

Space Weather Highlights
21 - 27 November 2005

SEC PRF 1578
29 November 2005

Solar activity was at very low to low levels. Region 822 (S08, L=080, class/area, Eki/810 on 15 November) was the largest region on the disk during the period. Since passing central meridian on 18 November, the region showed steady decay, and rotated around the west limb as a simple magnetic spot group. No other significant activity was observed.

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 25 – 27 November.

The geomagnetic field ranged from quiet to unsettled levels at middle latitudes, while high latitudes observed quiet to minor storm conditions. Solar wind speed ranged from a low of approximately 325 km/s late on 22 November to a high of 500 km/s early on 25 November. During the majority of the period, the IMF Bz did not vary much beyond +/- 5 nT. At about 22/2100 UTC, ACE detected a weak shock in the solar wind field. Following the shock, solar wind reached 500 km/s, while the IMF Bz generally turned southward to -7 nT through early on 25 November. During this period, the geomagnetic field remained quiet to unsettled at middle latitudes, while active to minor storm levels were observed at high latitudes. Thereafter, the field was generally quiet to unsettled.

Space Weather Outlook
30 November - 26 December 2005

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 01 – 08 December, and again on 22 – 24 December.

The geomagnetic field is expected to range from quiet to minor storm levels. Active to minor storm levels are possible on 30 November – 02 December due to a recurrent coronal hole high speed wind stream. Otherwise, expect quiet to unsettled conditions.



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
21 November	95	45	590	A9.8	0	0	0	0	0	0	0	0
22 November	93	36	600	A8.2	0	0	0	0	0	0	0	0
23 November	90	35	410	A6.4	0	0	0	0	0	0	0	0
24 November	87	30	320	A7.0	0	0	0	0	0	0	0	0
25 November	80	39	210	A6.7	0	0	0	0	0	0	0	0
26 November	81	30	80	A7.8	1	0	0	0	0	0	0	0
27 November	81	26	70	A5.7	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
	21 November	7.2E+5	1.5E+4	3.3E+3		2.4E+6
22 November	7.2E+5	1.4E+4	3.4E+3		1.8E+6	
23 November	2.1E+5	1.4E+4	3.4E+3		1.7E+6	
24 November	3.9E+5	1.4E+4	3.3E+3		5.4E+6	
25 November	5.7E+5	1.5E+4	3.2E+3		7.3E+7	
26 November	4.5E+5	1.4E+4	3.2E+3		1.3E+8	
27 November	4.4E+5	1.4E+4	3.0E+3		1.1E+8	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	21 November	2	1-2-0-0-1-1-1-0	2	2-1-0-1-1-1-0-0	3
22 November	3	0-0-2-1-1-1-1-2	14	0-0-4-5-4-2-1-1	6	0-1-2-2-2-2-2-2
23 November	12	2-3-3-3-3-3-2-2	*	*-*-*-*-*-*-*	8	1-3-3-2-2-2-1-2
24 November	6	1-1-1-3-1-2-1-2	16	1-1-2-5-3-4-3-2	9	1-1-2-3-2-2-3-3
25 November	8	3-3-3-1-1-1-1-1	17	3-3-4-4-4-3-1-1	10	3-4-3-2-1-2-2-1
26 November	3	2-0-2-1-1-1-0-0	10	1-0-2-5-3-2-1-0	5	2-0-2-2-2-1-0-1
27 November	2	0-0-2-0-0-1-0-1	1	0-0-1-1-0-0-0-0	2	0-0-1-1-0-1-0-1

