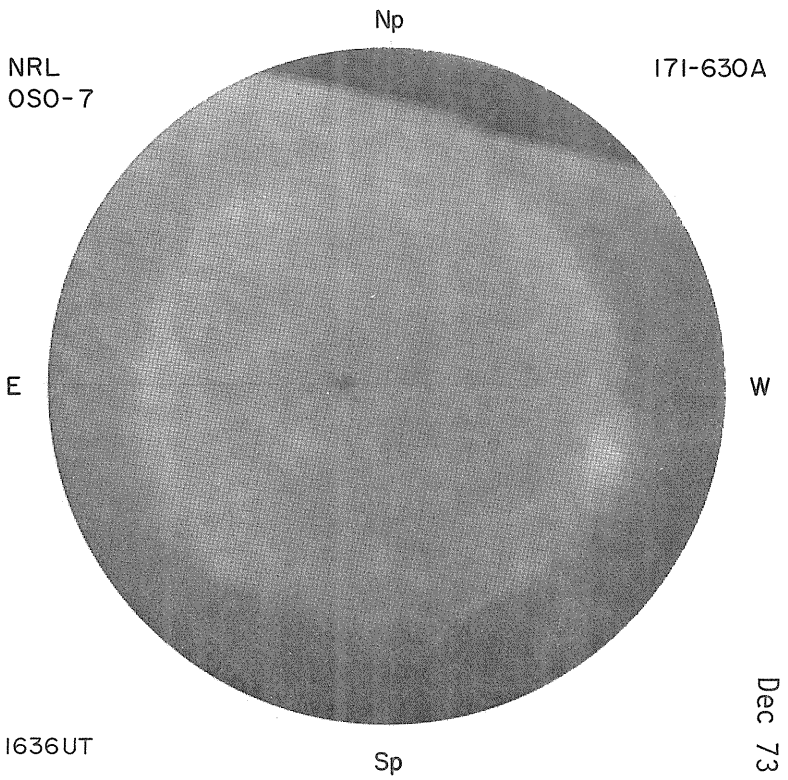


NASA GSFC
OSO-7



FE XV
284A

NRL
OSO-7



85
Dec 73

REGIONS OF SOLAR ACTIVITY

DECEMBER 1973

MCMATH REGION 12640 CMP DATE 3.6

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	11	29	12640	S14 E52	78	100	1.5									

MCMATH REGION 12642 CMP DATE 4.4

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	11	30	12642	N00 E50	67	100	2.0									

MCMATH REGION 12645 CMP DATE 5.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	2	12645	S40 E32	57	100	1.5									
73	12	3	12645	S40 E20	56	100	1.0									

MCMATH REGION 12641 CMP DATE 6.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	11	29	12641	N13 E85	45	200	1.0									
73	11	30	12641	N13 E71	46	300	2.5									
73	12	1	12641	N13 E60	43	400	2.0									
73	12	2	12641	N13 E48	41	500	2.0									
73	12	3	12641	N13 E33	43	500	2.0									
73	12	6	12641	N13 W08	44	300	2.0									
73	12	7	12641	N13 W21	43	600	2.0									
73	12	8	12641	N13 W35	43	300	2.0									
73	12	9	12641	N13 W46	43	400	1.0									

MCMATH REGION 12652 CMP DATE 6.5

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	8	12652	S22 W31	39	100	1.5									

MCMATH REGION 12647 CMP DATE 7.5

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	3	12647	S18 E51	25	100	1.5									

MCMATH REGION 12648 CMP DATE 9.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	6	12648	S05 E32	4	100	1.0									
73	12	7	12648	S06 E18	4	100	1.0									

MCMATH REGION 12646 CMP DATE 9.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	2	12646	N06 E85	4	200	1.0									
73	12	3	12646	N06 E74	2	500	2.0									
73	12	6	12646	N08 E34	2	300	2.0									
73	12	7	12646	N08 E21	1	500	2.0									
73	12	8	12646	N08 E07	1	400	1.5									
73	12	9	12646	N09 W06	3	500	1.5									
73	12	12	12646	N10 W46	4	200	1.0									
73	12	14	12646	N09 W65	357	200	1.0									

REGIONS OF SOLAR ACTIVITY

DECEMBER 1973

MCMATH REGION 12653 CMP DATE 9.5

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	9	12653	N01 W02	-0	100	1.0									

MCMATH REGION 12649 CMP DATE 10.4

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	6	12649	N41 E48	349	100	1.0									

MCMATH REGION 12655 CMP DATE 10.4

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	12	12655	S22 W30	348	200	2.0									
73	12	14	12655	S22 W56	348	200	1.5									
73	12	15	12655	S22 W70	349	200	1.0									

MCMATH REGION 12650 CMP DATE 10.6

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	6	12650	N15 E50	347	100	1.0									
73	12	7	12650	N15 E35	348	100	1.0									
73	12	8	12650	N15 E21	348	100	1.5									
73	12	9	12650	N15 E12	346	100	1.0									

MCMATH REGION 12659 CMP DATE 11.5

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	15	12659	N01 W55	334	100	1.0									

MCMATH REGION 12654 CMP DATE 11.7

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	9	12654	S16 E27	331	200	1.0									
73	12	11						19303	S21 W19	348	(BP)	2	B	10	3	BXX

MCMATH REGION 12651 CMP DATE 13.7

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	7	12651	N04 E85	298	400	2.5	19302	N03 E80	303	(AP)	3				
73	12	8	12651	N06 E69	300	600	2.0	19302	N03 E65	304	(AP)	3	B	100	1	HSX
73	12	9	12651	N06 E55	303	1000	2.5	19302	N03 E53	304	(AP)	3	B	50	1	HSX
73	12	10						19302	N03 E38	305	(AP)	4	B	50	1	HSX
73	12	11						19302	N02 E25	304	(AP)	4	B	50	1	HSX
73	12	12	12651	N06 E15	303	900	2.0	19302	N02 E13	304	(AP)	4	B	0	1	AXX
73	12	13						19302	N02 W03	305	(AP)	3	B	40	1	HSX
73	12	14	12651	N05 W12	304	800	2.0	19302	N02 W14	305	(BP	4	B	40	1	HSX
73	12							19304	N09 W11	302		1				
73	12	15	12651	N05 W25	304	800	2.0	19302	N02 W29	305	(AP)	3	B	20	1	HSX
73	12							19304	N09 W25	301						
73	12	16						19302	N02 W42	304	(AP)	3	G	20	1	AXX
73	12	17	12651	N04 W51	303	800	1.5	19302	N02 W53	305	(AP)	2				

The new column marked STA is inserted to indicate the source of data for sunspot area, count and classification.
B = Boulder C = Carnarvon G = Gran Canaria (Canary Islands) M = Manila R = Ramey

REGIONS OF SOLAR ACTIVITY

DECEMBER 1973

MCMATH REGION 12656 CMP DATE 15.6 RETURN OF REGION 12618 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	12	12656	N17 E40	278	300	1.0									
73	12	14	12656	N17 E13	279	400	1.5									
73	12	15	12656	N16 E01	278	400	1.5									
73	12	17	12656	N16 W25	277	400	1.0									
73	12	21	12656	N16 W80	279	300	1.0									

MCMATH REGION 12658 CMP DATE 16.1

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	14	12658	S11 E20	272	200	1.5									
73	12	15	12658	S11 E06	273	200	1.5									

MCMATH REGION 12657 CMP DATE 18.5 RETURN OF REGION 12626 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	12	12657	S13 E73	245	400	2.0		N13 E80				B	40	1	AXX
73	12	13							N13 E68				B	70	3	HSX
73	12	14	12657	S14 E52	240	1000	2.0		N12 E56				B	100	9	CSI
73	12	15	12657	S15 E40	239	800	2.0									
73	12	17	12657	S15 E12	240	800	2.0									
73	12	21	12657	S15 W40	239	600	1.5									
73	12	22	12657	S15 W55	239	800	1.5									
73	12	23	12657	S15 W68	239	300	1.0									

MCMATH REGION 12671 CMP DATE 19.3

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	23	12671	N25 W59	230	100	1.5									

MCMATH REGION 12660 CMP DATE 19.4

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	15	12660	S04 E49	230	100	1.0		N13 E44				B	70	8	CSI

MCMATH REGION 12661 CMP DATE 20.7 RETURN OF REGION 12624 ROTATION 7

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	15	12661	S14 E74	205	300	1.0									
73	12	17	12661	S13 E44	208	300	1.5									
73	12	18						19308	S13 E26	211	(AP)	2	C	10	1	AXX
73	12	19						19308	S14 E11	213	B		B	0	1	AXX
73	12								S08 E16				B	0	1	AXX
73	12	20						19308	S14 W03	216	(AP)	3	B	10	1	AXX
73	12	21	12661	S14 W13	212	800	2.0	19308	S14 W17	215	(AP)	2	B	0	1	AXX
73	12	22	12661	S14 W28	212	800	2.0	19308	S13 W26	210	(BP)	2	B	10	2	BXO
73	12	23	12661	S13 W43	214	500	1.5	19308	S15 W39	211	(BF)	3				

MCMATH REGION 12668 CMP DATE 20.8

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	23	12668	S16 W40	211	600	3.5									
73	12	24	12668	S16 W50	210	1000	3.5	19308	S14 W53	213	(BP)	3	G	130	10	DAO
73	12	25							S16 W61				G	150	8	DAO
73	12	26						19308	S12 W80	210	B		B	30	3	BXO

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MCMATH REGION 12669 CMP DATE 21.1

CALCIUM PLAGE DATA								SUNSPOT DATA									
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	23	12669	S12	W35	206	300	2.5	19309	S11	W34	206	(BP)	3	G	30	11	CRO
73	12									S11	W30				G	10	3	BXO
73	12	24	12669	S12	W45	205	400	2.5		S11	W44				G	10	1	AXX

MCMATH REGION 12662 CMP DATE 22.2 RETURN OF REGION 12636 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA									
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	15	12662	N09	E85	194	400	1.5		N07	E79				B	20	1	HSX
73	12	16							19305	N08	E65	197	(AP)	4	G	50	1	HSX
73	12	17	12662	N08	E60	192	1000	2.5	19305	N08	E54	198	(AP)	5	B	30	1	HSX
73	12	18							19305	N08	E39	198	(AP)	3	C	30	1	HSX
73	12	19							19305	N08	E26	198	(AP)	4	B	30	1	HSX
73	12	20							19305	N08	E14	199	(AP)	4	B	30	1	HSX
73	12	21	12662	N08	E07	192	1000	2.5	19305	N08	W01	199	(AP)	3	B	20	1	HSX
73	12	22	12662	N08	W08	192	1000	2.0	19305	N09	W13	197	(AP)	3	B	20	4	CSO
73	12	23	12662	N08	W22	193	1000	2.5	19305	N08	W28	200	(AP)	4	G	40	1	HSX
73	12	24	12662	N08	W33	193	1000	2.0	19305	N09	W40	200	(AP)	2	G	30	1	HSX
73	12	25								N09	W49				G	30	1	HRX
73	12	26							19305	N08	W70	200	(AP)	3	B	0	1	AXX
73	12	27								N08	W72				C	20	1	HSX
73	12	28	12662	N08	W88	194	500	1.0										

MCMATH REGION 12664 CMP DATE 22.5

CALCIUM PLAGE DATA								SUNSPOT DATA									
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	16							19306	S19	E78	184	(BP)	4	G	100	2	DSO
73	12	17	12664	S16	E67	185	1700	3.5	19306	S18	E65	187	(BF)	3	B	70	7	CSI
73	12	18							19306	S18	E49	188	(B)	3	C	40	12	DRO
73	12	19							19306	S18	E34	190	(BP)	3	B	80	13	CSI
73	12	20							19306	S18	E23	190	(D)	5	B	180	21	EAI
73	12	21	12664	S17	E11	188	2700	3.5	19306	S18	E08	190	(BP)	4	B	330	12	EKI
73	12	22	12664	S17	W04	188	2700	3.5	19306	S18	W08	192	(BP)	5	B	460	49	EHI
73	12	23	12664	S17	W18	189	2600	3.5	19306	S18	W19	191	(BP)	6	G	350	21	EKO
73	12	24	12664	S17	W28	188	2500	2.5	19306	S18	W32	192	(BP)	5	G	350	14	EHO
73	12	25								S18	W41				G	320	6	EHO
73	12	26							19306	S18	W62	192	(BP)	4	B	370	2	CAO
73	12	27								S18	W67				C	160	2	DSO
73	12	28	12664	S17	W85	191	1000	2.5		S19	W85				G	60	1	HSX

