

Space Weather Highlights
16 April – 22 April 2007

SEC PRF 1651
24 April 2007

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

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels during the period.

The geomagnetic field was quiet at all latitudes on 16 April. Field activity increased to quiet to active levels during 17 – 19 April. ACE near-real-time solar wind data indicated the 17 – 19 activity was the result of an increase in velocities associated with a coronal hole high-speed stream (peak 426 km/sec at 19/1043 UTC) coupled with increased total IMF intensity (peak 11 nT at 17/1026 UTC) and intermittent periods of southward Bz (minimum -10 nT at 17/1026 UTC). Field activity decreased to quiet levels at all latitudes during 20 – 21 April. Activity increased to quiet to active levels on 22 April due to increased solar wind velocities associated with a coronal hole high-speed stream (peak 469 km/sec at 22/1644 UTC) and increased IMF Bt (peak 13 nT at 22/1036 UTC) as well as periods of southward IMF Bz (minimum -08 nT at 22/2320 UTC).

Space Weather Outlook
25 April – 21 May 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 29 April – 07 May.

Geomagnetic field activity is expected to be at quiet levels through 27 April. A recurrent coronal hole high-speed stream is expected to disturb the field during 28 – 29 April. Unsettled to minor storm levels are expected during the disturbance with isolated major storm periods possible. Mostly quiet conditions are expected during 30 April – 18 May. Another round of coronal hole effects is expected during 19 - 20 May with unsettled to minor storm conditions expected. Quiet to unsettled conditions are expected on 21 May.



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
16 April	69	0	0	<A1.0	0	0	0	0	0	0	0	0
17 April	69	12	20	<A1.0	0	0	0	0	0	0	0	0
18 April	69	11	10	<A1.0	0	0	0	0	0	0	0	0
19 April	68	0	0	<A1.0	0	0	0	0	0	0	0	0
20 April	69	0	0	<A1.0	0	0	0	0	0	0	0	0
21 April	69	0	0	<A1.0	0	0	0	0	0	0	0	0
22 April	69	0	0	<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
16 April	1.2E+6	1.7E+4	4.2E+3		8.2E+6	
17 April	8.5E+5	1.8E+4	4.0E+3		2.4E+6	
18 April	5.3E+5	1.8E+4	4.2E+3		2.8E+6	
19 April	6.2E+5	1.7E+4	4.0E+3		7.3E+6	
20 April	6.4E+5	1.7E+4	4.1E+3		1.0E+7	
21 April	5.5E+5	1.9E+4	4.0E+3		8.5E+6	
22 April	6.2E+5	1.8E+4	4.1E+3		1.5E+6	

