

Space Weather Highlights
03 December - 09 December 2018

SWPC PRF 2258
10 December 2018

Solar activity was very low throughout the period. Region 2729 (S05, L=229, class/area=Cro/50 on 06 Dec) was the only region with sunspots and produced multiple low-level B-class flare late in the period. A CME associated with a filament eruption on 30 Nov was predicted to hit Earth on 05 Dec, but this event did not materialize.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached moderate levels on 06, and 08-09 Dec and normal levels were observed throughout the remainder of the period.

Geomagnetic field activity reached active levels late on 09 Dec in response to coronal hole/high speed stream effects. Quiet and quiet to unsettled conditions were observed throughout the remainder of the period.

Space Weather Outlook
10 December - 05 January 2019

Solar activity is expected to be very low throughout the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to reach moderate levels on 10-16 Dec and 03-05 Jan with normal flux levels expected for the remainder of the outlook period.

Geomagnetic field activity is expected to reach active levels on 10 Dec and 29 Dec due to coronal hole/high speed stream effects. Quiet or quiet to unsettled conditions are expected throughout 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
03 December	68	0	0	A0.0	0	0	0	0	0	0	0	0
04 December	69	0	0	A0.0	0	0	0	0	0	0	0	0
05 December	71	16	30	A1.9	0	0	0	0	0	0	0	0
06 December	70	17	50	A1.9	0	0	0	0	0	0	0	0
07 December	70	16	50	A1.7	0	0	0	0	0	0	0	0
08 December	71	12	10	A2.3	0	0	0	0	0	0	0	0
09 December	72	12	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
03 December		1.2e+06	1.7e+04	3.7e+03	7.7e+05	
04 December		5.0e+05	1.6e+04	3.5e+03	1.9e+06	
05 December		3.7e+05	1.7e+04	3.8e+03	2.0e+06	
06 December		3.7e+05	1.6e+04	3.8e+03	3.9e+06	
07 December		6.4e+05	1.6e+04	3.6e+03	3.6e+06	
08 December		7.2e+05	1.6e+04	3.5e+03	1.3e+07	
09 December		7.8e+05	1.7e+04	3.7e+03	1.2e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
03 December	9	2-1-2-1-3-3-3-2	21	1-1-2-5-5-5-2-1	10	3-2-2-1-3-3-3-2
04 December	5	3-2-1-1-1-1-1-1	4	2-2-1-2-0-1-1-0	8	3-3-2-2-1-2-1-2
05 December	3	2-2-0-0-1-1-0-2	3	0-0-0-2-3-1-0-0	5	2-2-0-1-1-1-0-2
06 December	3	2-1-1-0-1-2-0-0	6	0-1-2-2-4-1-0-0	5	2-2-1-1-2-1-1-1
07 December	8	1-2-3-2-2-1-3-2	9	0-1-2-3-4-2-2-2	10	1-3-3-2-2-2-3-2
08 December	10	2-3-3-2-2-3-2-1	18	2-2-4-4-3-5-2-2	10	2-3-3-2-2-3-2-2
09 December	6	1-1-1-1-1-2-2-3	8	1-1-0-2-1-3-1-4	7	2-1-1-1-1-3-3-4

