

Solar activity was at very low levels from 04-06 Jul followed by low levels for the remainder of the period. Region 2561 (S16, L=344, class/area Cro/beta on 07 Jul) produced a C5/Sn flare at 07/0756 UTC. Region 2564 (N09, L=209, class/area Dai/120 on 10 Jul) produced all further C-class activity, the largest a C8/2f at 10/0059 UTC with an associated Type II radio sweep (1435 km/s). No Earth-directed CMEs were observed.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels from 04-08 Jul and reached high levels on 09-10 Jul following several days of enhanced solar wind speeds with a sequence of coronal holes.

Geomagnetic field activity was mostly quiet from 04-06 Jul with a few isolated unsettled periods under a nominal solar wind regime. Unsettled to minor storm conditions were observed on 07-08 Jul due to positive polarity CH HSS effects followed by unsettled to active conditions on 09 Jul as effects began to subside. Quiet to unsettled levels were observed on 10 Jul as CH HSS effects waned.

### **Space Weather Outlook** **11 July - 06 August 2016**

Solar activity is expected to be very low with a chance for C-class flares and a slight chance for M-class flares through 24 Jul due to flare potential from Region 2564. Activity is expected to be very low for the remainder of the forecast period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach high levels on 16-19 Jul, 22-27 Jul and 05-06 Aug following recurrent CH HSS events. Normal to moderate levels are expected otherwise.

Geomagnetic field activity is likely to reach minor storm levels on 11 Jul due to positive polarity CH HSS effects. Unsettled to active conditions are expected on 12 Jul as effects continue followed by quiet to unsettled conditions on 13 Jul as effects subside. A second CH HSS is expected to bring quiet to unsettled conditions on 14-15 Jul with active periods likely on the 14th. Mostly quiet levels are expected on 16-18 Jul. Quiet to unsettled conditions are anticipated from 19-24 Jul due to effects from a series of recurrent CH HSSs. Mostly quiet conditions are expected from 25 Jul to 02 Aug with isolated unsettled periods possible from 28-30 Jul as a few small CH HSS events move past Earth. Minor storms are likely on 03-04 Aug due to recurrent, positive polarity CH HSS activity, decreasing to active conditions on 05 Aug and unsettled conditions on 06 Aug as effects subside.



### *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
04 July	74	0	0	A7.8	0	0	0	0	0	0	0	0
05 July	72	23	20	A7.9	0	0	0	0	0	0	0	0
06 July	77	11	10	B1.2	0	0	0	0	0	0	0	0
07 July	83	25	60	B1.6	1	0	0	2	0	0	0	0
08 July	87	55	120	B2.2	1	0	0	3	0	0	0	0
09 July	92	63	170	B2.2	1	0	0	9	0	0	0	0
10 July	94	46	190	B2.5	1	0	0	2	0	1	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
	04 July	3.3e+05	1.3e+04	3.3e+03	4.7e+06	
05 July	2.1e+05	1.4e+04	3.4e+03	5.6e+06		
06 July	3.3e+05	1.4e+04	3.3e+03	7.2e+06		
07 July	2.3e+05	1.5e+04	3.5e+03	1.3e+05		
08 July	1.2e+06	1.4e+04	3.2e+03	1.7e+07		
09 July	5.4e+05	1.3e+04	3.1e+03	7.9e+07		
10 July	3.0e+05	1.2e+04	2.8e+03	1.4e+08		

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	04 July	9	2-2-3-2-3-2-2-1	8	2-2-3-4-2-0-1-0	7
05 July	6	2-2-2-1-2-2-2-1	2	2-1-1-0-0-0-0-0	4	2-2-1-1-1-1-1-1
06 July	7	1-1-1-1-2-3-1-3	3	0-1-0-2-1-0-1-2	5	1-1-1-1-1-1-1-3
07 July	19	2-3-3-3-3-4-4-4	31	2-3-5-5-5-5-3-3	23	3-3-3-3-3-5-5-4
08 July	18	3-3-3-4-4-3-3-3	35	3-3-5-6-5-5-3-2	23	3-3-4-4-5-4-4-2
09 July	15	3-3-4-3-3-2-3-2	30	3-2-6-3-6-4-2-2	14	3-2-4-3-3-3-3-2
10 July	11	3-3-2-3-3-2-2-2	19	3-3-4-5-4-2-2-2	9	2-2-2-3-3-2-2-2

