

Solar activity ranged from low to high this period. Low levels occurred on 02 November, moderate levels on 01 and 05 November, and high levels on 03, 04, 06, and 07 November. Region 691 (N13, L=139, class/area, Dac/270 on 31 October) showed steady decay this period and accounted for only low-level M-class flare activity on 01 and 03 November. New Region 696 (N09, L=026, class/area, Ekc/910 on 06 November) quietly rotated onto the disk on 01 November, but rapidly emerged as a major flare producer on the 3rd and was this period's largest and most active group. Chronologically this period, Region 696 produced the following flare activity: on 03 November, an M1.6/1n Tenflare (1100 sfu) at 0335 UTC with Type II and IV sweeps and a bright, partial halo CME off the northeast limb; an M5.0/Sn Tenflare (1700 sfu) at 1547 UTC with Type II and IV sweeps and an asymmetric halo CME off the northeast limb with plane-of-sky velocity of about 900 km/s; and an M1.0/Sf Tenflare (380 sfu) at 1826 UTC. Early on 04 November, Region 696 produced a long duration C6.3/Sf Tenflare (210 sfu) with a Type IV sweep at 0905 UTC. A partial halo CME was visible off the northeast limb. Late on the 4th, Region 696 produced an M2.5/1n Tenflare (1800 sfu) at 04/2229 UTC with a Type II sweep and shortly thereafter, an M5.4 Tenflare (1500 sfu) at 04/2309 UTC with a Type IV sweep. These two flares resulted in a complex partial halo CME that appeared to be Earth-directed. On 05 November, Region 696 produced an M4.0/1f Tenflare (440 sfu) with a Type IV sweep and later in the day an M1.2/Sf. Early on the 6th, this region produced a series of M flares beginning with an M9.3/2n Tenflare (2700 sfu) at 0034 UTC with Type II and Type IV sweeps, followed by an M5.9 at 0057 UTC, and culminating in an M3.6 at 0157 UTC. These three flares produced a complex partial halo CME. Later in the day, Region 696 produced an impulsive M1.4 at 1953 UTC. On 07 November, the largest flare of the summary period was observed as Region 696 produced an X2.0 Tenflare (4600 sfu) with Type II and IV sweeps and a full halo CME. Other significant activity this period included a bright CME and proton event from a source behind the west limb. It was first observed at 01/0606 UTC with a plane-of-sky speed of about 800 km/s. LASCO C2 and EIT 195 imagery clearly indicated a backside source for this event.

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 320 km/s late on 06 November to a high near 725 km/s late on 07 November. The period began with wind parameters weak. By 02/1800 UTC, a solar sector boundary crossing was observed as wind speed, density, and temperature all increased and the IMF Bz fluctuated between +/- 8nT for a 24 hour period. This sector boundary crossing was followed by a co-rotating interactive region preceding a weak coronal hole wind stream. By 05 November, wind parameters were once again weak. Early on 07 November, the first of four shocks arrived at Earth. At 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 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 Regions 687 (15 November), 691 (18 November), and 696 (26 November) are due to corresponding increase in density and temperature. A sudden impulse of 41 nT was recorded at Boulder at 07/1831 UTC. The source of these later two shocks most likely was from the complex series of CME's late on 04 November. *Note: Due to the quantity and complexity of the CME activity, a more accurate determination of the timing and association of these CME's will be available in the next issue.*

A greater than 10 MeV and a greater than 100 MeV proton event was observed following the backside CME observed on 01 November. The 10 MeV event began at 01/0655 UTC, reached a maximum of 63 pfu at 01/0805 UTC, and ended at 01/1900 UTC. The 100 MeV event began at 01/0635 UTC, reached a maximum of 1.5 pfu at 01/0645 UTC, and ended at 01/0755 UTC. A second greater than 10 MeV proton event occurred late in the period and was still in progress at this writing. The event began at 07/1910 UTC, reached a maximum value of 495 pfu at 08/0115 UTC, and ended the period at 60 pfu. This event was associated with the X2.0 flare on 07 November.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels on 04 - 06 November and at moderate levels on 01 – 03 and 07 November.

The geomagnetic field, through midday on 07 November, was at mostly quiet to unsettled levels with brief periods of active conditions at mid latitudes late on 03 November. At high latitudes, an isolated period of active levels were observed midday on 04 November while on 03 November, an isolated period of minor storming occurred midday on the 3rd. By 1800 UTC on 07 November, activity levels increased to minor to severe storm levels as separate CME's from the major flare activity earlier in the week arrived at Earth.



Space Weather Outlook

10 November - 06 December 2004

Solar activity is expected to be at moderate to high levels through 12 November when Region 696 departs the disk. Activity levels are expected to decrease to very low to low through 15 November. Thereafter, low to moderate activity levels are expected as old Regions 687 (15 November), 691 (18 November), 696 (26 November) are due to return.

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

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 10 – 13 November.

The geomagnetic field is expected to range from mostly unsettled to major storm levels early in the forecast period. Shocks from CME's related to additional flare activity observed after the summary period, along with effects from a geoeffective coronal hole wind stream are expected to influence the geomagnetic field through 11 November. Thereafter through 03 December, the field is expected to remain mostly quiet to unsettled. From 04 – 06 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
01 November	136	144	1160	B3.3	2	1	0	1	1	0	0	0
02 November	133	110	1070	B5.1	7	0	0	2	0	0	0	0
03 November	136	123	1240	B5.4	11	4	0	6	3	0	0	0
04 November	136	135	1300	B4.5	6	2	0	2	1	0	0	0
05 November	141	83	1400	B4.9	10	2	0	6	1	0	0	0
06 November	129	106	1370	B4.3	6	4	0	2	3	1	0	0
07 November	130	94	980	B4.9	12	0	1	6	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
	01 November	3.3E+6	1.3E+6	2.3E+4		1.6E+7
02 November	1.1E+6	2.2E+5	4.2E+3		1.5E+7	
03 November	5.8E+5	3.0E+4	3.2E+3		4.5E+6	
04 November	2.9E+5	1.8E+4	3.0E+3		9.9E+5	
05 November	1.8E+5	1.5E+4	3.0E+3		9.3E+5	
06 November	2.9E+5	1.6E+4	2.8E+3		9.8E+5	
07 November	7.0E+7	3.2E+6	7.9E+3		5.6E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	01 November	4	3-0-0-1-2-1-0-1	4	1-1-0-2-3-2-0-0	5
02 November	2	1-0-0-1-1-1-1-1	5	0-0-0-3-2-2-2-1	4	1-0-0-2-1-2-2-1
03 November	7	0-1-1-2-1-2-3-3	10	0-0-0-5-2-1-2-3	10	0-0-0-3-2-3-3-4
04 November	5	1-2-1-1-1-1-1-3	9	2-2-4-3-1-2-0-1	7	1-2-2-1-1-3-2-2
05 November	1	2-0-0-0-0-0-1-0	1	2-0-0-0-0-0-1-0	4	3-1-0-0-1-1-1-0
06 November	4	0-2-1-0-1-1-3-1	0	0-0-0-0-0-0-0-0	3	0-0-0-0-1-1-1-1
07 November	19	1-2-2-3-3-4-4-5	*	*_*_*_*_*_*_*_*_*_*	39	1-2-1-3-3-5-6-7



Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UT
01 Nov 0035	20 – 245 MHz Radio Bursts	31 Oct
01 Nov 0035	1 – 245Radio Noise Storm	31 Oct
01 Nov 0356	ALERT: Type II Radio Emission	01 Nov 0323
01 Nov 0641	ALERT: Proton Event 100MeV Integral Flux > 1pfu	01 Nov 0641
01 Nov 0658	WARNING: Proton 10MeV Integral Flux > 10pfu	01 Nov 0700 - 1600
01 Nov 0706	ALERT: Proton Event 10MeV Integral Flux > 10pfu	01 Nov 0703
01 Nov 1418	SUMMARY: Proton Event 100MeV Integral Flux > 1pfu	01 Nov 0641
01 Nov 1555	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	01 Nov 0700 - 2100
02 Nov 0214	7 – 245 MHz Radio Bursts	01 Nov
02 Nov 0214	1 – 245Radio Noise Storm	01 Nov
02 Nov 0112	SUMMARY: Proton Event 10MeV Integral Flux > 10pfu	01 Nov 0655
03 Nov 0050	5 – 245 MHz Radio Bursts	02 Nov
03 Nov 0050	1 – 245Radio Noise Storm	02 Nov
03 Nov 0142	SUMMARY: 10cm Radio Burst	03 Nov 0126
03 Nov 0257	ALERT: Type II Radio Emission	03 Nov 0135
03 Nov 0407	ALERT: Type II Radio Emission	03 Nov 0334
03 Nov 0408	ALERT: Type IV Radio Emission	03 Nov 0332
03 Nov 0540	SUMMARY: 10cm Radio Burst	03 Nov 0329
03 Nov 1045	ALERT: Geomagnetic K= 4	03 Nov 1044
03 Nov 1548	ALERT: X-Ray Flux > M5	03 Nov 1547
03 Nov 1603	SUMMARY: X-ray Event > M5	03 Nov 1535
03 Nov 1610	ALERT: Type II Radio Emission	03 Nov 1541
03 Nov 1713	SUMMARY: 10cm Radio Burst	03 Nov 1538
03 Nov 1723	ALERT: Type IV Radio Emission	03 Nov 1544
03 Nov 1853	SUMMARY: 10cm Radio Burst	03 Nov 1807
03 Nov 2106	WATCH: Geomagnetic A ≥ 20	06 Nov
04 Nov 0019	7 – 245 MHz Radio Bursts	03 Nov
04 Nov 0019	1 – 245Radio Noise Storm	03 Nov
04 Nov 0920	ALERT: Type IV Radio Emission	04 Nov 0856
04 Nov 1047	SUMMARY: 10cm Radio Burst	04 Nov 0951
04 Nov 2155	WATCH: Geomagnetic A ≥ 20	07 Nov
04 Nov 2247	ALERT: Type II Radio Emission	04 Nov 2222
04 Nov 2249	ALERT: Type IV Radio Emission	04 Nov 2225
04 Nov 2306	ALERT: X-Ray Flux > M5	04 Nov 2305
04 Nov 2325	ALERT: Type IV Radio Emission	04 Nov 2258
04 Nov 2335	SUMMARY: X-ray Event > M5	04 Nov 2252
05 Nov 0032	7 – 245 MHz Radio Bursts	04 Nov
05 Nov 0032	1 – 245Radio Noise Storm	04 Nov
05 Nov 0002	SUMMARY: 10cm Radio Burst	04 Nov 2207
05 Nov 1152	ALERT: Type IV Radio Emission	05 Nov 1120
05 Nov 1159	SUMMARY: 10cm Radio Burst	05 Nov 1128
06 Nov 0031	ALERT: X-Ray Flux exceeded M5	06 Nov 0030
06 Nov 0048	SUMMARY: X-ray Event > M5	06 Nov 0011
06 Nov 0051	ALERT: X-Ray Flux > M5	06 Nov 0049
06 Nov 0055	4 – 245 MHz Radio Bursts	05 Nov
06 Nov 0055	1 – 245Radio Noise Storm	05 Nov
06 Nov 0104	ALERT: Type II Radio Emission	06 Nov 0044
06 Nov 0112	ALERT: Type IV Radio Emission	06 Nov 0033
06 Nov 0118	SUMMARY: X-ray Event > M5	06 Nov 0044
06 Nov 0317	SUMMARY: 10cm Radio Burst	06 Nov 0028
07 Nov 0013	5 – 245 MHz Radio Bursts	06 Nov
07 Nov 0035	WATCH: Geomagnetic A ≥ 20	08 Nov

