

Space Weather Highlights
14 – 20 April 2008

SEC PRF 1703
22 April 2008

Solar activity was very low. New-cycle polarity sunspot Region 990 (N27, L = 000, class/area Bxo/010 on 15 April) was numbered on 15 April. It produced a single low-level B-class flare on 16 April as it decayed to a spotless plage region.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 14 - 16 April.

Geomagnetic field activity was at mostly quiet levels during 14 - 15 April. Activity increased to active levels on 16 April with a brief minor storm period detected at high latitudes. Activity decreased to quiet to unsettled levels during 17 - 18 April. Mostly quiet conditions occurred during the rest of the period. ACE solar wind measurements indicated the onset of a co-rotating interaction region (CIR) on 15 April, in advance of a recurrent coronal hole high-speed stream (HSS). Interplanetary magnetic field changes during the CIR included increased Bt (peak 14 nT at 16/1424 UTC) and increased Bz variability (minimum -9 nT at 16/1124 UTC). The high-speed stream commenced on 16 April. ACE detected a peak velocity of 610 km/sec at 16/2204 UTC. Velocities decreased during 17 April, but remained elevated during the rest of the period (range: 465 - 584 km/sec).

Space Weather Outlook
23 April – 19 May 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 25 April - 13 May.

Geomagnetic field activity is expected to be at active levels during 23 - 24 April due to a recurrent coronal hole high-speed stream. Activity is expected to decrease to unsettled levels during 25 April as the high-speed stream subsides. Quiet conditions are forecast during 24 - 30 April. Activity is expected to increase to unsettled to active levels during 01 - 05 May with minor storm levels likely on 02 May as another recurrent coronal hole high-speed stream affects the field. Activity is expected to decrease to quiet to unsettled levels during 06 - 07 May as the high-speed stream subsides. Mostly quiet conditions are expected during 08 - 18 May. Activity is expected to increase to unsettled levels on 19 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
14 April	69	11	10	<A1.0	0	0	0	0	0	0	0	0
15 April	71	12	10	<A1.0	0	0	0	0	0	0	0	0
16 April	70	0	0	<A1.0	0	0	0	0	0	0	0	0
17 April	69	0	0	<A1.0	0	0	0	0	0	0	0	0
18 April	70	0	0	<A1.0	0	0	0	0	0	0	0	0
19 April	71	13	20	<A1.0	0	0	0	0	0	0	0	0
20 April	71	12	20	<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
	14 April	2.8E+6	1.8E+4	4.0E+3		3.4E+8
15 April	4.0E+6	1.8E+4	4.4E+3		3.6E+8	
16 April	1.7E+6	1.8E+4	4.5E+3		9.4E+6	
17 April	6.4E+5	1.8E+4	4.4E+3		1.2E+7	
18 April	6.5E+5	1.8E+4	4.3E+3		1.5E+7	
19 April	8.7E+5	1.7E+4	4.3E+3		2.7E+7	
20 April	1.0E+6	1.8E+4	4.3E+3		3.0E+7	

Daily Geomagnetic Data

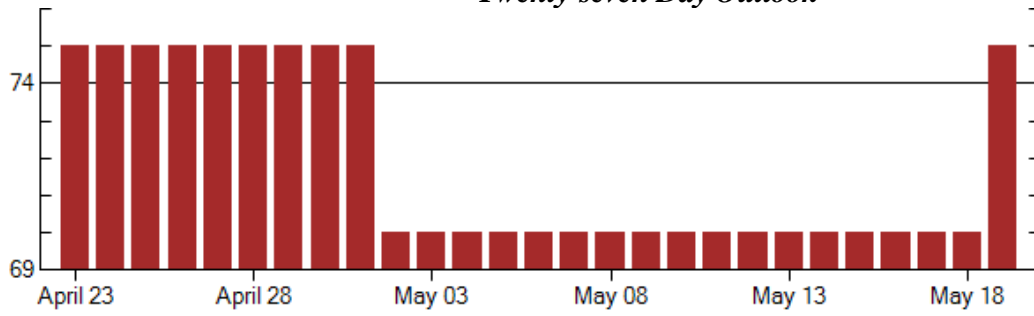
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	14 April	2	1-1-0-0-1-1-0-1	1	2-0-0-0-0-0-0-1	2
15 April	3	0-0-0-0-2-1-2-2	2	0-0-0-0-1-1-1-2	5	0-0-0-0-2-1-2-3
16 April	9	2-2-3-2-3-2-2-2	18	2-3-4-3-5-3-2-2	15	3-2-4-2-3-3-4-3
17 April	7	3-3-1-1-1-1-2-1	5	2-2-1-2-0-2-2-1	8	3-3-1-1-1-2-2-1
18 April	5	1-3-2-1-1-1-1-1	5	2-2-1-2-2-1-1-1	6	2-3-2-1-1-1-1-1
19 April	6	3-2-1-1-1-1-1-2	4	2-1-2-2-0-1-1-1	5	2-2-1-1-1-1-1-2
20 April	1	1-0-0-0-0-1-1-0	3	2-0-0-1-1-2-1-0	4	2-0-0-0-1-2-1-2

