

Space Weather Highlights
05 December – 11 December 2005

SEC PRF 1580
13 December 2005

Solar activity ranged from very low to low during the period. New Region 835 (N19, L=089, class/area, Dko/180 on 10 December) produced two low-level C-class flares prior to its rotation onto the disk on 09 December. Region 835 produced one more C1 flare at 11/1338 UTC. No other significant activity was observed during the period.

No greater than 10 MeV proton events were observed this period.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels 05 – 08 December.

The geomagnetic field ranged from quiet to active levels with minor to major storm periods towards the end of the summary period. Solar wind speed ranged from a low of near 275 km/s midday on 09 December to a high of about 600 km/s midday on 11 December. During the majority of the period, the IMF Bz was mostly neutral, not varying much beyond +/- 3 nT. At about 09/1830 UTC, ACE detected a sharp turn southward to -10 nT in the IMF Bz, while wind speed gradually increased to about 600 km/s by 11/1413 UTC. These effects were due to the influence of a high speed stream from a geoeffective northern coronal hole. During this period, the geomagnetic field was mostly unsettled to active with periods of minor to major storm conditions at high latitudes.

Space Weather Outlook
14 December 2005 - 09 January 2006

Solar activity is expected to be at very low to low levels.

No greater than 10 MeV proton events are expected.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels on 22 – 24 December, and 29 December – 04 January.

The geomagnetic field is expected to range from quiet to active levels. Isolated active periods are possible on 28 – 29 December and active to minor storm periods are possible on 06 – 07 January due to effects from recurrent coronal hole wind streams. Otherwise, quiet to unsettled conditions are expected for the majority of the forecast period.



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	
05 December	92	85	420	A8.9	0	0	0	0	0	0	0	0	0
06 December	89	58	280	A7.7	0	0	0	0	0	0	0	0	0
07 December	89	22	140	A6.7	0	0	0	1	0	0	0	0	0
08 December	90	51	220	B1.0	2	0	0	0	0	0	0	0	0
09 December	89	61	280	B1.1	0	0	0	0	0	0	0	0	0
10 December	91	55	350	B1.4	0	0	0	0	0	0	0	0	0
11 December	93	51	340	B1.6	1	0	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)		
	>1 MeV	>10 MeV	>100 MeV	>.6 MeV	>2MeV	>4 MeV
	05 December	7.5E+5	1.4E+4	3.2E+3		9.6E+7
06 December	8.6E+5	1.4E+4	3.3E+3		9.3E+7	
07 December	9.1E+5	1.4E+4	3.5E+3		7.0E+7	
08 December	1.2E+6	1.5E+4	3.3E+3		8.1E+7	
09 December	1.4E+6	1.4E+4	3.4E+3		2.3E+7	
10 December	7.8E+5	1.5E+4	3.5E+3		1.1E+6	
11 December	7.4E+5	1.5E+4	3.4E+3		9.4E+5	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	05 December	2	1-1-1-0-0-2-1-0	2	1-1-1-0-0-0-0-1	2
06 December	2	0-0-1-1-1-1-0-0	4	0-1-1-3-2-0-0-0	3	0-0-1-1-1-0-1-1
07 December	1	0-0-1-0-0-1-0-0	0	0-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0
08 December	1	0-0-0-0-0-1-0-1	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-1-0-1
09 December	3	1-0-0-0-1-1-1-3	4	2-0-0-2-0-0-0-3	4	1-0-0-0-1-1-1-3
10 December	17	3-4-3-1-3-3-4-3	*	*_*_*_*_*_*_*_*	12	3-4-3-1-2-2-4-2
11 December	10	3-2-2-3-2-3-2-1	40	3-3-5-5-5-6-5-3	22	3-2-3-4-2-5-5-3