Daily Geomagnetic Data

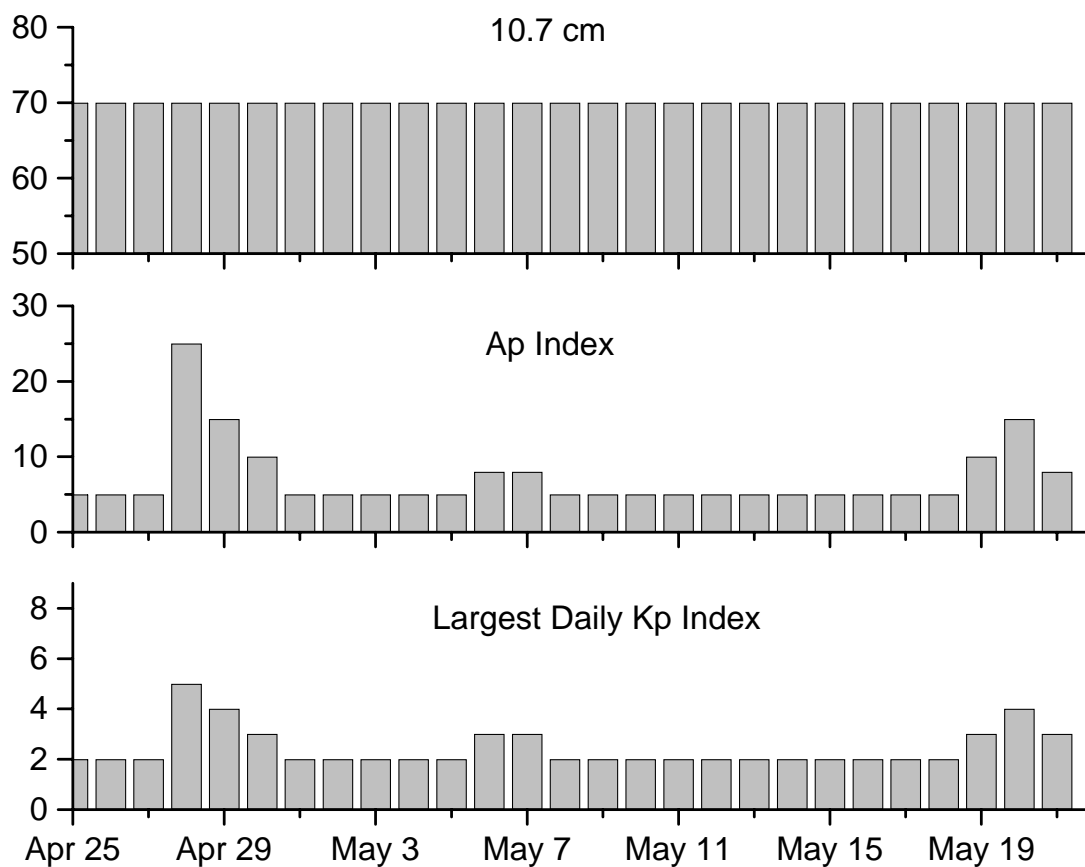
Date	Middle Latitude		High Latitude		Estimated	
	Fredericksburg		College		Planetary	
	A	K-indices	A	K-indices	A	K-indices
16 April	0	0-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0	1	0-0-0-0-0-0-0-1
17 April	6	0-2-2-2-2-1-1-3		0-1-1-4-*-3-3-1	8	1-1-1-2-2-2-3-3
18 April	6	3-2-1-1-1-1-2-2	5	2-2-2-1-1-1-1-2	9	4-3-1-1-1-1-2-3
19 April	4	2-2-2-1-1-0-1-0	8	2-1-3-4-2-1-1-0	6	3-2-2-1-1-0-0-1
20 April	2	1-1-1-0-0-0-0-1	2	1-1-1-0-0-0-0-1	3	1-1-1-1-1-0-0-2
21 April	2	1-1-0-0-1-0-1-1	0	1-0-0-0-0-0-0-0	2	1-1-0-0-0-1-1-1
22 April	8	2-2-1-2-2-1-3-3	10	2-2-1-4-3-3-1-1	10	2-2-2-2-2-3-3-3

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
17 Apr 1735	WARNING: Geomagnetic K=4	17 Apr 1735 - 2359
18 Apr 0238	WARNING: Geomagnetic K=4	18 Apr 0238 – 1600
18 Apr 0241	ALERT: Geomagnetic K=4	18 Apr 0240
19 Apr 0122	WARNING: Geomagnetic K=4	19 Apr 0200 - 1600
22 Apr 1721	WARNING: Geomagnetic K=4	22 Apr 1722 - 23/1600



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
25 Apr	70	5	2	09 May	70	5	2
26	70	5	2	10	70	5	2
27	70	5	2	11	70	5	2
28	70	25	5	12	70	5	2
29	70	15	4	13	70	5	2
30	70	10	3	14	70	5	2
01 May	70	5	2	15	70	5	2
02	70	5	2	16	70	5	2
03	70	5	2	17	70	5	2
04	70	5	2	18	70	5	2
05	70	5	2	19	70	10	3
06	70	8	3	20	70	15	4
07	70	8	3	21	70	8	3
08	70	5	2				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq	
	$\frac{1}{2}$		Integ		Imp/	Location	Rgn	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	

16 April **No Flares Observed**
 17 April **No Flares Observed**
 18 April **No Flares Observed**
 19 April **No Flares Observed**
 20 April **No Flares Observed**
 21 April **No Flares Observed**
 22 April **No Flares Observed**

Region Summary

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

Region 951

14 Apr S12E31 137 0010 01 Axx 001 A
 15 Apr S12E18 137
 16 Apr S12E05 137
 17 Apr S12W08 137
 18 Apr S12W18 134 0010 01 Axx 001 A
 19 Apr S12W31 134
 20 Apr S12W44 134
 21 Apr S12W57 134
 22 Apr S12W70 134

