

Solar activity reached moderate levels this period due to an M1/1n flare on 07 Dec at 0729 UTC from Region 1909 (S18, L=205 class/area Dkc/350 on 01 Dec), which was the largest event of the period. A Tenflare (220 sfu) and a Type-II radio sweep (691 km/s) accompanied this event. A subsequent coronal mass ejection (CME) was observed in SOHO/LASCO C2 coronagraph imagery beginning on 07 Dec at 0748 UTC. The bulk of the ejecta associated with this CME appeared to be directed to the west of Earth, but forecaster analysis and WSA-ENLIL model output indicate that Earth will likely see a flanking portion of this CME midday on 10 Dec (See space weather outlook for expected impacts). While Region 1909 was the most productive region of the period, contributing several mid-level C-class flares in addition to the M-class flare, Regions 1913 (S14, L=268 class/area Dao/130 on 04 Dec) and 1916 (S13, L=169 class/area Eai/240 on 08 Dec) also contributed many low-level C-class flares throughout the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at predominately normal levels with moderate levels observed briefly on 06 Dec from 1020 - 1915 UTC and on 07 Dec from 1555 - 2000 UTC, reaching a maximum flux value of 159 pfu on 06 Dec at 1215 UTC.

Geomagnetic field activity was at quiet levels on 02 Dec and 04 - 06 Dec. Unsettled conditions were observed on 03 Dec due to a prolonged period of southward Bz and on 07 Dec with initial onset of a strong positive polarity coronal hole high speed stream (CH HSS). An isolated period of G2 (Moderate) geomagnetic storm conditions was observed on 08 Dec at 0000 - 0300 UTC due to a strong co-rotating interaction region (CIR) followed by the CH HSS. An isolated period of G1 (Minor) geomagnetic storm conditions followed for the 0300 - 0600 UTC synoptic period. CH HSS influence began to subside midday on 08 Dec and active to quiet conditions were observed for the remained of the day.

Space Weather Outlook **09 December - 04 January 2014**

Solar activity is expected to be low with a chance for M-class flare activity (NOAA Scale R1-R2 / Minor-Moderate radio blackouts) 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 with a chance for high levels on 10 - 11 Dec due to coronal hole high speed stream (CH HSS) effects.

Geomagnetic field activity is expected to be at unsettled to active levels on 09 - 10 Dec with quiet to unsettled levels on 11 Dec due to combined positive polarity CH HSS effects and the arrival of the 07 Dec CME midday on 10 Dec. Predominately quiet conditions are expected for



12 - 25 Dec. An increase to unsettled to active levels is expected for 26 - 27 Dec with quiet to unsettled levels on 28 Dec due to a positive polarity CH HSS. Quiet conditions are expected for 29 Dec - 02 Jan. An increase to unsettled to active levels is expected for 03 Jan with active to G1 (Minor) geomagnetic storm conditions for 04 Jan with the return of a strong positive polarity 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
02 December	134	124	640	B4.6	2	0	0	0	0	0	0	0
03 December	136	97	570	B4.9	2	0	0	0	0	0	0	0
04 December	138	98	620	B6.2	4	0	0	1	0	0	0	0
05 December	150	103	510	C1.0	4	0	0	5	0	0	0	0
06 December	151	105	550	C1.0	5	0	0	4	0	0	0	0
07 December	157	104	510	B9.5	3	1	0	2	1	0	0	0
08 December	166	83	680	B8.4	2	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
02 December	1.4e+05	1.1e+04	2.3e+03		9.8e+05	
03 December	2.0e+05	1.1e+04	2.5e+03		1.2e+06	
04 December	1.4e+05	1.1e+04	2.6e+03		2.0e+06	
05 December	9.4e+04	1.1e+04	2.5e+03		3.6e+06	
06 December	1.4e+05	1.0e+04	2.5e+03		7.7e+06	
07 December	2.2e+05	1.0e+04	2.5e+03		4.9e+06	
08 December	4.6e+05	1.1e+04	2.2e+03		7.6e+05	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
02 December	1	0-0-0-0-0-1-1-0	0	0-0-0-0-0-0-0-0	2	0-0-0-0-0-0-0-0
03 December	6	1-1-1-3-2-1-2-1	15	0-0-0-5-5-3-2-1	7	1-1-1-3-3-2-2-2
04 December	3	1-1-1-1-1-1-1-1	2	1-0-1-0-1-0-1-2	4	2-2-1-0-0-1-1-1
05 December	4	0-2-1-2-1-2-1-0	9	0-0-2-5-3-0-0-0	5	1-1-1-2-2-1-1-1
06 December	3	1-1-1-0-1-1-1-1	0	0-0-0-0-0-0-0-0	4	1-1-1-1-0-0-1-1
07 December	4	1-1-2-0-1-1-1-2	3	0-1-2-1-1-0-0-2	6	2-1-2-1-1-1-2-3
08 December	14	4-4-3-2-2-3-2-1	23	4-4-4-3-3-5-3-2	26	6-5-4-2-2-4-3-2

