FEBRUARY 2009 NUMBER 774 - Part I

Solar-Geophysical Data prompt reports

Data for December 2008 and January 2009
Explanation of Data Reports Issued as Number 515 (Supplement) July 1987

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FEBRUARY 2009 NUMBER 774 - Part I

Solar-Geophysical Data prompt reports

Data for November 2008 and January 2009

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NATIONAL GEOPHYSICAL DATA CENTER
Christopher G. Fox, Director
Boulder, Colorado

SOLAR-GEOPHYSICAL DATA

Number 774

(Issued in Two Parts)

Editor: Edward H. Erwin

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Solar-Terrestrial Physics Division

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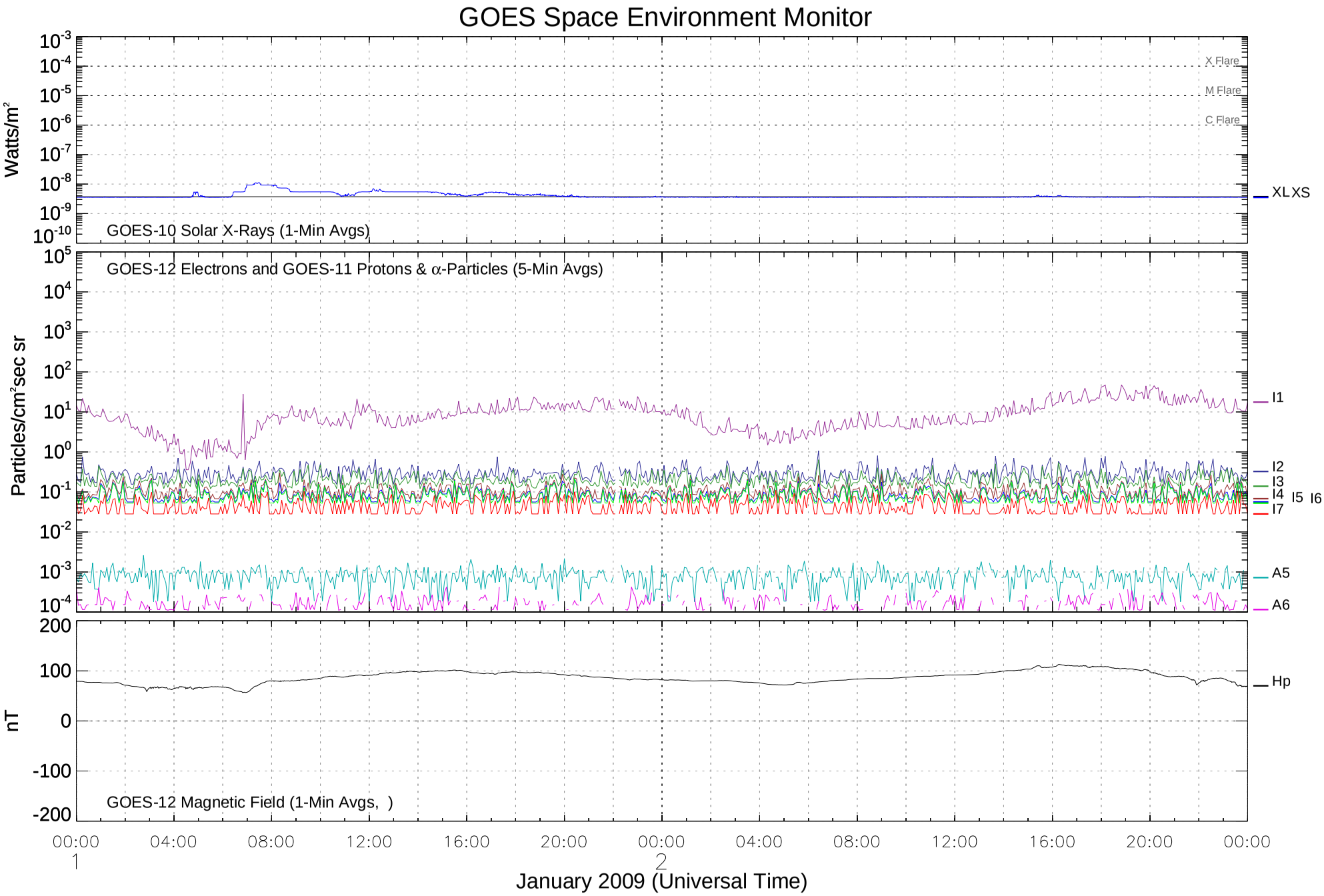
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M Flare
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XL XS
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GOES-12 Electrons and GOES-11 Protons & α-Particles (5-Min Avgs)
Particles/cm²sec sr
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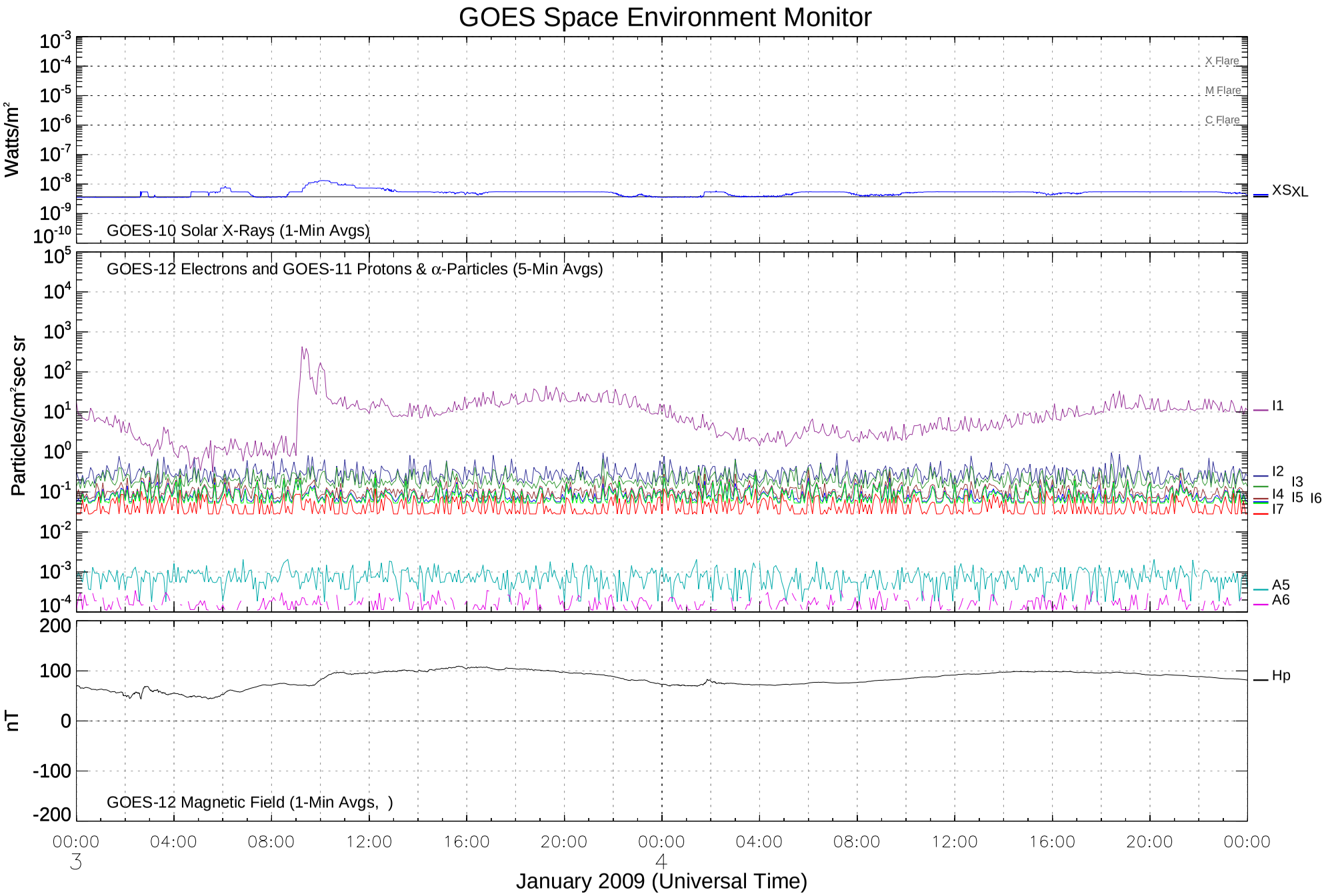
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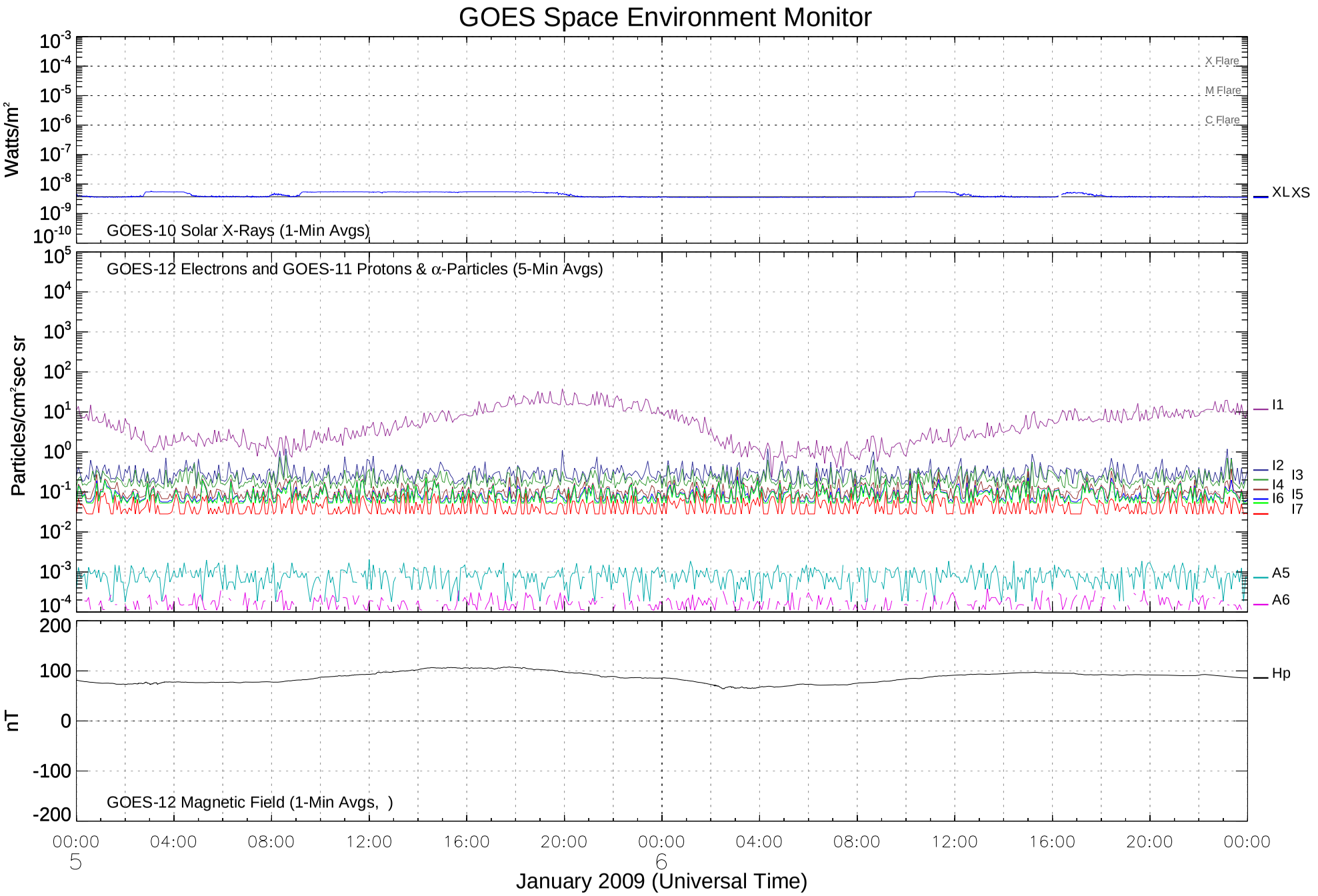
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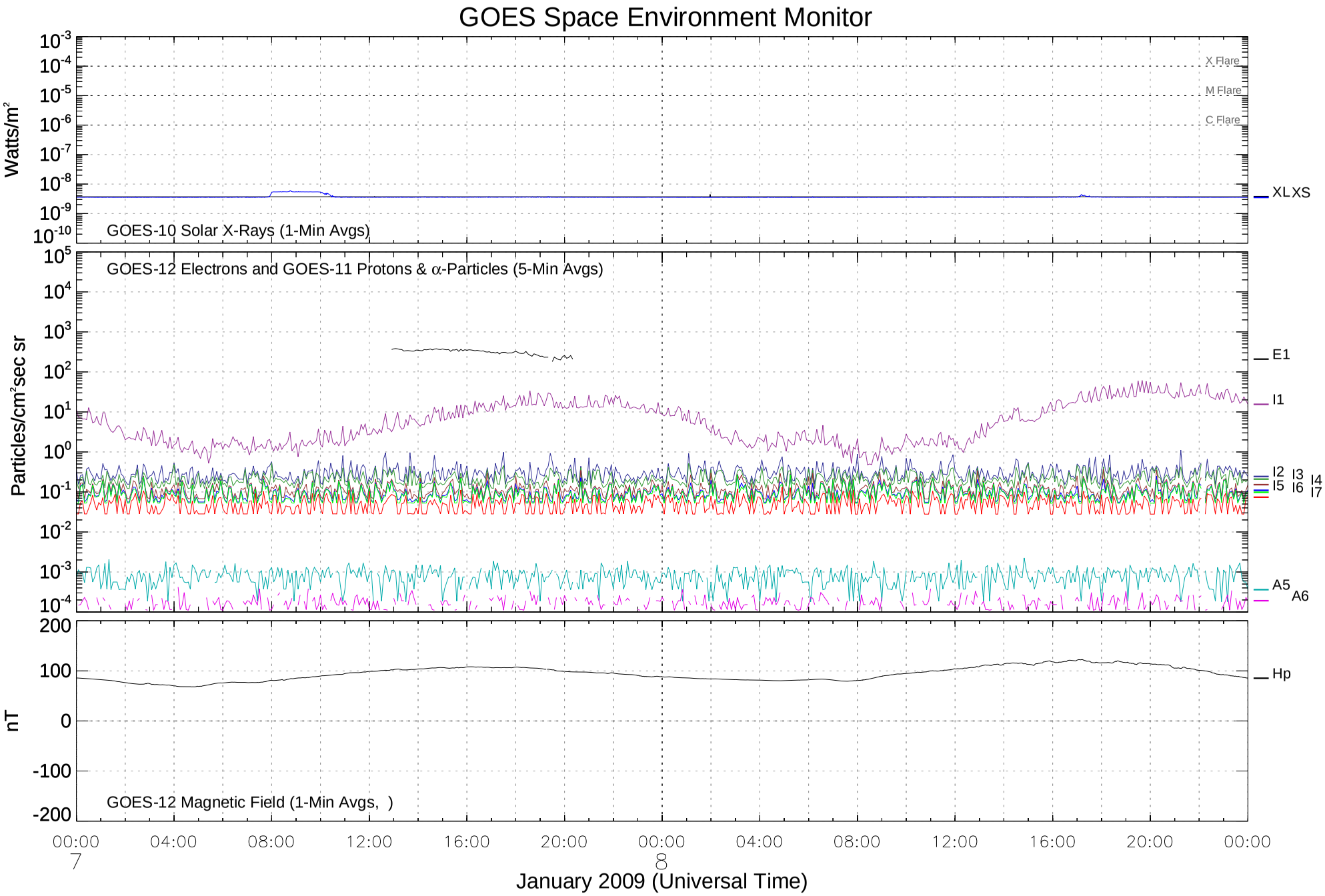
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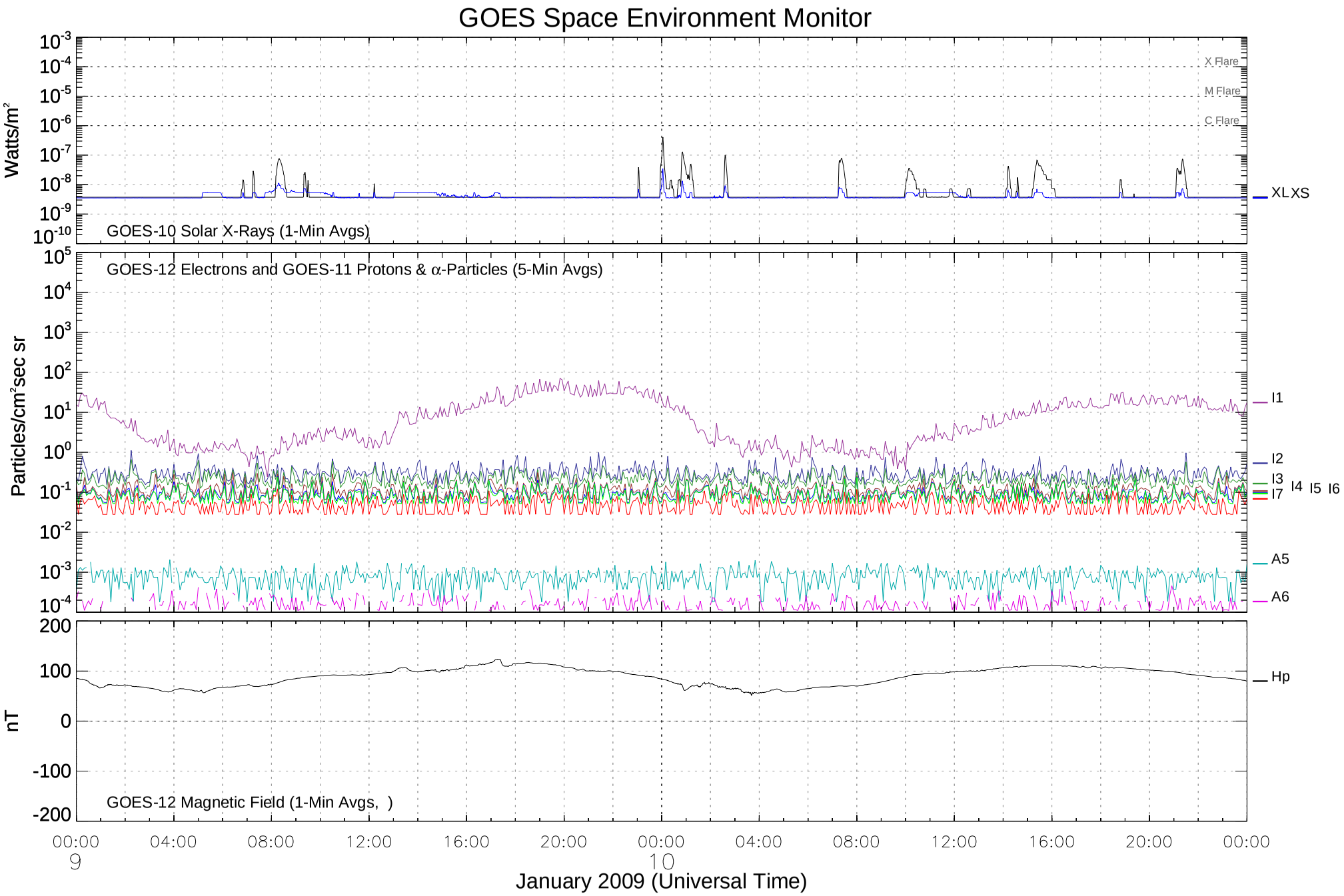
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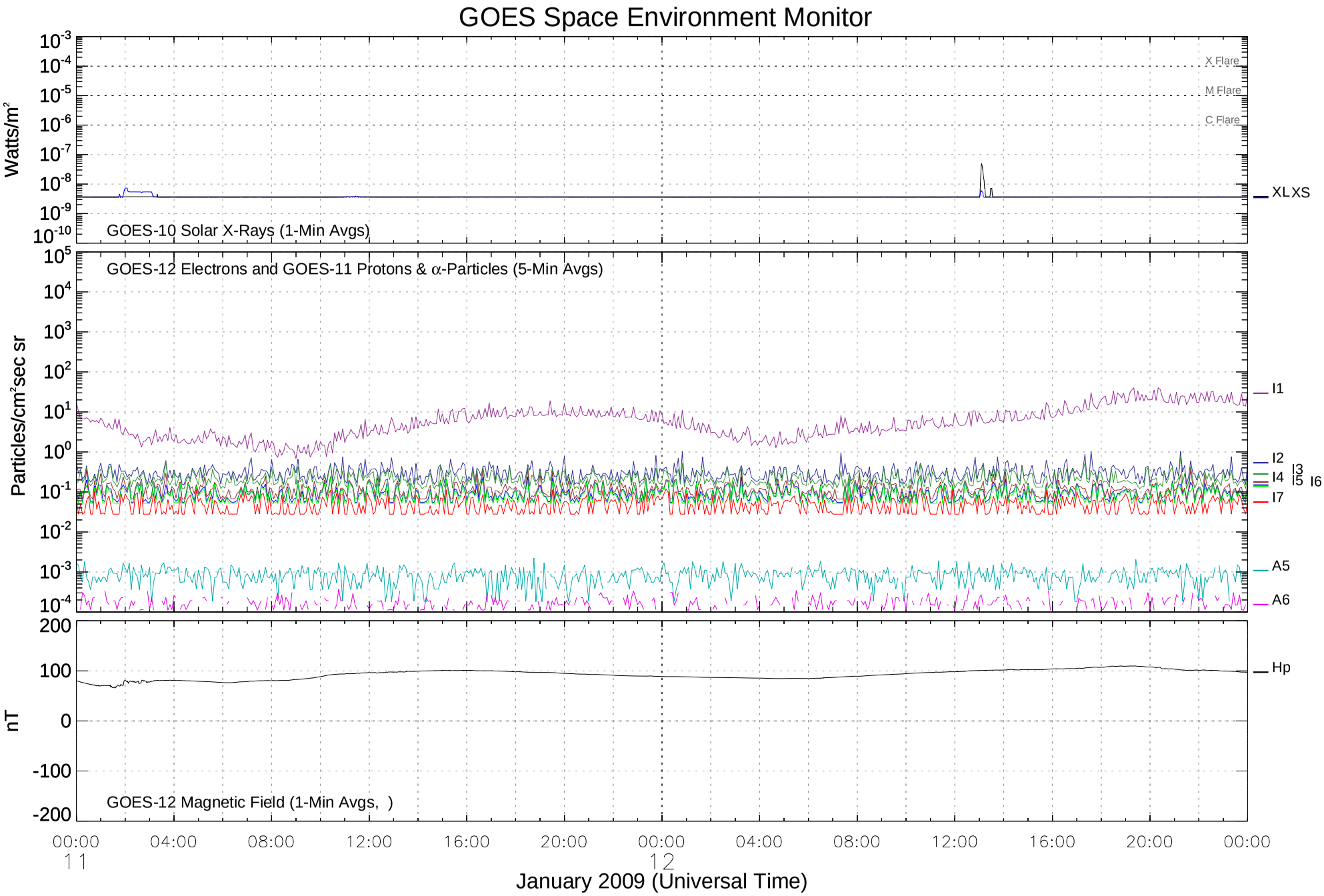
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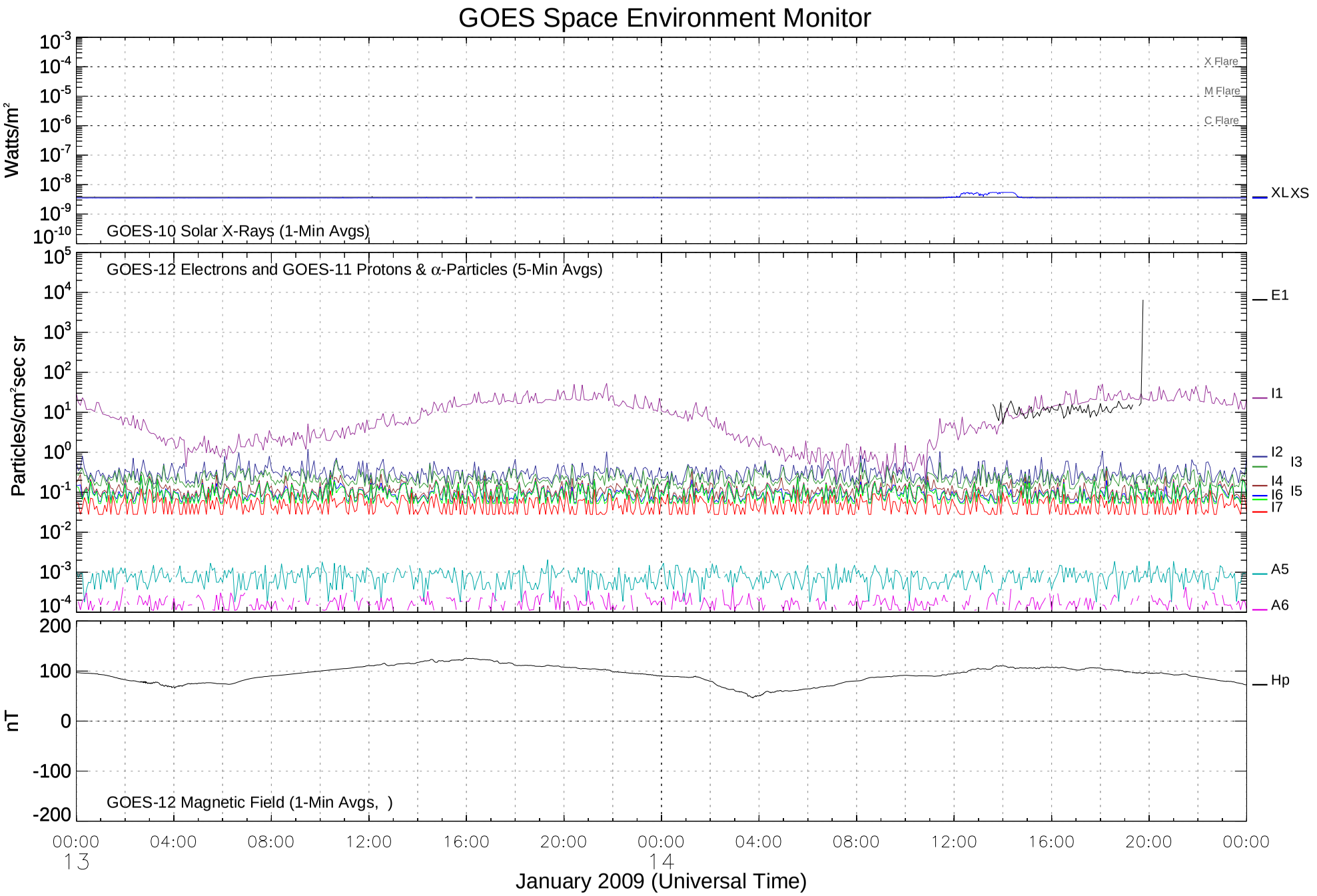
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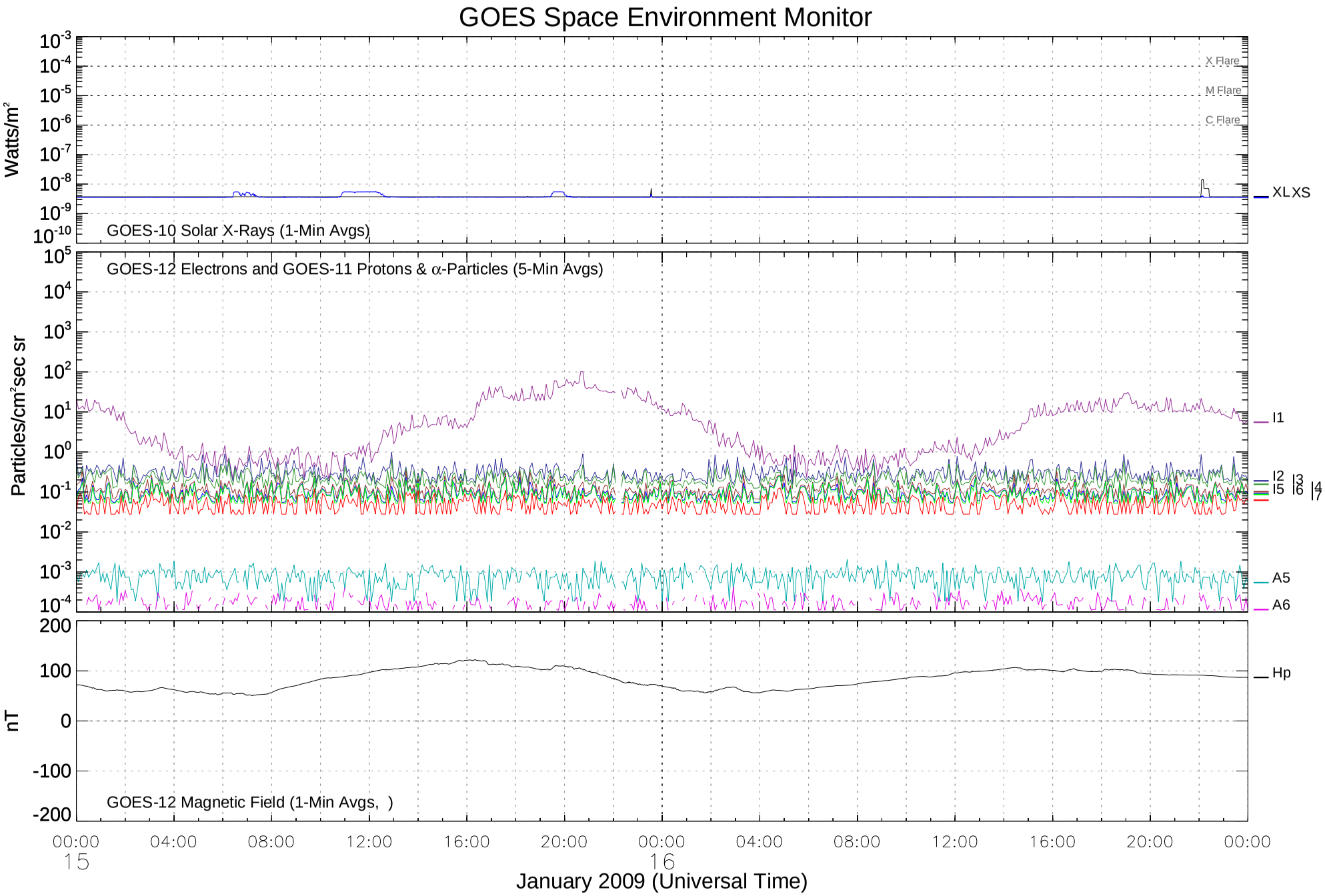
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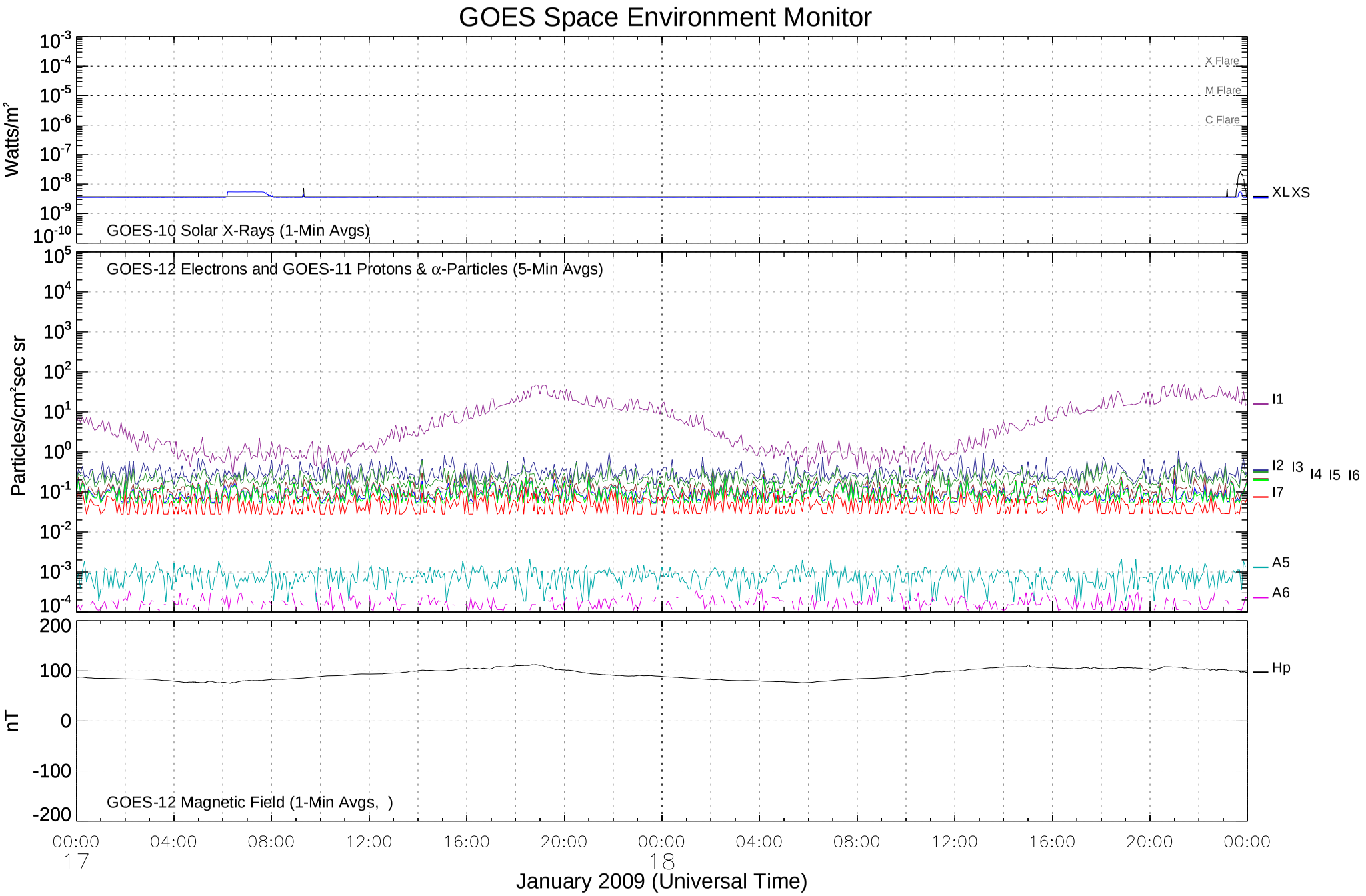
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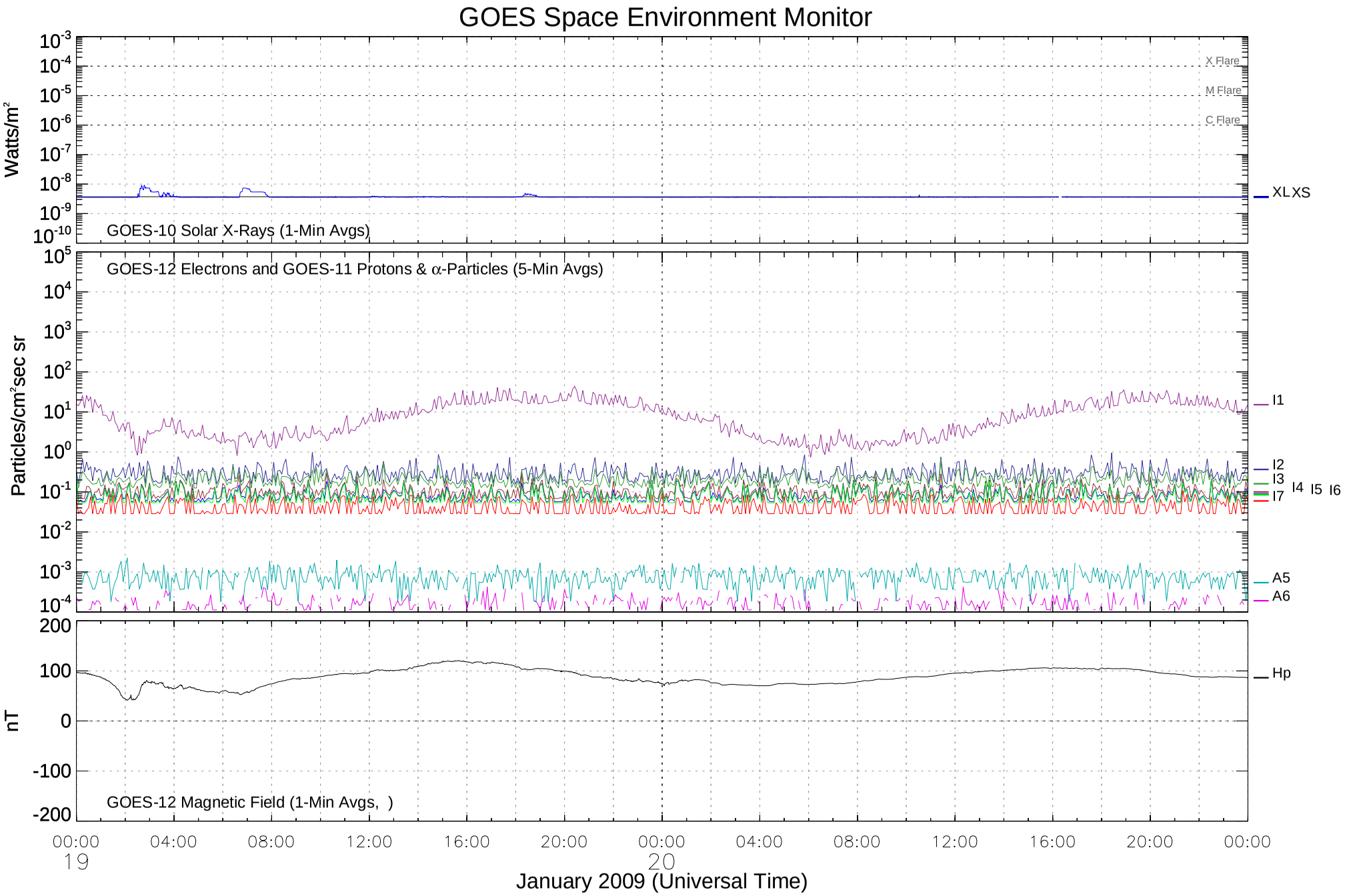
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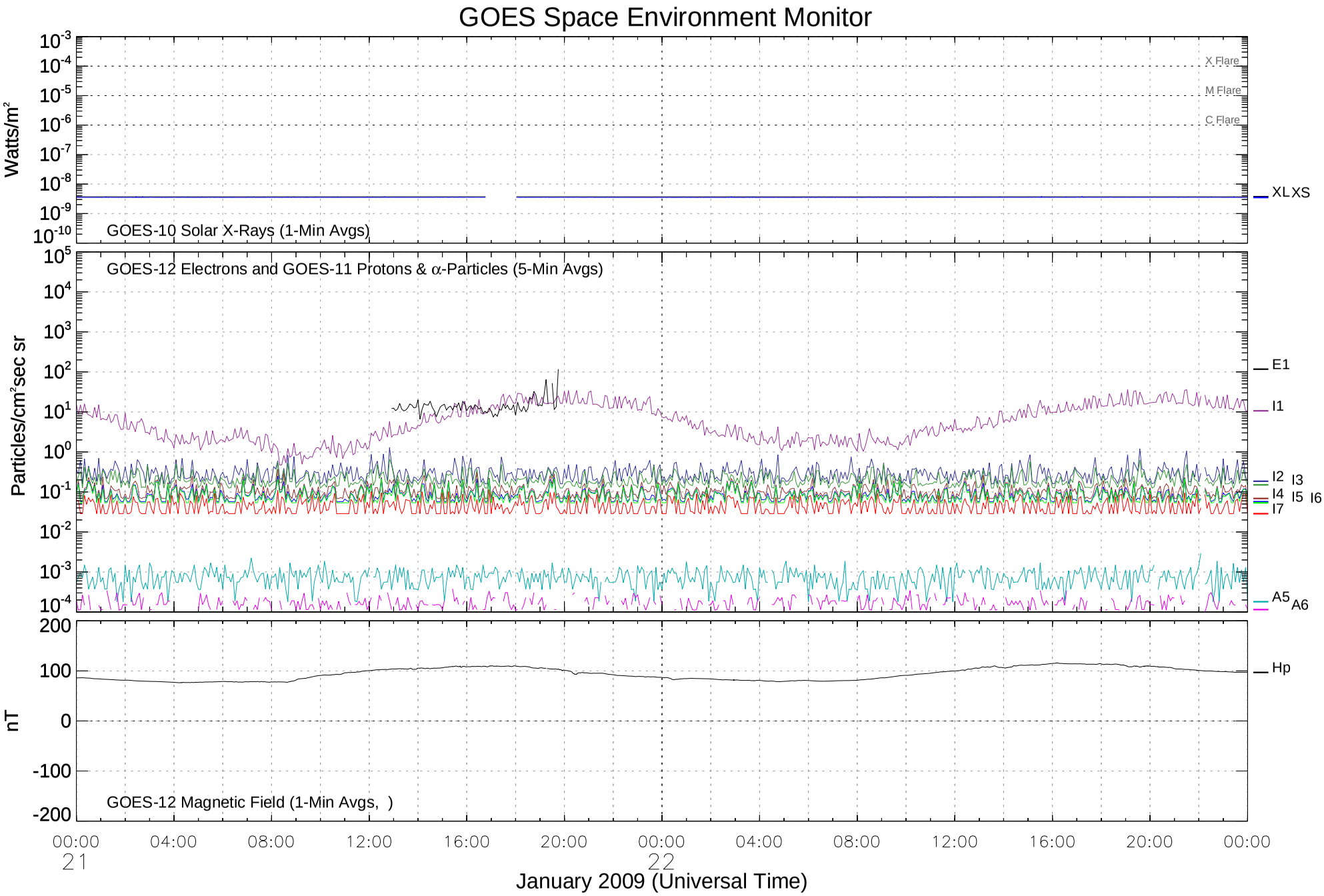
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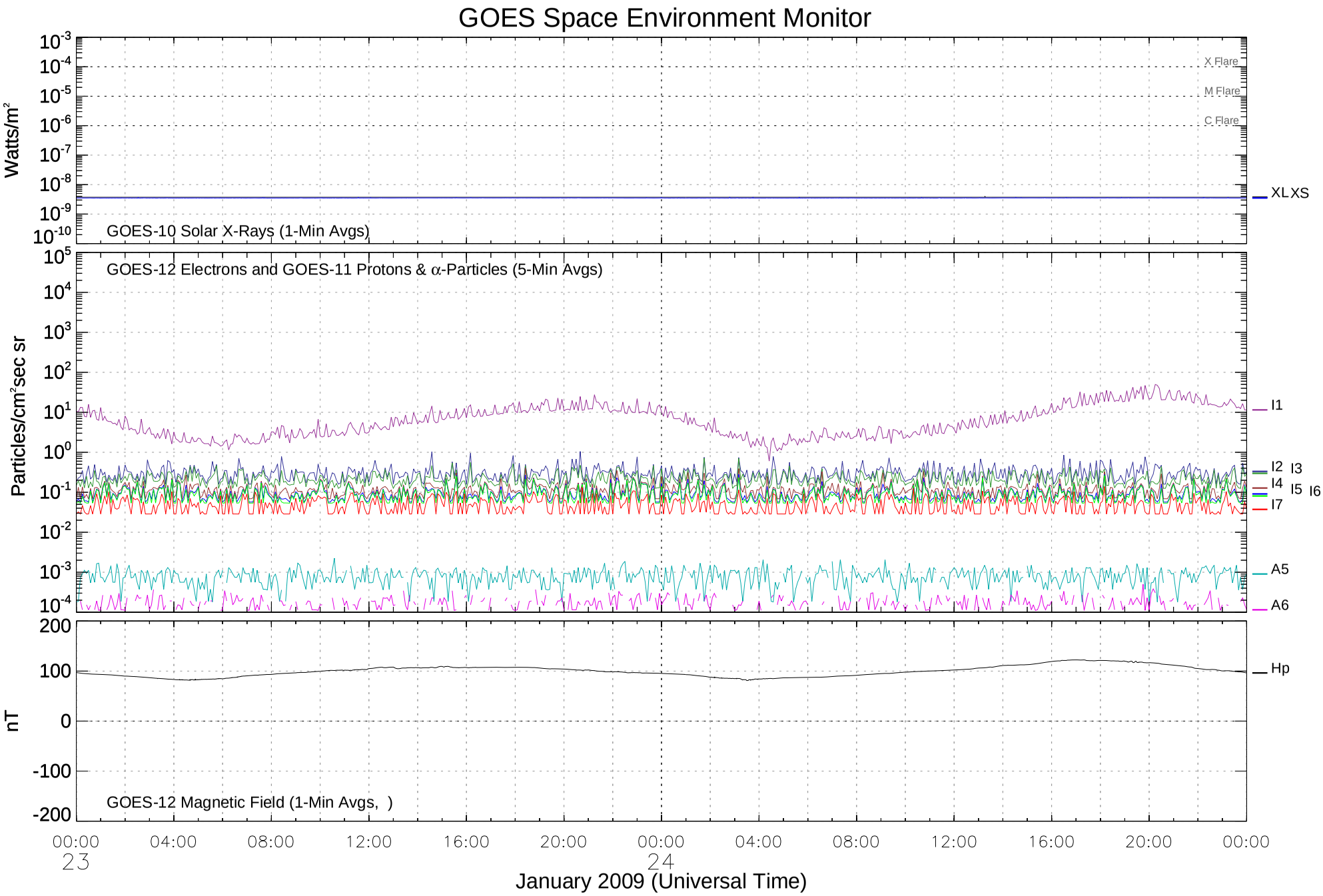
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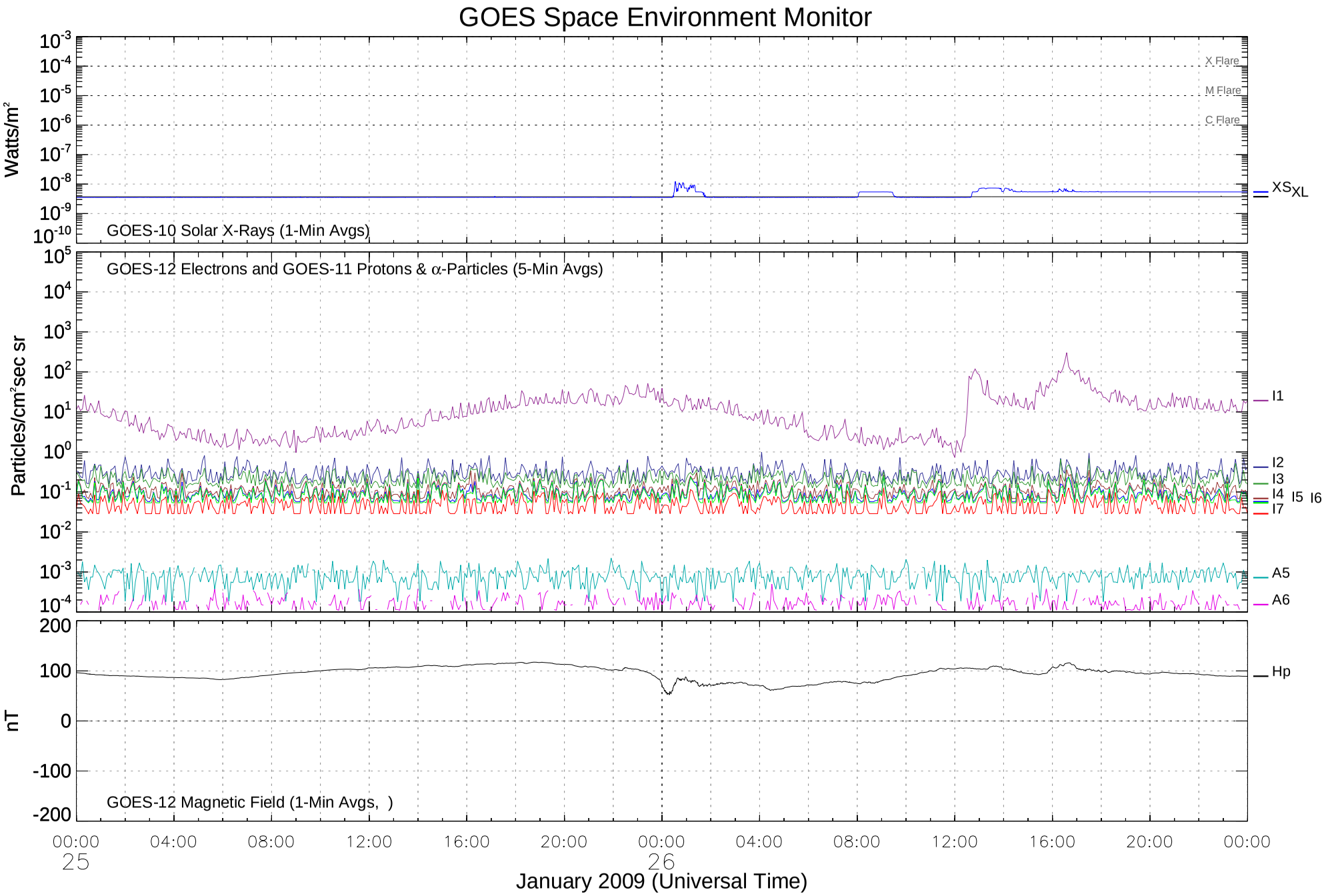
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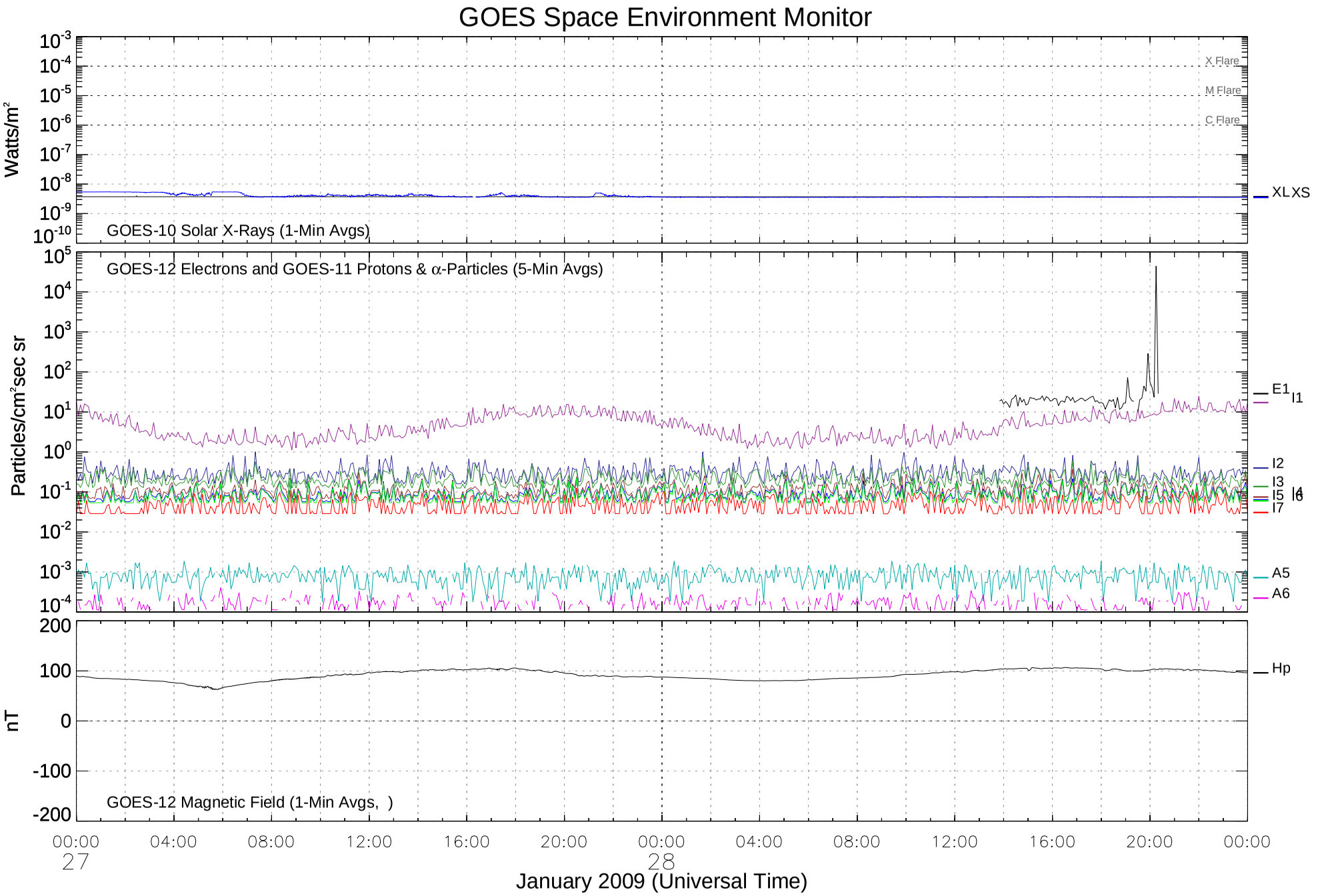
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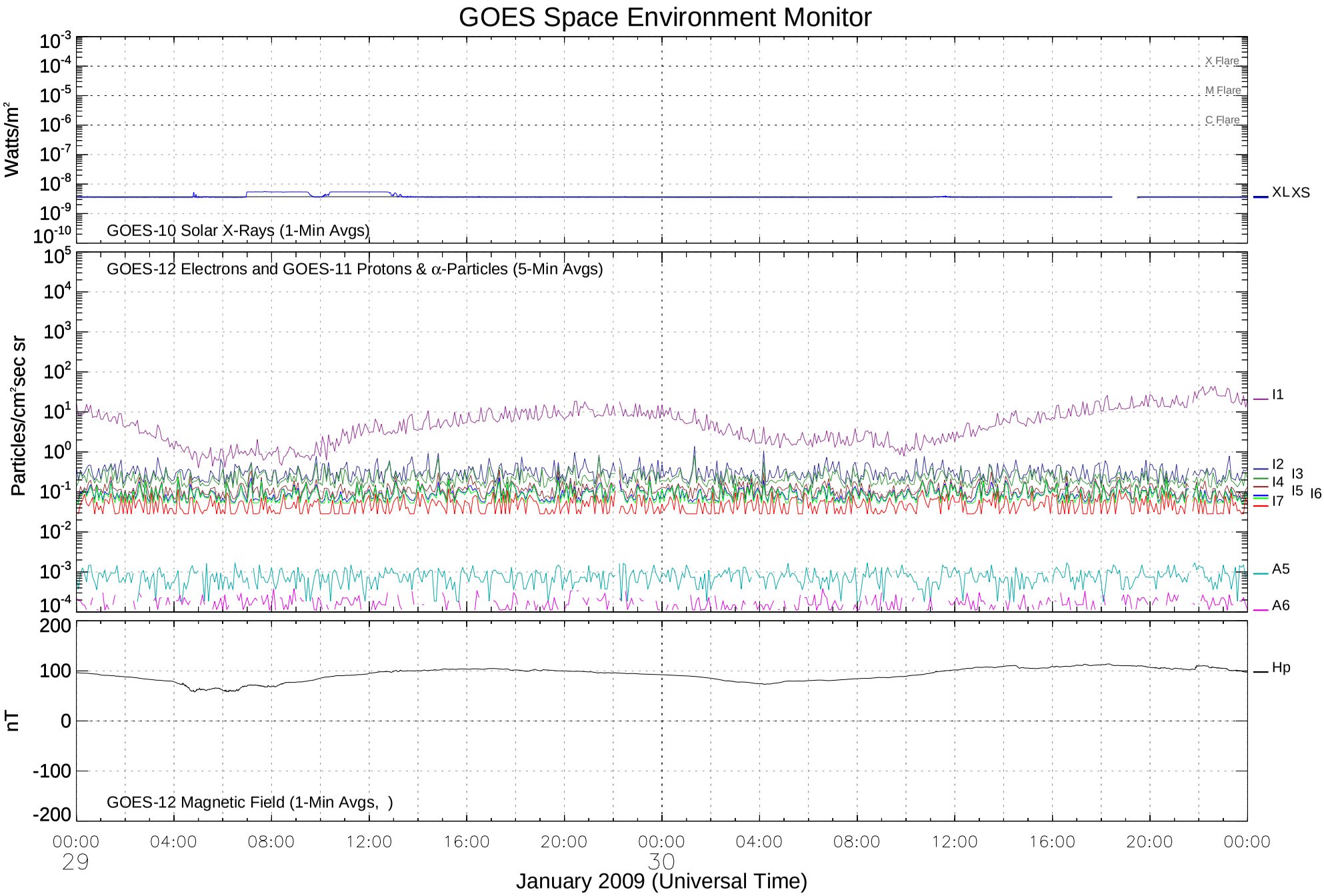
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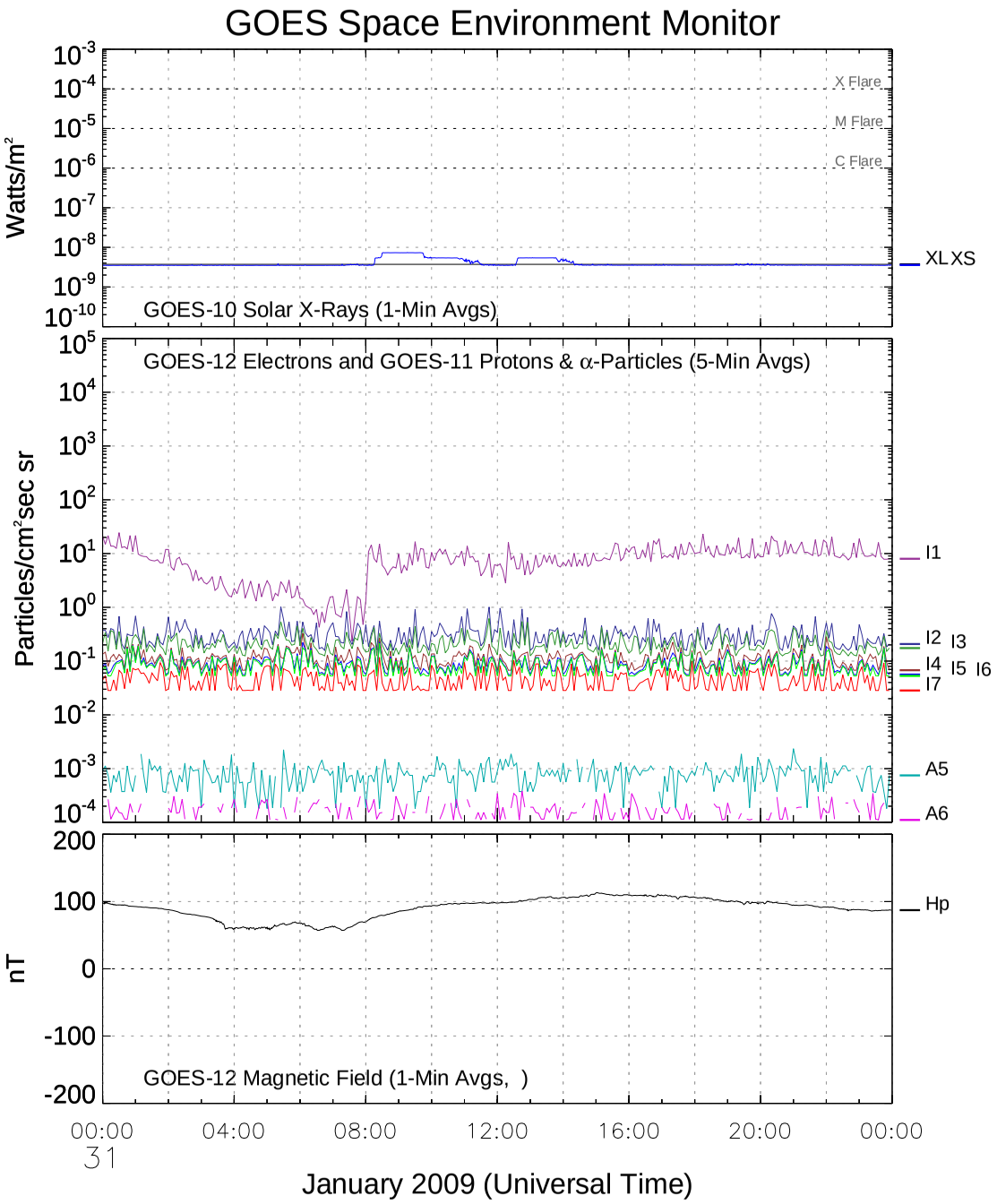
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31
January 2009 (Universal Time)

