

Space Weather Highlights
22 July - 28 July 2019

SWPC PRF 2291
29 July 2019

Solar activity was at very low levels with no spotted regions on 22-28 July.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal levels on 22-28 July.

Geomagnetic field activity reached unsettled levels on 22 July. Quiet levels were observed on 23-28 July.

Space Weather Outlook
29 July - 24 August 2019

Solar activity is expected to be at very low levels for 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 high levels on 02-03 and 05-17 August due to recurrent coronal hole high speed stream influences. Normal to moderate levels are expected for the remainder of the outlook period.

Geomagnetic field activity is expected to be at active levels on 01 and 05-06 August due to recurrent coronal hole high speed stream influences. Quiet to unsettled levels are expected for the remainder of the outlook period.



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
22 July	67	11	0	A6.4	0	0	0	0	0	0	0	0	0
23 July	67	0	0	A6.4	0	0	0	0	0	0	0	0	0
24 July	68	0	0	A6.4	0	0	0	0	0	0	0	0	0
25 July	68	0	0	A6.3	0	0	0	0	0	0	0	0	0
26 July	68	0	0	A6.3	0	0	0	0	0	0	0	0	0
27 July	67	0	0	A6.2	0	0	0	0	0	0	0	0	0
28 July	67	0	0	A6.4	0	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
22 July	1.8e+05	2.1e+04	3.9e+03		3.7e+06	
23 July	2.3e+05	2.2e+04	4.1e+03		3.1e+06	
24 July	2.8e+05	2.1e+04	4.0e+03		4.6e+06	
25 July	2.7e+05	2.2e+04	4.1e+03		4.8e+06	
26 July	4.5e+05	2.1e+04	4.0e+03		5.5e+06	
27 July	4.9e+05	2.2e+04	3.8e+03		5.4e+06	
28 July	4.9e+05	2.1e+04	3.5e+03		4.0e+06	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
22 July	11	1-2-4-3-3-2-2-1	10	2-2-3-4-2-2-2-0	8	2-2-3-3-2-2-2-1
23 July	7	1-3-1-2-3-1-2-1	3	1-2-1-2-1-0-0-1	6	1-2-2-2-2-1-1-2
24 July	5	1-1-0-1-3-1-1-2	3	1-1-0-1-2-1-1-1	5	2-1-0-1-2-1-1-2
25 July	3	0-0-0-1-3-1-1-1	1	1-1-0-0-0-0-0-0	3	1-0-0-1-1-1-0-1
26 July	4	0-0-1-1-3-2-1-1	0	0-0-0-0-0-0-0-0	3	0-0-1-1-1-1-1-1
27 July	4	1-0-0-2-2-1-2-1	2	1-0-0-1-0-0-2-0	4	1-1-0-2-1-1-2-1
28 July	7	1-3-2-1-3-1-1-1	3	1-2-1-2-1-0-0-0	5	1-2-1-1-1-1-1-0

