

**Space Weather Highlights**  
**27 August – 02 September 2007**

**SEC PRF 1670**  
**04 September 2007**

Solar activity was very low.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 28 – 31 August and again on 02 September.

The geomagnetic field was at quiet to active levels during 27 – 28 August with brief minor to major storm periods detected at middle and high latitudes, respectively, on 28 August. Activity declined to quiet levels at all latitudes during 29 – 30 August. Activity increased to quiet to unsettled levels during 31 August – 01 September with active to minor storm periods detected at high latitudes on 01 September. A further increase to quiet to minor storm levels occurred on the last day of the period with major storm periods detected at high latitudes. ACE solar wind data indicated two recurrent high-speed streams affected the field during the summary period. The first stream commenced late on 26 August and eventually reached a peak velocity of 695 km/sec at 27/1848 UTC. The proton density increase in advance of this stream reached a peak of 71 p/cc at 26/1627 UTC. IMF variance associated with the stream included a peak IMF  $B_t$  of 21 nT at 26/1711 UTC and a minimum IMF  $B_z$  reading of

-12 nT at 26/1952 UTC. The second stream commenced late on 31 August and eventually reached a peak velocity of 682 km/sec at 02/2141 UTC. The proton density increase in advance of this stream was negligible. IMF variance associated with the stream included a peak IMF  $B_t$  of 11 nT at 01/2354 UTC and a minimum IMF  $B_z$  reading of -09 nT at 02/0001 UTC.

**Space Weather Outlook**  
**05 September – 01 October 2007**

Solar activity is expected to be very low.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels during 05 – 10 September and 24 September – 01 October.

Geomagnetic field activity is expected to be at quiet levels on 05 September. Activity is expected to increase to unsettled to active levels on 06 September due to a recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected during 07 -08 September. Activity is expected to increase to unsettled to minor storm levels during 29 – 30 September as another recurrent coronal hole high-speed stream affects the field. Activity is expected to decrease to quiet to unsettled levels on 01 October as coronal hole effects subside.



### 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
27 August	69	12	100	<A1.0	0	0	0	0	0	0	0	0
28 August	70	14	110	<A1.0	0	0	0	0	0	0	0	0
29 August	70	13	100	<A1.0	0	0	0	0	0	0	0	0
30 August	72	15	90	<A1.0	0	0	0	0	0	0	0	0
31 August	71	14	120	<A1.0	0	0	0	1	0	0	0	0
01 September	71	26	80	<A1.0	0	0	0	0	0	0	0	0
02 September	69	14	30	<A1.0	0	0	0	0	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
27 August	1.6E+6	1.6E+4	3.5E+3		1.5E+6	
28 August	4.4E+6	1.6E+4	3.5E+3		7.9E+7	
29 August	1.6E+6	1.6E+4	3.5E+3		1.1E+8	
30 August	1.4E+6	1.6E+4	3.5E+3		1.0E+8	
31 August	1.9E+6	1.6E+4	3.8E+3		1.2E+8	
01 September	1.3E+6	1.7E+4	3.7E+3		6.8E+6	
02 September	3.0E+6	1.7E+4	3.5E+3		6.3E+7	

### Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg			High Latitude College			Estimated Planetary	
	A	K-indices		A	K-indices		A	K-indices
27 August	10	3-2-3-1-2-2-3-2		13	3-1-4-4-2-1-3-2		12	3-2-4-2-2-2-3-3
28 August	9	2-2-3-4-2-1-1-1		18	2-2-3-6-4-1-1-1		11	3-2-3-4-2-2-2-2
29 August	4	1-0-2-1-1-1-2-1		3	1-1-1-0-1-1-1-1		4	2-0-1-1-1-1-1-2
30 August	4	2-1-1-1-1-1-1-2		2	1-1-2-0-0-0-1-1		6	2-2-1-1-2-2-1-2
31 August	7	1-2-1-1-1-1-3-3		6	1-1-1-3-2-1-2-2		7	1-1-1-2-2-2-3-3
01 September	9	1-2-3-3-2-1-2-3		18	2-1-5-5-4-1-1-2		11	2-2-3-3-2-2-2-3
02 September	17	3-5-3-2-3-2-3-2		38	4-5-5-6-5-4-3-2		23	4-5-3-4-4-2-4-3

