

Solar activity ranged from very low to moderate levels. The period began on 03 Jul with an M1 flare (R1-Minor) observed at 03/1615 UTC from an emerging region on the west limb. A CME was associated with the M1 flare, but was determined to be well off the Sun-Earth line. Low levels were observed on 04 Jul due to a single C1 flare observed at 04/0425 UTC from this same unnumbered region. Very low levels were recorded on 05-06 Jul. Activity increased to low levels on 07 and 08 Jul as new Region 2665 (S06, L=111, class/area Ekc/710 on 09 Jul) produced a C1 flare observed at 07/1349 UTC. This was followed by a C3/Sf flare observed at 08/2353 UTC from the same region. Activity levels increased to moderate as developing Region 2665 produced an impulsive M1/2n flare (R1-Minor) observed at 09/0318 UTC. Additional C-class flares were observed from Region 2665 throughout the remainder of 09 Jul.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels throughout the period.

Geomagnetic field activity was at quiet to isolated unsettled levels from 03-08 Jul. During this time, the solar wind environment was at nominal levels with the phi angle in a steady negative orientation. By early on 09 Jul, solar wind parameters reflected the onset of a CIR in advance of a recurrent, positive polarity CH HSS. The geomagnetic field responded with active to minor storm levels (G1-Minor) throughout 09 Jul. Solar wind speed increased from near 365 km/s to a maximum of 602 km/s at 09/2103 UTC. Total field ranged from 4-14 nT while the Bz component varied between +/-11 nT. Phi angle rotated from a negative to a mostly positive sector after 09/0430 UTC.

Space Weather Outlook **10 July - 05 August 2017**

Solar activity is expected to be at low levels throughout the outlook period. A chance for additional M-class activity (R1-R2, Minor-Moderate) is possible from 10-30 Jul.

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 10-15 Jul with normal to moderate levels expected throughout the remainder of the outlook period.

Geomagnetic field activity is expected to be at generally quiet to unsettled levels for a majority of the outlook period. Unsettled to active conditions are likely on 10 Jul with active to minor storm levels (G1-Minor) likely on 05 Aug due to the influence of a recurrent, positive polarity CH HSS.



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
03 July	72	0	0	A6.5	0	1	0	4	0	0	0	0
04 July	72	0	0	A9.3	1	0	0	0	0	0	0	0
05 July	73	11	70	A9.0	0	0	0	2	0	0	0	0
06 July	76	16	140	A8.4	0	0	0	3	0	0	0	0
07 July	80	25	310	B1.4	1	0	0	19	1	0	0	0
08 July	87	24	480	B1.7	1	0	0	23	0	2	0	0
09 July	91	31	710	B2.1	4	1	0	16	1	1	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
	03 July	1.6e+07	1.5e+04	3.4e+03	1.4e+06	
04 July	1.3e+07	1.6e+04	3.6e+03	1.8e+06		
05 July	1.3e+07	1.5e+04	3.7e+03	1.6e+06		
06 July	1.0e+07	1.6e+04	3.9e+03	8.3e+05		
07 July	1.6e+07	1.5e+04	3.3e+03	2.3e+05		
08 July	2.8e+07	1.6e+04	3.5e+03	3.8e+05		
09 July	3.2e+07	1.6e+04	3.8e+03	7.0e+04		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	03 July	7	2-3-2-2-2-1-1-1	6	1-3-1-3-1-1-1-0	5
04 July	5	1-1-1-2-2-1-2-2	2	1-2-1-0-0-0-0-1	4	1-1-1-1-1-1-1-2
05 July	2	1-1-0-1-1-0-1-1	0	0-0-0-0-0-0-0-0	3	1-1-1-1-1-0-0-1
06 July	8	0-1-2-2-2-3-2-3	3	0-1-1-0-1-2-1-2	7	1-1-2-2-2-2-2-3
07 July	5	2-2-1-1-2-1-1-2	3	2-2-0-0-1-0-1-1	5	2-2-1-1-1-1-1-2
08 July	3	1-0-1-1-2-1-1-1	0	0-1-0-0-0-0-0-0	3	1-1-1-1-1-0-1-1
09 July	26	5-3-3-5-3-3-4-4	28	4-4-3-6-3-4-3-3	56	5-4-2-5-2-3-4-4

