

**Space Weather Highlights**  
**05 - 11 September 2005**

**SWO PRF 1567**  
**13 September 2005**

Solar activity ranged from low to very high levels. Solar activity began the period at low levels. However, numerous CMEs were observed from the far side of the southeast limb in early September, indicating a very active region would soon rotate into view. On 06 September, activity increased to moderate levels as a very long-duration M1 flare and CME erupted from near S12 on the east limb. A large, complex sunspot group rotated into view on 07 September and was numbered as NOAA Region 808 (S09, L=232, class/area, Fkc/1430 on 09 September). Activity increased to high levels on 07 September as Region 808 produced one of the largest flares of Solar Cycle 23. The X17/3b proton flare at 07/1740 UTC had an associated 27,000 sfu Tenflare, Type II (1860 km/s) and Type IV radio sweeps, and a very large and fast CME.

Region 808 was the return of old Region 798 (S12, L=225, class/area, Dkc/680 on 23 August), which was responsible for significant solar and geophysical activity during its last passage on the visible disk. Activity levels were high to very high from 07 - 11 September as Region 808 produced 14 M-class, and 7 X-class flares. Flares of note included the X5/2b flare on 08/2106 UTC, an X6/2b on 09/2004Z, and an X2 flare on 10/2211 UTC. Region 808 contained a strong beta-gamma-delta magnetic configuration. The region exhibited some decay towards the end of the period; however, the dominant central penumbral sunspot still contained a strong delta.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. Solar wind speed at ACE was elevated at the beginning of the summary period at 650 km/s. By 06 September wind speed had decreased to background levels with the IMF Bz fluctuating between +/-5 nT. These conditions continued until 09 September when the first shock from a CME hit ACE. Bz spiked to approximately -15 nT and fluctuated around +/-10 nT, until the second shock from a later CME hit early on 10 September. The IMF Bt increased to around 20 nT while Bz fluctuated between +20/-10 nT for six hours before returning to -5nT for several hours. From the latter half of 09 September to almost midday on the 11th, Solar wind data from the ACE SWEPAM instrument was unusable due to contamination from the energetic proton event.

A greater than 10 MeV proton event began at 08/0215 UTC as a result of the X17 flare from Region 808. Soon after, a greater than 100 MeV proton event began at 08/0405 UTC. It is extremely rare to see 100 Mev protons from a source on or near the east limb. Further enhancement of the proton event on 09 September was due to subsequent flare activity in Region 808. The greater than 10 MeV proton event reached a peak flux of 1880 pfu at 11/0425 UTC. The greater than 100 MeV proton event reached a peak flux of 7.9 pfu at 09/1920 UTC and ended at 11/0545 UTC.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels for the entire period 05 – 11 September.

The geomagnetic field ranged from quiet to severe storm levels. Predominantly quiet to unsettled levels persisted from 04 - 08 September. However, sudden disturbances (magnetic crochets) of 82 nT and 41 nT occurred in the geomagnetic field on the 7th and 8th following the X17 and X5 flares. A sudden impulse of 30 nT occurred on 09/1359 UTC. This was likely due to the CME associated with the X17 flare on 7 September. Mostly active conditions ensued with some storm periods at higher latitudes. A second shock was observed on 10/0300 UTC assumed to be associated with the X5 flare and CME on 08 September. Periods of southward IMF Bz and very elevated solar wind plasma measurements resulted in active to minor storm periods at mid latitudes and major storm periods at high latitudes. Another strong shock was observed early on the 11th. This was likely associated with the X6 flare of 09 September. Severe geomagnetic storm levels were observed at all latitudes following this shock passage.

**Space Weather Outlook**  
**14 September - 10 October 2005**

Solar activity is expected to continue at moderate to high levels until Region 808 departs the visible disk on 21 September. Region 808 has shown some signs of weakening over the last 24-48 hours; however, it still maintains potential for significant solar flares. There are no other active regions of concern on the visible disk.

The greater than 10 MeV proton event in progress since 08 September will likely end early this period. A new influx of particles can happen at any time if more major activity occurs in Region 808.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 14 – 19 September, 21 – 26 September, and on 29 September – 03 October.

The geomagnetic field is expected to range from quiet to severe storm levels. New flare activity occurring at the time of this writing may produce severe storm levels on 15 September. Active to minor storm conditions are possible on 20 – 22 September, and 28 – 30 September due to recurrent coronal hole high speed wind streams. Region 808 will be located near center-disk for the first few days of the forecast period. Further major flare activity will likely result in a significant geomagnetic response.



**Daily Solar Data**

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background	Flares								
					X-ray Flux			Optical					
					C	M	X	S	1	2	3	4	
05 September	75	12	40	A7.6	1	0	0	0	0	0	0	0	0
06 September	83	12	40	B3.4	2	1	0	0	0	0	0	0	0
07 September	100	11	10	C1.0	4	0	1	0	0	0	1	0	0
08 September	94	36	550	C1.0	5	2	1	3	0	1	0	0	0
09 September	99	59	1450	B8.3	7	5	3	13	1	2	0	0	0
10 September	100	59	1420	C1.9	3	3	2	13	4	1	0	0	0
11 September	110	101	1270	C1.8	5	3	0	10	1	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)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
	05 September	1.8E+6	1.7E+4	3.7E+3		1.8E+9
06 September	1.2E+6	2.1E+4	3.3E+3		1.3E+9	
07 September	1.9E+6	3.2E+4	4.7E+3		4.2E+8	
08 September	1.9E+7	3.3E+6	2.6E+5		6.3E+8	
09 September	2.6E+8	1.8E+7	5.0E+5		2.6E+8	
10 September	5.8E+8	7.4E+7	4.3E+5		1.3E+6	
11 September	1.1E+9	5.4E+7	6.4E+4		1.2E+8	

**Daily Geomagnetic Data**

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	05 September	9	3-2-3-3-2-1-2-1	22	3-2-5-5-4-3-2-2	14
06 September	6	3-1-0-2-2-2-1-1	17	3-2-1-5-4-4-1-1	9	3-2-0-2-2-3-1-2
07 September	18	3-3-1-2-1-5-5-1	15	2-3-3-5-4-1-1-0	15	4-3-2-3-2-4-4-1
08 September	5	1-2-1-1-2-1-1-2	7	1-3-2-3-1-1-1-2	8	3-2-1-1-1-2-2-3
09 September	12	1-2-0-1-4-3-4-3	29	1-1-0-4-6-6-4-3	17	1-2-0-1-4-4-4-4
10 September	15	2-2-3-2-3-3-4-4	52	4-3-5-4-5-7-6-4	30	2-2-5-3-4-5-5-5
11 September	53	5-6-7-5-5-3-4-3	131	6-7-8-8-7-6-6-5	105	5-7-9-7-6-5-5-4



### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
05 Sep 0515	ALERT: Electron 2MeV Integral Flux > 1000pfu	05 Sep 0500
05 Sep 1036	ALERT: Type IV Radio Emission	05 Sep 0938
06 Sep 0012	1 – 245 MHz Radio Burst	05 Sep
06 Sep 0012	1 – 245 MHz Radio Burst	05 Sep
06 Sep 0515	ALERT: Electron 2MeV Integral Flux > 1000pfu	06 Sep 0500
07 Sep 0256	ALERT: Geomagnetic K = 4	07 Sep 0250
07 Sep 0331	ALERT: Geomagnetic K = 4	07 Sep 0329
07 Sep 0341	WARNING: Geomagnetic K = 4 expected	07 Sep 0342 - 1500
07 Sep 0515	ALERT: Electron 2MeV Integral Flux > 1000pfu	07 Sep 0500
07 Sep 1728	ALERT: X-Ray Flux > M5	07 Sep 1726
07 Sep 1803	ALERT: Type II Radio Emission	07 Sep 1738
07 Sep 1817	SUMMARY: X-ray Event > X10	07 Sep 1717
07 Sep 1834	ALERT: Type IV Radio Emission	07 Sep 1757
07 Sep 1921	SUMMARY: 10cm Radio Burst	07 Sep 1728
08 Sep 0009	2 – 245 MHz Radio Bursts	07 Sep
08 Sep 0053	WARNING: Proton 10MeV Integral Flux > 10pfu	08 Sep 0200 - 1500
08 Sep 0231	ALERT: Proton Event 10MeV Integral Flux > 10pfu	08 Sep 0215
08 Sep 0242	WARNING: Proton 100MeV Integral Flux > 1pfu	08 Sep 0340 - 1500
08 Sep 0422	ALERT: Proton Event 100MeV Integral Flux > 1pfu	08 Sep 0405
08 Sep 0515	ALERT: Electron 2MeV Integral Flux > 1000pfu	08 Sep 0500
08 Sep 1456	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	08 Sep 0200 - 1500
08 Sep 1457	EXT WARNING: Proton 100MeV Integral Flux > 1pfu	08 Sep 0340 - 2359
08 Sep 1756	WATCH: Geomagnetic A ≥ 20	09 Sep
08 Sep 2102	ALERT: X-Ray Flux > M5	08 Sep 2101
08 Sep 2135	SUMMARY: X-ray Event > X1	08 Sep 2052
08 Sep 2158	WARNING: Proton 10MeV Integral Flux > 10pfu	08 Sep 2159 - 09 Sep 2359
08 Sep 2208	ALERT: Proton Event 10MeV Integral Flux > 100pfu	08 Sep 2145
08 Sep 2218	SUMMARY: 10cm Radio Burst	08 Sep 2102
08 Sep 2219	ALERT: Type IV Radio Emission	08 Sep 2133
08 Sep 2355	EXT WARNING: Proton 100MeV Integral Flux > 1pfu	08 Sep 0340 - 09 Sep 1600
09 Sep 0022	CONT ALERT: Proton Event 10MeV Integral Flux > 100pfu	08 Sep 2145
09 Sep 0027	CONT ALERT: Proton Event 100MeV Integral Flux > 1pfu	08 Sep 0405
09 Sep 0054	1 – 245 MHz Radio Burst	08 Sep
09 Sep 0258	ALERT: X-Ray Flux > M5	09 Sep 0256
09 Sep 0313	SUMMARY: X-ray Event > X1	09 Sep 0243
09 Sep 0542	ALERT: X-Ray Flux > M5	09 Sep 0541
09 Sep 0555	ALERT: Electron 2MeV Integral Flux > 1000pfu	09 Sep 0500
09 Sep 0642	SUMMARY: X-ray Event > M5	09 Sep 0532
09 Sep 0956	ALERT: X-Ray Flux > M5	09 Sep 0955
09 Sep 1011	SUMMARY: 10cm Radio Burst	09 Sep 0955
09 Sep 1015	SUMMARY: X-ray Event > X1	09 Sep 0942
09 Sep 1326	WARNING: Geomagnetic Sudden Impulse	09 Sep 1345 - 1415
09 Sep 1328	WARNING: Geomagnetic K = 5	09 Sep 1400 - 2359
09 Sep 1338	WARNING: Geomagnetic K = 6	09 Sep 1430 - 2359
09 Sep 1434	SUMMARY: Geomagnetic Sudden Impulse	09 Sep 1359
09 Sep 1440	ALERT: Geomagnetic K = 4	09 Sep 1439
09 Sep 1727	ALERT: Geomagnetic K = 5	09 Sep 1726
09 Sep 1929	ALERT: X-Ray Flux > M5	09 Sep 1928
09 Sep 2006	WARNING: Proton 10MeV Integral Flux > 10pfu	09 Sep 2359 – 10 Sep 2359
09 Sep 2012	ALERT: Type II Radio Emission	09 Sep 1949
09 Sep 2013	ALERT: Type IV Radio Emission	09 Sep 1948
09 Sep 2054	SUMMARY: X-ray Event > X1	09 Sep 1913
09 Sep 2139	EXT WARNING: Proton 100MeV Integral Flux > 1pfu	08 Sep 0340 – 10 Sep 2359