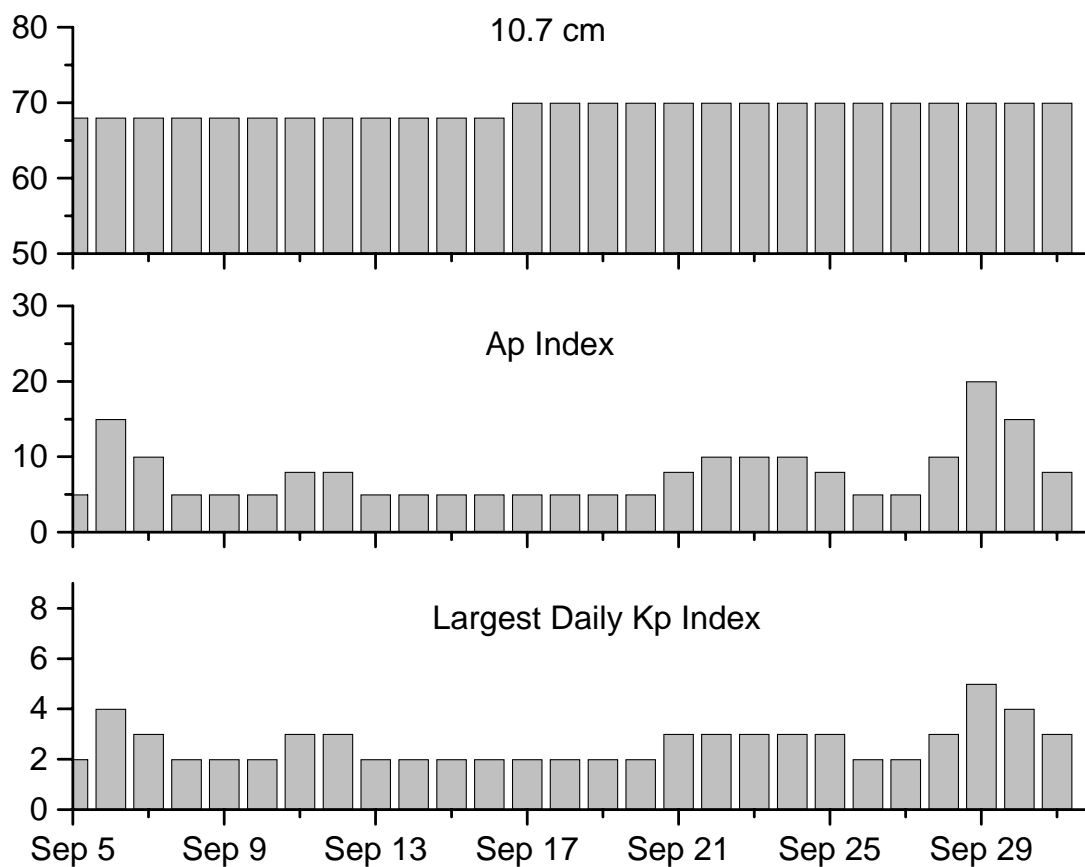


### *Alerts and Warnings Issued*

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
27 Aug 0640	WARNING: Geomagnetic K=4	27 Aug 0640 - 1600
27 Aug 0642	ALERT: Geomagnetic K=4	27 Aug 0642
28 Aug 0921	WARNING: Geomagnetic K=4	28 Aug 0921 - 1600
28 Aug 0924	ALERT: Geomagnetic K=4	28 Aug 0923
28 Aug 0930	WARNING: Geomagnetic K=5	28 Aug 0930 - 1200
28 Aug 0931	ALERT: Geomagnetic K=5	28 Aug 0931
28 Aug 1317	ALERT: Electron 2MeV Integral Flux >1000pfu	28 Aug 1255
29 Aug 1018	ALERT: Electron 2MeV Integral Flux >1000pfu	29 Aug 0955
30 Aug 1006	ALERT: Electron 2MeV Integral Flux >1000pfu	30 Aug 0945
31 Aug 1109	ALERT: Electron 2MeV Integral Flux >1000pfu	31 Aug 1045
01 Sep 0642	WARNING: Geomagnetic K=4	01 Sep 0645 - 1600
01 Sep 1109	ALERT: Geomagnetic K=4	01 Sep 1105
02 Sep 0312	ALERT: Geomagnetic K=4	02 Sep 0309
02 Sep 0402	ALERT: Geomagnetic K=5	02 Sep 0400
02 Sep 0410	WARNING: Geomagnetic K=4	02 Sep 0410 - 1600
02 Sep 0951	WARNING: Geomagnetic K=5	02 Sep 1000 - 1600
02 Sep 1000	ALERT: Geomagnetic K=5	02 Sep 1000
02 Sep 1227	ALERT: Electron 2MeV Integral Flux >1000pfu	02 Sep 1205
02 Sep 2043	WARNING: Geomagnetic K=4	02 Sep 2042 - 03/1600
02 Sep 2046	ALERT: Geomagnetic K=4	02 Sep 2045



