

Space Weather Highlights
29 March - 04 April 1999

Solar activity ranged from very low to high levels. The week began with activity at very low to low levels with isolated, mostly B-class X-ray flares. Activity increased to moderate levels on 02 April with an optically uncorrelated M1 at 02/0821UT. Region 8508 (N20, L = 284, class/area Cao/090 on 04 April) rotated into view on 03 April and appeared to be the return of old Region 8485. Region 8508 lies within a band of active solar longitudes that have produced episodes of moderate to high activity for the last several rotations. Activity rose to high levels on the last day of the period as Region 8508 produced an M5/1F flare at 04/0528UT accompanied by a 190 SFU Tenflare and moderate centimetric radio bursts. A halo-CME may have been associated with this flare as well.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft for most of the period.

There were no significant proton enhancements detected at geo-synchronous altitude.

The greater than 2 MeV electron flux at geo-synchronous altitude briefly reached high levels during 02 - 04 April, but was otherwise at normal to moderate levels.

The geomagnetic field was intermittently disturbed during the week with brief active to minor storm levels detected at all latitudes. There were also a few isolated periods of major storm levels at high latitudes. This activity appeared to be due to a recurrent high-speed coronal hole windstream.

Space Weather Outlook
07 April - 03 May 1999

Solar activity is expected to be at low to moderate levels. Isolated M-class flares are possible through the first half of April, due primarily to the presence of Region 8508.

No significant proton enhancements are expected at geo-synchronous altitude.

The greater than 2 MeV electron flux at geo-synchronous altitude may reach high levels during 25 April - 03 May. Otherwise, normal to moderate levels are expected.

Geomagnetic field activity may increase to active levels during 07 - 08 April in response to the CME mentioned above. Active to minor storm levels are also possible during 25 April - 01 May due to recurrent coronal hole effects.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No. (10 ⁶ hemi.)	Sunspot Area	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
29 March	104	63	250	A8.9	1	0	0	3	0	0	0	0
30 March	105	72	270	B1.0	0	0	0	0	0	0	0	0
31 March	102	70	180	A8.9	0	0	0	0	0	0	0	0
01 April	103	59	220	B1.1	0	0	0	0	0	0	0	0
02 April	100	50	180	B1.9	0	1	0	0	0	0	0	0
03 April	103	77	160	B2.9	5	1	0	15	1	0	0	0
04 April	116	90	250	C1.3	1	1	0	4	2	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
29 March	4.4E+5	1.3E+4	3.0E+3		2.7E+5	
30 March	1.6E+5	1.4E+4	3.0E+3		1.7E+6	
31 March	1.3E+5	1.4E+4	3.2E+3		1.7E+7	
01 April	1.1E+5	1.5E+4	3.5E+3		1.4E+7	
02 April	9.8E+4	1.6E+4	3.7E+3		3.0E+7	
03 April	7.7E+4	1.5E+4	3.8E+3		2.9E+7	
04 April	1.6E+5	1.5E+4	3.6E+3		3.6E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	29 March	21	3-3-4-3-5-3-3-3	*	*-*-*-**-*-**	24
30 March	14	3-2-3-3-3-3-3-3	38	3-2-5-6-5-5-5-2	18	3-3-4-4-3-3-3-2
31 March	15	3-3-3-3-3-2-2-4	20	2-4-3-4-5-3-2-3	14	3-3-3-3-3-2-2-4
01 April	14	5-5-2-1-1-0-1-1	15	5-5-2-2-1-1-1-1	14	5-5-2-2-2-2-1-1
02 April	7	1-3-1-1-2-2-3-2	10	2-2-3-2-4-2-2-1	10	1-3-3-2-3-3-3-2
03 April	12	2-2-3-2-3-3-3-3	8	2-2-2-3-3-2-2-1	8	2-2-3-2-2-2-3-3
04 April	8	3-2-1-2-2-2-3-2	16	2-2-3-4-5-3-2-2	13	3-2-4-2-3-2-3-3

