Space Weather Highlights
30 March - 05 April 2020

SWPC PRF 2327
06 April 2020

Solar activity was very low throughout the period. Region 2759 (N28, L=263, class/area Hrx/030 on 02 Apr) formed on the disk on 31 Mar and produced a few B-class events early on 04 Apr. The region decayed to plage on 05 Apr. No Earth-directed CMEs were detected.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit reached high levels on 01-04 Apr and moderate levels on 30-31 Mar and 04-05 Apr. A maximum flux of 1,690 pfu was observed on 02 Apr at 1750 UTC.

Geomagnetic field activity was at unsettled to active levels on 30-31 Mar due to negative polarity CH HSS influence. The remainder of the period experienced quiet to unsettled levels with an isolated active period observed late on 03 Apr.

Space Weather Outlook
06 April - 02 May 2020

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 19-22 Apr and 29-30 Apr. Normal to moderate levels are expected to prevail throughout the remainder of the outlook period.

Geomagnetic field activity is expected to reach unsettled to active levels on 10-11 Apr, 15-19 Apr and 26-27 Apr due to negative polarity CH HSS influence. Generally quiet or quiet to unsettled conditions are expected to prevail 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
30 March	69	0	0	A1.1	0	0	0	0	0	0	0	0
31 March	70	12	10	A1.2	0	0	0	0	0	0	0	0
01 April	69	13	20	A1.4	0	0	0	0	0	0	0	0
02 April	69	12	30	A1.3	0	0	0	0	0	0	0	0
03 April	70	13	30	A0.0	0	0	0	0	0	0	0	0
04 April	70	11	10	A1.2	0	0	0	0	0	0	0	0
05 April	71	0	0	A1.1	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
30 March	1.2e+05	4.6e+04	7.8e+06
31 March	9.4e+04	4.6e+04	9.0e+06
01 April	5.6e+04	4.6e+04	3.9e+07
02 April	5.4e+04	4.7e+04	5.2e+07
03 April	5.9e+04	4.6e+04	2.6e+07
04 April	6.0e+04	4.6e+04	1.1e+07
05 April	5.9e+04	4.6e+04	1.1e+07

