

Solar activity ranged from low to high during the period. There were five major solar events, beginning on the 2nd of July. Region 1515 (S18, L=206, class/area=Fhc/900) was responsible for all of them. After a lackluster performance in the week prior (5 C-class x-ray events), it began this week with three M-class x-ray flares. The largest flare, an M5/2b at 2/1052UTC, brought activity to high levels for the first time since May 17th. The flare was accompanied by a Type II radio sweep (1063 km/s) and a 380 sfu Tenflare. A CME was subsequently observed in LASCO C3 coronagraph imagery at approximately 2/1254UTC, with most of the ejecta directed south of the ecliptic plane. The CME was also visible in STEREO-A and B COR2 coronagraph imagery.

Activity dipped to low levels on the 3rd when no M flares were observed. However, Region 1515 developed a beta-gamma-delta magnetic configuration that day. Activity returned to high levels the following day when Region 1515 unleashed an M5/2b flare at 4/0955UTC. Later in the day (04/2209UTC), it produced an M4 x-ray event accompanied by a 12,000 sfu 245 MHz burst, a Type II sweep (no speed estimate available), and a 220 sfu Tenflare. Of the seven M-class events that day, Region 1515 was responsible for six of them. The remaining M-flare, an M1/2n at 04/1639UTC, was produced by Region 1513 (N16, L=218, class/area=Dso/240). This event was accompanied by a 200 sfu Tenflare, and Type II radio (807 km/s) and Type IV radio emissions. A CME was captured by STEREO-B COR2 imagery at 04/1754UTC and STEREO-A COR2 coronagraph imagery at 04/1854UTC, and appeared to have an earth-directed component, consistent with Region 1513s geoeffective position.

High activity levels continued through the 5th and 6th of July as Region 1515 grew to its peak, covering 900 millionths of the solar disk and containing 60 spots. July 5th saw Region 1515 produce an M6.1/1b flare at 05/1144UTC accompanied by a 290 sfu Tenflare. The following day, this region produced the largest flare of the week, an X1 x-ray event at 06/2308UTC. Although no optical flare was reported, the event was accompanied by a 520 sfu Tenflare, a Type II sweep (1771 km/s), and a Type IV sweep. A CME was subsequently observed in LASCO C3 coronagraph imagery at 06/2324UTC.

Activity dropped to moderate levels on the 7th as Region 1515s magnetic complexity, area and spot count decreased to beta-gamma, 780 millionths, and 43 spots respectively. A new region, Region 1520 (S15, L=86, class/area=Fhc/1070), was numbered as it rotated on to the east limb. It produced an M1 x-ray flare at 7/0728UTC.

High activity levels returned on the 8th, when Region 1515 produced an M6/1n at 08/1632UTC. The event was accompanied by a 640 sfu Tenflare, Type II (2271 km/s) and Type IV radio sweeps. LASCO C2 coronagraph imagery first indicated a CME at 08/1648UTC, with most of the ejecta directed southwest.

Two proton events were observed at geosynchronous orbit during the week. A 10 MeV greater than 10 pfu event began at 07/0400UTC, peaked at 07/0745UTC (25 pfu), and ended at



07/2110UTC. This event was associated with the X1 x-ray flare observed at 06/2308UTC described above. Both 10 and 100 MeV protons were elevated again on the 8th of July following the M6/1n flare described above. Neither the 10 nor the 100 MeV protons had crossed their flux thresholds (10 pfu and 1 pfu) by the end of this report, ending the period at 6 pfu and 4 pfu, respectively.

The greater than 2 MeV electron flux at geosynchronous orbit were at high levels from July 2nd through the 6th, and at moderate levels on the 7th and 8th.