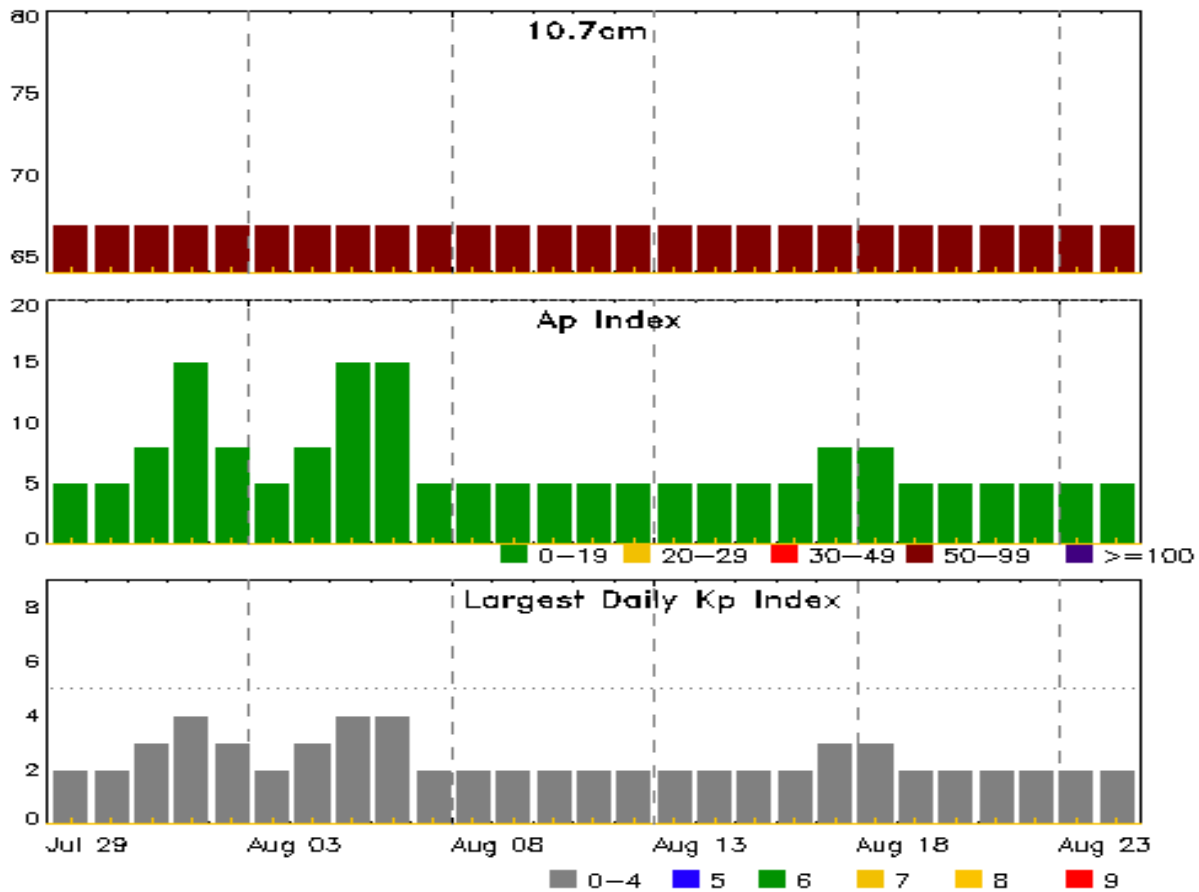


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
No Alerts or Warnings Issued		



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
29 Jul	67	5	2	12 Aug	67	5	2
30	67	5	2	13	67	5	2
31	67	8	3	14	67	5	2
01 Aug	67	15	4	15	67	5	2
02	67	8	3	16	67	5	2
03	67	5	2	17	67	8	3
04	67	8	3	18	67	8	3
05	67	15	4	19	67	5	2
06	67	15	4	20	67	5	2
07	67	5	2	21	67	5	2
08	67	5	2	22	67	5	2
09	67	5	2	23	67	5	2
10	67	5	2	24	67	5	2
11	67	5	2				

Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Half	Class	Flux	Imp/	Location	Rgn	Radio Flux		Intensity	
			Max			Brtns			245	2695	II	IV

No Events Observed

Flare List

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
No Flares Observed							

No Flares Observed



Region Summary

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

Region 2745

22 Jul	N02W35	84	0	1	Axx	1	A								
23 Jul	N02W50	85	plage												
24 Jul	N02W65	87	plage												
25 Jul	N02W78	87	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 84

