

Space Weather Highlights 07 - 13 October 2002

**SWO PRF 1415
15 October 2002**

Solar activity was at low to moderate levels. Activity reached moderate levels on the last day of the summary period with an M2.2 long duration flare that began at 13/2342 UTC from Region 159 (S12, L=190, class/area Hsx/080 on 13 October). Associated with this M-class event was a Type II radio sweep (est. shock speed 1000 km/s) and an east limb CME observed in SOHO/LASCO imagery. Activity was at low levels from 07-12 October with only minor C-class flares. Region 139 (N11, L=334 class/area Dkc/570 on 09 October) began the period with a beta-gamma magnetic configuration. On 09 October, Region 139 developed a delta magnetic configuration in the leading spots but remained relatively stable and quiescent through out the rest of the summary period. Region 149 (N16, L=243 class/area Dhi/410 on 13 October) rotated into view on 09 October and has shown steady growth. At the close of the period Region 149 has only produced C-class events but has shown some mixing of polarities among the smaller intermediate spots.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft for the majority of the summary period. Solar wind velocity rose on 07-08 October reaching peak velocities near 550 km/s then gradually decreased to 300 km/s over the remainder of the summary period. The Bz component of the IMF was predominantly negative throughout the summary period. Bz averaged approximately -5 nT from 07-13 October.

There were no greater than 10 MeV proton events at geo-synchronous orbit during the summary period.

The greater than 2 MeV electron flux at geo-synchronous orbit was at moderate to high levels. High levels were observed on 09-10 October and again on 12-13 October.

The geomagnetic field was at quiet to major storm levels. Minor and major storm levels were observed on 07-10 October due sustained periods of negative Bz. Quiet to unsettled conditions were observed for the remainder of the period, from 11 to 13 October.

Space Weather Outlook 16 October - 11 November 2002

Solar activity is expected to be low to moderate. Moderate activity is possible from Region 149 if further polarity mixing develops. Midway through the forecast period Region 139 is due to return and may have M-class potential.

There is a slight chance of a greater than 10 MeV proton event during the forecast period.

The greater than 2 MeV electron flux at geo-synchronous orbit may reach event threshold on 28-29 October and again on 05-06 November due to coronal hole effects.

The geomagnetic field is expected to be quiet to unsettled with isolated periods of active conditions. Active conditions are possible on 16-17 October due to the M2.2 event mentioned above. Active conditions are also possible on 27 October and 03-04 November due to recurring coronal holes.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
07 October	164	143	1100	B5.3	3	0	0	1	0	0	0	0
08 October	165	128	1010	B6.0	8	0	0	5	0	0	0	0
09 October	167	226	1470	B6.0	2	0	0	2	0	0	0	0
10 October	172	244	1420	B6.2	4	0	0	4	0	0	0	0
11 October	179	178	1310	B6.4	10	0	0	7	0	0	0	0
12 October	180	171	1680	B6.5	1	0	0	0	0	0	0	0
13 October	179	167	1570	B6.2	3	1	0	1	1	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
	07 October	4.6E+5	1.2E+4	2.6E+3		2.1E+7
08 October	4.4E+5	1.2E+4	2.8E+3		1.1E+7	
09 October	2.9E+5	1.2E+4	2.7E+3		2.6E+7	
10 October	4.2E+5	1.2E+4	2.7E+3		2.3E+7	
11 October	8.5E+4	1.3E+4	2.8E+3		2.3E+7	
12 October	5.3E+4	1.2E+4	2.7E+3		2.6E+7	
13 October	4.9E+4	1.2E+4	2.5E+3		3.5E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	07 October	21	2-5-4-3-4-3-3-3	64	3-5-7-4-7-6-5-3	39
08 October	19	2-6-2-3-3-3-2-1	40	4-6-5-6-5-3-3-1	34	4-6-4-5-4-4-3-3
09 October	9	0-2-4-2-2-2-2-2	30	1-3-6-5-5-4-3-2	22	2-4-5-5-4-4-3-3
10 October	10	1-3-4-3-2-1-1-2	34	1-4-6-6-5-4-1-1	23	3-3-5-5-4-2-2-3
11 October	5	1-2-2-2-2-1-1-1	18	1-2-4-5-5-2-1-1	8	2-2-2-3-3-2-2-2
12 October	6	1-1-1-3-2-2-1-1	11	1-1-2-4-4-3-1-0	11	2-3-2-4-3-3-3-2
13 October	4	1-1-2-1-1-1-1-1	9	1-1-3-3-4-0-1-1	10	2-3-3-3-3-3-2-2