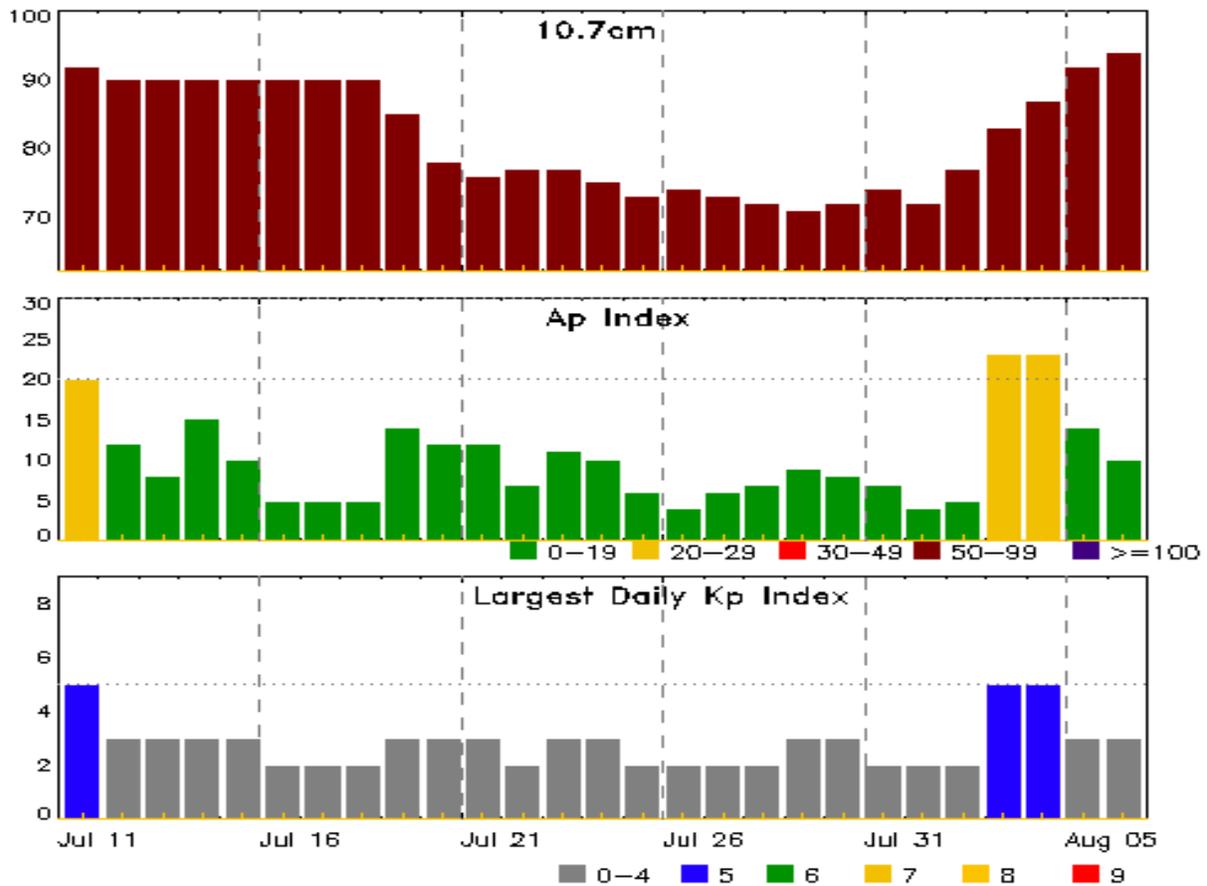


### *Alerts and Warnings Issued*

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
05 Jul 2113	WATCH: Geomagnetic Storm Category G1 predicted	
06 Jul 2205	WATCH: Geomagnetic Storm Category G1 predicted	
07 Jul 0300	WARNING: Geomagnetic K = 4	07/0300 - 1300
07 Jul 1507	WARNING: Geomagnetic K = 4	07/1507 - 2200
07 Jul 1655	ALERT: Geomagnetic K = 4	07/1650
07 Jul 1657	WARNING: Geomagnetic K = 5	07/1700 - 2300
07 Jul 1803	ALERT: Geomagnetic K = 5	07/1800
07 Jul 1845	EXTENDED WARNING: Geomagnetic K = 4	07/1507 - 08/0600
07 Jul 2047	ALERT: Geomagnetic K = 5	07/2047
07 Jul 2250	EXTENDED WARNING: Geomagnetic K = 5	07/1700 - 08/0400
08 Jul 0348	EXTENDED WARNING: Geomagnetic K = 4	07/1507 - 08/1300
08 Jul 0348	EXTENDED WARNING: Geomagnetic K = 5	07/1700 - 08/0900
08 Jul 1030	WARNING: Geomagnetic K = 5	08/1030 - 1500
08 Jul 1030	EXTENDED WARNING: Geomagnetic K = 4	07/1507 - 08/2100
08 Jul 1448	ALERT: Geomagnetic K = 5	08/1448
08 Jul 1448	EXTENDED WARNING: Geomagnetic K = 4	07/1507 - 09/0000
08 Jul 1448	EXTENDED WARNING: Geomagnetic K = 5	08/1030 - 2200
08 Jul 2029	WATCH: Geomagnetic Storm Category G1 predicted	
08 Jul 2157	EXTENDED WARNING: Geomagnetic K = 5	08/1030 - 09/0900
08 Jul 2157	EXTENDED WARNING: Geomagnetic K = 4	07/1507 - 09/1200
09 Jul 1102	EXTENDED WARNING: Geomagnetic K = 4	07/1507 - 09/2359
09 Jul 1415	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	09/1400
09 Jul 2255	EXTENDED WARNING: Geomagnetic K = 4	07/1507 - 10/0600
10 Jul 0112	ALERT: Type II Radio Emission	10/0059