MCMATH REGION 12663 CMP DATE 22.7 RETURN OF REGION 12638 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA									
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	17	12663	S07	E67	185	600	2.0	19307	S07	E63	189	(AP)	1				
73	12	21	12663	S07	E13	186	700	2.0										
73	12	22	12663	S07	W03	187	800	2.0										
73	12	23	12663	S07	W17	188	600	2.0										
73	12	24	12663	S07	W28	188	600	1.5										
73	12	25								S10	W34				G	40	2	CRO
73	12	28	12663	S09	W85	191	300	2.5										

MCMATH REGION 12670 CMP DATE 23.2

CALCIUM PLAGE DATA								SUNSPOT DATA									
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	23	12670	N05	W08	179	200	1.5										

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MCMATH REGION 12665 CMP DATE 23.5 RETURN OF REGION 12643 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
73	12	21	12665	S13 E25	174	300	1.5								
73	12	22	12665	S13 E10	174	300	1.5								
73	12	23	12665	S14 W04	175	300	1.5								
73	12	24	12665	S14 W14	174	300	1.5								

MCMATH REGION 12666 CMP DATE 24.9 RETURN OF REGION 12628 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
73	12	21	12666	S11 E43	156	2000	2.5								
73	12	22	12666	S12 E28	156	2600	2.5								
73	12	23	12666	S12 E14	157	2400	2.5								
73	12	24	12666	S12 E03	157	2100	2.0								
73	12	28	12666	S13 W55	161	1400	2.0								
73	12	30	12666	S14 W74	154	1100	1.5								
73	12	31	12666	S14 W88	155	600	1.0								

MCMATH REGION 12676 CMP DATE 25.1

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
73	12	30	12676	N23 W74	154	100	1.0								

MCMATH REGION 12672 CMP DATE 26.2

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
73	12	23	12672	S48 E32	139	100	1.5								

MCMATH REGION 12677 CMP DATE 26.5

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
73	12	30	12677	N06 W55	135	200	1.0								

MCMATH REGION 12679 CMP DATE 27.1

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
73	12	31	12679	N37 W60	127	100	1.0								

MCMATH REGION 12667 CMP DATE 27.7

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
73	12	21	12667	S43 E80	119	200	1.0								

MCMATH REGION 12685 CMP DATE 30.4

CALCIUM PLAGE DATA								SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
74	1	04	12685	S21 W68	87	100	1.5								

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MCMATH REGION 12680 CMP DATE 30.9

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	31	12680	S05 W10	77	200	1.5									
74	1	01	12680	S05 W23	81	200	1.5									

MCMATH REGION 12673 CMP DATE 31.2

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	28	12673	S21 E33	73	100	1.5									

MCMATH REGION 12687 CMP DATE 31.4

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
74	1	05	12687	N13 W67	70	100	1.0									

MCMATH REGION 12678 CMP DATE 31.7

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
73	12	30	12678	S07 E14	66	200	1.5									
73	12	31	12678	S07 E01	66	100	1.0									

Note: Region 12641 has developed near the location of old region 12595 of the previous rotation.
Region 12664 has formed in the location of old region 12625.
Region 12668 and 12669 have formed in the midst of old plage 12661.
No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on December 4, 5, 10, 11, 13, 16, 18, 19, 20, 25, 26, 27 and 29, 1973.
No sunspot observations were made at the Mt. Wilson Observatory on December 1, 4, 25 and 27, 1973.

Errata: Region 12537 which appeared on page 91 of No. 351 - Part I, published in November 1973, should have appeared on page 86 of No. 352 - Part I where part of the information on that region was published.

DAILY CALCIUM PLAGE INDEX

DECEMBER 1973

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
73	12	1	9.2	73	12	11	*	73	12	21	18.8
73	12	2	6.4	73	12	12	2.6	73	12	22	20.6
73	12	3	3.7	73	12	13	*	73	12	23	21.0
73	12	4	*	73	12	14	3.8	73	12	24	15.0
73	12	5	*	73	12	15	3.8	73	12	25	*
73	12	6	1.3	73	12	16	*	73	12	26	*
73	12	7	2.2	73	12	17	6.6	73	12	27	*
73	12	8	1.7	73	12	18	*	73	12	28	2.1
73	12	9	2.7	73	12	19	*	73	12	29	*
73	12	10	*	73	12	20	*	73	12	30	1.4
								73	12	31	1.1

* NO OBSERVATIONS

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 9 – EXPLORER 37

DECEMBER 1973

NAVAL RESEARCH LABORATORY 1 - 8A HOURLY AVERAGES (10^{-3} ergs/cm^2/sec)

DAY	HOUR 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	0.24	0.22	0.23	0.28	0.33	0.20	0.22	0.27	0.29	0.24	0.26	0.36	0.45	0.40	0.28	0.29	0.35	0.20	0.17	0.20	0.18	0.19	0.48	0.22
2	0.29	0.52	5.13	1.20	0.37	0.19	0.25	0.27	0.45	1.40	0.53	0.72	1.43	0.97	0.53	4.02	0.82	0.54	1.35	0.66	1.28	0.62	0.25	0.67
3	0.35	0.26	0.44	0.67	0.27	0.40	0.26	0.23	0.23	0.14	0.22	0.20	0.21	0.19	0.36	0.21	0.23	0.22	0.27	0.21	0.35	0.18	0.21	
4							4.40		6.84	4.40			8.33			5.03				0.27	0.35	0.31	0.31	0.78
5	0.59	0.65	0.39	0.35	0.24	0.50	0.28	0.22	0.16	0.20	0.20	0.20	0.15	0.14	0.22	0.22	0.17	0.15	0.15	0.14	0.15	0.14	0.15	0.13
6	0.16	0.11	0.13	0.14	0.10	0.11	0.13	0.09	0.12	0.10	0.12	0.14	0.10	0.12	0.10	0.10	0.16	0.13	0.12	0.09	0.16	0.09	0.10	0.12
7	0.12	0.20	0.16	0.18	0.14	0.11	0.12	0.11	0.15	0.13	0.14	0.10	0.10	0.09	0.14	0.09	0.11	0.14	0.10	0.11	0.11	0.18	0.12	0.14
8	0.12	0.14	0.12	0.12	0.14	0.09	0.13	0.17	0.10	0.13	0.11	0.10	0.11	0.10	0.12	0.11	0.12	0.10	0.14	0.10	0.12	0.09	0.12	0.13
9	0.13	0.09	0.09	0.16	0.18	0.11	0.18	0.14	0.13	0.14	0.13	0.15	0.14	0.13	0.11	0.16	0.14	0.13	0.13	0.11	0.10	0.09	0.14	0.11
10	0.13	0.15	0.12	0.14	0.11	0.18	0.13	0.11	0.11	0.11	0.13	0.09	0.14	0.15	0.09	0.13	0.12	0.09	0.11	0.09	0.12	0.13	0.12	0.13
11	0.10	0.11	0.14	0.11	0.16	0.13	0.11	0.09	0.09	0.13	0.10	0.11	0.11	0.12	0.15	0.11	0.13	0.11	0.10	0.11	0.13	0.10	0.13	0.12
12	0.14	0.12	0.14	0.16	0.16	0.12	0.13	0.14	0.12	0.14	0.12	0.13	0.10	0.12	0.11	0.09	0.14	0.10	0.11	0.10	0.14	0.11	0.14	0.12
13	0.10	0.09	0.16	0.15	0.13	0.13	0.12	0.09	0.13	0.12	0.12	0.11	0.10	0.12	0.09	0.12	0.10	0.11	0.12	0.13	0.12	0.34	0.13	0.10
14	0.12	0.13	0.11	0.10	0.10	0.16	0.12	0.16	0.56	0.10	0.17	0.12	0.10	0.17	0.09	0.14	0.19	0.10	0.15	0.14	0.13	0.10	0.11	0.19
15	0.12	0.11	0.13	0.13	0.17	0.13	0.15	0.16	0.14	0.13	0.12	0.14	0.09	0.13	0.13	0.14	0.13	0.14	0.13	0.19	0.12	0.13	0.12	0.13
16	0.16	0.15	0.14	0.13	0.31	0.31	0.19	0.13	0.89	0.29	0.34	3.67	1.34	0.46	0.21	0.18	0.41	0.10	0.47	0.22	0.94	3.23	2.22	0.36
17	4.10	0.46	0.15	0.26	0.22	0.17	0.33	1.05	0.60	0.24	0.42	0.45	0.54	0.33	0.14	0.26	0.15	0.31	0.12	0.14	0.14	0.12	0.14	0.16
18	0.14	0.14	0.17	0.13	0.12	0.12	0.15	0.21	0.14	0.13	0.13	0.13	0.14	0.12	0.20	0.27	0.20	0.21	0.22	0.24	0.16	0.13	0.21	0.21
19	0.15	0.93	0.40	0.15	0.14	0.14	0.15	0.13	0.71	0.16	0.25	0.37	0.25	0.35	0.18	0.19	0.22	0.34	0.19	0.21	0.18	0.33	0.22	0.22
20	0.31	0.33	0.21	0.33	0.18	0.36	0.25	0.42	0.48	0.28	0.51	0.39	0.30	0.62	0.38	0.19	0.24	0.17	0.29	0.37	0.31	0.43	0.35	0.60
21	0.43	0.42	0.31	0.35	1.97	0.34	0.45	0.27	0.26	0.28	0.28	0.51	0.26	0.31	0.32	0.36	0.46	0.17	0.23	0.23	0.33	0.33	0.22	0.26
22	0.30	0.61	0.62	0.66	0.23	0.18	0.20	0.19	0.31	0.25	0.17	0.26	0.31	0.24	0.17	0.14	0.32	0.20	0.19	0.14	0.16	0.16	0.15	0.13
23	0.13	0.20	0.13	0.12	0.13	0.23	0.20	0.20	0.19	0.14	0.14	0.15	0.15	0.15	0.18	0.18	0.12	0.15	0.15	0.19	0.15	0.16	0.19	0.26
24	0.20	0.17	0.17	0.14	0.20	0.17	0.13	0.17	0.17	0.16	0.17	0.16	0.15	0.17	0.15	0.22	0.20	0.18	0.17	0.17	0.16	0.16	0.15	0.20
25	0.20	0.31	0.17	0.27	0.26	0.16	0.22	0.20	0.19	0.20	0.21	0.29	0.29	0.19	0.18	0.39	0.35	0.24	0.20	0.20	0.43	0.60	0.20	0.18
26	0.15	0.15	0.16	0.18	0.16	0.15	0.17	0.51	0.25	0.26	0.62	0.36	0.44	0.28	0.23	0.21	0.17	0.23	0.25	0.22	0.19	0.20	0.18	0.19
27	0.17	0.15	0.17	0.13	0.21	0.17	0.22	0.20	0.16	0.18	0.43	0.19	0.19	0.24	0.23	0.28	0.44	0.24	0.25	0.34	0.60	0.25	0.42	0.31
28	0.22	0.18	0.17	0.13	0.18	0.15	0.15	0.21	0.12	0.15	0.12	0.14	0.12	0.13	0.15	0.15	0.40	0.38	0.18	0.12	0.18	0.13	0.16	0.12
29	0.11	0.13	0.12	0.13	0.13	0.15	0.12	0.12	0.11	0.12	0.11	0.13	0.12	0.12	0.12	0.11	0.11	0.12	0.11	0.17	0.14	0.14	0.13	0.10
30	0.12	0.10	0.11	0.13	0.10	0.12	0.10	0.11	0.09	0.10	0.11	0.14	0.12	0.10	0.12	0.10	0.12	0.09	0.18	0.14	0.12	0.21	0.13	0.13
31	0.19	0.11	0.13	0.09	0.09	0.10	0.11	0.10	0.10	0.12	0.10	0.10	0.11	0.10	0.11	0.11	0.12	0.11	0.15	0.12	0.16	0.13	0.16	0.16

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 9 – EXPLORER 37

DECEMBER 1973

NAVAL RESEARCH LABORATORY 8 - 20A HOURLY AVERAGES (10^{-2} ergs/cm^2/sec)

