

**Space Weather Highlights  
28 September – 04 October 1998**

Solar activity ranged from very low to moderate during the period. Two M-class flares occurred. The first was an optically uncorrelated M3 at 28/0654UT with major Types II and IV radio sweeps. Region 8340 (N20, L = 013, class/area Dko/540 on 21 September) produced the second, a long-duration M2/2N at 30/1350UT with associated major Types II and IV radio sweeps, a 450 SFU Tenflare, and a loop prominence system. Region 8340 was crossing the west limb at the time of the flare and had been in a period of slow decay since 25 September. Isolated B- and C-class subflares were observed from a few small regions during the remaining days of the period.

Real-time solar wind data were available from the Advanced Composition Explorer (ACE) spacecraft during most of the period. Significant wind variations were detected during the geomagnetic disturbance discussed below. Solar wind velocities increased from 440 - 600 km/sec on 01 October, followed by an increase to 720 km/sec on 02 October. Densities peaked at 11 p/cc. Bz reached maximum southerly deflections of minus 10 dB during the disturbance. Solar sector orientation was away (phi angle near 135 degrees) through 29 September, but was not discernible during the rest of the period.

A solar proton event (SPE) followed the long-duration M2/2N of 30 September. The greater than 100 MeV SPE began at 30/1440UT, reached a maximum of 3.0 PFU at 30/1920UT, and ended at 30/2235UT. The greater than 10 MeV SPE began at 30/1520UT, reached a maximum of 1200 PFU at 01/0025UT, and ended at 02/0830UT. The polar cap absorption event associated with the SPE peaked at 4.9 dB (as measured by the Thule 30 MHz riometer) at 30/2125UT, then ended around 02/0300UT.

The greater than 2 MeV electron flux at geosynchronous altitude was at moderate to high levels during the entire period.

The geomagnetic field was quiet to unsettled during 28 - 30 September. A field disturbance occurred during 01 - 03 October, likely in response to the long duration M2/2N mentioned above with active to minor storm levels at middle latitudes and active to major storm levels at high latitudes. Activity declined to quiet to unsettled levels during the latter half of 03 October and remained so for the remainder of the period.

**Space Weather Forecast  
07 October 1998-02 November 1998**

Solar activity is expected to be very low to moderate. M-class flare probabilities are expected to increase after 13 October with the return of old Region 8340.

No significant proton enhancements are expected at geosynchronous altitude.

The greater than 2 MeV electron flux at geosynchronous altitude is expected to be at moderate to high levels through 07 October, then decline to normal to moderate levels for the balance of the period.

The geomagnetic field is expected to be at quiet to unsettled levels. However, brief active periods may occur around 15 and 24 October due to recurrent, high-speed coronal hole wind streams.



### Daily Solar Data

Date	Radio	Sun	Sunspot	X-ray	Flares							
	Flux	spot	Area	Background	X-ray Flux			Optical				
	10.7 cm	No. ( $10^6$ hemi.)			C	M	X	S	1	2	3	4
28 September	123	127	550	B3.8	5	1	0	6	0	0	0	0
29 September	116	86	330	B2.6	1	0	0	2	0	0	0	0
30 September	122	59	290	B2.8	0	1	0	4	0	1	0	0
01 October	119	47	140	B5.8	6	0	0	2	0	0	0	0
02 October	113	51	290	B2.5	0	0	0	0	0	0	0	0
03 October	112	38	270	B1.8	0	0	0	2	0	0	0	0
04 October	115	21	260	B2.0	0	0	0	3	0	0	0	0

### Daily Particle Data

Date	Proton Fluence (protons/cm <sup>2</sup> -day-sr)			Electron Fluence (electrons/cm <sup>2</sup> -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
28 September	3.0E+6	1.6E+4	2.4E+3		2.4E+8	
29 September	2.1E+6	1.6E+4	2.8E+3		2.7E+8	
30 September	5.7E+7	1.6E+7	6.4E+4		3.3E+8	
01 October	2.6E+8	2.8E+7	9.5E+3		3.0E+7	
02 October	5.7E+7	8.1E+5	3.5E+3		4.8E+7	
03 October	7.4E+6	1.8E+5	6.3E+3		7.0E+7	
04 October	1.4E+6	5.0E+4	6.5E+3		1.5E+8	