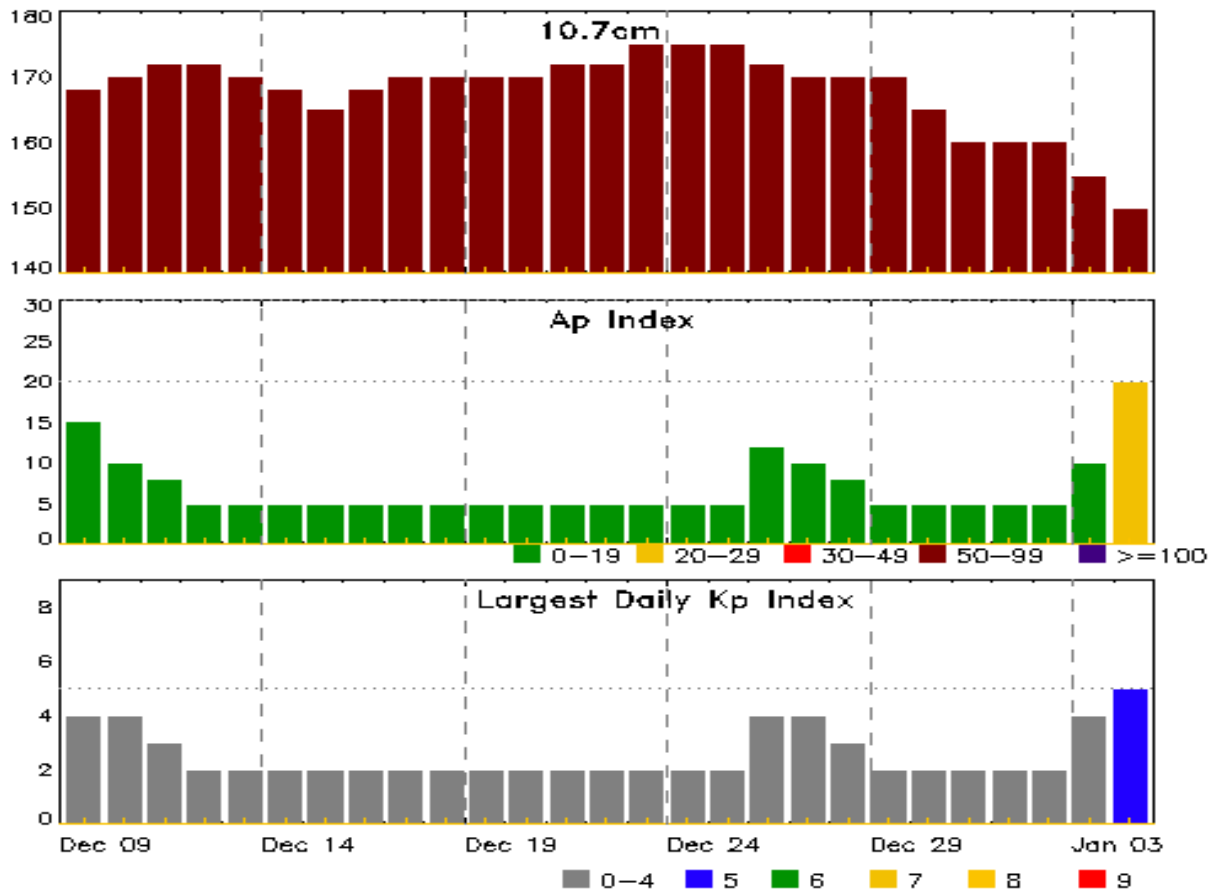


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
07 Dec 0743	SUMMARY: 10cm Radio Burst	07/0721 - 0725
07 Dec 0812	ALERT: Type II Radio Emission	07/0723
08 Dec 0045	WARNING: Geomagnetic K = 4	08/0050 - 1300
08 Dec 0129	ALERT: Geomagnetic K = 4	08/0121
08 Dec 0153	WARNING: Geomagnetic K = 5	08/0200 - 1000
08 Dec 0201	ALERT: Geomagnetic K = 5	08/0158
08 Dec 0202	WARNING: Geomagnetic K = 6	08/0202 - 0700
08 Dec 0224	ALERT: Geomagnetic K = 6	08/0217
08 Dec 0934	EXTENDED WARNING: Geomagnetic K = 5	08/0200 - 1500
08 Dec 0934	EXTENDED WARNING: Geomagnetic K = 4	08/0050 - 2000
08 Dec 1649	EXTENDED WARNING: Geomagnetic K = 4	08/0050 - 09/1300