10 Jul 1121	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	09/1400



## 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
11 Jul	92	20	5	25 Jul	73	6	2
12	90	12	3	26	74	4	2
13	90	8	3	27	73	6	2
14	90	15	3	28	72	7	2
15	90	10	3	29	71	9	3
16	90	5	2	30	72	8	3
17	90	5	2	31	74	7	2
18	90	5	2	01 Aug	72	4	2
19	85	14	3	02	77	5	2
20	78	12	3	03	83	23	5
21	76	12	3	04	87	23	5
22	77	7	2	05	92	14	3
23	77	11	3	06	94	10	3
24	75	10	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				
04 Jul	0157	0201	0204	B1.7			
04 Jul	0831	0845	0920	B1.6			
07 Jul	0303	0308	0314	B3.9			2561
07 Jul	0411	0416	0420	B4.4	SF	S17W33	2561
07 Jul	0431	0439	0450	B4.9			2561
07 Jul	0749	0756	0806	C5.1	SN	S19W35	2561
08 Jul	0048	0056	0105	C2.7			2564
08 Jul	0234	0316	0324	B9.1			2564
08 Jul	0516	0520	0531	B4.3			2564
08 Jul	0609	0624	0631	B6.3			2562
08 Jul	1627	1629	1630		SF	N18E61	2563
08 Jul	1731	1736	1740	B4.7			2561
08 Jul	1855	1855	1901		SF	N18E61	2563
08 Jul	1945	1950	1956	B5.5			2564
08 Jul	2211	2214	2220		SF	S09E19	2560
08 Jul	2305	2311	2313	B7.6			2564
09 Jul	0823	0824	0826		SF	N17E80	2564
09 Jul	0901	0905	0907	B9.8	SN	N10E76	2564
09 Jul	0941	0944	0951		SF	N14E78	2564
09 Jul	1122	1124	1127		SF	N14E78	2564
09 Jul	1234	1235	1237		SF	N15E73	2564
09 Jul	1238	1240	1249		SF	N14E74	2564
09 Jul	1427	1429	1433		SF	N14E73	2564
09 Jul	1549	1607	1611	C2.6	SF	N11E73	2564
09 Jul	2124	2129	2132	B6.6	SF	N11E69	2564
10 Jul	0053	0059	0103	C8.6	2F	N11E69	2564
10 Jul	0840	0843	0845	B3.4	SF	N12E64	2564
10 Jul	0947	0953	0959	B4.1			2562
10 Jul	1115	1115	1117		SF	N15E61	2564



