

Space Weather Highlights
11 July - 17 July 2011

SWPC PRF 1872
19 July 2011

Solar activity began the week at low levels for 11-12 July. Region 1249 (S18, L=244, class/area Cso/020 on 11 July) produced a C2/1f flare at 1103 UTC on 11 July which was associated with a type II radio sweep and a small coronal mass ejection. Region 1247 (S18, L=269, class/area Esi/080 on 11 July) produced C1/Sf at 1449 UTC on 12 July. Activity levels declined to very low levels for the remainder of the week from 13-17 July.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate levels on 11 July but increased to high levels on 12 July and continued to reach high levels for the remaining days of the reporting period.

Geomagnetic field activity began the week at unsettled levels with some active periods (and some isolated storm periods at high latitude). This initial activity appears to have been caused by a combination of effects from a coronal mass ejection (observed on 09 July) and a high speed stream from a coronal hole. Conditions gradually subsided for 12-14 July as the high speed stream persisted but weakened; typical activity levels were quiet to unsettled with isolated active periods and isolated storm periods at high latitude. Quiet levels prevailed for the remainder of the period from 15-17 July.

Space Weather Outlook
20 July - 15 August 2011

Solar activity is expected to be very low to low for most of the outlook interval. However, there is a chance that new, rapidly emerging flux regions could increase activity to moderate levels at any time during the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at background or moderate levels for most of the outlook interval. However, increases to high levels are expected for 21-24 July, 28-30 July, 1-3 July, and 6-9 August in response to recurrent high speed streams.

Geomagnetic field activity is expected to be unsettled with a chance for active periods for 20-22 July due to a favorably positioned coronal hole. Quiet levels are expected to prevail for 23-26 July. An increase to unsettled levels is expected for 27 July to 2 August due to another recurrent coronal hole. Quiet levels are expected for 3 August followed by another increase to unsettled levels for 04-10 August due to recurrence. 11-13 August is expected to be quiet and an increase to unsettled is expected for 14-15 August, again due to recurrence.



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
11 July	90	72	290	B1.9	1	0	0	0	1	0	0	0
12 July	92	62	300	B2.1	1	0	0	2	0	0	0	0
13 July	95	90	400	B1.8	0	0	0	0	0	0	0	0
14 July	94	79	265	B1.6	0	0	0	6	0	0	0	0
15 July	94	90	260	B1.5	0	0	0	0	0	0	0	0
16 July	94	75	230	B1.5	0	0	0	1	0	0	0	0
17 July	104	101	280	B2.1	0	0	0	26	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	>0.6 MeV	>2MeV	>4 MeV
	11 July	2.4e+05	1.3e+04	2.8e+03		1.2e+07
12 July	2.2e+05	1.2e+04	2.8e+03		4.6e+07	
13 July	2.4e+05	1.2e+04	3.1e+03		1.6e+08	
14 July	3.9e+05	1.3e+04	3.2e+03		1.4e+08	
15 July	4.7e+05	1.2e+04	3.0e+03		2.1e+08	
16 July	2.6e+05	1.2e+04	3.1e+03		9.3e+07	
17 July	3.9e+05	1.3e+04	3.2e+03		1.2e+08	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	11 July	10	2-1-3-3-2-3-2-2	29	3-2-3-7-4-3-2-2	13
12 July	7	3-2-0-2-2-2-2-1	11	3-3-0-2-4-3-2-1	8	3-3-0-1-2-2-2-2
13 July	6	2-2-1-2-2-1-2-1	6	3-2-1-2-2-1-1-1	8	3-2-2-1-2-2-3-2
14 July	6	2-2-2-2-2-1-1-2	15	2-2-3-5-4-2-1-1	8	2-3-2-3-2-2-1-2
15 July	5	1-3-1-1-2-1-1-1	2	1-2-1-0-0-1-1-0	6	1-3-1-1-1-1-1-2
16 July	4	1-1-2-2-1-1-1-1	2	1-1-2-1-0-0-0-1	6	1-1-1-1-1-2-2-2
17 July	3	1-1-0-1-1-1-2-1	3	2-1-0-1-0-1-1-1	5	1-2-0-1-1-1-2-2