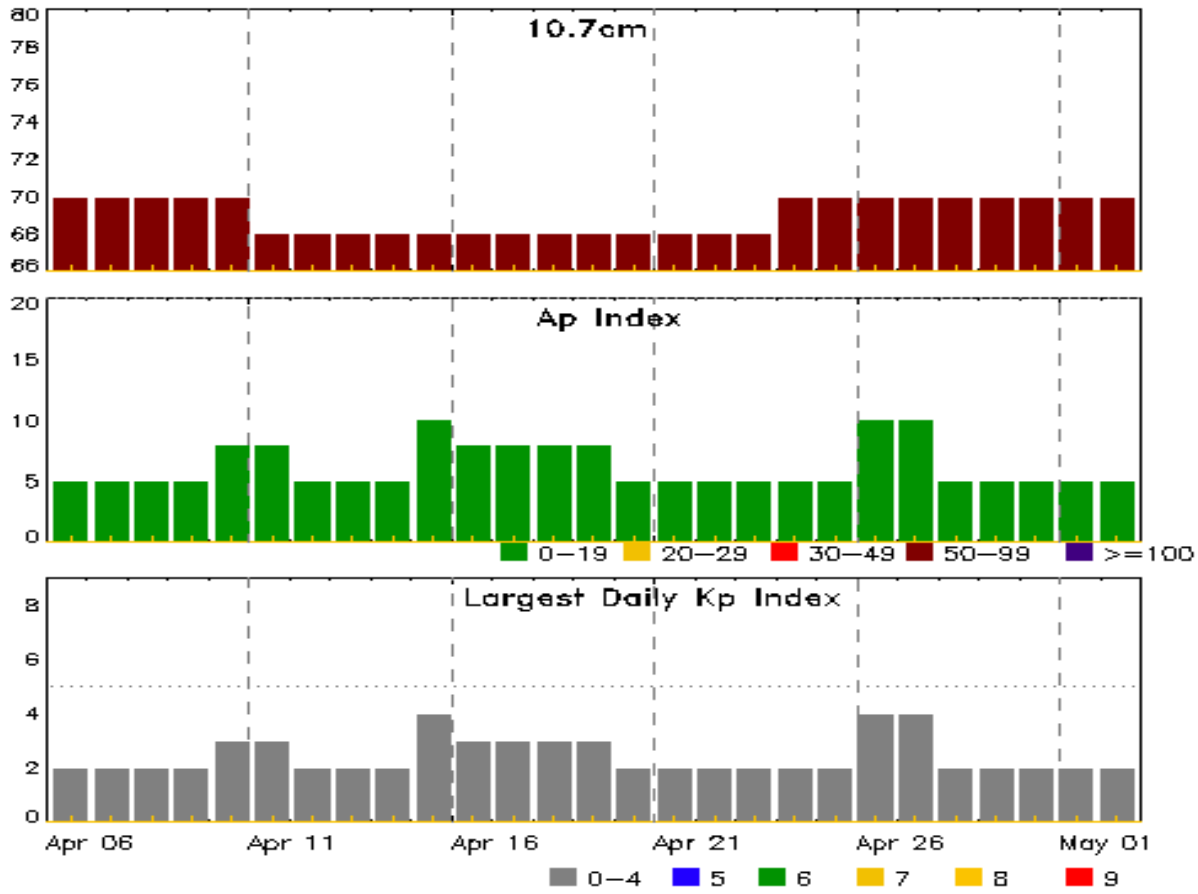
Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
30 March	8	1-2-2-1-1-2-3-3	12	0-1-3-4-3-3-3-2	11	2-2-2-1-1-3-3-4
31 March	10	3-3-3-2-2-2-2-2	25	3-4-4-5-5-4-1-1	15	4-4-4-2-3-2-2-2
01 April	4	2-2-1-0-1-0-1-2	5	2-2-2-1-1-1-1-1	6	2-3-2-1-1-1-1-2
02 April	7	2-2-2-1-2-0-2-3	8	1-1-3-3-3-1-1-1	7	1-2-2-2-1-0-2-3
03 April	7	2-2-1-1-2-2-2-3	4	2-1-0-0-2-2-1-2	9	3-2-1-1-1-2-2-4
04 April	4	2-0-0-2-1-1-2-2	5	1-0-0-4-1-0-1-0	5	2-1-0-2-0-0-2-2
05 April	4	2-1-1-1-1-1-1-1	4	2-1-1-1-3-1-0-0	7	2-2-1-1-1-1-0-1

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
30 Mar 1745	WARNING: Geomagnetic K = 4	30/1745 - 31/0300
31 Mar 0005	ALERT: Geomagnetic K = 4	31/0000
31 Mar 0014	EXTENDED WARNING: Geomagnetic K = 4	30/1745 - 31/0900
31 Mar 0726	EXTENDED WARNING: Geomagnetic K = 4	30/1745 - 31/1800
31 Mar 1755	EXTENDED WARNING: Geomagnetic K = 4	30/1745 - 01/0300
02 Apr 1441	ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/1415
03 Apr 1650	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	02/1415
03 Apr 2246	WARNING: Geomagnetic K = 4	03/2245 - 04/0300
04 Apr 0001	ALERT: Geomagnetic K = 4	03/2359

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 Apr	70	5	2	20 Apr	68	5	2
07	70	5	2	21	68	5	2
08	70	5	2	22	68	5	2
09	70	5	2	23	68	5	2
10	70	8	3	24	70	5	2
11	68	8	3	25	70	5	2
12	68	5	2	26	70	10	4
13	68	5	2	27	70	10	4
14	68	5	2	28	70	5	2
15	68	10	4	29	70	5	2
16	68	8	3	30	70	5	2
17	68	8	3	01 May	70	5	2
18	68	8	3	02	70	5	2
19	68	8	3				