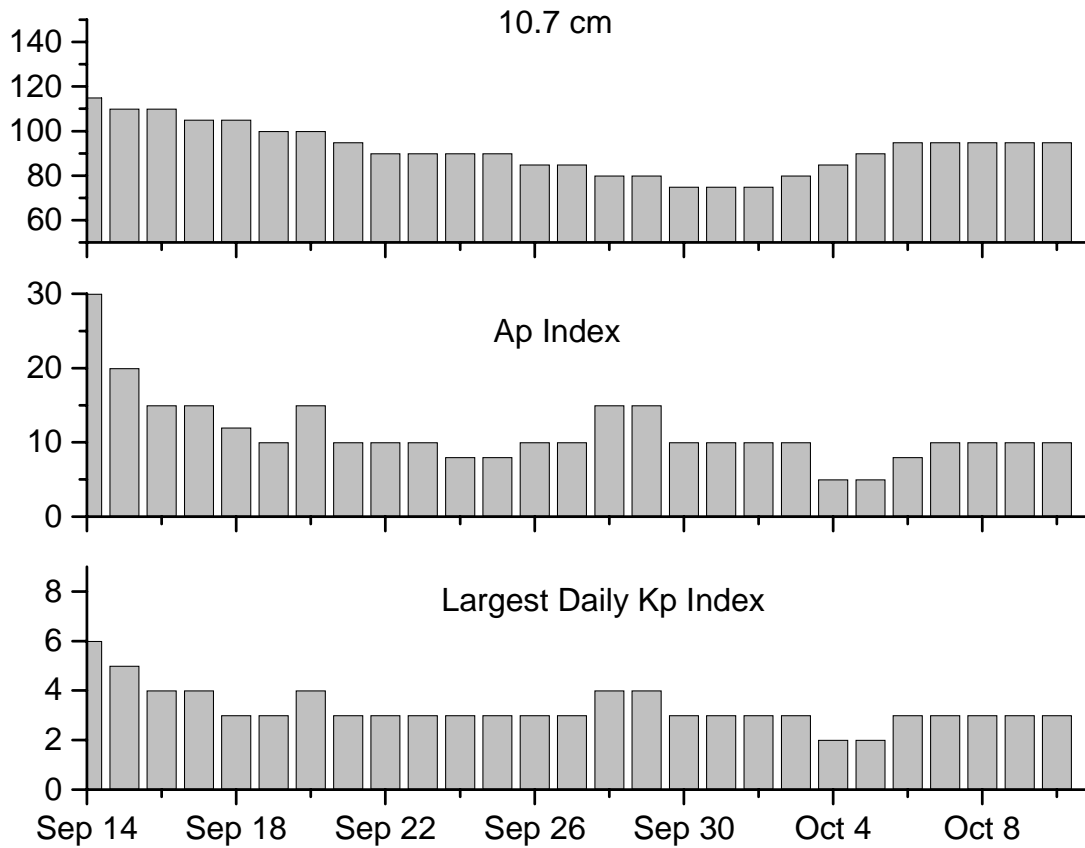


*Alerts and Warnings Issued – continued.*

<u>Date &amp; Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date &amp; Time of Event UTC</u>
09 Sep 2216	SUMMARY: 10cm Radio Burst	09 Sep 1921
09 Sep 2346	SUMMARY: 10cm Radio Burst	09 Sep 2223
10 Sep 0002	WATCH: Geomagnetic $A \geq 20$	11 Sep
10 Sep 0120	CONT ALERT: Proton Event 10MeV Integral Flux > 100pfu	08 Sep 2145
10 Sep 0122	CONT ALERT: Proton Event 100MeV Integral Flux > 1pfu	08 Sep 0405
10 Sep 0644	WARNING: Geomagnetic $K = 5$	10 Sep 0644 -1600
10 Sep 0648	ALERT: Geomagnetic $K = 4$	10 Sep 0637
10 Sep 0818	ALERT: Geomagnetic $K = 5$	10 Sep 0809
10 Sep 1052	ALERT: Proton Event 10MeV Integral Flux > 1000pfu	10 Sep 1035
10 Sep 1558	WARNING: Geomagnetic $K = 4$	10 Sep 1559 -2359
10 Sep 1615	WARNING: Geomagnetic $K = 5$	10 Sep 1616 -2359
10 Sep 1618	ALERT: Geomagnetic $K = 5$	10 Sep 1617
10 Sep 1640	ALERT: X-Ray Flux > M5	10 Sep 10 1640
10 Sep 1658	SUMMARY: X-ray Event > X1	10 Sep 1634
10 Sep 1809	SUMMARY: 10cm Radio Burst	10 Sep 1638
10 Sep 2139	ALERT: X-Ray Flux > M5	10 Sep 2138
10 Sep 2159	ALERT: Type II Radio Emission	10 Sep 2137
10 Sep 2202	ALERT: Type IV Radio Emission	10 Sep 2143
10 Sep 2251	SUMMARY: X-ray Event > X1	10 Sep 2130
10 Sep 2354	EXT WARNING: Geomagnetic $K = 4$	10 Sep 1559 -11 Sep 2359
10 Sep 2355	EXT WARNING: Geomagnetic $K = 5$	10 Sep 1616 - 11 Sep 2359
10 Sep 2357	SUMMARY: 10cm Radio Burst	10 Sep 2153
11 Sep 0029	SUMMARY: 10cm Radio Burst	10 Sep 2344
11 Sep 0040	CONT ALERT: Proton Event 10MeV Integral Flux > 1000pfu	10 Sep 1035
11 Sep 0042	CONT ALERT: Proton Event 100MeV Integral Flux > 1pfu	08 Sep 0405
11 Sep 0052	EXT WARNING: Proton 100MeV Integral Flux > 1pfu	08 Sep 0340 -11 Sep 2359
11 Sep 0053	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	09 Sep 2359 -11 Sep 2359
11 Sep 0102	WARNING: Geomagnetic Sudden Impulse	11 Sep 0115 -11 Sep 0215
11 Sep 0119	SUMMARY: Geomagnetic Sudden Impulse	11 Sep 0115
11 Sep 0130	WARNING: Geomagnetic $K = 6$	11 Sep 0130 -1600
11 Sep 0206	ALERT: Electron 2MeV Integral Flux > 1000pfu	11 Sep 0145
11 Sep 0344	ALERT: Geomagnetic $K = 6$	11 Sep 0342
11 Sep 0537	WARNING: Geomagnetic $K \geq 7$	11 Sep 0540 -1600
11 Sep 0613	ALERT: Geomagnetic $K = 7$	1 Sep 0612
11 Sep 0626	ALERT: Electron 2MeV Integral Flux > 1000pfu	11 Sep 0500
11 Sep 0639	ALERT: Geomagnetic $K = 8$	11 Sep 0637
11 Sep 0646	ALERT: Geomagnetic $K = 9$	11 Sep 0645
11 Sep 0954	ALERT: Geomagnetic $K = 6$	11 Sep 11 0952
11 Sep 1448	SUMMARY: 10cm Radio Burst	11 Sep 11 1241
11 Sep 1732	WATCH: Geomagnetic $A \geq 50$	12 Sep
11 Sep 1733	WATCH: Geomagnetic $A \geq 50$	13 Sep
11 Sep 1908	SUMMARY: Proton Event 100MeV Integral Flux > 1pfu	08 Sep 0405
11 Sep 1938	SUMMARY: Proton Event 10MeV Integral Flux > 1000pfu	08 Sep 0245
11 Sep 2055	WARNING: Geomagnetic $K = 5$	11 Sep 2056 - 2359
11 Sep 2231	EXT WARNING: Proton 10MeV Integral Flux > 10pfu	09 Sep 2359 – 12 Sep 2359