Alerts and Warnings Issued

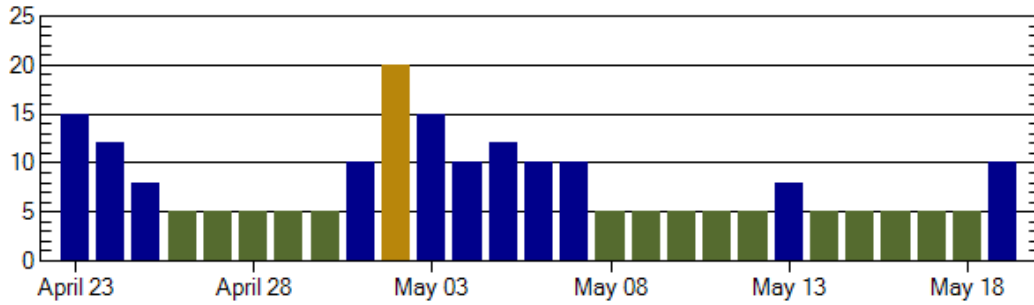
Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
14 Apr 0511	ALERT: Electron 2MeV Integral Flux >1000pfu	14 Apr 0500
15 Apr 0500	ALERT: Electron 2MeV Integral Flux >1000pfu	15 Apr 0500
16 Apr 0506	ALERT: Electron 2MeV Integral Flux >1000pfu	16 Apr 0500
16 Apr 0725	ALERT: Geomagnetic K=4	16 Apr 0724



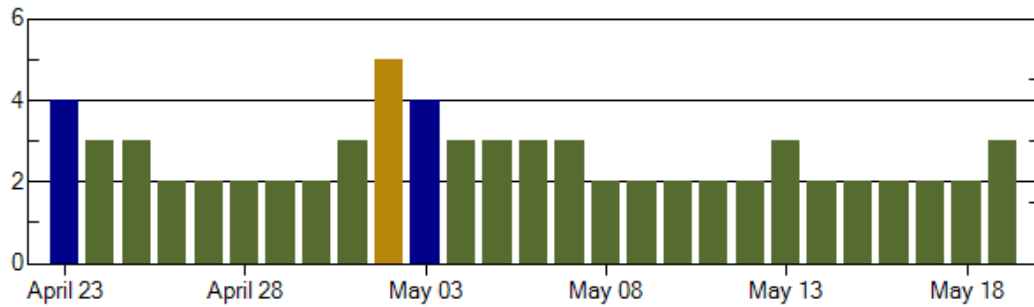
Twenty-seven Day Outlook



10.7 cm



Ap Index



Largest Daily Kp Index

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 Apr	75	15	4	07 May	70	10	3
24	75	12	3	08	70	5	2
25	75	8	3	09	70	5	2
26	75	5	2	10	70	5	2
27	75	5	2	11	70	5	2
28	75	5	2	12	70	5	2
29	75	5	2	13	70	8	3
30 Apr	75	5	2	14	70	5	2
01 May	75	10	3	15	70	5	2
02	70	20	5	16	70	5	2
03	70	15	4	17	70	5	2
04	70	10	3	18	70	5	2
05	70	12	3	19	75	10	3
06	70	10	3				



Energetic Events

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

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location	Rgn
	Begin	Max	End	X-ray		Lat CMD	
14 April	No Flares Observed						
15 April	No Flares Observed						
16 April	0631	0634	0637	B2.1			
17 April	No Flares Observed						
18 April	No Flares Observed						
19 April	No Flares Observed						
20 April	No Flares Observed						

