

Space Weather Highlights
19 March – 25 March 2007

SEC PRF 1647
27 March 2007

Solar activity was very low. No flares were observed during the summary period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 19 – 22 March.

The geomagnetic field was quiet at all latitudes during 19 – 22 March. Field activity increased to quiet to unsettled levels on 23 March with active to minor storm levels at high latitudes. A further increase to quiet to minor storm levels occurred during 24 - 25 March with major storm periods observed at high latitudes. ACE near-real-time solar wind data indicated the 23 – 25 March disturbance was associated with a recurrent coronal hole high-speed stream with a peak velocity of 478 km/sec at 25/1107 UTC, minimum southward IMF Bz of -11 nT at 24/0556 UTC, and peak IMF Bt of 12 nT at 25/0028 UTC.

Space Weather Outlook
28 March – 23 April 2007

Solar activity is expected to continue at very 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 28 - 31 March, 03 – 07 April, and 10 – 18 April.

Geomagnetic field activity is expected to be at quiet to unsettled levels through 01 April. Activity is expected to increase to unsettled to minor storm levels during 02 – 03 April with major storm periods possible at high latitudes due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to quiet to unsettled levels during 04 – 07 April. Activity is expected to increase to unsettled to minor storm levels during 08 – 09 April with major storm periods possible at high latitudes due to a recurrent coronal hole high-speed stream. Quiet to unsettled conditions are expected 10 – 19 April. Quiet to active conditions are expected during 20 – 23 April with minor to major storm periods possible on 20 April due to a recurrent coronal hole high-speed stream.



Daily Solar Data

Date	Radio	Sun	Sunspot	X-ray	Flares							
	Flux	spot	Area	Background	X-ray Flux			Optical				
	10.7 cm	No.	(10 ⁻⁶ hemi.)		C	M	X	S	1	2	3	4
19 March	70	0	0	<A1.0	0	0	0	0	0	0	0	0
20 March	73	0	0	<A1.0	0	0	0	0	0	0	0	0
21 March	73	0	0	<A1.0	0	0	0	0	0	0	0	0
22 March	73	0	0	<A1.0	0	0	0	0	0	0	0	0
23 March	73	14	20	<A1.0	0	0	0	0	0	0	0	0
24 March	73	11	20	<A1.0	0	0	0	0	0	0	0	0
25 March	74	11	10	<A1.0	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
19 March	2.2E+6	1.7E+4	3.9E+3		2.1E+8	
20 March	2.2E+6	1.8E+4	4.1E+3		2.1E+8	
21 March	2.9E+6	1.8E+4	4.1E+3		2.0E+8	
22 March	2.2E+6	1.7E+4	4.2E+3		1.0E+8	
23 March	1.7E+6	1.8E+4	4.1E+3		1.6E+7	
24 March	1.1E+6	1.8E+4	3.8E+3		1.9E+6	
25 March	1.1E+6	1.7E+4	3.7E+3		4.0E+6	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
19 March	1	0-1-0-1-0-0-0-0	1	0-0-1-1-0-0-0-1	2	0-1-0-0-0-1-1-1
20 March	1	0-0-0-0-1-1-0-0	1	0-0-0-0-1-1-0-0	2	0-0-0-0-1-0-1-1
21 March	1	0-0-1-0-1-0-0-0	0	0-0-0-1-0-0-0-0	2	0-0-0-0-0-1-1-0
22 March	1	1-1-0-0-0-1-0-0	3	0-0-0-3-1-1-0-0	2	1-0-0-1-0-1-0-1
23 March	7	0-1-1-2-2-3-2-3	17	0-0-0-4-5-5-2-1	10	1-1-1-2-3-3-3-3
24 March	16	4-3-4-4-3-1-1-2	31	2-5-5-6-5-2-1-1	21	4-5-4-5-3-1-1-2
25 March	8	2-2-2-3-2-2-1-2	25	2-2-1-6-6-3-1-1	10	2-1-2-4-4-2-1-2

