

Space Weather Highlights
30 October - 05 November 2017

SWPC PRF 2201
06 November 2017

Solar activity was at very low levels. There were no observable flares reported and no Earth-directed coronal mass ejections observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 30 Oct - 01 Nov, moderate levels on 02 Nov, and normal levels on 03-05 Nov. The largest flux of the period was 3,668 pfu observed at 30/1610 UTC.

Geomagnetic field activity ranged from quiet to active levels. The period began under nominal solar wind conditions with wind speeds ranging between 260 to 320 km/s and total field measurements between 1 and 4 nT. The geomagnetic field was at quiet levels on 30 Oct - 01 Nov. At approximately 02/0100 UTC, wind speeds began to increase and total field became enhanced due to the arrival of a weak, negative polarity, coronal hole high speed stream (CH HSS). Wind speed continued to increase to a period high of 458 km/s at 04/1701 UTC, total field achieved a max of 14 nT at 02/1115 UTC and the Bz component of the interplanetary magnetic field dropped to a low of -7 nT at 02/1944 UTC as a result of this feature. The geomagnetic field responded with quiet to active conditions on 02-03 Nov. The remainder of the period was indicative of waning CH HSS influence with decreasing wind speeds and less enhanced total field. Quiet conditions were observed on 04-05 Nov.

Space Weather Outlook
06 November - 02 December 2017

Solar activity is expected to be at very low levels throughout the outlook period (06 Nov - 02 Dec) due to an absence of returning sunspots and a spotless solar disk.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is likely to be at high levels on 08-15, 17-18, 21-28 Nov with very high levels on 11-14 Nov due to recurrent CH HSS influence.

Geomagnetic field activity is expected to be at unsettled to active levels on 06-12, 15-17, 20-22, 29-30 Nov, with G1 (Minor) storm levels likely on 07-11, 20-22 Nov due to recurrent CH HSS effects.



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	
30 October	76	22	10	A5.7	0	0	0	0	0	0	0	0	0
31 October	75	11	0	A5.5	0	0	0	0	0	0	0	0	0
01 November	73	0	0	A5.3	0	0	0	0	0	0	0	0	0
02 November	74	0	0	A5.2	0	0	0	0	0	0	0	0	0
03 November	73	0	0	A5.4	0	0	0	0	0	0	0	0	0
04 November	72	0	0	A5.0	0	0	0	0	0	0	0	0	0
05 November	71	0	0	A4.2	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
	30 October		1.0e+07	1.5e+04	3.3e+03	
31 October		3.0e+06	1.5e+04	3.6e+03		1.7e+08
01 November		7.4e+06	1.5e+04	3.8e+03		6.9e+07
02 November		2.2e+07	1.6e+04	3.5e+03		4.2e+06
03 November		1.9e+07	1.5e+04	3.5e+03		1.6e+06
04 November		4.0e+07	1.5e+04	3.5e+03		1.8e+06
05 November		3.1e+07	1.5e+04	3.3e+03		2.7e+06

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	30 October	1	0-1-0-0-1-0-0-0	0	0-0-0-0-0-0-0-0	3
31 October	2	1-0-0-0-2-1-0-0	1	0-0-0-2-1-0-0-0	3	1-0-0-1-2-0-0-0
01 November	2	1-0-0-1-1-1-1-1	2	0-0-0-1-3-0-0-0	4	1-0-1-1-1-1-1-1
02 November	12	3-2-1-1-2-1-4-4	3	0-0-2-2-1-0-1-1	8	3-2-2-1-2-1-2-3
03 November	7	3-2-2-2-3-0-1-1	15	2-1-2-5-5-1-0-1	9	4-2-2-2-3-1-1-1
04 November	2	1-1-0-1-1-1-0-1	3	0-0-1-1-2-2-1-0	4	1-1-1-1-1-1-1-1
05 November	1	1-0-0-0-1-0-0-0	0	0-0-0-0-0-0-0-0	3	1-1-0-0-0-0-1-1