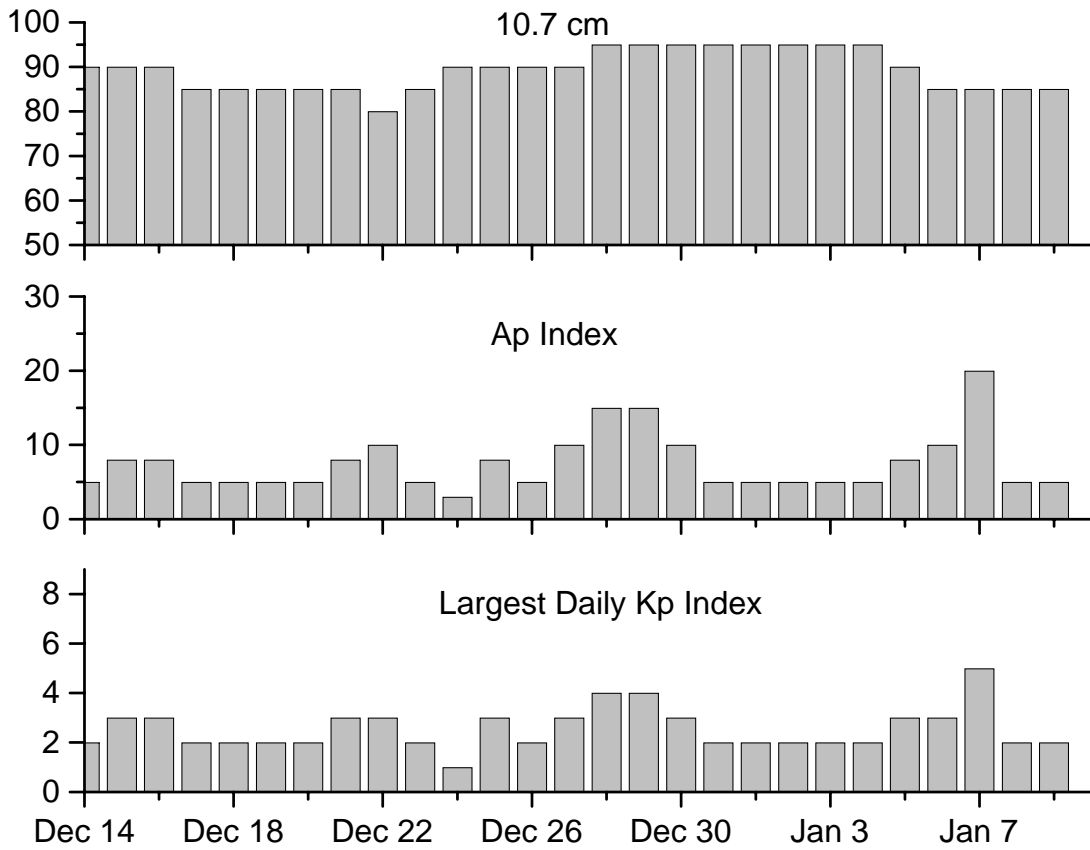


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UTC</u>
05 Dec 0948	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	05 Dec 0915
06 Dec 0930	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	06 Dec 0919
07 Dec 1313	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	07 Dec 1255
08 Dec 1241	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	08 Dec 1220
10 Dec 0007	2 – 245 MHz Radio Bursts	09 Dec
10 Dec 0333	WARNING: Geomagnetic K=4	10 Dec 0333-1500
10 Dec 0335	ALERT: Geomagnetic K= 4	10 Dec 0334
10 Dec 0811	ALERT: Geomagnetic K= 5	10 Dec 0810
11 Dec 0955	WARNING: Geomagnetic K= 4	11 Dec 0954-1500
11 Dec 0958	ALERT: Geomagnetic K= 4	11 Dec 0958
11 Dec 1644	WARNING: Geomagnetic K=4	11 Dec 1644-2359
11 Dec 1648	ALERT: Geomagnetic K=4	11 Dec 1648



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 Dec	90	5	2	28 Dec	95	15	4
15	90	8	3	29	95	15	4
16	90	8	3	30	95	10	5
17	85	5	2	31	95	5	2
18	85	5	2	01 Jan	95	5	2
19	85	5	2	02	95	5	2
20	85	5	2	03	95	5	2
21	85	8	3	04	95	5	2
22	80	10	3	05	90	8	3
23	85	5	2	06	85	10	3
24	90	3	1	07	85	20	5
25	90	8	3	08	85	5	2
26	90	3	2	09	85	5	2
27	90	10	3				



Energetic Events

Date	Time		X-ray	Optical Information			Peak		Sweep Freq	
	Begin	Max	Integ	Imp/	Location	Rgn	Radio Flux		Intensity	
			Class	Flux	Lat	CMD	#	245	2695	II