### Daily Geomagnetic Data

Date	Middle Latitude		High Latitude		Estimated	
	Fredericksburg		College		Planetary	
	A	K-indices	A	K-indices	A	K-indices
28 September	4	1-2-1-1-0-2-1-1	*	1-2-0-0-0-*-1-1	6	1-1-1-2-2-3-3-2
29 September	6	1-2-2-1-1-2-3-1	7	1-1-4-2-2-1-1-1	10	1-3-3-1-2-3-3-3
30 September	6	2-2-0-1-3-1-2-2	4	1-2-0-2-1-1-1-2	8	1-2-1-1-2-2-3-4
01 October	17	5-3-3-3-2-3-2-3	31	4-3-5-4-4-6-3-2	21	5-3-4-3-3-4-3-3
02 October	20	5-3-4-2-3-2-3-4	42	2-2-5-5-6-6-5-3	21	4-3-4-3-4-4-4-4
03 October	18	4-4-3-5-3-1-1-1	20	4-5-4-4-4-1-1-0	14	4-4-4-2-3-2-2-2
04 October	3	1-1-1-1-2-0-0-1	2	1-0-1-0-2-0-0-1	5	1-1-2-1-1-2-2-2

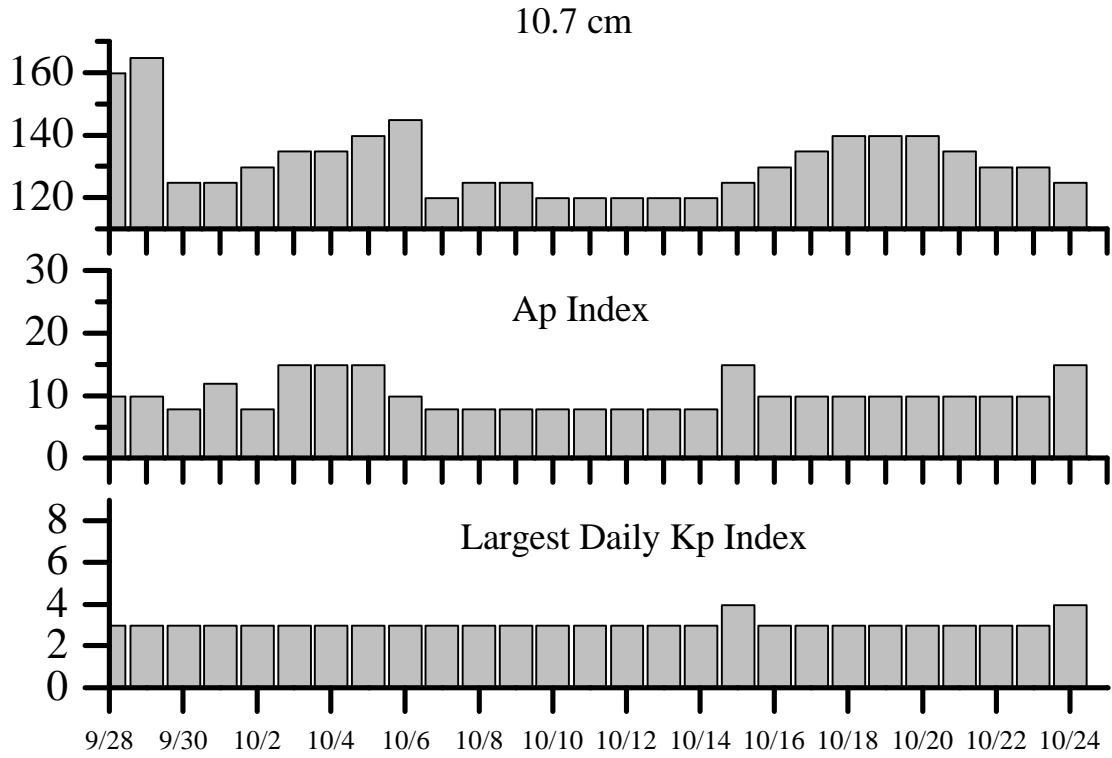


### *Alerts and Warnings Issued*

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
28 Sep 0731	Type II Radio Emission	28 Sep 0704
28 Sep 0731	Type IV Radio Emission	28 Sep 0652
28 Sep 1200	CONTINUED >2MeV Electron Event $\geq 1000$ pfu	25 Sep 1605
29 Sep 0156	4 –245 MHz Radio Bursts	28 Sep
29 Sep 1200	CONTINUED >2MeV Electron Event $\geq 1000$ pfu	25 Sep 1605
30 Sep 0026	3 – 245 MHz Radio Bursts	29 Sep
30 Sep 0026	245 MHz Radio Noise Storm	29 Sep
30 Sep 1200	CONTINUED >2MeV Electron Event $\geq 1000$ pfu	25 Sep 1605
30 Sep 1423	Type II Radio Emission	30 Sep 1322
30 Sep 1429	10cm Radio Burst 490 F.U.	30 Sep 1405
30 Sep 1429	Type IV Radio Emission	30 Sep 1335
30 Sep 1431	Proton Event Warning 10pfu @ $\geq 10$ MeV	30 Sep 1631
30 Sep 1436	Proton Event Expected >1pfu @ $\geq 100$ MeV	30 Sep 1536
30 Sep 1500	Proton Event >1pfu @ $\geq 100$ MeV	30 Sep 1440
30 Sep 1538	Proton Event $\geq 10$ pfu @ $\geq 10$ MeV	30 Sep 1525
01 Oct 0039	Sudden Impulse 40 nT observed at Boulder	01 Oct 0000
01 Oct 0302	K= 5 Observed	01 Oct 00- 03
01 Oct 0900	K= 4 Observed	01 Oct 06- 09
01 Oct 1200	CONTINUED >2MeV Electron Event $\geq 1000$ pfu	25 Sep 1605
01 Oct 1200	CONTINUED Proton Event $\geq 10$ pfu @ $\geq 10$ MeV	30 Sep 1525
01 Oct 1850	ENDED Proton Event >1pfu @ $\geq 100$ MeV at 30/2235 Sep	30 Sep 1440
02 Oct 0128	245 MHz Radio Noise Storm	01 Oct
02 Oct 0607	K= 4 Observed	02 Oct 03- 06
02 Oct 0752	Sudden Impulse 32 nT observed at Boulder	02 Oct 0725
02 Oct 1200	ENDED Proton Event $\geq 10$ pfu @ $\geq 10$ MeV at 02/0830 Oct	30 Sep 1525