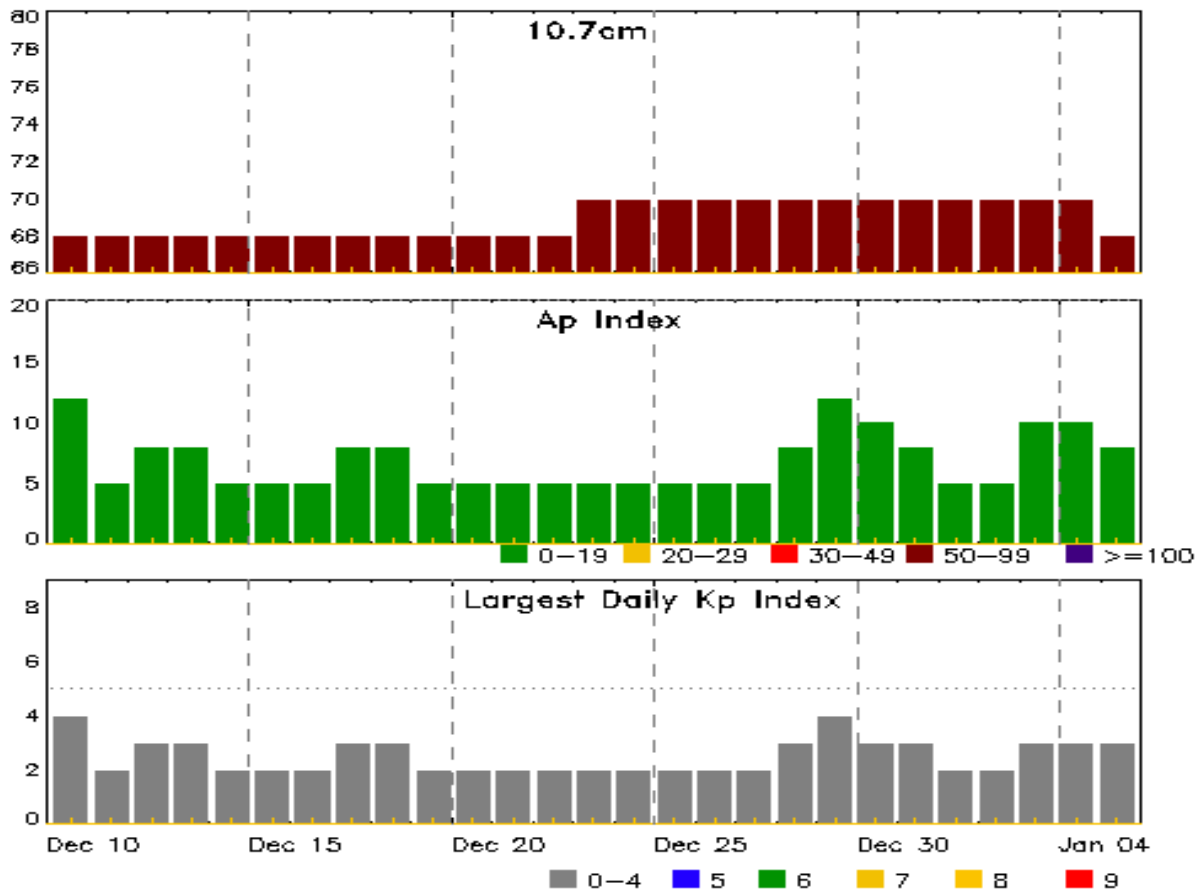


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
03 Dec 1507	WARNING: Geomagnetic K = 4	03/1510 - 2200
03 Dec 1835	WATCH: Geomagnetic Storm Category G1 predicted	
07 Dec 1945	WARNING: Geomagnetic K = 4	07/1945 - 08/0600
09 Dec 2243	WARNING: Geomagnetic K = 4	09/2244 - 10/0900
09 Dec 2304	ALERT: Geomagnetic K = 4	09/2304



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 Dec	68	12	4	24 Dec	70	5	2
11	68	5	2	25	70	5	2
12	68	8	3	26	70	5	2
13	68	8	3	27	70	5	2
14	68	5	2	28	70	8	3
15	68	5	2	29	70	12	4
16	68	5	2	30	70	10	3
17	68	8	3	31	70	8	3
18	68	8	3	01 Jan	70	5	2
19	68	5	2	02	70	5	2
20	68	5	2	03	70	10	3
21	68	5	2	04	70	10	3
22	68	5	2	05	68	8	3
23	70	5	2				

Energetic Events

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

No Events Observed

Flare List

Date	Time			X-ray Class	Optical		
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	Rgn #
03 Dec	1227	1228	1229	A1.1			
05 Dec	0231	0236	0239	B1.5			2729
05 Dec	2019	2025	2033	B1.3			2729
05 Dec	2038	2041	2045	B1.1			2729
07 Dec	1951	1955	2002	B1.2			2729
09 Dec	0705	0710	0716	B2.4			2729
09 Dec	1449	1453	1456	B1.1			2729
09 Dec	2035	2039	2044	B1.0			2729



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	4

Region 2729

05 Dec	S05W38	228	30	4	Cro	6	B								
06 Dec	S05W51	229	50	6	Cro	7	B								
07 Dec	S05W67	232	50	7	Bxo	6	B								
08 Dec	S05W80	231	10	6	Bxo	2	B								
09 Dec	S05W93	231	10	6	Bxo	2	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 228