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

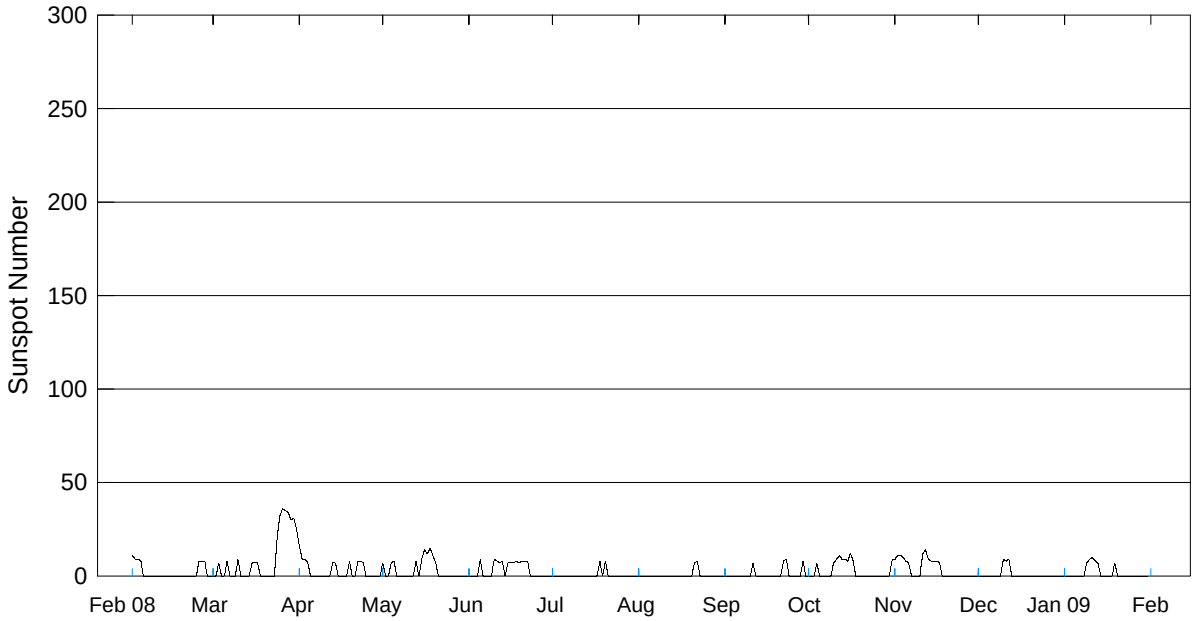
Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Rgn No.	Location Lat	Location Lon	Flares Opt	Flares M	Flares X	Date of Fcst	Region Fcst(1)	Geoadvice(1)
001	01	31	0	69	12				0	0	0	01		SOL: Quiet
									0	0	0	01		MAG: Quiet
									0	0	0	01		PRO: Quiet
002	02	01	0	69	8				0	0	0	02		SOL: Quiet
									0	0	0	02		MAG: Quiet
									0	0	0	02		PRO: Quiet
003	03	02	0	70	3				0	0	0	03		SOL: Quiet
									0	0	0	03		MAG: Quiet
									0	0	0	03		PRO: Quiet
004	04	03	0	70	10				0	0	0	04		SOL: Quiet
									0	0	0	04		MAG: Quiet
									0	0	0	04		PRO: Quiet
005	05	04	0	69	4				0	0	0	05		SOL: Quiet
									0	0	0	05		MAG: Quiet
									0	0	0	05		PRO: Quiet
006	06	05	0	69	5				0	0	0	06		SOL: Quiet
									0	0	0	06		MAG: Quiet
									0	0	0	06		PRO: Quiet
007	07	06	0	69	4				0	0	0	07		SOL: Quiet
									0	0	0	07		MAG: Quiet
									0	0	0	07		PRO: Quiet
008	08	07	0	69	2				0	0	0	08		SOL: Quiet
									0	0	0	08		MAG: Quiet
									0	0	0	08		PRO: Quiet
009	09	08	0	69	3				0	0	0	09		SOL: Quiet
									0	0	0	09		MAG: Quiet
									0	0	0	09		PRO: Quiet
010	10	09	14	70	4	11010	N18	E33	0	0	0	10	Q	SOL: Quiet
									0	0	0	10		MAG: Quiet
									0	0	0	10		PRO: Quiet
011	11	10	17	71	2	11010	N20	E19	0	0	0	11	Q	SOL: Quiet
									0	0	0	11		MAG: Quiet
									0	0	0	11		PRO: Quiet
012	12	11	20	70	2	11010	N18	E05	0	0	0	12	Q	SOL: Quiet
									0	0	0	12		MAG: Quiet
									0	0	0	12		PRO: Quiet
013	13	12	12	69	0	11010	N19	W08	0	0	0	13	Q	SOL: Quiet
									0	0	0	13		MAG: Quiet
									0	0	0	13		PRO: Quiet
014	14	13	11	71	2	11010	N18	W20	0	0	0	14	Q	SOL: Quiet
									0	0	0	14		MAG: Quiet
									0	0	0	14		PRO: Quiet
015	15	14	0	71	7				0	0	0	15		SOL: Quiet
									0	0	0	15		MAG: Quiet
									0	0	0	15		PRO: Quiet
016	16	15	0	71	7				0	0	0	16		SOL: Quiet
									0	0	0	16		MAG: Quiet
									0	0	0	16		PRO: Quiet
017	17	16	0	71	2				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

JANUARY 2009

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Rgn No.	Location Lat	Location Lon	Flares Opt	Flares M	Flares X	Date of Fcst	Region Fcst(1)	Geoadvice(1)
018	18	17	0	72	4				0	0	0	18		SOL: Quiet
									0	0	0	18		MAG: Quiet
									0	0	0	18		PRO: Quiet
019	19	18	0	71	2				0	0	0	19		SOL: Quiet
									0	0	0	19		MAG: Quiet
									0	0	0	19		PRO: Quiet
020	20	19	13	71	10	11011	S12	W25	0	0	0	20	Q	SOL: Quiet
									0	0	0	20		MAG: Quiet
									0	0	0	20		PRO: Quiet
021	21	20	0	70	3				0	0	0	21		SOL: Quiet
									0	0	0	21		MAG: Quiet
									0	0	0	21		PRO: Quiet
022	22	21	0	69	3				0	0	0	22		SOL: Quiet
									0	0	0	22		MAG: Quiet
									0	0	0	22		PRO: Quiet
023	23	22	0	69	1				0	0	0	23		SOL: Quiet
									0	0	0	23		MAG: Quiet
									0	0	0	23		PRO: Quiet
024	24	23	0	70	1				0	0	0	24		SOL: Quiet
									0	0	0	24		MAG: Quiet
									0	0	0	24		PRO: Quiet
025	25	24	0	69	1				0	0	0	25		SOL: Quiet
									0	0	0	25		MAG: Quiet
									0	0	0	25		PRO: Quiet
026	26	25	0	70	1				0	0	0	26		SOL: Quiet
									0	0	0	26		MAG: Quiet
									0	0	0	26		PRO: Quiet
027	27	26	0	70	12				0	0	0	27		SOL: Quiet
									0	0	0	27		MAG: Quiet
									0	0	0	27		PRO: Quiet
028	28	27	0	70	4				0	0	0	28		SOL: Quiet
									0	0	0	28		MAG: Quiet
									0	0	0	28		PRO: Quiet
029	29	28	0	70	3				0	0	0	29		SOL: Quiet
									0	0	0	29		MAG: Quiet
									0	0	0	29		PRO: Quiet
030	30	29	0	69	4				0	0	0	30		SOL: Quiet
									0	0	0	30		MAG: Quiet
									0	0	0	30		PRO: Quiet
031	31	30	0	69	3				0	0	0	31		SOL: Quiet
									0	0	0	31		MAG: Quiet
									0	0	0	31		PRO: Quiet

International Relative Sunspot Numbers
Feb 2008 - Jan 2009

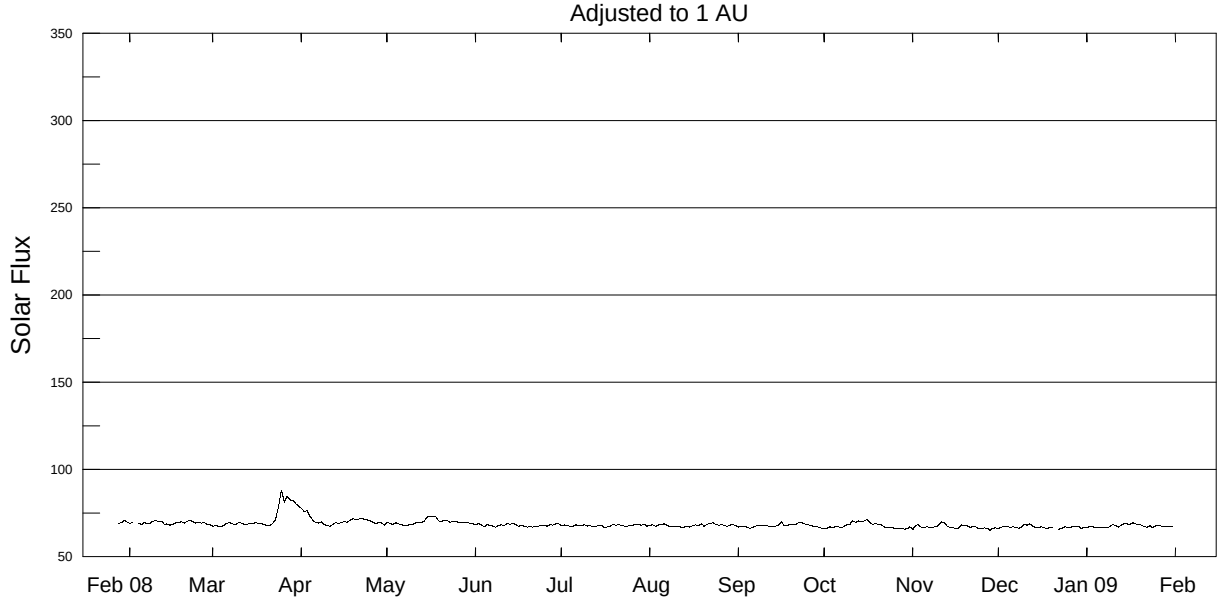


Day	Feb 08	Mar	Apr	May	Jun	Jul*	Aug*	Sep*	Oct*	Nov*	Dec*	Jan 09*
1	11	0	16	7	0	0	0	0	0	9	0	0
2	9	0	9	0	0	0	0	0	0	11	0	0
3	9	7	9	0	0	0	0	0	0	11	0	0
4	8	0	7	7	0	0	0	0	7	10	0	0
5	0	0	0	8	9	0	0	0	0	8	0	0
6	0	8	0	0	0	0	0	0	0	7	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	7
10	0	9	0	0	9	0	0	0	7	0	9	9
11	0	0	0	0	8	0	0	7	9	12	8	10
12	0	0	0	0	0	0	0	0	11	14	9	8
13	0	0	7	8	8	0	0	0	9	9	0	7
14	0	0	7	0	7	0	0	0	9	8	0	0
15	0	7	0	9	7	0	0	0	8	8	0	0
16	0	7	0	14	7	0	0	0	12	8	0	0
17	0	7	0	12	7	0	0	0	8	7	0	0
18	0	0	0	15	8	8	0	0	0	0	0	0
19	0	0	8	11	7	0	0	0	0	0	0	7
20	0	0	0	7	8	8	0	0	0	0	0	0
21	0	0	0	0	8	0	7	0	0	0	0	0
22	0	0	8	0	8	0	8	8	0	0	0	0
23	0	0	8	0	0	0	0	9	0	0	0	0
24	0	19	7	0	0	0	0	0	0	0	0	0
25	8	32	0	0	0	0	0	0	0	0	0	0
26	8	36	0	0	0	0	0	0	0	0	0	0
27	8	35	0	0	0	0	0	0	0	0	0	0
28	0	34	0	0	0	0	0	0	0	0	0	0
29	0	30	0	0	0	0	0	8	0	0	0	0
30		31	0	0	0	0	0	0	0	0	0	0
31		25		0		0	0		9		0	0
Mean	2.1	9.3	2.9	3.2	3.4	0.5	0.5	1.1	2.9	4.1	0.8	1.5

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Feb 2008 - Jan 2009

Adjusted to 1 AU



Day	Feb 08	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 09
1	69.0	67.4	77.7	69.6	68.5	67.8	68.1	67.0	65.9	65.6	66.2	66.6
2	69.8	68.0	75.9	69.2	69.0	68.2	68.2	67.2	66.4	68.0	67.0	67.6
3	*	67.3	76.4	68.5	68.2	67.7	67.4	67.3	67.2	68.3	67.2	67.2
4	69.3	67.2	73.1	69.5	67.1	67.6	68.2	67.0	66.6	66.8	67.6	66.6
5	68.5	68.2	71.1	68.8	68.4	67.3	68.4	66.3	67.4	66.5	66.8	66.9
6	69.6	69.3	69.5	68.4	67.9	68.3	68.9	66.8	67.2	67.3	67.1	66.5
7	68.9	69.5	69.3	67.8	67.6	67.7	68.0	67.6	66.6	66.5	67.0	66.7
8	69.0	68.8	70.0	67.7	66.9	67.8	67.3	68.0	67.5	67.0	66.4	66.5
9	70.3	68.5	68.2	68.6	68.0	68.3	67.3	68.0	68.5	67.1	66.7	67.4
10	70.7	69.4	68.1	68.7	68.2	67.6	67.4	68.1	68.7	67.9	68.7	68.5
11	70.2	69.3	67.4	69.4	67.8	67.9	67.5	67.8	70.5	70.0	68.0	67.7
12	70.3	68.5	68.5	69.5	69.2	67.1	66.9	67.1	69.7	69.5	68.8	67.0
13	68.7	68.7	69.7	69.7	68.6	67.4	67.0	67.2	70.5	67.6	67.5	68.2
14	68.8	69.1	69.0	70.5	69.2	67.8	67.6	67.6	70.0	66.8	66.6	68.9
15	68.0	68.8	69.7	72.7	68.6	67.9	67.0	68.2	70.5	66.7	66.7	68.8
16	68.6	69.6	70.0	73.2	67.4	66.7	67.8	70.1	71.4	66.2	67.2	68.5
17	69.4	69.1	69.8	72.8	68.1	67.1	68.2	67.7	69.5	66.2	66.6	69.6
18	69.5	69.0	70.8	73.3	67.5	67.4	67.8	67.8	68.6	68.2	66.2	68.8
19	70.0	68.4	71.7	70.5	67.0	68.5	68.9	68.4	69.0	67.7	67.0	68.6
20	69.3	67.9	71.5	70.2	67.3	68.0	67.4	68.4	68.6	67.9	66.9	68.1
21	70.3	67.7	71.6	70.8	67.0	68.4	68.7	68.4	68.2	66.8	*	67.2
22	70.8	69.1	72.1	71.0	67.5	68.0	69.1	69.6	67.0	67.3	65.5	66.9
23	70.1	71.5	71.5	69.6	67.5	67.6	69.4	69.8	66.5	67.2	66.3	67.8
24	69.3	79.0	71.2	70.3	68.0	67.5	68.6	68.8	66.7	66.1	67.1	66.6
25	69.9	88.2	70.7	70.1	68.1	67.9	68.0	68.6	66.7	66.0	67.0	67.7
26	69.3	81.2	69.9	69.8	67.5	68.1	68.3	68.0	66.0	66.5	67.0	67.8
27	69.4	84.5	69.0	69.7	68.3	68.4	68.0	67.6	66.1	66.4	67.1	67.6
28	68.7	82.6	69.4	69.6	68.1	68.3	67.4	67.3	66.2	65.2	67.5	67.4
29	68.5	82.4	69.6	69.9	68.8	68.1	68.1	67.0	65.8	66.4	67.5	67.3
30		80.4	68.0	69.0	68.9	68.5	68.4	66.4	65.9	66.5	66.3	67.1
31		79.1		68.8		67.5	67.9		67.1		67.0	67.4
Mean	69.4	72.2	70.7	69.9	68.0	67.8	68.0	67.8	67.8	67.1	67.0	67.3

* = No data available.

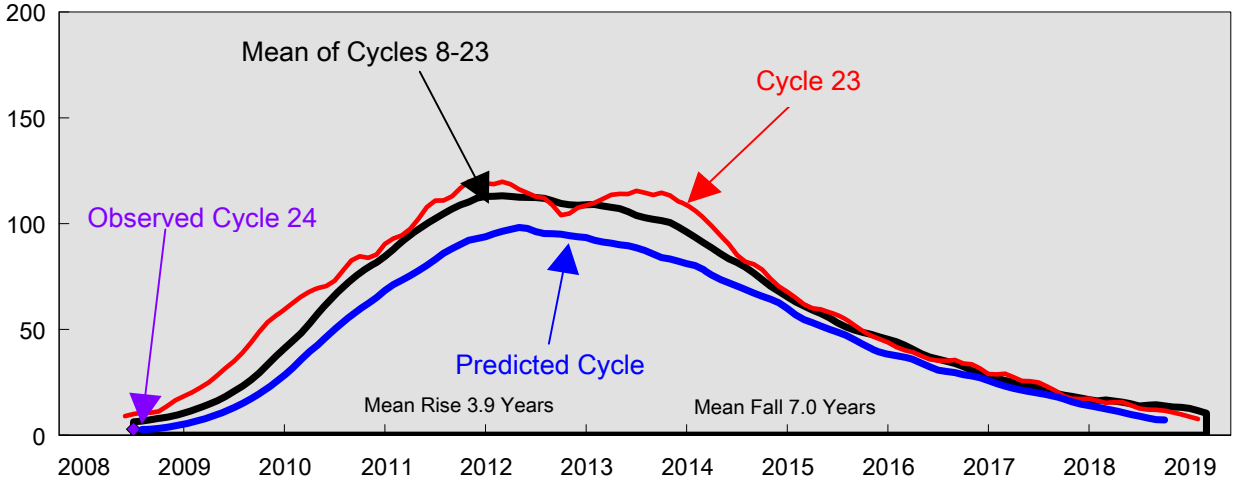
DAILY SOLAR INDICES
JANUARY 2009

	Day	Bartels	Sunspot		Obs Flux	-----Solar Flux Adjusted to 1 Astronomical Unit--------								
	of	Cycle	Numbers		Penticton	SGMR	SGMR	SGMR	Penticton	SGMR	SGMR	SGMR	SGMR	SGMR
Day	Year	Day	Int	Amer	(2800)	(15400)	(8800)	(4995)	(2800)	(2695)	(1415)	(610)	(410)	(245)
1	1	1	0	0	68.9	---	---	---	66.6	---	---	---	---	---
2	2	2	0	0	69.9	452	202	127	67.6	64	54	41	22	10
3	3	3	0	0	69.5	456	210	126	67.2	65	53	40	22	10
4	4	4	0	0	68.8	456	209	146	66.6	65	54	36	21	10
5	5	5	0	0	69.2	332	195	120	66.9	63	53	39	21	10
6	6	6	0	0	68.7	459	212	128	66.5	63	54	36	21	10
7	7	7	0	1	69.0	268	172	111	66.7	62	46	32	20	9
8	8	8	0	0	68.7	457	209	126	66.5	63	54	36	21	10
9	9	9	7	6	69.7	457	212	127	67.4	64	53	40	23	10
10	10	10	9	11	70.9	457	213	127	68.5	73	56	40	22	11
11	11	11	10	11	70.0	438	197	124	67.7	68	55	39	22	10
12	12	12	8	7	69.3	450	188	110	67.0	65	50	37	20	10
13	13	13	7	1	70.5	457	212	128	68.2	64	55	38	22	10
14	14	14	0	0	71.2	458	212	126	68.9	74	55	41	23	10
15	15	15	0	0	71.1	455	217	128	68.8	75	55	41	23	10
16	16	16	0	0	70.8	458	211	127	68.5	70	55	41	23	10
17	17	17	0	0	71.9	457	211	128	69.6	73	56	39	23	9
18	18	18	0	0	71.1	365	187	129	68.8	68	53	39	22	11
19	19	19	7	2	70.8	426	179	119	68.6	66	54	35	22	11
20	20	20	0	0	70.4	455	215	127	68.1	66	54	37	22	11
21	21	21	0	0	69.4	454	212	124	67.2	65	53	39	21	10
22	22	22	0	0	69.0	453	211	128	66.9	61	53	39	23	12
23	23	23	0	0	70.0	453	192	126	67.8	63	55	38	22	11
24	24	24	0	0	68.8	450	214	125	66.6	63	54	39	23	12
25	25	25	0	0	69.8	457	208	122	67.7	70	54	40	22	11
26	26	26	0	0	69.9	458	209	126	67.8	62	53	39	21	11
27	27	27	0	0	69.7	458	209	124	67.6	65	54	39	23	11
28	28	1	0	0	69.5	412	218	128	67.4	64	54	39	21	11
29	29	2	0	1	69.3	456	210	125	67.3	65	54	37	21	10
30	30	3	0	0	69.1	454	211	125	67.1	63	53	39	22	10
31	31	4	0	0	69.4	456	198	124	67.4	59	54	39	22	11
MEAN			1.5	1.3	69.8	439	205	125	67.6	65	53	38	21	10

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

Cycle 24 Smoothed Sunspot Numbers: Observed and Predicted

PRELIMINARY Based on July 2008 Smoothed Data



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	3.2	2.8###	3	3	3	4	5	3
								(1)	(1)	(2)	(3)	(4)	(1)
2009	5	6	7	8	10	11	13	15	17	20	22	25	13
	(5)	(6)	(7)	(9)	(10)	(12)	(14)	(17)	(19)	(21)	(24)	(27)	(14)

Solar Cycle 22 | Solar Cycle 23 | Min, Max, and Predictions

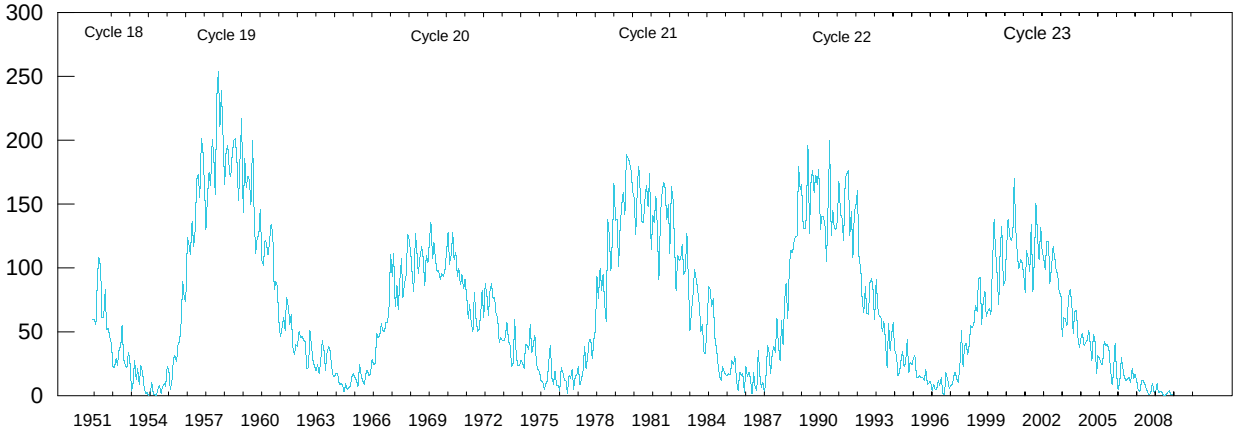
*** May 1996 marks Cycle 23's mathematical minimum.** **** October 1996 marks the consensus minimum.**

+ April 2000 marks Cycle 23 maximum. ## - Preliminary Cycle 24 Minumum

NOTE: This is a preliminary prediction using July 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 Jun 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 July 2009 prediction. There exists a 90% chance that in July 2009, the actual smoothed sunspot will fall somewhere between 0 and 27.

Mean Monthly Sunspot Numbers
Jan 1951 - Jan 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	0.5	0.5	1.1	2.9	4.1	0.8	2.8	
2009	1.5												1.5	

Values are preliminary after Jun 08. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

Hà SOLAR FLARES
JANUARY 2009

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

No Reports

"Remarks"

A = Eruptive prominence whose base is less than 90 degrees from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of Ca II.
P = Flare shows Helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase; important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

Observation Type: C=Cinematographic, E=Electronic, P=Photographic, V=Visual

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

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Xray	Total Integrated Flux(1)	Total Area(2)	Total(3) Intensity
GOES	09	2358	0003	0005			11010			7	B 4.0	7.6E-05		
GOES	10	0047	0051	0055			11010			8	B 1.2	4.0E-05		
GOES		0233	0236	0239			11010			6	B 1.0	2.3E-05		

Note 1: Total integrated flux computed from the event start time to end if available (units=J/m*2).
Note 2: Total area is derived from SXI imagery in units of squared arc seconds of the largest flaring area.
Note 3: Total intensity is derived from SXI imagery in units of data numbers/second of the largest flaring area.

TABLE FORMAT CHANGE: Data are from the GOES full disk xray monitor supplemented with Solar Xray Imager (SXI) from January, 2004, to April 12, 2007. Positions, areas, and intensities are taken from SXI imagery using the largest flare event on the disk. Only the largest event is selected during multiple flares on the disk.

IMPORTANT NOTE: The xray sensor on GOES 12 was turned off on April 12, 2007, at 2250UT. The GOES SXI instrument is also inoperative. GOES 10 backup for xray data. Effective April 13, 2007, xray flare locations will be determined by optical flare reports. Xray event times will still be from the xray data.

S O L A R R A D I O E M I S S I O N

Outstanding Occurrences

JANUARY 2009

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
10	245	SGMR	43 NS	1836.0	1900.0	42.0	32000.0			QL=4 ST=2 TYP=1
	245	SGMR	43 NS	1838.0	1900.0	322.0	32000.0			QL=4 ST=1 TYP=1
	245	SGMR	48 C	1836.0	1900.0	27.0	32000.0			QL=4 ST=2 TYP=8
	245	SGMR	48 C	1836.0	1857.0	324.0	7200.0			QL=4 ST=1 TYP=8
	245	SGMR	48 C	1836.0	1857.0	324.0	32000.0			QL=4 ST=1 TYP=8
	245	SGMR	48 C	1836.0	1857.0	324.0	32000.0			QL=2 ST=1 TYP=8
	245	SGMR	48 C	1906.0	1906.0	8.0	2000.0			QL=2 ST=2 TYP=8
	245	SGMR	48 C	1917.0	1918.0	5.0	140.0			QL=2 ST=2 TYP=8

Reports are received routinely from the following observatories:
LEAR = Learmonth SGMR = Sagamore Hill SVTO = San Vito

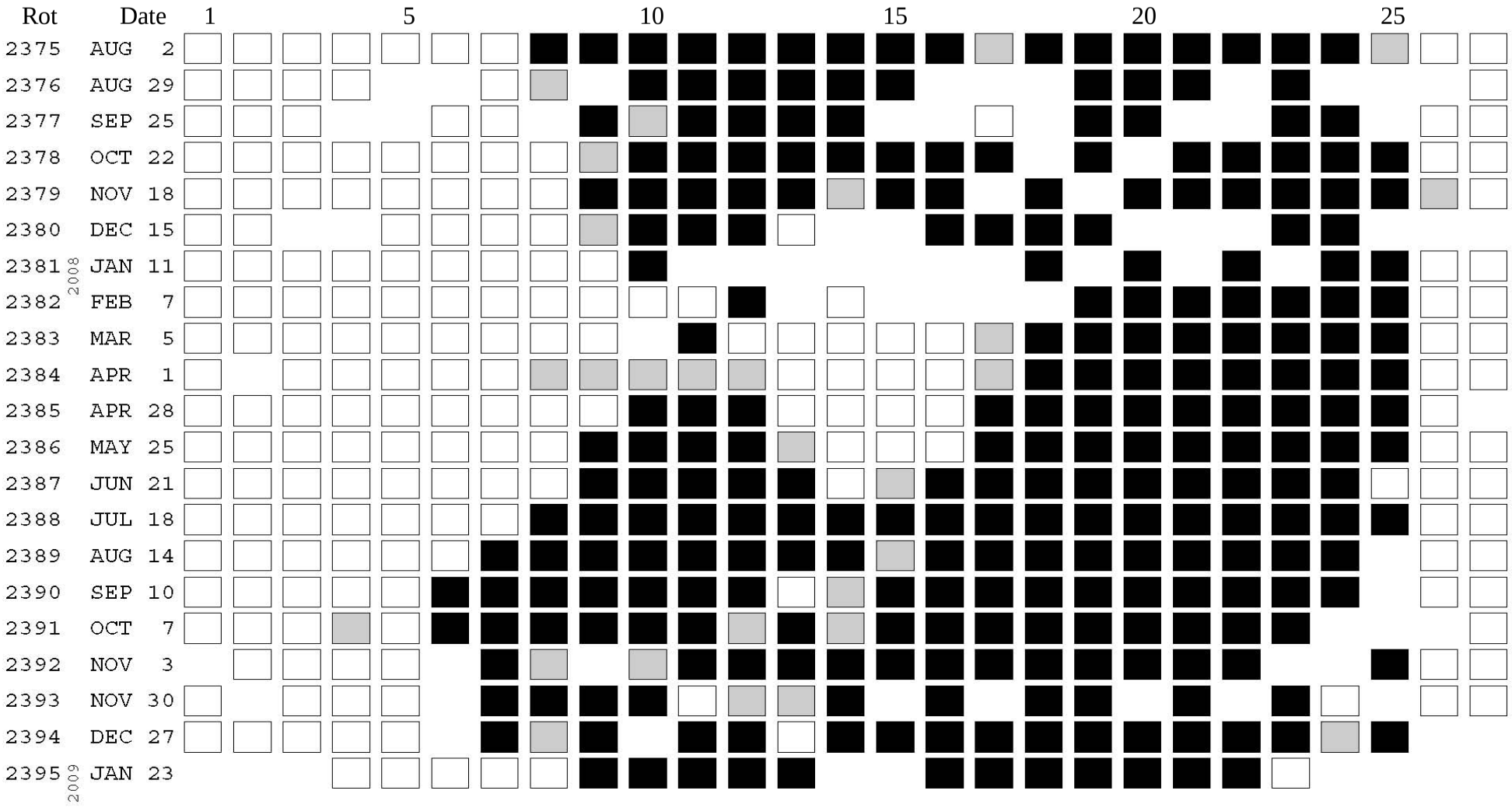
Explanation of Type Code:

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

1A Simple 1A	4A Simple 2AF	24PF Post Rise F	27F Rise and Fall F
3A Simple 2A	4O Rise Only	16A Fall A	27AF Rise and Fall AF
21A Simple 3A GRF	4OF Rise Only F	26O Fall Only	31A Post Burst Decrease A
2A Simple 1AF	4P Post Rise	26F Fall F	32A Absorption A

RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Penticton, Canada 2800 MHz; and Hiraiso, Japan 500 and 200 MHz.

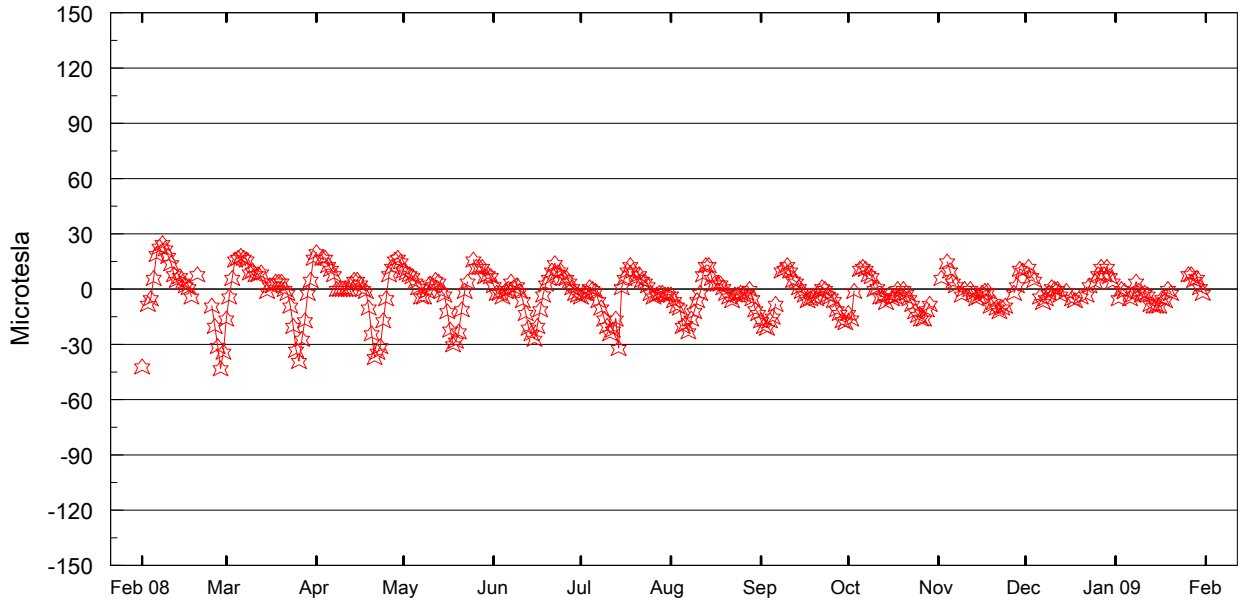
STANFORD MEAN SOLAR MAGNETIC FIELD



Mean Solar Magnetic Field Polarity: = field > 2 microT; = -2 microT ≤ field ≤ 2 microT = field < -2 microT; No box = no data available

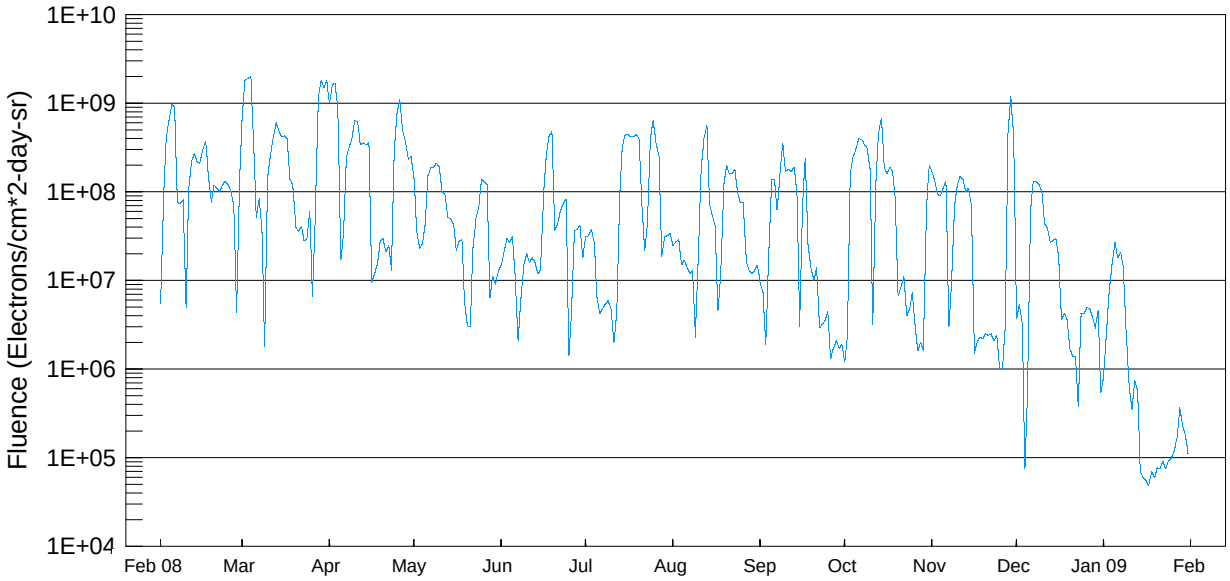
Observations are taken at 2000 UT. Rotation numbers given are the Bartels series, but the dates are not; these dates are five days earlier, to mark times of occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

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



Day	Feb 08	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 09
1	-42	-16	20	10	2	-4	-3	-17	-13	---	---	---
2	---	-4	---	9	-2	-2	-6	-20	-16	6	12	-5
3	-8	6	17	8	-2	-2	-9	-21	-1	---	7	0
4	-5	16	17	7	-4	1	-10	-17	---	15	5	-1
5	6	17	13	4	-1	0	-20	-15	11	10	---	---
6	19	18	11	1	0	-1	-19	-8	12	4	-4	-5
7	23	17	8	-4	4	-6	-23	---	11	2	-7	-3
8	25	16	0	-4	1	-10	-16	10	8	---	-5	4
9	22	9	0	-1	2	-16	-12	11	7	-3	-2	-1
10	18	10	0	3	-1	-20	-6	13	0	0	1	-3
11	14	8	0	2	-6	-24	-2	10	1	---	0	-2
12	8	8	0	5	-13	-22	8	5	-4	0	0	-3
13	5	9	3	4	-21	-16	13	4	-4	-2	-3	-8
14	7	---	5	-1	-24	-32	13	1	-7	-5	---	-9
15	4	-1	5	-3	-27	1	6	-1	-3	-4	-1	-9
16	2	2	3	-12	-20	6	3	-3	-5	-2	---	-9
17	1	2	0	-22	-11	10	3	-6	-4	-1	-5	-5
18	-4	4	-1	-30	-3	13	3	-5	0	-1	-6	-6
19	---	4	-10	-28	3	10	1	-4	-3	-9	---	0
20	8	4	-24	-23	6	6	-2	-5	0	-7	-4	-2
21	---	0	-37	-11	10	8	-4	-1	-2	-10	---	---
22	---	-2	-34	-1	14	5	-6	1	-5	-12	-3	---
23	---	-9	-31	4	9	4	-3	0	-8	-10	2	---
24	---	-20	-17	---	10	2	-3	-3	-12	-9	---	---
25	-9	-33	-5	16	6	-2	-2	-4	-14	---	4	---
26	-20	-39	8	12	6	-4	-3	-6	-16	---	8	8
27	-31	-27	12	12	4	-3	-2	-11	-16	-2	12	8
28	-43	-17	16	12	1	-2	0	-13	-11	2	8	5
29	-34	-2	17	7	-2	-2	-5	-17	-8	11	12	6
30		5	15	8	-3	-3	-11	-18	---	10	7	1
31		17		7		-3	-13		---		4	-2

GOES Daily Electron Fluence
Feb 2008 - Jan 2009



Day	Feb 08	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 09
1	5.5E+06	7.5E+08	1.0E+09	1.4E+08	1.5E+07	3.1E+07	2.5E+07	9.4E+06	1.2E+06	1.7E+08	3.7E+06	8.3E+05
2	8.0E+07	1.8E+09	1.6E+09	3.6E+07	2.1E+07	3.2E+07	2.7E+07	7.3E+06	2.5E+06	1.3E+08	5.4E+06	2.9E+06
3	4.1E+08	1.9E+09	1.7E+09	2.3E+07	3.0E+07	3.8E+07	2.9E+07	1.9E+06	1.6E+08	9.4E+07	3.3E+06	8.1E+06
4	6.5E+08	2.0E+09	8.9E+08	2.6E+07	2.7E+07	2.7E+07	1.5E+07	2.0E+07	2.5E+08	9.1E+07	7.5E+04	1.6E+07
5	9.7E+08	3.6E+08	1.7E+07	4.2E+07	3.1E+07	6.6E+06	1.7E+07	1.4E+08	3.0E+08	1.1E+08	6.5E+05	2.7E+07
6	9.1E+08	5.1E+07	3.6E+07	1.5E+08	1.1E+07	4.2E+06	1.4E+07	1.4E+08	4.0E+08	1.3E+08	6.3E+07	1.8E+07
7	7.6E+07	8.4E+07	2.5E+08	1.9E+08	2.1E+06	4.8E+06	1.2E+07	6.2E+07	3.9E+08	3.0E+06	1.3E+08	2.1E+07
8	7.3E+07	3.8E+07	3.2E+08	1.9E+08	6.7E+06	5.4E+06	1.3E+07	1.6E+08	3.4E+08	1.1E+07	1.3E+08	1.4E+07
9	8.1E+07	1.8E+06	4.0E+08	2.1E+08	1.5E+07	5.9E+06	2.3E+06	3.6E+08	3.1E+08	7.0E+07	1.2E+08	2.7E+06
10	5.0E+06	1.4E+08	6.4E+08	1.9E+08	2.0E+07	4.7E+06	1.8E+07	1.7E+08	1.8E+08	1.2E+08	1.0E+08	6.2E+05
11	1.1E+08	2.5E+08	6.2E+08	1.0E+08	1.6E+07	2.0E+06	1.9E+08	1.8E+08	3.2E+06	1.5E+08	4.4E+07	3.5E+05
12	2.2E+08	4.1E+08	3.4E+08	9.4E+07	1.8E+07	4.3E+06	4.0E+08	1.7E+08	1.1E+08	1.4E+08	3.9E+07	7.5E+05
13	2.7E+08	6.0E+08	3.6E+08	5.2E+07	1.6E+07	7.8E+07	5.7E+08	1.9E+08	4.5E+08	1.0E+08	2.7E+07	5.7E+05
14	2.2E+08	4.9E+08	3.4E+08	5.0E+07	1.2E+07	3.2E+08	7.2E+07	1.0E+08	6.8E+08	1.1E+08	2.8E+07	7.0E+04
15	2.1E+08	4.2E+08	3.6E+08	4.3E+07	1.3E+07	4.4E+08	5.4E+07	3.0E+06	1.9E+08	6.8E+07	3.0E+07	6.0E+04
16	3.0E+08	4.3E+08	9.4E+06	2.2E+07	9.6E+07	4.5E+08	4.1E+07	7.3E+07	1.6E+08	1.5E+06	1.9E+07	5.6E+04
17	3.7E+08	4.0E+08	1.2E+07	2.8E+07	2.7E+08	4.2E+08	4.5E+06	2.4E+08	1.9E+08	2.0E+06	3.6E+06	4.8E+04
18	1.5E+08	1.4E+08	1.5E+07	2.9E+07	4.3E+08	4.2E+08	1.1E+07	2.6E+07	1.7E+08	2.3E+06	4.3E+06	7.1E+04
19	7.6E+07	1.2E+08	2.7E+07	5.6E+06	4.8E+08	4.5E+08	1.2E+08	1.4E+07	8.0E+07	2.2E+06	3.6E+06	5.9E+04
20	1.2E+08	4.0E+07	3.0E+07	3.1E+06	3.7E+07	3.9E+08	2.0E+08	1.0E+07	6.7E+06	2.5E+06	1.7E+06	7.7E+04
21	1.1E+08	3.6E+07	2.1E+07	3.0E+06	4.3E+07	6.4E+07	1.6E+08	1.4E+07	8.4E+06	2.4E+06	1.4E+06	7.6E+04
22	1.0E+08	4.1E+07	2.5E+07	2.3E+07	6.0E+07	2.2E+07	1.6E+08	2.9E+06	1.1E+07	2.5E+06	1.4E+06	9.1E+04
23	1.2E+08	2.8E+07	1.3E+07	5.0E+07	7.3E+07	4.5E+07	1.8E+08	3.2E+06	4.0E+06	2.1E+06	3.8E+05	7.5E+04
24	1.3E+08	3.0E+07	3.0E+08	7.0E+07	8.3E+07	4.0E+08	9.6E+07	3.5E+06	4.7E+06	2.4E+06	4.2E+06	9.2E+04
25	1.2E+08	6.0E+07	7.8E+08	1.4E+08	1.4E+06	6.4E+08	7.5E+07	4.5E+06	7.3E+06	1.0E+06	4.2E+06	9.8E+04
26	1.0E+08	6.6E+06	1.1E+09	1.3E+08	4.8E+06	3.5E+08	7.7E+07	1.3E+06	3.1E+06	1.0E+06	5.0E+06	1.2E+05
27	7.1E+07	5.7E+07	5.0E+08	1.2E+08	3.6E+07	2.5E+08	1.6E+07	1.7E+06	1.6E+06	2.8E+06	4.8E+06	1.7E+05
28	4.4E+06	1.2E+09	3.7E+08	6.4E+06	3.8E+07	1.9E+07	1.3E+07	2.1E+06	2.0E+06	4.5E+08	3.9E+06	3.7E+05
29	1.1E+08	1.8E+09	2.3E+08	1.1E+07	4.2E+07	3.1E+07	1.2E+07	1.7E+06	1.6E+06	1.2E+09	2.9E+06	2.3E+05
30		1.5E+09	2.5E+08	9.1E+06	1.8E+07	3.2E+07	1.3E+07	1.9E+06	7.0E+07	4.5E+08	4.6E+06	1.8E+05
31		1.8E+09		1.3E+07		3.4E+07	1.5E+07		2.0E+08		5.4E+05	1.1E+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.

