

Space Weather Highlights
30 May - 05 June 2011

SWPC PRF 1866
07 June 2011

Solar activity was at low levels during 30 May - 04 June with C-class flares from Regions 1226 (S21, L = 037, class/area Eki/360 on 29 May) and 1227 (S19, L = 022, class/area Dsi/190 on 31 May). A C3/2n flare at 02/0746 UTC from Region 1227 was associated with an Earth-directed partial-halo CME.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels from 30 May - 04 June and returned to normal levels on 05 June.

Geomagnetic field activity ranged from quiet to major storm levels during the period. Activity was at quiet to active levels during 30 May - 01 June as CH HSS effects persisted. A CME passage occurred on 01 June which caused a brief period of active levels. Activity decreased to quiet to unsettled levels on 02 June as CH HSS effects subsided. Quiet levels occurred during 03 - 04 June. A geomagnetic sudden impulse (SI) occurred at 04/2045 UTC (54 nT, Boulder USGS magnetometer) associated with the CME observed on 02 June and was followed by active to minor storm conditions on 05 June with major storm conditions observed at high latitudes.

Space Weather Outlook
08 June - 04 July 2011

Solar activity is expected to be at low levels throughout the period with a chance for an isolated M-class flare from Region 1226 until it departs the west limb on 10 June.

The greater than 10 MeV and 100 MeV proton flux at geosynchronous orbit are expected to be above alert threshold levels through 11 June due to a fast moving halo coronal mass ejection (CME) observed early on 07 June. A return to background levels is expected on 12 June and is expected to stay below threshold for the remainder of the period.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels from 08 - 15 June due to the effects from both the 02 June CME and the 07 June CME. Normal to moderate levels are expected to return until 27 June following a recurrent coronal hole high speed stream.

Geomagnetic field activity is expected to be at quiet to unsettled levels during 08 June as coronal hole high speed stream (CH HSS) effects begin to wane. Active to major storm conditions are expected on 09 June due to the effects of the halo CME observed on 07 June. Activity is expected to decrease to unsettled to active levels during 10 - 12 June due to residual effects of the CME and another CH HSS. Activity is expected to decrease to mostly quiet levels on 13 June as CH HSS effects subside. Quiet levels are expected during 14 - 22 June. Quiet to unsettled levels are expected from 23 - 26 June due to another recurrent CH HSS. A return to quiet conditions is expected on 27 June as the effects of the CH HSS subside.



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 May	112	105	1000	B4.5	4	0	0	7	0	0	0	0
31 May	112	132	800	B3.6	2	0	0	1	0	0	0	0
01 June	114	107	440	B3.1	4	0	0	3	1	0	0	0
02 June	112	118	650	B4.4	5	0	0	3	1	1	0	0
03 June	107	122	720	B2.7	2	0	0	2	0	0	0	0
04 June	103	116	390	B2.2	0	0	0	1	0	0	0	0
05 June	103	74	230	B2.1	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	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
	30 May	7.3e+05	1.2e+04	2.9e+03		6.8e+08
31 May	6.6e+05	1.4e+04	3.1e+03		2.3e+08	
01 June	5.8e+06	1.5e+04	3.2e+03		2.7e+08	
02 June	2.8e+06	1.4e+04	3.1e+03		3.9e+08	
03 June	5.8e+05	1.3e+04	3.0e+03		5.2e+08	
04 June	1.5e+06	1.6e+04	3.4e+03		6.0e+08	
05 June	1.3e+06	5.4e+04	3.5e+03		1.7e+06	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	30 May	7	2-2-2-2-2-1-2-2	20	2-2-1-6-5-2-1-1	9
31 May	10	3-2-2-2-2-2-3-3	23	3-3-4-5-5-3-2-2	13	3-3-3-3-2-2-3-3
01 June	9	2-1-4-2-2-2-2-2	14	2-2-4-3-4-3-1-2	12	3-1-3-1-2-3-3-3
02 June	6	2-2-2-2-2-1-1-1	17	2-3-3-5-4-3-2-1	8	2-2-3-2-2-1-2-2
03 June	3	1-1-1-1-1-1-1-1	3	2-1-1-1-0-1-0-1	4	2-1-1-0-1-1-1-2
04 June	11	0-1-1-0-0-1-4-5	6	1-1-0-0-0-0-3-4	15	0-1-1-0-0-1-5-6
05 June	20	5-4-4-3-3-2-3-2	24	5-4-3-4-3-5-2-1	27	6-4-4-4-3-3-2-2