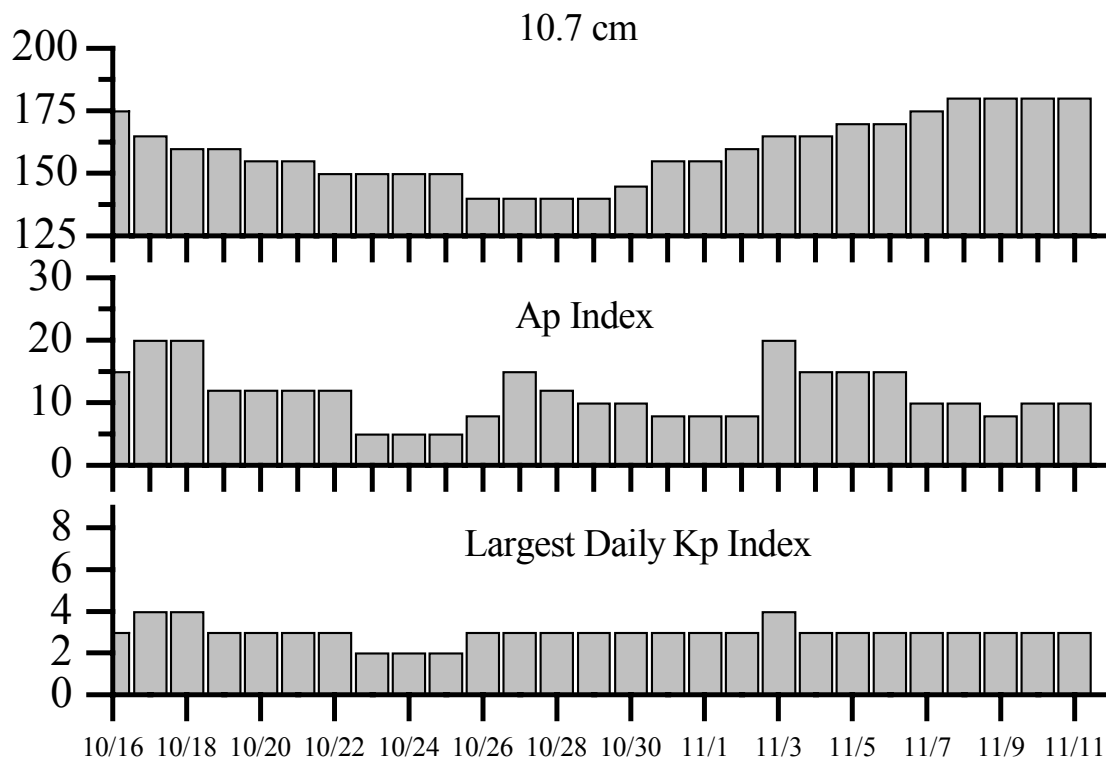


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
07 Oct 0450	WARNING: Geomagnetic K= 4	07 Oct 0451 -1500
07 Oct 0456	ALERT: Geomagnetic K= 4	07 Oct 0455
07 Oct 0504	ALERT: Electron 2MeV Integral Flux > 1000pfu	07 Oct 0503
07 Oct 0507	ALERT: Geomagnetic K= 5	07 Oct 0507
07 Oct 0746	WARNING: Geomagnetic K= 5	07 Oct 0715 - 1500
07 Oct 0747	ALERT: Geomagnetic K= 6	07 Oct 0747
07 Oct 0833	WARNING: Geomagnetic K= 6 expected	07 Oct 0833 -1500
07 Oct 1458	EXTENDED WARNING: Geomagnetic K= 5	07 Oct 0715 - 08 Oct 1500
08 Oct 0015	1 - 245 MHz Radio Burst	07 Oct
08 Oct 0015	1 - 245 MHz Radio Noise Storm	07 Oct
08 Oct 0447	WARNING: Geomagnetic K= 6	08 Oct 0450 - 1500
08 Oct 0456	ALERT: Geomagnetic K= 6	08 Oct 0455
08 Oct 1456	WARNING: Geomagnetic K= 4	08 Oct 1455 - Oct 09 1500
08 Oct 1818	ALERT: Geomagnetic K= 4	08 Oct 1744
09 Oct 0020	7 - 245 MHz Radio Bursts	08 Oct
09 Oct 0020	1 - 245 MHz Radio Noise Storm	08 Oct
09 Oct 0827	ALERT: Geomagnetic K= 5	09 Oct 0826
09 Oct 0903	WARNING: Geomagnetic K= 5	09 Oct 0905 - Oct 09 1500
09 Oct 1457	EXTENDED WARNING: Geomagnetic K= 4	08 Oct 1455 - 09 Oct 2359
09 Oct 1522	ALERT: Electron 2MeV Integral Flux exceeded 1000pfu	09 Oct 1455
09 Oct 2355	EXTENDED WARNING: Geomagnetic K= 4	08 Oct 1455 - 10 Oct 1500
10 Oct 0019	3 - 245 MHz Radio Bursts	09 Oct
10 Oct 1344	ALERT: Electron 2MeV Integral Flux exceeded 1000pfu	10 Oct 1255
10 Oct 1500	EXTENDED WARNING: Geomagnetic K= 4	08 Oct 1455 -11 Oct 1500
12 Oct 0026	3 - 245 MHz Radio Bursts	11 Oct
12 Oct 0026	2 - 245 MHz Radio Noise Storms	11 Oct
12 Oct 1042	ALERT: Geomagnetic K= 4	12 Oct 1042
12 Oct 1617	ALERT: Electron 2MeV Integral Flux > 1000pfu	12 Oct 1555
13 Oct 1812	ALERT: Type II Radio Emission	12 Oct 1754
13 Oct 1813	ALERT: Type IV Radio Emission	13 Oct 1759
13 Oct 1821	ALERT: Electron 2MeV Integral Flux > 1000pfu	13 Oct 1800