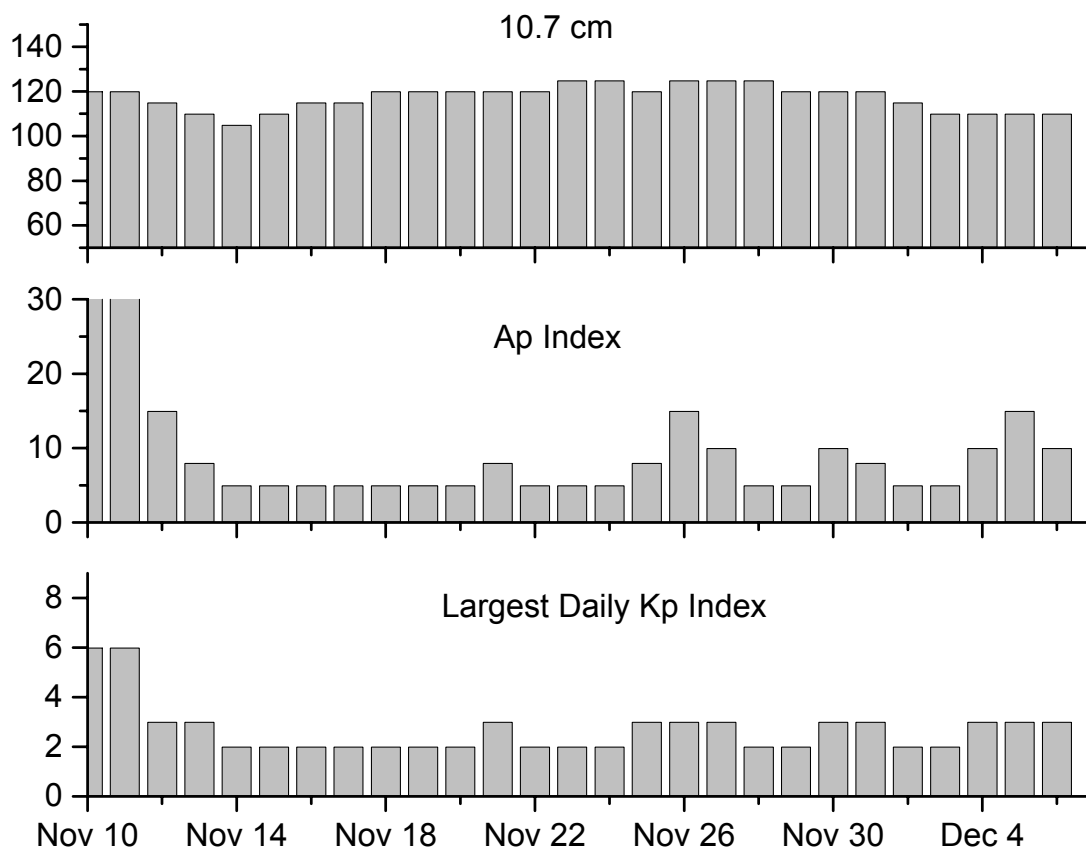


Alerts and Warnings Issued – continued.

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
07 Nov 0037	WATCH: Geomagnetic A \geq 20	09 Nov
07 Nov 0210	WARNING: Geomagnetic Sudden Impulse	07 Nov 0300 -0345
07 Nov 0304	SUMMARY: Geomagnetic Sudden Impulse	07 Nov 0258
07 Nov 1115	SUMMARY: Geomagnetic Sudden Impulse	07 Nov 1113
07 Nov 1503	WARNING: Geomagnetic K= 4	07 Nov 1510 - 2359
07 Nov 1517	WARNING: Geomagnetic K = 5	07 Nov 1530 - 1830
07 Nov 1527	ALERT: Geomagnetic K = 4	07 Nov 1526
07 Nov 1557	ALERT: X-Ray Flux > M5	07 Nov 1555
07 Nov 1602	ALERT: Geomagnetic K = 5	07 Nov 1558
07 Nov 1606	WARNING: Geomagnetic K = 6	07 Nov 1607 - 1700
07 Nov 1608	ALERT: Geomagnetic K = 6	07 Nov 1604
07 Nov 1628	ALERT: Type II Radio Emission	07 Nov 1559
07 Nov 1630	ALERT: Type IV Radio Emission	07 Nov 1603
07 Nov 1655	SUMMARY: X-ray Event > X1	07 Nov 1542
07 Nov 1657	EXTENDED WARNING: Geomagnetic K= 6	07 Nov 1607 - 1800
07 Nov 1759	SUMMARY: 10cm Radio Burst	07 Nov 1555
07 Nov 1812	WARNING: Geomagnetic Sudden Impulse	07 Nov 1815 - 1845
07 Nov 1828	WARNING: Proton 10MeV Integral Flux > 10pfu	07 Nov 1829 - 2359
07 Nov 1835	SUMMARY: Geomagnetic Sudden Impulse	07 Nov 1831
07 Nov 1840	WARNING: Geomagnetic K = 5	07 Nov 1840 -2100
07 Nov 1928	ALERT: Proton Event 10MeV Integral Flux > 10pfu	07 Nov 1910
07 Nov 2053	ALERT: Geomagnetic K = 5	07 Nov 2051
07 Nov 2058	EXTENDED WARNING: Geomagnetic K = 5	07 Nov 1840 -08 Nov 1500
07 Nov 2117	WATCH: Geomagnetic A \geq 20	10 Nov
07 Nov 2157	ALERT: Proton Event 10MeV Integral Flux > 100pfu	07 Nov 2135
07 Nov 2225	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	07 Nov 1829 - Nov 08 1500
07 Nov 2236	WARNING: Geomagnetic K = 6	07 Nov 2245 -Nov 08 0300
07 Nov 2304	WARNING: Geomagnetic K \geq 7	07 Nov 2310 - Nov 08 0300



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
10 Nov	120	40	6	24 Nov	125	5	2
11	120	50	6	25	120	8	3
12	115	15	3	26	125	15	3
13	110	8	3	27	125	10	3
14	105	5	2	28	125	5	2
15	110	5	2	29	120	5	2
16	115	5	2	30	120	10	3
17	115	5	2	01 Dec	120	8	3
18	120	5	2	02	115	5	2
19	120	5	2	03	110	5	2
20	120	5	2	04	110	10	3
21	120	8	3	05	110	15	3
22	120	5	2	06	110	10	3
23	125	5	2				