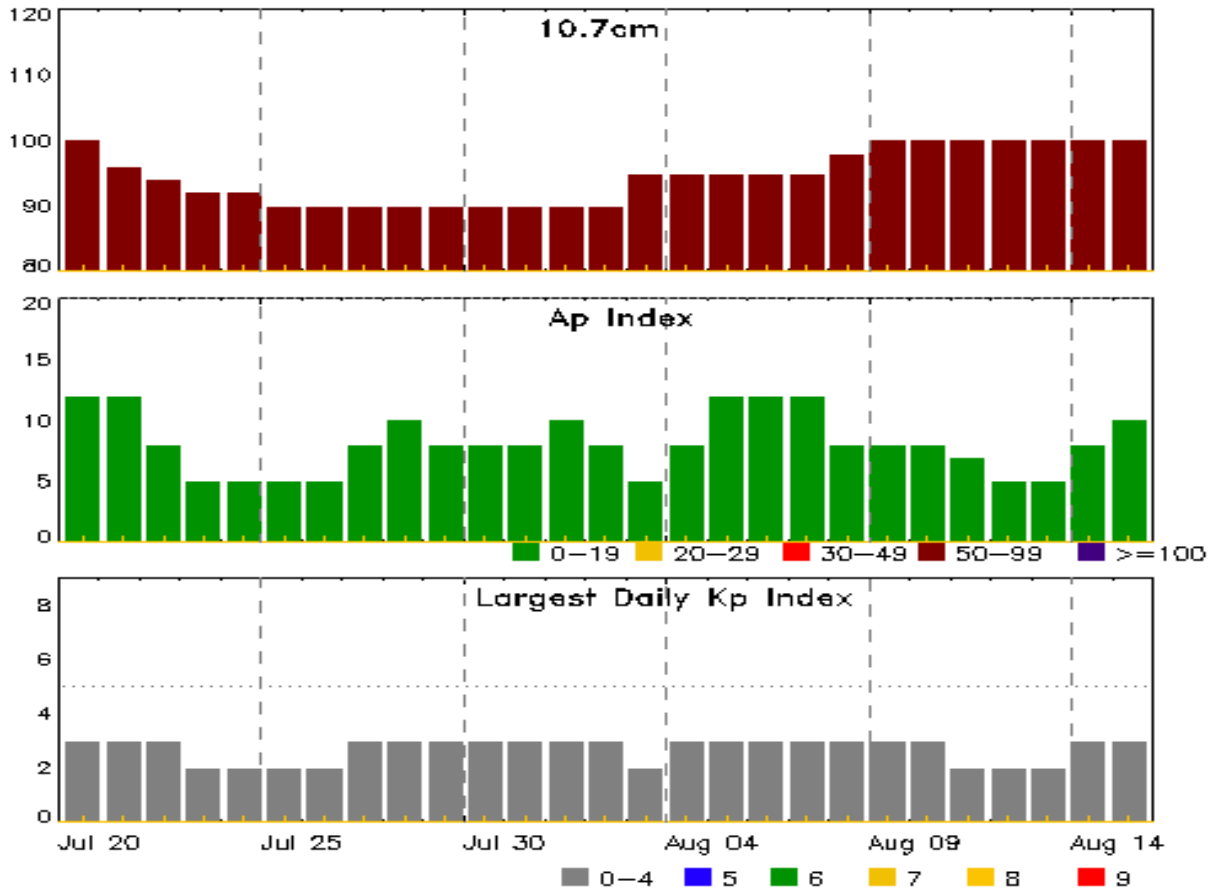


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
11 Jul 0827	WARNING: Geomagnetic Sudden Impulse expected	11/0850 - 0910
11 Jul 0858	WARNING: Geomagnetic K = 4	11/0900 - 1500
11 Jul 0910	SUMMARY: Geomagnetic Sudden Impulse	11/0852
11 Jul 1004	ALERT: Geomagnetic K = 4	11/1002
11 Jul 1119	ALERT: Type II Radio Emission	11/1049
11 Jul 1448	EXTENDED WARNING: Geomagnetic K = 4	11/0900 - 2359
11 Jul 2117	WARNING: Geomagnetic K = 5	11/2130 - 12/1500
11 Jul 2123	EXTENDED WARNING: Geomagnetic K = 4	11/0900 - 12/1800
12 Jul 0422	CANCELLATION: Geomagnetic K = 5	
12 Jul 1622	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	12/1605
13 Jul 0811	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	12/1605
14 Jul 1030	WARNING: Geomagnetic K = 4	14/1035 - 1500
14 Jul 1137	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	12/1605
15 Jul 0706	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	12/1605
16 Jul 1126	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	12/1605
17 Jul 0926	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	12/1605