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
09 Dec	168	15	4	23 Dec	175	5	2
10	170	10	4	24	175	5	2
11	172	8	3	25	175	5	2
12	172	5	2	26	172	12	4
13	170	5	2	27	170	10	4
14	168	5	2	28	170	8	3
15	165	5	2	29	170	5	2
16	168	5	2	30	165	5	2
17	170	5	2	31	160	5	2
18	170	5	2	01 Jan	160	5	2
19	170	5	2	02	160	5	2
20	170	5	2	03	155	10	4
21	172	5	2	04	150	20	5
22	172	5	2				

Energetic Events

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Half	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
			Max						245	2695	II	IV
07 Dec	0717	0729	0749	M1.2	0.017	1N	S16W49	1909	440	220	1	

Flare List

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
02 Dec	0132	0147	0203	B9.7			1913
02 Dec	0952	1020	1034	C1.1			1913
02 Dec	1209	1212	1216	B9.9			1913
02 Dec	1434	1444	1509	C2.5			1913
03 Dec	0554	0615	0650	B9.4			1909
03 Dec	1308	1312	1314	B9.2			
03 Dec	1430	1455	1559	C1.1			
03 Dec	2213	2224	2241	C1.2			1913
04 Dec	0020	0056	0110	C6.8			
04 Dec	0438	0458	0522	C4.7	SF	S12W74	1913
04 Dec	2014	2037	2052	C6.2			
04 Dec	2218	2222	2232	C1.1			
05 Dec	0020	0025	0026		SF	S14W83	1913
05 Dec	0119	0120	0123		SF	S14W83	1913
05 Dec	0133	0134	0145		SF	S14W83	1913
05 Dec	0638	0643	0647	C1.9	SF	S12E12	1916
05 Dec	1121	1127	1134	C4.9			
05 Dec	1455	1459	1511	C5.8			
05 Dec	1735	1743	1750	C6.7			1909
05 Dec	1753	1754	1822		SF	S17W31	1909
06 Dec	0007	U0008	A0021		SF	S14E02	1916
06 Dec	0643	0648	0652	C2.7	SF	S17W34	1909
06 Dec	0733	0737	0742	C2.1			
06 Dec	0939	0943	0946	C2.2			
06 Dec	0949	0953	0956		SF	S19W35	1909
06 Dec	1002	1005	1014		SF	S12W02	1916
06 Dec	1736	1740	1746	C1.7			1917
06 Dec	2306	2353	0009	C4.3			1917
07 Dec	0108	0108	0111		SF	S16W46	1916
07 Dec	0430	0436	0442	C3.3	SF	S15W12	1916



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
07 Dec	0522	0526	0530	C1.7			1916
07 Dec	0717	0729	0749	M1.2	1N	S16W49	1909
07 Dec	1734	1741	1752	C2.1			1917
08 Dec	0722	0723	0724		SF	S15W26	1916
08 Dec	1001	1009	1019	C2.2	SF	S10E35	
08 Dec	1221	1221	1230		SF	S23E05	1912
08 Dec	1806	1810	1813	C1.3			1917

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 1905															
21 Nov	N19E0*	258	plage					1							
22 Nov	N19E85	258	plage					5							
23 Nov	N19E71	258	60	9	Dso	3	BG	3							
24 Nov	N18E57	260	80	9	Dao	11	BG								
25 Nov	N18E45	259	50	6	Cso	7	B								
26 Nov	N19E32	259	10	6	Bxo	4	B								
27 Nov	N18E21	256	10	2	Bxo	5	B								
28 Nov	N18E07	257	plage												
29 Nov	N18W07	258	plage												
30 Nov	N18W21	259	plage												
01 Dec	N18W35	260	plage												
02 Dec	N18W49	261	plage												
03 Dec	N18W63	261	plage												
04 Dec	N18W77	262	plage												
								9	0	0	0	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 257

Region 1906															
25 Nov	S17E42	262	0	1	Axx	1	A								
26 Nov	S17E28	263	plage												
27 Nov	S17E14	263	plage												
28 Nov	S17W00	264	plage												
29 Nov	S17W14	265	plage												
30 Nov	S17W28	266	plage												
01 Dec	S17W42	267	plage												
02 Dec	S17W56	268	plage												
03 Dec	S17W70	268	plage												
04 Dec	S17W84	269	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 264



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	4
Region 1907															
26 Nov	S09E18	273	30	8	Dro	8	B								
27 Nov	S10E04	272	60	6	Dao	11	B								
28 Nov	S09W08	272	200	13	Eac	25	BG	1			1				
29 Nov	S09W22	273	130	12	Eac	21	BG	1							
30 Nov	S09W38	276	60	7	Cao	10	B								
01 Dec	S09W49	274	30	2	Hrx	3	A								
02 Dec	S09W63	275	plage												
03 Dec	S09W77	275	plage												
								2	0	0	1	0	0	0	0

Died on Disk.

