

Space Weather Highlights
19 – 25 May 2008

SEC PRF 1708
27 May 2008

Solar activity was very low. No X-ray flares were observed during the period. Regions 994 (S12, L=310, class/area, Bxo/020 on 19 May) and 996 (N09, L=256, class/area, Bxo/010 on 19 May) were on the disk when the period began as B-type groups. By 21 May both of these regions had decayed to spotless plage, and remained spotless through the remainder of the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels during 23 - 25 May.

The geomagnetic field was at quiet to unsettled levels during the summary period. Activity levels did increase on 21 May to quiet to active levels due to a coronal hole high speed stream. Solar wind speed measurements from the ACE spacecraft began the period at around 340 km/s and slowly increased to a maximum of approximately 630 km/s at 1432 UTC on 21 May. The inter-planetary magnetic field (IMF) Bz component during this time ranged between +/- 7 nT. Solar wind speeds declined throughout the rest of the summary period to end at about 450 km/s, with IMF Bz ranging between +/- 5 nT.

Space Weather Outlook
28 May – 23 June 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 01 - 10 June and 19 - 23 June.

The geomagnetic field is expected to be at quiet levels on 28 May. On 29 May a coronal hole high speed stream is expected to rotate into a geoeffective position and increase activity levels to quiet to unsettled levels; isolated periods of active conditions may be observed during this period. On 10 June activity levels should decrease again to mostly quiet conditions through 14 June. Another coronal hole high speed stream is expected to impact the geomagnetic field on 15 June. Activity levels should increase again to quiet to unsettled levels, with a chance for isolated active conditions. On 23 June conditions are expected to be at quiet levels.



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	
19 May	69	28	30	<A1.0	0	0	0	0	0	0	0	0	0
20 May	69	23	20	<A1.0	0	0	0	0	0	0	0	0	0
21 May	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
22 May	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
23 May	68	0	0	<A1.0	0	0	0	0	0	0	0	0	0
24 May	69	0	0	<A1.0	0	0	0	0	0	0	0	0	0
25 May	68	0	0	<A1.0	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 May	1.6E+6	1.9E+4	4.4E+3		5.6E+6
20 May	1.3E+6	1.8E+4	4.5E+3		3.1E+6	
21 May	1.2E+6	1.8E+4	4.1E+3		3.0E+6	
22 May	1.7E+6	1.8E+4	4.0E+3		2.3E+7	
23 May	1.5E+6	1.7E+4	3.6E+3		5.0E+7	
24 May	1.3E+6	1.7E+4	3.4E+3		7.0E+7	
25 May	1.1E+6	1.6E+4	3.5E+3		1.4E+8	