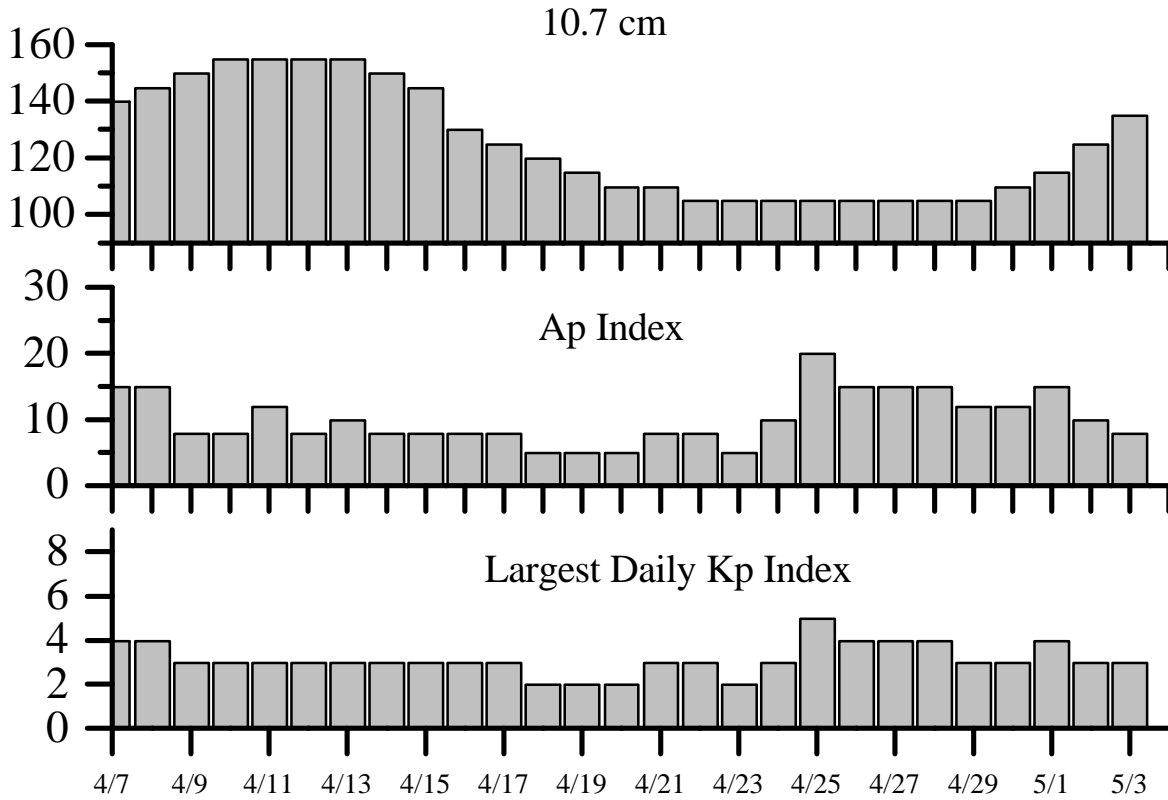


Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
01 Apr 0302	K= 5 Observed	01 Apr 00 - 03
01 Apr 0326	K= 5 Warning valid	01 Apr 03 - 12
01 Apr 0600	A \geq 20 Observed	01 Apr 0600
01 Apr 0600	K= 5 Observed	01 Apr 03 - 06
02 Apr 0600	K= 4 Observed	02 Apr 03 - 06
03 Apr 2350	Type II Radio Emission	03 Apr 2306
04 Apr 0545	10cm Radio Burst 190 F.U.	04 Apr 0521
04 Apr 0554	X-Ray event M5.4/1F/N18E72	04 Apr 0528
04 Apr 0859	K= 4 Observed	04 Apr 06 - 09
04 Apr 1437	>2MeV Electron Event \geq 1000pfu	04 Apr 1420
04 Apr 2345	Type II Radio Emission	04 Apr 0417



Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
07 Apr	140	15	4	21 Apr	110	8	3
08	145	15	4	22	105	8	3
09	150	8	3	23	105	5	2
10	155	8	3	24	105	10	3
11	155	12	3	25	105	20	5
12	155	8	3	26	105	15	4
13	155	10	3	27	105	15	4
14	150	8	3	28	105	15	4
15	145	8	3	29	105	12	3
16	130	8	3	30	110	12	3
17	125	8	3	01 May	115	15	4
18	120	5	2	02	125	10	3
19	115	5	2	03	135	8	3
20	110	8	3				



Energetic Events

Date	Time (UT)			X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Class	Integ Flux	Imp Brtns	Location		Rgn #	Radio Flux		Intensity	
			Max				Lat	CMD		245	2695	II	IV
02 Apr 99	0806	0821	0829	M1.1	.009								
03 Apr 99	2256	2310	2319	M4.3	.033	1F	N29E81		8508	75		2	
04 Apr 99	0519	0528	0537	M5.4		1F	N18E72		8508	190			

Flare List

Date	Time			X-ray Class.	Optical		Rgn #
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
29 March	0725	0731	0745	B1.6			
	1020	1025	1029	B2.3			
	1036	1040	1043	B1.8			
	1208	1213	1216		SF	S27E68	8502
	1330	1336	1340	B2.7			
	1534	1549	1620	B3.1			
	1702	1704	1708	B3.1	SF	S29E66	8502
30 March	2214	2216	2220	C1.4	SF	S27E64	8502
	0509	0513	0516	B3.3			
	0710	0713	0716	B1.1			
	1056	1100	1104	B1.6			
31 March	2139	2144	2154	B1.5			
	0519	0524	0529	B4.3			
	2027	2030	2033	B1.3			
01 April	0106	0115	0122	B4.7			
	0547	0552	0558	B4.1			
02 April	1929	1933	1939	B2.1			
	2036	2045	2049	B4.3			
	2115	2119	2124	B2.5			
	0806	0821	0829	M1.1			
	1011	1017	1026	B4.9			
	1526	1534	1541	B4.3			
03 April	1618	1624	1632	B6.2			
	2042	2046	2049	B7.1			
	2234	2240	2247	B9.9			
	0703	0708	0714	B4.1			
	0727	0731	0739		SF	N10E63	8507
	1000	U1001	A1008		SF	S28E05	8506
	B1141	U1144	A1154	B7.6	SF	N10E65	8507
	1201	1206	1210		SF	S28E04	8506
	1225	1240	1304		SF	S28E04	8506
	1301	1303	1308		SF	N31W13	8501
1329	1343	1353	C1.4	SF	S27E05	8506	
1401	1417	1423		SF	S26E05	8506	



Flare List-continued

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
03 Apr	1454	1503	1509	C1.9	SF	N11E63		8507
	1646	1655	1715	B9.3				
	1813	1815	1841	B8.2	SF	N11E66		8507
	2013	2017	2026	C1.6	SF	S26E02		8506
	2047	2048	2058	C3.1	SF	N18E74		8508
	2054	2054	2113		SF	S28E02		8506
	2145	2146	A2148		SF	S31E12		8504
	2219	2220	2225	C2.8	SF	S26E01		8506
	2304	2316	2342	M4.3	1F	N29E81		8508
04 April	B0506	0509	0546		SF	S28W05		8506
	B0519	0528	0537	M5.4	1F	N18E72		8508
	0528	0528	0537		1F	N18E72		8508
	1415	1423	1432		SF	N11E51		8507
	1506	1506	1512		SF	S26W11		8506
	1525	1529	1545		SF	S26W11		8506
	2147	2150	2154	C2.3				