Absolute heliographic longitude: 272

Region 1908															
27 Nov	S25E43	233	60	6	Dao	6	B								
28 Nov	S26E28	236	160	8	Dao	10	B	3			4				
29 Nov	S26E15	236	230	9	Dao	8	BG								
30 Nov	S26E01	237	180	10	Dao	6	BG								
01 Dec	S26W10	235	180	11	Eao	12	BG								
02 Dec	S25W22	233	120	11	Eao	9	BG								
03 Dec	S26W34	232	80	10	Dso	5	B								
04 Dec	S26W48	232	80	9	Dso	3	B								
05 Dec	S26W62	234	60	2	Hsx	1	A								
06 Dec	S25W79	236	40	2	Hsx	2	A								
								3	0	0	4	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 237



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 1909															
27 Nov	S18E69	208	140	5	Dso	2	B								
28 Nov	S18E59	205	300	9	Dkc	9	B								
29 Nov	S18E45	206	320	9	Dkc	14	B								
30 Nov	S18E31	207	330	10	Dkc	17	BG	1							
01 Dec	S18E20	205	350	10	Dkc	23	BG								
02 Dec	S17E06	205	330	11	Ekc	27	BG								
03 Dec	S18W07	205	250	11	Ekc	17	BG								
04 Dec	S17W20	205	250	11	Ekc	11	BG								
05 Dec	S17W34	206	200	10	Dai	19	B	1			1				
06 Dec	S17W50	207	140	10	Dso	10	B	1			2				
07 Dec	S17W61	207	100	10	Cso	7	B		1			1			
08 Dec	S19W79	211	50	2	Hsx	1	A								
								3	1	0	3	1	0	0	0

Still on Disk.

Absolute heliographic longitude: 205

Region 1910

28 Nov	N04W10	273	30	3	Cro	4	B								
29 Nov	N01W27	278	10	1	Axx	1	A								
30 Nov	N01W41	279	10	3	Bxo	4	B								
01 Dec	N02W54	279	40	6	Dao	8	B								
02 Dec	N02W67	278	10	6	Bxo	5	B								
03 Dec	N02W81	279	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 273

Region 1911

30 Nov	S12E16	222	20	3	Cso	4	B								
01 Dec	S12E01	224	50	5	Dao	8	B								
02 Dec	S11W11	223	50	5	Dao	6	B								
03 Dec	S11W24	222	20	3	Hrx	2	A								
04 Dec	S11W38	222	10	2	Bxo	2	B								
05 Dec	S11W52	224	10	3	Axx	1	A								
06 Dec	S11W64	221	10	1	Axx	1	A								
07 Dec	S11W78	224	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 224



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 1912

01 Dec	S22E79	146	plage								1				
02 Dec	S21E66	145	80	2	Hsx	1	A								
03 Dec	S21E53	144	120	2	Hsx	1	A								
04 Dec	S21E40	143	110	2	Hsx	1	A								
05 Dec	S21E26	146	110	2	Hsx	1	A								
06 Dec	S21E17	140	130	14	Cao	1	B								
07 Dec	S21E01	143	120	2	Hsx	1	A								
08 Dec	S21W12	144	120	2	Hsx	1	A				1				
								1	0	0	1	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 143

Region 1913

02 Dec	S13W56	267	40	3	Dao	4	B	2							
03 Dec	S15W69	266	90	7	Cao	9	B	1							
04 Dec	S14W84	268	130	9	Dao	5	B	1			1				
								4	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 267

Region 1914

02 Dec	S18W19	230	10	2	Axx	2	A								
03 Dec	S18W33	231	plage												
04 Dec	S18W47	232	plage												
05 Dec	S18W61	233	plage												
06 Dec	S18W75	234	plage												
07 Dec	S18W89	235	plage												
								0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 230



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 1915

03 Dec	S29W08	206	10	4	Bxo	3	B								
04 Dec	S29W23	208	30	3	Cao	3	B								
05 Dec	S29W37	209	80	5	Cao	9	B								
06 Dec	S30W48	206	30	8	Dro	10	B								
07 Dec	S30W59	205	10	10	Bxo	4	B								
08 Dec	S30W73	205	plage												
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 206