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
20 Jul	100	12	3	03 Aug	95	5	2
21	96	12	3	04	95	8	3
22	94	8	3	05	95	12	3
23	92	5	2	06	95	12	3
24	92	5	2	07	95	12	3
25	90	5	2	08	98	8	3
26	90	5	2	09	100	8	3
27	90	8	3	10	100	8	3
28	90	10	3	11	100	7	2
29	90	8	3	12	100	5	2
30	90	8	3	13	100	5	2
31	90	8	3	14	100	8	3
01 Aug	90	10	3	15	100	10	3
02	90	8	3				



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	
									245	2695	II	IV

No Events Observed

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
11 Jul	0112	0117	0120	B3.6			1245
11 Jul	1034	1056	1145	C2.6	1F	S17E06	1249
12 Jul	0025	0028	0030	B5.1			
12 Jul	1444	1449	1452	C1.9	SF	S19W34	1247
12 Jul	1519	1530	1605	B7.9	SF	S19W33	1247
12 Jul	2329	2339	2346	B5.0			
13 Jul	0047	0050	0054	B3.3			
13 Jul	0107	0129	0142	B4.9			
13 Jul	0421	0427	0440	B5.0			1247
13 Jul	0931	0935	0939	B4.1			1247
13 Jul	1704	1708	1716	B3.5			
13 Jul	2135	2138	2141	B4.3			
13 Jul	2321	2325	2329	B5.7			1254
14 Jul	0048	0052	0056	B4.0	SF	S24E77	1254
14 Jul	0249	0249	0256		SF	S24E74	1254
14 Jul	1423	1424	1432		SF	S21E69	1254
14 Jul	1429	1430	1435		SF	S22E69	1254
14 Jul	1455	1455	1459		SF	S22E70	1254
14 Jul	1614	1614	1623		SF	S22E68	1254
15 Jul	1528	1532	1535	B2.3			
15 Jul	2134	2138	2141	B3.6			
16 Jul	0747	0751	0755	B3.6			1249
16 Jul	1659	1705	1711	B6.2	SF	S23E42	1254
17 Jul	0453	0453	0459		SF	S22E34	1254
17 Jul	0733	0735	0754	B4.9	SF	N20W46	1257
17 Jul	0807	0821	0844		SF	N20W48	1257
17 Jul	0909	0915	0923		SF	N20W47	1257
17 Jul	0934	0942	0954		SF	N20W47	1257
17 Jul	0950	0952	0957		SF	S22E33	1254
17 Jul	0955	1002	1008		SF	N20W47	1257
17 Jul	1019	1030	1042	B3.5	SF	N20W48	1257
17 Jul	1031	1034	1046		SF	S22E32	1254



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
17 Jul	1042	1043	1047		SF	N20W48	1257
17 Jul	1053	1054	1057		SF	S22E32	1254
17 Jul	1053	1059	1115		SF	N20W48	1257
17 Jul	1107	1108	1110		SF	S22E32	1254
17 Jul	1122	1124	1133		SF	N20W48	1257
17 Jul	1124	1125	1131		SF	S23E32	1254
17 Jul	1128	1132	1136	B4.1	SF	N20W48	1257
17 Jul	1147	1149	1155		SF	N20W48	1257
17 Jul	1156	1156	1204		SF	N20W50	1257
17 Jul	1211	1218	1225		SF	N20W49	1257
17 Jul	1228	1326	1348		SF	N19W51	1257
17 Jul	1349	1352	1408		SF	N19W52	1257
17 Jul	1409	1431	1440		SF	N21E07	1252
17 Jul	1409	1413	1416		SF	N19W51	1257
17 Jul	1417	1504	1613		SF	N20W50	1257
17 Jul	1601	1603	1609		SF	N19W52	1257
17 Jul	1635	1636	1645		SF	N20W51	1257
17 Jul	1852	1926	1946	B7.9			1257