02 Oct 1513	>2MeV Electron Event $\geq 1000$ pfu	02 Oct 1455
02 Oct 1630	A $\geq 20$ Watch	03 Oct
03 Oct 0300	A $\geq 20$ Observed	03 Oct 0300
03 Oct 0300	K= 5 Observed	03 Oct 00 - 03
03 Oct 0610	K = 4 Observed	03 Oct 03 - 06
03 Oct 1200	CONTINUED >2MeV Electron Event >1000pfu	02 Oct 1455
04 Oct 1202	CONTINUED >2MeV Electron Event $\geq 1000$ pfu	02 Oct 1455



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 Oct	120	8	3	21 Oct	135	10	3
08	125	8	3	22	130	10	3
09	125	8	3	23	130	10	3
10	120	8	3	24	125	15	4
11	120	8	3	25	125	8	3
12	120	8	3	26	120	8	3
13	120	8	3	27	115	8	3
14	120	8	3	28	115	10	3
15	125	15	4	29	115	10	3
16	130	10	3	30	120	8	3
17	135	10	3	31	120	8	3
18	140	10	3	01 Nov	120	8	3
19	140	10	3	02	120	8	3
20	140	10	3				



### *Energetic Events*

Date	Time (UT)		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½	Integ	Imp	Location	Rgn	Radio Flux		Intensity		
			Max					Class	Flux	Brtns	Lat	CMD
28 Sep	0649	0654	0657	M3.5	.007				840	80	2	3
30 Sep	1308	1350	1448	M2.8	.110	2N	N23W81	8340	78	450	3	3

### *Flare List*

Date	Time			X-ray	Imp /	Optical	Rgn	
	Begin	Max	End					Class.
						Lat	CMD	
28 September	0351	0351	0358					
	0445	0453	0457	C1.1				
	0506	0509	0511	B7.5				
	0547	0554	0607	C3.3	SF	N21W58	8340	
	0649	0654	0657	M3.5				
	0943	0947	0951	B6.6				
	1156	1201	1206	C9.5				
	1358	1402	1407	B6.2				
	1442	1446	1449	B5.2				
	1605	1610	1613	C6.8				
	1642	1642	1655		SF	S28W10	8346	
	1644	1644	1650		SF	N18W76	8342	
	1644	1644	1649		SF	N21W64	8340	
	1824	1827	1835	B7.7	SF	N20W67	8340	
	2140	2149	2203	C1.3				
	29 September	0158	0202	0211	C6.1	SF	N23W69	8340
		0627	0635	0650		SF	N21W54	8345
30 September	0207	0224	0234	B6.2				
	0517	0519	0526	B4.4	SF	S29W28	8346	
	0605	0606	0610		SF	S30W26	8346	
	0745	0749	0759	B5.4				
	1322	1338	1350		SF	S28W35	8346	
	1324	1334	1339		SF	N21W71	8345	
	1402	1434	1545	M2.8	2N	N23W81	8340	
01 October	0336	0342	0347	C2.1				
	0830	0830	0835		SF	S26E35	8349	
	0849	0910	0926	C1.1				
	1024	1036	1042	C1.3				
	1106	1111	1129	C1.2				
	1711	1716	1735	C1.4	SF	S27E35	8349	
	1810	1816	1821	C1.6				
02 October	1416	1419	1423	B3.1				
	1956	2008	2034	B7.2				



