JANUARY 2004 NUMBER 713 - Part I

Solar-Geophysical Data prompt reports

Data for November and December 2003
Explanation of Data Reports Issued as Number 515 (Supplement) July 1987

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JANUARY 2004 NUMBER 713 - Part I

Solar-Geophysical Data prompt reports

Data for November and December 2003

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NATIONAL GEOPHYSICAL DATA CENTER
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Boulder, Colorado

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SOLAR-GEOPHYSICAL DATA

Number 713

(Issued in Two Parts)

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December 2003

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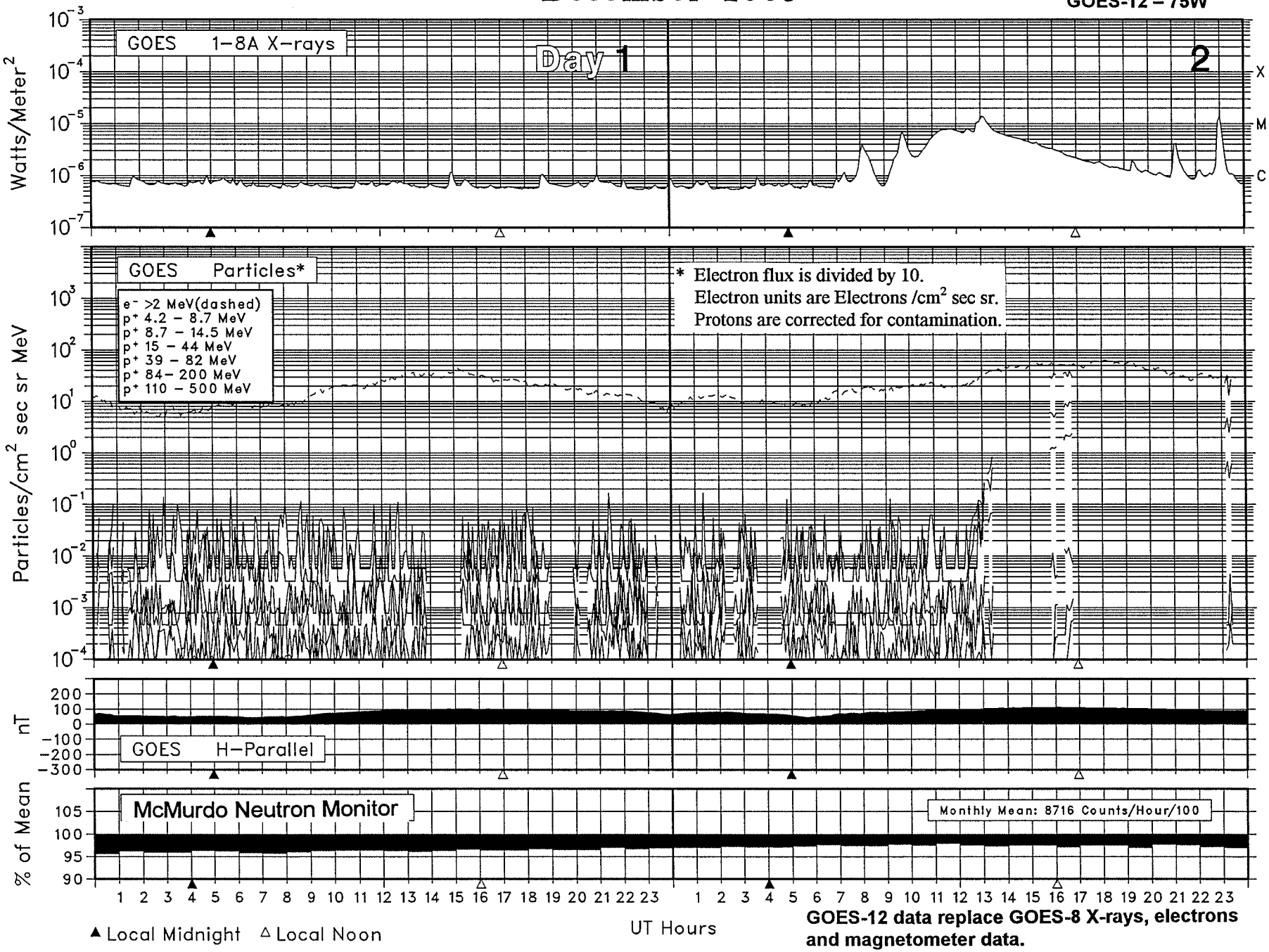
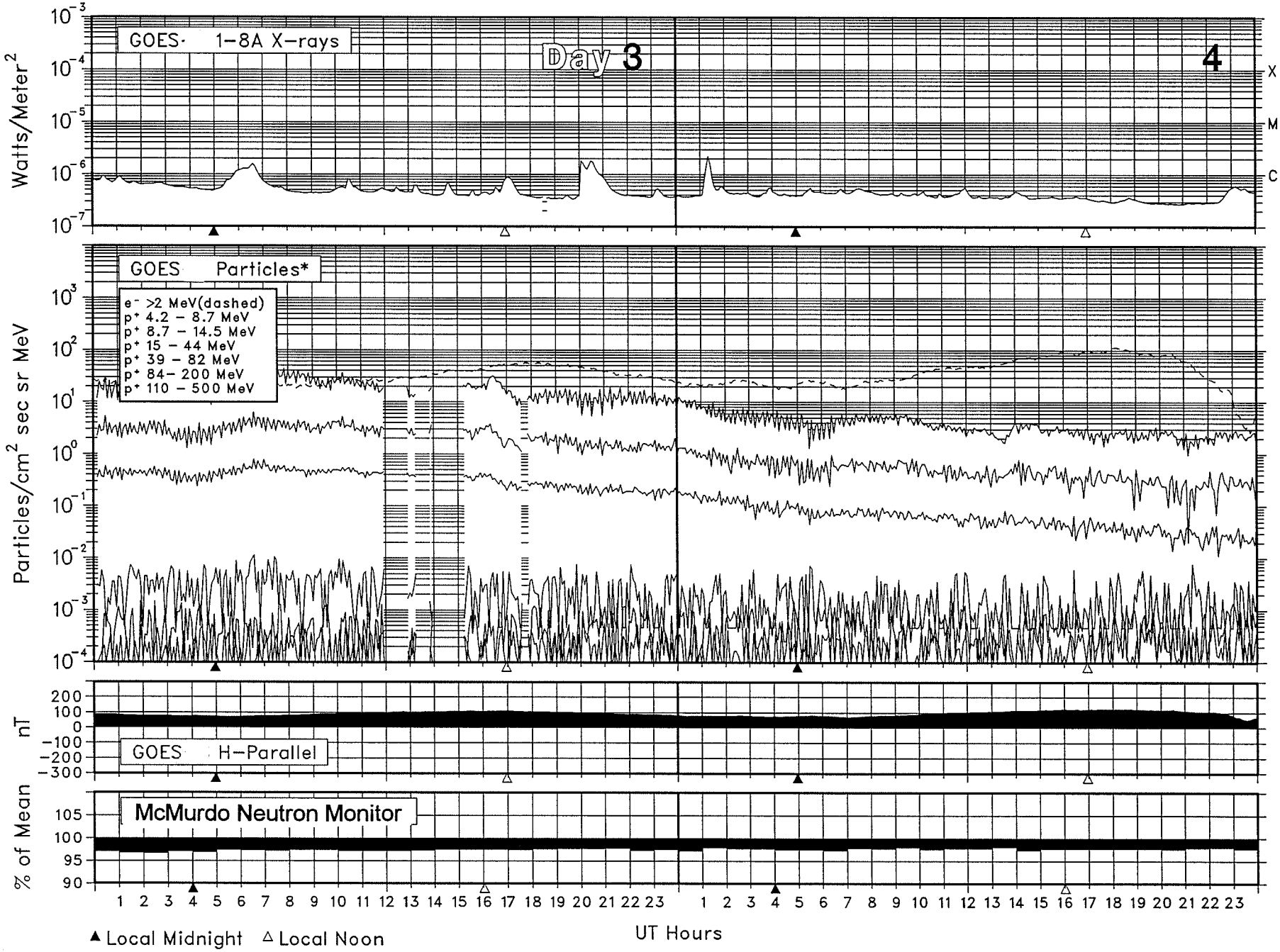
GOES-11 – 113W
GOES-12 – 75W

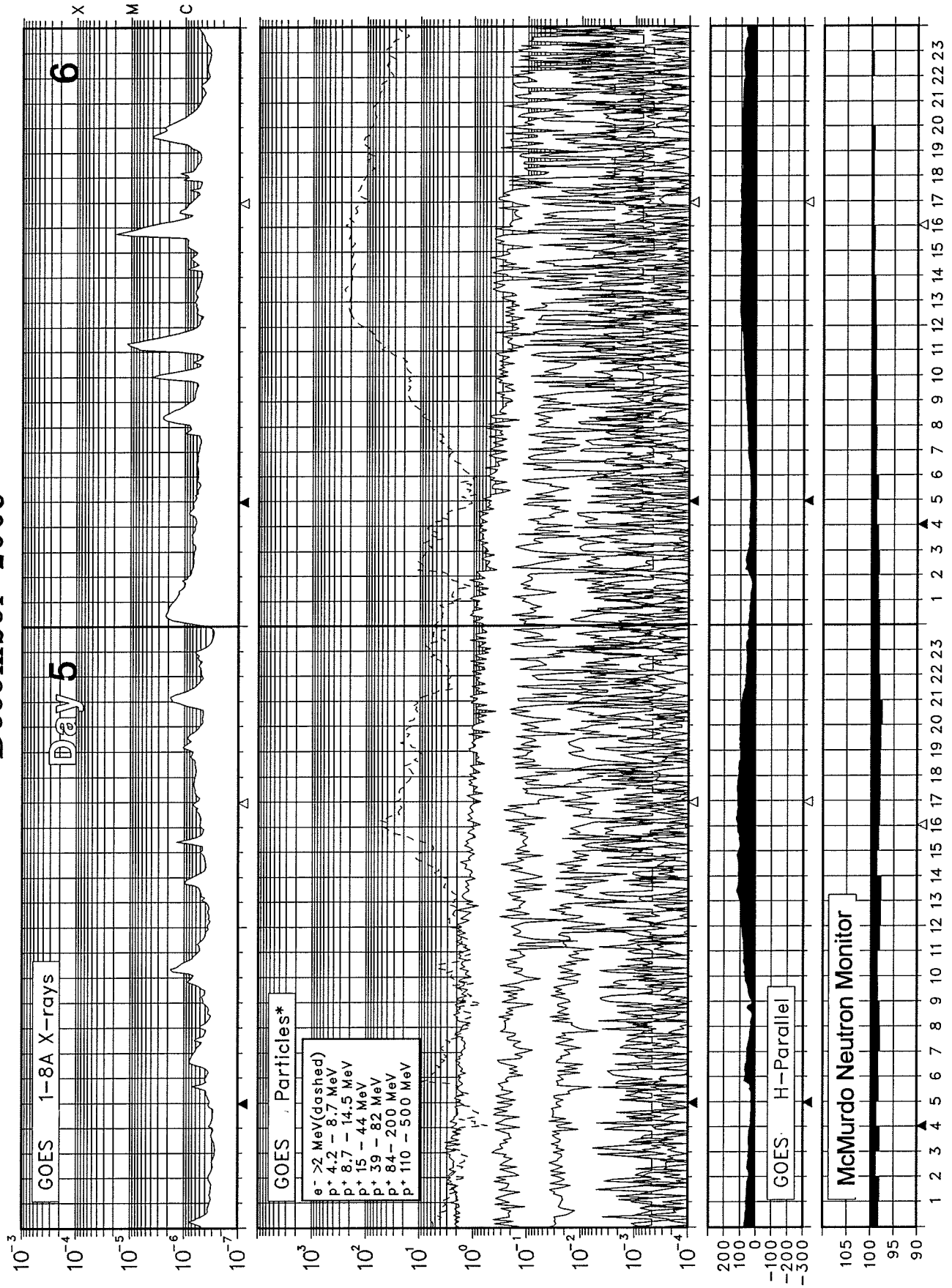


GOES-12 data replace GOES-8 X-rays, electrons and magnetometer data.
GOES 11 protons replace GOES-8 protons.

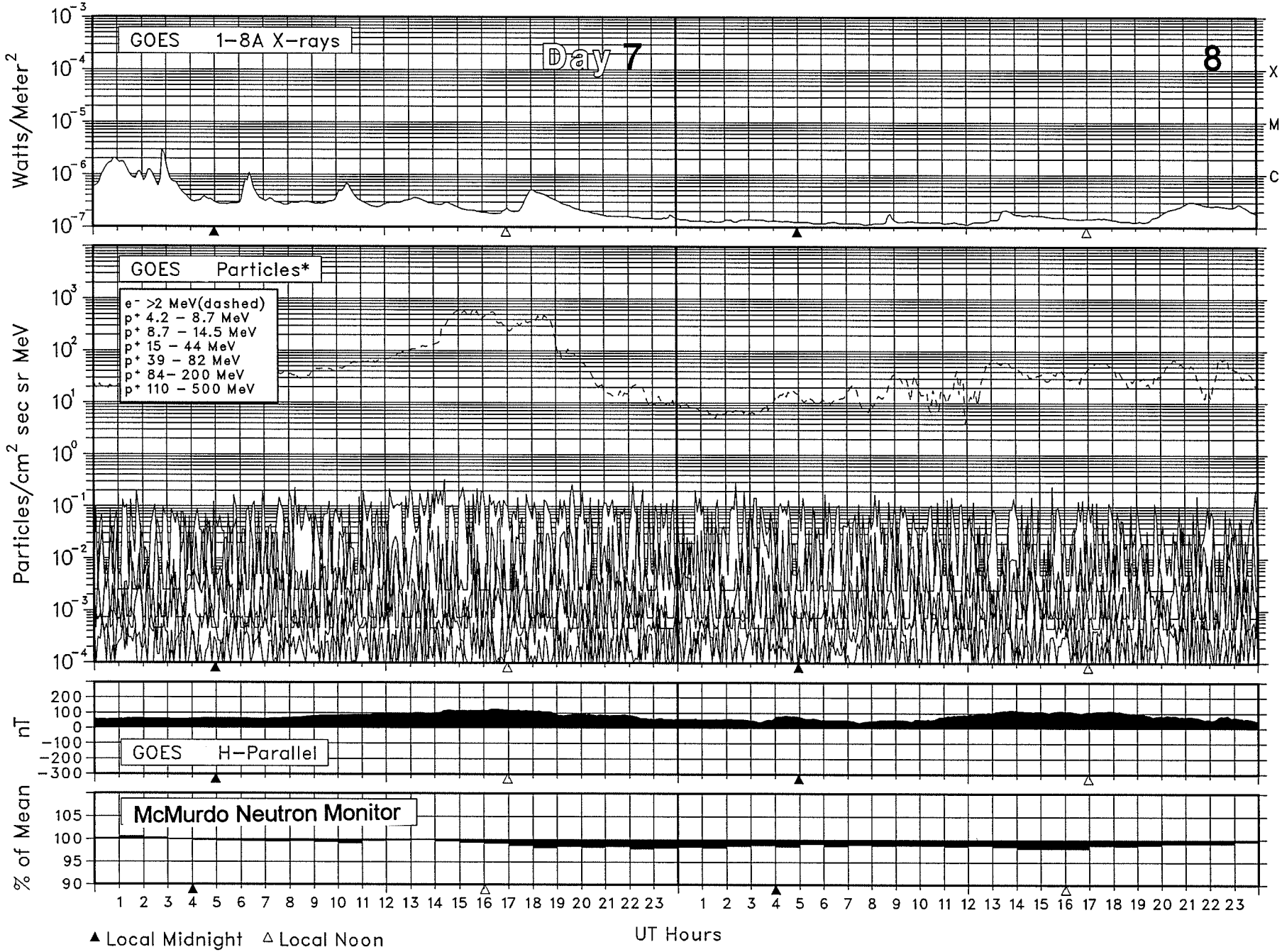
SOLAR-TERRESTRIAL ENVIRONMENT
December 2003



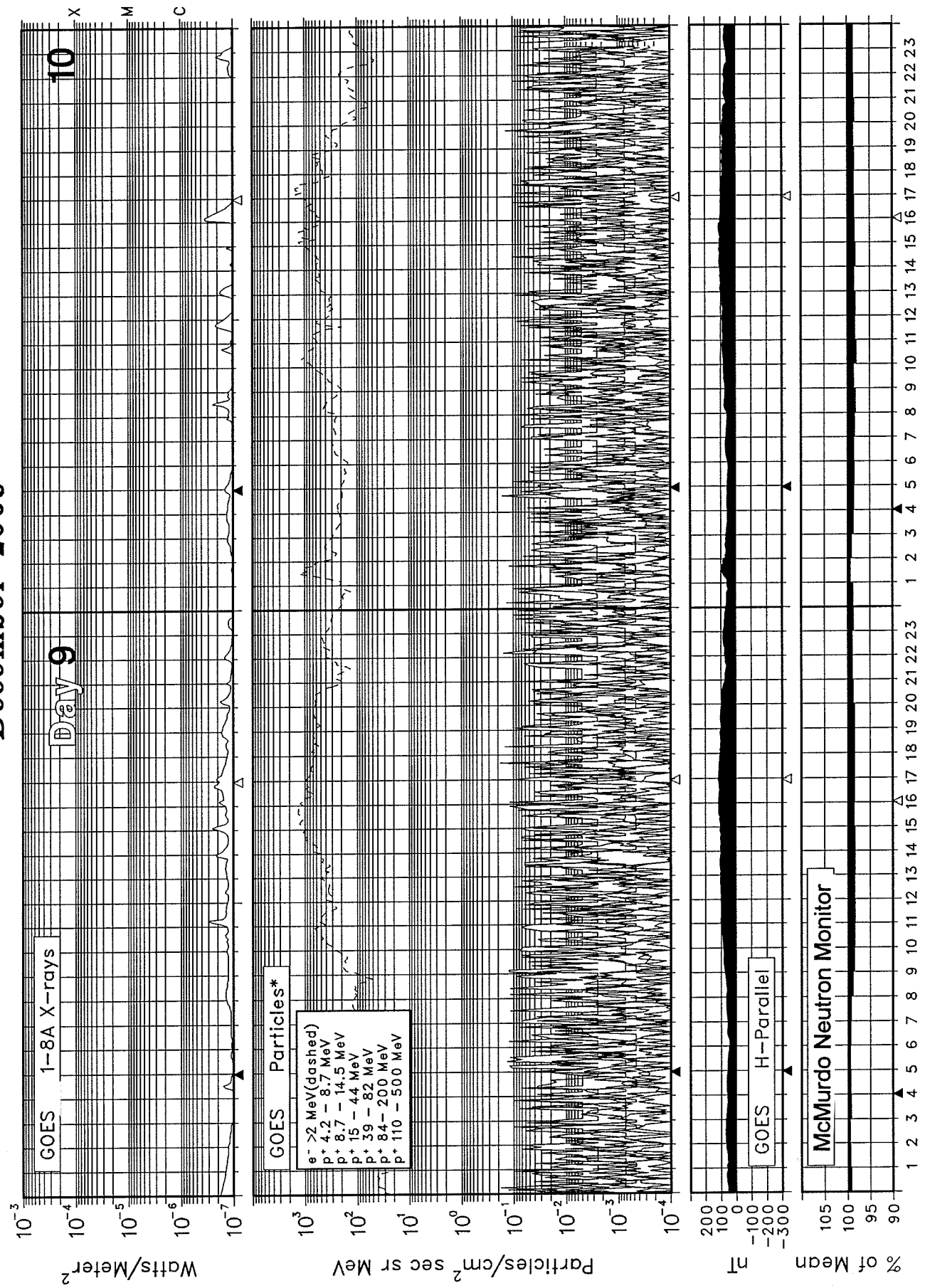
SOLAR-TERRESTRIAL ENVIRONMENT
December 2003



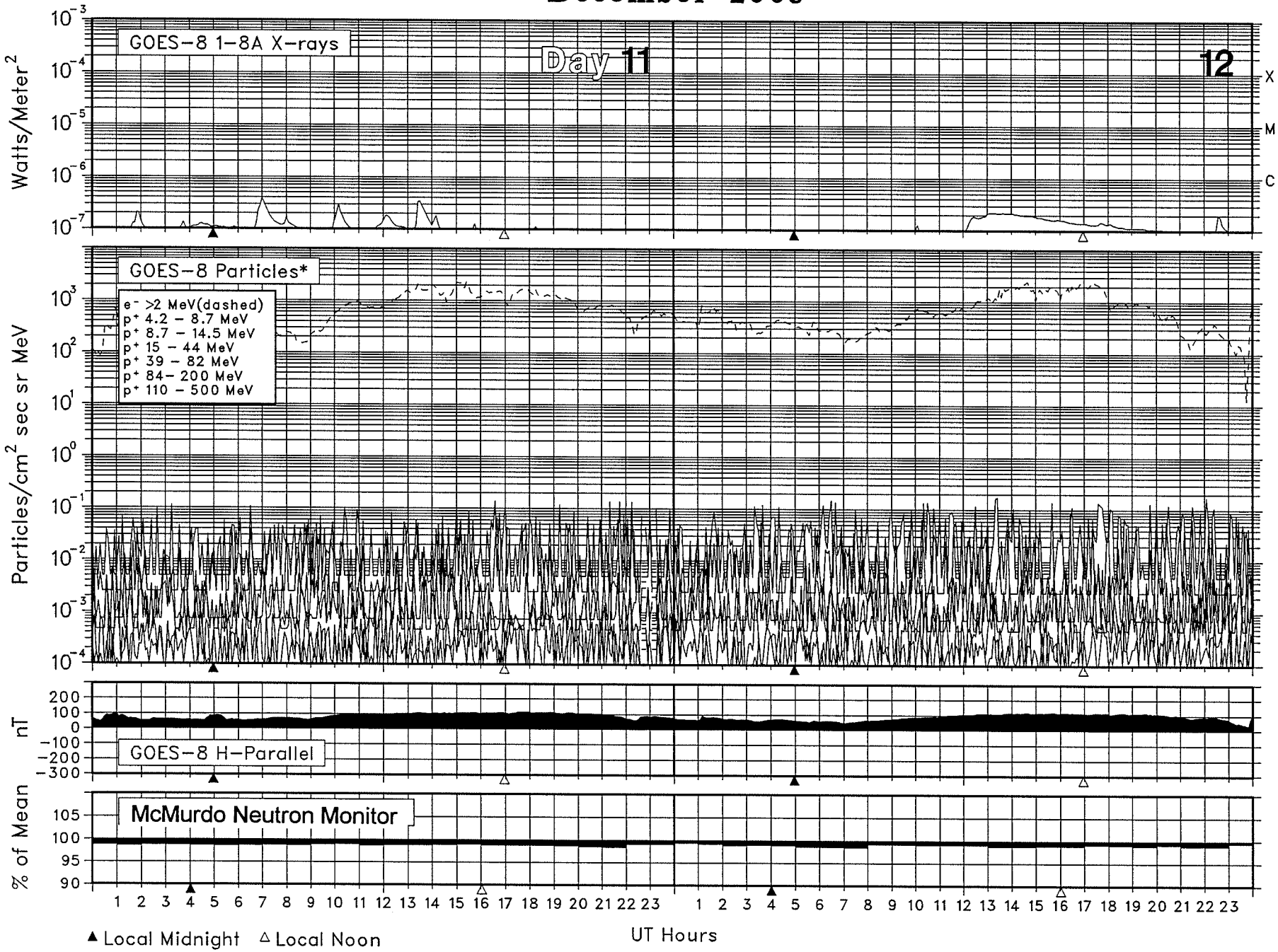
SOLAR-TERRESTRIAL ENVIRONMENT
December 2003



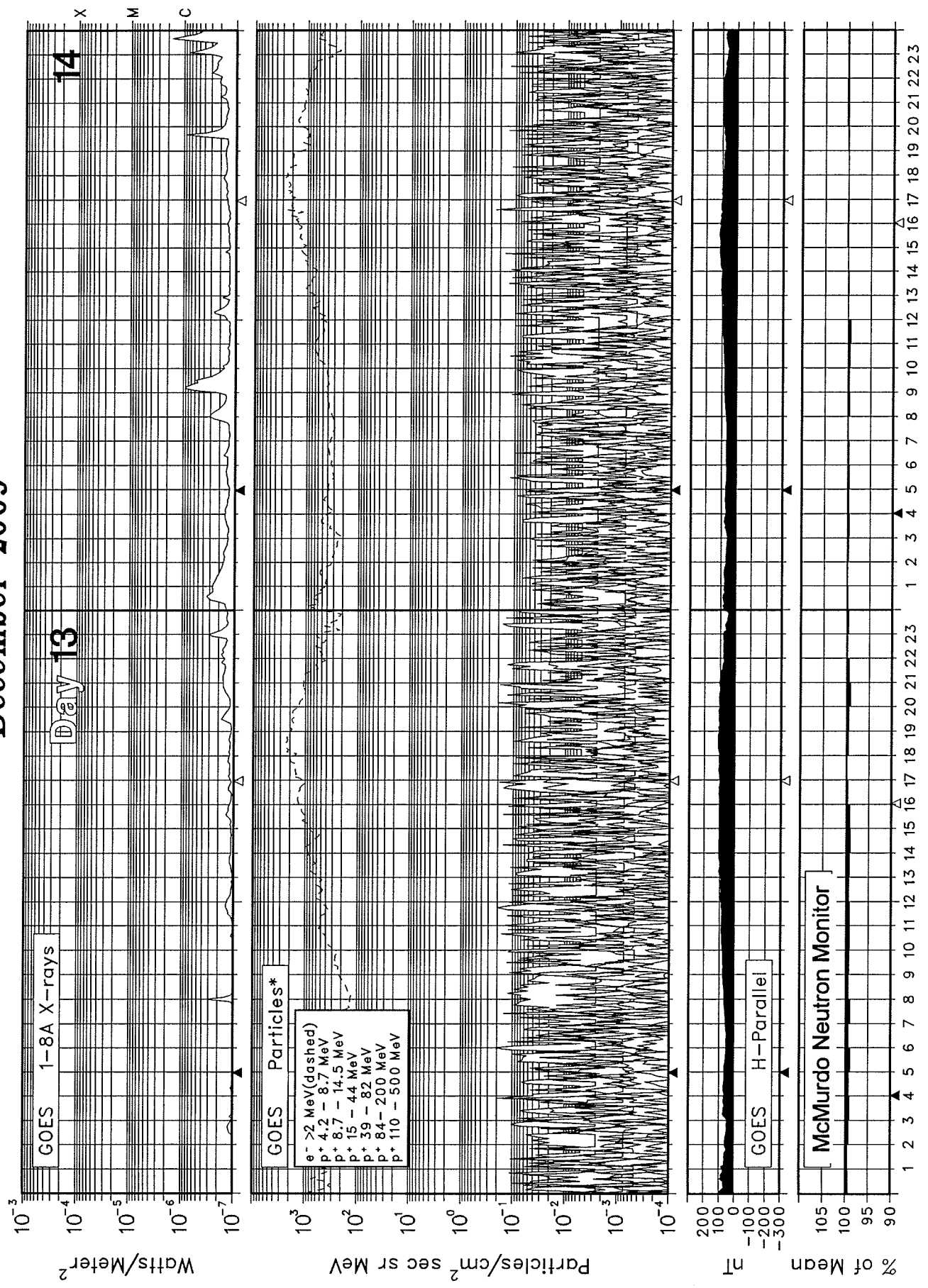
SOLAR-TERRESTRIAL ENVIRONMENT
December 2003



SOLAR-TERRESTRIAL ENVIRONMENT
December 2003



SOLAR-TERRESTRIAL ENVIRONMENT
December 2003



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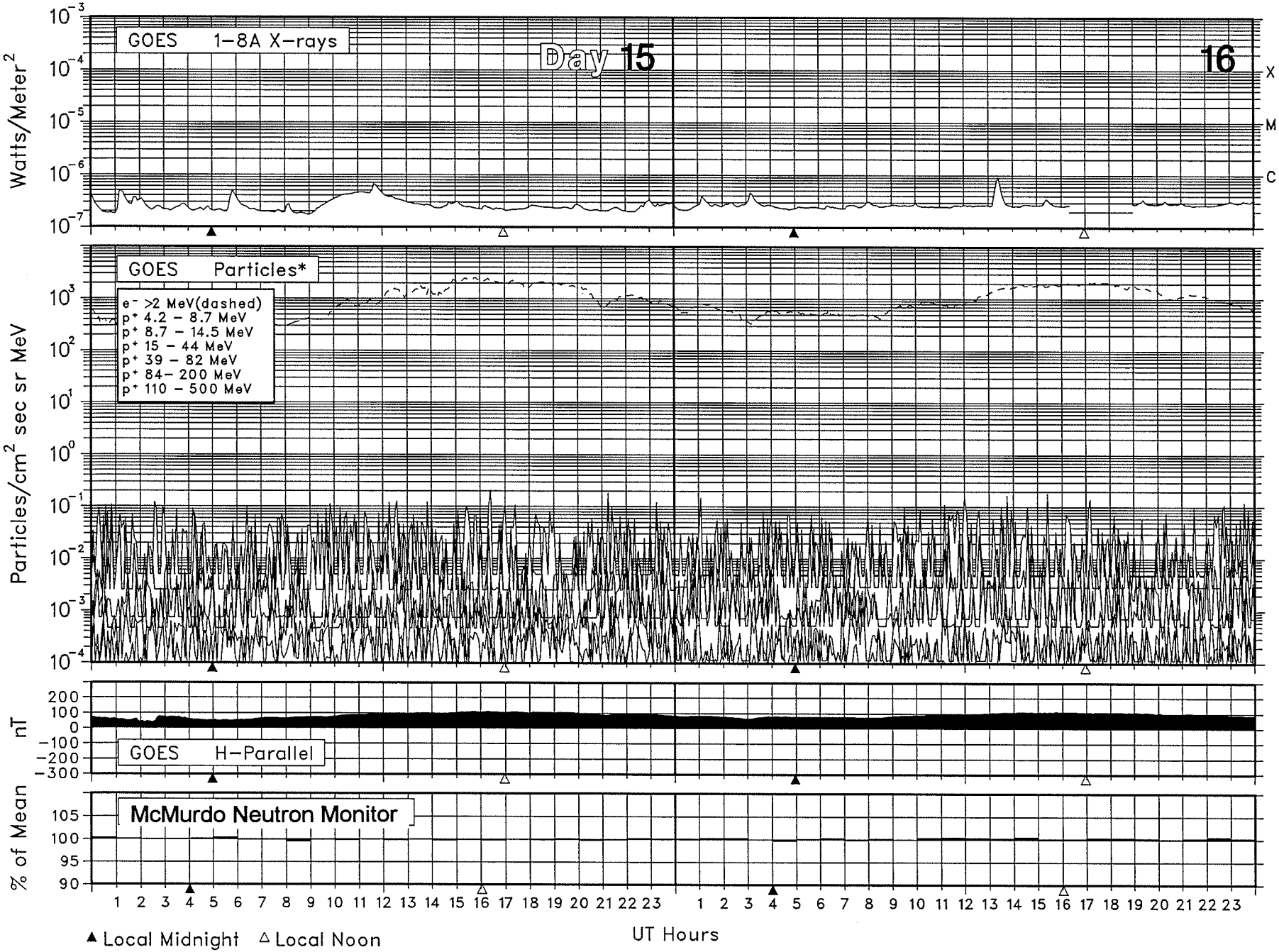

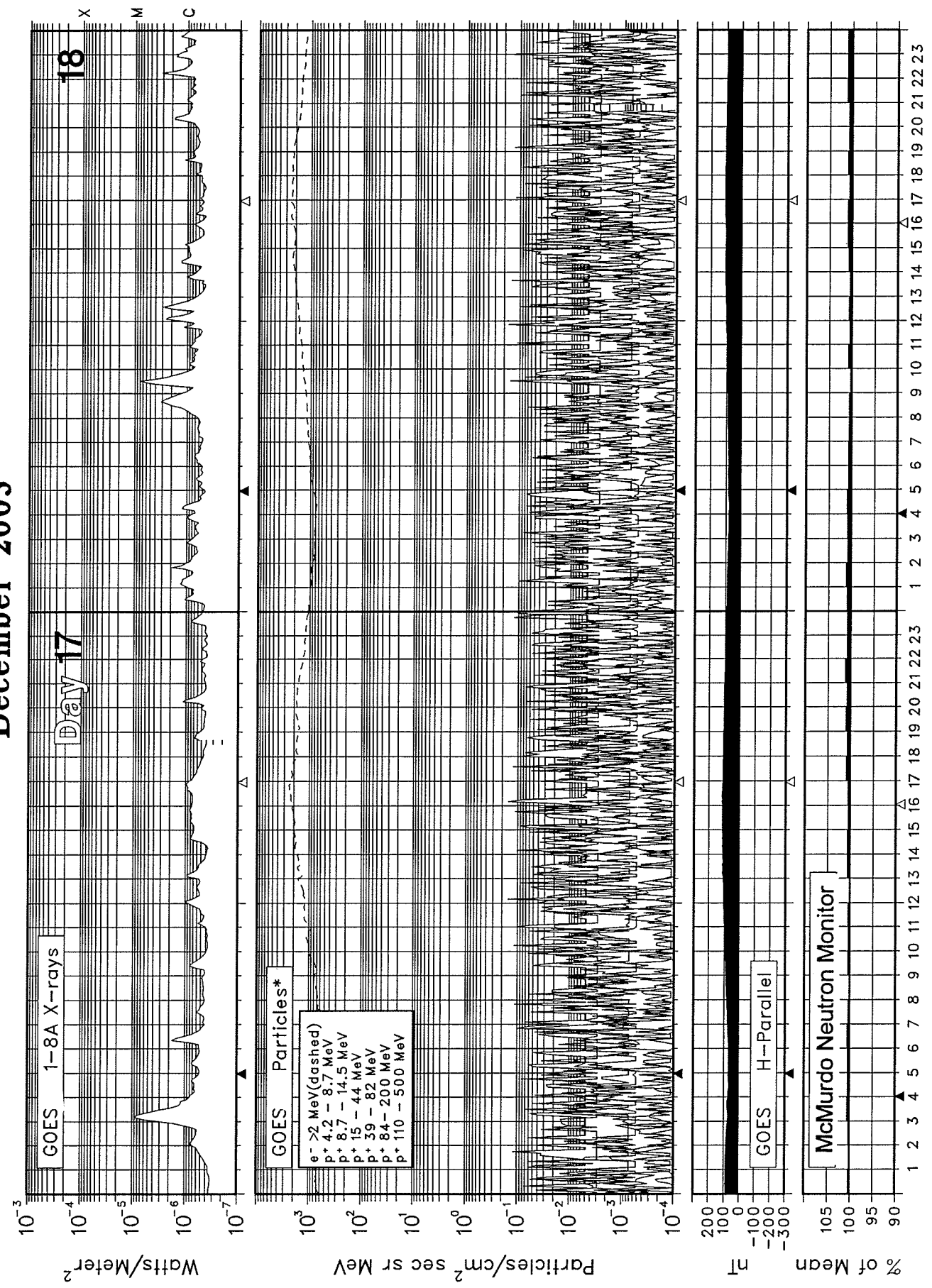
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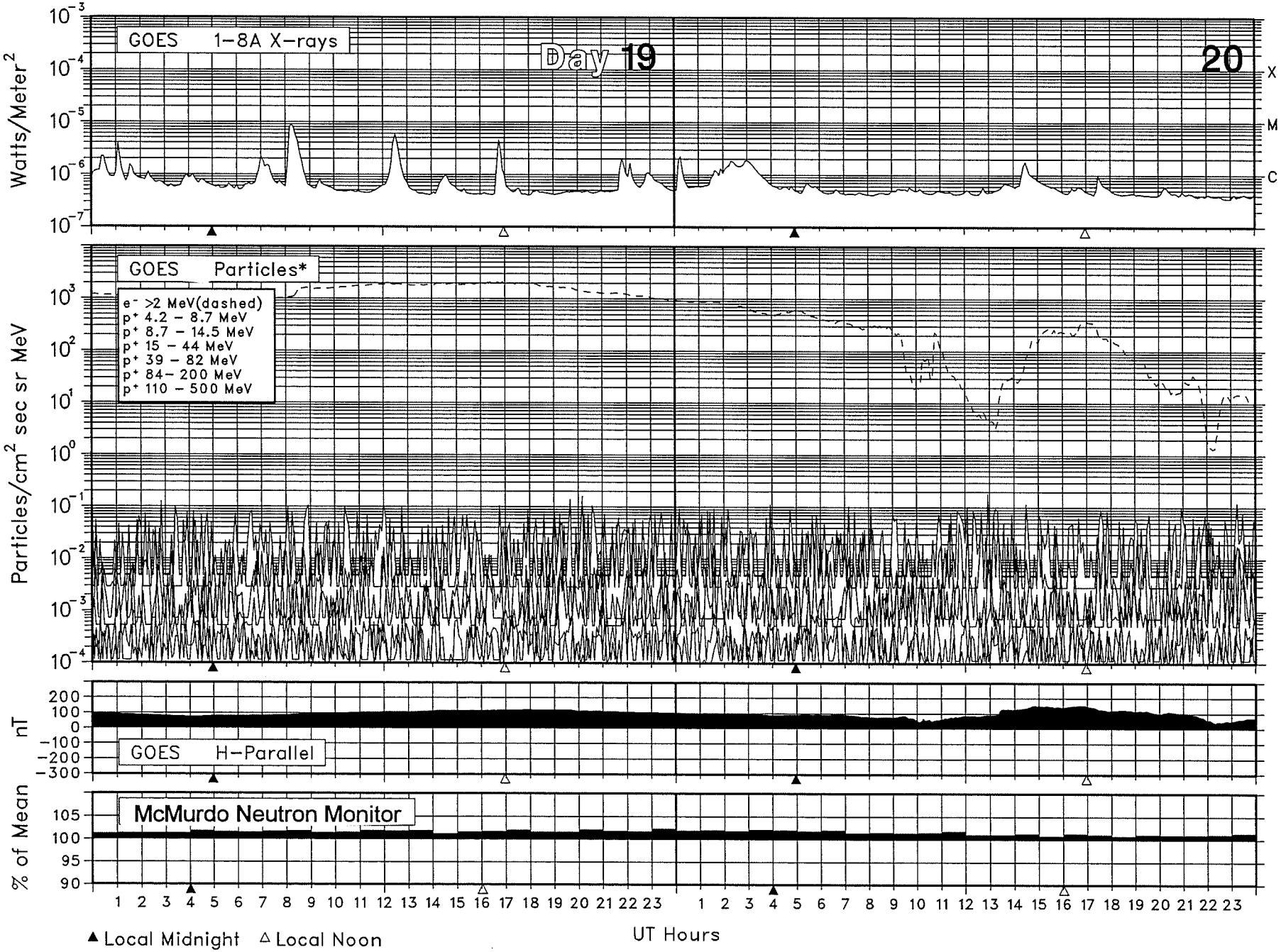
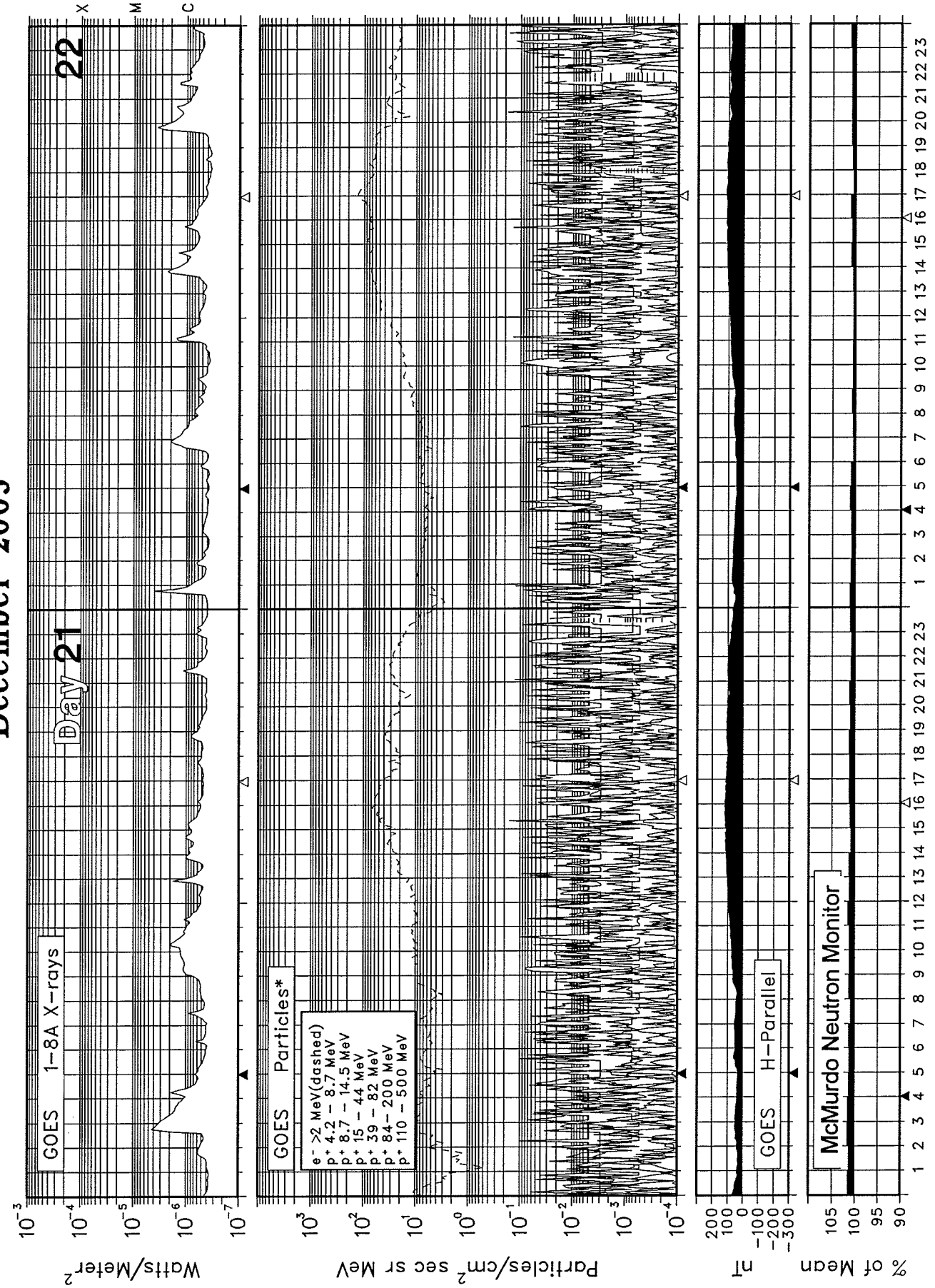
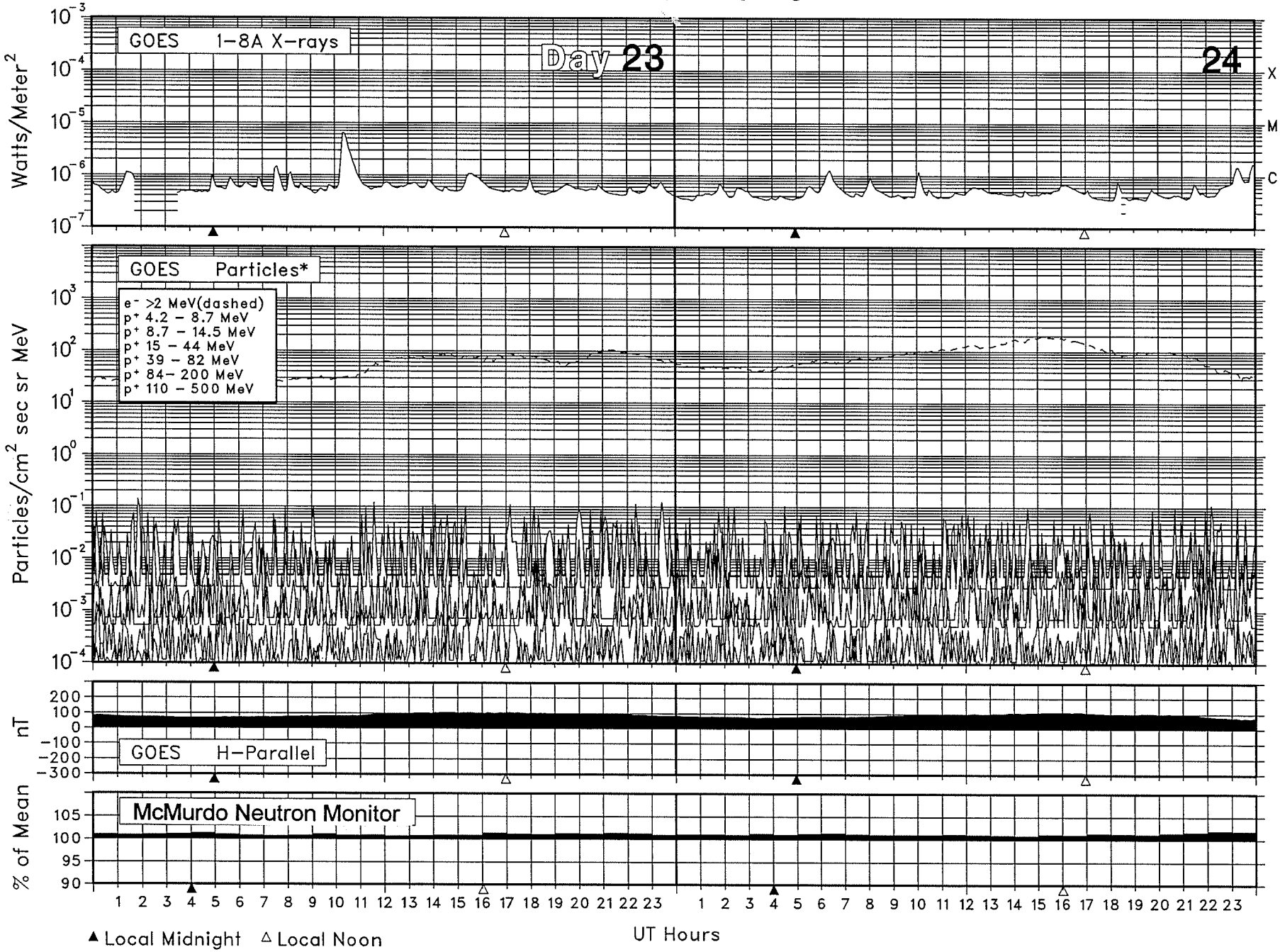
December 2003
Day 17
18
GOES 1-8A X-rays
Watts/Meter²
GOES Particles*
e⁻ >2 MeV(dashed)
p⁺ 4.2 - 8.7 MeV
p⁺ 8.7 - 14.5 MeV
p⁺ 15 - 44 MeV
p⁺ 39 - 82 MeV
p⁺ 84 - 200 MeV
p⁺ 110 - 500 MeV
Particles/cm² sec sr MeV
GOES H-Parallel
nT
McMurdo Neutron Monitor
% of Mean
UT Hours
▲ Local Midnight △ Local Noon

SOLAR-TERRESTRIAL ENVIRONMENT
December 2003




SOLAR-TERRESTRIAL ENVIRONMENT
December 2003
Day 21
22
GOES 1-8A X-rays
Watts/Meter²
GOES Particles*
e⁻ >2 MeV(dashed)
p⁺ 4.2 – 8.7 MeV
p⁺ 8.7 – 14.5 MeV
p⁺ 15 – 44 MeV
p⁺ 39 – 82 MeV
p⁺ 84– 200 MeV
p⁺ 110 – 500 MeV
Particles/cm² sec sr MeV
GOES H–Parallel
nT
McMurdo Neutron Monitor
% of Mean
UT Hours
▲ Local Midnight △ Local Noon

SOLAR-TERRESTRIAL ENVIRONMENT
December 2003



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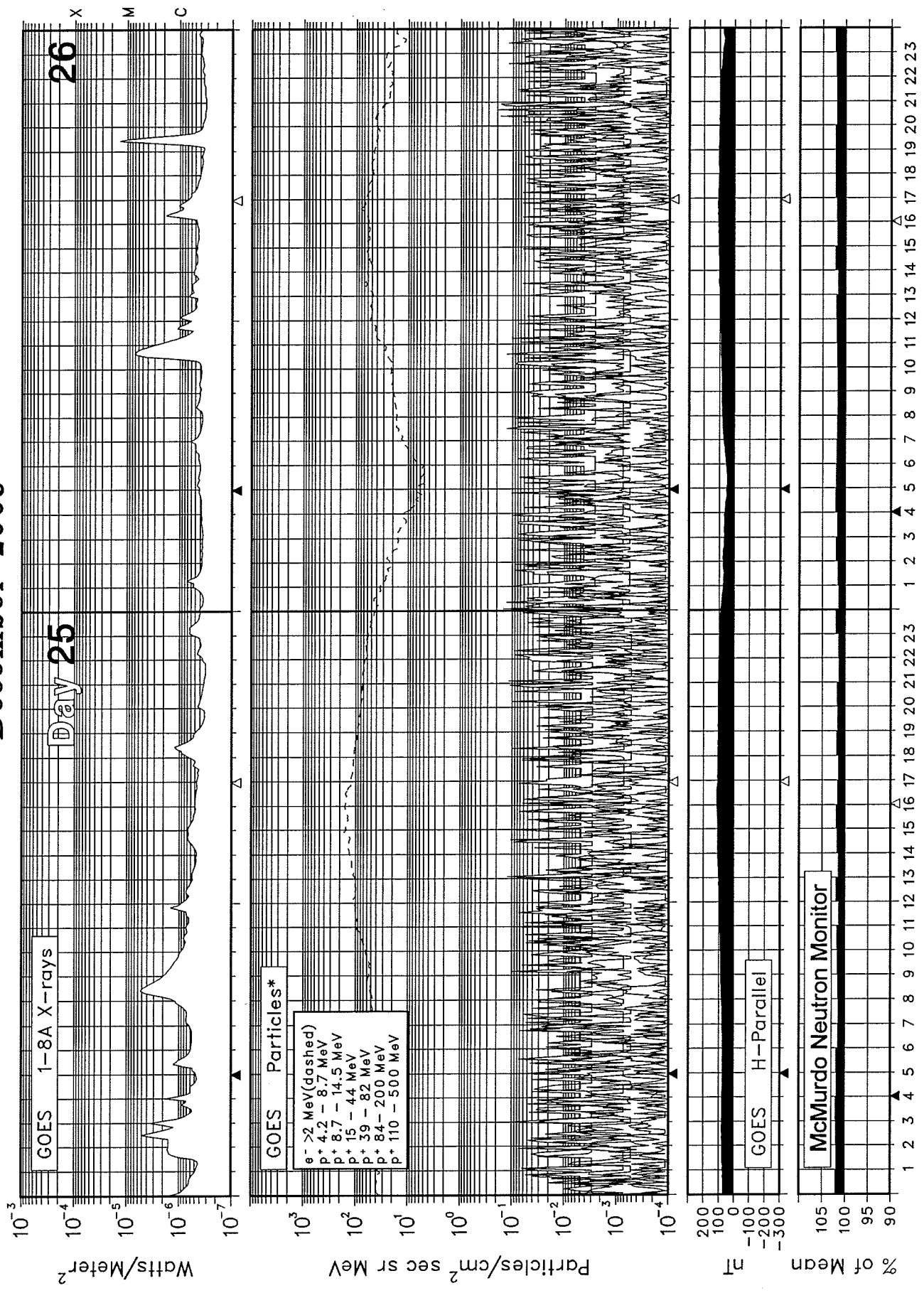
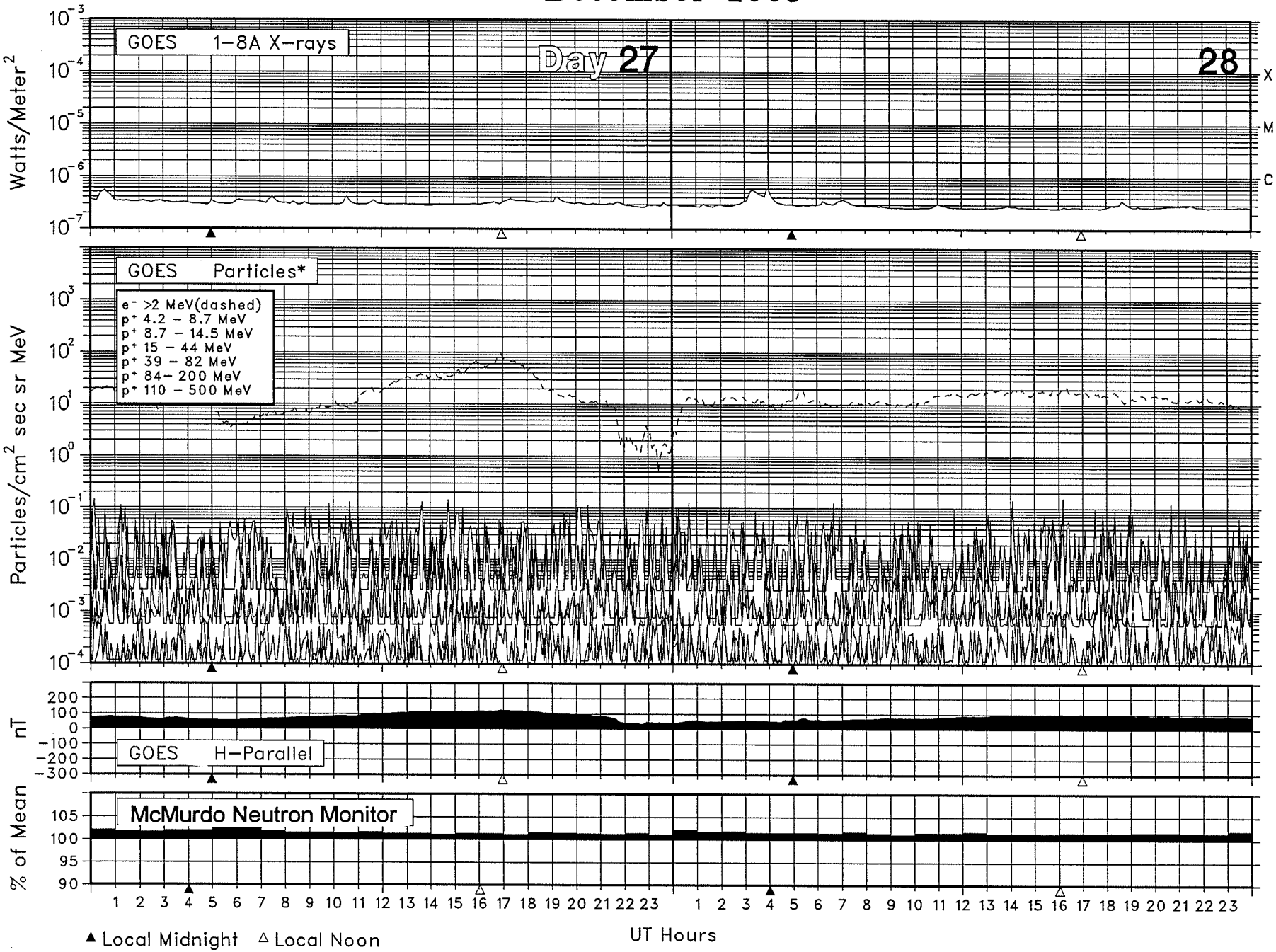
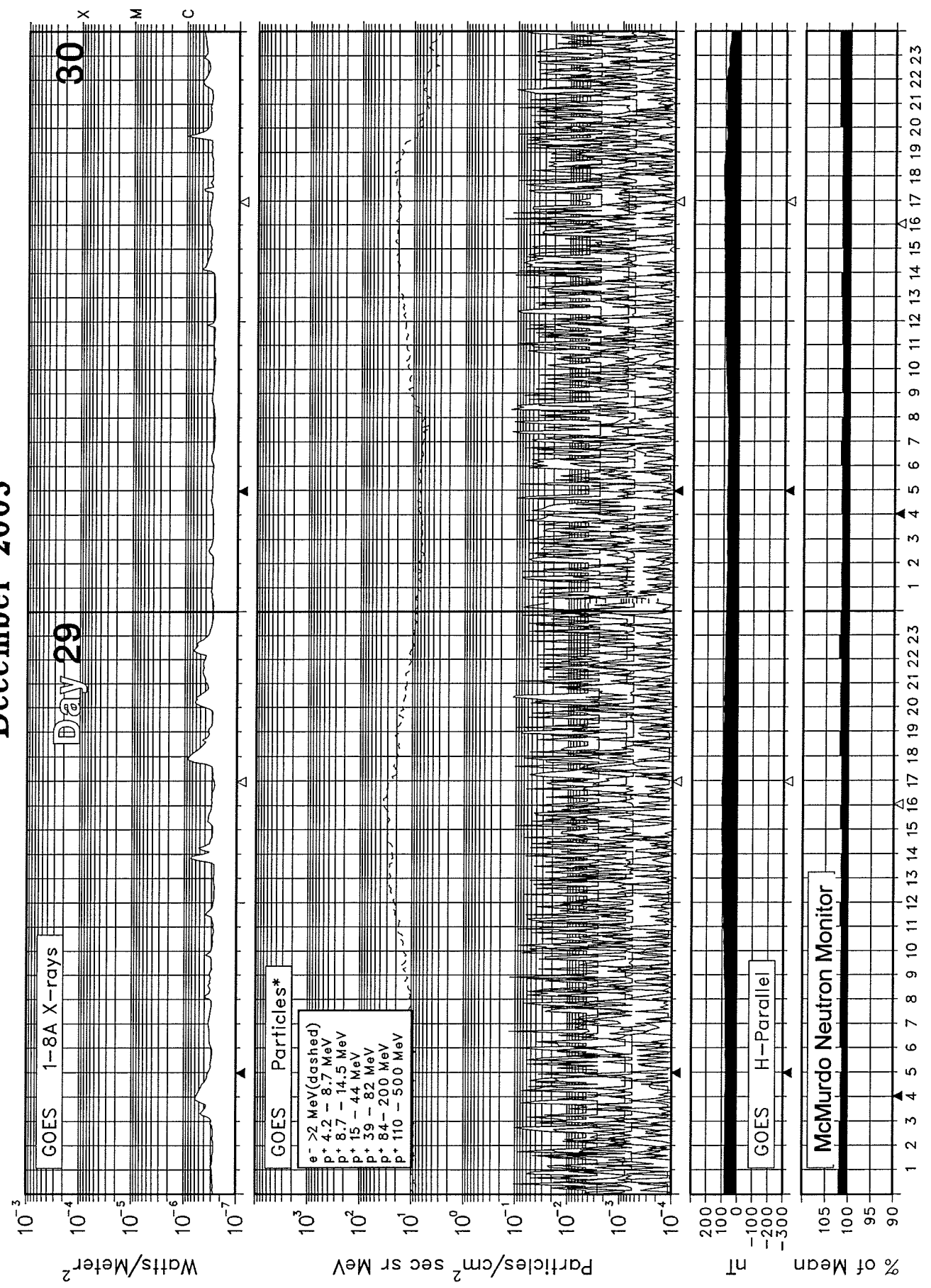
December 2003

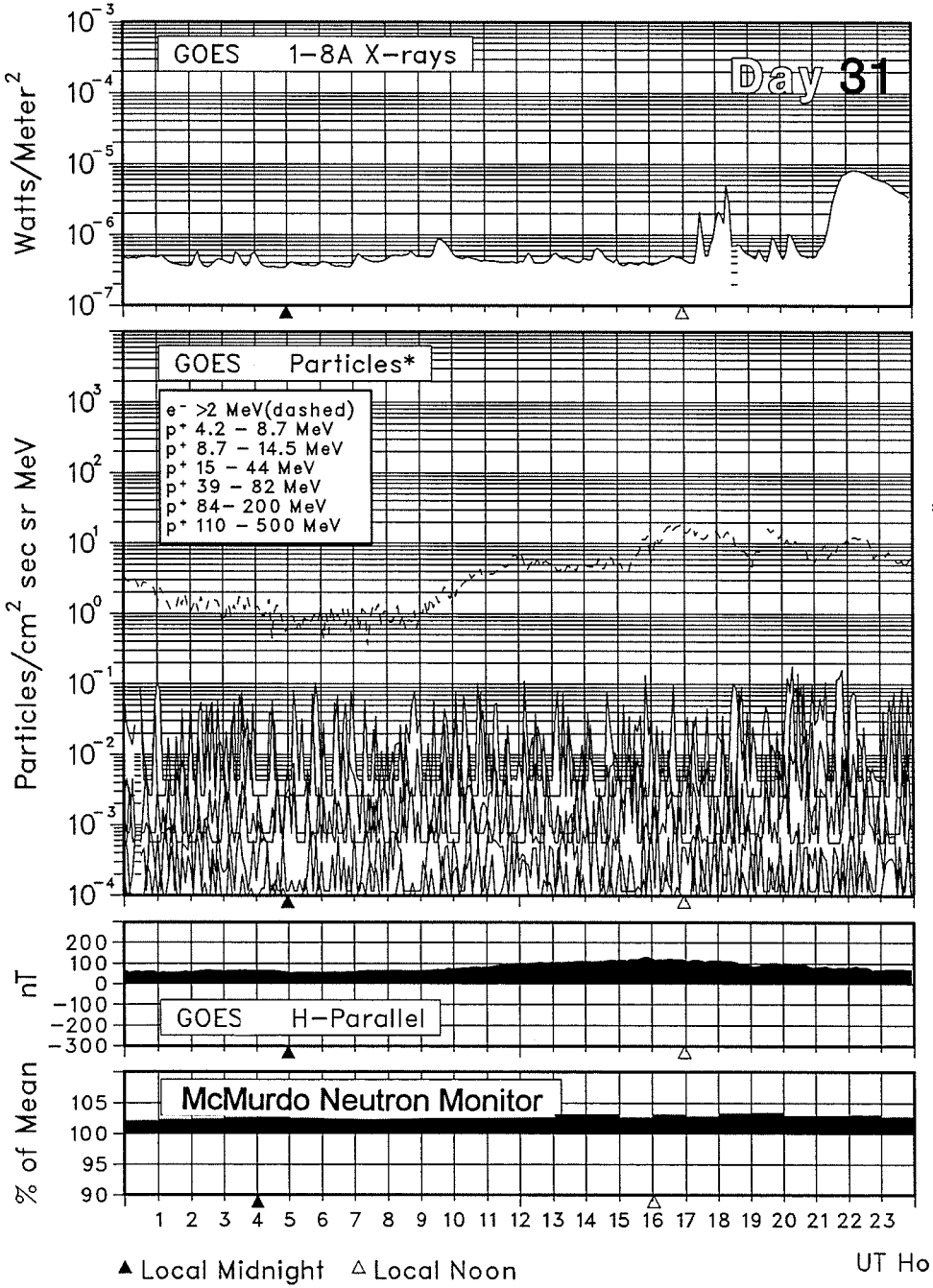


SOLAR-TERRESTRIAL ENVIRONMENT
December 2003




SOLAR-TERRESTRIAL ENVIRONMENT
December 2003
Day 29
30
X
M
C
GOES 1-8A X-rays
Watts/Meter²
GOES Particles*
e⁻ >2 MeV(dashed)
p⁺ 4.2 - 8.7 MeV
p⁺ 8.7 - 14.5 MeV
p⁺ 15 - 44 MeV
p⁺ 39 - 82 MeV
p⁺ 84 - 200 MeV
p⁺ 110 - 500 MeV
Particles/cm² sec sr MeV
GOES H-Parallel
nT
McMurdo Neutron Monitor
% of Mean
UT Hours
▲ Local Midnight △ Local Noon

SOLAR-TERRESTRIAL ENVIRONMENT
December 2003



Satellite positions:
GOES-8 – 75W
GOES-11 – 113W
GOES-12 – 75W

GOES-12 data replace GOES-8 X-rays, electrons and magnetometer data.
GOES 11 protons replace GOES-8 protons.

* Electron flux is divided by 10.
Electron units are Electrons/cm^2 sec sr.
Protons are corrected for contamination.

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

DECEMBER 2003

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)
335	01	30	178	153	9	507	N07	W82	0	0	0	01	E	SOL: Eruptive
						508	S19	W71	0	0	0	01	E	MAG: Quiet
						509	S11	W24	0	0	0	01	Q	PRO: Quiet
						510	S23	W16	0	0	0	01	E	
						511	S15	W44	0	0	0	01	Q	
						512	N06	W36	0	0	0	01	Q	
						513	N13	E18	0	0	0	01	Q	
						515	S02	E42	0	0	0	01	Q	
						516	S17	E44	0	0	0	01	Q	
						517	S07	E67	0	0	0	01	Q	
336	02	01	159	143	10	507	N07	W95	0	0	0	02	Q	SOL: Eruptive
						508	S19	W84	0	0	0	02	E	MAG: Quiet
						509	S11	W37	0	0	0	02	Q	PRO: Quiet
						510	S23	W29	0	0	0	02	Q	
						511	S15	W57	0	0	0	02	Q	
						513	N13	E05	0	0	0	02	Q	
						515	S02	E28	0	0	0	02	Q	
						516	S17	E31	0	0	0	02	Q	
						517	S07	E60	0	0	0	02	Q	
337	03	02	119	139	8	509	S11	W52	0	0	0	03	Q	SOL: Eruptive
						510	S22	W45	0	0	0	03	Q	MAG: Quiet
						511	S14	W71	1	0	0	03	Q	PRO: IP
						513	N12	W07	0	0	0	03	Q	
						515	S02	E13	0	0	0	03	Q	
						516	S16	E18	0	0	0	03	Q	
						517	S06	E47	0	0	0	03	Q	
338	04	03	100	124	4	509	S11	W67	0	0	0	04	Q	SOL: Eruptive
						510	S23	W58	0	0	0	04	Q	MAG: Quiet
						513	N12	W21	0	0	0	04	Q	PRO: IP
						515	S03	W01	0	0	0	04	Q	
						516	S16	E04	0	0	0	04	Q	
						517	S06	E33	0	0	0	04	Q	
						518	S22	E10	0	0	0	04	Q	
339	05	04	115	116	6	509	S10	W80	0	0	0	05	Q	SOL: Eruptive
						510	S24	W69	1	0	0	05	Q	MAG: Quiet
						513	N12	W34	0	0	0	05	Q	PRO: Quiet
						515	S03	W16	0	0	0	05	Q	
						516	S16	W11	0	0	0	05	Q	
						517	S06	E20	0	0	0	05	Q	
						518	S21	W03	0	0	0	05	Q	
						519	S08	W15	0	0	0	05	Q	
340	06	05	88	112	35	510	S24	W81	1	0	0	06	Q	SOL: Eruptive
						513	N12	W47	0	0	0	06	Q	MAG: Active
						516	S17	W24	0	0	0	06	Q	PRO: Quiet
						517	S06	E07	0	0	0	06	Q	
						519	S08	W28	0	0	0	06	Q	
341	07	06	87	109	23	510	S23	W96	0	0	0	07	E	SOL: Eruptive
						513	N11	W62	0	0	0	07	Q	MAG: Active
						516	S17	W37	0	0	0	07	Q	PRO: Quiet
						517	S07	W06	0	0	0	07	Q	
						519	S05	W45	0	0	0	07	Q	
342	08	07	53	92	17	513	N11	W75	0	0	0	08	Q	SOL: Eruptive
						516	S17	W52	0	0	0	08	Q	MAG: Active
						517	S08	W20	0	0	0	08	Q	PRO: Quiet
343	09	08	49	94	35	513	N11	W85	0	0	0	09	Q	SOL: Quiet
						516	S16	W63	0	0	0	09	Q	MAG: Active
						517	S07	W32	0	0	0	09	Q	PRO: Quiet
344	10	09	23	92	24	517	S16	W80	0	0	0	10	Q	SOL: Quiet

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

DECEMBER 2003

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)
						517	S08	W51	0	0	0	10	Q	MAG: Active
									0	0	0	10		PRO: Quiet
345	11	10	46	89	40	516	S16	W92	0	0	0	11	Q	SOL: Quiet
						517	S08	W64	0	0	0	11	Q	MAG: Active
						520	N03	E75	0	0	0	11	Q	PRO: Quiet
						521	S11	E82	0	0	0	11	Q	
346	12	11	35	86	45	517	S08	W78	0	0	0	12	Q	SOL: Quiet
						520	N02	E62	0	0	0	12	Q	MAG: Minor
						521	S11	E63	0	0	0	12	Q	PRO: Quiet
347	13	12	36	87	23	517	S07	W92	0	0	0	13	Q	SOL: Quiet
						520	N02	E47	0	0	0	13	Q	MAG: Minor
						521	S12	E48	0	0	0	13	Q	PRO: Quiet
348	14	13	40	88	27	520	N02	E33	0	0	0	14	Q	SOL: Quiet
						521	S12	E34	0	0	0	14	Q	MAG: Active
						522	N16	W50	0	0	0	14	Q	PRO: Quiet
349	15	14	48	92	29	520	N02	E19	0	0	0	15	Q	SOL: Eruptive
						521	S12	E21	0	0	0	15	Q	MAG: Active
						522	N16	W63	0	0	0	15	Q	PRO: Quiet
350	16	15	42	101	27	520	N02	E06	0	0	0	16	Q	SOL: Eruptive
						521	S12	E09	0	0	0	16	Q	MAG: Active
						522	N15	W76	0	0	0	16	Q	PRO: Quiet
351	17	16	71	106	13	520	N01	W07	0	0	0	17	Q	SOL: Quiet
						521	S11	W05	0	0	0	17	Q	MAG: Quiet
						523	S15	E72	0	0	0	17	Q	PRO: Quiet
						524	S08	E67	0	0	0	17	Q	
						525	N10	E68	0	0	0	17	Q	
352	18	17	92	118	10	520	N03	W22	0	0	0	18	Q	SOL: Eruptive
						521	S11	W20	0	0	0	18	Q	MAG: Quiet
						523	S15	E58	0	0	0	18	Q	PRO: Quiet
						524	S08	E54	0	0	0	18	Q	
						525	N09	E56	1	0	0	18	Q	
						526	N12	W54	0	0	0	18	Q	
						527	S15	W41	0	0	0	18	Q	
353	19	18	114	123	6	520	N03	W35	0	0	0	19	Q	SOL: Eruptive
						521	S12	W34	0	0	0	19	Q	MAG: Quiet
						523	S13	E45	0	0	0	19	Q	PRO: Quiet
						524	S07	E39	0	0	0	19	Q	
						525	N09	E44	4	0	0	19	Q	
						526	N12	W66	0	0	0	19	Q	
						527	S16	W56	0	0	0	19	Q	
						528	N08	E71	0	0	0	19	E	
354	20	19	113	123	1	520	N03	W48	0	0	0	20	Q	SOL: Eruptive
						521	S12	W47	0	0	0	20	Q	MAG: Quiet
						523	S17	E34	0	0	0	20	Q	PRO: Quiet
						524	S08	E25	0	0	0	20	Q	
						525	N10	E31	7	0	0	20	E	
						527	S15	W71	0	0	0	20	Q	
						528	N09	E62	0	0	0	20	E	
355	21	20	104	130	16	520	N03	W61	0	0	0	21	Q	SOL: Eruptive
						523	S17	E23	0	0	0	21	Q	MAG: Quiet
						524	S08	E13	0	0	0	21	Q	PRO: Quiet
						525	N09	E17	2	0	0	21	E	
						528	N09	E49	0	0	0	21	E	
						529	N09	W18	0	0	0	21	Q	
356	22	21	105	133	18	520	N02	W71	0	0	0	22	Q	SOL: Eruptive

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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)
						523	S17	E09	0	0	0	22	Q	MAG: Active
						524	S08	W03	0	0	0	22	Q	PRO: Quiet
						525	N09	E05	1	0	0	22	E	
						528	N09	E37	1	0	0	22	E	
						530	S20	E64	0	0	0	22	Q	
357	23	22	152	138	18	520	N03	W84	0	0	0	23	Q	SOL: Eruptive
						523	S18	W01	0	0	0	23	Q	MAG: Active
						525	N08	W10	0	0	0	23	Q	PRO: Quiet
						528	N09	E23	3	0	0	23	E	
						530	S21	E50	1	0	0	23	Q	
						531	N01	W21	0	0	0	23	Q	
358	24	23	144	142	6	520	N04	W99	0	0	0	24	Q	SOL: Eruptive
						523	S19	W13	0	0	0	24	Q	MAG: Quiet
						525	N08	W22	1	0	0	24	Q	PRO: Quiet
						528	N09	E09	3	0	0	24	E	
						529	N09	W60	0	0	0	24	Q	
						530	S22	E37	0	0	0	24	Q	
						531	N02	W37	0	0	0	24	Q	
359	25	24	100	139	5	523	S19	W26	0	0	0	25	Q	SOL: Eruptive
						525	N09	W36	0	0	0	25	Q	MAG: Quiet
						528	N10	W05	2	0	0	25	E	PRO: Quiet
						530	S22	E24	0	0	0	25	Q	
						531	N03	W50	0	0	0	25	Q	
360	26	25	58	139	8	525	N09	W49	5	0	0	26	Q	SOL: Eruptive
						528	N10	W18	3	0	0	26	E	MAG: Quiet
						532	S11	E02	0	0	0	26	Q	PRO: Quiet
361	27	26	65	137	11	532	N10	W31	3	1	0	27	E	SOL: Eruptive
						532	S11	W11	0	0	0	27	Q	MAG: Quiet
									0	0	0	27		PRO: Quiet
362	28	27	47	127	12	532	N10	W44	0	0	0	28	E	SOL: Eruptive
						532	S11	W25	0	0	0	28	Q	MAG: Quiet
									0	0	0	28		PRO: Quiet
363	29	28	47	119	13	528	N10	W57	0	0	0	29	E	SOL: Eruptive
						532	S11	W38	0	0	0	29	Q	MAG: Quiet
						533	N16	E54	0	0	0	29	Q	PRO: Quiet
364	30	29	56	115	5	528	N08	W69	0	0	0	30	E	SOL: Eruptive
						530	S22	W50	0	0	0	30	Q	MAG: Quiet
						532	S12	W51	0	0	0	30	Q	PRO: Quiet
						533	N16	E38	0	0	0	30	Q	
365	31	30	15	108	8	528	N10	W81	0	0	0	31	Q	SOL: Quiet
									0	0	0	31		MAG: Quiet
									0	0	0	31		PRO: Quiet

(1) Region Forecast and Flare (SOL) Advice
- Q = Quiet (<50% probability of C-class flares)
- E = Eruptive (C-class flares expected, probability >=50%)
- A = Active (M-class flares expected, probability >=50%)
- M = Major (X-class flares expected, probability >=50%)
- P = Proton (Proton flares expected, probability >=50%)
- W = Warning (activity levels are expected to increase, but no numerical forecast given)
- / = No forecast available

Magnetic (MAG) Geoadvice

'Quiet'		
'Active'	conditions expected	(A>= 20 or K =4)
'Minor'	storm expected	(A>= 30 or K =5)
'Major'	storm expected	(A>= 50 or K>=6)
'Severe'	storm expected	(A>=100 or K>=7)

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'IP'	magstorm in progress (A>= 30 or K>=4)
'Warning'	(activity levels are expected to increase, but no numerical forecast given)
'/'	no forecast available

Proton (PRO) Geoadvice

'Quiet'		
'Proton'	event expected	(10pfu at > 10 MeV)
'Major'	proton event expected	(100pfu at >100 MeV)
'IP'	proton event in progress	(>10 MeV)
'Warning'	(activity levels are expected to increase, but no numerical forecast given)	
'/'	no forecast available	

STRATWARM ALERTS

STRATALERT BERLIN 06 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE. WARM REGION OVER CENTRAL ASIA IN THE MIDDLE AND UPPER STRATOSPHERE, WEAKENING WITHIN THE NEXT 5-DAYS.

STRATALERT BERLIN 07 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE. WARM REGION OVER SIBERIA IN THE MIDDLE AND UPPER STRATOSPHERE, WEAKENING WITHIN THE NEXT 5-DAYS.

STRATALERT BERLIN 08 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
WARM REGION OVER EASTERN ASIA AND SIBERIA IN THE MIDDLE AND UPPER STRATOSPHERE, WEAKENING WITHIN THE NEXT 5-DAYS. COLD EARLY WINTER CONDITOINS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 09 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
WARM REGION OVER EASTERN ASIA AND SIBIERA IN THE MIDDLE AND UPPER STRATOSPHERE. COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 10 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
WARM REGION OVER EASTERN ASIA AND SIBERIA IN THE MIDDLE AND UPPER STRATOSPHERE. COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 11 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
WARM REGION OVER EASTERN ASIA AND SIBERIA IN THE MIDDLE AND UPPER STRATOSPHERE. COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 12 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
A WARMING OVER EASTERN ASIA AND SIBERIA IN THE MIDDLE AND UPPER STRATOSPHERE.
COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 13 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
A WARMING OVER ASIA AND SIBERIA IN THE MIDDLE AND UPPER STRATOSPHERE.
COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 14 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
A WARMING OVER SIBERIA/EASTERN EUROPE IN THE MIDDLE AND UPPER STRATOSPHERE. COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 15 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
WARMING OVER SIBERIA/EUROPE IN THE MIDDLE AND UPPER STRATOSPHERE, INTENSIFYING. COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 16 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
WARMING OVER SIBERIA/EUROPE IN THE MIDDLE AND UPPER STRATOSPHERE, INTENSIFYING. COLD EARLY WINTER CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 17 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
INTENSE MINOR WARMING OVER NORTHERN ASIA IN THE MIDDLE AND UPPER STRATOSPHERE. STILL UNDISTURBED CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 18 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
INTENSE MINOR WARMING OVER SIBERIA /EASTERN EUROPE IN THE MIDDLE AND UPPER STRATOSPHERE. STILL UNDISTURBED CONDITIONS IN THE LOWER STRATOSPHERE.

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STRATALERT BERLIN 19 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
INTENSE MINOR WARMING OVER SIBERIA/EASTERN EUROPE IN THE MIDDLE AND UPPER STRATOSPHERE. STILL UNDISTURBED CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 20 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
INTENSE MINOR WARMING OVER SIBERIA/EUROPE IN THE MIDDLE AND UPPER STRATOSPHERE. STILL UNDISTURBED CONDITIONS IN THE LOWER STRATOSPHERE.

STRATALERT BERLIN 21 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
INTENSE WARMING OVER SIBERIA/EUROPE CONTINUES IN THE UPPER STRATOSPHERE. STILL UNDISTURBED CONDITIONS IN THE LOWER STRATOSPHERE UP TO 10HPA.

STRATALERT BERLIN 22 DECEMBER 2003 1400 UTCSTRATALERT EXISTS.
INTENSE WARMING OVER SIBERIA /EUROPE CONTINUES IN THE UPPER STRATOSPHERE, WITH RELATIVELY UNDISTURBED CONDITIONS IN THE LOWER STRATOSPHERE UP TO 10 HPA.

STRATALERT BERLIN 23 DECEMBER 2003 1400 UTCSTRATALERT EXISTS.
INTENSE WARMING OVER SIBERIA/EUROPE CONTINUES, TEMPERATURE GRADIENT REVERSED FROM 10HPA UPWARDS.

STRATALERT BERLIN 24 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
INTENSE WARMING OVER SIBERIA/EUROPE CONTINUES , WITH THE TEMPERATURE GRADIENT BETWEEN 60N AND THE POLE REVERSED FROM 10HPA UPWARDS.
THE NEXT STRATALERT WILL BE AVAILABLE ON 26 DECEMBER.

