

Solar activity was very low throughout the summary period. A B1 flare, observed at 27/2136 UTC from a plage region near center disk, was the strongest event of the period. Region 2668 (N03, L=311, class/area Axx/010 on 25 Jul) decayed to plage by 26 Jul and Region 2669 (N18, L=255, class/area Axx/010 on 30 Jul) remained inactive. No Earth-directed CMEs were observed in available coronagraph imagery.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to high levels on 26 Jul, high levels on 30 Jul and moderate to high levels throughout the remaining days of the period. A maximum flux of 18,800 pfu was observed at 25/1515 UTC. The enhancements in flux levels were due to persistently elevated solar winds from a slowly-waning, positive polarity CH HSS.

Geomagnetic field activity ranged from quiet to active levels over the past week. Quiet to active levels were observed on 24 Jul and 26 July; quiet to unsettled levels were observed on 25 Jul and 27-28 Jul; the remaining days were quiet. Geomagnetic activity was associated with the influence of a slowly-waning, positive polarity CH HSS enhancing solar wind speeds. A steady decline in wind speed was observed over the entire reporting period from a peak speed of 705 km/s at 24/2219 UTC to a low of around 350 km/s by the end of 30 Jul.

Space Weather Outlook **31 July - 26 August 2017**

Solar activity is expected to be at low levels with a chance for M-class flare (R1-R2/Minor-Moderate) on 31 Jul - 13 Aug due to the return of old Region 2665 (S06, L=113) rotating across the visible disk. The remainder of the outlook period is expected to be at very low levels.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to range from normal background to high levels. High levels are expected on 01-03 Aug, 05-10 Aug, and 18-26 Aug; moderate levels are expected 31 Jul and 11 Aug; normal background levels are expected for 04 Aug and 12-17 Aug. All enhancements in electron flux are due to multiple anticipated recurrent CH HSSs.

Geomagnetic field activity is expected to range from quiet to G1 (Minor) geomagnetic storm levels. G1 (Minor) storm levels are likely on 04-05 Aug and again on 17-18 Aug; active conditions are likely on 31 Jul, 06 Aug and 19 Aug; unsettled levels are likely on 01-02 Aug, 07 Aug and 20-21 Aug; quiet conditions are expected for the remaining days of the outlook period.



All anticipated enhancements in geomagnetic activity are due to multiple, recurrent CH HSSs.



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
24 July	70	0	0	A4.8	0	0	0	0	0	0	0	0
25 July	70	12	10	A4.5	0	0	0	0	0	0	0	0
26 July	69	0	0	A3.8	0	0	0	1	0	0	0	0
27 July	68	0	0	A3.9	0	0	0	0	0	0	0	0
28 July	70	0	0	A3.7	0	0	0	0	0	0	0	0
29 July	70	12	5	A4.0	0	0	0	0	0	0	0	0
30 July	70	11	10	A4.6	0	0	0	0	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
	24 July	5.6e+07	1.7e+04	3.4e+03	4.1e+08	
25 July	1.3e+08	4.8e+04	3.4e+03	5.4e+08		
26 July	1.5e+08	4.3e+04	3.5e+03	4.7e+08		
27 July	1.2e+08	3.5e+04	3.7e+03	7.1e+08		
28 July	1.5e+08	3.0e+04	3.3e+03	4.4e+08		
29 July	1.8e+08	2.5e+04	3.2e+03	3.3e+08		
30 July	1.2e+08	2.2e+04	3.4e+03	3.5e+08		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	24 July	13	3-3-4-3-2-1-2-3	21	2-3-5-4-5-3-1-2	12
25 July	9	3-2-2-2-2-2-2-3	18	3-2-4-4-5-2-2-2	9	2-2-2-2-3-2-2-3
26 July	15	4-3-5-2-2-2-1-1	19	3-2-5-5-4-2-1-0	11	3-2-4-2-2-2-1-1
27 July	8	1-2-2-1-3-2-1-3	12	0-1-1-1-2-4-1-5	6	1-1-2-1-2-2-1-3
28 July	7	2-1-1-2-3-2-2-1	11	2-2-0-3-2-5-1-1	7	2-1-1-2-2-3-3-2
29 July	4	1-1-2-2-2-1-0-1	4	1-1-1-2-1-2-1-0	4	1-1-2-1-1-1-0-1
30 July	0	0-0-0-0-0-0-0-0	0	0-0-0-0-0-0-0-0	4	1-2-1-1-1-0-1-0