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
16 Oct	175	15	3	30 Oct	145	10	3
17	165	20	4	31	155	8	3
18	160	20	4	01 Nov	155	8	3
19	155	12	3	02	160	8	3
20	155	12	3	03	165	20	4
21	150	12	3	04	165	15	3
22	150	12	3	05	170	15	3
23	150	5	2	06	170	15	3
24	150	5	2	07	175	10	3
25	150	5	2	08	180	10	3
26	140	8	3	09	180	8	3
27	140	15	3	10	180	10	3
28	140	12	3	11	180	10	3
29	140	10	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	½	Integ	Imp/	Location	Rgn	Radio Flux		Intensity	
			Max	Flux	Brtns	Lat CMD	#	245	2695	II	IV
13 Oct	2342	0010	0108	M2.2	.079	Sf	S13E75	159	45	83	1

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical Location Lat CMD	Rgn
	Begin	Max	End				
07 October	1553	1555	1608	C1.4	Sf	S12E41	140
	1636	1657	1729	C3.1			
	2137	2156	2216	C1.8			
08 October	0327	0327	0338	B8.3	Sf	N10E00	139
	0711	0714	0733	C1.6	Sf	S07E23	140
	0743	0746	0756	C1.1	Sf	N12W02	139
	0921	0925	0928	C1.3			
	1501	1502	1512	C1.2	Sf	N09E01	139
	1639	1651	1700	C1.4			
	1806	1811	1818	C1.8			
	1834	1837	1840	C1.0			
09 October	2325	2326	2342	C1.6	Sf	N12W06	139
	0426	0427	0429		Sf	S17W52	143
	0643	0644	0649	C1.0	Sf	S11E18	140
10 October	1327	1338	1349	C1.1			
	1257	1259	1305		Sf	N16E53	145
	1321	1323	1330		Sf	S18W68	143
	1409	1412	1415	C1.1	Sf	N13W24	139
	1441	1451	1501	C1.6			
11 October	2205	2214	2226	C1.6			
	2324	2325	2331	C2.5	Sf	N14E61	149
	0153	0154	0202	C1.2	Sf	N09W36	139
	0435	0439	0447	C1.1	Sf	N09W38	139
	0832	0833	0844	C2.4	Sf	N12W38	139
	0934	0936	0939	C1.7	Sf	N09W41	139
	1015	1020	1026	C2.0			
	1112	1124	1138	C1.9			
	1421	1421	1426	C1.3	Sf	N14E53	149
	1705	U1716	A2105	C3.7	Sf	S17W80	143
12 October	1859	1903	1905	C2.6			
	2337	2337	2345	C1.7	Sf	N08W47	139
	1917	1922	1931	C2.6			
	13 October	1402	1403	1409	C1.1	Sf	N18E23
13 October	1750	1759	A1813	C4.7	1f	S07W54	150
	2147	2151	2155	C1.0			
	2342	0010	0108	M2.2			159



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 137

29 Sep	S16E50	038	0040	08	Cso	003	B												
30 Sep	S17E36	039	0070	07	Cso	004	B												3
01 Oct	S18E21	041	0170	09	Dai	017	Bg	1											3
02 Oct	S18E08	041	0310	10	Dki	029	Bg	7											4
03 Oct	S19W05	040	0310	11	Eki	019	Bg		1										3 1
04 Oct	S19W20	042	0220	11	Esi	017	Bg	4	4										7 2
05 Oct	S19W33	041	0230	11	Eai	022	Bg	3											5
06 Oct	S19W48	043	0215	11	Eai	017	Bg												1
07 Oct	S19W60	042	0200	10	Dao	008	B												
08 Oct	S20W75	043	0130	02	Hsx	001	A												
09 Oct	S18W85	040	0150	04	Dao	003	B												
								15	5	0	26	3	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 040

Region 139

02 Oct	N14E72	337	0120	06	Dso	004	B												
03 Oct	N14E59	336	0160	05	Cso	005	B												
04 Oct	N14E47	335	0410	10	Dki	018	Bgd	4	2										9 1
05 Oct	N12E32	336	0680	10	Dkc	044	Bg	1	1										5 1
06 Oct	N11E19	336	0570	11	Eki	032	Bg		2										1 1
07 Oct	N11E06	336	0600	11	Eki	040	Bg												
08 Oct	N11W07	335	0560	12	Eki	028	Bg	3											4
09 Oct	N11W19	334	0570	10	Dkc	031	Bgd												
10 Oct	N11W33	335	0520	09	Dkc	026	Bgd	1											1
11 Oct	N09W46	335	0590	08	Dki	017	Bgd	5											5
12 Oct	N08W59	335	0640	08	Dko	012	Bgd												
13 Oct	N08W72	335	0500	09	Dko	012	Bgd												
								14	5	0	25	3	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 336