Alerts and Warnings Issued

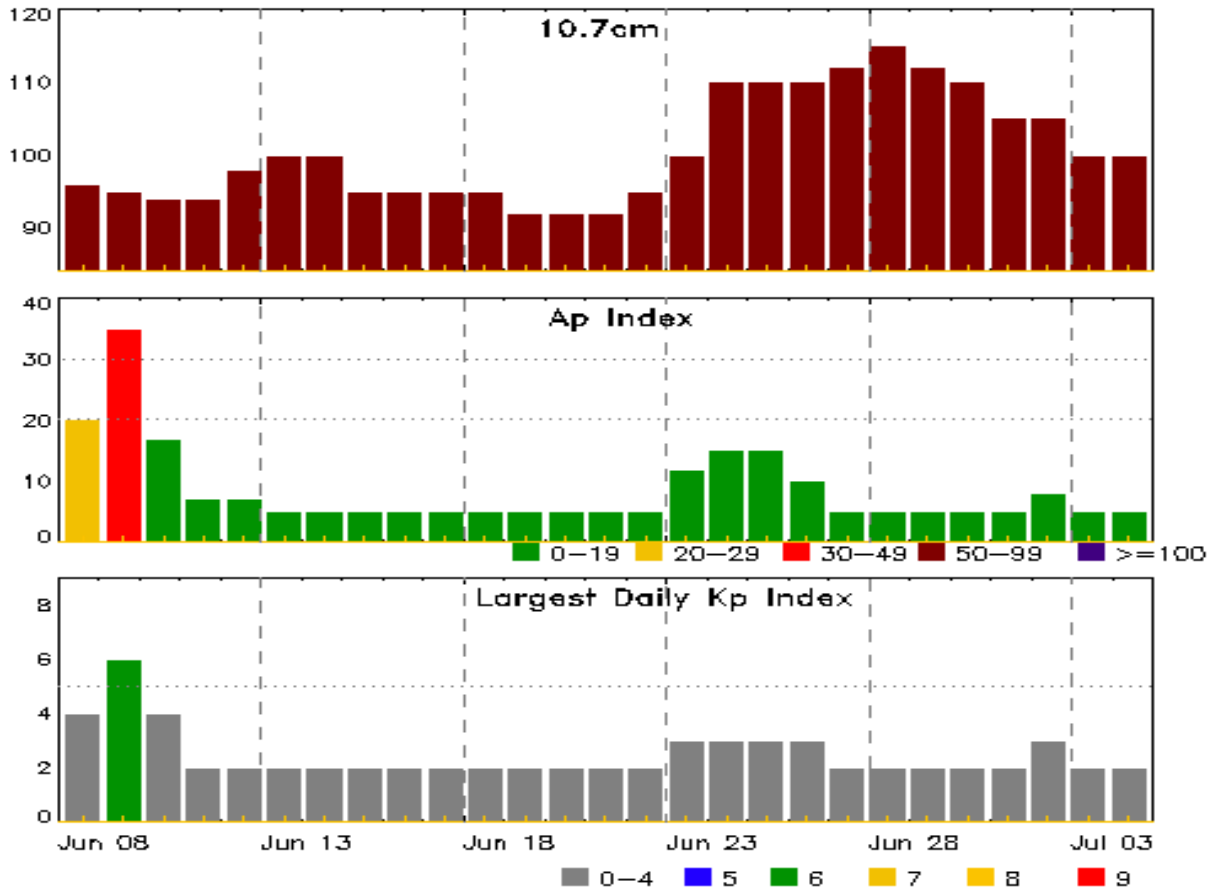
Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
30 May 0215	SUMMARY: 10cm Radio Burst	29/2108 - 2117
30 May 0324	ALERT: Type IV Radio Emission	29/2112
30 May 0343	ALERT: Type II Radio Emission	29/2108
30 May 0527	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	29/1240
30 May 1127	ALERT: Type II Radio Emission	30/1110
31 May 0748	WARNING: Geomagnetic K = 4	31/0747 - 1600
31 May 0810	ALERT: Geomagnetic K = 4	31/0809
31 May 1018	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	29/1240
31 May 1354	EXTENDED WARNING: Geomagnetic K = 4	31/0747 - 01/1600
01 Jun 0504	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	29/1240
01 Jun 0805	WARNING: Geomagnetic K = 5	01/0815 - 1200
01 Jun 0807	SUMMARY: Geomagnetic Sudden Impulse	01/0806
01 Jun 1902	CANCELLATION: Geomagnetic Sudden Impulse	
02 Jun 0510	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	29/1240
02 Jun 0731	WARNING: Geomagnetic K = 4	02/0745 - 1200
02 Jun 1526	ALERT: Type IV Radio Emission	02/0757
02 Jun 1955	WATCH: Geomagnetic A \geq 20	04/
03 Jun 0509	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	29/1240
04 Jun 0506	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	29/1240
04 Jun 1950	CANCELLATION: Geomagnetic A \geq 20	
04 Jun 1951	WATCH: Geomagnetic A \geq 20	05/
04 Jun 2008	WARNING: Geomagnetic Sudden Impulse expected	04/2050 - 2120
04 Jun 2052	WARNING: Geomagnetic K = 4	04/2055 - 05/1500
04 Jun 2055	ALERT: Geomagnetic K = 4	04/2053