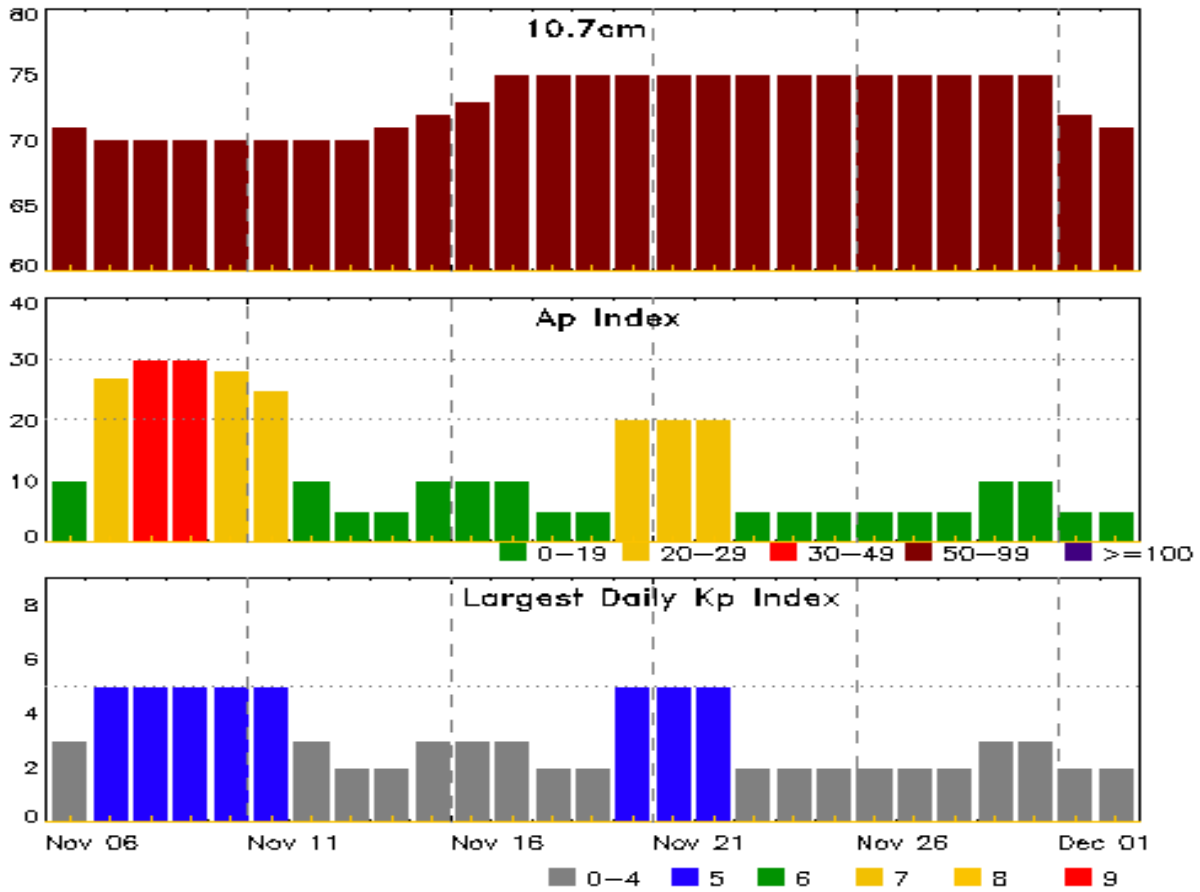


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
30 Oct 0506	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1245
31 Oct 0500	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1245
01 Nov 1021	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1245
03 Nov 0003	WARNING: Geomagnetic K = 4	03/0001 - 0900
03 Nov 0233	ALERT: Geomagnetic K = 4	03/0233
03 Nov 0824	EXTENDED WARNING: Geomagnetic K = 4	03/0001 - 1500
04 Nov 1759	WATCH: Geomagnetic Storm Category G1 predicted	
05 Nov 1457	WATCH: Geomagnetic Storm Category G1 predicted	



