

Space Weather Highlights
01 October - 07 October 2018

SWPC PRF 2249
08 October 2018

Solar activity was very low this period. Region 2723 (S08, L=357, class/area=Dso/30 on 01 Oct) was the only active region with sunspots, but was quiet throughout the period. No Earth-directed CMEs were observed during the summary period.

No proton events were observed at geosynchronous orbit.

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

Geomagnetic field activity reached G1 (Minor) geomagnetic storm levels on 07 Oct due to the influence of a positive polarity CH HSS. Active conditions were observed on 01-02 Oct and quiet to unsettled levels were observed on 03, and 05-06 Oct. Quiet conditions prevailed on 04 Oct.

Space Weather Outlook
08 October - 03 November 2018

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 high levels on 08-25 Oct with moderate flux levels expected throughout the remainder of the outlook period.

Geomagnetic field activity is expected to reach G1-G2 (Minor-Moderate) geomagnetic storm levels on 08 Oct and 03 Nov due to the influence of a positive polarity CH HSS. G1 (Minor) geomagnetic storm levels are expected on 19 Oct and active levels are expected on 09-10, 18, 20, and 22 Oct, due to the influence of 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
01 October	70	14	30	A0.0	0	0	0	0	0	0	0	0
02 October	67	14	30	A0.0	0	0	0	0	0	0	0	0
03 October	68	12	10	A0.0	0	0	0	0	0	0	0	0
04 October	67	11	10	A0.0	0	0	0	0	0	0	0	0
05 October	69	0	0	A0.0	0	0	0	0	0	0	0	0
06 October	69	0	0	A0.0	0	0	0	0	0	0	0	0
07 October	68	0	0	A0.0	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
01 October		2.2e+06	1.7e+04	3.6e+03		2.2e+07
02 October		4.9e+05	1.6e+04	3.8e+03		2.5e+07
03 October		7.5e+05	1.7e+04	3.8e+03		3.2e+07
04 October		6.1e+05	1.7e+04	3.5e+03		1.8e+07
05 October		3.4e+05	1.7e+04	3.7e+03		1.2e+07
06 October		3.2e+05	1.7e+04	3.6e+03		1.5e+07
07 October		1.2e+06	1.6e+04	3.3e+03		5.8e+06

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
01 October	6	0-1-1-2-3-2-1-2	19	0-1-2-4-6-4-2-1	9	0-2-1-2-4-2-2-2
02 October	6	3-2-2-1-2-1-1-1	4	2-1-2-1-1-1-1-0	8	4-3-2-1-2-1-2-0
03 October	4	0-1-0-1-1-2-2-2	2	0-0-1-0-0-1-1-2	6	1-1-1-2-1-1-2-3
04 October	4	1-0-1-0-2-2-2-1	4	1-0-0-0-2-3-1-1	4	1-0-1-0-1-2-1-1
05 October	8	3-2-2-1-3-1-1-2	6	1-2-1-3-2-1-1-1	9	3-3-2-2-3-1-1-2
06 October	5	3-1-2-2-1-0-1-0	6	1-1-2-4-2-0-0-0	6	3-1-2-2-1-0-1-0
07 October	13	0-0-2-3-3-4-4-3	44	0-0-2-6-7-6-4-3	2	0-1-1-3-4-5-5-5

