

Space Weather Highlights
10 - 16 October 2005

SWO PRF 1572
18 October 2005

Solar activity was at very low to low levels. During the period, three magnetically simple spot groups were observed on the disk. Region 813 (S08, L=285, class/area, Dac/150 on 05 October) slowly decayed throughout the period, and rotated off the disk on 13 October as spotless plage. New Region 814 (S07, L=234, class/area, Hax/040 on 12 October) developed spots on the 11th in the large plage field that was associated with old Region 808. Two weak C-class flares were observed in this region, one each on 11 and 12 October. By 14 October, the region had decayed to spotless plage. New Region 815 (N08, L=111, class/area, Hsx/070 on 15 October) rotated into view on 14 October and appeared to be the return of old Region 810. During its last rotation old Region 810 was a moderately complex spot group, but produced little activity. The remainder of the disk and limb was quiet.

Solar wind data were available from the NASA Advanced Composition Explorer (ACE) spacecraft during most of the summary period. Solar wind speed ranged from a high of about 650 km/s late on 10 October to a low of near 290 km/s midday on 15 October. The period began under the waning influence of a coronal hole high speed stream. Wind speed remained elevated between 600 to 650 km/s with the IMF Bz fluctuating between +/- 5 nT through late on 11 October. Wind speed slowly declined until early on 15 October when a solar sector boundary crossing was observed followed by the onset of a weak coronal hole stream. The period ended with a solar wind speed of 400 km/s and IMF Bz fluctuating between - 8 / + 5 nT.

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 on 10 - 15 October.

The geomagnetic field ranged from quiet to active levels. Geomagnetic activity was quiet to unsettled at mid latitudes during the entire summary period. Isolated active periods were observed at high latitudes on 10 and 11 October due to a geoeffective coronal hole high speed stream, and again on 15 and 16 October due to a solar sector boundary crossing followed by the onset of a weak coronal hole stream.

Space Weather Outlook
19 October - 14 November 2005

Solar activity is expected to be very low to low.

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 19 - 22 October, 29 October - 02 November, and 05 - 11 November.

The geomagnetic field is expected to range from quiet to minor storm levels. Unsettled to active levels are possible on 22 - 24 October and unsettled to minor storm levels are possible on 04 - 06 November due to recurrent coronal hole high speed wind streams. Otherwise, expect mostly quiet conditions.

Note: SEC will be making a minor change in the Space Weather Highlights section of the Preliminary Report and Forecast of Solar Geophysical Data (PRF). At present, there are five paragraphs describing the solar geophysical environment in the Space Weather Highlights section of the PRF; solar activity, solar wind, proton events, electron flux, and geomagnetic activity. SEC's change will combine solar wind and geomagnetic activity into one paragraph describing the period's geomagnetic activity with respect to solar wind data. The Space Weather Outlook section will remain the same. We will make this change effective on 25 October 2005 with PRF #1573.



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
10 October	79	11	20	A4.5	0	0	0	0	0	0	0	0
11 October	78	25	50	A4.3	1	0	0	0	0	0	0	0
12 October	77	17	40	A3.4	1	0	0	1	0	0	0	0
13 October	78	11	10	A4.1	0	0	0	0	0	0	0	0
14 October	78	11	50	A3.5	0	0	0	0	0	0	0	0
15 October	80	11	70	A3.2	0	0	0	0	0	0	0	0
16 October	79	11	50	A2.8	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
	10 October	1.7E+6	1.3E+4	3.2E+3		2.6E+8
11 October	6.8E+5	1.4E+4	3.4E+3		1.1E+8	
12 October	1.1E+6	1.4E+4	3.3E+3		1.3E+8	
13 October	1.2E+6	1.4E+4	3.3E+3		9.6E+7	
14 October	1.2E+6	1.4E+4	3.7E+3		7.7E+7	
15 October	1.4E+6	1.5E+4	3.8E+3		8.7E+7	
16 October	6.7E+5	1.4E+4	3.6E+3		1.8E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	10 October	7	2-2-3-2-1-1-1-3	9	2-1-3-4-3-0-0-1	10
11 October	5	3-2-0-0-1-2-1-1	8	2-1-0-0-3-2-1-4	6	3-2-0-0-1-1-1-2
12 October	1	0-1-0-0-1-0-0-1	*	*_*_*_*_*_*_*_*_*_*	1	0-0-0-0-0-0-0-1
13 October	2	0-0-2-0-0-1-1-0	*	*_*_*_*_*_*_*_*_*_*	4	1-0-2-1-1-0-2-1
14 October	1	0-2-0-0-0-0-0-0	*	*_*_*_*_*_*_*_*_*_*	2	1-2-0-0-0-1-1-0
15 October	2	0-1-0-0-1-0-1-1	4	4-0-0-1-0-0-0-0	2	0-1-0-0-1-0-0-1
16 October	5	0-1-2-1-1-1-2-3	14	0-1-4-4-4-3-2-1	8	1-1-2-2-2-2-2-3

