

SEPTEMBER 2009 NUMBER 781 - Part I

Solar-Geophysical Data prompt reports



Data for July 2009 and August 2009

Explanation of Data Reports Issued as Number 515 (Supplement) July 1987

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NATIONAL OCEANIC AND
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NATIONAL ENVIRONMENTAL SATELLITE,
DATA, AND INFORMATION SERVICE

NATIONAL GEOPHYSICAL
DATA CENTER

BOULDER,
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SEPTEMBER 2009 NUMBER 781 - Part I

Solar-Geophysical Data prompt reports

Data for July 2009 and August 2009

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NATIONAL GEOPHYSICAL DATA CENTER

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SOLAR-GEOPHYSICAL DATA

Number 781

(Issued in Two Parts)

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Solar-Terrestrial Physics Division

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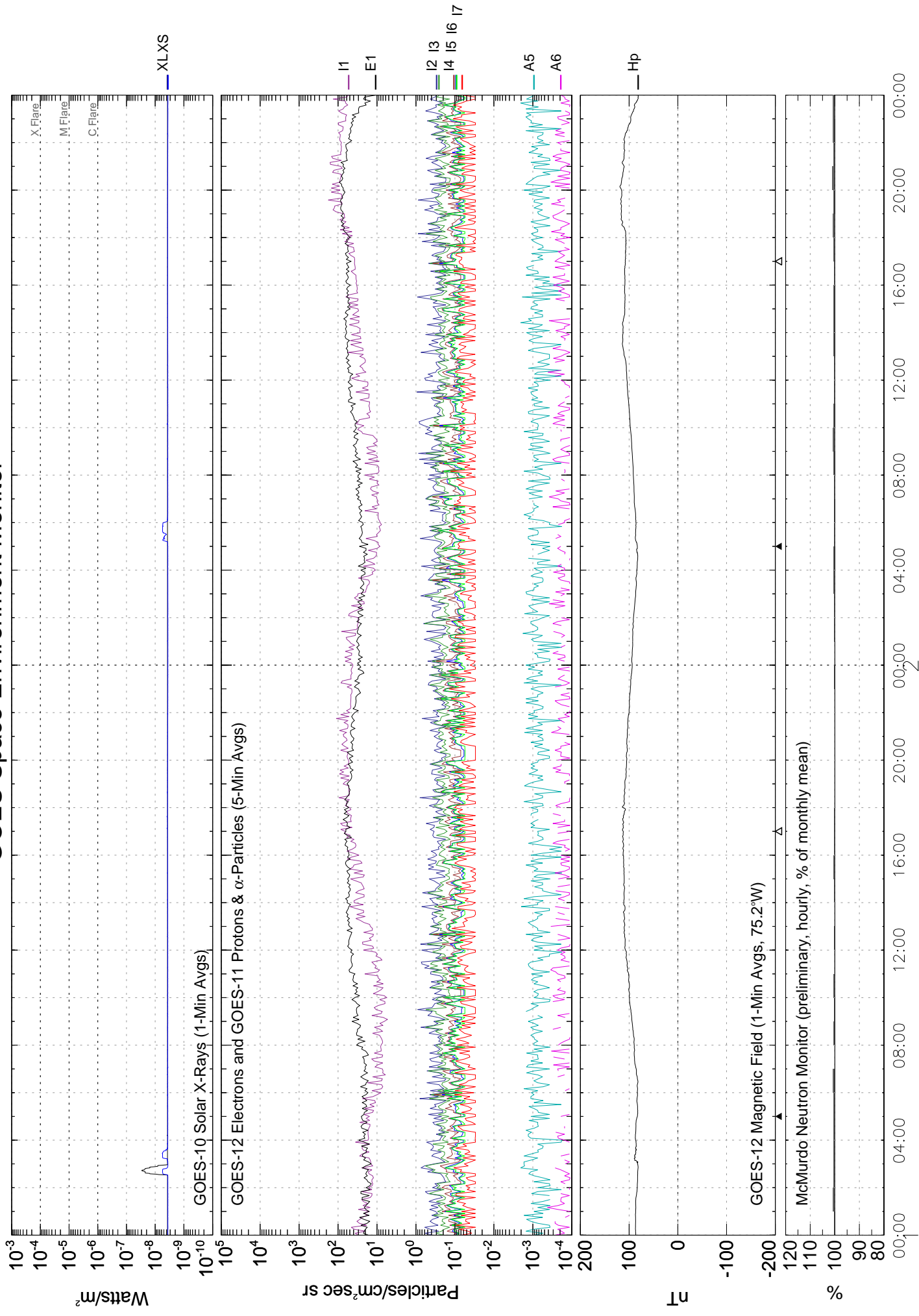
Prompt Reports

Number 781 Part I

DATA FOR AUGUST 2009

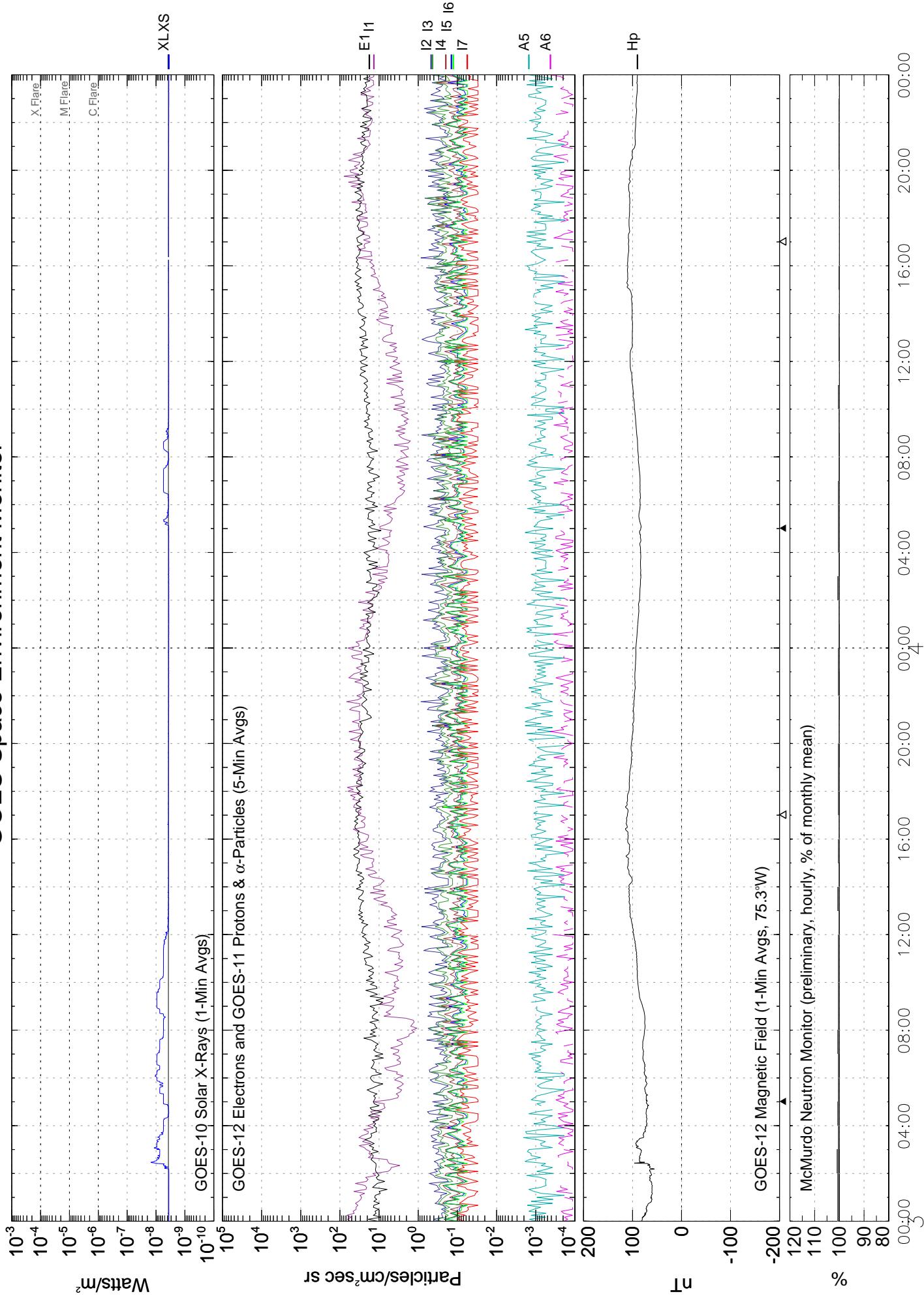
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GOES Space Environment Monitor



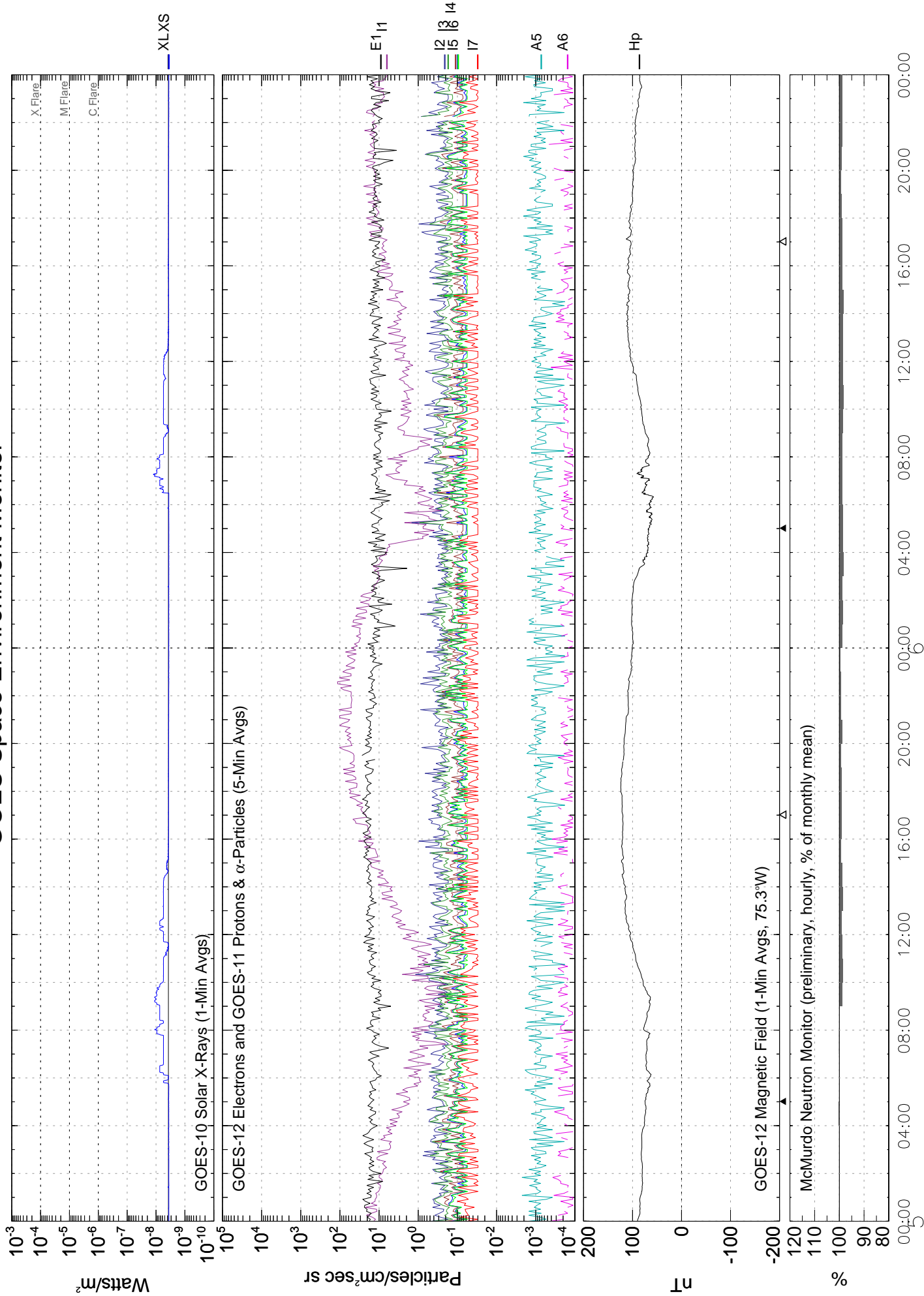
August 2009 (Universal Time)

GOES Space Environment Monitor



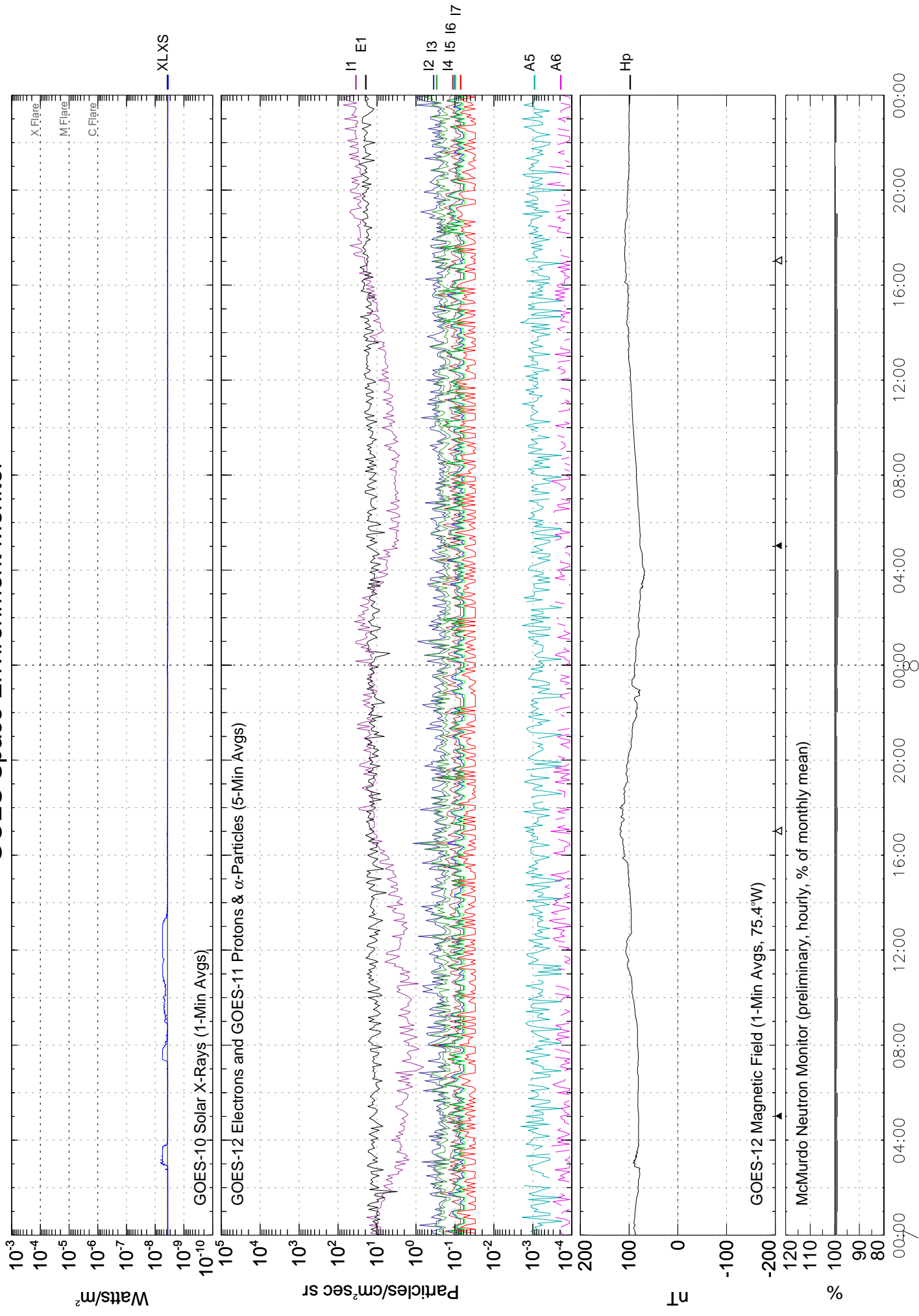
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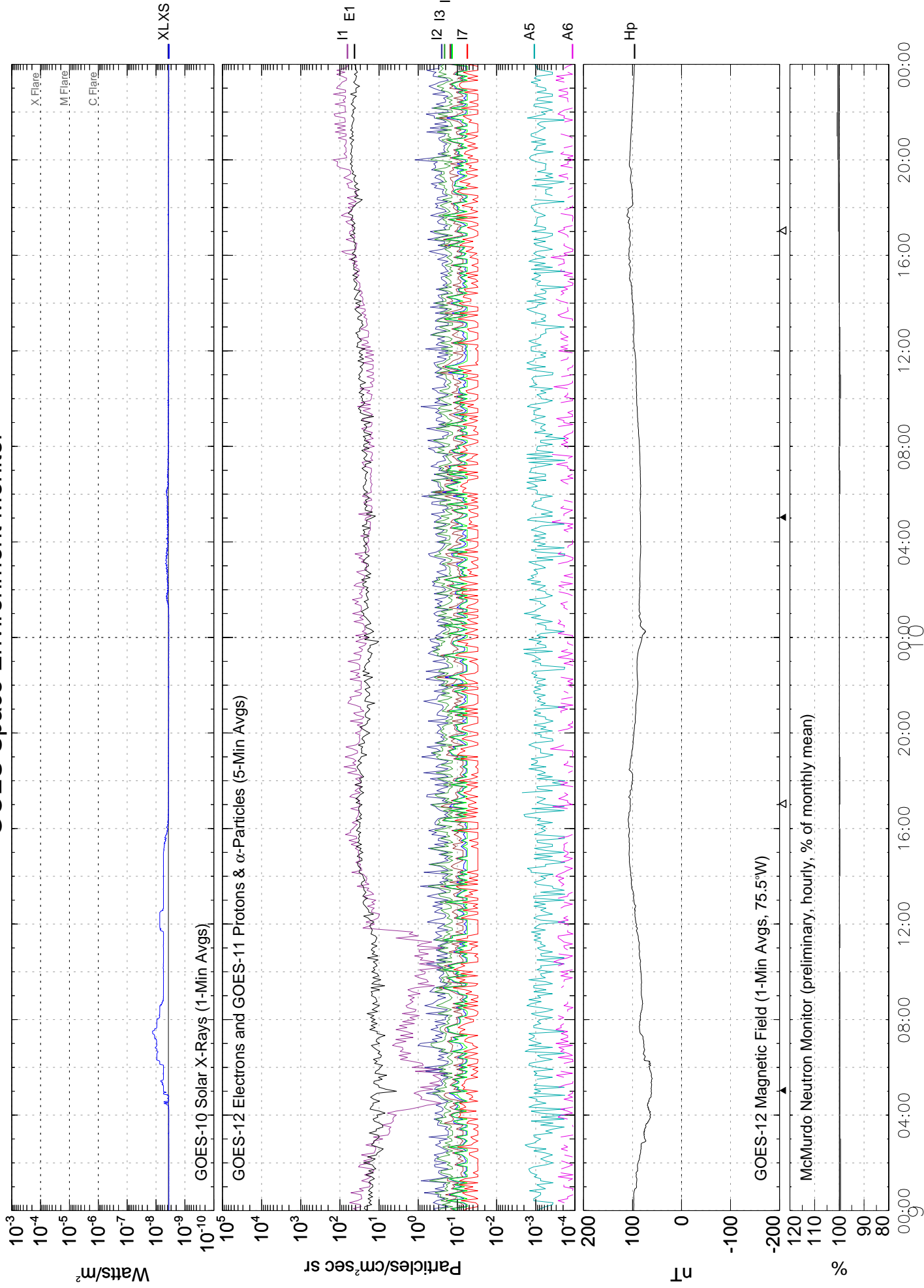
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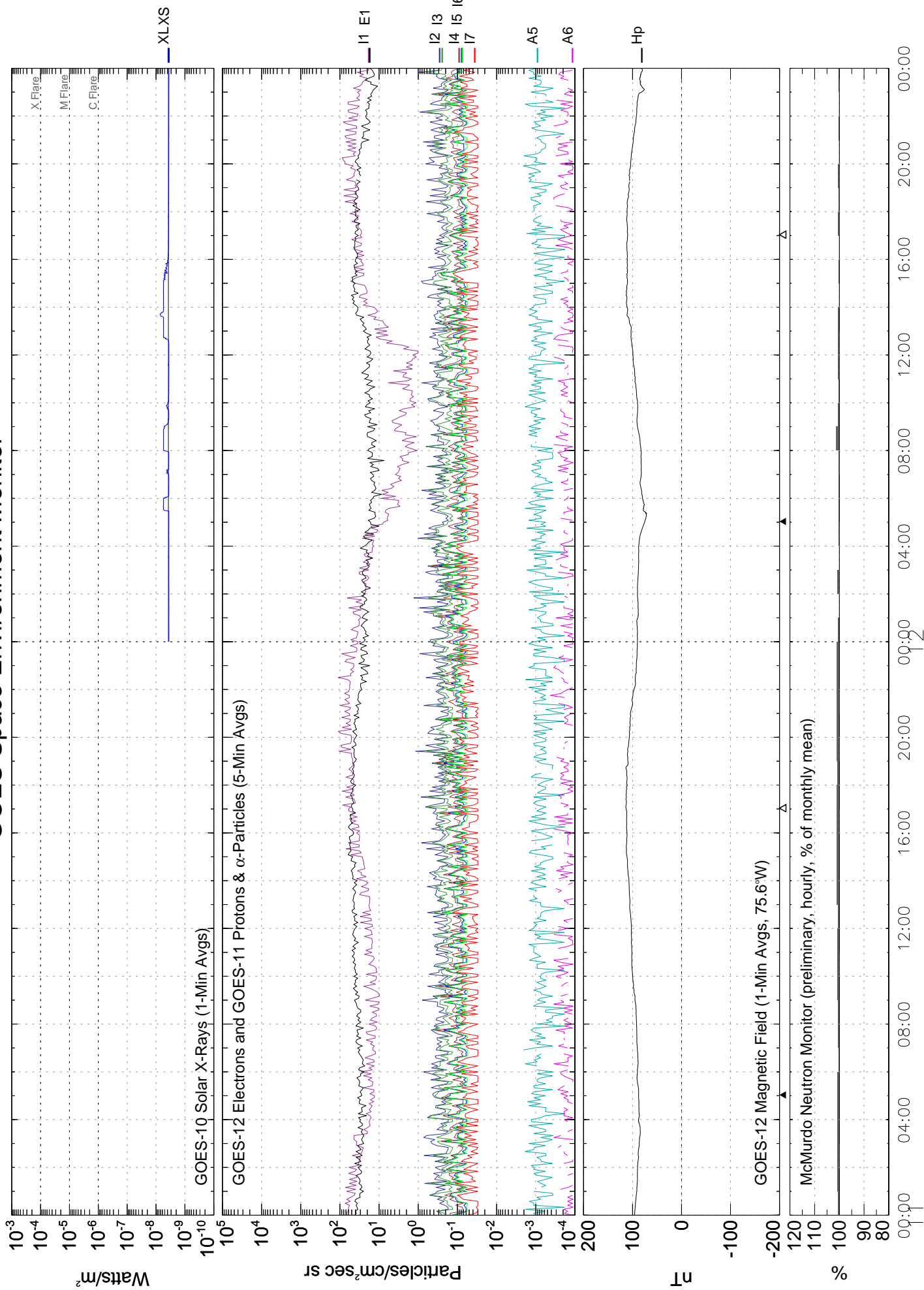
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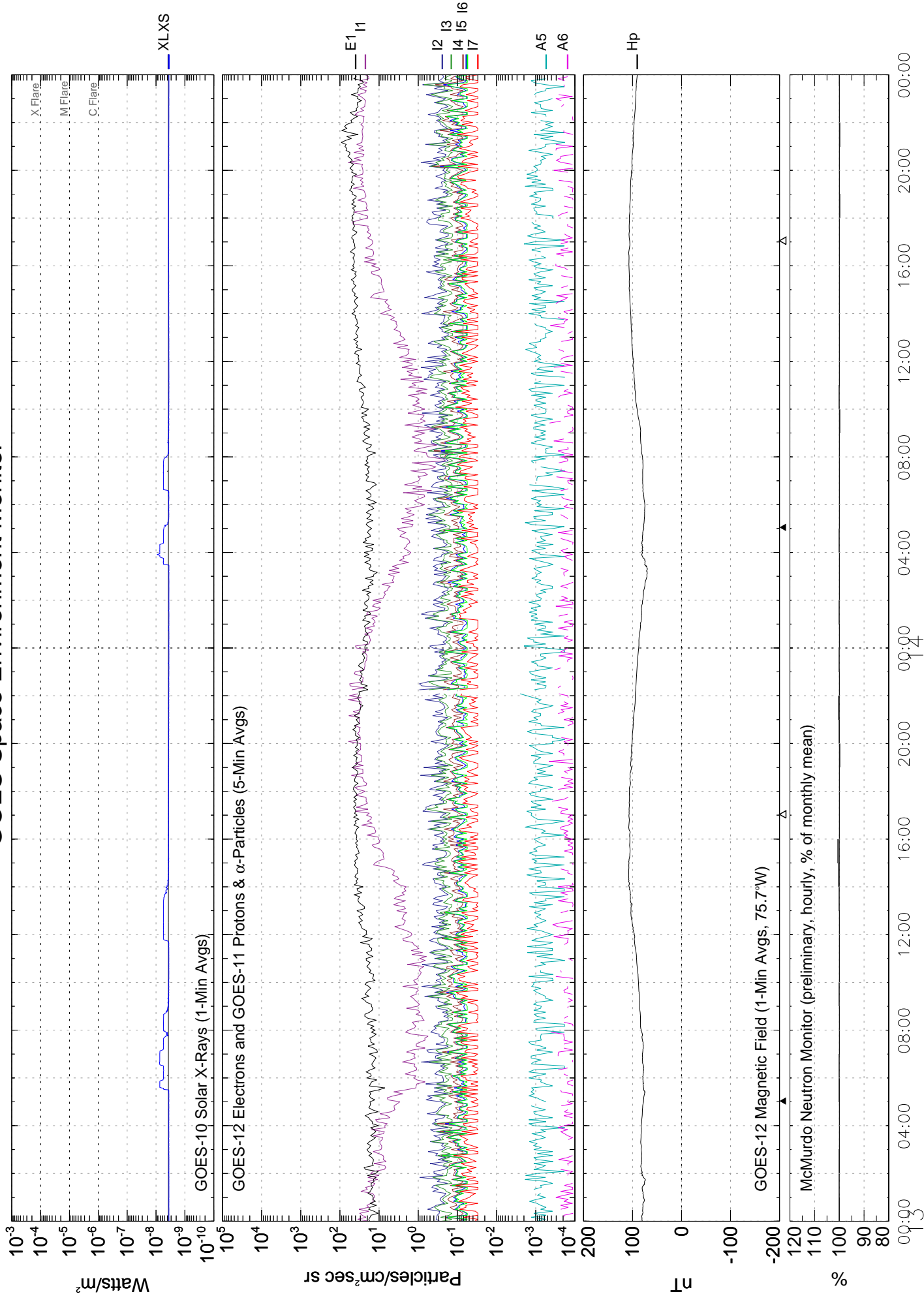
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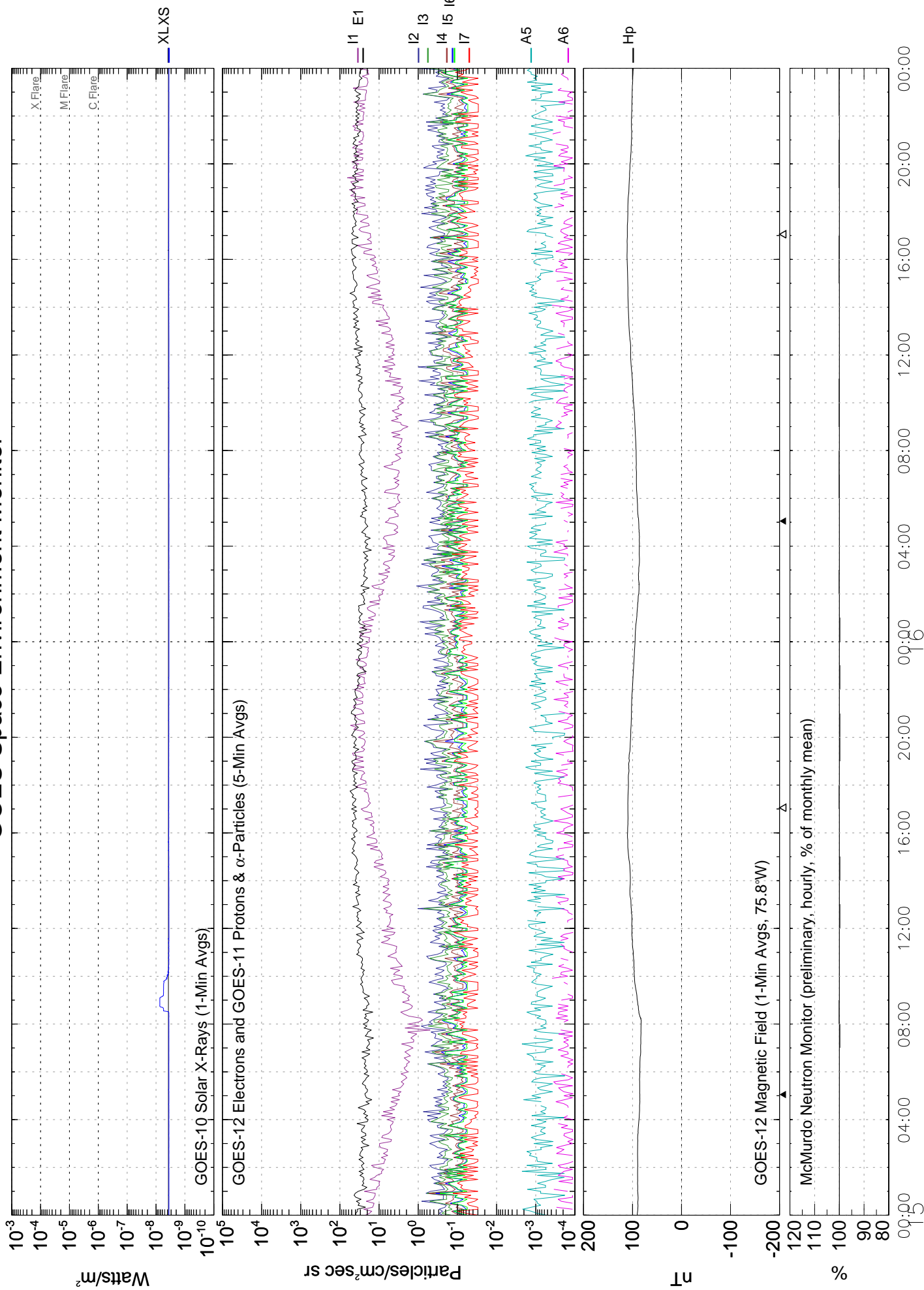


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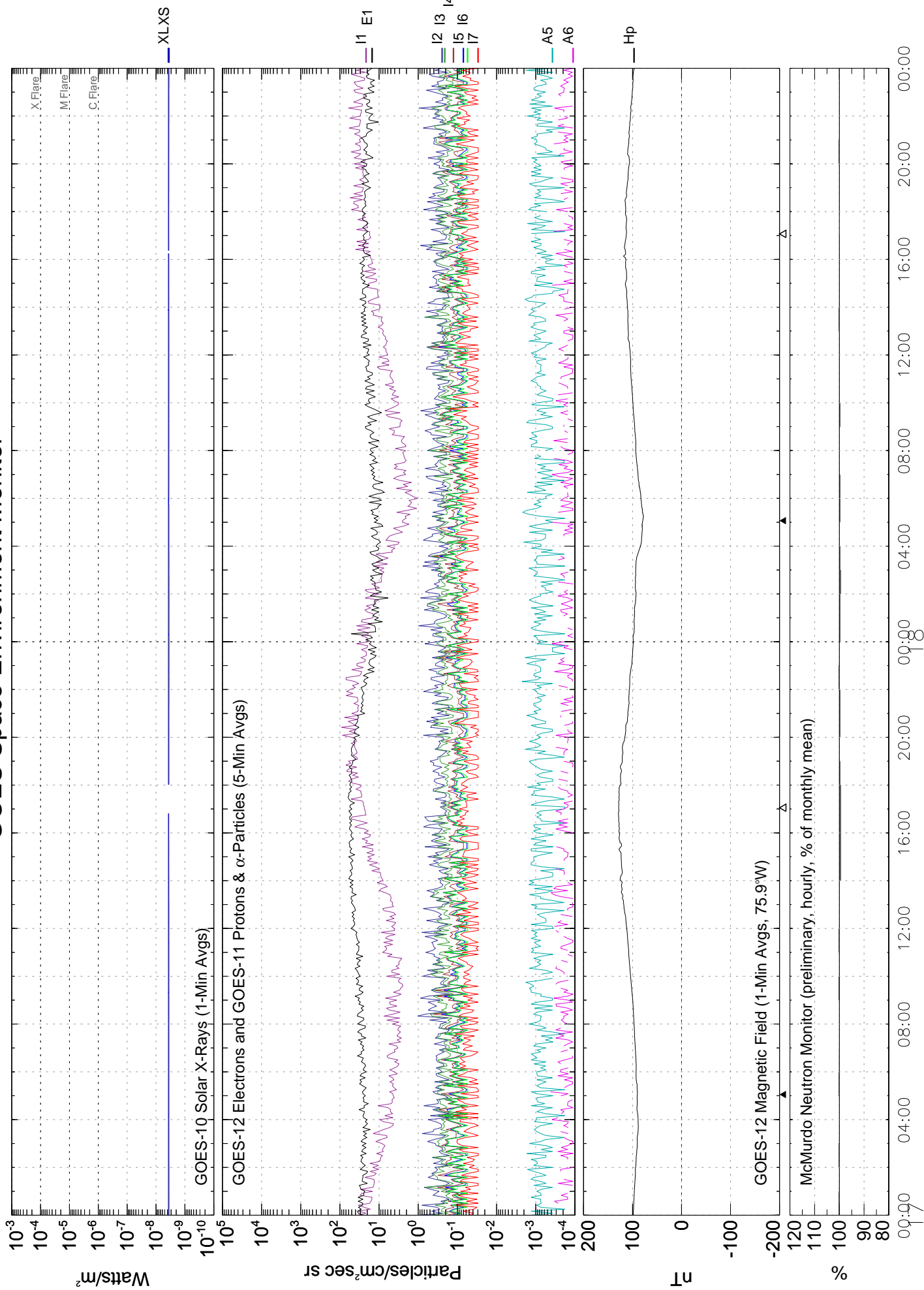
GOES Space Environment Monitor



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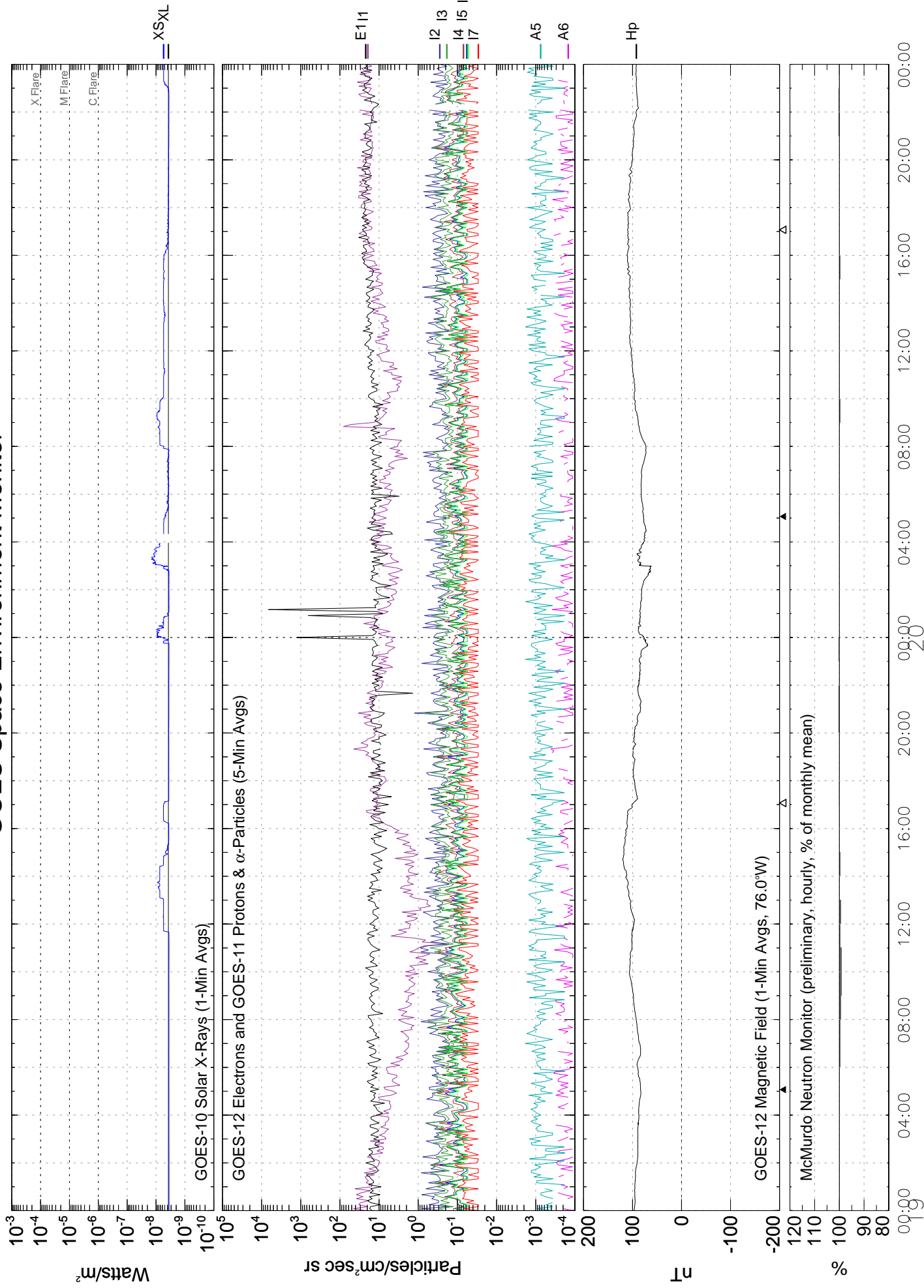


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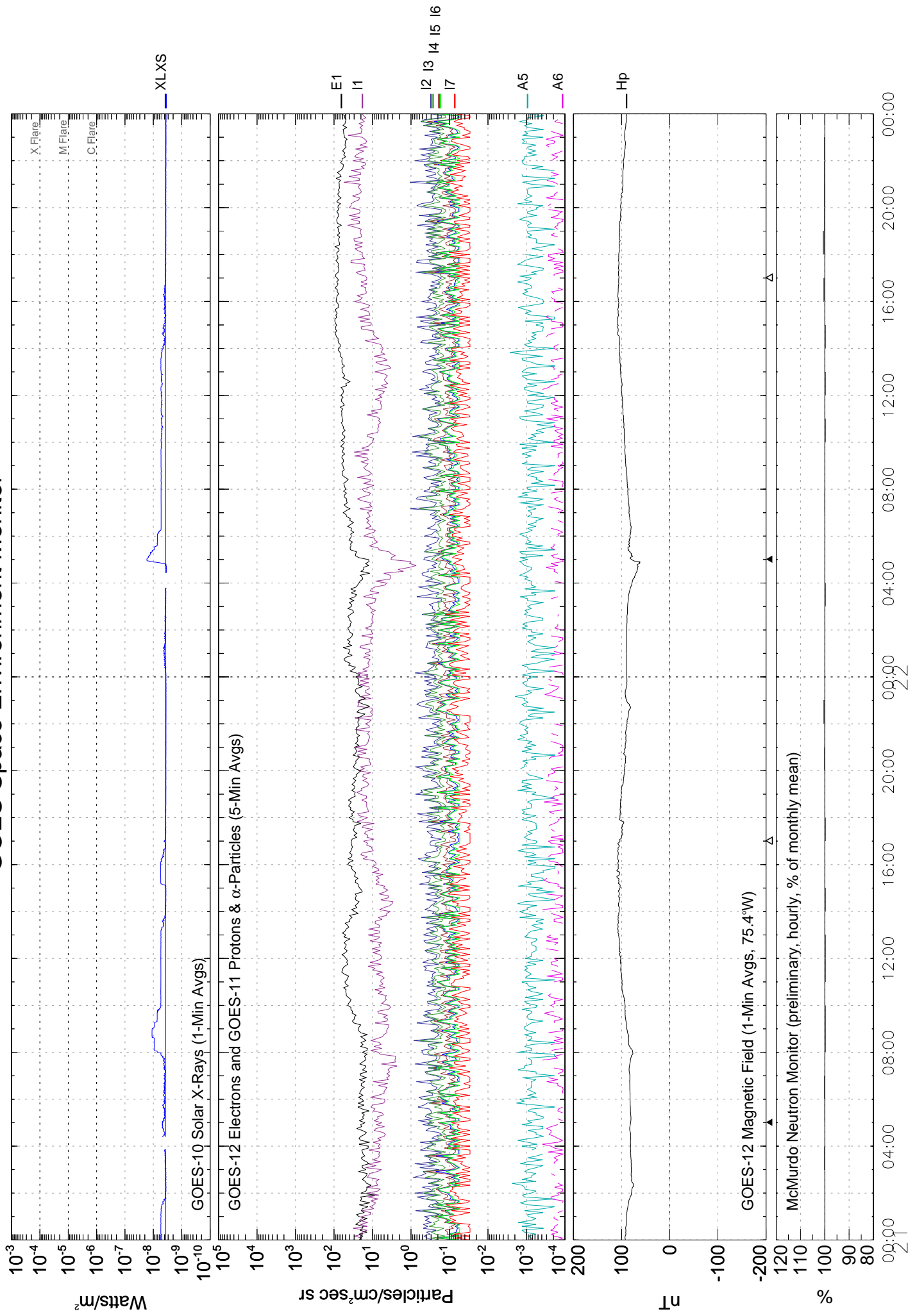


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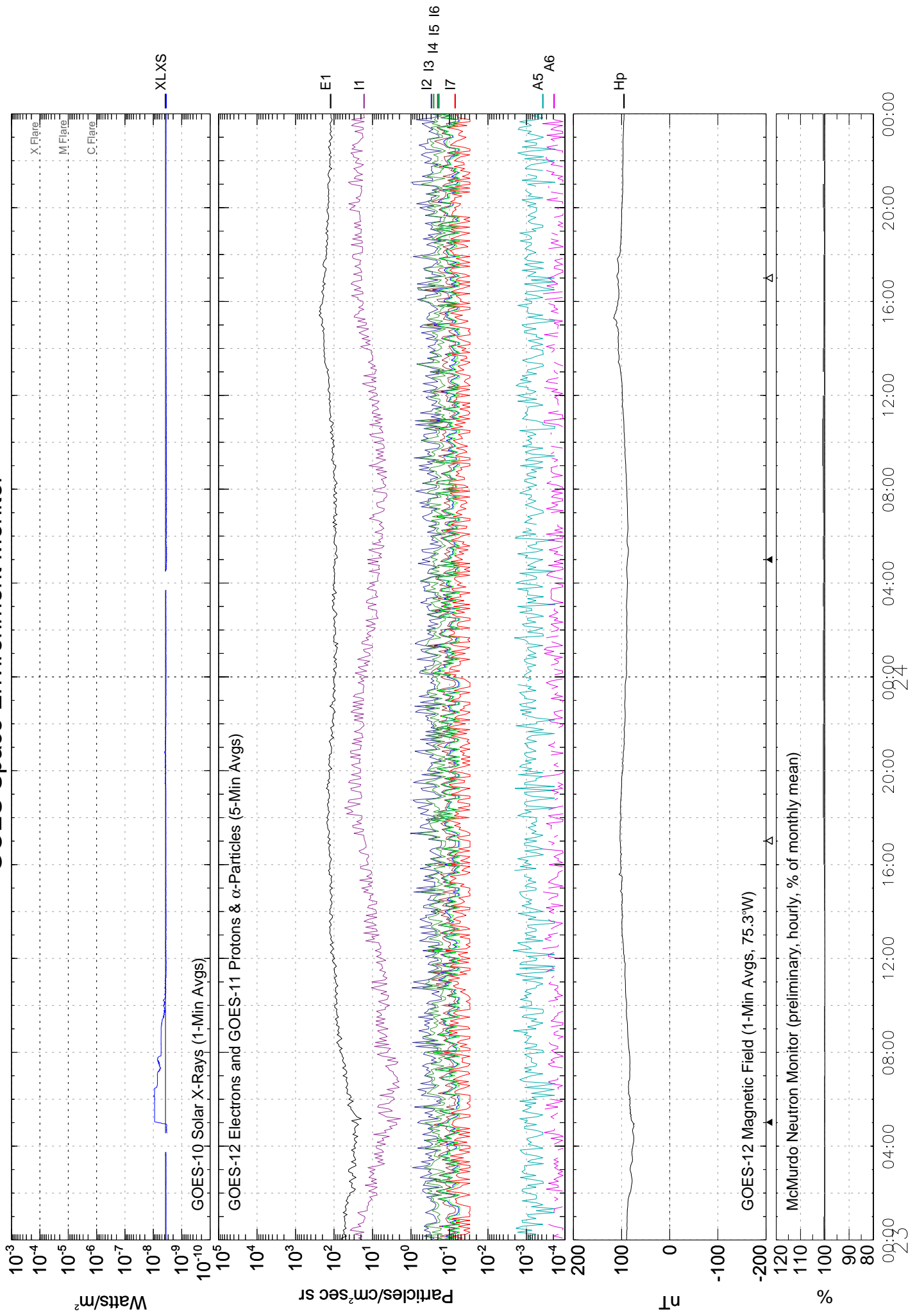


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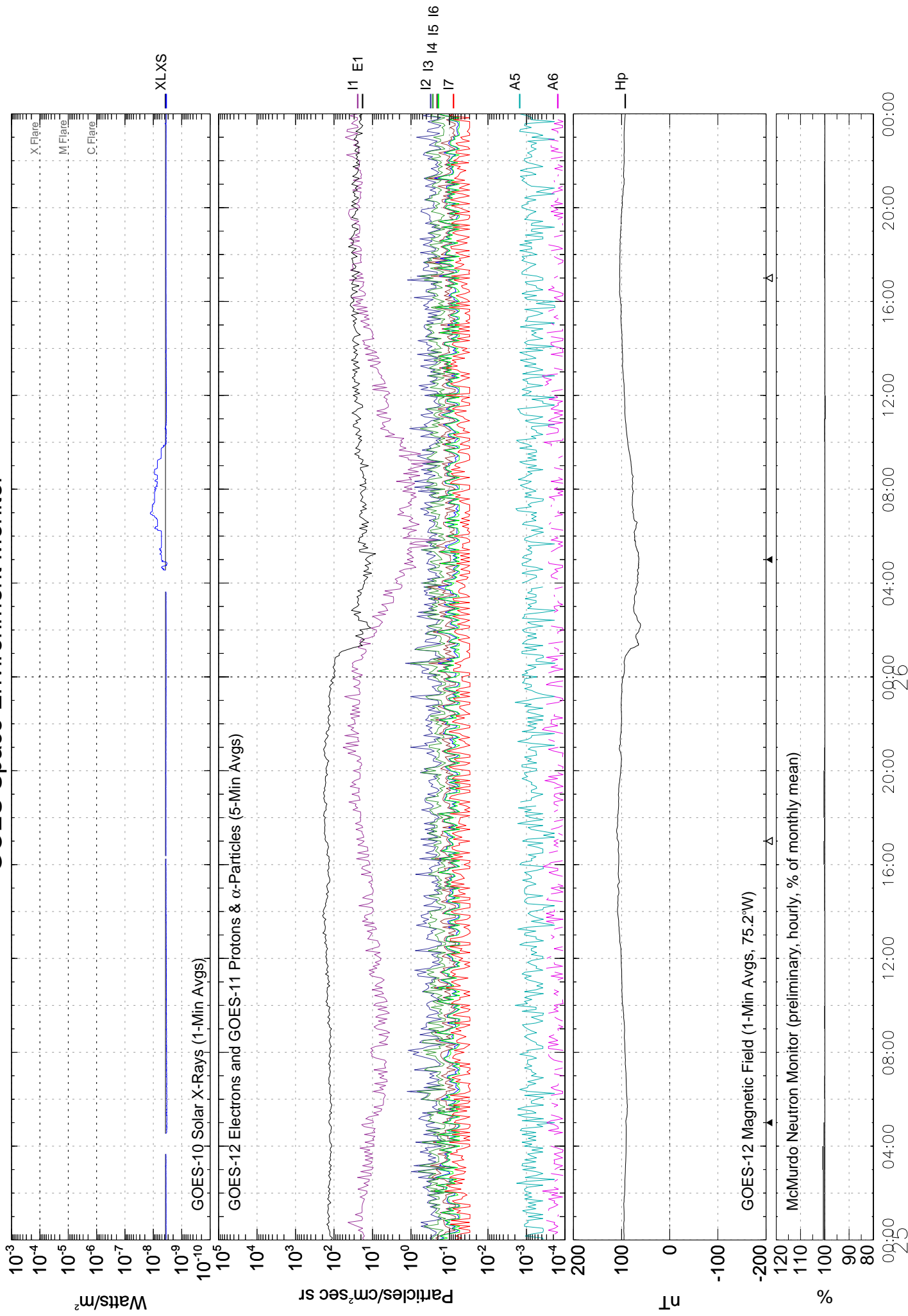
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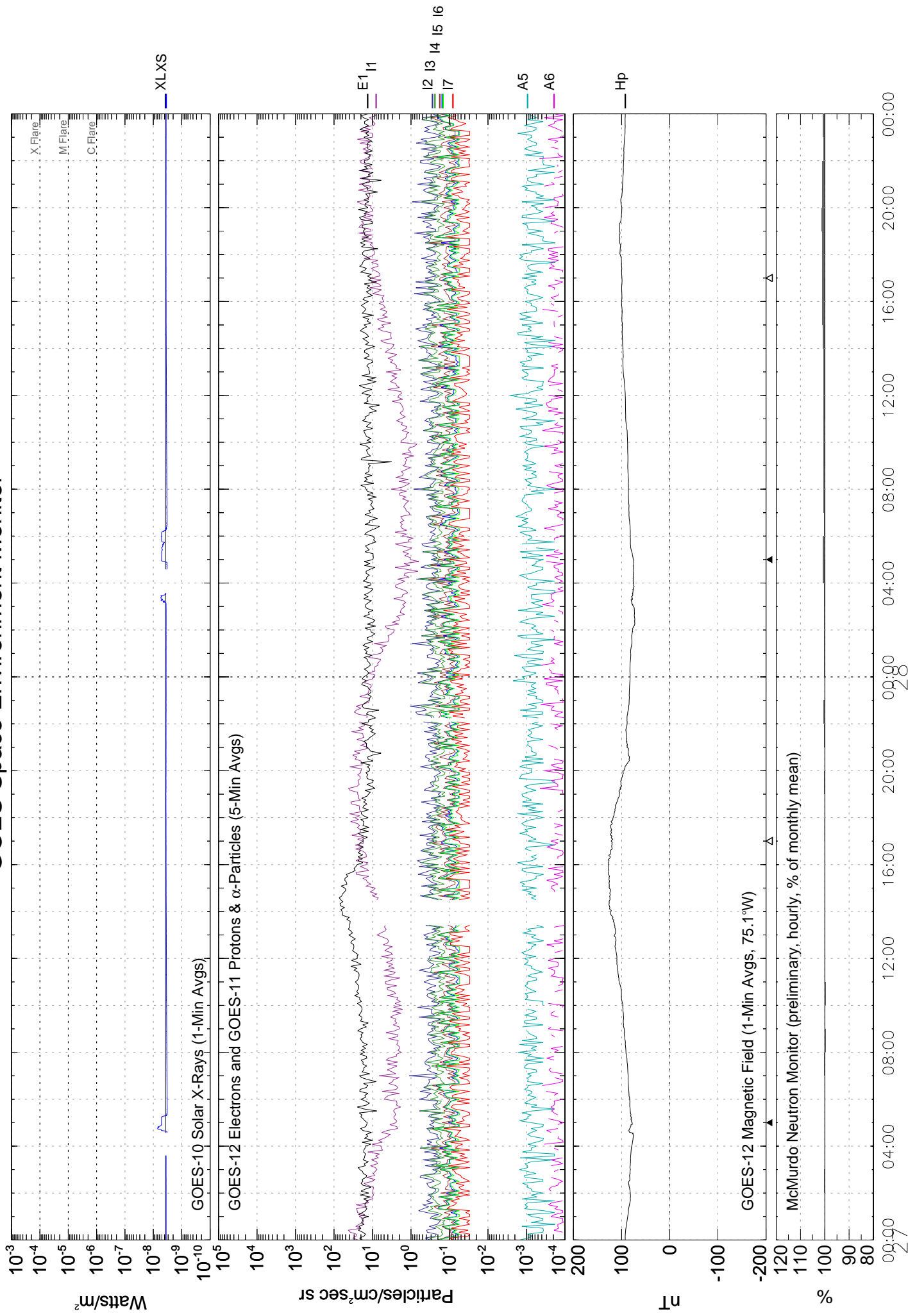
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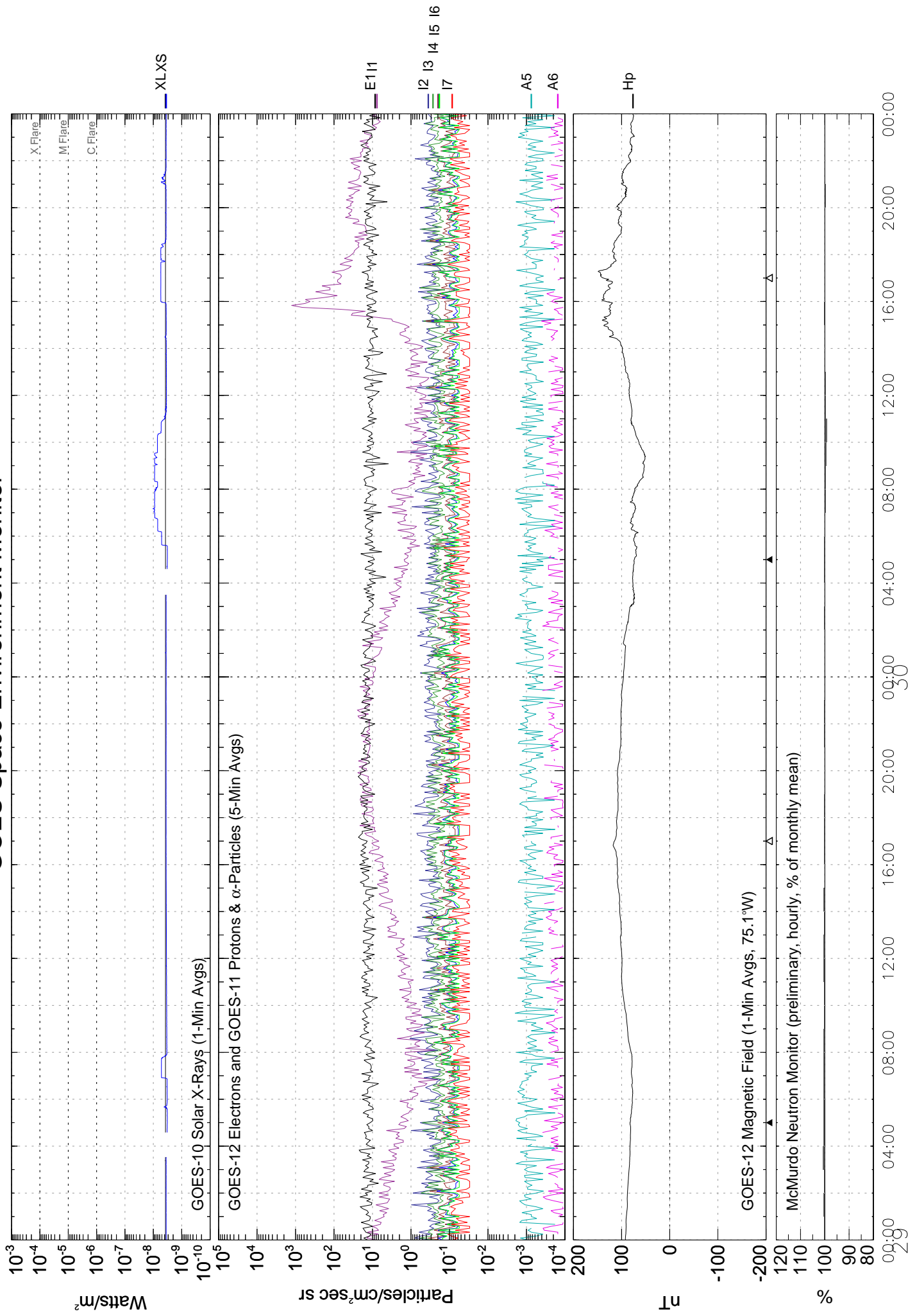


