

**Space Weather Highlights**  
**18 March - 24 March 2013**

**SWPC PRF 1960**  
**25 March 2013**

Solar activity was very low to moderate. Low activity dominated the week with low level C-class flares observed on 18-20 and March. Activity increased to moderate levels on 21 March when Region 1692 (N09, L=077, class/area Dki/340 on 20 Mar) produced an M1 flare at 21/2204 UTC. A filament eruption was observed around 19/1400 UTC from the area surrounding Region 1695 (N10, L=055, class/area Dao/180 on 18 Mar). A faint Earth-directed CME was associated with this event, as well as Type II (850 km/s) and Type IV radio sweeps. The period ended with very low levels on 23-24 March.

No proton events were observed at geosynchronous orbit. The period began with slightly enhanced proton levels due to residual effects from the 15 March CME but returned to background levels by 19 March.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate to high levels. Moderate levels were observed on 18-19 March followed by an increase to high levels on 20-23 March reaching a peak flux of 3,880 particle flux units (pfu) at 22/1640 UTC. Flux decayed to moderate levels on 24 March.

Geomagnetic field activity was at quiet to active levels. The period began with mostly quiet conditions from 18-20 March. An increase to quiet to active levels was observed on 21 March due to effects from the two CMEs related to filament activity on 17 March. Quiet conditions prevailed for the remainder of the period with the exception of an isolated active period at the close of 23 March. This increase in activity was possibly related to the weak CME observed on 19 March.

**Space Weather Outlook**  
**25 March - 20 April 2013**

Solar activity is expected to be very low to low throughout the period. A slight chance for M-class activity is possible from 01-13 April when old Regions 1692, 1696 (N04, L=095) and 1698 (S19, L=118) return to the visible disk.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to begin the period at normal to moderate levels. High levels are expected from 29 March-04 April due to recurrent coronal hole high speed stream effects (CH HSS). A return to normal to moderate levels is expected for the remainder of the period.

Geomagnetic field activity is expected to begin the period at mostly quiet levels. Quiet to active conditions with a chance for minor storm periods are expected on 28-30 March due to recurrent CH HSS effects.



### ***Daily Solar Data***

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
18 March	118	116	930	B3.7	9	0	0	0	0	0	0	0
19 March	110	68	630	B2.6	5	0	0	1	0	0	0	0
20 March	108	70	520	B3.1	3	0	0	1	0	0	0	0
21 March	106	60	460	B2.8	4	1	0	0	0	0	0	0
22 March	101	54	210	B3.2	7	0	0	5	0	0	0	0
23 March	98	56	250	B2.1	0	0	0	1	0	0	0	0
24 March	96	45	180	B1.3	0	0	0	0	0	0	0	0

### ***Daily Particle Data***

Date	Proton Fluence (protons/cm <sup>2</sup> -day -sr)			Electron Fluence (electrons/cm <sup>2</sup> -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
18 March	8.2e+06	3.3e+04	2.3e+03		1.4e+07	
19 March	3.0e+06	1.1e+04	2.4e+03		2.8e+07	
20 March	1.4e+06	1.1e+04	2.8e+03		5.0e+07	
21 March	6.9e+05	1.1e+04	2.7e+03		8.4e+07	
22 March	1.3e+06	1.1e+04	2.7e+03		1.8e+08	
23 March	1.2e+06	1.1e+04	2.7e+03		8.8e+07	
24 March	4.9e+05	1.1e+04	2.8e+03		3.1e+07	

### ***Daily Geomagnetic Data***

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
18 March	6	2-2-2-1-2-2-2-1	7	2-2-3-2-1-1-2-1	7	3-2-2-2-1-1-2-2
19 March	4	1-1-1-1-1-1-2-2	3	2-1-0-0-0-1-2-2	5	2-1-1-0-0-1-2-2
20 March	7	1-2-2-1-2-2-2-3	18	2-4-2-1-5-4-2-3	9	2-2-2-1-2-2-3-3
21 March	11	3-4-4-1-1-1-1-1	14	3-5-4-2-1-1-1-1	12	4-4-4-1-1-1-1-1
22 March	2	0-0-0-1-1-1-2-1	2	0-0-0-1-0-1-2-1	4	1-0-0-1-1-1-2-2
23 March	10	2-1-2-2-2-2-3-4	15	2-1-2-4-5-2-3-2	11	2-1-2-2-3-2-3-4
24 March	6	2-1-2-2-2-2-2-1	11	2-1-2-5-2-3-1-0	5	2-1-2-2-1-1-2-1