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
06 Nov	71	10	3	20 Nov	75	20	5
07	70	27	5	21	75	20	5
08	70	30	5	22	75	20	5
09	70	30	5	23	75	5	2
10	70	28	5	24	75	5	2
11	70	25	5	25	75	5	2
12	70	10	3	26	75	5	2
13	70	5	2	27	75	5	2
14	71	5	2	28	75	5	2
15	72	10	3	29	75	10	3
16	73	10	3	30	75	10	3
17	75	10	3	01 Dec	72	5	2
18	75	5	2	02	71	5	2
19	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	Optical			Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD		

No Flares Observed



Region Summary

Date	Location		Sunspot Characteristics					Flares									
	Lat CMD	Lon	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical					
			10 ⁻⁶	hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4	
Region 2685																	
20 Oct	S10E85	129		plage											1		
21 Oct	S11E74	128	50		2	Hax	1	A									
22 Oct	S09E58	131	70		2	Hax	3	A									
23 Oct	S09E45	130	60		2	Hax	1	A									
24 Oct	S09E31	131	60		2	Hsx	1	A									
25 Oct	S09E17	132	50		2	Hsx	2	A									
26 Oct	S09E04	132	30		1	Hsx	1	A									
27 Oct	S09W09	132	30		1	Hrx	1	A									
28 Oct	S08W22	131	10		1	Hrx	1	A									
29 Oct	S09W34	130	10		1	Axx	1	A									
30 Oct	S09W49	132	0		1	Axx	1	A									
31 Oct	S09W63	133		plage													
01 Nov	S09W77	134		plage													
										0	1	0	0	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 132

Region 2686																	
23 Oct	N12E67	108	30		2	Hax	2	A									
24 Oct	N12E53	109	30		2	Hax	2	A									
25 Oct	N12E39	110	20		1	Hsx	2	A									
26 Oct	N12E27	109	20		1	Hrx	2	A									
27 Oct	N13E15	108	30		2	Hax	2	A									
28 Oct	N13E02	108	10		1	Hrx	1	A									
29 Oct	N13W12	108	10		1	Hrx	2	A									
30 Oct	N13W26	109	10		1	Axx	1	A									
31 Oct	N13W39	109	0		1	Axx	1	A									
01 Nov	N13W53	110		plage													
02 Nov	N13W67	111		plage													
03 Nov	N13W81	111		plage													
										0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 108