04 Jun 2058	WARNING: Geomagnetic K = 5	04/2100 - 05/0900
04 Jun 2112	SUMMARY: Geomagnetic Sudden Impulse	04/2045
04 Jun 2322	ALERT: Geomagnetic K = 5	04/2318
04 Jun 2331	WARNING: Geomagnetic K = 6	04/2330 - 05/0900
05 Jun 0122	ALERT: Geomagnetic K = 6	05/0120
05 Jun 0821	EXTENDED WARNING: Geomagnetic K = 5	04/2100 - 05/1500
05 Jun 1453	EXTENDED WARNING: Geomagnetic K = 4	04/2055 - 05/2359



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
08 Jun	96	20	4	22 Jun	95	5	2
09	95	35	6	23	100	12	3
10	94	17	4	24	110	15	3
11	94	7	2	25	110	15	3
12	98	7	2	26	110	10	3
13	100	5	2	27	112	5	2
14	100	5	2	28	115	5	2
15	95	5	2	29	112	5	2
16	95	5	2	30	110	5	2
17	95	5	2	01 Jul	105	5	2
18	95	5	2	02	105	8	3
19	92	5	2	03	100	5	2
20	92	5	2	04	100	5	2
21	92	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

No Events Observed

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical Location Lat CMD	Rgn #
	Begin	Max	End				
30 May	0247	0252	0255	C3.2			1224
30 May	0537	0538	0542		SF	S23E52	1226
30 May	0546	0549	0551	C3.5	SF	S21E53	1226
30 May	0559	0602	0611	C7.0	SN	S23E51	1226
30 May	0658	0701	0704		SF	N15E48	1229
30 May	1048	1101	1122	C2.8	SN	S18E60	1227
30 May	1151	1151	1154		SF	S23E48	1226
30 May	1518	1527	1532		SF	N15W75	1222
30 May	2003	2007	2009	B6.7			
31 May	0434	0443	0449	C1.8	SF	S21E56	1227
31 May	0529	0553	0620	C1.7			1226
31 May	1708	1712	1714	B6.9			1226
01 Jun	0237	0253	0306	C2.6	SF	S18E37	1227
01 Jun	0501	0505	0509	B7.3			1229
01 Jun	1609	1616	1621	C1.6	SF	S19E19	1226
01 Jun	1625	1631	1639	C2.9	SF	S19E19	1226
01 Jun	1651	1708	1734	C4.1	1F	S20E20	1226
02 Jun	0239	0244	0249	C1.2			1226
02 Jun	0630	0636	0652	C1.4	SF	S19E20	1227
02 Jun	0722	0746	0757	C3.7	2N	S19E25	1227
02 Jun	B0750	U0759	A0806		SF	S22E12	1226
02 Jun	0842	0846	0850		SF	S22E13	1226
02 Jun	B0854	U0929	A1024	C2.7	1F	S25E14	1226
02 Jun	1022	1028	1033	C1.8			1232
03 Jun	0958	1002	1006	B5.6			1232
03 Jun	1345	1348	1350	B4.0	SF	S23W06	1226
03 Jun	1558	1617	1630	C2.5	SF	S22W05	1226
03 Jun	1849	1853	1859	B4.3			1226
03 Jun	2219	2242	2258	C1.6			1226
04 Jun	1545	1553	1606	B6.2	SF	S22W19	1226
04 Jun	1632	1647	1700	B7.8			1228
05 Jun	0211	0214	0217	B3.5			1226



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 1219																
21 May	N15E71		125	0	1	Axx	1	A								
22 May	N15E57		126	plage												
23 May	N15E43		127	plage												
24 May	N15E29		127	plage												
25 May	N15E15		128	plage												
26 May	N15E01		129	plage												
27 May	N15W13		130	plage												
28 May	N15W27		130	plage												
29 May	N15W41		131	plage												
30 May	N15W55		132	plage												
31 May	N15W69		133	plage												
01 Jun	N15W83		133	plage												
									0	0	0	0	0	0	0	0

Crossed West Limb.
 Absolute heliographic longitude: 129

Region 1222																
25 May	N15W24		166	10	3	Bxo	2	B								
26 May	N16W37		166	10	2	Axx	3	A								
27 May	N16W51		168	plage												
28 May	N16W66		169	0	1	Axx	1	A								
29 May	N16W80		170	0	1	Axx	2	A					5			
30 May	N16W83		160	150	4	Dso	3	B					1			
31 May	N17W98		160	30	1	Axx	1	A								
									0	0	0	6	0	0	0	0

Crossed West Limb.
 Absolute heliographic longitude: 166



Region Summary - continued

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

Region 1223

26 May	S15E14	114	50	5	Cso	6	B					1					
27 May	S16W00	115	50	6	Dso	6	B										
28 May	S16W12	115	20	6	Bxo	5	B										
29 May	S17W22	112	plage														
30 May	S17W36	113	plage														
31 May	S17W50	114	plage														
01 Jun	S17W64	114	plage														
02 Jun	S17W78	115	plage														
									2	0	0	3	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 115