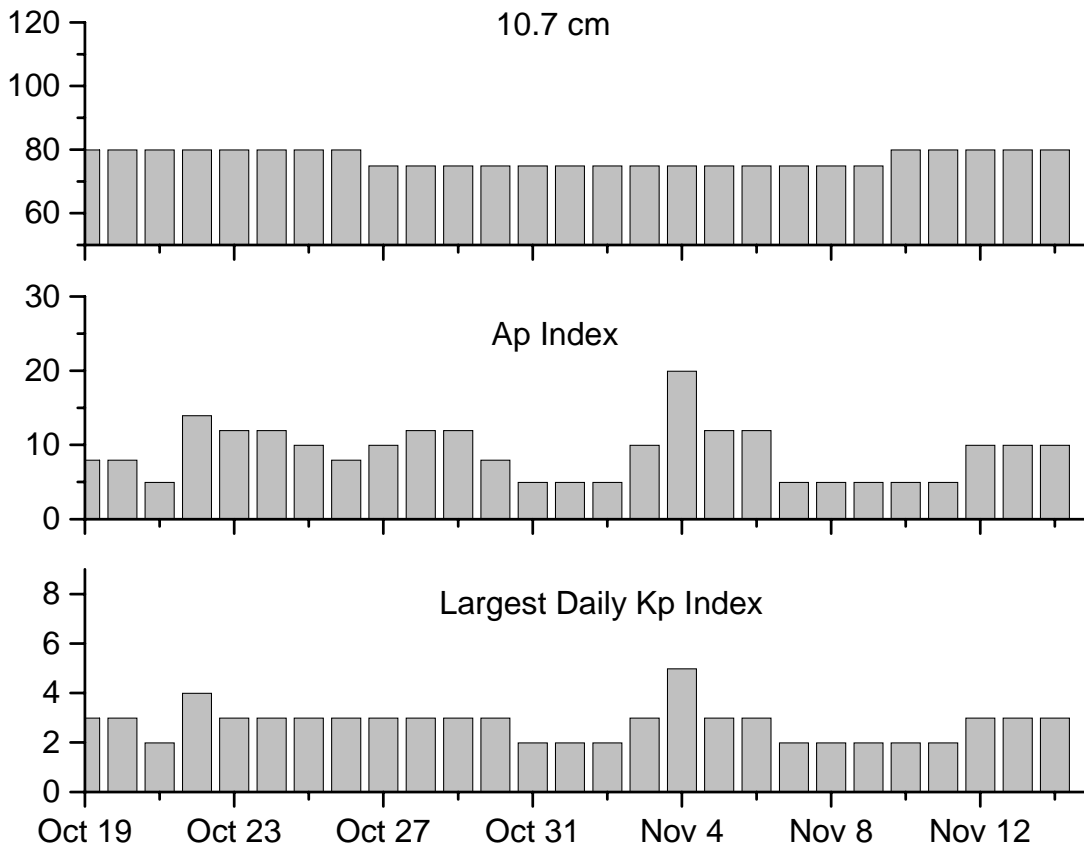


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UTC</u>
10 Oct 708	ALERT: Electron 2MeV Integral Flux > 1000pfu	10 Oct 0645
11 Oct 919	ALERT: Electron 2MeV Integral Flux > 1000pfu	11 Oct 0855
11 Oct 2021	ALERT: Type II Radio Emission	11 Oct 1735
12 Oct 621	ALERT: Type II Radio Emission	12 Oct 0558
12 Oct 823	ALERT: Electron 2MeV Integral Flux > 1000pfu	12 Oct 0800
13 Oct 1004	ALERT: Electron 2MeV Integral Flux > 1000pfu	13 Oct 0940
14 Oct 1317	ALERT: Electron 2MeV Integral Flux > 1000pfu	14 Oct 1255
15 Oct 1121	ALERT: Electron 2MeV Integral Flux > 1000pfu	15 Oct 1100



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
19 Oct	80	8	3	01 Nov	75	5	2
20	80	8	3	02	75	5	2
21	80	5	2	03	75	10	3
22	80	14	4	04	75	20	5
23	80	12	3	05	75	12	3
24	80	12	3	06	75	12	3
25	80	10	3	07	75	5	2
26	80	8	3	08	75	5	2
27	75	10	3	09	75	5	2
28	75	12	3	10	80	5	2
29	75	12	3	11	80	5	2
30	75	8	3	12	80	10	3
31	75	5	2	13	80	10	3
				14	80	10	3



Energetic Events

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

No Events Observed

Flare List

Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
10 October	<i>No Flares Observed</i>						
11 October	1720	1727	1732	C1.1			814
	2207	2212	2217	B3.5			
12 October	0538	0541	0552	C1.2	Sf	S10W14	814
	1217	1220	1224	B1.2			
	1807	1812	1815	B3.2			
	1816	1819	1821	B2.5			
13 October	0901	0905	0908	B2.4			
14 October	<i>No Flares Observed</i>						
