

Solar activity was at very low to moderate levels during the period. The period began with very low activity, with a few isolated B-class flares observed. A long-duration B2 flare was observed at 24/2237 UTC from Region 1220 (N13, L=248, class/area Bxo/050 on 23 May). Activity increased to low levels on 25 May, with two C-class flares from Region 1223 (S16, L=115, class/area Dso/050 on 27 May). The first was a C1 flare at 25/2103 UTC, followed by a C1/Sf at 25/2158 UTC. A nine-degree filament eruption was observed between 25/0801-1256 UTC. Activity decreased to very low on 26 May, with three B-class flares, included a B4/Sf at 26/0110 UTC. Activity increased to low levels on 27 May, with five C-class flares, including a C5 flare at 27/1643 UTC from Region 1226 (S21, L=036, class/area Eki/360 on 29 May). Activity increased to moderate levels during 28-29 May. A long-duration M1 /Sf was observed at 28/2150 UTC from Region 1226, as well as an M1/1F observed at 29/1033 UTC. Type II radio emission (554 km/s shock velocity) was associated with this event.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels during 23 - 28 May. High levels were reached on 29 May.

Geomagnetic field activity was predominantly quiet during 23 - 26 May. Activity increased to quiet to unsettled levels, with active periods at high latitudes, on 27 May. Activity increased to quiet to severe levels during 28-29 May. A co-rotating interaction region, in advance of a coronal hole high-speed stream (CH HSS), occurred during 27- 29 May. A CME was observed to interact with the field during 28-29 May.

Space Weather Outlook

01 June - 27 June 2011

Solar activity is expected to be low with a chance for M-class flares through 9 June. Activity is expected to decrease to very low to low levels during 10 - 14 June. Activity is expected to increase to low with a chance for M-class flares.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels through 5 June. Normal levels are expected during 9 - 27 June.

Geomagnetic field activity is expected to be at quiet to unsettled levels, with active levels at high latitudes during 1 - 5 June, due to an expected CME and a recurrent CH HSS. Activity is expected to decrease to predominantly quiet levels during 6 - 10 June. Activity is expected to increase to quiet to unsettled levels, with isolated active levels at high latitudes during 11-13 June, due to an expected CH HSS. Quiet to unsettled levels are expected during 14-22 June. Quiet to unsettled levels, with isolated active levels are expected during 23 - 25 June due to a recurrent CH HSS. Activity is expected to decrease to mostly quiet during 26 - 27 June.



Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 ⁻⁶ hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
23 May	84	37	140	A9.1	0	0	0	0	0	0	0	0
24 May	82	23	100	A7.4	0	0	0	0	0	0	0	0
25 May	80	23	70	A7.3	2	0	0	2	0	0	0	0
26 May	83	40	130	A7.2	0	0	0	1	0	0	0	0
27 May	90	65	180	B2.2	5	0	0	1	0	0	0	0
28 May	101	91	540	B5.5	18	1	0	10	0	0	0	0
29 May	111	89	730	B5.3	12	1	0	15	1	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	>0.6 MeV	>2MeV	>4 MeV
	23 May	2.0e+05	1.3e+04	3.3e+03		5.4e+06
24 May	2.3e+05	1.3e+04	3.1e+03		6.7e+06	
25 May	1.5e+05	1.3e+04	3.2e+03		6.7e+06	
26 May	2.3e+05	1.3e+04	3.2e+03		7.6e+06	
27 May	2.6e+05	1.3e+04	3.3e+03		2.4e+06	
28 May	3.7e+05	1.2e+04	3.0e+03		1.9e+06	
29 May	1.4e+06	1.2e+04	2.9e+03		1.6e+08	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	23 May	4	1-0-0-1-2-1-2-2	5	2-0-0-1-3-0-2-2	4
24 May	5	2-1-1-1-2-2-1-2	5	1-2-1-1-3-1-1-1	6	2-1-1-1-2-2-1-2
25 May	2	0-1-0-1-1-1-0-1	2	2-1-1-0-0-0-0-1	4	1-1-1-0-1-1-1-2
26 May	4	1-2-1-1-2-2-0-1	4	1-2-1-1-1-2-1-1	7	2-2-1-0-2-2-2-2
27 May	7	1-2-1-1-2-2-2-3	15	1-2-2-4-4-3-3-3	11	1-2-2-2-3-3-3-3
28 May	32	4-2-6-6-4-2-1-4	67	4-3-8-7-6-3-1-3	40	4-3-6-6-6-2-2-4
29 May	17	3-4-3-3-3-4-3-2	54	3-5-6-7-5-6-3-2	32	4-6-5-4-3-5-4-3