**Flare List- continued.**

Date	Time			X-ray Class.	Optical		Rgn #
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
03 October	0015	0015	0024		SF	N20E65	8350
	0726	0730	0735	B2.5			
	0835	0839	0843	B2.7			
	1447	1451	1456	B3.4			
	1952	1955	2000	B2.6			
	2007	2012	2016	B3.1			
04 October	2302	2302	2307		SF	N16E51	8350
	0952	0957	0959	B5.0			
	1200	1208	1227		SF	N18E43	8350
	1229	1229	1240		SF	N17E42	8350
	1445	1449	1453	B4.2			8350
	1811	1815	1821	B2.6			

**Region Summary**

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

*Region 8338*

16 Sep	N31E81	022	0090	02	HSX	001	A										
17 Sep	N33E68	022	0070	02	HAX	001	A										
18 Sep	N32E57	020	0130	02	HAX	001	A										
19 Sep	N31E43	020	0070	02	HSX	001	A										
20 Sep	N31E31	019	0050	01	HSX	001	A										
21 Sep	N32E18	019	0060	04	CSO	003	B										
22 Sep	N32E05	019	0070	03	HSX	001	A										
23 Sep	N32W08	019	0060	02	HAX	001	A										
24 Sep	N32W21	018	0060	02	HSX	001	A										
25 Sep	N32W32	016	0060	03	HSX	001	A										
26 Sep	N32W45	016	0070	02	HSX	001	A										
27 Sep	N31W58	016	0070	02	HSX	001	A										
28 Sep	N31W72	017	0040	01	HSX	001	A										
29 Sep	N31W84	016	0040	01	HSX	001	A										
30 Sep	N33W96	014	0120	02	HSX	001	A										

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 019



### Region Summary-continued

Date	Location		Sunspot Characteristics				Flares									
	( ° Lat ° CMD)	Helio	Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical					
		Lon						C	M	X	S	1	2	3	4	
<i>Region 8339</i>																
17 Sep	S17E42	048	0010	04	BXO	003	B									
18 Sep	S16E30	047	0020	06	CRO	007	B							5		
19 Sep	S17E16	047	0050	07	CSO	007	B							1		
20 Sep	S16E01	049	0050	10	CSO	007	B									
21 Sep	S16W15	052	0050	01	HAX	001	A									
22 Sep	S16W25	049	0050	12	ESO	010	B									
23 Sep	S16W38	049	0030	13	CRO	004	B									
24 Sep	S16W56	055	0000	00	AXX	001	A									
25 Sep	S16W69	053	0000	00		000										
26 Sep	S14W71	042	0080	05	BXO	004	B	1					3			
27 Sep	S15W84	042	0080	07	DSO	003	B	1					2			
28 Sep	S15W97	042	0000	00		000										
								2	0	0	11	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 049

#### *Region 8340*

17 Sep	N20E76	014	0150	04	HHX	001	A									
18 Sep	N22E64	013	0360	08	DKO	008	B									
19 Sep	N19E50	013	0470	08	CKO	012	B									
20 Sep	N19E38	012	0490	07	DKO	011	B		1							
21 Sep	N19E25	012	0540	09	DKO	021	B	2					2	1		
22 Sep	N20E11	013	0380	10	DAI	028	B	1					3			
23 Sep	N20W02	013	0460	12	EKO	031	B	1	1				3		1	
24 Sep	N20W15	012	0520	10	DKO	025	BGD	1					5			
25 Sep	N20W27	011	0390	08	DKI	018	BG	1					1			
26 Sep	N21W40	011	0350	09	CKI	018	B	1					4			
27 Sep	N19W54	012	0300	06	CKO	008	B	3					4	2		
28 Sep	N20W68	013	0320	06	CHO	007	B	1					4			
29 Sep	N19W82	014	0230	03	HSX	001	A	1					1			
30 Sep	N19W93	011	0100	02	HSX	001	A		1				1		1	
								12	3	0	28	3	1	1	0	

Crossed West Limb.