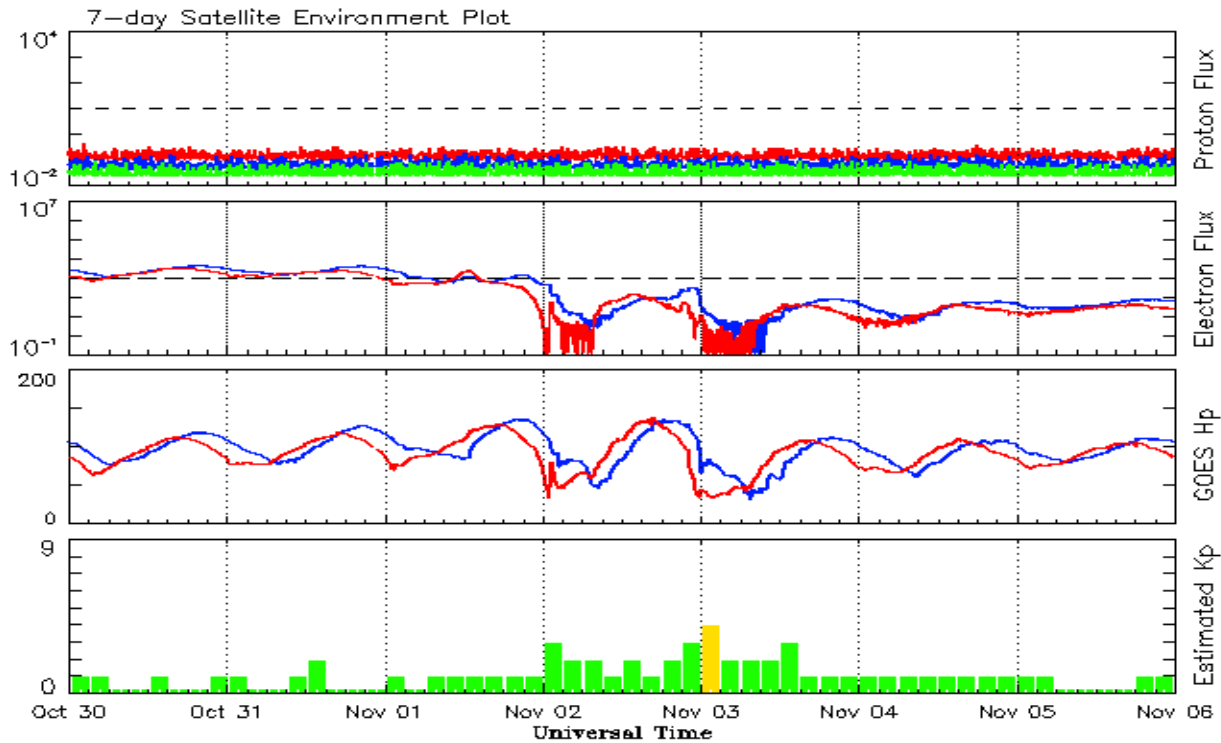


Recent Solar Indices (preliminary)
Observed monthly mean values

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										
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	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	15.5	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			73.5		9		
June	18.0	11.5	0.64			74.8		7		
July	18.8	11.0	0.59			77.7		9		
August	25.0	19.9	0.80			77.9		12		
September	42.2	26.2	0.62			92.0		19		
October	16.0	7.9	0.49			76.4		11		

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 30 October 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.

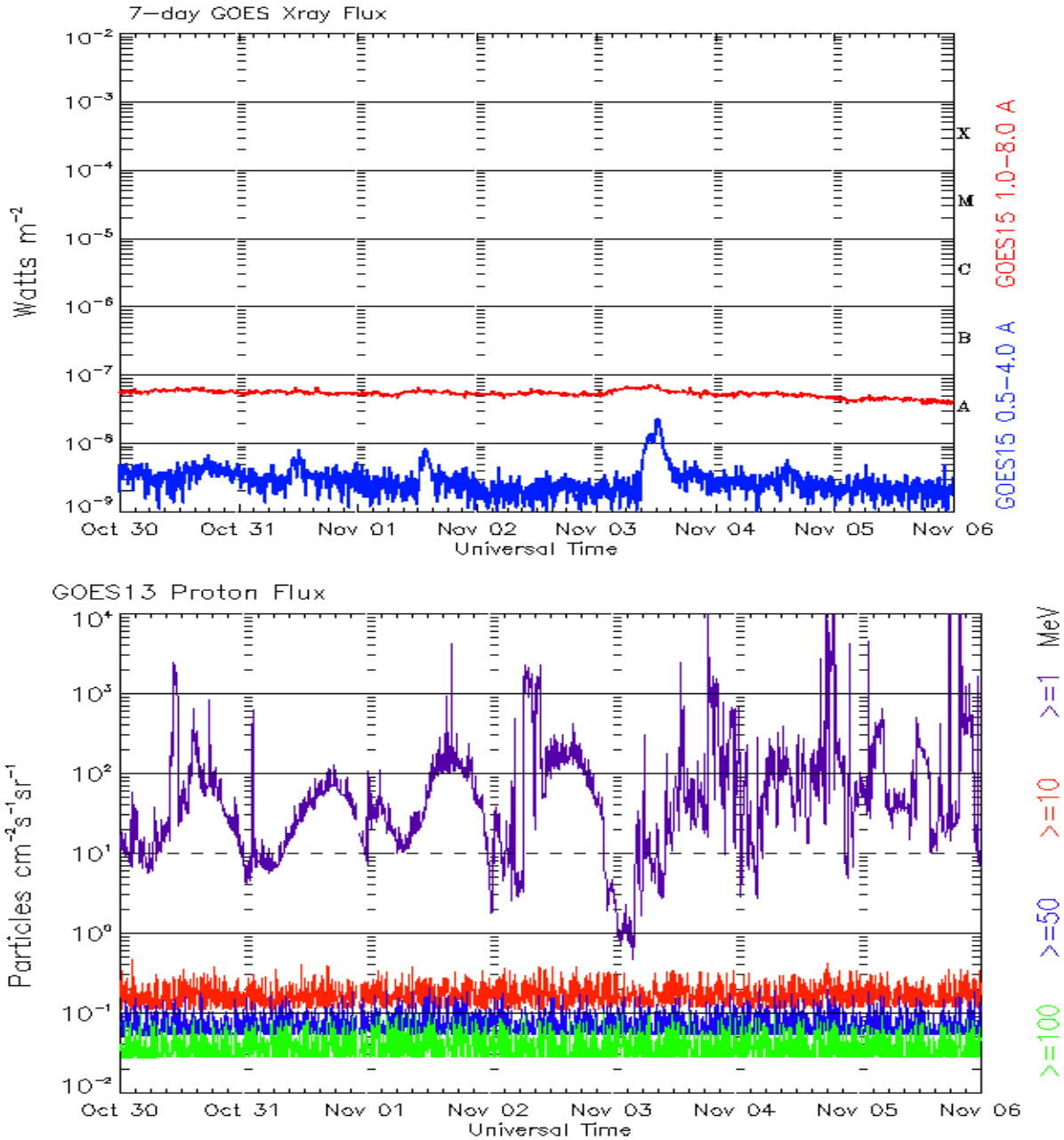
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 30 October 2017*