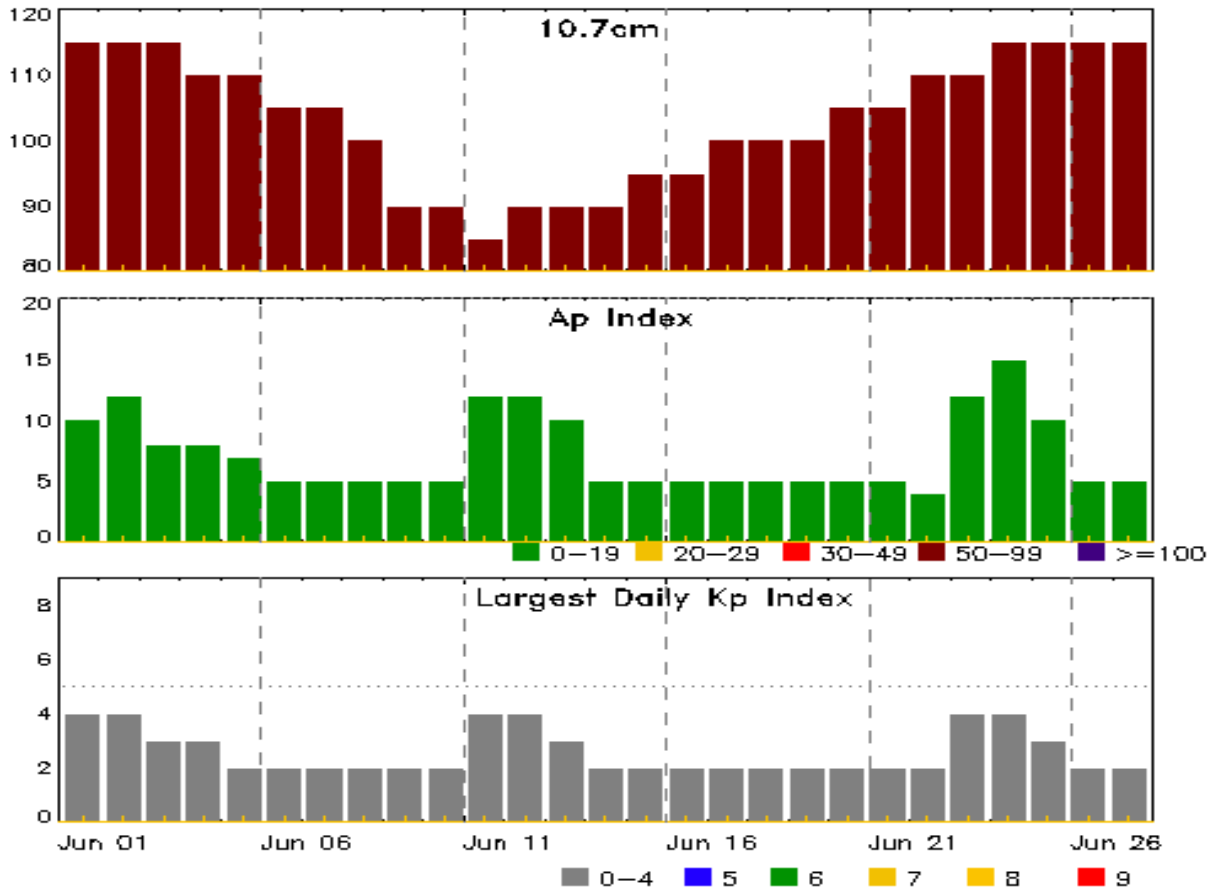


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
26 May 1623	WARNING: Geomagnetic K = 4	26/1630 - 27/0000
26 May 1656	ALERT: Geomagnetic K = 4	26/1654
27 May 1740	WARNING: Geomagnetic K = 4	27/1740 - 28/1600
28 May 0135	ALERT: Geomagnetic K = 4	28/0134
28 May 0616	WARNING: Geomagnetic K = 5	28/0620 - 1600
28 May 0841	ALERT: Geomagnetic K = 5	28/0840
28 May 0845	WARNING: Geomagnetic K = 6	28/0845 - 1200
28 May 0850	ALERT: Geomagnetic K = 6	28/0849
28 May 1000	ALERT: Geomagnetic K = 6	28/0959
28 May 1154	EXTENDED WARNING: Geomagnetic K = 6	28/0845 - 1600
28 May 1547	EXTENDED WARNING: Geomagnetic K = 5	28/0620 - 29/1600
28 May 1842	WATCH: Geomagnetic A \geq 20	29/
28 May 2204	WARNING: Geomagnetic K = 4	28/2205 - 29/1600
28 May 2241	ALERT: Geomagnetic K = 4	28/2240
29 May 0515	WARNING: Geomagnetic K = 6	29/0515 - 1600
29 May 1058	ALERT: Type II Radio Emission	29/1025
29 May 1301	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	29/1240
29 May 1545	EXTENDED WARNING: Geomagnetic K = 4	28/2205 - 30/1600
29 May 1741	WARNING: Geomagnetic K = 5	29/1739 - 2359
29 May 1746	ALERT: Geomagnetic K = 5	29/1745
29 May 2312	EXTENDED WARNING: Geomagnetic K = 5	29/1739 - 30/1600



Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
01 Jun	115	10	4	15 Jun	95	5	2
02	115	12	4	16	95	5	2
03	115	8	3	17	100	5	2
04	110	8	3	18	100	5	2
05	110	7	2	19	100	5	2
06	105	5	2	20	105	5	2
07	105	5	2	21	105	5	2
08	100	5	2	22	110	4	2
09	90	5	2	23	110	12	4
10	90	5	2	24	115	15	4
11	85	12	4	25	115	10	3
12	90	12	4	26	115	5	2