Geomagnetic field activity began the week at active levels for the first three synoptic periods (02/00-02/09UTC), then decreased to quiet to unsettled levels until the 5th, when one active period (05/12-05/15UTC) was observed. The unsettled to active periods were attributed to the presence of a coronal hole high speed solar wind stream. Solar wind speed at the ACE spacecraft was between 650-700km/s on the 2nd, decreasing to around 500 km/s on the 5th, with the Bz-component of the interplanetary magnetic field between 0 and -5 nT for much of the period. Activity for the remainder of the week was at quiet to unsettled levels with the exception of the 21-24UTC period on the 6th associated with a prolonged period of negative Bz, and the 21-24UTC period on the 8th. Analysis of data from the ACE spacecraft suggest the activity on the 8th was associated with the arrival of the CME associated with the M1/2n flare on July 4th described above. Wind speed at ACE jumped from 400 to 472 km/s around 08/1500UTC and the Bz component of the solar wind began a smooth rotation from +10 to -9 nT over the course of the next nine hours.

Space Weather Outlook 09 July - 04 August 2012

Solar activity is expected to be at moderate levels with a chance for high activity until Region 1520 reaches the west limb on 19 July. Low levels of activity are expected from 20-23 July, until old Regions 1515 and 1513 return on 23 and 24 July respectively. Moderate levels of activity, with a chance for high levels, are then expected through the end of the period.

There is a chance for proton events as Region 1520 moves into a favorable position beginning on the 13th of July though the 19th.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at high levels from 28 July through 01 August associated with coronal hole high speed stream effects.

Geomagnetic field activity is expected to begin at unsettled to active levels with CME passage, decreasing to mostly quiet levels from 10 July through 26 July. Activity is expected to increase to unsettled to active levels from 27 July through 2 July with the arrival of a coronal hole high speed stream. Activity is expected to then decrease to mostly quiet to unsettled levels through the end 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
02 July	166	165	1130	B8.4	17	4	0	24	7	2	0	0
03 July	146	136	1000	C1.0	16	0	0	42	0	0	0	0
04 July	163	129	990	C2.0	11	7	0	16	5	2	0	0
05 July	165	122	1050	C2.6	12	10	0	21	5	2	1	0
06 July	158	131	1240	C2.4	11	6	1	24	3	0	0	0
07 July	158	127	1590	C1.5	9	3	0	18	0	0	0	0
08 July	178	113	1910	C2.0	12	4	0	47	4	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 July	1.0e+06	1.2e+04	3.0e+03		1.1e+08
03 July	6.3e+05	1.2e+04	2.9e+03		3.6e+08	
04 July	4.5e+05	1.2e+04	2.6e+03		4.2e+08	
05 July	1.9e+06	1.4e+04	2.6e+03		4.1e+08	
06 July	6.1e+05	1.2e+04	2.8e+03		9.2e+07	
07 July	4.5e+06	1.1e+06	1.1e+04		3.4e+07	
08 July	8.3e+06	3.9e+05	9.4e+03		3.4e+07	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	02 July	18	3-4-4-3-3-3-3-3	43	3-5-5-5-6-6-3-2	19
03 July	11	3-2-2-3-3-3-2-2	17	3-3-1-5-3-4-2-1	10	3-3-2-2-2-3-2-2
04 July	11	3-3-2-3-3-2-2-2	13	3-4-2-4-3-1-1-1	9	3-3-2-3-2-2-1-2
05 July	13	2-2-1-3-4-3-3-3	6	2-2-2-2-2-2-1-1	14	2-2-2-3-4-3-3-3
06 July	14	2-3-2-2-2-3-2-5	11	2-3-2-2-3-2-3-3	16	2-3-2-2-2-3-3-5
07 July	8	2-2-2-2-2-2-3-2	12	2-2-2-5-2-1-2-2	8	3-2-2-2-1-2-3-2
08 July	15	2-3-2-3-3-3-3-4	9	2-2-2-4-1-1-1-3	13	2-3-2-3-2-3-3-4



