Space Weather Highlights
27 April - 03 May 2020

SWPC PRF 2331
04 May 2020

Solar activity was very low throughout the period. Four new-cycle sunspot groups were numbered this period, the most prominent of which was Region 2760 (S07, L=307, class/area=Cro/20 on 30 Apr). No significant solar flare activity was observed.

A filament eruption from the northern hemisphere midday on 27 Apr resulted in a very slow-moving CME. Modeling of the event suggested the CME may arrive at Earth on 02-03 May. A solar wind disturbance commensurate with the passage of a weak, slow-moving transient was detected on 03 May, however, the source of this disturbance is inconclusive at the time of this writing.

No proton events were observed at geosynchronous orbit.

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

Geomagnetic field activity was generally quiet and quiet to unsettled this period under a largely nominal solar wind environment. Isolated unsettled activity late on 03 May is thought to be associated with the passage of the 27 Apr CME.

Space Weather Outlook
04 May - 30 May 2020

Solar activity is expected to be very quiet 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 be at normal to moderate levels throughout the outlook period.

Geomagnetic field activity is expected to be generally quiet or quiet-to-unsettled throughout 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
27 April	69	12	10	A0.0	0	0	0	0	0	0	0	0
28 April	69	0	0	A0.0	0	0	0	0	0	0	0	0
29 April	70	24	30	A1.0	0	0	0	0	0	0	0	0
30 April	70	35	40	A1.3	0	0	0	0	0	0	0	0
01 May	70	0	0	A1.3	0	0	0	0	0	0	0	0
02 May	69	0	0	A1.1	0	0	0	0	0	0	0	0
03 May	69	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	>2MeV
27 April	5.6e+04	4.7e+04	1.9e+06
28 April	5.5e+04	4.7e+04	1.9e+06
29 April	5.5e+04	4.7e+04	2.4e+06
30 April	5.5e+04	4.7e+04	2.7e+06
01 May	6.6e+04	4.6e+04	1.5e+06
02 May	5.6e+04	4.6e+04	1.5e+06
03 May	7.1e+04	4.5e+04	1.4e+06

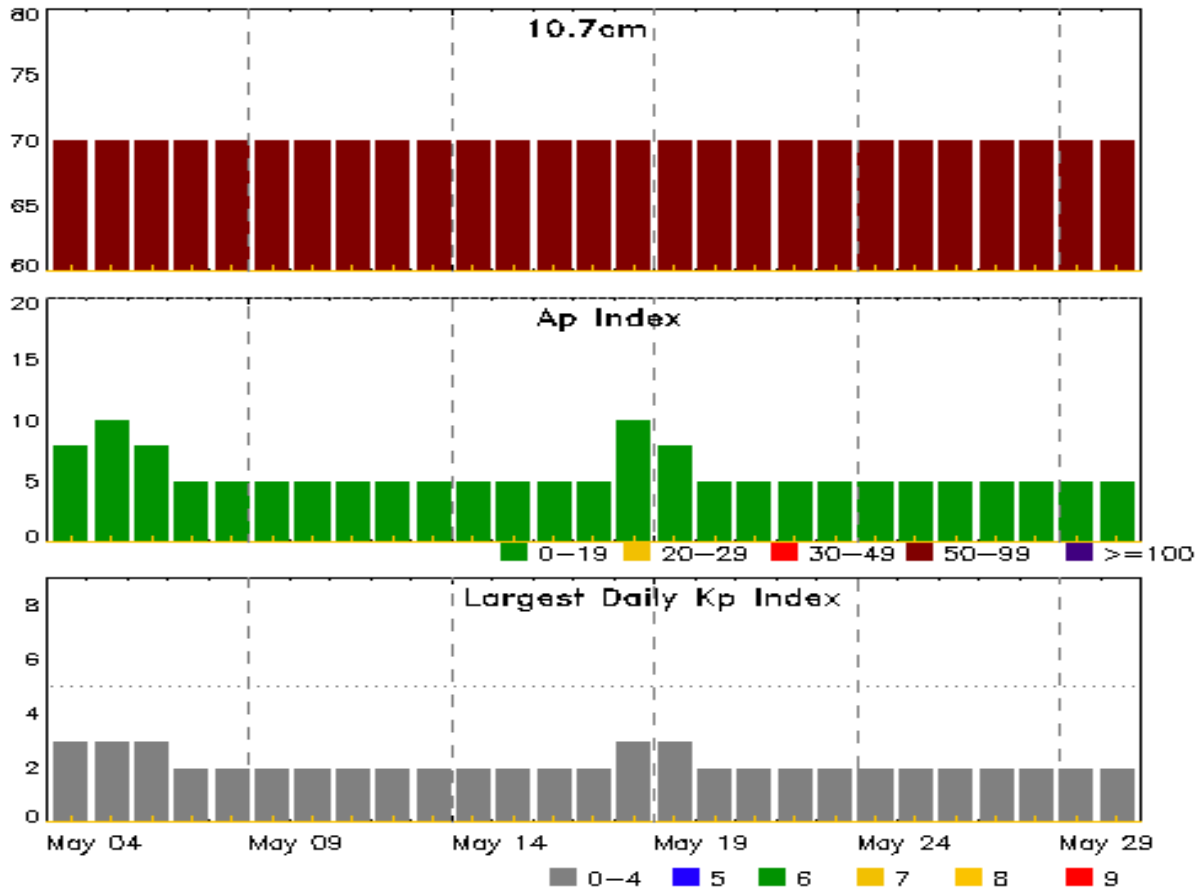
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
27 April	6	3-2-1-1-2-1-2-1	7	2-2-2-1-3-2-1-1	7	3-2-2-1-2-2-2-2
28 April	6	3-1-1-2-2-1-2-1	5	2-1-1-3-2-1-0-0	6	3-1-1-2-2-1-1-1
29 April	4	1-1-0-1-2-2-2-0	0	0-0-0-0-0-0-0-0	3	1-1-0-0-1-1-1-1
30 April	1	0-1-0-0-1-1-0-0	0	0-0-0-0-0-0-0-0	2	1-0-0-0-0-0-0-0
01 May	5	1-2-2-2-2-0-1-1	9	0-2-4-3-3-2-0-0	6	1-1-3-2-2-1-0-1
02 May	3	0-2-1-1-2-0-1-1	3	1-1-2-2-2-0-0-0	5	1-2-2-1-1-1-0-1
03 May	5	0-2-1-0-2-0-2-3	2	0-1-0-0-0-1-1-2	3	1-2-1-0-1-0-2-3