STRATALERT BERLIN 26 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
INTENSE WARMING OVER SIBERIA/ NORTHERN EUROPE CONTINUES, WITH THE TEMPERATURE GRADIENT BETWEEN 60N AND THE POLE REVERSED FROM 10 TO 3 HPA. AT 1 HPA, THE MEAN ZONAL WIND AT 60N IS FROM THE EAST. WITHIN THREE DAYS THE WARM REGION PROPAGATES DOWN TO 30 HPA OVER EASTERN SIBERIA.

STRATALERT BERLIN 27 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
INTENSE WARMING WEAKENING IN THE UPPER LEVELS, INTENSIFYING AT 10 HPA, PROPAGATING DOWN TO THE LOWER STRATOSPHERE WITHIN 3 DAYS. AT 2 HPA, THE MEAN ZONAL AT 60N IS FROM THE EAST.

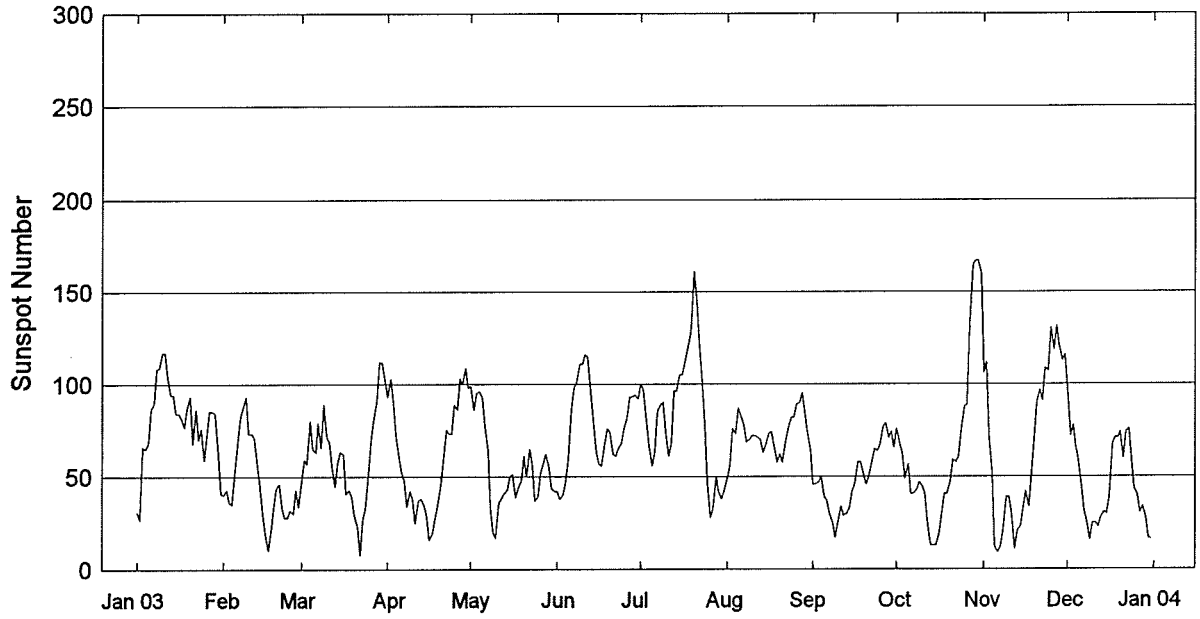
STRATALERT BERLIN 28 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
REVERSED TEMPERATURE GRADIENT BETWEEN 10 AND 2HPA. EASTERLY WINDS AT 3HPA AND ABOVE.

STRATALERT BERLIN 29 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
THERE IS A REVERSED TEMPERATURE GRADIENT ON 50HPA AND ABOVE AND THERE ARE EASTERLIES AT 1HPA.

STRATALERT BERLIN 30 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
WARM AIR COVERS NORTHEASTERN SIBERIA AND CANADA AT THE LOWER LEVELS AND EUROPE AND WESTERN ASIA AT THE UPPER LEVELS, THE LATTER INTENSIFYING, MOVING NORTHEASTWARDS, AND PENETRATING DOWNWARDS.

STRATALERT BERLIN 31 DECEMBER 2003 1400 UTC STRATALERT EXISTS.
WARM AIR COVERS NORTHEASTERN SIBERIA AND CANADA AT THE LOWER LEVELS AND EASTERN EUROPE/WESTERN ASIA AT THE UPPER LEVELS, THE LATTER INTENSIFYING AND PENETRATING DOWNWARDS.

International Relative Sunspot Numbers
Jan 2003- Dec 2003

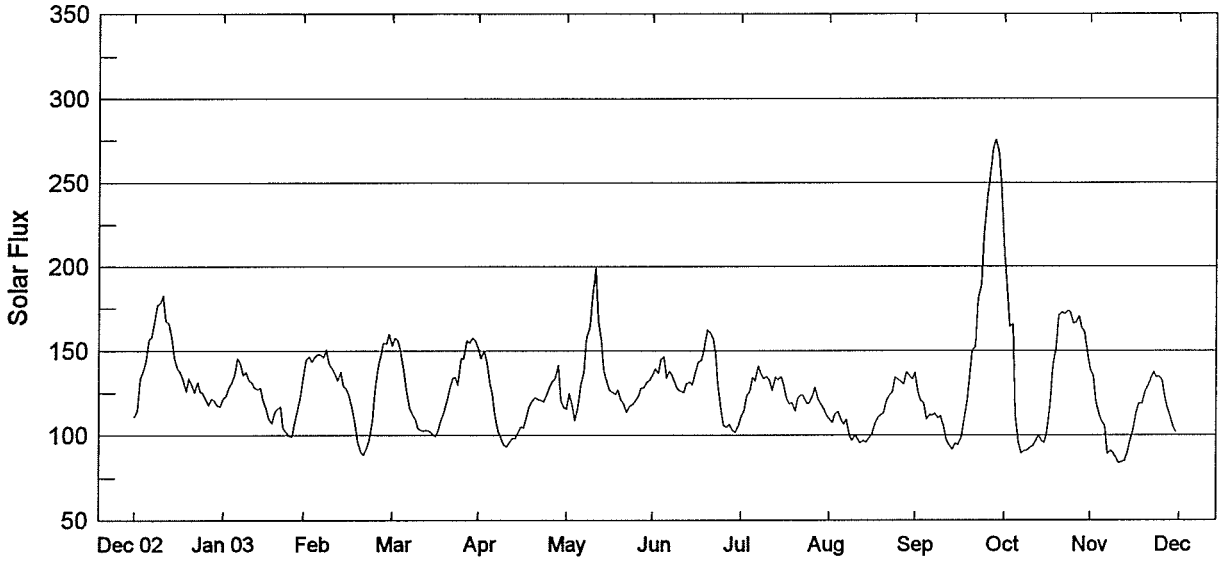


Day	Jan 03	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct*	Nov*	Dec*
1	31	40	48	93	99	42	100	49	46	76	106	98
2	27	43	59	103	86	38	97	56	46	68	112	72
3	66	36	57	90	95	40	80	76	47	62	72	78
4	65	35	80	72	96	47	67	73	50	49	52	66
5	68	50	65	60	93	59	56	87	39	57	12	59
6	86	68	63	52	78	86	63	83	37	41	9	45
7	90	82	79	48	65	98	85	78	30	41	12	32
8	108	87	66	34	33	101	89	69	25	43	21	26
9	109	93	89	42	20	111	90	70	17	47	39	16
10	117	73	71	38	17	111	74	72	25	45	39	25
11	117	73	69	25	36	116	61	72	34	41	30	25
12	104	71	56	37	38	115	68	71	29	25	11	23
13	94	59	45	38	41	96	96	70	30	13	21	28
14	94	45	58	35	43	81	96	63	33	13	23	31
15	84	31	63	29	50	63	105	67	42	13	33	30
16	84	20	62	16	51	57	105	73	46	19	42	39
17	81	10	41	19	39	56	112	74	58	30	34	68
18	77	20	43	27	44	68	121	67	58	41	52	71
19	87	33	39	34	48	76	128	58	52	41	70	71
20	93	44	29	45	61	74	161	62	46	47	90	74
21	68	46	23	58	50	62	146	58	50	59	97	60
22	86	34	8	75	65	61	123	69	57	58	91	74
23	70	28	27	73	57	66	100	76	65	61	109	76
24	76	28	33	73	37	68	78	82	64	75	107	59
25	59	32	52	89	39	76	47	82	67	88	131	44
26	72	30	70	86	52	82	28	89	77	89	119	40
27	85	43	81	103	57	93	33	90	79	133	132	31
28	85	34	91	100	62	93	50	95	71	165	121	34
29	84		112	109	56	94	43	85	74	167	113	28
30	62		112	98	44	92	38	74	66	167	116	17
31	41		102		42		42	65		160		16
Mean	79.7	46.0	61.1	60.0	54.6	77.4	83.3	72.7	48.7	65.6	67.2	47.0

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Jan 2003 - Dec 2003

Adjusted to 1 AU



Day	Jan 03	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	111.2	122.1	135.6	152.8	151.0	115.5	135.6	110.6	110.1	137.1	207.2	139.3
2	114.4	123.0	144.7	157.3	145.3#	124.8	139.3	114.7	107.6	125.0	187.4	135.4
3	133.1	128.7	146.5	155.7	150.1	117.8	136.7	123.6	112.4	120.3	164.2	120.3
4	138.2	131.0	143.6	148.8#	144.4	108.7	144.8	126.0	114.1	119.0	165.6#	112.5
5	143.2	136.2	146.2	137.5	131.1	117.0	146.7	134.4	109.8	109.6	112.1	108.5
6	156.8	145.4	147.9	126.1	124.1	129.4	134.0	132.4	106.6	112.0	96.1	105.7
7	157.8	143.3	147.6	115.9	112.2	137.2	137.8	140.9	109.4	111.8	89.4	89.3
8	168.0	135.4	146.2	112.6	102.8	158.0	135.7	136.6	100.3	113.1	91.0	90.9
9	176.9	137.6	150.6	109.7	98.9	163.1	130.2	133.6	97.3	110.5	91.2	89.4
10	178.7	132.6	141.7	104.1	94.5	182.0	126.9	134.7	100.6	111.4	92.8	86.5
11	182.6	131.4	139.7	103.0	93.4	198.9	126.1	132.7	98.0	105.4	93.7	83.4
12	167.7	128.2	136.2	102.6	95.8	168.6	125.5	126.6	95.6	97.4	96.7	84.5
13	166.2	127.3	132.5	103.0	98.1	155.8	130.7	134.3	97.3	94.0	100.0	85.0
14	158.6	128.1	137.3	102.6	98.3	137.7	131.4	133.1	95.8	91.9	96.8	89.5
15	145.0	120.6	129.3	101.1	101.4	132.8	129.9	134.7	98.4	95.3	95.6	97.7
16	139.9	115.7	127.2	99.2	104.9	126.5	137.5	130.1	100.4	94.6	102.0	103.0
17	137.1	109.4	123.1#	101.8	104.7	125.8	143.2	122.3	107.0	98.1	118.2	113.8
18	133.0	107.4	117.3	108.7	111.5	124.3	144.3	118.7	110.2	107.8	141.0	119.1
19	126.1	113.6	107.2	113.1	117.4	126.8	150.8	119.5	112.1	119.4	151.5	118.6
20	133.7	115.7	96.6	119.7	120.0	120.8	162.4	114.5	112.9	133.9	171.0	125.9
21	129.4	117.0	90.3	127.0	122.2	118.8	160.7	122.0	120.9	150.2	172.8	129.1
22	125.4	104.3	88.3	133.8	121.3	113.9	157.4	123.7	123.5	152.0#	171.9	133.2
23	131.6	101.8	92.4	134.3	120.9	117.2	148.7	122.9	125.7	181.3#	173.8	137.4
24	125.8	99.9	97.3	129.8	119.8	118.3	129.2	119.0	134.3	188.5	172.8	134.4
25	124.9	99.5	108.2	145.3	124.3	120.2	115.1	119.0	133.4	219.0	166.3	134.6
26	121.2	107.2	126.6	145.5	128.4	122.9	105.9	123.4	131.8	240.6*	166.5	132.7
27	117.7	115.4	140.5	156.1	132.3	128.1	104.9	128.3	130.3	254.0	170.1	122.4#
28	121.8	122.6	146.4	154.3	133.7	128.1	106.6	121.1	137.6	270.9	163.2	115.1
29	120.7		154.6	157.4	141.6	131.6	103.0	118.7	135.6	275.4#	161.4	110.7
30	117.6		154.2	155.8	120.4	132.5	101.7	116.2	133.3	267.6	148.6	104.2
31	116.9		159.8		116.3		105.2	111.8		245.2		102.1
Mean	139.4	121.4	130.8	127.2	118.7	133.4	131.9	125.2	113.4	150.1	137.7	111.4

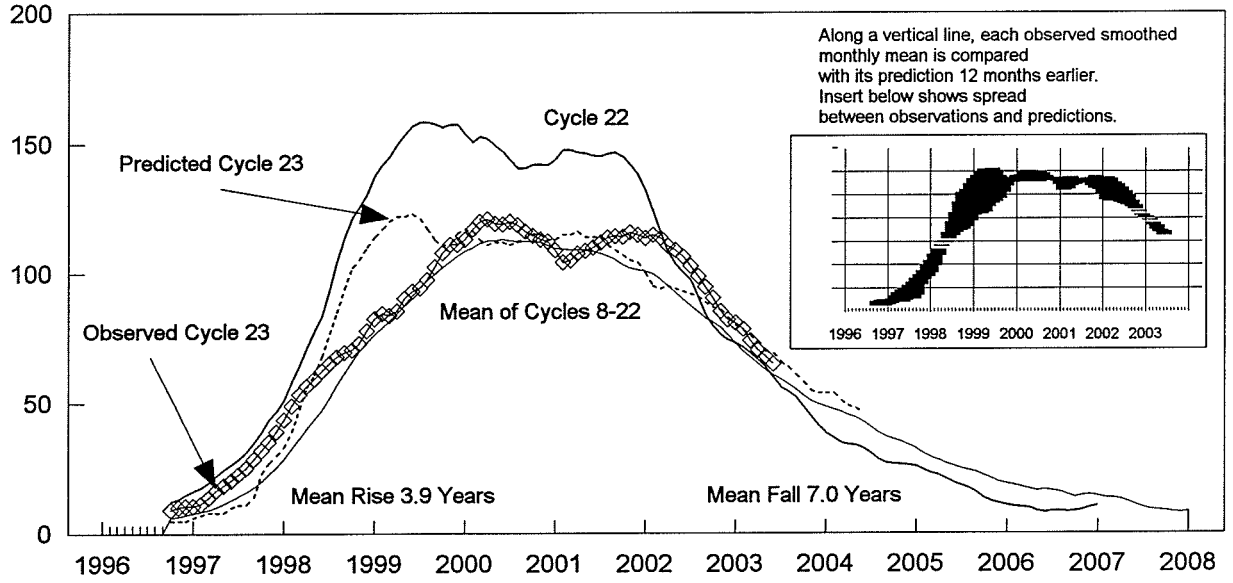
NOTE: # - 1700 or 1800UT reading, burst in progress at 2000UT. *-2300UT reading, burst in progress.

DAILY SOLAR INDICES
December 2003

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Sunspot Numbers Amer	Obs Flux Penticton (2800)	SGMR (15400)	SGMR (8800)	SGMR (4995)	Solar Flux Adjusted to 1 Astronomical Unit: Penticton (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
1	335	6	98	85	143.3	537	263	171	139.3	133	89	49	36	29
2	336	7	72	71	139.3	532	293	182	135.4	133	90	46	36	25
3	337	8	78	72	123.8	524	285	165	120.3	115	76	45	35	25
4	338	9	66	63	115.8	519	270	170	112.5	108	72	44	34	24
5	339	10	59	55	111.7	523	280	154	108.5	107	67	39	32	22
6	340	11	45	41	108.9	496	278	153	105.7	98	64	39	31	13
7	341	12	32	36	92.0	500	269	142	89.3	86	59	---	---	---
8	342	13	26	24	93.7	509	264	138	90.9	83	62	36	29	15
9	343	14	16	22	92.2	509	253	135	89.4	80	55	36	28	14
10	344	15	25	26	89.2	498	246	134	86.5	83	53	34	31	14
11	345	16	25	29	86.1	449	204	117	83.4	76	49	31	28	13
12	346	17	23	25	87.2	509	247	135	84.5	79	53	36	28	14
13	347	18	28	34	87.8	515	261	134	85.0	79	53	36	31	15
14	348	19	31	34	92.4	506	267	135	89.5	87	56	38	30	14
15	349	20	30	32	100.8	490	247	152	97.7	99	60	42	25	14
16	350	21	39	40	106.3	507	225	152	103.0	152	67	42	32	15
17	351	22	68	67	117.5	512	229	153	113.8	169	74	43	4	16
18	352	23	71	69	123.0	523	233	158	119.1	166	80	42	33	19
19	353	24	71	72	122.5	523	238	168	118.6	173	84	51	44	---
20	354	25	74	71	130.1	515	230	170	125.9	188	88	51	40	18
21	355	26	60	70	133.4	521	244	171	129.1	189	89	56	41	19
22	356	27	74	83	137.6	524	284	163	133.2	145	89	51	40	31
23	357	1	76	70	142.0	502	281	163	137.4	142	91	58	52	63
24	358	2	59	62	138.9	487	275	156	134.4	138	92	50	40	29
25	359	3	44	50	139.1	510	268	151	134.6	141	93	44	42	36
26	360	4	40	42	137.2	508	291	165	132.7	143	91	51	37	17
27	361	5	31	36	126.6#	528	280	153	122.4#	129	85	46	33	16
28	362	6	34	35	119.0	518	266	142	115.1	119	79	43	31	16
29	363	7	28	28	114.5	514	259	138	110.7	112	74	43	33	15
30	364	8	17	17	107.7	484	251	132	104.2	109	70	42	34	47
31	365	9	16	14	105.6	499	268	137	102.1	103	65	41	35	48
MEAN			47.0	47.6	115.0	509	259	151	111.4	121	73	43	33	23

NOTE: Radio flux values are from Sagamore Hill, Massachusetts, USA.
- 1800UT Reading, burst in progress at 2000UT.

Cycle 23 Smoothed Sunspot Numbers: Observed and Predicted



Smoothed Sunspot Numbers (Observed and Predicted) for Parts of Solar Cycles 22 and 23

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1994	37	35	34	34	33	31	29	27	27	27	26	26	31
1995	24	23	22	21	19	18	17	15	13	12	11	11	17
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	63	61	59	57	55	54	66
							(3)	(6)	(9)	(12)	(14)	(16)	(5)
2004	53	52	50	49	48	46	44	42	40	39	38	36	45
	(17)	(17)	(18)	(19)	(19)	(19)	(20)	(21)	(21)	(22)	(22)	(23)	(20)

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

*** May 1996 marks Cycle 22's mathematical minimum. ** October 1996 marks the consensus minimum NGDC is now using.**

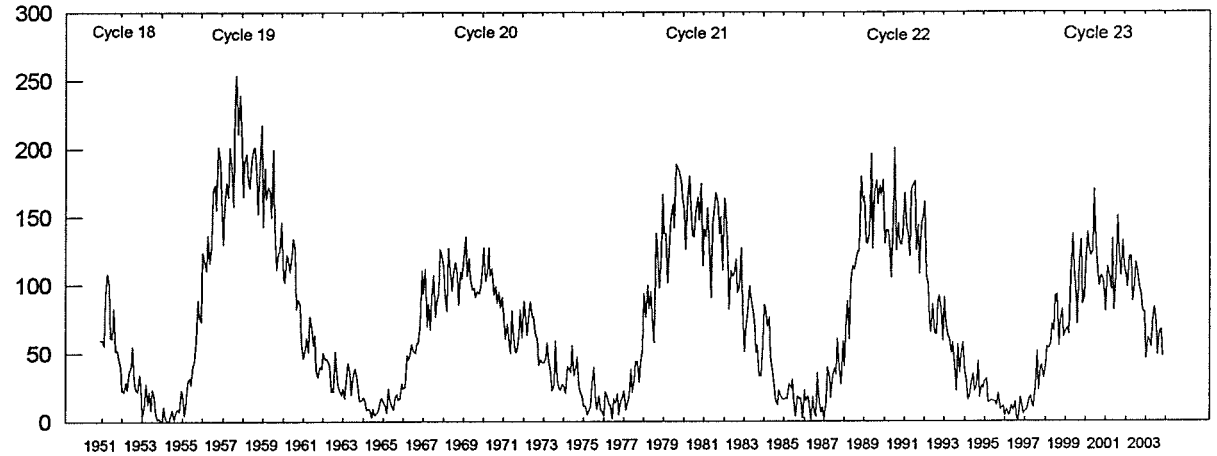
+ April 2000 marks Cycle 23 maximum.

Observed and Predicted Numbers. For the end of Cycle 22, and the rise and decline of Cycle 23, 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 June 2003 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 June 2004 prediction. There exists a 90% chance that in June 2004, the actual smoothed number will fall somewhere between 27 and 65.

Points to Ponder. The McNish-Lincoln prediction method generates useful estimates of smoothed, monthly mean sunspot numbers for no more than 12 months ahead. Beyond 12 months, the predictions regress toward the mean of all 15 cycles of observations used in the computation. Moreover, the method remains very sensitive to the date defining the onset of the current cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on the consensus minimum value of 8.8 that occurred in October 1996.

Note: Please visit http://www.sec.noaa.gov for solar minimum and Cycle 23 discussions.

Mean Monthly Sunspot Numbers
Jan 1951 - Dec 2003



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	85.0	72.7	48.8	65.6	67.2	47.0	63.8	

Values are preliminary after September, 2003. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

Hα SOLAR FLARES

DECEMBER 2003

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
GOES	01	0139	0144	0208			10508			29		B 9.6						1.5E-03
GOES		0446	0449	0452			10508			6		C 1.3						3.7E-04
GOES		1451	1503	1506			10508			15		C 1.3						9.3E-04
GOES		1838	1843	1854			10510			16		C 1.1						9.4E-04
GOES		2204	2209	2211						7		B 9.4						3.5E-04
GOES	02	0339	0343	0347						8		C 1.0						4.4E-04
GOES		0717	0720	0723						6		C 1.3						4.2E-04
GOES		0757	0807	0817			10508			20		C 3.9						3.7E-03
GOES		0940	0948	0954			10508			14		C 7.2						5.1E-03
GOES		1247	1308	1322			10508			35		M 1.4						2.4E-02
GOES		1917	1921	1929	S13	W63	10511			12	SF	C 2.0						1.3E-03
HOLL		1921	1922	1929	S13	W63	10511	11	28.1	8	SF		3	E		16		
GOES		2101	2109	2115						14		C 5.0						2.9E-03
GOES		2250	2300	2307			10508			17		M 1.5						9.2E-03
GOES	03	0505	0635	0651						106		C 1.6						6.5E-03
GOES		1029	1033	1037						8		C 1.0						3.9E-04
GOES		2003	2007	2017						14		C 2.3						1.3E-03
GOES		2023	2034	2040						17		C 1.8						1.7E-03
GOES	04	0108	0122	0128	S18	W59	10510			20	SF	C 2.2						1.7E-03
LEAR		0118	0121	0129	S18	W59	10510	11	29.7	11	SF		2	E		33		F
GOES	05	0011	0016	0020						9		B 8.4						4.0E-04
LEAR		0733	0733	0738	S23	W75	10510	11	29.6	5	SF		3	E		36		
GOES		0800	0804	0807						7		B 6.2						2.2E-04
GOES		1011	1019	1028			10513			17		C 1.8						1.5E-03
GOES		1302	1305	1308						6		B 5.3						1.7E-04
GOES		1343	1347	1357						14		C 1.1						7.9E-04
GOES		1519	1527	1531						12		C 1.5						7.7E-04
GOES		2045	2112	2122						37		C 1.8						3.0E-03
GOES	06	0006	0027	0112						66		C 2.2						7.0E-03
GOES		0742	0747	0753						11		C 1.1						5.8E-04
GOES		0808	0824	0841						33		C 2.5						4.0E-03
GOES		0951	1002	1010						19		C 4.1						3.1E-03
GOES		1032	1036	1040						8		B 7.5						3.2E-04
GOES		1058	1120	1128						30		M 1.3						1.3E-02
GOES		1417	1422	1426						9		C 1.0						4.3E-04
GOES		1539	1546	1553						14		M 2.0						1.1E-02
GOES		1633	1638	1644						11		C 1.5						7.9E-04
GOES		1727	1730	1733						6		C 1.0						2.9E-04
GOES		1752	1757	1802						10		C 1.2						5.4E-04
GOES		1807	1811	1813						6		C 1.4						4.3E-04
GOES		1923	1939	1952						29		C 4.1						5.1E-03
GOES	07	0246	0254	0301						15		C 3.1						2.0E-03
GOES		0609	0627	0633						24		C 1.1						1.2E-03
GOES	09	0425	0429	0433						8		B 1.8						7.5E-05
GOES		1110	1115	1117						7		B 4.2						1.3E-04
GOES		1354	1358	1404						10		B 2.5						1.2E-04
GOES		1500	1505	1512						12		B 2.7						1.6E-04
GOES		2009	2014	2022						13		B 1.8						1.3E-04
GOES	10	0826	0833	0837						11		B 2.9						1.5E-04
GOES		1041	1045	1048						7		B 1.9						6.8E-05
GOES		1341	1344	1346						5		B 1.4						3.4E-05
GOES		1415	1419	1421						6		B 1.5						4.3E-05
GOES		1453	1457	1459						6		B 1.7						4.4E-05
GOES		1601	1609	1622						21		B 3.9						3.6E-04
GOES		2245	2249	2255						10		B 2.3						1.2E-04
GOES	11	0148	0154	0158						10		B 2.5						1.2E-04
GOES		0340	0345	0350						10		B 1.4						7.5E-05
GOES		0647	0701	0713						26		B 3.9						4.4E-04
GOES		1006	1011	1015						9		B 3.2						1.5E-04

Hα S O L A R F L A R E S

DECEMBER 2003

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
GOES	11	1322	1329	1343						21		B 3.7						3.7E-04
GOES		1542	1546	1550						8		B 1.3						5.6E-05
GOES		1814	1817	1821						7		B 1.2						4.6E-05
GOES	12	1001	1005	1009			10520			8		B 1.3						5.8E-05
GOES		2231	2239	2244			10520			13		B 2.2						1.3E-04
GOES	13	0757	0802	0804			10520			7		B 4.4						1.2E-04
GOES		2252	2300	2307			10520			15		B 3.2						2.3E-04
GOES	14	0900	0913	0926						26		B 9.5						1.0E-03
GOES		1213	1220	1227						14		B 2.7						2.0E-04
GOES		1934	1940	1944			10522			10		C 1.1						4.1E-04
GOES		2112	2116	2120						8		B 2.1						9.1E-05
GOES		2300	2306	2313						13		B 8.4						4.5E-04
GOES		2334	2340	2347						13		C 2.0						9.4E-04
GOES	15	0105	0113	0126						21		B 5.6						5.2E-04
GOES		0545	0552	0601						16		B 4.9						4.2E-04
GOES		0805	0809	0814						9		B 3.0						1.5E-04
GOES	16	0107	0111	0120						13		B 4.0						2.8E-04
GOES		1313	1325	1332						19		C 1.0						7.7E-04
GOES	17	0255	0313	0325	N08	E72	10525			30	SF	C 8.6						1.0E-02
LEAR		0307	0307	0333	N08	E72	10525	12	22.5	26	SF		3	E		35		F
GOES		0615	0623	0630						15		C 1.8						1.2E-03
GOES		0919	0928	0938						19		B 8.2						8.2E-04
GOES		1303	1309	1316			10521			13		C 1.0						6.8E-04
GOES		1432	1656	1715						163		B 9.5						7.6E-03
GOES		1841	1845	1900						19		B 6.7						7.0E-04
GOES		2011	2017	2023			10525			12		C 1.3						6.9E-04
GOES		2330	2339	2344						14		B 8.8						6.1E-04
GOES	18	0028	0032	0039						11		C 1.1						6.5E-04
GOES		0101	0112	0126						25		C 1.3						1.7E-03
GOES		0146	0151	0155						9		C 2.1						8.5E-04
GOES		0412	0418	0427						15		C 1.3						9.9E-04
GOES		0525	0528	0535						10		B 7.3						4.0E-04
GOES		0839	0843	0847						8		C 3.4						1.5E-03
GOES		0919	0931	0937	N08	E53	10525			18	SF	C 8.6						5.5E-03
LEAR		0925	0931	0935	N08	E53	10525	12	22.4	10	SF		3	E		46		F
GOES		1053	1056	1107						14		B 9.9						7.1E-04
GOES		1142	1147	1150						8		C 1.4						4.8E-04
GOES		1200	1209	1211						11		C 5.5						1.4E-03
GOES		1228	1237	1243	N10	E47	10525			15	SF	C 2.9						1.9E-03
SVTO		1234	1236	1240	N10	E47	10525	12	22.0	6	SF		3	E		16		
GOES		1343	1351	1359						16		C 1.0						8.2E-04
GOES		1420	1429	1437						17		C 1.4						1.2E-03
GOES		1624	1628	1632						8		B 8.4						3.3E-04
GOES		1836	1840	1843						7		C 1.4						4.4E-04
GOES		2016	2024	2030	N11	E47	10525			14	SF	C 1.9						1.3E-03
HOLL		2018	2019	2022	N11	E47	10525	12	22.4	4	SF		3	E		14		
GOES		2209	2216	2220	N10	E46	10525			11	SF	C 3.5						1.5E-03
HOLL		2217	2217	2221	N10	E46	10525	12	22.4	4	SF		3	E		12		F
GOES		2252	2257	2308						16		C 1.7						1.4E-03
GOES		2342	2346	2354						12		C 1.3						8.9E-04
GOES	19	0023	0028	0035	N09	E47	10525			12	SF	C 2.5						1.5E-03
LEAR		0026	0027	0031	N09	E47	10525	12	22.5	5	SF		3	E		19		FH
GOES		0100	0107	0110	N08	E46	10525			10	SF	C 4.6						1.6E-03
LEAR		0105	0105	0119	N08	E46	10525	12	22.5	14	SF		3	E		41		FH
GOES		0131	0139	0141						10		C 2.0						8.3E-04
LEAR		0218	0220	0224	N09	E46	10525	12	22.5	6	SF		3	E		34		FH
LEAR		0619	0619	0625	N10	E47	10525	12	22.8	6	SF		3	E		16		
GOES		0655	0703	0710	N09	E43	10525			15	SF	C 2.1						1.6E-03
LEAR		0659	0702	0706	N09	E43	10525	12	22.5	7	SF		2	E		19		FH
GOES		0805	0818	0830	N08	E40	10528			25	SF	C 9.3						9.8E-03

Hα SOLAR FLARES

DECEMBER 2003

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
LEAR	19	0807	0810	0850	N10	E44	10525	12	22.6	43	SF		2	E		71		FH
SVTO		0809	0809	0835	N08	E40	10525	12	22.3	26	SF		3	E		36		F
LEAR		0813	0814	0818	N09	E90	10528	12	26.1	5	SF		2	E		22		H
GOES		0922	0926	0928						6		B 9.1						3.0E-04
GOES		1220	1231	1239			10525			19		C 5.9						4.5E-03
GOES		1637	1646	1653	N10	E36	10525			16	SF	C 5.4						2.6E-03
HOLL		1645	1646	1653	N10	E36	10525	12	22.4	8	SF		3	E		53		F
GOES		2144	2149	2158			10525			14		C 2.3						1.4E-03
GOES		2207	2211	2214			10525			7		C 1.8						6.2E-04
GOES	20	0007	0016	0020	N08	E32	10525			13	SF	C 2.6						1.4E-03
LEAR		0010	0011	0020	N08	E32	10525	12	22.4	10	SF		3	E		13		FH
GOES		0154	0158	0201	N08	E31	10525			7	SF	C 1.5						5.4E-04
LEAR		0156	0157	0205	N08	E31	10525	12	22.4	9	SF		2	E		35		FH
GOES		0204	0222	0243			10525			39		C 1.8						3.6E-03
GOES		1419	1431	1438			10525			19		C 1.8						1.6E-03
GOES		1726	1732	1740						14		B 9.9						6.8E-04
GOES	21	0238	0246	0314	N09	E46	10528			36	SF	C 4.5						6.8E-03
LEAR		0242	0244	0312	N09	E46	10528	12	24.6	30	SF		3	E		85		F
GOES		0410	0416	0421	S24	E89	10000			11	SF	C 2.0						1.1E-03
LEAR		0413	0414	0417	S24	E89		12	28.0	4	SF		3	E		36		
GOES		0617	0621	0624	N08	E12	10525			7	SF	B 7.1						2.5E-04
LEAR		0620	0620	0626	N08	E12	10525	12	22.2	6	SF		3	E		21		FH
GOES		0728	0731	0734			10528			6		B 9.3						3.0E-04
GOES		1014	1018	1025			10525			11		C 2.1						1.2E-03
GOES		1253	1257	1301			10528			8		C 2.0						7.0E-04
GOES		2124	2130	2136			10528			12		C 1.1						7.0E-04
GOES	22	0039	0045	0049	N08	E41	10528			10	SF	C 5.5						1.7E-03
LEAR		0042	0045	0052	N08	E41	10528	12	25.1	10	SF		3	E		32		F
GOES		0636	0654	0711			10530			35		C 2.2						3.1E-03
LEAR		0653	0654	0705	N07	E28	10528	12	24.4	12	SF		3	E		22		
GOES		0926	0930	0933						7		B 7.0						2.6E-04
GOES		1102	1109	1117			10528			15		C 1.7						1.2E-03
GOES		1346	1356	1406			10528			20		C 2.3						2.2E-03
GOES		1438	1441	1443			10528			5		C 1.6						4.2E-04
GOES		1541	1545	1549			10528			8		C 1.2						5.0E-04
GOES		1937	1950	2004	N09	E23	10528			27	SF	C 3.7						3.8E-03
HOLL		1943	1949	2013	N09	E23	10528	12	24.5	30	SF		3	E		64		F
GOES		2031	2041	2044	S18	E51	10530			13	SF	C 1.6						1.1E-03
HOLL		2036	2042	2046	S18	E51	10530	12	26.7	10	SF		3	E		21		F
GOES		2133	2139	2143			10528			10		C 1.8						7.8E-04
GOES	23	0231	0238	0245	N11	E25	10528			14	SF	C 2.1						1.4E-03
GOES		0452	0457	0502			10528			10		C 1.1						5.2E-04
GOES		0535	0543	0551			10528			16		B 8.7						7.6E-04
GOES		0647	0651	0658	N11	E23	10528			11	SF	B 9.5						5.4E-04
LEAR		0650	0650	0654	N11	E23	10528	12	25.0	4	SF		3	E		30		
GOES		0728	0732	0743	N11	W10	10525			15	SF	C 1.6						1.1E-03
LEAR		0731	0733	0746	N11	W10	10525	12	22.6	15	SF		3	E		30		F
GOES		0802	0809	0815	N09	E16	10528			13	SF	C 1.3						7.6E-04
LEAR		0808	0810	0817	N09	E16	10528	12	24.5	9	SF		3	E		48		
GOES		1014	1024	1035			10525			21		C 6.9						5.9E-03
GOES		1513	1532	1600						47		C 1.0						2.5E-03
GOES		1756	1801	1806			10525			10		B 9.5						4.9E-04
GOES	24	0602	0627	0639			10525			37		C 1.2						2.0E-03
GOES		0801	0806	0812			10528			11		B 9.5						5.7E-04
GOES		0959	1006	1014			10531			15		C 1.2						8.4E-04
GOES		1029	1033	1036						7		B 6.1						2.3E-04
GOES		1816	1822	1829			10525			13		B 7.9						5.1E-04
GOES		2130	2133	2136			10528			6		B 8.4						2.6E-04
LEAR		2316	2316	2329	N09	E00	10528	12	25.0	13	SF		2	E		18		F
GOES		2349	2400	2405	N09	W05	10528			16	SF	C 1.8						1.5E-03
LEAR		2350	2402	2408	N09	W05	10528	12	24.6	18	SF		3	E		23		FH
LEAR	25	0154E	0154	0219	S15	E03		12	25.3	25D	SF		3	E		37		F

Hα SOLAR FLARES

DECEMBER 2003

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	25	0216	0216	0223	N09	W36	10525	12	22.4	7	SF		3	E		16		FH
┌GOES		0222	0231	0237	N09	W01	10528			15	SF	C 5.3						3.2E-03
└LEAR		0226	0230	0252	N09	W01	10528	12	25.0	26	SF		3	E		63		FH
LEAR		0232	0235	0239	N09	W36	10525	12	22.4	7	SF		3	E		13		FH
┌GOES		0253	0301	0306	N09	W37	10525			13	SF	C 3.6						2.0E-03
└LEAR		0256	0302	0318	N09	W37	10525	12	22.3	22	SF		3	E		79		FH
LEAR		0347	0347	0352	N09	W02	10528	12	25.0	5	SF		3	E		23		FH
┌GOES		0357	0401	0406	N09	W38	10525			9	SF	C 1.9						7.8E-04
└LEAR		0400	0401	0410	N09	W38	10525	12	22.3	10	SF		3	E		65		FH
┌GOES		0519	0527	0540	N11	W39	10525			21	SF	C 1.2						1.3E-03
└LEAR		0522	0527	0544	N11	W39	10525	12	22.3	22	SF		3	E		34		FH
┌GOES		0738	0825	0932	N09	W04	10528			114	SF	C 5.3						1.6E-02
└LEAR		0754	0823	0901	N09	W04	10528	12	25.0	67	SF		3	E		69		FH
GOES		1147	1150	1155			10528			8		C 1.5						6.4E-04
GOES	26	0114	0118	0121			10532			7		B 8.6						3.0E-04
┌GOES		1023	1040	1059	N08	W22	10528			36	1F	C 7.1						1.1E-02
└SVTO		1027	1038	1114	N08	W22	10528	12	24.8	47	1F		3	E		102		F
GOES		1137	1143	1150			10528			13		C 1.2						7.6E-04
GOES		1204	1209	1215			10528			11		C 1.0						6.1E-04
GOES		1258	1302	1309			10528			11		B 7.2						4.3E-04
┌GOES		1614	1623	1632	N09	W29	10528			18	SF	C 1.8						1.5E-03
└HOLL		1619	1621	1630	N09	W29	10528	12	24.5	11	SF		3	E		30		F
┌GOES		1913	1928	1933	N09	W30	10528			20	1N	M 1.5						7.8E-03
└HOLL		1921	1928	1945	N09	W30	10528	12	24.5	24	1N		3	E		164		F
GOES	28	0354	0359	0405			10528			11		B 6.6						3.8E-04
GOES	29	0304	0321	0327			10532			23		B 4.7						5.3E-04
GOES		0343	0359	0421			10532			38		B 6.0						1.2E-03
GOES		1341	1354	1359			10525			18		B 8.9						6.7E-04
GOES		1409	1415	1421			10528			12		B 5.5						3.5E-04
GOES		1743	1757	1813			10528			30		B 8.6						1.3E-03
GOES		1954	2014	2038			10528			44		B 6.3						1.4E-03
GOES		2211	2223	2248			10528			37		B 6.8						1.3E-03
GOES	30	1148	1152	1155						7		B 4.5						1.6E-04
GOES		1406	1411	1428			10528			22		B 5.2						5.8E-04
GOES		1725	1729	1731			10528			6		B 7.9						1.9E-04
GOES		1934	1940	1947			10528			13		C 1.0						6.3E-04
GOES	31	0211	0215	0218						7		B 6.5						2.5E-04
GOES		1725	1733	1736						11		C 2.3						9.9E-04
GOES		1759	1808	1816						17		C 2.2						1.9E-03
GOES		1821	1824	1826			10528			5		M 1.0						1.9E-03
GOES		1918	1922	1926						8		B 6.6						2.9E-04
GOES		1943	1947	1952						9		B 9.9						4.7E-04
GOES		2010	2019	2029						19		C 1.0						9.9E-04
GOES		2131	2217	2327						116		C 8.3						4.4E-02

"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.

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

DECEMBER 2003

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
02	8800	SVTO	8 S	0800.0	0800.0	U	25.0			QL=4 ST=2 TYP=3
	2695	SVTO	8 S	0800.0	0800.0	1.0	29.0			QL=4 ST=2 TYP=3
19	8800	SGMR	20 GRF	1644.0	1644.0	1.0				QL=8 ST=2 TYP=2
	8800	SGMR	8 S	1644.0	1644.0	1.0				QL=8 ST=2 TYP=4
26	8800	SGMR	8 S	1923.0	1923.0	1.0				QL=6 ST=1 TYP=4
31	2695	SGMR	8 S	1728.0	1728.0	1.0				QL=2 ST=2 TYP=4

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

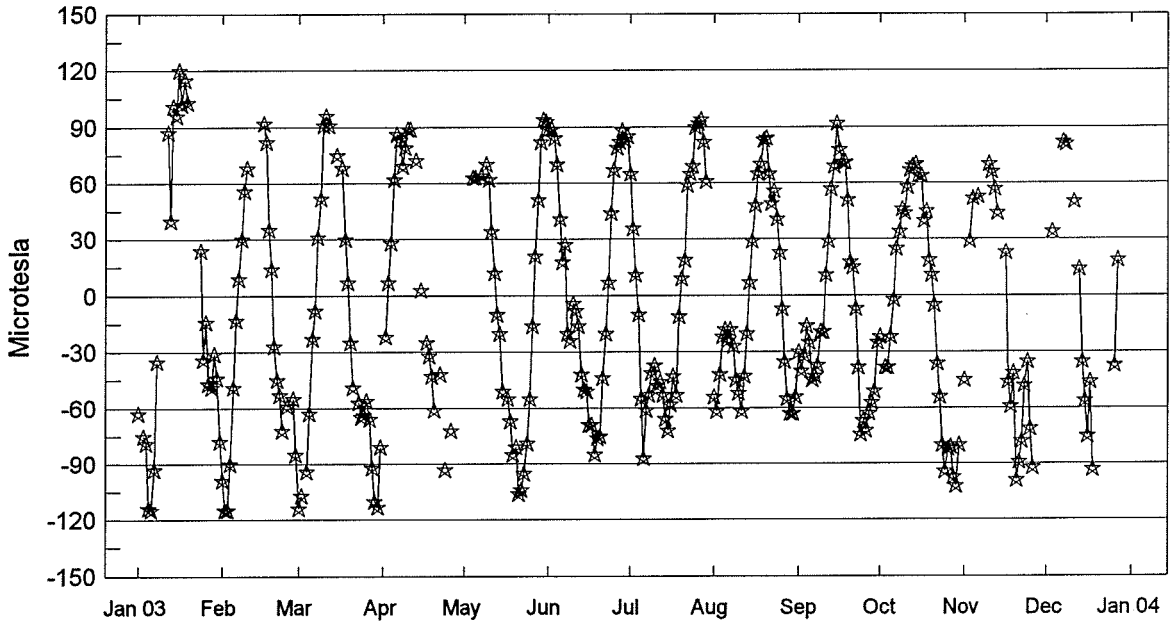
Explanation of Type Code:

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	40 Rise Only	16A Fall A	27AF Rise and Fall AF
21A Simple 3A GRF	40F Rise Only F	260 Fall Only	31A Post Burst Decrease A
2A Simple 1AF	4P Post Rise	26F Fall F	32A Absorption A

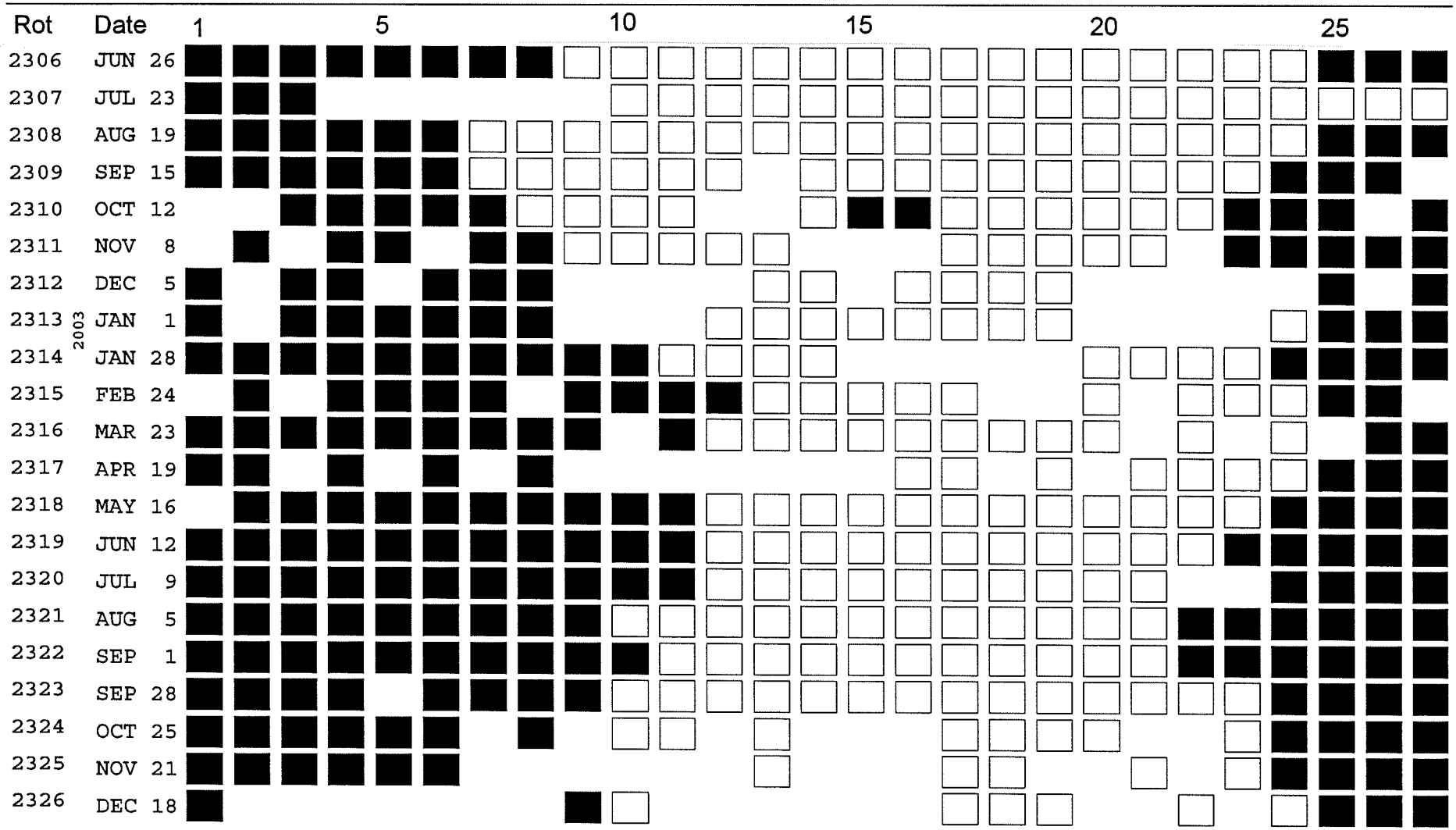
RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Penticton, Canada 2800 MHz; and Hiraiso, Japan 500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

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



Day	Jan 03	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	-63	-99	-114	—	—	89	65	-54	-30	-22	-45	—
2	—	-115	-107	-22	—	89	36	-62	-40	—	—	—
3	-75	-115	—	7	—	84	11	-42	-32	-38	29	34
4	-79	-90	-94	28	63	70	-10	-22	-16	-38	52	—
5	-114	-49	-63	62	63	41	-55	-18	-25	-22	—	—
6	-115	-13	-23	86	—	18	-87	-24	-45	-2	53	—
7	-93	9	-8	83	64	27	-61	-18	-43	25	—	82
8	-35	30	31	69	—	-20	-53	-27	-37	34	—	81
9	—	56	52	79	70	-24	-41	-45	-19	46	—	—
10	—	68	91	89	62	-4	-37	-52	-19	44	70	—
11	—	—	96	89	34	-8	-48	-62	11	58	66	50
12	87	—	91	—	12	-16	-46	-43	29	67	57	—
13	40	—	—	72	-10	-42	-53	-20	57	69	44	14
14	101	—	—	—	-20	-50	-66	7	69	70	—	-35
15	96	—	75	3	-51	-51	-72	29	92	64	—	-56
16	120	92	—	—	—	-69	-58	48	78	64	23	-75
17	102	82	68	-25	-55	-69	-43	65	71	40	-46	-46
18	115	35	30	-32	-67	-85	-53	70	71	45	-59	-93
19	103	14	7	-43	-85	-76	-11	83	51	19	-41	—
20	—	-27	-25	-61	-81	-75	9	84	18	11	-99	—
21	—	-45	-49	—	-106	-44	19	65	15	-5	-89	—
22	—	-53	—	-42	-104	-20	59	49	-7	-36	-78	—
23	—	-72	-57	—	-95	7	65	56	-38	-54	-48	—
24	24	—	-65	-93	-79	44	69	41	-74	-80	-35	—
25	-34	-59	-64	—	-55	67	90	23	-67	-94	-71	—
26	-14	—	-56	-72	-16	79	92	-7	-72	-82	-92	-37
27	-47	-55	-66	—	21	82	94	-35	-63	-81	—	19
28	-49	-85	-92	—	51	88	82	-55	-57	-97	—	—
29	-31		-110	—	82	83	61	-63	-51	-102	—	—
30	-44		-113	—	94	85	—	-63	-25	-80		—
31	-78		-81		93		—	-54		—		—

STANFORD MEAN SOLAR MAGNETIC FIELD

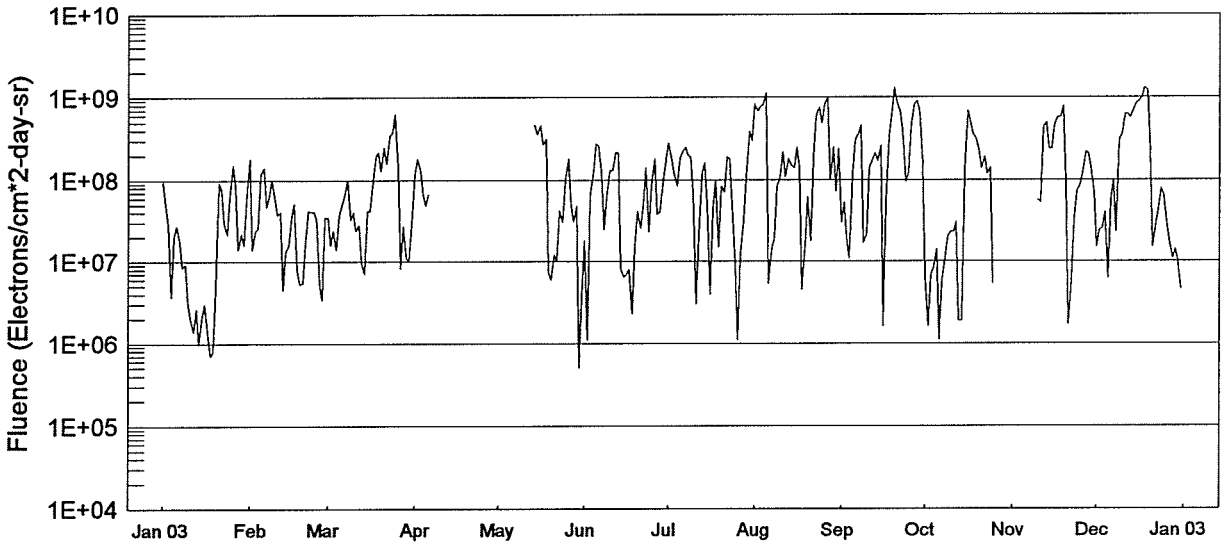


Mean Solar Magnetic Field Polarity: = field > 2 microT; = -2 microT ≤ field ≤ 2 microT

= 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.

GOES Daily Electron Fluence
Jan 2003 - Dec 2003



Day	Jan 03	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	9.5E+07	1.8E+08	3.5E+07	4.5E+08	--	1.8E+07	2.8E+08	8.1E+08	3.0E+07	6.7E+06	-999	1.5E+07
2	5.1E+07	1.4E+07	1.6E+07	6.3E+08	sensor	1.1E+06	1.8E+08	6.8E+08	5.4E+07	1.6E+06	-999	2.4E+07
3	2.9E+07	2.4E+07	2.4E+07	3.0E+08	problems	6.5E+07	1.2E+08	7.7E+08	1.9E+07	6.9E+06	-999	2.6E+07
4	3.7E+06	2.6E+07	1.4E+07	1.4E+08	--	1.2E+08	8.5E+07	8.2E+08	1.1E+07	8.2E+06	-999	4.0E+07
5	2.0E+07	1.2E+08	3.6E+07	1.7E+08	--	2.7E+08	1.8E+08	1.1E+09	1.2E+08	1.4E+07	-999	6.2E+06
6	2.7E+07	1.4E+08	5.2E+07	1.6E+08	--	2.6E+08	2.2E+08	5.4E+06	3.0E+08	1.1E+06	-999	5.9E+07
7	1.8E+07	4.7E+07	6.8E+07	1.7E+08	sensor	1.2E+08	2.5E+08	1.4E+07	3.6E+08	5.7E+06	-999	1.0E+08
8	8.6E+06	6.3E+07	9.9E+07	--	problems	2.5E+07	2.0E+08	1.9E+07	4.5E+08	1.1E+07	-999	2.3E+07
9	9.2E+06	1.0E+08	3.3E+07	--	--	6.4E+07	1.9E+08	8.3E+07	1.7E+07	2.0E+07	-999	3.2E+08
10	3.1E+06	6.1E+07	4.0E+07	--	--	1.3E+08	7.0E+07	1.1E+08	2.1E+07	2.3E+07	5.6E+07	3.5E+08
11	2.0E+06	3.8E+07	2.4E+07	--	--	1.3E+08	3.0E+06	2.2E+08	1.4E+08	2.3E+07	5.4E+07	6.2E+08
12	1.4E+06	4.0E+07	2.8E+07	sensor	--	2.2E+08	2.1E+07	1.1E+08	1.7E+08	3.0E+07	4.4E+08	6.3E+08
13	2.6E+06	4.5E+06	9.7E+06	problems	--	2.1E+08	1.2E+08	1.8E+08	2.1E+08	1.9E+06	5.0E+08	5.7E+08
14	9.8E+05	1.3E+07	7.2E+06	--	4.6E+08	8.3E+06	1.6E+08	1.5E+08	1.7E+08	1.9E+06	2.4E+08	7.1E+08
15	2.1E+06	1.6E+07	4.2E+07	--	3.6E+08	6.4E+06	5.0E+07	1.4E+08	2.6E+08	1.3E+08	2.4E+08	8.4E+08
16	3.0E+06	3.4E+07	4.2E+07	--	4.5E+08	6.9E+06	4.0E+06	2.5E+08	1.6E+06	6.8E+08	4.6E+08	9.0E+08
17	1.3E+06	5.2E+07	8.4E+07	sensor	2.7E+08	8.0E+06	4.5E+07	1.4E+08	5.5E+07	5.0E+08	5.7E+08	1.0E+09
18	7.1E+05	7.7E+06	1.9E+08	problems	3.1E+08	2.3E+06	9.9E+07	4.5E+06	3.5E+08	3.6E+08	5.8E+08	1.3E+09
19	7.7E+05	5.3E+06	2.2E+08	--	7.4E+06	1.6E+07	1.5E+07	1.5E+07	6.5E+08	3.1E+08	7.7E+08	1.2E+09
20	4.7E+06	5.5E+06	1.3E+08	--	6.0E+06	4.1E+07	8.4E+07	6.2E+07	1.3E+09	2.3E+08	9.6E+07	2.3E+08
21	9.1E+07	1.8E+07	2.5E+08	--	1.2E+07	2.6E+07	7.1E+07	1.8E+07	8.7E+08	1.4E+08	1.7E+06	1.5E+07
22	7.6E+07	4.2E+07	1.6E+08	sensor	1.0E+07	4.9E+07	1.9E+08	1.9E+08	6.8E+08	1.9E+08	5.8E+06	2.9E+07
23	2.9E+07	4.1E+07	3.5E+08	problems	4.2E+07	1.4E+08	1.8E+08	6.0E+08	3.7E+08	1.2E+08	3.3E+07	4.4E+07
24	2.2E+07	4.1E+07	3.7E+08	--	3.1E+07	2.3E+07	3.5E+07	7.5E+08	9.7E+07	1.4E+08	7.1E+07	7.8E+07
25	6.5E+07	3.3E+07	6.3E+08	--	9.9E+07	8.7E+07	9.4E+06	4.9E+08	1.2E+08	5.3E+06	8.7E+07	6.5E+07
26	1.5E+08	5.2E+06	1.4E+08	--	1.8E+08	1.8E+08	1.1E+06	8.2E+08	4.5E+08	-999	1.2E+08	2.8E+07
27	8.1E+07	3.4E+06	8.3E+06	sensor	5.1E+07	3.8E+07	1.2E+07	1.0E+09	8.3E+08	-999	2.2E+08	1.7E+07
28	1.4E+07	3.5E+07	2.7E+07	problems	3.1E+07	4.0E+07	3.2E+07	1.0E+08	8.9E+08	-999	2.1E+08	1.1E+07
29	2.2E+07		1.1E+07	--	4.8E+07	9.4E+07	1.1E+08	2.5E+08	7.0E+08	-999	1.4E+08	1.4E+07
30	1.6E+07		1.0E+07	--	5.0E+05	1.7E+08	3.9E+08	7.2E+07	1.6E+08	-999	7.1E+07	1.0E+07
31	6.1E+07		3.7E+07		3.6E+06		3.0E+08	2.4E+08		-999		4.5E+06

NOTE: The electron detector responds significantly to protons above 32 MeV; therefore, electron data are contaminated when a proton event is in progress. These days are indicated with '-999' in the table and are not plotted. '--' indicates data not available.

NOTE: GOES9 data began April, 1996 and ended on 26 July, 1998. GOES12 is primary satellite as of 15 May 2003.

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CONTENTS

Prompt Reports Number 713 Part I

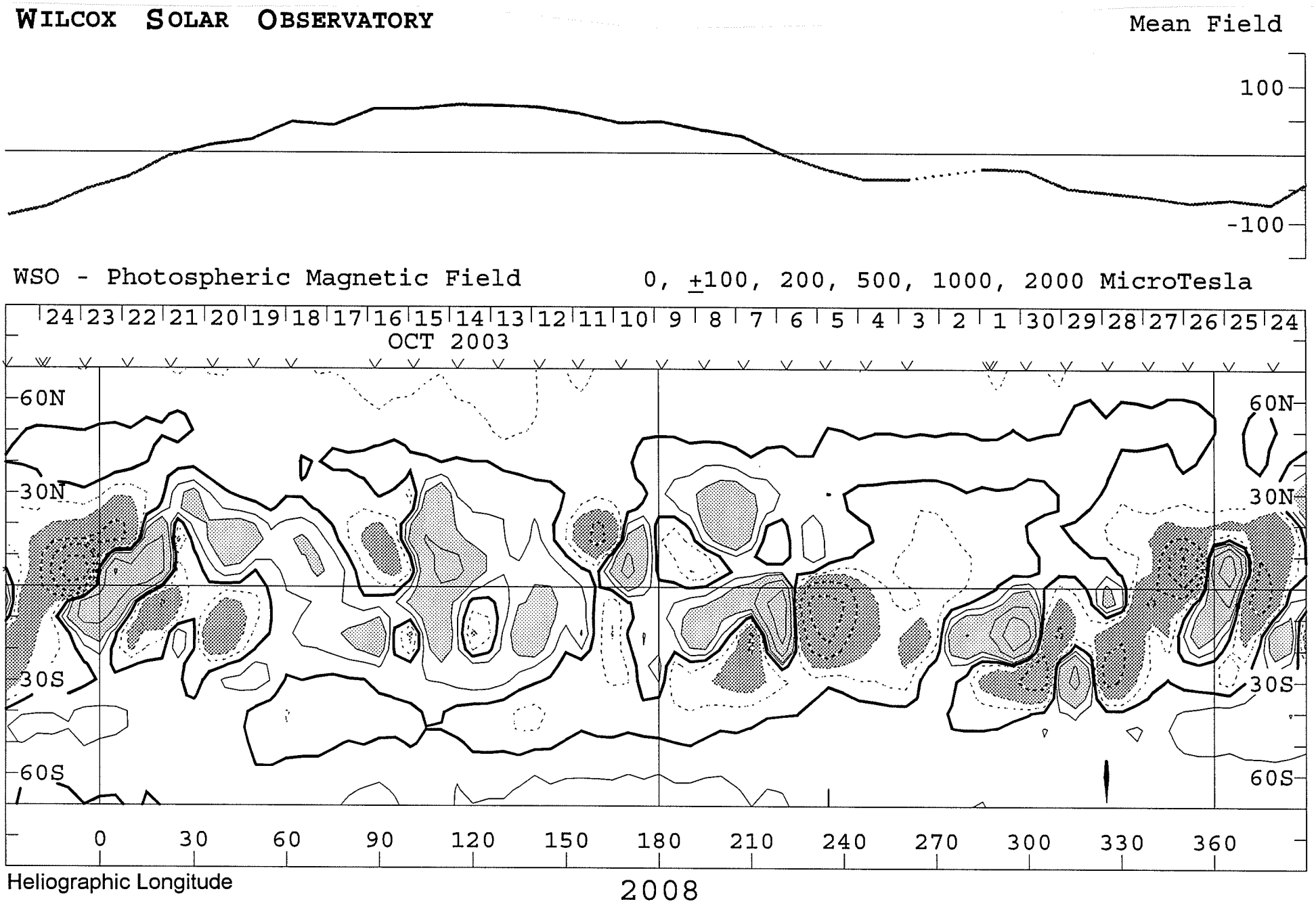
DATA FOR NOVEMBER 2003

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 2008

(26 September to 23 October 2003)

WILCOX SOLAR OBSERVATORY

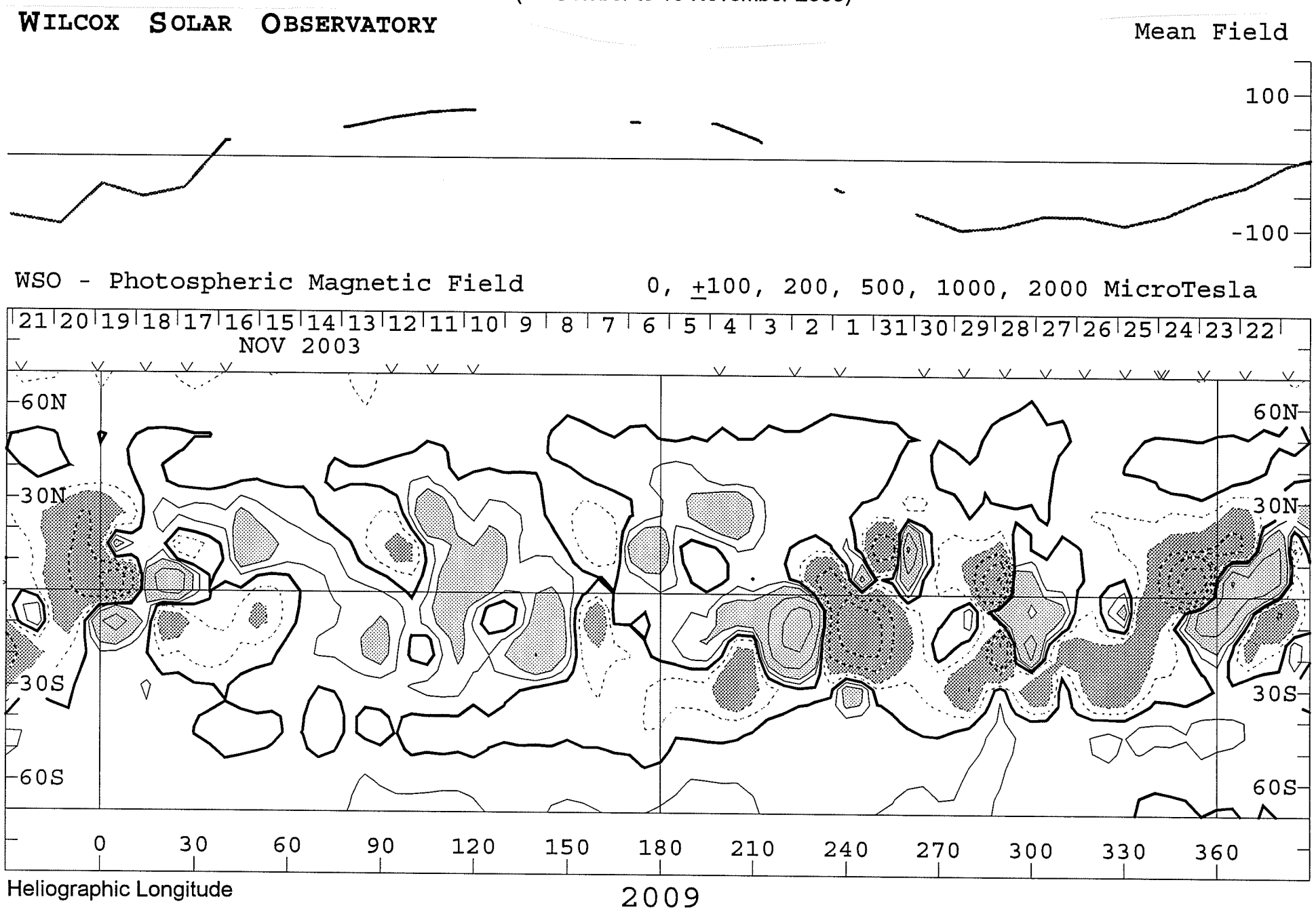


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 2009

(23 October to 19 November 2003)

WILCOX SOLAR OBSERVATORY

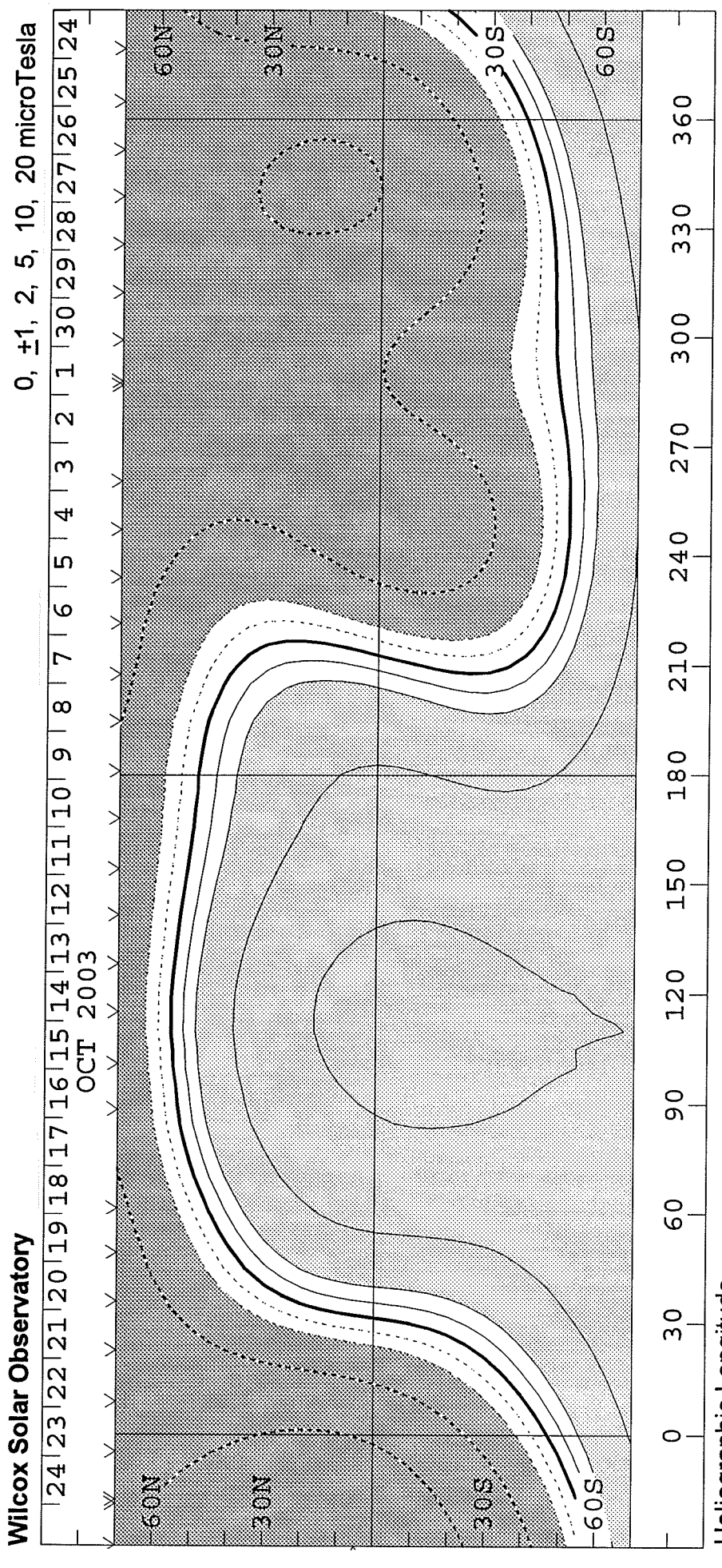


41
Nov 03

SOLAR MAGNETIC FIELD SYNOPTIC CHART

SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 2008
(26 September to 23 October 2003)



SOLAR MAGNETIC FIELD SYNOPTIC CHART

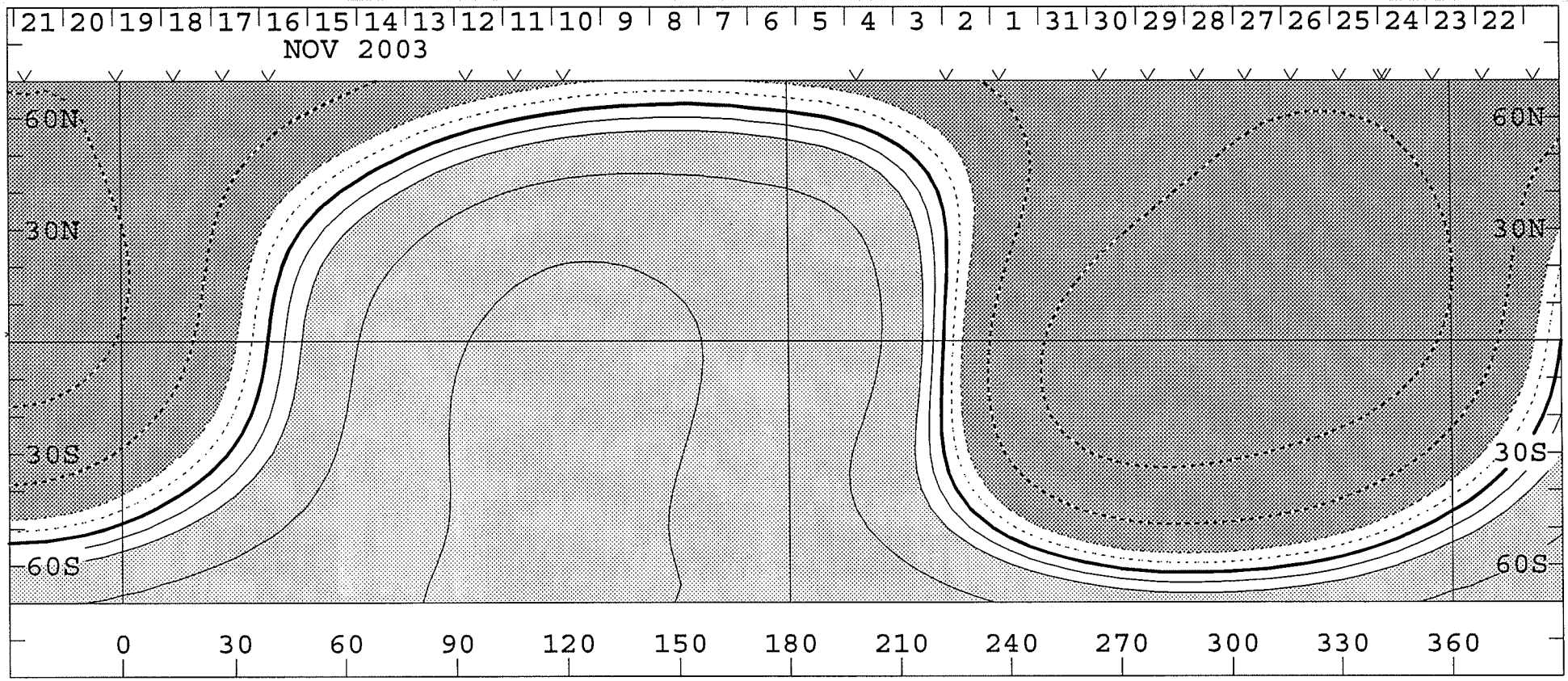
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 2009

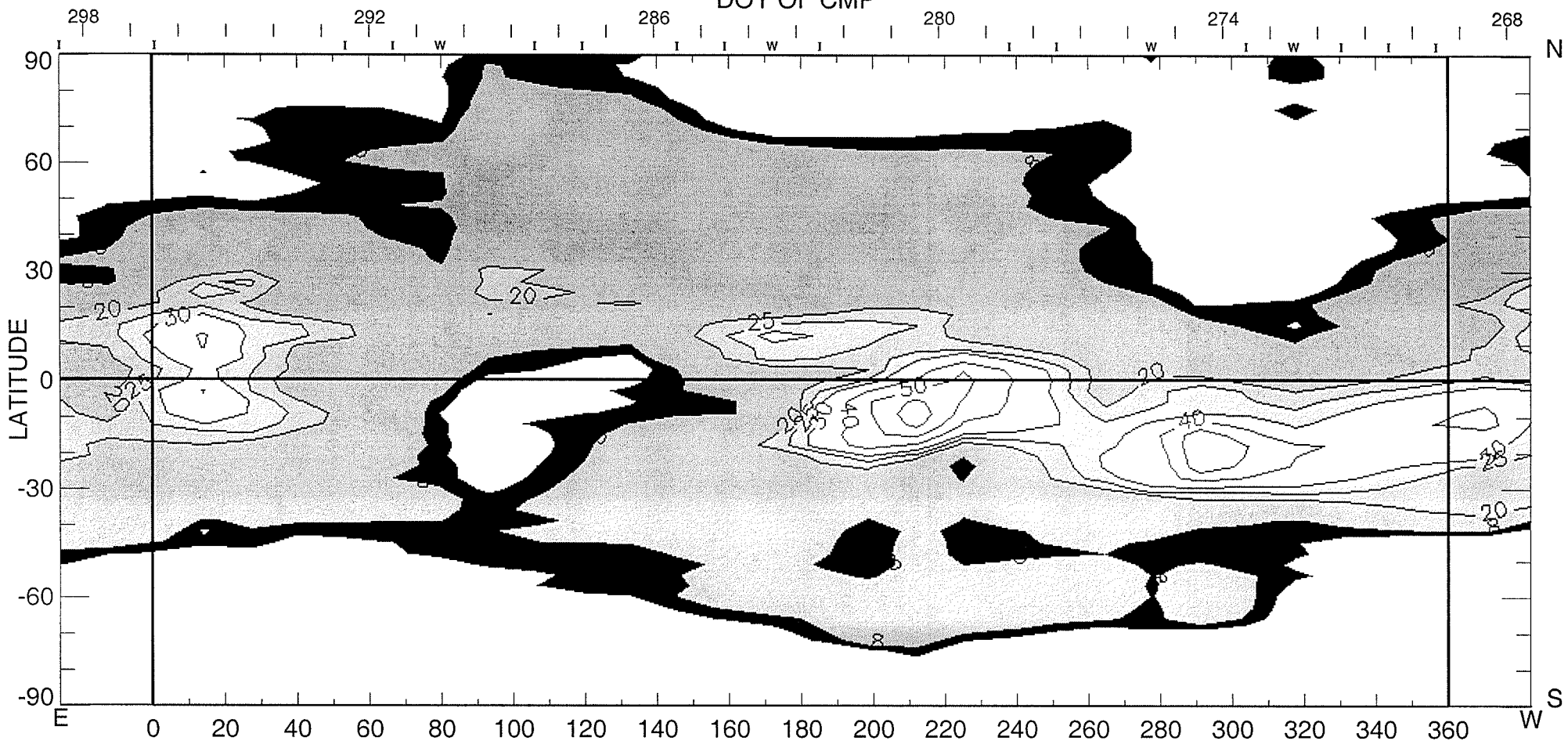
(23 October to 19 November 2003)

Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



CARRINGTON ROTATION NUMBER 2008 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o



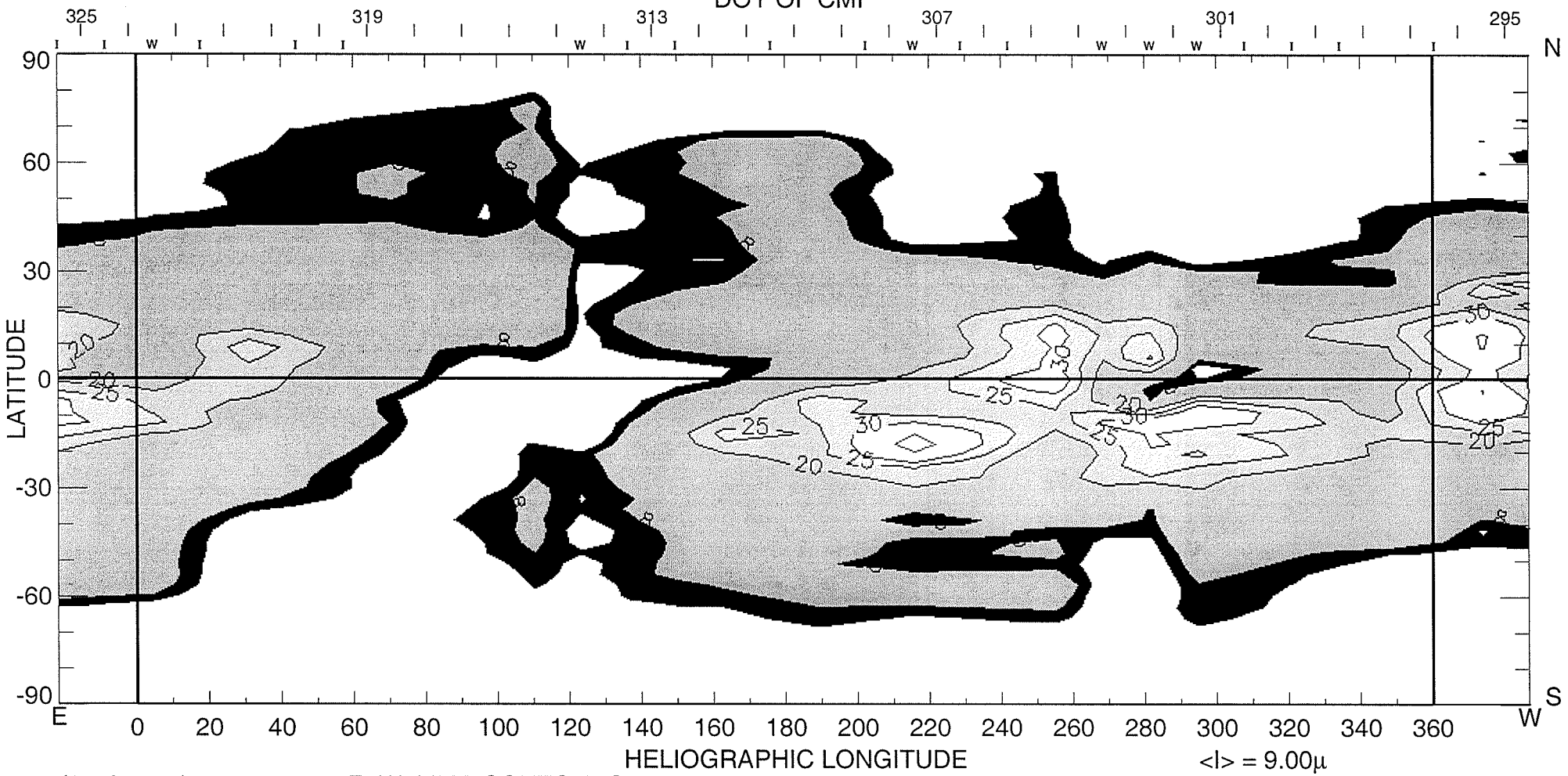
<I_o> = 10.69μ

(30-Jan-04) 2003 E+W LIMB CONTOURS: 6, 8, 20, 25, 30, 40, 50, 60, 80, 100, 120 MILLIONTHS OF I_o

CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK

altrock Fri Jan 30 15:47:03 2004

CARRINGTON ROTATION NUMBER 2009 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R_o