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End	X-ray Class.			
05 December	0756	0759	0802	B1.6			826
	1055	1058	1103	B1.7			826
06 December No flares observed							
07 December	1845	1849	1857	B5.5	Sf	N15E13	830
08 December	0041	0048	0058	B1.5			826
	0315	0337	0359	B4.0			826
	1529	1536	1549	B5.0			826
	1714	1718	1724	B2.1			826
	1743	1752	1800	B3.1			826
	1852	1902	1915	C1.7			
	2133	2141	2152	C1.1			
	2224	2228	2233	B4.5			
	2252	2259	2308	B7.8			
09 December	2231	2238	2245	B3.2			826
10 December	1418	1426	1437	B3.9			834
	1914	1924	1933	B4.5			832
	1950	2000	2012	B8.0			831
	2205	2208	2210	B3.2			834
	2300	2303	2310	B2.9			834
	2346	2353	2355	B4.3			834
11 December	0623	0626	0631	B2.0			
	0835	0839	0845	B3.3			835
	0949	0956	1004	B4.8			835
	1021	1025	1028	B4.4			835
	1226	1231	1243	B3.5			832
	1333	1338	1341	C1.1			835
	1458	1501	1504	B5.8			827
	2026	2029	2031	B3.3			
	2033	2037	2040	B3.8			835
	2108	2114	2116	B8.9			835
	2349	2355	2357	B5.1			835



Region Summary

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

Region 826

28 Nov S02E62	249	0030	04	Cro	003	B													
29 Nov S02E49	249	0030	05	Cso	004	B													
30 Nov S02E36	249	0140	09	Dac	022	Bg		1											
01 Dec S02E22	249	0210	11	Ekc	022	Bgd	5				1								
02 Dec S02E09	249	0490	13	Ekc	032	Bgd	3	3					2						
03 Dec S03W10	255	0380	13	Ekc	021	Bg	4				2	2							
04 Dec S04W21	253	0380	12	Ekc	025	Bg	1						1						
05 Dec S06W35	254	0260	13	Ehc	025	Bg													
06 Dec S07W47	253	0200	11	Ehi	009	Bg													
07 Dec S05W69	261	0080	03	Hsx	001	A													
08 Dec S06W80	259	0090	06	Dao	002	B													
							13	4	0	3	5	0	0	0	0				

Crossed West Limb.

Absolute heliographic longitude: 249

Region 827

30 Nov N08E56	229	0050	04	Dso	003	B												
01 Dec N08E42	229	0050	04	Dro	006	B												
02 Dec N08E29	229																	
03 Dec N08E16	229																	
04 Dec N08E03	229																	
05 Dec N08W10	229																	
06 Dec N08W23	229																	
07 Dec N08W36	229																	
08 Dec N08W49	229																	
							0	0	0	0	0	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 229



Region Summary - continued

Location		Sunspot Characteristics						X-ray			Optical			
Date	(° 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 828

01 Dec S04E42	229	0060	05	Dso	008	B													
02 Dec S04E29	229	0080	07	Dao	008	B													
03 Dec S04E16	229	0070	06	Cao	008	B													
04 Dec S04E04	228	0060	06	Cso	009	B						1							
05 Dec S04W11	230	0020	06	Cso	011	B													
06 Dec S07W22	228	0020	03	Cso	003	B													
07 Dec S07W35	228																		
08 Dec S07W48	228																		
												0	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 228

Region 829

02 Dec N11E02	256	0040	06	Dso	005	B													
03 Dec N11W12	257	0030	03	Dso	004	B													
04 Dec N10W26	258	0010	00	Axx	001	A													
05 Dec N10W39	258																		
06 Dec N10W52	258																		
												0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 256

Region 830

02 Dec N14E78	180	0090	02	Hax	002	A													
03 Dec N14E64	181	0070	06	Cso	002	B						1							
04 Dec N13E51	181	0100	07	Cao	003	B													
05 Dec N13E36	183	0090	02	Hsx	001	A													
06 Dec N12E25	181	0030	04	Cso	004	B													
07 Dec N13E10	182	0060	02	Hsx	001	A							1						
08 Dec N12W01	180	0070	05	Cso	002	B													
09 Dec N11W15	181	0050	02	Hsx	002	A													
10 Dec N12W28	181	0050	05	Cso	004	B													
11 Dec N12W41	181	0040	02	Hax	001	A													
												1	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 180



Region Summary - continued

Location		Sunspot Characteristics						X-ray			Optical				
Date	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	C	M	X	S	1	2	3	4
		Lon													

Region 831

04 Dec S06W07	239	0030	04	Dso	003	B
05 Dec S07W22	241	0050	05	Dai	008	B
06 Dec S08W37	243	0030	02	Bxo	002	B
07 Dec S08W50	243	0000	00		000	
08 Dec S07W58	237	0000	01	Axx	001	A
09 Dec S07W71	237					

