

Solar activity was at very low to moderate levels during the summary period. Most of the active regions on the visible disk remained stable and quiet with numerous non-Earth directed CMEs observed. The period started off at very low levels with the active sunspot regions remaining either stable or in a phase of decay. On 27 May, LASCO C2 and C3 imagery as well STEREO Ahead and Behind COR2 imagery showed a possible Earth directed CME. After analysis, this event was ascertained to be mostly northward with very little to no affects here at Earth. Very low levels continued through 28 May. On 29 May, levels increased to low levels with 2 unimpressive C-class x-ray events being observed. New Region 1760 (N12, L=096 class/area Cro/beta on 01 June) was also numbered. A return to very low levels was observed on 30 May. On 31 May, Region 1760, which was a simple alpha group, produced a very impulsive M1/Sb x-ray flare. Type II (est. shock speed of 1393 km/s) and Type IV radio sweeps were associated with this event; however imagery did not suggest an associated CME. A return to very low levels was observed on 01 June and new Region 1762 (S29, L=131 class/area Dai/210 on 02 June) was numbered, showing rapid growth. On 02 June, a return to low levels was observed as Region 1762 produced the largest event of the period, a C1 X-ray event. Early on 02 June, another region was numbered as it evolved rapidly, new Region 1764 (N12, L=131 class/area Dao/040 on 02 June). The summary period ended with only two regions on interest, Regions 1764 and 1762.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit ranged from normal to very high levels in response to multiple coronal hole high speed streams (CH HSS). A majority of the time was at high levels with very high levels reached on 27 May and normal levels reached for 01 June.

Geomagnetic field activity was at quiet to major storm levels during the period. Several CH HSS were observed with solar wind speeds, as measured by the ACE spacecraft reaching speeds of around 800 km/s. Two distinct CH HSS were observed with very different effects observed here on Earth. From 27-29 May, effects from a negative polarity CH HSS were observed. ACE signatures showed solar wind speed around 800 km/s; however the total IMF remained low, around 5 nT. With CH HSS signatures such as these, only quiet to active levels were observed here on Earth. Following the decline of the CH HSS, quiet levels prevailed on 30 May. On 31 May, an interplanetary shock was observed in ACE measurements with solar wind speed, density, and IMF all jumping up, slightly. This small shock was attributed to the arrival of the 27 May northward CME. Following this shock arrival, an even larger increase to IMF and solar wind density was observed with IMF reaching around 20 nT (with sustained periods of - 15 nT of the Bz component) and solar wind density around 40 p/cc. These increases are thought to be the slow moving CME from 27 May being bunched up and squished by the faster solar wind from a positive polarity CH HSS behind it. These signatures drove major storm levels on 01 June. After the bunched up CME past, around midday on 01 June, solar wind speeds rapidly increased to around 800 km/s as the CH HSS arrived. Total IMF remained somewhat elevated with sporadic



periods of negative Bz until early on 02 June. Later on 02 June, total IMF dropped to around 5 nT as solar wind speeds remained elevated. Minor storm levels were observed early on 02 June but levels started to decline as IMF dropped off. The period ended at mostly unsettled levels as the CH HSS continued.

Space Weather Outlook

03 June - 29 June 2013

Solar activity is expected to be at low levels with a slight chance for M-class events through the forecast period. Stereo Ahead and Behind imagery suggest many returning regions however very few large events have been observed and most of the active regions from last rotation showed decay before leaving the disk.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be normal to high levels throughout the forecast period. High levels are expected from 03 - 10 June and 20-29 June in response to CH HSS effects. Normal levels are expected for the remained of the period.

Geomagnetic field activity is expected to be at mostly quiet levels except for 03 June, 07-08 June and 12 June as active levels are possible in response to CH HSS effects. On 21-22 June and 28-29 June, Quiet to minor storm levels are likely in response to two of the larger and faster CH HSS.



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 May	110	87	430	B3.1	0	0	0	0	0	0	0	0
28 May	105	75	320	B2.6	0	0	0	0	0	0	0	0
29 May	107	83	230	B2.7	3	0	0	3	0	0	0	0
30 May	104	71	140	B2.7	0	0	0	2	0	0	0	0
31 May	102	58	120	B2.3	2	1	0	2	0	0	0	0
01 June	106	60	130	B2.2	0	0	0	1	0	0	0	0
02 June	111	76	290	B2.8	1	0	0	3	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
27 May	2.3e+06	1.7e+04	2.4e+03		1.6e+09	
28 May	1.4e+06	1.2e+04	2.5e+03		2.1e+09	
29 May	2.0e+06	1.1e+04	2.4e+03		2.5e+09	
30 May	2.8e+06	1.2e+04	2.4e+03		2.1e+09	
31 May	5.1e+06	1.2e+04	2.6e+03		1.5e+09	
01 June	4.8e+05	1.0e+04	2.2e+03		4.3e+06	
02 June	1.4e+06	1.0e+04	2.3e+03		1.3e+08	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
27 May	8	2-2-2-2-2-2-3-2	28	3-4-2-5-6-3-3-3	13	2-3-2-3-3-3-4-3
28 May	8	3-3-2-2-2-2-1-0	16	3-3-5-4-3-1-1-1	8	3-3-2-2-2-1-1-1
29 May	2	0-0-0-1-1-1-0-1	0	1-0-0-0-0-0-0-0	2	0-1-0-1-1-1-0-0
30 May	2	1-0-0-1-1-2-1-0	1	1-0-0-0-0-1-1-0	3	1-1-0-1-1-1-1-1
31 May	7	0-0-0-2-3-2-3-3	3	0-0-0-0-1-2-2-2	9	1-1-0-1-1-3-3-4
01 June	41	5-5-6-5-5-3-4-3	58	5-7-6-6-5-4-4-3	49	6-6-6-5-6-4-4-3
02 June	16	4-3-3-3-3-2-3-3	44	5-5-6-6-5-4-3-2	19	5-4-3-3-3-3-3-3



Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
27 May 0522	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1555
27 May 1947	WARNING: Geomagnetic K = 4	27/1947 - 28/0100
27 May 2032	ALERT: Geomagnetic K = 4	27/2023
28 May 0506	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1555
29 May 0506	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1555
30 May 0512	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1555
30 May 1520	WATCH: Geomagnetic Storm Category G1 predicted	
31 May 0507	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	24/1555
31 May 1217	ALERT: Type II Radio Emission	31/1122
31 May 1559	WARNING: Geomagnetic Sudden Impulse expected	31/1604 - 1704
31 May 1625	SUMMARY: Geomagnetic Sudden Impulse	31/1618
31 May 2053	ALERT: Type II Radio Emission	31/1957
31 May 2054	ALERT: Type IV Radio Emission	31/1957
31 May 2319	WARNING: Geomagnetic K = 4	31/2319 - 01/0300
31 May 2356	ALERT: Geomagnetic K = 4	31/2353
01 Jun 0040	WARNING: Geomagnetic K = 5	01/0040 - 0600
01 Jun 0041	EXTENDED WARNING: Geomagnetic K = 4	31/2319 - 01/0900
01 Jun 0052	ALERT: Geomagnetic K = 5	01/0051
01 Jun 0053	WARNING: Geomagnetic K = 6	01/0055 - 0600
01 Jun 0259	ALERT: Geomagnetic K = 6	01/0258
01 Jun 0506	ALERT: Geomagnetic K = 6	01/0502
01 Jun 0506	EXTENDED WARNING: Geomagnetic K = 6	01/0055 - 0900
01 Jun 0506	EXTENDED WARNING: Geomagnetic K = 4	31/2319 - 01/1800
01 Jun 0506	EXTENDED WARNING: Geomagnetic K = 5	01/0040 - 1200
01 Jun 0904	ALERT: Geomagnetic K = 6	01/0900
01 Jun 0904	EXTENDED WARNING: Geomagnetic K = 5	01/0040 - 1600

