

Solar activity ranged from very low to high during the period due to multiple M-class flares from Region 2644 (N12, L=57, class/area, Fkc/450 on 02 April). The first was an M4/1f flare at 01/2148 UTC with an associated Type IV radio sweep. The second M-flare was an M5/2n at 02/0802 UTC with associated Type II (628 km/s) and Type IV radio sweeps. This was followed by an M2 flare at 02/1300 UTC with an associated weak Tenflare (110 sfu). A long duration M2/Sf flare was produced at 02/1838 UTC. Finally, the region produced an impulsive M5 flare at 02/2033 UTC with associated multi-frequency discrete radio emissions. No Earth-directed CMEs were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to high levels on 27 March - 01 April and reached very high levels on 02 April. The largest flux of the period was 62,136 pfu observed at 02/1525 UTC.

Geomagnetic field activity ranged from quiet to G2 (Moderate) storm conditions under the influence of a recurrent, polar connected, negative polarity coronal hole high-speed stream (CH HSS). The period began under a nominal solar wind environment before quickly becoming enhanced. Total field increased to a maximum of 19 nT at 27/0752 UTC while the Bz component deflected southward to -14 nT at 27/0827 UTC. Solar wind speeds started the period near 375 km/s and peaked to a maximum speed of 781 km/s at 28/0711 UTC. The geomagnetic field responded with G2 (Moderate) storm conditions on 27 March, G1 (Minor) levels on 28, 30-31 March, and quiet to active conditions on 29 March, 01-02 April.

Space Weather Outlook **03 April - 29 April 2017**

Solar activity is likely to be at moderate levels (R1-R2, Minor-Moderate) with a slight chance for X-class flares (R3-Strong or greater) on 03-04 April due to flare potential in Region 2644. On 05-07 Apr, activity levels will decrease to a chance for moderate (R1-R2, Minor-Moderate) flares with a slight chance for X-class flares (R3-Strong or greater) due to potential in Region 2645.

There is a slight chance for an S1 (Minor) solar radiation storm from 03-08 April due to the threat of significant flare activity from both Regions 2644 and 2645 (S10, L=18, class/area Ehc/600 on 02 April).

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels with high levels likely from 03-11, 18-28 April and very high levels likely on 29 April due to CH HSS influence.

Geomagnetic field activity is expected to be at unsettled to active levels on 03-04, 17-19, and



23-29 April with G1 (Minor) storm levels likely on 17, 23-27 April and G2 (Moderate) storm levels likely on 23 April due to recurrent CH HSS effects. Quiet conditions are expected for the remainder of the 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 March	83	49	200	B1.0	3	0	0	15	0	0	0	0
28 March	84	51	320	B1.3	5	0	0	13	0	0	0	0
29 March	83	53	400	B1.1	0	0	0	4	0	0	0	0
30 March	86	33	450	B1.3	0	0	0	0	0	0	0	0
31 March	91	65	580	B1.1	2	0	0	5	0	0	0	0
01 April	101	79	740	B2.0	2	1	0	5	1	0	0	0
02 April	112	75	1070	B7.9	7	4	0	15	0	1	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
	27 March	6.4e+06	1.5e+04	3.5e+03	1.5e+07	
28 March	1.3e+07	1.5e+04	3.3e+03	3.0e+08		
29 March	1.2e+07	1.6e+04	3.3e+03	8.2e+08		
30 March	1.2e+07	1.6e+04	3.6e+03	7.0e+08		
31 March	1.6e+07	1.5e+04	3.3e+03	7.3e+08		
01 April	9.9e+06	1.4e+04	3.3e+03	1.5e+09		
02 April	8.0e+06	1.4e+04	3.4e+03	2.3e+09		

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	27 March	34	2-3-5-5-5-4-5-4	59	1-5-5-7-6-6-5-4	54
28 March	22	5-5-3-3-3-2-3-3	38	5-5-4-6-5-4-3-2	28	5-5-3-4-3-3-3-3
29 March	17	3-3-4-3-4-3-1-3	52	4-4-7-6-6-5-2-2	21	4-4-4-4-3-4-2-3
30 March	18	3-4-4-2-2-3-3-4	29	3-4-4-5-5-4-3-4	23	3-5-3-3-3-4-4-5
31 March	21	4-4-4-3-4-3-3-3	64	4-4-7-7-6-6-2-2	28	5-5-5-4-4-3-3-4
01 April	15	3-2-4-2-3-4-3-2	43	4-3-6-6-5-6-1-2	16	3-3-3-3-2-4-3-3
02 April	6	2-2-2-1-2-2-2-1	12	2-1-4-1-4-4-1-0	12	3-2-2-2-3-2-1-1



Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
27 Mar 0351	WARNING: Geomagnetic K = 4	27/0350 - 2359
27 Mar 0500	ALERT: Geomagnetic K = 4	27/0459
27 Mar 0520	WARNING: Geomagnetic K = 5	27/0520 - 1500
27 Mar 0559	ALERT: Geomagnetic K = 5	27/0559
27 Mar 0740	ALERT: Geomagnetic K = 5	27/0735
27 Mar 1007	ALERT: Geomagnetic K = 5	27/1005
27 Mar 1022	WARNING: Geomagnetic K = 6	27/1019 - 1459
27 Mar 1024	ALERT: Geomagnetic K = 6	27/1024
27 Mar 1409	ALERT: Geomagnetic K = 5	27/1408
27 Mar 1442	EXTENDED WARNING: Geomagnetic K = 6	27/1019 - 2100
27 Mar 1442	EXTENDED WARNING: Geomagnetic K = 5	27/0520 - 28/0300
27 Mar 1442	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 28/1200
27 Mar 1634	ALERT: Geomagnetic K = 5	27/1633
27 Mar 1942	ALERT: Geomagnetic K = 5	27/1941
27 Mar 1948	ALERT: Geomagnetic K = 6	27/1948
27 Mar 2055	EXTENDED WARNING: Geomagnetic K = 6	27/1019 - 28/0300
27 Mar 2116	WATCH: Geomagnetic Storm Category G2 predicted	
28 Mar 0012	ALERT: Geomagnetic K = 5	27/2339
28 Mar 0119	ALERT: Geomagnetic K = 5	28/0117
28 Mar 0240	EXTENDED WARNING: Geomagnetic K = 6	27/1019 - 28/1200
28 Mar 0240	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 28/2359
28 Mar 0240	EXTENDED WARNING: Geomagnetic K = 5	27/0520 - 28/1800
28 Mar 0408	ALERT: Geomagnetic K = 5	28/0405
28 Mar 1101	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	28/1045
28 Mar 2343	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 29/1200
29 Mar 0502	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	28/1045
29 Mar 1154	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 30/1200
30 Mar 0514	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	28/1045



Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
30 Mar 0525	WARNING: Geomagnetic K = 5	30/0524 - 1200
30 Mar 0606	ALERT: Geomagnetic K = 5	30/0559
30 Mar 1145	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 30/2359
30 Mar 2222	WARNING: Geomagnetic K = 5	30/2225 - 31/0600
30 Mar 2222	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 31/1200
31 Mar 0003	ALERT: Geomagnetic K = 5	30/2359
31 Mar 0308	ALERT: Geomagnetic K = 5	31/0259
31 Mar 0509	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	28/1045
31 Mar 0543	EXTENDED WARNING: Geomagnetic K = 5	30/2225 - 31/1500
31 Mar 0543	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 31/1800
31 Mar 0601	ALERT: Geomagnetic K = 5	31/0559
31 Mar 0628	ALERT: Type IV Radio Emission	31/0550
31 Mar 0901	ALERT: Geomagnetic K = 5	31/0859
31 Mar 1455	EXTENDED WARNING: Geomagnetic K = 5	30/2225 - 01/0300
31 Mar 1455	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 01/1200
31 Mar 2008	WATCH: Geomagnetic Storm Category G1 predicted	
01 Apr 0501	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	28/1045
01 Apr 1108	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 01/2100
01 Apr 2055	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 02/0300
01 Apr 2321	ALERT: Type IV Radio Emission	01/2150
02 Apr 0255	EXTENDED WARNING: Geomagnetic K = 4	27/0350 - 02/1300
02 Apr 0500	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	28/1045
02 Apr 0801	ALERT: X-ray Flux exceeded M5	02/0800
02 Apr 0817	ALERT: Type IV Radio Emission	02/0800
02 Apr 0833	ALERT: Type II Radio Emission	02/0807
02 Apr 0901	SUMMARY: X-ray Event exceeded M5	02/0750 - 0813
02 Apr 1308	SUMMARY: 10cm Radio Burst	02/1256 - 1257