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 137

Region 952

17 Apr S08W73 202 0020 02 Hrx 002 A
 18 Apr S08W86 202

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 202

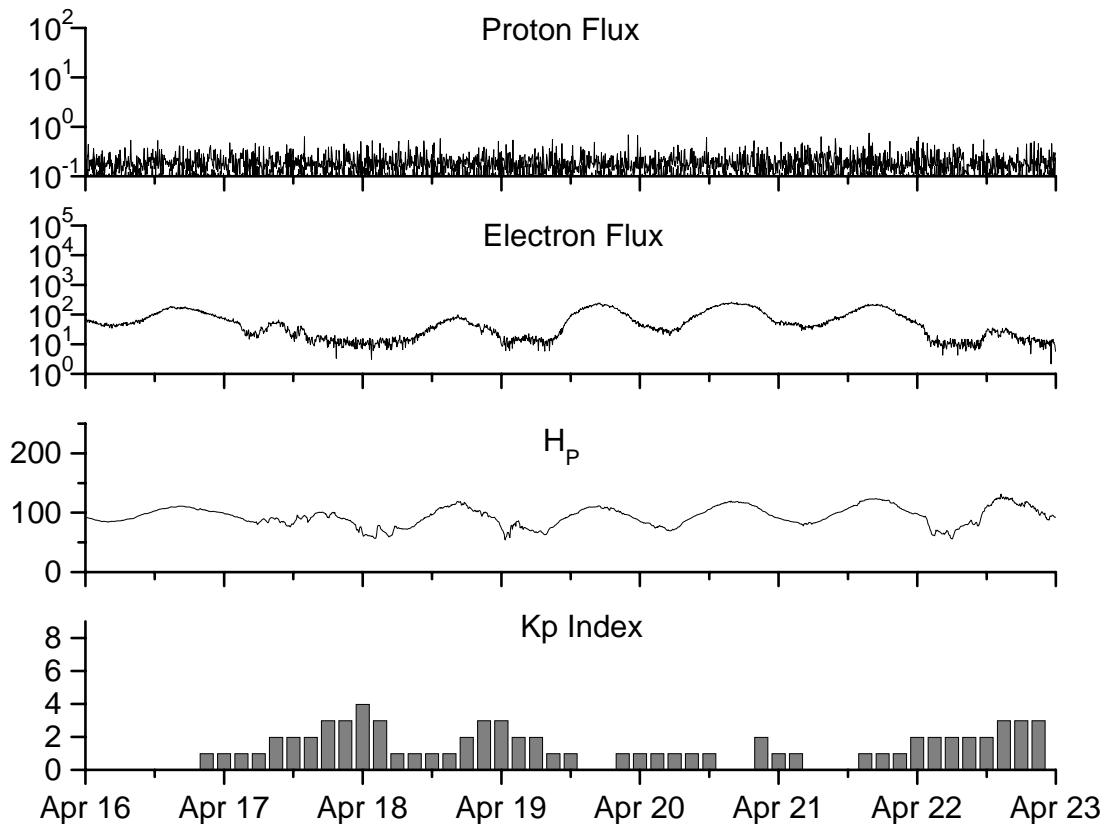


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

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									
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	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			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	
March	9.7	4.8	0.49			72.3		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 16 April 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.