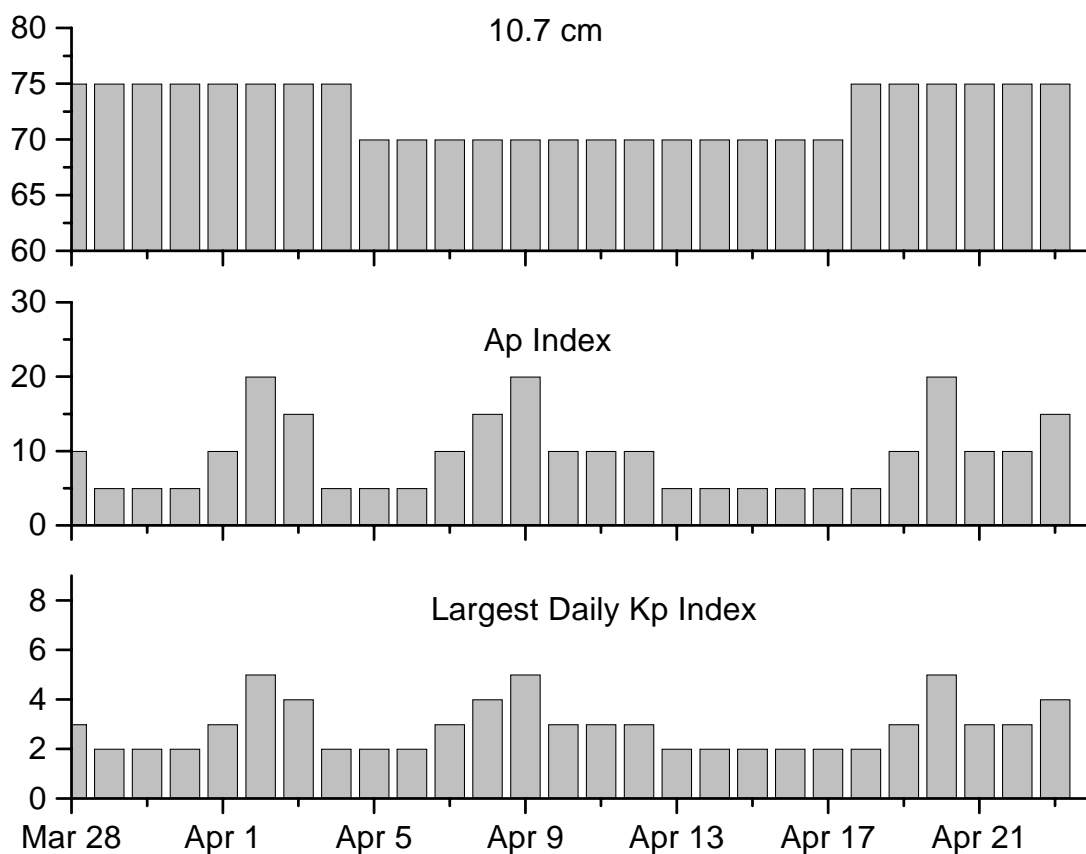


Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
19 Mar 0502	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	19 Mar 0500
20 Mar 0502	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	20 Mar 0500
21 Mar 0545	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	21 Mar 0500
22 Mar 0911	ALERT: Electron 2MeV Integral Flux ≥ 1000 pfu	22 Mar 0855
24 Mar 0245	WARNING: Geomagnetic K = 4	24 Mar 0245 – 1600
24 Mar 0256	ALERT: Geomagnetic K = 4	24 Mar 0254
24 Mar 1000	ALERT: Geomagnetic K = 5	24 Mar 0958
24 Mar 1556	EXTENDED WARNING: Geomagnetic K = 4	24 Mar 0245 – 25/1600
25 Mar 1554	EXTENDED WARNING: Geomagnetic K = 4	24 Mar 0245 – 26/1600



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
28 Mar	75	10	3	11 Apr	70	10	3
29	75	5	2	12	70	10	3
30	75	5	2	13	70	5	2
31	75	5	2	14	70	5	2
01 Apr	75	10	3	15	70	5	2
02	75	20	5	16	70	5	2
03	75	15	4	17	70	5	2
04	75	5	2	18	75	5	2
05	70	5	2	19	75	10	3
06	70	5	2	20	75	20	5
07	70	10	3	21	75	10	3
08	70	15	4	22	75	10	3
09	70	20	5	23	75	15	4
10	70	10	3				



Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	$\frac{1}{2}$			Integ		Imp/		Rgn	Radio Flux		Intensity	
	Begin	Max	Max	Class	Flux	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				
19 March	<i>No Flares Observed</i>						
20 March	<i>No Flares Observed</i>						
21 March	<i>No Flares Observed</i>						
22 March	<i>No Flares Observed</i>						
23 March	<i>No Flares Observed</i>						
24 March	<i>No Flares Observed</i>						
25 March	<i>No Flares Observed</i>						