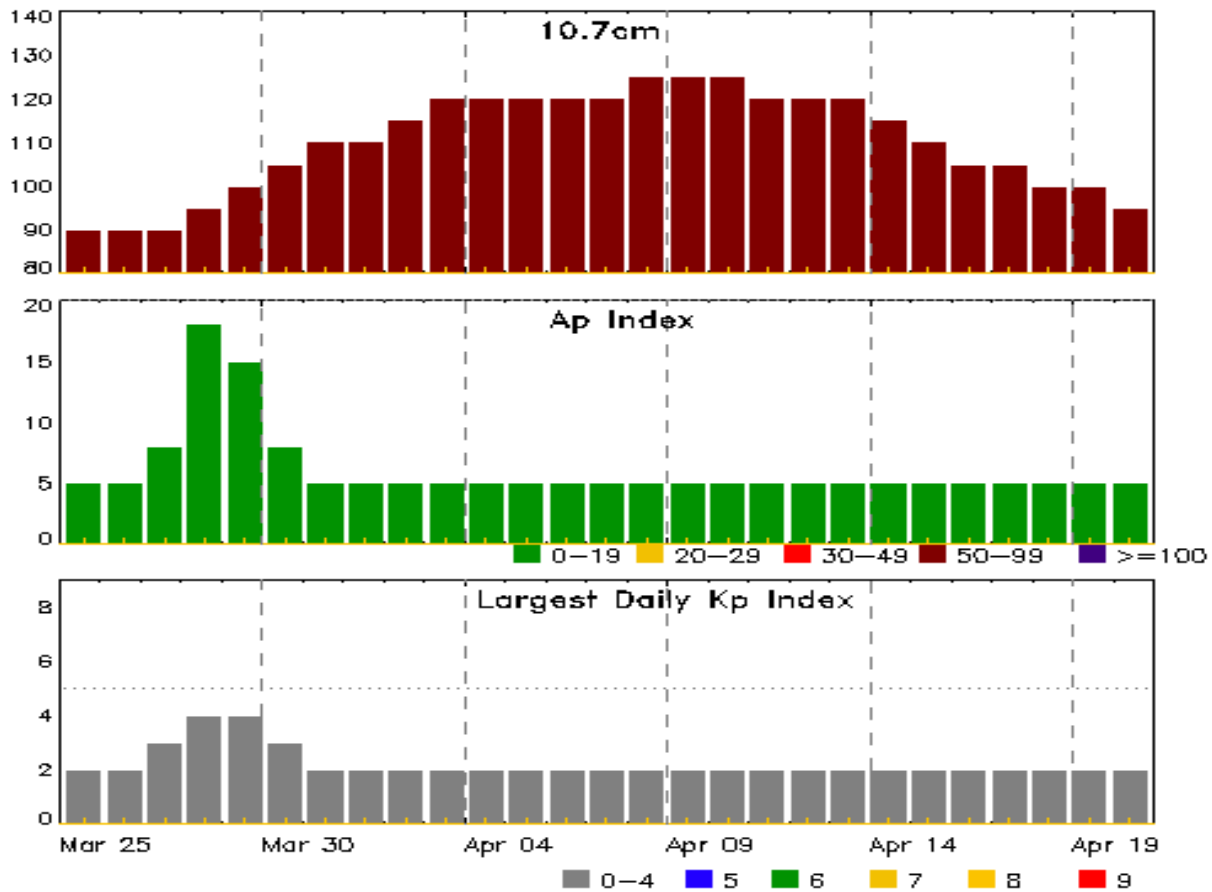


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
19 Mar 0214	ALERT: Type IV Radio Emission	19/0039
19 Mar 1435	ALERT: Type II Radio Emission	19/1415
19 Mar 1506	ALERT: Type IV Radio Emission	19/1425
20 Mar 1745	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	20/1720
21 Mar 0047	WARNING: Geomagnetic K = 4	21/0047 - 0600
21 Mar 0052	ALERT: Geomagnetic K = 4	21/0048
21 Mar 0519	EXTENDED WARNING: Geomagnetic K = 4	21/0047 - 1200
21 Mar 0657	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	20/1720
22 Mar 0512	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	20/1720
23 Mar 1017	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	20/1720
23 Mar 2127	WARNING: Geomagnetic K = 4	23/2128 - 24/0500
23 Mar 2241	ALERT: Geomagnetic K = 4	23/2240