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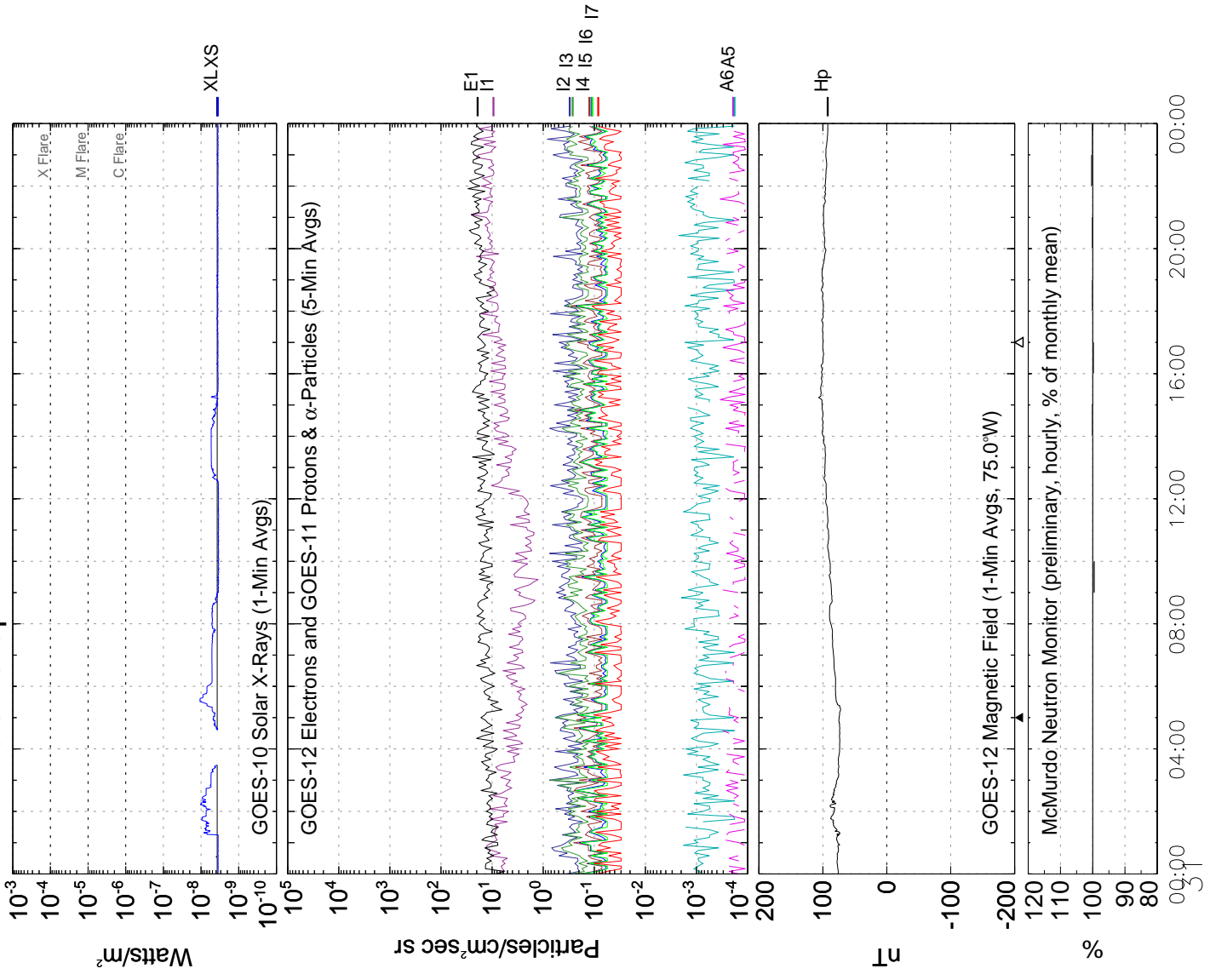


GOES Space Environment Monitor



August 2009 (Universal Time)

GOES Space Environment Monitor



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Aug 09

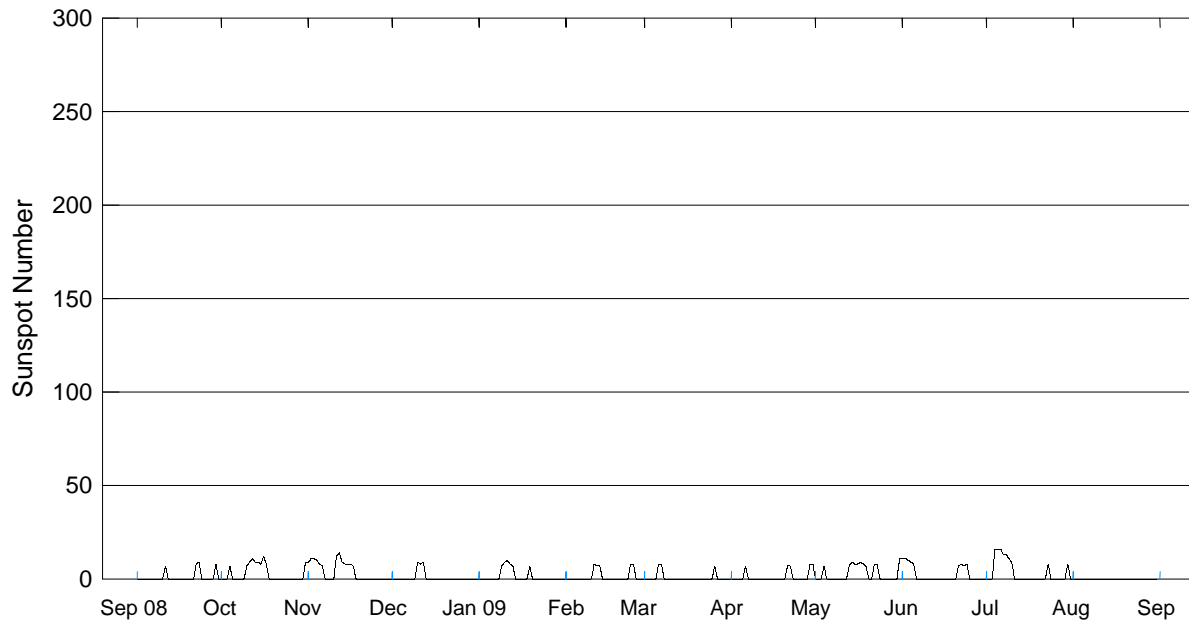
A L E R T P E R I O D S
The International Space Environment Service
AUGUST 2009

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Rgn No.	Location		Flares			Date of Fcst	Region Fcst (1)	Geoadvice (1)
							Lat	Lon	Opt	M	X			
213	01	31	0	69	4				0	0	0	01		SOL: Quiet
									0	0	0	01		MAG: Quiet
									0	0	0	01		PRO: Quiet
214	02	01	0	68	3				0	0	0	02		SOL: Quiet
									0	0	0	02		MAG: Quiet
									0	0	0	02		PRO: Quiet
215	03	02	0	68	2				0	0	0	03		SOL: Quiet
									0	0	0	03		MAG: Quiet
									0	0	0	03		PRO: Quiet
216	04	03	0	67	11				0	0	0	04		SOL: Quiet
									0	0	0	04		MAG: Quiet
									0	0	0	04		PRO: Quiet
217	05	04	0	66	4				0	0	0	05		SOL: Quiet
									0	0	0	05		MAG: Quiet
									0	0	0	05		PRO: Quiet
218	06	05	0	66	7				0	0	0	06		SOL: Quiet
									0	0	0	06		MAG: Quiet
									0	0	0	06		PRO: Quiet
219	07	06	0	67	12				0	0	0	07		SOL: Quiet
									0	0	0	07		MAG: Quiet
									0	0	0	07		PRO: Quiet
220	08	07	0	68	8				0	0	0	08		SOL: Quiet
									0	0	0	08		MAG: Quiet
									0	0	0	08		PRO: Quiet
221	09	08	0	67	3				0	0	0	09		SOL: Quiet
									0	0	0	09		MAG: Quiet
									0	0	0	09		PRO: Quiet
222	10	09	0	67	8				0	0	0	10		SOL: Quiet
									0	0	0	10		MAG: Quiet
									0	0	0	10		PRO: Quiet
223	11	10	0	67	2				0	0	0	11		SOL: Quiet
									0	0	0	11		MAG: Quiet
									0	0	0	11		PRO: Quiet
224	12	11	0	67	2				0	0	0	12		SOL: Quiet
									0	0	0	12		MAG: Quiet
									0	0	0	12		PRO: Quiet
225	13	12	0	67	6				0	0	0	13		SOL: Quiet
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226	14	13	0	67	6				0	0	0	14		SOL: Quiet
									0	0	0	14		MAG: Quiet
									0	0	0	14		PRO: Quiet
227	15	14	0	68	2				0	0	0	15		SOL: Quiet
									0	0	0	15		MAG: Quiet
									0	0	0	15		PRO: Quiet
228	16	15	0	68	3				0	0	0	16		SOL: Quiet
									0	0	0	16		MAG: Quiet
									0	0	0	16		PRO: Quiet
229	17	16	0	69	1				0	0	0	17		SOL: Quiet
									0	0	0	17		MAG: Quiet
									0	0	0	17		PRO: Quiet

A L E R T P E R I O D S
The International Space Environment Service
AUGUST 2009

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Rgn No.	Location		Flares			Date of Fcst	Region Fcst (1)	Geoadvice (1)
							Lat	Lon	Opt	M	X			
230	18	17	0	68	3				0	0	0	18		SOL: Quiet
									0	0	0	18		MAG: Quiet
									0	0	0	18		PRO: Quiet
231	19	18	0	67	3				0	0	0	19		SOL: Quiet
									0	0	0	19		MAG: Quiet
									0	0	0	19		PRO: Quiet
232	20	19	0	67	8				0	0	0	20		SOL: Quiet
									0	0	0	20		MAG: Quiet
									0	0	0	20		PRO: Quiet
233	21	20	0	68	13				0	0	0	21		SOL: Quiet
									0	0	0	21		MAG: Quiet
									0	0	0	21		PRO: Quiet
234	22	21	0	66	8				0	0	0	22		SOL: Quiet
									0	0	0	22		MAG: Quiet
									0	0	0	22		PRO: Quiet
235	23	22	0	67	5				0	0	0	23		SOL: Quiet
									0	0	0	23		MAG: Quiet
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236	24	23	0	67	3				0	0	0	24		SOL: Quiet
									0	0	0	24		MAG: Quiet
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237	25	24	0	68	1				0	0	0	25		SOL: Quiet
									0	0	0	25		MAG: Quiet
									0	0	0	25		PRO: Quiet
238	26	25	0	67	2				0	0	0	26		SOL: Quiet
									0	0	0	26		MAG: Quiet
									0	0	0	26		PRO: Quiet
239	27	26	0	67	4				0	0	0	27		SOL: Quiet
									0	0	0	27		MAG: Quiet
									0	0	0	27		PRO: Quiet
240	28	27	0	68	5				0	0	0	28		SOL: Quiet
									0	0	0	28		MAG: Quiet
									0	0	0	28		PRO: Quiet
241	29	28	0	68	2				0	0	0	29		SOL: Quiet
									0	0	0	29		MAG: Quiet
									0	0	0	29		PRO: Quiet
242	30	29	0	68	3				0	0	0	30		SOL: Quiet
									0	0	0	30		MAG: Quiet
									0	0	0	30		PRO: Quiet
243	31	30	0	67	16				0	0	0	31		SOL: Quiet
									0	0	0	31		MAG: Quiet
									0	0	0	31		PRO: Quiet

International Relative Sunspot Numbers Sep 2008 - Aug 2009

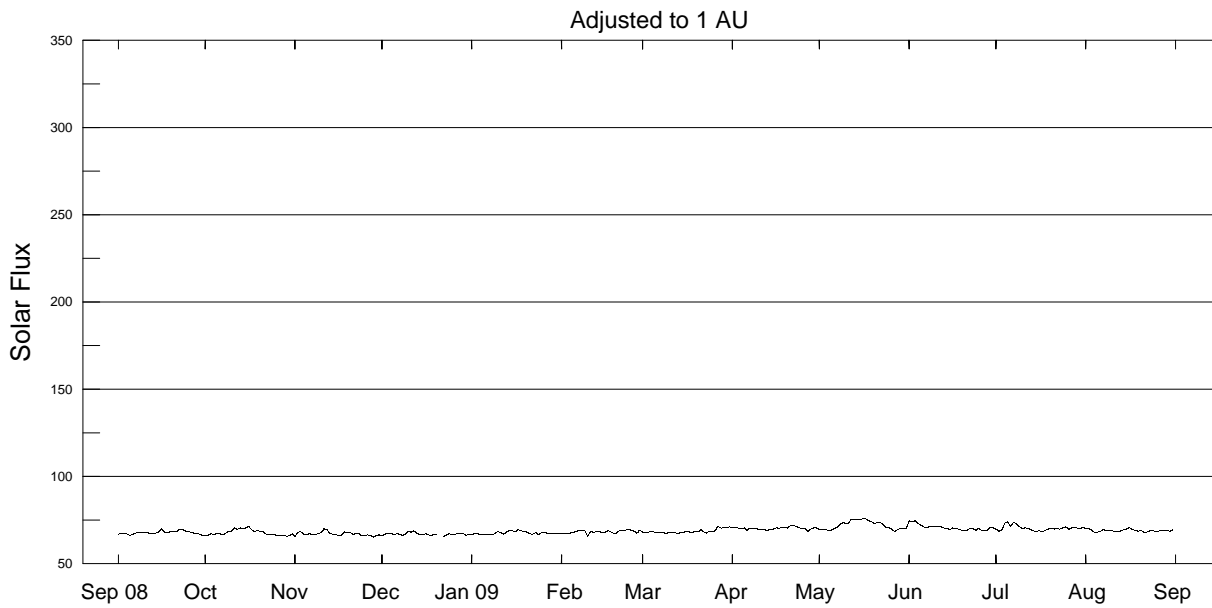


Day	Sep 08	Oct	Nov	Dec	Jan 09	Feb	Mar	Apr*	May*	Jun*	Jul*	Aug*
1	0	0	9	0	0	0	0	0	0	11	0	0
2	0	0	11	0	0	0	0	0	0	11	0	0
3	0	0	11	0	0	0	0	0	0	10	0	0
4	0	7	10	0	0	0	0	0	7	9	16	0
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27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	8	0	0	0	0	0	0	8	0	0	0	0
30	0	0	0	0	0	0	0	8	0	0	8	0
31	0	9	0	0	0	0	0	0	11	0	0	0
Mean	1.1	2.9	4.1	0.8	1.3	1.4	0.7	1.2	2.9	2.6	3.5	0.0

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux Sep 2008 - Aug 2009

23
Aug 09



Day	Sep 08	Oct	Nov	Dec	Jan 09	Feb	Mar	Apr	May	Jun	Jul	Aug
1	67.0	65.9	65.6	66.2	66.6	67.5	68.1	70.7	69.6	74.6	69.8	70.2
2	67.2	66.4	68.0	67.0	67.6	67.1	68.0	70.6	69.4	74.0	68.7	70.1
3	67.3	67.2	68.3	67.2	67.2	67.3	68.0	70.4	69.7	74.6	69.5	69.3
4	67.0	66.6	66.8	67.6	66.6	67.5	68.6	70.1	69.2	73.1	73.4	67.8
5	66.3	67.4	66.5	66.8	66.9	68.1	68.1	70.5	69.2	72.2	74.0	68.1
6	66.8	67.2	67.3	67.1	66.5	68.2	68.0	68.9	70.0	71.1	71.2	68.7
7	67.6	66.6	66.5	67.0	66.7	69.2	68.0	70.4	70.8	71.0	73.7	69.7
8	68.0	67.5	67.0	66.4	66.5	69.3	67.9	70.2	72.2	71.1	73.1	68.8
9	68.0	68.5	67.1	66.7	67.4	68.8	67.2	70.3	73.7	71.2	71.4	69.1
10	68.1	68.7	67.9	68.7	68.5	65.8	67.8	69.7	73.2	71.3	70.1	69.0
11	67.8	70.5	70.0	68.0	67.7	68.5	68.0	69.7	73.3	71.4	70.5	68.4
12	67.1	69.7	69.5	68.8	67.0	68.0	67.8	69.7	75.5	71.2	70.3	68.2
13	67.2	70.5	67.6	67.5	68.2	68.3	67.4	68.8	75.3	70.4	69.5	68.9
14	67.6	70.0	66.8	66.6	68.9	68.4	67.7	69.9	75.5	70.3	68.8	69.4
15	68.2	70.5	66.7	66.7	68.8	67.9	67.7	69.9	75.4	69.5	68.7	69.8
16	70.1	71.4	66.2	67.2	68.5	67.9	68.7	70.5	75.8	70.5	68.9	70.6
17	67.7	69.5	66.2	66.6	69.6	69.0	68.2	70.4	75.7	70.0	68.4	69.8
18	67.8	68.6	68.2	66.2	68.8	68.2	67.8	70.5	74.6	69.9	69.2	69.1
19	68.4	69.0	67.7	67.0	68.6	67.4	68.5	70.8	74.0	69.2	69.9	68.7
20	68.4	68.6	67.9	66.9	68.1	67.6	68.2	70.4	73.2	68.8	70.4	69.2
21	68.4	68.2	66.8	*	67.2	69.1	69.6	71.8	73.5	69.2	69.9	67.9
22	69.6	67.0	67.3	65.5	66.9	68.8	68.2	71.9	73.9	70.2	70.0	68.1
23	69.8	66.5	67.2	66.3	67.8	69.3	67.6	71.4	72.2	70.2	69.9	68.8
24	68.8	66.7	66.1	67.1	66.6	69.5	68.7	70.5	71.0	69.1	70.5	69.1
25	68.6	66.7	66.0	67.0	67.7	69.3	68.2	70.3	70.7	70.3	71.2	68.5
26	68.0	66.0	66.5	67.0	67.8	68.6	68.8	70.1	69.9	69.0	69.8	68.7
27	67.6	66.1	66.4	67.1	67.6	67.6	71.4	68.6	68.5	69.3	70.5	69.1
28	67.3	66.2	65.2	67.5	67.4	69.3	70.4	69.8	69.6	69.2	70.9	69.3
29	67.0	65.8	66.4	67.5	67.3		70.7	70.5	70.1	70.8	70.4	69.3
30	66.4	65.9	66.5	66.3	67.1		70.8	70.5	70.4	70.5	70.1	68.5
31		67.1		67.0	67.4		71.1		70.4		70.8	69.6
Mean	67.8	67.8	67.1	67.0	67.3	68.3	68.6	70.3	72.1	70.8	70.4	69.0

* = No data available.

24
Aug 09

DAILY SOLAR INDICES
AUGUST **2009**

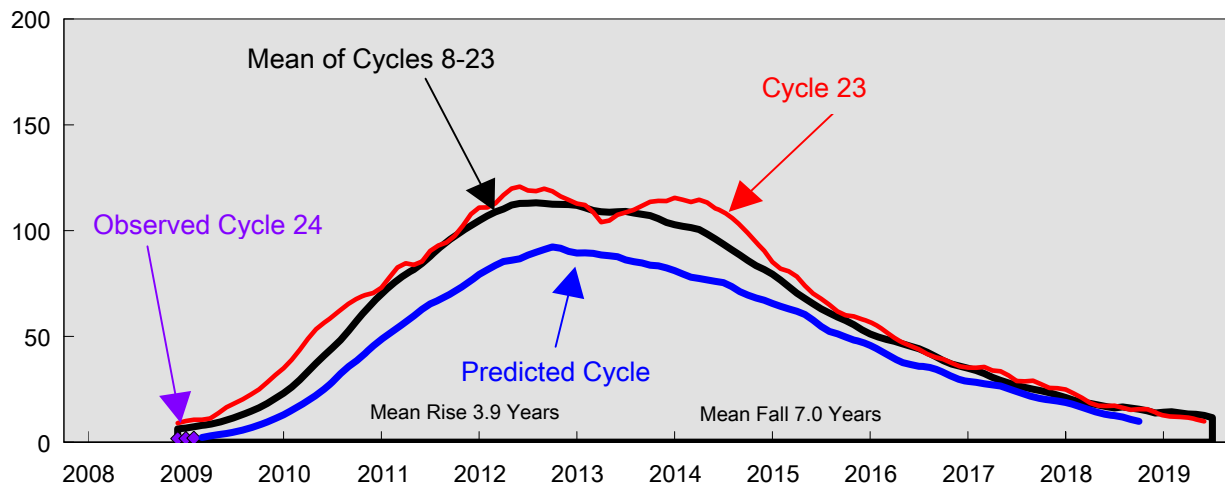
Day	Day of Year	Bartels Cycle Day	Sunspot Numbers		Obs Flux		-----Solar Flux Adjusted to 1 Astronomical Unit-----							
			Int	Amer	Penticton (2800)	SGMR (15400)	SGMR (8800)	SGMR (4995)	Penticton (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
1	213	24	0	0	68.1	608	223	116	70.2	74	55	32	26	12
2	214	25	0	0	68.1	600	225	116	70.1	73	56	32	25	12
3	215	26	0	0	67.4	603	219	114	69.3	71	56	31	26	12
4	216	27	0	0	65.8	602	222	115	67.8	67	54	26	26	13
5	217	1	0	0	66.2	578	218	116	68.1	67	54	34	25	12
6	218	2	0	0	66.8	516	222	116	68.7	71	56	23	26	13
7	219	3	0	0	67.8	504	225	116	69.7	68	57	32	26	12
8	220	4	0	0	67.0	504	222	116	68.8	70	55	29	26	12
9	221	5	0	0	67.2	520	223	116	69.1	70	54	31	26	12
10	222	6	0	0	67.1	499	223	116	69.0	72	55	35	26	13
11	223	7	0	0	66.6	501	223	115	68.4	67	55	32	25	12
12	224	8	0	0	66.5	509	213	113	68.2	73	55	33	25	12
13	225	9	0	0	67.2	494	223	116	68.9	70	55	30	26	11
14	226	10	0	0	67.6	510	223	115	69.4	69	56	25	26	12
15	227	11	0	0	68.1	513	210	114	69.8	70	56	35	26	12
16	228	12	0	0	68.8	519	218	118	70.6	75	57	35	26	12
17	229	13	0	0	68.1	522	221	117	69.8	74	56	33	26	12
18	230	14	0	0	67.4	508	211	113	69.1	69	55	29	26	12
19	231	15	0	0	67.1	517	219	115	68.7	72	55	35	25	12
20	232	16	0	0	67.6	516	224	116	69.2	71	55	33	26	12
21	233	17	0	0	66.4	505	219	115	67.9	68	54	31	25	11
22	234	18	0	0	66.6	540	219	114	68.1	69	55	29	25	12
23	235	19	0	0	67.3	519	220	115	68.8	66	55	32	25	12
24	236	20	0	0	67.6	510	218	115	69.1	68	54	31	25	12
25	237	21	0	0	67.1	524	219	115	68.5	71	54	35	25	12
26	238	22	0	0	67.3	524	219	115	68.7	70	55	33	26	12
27	239	23	0	0	67.7	529	220	115	69.1	65	54	33	26	13
28	240	24	0	0	67.9	517	218	112	69.3	67	55	34	25	12
29	241	25	0	0	68.0	364	188	104	69.3	69	55	33	25	12
30	242	26	0	0	67.2	518	221	114	68.5	71	54	33	25	12
31	243	27	0	1	68.3	524	224	115	69.6	73	56	34	25	12
MEAN			0.0	0.0	67.4	523	219	114	69.0	70	55	31	25	12

NOTE: Radio flux values are from Sagamore Hill, Massachusetts, USA.

Cycle 24 Smoothed Sunspot Numbers: Observed and Predicted

PRELIMINARY Based on December 2008 Smoothed Data

25
Aug 09



Smoothed Sunspot Numbers (Observed and Predicted) for Parts of Solar Cycles 23 and 24

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1996	10	10	10	9	8*	9	8	8	8	9**	10	10	8
1997	11	11	14	17	18	20	23	25	28	32	35	39	23
1998	44	49	53	57	59	63	65	68	69	71	73	78	62
1999	83	85	84	85	90	93	94	98	102	108	111	111	95
2000	113	117	120	120.8+	119	119	120	119	116	115	113	112	107
2001	109	104	105	108	109	110	112	114	114	114	115	115	111
2002	114	115	113	111	109	106	103	99	95	91	85	82	102
2003	81	79	74	70	68	65	62	60	60	58	57	57	66
2004	53	49	47	46	46	42	40	39	38	36	35	35	42
2005	35	34	34	32	29	29	29	27	26	26	25	23	29
2006	21	19	17	17	17	16	15	16	16	14	13	13	16
2007	12	12	11	10	9	8	7	6	6	6	6	5	8
2008	4	4	3	3	4	3	3	3	2	2	2	1.7##	3
2009	2	2	2	3	4	4	5	6	7	8	10	11	5
			(1)	(2)	(3)	(5)	(5)	(7)	(8)	(10)	(11)	(13)	(5)
2010	13	15	17	20	22	25	29	32	36	39	42	46	28
	(16)	(18)	(21)	(23)	(26)	(29)	(33)	(36)	(39)	(43)	(47)	(51)	(32)

Solar Cycle 22

Solar Cycle 23

Min, Max, and Predictions

* May 1996 marks Cycle 23's mathematical minimum.

** October 1996 marks the consensus minimum.

+ April 2000 marks Cycle 23 maximum.

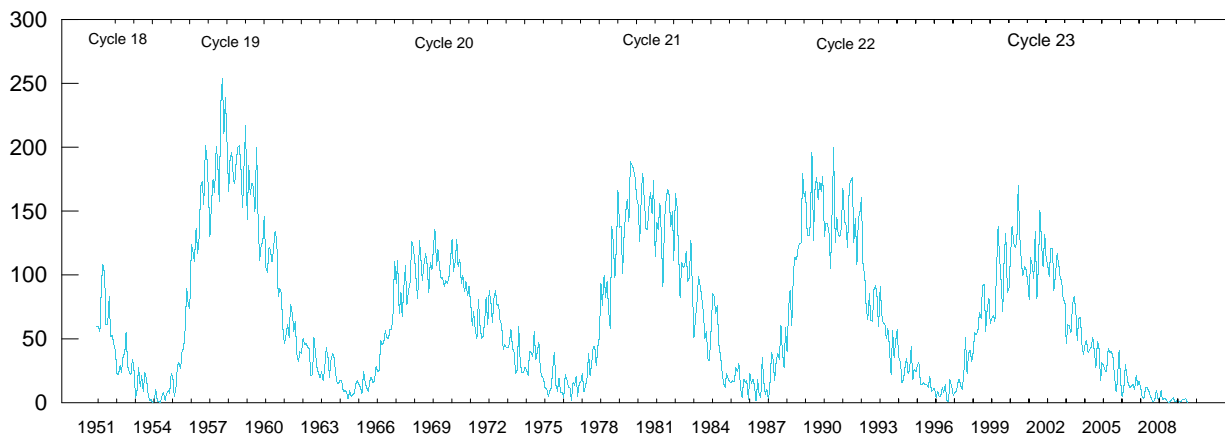
- Preliminary Cycle 24 Minimum

NOTE: This is a preliminary prediction using December 2008 as solar minimum.

OBSERVED AND PREDICTED NUMBERS: For the end of Cycle 23, and the rise and decline of Cycle 24, the table above lists observed smoothed sunspot numbers up to the one that includes the most recent monthly mean. We based these smoothed values on final monthly means through Dec 2008 and on provisional numbers thereafter. Table entries with numbers in parentheses below them denote predictions by the McNish-Lincoln method. See page 9 in the Jul 1987 supplement to Solar-Geophysical Data. Adding the number in parentheses to the predicted value generates the upper limit of the 90% confidence interval. Subtracting the number from the predicted value generates the lower limit. Consider, for example, the February 2010 prediction. There exists a 90% chance that in February 2010, the actual smoothed sunspot will fall somewhere between 0 and 33.

POINTS TO PONDER: The McNish-Lincoln prediction method generates useful estimates of smoothed, monthly mean sunspot numbers for no more than 12 months ahead. Beyond 12 months, the predictions regress toward the mean of all 16 cycles of observations used in the computation. Moreover, the method remains very sensitive to the date defining the onset of the current cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on a PRELIMINARY minimum of December, 2008. This will be updated monthly until the actual minimum is reached.

Mean Monthly Sunspot Numbers Jan 1951 - Aug 2009



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1951	59.9	59.9	55.9	92.9	108.5	100.6	61.5	61.0	83.1	51.6	52.4	45.8	69.4
1952	40.7	22.7	22.0	29.1	23.4	36.4	39.3	54.9	28.2	23.8	22.1	34.3	31.5
1953	26.5	3.9	10.0	27.8	12.5	21.8	8.6	23.5	19.3	8.2	1.6	2.5	13.9
1954	0.2	0.5	10.9	1.8	0.8	0.2	4.8	8.4	1.5	7.0	9.2	7.6	4.4 m
1955	23.1	20.8	4.9	11.3	28.9	31.7	26.7	40.7	42.7	58.5	89.2	76.9	38.0
1956	73.6	124.0	118.4	110.7	136.6	116.6	129.1	169.6	173.2	155.3	201.3	192.1	141.7
1957	165.0	130.2	157.4	175.2	164.6	200.7	187.2	158.0	235.8	253.8	210.9	239.4	190.2 M
1958	202.5	164.9	190.7	196.0	175.3	171.5	191.4	200.2	201.2	181.5	152.3	187.6	184.8
1959	217.4	143.1	185.7	163.3	172.0	168.7	149.6	199.6	145.2	111.4	124.0	125.0	159.0
1960	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6	122.3
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.8	63.6	37.7	32.6	39.9	53.9
1962	38.7	50.3	45.6	46.4	43.7	42.0	21.8	21.8	51.3	39.5	26.9	23.2	37.6
1963	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9	27.9
1964	15.3	17.7	16.5	8.6	9.5	9.1	3.1	9.3	4.7	6.1	7.4	15.1	10.2 m
1965	17.5	14.2	11.7	6.8	24.1	15.9	11.9	8.9	16.8	20.1	15.8	17.0	15.1
1966	28.2	24.4	25.3	48.7	45.3	47.7	56.7	51.2	50.2	57.2	57.2	70.4	47.0
1967	110.9	93.6	111.8	69.5	86.5	67.3	91.5	107.2	76.8	88.2	94.3	126.4	93.8
1968	121.8	111.9	92.2	81.2	127.2	110.3	96.1	109.3	117.2	107.7	86.0	109.8	105.9 M
1969	104.4	120.5	135.8	106.8	120.0	106.0	96.8	98.0	91.3	95.7	93.5	97.9	105.5
1970	111.5	127.8	102.9	109.5	127.5	106.8	112.5	93.0	99.5	86.6	95.2	83.5	104.5
1971	91.3	79.0	60.7	71.8	57.5	49.8	81.0	61.4	50.2	51.7	63.2	82.2	66.6
1972	61.5	88.4	80.1	63.2	80.5	88.0	76.5	76.8	64.0	61.3	41.6	45.3	68.9
1973	43.4	42.9	46.0	57.7	42.4	39.5	23.1	25.6	59.3	30.7	23.9	23.3	38.0
1974	27.6	26.0	21.3	40.3	39.5	36.0	55.8	33.6	40.2	47.1	25.0	20.5	34.5
1975	18.9	11.5	11.5	5.1	9.0	11.4	28.2	39.7	13.9	9.1	19.4	7.8	15.5
1976	8.1	4.3	21.9	18.8	12.4	12.2	1.9	16.4	13.5	20.6	5.2	15.3	12.6 m
1977	16.4	23.1	8.7	12.9	18.6	38.5	21.4	30.1	44.0	43.8	29.1	43.2	27.5
1978	51.9	93.6	76.5	99.7	82.7	95.1	70.4	58.1	138.2	125.1	97.9	122.7	92.5
1979	166.6	137.5	138.0	101.5	134.4	149.5	159.4	142.2	188.4	186.2	183.3	176.3	155.4 M
1980	159.6	155.0	126.2	164.1	179.9	157.3	136.3	135.4	155.0	164.7	147.9	174.4	154.6
1981	114.0	141.3	135.5	156.4	127.5	90.9	143.8	158.7	167.3	162.4	137.5	150.1	140.4
1982	111.2	163.6	153.8	122.0	82.2	110.4	106.1	107.6	118.8	94.7	98.1	127.0	115.9
1983	84.3	51.0	66.5	80.7	99.2	91.1	82.2	71.8	50.3	55.8	33.3	33.4	66.6
1984	57.0	85.4	83.5	69.7	76.4	46.1	37.4	25.5	15.7	12.0	22.8	18.7	45.9
1985	16.5	15.9	17.2	16.2	27.5	24.2	30.7	11.1	3.9	18.6	16.2	17.3	17.9
1986	2.5	23.2	15.1	18.5	13.7	1.1	18.1	7.4	3.8	35.4	15.2	6.8	13.4 m
1987	10.4	2.4	14.7	39.6	33.0	17.4	33.0	38.7	33.9	60.6	39.9	27.1	29.4
1988	59.0	40.0	76.2	88.0	60.1	101.8	113.8	111.6	120.1	125.1	125.1	179.2	100.2
1989	161.3	165.1	131.4	130.6	138.5	196.2	126.9	168.9	176.7	159.4	173.0	165.5	157.6 M
1990	177.3	130.5	140.3	140.3	132.2	105.4	149.4	200.3	125.2	145.5	131.4	129.7	142.6
1991	136.9	167.5	141.9	140.0	121.3	169.7	173.7	176.3	125.3	144.1	108.2	144.4	145.7
1992	150.0	161.1	106.7	99.8	73.8	65.2	85.7	64.5	63.9	88.7	91.8	82.6	94.3
1993	59.3	91.0	69.8	62.2	61.3	49.8	57.9	42.2	22.4	56.4	35.6	48.9	54.6
1994	57.8	35.5	31.7	16.1	17.8	28.0	35.1	22.5	25.7	44.0	18.0	26.2	29.9
1995	24.2	29.9	31.1	14.0	14.5	15.6	14.5	14.3	11.8	21.1	9.0	10.0	17.5
1996	11.5	4.4	9.2	4.8	5.5	11.8	8.2	14.4	1.6	0.9	17.9	13.3	8.6 m
1997	5.7	7.6	8.7	15.5	18.5	12.7	10.4	24.4	51.3	22.8	39.0	41.2	21.5
1998	31.9	40.3	54.8	53.4	56.3	70.7	66.6	92.2	92.9	55.5	74.0	81.9	64.3
1999	62.0	66.3	68.8	63.7	106.4	137.7	113.5	93.7	71.5	116.7	133.2	84.6	93.2
2000	90.1	112.9	138.5	125.5	121.6	124.9	170.1	130.5	109.7	99.4	106.8	104.4	119.6 M
2001	95.6	80.6	113.5	107.7	96.6	134.0	81.8	106.4	150.7	125.5	106.5	132.2	111.0
2002	114.1	107.4	98.4	120.7	120.8	88.3	99.9	116.4	109.3	97.5	95.5	80.8	104.0
2003	79.7	46.0	61.1	60.0	54.6	77.4	83.3	72.7	48.7	65.5	67.3	46.5	63.9
2004	37.7	45.8	49.1	39.3	41.5	43.2	51.0	40.9	27.7	48.0	43.5	17.9	40.4
2005	31.3	29.1	24.8	24.2	42.7	39.3	40.1	36.4	21.9	8.7	18.0	41.1	29.8
2006	15.4	4.7	10.8	30.2	22.2	13.9	12.2	12.9	14.4	10.5	21.4	13.6	15.2
2007	16.8	10.7	4.5	3.4	11.7	12.1	9.7	6.0	2.4	0.9	1.7	10.1	7.5
2008	3.3	2.1	9.3	2.9	3.2	3.4	0.8	0.5	1.1	2.9	4.1	0.8	2.9
2009	1.3	1.4	0.7	1.2	2.9	2.6	3.5	0.0					1.7

Values are preliminary after Mar 09. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

HÀ S O L A R F L A R E S
AUGUST 2009

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/		Dur (Min)	Imp Opt	Xray	See	Obs Type	Area Measurement			Remarks
							USAF Region	CMP Mo Day						Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	

No Reports

28
Aug 09

X - R A Y S O L A R F L A R E S
AUGUST 2009

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Dur Day (Min)	Imp Xray	Total Integrated Flux(1)	Total Area(2)	Total(3) Intensity
-----	-----	---------------	-------------	-------------	-----	-----	-------------------------	-----------	---------------------	-------------	--------------------------------	------------------	-----------------------

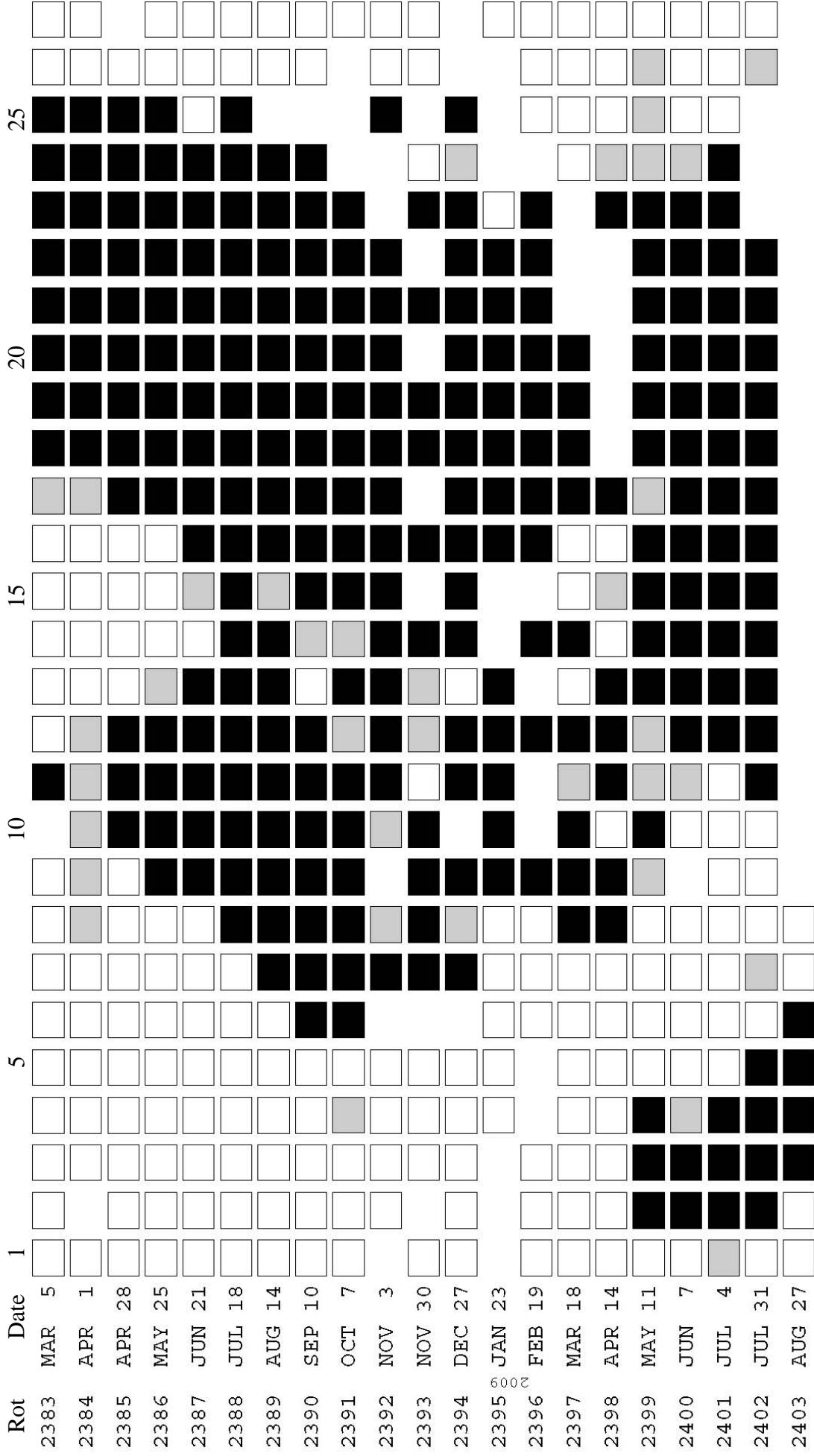
No Reports

S O L A R R A D I O E M I S S I O N
Selected Fixed Frequency Events
AUGUST 2009

Day	Freq Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density		Int	Remarks
						Peak (10 -22 W/m 2 Hz)	Mean		

No Reports

STANFORD MEAN SOLAR MAGNETIC FIELD



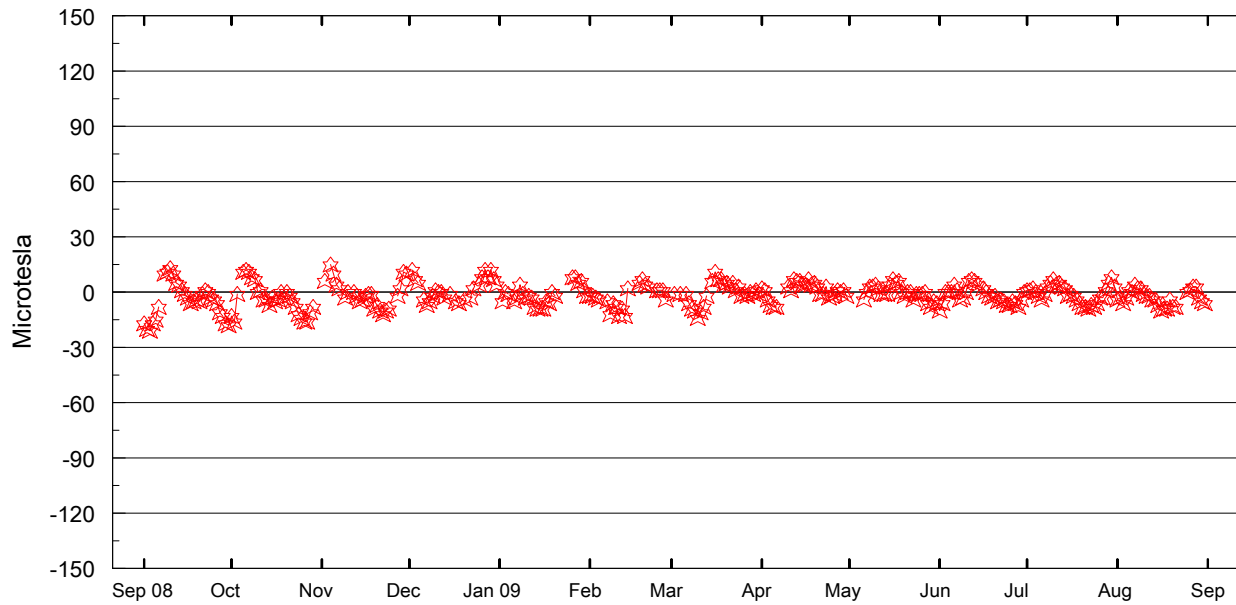
Mean Solar Magnetic Field Polarity:

- = field > 2 microT;
- = field < -2 microT;
- = -2 microT ≤ field ≤ 2 microT
- No box = no data available

Observations are taken at 2000 UT. Rotation numbers given are the Bartels series, but the dates are not; these dates are five days earlier, to mark times of occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

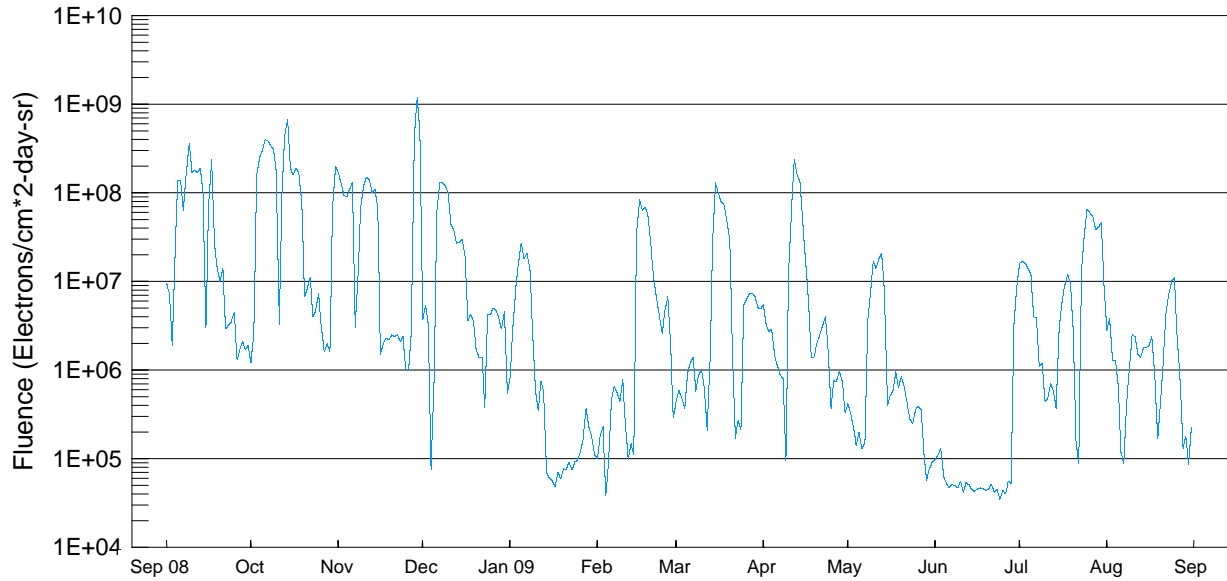
Stanford Mean Solar Magnetic Field (Microtesla) "Sun-As-A-Star"

31
Aug 09



Day	Sep 08	Oct	Nov	Dec	Jan 09	Feb	Mar	Apr	May	Jun	Jul	Aug
1	-17	-13	---	---	---	-2	---	2	---	-10	1	-4
2	-20	-16	6	12	-5	-2	-1	1	---	-6	1	-3
3	-21	-1	---	7	0	-3	---	-4	---	0	2	-6
4	-17	---	15	5	-1	-4	-1	-7	---	0	0	-3
5	-15	11	10	---	---	---	---	-8	---	0	-2	1
6	-8	12	4	-4	-5	---	-1	-8	-4	4	-4	0
7	---	11	2	-7	-3	-5	-6	---	0	1	-1	4
8	10	8	---	-5	4	-12	-9	---	3	-4	3	2
9	11	7	-3	-2	-1	-6	-10	---	3	-3	5	2
10	13	0	0	1	-3	-8	-14	3	4	0	7	-1
11	10	1	---	0	-2	-13	-11	1	2	6	4	-2
12	5	-4	0	0	-3	-9	-8	7	-1	7	5	-2
13	4	-4	-2	-3	-8	-13	-2	6	-1	6	3	-4
14	1	-7	-5	---	-9	2	---	6	-1	4	2	-4
15	-1	-3	-4	-1	-9	---	6	4	4		-2	-7
16	-3	-5	-2	---	-9	---	11	4	7	2	-1	-10
17	-6	-4	-1	-5	-5	---	7	7	5	0	-2	-9
18	-5	0	-1	-6	-6	5	7	4	6	-2	-4	-9
19	-4	-3	-9	---	0	7	4	5	0	-3	-6	-4
20	-5	0	-7	-4	-2	4	5	3	-2	-2	-8	-8
21	-1	-2	-10	---	---	3	3	-1	0	-5	-8	-8
22	1	-5	-12	-3	---	---	5	-1	0	-4	-9	---
23	0	-8	-10	2	---	---	1	3	-4	-5	-7	---
24	-3	-12	-9	---	---	1	3	-3	-1	-7	-8	---
25	-4	-14	---	4	---	1	-2	-2	-1	-7	-6	0
26	-6	-16	---	8	8	1	-1	-1	-1	-5	-3	1
27	-11	-16	-2	12	8	-4	-2	1	0	-6	-3	3
28	-13	-11	2	8	5	---	0	0	-6	-8	1	3
29	-17	-8	11	12	6		-1	1	-8	-4	5	-3
30	-18	---	10	7	1		1	-2	-5	0	8	-5
31		---		4	-2		-1		-6		3	-6

GOES Daily Electron Fluence Sep 2008 - Aug 2009



Day	Sep 08	Oct	Nov	Dec	Jan 09	Feb	Mar	Apr	May	Jun	Jul	Aug
1	9.4E+06	1.2E+06	1.7E+08	3.7E+06	8.3E+05	1.0E+05	4.4E+05	5.5E+06	4.2E+05	9.9E+04	1.6E+07	2.8E+06
2	7.3E+06	2.5E+06	1.3E+08	5.4E+06	2.9E+06	1.8E+05	5.9E+05	3.2E+06	3.2E+05	1.1E+05	1.7E+07	3.8E+06
3	1.9E+06	1.6E+08	9.4E+07	3.3E+06	8.1E+06	2.3E+05	4.9E+05	2.7E+06	2.3E+05	1.3E+05	1.6E+07	1.3E+06
4	2.0E+07	2.5E+08	9.1E+07	7.5E+04	1.6E+07	3.9E+04	3.7E+05	2.9E+06	1.4E+05	6.3E+04	1.4E+07	1.3E+06
5	1.4E+08	3.0E+08	1.1E+08	6.5E+05	2.7E+07	8.6E+04	9.2E+05	1.4E+06	2.0E+05	5.3E+04	1.2E+07	6.7E+05
6	1.4E+08	4.0E+08	1.3E+08	6.3E+07	1.8E+07	4.5E+05	1.2E+06	1.1E+06	1.3E+05	4.7E+04	4.0E+06	1.2E+05
7	6.2E+07	3.9E+08	3.0E+06	1.3E+08	2.1E+07	6.6E+05	1.4E+06	8.8E+05	1.5E+05	5.1E+04	3.9E+06	8.7E+04
8	1.6E+08	3.4E+08	1.1E+07	1.3E+08	1.4E+07	5.6E+05	5.8E+05	8.0E+05	3.5E+06	5.0E+04	1.1E+06	4.2E+05
9	3.6E+08	3.1E+08	7.0E+07	1.2E+08	2.7E+06	4.4E+05	8.8E+05	9.5E+04	7.6E+06	4.7E+04	1.2E+06	1.0E+06
10	1.7E+08	1.8E+08	1.2E+08	1.0E+08	6.2E+05	7.9E+05	1.0E+06	1.3E+07	1.7E+07	5.6E+04	4.4E+05	2.5E+06
11	1.8E+08	3.2E+06	1.5E+08	4.4E+07	3.5E+05	2.4E+05	6.6E+05	6.4E+07	1.4E+07	4.1E+04	4.8E+05	2.4E+06
12	1.7E+08	1.1E+08	1.4E+08	3.9E+07	7.5E+05	9.7E+04	2.1E+05	2.4E+08	1.8E+07	5.4E+04	7.1E+05	1.5E+06
13	1.9E+08	4.5E+08	1.0E+08	2.7E+07	5.7E+05	1.5E+05	1.3E+06	1.6E+08	2.1E+07	5.1E+04	5.8E+05	1.4E+06
14	1.0E+08	6.8E+08	1.1E+08	2.8E+07	7.0E+04	1.1E+05	3.1E+07	1.3E+08	8.3E+06	4.5E+04	3.7E+05	1.8E+06
15	3.0E+06	1.9E+08	6.8E+07	3.0E+07	6.0E+04	3.6E+07	1.3E+08	4.4E+07	4.0E+05	4.3E+04	2.8E+06	1.8E+06
16	7.3E+07	1.6E+08	1.5E+06	1.9E+07	5.6E+04	8.5E+07	9.9E+07	1.6E+07	5.2E+05	4.6E+04	5.6E+06	1.9E+06
17	2.4E+08	1.9E+08	2.0E+06	3.6E+06	4.8E+04	6.3E+07	8.0E+07	6.2E+06	5.8E+05	4.7E+04	8.8E+06	2.4E+06
18	2.6E+07	1.7E+08	2.3E+06	4.3E+06	7.1E+04	6.9E+07	7.5E+07	1.4E+06	9.6E+05	4.6E+04	1.2E+07	8.8E+05
19	1.4E+07	8.0E+07	2.2E+06	3.6E+06	5.9E+04	5.6E+07	4.9E+07	1.4E+06	6.3E+05	4.4E+04	9.6E+06	1.7E+05
20	1.0E+07	6.7E+06	2.5E+06	1.7E+06	7.7E+04	2.7E+07	3.0E+07	2.0E+06	8.4E+05	4.5E+04	3.0E+06	4.2E+05
21	1.4E+07	8.4E+06	2.4E+06	1.4E+06	7.6E+04	1.1E+07	1.4E+06	2.5E+06	6.6E+05	5.2E+04	1.6E+05	1.3E+06
22	2.9E+06	1.1E+07	2.5E+06	1.4E+06	9.1E+04	6.8E+06	1.7E+05	3.2E+06	4.4E+05	4.2E+04	8.9E+04	4.6E+06
23	3.2E+06	4.0E+06	2.1E+06	3.8E+05	7.5E+04	4.2E+06	2.7E+05	4.0E+06	2.8E+05	4.5E+04	1.4E+07	7.2E+06
24	3.5E+06	4.7E+06	2.4E+06	4.2E+06	9.2E+04	2.6E+06	2.1E+05	1.7E+06	2.5E+05	3.5E+04	3.3E+07	1.0E+07
25	4.5E+06	7.3E+06	1.0E+06	4.2E+06	9.8E+04	4.7E+06	5.4E+06	3.7E+05	3.6E+05	4.4E+04	6.6E+07	1.1E+07
26	1.3E+06	3.1E+06	1.0E+06	5.0E+06	1.2E+05	6.8E+06	6.2E+06	7.6E+05	3.9E+05	4.0E+04	5.9E+07	2.4E+06
27	1.7E+06	1.6E+06	2.8E+06	4.8E+06	1.7E+05	2.0E+06	7.2E+06	7.4E+05	3.6E+05	5.6E+04	5.4E+07	7.2E+05
28	2.1E+06	2.0E+06	4.5E+08	3.9E+06	3.7E+05	2.9E+05	7.4E+06	9.8E+05	1.2E+05	5.2E+04	3.8E+07	1.3E+05
29	1.7E+06	1.6E+06	1.2E+09	2.9E+06	2.3E+05		6.8E+06	7.4E+05	5.7E+04	3.3E+06	4.1E+07	1.8E+05
30	1.9E+06	7.0E+07	4.5E+08	4.6E+06	1.8E+05		5.1E+06	3.3E+05	7.7E+04	8.7E+06	4.6E+07	8.6E+04
31		2.0E+08		5.4E+05	1.1E+05		4.9E+06		9.3E+04		9.3E+06	2.3E+05

NOTE: The electron detector responds significantly to protons above 32 MeV; therefore, electron data are contaminated when a proton event is in progress. These days are indicated with '-999' in the table and are not plotted. '-' indicates data not available.
 NOTE: GOES9 data began April, 1996 and ended on 26 July, 1998. GOES12 is primary satellite as of 15 May 2003.