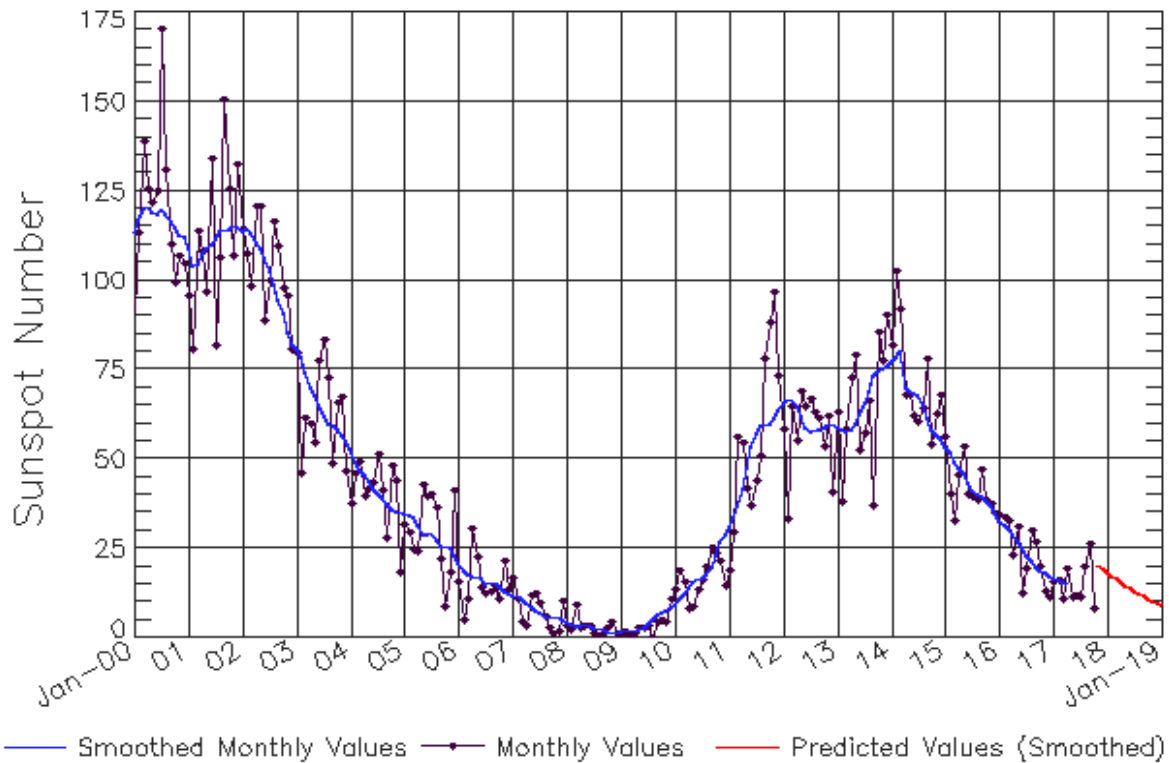
The x-ray plots contains five-minute averages x-ray flux (Watt/m²) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

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.