15 October	<i>No Flares Observed</i>						
16 October	1254	1302	1321	B3.0			



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 813</i>																		
04 Oct	S06E30	286	0060	04	Dso	005	B											
05 Oct	S08E18	285	0150	07	Dac	021	Bg	1				2						
06 Oct	S08E05	285	0130	06	Dai	018	Bg											
07 Oct	S08W08	285	0120	06	Dao	021	Bg											
08 Oct	S08W22	285	0080	07	Dao	014	B											
09 Oct	S08W35	285	0030	04	Dso	006	B											
10 Oct	S07W48	285	0020	02	Hsx	001	A											
11 Oct	S08W62	286	0030	04	Bxo	002	B											
12 Oct	S08W75	286																
13 Oct	S08W88	286																
								1	0	0	2	0	0	0	0	0		
Crossed West Limb.																		
Absolute heliographic longitude: 285																		
<i>Region 814</i>																		
11 Oct	S06W11	235	0020	04	Bxo	003	B	1										
12 Oct	S07W23	234	0040	10	Hax	007	A	1				1						
13 Oct	S13W31	228	0010	01	Axx	001	A											
14 Oct	S13W44	228																
15 Oct	S13W57	228																
16 Oct	S13W70	228																
								2	0	0	1	0	0	0	0	0		
Still on Disk.																		
Absolute heliographic longitude: 235																		
<i>Region 815</i>																		
14 Oct	N08E75	109	0050	03	Hax	001	A											
15 Oct	N08E60	111	0070	02	Hsx	001	A											
16 Oct	N08E47	111	0050	02	Hax	001	A											
								0	0	0	0	0	0	0	0	0		
Still on Disk.																		
Absolute heliographic longitude: 111																		