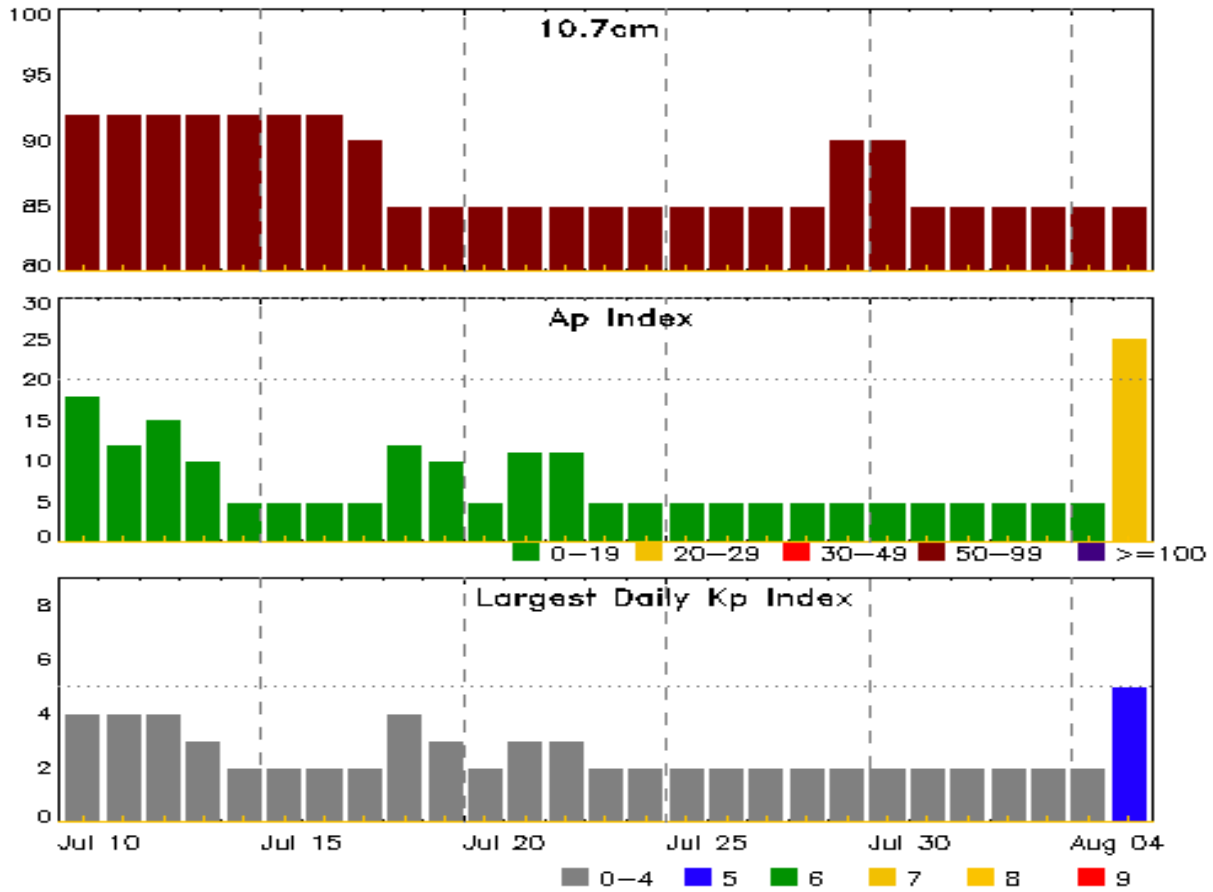


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
03 Jul 1411	CANCELLATION: Geomagnetic Storm Category G1 predicted	
06 Jul 2034	WATCH: Geomagnetic Storm Category G1 predicted	
09 Jul 0024	WARNING: Geomagnetic K = 4	09/0023 - 1500
09 Jul 0209	ALERT: Geomagnetic K = 4	09/0206
09 Jul 0221	WARNING: Geomagnetic K = 5	09/0220 - 1500
09 Jul 0230	ALERT: Geomagnetic K = 5	09/0230
09 Jul 1021	ALERT: Geomagnetic K = 5	09/1020
09 Jul 1456	EXTENDED WARNING: Geomagnetic K = 5	09/0220 - 2359
09 Jul 1456	EXTENDED WARNING: Geomagnetic K = 4	09/0023 - 2359
09 Jul 2347	EXTENDED WARNING: Geomagnetic K = 4	09/0023 - 10/0900