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
04 May	70	8	3	18 May	70	10	3
05	70	10	3	19	70	8	3
06	70	8	3	20	70	5	2
07	70	5	2	21	70	5	2
08	70	5	2	22	70	5	2
09	70	5	2	23	70	5	2
10	70	5	2	24	70	5	2
11	70	5	2	25	70	5	2
12	70	5	2	26	70	5	2
13	70	5	2	27	70	5	2
14	70	5	2	28	70	5	2
15	70	5	2	29	70	5	2
16	70	5	2	30	70	5	2
17	70	5	2				

Energetic Events

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

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
30 Apr	0129	1217	1221	B1.3			2762
01 May	1430	1436	1440	B2.6			2762

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 2760												
25 Apr	S07E37	305	10	1	Axx	1	A								
26 Apr	S07E24	305	10	3	Bxo	4	B								
27 Apr	S07E10	304	10	5	Axx	2	A								
28 Apr	S06W03	305	plage												
29 Apr	S06W17	306	20	2	Cro	2	B								
30 Apr	S07W31	307	20	3	Cro	2	B								
01 May	S07W44	307	plage												
02 May	S07W57	307	plage												
03 May	S07W71	307	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 305

			Region 2761												
28 Apr	S18W27	329	plage												
29 Apr	S18W41	330	plage												
30 Apr	S18W55	331	plage												
01 May	S18W69	332	plage												
02 May	S18W82	332	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 329

			Region 2762												
29 Apr	N24W48	336	10	2	Bxo	2	B								
30 Apr	N23W61	337	10	1	Axx	1	A								
01 May	N23W75	338	plage												
02 May	N23W88	338	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.
Absolute heliographic longitude: 336