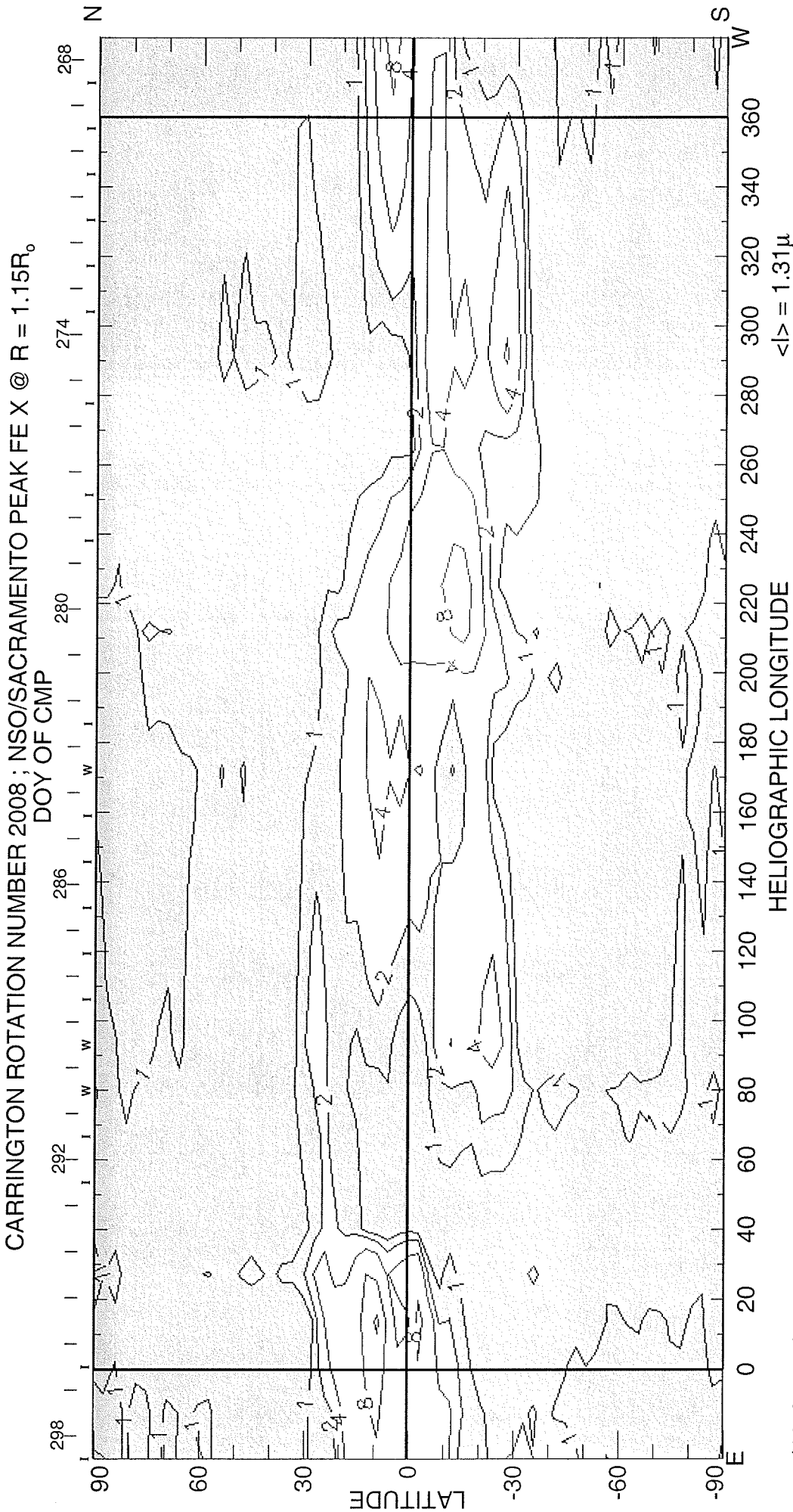
<I> = 9.00μ

(30-Jan-04) 2003 E+W LIMB CONTOURS: 6, 8, 20, 25, 30, 40, 50, 60, 80, 100, 120 MILLIONTHS OF I_o

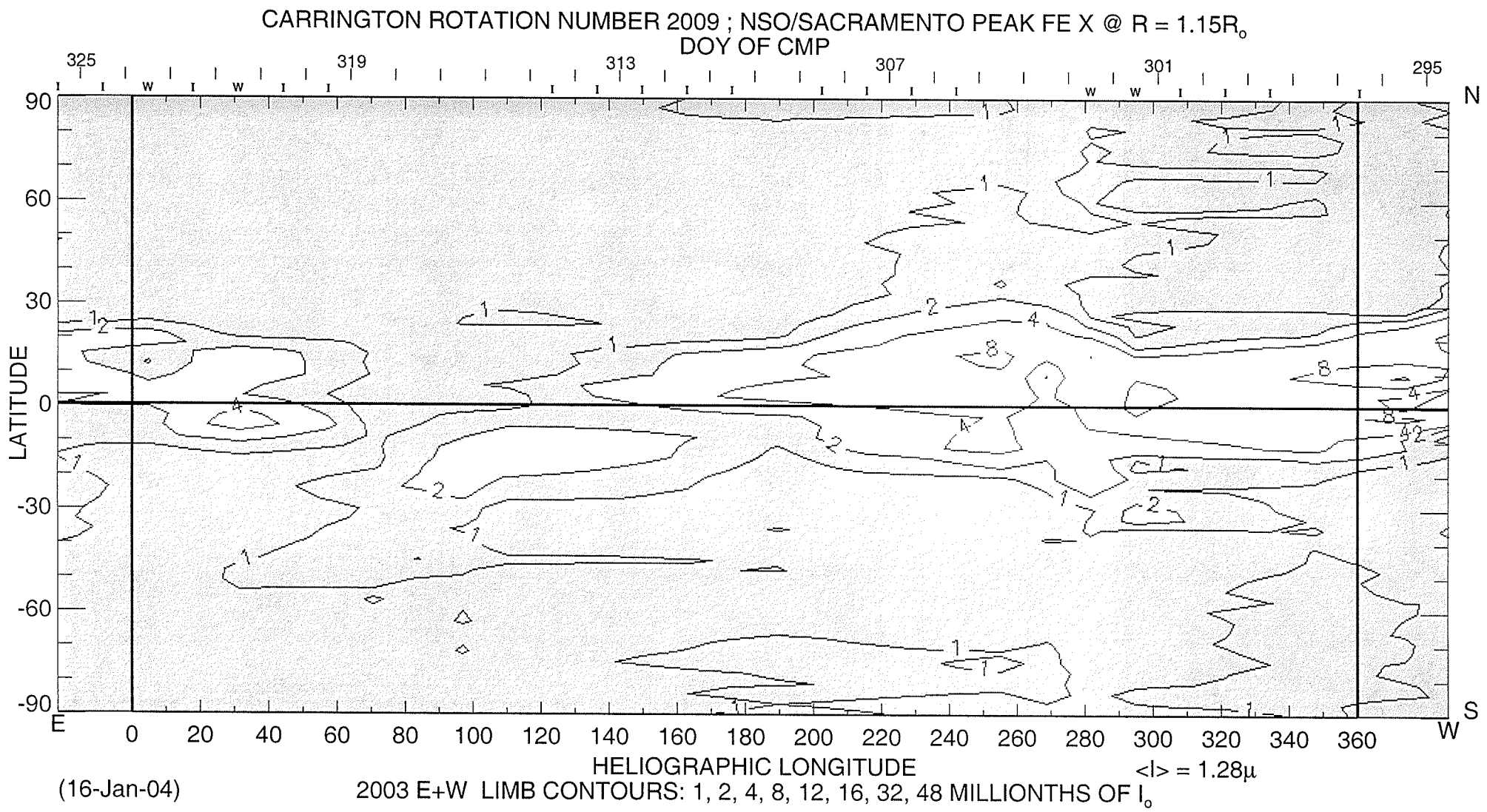
CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK

altrock Fri Jan 30 15:47:58 2004

46
Nov 03



tex Fri Jan 16 13:25:44 2004



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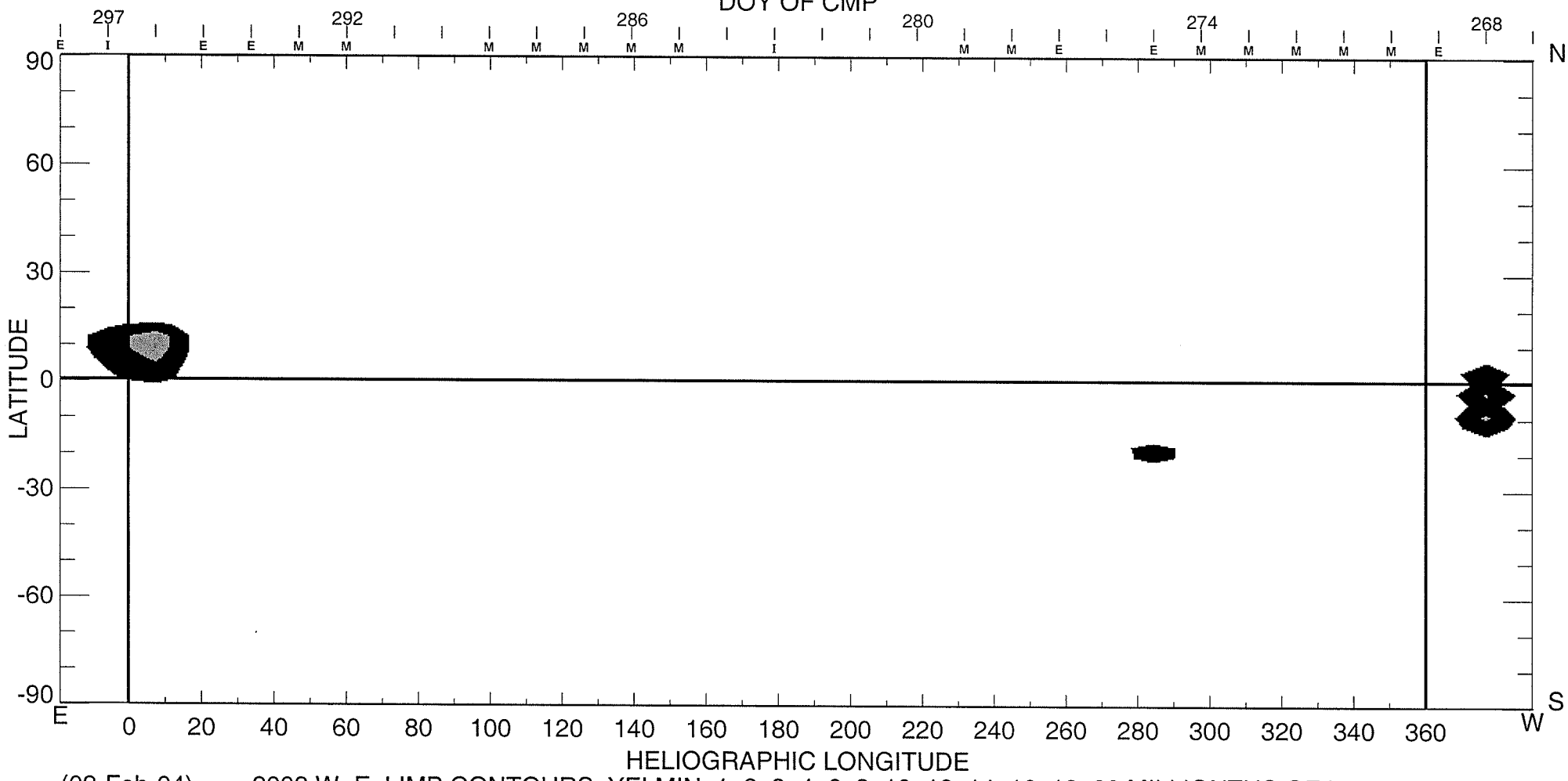
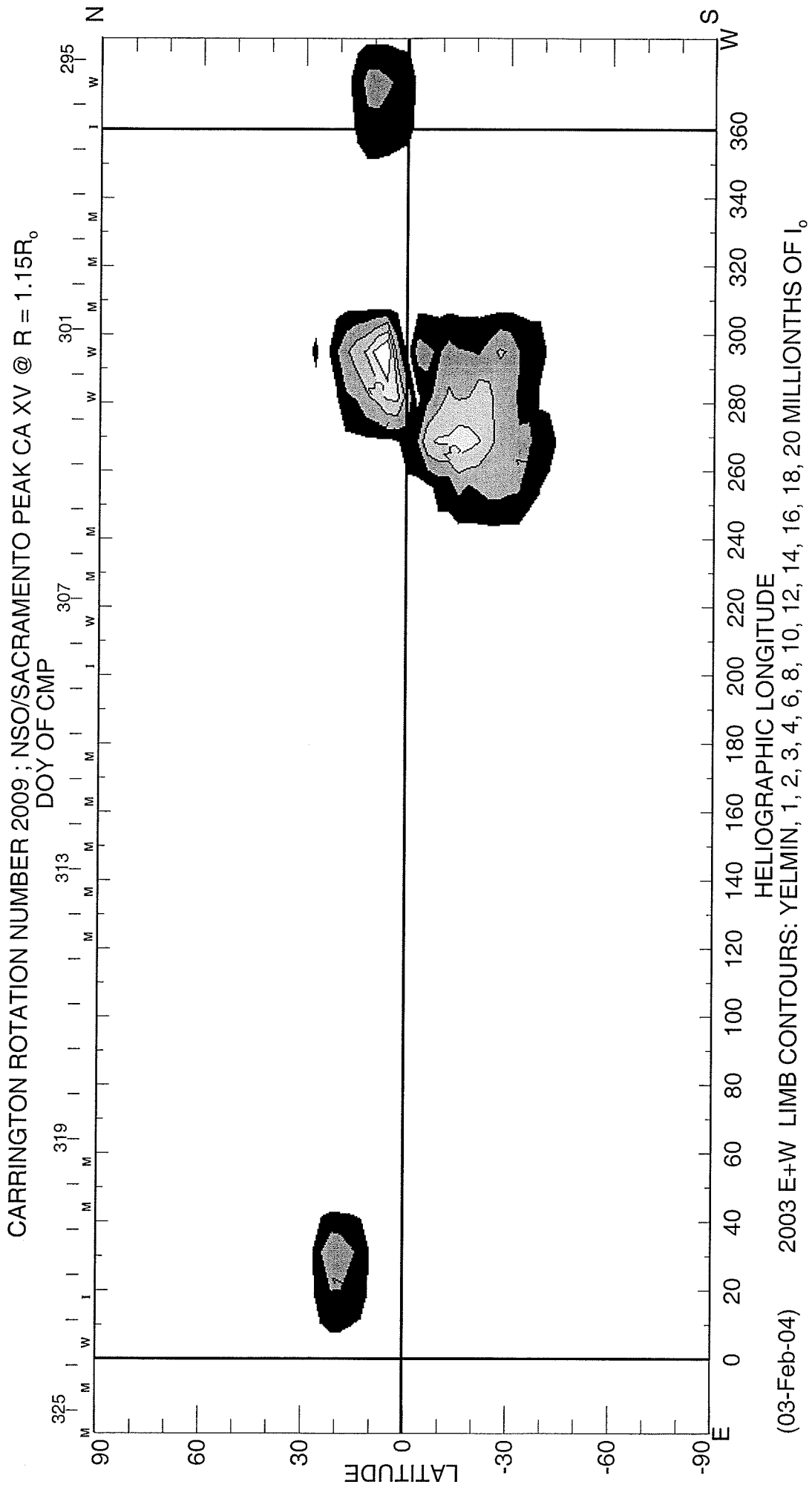


(02-Feb-04) 2003 W+E LIMB CONTOURS: YELMIN, 1, 2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20 MILLIONTHS OF I_o

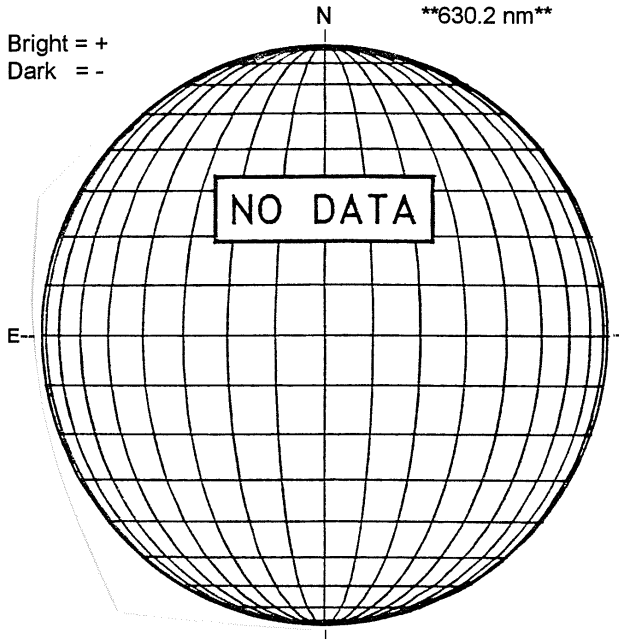
altrock Mon Feb 2 16:33:48 2004



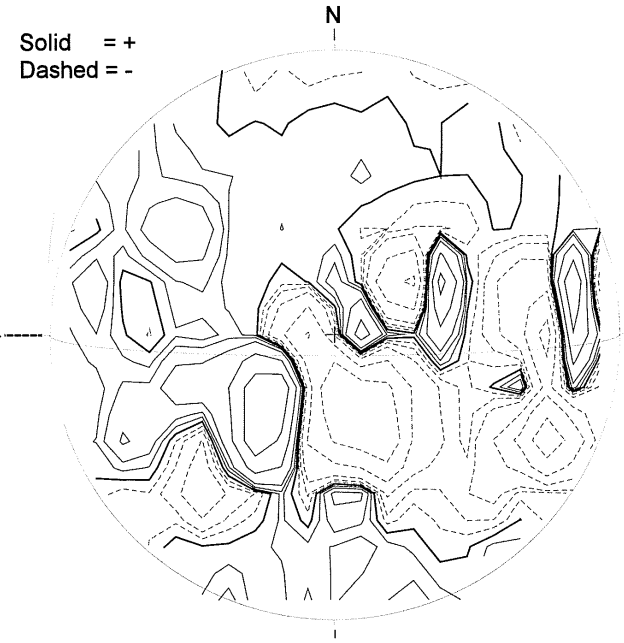
altrock Tue Feb 3 08:55:11 2004

NOVEMBER 1, 2003 (P= 24.58, Bo = 4.42, Lo = 248.48)

KITT PEAK MAGNETOGRAM--SOLIS

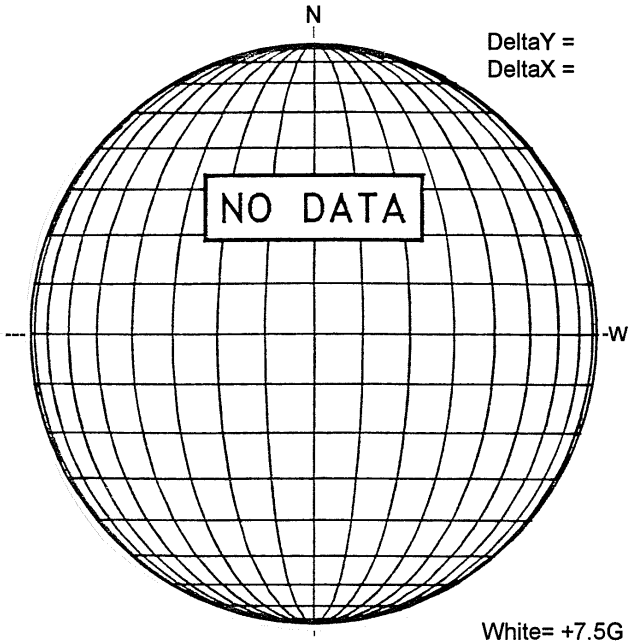


STANFORD MAGNETOGRAM



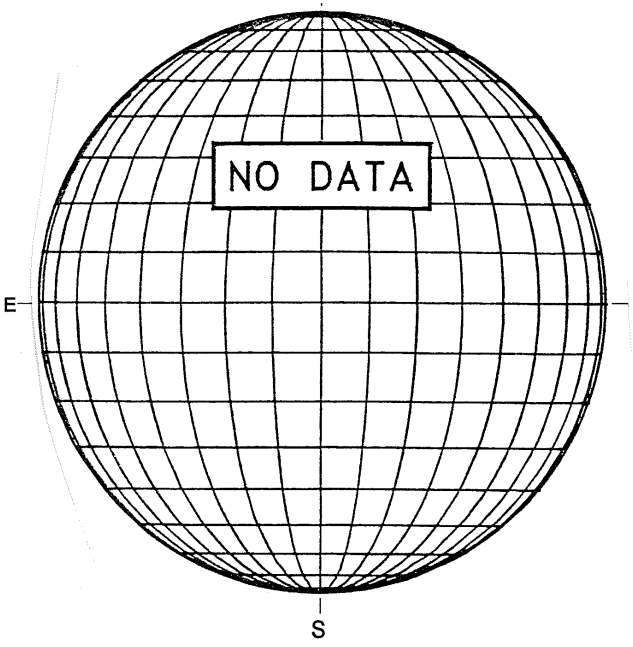
1933 UT

MT. WILSON MAGNETOGRAM

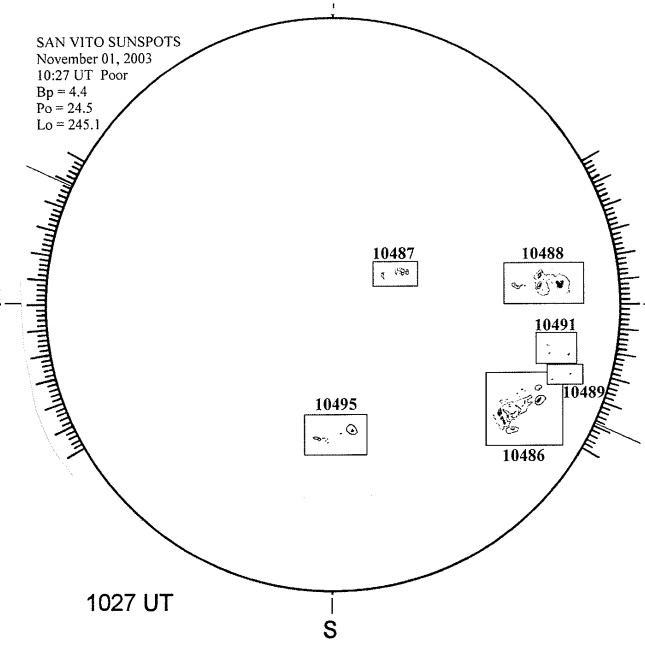


White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA

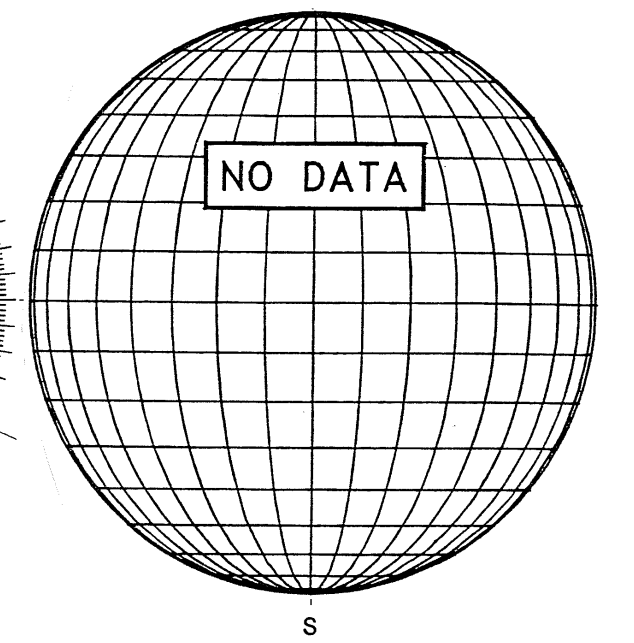


SAN VITO SUNSPOT



1027 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

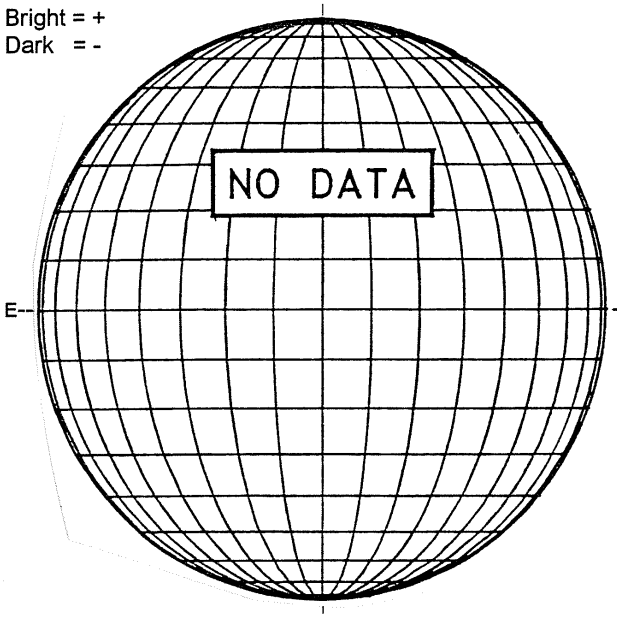


NOVEMBER 2, 2003 (P= 24.41, Bo = 4.32, Lo = 235.29)

KITT PEAK MAGNETOGRAM--SOLIS

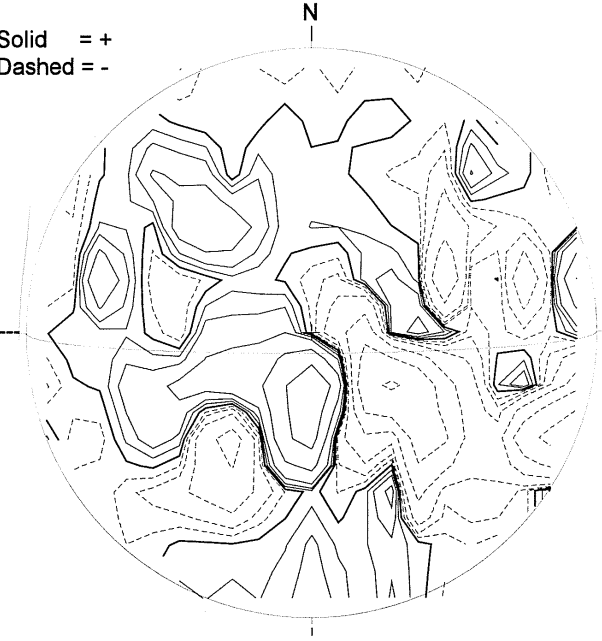
630.2 nm

Bright = +
Dark = -



STANFORD MAGNETOGRAM

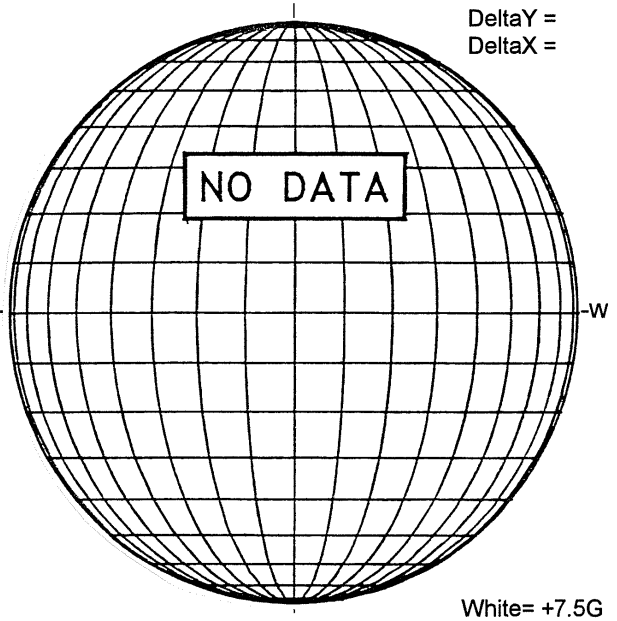
Solid = +
Dashed = -



2205 UT

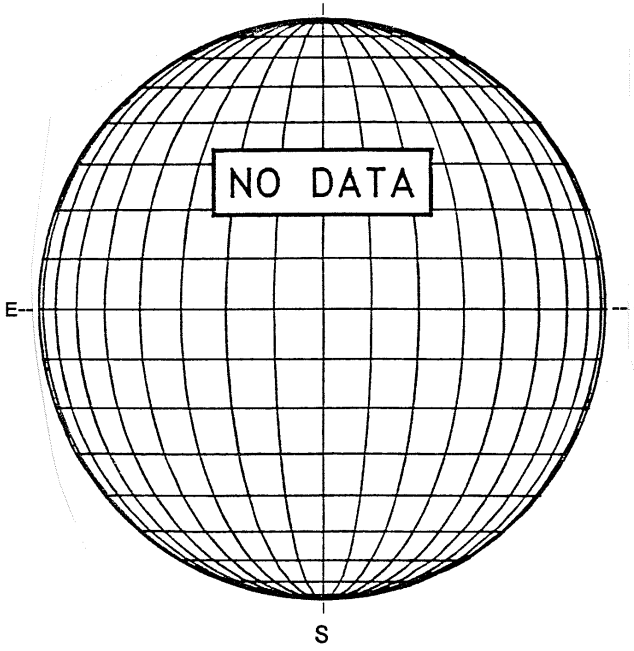
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =

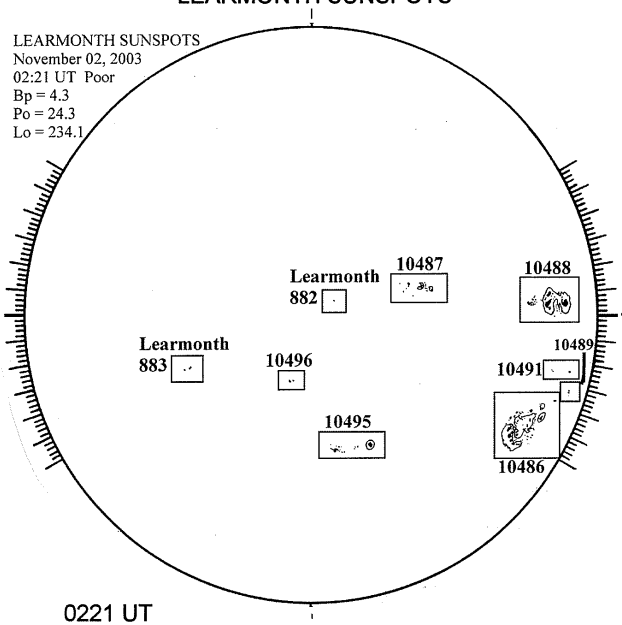


White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA

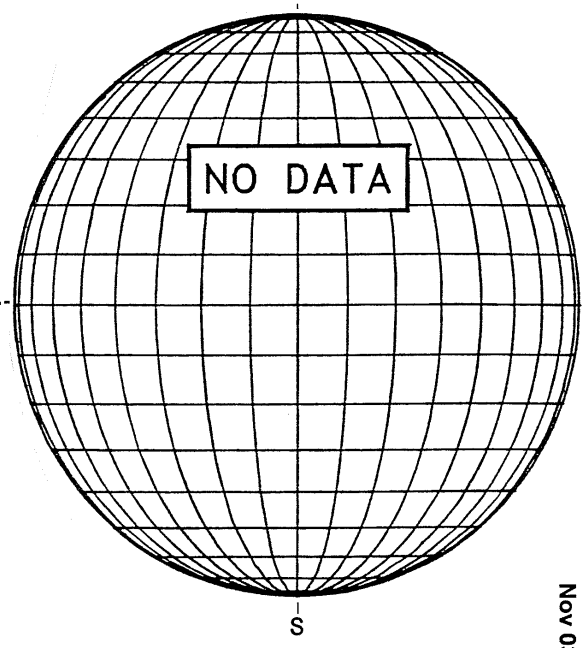


LEARMONTH SUNSPOTS



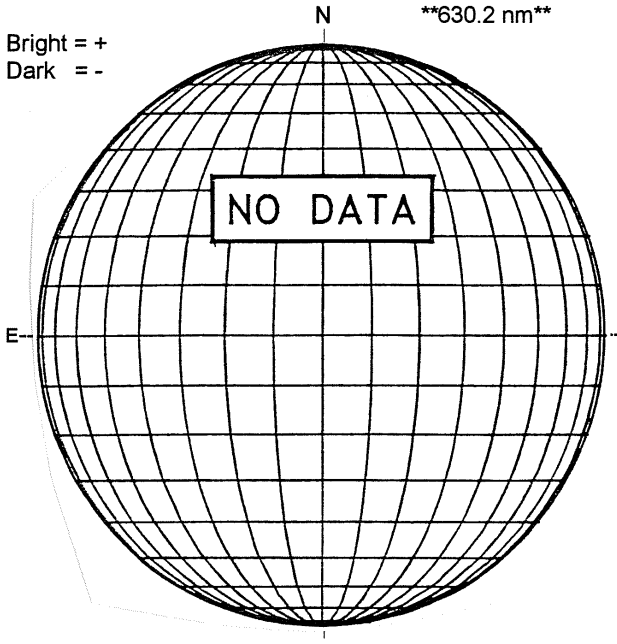
0221 UT

LOMNICKY PEAK CORONA (1.04 Radii)----

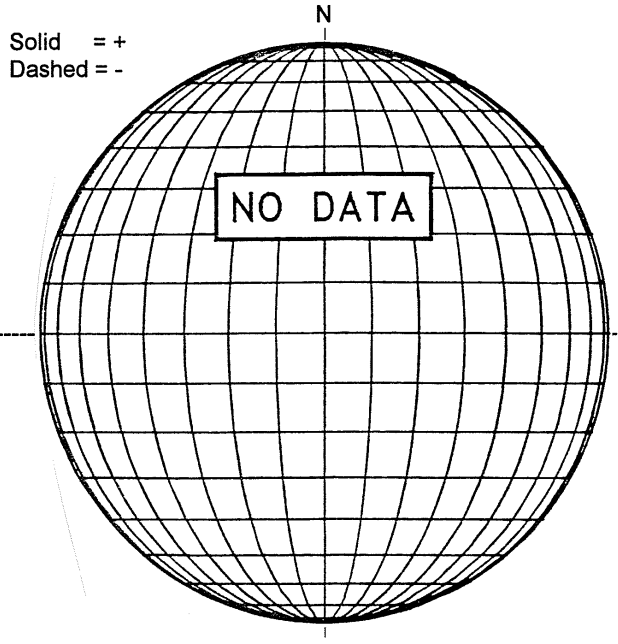


NOVEMBER 3, 2003 (P= 24.24, Bo = 4.22, Lo = 222.11)

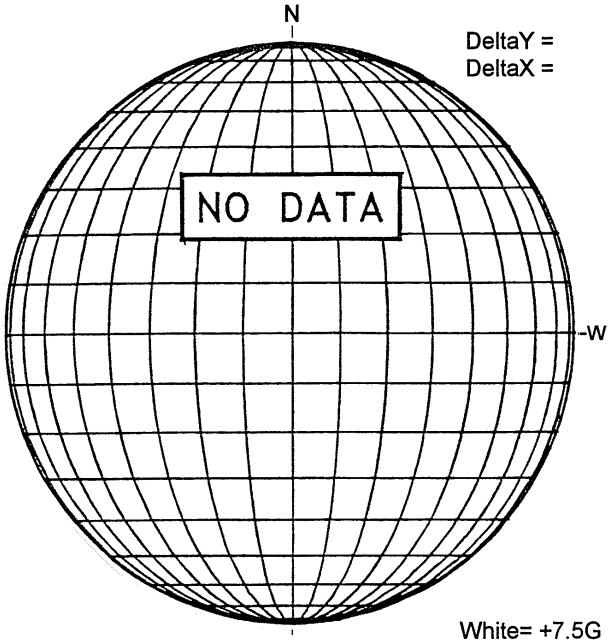
KITT PEAK MAGNETOGRAM--SOLIS



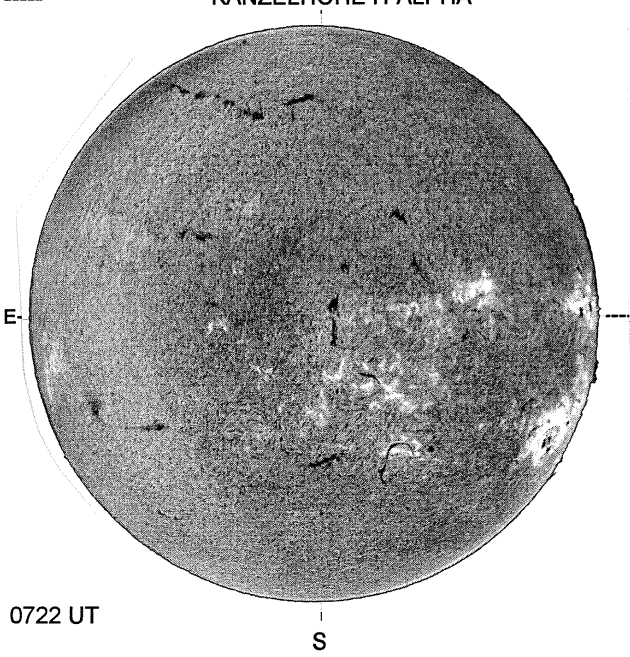
STANFORD MAGNETOGRAM



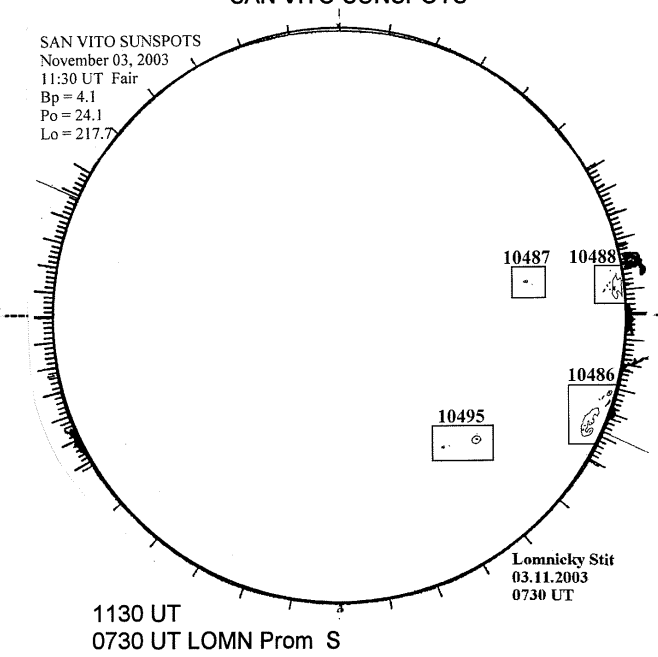
MT. WILSON MAGNETOGRAM



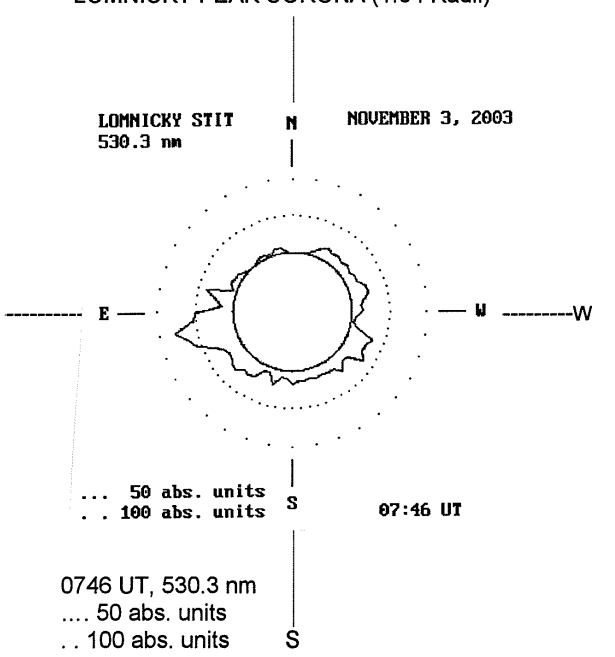
KANZELHOHE H-ALPHA



SAN VITO SUNSPOTS

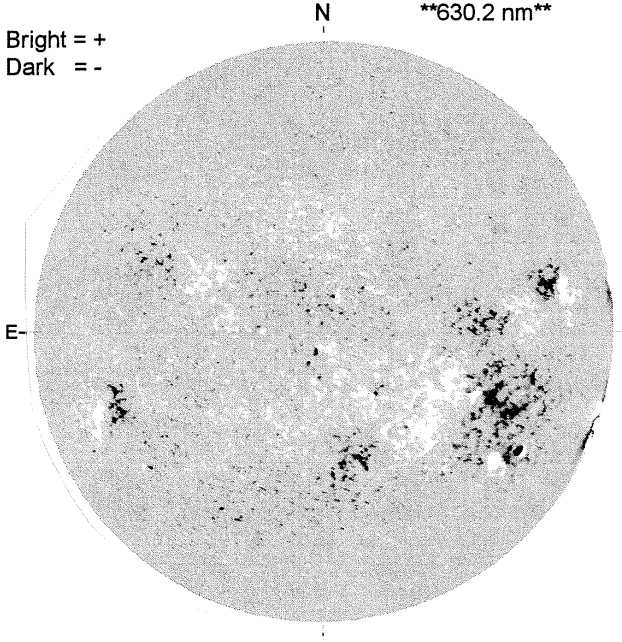


LOMNICKY PEAK CORONA (1.04 Radii)----



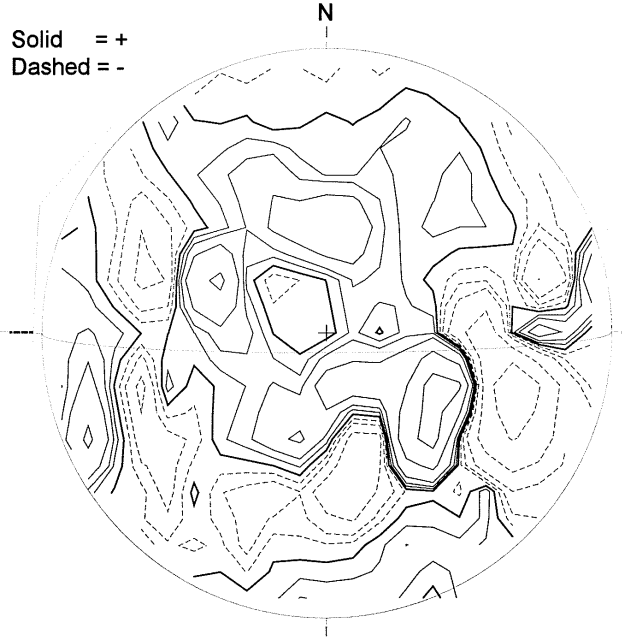
NOVEMBER 4, 2003 (P= 24.06, Bo = 4.12, Lo = 208.92)

KITT PEAK MAGNETOGRAM--SOLIS



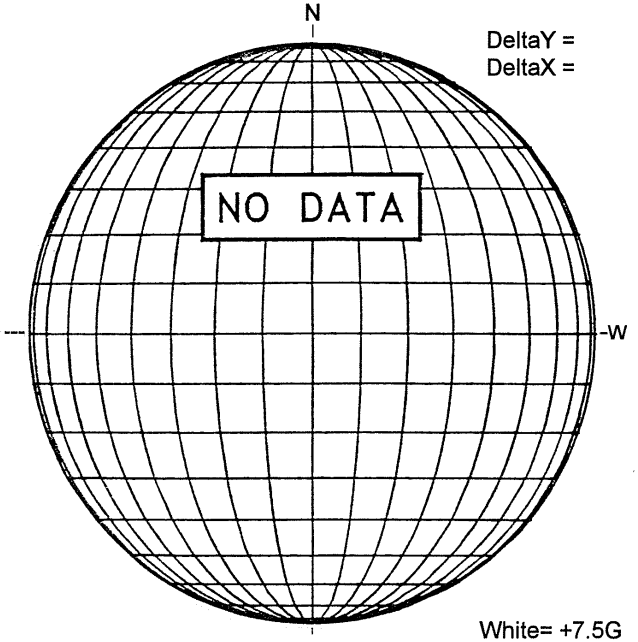
1725 UT

STANFORD MAGNETOGRAM

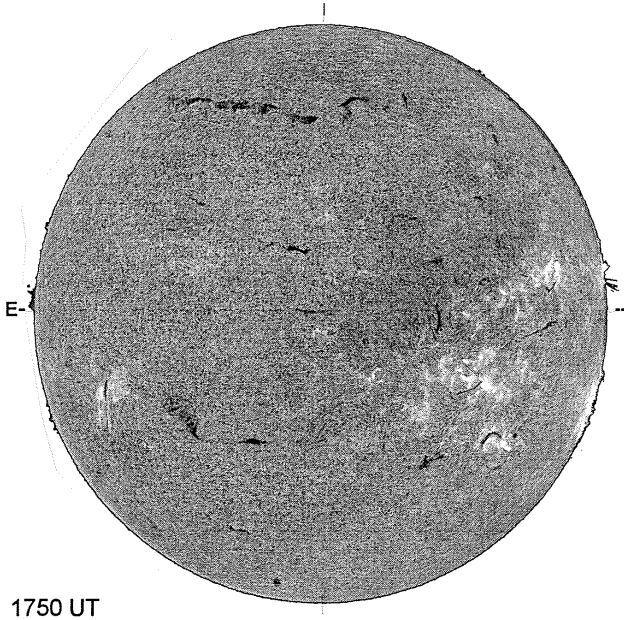


1817 UT

MT. WILSON MAGNETOGRAM

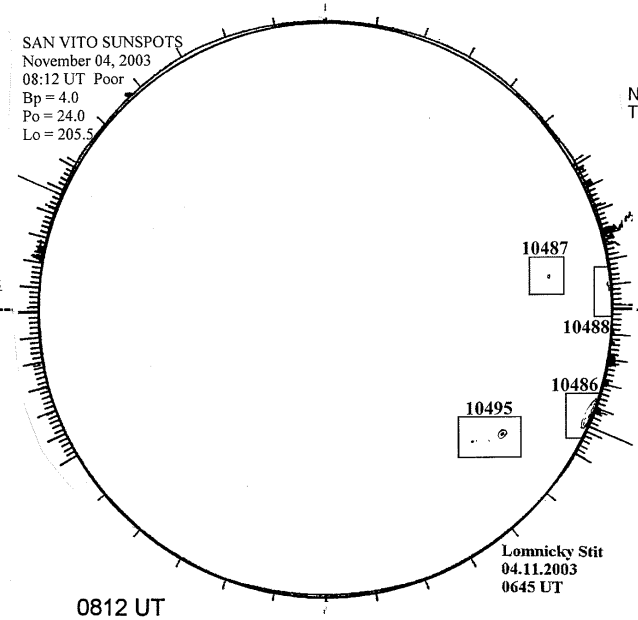


BIG BEAR H-ALPHA



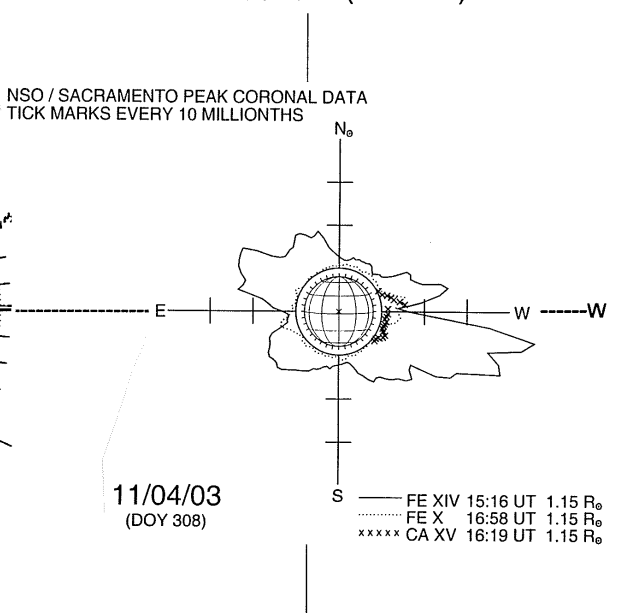
1750 UT

SAN VITO SUNSPOT



0812 UT
0645 UT LOMN Prom S

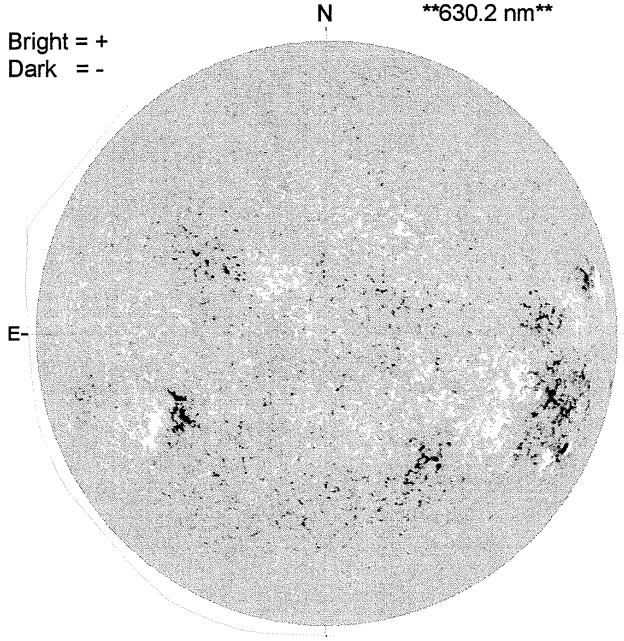
SACRAMENTO PEAK CORONA (1.15 Radii)----



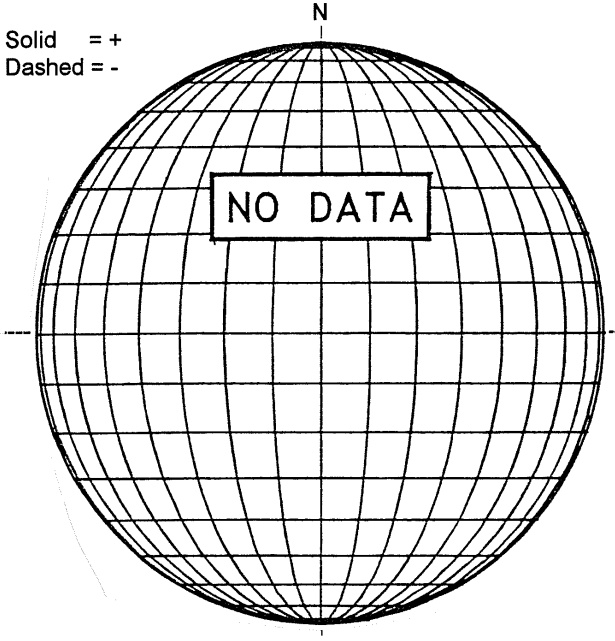
S

NOVEMBER 5, 2003 (P= 23.86, Bo = 4.01, Lo = 195.74)

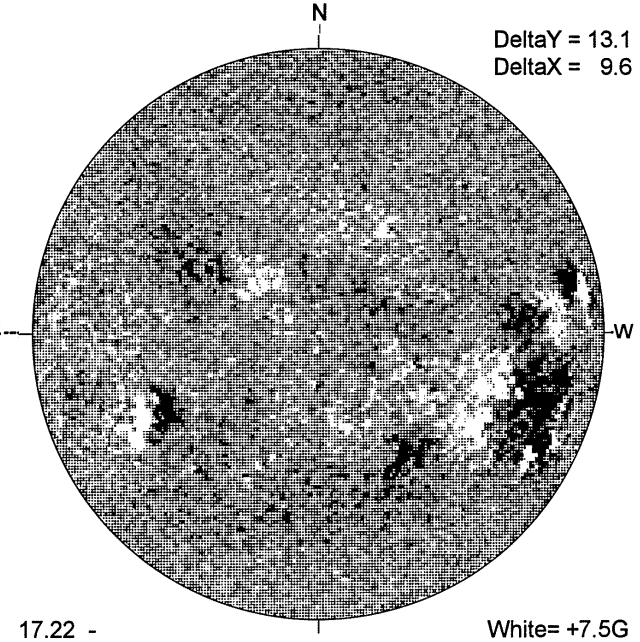
KITT PEAK MAGNETOGRAM--SOLIS



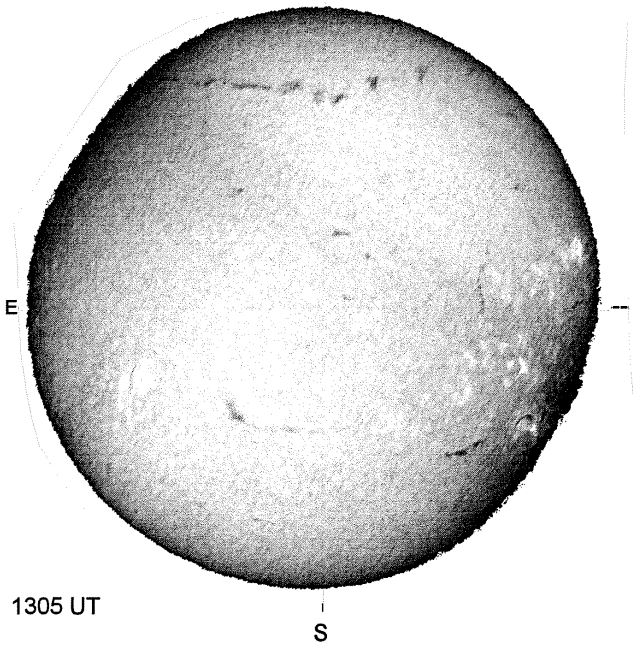
STANFORD MAGNETOGRAM



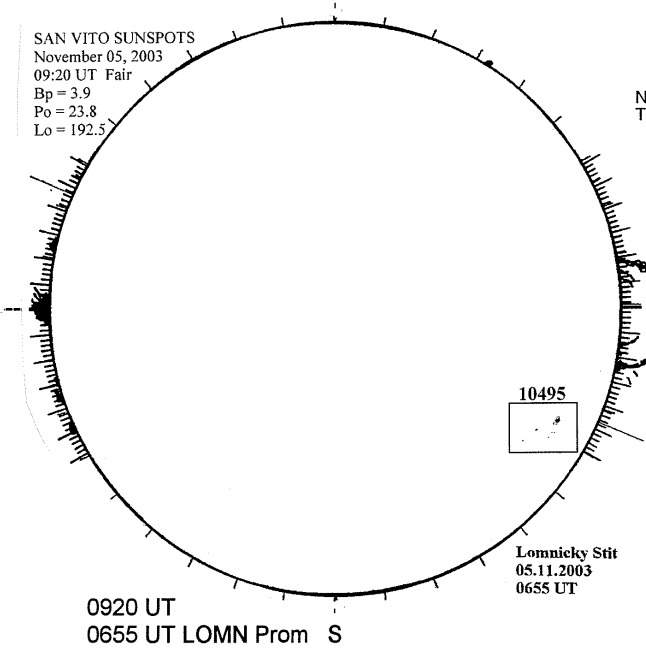
MT. WILSON MAGNETOGRAM



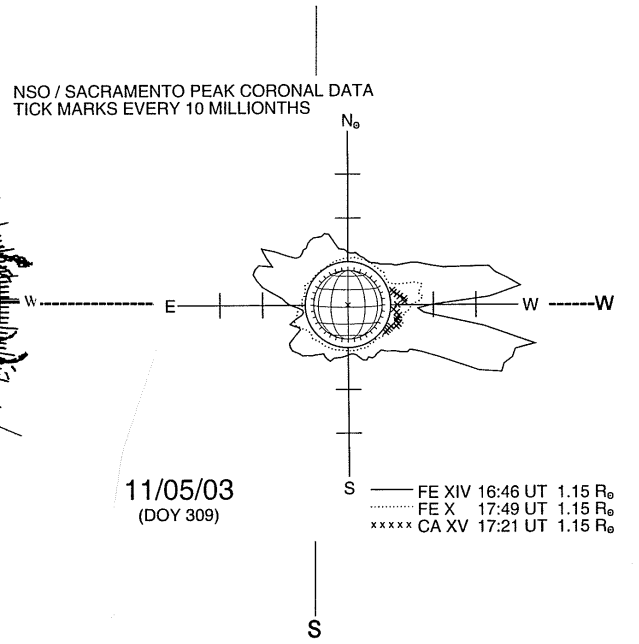
MEUDON H-ALPHA



SAN VITO SUNSPOT

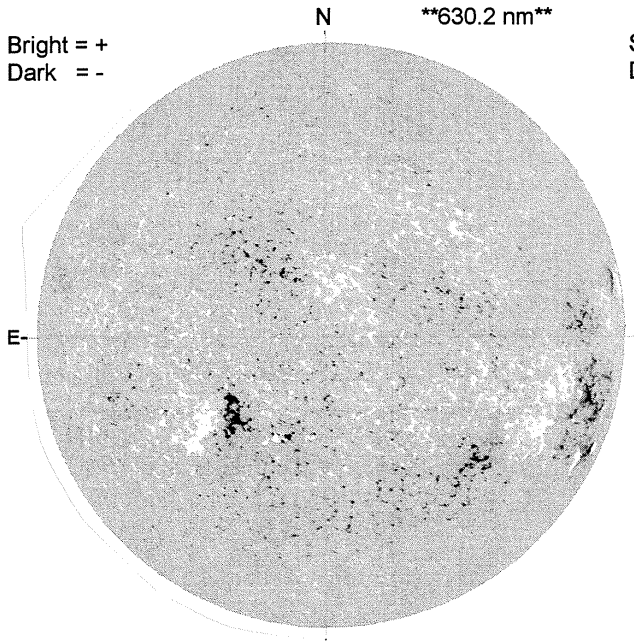


SACRAMENTO PEAK CORONA (1.15 Radii)----



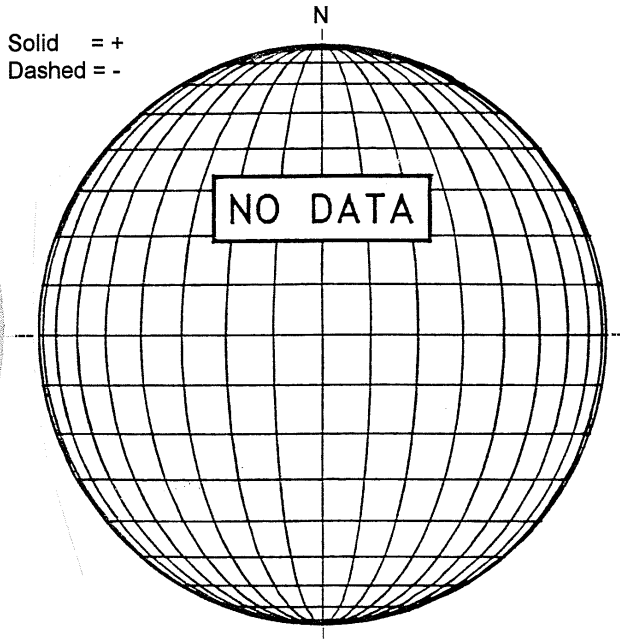
NOVEMBER 6, 2003 (P= 23.67, Bo = 3.91, Lo = 182.55)

KITT PEAK MAGNETOGRAM--SOLIS

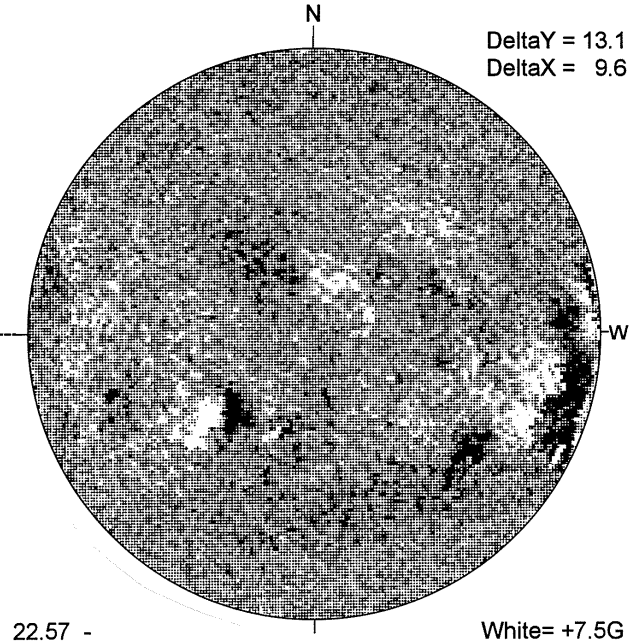


1712 UT

STANFORD MAGNETOGRAM



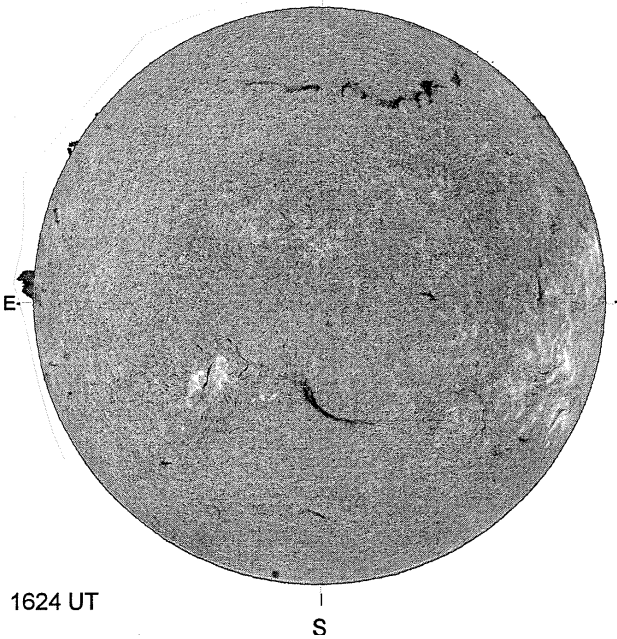
MT. WILSON MAGNETOGRAM



22.57 -
23.53 UT

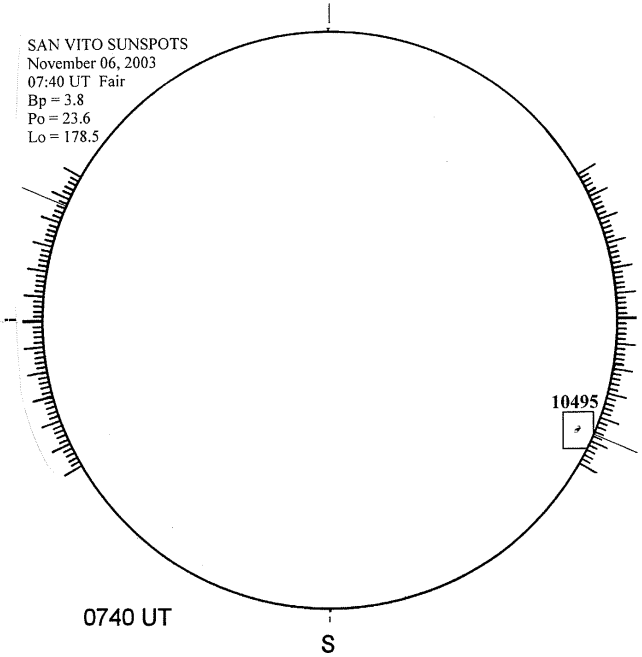
White= +7.5G
Black = -7.5G

----- BIG BEAR H-ALPHA



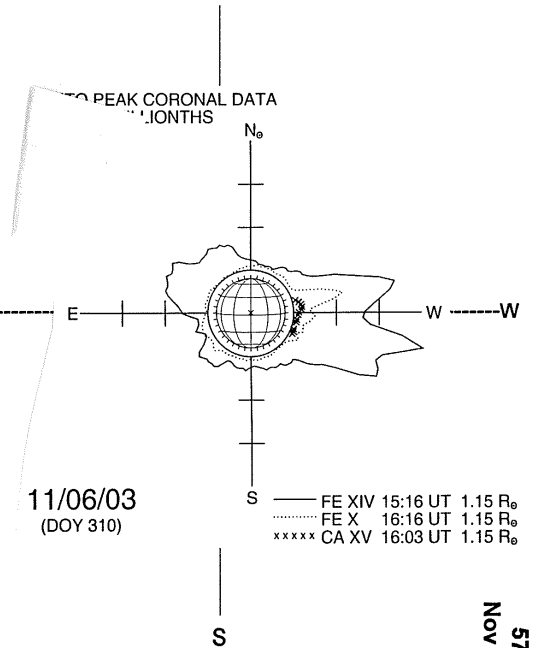
1624 UT

SAN VITO SUNSPOT



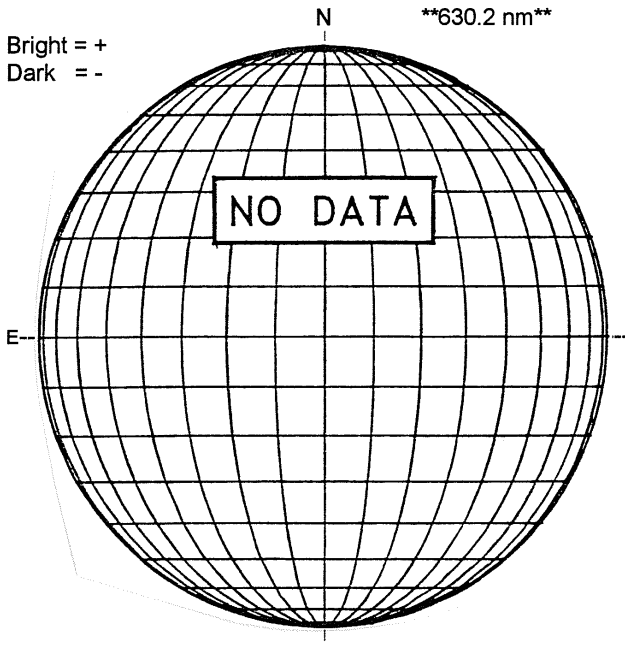
0740 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

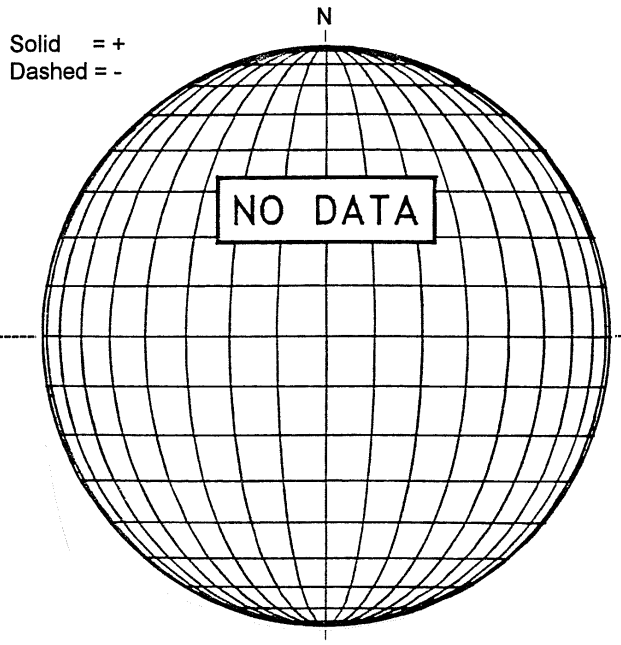


NOVEMBER 7, 2003 (P= 23.46, Bo = 3.80, Lo = 169.37)

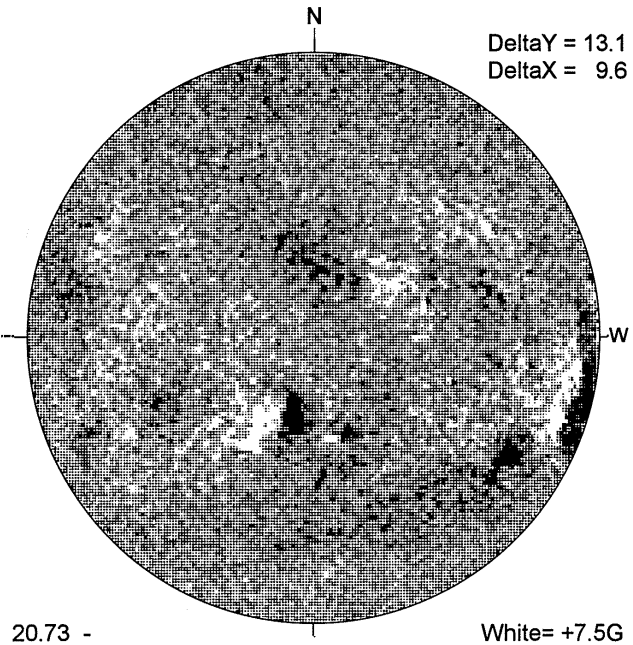
KITT PEAK MAGNETOGRAM--SOLIS



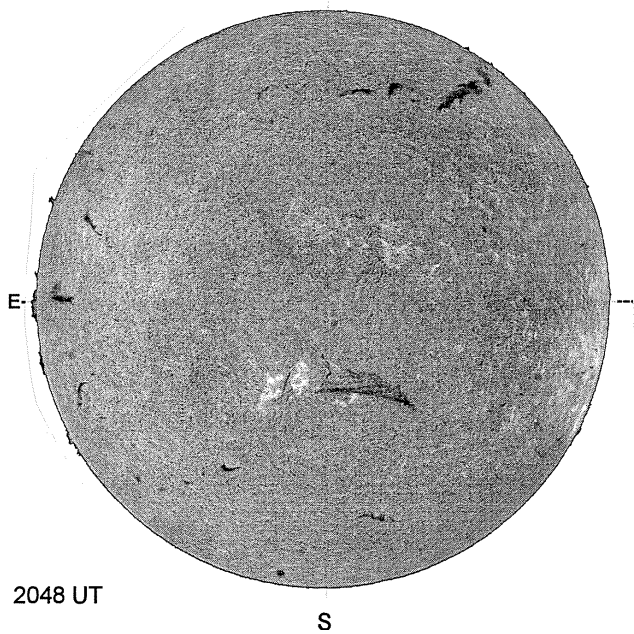
STANFORD MAGNETOGRAM



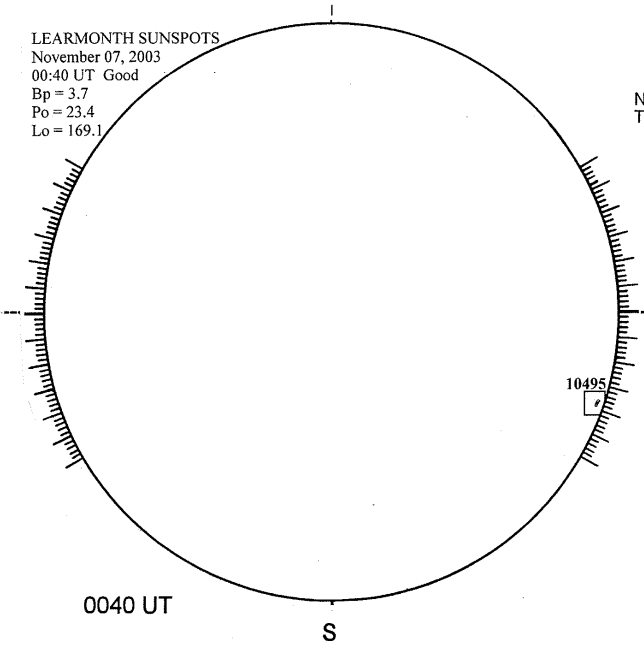
MT. WILSON MAGNETOGRAM



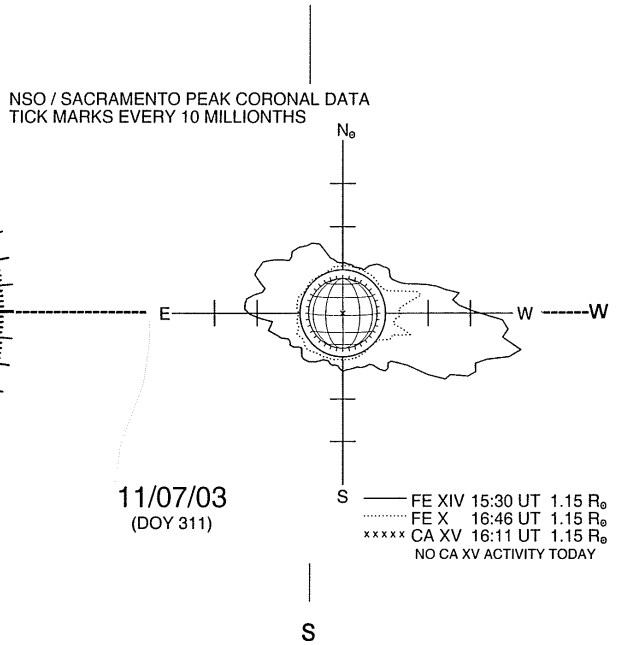
BIG BEAR H-ALPHA



LEARMONTH SUNSPOTS

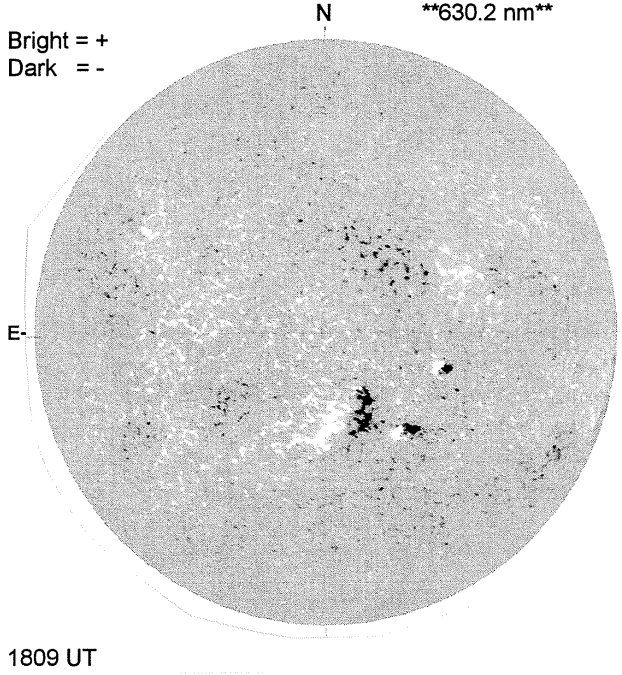


SACRAMENTO PEAK CORONA (1.15 Radii)----



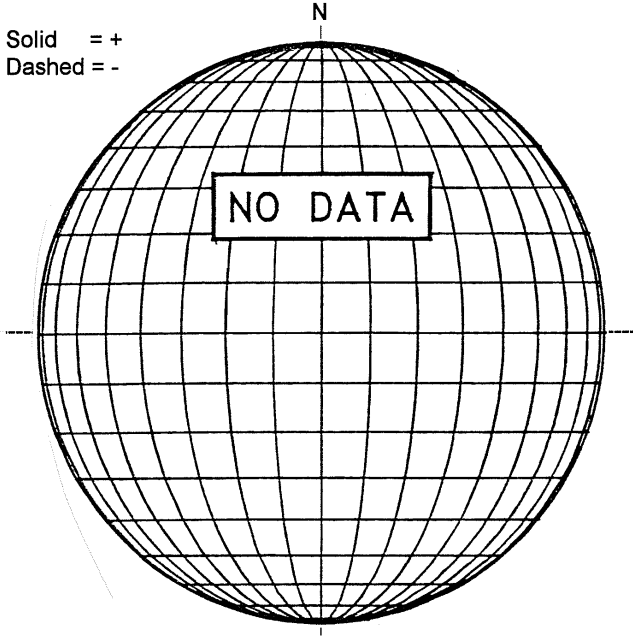
NOVEMBER 8, 2003 (P= 23.25, Bo = 3.69, Lo = 156.18)