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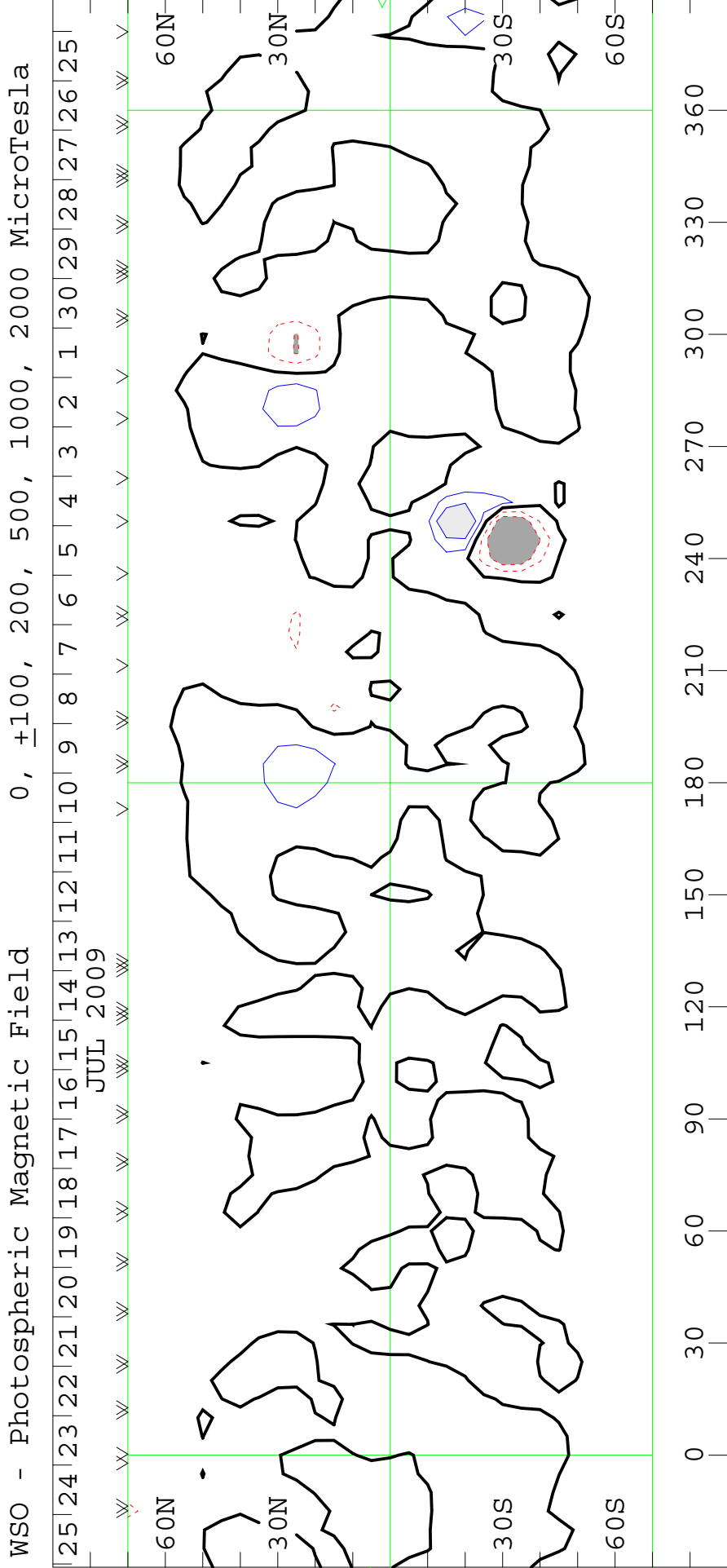
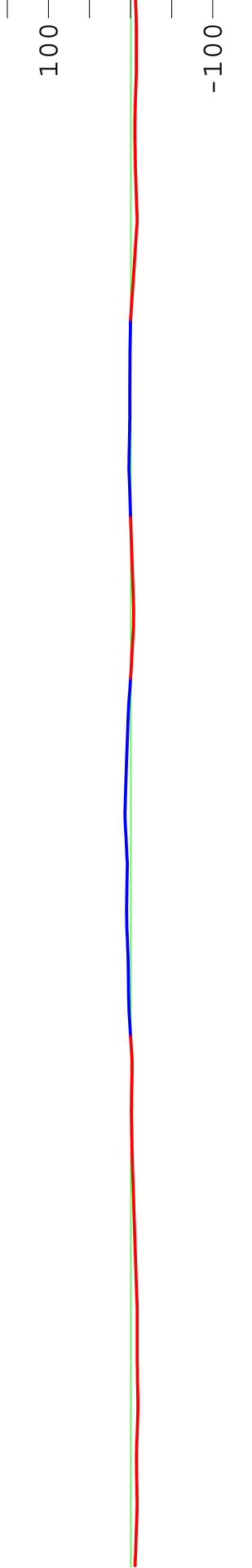
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 2085

(26 Jun 2009 to 23 Jul 2009)

Wilcox Solar Observatory

Mean Field



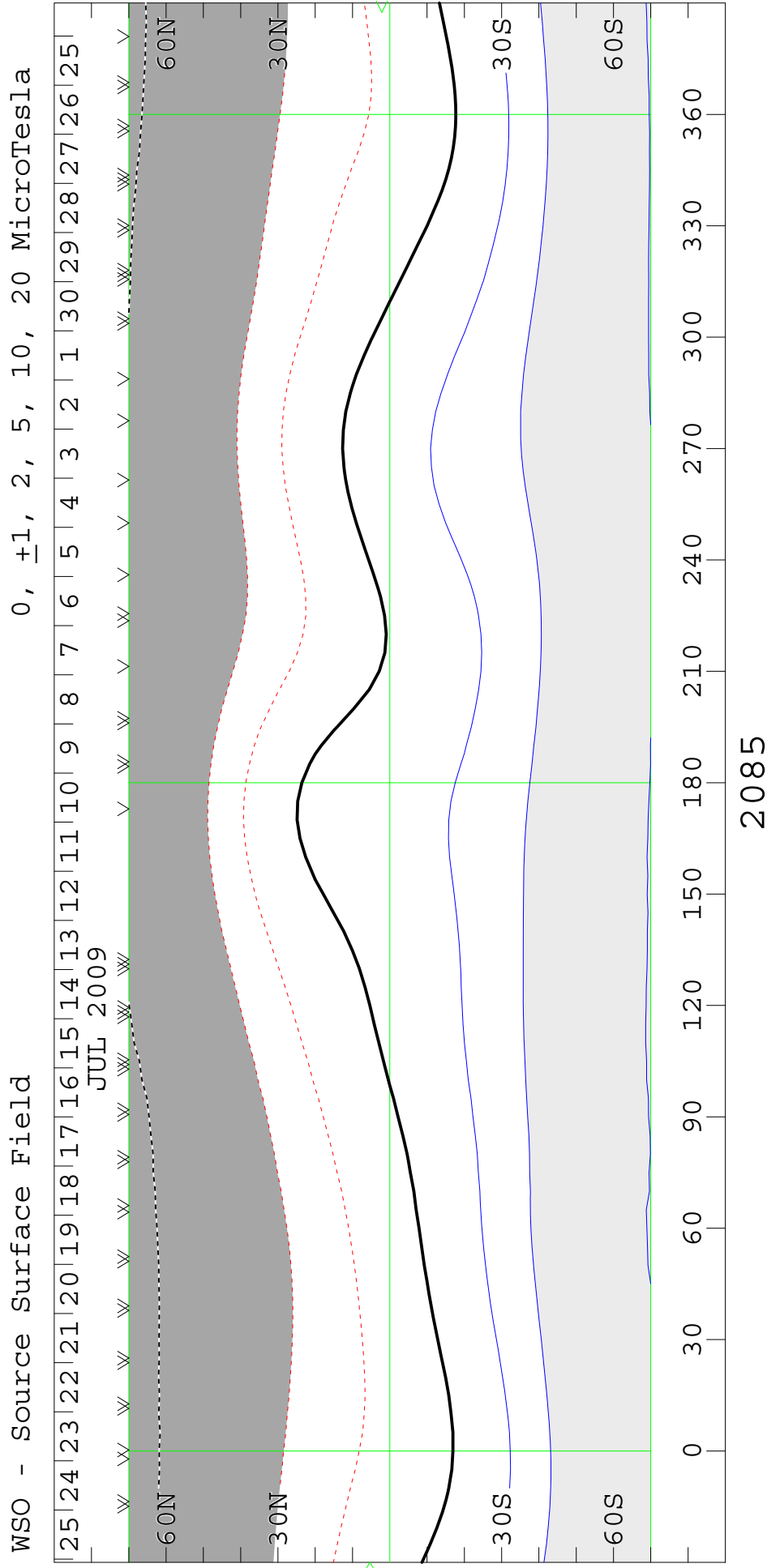
SOLAR MAGNETIC FIELD SYNOPSIS CHART

SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 2085

(26 Jun 2009 to 23 Jul 2009)

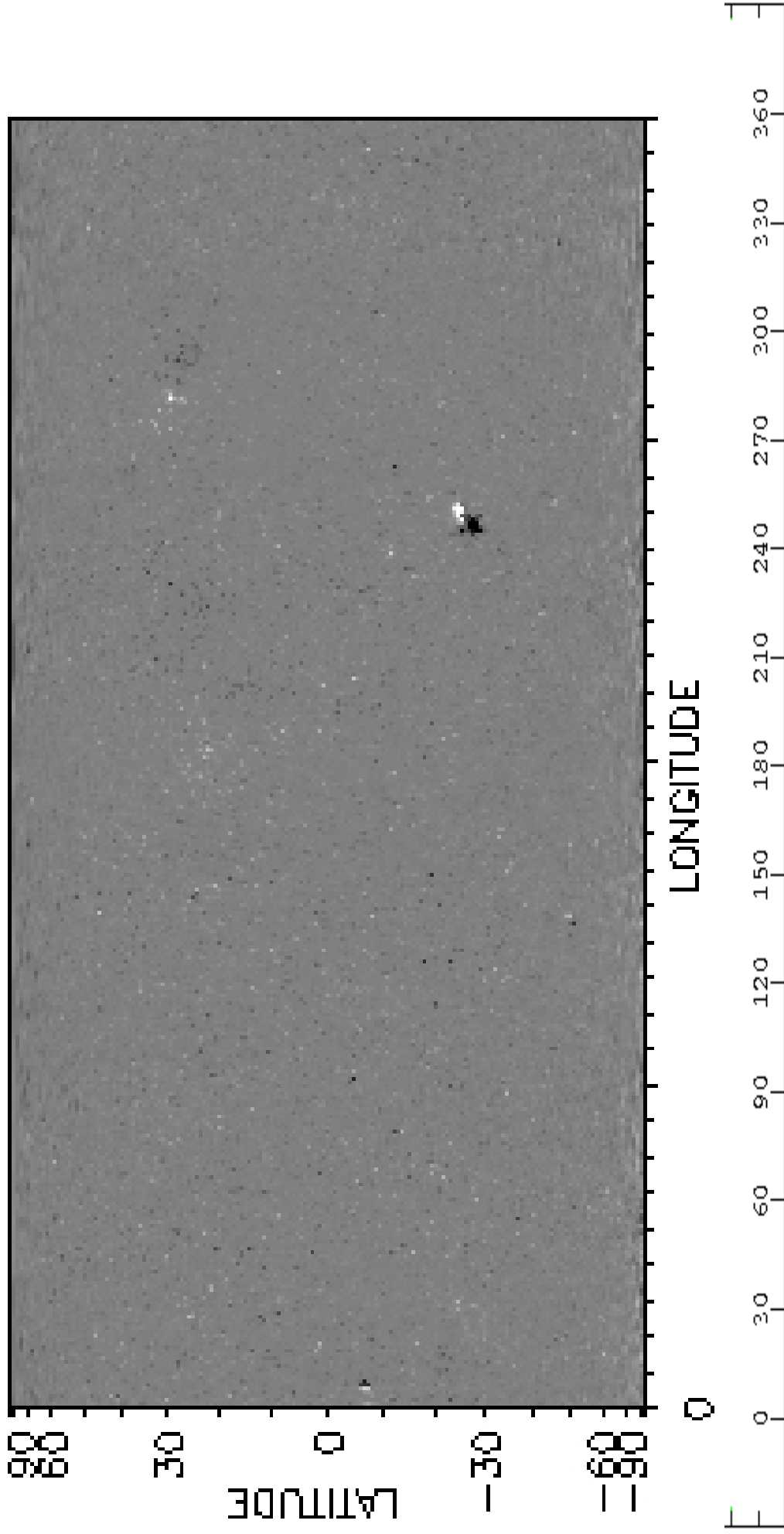
WILCOX SOLAR OBSERVATORY



SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION NUMBER 2085
(26 Jun 2009 to 23 Jul 2009)

National Solar Observatory/Kitt Peak

NSO/VSM MAGNETIC FLUX SYNOPTIC MAP
CARRINGTON ROTATION 2085



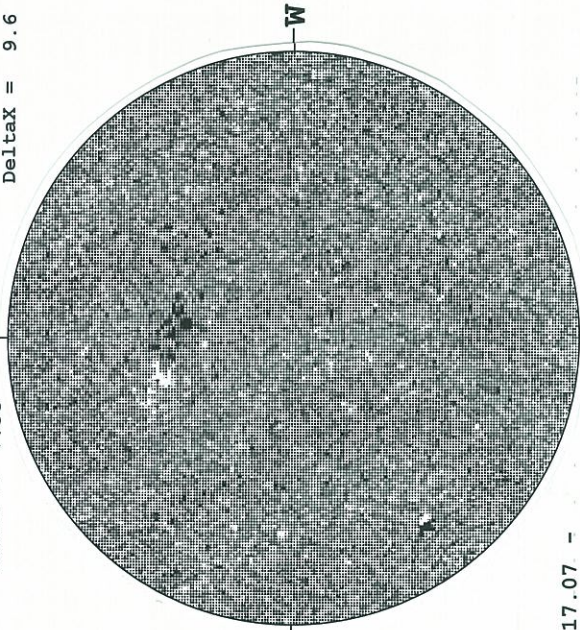
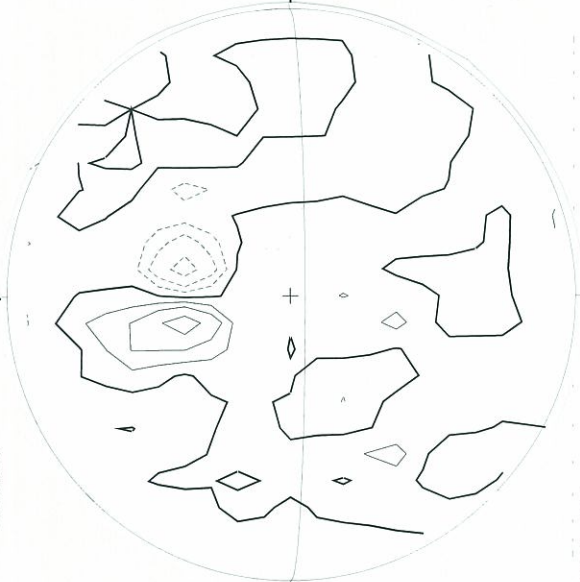
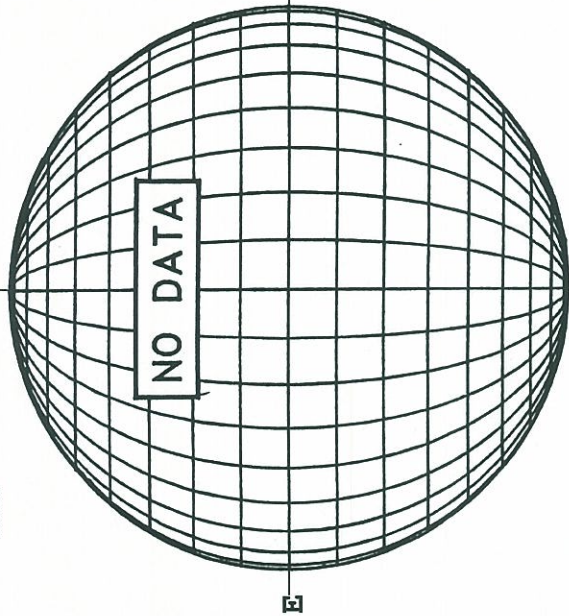
Heliographic Longitude

July 01, 2009 (P= -2.65, Bo= 2.88, Lo= 301.66)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -

STANFORD MAGNETOGRAM
Solid = +
Dashed = -

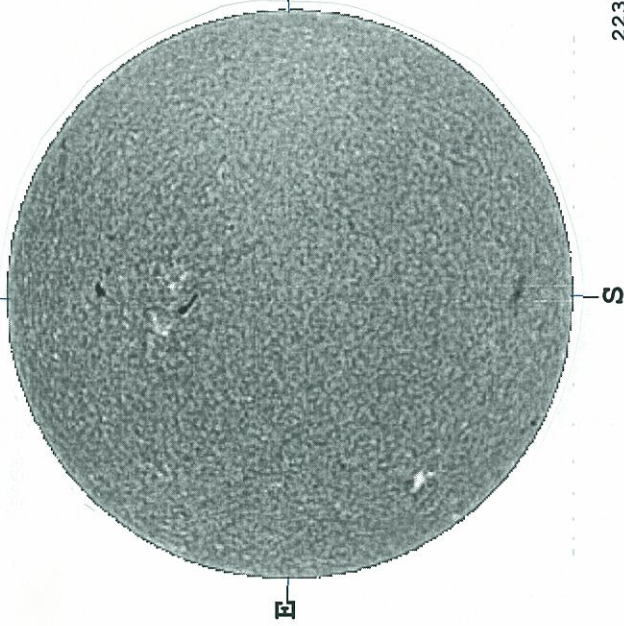
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaX = 13.1
DeltaY = 9.6



17.07 -
18.00 UT

2330 UT

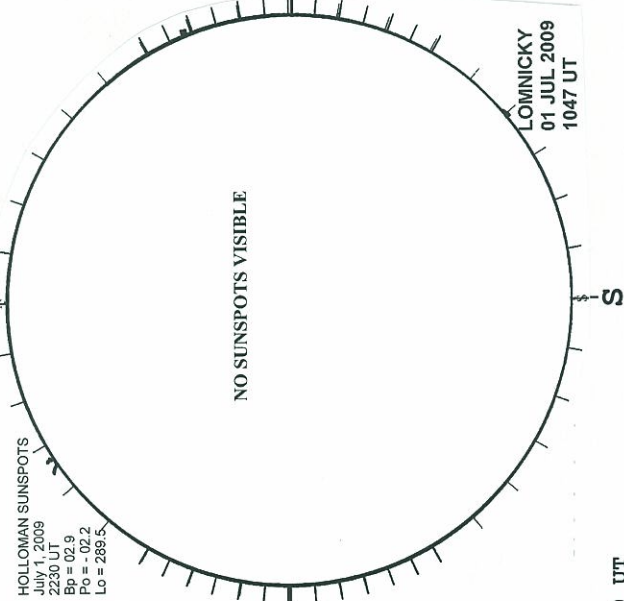
MAUNA LOA H-ALPHA



1748 UT

HOLLOMAN SUNSPOTS

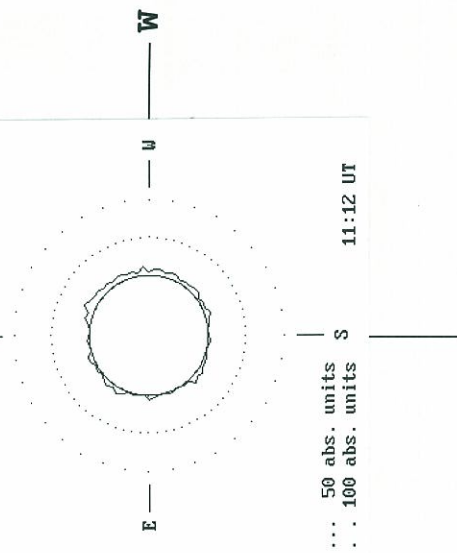
HOLLOMAN SUNSPOTS
JULY 1, 2009
2330 UT
B= 02.9
P= 02.2
Lo = 288.5



2330 UT
1047 UT LOMN PROM

LOMNICKY PEAK CORONA (1.04 Radii) -----

LOMNICKY STIT
530.3 nm
JULY 1, 2009

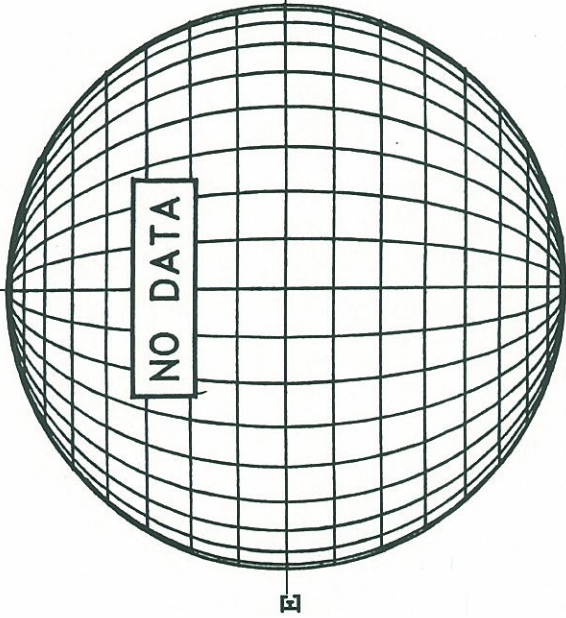


... 50 abs. units
... 100 abs. units
11:12 UT

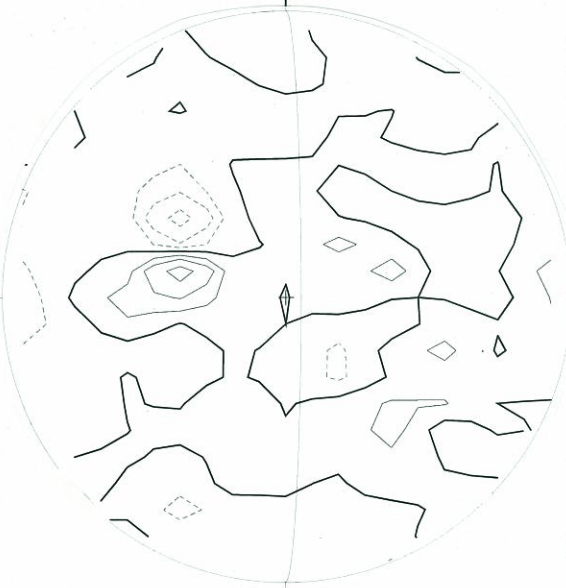
LOMNICKY
01 JUL 2009
1047 UT

July 02, 2009 (P= -2.19, Bo= 2.99, Lo= 288.42)

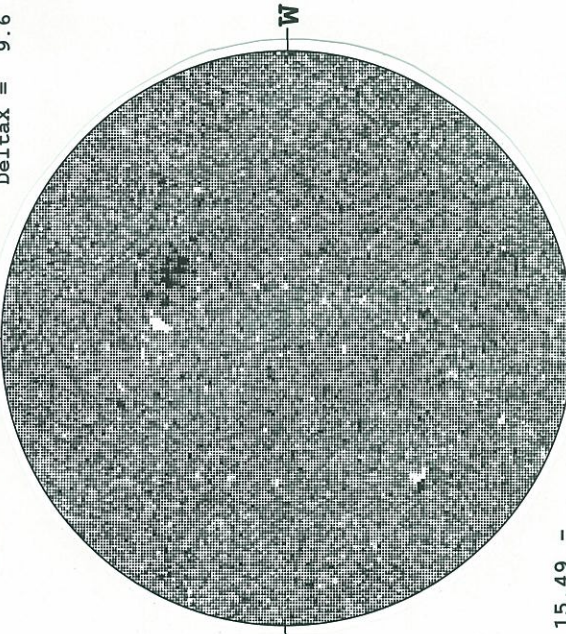
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



STANFORD M² NETOGRAM
Solid = +
Dashed = -



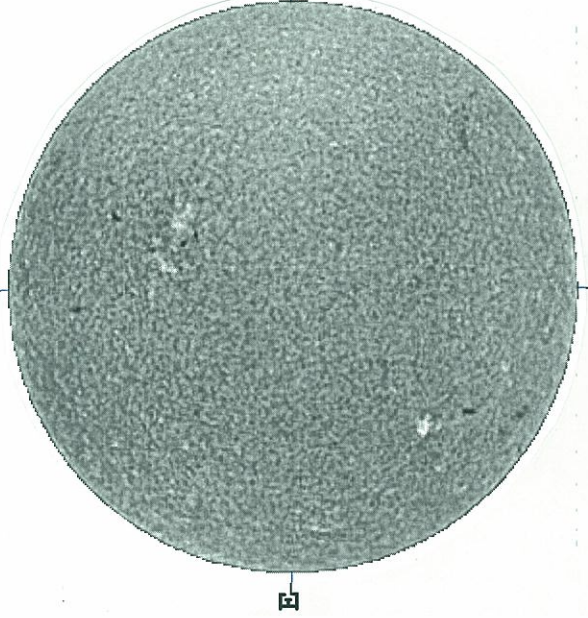
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



15.49 -
16.40 UT

1956 UT

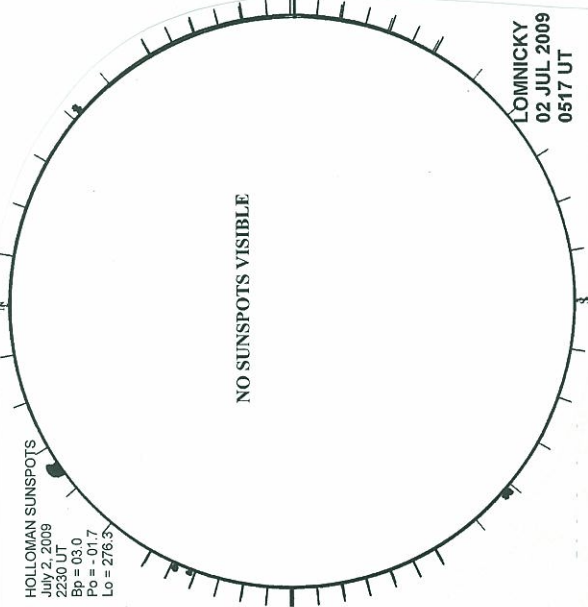
MAUNA LOA H-ALPHA



1719 UT

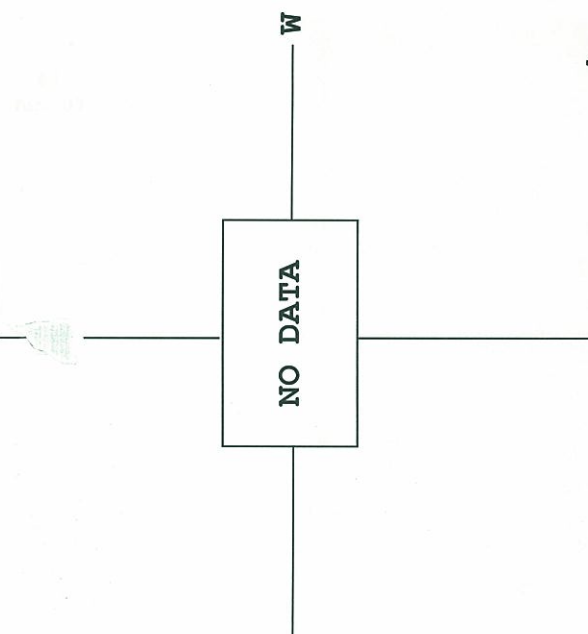
HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 2, 2009
2230 UT
Bp = 03.0
Po = -01.7
Lo = 276.3



2230 UT
0517 UT LOMN FROM

LOMNICKY PEAK CORONA (1.04 Radii) -----



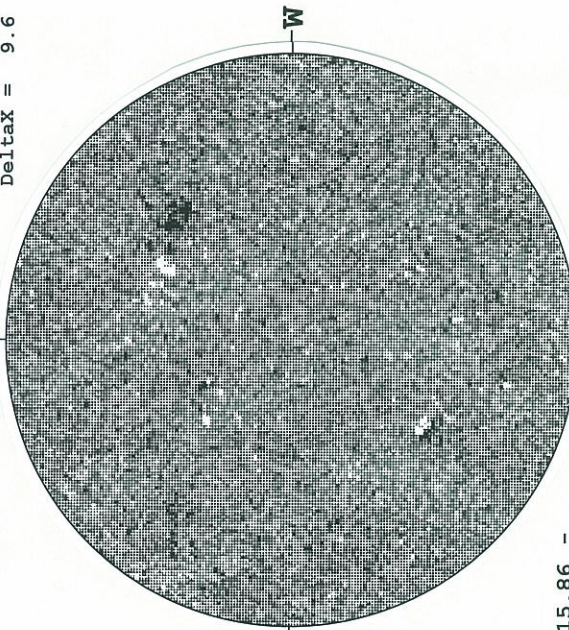
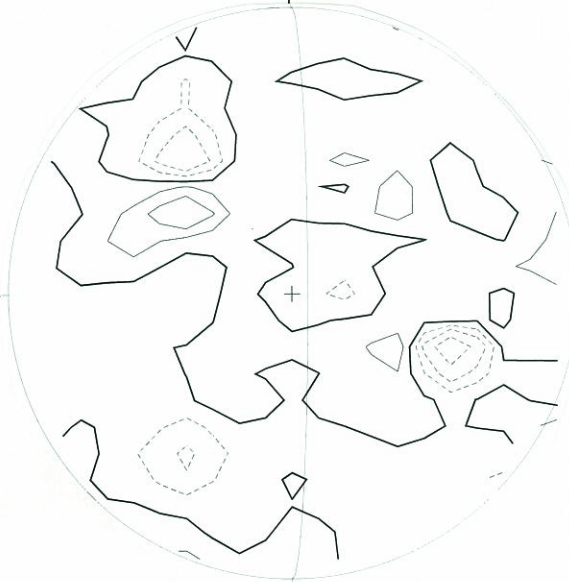
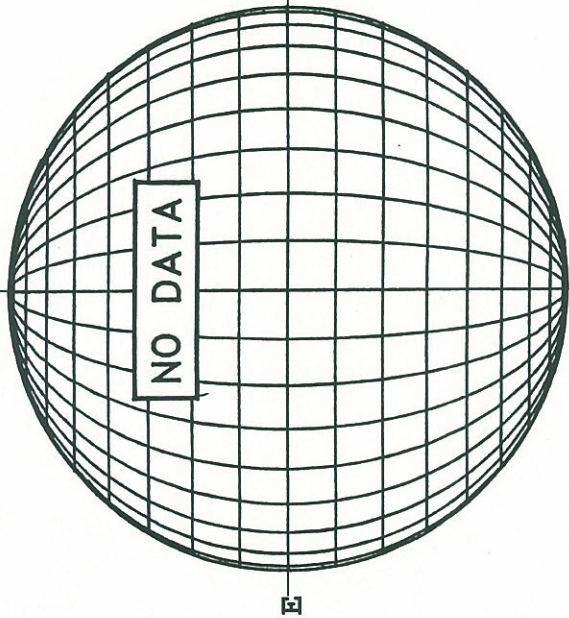
Jul 09 42

July 03, 2009 (P= -1.74, Bo= 3.10, Lo= 275.18)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -

STANFORD MAGNETOGRAM
Solid = +
Dashed = -

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



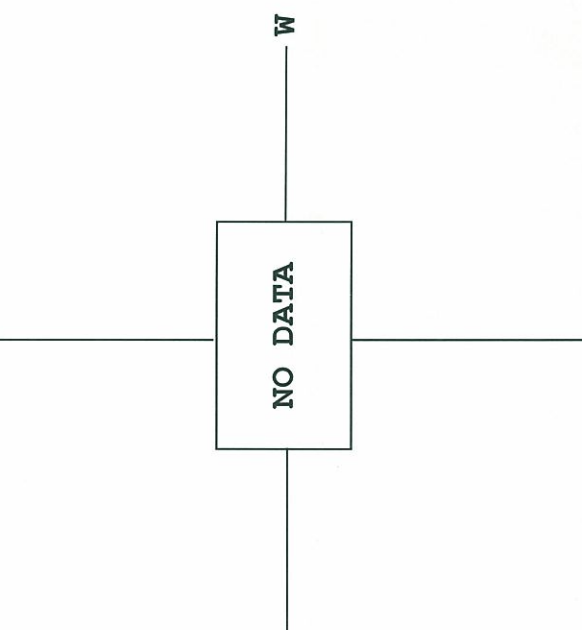
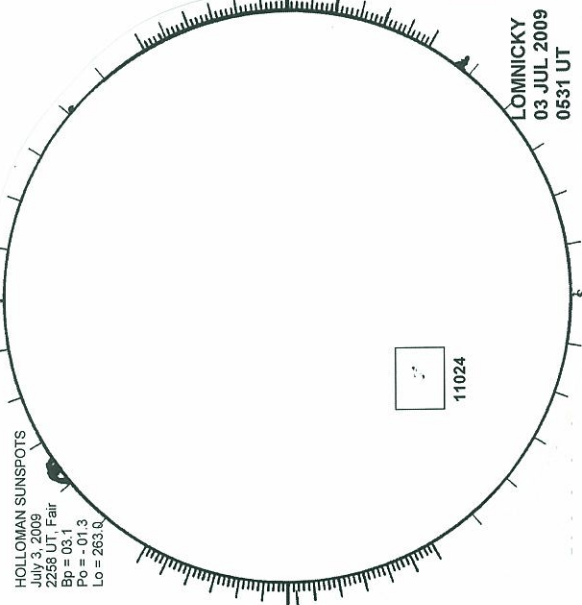
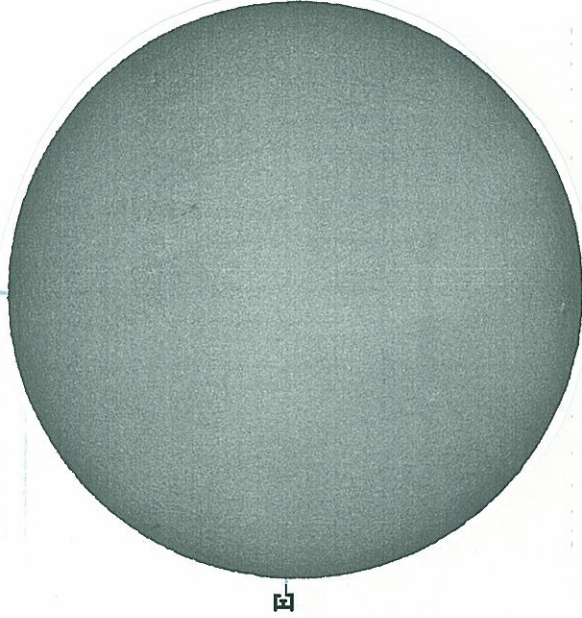
15.86 -
16.78 UT

04/0053 UT

KANZELHOHE H-ALPHA

HOLLOMAN SUNSPOTS

LOMNICKY PEAK CORONA (1.04 Radii) -----



0751 UT

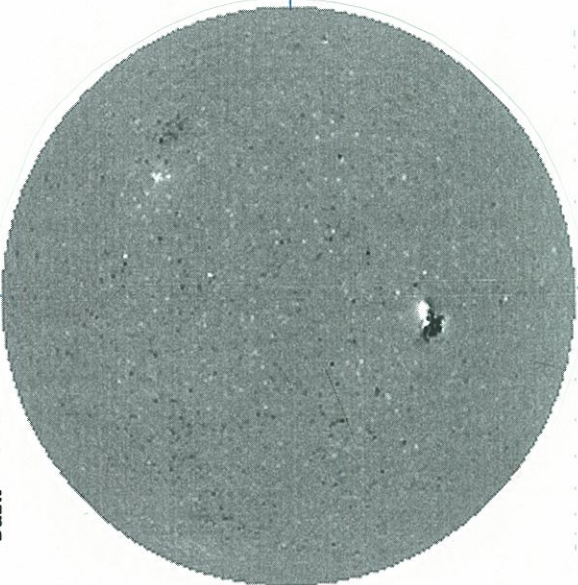
2258 UT
0531 UT LOMN PROM

LOMNICKY
03 JUL 2009
0531 UT

11024

July 04, 2009 (P= -1.29, Bo= 3.20, Lo= 261.95)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



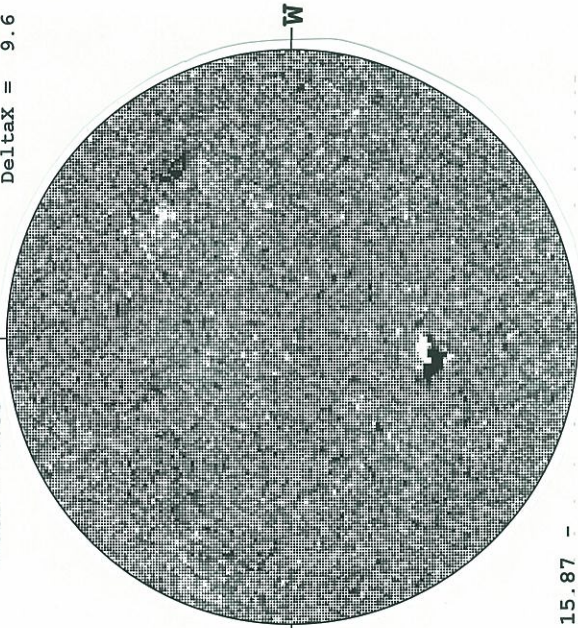
1403 UT

FANFORD MAGNETOGRAM
Solid =
Dashed =



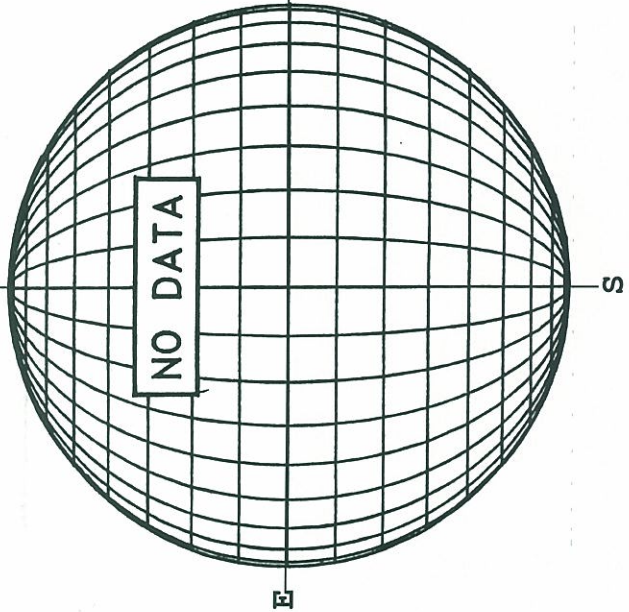
2151 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



15.87 -
16.79 UT

MAUNA LOA H-ALPHA

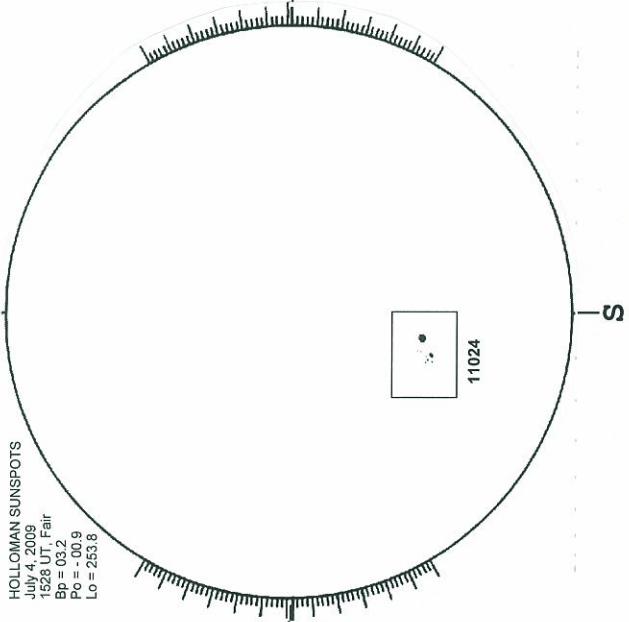


E

S

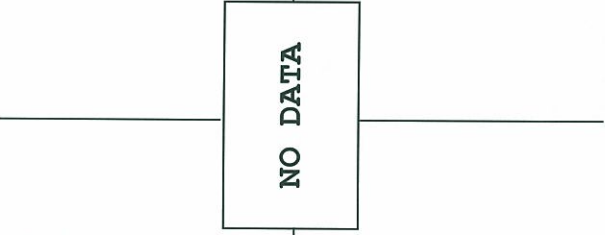
HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 4, 2009
1528 UT, Fair
Bp = 03.2
Po = -00.9
Lo = 253.8



1528 UT

LOMNICKY PEAK CORONA (1.04 Radii) -----

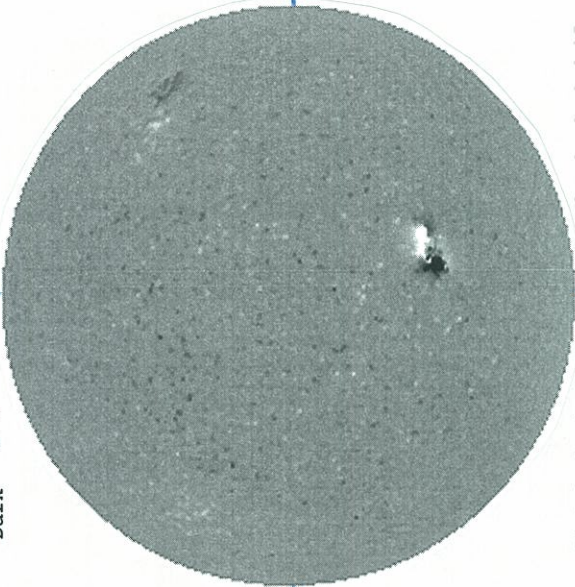


NO DATA

W

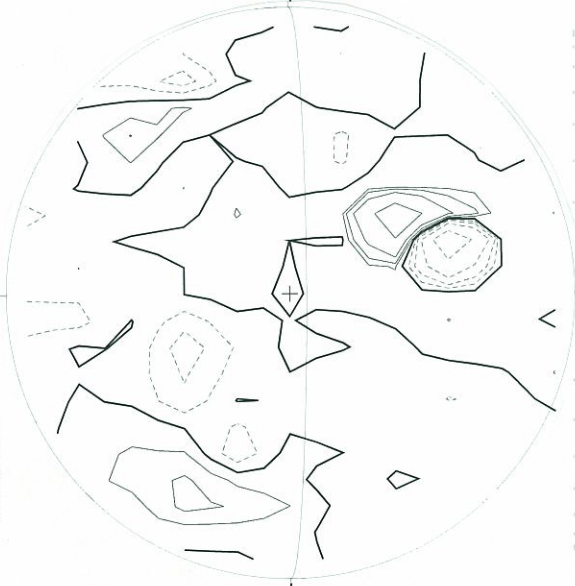
July 05, 2009 (P= -0.83, Bo= 3.31, Lo= 248.71)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



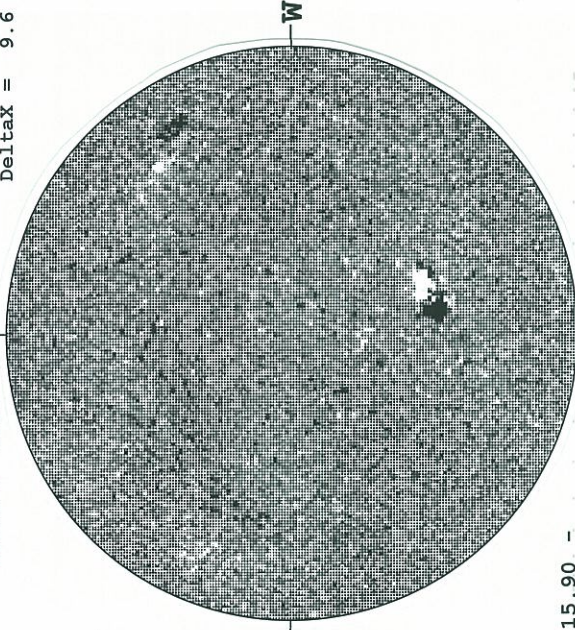
1703 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -



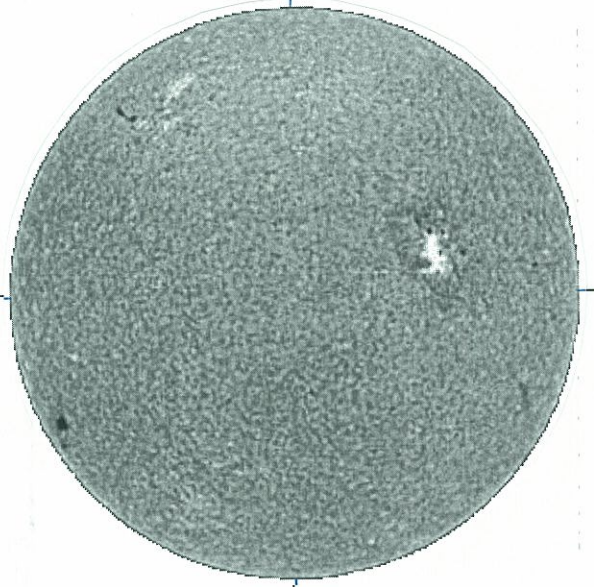
2311 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



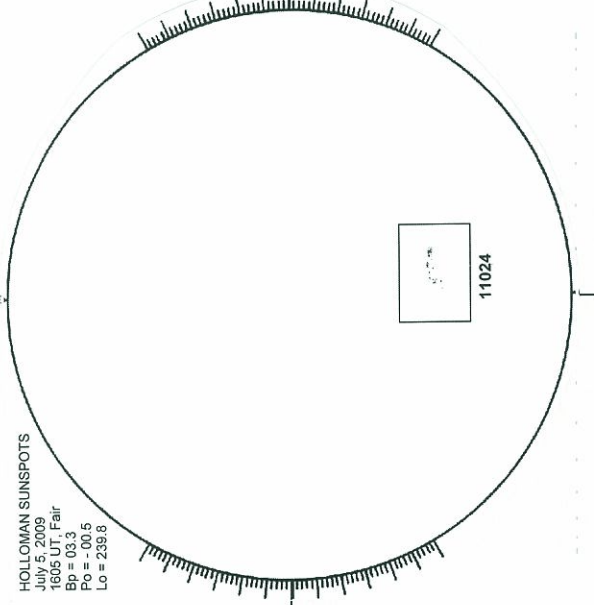
15.90 -
16.82 UT

MAUNA LOA H-ALPHA



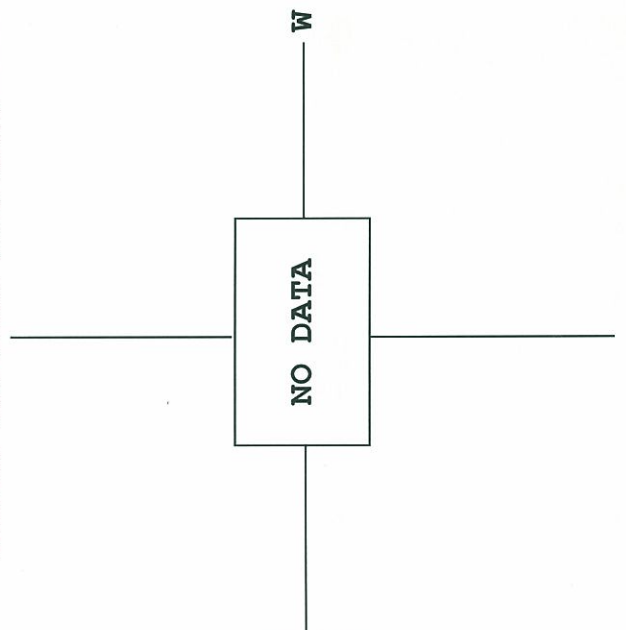
1722 UT

HOLLOMAN SUNSPOTS



1605 UT

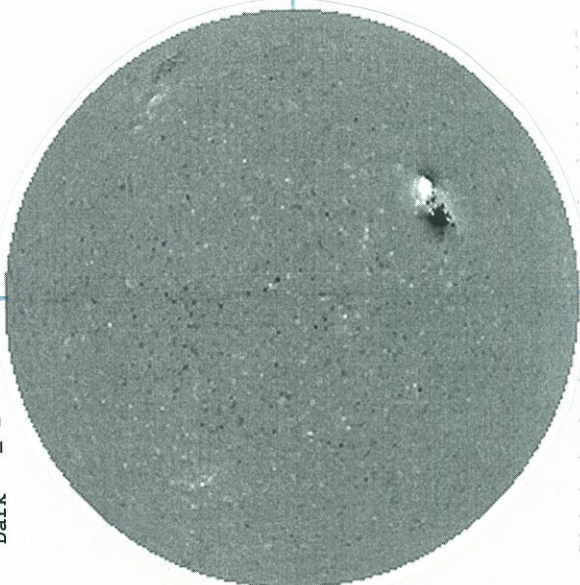
LOMNICKY PEAK CORONA (1.04 Radii) -----



1722 UT

July 06, 2009 (P= -0.38, Bo= 3.42, Lo= 235.48)