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
01 Nov	0304	0322	0326	M1.1	.005	1f	N15W41	691	500	90	2	
03 Nov	0123	0133	0137	M2.8	.013	1f	N13W71	691	180	170	2	
03 Nov	0323	0335	0357	M1.6	.022	1n	N09E45	696	1000	1100	3	2
03 Nov	1535	1547	1555	M5.0	.031	Sn	N11E40	696	29000	1700	3	2
03 Nov	1803	1826	1835	M1.0	.014	Sf	N09E32	696	410	380		
04 Nov	2142	2229	2253	M2.5	.059	1n	N11E19	696	1400	1800	1	2
04 Nov	2253	2309	2326	M5.4	.086			696	1500		1	
05 Nov	1123	1130	1133	M4.0	.009	1f	N08E15	696	440			
05 Nov	1910	1922	1932	M1.2	.012	Sf	N10E06	696	64			
06 Nov	0011	0034	0042	M9.3	.065	2n	N10E08	696	5200	2700	1	2
06 Nov	0044	0057	0110	M5.9	.085	1n	N10E05	696				
06 Nov	0140	0157	0208	M3.6	.055	1n	N07E00	696				
06 Nov	1938	1953	2003	M1.4	.010	1f	N09W06	696				
07 Nov	1542	1606	1615	X2.0	.200			696	42000	4600	1	1

Flare List

Date	Time			X-ray Class.	Optical Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
01 November	0038	0039	0042	B7.8	Sf	N14W47	691
	0243	0247	0253	B6.2			691
	0319	0320	0336	M1.1	1f	N15W41	691
	0414	0422	0436	C2.6			687
	0614	0619	0622	B5.4			687
	0655	0702	0706	C2.9			687
	1032	1036	1042	B4.8			687
	1117	1120	1122	B5.1			
	1233	1237	1240	B9.8			687
	1350	1356	1358	B7.1			691
	1758	1801	1803	B6.0			687
	1831	1838	1849	B9.4			
	2253	2257	2303	B6.2			687
	02 November	0044	0045	0048	B9.2	Sf	S17E10
0057		0101	0103	B6.4			
0120		0122	0127	C1.8	Sf	S17E10	693
0134		0143	0153	C6.9			687
0508		0511	0515	B6.8			
0935		0947	0955	C9.8			689
1207		1212	1217	B9.1			689
1315		1358	1422	C2.5			687
1632		1637	1642	C1.2			696
1841		1918	1929	C1.2			689
2141	2157	2209	C2.1				
2354	2357	2359	B8.1			693	



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn	
	Begin	Max	End		Imp / Brtns	Location Lat CMD		
03 November	0127	0128	0147	M2.8	1f	N13W71	691	
	B0128	0129	0139		1f	N12W74		
	B0328	0332	0355	M1.6	1n	N09E45	696	
	0636	0638	0643	C1.5	Sf	N14W69	691	
	0705	0718	0724	C1.5			691	
	0727	0730	0732	C1.5			691	
	0753	0758	0803	C1.2			691	
	0830	0840	0847	C1.4			689	
	0854	0855	0918	C5.3	Sf	N15W71	691	
	0904	0909	0913	C8.4			691	
	0930	0931	0933	C2.1	Sf	S12W16	693	
03 November	1101	1105	1108	C1.8			689	
	1247	1252	1301	B8.0			691	
	1341	1348	1351	C2.7			691	
	1504	1508	1512	B9.8			691	
	1539	1544	1624	M5.0	Sn	N11E40	696	
	1639	1639	1645		Sf	N13W71	691	
	1653	1656	1659	C3.8			691	
	1806	1828	1858	M1.0	Sf	N09E32	696	
	2336	2342	2345	B8.5			691	
	04 November	0726	0726	0730	C1.0	Sf	N07E30	696
		0821	0824	0828	C1.1			691
0849		0903	A0957	C6.3	Sf	N08E28	696	
1146		1149	1151	C1.5			696	
1606		1609	1615	B8.4			691	
1659		1702	1704	B7.5			691	
1905		1920	1928	C1.6			696	
2043		2100	2122	C2.8				
2147		2300	A2352	M2.5	1n	N11E19	696	
2253		2309	2326	M5.4			696	
05 November		0520	0522	0526	C2.3	Sf	N07E13	696
	0553	0553	0555	C2.8	Sf	N07E14	696	
	0734	0741	0746	C1.1			696	
	1012	1016	1019	C3.0			696	
	1129	1129	1150	M4.0	1f	N08E15	696	
	1629	1634	1637	C6.9			696	
	1704	1720	1725	C9.0			696	
	1754	1758	1801	C1.2			696	
	1809	1824	1839	C5.2			696	
	1858	1901	1904	C4.1			696	
	1907	1922	1943	M1.2	Sf	N10E06	696	
1945	1952	2008		Sf	N10E06	696		



Flare List – continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
05 November	2009	2010	2018		Sf	N09E06	696
	2111	2115	2122		Sf	N09E05	696
	2200	2204	2208	B9.9			696
	2212	2230	2246	C6.8			696
06 November	0013	0029	0248	M9.3	2n	N10E08	696
	B0100	0102	0130	M5.9	1n	N10E05	
	B0141	0149	0245	M3.6	1n	N07E00	
	0658	0659	0701	C1.8	Sf	N10E04	696
	1029	1033	1038	B6.8			696
	1208	1214	1220	B8.8			696
	1343	1346	1350	B5.9			
	1424	1431	1435	C2.6			696
	1552	1613	1625	C9.4	Sf	N07W02	696
	1646	1654	1700	C3.6			696
	1705	1715	1743	C4.6			696
	B1953	1954	2019	M1.4	1f	N09W06	696
	2055	2100	2105	C2.4			696
	2153	2206	2213	B7.1			696
2306	2310	2313	B6.0				
2315	2318	2322	B7.6			696	
07 November	0141	0142	0210	C3.2	Sf	N10W06	696
	0225	0227	0235		Sf	N10W07	696
	0239	0241	0256	C4.4	Sf	N10W07	696
	0413	0414	0443	C5.3	Sf	N10W08	696
	0443	0451	0512	C5.1	Sf	N10W08	696
	0622	0625	0633	C1.0			696
	0757	0758	0819	C4.1	Sf	N10W10	696
	0935	1002	1010	C6.7			696
	1111	1115	1120	B8.4			696
	1154	1200	1206	B7.4			
	1238	1247	1255	C1.2			696
	1358	1407	1420	C7.0			696
	1509	1513	1517	C2.3			696
	1542	1606	1615	X2.0			696
2154	2159	2204	C2.8			696	
2323	2326	2328	C1.6			696	