13	90	10	3	27	115	5	2
14	90	5	2				



Energetic Events

Date	Time			X-ray	Optical Information			Peak		Sweep Freq		
	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux 245	Radio Flux 2695	Intensity II	Intensity IV
28 May	2109	2150	2201	M1.1	0.023	SF	S20E71	1226				
29 May	1008	1033	1108	M1.4	0.038	1F	S22E65	1226	100		1	

Flare List

Date	Time			X-ray Class	Optical			Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #	
23 May	0237	0248	0250	B1.9				
24 May	2211	2237	2330	B2.0				1220
25 May	0341	0430	0457	B1.9				1218
25 May	1237	1302	1334	B1.2				1223
25 May	2009	2014	2018	B4.1				1223
25 May	2056	2103	2112	C1.1	SF	S15E31		1223
25 May	2150	2158	2203	C1.4	SF	S15E31		1223
25 May	2225	2231	2239	B3.0				1223
26 May	0021	0025	0028	B1.3				1218
26 May	0101	0110	0115	B4.4	SF	S15E30		1223
26 May	1646	1654	1711	B1.9				1226
27 May	0950	0953	0959	B4.4				1223
27 May	1158	1215	1238	B7.7				1226
27 May	1441	1453	1502	C2.1				1226
27 May	1557	1601	1615	B3.9				
27 May	1638	1643	1647	C5.6				1226
27 May	1753	1804	1810	C1.1				1226
27 May	1933	1943	1958	C1.4				1226
27 May	2058	2105	2112	B9.3				1226
27 May	2231	2235	2252	C1.2	SF	S20E90		1226
28 May	0027	0035	0043	C1.4				1226
28 May	0222	0232	0251	C1.6				1226
28 May	0304	0331	0343	C8.3				1226
28 May	0555	0556	0607		SF	S22E80		1226
28 May	0614	0629	0634	C1.7	SF	S21E76		1226
28 May	0651	0711	0723	C2.1				
28 May	0801	0806	0809	C4.4	SF	S21E76		1226
28 May	0826	0902	0918	C7.7	SF	S21E76		1226
28 May	1022	1028	1045	C5.3	SF	S21E73		1226
28 May	1157	1159	1203		SF	S21E70		1226