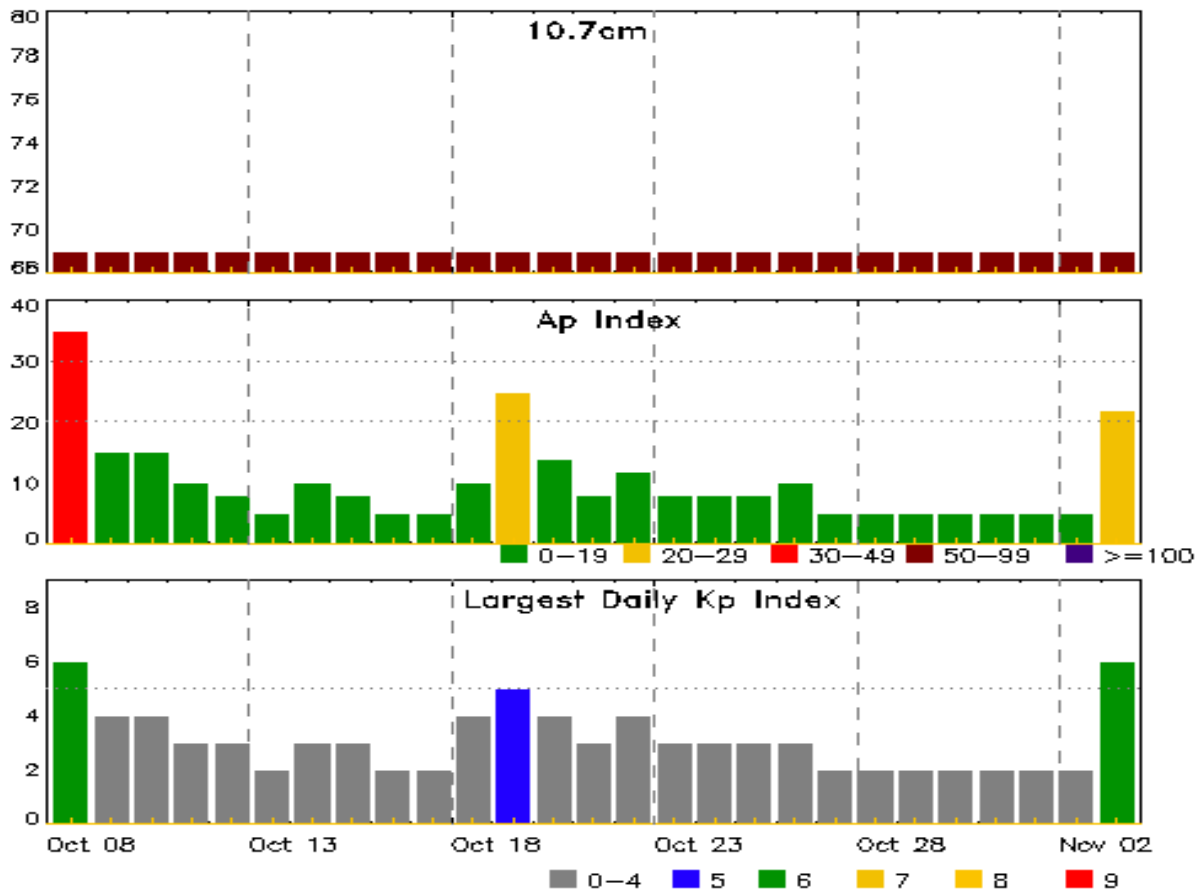


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
01 Oct 1418	WARNING: Geomagnetic K = 4	01/1419 - 2000
01 Oct 1424	ALERT: Geomagnetic K = 4	01/1424
02 Oct 0138	WARNING: Geomagnetic K = 4	02/0138 - 0900
02 Oct 0219	ALERT: Geomagnetic K = 4	02/0219
04 Oct 2150	WATCH: Geomagnetic Storm Category G1 predicted	
05 Oct 1921	WATCH: Geomagnetic Storm Category G2 predicted	
07 Oct 1055	WARNING: Geomagnetic K = 4	07/1100 - 2359
07 Oct 1459	ALERT: Geomagnetic K = 4	07/1459
07 Oct 1555	WARNING: Geomagnetic K = 5	07/1555 - 2359
07 Oct 1622	ALERT: Geomagnetic K = 5	07/1622
07 Oct 1645	EXTENDED WARNING: Geomagnetic K = 4	07/1100 - 08/1500
07 Oct 1645	EXTENDED WARNING: Geomagnetic K = 5	07/1555 - 08/0900
07 Oct 1645	WARNING: Geomagnetic K = 6	07/1645 - 08/0600
07 Oct 2043	ALERT: Geomagnetic K = 5	07/2042



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
08 Oct	69	35	6	22 Oct	69	12	4
09	69	15	4	23	69	8	3
10	69	15	4	24	69	8	3
11	69	10	3	25	69	8	3
12	69	8	3	26	69	10	3
13	69	5	2	27	69	5	2
14	69	10	3	28	69	5	2
15	69	8	3	29	69	5	2
16	69	5	2	30	69	5	2
17	69	5	2	31	69	5	2
18	69	10	4	01 Nov	69	5	2
19	69	25	5	02	69	5	2
20	69	14	4	03	69	22	6
21	69	8	3				