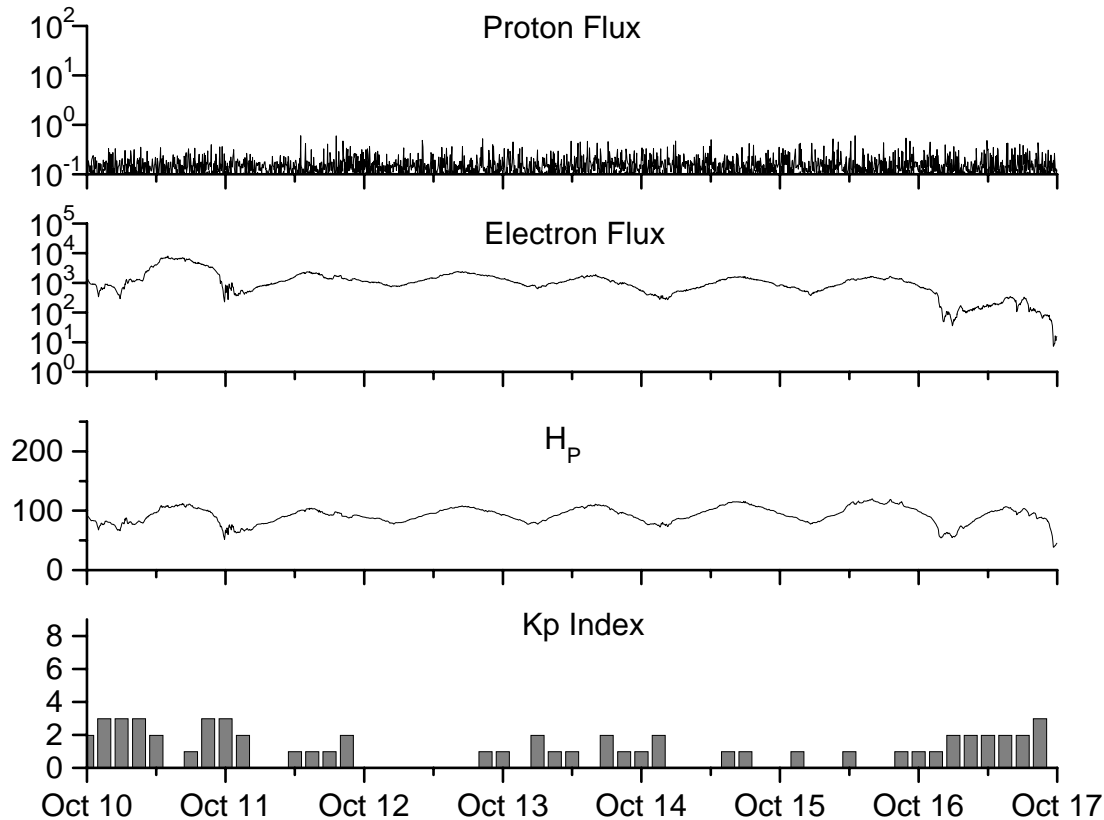


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2003									
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
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			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	
September	39.2	22.1	0.56			90.8		21	

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 10 October 2005

Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by GOES-11 (W113) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