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 Mar	1817	1818	1819	A1.1			
04 Apr	0043	0052	0056	B4.2			2759
04 Apr	0130	0138	0142	B1.4			2759

Region Summary

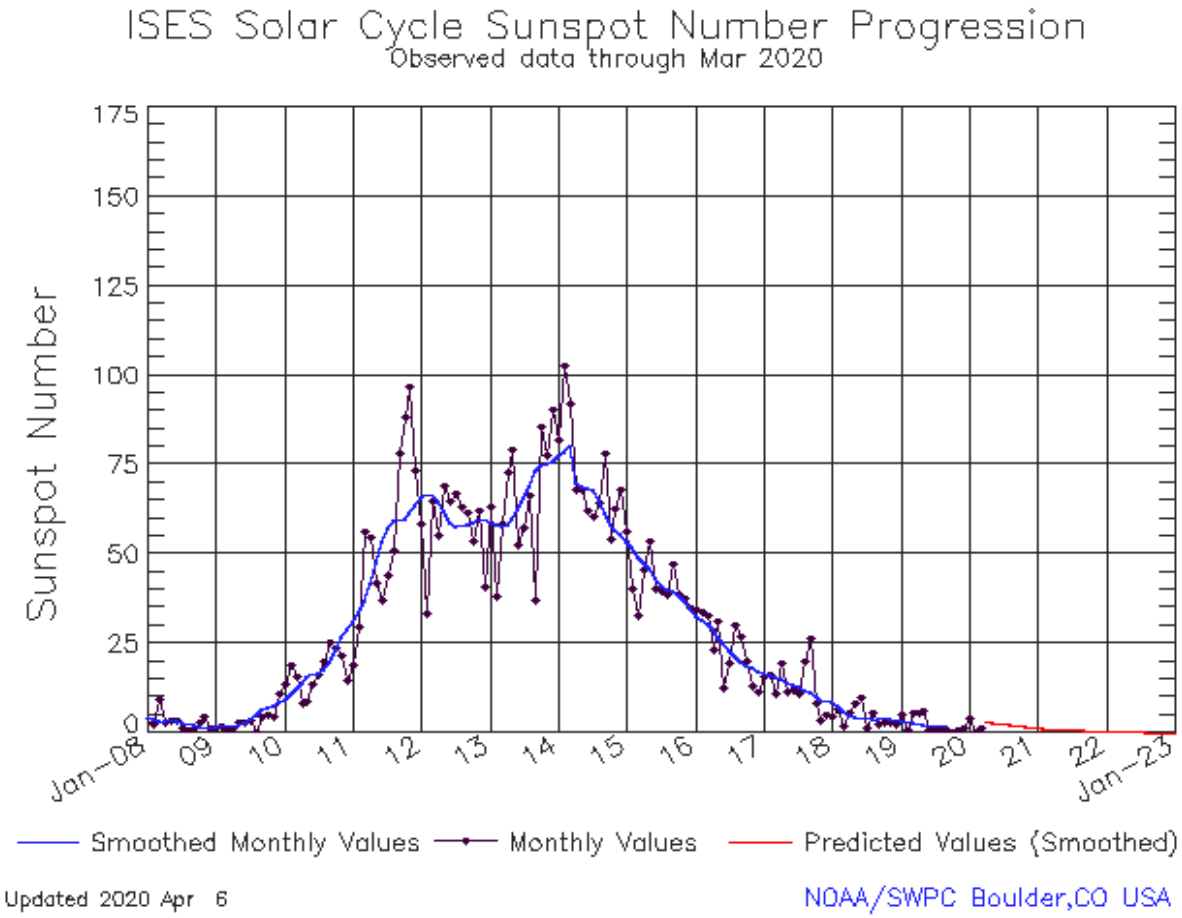
	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
		Region 2759													
31 Mar	N28E51	261	10	2	Axx	2	A								
01 Apr	N28E38	261	20	2	Hrx	3	A								
02 Apr	N28E22	263	30	2	Hrx	2	A								
03 Apr	N27E10	262	30	1	Hrx	3	A								
04 Apr	N28W01	260	10	2	Axx	1	A								
05 Apr	N28W15	261	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 260