Daily Geomagnetic Data

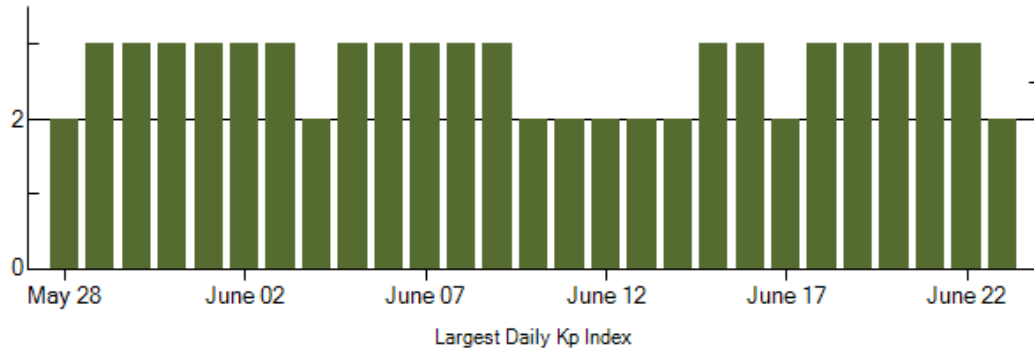
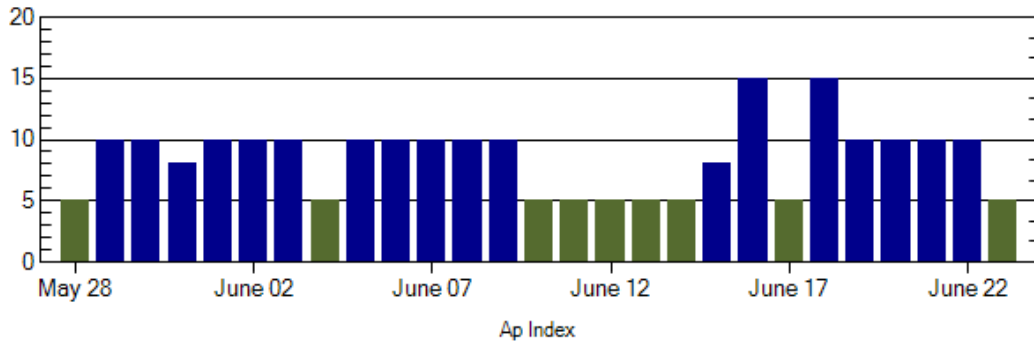
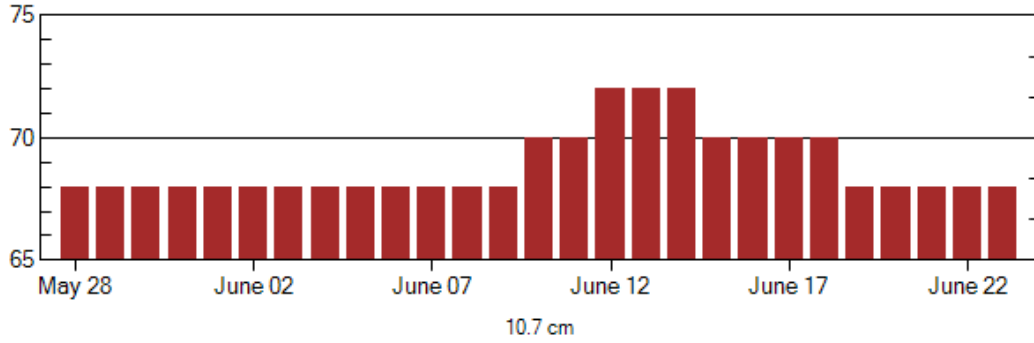
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	19 May	5	2-1-2-2-2-1-1-1	12	3-1-2-4-4-2-1-1	8
20 May	7	1-2-3-0-2-2-2-2	11	2-4-2-2-4-2-1-1	10	2-2-3-1-2-3-2-3
21 May	9	3-3-2-2-2-2-2-2	19	3-5-3-5-2-3-1-1	13	3-4-3-3-2-2-1-3
22 May	7	2-1-1-1-2-2-3-2	8	3-3-1-1-2-2-2-2	9	3-2-1-1-2-3-3-3
23 May	7	2-2-0-1-2-2-3-2	12	2-1-0-3-5-2-2-2	10	2-2-0-1-3-2-3-3
24 May	4	2-0-1-1-2-1-1-2	15	3-1-3-4-5-2-0-1	7	3-1-1-2-2-2-1-2
25 May	7	3-2-2-1-2-1-1-2	4	1-2-2-2-1-1-1-0	6	3-3-2-1-1-1-1-1

Alerts and Warnings Issued

Date & Time of Issue	Type of Alert or Warning	Date & Time of Event UTC
19 May 1548	WATCH: Geomagnetic A ≥ 20	20 May
21 May 0451	WARNING: Geomagnetic K = 4	21 May 0452 – 1600
21 May 0501	ALERT: Geomagnetic K = 4	21 May 0500
23 May 1421	ALERT: Electron 2MeV Integral Flux ≥1000pfu	23 May 1405
24 May 1401	ALERT: Electron 2MeV Integral Flux ≥1000pfu	24 May 1340
25 May 0956	ALERT: Electron 2MeV Integral Flux ≥1000pfu	25 May 0940



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 May	68	5	2	11 June	70	5	2
29	68	10	3	12	72	5	2
30	68	10	3	13	72	5	2
31	68	8	3	14	72	5	2
01 June	68	10	3	15	70	8	3
02	68	10	3	16	70	15	3
03	68	10	3	17	70	5	2
04	68	5	2	18	70	15	3
05	68	10	3	19	68	10	3
06	68	10	3	20	68	10	3
07	68	10	3	21	68	10	3
08	68	10	3	22	68	10	3
09	68	10	3	23	68	5	2
10	70	5	2				



Energetic Events

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

No Events Observed

Flare List

Date	Time			Optical	Imp / Brtns	Location	Rgn
	Begin	Max	End	Class.		Lat CMD	
19 May	<i>No Flares Observed</i>						
20 May	<i>No Flares Observed</i>						
21 May	<i>No Flares Observed</i>						
22 May	<i>No Flares Observed</i>						
23 May	<i>No Flares Observed</i>						
24 May	<i>No Flares Observed</i>						
25 May	<i>No Flares Observed</i>						