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	Optical		
	Begin	Max	End		Imp/	Location	Rgn
				Class	Brtns	Lat CMD	#
02 Oct	0441	0445	0448	B1.1			



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 2723

29 Sep	S08W01	355	10	1	Bxo	3	B								
30 Sep	S08W15	356	30	5	Dro	4	B								
01 Oct	S08W29	357	30	6	Dso	4	B								
02 Oct	S08W42	357	30	7	Cro	4	B								
03 Oct	S08W56	358	10	6	Bxo	2	B								
06 Oct	S12W99	1	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 355

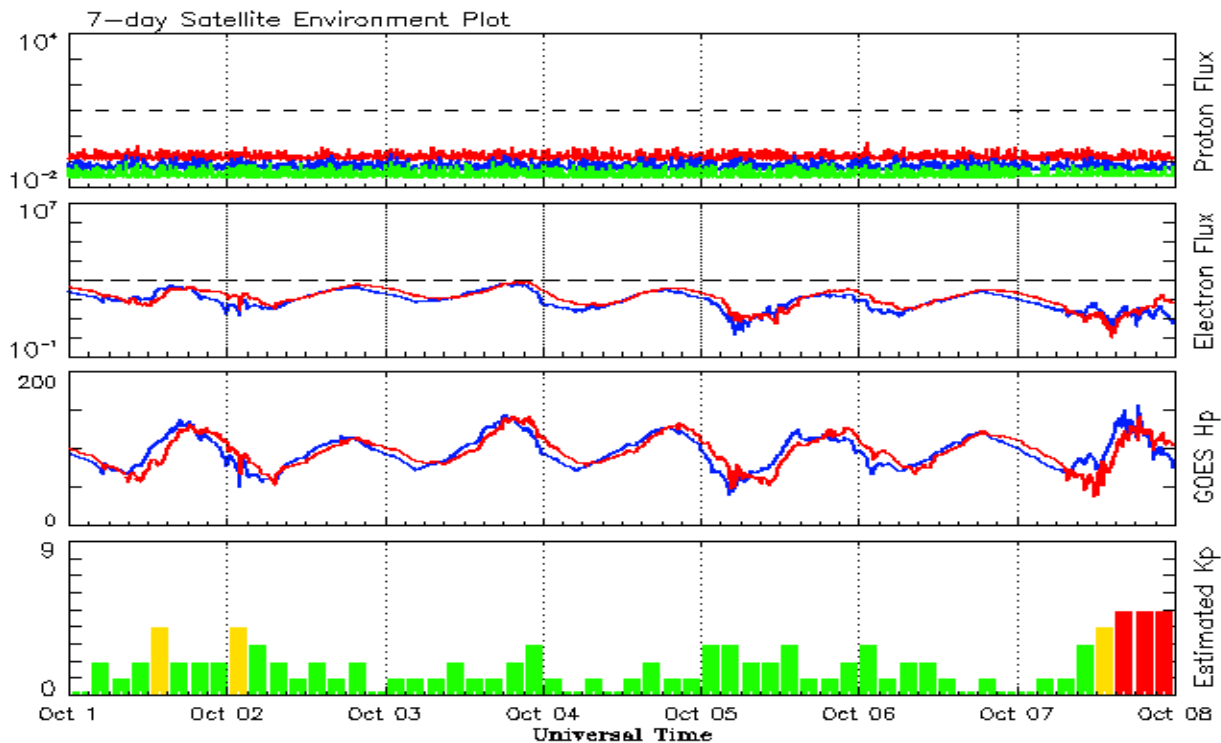


Recent Solar Indices (preliminary)
Observed monthly mean values

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									
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	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			70.0		7	
May	15.0	7.9	0.53			70.9		8	
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	