## Region Summary

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

### Region 2559

05 Jul	N10W20	346	10	2	Bxo	2	B										
06 Jul	N10W34	347	plage														
07 Jul	N10W48	348	plage														
08 Jul	N10W62	348	plage														
09 Jul	N10W76	349	plage														
10 Jul	N10W90	350	plage														
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 346

### Region 2560

05 Jul	S08E55	270	10	1	Axx	1	A										
06 Jul	S08E42	270	10	1	Axx	1	A										
07 Jul	S08E28	272	plage														
08 Jul	S08E14	272	plage								1						
09 Jul	S08W00	273	plage														
10 Jul	S08W14	274	plage														
									0	0	0	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 273

### Region 2561

07 Jul	S16W45	344	30	6	Cro	4	B	1			2						
08 Jul	S16W59	345	20	5	Cro	5	B										
09 Jul	S16W72	345	10	6	Bxo	3	B										
10 Jul	S16W85	345	plage														
									1	0	0	2	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 344

### Region 2562

07 Jul	S05E74	225	30	1	Cao	1	B										
08 Jul	S06E59	227	50	5	Cao	5	B										
09 Jul	S06E46	227	60	6	Cai	8	B										
10 Jul	S05E33	227	50	3	Cao	5	B										
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 227



### *Region Summary - continued*

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Lon	Helio 10 <sup>-6</sup> hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical					
									C	M	X	S	1	2	3	4	
<b>Region 2563</b>																	
08 Jul	N19E56	230	10	4	Bxo	4	B					2					
09 Jul	N19E42	231	20	5	Cro	6	B										
10 Jul	N19E32	228	20	8	Bxo	4	B										
									0	0	0	2	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 228

<b>Region 2564</b>																	
08 Jul	N10E79	207	40	1	Hsx	1	A	1									
09 Jul	N09E63	210	80	5	Cao	6	B	1				9					
10 Jul	N09E51	209	120	8	Dai	7	BG	1				2		1			
								3	0	0	11	0	1	0	0		

Still on Disk.