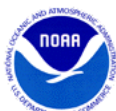
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
02 Jul 0231	WARNING: Geomagnetic K = 4	02/0230 - 0900
02 Jul 0241	ALERT: Geomagnetic K = 4	02/0236
02 Jul 0630	SUMMARY: 10cm Radio Burst	02/0505 - 0506
02 Jul 0631	ALERT: Type II Radio Emission	02/0509
02 Jul 0856	EXTENDED WARNING: Geomagnetic K = 4	02/0230 - 1900
02 Jul 1051	ALERT: X-ray Flux exceeded M5	02/1050
02 Jul 1115	SUMMARY: 10cm Radio Burst	02/1046 - 1048
02 Jul 1128	ALERT: Type II Radio Emission	02/1047
02 Jul 1133	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	01/1320
02 Jul 1151	SUMMARY: X-ray Event exceeded M5	02/1043 - 1057
02 Jul 1855	EXTENDED WARNING: Geomagnetic K = 4	02/0230 - 03/0100
02 Jul 2108	SUMMARY: 10cm Radio Burst	02/2001 - 2002
03 Jul 0812	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	01/1320
03 Jul 1535	ALERT: Type II Radio Emission	03/1448
03 Jul 1927	SUMMARY: 10cm Radio Burst	03/0339 - 0340
03 Jul 2114	ALERT: Type II Radio Emission	03/2048
04 Jul 0450	SUMMARY: 10cm Radio Burst	04/0430 - 0432
04 Jul 0528	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	01/1320
04 Jul 0544	ALERT: Type IV Radio Emission	04/0444
04 Jul 0955	ALERT: X-ray Flux exceeded M5	04/0954
04 Jul 1028	SUMMARY: X-ray Event exceeded M5	04/0947 - 0957
04 Jul 1236	SUMMARY: 10cm Radio Burst	04/1218 - 1220
04 Jul 2021	ALERT: Type IV Radio Emission	04/1646
04 Jul 2023	ALERT: Type II Radio Emission	04/1642
04 Jul 2233	SUMMARY: 10cm Radio Burst	04/2206 - 2209
05 Jul 0019	ALERT: Type IV Radio Emission	05/0001
05 Jul 0418	ALERT: Type IV Radio Emission	05/0351



Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
05 Jul 0540	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	01/1320
05 Jul 1146	ALERT: X-ray Flux exceeded M5	05/1145
05 Jul 1224	SUMMARY: X-ray Event exceeded M5	05/1139 - 1149
05 Jul 1230	SUMMARY: 10cm Radio Burst	05/1142 - 1145
05 Jul 1303	WARNING: Geomagnetic K = 4	05/1302 - 1900
05 Jul 1357	ALERT: Geomagnetic K = 4	05/1355
05 Jul 2129	WATCH: Geomagnetic A \geq 20	08/
05 Jul 2211	SUMMARY: 10cm Radio Burst	05/2143 - 2148
05 Jul 2214	WARNING: Geomagnetic K = 4	05/2230 - 06/0600
06 Jul 0556	EXTENDED WARNING: Geomagnetic K = 4	05/2230 - 06/1300
06 Jul 1051	CONTINUED ALERT: Electron 2MeV Integral Flux \geq 1000pfu	01/1320
06 Jul 1135	ALERT: Type II Radio Emission	06/1109
06 Jul 1450	ALERT: Type IV Radio Emission	06/1356
06 Jul 1630	WATCH: Geomagnetic A \geq 20	07/
06 Jul 1935	WARNING: Geomagnetic K = 4	06/1935 - 07/0300
06 Jul 2242	ALERT: Geomagnetic K = 4	06/2238
06 Jul 2243	WARNING: Geomagnetic K = 5	06/2245 - 07/0300
06 Jul 2243	WARNING: Geomagnetic K = 5	06/2245 - 07/0300
06 Jul 2246	ALERT: Geomagnetic K = 5	06/2241
06 Jul 2307	ALERT: X-ray Flux exceeded M5	06/2306
06 Jul 2325	SUMMARY: X-ray Event exceeded X1	06/2301 - 2314
06 Jul 2328	SUMMARY: 10cm Radio Burst	06/2304 - 2306
06 Jul 2348	ALERT: Type IV Radio Emission	06/2322
07 Jul 0101	ALERT: Type II Radio Emission	06/2309
07 Jul 0255	WARNING: Proton 10MeV Integral Flux $>$ 10pfu	07/0255 - 08/0300
07 Jul 0255	EXTENDED WARNING: Geomagnetic K = 4	06/1935 - 07/1200
07 Jul 0428	ALERT: Proton Event 10MeV Integral Flux \geq 10pfu	07/0400
08 Jul 0256	SUMMARY: Proton Event 10MeV Integral Flux \geq 10pfu	07/0400 - 2110