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 01 October 2018*

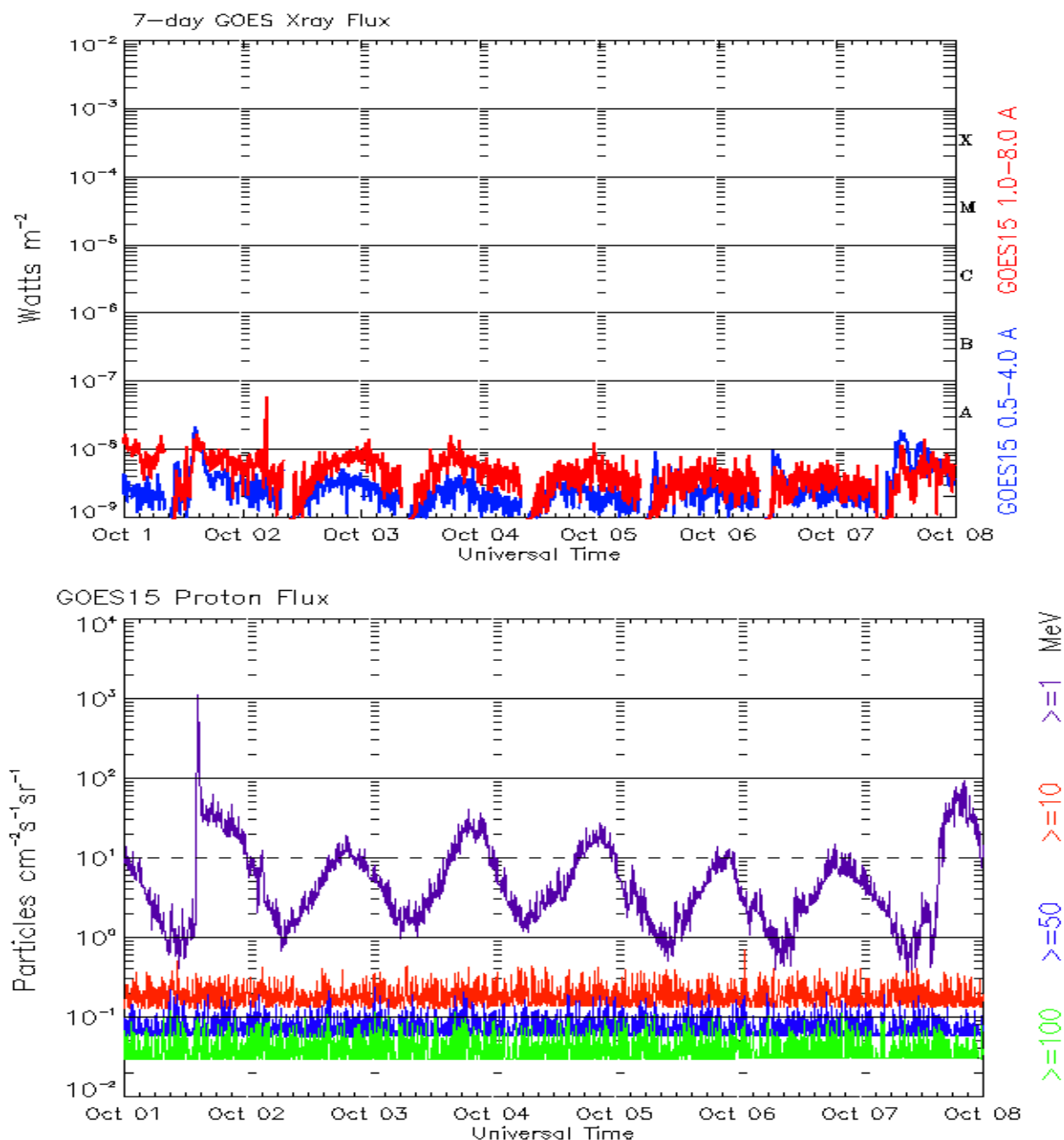
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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. Hp 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 01 October 2018*