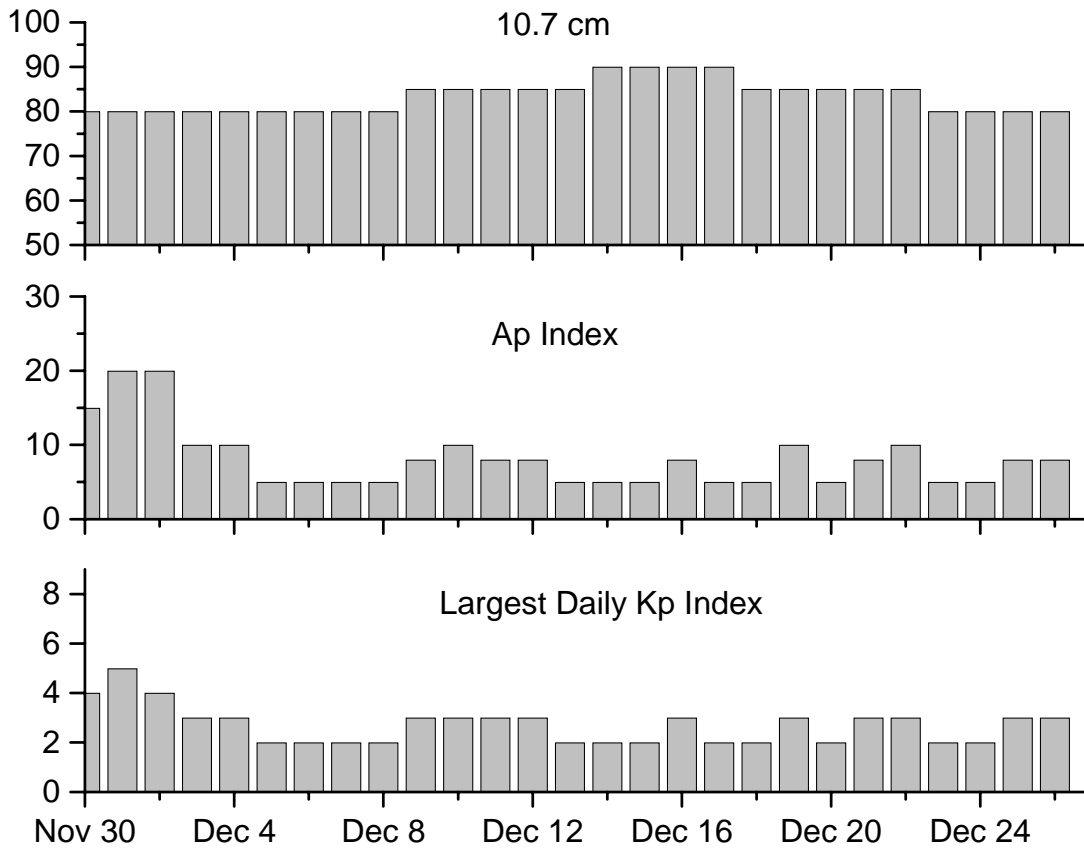


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UTC</u>
21 Nov 0012	1 – 245 MHz Radio Noise Storm	20 Nov
22 Nov 0014	1 – 245 MHz Radio Noise Storm	21 Nov
23 Nov 0035	2 – 245 MHz Radio Bursts	22 Nov
24 Nov 0033	1 – 245 MHz Radio Burst	23 Nov
24 Nov 1107	ALERT: Geomagnetic K=4	24 Nov 1106
25 Nov 0032	WARNING: Geomagnetic K=4	25 Nov 0035 - 1600
25 Nov 0130	ALERT: Geomagnetic K=4	25 Nov 0129
25 Nov 1426	ALERT: Electron 2MeV Integral Flux > 1000pfu	25 Nov 1400
26 Nov 0055	2 – 245 MHz Radio Bursts	25 Nov
26 Nov 0523	ALERT: Electron 2MeV Integral Flux > 1000pfu	26 Nov 0500
27 Nov 1041	ALERT: Electron 2MeV Integral Flux > 1000pfu	27 Nov 1020



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
30 Nov	80	15	4	14 Dec	90	5	2
01 Dec	80	20	5	15 Dec	90	5	2
02 Dec	80	20	4	16 Dec	90	8	3
03 Dec	80	10	3	17 Dec	90	5	2
04 Dec	80	10	3	18 Dec	85	5	2
05 Dec	80	5	2	19 Dec	85	10	3
06 Dec	80	5	2	20 Dec	85	5	2
07 Dec	80	5	2	21 Dec	85	8	3
08 Dec	80	5	2	22 Dec	85	10	3
09 Dec	85	8	3	23 Dec	80	5	2
10 Dec	85	10	3	24 Dec	80	5	2
11 Dec	85	8	3	25 Dec	80	8	3
12 Dec	85	8	3	26 Dec	80	8	3
13 Dec	85	5	2				