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 687</i>																		
19 Oct	N10E79	177	0120	04	Dao	002	B											
20 Oct	N10E65	177	0160	06	Dac	007	Bg		1									
21 Oct	N10E52	177	0210	06	Cko	007	Bg	5				7	1					
22 Oct	N10E39	177	0280	11	Eki	016	Bg	1	1			2	1					
23 Oct	N11E28	175	0270	12	Eai	027	Bg	2				3						
24 Oct	N12E15	175	0280	12	Eki	044	Bd	4	1			4	1					
25 Oct	N12E03	174	0370	13	Eai	048	Bg	7				3						
26 Oct	N12W11	174	0330	13	Eai	046	Bg	3				1						
27 Oct	N12W24	174	0360	13	Eai	050	Bg	1				1						
28 Oct	N12W37	174	0250	13	Eai	037	Bg											
29 Oct	N12W50	174	0160	09	Dai	013	Bg											
30 Oct	N12W66	177	0090	03	Hax	004	A	1										
31 Oct	N12W80	177	0060	03	Cao	004	B											
01 Nov	N11W92	176	0030	02	Bxo	002	B		2									
									26	3	0	21	3	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude:174

<i>Region 689</i>																		
21 Oct	N12E74	155	0060	01	Hsx	001	A											
22 Oct	N12E61	155	0060	01	Hsx	001	A											
23 Oct	N12E48	155	0040	02	Hax	001	A											
24 Oct	N11E34	156	0050	02	Hsx	001	A											
25 Oct	N12E22	155	0060	03	Hax	003	A											
26 Oct	N12E10	153	0050	02	Hax	001	A											
27 Oct	N12W03	153	0060	02	Hsx	002	A											
28 Oct	N12W17	154	0060	02	Hsx	001	A											
29 Oct	N12W30	154	0050	02	Hsx	001	A											
30 Oct	N12W43	154	0020	01	Hsx	001	A											
31 Oct	N11W57	154	0040	02	Hax	001	A											
01 Nov	N11W71	155	0020	01	Hax	001	A											
02 Nov	N10W81	152	0000	01	Axx	001	A		2									
									2	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude:153



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 690</i>																		
22 Oct	N00E78	138	0060	01	Hax	001	A											
23 Oct	N00E66	137	0070	02	Hsx	001	A											
24 Oct	N00E53	137	0070	02	Hax	003	A											
25 Oct	S01E40	137	0070	02	Hax	002	A											
26 Oct	N00E26	137	0130	03	Hsx	003	A											
27 Oct	N00E15	135	0100	07	Cso	007	B											
28 Oct	S01W01	138	0080	04	Dso	006	B											
29 Oct	N00W14	138	0070	02	Hax	003	A											
30 Oct	N01W27	138	0040	03	Cso	006	B											
31 Oct	S02W41	138	0040	04	Dao	007	B											
01 Nov	S02W54	138	0060	03	Cao	004	B											
02 Nov	S01W67	138	0010	01	Axx	001	A											
03 Nov	S01W81	139	0030	01	Hrx	001	A											
04 Nov	S01W94	139																

0 0 0 0 0 0 0 0

Crossed West Limb.
 Absolute heliographic longitude:138

<i>Region 691</i>																		
23 Oct	N16E69	134	0050	02	Hsx	001	A											
24 Oct	N15E59	131	0150	13	Eai	011	Bgd	1										
25 Oct	N15E48	129	0150	13	Eai	017	Bgd	1			1							
26 Oct	N15E32	131	0110	11	Eao	009	Bgd	1										
27 Oct	N16E20	130	0140	14	Cao	012	B	1										
28 Oct	N15E04	133	0140	10	Dao	011	Bg	1			1							
29 Oct	N13W13	137	0120	06	Dao	012	B	2			1							
30 Oct	N14W25	136	0200	16	Fao	024	Bg	6	4	1	6	1						
31 Oct	N13W42	139	0270	09	Dac	023	Bg	3	2		3							
01 Nov	N13W55	139	0140	09	Dao	008	B		1		1	1						
02 Nov	N12W67	138	0170	08	Dao	006	Bg											
03 Nov	N13W81	139	0200	09	Dai	010	Bg	8	1		3	1						
04 Nov	N13W94	139	0090	03	Dao	003	B	1										

25 8 1 16 3 0 0 0

Crossed West Limb.
 Absolute heliographic longitude:133



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 694

28 Oct	N16E22	115	0020	04	Cso	004	B											
29 Oct	N17E07	117	0010	09	Bxo	007	B											
30 Oct	N15W06	117	0020	03	Cso	005	B											
31 Oct	N14W16	113	0010	02	Axx	004	A											
01 Nov	N14W29	113																
02 Nov	N14W42	113																
03 Nov	N14W55	113																
04 Nov	N14W68	113																
05 Nov	N14W81	113																
06 Nov	N14W94	113																

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 117

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											

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 045

Region 696

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							

33 11 1 18 4 1 0 0

Still on Disk.

Absolute heliographic longitude: 026



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 697</i>																						
06 Nov	N05W52	070	0010	01	Hsx	001	A															
07 Nov	N07W66	071	0010	01	Axx	001	A															
								0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Still on Disk.																						
Absolute heliographic longitude: 070																						
<i>Region 698</i>																						
06 Nov	S10W42	060	0020	04	Cso	005	B															
07 Nov	S09W56	061	0060	06	Dso	009	B															
								0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Still on Disk.																						
Absolute heliographic longitude: 060																						

