

Space Weather Highlights
06 October - 12 October 2008

SWPC PRF 1728
14 October 2008

Solar activity was very low. No flares were observed. New-cycle polarity Region 1005 (N26, L = 119, class/area Cro/070 on 12 October) emerged on 11 October and was quiet and stable during the rest of the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 06 - 10 October and 12 October.

Geomagnetic field activity was at mostly quiet levels during 06 - 10 October. Activity increased to as high as severe storm levels on 11 October. Activity decreased to active levels on 12 October with minor storm levels observed at high latitudes. ACE solar wind observations indicated a recurrent coronal hole high-speed stream (CH HSS) disturbed the field during 11 - 12 October. A co-rotating interaction region (CIR) was observed on 11 October in advance of the CH HSS. Solar wind changes associated with the CIR included a plasma density increase (peak 40 p/cc at 11/0648 UTC), increased IMF Bt (peak 16 nT at 11/0729 UTC), and periods of sustained southward IMF Bz (minimum -14 nT at 11/0729 UTC). The velocity increase associated with CH HSS began early on 11 October and continued into 12 October with a peak velocity of 598 km/sec observed at 12/0432 UTC.

Space Weather Outlook
15 October - 10 November 2008

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 15 October, 30 October - 06 November, and 08 - 10 November.

Geomagnetic field activity is expected to be at quiet levels during 15 - 27 October. Activity is expected to increase to active levels during 28 - 29 October due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to unsettled levels during 30 - 31 October as the high-speed stream subsides. Quiet conditions are expected during 01 - 06 November. Activity is expected to increase to minor to major storm levels on 07 November due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to active levels on 08 November and then decrease to unsettled levels during Tuesday, October 14, 2008 09 - 10 November as the high-speed stream subsides.



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	
06 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0	0
07 October	67	0	0	<A1.0	0	0	0	0	0	0	0	0	0
08 October	68	0	0	<A1.0	0	0	0	0	0	0	0	0	0
09 October	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
10 October	69	12	10	<A1.0	0	0	0	0	0	0	0	0	0
11 October	71	16	40	<A1.0	0	0	0	0	0	0	0	0	0
12 October	70	16	70	<A1.0	0	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
	06 October	1.1E+6	1.8E+4	3.9E+3		4.0E+8
07 October	9.9E+5	1.8E+4	3.9E+3		3.9E+8	
08 October	1.2E+6	1.9E+4	4.1E+3		3.4E+8	
09 October	1.2E+6	1.9E+4	4.1E+3		3.1E+8	
10 October	1.3E+6	1.9E+4	4.5E+3		1.8E+8	
11 October	4.0E+6	1.9E+4	4.2E+3		3.2E+6	
12 October	2.5E+6	1.8E+4	4.0E+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
	06 October	3	1-3-0-0-0-1-0-1	3	1-1-1-3-0-0-0-1	4
07 October	1	0-0-0-0-1-1-1-0	1	0-0-0-0-0-1-1-0	3	0-0-0-0-2-2-1-1
08 October	2	1-1-0-0-2-1-0-1	0	0-0-0-0-0-0-0-0	2	1-0-0-0-1-0-0-1
09 October	1	0-0-0-0-1-0-1-0	0	0-0-0-0-0-0-0-0	2	0-0-0-0-1-1-1-1
10 October	2	0-0-0-1-2-1-0-1	2	0-0-1-2-1-0-0-0	3	0-0-0-1-1-1-0-1
11 October	20	1-3-3-3-4-5-4-2	40	1-1-5-5-6-6-5-2	37	1-2-3-4-6-7-5-2
12 October	10	4-2-3-2-2-2-1-2	26	3-2-5-5-5-4-2-2	13	4-3-3-3-3-2-2-3