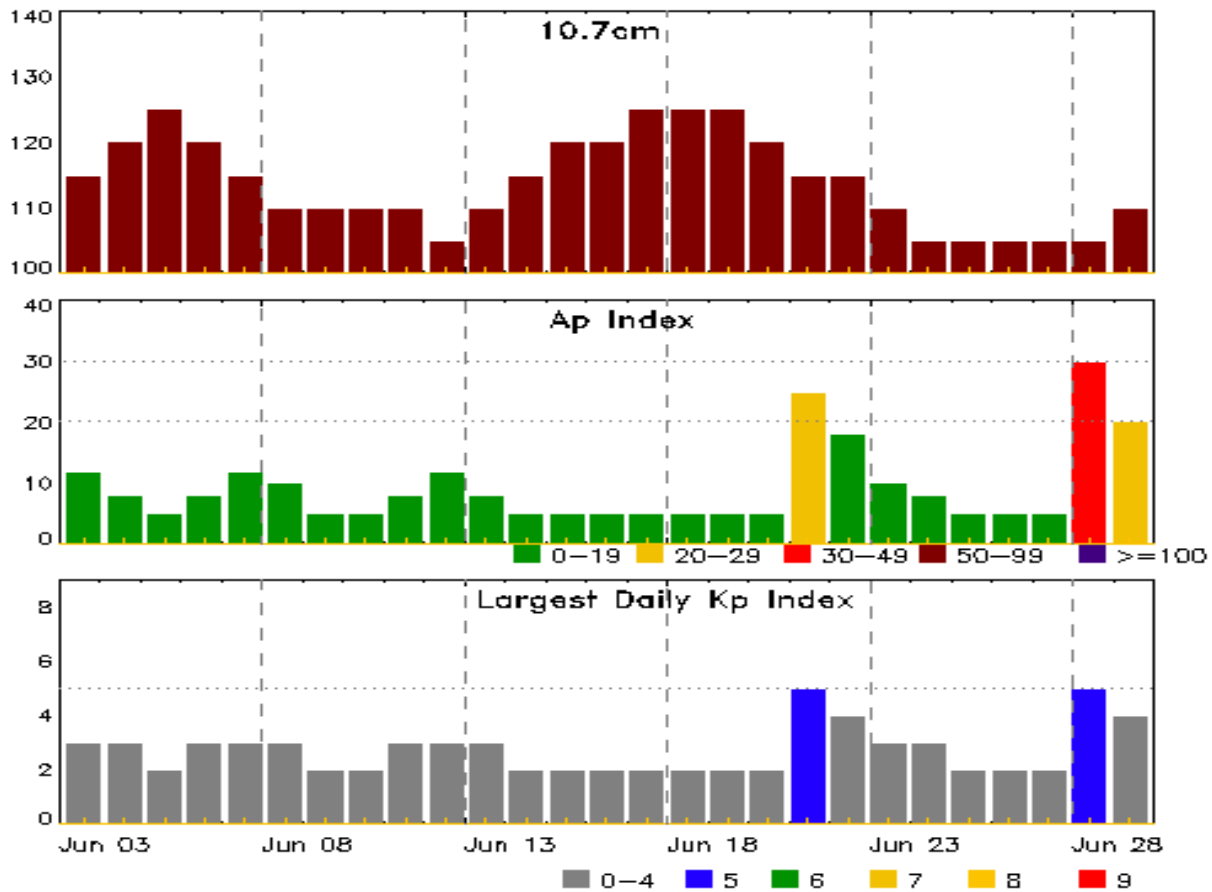


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
01 Jun 1422	WARNING: Geomagnetic K = 6	01/1421 - 1900
01 Jun 1430	EXTENDED WARNING: Geomagnetic K = 5	01/0040 - 2300
01 Jun 1430	EXTENDED WARNING: Geomagnetic K = 4	31/2319 - 02/0700
01 Jun 1502	ALERT: Geomagnetic K = 6	01/1500
01 Jun 2002	WATCH: Geomagnetic Storm Category G1 predicted	
02 Jun 0138	WARNING: Geomagnetic K = 5	02/0137 - 0600
02 Jun 0148	ALERT: Geomagnetic K = 5	02/0146
02 Jun 0655	EXTENDED WARNING: Geomagnetic K = 4	31/2319 - 02/1500
02 Jun 1503	CANCELLATION: Geomagnetic Storm Category G1 predicted	
02 Jun 1504	ALERT: Electron 2MeV Integral Flux \geq 1000pfu	02/1445
02 Jun 1521	ALERT: Type II Radio Emission	02/1452
02 Jun 1631	ALERT: Type IV Radio Emission	02/1603



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 Jun	115	12	3	17 Jun	125	5	2
04	120	8	3	18	125	5	2
05	125	5	2	19	125	5	2
06	120	8	3	20	120	5	2
07	115	12	3	21	115	25	5
08	110	10	3	22	115	18	4
09	110	5	2	23	110	10	3
10	110	5	2	24	105	8	3
11	110	8	3	25	105	5	2
12	105	12	3	26	105	5	2
13	110	8	3	27	105	5	2
14	115	5	2	28	105	30	5
15	120	5	2	29	110	20	4
16	120	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		Intensity	
									245	2695	II	IV
31 May	1952	2000	2006	M1.0	0.005	SB	N13E43	1760			2	1

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
27 May	0149	0211	0229	B8.1				1756
27 May	2138	2142	2146	B6.8				1756
28 May	0441	0447	0453	B9.6				1755
28 May	2309	2313	2316	B8.2				
29 May	0033	0037	0040	B8.3				
29 May	0052	0055	0056	B4.2				1760
29 May	0212	0218	0222	C1.5				
29 May	0247	0249	0251	B4.5				1760
29 May	0312	0325	0336	B5.4				1757
29 May	0441	0444	0446	B4.5				1754
29 May	0648	0736	0758	C1.2				1755
29 May	0856	0901	0909	B8.6				1755
29 May	B1527	U1529	A1539	B3.8	SF	N17E80		1760
29 May	1619	1622	1625	B4.8				1760
29 May	1658	1701	1704	B5.6				1754
29 May	1731	1735	1737	B7.4				1760
29 May	2051	2102	2110	B4.7	SF	N12E69		1760
29 May	2230	2236	2240	C2.9	SF	N12E68		1760
30 May	0222	0233	0240	B5.7				1760
30 May	0424	0431	0435	B5.3				
30 May	0504	0512	0518	B4.4				1760
30 May	1053	1056	1059	B4.4				1760
30 May	1258	1303	1308	B9.4	SF	S10E07		1757
30 May	1422	1432	1438	B8.7	SF	N17E61		1760
30 May	1527	1532	1535	B7.3				
30 May	1725	1734	1742	B5.0				1760
30 May	1833	1837	1842	B6.7				1756
31 May	0531	0536	0543	B4.6				1757
31 May	0701	0807	0845	C1.2				
31 May	1111	1124	1144	C1.1	SF	S18E32		1761



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
31 May	1952	2000	2006	M1.0	SB	N13E43	1760
01 Jun	0712	0717	0721	B5.1			1760
01 Jun	1338	1346	1354	B6.6	SF	S30W01	1762
02 Jun	0506	0520	0534	C1.8			1762
02 Jun	1447	1451	1455	B3.7	SF	N12E20	1760
02 Jun	1544	1548	1550	B4.8	SF	S29W20	1762
02 Jun	1616	1620	1624	B4.4	SF	N12E18	1760