## 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
14 Sep	115	30	6	28 Sep	80	15	4
15	110	20	5	29	80	15	4
16	110	15	4	30	75	10	3
17	105	15	4	01 Oct	75	10	3
18	105	12	3	02	75	10	3
19	100	10	3	03	80	10	3
20	100	15	4	04	85	5	2
21	95	10	3	05	90	5	2
22	90	10	3	06	95	8	3
23	90	10	3	07	95	10	3
24	90	8	3	08	95	10	3
25	90	8	3	09	95	10	3
26	85	10	3	10	95	10	3
27	85	10	3				



***Energetic Events***

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
06 Sep	1932	2202	0044	M1.4	.190							
07 Sep	1717	1740	1803	X17.0	2.600	3b	S06E89	808	3200	27000	3	2
08 Sep	1649	1703	1711	M2.1	.014	Sf	S10E81	808				
08 Sep	2023	2029	2041	M2.1	.014			808				
08 Sep	2052	2106	2117	X5.4	.380	2b	S11E74	808		990	1	
09 Sep	0208	0219	0229	M1.0	.009	Sf	S11E69	808				
09 Sep	0233	0236	0239	M1.1	.004	2f	S13E66	808				
09 Sep	0243	0300	0307	X1.1	.084	808						
09 Sep	0446	0503	0512	M1.8	.025	Sf	S10E67	808				
09 Sep	0532	0548	0600	M6.2	.080	1f	S10E66	808		200		
09 Sep	0942	0959	1008	X3.6	.230			808	280	270		
09 Sep	1732	1751	1810	M1.9	.026	Sf	S10E62	808		57		
09 Sep	1913	2004	2036	X6.2	1.700	2b	S10E58	808	690	4200	2	3
10 Sep	0606	0614	0617	M3.7	.017	2n	S11E51	808		61		
10 Sep	0859	0907	0931	M1.9	.030			808				
10 Sep	1634	1643	1651	X1.1	.068			808		600		
10 Sep	1910	1936	1950	M4.1	.058	1n	S10E45	808		65		
10 Sep	2130	2211	2243	X2.1	.640			808	910	1600	1	2
11 Sep	0229	0235	0240	M3.4	.015	1n	S10E42	808		91		2
11 Sep	1244	1312	1353	M3.0	.095	1f	S16E39	808	230	310		
11 Sep	2029	2040	2049	M1.3	.010				130			

***Flare List***

Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
05 September	0853	1041	1220	C2.7			
06 September	0749	1120	1206	C1.3			
	1452	1648	1728	C1.6			
	1932	2202	0044	M1.4			
07 September	0959	1003	1007	C2.3			
	1119	1123	1127	C2.4			
	1234	1244	1249	C9.6			
	1423	1426	1430	C1.7			
	1724	1728	1847	X17.0	3b	S06E89	808
08 September	1058	1117	1125	C2.9			808
	1255	1258	1302	C2.0			808
	1433	1436	1442	C4.0			808
	1449	1452	1456	C1.9			808
	1601	1609	1618	C4.2			808
	1700	1700	1715	M2.1	Sf	S10E81	808
	2023	2029	2041	M2.1			808
	2052	2105	0042	X5.4	2b	S11E74	808
	2300	2350	0032		Sf	S15E82	808
	B2303	2318	2320		Sf	S11E62	

***Flare List – continued.***



Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
09 September	0217	0219	0223	M1.0	Sf	S11E69	808
	0236	0300	0431	M1.1	2f	S13E66	808
	0243	0300	0307	X1.1			808
	B0403	0403	0410		Sf	S12E62	
	0449	0450	0526	M1.8	Sf	S10E67	808
	0533	0550	0659	M6.2	1f	S10E66	808
	0700	0701	0707		Sf	S10E66	808
	0729	0751	0801		Sf	S10E65	808
	0825	0826	0831	C3.7	Sf	S10E65	808
	0914	0918	0922	C3.1			808
	0926	0931	0941	C4.8			808
	0942	0959	1008	X3.6			808
	1233	1247	1252	C3.0			808
	1424	1424	1427		Sf	S10E61	808
	1526	1526	1531	C4.2	Sf	S10E58	808
	1537	1543	1548	C2.8			808
	1633	1638	1647	C1.0			808
	1743	1755	1840	M1.9	Sf	S10E62	808
	1913	1946	2328	X6.2	2b	S10E58	808
	2312	2318	2330		Sf	S10E57	808
	2331	2331	2335		Sf	S10E57	808
	2336	2338	2342		Sf	S10E57	808
	2347	0028	0049		Sf	S10E56	808
10 September	0105	0107	0110		Sf	S10E56	808
	0154	0154	0159		Sf	S10E55	808
	B0254	0255	0257		Sf	S10E55	808
	0348	0401	0407		Sf	S10E54	808
	0407	0409	0413		Sf	S10E54	808
	0413	0417	0423		Sf	S10E54	808
	0424	0424	0429		Sf	S10E54	808
	0432	0446	0457		Sf	S10E54	808
	0457	0504	0506		Sf	S10E54	808
	0533	0534	0536		Sf	S10E53	808
	0542	0614	0734	M3.7	2n	S11E51	808
	B0609	U0609	A0627		1f	S10E61	808
	0735	0738	0744		Sf	S10E52	808
	0745	0904	A1006		1f	S10E51	808
	0859	0907	0931	M1.9			808
	1024	1028	1034	C7.6			808
	1335	1342	1444	C7.8	1f	S11E46	808
1544	1550	1558	C7.1			808	
1634	1643	1651	X1.1			808	

*Flare List – continued.*



Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn	
	Begin	Max	End					
10 September	B1758	1758	1806		Sf	S10E42	808	
		1808	1809	1815		Sf	S11E43	808
		1915	1923	2039	M4.1	1n	S10E45	808
		2130	2211	2243	X2.1			808
11 September	B0035	0042	0046		Sf	S09E45		
		0229	0235	0240	M3.4	1n	S10E38	808
	B0400	0400	0404		Sf	S09E43		
	B0529	0600	0601		Sf	S09E41		
		0611	0618	0636	C7.1	Sf	S10E35	808
		0706	0710	0717	C4.4			808
	B1335	U1335	A1437	M3.0	1f	S16E39	808	
		1440	1450	1458		Sf	S16E37	808
		1646	1648	1701		Sf	S11E31	808
		2029	2040	2049	M1.3			
	B2055	2055	2059			Sf	S12E31	
		2205	2208	2211	C1.9			
		2214	2215	2223	C6.5	Sf	S10E27	808
		2322	2324	2344	C2.0	Sf	S10E30	808





