

Solar activity ranged from very low to high this period. Very low levels occurred on 12 – 13 November, low levels on 11 and 14 November, moderate levels on 08 November and high levels on 09 – 10 November. Region 693 (S16, L=076, class/area, Fkc/780 on 01 November) showed steady decay this period and accounted for only one low-level C-class flare. It quietly rotated around the west limb on the 9th. Region 696 (N09, L=026, class/area, Ekc/910 on 06 November) continued to be this period's largest and most active group. On 08 November, Region 696 produced an impulsive M2.3/1n flare at 08/1549 UTC. Levels returned to high on the 9th as the region produced an M8.9/2n Tenflare (1000 sfu) with Type II and IV sweeps at 09/1719 UTC. Accompanying this event was a very fast, asymmetric, full halo CME with a plane-of-sky speed of near 1800 km/s. A 23-degree fragmented filament erupted south of the region at the same time as the flare. On 10 November, Region 696 produced the largest event of the summary period, as well as the largest of its life-cycle, an X2.5/3b proton flare and Tenflare (650 sfu) at 10/0213 UTC with Type II and IV sweeps. Another very fast, asymmetrical, full halo CME accompanied this event. Plane-of-sky speed of this CME was estimated at near 2000 km/s. By 11 November, Region 696 had decayed considerably as it approached the west limb, but maintained a weak delta configuration. The region rotated quietly around the west limb on the 12th. Other activity included low-level C-class flaring on 08 – 09 November from Region 698 (S09, L=062, class/area, Dao/160 on 09 November). New Region 700 (N04, L=312, class/area, Dri/080 on 14 November) formed on the disk on the 11th and underwent slight growth in magnetic structure on 13 – 14 November, but produced only low-level C-class activity.

NOTE: Due to the quantity of CME activity on 07 November, and the relationship to subsequent geomagnetic activity on 08 – 10 November, the Space Weather Highlights period is from 07 – 14 November which includes a reassessment of activity on the 7th.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. Solar wind speed ranged from a low of near 425 km/s late on 14 November to a high near 825 km/s early on 10 November. Early on 07 November, the first of six shocks arrived at Earth. At approximately 07/0200 UTC, wind speed jumped slightly from 310 to 360 km/s and density and temperature both increased with a corresponding southward turning of the IMF Bz. A weak sudden impulse of 7 nT was recorded at Boulder at 07/0258 UTC. This shock was most likely from the M5/asymmetric halo CME of 03/1606 UTC. At approximately 07/1000 UTC, wind speed increased from 350 to 420 km/s along with an increase in density and temperature. A sudden impulse of 35 nT was observed at Boulder at 07/1113 UTC. This shock was most likely from the long duration C6.3 partial halo CME of 04/0954 UTC. Later in the day on 07 November, a shock was observed at 1755 UTC. The shock increased wind speed from near 500 to near 700 km/s with a corresponding increase in density and temperature. A sudden impulse of 41 nT was recorded at Boulder at 07/1831 UTC. The source of this shock most likely was from a combination of the complex series of CME's late on 04 November (M2.5 at 2229 UTC and M5.4 at 2309 UTC) and early on 06 November (M9.3 at 0034 UTC). At 09/0913 UTC, a weak shock was recorded at ACE that indicated a good jump in speed (600 to near 800 km/s), but not much change in Bt or Bz. This might have been from the M3.6 on 06/0157 UTC and got delayed behind the M9.3 on 06/0034 UTC. Later on the 9th, at 1818 UTC, ACE recorded another shock with a wind speed increase from near 675 km/s to near 825 km/s, and a southward turning of Bz to -30 nT. A sudden impulse of 46 nT was observed at Boulder at 1852 UTC. GOES 10 and 12 spacecraft observed magnetopause crossings following the sudden impulse. This activity was believed to be from the X2.0 flare on the 7th. Finally, at 11/1714 UTC, a weak sudden impulse of 12 nT was observed at Boulder. Solar wind plasma and magnetic field measurements at ACE indicated weak transient flow, likely from the CME activity on 09 November. By early on the 12th, wind parameters relaxed and ended the summary period weak with the IMF Bz trended north about +5 nT.

A greater than 10 MeV proton event began at 07/1910 UTC, reached a maximum value of 495 pfu at 08/0115 UTC, and ended at 13/1600 UTC. An enhancement of the greater than 100 MeV protons was observed on 07 – 08 November. This event was associated with the X2.0 flare on 07 November. Early on 10 November, a new influx of high energy protons followed the X2.5 flare at 10/0213 UTC. A secondary peak of 424 pfu on the greater than 10 MeV trace was recorded at 10/1655 UTC. A greater than 100 MeV proton event also occurred in association with the X2.5 flare. It began on 10/0320 UTC, peaked at 2.1 pfu at 10/0340 UTC, and ended at 10/1250 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels for the entire summary period.