DAY	HOUR 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	0.46	0.47	0.47	0.51	0.55	0.46	0.43	0.48	0.44	0.42	0.47	0.54	0.61	0.60	0.52	0.49	0.52	0.43	0.44	0.43	0.37	0.39	0.59	0.45
2	0.50	0.59	2.71	1.33	0.73	0.44	0.44	0.41	0.60	1.44	0.82	0.86	1.34	1.10	0.71	2.05	0.90	0.74	1.18	0.81	1.05	0.78	0.47	0.63
3	0.54	0.45	0.52	0.54	0.44	0.56	0.54	0.45	0.40	0.39	0.41	0.42	0.40	0.40	0.50	0.40	0.46	0.46	0.50	0.45	0.52	0.39	0.39	0.44
4	0.44	0.46	0.50	0.48	0.45	0.51	0.71	0.56	1.41	0.79	0.66	0.63	1.19	0.80	0.76	1.17	0.72	0.64	0.67	0.55	0.57	0.55	0.54	0.80
5	0.76	0.80	0.63	0.57	0.45	0.53	0.46	0.44	0.37	0.32	0.37	0.34	0.30	0.27	0.33	0.34	0.28	0.26	0.24	0.21	0.18	0.16	0.18	0.16
6	0.14	0.14	0.12	0.10	0.09	0.07	0.08	0.06	0.06	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.06	0.05	0.05	0.05	0.05	0.05
7	0.05	0.06	0.07	0.06	0.06	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.05
8	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06
9	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.05	0.05	0.05	0.05	0.06	0.07	0.08	0.06	0.17	0.06	0.06	0.05	0.05	0.05	0.06	0.05	0.06
10	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.06	0.05	0.05	0.06
11	0.06	0.05	0.05	0.05	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.08
12	0.05	0.05	0.06	0.06	0.06	0.05	0.06	0.05	0.06	0.11	0.09	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.06	0.05	0.06
13	0.06	0.05	0.05	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.06	0.05	0.05	0.05
14	0.05	0.07	0.05	0.06	0.05	0.06	0.06	0.05	0.06	0.07	0.08	0.08	0.06	0.07	0.06	0.06	0.07	0.07	0.14	0.10	0.08	0.08	0.08	0.08
15	0.08	0.09	0.10	0.08	0.09	0.09	0.08	0.07	0.08	0.09	0.09	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.12	0.20	0.15	0.14	0.14	0.14
16	0.15	0.17	0.15	0.16	0.26	0.28	0.32	0.18	0.91	0.40	0.38	1.93	1.14	0.58	0.33	0.27	0.32	0.18	0.35	0.30	0.66	1.36	1.54	0.44
17	1.89	0.55	0.22	0.31	0.30	0.24	0.38	0.69	0.58	0.35	0.49	0.51	0.67	0.41	0.31	0.41	0.28	0.31	0.22	0.22	0.20	0.20	0.19	0.19
18	0.19	0.20	0.19	0.18	0.18	0.17	0.18	0.18	0.20	0.19	0.17	0.17	0.17	0.17	0.26	0.34	0.31	0.29	0.32	0.35	0.27	0.23	0.29	0.28
19	0.24	0.76	0.50	0.22	0.23	0.21	0.18	0.16	0.55	0.25	0.29	0.48	0.39	0.45	0.31	0.30	0.32	0.42	0.30	0.36	0.34	0.46	0.41	0.34
20	0.41	0.46	0.33	0.41	0.32	0.44	0.40	0.45	0.31	0.39	0.50	0.49	0.46	0.61	0.48	0.31	0.31	0.33	0.43	0.51	0.45	0.50	0.49	0.64
21	0.63	0.53	0.47	0.50	1.35	0.50	0.54	0.45	0.46	0.47	0.46	0.59	0.44	0.48	0.51	0.50	0.62	0.38	0.41	0.43	0.53	0.57	0.47	0.51
22	0.51	0.73	0.70	0.69	0.45	0.38	0.37	0.37	0.44	0.40	0.36	0.42	0.45	0.42	0.33	0.32	0.44	0.35	0.30	0.28	0.26	0.25	0.24	0.25
23	0.24	0.32	0.25	0.24	0.26	0.25	0.31	0.30	0.35	0.30	0.27	0.28	0.26	0.25	0.27	0.32	0.29	0.28	0.32	0.32	0.30	0.27	0.25	0.30
24	0.36	0.32	0.28	0.28	0.30	0.27	0.28	0.30	0.32	0.34	0.33	0.34	0.31	0.29	0.31	0.37	0.30	0.32	0.31	0.31	0.28	0.31	0.31	0.32
25	0.38	0.50	0.39	0.44	0.44	0.39	0.39	0.38	0.37	0.41	0.39	0.49	0.51	0.42	0.40	0.50	0.55	0.48	0.40	0.38	0.44	0.52	0.35	0.33
26	0.34	0.34	0.37	0.35	0.36	0.35	0.37	0.60	0.49	0.46	0.77	0.56	0.58	0.53	0.45	0.44	0.39	0.43	0.46	0.41	0.40	0.39	0.36	0.38
27	0.36	0.34	0.35	0.34	0.40	0.38	0.42	0.42	0.38	0.39	0.49	0.43	0.41	0.44	0.44	0.45	0.62	0.46	0.45	0.52	0.67	0.45	0.55	0.47
28	0.39	0.37	0.35	0.32	0.32	0.30	0.28	0.32	0.27	0.28	0.29	0.28	0.25	0.26	0.27	0.28	0.41	0.47	0.25	0.22	0.21	0.21	0.21	0.22
29	0.22	0.21	0.19	0.21	0.24	0.23	0.19	0.19	0.21	0.21	0.18	0.18	0.15	0.15	0.15	0.16	0.15	0.15	0.15	0.15	0.13	0.13	0.15	0.12
30	0.12	0.12	0.12	0.11	0.10	0.10	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.07	0.07	0.06	0.07	0.07	0.07	0.06	0.07	0.07
31	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.06	0.06	0.05	0.05	0.06	0.07	0.06

SOLAR X-RAYS BY SATELLITE
EXPLORER 37

DECEMBER 1973

NAVAL RESEARCH LABORATORY

OUTSTANDING EVENTS

DAY	START TIME	0.5-3A FLUX XE-5	PEAK TIME	1-8A FLUX XE-4	PEAK TIME	8-20A FLUX XE-3	PEAK TIME	END TIME	COMMENTS
2	0200	21.00	0204	89.00	0212	40.00	0207	0213D	
2	1513	61.00	1517	130.00	1516	53.00D	1517D	1518D	
4	0851E	38.00D	0852E	88.00	0852	40.00	0855	0859D	
4	1206E	66.00	1208	130.00	1207	40.00	1209	1215D	
16	1128E	10.00D	1128E	53.00D	1128E	26.00D	1128E	1143	
16	2145	41.00	2148	130.00	2152	40.00	2149	2205	
17	0039E	38.00D	0040E	130.00	0042	40.00	0042	0049	
21	0421	20.00D	0423E	67.00	0424	27.00D	0422E	0433	

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1973

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
01	1138	1152	1142	1-	1			1					1138	12628
02	0154	0341	0214	1-	3				2				0151	12628
02	0352	0505	0400	1-	1				1				0356	12628
02	0915	1000	0920	1-	3			1	2		1		0908	12628
02	1513	1605	1523	1-	5	2			2		5	1	1508	12628
02	1828	1831	1829	1-	3							2	1826	12628
02	2007	2030	2010	1-	5						3	3	2010E	12628
03	0118	0140	0122	1-	1				1				0118E	12628
03	0340	0444	0342	1-	1				1				0340E	12628
04	0850	0905	0854	1-	1						1		0850	12628
04	1144	1200	1147	1-	1						1		1142	12628
04	1204	1240	1207	1-	3	1		1			1		NF	
04	1537	1630	1548	1-	5				2	1	5		1537	12628
08	1512E	1520	1514	1-	1			1					*	
16	1106	1115	1106	1+	3	2		2	2		2		1110E	12664
16	2144	2300	2153	1-	3	1					1	2	2145	12664
16	2353	0024	0002	1-	1				1				2355	12664
17	0039	0146	0044	1-	3				1			1	0043E	12664
17	1025	1035	1028	1-	1						1		1030	12664
17	1453	1525	1500	1-	1				1		1		1452	12664
17	1627	1715	1640	1-	3				1		1	1	1625	12664
20	1945	1958	1947	1-	1							1	1947E	12664
21	0415	0545	0427	1-	1				1				0416E	12664
22	0022	0024	0023	1-	1							1	0022E	12664
22	0220	0250	0228	1-	1				1				0229E	12664
23	2332	2335	2334	1-	3							2	2332	12661
27	1049	1115	1052	1-	1						1		1046	12664
30	2345	2348	2346	1-	1							1	*	

STATIONS REPORTING FOR DECEMBER 1973

AAVSO (A1) (SEA), (A1, A19, A21, A26, A30, A31, A35, A37, A38) (SES), (A31, A38) (SWF)
BOULDER (BO) (SCNA, SEA)
DARMSTADT (DA) (SWF)
HANA (MU) (SFD)
HAWAII (HA) (SFD)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
KONA (KN) (SFD)
KUHLUNGSBORN (KU) (SPA)
MANILA (MA) (SCNA, SEA, SPA)
MC MATH (MC) (SWF, SCNA)
NEUSTRELITZ (NU) (SWF)
PANSKA VES (PU) (SWF, SES)
POITIERS (PU) (SEA)
PRESTON (LO) (SEA)
SACRAMENTO PEAK (SP) (SFD)
SAO PAULO (UM) (SPA, SES)
SOFIA (SF) (SES)
TABLE MOUNTAIN (TM) (SWF, SPA, LF-SPA)
TORINO (TN) (SPA)
UPICE (UI) (SEA)
WHITE SANDS (WS) (SWF)

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-04	0000-2400 A35, 0000-2400 A37
01-05	0000-2400 A21 (34 kHz)
04	1030-1348 UM (16 kHz), 1726-2400 MA
05	0000-0352 MA
06	2054-2135 TM, 1643-1932 TM
07	1356-1718 UM (17 kHz), 1639-2003 BO, 2210-2224 TM
08-10	0125-1820 BO
11	1752-1757 TM
14-15	2325-0530 MC
14	1122-1335 MA
16-17	2326-0530 MC
16	0016-0307 MA, 0612-0705 UM (13 kHz)
18-19	0000-2400 LO
18	1004-1337 UM (16 kHz), 1105-1150 UM (13 kHz)
19	0427-1308 TM
20	0448-1800 TM
21	1354-1745 UM (17 kHz)
24	2018-2152 TM
25	1014-1325 UM (16 kHz)
26	1252-1935 MC
27	1500-1715 MC
31	0000-2400 WS

SID's BY McMATH REGION

DECEMBER 1973

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
REGION																															
28	1	6	2	3																											
61																						1									
64																3	4			1	1	2					1				
X-RAY																															
UNKNOWN				1																											
NO FP								1																				1			

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1973

DEC. 1973	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
01	0000	0721	CULG													
	1157	2106	SGMR													
	1400	2330	BOUL													
	1652	1734	HARV													
	1748	2334	HARV													
	2021	2400	CULG													
02	0000	0721	CULG													
	1159	2106	SGMR													
	1400	2330	BOUL													
	1402	2334	HARV				2006	201.0		3						IIIGG
	2021	2400	CULG													
03	0000	0722	CULG				0607	0607.5	1	0607	0615	1				II
	1201	2106	SGMR													
	1400	2330	BOUL													
	1401	2334	HARV							1411	1413	1				IIIG
	0843	1458	WEIS							1411.5	1412.4	1				IIIG
	2022	2400	CULG													
04	0000	0722	CULG				0540	0540.5	1							
	0735	1449	WEIS													
	1202	2105	SGMR													
	1400	2330	BOUL													
	1402	2334	HARV				1927	1955	1							IN
	2022	2400	CULG													
05	0000	0257	CULG				0014.5	0017	2							UNCLF
			CULG							0020	0022	1				UNCLF
	0449	0722	CULG													
	0735	1009	WEIS													
	1049	1520	WEIS													
	1203	2105	SGMR													
	1400	2330	BOUL													
	1401	2335	HARV													
	2023	2151	CULG													
	2244	2400	CULG													
06	0000	0722	CULG													
	0748	0930	WEIS													
	0948	1444	WEIS													
	1204	2105	SGMR													
	1400	2330	BOUL													
	1402	2335	HARV													
	2023	2400	CULG													
07	0000	0723	CULG													
	0745	1121	WEIS													
	1212	2105	SGMR													
	1400	2330	BOUL													
	1402	2335	HARV													
	2024	2400	CULG													
08	0000	0723	CULG													
	0750	1439	WEIS													
	1205	2105	SGMR													
	1400	2330	BOUL													
	1402	2335	HARV													
	2024	2400	CULG													
09	0000	0721	CULG													
	0759	1428	WEIS													
	1206	2105	SGMR													
	1400	2330	BOUL													
	1402	2335	HARV													
	2025	2400	CULG													
10	0000	0725	CULG							0011.5	0014	1				IIIG,U
			CULG							0106						IIIB,W
			CULG							0643	0644					IIIG,W
			CULG							0707	0708					IIIG,W
	0748	0953	WEIS													
	1207	2105	SGMR													
	1400	2330	BOUL													
	1401	2336	HARV													
	2049	2400	CULG													
11	0000	0720	CULG													
	1208	1850	SGMR													
	1400	2330	BOUL													
	1401	2336	HARV													
	2025	2400	CULG													
12	0000	0725	CULG													
	0828	1044	WEIS													
	1243	1501	WEIS													
	1400	2400	BOUL													
	1402	2336	HARV													
	1946	2105	SGMR													
	2025	2400	CULG													