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 239

Region 832

08 Dec S14W61	240	0060	08	Dso	006	B
09 Dec S15W72	238	0090	07	Dso	004	B

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 240

Region 833

09 Dec S17W52	218	0030	05	Cso	003	B
10 Dec S17W67	220	0050	06	Bxo	005	B
11 Dec S16W78	218	0050	06	Cao	003	B

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 218

Region 834

09 Dec S07E77	089	0060	01	Hax	001	A
10 Dec S06E63	090	0070	06	Dso	003	B
11 Dec S07E51	089	0030	05	Cao	003	B

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 089



Region Summary - continued

Location		Sunspot Characteristics						Flares															
Date	(° 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 835</i>																							
09 Dec	N19E78	088	0050	01	Hax	001	A																
10 Dec	N19E64	089	0180	07	Dko	003	B																
11 Dec	N18E55	085	0220	09	Dao	004	B	1															
									1	0	0	0	0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 085

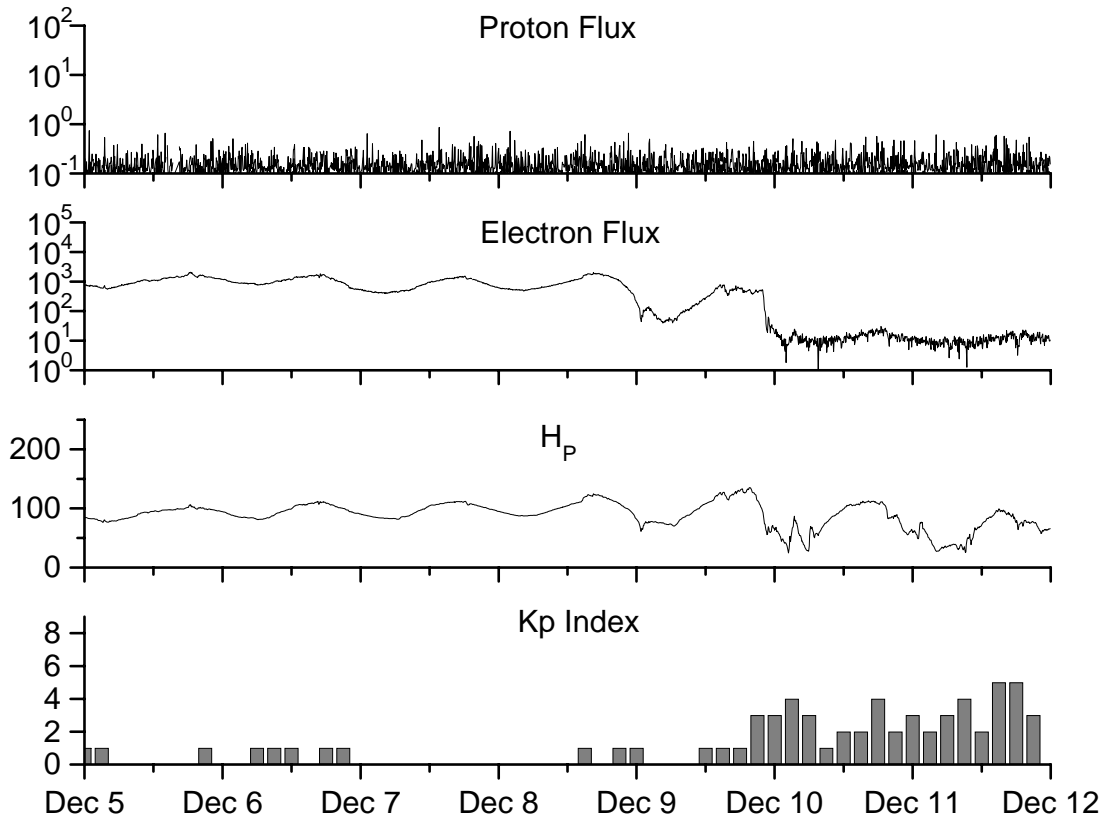


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed SEC	values RI	Ratio RI/SEC	Smooth SEC	values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2003									
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	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
2005									
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	55.8	33.6	90.0	97.2	12	15.3
April	41.5	24.4	0.59	52.6	31.7	85.9	95.5	12	15.7
May	65.4	42.6	0.65	48.3	29.0	99.5	93.2	20	14.8
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	
September	39.2	22.1	0.56			90.8		21	
October	13.0	8.5	0.65			76.7		7	
November	32.2	18.0	0.56			86.3		8	

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 December 2005

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W110) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