### Region Summary

Date	Location		Sunspot Characteristics				Flares												
	Helio		Area (10 <sup>-6</sup> hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical								
	( ° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4				
<i>Region 803</i>																			
24 Aug	N12E	78	059	0030	04	Dao	011	B											
25 Aug	N12E	67	056	0200	08	Dai	010	B		1					2				
26 Aug	N11E	52	058	0110	09	Dai	015	Bg	3				1						
27 Aug	N11E	40	057	0130	08	Dai	026	Bg	1				1						
28 Aug	N11E	27	057	0100	08	Dsi	037	Bgd		1			1						
29 Aug	N11E	14	057	0050	07	Dao	013	Bg											
30 Aug	N11E	01	057	0040	06	Dai	019	Bg											
31 Aug	N11W	13	057	0020	05	Bxo	008	B	1										
01 Sep	N10W	26	057																
02 Sep	N10W	39	057																
03 Sep	N10W	52	057																
04 Sep	N10W	65	057							1									
05 Sep	N10W	78	057																
06 Sep	N10W	91	057																
										6	2	0	3	2	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 057

<i>Region 805</i>																			
27 Aug	S08E	73	024	0060	04	Dso	002	B											
28 Aug	S08E	60	024	0100	04	Dso	003	B											
29 Aug	S08E	47	024	0090	05	Dao	003	B	1										
30 Aug	S08E	34	024	0050	03	Dso	005	B											
31 Aug	S09E	21	023	0050	02	Hax	002	A											
01 Sep	S10E	08	023	0070	02	Hsx	002	A											
02 Sep	S10W	04	022	0060	04	Cso	006	B											
03 Sep	S11W	17	022	0060	04	Dso	004	B											
04 Sep	S11W	30	022	0060	03	Cso	002	B											
05 Sep	S11W	44	022	0040	02	Hax	002	A											
06 Sep	S12W	59	024	0040	02	Dao	002	B											
07 Sep	S12W	72	024																
08 Sep	S12W	85	024																
09 Sep	S12W	98	024																
										1	0	0	0	0	0	0	0	0	

Crossed West Limb.

Absolute heliographic longitude: 022



**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 806*

29 Aug	S17E50	021	0070	04	Dai	006	Bg	3				2					
30 Aug	S17E37	021	0060	06	Dai	014	Bg	1				1					
31 Aug	S17E23	021	0050	06	Dao	008	Bg										
01 Sep	S16E07	024	0010	01	Hrx	002	A										
02 Sep	S16W06	024															
03 Sep	S16W19	024															
04 Sep	S16W32	024															
05 Sep	S16W45	024															
06 Sep	S16W58	024															
07 Sep	S16W71	024															
08 Sep	S16W84	024															
09 Sep	S16W97	024															
									4	0	0	3	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 024

*Region 808*

07 Sep	S12E83	229	0010	00	Hsx	001	A				1						1
08 Sep	S09E67	232	0510	12	Ekc	014	Bg	5	2	1	2						1
09 Sep	S09E54	232	1430	16	Fkc	038	Bgd	7	5	3	12	1					2
10 Sep	S09E44	229	1400	12	Ekc	038	Bgd	3	3	2	13	4					1
11 Sep	S09E30	229	1250	14	Ekc	080	Bgd	4	2		5	2					
								19	12	7	32	7	4	1			0

Still on Disk.

Absolute heliographic longitude: 229

*Region 809*

08 Sep	N10E60	239	0040	01	Hsx	002	A										
09 Sep	N10E47	239	0020	01	Hrx	001	A										
10 Sep	N10E34	239	0020	01	Hsx	001	A										
11 Sep	N10E20	239	0020	01	Hsx	001	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 239