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1973

DEC. 1973	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
13	0000	0725	CULG													
	0815	1456	WEIS													
	1210	2105	SGMR													
	1400	2400	BOUL													
	1401	2336	HARV													
	2027	2400	CULG													
14	0000	0724	CULG													
	0838	1326	WEIS													
	1211	2106	SGMR													
	1337	1453	WEIS													
	1402	2336	HARV													
	1400	2400	BOUL										1736.1	1736.8	1	III
	2027	2400	CULG													
15	0000	0726	CULG							0133.5	0135.5	1				IIIG,V
	1133	1322	WEIS													
	1211	2106	SGMR													
	1400	2400	BOUL													
	1416	2337	HARV													
	1426	1500	WEIS													
	2028	2400	CULG							2332.5		1				IIIB,U
16	0000	0727	CULG													
	0941	1017	WEIS													
	1020	1500	WEIS													
	1212	2106	SGMR													
	1416	2337	HARV							1551	1552	3	1551	1552	3	IIIB
	1400	2400	BOUL							1551.2	1552.1	1	1551.2	1552.1	1	III
	1416	2337	HARV							1656	1658	3	1656	1658	3	IIIG,U
			BOUL							1656.6	1657.8	1	1656.6	1657.8	1	IIIG
	2115	2400	CULG													
17	0000	0727	CULG							0256	0259.5	1				IIIG
	0754	0930	WEIS													
	1044	1605	WEIS							1140.5	1140.8	2				IIIG
	1213	2106	SGMR													
	1417	2337	HARV													
	2028	2400	CULG							2116	2118	1				IIIG,U
	1400	2400	BOUL							2126.4	2128.3	1	2126.4	2128.3	1	IIIG
18	0000	0728	CULG							0011	0012					IIIG,W
			CULG							0030	0031	1				IIIB
			CULG							0112	0114					IIIG,W
			CULG							0333	0334	1				IIIG,U
	0758	0802	WEIS													
	0805	1509	WEIS													
	1214	2107	SGMR													
	1400	2400	BOUL													
	1416	2337	HARV				1746	1748	2							I
	2029	2400	CULG							2320.5		1	2320.5		1	IIIB
			HARV				2322	2323	3							IIIG
19																
	0000	0728	CULG							0516	0517	1				IIIG
			CULG							0533.5	0535	2				IIIG,U
			CULG							0654	0656	2				IIIGG,V
			CULG							0656	0657.5	1				IIIG
	0752	1457	WEIS							0752.7	0752.8	1				IIIB
			WEIS							0843.2	0844.5	1				IIIG
			WEIS							0928.7	0928.7	1				III B
	1417	2338	HARV													
	1518	2400	BOUL													
	2030	2400	CULG													
20																
	0000	0728	CULG							0003	0006	1				IIIG
			CULG							0135	0136	1				IIIG
			CULG							0527	0529	1				IIIG,U
			CULG							0537	0538	1				IIIG,U
	0752	0930	WEIS													
	1315	1429	WEIS													
	1400	2400	BOUL													
	1416	2339	HARV													
	2030	2400	CULG													
21	0000	0730	CULG							0317.5						IIIG,W
			CULG				0407.5	0408	1	0407	0408	2				IIIG,U
			CULG							0419	0420	1				IIIG,U
			CULG							0448.5	0453	2				IIIGG
	0814	1113	WEIS													
	1137	1450	WEIS													
	1417	2339	HARV													
	1448	2108	SGMR													
	2030	2400	CULG							2039	2143					IS,W
			CULG							2043	2352					IIIN,W
	1400	2400	BOUL										2111.7	2112.2	1	III
			CULG							2112		1				IIIB,U
22	0000	0730	CULG							0306	0725					IIN W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1973

DEC. 1973	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
22	0000	0730	CULG							0419		1				IIIB,U
	0758	1452	WEIS													
	1215	2109	SGMR													
	1417	2339	HARV				1417	1454	1	1417	1453	1				IN
			HARV							1930	1931	3	1930	1931	3	IIIG
	1400	2400	BOUL							1930.5	1930.9	1	1930.5	1930.9	1	III
	2030	2400	CULG							2046	2400					IIIN,H
			CULG							2221	2222	2				IIIG
			BOUL							2221.6	2222.7	1	2221.6	2222.7	1	III
	1417	2339	HARV							2222	2223	1	2222		1	IIIG
23	0000	0731	CULG							0000	0725					IIN H
			CULG							0027		1				IIIG,U
			CULG				0407	0731	1							IS
			CULG							0442	0647					IS,H
			CULG							0534		1				IIIB
			CULG							0558.5	0559.5	2				IIIG,V
			CULG							0603	0604	2				IIIG,V
	0758	1454	WEIS													
	1416	2340	HARV							1416	1543	1				IN
			HARV							1450	1452	1				IIIGG
			HARV							1526	1528	3	1526	1527	3	IIIG
	1400	2400	BOUL							1526.3	1527.2	1	1526.3	1527.2	1	III
	1216	2109	SGMR										1526.4	1526.8	2	III
			HARV							1608	1610	2				IIIGG
			BOUL							1608.8	1609.9	1				III
			HARV							1726	1832	1				I
			HARV							1727	1728	1				IIIG
			BOUL							1727.0	1727.7	1				IIIG
			HARV				1741	1809	1							I
			BOUL							1816.8	1817.0	1	1816.8	1817.0	1	III
			BOUL							1822.9	1823.3	1	1822.9	1823.3	1	III
			HARV							1823	2025	2	1823	2025	2	IIIN
			HARV							1832	2102	1				IN
			BOUL							1913.3	1913.4	1				III
			BOUL							1917.9	1918.5	1	1917.9	1918.5	1	IIIG
			BOUL							1924.4	1925.9	1	1924.4	1925.9	1	IIIG
			BOUL										2003.0	2004.0	1	IIIG
	2020	2400	CULG				2030	2400	1	2030	2400	1				IS
			CULG							2030	2400	1				IIIN
			HARV							2102	2300	1				I
			HARV				2106	2320	1							IN
			BOUL							2218.9	2219.0	1	2218.9	2219.0	1	III
			BOUL							2222.3	2223.8	1	2222.3	2223.8	1	IIIG
			BOUL							2259.0	2259.5	1	2259.0	2259.5	1	IIIG
			HARV							2300	2337	1				IN
			HARV				2332	2334	3	2332	2334	3				IIIGG
			CULG				2332	2334	2	2332	2335	2	2333.5	2334	2	IIIGG,V
			CULG							2337		2				IIIB
			CULG							2340		2				IIIB
24	0000	0731	CULG				0000	0300		0000	0300					IS,H
			CULG							0000	0731					IIIN,H
			CULG				0020.5									IIIB,H
			CULG				0300	0440	2	0300	0610	2				IS
			CULG				0440	0731	1	0610	0731	1				IS
			CULG				0710	0710.5	2	0710	0710.5	2				IIIG,V
	0800	1024	WEIS							0902.9	0903.9	2				III G
	1028	1456	WEIS							1030.0	1423.0	2				I DC
			WEIS							1231.6	1232.5	1				III GG
	1300	2110	SGMR													
			WEIS							1337.3	1337.6	2				III G
	1417	2341	HARV							1417	1523	1				I
			HARV							1523	2123	1				IN
			HARV							1708	1829	1	1708	1829	1	IIIN
			HARV							1740	1743	3	1740	1743	3	IIIG
	1400	2400	BOUL							1740.6	1743.2	2	1740.6	1743.2	2	IIIG
			HARV				1742	1949	1							IN
			BOUL							1827.0	1829.4	1	1827.0	1829.4	1	IIIG
			HARV				1949	2336	2							I, DC
	2027	2400	CULG				2027	2400	1	2027	2200	1				IS
			CULG							2027	2400					IIIN,H
			CULG							2111.5	2112	2				IIIG
			BOUL							2111.9	2112.5	1	2111.9	2112.5	1	III
			HARV							2123	2340	1				I
			CULG				2127	2228								IIIN,H
			CULG				2133	2134	2	2133	2134	2				IIIG,U
			CULG							2200	2400	2				IS
			BOUL							2205.9	2206.0	1	2205.9	2206.0	1	III
			BOUL							2231.6	2243.1	1	2231.6	2243.1	1	IIIG
25	0000	0159	CULG				0000	0159	1	0000	0159	1				IS
			CULG							0000	0159					IIIN,H
			CULG							0134	0135	2				IIIG,V,U
			CULG							0137	0138	1				IIIG
	0220	0731	CULG				0220	0731	1	0220	0731	1				IS
			CULG							0220	0731					IIIN,H
			CULG							0238	0239	2				IIIG,U
			CULG							0314	0315	1				IIIG,U
			CULG							0535		1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1973

DEC. 1973	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
25	0220	0731	CULG							0713	0714	1				IIIG
	0803	1458	WEIS							1011.5	1012.0	2				III G
	1416	2342	HARV				1416	1518	1	1416	1534	1				I
			HARV				1528	1657	1	1534	1801	1				IN
	1400	2400	BOUL							1533.6	1747	1	1533.6	1747	1	CONT
			BOUL							1747	1950	2	1747	1950	2	CONT
			HARV							1801	1949	3	1808	1949	3	I
			HARV							1812	2036	2	1812	2036	2	IIIN
			HARV							1928	1929	3	1928	1929	3	IIIG
													1928.7	1928.9	1	III
	1217	2110	SGMR										1950	233.0		CONT
			BOUL													IN
			HARV				2015	2250	1	2017	2229	1				IIIN,W
	2033	2400	CULG							2033	2400					IS,W
			CULG				2033	2245		2033	2400					IIIG
			HARV							2212	2213	1	2212	2213	1	IIIG
			CULG							2212.5	2213.5	1				
26	0000	0732	CULG							0000	0732					IIIN,W
			CULG				0122	0732		0000	0732					IS,W
	0804	1406	WEIS										1329.6	1330.1	1	III
	1217	2111	SGMR										1339.5	1340.9	1	III
			SGMR							1719.8	1755.0	1				CONT
	1400	2400	BOUL													IN
	1417	2342	HARV				1825	2338	1	1902	1908	2	1902	1908	2	IIIGG
			HARV							1902.2	1904.2	1	1902.2	1904.2	1	IIIG
			BOUL										1902.9	1903.9	1	III
			SGMR							1913	1954	2	1913	1954	2	IIIN
			HARV							1913.0	1913.7	1	1913.0	1913.7	1	IIIG
			BOUL							1952.7	1954.0	1	1952.7	1954.0	1	IIIG
			BOUL							2034	2400					IIIN,W
	2034	2400	CULG							2154	2155	1				IIIG,U
			CULG							2154.1	2155.7	1	2154.1	2155.7	1	IIIG
			BOUL							2205	2206.5	1				IIIG
			CULG							2205.3	2207.2	1	2205.3	2207.2	1	IIIG
			BOUL							2223.8	2224.9	1	2223.8	2224.9	1	IIIG
			BOUL							2224	2225	2	2224	2224.5	1	IIIG,V
			CULG							2251.5	2251.6	1	2251.5	2251.6	1	IIIG
			BOUL							2308	2340	1				IN
			HARV													IIIG
			CULG				2308.5	2309	1							IS,W
			CULG				2313	2400		2034	2400					IIIG
			HARV							2334	2336	2				IIIG
			CULG				2334.5	2336	1	2334.5	2336	1				
27	0000	0638	CULG							0000	0735	1				IIIN
			CULG							0042	0042.5	1				IIIG
			CULG							0130		1				IIIB,U
			CULG				0312	0502.5								IIIN,W
			CULG				0400	0502.5		0000	0602					IS,W
			CULG							0404	0406	2				IIIG,V,U
			CULG							0441	0442	2				IIIG
			CULG							0444	0447	1				IIIGG
			CULG							0515	0515.5	1				IIIG,U
	0643	0733	CULG							0704		1				IIIB
			CULG							0718		1				IIIB
			CULG							0733		1				IIIB
	0739	1528	WEIS							0929.5	0930.0	1				III G
			WEIS							0941.5	0942.0	1				III G
			WEIS							1048.6	1050.8	1				III GG
			WEIS							1203.7	1207.0	1				III GG
	1417	2343	HARV							1421	1422	2				IIIG
			WEIS							1421.7	1422.4	1				III G
	1217	2112	SGMR										1422.0	1423.0	2	III
			HARV				1735	2253	1							IN
			HARV							1915	1916	3	1915	1916	3	IIIGG
	1430	2400	BOUL							1915.3	1916.1	2	1915.3	1916.1	2	IIIG
			SGMR										1915.3	1916.0	2	III
			BOUL										1947.2	1947.6	1	III
			BOUL							1951.7	1951.9	1	1951.7	1951.9	1	III
			HARV							1952	2239	2	1952	2155	2	IIIN
			BOUL										1956.8	1957.0	1	III
			BOUL										2001.0	2002.1	1	III
			BOUL							2004.0	2004.3	1				III
			BOUL							2004.9	2005.7	1	2004.3	2005.7	1	III
			HARV							2005	2009	3	2005	2009	3	IIIGG
			BOUL							2006.4	2009.1	2	2006.4	2009.1	2	IIIG
			SGMR										2007.4	2008.0	1	III
	2034	2400	CULG				2034	2253								IS,W
			CULG							2034	2400	1				IIIN
			BOUL							2046.6	2047.6	1				IIIG
			CULG							2047.5		1				IIIB
			CULG							2109.5	2112.5	2				IIIG,U
			BOUL							2109.6	2109.7	1				III
			BOUL							2111.1	2111.7	2	2111.1	2111.7	2	IIIG
			HARV							2149	2151	1				IIIG
			CULG							2149	2150.5	2				IIIG,U
			BOUL							2149.8	2227.4	1	2149.8	2227.4	1	IIIN
			CULG							2154	2155	2				IIIG
			CULG							2205	2228	2				IIIN,U
			CULG							2224.5	2225	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1973