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 143

07 Oct	S19W38	020	0010	01	Hrx	002	B										
08 Oct	S17W51	019	0030	04	Dao	005	Bg										
09 Oct	S17W60	015	0060	06	Dro	011	B					1					
10 Oct	S16W74	016	0100	06	Dso	012	Bg					1					
11 Oct	S16W87	016						1				1					
								1	0	0	0	3	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 020

Region 144

07 Oct	N12E44	298	0020	04	Cro	008	B										
08 Oct	N12E30	298	0060	05	Dso	007	B										
09 Oct	N12E17	298	0110	07	Dao	011	B										
10 Oct	N12E04	298	0130	07	Dai	021	B										
11 Oct	N12W10	299	0110	07	Dso	012	B										
12 Oct	N12W24	300	0110	08	Dso	009	B										
13 Oct	N11W37	300	0090	08	Dso	004	B										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 298

Region 145

08 Oct	N12E76	252	0010	01	Hsx	001	A										
09 Oct	N11E62	253	0090	02	Hax	001	A										
10 Oct	N12E49	253	0070	02	Hsx	001	A					1					
11 Oct	N13E36	253	0070	02	Hsx	001	A										
12 Oct	N13E21	255	0090	04	Cso	003	B										
13 Oct	N12E08	255	0070	06	Dso	003	B										
								0	0	0	0	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 255

Region 146

09 Oct	S10E25	290	0050	04	Cao	007	B										
10 Oct	S10E11	291	0040	05	Dao	006	B										
11 Oct	S09W05	294	0020	01	Hsx	001	A										
12 Oct	S09W18	294	0000	00	Axx	001	A										
13 Oct	S09W31	294															
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 294



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 147

09 Oct	S03E39	276	0010	03	Bxo	002	B											
10 Oct	S03E25	277	0010	04	Bxo	003	B											
11 Oct	S03E12	277																
12 Oct	S03W01	277																
									0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 277

Region 148

09 Oct	S21E70	245	0050	01	Hax	001	A											
10 Oct	S21E57	245	0070	02	Hax	002	A											
11 Oct	S20E43	246	0040	02	Hsx	001	A											
12 Oct	S20E31	245	0060	02	Hsx	001	A											
13 Oct	S20E17	246	0030	02	Hsx	002	A											
									0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 246

Region 149

09 Oct	N16E72	243	0140	03	Hax	001	A											
10 Oct	N16E61	241	0170	08	Dao	007	B	1			1							
11 Oct	N15E48	241	0220	08	Dsi	012	B	1			1							
12 Oct	N16E34	242	0400	09	Dai	012	B											
13 Oct	N16E20	243	0410	10	Dhi	024	B	1			1							
								3	0	0	3	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 243

Region 150

09 Oct	S09W05	320	0010	02	Axx	002	A											
10 Oct	S09W19	321	0020	02	Axx	002	A											
11 Oct	S09W32	321																
12 Oct	S09W45	321																
13 Oct	S09W58	321																
									1					1				
								1	0	0	0	1	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 320



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 151

09 Oct	S14E50	265	0010	01	Axx	001	A										
10 Oct	S14E37	265															
11 Oct	S14E24	265															
12 Oct	S14E11	265															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 265

Region 152

10 Oct	N20W16	318	0020	04	Cao	003	B										
11 Oct	N20W29	318	0010	06	Dro	002	B										
12 Oct	N20W42	318															
13 Oct	N20W55	318															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 318

Region 153

10 Oct	S05E47	255	0010	01	Axx	001	A										
11 Oct	S05E34	255															
12 Oct	S05E21	255															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 255

Region 154

10 Oct	S12E68	234	0050	02	Hax	002	A										
11 Oct	S13E55	234	0030	02	Cso	002	B										
12 Oct	S12E44	232	0050	07	Cso	003	B										
13 Oct	S11E33	230	0060	10	Dso	005	B										

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 230

Region 155

11 Oct	S09W53	342	0030	03	Cro	003	B										
12 Oct	S09W66	342	0040	03	Cro	004	B										
13 Oct	S09W79	342															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 342



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 156

11 Oct	N09E10	279	0010	03	Bxo	002	B											
12 Oct	N09W05	281	0000	00	Axx	001	A											
13 Oct	N09W17	280	0000	00	Axx	001	A											
									0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 281

Region 157

12 Oct	N17E49	227	0010	01	Hrx	002	A											
13 Oct	N16E34	229	0010	01	Hsx	003	A											
									0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 229