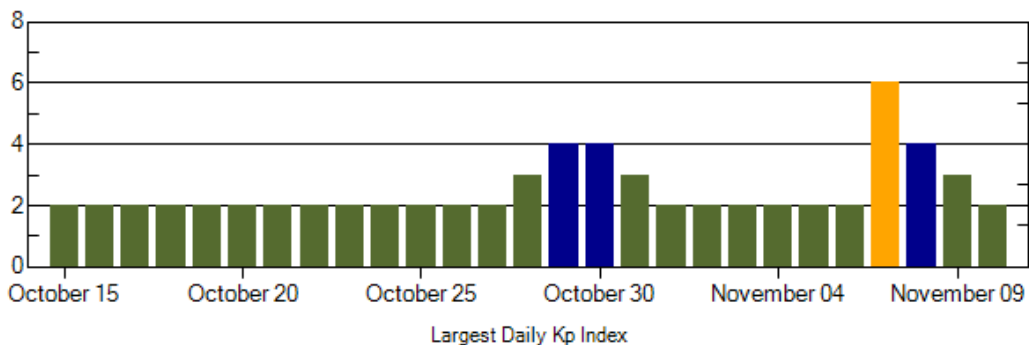
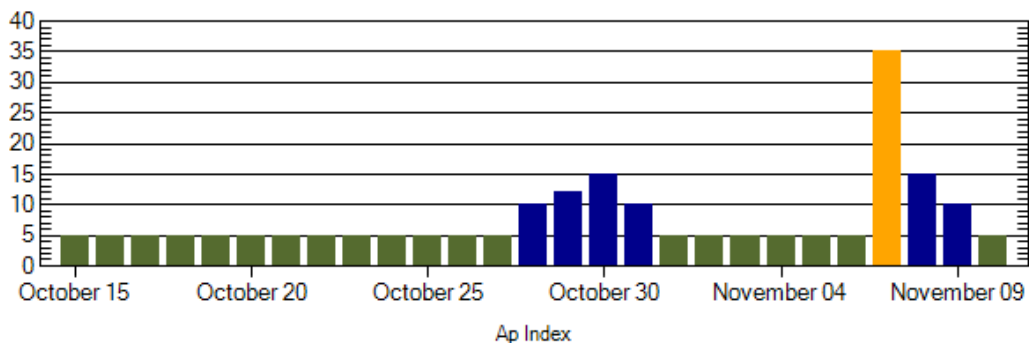
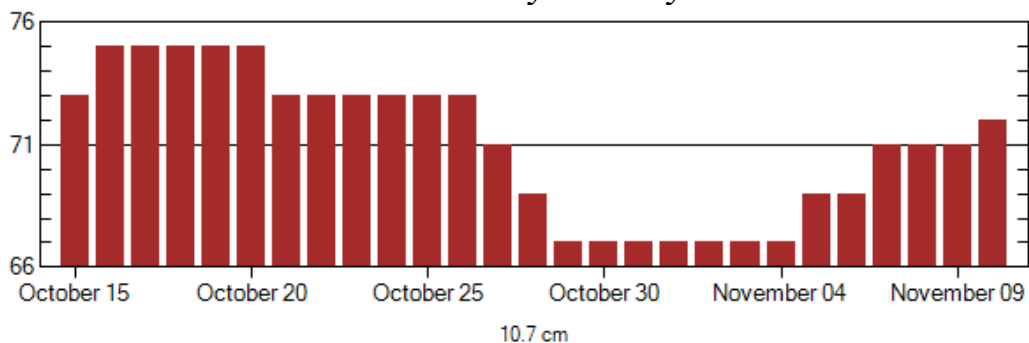


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
06 Oct 0500	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	06 Oct 0500
07 Oct 0501	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	07 Oct 0500
08 Oct 0501	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	08 Oct 0500
09 Oct 0501	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	09 Oct 0500
10 Oct 0500	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	10 Oct 0500
11 Oct 0715	WARNING: Geomagnetic K = 4	11 Oct 0715 - 1600
11 Oct 0939	ALERT: Geomagnetic K = 4	11 Oct 0938
11 Oct 0953	WARNING: Geomagnetic K = 5	11 Oct 0955 - 1200
11 Oct 1155	ALERT: Geomagnetic K = 5	11 Oct 1154
11 Oct 1428	ALERT: Geomagnetic K = 5	11 Oct 1426
11 Oct 1429	WARNING: Geomagnetic K = 5	11 Oct 1429 - 1800
11 Oct 1506	EXTENDED WARNING: Geomagnetic K = 4	11 Oct 0715 - 2359
11 Oct 1734	ALERT: Geomagnetic K = 5	11 Oct 1734
11 Oct 2353	EXTENDED WARNING: Geomagnetic K = 4	11 Oct 0715 - 12/1600
12 Oct 1341	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	12 Oct 1325
12 Oct 1557	EXTENDED WARNING: Geomagnetic K = 4	11 Oct 0715 - 12/2359