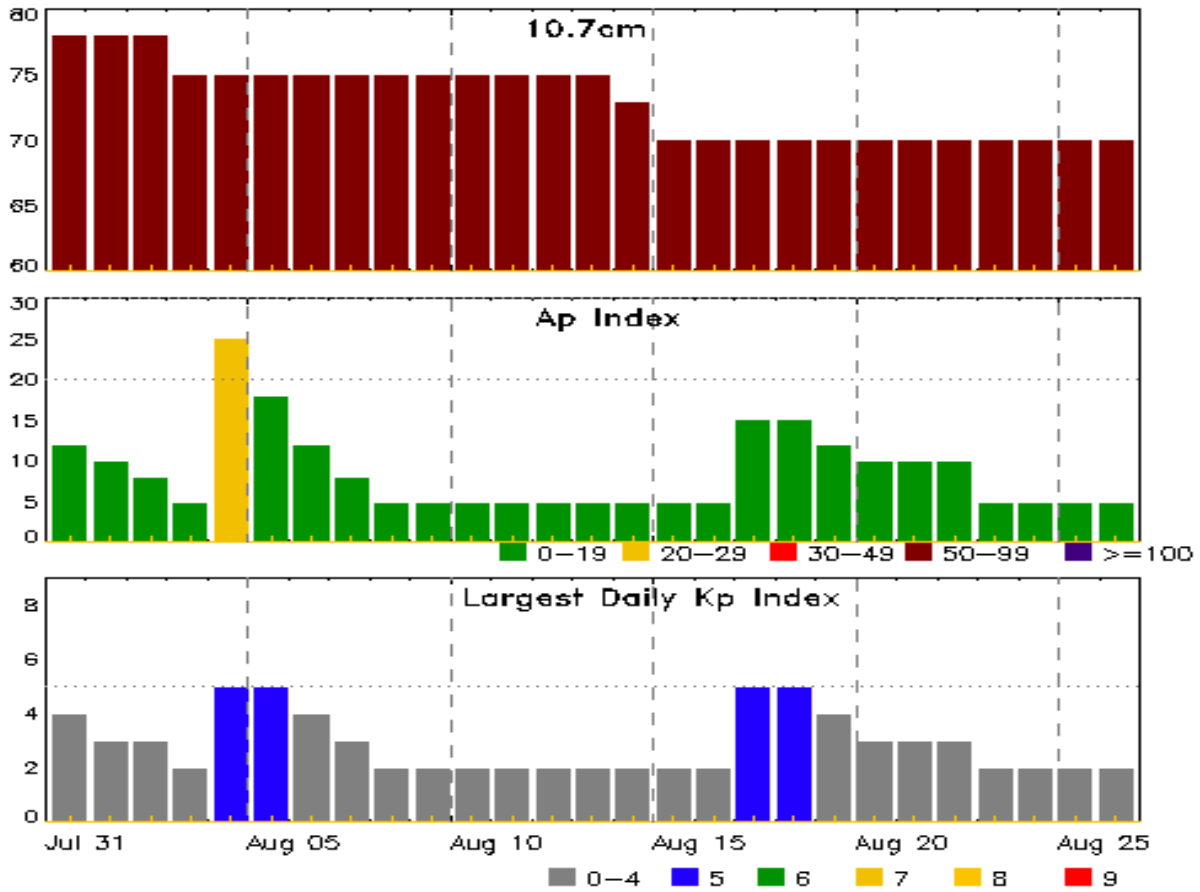


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
24 Jul 0544	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	17/0325
24 Jul 2300	WARNING: Geomagnetic K = 4	24/2300 - 25/0600
25 Jul 0001	ALERT: Geomagnetic K = 4	24/2359
25 Jul 0500	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	17/0325
26 Jul 0038	WARNING: Geomagnetic K = 4	26/0037 - 0600
26 Jul 0503	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	17/0325
26 Jul 0729	WARNING: Geomagnetic K = 4	26/0729 - 1200
26 Jul 0740	ALERT: Geomagnetic K = 4	26/0740
27 Jul 0500	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	17/0325
28 Jul 0501	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	17/0325
29 Jul 0701	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	17/0325
30 Jul 0500	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	17/0325