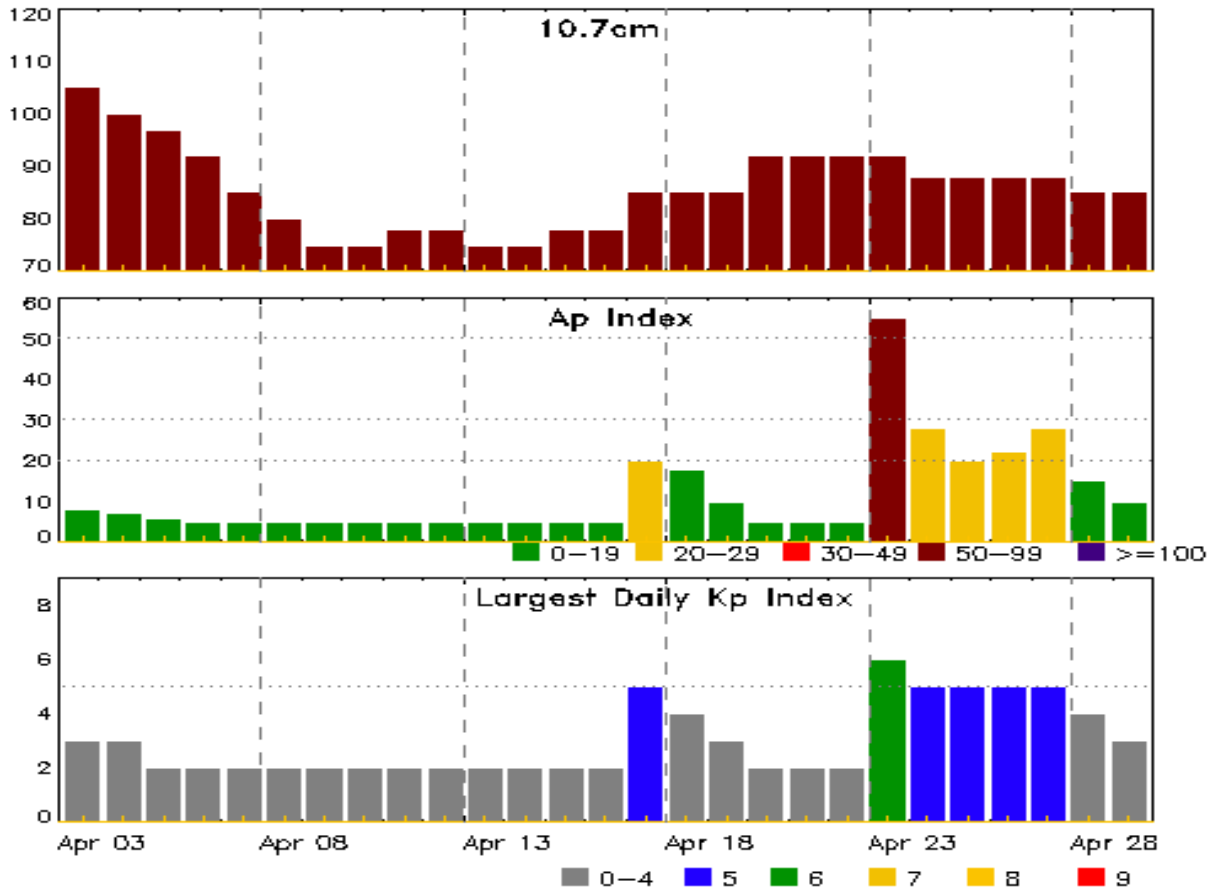


Alerts and Warnings Issued

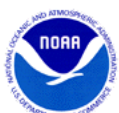
Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
02 Apr 2034	ALERT: X-ray Flux exceeded M5	02/2032
02 Apr 2046	SUMMARY: X-ray Event exceeded M5	02/2026 - 2038



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
03 Apr	105	8	3	17 Apr	85	20	5
04	100	7	3	18	85	18	4
05	97	6	2	19	85	10	3
06	92	5	2	20	92	5	2
07	85	5	2	21	92	5	2
08	80	5	2	22	92	5	2
09	75	5	2	23	92	55	6
10	75	5	2	24	88	28	5
11	78	5	2	25	88	20	5
12	78	5	2	26	88	22	5
13	75	5	2	27	88	28	5
14	75	5	2	28	85	15	4
15	78	5	2	29	85	10	3
16	78	5	2				



Energetic Events

Date	Time			X-ray	Optical Information				Peak		Sweep Freq	
	Begin	Max	Half	Class	Integ Flux	Imp/ Brtns	Location	Rgn #	Radio Flux		Intensity	
			Max						245	2695	II	IV
01 Apr	2135	2148	2205	M4.4	0.046	1F	N16W53	2644	570			3
02 Apr	0750	0802	0813	M5.3	0.044	2N	N12W59	2644	100		1	1
02 Apr	1252	1300	1311	M2.3	0.016						110	
02 Apr	1818	1838	1928	M2.1	0.061	SF	N16W68	2644	230			
02 Apr	2026	2033	2038	M5.7	0.022			2644	670			

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location	Lat CMD	
27 Mar	0535	0537	0540			SF	N12E30	2644
27 Mar	0606	0612	0621	B2.6				
27 Mar	0918	0923	0929	B4.7	SF		S07E67	
27 Mar	1107	1112	1118	C3.2	SF		S07E63	2645
27 Mar	1333	1343	1348	B4.9				
27 Mar	1410	1416	1419	B4.6	SF		S07E63	
27 Mar	1440	1445	1451	B2.5				
27 Mar	1459	1516	1523	B4.8				
27 Mar	1606	1618	1624		SF		N15E21	2644
27 Mar	1652	1712	1718	C1.6	SF		S11E62	2645
27 Mar	1739	1743	1747	B4.1	SF		S11E63	2645
27 Mar	1754	1755	1809	C5.1	SF		S12E61	2645
27 Mar	1929	1937	1940		SF		S12E60	2645
27 Mar	1944	2002	2011	B5.5	SF		N12E22	2644
27 Mar	2037	2047	2052	B8.4	SF		S11E60	2645
27 Mar	2134	2140	2147	B4.1	SF		N12E20	2644
27 Mar	2220	2226	2227		SF		S11E60	2645
27 Mar	2222	2224	2227		SF		N12E20	2644
27 Mar	2341	2345	2349	B6.8	SF		N13E17	2644
28 Mar	0001	0001	0009		SF		S11E57	2645
28 Mar	0019	0027	0035	C1.1	SF		N13E18	2644
28 Mar	0050	0053	0059	B9.1	SF		S10E58	2645
28 Mar	0135	0143	0146		SF		N13E18	2644
28 Mar	0152	0200	0204	B6.6	SF		N13E16	2644
28 Mar	0256	0300	0303	B3.1				
28 Mar	0318	0323	0325	C3.1	SF		S09E56	2645



Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
28 Mar	0352	0357	0407	B6.6	SF	N13E14		2644
28 Mar	0447	0456	0503	C3.2	SF	S09E56		2645
28 Mar	B0508	U0508	0512		SF	S10E60		2645
28 Mar	0712	0719	0723	C1.1	SF	S11E52		2645
28 Mar	0901	0910	0916	B7.0	SF	S08E54		2645
28 Mar	0938	0944	0950	B4.0	SF	S09E52		2645
28 Mar	0955	1001	1004	C1.0				2645
28 Mar	1318	1322	1325	B2.8				2645
28 Mar	1351	1355	1359	B2.5				2645
28 Mar	1546	1551	1556	B2.1				2645
28 Mar	2048	2054	2100	B2.1				2646
28 Mar	2102	2105	2107	B2.0				2646
28 Mar	2354	2355	A2359		SF	S10E41		2645
29 Mar	B0000	0000	0004		SF	S10E41		2645
29 Mar	0038	0043	0048	B3.2	SF	S10E43		2645
29 Mar	0126	0140	0145	B4.5	SF	S10E41		2646
29 Mar	0218	0222	0226	B3.5				2645
29 Mar	1259	1309	1320	B3.3				2644
29 Mar	2026	2030	2032	B4.3				2645
29 Mar	2319	2332	2350	B6.5	SF	N12W09		2644
30 Mar	0658	0703	0710	B2.6				2645
30 Mar	1300	1303	1305	B2.7				2645
30 Mar	1757	1801	1803	B2.6				2644
30 Mar	1944	1953	2000	B2.1				2644
31 Mar	0339	0346	0350	B5.0				2645
31 Mar	0448	0621	0653		SF	S10E34		2645
31 Mar	0449	0453	0455	B4.1				
31 Mar	0545	0550	0553	B3.3	SF	N13W32		2644
31 Mar	0615	0619	0624	B2.7				2645
31 Mar	1339	1342	1344	B3.2				2644
31 Mar	1441	1447	1452	B3.7				2648
31 Mar	1532	1533	1538		SF	S10E06		2645
31 Mar	1555	1555	1558		SF	S10E06		2645
31 Mar	1728	1737	1748	C1.7	SF	S12E03		2645
31 Mar	1912	1919	1923	B2.9				2644
31 Mar	2109	2112	2116	B3.6				2644
31 Mar	2254	2301	2310	C1.1				2645
01 Apr	0138	0147	0153	B5.0				2647



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
01 Apr	0347	0351	0356	B5.1			2645
01 Apr	0412	0415	0420	B6.4			2645
01 Apr	1017	1020	1022	B6.2	SF	N14W22	
01 Apr	1031	1036	1039	B9.8	SF	N14W23	
01 Apr	1459	1502	1509	B3.5			2644
01 Apr	1523	1549	1618	B8.1			2645
01 Apr	1807	1810	1814	B7.4			2644
01 Apr	1930	1956	2013	C3.7	SF	N15W53	2644
01 Apr	2135	2148	2205	M4.4	1F	N16W53	2644
01 Apr	2259	2303	2305	C5.1	SN	S11W06	2645
01 Apr	2308	2311	2316		SF	N12W53	2644
01 Apr	2350	2354	2357	B9.0			
02 Apr	0026	0029	0031	B4.8			2644
02 Apr	0206	0210	0213	C1.0			2645
02 Apr	0241	0246	0248	C8.0	SN	S12W08	2645
02 Apr	0249	0252	0308		SF	N12W53	2644
02 Apr	0321	0321	0323		SF	N12W59	2644
02 Apr	0445	0446	0451		SF	N12W59	2644
02 Apr	0455	0458	0500	C1.2			2644
02 Apr	0506	0508	0510		SF	N12W59	2644
02 Apr	0551	0552	0558		SF	N12W59	2644
02 Apr	0619	0621	0623		SF	N13W60	2644
02 Apr	0655	0657	0659		SF	N10W62	2644
02 Apr	0708	0710	0748		SF	N12W58	2644
02 Apr	0750	0804	0946	M5.3	2N	N12W59	2644
02 Apr	1042	1103	1111	C1.7			2645
02 Apr	1252	1300	1311	M2.3			
02 Apr	B1323	U1328	1351		SF	N11W64	2644
02 Apr	1356	1357	1400		SF	N11W66	2644
02 Apr	1416	1418	1423		SF	S12W14	2645
02 Apr	1444	1508	1525	C4.2			
02 Apr	1620	1627	1638	C3.0	SF	N14W66	2644
02 Apr	1716	1722	1726		SF	N16W68	2644
02 Apr	1818	1838	1928	M2.1	SF	N16W68	2644
02 Apr	2026	2033	2038	M5.7			2644
02 Apr	2107	2110	2113	C4.7			2644



Region Summary

Date	Location		Sunspot Characteristics					Flares								
	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 2643																
21 Mar	N09E72		78	40	1	Hrx	2	A								
22 Mar	N08E56		81	30	1	Hsx	2	A								
23 Mar	N08E42		81	20	2	Hrx	2	A								
24 Mar	N08E29		81	10	1	Hrx	2	A								
25 Mar	N08E16		81	10	1	Axx	1	A								
26 Mar	N08E02		82	plage												
27 Mar	N08W12		83	plage												
28 Mar	N08W26		84	plage												
29 Mar	N08W40		84	plage												
30 Mar	N08W54		85	plage												
31 Mar	N08W68		86	plage												
01 Apr	N08W82		87	plage												
									0	0	0	0	0	0	0	0