## Twenty-seven Day Outlook



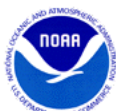
Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
25 Mar	90	5	2	08 Apr	125	5	2
26	90	5	2	09	125	5	2
27	90	8	3	10	125	5	2
28	95	18	4	11	120	5	2
29	100	15	4	12	120	5	2
30	105	8	3	13	120	5	2
31	110	5	2	14	115	5	2
01 Apr	110	5	2	15	110	5	2
02	115	5	2	16	105	5	2
03	120	5	2	17	105	5	2
04	120	5	2	18	100	5	2
05	120	5	2	19	100	5	2
06	120	5	2	20	95	5	2
07	120	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		Intensity II	IV
									245	2695		
21 Mar	2142	2204	2236	M1.6	0.033			1692				

### ***Flare List***

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
18 Mar	0117	0132	0140	B9.5				1700
18 Mar	0214	0218	0223	C1.4				1698
18 Mar	0315	0321	0325	C2.8				1698
18 Mar	0559	0605	0610	C1.7				
18 Mar	0627	0632	0641	C2.1				1698
18 Mar	0657	0700	0703	C1.5				1698
18 Mar	0749	0754	0759	C1.2				1698
18 Mar	1127	1135	1140	C1.2				1698
18 Mar	1220	1227	1234	B8.1				1700
18 Mar	2054	2058	2102	C1.3				1698
18 Mar	2255	2305	2325	C1.4				1698
19 Mar	0051	0117	0136	C4.3				1698
19 Mar	1052	1102	1108	B6.2				1698
19 Mar	1350	1423	1442	C1.5	SF	N11W27		1695
19 Mar	1609	1618	1627	C1.7				1698
19 Mar	1645	1651	1656	C1.2				1692
19 Mar	1844	1850	1857	B9.7				1692
19 Mar	2045	2051	2055	C1.0				1692
19 Mar	2302	2315	2321	B6.3				1692
20 Mar	0039	0102	0125	C5.5				1698
20 Mar	0609	0615	0620	C1.3				1692
20 Mar	0936	0936	0939		SF	N08W62		1692
20 Mar	1138	1142	1146	B4.5				1692
20 Mar	1836	1841	1846	B5.0				1692
20 Mar	1926	1932	1937	C1.0				1692
20 Mar	2214	2222	2232	B8.4				1692
21 Mar	0720	0725	0728	B6.7				1692
21 Mar	1030	1034	1039	B4.2				1692
21 Mar	1137	1143	1149	B5.7				1692
21 Mar	1525	1531	1545	C1.0				1692



## *Flare List*

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
21 Mar	1646	1657	1707	B6.4			1692
21 Mar	1810	1822	1828	C3.5			1692
21 Mar	2020	2029	2040	C1.9			1692
21 Mar	2117	2121	2124	C1.1			
21 Mar	2142	2204	2236	M1.6			1692
22 Mar	0028	0031	0035	C1.1			
22 Mar	0233	0238	0245	C2.9			1692
22 Mar	0351	0356	0358	C1.1	SF	N08E10	1692
22 Mar	0614	0614	0616		SF	N07W81	1692
22 Mar	0654	0702	0713	C1.2			
22 Mar	0822	0828	0831	C1.3	SF	N06W88	1692
22 Mar	1022	1027	1033	B9.4			1692
22 Mar	1133	1137	1140	B6.3			1692
22 Mar	1154	1201	1213	B6.7			1692
22 Mar	1216	1220	1228	C1.4			1692
22 Mar	1342	1348	1354	B6.5			1695
22 Mar	1551	1555	1558	B5.7			
22 Mar	1631	1635	1640	B7.9			1692
22 Mar	1833	1849	1853	C1.2			1692
22 Mar	2137	2143	2147		SF	S24W58	1703
22 Mar	2153	2155	2157		SF	S24W59	1703
23 Mar	0149	0158	0202	B5.4			1704
23 Mar	0204	0209	0214	B6.8			1704
23 Mar	0229	0240	0328	B5.5			1695
23 Mar	1005	1005	1009		SF	S26W66	1703
23 Mar	1215	1222	1227	B6.8			1703



