

Space Weather Highlights
14 May – 20 May 2007

SEC PRF 1655
22 May 2007

Solar activity was at very low to low levels during the period. Region 956 (N02, L=070, class/area, Dkc/300 on 17 May) produced two C-class flares; a C1.0/Sf at 15/1537 UTC and a C2.9/Sf at 16/1741 UTC. On 19 May, Region 956 produced a B9.5 flare at 1302 UTC, with an associated disappearing solar filament and Type II radio burst (speed 882 km/s). LASCO imagery showed an associated faint partial halo with an estimated maximum speed around 618 km/s.

No proton events were observed at geosynchronous orbit.

No greater than 2 MeV electron flux events were observed at geosynchronous orbit during the summary period.

Geomagnetic field activity ranged from quiet to minor storm levels. From 14 May to early on 18 May, the geomagnetic field was mostly quiet. By early on 18 May, a coronal hole high speed stream moved into geoeffective position causing active periods at middle latitudes while active to minor storm periods were observed at high latitudes. Solar wind speed increased from approximately 320 km/s to 610 km/s, while the IMF Bz fluctuated up to +13/-15 nT for a few hours. By late on 18 May, the IMF Bz was decreasing and by 19 May, did not vary much between +/- 3 nT. Quiet to unsettled levels were observed at middle latitudes with an isolated minor storm period at high latitudes on 19 May. By 20 May, solar wind speed was slowly decreasing and ended the period around 530 km/s. The geomagnetic field was mostly quiet at all latitudes on 20 May.

Space Weather Outlook
23 May – 18 June 2007

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

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 25 May – 03 June and again on 17 June.

Quiet to unsettled conditions are expected during 23 May. A coronal hole high speed stream combined with a possible weak CME are expected during 24 - 27 May, with unsettled to minor storm conditions possible. Major storm levels are also possible at high latitudes on 25 May. Quiet to unsettled conditions are expected during 28 May – 02 June. Activity is expected to increase to quiet to active levels during 03 – 04 June due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to mostly quiet levels until another recurrent coronal hole becomes geoeffective on 14 June. Unsettled to active periods are possible during this time. Quiet to unsettled conditions are expected during the rest 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
14 May	73	29	130	<A1.0	0	0	0	0	0	0	0	0
15 May	77	37	140	<A1.0	1	0	0	1	0	0	0	0
16 May	77	56	240	A3.0	1	0	0	1	0	0	0	0
17 May	77	30	300	A2.7	0	0	0	0	0	0	0	0
18 May	76	45	310	A1.9	0	0	0	0	0	0	0	0
19 May	75	44	180	A1.7	0	0	0	0	0	0	0	0
20 May	74	23	190	A1.7	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
14 May	6.8E+5	1.9E+4	4.3E+3		1.3E+7	
15 May	5.0E+5	1.8E+4	4.4E+3		6.9E+6	
16 May	5.4E+5	1.8E+4	4.4E+3		7.8E+6	
17 May	5.1E+5	1.8E+4	4.4E+3		2.5E+6	
18 May	5.4E+5	1.8E+4	4.4E+3		9.6E+5	
19 May	8.8E+5	1.7E+4	3.7E+3		3.1E+6	
20 May	1.1E+6	1.7E+4	3.5E+3		1.6E+7	