Region 1224

27 May	N21W15	131	30	5	Dso	6	B										
28 May	N20W28	131	130	7	Dso	14	B										
29 May	N20W41	131	130	8	Cai	10	BD	1									
30 May	N20W56	132	140	9	Dso	9	BG	1									
31 May	N21W68	133	50	7	Csi	8	B										
01 Jun	N21W82	132	plage														
									2	0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 131

Region 1225

27 May	N18E55	60	20	1	Hsx	1	A										
28 May	N17E43	60	60	2	Hsx	1	A										
29 May	N17E30	60	40	2	Hsx	1	A										
30 May	N17E18	59	40	2	Hsx	1	A										
31 May	N16E04	60	30	2	Hsx	1	A										
01 Jun	N16W09	59	20	1	Hsx	1	A										
02 Jun	N16W21	58	10	1	Axx	1	A										
03 Jun	N17W35	58	10	1	Axx	1	A										
04 Jun	N17W49	59	10	1	Hsx	1	A										
05 Jun	N17W63	61	plage														
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 60



Region Summary - continued

Date	Location		Sunspot Characteristics					Flares															
	Lat CMD	Lon	Helio 10 ⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
Region 1226																							
27 May	S18E74		42	20	1	Hsx	1	A	5			1											
28 May	S19E65		38	270	11	Eai	9	BD	13	1		10											
29 May	S21E54		36	360	11	Eki	12	BD	4	1		6	1										
30 May	S21E42		35	360	10	Dki	11	BG	2			4											
31 May	S22E27		37	330	9	Dkc	18	B	1														
01 Jun	S22E14		36	150	9	Csi	15	B	3			2	1										
02 Jun	S22W00		37	210	6	Dsi	13	B	2			2	1										
03 Jun	S22W14		37	340	7	Dkc	21	B	2			2											
04 Jun	S21W26		36	140	8	Dsi	17	B				1											
05 Jun	S21W38		35	100	9	Dao	10	B															
									32	2	0	28	3	0	0	0	0						

Still on Disk.

Absolute heliographic longitude: 37

Region 1227

29 May	S19E69		21	80	3	Cso	3	B	1			3									
30 May	S18E54		23	170	8	Dsi	6	BG	1			1									
31 May	S18E40		24	190	8	Dsi	7	BG	1			1									
01 Jun	S19E26		23	100	8	Dso	7	BG				1									
02 Jun	S19E13		23	80	9	Dso	4	B	2			1		1							
03 Jun	S19W00		22	120	10	Cso	4	B													
04 Jun	S19W14		24	60	10	Cso	7	B													
05 Jun	S22W26		22	30	10	Dso	5	B													
									5	0	0	7	0	1	0	0	0				

Still on Disk.

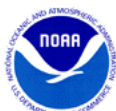
Absolute heliographic longitude: 22

Region 1228

29 May	N17E67		23	120	4	Hsx	1	A				1									
30 May	N17E55		22	110	2	Hsx	1	A													
31 May	N17E50		14	100	8	Cso	8	B													
01 Jun	N17E31		18	90	8	Cso	6	B	1												
02 Jun	N17E20		17	130	8	Cso	8	B													
03 Jun	N18E05		18	150	8	Dao	10	B													
04 Jun	N17W08		18	100	8	Dao	6	B													
05 Jun	N18W21		18	60	8	Dso	5	B													
									1	0	0	1	0	0	0	0	0				

Still on Disk.

Absolute heliographic longitude: 18



Region Summary - continued

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Lon	Helio 10 ⁻⁶ hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical					
									C	M	X	S	1	2	3	4	
Region 1229																	
30 May	N16E38		39	30	4	Cao	4	B				1					
31 May	N16E24		40	40	6	Cso	6	B									
01 Jun	N16E10		41	30	5	Bxo	5	B									
02 Jun	N15W04		41	30	6	Bxo	4	B									
03 Jun	N17W20		43	10	1	Axx	1	A									
04 Jun	N18W35		45	10	1	Axx	1	A									
05 Jun	N18W49		47	plage													
									0	0	0	1	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 41

Region 1230																	
31 May	N19E58		6	30	2	Bxo	3	B									
01 Jun	N19E44		6	10	2	Bxo	2	B									
02 Jun	N18E31		6	20	4	Bxo	3	B									
03 Jun	N19E15		8	10	2	Axx	2	A									
04 Jun	N20E06		4	0		Axx	1	A									
05 Jun	N20W08		6	plage													
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 4

Region 1231																	
01 Jun	N09E68		341	40	7	Hsx	1	A									
02 Jun	N08E50		343	90	9	Cro	4	B									
03 Jun	N10E33		349	10	3	Bxo	2	B									
04 Jun	N09E20		350	0		Axx	1	A									
05 Jun	N09E06		352	plage													
									0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 352



Region Summary - continued

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

Region 1232

02 Jun	N10E61	336	80	2	Hsx	1	A	1									
03 Jun	N10E46	336	70	2	Hsx	1	A										
04 Jun	N09E33	337	70	2	Hsx	2	A										
05 Jun	N09E20	337	40	2	Hsx	3	A										
								1	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 337