KITT PEAK MAGNETOGRAM -- SOLIS
 Bright = +
 Dark = -



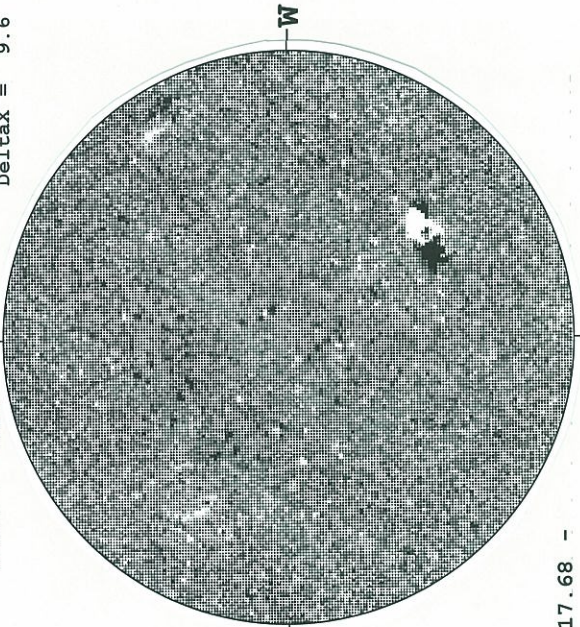
1354 UT

STANFORD MAGNETOGRAM
 Solid = +
 Dashed = -



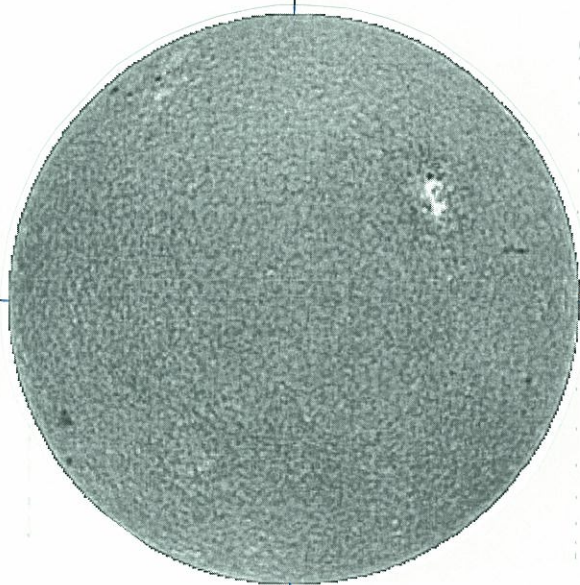
1806 UT

MT. WILSON MAGNETOGRAM
 White = +7.5G
 Black = -7.5G
 DeltaY = 13.1
 DeltaX = 9.6



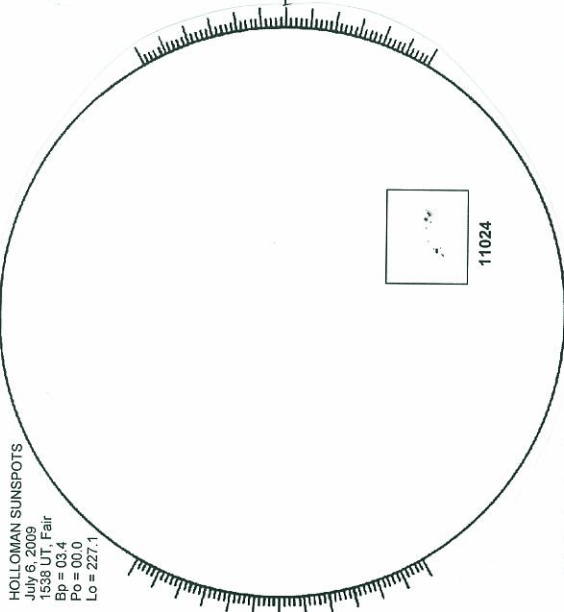
17.68 -
 18.60 UT

MAUNA LOA H-ALPHA



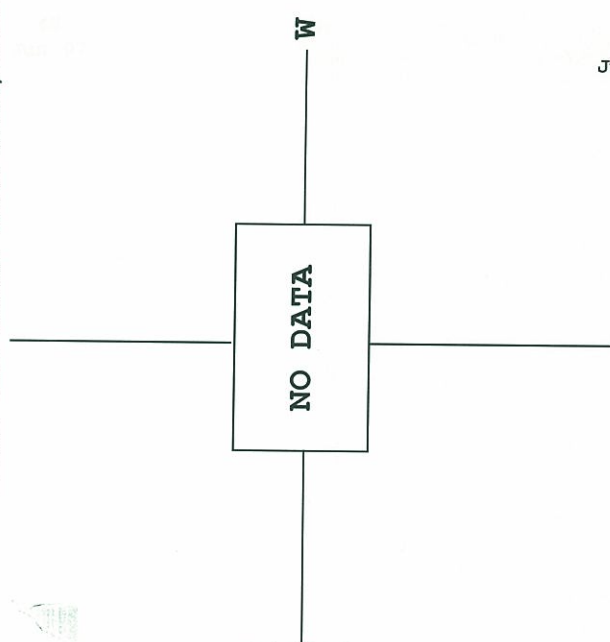
1926 UT

HOLLOMAN SUNSPOTS



1538 UT

SACRAMENTO PEAK CORONA (1.15 Radii) -----



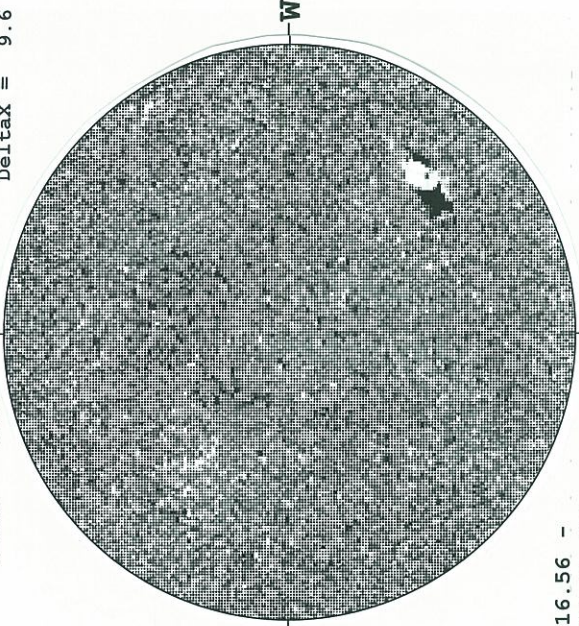
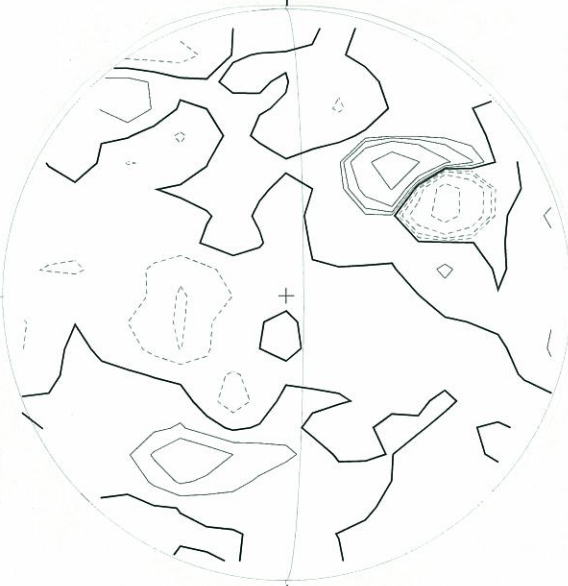
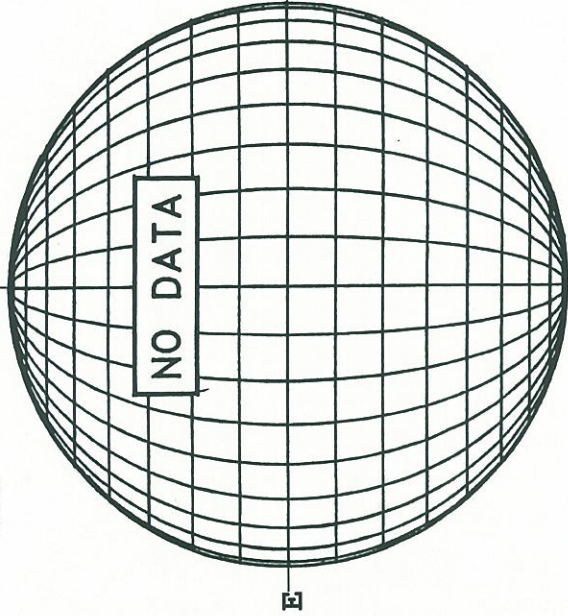
Jul 09 46

July 07, 2009 (P= 0.07, Bo= 3.52, Lo= 222.24)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -

STANFORD MAGNETOGRAM
Solid = +
Dashed = -

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



16.56 -
17.48 UT

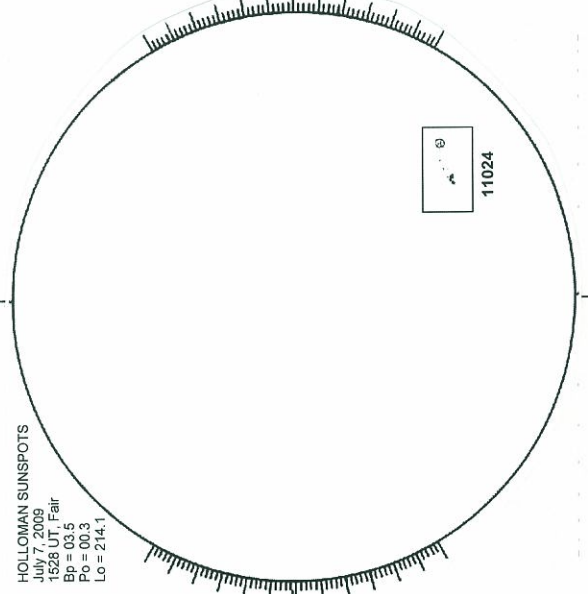
2134 UT

BIG BEAR H-ALPHA



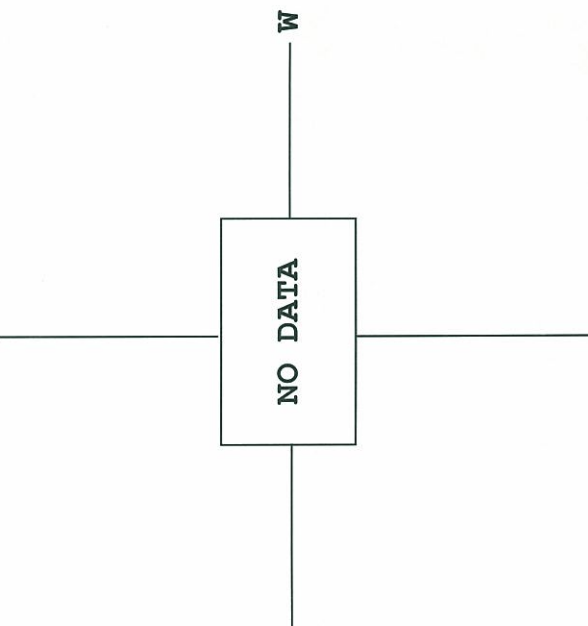
1542 UT

HOLLOMAN SUNSPOTS



1528 UT

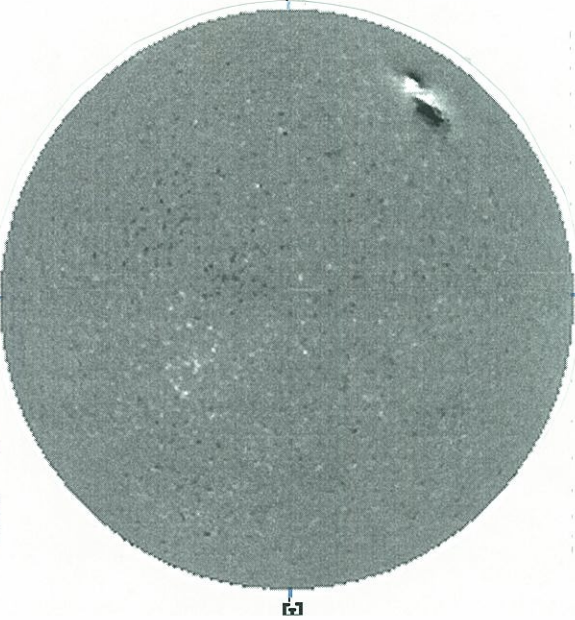
LOMNICKY PEAK CORONA (1.04 Radii) -----



NO DATA

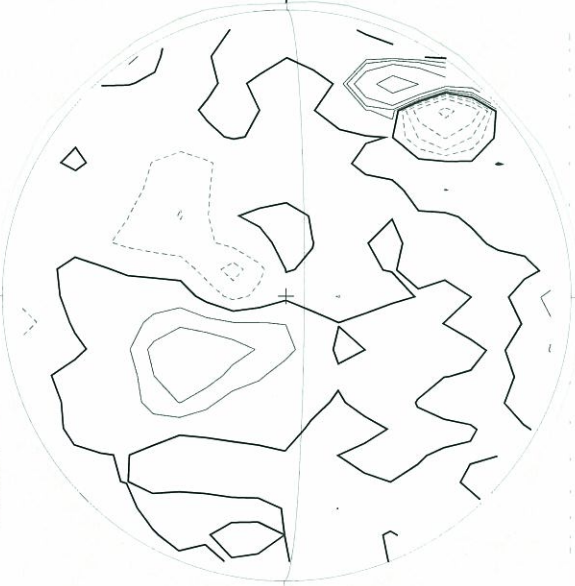
July 08, 2009 (P= 0.53, Bo= 3.63, Io= 209.00)

KITT PEAK MAGNETOGRAM -- SOLIS
 Bright = +
 Dark = -



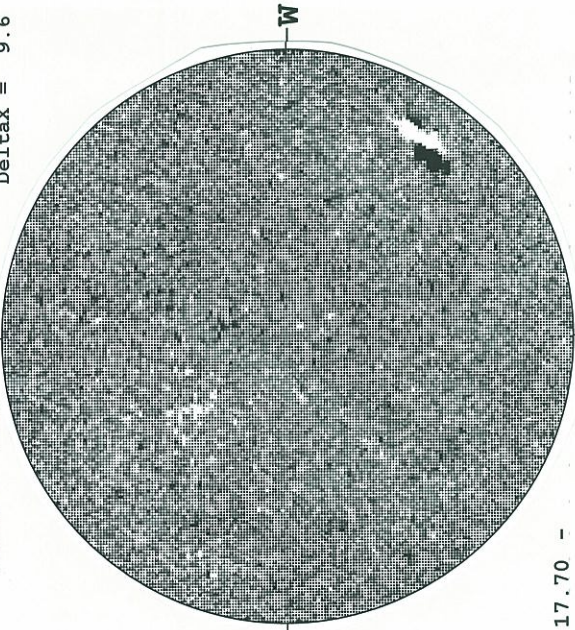
2042 UT

STANFORD MAGNETOGRAM
 Solid = +
 Dashed = -



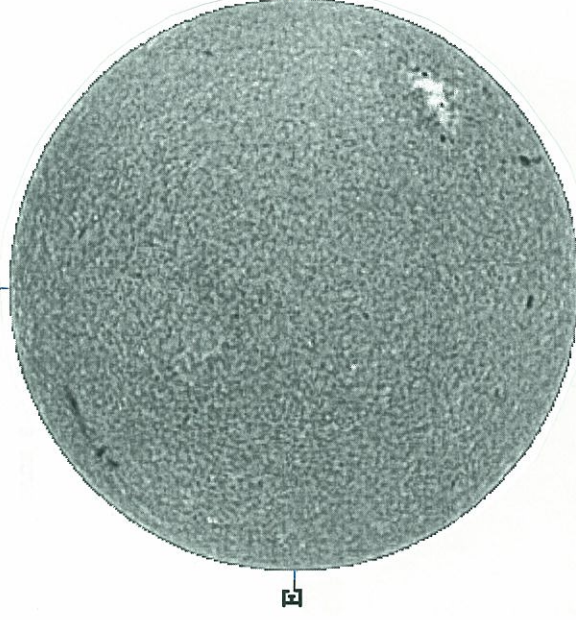
2116 UT

MT. WILSON MAGNETOGRAM
 White = +7.5G
 Black = -7.5G
 DeltaY = 13.1
 DeltaX = 9.6



17.70 -
 18.62 UT

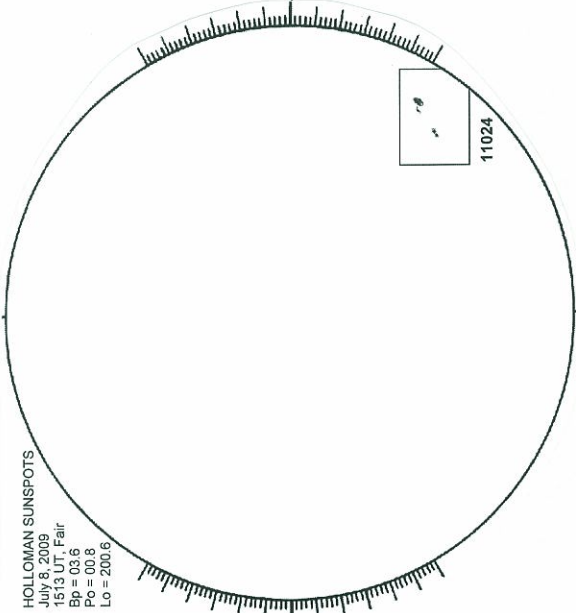
MAUNA LOA H-ALPHA



1743 UT

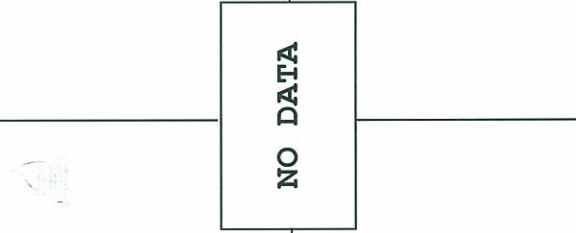
HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
 July 8, 2009
 1513 UT, Fair
 Bp = 03.6
 Pc = 00.8
 Lo = 200.6



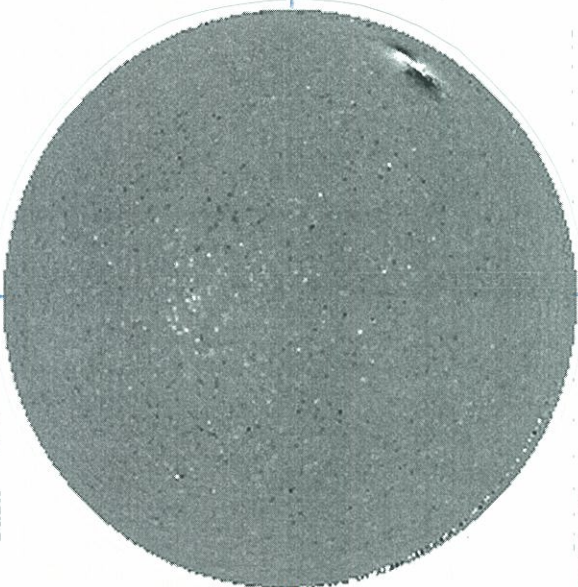
1513 UT

LOMNICKY PEAK CORONA (1.04 Rachi) -----



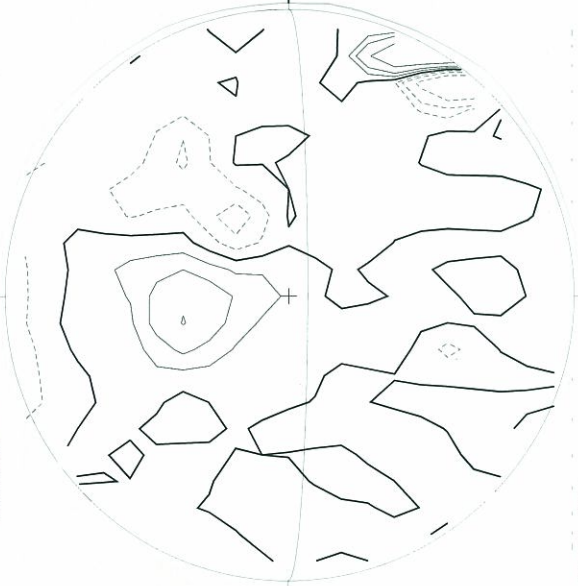
July 09, 2009 (P= 0.98, Bo= 3.73, Lo= 195.77)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N



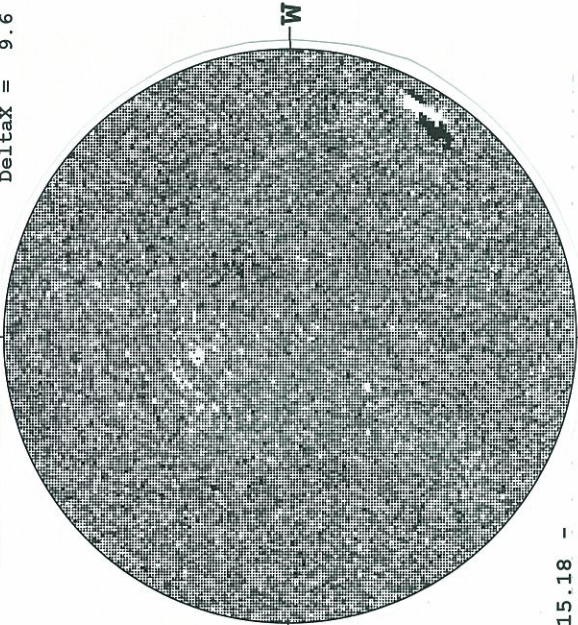
2226 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



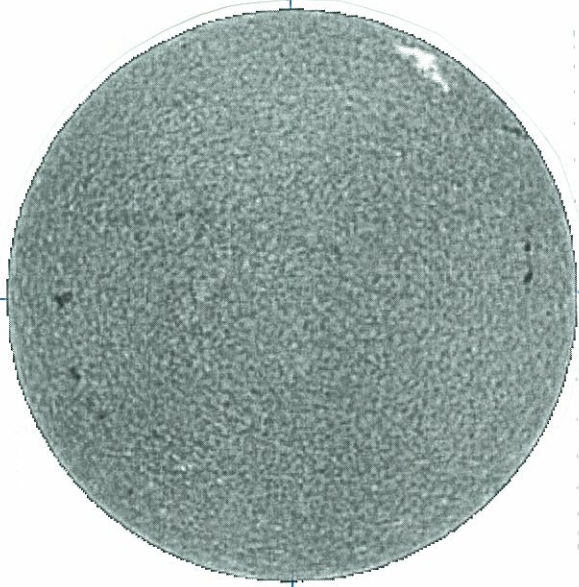
1830 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6
N



15.18 -
16.10 UT

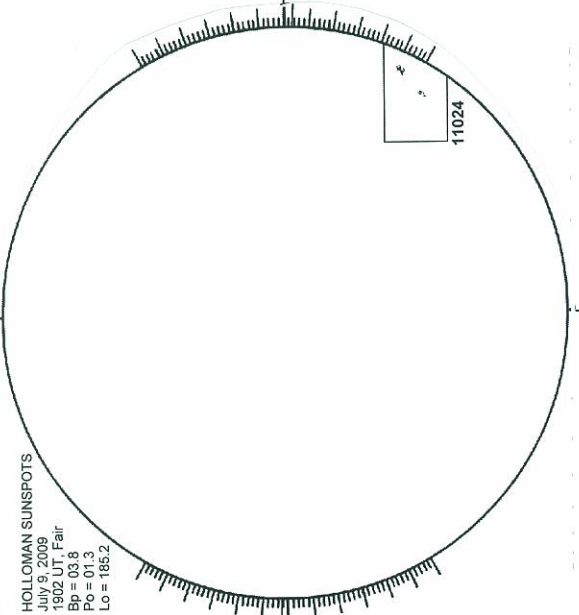
MAUNA LOA H-ALPHA



0058 UT

HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 9, 2009
1902 UT, Fair
Bp = 03.8
Po = 01.3
Lo = 185.2



1902 UT

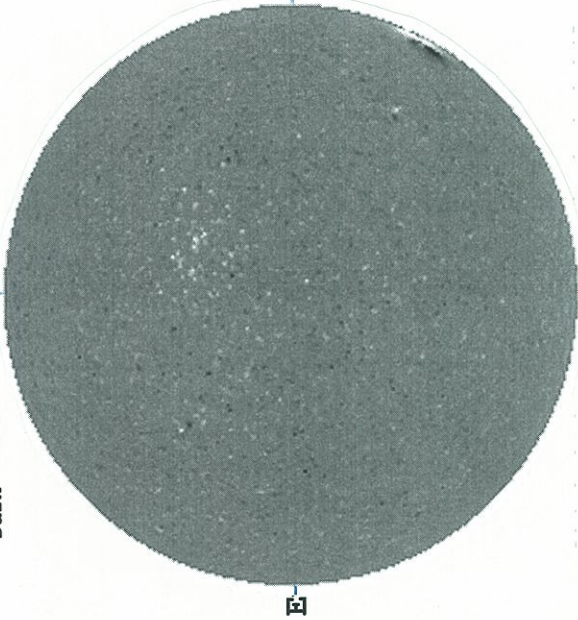
LOMNICKY PEAK CORONA (1.04 Radii) -----

NO DATA

W

July 10, 2009 (P= 1.43, Bo= 3.84, Lo= 182.54)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



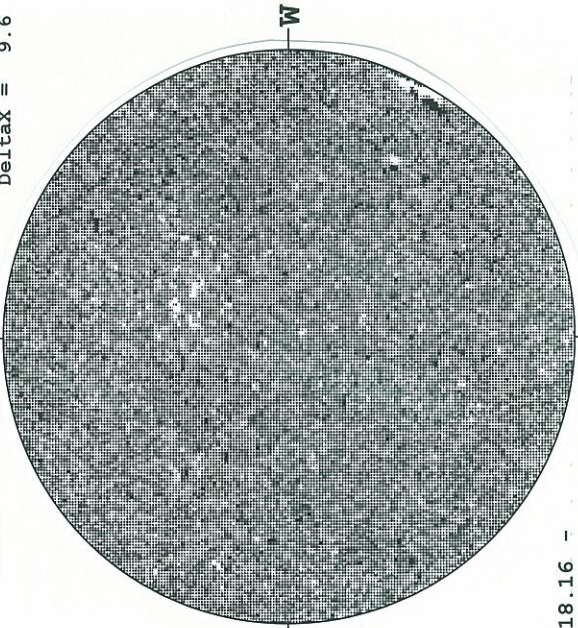
2101 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -



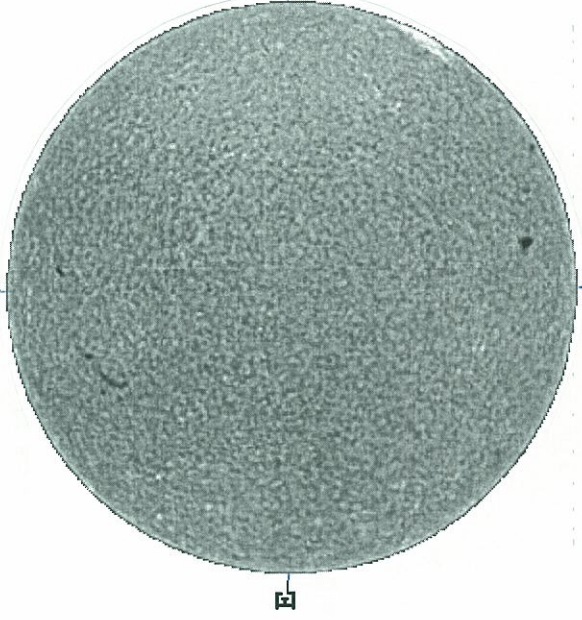
1730 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
Deltax = 13.1
Deltay = 9.6



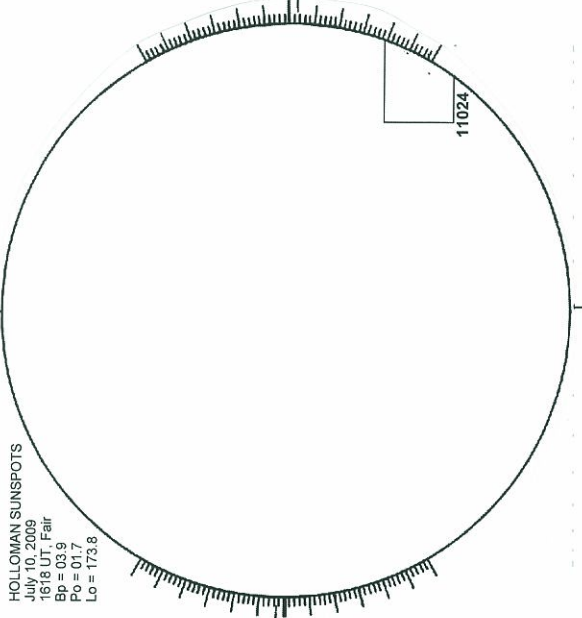
18.16 -
19.08 UT

MAUNA LOA H-ALPHA



2101 UT

HOLLOMAN SUNSPOTS



1618 UT

LOMNICKY PEAK CORONA (1.04 Radii) -----

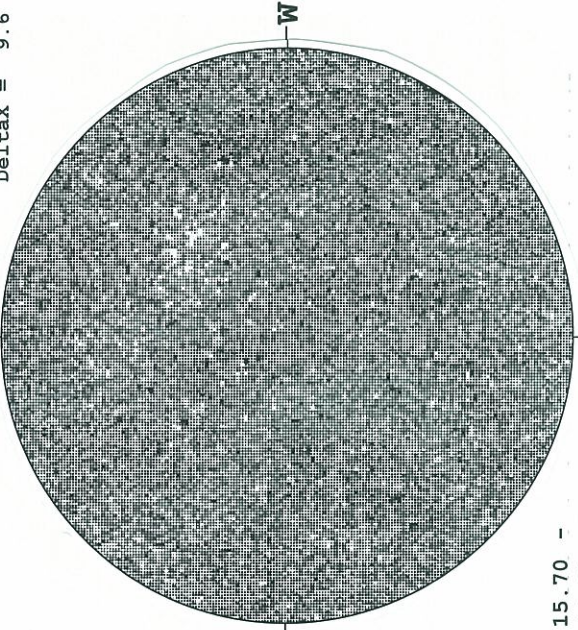
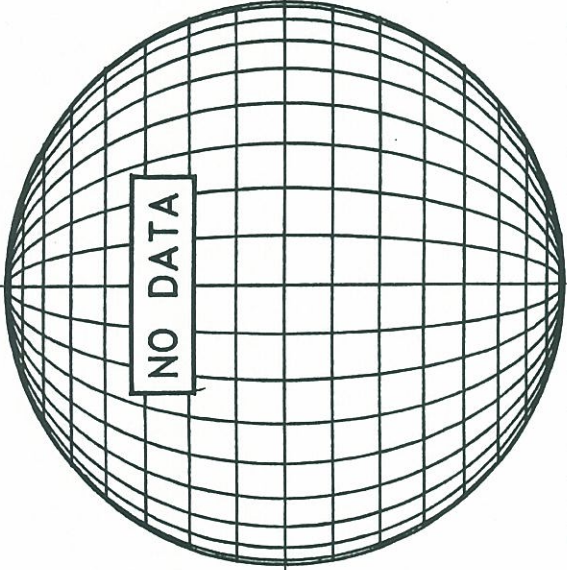
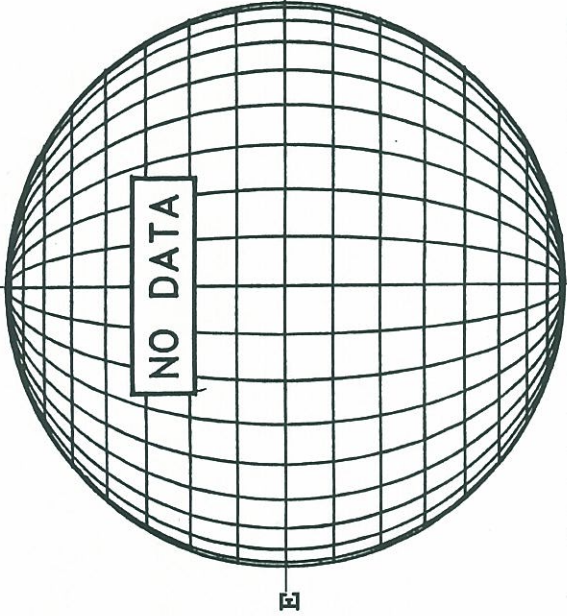
NO DATA

July 11, 2009 (P= 1.88, Bo= 3.94, Lo= 169.30)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -

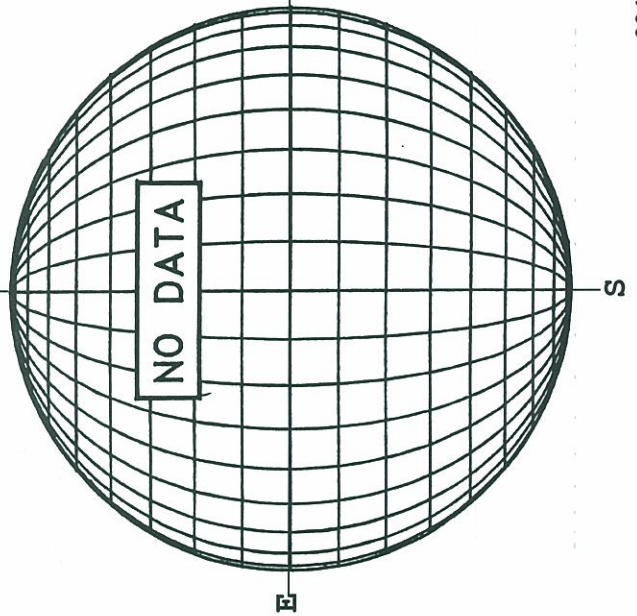
STANFORD MAGNETOGRAM
Solid = +
Dashed = -

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6

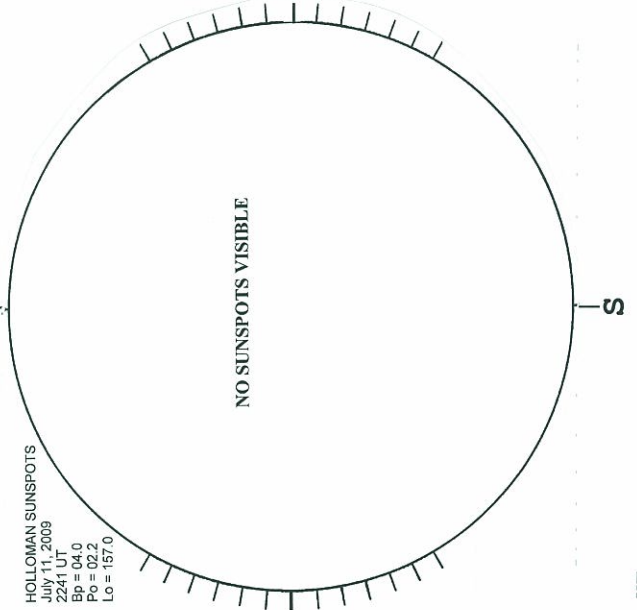


15.70 -
16.62 UT

MAUNA LOA H-ALPHA



HOLLOMAN SUNSPOTS



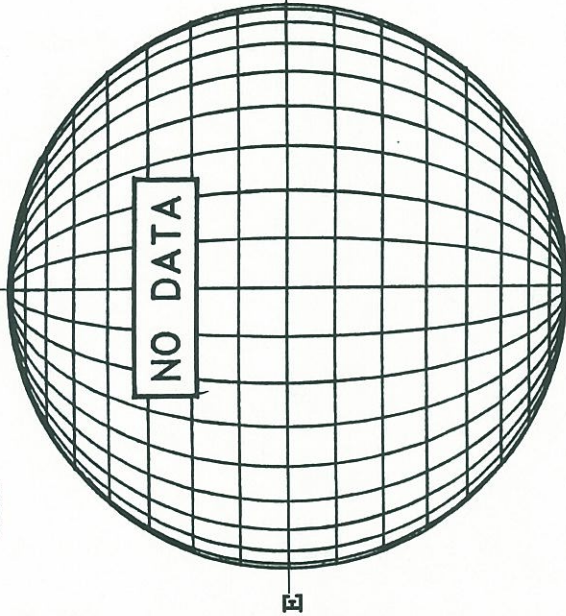
HOLLOMAN SUNSPOTS
July 11, 2009
2241 UT
Bo = 04.0
Po = 02.2
Lo = 157.0

LOMNICKY PEAK CORONA (1.04 Radii) -----

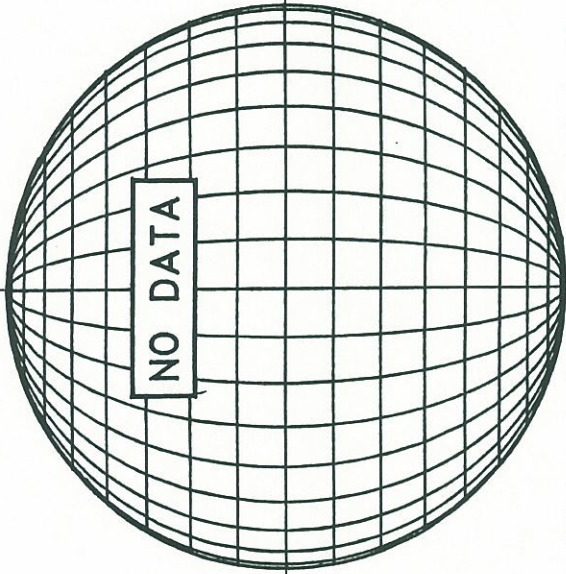
NO DATA

July 12, 2009 (P= 2.32, Bo= 4.04, Lo= 156.07)

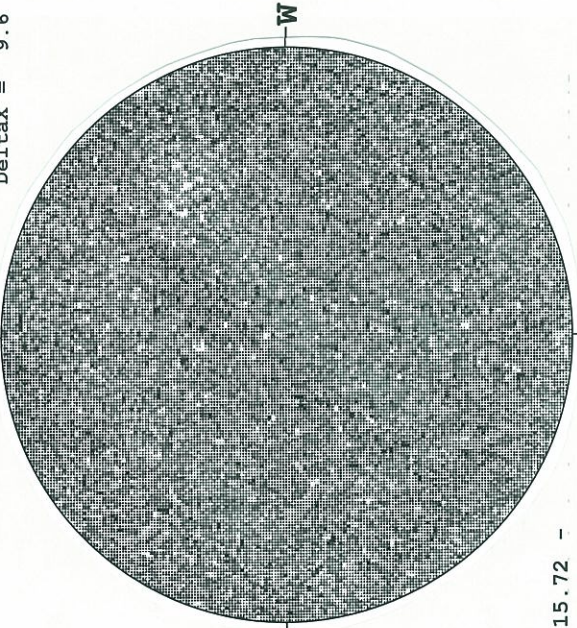
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N
** 854.2NM **



STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N

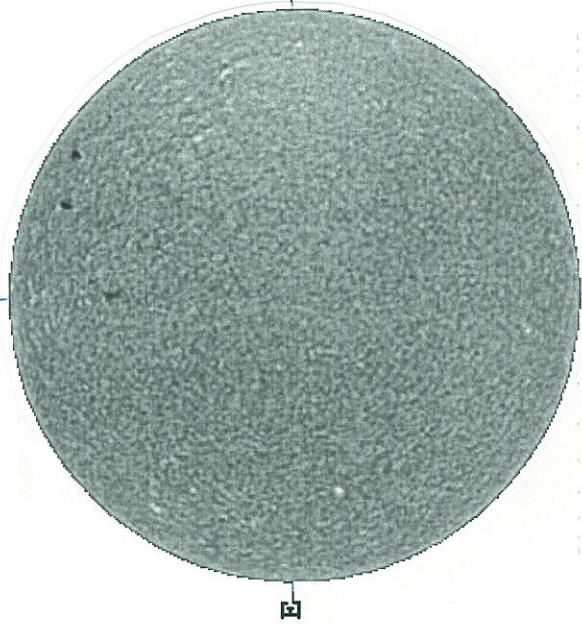


MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
N
DeltaY = 13.1
DeltaX = 9.6



15.72 -
16.65 UT

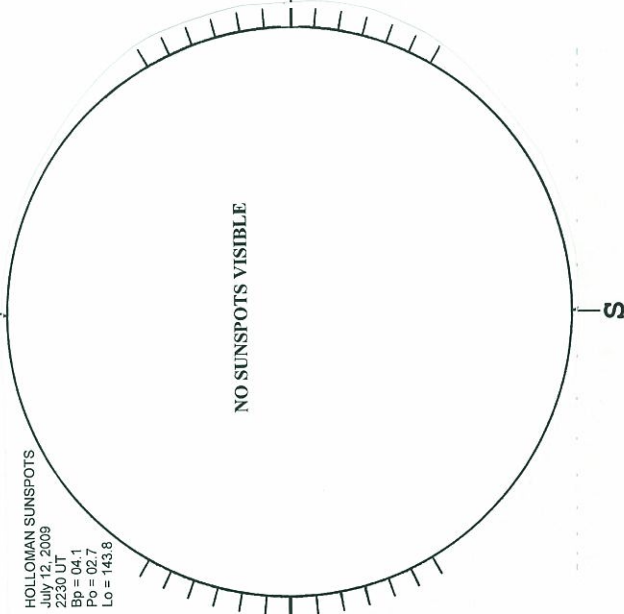
MAUNA LOA H-ALPHA



1941 UT

HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
JULY 12, 2009
2230 UT
Bo = 04.1
Po = 02.7
Lo = 143.8



2230 UT

LOMNICKY PEAK CORONA (1.04 Radii) -----

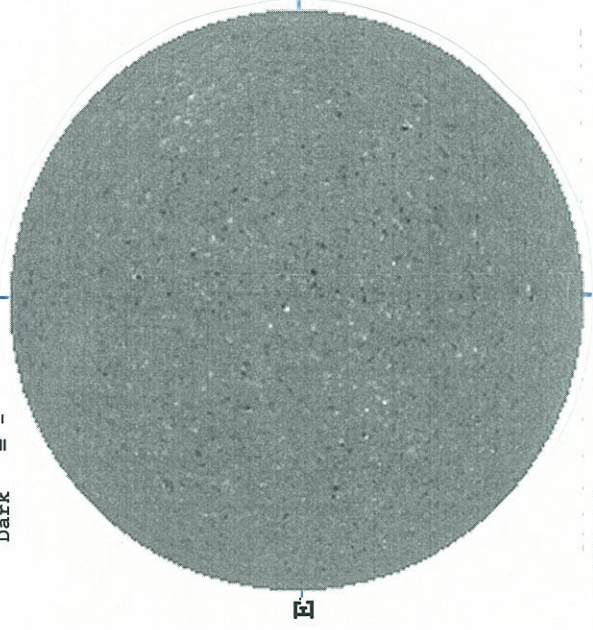
NO DATA

W

Jul 09 52

July 13, 2009 (P= 2.77, Bo= 4.14, Lo= 142.83)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



1836 UT

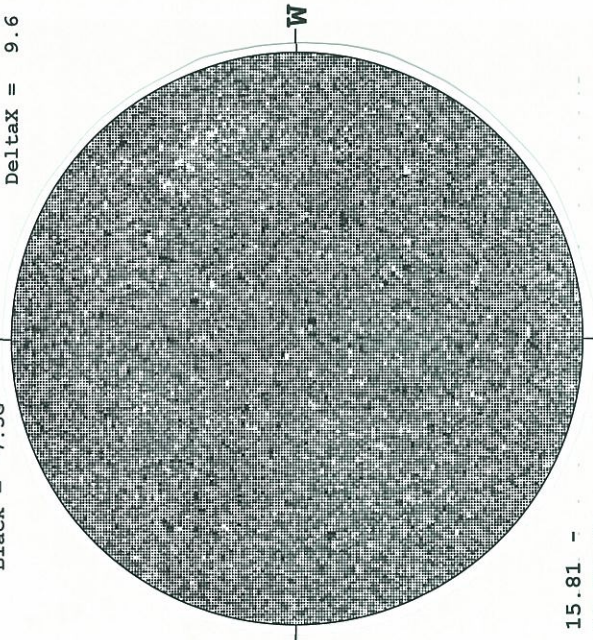
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



1905 UT

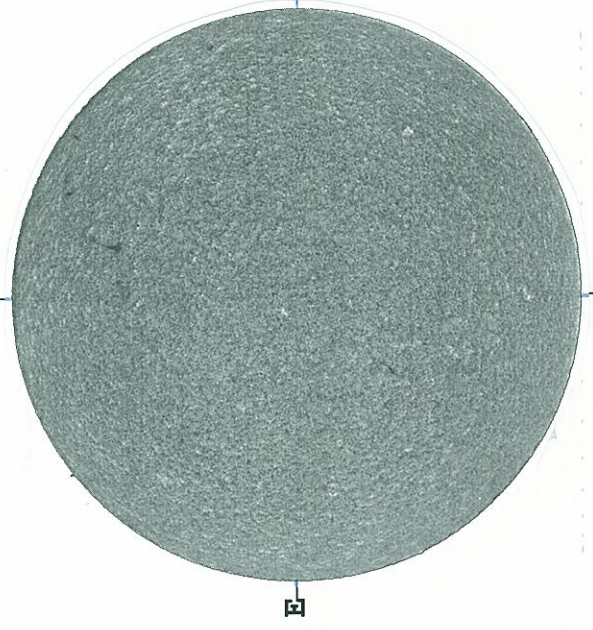
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



15.81 -
16.72 UT

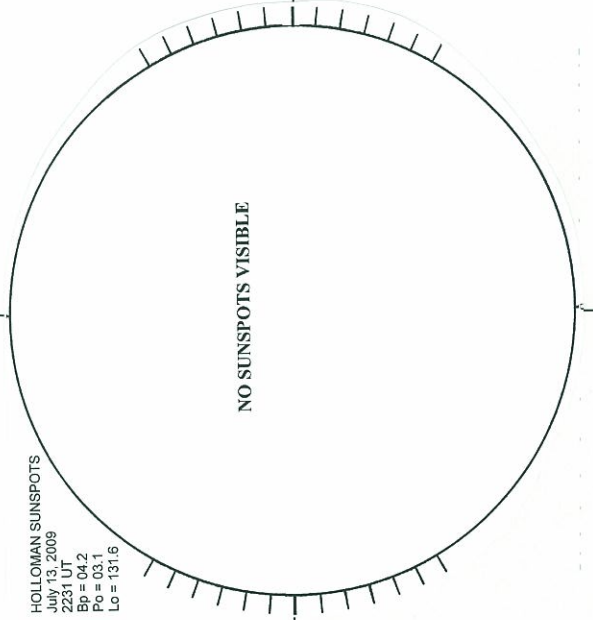
BIG BEAR H-ALPHA



1541 UT

HOLLOMAN SUNSPOTS

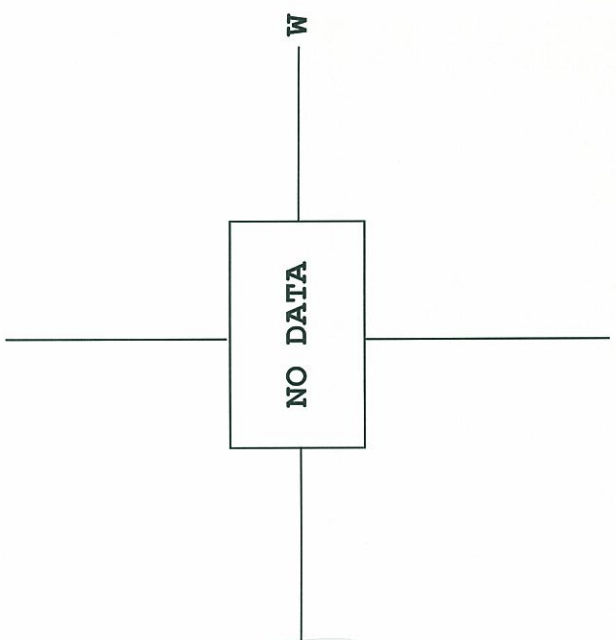
HOLLOMAN SUNSPOTS
July 13, 2009
2231 UT
Bo = 4.12
Po = 03.1
Lo = 131.6



2231 UT

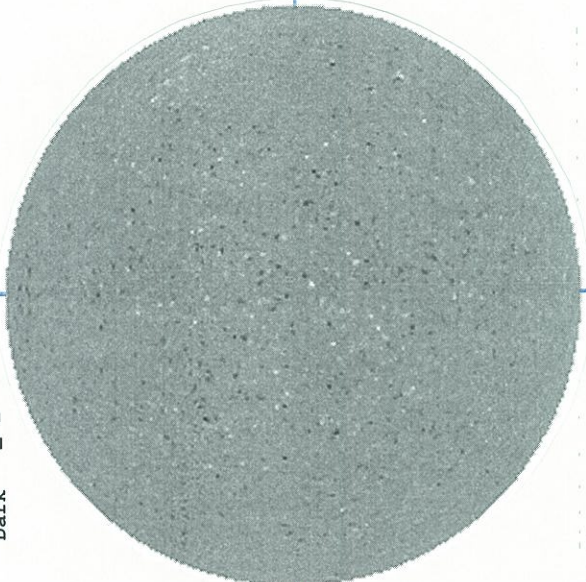
LOMNICKY PEAK CORONA (1.04 Radii) -----

NO DATA



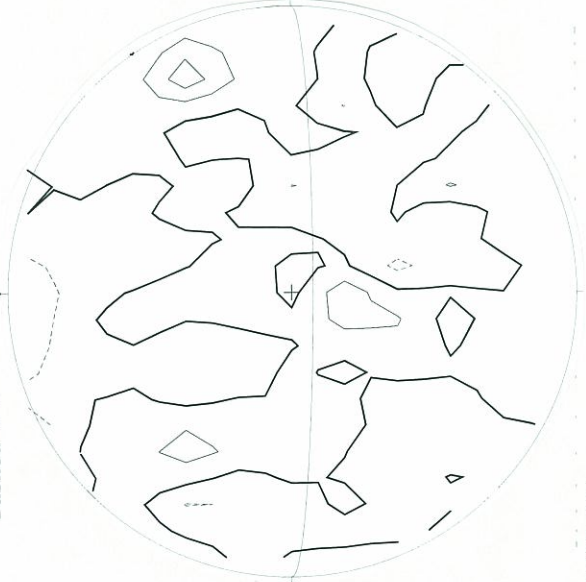
July 14, 2009 (P= 3.22, Bo= 4.24, Lo= 129.60)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N



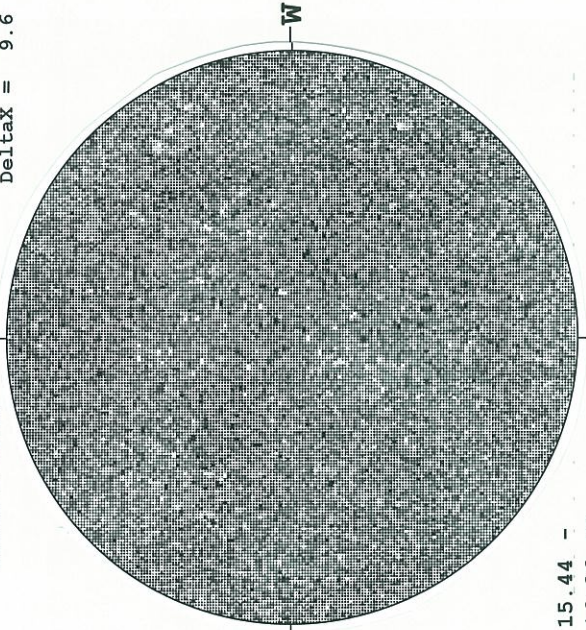
1824 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



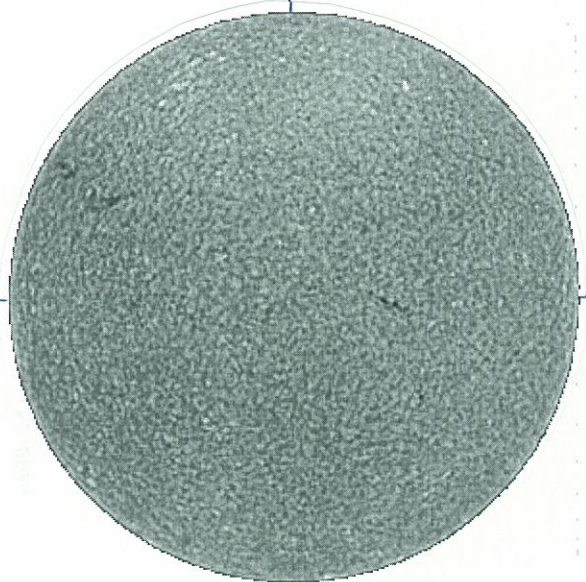
2049 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6
N