Daily Geomagnetic Data

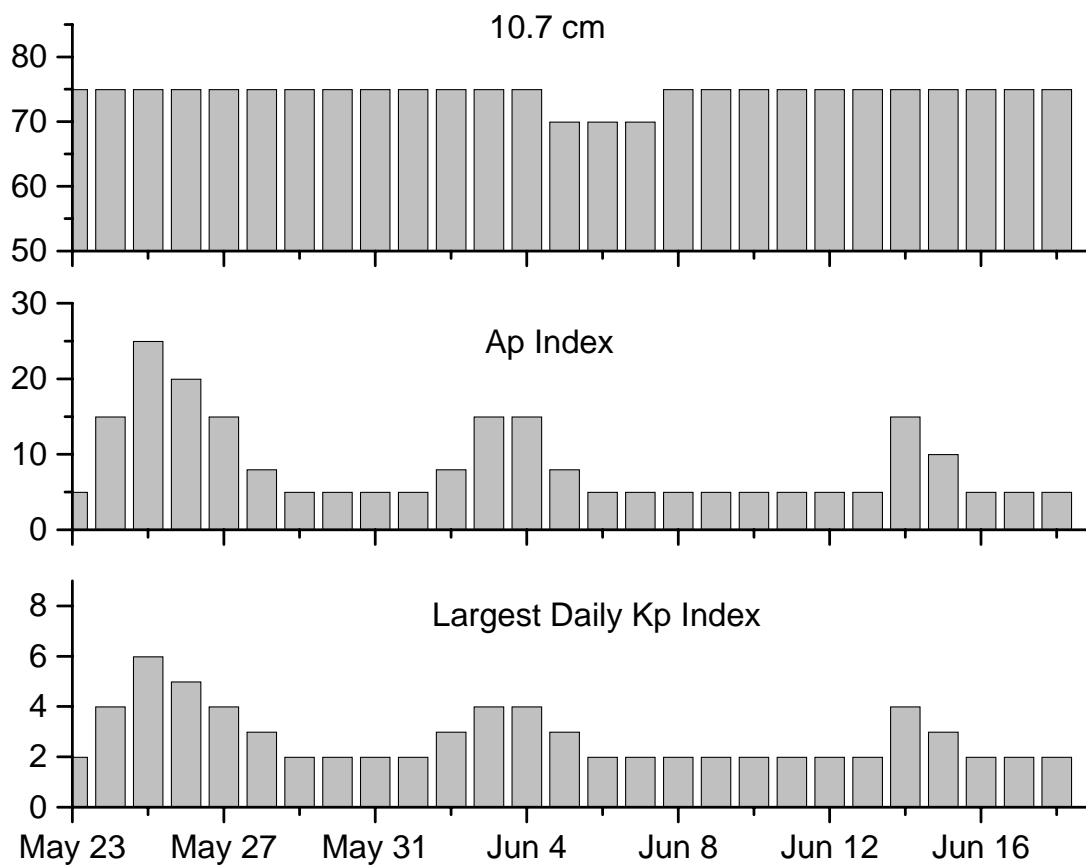
Date	Middle Latitude		High Latitude		Estimated	
	Fredericksburg		College		Planetary	
	A	K-indices	A	K-indices	A	K-indices
14 May	1	0-0-0-0-1-1-1-0	2	0-0-1-1-0-0-0-2	3	0-0-0-0-1-1-2-1
15 May	4	1-1-1-1-2-1-2-1	5	0-2-2-2-3-1-0-0	6	1-1-1-1-2-2-2-2
16 May	3	1-1-1-1-1-0-1-1	2	0-1-1-0-0-0-1-1	4	1-1-1-1-1-1-1-2
17 May	4	2-1-0-0-1-1-2-2	3	0-1-1-1-2-0-1-2	6	1-2-1-1-1-1-2-3
18 May	15	2-2-4-4-4-2-2-2	22	2-1-5-5-4-4-2-2	18	3-2-4-4-4-3-3-3
19 May	10	2-2-3-2-3-2-3-2	16	3-3-3-5-3-2-2-1	12	2-3-3-2-2-3-3-3
20 May	6	3-2-1-1-1-1-2-2	5	2-2-1-3-1-0-1-1	6	3-2-1-1-1-1-1-2

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
18 May 1146	ALERT: Geomagnetic K=4	18 May 1146
18 May 1610	WARNING: Geomagnetic K=4	18 May 1610 -19/1600
19 May 1334	ALERT: Type II	19 May 1252