Region Summary - continued

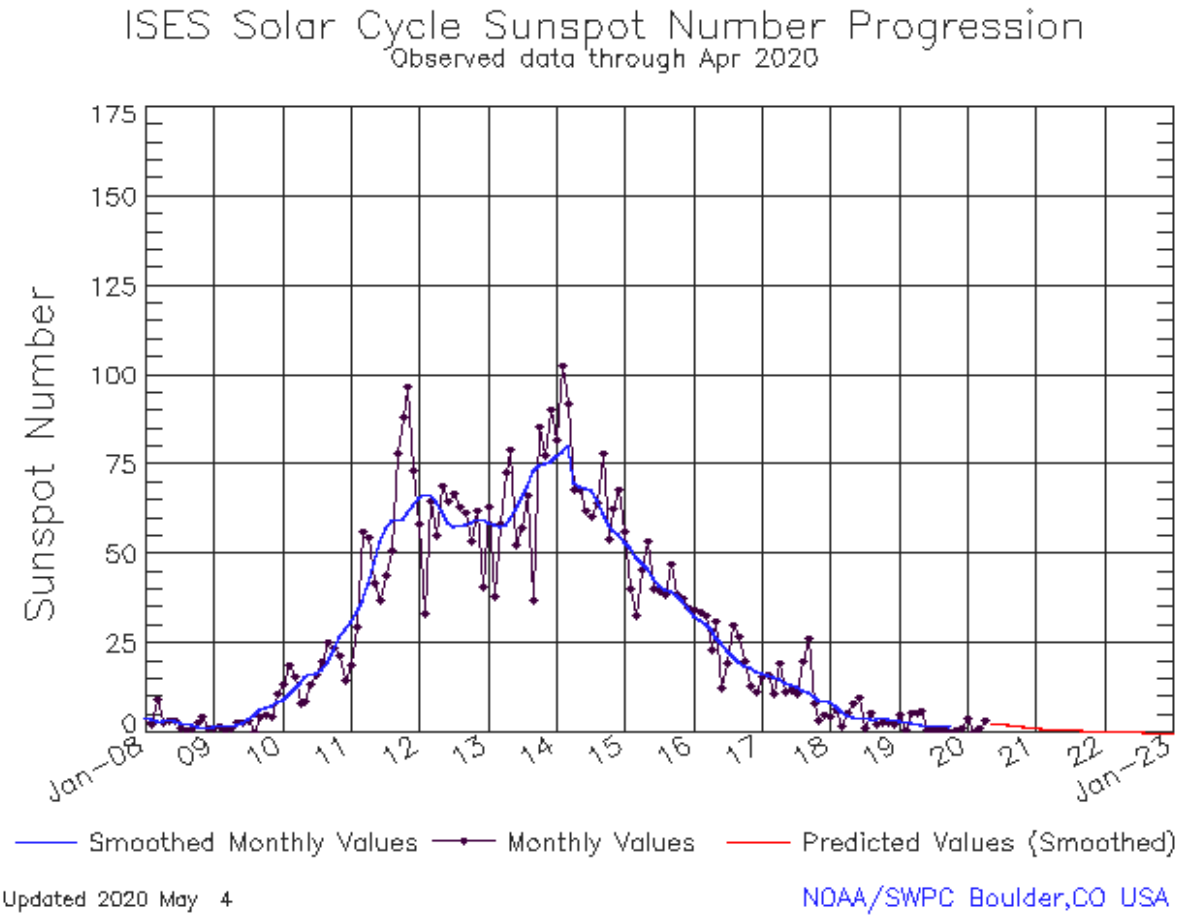
	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 2763													
30 Apr	N32E16	260	10	2	Bxo	2	B								
01 May	N32E02	261	plage												
02 May	N32W11	261	plage												
03 May	N32W25	261	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 261