# *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
05 Sep	68	5	2	19 Sep	70	5	2
06	68	15	4	20	70	5	2
07	68	10	3	21	70	8	3
08	68	5	2	22	70	10	3
09	68	5	2	23	70	10	3
10	68	5	2	24	70	10	3
11	68	8	3	25	70	8	3
12	68	8	3	26	70	5	2
13	68	5	2	27	70	5	2
14	68	5	2	28	70	10	3
15	68	5	2	29	70	20	5
16	68	5	2	30	70	15	4
17	70	5	2	01 Oct	70	8	3
18	70	5	2				



### Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	$\frac{1}{2}$		Integ		Imp/	Location		Radio Flux		Intensity	
	Begin	Max	Max	Class	Flux	Brtns	Lat CMD	#	245	2695	II IV

*No Events Observed*

### Flare List

Date	Time			Optical	Imp / Brtns	Location		Rgn
	Begin	Max	End	X-ray Class.		Lat	CMD	

27 August **No Flares Observed**

28 August **No Flares Observed**

29 August **No Flares Observed**

30 August **No Flares Observed**

31 August 0154 0159 0204 B1.1

0536 0537 0539 Sf S07W49 969

0649 0653 0657 B1.5

1618 1622 1628 B1.1

01 September 2103 2106 2109 B1.1

02 September 0234 0237 0239 B1.1

1526 1529 1532 B1.2

### Region Summary

Location			Sunspot Characteristics											
			Flares											
Date	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

#### Region 969

21 Aug S06E73	189	0090	07	Hsx	001	A									
22 Aug S06E61	187	0100	03	Hsx	002	A									
23 Aug S05E47	188	0100	02	Hax	002	A									
24 Aug S05E35	187	0090	02	Hax	002	A	1				3				
25 Aug S05E22	187	0110	04	Cso	004	B									
26 Aug S05E08	188	0080	04	Hhx	003	A									
27 Aug S05W05	188	0100	03	Hax	002	A									
28 Aug S05W19	188	0110	02	Cso	004	B									
29 Aug S05W30	186	0100	04	Cho	003	B									
30 Aug S06W45	188	0090	06	Hsx	005	A									
31 Aug S08W58	188	0120	05	Dso	004	B					1				
01 Sep S06W72	189	0030	01	Hrx	001	A									
02 Sep S06W86	189														
1 0 0 4 0 0 0 0															

Still on Disk.

Absolute heliographic longitude: 188



### ***Region Summary- Continued***

Region Summary - Continued														
Location			Sunspot Characteristics											
			Flares											
Date	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

#### *Region 970*

01 Sep S06W07    124    0050    06    Cso    005    B

02 Sep S07W21    124    0030    04    Cso    004    B

0   0   0   0   0   0   0   0

Still on Disk.