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	Rgn #
28 May	1210	1216	1225		SF	S21E75	1226
28 May	1242	1245	1248	C1.9			1226
28 May	1311	1315	1317	C1.4			1226
28 May	1337	1340	1343	C1.0	SF	S21E69	1226
28 May	1520	1525	1529	C1.2			
28 May	1539	1543	1547	C1.0			1226
28 May	1720	1723	1726	C1.9	SF	S21E74	1226
28 May	1842	1846	1850	C2.2			1226
28 May	1944	1953	2001	C1.2			
28 May	2109	2150	2201	M1.1	SF	S20E71	1226
28 May	2257	2300	2305	C2.4			
28 May	2341	2346	2353	C1.4			
29 May	0009	0014	0021	C2.1			
29 May	0059	0059	0103		SF	S21E67	1226
29 May	0133	0142	0145	C4.6			1216
29 May	0154	0159	0203	C5.9			1224
29 May	0526	0531	0535	C1.0			1216
29 May	0612	0617	0622	C1.8			
29 May	0700	0705	0706		SF	S18E74	1227
29 May	0713	0716	0719	B9.4			
29 May	0721	0721	0732	C2.6	SF	S23E64	1226
29 May	0807	0833	0848	C2.4			
29 May	0857	0900	0902	C1.6			
29 May	0905	0905	0909		SF	S18E74	1227
29 May	0916	0924	0927	C3.7	SF	S22E65	1226
29 May	0944	0947	0949	C3.0	SF	S21E65	1226
29 May	1003	1038	1133	M1.4	1F	S22E65	1226
29 May	1012	1014	1021		SF	N17E77	1228
29 May	1134	1140	1150	C7.7	SF	S23E61	1226
29 May	1453	1506	1514		SF	N15W65	1222
29 May	1515	1515	1522		SF	N15W65	1222
29 May	1526	1526	1530		SF	N15W65	1222
29 May	1536	1544	1546		SF	N15W66	1222
29 May	1540	1544	1548		SF	S19E32	1226
29 May	1555	1557	1602		SF	N14W66	1222
29 May	2011	2120	2148	C8.7	SF	S18E68	1227



Region Summary

Date	Location		Sunspot Characteristics				Flares									
	Lat	CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
			Lon	10 ⁻⁶ hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
Region 1216																
16 May	S14E66	195	90	2	Hsx	1	A									
17 May	S15E54	194	80	2	Hsx	1	A									
18 May	S14E41	194	110	1	Hsx	1	A									
19 May	S14E27	194	110	2	Hsx	1	A									
20 May	S16E19	188	90	2	Hsx	1	A									
21 May	S15E01	193	90	2	Hax	1	A									
22 May	S15W11	194	80	2	Hsx	1	A									
23 May	S15W25	194	70	2	Hsx	1	A									
24 May	S15W38	194	90	2	Hsx	1	A									
25 May	S15W52	194	60	2	Hsx	1	A									
26 May	S15W64	193	70	1	Hsx	1	A									
27 May	S16W78	194	60	1	Hsx	1	A									
28 May	S16W90	193	60	2	Hsx	1	A									
									0	0	0	0	0	0	0	0

Crossed West Limb.
 Absolute heliographic longitude: 193

Region 1218																
18 May	S16E66	169	0		Axx	1	A									
19 May	S15E54	166	10	4	Bxo	2	B									
20 May	S16E40	167	10		Axx	1	A									
21 May	S15E28	167	10	1	Axx	1	A									
22 May	S16E14	168	10	1	Axx	1	A									
23 May	S16W00	170	plage													
24 May	S16W14	170	plage													
25 May	S16W28	171	plage													
26 May	S16W42	172	plage													
27 May	S16W56	173	plage													
28 May	S16W70	173	plage													
29 May	S16W84	174	plage													
									1	0	0	0	0	0	0	0