Region 1233

05 Jun	S18W29	26	0	1	Axx	1	A										
								0	0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 26

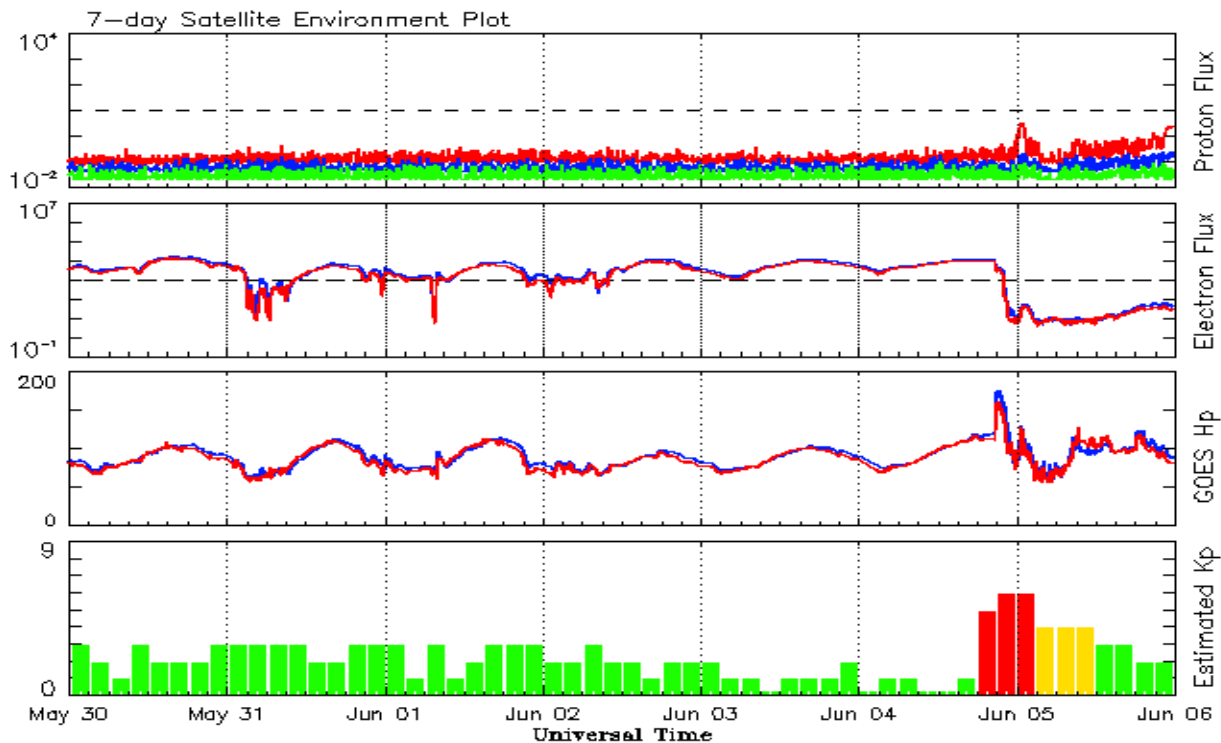


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2009									
June	6.6	2.9	0.39	4.4	2.7	68.6	70.2	4	4.0
July	5.0	3.2	0.70	5.8	3.6	68.2	71.0	4	3.9
August	0.3	0.0	0.00	7.7	4.8	67.4	72.1	5	3.8
September	6.6	4.3	0.64	9.9	6.2	70.5	73.3	4	3.8
October	7.0	4.8	0.66	11.3	7.1	72.3	74.1	3	4.1
November	7.7	4.1	0.55	12.4	7.6	73.6	74.5	3	4.5
December	15.7	10.8	0.68	13.6	8.3	76.8	74.9	2	4.8
2010									
January	21.3	13.2	0.62	14.8	9.3	81.1	75.5	3	5.0
February	31.0	18.8	0.60	16.7	10.6	84.7	76.5	5	5.1
March	24.7	15.4	0.62	19.1	12.3	83.3	77.5	5	5.3
April	11.2	8.0	0.71	21.4	14.0	75.9	78.3	10	5.5
May	19.9	8.7	0.44	23.8	15.5	73.8	79.0	8	5.7
June	17.9	13.6	0.75	25.2	16.4	72.6	79.7	7	5.8
July	23.1	16.1	0.70	25.9	16.7	79.9	80.1	5	6.0
August	28.2	19.6	0.70	27.3	17.4	79.7	80.7	8	6.2
September	35.6	25.2	0.71	30.6	19.6	81.1	82.4	5	6.3
October	35.0	23.5	0.67	35.9	23.2	81.6	85.3	6	6.4
November	36.1	21.5	0.60	40.5	26.5	82.5	87.7	5	6.4
December	22.0	14.4	0.66			84.3		4	
2011									
January	32.1	19.0	0.59			83.7		6	
February	53.2	29.4	0.55			94.5		6	
March	81.0	56.2	0.69			115.3		7	
April	81.7	54.4	0.67			112.6		9	
May	61.4	41.6	0.68			95.9		9	

Note: Values are final except for the most recent 6 months which are considered preliminary. Cycle 23 started in May 1996 with an RI=8.0. Cycle 23 maximum was April 2000 with an RI=120.8. Solar minimum for Cycle 23 was December 2008.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 30 May 2011*

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.