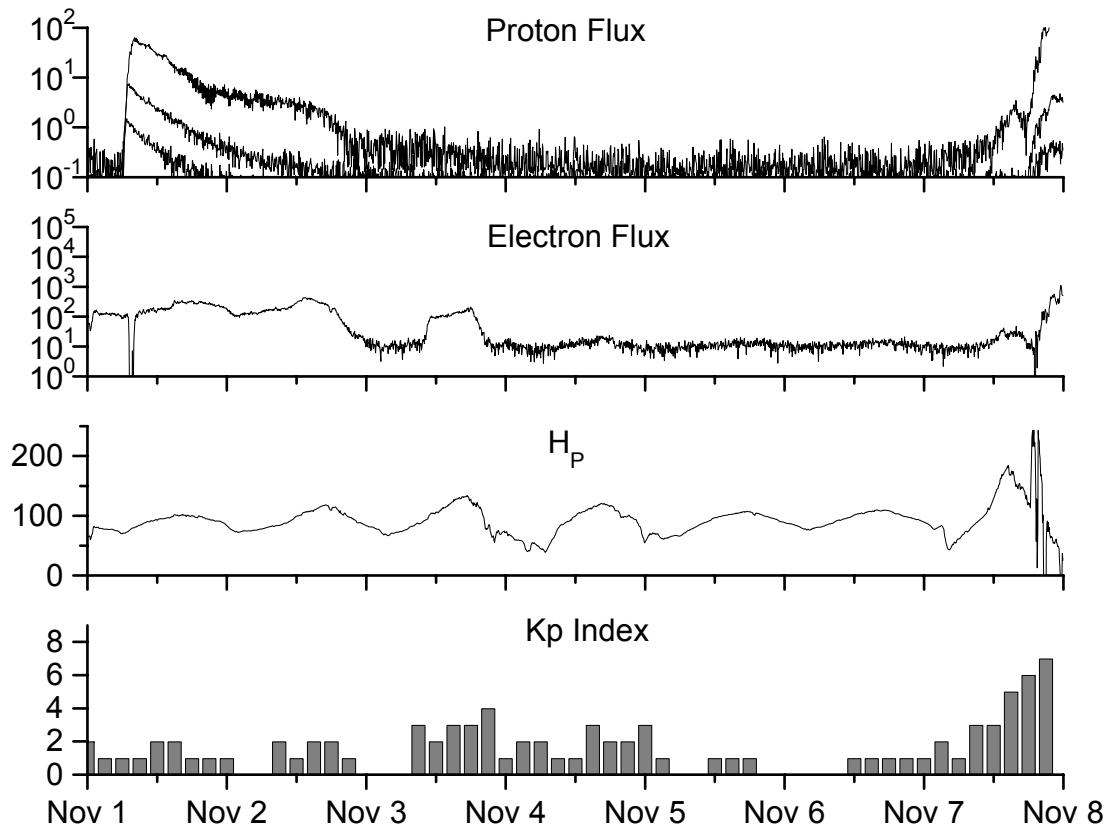


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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
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 01 November 2004*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W100) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

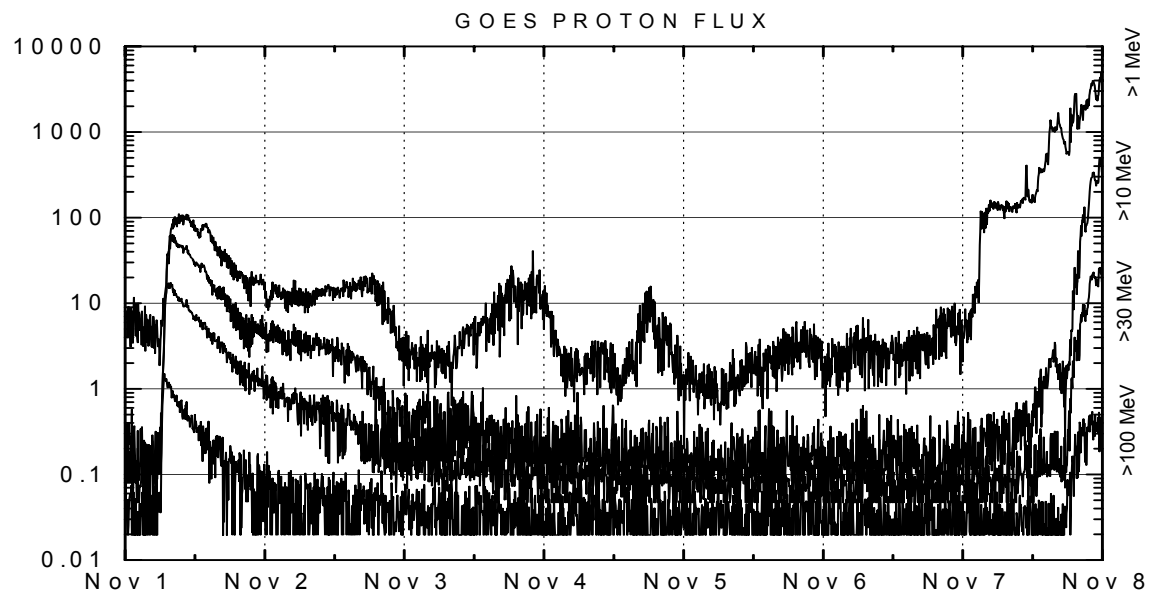
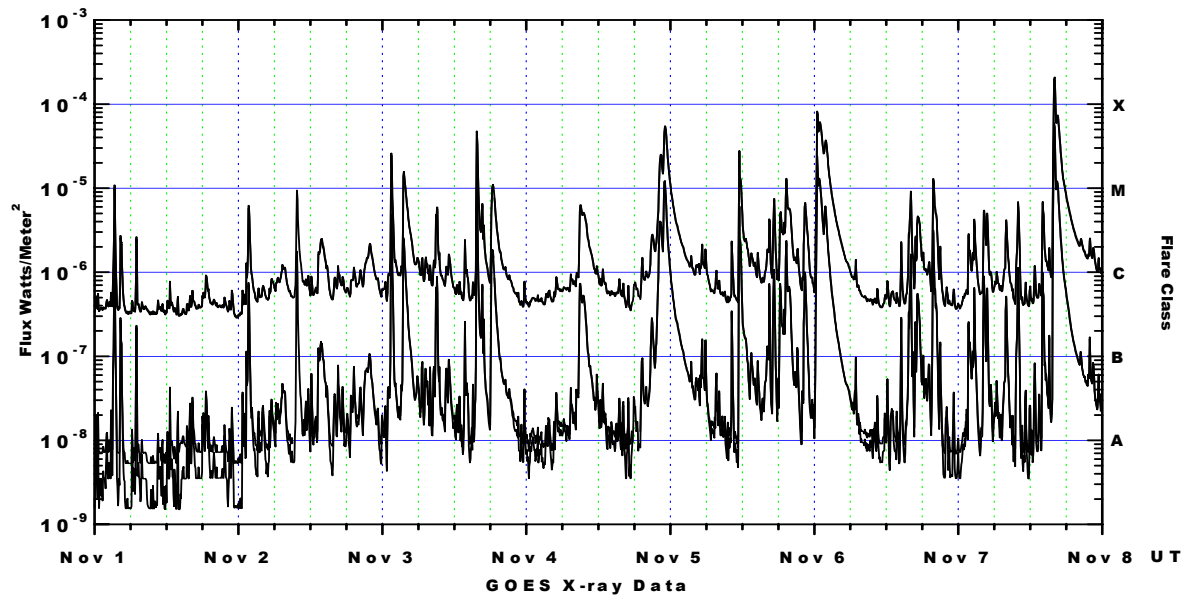
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W74).