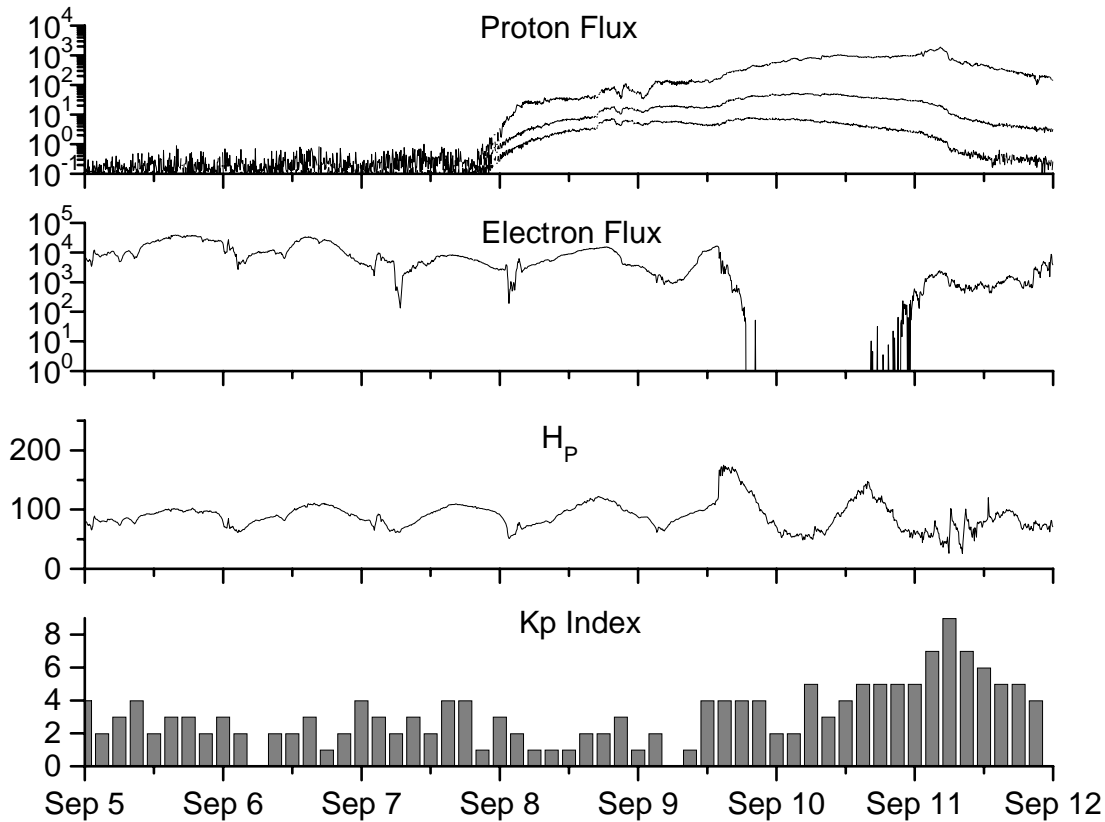


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

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
<b>2003</b>									
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
<b>2004</b>									
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	74.1	43.9	99.8	109.2	8	14.3
June	78.9	43.2	0.55	70.4	41.7	97.4	107.2	8	14.0
July	87.8	51.0	0.58	68.3	40.2	118.5	105.9	23	13.8
August	69.5	40.9	0.59	66.6	39.3	110.1	105.0	11	13.8
September	50.0	27.7	0.55	63.7	37.6	103.1	103.7	10	13.6
October	77.9	48.4	0.62	61.3	35.9	105.7	102.1	9	13.5
November	70.5	43.7	0.62	60.0	35.4	113.2	101.5	26	14.1
December	34.7	17.9	0.52	58.8	35.3	94.6	101.3	11	14.8
<b>2005</b>									
January	52.0	31.3	0.60	57.3	34.7	102.4	100.3	22	14.7
February	45.4	29.1	0.64	56.4	34.0	97.3	98.5	11	14.6
March	41.0	24.8	0.60			90.0		12	
April	41.5	24.4	0.59			85.9		12	
May	65.4	42.6	0.65			99.5		20	
June	59.8	39.6	0.66			93.7		13	
July	71.0	39.9	0.56			96.6		16	
August	65.6	36.4	0.55			90.7		16	

**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 05 September 2005*

*Protons* plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-11 (W113) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

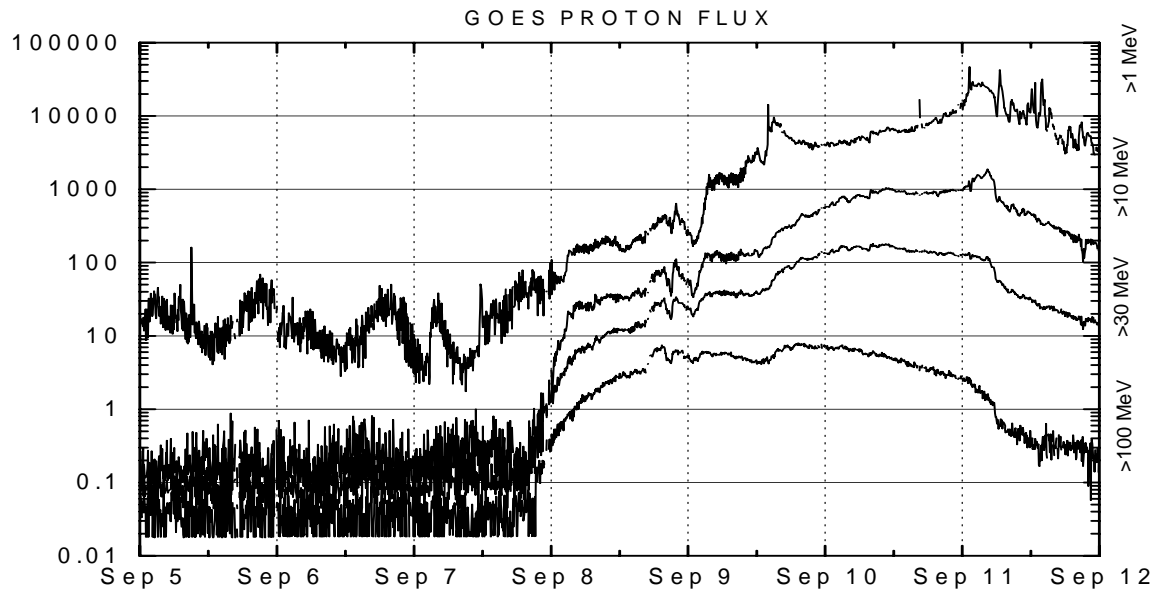
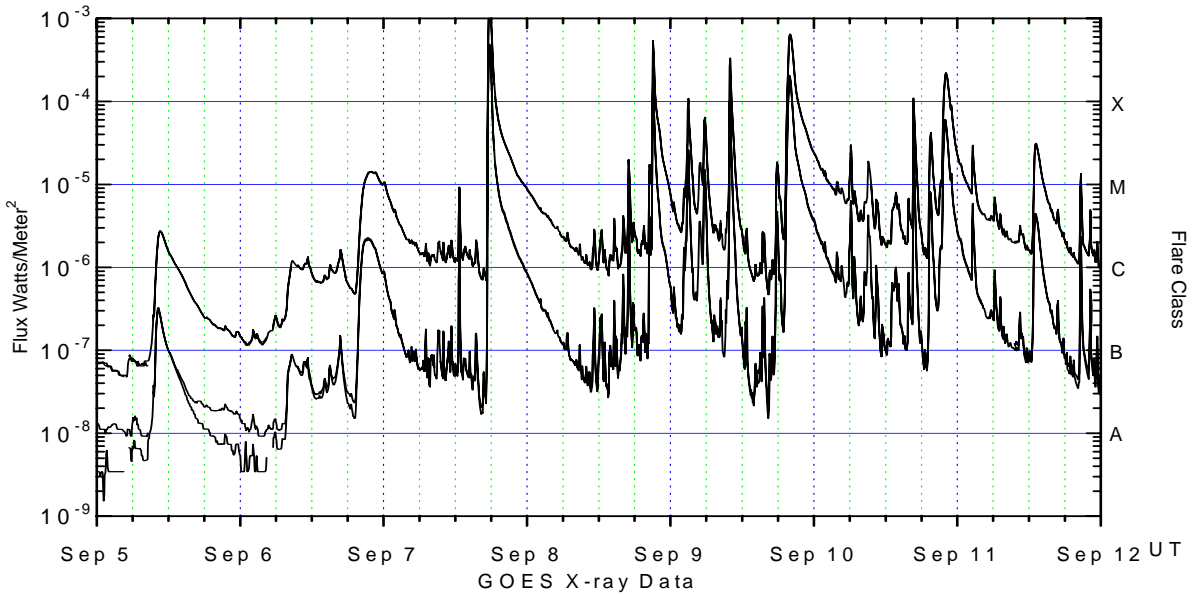
*Electrons* plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec-sr) with energies greater than 2 MeV at GOES-12 (W75).