Crossed West Limb.
 Absolute heliographic longitude: 82

Region 2644																
26 Mar	N12E30		54	50	6	Dao	10	B	1				4			
27 Mar	N13E17		54	150	8	Dai	15	BG					6			
28 Mar	N12E04		54	240	10	Dsi	12	B	1				4			
29 Mar	N12W09		53	220	11	Eso	10	B					1			
30 Mar	N12W23		54	190	12	Eso	3	B								
31 Mar	N12W37		55	190	11	Eao	4	B					1			
01 Apr	N12W52		57	200	12	Eao	8	B	1	1			2	1		
02 Apr	N12W65		57	450	17	Fkc	19	BG	3	3			13		1	
									6	4	0	31	1	1	0	0

Still on Disk.
 Absolute heliographic longitude: 54



Region Summary - continued

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 2645																	
27 Mar	S09E59		12	30	4	Cso	3	B	3				6				
28 Mar	S09E44		14	70	7	Dai	8	BG	4				9				
29 Mar	S10E29		15	180	9	Dsi	12	B					2				
30 Mar	S10E16		15	260	10	Dki	10	B									
31 Mar	S10E01		17	380	12	Ekc	29	BG	2				4				
01 Apr	S11W13		17	520	12	Ekc	25	BG	1				1				
02 Apr	S10W26		18	600	14	Ehc	23	BGD	3				2				
									13	0	0		24	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 17

Region 2646																	
27 Mar	N06W60		131	20	1	Hrx	1	A									
28 Mar	N07W74		132	10	1	Axx	1	A									
29 Mar	N06W83		127	0		Axx	1	A					1				
									0	0	0		1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 131

Region 2647																	
31 Mar	N11E01		17	10	2	Bxo	2	B									
01 Apr	N11W13		18	10	3	Bxo	4	B									
02 Apr	N11W27		19	plage													
									0	0	0		0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 17

Region 2648																	
01 Apr	S03E72		293	10	3	Bxo	2	B									
02 Apr	S03E61		291	20	5	Cro	3	B									
									0	0	0		0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 291