Region Summary

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

Region 1753

20 May	N04E63	216	60	5	Dso	2	B	1			1				
21 May	N04E47	218	60	5	Dro	10	B				1				
22 May	N04E36	217	20	3	Cro	3	B								
23 May	N04E22	219	20	9	Cro	7	B								
24 May	N05E09	219	10	6	Bxo	3	B				1				
25 May	N05W04	219	10	1	Axx	2	A								
26 May	N05W19	221	plage												
27 May	N05W34	222	plage												
28 May	N05W49	224	plage												
29 May	N05W64	226	plage												
30 May	N05W79	228	plage												
								1	0	0	3	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 219

Region 1754

20 May	S16E50	229	10	3	Axx	1	A								
21 May	S16E38	229	20	6	Cro	4	B								
22 May	S19E23	230	40	4	Cro	3	B								
23 May	S19E09	232	30	5	Cro	7	B								
24 May	S19W03	231	20	8	Cro	9	B								
25 May	S19W17	232	30	8	Dro	9	B								
26 May	S19W27	229	10	4	Cro	3	B				1				
27 May	S19W41	229	plage												
28 May	S19W55	230	plage												
29 May	S19W69	231	plage												
								0	0	0	1	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 231



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4
Region 1755															
21 May	N10E62	204	120	3	Dso	3	B	1							
22 May	N10E52	201	250	10	Dsi	7	BG				3				
23 May	N11E40	201	290	10	Dhi	9	BG	2			2	1			
24 May	N11E26	202	220	10	Dai	12	BG				2				
25 May	N11E12	203	220	10	Dai	12	B	2			2				
26 May	N12W00	202	180	9	Dai	19	B								
27 May	N12W13	201	110	9	Dao	16	B								
28 May	N11W29	203	70	9	Cso	10	B								
29 May	N11W40	202	30	8	Cro	6	B	1							
30 May	N12W59	207	10		Axx	1	A								
31 May	N12W73	208	plage												
01 Jun	N12W87	209	plage												
								6	1	0	9	1	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 202

Region 1756															
21 May	S20E54	213	100	6	Dao	10	B	1			3	1			
22 May	S20E41	212	230	9	Dai	13	BG	3			7				
23 May	S20E27	214	250	13	Ehi	19	BG	3			5	1			
24 May	S20E15	213	290	13	Ehi	21	BG	1			7				
25 May	S20E01	214	290	14	Ehi	21	BG	2							
26 May	S20W13	215	270	15	Ehi	18	B	2			4				
27 May	S20W26	214	190	16	Fso	17	B								
28 May	S20W38	212	140	17	Cso	12	B								
29 May	S19W53	214	110	15	Cso	10	B								
30 May	S18W73	221	70	3	Hsx	2	A								
31 May	S18W86	221	50	3	Hsx	1	A								
								12	0	0	26	2	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 214

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 1757																	
24 May	S09E84	145	plage					2									
25 May	S09E70	145	120	5	Hsx	1	A										
26 May	S08E54	148	80	2	Hsx	1	A										
27 May	S09E41	147	100	2	Hsx	1	A										
28 May	S08E27	146	80	2	Hsx	1	A										
29 May	S08E14	146	60	2	Hsx	2	A										
30 May	S08W00	147	30	1	Hsx	1	A				1						
31 May	S09W13	148	30	1	Hsx	1	A										
01 Jun	S08W26	148	20	1	Hrx	1	A										
02 Jun	S07W37	146	10	2	Hrx	2	A										
								2	0	0	1	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 147

Region 1758

26 May	S23E73	129	10	1	Axx	1	A								
27 May	S23E60	128	30	1	Hsx	1	A								
28 May	S21E47	127	20	1	Hsx	1	A								
29 May	S21E34	127	10	1	Axx	1	A								
30 May	S22E21	126	10	1	Axx	2	A								
31 May	S21E10	125	10	1	Axx	1	A								
01 Jun	S21W03	125	plage												
02 Jun	S21W16	125	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 125

Region 1759

27 May	S08E68	120	0	3	Bxo	2	B								
28 May	S07E52	121	10		Hsx	1	A								
29 May	S07E37	124	plage												
30 May	S07E22	127	plage												
31 May	S07E07	128	plage												
01 Jun	S07W08	130	plage												
02 Jun	S07W21	130	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 128



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares							
	Lat CMD	Helio Lon	Area 10 ⁻⁶ hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical				
								C	M	X	S	1	2	3	4

Region 1760

29 May	N10E63	98	10	1	Axx	2	A	1			2				
30 May	N12E51	97	10	4	Bxo	4	B								
31 May	N12E38	97	20	2	Hrx	2	A		1		1				
01 Jun	N12E26	96	20	3	Cso	5	B								
02 Jun	N12E11	98	10	1	Hrx	1	A				2				
								1	1	0	5	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 98

Region 1761

29 May	S17E52	109	10	1	Axx	2	A								
30 May	S18E37	111	10	1	Hsx	1	A								
31 May	S17E24	111	10	5	Cro	3	B	1			1				
01 Jun	S17E10	112	plage												
02 Jun	S17W03	112	plage												
								1	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 112

Region 1762

01 Jun	S30W08	130	70	4	Dao	10	B				1				
02 Jun	S29W22	131	210	8	Dai	12	BG	1			1				
								1	0	0	2	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 130

Region 1763

01 Jun	S15W02	124	20	3	Cro	4	B								
02 Jun	S15W17	126	20	6	Cro	4	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 124