*H<sub>p</sub>* 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<sub>p</sub>* 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<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 parallel 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

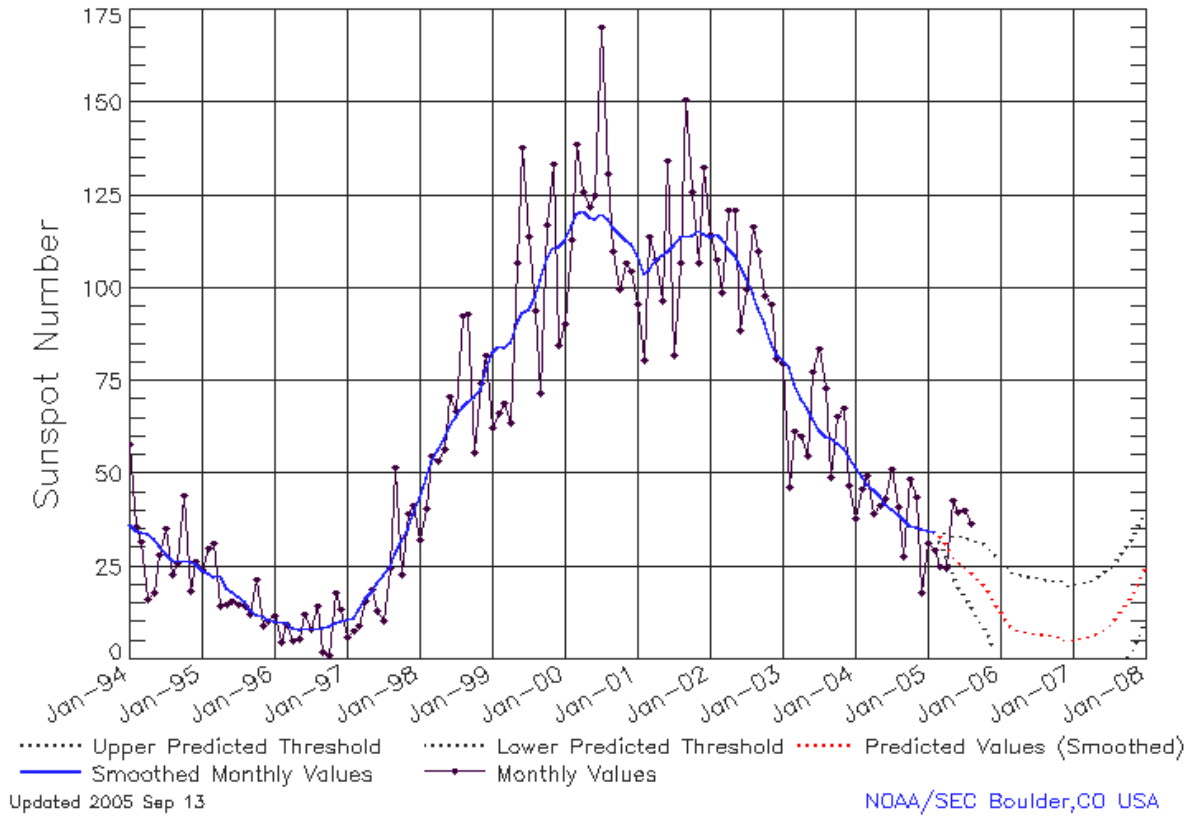
X-ray plot contains five-minute averaged x-ray flux (watts/m<sup>2</sup>) as measured by GOES 12 (W75) and GOES 10 (W135) in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-11 (W113) 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.



# ISES Solar Cycle Sunspot Number Progression

Data Through 31 Aug 05



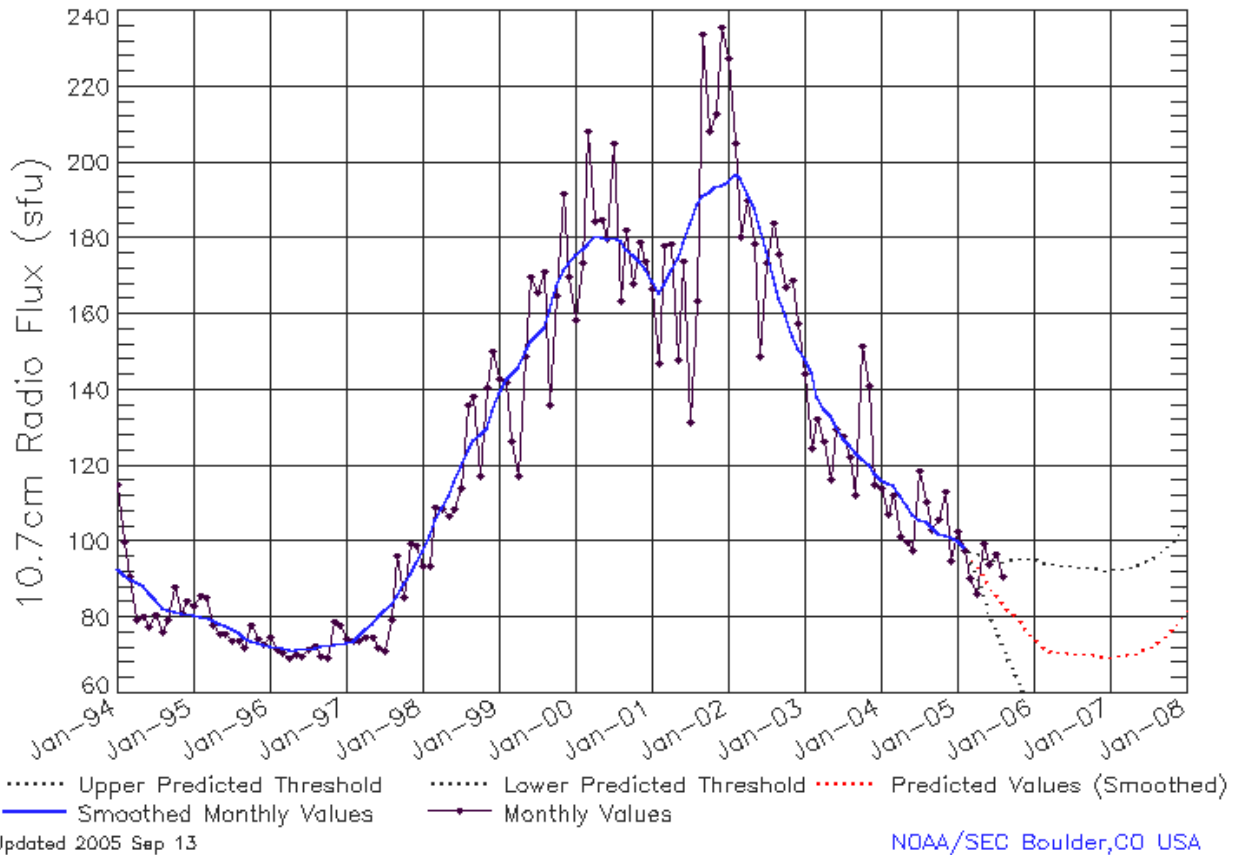
## SEC Prediction of Smoothed Sunspot Number