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
10 Jul	92	18	4	24 Jul	85	5	2
11	92	12	4	25	85	5	2
12	92	15	4	26	85	5	2
13	92	10	3	27	85	5	2
14	92	5	2	28	85	5	2
15	92	5	2	29	90	5	2
16	92	5	2	30	90	5	2
17	90	5	2	31	85	5	2
18	85	12	4	01 Aug	85	5	2
19	85	10	3	02	85	5	2
20	85	5	2	03	85	5	2
21	85	11	3	04	85	5	2
22	85	11	3	05	85	25	5
23	85	5	2				

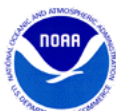


Energetic Events

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
03 Jul	1537	1615	1618	M1.3	0.004						140	
09 Jul	0309	0318	0337	M1.3	0.013	2N	S08E37		2665			

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical Location Lat CMD	Rgn #
	Begin	Max	End				
03 Jul	0617	0621	0625	B3.5	SF	S00W87	2664
03 Jul	0621	0621	0624		SF	N02W89	
03 Jul	0633	0635	0648	B8.0	SF	S00W87	2664
03 Jul	0634	0635	0642		SF	N02W89	
03 Jul	0706	0710	0712	B1.9			2664
03 Jul	0728	0731	0734	B1.3			2664
03 Jul	0847	0900	0908	B2.4			2664
03 Jul	0943	0950	1004	B2.2			2664
03 Jul	1031	1051	1103	B2.7			2664
03 Jul	1121	1125	1129	B2.6			2664
03 Jul	1236	1247	1253	B4.0			
03 Jul	1331	1335	1337	B6.2			
03 Jul	1537	1615	1618	M1.3			
03 Jul	1747	1758	1802	B9.2			
03 Jul	1812	1817	1821	B8.7			
03 Jul	1913	1917	1922	B2.6			
03 Jul	2051	2054	2056	B1.5			
04 Jul	0143	0153	0223	B6.9			
04 Jul	0405	0425	0444	C1.1			
05 Jul	0925	0929	0931	B2.0			
05 Jul	1249	1359	1403	B3.5			
05 Jul	1355	1359	1402	B3.8			
05 Jul	1633	1636	1639	B1.1			
05 Jul	1959	1959	2001		SF	S05E80	2665
05 Jul	2251	2255	2257	B2.4	SF	S05E80	2665
06 Jul	1428	1431	1434	B1.0			2665
06 Jul	1453	1531	1554		SF	S05E73	2665
06 Jul	1642	1704	1710		SF	S07E73	2665
06 Jul	1725	1725	1734	B1.7	SF	S07E72	2665



Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
07 Jul	0119	0138	0145	B2.6	SF	S06E65		2665
07 Jul	0158	0221	0232	B8.5				2665
07 Jul	0354	0403	0409	B9.2				2665
07 Jul	B0435	0448	0639		SF	S05E66		2665
07 Jul	0746	0750	0753	B2.1				2665
07 Jul	0913	0913	0920		SF	S04E63		2665
07 Jul	1021	1021	1025		SF	S05E62		2665
07 Jul	1040	1049	1052	B2.5	SF	S03E61		2665
07 Jul	1102	1102	1103		SF	S03E61		2665
07 Jul	1117	1133	1143	B3.6	SF	S04E57		2665
07 Jul	1148	1148	1201		SF	S04E57		2665
07 Jul	1204	1206	1211		SF	S04E61		2665
07 Jul	1213	1214	1216		SF	S04E61		2665
07 Jul	1222	1229	1231		SF	S04E61		2665
07 Jul	B1234	1255	1357	B5.7	1F	S06E55		2665
07 Jul	1302	1302	1306		SF	S04E61		2665
07 Jul	1313	1316	1319	B3.7				
07 Jul	1337	1349	1353	C1.0	SF	S04E60		2665
07 Jul	1430	1431	1434		SF	S05E57		2665
07 Jul	1500	1500	1502		SF	S06E57		2665
07 Jul	1507	1511	1515	B8.1	SF	S06E57		2665
07 Jul	1519	1521	1524		SF	S06E57		2665
07 Jul	1547	1547	1547		SF	S04E57		2665
07 Jul	1629	1710	1719		SF	S04E58		2665
07 Jul	2000	2004	2009	B2.1				2665
08 Jul	0325	0330	0334		SF	S08E51		2665
08 Jul	0427	0432	0438		SF	S04E50		2665
08 Jul	0457	0457	0501	B3.9	SF	S07E50		2665
08 Jul	0538	0623	0631	B6.8	SF	S04E51		2665
08 Jul	0621	0623	0627		SF	S04E51		2665
08 Jul	0715	0715	0730		SF	S04E51		2665
08 Jul	0757	0804	0810	B5.2	SF	S05E49		2665
08 Jul	0854	0916	0929		SF	S05E49		2665
08 Jul	0934	0945	0947		SF	S05E48		2665
08 Jul	0958	0958	1002		SF	S05E47		2665
08 Jul	1045	1105	1119	B6.5	SF	S05E47		2665
08 Jul	1116	1117	1119		SF	S05E47		2665
08 Jul	1346	1351	1355	B5.1	SF	S06E46		2665