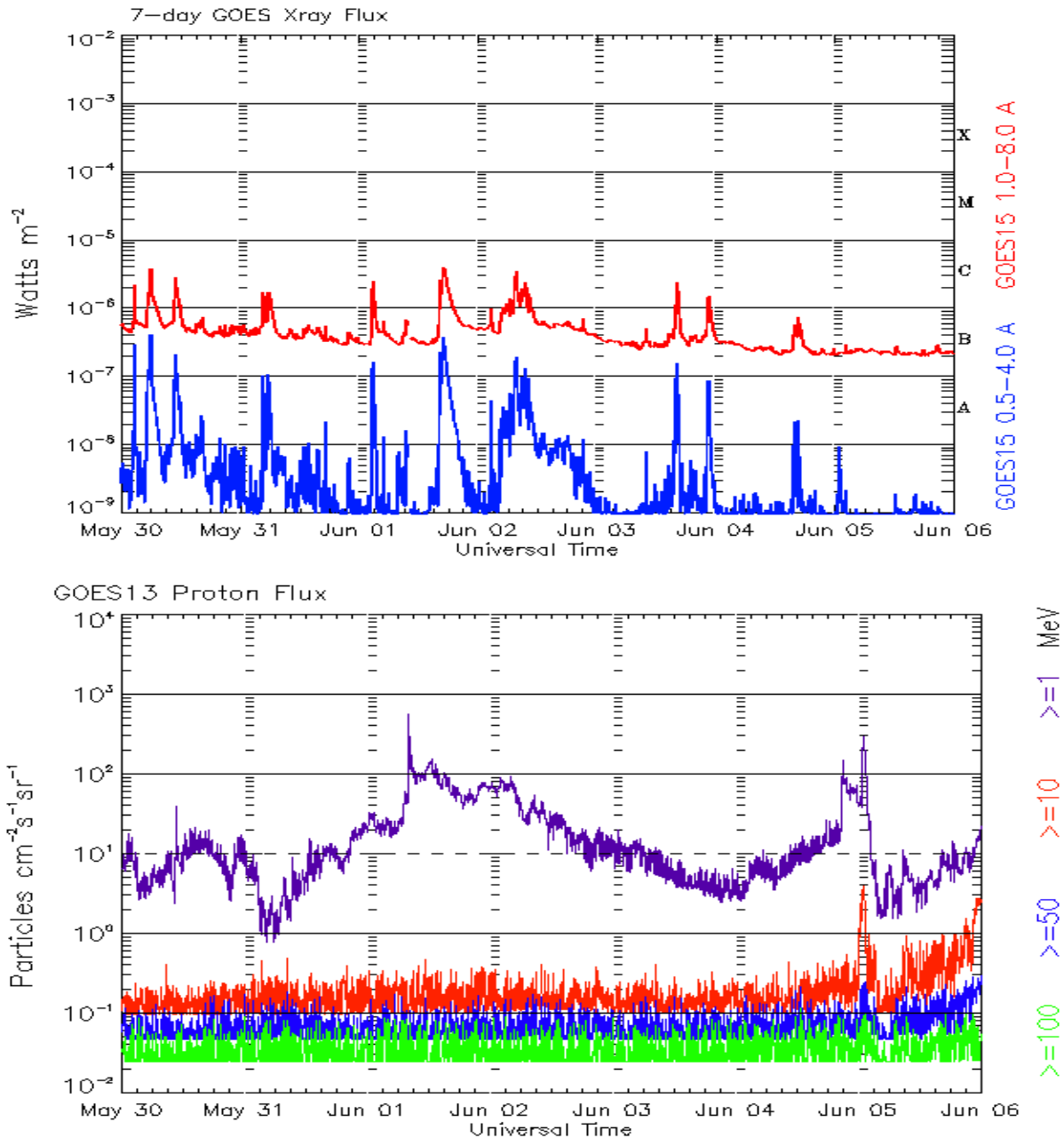
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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.

Kp plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Hartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC), British Geological Survey (BGS) and the US Geological Survey. These may differ from the final Kp values derived from a more extensive network of magnetometers.