15.44 -
16.36 UT

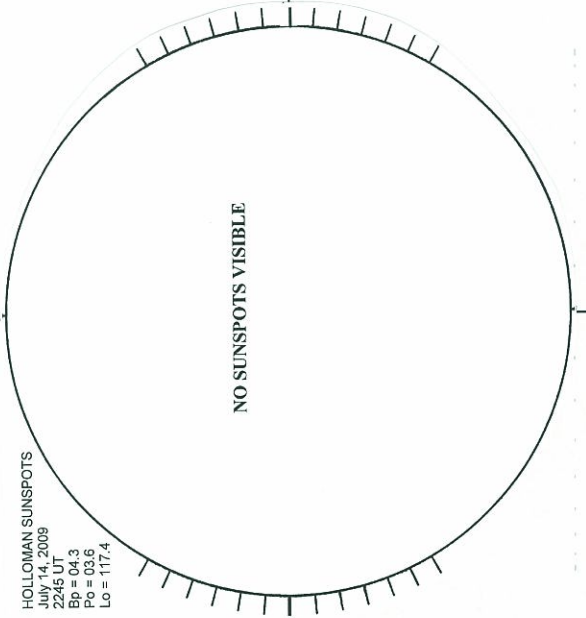
MAUNA LOA H-ALPHA



1711 UT

HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
JULY 14, 2009
2245 UT
Bo = 04.3
Po = 03.6
Lo = 117.4



2245 UT

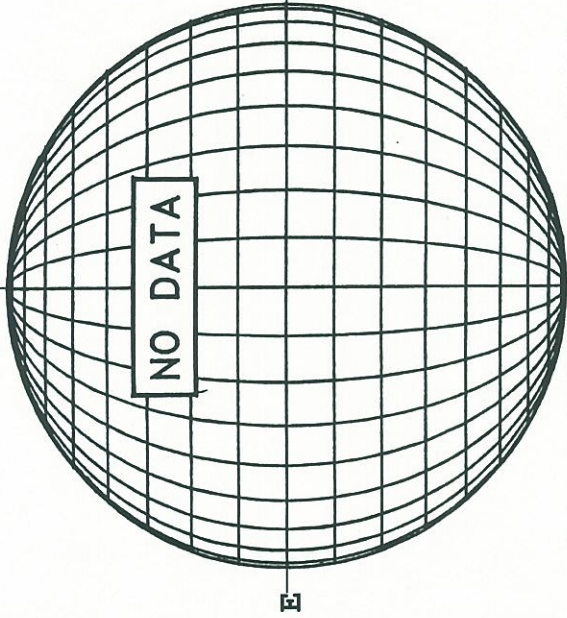
LOMNICKY PEAK CORONA (1.04 Radii) -----

NO DATA

NO DATA

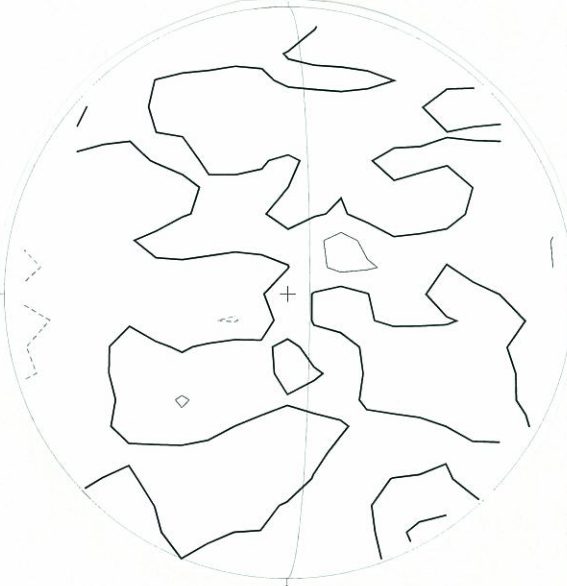
July 15, 2009 (P= 3.66, Bo= 4.33, Lo= 116.37)

KITT PEAK M⁺ FNETOGRAM --- SOLIS
Bright = +
Dark = -
V ** 854.2NM **



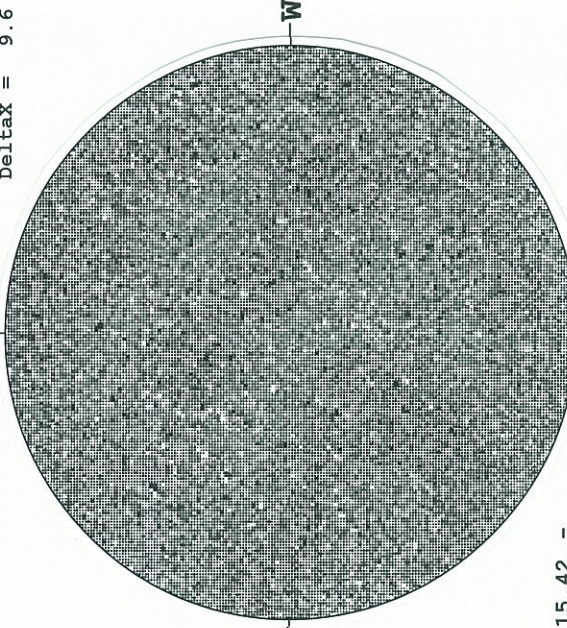
E

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



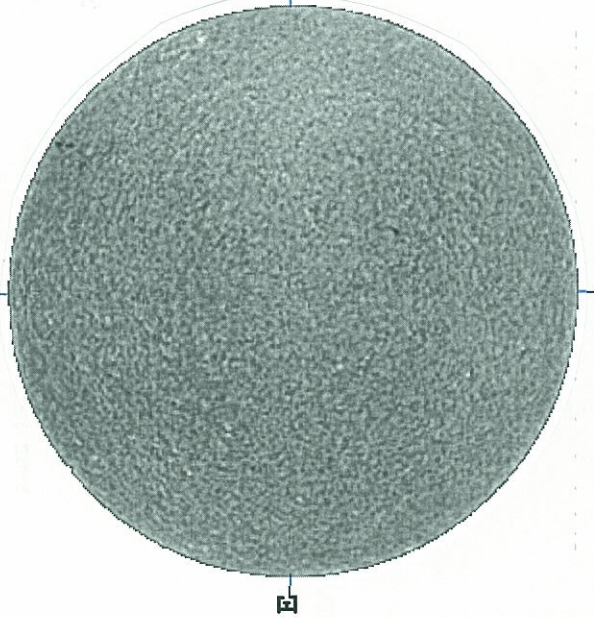
2004 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6
N



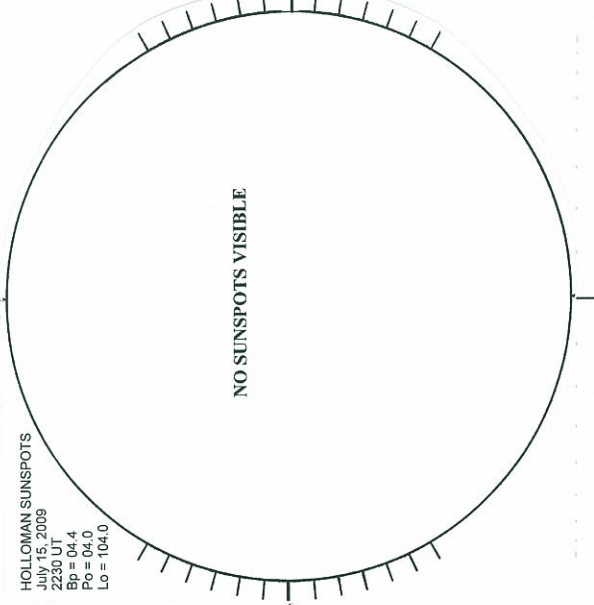
15.42 -
16.34 UT

MAUNA LOA H-ALPHA



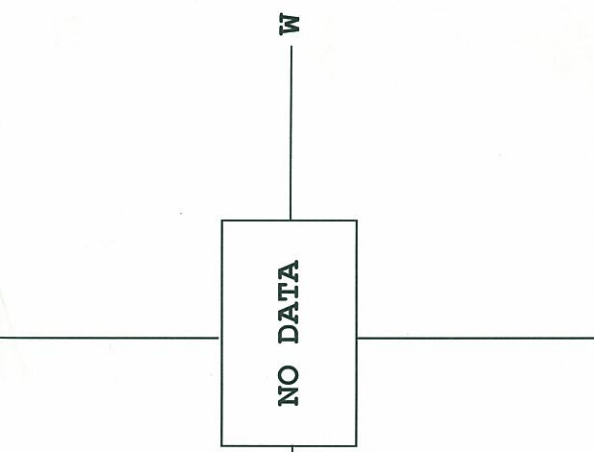
1749 UT

HOLLOMAN SUNSPOTS



2230 UT

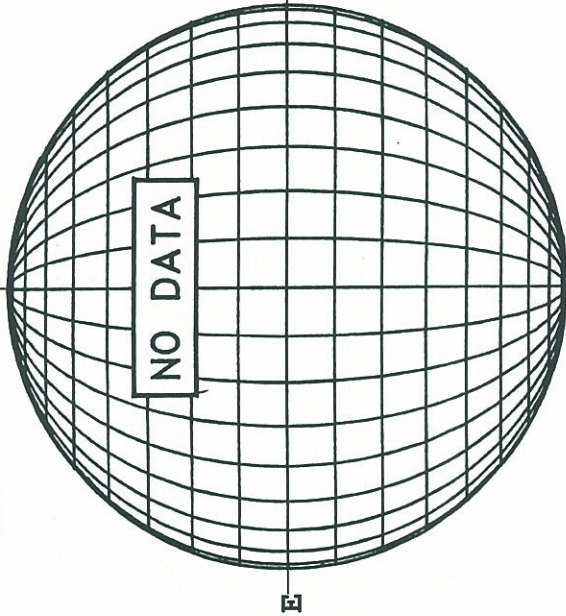
LOMNICKY PEAK CORONA (1.04 Radii) -----



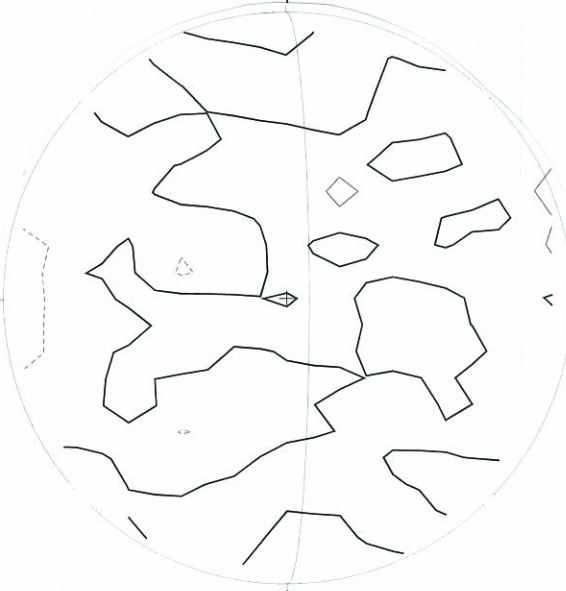
1749 UT

July 16, 2009 (P= 4.10, Bo= 4.43, Lo= 103.13)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -

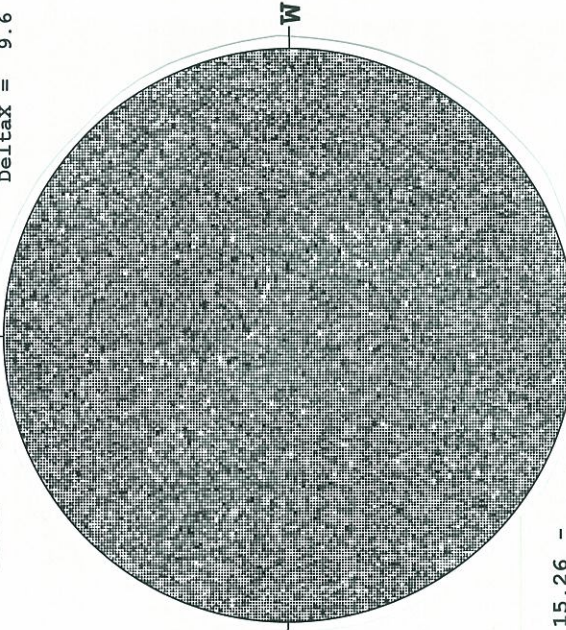


STANFORD MAGNETOGRAM
Solid = +
Dashed = -



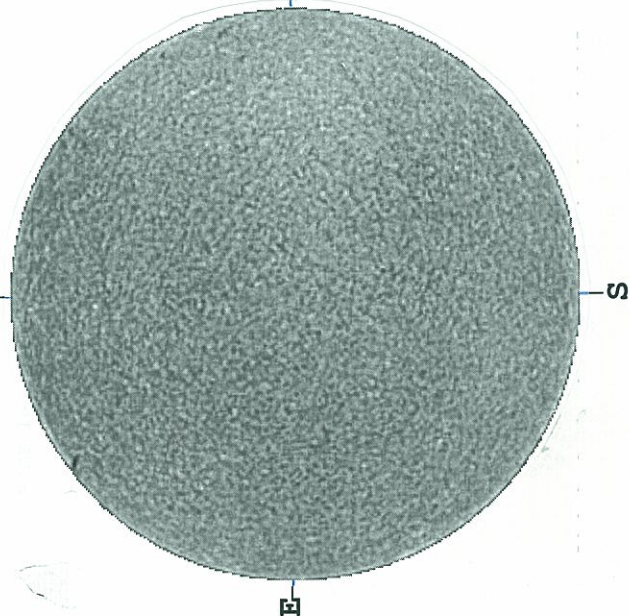
2029 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
Deltay = 13.1
Deltax = 9.6



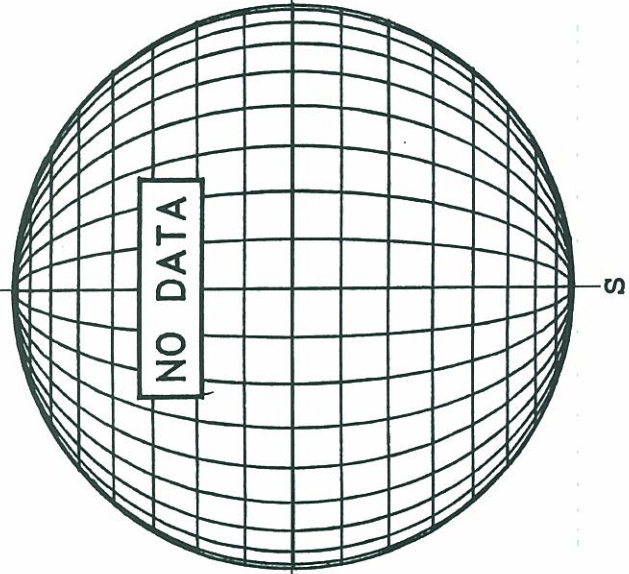
15.26 -
16.18 UT

MAUNA LOA H-ALPHA



1752 UT

HOLLOMAN SUNSPOTS



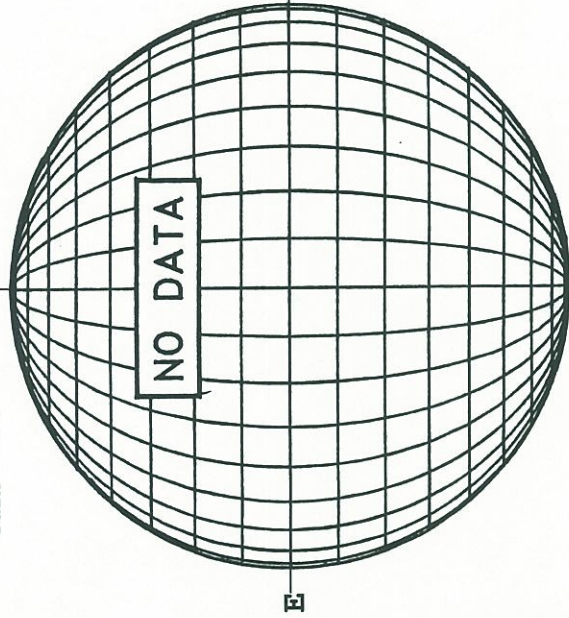
LOMNICKY PEAK CORONA (1.04 Radii) -----

NO DATA

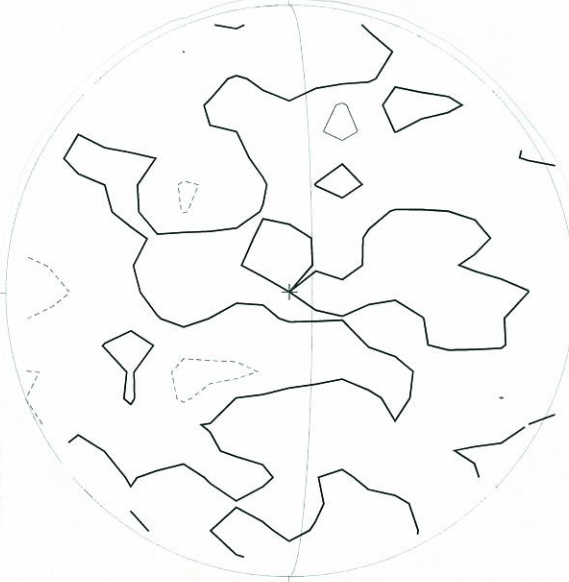
56
Jul 09

July 17, 2009 (P= 4.54, Bo= 4.52, Lo= 89.90)

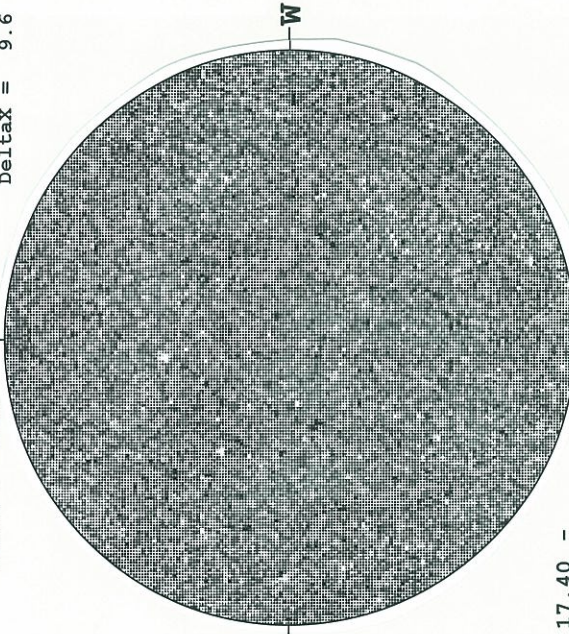
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N
N ** 854.2NM **



STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



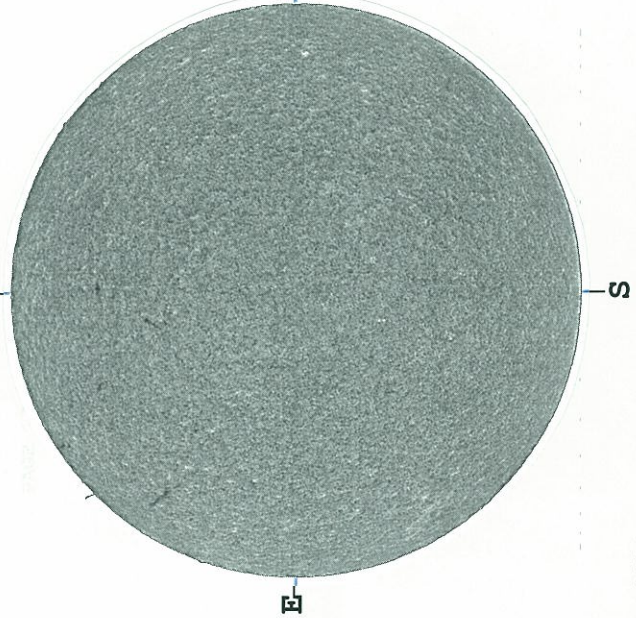
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
N
DeltaY = 13.1
DeltaX = 9.6



17.40 -
18.23 UT

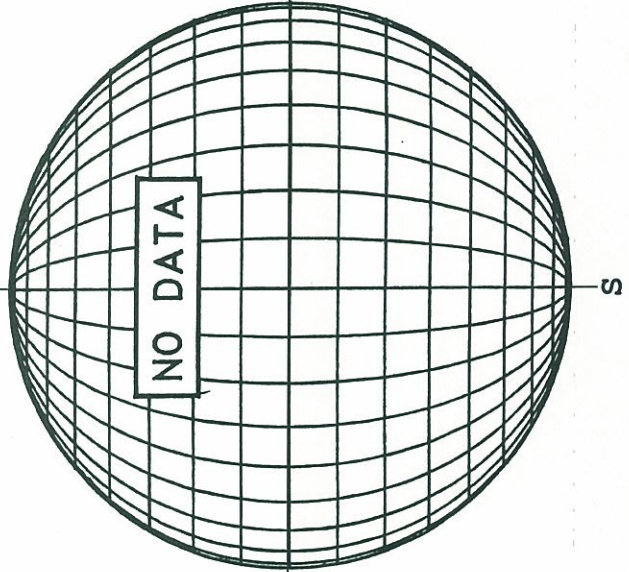
2156 UT

BIG BEAR H-ALPHA



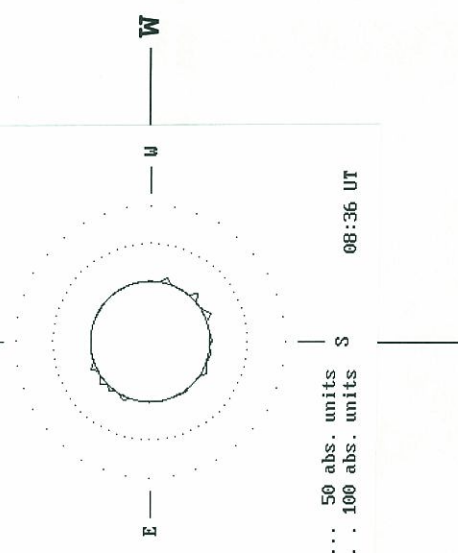
1644 UT

HOLLOMAN SUNSPOTS



LOMNICKY PEAK CORONA (1.04 Radii) -----

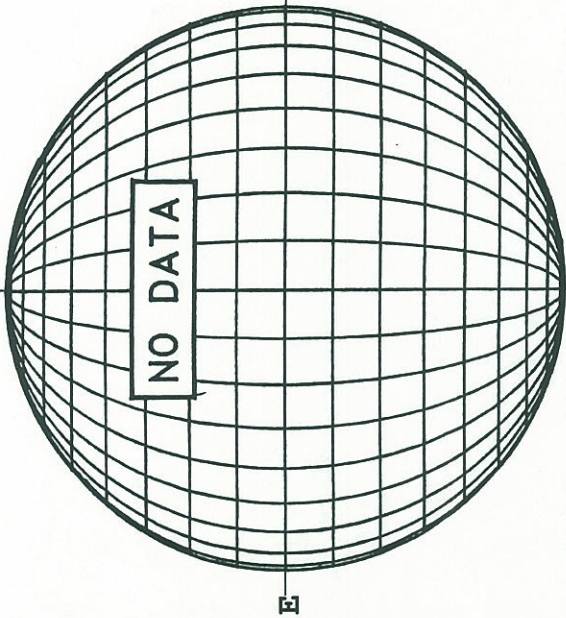
LOMNICKY STIT
530.3 nm
N
JULY 17, 2009



... 50 abs. units
... 100 abs. units
S
08:36 UT

July 18, 2009 (P= 4.98, Bo= 4.62, Lo= 76.67)

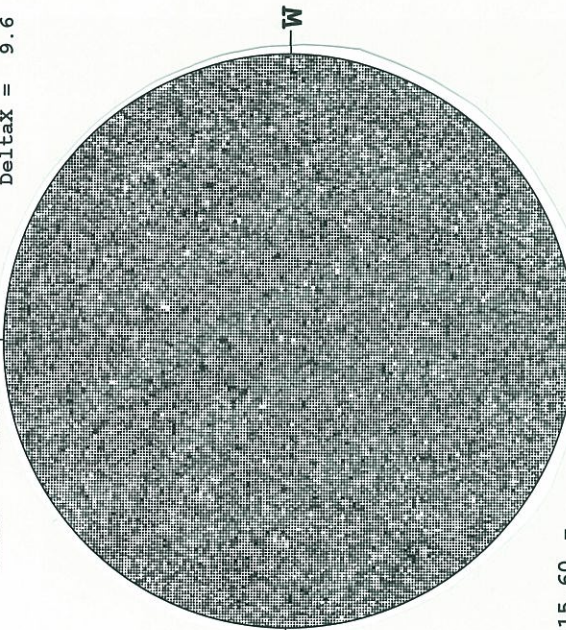
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



STANFORD MAGNETOGRAM
Solid = +
Dashed = -



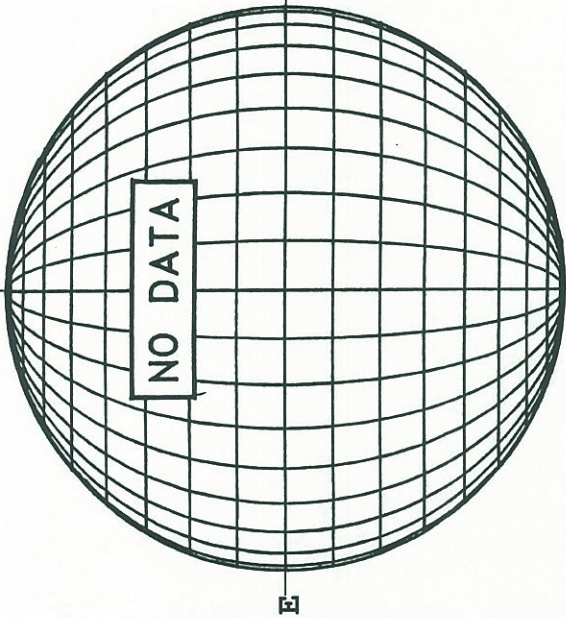
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



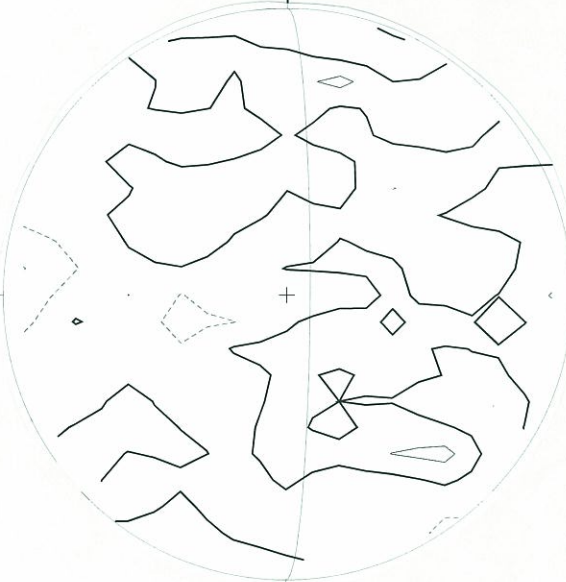
15.60 -
16.52 UT

2229 UT

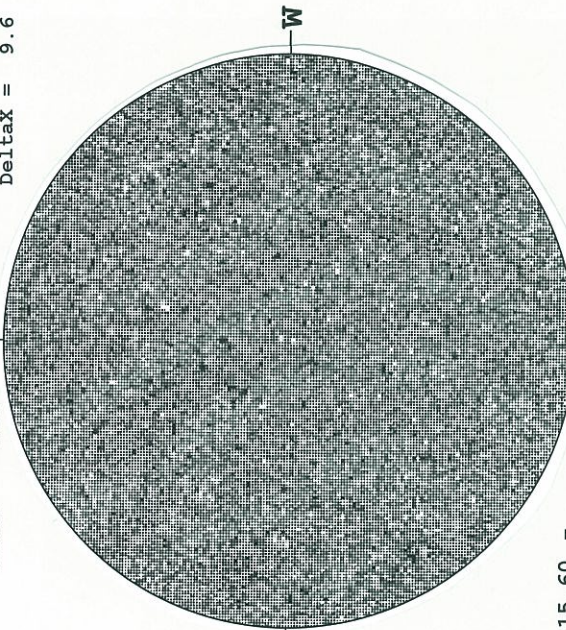
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



STANFORD MAGNETOGRAM
Solid = +
Dashed = -



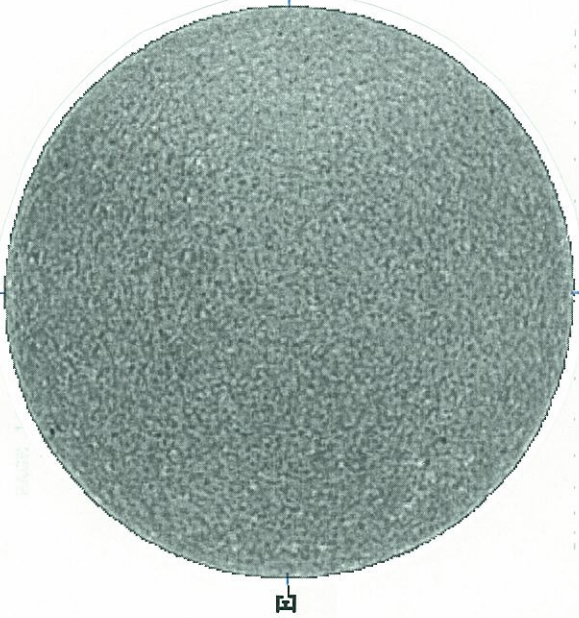
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



15.60 -
16.52 UT

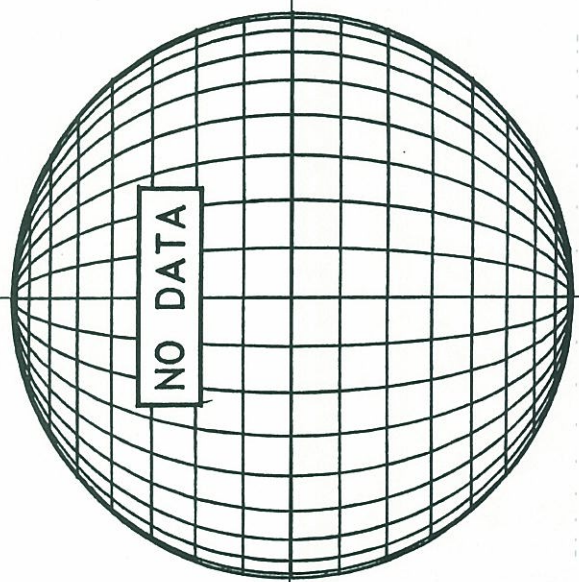
2229 UT

MAUNA LOA H-ALPHA

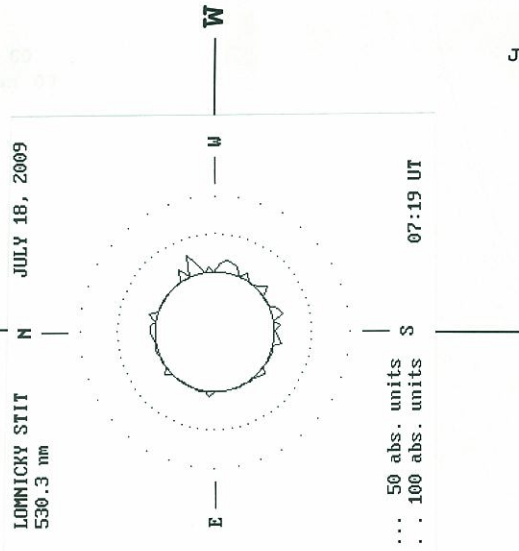


1723 UT

HOLLOMAN SUNSPOTS



LOMNICKY PEAK CORONA (1.04 Radii) -----



LOMNICKY STIT
530.3 nm

JULY 18, 2009

... 50 abs. units
... 100 abs. units

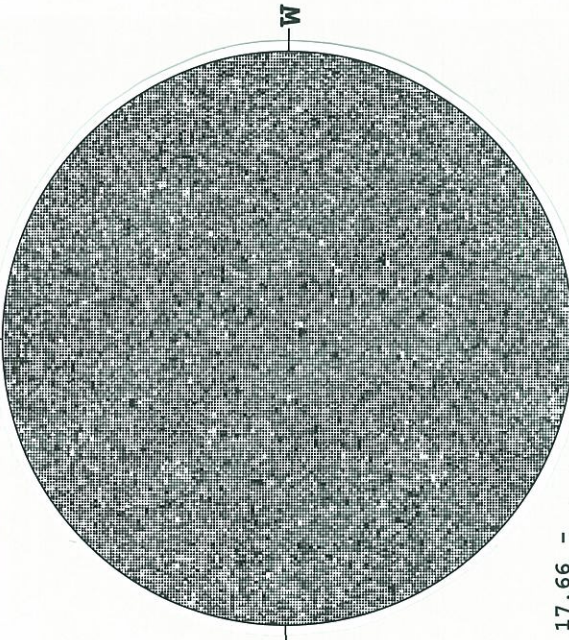
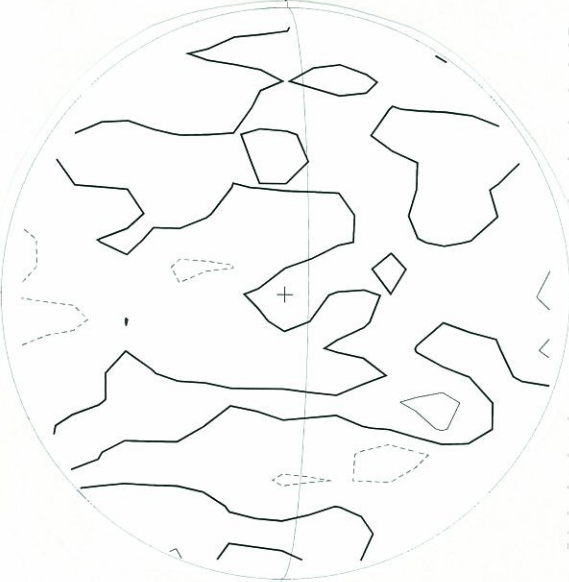
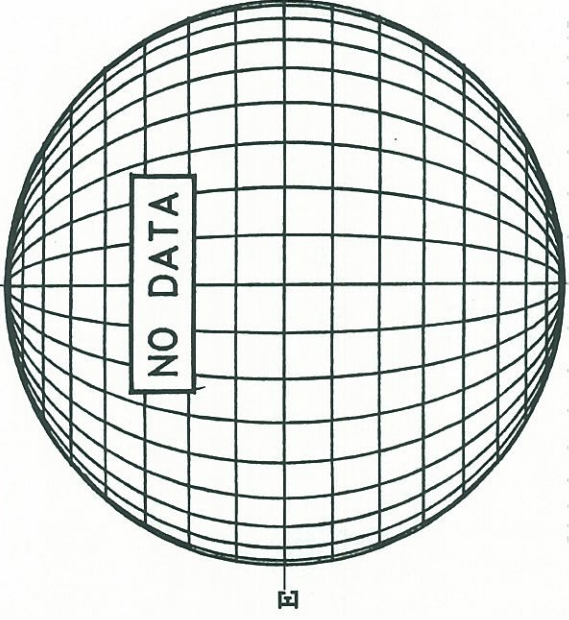
07:19 UT

July 19, 2009 (P= 5.42, Bo= 4.71, Lo= 63.44)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N
** 854.2NM **

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N

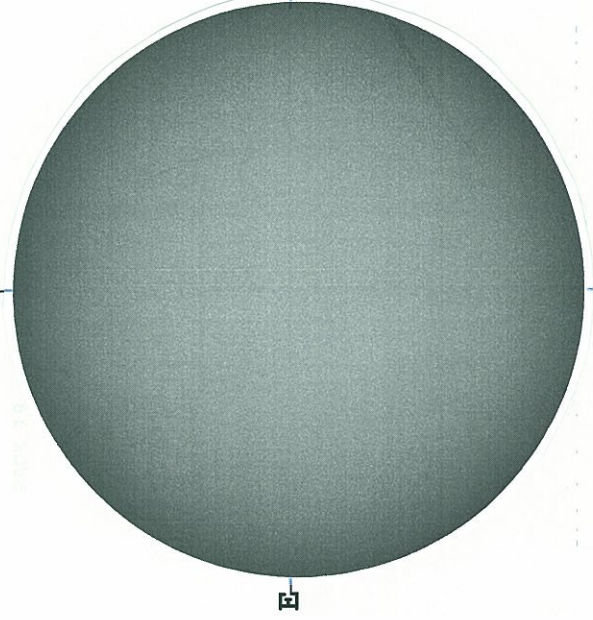
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
N
DeltaY = 13.0
DeltaX = 9.6



17.66 -
18.59 UT

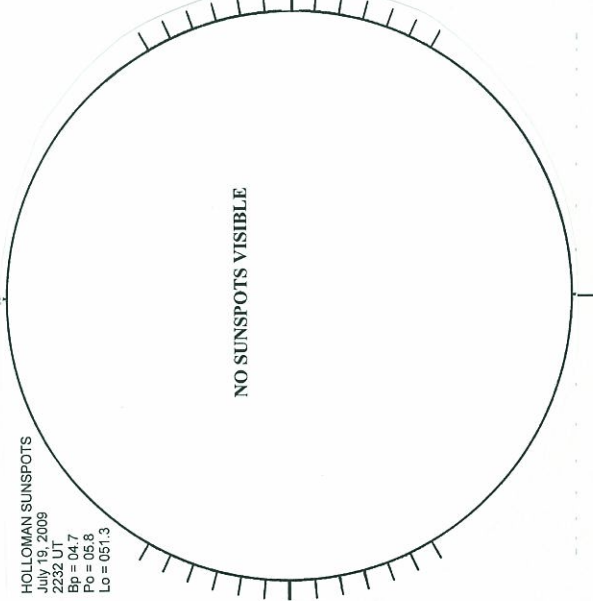
2012 UT

KANZELHOHE H-ALPHA



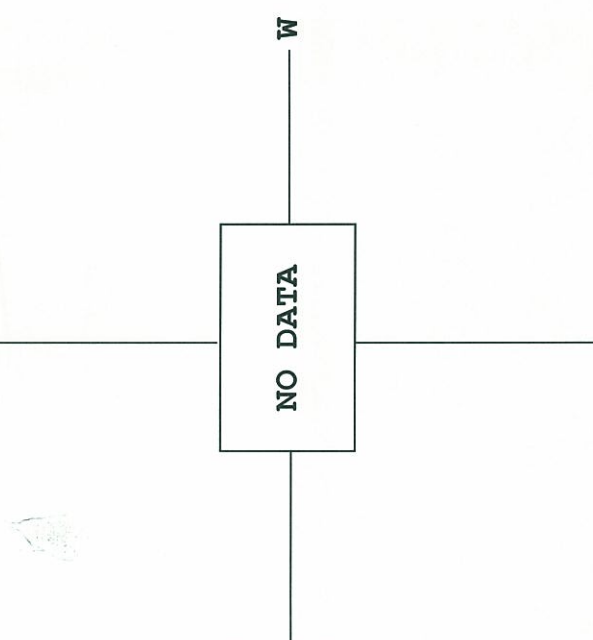
0730 UT

HOLLOMAN SUNSPOTS



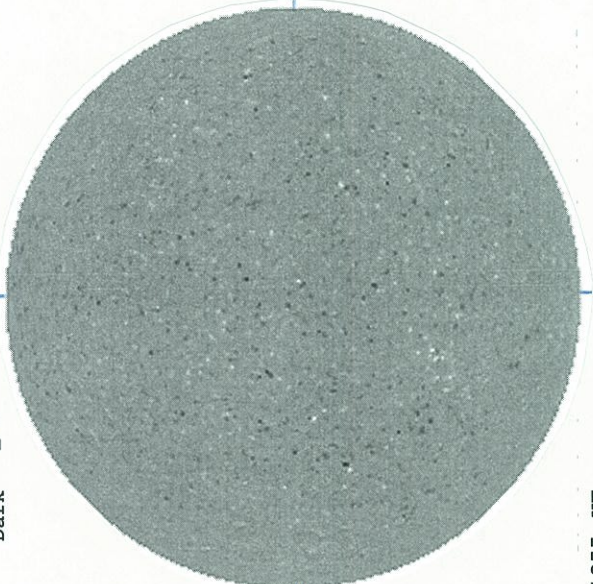
2232 UT

LOMNICKY PEAK CORONA (1.04 Radii) -----



July 20, 2009 (P= 5.85, Bo= 4.80, Lo= 50.21)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N



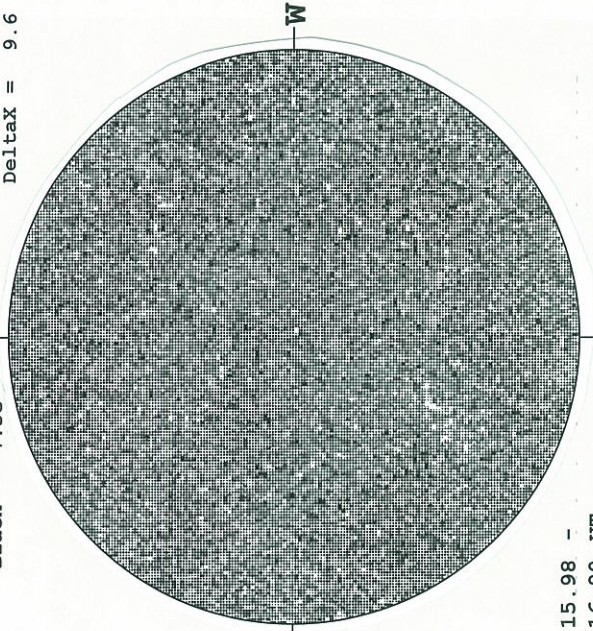
1855 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



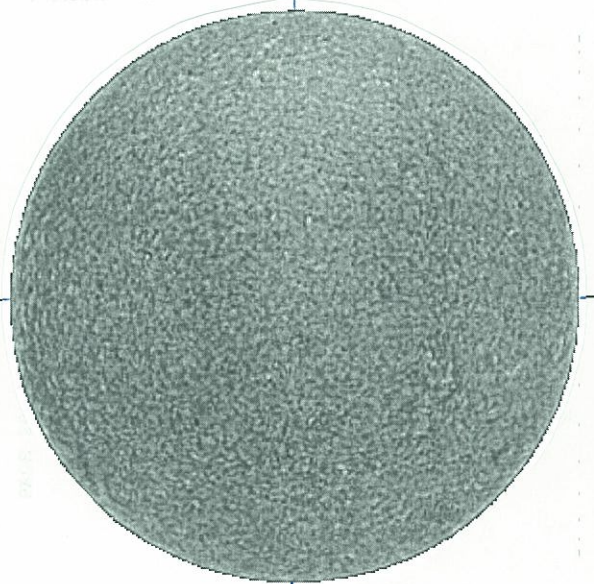
2232 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
N
DeltaY = 13.1
DeltaX = 9.6



15.98 -
16.90 UT

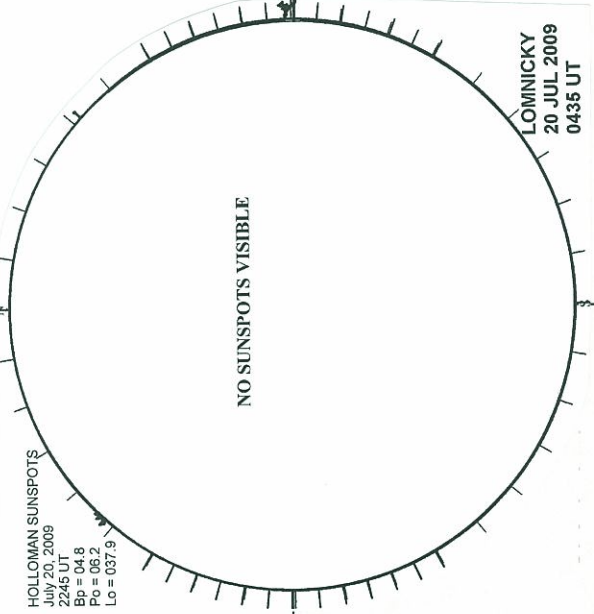
MAUNA LOA H-ALPHA



1731 UT

HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 20, 2009
2245 UT
SP = 018
PO = 062
LO = 037.9



2245 UT
0435 UT LOMN FROM

LOMNICKY PEAK CORONA (1.04 Radii) -----

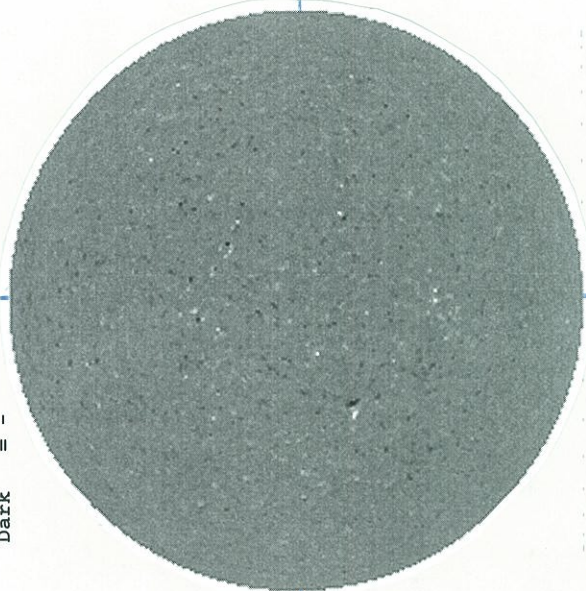
NO DATA

W

Jul 09

July 21, 2009 (P= 6.29, Bo= 4.89, Lo= 36.98)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N
** 854.2NM **



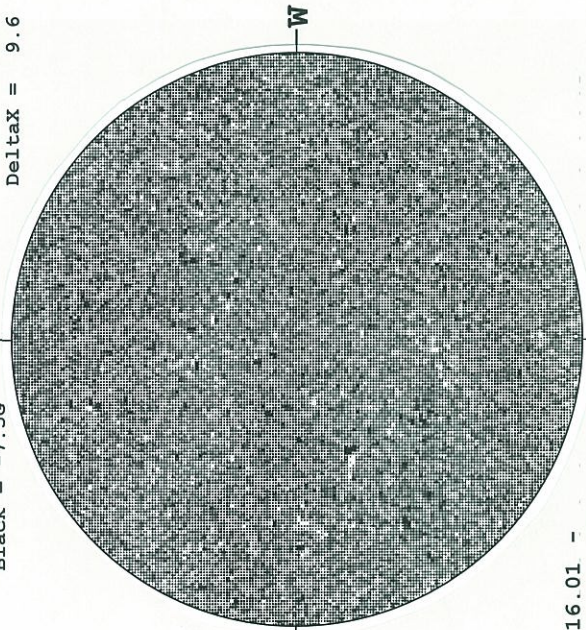
1932 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



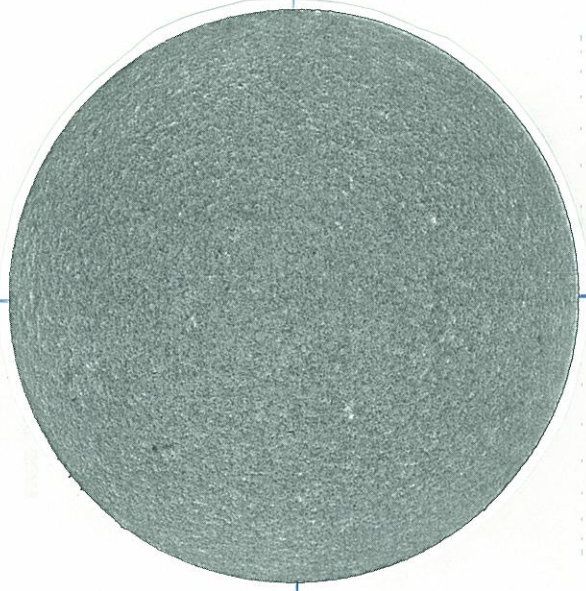
2146 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6
N



16.01 -
16.93 UT

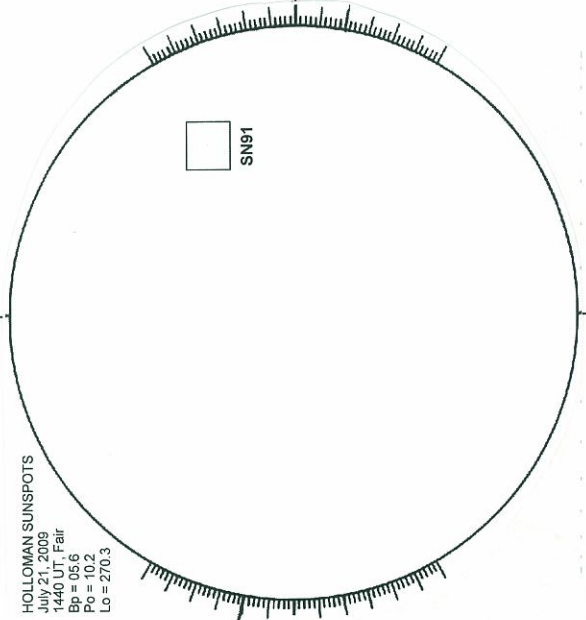
--- BIG BEAR H-ALPHA



1547 UT

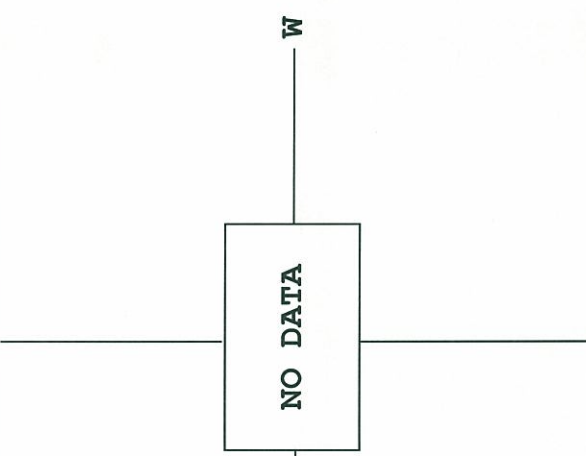
HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 21, 2009
1440 UT, Fair
Bp = 05.6
Po = 10.2
Lo = 270.3



1440 UT

LOMNICKY PEAK CORONA (1.04 Radii) -----

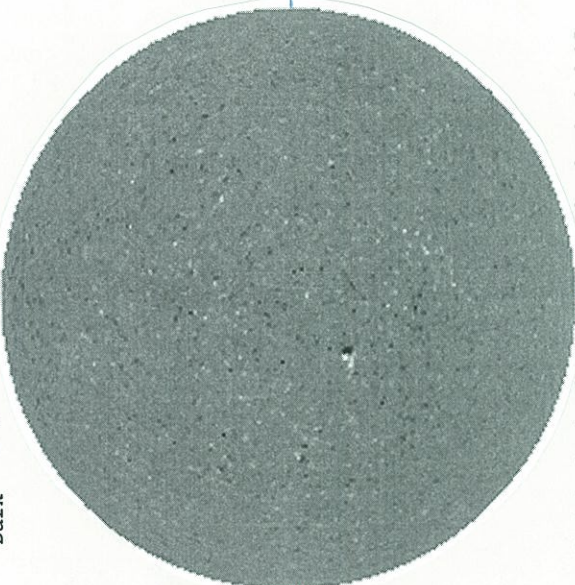


NO DATA

W

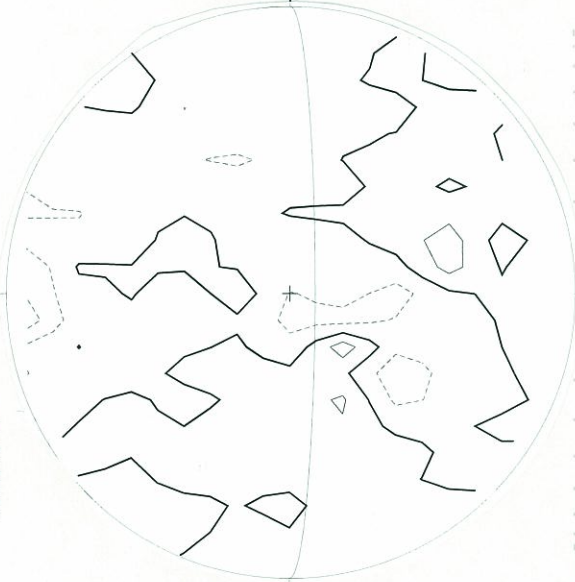
July 22, 2009 (P= 6.71, Bo= 4.98, Io= 23.75)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N



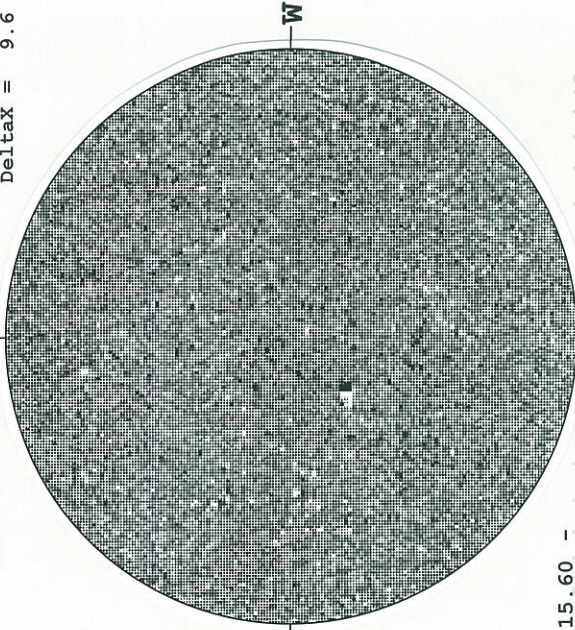
1426 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