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	Rgn
	Begin	Max	End	X-ray Class.		Lat	
21 November	0024	0030	0038	B4.6			824
	0334	0338	0340	B2.1			822
	0816	0847	0859	B2.6			822
	0945	0956	1002	B8.2			824
	1159	1204	1207	B4.1			822
	1243	1250	1254	B4.0			824
	1602	1605	1609	B1.6			824
22 November	0112	0119	0126	B2.9			824
	0200	0213	0222	B3.6			824
	0414	0417	0423	B1.4			824
	1509	1516	1519	B7.7			822
	1901	1906	1911	B1.5			824
23 November	2145	2150	2155	B1.5			824
	0320	0328	0338	B3.9			822
	0645	0650	0657	B1.9			822
	1607	1611	1614	B1.9			822
	1851	1858	1904	B1.3			822
24 November	2049	2052	2054	B1.2			
	0346	0356	0404	B4.9			822
	0547	0550	0552	B1.3			822
	1111	1118	1124	B1.9			822
25 November	1606	1611	1621	B1.5			822
	0406	0410	0412	B1.9			822
	1354	1407	1423	B1.6			
	1600	1604	1606	B1.6			822
26 November	1723	1727	1729	B1.1			822
	2351	2355	0000	B1.8			
	0331	0409	0423	C1.0			822
	0631	0705	0749	B8.9			824
27 November	1653	1658	1701	B1.7			824
	No Flares Observed						



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 822</i>																		
12 Nov	S04E81	080	0120	02	Hsx	001	A	2										
13 Nov	S06E66	082	0120	08	Cao	006	B	6	1			3						
14 Nov	S06E55	080	0610	14	Ehi	016	Bg	6	3			5	1					
15 Nov	S08E41	080	0810	14	Eki	022	Bg	9	1			1						
16 Nov	S08E28	080	0740	16	Fki	048	Bg	1										
17 Nov	S07E15	080	0720	17	Fki	052	Bg	2				2						
18 Nov	S07E02	080	0690	18	Fkc	041	Bg	2	1			2						
19 Nov	S08W12	081	0610	16	Fkc	026	Bg	1				1						
20 Nov	S08W25	080	0570	16	Fki	022	Bg	2										
21 Nov	S08W37	079	0480	15	Eko	009	B											
22 Nov	S07W51	080	0480	18	Fko	011	Bg											
23 Nov	S07W63	080	0320	14	Eko	006	B											
24 Nov	S09W81	085	0250	08	Cho	004	B											
25 Nov	S09W97	088	0120	02	Hax	001	A											
								31	6	0	14	1	0	0	0	0		

Crossed West Limb.

Absolute heliographic longitude: 080

Region 823

19 Nov	S18W37	106	0040	04	Dso	006	B											
20 Nov	S17W50	105	0040	04	Dso	003	B											
21 Nov	S15W63	105	0030	05	Cso	002	B											
22 Nov	S15W76	105																
23 Nov	S15W89	105																
								0	0	0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 106

Region 824

20 Nov	S13E68	347	0090	02	Hax	001	A											
21 Nov	S12E57	345	0080	08	Cao	004	B											
22 Nov	S12E46	343	0120	09	Dao	005	B											
23 Nov	S14E32	345	0090	09	Dao	009	B											
24 Nov	S13E19	345	0070	06	Cso	006	B											
25 Nov	S12E05	346	0070	03	Cso	004	B											
26 Nov	S14W06	343	0070	07	Dso	006	B											
27 Nov	S14W20	344	0060	05	Cso	004	B											
								0	0	0	0	0	0	0	0	0	0	

Still on Disk.