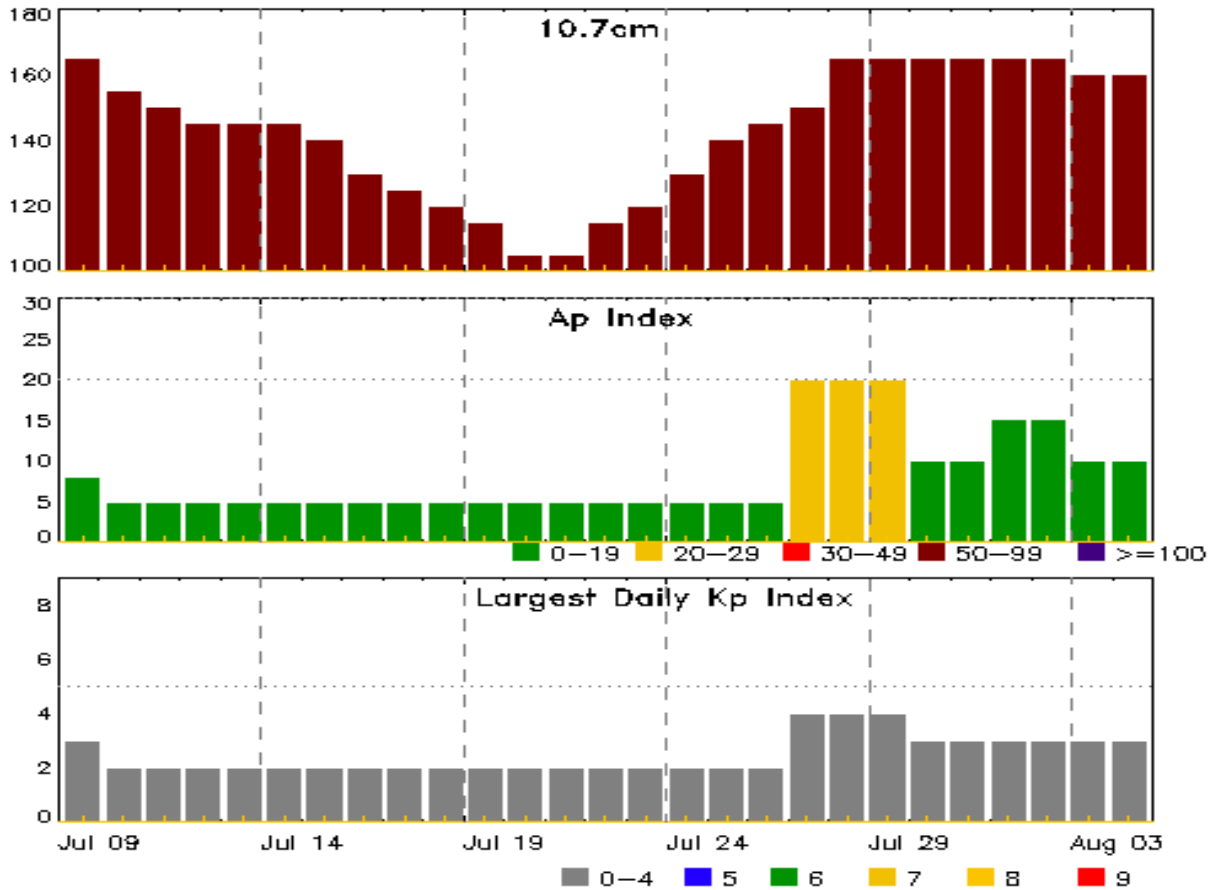


Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
08 Jul 1631	ALERT: X-ray Flux exceeded M5	08/1630
08 Jul 1646	SUMMARY: 10cm Radio Burst	08/1624 - 1631
08 Jul 1651	SUMMARY: X-ray Event exceeded M5	08/1623 - 1642
08 Jul 1657	ALERT: Type II Radio Emission	08/1630
08 Jul 1753	ALERT: Type IV Radio Emission	08/1722
08 Jul 2019	WARNING: Proton 10MeV Integral Flux > 10pfu	08/2030 - 09/2030
08 Jul 2228	WARNING: Proton 100MeV Integral Flux > 1pfu	08/2300 - 09/1100
08 Jul 2235	WARNING: Geomagnetic K = 4	08/2235 - 09/0600
08 Jul 2241	ALERT: Geomagnetic K = 4	08/2239
08 Jul 2347	WARNING: Geomagnetic K = 5	08/2346 - 09/0600