Region Summary

Date	Location		Sunspot Characteristics				Flares							
	° Lat ° CMD	Helio	Area (10 ⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

Region 8490

17 Mar	S20E66	158	0000	00	AXX	001	A										
18 Mar	S19E54	157	0000	00	AXX	001	A										
19 Mar	S19E40	158	0010	01	AXX	002	A										
20 Mar	S19E27	158	0010	01	BXO	003	B										
21 Mar	S18E10	162	0010	03	BXO	003	B										
22 Mar	S17W02	160	0000	00	AXX	001	A										
23 Mar	S17W15	160															
24 Mar	S17W28	160															
25 Mar	S17W41	160															
26 Mar	S17W54	160															
27 Mar	S17W67	160															
28 Mar	S17W80	160															

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 160



Region Summary-continued

Date	Location		Sunspot Characteristics				Flares							
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

Region 8495

19 Mar	S21E62	136	0000	00	AXX	001	A												
20 Mar	S21E47	138	0000	07	BXO	002	B												
21 Mar	S21E33	139	0010	07	BXO	002	B												
22 Mar	S21E23	135	0000	01	AXX	002	A												
23 Mar	S21E10	135																	
24 Mar	S21W03	135																	
25 Mar	S21W16	135																	
26 Mar	S21W29	135																	
27 Mar	S21W42	135																	
28 Mar	S22W51	130	0010	03	BXO	007	B												
29 Mar	S22W64	130																	
30 Mar	S22W77	130																	

0 0 0 0 0 0 0 0 0

Died on Disk.

Absolute heliographic longitude: 135

Region 8497

22 Mar	N30E60	098	0060	03	HSX	001	A												
23 Mar	N30E49	096	0040	02	HSX	001	A												
24 Mar	N28E37	095	0070	02	HSX	001	A												
25 Mar	N29E25	094	0080	02	HSX	001	A												
26 Mar	N30E12	094	0060	02	HSX	001	A												
27 Mar	N29W01	094	0070	02	HSX	001	A												
28 Mar	N29W13	092	0070	02	HSX	001	A												
29 Mar	N30W26	092	0070	02	HSX	001	A												
30 Mar	N29W38	091	0050	02	HSX	001	A												
31 Mar	N29W50	090	0050	02	HSX	001	A												
01 Apr	N29W62	089	0070	02	HSX	001	A												
02 Apr	N30W76	089	0070	02	HSX	001	A												
03 Apr	N30W89	089																	

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 094



Region Summary-continued

Date	Location		Sunspot Characteristics				Flares													
	(° Lat ° CMD)	Helio Lon	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical									
								C	M	X	S	1	2	3	4					
<i>Region 8498</i>																				
23 Mar	N18E67	078	0050	02	HSX	001	A													
24 Mar	N17E54	078	0050	02	HSX	001	A													
25 Mar	N17E42	077	0060	02	HAX	003	A													
26 Mar	N18E29	077	0060	02	HSX	001	A													
27 Mar	N18E16	077	0050	02	HSX	001	A													
28 Mar	N18E03	076	0050	02	HSX	002	A													
29 Mar	N18W10	076	0040	02	HSX	001	A													
30 Mar	N18W22	075	0030	03	CSO	002	B													
31 Mar	N19W36	076	0020	01	HSX	001	A													
01 Apr	N18W48	075	0030	01	HSX	001	A													
02 Apr	N18W61	074	0040	01	HSX	001	A													
03 Apr	N18W74	074	0020	01	HSX	001	A													
04 Apr	N19W84	071	0000	00	AXX	001	A													
																				0 0 0 0 0 0 0 0
Still on Disk.																				
Absolute heliographic longitude: 076																				
<i>Region 8500</i>																				
27 Mar	N16E02	091	0000	00	AXX	001	A													
28 Mar	N16W11	091																		
29 Mar	N16W24	091																		
30 Mar	N16W38	091																		
31 Mar	N16W51	091																		
01 Apr	N16W64	091																		
02 Apr	N16W77	091																		
																				0 0 0 0 0 0 0 0
Died on Disk.																				
Absolute heliographic longitude: 091																				
<i>Region 8501</i>																				
27 Mar	N28E66	027	0010	02	BXO	002	B													1
28 Mar	N29E55	024	0040	08	CSO	004	B													
29 Mar	N28E42	024	0040	06	CSO	003	B													
30 Mar	N27E29	024	0020	01	HSX	002	A													
31 Mar	N25E16	024	0010	00	AXX	001	A													
01 Apr	N27E05	022	0010	05	BXO	002	B													
02 Apr	N27W08	022																		
03 Apr	N27W21	022																		1
04 Apr	N27W34	022																		
																				0 0 0 2 0 0 0 0
Still on Disk.																				
Absolute heliographic longitude: 22																				



Region Summary-continued

Date	Location		Sunspot Characteristics				Flares							
	(° Lat ° CMD)	Helio Lon	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
								C	M	X	S	1	2	3

Region 8502

28 Mar	S25E71	008	0000	00	AXX	001	A											
29 Mar	S27E65	001	0090	17	FAO	003	B	1				3						
30 Mar	S27E45	008	0030	04	CSO	003	B											
31 Mar	S27E30	010	0010	01	HSX	001	A											
01 Apr	S27E18	009	0000	00	AXX	001	A											
02 Apr	S27E05	008	0000	00	AXX	001	A											
03 Apr	S27W08	008																
04 Apr	S27W21	008																

Still on Disk.