Absolute heliographic longitude: 346



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 825</i>																						
25 Nov	S06E12	339	0020	05	Dao	004	B															
26 Nov	S06E00	337	0010	05	Bxo	004	B															
27 Nov	S03W10	334	0010	02	Axx	002	A															
																						0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 337

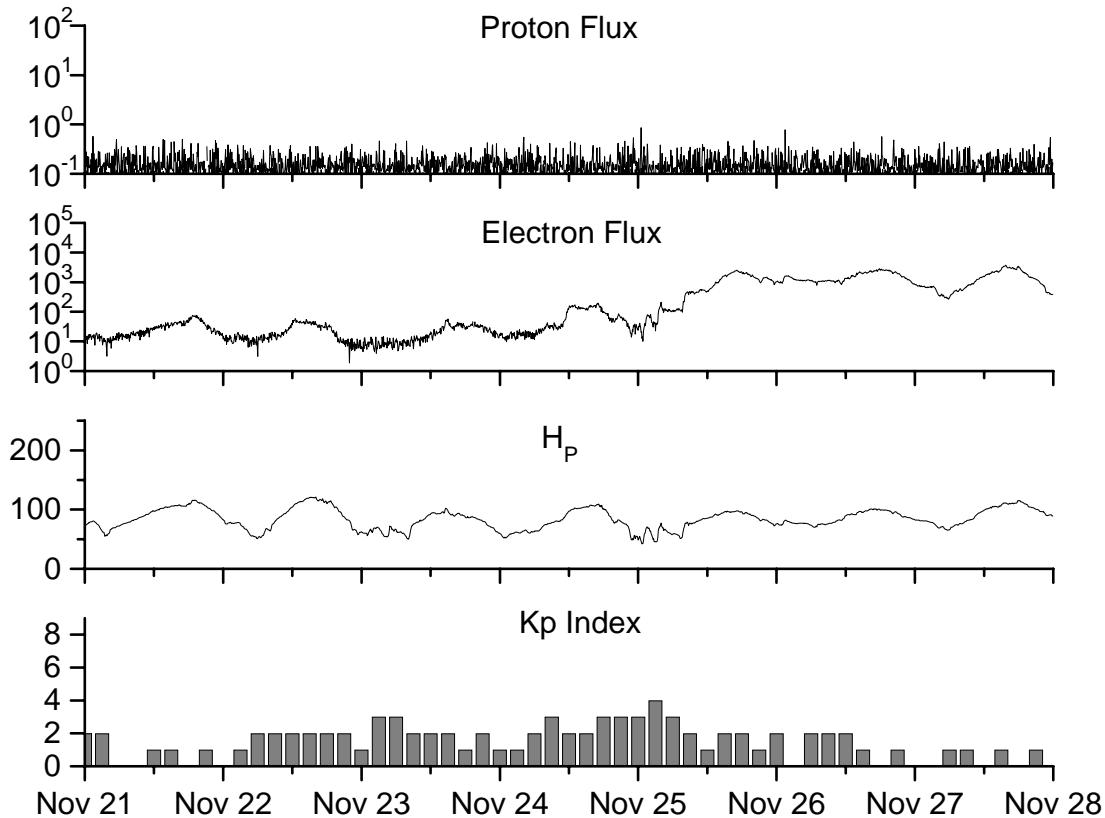


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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									
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	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			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	
September	39.2	22.1	0.56			90.8		21	
October	13.0	8.5	0.65			76.7		7	

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 21 November 2005

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W112) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