Still on Disk.
 Absolute heliographic longitude: 170



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Lon	Helio 10 ⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
								C	M	X	S	1	2	3	4		
Region 1219																	
21 May	N15E71	125	0	1	Axx	1	A										
22 May	N15E57	126	plage														
23 May	N15E43	127	plage														
24 May	N15E29	127	plage														
25 May	N15E15	128	plage														
26 May	N15E01	129	plage														
27 May	N15W13	130	plage														
28 May	N15W27	130	plage														
29 May	N15W41	131	plage														
								0	0	0	0	0	0	0	0	0	0
Still on Disk.																	
Absolute heliographic longitude: 129																	
Region 1220																	
22 May	N14W65	248	10	2	Bxo	4	B					1					
23 May	N13W79	248	50	3	Bxo	4	B										
24 May	N12W94	249	10	1	Bxo	2	B										
								0	0	0	1	0	0	0	0	0	0
Crossed West Limb.																	
Absolute heliographic longitude: 248																	
Region 1221																	
23 May	S18W69	238	20	2	Bxo	2	B										
24 May	S18W83	239	plage														
								0	0	0	0	0	0	0	0	0	0
Crossed West Limb.																	
Absolute heliographic longitude: 238																	
Region 1222																	
25 May	N15W24	166	10	3	Bxo	2	B										
26 May	N16W37	166	10	2	Axx	3	A										
27 May	N16W51	168	plage														
28 May	N16W66	169	0	1	Axx	1	A										
29 May	N16W80	170	0	1	Axx	2	A					5					
								0	0	0	5	0	0	0	0	0	0

Still on Disk.
 Absolute heliographic longitude: 166



Region Summary - continued

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

Region 1223

26 May	S15E14	114	50	5	Cso	6	B					1					
27 May	S16W00	115	50	6	Dso	6	B										
28 May	S16W12	115	20	6	Bxo	5	B										
29 May	S17W22	112	plage														
									2	0	0	3	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 115

Region 1224

27 May	N21W15	131	30	5	Dso	6	B										
28 May	N20W28	131	130	7	Dso	14	B										
29 May	N20W41	131	130	8	Cai	10	BD	1									
								1	0	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 131

Region 1225

27 May	N18E55	60	20	1	Hsx	1	A										
28 May	N17E43	60	60	2	Hsx	1	A										
29 May	N17E30	60	40	2	Hsx	1	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 60

Region 1226

27 May	S18E74	42	20	1	Hsx	1	A	5				1					
28 May	S19E65	38	270	11	Eai	9	BD	13	1			10					
29 May	S21E54	36	360	11	Eki	12	BD	4	1			6	1				
								22	2	0	17	1	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 36