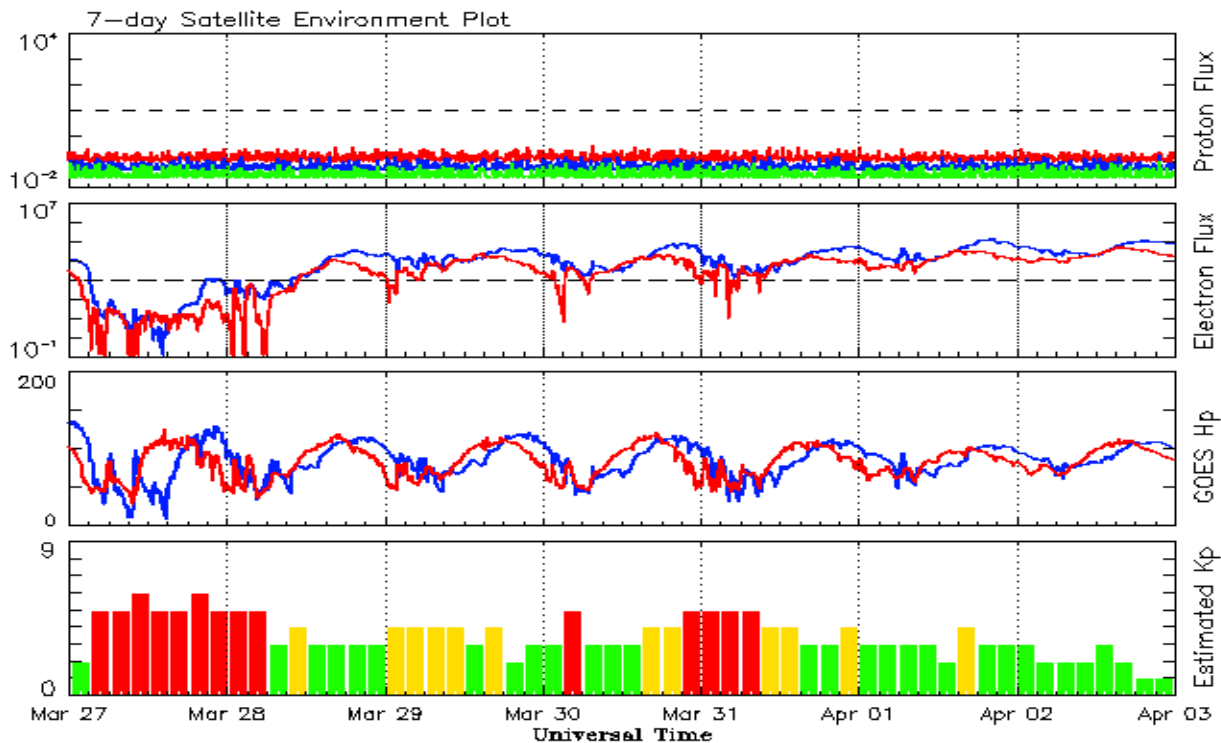


Recent Solar Indices (preliminary)
Observed monthly mean values

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									
April	72.5	45.2	0.75	80.5	47.3	129.2	127.3	12	12.4
May	83.0	53.3	0.71	77.5	45.7	120.1	123.3	9	12.7
June	77.3	39.9	0.53	73.1	43.3	123.2	119.5	14	13.0
July	68.4	39.5	0.58	68.2	41.0	107.0	116.0	10	13.1
August	61.6	38.6	0.63	65.5	39.8	106.2	113.3	16	13.1
September	72.5	47.2	0.65	64.0	39.5	102.1	110.8	16	12.8
October	59.5	38.2	0.62	61.8	38.6	104.1	107.9	15	12.5
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	23.2	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	31.0	19.9	87.8	83.7	16	11.3
October	30.0	20.2	0.67			86.1		16	
November	22.4	12.8	0.57			78.7		10	
December	17.6	11.3	0.64			75.1		10	
2017									
January	28.1	15.5	0.55			77.4		10	
February	22.0	15.7	0.71			76.9		10	
March		10.6				74.6		15	

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 27 March 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.

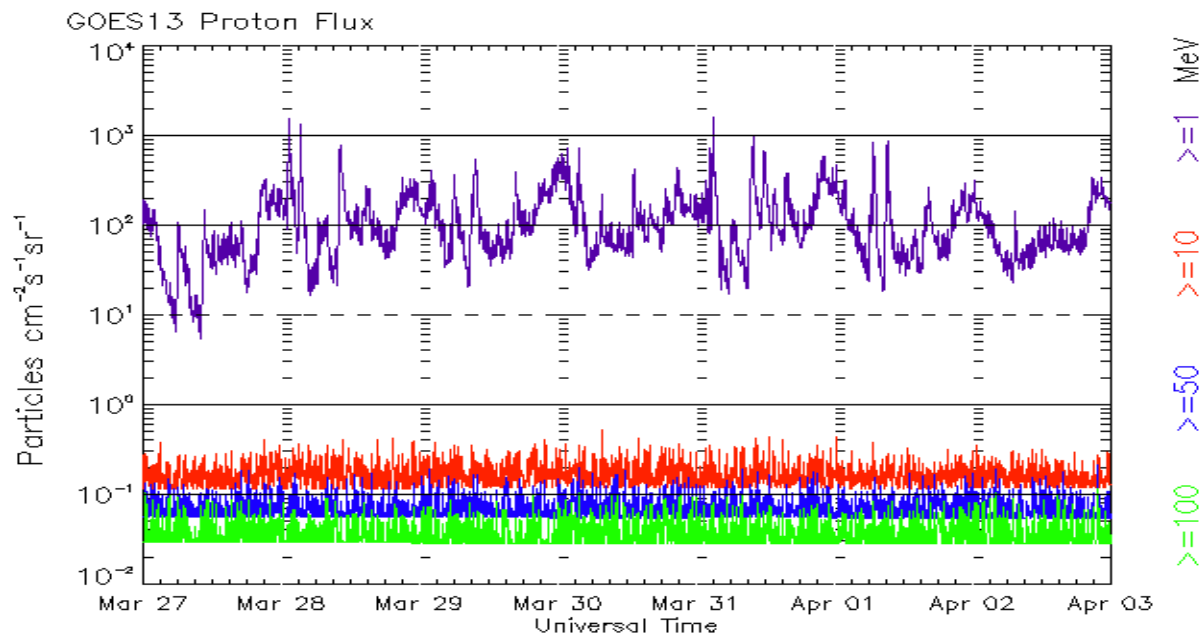
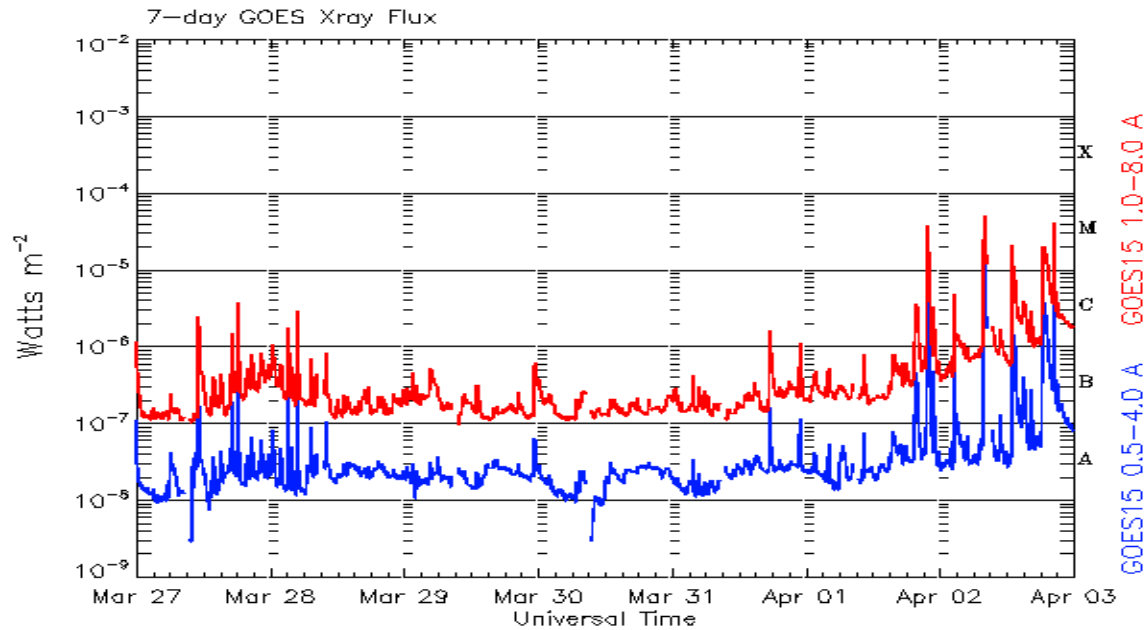
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 27 March 2017*