Region Summary

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

Region 990

14 Apr N26E20	358	0010	01	Axx	001	A
15 Apr N27E05	000	0010	03	Bxo	002	B
16 Apr N27W08						
17 Apr N27W21						
18 Apr N27W34						
19 Apr N27W47						
20 Apr N27W60						

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 0

Region 991

19 Apr S09E29	282	0020	02	Bxo	003	B
20 Apr S10E15	283	0020	01	Axx	002	A

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 283



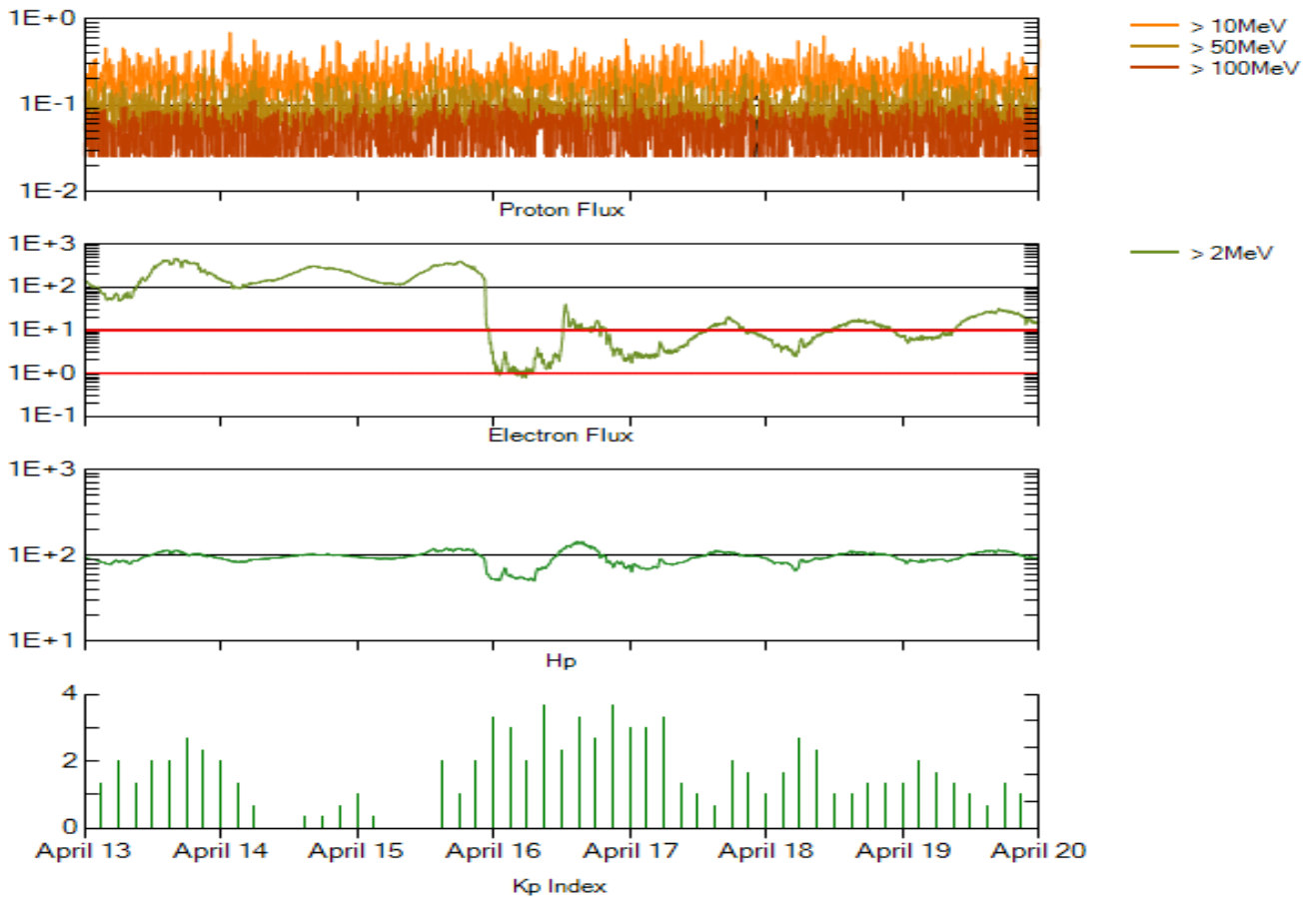
Recent Solar Indices (preliminary)
Of the observed monthly mean values

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									
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	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			65.5		9	
November	2.5	1.7	0.68			69.7		5	
December	16.2	10.1	0.62			78.6		4	
2008									
January	5.1	3.4	0.67			72.1		6	
February	3.8	2.1	0.55			71.2		9	
March	15.9	9.3	0.58			72.9		10	

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 13 April 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.