Region 1227

29 May	S19E69	21	80	3	Cso	3	B	1				3					
								1	0	0	3	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 21



Region Summary - continued

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

Region 1228

29 May	N17E67	23	120	4	Hsx	1	A	0	0	0	1	0	0	0	0
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Still on Disk.

Absolute heliographic longitude: 23

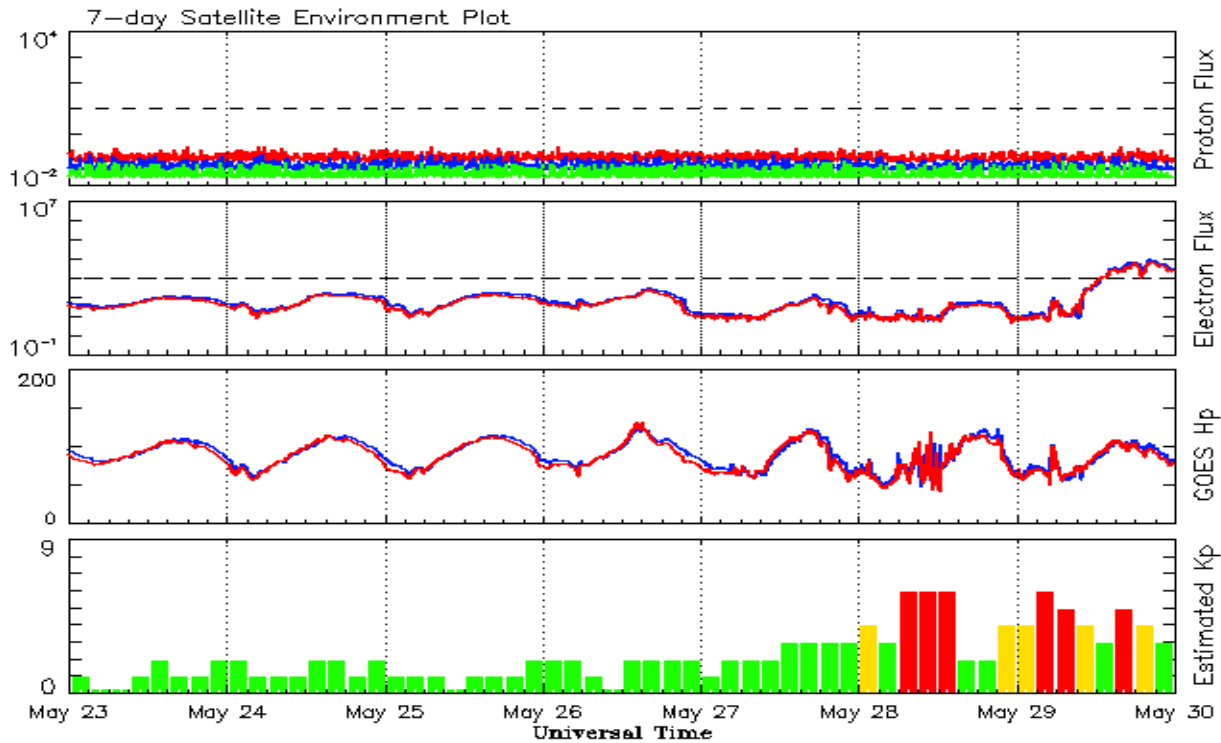


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2009									
May	3.9	2.9	0.74	3.8	2.3	70.5	69.7	4	4.1
June	6.6	2.9	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.2	0.70	5.8	3.6	68.2	71.0	4	3.9
August	0.3	0.0	0.00	7.7	4.8	67.4	72.1	5	3.8
September	6.6	4.3	0.64	9.9	6.2	70.5	73.3	4	3.8
October	7.0	4.8	0.66	11.3	7.1	72.3	74.1	3	4.1
November	7.7	4.1	0.55	12.4	7.6	73.6	74.5	3	4.5
December	15.7	10.8	0.68	13.6	8.3	76.8	74.9	2	4.8
2010									
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62	19.1	12.3	83.3	77.5	5	5.3
April	11.2	8.0	0.71	21.4	14.0	75.9	78.3	10	5.5
May	19.9	8.7	0.44	23.8	15.5	73.8	79.0	8	5.7
June	17.9	13.6	0.75	25.2	16.4	72.6	79.7	7	5.8
July	23.1	16.1	0.70	25.9	16.7	79.9	80.1	5	6.0
August	28.2	19.6	0.70	27.3	17.4	79.7	80.7	8	6.2
September	35.6	25.2	0.71	30.6	19.6	81.1	82.4	5	6.3
October	35.0	23.5	0.67	35.9	23.2	81.6	85.3	6	6.4
November	36.1	21.5	0.60			82.5		5	
December	22.0	14.4	0.66			84.3		4	
2011									
January	32.1	19.0	0.59			83.7		6	
February	53.2	29.4	0.55			94.5		6	
March	81.0	56.2	0.69			115.3		7	
April	81.7	54.4	0.67			112.6		9	

Note: Values are final except for the most recent 6 months which are considered preliminary. Cycle 23 started in May 1996 with an RI=8.0. Cycle 23 maximum was April 2000 with an RI=120.8. Solar minimum for Cycle 23 was December 2008.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 23 May 2011*