DEC. 1973	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
27			CULG							2237	2239	2				IIIG
			CULG							2338	2341	1				IIIG,U
28	0000	0733	CULG													
			CULG							0615.5	0618					IIIG,W
			CULG							0711	0712					IIIG,W
	1218	2112	SGMR													
	0739	1529	WEIS							1236.3	1236.4	1				III B
	1417	2344	HARV													
	1430	2400	BOUL													
	2034	2400	CULG				2123	2130								IN,W
			CULG							2147	2226					IIIN,W
29	0000	0734	CULG				0150	0255								IN,W
			CULG							0417.5		2				IIIB
			CULG							0620	0620.5					IIIG,W
			CULG							0709.5	0710					IIIG,W
			CULG							0730	0731					IIIG,W
	0742	1009	WEIS													
	1014	1453	WEIS													
	1218	2112	SGMR													
	1417	2345	HARV													
	1430	2400	BOUL										1818.8	1819.4	1	III
	2034	2400	CULG													
30	1416	2346	HARV													
	0000	0735	CULG							0116						IIIB,W
	0758	1455	WEIS													
	1218	2114	SGMR													
	1430	2400	BOUL							2007.7	2008.4	1	2007.7	2008.4	1	III
	2035	2400	CULG													
31	0000	0735	CULG													
	1417	2346	HARV													
	0759	1456	WEIS													
	1218	2115	SGMR													
	1430	2400	BOUL													
	2035	2400	CULG													

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

SELECTED SOLAR EVENTS

DECEMBER 1973

Culgoora

UT Date 197.3 December	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
15	0133	0135	(43.25	1.6	120	-	3)	III G, V	
			(80	1.2	150	0	1)		
17	0256	0259	(43.25	1.6	130	-	3)	III G	*
			(80	1.1	130	0	2)		
			(160	1.0	130	0	2)		
21	0449	0453	(43.25	0.4	270	-	2)	III GG	*
			(80	0.3	270	0	1)		
			(160	0.2	270	0	1)		
27	0403	0406	(43.25	2.0	280	-	3)	III G, V	*
			(80	1.3	260	0	3)		
			(160	1.2	260	0	2)		

Days without Heliograph observations: None

* Other type III observed at same position during day.

COSMIC RAY INDICES

(Neutron Monitors)

DECEMBER 1973

Dec. 1973	THULE DAILY AVERAGE COUNTS PER HOUR	CALGARY DAILY AVERAGE COUNTS PER HOUR	SULPHUR MT. DAILY AVERAGE COUNTS PER HOUR	DALLAS DAILY AVERAGE COUNTS PER HOUR	KIEL DAILY AVERAGE COUNTS PER HOUR	TOKYO DAILY AVERAGE COUNTS PER HOUR
1	4606.3	11995.8	8924.9	6368.5	6366.2	3559.4
2	4615.7	11971.0	8864.0	6350.6	6341.9	3558.3
3	4612.8	12005.2	8980.2	6364.5	6343.9	3568.8
4	4622.6	11991.2	8934.0	6405.4	6376.0	3582.7
5	4581.0	11962.9	8918.1	6394.5	6366.7	3575.3
6	4596.9	11937.9	8927.8	6384.9	6385.4	3571.2
7	4579.0	11913.0	8929.3	6371.0	6377.3	3562.3
8	4589.4	11988.8	8910.9	6370.5	6335.7	3565.6
9	4601.8	12025.8	8918.8	6384.2	6297.7	3577.7
10	4617.3	12009.2	8944.1	6394.5	6300.8	3576.5
11	4620.3	12051.0	8999.8	6392.7	6337.9	3568.8
12	4587.7	12048.2	8990.2	6378.5	6377.5	3567.4
13	4579.8	12048.9	8999.2	6385.0	6397.9	3564.7
14	4602.5	12087.9	9009.8	6374.1	6417.9	3564.2
15	4591.0	12016.2	8973.8	6385.6	6370.3	3559.0
16	4589.9	11979.8	8981.9	6383.8	6370.0	3563.6
17	4583.0	12041.1	9014.4	6384.3	6397.2	3573.0
18	4586.7	12108.4	9030.6	6395.7	6398.3	3579.7
19	4621.6	12128.1	9059.7	6412.2	6405.2	3571.5
20	4636.4	12082.3	9063.2	6422.3	6419.6	3573.3
21	4601.0	12002.6	8986.0	6388.8	6398.7	3562.8
22	4570.0	11970.8	8948.6	6352.6	6364.4	3550.1
23	4574.2	11994.2	8944.3	6345.4	6340.4	3546.6(18)
24	4609.8	12050.0	8981.8	6382.3	6353.9	3558.3(20)
25	4617.8	12032.3	8994.6	6377.0	6365.0	3561.3(23)
26	4630.6	12094.8	9019.8	6380.1	6355.3	3563.4(23)
27	4637.8	12141.7	9088.7(22)	6390.0	6351.4	3569.9
28	4624.0	12093.1	-- (0)	6359.2	6339.7	3563.1
29	4584.0	12013.3	-- (0)	6320.5	6299.8	3550.6
30	4570.4	11992.9	-- (0)	6326.5	6305.2	3544.9
31	4540.8	12001.5	8912.5(1)	6329.5	6286.4	3549.8

( ) Number of hours for which data are available if less than 24.

Thule, Alert, Calgary, Sulphur Mountain and Kiel Scaling Factors = 100.
Deep River Scaling Factor = 300.
Dallas " " = 120.
Tokyo " " = 128.

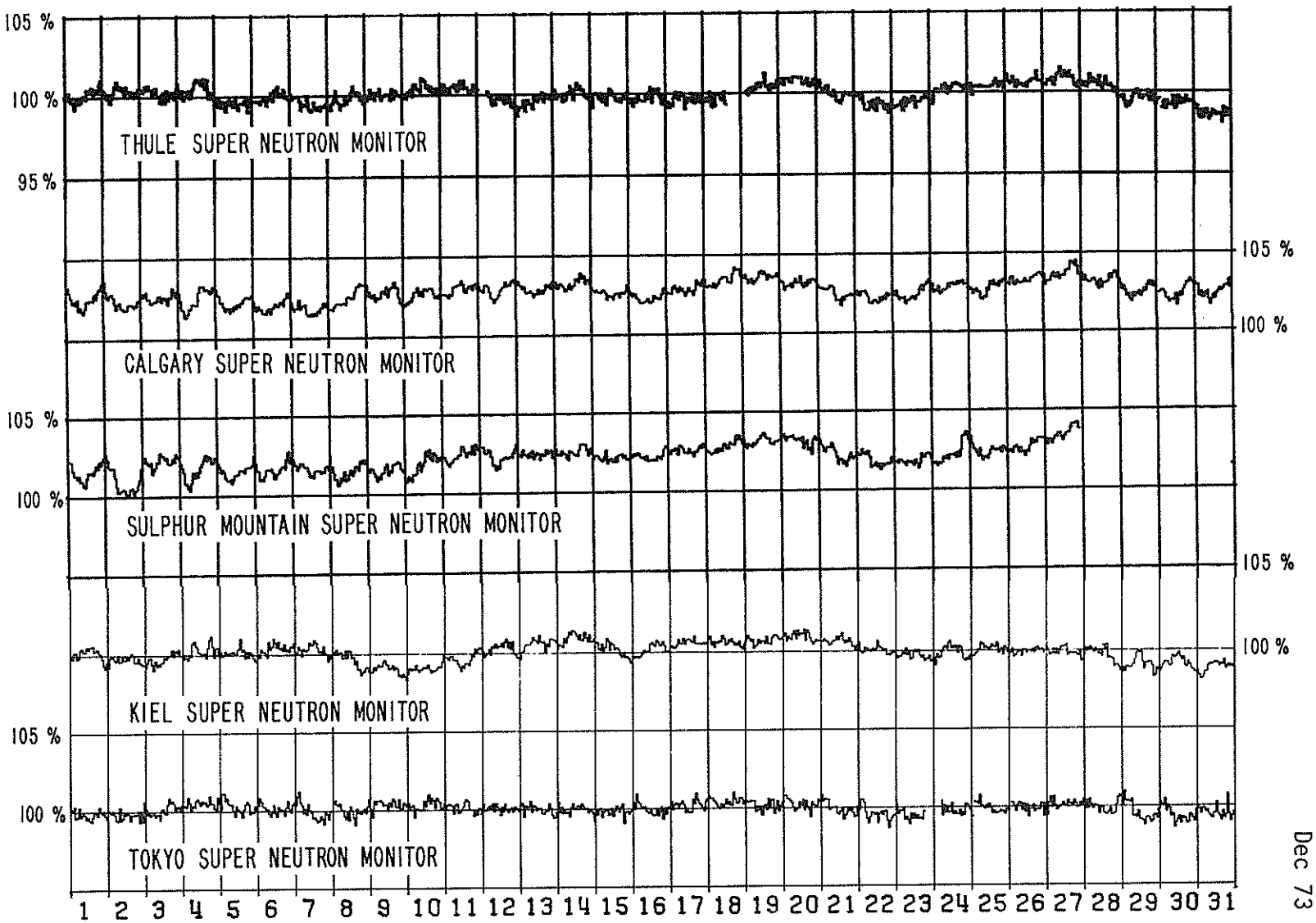
See "Descriptive Text" for other characteristics.

Note: Data from Deep River and Alert not received in time for publication.

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

DECEMBER 1973



GEOMAGNETIC ACTIVITY INDICES

DECEMBER 1973

DAY		K_p THREE-HOUR RANGE INDICES 1	2	3	4	5	6	7	8	SUM	C_i	C_p	A_p
1	QQ	2+	1	1-	1+	0+	0	1-	1-	7	0.1	0.1	4
2	QQ	1+	0+	1-	1	0+	0	0	1-	4+	0.0	0.0	2
3	Q	1+	0+	1-	1	0+	2-	2	2+	10-	0.3	0.2	5
4	D	4-	3+	3	3+	3-	4	5-	6	31-	1.4	1.3	29
5		5	3	3	2-	1-	3+	3-	4-	23	1.0	0.9	17
6		4-	2+	3	1-	2	1+	1+	3+	18-	0.5	0.6	10
7		3+	2+	1	1	2	1+	2-	2+	15	0.4	0.4	8
8		2+	2+	1	2-	2+	1+	1-	2+	14	0.3	0.3	7
9	D	2+	3	3	4	4+	4+	3+	4-	28	1.1	1.1	21
10		3-	3+	2-	2-	0+	0+	0+	3-	13	0.2	0.4	8
11		4-	2+	1+	2-	2	2	2-	1	16-	0.5	0.4	8
12	Q	1+	1	1	1-	1	2-	2-	1-	9	0.1	0.2	4
13	Q	1+	2+	1+	1	0	1-	2-	1	9+	0.1	0.2	4
14		0+	0+	0+	0+	2	2+	2+	3	11	0.3	0.3	6
15		3-	2+	2+	2+	3-	1-	1-	1+	15	0.4	0.4	8
16	QQ	2	1	1-	1-	1-	1-	1-	1-	7	0.1	0.1	4
17		1	3-	2-	1	1-	1	1+	2+	12-	0.2	0.3	6
18	QQ	1+	0	0	1-	0	1	1	0+	5	0.0	0.0	3
19		0+	1-	1+	2	3-	4+	4	3+	19-	0.9	0.8	13
20	D	3	4+	4+	4-	4-	4	5+	4	32+	1.4	1.3	29
21	D	4-	4	5	4-	5	5	4+	4	35-	1.5	1.4	34
22	D	5	4-	4-	3+	4+	3+	3+	4-	30+	1.2	1.2	25
23		4	4	3-	3+	2+	3+	3+	3-	26-	0.9	1.0	18
24	Q	2+	2-	1	2	0+	0+	0+	0+	8+	0.1	0.1	4
25	QQ	0+	1-	0+	0	1+	2-	1-	1+	6+	0.1	0.1	3
26	Q	1	1	1-	2-	1	1+	1+	1-	9-	0.1	0.1	4
27		1+	0+	1+	1+	1	1+	2+	3	12	0.4	0.3	6
28		3	3	2+	1	1+	2	3+	3+	19+	0.7	0.7	11
29		4-	4-	3-	3+	3	3	4-	4	27	1.0	1.0	19
30		3+	3+	3	3+	3-	3-	3	2+	24-	0.9	0.8	15
31		3	4	4-	3-	3-	3+	3	3+	26-	0.8	0.9	17
										MEAN	0.55	0.55	11