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
15 Oct	73	5	2	29 Oct	67	12	4
16	75	5	2	30	67	15	4
17	75	5	2	31	67	10	3
18	75	5	2	01 Nov	67	5	2
19	75	5	2	02	67	5	2
20	75	5	2	03	67	5	2
21	73	5	2	04	67	5	2
22	73	5	2	05	69	5	2
23	73	5	2	06	69	5	2
24	73	5	2	07	71	35	6
25	73	5	2	08	71	15	4
26	73	5	2	09	71	10	3
27	71	5	2	10	72	5	2
28	69	10	3				



Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical	Rgn
	Begin	Max	End			Location Lat CMD	
06 Oct	<i>No Flares Observed</i>						
07 Oct	<i>No Flares Observed</i>						
08 Oct	<i>No Flares Observed</i>						
09 Oct	<i>No Flares Observed</i>						
10 Oct	<i>No Flares Observed</i>						
11 Oct	<i>No Flares Observed</i>						
12 Oct	<i>No Flares Observed</i>						

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

Region 1003

04 Oct	S23E28	222	0010	01	Axx	002	A										
05 Oct	S23E15	222															
06 Oct	S23E02	222															
07 Oct	S23W11	222															
08 Oct	S23W24	222															
09 Oct	S23W37	222															
10 Oct	S23W50	222															
11 Oct	S23W63	222															
12 Oct	S23W76	222															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 222

Region 1004

10 Oct	S08W17	188	0010	01	Axx	002	A										
11 Oct	S08W30	188															
12 Oct	S08W43	188															

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 188



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 1005</i>																	
11 Oct	N26E42	116	0040	03	Bxi	006	B										
12 Oct	N27E28	117	0070	06	Cro	006	B										
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 117																	