KITT PEAK MAGNETOGRAM--SOLIS

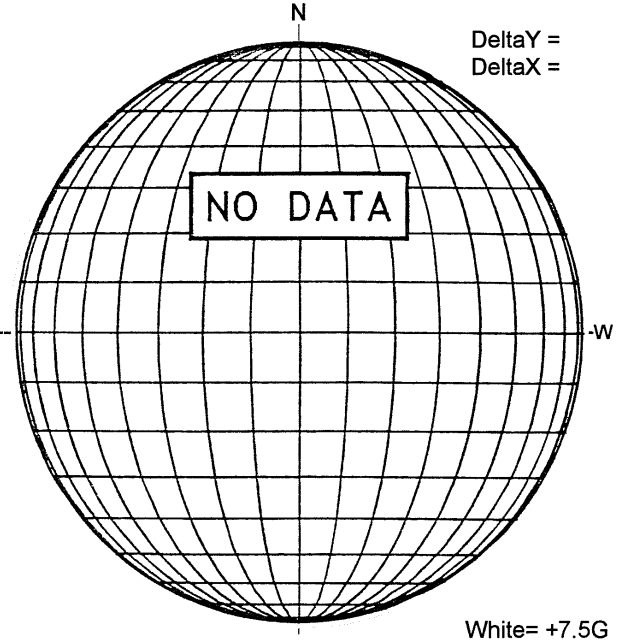


1809 UT

STANFORD MAGNETOGRAM

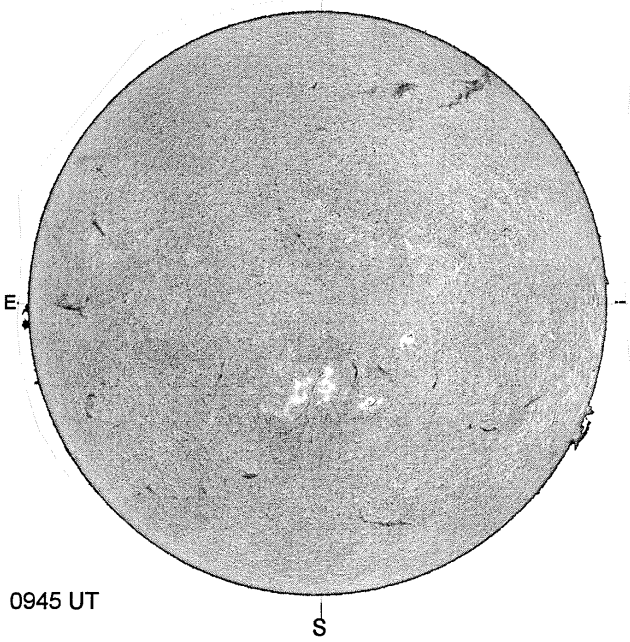


MT. WILSON MAGNETOGRAM



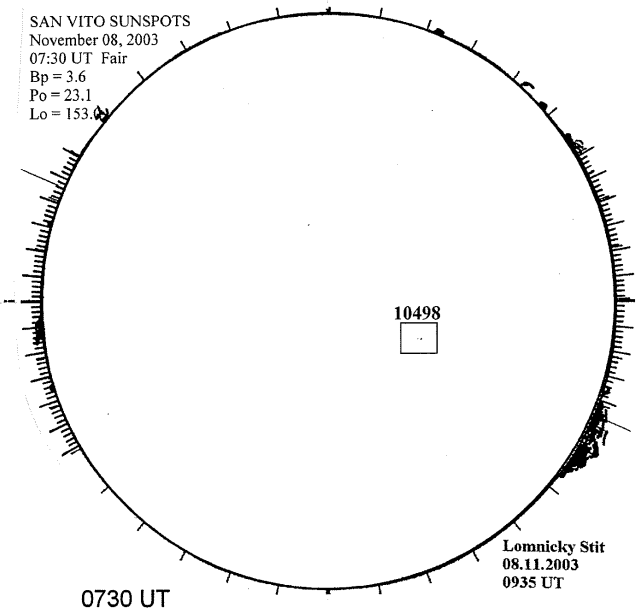
White= +7.5G
Black = -7.5G

CATANIA H-ALPHA



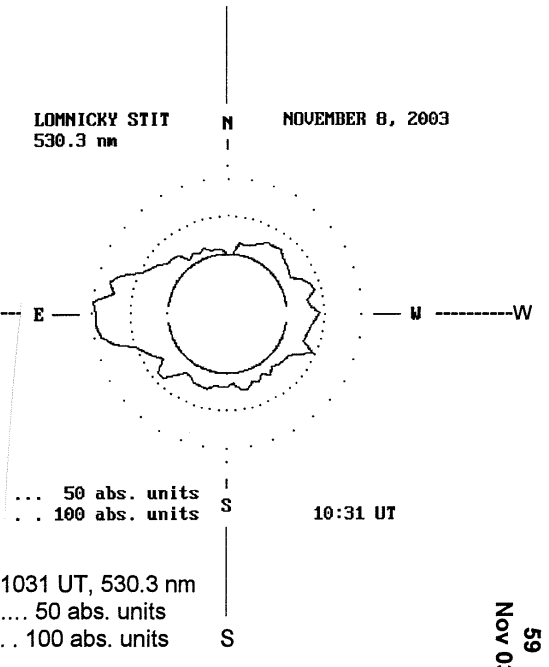
0945 UT

SAN VITO SUNSPOTS



0730 UT
0935 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)----



1031 UT, 530.3 nm
.... 50 abs. units
. . 100 abs. units
S

59
Nov 0

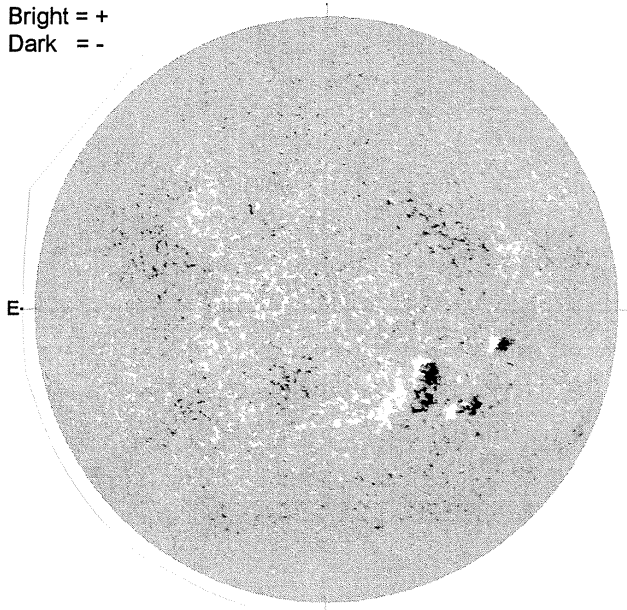
NOVEMBER 9, 2003 (P= 23.02, Bo = 3.58, Lo = 143.00)

KITT PEAK MAGNETOGRAM--SOLIS

N

**630.2 nm

Bright = +
Dark = -



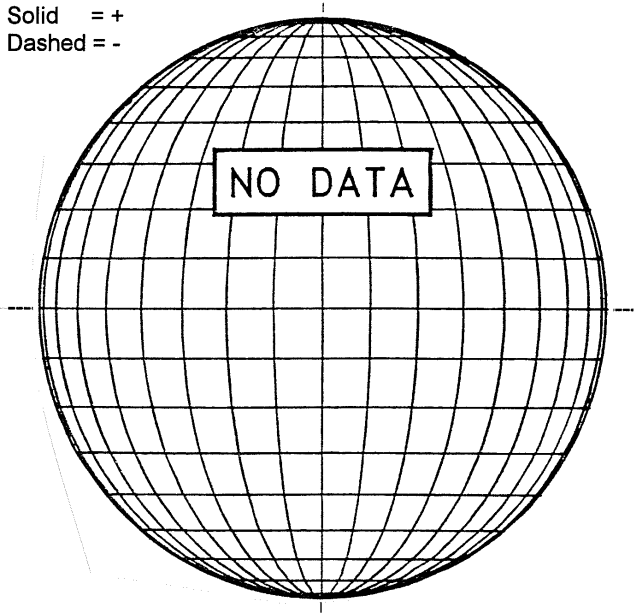
E

1713 UT

STANFORD MAGNETOGRAM

N

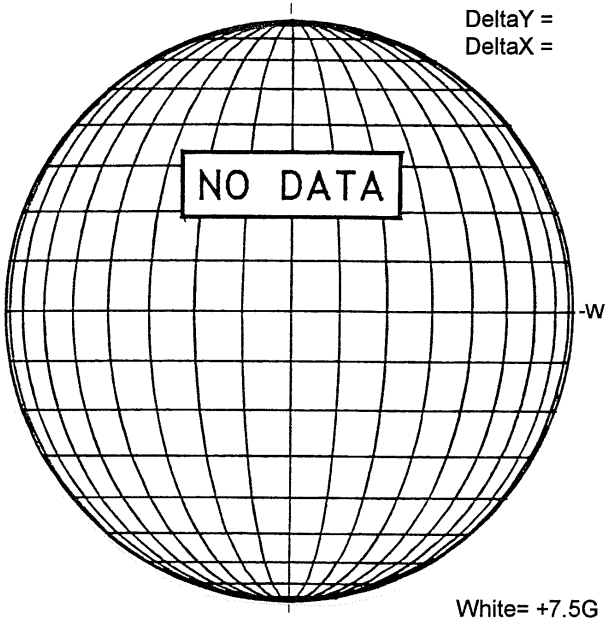
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

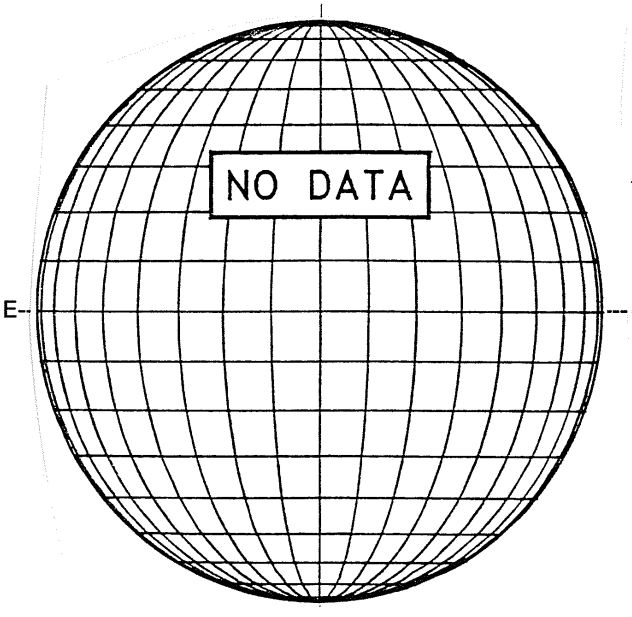
DeltaY =
DeltaX =



W

White= +7.5G
Black = -7.5G

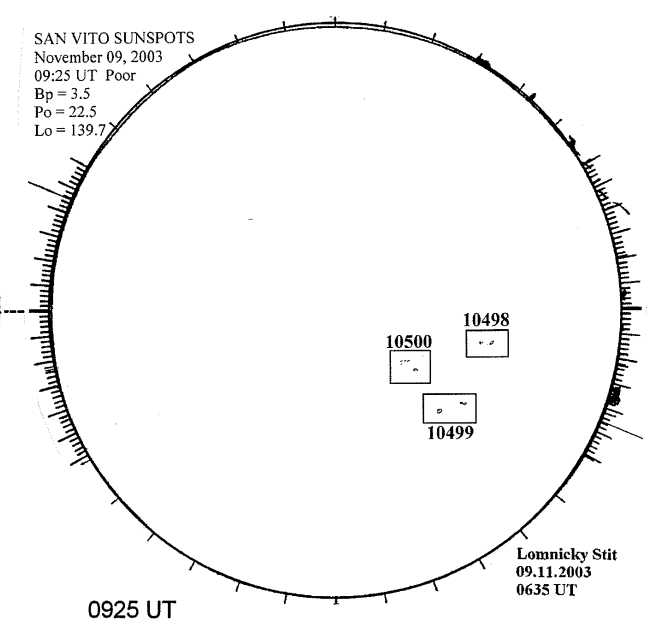
BIG BEAR H-ALPHA



E

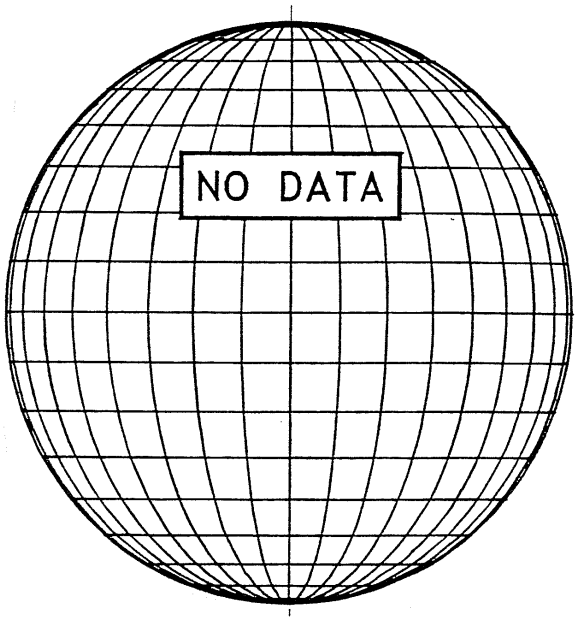
S

SAN VITO SUNSPOT



0925 UT
0635 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)



S

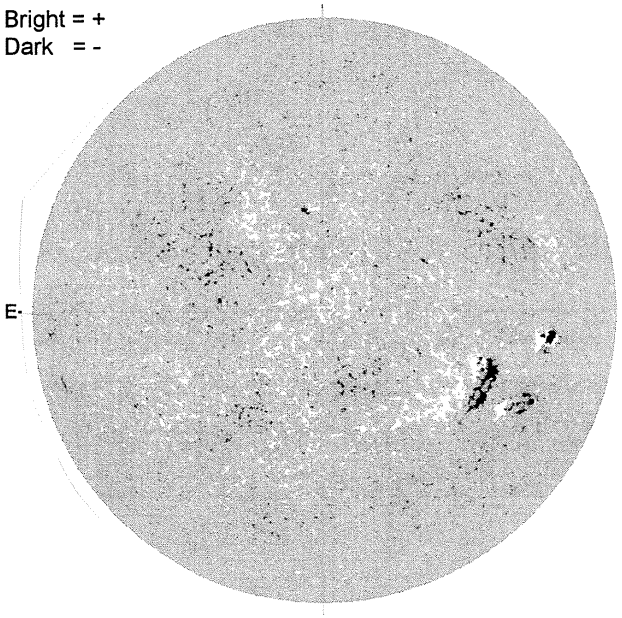
NOVEMBER 10, 2003 (P= 22.80, Bo = 3.47 Lo = 129.81)

KITT PEAK MAGNETOGRAM--SOLIS

N

630.2 nm

Bright = +
Dark = -



E

1651 UT

STANFORD MAGNETOGRAM

N

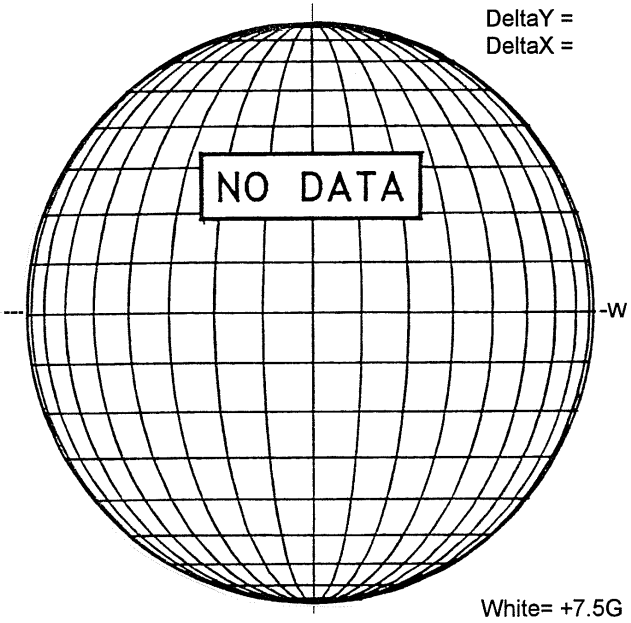
Solid = +
Dashed = -

1839 UT

MT. WILSON MAGNETOGRAM

N

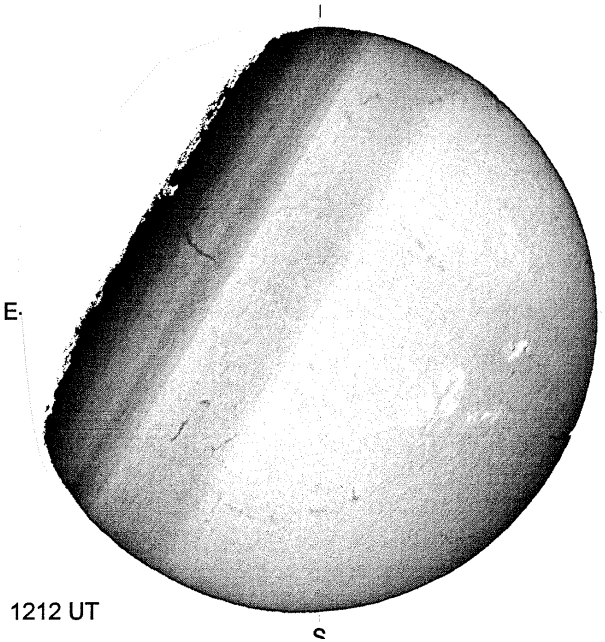
DeltaY =
DeltaX =



W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

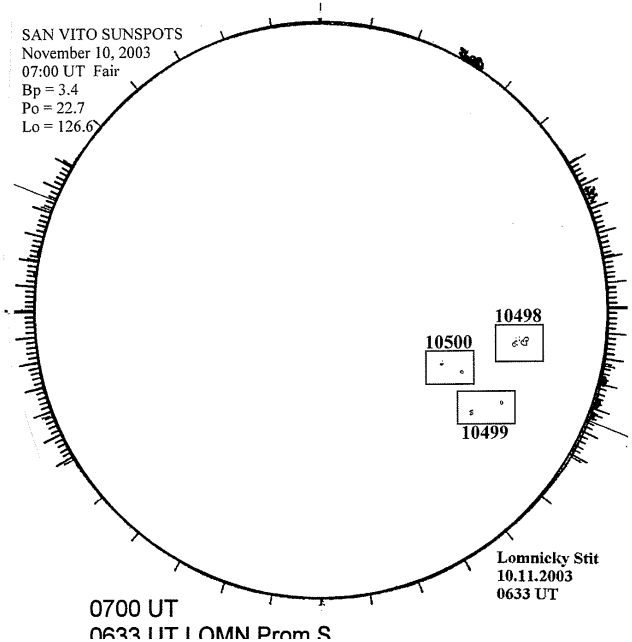


E

1212 UT

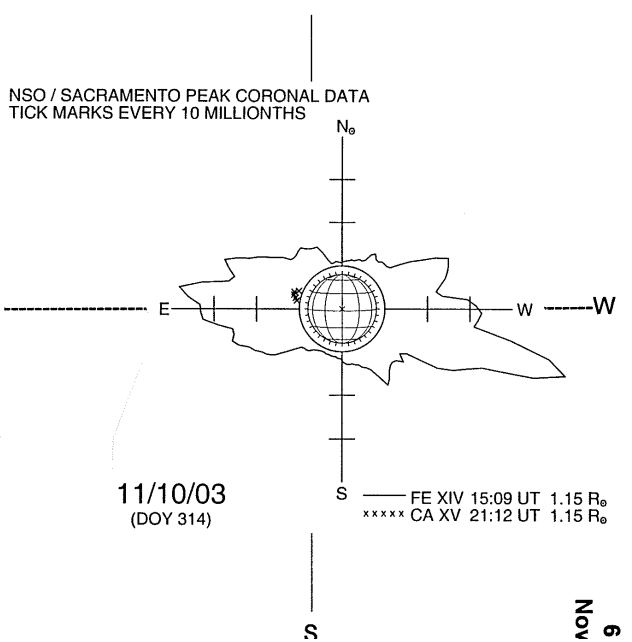
S

SAN VITO SUNSPOTS



0700 UT
0633 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)



S

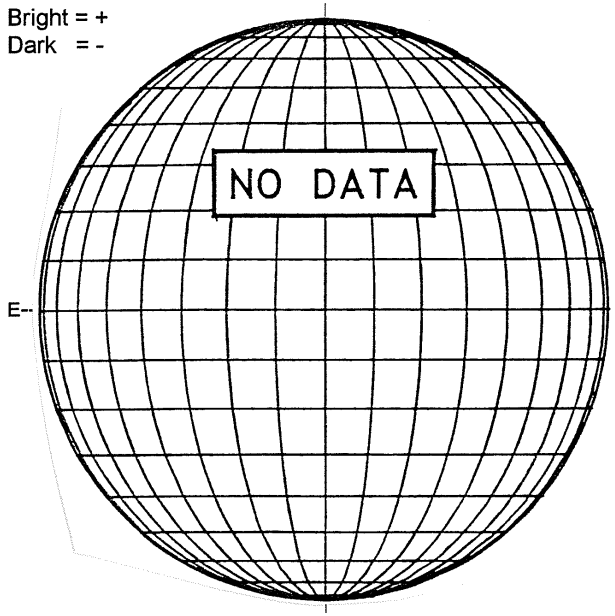
NOV 6

NOVEMBER 11, 2003 (P= 22.56, Bo = 3.36, Lo = 116.63)

KITT PEAK MAGNETOGRAM--SOLIS

N **630.2 nm**

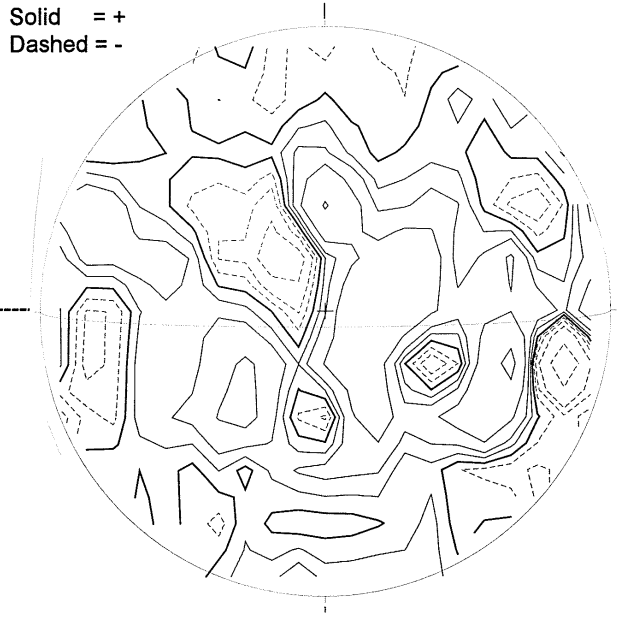
Bright = +
Dark = -



STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

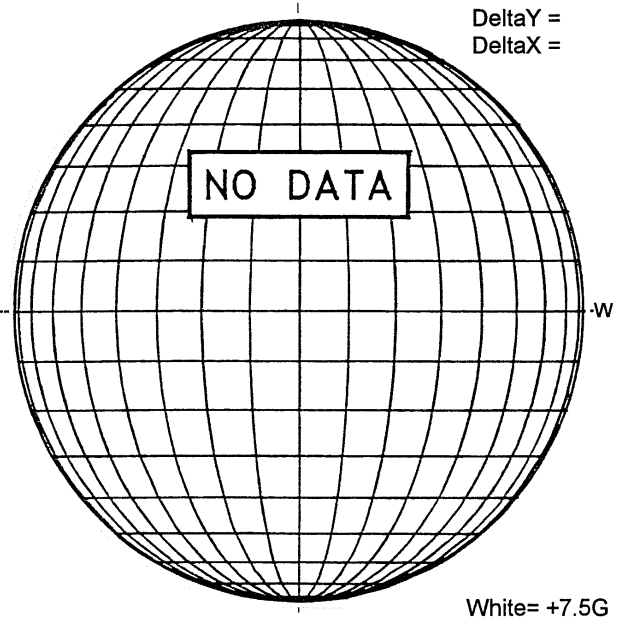


1836 UT

MT. WILSON MAGNETOGRAM

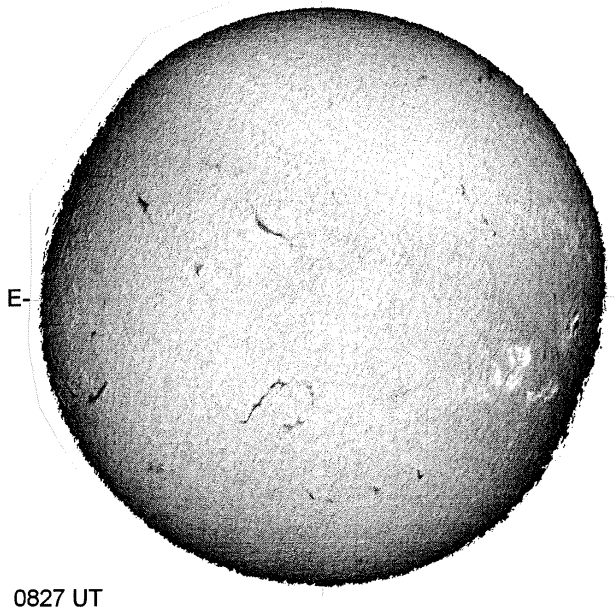
N

DeltaY =
DeltaX =



White= +7.5G
Black = -7.5G

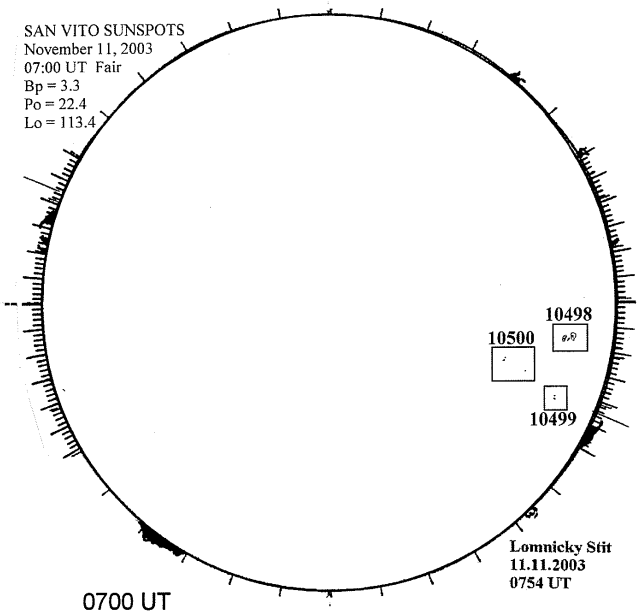
MEUDON H-ALPHA



0827 UT

S

SAN VITO SUNSPOTS

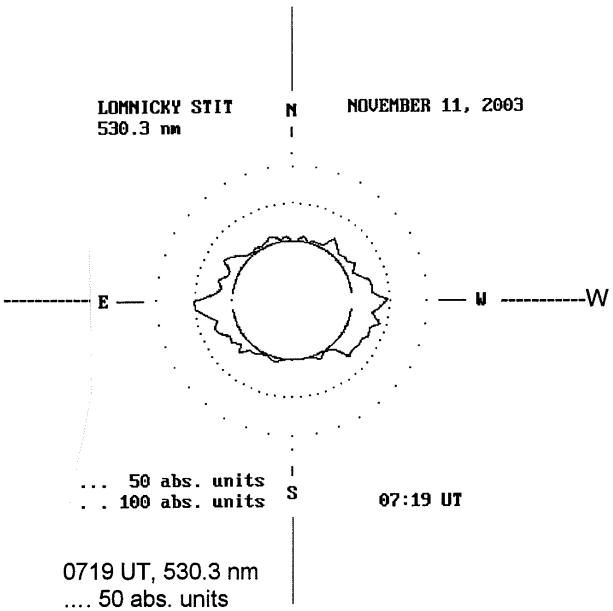


0700 UT

0745 UT LOMN Prom.

S

LOMNICKY PEAK CORONA (1.04 Radii)----

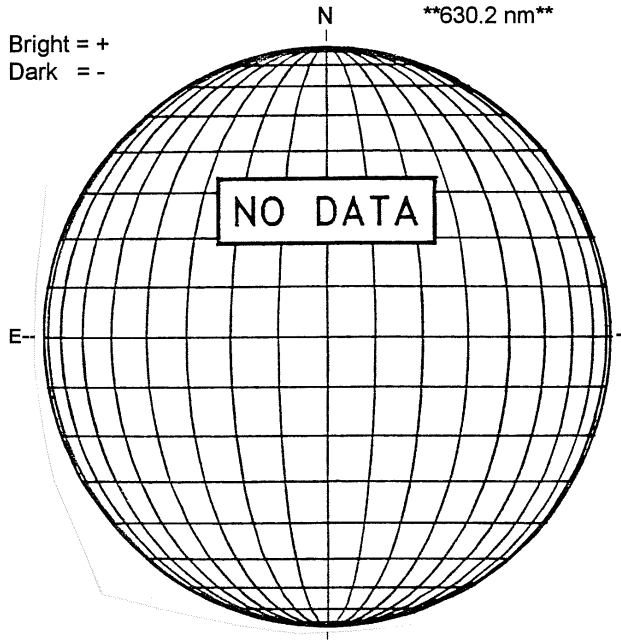


0719 UT, 530.3 nm
.... 50 abs. units
100 abs. units

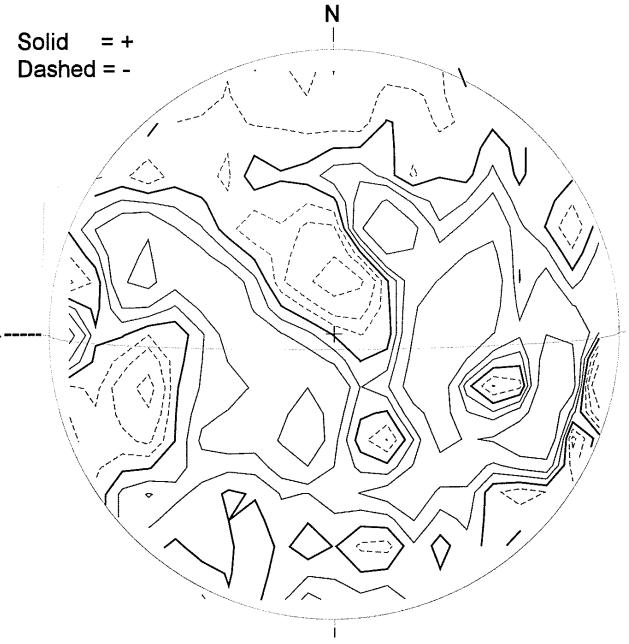
S

NOVEMBER 12, 2003 (P= 22.31, Bo = 3.24, Lo = 103.44)

KITT PEAK MAGNETOGRAM--SOLIS

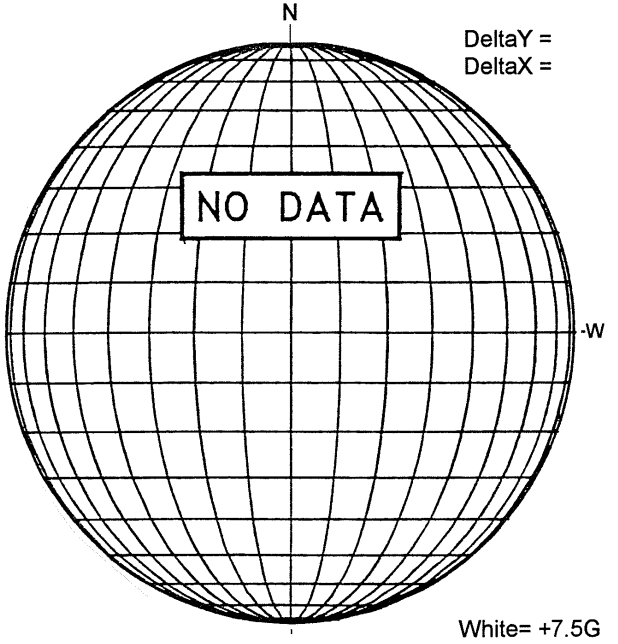


STANFORD MAGNETOGRAM

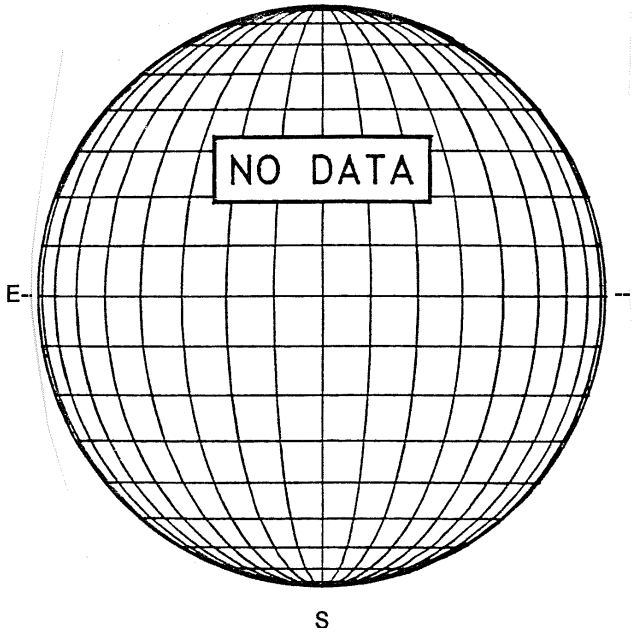


1832 UT

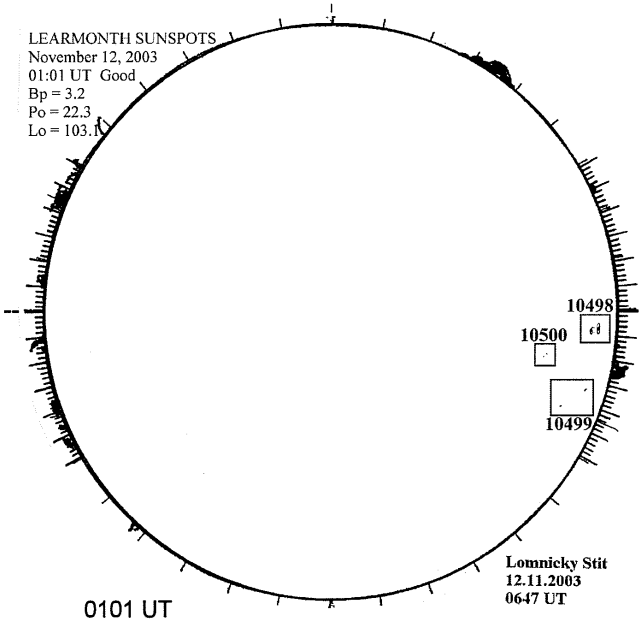
MT. WILSON MAGNETOGRAM



KANZELHOHE H-ALPHA

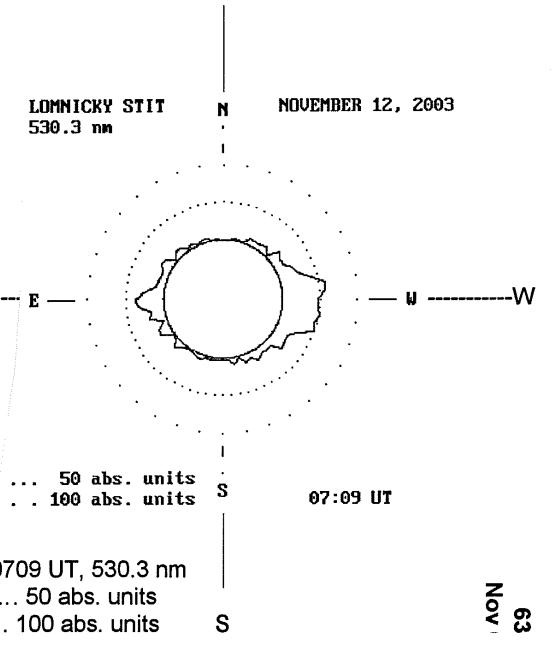


LEARMONTH SUNSPOTS



0101 UT
0647 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)----

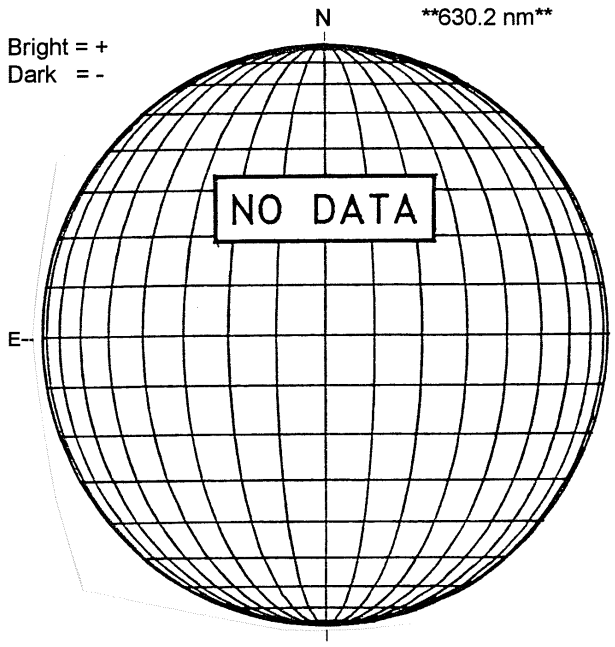


0709 UT, 530.3 nm
.... 50 abs. units
. . 100 abs. units S

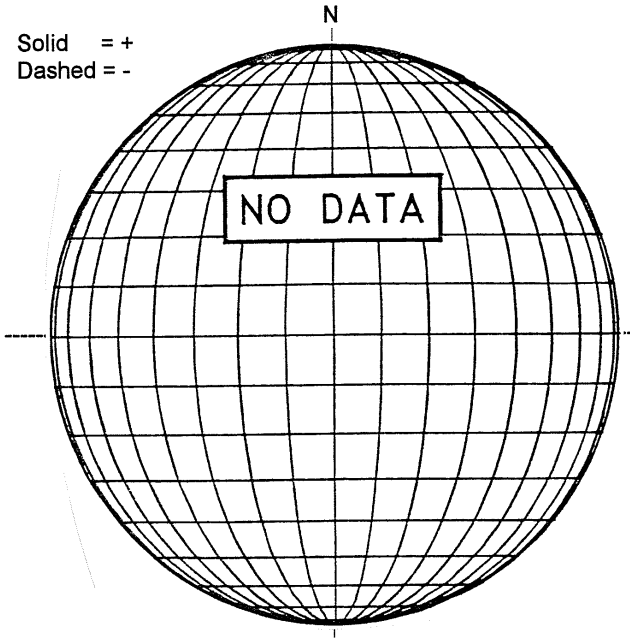
Nov 63

NOVEMBER 13, 2003 (P= 22.06, Bo = 3.13, Lo = 90.26)

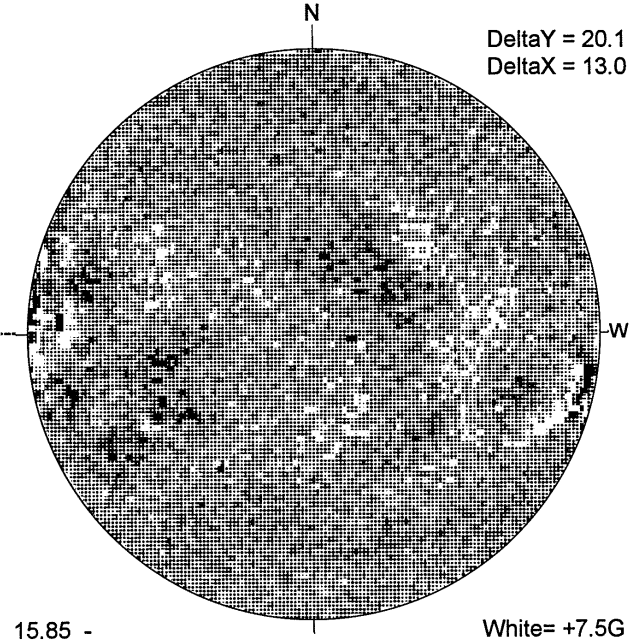
KITT PEAK MAGNETOGRAM--SOLIS



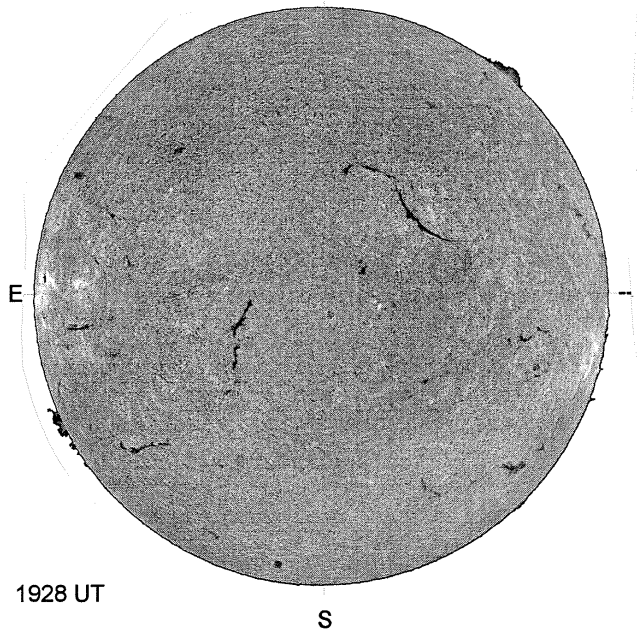
STANFORD MAGNETOGRAM



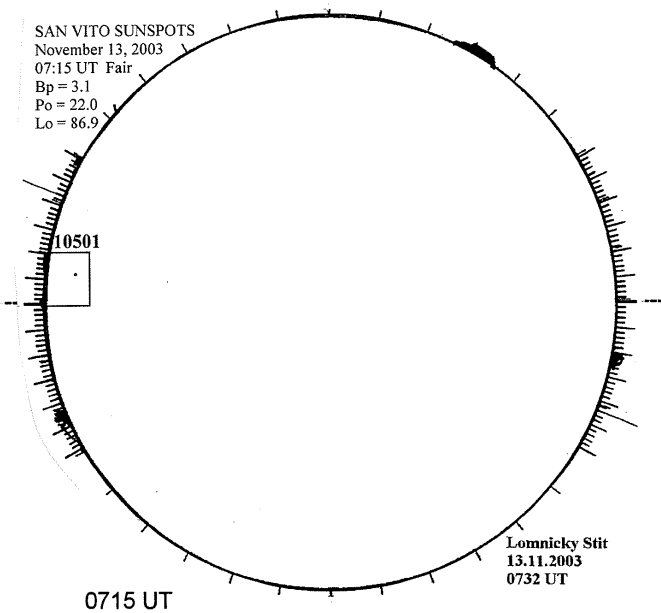
MT. WILSON MAGNETOGRAM



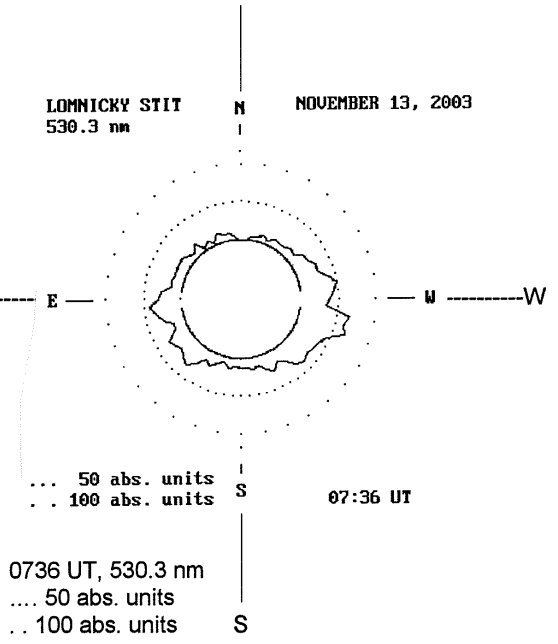
BIG BEAR H-ALPHA



SAN VITO SUNSPOT

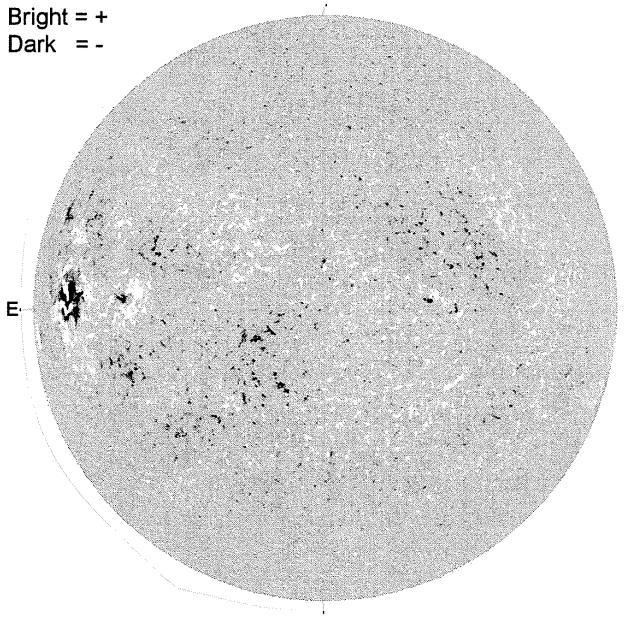


LOMNICKY PEAK CORONA (1.04 Radii)----

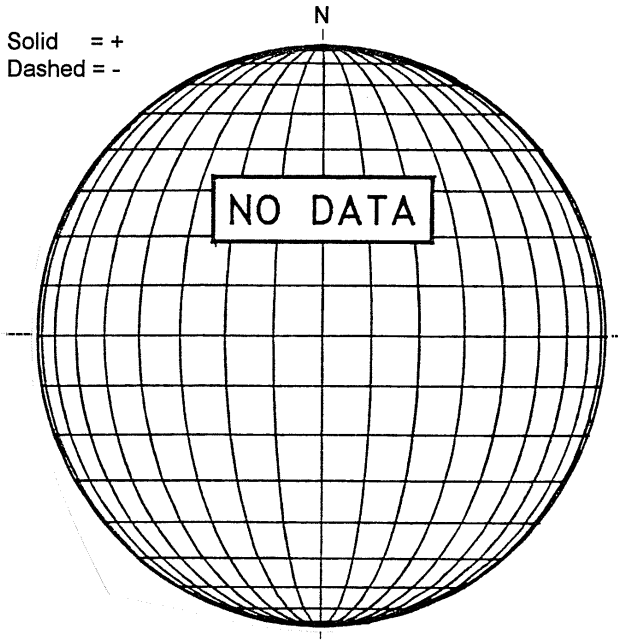


NOVEMBER 14, 2003 (P= 21.80, Bo = 3.01, Lo = 77.07)

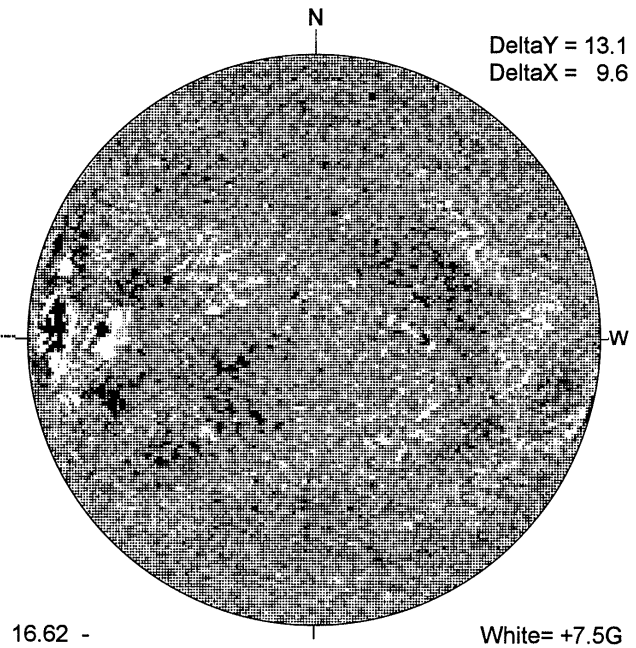
KITT PEAK MAGNETOGRAM--SOLIS



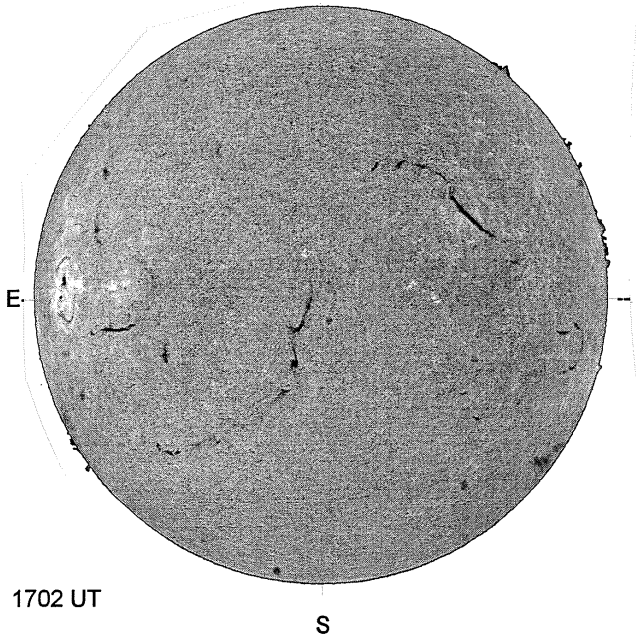
STANFORD MAGNETOGRAM



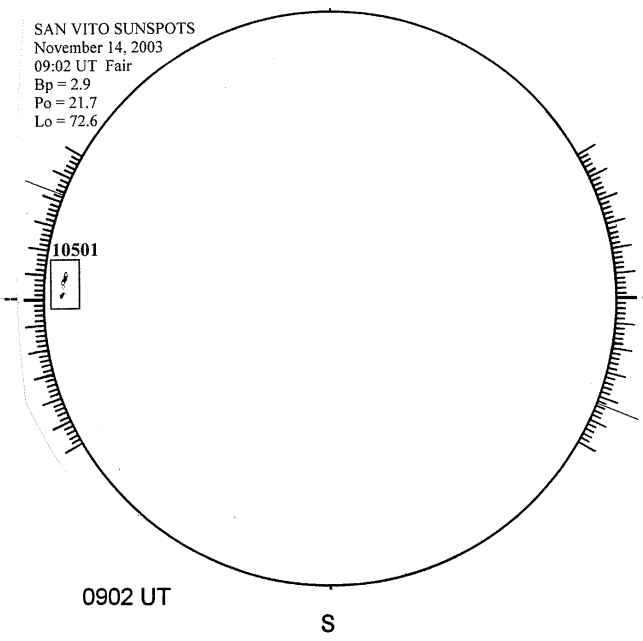
MT. WILSON MAGNETOGRAM



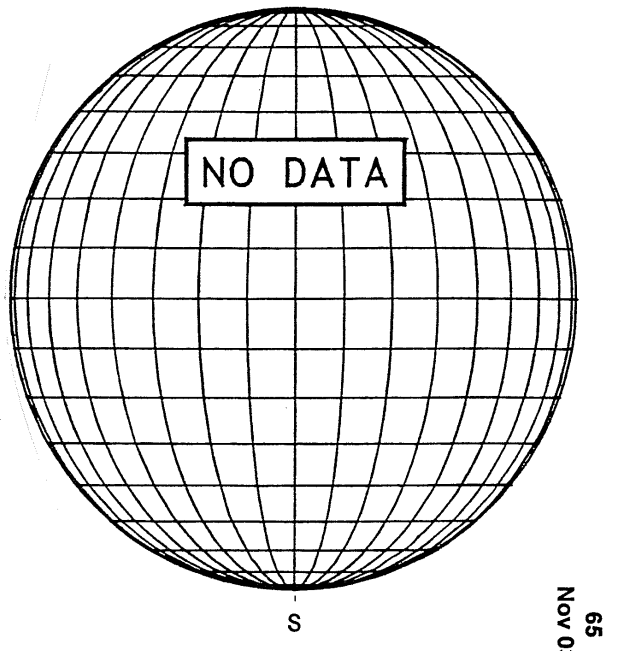
BIG BEAR H-ALPHA



SAN VITO SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



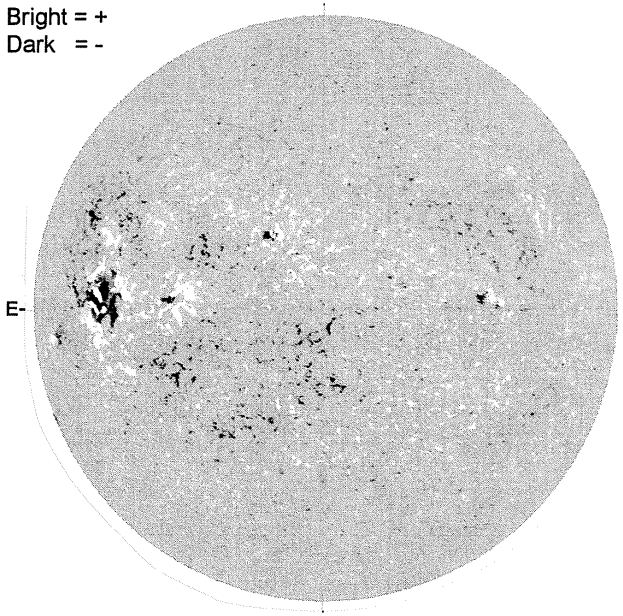
65
Nov 03

NOVEMBER 15, 2003 (P= 21.53, Bo = 2.90, Lo = 63.89)

KITT PEAK MAGNETOGRAM--SOLIS

N **630.2 nm**

Bright = +
Dark = -

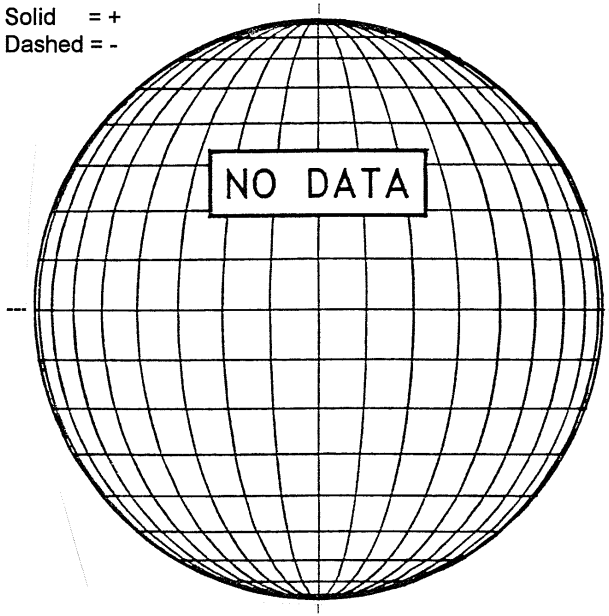


1844 UT

STANFORD MAGNETOGRAM

N

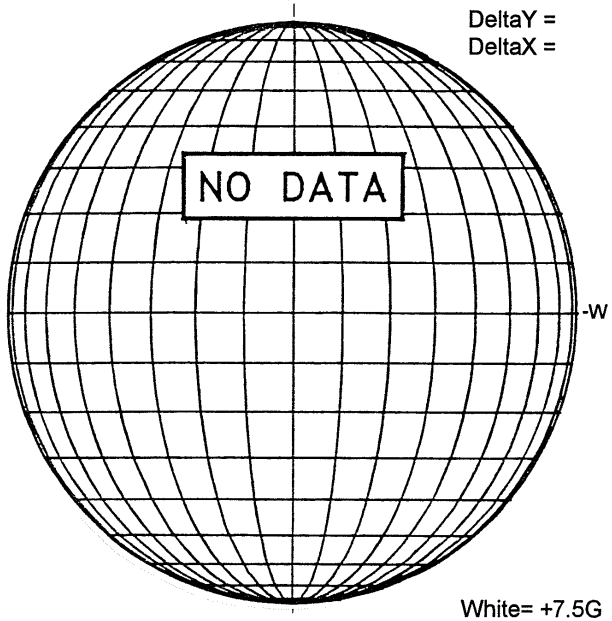
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

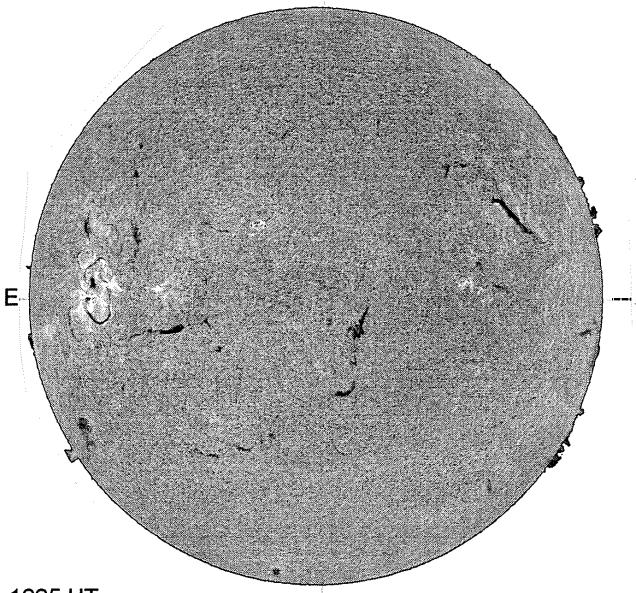
N

DeltaY =
DeltaX =



White= +7.5G
Black = -7.5G

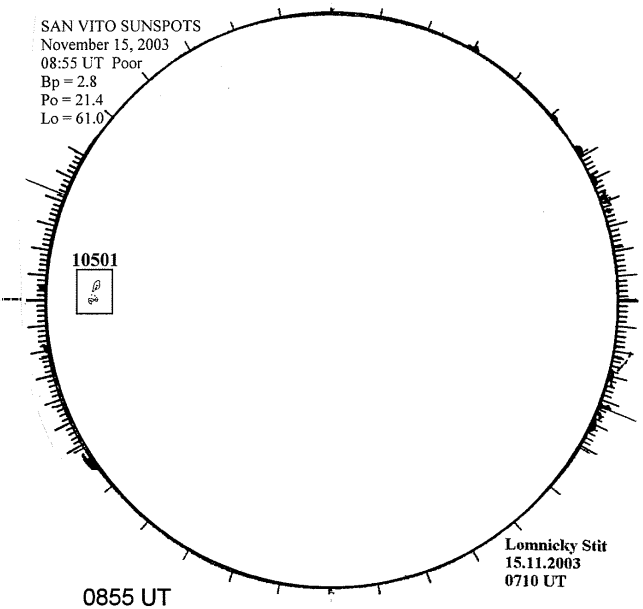
BIG BEAR H-ALPHA



1625 UT

S

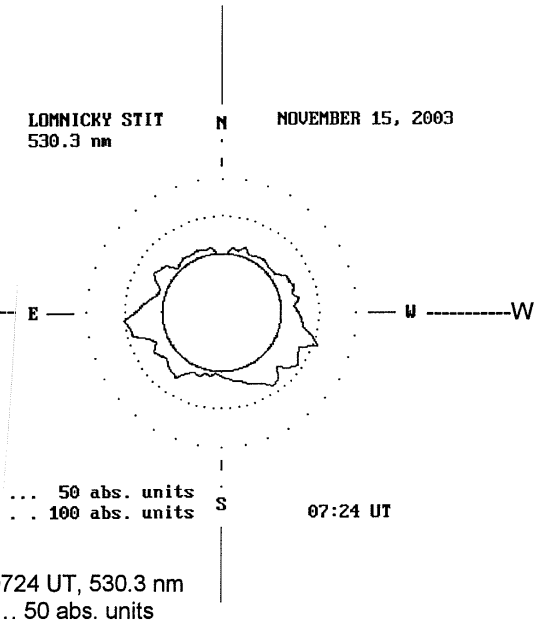
SAN VITO SUNSPOT



0855 UT
0710 UT LOMN Prom

S

LOMNICKY PEAK CORONA (1.04 Radii)----

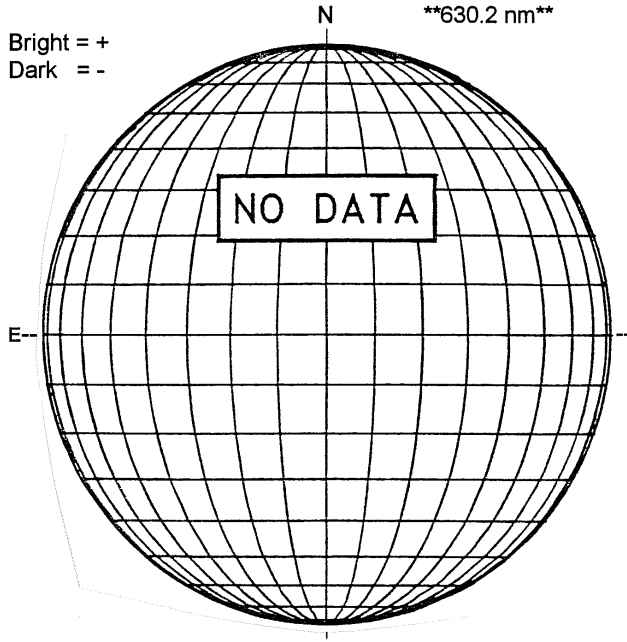


0724 UT, 530.3 nm
.... 50 abs. units
100 abs. units

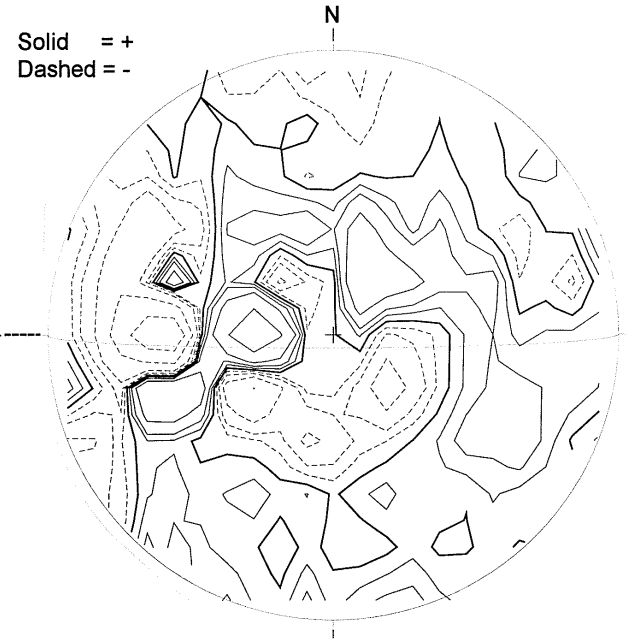
S

NOVEMBER 16, 2003 (P= 21.26, Bo = 2.78, Lo = 50.71)

KITT PEAK MAGNETOGRAM--SOLIS

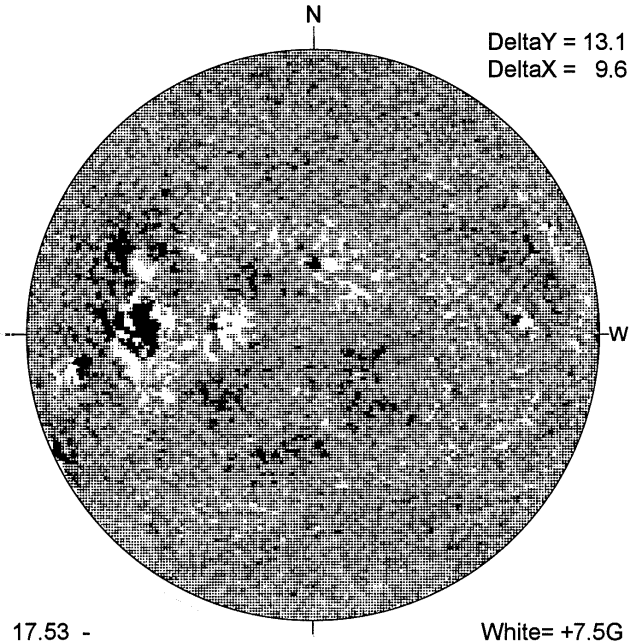


STANFORD MAGNETOGRAM



1941 UT

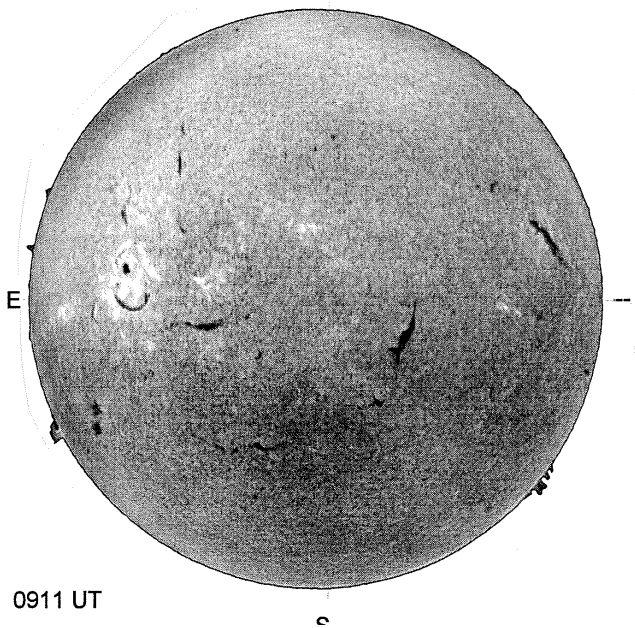
MT. WILSON MAGNETOGRAM



17.53 -
18.50 UT

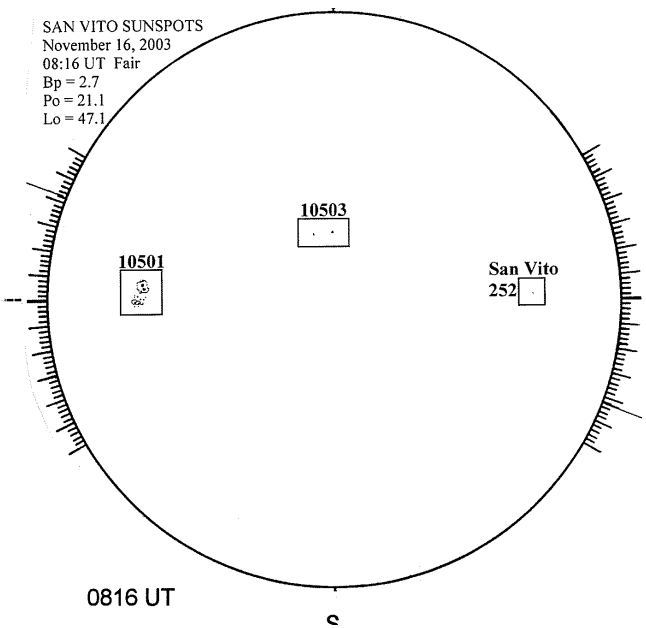
White= +7.5G
Black = -7.5G

----- KANZELHOHE H-ALPHA



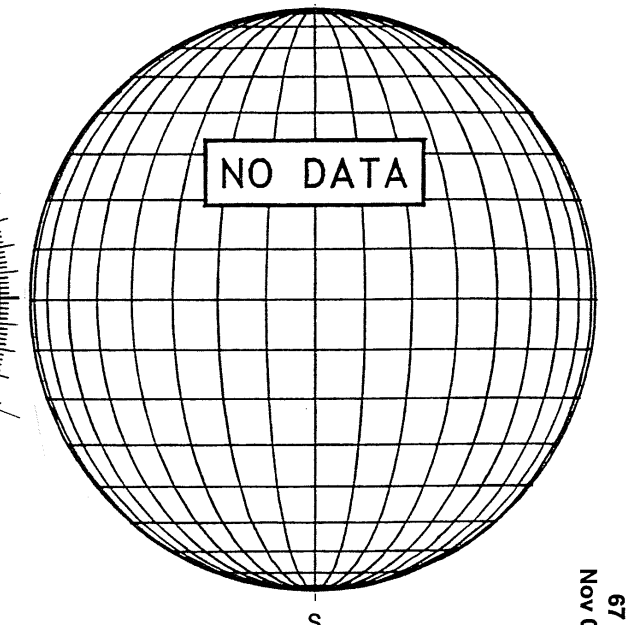
0911 UT

SAN VITO SUNSPOT



0816 UT

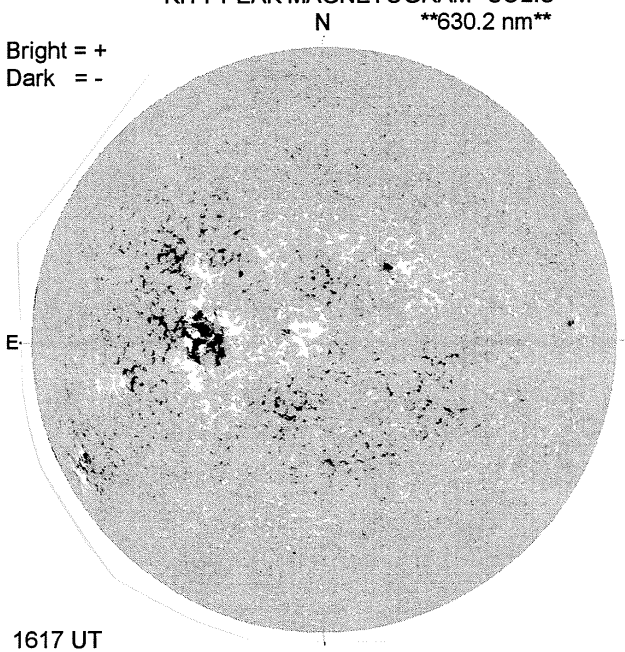
SACRAMENTO PEAK CORONA (1.15 Radii)----



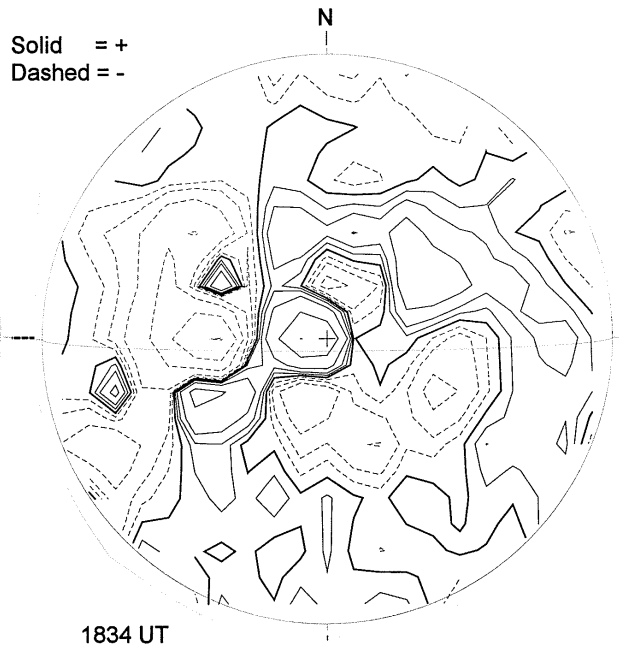
67

NOVEMBER 17, 2003 (P= 20.97, Bo = 2.66, Lo = 37.53)

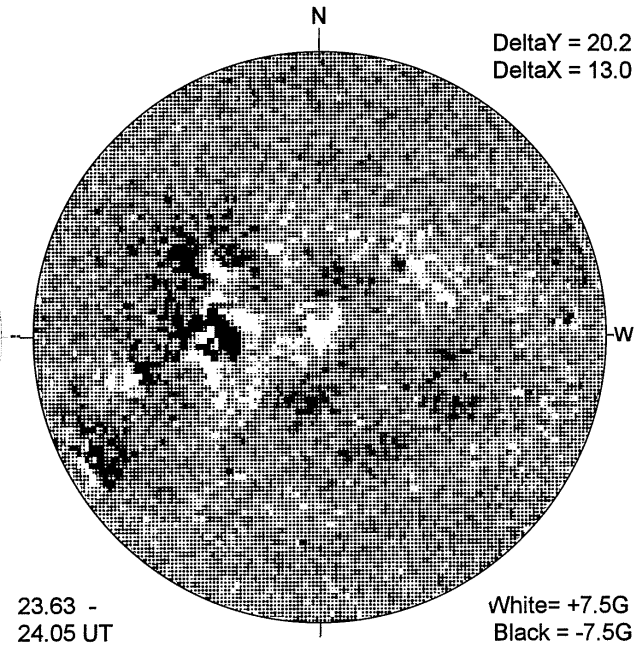
KITT PEAK MAGNETOGRAM--SOLIS



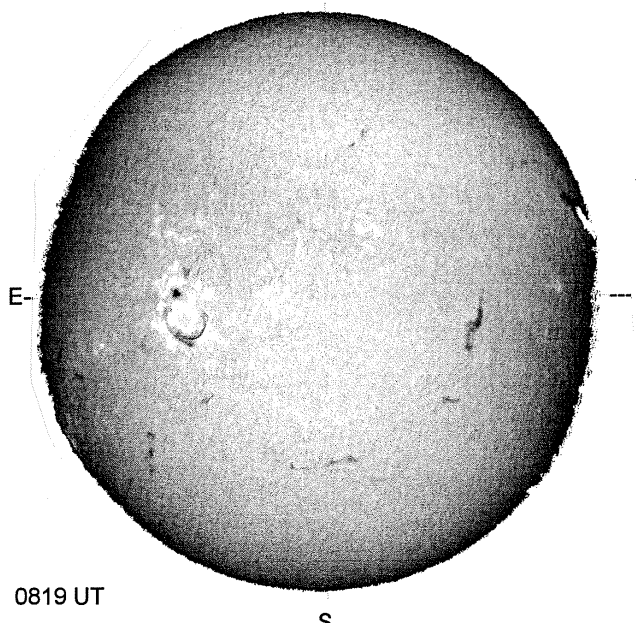
STANFORD MAGNETOGRAM



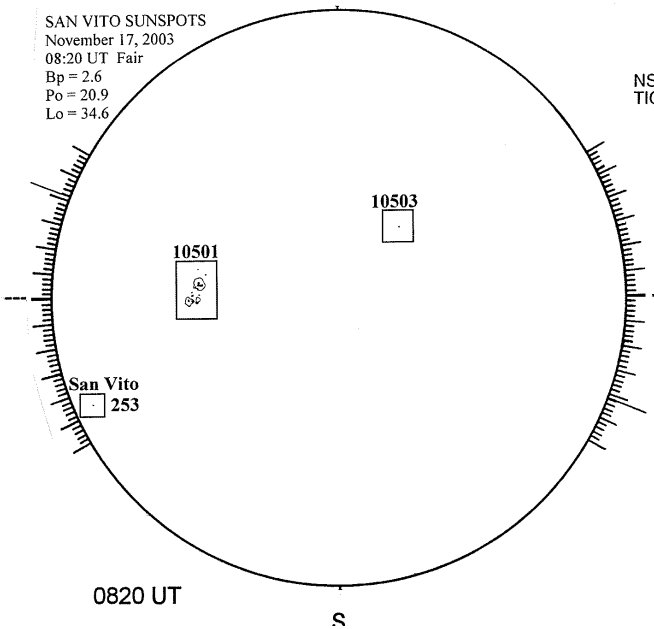
MT. WILSON MAGNETOGRAM



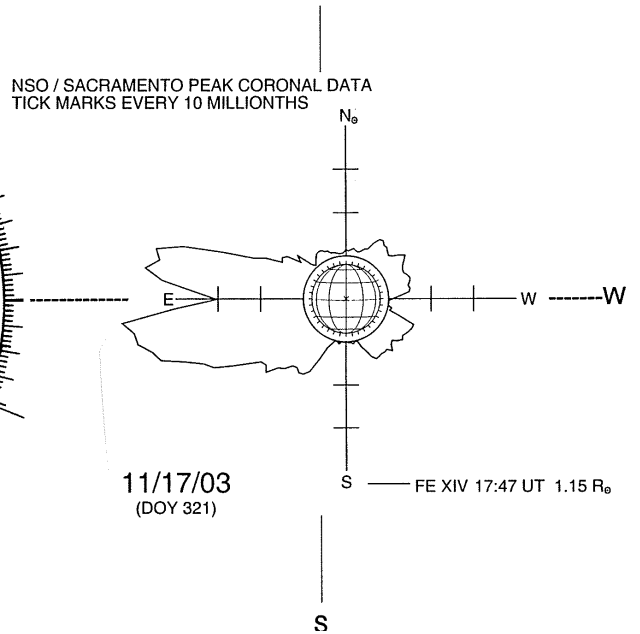
MEUDON H-ALPHA



SAN VITO SUNSPOT

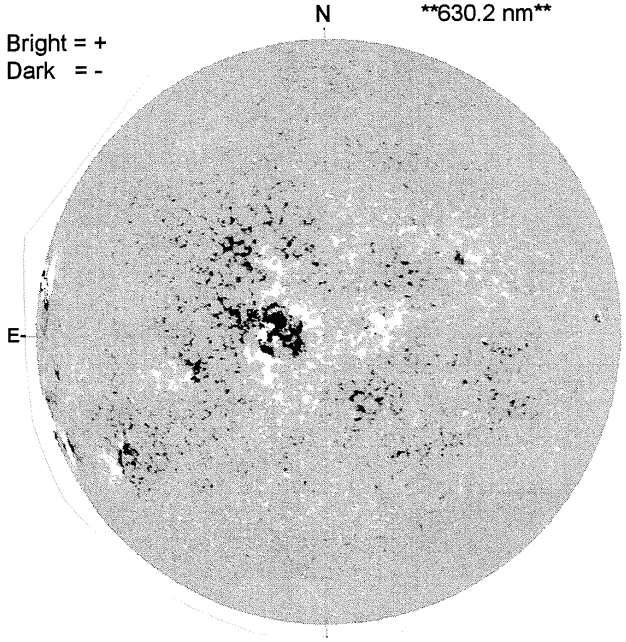


SACRAMENTO PEAK CORONA (1.15 Radii)----



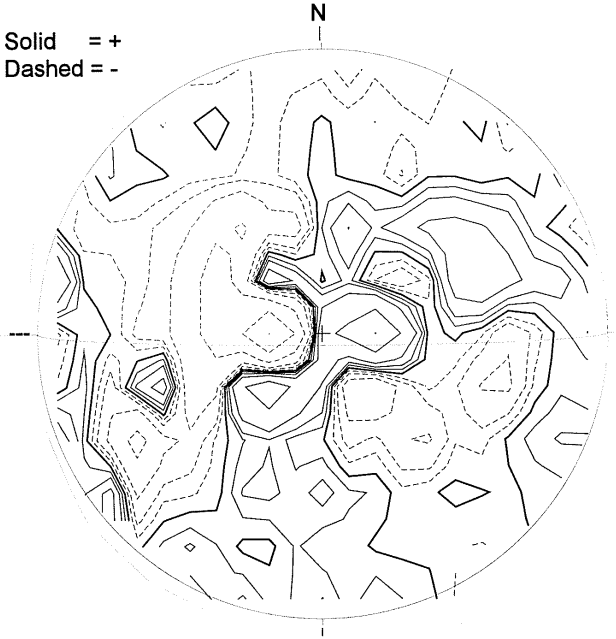
NOVEMBER 18, 2003 (P= 20.68, Bo = 2.54, Lo = 24.34)

KITT PEAK MAGNETOGRAM--SOLIS



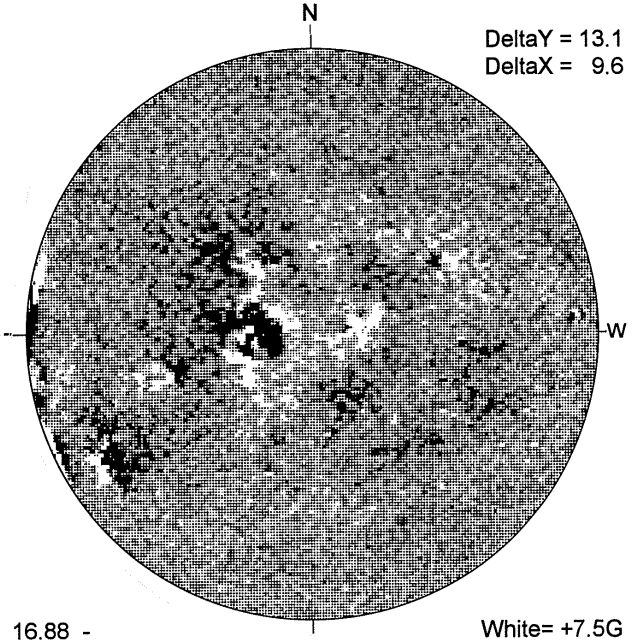
1826 UT

STANFORD MAGNETOGRAM



1832 UT

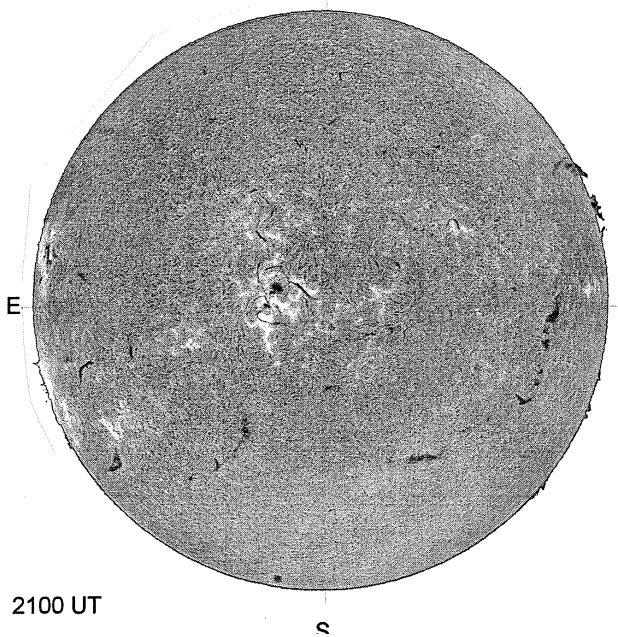
MT. WILSON MAGNETOGRAM



16.88 -
17.85 UT

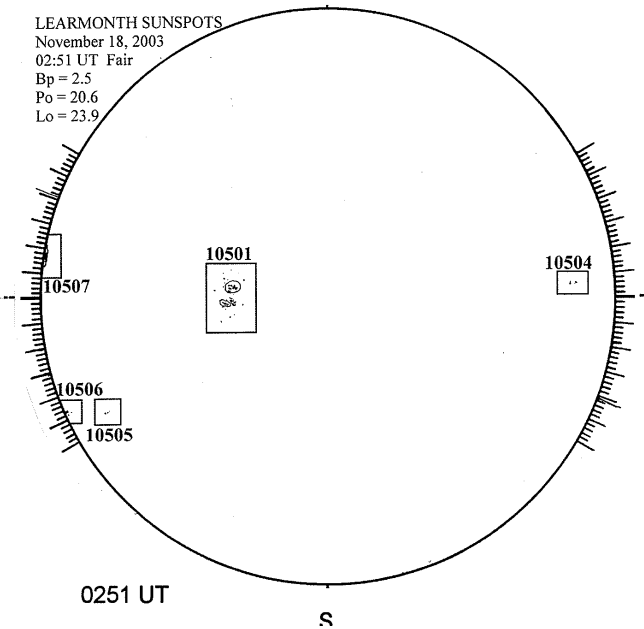
White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA



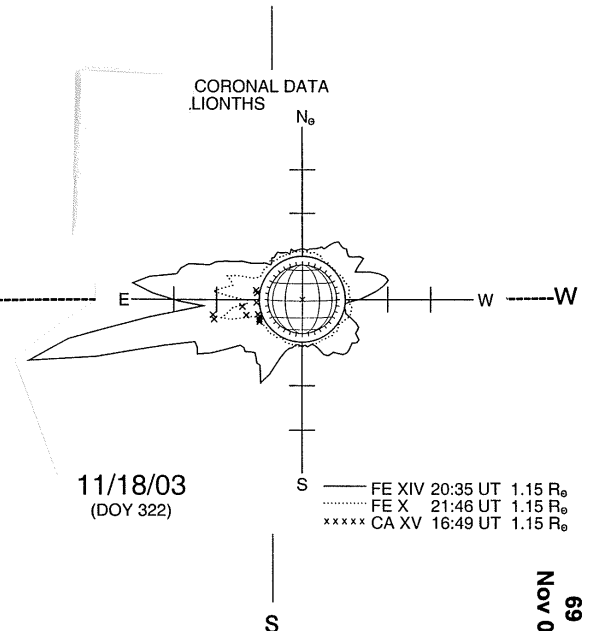
2100 UT

LEARMONTH SUNSPOT



0251 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



Nov 0

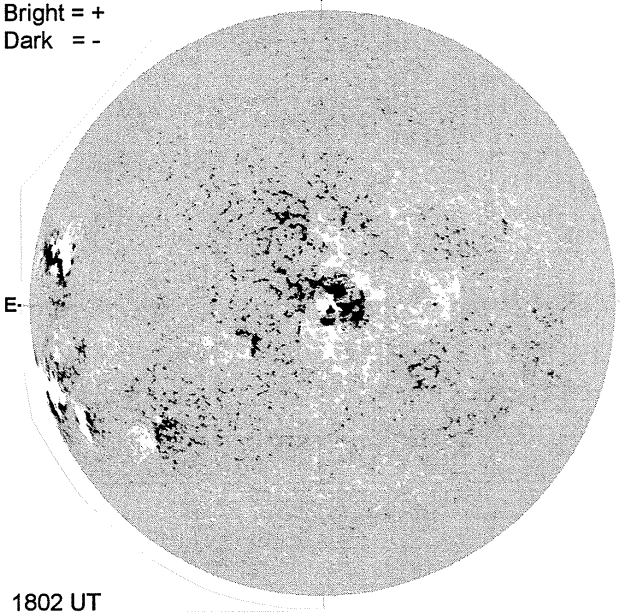
NOVEMBER 19, 2003 (P= 20.39, Bo = 2.42, Lo = 11.16)

KITT PEAK MAGNETOGRAM--SOLIS

N
630.2 nm

Bright = +
Dark = -

E



1802 UT

STANFORD MAGNETOGRAM

N

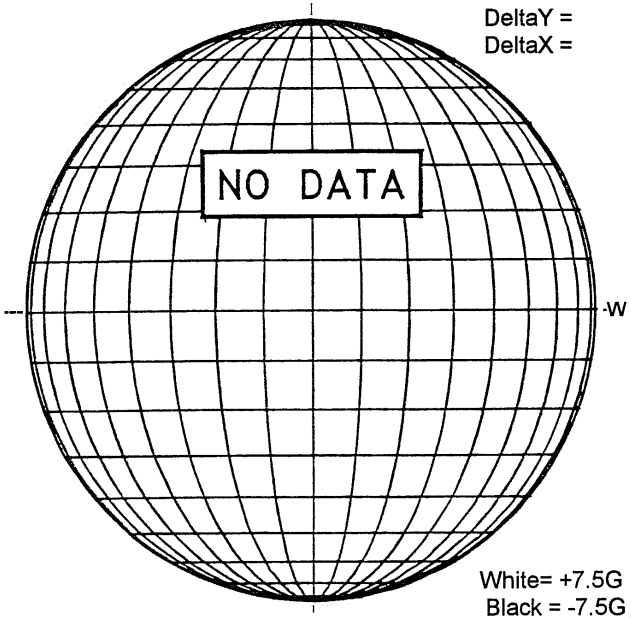
Solid = +
Dashed = -

2233 UT

MT. WILSON MAGNETOGRAM

N

DeltaY =
DeltaX =

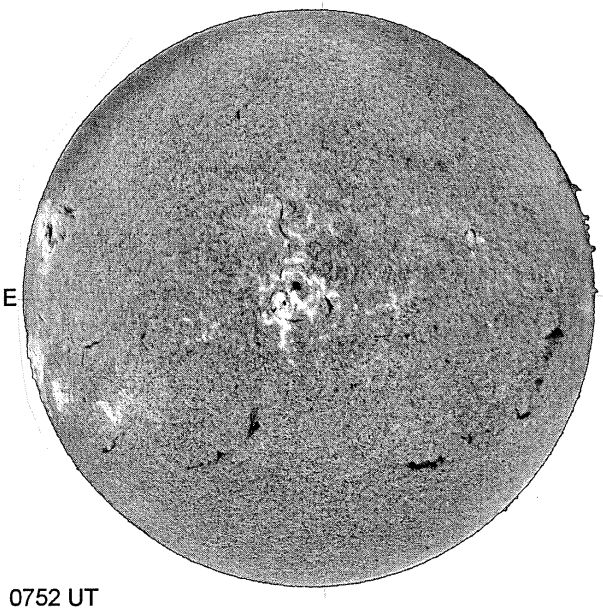


W

White= +7.5G
Black = -7.5G

KANZELHOHE H-ALPHA

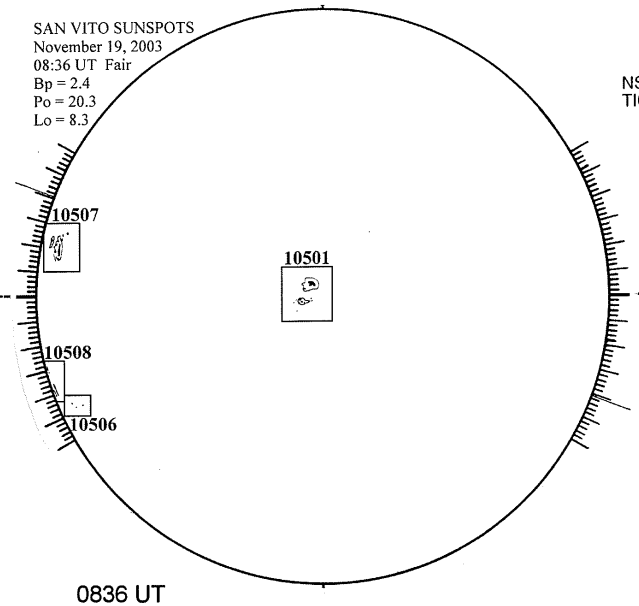
E



0752 UT

S

SAN VITO SUNSPOT

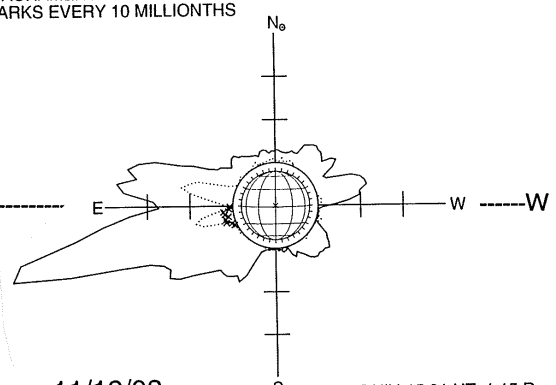


0836 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 10 MILLIONTHS



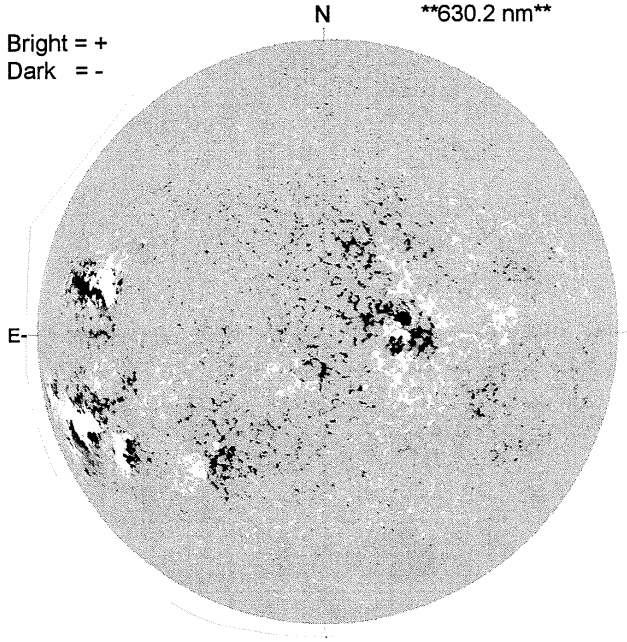
11/19/03
(DOY 323)

FE XIV 15:31 UT 1.15 R⊙
FE X 16:25 UT 1.15 R⊙
CA XV 15:52 UT 1.15 R⊙

S

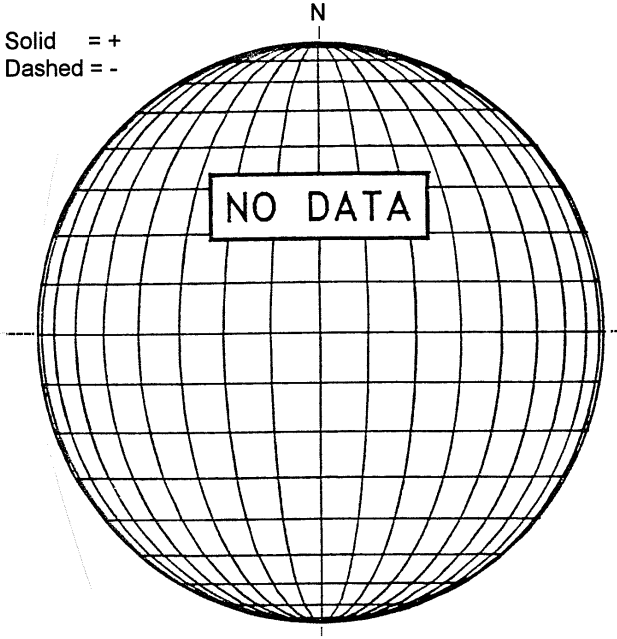
NOVEMBER 20, 2003 (P= 20.08, Bo = 2.30, Lo = 357.98)

KITT PEAK MAGNETOGRAM--SOLIS

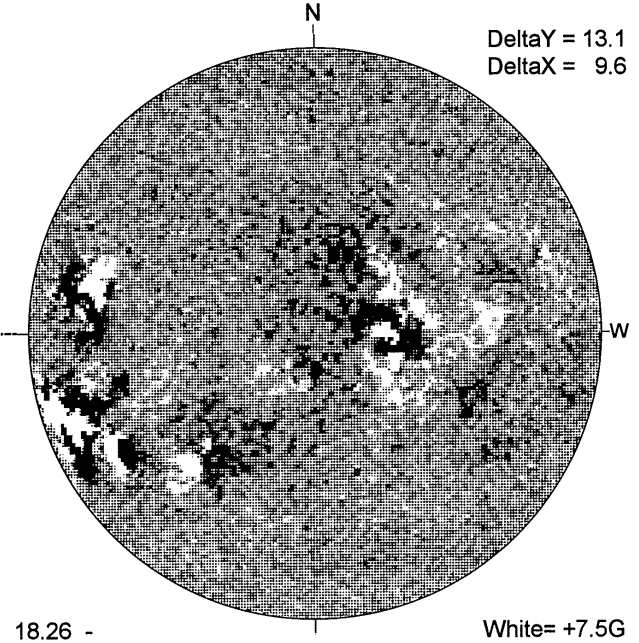


1717 UT

STANFORD MAGNETOGRAM



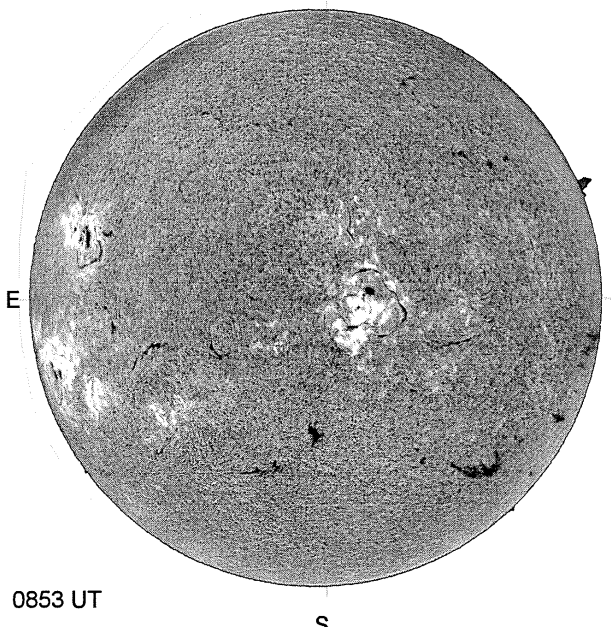
MT. WILSON MAGNETOGRAM



18.26 -
19.23 UT

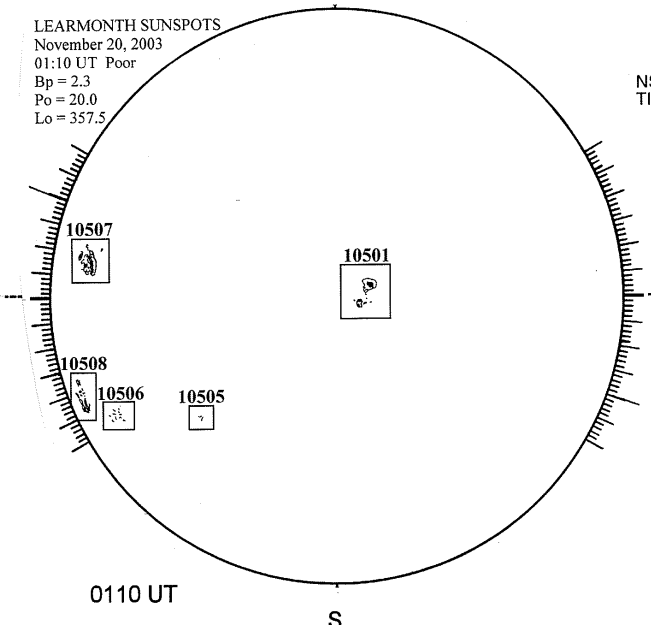
White= +7.5G
Black = -7.5G

---- KANZELHOHE H-ALPHA



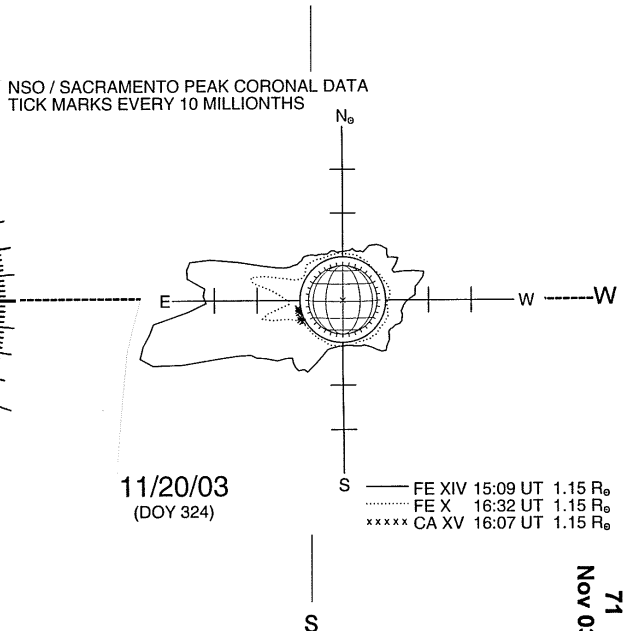
0853 UT

LEARMONTH SUNSPOT



0110 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



71
Nov 0

NOVEMBER 21, 2003 (P= 19.77, Bo = 2.18, Lo = 344.80)

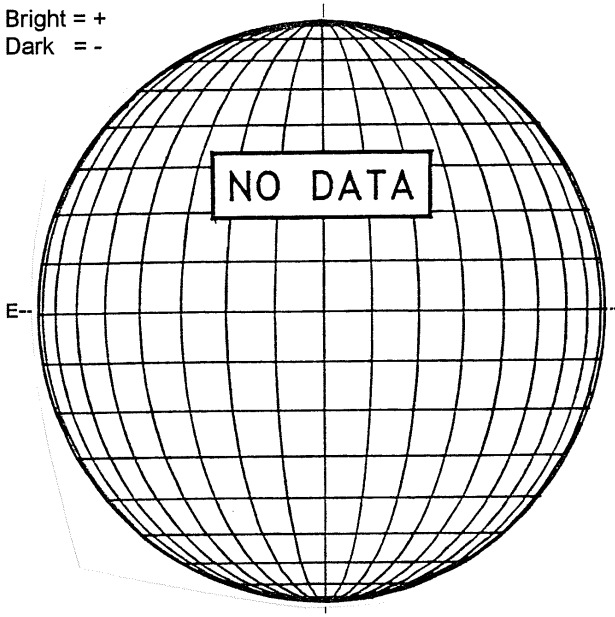
72
Nov 03

KITT PEAK MAGNETOGRAM--SOLIS

N

630.2 nm

Bright = +
Dark = -



STANFORD MAGNETOGRAM

N

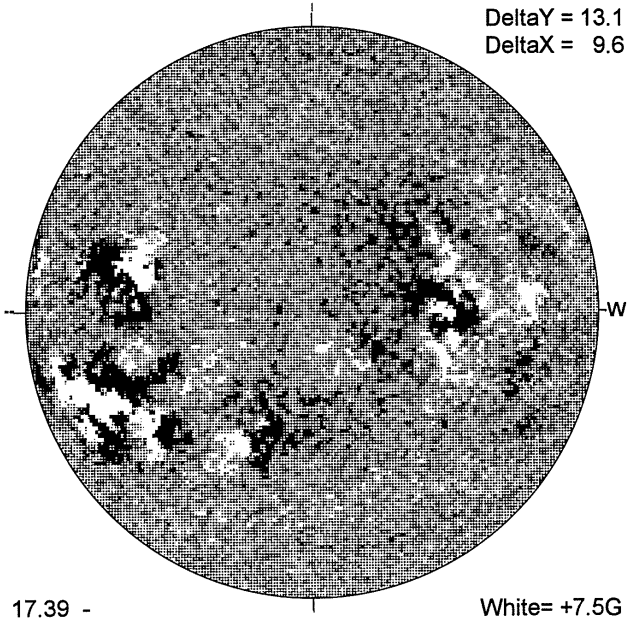
Solid = +
Dashed = -

1855 UT

MT. WILSON MAGNETOGRAM

N

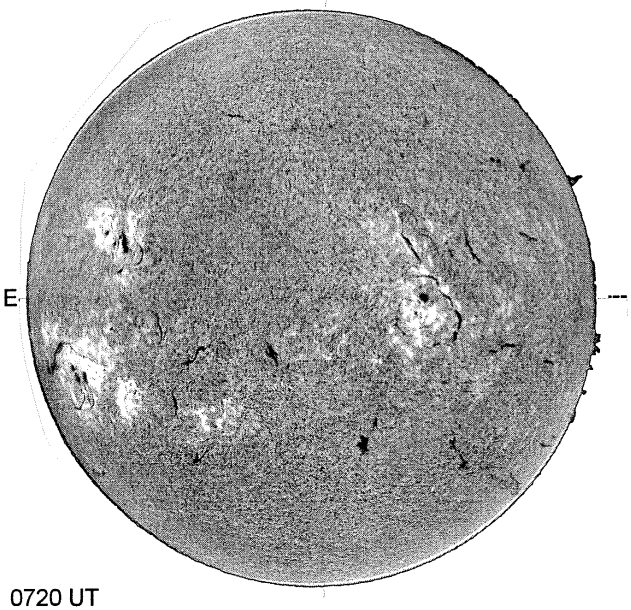
DeltaY = 13.1
DeltaX = 9.6



17.39 -
18.36 UT

White= +7.5G
Black = -7.5G

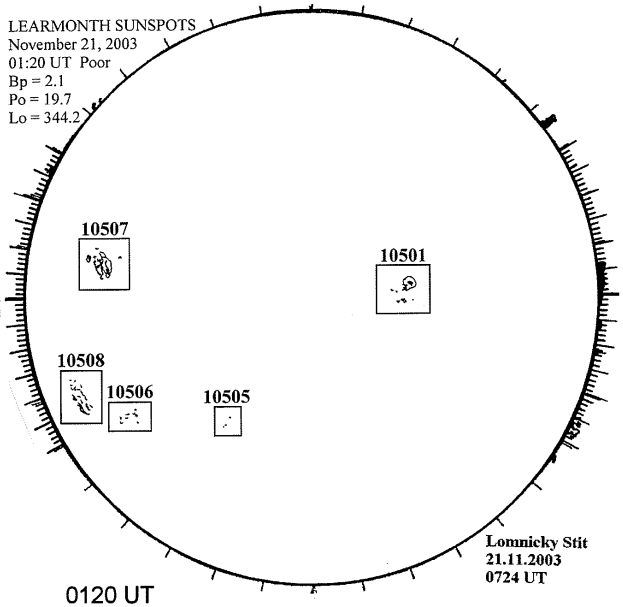
KANZELHOHE H-ALPHA



0720 UT

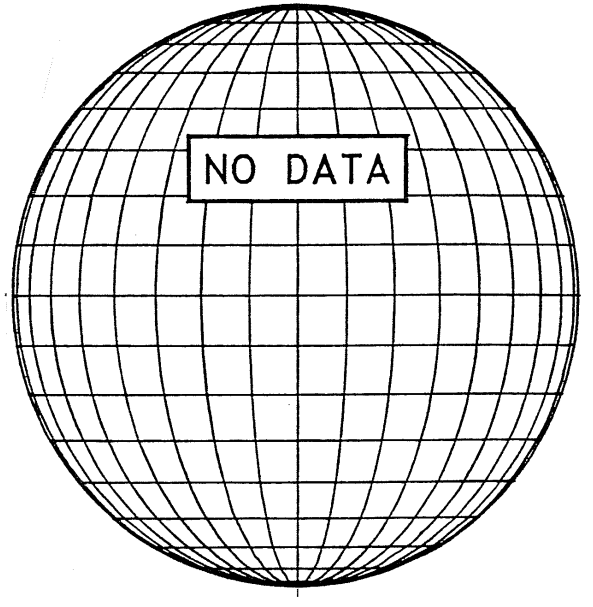
S

LEARMONTH SUNSPOT



0120 UT
0724 UT LOMN Prom S

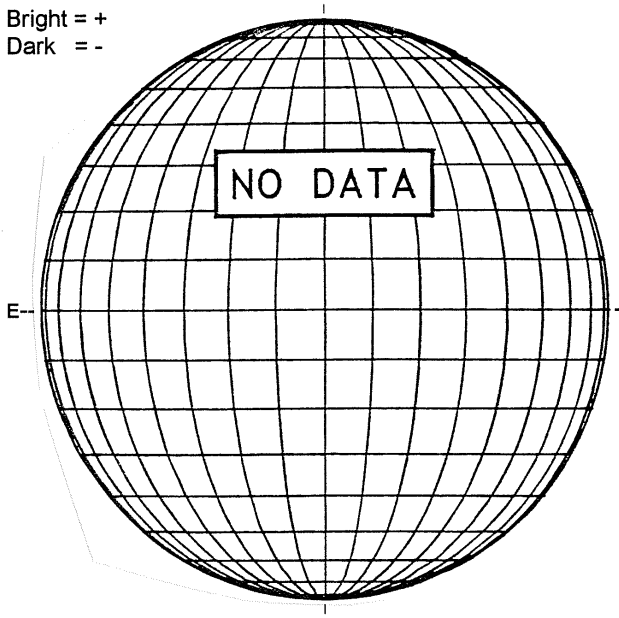
LOMNICKY PEAK CORONA (1.04 Radii)----



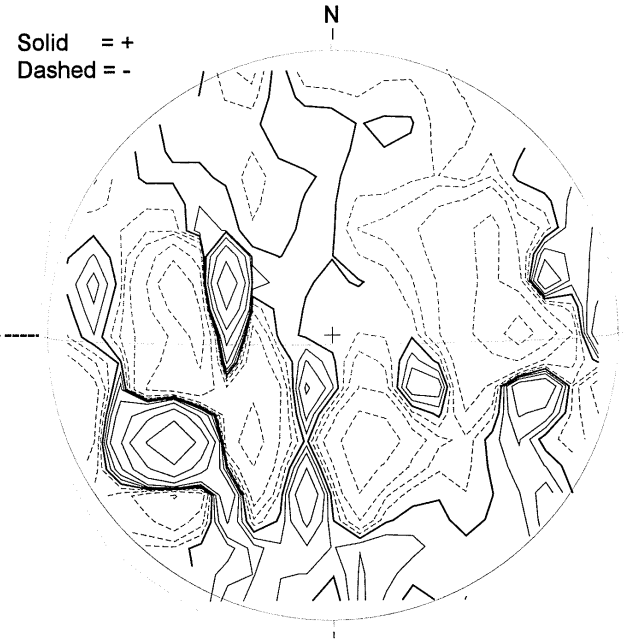
S

NOVEMBER 22, 2003 (P= 19.45, Bo = 2.06, Lo = 331.62)

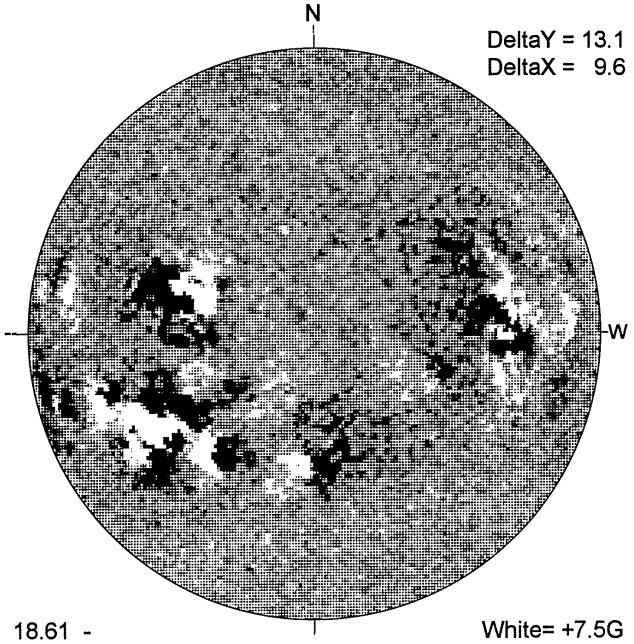
KITT PEAK MAGNETOGRAM--SOLIS



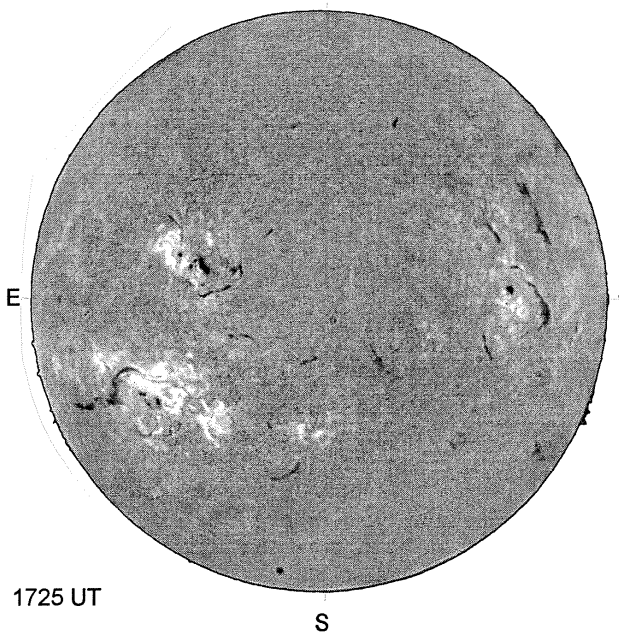
STANFORD MAGNETOGRAM



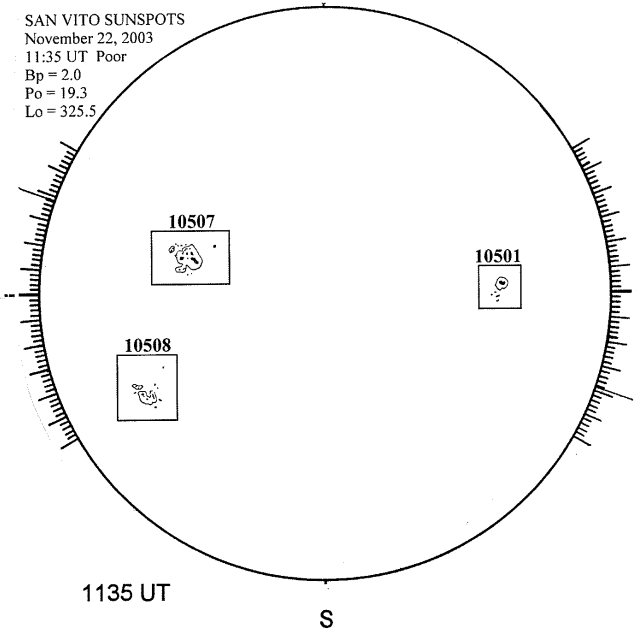
MT. WILSON MAGNETOGRAM



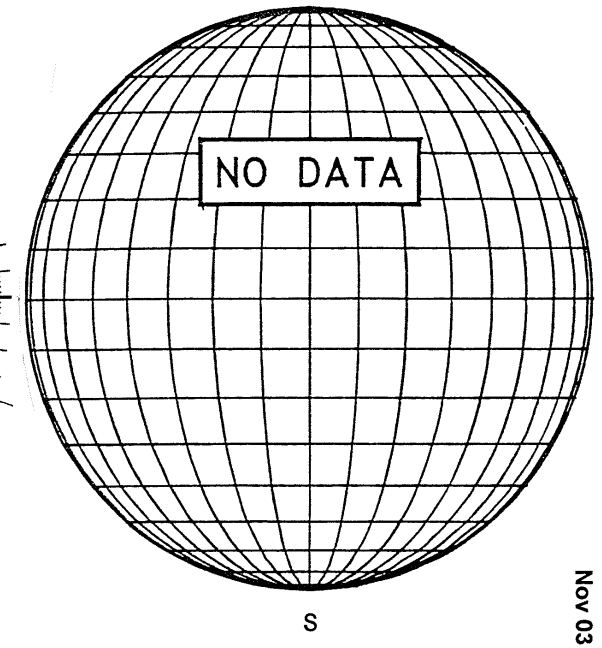
BIG BEAR H-ALPHA



SAN VITO SUNSPOT



LOMNICKY PEAK CORONA (1.04 Radii)----



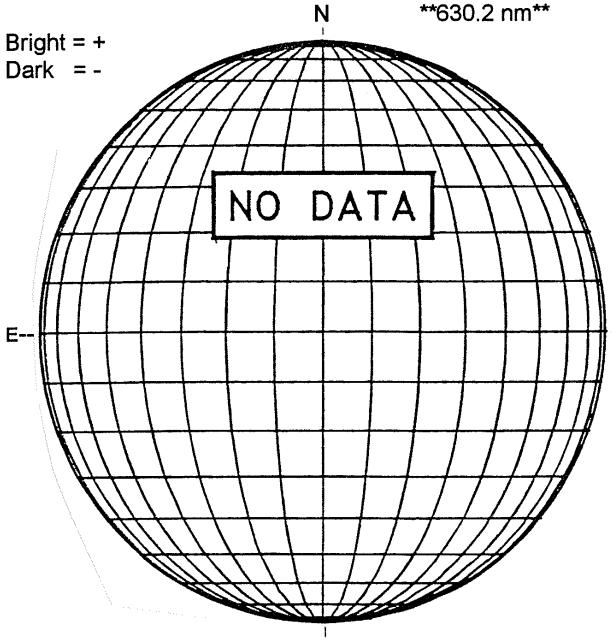
73
Nov 03

NOVEMBER 23, 2003 (P= 19.12, Bo = 1.94, Lo = 318.44)

KITT PEAK MAGNETOGRAM--SOLIS

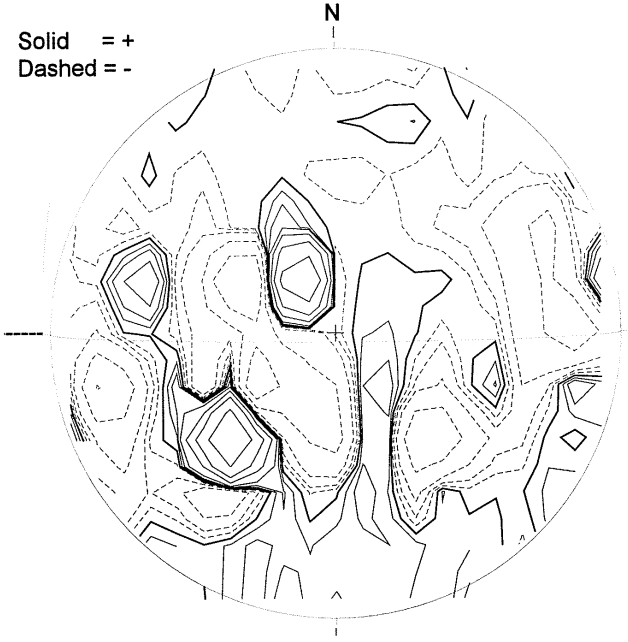
630.2 nm

Bright = +
Dark = -



STANFORD MAGNETOGRAM

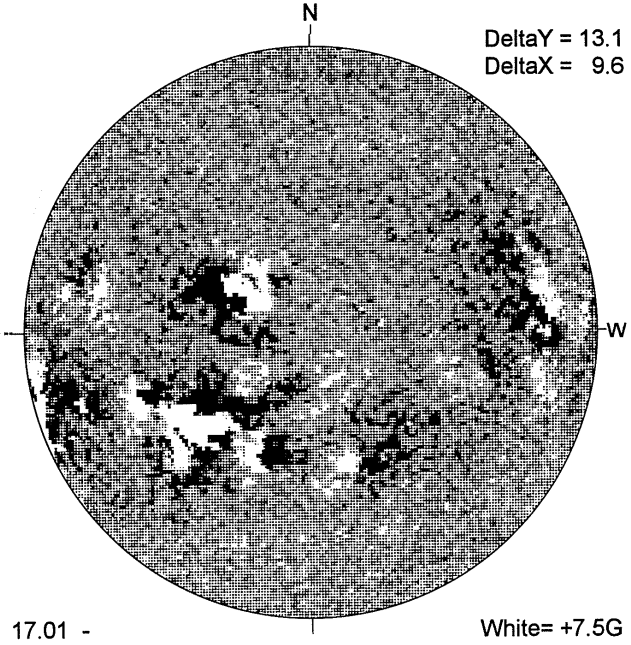
Solid = +
Dashed = -



1951 UT

MT. WILSON MAGNETOGRAM

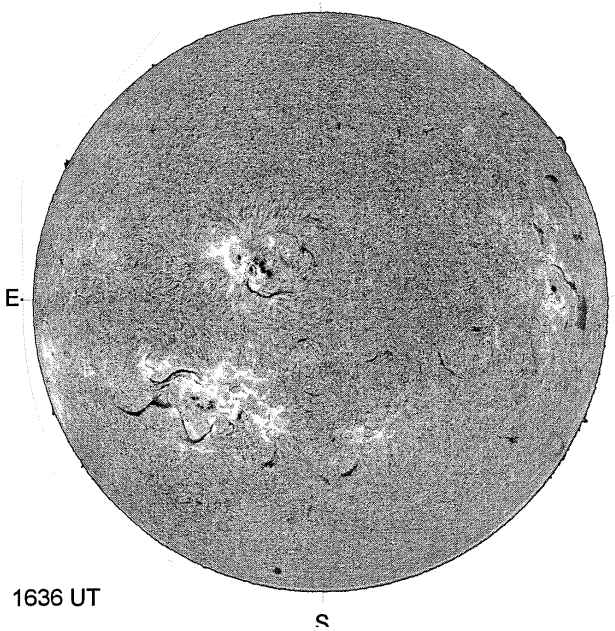
DeltaY = 13.1
DeltaX = 9.6



17.01 -
17.98 UT

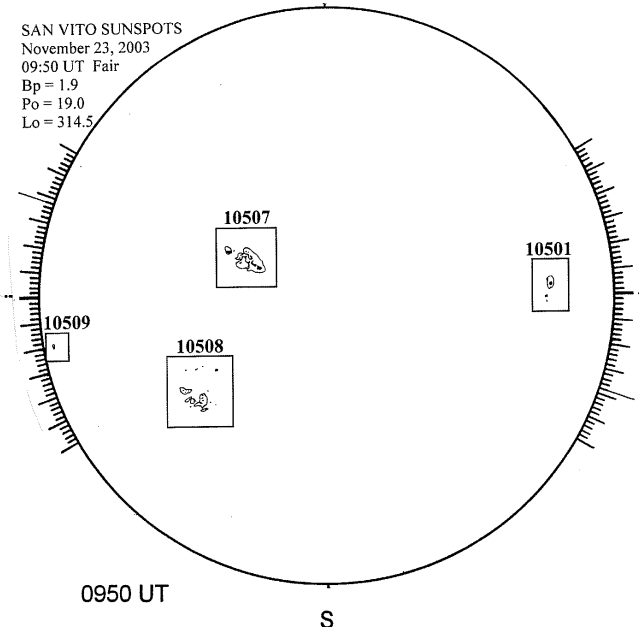
White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA



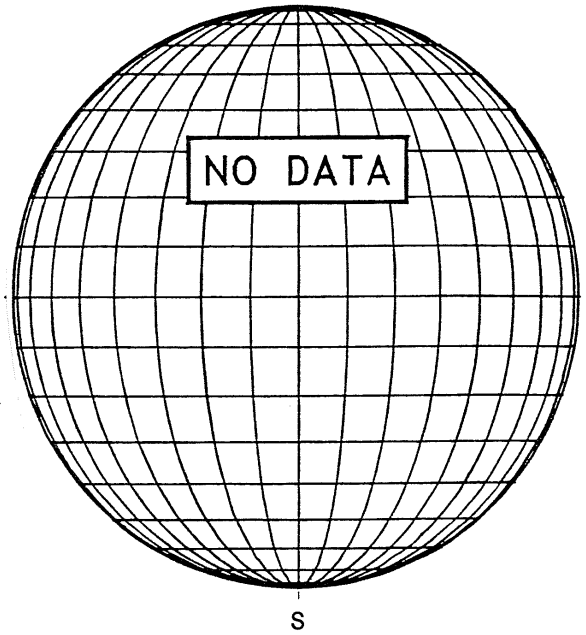
1636 UT

SAN VITO SUNSPOT



0950 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

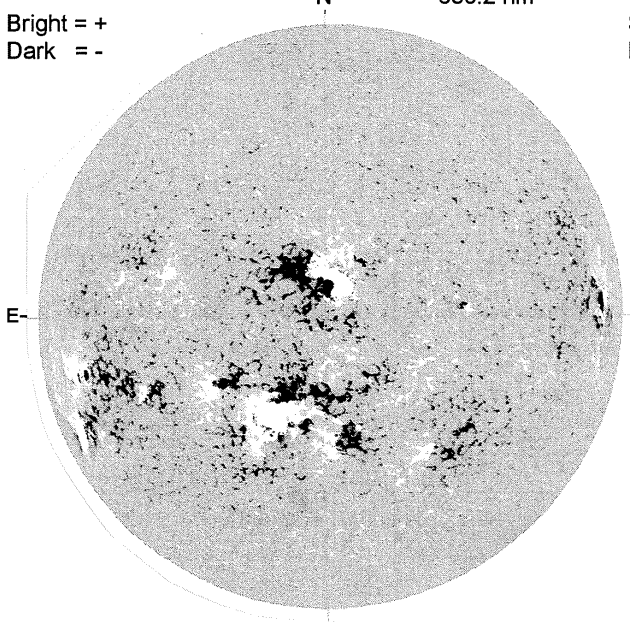


NOVEMBER 24, 2003 (P= 18.79, Bo = 1.81, Lo = 305.26)

KITT PEAK MAGNETOGRAM--SOLIS

630.2 nm

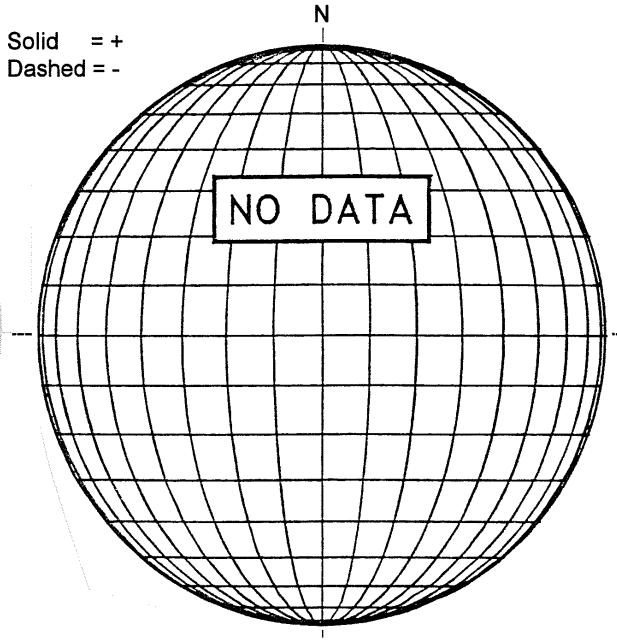
Bright = +
Dark = -



1656 UT

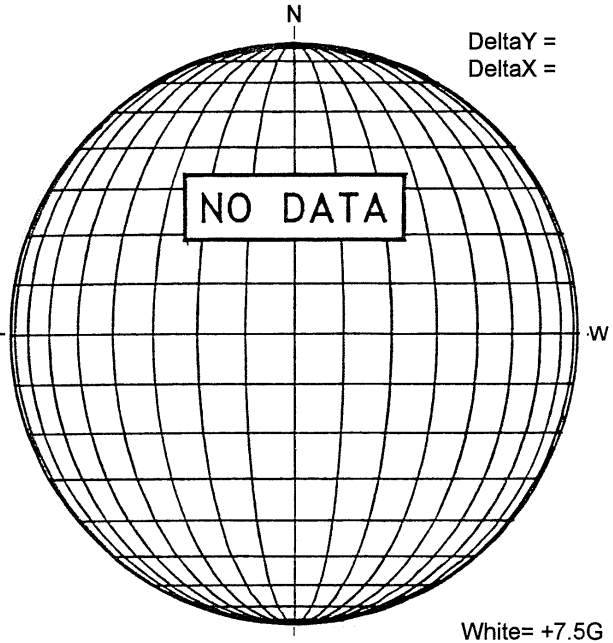
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



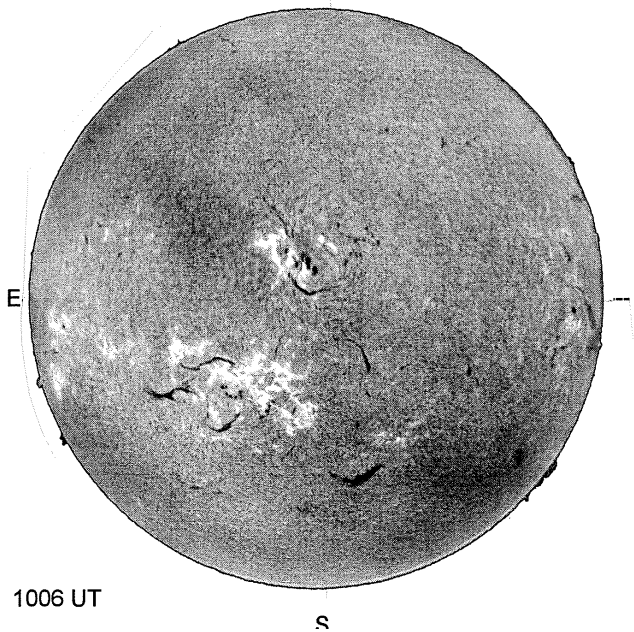
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



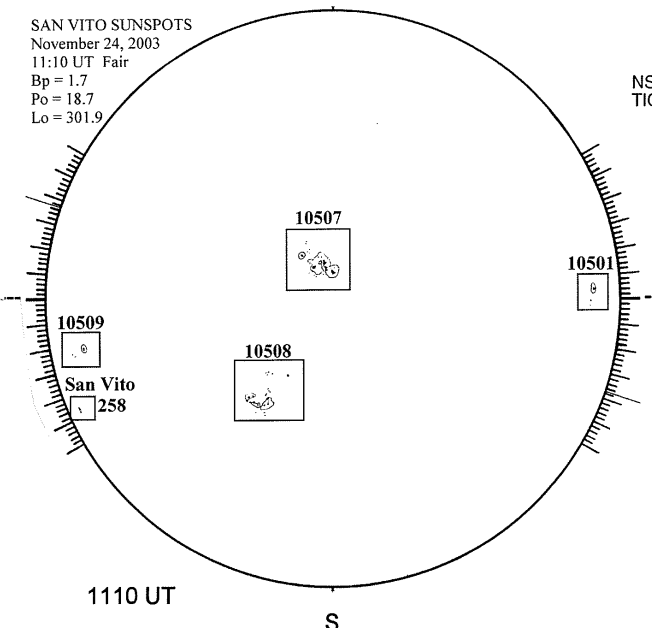
White= +7.5G
Black = -7.5G

KANZELHOHE H-ALPHA



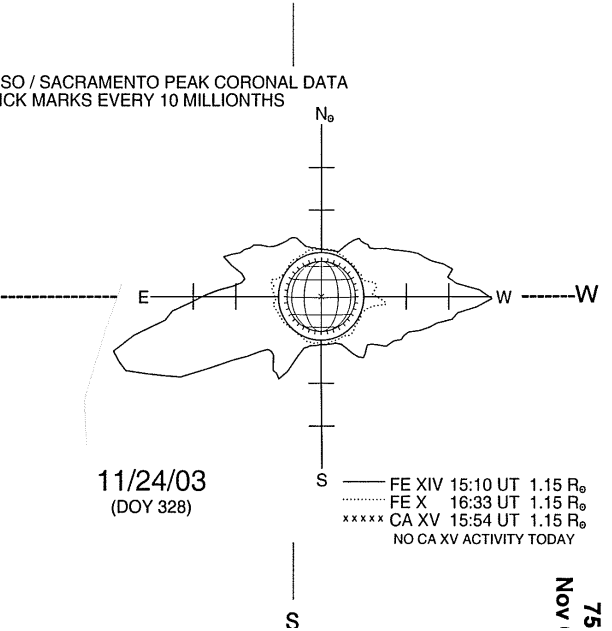
1006 UT

SAN VITO SUNSPOT



1110 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



75

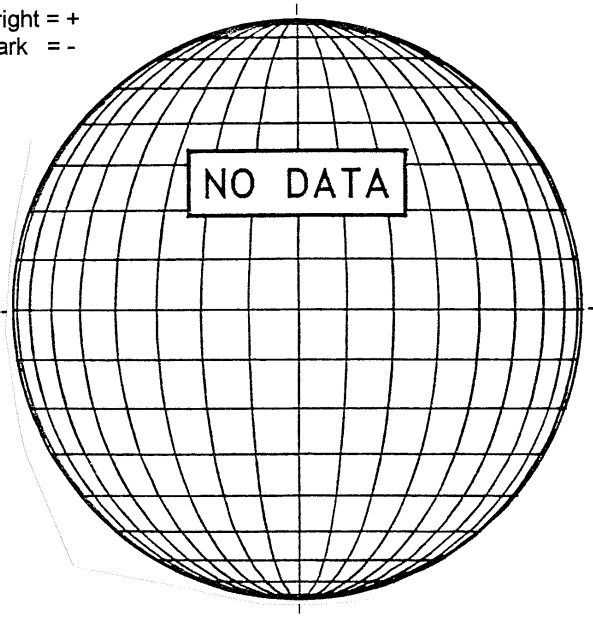
NOVEMBER 25, 2003 (P= 18.45, Bo = 1.69, Lo = 292.08)

KITT PEAK MAGNETOGRAM--SOLIS

N

630.2 nm

Bright = +
Dark = -



E--

STANFORD MAGNETOGRAM

N

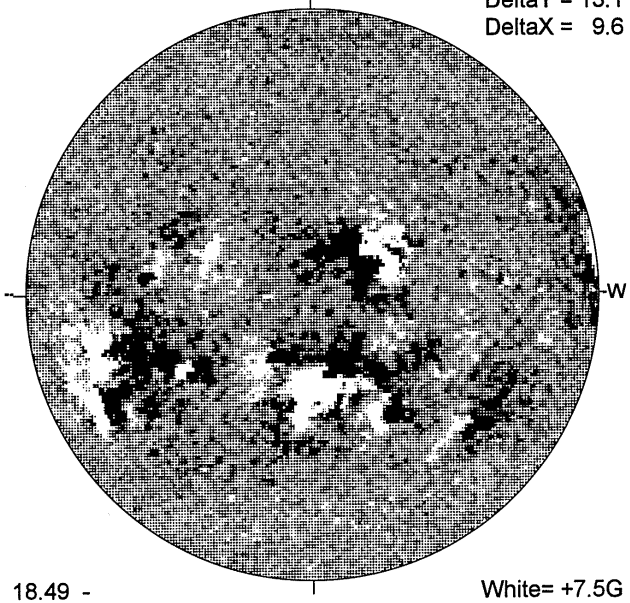
Solid = +
Dashed = -

2243 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

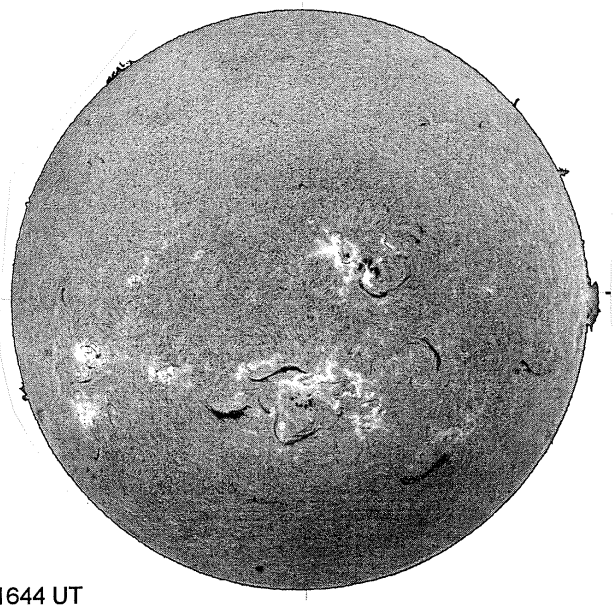


-W

18.49 -
19.46 UT

White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA

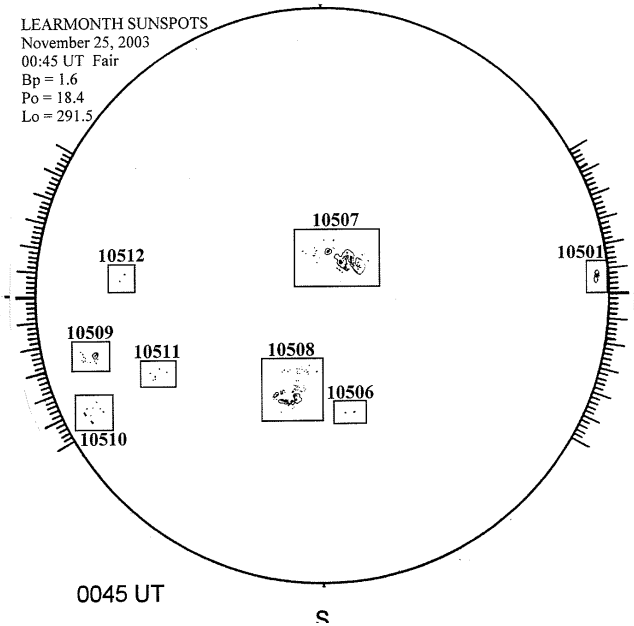


E

1644 UT

S

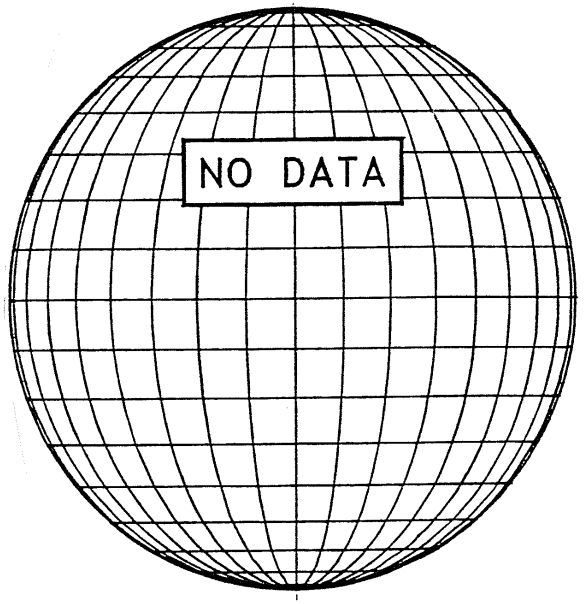
LEARMONTH SUNSPOT



0045 UT

S

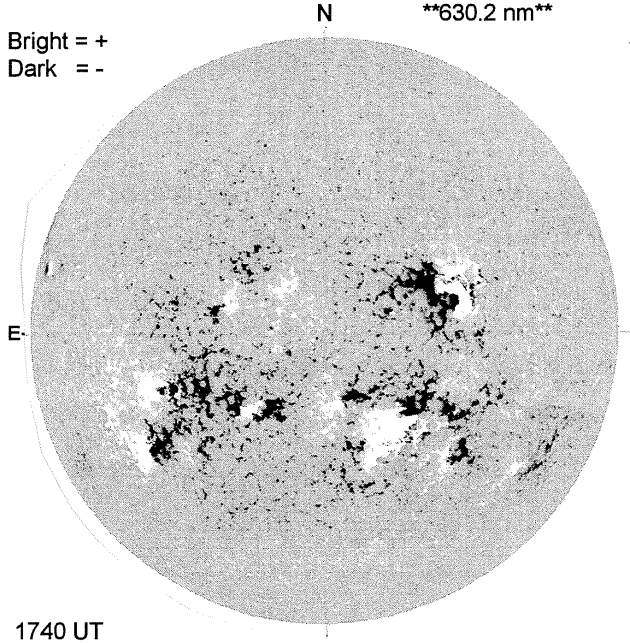
LOMNICKY PEAK CORONA (1.04 Radii)----



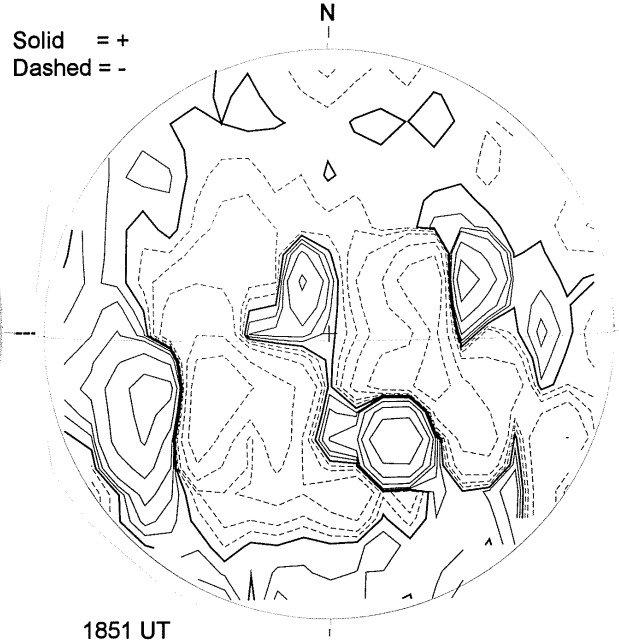
S

NOVEMBER 26, 2003 (P= 18.10, Bo = 1.57, Lo = 278.90)

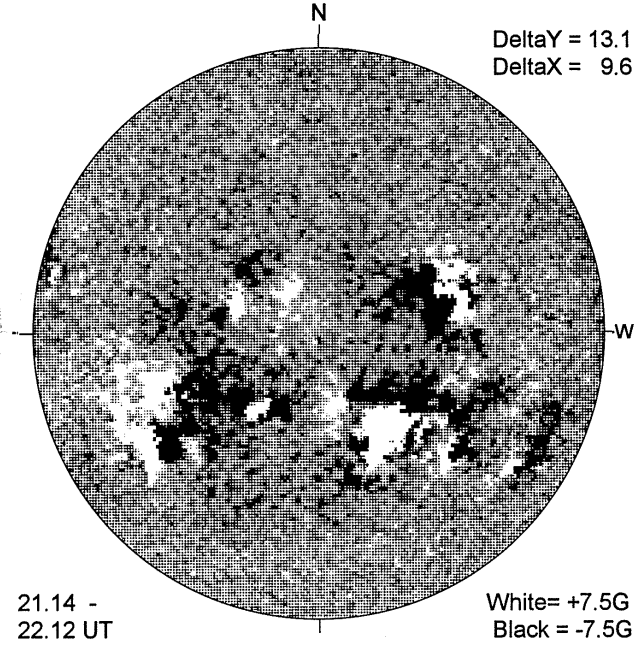
KITT PEAK MAGNETOGRAM--SOLIS



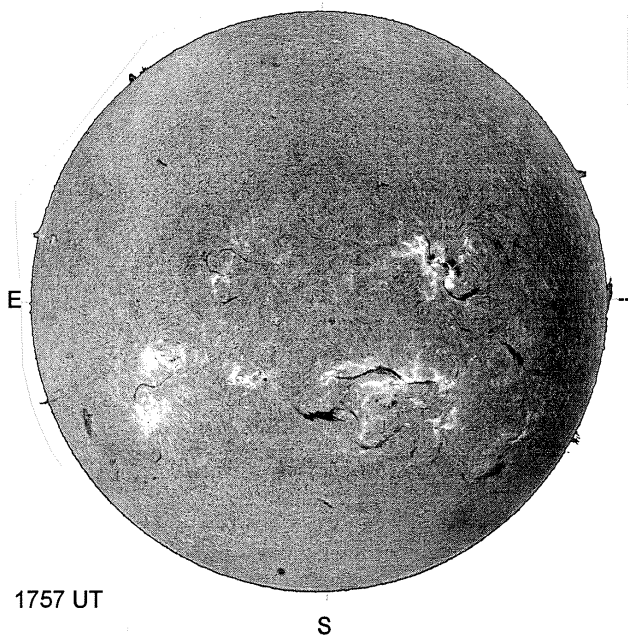
STANFORD MAGNETOGRAM



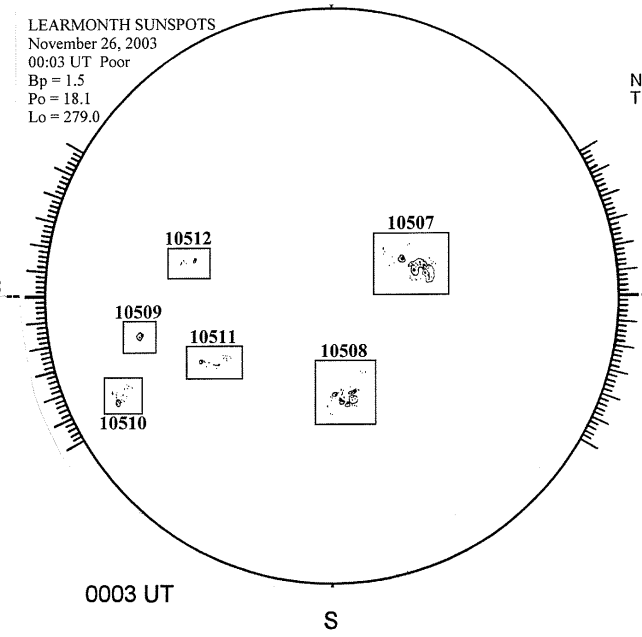
MT. WILSON MAGNETOGRAM



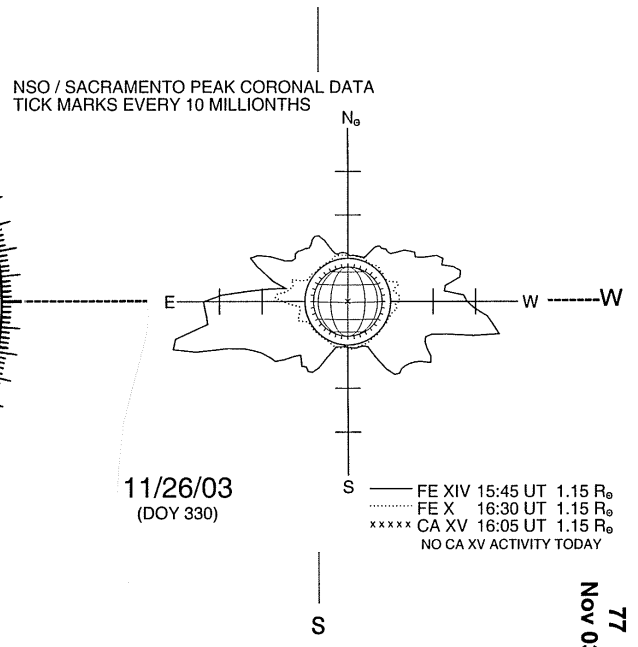
BIG BEAR H-ALPHA



LEARMONTH SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



Nov 03 77

NOVEMBER 27, 2003 (P= 17.75, Bo = 1.44, Lo = 265.72)

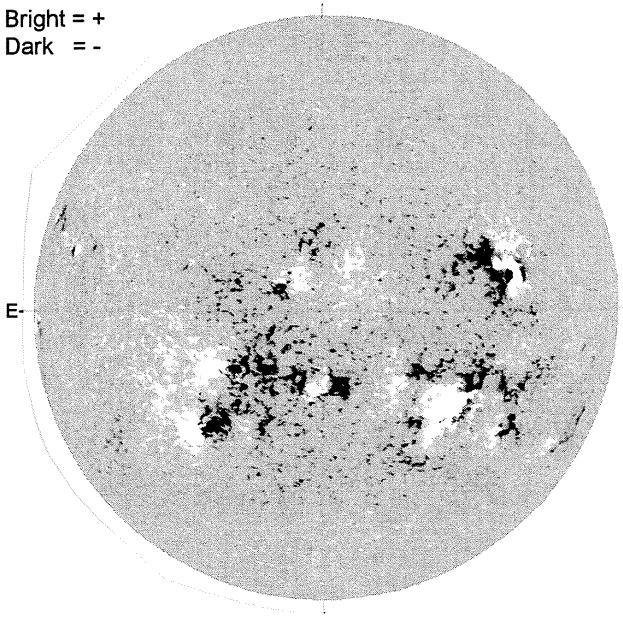
Nov 03 78

KITT PEAK MAGNETOGRAM--SOLIS

N

630.2 nm

Bright = +
Dark = -



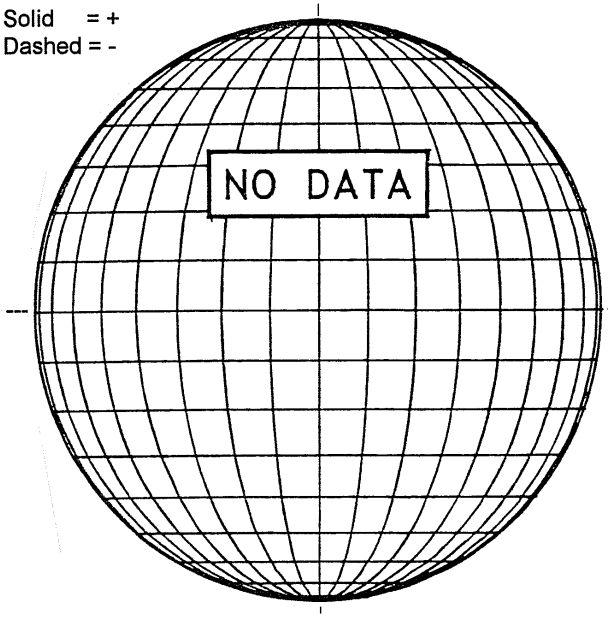
E

1702 UT

STANFORD MAGNETOGRAM

N

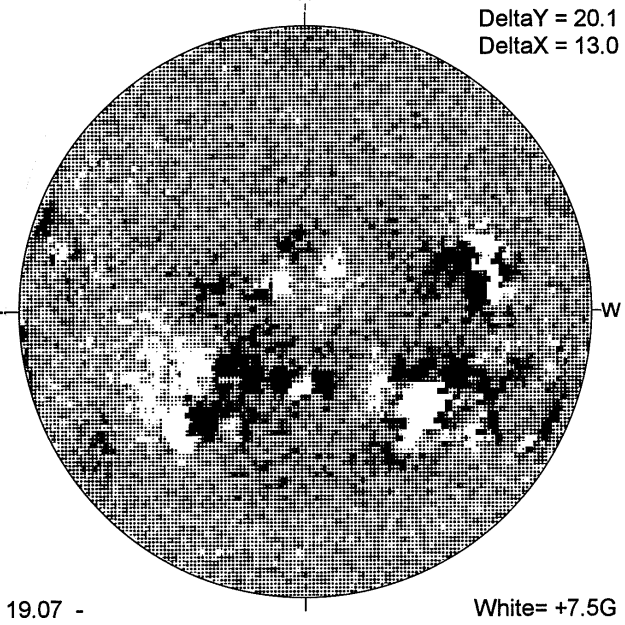
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

DeltaY = 20.1
DeltaX = 13.0

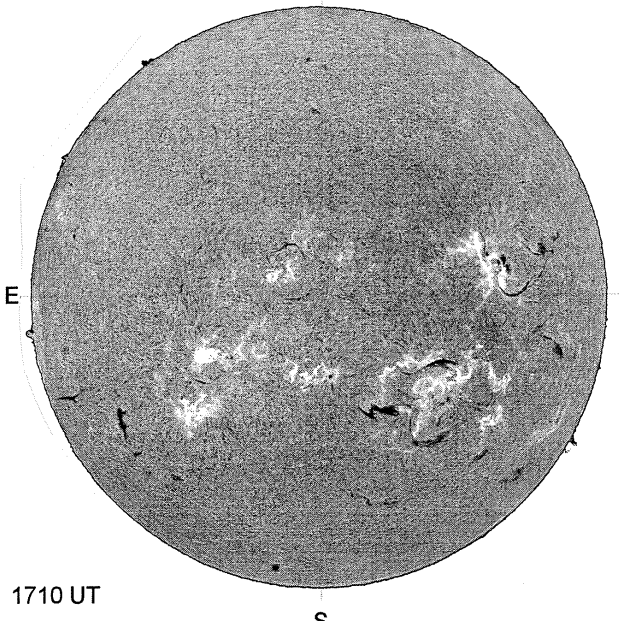


W

19.07 -
19.50 UT

White= +7.5G
Black = -7.5G

BIG BEAR H-ALPHA

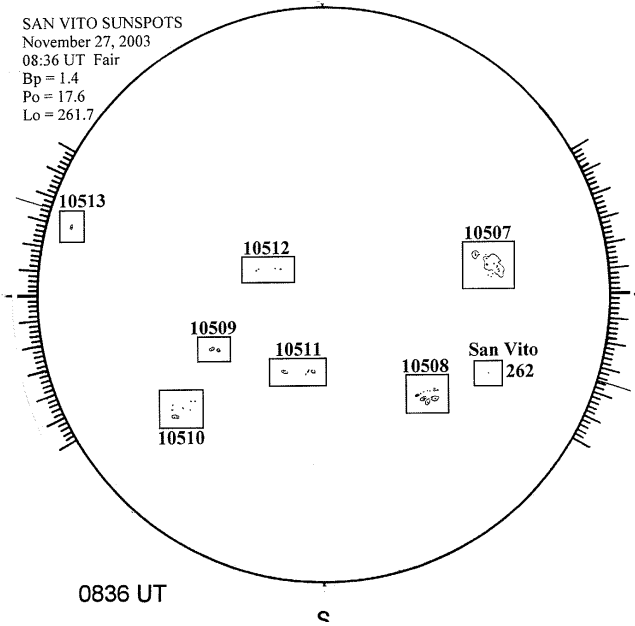


E

1710 UT

S

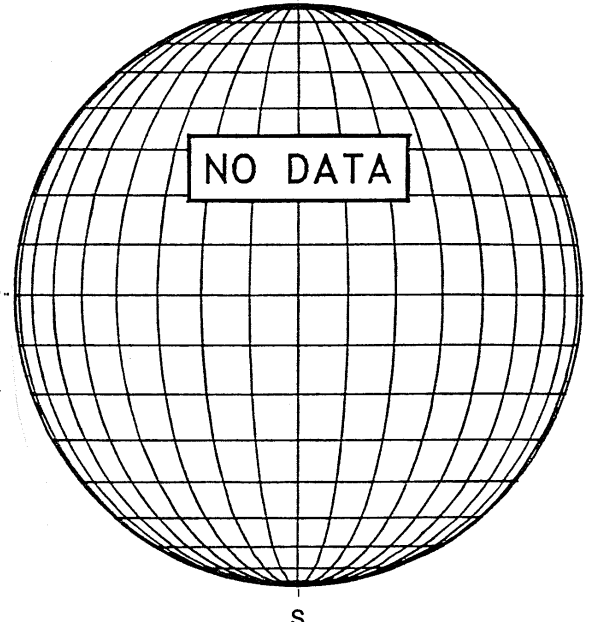
SAN VITO SUNSPOT



0836 UT

S

LOMNICKY PEAK CORONA (1.04 Radii)----



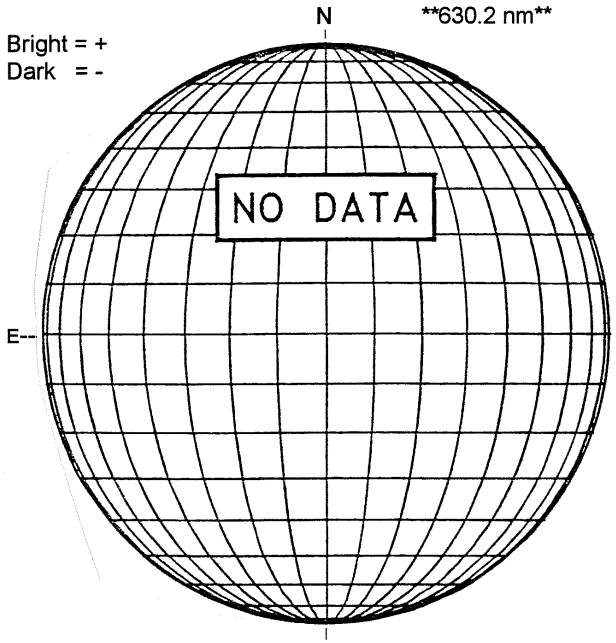
S

NOVEMBER 28, 2003 (P= 17.39, Bo = 1.32, Lo = 252.54)

KITT PEAK MAGNETOGRAM--SOLIS

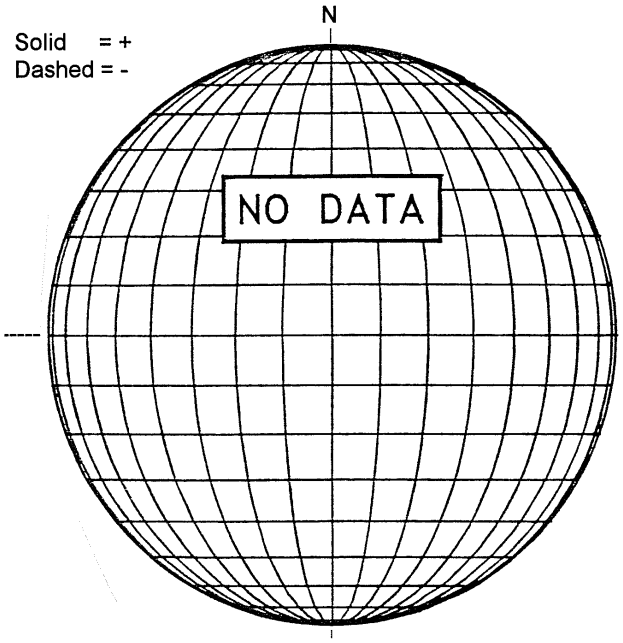
630.2 nm

Bright = +
Dark = -



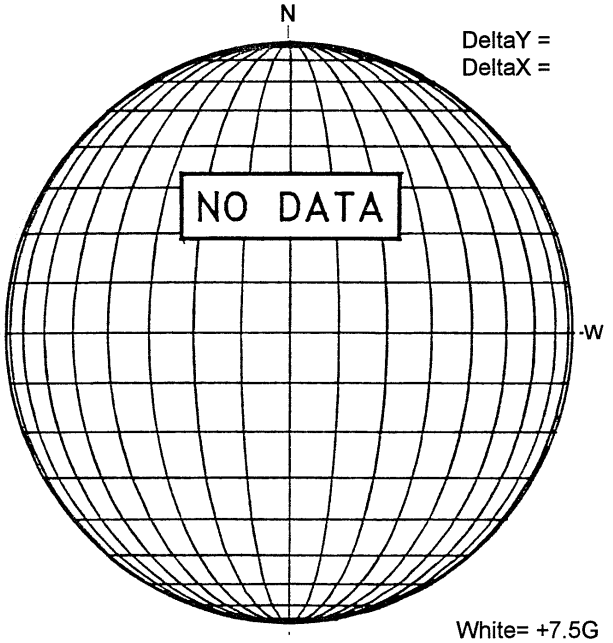
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



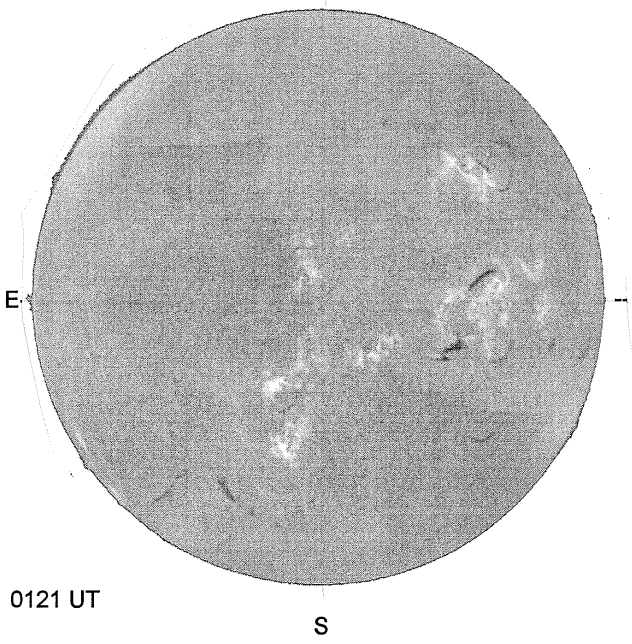
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =

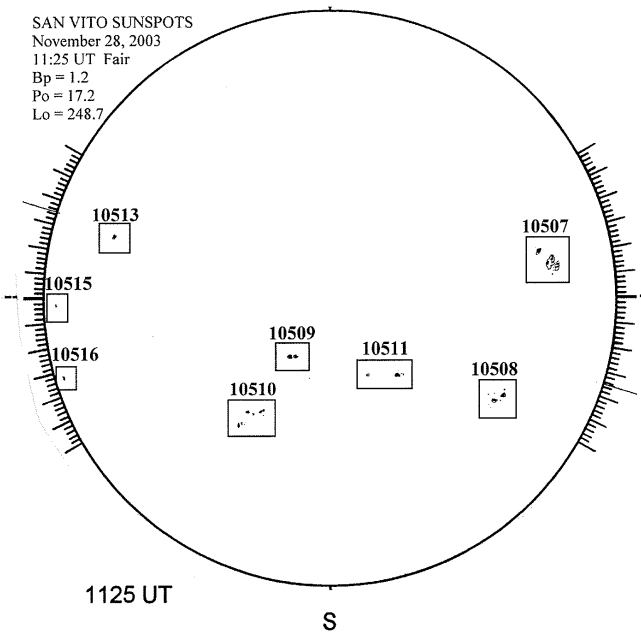


White= +7.5G
Black = -7.5G

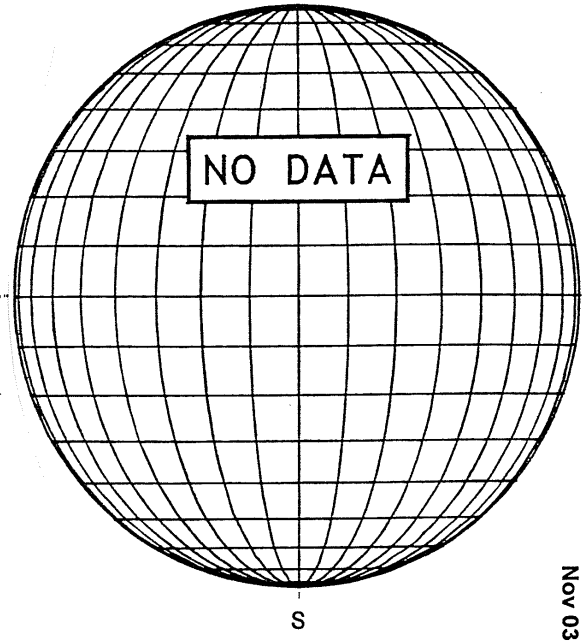
----- YNAO H-ALPHA



SAN VITO SUNSPOT



LOMNICKY PEAK CORONA (1.04 Radii)----



79
Nov 03

NOVEMBER 29, 2003 (P= 17.02, Bo = 1.19, Lo = 239.36)