The geomagnetic field, through midday on 07 November, was at quiet to unsettled levels. By 1830 UTC on 07 November, activity levels increased to minor to severe storm levels as CME activity from the major flares arrived at Earth. A short lull in geomagnetic activity late on 08 November was followed by another significant and prolonged period of CME induced minor to severe geomagnetic storming. Major to severe storming was observed between 09/1200 UTC through 10/1800 UTC. By 10/2100 UTC, activity decreased to mostly active to minor storm levels as CME activity abated. By 13 November, activity levels were predominately quiet with isolated active periods midday on the 13th and again early on the 14th as brief periods of southward Bz, coupled with elevated solar wind speed, were observed.

Space Weather Outlook

17 November – 13 December 2004

Solar activity is expected to be at mostly low to isolated moderate levels through 18 November due to the complex magnetic structure of Region 700. Thereafter, activity levels are expected to increase to low to moderate when old Region 691 (18 November) and Region 696 (26 November) returns.

A greater than 10 MeV proton event is possible after 26 November with major flare activity from old Region 696.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 17 – 18 November and again on 06 – 11 Dec.

The geomagnetic field is expected to range from mostly quiet to unsettled. From 06 – 10 December, a recurrent coronal hole wind stream is expected to become geoeffective.



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
08 November	124	93	870	B4.9	5	1	0	10	2	0	0	0
09 November	127	90	980	B7.0	6	1	0	4	0	1	0	0
10 November	105	50	500	B5.2	8	0	1	1	0	0	2	0
11 November	95	70	550	B2.1	1	0	0	1	0	0	0	0
12 November	97	52	230	B1.3	0	0	0	0	0	0	0	0
13 November	96	50	220	B1.0	0	0	0	0	0	0	0	0
14 November	100	69	230	B1.4	2	0	0	0	0	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
	08 November	2.0E+8	1.1E+7	6.5E+3		5.6E+7
09 November	3.0E+8	3.9E+6	2.8E+3		2.3E+8	
10 November	2.2E+8	1.1E+7	7.0E+4		3.3E+8	
11 November	1.1E+8	6.9E+6	1.0E+4		1.4E+9	
12 November	5.9E+7	3.7E+6	2.9E+3		2.4E+8	
13 November	1.1E+7	8.7E+5	2.5E+3		2.3E+8	
14 November	8.8E+6	3.9E+5	2.9E+3		3.1E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	08 November	116	9-8-7-6-3-2-3-4	114	6-7-7-9-6-3-4-4	189
09 November	47	6-4-4-4-4-4-6-6	188	4-6-7-9-8-8-8-7	120	6-6-5-7-6-7-8-7
10 November	101	7-7-8-7-6-4-4-3	122	6-6-8-8-7-7-5-2	181	8-8-9-9-7-6-5-4
11 November	22	4-4-4-3-2-4-3-4	*	3-5-5-5-4-4-4-*	23	4-5-4-4-2-3-2-4
12 November	23	4-5-4-4-4-2-2-3	*	*-*-*-*-4-3-4	30	5-5-4-5-4-3-3-4
13 November	7	2-2-3-1-2-2-1-1	12	2-2-3-4-3-3-2-1	8	2-2-4-2-2-2-1-1
14 November	7	4-2-2-1-1-1-1-1	8	3-2-2-2-3-2-2-0	9	4-2-2-2-2-2-2-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
08 Nov 0016	ALERT: Geomagnetic K= 6	08 Nov 0011
08 Nov 0033	5 – 245 MHz Radio Bursts	07 Nov
08 Nov 0033	1 – 245Radio Noise Storm	07 Nov
08 Nov 0107	ALERT: Geomagnetic K= 7	08 Nov 0104
08 Nov 0117	ALERT: Geomagnetic K= 8	08 Nov 0110
08 Nov 0124	CONT ALERT: Proton Event 10MeV Integral Flux > 100pfu	07 Nov 2135
08 Nov 0149	WARNING: Geomagnetic K= 6	08 Nov 0155 -1500
08 Nov 0257	EXT WARNING: Geomagnetic K≥ 7	07 Nov 2310 -08 Nov 1500
08 Nov 0327	ALERT: Geomagnetic K= 7	08 Nov 0323
08 Nov 0458	ALERT: Type IV Radio Emission	07 Nov 2217
08 Nov 0526	ALERT: Geomagnetic K= 8	08 Nov 0522



Alerts and Warnings Issued – continued.