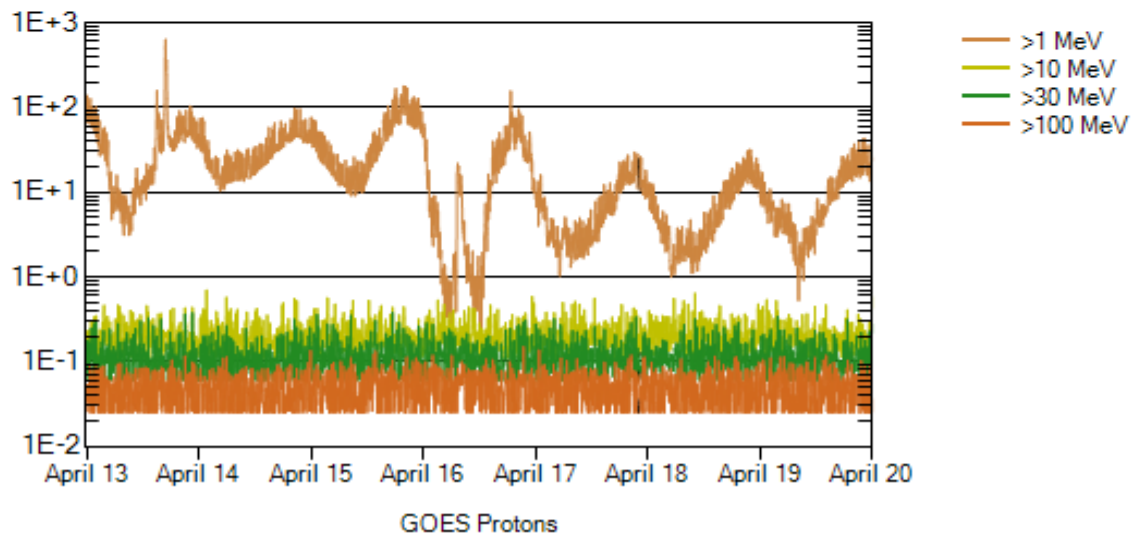
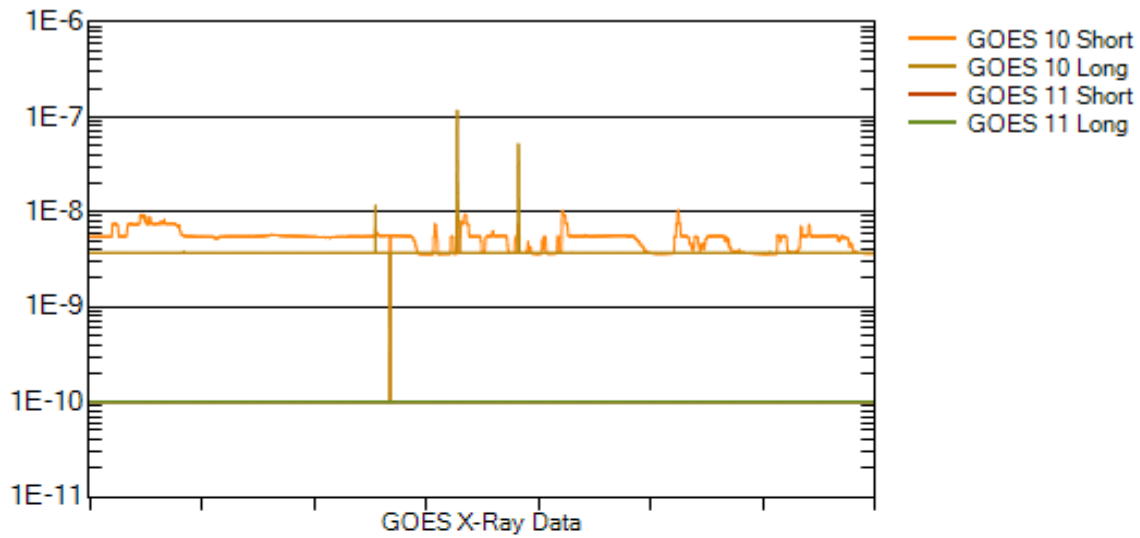
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