Absolute heliographic longitude: 13



**Region Summary-continued**

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

*Region 8342*

19 Sep	N17E38	025	0010	00	AXX	001	A											
20 Sep	N18E25	025	0040	05	CSO	008	B											4
21 Sep	N18E13	024	0100	07	DSO	011	B											
22 Sep	N18E00	024	0070	08	DAO	008	B											
23 Sep	N18W16	027	0070	08	CSO	004	B											
24 Sep	N18W28	025	0060	09	CSO	003	B											
25 Sep	N19W46	030	0060	03	HSX	001	A											
26 Sep	N18W61	032	0080	02	HSX	001	A											
27 Sep	N17W72	030	0070	07	DSO	002	B											
28 Sep	N17W88	033	0050	08	DSO	002	B											1
																		0 0 0 5 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 024

*Region 8343*

19 Sep	N42E65	358	0010	00	AXX	002	B											1
20 Sep	N37E47	003	0000	00	AXX	001	A											
21 Sep	N38E38	359	0010	07	BXO	006	B											2
22 Sep	N39E25	359	0020	07	CSO	008	B											1
23 Sep	N38E13	358	0010	07	BXO	008	B											2
24 Sep	N38E00	357	0010	06	BXO	008	B											
25 Sep	N39W10	354	0020	07	CRO	007	B											
26 Sep	N41W21	352	0000	02	BXO	002	B											
27 Sep	N41W34	352																
28 Sep	N37W52	357	0010	03	BXO	002	B											
29 Sep	N37W65	357																
30 Sep	N37W78	357																
																		0 0 0 6 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 357

*Region 8344*

22 Sep	S20E22	002	0010	05	BXO	005	B											
23 Sep	S20E09	002	0060	09	DAO	012	B	2					2					
24 Sep	S20W04	001	0070	10	DSO	014	BGD	1										1
25 Sep	S18W16	360	0070	16	FSI	012	BG	1										2
26 Sep	S20W31	002	0070	07	CSO	007	B											
27 Sep	S21W48	006	0030	01	HSX	001	A											
28 Sep	S22W62	007	0040	01	HSX	001	A											
29 Sep	S21W75	007	0020	01	CSO	002	B											
																		4 0 0 4 1 0 0 0

Died on Disk.

Absolute heliographic longitude: 001





**Region Summary-continued**

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

*Region 8345*

24 Sep	N22W06	003	0010	05	BXO	004	B											
25 Sep	N22W19	003																
26 Sep	N22W32	003																
27 Sep	N22W45	003																
28 Sep	N22W58	003																
29 Sep	N22W71	003											1					
30 Sep	N22W84	003											1					
										0	0	0	2	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 003

*Region 8346*

24 Sep	S30E41	316	0040	09	CSO	005	B											
25 Sep	S30E27	317	0070	10	CSO	007	B	1				2						
26 Sep	S28E13	318	0120	10	DAO	012	B					1						
27 Sep	S28E01	317	0070	12	ESO	012	B	1				1	1					
28 Sep	S28W13	318	0050	13	ESO	014	B					1						
29 Sep	S28W25	317	0020	12	CSO	008	B											
30 Sep	S28W42	320	0040	07	DRO	005	B		1			3						
01 Oct	S29W55	320	0030	00	DSO	003	B											
02 Oct	S28W66	318	0020	06	BXO	003	B											
03 Oct	S27W79	317	0000	00	AXX	001	A											
04 Oct	S27W92	317	0000	00		000												
										2	1	0	8	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 317

*Region 8347*

28 Sep	S12W21	326	0020	03	BXO	007	B											
29 Sep	S12W34	326	0020	03	CSO	002	B											
30 Sep	S13W48	326	0020	01	HSX	001	A											
01 Oct	S13W61	326																
02 Oct	S13W74	326																
										0	0	0	0	0	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 326



**Region Summary-continued**

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

*Region 8348*

28 Sep	N17E77	228	0010	01	AXX	001	A										
29 Sep	N16E60	232	0000	00	AXX	001	A										
30 Sep	N16E47	231	0010	01	AXX	001	A										
01 Oct	N16E33	232	0000	00	AXX	001	A										
02 Oct	N16E19	233	0000	00	AXX	001	A										
03 Oct	N16E06	233															
04 Oct	N16W07	233															
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 233

*Region 8349*

28 Sep	S26E65	240	0010	01	AXX	002	B										
29 Sep	S26E48	244	0000	00	AXX	001	A										
30 Sep	S26E35	244															
01 Oct	S26E29	236	0010	01	AXX	002	A	1				2					
02 Oct	S27E18	234	0010	02	BXO	005	B										
03 Oct	S27E06	232	0010	03	BXO	004	B										
04 Oct	S27W07	232															
								1	0	0	2	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 232

*Region 8350*

01 Oct	N20E78	187	0100	04	HSX	001	A										
02 Oct	N20E66	186	0260	11	ESO	002	B										
03 Oct	N19E54	184	0260	10	DAO	003	B					2					
04 Oct	N20E41	184	0260	10	DSO	011	B					2					
								0	0	0	4	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 184