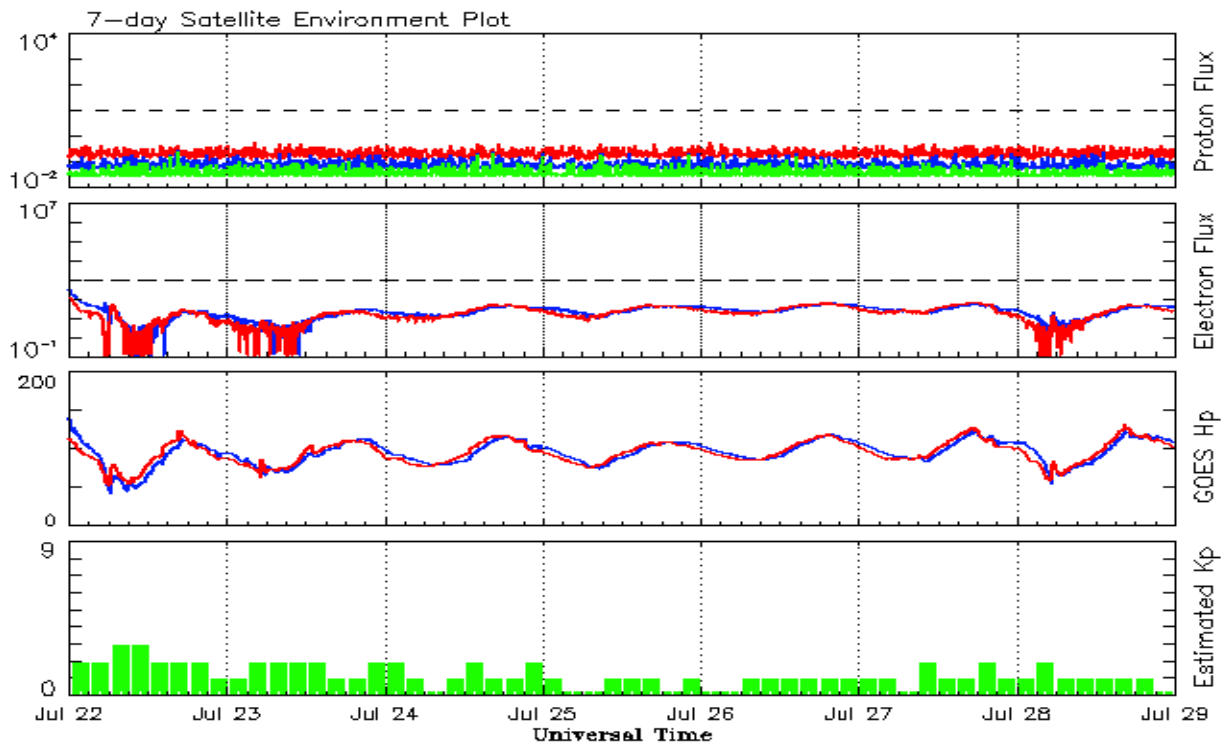


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2017									
July	18.8	10.7	0.59	20.8	12.6	77.7	76.8	9	11.0
August	25.0	19.6	0.80	19.7	11.8	77.9	76.3	12	10.7
September	42.2	26.2	0.62	18.6	11.0	92.0	75.9	19	10.3
October	16.0	7.9	0.49	16.8	10.0	76.4	75.1	11	9.8
November	7.7	3.4	0.44	15.7	9.2	72.1	74.6	11	9.5
December	7.6	4.9	0.64	15.7	9.1	71.5	74.4	8	9.4
2018									
January	7.8	4.1	0.51	15.0	8.5	70.0	74.0	6	9.3
February	16.0	6.4	0.40	13.7	7.6	72.0	73.3	7	9.1
March	6.0	1.5	0.25	11.5	5.9	68.4	71.9	8	8.6
April	7.0	5.3	0.76	9.6	4.7	70.0	70.6	7	8.0
May	15.0	7.9	0.53	9.2	4.5	70.9	70.2	8	7.6
June	19.7	9.4	0.48	9.1	4.3	72.5	70.0	7	7.4
July	1.3	1.0	0.77	9.4	4.2	69.7	70.0	6	7.3
August	10.0	5.2	0.53	9.0	4.0	69.1	70.0	10	7.3
September	5.7	2.0	0.35	8.7	3.9	68.3	70.1	9	7.3
October	6.9	2.9	0.42	9.2	4.1	69.5	70.3	7	7.1
November	7.3	2.9	0.48	9.5	4.0	68.9	70.4	6	7.0
December	5.6	1.9	0.34	9.3	3.6	70.0	70.3	7	6.9
2019									
January	16.0	4.6	0.29			71.6		6	
February		0.5				70.6		7	
March	14.8	5.6	0.39			71.5		6	
April	11.5	5.5	0.48			72.4		6	
May	18.1	6.1	0.34			71.3		7	
June	11.6	0.7	0.06			68.1		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 22 July 2019*