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
23 May	75	5	2	06 May	70	5	2
24	75	15	4	07	70	5	2
25	75	25	6	08	75	5	2
26	75	20	5	09	75	5	2
27	75	15	4	10	75	5	2
28	75	8	3	11	75	5	2
29	75	5	2	12	75	5	2
30 May	75	5	2	13	75	5	2
31	75	5	2	14	75	15	4
01 June	75	5	2	15	75	10	3
02	75	8	3	16	75	5	2
03	75	15	4	17	75	5	2
04	75	15	4	18	75	5	2
05	79	8	3				



Energetic Events

Energy Events												
Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	1/2			Integ		Imp/	Location	Rgn	Radio Flux		Intensity	
	Begin	Max	Max	Class	Flux	Brtns	Lat	CMD	#	245	2695	II

No Events Observed

Flare List

Date	Time			Optical X-ray Class.	Imp / Brtns	Location Lat CMD	Rgn
	Begin	Max	End				
14 May	0741	0747	0753	B2.0			956
15 May	0427	0435	0443	B4.2			956
	0509	0514	0518	B1.1			956
	1534	1534	1543	C1.0	Sf	N00E50	956
	1657	1705	1707	B1.7			956
	1802	1809	1816	B3.2			956
	1902	1907	1912	B2.7			956
	2303	2315	2345	B2.0			956
16 May	0109	0113	0121	B1.0			956
	0148	0153	0155	B2.0			956
	0214	0222	0238	B2.6			956
	0556	0601	0606	B1.9			956
	1208	1222	1230	B1.8			956
	1302	1305	1308	B1.8			956
	1725	1741	1819	C2.9	Sf	N00E35	956
17 May	1859	1904	1909	B1.7			956
	0033	0040	0048	B1.7			956
	0256	0310	0319	B2.3			956
	1247	1256	1307	B5.5			956
	1342	1347	1351	B1.4			956
	1441	1445	1448	B1.0			956
	1750	1805	1918	B1.8			956
18 May	0546	0549	0553	B1.0			956
19 May	0452	0502	0514	B1.3			956
	1248	1302	1319	B9.5			956
20 May	0452	0556	0620	B6.7			956
	1357	1401	1405	B1.5			956
	2136	2139	2145	B1.0			956
	2356	0000	0005	B1.1			956



Region Summary

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

Region 955

09 May	S10E22	175	0250	05	Dao	008	B								
10 May	S09E08	176	0080	06	Dso	010	B								
11 May	S09W06	176	0150	08	Dao	014	B								
12 May	S09W21	178	0090	08	Dao	011	B								
13 May	S09W35	179	0050	10	Cao	008	B								
14 May	S09W45	176	0050	08	Cso	005	B								
15 May	S07W58	176	0010	06	Bxo	003	B								
16 May	S07W77	182	0010	01	Axx	001	A								
17 May	S09W92	184													

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 176

Region 956

14 May	N02E61	070	0080	05	Cao	004	B								
15 May	N02E48	070	0130	05	Dso	014	Bg	1			1				
16 May	N02E35	070	0220	06	Dkc	022	Bgd	1			1				
17 May	N02E21	070	0300	07	Dkc	020	Bgd								
18 May	N03E07	071	0280	06	Dko	022	Bgd								
19 May	N02W06	071	0150	07	Dac	021	Bg								
20 May	N04W18	070	0190	05	Dai	013	B								

2 0 0 2 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 071

Region 957

16 May	S04W34	139	0010	03	Bxo	003	B								
17 May	S04W47	139													
18 May	S05W60	138	0030	05	Cro	003	B								
19 May	S05W74	139	0030	04	Bxo	003	B								
20 May	S05W87	139													