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 Jul	165	8	3	23 Jul	120	5	2
10	155	5	2	24	130	5	2
11	150	5	2	25	140	5	2
12	145	5	2	26	145	5	2
13	145	5	2	27	150	20	4
14	145	5	2	28	165	20	4
15	140	5	2	29	165	20	4
16	130	5	2	30	165	10	3
17	125	5	2	31	165	10	3
18	120	5	2	01 Aug	165	15	3
19	115	5	2	02	165	15	3
20	105	5	2	03	160	10	3
21	105	5	2	04	160	10	3
22	115	5	2				



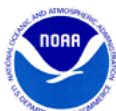
Energetic Events

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
02 Jul	0026	0035	0040	M1.1	0.005	1N	N15E01	1513	1100			
02 Jul	1043	1052	1057	M5.6	0.027	2B	S17E08	1515	590	380	1	
02 Jul	1959	2007	2013	M3.8	0.018	2B	S17W01	1515	8200	190		
02 Jul	2349	2356	0003	M2.0	0.011	SF	S16W02	1515	180			
04 Jul	0428	0437	0445	M2.3	0.016	SN	S17W18	1515	1600	150		1
04 Jul	0947	0955	0957	M5.3	0.014	2B	S20W18	1515	130	79		
04 Jul	1207	1224	1232	M2.3	0.020			1515	270	78		
04 Jul	1435	1440	1442	M1.3	0.003	SN	S18W18	1515				
04 Jul	1633	1639	1648	M1.8	0.012	2N	N14W34	1513	810	200	1	
04 Jul	2203	2209	2215	M4.6	0.020			1515	12000	220	1	
04 Jul	2347	2355	0002	M1.2	0.008			1515				1
05 Jul	0105	0110	0115	M2.4	0.009	3N	S18W26	1515				
05 Jul	0235	0242	0247	M2.2	0.010			1515				
05 Jul	0325	0336	0339	M4.7	0.014			1515				
05 Jul	0649	0658	0705	M1.1	0.009	1F	S18W39	1515				
05 Jul	0740	0745	0748	M1.3	0.004			1519				
05 Jul	1044	1048	1050	M1.8	0.003	SN	S19W30	1515		68		
05 Jul	1139	1144	1149	M6.1	0.018	1B	S20W32	1515		290		
05 Jul	1305	1318	1332	M1.2	0.015	2N	S16W43	1515				
05 Jul	2009	2014	2028	M1.6	0.013			1515		150		
05 Jul	2137	2145	2151	M1.6	0.009	1N	S12W46	1515	940	270		
06 Jul	0137	0140	0142	M2.9	0.004	SN	S18W41	1515		130		
06 Jul	0244	0251	0258	M1.0	0.007			1515				
06 Jul	0817	0823	0827	M1.5	0.005	SB	S17W40	1515				
06 Jul	1024	1029	1032	M1.8	0.005	1N	S17W42	1515				
06 Jul	1326	1330	1332	M1.2	0.002	SF	S20W45	1515		55		
06 Jul	1848	1855	1905	M1.3	0.008	SF	S18W51	1515				
06 Jul	2301	2308	2314	X1.1	0.043			1515	270	520	3	
07 Jul	0310	0315	0323	M1.2	0.007	SF	S17W51	1515				
07 Jul	0818	0828	0839	M1.0	0.010			1520				
07 Jul	1057	1103	1107	M2.6	0.008	SF	S19W58	1515				
08 Jul	0541	0546	0552	M1.3	0.006	SF	S17W65	1515				
08 Jul	0944	0953	0957	M1.1	0.004	1F	S21W67	1515				
08 Jul	1206	1210	1213	M1.4	0.003	1F	S21W69	1515				
08 Jul	1623	1632	1642	M6.9	0.045	1N	S17W74	1515	200	640	2	



Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
02 Jul	0026	0035	0040	M1.1	1N	N15E01		1513
02 Jul	0033	0036	0045		SF	S15E05		1514
02 Jul	0206	0206	0211		SF	S18E17		1515
02 Jul	0238	0242	0244	C1.5	SN	N17E00		1513
02 Jul	0251	0254	0257	B9.5	SF	S18E11		1515
02 Jul	0356	0400	0403	B8.4				
02 Jul	0447	0451	0456	C1.0	SF	N17E02		1513
02 Jul	0501	0508	0514	C3.5	SF	S17E10		1515
02 Jul	0555	0556	0559		SF	N17W03		1513
02 Jul	0613	0613	0615		SF	N16W03		1513
02 Jul	0703	0707	0710	C2.1	1N	S18E10		1515
02 Jul	0802	0804	0806		SF	S17E14		1515
02 Jul	0850	0855	0858	C2.4	SF	S17E14		1515
02 Jul	0922	0924	0950		SF	S18E09		1515
02 Jul	1033	1037	1041	C2.9				1514
02 Jul	1035	1052	1114		2B	S17E08		1515
02 Jul	1036	1040	1128		SF	S22E02		1514
02 Jul	1043	1052	1057	M5.6				1515
02 Jul	1204	1251	1326	C1.8	SF	S21E01		1514
02 Jul	1221	1222	1234		SF	N21E21		1516
02 Jul	1221	1221	1229		SF	S14E06		1515
02 Jul	1320	1342	1354		1F	S18E11		1515
02 Jul	1432	1446	1452	C1.7	SF	N14W06		1513
02 Jul	1445	1446	1449		SF	S17E04		1515
02 Jul	1458	1458	1502		SF	S18E06		1515
02 Jul	1516	1517	1520		SF	S18E06		1515
02 Jul	1539	1556	1606		SF	S18E04		1515
02 Jul	1637	1644	1652	C2.0				1515
02 Jul	1742	1750	1754	C3.7	1F	S17E03		1515
02 Jul	1803	1812	1822	C4.5	1F	N14W09		1513
02 Jul	1839	2006	2040		2B	S17W01		1515
02 Jul	1845	1856	1902	C7.4				
02 Jul	1927	1931	1934	C1.4				
02 Jul	1934	1943	1947	C2.5				1515
02 Jul	1959	2007	2013	M3.8				1515
02 Jul	2026	2027	2029		SF	N18W05		1513
02 Jul	2113	2113	2116		SF	N17W10		1513
02 Jul	2133	2136	2138	C1.9				1515