Region 1764

02 Jun	N12W22	131	40	4	Dao	7	B								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 131

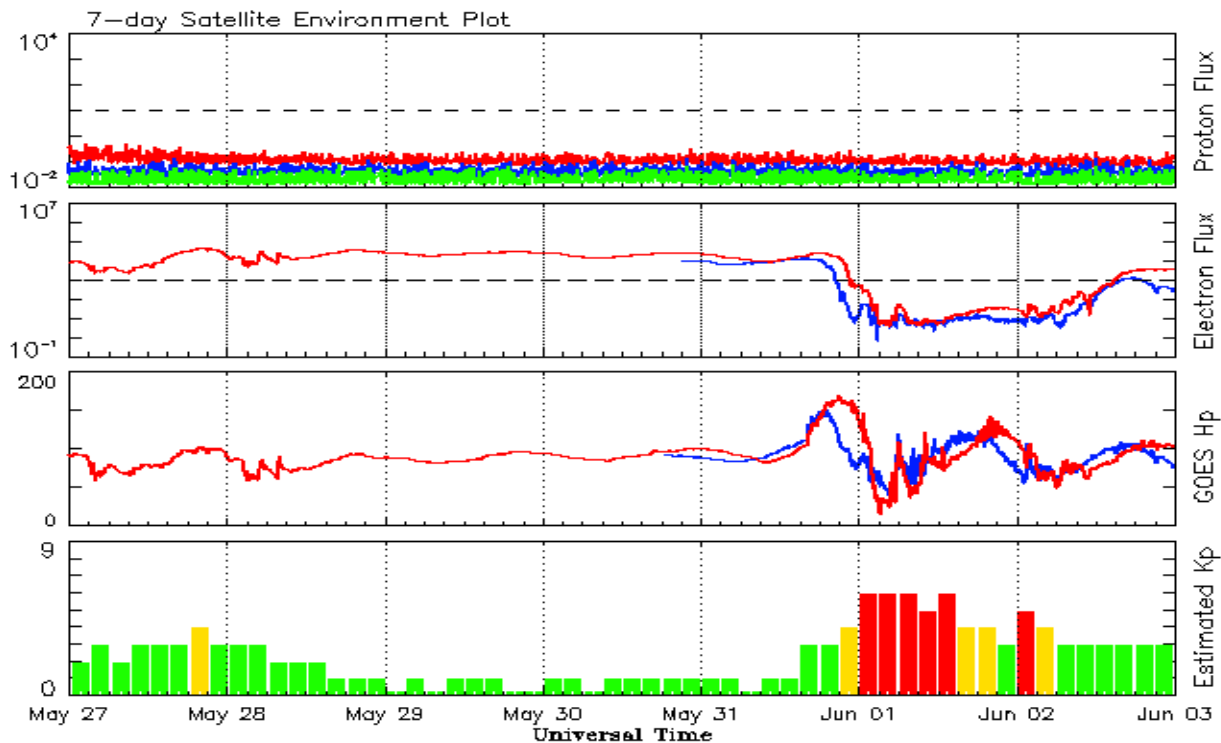


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2011									
June	55.5	37.0	0.67	76.5	53.2	95.8	110.9	8	7.4
July	67.0	43.8	0.66	82.5	57.3	94.2	115.4	9	7.3
August	66.1	50.6	0.77	84.9	59.0	101.7	117.9	8	7.4
September	106.4	78.0	0.73	84.6	59.5	134.5	118.4	13	7.7
October	116.8	88.0	0.75	84.6	59.9	137.2	118.4	7	8.0
November	133.1	96.7	0.73	86.3	61.1	153.1	119.5	3	8.0
December	106.3	73.0	0.69	89.2	63.4	141.2	121.6	3	8.0
2012									
January	91.3	58.3	0.64	92.0	65.5	133.1	124.4	6	8.3
February	50.1	32.9	0.66	94.2	66.9	106.7	126.7	7	8.4
March	77.9	64.3	0.82	94.1	66.8	115.1	126.8	14	8.1
April	84.4	55.2	0.65	91.3	64.6	113.1	125.8	9	8.0
May	99.5	69.0	0.69	87.7	61.7	121.5	123.8	8	8.2
June	88.6	64.5	0.73	83.9	58.9	120.5	121.1	10	8.3
July	99.6	66.5	0.67	82.4	57.8	135.6	119.5	13	8.3
August	85.8	63.0	0.74	83.1	58.2	115.7	119.2	7	8.1
September	84.0	61.4	0.73	83.7	58.1	123.2	118.9	8	7.8
October	73.5	53.3	0.73	85.0	58.6	123.3	119.2	9	7.4
November	89.2	61.8	0.69	87.3	59.7	120.9	120.1	6	7.3
December	60.4	40.8	0.68			108.4		3	
2013									
January	99.8	62.9	0.63			127.1		4	
February	60.0	38.0	0.63			104.4		5	
March	81.0	57.9	0.71			111.2		9	
April	112.8	72.4	0.64			125.0		5	
May	125.5	78.7	0.63			131.3		10	