## Region Summary

Date	Location	Sunspot Characteristics						Flares							
	Lat CMD	Helio	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
		Lon						C	M	X	S	1	2	3	4
Region 1690															
06 Mar	N23E69	122	20	1	Hsx	1	A								
07 Mar	N23E57	121	30	7	Hsx	1	A								
08 Mar	N23E42	123	30	2	Hsx	2	A								
09 Mar	N23E29	123	30	2	Hsx	2	A								
10 Mar	N24E17	121	20	1	Hrx	1	A								
11 Mar	N24E06	118	10	1	Axx	1	A								
12 Mar	N24W08	119	10	1	Bxo	1	B	1					1		
13 Mar	N25W21	119	10	1	Bxo	2	B								
14 Mar	N25W36	122	10	2	Bxo	2	B								
15 Mar	N25W50	122	plage												
16 Mar	N25W64	123	plage												
17 Mar	N25W78	124	plage												
								1	0	0	0	1	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 118

<b>Region 1691</b>															
08 Mar	N12E46	119	20	4	Cro	3	B								
09 Mar	N12E31	121	40	7	Cao	7	B								
10 Mar	N13E16	122	60	10	Cao	7	B								
11 Mar	N13W01	125	40	3	Cso	2	B								
12 Mar	N12W12	124	60	5	Dso	4	B								
13 Mar	N14W26	123	70	8	Dao	9	B								
14 Mar	N13W39	125	120	8	Dao	8	B	1				1			
15 Mar	N12W51	123	90	7	Cso	5	BG					1			
16 Mar	N12W64	123	120	8	Cso	7	B								
17 Mar	N12W78	124	120	7	Cso	2	B								
								1	0	0	2	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 125



### *Region Summary - continued*

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4
Region 1692															
09 Mar	N09E75	77	250	3	Hhx	1	A								
10 Mar	N09E60	77	220	4	Hsx	1	A								
11 Mar	N10E49	75	160	3	Hsx	1	A								
12 Mar	N09E35	76	190	3	Hsx	1	A	2							
13 Mar	N09E23	75	190	5	Cso	2	B								
14 Mar	N09E09	77	200	3	Hsx	2	A								
15 Mar	N09W03	75	180	3	Hsx	3	A		1				2		
16 Mar	N09W17	76	240	3	Hax	1	A								
17 Mar	N09W29	75	240	3	Cso	2	B								
18 Mar	N09W43	76	240	3	Cso	2	B								
19 Mar	N09W57	77	240	4	Dai	5	B	2							
20 Mar	N09W71	77	340	5	Dki	8	B	2				1			
21 Mar	N09W85	78	270	5	Dko	7	B	3	1						
								9	2	0	1	2	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 75

### **Region 1694**

10 Mar	N15E66	71	30	1	Hsx	1	A								
11 Mar	N15E54	71	20	1	Hsx	1	A								
12 Mar	N16E38	73	20	1	Hsx	1	A								
13 Mar	N16E22	75	20	1	Hsx	1	A								
14 Mar	N15E11	75	20	1	Hrx	1	A								
15 Mar	N17W05	77	10	1	Hrx	1	A								
16 Mar	N17W19	78	plage												
17 Mar	N17W33	79	plage												
18 Mar	N17W47	80	plage												
19 Mar	N17W61	81	plage												
20 Mar	N17W75	82	plage												
21 Mar	N17W89	82	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 77





### *Region Summary - continued*

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4
<i>Region 1695</i>															
11 Mar	N09E70	54	80	2	Hsx	1	A	1							
12 Mar	N09E58	53	140	2	Hsx	1	A	1							
13 Mar	N09E44	53	160	2	Hsx	1	A								
14 Mar	N09E31	55	160	2	Hsx	1	A								
15 Mar	N10E18	54	110	3	Hax	2	A								
16 Mar	N10E05	54	180	3	Hax	1	A								
17 Mar	N10W09	55	180	3	Cso	3	B	1				1			
18 Mar	N10W23	56	180	3	Dao	9	B								
19 Mar	N10W37	57	150	6	Dao	6	B	1				1			
20 Mar	N10W51	57	130	6	Dao	4	B								
21 Mar	N10W65	58	110	6	Cao	2	B								
22 Mar	N10W79	59	100	6	Cao	3	B								
23 Mar	N09W90	57	60	3	Hsx	1	A								
								4	0	0	2	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 54