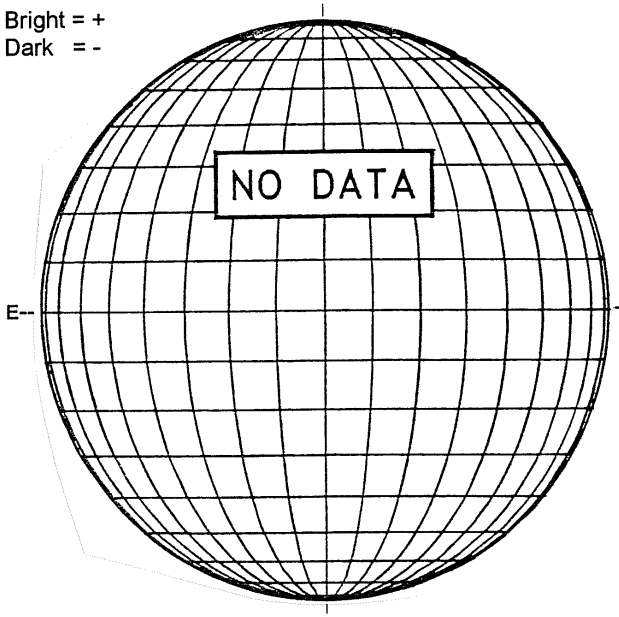
Nov 03 80

KITT PEAK MAGNETOGRAM--SOLIS

N

630.2 nm

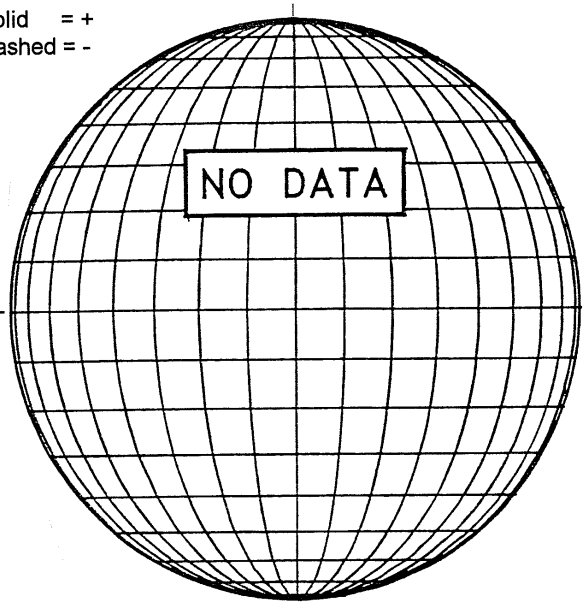
Bright = +
Dark = -



STANFORD MAGNETOGRAM

N

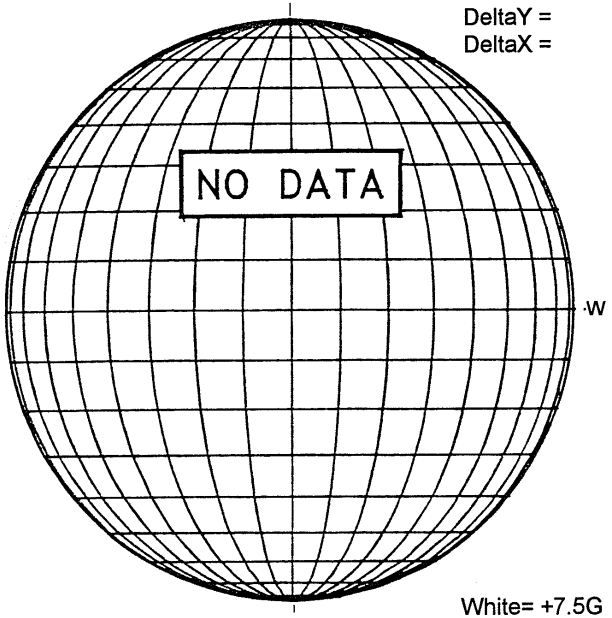
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

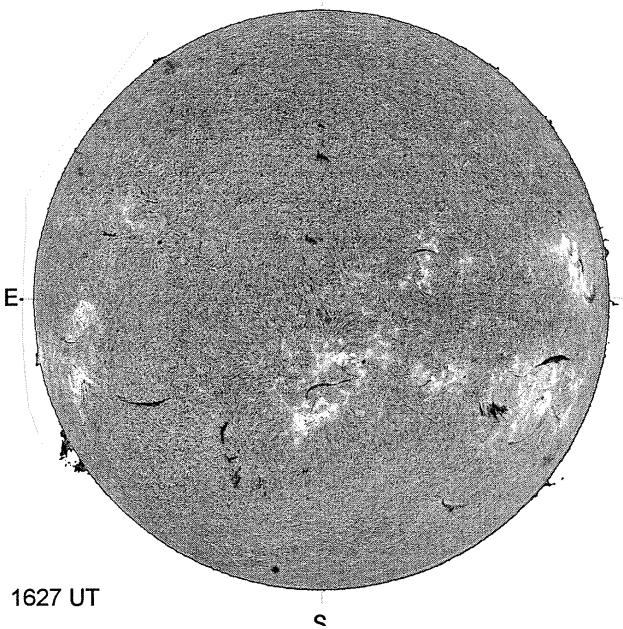
N

DeltaY =
DeltaX =



White= +7.5G
Black = -7.5G

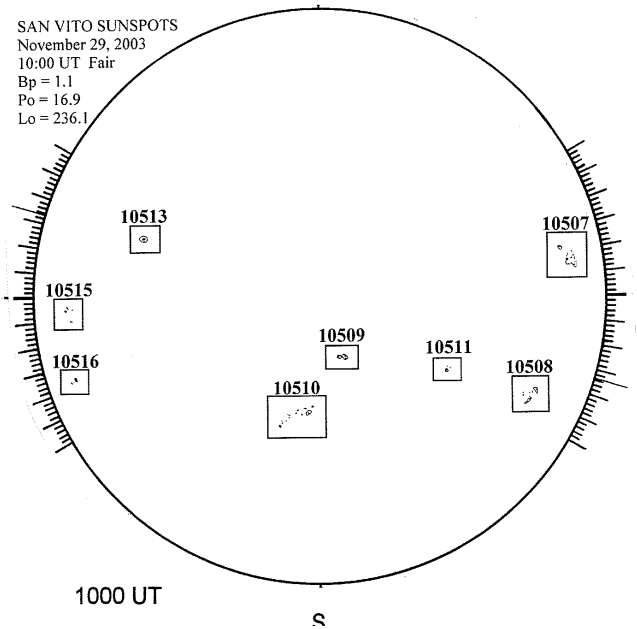
BIG BEAR H-ALPHA



1627 UT

S

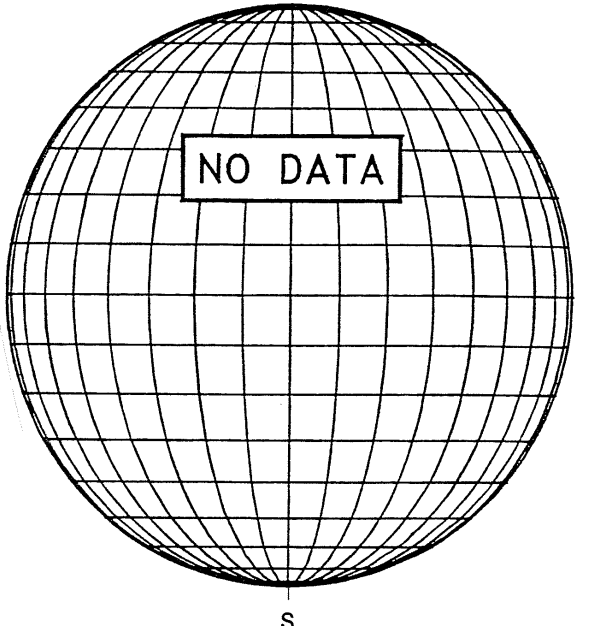
SAN VITO SUNSPOT



1000 UT

S

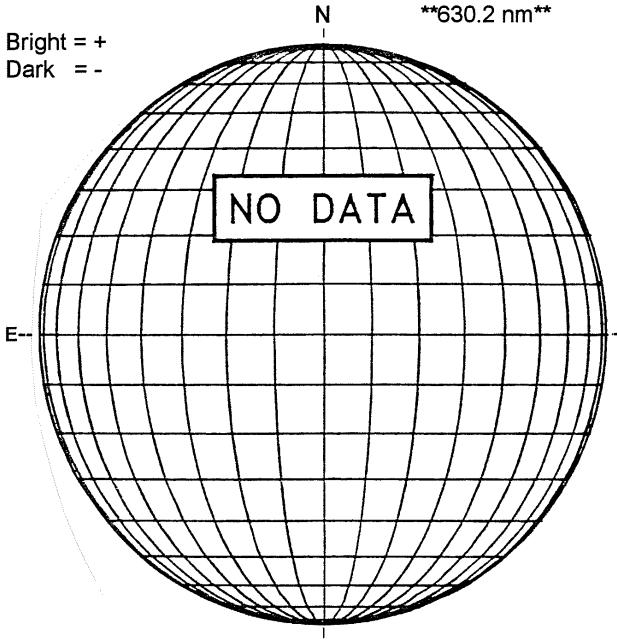
SACRAMENTO PEAK CORONA (1.15 Radii)----



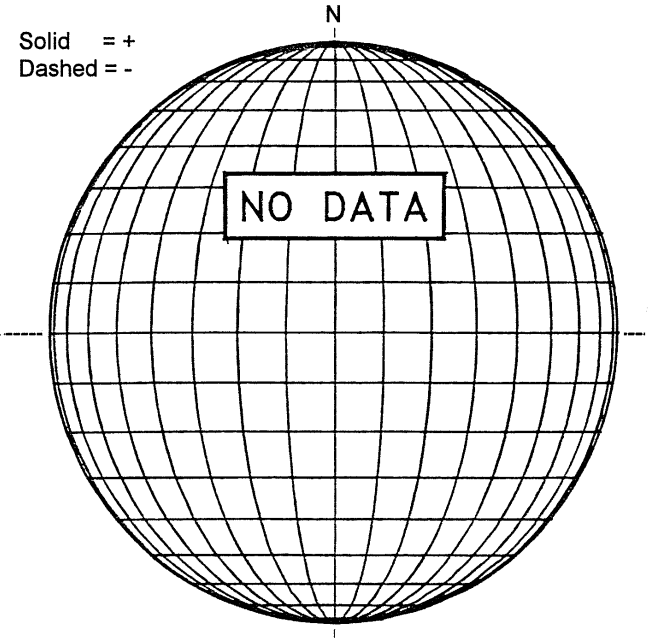
S

NOVEMBER 30, 2003 (P= 16.65, Bo = 1.06, Lo = 226.18)

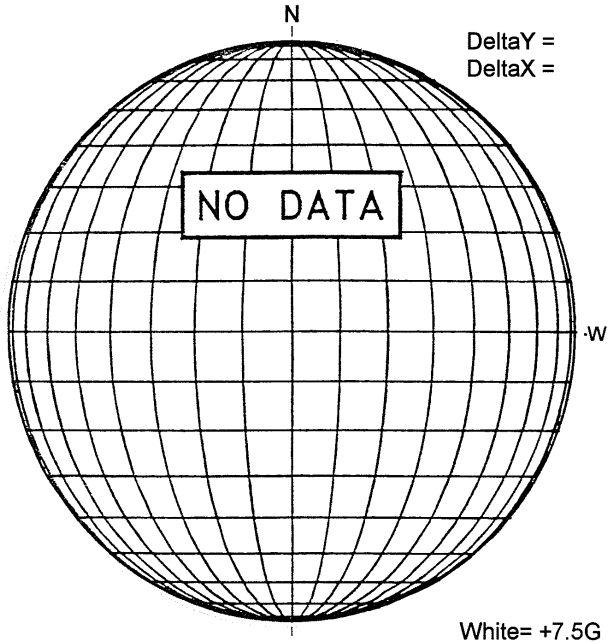
KITT PEAK MAGNETOGRAM—SOLIS



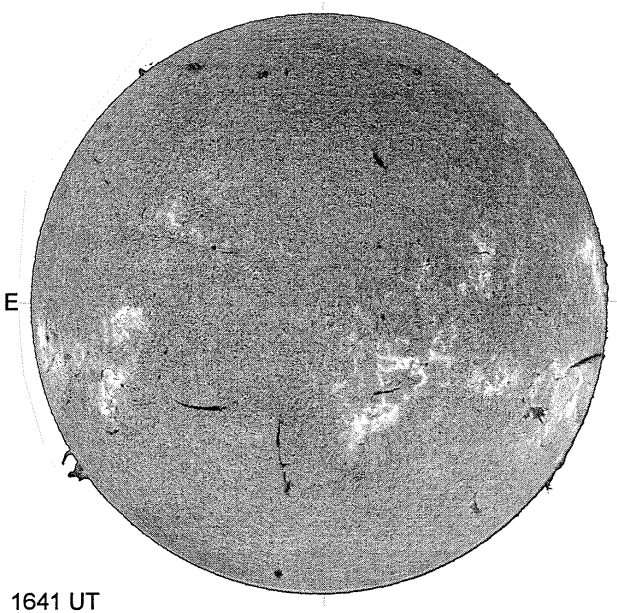
STANFORD MAGNETOGRAM



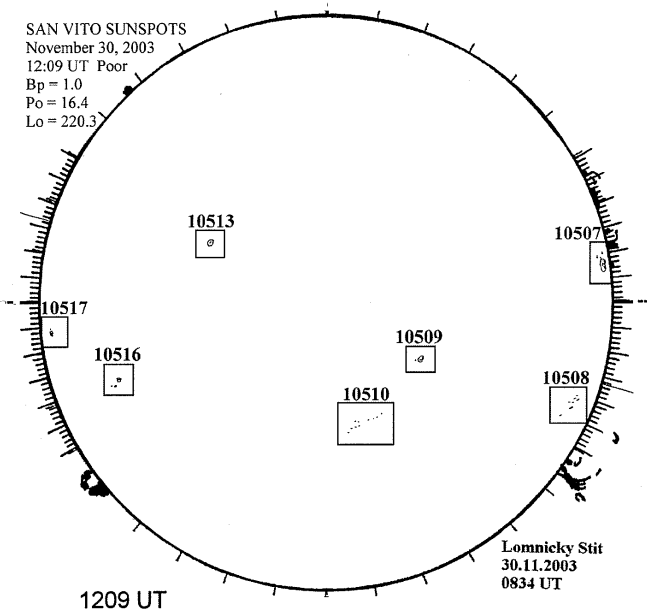
MT. WILSON MAGNETOGRAM



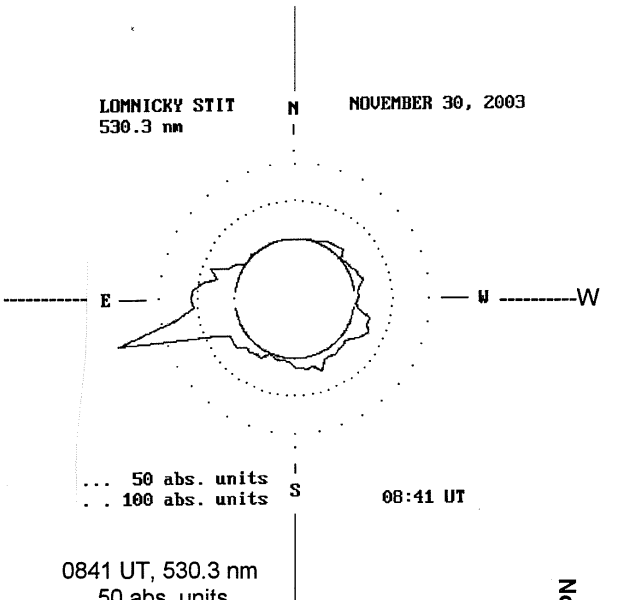
BIG BEAR H-ALPHA



SAN VITO SUNSPOT

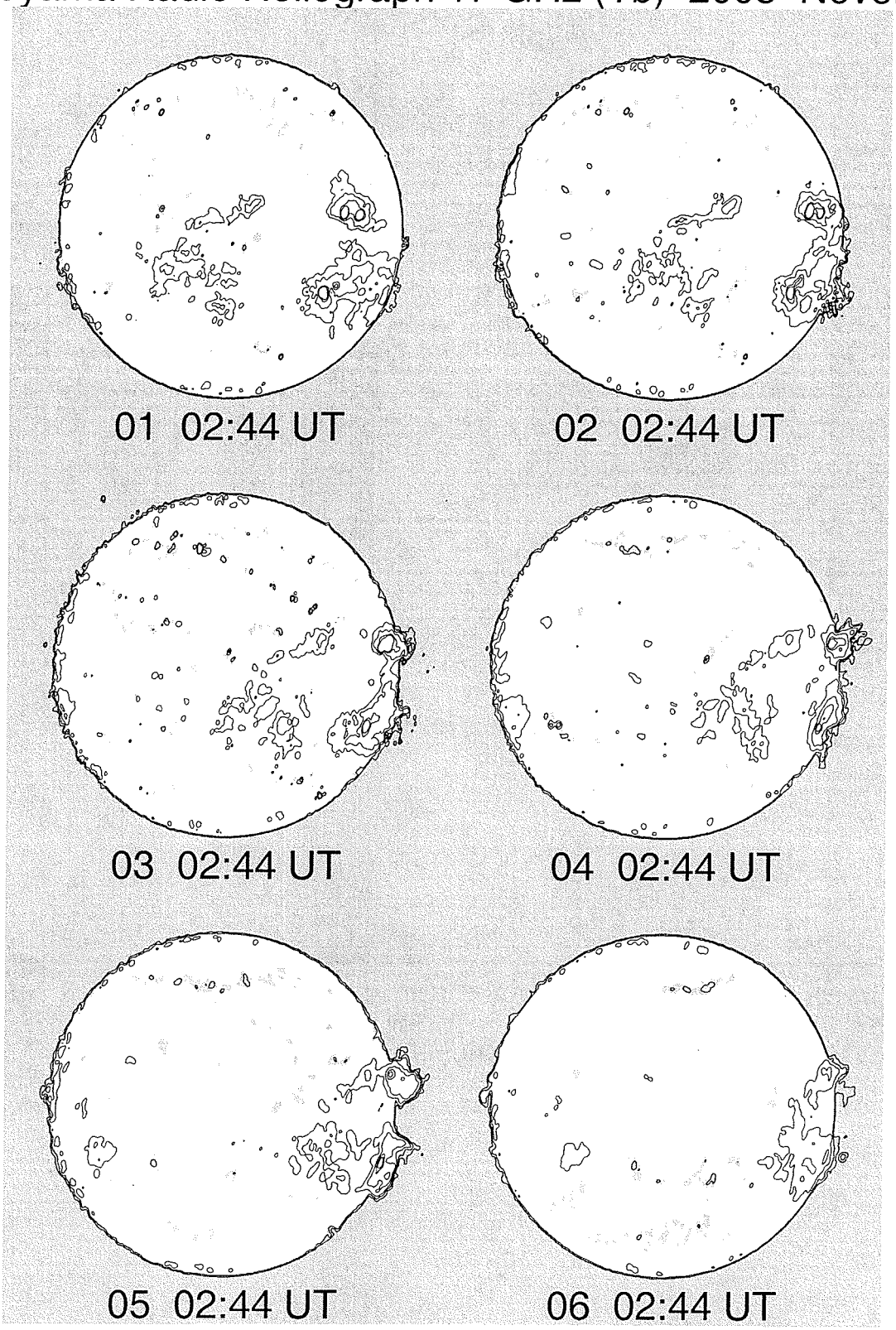


LOMNICKY PEAK CORONA (1.04 Radii)----



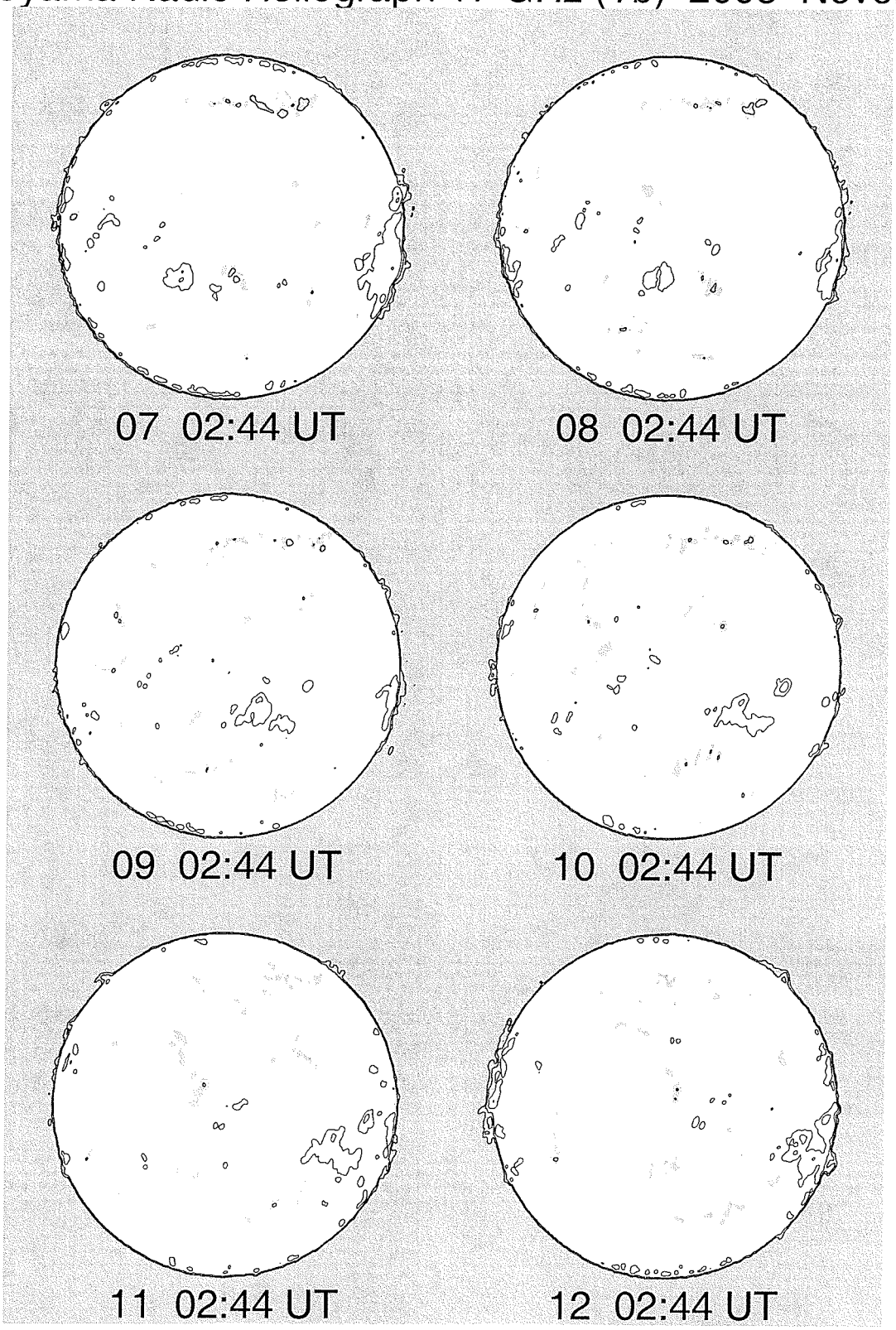
81
Nov 03

Nobeyama Radio Heliograph 17 GHz (Tb) 2003 November



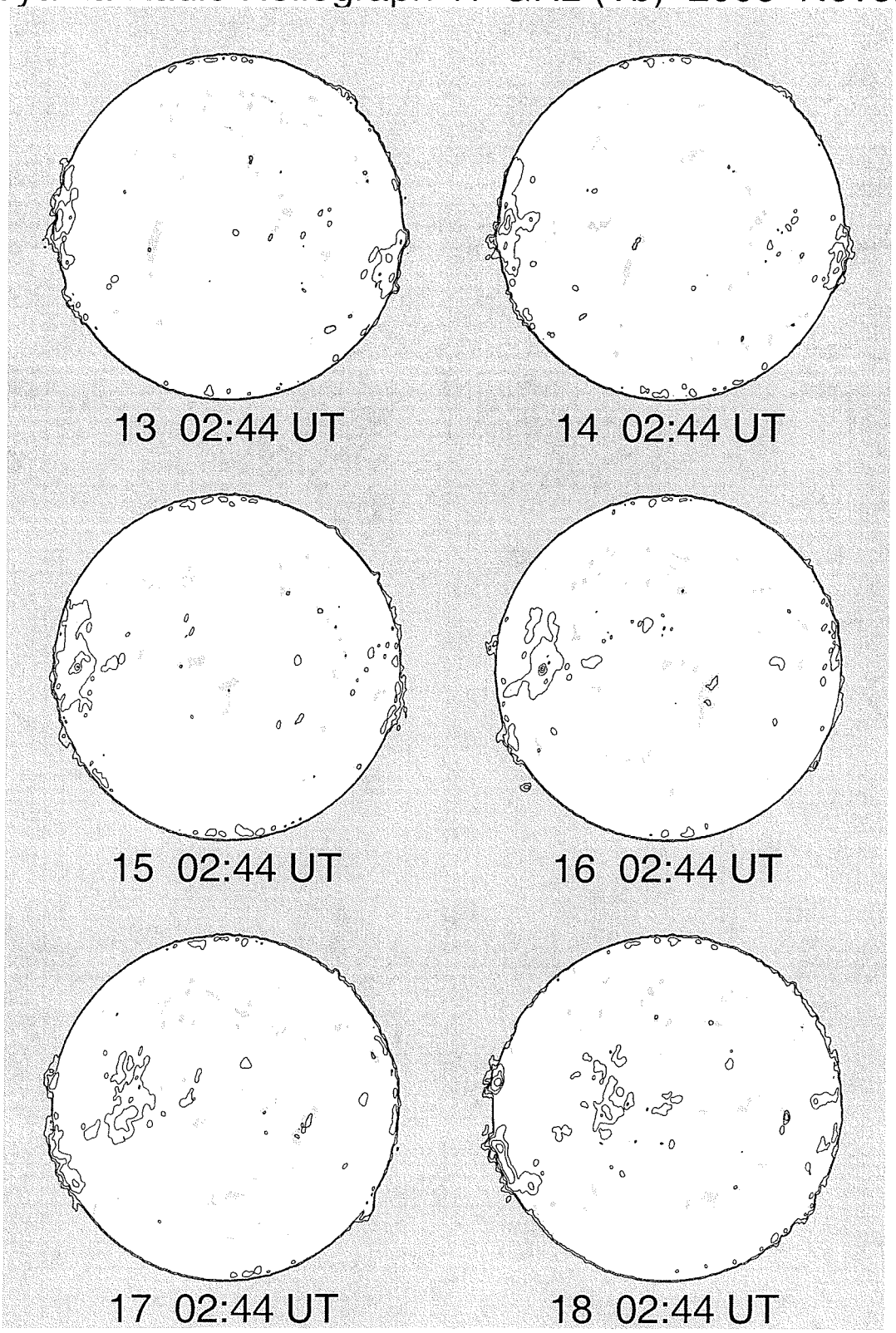
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2003 November



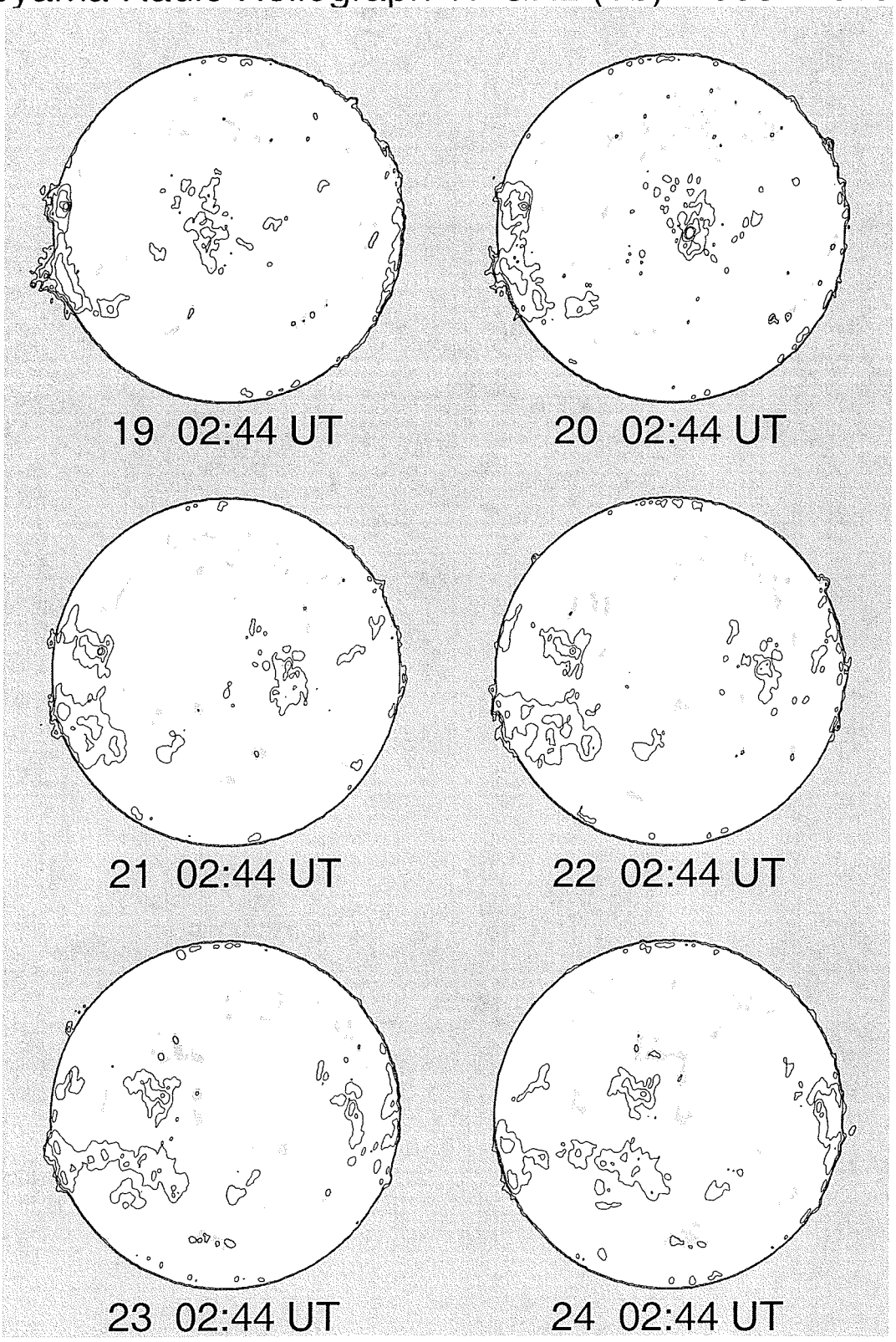
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2003 November



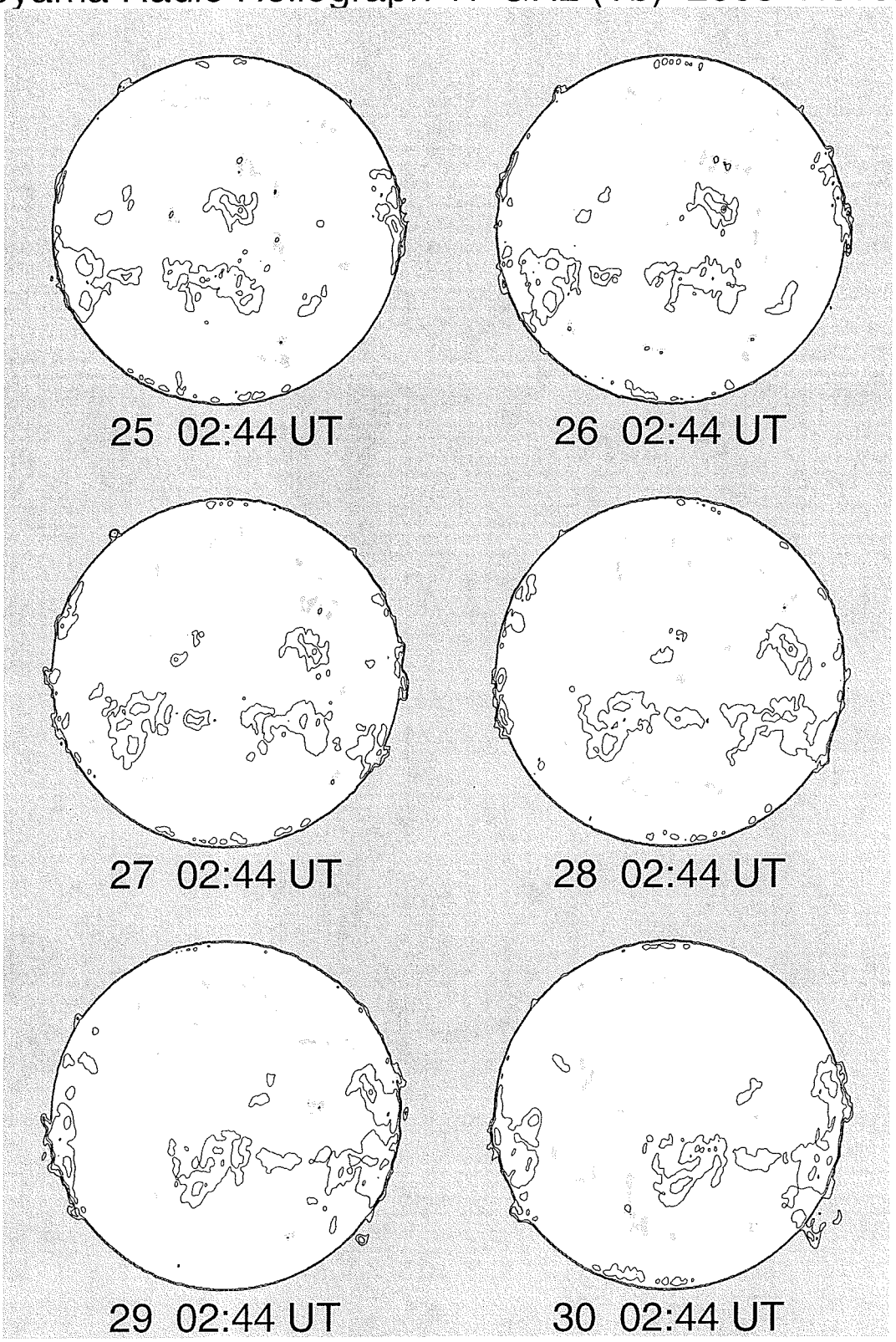
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 2003 November



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) 2003 November



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

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

NOVEMBER 2003

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
10495		LEAR	10	29	0100	S20	E45	11	1.5		B	BXO	20	5	4	2
10495		VORO	10	29	0517	S23	E41	11	1.4			BSO	49	3	4	3
10495		TACH	10	29	0809	S22	E39	11	1.3			BXO	32	2	5	4
10495		KAND	10	29	1125	S23	E38	11	1.4			DSO		3	5	4
10495	31928	MWIL	10	29	1530	S23	E35	11	1.3	5	(B)					
10495		HOLL	10	29	1535	S25	E35	11	1.4		B	DAO	160	12	5	3
10495		VORO	10	29	2317	S22	E31	11	1.3			DAI	219	6	4	4
10495		LEAR	10	30	0125	S22	E32	11	1.5		B	DAO	180	15	7	2
10495		SVTO	10	30	0750	S22	E27	11	1.4		B	DSO	260	7	9	3
10495		VORO	10	30	2332	S22	E17	11	1.3			DAI	284	11	6	4
10495		LEAR	10	31	0058	S22	E18	11	1.4		B	DSO	250	14	7	4
10495		TACH	10	31	0536	S22	E14	11	1.3			DAI	265	14	6	3
10495		KAND	10	31	0810	S22	E14	11	1.4			DSO		12	8	3
10495		SVTO	10	31	0812	S22	E14	11	1.4		B	DAO	210	11	8	3
10495		HOLL	10	31	1538	S22	E08	11	1.3		B	DSI	160	23	8	3
10495		VORO	11	01	0025	S22	E04	11	1.3			DAI	255	10	7	3
10495		LEAR	11	01	0033	S23	E04	11	1.3		B	DSO	230	18	9	4
10495		SVTO	11	01	1027	S23	W02	11	1.3		B	DSO	260	7	10	2
10495		KAND	11	01	1043	S23	W02	11	1.3			DSI		9	9	3
10495		HOLL	11	01	1615	S22	W06	11	1.2		B	DAI	170	12	9	3
10495		LEAR	11	02	0221	S23	W09	11	1.4		B	DSO	200	17	9	2
10495		KAND	11	02	0710	S23	W13	11	1.3			DSO		7	10	3
10495		HOLL	11	02	1545	S22	W19	11	1.2		B	DSO	90	8	9	4
10495		VORO	11	03	0028	S22	W22	11	1.3			DHO	188	4	8	3
10495		LEAR	11	03	0045	S23	W22	11	1.3		B	DSO	90	6	9	4
10495		KAND	11	03	0730	S23	W25	11	1.4			DSO		4	10	2
10495		SVTO	11	03	1130	S23	W28	11	1.3		B	DSO	140	4	9	3
10495		HOLL	11	03	1516	S22	W30	11	1.3		B	DAO	110	4	9	3
10495		VORO	11	03	2334	S22	W34	11	1.4			CSO	167	6	7	3
10495		LEAR	11	04	0047	S22	W35	11	1.3		B	DSO	140	5	9	2
10495		SVTO	11	04	0812	S23	W37	11	1.5		B	DSO	170	4	10	2
10495		HOLL	11	04	1525	S22	W45	11	1.2		B	DHO	90	10	10	4
10495		VORO	11	05	0004	S22	W47	11	1.4			CSO	135	2	7	3
10495		LEAR	11	05	0057	S22	W48	11	1.3		B	CSO	100	2	7	4
10495		SVTO	11	05	0920	S23	W49	11	1.6		B	ESO	110	8	12	3
10495		HOLL	11	05	1601	S22	W57	11	1.3		B	CAO	120	5	10	4
10495		VORO	11	05	2327	S22	W60	11	1.4			CAO	117	2	6	3
10495		LEAR	11	06	0104	S21	W64	11	1.1		B	CSO	90	2	8	4
10495		SVTO	11	06	0740	S22	W68	11	1.1		A	HSX	100	1	3	3
10495	31928	MWIL	11	06	1600	S21	W71	11	1.2	4	(AP)					
10495		HOLL	11	06	1935	S21	W69	11	1.5		A	HAX	120	1	2	3
10495		LEAR	11	07	0040	S18	W77	11	1.2		A	HSX	120	1	3	4
10495		VORO	11	07	0102	S22	W75	11	1.3			CAO	37	2	6	2
10495A		LEAR	11	02	0221	N07	W04	11	1.8		A	AXX		1		2
10495A		LEAR	11	04	0047	N09	W31	11	1.7		A	AXX	10	3	2	2
10495A		HOLL	11	04	1525	N10	W42	11	1.5		B	BXO	10	3	6	4
10496		VORO	10	29	0517	S09	E50	11	2.0			AXX	11	1		3
10496		TACH	10	29	0809	S06	E48	11	1.9			AXX	8	1	1	4
10496		KAND	10	29	1125	S08	E47	11	2.0			AX		1		4
10496	31929	MWIL	10	29	1530	S09	E45	11	2.0	4	(AP)					
10496		HOLL	10	29	1535	S08	E45	11	2.0		A	AXX		2	1	3
10496		VORO	10	29	2317	S08	E40	11	2.0			AXX	4	2		4
10496		LEAR	10	30	0125	S07	E39	11	2.0		A	HRX	20	2	1	2
10496		VORO	10	30	2332	S09	E25	11	1.8			AXX	2	1		4
10496		LEAR	10	31	0058	S05	E18	11	1.4		B	BXO	10	6	2	4
10496		LEAR	10	31	0058	S08	E25	11	1.9		A	AXX	10	1	1	4
10496		KAND	10	31	0810	S06	E14	11	1.4			AX		1		3
10496		HOLL	10	31	1538	S09	E24	11	2.4		A	AXX		1	1	3
10496		HOLL	10	31	1538	S12	E13	11	1.6		B	CSO	20	4	4	3
10496		VORO	11	01	0025	S08	E13	11	2.0			AXX	5	1		3
10496		VORO	11	01	0025	S11	E06	11	1.5			AXX	2	1		3
10496		LEAR	11	01	0033	S10	E10	11	1.8		B	CRO	20	8	7	4
10496		HOLL	11	01	1615	S09	E04	11	2.0		A	AXX	10	6	2	3
10496		LEAR	11	02	0221	S09	E03	11	2.3		A	HRX	10	2	1	2
10496		LEAR	11	03	0045	S09	W03	11	2.8		B	BXO	10	2	2	4
10496		LEAR	11	03	0045	S10	W12	11	2.1		B	BXO	10	2	2	4
10496		HOLL	11	03	1516	S08	W17	11	2.4		A	AXX	10	2	2	3

SUNSPOT GROUPS
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NOVEMBER 2003

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
10496		LEAR	11	04	0047	S04	W22	11	2.4		A	AXX	10	1	1	2
10496C		VORO	11	05	0004	S21	W32	11	2.5			AXX	9	2		3
10496C		LEAR	11	05	0057	S21	W33	11	2.5		A	AXX	10	1	1	4
10496C		VORO	11	05	2327	S21	W46	11	2.4			AXX	11	1		3
10496A		LEAR	11	02	0221	S08	E26	11	4.0		B	BXO	10	3	2	2
10496A		KAND	11	02	0710	S08	E23	11	4.0			AX		2	1	3
10496A		HOLL	11	02	1545	S08	E18	11	4.0		A	HSX	10	1	1	4
10496A		VORO	11	03	0028	S08	E13	11	4.0			BRI	18	5	2	3
10496A		LEAR	11	03	0045	S08	E13	11	4.0		A	AXX	10	1	1	4
10496A		HOLL	11	03	1516	S08	E04	11	3.9		A	AXX		1	1	3
10496B		LEAR	11	04	0047	N11	E07	11	4.5		A	AXX	10	1	1	2
10496B		LEAR	11	04	0047	N12	E01	11	4.1		B	BXO	10	2	3	2
10496D		HOLL	11	04	1525	N12	E30	11	6.9		A	AXX		1	1	4
10498		LEAR	11	08	0222	S03	W15	11	7.0		A	AXX	10	1	1	2
10498		SVTO	11	08	0730	S04	W18	11	7.0		A	AXX	10	2	1	3
10498		HOLL	11	08	1458	S03	W22	11	7.0		B	DAO	30	7	4	2
10498		VORO	11	08	2355	S03	W24	11	7.2			CAI	44	8	7	3
10498		LEAR	11	09	0030	S04	W27	11	7.0		B	DRO	20	4	3	2
10498		TACH	11	09	0639	S04	W31	11	6.9			BRI	14	6	3	3
10498		SVTO	11	09	0925	S04	W33	11	6.9		B	DSO	30	5	4	2
10498		HOLL	11	09	1525	S04	W33	11	7.2		B	DAO	30	8	3	3
10498		VORO	11	09	2355	S04	W40	11	7.0			HAX	124	11	3	3
10498		LEAR	11	10	0046	S04	W40	11	7.0		B	DSO	100	6	3	4
10498		SVTO	11	10	0700	S04	W45	11	6.9		B	DAO	140	8	4	3
10498		HOLL	11	10	1502	S04	W48	11	7.0		B	DAO	140	6	5	2
10498	31931	MWIL	11	10	1530	S04	W49	11	7.0	5	(B)					
10498		VORO	11	11	0001	S03	W53	11	7.0			DAI	220	6	3	3
10498		LEAR	11	11	0104	S04	W56	11	6.8		B	DAO	240	5	6	3
10498		TACH	11	11	0559	S03	W57	11	7.0			CSO	254	3	3	3
10498		SVTO	11	11	0700	S05	W57	11	7.0		B	DAO	200	4	5	3
10498	31931	MWIL	11	11	1600	S03	W63	11	6.9	5	(B)					
10498		HOLL	11	11	1958	S04	W64	11	7.0		B	DAO	120	3	6	2
10498		VORO	11	12	0007	S03	W66	11	7.1			DAI	253	3	4	3
10498		LEAR	11	12	0101	S02	W68	11	7.0		B	DSO	190	5	5	4
10498		KAND	11	12	0915	S03	W74	11	6.8			DSO		2	6	1
10498		VORO	11	13	0000	S03	W79	11	7.1			DAI	119	3	3	3
10498		LEAR	11	13	0230	S02	W80	11	7.1		B	DAO	110	2	5	2
10499		HOLL	11	07	1520	S17	W02	11	7.5		B	BXO	10	2	3	3
10499	31930	MWIL	11	07	1600	S17	W03	11	7.4	3	(B)					
10499		HOLL	11	08	1458	S17	W15	11	7.5		B	DSO	30	5	4	2
10499		VORO	11	08	2355	S16	W20	11	7.5			DAO	84	4	4	3
10499		LEAR	11	09	0030	S17	W20	11	7.5		B	DAO	40	3	5	2
10499		TACH	11	09	0639	S17	W24	11	7.4			CSO	59	2	5	3
10499		SVTO	11	09	0925	S16	W25	11	7.5		B	DSO	60	3	8	2
10499		HOLL	11	09	1525	S16	W29	11	7.4		B	DAO	20	6	7	3
10499		VORO	11	09	2355	S17	W34	11	7.4			CAO	63	6	7	3
10499		LEAR	11	10	0046	S17	W35	11	7.4		B	DSO	60	2	8	4
10499		SVTO	11	10	0700	S18	W37	11	7.5		B	DSO	50	3	8	3
10499		HOLL	11	10	1502	S17	W42	11	7.4		B	CAO	20	4	9	2
10499	31930	MWIL	11	10	1530	S17	W43	11	7.4	5	(BF)					
10499		VORO	11	11	0001	S16	W47	11	7.4			BRO	33	3	9	3
10499		LEAR	11	11	0104	S17	W48	11	7.4		B	BXO	40	3	8	3
10499		TACH	11	11	0559	S16	W51	11	7.4			BRO	48	4	9	3
10499		SVTO	11	11	0700	S18	W56	11	7.0		B	CRO	20	2	1	3
10499	31930	MWIL	11	11	1600	S17	W57	11	7.3	4	(B)					
10499		HOLL	11	11	1958	S16	W58	11	7.4		B	CSO	20	3	9	2
10499		VORO	11	12	0007	S17	W61	11	7.4			BXO	17	2	9	3
10499		LEAR	11	12	0101	S16	W62	11	7.3		B	DRO	20	2	9	4
10499A		HOLL	11	07	1520	S15	E08	11	8.2		A	AXX		1	1	3
10500		VORO	11	08	2355	S08	W10	11	8.2			AXX	15	4	2	3
10500		LEAR	11	09	0030	S08	W10	11	8.3		B	CAO	20	6	3	2

SUNSPOT GROUPS
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10500		TACH	11	09	0639	S08	W14	11	8.2			CSO	48	3	1	3
10500		SVTO	11	09	0925	S07	W16	11	8.2		B	CAO	30	6	5	2
10500		HOLL	11	09	1525	S08	W18	11	8.3		B	DAO	30	9	4	3
10500		VORO	11	09	2355	S08	W24	11	8.2			CRI	42	11	4	3
10500		LEAR	11	10	0046	S08	W25	11	8.1		B	CAO	40	8	5	4
10500		SVTO	11	10	0700	S09	W27	11	8.3		B	DSO	40	3	6	3
10500		HOLL	11	10	1502	S09	W32	11	8.2		B	BXO	30	10	7	2
10500	31932	MWIL	11	10	1530	S08	W32	11	8.2	4	(B)					
10500		VORO	11	11	0001	S09	W38	11	8.1			BRO	31	8	7	3
10500		LEAR	11	11	0104	S08	W38	11	8.2		B	CSO	30	6	6	3
10500		TACH	11	11	0559	S08	W41	11	8.2			BRO	15	4	6	3
10500		SVTO	11	11	0700	S10	W42	11	8.1		B	CRO	30	3	7	3
10500	31932	MWIL	11	11	1600	S07	W46	11	8.2	4	(B)					
10500		HOLL	11	11	1958	S10	W47	11	8.3		A	AXX		1	1	2
10500		LEAR	11	12	0101	S07	W49	11	8.4		B	BXO	10	2	1	4
10504		HOLL	11	15	1900	N05	W35	11	13.2		A	AXX	10	3	3	4
10504		VORO	11	16	0112	N05	W38	11	13.2			AXX	13	1		2
10504		LEAR	11	16	0135	N05	W39	11	13.1		B	CAO	10	3	3	1
10504		SVTO	11	16	0816	N03	W44	11	13.0		A	AXX		1		3
10504		KAND	11	16	0845	N04	W42	11	13.2			AX		1		4
10504		HOLL	11	16	1517	N05	W47	11	13.1		A	AXX		1	1	3
10504		VORO	11	17	2344	N03	W57	11	13.7			AXX	3	1		3
10504		LEAR	11	18	0251	N04	W58	11	13.8		B	DAO	30	4	3	3
10504		TACH	11	18	0535	N04	W62	11	13.6			DAO	6	18	1	3
10504	31938	MWIL	11	18	1530	N04	W66	11	13.7	4	(B)					
10504		LEAR	11	19	0003	N05	W72	11	13.6		B	CRO	30	3	2	4
10504		VORO	11	19	0017	N03	W71	11	13.7			AXX	28	1		3
10503	31933	MWIL	11	14	1530	N18	E25	11	16.5	4	(AF)					
10503		HOLL	11	15	1900	N17	E11	11	16.6		B	DAO	20	7	3	4
10503		VORO	11	16	0112	N17	E07	11	16.6			BRO	16	2	4	2
10503		LEAR	11	16	0135	N17	E08	11	16.7		B	CAO	20	4	5	1
10503		SVTO	11	16	0816	N17	E03	11	16.6		B	CRO	10	2	4	3
10503		KAND	11	16	0845	N17	E03	11	16.6			CSO		2	4	4
10503		HOLL	11	16	1517	N18	W01	11	16.6		B	CSO	10	4	5	3
10503	31933	MWIL	11	16	1630	N17	W01	11	16.6	4	(B)					
10503		VORO	11	16	2338	N16	W06	11	16.5			BXO	10	3	4	2
10503		LEAR	11	17	0035	N18	W05	11	16.6		B	BXO	20	4	6	3
10503		KAND	11	17	0805	N17	W10	11	16.6			BXO		2	5	3
10503		SVTO	11	17	0820	N17	W13	11	16.3		A	AXX		1		3
10503		HOLL	11	17	1511	N18	W17	11	16.3		B	BXO	10	2	4	2
10503		VORO	11	17	2344	N17	W18	11	16.6			BXO	11	2	3	3
10502A		VORO	11	16	0112	S13	E15	11	17.2			AXX	10	1		2
10502		LEAR	11	14	0006	N05	E54	11	18.0		B	BXO	20	3	3	3
10502		VORO	11	14	0053	N05	E53	11	18.0			AXX	13	2	1	3
10502		TACH	11	14	0635	N05	E48	11	17.9			AXX	11	1	1	3
10502		KAND	11	14	0840	N06	E49	11	18.0			AX		1		4
10502	31934	MWIL	11	14	1530	N05	E44	11	17.9	4	(AP)					
10502		VORO	11	15	0010	N06	E39	11	17.9			AXX	5	1		3
10502		LEAR	11	15	0113	N05	E38	11	17.9		B	BXO	10	2	2	2
10502		HOLL	11	15	1900	N04	E34	11	18.3		A	AXX		1	1	4
10502		HOLL	11	17	1511	N07	E08	11	18.2		A	AXX		1	1	2
10502	31944	MWIL	11	20	1530	N03	W40	11	17.6	3	(AP)					
10501		LEAR	11	13	0230	N04	E85	11	19.4		B	DSO	150	2	16	2
10501		SVTO	11	13	0715	N06	E80	11	19.3		B	FSO	340	3	22	3
10501		LEAR	11	14	0006	N03	E74	11	19.5		BG	DKI	450	16	9	3
10501		VORO	11	14	0053	N03	E74	11	19.6			HKX	618	5	1	3
10501		TACH	11	14	0635	N03	E70	11	19.5			HAO	725	4	1	3
10501		KAND	11	14	0840	N03	E72	11	19.7			DKO		6	9	4
10501		SVTO	11	14	0902	N05	E69	11	19.5		B	FAO	230	6	7	3
10501	31935	MWIL	11	14	1530	N03	E65	11	19.5	5	(BG)					
10501		VORO	11	15	0010	N03	E61	11	19.6			HKX	573	7	1	3
10501		LEAR	11	15	0113	N04	E58	11	19.4		BG	DKI	300	10	7	2
10501		KAND	11	15	0720	N04	E58	11	19.6			EKO		9	11	4
10501		SVTO	11	15	0855	N03	E57	11	19.6		B	DAO	270	6	6	2

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
10501		HOLL	11	15	1900	N03	E50	11	19.5		BG	DKC	400	19	6	4
10501		VORO	11	16	0112	N03	E47	11	19.6			HKX	423	8	1	2
10501		LEAR	11	16	0135	N03	E48	11	19.6		BG	DAI	350	22	4	1
10501		SVTO	11	16	0816	N04	E43	11	19.5		BG	DKO	360	14	7	3
10501		KAND	11	16	0845	N04	E44	11	19.6			DKI		16	5	4
10501		HOLL	11	16	1517	N03	E39	11	19.5		BG	DKI	400	25	4	3
10501	31935	MWIL	11	16	1630	N03	E39	11	19.6	5	(D)					
10501		VORO	11	16	2338	N03	E34	11	19.5			HKX	514	14	2	2
10501		LEAR	11	17	0035	N03	E34	11	19.6		BG	DKI	340	40	6	3
10501		KAND	11	17	0805	N04	E30	11	19.6			DKI		19	5	3
10501		SVTO	11	17	0820	N05	E30	11	19.6		B	DKO	390	10	9	3
10501		HOLL	11	17	1511	N04	E27	11	19.6		BG	DHI	380	25	8	2
10501	31935	MWIL	11	17	2300	N03	E23	11	19.7	5	(D)					
10501		VORO	11	17	2344	N02	E21	11	19.5			HKX	539	27	2	3
10501		LEAR	11	18	0251	N04	E20	11	19.6		BG	DHI	420	33	10	3
10501		TACH	11	18	0535	N03	E18	11	19.6			ARI	344	2	8	3
10501	31935	MWIL	11	18	1530	N03	E13	11	19.6	5	(D)					
10501		HOLL	11	18	1612	N04	E12	11	19.6		BG	DHI	390	18	9	3
10501		LEAR	11	19	0003	N03	E08	11	19.6		BGD	DHC	400	39	10	4
10501		VORO	11	19	0017	N02	E08	11	19.6			HHX	535	21	2	3
10501		TACH	11	19	0521	N03	E02	11	19.4			DAI	388	11	10	3
10501		KAND	11	19	0745	N02	E04	11	19.6			DKI		12	5	3
10501		SVTO	11	19	0836	N03	E04	11	19.6		B	DKO	420	10	9	3
10501	31935	MWIL	11	19	1530	N03	E00	11	19.6	5	(D)					
10501		HOLL	11	19	1615	N04	W02	11	19.5		BG	DKO	280	7	6	2
10501		LEAR	11	20	0110	N02	W06	11	19.6		BGD	DKI	320	15	5	2
10501		TACH	11	20	0708	N02	W08	11	19.7			CRO	307	6	2	4
10501		KAND	11	20	0825	N02	W10	11	19.6			DKO		10	7	4
10501	31935	MWIL	11	20	1530	N02	W13	11	19.7	5	(D)					
10501		LEAR	11	21	0120	N04	W19	11	19.6		BGD	DKI	280	13	6	2
10501		VORO	11	21	0418	N03	W20	11	19.7			HHX	365	12	3	3
10501		KAND	11	21	0715	N03	W23	11	19.6			DAO		7	4	5
10501	31935	MWIL	11	21	1530	N03	W27	11	19.6	6	(D)					
10501		HOLL	11	21	1610	N04	W28	11	19.6		BG	DKI	330	14	6	3
10501		VORO	11	22	0004	N03	W31	11	19.7			HHX	356	8	3	3
10501		LEAR	11	22	0135	N03	W33	11	19.6		BGD	DKI	240	10	5	3
10501		KAND	11	22	0645	N04	W36	11	19.6			CSO		4	6	4
10501		SVTO	11	22	1135	N03	W38	11	19.6		B	DAO	300	5	6	2
10501		HOLL	11	22	1517	N03	W39	11	19.7		BG	DKI	220	9	7	2
10501		VORO	11	23	0003	N01	W38	11	20.2			AXX	6	1		3
10501		VORO	11	23	0003	N02	W44	11	19.7			HKX	294	6	3	3
10501		LEAR	11	23	0008	N03	W43	11	19.8		BG	DKI	270	9	9	4
10501		SVTO	11	23	0950	N03	W52	11	19.5		B	DSO	180	3	6	3
10501		KAND	11	23	1045	N04	W52	11	19.6			CSO		4	4	5
10501		HOLL	11	23	1526	N03	W54	11	19.6		BG	DKI	280	6	7	3
10501	31935	MWIL	11	23	1530	N03	W54	11	19.6	5	(BP)					
10501		LEAR	11	24	0010	N04	W59	11	19.6		B	CAO	170	3	4	3
10501		VORO	11	24	0036	N03	W58	11	19.7			HKX	282	4	1	2
10501		TACH	11	24	0538	N02	W62	11	19.6			CAO	174	3	2	4
10501		SVTO	11	24	1110	N03	W66	11	19.5		B	DSO	150	3	6	3
10501		HOLL	11	24	1513	N03	W67	11	19.6		B	DAO	140	2	3	4
10501		VORO	11	25	0019	N03	W71	11	19.7			HKX	289	2	1	3
10501		LEAR	11	25	0045	N04	W73	11	19.6		A	HSX	180	1	3	3
10501		TACH	11	25	0649	N02	W76	11	19.6			HHX	232	1	2	4
10501	31935	MWIL	11	25	1545	N04	W82	11	19.5	5	(AF)					
10501		HOLL	11	25	1740	N04	W82	11	19.6		A	HSX	60	1	1	3
10501A	31936	MWIL	11	16	1630	N09	E39	11	19.6	4	(AP)					
10501A	31939	MWIL	11	18	1530	N09	E13	11	19.6	4	(AP)					
10505		VORO	11	16	2338	S25	E66	11	22.1			AXX	7	1		2
10505		LEAR	11	17	0035	S22	E70	11	22.4		B	BXO	30	3	2	3
10505		KAND	11	17	0805	S22	E70	11	22.7			AX		2	2	3
10505		SVTO	11	17	0820	S21	E66	11	22.4		A	AXX		1		3
10505		HOLL	11	17	1511	S23	E63	11	22.5		B	CSO	20	3	3	2
10505	31937	MWIL	11	17	2300	S21	E59	11	22.5	4	(AP)					
10505		VORO	11	17	2344	S22	E57	11	22.4			HRX	33	3		3
10505		LEAR	11	18	0251	S22	E57	11	22.5		B	CRO	40	3	2	3
10505	31937	MWIL	11	18	1530	S22	E50	11	22.5	4	(AP)					

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10505		HOLL	11	18	1612	S22	E51	11	22.6		A	HSX	20	1	1	3
10505		LEAR	11	19	0003	S22	E45	11	22.5		B	CRO	30	3	2	4
10505		VORO	11	19	0017	S22	E44	11	22.4			ARX	14	2		3
10505		TACH	11	19	0521	S21	E41	11	22.4			ARO	6	4	2	3
10505		KAND	11	19	0745	S23	E43	11	22.6			BXO		5	2	3
10505	31937	MWIL	11	19	1530	S23	E37	11	22.5	6	(AP)					
10505		LEAR	11	20	0110	S23	E31	11	22.4		B	CRO	30	3	2	2
10505		KAND	11	20	0825	S23	E29	11	22.6			BXO		2	2	4
10505	31937	MWIL	11	20	1530	S24	E25	11	22.6	4	(AP)					
10505		LEAR	11	21	0120	S23	E18	11	22.4		B	CRO	30	3	2	2
10505		VORO	11	21	0418	S21	E17	11	22.5			AXX	10	1		3
10505		KAND	11	21	0715	S23	E17	11	22.6			BXO		2	3	5
10505	31937	MWIL	11	21	1530	S22	E11	11	22.5	4	(AP)					
10505		HOLL	11	21	1610	S22	E11	11	22.5		A	AXX	10	2	1	3
10505		VORO	11	22	0004	S22	E07	11	22.5			AXX	11	1		3
10505		HOLL	11	22	1517	S22	W02	11	22.5		B	BXO	10	3	3	2
10505		VORO	11	23	0003	S22	W08	11	22.4			AXX	4	1		3
10505		LEAR	11	23	0008	S22	W08	11	22.4		B	BXO	10	2	3	4
10505A		TACH	11	24	0538	N03	W23	11	22.5			AXX	3	1	1	4
10505B		TACH	11	24	0538	S24	W15	11	23.1			BRO	6	2	2	4
10506		LEAR	11	18	0251	S23	E82	11	24.4		A	HAX	40	3	4	3
10506	31941	MWIL	11	18	1530	S23	E78	11	24.6	4	(B)					
10506		HOLL	11	18	1612	S23	E76	11	24.5		B	DAO	90	3	6	3
10506		LEAR	11	19	0003	S21	E71	11	24.4		B	EAO	180	18	14	4
10506		VORO	11	19	0017	S23	E71	11	24.5			CAI	96	8	5	3
10506		TACH	11	19	0521	S27	E67	11	24.4			BRO	51	3	10	3
10506		KAND	11	19	0745	S22	E68	11	24.5			DSO		6	5	3
10506		SVTO	11	19	0836	S21	E68	11	24.6		B	BXO	50	3	7	3
10506	31941	MWIL	11	19	1530	S23	E64	11	24.6	4	(B)					
10506		HOLL	11	19	1615	S22	E64	11	24.6		B	DSO	80	6	7	2
10506		LEAR	11	20	0110	S23	E56	11	24.4		B	DSO	120	10	6	2
10506		TACH	11	20	0708	S23	E54	11	24.4			BRI	23	4	2	4
10506		KAND	11	20	0825	S22	E55	11	24.6			DAO		8	7	4
10506	31941	MWIL	11	20	1530	S23	E50	11	24.5	4	(B)					
10506		LEAR	11	21	0120	S22	E45	11	24.5		B	DSO	120	8	7	2
10506		VORO	11	21	0418	S22	E42	11	24.4			CAI	91	13	7	3
10506		KAND	11	21	0715	S22	E43	11	24.6			CSO		11	8	5
10506	31941	MWIL	11	21	1530	S22	E35	11	24.3	4	(BP)					
10506		HOLL	11	21	1610	S21	E35	11	24.3		B	CAO	20	12	3	3
10506		VORO	11	22	0004	S21	E30	11	24.3			CAI	82	9	3	3
10506		LEAR	11	22	0135	S21	E30	11	24.4		B	CAO	100	10	4	3
10506		KAND	11	22	0645	S21	E27	11	24.3			BXO		6	4	4
10506		HOLL	11	22	1517	S22	E23	11	24.4		B	CSO	20	4	3	2
10506		VORO	11	23	0003	S20	E16	11	24.2			BXI	16	5	2	3
10506		LEAR	11	23	0008	S22	E18	11	24.4		B	BXO	40	11	5	4
10506		HOLL	11	23	1526	S23	E08	11	24.2		A	AXX		1	1	3
10506		TACH	11	24	0538	S20	E01	11	24.3			AXX	3	1	1	4
10506		HOLL	11	24	1513	S23	W03	11	24.4		B	CSO	10	2	3	4
10506		VORO	11	25	0019	S21	W05	11	24.6			AXX	10	2	2	3
10506		LEAR	11	25	0045	S22	W06	11	24.6		B	BXO	10	2	3	3
10506		TACH	11	25	0649	S23	W08	11	24.7			BRO	2	2	3	4
10506	31941	MWIL	11	25	1545	S22	W16	11	24.4	4	(AP)					
10506		VORO	11	27	0008	S22	W32	11	24.5			BXO	17	2	4	3
10506		LEAR	11	27	0150	S23	W31	11	24.7		A	AXX		1	1	3
10514	31953	MWIL	11	26	1600	S14	W28	11	24.5	4	(AP)					
10514		VORO	11	27	0008	S14	W33	11	24.5			AXX	7	1		3
10514		LEAR	11	27	0150	S15	W35	11	24.4		A	AXX		1	1	3
10514		SVTO	11	27	0836	S16	W37	11	24.5		A	AXX		1		3
10514	31953	MWIL	11	27	1600	S14	W44	11	24.3	4	(AP)					
10514		LEAR	11	28	0022	S15	W48	11	24.4		A	AXX	10	1	1	3
10507		LEAR	11	18	0251	N09	E87	11	24.6		A	HHX	300	1	5	3
10507		TACH	11	18	0535	N09	E83	11	24.5			HHX	461	1	1	3
10507	31942	MWIL	11	18	1530	N09	E80	11	24.6	5	(D)					
10507	31940	MWIL	11	18	1530	N13	E77	11	24.4	4	(AF)					

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10507		HOLL	11 18 1612	N10 E84	11 25.0		B	EKO	360	4	11	3
10507		LEAR	11 19 0003	N08 E75	11 24.6		BGD	DKC	810	15	8	4
10507		VORO	11 19 0017	N11 E74	11 24.6			HKX	1259	9	6	3
10507		TACH	11 19 0521	N10 E70	11 24.5			DAO	1227	4	5	3
10507		KAND	11 19 0745	N09 E73	11 24.8			DKO		7	9	3
10507		SVTO	11 19 0836	N11 E70	11 24.6		B	EKO	1140	8	13	3
10507	31942	MWIL	11 19 1530	N09 E67	11 24.7	5	(D)					
10507	31940	MWIL	11 19 1530	N12 E61	11 24.2	4	(AF)					
10507		HOLL	11 19 1615	N11 E65	11 24.6		B	EKI	680	7	11	2
10507		LEAR	11 20 0110	N07 E61	11 24.6		BGD	DKI	840	22	10	2
10507		TACH	11 20 0708	N10 E59	11 24.7			DAI	450	5	11	4
10507		KAND	11 20 0825	N10 E60	11 24.8			EKO		12	13	4
10507	31942	MWIL	11 20 1530	N09 E54	11 24.7	5	(BG)					
10507	31940	MWIL	11 20 1530	N11 E48	11 24.2	5	(AF)					
10507		LEAR	11 21 0120	N08 E48	11 24.6		BGD	EKI	760	21	11	2
10507		VORO	11 21 0418	N10 E45	11 24.6			HKX	1181	24	10	3
10507		KAND	11 21 0715	N08 E46	11 24.7			EKO		19	11	5
10507	31942	MWIL	11 21 1530	N09 E40	11 24.6	5	(BG)					
10507	31940	MWIL	11 21 1530	N11 E37	11 24.4	4	(AF)					
10507		HOLL	11 21 1610	N09 E40	11 24.7		B	EKI	830	32	11	3
10507		VORO	11 22 0004	N10 E34	11 24.5			HKX	1150	24	10	3
10507		LEAR	11 22 0135	N08 E34	11 24.6		BG	EKI	780	26	11	3
10507		KAND	11 22 0645	N09 E33	11 24.7			EKI		21	15	4
10507		SVTO	11 22 1135	N09 E28	11 24.6		B	EKI	960	19	13	2
10507		HOLL	11 22 1517	N09 E26	11 24.6		BGD	EKC	690	42	13	2
10507		VORO	11 23 0003	N09 E20	11 24.5			HKX	1298	38	10	3
10507		LEAR	11 23 0008	N09 E23	11 24.7		BGD	EKC	1030	58	14	4
10507		SVTO	11 23 0950	N09 E17	11 24.7		B	DKC	760	14	9	3
10507		KAND	11 23 1045	N09 E17	11 24.7			EKI		19	12	5
10507		HOLL	11 23 1526	N09 E14	11 24.7		BGD	EKC	550	47	12	3
10507	31942	MWIL	11 23 1530	N09 E13	11 24.6	5	(D)					
10507	31940	MWIL	11 23 1530	N12 E07	11 24.2	4	(AF)					
10507		LEAR	11 24 0010	N09 E09	11 24.7		BGD	DKC	890	57	10	3
10507		VORO	11 24 0036	N11 E07	11 24.5			HKX	879	15	10	2
10507		TACH	11 24 0538	N10 E08	11 24.8			DAI	878	16	7	4
10507		SVTO	11 24 1110	N10 E03	11 24.7		B	EKI	780	21	11	3
10507		HOLL	11 24 1513	N09 E02	11 24.8		BGD	EKC	590	41	13	4
10507		VORO	11 25 0019	N10 W03	11 24.8			HKX	822	13	6	3
10507		LEAR	11 25 0045	N09 W02	11 24.9		BGD	EKC	720	56	14	3
10507		TACH	11 25 0649	N08 W07	11 24.7			DKC	903	16	13	4
10507	31942	MWIL	11 25 1545	N09 W12	11 24.7	5	(D)					
10507	31940	MWIL	11 25 1545	N14 W16	11 24.4	3	AF					
10507		HOLL	11 25 1740	N09 W12	11 24.8		BGD	EKC	590	26	13	3
10507		LEAR	11 26 0003	N09 W16	11 24.8		BGD	EKC	540	48	12	2
10507		TACH	11 26 0609	N09 W16	11 25.0			CKC	973	13	8	4
10507		HOLL	11 26 1600	N07 W26	11 24.7		BG	EKC	720	42	13	3
10507	31942	MWIL	11 26 1600	N09 W26	11 24.7	5	(D)					
10507		VORO	11 27 0008	N08 W29	11 24.8			DKI	847	18	5	3
10507		LEAR	11 27 0150	N07 W32	11 24.7		BGD	DKI	430	16	6	3
10507		TACH	11 27 0528	N09 W33	11 24.7			DAI	400	20	6	3
10507		SVTO	11 27 0836	N07 W36	11 24.7		B	DKI	720	12	9	3
10507	31942	MWIL	11 27 1600	N09 W39	11 24.7	5	(D)					
10507		HOLL	11 27 1730	N08 W39	11 24.8		BG	DKI	430	12	9	2
10507		LEAR	11 28 0022	N07 W43	11 24.8		BG	DKI	600	25	8	3
10507		TACH	11 28 0628	N08 W45	11 24.9			DAI	575	8	5	2
10507		SVTO	11 28 1125	N07 W51	11 24.6		B	DKO	570	10	9	3
10507		KAND	11 28 1210	N07 W51	11 24.7			DKO		10	7	3
10507		HOLL	11 28 1720	N08 W53	11 24.7		BG	DKO	510	9	6	2
10507	31942	MWIL	11 28 2130	N09 W55	11 24.8	5	D *					
10507		LEAR	11 29 0014	N08 W56	11 24.8		BG	DKI	500	13	6	4
10507		SVTO	11 29 1000	N08 W61	11 24.8		B	DKO	440	7	9	3
10507		KAND	11 29 1130	N08 W62	11 24.8			DKO		11	7	3
10507		HOLL	11 29 1456	N09 W63	11 24.9		BG	DKO	440	13	8	4
10507	31942	MWIL	11 29 1600	N09 W64	11 24.9	4	(BG)					
10507		VORO	11 30 0004	N10 W68	11 24.9			DKI	461	5	4	2
10507		LEAR	11 30 0013	N08 W69	11 24.8		BGD	DKC	400	10	8	4
10507		SVTO	11 30 1209	N08 W77	11 24.7		B	DKO	300	8	8	2
10507		KAND	11 30 1210	N09 W75	11 24.9			DAO		4	7	1
10507	31942	MWIL	11 30 1600	N09 W77	11 24.9	5	(AP)					

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NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
10507		HOLL	11 30 1610	N09 W78	11 24.8		BG	DAO	240	4	6	3
10507		VORO	12 01 0006	N11 W78	11 25.2			HKX	306	1		2
10507		LEAR	12 01 0103	N08 W84	11 24.8		B	BXO	150	2	5	2
10506A		VORO	11 22 0004	S17 E38	11 24.9			AXX	9	1		3
10506A		VORO	11 23 0003	S19 E26	11 25.0			AXX	14	3	2	3
10506A		VORO	11 24 0036	S20 E14	11 25.1			AXX	7	5	2	2
10507A		KAND	11 21 0715	S15 E56	11 25.5			BXO		2	9	5
10507A	31947	MWIL	11 21 1530	S13 E46	11 25.1	4	(AP)					
10507A	31946	MWIL	11 21 1530	S17 E40	11 24.7	4	(B)					
10507A		VORO	11 22 0004	S13 E41	11 25.1			HRX	18	2		3
10507A		KAND	11 22 0645	S15 E44	11 25.6			BXO		4	9	4
10507A		VORO	11 23 0003	S14 E28	11 25.1			HRX	18	2		3
10507A		KAND	11 23 1045	S13 E27	11 25.5			BXO		8	9	5
10507A	31947	MWIL	11 23 1530	S13 E22	11 25.3	4	(BP)					
10507A	31946	MWIL	11 23 1530	S17 E17	11 24.9	4	(AF)					
10507A		VORO	11 24 0036	S12 E15	11 25.1			AXX	9	1		2
10507A		TACH	11 24 0538	S14 E16	11 25.4			DAI	113	1	9	4
10507A		VORO	11 25 0019	S12 E02	11 25.2			AXX	7	1		3
10507A		TACH	11 25 0649	S13 E04	11 25.6			BAI	8	6	7	4
10507A	31946	MWIL	11 25 1545	S14 W04	11 25.3	4	(AP)					
10507A		TACH	11 26 0609	S13 W10	11 25.5			BRO	4	2	4	4
10507A	31946	MWIL	11 26 1600	S14 W15	11 25.5	4	(AP)					
10507A		TACH	11 27 0528	S12 W24	11 25.4			ARO	5	3	1	3
10507A	31946	MWIL	11 27 1600	S14 W32	11 25.2	4	(AP)					
10507A		TACH	11 28 0628	S14 W37	11 25.5			AXX	16	2	1	2
10507A		KAND	11 28 1210	S15 W40	11 25.5			BXO		4	4	3
10507A	31946	MWIL	11 28 2130	S14 W46	11 25.4	4	AP					
10507A		LEAR	11 29 0014	S14 W46	11 25.5		B	BXO	20	5	5	4
10508		TACH	11 19 0521	S19 E81	11 25.4			ARO	93	2	1	3
10508		KAND	11 19 0745	S17 E83	11 25.6			DAO		3	4	3
10508		SVTO	11 19 0836	S17 E85	11 25.8		B	EAO	270	4	12	3
10508	31943	MWIL	11 19 1530	S18 E76	11 25.4	4	(BG)					
10508		HOLL	11 19 1615	S17 E75	11 25.4		B	DKO	700	6	9	2
10508		LEAR	11 20 0110	S20 E70	11 25.4		BG	DKO	680	18	10	2
10508		TACH	11 20 0708	S18 E71	11 25.7			DAI	368	5	5	4
10508		KAND	11 20 0825	S19 E70	11 25.7			EKC		20	14	4
10508	31943	MWIL	11 20 1530	S19 E65	11 25.6	4	(BF)					
10508		LEAR	11 21 0120	S18 E59	11 25.5		BG	DKO	540	18	8	2
10508		VORO	11 21 0418	S17 E58	11 25.6			DKI	946	22	6	3
10508		KAND	11 21 0715	S20 E59	11 25.8			FKI		20	18	5
10508	31943	MWIL	11 21 1530	S19 E50	11 25.5	5	(BG)					
10508		HOLL	11 21 1610	S18 E51	11 25.5		BG	FAI	490	33	16	3
10508		VORO	11 22 0004	S17 E47	11 25.6			DAI	784	24	5	3
10508		LEAR	11 22 0135	S17 E44	11 25.4		BG	EAI	580	28	13	3
10508		KAND	11 22 0645	S20 E45	11 25.7			EKI		16	12	4
10508		SVTO	11 22 1135	S18 E42	11 25.7		B	EKO	530	12	13	2
10508		HOLL	11 22 1517	S17 E38	11 25.5		BG	EKC	420	32	11	2
10508		VORO	11 23 0003	S19 E34	11 25.6			DAI	698	36	4	3
10508		LEAR	11 23 0008	S17 E32	11 25.4		BG	EAC	600	61	11	4
10508		SVTO	11 23 0950	S17 E27	11 25.5		B	EKC	390	20	13	3
10508		KAND	11 23 1045	S20 E28	11 25.6			DKI		27	9	5
10508		HOLL	11 23 1526	S16 E25	11 25.5		BGD	EKC	420	56	12	3
10508	31943	MWIL	11 23 1530	S19 E25	11 25.5	4	(BF)					
10508		LEAR	11 24 0010	S18 E19	11 25.4		BG	EKC	550	52	11	3
10508		VORO	11 24 0036	S16 E20	11 25.5			DKI	787	17	5	2
10508		TACH	11 24 0538	S18 E14	11 25.3			DRO	307	2	6	4
10508		SVTO	11 24 1110	S17 E15	11 25.6		B	EKI	450	24	14	3
10508		HOLL	11 24 1513	S17 E14	11 25.7		BG	EKC	370	46	14	4
10508		VORO	11 25 0019	S16 E07	11 25.5			HKX	450	14	5	3
10508		LEAR	11 25 0045	S16 E05	11 25.4		BG	DAC	290	63	10	3
10508		TACH	11 25 0649	S17 E04	11 25.6			DAO	417	14	5	4
10508	31943	MWIL	11 25 1545	S17 W01	11 25.6	5	(BG)					
10508		HOLL	11 25 1740	S17 W02	11 25.6		BG	EAC	240	41	11	3
10508		LEAR	11 26 0003	S17 W03	11 25.8		BG	DKC	260	44	9	2
10508		TACH	11 26 0609	S18 W07	11 25.7			CAI	155	11	5	4
10508	31943	MWIL	11 26 1600	S17 W14	11 25.6	5	(BG)					