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

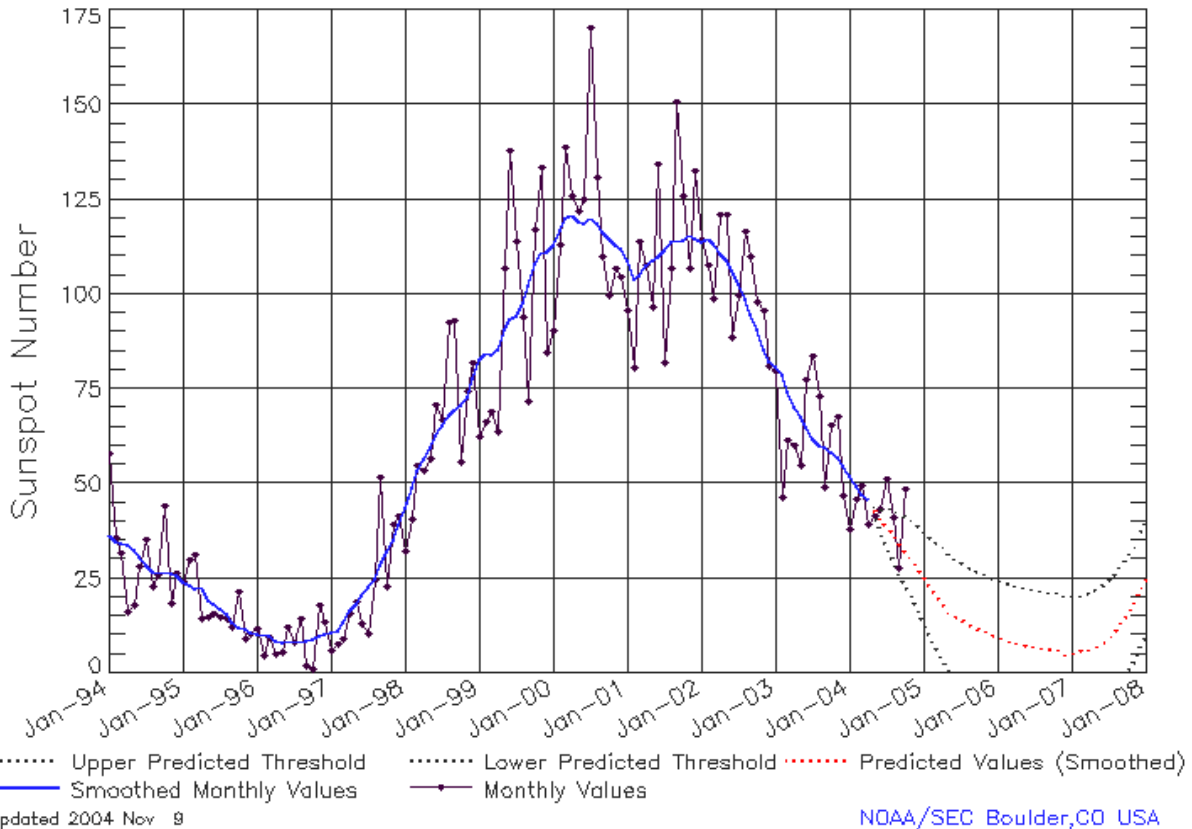
X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 12 (W75) and GOES 10 (W136) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W100) 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.



ISES Solar Cycle Sunspot Number Progression

Data Through 31 Oct 04



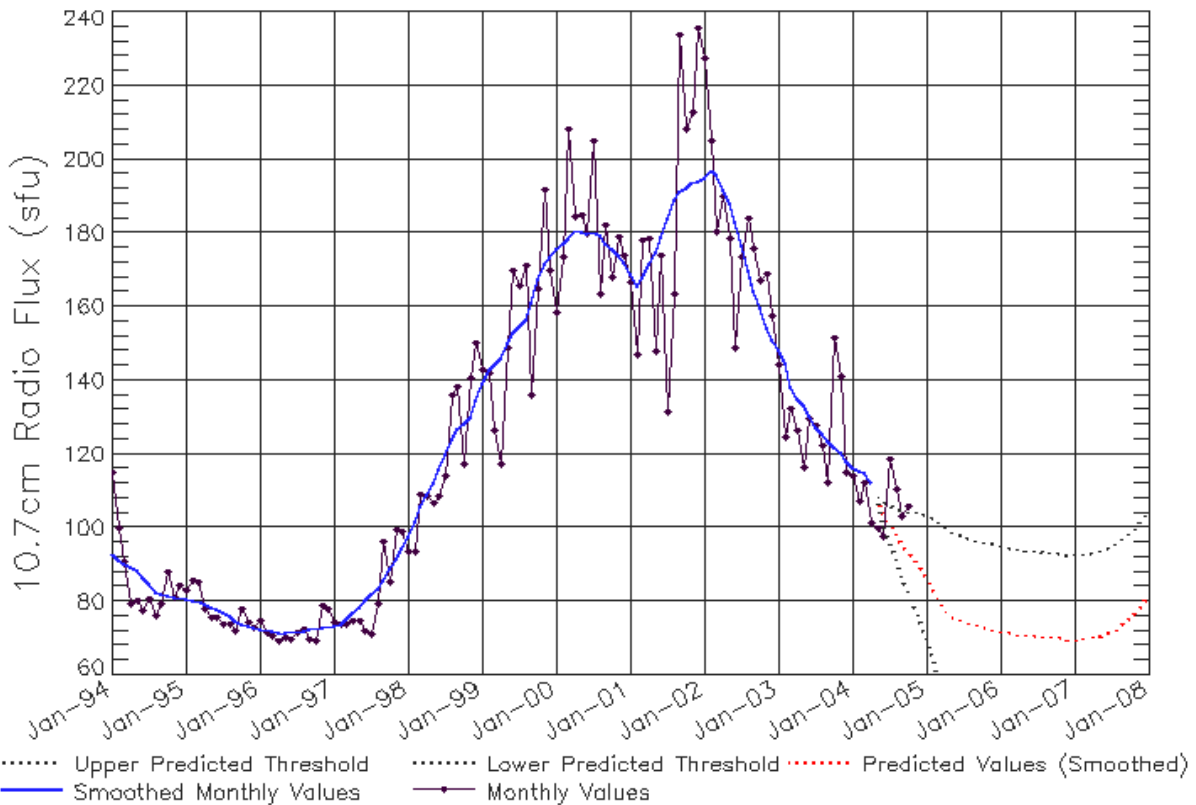
SEC Prediction of Smoothed Sunspot Number