	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 (***)	44 (***)	42 (***)	40 (***)	39 (***)	38 (***)	36 (***)	35 (***)	35 (***)
2005	35 (***)	34 (***)	<b>33</b> (1)	<b>31</b> (3)	<b>28</b> (5)	<b>26</b> (7)	<b>25</b> (8)	<b>24</b> (9)	<b>22</b> (10)	<b>21</b> (11)	<b>18</b> (12)	<b>16</b> (13)
2006	<b>13</b> (14)	<b>10</b> (15)	<b>8</b> (15)	<b>8</b> (15)	<b>8</b> (15)	<b>7</b> (15)	<b>7</b> (15)	<b>7</b> (15)	<b>7</b> (15)	<b>6</b> (15)	<b>6</b> (15)	<b>5</b> (15)
2007	<b>5</b> (15)	<b>6</b> (15)	<b>6</b> (15)	<b>6</b> (15)	<b>7</b> (15)	<b>8</b> (15)	<b>10</b> (15)	<b>11</b> (15)	<b>13</b> (15)	<b>16</b> (15)	<b>18</b> (15)	<b>21</b> (15)



# ISES Solar Cycle F10.7cm Radio Flux Progression

Data Through 31 Aug 05



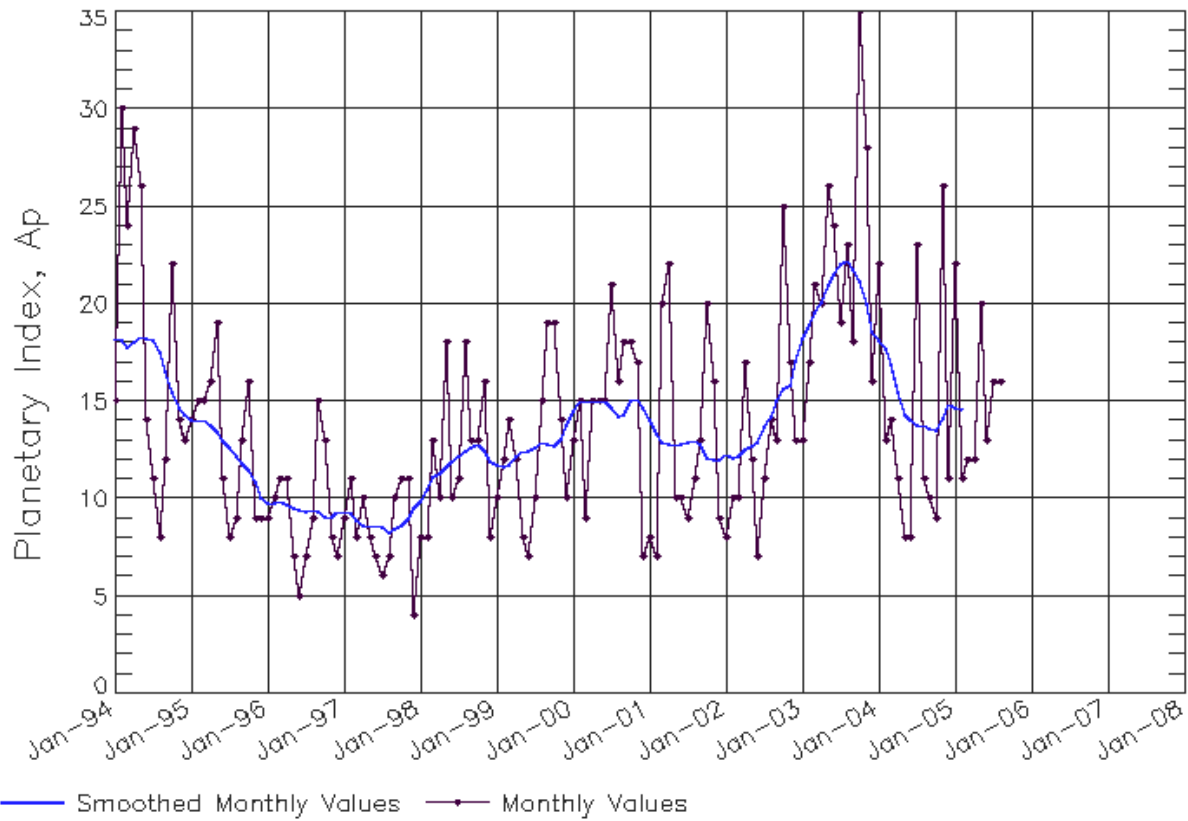
### SEC Prediction of Smoothed F10.7cm Radio Flux

	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 (***)	109 (***)	107 (***)	106 (***)	105 (***)	104 (***)	102 (***)	102 (***)	101 (***)
2005	100 (***)	99 (***)	<b>97</b> (1)	<b>94</b> (3)	<b>91</b> (5)	<b>88</b> (7)	<b>86</b> (9)	<b>84</b> (11)	<b>82</b> (13)	<b>81</b> (15)	<b>79</b> (17)	<b>77</b> (19)
2006	<b>75</b> (21)	<b>73</b> (22)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)
2007	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>70</b> (23)	<b>71</b> (23)	<b>71</b> (23)	<b>72</b> (23)	<b>73</b> (23)	<b>74</b> (23)	<b>76</b> (23)	<b>77</b> (23)	<b>79</b> (23)



# ISES Solar Cycle Ap Progression

Data Through 31 Aug 05



Updated 2005 Sep 13

NOAA/SEC Boulder, CO USA