Region 1916

04 Dec	S14E19	165	10	4	Bxo	3	B								
05 Dec	S14E05	167	50	7	Dao	12	B	1			1				
06 Dec	S13W10	168	200	9	Dac	21	BG				2				
07 Dec	S13W25	171	220	8	Dai	34	BG	2			2				
08 Dec	S13W37	169	240	11	Eai	20	BG				1				
								3	0	0	6	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 167

Region 1917

06 Dec	S16E77	83	plage					2							
07 Dec	S16E63	83	60	8	Dao	8	B	1							
08 Dec	S16E57	74	210	8	Dai	8	B	1							
								4	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 74

Region 1918

08 Dec	S09E76	56	60	2	Hax	3	A								
								0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 56

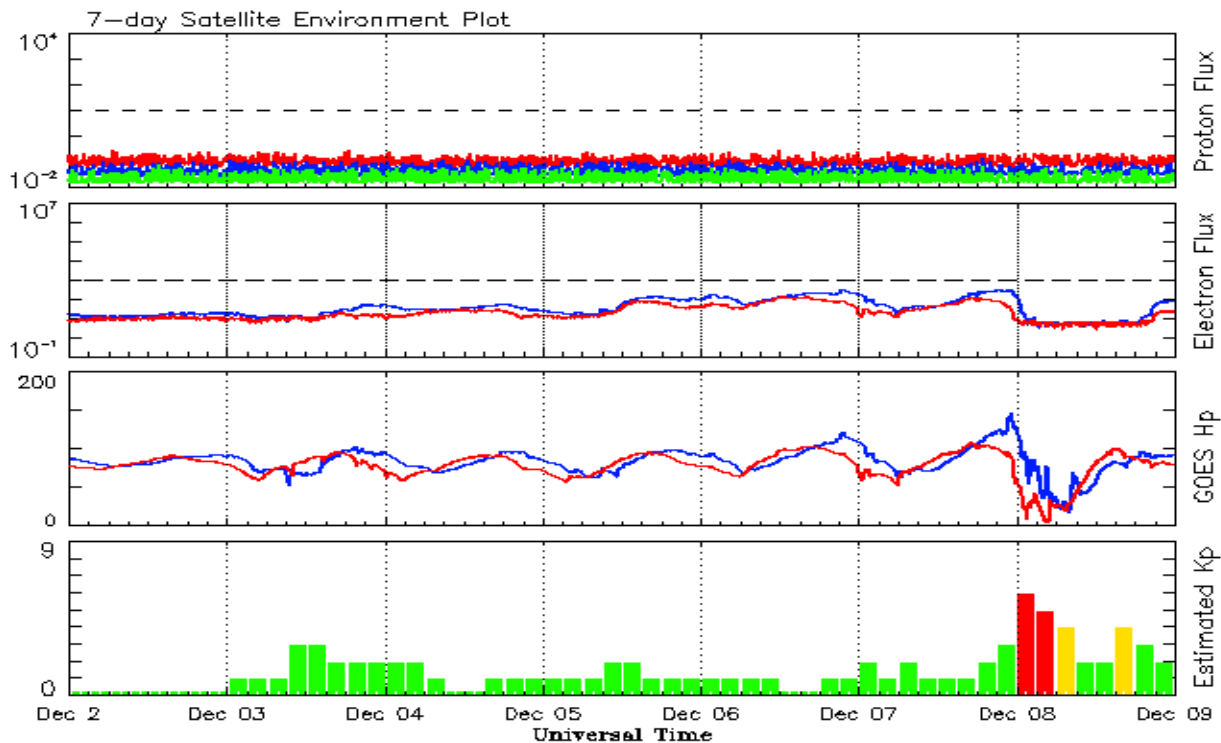


Recent Solar Indices (preliminary)
Observed monthly mean values

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									
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	88.0	59.6	108.4	120.1	3	7.5
2013									
January	99.8	62.9	0.63	87.1	58.7	127.1	118.9	4	7.5
February	60.0	38.1	0.63	86.7	58.4	104.4	118.0	5	7.4
March	81.0	57.9	0.71	85.7	57.5	111.2	117.1	9	7.4
April	112.8	72.4	0.64	86.7	57.9	125.0	116.6	5	7.2
May	125.5	78.7	0.63	90.5	59.9	131.3	118.1	10	7.0
June	80.1	52.5	0.66			110.2		13	
July	86.1	57.0	0.66			115.6		9	
August	90.2	66.0	0.73			114.7		9	
September	55.0	36.9	0.67			102.7		5	
October	127.1	85.6	0.67			132.3		7	
November	125.7	77.6	0.62			148.4		5	