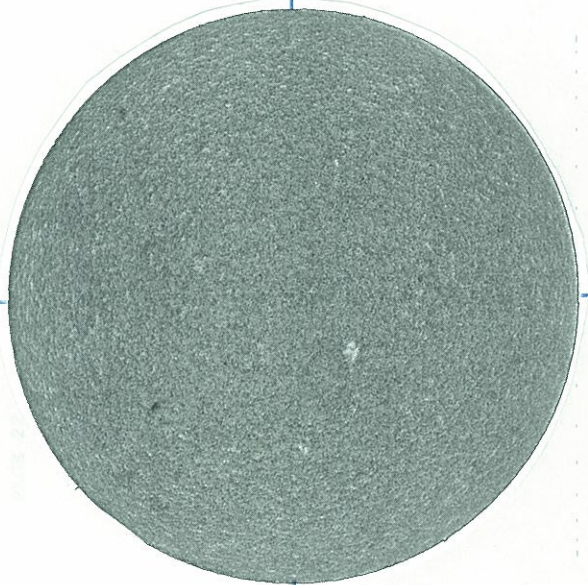
2008 UT

MTT WILSON MAGNETOGRAM
White = .5G
Black = .5G
DeltaY = 13.1
DeltaX = 9.6
N



15.60 -
16.52 UT

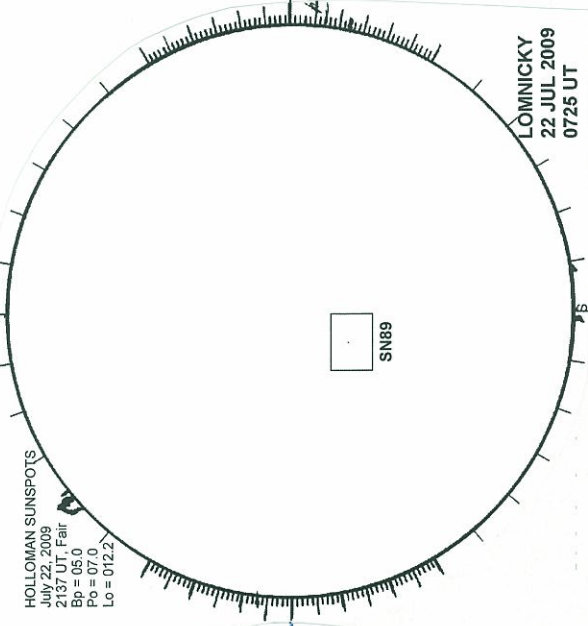
BIG BEAR H-ALPHA



1553 UT

HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 22, 2009
2137 UT, Fair
Bp = 05.0
Po = 07.0
Lo = 012.2



2137 UT
0725 UT LOMN PROM

LOMNICKY PEAK CORONA (1.04 Radii) -----

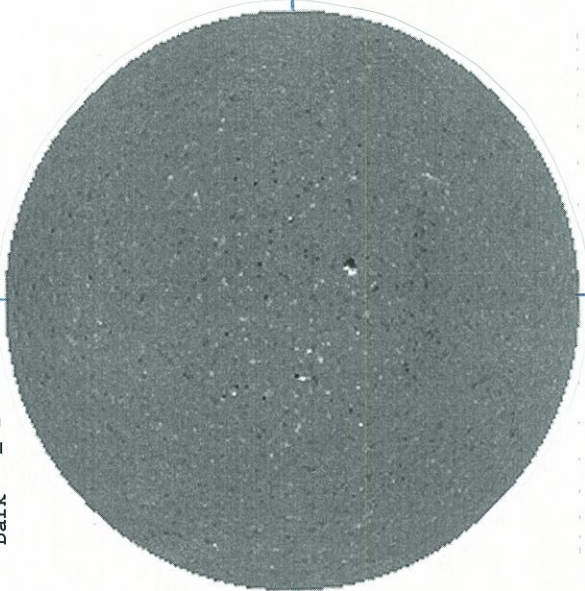
NO DATA

NO DATA

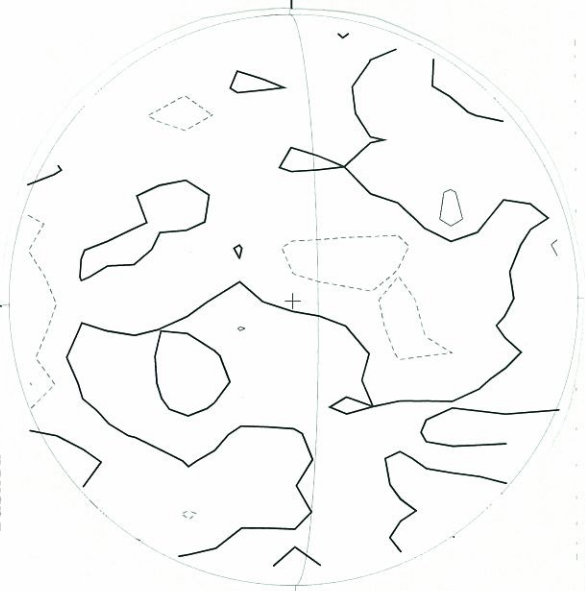
62
Jul 09

July 23, 2009 (P= 7.14, Bo= 5.07, Lo= 10.52)

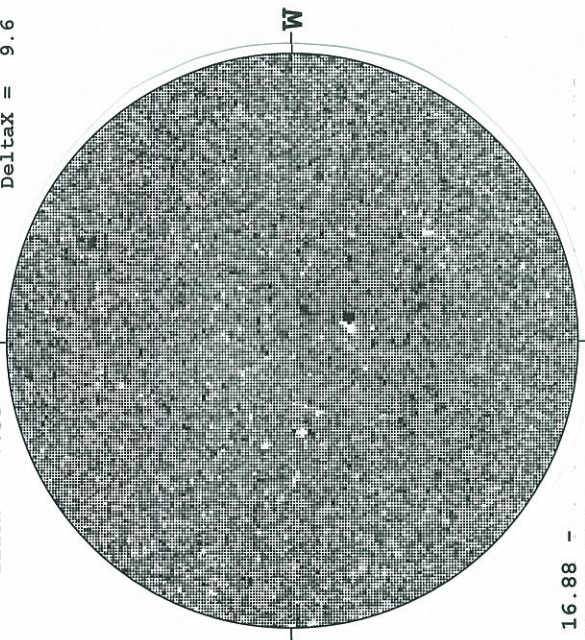
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



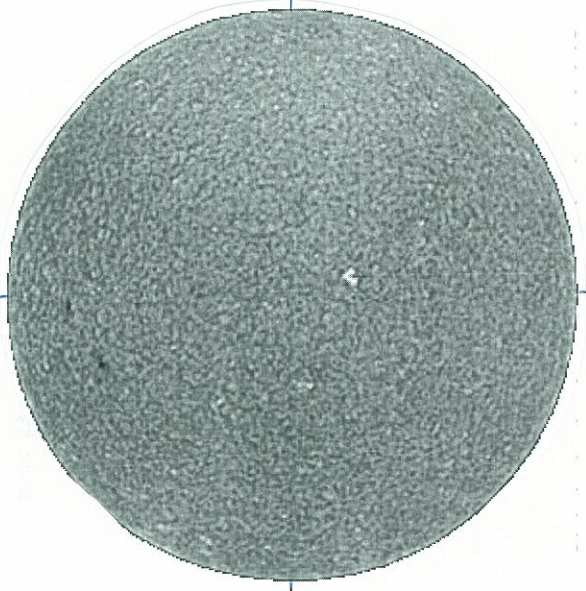
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.0
DeltaX = 9.6



MAUNA LOA H-ALPHA

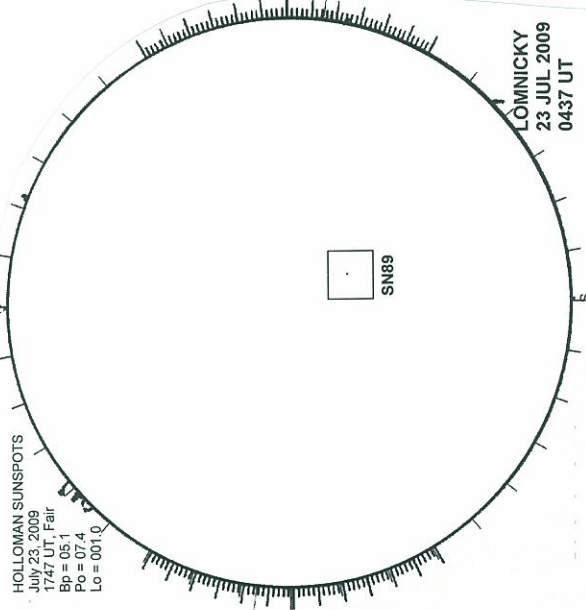


MAUNA LOA H-ALPHA

HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 23, 2009
1747 UT, Fair
Bp = 05.1
Po = 07.4
Lo = 001.0

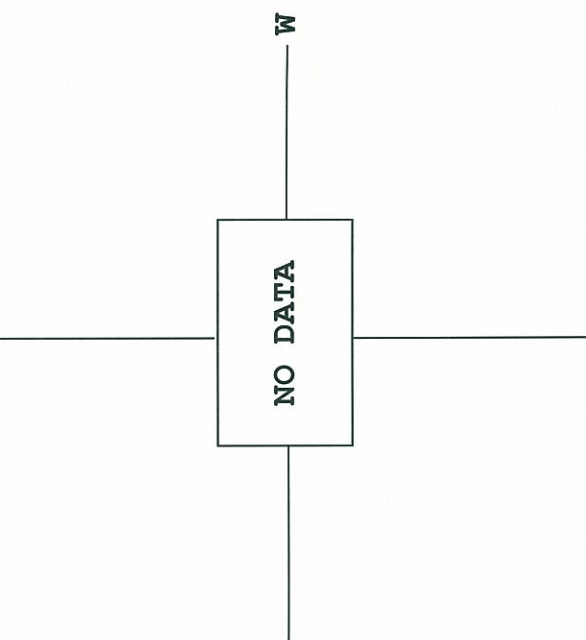
HOLLOMAN SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii) -----

NO DATA

W



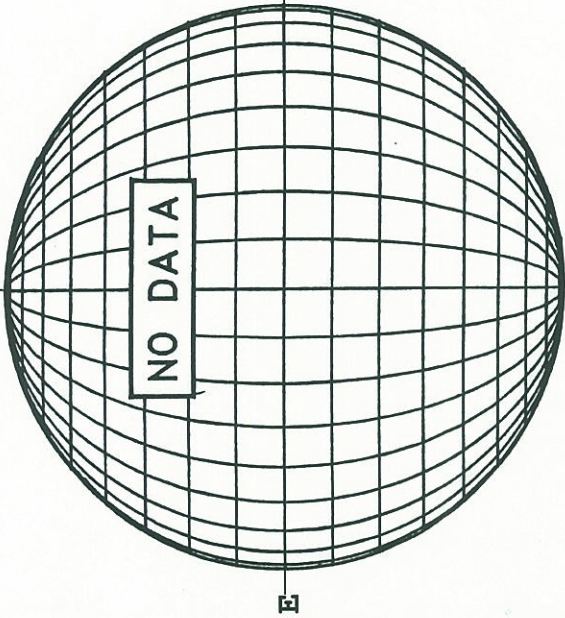
LOMNICKY
23 JUL 2009
0437 UT

1747 UT
0437 UT LOMN FROM

1723 UT

July 24, 2009 (P= 7.57, Bo= 5.15, Lo= 357.29)

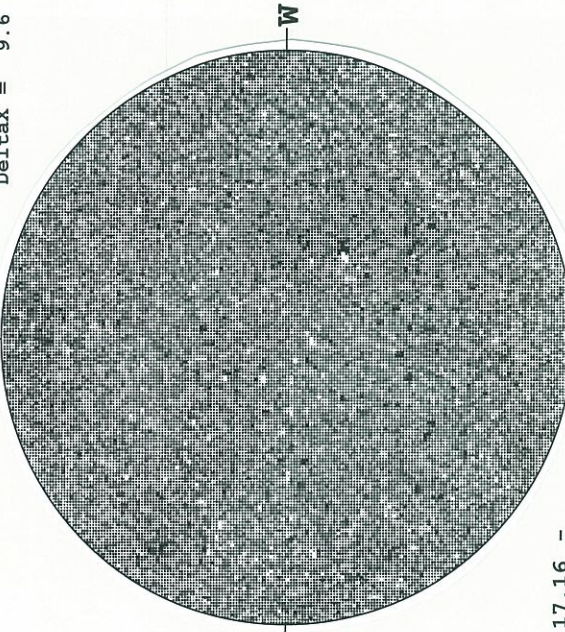
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



STANFORD MAGNETOGRAM
Solid = +
Dashed = -



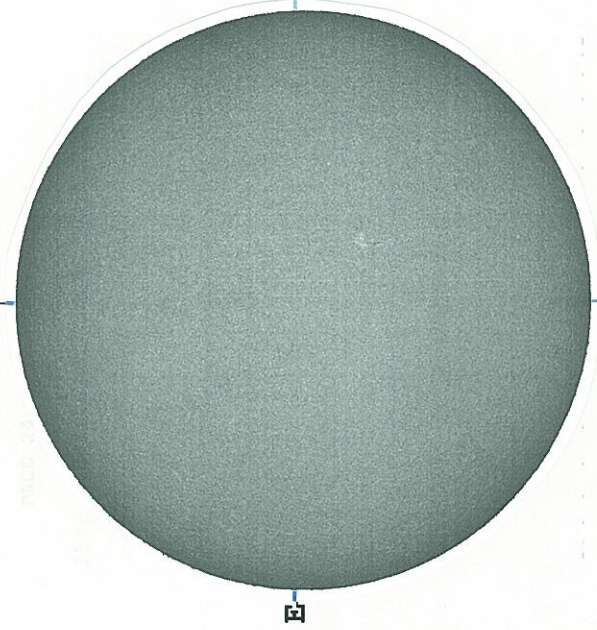
MT. WILSON MAGNETOGRAM
DeltaY = +7.5G
DeltaX = -7.5G
DeltaY = 13.0
DeltaX = 9.6



17.16 -
18.08 UT

2008 UT

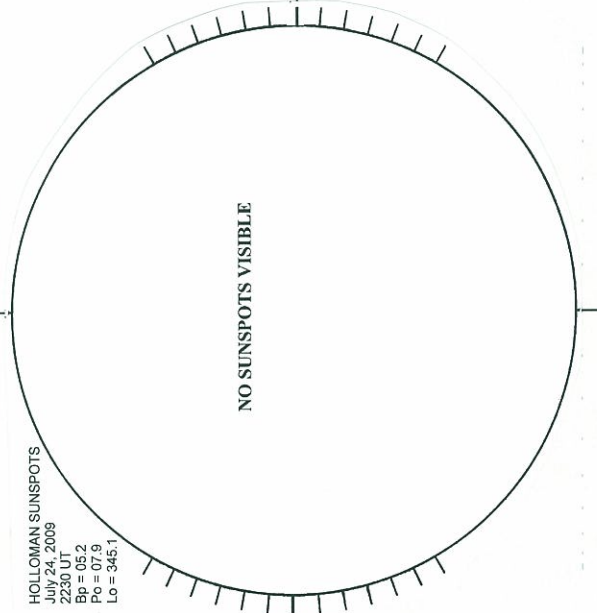
--- KANZELHOHE H-ALPHA



0719 UT

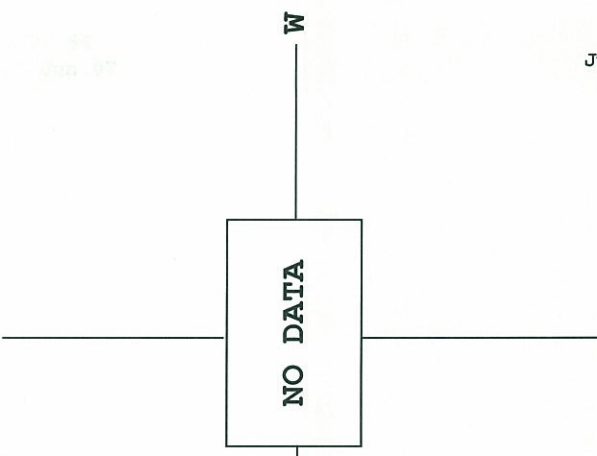
HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 24, 2009
2230 UT
Bp = 05.2
Pb = 07.9
Lo = 346.1



2230 UT

LOMNICKY PEAK CORONA (1.04 Radii) -----



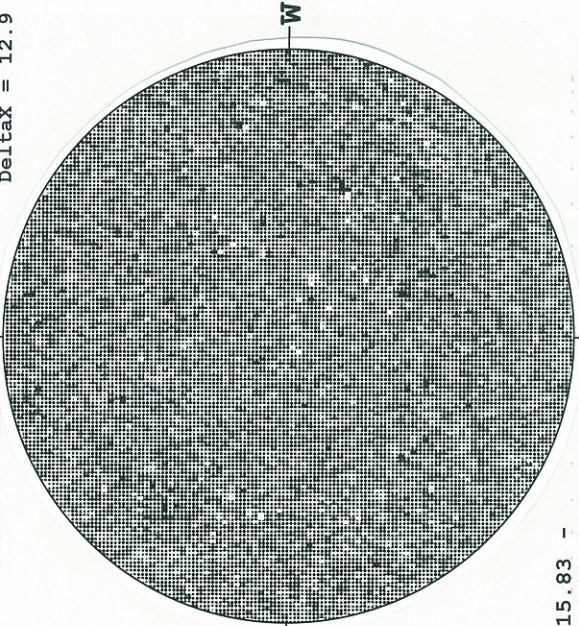
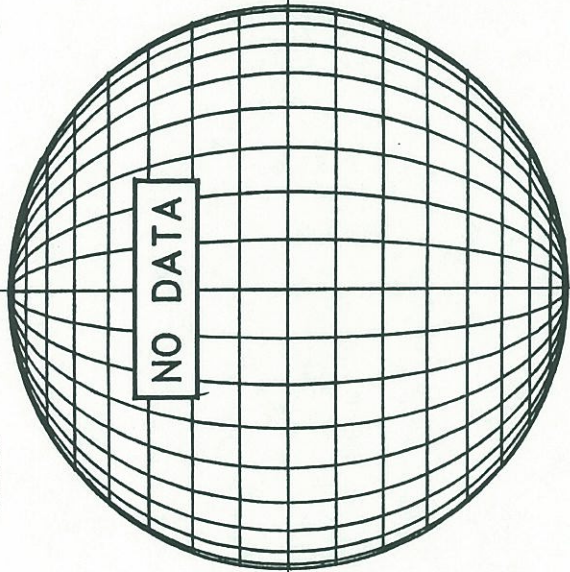
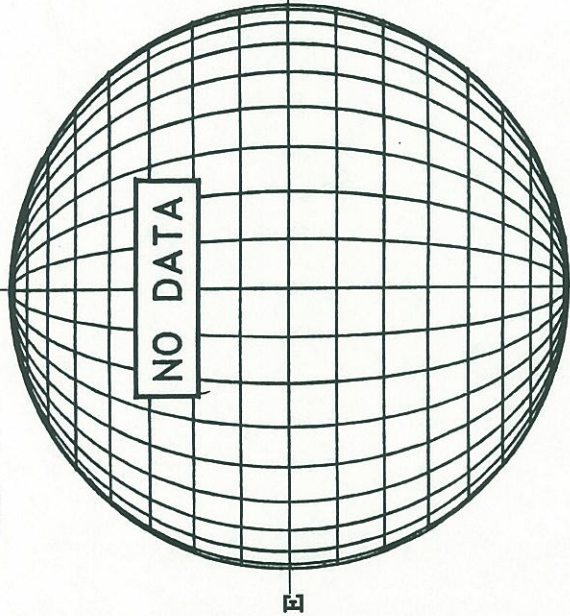
Jul 64 09

July 25, 2009 (P= 7.99, Bo= 5.24, Lo= 344.06)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -

STANFORD MAGNETOGRAM
Solid = +
Dashed = -

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 20.1
DeltaX = 12.9

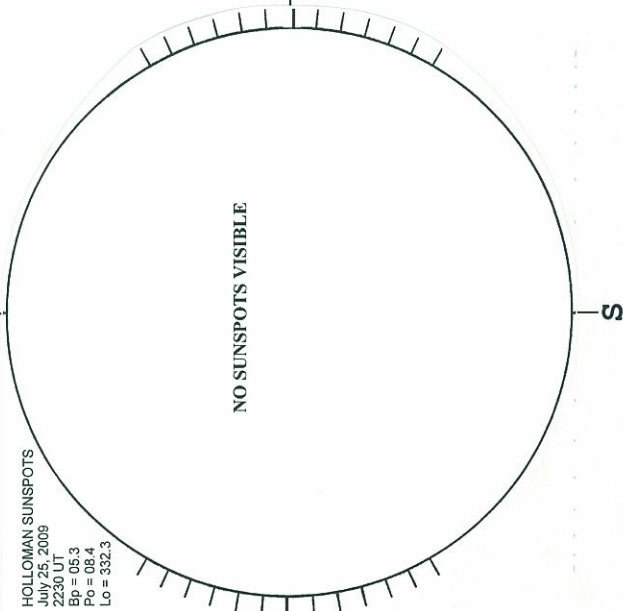
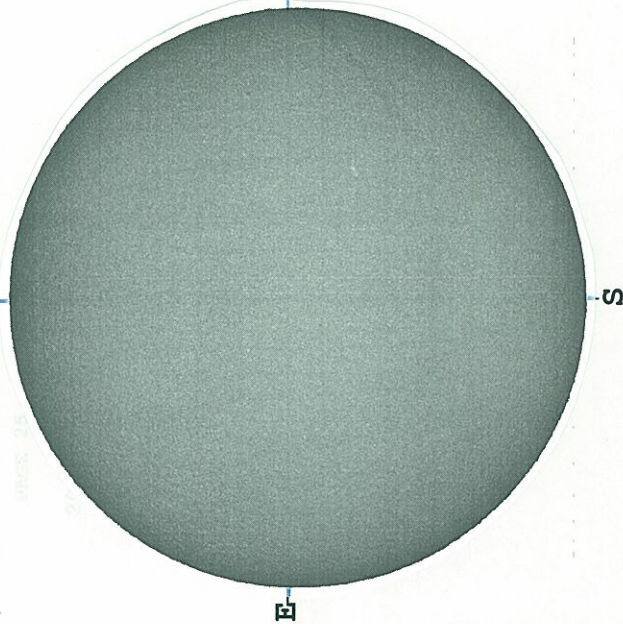


15.83 -
18.24 UT

KANZELHOHE H-ALPHA

HOLLOMAN SUNSPOTS

LOMNICKY PEAK CORONA (1.04 Radii) -----



HOLLOMAN SUNSPOTS
July 25, 2009
2230 UT
Bp = 063
Po = 084
Lo = 332.3

NO DATA

0859 UT

2230 UT

S

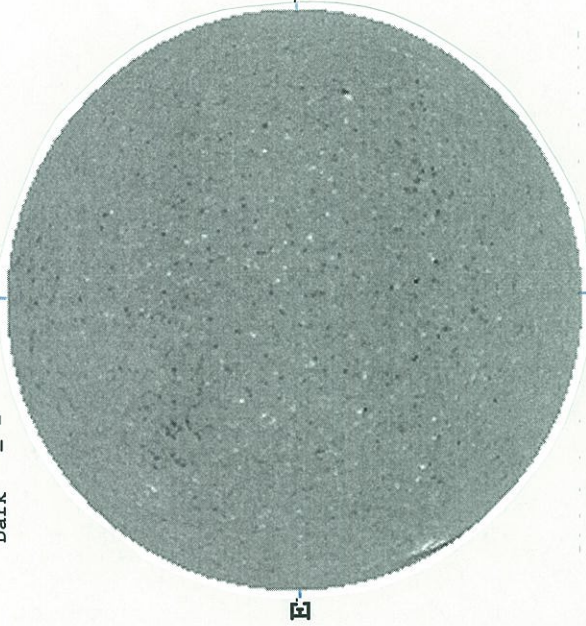
S

E

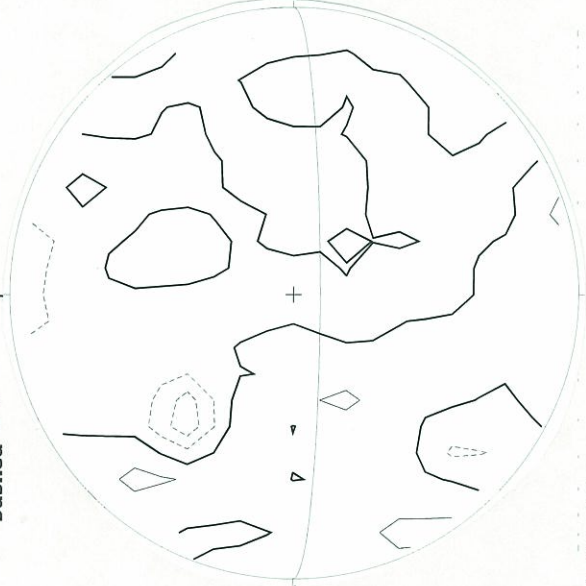
W

July 26, 2009 (P= 8.41, Bo= 5.32, Lo= 330.83)

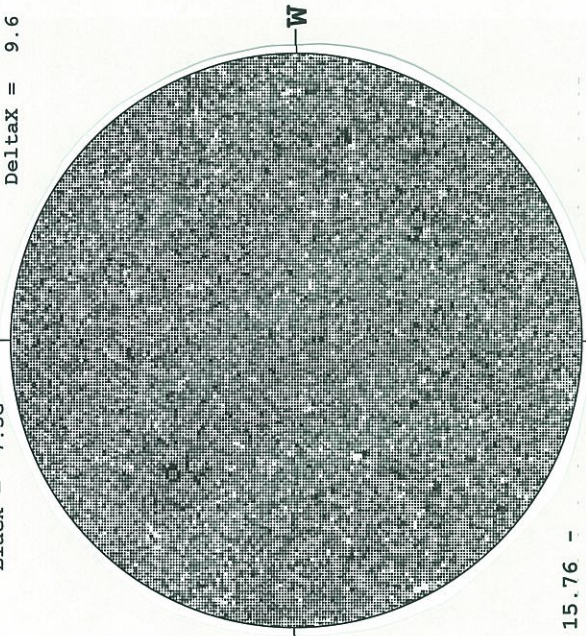
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



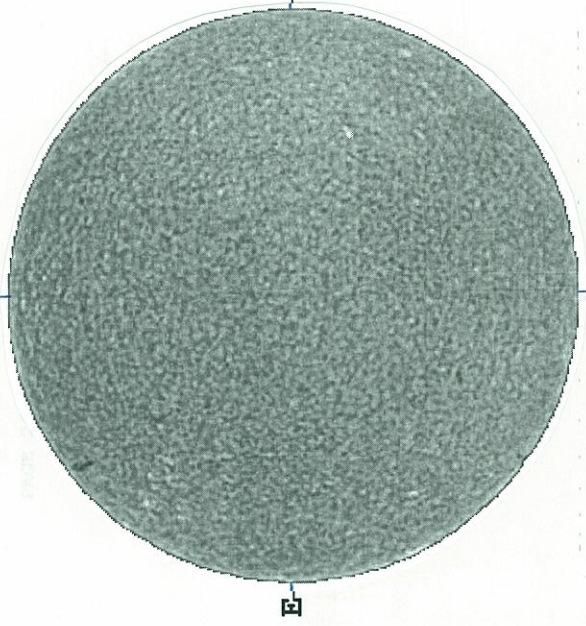
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6

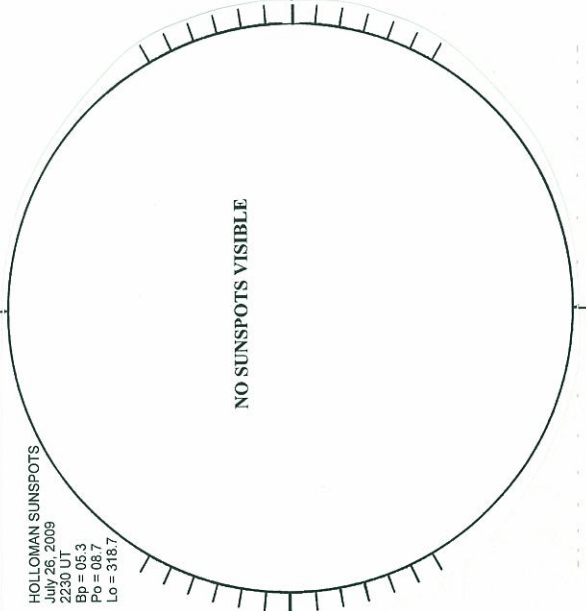


MAUNA LOA H-ALPHA



HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 26, 2009
2230 UT
Bp = 08.3
Po = 06.7
Lo = 318.7

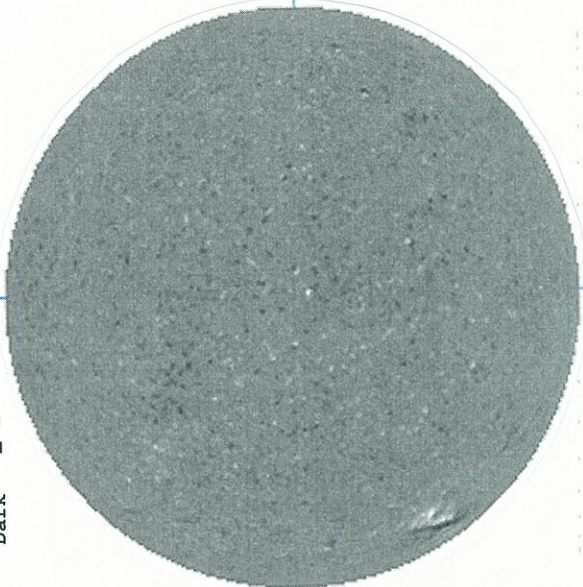


LOMNICKY PEAK CORONA (1.04 Radii) -----

NO DATA

July 27, 2009 (P= 8.82, Bo= 5.40, Lo= 317.60)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N



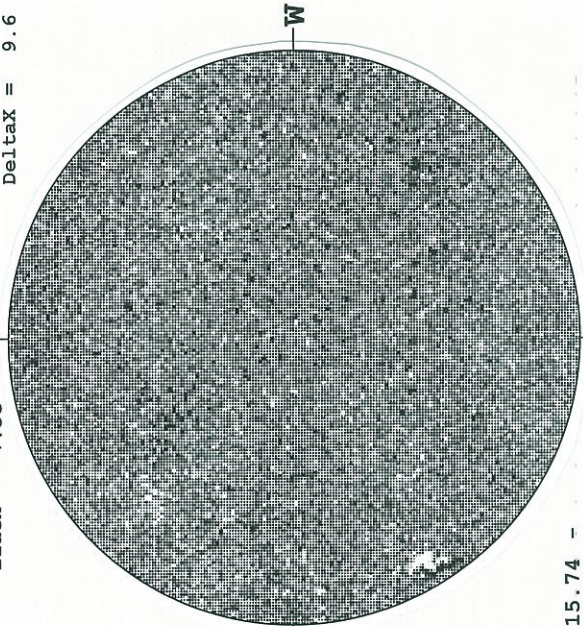
1810 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



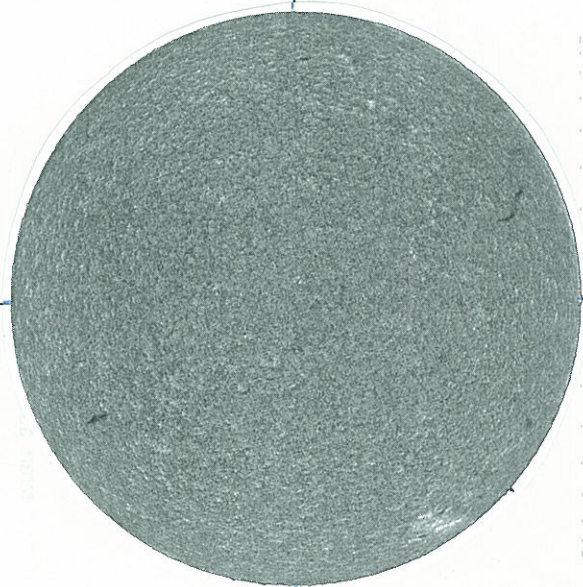
2055 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
N
DeltaY = 13.1
DeltaX = 9.6



15.74 -
16.66 UT

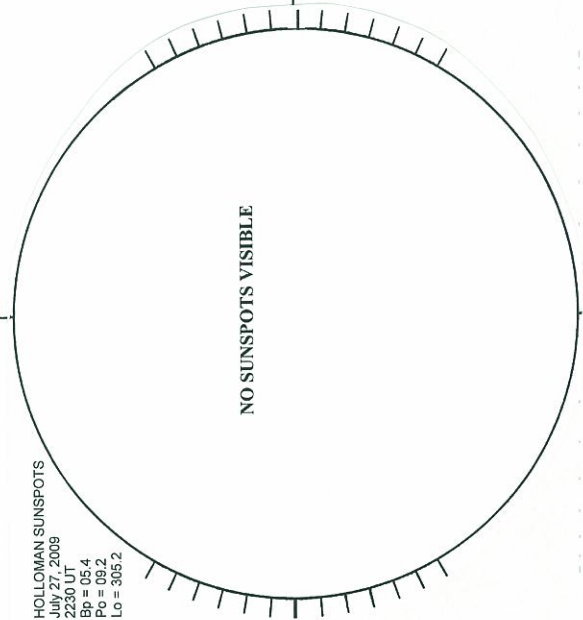
BIG BEAR H-ALPHA



1538 UT

HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
July 27, 2009
2230 UT
Bp = 05.4
Po = 05.2
Lo = 305.2

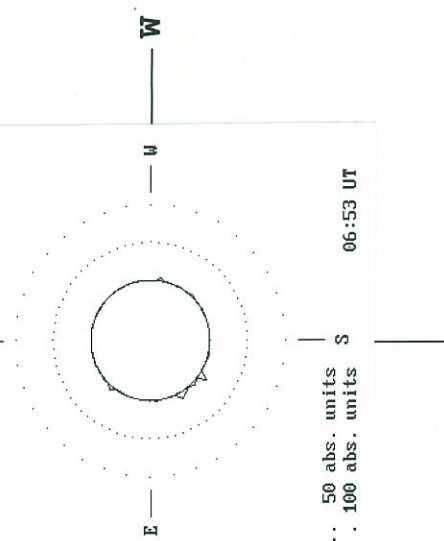


2230 UT

LOMNICKY PEAK CORONA (1.04 Radii) -----

LOMNICKY STIT
530.3 nm

JULY 27, 2009

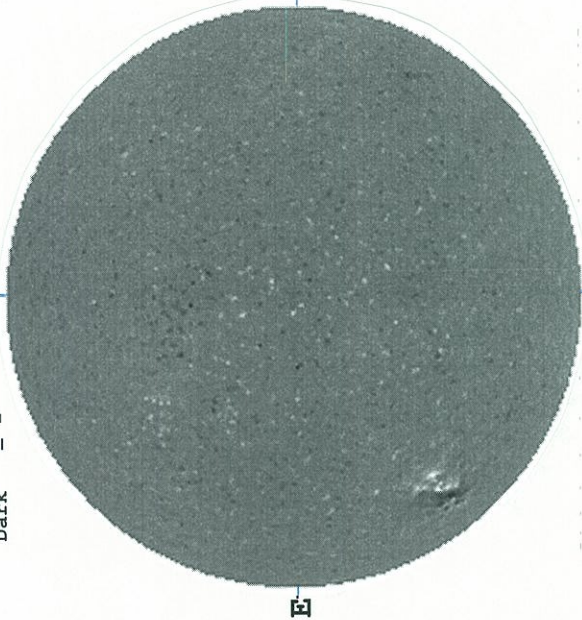


... 50 abs. units
.. 100 abs. units

06:53 UT

July 28, 2009 (P= 9.23, Bo= 5.48, Lo= 304.38)

KITT PEAK MAGNETOGRAM -- SOLIS
 Bright = +
 Dark = -



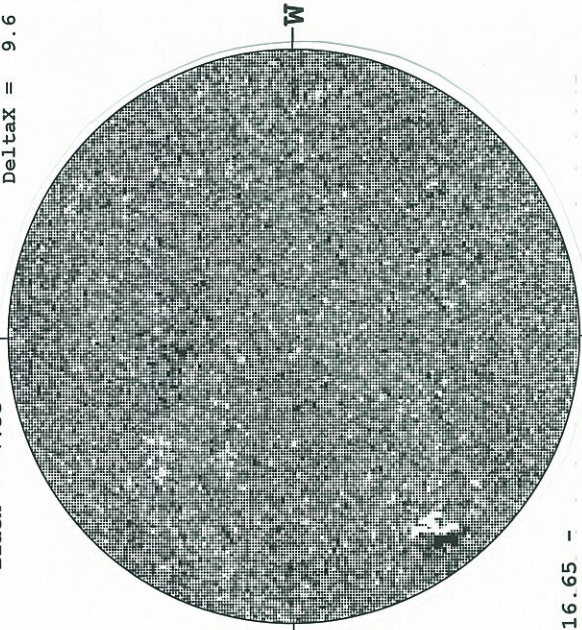
1755 UT

STANFORD MAGNETOGRAM
 Solid = +
 Dashed = -



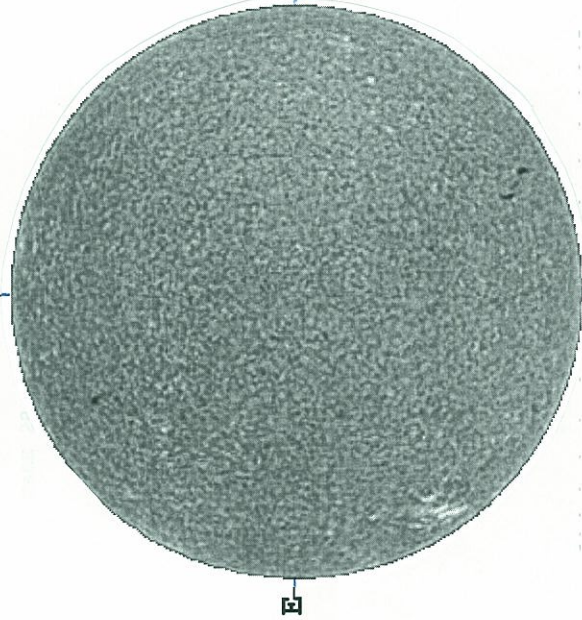
2043 UT

MT. WILSON MAGNETOGRAM
 White = +7.5G
 Black = -7.5G
 Delay = 13.1
 DeltaX = 9.6



16.65 -
 17.57 UT

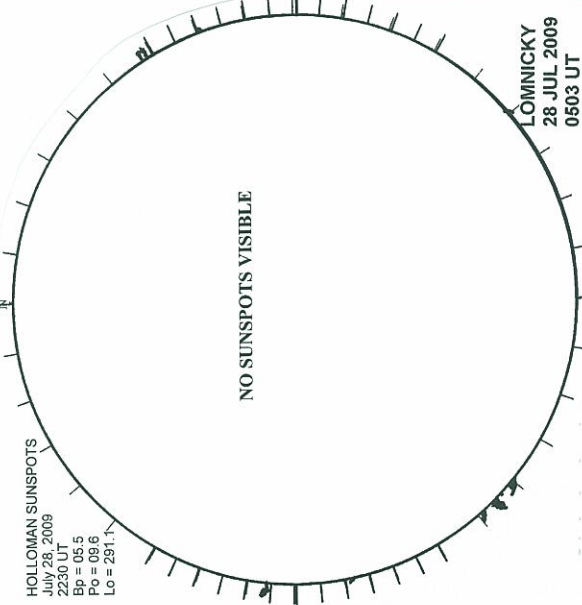
MAUNA LOA H-ALPHA



0026 UT

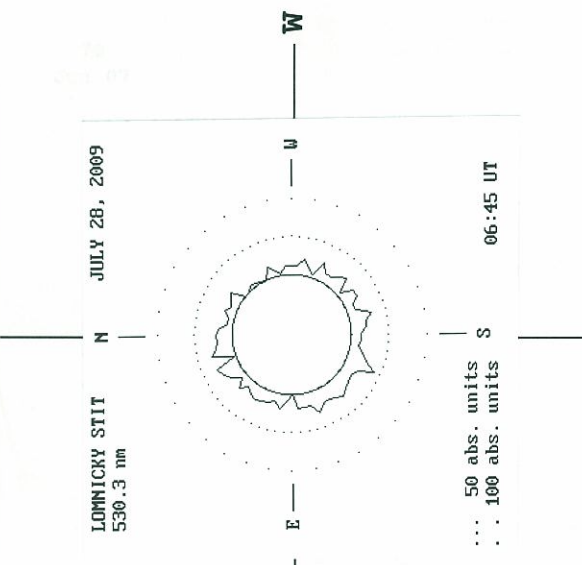
HOLLOMAN SUNSPOTS

HOLLOMAN SUNSPOTS
 JUL 28 2009
 2230 UT
 Bp = 05.5
 Po = 09.6
 Lo = 291.1



2230 UT
 0503 UT LOMN FROM

LOMNICKY PEAK CORONA (1.04 Radii) -----

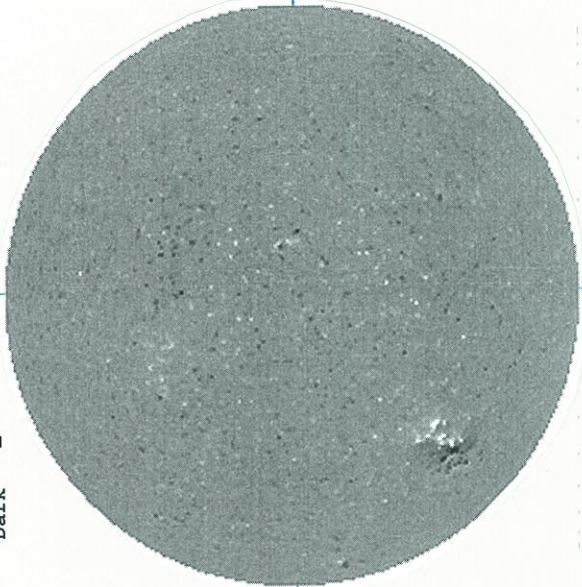


LOMNICKY STIT
 530.3 nm
 ... 50 abs. units
 ... 100 abs. units
 06:45 UT

Jul 68
09

July 29, 2009 (P= 9.64, Bo= 5.56, Lo= 291.15)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
N ** 854.2NM **



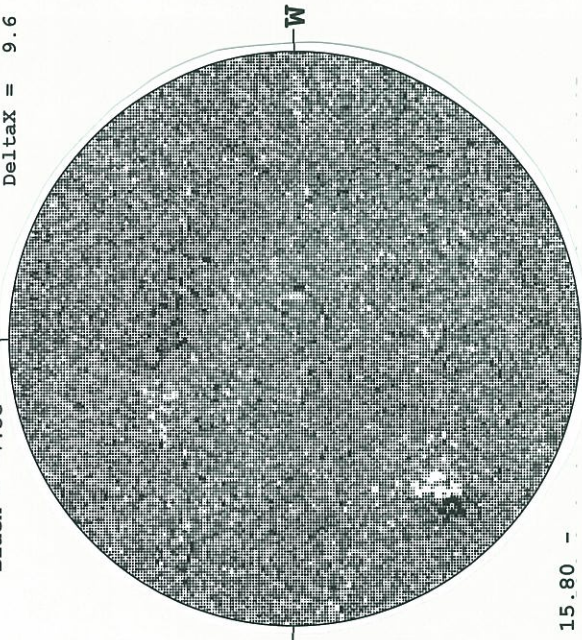
1905 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -
N



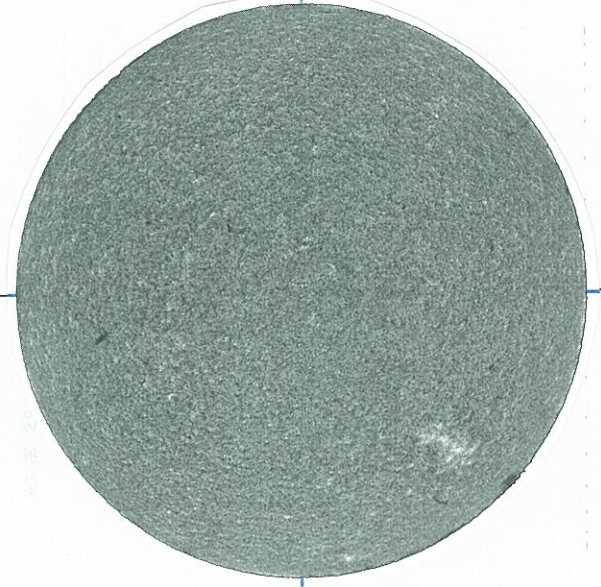
2305 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.0
DeltaX = 9.6
N



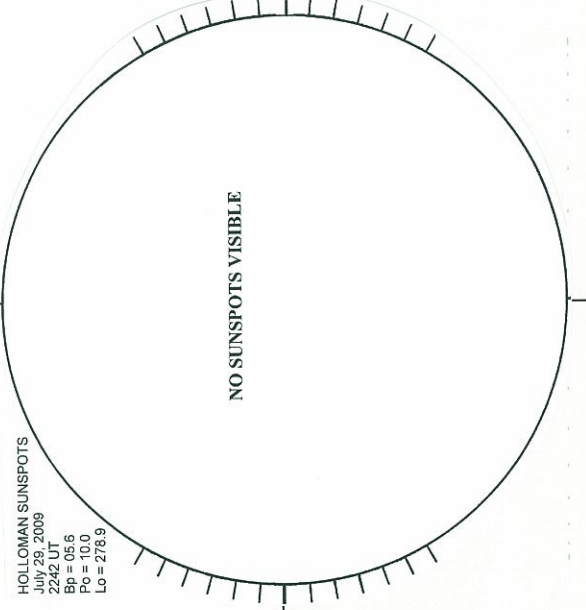
15.80 -
16.92 UT

BIG BEAR H-ALPHA



1548 UT

HOLLOMAN SUNSPOTS



2242 UT

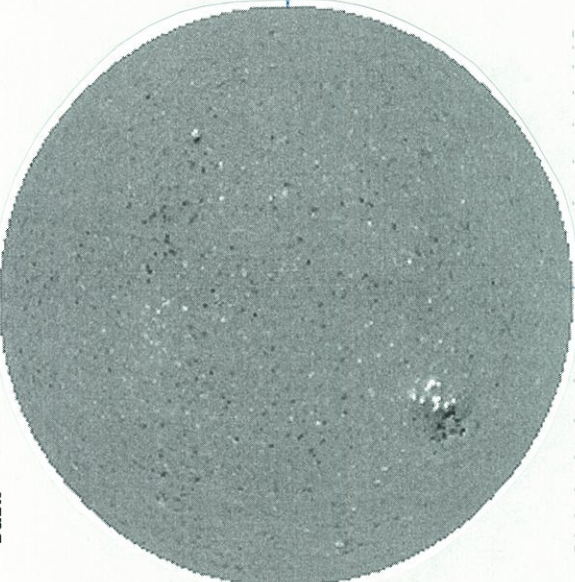
LOMNICKY PEAK CORONA (1.04 Radii) -----

NO DATA

W

July 30, 2009 (P= 10.05, Bo= 5.64, Lo= 277.92)

KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



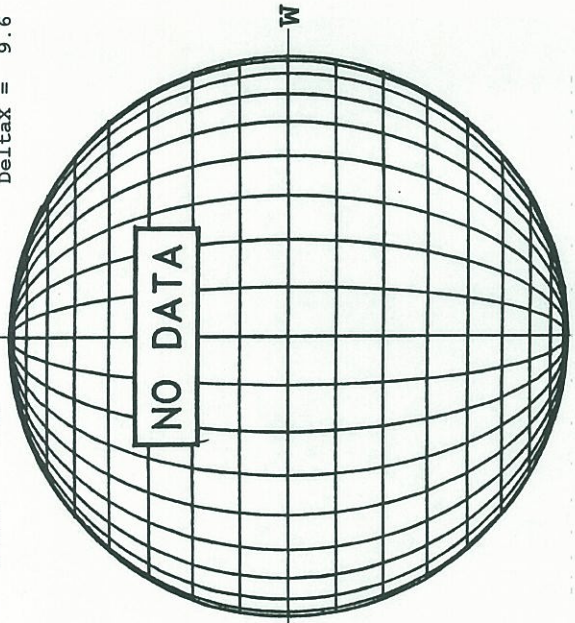
1343 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -

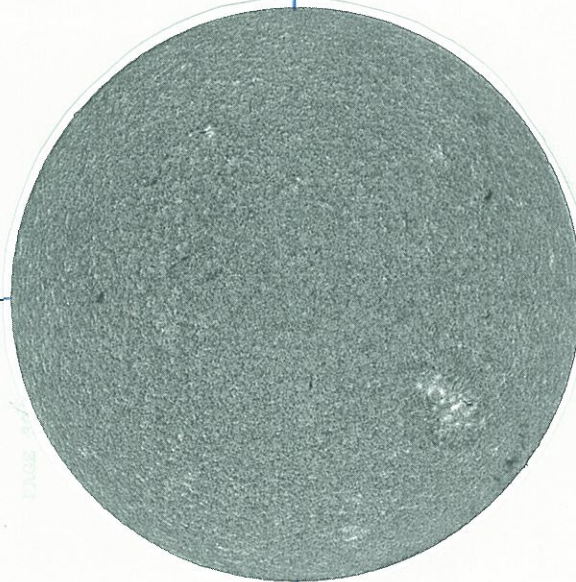


2302 UT

MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6

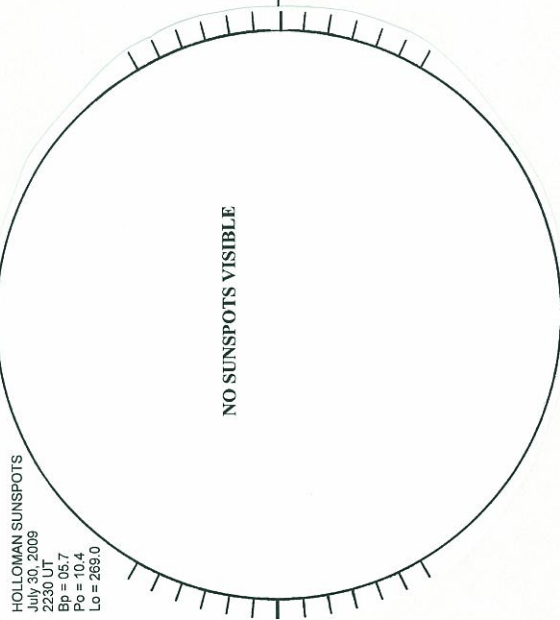


BIG BEAR H-ALPHA



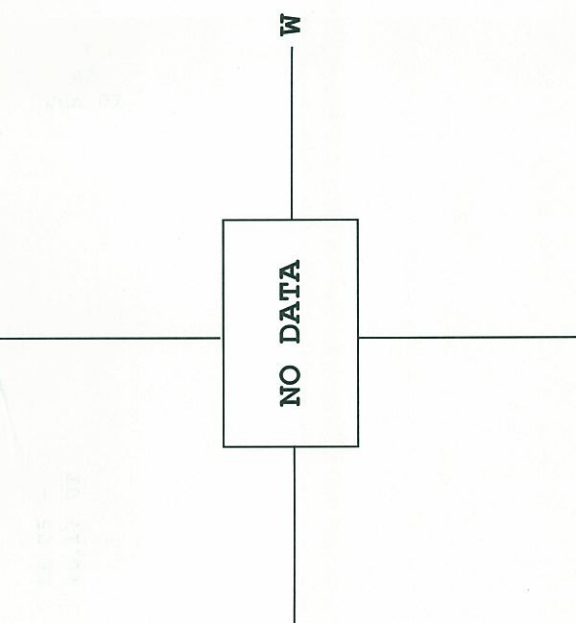
1550 UT

HOLLOMAN SUNSPOTS



2230 UT

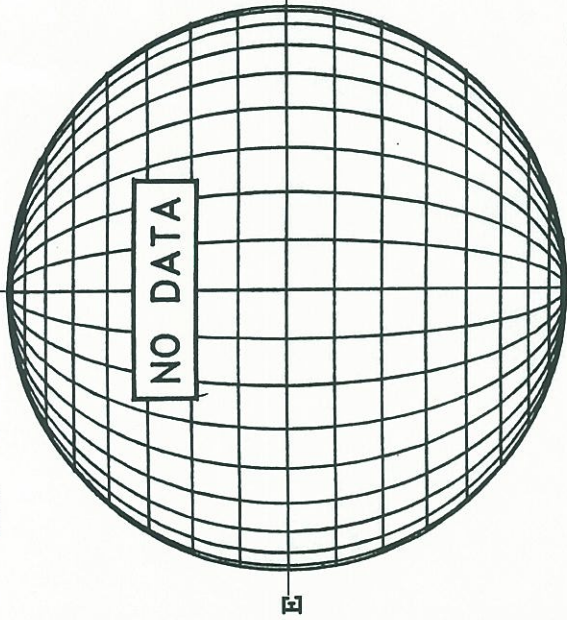
LOMNICKY PEAK CORONA (1.04 Radii) -----



70
Jul 09

July 31, 2009 (P= 10.45, Bo= 5.71, Io= 264.70)