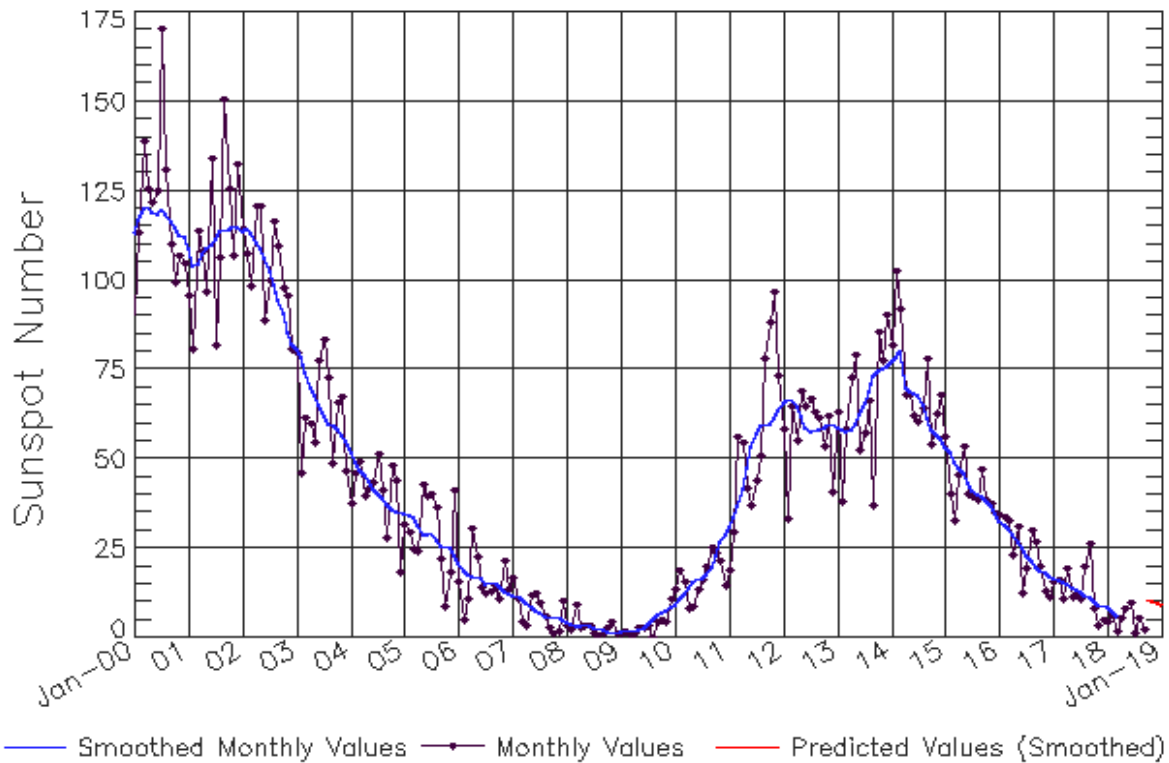
The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

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.