Absolute heliographic longitude: 008

Region 8503

29 Mar	S23W17	083	0010	03	BXO	005	B											
30 Mar	S22W31	084	0000	00	AXX	001	A											
31 Mar	S22W44	084																
01 Apr	S22W57	084																
02 Apr	S22W70	084																
03 Apr	S22W83	084																

Crossed West Limb.

Absolute heliographic longitude: 083

Region 8504

30 Mar	S28E61	352	0140	02	HSX	003	A											
31 Mar	S28E47	353	0090	06	CAO	004	B											
01 Apr	S28E36	351	0110	04	CAO	004	B											
02 Apr	S28E23	350	0070	05	CSO	007	B											
03 Apr	S28E11	349	0070	05	DSO	010	B					1						
04 Apr	S28W02	349	0050	04	DSO	010	B											

Still on Disk.

Absolute heliographic longitude: 349

Region 8505

31 Mar	N10W56	096	0000	03	BXO	002	B											
01 Apr	N10W69	096																
02 Apr	N10W82	096																

Crossed West Limb.

Absolute heliographic longitude: 096



Region Summary-continued

Date	Location		Sunspot Characteristics				Flares							
	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical			
		Lon						C	M	X	S	1	2	3

Region 8506

03 Apr	S26W02	002	0010	04	BXO	008	B	4			8						
04 Apr	S26W15	002	0100	07	DAO	017	BG				3						
									4	0	0	11	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 002

Region 8507

03 Apr	N12E58	302	0010	05	BXO	005	B	1			4						
04 Apr	N11E45	302	0010	07	BXO	006	B				1						
									1	0	0	5	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 302

Region 8508

03 Apr	N19E77	283	0050	02	HSX	003	A		1		1	1					
04 Apr	N20E63	284	0090	08	CAO	006	B		1			2					
									0	2	0	1	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 284



**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Smooth values RI/SWO	Smooth values SWO	**Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value	
1997									
April	24.5	15.5	0.63	24.0	16.5	74.5	76.8	10	08.6
May	28.6	18.5	0.65	26.4	18.3	74.6	78.4	08	08.6
June	22.1	12.7	0.57	29.0	20.3	71.7	80.1	07	08.6
July	17.0	10.4	0.61	32.4	22.6	71.1	81.8	06	08.5
August	36.7	24.4	0.66	35.9	25.0	79.0	83.4	07	08.3
September	52.8	51.3	0.88	40.5	28.3	96.2	85.7	10	08.4
October	33.6	22.8	0.68	45.4	31.8	84.9	88.6	11	08.6
November	53.5	39.0	0.73	49.3	35.0	99.5	91.3	11	09.0
December	57.9	41.2	0.71	54.2	39.0	98.8	94.2	05	09.5
1998									
January	51.8	31.9	0.62	60.6	43.7	93.4	97.5	08	09.9
February	54.4	40.3	0.74	67.4	48.8	93.4	101.7	08	10.5
March	81.8	54.8	0.67	73.3	53.4	109.1	105.8	13	11.1
April	73.6	53.4	0.73	77.7	56.5	108.3	109.1	10	11.3
May	74.3	56.3	0.76	81.4	59.3	106.7	112.4	18	11.6
June	93.6	70.7	0.76	85.9	62.4	108.4	116.2	10	11.9
July	98.3	66.2	0.67	90.3	65.4	114.0	120.3	11	12.2
August	118.6	91.7	0.77			136.0		18	12.4
September	119.0	92.9	0.78			138.4		14	12.5
October	77.0	55.6	0.72			121.9		13	
November	99.5	73.6	0.74			140.2		16	
December	120.8	81.6	0.68			150.1		08	
1999									
January	94.3	62.4	0.66			142.6		10	
February	93.4	66.1	0.70			142.0		11	
March	100.5	69.1	0.70			126.3		13	

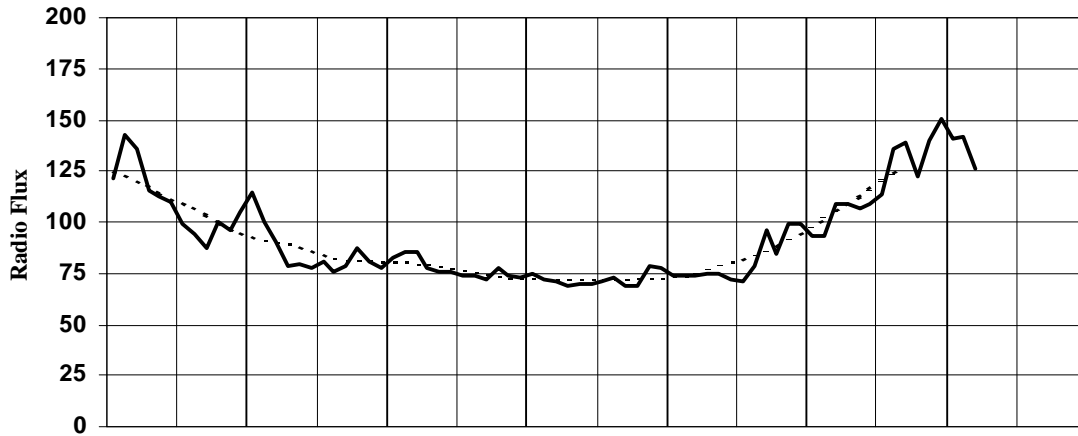
NOTE: All smoothed values after January 1998 and monthly values after September 1998 are preliminary estimates.

The lowest smoothed sunspot indices number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 22, RI=158.5, occurred July 1989.