Absolute heliographic longitude: 124

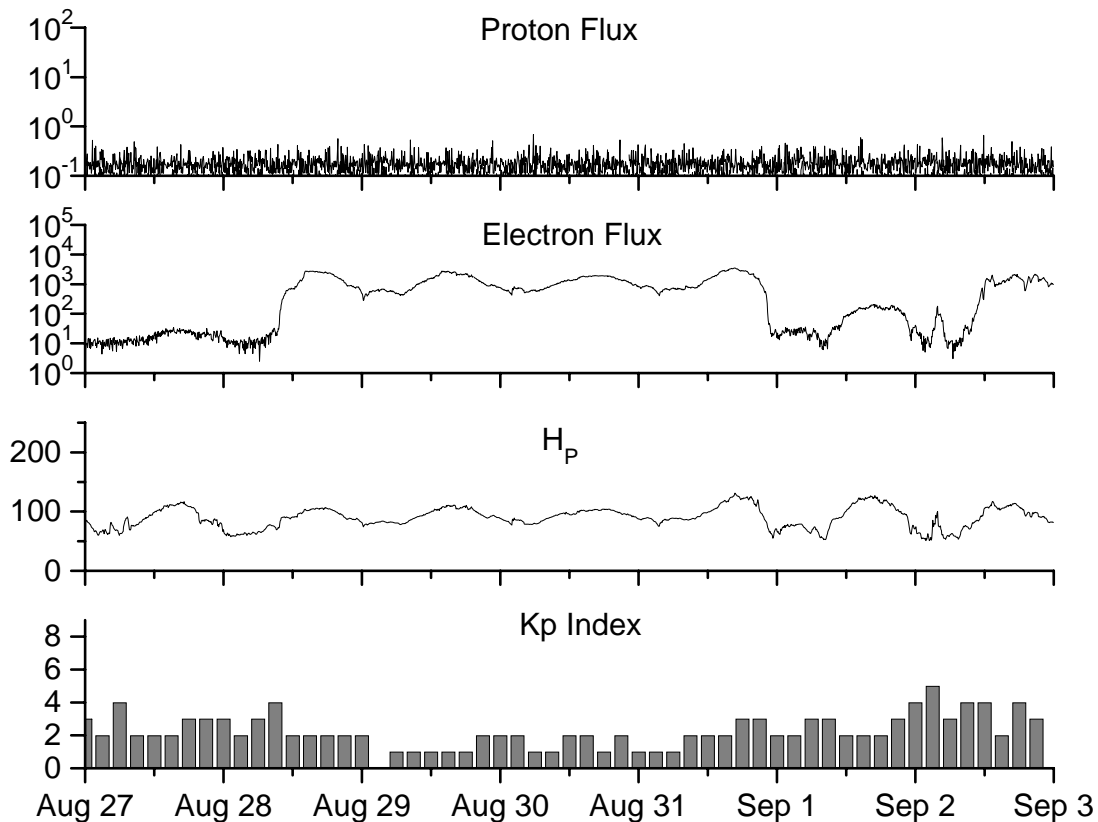


**Recent Solar Indices (preliminary)  
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	Observed values	Ratio	Smooth values		*Penticton	Smooth	Planetary	Smooth	
	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
2005									
August	65.6	36.4	0.55	45.4	27.5	90.7	89.3	16	12.2
September	39.2	22.1	0.56	42.9	25.9	90.8	87.8	21	11.8
October	13.0	8.5	0.65	42.6	25.5	76.7	87.4	7	11.6
November	32.2	18.0	0.56	42.1	24.9	86.3	86.7	8	11.1
December	62.6	41.2	0.66	40.1	23.0	90.8	85.4	7	10.4
2006									
January	28.0	15.4	0.55	37.2	20.8	83.8	84.0	6	9.9
February	5.3	4.7	0.89	33.4	18.7	76.6	82.6	6	9.2
March	21.3	10.8	0.51	31.0	17.4	75.5	81.6	8	8.4
April	55.2	30.2	0.55	30.6	17.1	89.0	80.9	11	7.9
May	39.6	22.2	0.56	30.7	17.3	81.0	80.8	8	7.9
June	37.7	13.9	0.37	28.9	16.3	80.1	80.6	9	8.3
July	22.6	12.2	0.54	27.2	15.3	75.8	80.3	7	8.7
August	22.8	12.9	0.57	27.6	15.6	79.0	80.3	9	8.7
September	25.2	14.5	0.58	27.7	15.6	77.8	80.2	8	8.7
October	15.7	10.4	0.66	25.2	14.2	74.3	79.4	8	8.6
November	31.5	21.5	0.68	22.3	12.7	86.4	78.5	9	8.5
December	22.2	13.6	0.61	20.7	12.1	84.3	77.9	15	8.5
2007									
January	26.6	16.9	0.64	19.7	12.0	83.5	77.5	6	8.4
February	17.2	10.6	0.62			77.8		6	
March	9.7	4.8	0.49			72.3		7	
April	6.9	3.7	0.54			72.4		9	
May	19.4	11.7	0.60			74.5		8	
June	20.0	12.0	0.60			73.7		7	
July	15.6	10.0	0.64			71.6		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 27 August 2007*

Protons plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec-sr) as measured by GOES-11 (W135) 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 (W075).