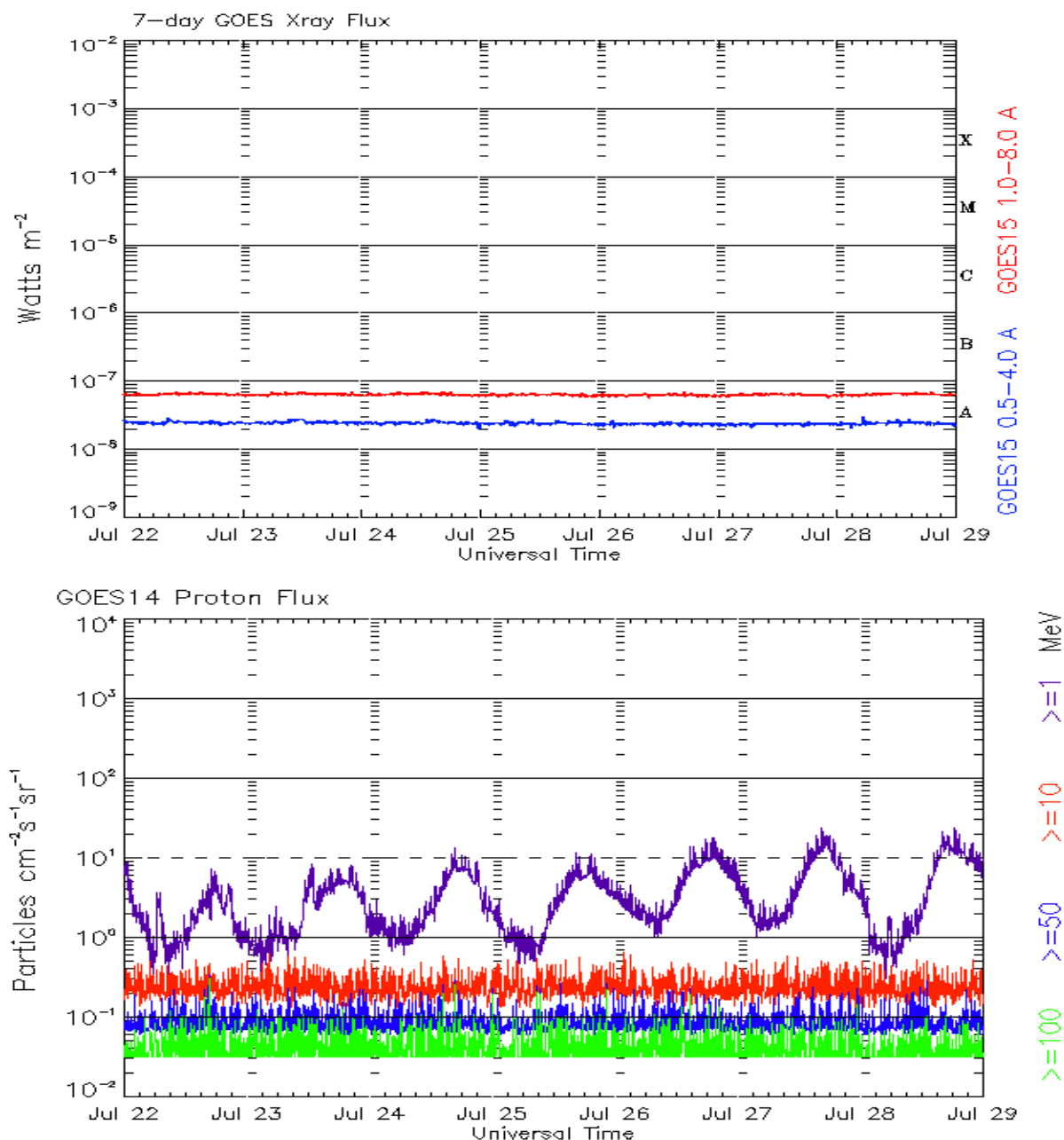
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 22 July 2019*

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) 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^2 -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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