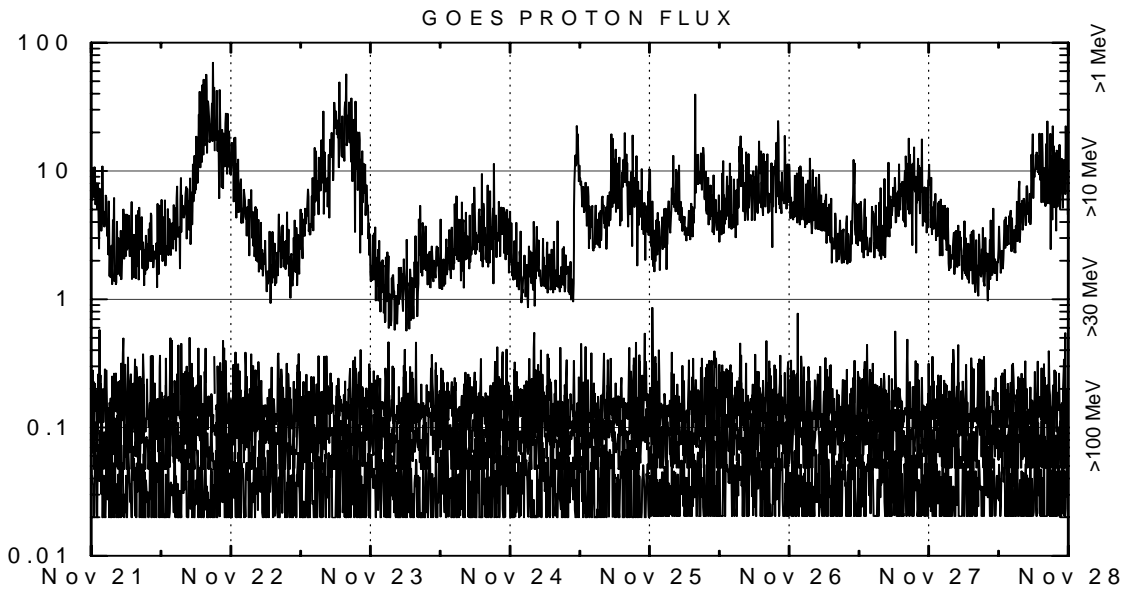
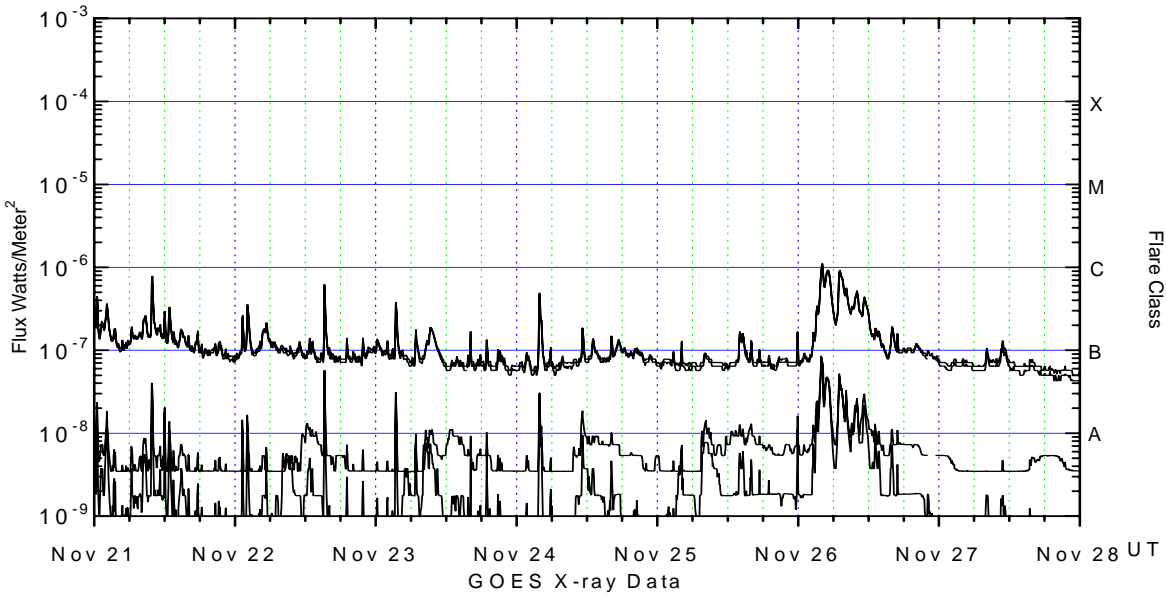
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W76).

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 (W76) 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 (W112) 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.