Region Summary

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

Region 994

16 May	S11E04	310	0015	01	Axx	001	A						
17 May	S09W09	310											
18 May	S12W22	310	0050	04	Bxo	006	B						
19 May	S12W36	310	0020	04	Bxo	005	B						
20 May	S12W50	311	0010	01	Axx	001	A						
21 May	S12W63	311											
22 May	S12W76	311											
23 May	S12W89	311											

0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 310



Region Summary – continued.

Location		Sunspot Characteristics						Flares			X-ray		Optical	
Date	(° Lat ° CMD)	Helio	Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	C	M	X	S	1	2	
		Lon												
<i>Region 995</i>														
16 May	N12E22	292	0010	01	Axx	001	A							
17 May	N11E09	292	0010	04	Axx	001	A							
18 May	N11W04	292												
19 May	N11W17	292												
20 May	N11W30	292												
21 May	N11W43	292												
22 May	N11W56	292												
23 May	N11W69	292												
24 May	N11W82	292												
								0	0	0	0	0	0	
Still on Disk.														
Absolute heliographic longitude: 292														
<i>Region 996</i>														
16 May	N13E59	255	0020	06	Bxo	002	B							
17 May	N10E46	255	0020	05	Bxo	002	B							
18 May	N10E32	256	0030	04	Bxo	004	B							
19 May	N09E18	256	0010	04	Bxo	003	B							
20 May	N10E05	256	0010	02	Bxo	002	B							
21 May	N10W08	256												
22 May	N10W21	256												
23 May	N10W34	256												
24 May	N10W47	256												
25 May	N10W60	256												
								0	0	0	0	0	0	
Still on Disk.														
Absolute heliographic longitude: 256														



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

Month	Sunspot Numbers			Smooth values		Radio Flux		Geomagnetic	
	Observed SEC	values RI	Ratio RI/SEC	SEC	RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2006									
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	10.0	6.1	65.5	71.5	9	7.9
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	
April	4.9	2.9	0.59			70.3		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 19 May 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.

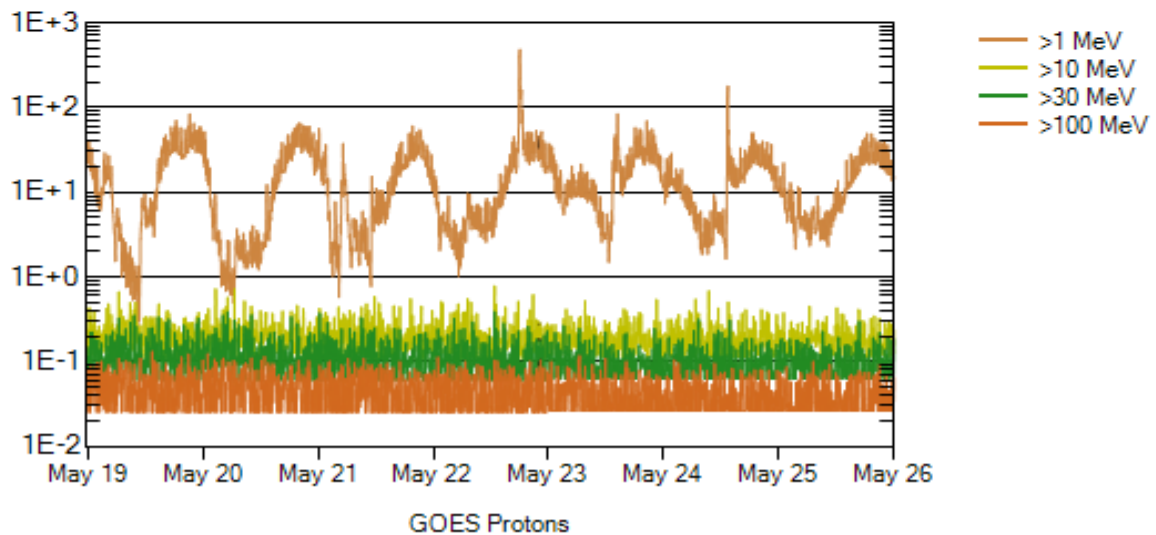
Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV at GOES-12 (W075).

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.