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10508		HOLL	11	26	1600	S18	W15	11	25.5		BG	EKI	420	37	9	3
10508		VORO	11	27	0008	S17	W18	11	25.6			DAI	443	18	5	3
10508		LEAR	11	27	0150	S17	W20	11	25.5		BG	DAO	170	20	7	3
10508		TACH	11	27	0528	S18	W21	11	25.6			CAI	144	19	5	3
10508		SVTO	11	27	0836	S20	W23	11	25.6		B	DAO	220	11	7	3
10508	31943	MWIL	11	27	1600	S17	W27	11	25.6	5	(BG)					
10508		HOLL	11	27	1730	S20	W28	11	25.6		BG	DAI	120	16	8	2
10508		LEAR	11	28	0022	S20	W32	11	25.6		BG	DAI	230	34	6	3
10508		TACH	11	28	0628	S20	W34	11	25.7			CAI	150	12	4	2
10508		SVTO	11	28	1125	S20	W38	11	25.6		B	DAO	170	9	8	3
10508		KAND	11	28	1210	S20	W39	11	25.5			DAO		9	5	3
10508		HOLL	11	28	1720	S17	W42	11	25.5		BG	DAI	210	21	9	2
10508	31943	MWIL	11	28	2130	S17	W45	11	25.5	5	BG					
10508		LEAR	11	29	0014	S20	W45	11	25.6		BG	DAI	280	30	7	4
10508		SVTO	11	29	1000	S20	W52	11	25.4		B	DAO	140	9	7	3
10508		KAND	11	29	1130	S20	W53	11	25.4			DAC		14	8	3
10508		HOLL	11	29	1456	S18	W53	11	25.6		BG	EAC	260	25	11	4
10508	31943	MWIL	11	29	1600	S17	W55	11	25.5	4	(B)					
10508		VORO	11	30	0004	S20	W57	11	25.6			DAI	275	9	4	2
10508		LEAR	11	30	0013	S20	W58	11	25.6		BG	DAI	240	23	8	4
10508		SVTO	11	30	1209	S21	W66	11	25.4		B	DSO	140	7	9	2
10508		KAND	11	30	1210	S20	W67	11	25.4			DAO		5	7	1
10508	31943	MWIL	11	30	1600	S18	W69	11	25.4	5	(B)					
10508		HOLL	11	30	1610	S19	W70	11	25.3		BG	DAI	280	9	7	3
10508		VORO	12	01	0006	S21	W70	11	25.7			DAI	114	6	7	2
10508		LEAR	12	01	0103	S20	W72	11	25.6		B	CSO	180	15	7	2
10508		SVTO	12	01	0805	S19	W76	11	25.6		B	CSO	60	3	5	3
10508	31943	MWIL	12	01	1530	S21	W82	11	25.4	4	AF					
10507B	31954	MWIL	11	26	1600	N06	W12	11	25.8	4	(AP)					
10508A	31945	MWIL	11	20	1530	S12	E76	11	26.4	3	(AF)					
10508A		KAND	11	21	0715	S11	E71	11	26.6			AX		1		5
10508A	31945	MWIL	11	21	1530	S12	E64	11	26.5	3	(AF)					
10508A		HOLL	11	21	1610	S10	E61	11	26.2		A	AXX	10	1	1	3
10508A		HOLL	11	23	1526	S11	E36	11	26.3		A	AXX	10	2	1	3
10508B		HOLL	11	26	1600	N05	E12	11	27.6		B	BXO		2	1	3
10508B	31955	MWIL	11	26	1600	N11	E08	11	27.3	4	(AP)					
10508B		KAND	11	30	1210	N06	W35	11	27.9			AX		1	1	1
10508B		VORO	12	01	0006	N06	W41	11	28.0			AXX	10	2		2
10511		KAND	11	22	0645	S14	E77	11	28.1			AX		1	1	4
10511		HOLL	11	22	1517	S13	E70	11	27.9		A	AXX		1	1	2
10511		VORO	11	23	0003	S14	E64	11	27.8			AXX	8	1		3
10511		LEAR	11	23	0008	S13	E64	11	27.8		A	AXX	10	2	2	4
10511		HOLL	11	23	1526	S11	E58	11	28.0		A	AXX		1	1	3
10511		VORO	11	24	0036	S12	E49	11	27.7			AXX	1	1		2
10511		VORO	11	25	0019	S13	E36	11	27.7			BRO	7	2	3	3
10511		LEAR	11	25	0045	S14	E36	11	27.7		B	BXO	20	6	6	3
10511		TACH	11	25	0649	S14	E33	11	27.8			BAI	5	3	5	4
10511	31951	MWIL	11	25	1545	S14	E29	11	27.8	5	(B)					
10511		HOLL	11	25	1740	S14	E27	11	27.8		B	DSO	50	5	5	3
10511		LEAR	11	26	0003	S12	E25	11	27.9		B	CSO	40	16	7	2
10511		TACH	11	26	0609	S14	E20	11	27.8			DRI	55	7	4	4
10511	31951	MWIL	11	26	1600	S14	E14	11	27.7	5	(B)					
10511		HOLL	11	26	1600	S15	E14	11	27.7		B	DAO	80	26	7	3
10511		VORO	11	27	0008	S14	E09	11	27.7			DSO	159	5	5	3
10511		LEAR	11	27	0150	S15	E08	11	27.7		B	DSO	50	6	7	3
10511		TACH	11	27	0528	S14	E06	11	27.7			DAI	119	9	6	3
10511		SVTO	11	27	0836	S15	E05	11	27.7		B	DSO	60	5	7	3
10511	31951	MWIL	11	27	1600	S15	E01	11	27.7	4	(BG)					
10511		HOLL	11	27	1730	S15	E01	11	27.8		B	DSO	50	9	8	2
10511		LEAR	11	28	0022	S15	W04	11	27.7		B	DSO	60	7	8	3
10511		TACH	11	28	0628	S14	W07	11	27.7			CRO	53	3	6	2
10511		SVTO	11	28	1125	S14	W11	11	27.6		B	DSO	40	3	9	3
10511		KAND	11	28	1210	S15	W11	11	27.7			DAO		5	8	3
10511		HOLL	11	28	1720	S16	W15	11	27.6		B	CAO	40	8	8	2
10511	31951	MWIL	11	28	2130	S15	W20	11	27.4	4	AP					

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10511		LEAR	11 29 0014	S15 W18	11 27.6		B	CSO	40	10	9	4
10511		SVTO	11 29 1000	S14 W27	11 27.4		B	CSO	30	4	3	3
10511		KAND	11 29 1130	S14 W28	11 27.4			BXO		4	3	3
10511		HOLL	11 29 1456	S13 W28	11 27.5		B	CSO	20	7	5	4
10511	31951	MWIL	11 29 1600	S15 W31	11 27.3	4	(AP)					
10511		VORO	11 30 0004	S13 W34	11 27.4			BRO	20	3	3	2
10511		LEAR	11 30 0013	S15 W33	11 27.5		B	CAO	40	7	6	4
10511		KAND	11 30 1210	S14 W42	11 27.3			BXO		3	3	1
10511	31951	MWIL	11 30 1600	S14 W44	11 27.3	4	(AP)					
10511		HOLL	11 30 1610	S15 W43	11 27.4		B	BXO	10	4	3	3
10511		VORO	12 01 0006	S14 W40	11 28.1			AXX	13	3		2
10511		VORO	12 01 0006	S15 W47	11 27.5			CAI	54	8	5	2
10511		LEAR	12 01 0103	S15 W45	11 27.7		B	BXO	30	9	12	2
10511		SVTO	12 01 0805	S15 W53	11 27.4		B	CRO	50	5	5	3
10511	31951	MWIL	12 01 1530	S13 W58	11 27.4	3	B					
10511		HOLL	12 01 1550	S13 W54	11 27.7		B	DSO	40	4	9	3
10511		LEAR	12 02 0022	S15 W57	11 27.8		B	BXO	40	4	8	3
10511		VORO	12 02 0033	S14 W55	11 28.0			ARX	7	1		3
10511		VORO	12 02 0033	S15 W62	11 27.4			BRO	28	4	3	3
10511		HOLL	12 02 1940	S13 W72	11 27.5		B	BXO	30	7	3	3
10511		VORO	12 03 0033	S14 W73	11 27.6			AXX	6	1		3
10512		VORO	11 25 0019	N06 E45	11 28.4			BRO	25	2	1	3
10512		LEAR	11 25 0045	N05 E43	11 28.2		B	BXO	10	2	2	3
10512		TACH	11 25 0649	N05 E41	11 28.3			CAO	29	2	2	4
10512	31952	MWIL	11 25 1545	N05 E36	11 28.3	5	(B)					
10512		HOLL	11 25 1740	N06 E34	11 28.3		B	CSO	20	4	3	3
10512		LEAR	11 26 0003	N08 E30	11 28.2		B	CSO	30	7	4	2
10512		TACH	11 26 0609	N06 E27	11 28.3			BRO	5	4	3	4
10512		HOLL	11 26 1600	N04 E23	11 28.4		B	CSO	20	6	6	3
10512	31952	MWIL	11 26 1600	N06 E20	11 28.2	4	(B)					
10512		VORO	11 27 0008	N06 E16	11 28.2			BXI	27	4	4	3
10512		LEAR	11 27 0150	N05 E16	11 28.3		B	DSO	30	8	6	3
10512		TACH	11 27 0528	N06 E13	11 28.2			BRO	14	2	5	3
10512		SVTO	11 27 0836	N06 E12	11 28.2		B	CRO	20	4	7	3
10512	31952	MWIL	11 27 1600	N05 E08	11 28.3	4	(B)					
10512		HOLL	11 27 1730	N06 E07	11 28.2		B	CAO	30	7	7	2
10512		LEAR	11 28 0022	N05 E04	11 28.3		B	BXO	30	8	6	3
10512		LEAR	11 29 0014	N05 W08	11 28.4		A	AXX	10	2	1	4
10512		HOLL	11 29 1456	N04 W17	11 28.3		A	AXX		1	1	4
10512	31952	MWIL	11 29 1600	N06 W18	11 28.3	4	(B)					
10512	31952	MWIL	11 30 1600	N07 W36	11 28.0	5	(AP)					
10512		HOLL	11 30 1610	N06 W37	11 27.9		A	HSX	10	1	1	3
10509		VORO	11 23 0003	S10 E79	11 28.9			HAX	117	1		3
10509		LEAR	11 23 0008	S10 E79	11 28.9		A	HSX	30	1	1	4
10509		SVTO	11 23 0950	S09 E76	11 29.1		A	HSX	60	1	2	3
10509		KAND	11 23 1045	S10 E77	11 29.2			HA		1	2	5
10509		HOLL	11 23 1526	S11 E72	11 29.1		A	HSX	30	1	2	3
10509	31948	MWIL	11 23 1530	S10 E70	11 28.9	4	(AP)					
10509		LEAR	11 24 0010	S11 E66	11 29.0		B	CAO	60	2	3	3
10509		VORO	11 24 0036	S10 E67	11 29.0			HAX	112	1		2
10509		TACH	11 24 0538	S09 E63	11 29.0			HS	51	1	1	4
10509		SVTO	11 24 1110	S09 E64	11 29.3		B	CSO	150	3	8	3
10509		HOLL	11 24 1513	S11 E61	11 29.2		B	CSO	120	2	4	4
10509		VORO	11 25 0019	S10 E55	11 29.1			HAX	108	3	2	3
10509		LEAR	11 25 0045	S11 E55	11 29.2		B	CSO	110	15	7	3
10509		TACH	11 25 0649	S10 E50	11 29.0			DAO	7	2	4	4
10509	31948	MWIL	11 25 1545	S10 E48	11 29.3	4	(B)					
10509		HOLL	11 25 1740	S10 E46	11 29.2		B	CSO	120	4	5	3
10509		LEAR	11 26 0003	S08 E42	11 29.1		A	HSX	80	2	2	2
10509		TACH	11 26 0609	S10 E38	11 29.1			HSX	65	2	2	4
10509	31948	MWIL	11 26 1600	S10 E33	11 29.1	5	(AP)					
10509		HOLL	11 26 1600	S13 E29	11 28.8		B	BXO	10	3	3	3
10509		HOLL	11 26 1600	S13 E32	11 29.1		B	CAO	80	7	5	3
10509		VORO	11 27 0008	S10 E27	11 29.0			HSX	80	5		3
10509		LEAR	11 27 0150	S11 E28	11 29.2		B	DSO	20	5	2	3
10509		TACH	11 27 0528	S10 E24	11 29.0			HSX	73	4	2	3
10509		SVTO	11 27 0836	S11 E23	11 29.1		B	DSO	70	3	3	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

NOVEMBER 2003

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
10509	31948	MWIL	11	27	1600	S12	E20	11	29.2	5	(BP)					
10509		HOLL	11	27	1730	S11	E18	11	29.1		B	CKI	80	10	4	2
10509		LEAR	11	28	0022	S11	E14	11	29.1		B	CAO	60	8	5	3
10509		TACH	11	28	0628	S10	E11	11	29.1			HSX	78	3	2	2
10509		SVTO	11	28	1125	S11	E08	11	29.1		B	DSO	70	2	3	3
10509		KAND	11	28	1210	S11	E08	11	29.1			HA		2	2	3
10509		HOLL	11	28	1720	S11	E04	11	29.0		B	DAO	80	2	3	2
10509	31948	MWIL	11	28	2130	S11	E02	11	29.0	5	AP					
10509		LEAR	11	29	0014	S12	E04	11	29.3		B	CAO	70	4	9	4
10509		SVTO	11	29	1000	S11	W05	11	29.0		B	DSO	60	3	3	3
10509		KAND	11	29	1130	S11	W06	11	29.0			CSO		5	5	3
10509		HOLL	11	29	1456	S11	W08	11	29.0		B	DSO	90	6	4	4
10509	31948	MWIL	11	29	1600	S11	W08	11	29.1	5	(BP)					
10509		VORO	11	30	0004	S10	W13	11	29.0			HAX	56	2		2
10509		LEAR	11	30	0013	S11	W09	11	29.3		B	CAO	50	4	9	4
10509		SVTO	11	30	1209	S11	W20	11	29.0		A	HSX	40	3	2	2
10509	31948	MWIL	11	30	1600	S11	W18	11	29.3	4	(BP)					
10509		HOLL	11	30	1610	S11	W22	11	29.0		A	HAX	20	2	2	3
10509		VORO	12	01	0006	S11	W26	11	29.1			HAX	42	1		2
10509		LEAR	12	01	0103	S11	W22	11	29.5		B	CSO	50	6	9	2
10509		SVTO	12	01	0805	S11	W31	11	29.1		B	CSO	40	3	3	3
10509	31948	MWIL	12	01	1530	S11	W36	11	29.0	5	AP					
10509		HOLL	12	01	1550	S09	W35	11	29.1		A	HAX	20	1	1	3
10509		LEAR	12	02	0022	S12	W40	11	29.1		A	HSX	50	1	1	3
10509		VORO	12	02	0033	S11	W40	11	29.1			HAX	29	1		3
10509		TACH	12	02	0640	S10	W45	11	29.0			HSX	25	1	1	2
10509		SVTO	12	02	0755	S11	W45	11	29.0		B	CRO	10	2	2	3
10509	31948	MWIL	12	02	1600	S10	W49	11	29.1	4	(AP)					
10509		HOLL	12	02	1940	S11	W52	11	29.0		A	HAX	20	3	1	3
10509		LEAR	12	03	0030	S12	W54	11	29.0		A	HSX	30	1	2	2
10509		VORO	12	03	0033	S10	W54	11	29.1			ARX	20	1		3
10509		SVTO	12	03	1003	S11	W60	11	29.0		A	HSX	10	1	1	3
10509	31948	MWIL	12	03	1545	S11	W62	11	29.1	4	(AP)					
10509		HOLL	12	03	1739	S10	W66	11	28.9		A	AXX		1	1	3
10509		LEAR	12	04	0046	S10	W68	11	29.0		A	HRX	20	1		2
10509		VORO	12	04	0048	S11	W68	11	29.0			AXX	13	1		3
10509A		LEAR	11	28	0022	S15	E22	11	29.7		A	AXX	10	1	1	3
10509A		LEAR	11	30	0013	S15	W05	11	29.6		B	BXO	10	2	3	4
10510		HOLL	11	23	1526	S20	E78	11	29.6		B	BXO	10	2	1	3
10510	31950	MWIL	11	23	1530	S20	E75	11	29.4	3	(AP)					
10510	31949	MWIL	11	23	1530	S22	E75	11	29.4	2	(AP)					
10510		LEAR	11	24	0010	S22	E72	11	29.5		B	BXO	60	6	8	3
10510		VORO	11	24	0036	S21	E69	11	29.3			AXX	10	1		2
10510		SVTO	11	24	1110	S22	E72	11	30.0		A	HSX	60	1	2	3
10510		HOLL	11	24	1513	S22	E66	11	29.7		B	CSO	50	5	8	4
10510		VORO	11	25	0019	S22	E64	11	29.9			HRX	32	1		3
10510		LEAR	11	25	0045	S22	E60	11	29.6		B	BXO	90	8	9	3
10510		TACH	11	25	0649	S19	E65	11	30.2			BRI	151	5	12	4
10510	31949	MWIL	11	25	1545	S23	E55	11	29.9	4	(BF)					
10510		HOLL	11	25	1740	S23	E54	11	29.9		B	DSO	70	6	4	3
10510		LEAR	11	26	0003	S19	E50	11	29.8		B	CSO	100	22	8	2
10510		TACH	11	26	0609	S22	E46	11	29.8			DRI	82	6	6	4
10510	31949	MWIL	11	26	1600	S23	E40	11	29.7	4	(B)					
10510		HOLL	11	26	1600	S25	E40	11	29.8		B	DAO	110	17	7	3
10510		VORO	11	27	0008	S23	E35	11	29.7			CAI	141	13	5	3
10510		LEAR	11	27	0150	S22	E36	11	29.8		B	DSO	70	12	8	3
10510		TACH	11	27	0528	S23	E32	11	29.7			BRI	67	1	7	3
10510		SVTO	11	27	0836	S23	E33	11	29.9		B	CSO	80	8	9	3
10510	31949	MWIL	11	27	1600	S25	E28	11	29.8	4	(B)					
10510		HOLL	11	27	1730	S24	E27	11	29.8		B	CKO	80	21	8	2
10510		LEAR	11	28	0022	S23	E24	11	29.9		B	DAI	200	32	9	3
10510		TACH	11	28	0628	S23	E21	11	29.9			CRI	80	19	5	2
10510		SVTO	11	28	1125	S25	E18	11	29.9		B	DSO	90	9	9	3
10510		KAND	11	28	1210	S24	E19	11	30.0			DSO		16	8	3
10510		HOLL	11	28	1720	S23	E15	11	29.9		B	DAI	150	26	11	2
10510	31949	MWIL	11	28	2130	S24	E13	11	29.9	4	B					
10510		LEAR	11	29	0014	S23	E11	11	29.8		B	DAO	110	27	9	4

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

NOVEMBER 2003

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
10510		SVTO	11	29	1000	S23	E06	11	29.9		B	DAI	110	16	9	3
10510		KAND	11	29	1130	S23	E05	11	29.9			DRI		22	10	3
10510		HOLL	11	29	1456	S22	E02	11	29.8		B	EAI	70	37	11	4
10510	31949	MWIL	11	29	1600	S24	E02	11	29.8	4	(B)					
10510		VORO	11	30	0004	S23	W02	11	29.8			DKI	104	9	7	2
10510		LEAR	11	30	0013	S23	W03	11	29.8		B	DAI	160	34	10	4
10510		SVTO	11	30	1209	S24	W09	11	29.8		B	BXO	40	10	8	2
10510		KAND	11	30	1210	S25	W09	11	29.8			DSO		12	8	1
10510	31949	MWIL	11	30	1600	S24	W11	11	29.8	4	(B)					
10510		HOLL	11	30	1610	S22	W15	11	29.5		B	EAI	40	30	11	3
10510		VORO	12	01	0006	S22	W19	11	29.6			BXI	10	10	6	2
10510		LEAR	12	01	0103	S23	W18	11	29.7		B	BXO	40	29	11	2
10510		SVTO	12	01	0805	S23	W22	11	29.7		B	CRO	40	9	8	3
10510	31949	MWIL	12	01	1530	S23	W25	11	29.8	4	B					
10510		HOLL	12	01	1550	S23	W26	11	29.7		B	CSO	50	29	14	3
10510		LEAR	12	02	0022	S24	W29	11	29.9		B	BXO	30	19	10	3
10510		VORO	12	02	0033	S23	W30	11	29.8			CRI	75	8	10	3
10510		SVTO	12	02	0755	S21	W38	11	29.5		B	BXO	10	4	3	3
10510	31949	MWIL	12	02	1600	S22	W39	11	29.8	4	(B)					
10510		HOLL	12	02	1940	S22	W45	11	29.5		B	BXO	20	7	9	3
10510		LEAR	12	03	0030	S23	W45	11	29.6		B	BXO	30	7	10	2
10510		VORO	12	03	0033	S21	W44	11	29.7			BXX	20	12	8	3
10510		SVTO	12	03	1003	S22	W53	11	29.4		A	HSX	20	1	2	3
10510	31949	MWIL	12	03	1545	S23	W52	11	29.7	5	(B)					
10510		HOLL	12	03	1739	S23	W55	11	29.6		B	BXO	40	4	3	3
10510		LEAR	12	04	0046	S22	W56	11	29.8		B	EAO	100	7	12	2
10510		VORO	12	04	0048	S23	W56	11	29.8			CRO	46	8	10	3
10510		TACH	12	04	0547	S23	W63	11	29.5			BRO	62	4	5	3
10510		KAND	12	04	1155	S23	W65	11	29.6			BXO		4	7	2
10510	31949	MWIL	12	04	1530	S24	W66	11	29.6	4	(AP)					
10510		HOLL	12	04	1605	S25	W65	11	29.7		B	CSO	120	5	7	4
10510		VORO	12	05	0030	S23	W69	11	29.8			CAI	82	14	9	3
10510		LEAR	12	05	0113	S22	W69	11	29.8		B	BXO	80	5	7	1
10510		KAND	12	05	1010	S24	W77	11	29.6			HS		1	2	2
10510		HOLL	12	05	1708	S25	W78	11	29.8		A	HAX	60	1	2	3
10510	31949	MWIL	12	05	1830	S22	W79	11	29.8	5	AP					
10510		LEAR	12	06	0015	S23	W83	11	29.7		B	BXO	50	5	5	3
10510C	31961	MWIL	12	01	1530	S14	W20	11	30.1	4	AP					
10510B		TACH	11	24	0538	S32	E76	11	30.2			AX	24	1	1	4

Stations reporting:

HOLL = Holloman
KAND = Kandilli
LEAR = Learmonth
MWIL = Mt. Wilson
PALE = Palehua
RAMY = Ramey
SVTO = San Vito
TACH = Tashkent
VORO = Voroshilov

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 2003

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
01	0421	0427	0440	1-	5					2	0417	C3.7	10486
01	0443	0447	0503	1-	5					2	0436	C2.8	
01	0452	0457	0517	1	5					3	0450	C5.6	10488
01	0526	0530	0543	1-	5					3	0526	C3.6	10486
01	0812	0820	0835	1	5		1			5	0814	C4.4	10486
01	0843	0845	0857	2+	5	1	2	1		6	0839	M1.3	10488
01	1136	1146	1209	3-	5	1	2	1		4	1131	C9.7	10488
01	1743	1751	1846	2	3					2	1742	M1.1	10488
01	2228D	2237D	2326U	2+	1					1	2226	M3.2	10486
02	0240	0246	0254	1-	1					1	0237	C4.0	10486
02	0749	0755	0814	1	5					4	0659	M1.0	10486
02	0855	0909U	0922	1	1		1				No flare		
02	0933	0947U	1036	1	1		1				No flare		
02	1227	1231	1247	1	1					1	1230	M1.8	10488
02	1231	1247	1358	3	5	1	2	1		3	1230	M1.8	10488
02	1437	1445	1511	1+	5		1			2	No flare		
02	1542	1555	1619	1	1		1				1539		10486
02	1704	1716	1801	2	3					2	1703	X8.3	10486
03	0444	0450	0501	1-	1					1	0450		10486
03	0633	0639	0706	1+	5					2	*		
03	0746	0823	0846	2	1		1				*		
03	0836	0849	0858	2	1			1			*		
03	0914	0923U	0945	2	1		1				*		
03	0945	0959	1040	3	5	1	2	1		7	0943	X3.9	10488
03	1017	1035	1124	2-	5					3	1021E		10488
03	1340	1414	1502	1	1		1				No flare		
03	1528	1534	1613	2	5		1			6	1526	M3.9	10486
03	1550	1555	1605	1-	1					1	1544		10486
03	2028D	2038D	2102U	2	1					1	2031	C5.4	
04	0402	0410	0430	1+	5					3	0404	C5.0	
04	0421	0429	0510	2	5					3	No flare		
04	0544	0551	0635	2	3					3	0543	M2.6	
04	0650	0654	0713	1-	3					3	No flare		
04	0825	0834	0919	2	5					2	No flare		
04	0941	0944	0957	1-	1					1	0940	C2.8	10486
04	1012	1020	1112	3	5	1	2	1		9	1011	M3.0	10488
04	1117	1120	1127	2	5	1	2	1		4	1115	C5.7	10486
04	1344	1348	1407	2	5		2	1		4	1343	M1.1	10486
04	1451	1457	1520	1	1		1				*		
04	1940	1949	2027	2	3					2	1929	X28.0	10486
05	0240	0243	0317	2-	5					2	0237	M1.6	10486
05	0754	0759	0828	2-	5					4	0754	C4.7	
05	0930	0954U	1050	2	1		1				No flare		
05	1048	1054	1113	3	5	1	2	1		4	1046	M5.3	10486
05	1348	1409U	1446	1	1		1				No flare		
08	0943	0958	1013	1	1		1				No flare		
09	0636	0640	0658	1	1					1	No flare		
10	1026	1041	1109	1+	5		1			1	1029	B1.9	
10	2129	2132	2138	1-	1						2125	C1.9	
11	0528	0545	0610	2	1					1	0526	B7.8	
11	0729	0738	0802D	1	1		1				No flare		
11	0802	0817	0900	1	1		1				No flare		
11	1212	1227	1314	1	1		1				No flare		
11	1328	1349	1444	2+	3		2			3	1321	M1.6	10498
11	1557D	1610D	1644U	2+	1					1	1523	C8.5	
12	0932	0940	1008	1+	3					3	0928	C1.8	
12	1027	1046	1103	2	1		1				*		
12	1156	1201	1226	1	1		1				*		
12	1348	1354	1402	2+	5		2	1		2	1342	C2.3	

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 2003

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
13	0455	0459	0536	2	3					2	0454	M1.6	
13	0808	0848	0848	2	1		1				No flare		
13	0856	0909	1038	2+	3		1			1	0903	M1.4	10501
13	0907	0925	1059	2+	3					4	0903	M1.4	10501
13	1058	1104	1132	1	3		1			3	1102	C5.0	
13	1210	1223	1320	1	1		1				No flare		
14	0858	0912	1004	1	1		1				0905	B5.0	10501
15	0430	0433	0439	1-	1					1	No flare		
15	0922	0954	1035	1	1		1				0930	B5.4	
16	0749	0806	0806U	1	3	1	2			2	0749	C1.9	
16	0818	0828	0851	1	1	1					0834	C1.0	
16	1019	1033	1107	1+	3		1			6	1010	C7.0	10501
16	1810D	1818D	1847D	2	1					1	1808	C4.9	10501
16	1852D	1856D	1916D	1	1					1	1850	C2.6	10501
17	0820	0840	0944	1	1		1				No flare		
17	0857	0905	0923	3-	5	1		1		4	0855	M4.2	10501
17	1342	1353	1431	1	1		1				1341	C2.5	
17	2001D	2005D	2019D	1-	1					1	2001	C3.1	
18	0135	0140	0203	1+	5					2	0134	M1.8	10501
18	0519	0525	0548	1+	5					3	0525	C3.8	10501
18	0725	0740	0826	2-	5		1			5	0723	M3.2	10501
18	0814	0825	0908	2+	3					3	0812	M3.9	10501
18	0937	0956	1017	1+	1	1	1			1	0923	M4.5	
18	2141D	2148D	2211D	1+	1					1	2144	C2.2	10507
18	2216	2222	2300	2-	3					2	2215	C6.1	
19	0356	0401	0442	2	3					2	0355	M1.7	10501
19	0801	0814	0907	2-	3		1			2	0759	C8.8	10501
19	0930	0934	1008	2	1					1	0926	C4.9	10501
19	1148	1206	1308	2	1		1			1	1146	C2.8	10506
19	1417	1422	1438	1	1					1	1414	C3.9	
19	1501	1517	1556	2+	5		1			2	1455	C9.1	10506
20	0435	0442	0514	2-	5					3	0432	C4.3	10508
20	0726	0729	0745	1	5		1			4	0725	C3.8	10501
20	0737	0748	0813	3	5	1	2	1		4	0735	M9.6	10501
20	0935	0940	0945	1-	1					1	No flare		
20	1013	1022	1056	2+	5		2	1		6	1013	C4.1	
20	1232	1240	1302	2	5		2	1		2	1231	C3.5	
20	2347D	2354D	2359U	1+	1					1	2342	M5.8	10501
21	0940	0952	1019	3-	5		1	1		5	0937	C4.3	10506
24	0827	0842	0921	1	1		1				No flare		
24	2009	2016	2038	1+	3					2	2008	C2.3	10508
25	0558	0604	0655	2+	1					1	0554	C3.0	10508
25	0932	0947	1050	1	1		1				0924	C2.2	
25	1014	1017	1029	1-	1					1	No flare		
25	1326	1329	1357	1	1		1				1325	C1.3	10508
26	0911	0930	0948	1	3	1	2				No flare		
27	0638	0644	0704	1+	1					1	0634	C1.9	10508
27	0801	0818	0933	2+	5		1			3	0741	C9.6	10508
27	1607	1700	1907	3+	1					1	No flare		
27	1824	1830	1900	2	1					1	No flare		
27	1843	1848	1945	2+	1					1	1839	C2.7	10508
28	0910	0916	0943	2-	5					2	0906	C3.6	10508

* = no flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 2003

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
29	0633	0641	0657	1	1					1	0632	C2.0	10508
29	0657	0659	0711	1-	1					1	0656	C1.5	10508
29	0832	0836	0854	1	5					2	0830	C1.9	10507
29	1009	1013	1046	2	1					1	1006	C2.6	10508
29	2103	2111	2207	2+	1					1	2100	C4.2	10510

* = no flare patrol.

OBSERVATORIES REPORTING FOR NOVEMBER 2003

Alberta, Canada	SES	Milan, Italy	SES
Athens, Greece	SES	Nerja, Spain	SES
Bern, Switzerland	SES	Palo Alto, California, USA	SES
Calcutta, India	SES	Panska Ves, Czech Republic	SES, SEA, SWF
Cambridge, England, UK	SES	Sofia, Bulgaria	SES
Edenvale, Rep of S. Africa	SES	Sussex, United Kingdom	SES
Houston, Texas, USA	SES	Upice, Czech Republic	SEA
Isola del Gran Sasso, Italy	SES	Villiersdorp, South Africa	SES
Marlborough, Massachusetts, USA	SES		

Observations are not necessarily continuous.

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 2003

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
01	0000	0750	CULG	0000.0E	0750.0D	I	S,C	1	50	160	
			CULG	0044.0	0044.0	III	B	1	60	300	
			CULG	0056.0	0056.0	III	B	1	18X	80	
			CULG	0139.0	0141.0	III	G	1	18	90	
			CULG	0238.0	0238.0	III	B	1	30	90	
			CULG	0255.0	0255.0	III	B	2	20	150	
			CULG	0304.0	0304.0	III	B	1	100	370	
			CULG	0417.0	0421.0	III	G	1	30	180	
			CULG	0619.0	0621.0	III	G	1	20	100	
			LEAR	0625.0	0628.0	III		1	25	180	
			CULG	0626.0	0628.0	III	G	3	18	300	
			SVTO	0626.0	0627.0	III		1	25	180	
	0000	0743	HIRA	0626.0	0628.0	III	G	2	30	130	
			IZMI	0658.0E	1200.0D	III	N	1	25X	95U	
	0658	1200	IZMI	0658.0E	1200.0D	I	S	2	50	270X	
			IZMI	0659.8	0659.9	III	G	1	25X	160	
			CULG	0700.0	0700.0	III	B	3	23	90	
			IZMI	0839.7	0839.9	III	B	2	50	160	
	0720	1510	BLEN	0842.8	0845.5	III	GG,C	2	600	800	
			SVTO	0912.0	0912.0	III		1	25	46	
			IZMI	0912.6	0912.9	III	B	2	25X	140	
			SVTO	1019.0	1019.0	III		1	25	65	
	0710	1421	ONDR	1132.2	1152.1	DCIM	G	1	2000X	4500X	
			IZMI	1132.5	1133.1	III	GG,FS,DC	2	50	180	
			BLEN	1134.0	1515.0X	I	DC,C	3	140	4000X	
			BLEN	1138.0	1141.0	III	G,C	2	140	4000X	
			IZMI	1139.1	1140.6	III	GG,FS	2	55	190	
			HOLL	1433.0	2030.0	CONT		1	77	180	
			HOLL	1758.0	1801.0	III		1	25	180	
			PALE	1759.0	1800.0	III		1	25	180	
			SGMR	1759.0	1800.0	III		1	30	50	
			CULG	2000.0E	2230.0U	I	S	1	60	160	
	2000	2400	CULG	2000.0E	2052.0	III	S,C	1	20	100	
			HOLL	2118.0	2119.0	III		1	25	180	
			CULG	2119.0	2120.0	III	G	3	18X	300	
			PALE	2119.0	2119.0	III		1	25	180	
	2059	2400	HIRA	2119.0	2119.5	III	B	1	30	280	
			LEAR	2149.0	0400.0	CONT		1	50	180	
			HIRA	2224.5	2257.0	II		3	25X	290	
			CULG	2231.0	2234.0	III	G	1	20	180	
			HOLL	2233.0	2330.0	III	N	1	32	180	
			LEAR	2233.0	2234.0	III		1	58	180	
			HIRA	2233.5	2234.0	III	B	2	60	180	
			CULG	2234.0	2235.0	III	G	3	18	330	
			CULG	2234.0	2244.0	II	FN	3	30	150	
			CULG	2234.0	2247.0	II	SH	3	35	290	ESS 1000
			LEAR	2234.0	2300.0	II		2	33	180	ESS 1079
			HIRA	2234.5	2244.0	II		3	30	130	
			HOLL	2236.0	2351.0	IV		1	53	180	
			CULG	2237.0	2240.0	UNCLF		1	180	430	
			HOLL	2238.0	2246.0	II		2	46	180	ESS 1007
			CULG	2239.0	2400.0D	III	S,C	2	20	200	
			HIRA	2243.0	2333.0	IV		2	70	150	
			LEAR	2243.0	0010.0	IV		1	25	180	
			CULG	2248.0	2251.0	III	G	3	20	300	
			CULG	2248.0	2302.0	II	UE	3	20	45	
			CULG	2307.0	2313.0	UNCLF		3	18	30	
			PALE	2336.0	2255.0	II		1	25	180	
			CULG	2345.0	2356.0	CONT		1	200	750	
02	0000	0750	CULG	0000.0E	0750.0D	III	S,C	1	20	180	
			CULG	0250.0	0252.0	III	G	3	30	270	
			LEAR	0250.0	0252.0	III		2	25	180	
			PALE	0250.0	0251.0	III		1	99	180	
	0000	0742	HIRA	0250.0	0252.0	III	G	1	50	290	
	0700	1200	IZMI	0700.0E	1200.0D	I	S	2	50	270X	
			IZMI	0742.9	0743.1	III	B	1	40	65	
			IZMI	0755.8	0756.8	III	G	1	180	270X	
			IZMI	0821.2	0822.4	III	G	1	40	90	

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 2003

OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
02		IZMI	0831.9	0832.1	III	G	2	55	190	
		SVTO	0854.0	1524.0	III	N	1	25	180	
		IZMI	0855.7	0855.9	III	G	2	25	130	
0712	1419	ONDR	0900.1	0905.2	DCIM	G	2	2000X	4500X	
0720	1505	BLEN	0900.1	0911.7	DCIM	P,C	3	140	4000X	
		IZMI	0900.2	0901.7	III	GG,C	2	40	270X	
		IZMI	0906.1	0907.6	III	G,U	2	52	190	
		IZMI	0920.4	0928.4	III	GG,C,FS	2	25X	100	
		IZMI	0920.5	0921.5	III	G	1	180	270X	
		IZMI	0942.5	0942.6	III	G	1	170	260	
		IZMI	1113.9	1114.2	III	G,C	2	230	270X	
		IZMI	1122.8	1124.3	III	G,C	2	30	270X	
		IZMI	1128.1	1129.3	III	G,C	2	25X	230	
		IZMI	1128.6	1129.4	V		2	100U	160	
		IZMI	1132.5	1136.1	III	GG	2	30	270X	
		IZMI	1137.1	1140.2	III	GG	1	180	270X	
		IZMI	1143.5U	1152.0U	III	N	1	130	270X	
		IZMI	1153.0	1153.7	III	G	2	110	190	
		ONDR	1233.0	1251.0	DCIM	G	1	2000X	4500X	
		BLEN	1245.4	1249.3	DCIM	P,C	2	400	4000X	
		HOLL	1714.0	1800.0	III	N	2	25	180	
		PALE	1714.0	1737.0	II		3	25	180	ESS 1691
		SGMR	1714.0	1824.0	IV		3	30	80	
		HOLL	1715.0	1740.0	II		2	25	180	ESS 1551
		HOLL	1715.0	1845.0	IV		2	25	180	
2000	2400	CULG	2044.0	2050.0	III	G	3	18X	130	
		CULG	2318.0	2319.0	III	G	1	30	160	
2100	2400	HIRA	2318.0	2318.5	III	B	1	80	130	
		CULG	2324.0	2325.0	III	G	1	27	180	
		HIRA	2324.0	2324.5	III	B	1	50	200	
03	0000	0750	CULG	0040.0	0133.0	III	S,C	1	18X	180	
			CULG	0058.0	0104.0	III	G	3	18X	850	
			LEAR	0058.0	0426.0	III	N	2	25	180	
			PALE	0058.0	0100.0	III		1	25	180	
	0000	0741	HIRA	0058.5	0102.5	III	G	2	30	190	
			CULG	0108.0	0118.0	III	G	3	18X	340	
			CULG	0108.0	0136.0	IV		1	20U	850	
			CULG	0124.0	0128.0	II	FN	3	35	100	SWF
			CULG	0124.0	0129.0	II	SH	3	50	200	FLA ESS 1500
			HIRA	0124.0	0128.0	II		2	50	200	
			LEAR	0124.0	0130.0	II		1	25	180	ESS 1400
			PALE	0124.0	0130.0	II		1	25	180	ESS 2616
			LEAR	0131.0	0406.0	IV		1	25	115	
			CULG	0133.0	0226.0	III	S,C	3	18X	250	
			CULG	0226.0	0750.0D	III	S,C	1	18	200	
			CULG	0302.0	0304.0	III	G	3	18X	140	
			CULG	0329.0	0333.0	III	G	3	18X	160	
			HIRA	0329.0	0329.5	III	B	1	30	70	
	0650	1200	IZMI	0650.0E	1200.0D	I	S	2	75	270X	
			SVTO	0711.0	0720.0	III		1	25	152	
			IZMI	0720.3	0720.5	II	G	1	40	90	
			IZMI	0946.2	0947.2	III	G	1	40	170	
			ONDR	0948.5	1139.0	DCIM	GG	3	800X	2000X	
			IZMI	0948.8	0951.4	III	GG,FS	2	25X	270X	
			LEAR	0949.0	0954.0	V		2	25	180	
			SVTO	0949.0	0954.0	III		2	25	180	
	0714	1417	ONDR	0949.0	1112.0	DCIM	GG	3	2000X	4500X	
	0720	1505	BLEN	0949.4	1008.5	II	H	3	100X	620	
			BLEN	0949.5	1055.5	IV	P	3	100X	4000X	
			IZMI	0950.4U	1013.0	II	G,HARM	2	25X	270X	
			SVTO	0951.0	1012.0	II		2	25	180	ESS 0869
			IZMI	0951.3	0952.8	III	G,C	3	25X	270X	
			SVTO	0952.0	1523.0	IV		1	25	180	
			LEAR	0955.0	1007.0	II		2	25	180	ESS 1362
			IZMI	0956.4	1010.6	III	N	2	25X	270X	
			IZMI	0956.9	1028.0U	IV		2	40U	270X	
			LEAR	1000.0	1019.0	IV		1	25	180	
2000	2400	CULG	2000.0E	2306.0	I	S,C	1	70	170	

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Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
03			CULG	2002.0	2002.0	III	B	1	30	75	
			CULG	2037.0	2037.0	III	G	3	20	90	
			CULG	2041.0	2041.0	III	B	1	27	50	
	2101	2400	HIRA								
04	0000	0750	CULG	0045.0	0045.0	III	B	1	23	160	
			CULG	0346.0	0346.0	III	B	1	80	300	
	0000	0740	HIRA	0346.0	0346.5	III	B	1	110	360	
			CULG	0447.0	0447.0	III	B	1	100	300	
			CULG	0512.0	0700.0	I	S	1	80	260	
	0700	1200	IZMI	0700.0E	1015.0U	I	S	2	140	270X	
			CULG	0718.0	0719.0	III	B	1	23	90	
			LEAR	0839.0	0840.0	III		1	53	156	
			IZMI	0839.7	0840.7	III	G,U	2	60	185	
			LEAR	0940.0	0942.0	III		1	50	170	
			IZMI	0940.9	0942.2	III	G	2	50	170	
			IZMI	1005.5	1007.6	III	G	1	110	180	
			IZMI	1015.0	1200.0D	I	S,C	2	110	270X	
			IZMI	1015.0	1200.0D	III	N	1	110	170	
			IZMI	1027.2	1028.2	III	G	1	110	175	
	0716	1415	ONDR	1344.4	1349.3	DCIM	G	1	2967	4500X	
	0725	1505	BLEN	1344.8	1346.7	DCIM	C	2	2000	4000X	
			HOLL	1942.0	1950.0	II		2	25	180	ESS 1074
			PALE	1942.0	1947.0	II		2	25	180	ESS 1268
			SGMR	1943.0	1947.0	II		3	30	80	ESS 1200
			PALE	1947.0	2017.0	IV		2	25	180	
	2000	2400	CULG	2000.0E	2006.0	II	UE	3	23	170	
			CULG	2002.0	2013.0	III	G	3	23	57	
			CULG	2003.0	2008.0	II	FN	3	20	45	
			CULG	2003.0	2010.0	II	SH	3	23	90	ESS 1500
			CULG	2006.0	2058.0	IV		1	20U	1400	
			CULG	2017.0	2017.0	III	G	2	20	45	
			HOLL	2036.0	2038.0	III		1	25	180	
			CULG	2037.0	2039.0	III	G	2	23	220	
			CULG	2045.0	2244.0	I	S	1	100	150	
			CULG	2046.0	2100.0	III	G	1	20	180	
			CULG	2047.0	2056.0	III	G	3	20	45	
	2103	2400	HIRA								
			CULG	2110.0	2110.0	III	G	1	90	180	
			CULG	2134.0	2136.0	III	G	1	50	200	
05	0000	0739	HIRA	0301.0	0301.5	III	B	2	100	180	
	0000	0750	CULG	0301.0	0301.0	III	B	2	57	180	
			LEAR	0507.0	0508.0	III		1	25	118	
			HIRA	0507.5	0508.0	III	B	1	25X	210	
			CULG	0508.0	0508.0	III	G	3	18X	180	
			LEAR	0527.0	0547.0	III	N	1	43	153	
			CULG	0528.0	0528.0	III	B	1	30	140	
			CULG	0538.0	0538.0	III	B	1	50	150	
			CULG	0632.0	0632.0	III	G	1	50	200	
			CULG	0702.0	0703.0	III	G	2	27	140	
			CULG	0704.0	0705.0	III	G	3	20	180	
			HIRA	0704.0	0704.5	III	B	1	50	400	
			LEAR	0704.0	0704.0	III		1	25	114	
	0718	1413	ONDR								
			LEAR	0829.0	0829.0	III		1	75	135	
			SVTO	0829.0	0829.0	III		1	75	165	
	0700	1200	IZMI	0829.4	0829.7	III	G	2	75	150	
	0725	1500	BLEN	1049.3	1050.3	DCIM	C	2	2000	4000X	
			SGMR	1349.0	1350.0	III		1	30	50	
			SGMR	1433.0	1433.0	III		2	30	60	
	2000	2400	CULG	2042.0	2042.0	III	G	1	130	180	
	2104	2400	HIRA								
06	0000	0738	HIRA	0354.0	0354.5	III	B	1	80	180	
	0000	0800	CULG	0354.0	0355.0	III	G	1	30	180	
			LEAR	0701.0	0702.0	III		1	51	97	
	0700	1200	IZMI	0701.7	0702.2	III	G,C	2	50	90	
	0720	1410	ONDR								

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Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
06	0730	1500	BLEN								
	2000	2400	CULG								
	2105	2400	HIRA								
07	0000	0737	HIRA								
	0000	0800	CULG								
	0702	1200	IZMI								
	0722	1408	ONDR								
	0730	1500	BLEN								
			HOLL	1501.0	1503.0	III		1	25	89	
	2000	2400	CULG								
	2106	2400	HIRA								
08	0000	0736	HIRA								
	0000	0800	CULG	0543.0	0543.0	III	B	2	40	180	
	0725	1406	ONDR								
	0730	1500	BLEN								
	0700	1200	IZMI	0925.9	0933.9	III	GG	1	40	95	
	2000	2400	CULG								
	2107	2400	HIRA								
09	0000	0800	CULG	0431.0	0431.0	III	B	1	20	160	
			CULG	0534.0	0535.0	III	G	1	18	90	
			CULG	0609.0	0621.0	UNCLF		1	57	180	
			LEAR	0615.0	0629.0	III		1	25	180	
			SVTO	0615.0	0624.0	III		1	25	80	
	0000	0735	HIRA	0615.5	0618.5	III	G	1	30	160	
			CULG	0616.0	0625.0	III	GG	3	18X	180	
			CULG	0625.0	0800.0D	III	S,C	1	25	180	
			CULG	0640.0	0645.0	UNCLF		3	27	40	
	0655	1200	IZMI	0706.2	0706.4	III	G	1	55	85	
			LEAR	0714.0	0959.0	III	N	1	25	180	
			SVTO	0714.0	0721.0	III		1	29	173	
			HIRA	0714.5	0715.0	III	B	3	40	180	
			IZMI	0714.5	0714.8	III	G,C	2	40	260	
			CULG	0715.0	0715.0	III	B	3	18X	180	
			CULG	0719.0	0721.0	III	G	2	25	170	
			IZMI	0719.1	0721.6	III	G	2	35	150	
			CULG	0722.0	0722.0	III	B	3	18	70	
			IZMI	0723.0	0800.0U	I	S	1	45U	155	
			IZMI	0723.0	0800.0U	III	N	1	45U	140	
	0727	1404	ONDR								
	0740	1500	BLEN								
			IZMI	0831.1	0831.4	III	G,C	2	50	155	
			IZMI	0931.0	0931.7	III	G	1	40	160	
	2108	2400	HIRA								
	2000	2400	CULG	2141.0	2141.0	III	B	1	20	45	
			LEAR	2323.0	2324.0	III		1	25	86	
			CULG	2324.0	2325.0	III	G	2	23	100	
10	0000	0734	HIRA								
	0000	0800	CULG	0702.0	0702.0	III	B	2	23	57	
	0655	1200	IZMI	0702.0	0702.1	III	B	1	45	145	
			IZMI	0831.3	0831.3	UNCLF		2	60	70	
	0729	1402	ONDR	1348.1	1352.2	DCIM	G	2	800X	1944	
	0745	1500	BLEN	1348.2	1352.3	DCIM	P	2	250	2000	
	2000	2400	CULG	2011.0	2015.0	III	G	2	18	770	
			HOLL	2013.0	2013.0	III		1	36	178	
			CULG	2030.0	2032.0	III	G	3	18	180	
			HOLL	2031.0	2032.0	III		1	25	180	
			HOLL	2126.0	2131.0	III		1	25	180	
			CULG	2127.0	2130.0	III	G	3	18X	150	
	2109	2400	HIRA	2127.5	2130.0	III	G	2	30	310	
			CULG	2206.0	2206.0	III	B	1	20	60U	
			HIRA	2206.0	2206.5	III	B	1	30	110	
			CULG	2243.0	2243.0	III	B	1	20	45U	
			LEAR	2243.0	2243.0	III		1	25	180	
			HIRA	2243.5	2244.0	III	B	1	25X	500	
			HOLL	2310.0	2317.0	III		1	25	180	

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Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
10			LEAR	2310.0	2319.0	III		1	25	180	
			HIRA	2310.5	2319.0	III	G	2	25X	490	
			CULG	2316.0	2317.0	III	G	3	18X	100	
11			LEAR	0138.0	0139.0	III		1	25	130	
			LEAR	0527.0	0531.0	III		3	25	180	
	0000	0733	HIRA	0528.0	0530.5	III	G	3	25X	340	
	0000	0800	CULG	0528.0	0530.0	III	G	3	18X	130	
			HIRA	0530.5	0547.0	II		2	25X	230	
			CULG	0534.0	0549.0	III	GG	3	20	75	
			LEAR	0535.0	0549.0	II		2	25	180	ESS 0526
	0655	1202	IZMI	0759.4	0801.2	III	G	1	45	65	
			IZMI	1033.4	1033.8	III	G	1	110	150	
			SVTO	1210.0	1210.0	III		1	63	83	
			ONDR	1328.0	1401.1	DCIM	GG,SP	3	800X	2000X	
			SVTO	1328.0	1338.0	III		2	25	180	
	0731	1400	ONDR	1329.4	1401.1U	DCIM	GG,FS	3	2000X	4500X	
			SGMR	1330.0	1340.0	III		2	30	80	
	0755	1500	BLEN	1331.0	1457.5	IV	P	3	100X	4000X	
			SVTO	1335.0	1351.0	II		2	25	180	ESS 0481
			SGMR	1339.0	1342.0	II		2	61	80	ESS 0510
			SGMR	1339.0	1351.0	II		2	44	80	ESS 0510
			HOLL	1544.0	1552.0	III		1	25	180	
			SGMR	1545.0	1554.0	III		2	30	70	
	2000	2400	CULG	2012.0	2012.0	III	B	1	40	200	
			CULG	2042.0	2042.0	III	B	1	40	90	
			CULG	2131.0	2145.0	III	GG	3	18X	260	
			HOLL	2131.0	2142.0	III		1	25	149	
	2110	2400	HIRA	2131.0	2142.0	III	G	1	40	140	
			CULG	2148.0	2150.0	III	G	1	20	45	
			CULG	2250.0	2251.0	III	G	2	20	160	
			HIRA	2251.0	2251.5	III	B	1	25X	70	
			LEAR	2251.0	2251.0	III		1	25	86	
12	0000	0732	HIRA	0111.0	0112.0	III	G	2	40	210	
	0000	0800	CULG	0111.0	0113.0	III	G	3	18X	270	
			CULG	0657.0	0657.0	III	B	2	20	90	
			CULG	0738.0	0739.0	III	G	3	18	170	
			IZMI	0738.0	1110.0U	I	N	1	200	270X	
			LEAR	0738.0	0738.0	III		1	25	119	
			SVTO	0738.0	0738.0	III		1	28	73	
	0655	1200	IZMI	0738.1	0738.6	III	G,RS,C	2	25X	120	
			IZMI	0930.4	0931.6	III	G	1	40	210	
			LEAR	0935.0	0940.0	III		1	25	120	
			SVTO	0935.0	0936.0	III		1	25	67	
			IZMI	0935.6	0936.3	III	G,C	1	35	85	
			IZMI	0939.8	0940.1	UNCLF		2	55	85	
			IZMI	1010.7	1011.9	III	G	1	25X	90	
			IZMI	1150.4	1150.9	III	G	2	50	145	
			IZMI	1150.4	1151.4	I	SS,DC	2	110	150	
	0900	1500	BLEN	1348.9	1355.8	DCIM	P,C	2	100X	4000X	
			SVTO	1349.0	1352.0	III		1	25	155	
	0733	1359	ONDR	1349.1	1352.4	DCIM	G	1	2908X	4500X	
			SGMR	1350.0	1351.0	III		2	30	75	
			HOLL	2004.0	2006.0	III		1	25	180	
	2000	2400	CULG	2004.0	2007.0	III	G	2	20	180	
			CULG	2008.0	2201.0	III	N	1	20	170	
			CULG	2110.0	2110.0	III	B	3	18X	150	
			LEAR	2351.0	2355.0	III		1	25	170	
			PALE	2351.0	2352.0	III		1	25	165	
			CULG	2352.0	2353.0	III	G	3	18X	180	
	2111	2400	HIRA	2352.0	2353.0	III	B	3	25X	160	
			CULG	2354.0	2356.0	III	G	3	18X	180	
			HIRA	2354.5	2355.5	III	G	1	25X	160	
13	0000	0731	HIRA	0026.0	0026.5	III	B	1	25X	50	
	0000	0800	CULG	0026.0	0027.0	III	G	1	23	90	
			LEAR	0112.0	0113.0	III		1	36	113	
			HIRA	0112.5	0113.0	III	B	1	60	120	

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13		CULG	0113.0	0114.0	III	G	1	30	180	
		LEAR	0351.0	0352.0	III		1	25	180	
		CULG	0352.0	0352.0	III	B	2	30	200	
		HIRA	0352.0	0352.5	III	B	2	60	200	
		CULG	0403.0	0407.0	UNCLF		1	100	150	
		CULG	0451.0	0453.0	III	G	2	18	180	
		LEAR	0456.0	0506.0	III		2	25	180	
		HIRA	0456.5	0505.0	III	G	2	25	200	
		CULG	0457.0	0508.0	III	GG	3	18X	200	
		HIRA	0542.0	0643.0	III	G	2	30	140	
		CULG	0642.0	0643.0	III	G	3	18X	200	
		SVTO	0642.0	0643.0	III		1	25	157	
	0735 1357	ONDR	0904.2	0936.5	DCIM	GG	2	2000X	4500X	
		ONDR	0904.4	0941.1	DCIM	GG	2	800X	2000X	
	0700 1200	IZMI	0905.5	0923.0	I	S,C	1	50	270X	
	0800 1500	BLEN	0906.5	0931.5	DCIM	P,C	3	130	4000X	
		IZMI	0909.1	0921.6	III	GG,FS	2	40	270X	
		IZMI	0916.3	0923.0	I	GG,DC	2	100	160	
		LEAR	0922.0	0937.0	II		3	25	180	ESS 0548
		IZMI	0922.9	0933.4	III	S	2	40U	270X	
		SVTO	0924.0	0941.0	II		3	25	180	ESS 0595
		IZMI	0925.0U	1020.0U	IV		2	45U	270X	
		IZMI	0925.4	0935.9	II	HARM,C	2	25X	90	
		IZMI	0936.0U	1002.0U	III	U	1	40	230	
		IZMI	1039.9	1040.1	III	G	2	60	150	
		IZMI	1043.9	1044.0	III	G	1	90	160	
		ONDR	1150.2	1155.2	DCIM	GG	1	800X	1184	
		BLEN	1327.1	1327.7	III	G	2	180	400	
	2000 2400	CULG	2000.0E	2400.0D	III	S,C	1	20	180	
		CULG	2008.0	2008.0	III	B	3	18	90	
		CULG	2157.0	2157.0	III	B	2	20	180	
		LEAR	2245.0	2245.0	III		1	25	70	
	2112 2400	HIRA	2245.5	2246.0	III	B	1	40	60	
		CULG	2246.0	2246.0	III	B	2	18	90	
		LEAR	2257.0	1001.0	III	N	1	25	86	
14	0000 0731	HIRA								
	0000 0800	CULG	0000.0E	0800.0D	III	S,C	1	20	180	
		CULG	0005.0	0008.0	III	G	3	18	160	
		CULG	0106.0	0106.0	III	B	3	18X	140	
		CULG	0157.0	0157.0	III	B	3	18X	70	
		CULG	0240.0	0240.0	III	B	3	18X	90	
		CULG	0326.0	0326.0	III	B	3	18	90	
		CULG	0335.0	0335.0	III	B	3	18	120	
		CULG	0458.0	0458.0	III	B	3	18	180	
	0700 1200	IZMI	0707.0	0728.0	I	S	1	45X	90	
		IZMI	0712.2	0717.9	III	GG	1	40	130	
		CULG	0716.0	0716.0	III	B	3	18	90	
		IZMI	0732.0U	1200.0D	III	N	1	25X	95X	
		CULG	0739.0	0739.0	III	B	3	20	45	
		IZMI	0742.4	0742.6	III	N	2	45	90	
		CULG	0751.0	0753.0	III	G	3	18	90	
		SVTO	0751.0	0752.0	III		1	25	144	
		IZMI	0751.3	0754.4	III	GG	2	40	155	
		IZMI	0828.7	0828.9	III	B	1	45	85	
		IZMI	0835.2	0835.6	I	GG,HARM,DC	2	160	190	
		IZMI	0846.8	0847.0	III	B	1	40	70	
		IZMI	0859.4	0859.5	III	B	1	40	70	
		SVTO	0917.0	0917.0	III		1	25	43	
		IZMI	0917.4	0917.7	III	B	1	35	75	
		IZMI	0943.7	0943.8	III	B	1	120	205	
		IZMI	0948.0	1200.0D	I	N	2	110U	250	
		IZMI	1031.0	1033.1	III	G,C	1	25X	155	
		SVTO	1031.0	1031.0	III		1	25	123	
	0800 1500	BLEN	1032.5	1039.2	II		1	170	640	
		IZMI	1036.2	1039.1	I	GG,DC	2	170	270X	
		IZMI	1116.2	1116.6	III	G	2	25	62	
		SGMR	1252.0	1252.0	III		1	30	50	
		SVTO	1252.0	1254.0	III		2	25	81	

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0738	1355	14	ONDR	1253.1	1300.5	DCIM	G	1	2146	4500X	
			BLEN	1253.6	1257.3	III	C,RS	3	370	4000X	
			HOLL	1553.0	1900.0	III	N	1	25	180	
			PALE	1830.0	1831.0	III		1	25	63	
			SGMR	1830.0	1831.0	III		2	30	55	
2000	2400		CULG	2022.0	2400.0D	III	S,C	1	20	180	
			CULG	2035.0	2035.0	III	B	3	18	90	
2113	2400		HIRA								
			LEAR	2213.0	0000.0	III	N	1	25	142	
0000	0800	15	CULG	0000.0E	0800.0D	III	S,C	1	20	180	
			CULG	0059.0	0059.0	III	B	3	18X	120	
			CULG	0254.0	0258.0	III	G	3	18X	100	
0000	0730		HIRA	0255.5	0258.0	III	G	1	25X	80	
			CULG	0527.0	0551.0	I	S,C	1	110	260	
0655	1200		IZMI	0711.4	1200.0D	III	N	1	45	95	
			IZMI	0716.3	0719.8	III	GG	2	50	140	
			IZMI	0724.5	0724.6	III	B,HARM	2	30	90	
0740	1353		ONDR								
0800	1500		BLEN								
			IZMI	0817.6	0818.7	III	GG,C	2	30	165	
			SVTO	0847.0	0848.0	III		1	25	82	
			IZMI	0850.8	0853.0	I	GG	2	170	270	
			IZMI	0915.0U	1035.0U	I	S	2	110	170	
			IZMI	1053.0	1120.0	I	S	1	110	270X	
			SVTO	1337.0	1337.0	III		1	25	44	
			HOLL	1731.0	1740.0	III		1	66	180	
2000	2400		CULG	2000.0E	2400.0D	III	S,C	1	20	180	
			CULG	2037.0	2037.0	III	B	3	20	150	
2114	2400		HIRA								
			LEAR	2209.0	1003.0	CONT		1	25	180	
0000	0800	16	CULG	0000.0E	0800.0D	III	S,C	1	20	180	
			CULG	0036.0	0049.0	I	S	1	57	100	
			SVTO	0625.0	1509.0	CONT		1	25	180	
			CULG	0629.0	0630.0	III	G	3	20	180	
			LEAR	0629.0	1003.0	III	N	1	25	180	
0000	0730		HIRA	0629.5	0630.0	III	B	1	30	130	
			IZMI	0648.6	0648.9	III	G	2	45	85	
			IZMI	0702.0E	1200.0D	III	N	2	45	180U	
0702	1200		IZMI	0702.0E	1200.0D	I	S,C	2	45	270X	
			IZMI	0717.7	0718.7	III	GG,C	2	25X	270X	
			CULG	0718.0	0722.0	III	G	2	18	180	
			IZMI	0738.4	0744.5	III	GG,C	2	25X	160	
			CULG	0742.0	0742.0	III	B	3	18X	180	
			IZMI	0759.1	0800.8	III	G,C	2	45	240	
			IZMI	0810.5	0810.7	III	G,FS	2	40	240	
			IZMI	0817.3	0819.0	III	G,FS	2	55	260	
			IZMI	0833.4	0834.5	III	G,C	2	40	240	
			IZMI	0854.1	0906.8	III	GG,FS	2	25X	270X	
			IZMI	0912.9	0913.2	I	GG,DC	2	165	190	
			IZMI	0918.6	0930.5	III	GG	2	30	270X	
			IZMI	0935.9	0939.8	III	GG,C	2	25X	270X	
0800	1450		BLEN	0936.0	0939.9	DCIM	P	2	130	1900	
			IZMI	0946.5	0956.7	III	gg	2	40	270X	
			IZMI	1001.4	1001.7	III	GG,FS	2	35	240	
0742	1351		ONDR	1012.1	1043.5	DCIM	GG	2	2000X	4500X	
			BLEN	1017.1	1021.3	DCIM	P	3	800	4000X	
			BLEN	1032.3	1040.5	DCIM	P	3	140	4000X	
			IZMI	1038.5	1039.0	III	G,FS	2	55	270	
			IZMI	1053.3	1053.8	III	G	2	25X	95	
			IZMI	1105.6	1105.9	III	G,HARM	2	60	190	
			SVTO	1125.0	1127.0	III		2	25	160	
			IZMI	1125.5	1128.4	III	GG,C	2	25X	175	
			BLEN	1126.0	1126.7	DCIM	P	3	100X	4000X	
			HOLL	1609.0	1609.0	III		1	25	94	
2000	2400		CULG	2000.0E	2302.0	III	S,C	1	18	180	
			HOLL	2015.0	2339.0	III	N	1	25	180	
			CULG	2016.0	2032.0	III	G	2	20	180	

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16		HOLL	2028.0	2339.0	CONT		1	72	180	
		CULG	2112.0	2112.0	III	B	3	18	100	
2115	2400	HIRA	2124.5	2125.0	III	B	1	40	140	
		CULG	2125.0	2126.0	III	G	3	18	180	
		HIRA	2213.0	2213.5	III	B	1	30	180	
		PALE	2213.0	2213.0	III		1	25	155	
		LEAR	2220.0	1004.0	CONT		1	25	180	
		CULG	2252.0	2258.0	III	GG	3	18X	1200	
		LEAR	2252.0	2258.0	III		1	25	180	
		PALE	2252.0	2258.0	III		1	25	180	
		HIRA	2252.5	2258.5	III	G	1	25X	1000	
		CULG	2302.0	2400.0D	III	S,C	2	18	180	
		LEAR	2314.0	2316.0	III		1	25	180	
		PALE	2314.0	2316.0	III		1	25	180	
		CULG	2315.0	2317.0	III	G	3	20	280	
		CULG	2333.0	2343.0	III	GG	3	18	1000	
		HIRA	2333.5	2343.5	III	G	1	25X	900	
		LEAR	2336.0	2344.0	III		1	25	180	
		PALE	2340.0	2342.0	III		1	25	180	
17	0000	0800	CULG	0000.0E	0052.0	III	S,C	3	18	200
		CULG	0052.0	0348.0	III	S,C	2	18	180	
		LEAR	0122.0	0123.0	III		1	25	180	
		CULG	0123.0	0123.0	III	B	3	18X	200	
		CULG	0132.0	0132.0	III	B	1	550	750	
		LEAR	0142.0	1004.0	III	N	1	25	109	
		CULG	0230.0	0230.0	III	B	3	18X	40	
		CULG	0348.0	0800.0D	III	S,C	1	20	180	
		CULG	0502.0	0502.0	III	B	3	18	160	
0000	0729	HIRA	0502.0	0502.5	III	B	1	30	120	
		CULG	0531.0	0611.0	I	S,C	1	100	180	
		CULG	0546.0	0607.0	III	N	2	18X	60	
		SVTO	0642.0	1508.0	CONT		1	25	180	
		CULG	0701.0	0701.0	III	B	2	20	100	
		HIRA	0701.0	0701.5	III	B	1	40	110	
0705	1202	IZMI	0705.0E	0950.0	I	N	2	45U	270X	
		IZMI	0715.0	1202.0D	III	N	1	25X	95U	
		CULG	0723.0	0748.0	III	N	2	30	57	
		IZMI	0734.2	0734.4	III	G	1	25	240	
		IZMI	0802.9	0807.1	III	GG,FS	1	35	230	
		IZMI	0816.3	0817.4	III	G	1	25X	65	
		IZMI	0825.8	0826.1	III	G,C	1	25X	190	
		ONDR	0858.1	0952.3	DCIM	GG,FS	2	800X	2000X	
0744	1349	ONDR	0858.1	0913.4	DCIM	GG	2	2000X	4500X	
0800	1450	BLEN	0858.2	0946.5	DCIM	P	3	100X	4000X	
		LEAR	0859.0	0912.0	V		2	25	180	
		SVTO	0859.0	0907.0	III		3	25	180	
		IZMI	0859.1	0900.6	III	GG,C	3	25X	270X	
		IZMI	0900.7	0903.9	III	GG,C,FS	3	25X	270X	
		IZMI	0901.6	0909.6	CONT		2	25X	270X	
		IZMI	0903.4	0906.2	III	GG,FS	2	25X	270X	
		IZMI	0907.0	0909.1	III	GG,FS	2	25X	250	
		SVTO	0907.0	0912.0	III		1	25	171	
		IZMI	0909.6	0911.7	III	GG,FS	2	25X	270X	
		IZMI	0912.3	0928.5	II	G	2	40	65U	
		IZMI	0913.3	0922.8	I	GG,DC	2	45U	270X	
		LEAR	0917.0	0922.0	II		1	25	44	ESS 0445
		IZMI	0923.0	0950.0U	IV		2	45	270X	
		IZMI	0950.0	1202.0D	I	S,C	2	45	270X	
		IZMI	0951.2	1202.0U	III	N	2	90	190	
		ONDR	0955.3	1007.3	DCIM	GG	2	800X	1944	
		IZMI	1137.8	1138.2	III	G	2	25X	240	
		SGMR	1144.0	1145.0	III		/	30	45	
		SGMR	1403.0	1404.0	III		1	30	55	
		HOLL	1405.0	2338.0	CONT		1	25	180	
		SGMR	1603.0	1604.0	III		2	30	80	
		PALE	1930.0	1930.0	III		1	25	103	
2000	2400	CULG	2000.0E	2400.0D	III	S,C	1	18	180	
		CULG	2004.0	2004.0	III	B	2	23	130	

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OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
17		CULG	2017.0	2017.0	III	B	2	20	170	
		CULG	2058.0	2136.0	III	N	3	18	180	
		CULG	2149.0	2149.0	III	B	2	20	130	
2116	2400	HIRA	2149.0	2149.5	III	B	1	40	110	
		CULG	2204.0	2210.0	III	G	2	18	180	
		HOLL	2204.0	2208.0	III		1	25	180	
		HIRA	2204.5	2210.5	III	G	1	30	130	
		LEAR	2217.0	0811.0	CONT		1	25	180	
		HIRA	2257.0	2257.5	III	B	1	25X	130	
		CULG	2258.0	2312.0	III	G	3	18X	160	
		HIRA	2329.0	2332.5	III	G	1	25X	220	
		CULG	2331.0	2331.0	III	B	2	27	260	
18		HIRA								
0000	0800	CULG	0000.0E	0800.0D	III	S,C	1	18	180	
0000	0728	HIRA	0009.5	0010.5	III	G	1	25X	120	
		CULG	0010.0	0010.0	III	G	3	18X	130	
		CULG	0129.0	0159.0	III	N	3	18X	180	
		LEAR	0131.0	0838.0	III	N	2	25	180	
		CULG	0134.0	0138.0	III	G	3	18X	1200	
		HIRA	0134.0	0138.0	III	G	3	25X	1000	
		PALE	0134.0	0137.0	III		2	25	180	
		CULG	0224.0	0320.0	III	N	2	20	180	
		HIRA	0337.5	0338.0	III	B	1	30	50	
		CULG	0338.0	0338.0	III	B	3	20	150	
		CULG	0413.0	0415.0	III	G	3	20	100	
		HIRA	0413.0	0415.0	III	G	1	30	70	
		CULG	0426.0	0427.0	III	G	2	20	140	
		HIRA	0426.0	0427.0	III	G	1	25X	70	
		CULG	0526.0	0532.0	III	G	1	300	670	
		HIRA	0527.5	0532.5	III	G	1	300	670	
		CULG	0714.0	0716.0	III	G	3	18X	140	
		SVTO	0715.0	0838.0	III	N	2	25	180	
		IZMI	0717.0E	1200.0D	I	S,C,DC	2	45U	270X	
0717	1200	IZMI	0717.0E	1200.0D	III	N	2	25X	180U	
		IZMI	0722.7	0730.7	III	GG,C,FS	2	25X	270X	
		CULG	0725.0	0744.0	III	GG	3	18X	1300	
		IZMI	0731.1	0738.7	III	GG,C,FS	2	25X	270X	
		IZMI	0739.6	0746.0	III	GG,C,FS	2	25	270X	
		LEAR	0740.0	0742.0	III		2	25	180	
		IZMI	0740.8	0745.0U	CONT	FS	2	25X	270X	
		IZMI	0743.6	0746.0	III	GG	2	25X	270X	
		IZMI	0746.8	0758.5	II	HARM	2	40	270X	
		CULG	0747.0	0758.0	II	SH	1	80	280	
		CULG	0747.0	0759.0	II	FN	3	35	130	ESS 450
		LEAR	0747.0	0810.0	II		2	25	180	ESS 0405
		SVTO	0747.0	0806.0	II		2	25	180	ESS 0478
		ONDR	0751.0	0844.1	DCIM	GG,FS	3	800X	2000X	
		IZMI	0751.3	0804.0	III	S	2	40	270X	
		CULG	0754.0	0756.0	III	G	3	18	57	
0800	1450	BLEN	0800.5	0843.0	DCIM	P,F	3	100X	4000X	
		BLEN	0803.6	0827.6	II	H	2	100X	650	
0746	1348	ONDR	0805.4	0842.2	DCIM	GG,FS	3	2000X	4500X	
		IZMI	0806.7	0809.1	III	GG	2	25X	220	
		SVTO	0810.0	1507.0	IV		2	25	180	
		IZMI	0811.0	0834.0	III	S	2	40	270X	
		LEAR	0811.0	1004.0	IV		2	25	180	
		LEAR	0815.0	0831.0	II		2	25	118	
		IZMI	0815.5	0832.8	II	G,FS	2	25X	120	
		IZMI	0815.8	0822.5	CONT	RS	2	50	120	
		SVTO	0816.0	0825.0	II		2	25	85	
		IZMI	0834.5	0835.7	III	G	2	30	220	
		IZMI	0836.7	0837.9	III	G	2	30	195	
		IZMI	0849.9	0851.4	I	GG,DC	2	75	160	
		IZMI	0850.2	0951.2	III	G,C	2	40	65	
		ONDR	0938.0	1024.3	DCIM	GG	2	2000X	4500X	
		ONDR	0952.2	1015.2	DCIM	GG	1	800X	2000X	
		IZMI	0955.2	0957.7	I	GG,DC	2	25X	45	
		IZMI	1009.0	1009.8	III	G	2	130	215	

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18		HOLL	1555.0	1555.0	III		1	25	80	
		SGMR	1555.0	1555.0	III		1	30	60	
		HOLL	1807.0	1809.0	III		1	25	137	
		SGMR	1910.0	1910.0	III		1	30	80	
2000	2400	CULG	2000.0E	2050.0	III	N	1	27	150	
		CULG	2046.0	2047.0	III	G	3	18X	140	
		CULG	2056.0	2058.0	III	G	3	18X	180	
		HOLL	2056.0	2156.0	III	N	1	25	180	
		PALE	2056.0	2058.0	III		1	25	157	
		CULG	2127.0	2130.0	III	G	3	18X	150	
2117	2400	HIRA	2127.0	2129.0	III	G	1	30	100	
		CULG	2140.0	2140.0	III	B	1	18	140	
19		LEAR	0006.0	0007.0	III		1	25	180	
		PALE	0007.0	0007.0	III		1	25	52	
0000	0728	HIRA	0007.0	0007.5	III	B	1	25X	120	
0000	0800	CULG	0007.0	0007.0	III	B	3	18X	150	
		CULG	0140.0	0229.0	III	N	1	20	150	
		CULG	0309.0	0419.0	III	N	1	18	180	
		CULG	0358.0	0401.0	III	G	1	130	800	
		CULG	0407.0	0407.0	III	G	1	100	380	
		HIRA	0407.0	0408.0	III	G	1	200	410	
		CULG	0416.0	0417.0	III	G	3	18	200	
		HIRA	0416.0	0417.0	III	B	1	25X	140	
		LEAR	0416.0	0417.0	III		1	25	180	
		CULG	0503.0	0503.0	III	B	1	35	140	
		LEAR	0556.0	0558.0	III		1	25	135	
		HIRA	0558.0	0558.5	III	B	1	30	120	
0700	1200	IZMI	0700.0E	1200.0D	I	N	2	50	270X	
0805	1450	BLEN								
		LEAR	0809.0	1004.0	CONT		1	78	180	
		IZMI	0816.9	0817.0	III	B,HARM	2	55	190	
		LEAR	0830.0	0830.0	III		1	25	180	
		SVTO	0830.0	0830.0	III		1	25	163	
		IZMI	0830.1	0833.6	I	N	2	50	270X	
		IZMI	0932.7	0933.1	III	G	1	50	85	
0748	1346	ONDR	0941.1	0943.0	DCIM	G,W	1	2752	4500X	
		IZMI	1116.9	1117.8	III	G	1	55	270X	
		IZMI	1148.0	1150.4	III	GG	2	45	125	
		IZMI	1153.8	1153.9	III	G,C,U	2	130	190	
		SVTO	1258.0	1306.0	III		1	25	38	
		SVTO	1328.0	1338.0	III		1	25	82	
		SGMR	1457.0	1512.0	III	N	1	30	45	
		HOLL	1836.0	2157.0	III	N	1	25	180	
		CULG	2000.0E	2328.0	III	S,C	1	20	100	
2000	2400	CULG	2000.0E	2400.0D	I	S	1	70	180	
		CULG	2035.0	2035.0	III	B	3	20	45	
		CULG	2058.0	2143.0	III	N	3	20	180	
		CULG	2204.0	2204.0	III	B	1	20	180	
		HOLL	2320.0	2321.0	III		1	25	180	
		LEAR	2320.0	2323.0	III		1	25	180	
2118	2400	HIRA	2320.5	2321.5	III	B	1	25X	190	
		CULG	2321.0	2324.0	III	G	2	20	180	
20	0800	CULG	0000.0E	0502.0	III	S	1	50	180	
		LEAR	0003.0	1005.0	III	N	1	25	180	
		CULG	0136.0	0138.0	III	G	3	18	90	
0000	0727	HIRA	0136.5	0138.0	III	G	1	30	70	
		CULG	0150.0	0201.0	III	G	1	450	1600	
		CULG	0151.0	0154.0	III	G	3	18	180	
		HIRA	0151.5	0155.0	III	G	1	25X	150	
		CULG	0212.0	0212.0	III	B	3	18	90	
		CULG	0256.0	0256.0	III	G	3	18	150	
		HIRA	0256.0	0256.5	III	B	2	30	110	
		CULG	0322.0	0322.0	III	B	3	20	80	
		CULG	0403.0	0403.0	III	B	2	23	90	
		CULG	0541.0	0542.0	III	G	1	23	180	
		CULG	0625.0	0625.0	III	G	1	80	180	
0700	1200	IZMI	0705.9	0706.2	III	G	1	55	65	

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20		IZMI	0711.5	0712.8	III	G	1	190	270X	
		IZMI	0718.0	0718.7	III	G	1	55	65	
		IZMI	0718.7	0720.3	III	GG	2	180	270X	
		SVTO	0726.0	0728.0	III		1	29	123	
		IZMI	0726.7	0727.9	III	G	2	45	130	
		CULG	0727.0	0727.0	III	B	1	380	1000	
		IZMI	0731.1	0733.1	III	GG	2	185	270X	
		IZMI	0735.4	0744.8	III	S,FS	2	25X	170	
		CULG	0736.0	0743.0	III	G	3	18X	700	
		SVTO	0736.0	0746.0	III		3	25	180	
		IZMI	0738.0	0741.7	III	GG,FS,C	3	25X	270X	
		LEAR	0738.0	0741.0	V		3	25	180	
		IZMI	0738.2	0744.0U	CONT		2	25X	270X	
		IZMI	0739.1	0743.1	I	GG,DC	2	50	270X	
		LEAR	0741.0	0900.0	IV		1	25	113	
		IZMI	0742.0	0751.0	III	N,C	2	30	150	
		IZMI	0744.3	0746.0	III	GG	2	210	270X	
		IZMI	0745.0U	1200.0D	I	S	1	45U	270X	
		CULG	0746.0	0754.0	III	G	2	20	90	
		SVTO	0748.0	1506.0	III	N	2	25	180	
	0750 1344	ONDR								
		IZMI	0751.1	0754.1	III	GG,C	2	25X	270X	
		IZMI	0755.2	0756.62	III	GG	1	50	270X	
		IZMI	0759.1	0806.4	III	GG,C	2	25X	270X	
	0805 1450	BLEN								
		IZMI	0808.3	0814.7	III	GG,DC	1	25X	270X	
		IZMI	0818.5	0824.3	III	N	1	40	190	
		IZMI	0928.3	0935.5	III	GG	1	45	95	
		IZMI	0937.9	0938.7	III	G	2	35	125	
		IZMI	0946.1	0948.3	III	G	2	40	190	
		IZMI	0951.0	0952.3	III	G	2	50	150	
		IZMI	0954.5	0957.0	III	GG	2	40	155	
		IZMI	1114.3	1114.6	III	G	1	50	190	
		IZMI	1118.2	1118.3	III	G,HARM	1	55	165	
		IZMI	1137.2	1137.4	III	G,U,HARM	2	55	215	
		IZMI	1151.8	1152.6	III	G,RS	2	150	270X	
		HOLL	1438.0	1440.0	III		1	25	180	
		SGMR	1439.0	1440.0	III		1	30	45	
		PALE	1843.0	1843.0	III		1	25	100	
	2000 2400	CULG	2000.0E	2231.0	I	S,C	1	50	180	
		CULG	2005.0	2005.0	III	G	2	20	300	
		CULG	2015.0	2019.0	III	G	2	20	120	
		CULG	2034.0	2036.0	III	G	2	20	150	
		CULG	2143.0	2143.0	III	B	3	18	200	
	2119 2400	HIRA	2143.5	2144.0	III	B	2	25X	200	
		CULG	2205.0	2221.0	III	GG	1	20	90	
		HIRA	2205.0	2221.0	III	G	1	25X	80	
		LEAR	2243.0	0228.0	III	N	1	25	180	
		HIRA	2243.5	2244.0	III	B	1	25X	80	
		CULG	2244.0	2245.0	III	G	1	18	150	
		CULG	2255.0	2301.0	III	G	1	50	180	
		LEAR	2346.0	2350.0	III		2	25	180	
		CULG	2347.0	2351.0	III	G	3	18X	1400	
		PALE	2347.0	2353.0	III		2	25	180	
		HIRA	2347.5	2350.0	III	G	3	25X	500	
		CULG	2352.0	2354.0	III	G	3	18X	420	
		HIRA	2352.0	2354.0	III	G	2	25X	220	
		LEAR	2352.0	2354.0	III		2	25	180	
		CULG	2356.0	2356.0	III	B	3	18X	50	
		PALE	2356.0	0248.0	III	N	1	25	180	
		CULG	2358.0	2400.0	III	G	1	100	780	
21	0000 0800	CULG	0000.0	0129.0	III	S,C	1	18	180	
	0000 0727	HIRA	0024.0	0030.0	III	G	1	25X	220	
		CULG	0025.0	0030.0	III	G	3	18X	1000	
		HIRA	0131.5	0132.0	III	B	1	240	610	
		CULG	0132.0	0132.0	III	B	1	150	380	
		LEAR	0355.0	0356.0	III		1	25	50	
		LEAR	0510.0	0526.0	III	N	1	25	180	