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
08 Nov 0635	ALERT: Geomagnetic K= 7	08 Nov 0632
08 Nov 0751	ALERT: Geomagnetic K= 8	08 Nov 0745
08 Nov 0955	ALERT: Geomagnetic K= 6	08 Nov 0953
08 Nov 1005	ALERT: Geomagnetic K= 7	08 Nov 1005
08 Nov 1407	ALERT: Geomagnetic K= 6	08 Nov 1407
08 Nov 1435	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	07 Nov 1829 -09 Nov 1600
08 Nov 1440	SUMMARY: Proton Event 10MeV Integral Flux > 100pfu	07 Nov 1910
08 Nov 1449	EXT WARNING: Geomagnetic K= 5	07 Nov 1840 -08 Nov 2359
08 Nov 1453	EXT WARNING: Geomagnetic K= 6	08 Nov 0155 - 1800
08 Nov 2137	ALERT: Electron 2MeV Integral Flux . 1000pfu	08 Nov 2115
08 Nov 2148	WATCH: Geomagnetic A ≥ 30	09 Nov
09 Nov 0013	11 – 245 MHz Radio Bursts	08 Nov
09 Nov 0013	1 – 245Radio Noise Storm	08 Nov
09 Nov 0030	WARNING: Geomagnetic K= 4	09 Nov 0035 -1500
09 Nov 0045	WARNING: Geomagnetic K= 5	09 Nov 0047 - 1500
09 Nov 0048	WARNING: Geomagnetic K= 6	09 Nov 0050 - 1500
09 Nov 0100	ALERT: Proton Event 10MeV Integral Flux > 100pfu	09 Nov 0035
09 Nov 0111	ALERT: Geomagnetic K= 6	09 Nov 0105
09 Nov 0514	ALERT: Electron 2MeV Integral Flux > 1000pfu	09 Nov 0500
09 Nov 525	ALERT: Geomagnetic K= 6	09 Nov 0520
09 Nov 920	WARNING: Geomagnetic Sudden Impulse expected	09 Nov 0940 - 1010
09 Nov 923	WARNING: Geomagnetic K 7 Nov 09 0930 -	09 Nov 1500
09 Nov 939	SUMMARY: Geomagnetic Sudden Impulse	09 Nov 0931
09 Nov 1137	ALERT: Geomagnetic K= 6	09 Nov 1136
09 Nov 1450	EXTENDED WARNING: Geomagnetic K=6	09 Nov 0050 - 2100
09 Nov 1502	ALERT: Geomagnetic K= 6	09 Nov 1459
09 Nov 1619	ALERT: Geomagnetic K= 6	09 Nov 1617
09 Nov 1714	ALERT: X-Ray Flux > M5	09 Nov 1713
09 Nov 1728	ALERT: Type IV Radio Emission	09 Nov 1706
09 Nov 1737	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	07 Nov 1829 -10 Nov 1600
09 Nov 1750	ALERT: Type II Radio Emission	09 Nov 1724
09 Nov 1758	SUMMARY: X-ray Event > M5	09 Nov 1659
09 Nov 1815	SUMMARY: 10cm Radio Burst	09 Nov 1701
09 Nov 1858	SUMMARY: Geomagnetic Sudden Impulse	09 Nov 1852
09 Nov 1906	WARNING: Geomagnetic K ≥ 7	09 Nov 1910 -10 Nov 0300
09 Nov 1928	ALERT: Geomagnetic K= 6	09 Nov 1927
09 Nov 2008	ALERT: Geomagnetic K= 7	09 Nov 2006
09 Nov 2123	ALERT: Geomagnetic K= 6	09 Nov 2121
09 Nov 2240	WATCH: Geomagnetic A≥ 30	11 Nov
09 Nov 2250	ALERT: Geomagnetic K= 7	09 Nov 2247
10 Nov 0009	6 – 245 MHz Radio Bursts	09 Nov
10 Nov 0009	1 – 245Radio Noise Storm	09 Nov
10 Nov 0057	WARNING: Geomagnetic K= 5	Nov 10 0100 -Nov 10 1500
10 Nov 0112	CONT ALERT: Proton Event 10MeV Integral Flux > 10pfu	Nov 07 1910
10 Nov 0130	WARNING: Geomagnetic K= 6	Nov 10 0130 -Nov 10 1500
10 Nov 0208	ALERT: X-Ray Flux > M5	Nov 10 0207
10 Nov 0225	SUMMARY: X-ray Event > X1	Nov 10 0159
10 Nov 0246	ALERT: Geomagnetic K= 6	Nov 10 0246
10 Nov 0259	ALERT: Geomagnetic K= 7	Nov 10 0257
10 Nov 0316	ALERT: Geomagnetic K= 6	Nov 10 0310
10 Nov 0323	SUMMARY: 10cm Radio Burst	Nov 10 0204
10 Nov 0333	WARNING: Proton 100MeV Integral Flux > 1pfu	Nov 10 0333 -Nov 10 1500
10 Nov 0339	ALERT: Proton Event 100MeV Integral Flux . 1pfu	Nov 10 0320