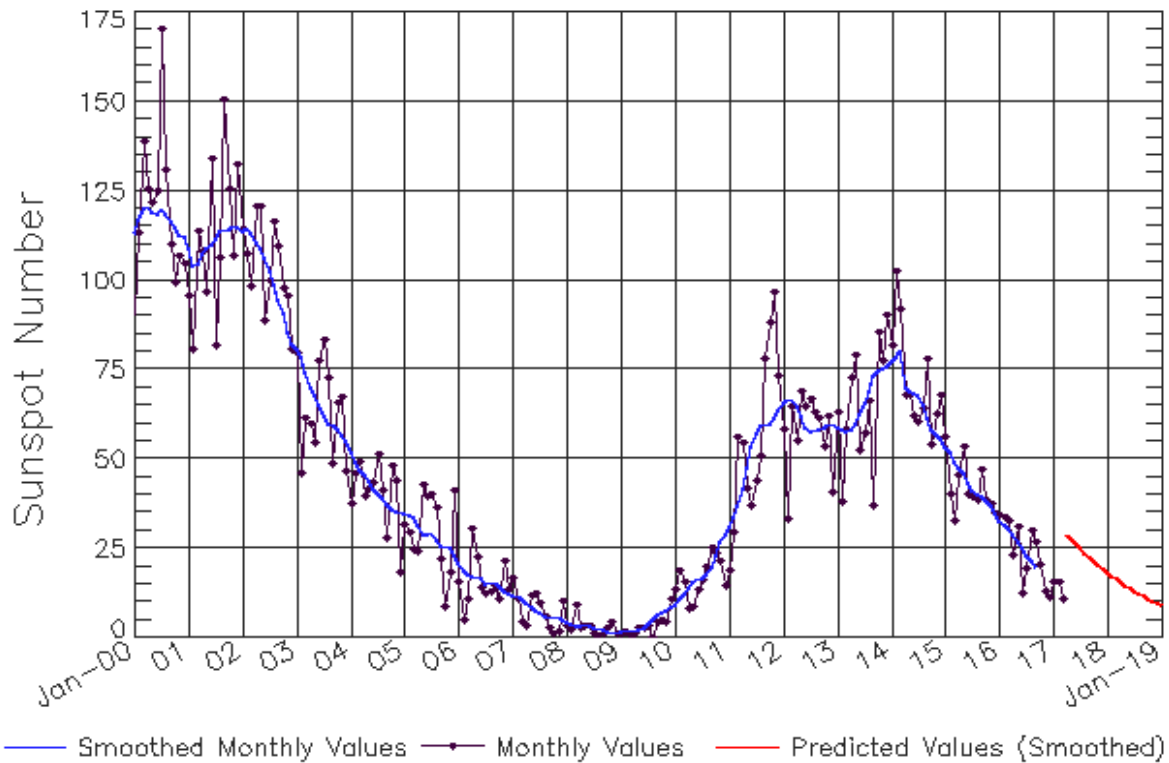
The x-ray plots contains five-minute averages x-ray flux ($Watt/m^2$) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral 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 Mar 2017