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

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values		Ratio	Smooth values		**Penticton	Smooth	Planetary	Smooth
	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
<b>1996</b>									
October	02.3	00.9	0.39	14.0	08.8	69.2	72.6	13	09.1
November	26.7	17.9	0.67	15.4	09.8	78.7	73.0	08	09.1
December	21.1	13.3	0.63	16.2	10.4	77.8	73.3	07	09.3
<b>1997</b>									
January	09.0	05.7	0.63	16.5	10.5	74.0	73.4	09	09.3
February	11.3	07.6	0.67	17.4	11.0	73.8	73.7	11	09.2
March	14.4	08.7	0.60	20.4	13.5	73.5	75.1	08	08.9
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
<b>1998</b>									
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	11.2*
April	73.6	53.4	0.73			108.3		10	
May	74.3	56.3	0.76			106.7		18	
June	93.6	70.7*	0.76*			108.4*		10	
July	98.3	66.2*	0.67*			114.0*		11*	
August	118.6	91.7*	0.77*			136.0*		18*	
September	119.0	92.9*	0.78*			138.4*		14*	

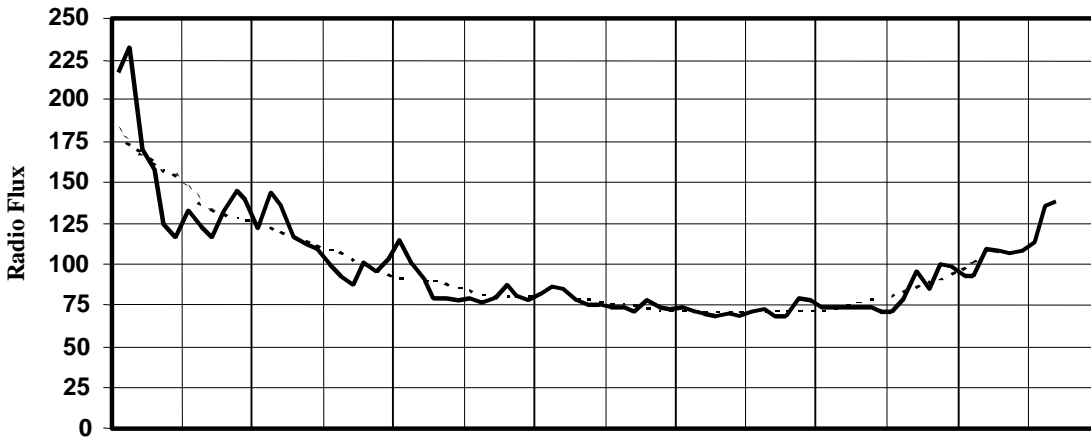
\*Preliminary estimates.

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.

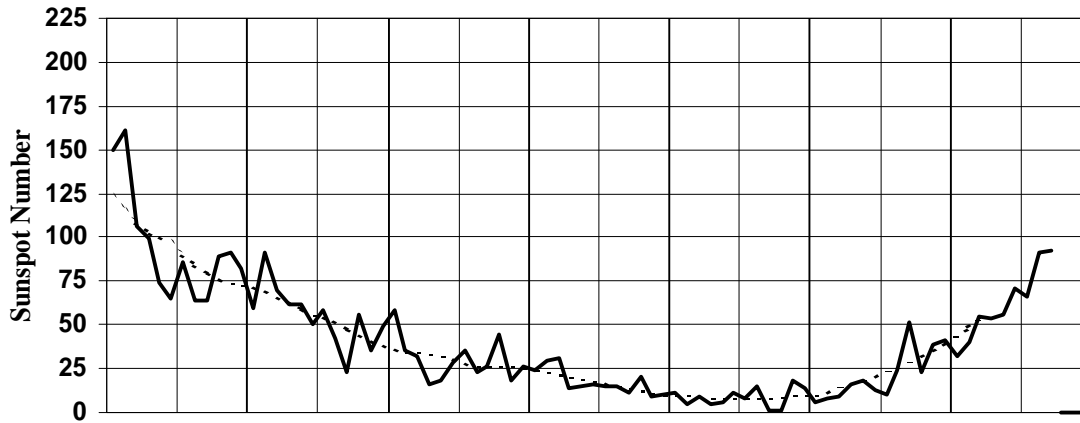
\*\* From June 1991 onward, the 10.7-cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.