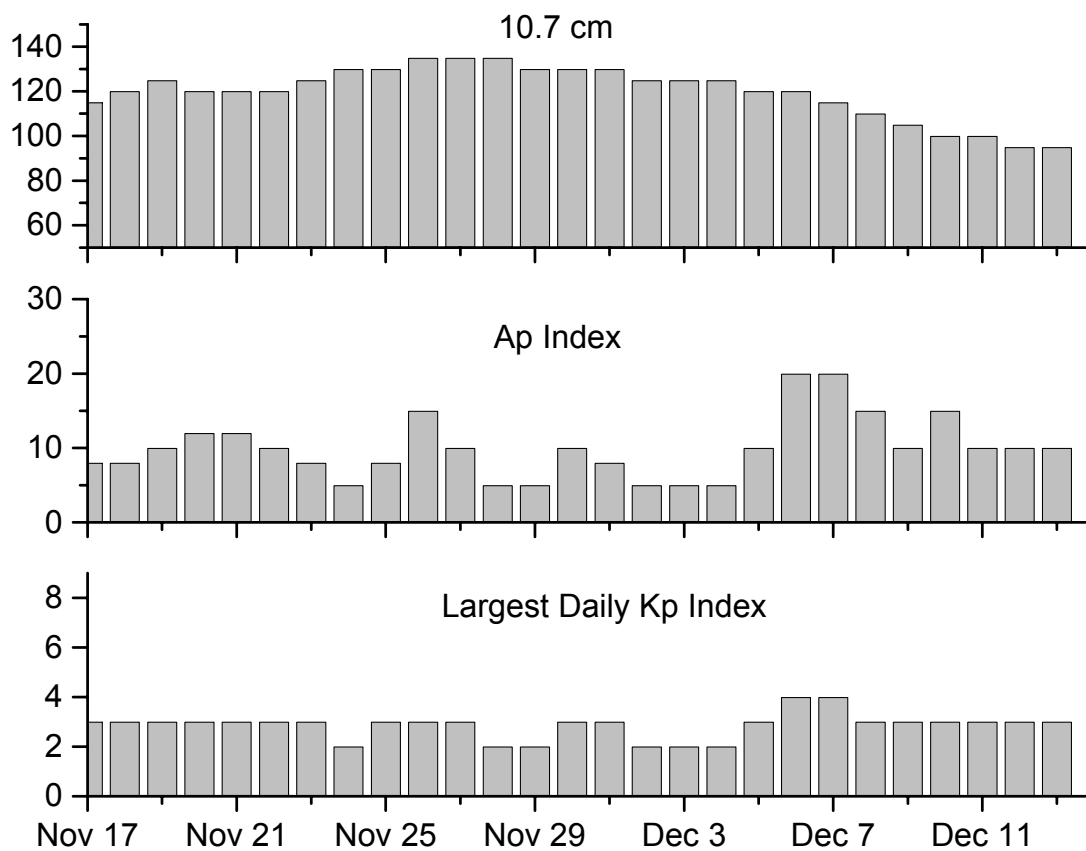


Alerts and Warnings Issued – continued.

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
10 Nov 0348	ALERT: Geomagnetic K= 7	Nov 10 0337
10 Nov 0442	WARNING: Geomagnetic K= 7	Nov 10 0443 -Nov 10 1500
10 Nov 0642	ALERT: Type II Radio Emission	10 Nov 0207
10 Nov 0645	ALERT: Type IV Radio Emission	10 Nov 0227
10 Nov 0657	ALERT: Geomagnetic K-index of 6	10 Nov 0655
10 Nov 0707	ALERT: Geomagnetic K=7	10 Nov 0659
10 Nov 0812	ALERT: Geomagnetic K-index of 8	10 Nov 0810
10 Nov 0934	ALERT: Geomagnetic K= 6	10 Nov 0930
10 Nov 1013	ALERT: Geomagnetic K= 7	10 Nov 1012
10 Nov 1111	ALERT: Geomagnetic K= 8	10 Nov 1110
10 Nov 1230	ALERT: Geomagnetic K-index of 6	10 Nov 1230
10 Nov 1431	EXT WARNING: Proton 100MeV Integral Flux > 1pfu	10 Nov 0333 -2359
10 Nov 1440	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	07 Nov 1829 -11 Nov 1500
10 Nov 1452	EXT WARNING: Geomagnetic K= 6	10 Nov 0130 –10 Nov 2359
10 Nov 1944	CANCEL WATCH: Geomagnetic A ≥ 30	09 Nov 2240
10 Nov 1947	WATCH: Geomagnetic A ≥ 50	11 Nov
10 Nov 2303	SUMMARY: Proton Event 100MeV Integral Flux > 1pfu	10 Nov 0320
10 Nov 2317	WARNING: Geomagnetic K= 4	10 Nov 2320 -Nov 11 1500
11 Nov 0012	6 – 245 MHz Radio Bursts	09 Nov
11 Nov 0518	ALERT: Electron 2MeV Integral Flux > 1000pfu	11 Nov 0500
11 Nov 0545	ALERT: Geomagnetic K= 5	11 Nov 0540
11 Nov 1455	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	07 Nov 1829 –12 Nov 1500
11 Nov 1656	WARNING: Geomagnetic Sudden Impulse	11 Nov 1725 -11 Nov 1745
11 Nov 1720	SUMMARY: Geomagnetic Sudden Impulse	11 Nov 1714
11 Nov 2154	WARNING: Geomagnetic K= 4	11 Nov 2155 -12 Nov 1500
11 Nov 2158	ALERT: Geomagnetic K= 4	11 Nov 2156
12 Nov 0025	3 – 245 MHz Radio Bursts	11 Nov
12 Nov 0137	WARNING: Geomagnetic K= 5	12 Nov 0145 -1500
12 Nov 0506	ALERT: Geomagnetic K= 5	12 Nov 0505
12 Nov 0520	ALERT: Electron 2MeV Integral Flux > 1000pfu	12 Nov 0500
12 Nov 0650	CONT ALERT: Proton Event 10MeV Integral Flux > 10pfu	07 Nov 1910
12 Nov 1039	ALERT: Type II Radio Emission	12 Nov 0957
12 Nov 1454	EXTENDED WARNING: Geomagnetic K= 4	11 Nov 2155 -12 Nov 2359
12 Nov 1458	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	Nov 07 1829 -Nov 12 2359
12 Nov 1539	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	Nov 07 1829 -Nov 12 2359
12 Nov 1540	EXT WARNING: Geomagnetic K= 4	Nov 11 2155 -Nov 12 2359
12 Nov 2355	EXT WARNING: Proton 10MeV Integral Flux >10pfu	Nov 07 1829 -Nov 13 1500
13 Nov 0000	EXT WARNING: Geomagnetic K= 4 Nov 11 2155 -	Nov 13 1500
13 Nov 0410	CONT ALERT: Proton Event 10MeV Integral Flux > 10pfu	Nov 07 1910
13 Nov 0640	ALERT: Electron 2MeV Integral Flux > 1000pfu	Nov 13 0620
13 Nov 1454	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	Nov 07 1829 -Nov 13 2359
14 Nov 0010	WARNING: Geomagnetic K= 4	Nov 14 0100 -Nov 14 1500
14 Nov 0213	ALERT: Geomagnetic K= 4 Nov 14 0210	
14 Nov 0520	ALERT: Electron 2MeV Integral Flux > 1000pfu	Nov 14 0500
14 Nov 1205	SUMMARY: Proton Event 10MeV Integral Flux > 10pfu	Nov 07 1910