Recent Solar Indices (preliminary)
Observed monthly mean values

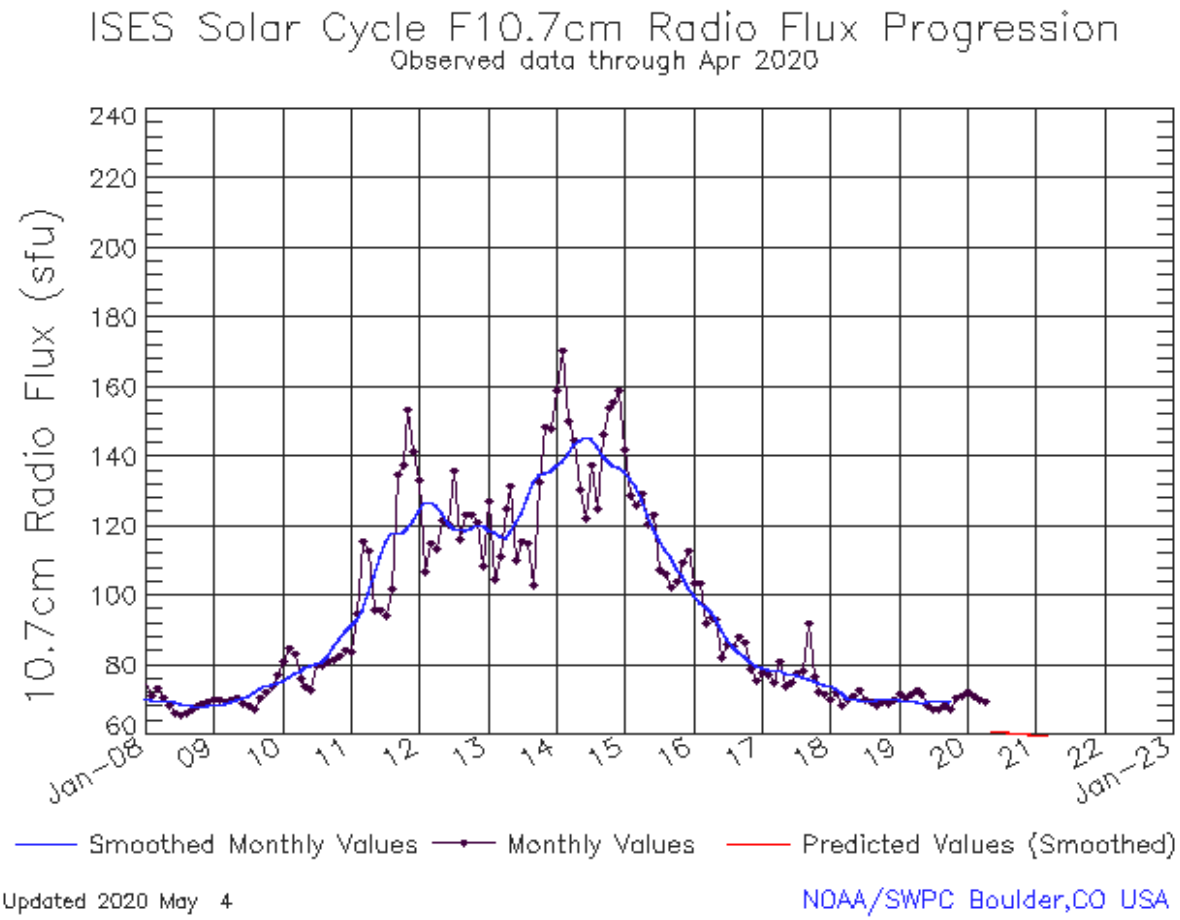
	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2018					
May		15.0	7.9	0.53	9.2	4.5	70.9	70.2	8	7.6
June		19.7	9.4	0.48	9.1	4.3	72.5	70.0	7	7.4
July		1.3	1.0	0.77	9.4	4.2	69.7	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	9.0	3.2	71.6	70.0	6	6.8
February			0.5		8.7	3.0	70.6	69.8	7	6.7
March		14.8	5.6	0.39	8.3	2.8	71.5	69.7	6	6.6
April		11.5	5.5	0.48	7.9	2.6	72.4	69.6	6	6.7
May		18.1	5.9	0.34	7.4	2.3	71.3	69.6	7	6.7
June		11.6	0.7	0.06	7.3	2.2	68.1	69.6	5	6.5
July		1.6	0.5	0.31	7.0	2.1	67.1	69.7	6	6.3
August		2.5	0.3	0.16	7.0	2.1	67.0	69.8	7	6.2
September		2.6	0.7	0.27	6.8	1.9	68.1	69.7	10	6.2
October		1.8	0.2	0.11	6.2	1.6	67.4	69.5	8	6.2
November		1.1	0.3	0.27			70.2		4	
December		7.2	0.9	0.14			70.9		4	
				2020					
January		9.2	3.8	0.41			72.3		5	
February		5.5	0.2	0.04			71.0		6	
March		3.0	0.9	0.30			70.1		6	
April		8.5	3.2	0.38			69.5		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.