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	Rgn #
02 Jul	2135	2212	2218	C3.4	1F	S17E00	1515
02 Jul	2317	2339	2346	C6.5			1513
02 Jul	2319	2325	2337		SF	S17E00	1515
02 Jul	2327	2337	2356		1F	N14W12	1513
02 Jul	2349	2356	0003	M2.0	SF	S16W02	1515
03 Jul	0012	0016	0032		SF	S17E06	1515
03 Jul	0042	0042	0046	C1.9	SF	S17E06	1515
03 Jul	0052	0103	0118	C2.6	SF	S17E06	1515
03 Jul	0118	0124	0130		SF	N19E16	1516
03 Jul	0122	0122	0125		SF	S17W02	1515
03 Jul	0141	0145	0150		SF	S17E06	1515
03 Jul	0238	0241	0244	C2.7	SF	S17E05	1515
03 Jul	0256	0257	0259		SF	S17E05	1515
03 Jul	0336	0342	0348	C9.9	SF	S17E05	1515
03 Jul	0414	0418	0420	C2.4	SF	S17W03	1515
03 Jul	0519	0521	0525		SF	S17W01	1515
03 Jul	0605	0609	0612	C2.8	SF	S17E03	1515
03 Jul	0640	0641	0643		SF	S17E03	1515
03 Jul	0651	0651	0657		SF	S17E03	1515
03 Jul	0706	0708	0710		SF	S17E03	1515
03 Jul	0732	0821	0925		SF	S18W03	1515
03 Jul	0738	0738	0755		SF	S17E02	1515
03 Jul	0821	0823	0844		SF	S17E02	1515
03 Jul	0854	0855	0857		SF	S17E02	1515
03 Jul	0904	0912	0930		SF	S17E02	1515
03 Jul	0934	0934	0937		SF	S19W04	1515
03 Jul	1020	1026	1041		SF	S18W03	1515
03 Jul	1048	1050	1057		SF	S19W04	1515
03 Jul	1156	1203	1209		SF	S18W05	1515
03 Jul	1212	1215	1218	C2.0	SF	S18W05	1515
03 Jul	1249	1252	1255		SF	S18W62	1512
03 Jul	1257	1257	1259		SF	N20E07	1516
03 Jul	1302	1306	1309	C2.2	SF	S18W05	1515
03 Jul	1322	1336	1351		SF	S19W08	1515
03 Jul	1356	1359	1402	C4.2	SF	S18W06	1515
03 Jul	1405	1408	1411		SF	N16W16	1513
03 Jul	1412	1415	1416		SF	N16W16	1513
03 Jul	1427	1440	1500		SF	S19W05	1515



Flare List

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	Rgn #
03 Jul	1429	1432	1509	C8.2	SF	N14W16	1513
03 Jul	1519	1522	1524	C4.1	SF	S13W11	1515
03 Jul	1537	1542	1543		SF	S19W06	1515
03 Jul	1609	1609	1627		SF	S17W11	1515
03 Jul	1619	1619	1627		SF	S18W10	1515
03 Jul	1658	1702	1709	C9.0	SN	S17W08	1515
03 Jul	2014	2017	2019	C3.5	SF	S13W15	1515
03 Jul	2036	2045	2051	C9.3			1513
03 Jul	2038	2038	2043		SF	S18W07	1515
03 Jul	2147	2151	2154	C2.9			1515
03 Jul	2326	2330	2336	C4.9			1515
03 Jul	2344	2357	0004		SF	S17W11	1515
04 Jul	0000	0001	0004		1F	S18W26	1515
04 Jul	0117	0117	0119		SF	S18W12	1515
04 Jul	0130	0143	0156	C5.1	1F	S18W13	1515
04 Jul	0259	0259	0304		1F	S18W12	1515
04 Jul	0308	0309	0316		SF	S18W14	1515
04 Jul	0318	0319	0321		SF	S18W15	1515
04 Jul	0333	0355	0414		SF	S17W12	1515
04 Jul	0334	0337	0345		SF	S17W23	1515
04 Jul	0347	0347	0401		SF	S17W23	1515
04 Jul	0403	0405	0407	C6.1	SF	S17W23	1515
04 Jul	0428	0437	0445	M2.3	SN	S17W18	1515
04 Jul	0520	0520	0527		SF	S17W10	1515
04 Jul	0528	0532	0537		1F	S17W13	1515
04 Jul	0601	0954	1250		2B	S20W18	1515
04 Jul	0612	0614	0620		SF	S16W20	1515
04 Jul	0839	0842	0848		SF	S17W26	1515
04 Jul	0900	0906	0909	C6.7			1515
04 Jul	0947	0955	0957	M5.3			1515
04 Jul	1113	1117	1119	C5.8			1515
04 Jul	1123	1123	1130		SF	N12W32	1513
04 Jul	1207	1224	1232	M2.3			1515
04 Jul	1353	1550	1856		1F	S17W19	1515
04 Jul	1357	1413	1426	C5.6	SN	S19W18	1515
04 Jul	1435	1439	1558	M1.3	SN	S18W18	1515
04 Jul	1445	1449	1452	C8.2			1515
04 Jul	1547	1550	1552	C6.4			1515