Recent Solar Indices (preliminary)
Observed monthly mean values

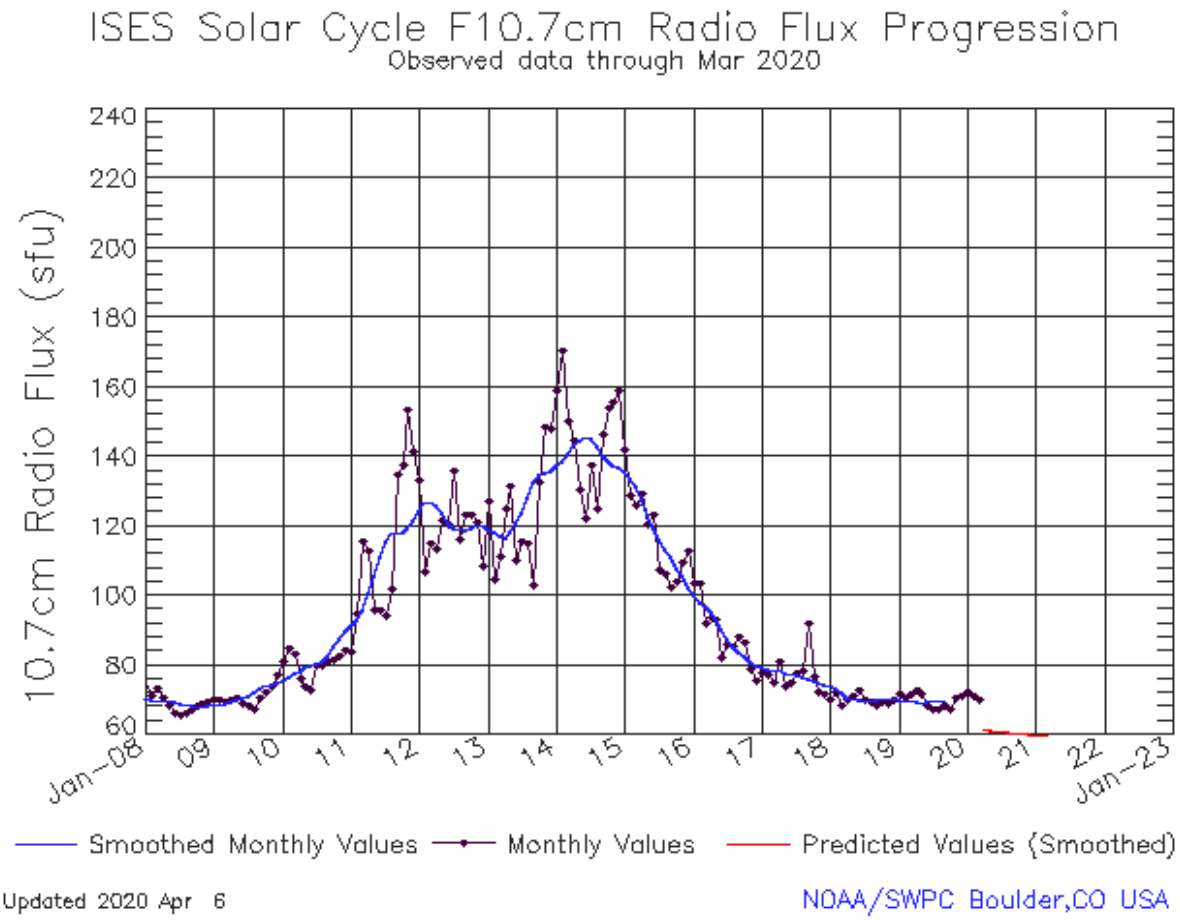
	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2018					
April	7.0	5.3	0.76	9.6	4.7	70.0	70.6	7	8.0
May	15.0	7.9	0.53	9.2	4.5	70.9	70.2	8	7.6
June	19.7	9.4	0.48	9.1	4.3	72.5	70.0	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	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			67.4		8	
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	

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.