CONTENTS

Prompt Reports Number 774 Part I

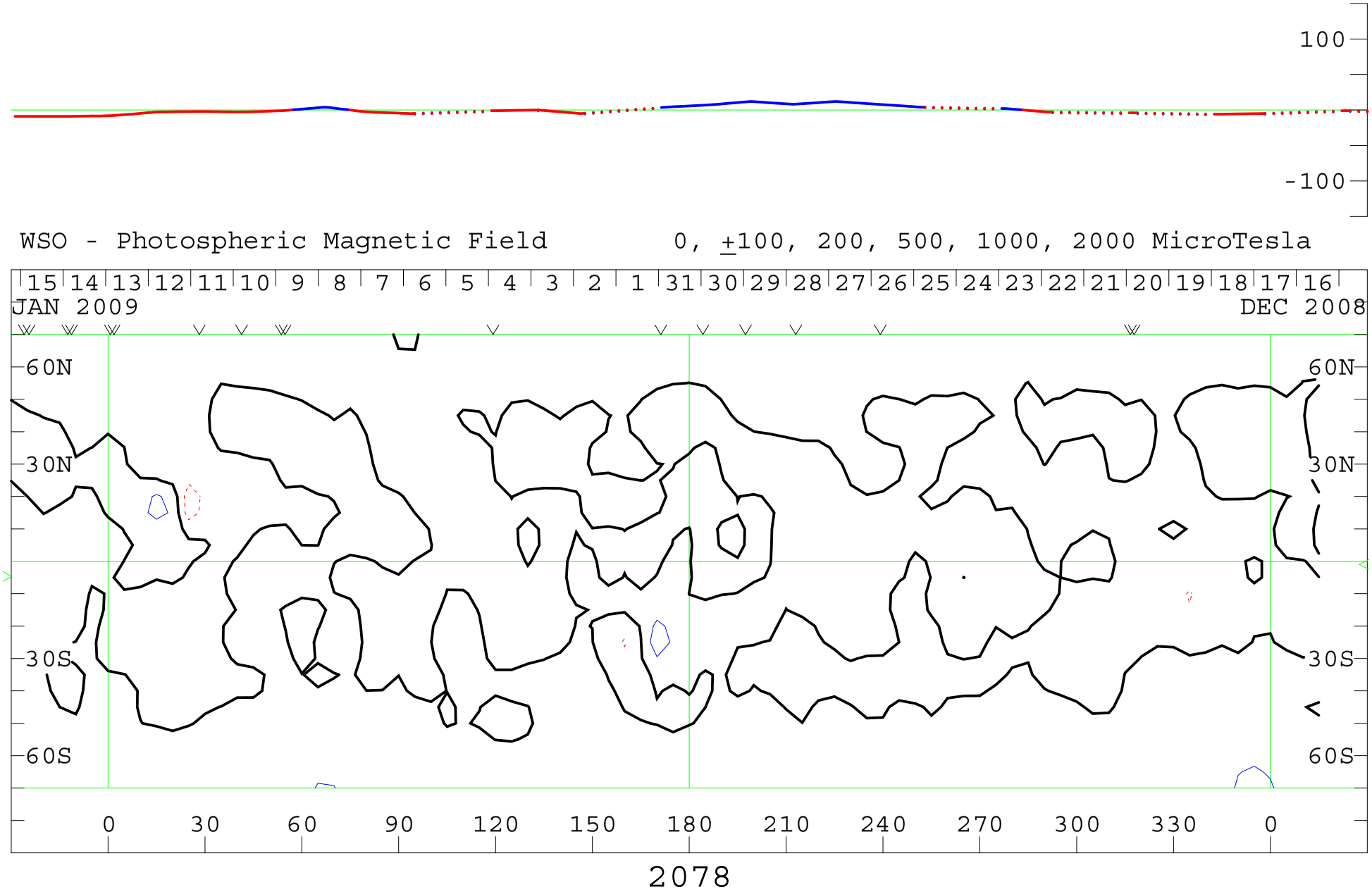
DATA FOR **DECEMBER 2008**

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 2078

(17 Dec 2008 - 13 Jan 2009)

Wilcox Solar Observatory Mean Field

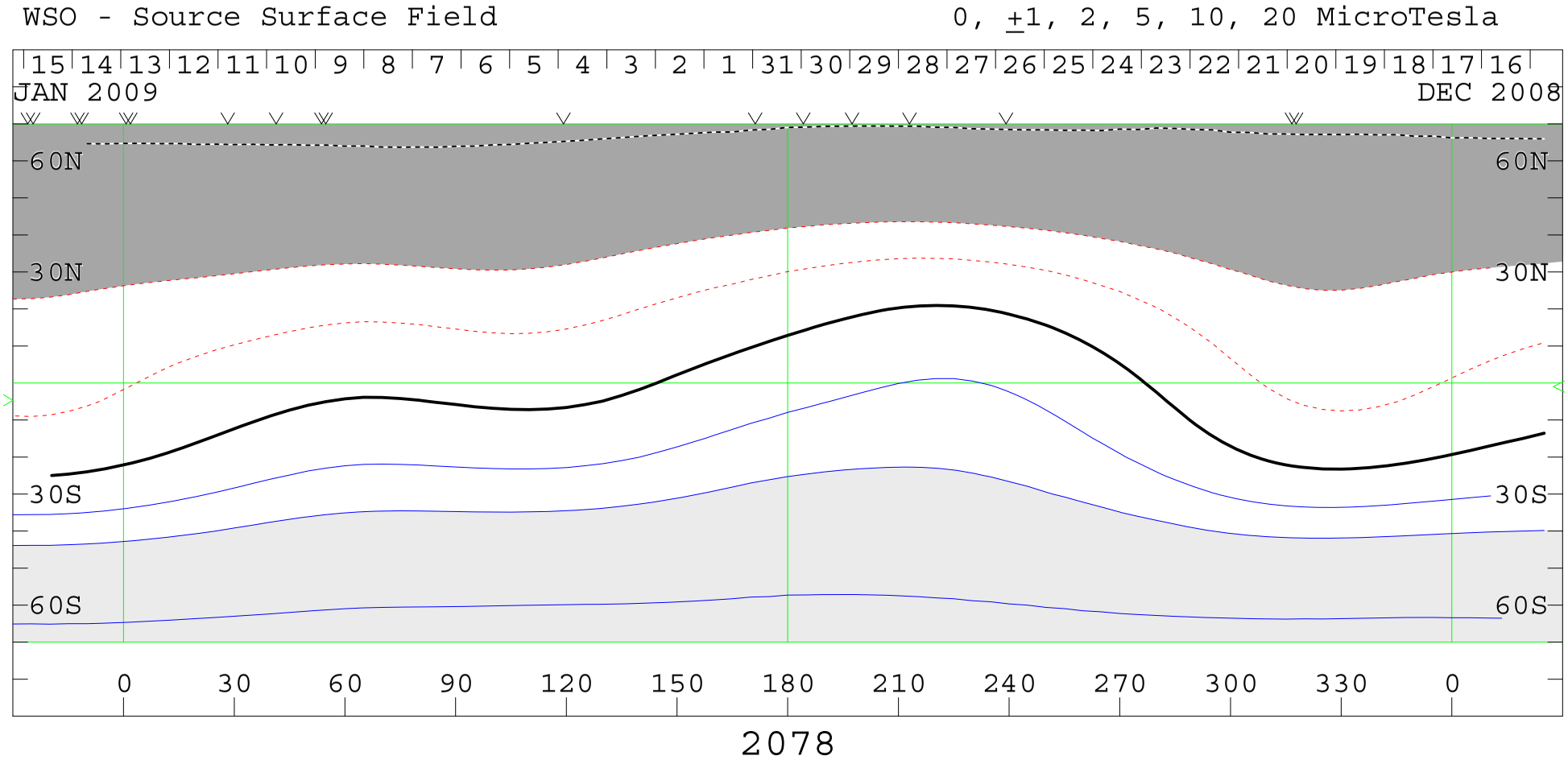


SOLAR MAGNETIC FIELD SYNOPTIC CHART

SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 2078

(17 Dec 2008 - 13 Jan 2009)

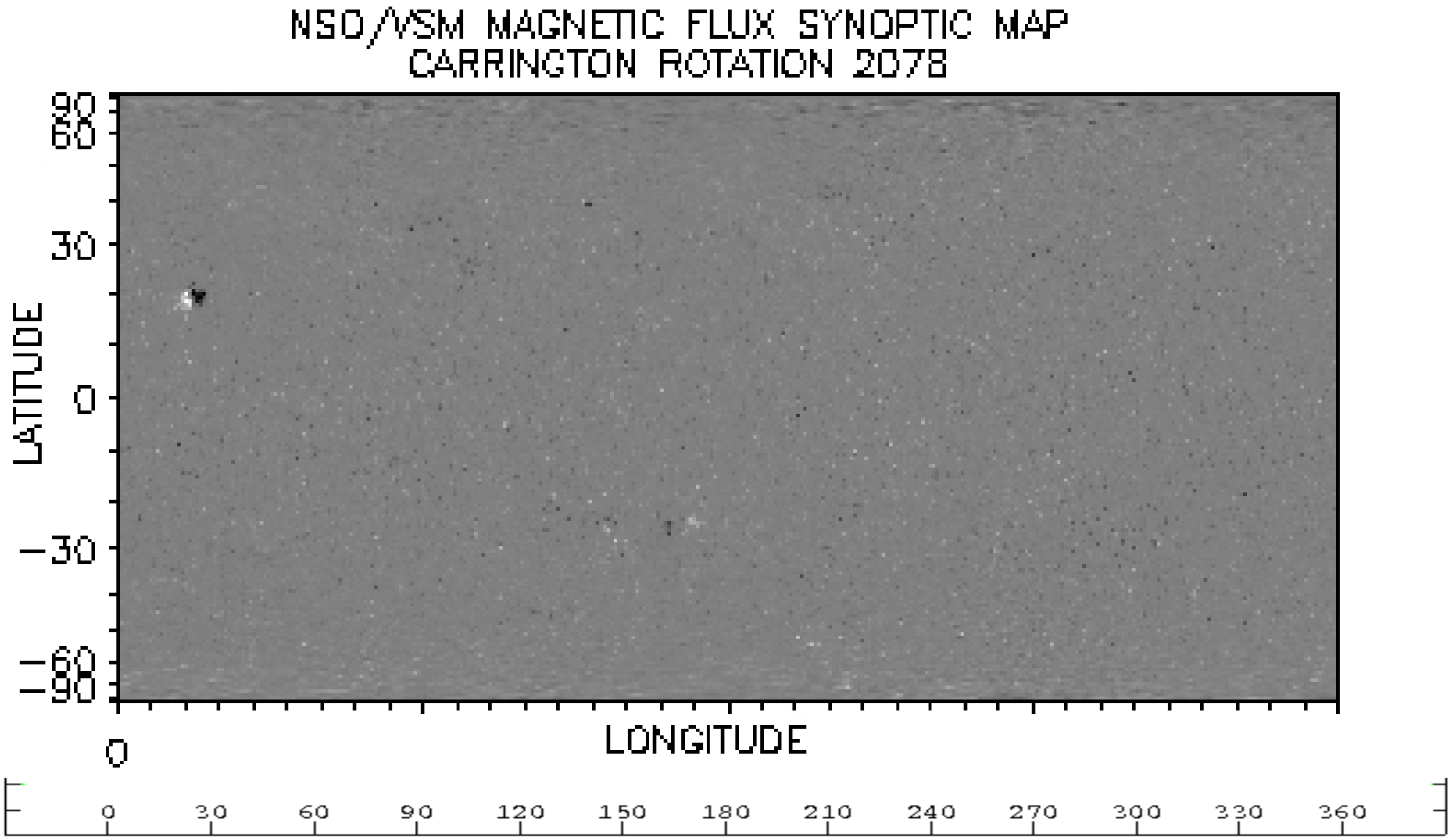


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 2078

(17 Dec 2008 to 13 Jan 2009)

National Solar Observatory/Kitt Peak

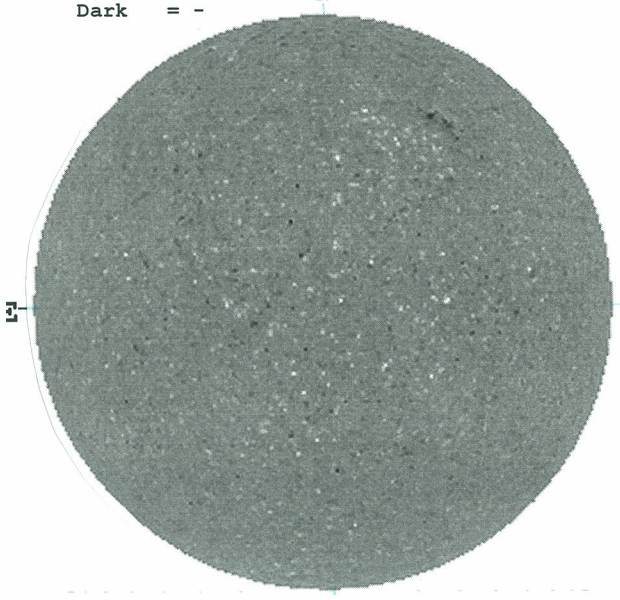


Heliographic Longitude

December 01, 2008 (P= 15.97, Bo= 0.85, Lo= 218.83)

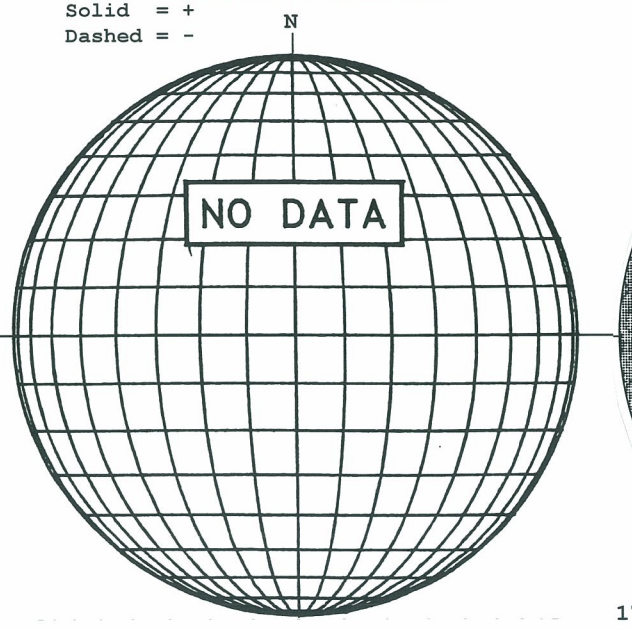
40
Dec 08

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

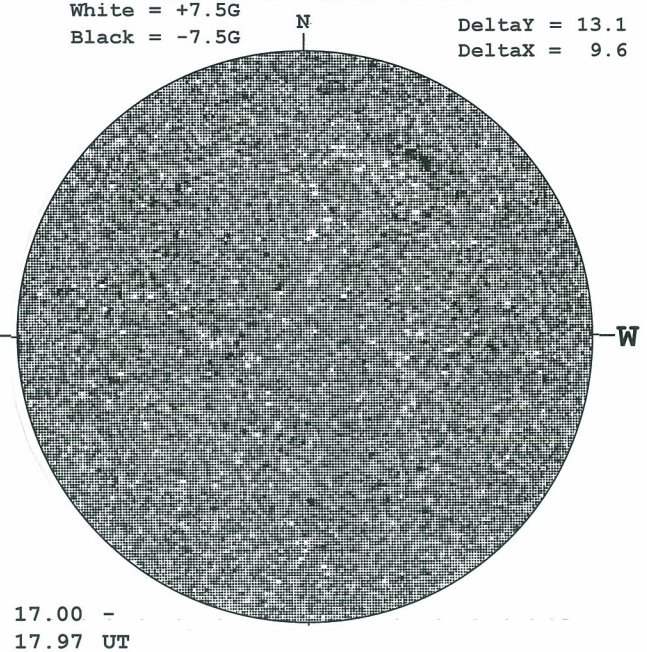


1928 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -

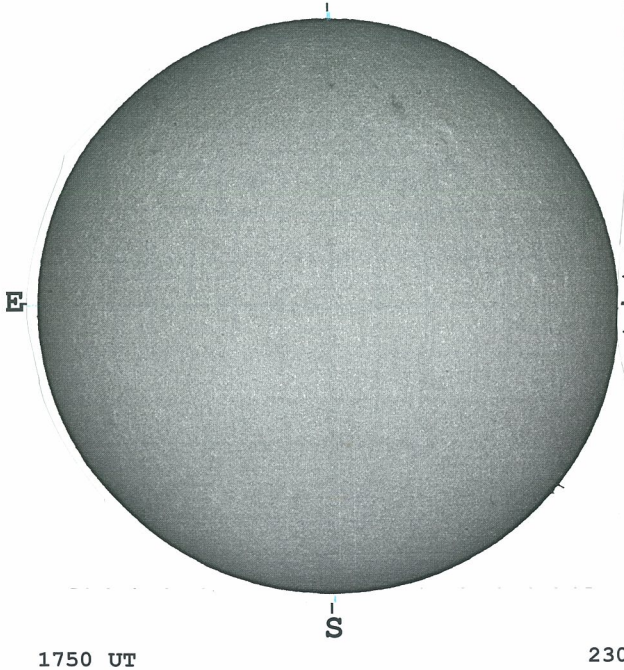


MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



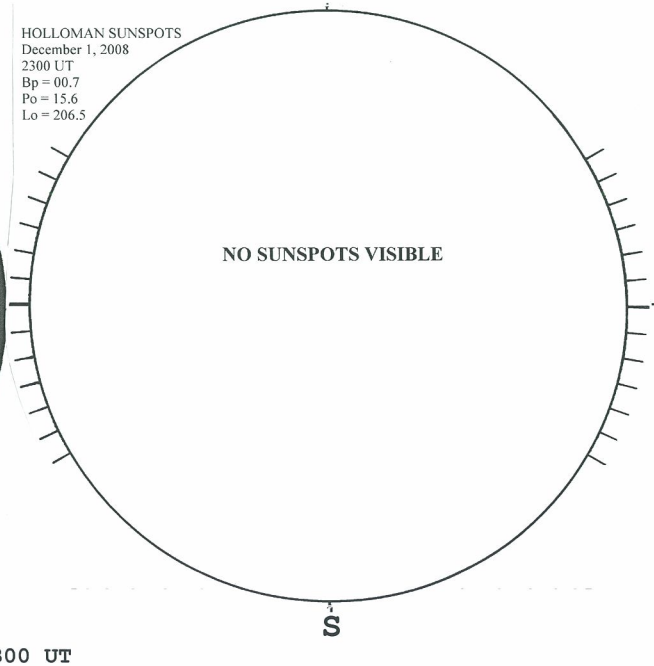
17.00 -
17.97 UT

BIG BEAR H-ALPHA



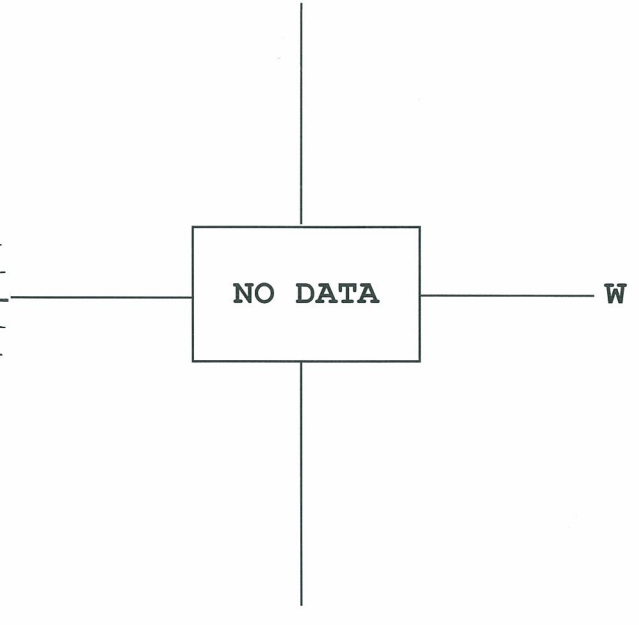
1750 UT

HOLLOMAN SUNSPOTS



2300 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

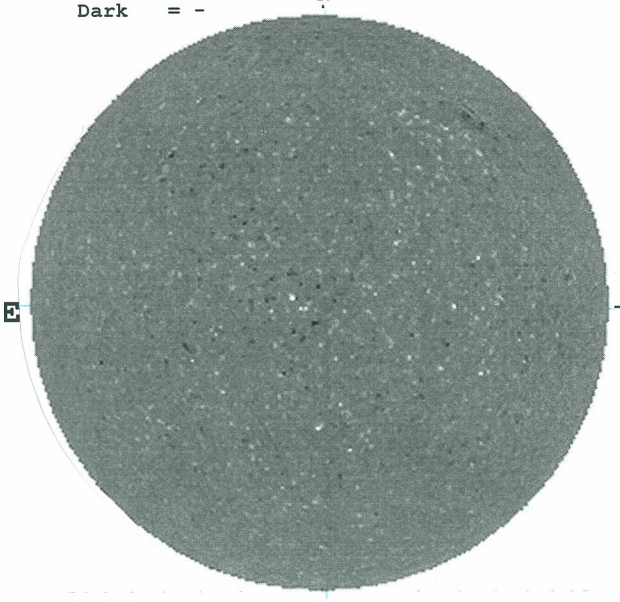


December 02, 2008 (P= 15.58, Bo= 0.72, Lo= 205.65)

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

** 854.2NM **



1848 UT

STANFORD MAGNETOGRAM

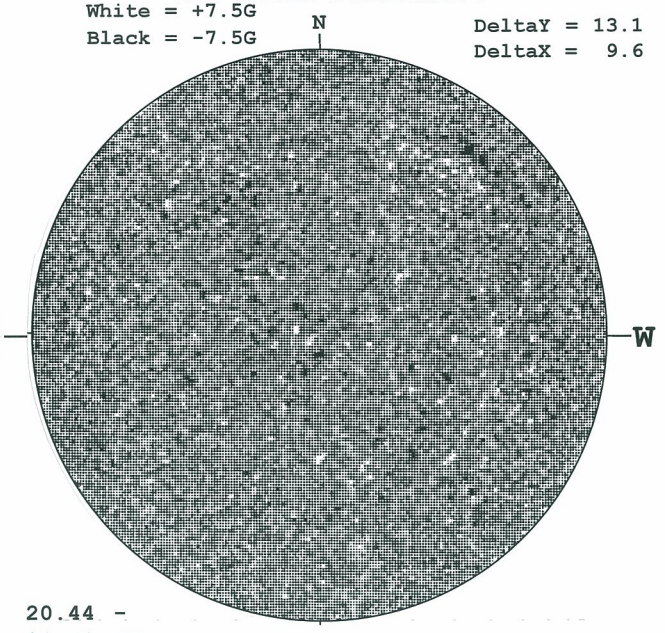
Solid = +
Dashed = -

2214 UT

MT. WILSON MAGNETOGRAM

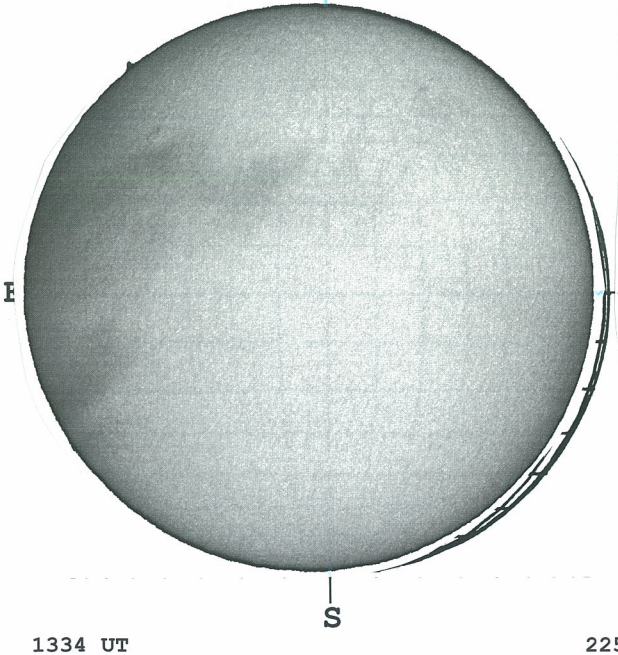
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



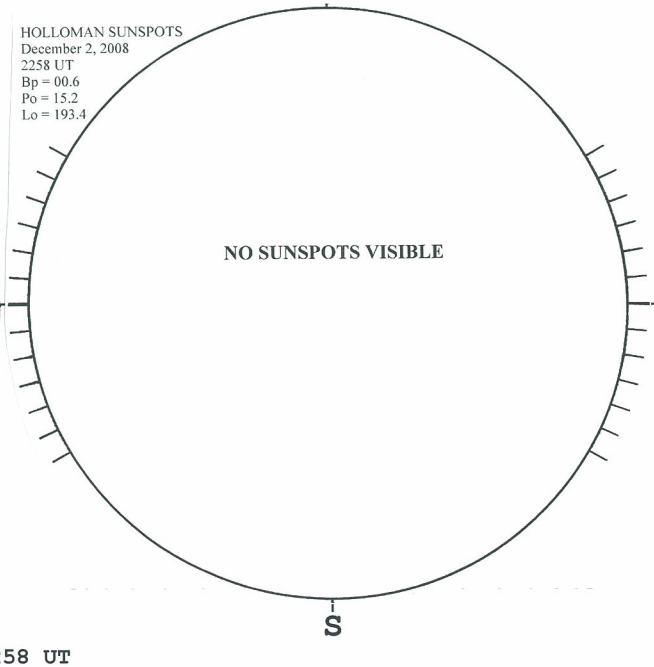
20.44 -
21.41 UT

MEUDON H-ALPHA



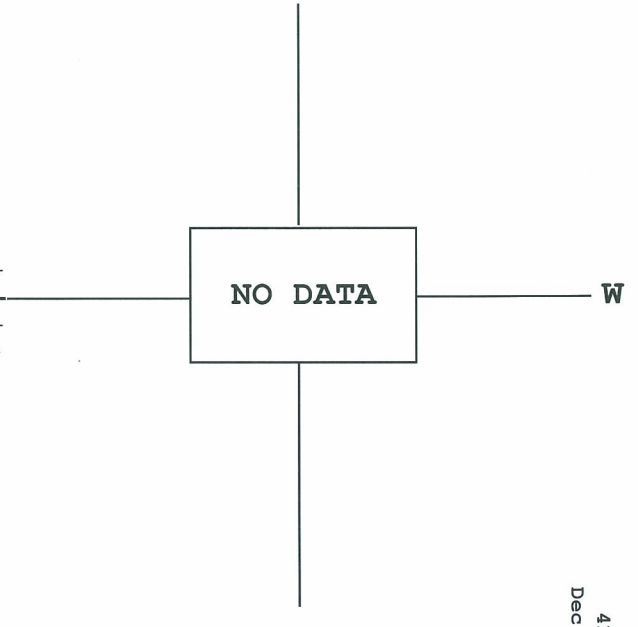
1334 UT

HOLLOMAN SUNSPOTS



2258 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

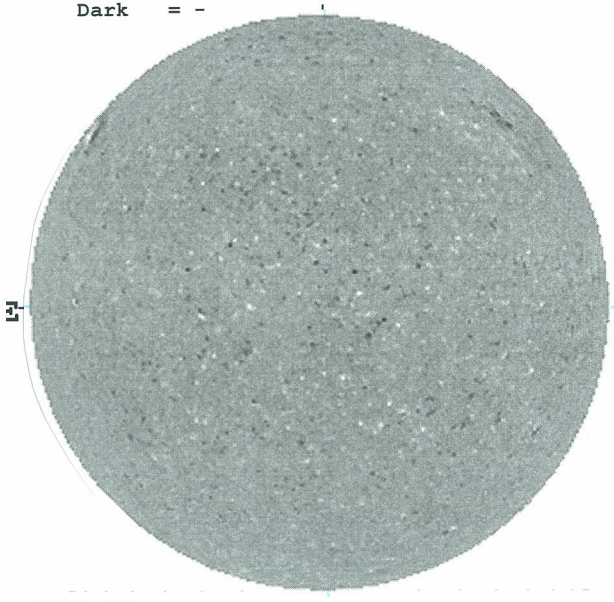


41
Dec 08

December 03, 2008 (P= 15.18, Bo= 0.59, Lo= 192.47)

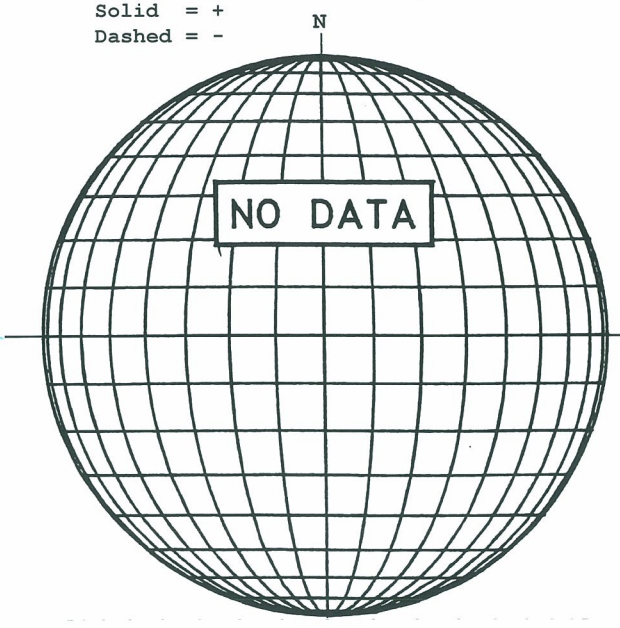
Dec 08 42

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

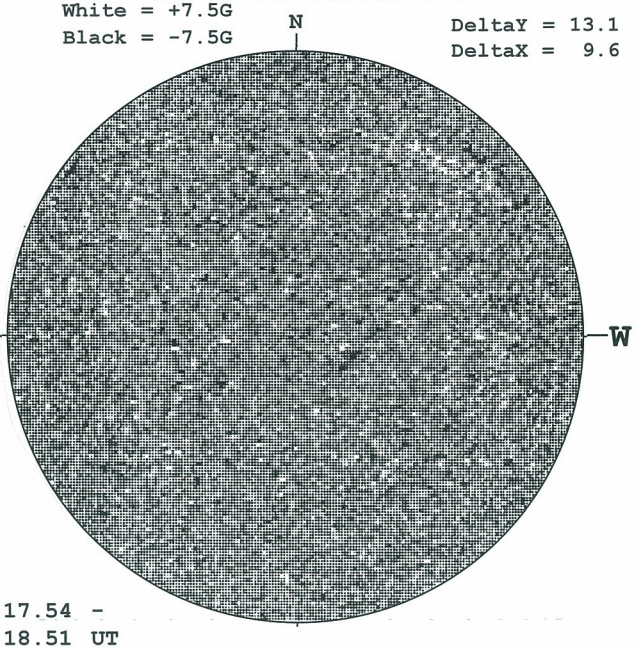


1733 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -

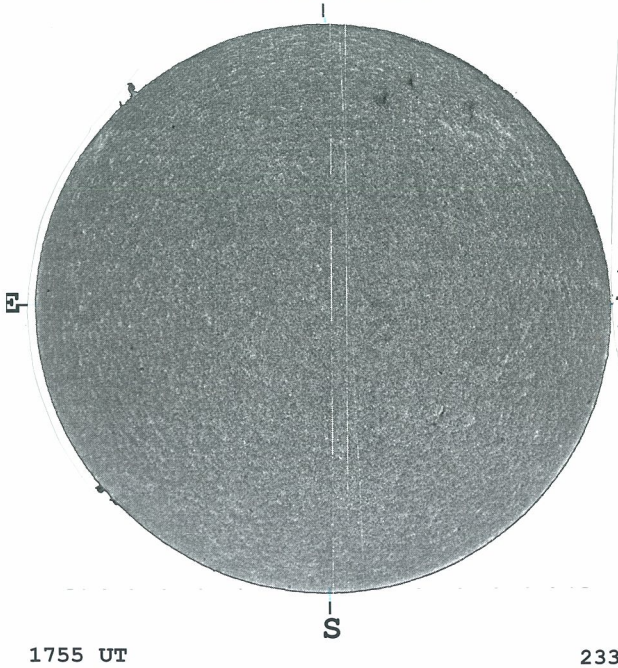


MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



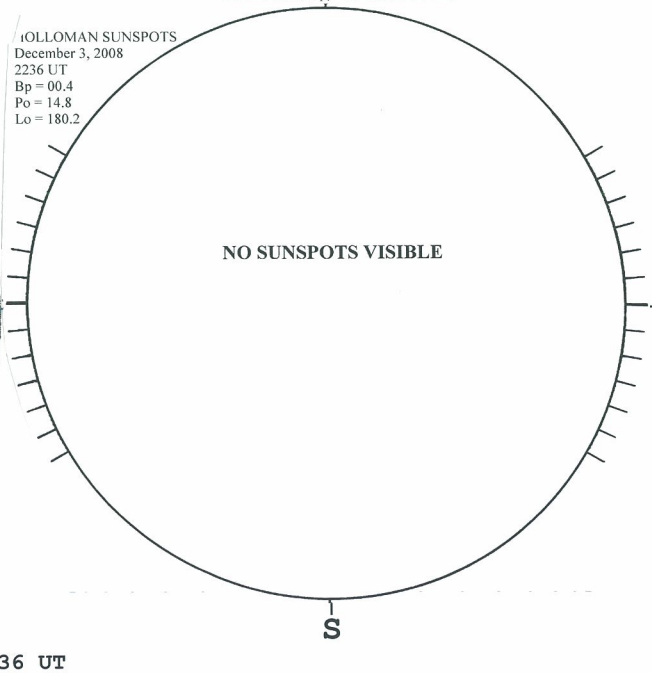
17.54 -
18.51 UT

BIG BEAR H-ALPHA



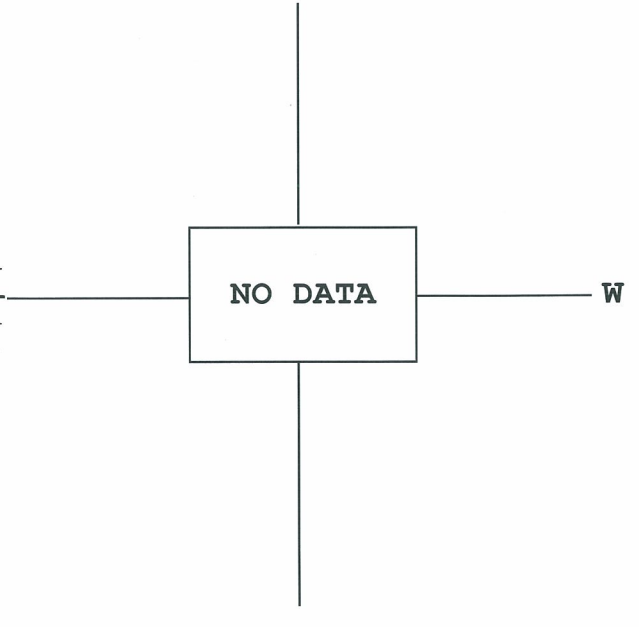
1755 UT

HOLLOMAN SUNSPOTS



2336 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

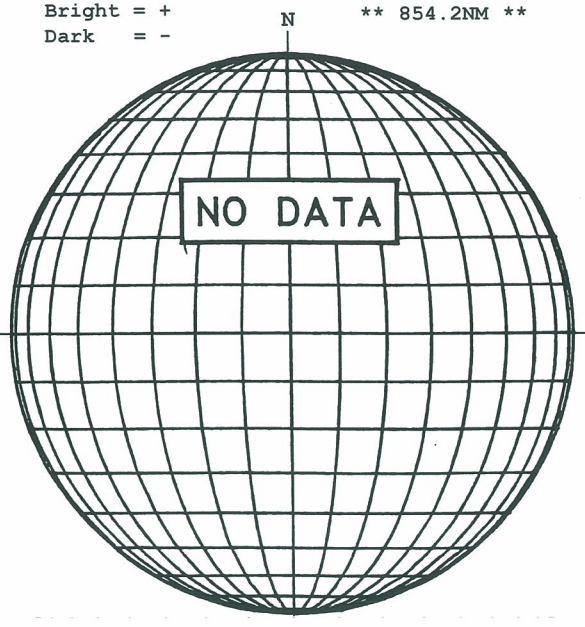


December 04, 2008 (P= 14.78, Bo= 0.46, Lo= 179.30)

KITT PEAK MAGNETOGRAM -- SOLIS

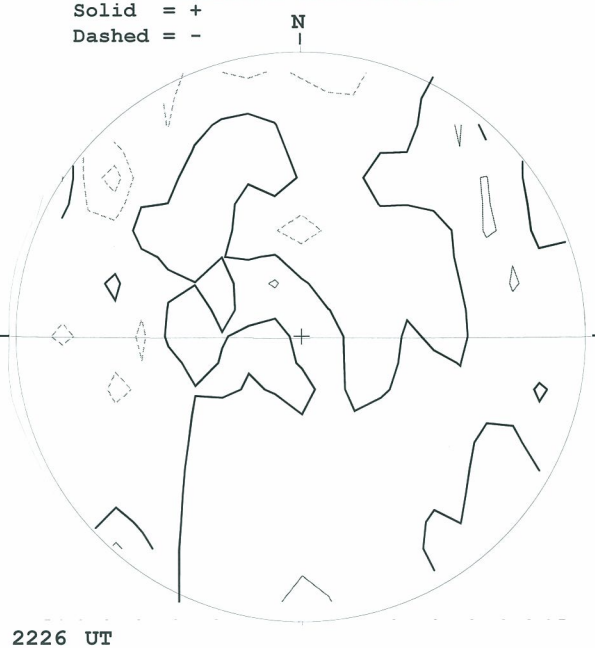
Bright = +
Dark = -

** 854.2NM **



STANFORD MAGNETOGRAM

Solid = +
Dashed = -

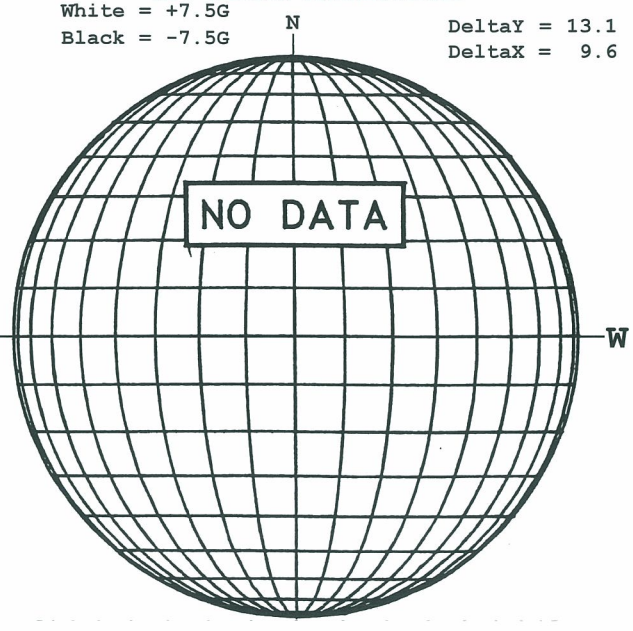


2226 UT

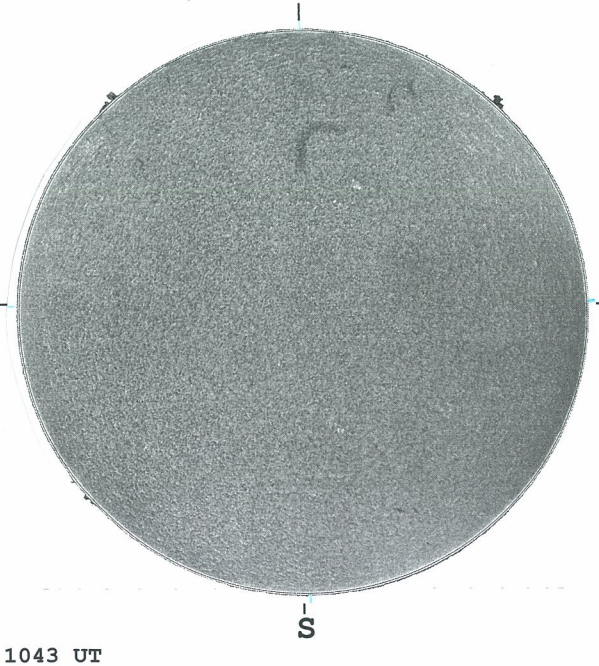
MT. WILSON MAGNETOGRAM

White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6

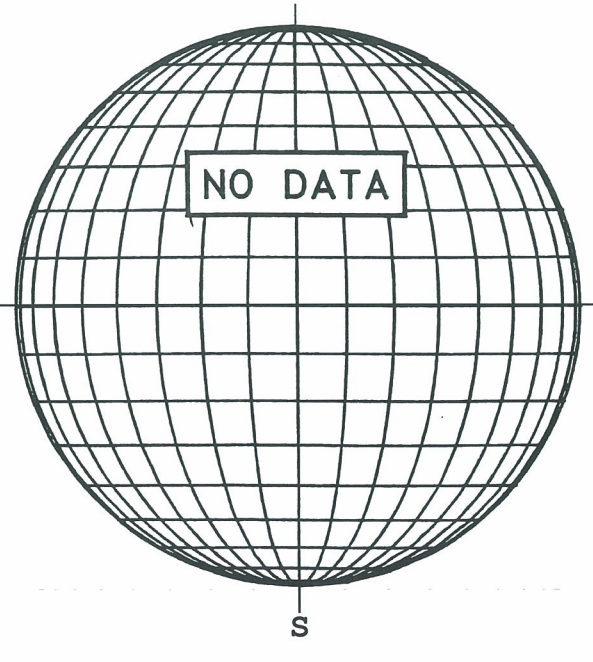


KANZELHOHE H-ALPHA

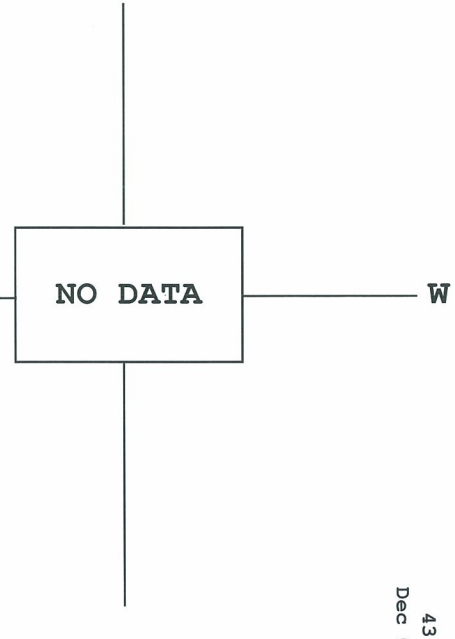


1043 UT

HOLLOMAN SUNSPOTS



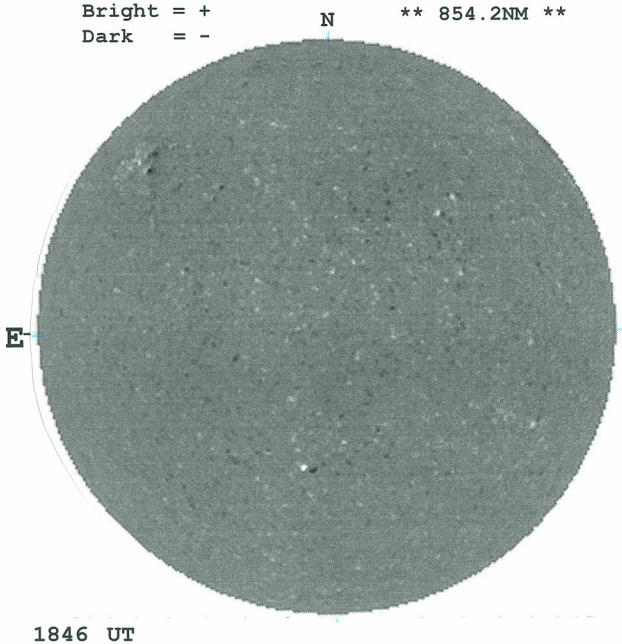
SACRAMENTO PEAK CORONA (1.15 Radii)



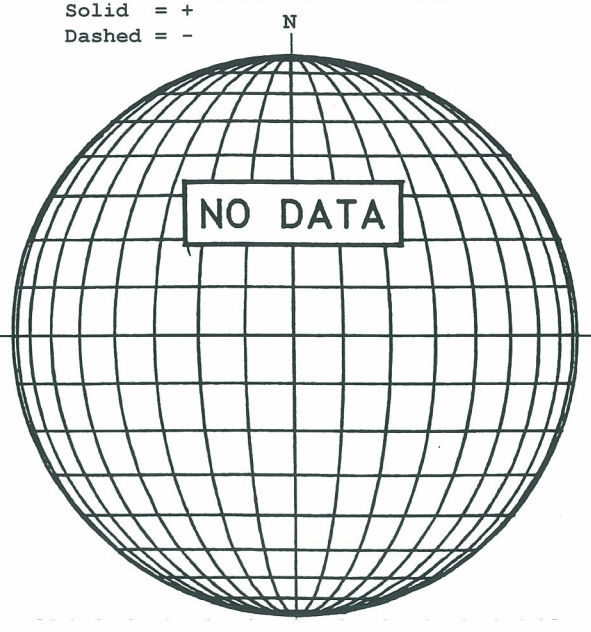
December 05, 2008 (P= 14.38, Bo= 0.34, Lo= 166.12)

Dec 08 44

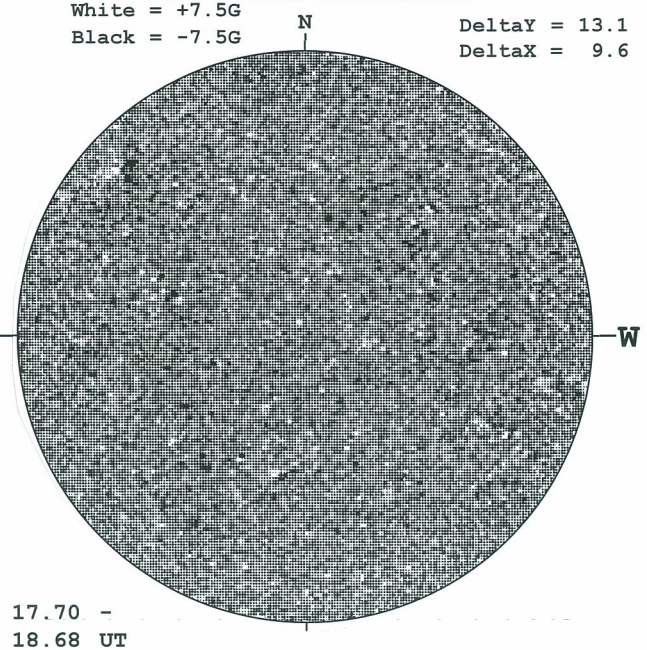
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



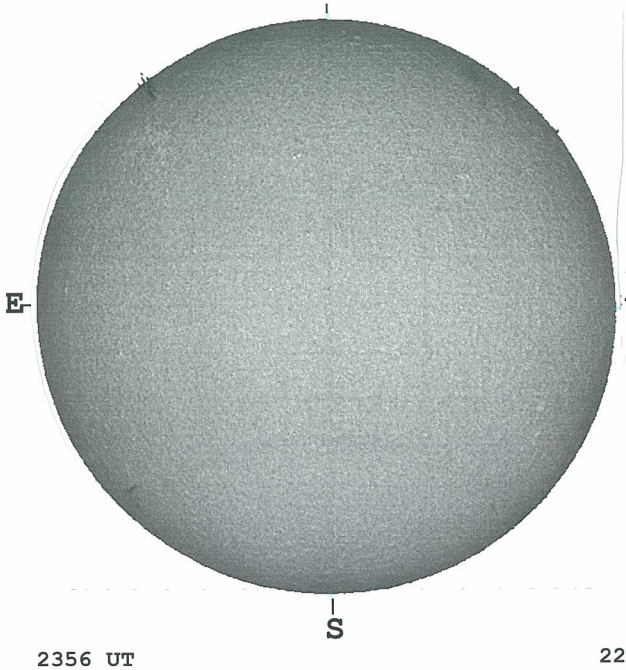
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



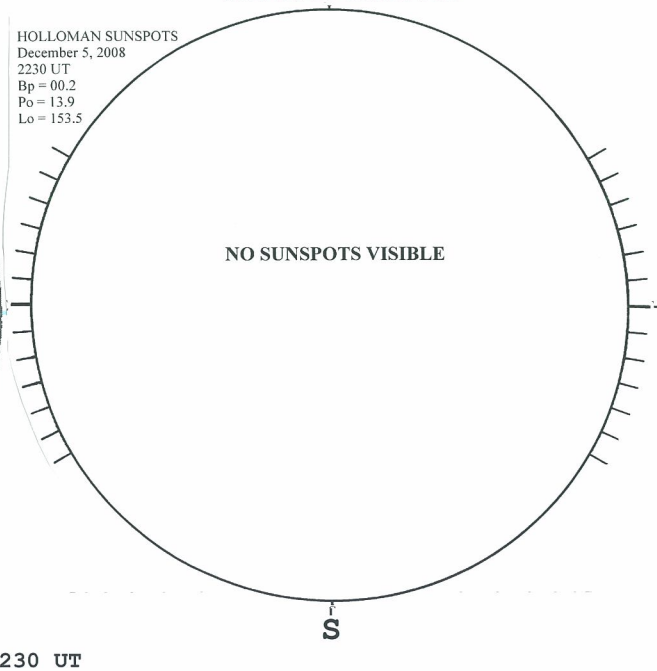
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



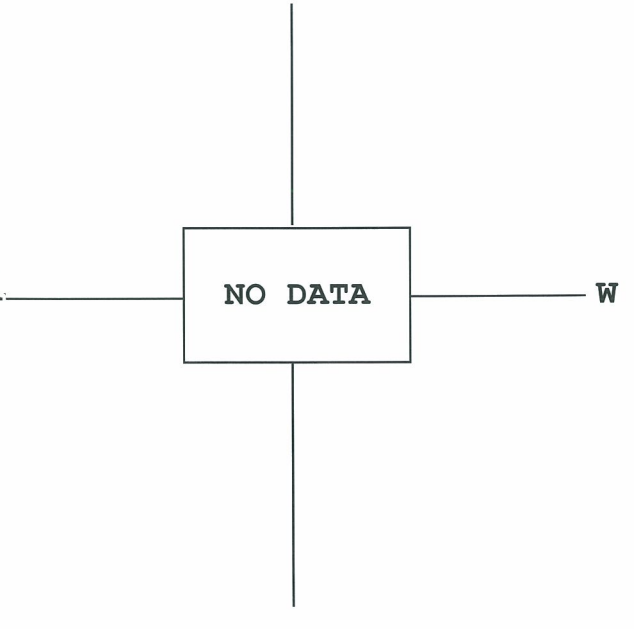
MONA LOA H-ALPHA



HOLLOMAN SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

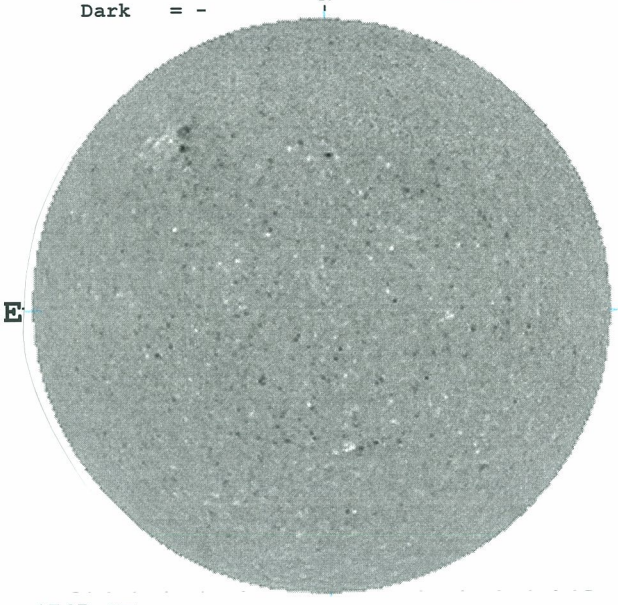


December 06, 2008 (P= 13.97, Bo= 0.21, Lo= 152.94)

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

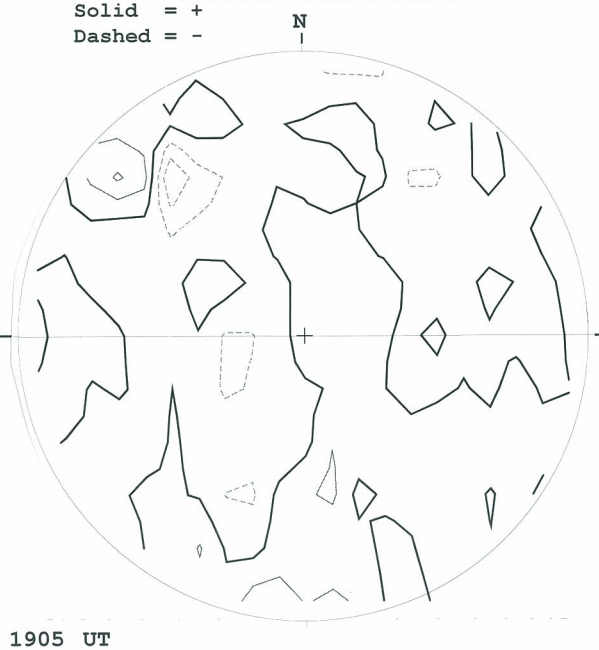
** 854.2NM **



1745 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

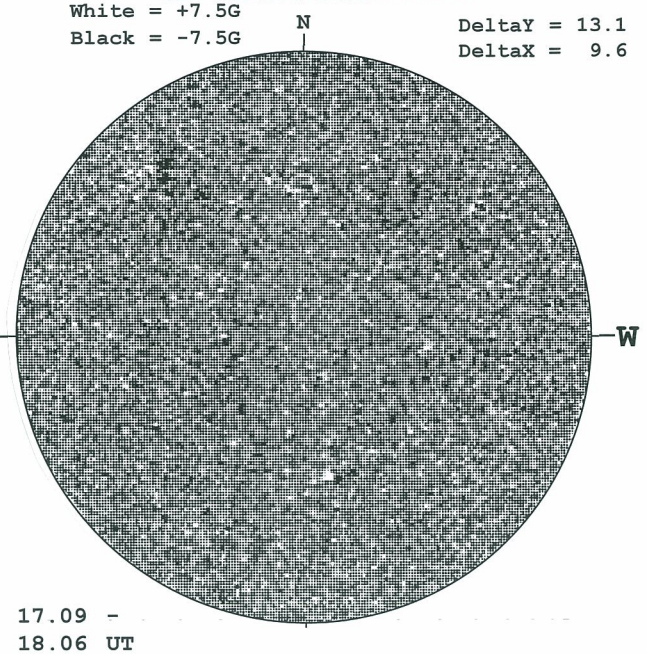


1905 UT

MT. WILSON MAGNETOGRAM

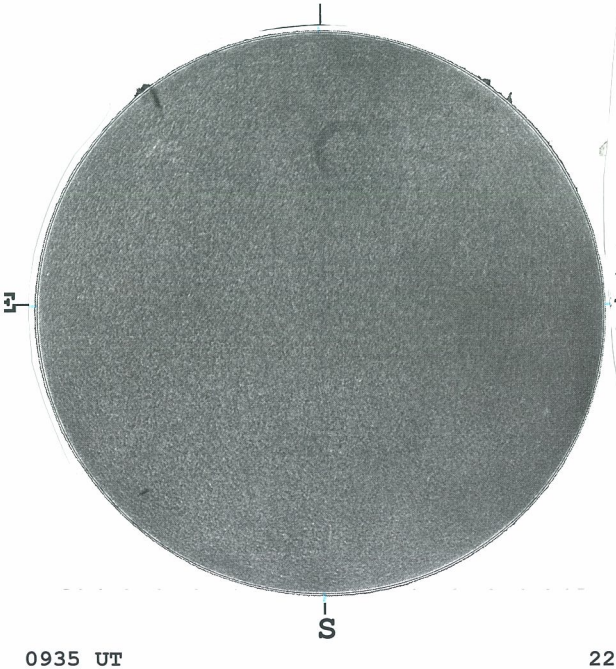
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



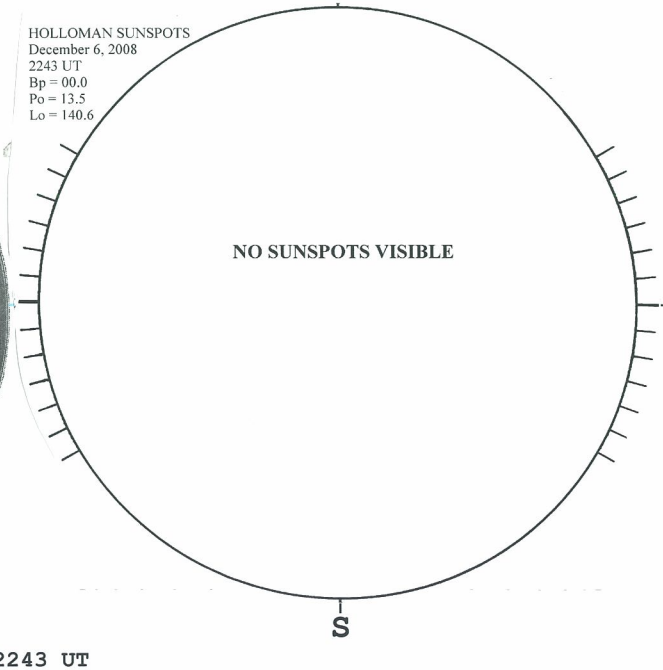
17.09 -
18.06 UT

KANZELHOHE H-ALPHA



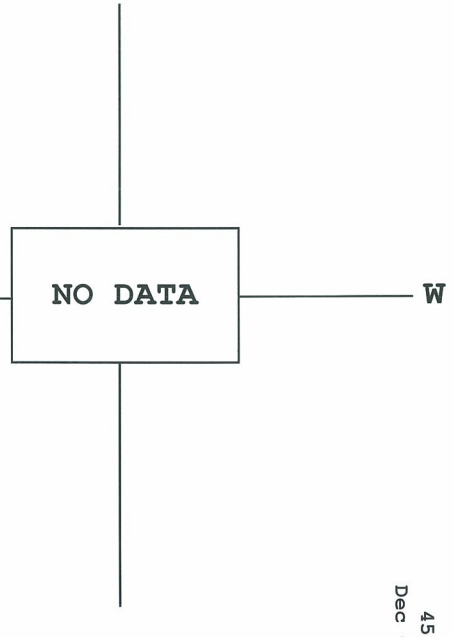
0935 UT

HOLLOMAN SUNSPOTS



2243 UT

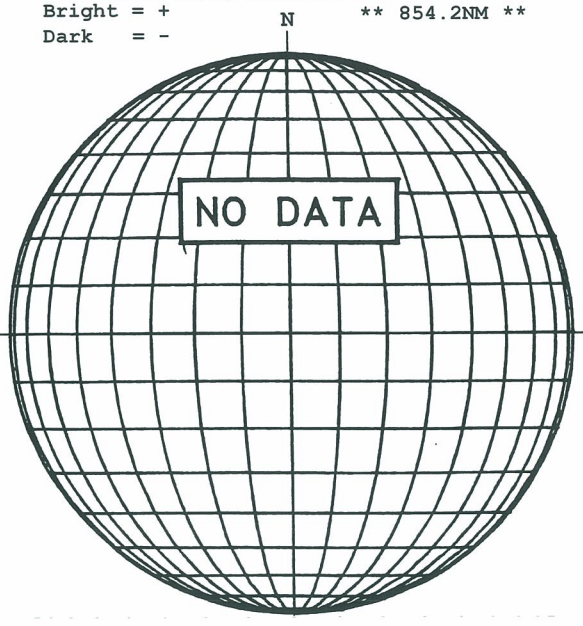
SACRAMENTO PEAK CORONA (1.15 Radii)