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 May 2011*

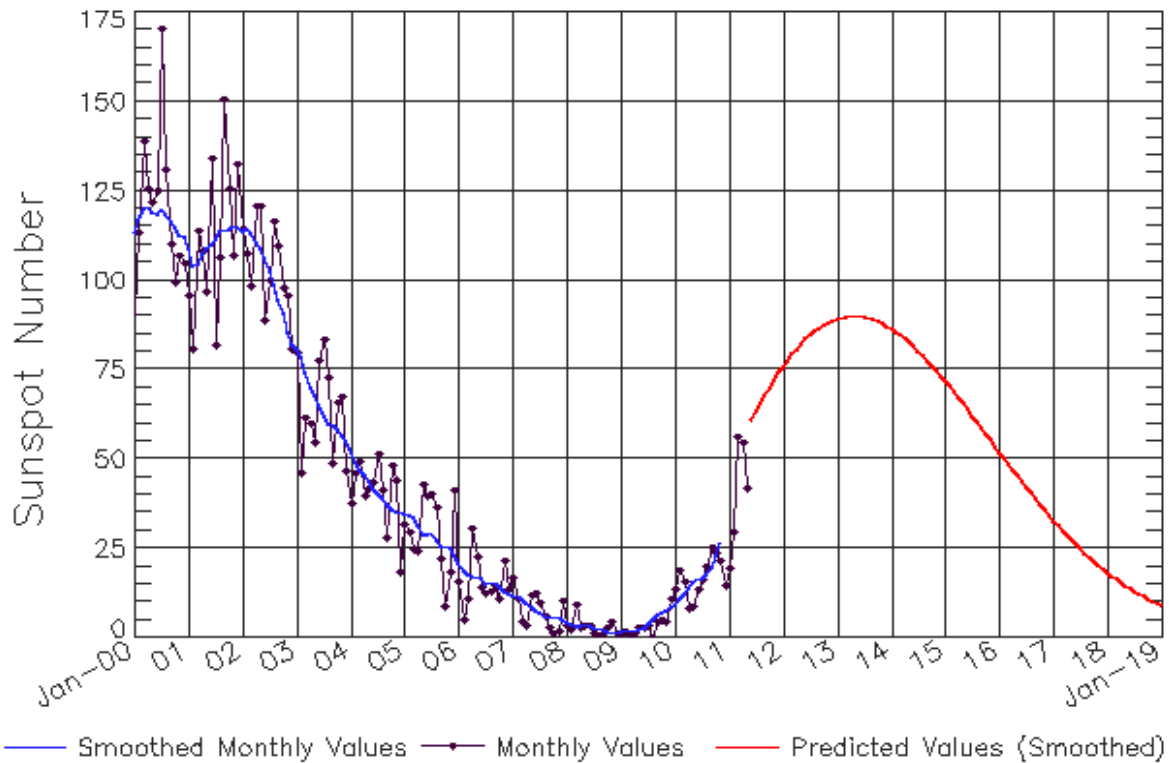
The x-ray plots contains five-minute averages x-ray flux (Watt/m²) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