Region Summary

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

Region 1245

07 Jul	N15E58	234	50	3	Cso	4	B					5					
08 Jul	N15E45	235	20	1	Hsx	1	A										
09 Jul	N15E31	236	30	3	Cao	4	B										
10 Jul	N15E18	236	10	2	Hax	1	A										
11 Jul	N12E05	235	10	1	Hrx	1	A										
12 Jul	N15W08	236	10	1	Axx	1	A										
13 Jul	N15W23	237	10	1	Hsx	1	A										
14 Jul	N14W36	237	5		Axx	1	A										
15 Jul	N13W49	236	0		Axx	1	A										
16 Jul	N14W65	240	10	3	Bxo	2	B										
17 Jul	N14W79	241	plage														
									0	0	0	5	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 235

Region 1246

08 Jul	N14W47	327	10	3	Bxo	3	B										
09 Jul	N15W62	329	0		Axx	1	A										
10 Jul	N15W76	330	plage														
11 Jul	N15W90	331	plage														
									0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 327

Region 1247

08 Jul	S18E11	268	20	5	Dai	7	B	4			5	2					
09 Jul	S18W02	269	40	6	Cao	8	B										
10 Jul	S18W15	269	40	10	Dai	15	BG				1						
11 Jul	S18W28	269	80	12	Esi	14	BG										
12 Jul	S18W40	268	30	6	Cao	4	BG	1			2						
13 Jul	S18W54	267	10	1	Hsx	1	A										
14 Jul	S18W68	269	plage														
15 Jul	S18W82	270	plage														
									5	0	0	8	2	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 269



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares								
	Lat CMD	Lon	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical			
			10 ⁻⁶	hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3
<i>Region 1248</i>															
08 Jul	N20E53	226	10	1	Axx	1	A								
09 Jul	N20E39	228	plage												
10 Jul	N20E25	229	plage												
11 Jul	N20E11	230	plage												
12 Jul	N20W03	231	plage												
13 Jul	N20W16	231	plage												
14 Jul	N20W30	231	plage												
15 Jul	N20W44	232	plage												
16 Jul	N20W58	233	plage												
17 Jul	N20W72	234	plage												
									0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 231

<i>Region 1249</i>															
09 Jul	S16E25	242	0		Axx	2	A								
10 Jul	S16E11	243	10	3	Cao	3	B								
11 Jul	S18W04	244	20	3	Cso	2	B	1				1			
12 Jul	S16W14	242	20	3	Cro	2	B								
13 Jul	S16W31	244	10	1	Axx	2	A								
14 Jul	S16W45	246	plage												
15 Jul	S16W59	247	plage												
16 Jul	S16W73	248	plage												
17 Jul	S16W87	249	plage												
									1	0	0	0	1	0	0

Still on Disk.

Absolute heliographic longitude: 244



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	4							
Region 1250																							
10 Jul	S25E48	206	30	4	Dai	8	B																
11 Jul	S27E32	208	100	6	Dso	4	B																
12 Jul	S27E18	210	140	6	Dso	4	BG																
13 Jul	S27E04	209	170	7	Dso	9	B																
14 Jul	S27W07	208	100	7	Dso	10	B																
15 Jul	S27W21	208	80	2	Cso	4	B																
16 Jul	S26W34	208	80	2	Hsx	1	A																
17 Jul	S26W48	209	70	2	Cso	4	B																
																							0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 209

Region 1251																							
11 Jul	N15E68	172	80	3	Hsx	1	A																
12 Jul	N16E57	170	100	1	Hsx	1	A																
13 Jul	N17E42	171	160	3	Hsx	1	A																
14 Jul	N17E30	170	100	2	Hsx	2	A																
15 Jul	N17E17	170	100	2	Hsx	1	A																
16 Jul	N16E04	170	70	2	Hsx	2	A																
17 Jul	N16W08	169	80	2	Hsx	3	A																
																							0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 170

Region 1252																							
13 Jul	N25E62	151	30	11	Cso	3	B																
14 Jul	N25E56	144	20	1	Hrx	2	A																
15 Jul	N25E45	142	10		Bxo	3	B																
16 Jul	N25E32	142	0	1	Axx	1	A																
17 Jul	N25E19	142	plage																				
																							0 0 0 1 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 142



Region Summary - continued

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

Region 1253

13 Jul	N14W12	226	10	3	Bxo	3	B										
14 Jul	N14W26	227	plage														
15 Jul	N14W40	228	plage														
16 Jul	N14W54	229	plage														
17 Jul	N14W68	230	plage														