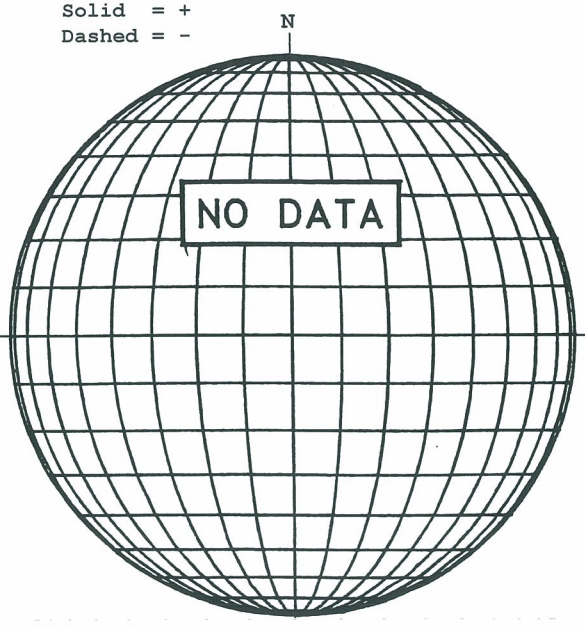
45
Dec 08

December 07, 2008 (P= 13.55, Bo= 0.08, Lo= 139.76)

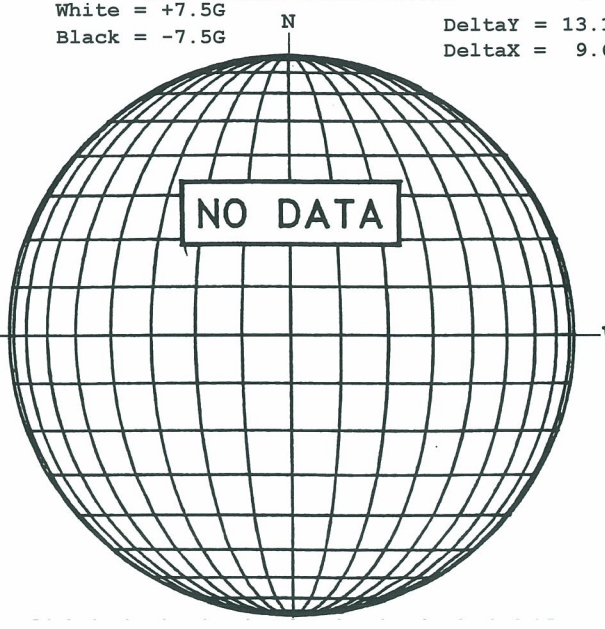
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



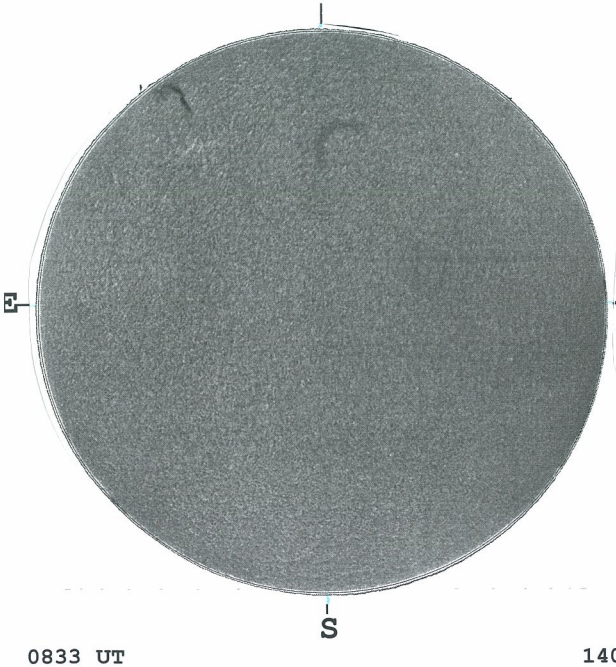
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



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

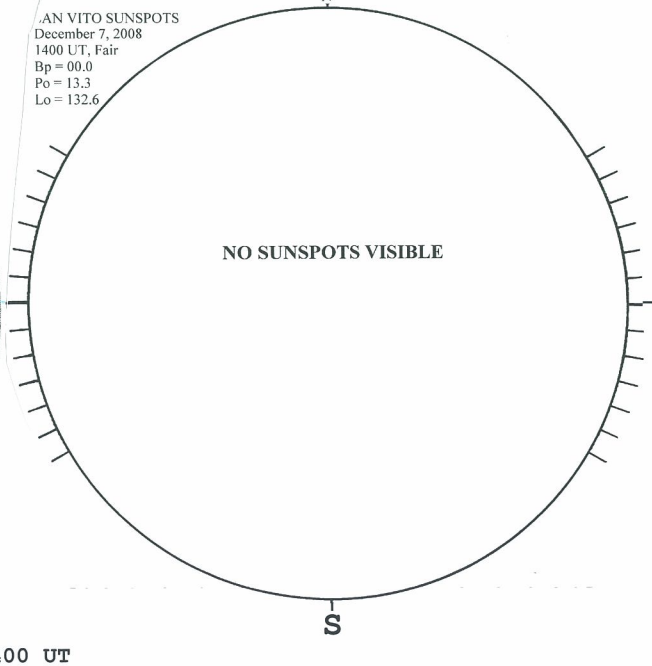


KANZELHOHE H-ALPHA



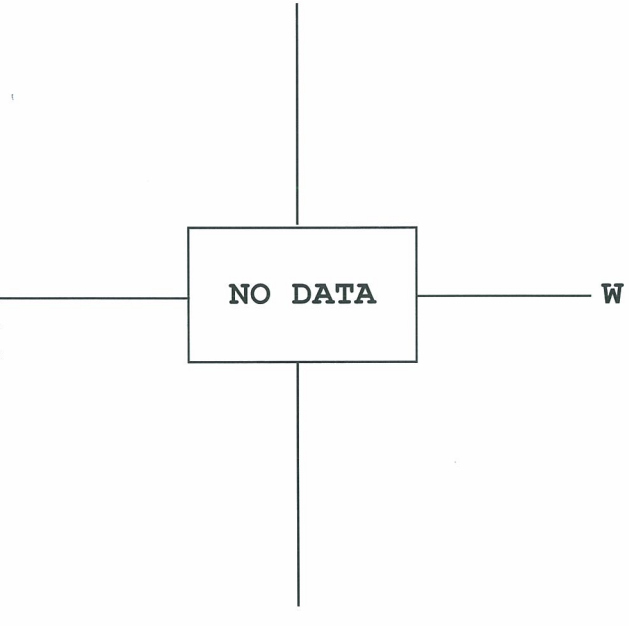
0833 UT

SAN VITO SUNSPOTS



1400 UT

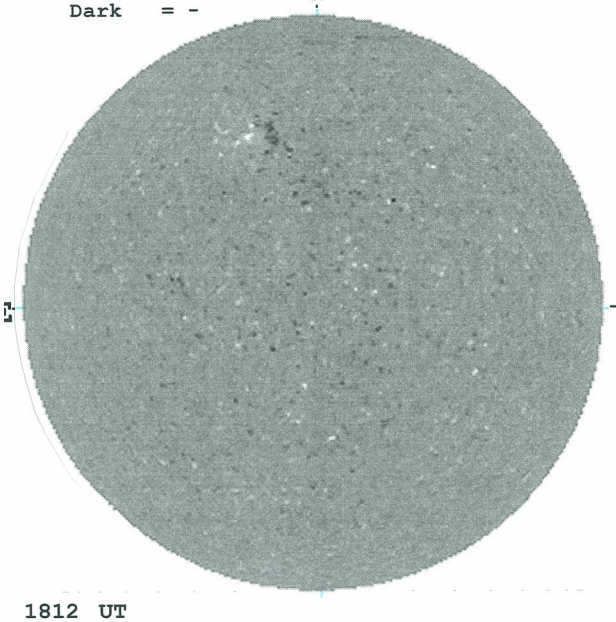
SACRAMENTO PEAK CORONA (1.15 Radii)



December 08, 2008 (P= 13.13, Bo=-0.05, Lo= 126.59)

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

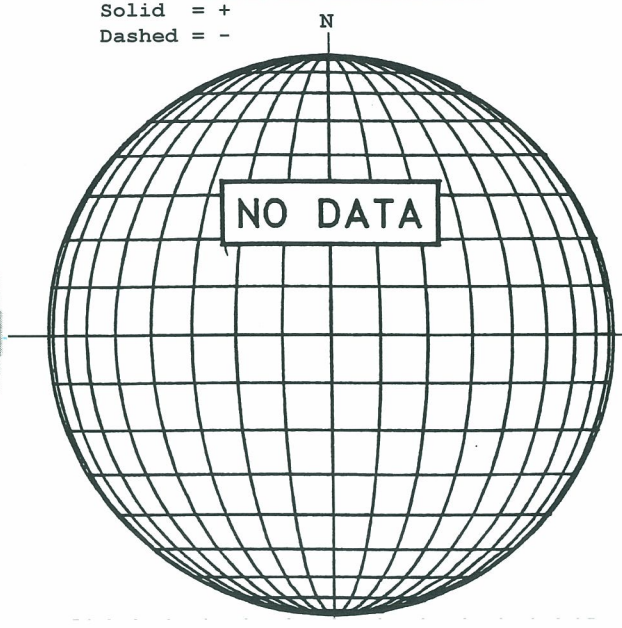


** 854.2NM **

1812 UT

STANFORD MAGNETOGRAM

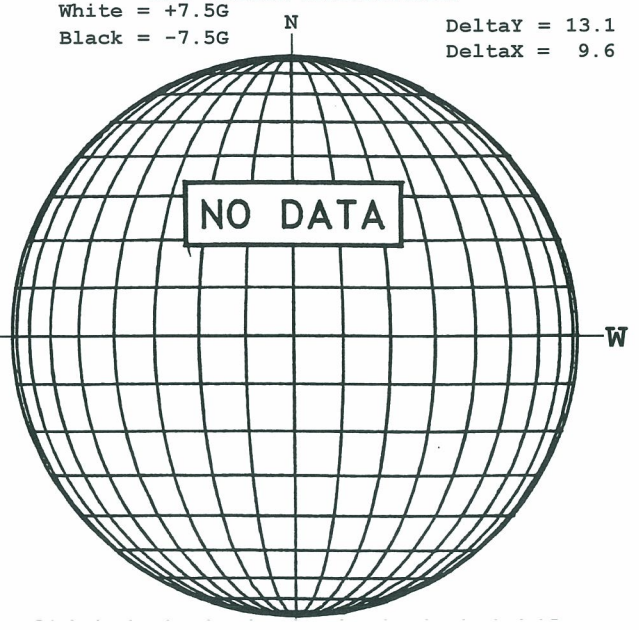
Solid = +
Dashed = -



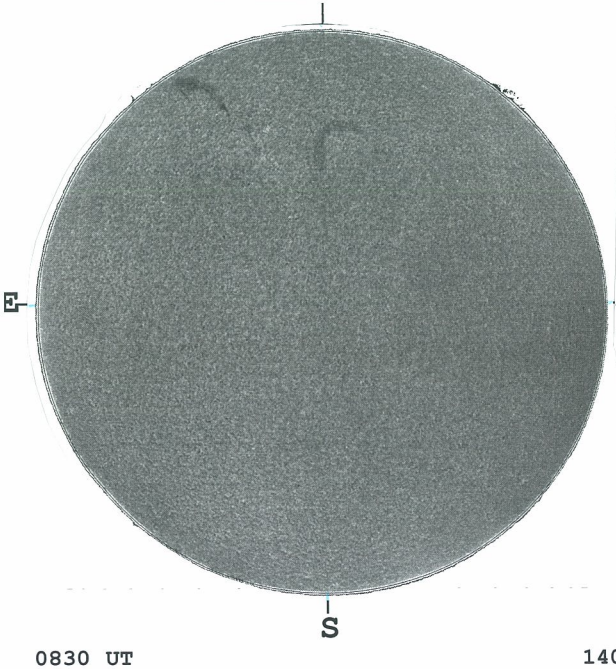
MT. WILSON MAGNETOGRAM

White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6

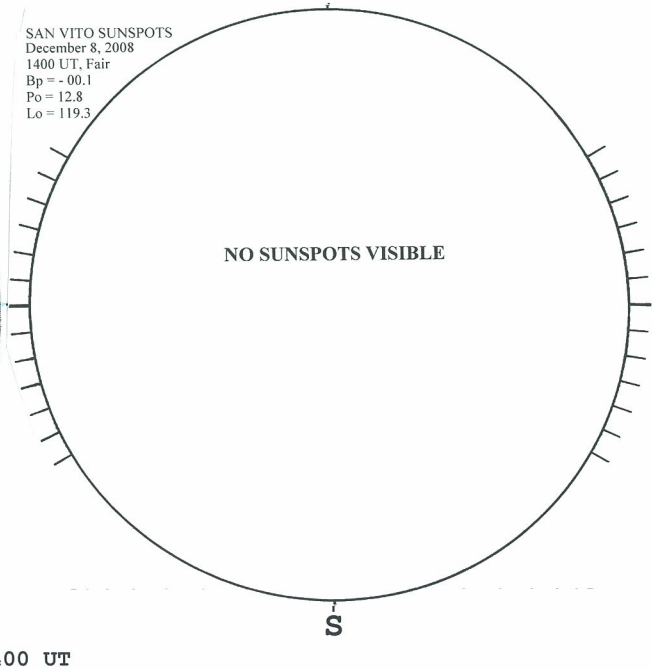


KANZELHOHE H-ALPHA



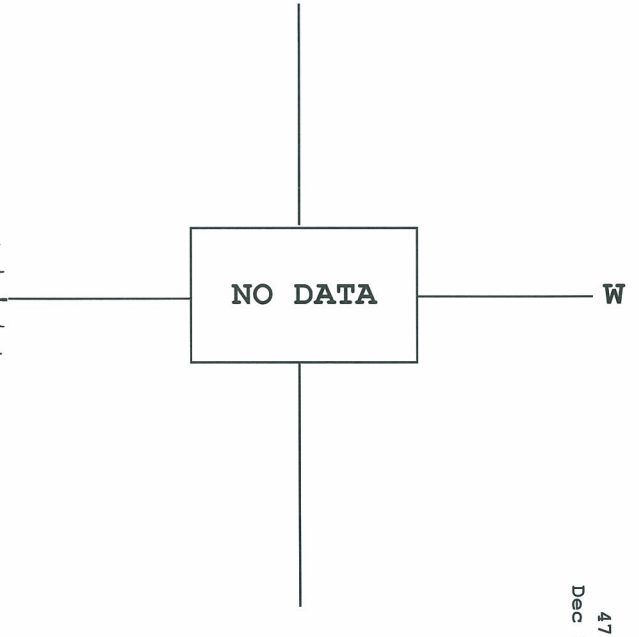
0830 UT

SAN VITO SUNSPOTS



1400 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



47
Dec 08

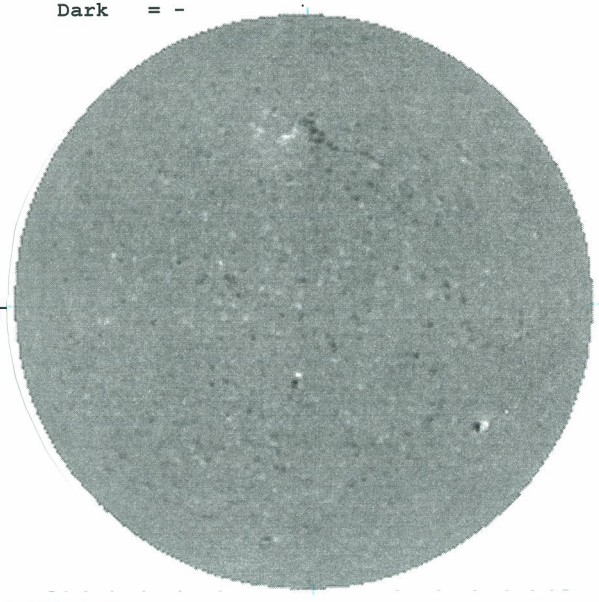
December 09, 2008 (P= 12.70, Bo=-0.18, Lo= 113.41)

Dec 08 48

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

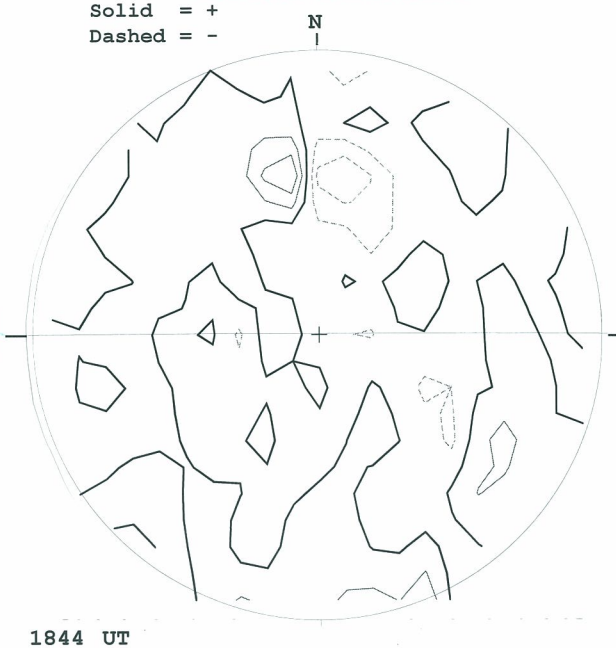
** 854.2NM **



1909 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

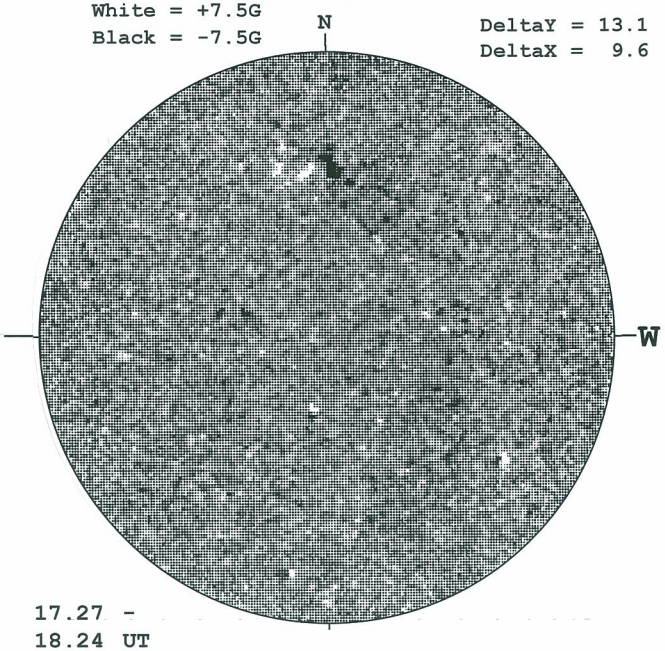


1844 UT

MT. WILSON MAGNETOGRAM

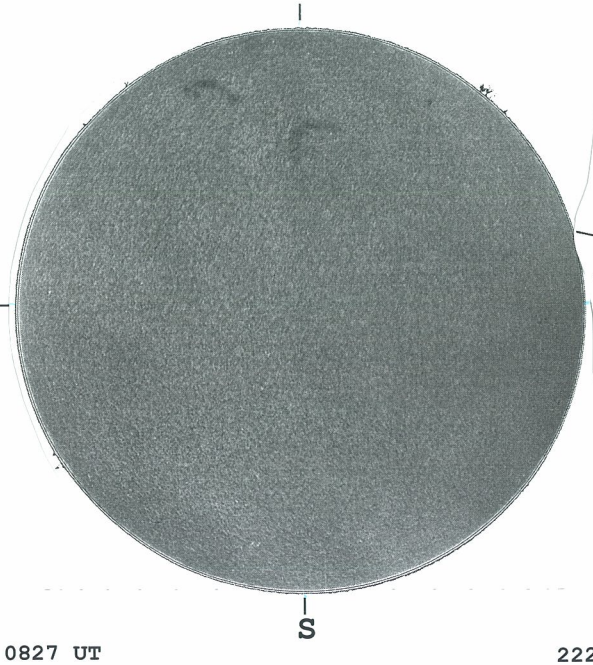
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



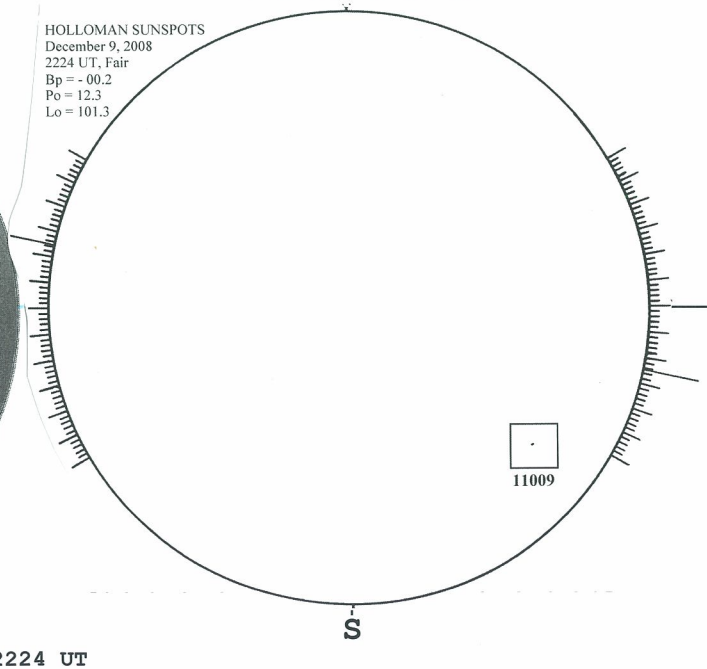
17.27 -
18.24 UT

KANZELHOHE H-ALPHA



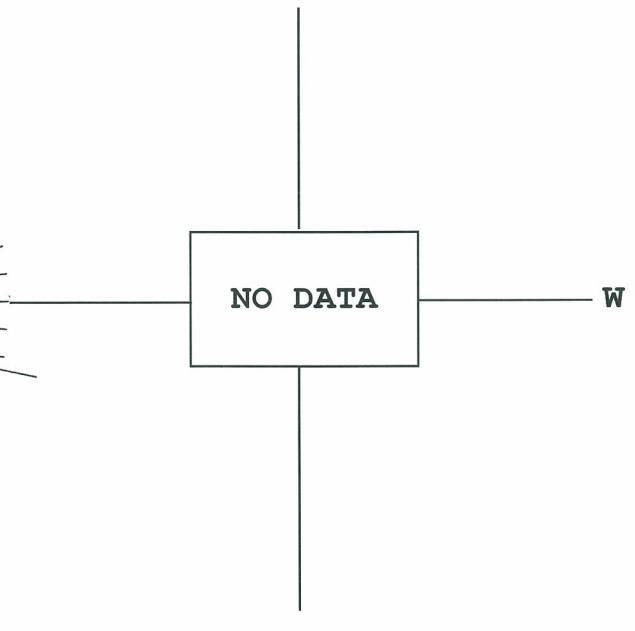
0827 UT

HOLLOMAN SUNSPOTS



2224 UT

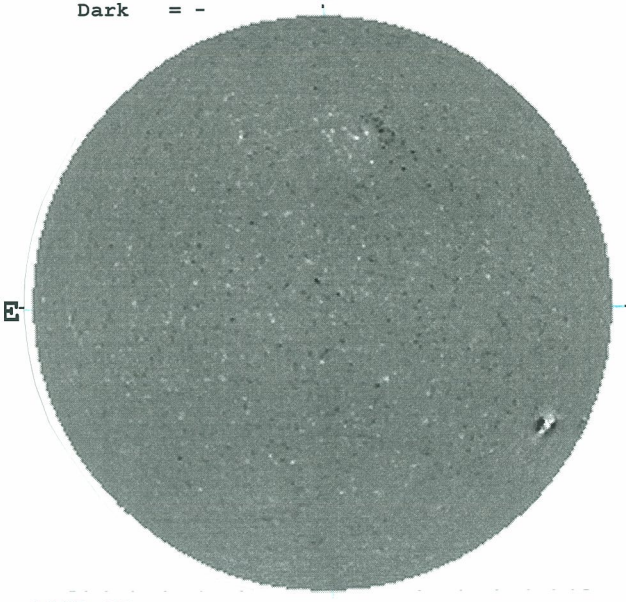
SACRAMENTO PEAK CORONA (1.15 Radii)



December 10, 2008 (P= 12.27, Bo=-0.31, Lo= 100.23)

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -



1928 UT

STANFORD MAGNETOGRAM

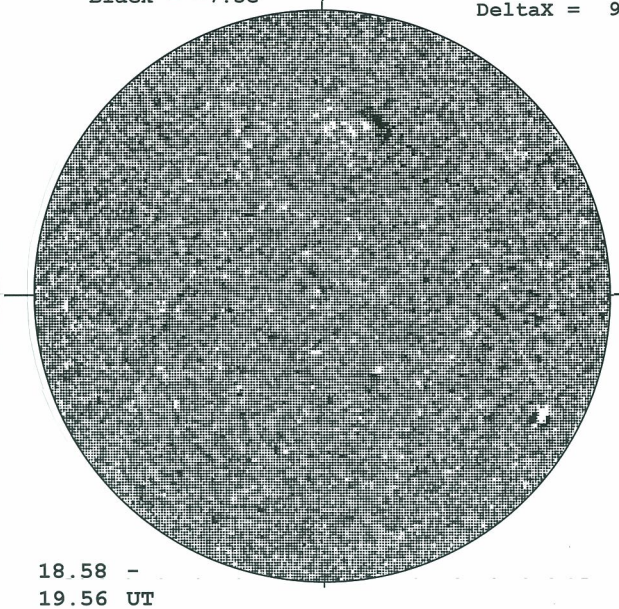
Solid = +
Dashed = -

2145 UT

MT. WILSON MAGNETOGRAM

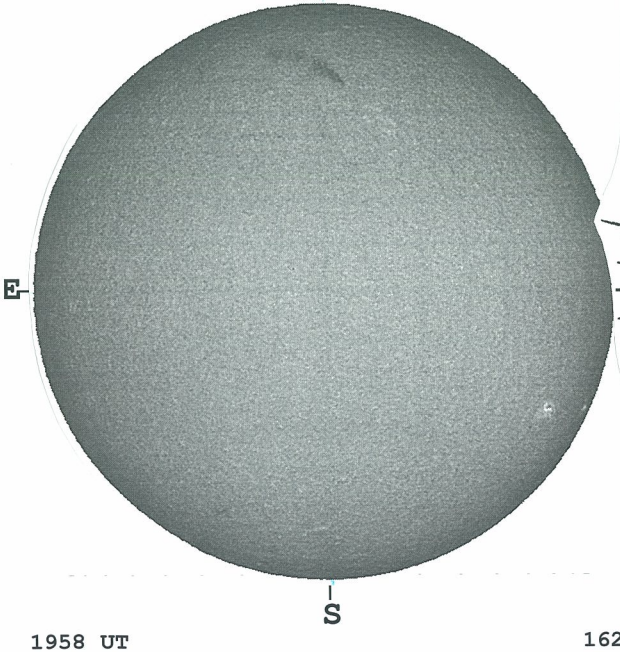
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



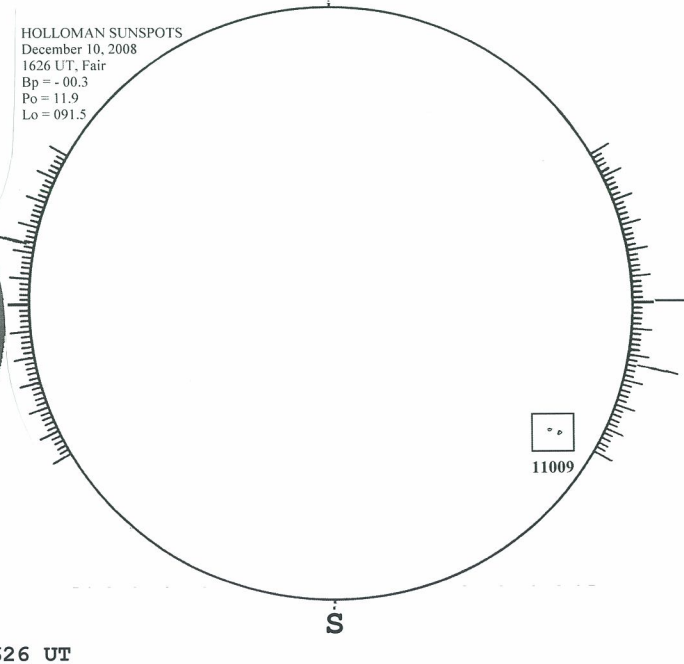
18.58 -
19.56 UT

MONA LOA H-ALPHA



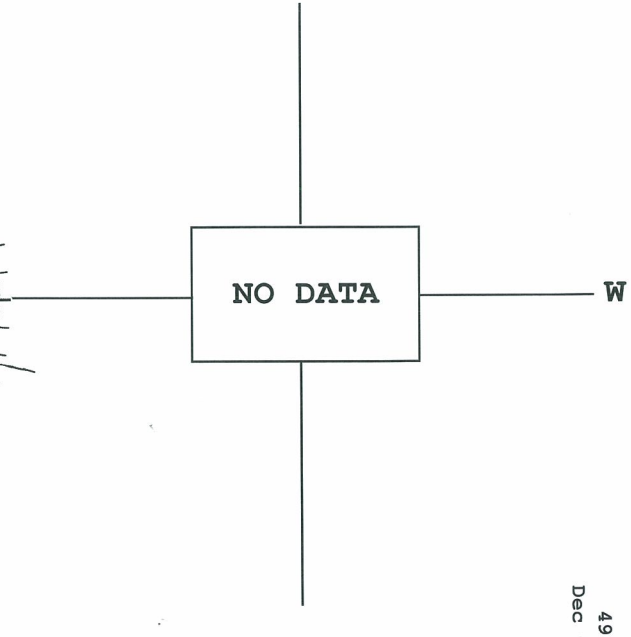
1958 UT

HOLLOMAN SUNSPOTS



1626 UT

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

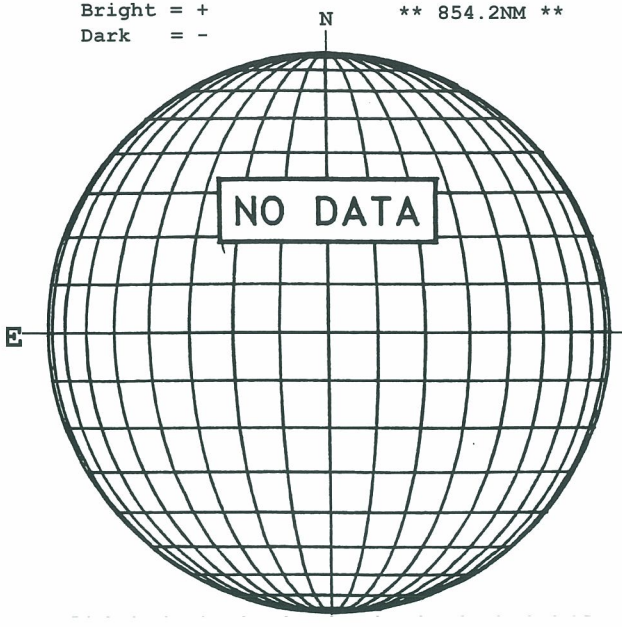


49
Dec 08

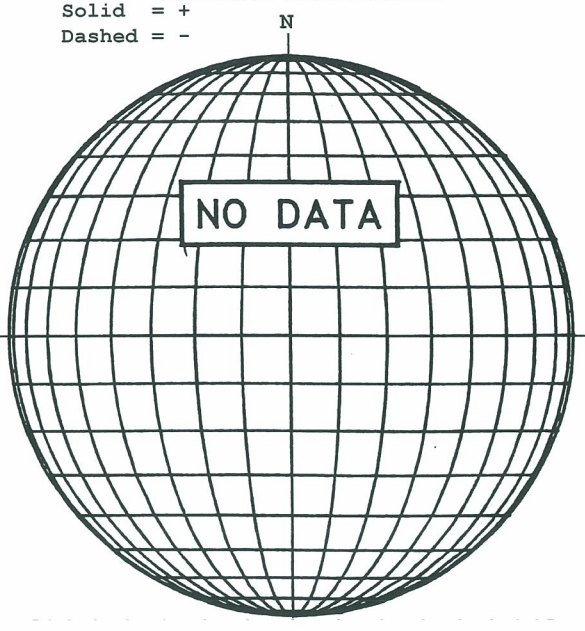
December 11, 2008 (P= 11.83, Bo=-0.43, Lo= 87.06)

Dec 08 50

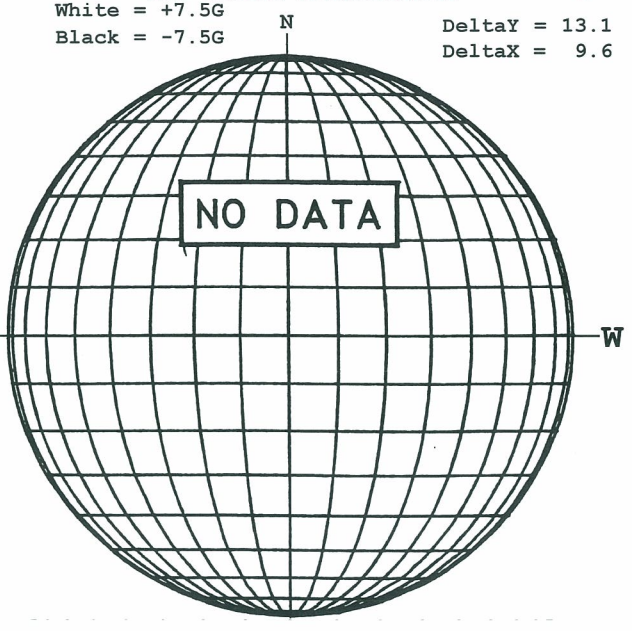
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



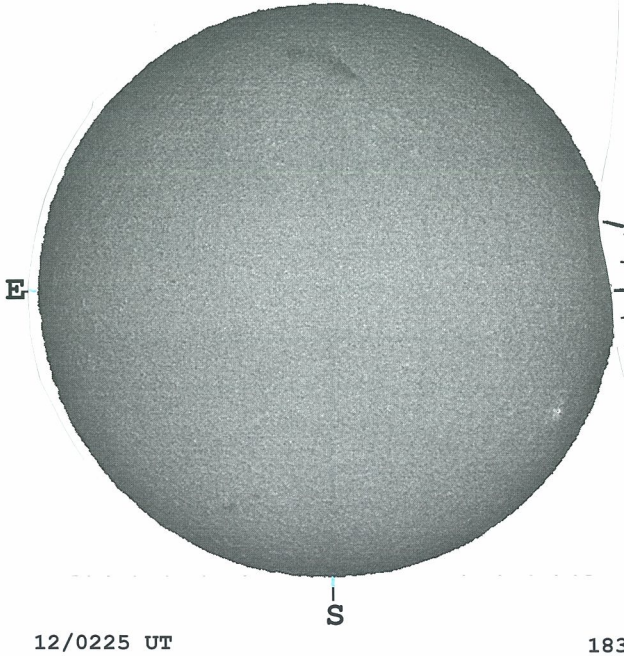
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



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

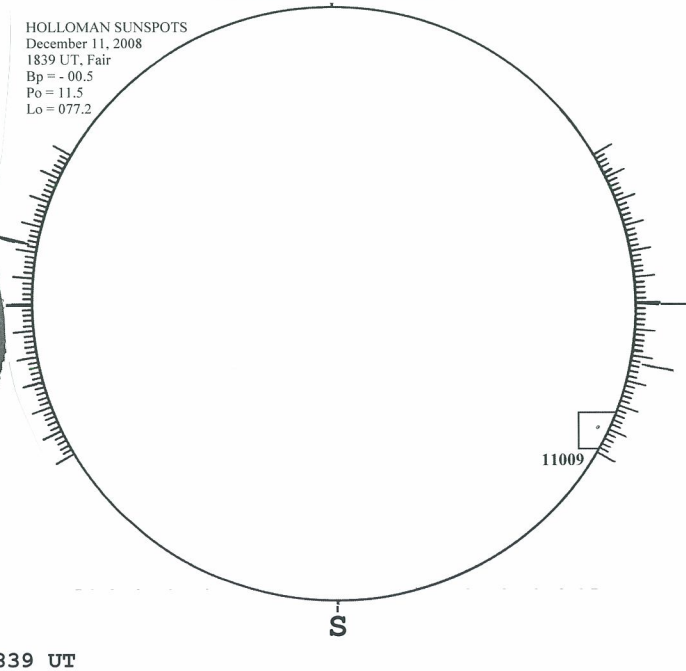


--- MONA LOA H-ALPHA



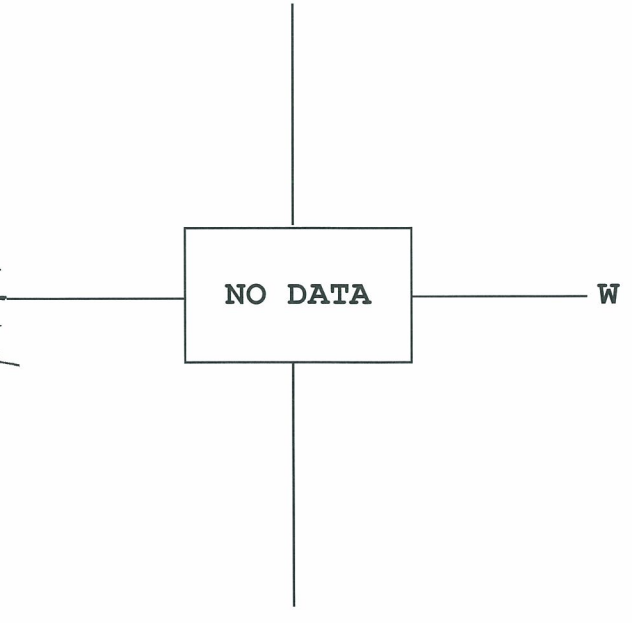
12/0225 UT

HOLLOMAN SUNSPOTS



1839 UT

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

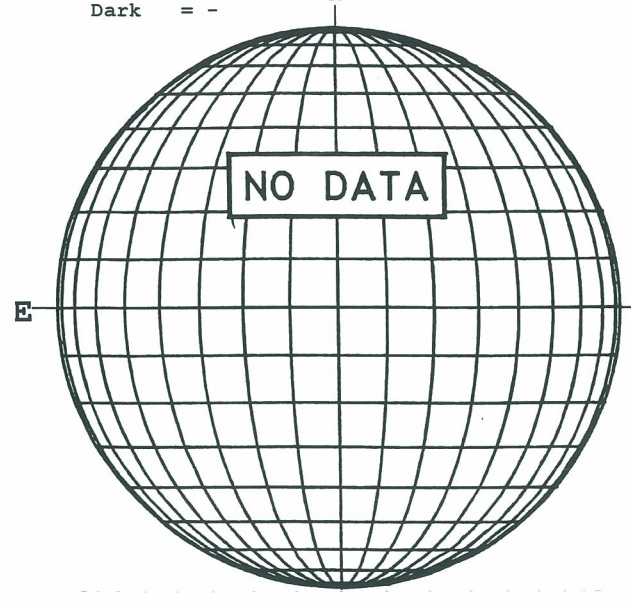


December 12, 2008 (P= 11.39, Bo=-0.56, Lo= 73.88)

KITT PEAK MAGNETOGRAM -- SOLIS

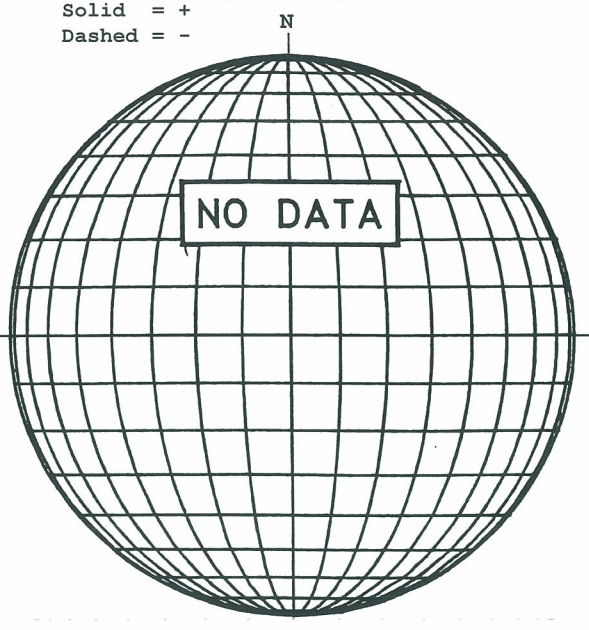
Bright = +
Dark = -

** 854.2NM **



STANFORD MAGNETOGRAM

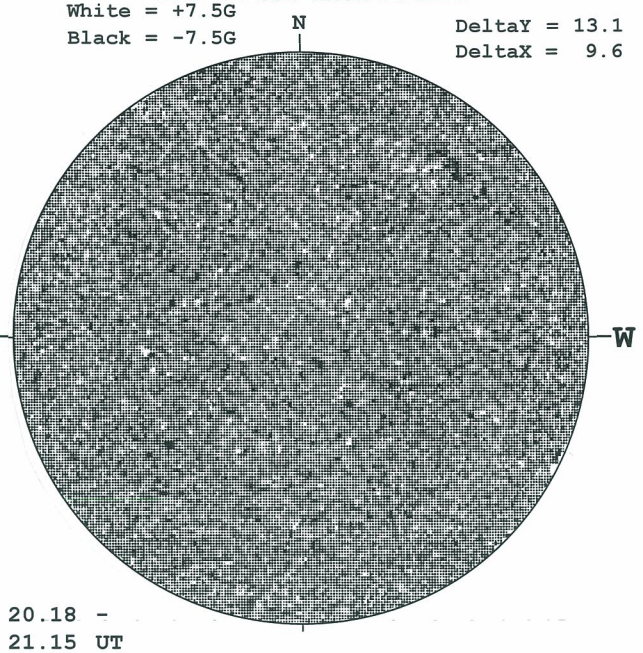
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

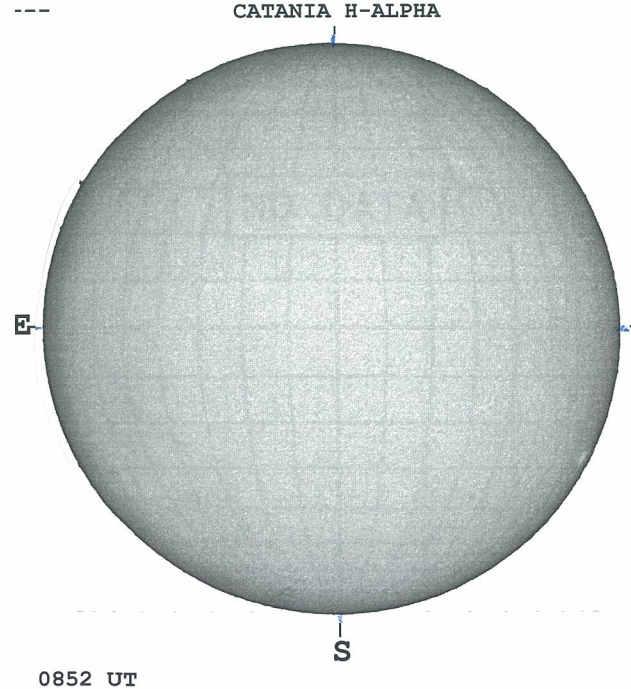
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



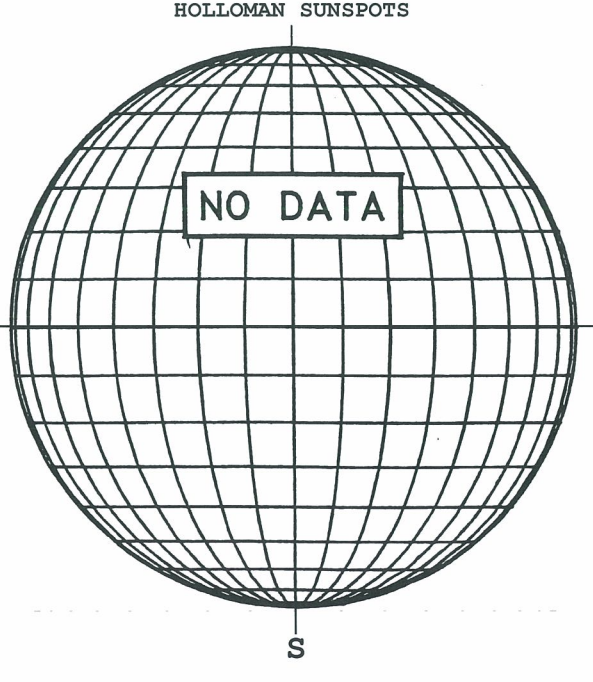
20.18 -
21.15 UT

CATANIA H-ALPHA

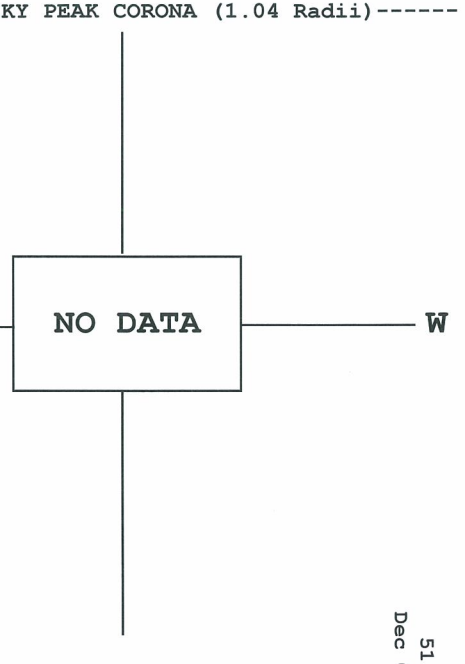


0852 UT

HOLLOMAN SUNSPOTS



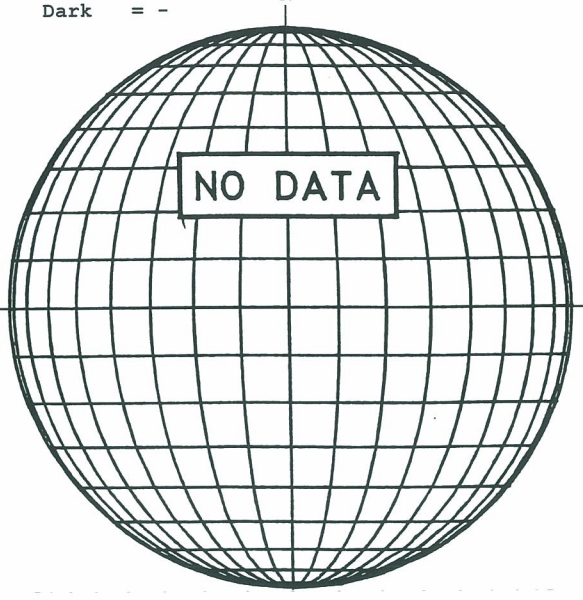
LOMNICKY PEAK CORONA (1.04 Radii)



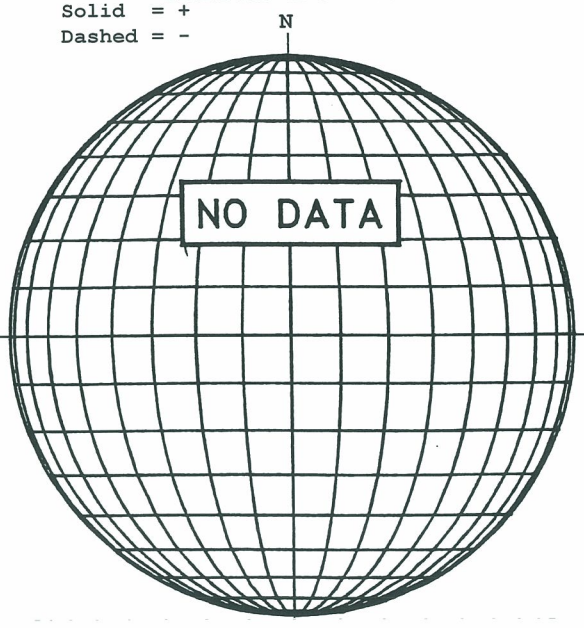
51
Dec 08

December 13, 2008 (P= 10.95, Bo=-0.69, Lo= 60.70)

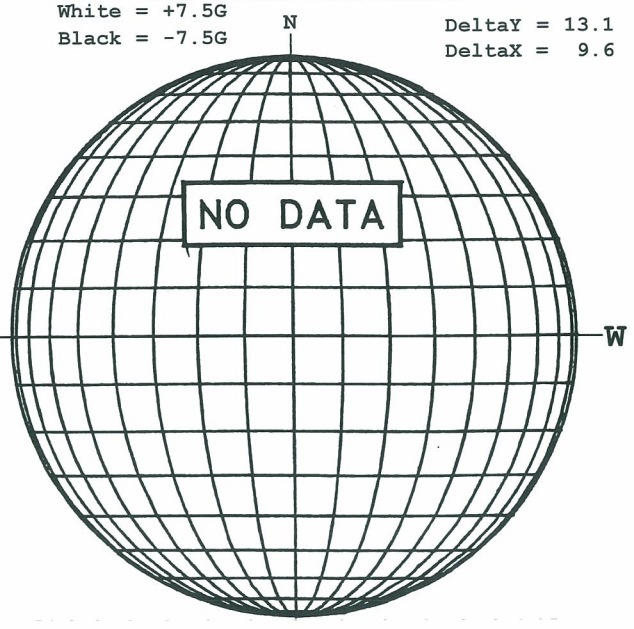
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



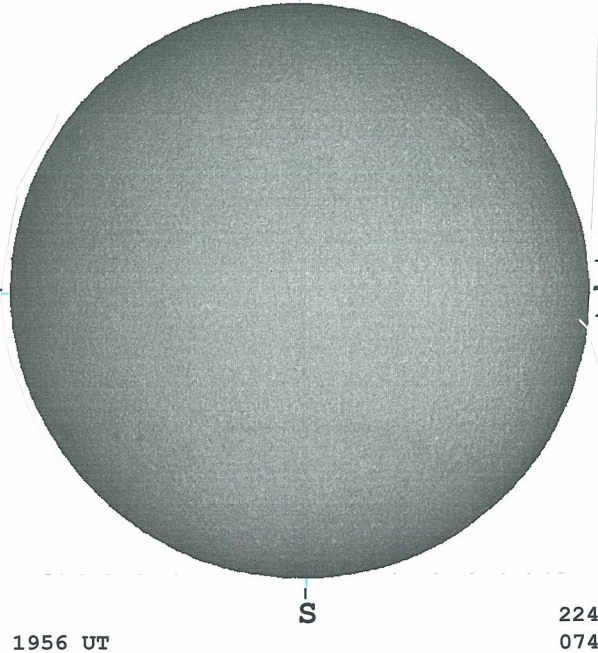
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



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

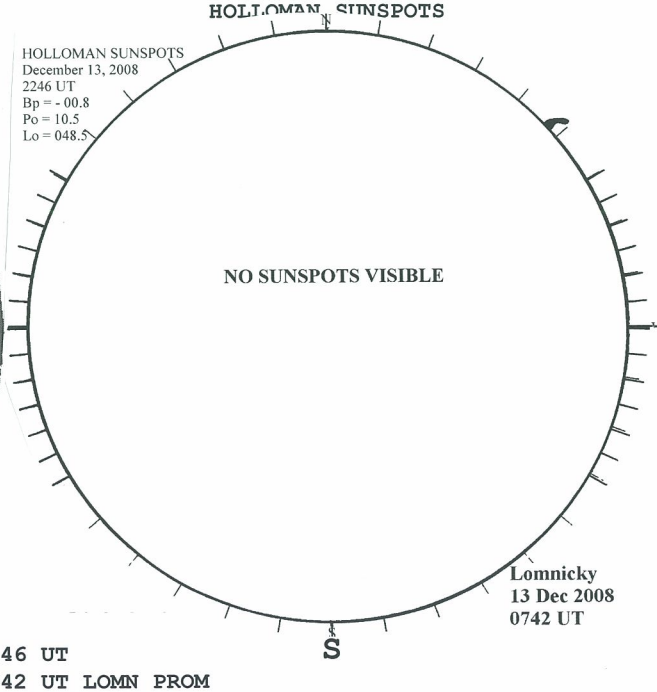


MONA LOA H-ALPHA



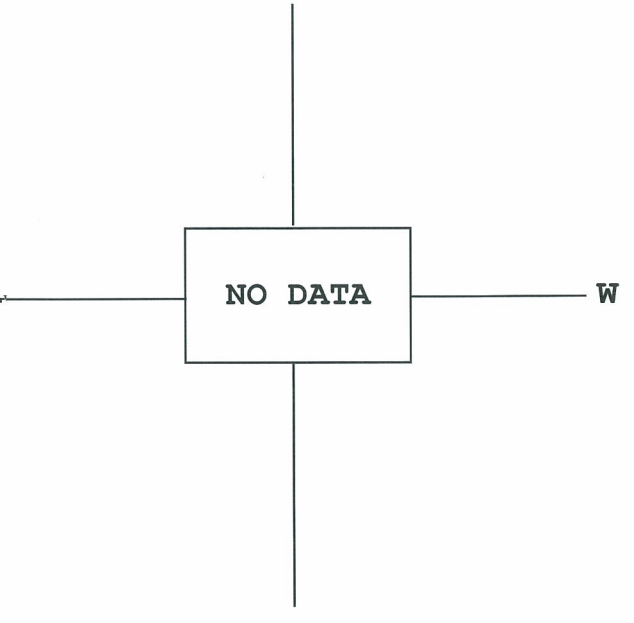
1956 UT

HOLLOMAN SUNSPOTS



2246 UT
0742 UT LOMN PROM

SACRAMENTO PEAK CORONA (1.15 Radii)