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
17 Nov	115	8	3	01 Dec	130	8	3
18	120	8	3	02	125	5	2
19	125	10	3	03	125	5	2
20	120	12	3	04	125	5	2
21	120	12	3	05	120	10	3
22	120	10	3	06	120	20	3
23	125	8	3	07	115	20	3
24	130	5	2	08	110	15	3
25	130	8	3	09	105	10	3
26	135	15	3	10	100	15	3
27	135	10	3	11	100	10	3
28	135	5	2	12	95	10	3
29	130	5	2	13	95	10	3
30	130	10	3				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	Max	Class	Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
08 Nov	1543	1549	1552	M2.3	.007	1n	N08W35	696	1300	56		
09 Nov	1659	1719	1732	M8.9	.094	2n	N07W51	696	2000	1000	3	3
10 Nov	0159	0213	0220	X2.5	.160	3b	N09W49	696	2700	650	3	1

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical Location Lat CMD	Rgn	
	Begin	Max	End					
08 November	0223	0224	0227		Sf	N05W26	696	
	0242	0245	0257		Sf	N06W18	696	
	0258	0300	0314		Sf	N06W19	696	
	0316	0318	0327		Sf	N06W19	696	
	0328	0330	0346	C7.9	Sf	N08W28	696	
	0347	0358	0410		Sf	N10W21	696	
	0413	0422	0427		Sf	N07W20	696	
	0430	0431	0444		Sf	N07W20	696	
	0833	0838	0842	C1.8			696	
	1248	1253	1301	B8.2			696	
	1433	1435	1444	C7.7	1n	N05W33	696	
	1546	1546	1556	M2.3	1n	N08W35	696	
	1638	1644	1648	C1.0			693	
	1921	1926	1933	B9.0			698	
09 November	1944	1947	1957		Sf	S10W69	698	
	2128	2130	2136	C1.6	Sf	S11W71	698	
	0105	0105	0111		Sf	N09W42	696	
	0146	0148	0150	C2.3	Sf	S06W77	698	
	0621	0630	0641	C1.8			698	
	0740	0745	0748	C1.8			698	
	0920	0925	0931	C1.2			698	
	1311	1323	1330	C1.2			698	
	1346	1350	1355	C1.0			698	
	1705	1711	1829	M8.9	2n	N07W51	696	
	1836	1846	1849		Sf	N07W47	696	
	1915	1925	1951		Sf	N06W47	696	
	10 November	0204	0210	0315	X2.5	3b	N09W49	696
		B0221	0221	0249		3n	N09W48	
0317		0320	0327		Sf	N10W47	696	
0727		0739	0747	C2.6				
0808		0814	0820	C3.2				
1016		1021	1027	C1.5				
	1045	1049	1051	C1.9				
	1146	1157	1218	C2.2				



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
10 November	1542	1550	1559	C2.6			
	1608	1612	1617	C2.6			698
	1651	1657	1702	C1.8			698
	1828	1831	1835	B9.3			
	2052	2059	2124	B9.6			698
11 November	0229	0235	0243	B6.9			696
	0605	0608	0612	B4.7			
	0835	0847	0854	B7.2			
	1156	1216	1224	B6.8			696
	1508	1523	1532	B9.0			696
	1555	1555	1601	C1.1	Sf	N08W69	696
12 November	0943	0950	0956	B7.8			699
13 November	0538	0542	0547	B2.0			
	0606	0610	0613	B2.7			700
	0839	0843	0845	B2.1			
	1357	1401	1411	B1.7			700
	1738	1744	1751	B6.5			
	2116	2123	2134	B4.3			
14 November	0641	0644	0648	B3.0			700
	0853	0925	0948	C1.0			699
	1128	1143	1155	B7.2			700
	1408	1416	1424	C1.2			700
	1944	1952	1958	B7.8			700
	2105	2115	2133	B8.6			700