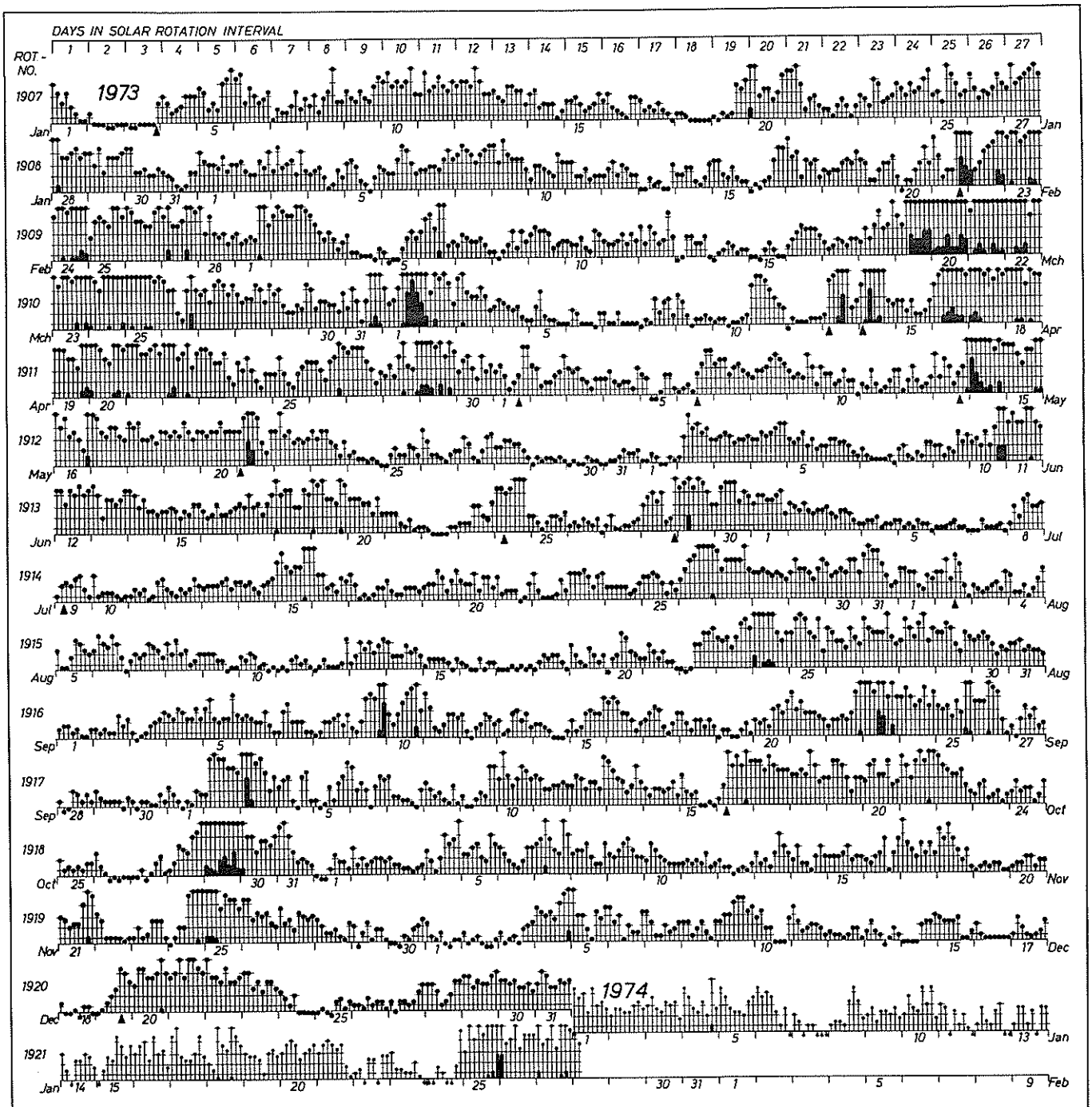
GEOMAGNETIC ACTIVITY INDICES

See next page for Kp chart for the year 1973.

DAILY AVERAGE INDICES Ap

1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	11	17	22	91	17	3	19	12	5	5	4	4
2	2	14	40	54	12	20	11	16	6	31	7	2
3	2	16	14	26	9	14	7	7	6	48	5	5
4	11	7	4	9	8	19	4	8	12	12	18	29
5	21	9	6	7	5	10	4	9	15	10	14	17
6	20	15	28	4	13	8	3	13	9	12	9	10
7	8	14	8	4	16	4	3	8	8	6	28	8
8	15	25	7	8	17	6	13	9	8	6	11	7
9	16	21	11	7	12	9	8	5	44	10	12	21
10	28	11	8	4	7	33	6	4	27	21	8	8
11	24	8	8	24	6	34	6	4	12	11	6	8
12	25	9	14	3	7	30	6	5	7	15	4	4
13	16	4	5	46	20	24	8	10	8	17	10	4
14	8	7	4	57	80	18	8	8	4	7	8	6
15	9	8	3	9	37	13	32	4	12	6	8	8
16	8	10	12	60	32	11	15	3	14	30	10	4
17	5	16	6	51	27	18	6	2	10	27	17	6
18	3	11	20	46	22	30	6	4	7	22	19	3
19	10	10	82	42	21	38	10	6	3	20	4	13
20	29	9	80	46	23	18	9	9	12	20	6	29
21	22	49	58	42	46	6	5	6	15	37	23	34
22	5	46	53	44	20	3	6	12	17	20	7	25
23	13	48	50	25	15	10	14	22	63	6	8	18
24	22	54	49	14	4	34	6	46	28	7	26	4
25	20	31	50	14	6	6	9	29	27	5	42	3
26	20	34	32	28	8	4	36	18	25	3	18	4
27	33	44	28	26	10	4	29	26	8	4	14	6
28	33	20	22	26	8	21	14	28	4	20	6	11
29	22		16	59	3	41	18	20	4	86	5	19
30	15		15	18	3	29	19	13	4	28	4	15
31	6		33		4		26	9		19		17
MEAN	16	20	25	30	17	17	12	12	14	18	12	11



PLANETARY MAGNETIC
THREE-HOUR-RANGE INDICES
Kp 1973

(preliminary indices to 1974 January 28)

R9	Rot.-No.	1st day	C9	
876 886 578	19	J17	3 2 2 2 . . . 32 252 33	32 32
787 888 777	70	F13	32 32 . . . . 3 . 22 454 443 678 7 . .	2 . . .
645 787 777		M12	2 . . . . . 454 47 . 33 252	35 . 2 . .
887 556 677	1870	A 8	35 . 2 . . . 4 655 577 444 33 . 253 23 .	3 . . . .
768 888 777	71	M5	3 . . . . . 4 33 3 . . 32 . 2 . . . 47 33 .	623 2 . .
644 788 667	72	J 1	623 2 . . 23 . . . . 223 236 254 . . . 36	2 . . 335
788 765 477	73	J 28	2 . . 335 644 . 376 34 32 . . 2 . . . 6 326	854 . 72
886 555 677	74	J 25	854 . 72 4 . . . . . 236 522 2 . . 258 64 .	. . 2 . 24
777 777 755	75	A21	. . 2 . 24 332 . 35 543 2 . . 2 . . . 6 532	235 453
577 654 555	76	S17	235 453 . . 2 . 5 . . 23 246 2 442	2 . 6663
665 677 655	77	O14	2 . 6663 . . 5 64 . . . 4 32 . . . 2 . 23 722	452 2 . .
678 765 666	78	N10	452 2 . . . . 54 . 6 553 322 2 22	25 . . .
676 566 555	1879	D 7	25 . . . . . 74 . . . 22 . . 24 . . 2 533 . . 5	642 . . .
556 657 777	19	J 3	642 . . . . 2 . . 2 22 . 436 32 . 32 . 664	644 2 . .
665 455 677	71	J30	644 2 . . . . 332 . . . 466 432 2 . . 437	63 . . . 2
665 345 544		F26	63 . . . 2 4 . . . 4 . 4 . 5 665 42 . 43 . . . 4	342 . . 2
444 444 777	1883	M25	342 . . 2 63 . 463 4 . . 766 326 664 232 .	543 . . .
544 355 555	84	A21	543 . . . 252 2 . 4 222 764 33 . . 4 3 . 7	62 . . . 3
432 444 322	85	M18	62 . . . 3 2 . 2 . . . 5 . 5 662 . . . 2 2	. . . 3 . .
233 467 654	86	J 14	. . . 3 . . . . . 2 . 6 3 . 2 533 4 . 2 . 2 . .	. 22 22 .
456 775 553	87	J 11	. 22 22 . . . 2 . 52 2 . . 42 . . 22 . 4 . . 4 .	. 32 343
454 467 522	88	A 7	. 32 343 . . . 234 . . 2 232 . 3 . . . . 63 .	. 24 353
352 355 534	89	S 3	. 24 353 2 . . 242 233 724 . . . . 65 62 .	555 534
543 332 456	1890	S 30	555 534 545 623 242 2 . . . . . 2 . 3 . .	. 464 . .
555 543 235	91	O 27	. 464 . . . . . 2 2 . . 42 . . . . . 2 . . 36	767 523
676 456 667	92	N 23	767 523 . . . . 32 . . . 2 . . 24 . . 2 753	. 353 . .
665 444 423	1893	D 20	. 35 3 . . 3 . . 442 22 . 3 . . . . . 4 . . . 5	655 325
457 664 344	19	J 16	655 325 663 454 542 . 24 22 . . 2 . . 3 .	. 54 325
578 866 655	72	F12	. 54 325 343 2 . . 64 . . . 234 2 . 673 3	. . . . .
567 775 333		M10	. . . . . 543 . . . 225 235 356 443 . 44	22 . . . .
555 556 642	1897	A 6	22 . . . 332 . . . 522 532 . . . 557 455	2 . . 2 . .
356 777 544	98	M 3	2 . . 2 . . 422 22 . 652 2 . . . 2 . . . 2 52	43 . . 34
677 546 666	99	M 30	43 . . 34 3 . 2 . . . . . 232 785 2 . 3 34 .	243 3 . .
556 655 545	1900	J 26	243 3 . . 22 . . . 3 2 . 2 . . . . 2 2 . 2 . . 2	246 42 .
567 665 344	01	J 23	246 42 . . . . 3 . . 887 527 54 . . 22 . . 3	444 2 . .
466 875 543	02	A19	444 2 . . . 56 22 . . . . . 3 . 2 243 . 77 .	656 4 . .
435 555 543	03	S15	656 4 . . . 4 4 . 2 22 6 2 . . . . . 2 . . . 5	556 23 .
223 577 642	04	O12	556 23 . 364 445 3 . 2 235 568 74 . . 22	12 . 2 . .
132 355 432	05	N 8	12 . 2 . . . 46 323 624 3 . 2 433 2	. . 2 . . .
235 544 433	1906	O 5	. . 2 . . . . 2 6 266 322 . . 4 63 453	3 . . 355
455 422 442	19	J 1	3 . . 355 244 666 422 2 . . 365 . 35 556	654 . 44
. . 2 346 422	73	J28	654 . 44 422 446 532 2 . . 234 332 777	766 755
333 345 532		F24	766 755 64 . . 62 232 24 . . . 3 . 57 777	777 665
334 565 432	1910	M23	777 665 446 876 2 . . . 2 . . 5 . 772 777	777 764
355 435 42 .	11	A19	777 764 466 675 432 2 . 4 443 . . 2 576	665 567
334 42 . . 23	12	M16	665 557 54 . . 22 2 . . . . 5 453 2 . . 2 66	655 335
433 543 223	13	J12	655 335 665 . . 2 6 . . . 576 53 2 3	2 . . . 22
2 . 2 2 . . . 22	14	J 9	2 . . . 22 64 . . 32 . . 4 . 2 6645 563 4 . 2	232 2 . .
33 235	15	A 5	232 2 . . . 3 2 . . . . . 2 . 3 576 566 542	. . . 342
775 3 . 2 246	16	S 1	. . . 342 227 632 2 . 3 42 . . 34 476 662	 67
553 3 . . 2 . 3	17	S28	. . . . 67 333 . . 2 534 42 . 665 556 5 . 2	. . . 576
453 2	18	O25	. . . 576 5 . 2 . 54 . 263 32 . . 32 234 5 . .	5 . 2 675
334 3 2	19	N21	5 . 2 675 4 . . . . . 64 32 . 522 . . . 2 . .	. 46665
444 .	1920	D18	. 46665 . . . . 35 44 . 5 345 44 . 324 . . 2	245 563
	21	J14	245 563 54 . . 777 preliminary	
	22	F10		

Symbol	.	1	2	3	4	5	6	7	8	9
$\bar{R}$ =	0	1-15	16-30	31-45	46-60	61-80	81-100	101-130	131-170	171...
R9,C9 =	0	1	2	3	4	5	6	7	8	9
Cp =	0.0-0.1	0.2-0.3	0.4-0.5	0.6-0.7	0.8-0.9	1.0-1.1	1.2-1.4	1.5-1.8	1.9	2.0-2.5

DAILY GEOMAGNETIC CHARACTER FIGURES C9 AND 3-DAY MEAN SUNSPOT NUMBERS R9

For explanation and previous years see J. Bartels, Abhandlungen der Akademie der Wissenschaften zu Göttingen, Beiträge zum I.G.J., Heft 3 (1958) (may be requested from Institut für Geophysik, Postfach 876, 34 Göttingen, Germany).