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 May 2013*

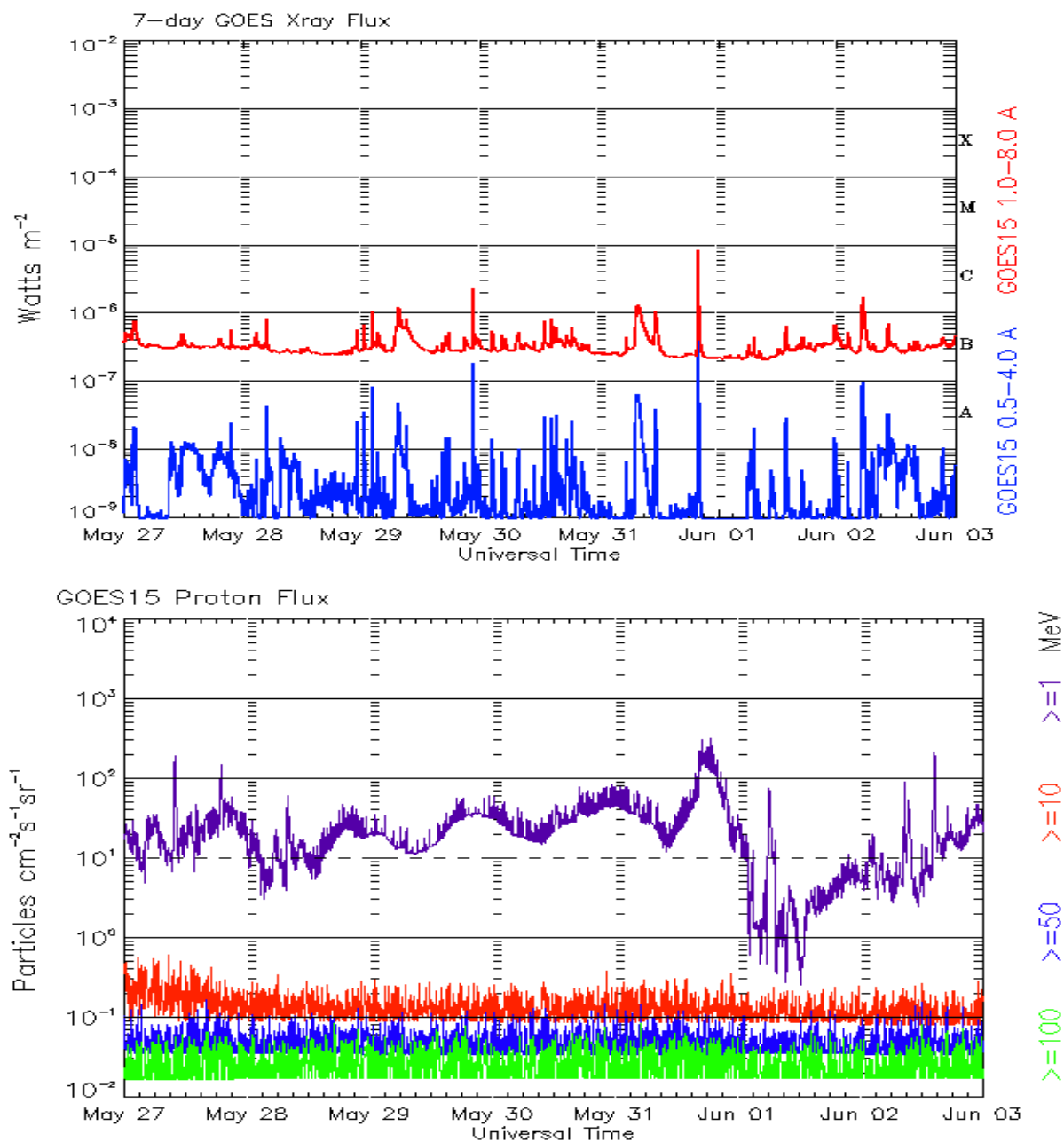
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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 May 2013*

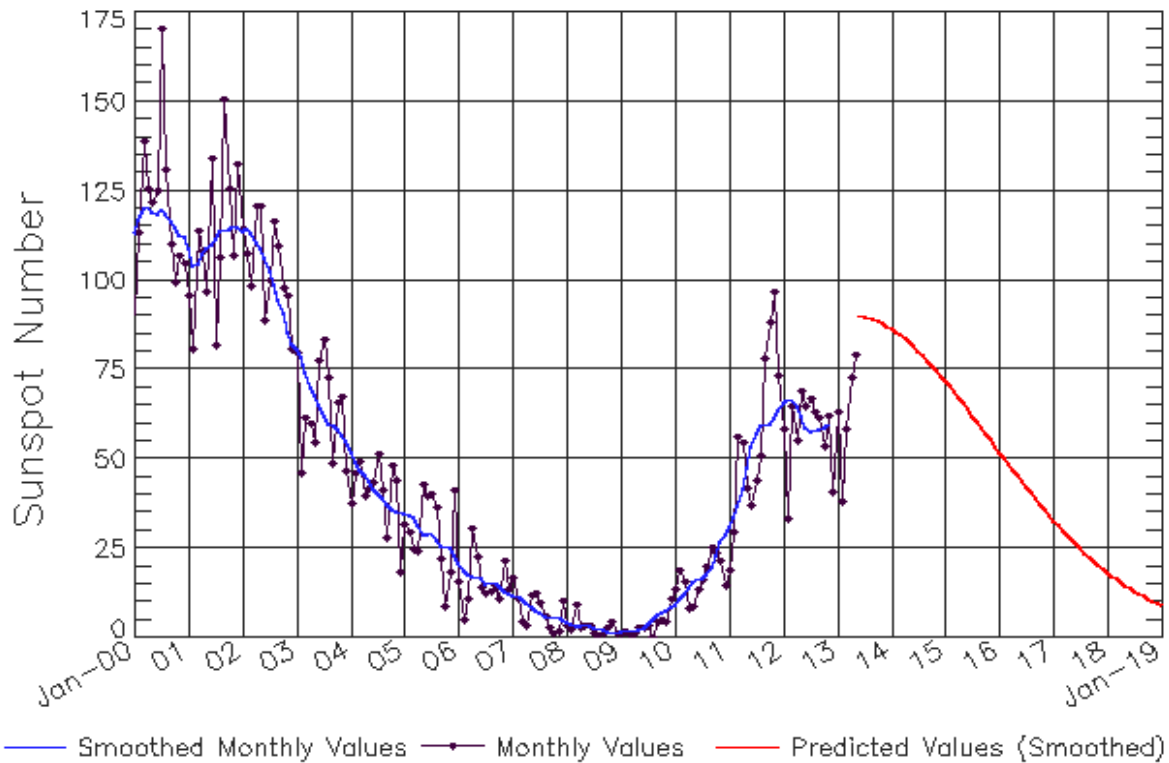
The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