ISES Solar Cycle Sunspot Number Progression

Observed data through Sep 2018



Updated 2018 Oct 8

NOAA/SWPC Boulder, CO USA

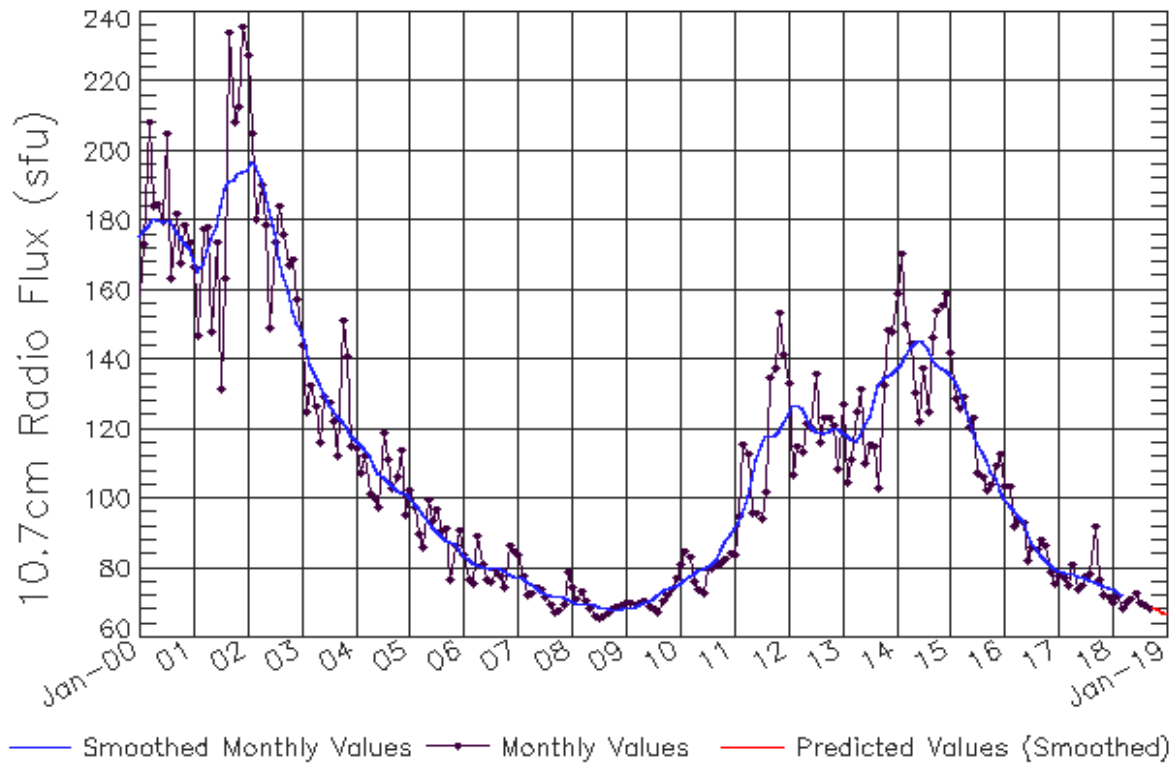
Smoothed Sunspot Number Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	9 (1)	10 (2)	11 (3)	13 (5)	15 (5)	16 (6)	17 (7)	17 (7)	20 (8)	23 (9)	27 (9)	29 (10)
2011	19 (10)	30 (10)	56 (10)	54 (10)	42 (10)	37 (10)	44 (10)	51 (10)	78 (10)	88 (10)	97 (10)	73 (10)
2012	58 (10)	33 (10)	64 (10)	55 (10)	69 (10)	65 (10)	67 (10)	63 (10)	61 (10)	53 (10)	62 (10)	41 (10)
2013	63 (10)	38 (10)	58 (10)	72 (10)	79 (10)	53 (10)	57 (10)	66 (10)	37 (10)	86 (10)	78 (10)	90 (10)
2014	82 (10)	102 (10)	92 (10)	68 (10)	68 (10)	62 (10)	60 (10)	64 (10)	78 (10)	54 (10)	62 (10)	68 (10)
2015	56 (10)	40 (10)	33 (10)	45 (10)	53 (10)	40 (10)	40 (10)	39 (10)	47 (10)	38 (10)	37 (10)	35 (10)
2016	34 (10)	34 (10)	33 (10)	23 (10)	31 (10)	12 (10)	19 (10)	30 (10)	27 (10)	20 (10)	13 (10)	11 (10)
2017	16 (10)	16 (10)	11 (10)	19 (10)	11 (10)	12 (10)	11 (10)	20 (10)	26 (10)	8 (10)	3 (10)	5 (10)
2018	4 (10)	6 (10)	2 (10)	5 (10)	8 (10)	9 (10)	1 (10)	5 (10)	2 (10)	11 (10)	10 (10)	10 (10)
2019	9 (10)	8 (10)	8 (10)	7 (10)	7 (10)	6 (10)	6 (10)	6 (10)	5 (10)	5 (10)	4 (10)	4 (10)