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21	0655	1200	IZMI	0655.0E	0703.0	III	N	1	45	90	
			IZMI	0728.0	0728.3	III	G	1	110	170	
			IZMI	0730.0	0730.1	III	G	1	55	165	
			IZMI	0732.8	0736.4	III	GG,FS,C	1	55	270	
			LEAR	0808.0	0815.0	III		1	25	180	
	0810	1445	BLEN	0808.4	0812.0	III	GG,S	2	100X	1000	
			IZMI	0808.5	0809.4	III	GG	2	60	270X	
			SVTO	0811.0	0812.0	III		1	74	172	
			IZMI	0811.2	0812.7	III	GG	2	25X	160	
			SVTO	0821.0	0824.0	III		1	25	126	
			IZMI	0821.3	0824.4	III	GG	2	110	270X	
			IZMI	0825.8	0826.0	III	GG,FS	2	110	270X	
			IZMI	0838.9	0839.4	III	G,C	2	120	190	
			IZMI	0851.6	0851.7	III	G	1	130	190	
			LEAR	0939.0	0944.0	III		1	50	180	
			SVTO	0939.0	0943.0	III		1	59	180	
			BLEN	0939.3	0944.4	III	GG,S	3	100X	3500	
			ONDR	0939.3	0944.1	DCIM	GG,SP	2	800X	2000X	
	0753	1343	ONDR	0939.4	0940.2	DCIM	G,W	1	2342	4500X	
			IZMI	0939.5	0941.3	III	GG,C	2	50	270X	
			IZMI	0942.0	0944.5	III	GG	2	50	270X	
			IZMI	0947.2	0952.3	III	GG	1	55	225	
			IZMI	1039.4	1040.8	I	GG	1	140	165	
			IZMI	1107.7	1108.1	III	G	1	200	250	
			SVTO	1217.0	1222.0	III		2	45	180	
			BLEN	1220.9	1222.8	III	GG	2	100X	600	
			SVTO	1236.0	1505.0	III	N	1	57	168	
			HOLL	1759.0	1800.0	III		1	25	124	
			PALE	1800.0	1800.0	III		1	25	104	
	2000	2400	CULG	2020.0	2020.0	III	B	1	27	150	
			CULG	2113.0	2332.0	III	N	1	20	180	
			CULG	2151.0	2151.0	III	G	3	50	190U	
			LEAR	2250.0	2250.0	III		1	50	180	
	2120	2400	HIRA	2250.5	2251.0	III	G	2	50	190	
			LEAR	2353.0	2358.0	III		1	46	180	
			HIRA	2353.5	2359.0	III	G	1	50	200	
			CULG	2354.0	2359.0	III	G	2	30	180U	
22	0000	0800	CULG	0018.0	0018.0	III	B	1	80	150	
			CULG	0059.0	0059.0	III	G	1	30	180	
			CULG	0112.0	0112.0	III	B	1	18	90	
			PALE	0115.0	0121.0	III		1	25	92	
			CULG	0116.0	0122.0	III	G	3	18X	180	
			LEAR	0116.0	0122.0	III		1	25	124	
	0000	0727	HIRA	0117.0	0120.0	III	G	1	25X	110	
			CULG	0137.0	0137.0	III	B	3	18	140	
			HIRA	0137.0	0137.5	III	B	1	25X	110	
			CULG	0148.0	0151.0	III	G	3	18	180	
			HIRA	0148.5	0151.5	III	G	1	25X	120	
			CULG	0202.0	0202.0	III	B	1	50	180	
			CULG	0229.0	0229.0	III	B	1	57	90	
			CULG	0236.0	0236.0	III	B	1	18	180	
			HIRA	0236.5	0237.0	III	B	1	50	400	
			CULG	0340.0	0345.0	III	G	1	23	170	
			HIRA	0347.5	0348.0	III	B	1	50	200	
			CULG	0348.0	0348.0	III	G	3	45	200U	
			CULG	0416.0	0421.0	III	G	1	18	180	
			CULG	0438.0	0439.0	III	G	2	18X	350	
			HIRA	0438.0	0439.0	III	G	2	30	350	
			CULG	0504.0	0507.0	III	G	1	30	180	
			CULG	0521.0	0521.0	III	B	3	18X	160	
			HIRA	0531.5	0535.0	III	G	1	50	320	
			CULG	0532.0	0535.0	III	G	1	20	350	
	0656	1200	IZMI	0656.0	0704.0	III	N	1	45	95	
			CULG	0710.0	0711.0	III	G	3	20	200U	
			HIRA	0710.0	0711.0	III	G	2	90	500	
			SVTO	0710.0	0710.0	III		1	61	180	
			IZMI	0710.1	0710.9	III	GG,FS,C	2	50	270X	
			SVTO	0727.0	0727.0	III		1	110	170	

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22			IZMI	0727.5	0727.7	III	B,U	2	105	215	
			IZMI	0745.6	0745.8	III	G,U	1	50	90	
			IZMI	0748.0	1200.0D	I	N	2	150	270X	
	0754	1341	ONDR								
			IZMI	0756.8	0925.0	III	N,FS	1	45	90	
			SVTO	0843.0	0843.0	III		1	25	45	
			SVTO	0906.0	0906.0	III		1	76	180	
			IZMI	0906.6	0907.1	III	GG	2	50	270X	
			SVTO	0942.0	0943.0	III		1	25	168	
			IZMI	0942.3	0943.6	III	G	2	25X	260	
	0810	1445	BLEN	1006.8	1007.4	III	GG	2	150	500	
			IZMI	1007.0	1007.4	III	G,C	1	25X	270X	
			SVTO	1007.0	1007.0	III		1	29	172	
			BLEN	1058.9	1059.7	III	GG,S	3	100X	900	
			IZMI	1058.9	1059.8	III	G,C	3	25X	270C	
			SVTO	1059.0	1059.0	III		2	25	180	
			IZMI	1158.3	1159.2	III	G	1	105	160	
			SVTO	1225.0	1504.0	III	N	1	29	83	
			HOLL	1509.0	1714.0	III	N	1	25	180	
			SGMR	1520.0	1650.0	III	N	1	30	80	
			HOLL	1813.0	1819.0	III		1	25	169	
			PALE	1813.0	1818.0	III		1	25	180	
	2000	2400	CULG	2015.0	2017.0	III	G	1	50	200U	
			CULG	2132.0	2240.0	III	S	1	20	180	
			HOLL	2140.0	2142.0	III		1	25	180	
	2121	2400	HIRA	2140.5	2143.0	III	G	2	40	180	
			CULG	2141.0	2143.0	III	G	3	18X	180	
			PALE	2141.0	2142.0	III		1	25	128	
			HIRA	2232.0	2235.0	III	G	1	25X	400	
			LEAR	2232.0	2235.0	III		1	25	180	
			CULG	2233.0	2235.0	III	G	2	18	180	
			PALE	2353.0	2357.0	III		1	80	180	
23	0000	0726	HIRA	0044.5	0045.0	III	B	1	25X	50	
	0000	0800	CULG	0045.0	0045.0	III	B	2	18	90	
			CULG	0051.0	0053.0	III	G	1	27	170	
			CULG	0210.0	0210.0	III	B	1	30	100	
			PALE	0241.0	0241.0	III		1	99	180	
			HIRA	0241.5	0242.0	III	B	2	100	200	
			CULG	0242.0	0242.0	III	B	2	57	180U	
			CULG	0615.0	0616.0	III	G	1	45	180	
			CULG	0624.0	0624.0	III	B	1	40	180	
			CULG	0628.0	0628.0	III	G	2	30	180	
			HIRA	0628.0	0628.5	III	B	1	50	180	
			CULG	0635.0	0637.0	III	G	2	20	180	
			HIRA	0635.0	0636.5	III	G	1	40	230	
			CULG	0711.0	0712.0	III	G	1	20	180	
	0700	1200	IZMI	0711.4	0711.8	III	G,C	2	50	270X	
	0756	1340	ONDR								
			IZMI	0838.7	0839.4	III	G	1	25X	85	
			IZMI	0845.6	0845.8	III	G	1	50	85	
			IZMI	0851.4	0851.7	III	B	2	50	165	
			IZMI	0932.0	0932.9	III	G	1	45	85	
			IZMI	1000.1	1003.4	III	GG	2	25X	160	
			IZMI	1147.8	1148.0	III	G	2	80	160	
			PALE	1714.0	1716.0	III		1	25	180	
			PALE	1903.0	1904.0	III		1	25	97	
	2000	2400	CULG								
	2122	2400	HIRA								
24			LEAR	0356.0	0357.0	III		1	25	180	
	0000	0800	CULG	0356.0	0358.0	III	G	3	18X	260U	
	0000	0726	HIRA	0356.5	0358.0	III	G	1	25X	300	
			CULG	0500.0	0502.0	III	G	1	35	100	
			CULG	0517.0	0519.0	III	G	2	35	170	
			LEAR	0517.0	0519.0	III		1	25	109	
			HIRA	0517.5	0519.0	III	G	1	25X	140	
			CULG	0607.0	0608.0	III	G	1	35	190	
			HIRA	0607.5	0608.0	III	B	1	110	140	

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 2003

OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
24		CULG	0650.0	0650.0	III	B	2	20	130	
0655	1205	IZMI	0712.1	0713.0	III	G	1	130	160	
		IZMI	0727.4	0729.9	III	GG,FS	1	50	65	
0759	1338	ONDR								
0815	1445	BLEN								
		IZMI	1011.3	1011.5	CONT		2	55	65	
		IZMI	1126.9	1126.9	III	G,HARM	2	50	150	
		HOLL	1851.0	1851.0	III		1	25	180	
		PALE	1851.0	1851.0	III		1	25	180	
2000	2400	CULG	2000.0E	2400.0D	III	S	1	25	130	
		CULG	2053.0	2054.0	III	G	1	60	180	
		CULG	2201.0	2204.0	III	G	2	18	230	
		HOLL	2201.0	2201.0	III		1	25	157	
2123	2400	HIRA	2201.5	2204.0	III	G	1	30	310	
25	0000	0725	HIRA							
0000	0800	CULG	0000.0E	0800.0D	III	S	1	25	150	
0701	1200	IZMI	0701.0E	1200.0D	III	N	1	45U	95U	
0800	1337	ONDR								
0820	1445	BLEN								
		IZMI	0833.0U	1200.0D	I	N	1	130	270X	
		IZMI	1022.8	1022.9	III	B	1	50	65	
		IZMI	1049.1	1049.9	III	GG	2	40	155	
2000	2400	CULG	2000.0E	2400.0D	III	S	1	20	170	
		HOLL	2203.0	2205.0	III		1	25	170	
		PALE	2203.0	2205.0	III		1	25	180	
2124	2400	HIRA	2203.5	2206.0	III	G	2	30	300	
		CULG	2204.0	2206.0	III	G	3	18	200	
26	0000	0800	CULG	0000.0E	0253.0	III	S	1	20	170	
		CULG	0054.0	0058.0	III	G	3	18	230	
0000	0725	HIRA	0055.0	0056.5	III	G	1	30	290	
		CULG	0606.0	0640.0	I	S	1	120	180	
		CULG	0612.0	0640.0	III	N	1	35	180	
0701	1200	IZMI	0701.0E	1200.0D	I	N	2	45U	270X	
		IZMI	0710.0U	1200.0D	III	N	1	45U	95U	
		IZMI	0738.7	0742.0	III	GG,FS	1	45	90	
0803	1335	ONDR								
		LEAR	0940.0	1009.0	III	N	1	25	180	
		IZMI	0944.1	0944.1	III	G	2	185	270X	
		IZMI	0955.0	1000.8	III	GG	2	25X	270X	
		IZMI	0955.0	1052.0U	III	S	2	25X	270X	
		IZMI	1001.0	1004.2	III	GG	2	25X	190	
		IZMI	1006.4	1011.2	III	GG	2	25X	180	
		IZMI	1036.3	1039.4	III	GG	2	25X	160	
		IZMI	1049.4	1051.4	III	GG	2	25X	180	
		IZMI	1114.4	1114.5	III	B	1	40	65	
0820	1445	BLEN	1215.0	1216.9	III	GG,S	1	180	450	
		HOLL	1532.0	2331.0	CONT		1	75	180	
		HOLL	1553.0	1558.0	III		1	25	180	
		HOLL	1701.0	1702.0	III		1	25	180	
		SGMR	1702.0	1702.0	III		1	30	80	
2000	2400	CULG	2000.0E	2400.0D	I	S,C	1	60	180	
		CULG	2002.0	2016.0	III	G	1	23	150	
		CULG	2043.0	2150.0	III	N	1	20	180	
		PALE	2051.0	2051.0	III		1	25	48	
		HOLL	2133.0	2139.0	III		1	25	169	
		CULG	2134.0	2140.0	III	GG	3	18X	250	
2125	2400	HIRA	2136.5	2140.0	III	G	2	30	230	
		LEAR	2138.0	2139.0	III		1	25	180	
		PALE	2139.0	2139.0	III		1	25	50	
		LEAR	2144.0	1005.0	CONT		1	35	180	
		LEAR	2228.0	2237.0	III		2	25	180	
		CULG	2229.0	2233.0	III	G	2	18	180	
		HIRA	2229.0	2233.0	III	G	1	25X	220	
		HOLL	2229.0	2232.0	III		1	25	180	
		CULG	2233.0	2400.0D	III	N	1	20	130	
27		CULG	0000.0E	0800.0D	III	N	1	23	100	

SOLAR RADIO EMISSION
Spectral Observations

NOVEMBER 2003

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	EVENT Spectral Class	EVENT Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
27	0000	0800	CULG	0000.0E	0800.0D	I	S,C	1	60	180	
			CULG	0200.0	0201.0	III	G	3	18X	180	
			LEAR	0200.0	0201.0	III		3	25	145	
	0000	0725	HIRA	0200.5	0201.0	III	B	2	30	130	
			LEAR	0335.0	0336.0	III		1	32	86	
			HIRA	0336.0	0336.5	III	B	1	25X	70	
			LEAR	0347.0	0348.0	III		1	25	88	
			HIRA	0347.5	0348.5	III	G	1	25X	80	
			CULG	0348.0	0349.0	III	G	2	20	100	
			CULG	0511.0	0512.0	III	G	3	18X	250	
			HIRA	0511.0	0512.0	III	B	2	30	210	
			LEAR	0511.0	0512.0	III		2	25	180	
			SVTO	0611.0	1501.0	CONT		1	56	180	
	0650	1200	IZMI	0650.0E	1200.02	I	S,C	1	50	270X	
			IZMI	0700.5	0700.7	III	B	1	45	90	
			IZMI	0720.7	0724.5	III	GG,C	1	45	85	
			IZMI	0745.5	0748.1	III	G	1	50	95	
			IZMI	0751.1	0758.4	III	N	1	45U	70	
	0804	1334	ONDR								
	0820	1445	BLEN								
			IZMI	0900.0U	0951.0U	III	N,C	1	45	95	
			IZMI	0942.0	0949.2	I	GG,DC	2	130	270	
			IZMI	0944.5	0947.0	III	GG	2	40	180	
	2000	2400	CULG								
	2126	2400	HIRA								
28	0000	0725	HIRA	0440.5	0441.0	III	B	1	300	400	
	0000	0800	CULG	0441.0	0441.0	III	B	1	120	400	
	0700	1200	IZMI								
	0806	1333	ONDR								
	0820	1445	BLEN								
	2127	2400	HIRA								
	2000	2400	CULG	2327.0	2328.0	III	G	1	20	50	
29	0000	0800	CULG	0100.0	0101.0	III	G	1	20	50	
			CULG	0519.0	0519.0	III	B	1	30	90	
			LEAR	0603.0	0609.0	III		1	25	180	
	0000	0724	HIRA	0603.5	0604.0	III	B	1	50	120	
			CULG	0604.0	0604.0	III	B	3	20	180	
			CULG	0607.0	0609.0	III	G	3	18	200	
			HIRA	0607.5	0609.5	III	G	2	50	180	
			CULG	0631.0	0716.0	III	N	1	20	180	
	0655	1200	IZMI	0657.8	0658.1	III	G	1	55	215	
			IZMI	0708.2	0708.3	III	G	1	50	85	
			CULG	0722.0	0722.0	III	B	2	27	160	
			IZMI	0722.0	0722.3	III	G	2	45	160	
			LEAR	0722.0	0722.0	III		1	25	147	
			IZMI	0747.8	0748.0	III	G	1	50	85	
	0808	1332	ONDR								
			IZMI	0817.5	0817.7	III	B	1	45	85	
	0820	1445	BLEN								
			LEAR	0824.0	0825.0	III		1	25	136	
			SVTO	0824.0	0825.0	III		1	25	83	
			IZMI	0824.5	0825.5	III	GG	2	30	155	
			IZMI	0834.2	0839.5	III	G	1	45	90	
			IZMI	0901.6	0901.6	III	B	1	55	85	
			IZMI	1032.5	1032.7	III	G	1	95	175	
	2000	2400	CULG	2015.0	2049.0	III	N	1	40	150	
	2128	2400	HIRA								
			CULG	2321.0	2322.0	III	G	1	45	180	
			CULG	2338.0	2341.0	III	G	1	50	250	
30	0000	0724	HIRA								
	0000	0800	CULG	0131.0	0131.0	III	B	1	30	50	
			CULG	0333.0	0333.0	III	B	1	50	80	
	0810	1330	ONDR								
	0830	1440	BLEN								
	0701	1200	IZMI	0930.6	0930.7	III	B	1	50	65	
			IZMI	1002.8	1003.0	III	B	1	50	65	

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

NOVEMBER 2003

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
30	2000	2400	CULG	2048.0	2051.0	III	G	1	50	180	
	2129	2400	HIRA								
			CULG	2142.0	2142.0	III	B	1	20	57	

Event Remarks:

B = Single burst	N = Intermittent activity in this period
C = Underlying 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	

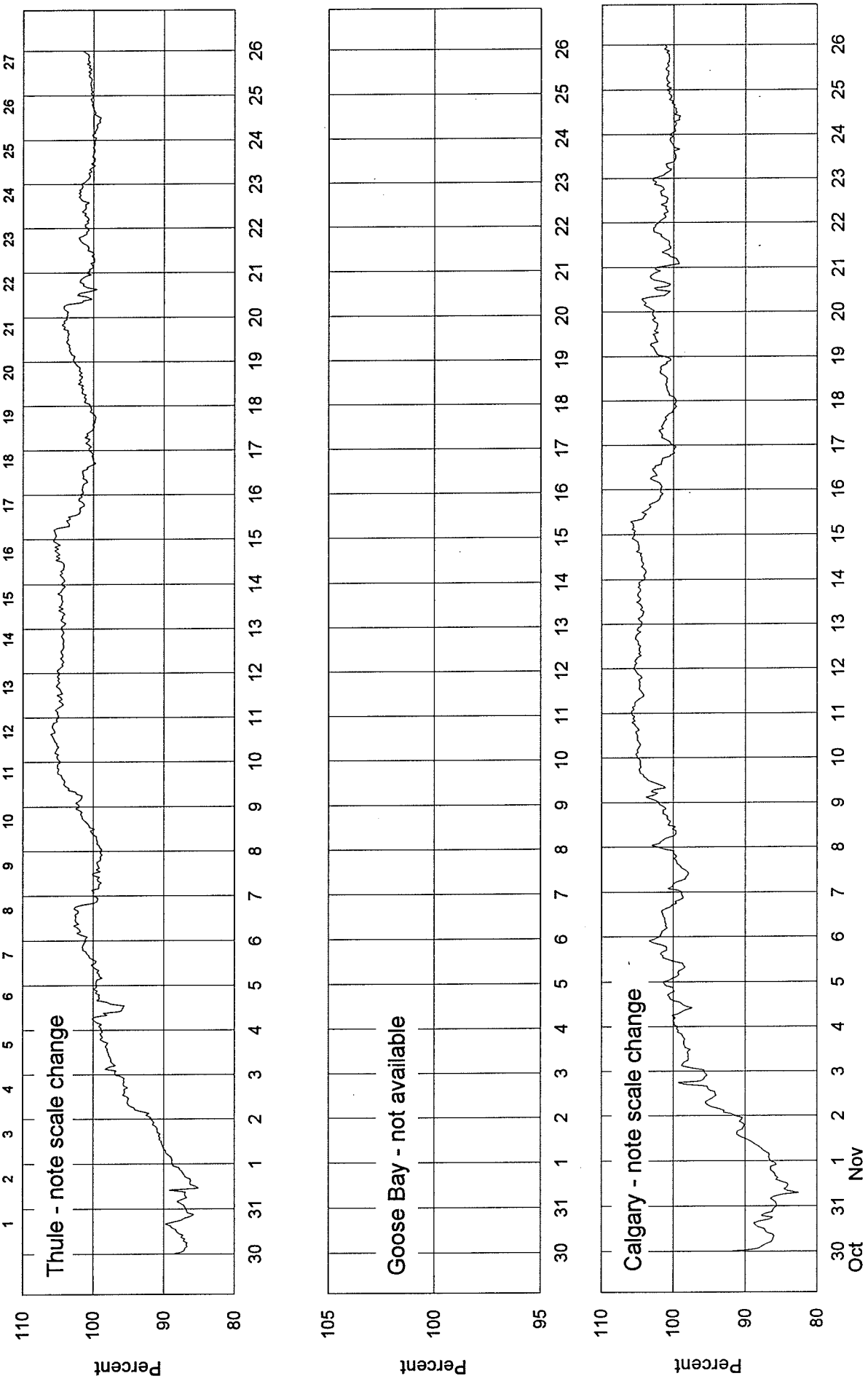
NOTE 1: Beginning June 26, 2001, the Bleien observatory changed to higher frequencies (1-4Ghz).

COSMIC RAY INDICES
(Neutron Monitor)
November 2003

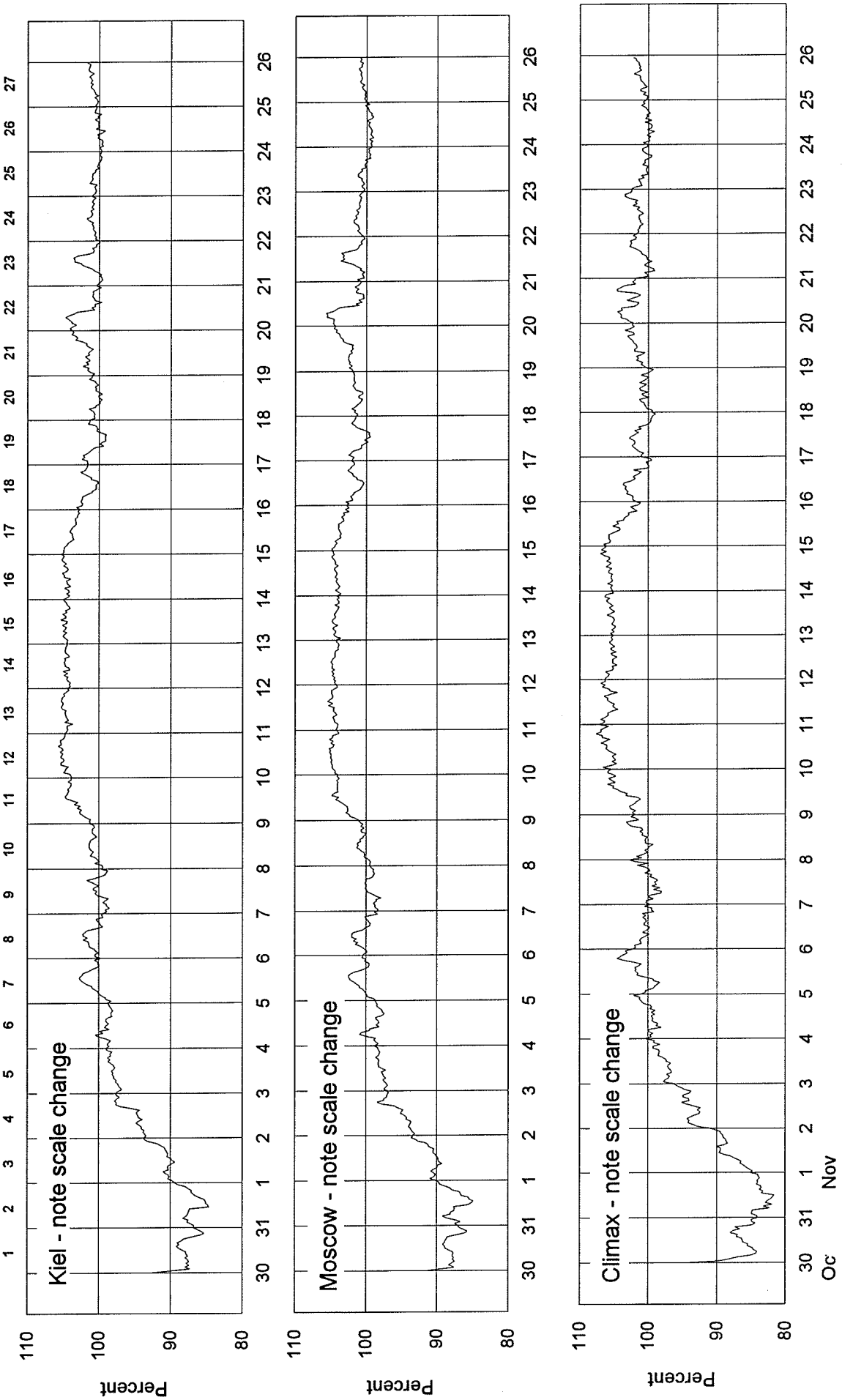
Day	THULE Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	3312.0	2819.8	4677	6868	2980.2	1737.6	3141.6
2	3476.3	3003.3	4912	7205	3174.1	1809.5	3242.3
3	3595.4	3108.5	5055	7403	3306.4	1847.9	3303.4
4	3620.2	3155.8	5102	7471	3375.9	1865.7	3331.9
5	3677.3	3183.0	5197	7617	3426.7	1875.0	3351.8
6	3732.4	3187.5	5201	7606	3402.9	1872.9	3338.5
7	3649.4	3143.3	5148	7509	3370.5	1865.9	3339.0
8	3686.4	3195.7	5196	7602	3420.0	1892.7	3359.0
9	3802.2	3273.8	5328	7829	3507.3	1922.0	3388.5
10	3869.0	3327.5	5414	7929	3583.6	1947.7	3416.0
11	3850.5	3321.7	5403	7919	3581.9	1951.0	3416.7
12	3835.3	3323.0	5392	7910	3564.2	1942.7	3415.0
13	3835.1	3312.0	5401	7895	3566.0	1942.3	3416.5
14	3845.4	3309.3	5398	7894	3578.7	1948.8	3420.1
15	3792.7	3288.2	5359	7853	3522.2	1949.7	3398.6
16	3706.3	3218.0	5246	7703	3447.1	1920.2	3354.8
17	3684.7	3192.5	5194	7652	3422.4	1904.3	3350.5
18	3730.4	3194.0	5185	7678	3398.8	1901.5	3354.2
19	3801.8	3245.3	5260	7783	3445.9	1922.4	3381.9
20	3749.0	3247.2	5268	7779	3483.1	1956.5	3428.8
21	3698.7	3201.8	5217	7687	3417.3	1936.3	3366.2
22	3721.0	3213.5	5205	7658	3442.5	1906.1	3353.7
23	3682.7	3180.2	5186	7594	3406.9	1890.1	3343.0
24	3663.2	3163.5	5162	7531	3387.1	1893.3	3337.5
25	3690.7	3190.8	5207	7615	3420.5	1897.8	3349.5
26	3728.2	3227.5	5260	7676	3467.4	1907.8	3345.2
27	3750.6	3274.3	5309	7747	3496.6	1909.5	3380.4
28	3802.4	3298.5	5366	7822	3520.7	1931.7	3409.8
29	3846.8	3328.5	5409	7902	3567.7	1950.3	3423.5
30	3850.9	3346.7	5402	7917	3565.7	1935.6	3401.0
Mean	3722.0	3215.8	5235.3	7675.1	3442.3	1904.5	3362.3

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.

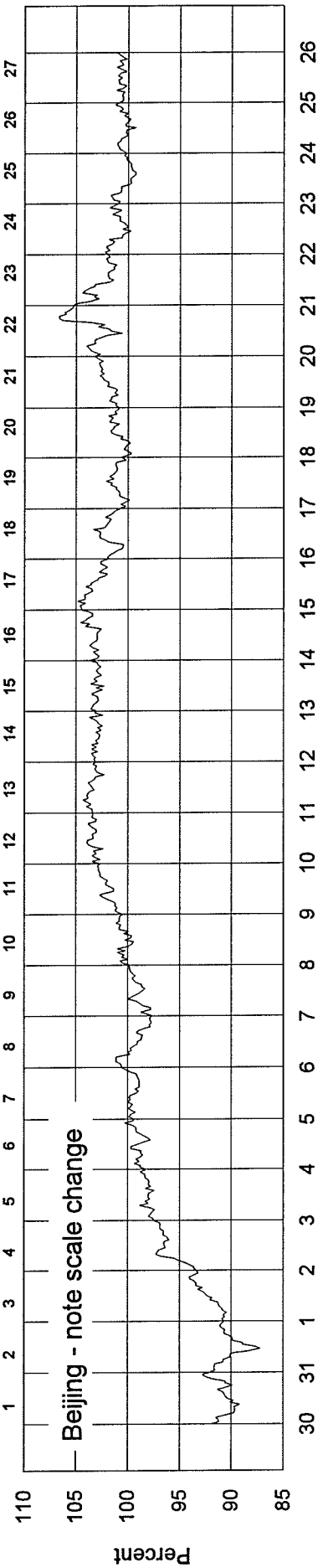
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2324 - Beginning 30 October 2003

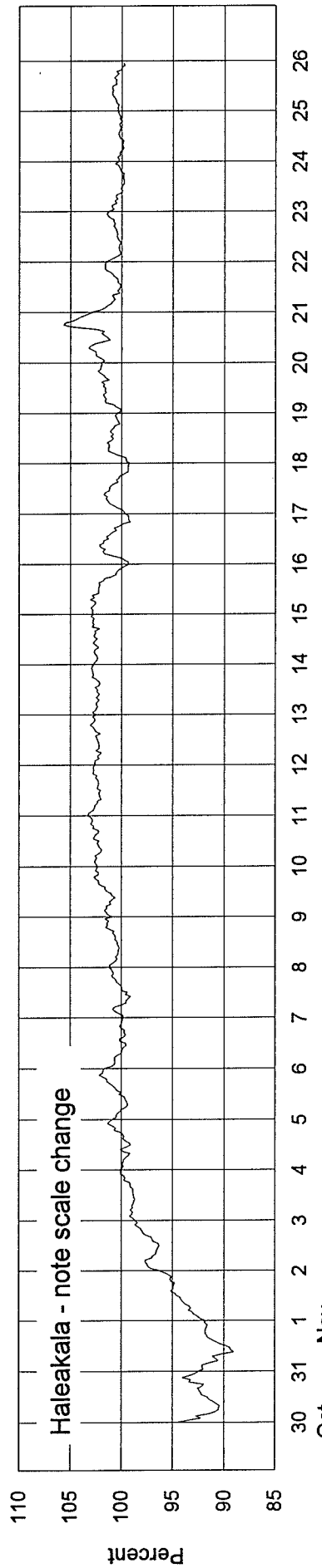


COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2324 - Beginning 30 October 2003

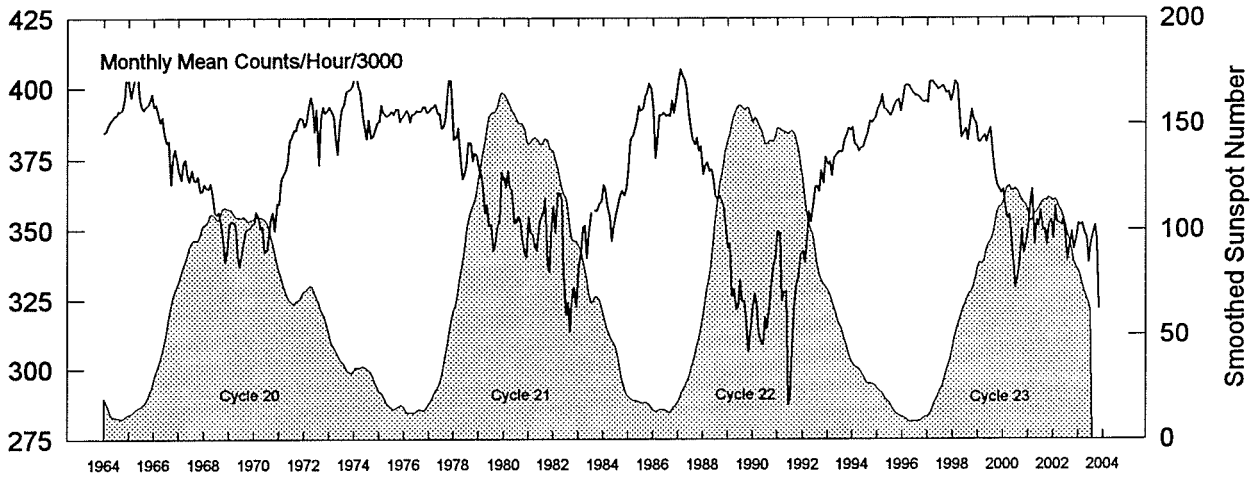


COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2324 - Beginning 30 October 2003





Calgary Neutron Monitor Pressure-Corrected Values
Jan 1964 - Nov 2003



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1964	3847	3852	3872	3883	3892	3905	3905	3921	3920	3926	3966	4064	3913
1965	4006	3968	4007	4040	4040	3967	3935	3923	3938	3942	3960	3980	3976
1966	3935	3943	3906	3881	3899	3844	3807	3814	3663	3758	3785	3750	3832
1967	3710	3678	3741	3750	3697	3671	3713	3679	3675	3691	3638	3639	3690
1968	3663	3653	3647	3665	3632	3561	3556	3567	3529	3482	3386	3420	3563
1969	3515	3531	3529	3520	3417	3370	3408	3464	3500	3507	3506	3524	3483
1970	3523	3565	3548	3505	3512	3424	3426	3477	3543	3564	3497	3596	3515
1971	3593	3678	3693	3712	3737	3813	3832	3853	3851	3883	3899	3893	3786
1972	3865	3875	3924	3969	3942	3847	3926	3731	3895	3935	3912	3920	3895
1973	3935	3919	3903	3819	3768	3875	3926	3944	3986	3995	3997	4008	3923
1974	4036	4043	4005	3988	3906	3861	3822	3890	3827	3831	3850	3881	3912
1975	3883	3943	3914	3905	3904	3910	3918	3907	3929	3927	3884	3897	3910
1976	3908	3923	3915	3881	387	3909	3921	3918	3920	3936	3935	3916	3916
1977	3919	3933	3933	3943	3911	3911	3857	3865	3895	4010	4055	3961	3933
1978	3823	3826	3860	3773	3681	3697	3730	3811	3808	3744	3772	3764	3774
1979	3726	3696	3647	3559	3592	3516	3521	3427	3447	3519	3528	3705	3573
1980	3681	3652	3711	3649	3643	3527	3525	3550	3540	3471	3414	3403	3564
1981	3550	3491	3483	3440	3426	3522	3546	3560	3615	3374	3348	3520	3490
1982	3586	3492	3634	3632	3608	3344	3196	3239	3137	3257	3296	3225	3387
1983	3364	3421	3510	3515	3399	3487	3563	No Data	3571	3569	3597	3599	3509
1984	3661	3646	3586	3551	3460	3515	3551	3593	3623	3641	3623	3652	3592
1985	3723	3821	3834	3858	3888	3936	3921	3929	3971	3987	4017	3997	3907
1986	3923	3755	3814	3905	3906	3915	3902	3907	3902	3958	3912	3974	3898
1987	4025	4068	4047	4028	3993	3914	3866	3822	3802	3827	3779	3796	3914
1988	3698	3729	3739	3709	3714	3682	3621	3608	3624	3603	3590	3520	3653
1989	3436	3454	3263	3290	3216	3222	3321	3224	3246	3164	3063	3152	3254
1990	3227	3272	3232	3129	3099	3089	3188	3147	3237	3317	3375	3401	3226
1991	3496	3489	3244	3279	3280	2873	2896	3078	3253	3311	3330	3412	3245
1992	3425	3382	3463	3566	3528	3593	3655	3655	3636	3711	3665	3758	3586
1993	3730	3741	3693	3753	3765	3775	3780	3775	3815	3836	3859	3852	3781
1994	3864	3807	3798	3779	3793	3793	3822	3841	3885	3878	3891	3896	3837
1995	3929	3945	3919	3929	3927	3917	3902	3919	3940	3956	3963	3920	3931
1996	3960	4008	4012	4010	3993	3983	3976	3976	3970	3960	3953	3955	3980
1997	3947	4023	4024	4014	4007	3998	4001	4010	3999	3985	3990	3955	3996
1998	3982	4025	4013	3910	3827	3839	3857	3817	3876	3925	3890	3875	3903
1999	3816	3811	3823	3836	3810	3843	3861	3760	3699	3664	3644	3631	3767
2000	3646	3586	3544	3554	3465	3386	3293	3337	3395	3503	3417	3447	3464
2001	3510	3599	3646	3449	3537	3511	3570	3501	3504	3449	3521	3537	3528
2002	3469	3585	3527	3526	3517	3541	3479	3393	3455	3493	3431	3474	3491
2003	3523	3517	3524	3488	3473	3384	3450	3480	3517	3460	3216		3457

Multiply table entries by 300 to obtain hourly counting rate. Calgary, Canada: N51 W114, Alt=1128m, Cutoff Rigidity=1.09GV.

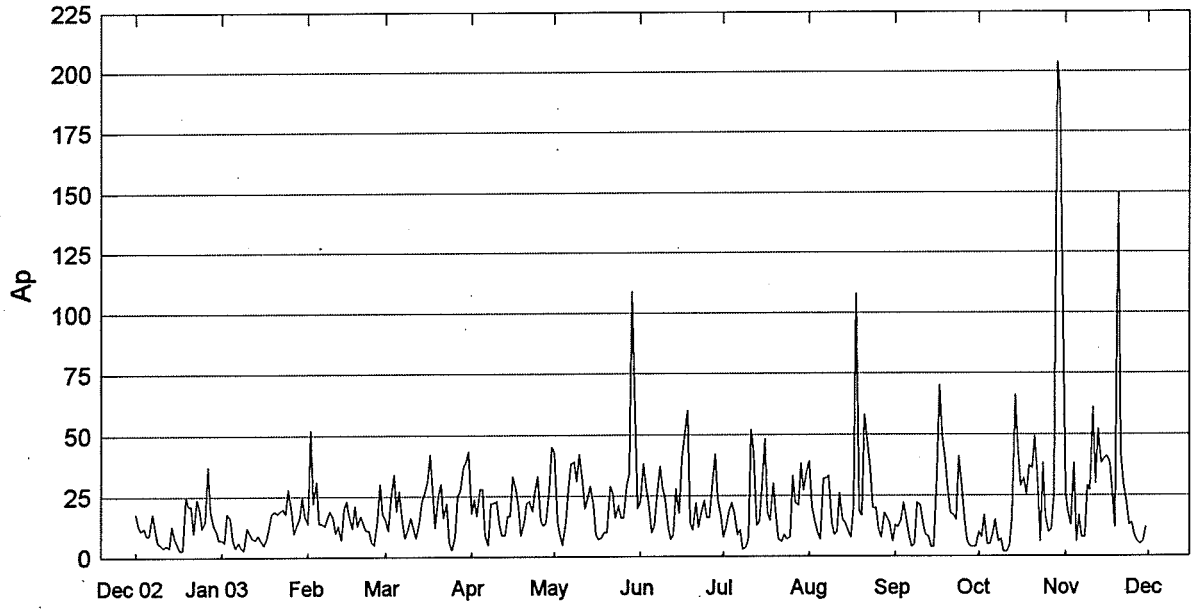
Geomagnetic Activity Indices

November 2003

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	aa Provisional Am	N	S	M	
1		5	5-	4	3-	3	3+	3+	4	30	26	1.2	4+	4-	4-	3-	3o	3o	3o	4-	40	40	43	40	42	
2		3+	4-	3+	3	3-	3+	4+	3-	26+	18	1.0	3-	3o	2+	3o	3-	4-	4-	3-	31	33	30	28	35	
3	Q10A	3+	3	3-	3-	2	2+	3-	3+	22	13	0.7	3o	3-	2o	2+	2-	2+	3-	3o	22	29	19	24	24	
4		3	3	6+	7	3-	2	3+	3-	30	38	1.4	3o	3-	5+	6+	2+	2o	3+	2+	54	50	60	89	20	
5	Q4K	2-	0	1+	1	1-	1+	2+	3+	12-	6	0.3	2-	1-	1+	1o	1-	1+	2+	3o	12	14	11	8	17	K
6		3-	2-	1	1-	2-	2+	6-	4+	20	17	0.9	3-	2-	1o	1-	2o	2o	5o	4o	28	44	20	11	53	
7	Q7A	3+	3-	2-	2+	1	2-	1+	1+	15+	8	0.4	3-	2o	1+	2o	1o	2-	2-	1+	13	16	13	18	11	
8	Q5A	1+	1	1-	2-	3-	3+	2+	2	15	8	0.4	1o	1-	1+	2o	3-	4-	3-	2+	18	19	21	10	30	
9		3-	3	4-	4-	6-	4	5	3+	31	29	1.3	2+	2+	3+	4-	5o	4o	4+	3o	47	57	44	28	74	
10		3+	4	4-	4-	4	4-	5-	5-	32-	27	1.2	3+	3o	3o	4-	4o	4o	4+	5-	50	47	49	36	61	
11	D2	6-	5+	6	6-	5+	6-	5+	5-	44-	61	1.7	5-	4+	5-	5+	5-	5+	5o	4o	87	79	76	81	75	
12		4+	4-	4-	4	4-	5	5	3	32+	30	1.3	4-	3+	3+	4o	3+	5-	4+	3o	47	52	43	42	53	
13	D3	4-	4	5	5+	6	5	6	5+	40+	52	1.6	3-	4-	4o	5-	6-	5-	5+	5o	79	88	64	44	108	
14		5+	5	5-	5-	5-	3+	5-	4-	36	38	1.4	4o	4o	4-	4+	4+	3o	4+	3+	53	62	51	63	51	
15	D5	3	4	6	5-	5	5+	4+	4	36+	40	1.5	3-	4-	5o	4o	5-	5+	4o	4-	65	69	55	53	72	
16	D4	4	5-	5	4	5	5+	4+	5	37+	41	1.5	3+	4o	4+	4o	5-	5-	5-	5-	66	59	64	42	81	
17		5-	5	4+	5-	5-	5+	4+	4	37	39	1.4	4o	4-	3+	4+	5-	5o	4o	4o	62	64	43	49	57	
18		5	4-	3+	4	4	4+	3+	3	31-	26	1.2	4+	3o	3o	3+	4o	4o	3+	3-	41	50	43	45	48	
19	Q8A	2+	2+	3	2+	3	3	3	1+	20+	12	0.7	2o	2o	3o	3-	3-	3o	3o	1+	22	24	24	22	26	
20	D1	1	4-	6+	6+	8-	9-	9-	8	50+	150	2.0	1+	3-	5+	6+	7o	8+	8+	8-	247	258	198	73	383	
21		7-	6	6	4-	2	3	3-	3-	33-	42	1.5	6-	5+	5o	4-	2+	3-	3o	3-	62	52	66	91	26	
22		4+	3	2+	3-	3	5-	6	5-	31-	30	1.3	3+	2+	2o	2+	3-	5o	5+	4o	46	44	48	28	65	
23		4-	5	4-	3-	3+	2+	4	4-	28+	22	1.1	3o	4-	3+	3-	3+	2+	4-	3+	34	38	42	38	42	
24		3-	2	2+	2+	4	3	2+	3	22-	13	0.7	2+	2-	2o	2-	4-	3-	3-	3+	23	29	25	17	37	
25		3+	3+	3	3-	3	3+	2+	2+	23+	14	0.8	3-	3-	2+	3-	3o	3+	2o	2+	24	29	25	28	26	
26	Q6A	2+	2	2-	1+	3-	2+	2	3-	17	8	0.5	2-	2-	1+	1+	3-	2+	2-	3-	15	18	14	11	21	
27	Q2	2	2+	1+	2-	1	1-	2-	1+	12	6	0.3	1+	2-	1+	2-	1+	1o	2o	2-	10	11	10	12	9	CK
28	Q1	2-	2	1	2	2+	2-	0+	0+	11+	5	0.2	1+	2-	1+	2+	3-	2o	1-	1o	12	9	12	11	11	CC
29	Q3	2+	2	2-	2-	1+	1+	1-	2	13	6	0.3	2-	1+	2o	2-	2-	1+	1+	2o	12	10	12	12	10	CC
30	Q9A	2	3	1	1	2+	4-	4-	3	20-	12	0.7	2+	3-	2-	1+	3-	3+	4-	3o	24	34	24	16	42	
Mean											28	1.02									44.9	47.6	41.7		44.7	

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	4o	4o	4-	3o	3o	3-	3o	4-	39	5-	4-	3+	3-	3o	3o	3o	4-	41	207.2	106	122	162	
2	3-	3+	2+	3o	3o	3+	4o	3-	32	3-	3o	2o	3o	2+	4o	3+	3-	29	187.4	112	102	140	
3	3o	3-	2o	3-	2-	3-	3-	3+	22	3o	3-	2o	2+	2o	2+	3-	3o	21	164.2	72	71	115	
4	3-	3-	5+	6o	2+	2o	3+	2o	51	3+	3-	5+	6+	2o	2o	3+	3-	57	165.6#	52	38	117	
5	1+	0+	1+	1-	1-	1+	2+	3o	11	2o	1o	2-	1o	1-	1+	3-	3-	13	112.1	12	18	59	
6	2+	1+	1-	1-	2o	2o	5o	4o	27	3-	2-	1o	1o	2o	2+	5o	4o	29	96.1	9	13	42	
7	2+	2-	1+	2o	1o	2-	2-	1+	12	3-	2+	1o	2-	1+	2-	2-	2-	13	89.4	12	8	35	
8	1o	1-	1-	2o	3o	4-	3-	2o	18	1+	1o	2-	2+	3-	3+	3-	3-	18	91.0	21	22	36	
9	2+	2+	4-	4-	5+	4o	5-	3-	51	3-	2o	3o	3+	5o	4o	4+	3o	43	91.2	39	38	36	
10	3o	3+	3o	4o	4+	4-	5-	5-	54	3+	3-	3o	3+	4o	4o	4o	5-	47	92.8	39	41	38	
11	5-	5-	5o	5+	5o	6-	5+	4o	97	4+	4o	4+	5o	5-	5o	5o	4o	76	93.7	30	28	39	
12	4-	3+	4-	4+	4-	5-	5-	3o	53	3+	3o	3+	3+	3o	4o	4+	3o	41	96.7	11	14	42	
13	3o	4o	4o	5-	6o	5o	5+	5-	85	3-	3o	4-	5-	5+	5-	5+	5+	74	100.0	21	19	46	
14	5-	4o	4o	5-	5-	3+	4+	4-	61	4-	4-	4-	4o	4o	3o	4o	3+	45	96.8	23	21	43	
15	3-	4-	5+	4+	5-	6-	4+	4-	71	3-	4o	5o	4o	4+	5-	4o	4-	59	95.6	33	28	41	
16	4-	4o	5-	4+	5-	5o	5-	5-	70	3o	4-	4o	4o	5-	5-	5-	5-	61	102.0	42	30	48	
17	4+	4o	4-	5-	5+	5o	4+	4-	69	4o	4-	3o	4-	4+	5-	4o	4+	55	118.2	34	30	66	
18	4+	3+	3o	4-	4o	4o	3+	3-	43	4+	3-	3o	3o	4o	4o	3+	3o	40	141.0	52	42	90	
19	2o	2+	3o	3-	3o	3o	3+	1+	24	2o	2o	3-	2+	3-	3o	3-	2-	20	151.5	70	64	102	
20	1-	3-	5+	6+	7o	9-	9-	7+	253	2-	3-	5+	6+	7o	8+	8+	8o	241	171.0	90	76	123	
21	6-	6-	5+	4o	2+	3-	3-	2+	63	6-	5+	5o	3+	2+	3-	3o	3-	60	172.8	97	80	125	
22	3+	2+	2+	2o	3o	5o	5o	4-	46	3+	3-	2-	3-	3-	5-	5+	5-	47	171.9	91	87	124	
23	3-	4o	3o	3-	3+	2o	3+	3o	32	3+	4-	4-	3-	3+	2+	4-	3+	37	173.8	109	91	126	
24	2+	2-	2+	2-	4o	3o	3-	3o	24	3-	2-	2o	2-	4-	3-	2+	4-	23	172.8	107	94	125	
25	3-	3-	3-	3-	3o	3+	2o	2+	24	3-	3-	2+	3-	3o	4-	2o	2+	25	166.3	131	110	118	
26	2-	2-	1+	1o	2+	2+	2o	2+	13	2o	2o	2-	1+	3o	3-	2-	3-	17	166.5	119	111	118	
27	1+	2-	1o	1+	1+	1-	2-	1+	9	1+	2o	1+	2o	2-	1o	2+	2-	12	170.1	132	111	122	
28	1o	2-	1-	2o	3-	1+	0+	0+	10	2-	2-	1+	3-	3-	2+	1-	2-	15	163.2	121	116	114	
29	1+	1o	1+	2-	2o	1o	1o	2-	10	2o	1+	2+	2-	2-	1+	2-	2+	14	161.4	113	111	112	
30	2-	2+	1o	1o	3-	4-	3+	3o	22	3-	3o	2o	2o	2+	3o	4-	3o	26	148.6	116	90	98	
Mean									46.5									43.3	137.7	67.2	60.9	86.7	

Daily Average Indices Ap
Dec 2002 - Nov 2003

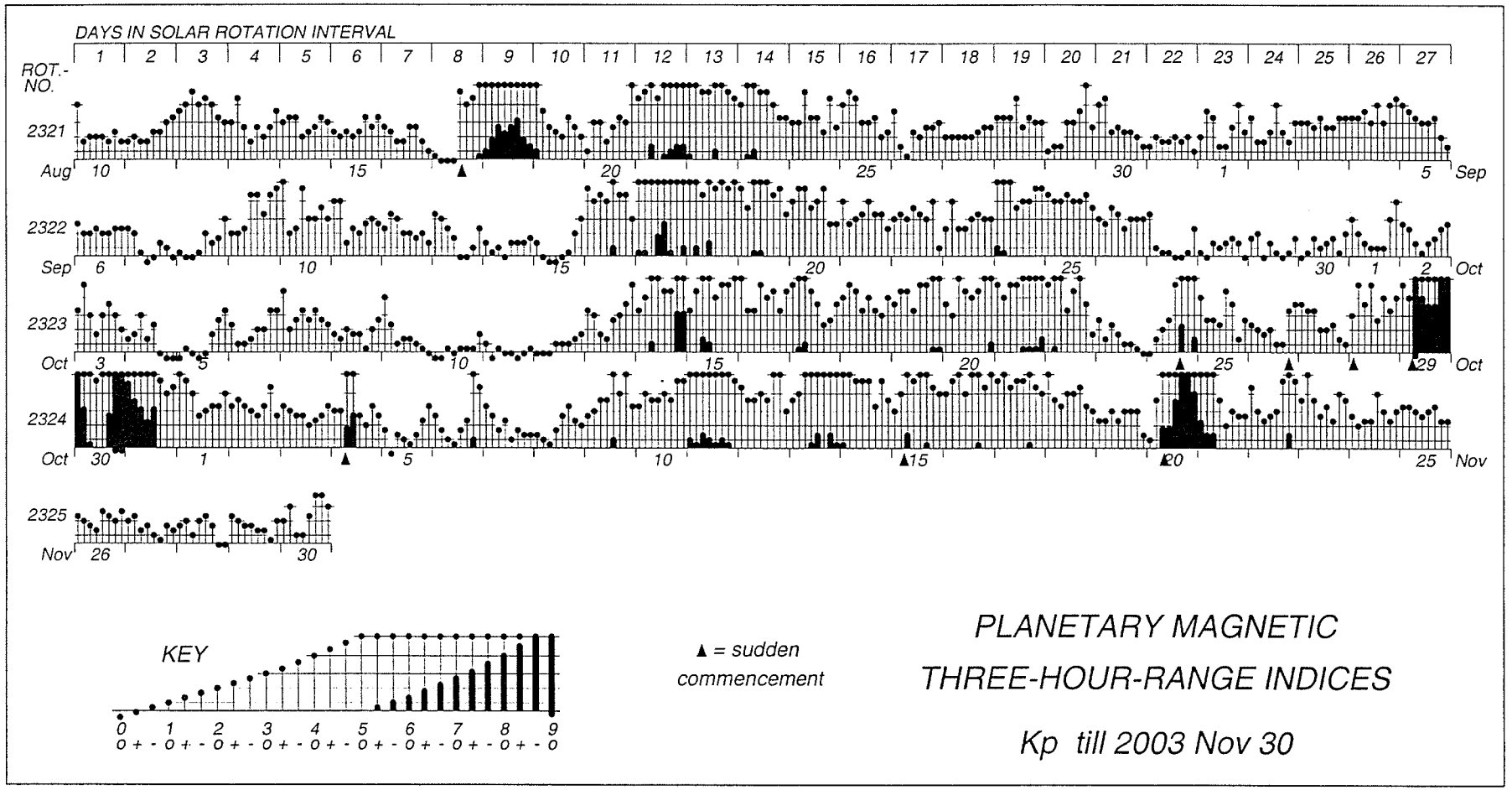


Day	Dec 02	Jan 03	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1	18	7	14	15	18	43	22	8	39	13	10	26
2	13	6	52	11	24	15	38	12	21	12	8	18
3	11	18	22	24	17	9	29	19	14	15	17	13
4	12	16	31	34	28	5	22	22	10	22	5	38
5	9	7	14	19	28	14	10	18	7	16	5	6
6	9	4	14	27	9	28	13	9	32	8	9	17
7	18	6	13	15	5	38	25	11	32	4	15	8
8	12	4	16	8	22	39	37	3	33	5	6	8
9	6	3	19	11	22	31	28	4	14	22	7	29
10	5	12	16	16	23	42	24	7	9	21	2	27
11	4	10	10	12	14	31	12	52	10	14	2	61
12	5	8	13	8	9	20	7	43	26	9	4	30
13	4	7	7	14	9	24	9	13	15	8	16	52
14	13	9	20	23	17	29	28	14	14	4	66	38
15	8	7	23	26	17	22	18	28	11	4	44	40
16	5	5	17	31	33	9	40	48	8	34	29	41
17	3	7	12	42	28	7	49	18	20	70	32	39
18	3	12	21	28	21	8	60	15	108	50	25	26
19	25	18	13	12	9	10	14	30	19	39	37	12
20	21	19	17	25	14	10	11	17	17	27	36	150
21	21	18	14	30	22	29	22	7	58	18	49	42
22	10	19	11	16	23	26	12	6	46	17	34	30
23	24	20	11	22	19	16	18	9	36	15	6	22
24	20	18	6	6	27	21	23	7	20	41	38	13
25	12	28	5	3	33	16	16	8	20	28	16	14
26	15	20	15	8	15	16	16	33	11	15	10	8
27	37	10	30	25	13	30	31	22	8	6	11	6
28	19	13	18	27	14	34	42	21	18	4	25	5
29	13	16		37	27	109	24	38	16	4	204	6
30	11	25		39	45	59	17	27	14	4	191	12
31	7	17		43		20		35	6		116	
Mean	13	13	17	21	20	26	24	19	23	18	35	28

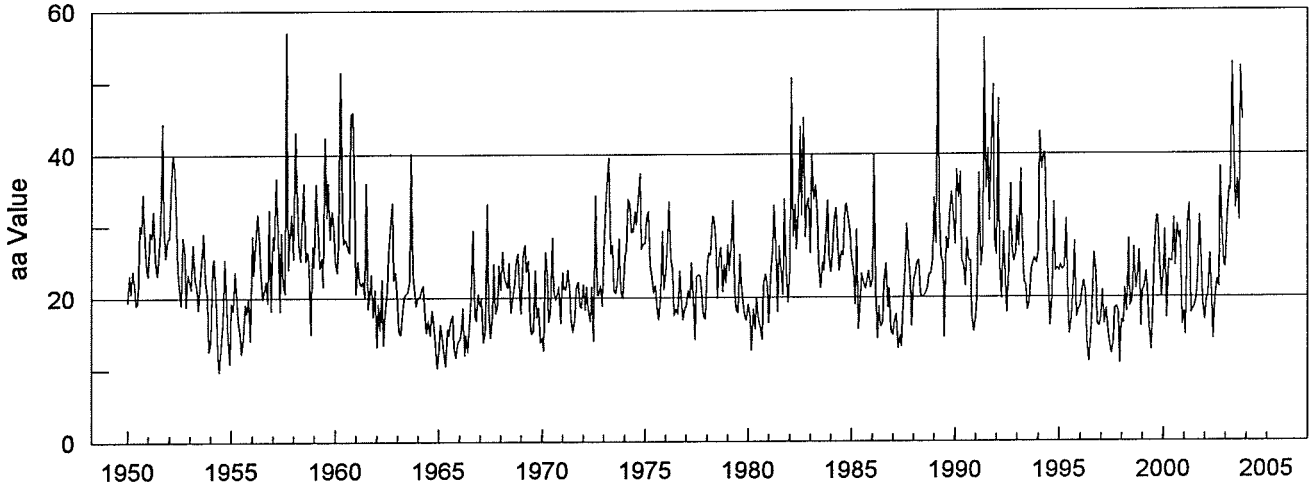
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

GeoForschungsZentraum Potsdam

Kp through November 30, 2003



Monthly Mean aa Index Jan 1950 - Nov 2003

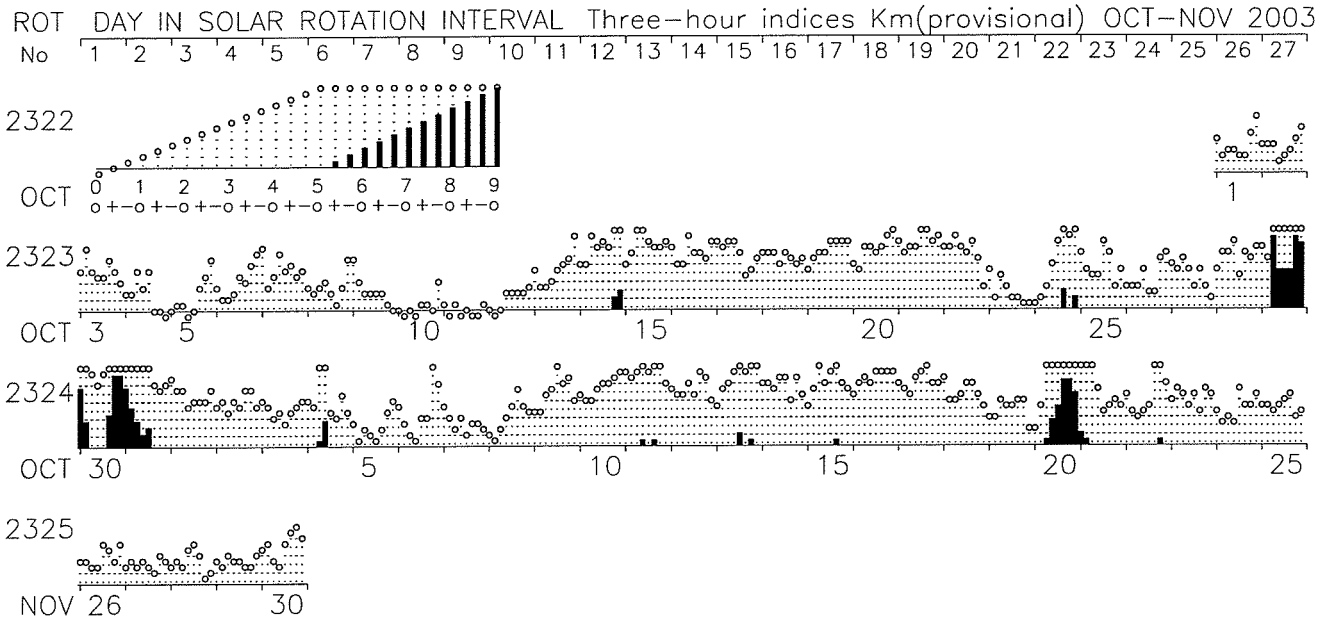


Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	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		37.7

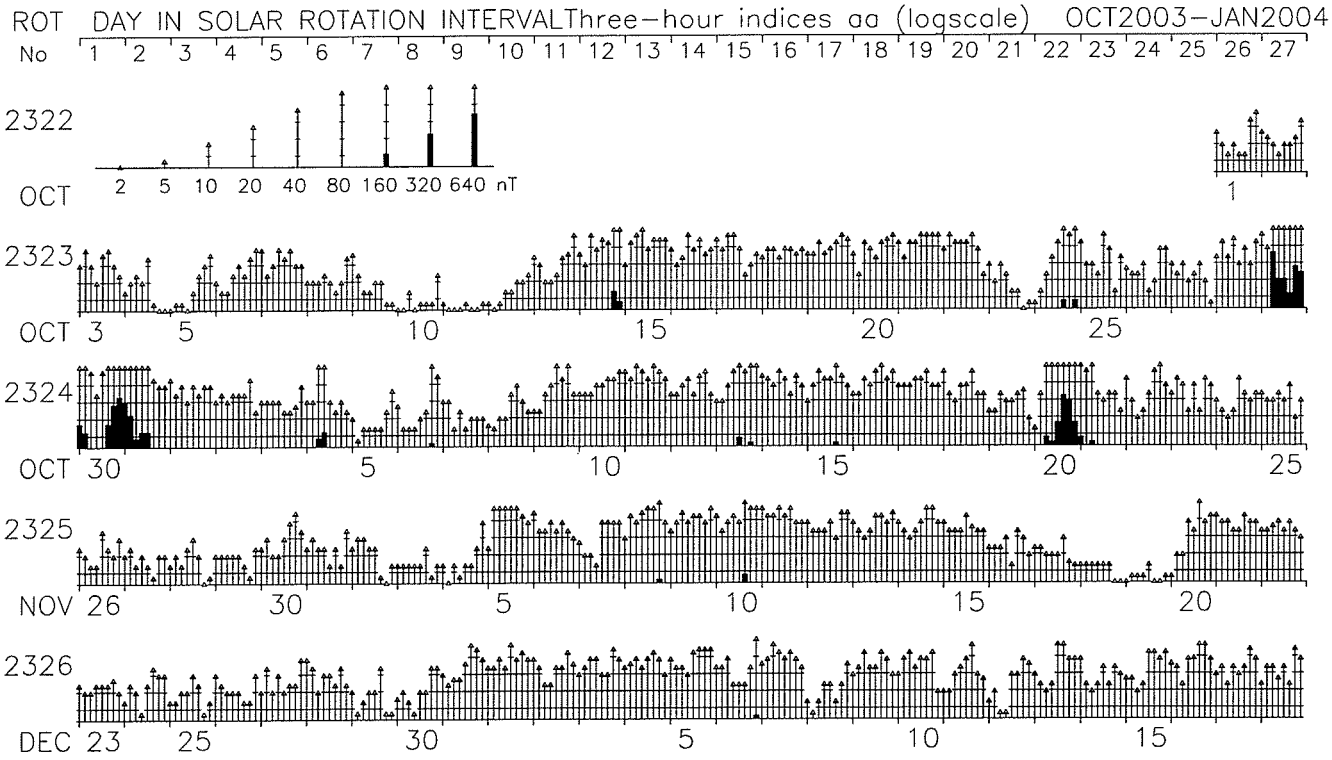
PLANETARY GEOMAGNETIC ACTIVITY

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.

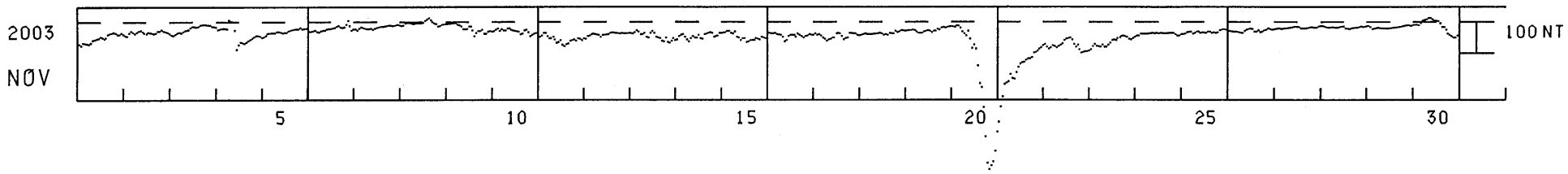
WDC FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

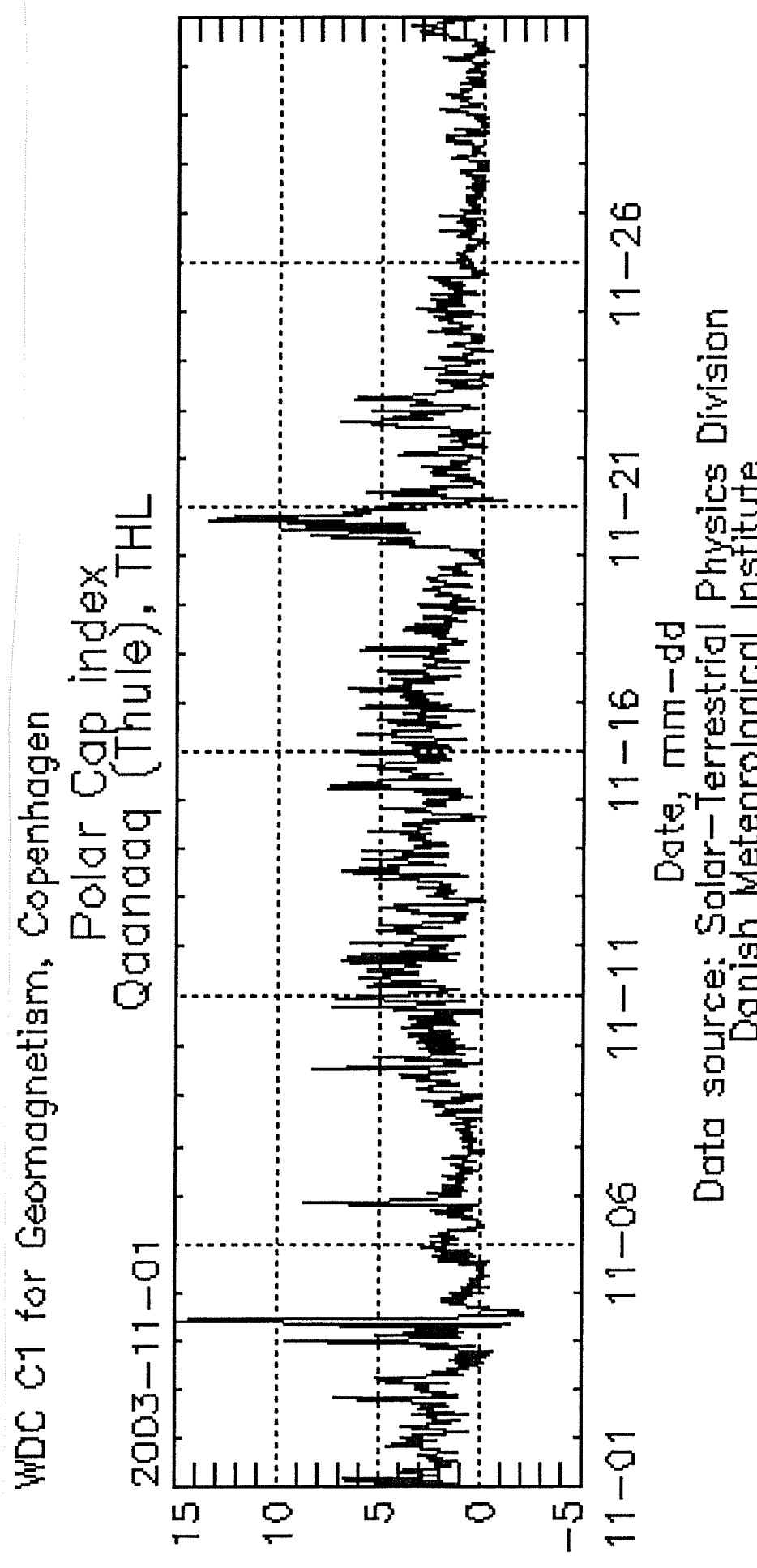
NOVEMBER 2003

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-72	-75	-67	-68	-68	-71	-67	-58	-56	-54	-52	-47	-50	-53	-49	-40	-37	-36	-32	-36	-40	-39	-36	-40
2	-44	-45	-36	-28	-33	-37	-32	-28	-27	-30	-36	-38	-33	-32	-36	-37	-35	-29	-29	-25	-29	-30	-32	-37
3	-41	-44	-39	-34	-32	-36	-30	-26	-27	-24	-17	-14	-14	-15	-13	-10	-7	-8	-7	-10	-10	-13	-14	-15
4	-25	-22	-19	-19	-20	-23	8	4	1	-26	-89	-74	-65	-66	-68	-65	-61	-57	-52	-47	-44	-43	-45	-49
5	-48	-43	-37	-36	-35	-36	-34	-31	-31	-33	-34	-33	-32	-29	-27	-24	-22	-22	-23	-18	-23	-23	-21	-27
6	-30	-31	-28	-27	-31	-32	-29	-27	-26	-23	-22	-19	-19	-18	-13	-11	-15	-17	-16	-7	6	-12	-27	-23
7	-23	-27	-21	-15	-18	-21	-23	-22	-20	-24	-20	-18	-15	-14	-14	-14	-11	-9	-9	-11	-12	-10	-8	-9
8	-11	-9	-3	-1	-1	-3	-5	-4	-4	-4	-3	-2	5	10	14	7	0	-4	-5	-14	-12	-7	-7	-6
9	-6	-6	-3	-3	-3	-7	-10	-13	-22	-23	-23	-14	-14	-27	-46	-34	-28	-28	-25	-37	-37	-31	-29	-31
10	-29	-25	-21	-28	-23	-26	-26	-20	-20	-24	-26	-28	-28	-31	-40	-37	-27	-25	-33	-46	-41	-37	-34	-36
11	-47	-43	-34	-35	-46	-52	-51	-48	-56	-66	-65	-58	-74	-78	-71	-69	-61	-59	-56	-61	-51	-54	-58	-52
12	-53	-46	-44	-39	-38	-39	-40	-42	-48	-41	-41	-39	-39	-34	-32	-35	-36	-35	-38	-36	-37	-38	-35	-34
13	-36	-37	-33	-26	-30	-39	-40	-36	-47	-50	-34	-28	-35	-48	-49	-51	-60	-63	-50	-65	-66	-60	-52	-59
14	-57	-45	-41	-39	-47	-56	-62	-51	-46	-50	-50	-41	-51	-54	-40	-37	-34	-33	-36	-47	-45	-43	-35	-36
15	-35	-33	-28	-28	-35	-37	-30	-47	-50	-59	-52	-52	-64	-62	-58	-59	-59	-52	-54	-56	-48	-49	-51	-41
16	-36	-38	-37	-35	-39	-40	-42	-48	-63	-59	-46	-42	-42	-42	-48	-38	-41	-45	-49	-45	-43	-40	-42	-41
17	-38	-41	-40	-43	-50	-53	-60	-56	-54	-50	-49	-38	-36	-38	-46	-55	-52	-49	-34	-36	-37	-37	-41	-43
18	-42	-40	-38	-39	-40	-40	-40	-38	-38	-38	-35	-37	-41	-40	-42	-36	-38	-38	-29	-32	-31	-27	-27	-28
19	-26	-27	-26	-24	-26	-31	-34	-35	-34	-31	-28	-27	-28	-32	-29	-28	-22	-25	-17	-16	-17	-15	-14	-14
20	-14	-15	-11	-12	-18	-30	-38	-43	-28	-53	-84	-74	-86	-141	-198	-211	-273	-368	-451	-472	-460	-448	-413	-353
21	-320	-271	-241	-200	-195	-192	-169	-180	-184	-161	-144	-135	-131	-129	-122	-117	-118	-113	-99	-96	-93	-86	-81	-75
22	-72	-79	-86	-82	-75	-77	-81	-77	-74	-69	-59	-54	-51	-49	-57	-71	-80	-74	-87	-99	-96	-94	-95	-92
23	-87	-78	-72	-78	-78	-79	-74	-79	-79	-74	-67	-59	-56	-59	-52	-50	-46	-44	-45	-48	-53	-56	-52	-47
24	-44	-43	-38	-37	-37	-37	-38	-37	-36	-37	-36	-37	-35	-35	-37	-37	-34	-36	-34	-35	-40	-44	-43	-39
25	-39	-37	-33	-30	-31	-37	-36	-31	-31	-35	-32	-33	-35	-31	-31	-36	-32	-36	-32	-27	-25	-23	-25	-29
26	-28	-30	-30	-30	-30	-32	-35	-35	-29	-25	-23	-21	-22	-30	-30	-27	-32	-31	-27	-25	-21	-23	-24	-23
27	-23	-20	-21	-23	-21	-21	-20	-18	-17	-15	-13	-13	-15	-19	-20	-19	-20	-18	-15	-16	-18	-17	-14	-12
28	-12	-14	-15	-17	-18	-16	-15	-17	-17	-15	-13	-14	-19	-21	-23	-20	-17	-17	-18	-16	-14	-15	-13	-13
29	-11	-15	-22	-21	-21	-18	-19	-19	-21	-19	-20	-19	-18	-18	-17	-15	-15	-13	-12	-11	-10	-10	-11	-9
30	-8	-8	-9	-4	5	7	10	13	13	9	5	5	3	-3	-15	-16	-24	-38	-42	-45	-50	-49	-44	-36



Note: The baselines for the observatories were adjusted for secular change for the Provisional Dst values for November 2003.


WDC C1 for Geomagnetism, Copenhagen
Polar Cap index
Qaanaaq (Thule), THL
2003-11-01
15
10
5
0
-5
11-01
11-06
11-11
11-16
11-21
11-26
Date, mm-dd
Data source: Solar-Terrestrial Physics Division
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

NOVEMBER 2003

Sta	Geomag Lat	Commencement Time Day	(UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Hour Day	(UT)
JAI	17.4N	04	0627	SC	- 0.7	57	- 12		-	5	247	43	04	21
NGP	11.3N	04	0627	SC	- 0.5	--	- 9		-	4	--	26	04	21
ABG	09.4N	04	0627	SC	- 0.5	39	- 7	04(4)	7	5	253	39	04	21
HYB	07.6N	04	0626	SC	- 0.5	57	- 5		-	--	--	--	--	--
PND	02.0N	04	0627	SC	- 0.4	65	52		-	3	293	--	04	21
TIR	00.6S	04	0627	SC	- 1.4	91	99		-	7	350	231	04	21
HYB	07.6N	06	1940	SC	- 0.3	22	- 1		-	--	--	--	--	--
JAI	17.4N	09	0700	..	..	..	..		-	9	153	32	11	22
NGP	11.3N	09	0700	..	..	..	..		-	--	--	--	11	22
ABG	09.4N	09	0700	..	..	..	..	11(6)	6	6	--	28	11	22
HYB	07.6N	09	0500	..	..	..	..	11(5,6)	6	6	187	21	11	22
PND	02.0N	09	0700	..	..	..	..		-	5	177	75	11	22
TIR	00.6S	09	0700	..	..	..	..		-	5	206	83	11	22
GNA	43.0S	09	0900	..	..	..	..	11(6) 13(5) 16(6)	6	32	131	168	17	21
CAN	43.6S	09	0600	..	..	..	..	13(5)	6	24	203	70	17	03
HYB	07.6N	12	0400	..	..	..	..	13(6)	6	4	103	23	14	24
JAI	17.4N	13	0400	..	..	..	..		-	6	85	30	14	23
NGP	11.3N	13	0400	..	..	..	..		-	--	--	--	14	23
ABG	09.4N	13	0400	..	..	..	..	13(4)	6	4	104	24	14	23
PND	02.0N	13	0400	..	..	..	..		-	4	109	75	14	23
TIR	00.6S	13	0400	..	..	..	..		-	4	145	96	14	23
JAI	17.4N	15	0550	SC	- 0.5	25	- 7		-	6	116	22	17	24
NGP	11.3N	15	0550	SC	- 0.1	29	- 4		-	5	127	17	17	24
ABG	09.4N	15	0550	SC	- 0.4	28	- 4	15(3,6) 16(3,5,6) 17(5,6) 18(6)	5	5	122	24	17	24
HYB	07.6N	15	0549	SC	- 0.2	29	- 3	15(6)	6	4	122	20	18	22
PND	02.0N	15	0550	SC	- 0.2	33	21		-	3	123	74	17	24
TIR	00.6S	15	0550	SC	- 0.5	23	25		-	4	150	99	17	24
JAI	17.4N	20	0802	SC	- 1.0	38	- 9		-	21	--	65	21	22
NGP	11.3N	20	0802	SC	- 0.1	42	- 6		-	14	--	78	21	22
ABG	09.4N	20	0802	SC	- 0.6	39	- 9	20(6)	8	16	--	70	21	22
HYB	07.6N	20	0803	SC	- 0.8	40	- 6	20(7,8)	9	13	623	38	21	22
PND	02.0N	20	0802	SC	- 0.3	55	44		-	--	--	--	21	22
TIR	00.6S	20	0802	SC	- 1.4	100	99		-	15	841	286	21	22
GNA	43.0S	20	0802	SC	12.3	100.2	64.5	20(6,7)	8	69	598	381	23	09
CAN	43.6S	20	0802	SC	11	106.4	33.7	20(6)	8	61	627	269	23	09
HYB	07.6N	22	1000	..	..	..	..	22(6,7)	5	3	153	25	25	24
HYB	07.6N	30	0100	..	..	..	..	30(6,8)	4	3	118	17	30	24

Stations:

ABG = ALIBAG
AMS = MARTIN DE VIVIES
ANN = ANNAMALAINAGAR
BJI = BEIJING
CAN = CANBERRA
CMO = COLLEGE
CZT = PORT ALFRED
DRV = DUMONT D'URVILLE
ETT = ETAIYAPURAM
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HON = HONOLULU
HYB = HYDERABAD
JAI = JAIPUR
KRC = KARACHI
NGP = NAGPUR
PAF = PORT AUX FRANCAIS
PMG = PORT MORESBY
PND = PONDICHERRY
SHL = SHILLONG
SIT = SITKA
TIR = TIRUNELVELI
UJJ = UJJAIN

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

November 2003

Storm Sudden Commencements (SSC)

Day	Time	Quality: Station Group*
04	0625	A: VAL* NAG* MMB* KAK* HTY* KNY* GUI* GNA CNB
		B: NUR NGK* BDV* CLF*
		C: EBR
		S: HRB
15	0550	A: GUI*
		C: NGK VAL CLF MMB* EBR KAK HTY KNY
20	0803	A: VAL CLF* MMB* KAK* HTY* KNY* GUI GNA CNB
		B: SOD* NUR NGK* BDV* GCK*
		C: HRB NAG* EBR*

Solar Flare Effects (sfe)

Day	Begin-End	Station(s)
03	0946-1050	NGK+ BDV+ HTY+
03	1440-1449	NGK+
05	1049-1104	BDV+
08	1635-1641	NAG
13	0906-0922	HTY+
24	1238-1305	GUI
29	0637-0651	NAG

REPORTING OBSERVATORIES (up to the 5th of January 2004):
SOD NUR NGK VAL BDV CLF HRB NAG GCK MMB EBR KAK HTY KNY GUI GNA CNB

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

Note that we have included data of the 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.