0 0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 226

Region 1254

14 Jul	S22E59	141	30	2	Cro	1	B				6						
15 Jul	S22E49	138	50	8	Cao	5	B										
16 Jul	S22E36	138	50	8	Dso	7	B				1						
17 Jul	S23E23	137	50	8	Cai	15	B				6						

0 0 0 13 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 137

Region 1255

14 Jul	N17E45	156	10	2	Axx	3	A										
15 Jul	N18E33	154	0		Bxo	3	B										
16 Jul	N18E19	156	plage														
17 Jul	N18E07	153	10	3	Bxo	3	B										

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 153

Region 1256

15 Jul	N09E34	153	20	3	Dro	3	B										
16 Jul	N08E21	153	20	4	Cro	2	B										
17 Jul	N09E07	154	20	4	Dro	4	B										

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 154



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares												
	Lat CMD	Lon	Heli 10 ⁻⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical							
									C	M	X	S	1	2	3	4			
<i>Region 1257</i>																			
17 Jul	N19W56	217	50	4	Dai	12	B					19							
									0	0	0	19	0	0	0	0			

Still on Disk.

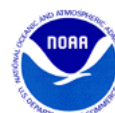
Absolute heliographic longitude: 217

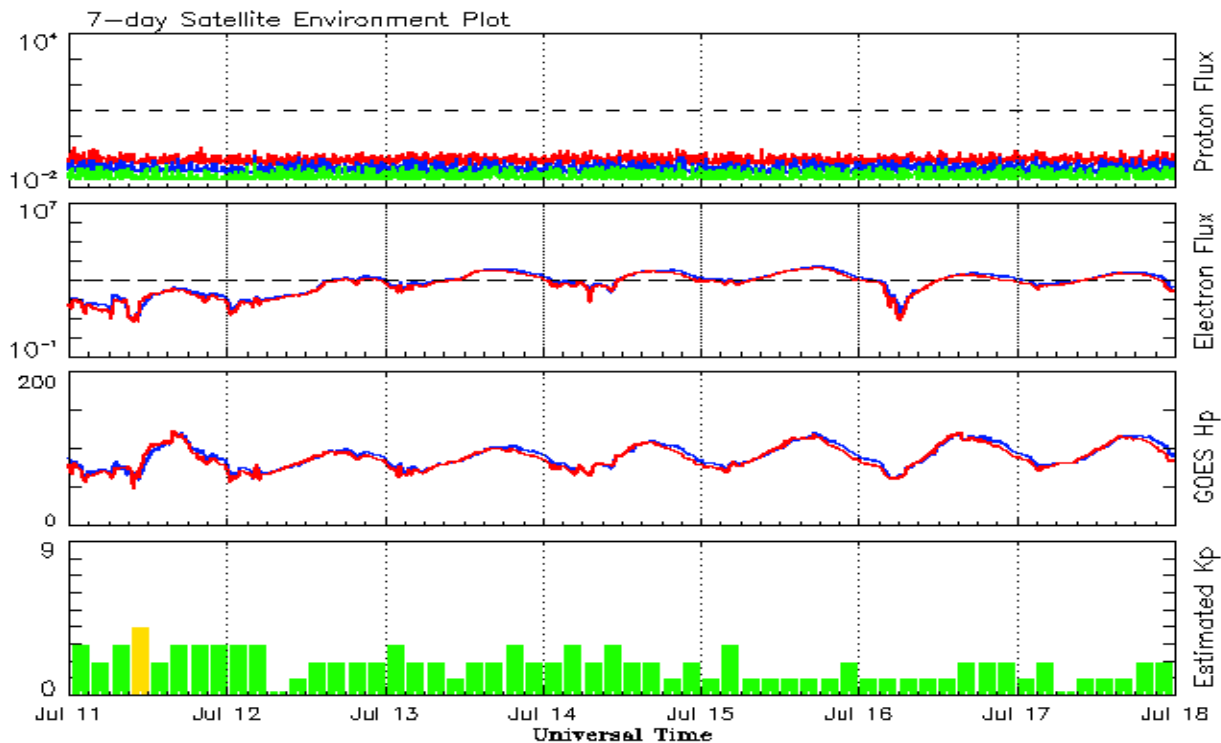


Recent Solar Indices (preliminary)
Observed monthly mean values

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									
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	40.5	26.5	82.5	87.7	5	6.4
December	22.0	14.4	0.66	43.8	28.8	84.3	89.6	4	6.5
2011									
January	32.1	18.8	0.59			83.7		6	
February	53.2	29.6	0.55			94.5		6	
March	81.0	55.8	0.69			115.3		7	
April	81.7	54.4	0.67			112.6		9	
May	61.4	41.6	0.68			95.9		9	
June	55.5	37.0	0.67			95.8		8	

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 11 July 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.