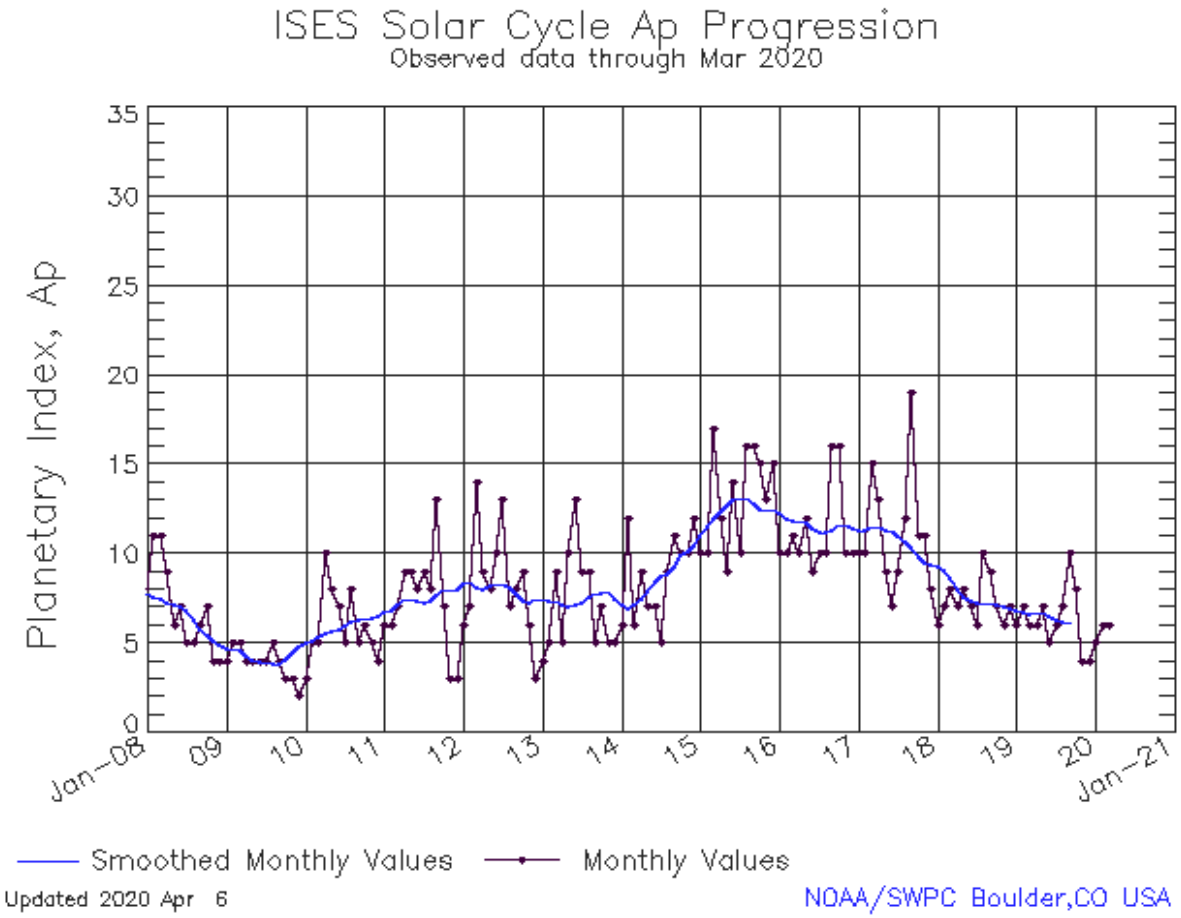
Smoothed Sunspot Number Prediction

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)	(3)
2020	1	2	2	2	2	2	2	2	2	2	2	2
	(5)	(5)	(6)	(7)	(7)	(8)	(9)	(9)	(10)	(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	69	68	68
	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(***)	(1)	(1)	(2)
2020	67	67	66	65	65	64	63	62	61	60	60	60
	(3)	(4)	(4)	(5)	(6)	(7)	(8)	(8)	(9)	(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.

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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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