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	Rgn #
08 Jul	1606	1607	1609		SF	S06E44	2665
08 Jul	1634	1641	1702	B3.4	SF	S07E42	2665
08 Jul	1717	1720	1730		SF	S04E45	2665
08 Jul	1832	1851	1913	B2.6	SF	S06E41	2665
08 Jul	1933	1934	2002		SF	S06E41	2665
08 Jul	2014	2015	2023		SF	S06E41	2665
08 Jul	2027	2028	2039		SF	S06E41	2665
08 Jul	2118	2124	2127	B6.0	2N	S06E41	2665
08 Jul	2133	2137	2141	B4.5			
08 Jul	2147	2200	2202	B6.0			
08 Jul	2223	2226	2229	B5.8	SF	S06E39	2665
08 Jul	2242	2250	2302		2F	S06E39	2665
08 Jul	2305	2309	2318	B4.5	SF	S06E39	2665
08 Jul	2350	2353	2357	C3.4	SF	S05E38	2665
09 Jul	B0000	0037	0004		SF	S05E38	2665
09 Jul	0120	0127	0129	B6.6			2665
09 Jul	0222	0227	0230	B3.4			2665
09 Jul	0302	0306	0308	B7.5			2665
09 Jul	0304	0318	0353	M1.3	2N	S08E37	2665
09 Jul	0615	0630	0640	C1.6	SF	S08E35	2665
09 Jul	0728	0733	0749	C1.2	SF	S06E35	2665
09 Jul	0813	0813	0818		SF	S05E34	2665
09 Jul	0824	0910	0924	C4.0	SF	S05E34	2665
09 Jul	1020	1040	1049	B9.8	SF	S05E33	2665
09 Jul	1057	1102	1104		SF	S05E33	2665
09 Jul	1122	1130	1140		SF	S05E33	2665
09 Jul	1144	1212	1228	C5.3	1F	S06E33	2665
09 Jul	1405	1409	1412	B4.4	SF	S06E31	2665
09 Jul	B1418	1419	1423		SF	S06E31	2665
09 Jul	1435	1442	1449	B8.7	SF	S08E28	2665
09 Jul	1519	1527	1532	B4.5	SF	S08E30	2665
09 Jul	1539	1544	1548	B4.6	SF	S06E32	2665
09 Jul	1620	1626	1632	B3.3	SF	S05E30	2665
09 Jul	1710	1738	1744	B5.0	SF	S09E27	2665
09 Jul	1829	1847	1849	B6.6			2665
09 Jul	1930	1933	1938	B2.4			2665
09 Jul	2008	2012	2015	B5.2			2665
09 Jul	2133	2154	2201	B9.0			2665



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
09 Jul	2206	2211	2215	B7.0			2665
09 Jul	2309	2332	2338	B3.6	SF	S08E26	2665



Region Summary

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 2664																							
20 Jun	N18E72	314	80	2	Cso	1	B																
21 Jun	N17E60	314	50	2	Hsx	1	A																
22 Jun	N17E47	312	50	1	Hsx	1	A																
23 Jun	N18E35	312	70	2	Hsx	1	A																
24 Jun	N18E21	313	70	5	Cso	7	B																
25 Jun	N18E07	314	90	7	Cso	10	B																
26 Jun	N18W07	315	90	7	Dsi	9	BG																
27 Jun	N18W19	313	100	4	Dsi	7	B					2											
28 Jun	N18W33	314	60	5	Cso	3	B																
29 Jun	N18W46	314	50	5	Cso	2	B																
30 Jun	N17W58	313	50	3	Hsx	1	A																
01 Jul	N18W71	313	20	1	Hsx	1	A																
02 Jul	N18W85	313	20	1	Hsx	1	A																
												0	0	0	2	0	0	0	0	0			

Crossed West Limb.

Absolute heliographic longitude: 314

Region 2665

05 Jul	S05E78	109	70	6	Hsx	1	A					2										
06 Jul	S06E64	111	140	9	Dai	6	B					3										
07 Jul	S06E52	110	310	11	Ekc	15	B	1				19	1									
08 Jul	S06E38	111	480	11	Ekc	14	B	1				23		2								
09 Jul	S06E24	111	710	11	Ekc	21	BG	4	1			16	1	1								
								6	1	0		63	2	3	0	0						

Still on Disk.