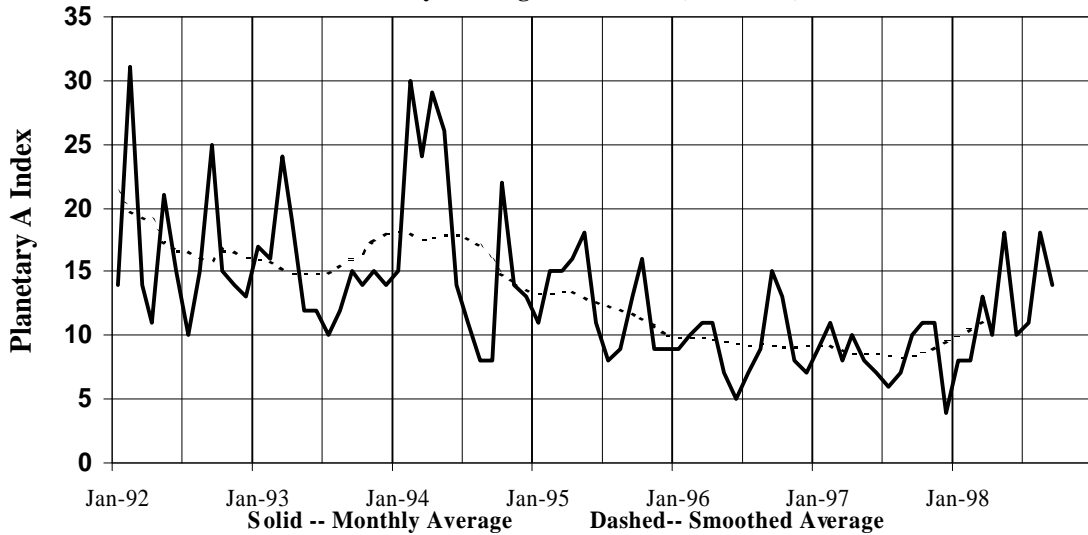
Penticton (DRAO) Radio Flux 2800MHz (10.7cm)  
 (With data through 1 Oct 98 for all 3 graphs)

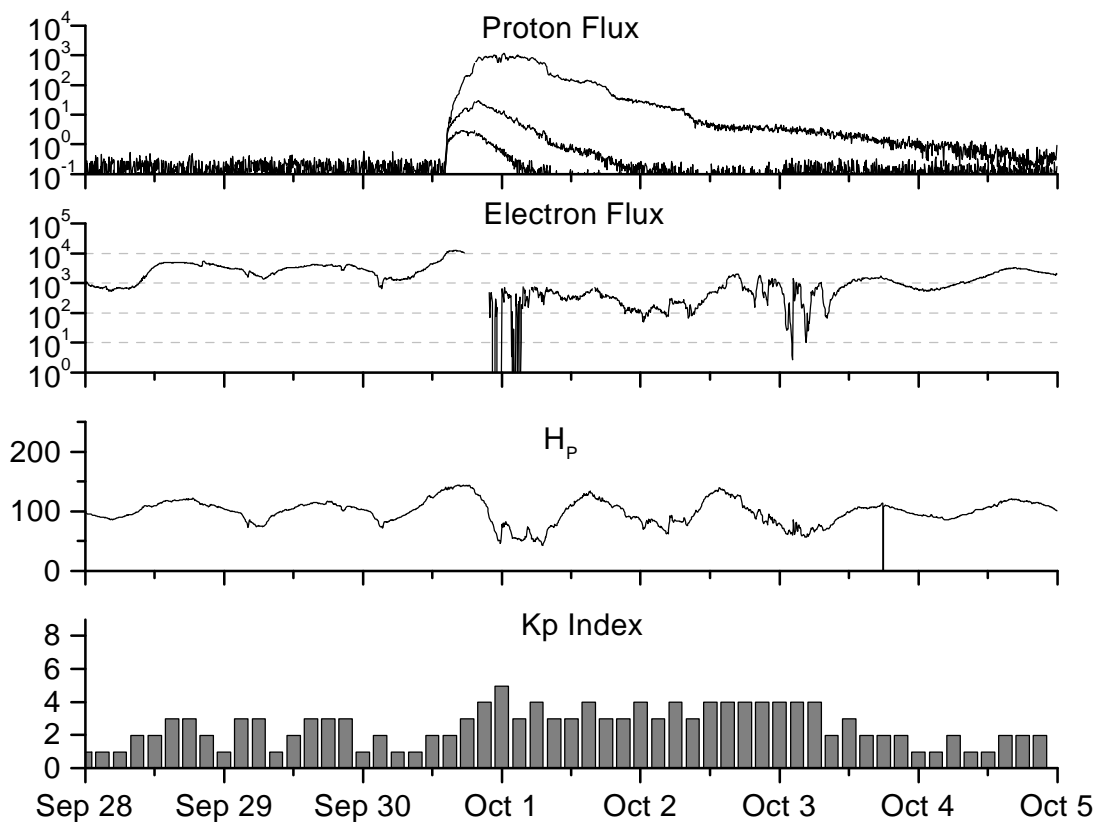


International Sunspot Number



Planetary Geomagnetic A Index (Estimated)





*Weekly Geosynchronous Satellite Environment Summary  
Week Beginning 28 September 1998*