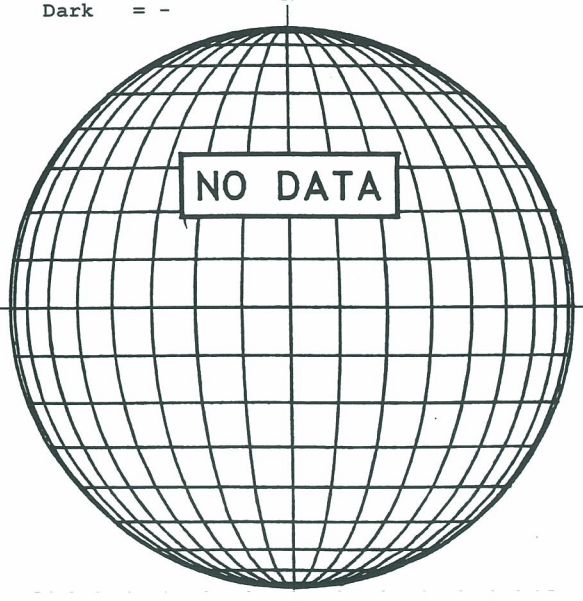


December 14, 2008 (P= 10.50, Bo=-0.82, Lo= 47.53)

KITT PEAK MAGNETOGRAM -- SOLIS

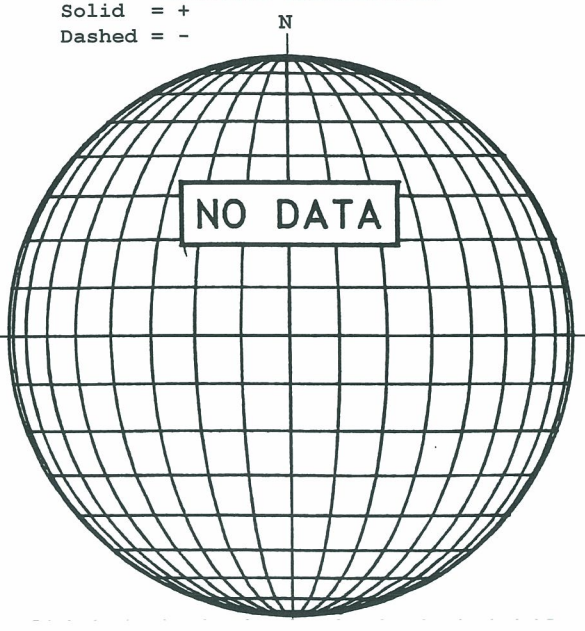
Bright = +
Dark = -

** 854.2NM **



STANFORD MAGNETOGRAM

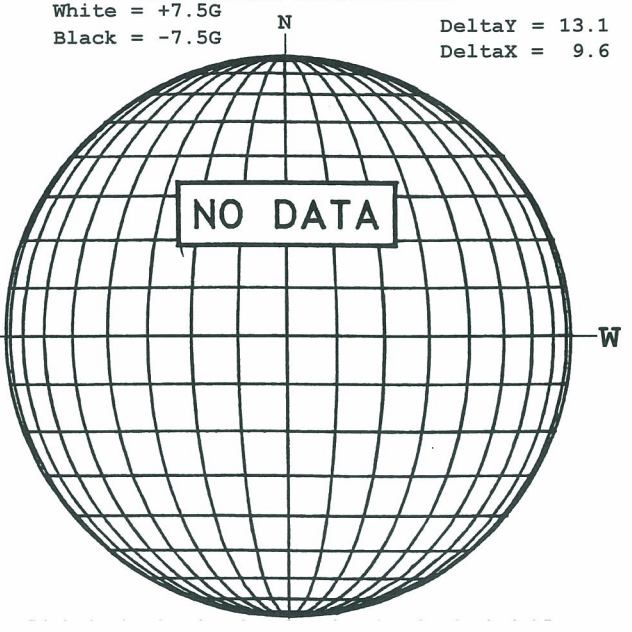
Solid = +
Dashed = -



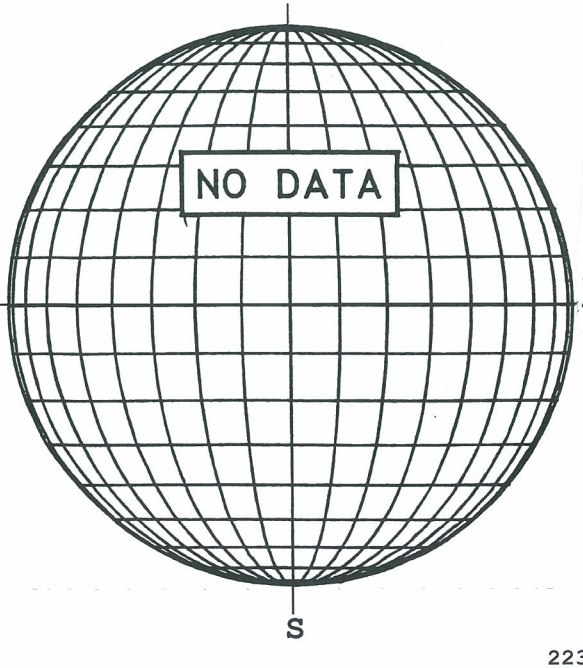
MT. WILSON MAGNETOGRAM

White = +7.5G
Black = -7.5G

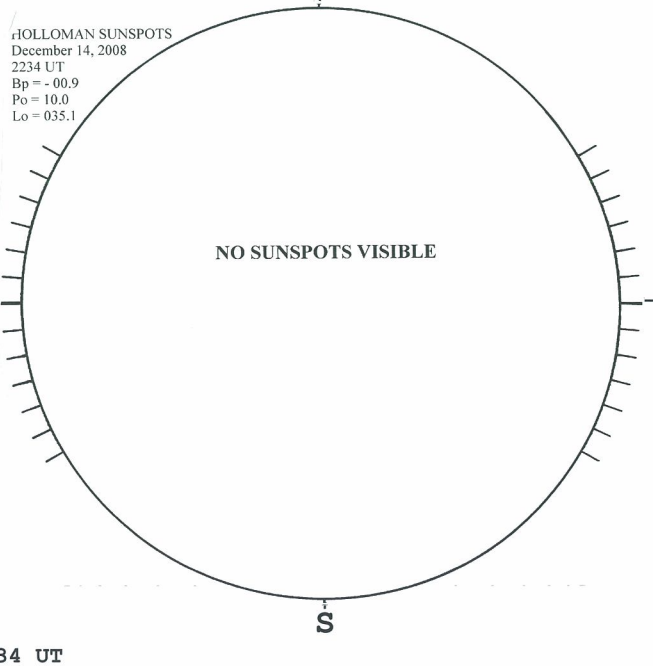
DeltaY = 13.1
DeltaX = 9.6



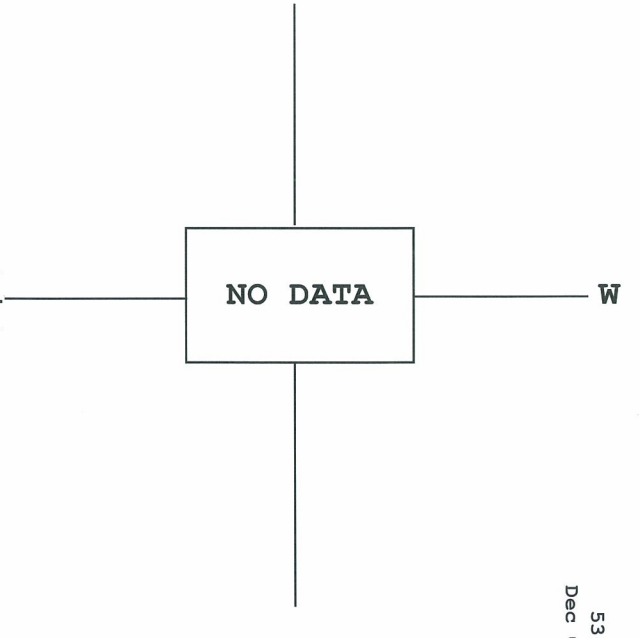
BIG BEAR H-ALPHA



HOLLOMAN SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



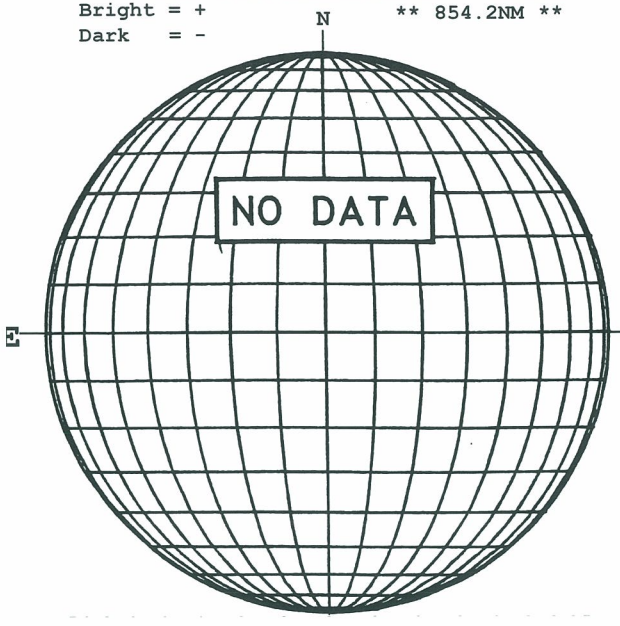
2234 UT

53
Dec 08

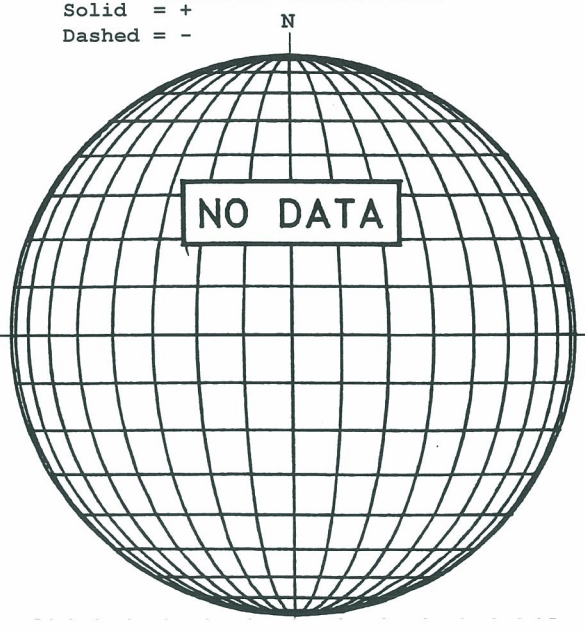
December 15, 2008 (P= 10.05, Bo=-0.94, Lo= 34.35)

Dec 08 54

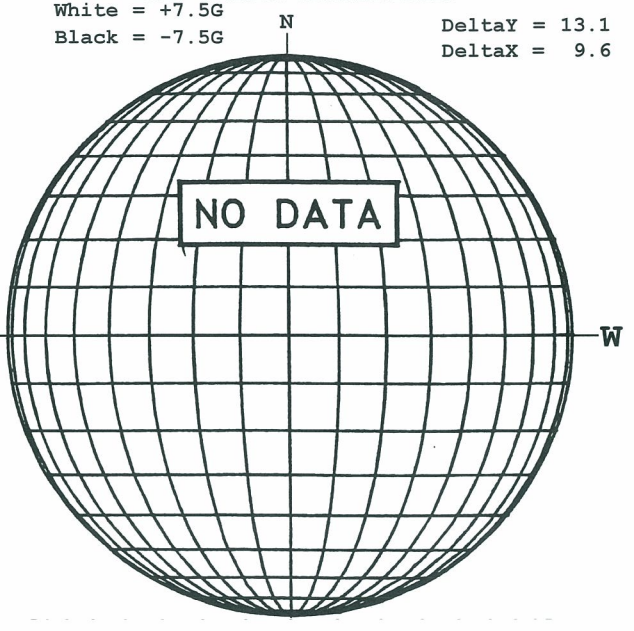
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



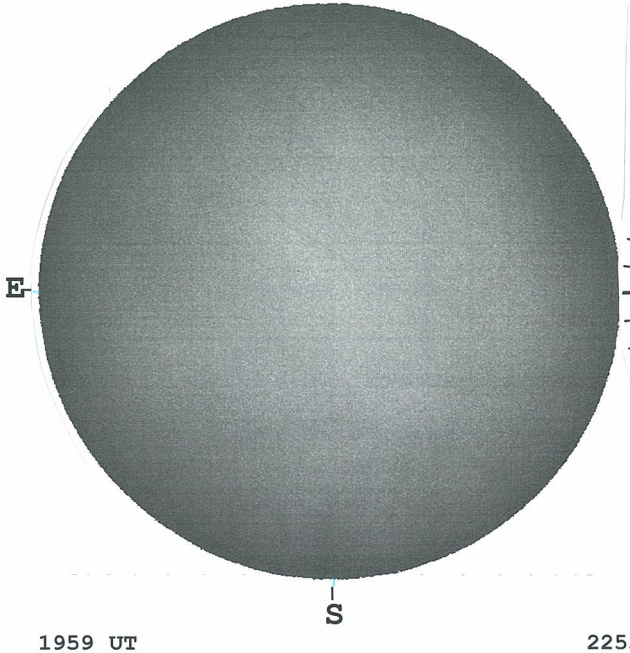
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



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

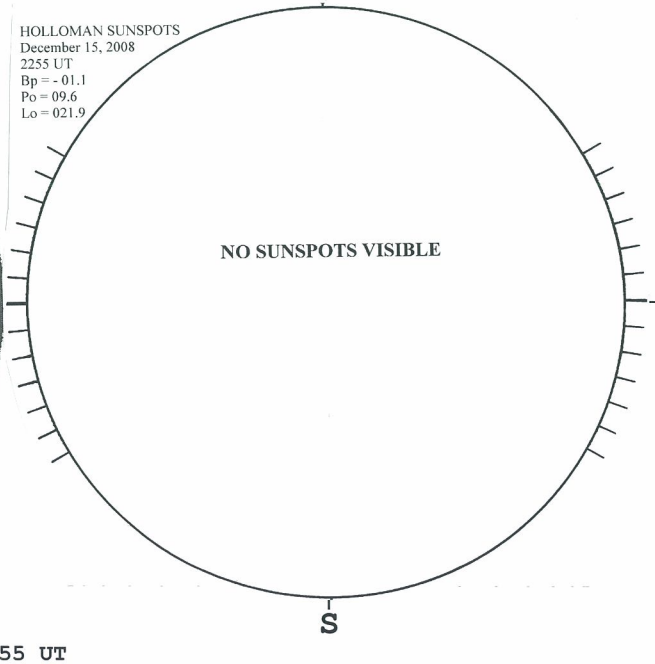


--- MONA LOA H-ALPHA



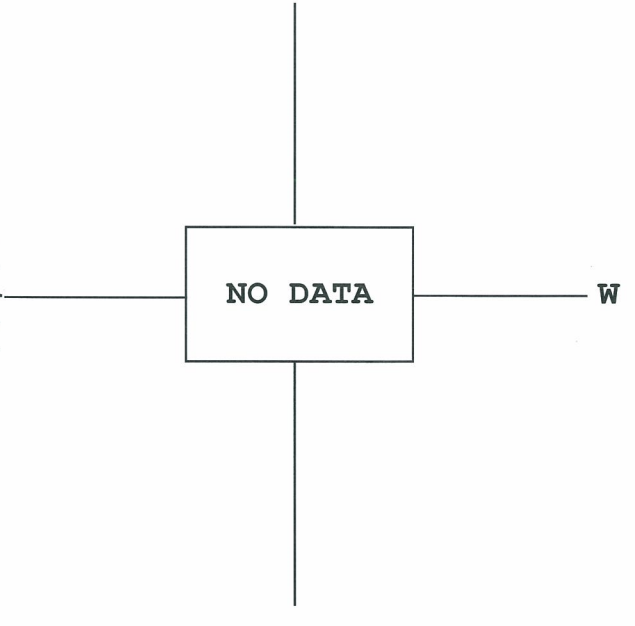
1959 UT

HOLLOMAN SUNSPOTS



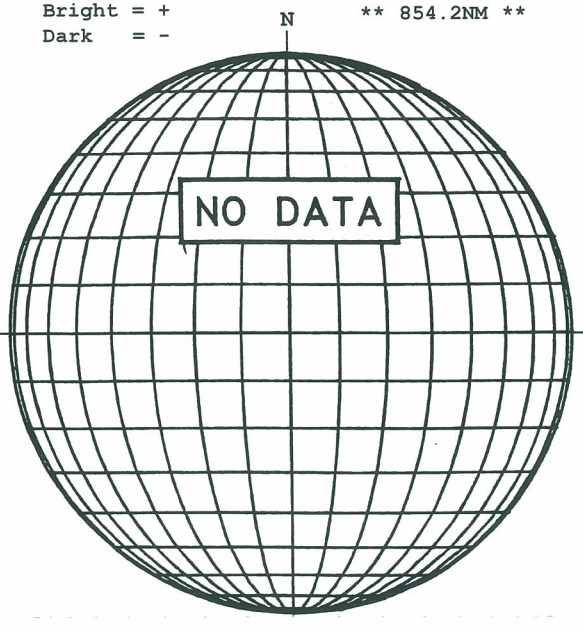
2255 UT

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

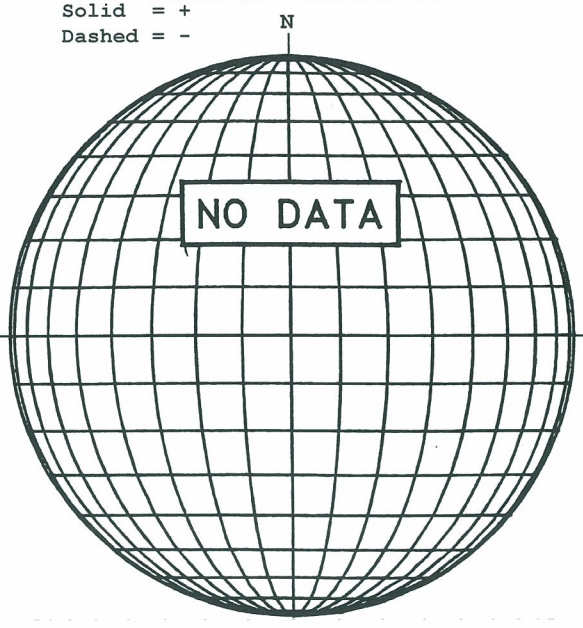


December 16, 2008 (P= 9.60, Bo=-1.07, Lo= 21.18)

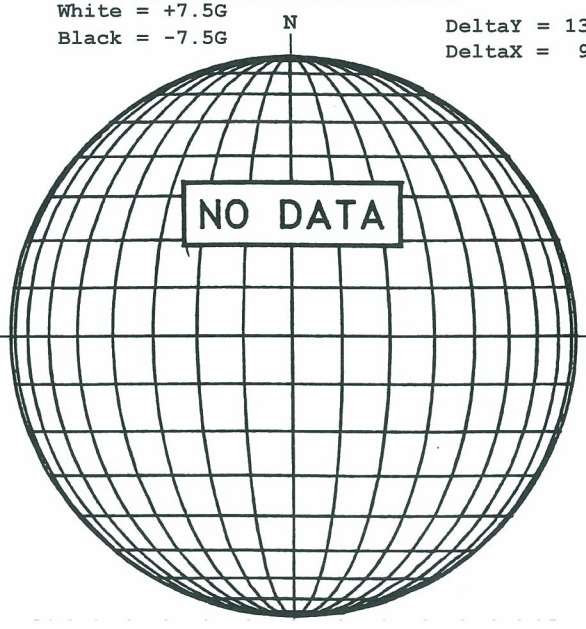
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



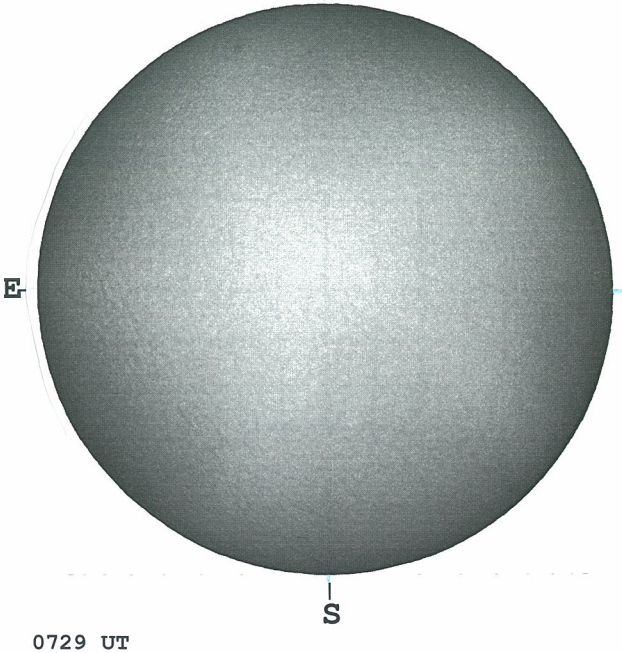
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



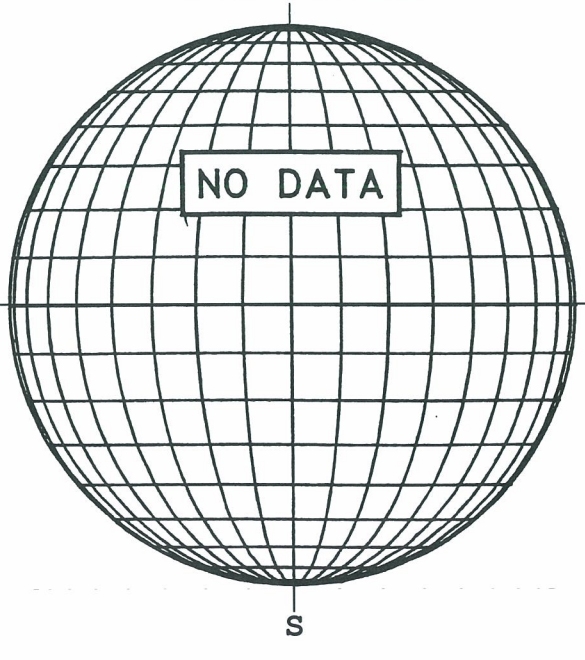
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



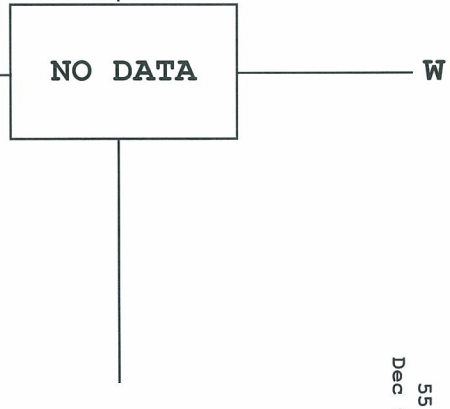
YUNNAN H-ALPHA



HOLLOMAN SUNSPOTS



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



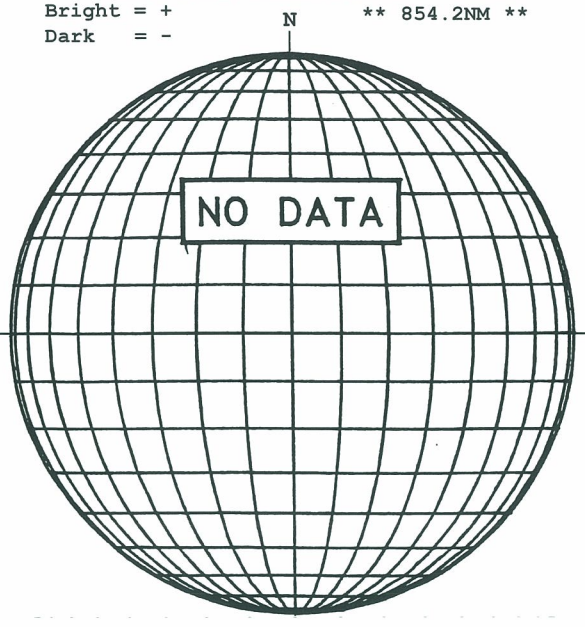
0729 UT

55
Dec 08

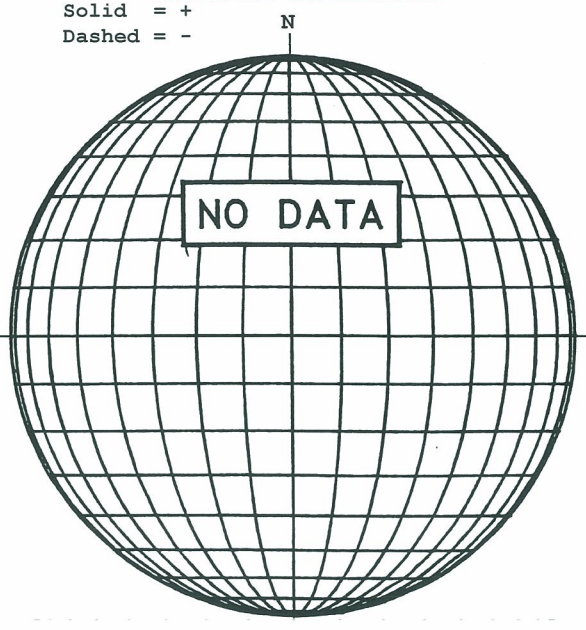
December 17, 2008 (P= 9.14, Bo=-1.20, Lo= 8.00)

Dec 08 56

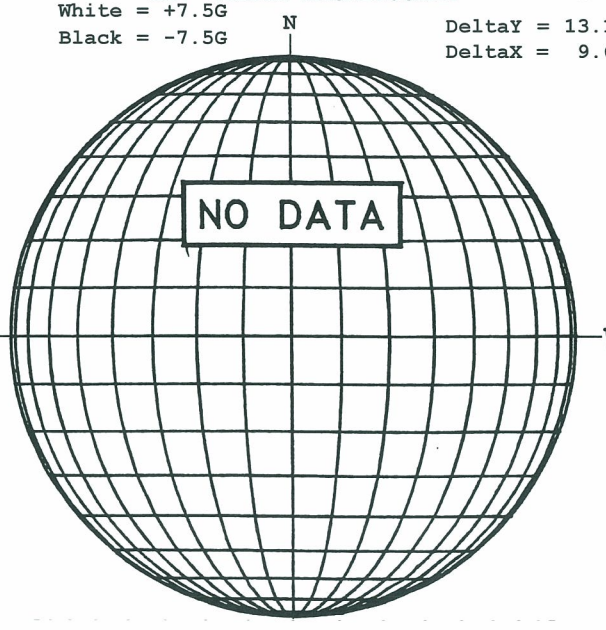
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



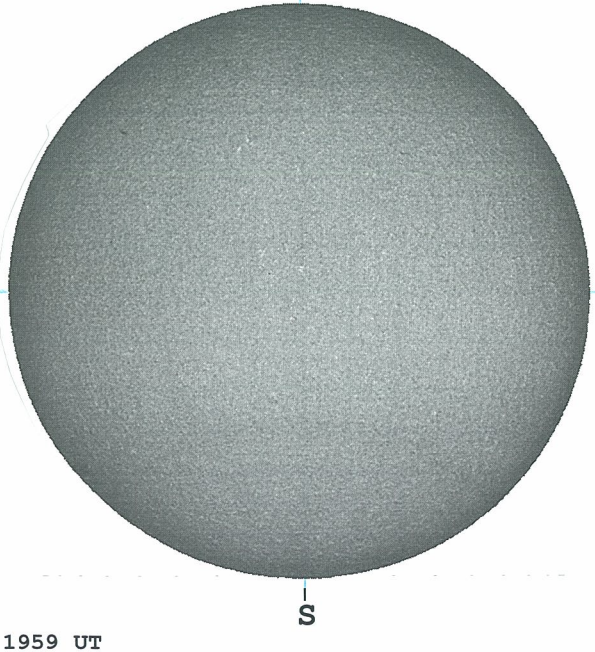
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



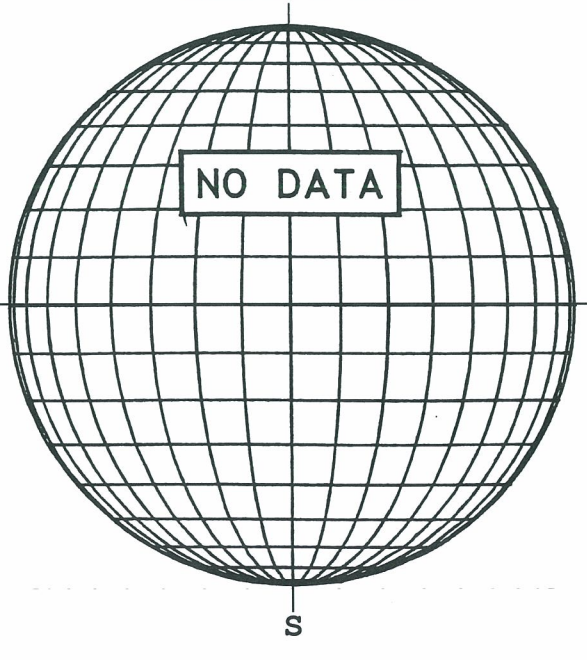
MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 13.1
DeltaX = 9.6



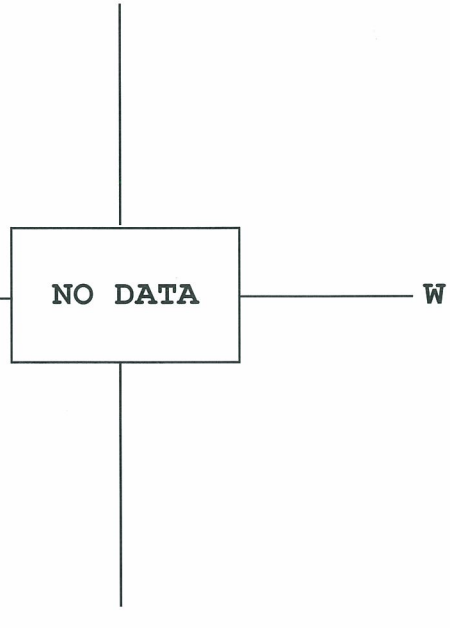
MONA LOA H-ALPHA



HOLLOMAN SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



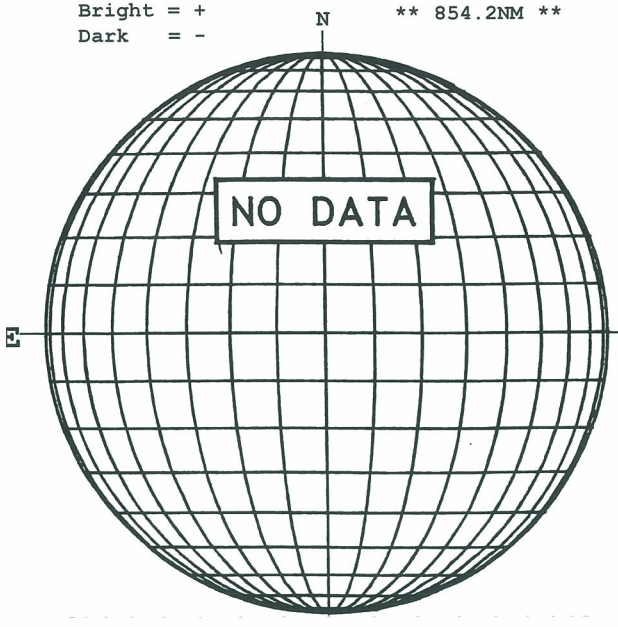
1959 UT

December 18, 2008 (P= 8.67, Bo=-1.32, Lo= 354.83)

KITT PEAK MAGNETOGRAM -- SOLIS

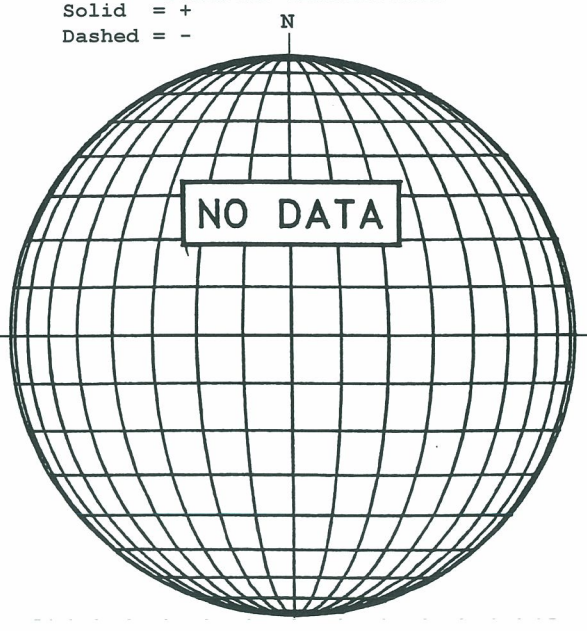
Bright = +
Dark = -

** 854.2NM **



STANFORD MAGNETOGRAM

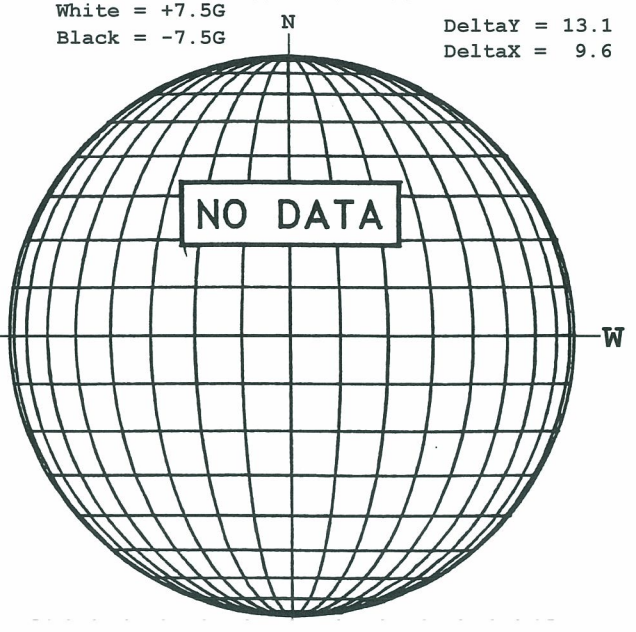
Solid = +
Dashed = -



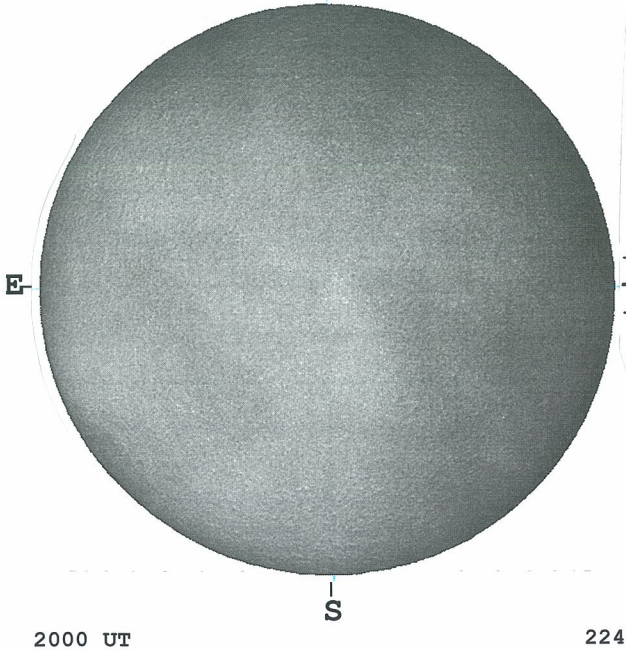
MT. WILSON MAGNETOGRAM

White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6

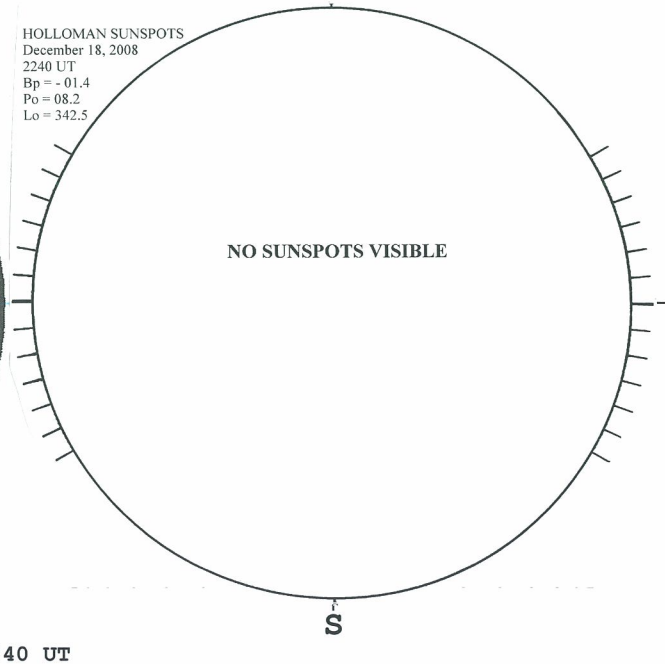


MONA LOA H-ALPHA



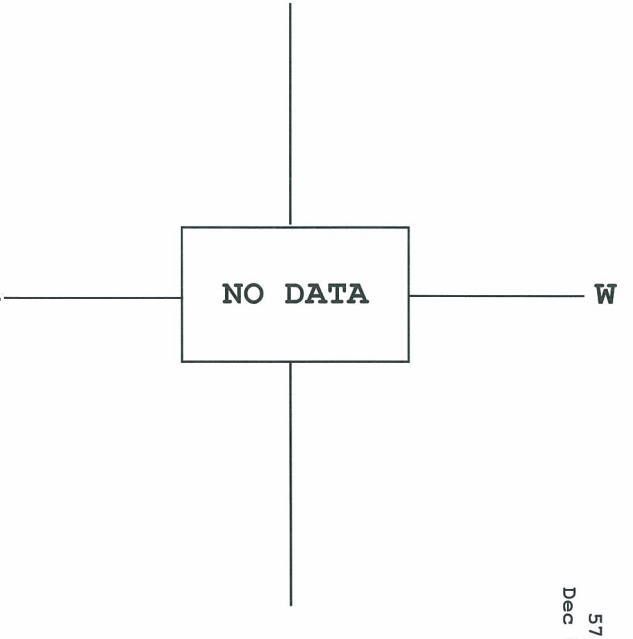
2000 UT

HOLLOMAN SUNSPOTS



2240 UT

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

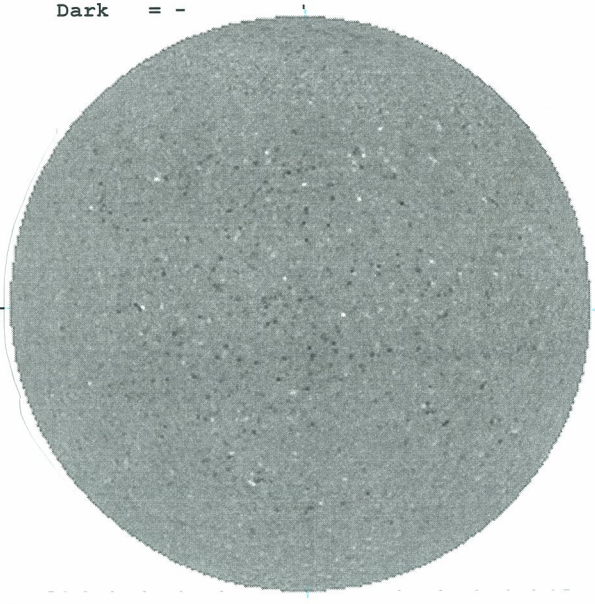


57
Dec 08

December 19, 2008 (P= 8.21, Bo=-1.45, Lo= 341.65)

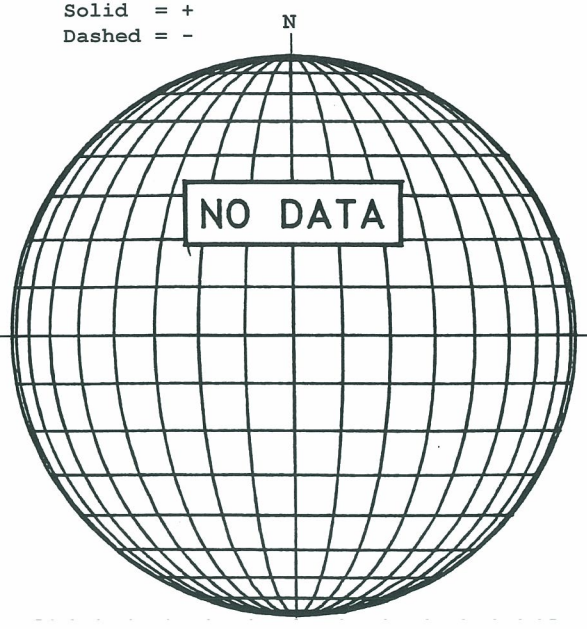
58
Dec 08

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

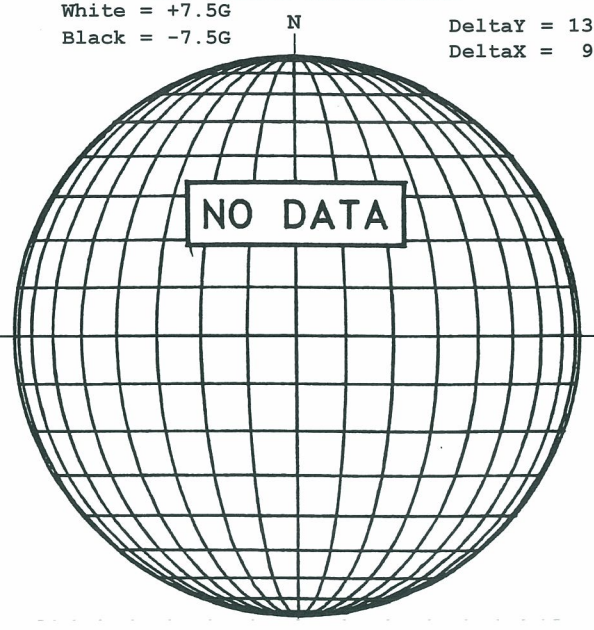


1900 UT

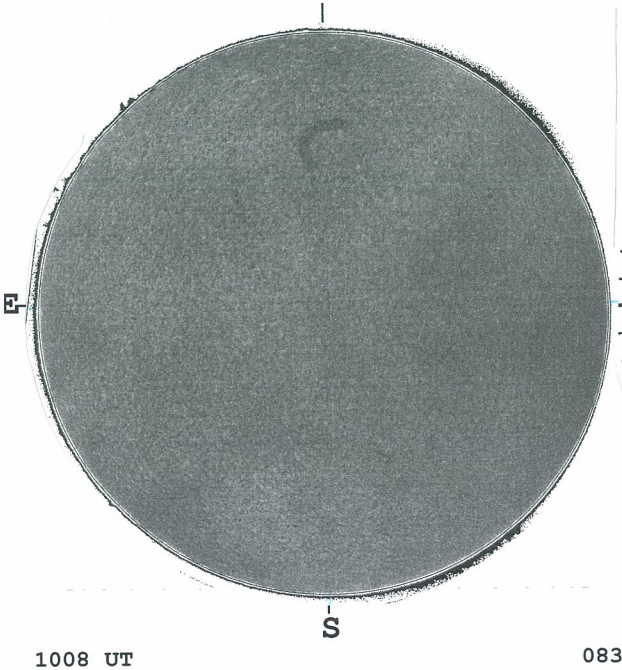
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



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

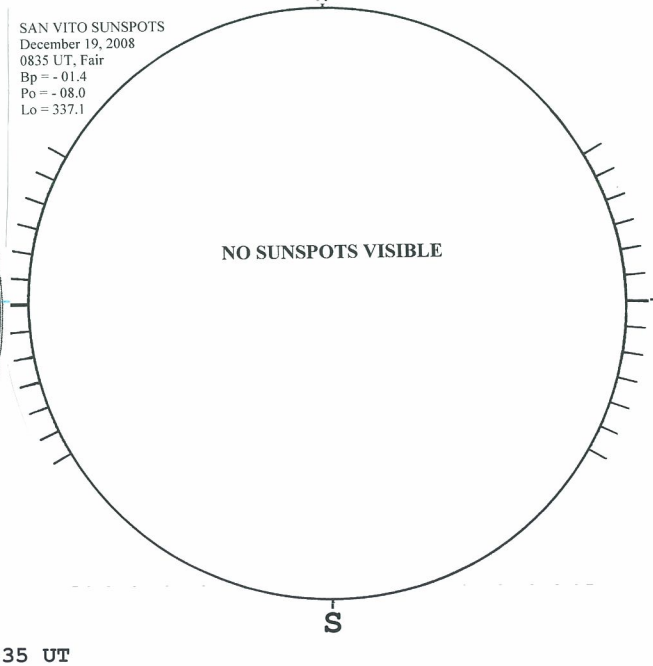


KANZELHOHE H-ALPHA



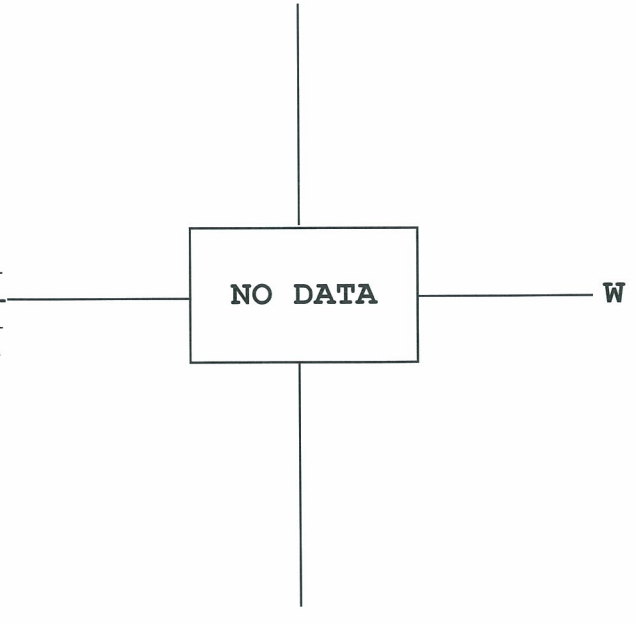
1008 UT

SAN VITO SUNSPOTS



0835 UT

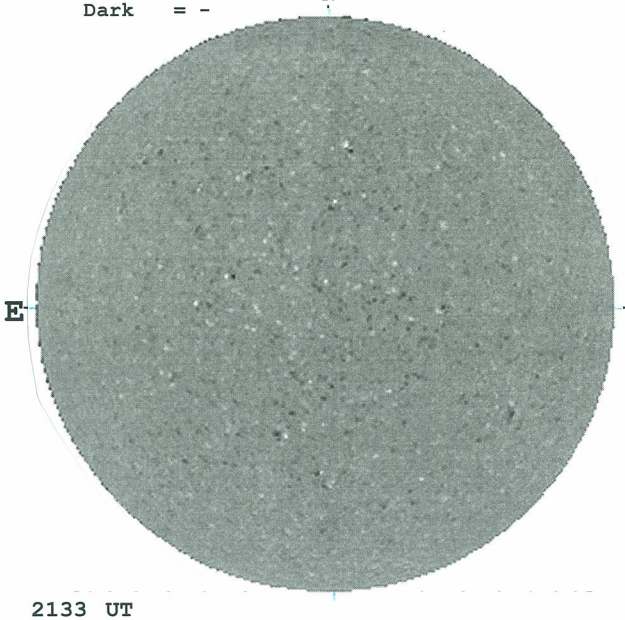
SACRAMENTO PEAK CORONA (1.15 Radii)



December 20, 2008 (P= 7.74, Bo=-1.58, Lo= 328.48)

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

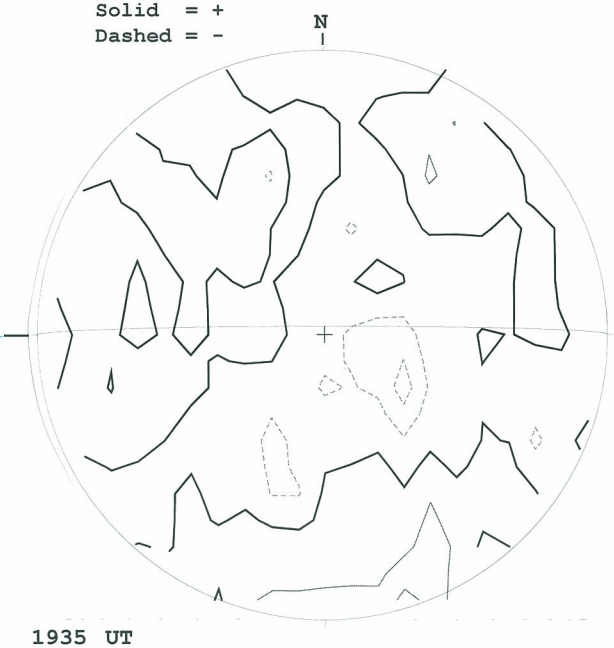


** 854.2NM **

2133 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

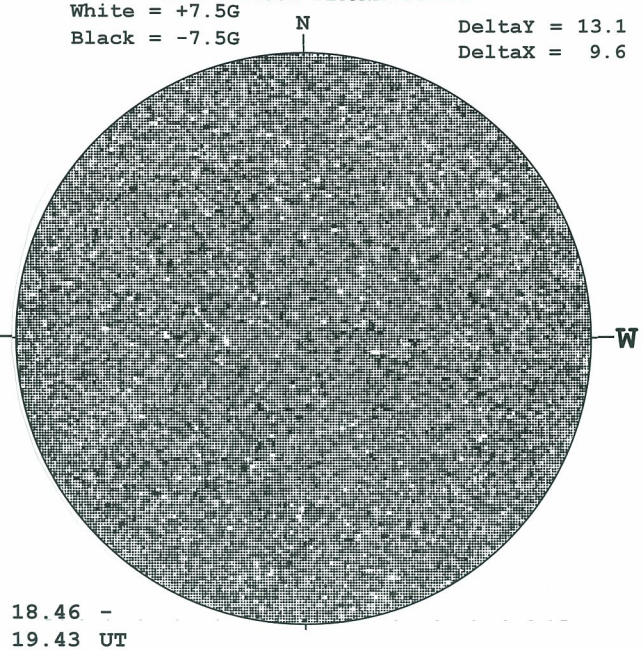


1935 UT

MT. WILSON MAGNETOGRAM

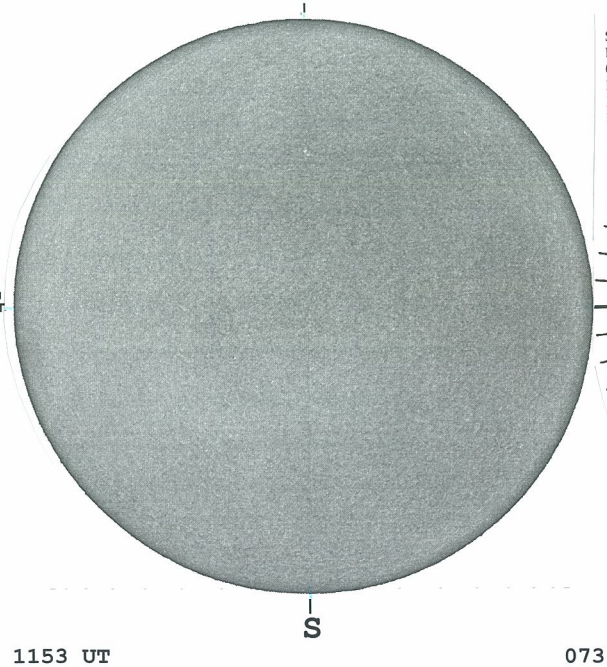
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