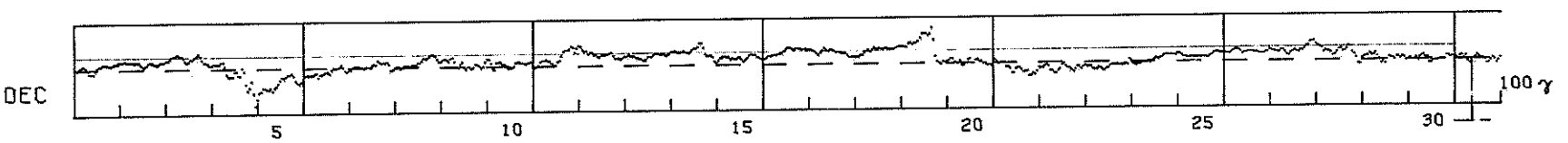
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

DECEMBER 1973

NASA/GODDARD SPACE FLIGHT CENTER

(Time-UT)

DAY	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	0	1	3	5	5	3	-1	-7	-6	-6	-1	3	5	6	8	8	8	6	5	7	9	9	11	12
2	12	13	12	12	11	11	10	11	12	10	7	4	5	7	10	11	11	8	8	8	10	11	11	13
3	14	16	19	20	21	23	21	20	18	12	10	12	15	15	18	21	24	20	14	10	9	8	5	5
4	7	6	7	6	10	10	3	-9	-13	-12	-12	-5	-4	-11	-12	1	-5	-25	-35	-30	-20	-39	-59	-48
5	-38	-36	-31	-31	-33	-34	-31	-36	-30	-27	-23	-18	-14	-15	-13	-10	-10	-8	-12	-20	-23	-25	-22	-16
6	-12	-11	-11	-11	-12	-9	-8	-15	-10	-9	-8	-6	-6	-9	-3	0	0	0	1	4	0	-5	-7	-4
7	-3	0	2	2	2	0	-1	-2	1	1	1	4	6	4	11	9	7	8	8	9	5	-5	-3	-1
8	2	1	-2	0	3	2	3	1	4	3	3	7	6	10	14	14	15	17	20	20	17	12	8	9
9	11	13	11	8	13	15	8	-1	0	4	8	0	-4	0	0	-3	-1	4	3	1	-2	0	8	12
10	12	5	-3	-5	6	7	7	4	3	1	-3	-3	-2	0	6	7	7	5	4	4	4	6	7	3
11	-4	-2	1	7	9	9	10	8	7	4	1	2	7	9	16	23	25	25	27	31	29	21	28	32
12	30	25	23	23	18	21	21	16	18	14	14	16	17	17	18	20	21	15	11	11	11	9	11	14
13	14	16	15	14	15	12	12	10	9	7	9	13	14	14	16	18	19	17	17	18	16	15	17	21
14	21	23	21	20	20	21	22	20	19	20	23	26	26	28	34	34	27	16	14	14	15	12	5	3
15	7	11	13	12	13	12	9	10	9	8	11	11	9	4	7	10	15	16	15	15	12	10	9	8
16	9	10	13	12	14	15	15	16	16	17	21	24	26	26	24	22	24	25	24	23	23	23	22	23
17	22	21	19	16	14	17	21	25	22	20	22	23	21	18	19	17	17	16	16	14	10	10	11	12
18	10	11	13	14	17	20	22	19	22	25	23	24	23	22	23	25	23	23	23	23	24	26	27	27
19	27	26	26	32	33	30	33	33	35	40	47	47	47	44	46	56	37	10	2	0	-2	2	1	3
20	4	7	6	0	1	-1	3	-4	-3	0	5	7	-1	0	4	6	3	2	-1	0	-4	-3	-4	4
21	5	1	-2	0	1	0	-7	-6	-10	-17	-17	-10	-8	-8	-11	-15	-14	-13	-21	-20	-17	-19	-14	-8
22	-8	-8	-5	-4	-6	-14	-14	-17	-17	-13	-10	-4	-2	-7	-9	-9	-12	-15	-11	-7	-7	-11	-8	-5
23	-7	-7	-7	-11	-12	-11	-9	-10	-12	-14	-11	-9	-6	-4	-4	-5	-3	-5	-4	-3	-4	-4	4	2
24	-3	-5	-4	-4	-3	-2	-1	-1	1	-2	1	4	6	4	6	7	10	11	11	11	11	10	10	13
25	12	10	8	7	6	5	7	7	7	6	6	7	6	7	7	5	8	10	13	15	15	13	12	12
26	13	12	11	14	16	18	18	17	15	11	13	14	15	15	14	13	14	12	11	11	11	14	14	18
27	16	15	14	13	14	17	17	13	9	8	12	14	16	14	14	16	16	19	23	24	29	30	31	25
28	23	21	19	12	15	14	13	11	7	9	13	17	18	14	15	18	22	21	12	9	3	-6	-7	3
29	5	6	7	10	8	8	11	5	0	-6	-3	-7	0	4	3	2	0	5	4	2	5	3	-2	0
30	2	-1	0	3	-2	3	6	7	3	3	-6	-5	-3	-2	-2	-1	0	0	0	6	6	3	4	3
31	2	0	4	6	1	5	-4	-7	0	0	3	6	3	0	1	-2	-8	-6	-2	1	-1	-7	-3	1



Note: The zero level drift due to the secular change does not appear to have been adequately compensated for in deriving the provisional Dst values toward the end of 1973. The thin line in the plots shows a crudely estimated zero level, which is 21 gamma above the reference level used in the tabulation and the plots. For a more reliable zero level, see the final Dst to be published shortly.

PRINCIPAL MAGNETIC STORMS

DECEMBER 1973

OBS. 2 letter IAGA code	GEOMAG-NETIC LATITUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY (3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
NE	55.1N	3	2325	SC	1	4	--	04(8)	5	20	121	96	05	09
AL	9.5N	3	15--	..	...	...	...	04(6,7,8)	5	4	129	20	05	09
HY	7.6N	3	1530	..	...	...	...	04(6,7,8)	5	4	130	11	05	07
AN	1.4N	3	15--	..	...	...	...	--	-	4	131	42	05	09
TV	1.2S	3	15--	..	...	...	...	--	-	4	141	91	05	09
GN	43.3S	3	15--	..	...	...	...	04(8)	6	23	90	100	05	10
TO	46.7S	3	21--	..	...	...	...	04(8)	6	18	130	50	05	15
CO	64.6N	4	06--	..	...	...	...	04(6,7)	6	159	970	470	05	10
SI	60.0N	4	06--	..	...	...	...	04(8)	5	45	270	240	05	09
WI	54.2N	4	16--	..	...	...	...	04(8)	6	45	140	85	05	04
FR	49.6N	4	15--	..	...	...	...	04(8)	5	34	110	54	05	09
BD	49.0N	4	16--	..	...	...	...	05(1)	5	22	125	58	05	12
IR	41.0N	4	07--	..	...	...	...	04(8)	6	16	72	23	05	09
TU	40.4N	4	15--	..	...	...	...	04(8)	6	19	140	25	05	12
SJ	29.9N	4	1520	...	...	...	...	04(8)	6	7	139	27	05	03
HR	33.3S	4	15--	..	...	...	...	04(7)	6	26	90	112	05	03
KG	56.5S	4	15--	..	...	...	...	04(8)	7	--	--	--	05	06
SI	60.0N	8	10--	..	...	...	...	09(5)	5	30	250	210	10	07
HY	7.6N	8	0830	..	...	...	...	09(6)	5	3	84	12	10	03
CO	64.6N	9	04--	..	...	...	...	09(4,5)	6	157	1080	730	09	20
IR	41.0N	9	03--	..	...	...	...	09(6)	6	21	105	26	09	23
PM	18.6S	9	04--	..	...	...	...	09(5)	5	6	65	35	10	10
GN	43.3S	9	03--	..	...	...	...	09(5,6)	5	10	60	80	09	18
KG	56.5S	9	06--	..	...	...	...	09(5)	5	--	--	--	10	02
HY	7.6N	14	1230	..	...	...	...	14(6)	4	2	60	11	15	16
CO	64.6N	19	07--	..	...	...	...	22(5)	7	173	1650	780	22	22
SI	60.0N	19	1645	SC *	+ 6.5	+ 13.7	- 7.3	21(3)	6	60	540	390	23	11
NE	55.1N	19	1326	SC	3	4	---	21(3)	6	39	117	108	24	01
WI	54.2N	19	1644	SC	- 4	- 25	0	20(7) 21(6)	6	45	190	55	23	05
BD	49.0N	19	08--	..	...	...	...	21(3)	5	31	110	43	24	02
IR	41.0N	19	12--	..	...	...	...	20(7)	6	24	75	32	21	03
TU	40.4N	19	14--	..	...	...	...	19(6) 20(3,7) 21(3,5,6) 22(1)	5	16	115	20	22	17
SJ	29.9N	19	1326	..	...	...	...	19(6)	6	9	112	21	22	09
SJ	29.9N	19	1642	SC	- 0.5	- 17	- 04	(Impluse within above storm)						
AL	9.5N	19	04--	..	...	...	...	19(6) 20(7) 21(5,6)	5	4	124	27	23	03
HY	7.6N	19	0230	..	...	...	...	19(6)	5	2	87	8	19	23
AN	1.4N	19	04--	..	...	...	...	--	-	4	131	51	23	03
TV	1.2S	19	04--	..	...	...	...	--	-	4	150	101	23	03
PM	18.6S	19	05--	..	...	...	...	19(6) 21(5)	5	9	90	50	22	22
HR	33.3S	19	13--	..	...	...	...	19(6)	6	22	97	115	23	02
GN	43.3S	19	03--	..	...	...	...	21(6)	6	16	90	100	24	01
TO	46.7S	19	03--	..	...	...	...	21(6)	6	18	130	50	24	01
KG	56.5S	19	08--	..	...	...	...	21(6)	6	--	--	--	24	01
HY	7.6N	20	0640	..	...	...	...	20(7) 21(5,6)	5	4	105	17	22	20
IR	41.0N	21	05--	..	...	...	...	21(5)	6	26	93	23	22	21
WI	54.2N	28	17--	..	...	...	...	28(7) 29(1,7,8)	5	15	120	30	30	03
HY	7.6N	28	1400	..	...	...	...	28(7) 29(6,7)	4	3	63	8	30	02
KG	56.5S	28	17--	..	...	...	...	29(7)	5	--	--	--	30	14
HY	7.6N	30	0445	SC	- 0.1	+ 10	- 1	30(7) 31(6)	4	2	52	16	31	22

Reports were received from the following observatories:

College, Witteveen, Fredericksburg, Irkutsk, San Juan, Hyderabad, Annamalainagar, Apia, Hermanus, Port-aux-Francais
Sitka, Newport, Boulder, Tucson, Alibag, Toolangi, Trivandrum, Port Moresby, Gnangara

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

DECEMBER 1973

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

The meaning of the station symbols is given in the IAGA-Bulletins nr. 12 and 32. Times of ssc, si and bay-commencements are mean values. If given by ten or more stations they are underlined.