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 May 2013



Updated 2013 Jun 3

NOAA/SWPC Boulder, CO USA

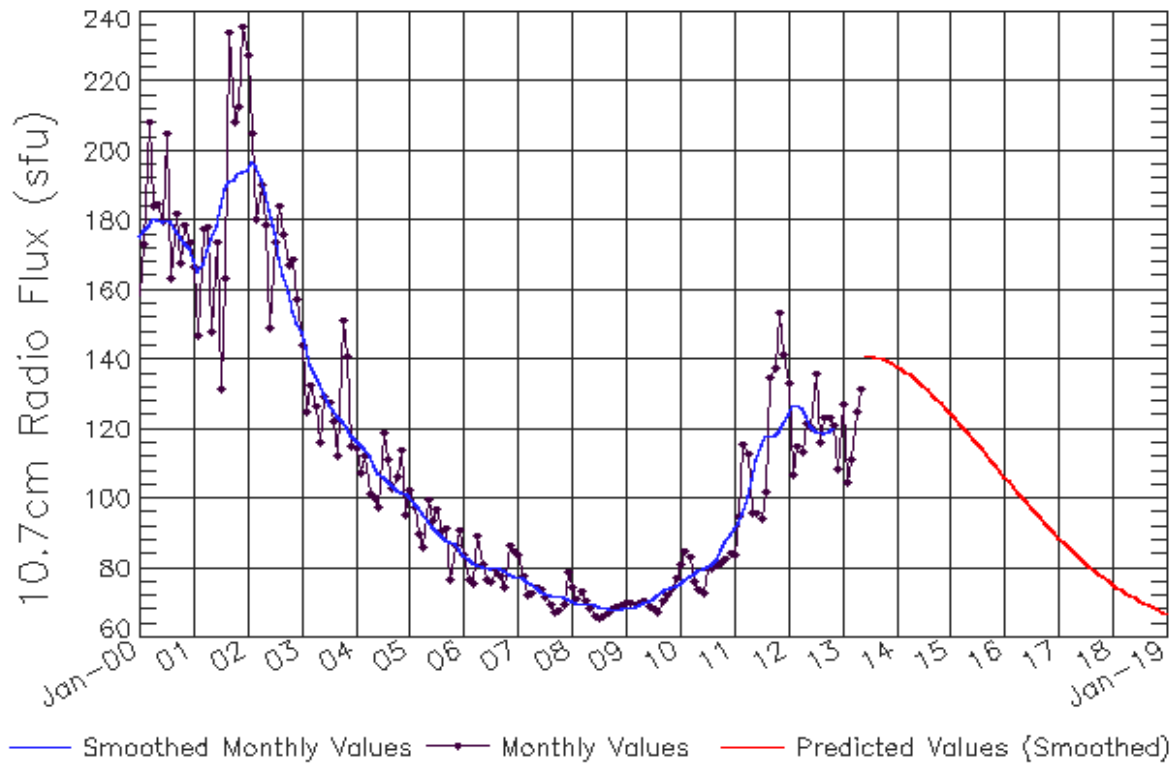
Smoothed Sunspot Number Prediction

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	9 (***)	11 (***)	12 (***)	14 (***)	16 (***)	16 (***)	17 (***)	17 (***)	20 (***)	23 (***)	27 (***)	29 (***)
2011	31 (***)	33 (***)	37 (***)	42 (***)	48 (***)	53 (***)	57 (***)	59 (***)	60 (***)	60 (***)	61 (***)	63 (***)
2012	66 (***)	67 (***)	67 (***)	65 (***)	62 (***)	59 (***)	58 (***)	58 (***)	58 (***)	59 (***)	60 (***)	61 (1)
2013	63 (2)	65 (3)	68 (5)	70 (5)	73 (6)	76 (7)	79 (7)	82 (8)	85 (9)	86 (9)	87 (10)	87 (10)
2014	86 (10)	86 (10)	85 (10)	84 (10)	83 (10)	81 (10)	80 (10)	79 (10)	78 (10)	76 (10)	75 (10)	73 (10)
2015	72 (10)	70 (10)	69 (10)	67 (10)	65 (10)	64 (10)	62 (10)	60 (10)	59 (10)	57 (10)	55 (10)	54 (10)
2016	52 (10)	50 (10)	49 (10)	47 (10)	45 (10)	44 (10)	42 (10)	40 (10)	39 (10)	37 (10)	36 (10)	34 (10)
2017	33 (10)	31 (10)	30 (10)	29 (10)	27 (10)	26 (10)	25 (10)	24 (10)	23 (10)	21 (10)	20 (10)	19 (10)