Region 158

12 Oct	S08E80	196	0090	04	Hsx	001	A											
13 Oct	S09E62	199	0120	02	Hsx	001	A											
									0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 199

Region 159

13 Oct	S12E73	190	0080	02	Hsx	001	A		1									
									0	1	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 190

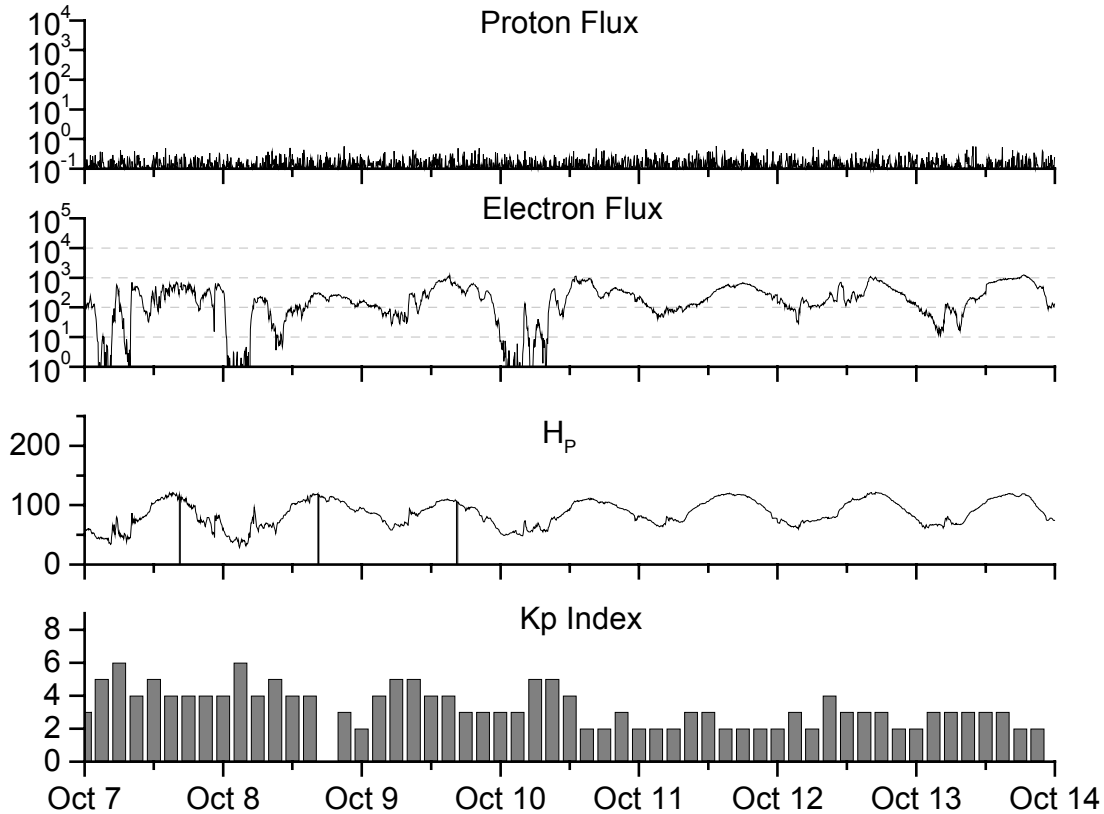


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2000									
October	138.9	100.1	0.72	166.2	114.4	167.7	175.6	18	14.6
November	149.9	106.5	0.71	162.7	112.7	178.8	173.9	17	14.6
December	146.4	104.5	0.71	160.8	112.1	173.6	172.1	08	14.4
2001									
January	142.7	95.1	0.67	156.3	108.8	166.7	168.8	08	13.8
February	131.0	80.1	0.61	151.4	104.2	147.3	165.8	06	13.3
March	166.7	114.2	0.69	154.0	104.9	177.7	167.9	17	12.9
April	163.6	108.2	0.66	159.4	107.7	178.3	171.7	18	12.7
May	135.1	97.3	0.72	163.1	108.8	148.7	174.8	12	12.5
June	196.7	134.0	0.68	167.2	109.9	173.7	178.8	12	12.4
July	124.6	82.2	0.66	172.1	111.8	131.3	183.9	11	12.4
August	159.4	106.8	0.67	176.7	113.8	163.2	188.8	13	12.5
September	229.1	150.7	0.66	178.8	114.3	233.3	191.3	12	12.3
October	197.4	125.6	0.64	179.5	114.1	208.2	191.9	18	11.9
November	178.6	106.5	0.60	183.7	115.6	212.5	193.6	14	11.9
December	217.5	131.8	0.61	184.5	114.7	236.6	193.8	08	12.0
2002									
January	189.0	113.9	0.60	184.8	113.5	226.4	194.6	07	12.0
February	194.5	108.0	0.56	188.6	114.7	205.1	197.2	09	12.2
March	153.1	98.1	0.64	188.9	113.3	179.5	195.7	10	12.4
April	194.9	120.4	0.62			189.7		15	
May	204.1	120.8	0.59			178.4		15	
June	146.0	88.5	0.61			148.8		11	
July	183.5	99.9	0.54			174.5		13	
August	191.0	116.4	0.61			184.0		16	
September	206.4	109.3	0.53			175.9		14	

NOTE: All smoothed values after June 1999 and monthly values after December 2000 are preliminary estimates. The lowest smoothed sunspot index 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.