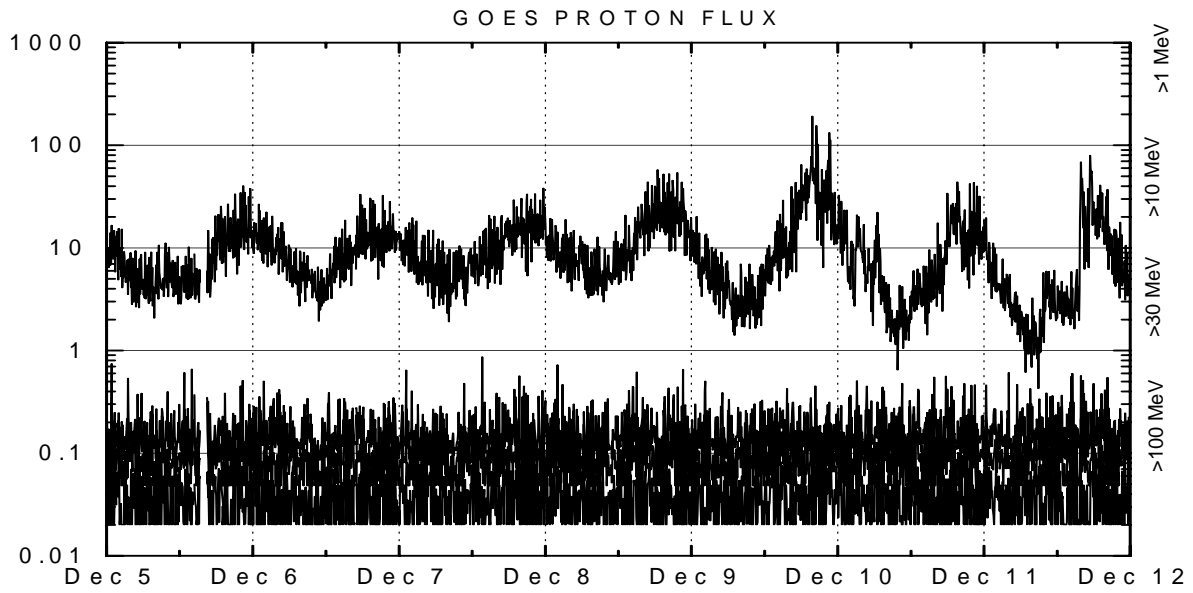
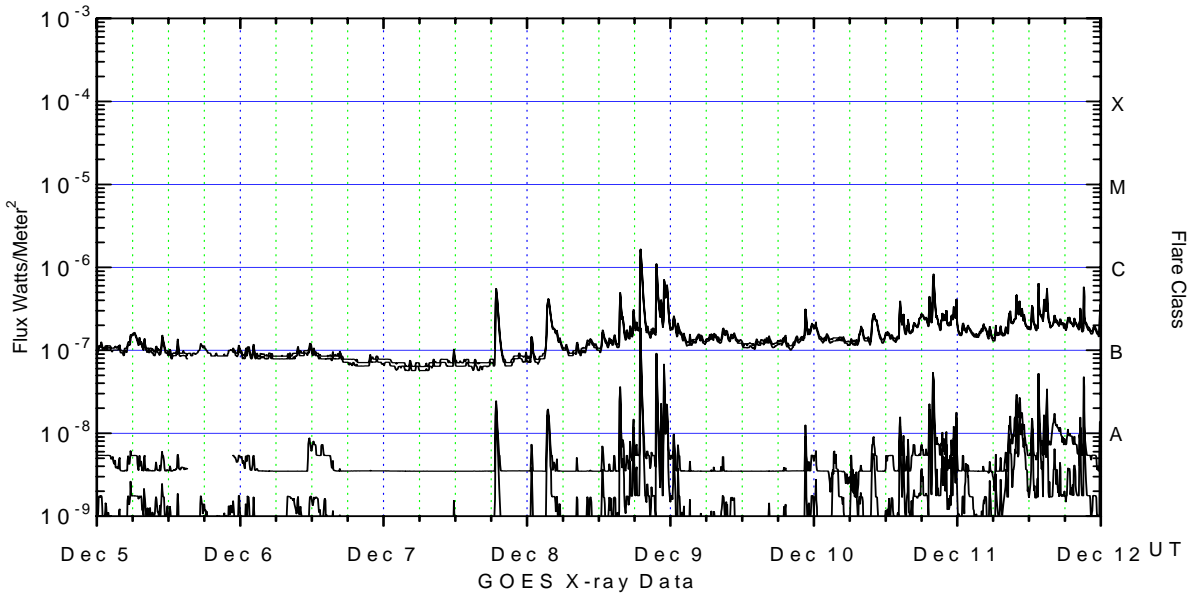
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

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 SEC 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 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/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 (W110) 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.