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	4			
<i>Region 693</i>																		
27 Oct	S13E72	078	0060	02	Hsx	001	A	1										
28 Oct	S14E61	076	0330	11	Eho	008	Bg	7				4						
29 Oct	S14E46	078	0590	11	Ehi	012	Bg	7				3						
30 Oct	S16E34	077	0530	13	Ehi	029	Bg											
31 Oct	S16E22	075	0760	16	Fkc	050	Bg	1										
01 Nov	S16E08	076	0780	16	Fkc	050	Bg											
02 Nov	S14W05	076	0720	15	Ekc	034	Bg	1				2						
03 Nov	S15W18	076	0690	16	Fkc	044	Bgd	1				1						
04 Nov	S15W31	076	0600	16	Fkc	046	Bgd											
05 Nov	S15W44	076	0540	17	Fki	031	Bd											
06 Nov	S15W57	075	0410	17	Fai	015	Bg											
07 Nov	S17W71	076	0250	17	Fko	007	Bg											
08 Nov	S17W82	074	0120	02	Hax	003	A	1										
09 Nov	S18W93	071	0070	03	Hax	002	A											
								19	0	0	10	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 76

Region 695

30 Oct	S15E68	043	0100	06	Dao	002	B											
31 Oct	S15E55	042	0130	05	Dao	004	B											
01 Nov	S15E39	045	0070	05	Dso	003	B											
02 Nov	S12E27	044	0060	05	Dao	003	B											
03 Nov	S14E12	046	0050	06	Dao	004	B											
04 Nov	S14E01	045	0030	07	Cao	005	B											
05 Nov	S14W13	045	0040	07	Cso	004	B											
06 Nov	S14W27	045	0020	07	Dso	002	B											
07 Nov	S16W40	045	0010	01	Cso	001	B											
08 Nov	S16W53	045																
09 Nov	S16W66	045																
10 Nov	S16W79	045																
								0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 045



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	4			
<i>Region 696</i>																		
01 Nov	N09E63	021	0060	03	Dao	006	B											
02 Nov	N08E47	024	0110	04	Dao	005	B	1										
03 Nov	N09E32	026	0270	06	Dac	014	Bg		3		2	1						
04 Nov	N09E19	026	0580	08	Dkc	041	Bgd	4	2		2	1						
05 Nov	N09E06	026	0820	11	Ekc	018	Bgd	10	2		6	1						
06 Nov	N09W08	026	0910	12	Ekc	033	Bgd	6	4		2	1	1					
07 Nov	N08W22	027	0650	13	Eki	026	Bgd	12		1	6							
08 Nov	N08W36	028	0600	13	Ekc	048	Bgd	3	1		8	2						
09 Nov	N08W50	028	0730	13	Ekc	037	Bgd		1		3		1					
10 Nov	N08W62	027	0470	14	Eac	029	Bgd			1	1				1			
11 Nov	N08W76	027	0420	13	Eac	020	Bgd	1			1							
12 Nov	N08W87	025	0070	06	Hax	001	A											
								37	13	2	31	6	2	1	0			

Crossed West Limb.

Absolute heliographic longitude: 026

Region 697

06 Nov	N05W52	070	0010	01	Hsx	001	A											
07 Nov	N07W66	071	0010	01	Axx	001	A											
08 Nov	N07W79	071																
09 Nov	N07W92	071																
								0	0	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 070

Region 698

06 Nov	S10W42	060	0020	04	Cso	005	B											
07 Nov	S09W56	061	0060	06	Dso	009	B											
08 Nov	S09W72	064	0150	08	Dai	012	B	1			2							
09 Nov	S09W84	062	0160	10	Dao	009	B	6			1							
								7	0	0	3	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 060



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 699

09 Nov	S16E66	272	0020	01	Hrx	002	A											
10 Nov	S15E53	272	0030	01	Hsx	001	A											
11 Nov	S14E38	273	0030	01	Hsx	001	A											
12 Nov	S14E27	271	0030	08	Cso	003	B											
13 Nov	S15E17	268	0040	10	Dao	004	B											
14 Nov	S13E03	269	0080	10	Dro	011	B				1							
									1	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:269

Region 700

11 Nov	N04W02	313	0020	05	Dso	007	B											
12 Nov	N05W14	312	0030	05	Dso	006	B											
13 Nov	N05W27	312	0080	08	Dac	013	Bg											
14 Nov	N04W40	312	0080	09	Dri	026	Bg				1							
									1	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:313

Region 701

11 Nov	S16E70	241	0080	07	Cso	002	B											
12 Nov	S17E60	238	0100	08	Cso	002	B											
13 Nov	S17E45	240	0100	07	Cao	003	B											
14 Nov	S15E30	242	0070	02	Hax	002	A											
									0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude:242