Recent Solar Indices (preliminary)
Of the observed monthly mean values

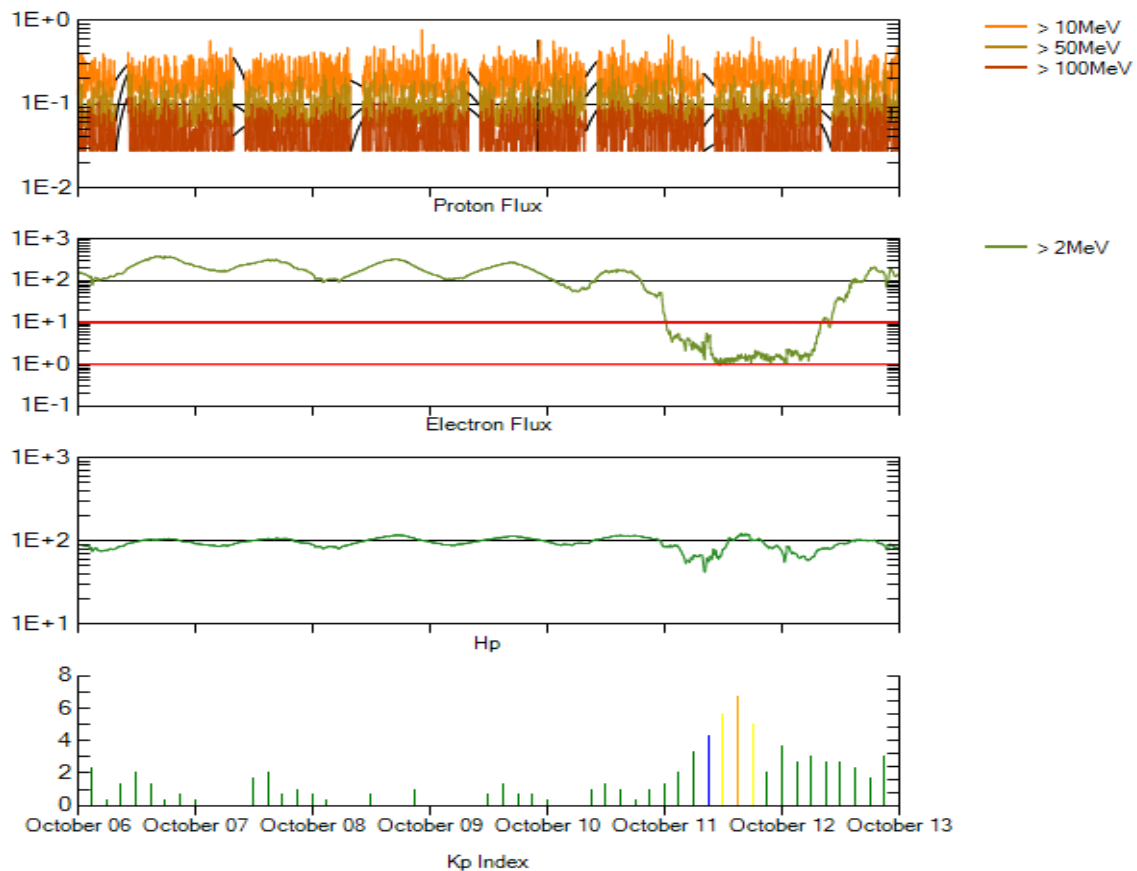
Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SEC	Ratio RI	Ratio RI/SEC	Smooth values SEC	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2006									
October	15.7	10.4	0.66	25.2	14.2	74.3	79.4	8	8.6
November	31.5	21.5	0.68	22.3	12.7	86.4	78.5	9	8.5
December	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	18.9	11.6	77.8	76.9	6	8.4
March	9.7	4.8	0.49	17.5	10.8	72.3	76.0	8	8.4
April	6.9	3.7	0.54	16.0	9.9	72.4	75.2	9	8.5
May	19.4	11.7	0.60	14.2	8.7	74.5	74.2	9	8.4
June	20.0	12.0	0.60	12.8	7.7	73.7	73.2	7	7.8
July	15.6	10.0	0.64	11.6	7.0	71.6	72.5	8	7.4
August	9.9	6.2	0.63	10.2	6.1	69.2	71.8	7	7.6
September	4.8	2.4	0.50	9.9	5.9	67.1	71.5	9	7.8
October	1.3	0.9	0.70	10.0	6.1	65.5	71.5	9	7.9
November	2.5	1.7	0.68	9.4	5.7	69.7	71.1	5	7.8
December	16.2	10.1	0.62	8.1	5.0	78.6	70.5	4	7.8
2008									
January	5.1	3.4	0.67	6.9	4.2	72.1	70.0	6	7.7
February	3.8	2.1	0.55	5.9	3.6	71.2	69.6	9	7.6
March	15.9	9.3	0.58	5.3	3.3	72.9	69.5	10	7.4
April	4.9	2.9	0.59			70.3		9	
May	5.7	2.9	0.51			68.4		6	
June	4.2	3.1	0.74			65.9		7	
July	1.0	0.5	0.50			65.8		6	
August	0.0	0.5	**			66.4		5	
September	1.5	1.1	0.73			67.1		5	

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.