	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	98	102	108	111	111
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2000	113	117	120	121	119	119	120	119	116	115	113	112
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2001	109	104	105	108	109	110	112	114	114	114	116	115
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2002	114	115	113	111	109	106	103	99	95	91	85	82
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2003	81	79	74	70	68	65	62	60	60	58	57	55
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2004	52	49	47	46	43	40	39	37	34	32	30	28
	(***)	(***)	(***)	(***)	(1)	(3)	(5)	(7)	(8)	(9)	(10)	(11)
2005	25	23	21	19	16	15	14	13	12	12	11	10
	(12)	(13)	(14)	(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)



ISES Solar Cycle F10.7cm Radio Flux Progression

Data Through 31 Oct 04



Updated 2004 Nov 9

NOAA/SEC Boulder, CO USA

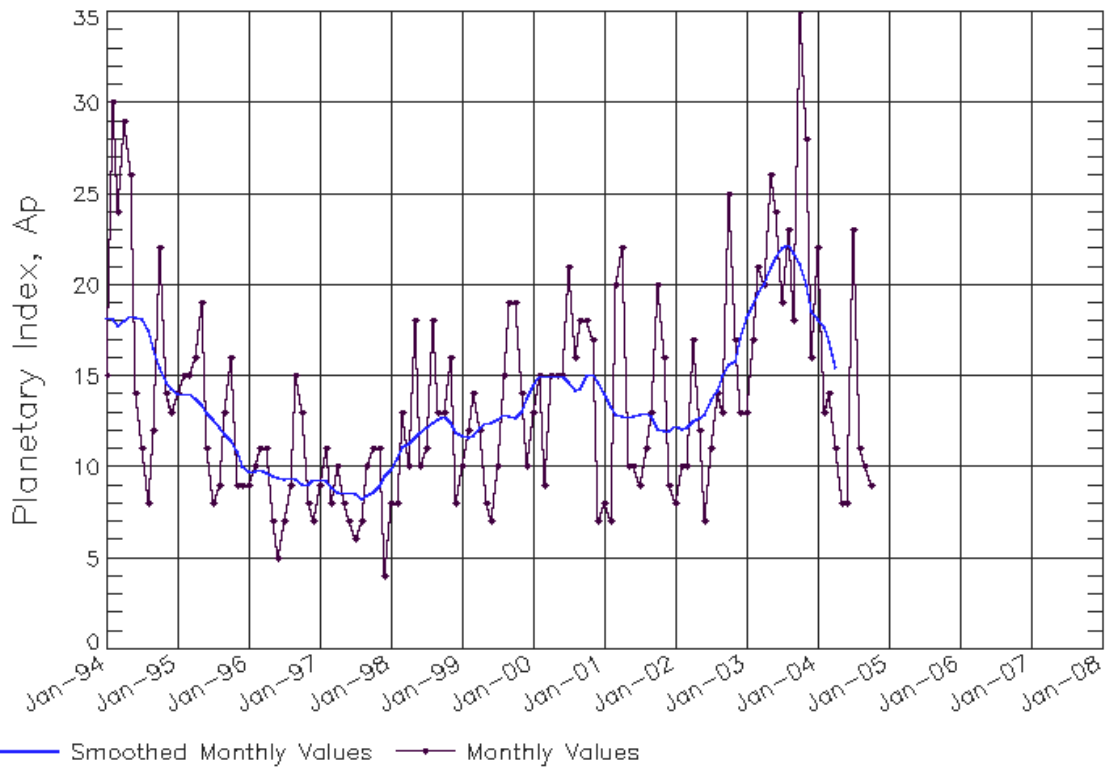
SEC Prediction of Smoothed F10.7cm Radio Flux

	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	176 (***)	177 (***)	178 (***)	181 (***)	180 (***)	180 (***)	180 (***)	179 (***)	177 (***)	176 (***)	174 (***)	172 (***)
2001	169 (***)	166 (***)	168 (***)	172 (***)	175 (***)	179 (***)	184 (***)	189 (***)	191 (***)	192 (***)	194 (***)	194 (***)
2002	195 (***)	197 (***)	196 (***)	192 (***)	188 (***)	183 (***)	176 (***)	170 (***)	164 (***)	159 (***)	154 (***)	151 (***)
2003	148 (***)	145 (***)	138 (***)	135 (***)	133 (***)	130 (***)	127 (***)	125 (***)	124 (***)	122 (***)	120 (***)	118 (***)
2004	116 (***)	116 (***)	115 (***)	112 (***)	108 (1)	104 (3)	101 (5)	98 (7)	96 (9)	93 (11)	91 (13)	89 (15)
2005	87 (17)	83 (19)	81 (21)	78 (22)	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 31 Oct 04



Updated 2004 Nov 9

NOAA/SEC Boulder, CO USA