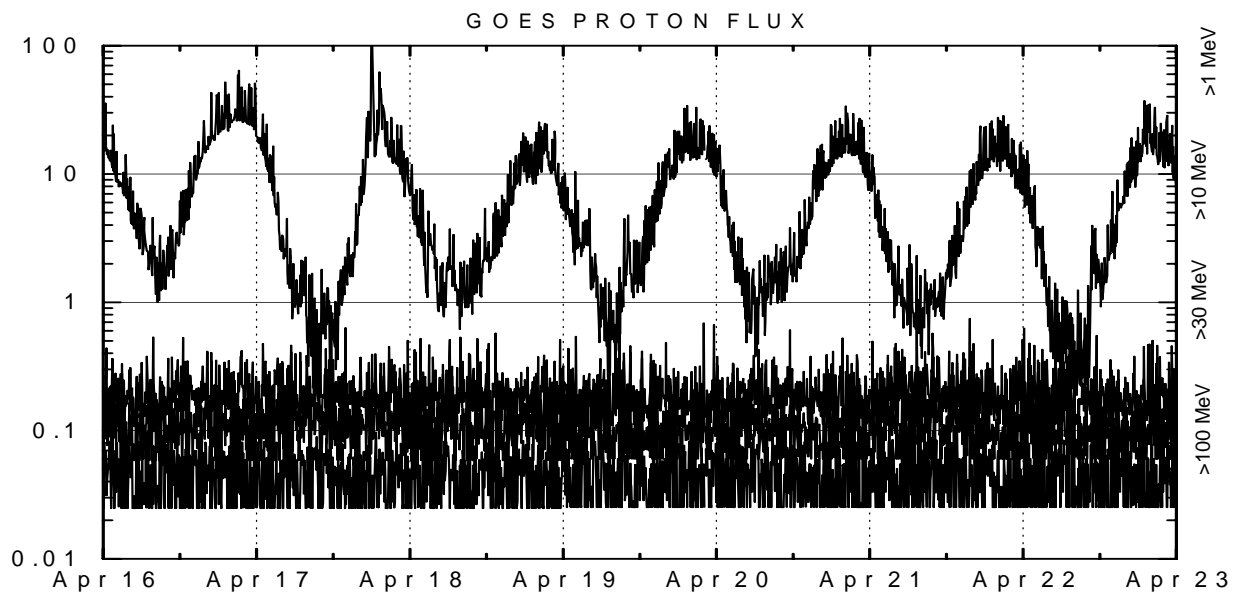
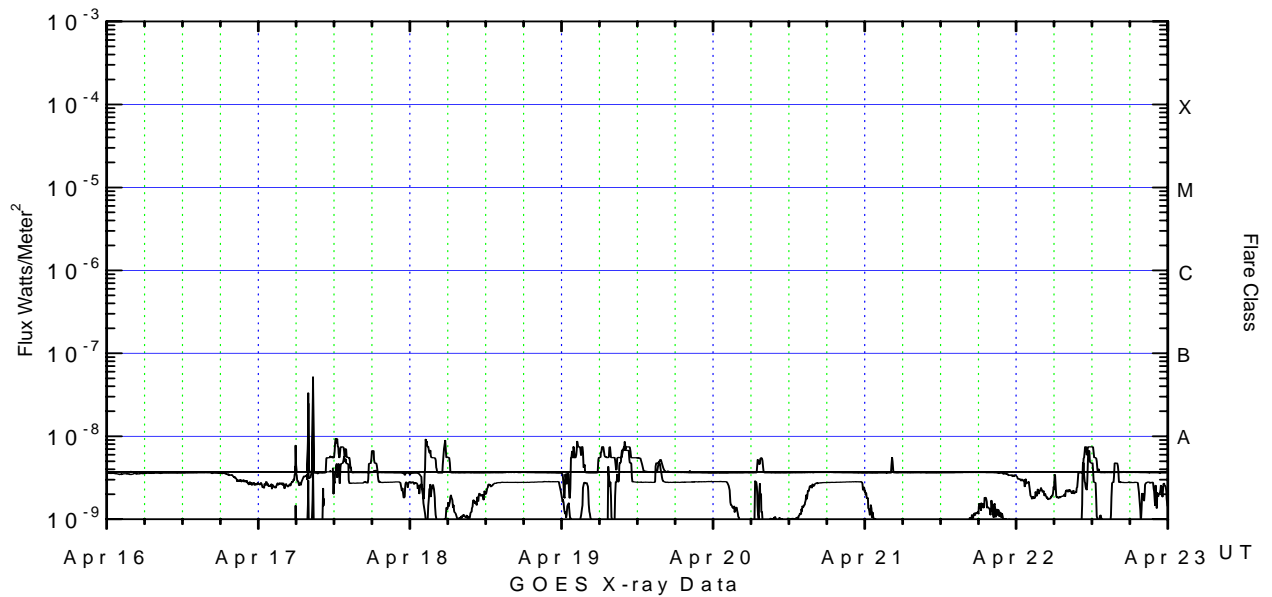
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²–sec–sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