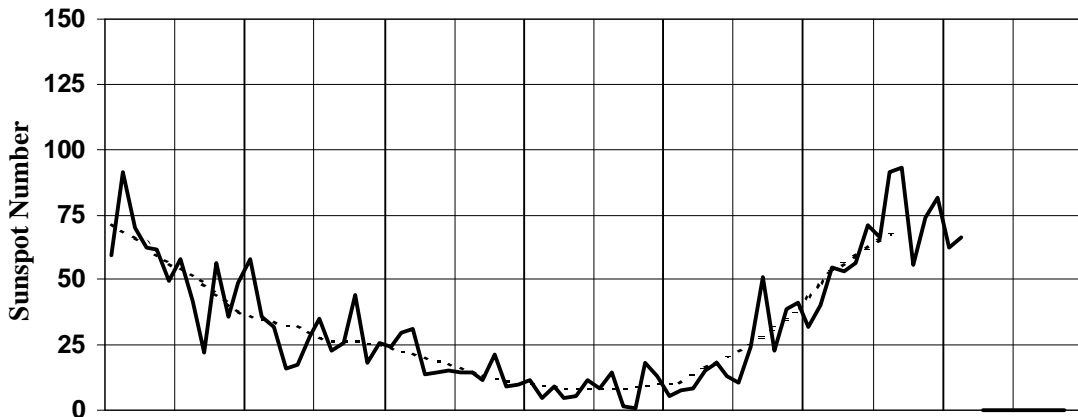
* After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.



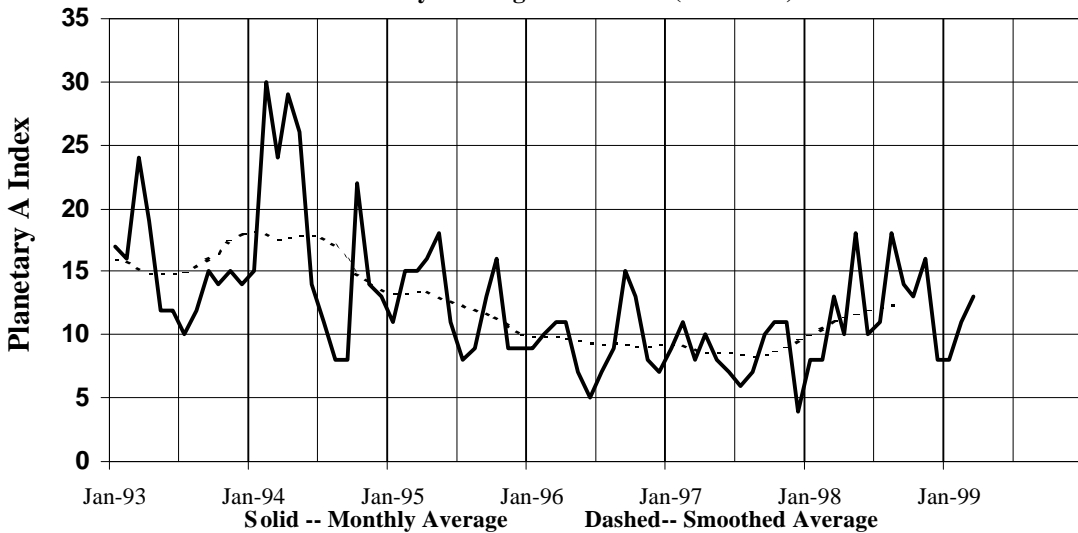
Penticton (DRAO) Radio Flux 2800MHz (10.7cm)
 (With data through 1 Apr 99 for all graphs)