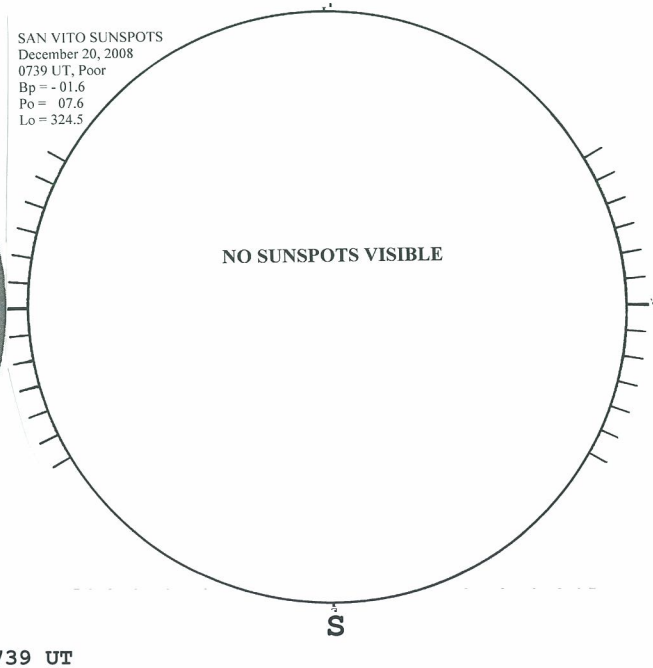
18.46 -
19.43 UT

CATANIA H-ALPHA



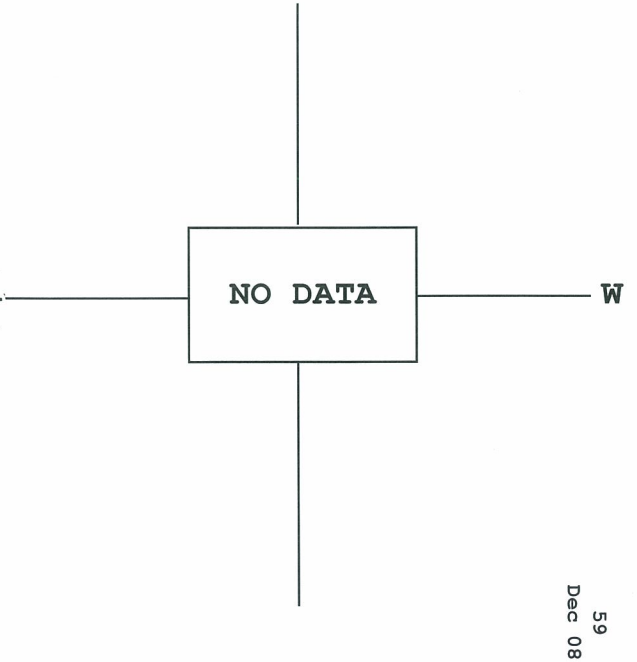
1153 UT

SAN VITO SUNSPOTS



0739 UT

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



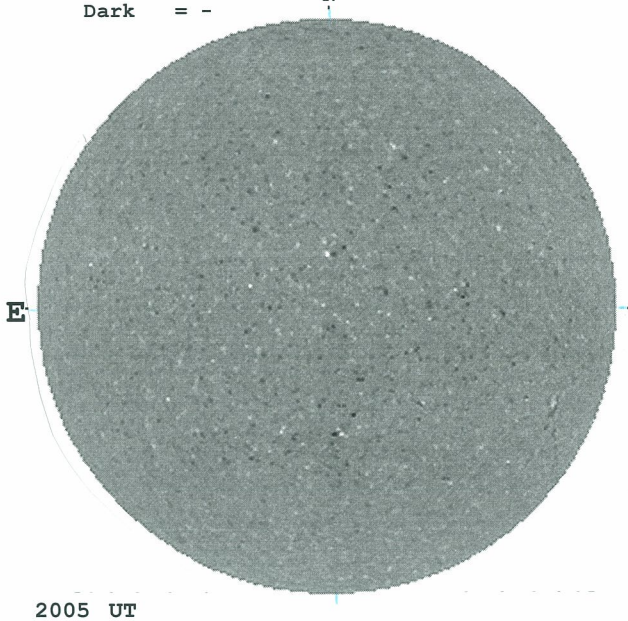
December 21, 2008 (P= 7.27, Bo=-1.70, Lo= 315.31)

Dec 08 60

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

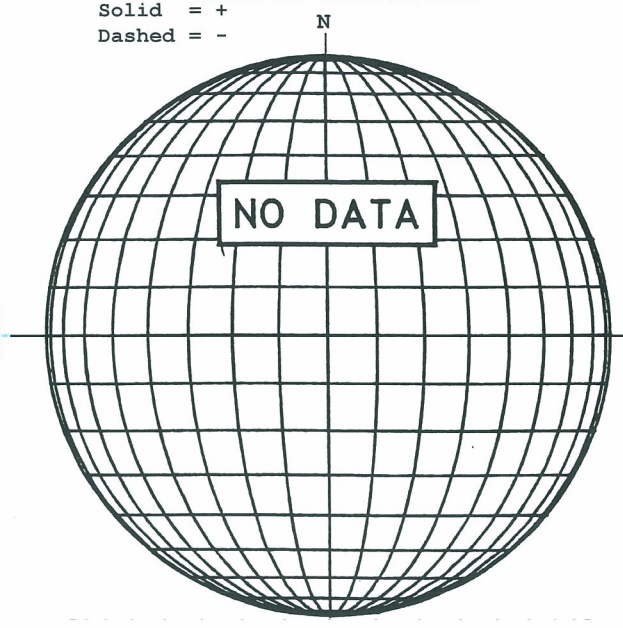
** 854.2NM **



2005 UT

STANFORD MAGNETOGRAM

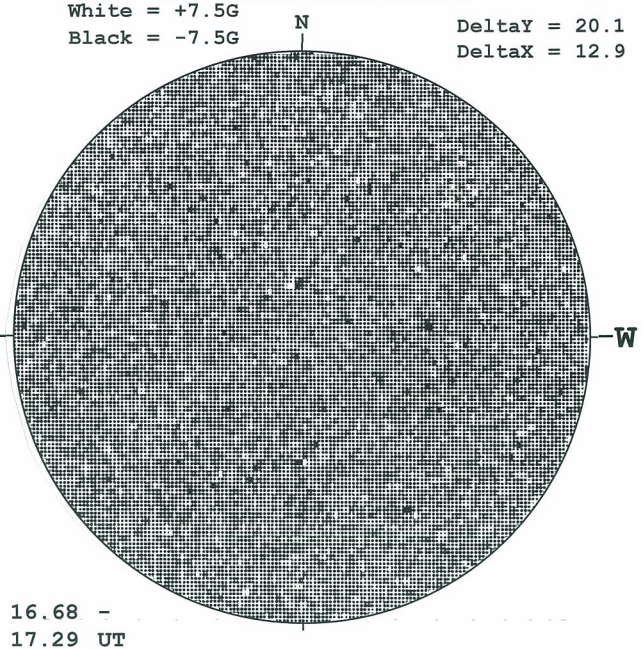
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

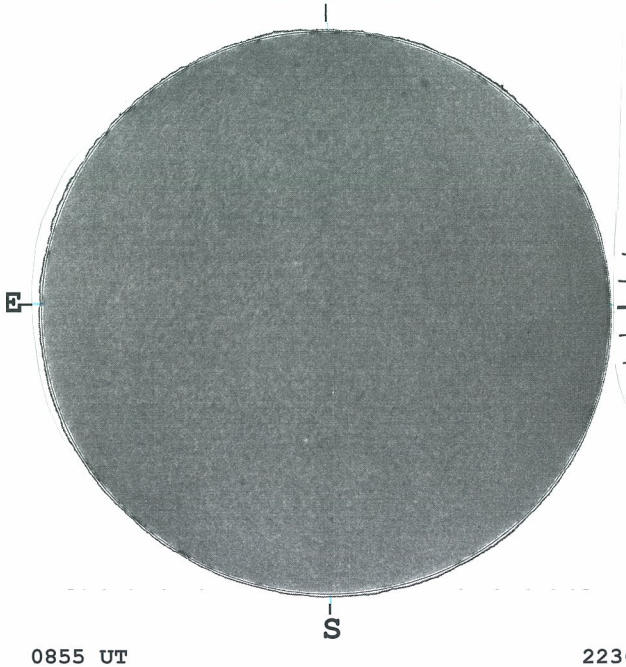
White = +7.5G
Black = -7.5G

DeltaY = 20.1
DeltaX = 12.9



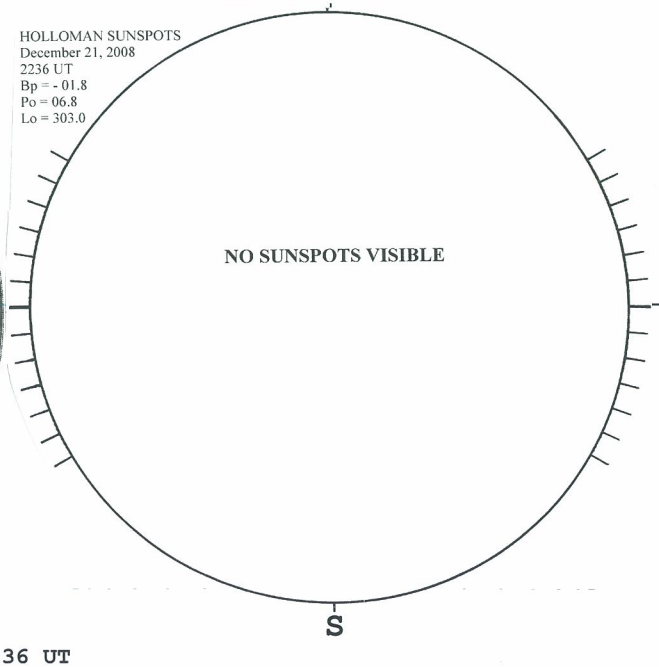
16.68 -
17.29 UT

KANZELHOHE H-ALPHA



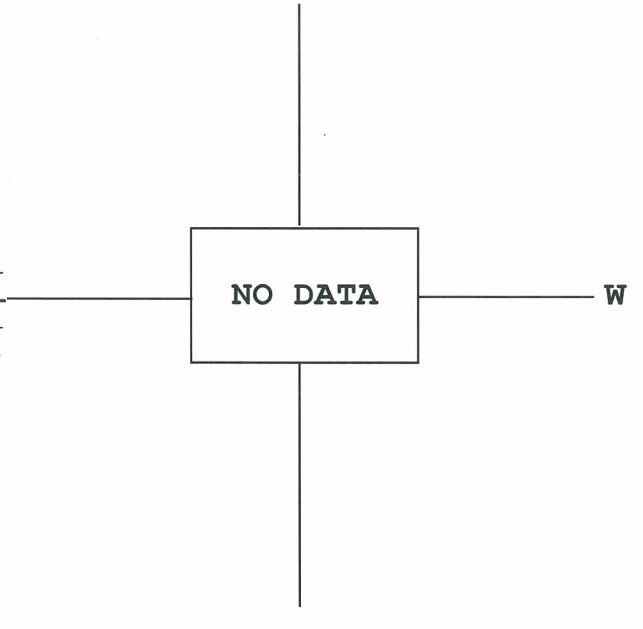
0855 UT

HOLLOMAN SUNSPOTS



2236 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

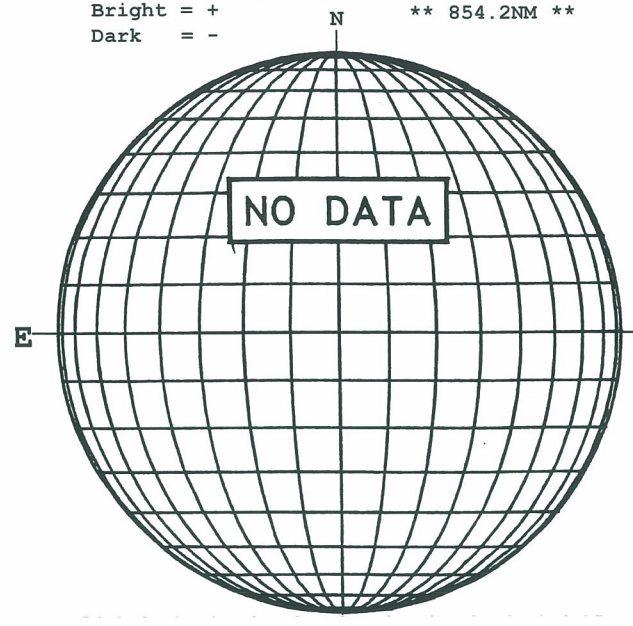


December 22, 2008 (P= 6.80, Bo=-1.83, Lo= 302.13)

KITT PEAK MAGNETOGRAM -- SOLIS

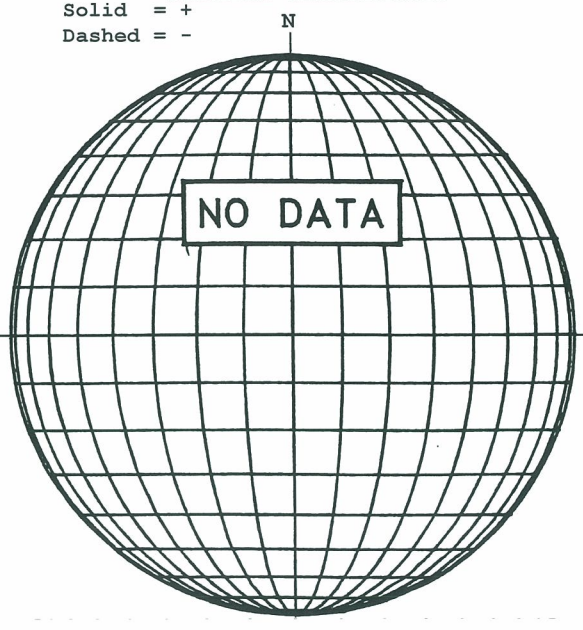
Bright = +
Dark = -

** 854.2NM **



STANFORD MAGNETOGRAM

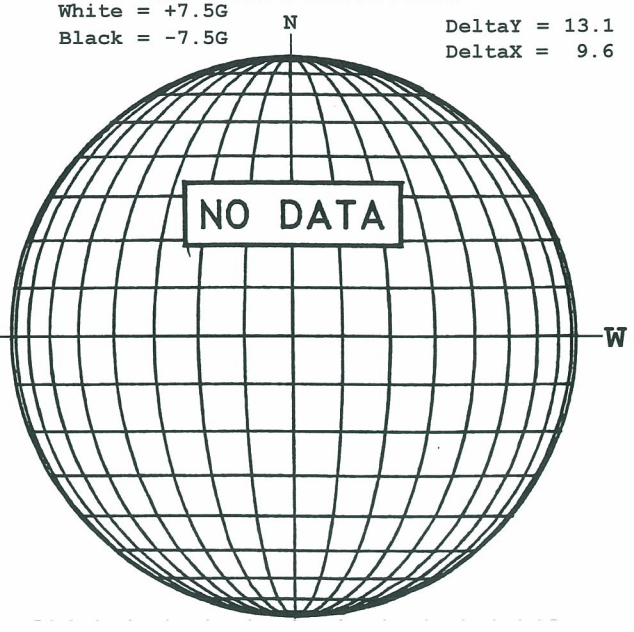
Solid = +
Dashed = -



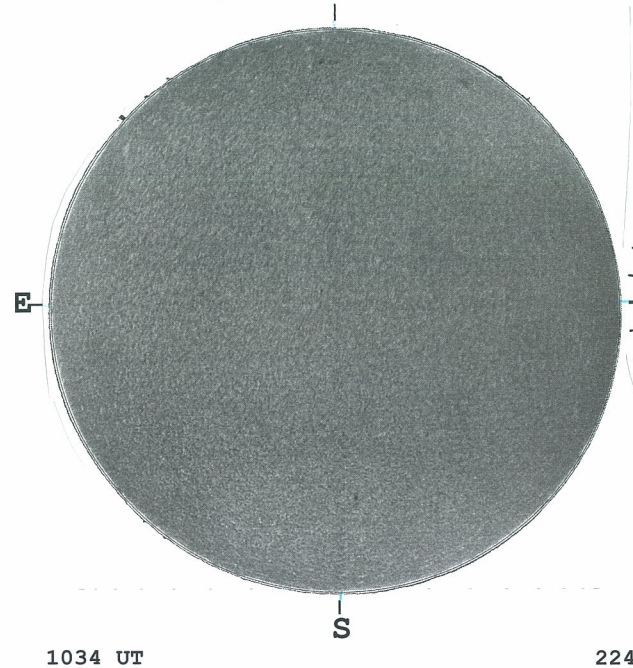
MT. WILSON MAGNETOGRAM

White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6

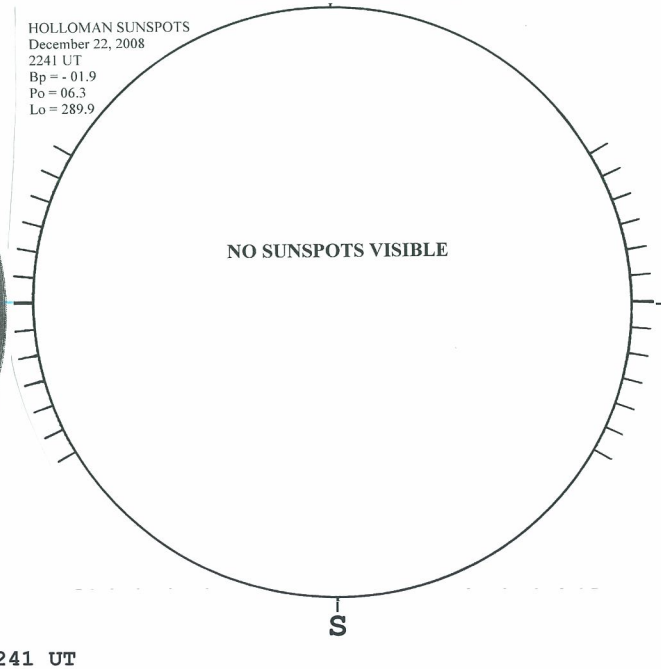


--- KANZELHOHE H-ALPHA



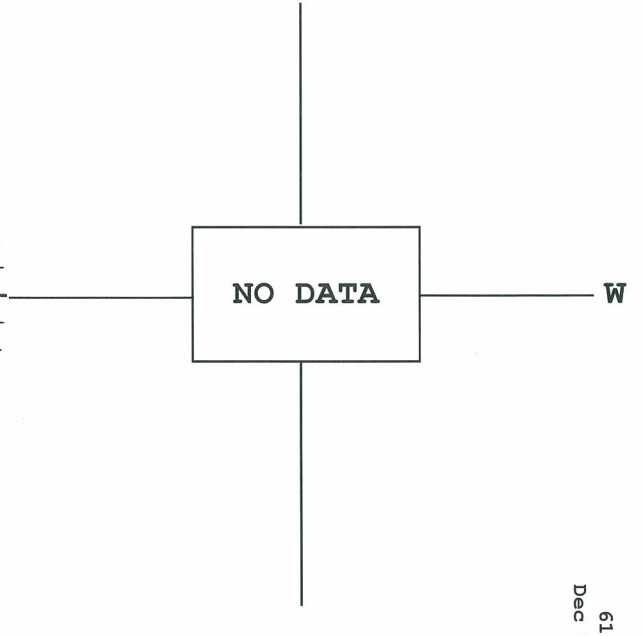
1034 UT

HOLLOMAN SUNSPOTS



2241 UT

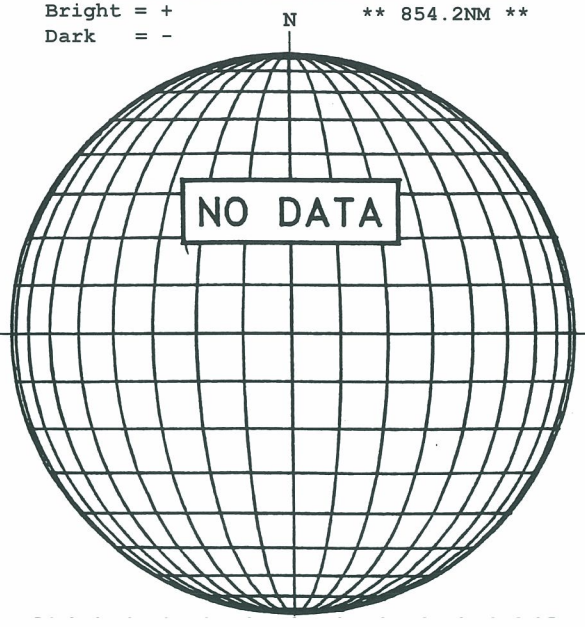
SACRAMENTO PEAK CORONA (1.15 Radii)-----



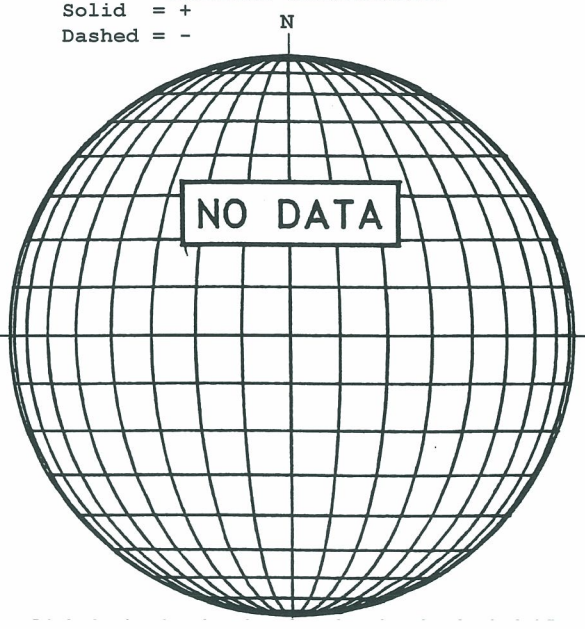
December 23, 2008 (P= 6.32, Bo=-1.95, Lo= 288.96)

Dec 08 62

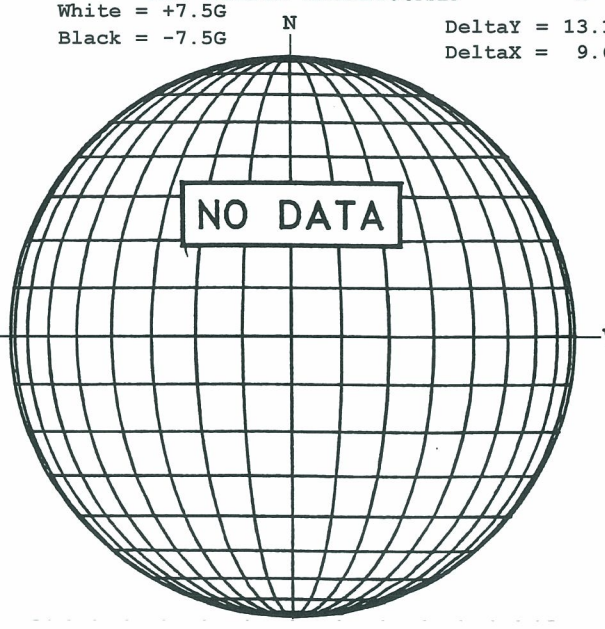
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



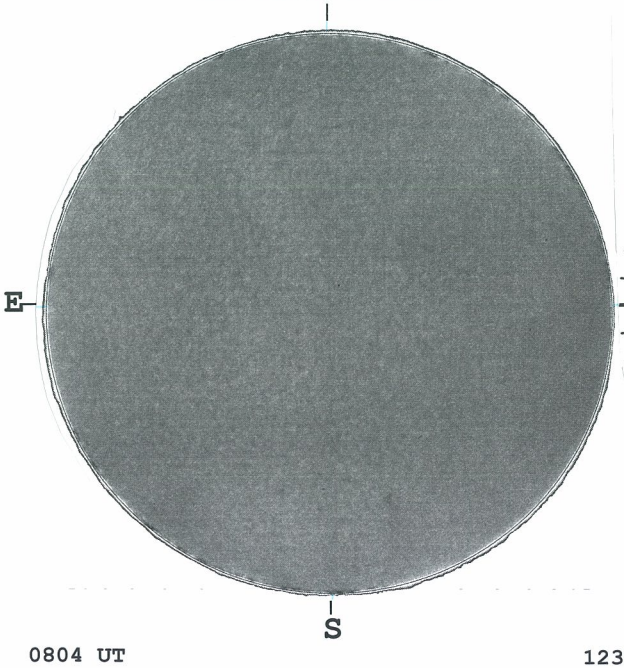
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



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

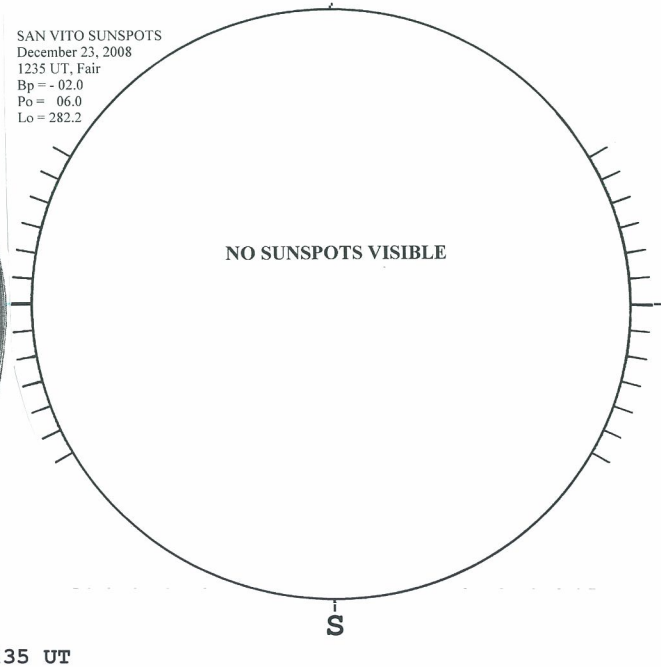


--- KANZELHOHE H-ALPHA



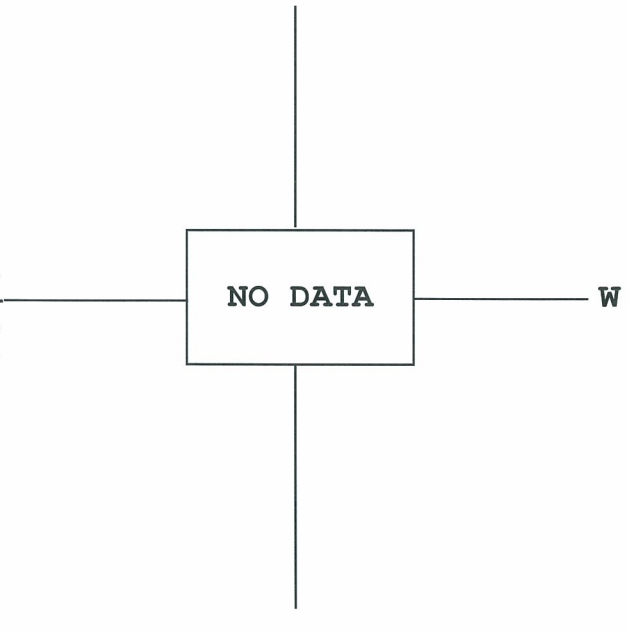
0804 UT

SAN VITO SUNSPOTS



1235 UT

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

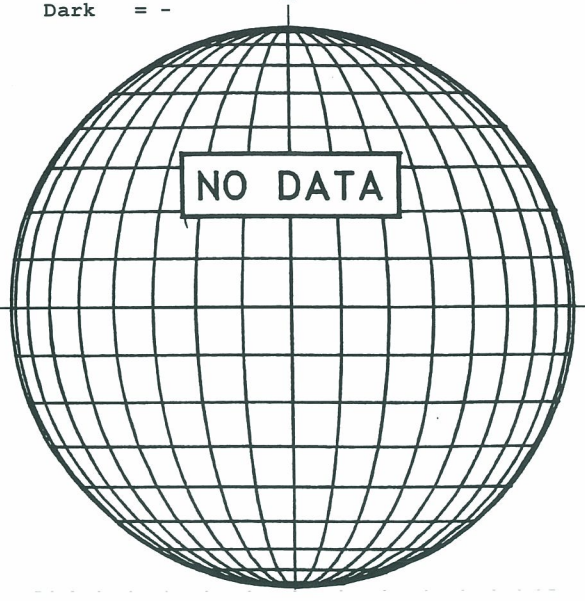


December 24, 2008 (P= 5.85, Bo=-2.07, Lo= 275.79)

KITT PEAK MAGNETOGRAM -- SOLIS

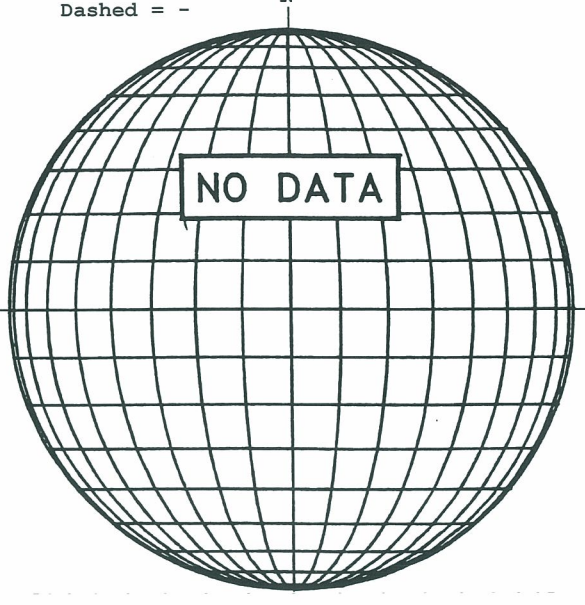
Bright = +
Dark = -

** 854.2NM **



STANFORD MAGNETOGRAM

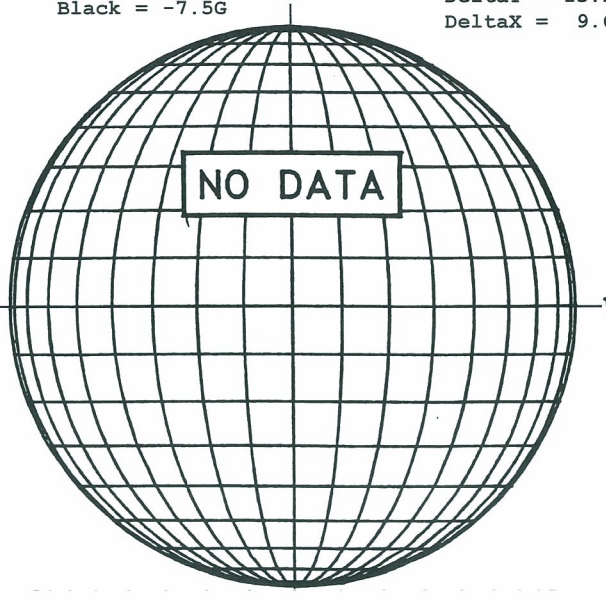
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

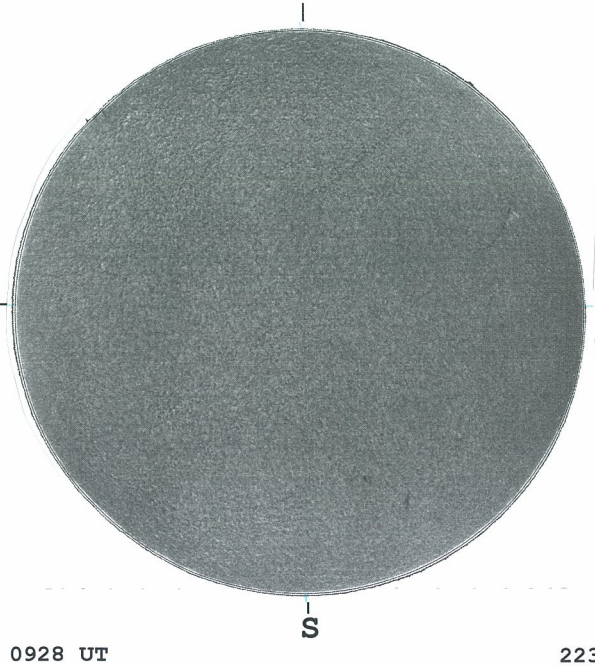
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



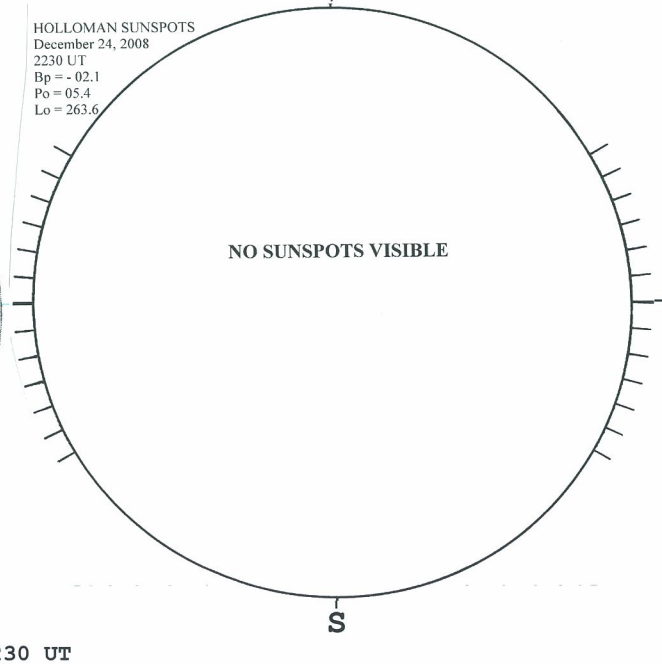
E W

KANZELHOHE H-ALPHA



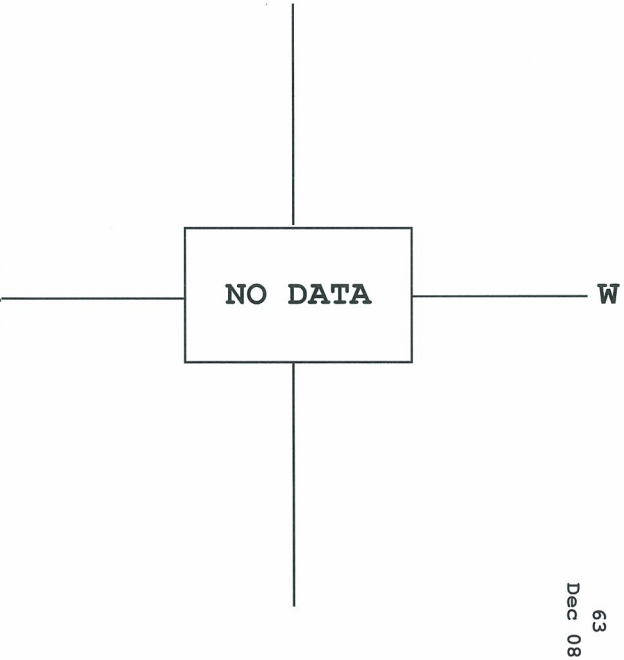
0928 UT

HOLLOMAN SUNSPOTS



2230 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



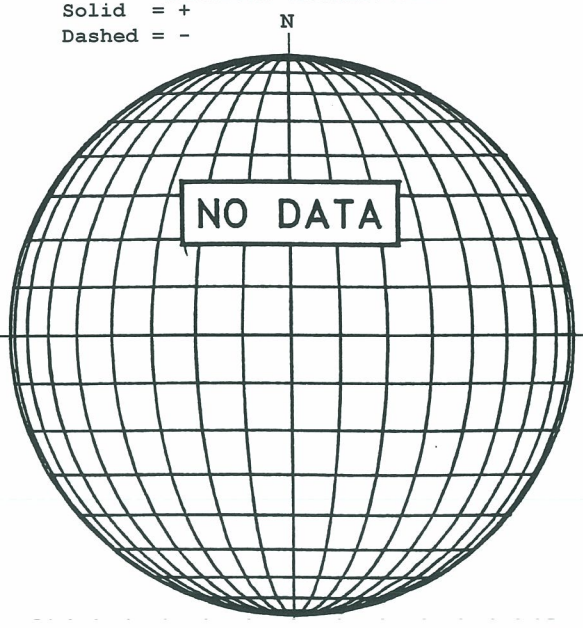
63
Dec 08

December 25, 2008 (P= 5.37, Bo=-2.20, Lo= 262.62)

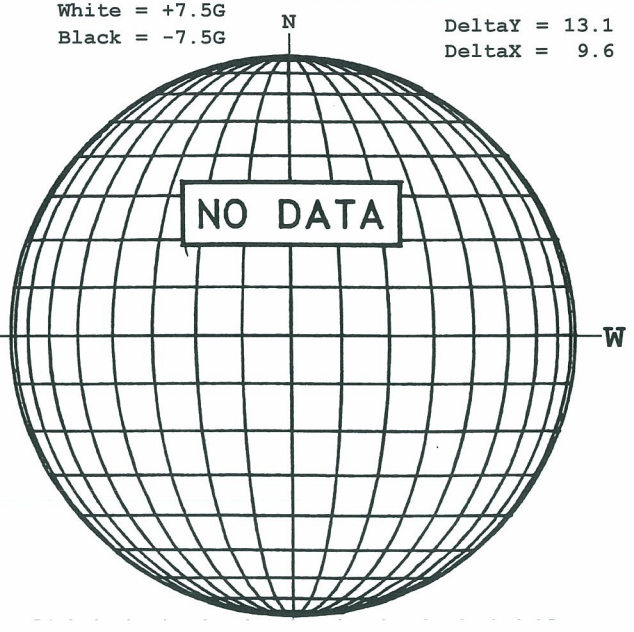
64
Dec 08

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

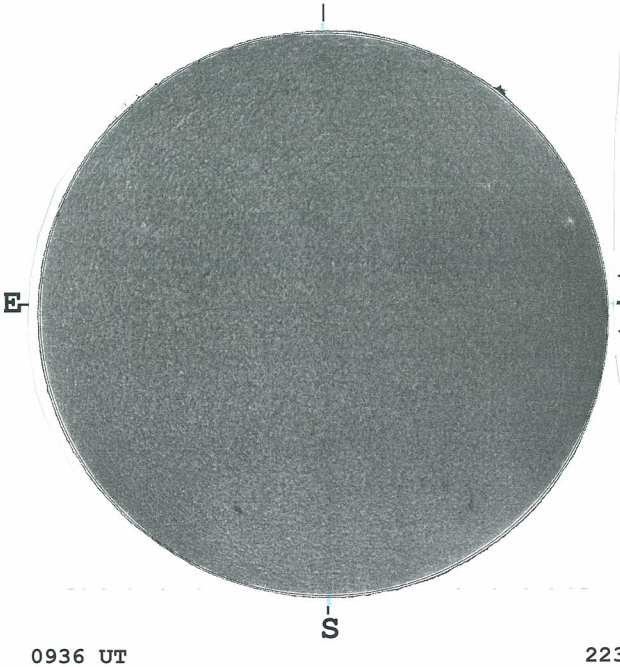
STANFORD MAGNETOGRAM
Solid = +
Dashed = -



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

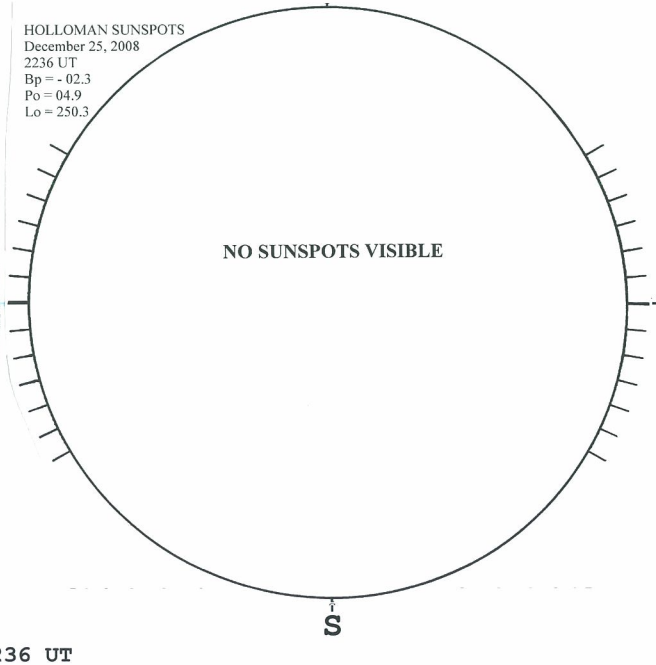


--- KANZELHOHE H-ALPHA



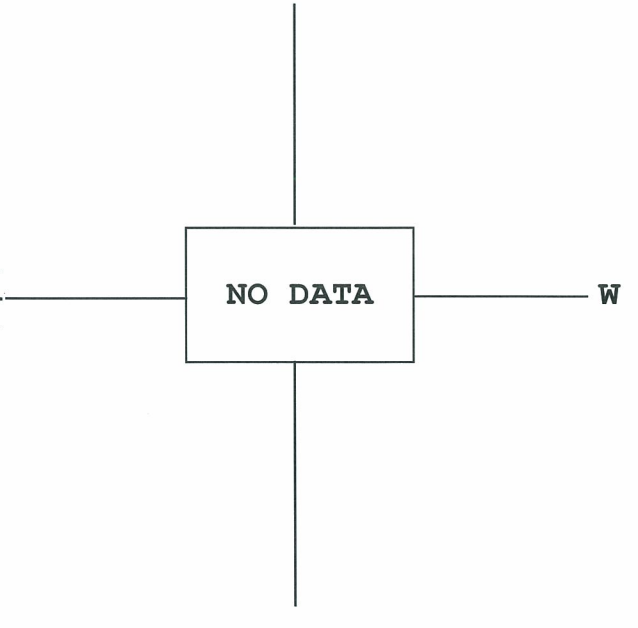
0936 UT

HOLLOMAN SUNSPOTS



2236 UT

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

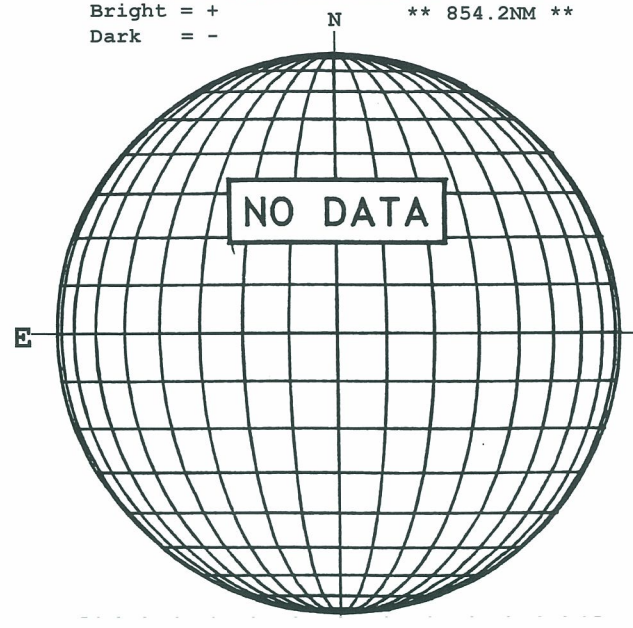


December 26, 2008 (P= 4.89, Bo=-2.32, Lo= 249.45)

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

** 854.2NM **



STANFORD MAGNETOGRAM

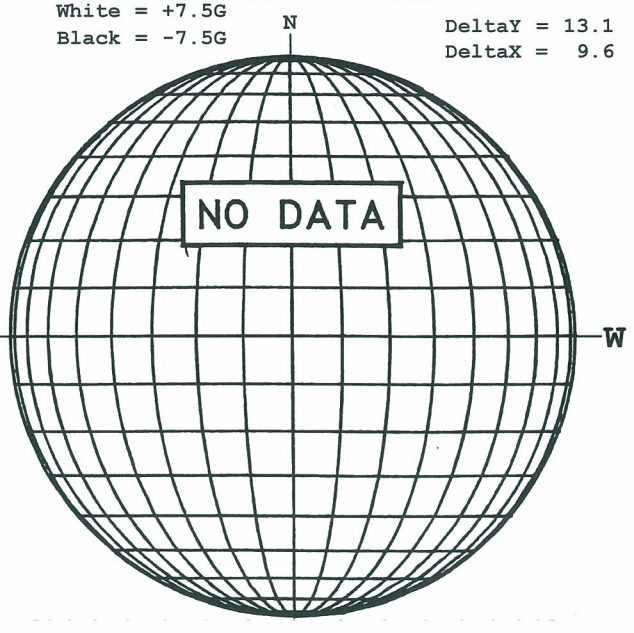
Solid = +
Dashed = -

1851 UT

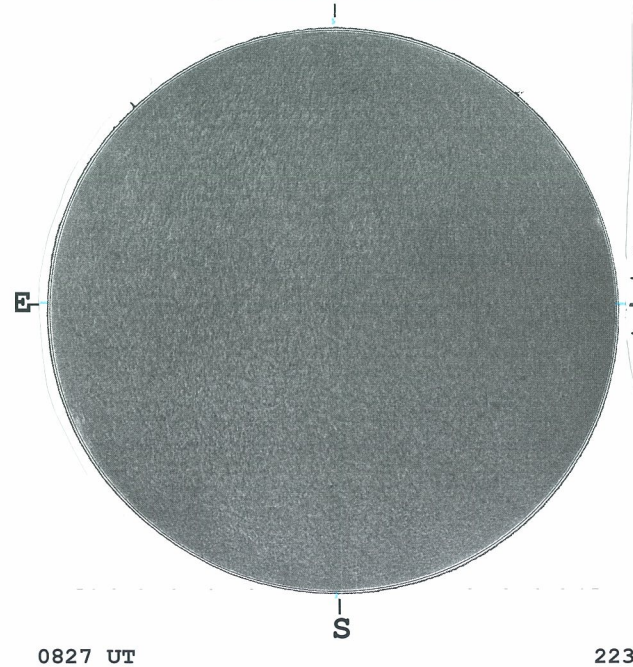
MT. WILSON MAGNETOGRAM

White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6

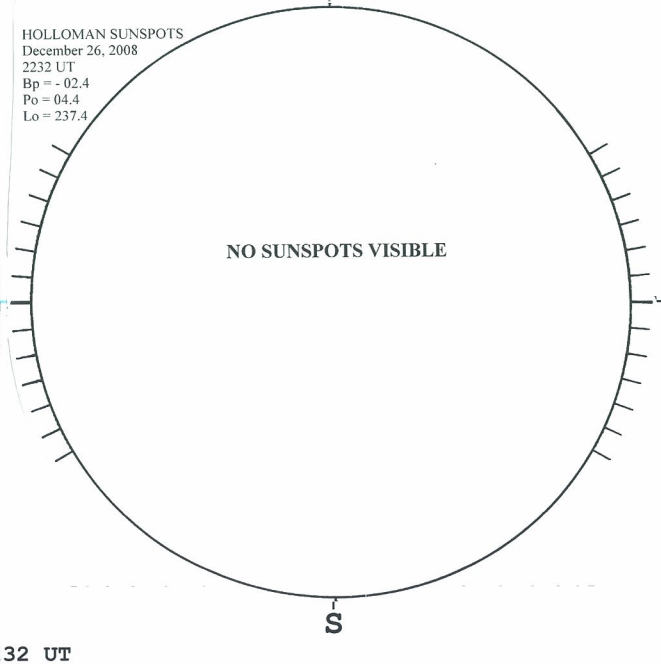


KANZELHOHE H-ALPHA



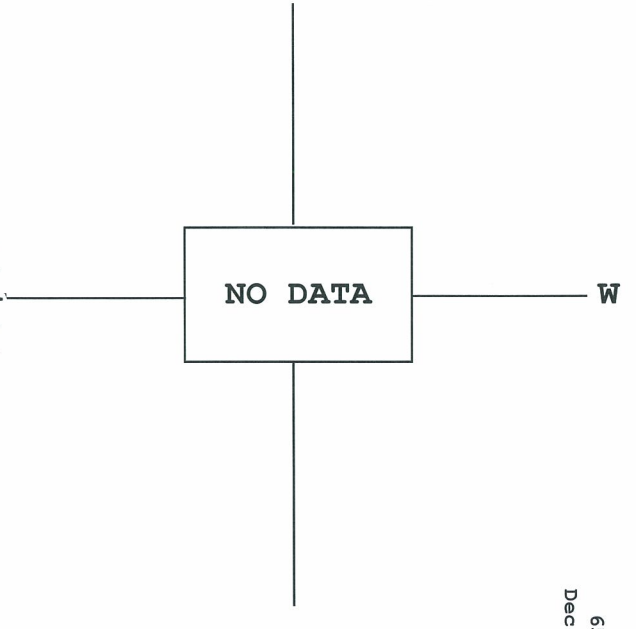
0827 UT

HOLLOMAN SUNSPOTS



2232 UT

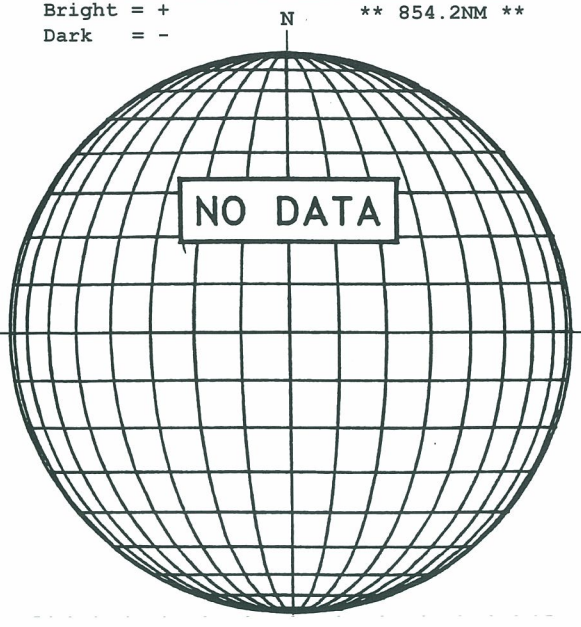
SACRAMENTO PEAK CORONA (1.15 Radii)-----



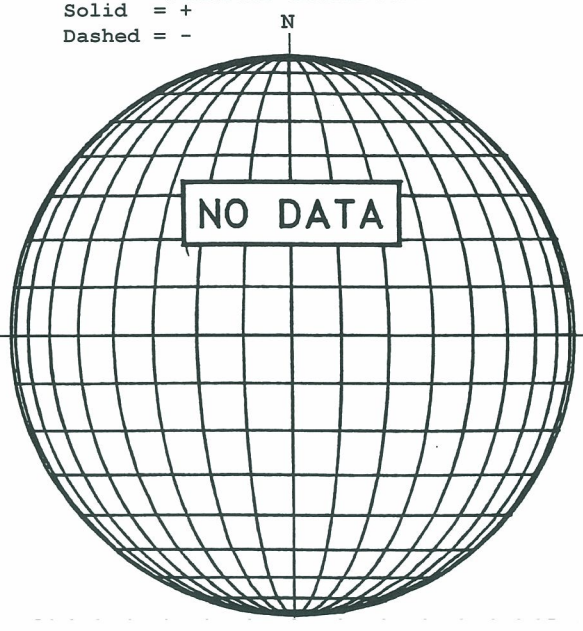
65
Dec 08

December 27, 2008 (P= 4.41, Bo=-2.44, Lo= 236.27)

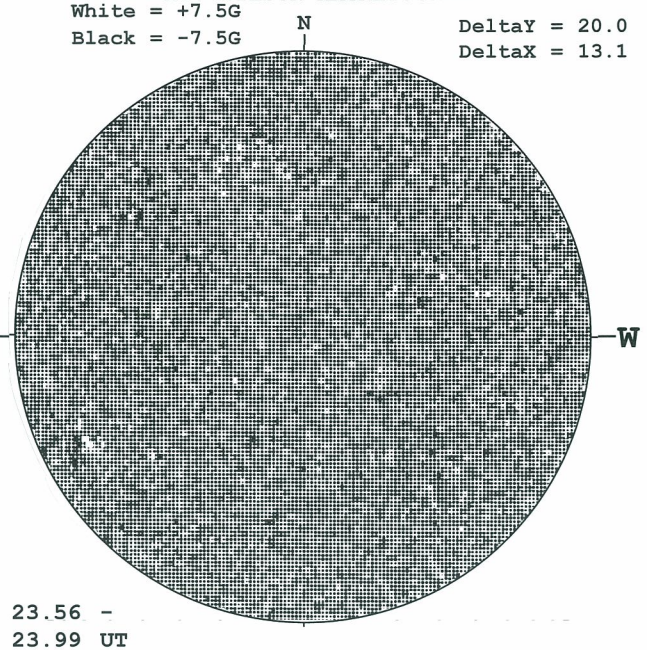
KITT PEAK MAGNETOGRAM -- SOLIS
Bright = +
Dark = -
** 854.2NM **



STANFORD MAGNETOGRAM
Solid = +
Dashed = -

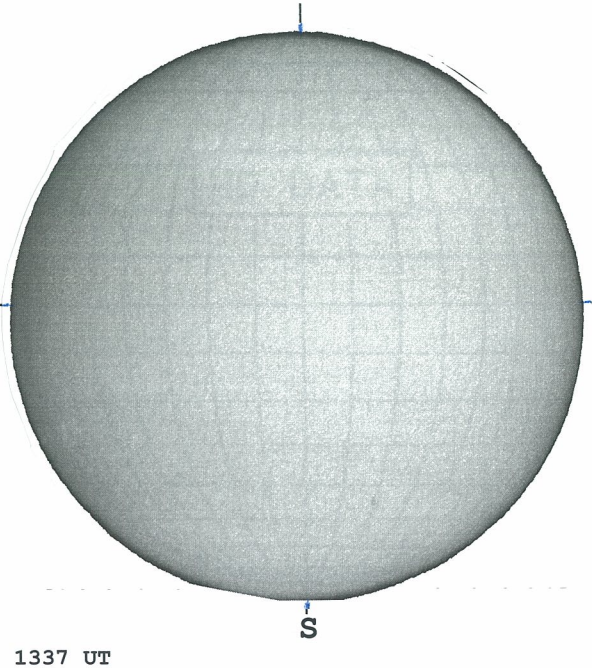


MT. WILSON MAGNETOGRAM
White = +7.5G
Black = -7.5G
DeltaY = 20.0
DeltaX = 13.1



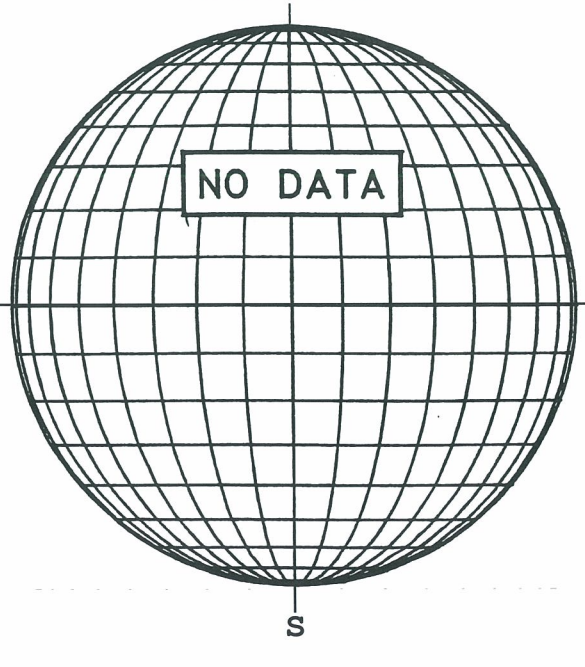
23.56 -
23.99 UT

MEUDON H-ALPHA

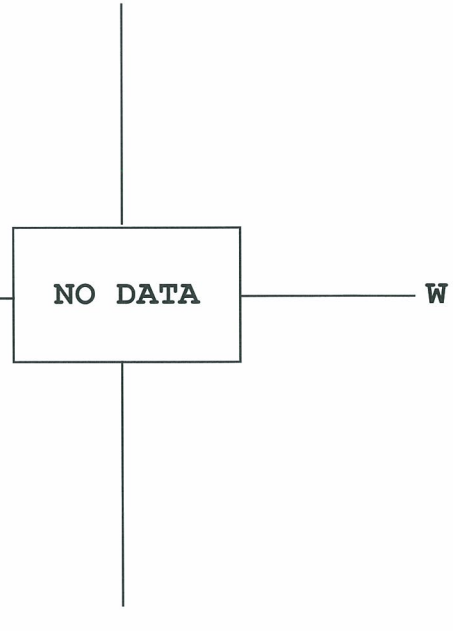


1337 UT

HOLLOMAN SUNSPOTS



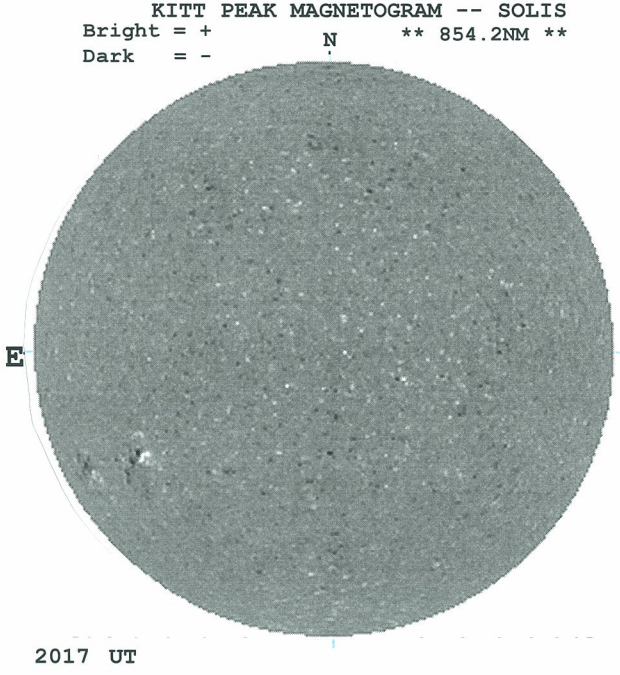
SACRAMENTO PEAK CORONA (1.15 Radii)-----