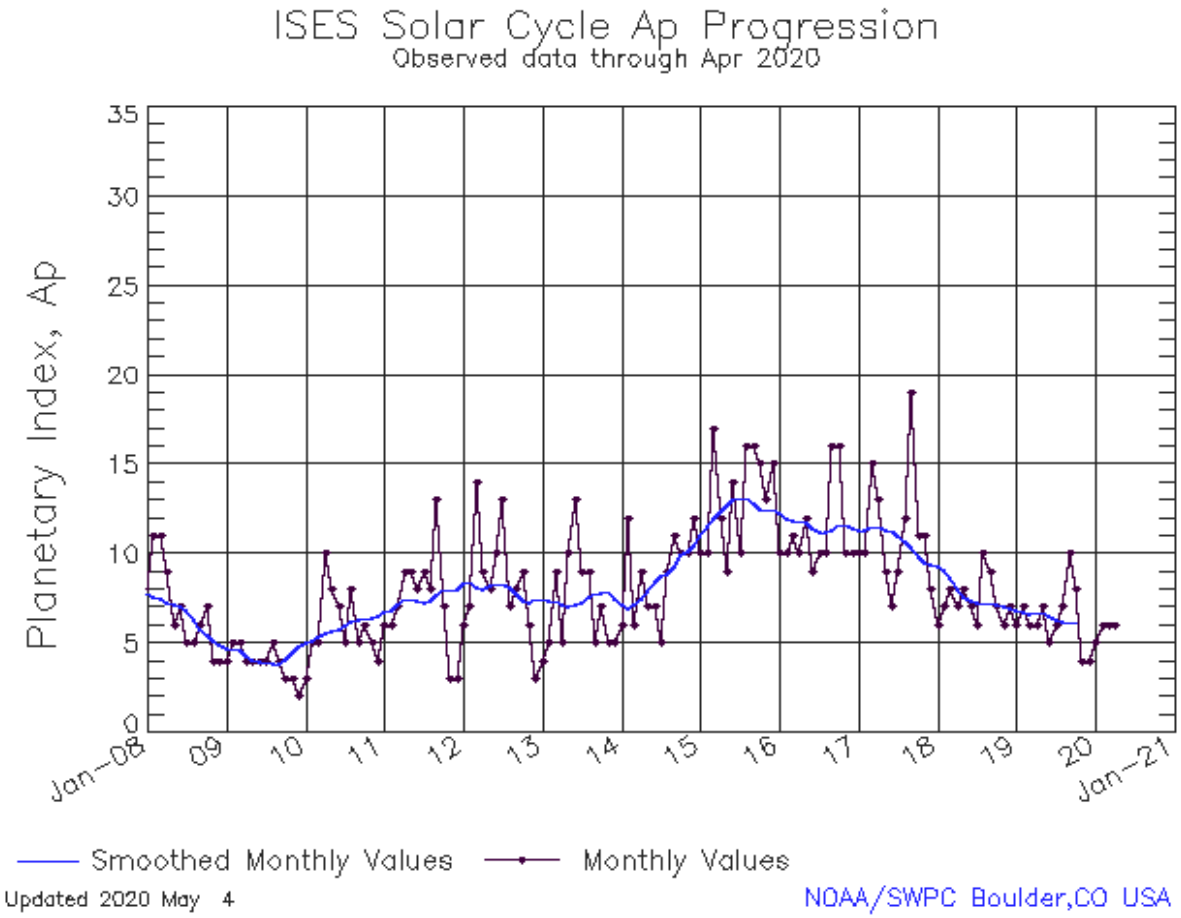
Smoothed Sunspot Number Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	33	32	30	29	27	25	23	22	20	19	18	17
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2017	17	16	15	15	14	13	13	12	11	10	9	9
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2018	9	8	6	5	5	4	4	4	4	4	4	4
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2019	3	3	3	3	2	2	2	2	2	2	1	1
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(2)
2020	1	2	2	2	2	2	2	2	2	2	2	2
	(3)	(5)	(5)	(6)	(7)	(7)	(8)	(9)	(9)	(10)	(10)	(10)
2021	2	1	1	1	1	1	1	1	1	1	1	1
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
2022	1	0	0	0	0	0	0	0	0	0	0	0
	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)



Smoothed F10.7cm Radio Flux Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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	70	70	70	70	70	70	70	70
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)
2019	70	70	70	70	70	70	70	70	70	70	69	68
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(1)
2020	68	67	67	66	65	65	64	63	62	61	60	60
	(2)	(3)	(4)	(4)	(5)	(6)	(7)	(8)	(8)	(9)	(9)	(9)
2021	60	60	60	60	60	60	60	59	59	59	59	59
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
2022	59	59	59	59	59	59	59	59	59	59	59	59
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)



Solar Cycle Comparison charts are temporarily unavailable.

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

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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

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