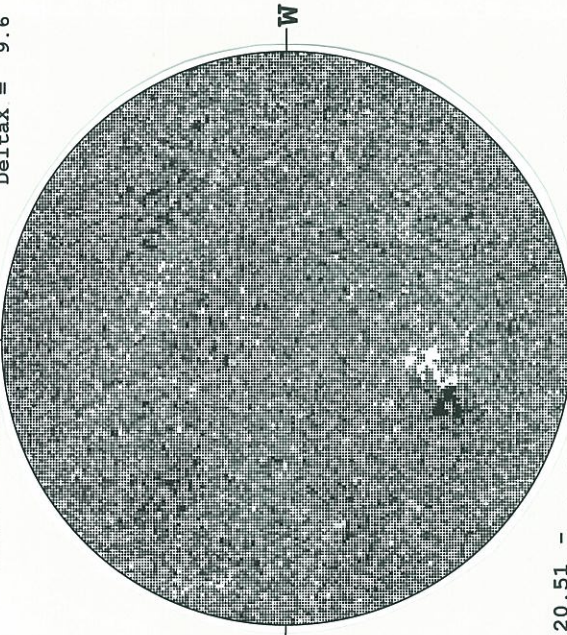
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -



STANFORD MAGNETOGRAM
Solid = +
Dashed = -

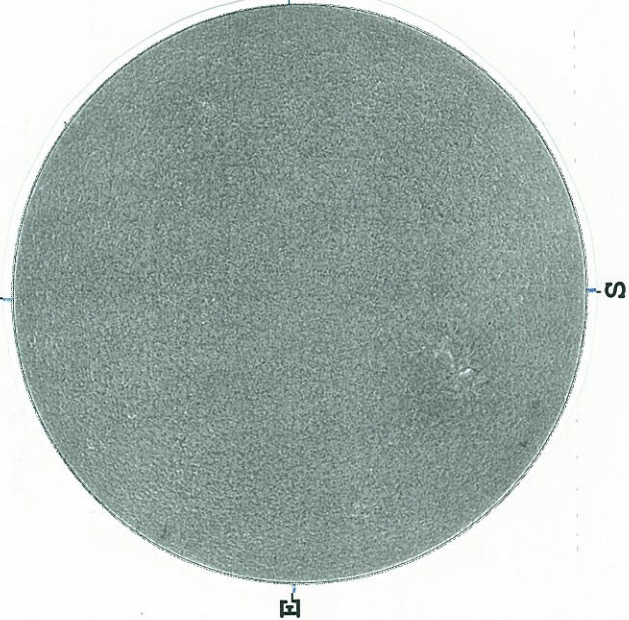


MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



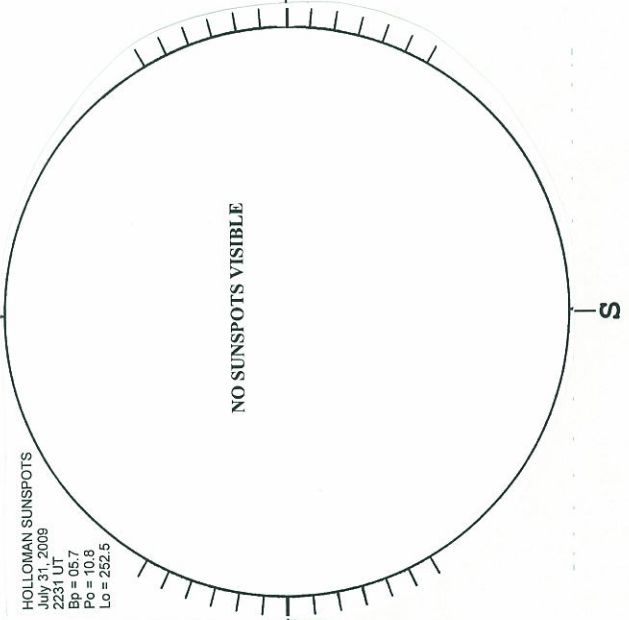
20.51 -
21.43 UT

KANZELHOHE H-ALPHA



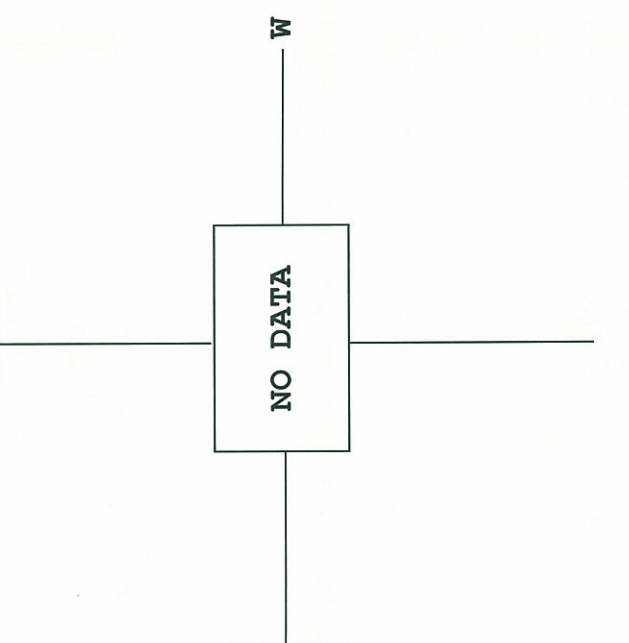
0624 UT

HOLLOMAN SUNSPOTS



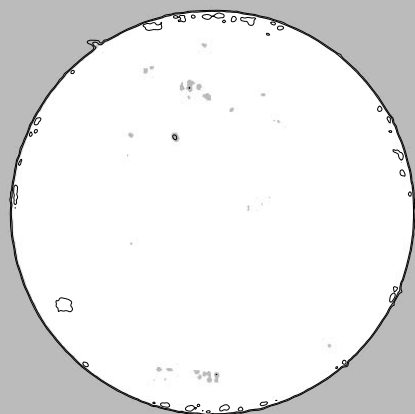
2231 UT

SACRAMENTO PEAK CORONA (1.15 Radii) -----

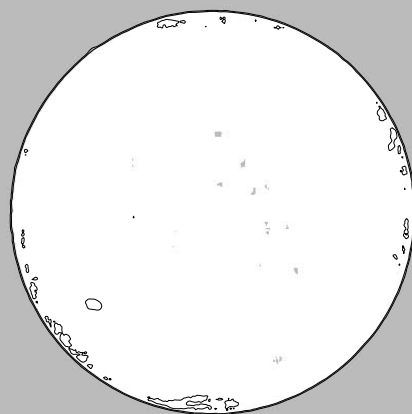


0624 UT

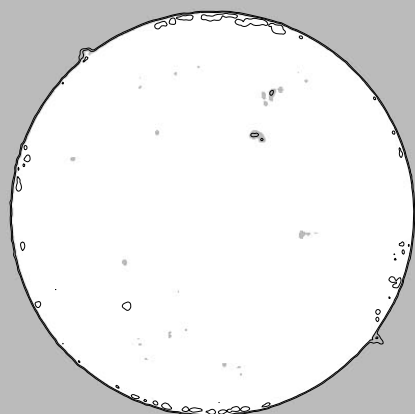
Nobeyama Radio Heliograph 17 GHz (Tb) 2009 July



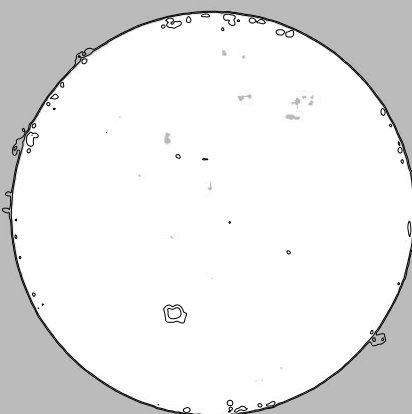
01 02:44 UT



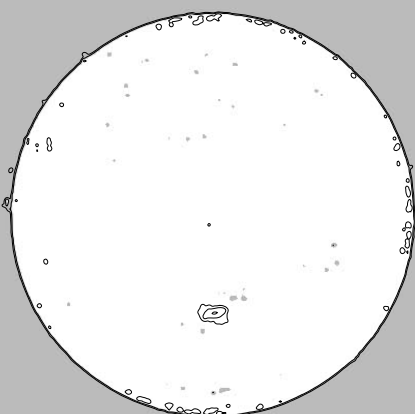
02 02:44 UT



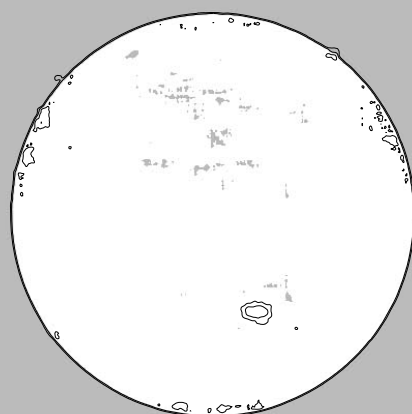
03 02:44 UT



04 02:44 UT



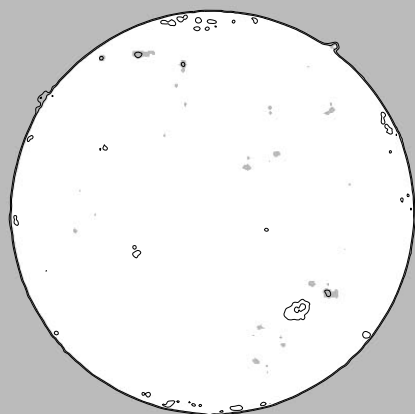
05 02:44 UT



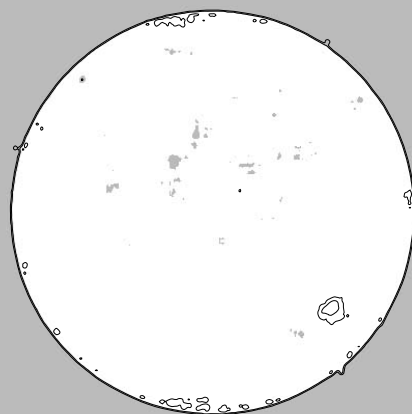
06 02:44 UT

Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3 \text{ K}$
Grey level $T_b \leq 9,500 \text{ K}$

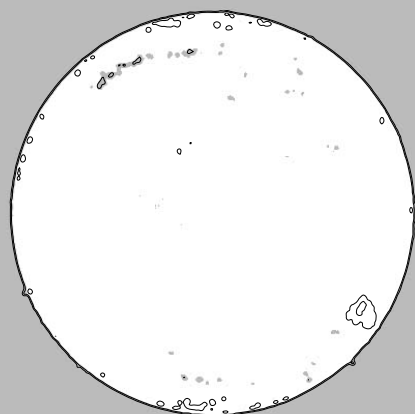
Nobeyama Radio Heliograph 17 GHz (Tb) 2009 July



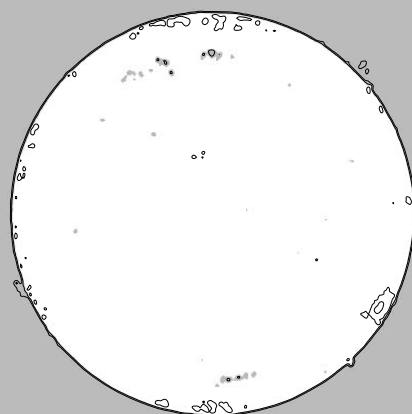
07 02:44 UT



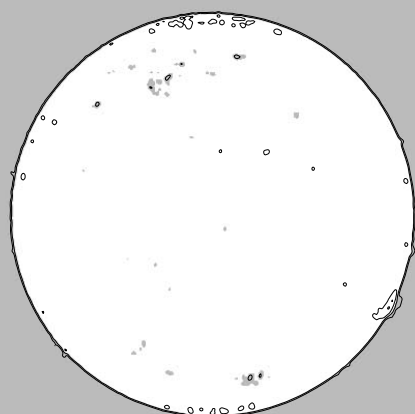
08 02:44 UT



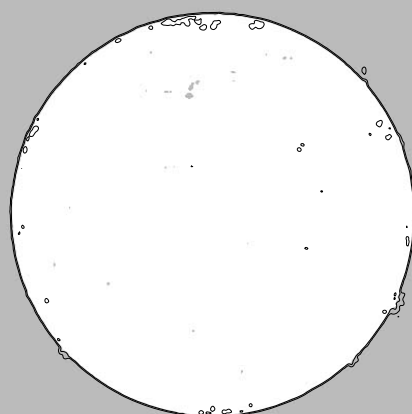
09 02:44 UT



10 02:44 UT



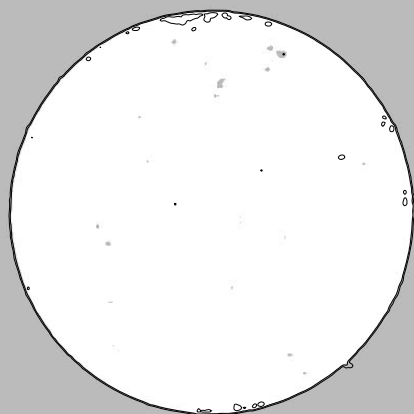
11 02:44 UT



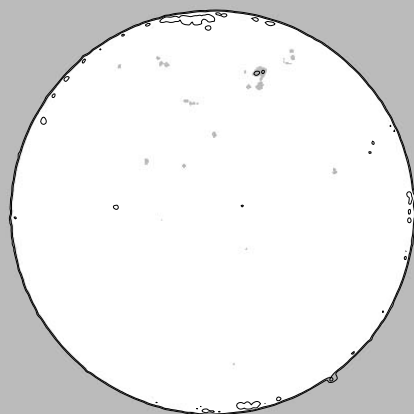
12 02:44 UT

Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3 \text{ K}$
Grey level $T_b \leq 9,500 \text{ K}$

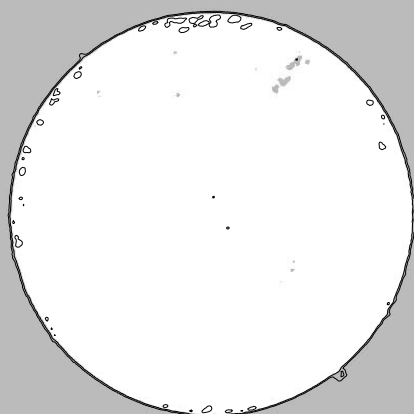
Nobeyama Radio Heliograph 17 GHz (Tb) 2009 July



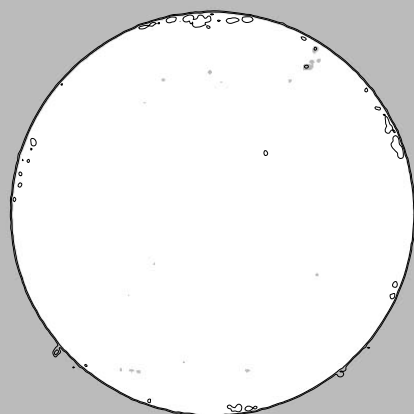
13 02:44 UT



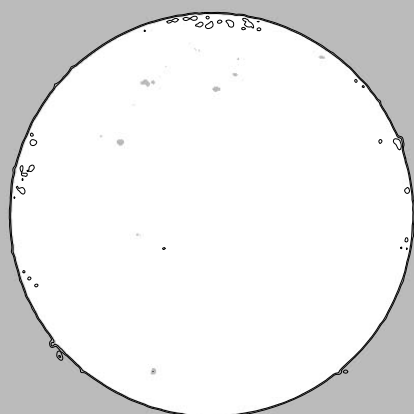
14 02:44 UT



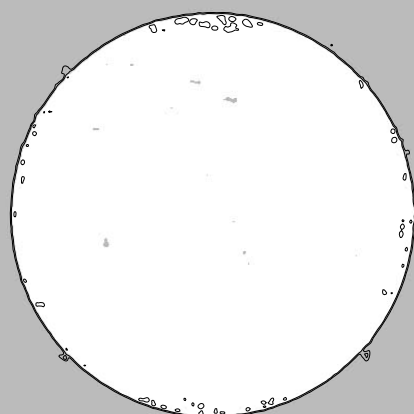
14 23:44 UT



16 02:44 UT



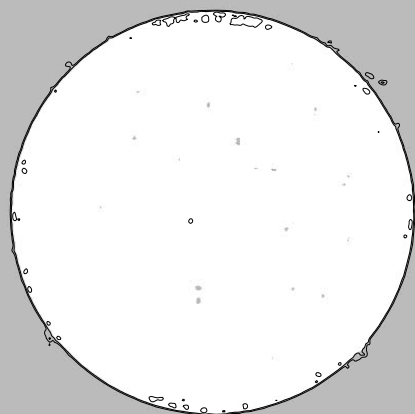
17 02:44 UT



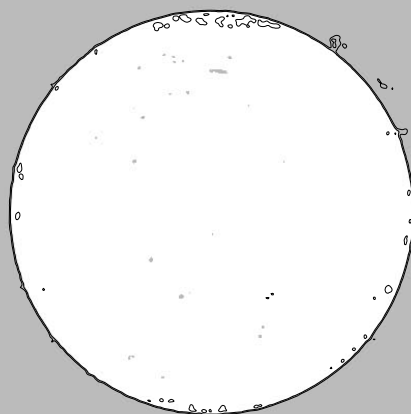
18 02:44 UT

Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3$ K
Grey level $T_b \leq 9,500$ K

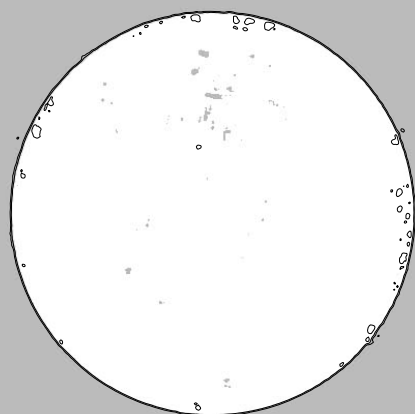
Nobeyama Radio Heliograph 17 GHz (Tb) 2009 July



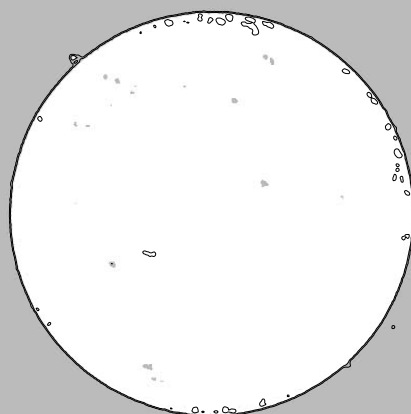
19 02:44 UT



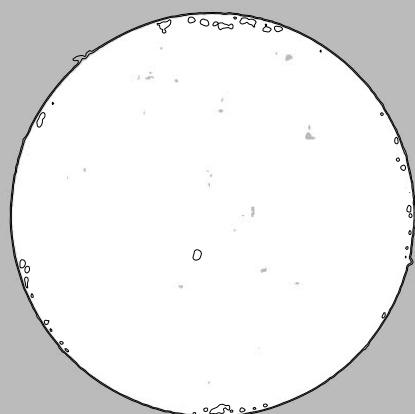
20 02:44 UT



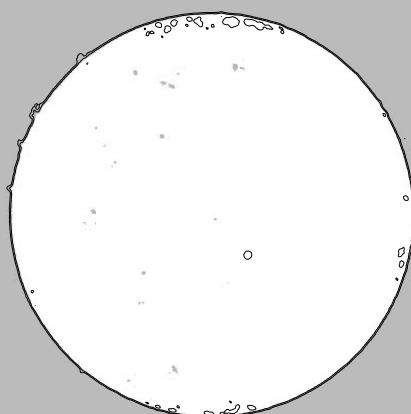
21 02:44 UT



22 03:59 UT



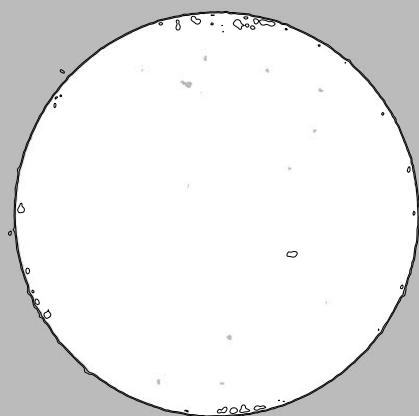
23 02:44 UT



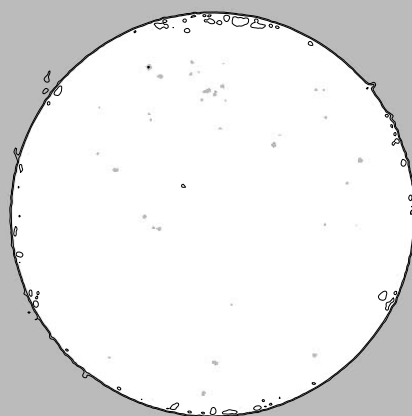
24 04:59 UT

Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3 \text{ K}$
Grey level $T_b \leq 9,500 \text{ K}$

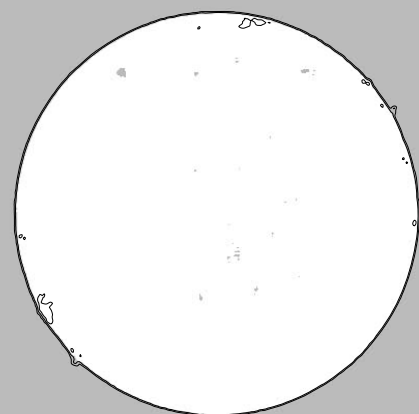
Nobeyama Radio Heliograph 17 GHz (Tb) 2009 July



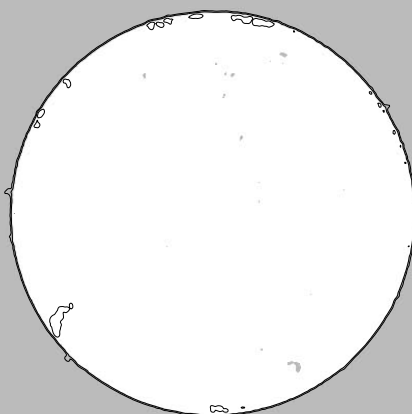
25 02:44 UT



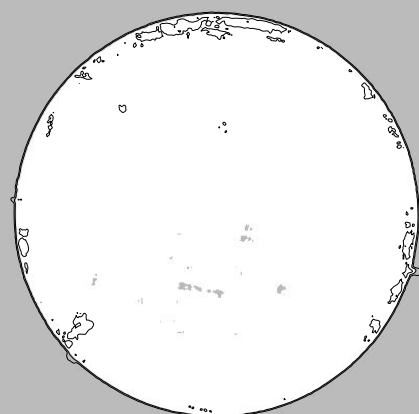
26 02:44 UT



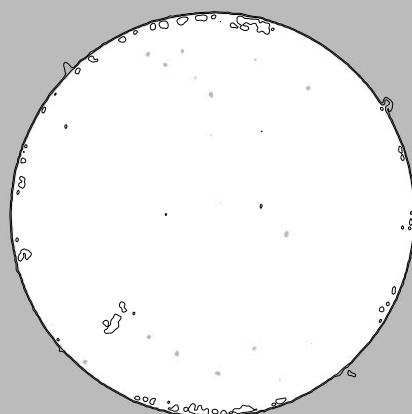
27 00:59 UT



28 02:44 UT



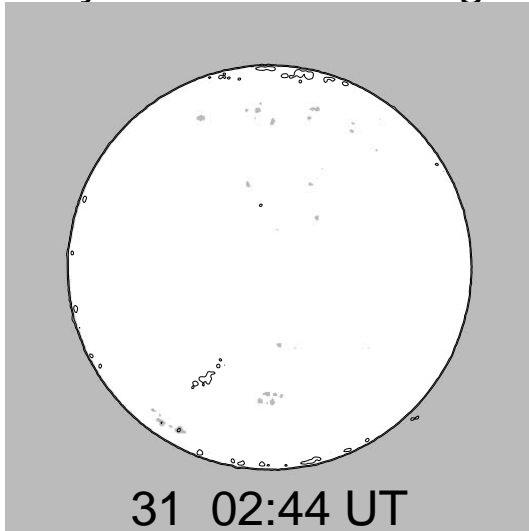
29 02:44 UT



30 02:44 UT

Contour Levels Tb=[5,8,12,20,50,100] x 10³ K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2009 July



Contour Levels $T_b = [5, 8, 12, 20, 50, 100] \times 10^3 \text{ K}$
Grey level $T_b \leq 9,500 \text{ K}$

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)
J U L Y 2 0 0 9

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation			CMP Mo Day	Max H	Mag Class	Spot Class	Corrected		Spot Count	Long. Extent (Deg)	Qual
			Mo	Day	Time (UT)					Lat	CMD				Area (10-6 Hemi)
11024		HOLL	07	03	2258	S25 E16	07 5.2	B	DSO	60	7	5	3	
11024		PURP	07	04	0048	S26 E13	07 5.0		DSI	20	7	3	4	
11024		TACH	07	04	0519	S26 E12	07 5.1		BRI	36	8	4	4	
11024		SVTO	07	04	0615	S30 E10	07 5.0	B	BXO	80	8	5	3	
11024		LEAR	07	04	0700	S26 E10	07 5.1	B	BXI	70	13	5	2	
11024		KAND	07	04	0700	S27 E10	07 5.1		BXO		12	6	5	
11024		HOLL	07	04	1528	S25 E08	07 5.3	B	DSI	140	16	7	3	
11024		PURP	07	05	0040	S26 W02	07 4.9		DAI	126	15	8	4	
11024		LEAR	07	05	0315	S27 W03	07 4.9	B	DSI	170	18	9	3	
11024		SVTO	07	05	0530	S27 W03	07 5.0	B	DSI	110	13	9	3	
11024		KAND	07	05	0915	S27 W05	07 5.0		DAI		14	9	2	
11024		HOLL	07	05	1605	S28 W06	07 5.2	B	ESI	170	18	11	3	
11024		LEAR	07	06	0150	S26 W15	07 4.9	B	DAI	180	13	9	3	
11024		SVTO	07	06	0546	S27 W16	07 5.0	B	DSI	190	13	10	3	
11024		TACH	07	06	0606	S26 W14	07 5.2		CAI	175	11	6	4	
11024		KAND	07	06	0650	S27 W18	07 4.9		DAO		14	10	3	
11024		HOLL	07	06	1538	S29 W18	07 5.2	B	ESI	130	16	11	3	
11024		LEAR	07	07	0210	S26 W28	07 4.9	B	DAI	200	11	10	3	
11024		SVTO	07	07	0605	S26 W30	07 4.9	B	ESO	170	9	11	3	
11024		TACH	07	07	0606	S26 W28	07 5.1		CAI	89	16	8	5	
11024		KAND	07	07	0710	S27 W31	07 4.9		CAO		5	10	4	
11024		HOLL	07	07	1528	S28 W33	07 5.1	B	EAI	170	13	12	3	
11024		LEAR	07	08	0202	S26 W40	07 5.0	B	DAI	270	10	10	3	
11024		PURP	07	08	0313	S26 W45	07 4.6		EAI	169	17	10	3	
11024		TACH	07	08	0442	S29 W45	07 4.7		DAI	244	6	9	5	
11024		SVTO	07	08	0642	S25 W43	07 4.9	B	ESO	200	7	11	3	
11024		KAND	07	08	0750	S25 W45	07 4.8		DAO		8	10	3	
11024		HOLL	07	08	1513	S25 W49	07 4.8	B	ESI	90	7	11	3	
11024		LEAR	07	09	0035	S24 W54	07 4.8	B	FKO	300	6	16	3	
11024		PURP	07	09	0050	S27 W57	07 4.6		EAO	226	13	12	3	
11024		TACH	07	09	0512	S26 W54	07 5.0		DAO	205	4	8	5	
11024		SVTO	07	09	0705	S26 W56	07 4.9	B	ESO	110	5	12	3	
11024		KAND	07	09	0735	S26 W58	07 4.8		DAO		4	10	3	
11024		HOLL	07	09	1902	S25 W62	07 5.0	B	EAO	290	4	12	3	
11024		SVTO	07	10	0627	S25 W70	07 4.8	B	ESO	100	3	15	3	
11024		KAND	07	10	0630	S26 W70	07 4.8		DAO		6	10	5	
11024		TACH	07	10	0656	S25 W66	07 5.2		DSO	113	2	9	4	
11024		PURP	07	10	0720	S27 W74	07 4.5		ESO	109	3	10	2	
11024		LEAR	07	10	0820	S25 W72	07 4.8	B	BXO	100	2	11	1	
11024		HOLL	07	10	1618	S25 W75	07 4.9	B	BXO	60	3	15	3	
11024		PURP	07	11	0045	S28 W82	07 4.6		AXX	14	1	1	3	
11024B		HOLL	07	22	2137	S06 E06	07 23.3	A	AXX		1	1	3	
11024B		KAND	07	23	0715	S08 E01	07 23.4		BXO		3	1	3	
11024B		HOLL	07	23	1747	S07 W06	07 23.3	A	AXX		1	1	3	
11024C		HOLL	07	30	1440	N23 W38	07 27.7	A	AXX		1		3	

Stations reporting:

HOLL = Holloman
KAND = Kandilli

LEAR = Learmonth
PALE = Palehua

PURP = Purple Mountain
SVTO = San Vito

TACH = Tashkent
VORO = Voroshilov

S O L A R R A D I O E M I S S I O N
Spectral Observations
JULY 2009

Day	OBSERVATION			Start (UT)	End (UT)	EVENT		Int (1-3)	FREQUENCY		Remarks
	Start (UT)	End (UT)	Sta			Spectral Class	Event Remarks		Lower (MHz)	Upper (MHz)	
01	0000	0710	CULG								
	0000	1006	HIRA								
	0435	1815	BLEN								
	0459	1754	ONDR								
	1917	2400	HIRA								
	2100	2400	CULG								
02	0000	0710	CULG								
	0000	1006	HIRA								
	0435	1010	BLEN								
	0459	1753	ONDR								
	1918	2400	HIRA								
	2100	2400	CULG								
03	0000	0710	CULG								
	0000	1005	HIRA								
	0435	1815	BLEN								
	0459	1753	ONDR								
			PALE	2025.0	2048.0	III		1	25U	88U	
			SGMR	2025.0	2028.0	III		1	30U	83U	
	1918	2400	HIRA	2025.0	2028.0	III	G	1	50	200	
	2100	2400	CULG	2300.0	2300.0	III	B	1	20	45	
04	0000	0710	CULG	0100.0	0100.0	III	B	1	100	180	
			CULG	0104.0	0106.0	III	G	1	18X	180	
			LEAR	0104.0	0108.0	III		1	25	180	
			PALE	0104.0	0108.0	III		1	25	162	
	0000	1005	HIRA	0104.0	0109.0	III	G	1	25X	200	
			CULG	0108.0	0108.0	III	B	1	18	160	
			LEAR	0123.0	0308.0	III	N	1	25	180	
			PALE	0123.0	0124.0	III		1	25U	152U	
			HIRA	0123.5	0124.5	III	G	1	50	240	
			CULG	0124.0	0125.0	III	G	1	20	180	
			PALE	0142.0	0233.0	III	N	1	25	135	
			CULG	0143.0	0145.0	III	G	1	18X	170	
			CULG	0211.0	0219.0	III	G	1	18X	160	
			CULG	0228.0	0234.0	III	GG	1	18	160	
			CULG	0308.0	0308.0	III	B	1	20	180	
			HIRA	0308.0	0308.5	III	B	1	200	400	
			PALE	0308.0	0308.0	III		1	25	180	
	0435	1810	BLEN								
			CULG	0449.0	0449.0	III	B	1	60	180	
	0459	1753	ONDR								
	1918	2400	HIRA								
	2100	2400	CULG								
05	0000	0710	CULG								
	0000	1005	HIRA								
	0435	1810	BLEN								
	0459	1752	ONDR								
	1919	2400	HIRA								
	2100	2400	CULG								
06	0000	0710	CULG								
	0440	1805	BLEN								
	0459	1752	ONDR								
			LEAR	0734.0	0735.0	III		1	25	62	
			SVTO	0734.0	0735.0	III		1	25	64	
	0000	1005	HIRA	0735.0	0735.5	III	B	1	25X	80	
	1919	2400	HIRA								
	2100	2400	CULG								
07	0000	0710	CULG								
	0000	1004	HIRA								
	0440	1805	BLEN								
	0459	1752	ONDR								
			SVTO	0920.0	1649.0	III	N	1	25	78	
			SVTO	0925.0	1148.0	CONT		1	112	180	
			SGMR	1021.0	1711.0	III	N	1	30U	130U	

SOLAR RADIO NOISE STORM AT 150.9 MHZ

FROM NANÇAY RADIOHELIOGRAPH

JULY 2009

DAY	HELIOGRAPHICS POSITIONS MEAN VALUES ¹		IMP ²	OBSERVING TIME ³	
	E-W	S-N		START(UT)	END(UT)
04/07/09	-0.20	-0.60	I	11H45	15H25 D
05/07/09	-0.13	-0.57	I	8H24 E	15H25 D
06/07/09	+0.10	-0.62	I	8H46 E	15H26 D
06/07/09	+0.40	-0.44	I	8H46 E	15H26 D
07/07/09	+0.54	-0.49	II	8H25 E	15H26 D
08/07/09	+0.82	-0.46	II	8H25 E	15H26 D
09/07/09	+0.99	-0.41	I	8H25 E	15H26 D
10/07/09	+1.22	-0.49	I	8H25 E	15H26 D
11/07/09	+1.13	-0.58	I	8H26 E	9H36

¹ POSITIVE E-W AND S-N COORDINATES CORRESPOND TO THE N-W QUADRANT

² IMP1: FLUX < 5 SFU IMP2: 5 < FLUX < 20 SFU IMP3: 20 < FLUX < 100 SFU

IMP4: 100 < FLUX < 300 SFU IMP5 > 300 SFU

³ E NOISE STORM IN PROGRESS AT THE BEGINNING OF THE NANÇAY OBSERVATIONS

D NOISE STORM IN PROGRESS AT THE END OF THE NANÇAY OBSERVATIONS

SOLAR RADIO NOISE STORM AT 327 MHZ
FROM NANÇAY RADIOHELIOGRAPH
JULY 2009

DAY	HELIOGRAPHICS POSITIONS MEAN VALUES ¹		IMP ²	OBSERVING TIME ³	
	E-W	S-N		START(UT)	END(UT)
04/07/09	-0.19	-0.58	I	9H43	15H25 D
04/07/09	-0.11	-0.48	I	8H24 E	15H25 D
05/07/09	-0.03	-0.53	I	8H24 E	15H25 D
06/07/09	+0.16	-0.52	I	8H46 E	15H26 D
06/07/09	+0.36	-0.39	I	8H46 E	15H26 D
07/07/09	+0.59	-0.48	II	8H25 E	15H26 D
08/07/09	+0.83	-0.47	I	8H25 E	15H26 D
09/07/09	+1.05	-0.44	II	8H25 E	15H26 D
10/07/09	+0.90	-0.63	I	8H25 E	15H26 D
10/07/09	+1.02	-0.36	I	8H25 E	15H26 D

17 JULY 2009: NO DATA

OTHERS DAYS: NO DETECTABLE NOISE STORM

- For the days marked by an asterisk, intense ionospheric gravity waves are observed during the whole day. Without a more detailed analysis leading to increase uncertainties in the deviation, the positions which are indicated are estimated within 0.2 R

** Following a large burst

*** importance not well determined due to the proximity of the very strong other source

**** no flux measurements available

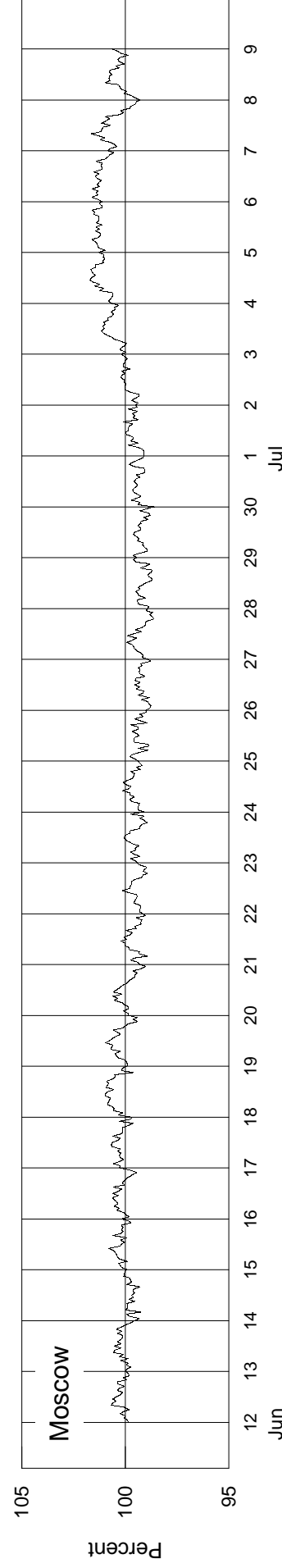
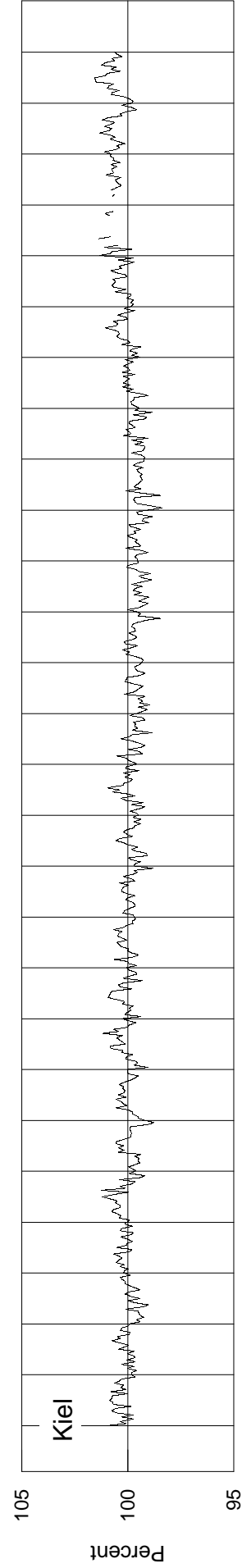
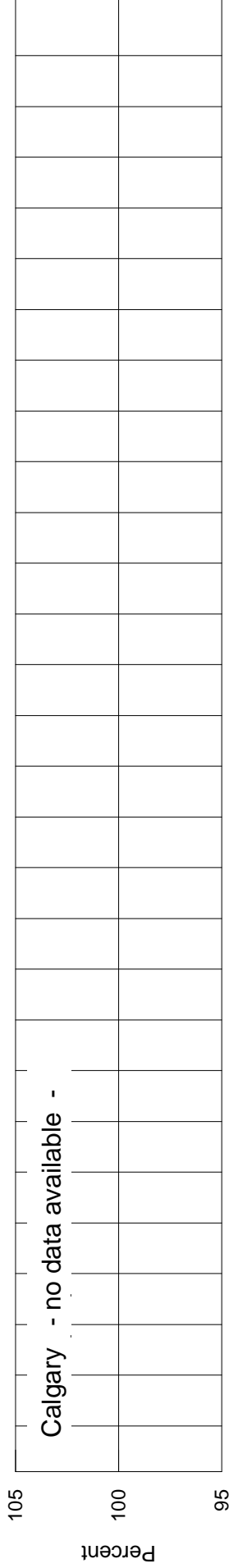
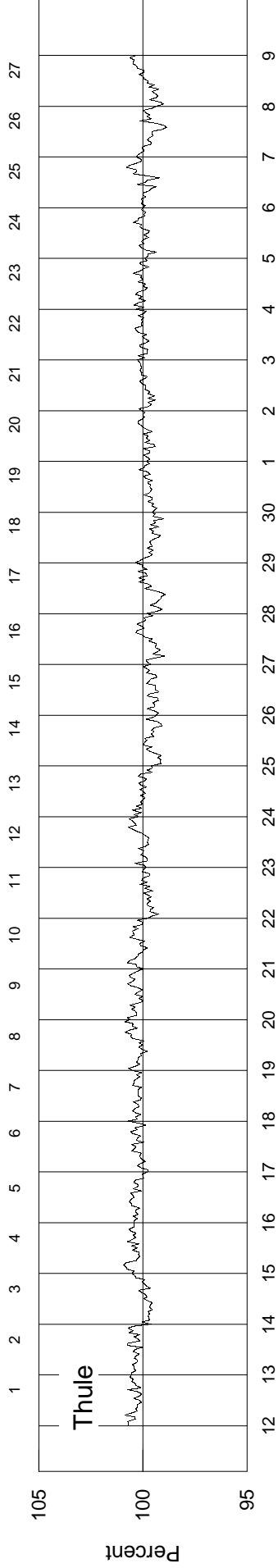
COSMIC RAY INDICES
(Neutron Monitor)
JULY 2009

Day	THULE Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	4701.5		6463.9	9692.9		2071.3	
2	4704.0		6485.1	9721.3		2076.3	
3	4709.6		6503.6	9790.1		2074.8	
4	4712.4		6507.3	9847.8		2070.5	
5	4706.5		6601.6(14)	9860.7		2072.6	
6	4709.6		6541.7(20)	9852.3		2061.2	
7	4695.0		6532.4	9794.7	data	2067.5	data
8	4699.5	data	6539.2	9760.8	not	2058.0	not
9	4708.9	available	6534.7	9764.2	available	2066.4	available
10	4704.6		6521.5	9737.7		2068.9	
11	4681.2		6509.0	9702.3		2063.2	
12	4692.3		6519.2	9729.7		2061.9	
13	4700.8		6499.5	9723.4		2065.5	
14	4681.1		6488.8	9673.0		2069.5	
15	4679.0		6481.3	9656.9		2063.2	
16	4690.0		6499.0	9684.9		2063.3	
17	4695.9		6523.7	9714.6		2051.2	
18	4703.0		6517.7	9715.8		2057.6	
19	4713.0		6527.5	9722.1		2057.8	
20	4722.8		6537.6	9729.0		2077.8	
21	4699.5		6516.9	9736.0		2072.2	
22	4698.7		6536.6	9792.7		2077.3	
23	4691.4		6525.4	9747.5		2064.5	
24	4687.6		6519.0	9736.6		2067.9	
25	4696.2		6509.2	9739.7		2067.0	
26	4693.5		6507.4	9753.7		2070.4	
27	4699.4		6506.8	9759.7		2065.5	
28	4702.1		6508.6	9750.0		2068.9	
29	4703.1		6513.2	9705.7		2064.5	
30	4698.8		6500.6	9682.1		2059.5	
31	4709.3		6505.8	9719.5		2064.5	
Mean	4699.0		6515.6	9741.9		2066.5	

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours, and for Haleakala, whenever the sum of all three sections falls below 60 hours.

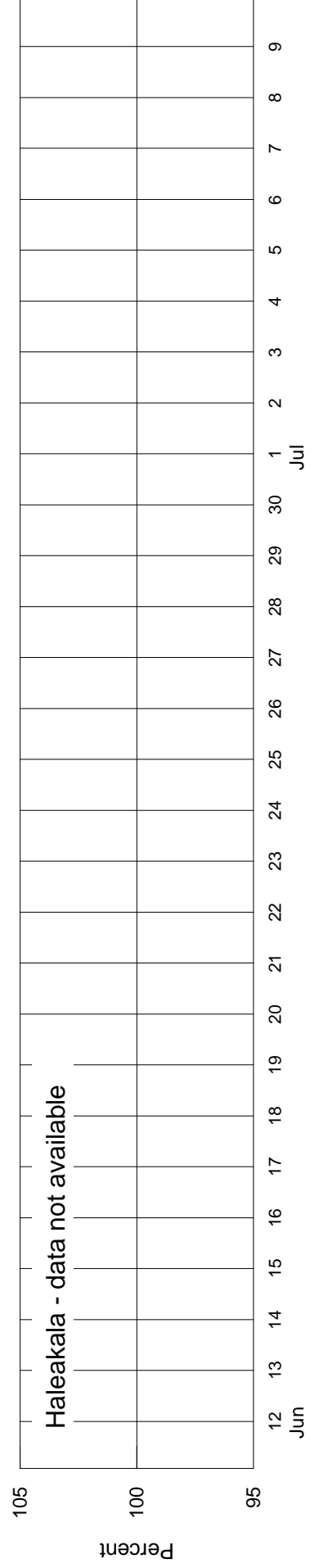
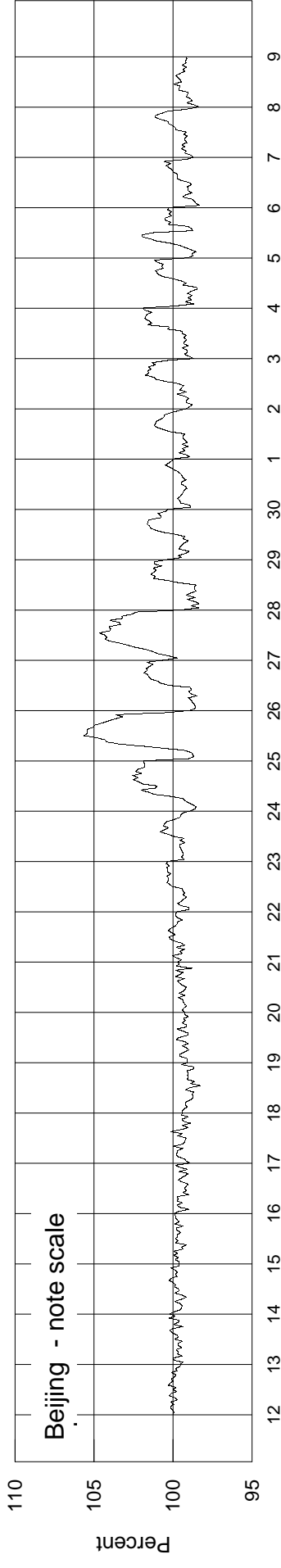
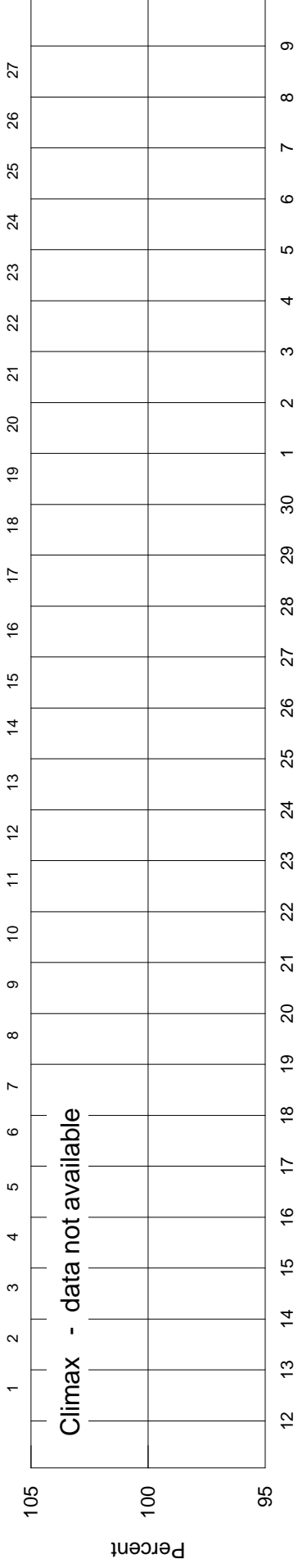
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2400 - Beginning 12 Jun 2009



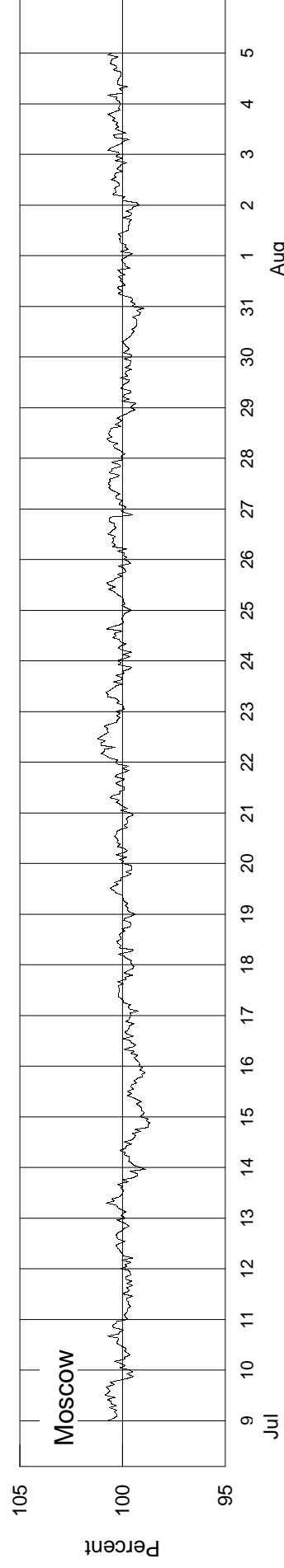
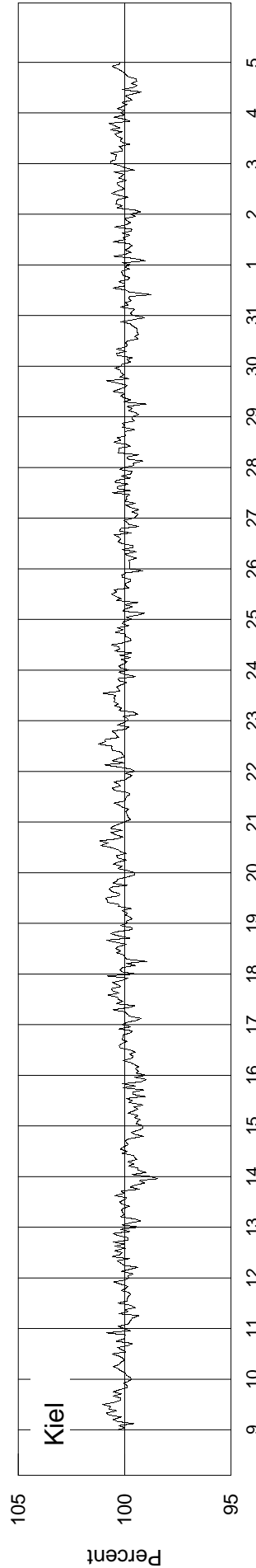
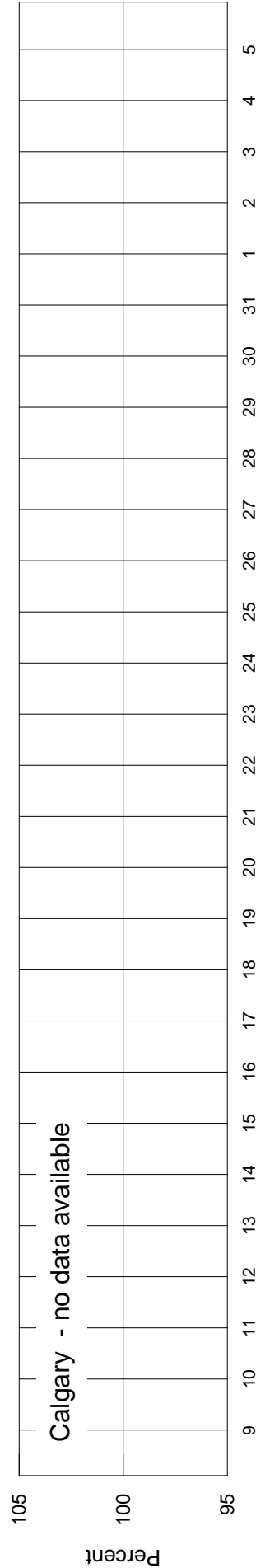
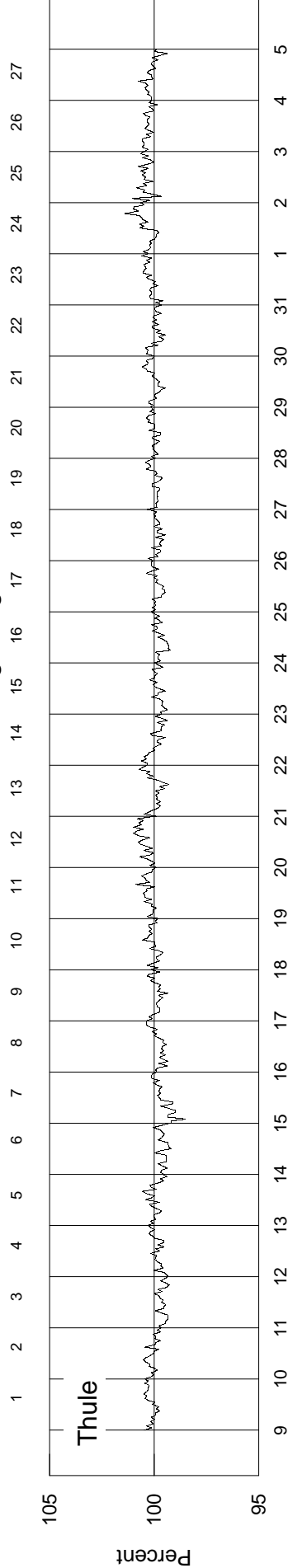
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2400 - Beginning 12 Jun 2009