### **Region 1696**

11 Mar	N05E34	91	40	3	Cso	6	B								
12 Mar	N05E19	91	90	6	Dao	5	B								
13 Mar	N05E04	93	150	9	Dsi	12	B	1			1				
14 Mar	N05W09	95	150	12	Eai	15	BG								
15 Mar	N05W22	94	140	12	Eai	14	BG	2			1				
16 Mar	N04W36	95	190	13	Eai	10	BG								
17 Mar	N05W49	95	190	13	Eai	16	BG								
18 Mar	N05W63	95	190	13	Eai	16	B								
19 Mar	N05W77	97	180	13	Eai	10	B								
								3	0	0	2	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 93

### **Region 1697**

14 Mar	N15W22	108	30	5	Cro	4	B								
15 Mar	N16W36	108	40	5	Dao	4	B								
16 Mar	N15W49	108	10	5	Bxo	3	B								
17 Mar	N15W63	109	10	5	Bxo	2	B								
18 Mar	N15W77	110	plage												
								0	0	0	0	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 108



### *Region Summary - continued*

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10 <sup>-6</sup> hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
Region 1698															
14 Mar	S20W29	115	20	3	Cro	6	B								
15 Mar	S19W42	114	80	6	Cso	6	B								
16 Mar	S19W57	116	150	9	Dao	8	B	4			5				
17 Mar	S19W72	118	200	11	Eao	16	B	2							
18 Mar	S19W86	119	200	11	Eao	16	B	8							
								14	0	0	5	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 115

<b>Region 1699</b>															
17 Mar	S15W45	91	30	4	Cro	3	B								
18 Mar	S15W59	92	60	4	Dai	8	B								
19 Mar	S15W73	93	60	4	Dao	7	B								
20 Mar	S15W87	93	20	4	Cro	2	B								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 91

<b>Region 1700</b>															
17 Mar	S13E54	352	10	3	Bxo	2	B								
18 Mar	S13E41	352	60	5	Cso	5	B								
19 Mar	S13E27	353	plage												
20 Mar	S13E13	353	10	1	Axx	1	A								
21 Mar	S13W01	354	plage												
22 Mar	S13W15	355	plage												
23 Mar	S13W29	356	plage												
24 Mar	S13W43	357	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 354

<b>Region 1701</b>															
20 Mar	N14W59	65	20	2	Cro	5	B								
21 Mar	N14W73	66	60	4	Dao	6	B								
22 Mar	N14W87	67	30	3	Hrx	2	A								
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 65



### ***Region Summary - continued***

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 <sup>-6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

#### ***Region 1702***

21 Mar	N08W24	16	20	3	Dro	5	B								
22 Mar	N08W38	18	40	4	Dao	4	B								
23 Mar	N08W51	18	50	6	Cao	7	B								
24 Mar	N07W64	18	60	6	Cao	9	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 16

#### ***Region 1703***

22 Mar	S25W59	39	40	5	Dao	5	B				2				
23 Mar	S25W72	39	80	7	Dao	7	B				1				
24 Mar	S26W84	38	40	6	Cao	5	B								
								0	0	0	3	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 39

#### ***Region 1704***

23 Mar	N15E74	253	60	3	Hsx	1	A								
24 Mar	N16E60	254	80	3	Hax	1	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 254