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 May 2011



Updated 2011 Jun 7

NOAA/SWPC Boulder, CO USA

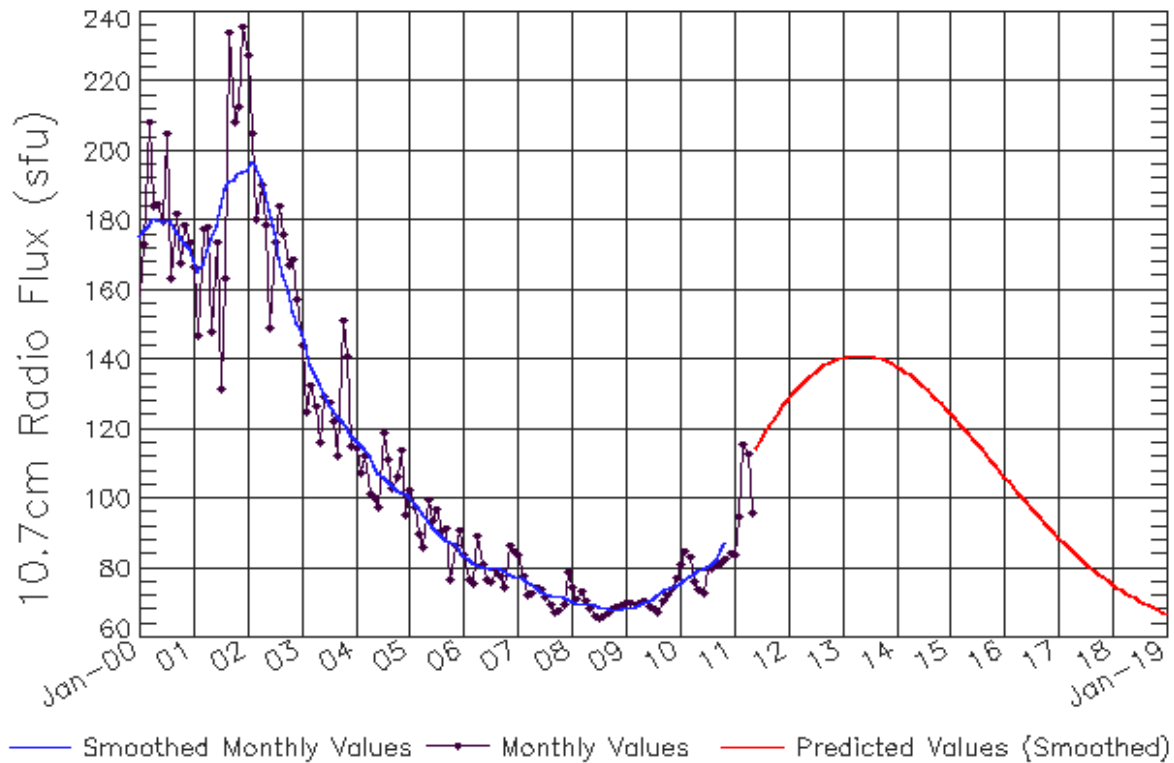
Smoothed Sunspot Number Prediction

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 (***)	30 (1)
2011	34 (2)	38 (3)	41 (5)	45 (5)	49 (6)	54 (7)	59 (7)	63 (8)	66 (9)	68 (9)	71 (10)	74 (10)
2012	76 (10)	78 (10)	79 (10)	81 (10)	82 (10)	84 (10)	85 (10)	86 (10)	87 (10)	88 (10)	88 (10)	89 (10)
2013	89 (10)	90 (10)	90 (10)	90 (10)	90 (10)	90 (10)	90 (10)	89 (10)	89 (10)	89 (10)	88 (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 2011



Updated 2011 Jun 7

NOAA/SWPC Boulder, CO USA

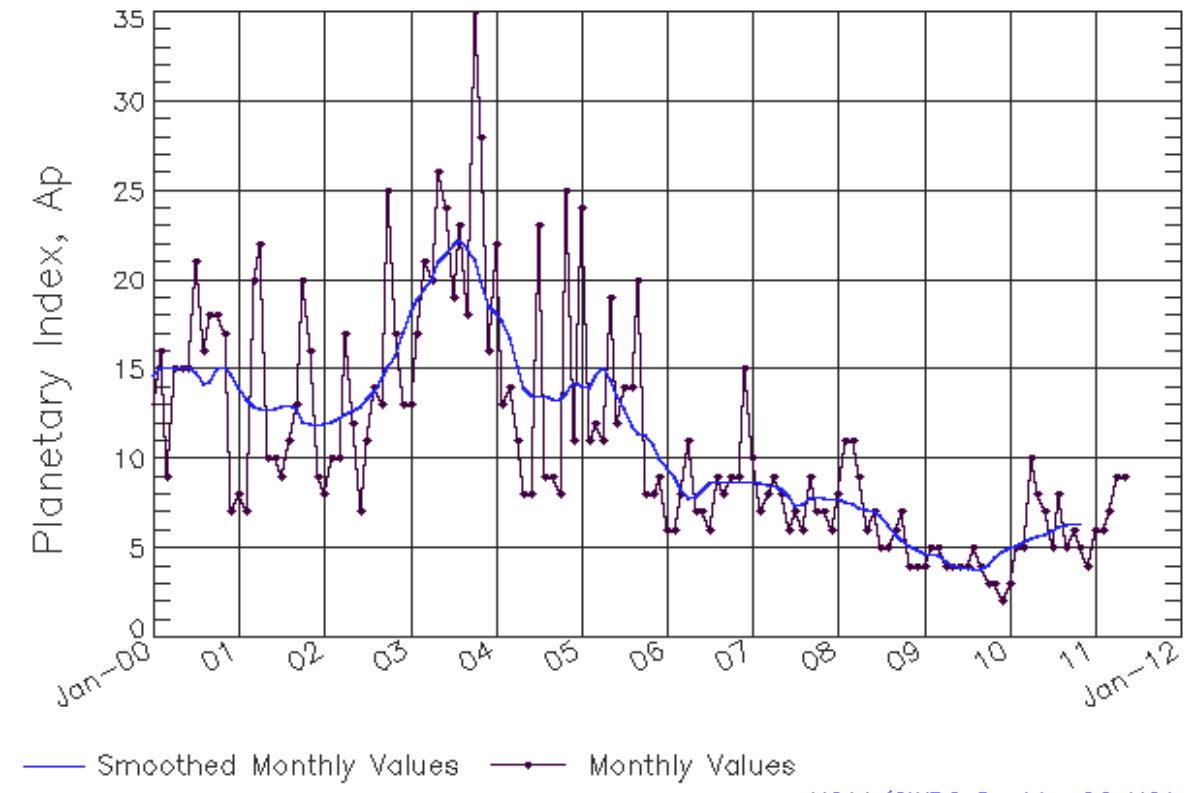
Smoothed F10.7cm Radio Flux Prediction

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 (1)
2011	94 (1)	97 (2)	100 (3)	104 (4)	107 (4)	111 (5)	114 (6)	118 (7)	120 (8)	121 (8)	124 (9)	127 (9)
2012	128 (9)	130 (9)	132 (9)	133 (9)	134 (9)	135 (9)	136 (9)	137 (9)	138 (9)	139 (9)	140 (9)	140 (9)
2013	141 (9)	141 (9)	141 (9)	141 (9)	141 (9)	141 (9)	141 (9)	141 (9)	140 (9)	140 (9)	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 2011



Updated 2011 Jun 7

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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/> -- 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