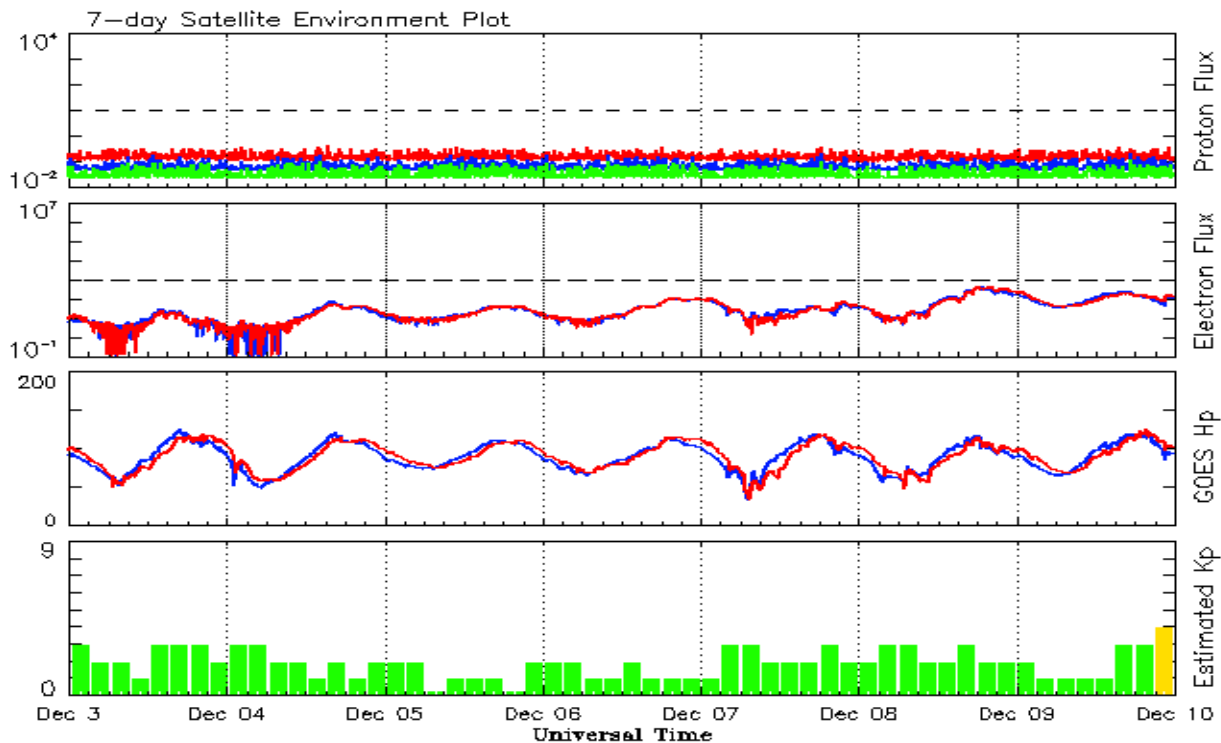


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2016									
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	27.3	16.7	77.4	79.4	10	11.3
February	22.0	15.8	0.71	25.5	15.9	76.9	78.7	10	11.3
March	25.4	10.6	0.42	24.6	15.4	74.6	78.6	15	11.5
April	30.4	19.4	0.64	24.3	14.9	80.9	78.4	13	11.5
May	18.1	11.3	0.62	23.1	14.0	73.5	77.7	9	11.3
June	18.0	11.5	0.64	22.0	13.3	74.8	77.3	7	11.3
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			72.5		7	
July	1.3	1.0	0.77			69.7		6	
August	10.0	5.3	0.53			69.1		10	
September	5.7	2.0	0.35			68.3		9	
October	6.9	2.9	0.42			69.5		7	
November	7.3	3.5	0.48			68.9		6	