International Sunspot Number

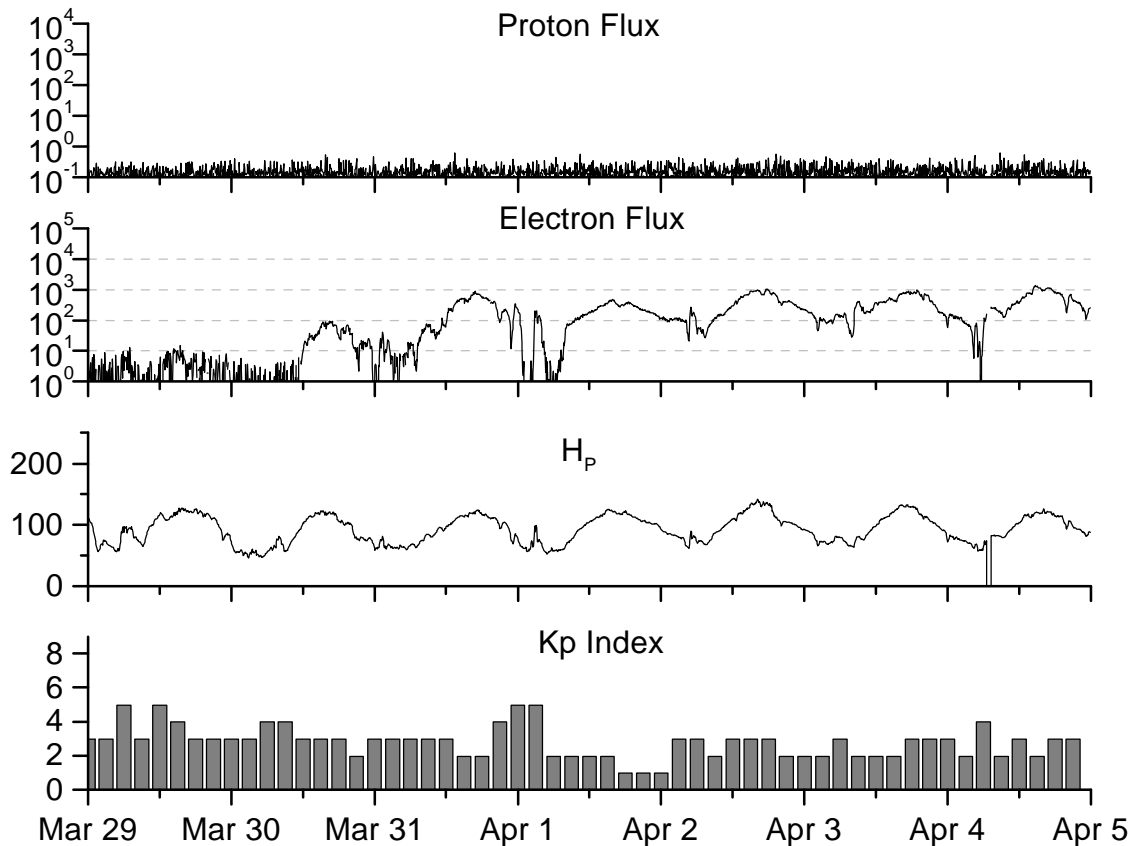


Planetary Geomagnetic A Index (Estimated)



Jan-93 Jan-94 Jan-95 Jan-96 Jan-97 Jan-98 Jan-99
 Solid -- Monthly Average Dashed-- Smoothed Average





Weekly Geosynchronous Satellite Environment Summary
Week Beginning 29 March 1999

Protons plot contains the five-minute averaged integral proton flux (protons/ cm²-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

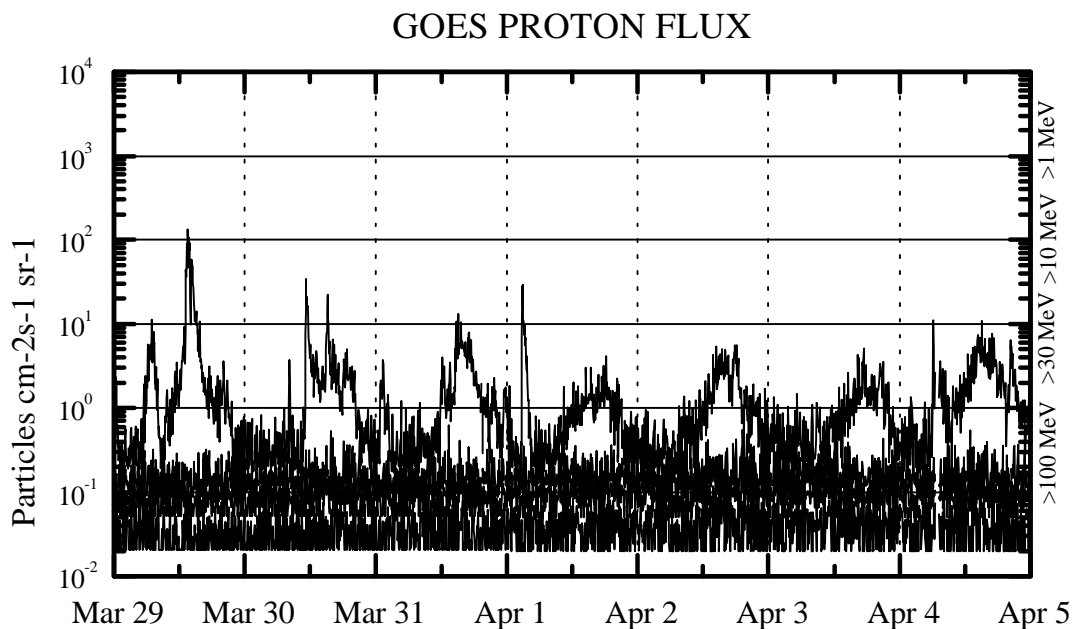
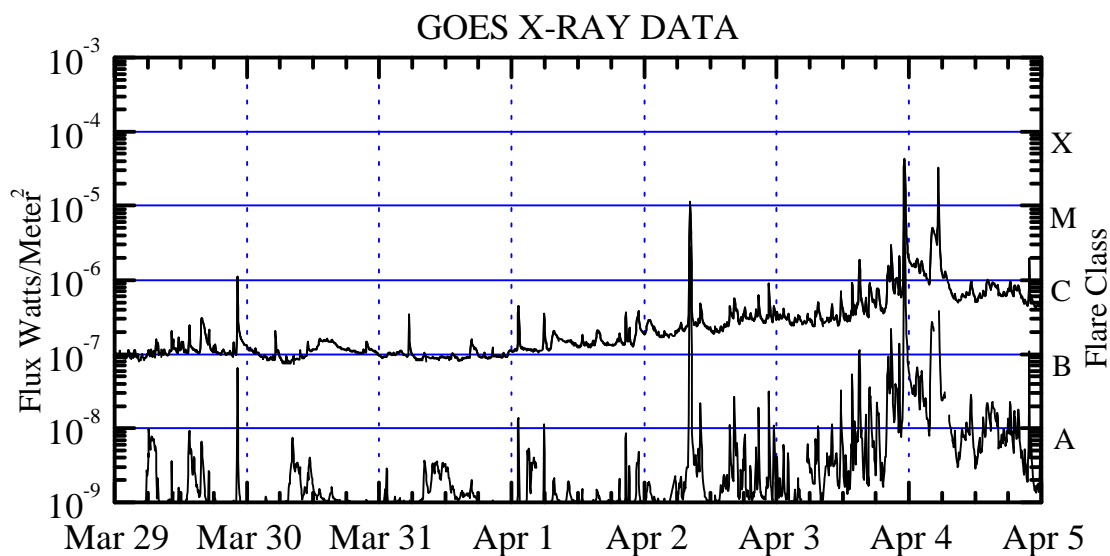
Electrons plot contains the five-minute averaged integral electron flux (electrons/ cm²-sec-sr) with energies greater than 2 MeV at GOES-8.