**SEC sunspot number was less than RI value, so a ratio could not be done.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 06 October 2008*

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

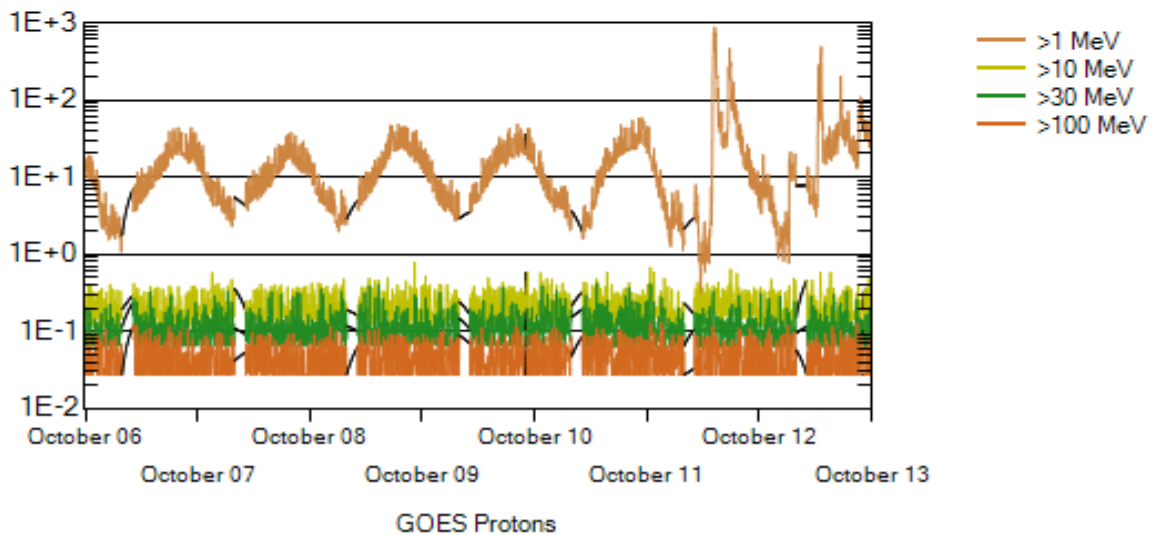
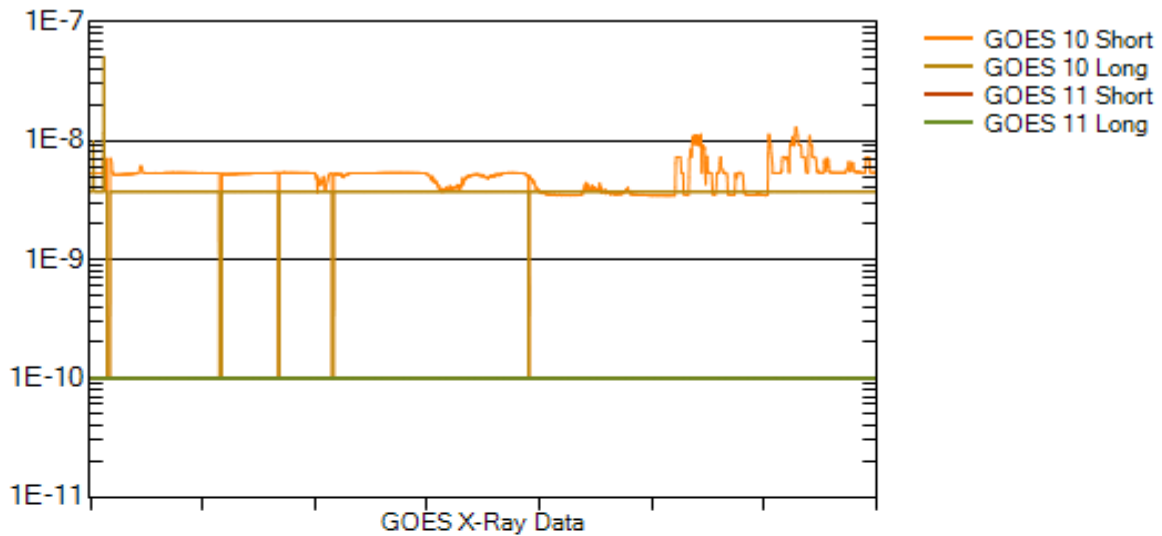
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12 (W075).

Hp 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^2) 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 ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-11 (W135) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ($\text{protons/cm}^2\text{-sec-sr}$) at greater than 10 MeV.