ISES Solar Cycle F10.7cm Radio Flux Progression

Observed data through Sep 2018



Updated 2018 Oct 8

NOAA/SWPC Boulder, CO USA

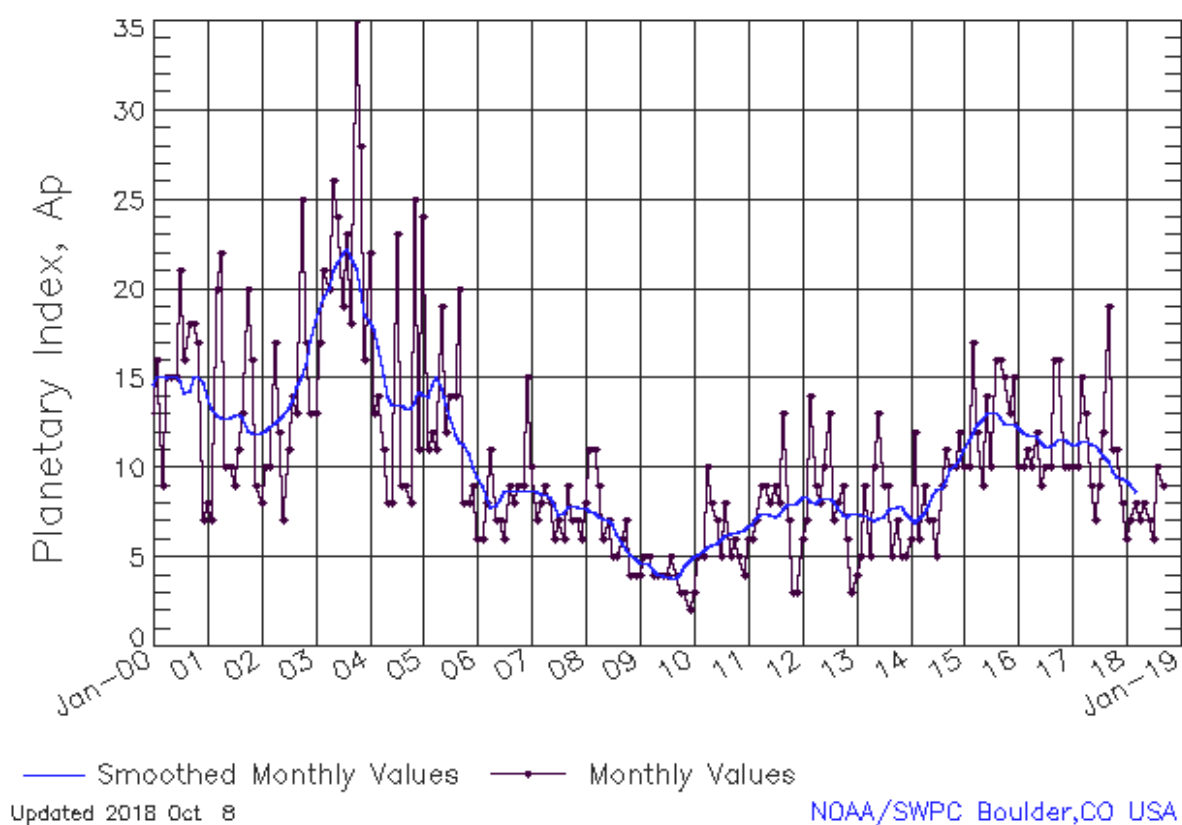
Smoothed F10.7cm Radio Flux Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	76 (***)	77 (***)	78 (***)	78 (***)	79 (***)	80 (***)	80 (***)	81 (***)	82 (***)	85 (***)	88 (***)	90 (***)
2011	91 (***)	93 (***)	96 (***)	100 (***)	106 (***)	111 (***)	115 (***)	118 (***)	118 (***)	118 (***)	120 (***)	122 (***)
2012	124 (***)	127 (***)	127 (***)	126 (***)	124 (***)	121 (***)	120 (***)	119 (***)	119 (***)	119 (***)	120 (***)	120 (***)
2013	119 (***)	118 (***)	117 (***)	117 (***)	118 (***)	121 (***)	124 (***)	128 (***)	132 (***)	135 (***)	135 (***)	136 (***)
2014	137 (***)	139 (***)	141 (***)	144 (***)	145 (***)	146 (***)	145 (***)	143 (***)	140 (***)	138 (***)	137 (***)	137 (***)
2015	136 (***)	134 (***)	131 (***)	127 (***)	123 (***)	120 (***)	116 (***)	113 (***)	111 (***)	108 (***)	105 (***)	103 (***)
2016	100 (***)	98 (***)	97 (***)	95 (***)	93 (***)	90 (***)	88 (***)	86 (***)	84 (***)	83 (***)	81 (***)	80 (***)
2017	79 (***)	79 (***)	79 (***)	78 (***)	78 (***)	77 (***)	77 (***)	76 (***)	76 (***)	75 (***)	75 (***)	74 (***)
2018	74 (***)	73 (***)	72 (***)	71 (1)	70 (1)	70 (2)	69 (3)	69 (4)	69 (4)	68 (5)	68 (6)	67 (7)
2019	67 (8)	66 (8)	66 (9)	65 (9)	65 (9)	65 (9)	64 (9)	64 (9)	63 (9)	63 (9)	63 (9)	63 (9)



ISES Solar Cycle Ap Progression

Observed data through Sep 2018



Solar Cycle Comparison charts are temporarily unavailable.

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/ftpmenu/> -- Some content as ascii text

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

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