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 02 December 2013*

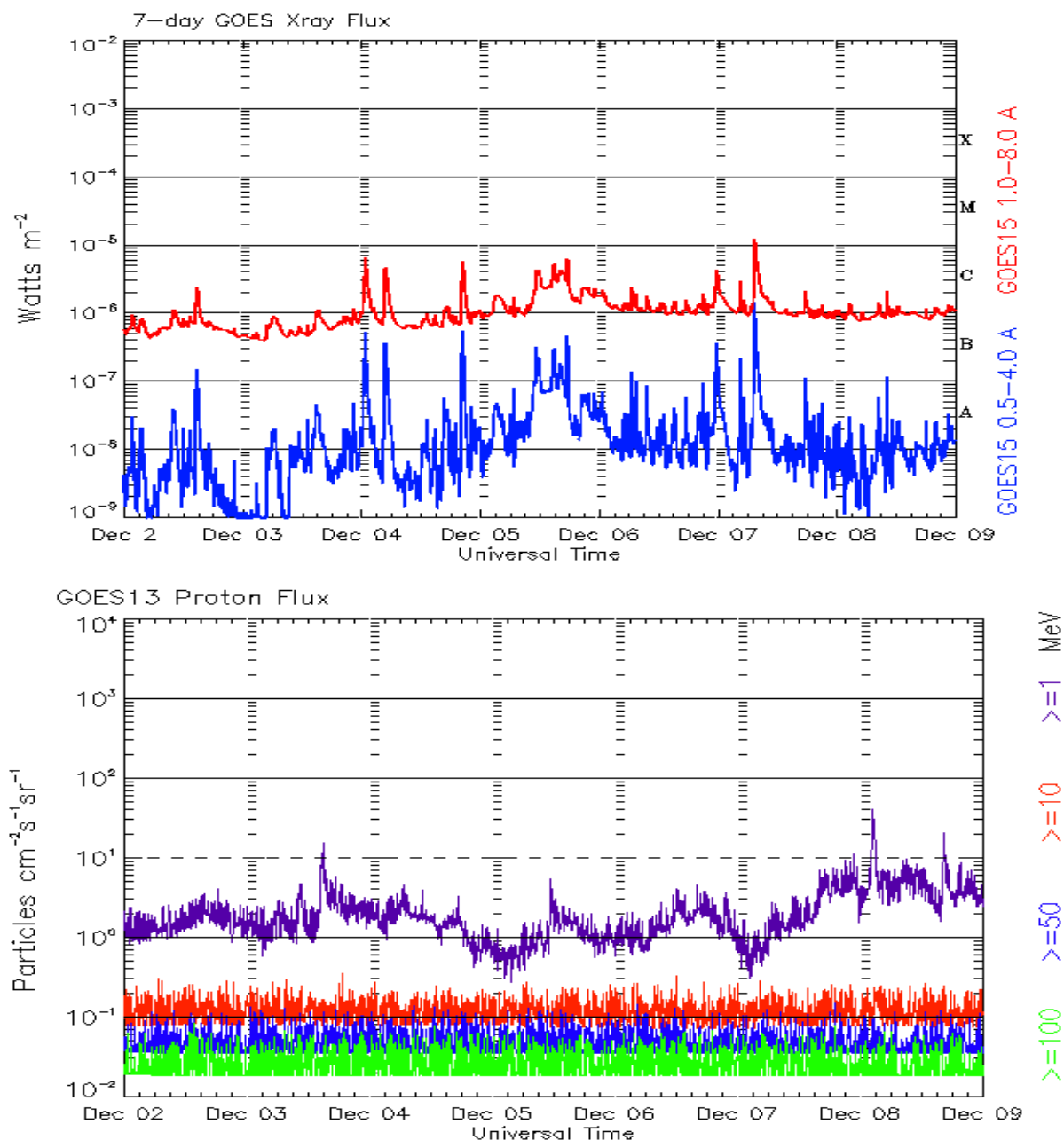
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

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. Hp 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 02 December 2013*