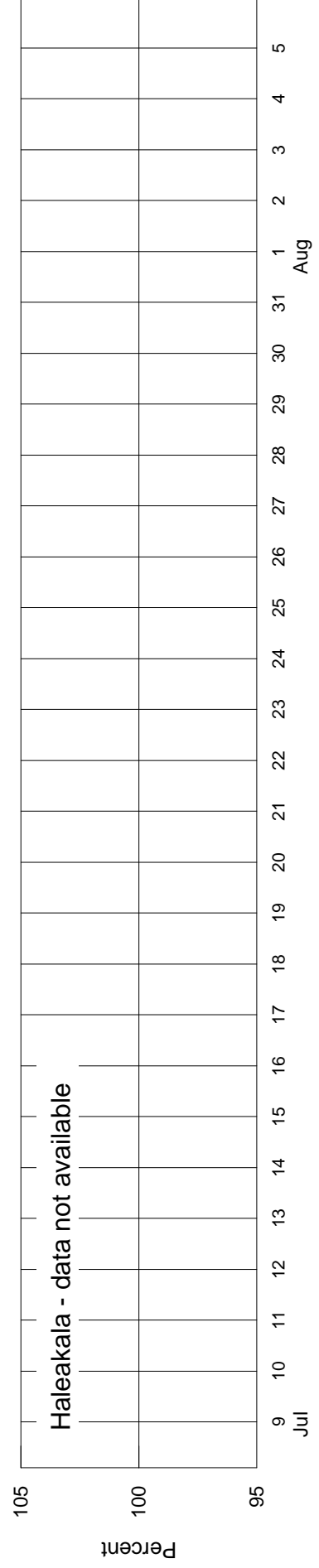
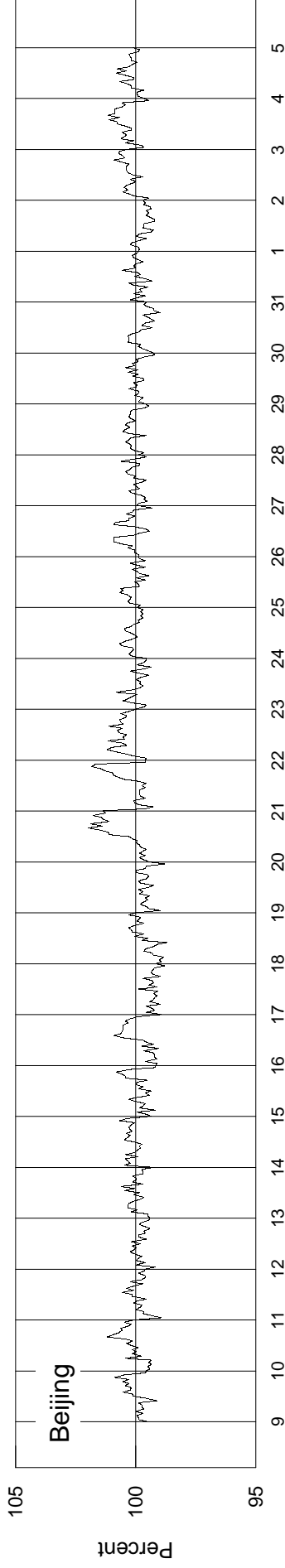
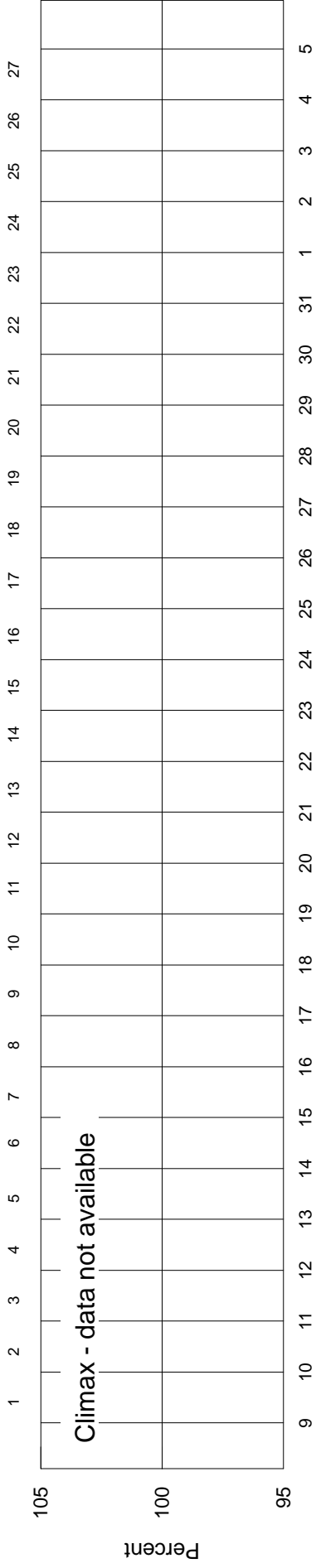
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2401 - Beginning 9 Jul 2009

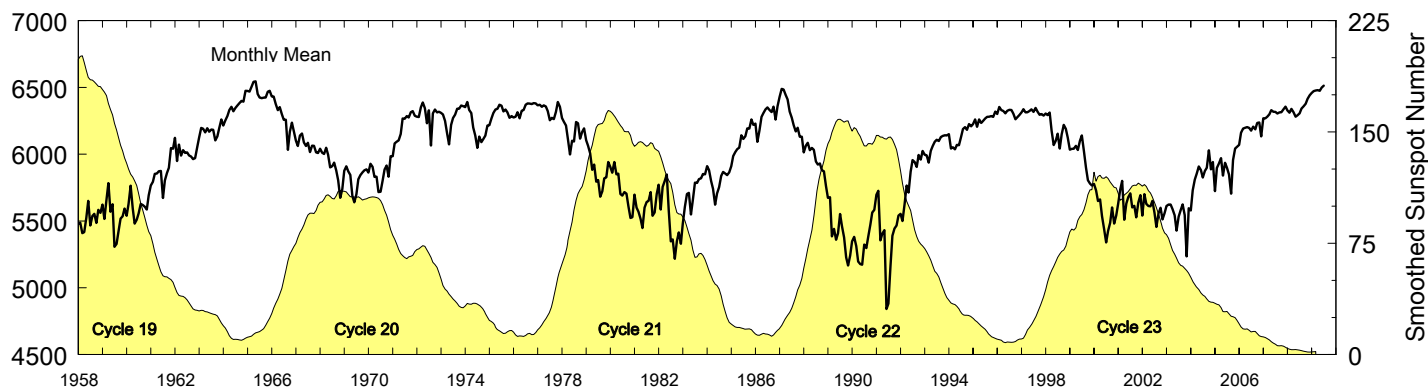


Aug

COSMIC RAY INDICES (Neutron Monitor) Bartels Rotation 2401 - Beginning 9 Jul 2009



Kiel Neutron Monitor Pressure-Corrected Values Jan 1958 - Jul 2009



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1958	5481	5488	5409	5417	5523	5651	5466	5538	5553	5485	5561	5561	5513
1959	5623	5515	5659	5783	5569	5625	5307	5328	5420	5518	5536	5593	5540
1960	5539	5628	5764	5596	5480	5509	5557	5628	5620	5607	5586	5692	5601
1961	5766	5793	5853	5856	5872	5874	5672	5804	5859	5898	6046	6041	5861
1962	6122	5949	6072	5989	6030	6010	6013	5991	5982	5963	5971	6052	6012
1963	6125	6197	6191	6163	6194	6168	6185	6182	6103	6133	6197	6260	6175
1964	6215	6253	6287	6331	6355	6321	6347	6366	6383	6399	6393	6475	6344
1965	6474	6469	6506	6542	6545	6451	6424	6420	6423	6424	6467	6475	6468
1966	6433	6432	6375	6330	6353	6300	6258	6258	6033	6168	6236	6172	6279
1967	6101	6061	6139	6155	6088	6061	6086	6016	6064	6063	6014	6009	6071
1968	6041	6011	6001	6048	5997	5901	5910	5937	5878	5805	5673	5739	5912
1969	5876	5909	5872	5845	5686	5640	5700	5812	5843	5864	5879	5887	5818
1970	5863	5928	5906	5830	5831	5716	5719	5803	5885	5915	5832	5985	5851
1971	5985	6081	6094	6103	6151	6268	6265	6286	6275	6314	6322	6288	6203
1972	6281	6278	6351	6387	6344	6232	6328	6065	6306	6334	6313	6318	6295
1973	6309	6298	6250	6155	6074	6220	6271	6296	6341	6340	6365	6360	6273
1974	6353	6391	6331	6308	6201	6139	6047	6132	6090	6113	6139	6215	6205
1975	6217	6267	6308	6334	6341	6370	6363	6320	6334	6313	6272	6286	6310
1976	6275	6281	6314	6269	6325	6331	6370	6380	6379	6375	6383	6380	6339
1977	6366	6371	6355	6366	6357	6322	6254	6272	6263	6317	6391	6355	6332
1978	6271	6242	6215	6113	5998	6101	6095	6241	6232	6117	6167	6193	6165
1979	6104	6063	6006	5883	5923	5794	5806	5682	5723	5820	5827	5942	5881
1980	5905	5862	5942	5850	5854	5702	5690	5717	5704	5611	5522	5528	5741
1981	5697	5600	5569	5517	5447	5600	5642	5650	5717	5539	5564	5702	5604
1982	5772	5586	5755	5799	5848	5582	5347	5362	5217	5349	5414	5329	5530
1983	5481	5606	5702	5711	5549	5659	5787	5785	5814	5820	5852	5849	5718
1984	5911	5880	5799	5740	5622	5706	5753	5837	5867	5856	5844	5864	5807
1985	5911	5986	6016	6038	6049	6142	6114	6135	6193	6192	6260	6220	6105
1986	6229	6093	6176	6280	6308	6336	6350	6331	6315	6356	6259	6359	6283
1987	6429	6489	6484	6443	6410	6319	6273	6217	6171	6198	6131	6131	6308
1988	6013	6064	6085	6030	6047	6033	5945	5922	5931	5880	5872	5761	5965
1989	5673	5678	5385	5441	5360	5407	5552	5460	5378	5228	5167	5241	5414
1990	5348	5381	5313	5197	5177	5173	5324	5297	5382	5471	5563	5584	5351
1991	5696	5726	5355	5405	5431	4841	4882	5162	5390	5443	5466	5540	5361
1992	5553	5500	5624	5766	5713	5869	5956	5942	5905	5994	5960	6024	5817
1993	5996	5992	5937	6026	6061	6094	6108	6099	6129	6137	6142	6141	6072
1994	6150	6042	6052	6067	6070	6068	6129	6189	6203	6183	6226	6209	6132
1995	6225	6260	6205	6260	6234	6250	6267	6279	6281	6285	6279	6319	6262
1996	6301	6354	6330	6324	6306	6325	6332	6331	6303	6262	6277	6294	6312
1997	6313	6337	6313	6314	6324	6336	6317	6347	6319	6295	6301	6289	6317
1998	6305	6293	6312	6177	6069	6101	6154	6042	6149	6220	6190	6124	6178
1999	6034	6040	6041	6062	6032	6100	6140	6023	5898	5805	5780	5765	5977
2000	5778	5729	5650	5661	5537	5441	5339	5425	5487	5602	5481	5542	5556
2001	5629	5736	5800	5509	5631	5678	5707	5602	5614	5527	5637	5694	5647
2002	5540	5701	5628	5613	5610	5651	5562	5455	5556	5599	5512	5558	5582
2003	5613	5624	5624	5588	5543	5428	5532	5582	5624	5544	5235	5595	5544
2004	5579	5730	5810	5854	5908	5882	5856	5874	5898	6029	5887	5941	5854
2005	5723	5898	5931	5970	5840	5936	5899	5847	5705	5956	6042	6056	5900
2006	6070	6161	6192	6198	6202	6197	6176	6206	6186	6234	6238	6133	6183
2007	6270	6268	6281	6298	6330	6317	6316	6304	6313	6314	6336	6357	6309
2008	6327	6311	6339	6314	6280	6291	6306	6341	6359	6378	6416	6441	6342
2009	6458	6473	6478	6479	6475	6499	6514						6482

Multiply table entries by 100 to obtain hourly counting rate. Kiel, Germany: N54, E10, Alt= 54 m, Cutoff Rigidity= 2.32GV.

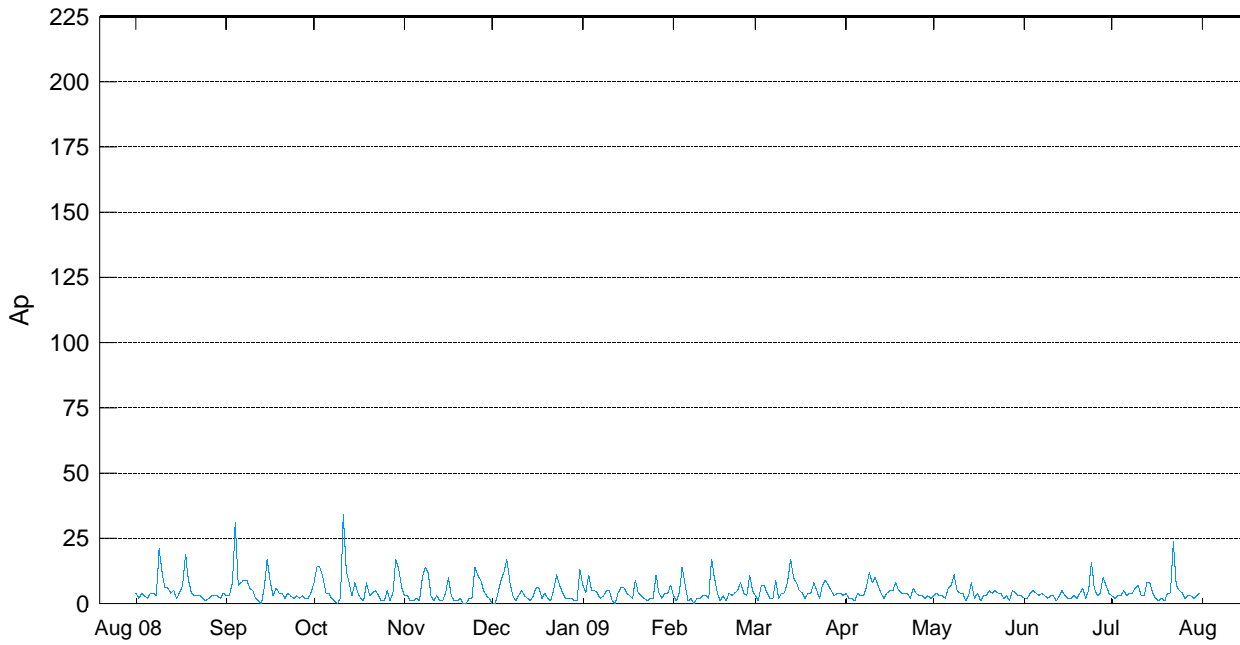
Geomagnetic Activity Indices

JULY 2009

91
Jul 09

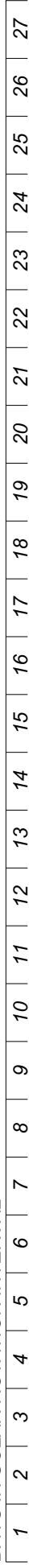
		Kp Three-Hourly Indices								Km Three-Hourly Indices								aa Provisional										
Day		1	2	3	4	5	6	7	8	Sum	Ap	Cp	1	2	3	4	5	6	7	8	Am	N	S	M				
1	Q9	1-	1+	1	1-	0+	0+	0+	0+	5	3	0.1	1-	1+	1+	1-	0+	0+	0+	0+	5	6	4	6	4	CC		
2	Q4	0+	1-	1-	0+	0+	0+	0+	0	3	2	0.0	1-	0+	1o	0+	0+	0o	0+	0o	3	6	3	5	4	CC		
3		0+	1-	0+	1	1-	1-	1-	1+	6-	3	0.1	0+	1-	0+	1o	0+	1-	1-	1+	4	8	5	5	8	CC		
4	Q10	1	1-	0+	0+	1-	1	1-	1	6-	3	0.1	1o	0+	1-	1-	0+	1o	1-	1o	5	7	5	4	8	CC		
5		2	2	0+	0+	0+	1	2	2-	10-	5	0.2	2-	2o	1-	0+	0o	1-	2o	2-	9	12	6	9	9	CC		
6		1+	2-	1-	0+	0+	0+	1-	1	6+	3	0.1	1+	2o	0+	0+	0+	0+	1-	5	8	4	7	5	CC			
7		1-	1-	0+	1	1-	2-	1+	1-	7	4	0.1	1-	1-	0+	1o	1-	1+	1o	1-	5	11	6	6	11	CC		
8		1	0+	2-	1+	1	1	1-	1-	8-	4	0.1	1o	1-	2-	2-	1o	1+	1-	0+	7	7	7	6	8	CC		
9		1+	1-	1+	1	0+	2-	3-	2+	11+	6	0.3	1+	0+	1+	1-	0o	1+	2o	2o	8	14	6	7	14	CK		
10	D5*	2+	3	1+	1+	2-	2-	1-	1+	13+	7	0.3	2+	3o	1+	2-	1+	1+	1-	2-	13	17	11	18	10	K		
11		1	1+	1+	0+	1-	0+	0+	1	6+	3	0.1	1+	1+	1+	1-	0+	0+	0o	1-	5	7	5	8	4	CC		
12		1-	1-	1-	1-	1	0+	0+	1	6-	3	0.1	1-	1-	1o	1-	1-	0+	0o	1+	5	6	5	7	4	CC		
13	D3*	1-	1-	0+	1	3-	3+	2+	3	14	8	0.4	1-	1o	1-	1+	3-	3o	2+	3-	14	23	14	7	30			
14	D2*	4-	2+	2-	1+	2	1	1-	1+	14	8	0.4	3o	3-	2o	2-	2-	1-	1-	1+	13	16	12	15	13			
15		1	2-	1+	1	1	1	0+	0+	8-	4	0.1	1o	2+	2-	1o	1+	1-	0+	0+	7	9	7	7	9	CC		
16	Q6	1-	0+	1	0+	0+	0	0+	0+	3+	2	0.0	1-	0+	1+	0+	0o	0o	0o	0o	3	5	2	4	3	CC		
17	Q1	0	0+	0	0+	0	0+	0	0	1	1	0.0	0o	0o	0o	0o	0+	0o	0o	0o	1	2	2	2	2	CC		
18	Q3	0	1-	0+	0+	1-	0	0+	0	2+	2	0.0	0o	0+	0+	0o	0+	0o	0+	0o	2	6	2	4	4	CC		
19	Q2	0	0+	0+	0+	0+	0	0	0	1+	1	0.0	0o	0o	0o	0+	0+	0o	0o	1	4	2	3	3	CC			
20		0+	1+	1+	2	2-	2+	0+	0	9+	4	0.2	0+	1o	2-	2+	2o	2+	0+	0+	10	10	12	10	13	KC		
21		1-	1	1-	1	1-	1	1	1	7	4	0.1	1-	1-	1-	1o	1-	1o	1o	0+	5	9	6	7	9	C		
22	D1	3	6-	5	4+	2-	2-	2+	1+	25	24	1.1	3o	5-	4+	5-	1+	1+	2o	2-	37	41	37	65	13			
23	D4*	1+	1+	2	2-	2-	2+	2+	2	15-	7	0.3	1o	1+	3-	2o	2-	2+	2o	2o	14	14	12	10	16	CC		
24		2	1	2	1+	1+	2	1-	1	11+	5	0.2	2o	1o	2-	1+	1+	2-	0+	1+	9	11	8	9	10	CC		
25		2	2	0+	1	1	0+	1-	1+	9-	4	0.1	2+	2o	0+	1o	1+	0+	0+	1o	8	9	6	9	7	CC		
26	Q5	1-	0+	1-	0+	1-	0+	0+	0	3+	2	0.0	1-	0o	1-	0+	1-	0+	0o	0o	3	6	4	6	4	CC		
27	Q8	1-	1-	1-	0+	1	1-	1-	1-	5+	3	0.1	1o	0+	1-	1-	1o	1-	1+	1-	5	7	7	5	9	CC		
28		1	1+	1	1	1-	1	0	1-	7-	3	0.1	1o	1+	1o	1+	0+	1-	0o	0+	5	7	6	8	5	CC		
29	Q7	1-	1	0+	1-	1-	0+	0	0	4-	2	0.0	1o	1o	1-	1-	0+	0o	0o	0o	3	6	3	5	4	CC		
30		0+	0	0	1+	1	2	1+	0+	6+	3	0.1	1-	0o	0o	2-	1-	1+	1+	0+	6	10	7	6	11	CC		
31		0	1-	2+	2-	1+	1	1-	1-	8+	4	0.1	0o	0+	3o	2o	2-	1-	1o	1o	9	8	11	9	10	CC		
Mean											4	0.16									7.4	10.2	7.4	8.7				
		Kn Three-Hourly Indices								Ks Three-Hourly Indices								Prov										
Day		1	2	3	4	5	6	7	8	An	1	2	3	4	5	6	7	8	As	Sa	Ri	Ra	Rs	IMF				
1		1+	1+	1+	1o	0+	1o	0+	1-	7	0+	1+	1o	0+	0o	0o	0o	0o	3	69.8	0	1	13					
2		1-	1o	1o	1-	0+	0+	1-	0+	4	1-	0o	1o	0o	0o	0o	0o	0o	2	68.7	0	0	12					
3		0+	1-	0+	1o	1-	1+	1+	2-	6	0o	0+	0o	1o	0+	0o	0o	1o	2	69.5	0	1	13					
4		1+	1-	1o	1-	1-	1+	1o	1+	6	1-	0+	1-	0+	0+	1-	0+	0+	3	73.4	16	18	17					
5		2+	2o	1o	1-	0+	1+	2o	2o	10	1+	2o	1-	0o	0o	0o	2o	1+	7	74.0	16	20	18					
6		2-	2o	1o	0+	1-	1-	1-	1-	6	1o	2o	0o	0o	0o	0o	0o	1-	4	71.2	16	17	15					
7		1-	1+	1-	1+	1o	2-	1+	1o	8	1-	0+	0+	1-	0+	1-	0+	0o	3	73.7	13	16	18					
8		1o	1-	2o	1+	1o	2-	1o	1-	8	1-	1-	1+	2-	1o	1-	0+	0+	6	73.1	13	15	17					
9		1o	1-	2-	1+	0+	2-	3-	2+	11	1+	0+	1+	0o	0o	1-	1+	2-	6	71.4	11	12	15					
10		3-	3o	1+	2o	2-	2o	1o	2o	16	2o	3-	1o	1+	1o	1-	0+	2-	9	70.1	9	9	14					
11		2-	2-	1+	1o	1-	1-	0+	1o	7	1-	1+	1o	0+	0o	0o	0o	1-	4	70.5	0	0	14					
12		1-	1o	1+	1o	1o	1-	0+	2-	7	1-	1-	1-	1-	0+	0o	0o	1o	3	70.3	0	0	14					
13		1-	1-	1-	2-	3-	3+	2+	3+	17	1-	1o	1-	1o	2o	2+	2o	2+	11	69.5	0	0	13					
14		3+	3-	2o	2o	2o	1o	1-	1+	16	3-	2+	2o	1+	2-	0+	0+	1o	11	68.8	0	0	12					
15		1+	2+	2-	1o	2-	1-	1-	1-	9	1o	2o	2-	1-	1o	0+	0o	0o	6	68.7	0	0	12					
16		1-	1-	1+	1-	0+	0o	0o	0+	3	1-	0+	1o	0+	0o	0o	0o	0o	2	68.9	0	0	12					
17		0o	0o	0o	0o	0+	0+	0o	0+	1	0o	0o	0o	0o	0o	0o	0o	0o	0	68.4	0	0	12					
18		0o	1-	1-	0+	1-	0+	1-	0o	3	0o	0o	0o	0o	0o	0o	0o	0o	0	69.2	0	0	13					
19		0o	0+	0+	1-	1-	0+	0o	0o	2	0o	0o	0o	0o	0o	0o	0o	0o	1	69.9	0	0	13					
20		0+	1+	2-	2+	2+	2+	1-	0+	11	0+	1-	1+	2+	2-	2o	0o	0o	8	70.4	0	0	14					
21		1o	1o	1o	1+	1-	1+	1+	1-	6	0+	1-	1-	1-	1-	1-	1o	0o	4	69.9	0	0	13					
22		3o	5-	4+	4+	1+	2-	2o	1+	35	3o	5o	5-	5-	1o	1+	2o	2-	40	70.0	0	0	14					
23		1-	1+	3-	2o	2o	3-	2+	2+	16	1o	1o	2+	2-	1+	2+	2o	2-	13	69.9	8	2	13					
24		2-	1o	2-	2-	1+	2-	0+	1+	10	2+	1-	1+	1+	1+	1+	0+	1o	8	70.5	0	0	14					
25		2+	2o	0+	1+	1+	1-	1-	1+	9	2o	2o	0o	1o	1+	0o	0o	0+	7	71.2	0	0	15					
26		1o	0+	1-	1o	1+	0+	0+	0o	4	0+	0o	1-	0o	0+	0o	0o	0o	1	69.8	0	0	13					
27		1-	1-	1-	1-	1o	1-	1+	1-	6	1+	0o	0+	0+	1-	1-	2-	1o	5	70.5	0	0	14					
28		1+	1+	1o	1+	1-	1o	0o	1o	6	1-	1o	1o	1+	0o	0o	0o	0o	4	70.9	0	0	15					
29		1-	1o	1-	1o	1-	0+	0o	0+	4	1+	1-	1-	0+	0o	0o	0o	0o	3	70.4	0	0	14					
30		1-	0o	0+	2o	1+	2o	2-	1o	8	1-	0o	0o	1+	0o	1o	1-	0o	3	70.1	8	2	14					
31		0o	1-	3-	2+	2-	1-	1+	1o	10	0o	0+	3o	2-	1+	1o	1-	1+	9	70.8	0	0	14					
Mean											8.8									6.1	70.4	3.5	3.6	14.0				

Daily Average Indices Ap Aug 2008 - Jul 2009

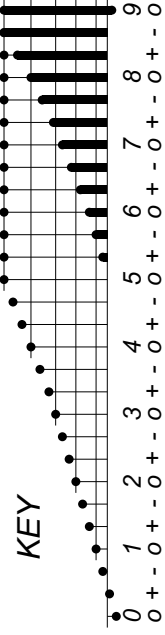
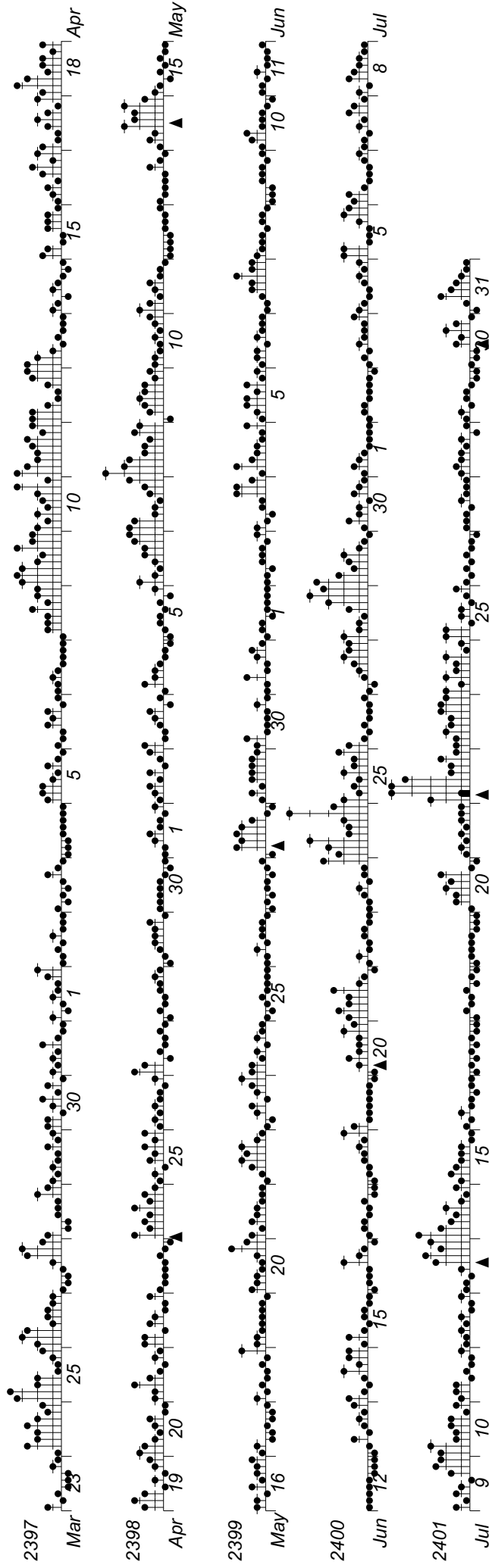


Day	Aug 08	Sep	Oct	Nov	Dec	Jan 09	Feb	Mar	Apr	May	Jun	Jul
1	4	3	8	3	0	7	3	3	4	3	2	3
2	2	3	14	3	0	4	1	1	2	4	2	2
3	4	8	14	1	4	11	4	7	2	3	4	3
4	3	31	10	1	9	5	14	7	1	3	5	3
5	2	7	4	2	12	5	7	4	4	2	4	5
6	4	8	4	1	17	4	1	2	3	6	3	3
7	4	9	2	10	8	2	2	2	3	7	4	4
8	3	9	1	14	3	3	0	9	6	11	3	4
9	21	6	0	12	1	5	2	2	12	5	2	6
10	12	5	2	3	3	5	2	4	8	4	3	7
11	6	2	34	1	5	1	3	4	10	4	3	3
12	6	1	13	3	3	0	3	8	7	1	1	3
13	4	0	8	1	2	4	2	17	4	3	3	8
14	5	6	3	1	1	6	17	10	2	8	5	8
15	2	17	8	4	3	6	10	8	4	2	3	4
16	4	9	4	10	6	4	4	5	5	4	2	2
17	7	3	2	3	6	3	1	4	5	1	2	1
18	19	6	1	1	2	2	3	2	8	3	3	2
19	9	4	8	1	4	9	1	4	5	3	2	1
20	4	4	3	2	2	4	4	4	4	5	4	4
21	3	2	4	0	1	3	3	8	4	4	6	4
22	3	4	5	0	5	2	4	5	4	5	2	24
23	3	3	3	2	11	1	5	2	2	4	5	7
24	2	2	1	2	7	2	8	7	6	4	16	5
25	1	3	1	14	4	2	4	9	4	2	6	4
26	2	2	5	11	2	11	3	7	3	3	3	2
27	3	3	1	9	2	4	11	5	3	1	4	3
28	3	2	4	5	2	2	5	3	2	5	10	3
29	3	2	17	3	1	4		4	3	4	7	2
30	2	4	13	2	1	4		4	2	3	4	3
31	4		6		13	7		3		3		4
Mean	5	6	7	4	4	4	5	5	4	4	4	4

DAYS IN SOLAR ROTATION INTERVAL



ROT.-
NO.

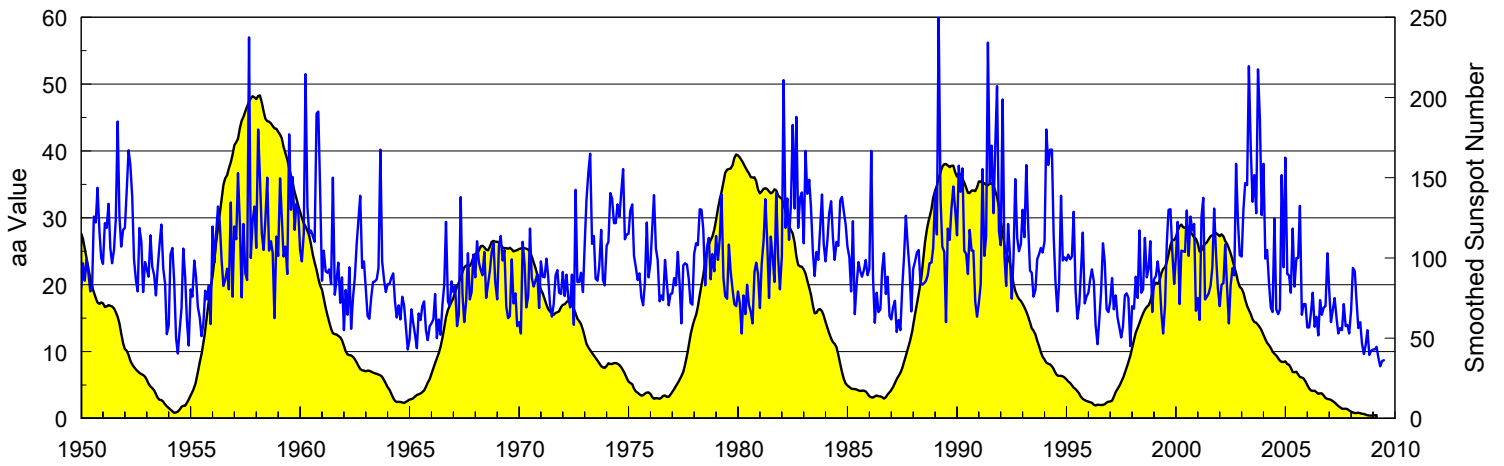


▲ = sudden
commencement

PLANETARY MAGNETIC
THREE-HOUR-RANGE INDICES

Kp till 2009 Jul 31

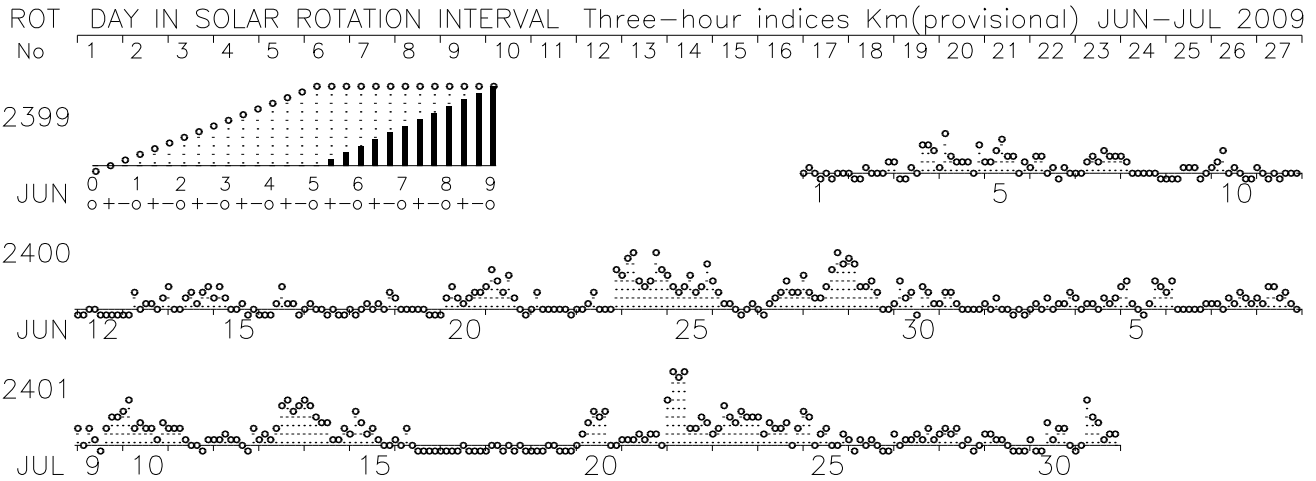
Monthly Mean aa Index Jan 1950 - July 2009



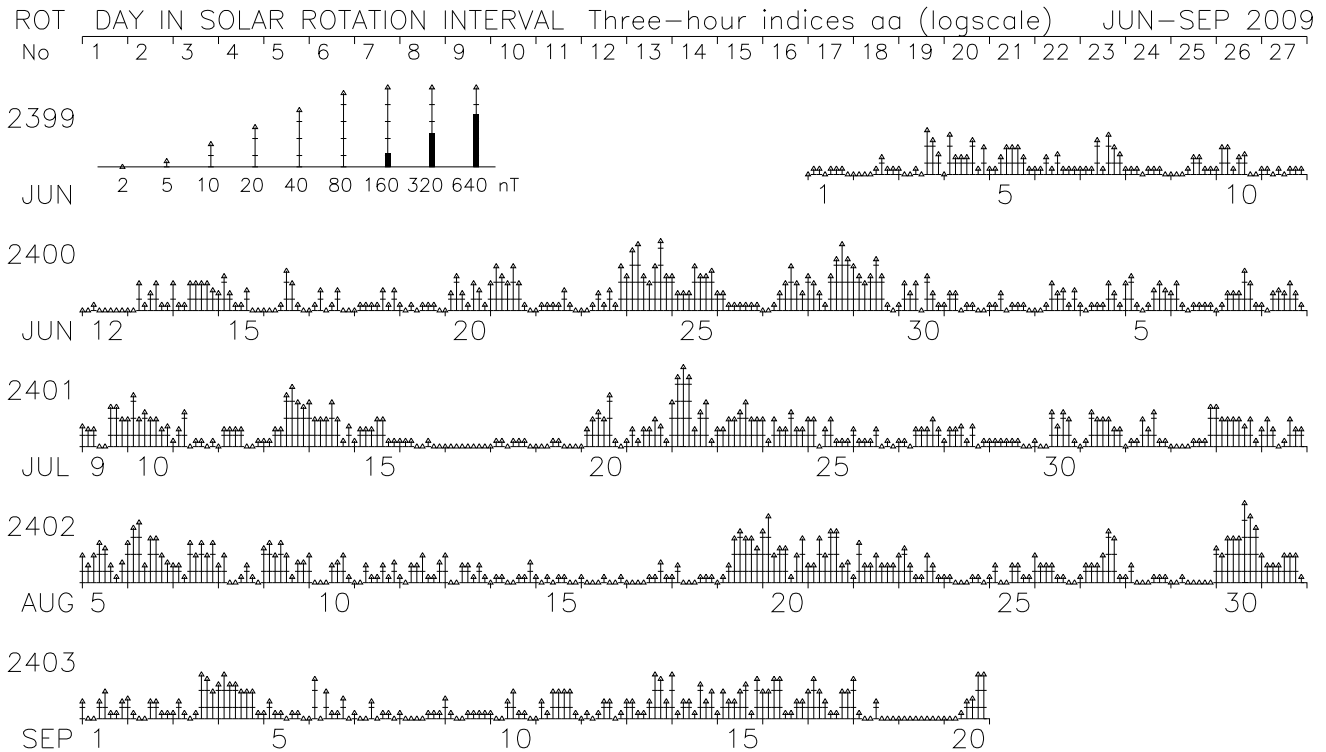
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	22.5	26.1	29.0	22.4	20.2	12.6	22.2
1954	13.9	24.5	25.5	20.6	12.0	9.7	13.1	16.5	25.4	21.1	14.5	10.9	17.3
1955	19.3	18.2	23.6	21.1	16.7	15.1	12.3	14.3	19.1	17.8	19.9	14.1	17.6
1956	28.7	23.3	27.6	31.7	29.3	23.5	19.8	20.7	22.4	19.3	32.3	18.2	24.7
1957	28.7	26.8	36.7	28.8	18.1	29.1	21.7	20.7	57.0	24.0	29.5	31.7	29.4
1958	25.5	43.2	36.1	27.6	25.2	29.7	36.0	25.1	26.5	24.7	15.0	27.2	28.5
1959	24.3	35.9	29.9	24.2	25.7	21.6	42.5	31.2	36.1	28.2	32.1	30.8	30.2
1960	25.2	23.5	27.6	51.5	31.6	27.6	28.1	27.2	26.4	45.6	45.9	34.5	32.9
1961	20.6	25.1	22.0	21.8	22.3	20.1	36.0	18.5	20.7	23.3	17.3	21.1	22.4
1962	13.2	19.2	15.5	22.6	13.4	18.1	21.0	26.2	29.8	33.3	22.5	23.5	21.5
1963	19.3	15.3	14.9	18.2	20.4	20.5	20.8	22.5	40.2	23.5	20.7	18.9	21.3
1964	20.1	20.1	21.0	21.7	17.5	15.1	16.9	14.8	18.2	16.9	13.8	10.3	17.2
1965	11.8	16.3	14.3	12.6	10.5	15.7	14.7	16.8	17.5	13.1	11.7	13.8	14.1
1966	14.2	14.8	18.6	12.0	14.8	12.5	17.1	20.0	29.4	17.5	16.8	20.5	17.3
1967	18.9	19.8	13.8	15.5	33.1	18.6	14.4	17.5	24.7	17.8	18.9	24.5	19.8
1968	21.1	26.5	23.3	22.2	21.4	24.9	18.0	20.1	22.0	24.8	26.2	20.3	22.6
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.8	17.2	18.7	13.8	20.0
1970	14.4	12.7	26.4	23.1	16.6	18.3	28.4	21.0	19.7	20.6	21.6	16.5	19.9
1971	23.5	21.2	21.1	23.9	21.1	17.0	15.2	17.1	21.4	22.2	18.8	18.6	20.1
1972	21.9	18.3	21.5	18.1	16.6	21.5	14.0	34.2	20.4	20.4	21.8	18.9	20.6
1973	26.1	32.7	36.9	39.6	26.1	27.3	20.9	20.6	22.8	28.2	20.7	19.9	26.8
1974	25.8	26.4	33.7	32.9	29.2	29.2	32.0	30.2	33.7	37.3	26.8	27.5	30.4
1975	27.6	31.1	32.0	24.3	22.7	20.7	21.7	18.1	16.9	20.2	29.3	21.1	23.8
1976	23.3	28.5	33.4	25.4	23.7	17.5	18.4	17.7	23.7	20.4	16.9	18.6	22.3
1977	18.7	21.0	19.9	24.9	20.1	14.2	22.9	23.2	23.0	20.9	17.3	17.0	20.3
1978	24.6	26.2	25.9	31.3	31.2	28.3	19.9	25.6	27.0	20.8	24.6	22.0	25.6
1979	27.3	23.7	26.9	33.5	21.0	18.3	17.9	26.0	22.0	19.3	17.1	16.8	22.5
1980	19.0	17.3	12.7	18.4	15.6	20.0	17.0	15.9	14.2	21.9	23.3	21.7	18.1
1981	16.5	23.1	26.6	32.8	26.9	18.0	27.2	24.0	20.4	33.7	24.1	19.3	24.4
1982	24.2	50.6	28.5	32.9	26.7	32.1	43.9	31.4	45.1	28.5	33.0	33.8	34.2
1983	26.2	40.0	33.6	35.7	31.6	24.9	21.3	24.9	23.7	28.3	33.5	26.0	29.1
1984	23.5	26.7	30.7	32.5	27.2	23.7	26.4	25.8	32.6	33.1	31.0	29.0	28.5
1985	25.7	24.1	19.0	29.5	15.6	19.9	23.4	22.0	21.2	22.2	23.7	21.4	22.3
1986	22.4	40.0	21.1	14.3	18.8	15.9	16.3	22.3	24.7	18.6	21.2	15.3	20.9
1987	14.8	16.6	17.6	12.9	14.7	13.2	19.3	24.3	30.3	25.8	22.4	16.0	19.0
1988	22.4	23.4	24.8	25.2	20.5	20.0	20.2	20.6	21.4	23.2	23.3	25.5	22.5
1989	33.9	27.5	60.1	32.8	25.7	24.9	14.4	28.4	26.7	31.4	34.7	31.4	31.0
1990	27.4	37.8	33.9	37.4	25.1	24.6	21.6	28.2	25.1	25.1	17.4	15.2	26.6
1991	17.2	20.1	37.3	24.3	27.3	56.2	35.2	40.8	30.7	44.1	49.7	28.0	34.2
1992	25.9	47.7	24.5	19.8	29.1	24.8	17.9	24.1	35.8	27.0	25.0	26.1	27.3
1993	31.2	27.1	37.9	29.2	22.1	21.8	18.2	19.2	23.8	24.6	25.5	24.8	25.5
1994	26.5	43.2	37.9	40.2	40.2	27.2	20.6	16.0	20.2	33.3	23.6	24.1	29.4
1995	23.6	24.5	23.8	24.2	30.9	19.1	14.9	17.0	22.2	27.9	17.2	18.2	22.0
1996	18.8	20.8	22.3	20.5	14.0	11.1	14.7	18.8	26.2	23.5	16.3	15.9	18.6
1997	17.4	21.0	16.3	18.4	15.1	13.7	12.1	13.7	18.4	18.7	18.0	10.8	16.1
1998	16.8	16.4	21.2	18.0	28.1	18.8	19.3	27.0	21.1	22.4	26.5	15.9	21.0
1999	20.8	21.3	23.5	21.3	15.8	12.7	16.9	26.2	31.2	31.3	25.1	20.1	22.2
2000	24.2	29.4	17.1	25.1	25.0	24.9	31.1	24.3	30.2	28.1	29.1	16.1	25.4
2001	18.0	14.7	30.2	33.0	17.8	18.2	18.7	19.9	22.7	31.4	24.4	19.5	22.4
2002	16.8	20.0	20.2	26.0	19.9	14.2	19.9	22.5	21.4	38.1	29.3	24.4	22.7
2003	24.2	31.3	35.2	34.9	52.7	40.2	32.4	36.4	30.7	52.2	44.7	30.4	37.1
2004	38.1	23.9	25.2	20.1	16.6	15.9	29.9	16.3	15.6	16.3	36.4	22.6	23.1
2005	39.0	21.6	21.4	18.8	28.4	19.7	24.0	24.0	31.8	15.5	17.1	17.1	23.2
2006	13.6	13.6	15.8	18.8	13.7	15.2	12.4	17.7	15.5	16.6	16.8	24.7	16.2
2007	19.2	14.4	16.3	18.0	15.0	12.7	13.5	13.2	17.1	13.8	14.0	12.7	15.0
2008	16.2	22.5	22.0	17.5	13.5	14.4	11.2	9.6	11.0	13.2	9.5	10.1	14.2
2009	10.3	10.3	10.7	9.0	7.8	8.6	8.7						9.3

PLANETARY GEOMAGNETIC ACTIVITY

3-HOUR-RANGE INDICES Km AND α BY 27-DAY SOLAR ROTATION INTERVAL
 ISGI PUBLICATION OFFICE – EMAIL : ISGI.PUBOFF@cetp.ipsl.fr
 CETP, 4 Avenue de Neptune, F-94107 Saint Maur des Fosses CEDEX – FRANCE



Indices Derivation at C.E.T.P.; Graph Prepared at ISGI Publication Office.

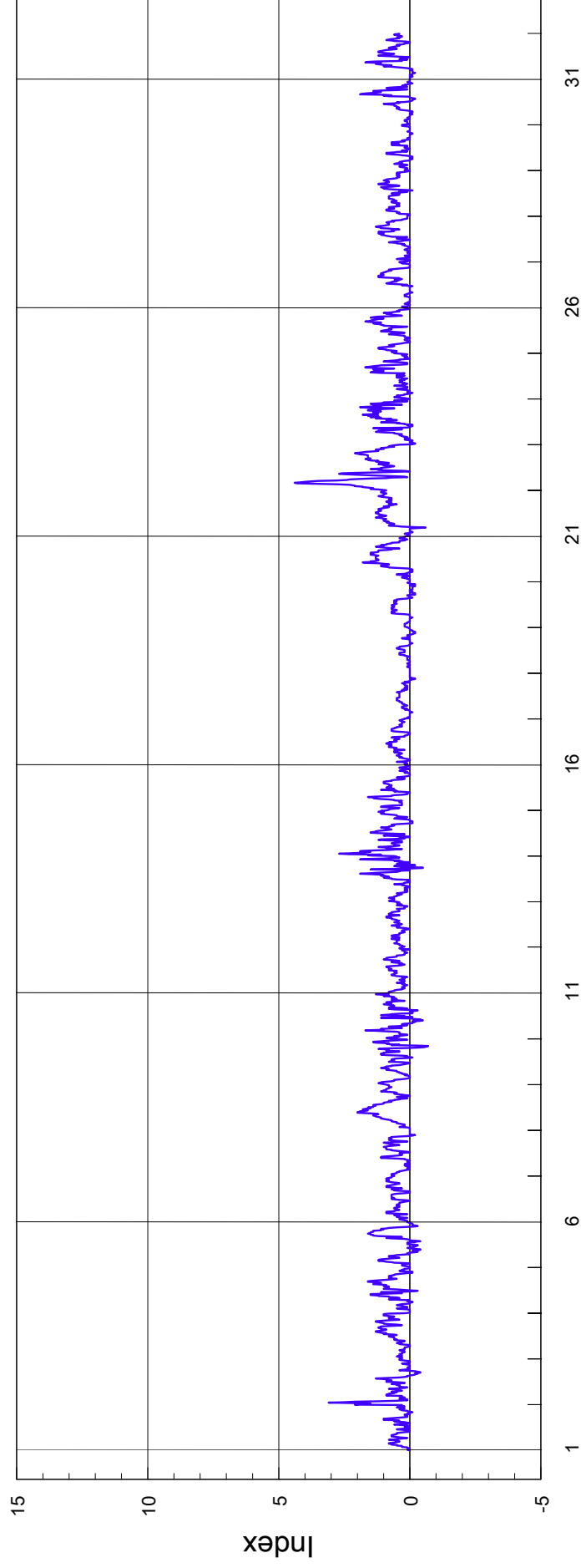


Indices Derivation at C.E.T.P.; Graph Prepared at ISGI Publication Office.

Polar Cap Index

Qaanaaq - Thule

WDC C1 for Geomagnetism, Copenhagen



JULY 2009

Data Source: Geomagnetism and Space Physics
Danish Meteorological Institute

98
Jul 09

P R I N C I P A L M A G N E T I C S T O R M S
J U L Y 2 0 0 9

Sta	Geomag Lat	Commencement			SC Amplitudes			Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges			End	
		Day	Time (UT)	Type	D (Min)	H (Gamma)	Z (Gamma)			D (Min)	H (Gamma)	Z (Gamma)	Day	Hour (UT)
HYB	07.6N	04	1500	SC	- 0.2	8	- 2	5(8)	3	5	57	27	06	10
HYB	07.6N	09	1400	..	..	..	..	9(7),10(1,2)	3	6	57	29	11	10
HYB	07.6N	13	0854	SC	- 0.4	7	2	13(5,6,7,8),14(1)	3	4	37	12	14	19
HYB	07.6N	20	0200	..	..	..	..	22(3,4)	4	7	38	17	24	24
GNA	43.0S	20	0451	SC	7.7	6.2	7.1		-	--	---	---	--	--
CAN	43.6S	20	0451	SC	3.2	9.8	1.5		-	--	---	---	--	--
JAI	17.4N	23	2200	..	..	..	..		-	7	112	36	24	23
NGP	11.3N	23	2200	..	..	..	..		-	5	119	20	24	23
ABG	09.4N	23	2200	..	..	..	..	24(2,3,7)	5	6	122	37	24	23
VSK	08.3N	23	2200	..	..	..	..		-	5	120	23	24	23
PND	02.0N	23	2200	..	..	..	..		-	4	120	49	24	23
TIR	00.6S	23	2200	..	..	..	..		-	4	146	91	24	23
JAI	17.4N	27	1200	..	..	..	..		-	6	76	44	29	20
NGP	11.3N	27	1200	..	..	..	..		-	5	79	31	29	20
ABG	09.4N	27	1200	..	..	..	..	28(7),29(3,4)	4	5	73	39	29	20
VSK	08.3N	27	1200	..	..	..	..		-	5	81	29	29	20
PND	02.0N	27	1200	..	..	..	..		-	-	76	34	29	20
TIR	00.6S	27	1200	..	..	..	..		-	4	101	46	29	20
HYB	07.6N	30	0500	..	..	..	..	30(4,5),31(3,4)	2	4	62	18	31	23

Stations:

ABG = ALIBAG	HYB = HYDERABAD	NGP = NAGPUR	TIR = TIRUNELVELI
CAN = CANBERRA	JAI = JAIPUR	PND = PONDICHERRY	VSK = VISAKHAPATNAM
GNA = GNANGARA			

MAGNETIC STORM SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

(PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS)

JUL 2009

Storm Sudden Commencements (SSC)					Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*			Day	Begin-End	Station(s)
13	1322	B: LER*	ESK*	VAL	HAD*	GUI	04 1501-1520 GUI
		C: NGK*	BDV*	SPT			

REPORTING OBSERVATORIES (up to 04-09-2009):

LER ESK NGK VAL HAD BDV NAG GCK MMB EBR SPT KAK KNY GUI HYB GNA CNB

Three-letter codes identify each observatory. Reporting stations have been grouped by the character of the observed event. The letter A means very remarkable; B means fair, but unmistakable; C means very poor, doubtful; and - means no quality figure given. The * means that the SSC, at least in one component, was preceded by a small reversed impulse. SSCs are given only when five or more stations report the event. SFEs include all reports. If an SFE is confirmed by solar or ionospheric events, the name of the station is identified with a plus sign (+).

Note that we have included data of the Antarctic Station LIVINGSTONE (62° 39' 44" S, 60°23' 41" W) -- Luis F.

Criterion on Provisional SSC data

From December 2002, we are giving as provisional SSC only the SSC reported by more than 4 observatories. This is a change with respect to the previous criterion according to which we used to give the SSC reported by more than 5 observatories. The change, pending IAGA confirmation, has been provisionally taken because of the decreasing number of reporting observatories in order to keep the homogeneity of the data. The idea is to keep the same minimum percentage of the observatories reporting an SSC, relative to the total number of reporting observatories, to be considered as a probable SSC.