Region Summary

Location			Sunspot Characteristics												
			Flares												
Helio			Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
Date	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4
Region 947															
23 Mar	S13W60	158	0020	03	Cso	004	B								
24 Mar	S14W74	159	0020	01	Hsx	001	A								
25 Mar	S15W86	158	0010	01	Axx	001	A								
									0	0	0	0	0	0	0

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 158

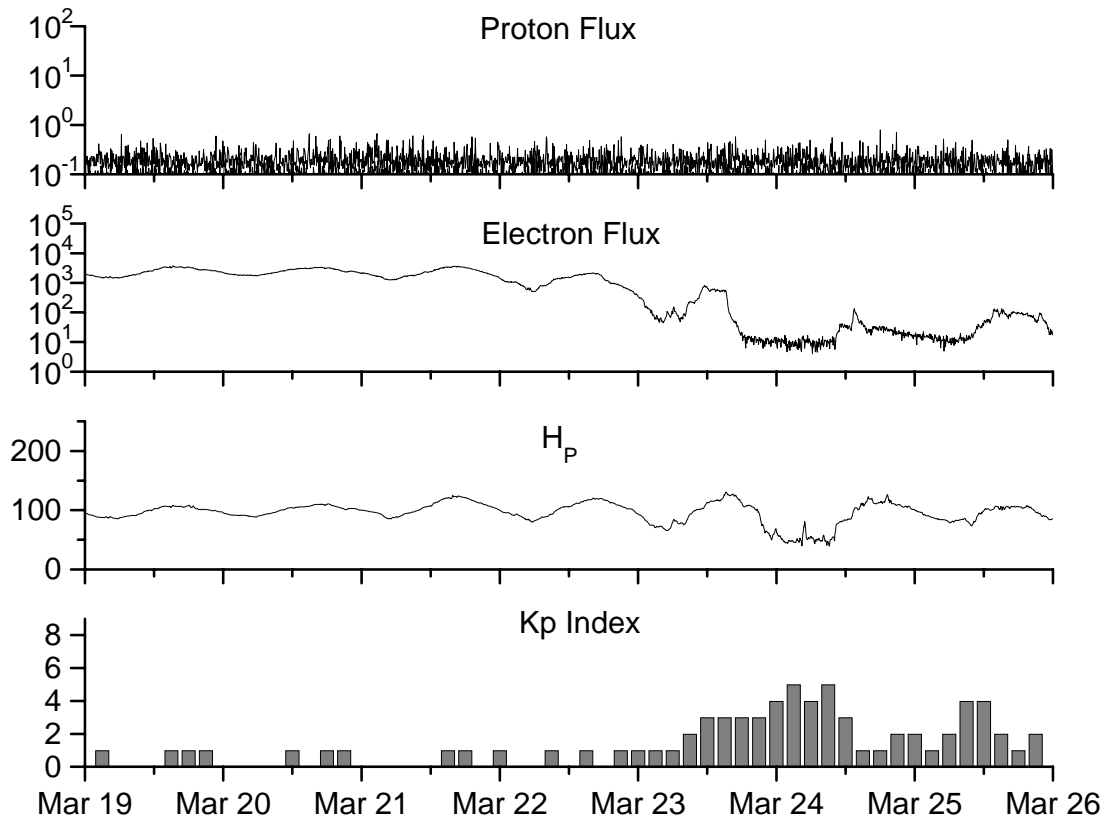


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers				Radio Flux		Geomagnetic		
	<u>Observed values</u> SEC	<u>Ratio</u> RI	<u>Smooth values</u> RI/SEC	<u>Smooth values</u> SEC	<u>*Penticton</u> 10.7 cm	<u>Smooth</u> Value	<u>Planetary</u> Ap	<u>Smooth</u> Value	
2005									
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	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			79.0		9	
September	25.2	14.5	0.58			77.8		8	
October	15.7	10.4	0.66			74.3		8	
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	

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 19 March 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.