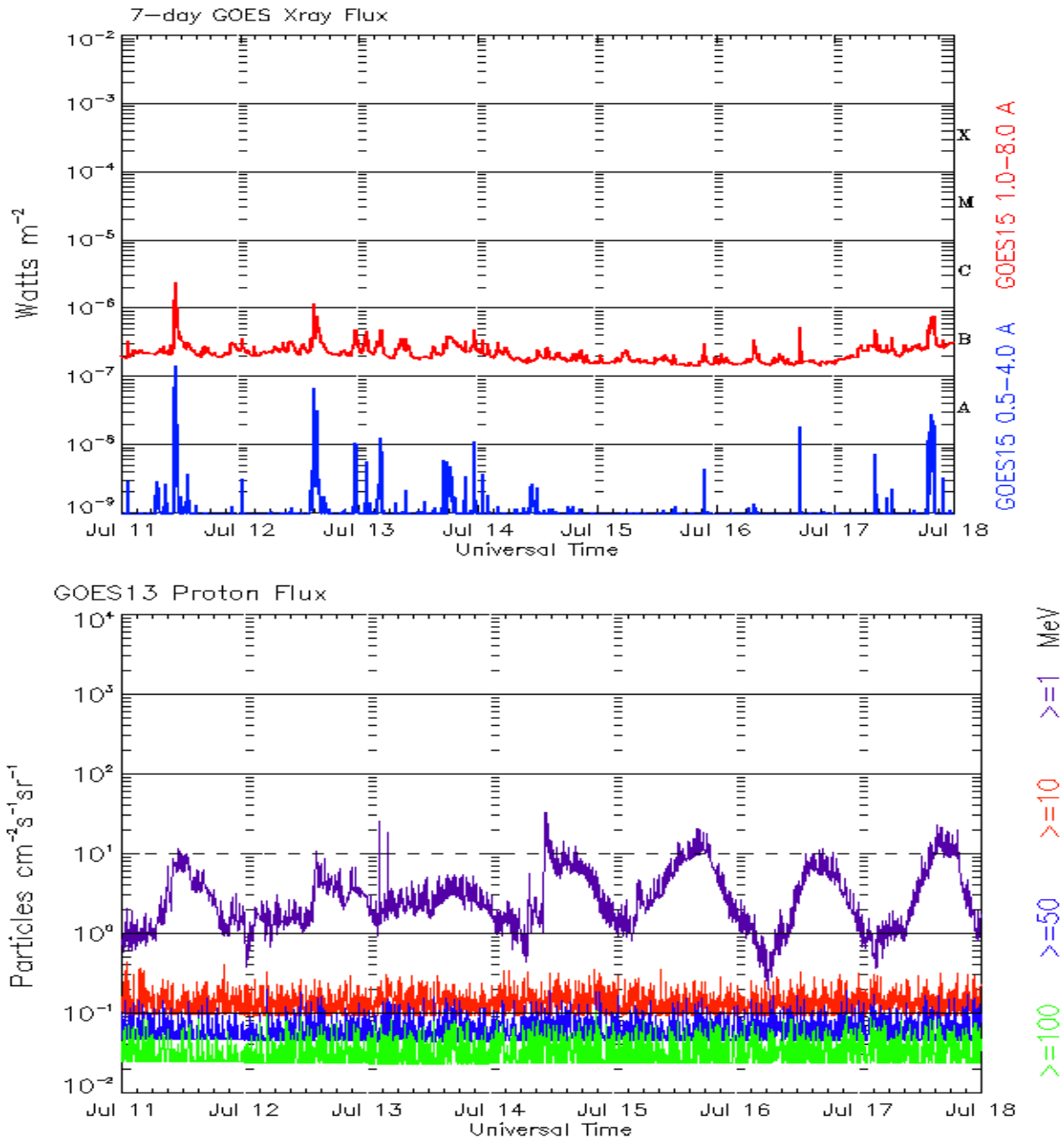
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 11 July 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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