H_p plot contains the five minute averaged magnetic field H component in nanoteslas (nT) as measured by GOES-8. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

Kp plot contains the estimated planetary 3-hour K-index (derived by the USAF 55th Space Weather Squadron) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) and the US Geological Survey. These may differ from the final Kp values derived from a more extensive network of magnetometers.

The data included here are those now available in real time at the SWO and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are "global" parameters that are applicable to a first order approximation over large areas. H_{parallel} is subject to a more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



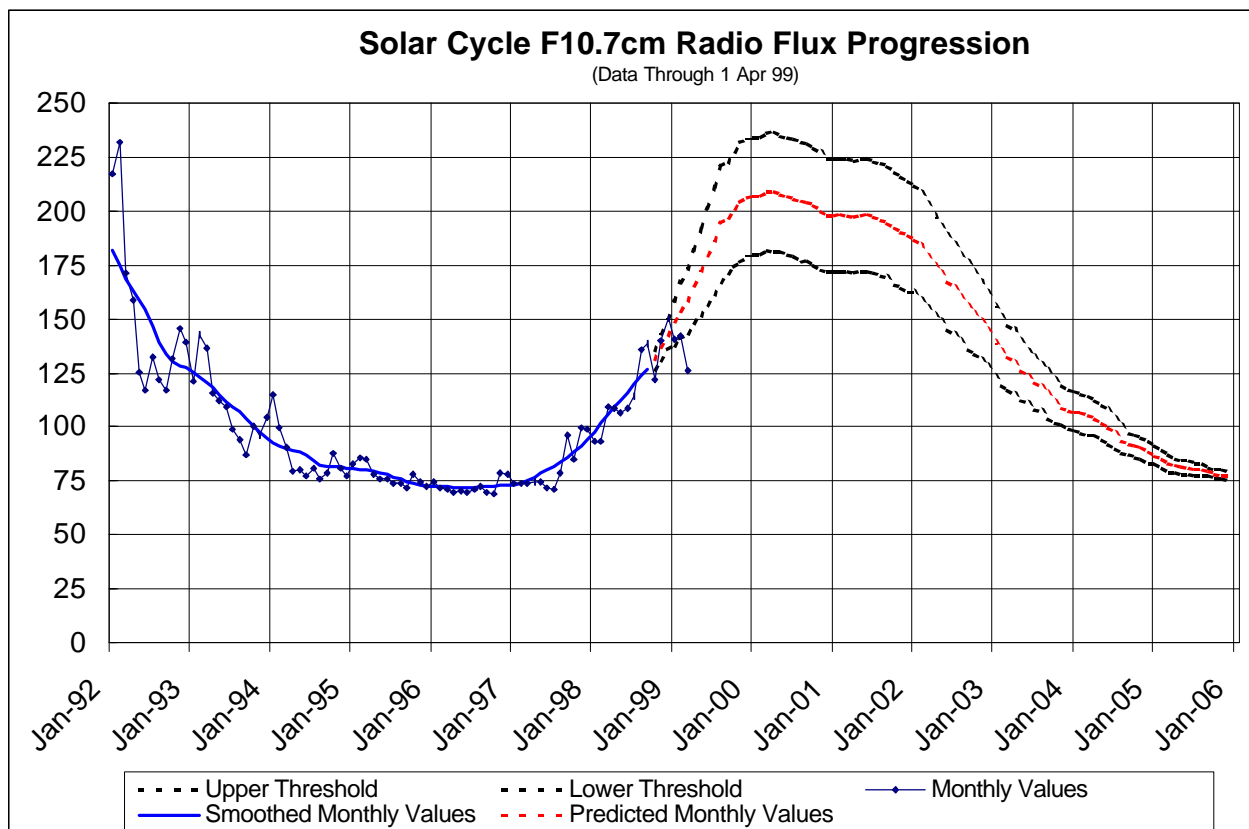


Weekly GOES Satellite X-ray and Proton Plots

X-ray plot contains five minute averaged x-ray flux (watts/m²) as measured by GOES 8 and 10 in two wavelength bands, .05 -.4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.