Weekly Geosynchronous Satellite Environment Summary

Week Beginning 07 October 2002

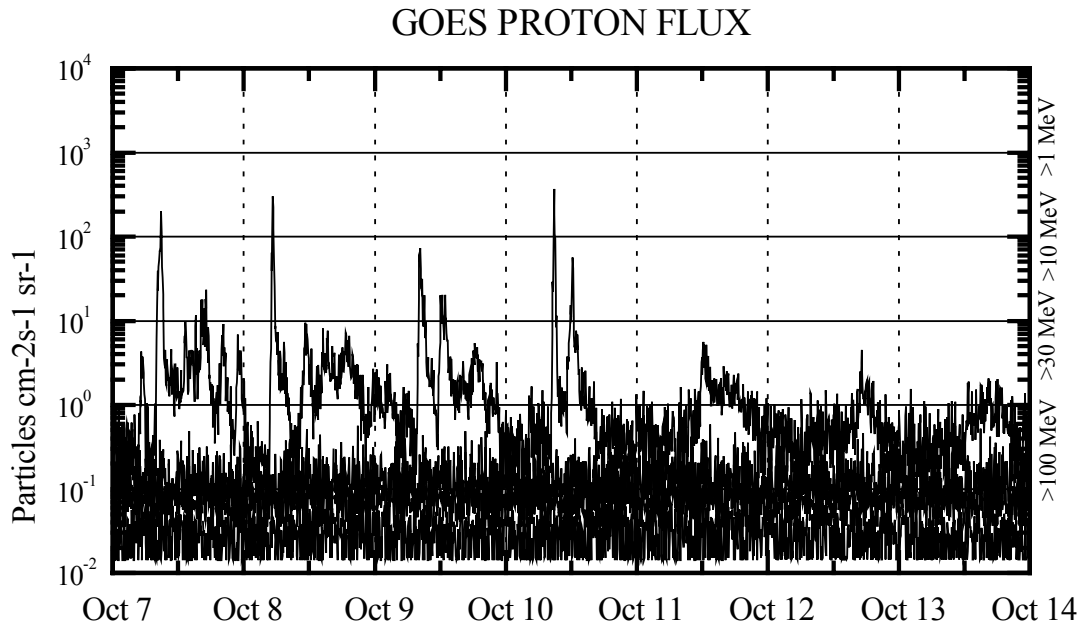
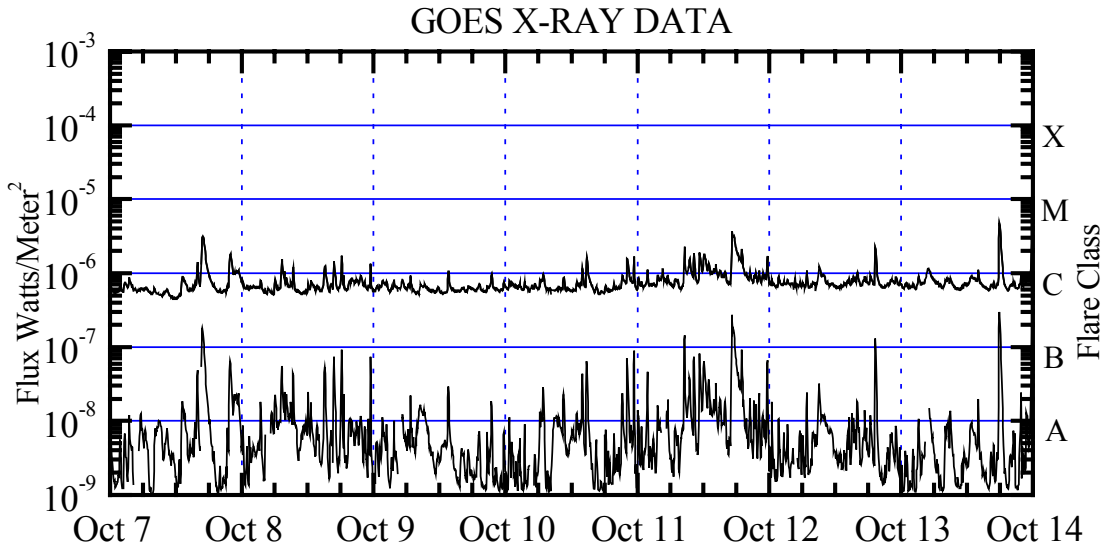
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-8 (W75) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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.