ISES Solar Cycle Sunspot Number Progression

Observed data through Oct 2017



Updated 2017 Nov 6

NOAA/SWPC Boulder, CO USA

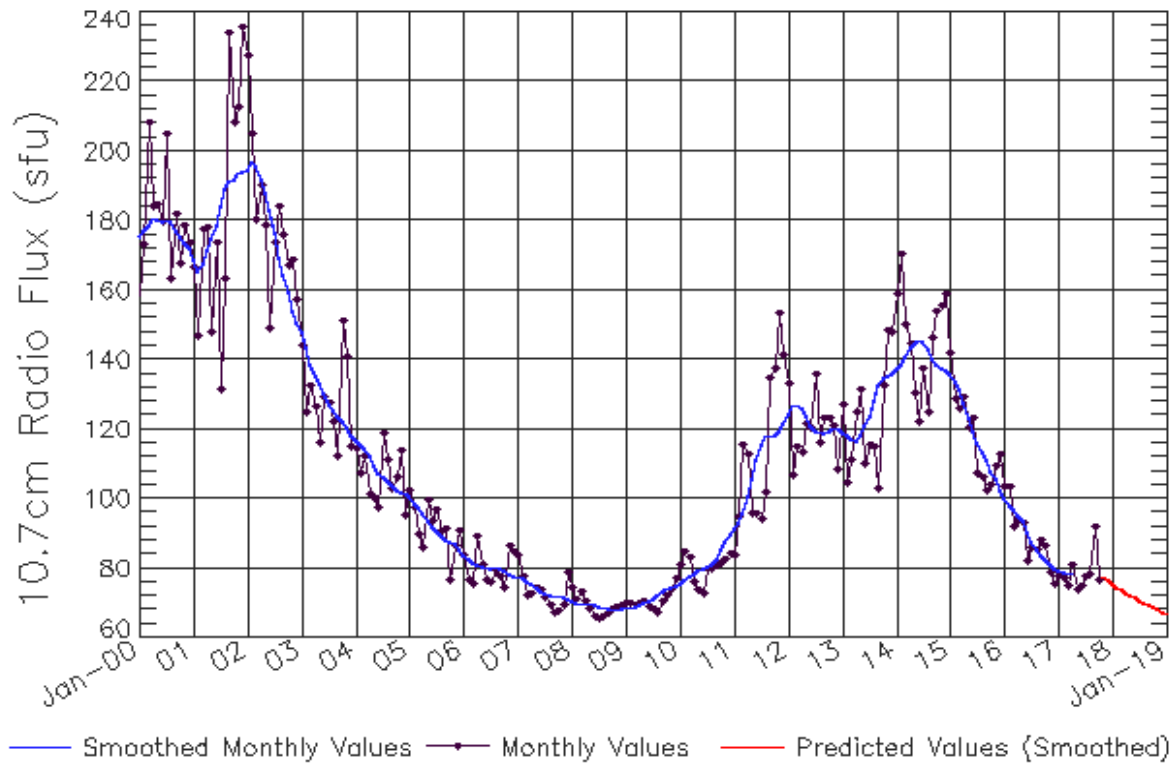
Smoothed Sunspot Number Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	9	10	11	13	15	16	17	17	20	23	27	29
	(1)	(2)	(3)	(5)	(5)	(6)	(7)	(7)	(8)	(9)	(9)	(10)
2011	19	30	56	54	42	37	44	51	78	88	97	73
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2012	58	33	64	55	69	65	67	63	61	53	62	41
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2013	63	38	58	72	79	53	57	66	37	86	78	90
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2014	82	102	92	68	68	62	60	64	78	54	62	68
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2015	56	40	33	45	53	40	40	39	47	38	37	35
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2016	34	34	33	23	31	12	19	30	27	20	13	11
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2017	16	16	11	19	11	12	11	20	26	8	20	19
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2018	18	17	16	15	15	14	13	12	12	11	10	10
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2019	9	8	8	7	7	6	6	6	5	5	4	4
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)