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 139

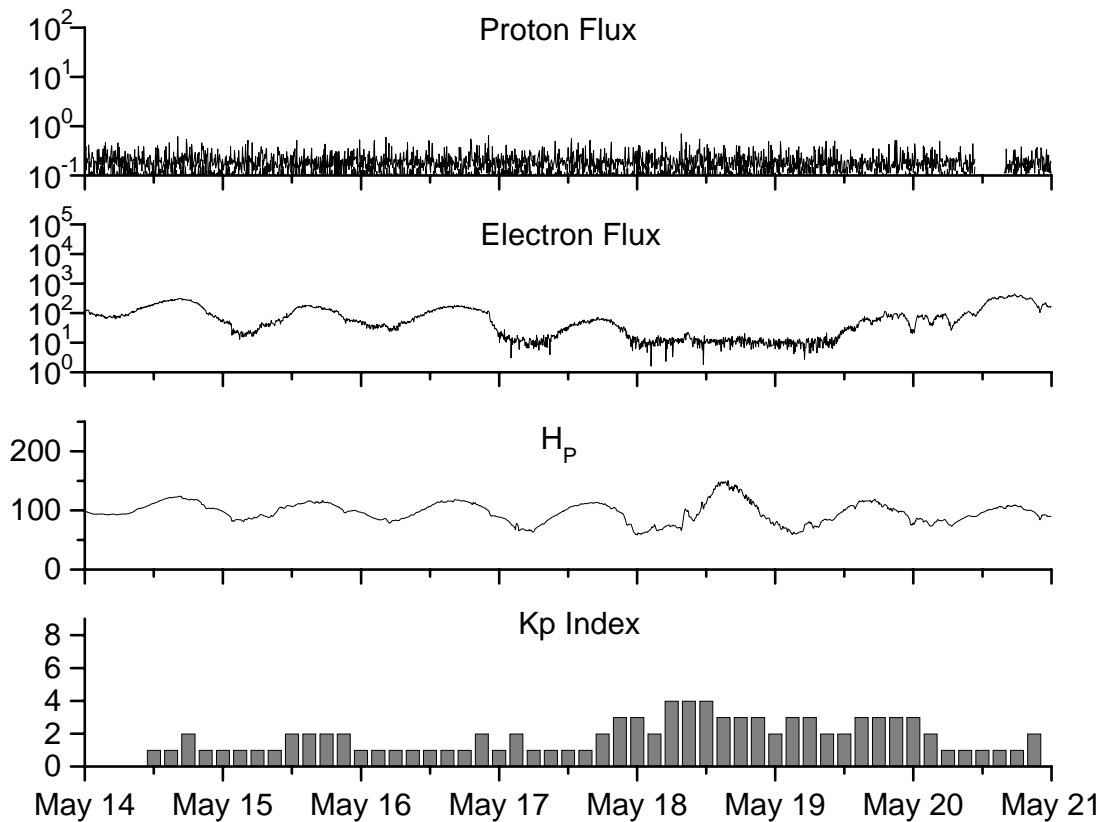


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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									
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	47.9	28.9	93.7	91.9	13	13.9
July	71.0	39.9	0.56	48.1	29.2	96.6	90.9	16	13.1
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			86.4		9	
December	22.2	13.6	0.61			84.3		15	
2007									
January	26.6	16.9	0.64			83.5		6	
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	

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 14 May 2007

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.