K_p plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) 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_p 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_p are "global" parameters that are applicable to a first order approximation over large areas. H_p is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



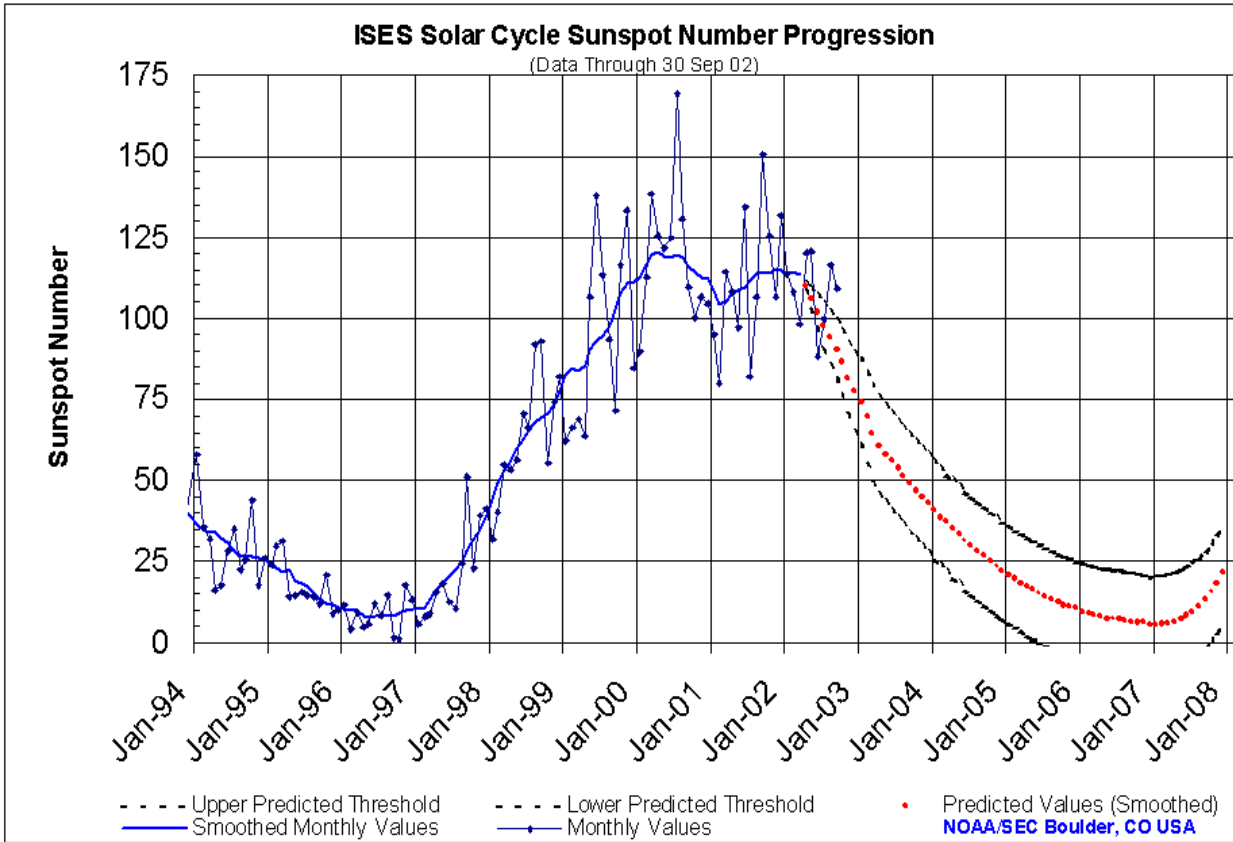


Weekly GOES Satellite X-ray and Proton Plots

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.