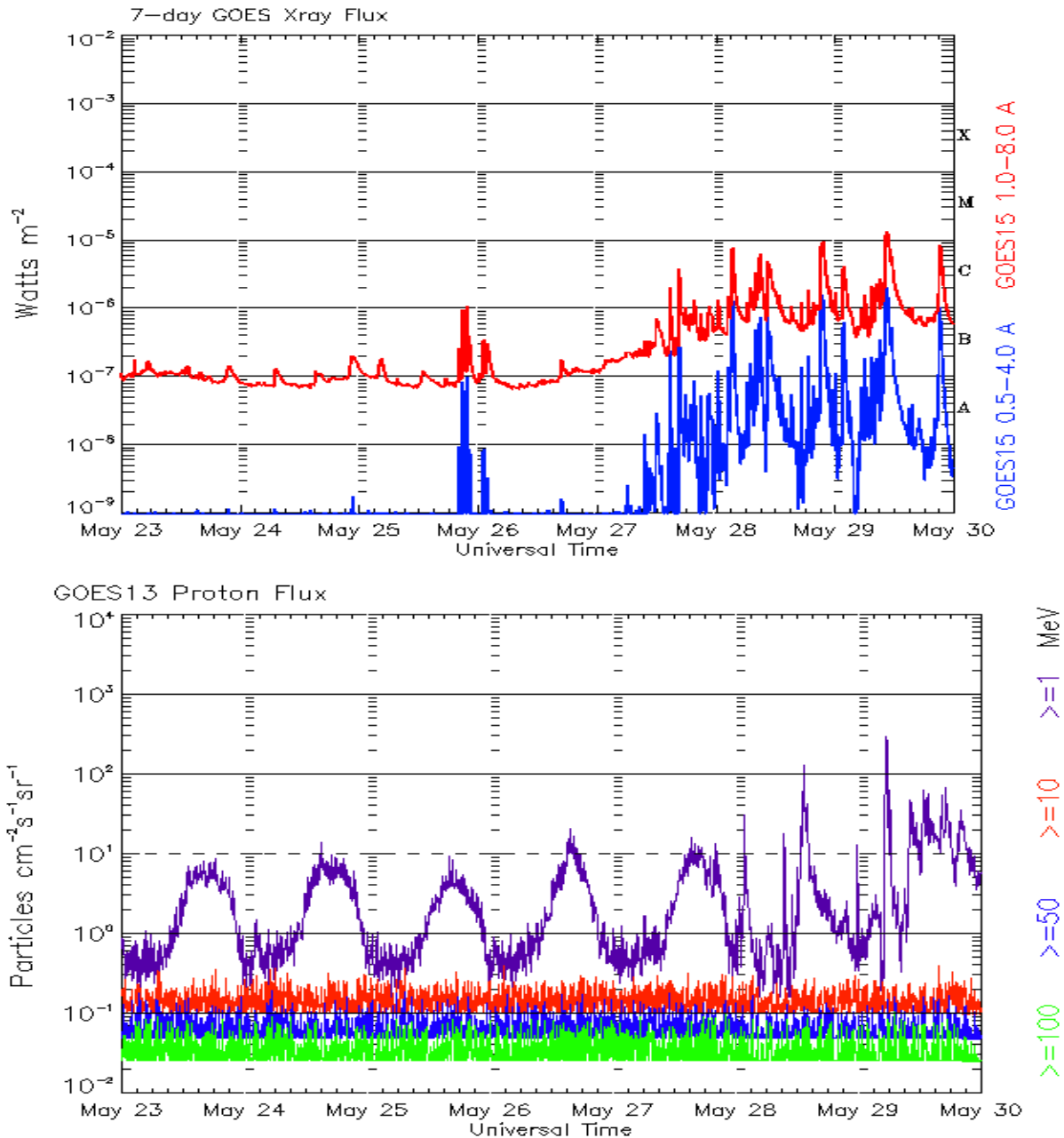
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp 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 SWPC 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
Week Beginning 23 May 2011*

The x-ray plots contains five-minute averages x-ray flux (Watt/m²) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm² -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.



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Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

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