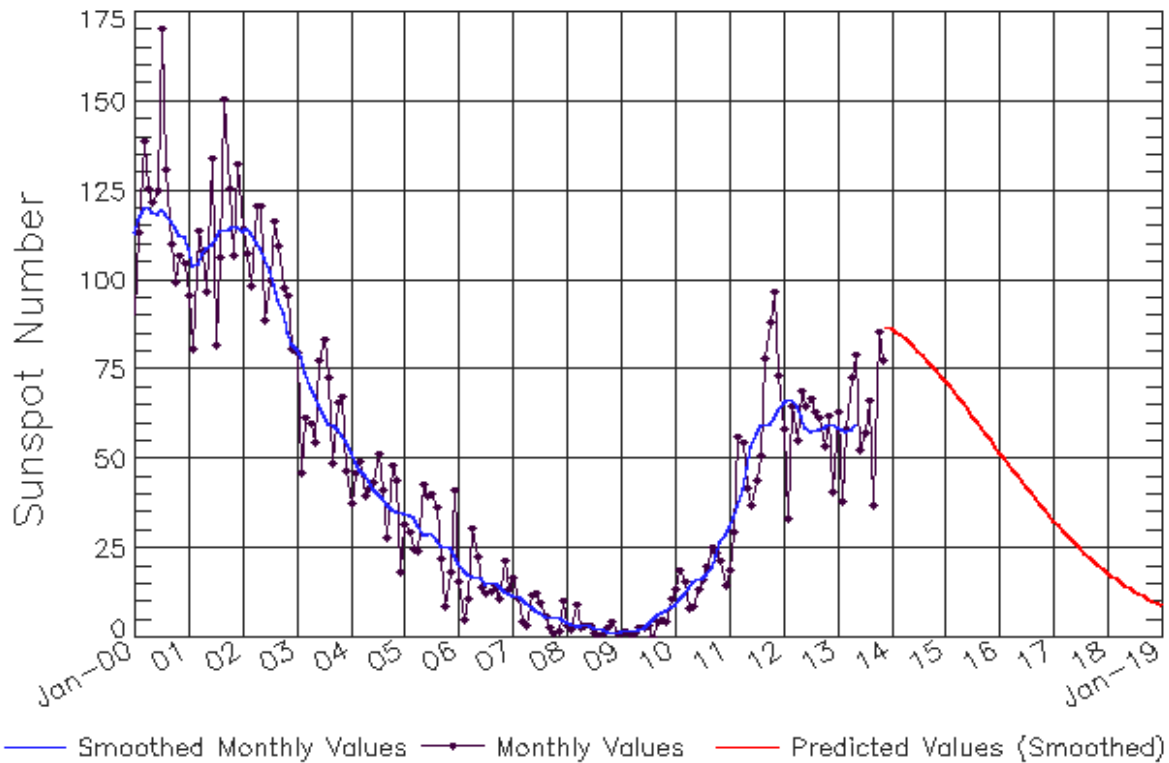
The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