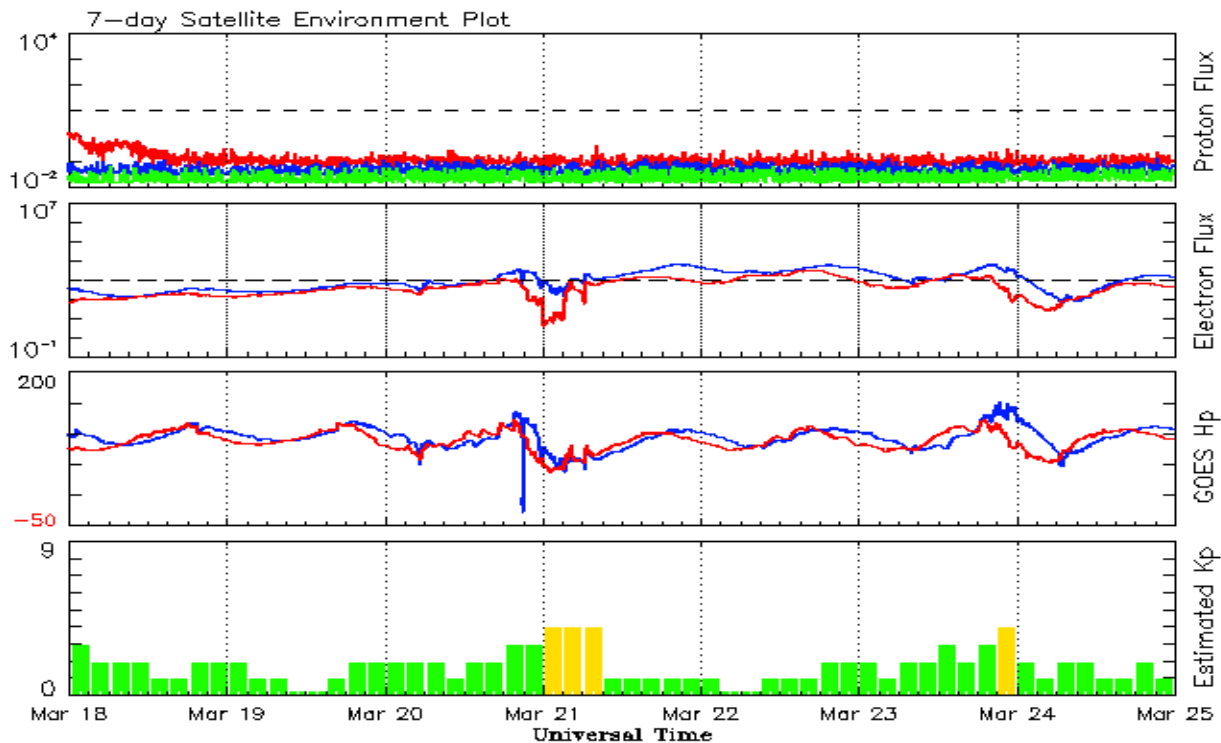


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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
<b>2011</b>									
March	81.0	55.8	0.69	55.2	36.9	115.3	95.8	7	7.2
April	81.7	54.4	0.67	61.5	41.8	112.6	100.4	9	7.5
May	61.4	41.6	0.68	69.0	47.6	95.9	105.6	9	7.5
June	55.5	37.0	0.67	76.5	53.2	95.8	110.9	8	7.4
July	67.0	43.8	0.66	82.5	57.3	94.2	115.4	9	7.3
August	66.1	50.6	0.77	84.9	59.0	101.7	117.9	8	7.4
September	106.4	78.0	0.73	84.6	59.5	134.5	118.4	13	7.7
October	116.8	88.0	0.75	84.6	59.9	137.2	118.4	7	8.0
November	133.1	96.7	0.73	86.3	61.1	153.1	119.5	3	8.0
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
<b>2012</b>									
January	91.3	58.3	0.64	92.0	65.5	133.1	124.4	6	8.3
February	50.1	32.9	0.66	94.2	66.9	106.7	126.7	7	8.4
March	77.9	64.3	0.82	94.1	66.8	115.1	126.8	14	8.1
April	84.4	55.2	0.65	91.3	64.6	113.1	125.8	9	8.0
May	99.5	69.0	0.69	87.7	61.7	121.5	123.8	8	8.2
June	88.6	64.5	0.73	83.9	58.9	120.5	121.1	10	8.3
July	99.6	66.5	0.67	82.4	57.7	135.6	119.5	13	8.3
August	85.8	63.0	0.74	83.1	58.1	115.7	119.2	7	8.1
September	84.0	61.4	0.73			123.2		8	
October	73.5	53.3	0.73			123.3		9	
November	89.2	61.4	0.69			120.9		6	
December	60.4	40.8	0.68			108.4		3	
<b>2013</b>									
January	99.8	62.9	0.63			127.1		4	
February	60.0	38.0	0.63			104.4		5	

**Note:** Values are final except for the most recent 6 months which are considered preliminary.  
Cycle 24 started in Dec 2008 with an RI=1.7.