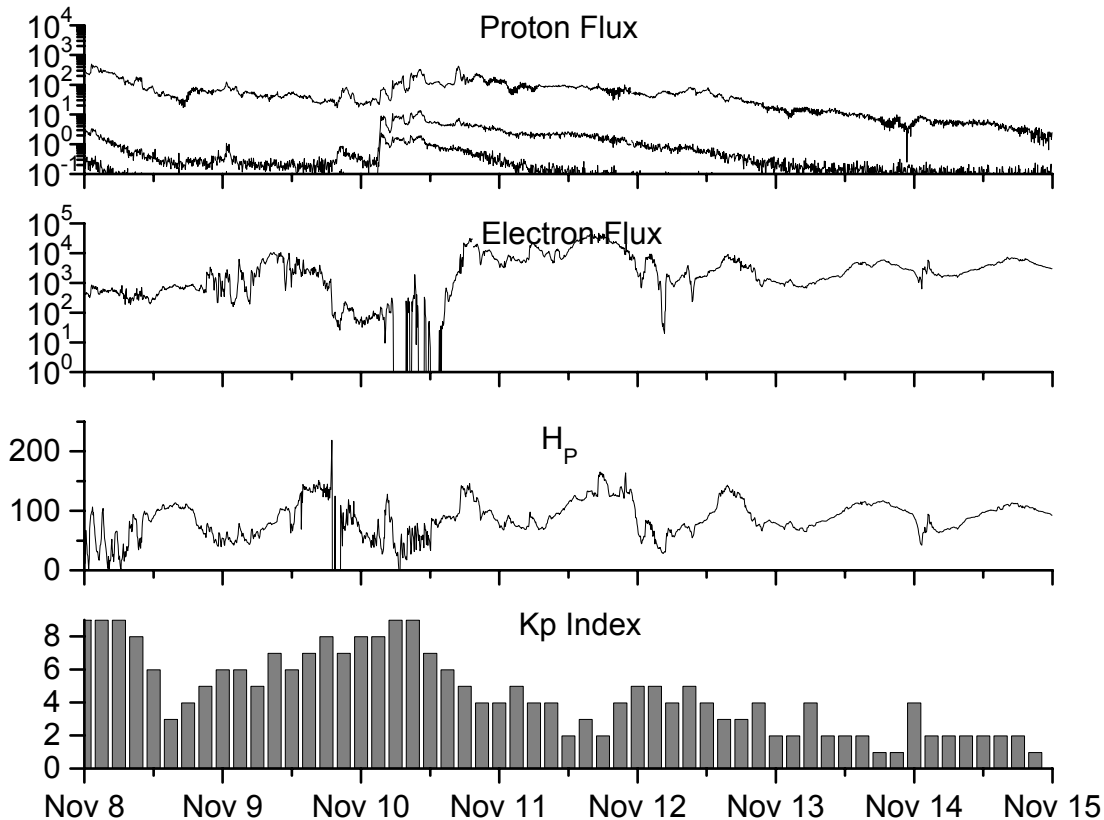


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed SWO	values RI	Ratio RI/SWO	Smooth SWO	values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2002									
November	159.8	95.5	0.60	150.9	85.2	168.7	154.8	16	16.3
December	147.9	80.8	0.55	144.6	82.1	158.6	150.9	13	17.0
2003									
January	149.3	79.7	0.53	141.7	81.0	144.0	149.2	13	18.2
February	87.0	46.0	0.53	136.4	78.5	124.5	144.7	17	18.9
March	119.7	61.1	0.51	128.1	74.2	132.2	139.5	21	19.4
April	119.7	60.0	0.50	121.5	70.3	126.3	135.0	20	20.1
May	89.6	55.2	0.62	118.3	67.8	129.3	133.1	26	21.0
June	118.4	77.4	0.65	113.6	65.2	129.4	130.2	24	21.5
July	132.8	85.0	0.64	106.9	62.0	127.8	127.2	19	22.0
August	114.3	72.7	0.64	102.8	60.3	122.1	125.2	23	22.2
September	82.6	48.8	0.59	100.7	59.8	112.3	123.7	18	21.8
October	118.9	65.5	0.55	96.6	58.4	153.1	121.8	35	21.1
November	118.9	67.3	0.57	93.6	57.0	153.1	120.1	28	20.0
December	75.4	46.5	0.62	91.4	55.0	115.1	118.0	16	18.6
2004									
January	62.3	37.7	0.61	87.9	52.0	114.1	116.3	22	18.1
February	75.6	45.8	0.61	84.2	49.4	107.0	115.5	13	17.7
March	81.0	49.1	0.61	80.9	47.2	112.2	114.6	14	16.9
April	59.3	39.3	0.66	77.9	45.6	101.2	112.3	11	15.5
May	77.3	41.5	0.54			99.8		8	
June	78.9	43.2	0.55			97.4		8	
July	87.8	51.0	0.58			118.5		23	
August	69.5	40.9	0.59			110.1		11	
September	50.0	27.7	0.55			103.1		10	
October	77.9	48.4	0.62			167.0		9	