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 December 2018*

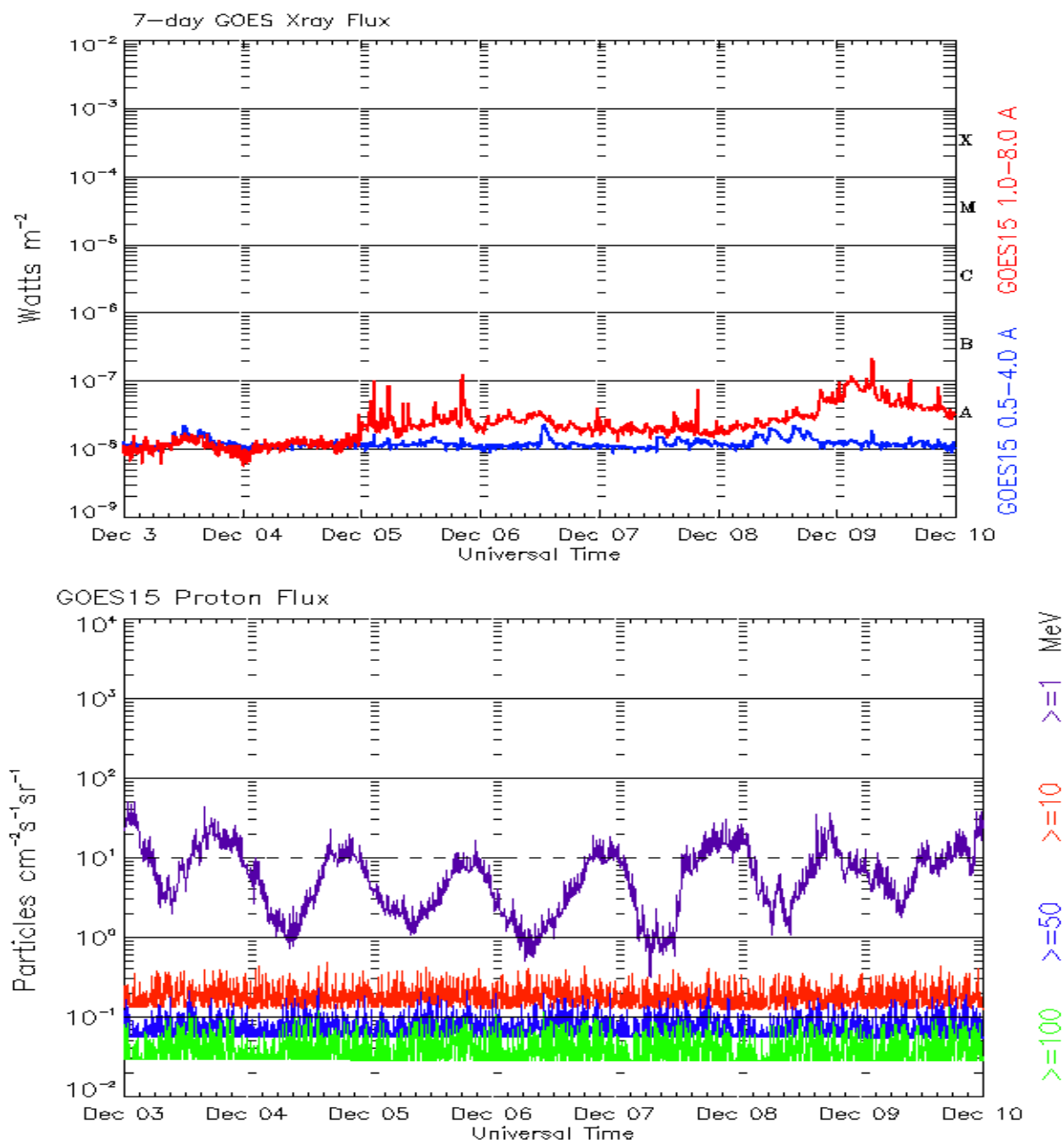
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 December 2018*

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.



Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

Published every Monday by the Space Weather Prediction Center.

U.S. Department of Commerce
NOAA / National Weather Service
Space Weather Prediction Center
325 Broadway, Boulder CO 80305

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.

<http://spaceweather.gov/weekly/> -- Current and previous year

<http://spaceweather.gov/ftpmenu/warehouse.html> -- Online archive from 1997

<http://spaceweather.gov/ftpmenu/> -- Some content as ascii text

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

<http://spaceweather.gov/contacts.html> -- Contact and Copyright information

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