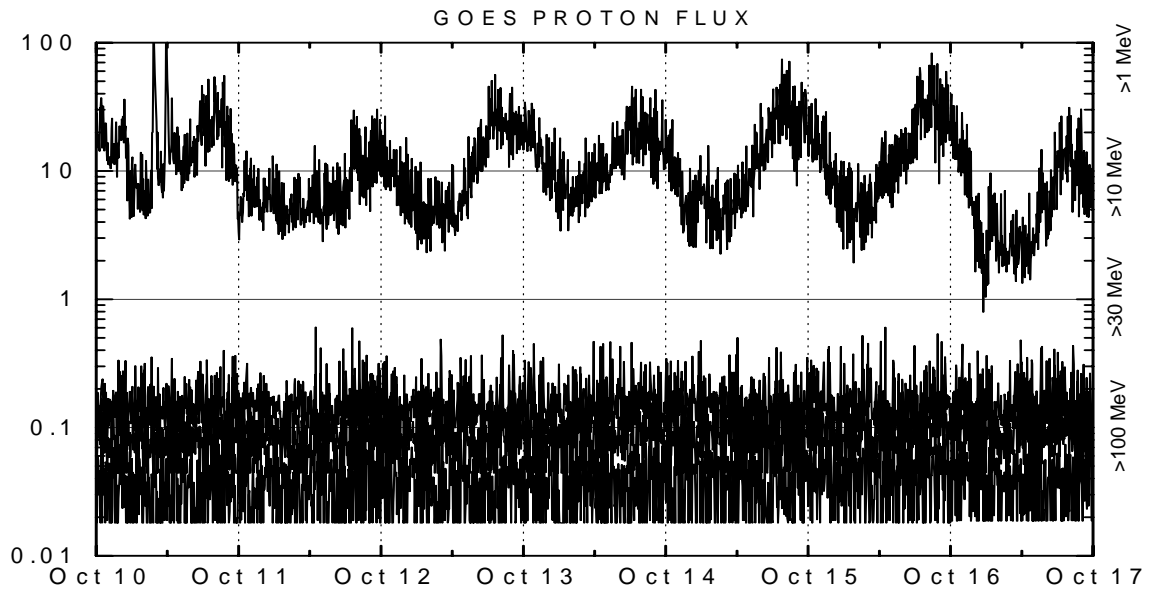
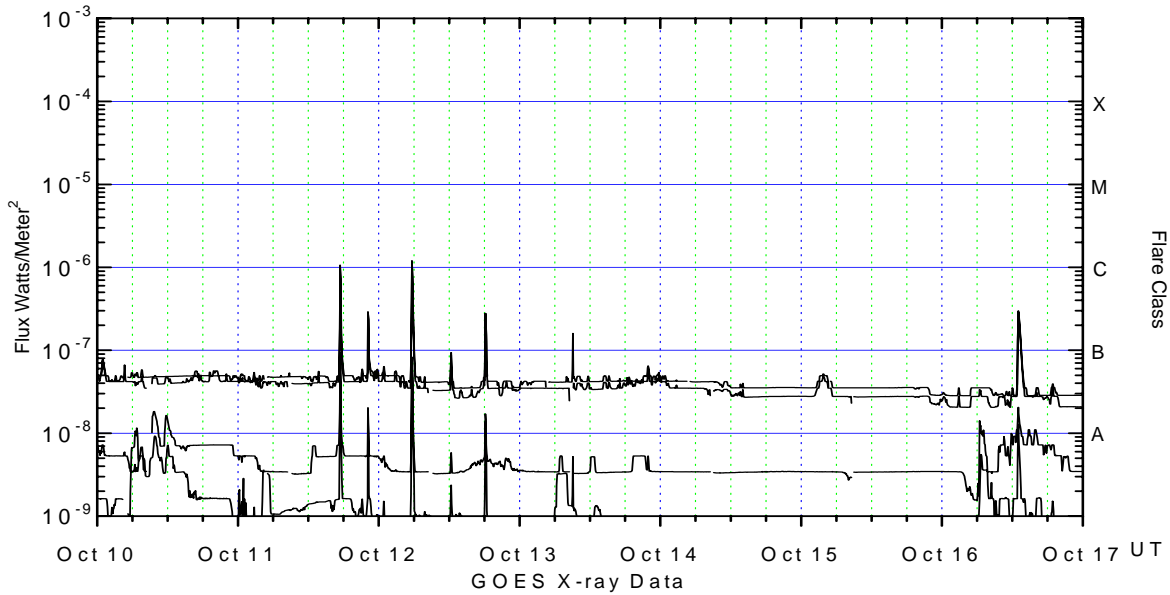
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W75).

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 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_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/m^2) 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 ($\text{protons/cm}^2\text{-sec-sr}$) as measured by GOES-11 (W113) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu ($\text{protons/cm}^2\text{-sec-sr}$) at greater than 10 MeV.