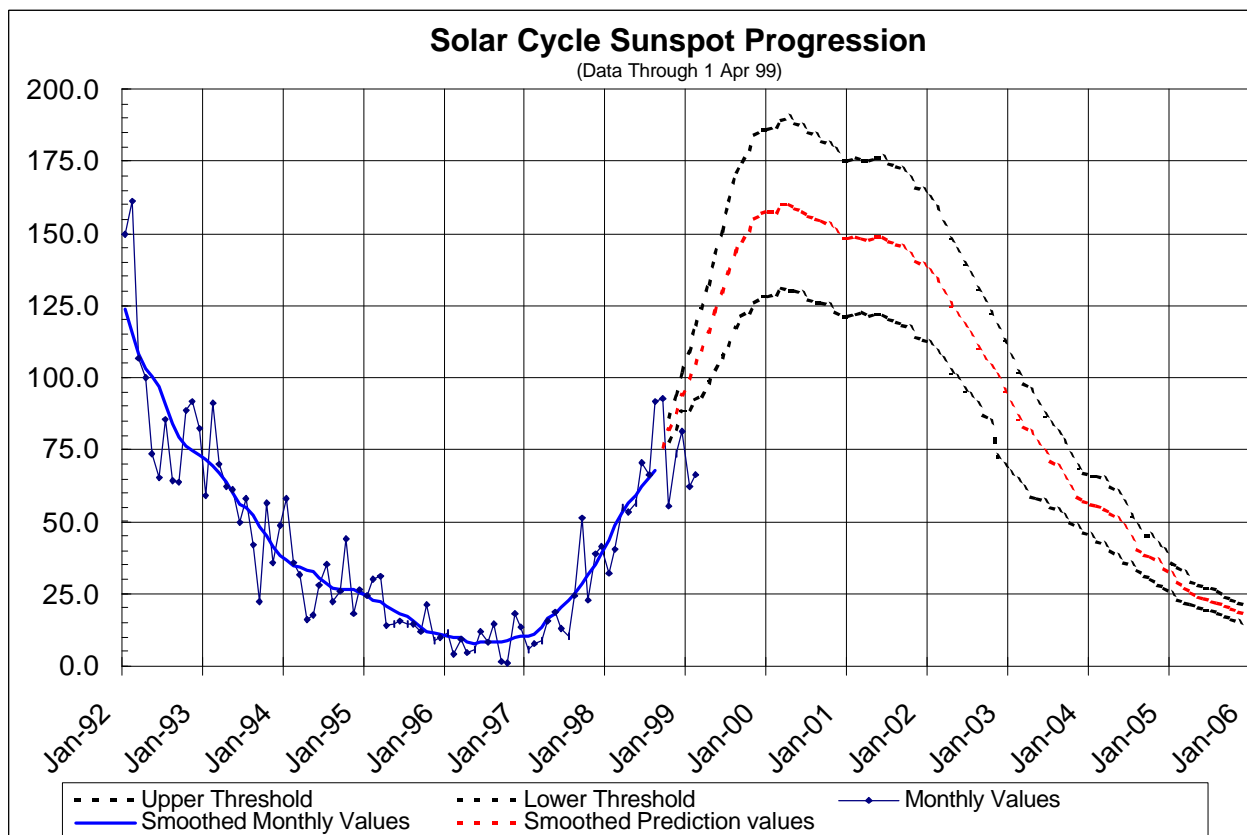




SEC Prediction of Smoothed F10.7cm Radio Flux

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	73 (***)	72 (***)	72 (***)	71 (***)	71 (***)	72 (***)	71 (***)	71 (***)	71 (***)	72 (***)	72 (***)	73 (***)
1997	73 (***)	74 (***)	75 (***)	77 (***)	78 (***)	80 (***)	82 (***)	83 (***)	86 (***)	88 (***)	91 (***)	94 (***)
1998	98 (***)	102 (***)	106 (***)	109 (***)	112 (***)	116 (***)	120 (***)	124 (***)	127 (***)	131 (4)	137 (6)	142 (8)
1999	148 (10)	154 (13)	158 (15)	165 (17)	172 (20)	179 (22)	186 (25)	194 (27)	197 (26)	201 (27)	204 (28)	206 (27)
2000	207 (27)	207 (27)	209 (27)	209 (28)	208 (27)	207 (27)	206 (27)	204 (28)	204 (27)	202 (27)	200 (27)	198 (26)
2001	198 (26)	198 (26)	198 (26)	197 (26)	198 (26)	198 (26)	197 (26)	196 (26)	195 (26)	192 (26)	190 (26)	188 (26)
2002	187 (25)	184 (25)	179 (24)	175 (23)	171 (22)	167 (22)	164 (21)	160 (20)	156 (20)	153 (19)	149 (18)	145 (17)
2003	140 (17)	135 (16)	132 (15)	130 (15)	126 (14)	123 (12)	120 (12)	118 (11)	115 (11)	112 (10)	110 (9)	108 (9)
2004	107 (9)	106 (9)	105 (9)	104 (8)	102 (8)	100 (8)	97 (7)	94 (6)	92 (5)	91 (5)	90 (5)	88 (5)
2005	87 (4)	85 (4)	83 (4)	82 (3)	81 (3)	81 (3)	80 (3)	80 (3)	79 (2)	78 (2)	78 (2)	77 (2)





SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	10 (***)	10 (***)	10 (***)	8 (***)	8 (***)	9 (***)	8 (***)	8 (***)	8 (***)	9 (***)	10 (***)	10 (***)
1997	11 (***)	11 (***)	14 (***)	17 (***)	18 (***)	20 (***)	23 (***)	25 (***)	28 (***)	32 (***)	35 (***)	39 (***)
1998	44 (***)	49 (***)	53 (***)	57 (***)	59 (***)	62 (***)	65 (***)	68 (1)	69 (2)	73 (4)	79 (6)	85 (8)
1999	91 (10)	96 (13)	100 (15)	107 (17)	114 (20)	121 (22)	128 (25)	135 (27)	143 (27)	151 (28)	155 (29)	157 (29)
2000	157 (29)	158 (29)	160 (29)	160 (30)	159 (29)	158 (29)	156 (29)	155 (29)	154 (28)	153 (28)	151 (28)	148 (27)
2001	148 (27)	149 (27)	148 (27)	148 (27)	149 (27)	149 (27)	147 (27)	146 (27)	145 (27)	143 (26)	140 (26)	139 (26)
2002	137 (25)	134 (25)	130 (24)	125 (23)	122 (22)	118 (22)	115 (21)	111 (20)	107 (20)	104 (19)	100 (18)	96 (17)
2003	91 (17)	86 (16)	83 (15)	81 (15)	77 (14)	74 (13)	71 (13)	69 (12)	66 (12)	62 (11)	59 (10)	57 (10)
2004	56 (10)	56 (10)	55 (10)	53 (9)	51 (9)	48 (9)	44 (8)	41 (7)	38 (7)	38 (7)	36 (6)	34 (6)
2005	31 (5)	29 (5)	27 (5)	25 (4)	24 (4)	23 (4)	23 (4)	22 (4)	21 (3)	20 (3)	19 (3)	18 (3)