NOTE: All smoothed values after September 2002 and monthly values after March 2003 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 23, RI= 120.8, occurred April 2000. *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 08 November 2004

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W103) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

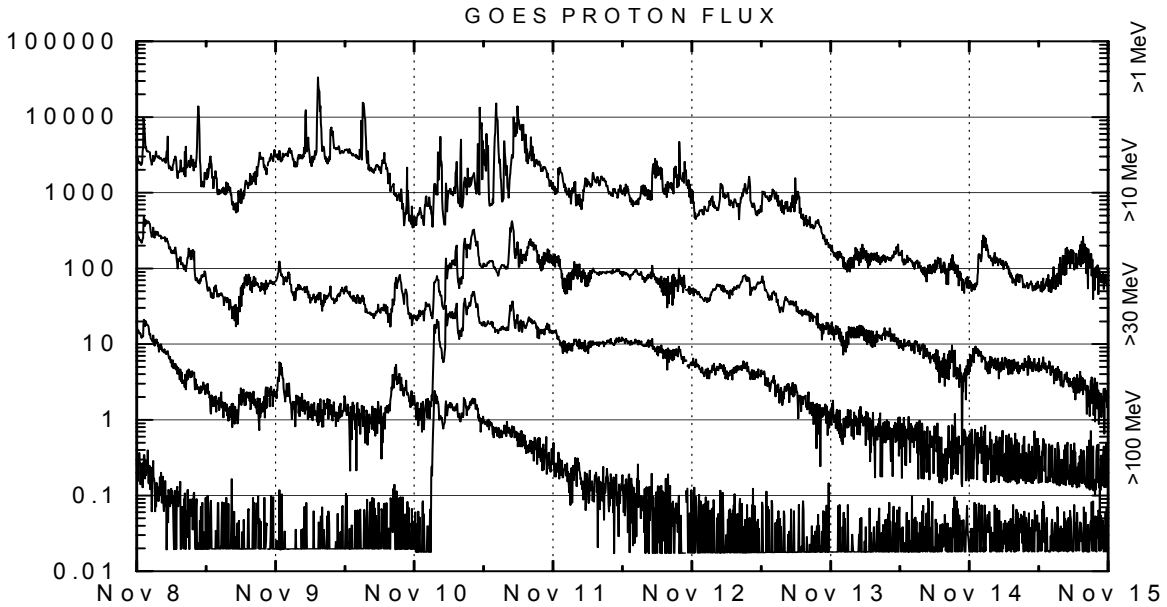
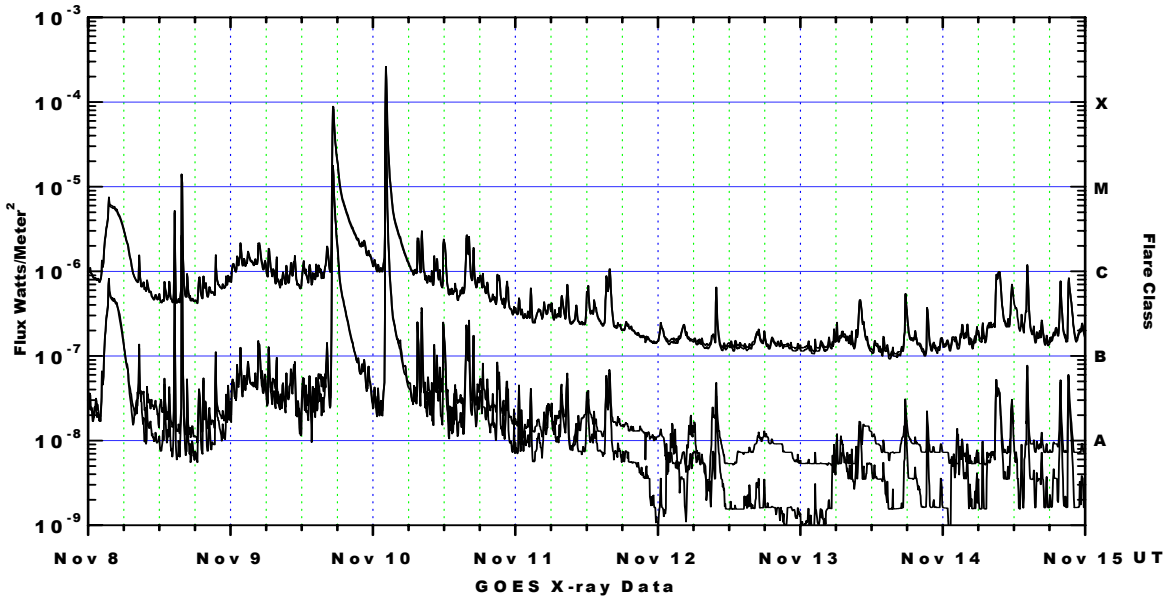
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W75).

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. 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 Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), British Geological Survey (BGS) 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 12 (W75) and GOES 10 (W135) 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-11 (W103) 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.





Space Environment Center

Active Regions

October 2004
(Month 97)



Comparison of Cycles at current month in cycle

Preliminary data