Absolute heliographic longitude: 111

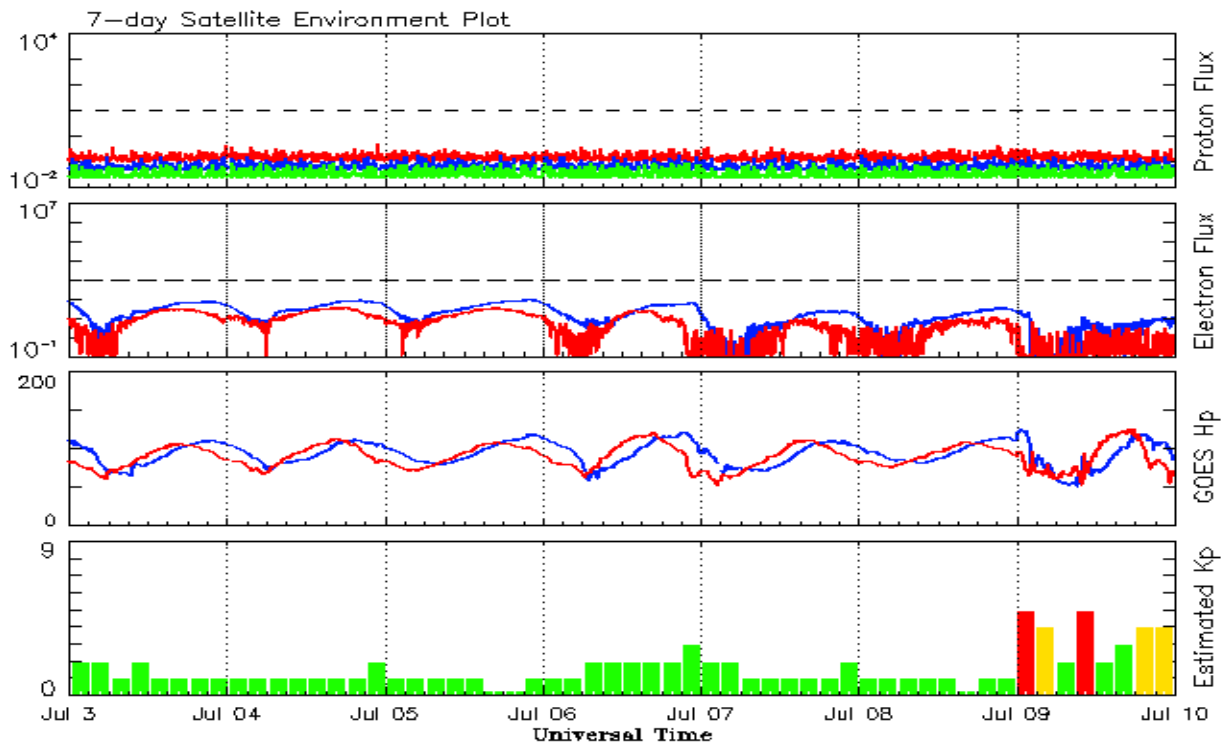


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2015									
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	36.7	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
2016									
January	50.4	34.2	0.67	51.4	32.6	103.5	99.9	10	12.3
February	56.0	33.8	0.61	49.6	31.5	103.5	98.1	10	12.0
March	40.9	32.5	0.80	47.7	30.2	91.6	96.6	11	11.8
April	39.2	22.7	0.58	45.0	28.7	93.4	95.3	10	11.8
May	48.9	30.9	0.64	42.1	26.9	93.1	93.2	12	11.7
June	19.3	12.3	0.65	39.0	24.9	81.9	90.4	9	11.4
July	36.8	19.4	0.53	36.5	23.1	85.9	87.7	10	11.2
August	50.4	30.1	0.60	34.2	21.6	85.0	85.5	10	11.2
September	37.4	26.8	0.72	32.1	19.9	87.8	83.7	16	11.3
October	30.0	20.0	0.67	31.1	18.9	86.1	82.5	16	11.6
November	22.4	12.8	0.57	29.4	17.9	78.7	81.1	10	11.6
December	17.6	11.1	0.64	28.1	17.1	75.1	80.0	10	11.4
2017									
January	28.1	15.7	0.55			77.4		10	
February	22.0	15.8	0.71			76.9		10	
March	25.4	10.6	0.42			74.6		15	
April	30.4	19.6	0.64			80.9		13	
May	18.1	11.3	0.62			73.5		9	
June	18.0	11.6	0.64			74.8		7	