Absolute heliographic longitude: 209

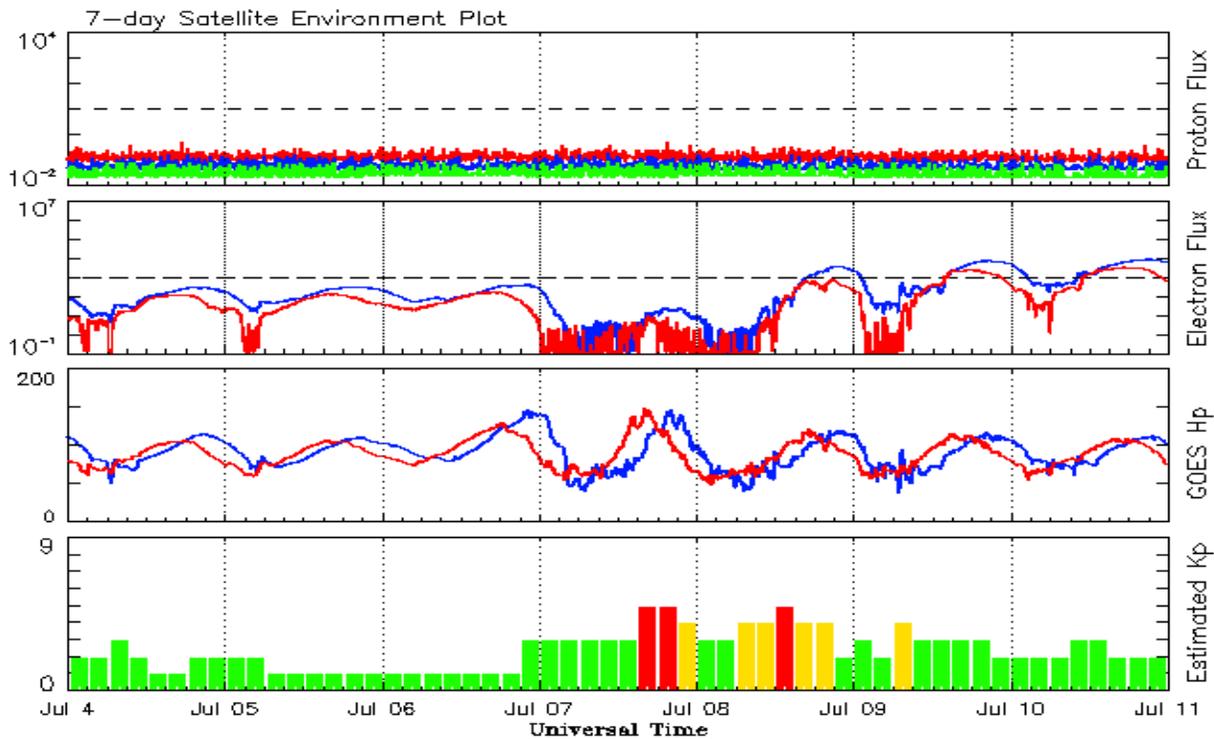


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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>2014</b>									
July	113.6	60.1	0.64	120.4	67.6	137.3	145.2	5	8.8
August	106.2	64.1	0.70	115.1	65.0	124.7	142.8	9	8.9
September	127.4	78.0	0.69	107.4	61.1	146.1	140.1	11	9.3
October	92.0	54.0	0.66	101.7	58.4	153.7	138.4	10	9.9
November	101.8	62.2	0.69	97.9	56.8	155.3	137.4	10	10.1
December	120.0	67.7	0.65	95.2	55.3	158.7	137.0	12	10.5
<b>2015</b>									
January	101.2	55.8	0.66	92.1	53.6	141.7	135.8	10	11.0
February	70.6	40.0	0.63	88.3	51.7	128.8	133.8	10	11.5
March	61.7	32.7	0.62	84.2	49.3	126.0	131.2	17	12.0
April	72.5	45.2	0.75	80.5	47.3	129.2	127.3	12	12.4
May	83.0	53.3	0.71	77.5	45.7	120.1	123.3	9	12.7
June	77.3	39.9	0.53	73.1	43.3	123.2	119.5	14	13.0
July	68.4	39.5	0.58	68.2	41.0	107.0	116.0	10	13.1
August	61.6	38.6	0.63	65.5	39.8	106.2	113.3	16	13.1
September	72.5	47.2	0.65	64.0	39.5	102.1	110.8	16	12.8
October	59.5	38.2	0.62	61.8	38.6	104.1	107.9	15	12.5
November	61.8	37.3	0.61	59.0	36.8	109.6	105.3	13	12.5
December	54.1	34.8	0.64	55.1	34.7	112.8	102.5	15	12.5
<b>2016</b>									
January	50.4	34.2	0.67			103.5		10	
February	56.0	33.8	0.61			103.5		10	
March	40.9	32.5	0.80			91.6		11	
April	39.2	22.8	0.58			93.4		10	
May	48.9	31.3	0.64			93.1		12	
June	19.3	12.5	0.65			81.9		9	

**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 04 July 2016*

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.