December 28, 2008 (P= 3.92, Bo=-2.56, Lo= 223.10)

KITT PEAK MAGNETOGRAM -- SOLIS

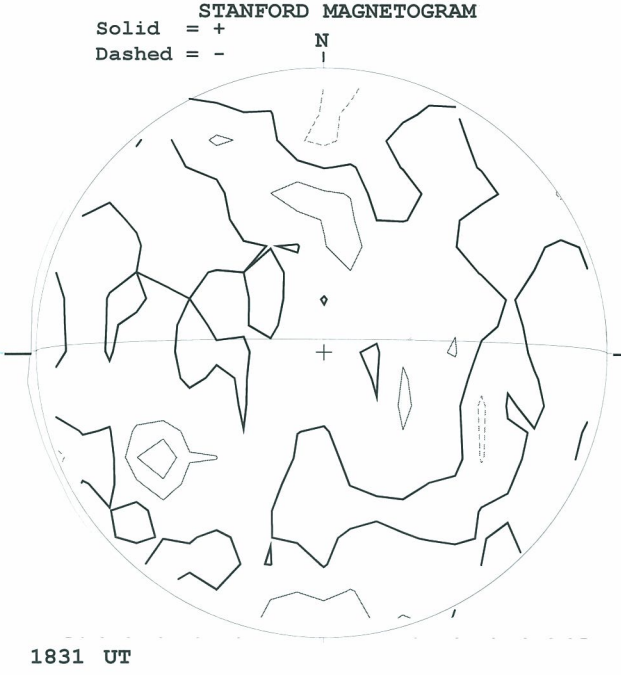
Bright = +
Dark = -



2017 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

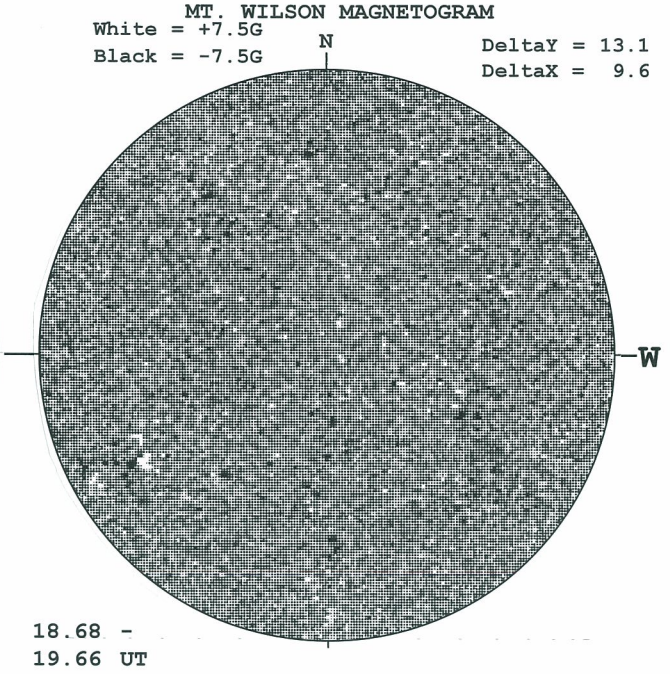


1831 UT

MT. WILSON MAGNETOGRAM

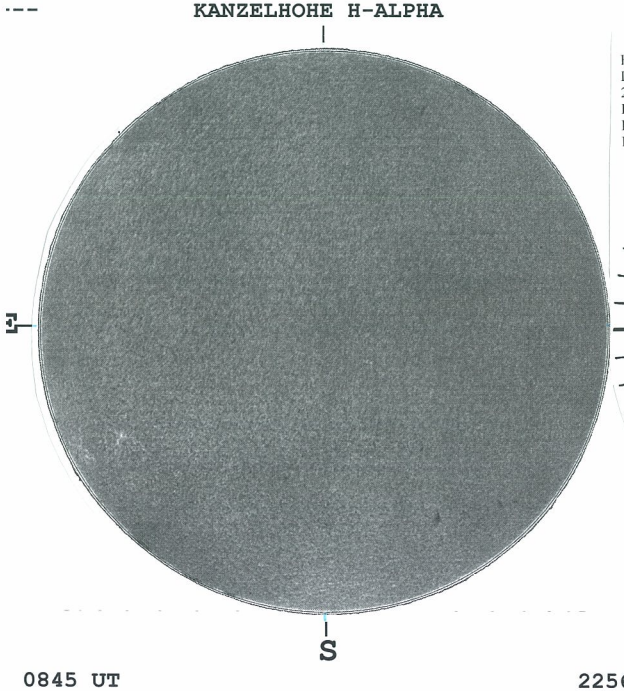
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



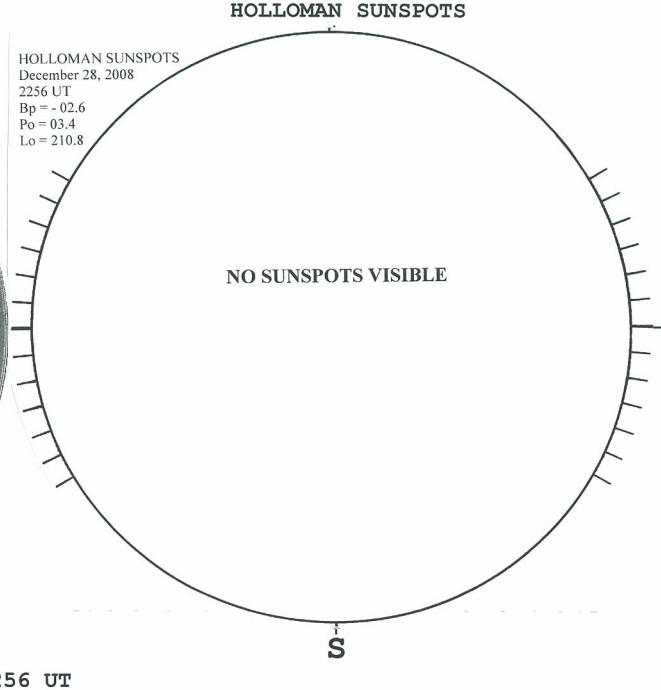
18.68 -
19.66 UT

KANZELHOHE H-ALPHA



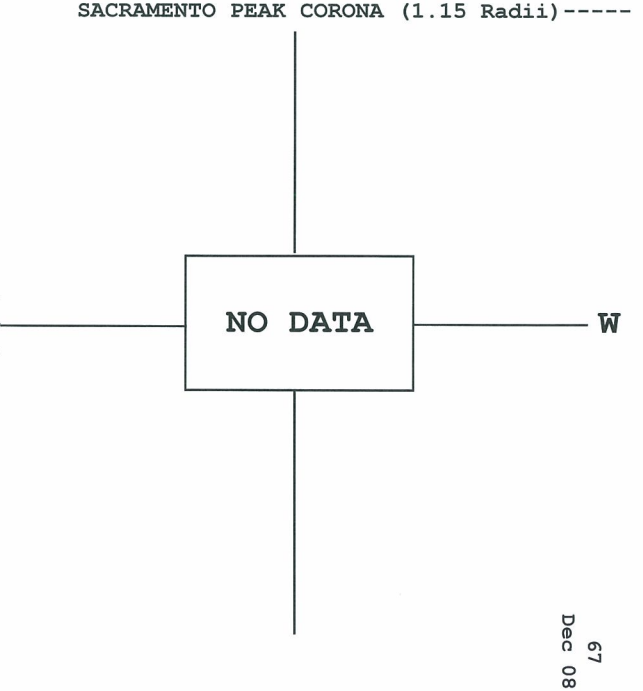
0845 UT

HOLLOMAN SUNSPOTS



2256 UT

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



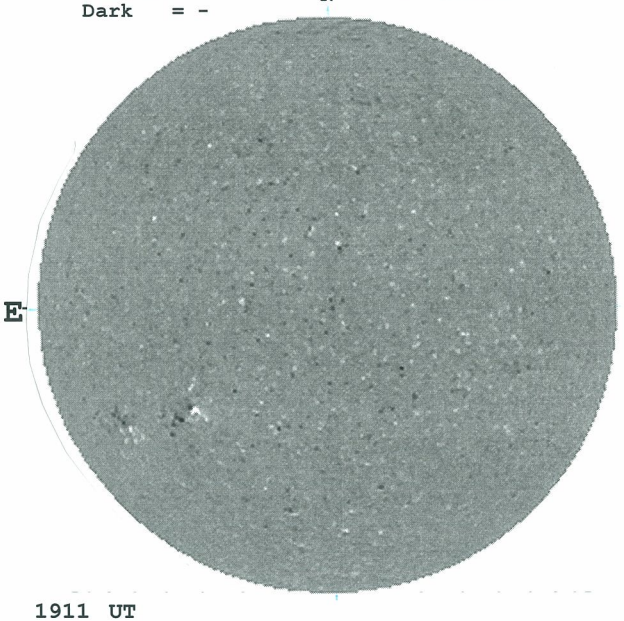
67
Dec 08

December 29, 2008 (P= 3.44, Bo=-2.68, Lo= 209.93)

Dec 08 68

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

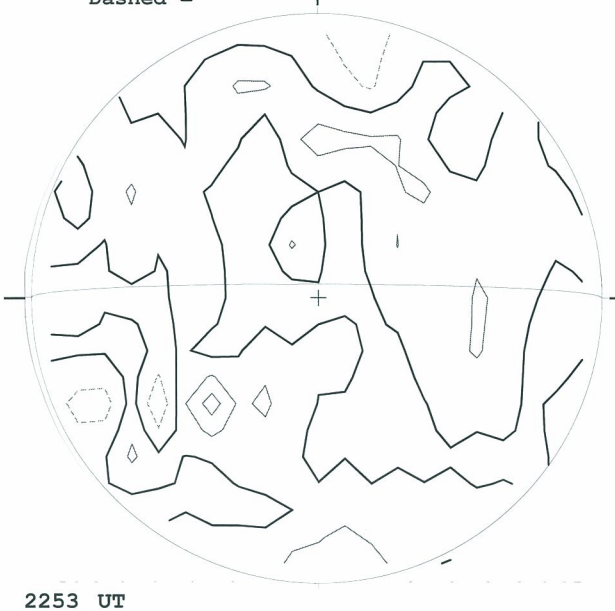


** 854.2NM **

1911 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

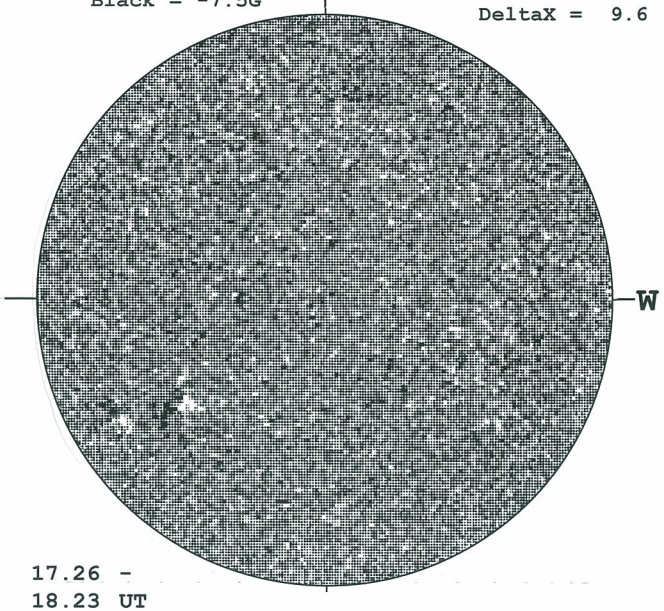


2253 UT

MT. WILSON MAGNETOGRAM

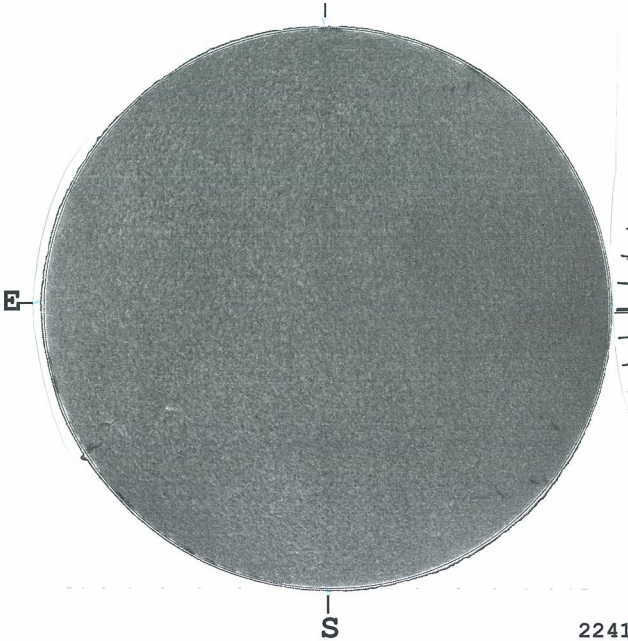
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



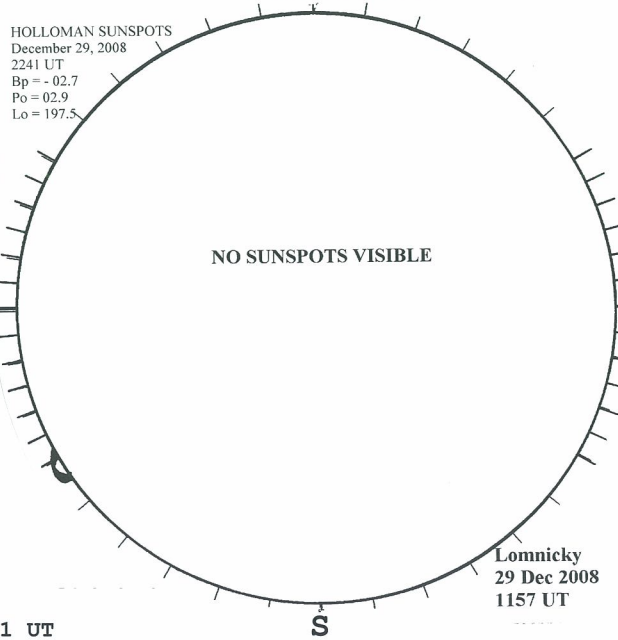
17.26 -
18.23 UT

KANZELHOHE H-ALPHA



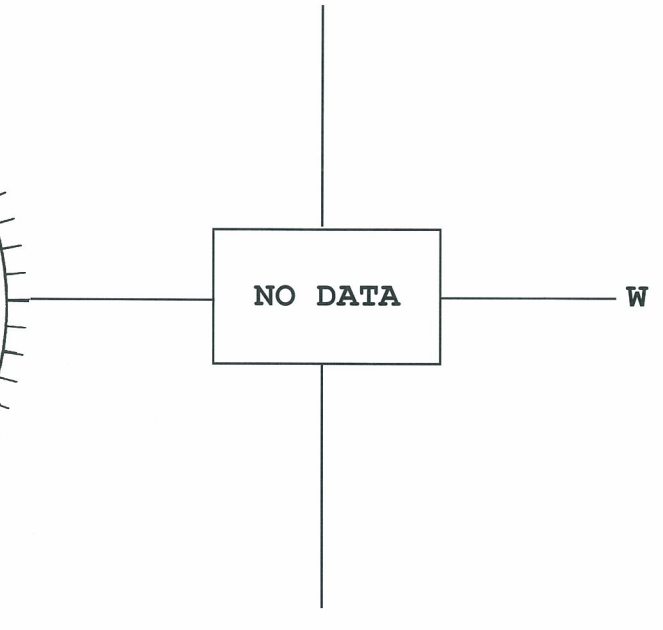
0800 UT

HOLLOMAN SUNSPOTS



2241 UT
1157 UT LOMN PROM

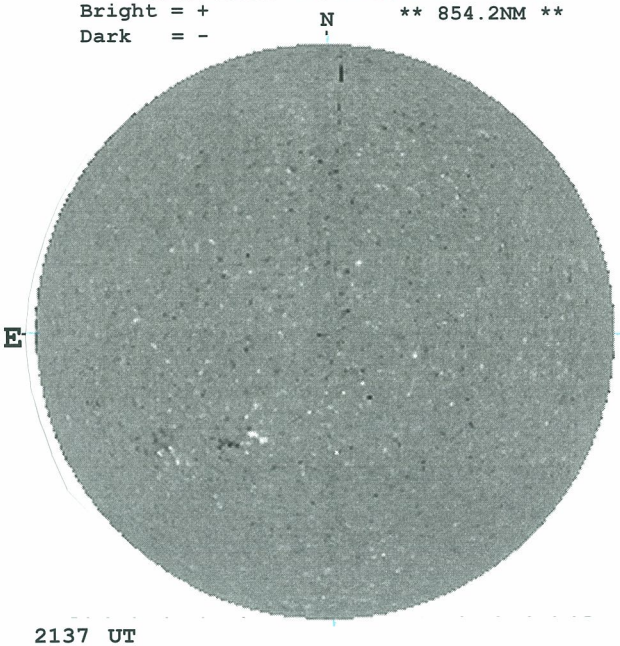
SACRAMENTO PEAK CORONA (1.15 Radii)-----



December 30, 2008 (P= 2.96, Bo=-2.80, Lo= 196.76)

KITT PEAK MAGNETOGRAM -- SOLIS

Bright = +
Dark = -

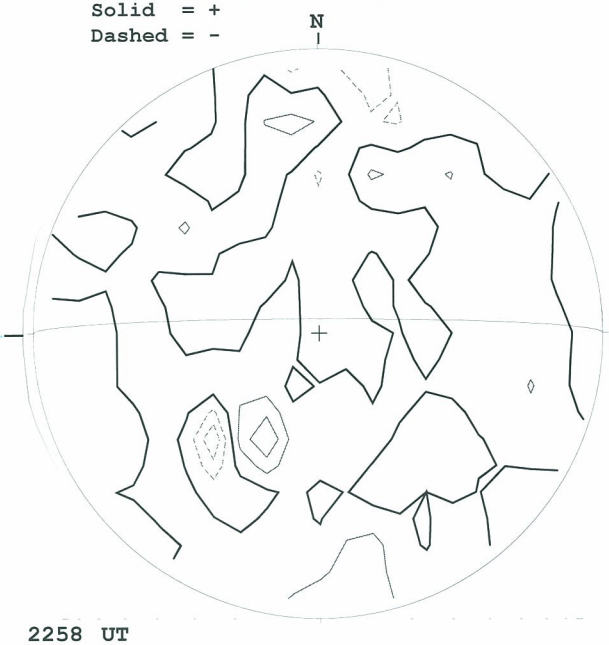


** 854.2NM **

2137 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

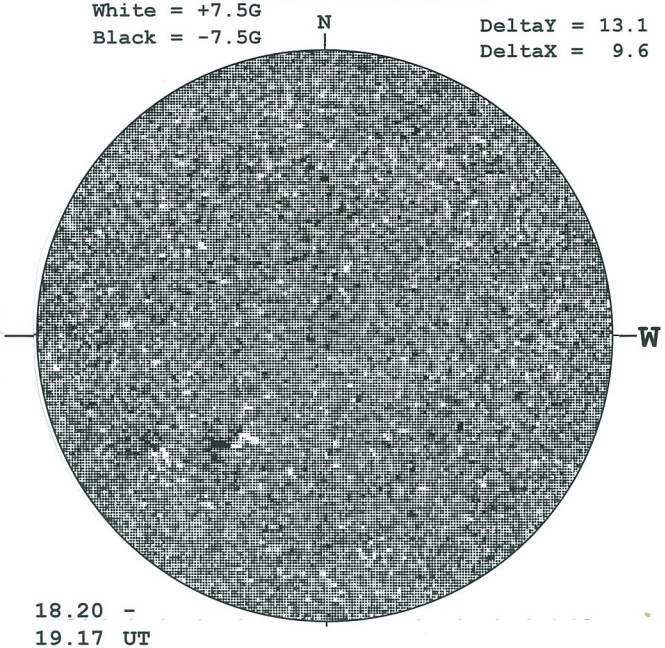


2258 UT

MT. WILSON MAGNETOGRAM

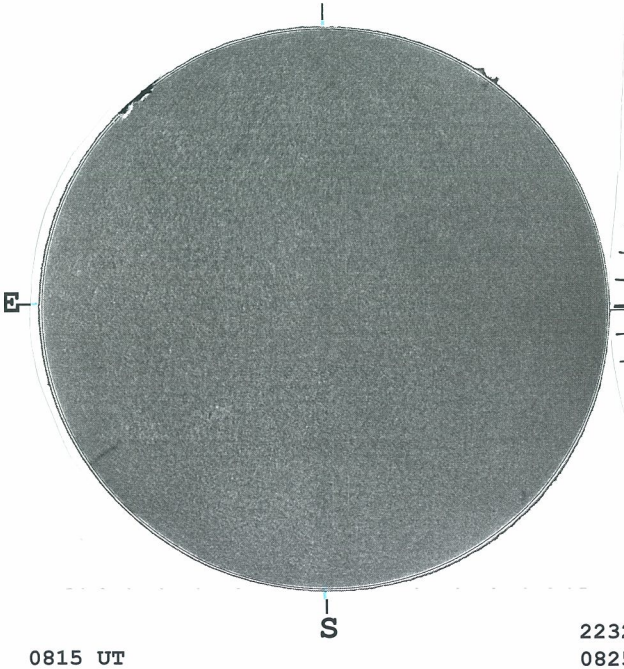
White = +7.5G
Black = -7.5G

DeltaY = 13.1
DeltaX = 9.6



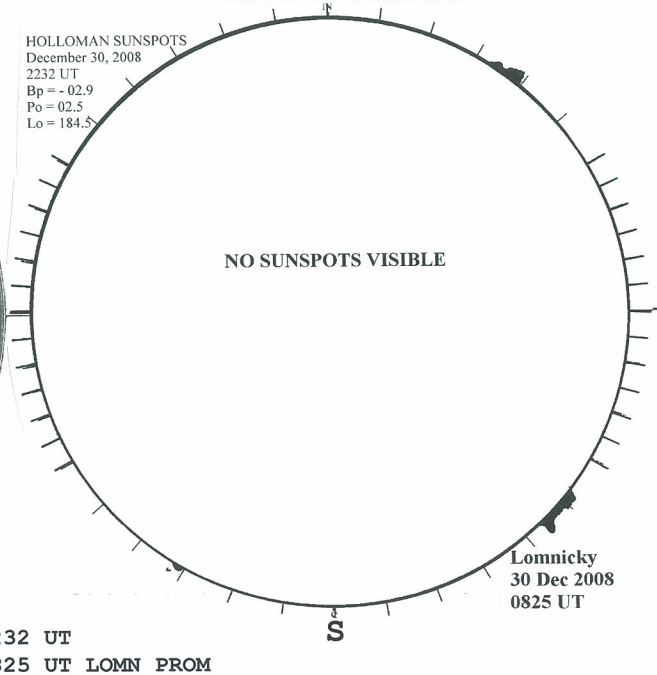
18.20 -
19.17 UT

--- KANZELHOHE H-ALPHA



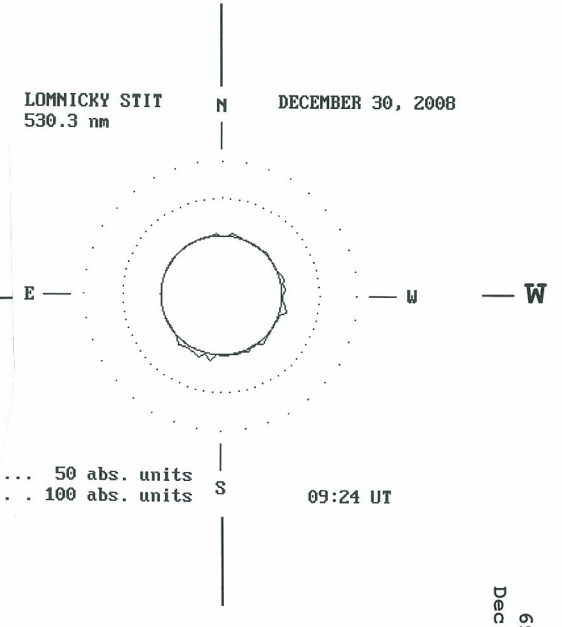
0815 UT

HOLLOMAN SUNSPOTS



2232 UT
0825 UT LOMN PROM

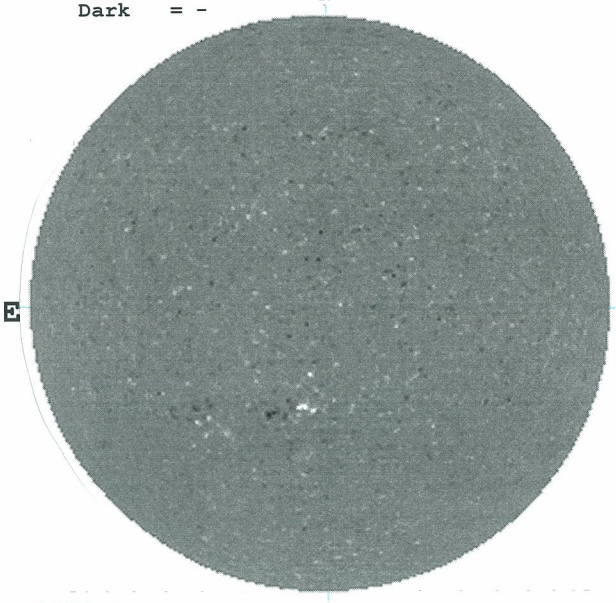
LOMNICKY PEAK CORONA (1.04 Radii)------



December 31, 2008 (P= 2.47, Bo=-2.92, Lo= 183.59)

Dec 08 70

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

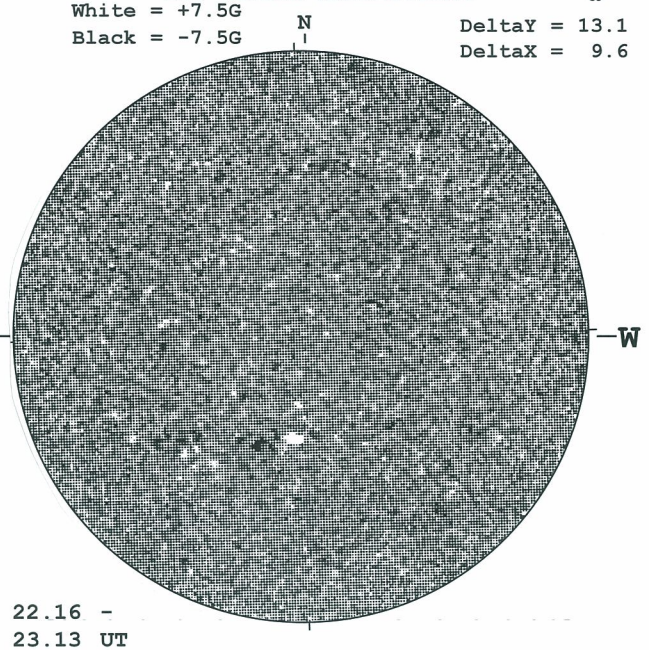


1935 UT

STANFORD MAGNETOGRAM
Solid = +
Dashed = -

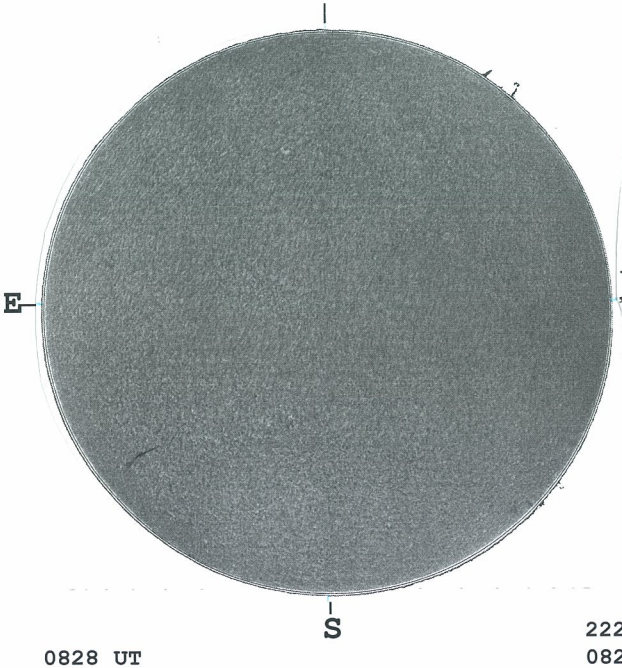
2242 UT

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



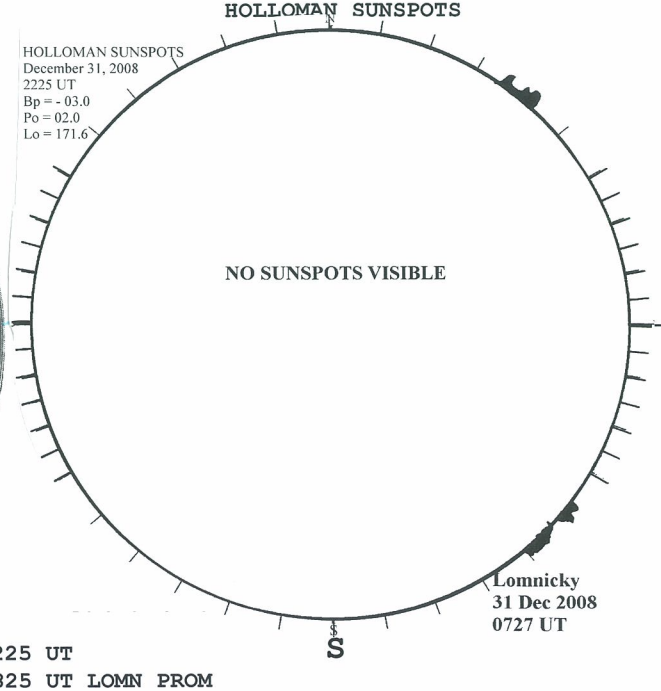
22.16 -
23.13 UT

KANZELHOHE H-ALPHA



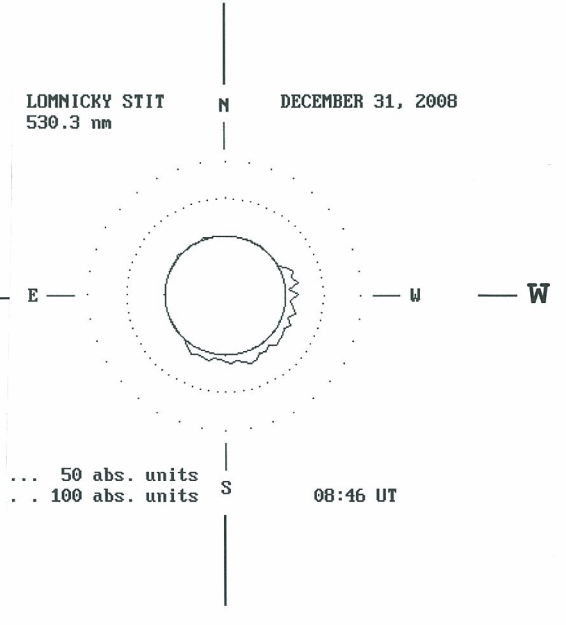
0828 UT

HOLLOMAN SUNSPOTS

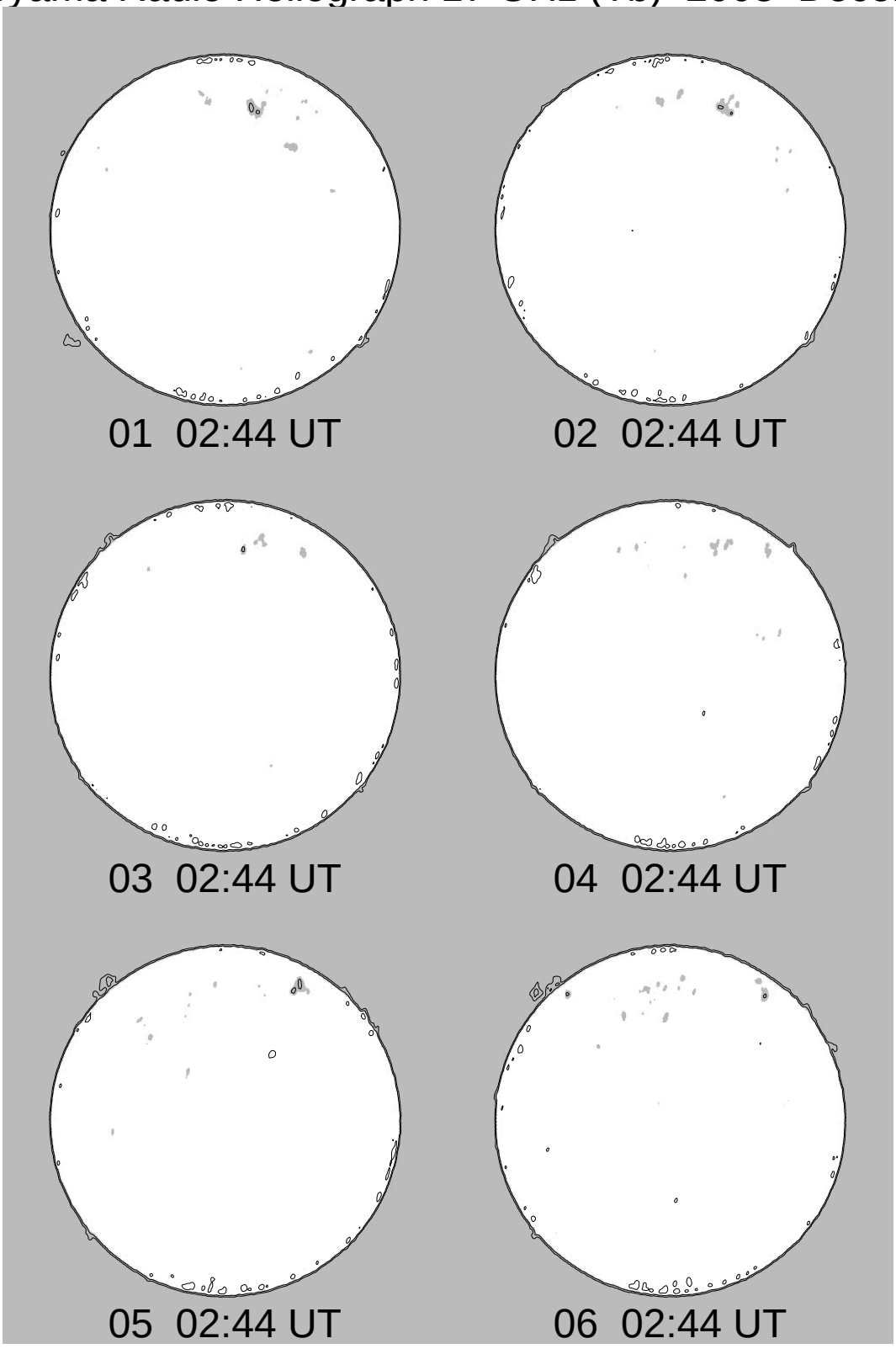


2225 UT
0825 UT LOMN PROM

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

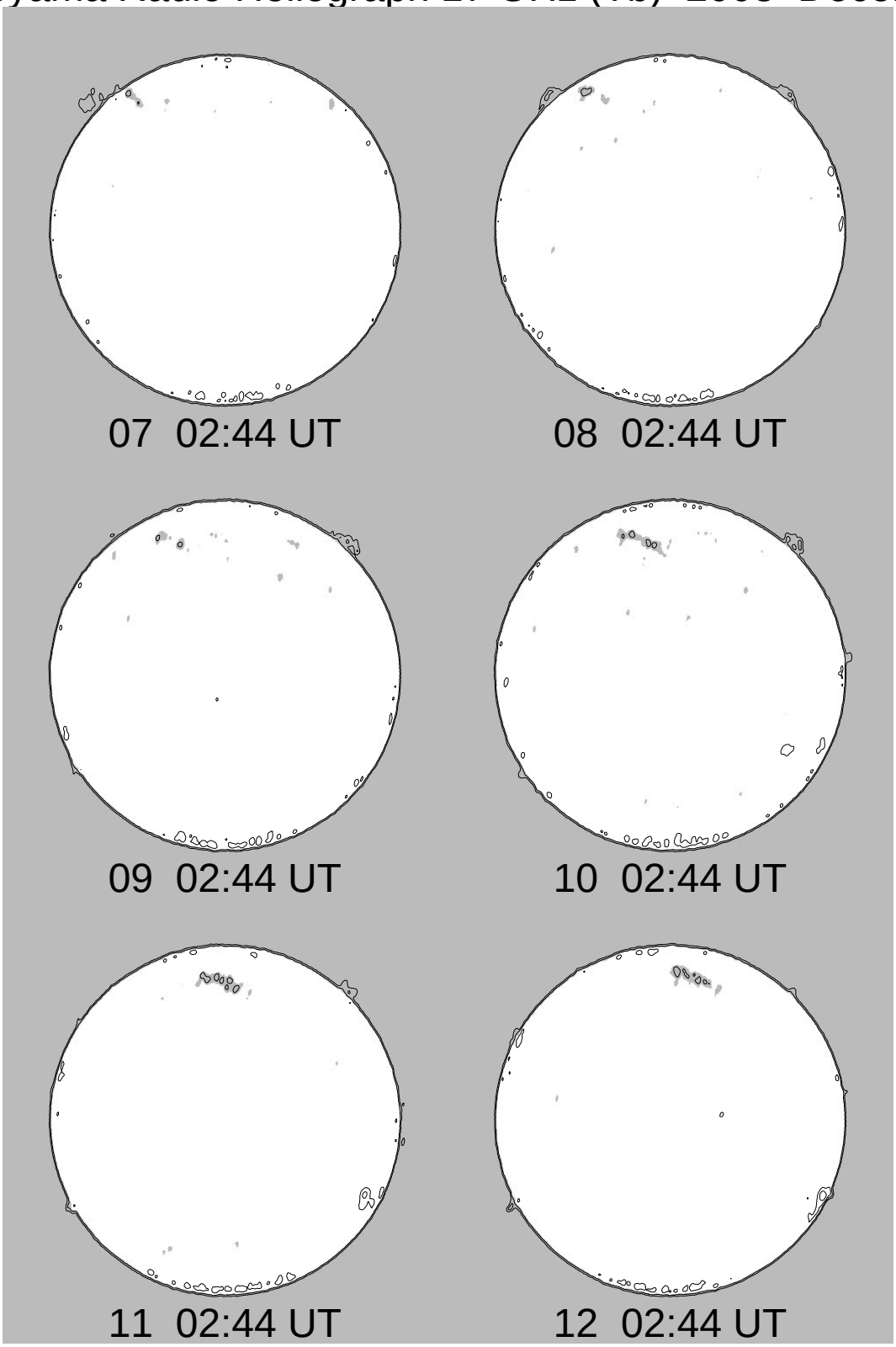


Nobeyama Radio Heliograph 17 GHz (Tb) 2008 December



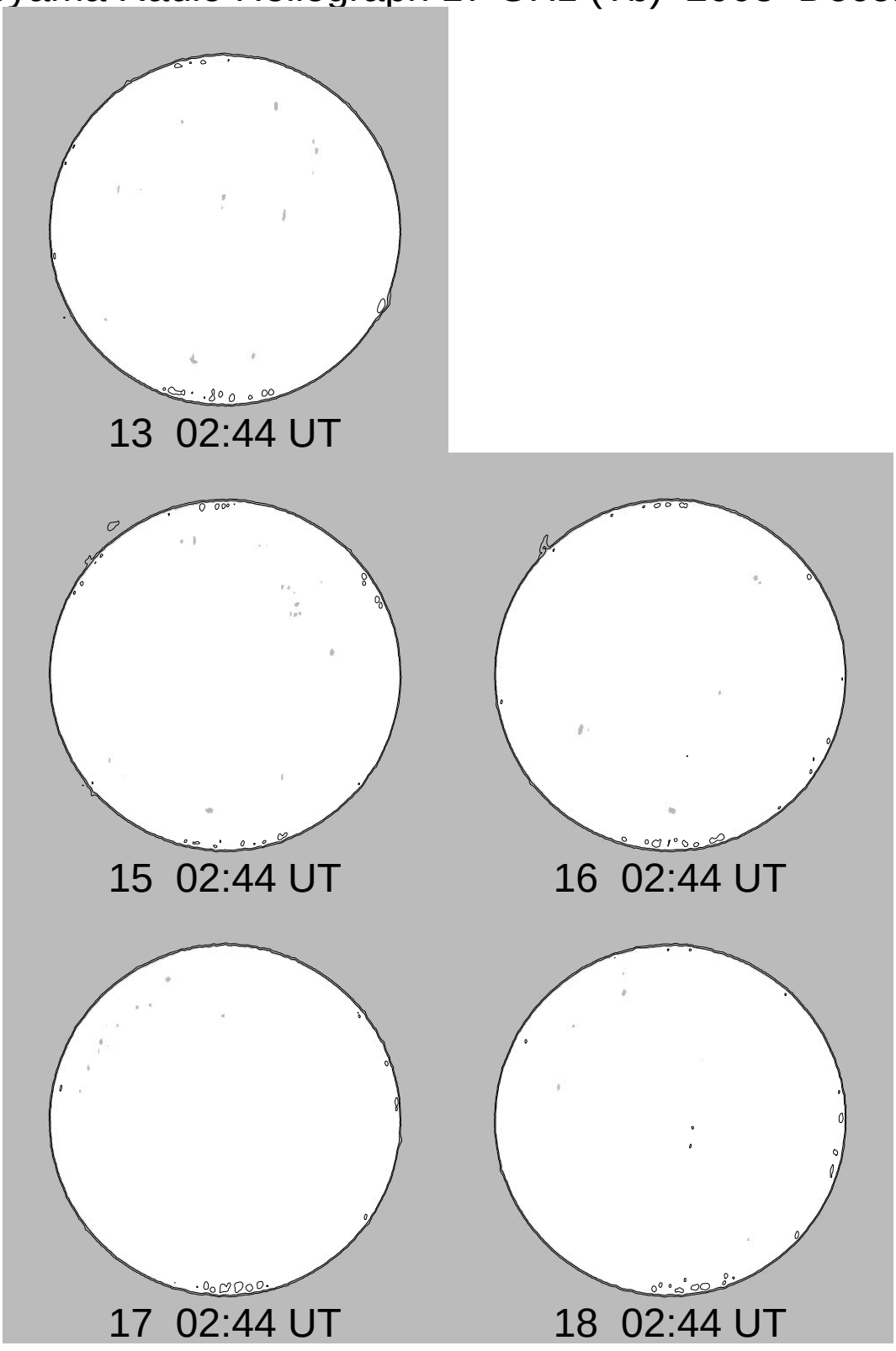
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2008 December



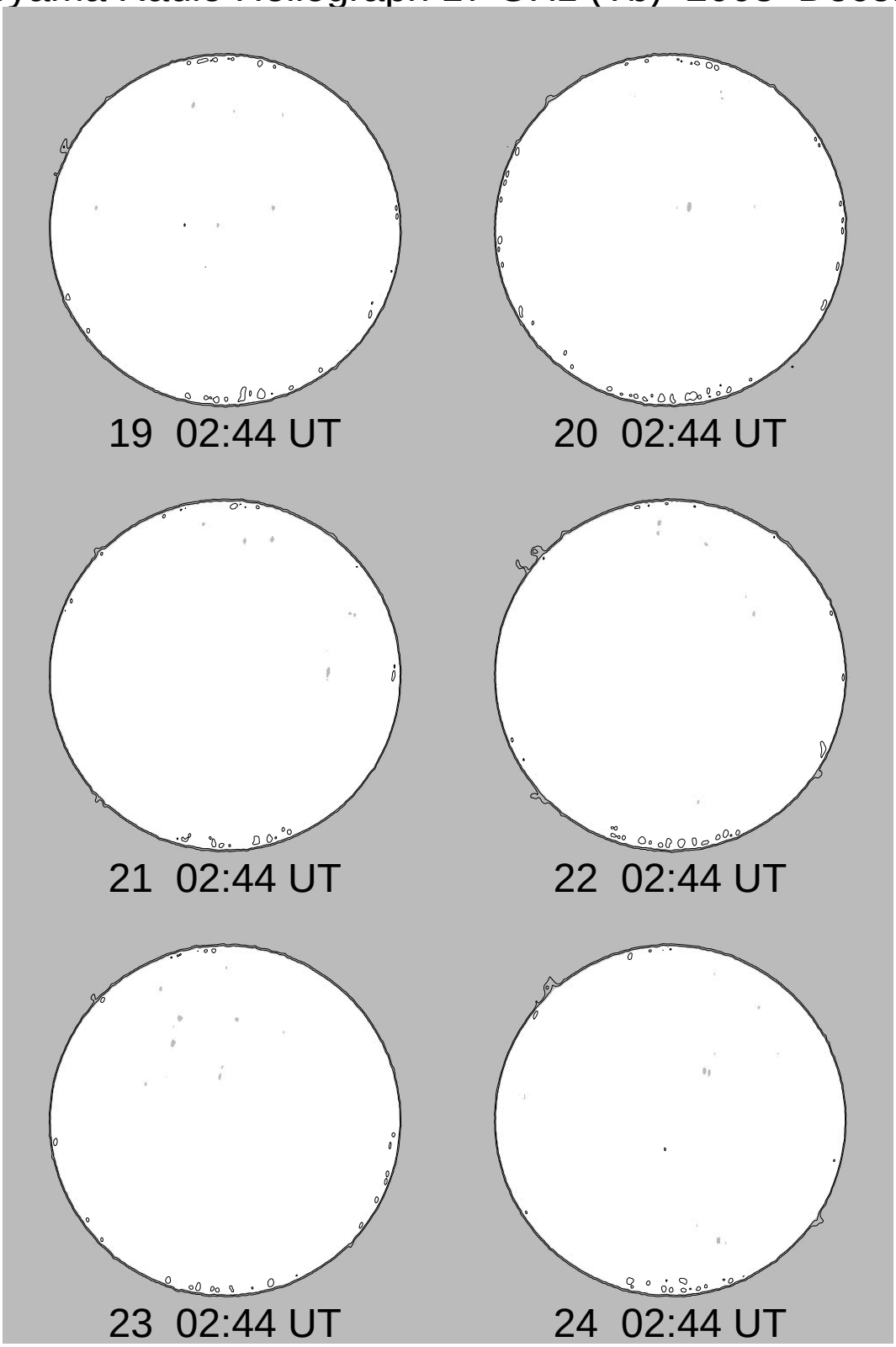
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2008 December



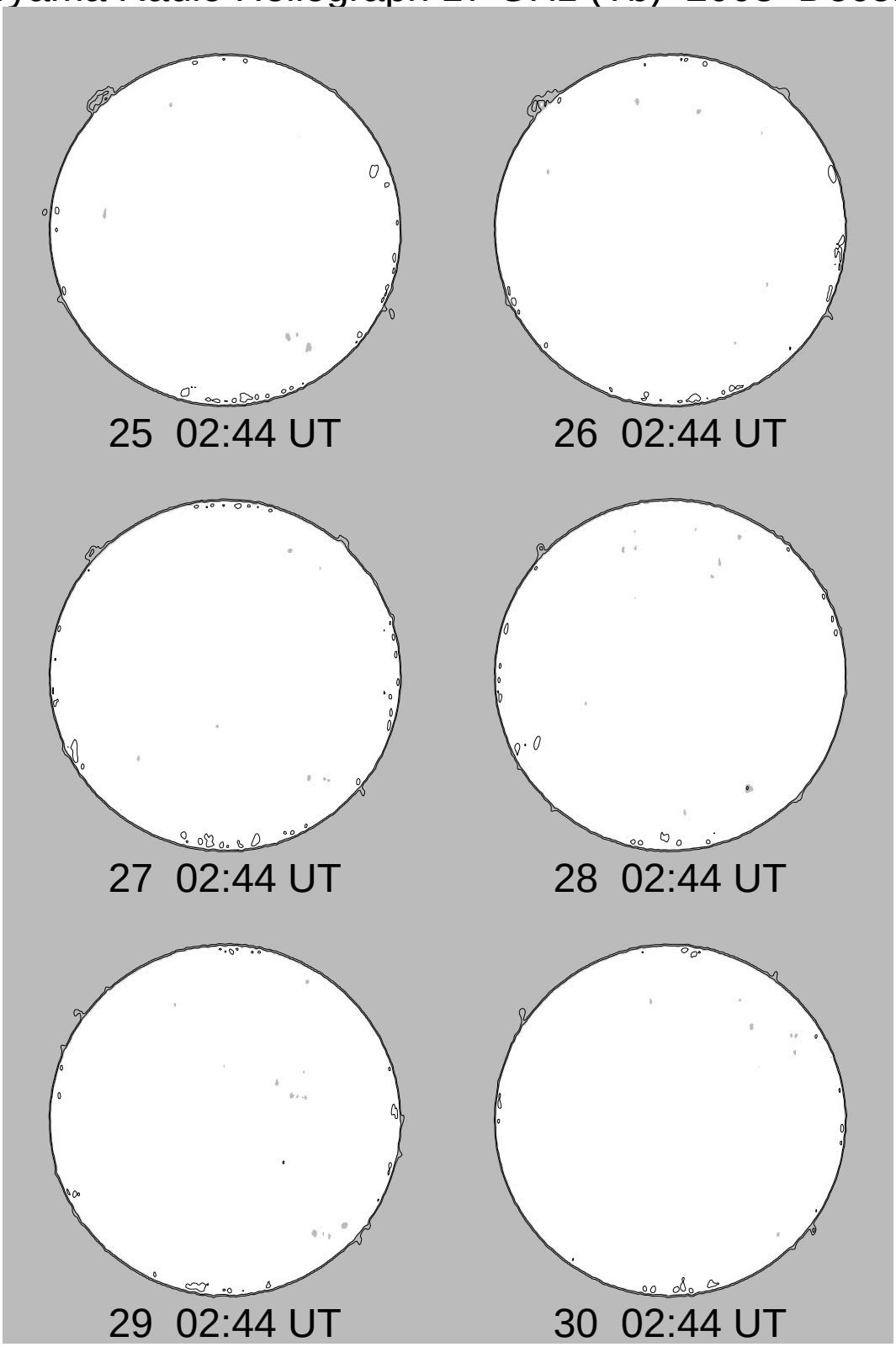
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2008 December



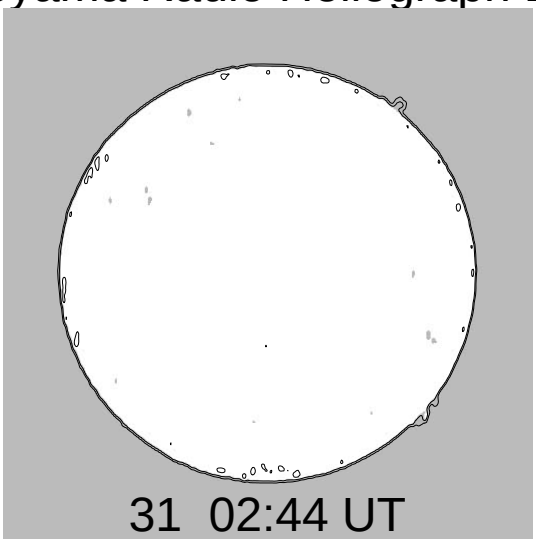
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2008 December



Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2008 December



Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

S U N S P O T G R O U P S

(Ordered by Central Meridian Passage Date)

DECEMBER 2008

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	CMP Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
11009		HOLL	12	09	2224	S26	W43	12	6.6		A	AXX	10	1	1	3
11009		LEAR	12	10	0109	S26	W47	12	6.4		B	BXO	30	2	3	3
11009		SVTO	12	10	0955	S27	W54	12	6.2		B	CSO	40	2	4	2
11009		KAND	12	10	1155	S24	W54	12	6.3			DAO		3	4	3
11009		HOLL	12	10	1626	S26	W55	12	6.4		B	DSO	50	3	7	3
11009		VORO	12	11	0004	S26	W59	12	6.4			CAI	54	2	5	3
11009		LEAR	12	11	0202	S25	W61	12	6.3		B	BXO	60	2	5	3
11009		TACH	12	11	0536	S23	W62	12	6.4			BXO	24	2	6	3
11009		KAND	12	11	0800	S26	W67	12	6.1			DAO		2	7	3
11009		VORO	12	12	0105	S27	W76	12	6.1			HAX	50	1		3
11009		LEAR	12	12	0120	S25	W78	12	6.0		B	BXO	70	4	2	3
11009		TACH	12	12	0557	S25	W74	12	6.5			BXO	26	2	5	3
11009		KAND	12	12	0820	S25	W80	12	6.1			DAO		3	8	2