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 03 July 2017*

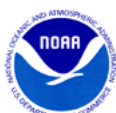
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

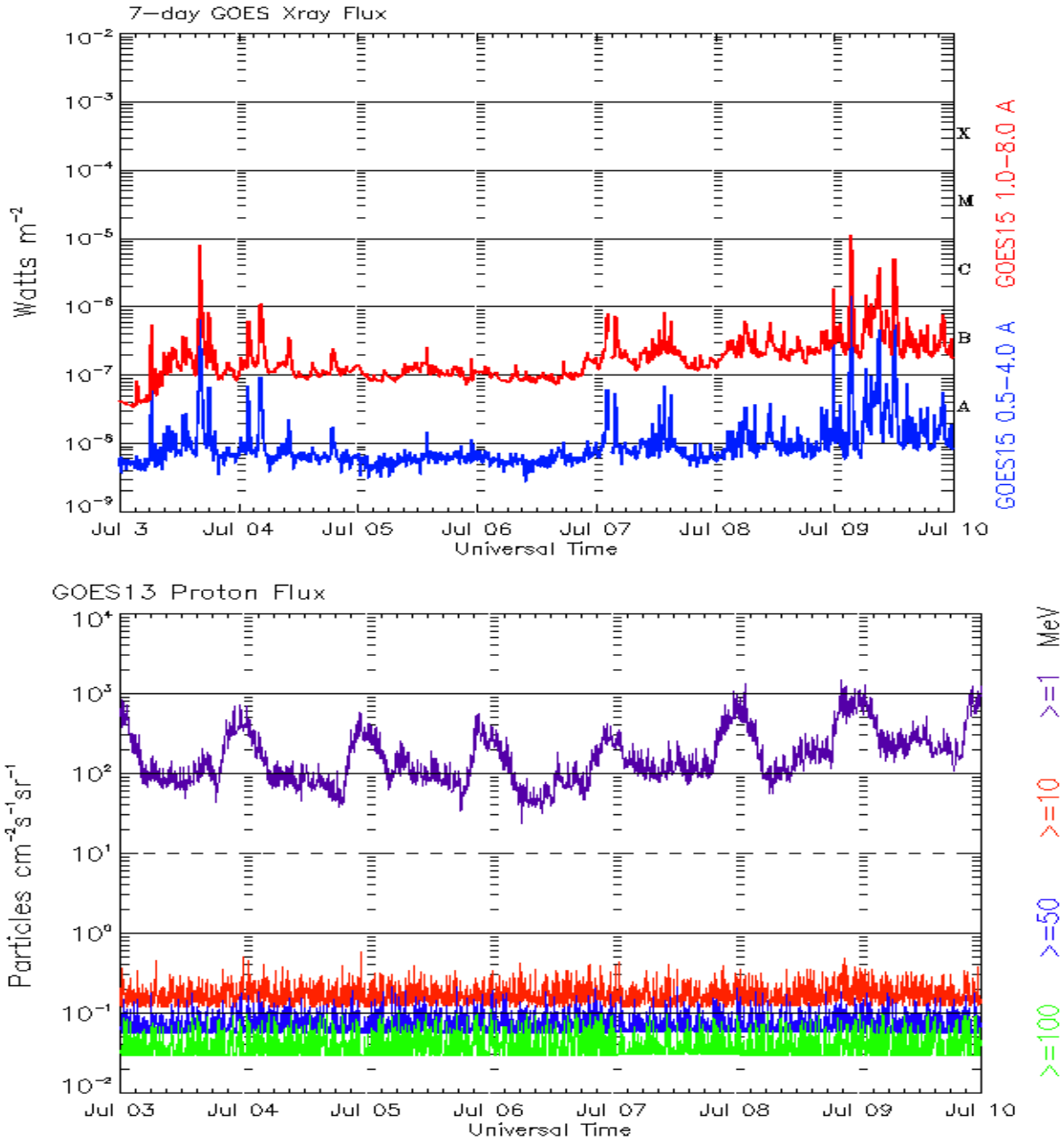
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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.

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 03 July 2017*

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.



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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<http://spaceweather.gov/SolarCycle/> -- Solar Cycle Progression web site

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http://spaceweather.gov/weekly/Usr_guide.pdf -- User Guide