Updated 2017 Apr 3

NOAA/SWPC Boulder, CO USA

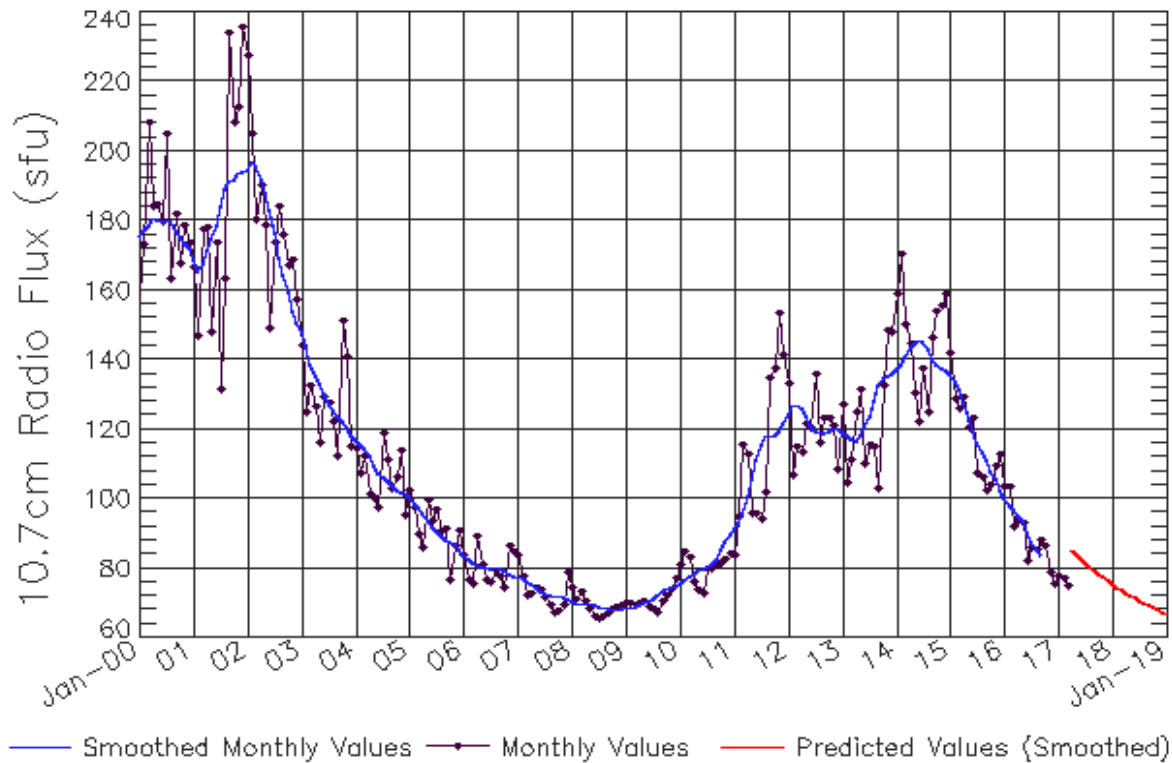
Smoothed Sunspot Number Prediction

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	29	27	26	25	24	23	21	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 Mar 2017

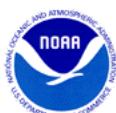


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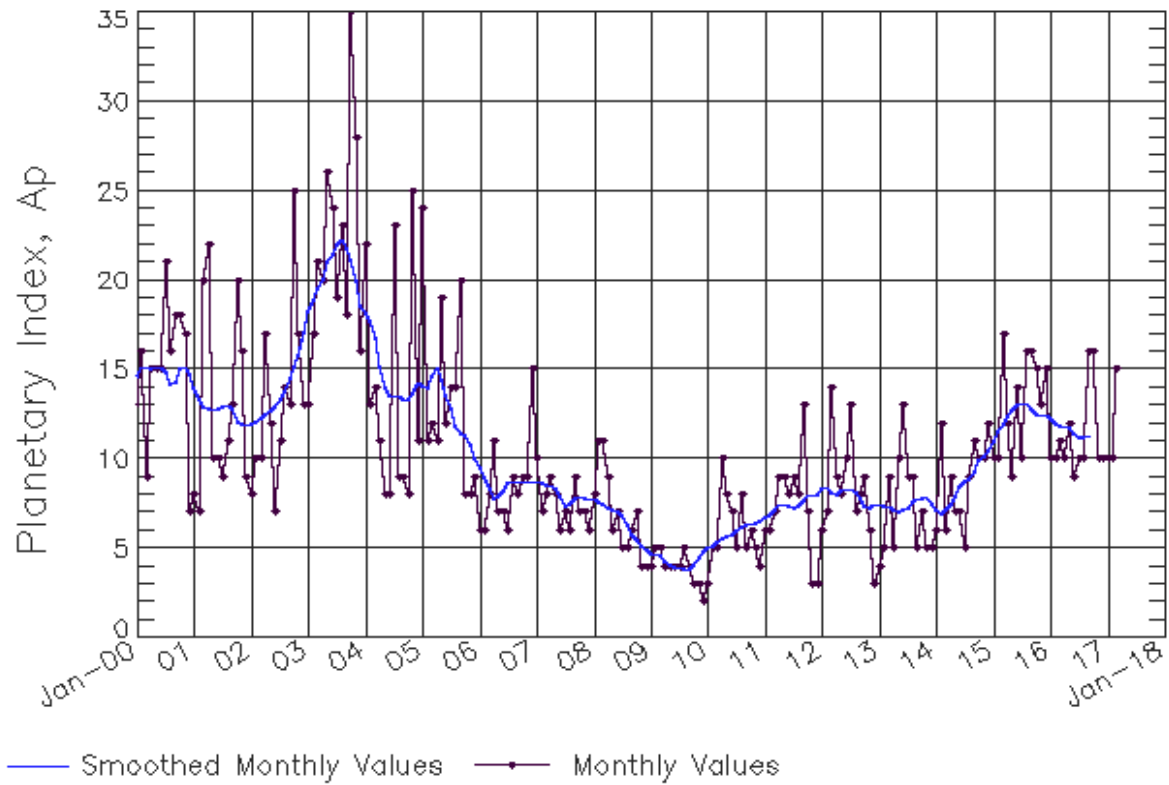
Smoothed F10.7cm Radio Flux Prediction

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 (1)	82 (1)	82 (2)
2017	81 (3)	81 (4)	81 (4)	80 (5)	79 (6)	79 (7)	79 (8)	79 (8)	79 (9)	78 (9)	77 (9)	76 (9)
2018	75 (9)	75 (9)	74 (9)	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 Mar 2017



Updated 2017 Apr 3

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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

The Weekly has been published continuously since 1951 and is available online since 1997.

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<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