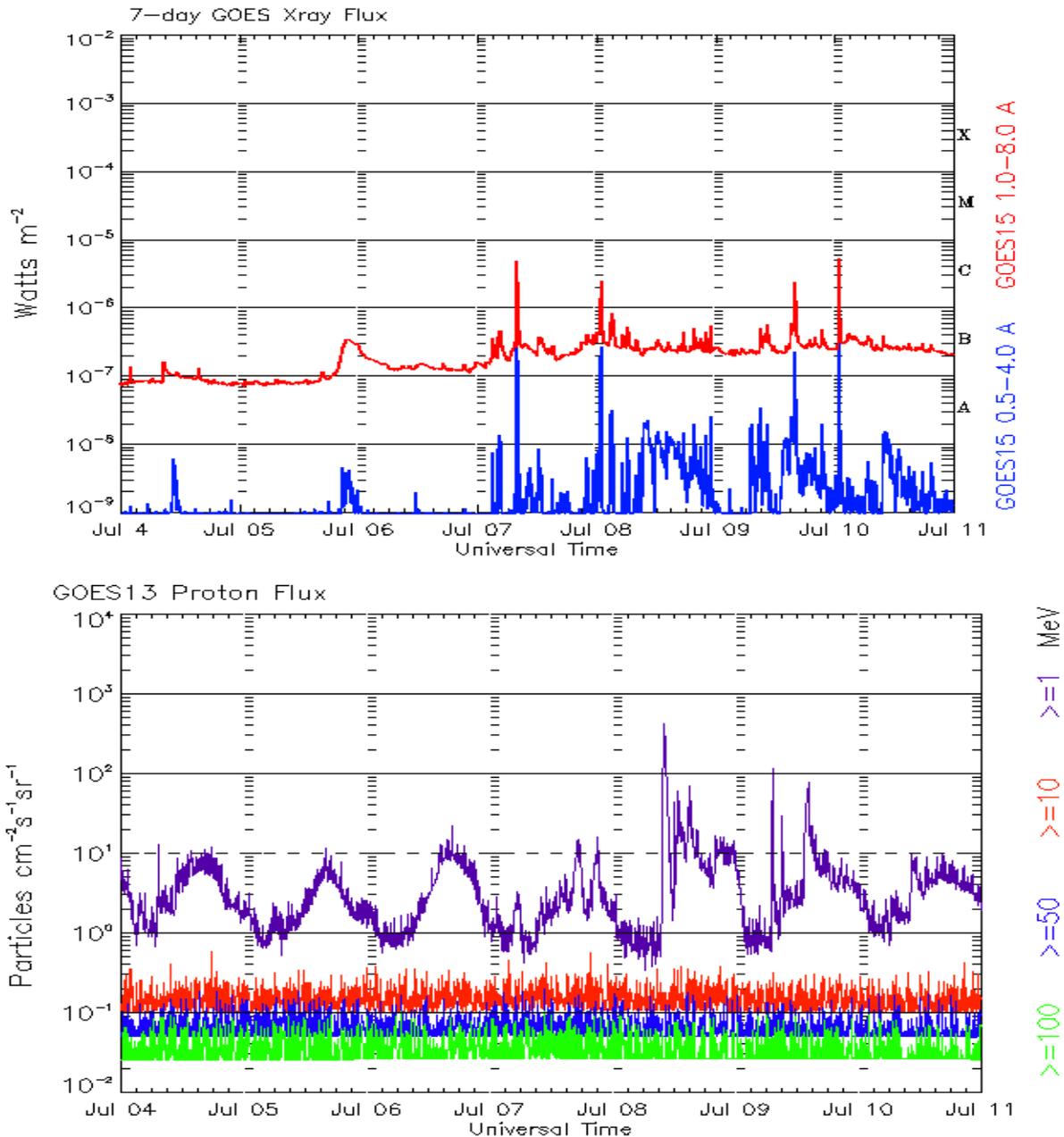
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 04 July 2016*

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 intergral 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

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