*Protons* plot contains the five-minute averaged integral proton flux (protons/ cm<sup>2</sup>-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

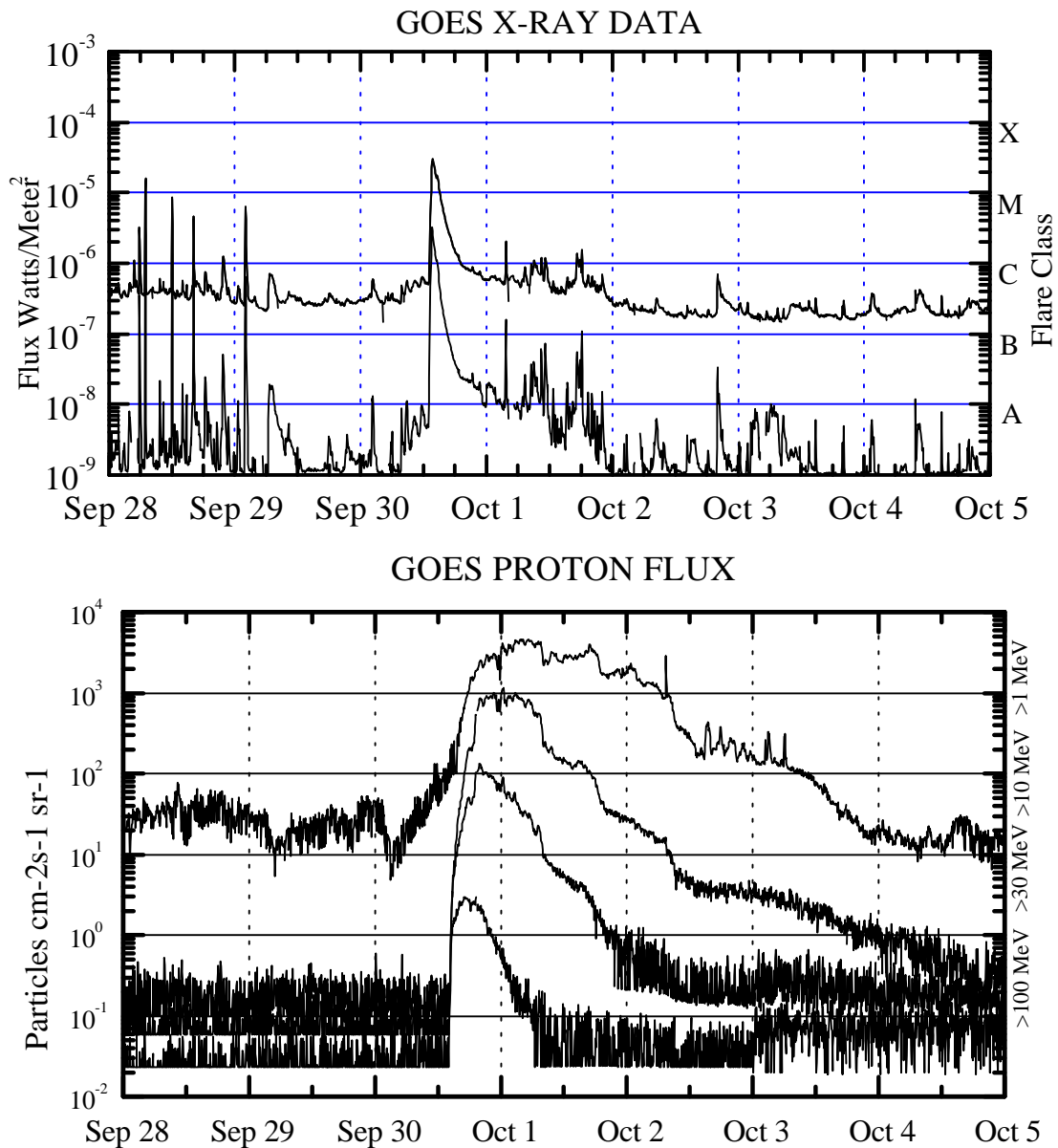
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/ cm<sup>2</sup>-sec-sr) with energies greater than 2 MeV at GOES-8.

*H<sub>p</sub>* 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.

*K<sub>p</sub>* plot contains the estimated planetary 3-hour K-index (derived by the USAF 55<sup>th</sup> 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 K<sub>p</sub> 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 K<sub>p</sub> are "global" parameters that are applicable to a first order approximation over large areas. H<sub>p</sub> 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/m<sup>2</sup>) 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/cm<sup>2</sup>-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/cm<sup>2</sup>-sec-sr) at greater than 10 MeV.



# Optical Flares



Space Environment Center



September 1998  
( Month 24 )

▮ Preliminary data

Comparison of Cycles at current month in cycle