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
31 Jul	78	12	4	14 Aug	73	5	2
01 Aug	78	10	3	15	70	5	2
02	78	8	3	16	70	5	2
03	75	5	2	17	70	15	5
04	75	25	5	18	70	15	5
05	75	18	5	19	70	12	4
06	75	12	4	20	70	10	3
07	75	8	3	21	70	10	3
08	75	5	2	22	70	10	3
09	75	5	2	23	70	5	2
10	75	5	2	24	70	5	2
11	75	5	2	25	70	5	2
12	75	5	2	26	70	5	2
13	75	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

No Events Observed

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD	Rgn #	
26 Jul	0022	0023	0027		SF	N04E56		
27 Jul	2107	2136	2149	B1.5				



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

Region 2668

25 Jul	N03W28	311	10	1	Axx	2	A										
26 Jul	N03W41	312	plage														
27 Jul	N03W56	314	plage														
28 Jul	N03W71	315	plage														
29 Jul	N03W86	317	plage														
									0	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 311

Region 2669

29 Jul	N18W25	256	5	3	Bxo	2	B										
30 Jul	N18W37	255	10	1	Axx	1	A										
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 256

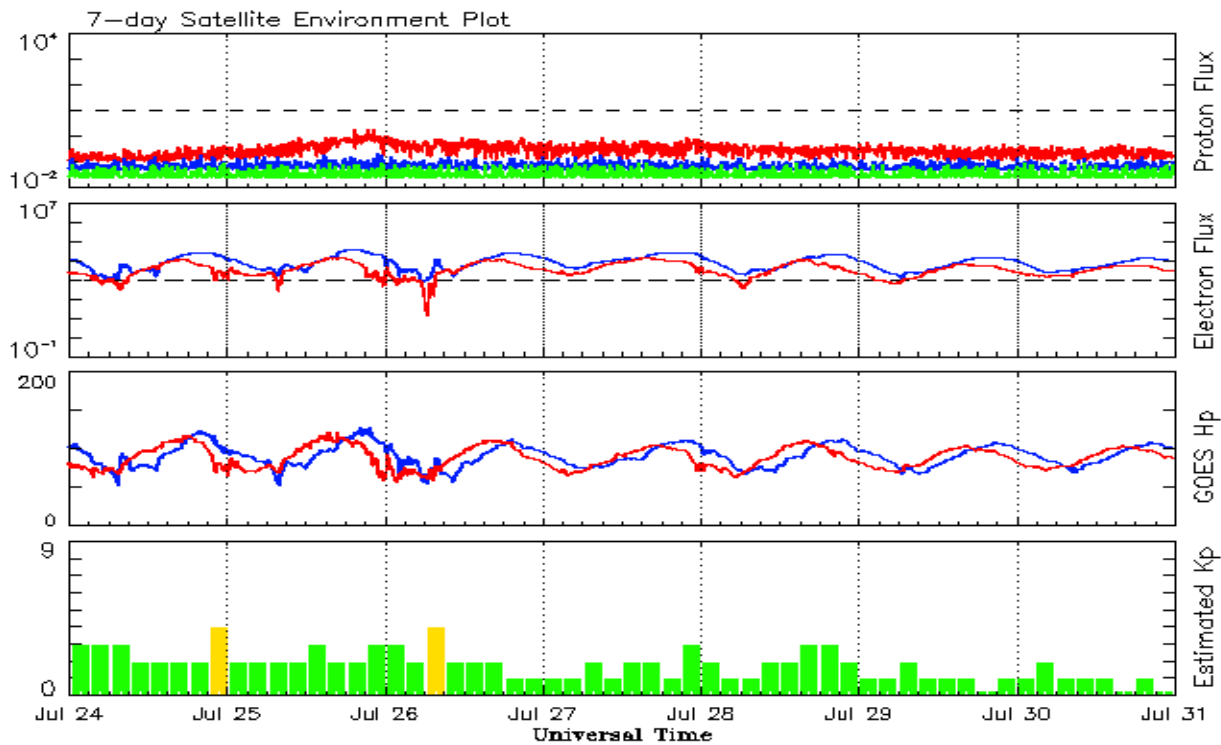


Recent Solar Indices (preliminary)
Observed monthly mean values

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 24 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.