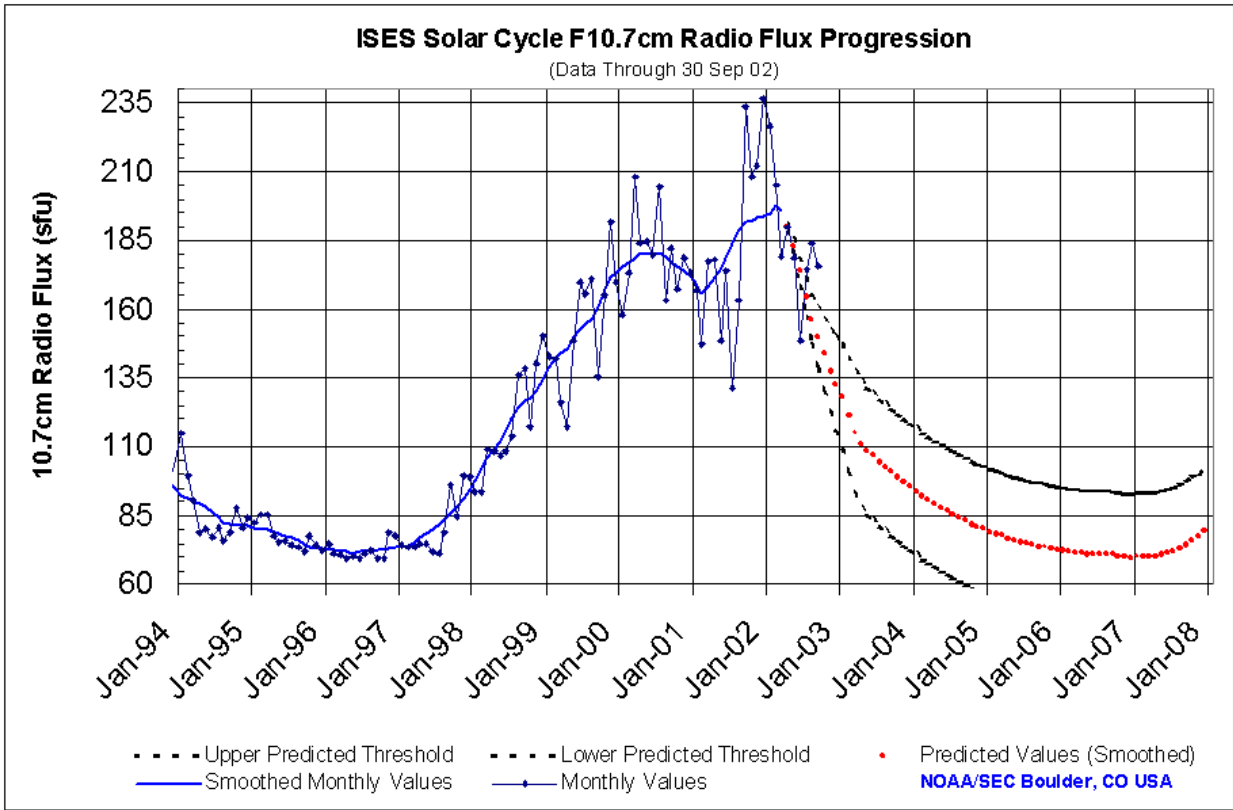




SEC Prediction of Smoothed Sunspot Number

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	44	49	53	57	59	63	66	68	70	71	73	78
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
1999	83	85	84	86	91	93	94	97	102	108	111	111
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2000	113	117	120	121	119	119	120	119	116	114	113	112
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2001	109	104	105	108	109	110	112	114	114	114	116	115
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2002	114	115	113	110	106	102	98	94	91	87	82	78
	(***)	(***)	(***)	(1)	(3)	(5)	(7)	(8)	(9)	(10)	(11)	(12)
2003	74	70	64	61	58	56	54	51	49	47	45	43
	(13)	(14)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2004	41	39	37	35	33	31	30	28	27	25	24	22
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2005	21	20	18	17	16	15	14	13	12	12	11	10
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2006	10	9	8	8	8	7	7	7	7	6	6	5
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
2007	5	6	6	6	7	8	10	11	13	16	18	21
	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)





SEC Prediction of Smoothed F10.7cm Radio Flux

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	98 (***)	102 (***)	106 (***)	109 (***)	112 (***)	116 (***)	120 (***)	124 (***)	127 (***)	128 (***)	130 (***)	134 (***)
1999	139 (***)	143 (***)	144 (***)	146 (***)	150 (***)	153 (***)	154 (***)	156 (***)	161 (***)	167 (***)	172 (***)	173 (***)
2000	175 (***)	176 (***)	178 (***)	181 (***)	180 (***)	180 (***)	180 (***)	180 (***)	177 (***)	176 (***)	174 (***)	172 (***)
2001	169 (***)	166 (***)	168 (***)	172 (***)	175 (***)	179 (***)	184 (***)	189 (***)	191 (***)	192 (***)	194 (***)	194 (***)
2002	195 (***)	197 (***)	196 (***)	190 (1)	183 (3)	174 (5)	164 (7)	156 (9)	150 (11)	144 (13)	137 (15)	133 (17)
2003	128 (19)	122 (21)	115 (22)	111 (23)	109 (23)	107 (23)	104 (23)	103 (23)	101 (23)	99 (23)	97 (23)	95 (23)
2004	94 (23)	92 (23)	91 (23)	89 (23)	88 (23)	87 (23)	85 (23)	84 (23)	83 (23)	82 (23)	81 (23)	80 (23)
2005	79 (23)	78 (23)	78 (23)	77 (23)	76 (23)	75 (23)	75 (23)	74 (23)	74 (23)	73 (23)	73 (23)	73 (23)
2006	72 (23)	72 (23)	71 (23)	71 (23)	71 (23)	71 (23)	71 (23)	71 (23)	70 (23)	70 (23)	70 (23)	70 (23)
2007	70 (23)	70 (23)	70 (23)	70 (23)	71 (23)	71 (23)	72 (23)	73 (23)	74 (23)	76 (23)	77 (23)	79 (23)



ISES Solar Cycle Ap Progression

(Data Through 30 Sep 02)