Stations reporting:

HOLL = Holloman LEAR = Learmonth PURP = Purple Mountain TACH = Tashkent
KAND = Kandilli PALE = Palehua SVTO = San Vito VORO = Voroshilov

SUDDEN IONOSPHERIC DISTURBANCES
DECEMBER 2008

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
03	1216	1234	1257	1	1						No Fare		
11	1137	1155	1239	1	1						1134	B 1.0	
11	1304	1334	1400	1	1						No Fare		
12	1148	1203	1258	1	1						No Fare		

OBSERVATORIES REPORTING FOR DECEMBER 2008

Upice, Czech Republic	SEA

Observations are not necessarily continuous.
* = No Flare Patrol

S O L A R R A D I O E M I S S I O N

Spectral Observations

DECEMBER 2008

OBSERVATION			EVENT				FREQUENCY			
Day	Start (UT)	End (UT)	Sta	Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)	Upper (MHz)	Remarks
01	0000	0729	HIRA								
	0000	0800	CULG								
	0814	1329	ONDR								
	0825	1440	BLEN								
	2000	2400	CULG								
	2125	2400	HIRA								
02	0000	0728	HIRA								
	0000	0800	CULG								
	0817	1328	ONDR								
	0930	1210	BLEN								
	2000	2400	CULG								
	2126	2400	HIRA								
03	0000	0728	HIRA								
	0000	0800	CULG								
	0817	1327	ONDR								
	0830	1435	BLEN								
	2000	2400	CULG								
	2127	2400	HIRA								
04	0000	0729	HIRA								
	0000	0800	CULG								
	0820	1326	ONDR								
	0830	1435	BLEN								
	2000	2400	CULG								
	2127	2400	HIRA								
05	0000	0729	HIRA								
	0000	0800	CULG								
	0820	1325	ONDR								
	0835	1435	BLEN								
	2000	2400	CULG								
	2128	2400	HIRA								
06	0000	0729	HIRA								
	0000	0800	CULG								
	0822	1324	ONDR								
	0835	1435	BLEN								
	2000	2400	CULG								
	2129	2400	HIRA								
07	0000	0729	HIRA								
	0000	0800	CULG								
	0823	1324	ONDR								
	0840	1435	BLEN								
	2000	2400	CULG								
	2130	2400	HIRA								
08	0000	0729	HIRA								
	0000	0800	CULG								
	0845	1435	BLEN								
	1023	1323	ONDR								
	2000	2400	CULG								
	2131	2400	HIRA								
09	0000	0729	HIRA								
	0000	0800	CULG								
	0837	1309	ONDR								
	0845	1435	BLEN								
	2000	2400	CULG								
	2132	2400	HIRA								
10	0000	0729	HIRA								
	0000	0800	CULG								
	0828	1322	ONDR								
	0845	1435	BLEN								
	2000	2400	CULG								
	2133	2400	HIRA								

S O L A R R A D I O E M I S S I O N

Spectral Observations

DECEMBER 2008

OBSERVATION			EVENT				FREQUENCY		
Start	End		Start	End	Spectral	Event	Int	Lower	Upper	Remarks
Day (UT)	(UT)	Sta	(UT)	(UT)	Class	Remarks	(1-3)	(MHz)	(MHz)	
11 0000	0729	HIRA								
0000	0800	CULG								
0845	1435	BLEN								
0829	1322	ONDR	0924.0	0924.5	DCIM		1	800x	1600	
		ONDR	1143.1	1143.5	DCIM		1	800x	1300	
2000	2400	CULG								
2133	2400	HIRA								
12 0000	0729	HIRA								
0000	0800	CULG								
0830	1322	ONDR								
1230	1435	BLEN								
2000	2400	CULG								
2134	2400	HIRA								
13 0000	0729	HIRA								
0000	0800	CULG								
0831	1321	ONDR								
0850	1435	BLEN								
2000	2400	CULG								
2134	2400	HIRA								
14 0000	0730	HIRA								
0000	0800	CULG								
0832	1321	ONDR								
0850	1435	BLEN								
2000	2400	CULG								
2135	2400	HIRA								
15 0000	0730	HIRA								
0000	0800	CULG								
0833	1321	ONDR								
0850	1435	BLEN								
2000	2400	CULG								
2136	2400	HIRA								
16 0000	0730	HIRA								
0000	0800	CULG								
0834	1321	ONDR								
0850	1435	BLEN								
2000	2400	CULG								
2137	2400	HIRA								
17 0000	0731	HIRA								
0000	0800	CULG								
0835	1322	ONDR								
0850	1435	BLEN								
2000	2400	CULG								
2138	2400	HIRA								
18 0000	0731	HIRA								
0000	0800	CULG								
0836	1322	ONDR								
0850	1435	BLEN								
2000	2400	CULG								
2138	2400	HIRA								
19 0000	0732	HIRA								
0000	0800	CULG								
0837	1322	ONDR								
0855	1435	BLEN								
2000	2400	CULG								
2138	2400	HIRA								
20 0000	0732	HIRA								
0000	0800	CULG								
0837	1322	ONDR								
0855	1435	BLEN								
2000	2400	CULG								

S O L A R R A D I O E M I S S I O N

Spectral Observations

DECEMBER 2008

OBSERVATION			EVENT				FREQUENCY		
Start (UT)	End (UT)	Sta	Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)	Upper (MHz)	Remarks
20										
2139	2400	HIRA								
21										
0000	0732	HIRA								
0000	0800	CULG								
0838	1323	ONDR								
0855	1440	BLEN								
2000	2400	CULG								
2139	2400	HIRA								
22										
0000	0733	HIRA								
0000	0800	CULG								
0838	1310	ONDR								
0855	1440	BLEN								
2000	2400	CULG								
2140	2400	HIRA								
23										
0000	0733	HIRA								
0000	0800	CULG								
0839	1311	ONDR								
0855	1440	BLEN								
2140	2400	HIRA								
24										
0000	0734	HIRA								
0015	0800	CULG								
0839	1311	ONDR								
0855	1440	BLEN								
2000	2400	CULG								
2141	2400	HIRA								
25										
0000	0734	HIRA								
0000	0800	CULG								
0839	1326	ONDR								
0855	1440	BLEN								
2000	2400	CULG								
2142	2400	HIRA								
26										
0000	0735	HIRA								
0000	0800	CULG								
0839	1326	ONDR								
0855	1440	BLEN								
2000	2400	CULG								
2142	2400	HIRA								
27										
0000	0736	HIRA								
0000	0800	CULG								
0839	1327	ONDR								
0855	1440	BLEN								
2000	2400	CULG								
2142	2400	HIRA								
28										
0000	0737	HIRA								
0000	0800	CULG								
0839	1328	ONDR								
0855	1440	BLEN								
2000	2400	CULG								
2142	2400	HIRA								
29										
0000	0737	HIRA								
0000	0800	CULG								
0839	1329	ONDR								
0855	1440	BLEN								
2000	2400	CULG								
2143	2400	HIRA								
30										
0000	0737	HIRA								
0000	0800	CULG								
0839	1331	ONDR								
0855	1440	BLEN								
2000	2400	CULG								

S O L A R R A D I O E M I S S I O N

Spectral Observations

DECEMBER 2008

OBSERVATION			EVENT				FREQUENCY			
Day	Start (UT)	End (UT)	Sta	Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	Lower (MHz)	Upper (MHz)	Remarks
30	2143	2400	HIRA								
31	0000	0738	HIRA								
	0000	0800	CULG								
	0839	1332	ONDR								
	0855	1445	BLEN								
	2000	2400	CULG								
	2143	2400	HIRA								

Event Remarks:

B = Single burst	N = Intermittent activity in this period
C = Underlyling continuum (particularly with Type I)	MOV = Moving (Type IV)
DC = Drifting chains	MWB = Meter wave burst
DP = Drifting pairs	RS = Reverse slope burst
F = Fundamental emission (Type II)	S = Storm in the sense of intermittent but apparently connected actively
FS = Fine structures (Type IV)	SH = Secondary harmonic emission
G = Small group of bursts (<10)	STA = Stationary (Type IV)
GG = Large group of bursts (>10)	U = U-shaped burst of Type III
H = Herringbone	UE = Uncertain emission (Type II)
HARM = Harmonic	W = Weak

Frequency qualifiers:

X = Extends beyond instrument range U = Uncertain frequency

Remarks:

SWF = Associated short wave fade observed
ESS = Estimated shock speed in km/s (Type II)
FLA = Associated flare observed (class optional)

Stations Reporting:

CULG = Culgoora IZMI = Izmiran LEAR = Learmonth ONDR = Ondrejov BLEN = Bleien
PALE = Palehua POTS = Potsdam SGMR = Sagamore Hill SVTO = San Vito

NOTE 1: Beginning June 26, 2001, the Bleien observatory changed to higher frequencies (1-4Ghz).
NOTE 2: Potsdam has reduced sensitivity in the 400-800 MHz range.

SOLAR RADIO NOISE STORM AT 150.9 MHZ

FROM NANÇAY RADIOHELIOGRAPH

DECEMBER 2008

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)

SOLAR RADIO NOISE STORM AT 327 MHZ

FROM NANÇAY RADIOHELIOGRAPH

DECEMBER 2008

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
11/12/08	+0.92	-0.55	I	8H14 E	15H14 D

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 mode detailed analysis leadind 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 off the very strong other source

**** no flux measurements available

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[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 NANCAY OBSERVATIONS

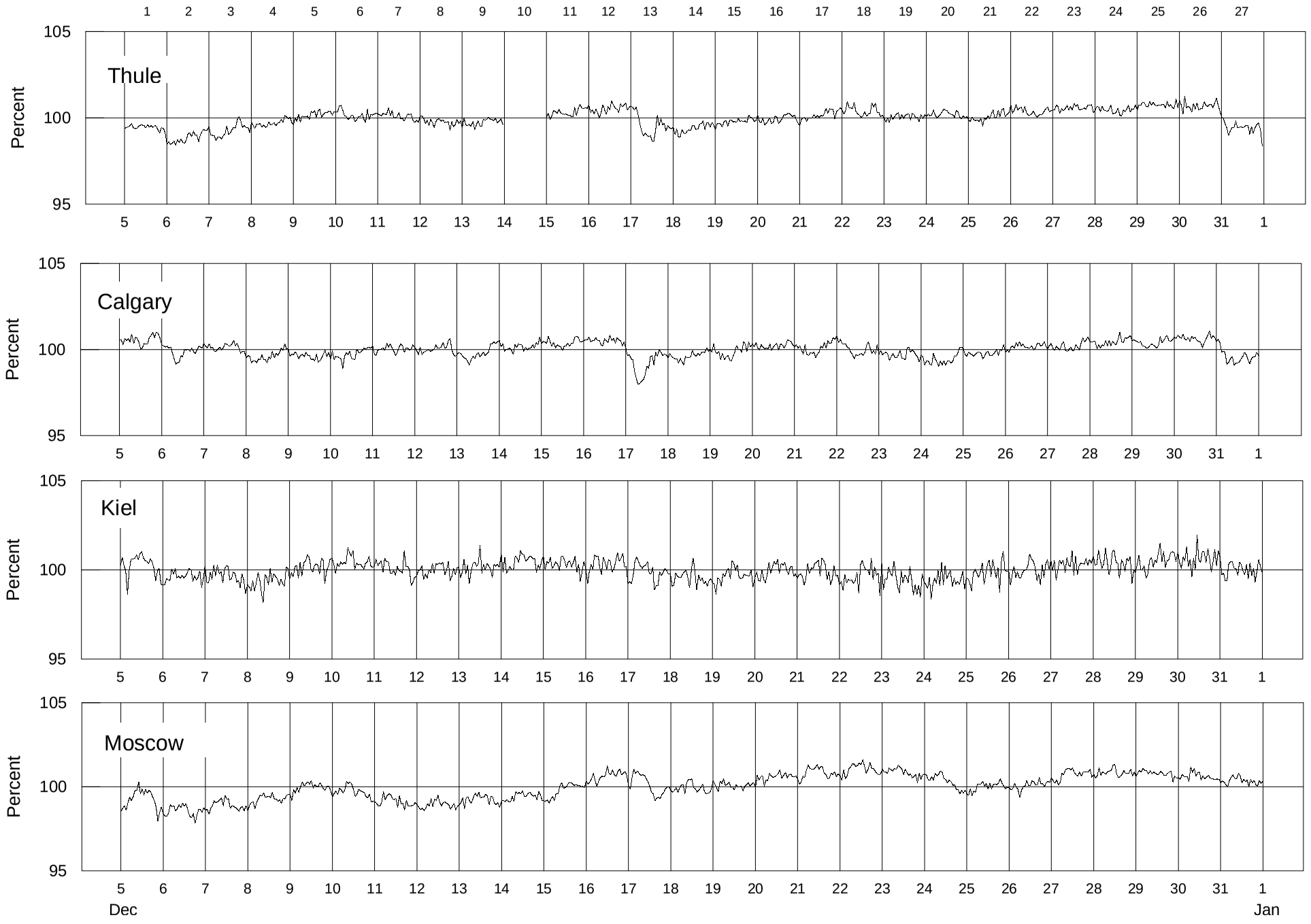
COSMIC RAY INDICES
(Neutron Monitor)
DECEMBER 2008

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	4654.1	4080.7	6475.5	9511.4		2106.8	
2	4668.2	4096.3	6477.9	9549.8		2109.8	
3	4661.5	4085.3	6491.5	9521.2		2105.3	
4	4647.2	4079.7	6467.0	9492.7		2130.9	
5	4641.7	4055.3	6454.3	9490.5		2119.7	
6	4613.0	4027.8	6411.2	9425.7		2109.4	
7	4633.2	4038.2	6415.0	9456.2	data	2119.1	data
8	4653.4	4016.7	6395.0	9491.0	not	2104.0	not
9	4674.6	4018.0	6444.9	9558.6	available	2108.2	available
10	4674.8	4021.0	6463.4	9533.0		2113.8	
11	4671.7	4033.8	6441.8	9477.8		2109.5	
12	4656.7	4033.7	6435.0	9459.5		2116.4	
13	4655.1	4023.3	6445.4	9489.3		2122.3	
14	---	4039.0	6465.0	9506.2		2119.8	
15	4682.1	4047.3	6456.9	9541.6		2113.5	
16	4691.6	4053.3	6457.4	9623.6		2115.6	
17	4647.0	4000.7	6427.0	9571.5		2115.3	
18	4638.9	4016.8	6408.5	9554.0		2112.5	
19	4657.0	4027.5	6414.3	9570.7		2123.3	
20	4664.5	4041.3	6433.1	9618.0		2134.3	
21	4674.6	4035.7	6430.1	9641.1		2142.1	
22	4686.1	4033.7	6412.2	9660.9		2126.9	
23	4669.8	4020.8	6401.1	9643.7		2122.5	
24	4676.6	4009.2	6399.3	9593.2		2115.8	
25	4670.0	4024.0	6427.2	9562.4		2112.9	
26	4685.1	4039.7	6433.6	9570.2		2118.6	
27	4693.7	4040.2	6456.0	9631.8		2117.5	
28	4688.8	4050.3	6461.7	9642.5		2120.3	
29	4701.9	4048.5	6467.2	9638.2		2124.0	
30	4699.7	4058.5	6476.6	9621.5		2124.9	
31	4641.0	4017.0	6438.0	9594.5		2121.0	
Mean	4665.0	4039.1	6441.4	9556.2		2117.9	

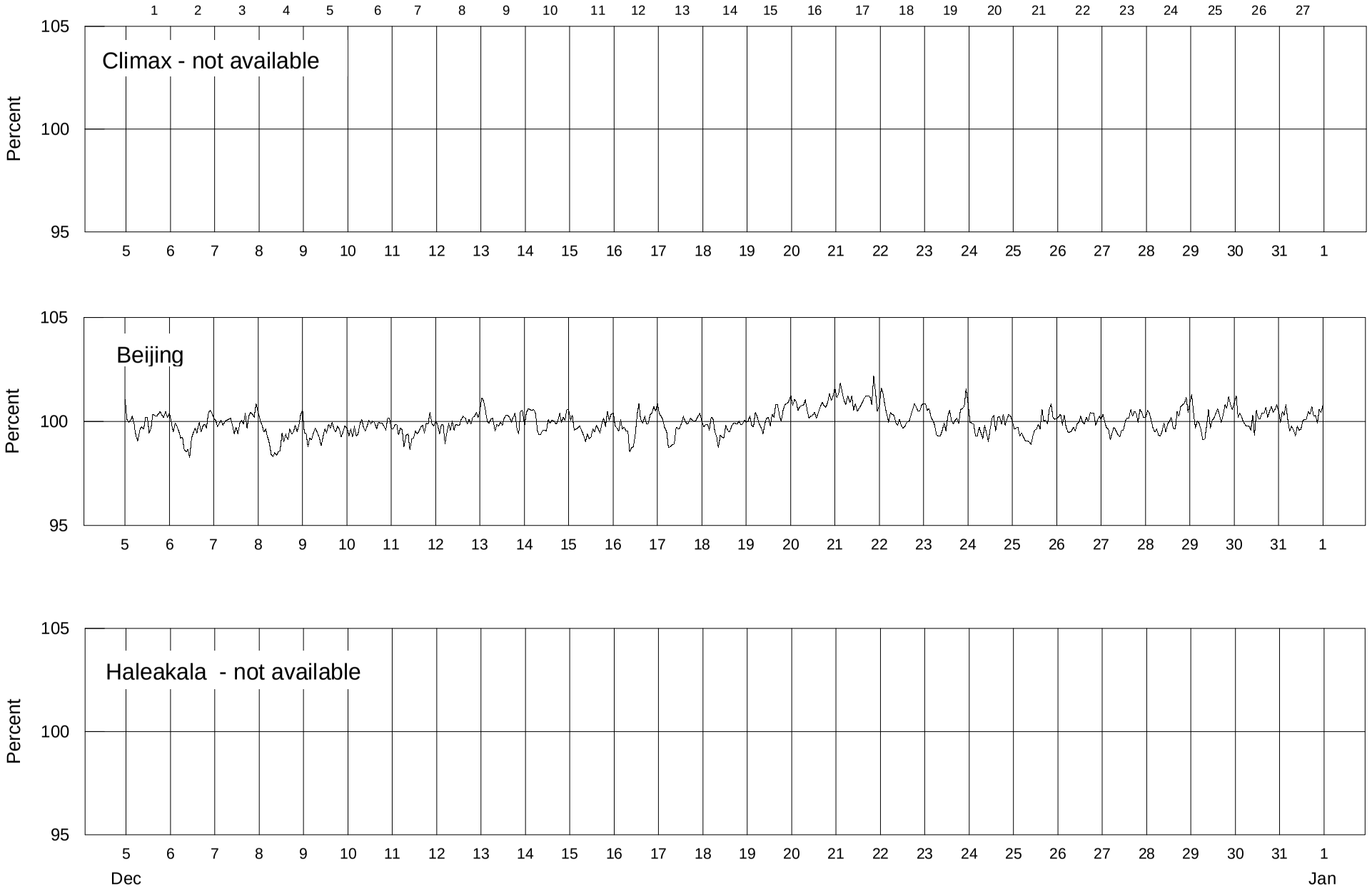
For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours, and for Haleakala, whenever the sum of all three sections falls below 60 hours.

COSMIC RAY INDICES
(Neutron Monitor)

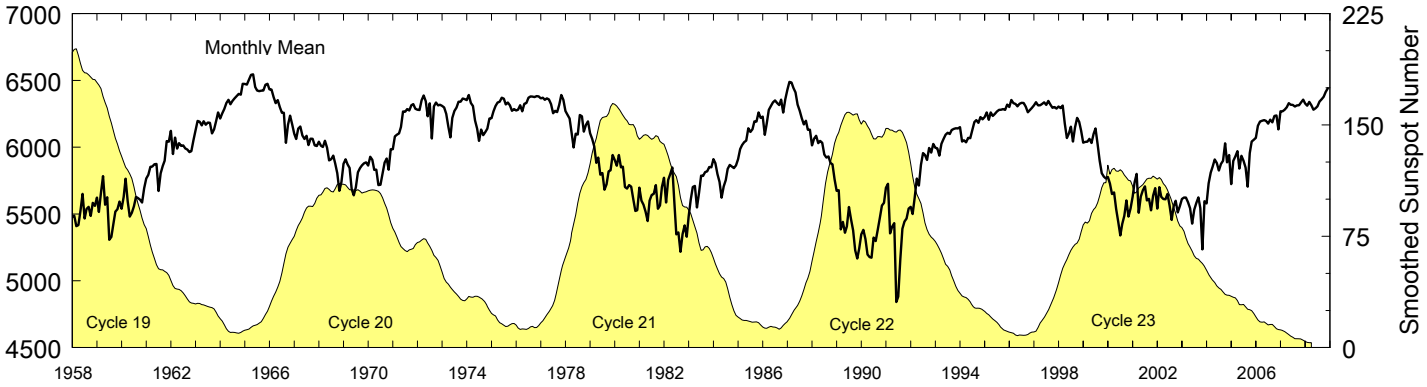
Bartels Rotation 2393 - Beginning 5 Dec 2008



COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2393 - Beginning 5 Dec 2008



Kiel Neutron Monitor Pressure-Corrected Values
Jan 1958 - Dec 2008



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	5584	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	6415	6441	6342

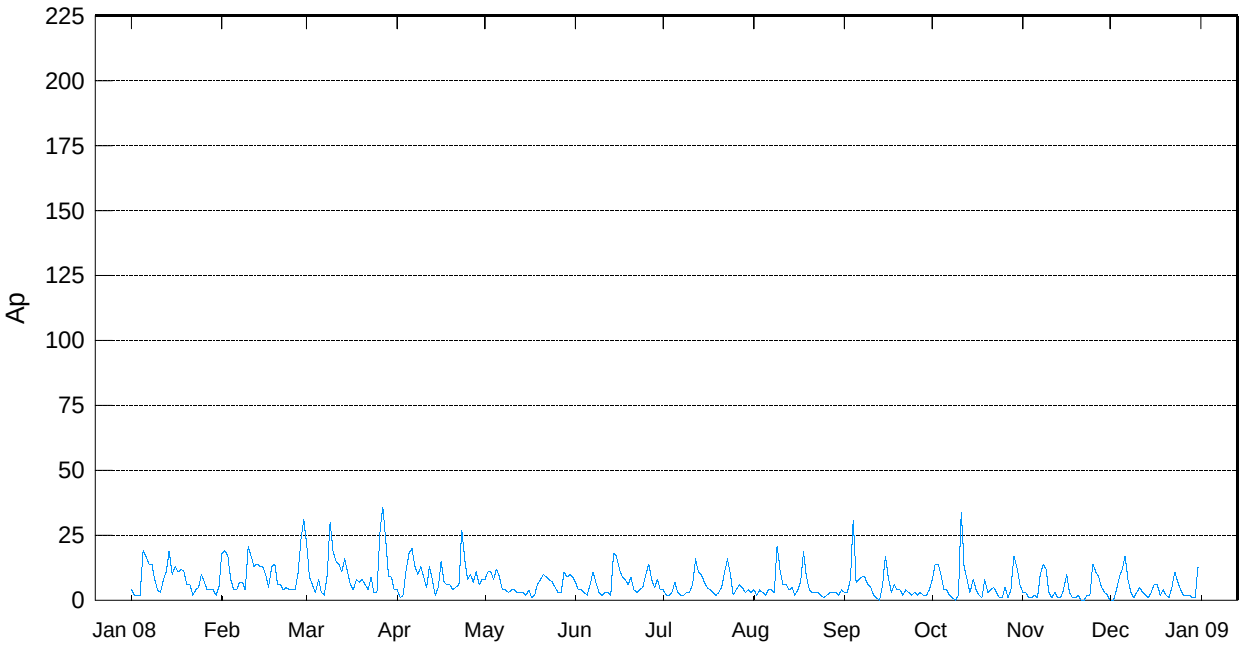
Multiply table entries by 100 to obtain hourly counting rate. Kiel, Germany: N54, E10, Alt= 54 m, Cutoff Rigidity= 2.32GV.

Geomagnetic Activity Indices
DECEMBER 2008

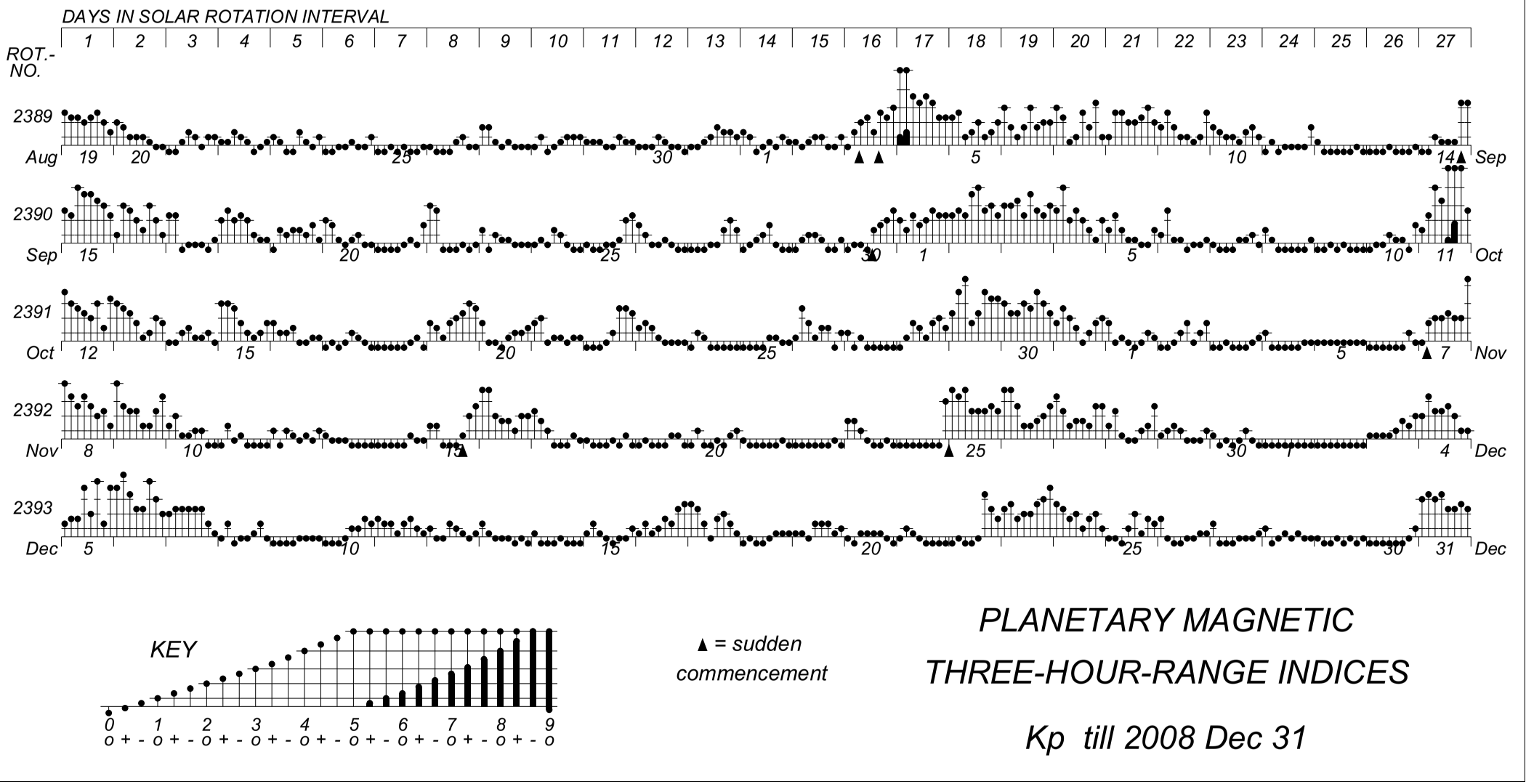
Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	Am	aa Provisional N	S	M	
1	Q1	0	0	0	0	0	0	0	0	0	0	0.0	0o	0+	0o	0o	0o	0o	0o	0o	0	2	3	3	2 CC
2	Q2	0	0	0	0	0	0	0	0	0	0	0.0	0o	0o	0o	0+	0+	0+	0o	0+	2	2	3	3	2 CC
3		1-	1-	1-	1-	1	2-	1+	2	9-	4	0.1	1o	1o	1o	1o	2-	2o	2o	2o	10	10	19	9	20 K
4	D5*	2	3+	2+	2+	3-	2	1	1	17-	9	0.5	1+	3-	2-	3-	3-	2o	1o	1o	15	18	19	21	15
5	D3*	1+	2-	2-	4-	2	4	1+	4-	19+	12	0.7	1+	1+	2-	3+	2+	4-	1+	4-	23	27	21	16	32
6	D1*	4-	4+	3+	2+	2+	4	3	2	25	17	0.9	3+	4-	3o	3-	3-	3+	2+	2-	29	34	23	33	24
7		2	2+	2+	2+	2+	2+	1+	1-	16-	8	0.4	1+	2o	2-	3-	2+	2+	1+	1-	14	15	15	16	14
8		0+	1+	0	0+	0+	1-	1+	0+	5-	3	0.0	1o	1o	0o	0+	0o	1+	1+	0+	5	5	6	5	5 CC
9	Q3	0	0	0	0	0+	0+	0+	0+	1+	1	0.0	0o	0o	0o	0o	0o	1-	0+	0+	2	2	3	2	3 CC
10		0	0	0	0+	1	1	2-	1+	5+	3	0.0	0o	0o	0+	1-	1+	1+	2-	2-	6	6	9	4	11 CC
11		2-	1+	1+	1-	1+	2-	1	1-	10-	5	0.2	2-	1o	1+	1+	2-	2o	1+	1-	10	9	11	9	11 CC
12		1	0+	0+	1+	1	1-	0+	1-	6-	3	0.1	1+	0+	1-	1+	2-	1o	1o	1o	7	6	8	6	8 CC
13		1+	1-	0+	0+	0+	0	0+	0	3+	2	0.0	1+	1-	1-	1-	1-	0o	1o	1-	5	5	7	8	5 CC
14	Q5	1-	0	0	0	0+	0	0	0	1	1	0.0	1-	0o	0o	0+	0o	0o	0o	0+	2	3	2	3	2 CC
15		1-	1+	1-	0+	0	0+	0+	1	5-	3	0.0	1-	1o	1-	1-	0+	1-	1o	1+	5	8	7	8	8 CC
16		1-	1+	1-	1	2-	1+	2+	3-	12-	6	0.3	1-	1+	1o	1+	2o	1+	2+	3-	12	14	13	8	19 K
17		3-	2+	1+	0+	2-	2	1+	1-	12+	6	0.3	2+	2+	2-	0+	2+	2+	1+	1o	13	11	21	16	16 K
18	Q7	0	0+	0	0	0+	1-	1-	1-	3-	2	0.0	0o	0+	0+	0o	1o	1-	1o	1-	3	5	6	3	9 CC
19		1-	1-	0+	1+	1+	1+	1-	1	7+	4	0.1	0+	0+	0+	1+	2-	1+	1o	1o	7	8	8	7	9 CC
20	Q9	0+	0	1-	1-	1-	1-	0+	0	3+	2	0.0	1-	0o	1-	1-	1+	1o	0+	0+	4	4	6	4	5 CC
21	Q8	0+	1	1-	0+	0	0	0	0	2+	1	0.0	0+	0+	1o	1-	0o	0+	0+	1-	3	4	5	5	4 CC
22		0	0+	0	0	0+	3+	2+	2-	8	5	0.2	0+	0+	0+	0o	0+	3+	3-	2o	10	15	11	3	23 KK
23	D4*	2+	3-	2-	2	2	3-	3	4-	20	11	0.6	2-	2o	2-	2o	2o	3o	3o	3-	19	30	17	17	31
24		3-	2+	2-	2	1	2-	2	1	14+	7	0.3	2o	2o	2-	2o	1+	2o	2-	1+	13	16	11	16	11 C
25		0+	0+	0	1	2	1-	2-	1+	7+	4	0.1	1o	1-	0+	1+	2+	1o	2-	1+	8	8	9	6	11 CC
26		2-	0+	0	0	0+	0+	1-	1-	4	2	0.0	1+	1-	0o	0+	0+	1-	1o	1-	4	4	5	4	5 CC
27		1+	0	0	0	0+	0+	0+	1-	3	2	0.0	1o	0o	0+	0+	0+	1-	1-	1o	4	5	5	5	6 CC
28	Q10	1	0	0+	1-	0+	1-	0+	0+	4-	2	0.0	1-	0o	1-	1o	1-	1+	0+	1-	5	4	6	5	4 CC
29	Q4	0+	0	0	0+	0	0+	0	0+	1+	1	0.0	0+	0+	0o	0+	0o	0o	0+	0+	2	4	2	4	3 CC
30	Q6	0	0	0	0	0	0	0+	1	1+	1	0.0	0o	0o	0o	0o	0o	0o	1-	1+	2	3	3	2	4 CK
31	D2*	3	3+	3	3+	2+	2+	3-	2+	22+	13	0.8	3o	3-	3-	3o	2o	2o	2+	2-	21	31	26	36	21
Mean											4	0.18									8.6	10.3	10.0	10.1	

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF
1	0o	0o	0o	0o	0o	0o	0o	0o	0	0o	1-	0+	0o	0o	0o	0o	0o	1	66.2	0	0	9	
2	0o	0o	0o	0o	0+	0o	0o	0o	1	0+	0+	0+	0+	1-	0+	0o	1-	3	67.0	0	0	10	
3	0+	0+	1-	1-	2o	2o	2-	2-	9	2-	1+	1+	1+	1+	2o	2o	2+	13	67.2	0	0	11	
4	1+	3-	2-	3o	3-	2+	1o	1o	16	2-	3-	2o	2+	2+	2-	1o	1o	15	67.6	0	0	11	
5	1+	1o	2-	4o	2+	4o	1+	3+	26	2-	1+	2-	3-	2o	3+	1+	4-	20	66.8	0	0	10	
6	3o	4-	3+	3o	3-	4-	3-	2-	31	4-	3+	3o	2+	3-	3+	2o	2o	27	67.1	0	0	10	
7	1+	2o	2-	3o	3-	2+	2-	1-	15	2-	2-	2-	2+	2-	2o	1+	1o	12	67.0	0	0	10	
8	1-	1-	0o	0+	0+	1+	1+	0+	4	1+	1+	0+	1-	0o	1+	1+	1-	6	66.4	0	0	10	
9	0o	0o	0o	0o	0+	1-	0o	0o	1	0+	0+	0o	0+	0o	1-	0+	1-	3	66.7	0	0	10	
10	0o	0o	0o	0+	1+	1+	1+	1+	5	0o	0o	1o	1o	1+	1o	2-	2+	8	68.7	9	6	12	
11	1+	1o	1+	1o	1+	2+	1+	1-	9	2o	1+	1+	2-	2-	2-	1+	1o	11	68.0	8	7	11	
12	1-	0+	0o	1+	1+	1-	1-	1-	5	2-	1-	1o	2-	2o	1o	1+	2-	9	68.8	9	4	12	
13	1o	0+	0+	0o	0+	0o	0o	0o	2	1+	1o	1o	1o	1-	0o	1+	1+	7	67.5	0	0	11	
14	0+	0o	0o	0o	0o	0o	0o	0+	1	1o	0+	0+	1-	0o	0+	0o	1-	3	66.6	0	0	10	
15	0+	1-	0+	0o	0o	1-	1-	1-	3	1o	1o	1+	1o	0+	1-	1+	1+	7	66.7	0	0	10	
16	0+	1-	1-	1+	2o	1o	2+	2+	10	1+	1+	1o	2-	2o	2-	3-	3-	13	67.2	0	0	11	
17	2o	2o	1+	0+	2+	3-	1+	1-	12	3-	3-	2-	1-	2o	2+	2-	1+	15	66.6	0	0	10	
18	0o	0o	0o	0o	1o	1-	1o	0+	3	0+	1-	0+	0+	1o	1-	1o	1-	4	66.2	0	0	9	
19	0o	0+	0+	2-	2-	1+	1+	1o	7	0+	0+	1-	1+	2o	2-	1-	1o	7	67.0	0	0	10	
20	0+	0o	1-	0+	1+	1+	0o	0o	3	1o	0o	1o	1o	1o	1o	1-	0+	5	66.9	0	0	10	
21	0o	0+	1o	0+	0o	0+	0o	0o	2	1-	1-	1o	1o	0o	0+	1-	1+	5	---	0	0	---	
22	0o	0+	0o	0o	0+	4-	3-	1+	9	1o	0+	0+	0o	0+	3o	2+	2+	11	65.5	0	0	9	
23	2-	2+	2-	2o	2o	3o	3o	3-	20	2-	2-	2-	2o	2o	3-	3o	3-	18	66.3	0	0	10	
24	2o	2+	2-	2o	1o	2o	2o	1+	13	2o	2o	2o	2o	1+	2o	2-	1o	13	67.1	0	0	10	
25	0+	0o	0o	1+	3-	1-	2-	1+	8	1+	1o	0+	1+	2-	1o	2-	1+	9	67.0	0	0	10	
26	1-	0o	0o	0o	0+	0+	1o	1-	3	2-	1o	0+	1-	1-	1o	1+	1o	6	67.0	0	0	10	
27	1o	0o	0o	0o	0+	1-	1-	1-	3	1o	0+	1o	0+	0+	1-	1o	1+	5	67.1	0	0	10	
28	1-	0o	0+	1o	1-	1o	0o	0+	4	1o	0+	1o	1+	1-	1+	0+	1-	6	67.5	0	0	11	
29	0o	0o	0o	1-	0o	0o	0o	0+	1	1-	0+	0+	0+	0o	0o	0+	1-	3	67.5	0	0	11	
30	0o	0o	0o	0o	0o	0o	0+	1o	2	0+	0+	0o	0o	0o	0+	1-	2-	3	66.3	0	0	10	
31	2+	3-	3-	3+	2o	2+	2+	2-	21	4-	3o	3-	3-	2o	2-	2+	2-	22	67.0	0	0	10	
Mean									8.0									9.4	67.0	0.8	0.5	10.4	

Daily Average Indices Ap
Jan 2008 - Dec 2008



Day	Jan 08	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	4	18	22	4	8	7	4	4	3	8	3	0
2	2	19	9	1	11	4	2	2	3	14	3	0
3	2	17	6	2	11	4	2	4	8	14	1	4
4	2	8	3	11	8	3	3	3	31	10	1	9
5	19	4	8	18	12	2	7	2	7	4	2	12
6	17	4	3	20	9	6	3	4	8	4	1	17
7	14	7	2	13	4	11	2	4	9	2	10	8
8	14	7	10	10	4	7	2	3	9	1	14	3
9	8	4	30	13	3	3	3	21	6	0	12	1
10	4	21	19	9	4	2	3	12	5	2	3	3
11	3	17	15	5	4	3	6	6	2	34	1	5
12	8	13	14	13	3	3	16	6	1	13	3	3
13	11	14	11	8	3	2	11	4	0	8	1	2
14	19	13	16	2	3	18	10	5	6	3	1	1
15	10	13	11	5	2	17	7	2	17	8	4	3
16	13	10	6	15	4	12	5	4	9	4	10	6
17	11	5	4	7	1	9	4	7	3	2	3	6
18	12	13	8	6	2	8	3	19	6	1	1	2
19	11	14	7	6	6	6	2	9	4	8	1	4
20	6	6	8	4	8	9	3	4	4	3	2	2
21	6	6	6	5	10	4	5	3	2	4	0	1
22	2	4	4	6	9	3	11	3	4	5	0	5
23	4	5	9	27	8	4	16	3	3	3	2	11
24	5	4	3	16	7	5	10	2	2	1	2	7
25	10	4	3	8	5	10	2	1	3	1	14	4
26	7	4	26	10	3	14	4	2	2	5	11	2
27	4	10	36	7	3	8	6	3	3	1	9	2
28	4	23	24	11	11	5	5	3	2	4	5	2
29	4	31	9	6	9	8	3	3	2	17	3	1
30	2		9	8	10	4	4	2	4	13	2	1
31	5		4		9		3	4		6		13
Mean	8	11	11	9	6	7	5	5	6	7	4	4

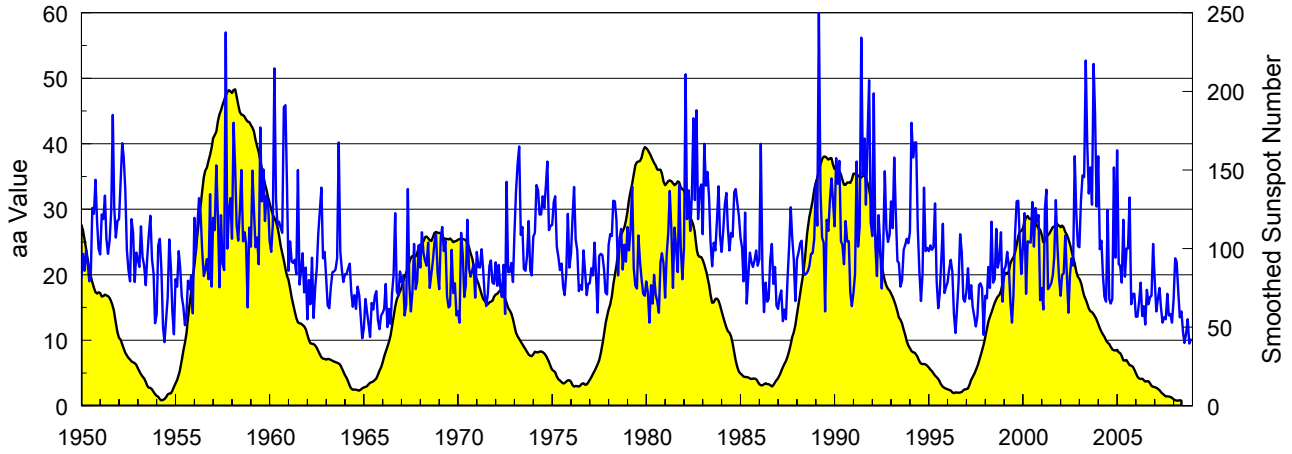


▲ = sudden commencement

PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 2008 Dec 31

Monthly Mean aa Index Jan 1950 - Dec 2008



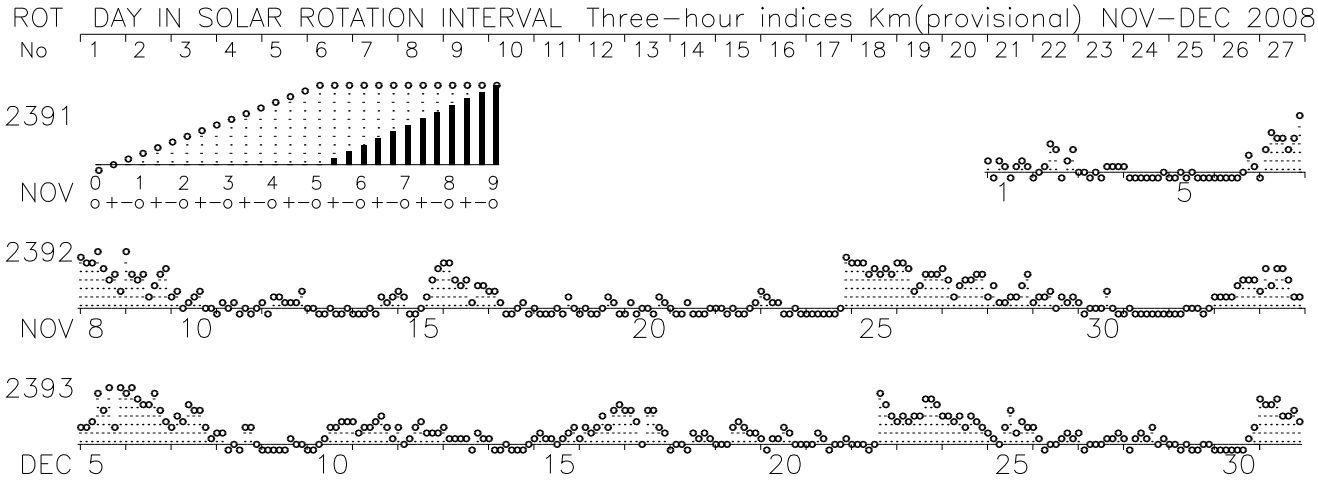
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	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

PLANETARY GEOMAGNETIC ACTIVITY

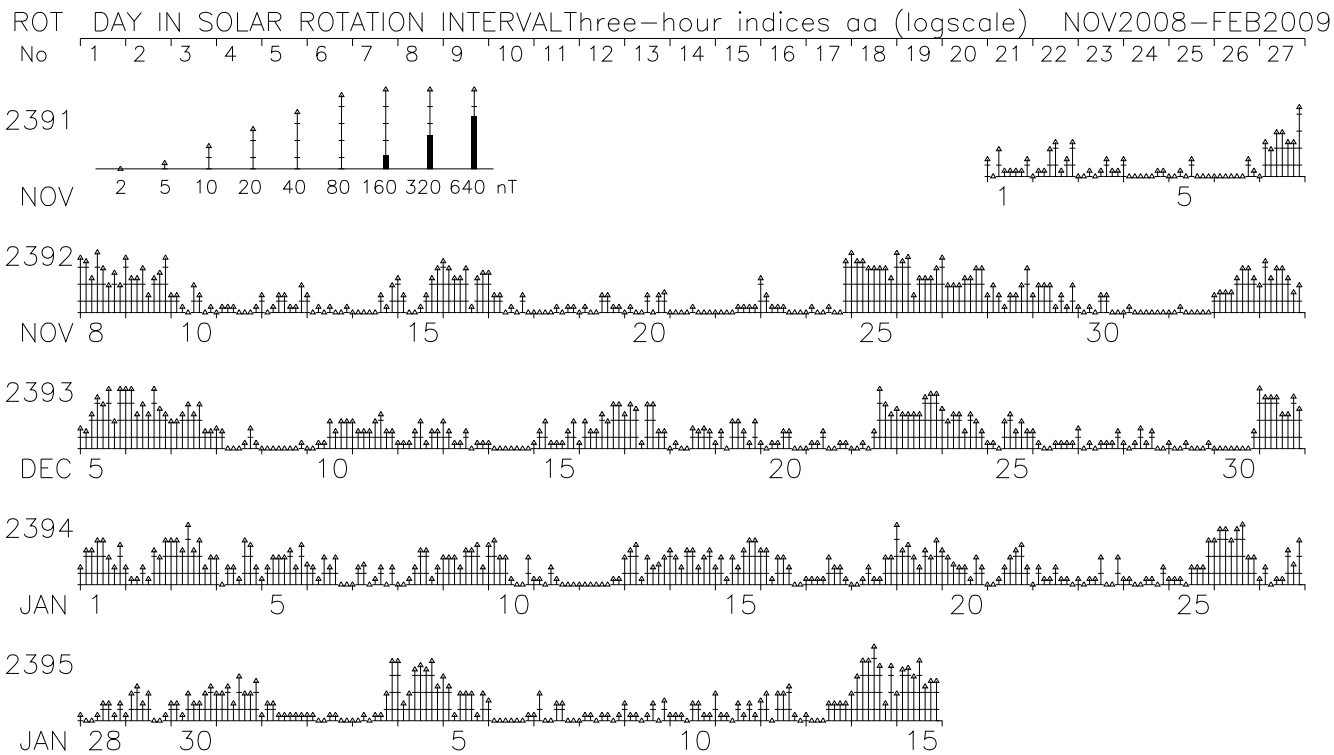
3-HOUR-RANGE INDICES Km AND aa BY 27-DAY SOLAR ROTATION INTERVAL

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.

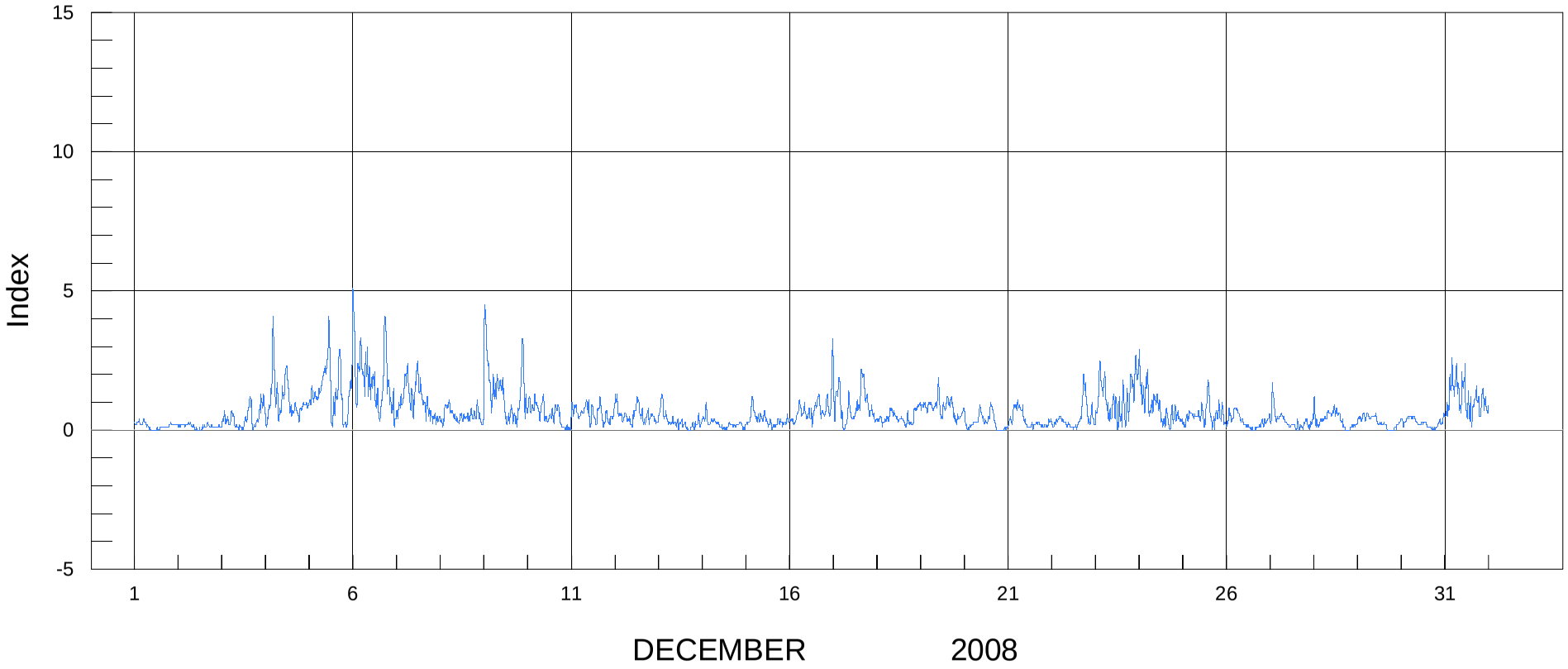


Indices Derivation at C.E.T.P.; Graph Prepared at ISGI Publication Office.

Polar Cap Index

Qaanaaq - Thule

WDC C1 for Geomagnetism, Copenhagen



Data Source: Geomagnetism and Space Physics
Danish Meteorological Institute

P R I N C I P A L M A G N E T I C S T O R M S

DECEMBER 2008

Sta	Geomag Lat	Commencement Day	Time (UT)	Type	SC Amplitudes D (Min)	SC Amplitudes H (Gamma)	SC Amplitudes Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	Ranges H (Gamma)	Ranges Z (Gamma)	End Hour Day	End Hour (UT)
HYB	07.6N	02	2100	..	..	..	..	4(4,5) 5(4,5) 6(6)	4	3	97	23	07	22
JAI	17.4N	03	0230	..	..	..	..		-	2	60	17	04	20
NGP	11.3N	03	0230	..	..	..	..		-	2	71	14	04	20
ABG	09.4N	03	0230	..	..	..	..	3(4) 4(3)	4	2	68	21	04	20
PND	02.0N	03	0230	..	..	..	..		-	-	--	--	04	20
TIR	00.6S	03	0230	..	..	..	..		-	2	70	50	04	20
JAI	17.4N	05	0500	..	..	..	..		-	4	64	11	07	22
NGP	11.3N	05	0500	..	..	..	..		-	3	63	16	07	22
ABG	09.4N	05	0500	..	..	..	..	5(5) 6(6)		4	58	15	07	22
PND	02.0N	05	0500	..	..	..	..		-	-	--	--	07	22
TIR	00.6S	05	0500	..	..	..	..		-	3	69	46	07	22
HYB	07.6N	10	0500	..	..	..	..	10(7)	3	2	56	14	11	24
HYB	07.6N	15	1100	..	..	..	..	16(7,8) 17(2,3)	3	2	54	23	17	22
JAI	17.4N	16	0300	..	..	..	..		-	3	46	16	17	23
NGP	11.3N	16	0300	..	..	..	..		-	3	48	16	17	23
ABG	09.4N	16	0300	..	..	..	..	17(2,3)		3	50	26	17	23
PND	02.0N	16	0300	..	..	..	..		-	-	--	--	17	23
TIR	00.6S	16	0300	..	..	..	..		-	2	66	39	17	23
JAI	17.4N	22	1600	..	..	..	..		-	3	43	23	24	23
NGP	11.3N	22	1600	..	..	..	..		-	2	43	09	24	23
ABG	09.4N	22	1600	..	..	..	..	22(6) 31(2,3)	4	2	46	30	24	23
HYB	07.6N	22	1100	..	..	..	..	22(5,6)	4	2	47	09	24	22
PND	02.0N	22	1600	..	..	..	..		-	-	--	--	24	23
TIR	00.6S	22	1600	..	..	..	..		-	2	82	35	24	23
HYB	07.6N	30	2200	..	..	..	..	31(4)	4	3	57	18	31	22
CAN	43.6S	31	0111	SC	24.3	4.4	- 8.1		-	--	---	---	--	--

MAGNETIC STORM SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS
(PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS)

DECEMBER 2008

Storm Sudden Commencements (SSC)			Solar Flare Effects (sfe)		
Day	Time	Quality: Station Group*	Day	Begin-End	Station(s)
16	1159	A: LER* ESK* HAD* C: DOU	NONE		

REPORTING OBSERVATORIES (up to 02-02-2009):
NUR LER ESK NGK VAL HAD DOU BDV CLF HRB NAG GCK MMB EBR SPT KAK KNY GUI HYB GNA CNB LIV

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 Antartic Station LIVINGSTONE (62º 39' 44" S, 60º23' 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.