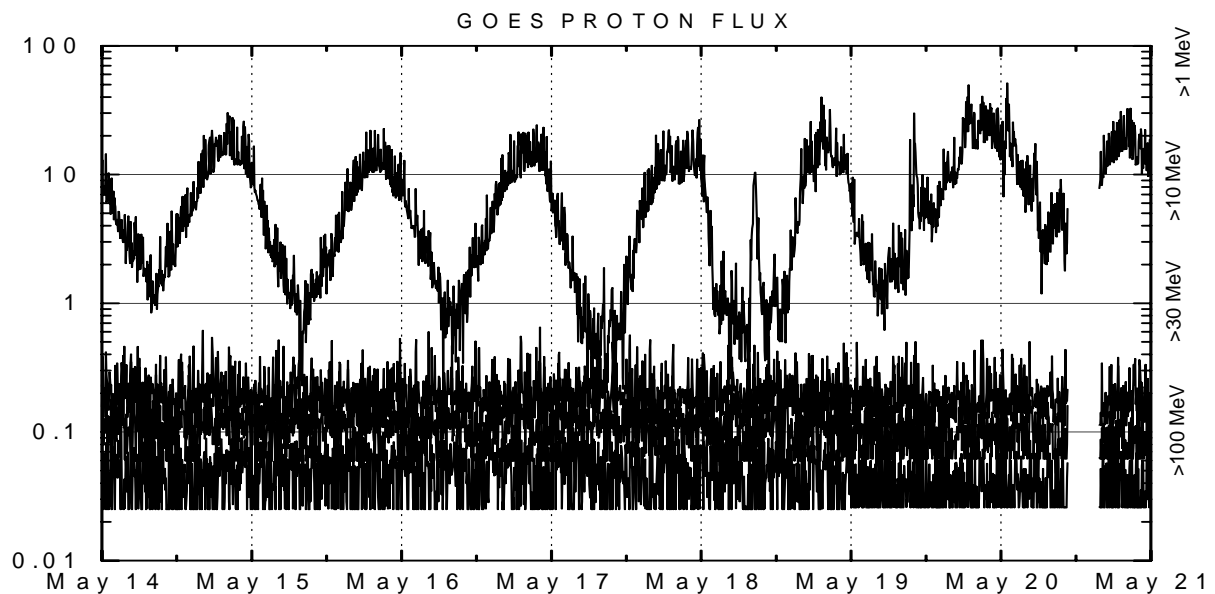
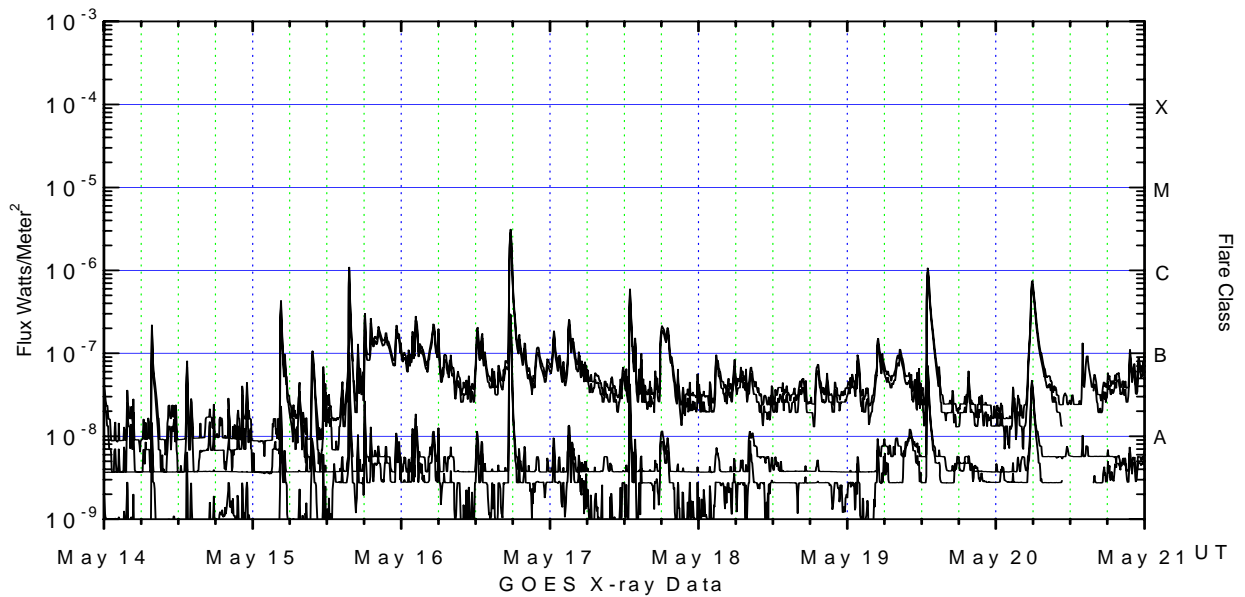
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²–sec –sr) with energies greater than 2 MeV at GOES-12 (W075).

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 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/cm² -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/cm²-sec-sr) at greater than 10 MeV.