2018	18 (10)	17 (10)	16 (10)	15 (10)	15 (10)	14 (10)	13 (10)	12 (10)	12 (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 May 2013



Updated 2013 Jun 3

NOAA/SWPC Boulder, CO USA

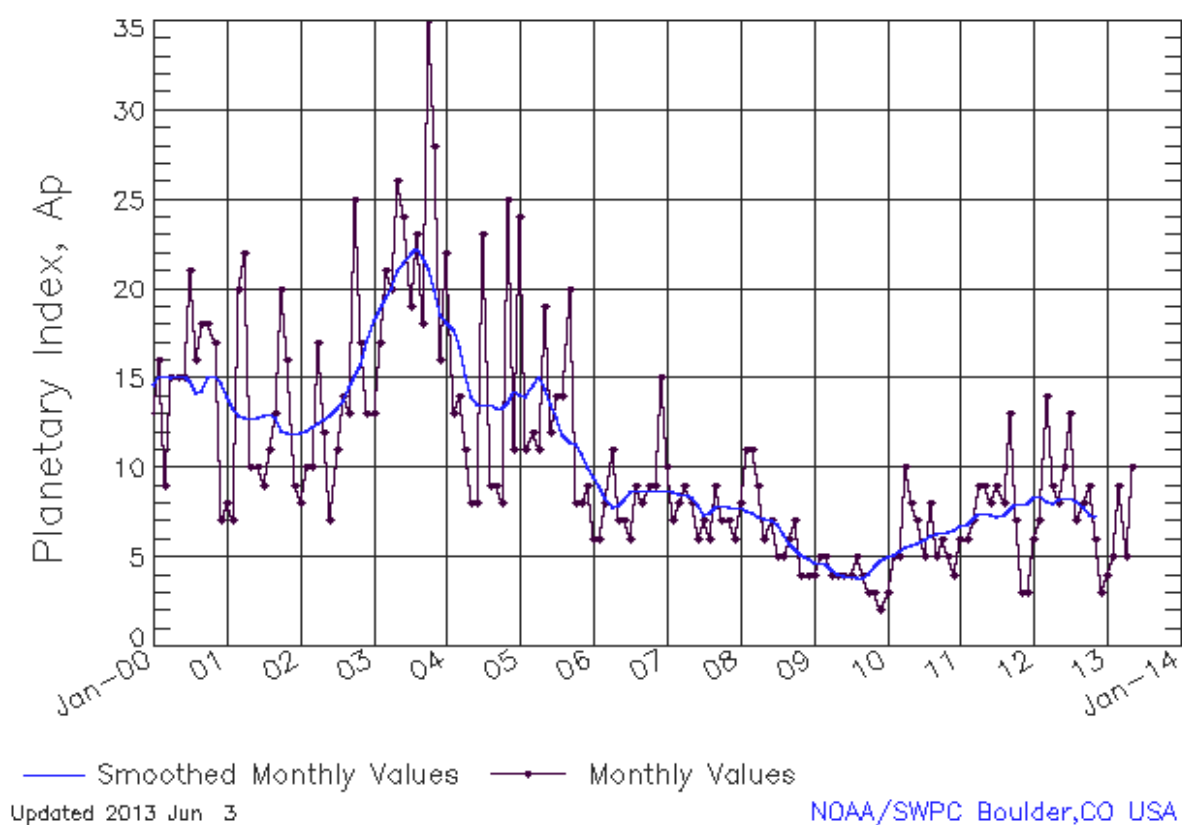
Smoothed F10.7cm Radio Flux Prediction

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 (***)	121 (1)
2013	123 (1)	124 (2)	126 (3)	127 (4)	128 (4)	130 (5)	132 (6)	134 (7)	136 (8)	138 (8)	139 (9)	139 (9)
2014	138 (9)	137 (9)	136 (9)	136 (9)	135 (9)	134 (9)	132 (9)	131 (9)	130 (9)	129 (9)	127 (9)	126 (9)
2015	125 (9)	123 (9)	122 (9)	120 (9)	119 (9)	117 (9)	116 (9)	114 (9)	113 (9)	111 (9)	110 (9)	108 (9)
2016	106 (9)	105 (9)	103 (9)	102 (9)	100 (9)	99 (9)	97 (9)	96 (9)	94 (9)	93 (9)	92 (9)	90 (9)
2017	89 (9)	88 (9)	86 (9)	85 (9)	84 (9)	83 (9)	82 (9)	80 (9)	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 May 2013



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.

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<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