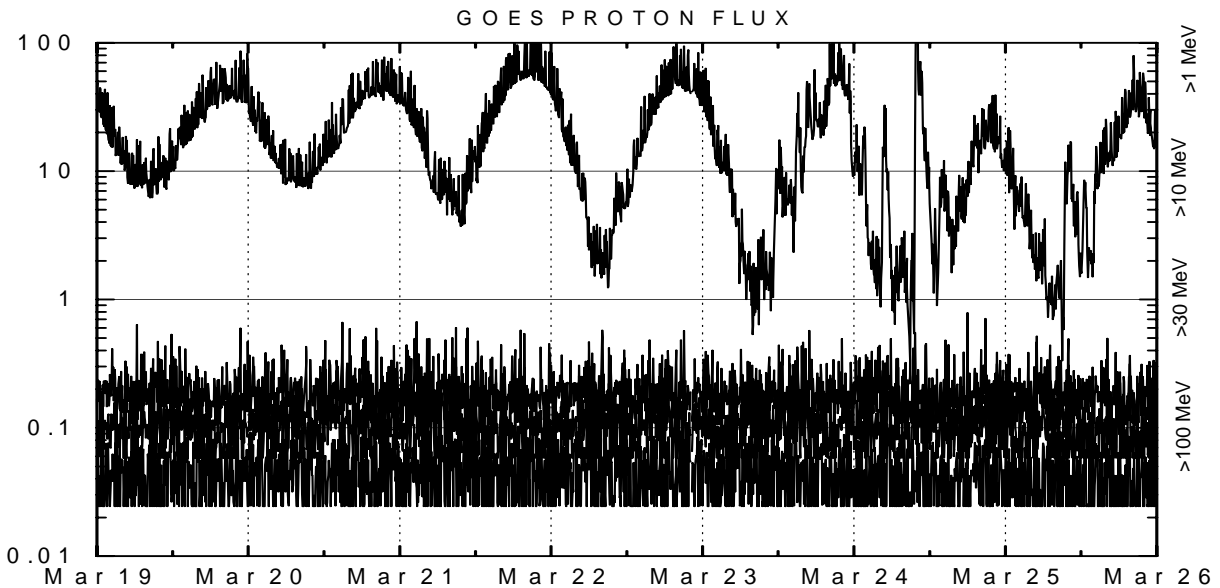
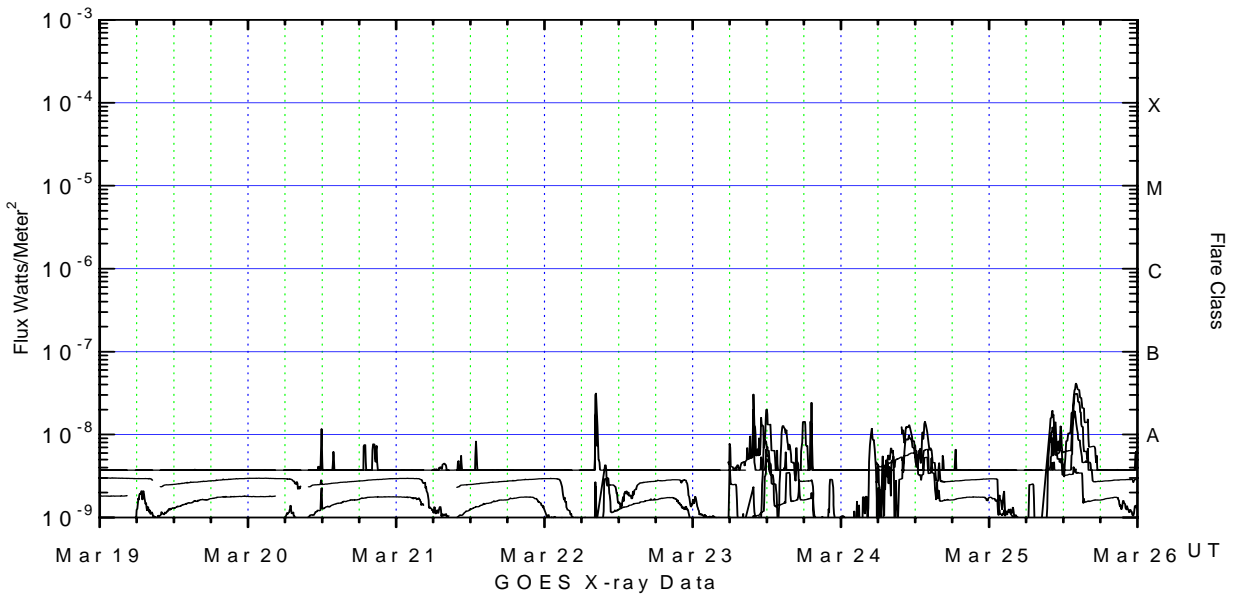
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²–sec –sr) with energies greater than 2 MeV at GOES-12 (W075).

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 12 (W075) 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.