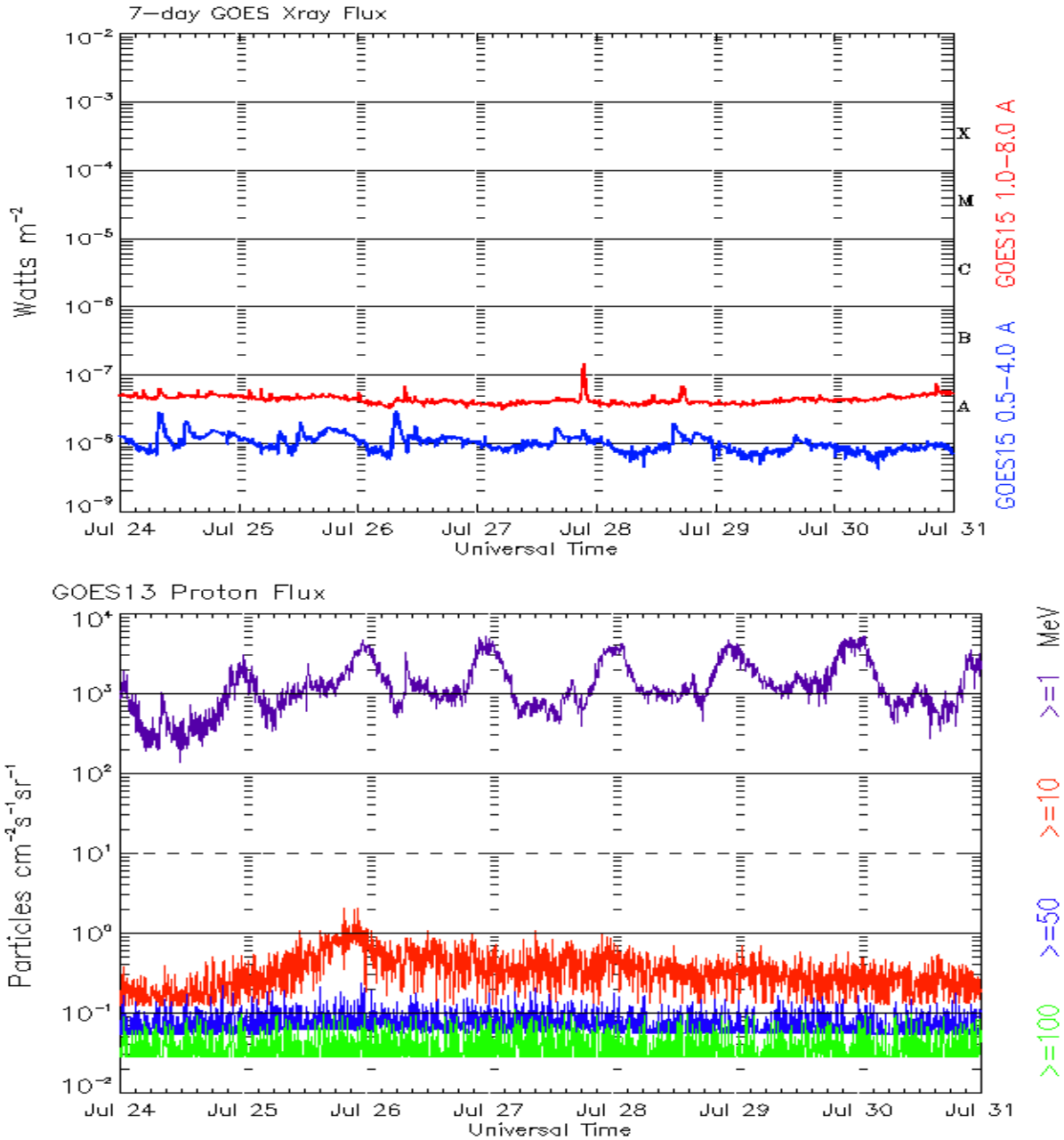
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 24 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.



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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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