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 Nov 2013



Updated 2013 Dec 9

NOAA/SWPC Boulder, CO USA

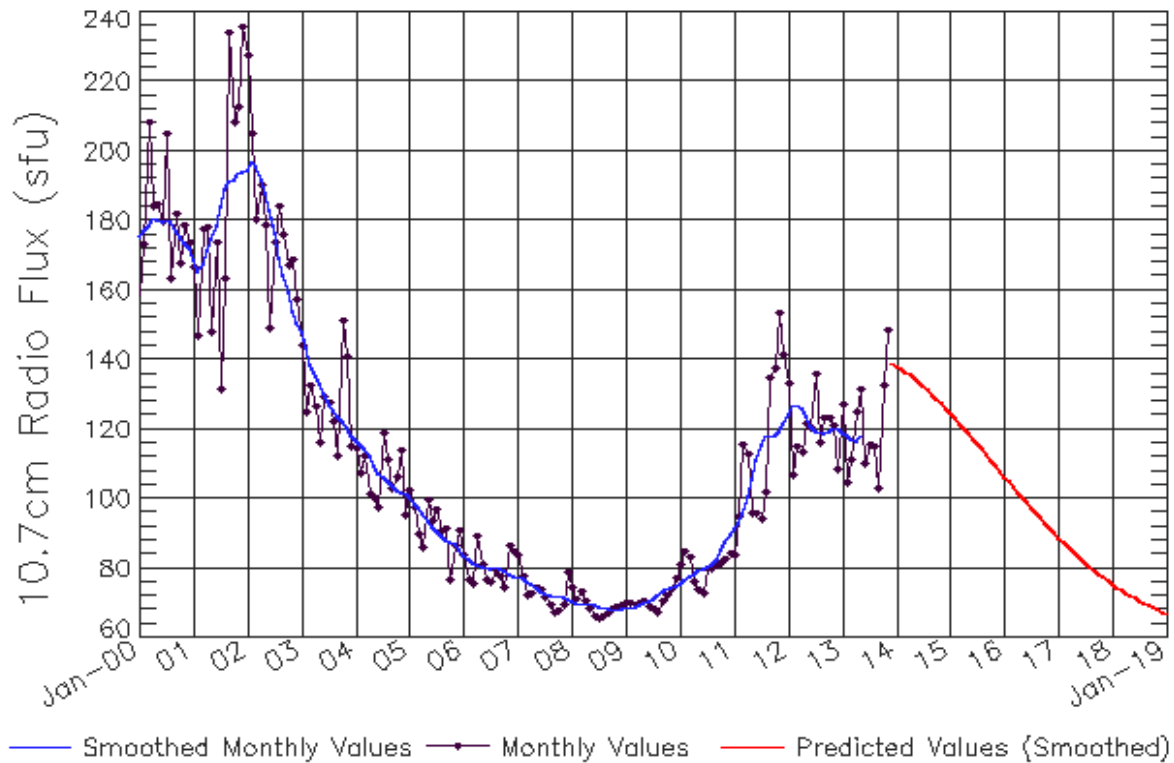
Smoothed Sunspot Number Prediction

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 (***)	60 (***)
2013	59 (***)	58 (***)	58 (***)	58 (***)	60 (***)	63 (1)	65 (2)	68 (3)	71 (5)	73 (5)	74 (6)	75 (7)
2014	77 (7)	79 (8)	81 (9)	82 (9)	82 (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 Nov 2013



Updated 2013 Dec 9

NOAA/SWPC Boulder, CO USA

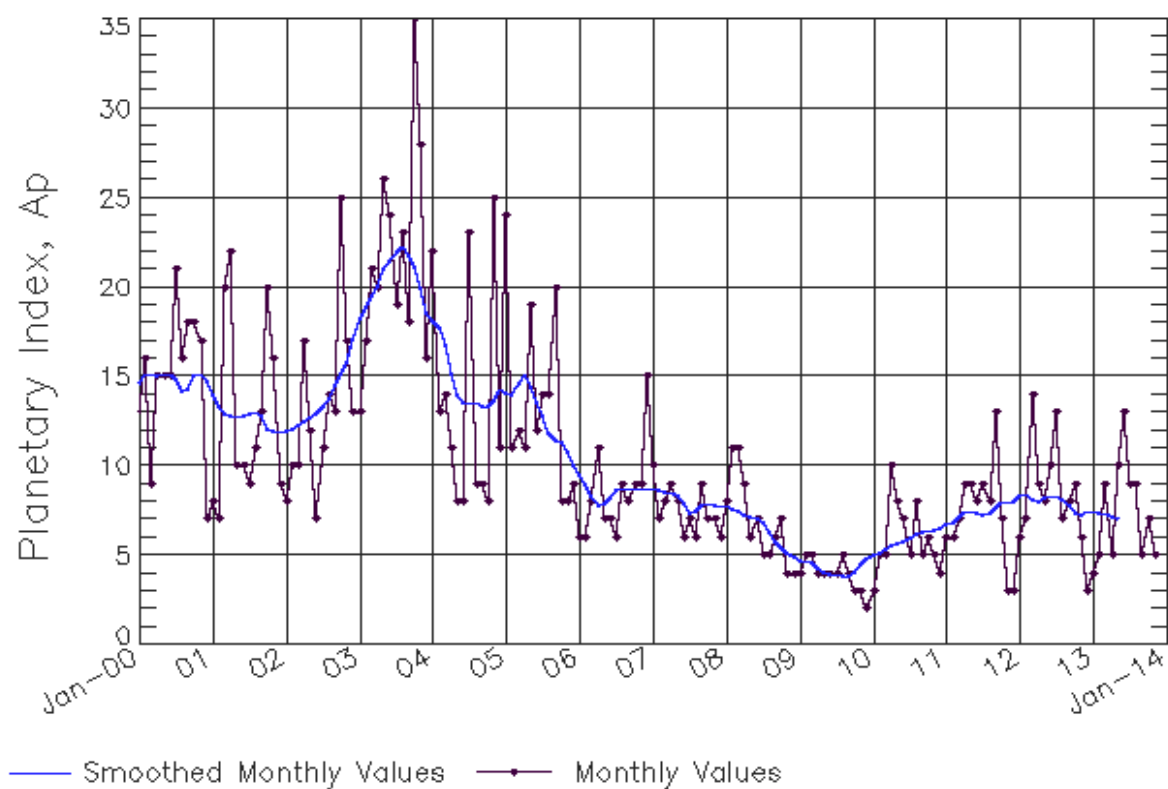
Smoothed F10.7cm Radio Flux Prediction

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 (***)	120 (***)
2013	119 (***)	118 (***)	117 (***)	117 (***)	118 (***)	121 (1)	122 (1)	124 (2)	127 (3)	128 (4)	129 (4)	130 (5)
2014	131 (6)	133 (7)	135 (8)	136 (8)	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 Nov 2013



Updated 2013 Dec 9

NOAA/SWPC Boulder, CO USA

Solar Cycle Comparison charts are temporarily unavailable.

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

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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.

<http://spaceweather.gov/weekly/> -- Current and previous year

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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