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

None

Sudden impulses found in the magnetograms (si)

19 1644 A: FU LG HU; B: TL; C: CF EB (ssc: A: SI MA; B: WN HB LM - bp: C: KG)

Rapid variations in form of bays (b, bs, bp, bps)

04 0215 bs: A: KS - bp: A: CF SZ; B: MA FU IK EB TL; C: HB - bps: A: LG

16 0020 bp: A: LG; B: MA IK EB CI PE; C: WN CF TL - bps: C: SZ

23 1747 bs: A: LG KS; C: NI - bp: A: MA FU CF; B: WN EB TL LM - bps: A: IK; B: HB

29 1943 b: A: CF EB PE; B: WN - bs: A: LG - bp: A: TL; B: NI MA IK LM KG - bps: B: HB

Giant pulsations (pg)

09 1150 - 1318 WN MA (300s 38) MAA FUA EB TL
- .... CF
16 2208 - 2254 MA
19 1645 - 1704 FUA

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

07 1402 - 1424 SZ (si: A: LG)
17 1106 - 1121 SZ
18 1106 - 1117 SZ
18 1146 - 1203 SZ
29 1002 - 1011 SZ
30 0830 - 0842 SZ

RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

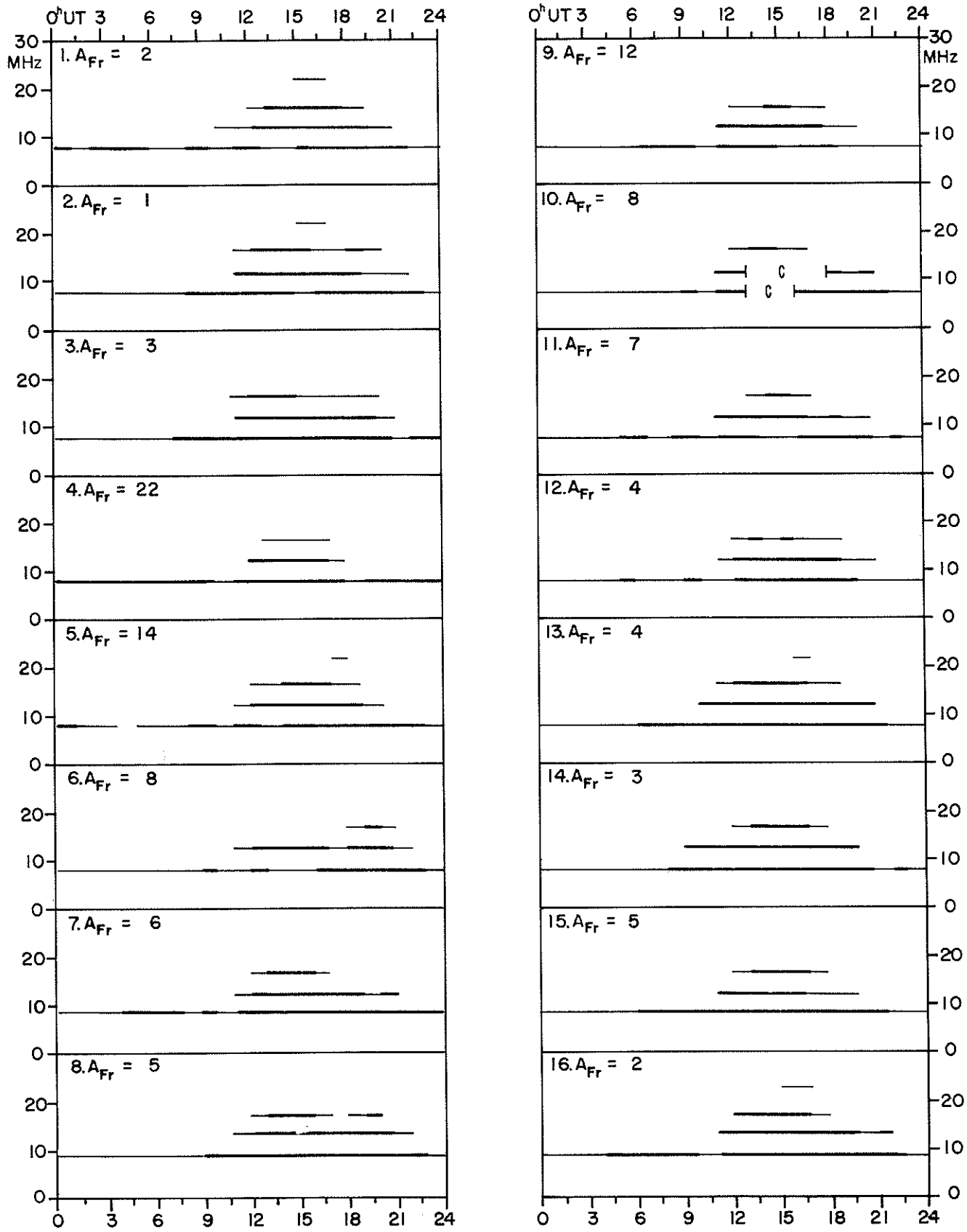
DECEMBER 1973

North Atlantic

DEC. 1973	WHOLE DAY INDICES NORTH ATLANTIC	ADVANCE FORECASTS (JC-REPORTS) FOR WHOLE DAY	NORTH ATLANTIC 6-HOURLY QUALITY FIGURES 00 TO 06	06 TO 12	12 TO 18	18 TO 24	SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF 02	08	14	20	GEOMAGNETIC INDICES K_{FR} HALF DAY (1)	(2)	A_{FR} OBSERVED
01	6+	7	6−	6+	6+	7−	6	6	6	5	1	0	2
02	6+	6	6−	6o	7o	6+	6	6	6	6	1	0	1
03	6+	5	6o	6−	7−	6+	6	6	6	6	1	1	3
04	6o	5	6+	6−	6+	6+	6	6	5	5	3	(4)	22
05	5+	5	5−	5−	6o	6o	4	4	5	6	3	2	14
06	5o	6	4+	4+	6−	6−	6	5	6	6	2	2	8
07	6−	6	6−	6−	6o	6o	5	5	6	6	2	2	6
08	6+	6	6+	7−	6+	6+	6	6	6	5	2	1	5
09	6−	7	6o	5+	6+	6−	6	6	5	5	2	3	12
10	6o	7	5o	6−	7o	6o	5	5	6	6	2	1	8
11	6−	7	5o	5+	6+	6o	6	6	6	6	2	1	7
12	6o	6	6−	5+	7−	7−	5	5	6	6	1	1	4
13	6o	6	6o	6−	7o	6o	6	6	6	6	2	1	4
14	6o	6	6o	6−	7o	6−	5	5	6	6	0	2	3
15	6−	6	5+	6−	6−	6−	5	5	5	5	2	1	5
16	6+	6	6o	6o	6+	6+	6	6	6	6	1	1	2
17	6o	6	6o	5−	7−	7−	6	6	6	6	2	1	4
18	6+	6	6+	6+	7−	6+	6	6	6	6	0	0	0
19	6+	6	6+	6o	7−	6−	6	6	6	6	1	3	8
20	6−	6	5+	5−	7−	6−	5	4	4	5	(4)	3	20
21	6−	5	6+	4+	6o	6−	4	4	4	4	(4)	(4)	25
22	5−	4	4+	4+	6−	5o	4	4	4	5	(4)	3	19
23	5o	4	4o	5+	6o	5o	5	5	5	5	(4)	2	17
24	6−	5	5o	5+	6+	6o	5	5	5	6	2	0	3
25	6+	6	6−	6o	7o	6+	6	6	6	6	1	1	2
26	6+	6	6−	6o	6+	6+	6	6	6	6	2	1	4
27	6+	6	6+	6+	6+	6o	6	5	6	6	2	2	6
28	6+	6	6o	6o	6+	6+	6	5	6	6	2	2	9
29	7−	6	6+	6o	7−	7−	6	6	5	5	3	3	15
30	6−	6	6−	5+	6+	6−	5	5	5	5	3	2	13
31	6−	5	5+	5−	6o	6o	5	5	5	5	3	3	13

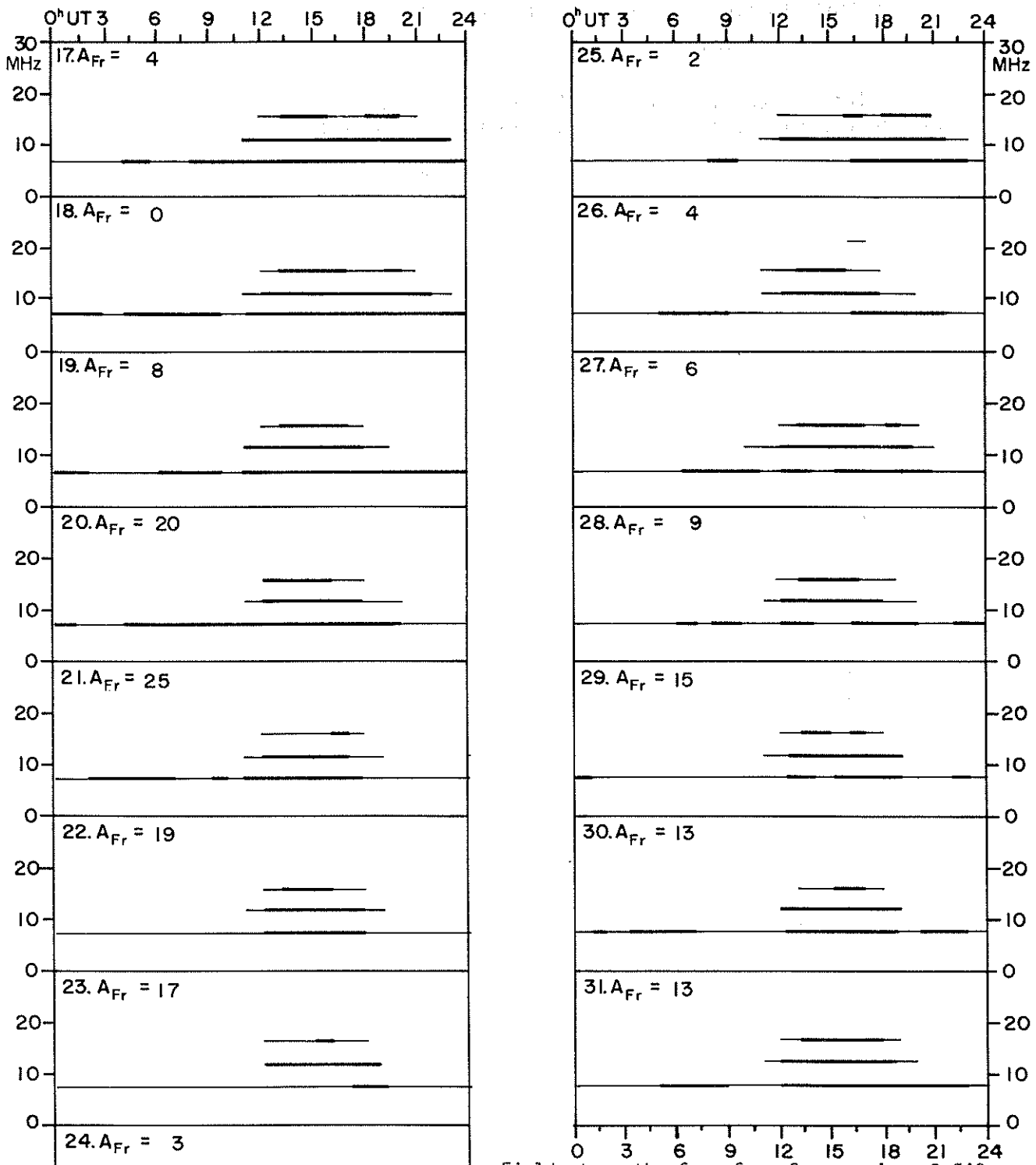
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1973



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1973



Field strengths from four frequencies, 8.542, 12.813, 17.084 and 22.378 MHz, as observed on a Lüchow.- Halifax circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line. Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

DECEMBER 1973

Calculated from the records of four frequencies
on the circuit Lüchow - Halifax (Germany - Canada)

Date	Day	Night	D+N
1	6.0	6.0	6.0
2	6.0	6.0	6.0
3	6.0	6.0	6.0
4	6.0	6.0	6.0
5	6.0	6.0	6.0
6	6.0	4.8	6.0
7	5.7	4.3	6.1
8	5.9	4.7	6.5
9	4.4	4.4	5.3
10	4.9	4.3	5.4
11	4.8	4.1	5.2
12	5.3	4.9	6.0
13	7.2	4.9	7.0
14	7.2	5.3	7.1
15	6.5	4.8	6.4
16	7.5	5.5	7.3
17	7.9	6.1	7.7
18	7.3	5.2	6.8
19	6.2	5.4	6.2
20	5.4	5.1	5.7
21	3.9	3.9	4.2
22	4.0	4.0	4.2
23	3.6	3.7	3.8
24	4.4	3.8	4.2
25	5.8	4.9	5.4
26	4.6	5.3	5.0
27	5.2	4.5	4.9
28	4.8	4.5	4.6
29	4.6	4.6	4.5
30	4.9	4.5	4.6
31	5.6	4.3	4.8

USCOMM-NOAA-ASHEVILLE-2-28-74-1125

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."