*Weekly Geosynchronous Satellite Environment Summary  
Week Beginning 18 March 2013*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-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.

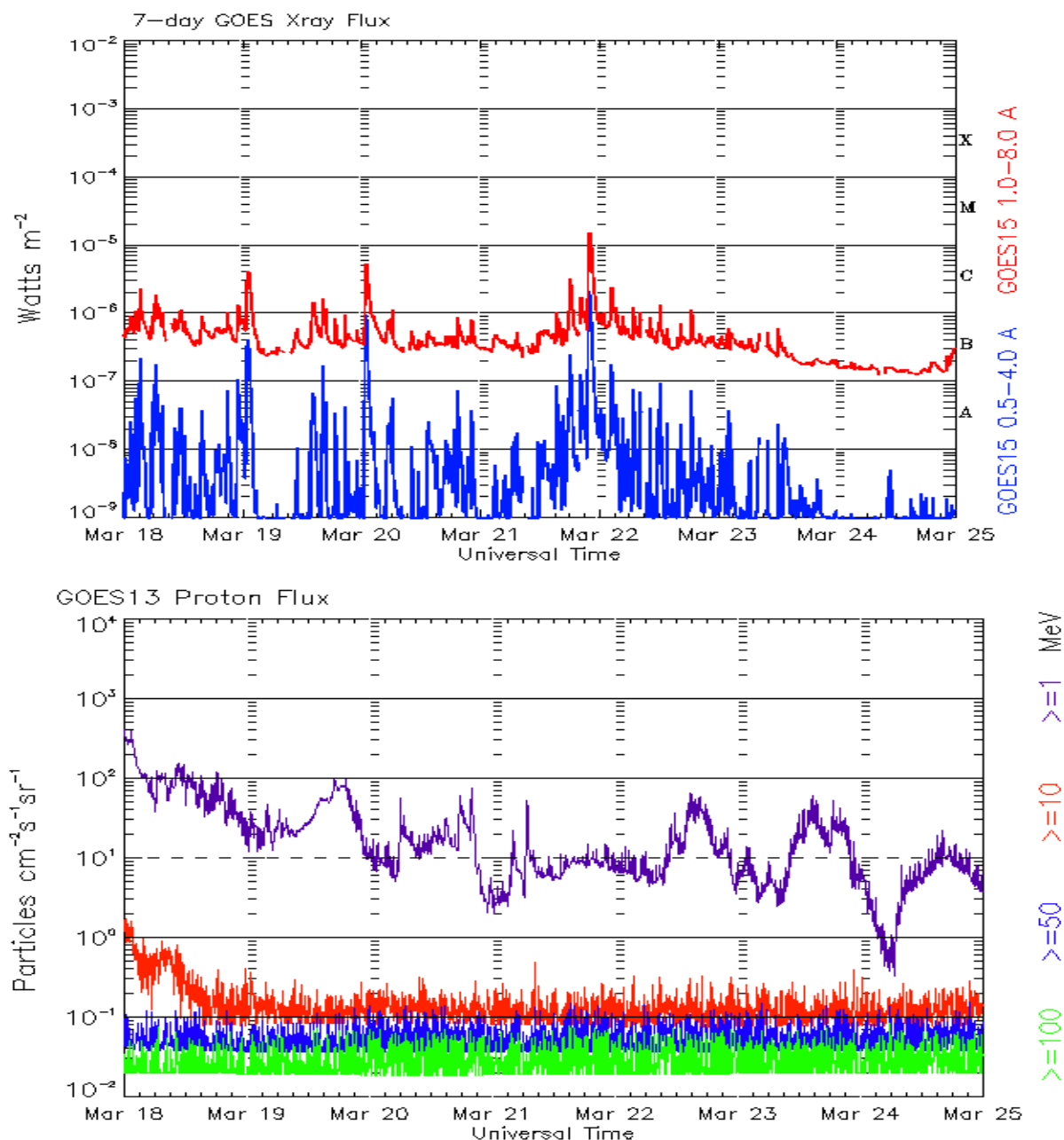
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

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 18 March 2013*

The x-ray plots contains five-minute averages x-ray flux (Watt/m<sup>2</sup>) 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 integral flux units (pfu = protons/cm<sup>2</sup> -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.

## ***Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)***

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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

The Weekly has been published continuously since 1951 and is available online since 1997.

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