ISES Solar Cycle F10.7cm Radio Flux Progression

Observed data through Oct 2017



Updated 2017 Nov 6

NOAA/SWPC Boulder, CO USA

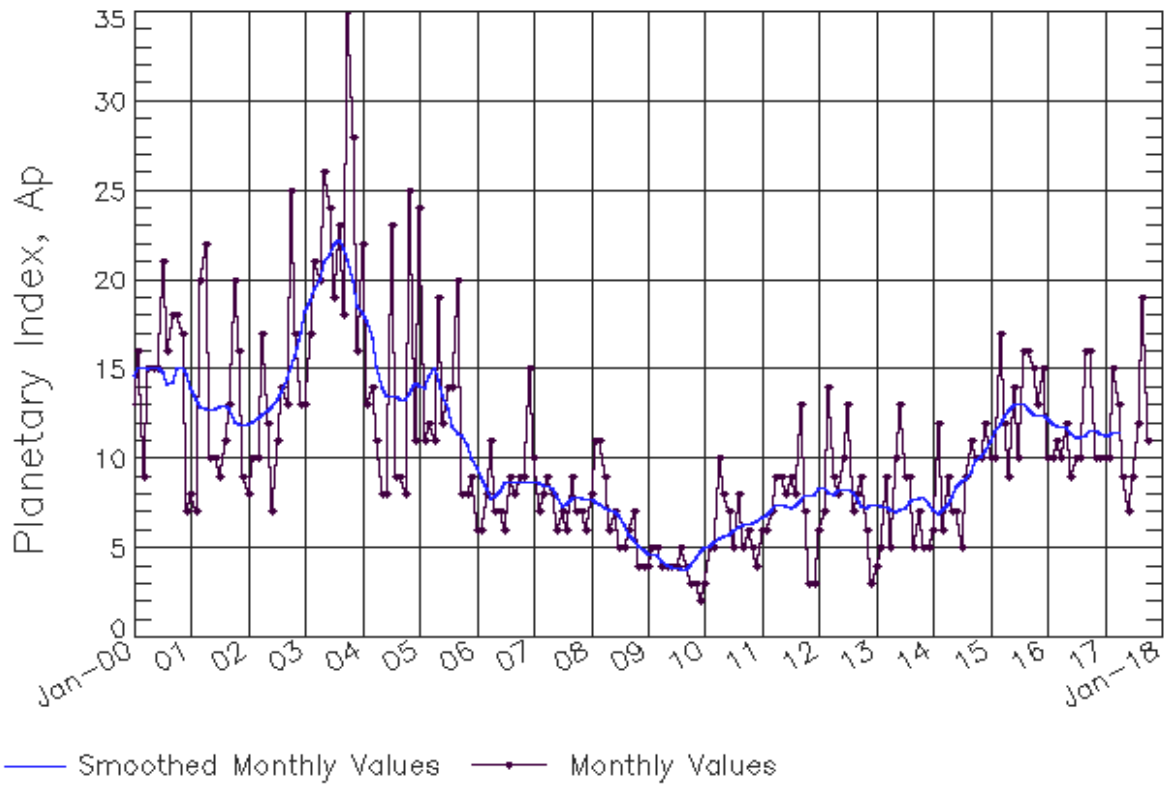
Smoothed F10.7cm Radio Flux Prediction

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 (1)	78 (1)	78 (2)	78 (3)	78 (4)	77 (4)	77 (5)	77 (6)
2018	76 (7)	76 (8)	74 (8)	73 (9)	72 (9)	71 (9)	71 (9)	70 (9)	69 (9)	69 (9)	68 (9)	67 (9)
2019	67 (9)	66 (9)	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 Oct 2017



Updated 2017 Nov 6

NOAA/SWPC Boulder, CO USA

Solar Cycle Comparison charts are temporarily unavailable.



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