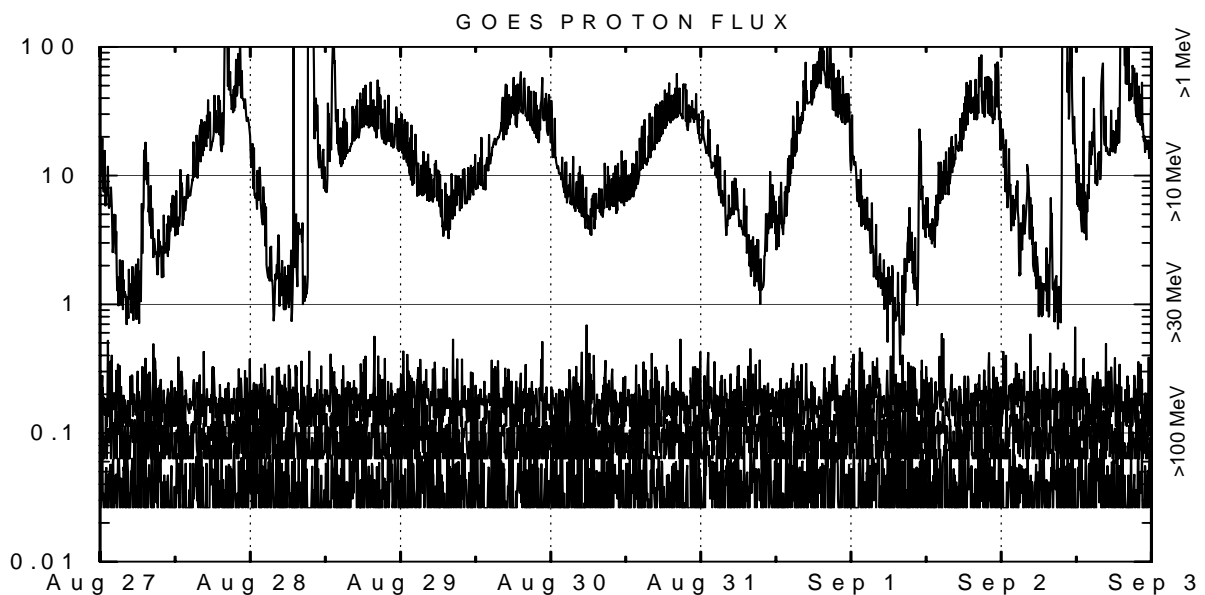
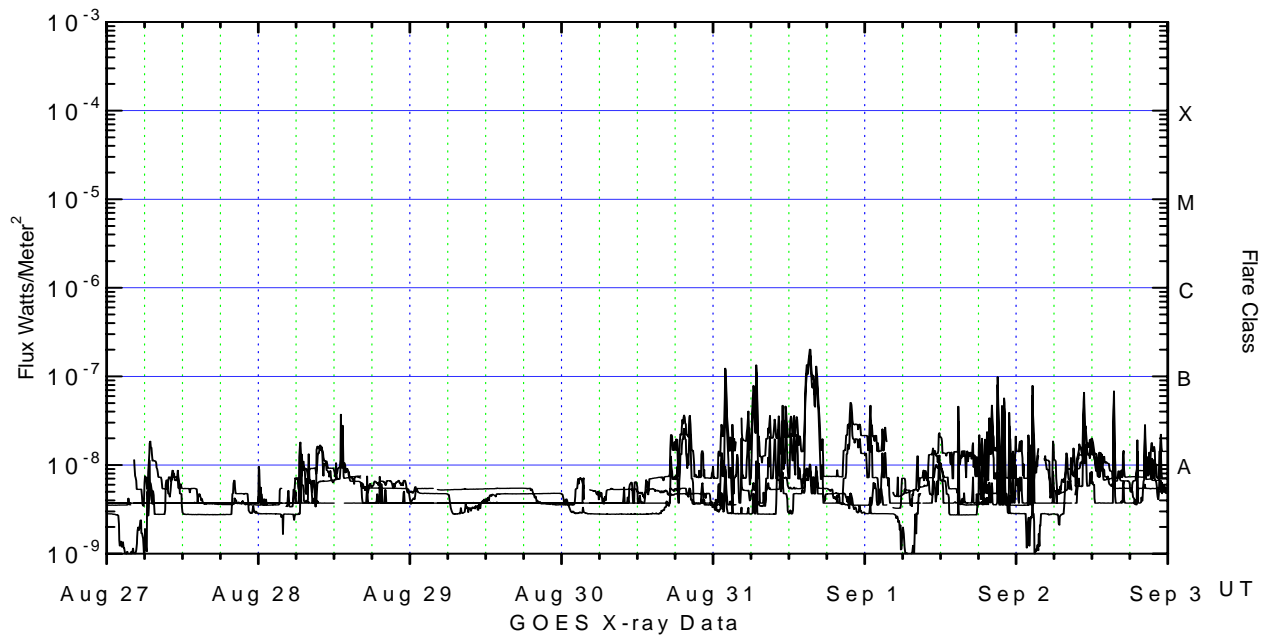
$H_p$  plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

Kp 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 Kp 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 Kp 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 10 (W060) and GOES 11 (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 (W135) 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.