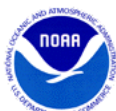
Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
04 Jul	1608	1612	1615	C6.9	SF	S19W20	1515
04 Jul	1626	1636	1722		2N	N14W34	1513
04 Jul	1629	1632	1634		SF	S18W18	1515
04 Jul	1633	1639	1648	M1.8			1513
04 Jul	1930	1934	1937	C2.9			1515
04 Jul	2123	2127	2129	C9.5			1515
04 Jul	2203	2209	2215	M4.6			1515
04 Jul	2239	2245	2247	C7.4			1515
04 Jul	2347	2355	0002	M1.2			1515
05 Jul	0033	0040	0045		1N	S18W27	1515
05 Jul	0053	0056	0102		SF	S18W28	1515
05 Jul	0105	0110	0115	M2.4	3N	S18W26	1515
05 Jul	0138	0143	0147		2F	S19W28	1515
05 Jul	0201	0205	0232	C7.0	SN	S18W28	1515
05 Jul	0235	0242	0247	M2.2			1515
05 Jul	0305	0312	0324		1F	S18W28	1515
05 Jul	0325	0336	0339	M4.7			1515
05 Jul	0442	0445	0449	C9.1			1519
05 Jul	0615	0635	0743	M1.1	1F	S18W39	1515
05 Jul	0740	0745	0748	M1.3			1519
05 Jul	B0800	0810	0816		SF	S17W25	1515
05 Jul	0818	0820	0836		SF	S18W32	1515
05 Jul	0845	0916	A0942		SF	S18W31	1515
05 Jul	0905	0908	0911	C5.0			1515
05 Jul	0917	0920	0924	C5.8			1515
05 Jul	0933	0935	0938		SF	S13W37	1515
05 Jul	0944	0949	0956		SF	S13W37	1515
05 Jul	0959	1008	1013		SF	S19W30	1515
05 Jul	1044	1047	1118	M1.8	SN	S19W30	1515
05 Jul	1138	1139	1140		SF	S22E68	1520
05 Jul	1139	1144	1149	M6.1	1B	S20W32	1515
05 Jul	1301	1313	1418	M1.2	2N	S16W43	1515
05 Jul	1337	1353	1419	C7.4	SN	S22E66	1515
05 Jul	1354	1354	1357		SF	S17W36	1515
05 Jul	1415	1418	1420	C4.0	SF	S18W35	1515
05 Jul	1441	1445	1450	C8.3			1515
05 Jul	1454	1455	1502		SF	S22E66	1520
05 Jul	1526	1528	1531		SF	S11W41	1514



Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
05 Jul	1556	1559	1601	C6.2	SF	S17W34		1515
05 Jul	1641	1642	1644		SF	S17W34		1515
05 Jul	1751	1754	1757	C5.1				1515
05 Jul	1812	1820	1824	C6.1	SF	S18W37		1515
05 Jul	1939	1944	1953	C4.8	SF	S15W42		1515
05 Jul	2003	2004	2006		SF	S15W42		1515
05 Jul	2007	2042	2100		SF	S18W38		1515
05 Jul	2009	2014	2028	M1.6				1515
05 Jul	2137	2145	2151	M1.6	1N	S12W46		1515
05 Jul	2334	2339	2341	C5.0				1515
06 Jul	0013	0021	0024	C6.8	1N	S17W37		1515
06 Jul	0137	0140	0142	M2.9	SN	S18W41		1515
06 Jul	0228	0231	0237	C5.0	1N	S11W50		1515
06 Jul	0244	0251	0258	M1.0				1515
06 Jul	0334	0343	0348		SF	S18W39		1515
06 Jul	0359	0411	0423		SF	S17W39		1515
06 Jul	0425	0433	0443	C5.8	SN	S17W38		1515
06 Jul	0444	0445	0447		SF	S17W38		1515
06 Jul	0452	0459	0524	C7.7	SF	S17W38		1515
06 Jul	0545	0548	0555		SF	S14W49		1514
06 Jul	0635	0637	0638		SF	S18E78		1520
06 Jul	0640	0641	0648		SF	S17W40		1515
06 Jul	0655	0657	0722	C7.4	SN	S18W40		1515
06 Jul	0725	0726	0732		SF	S17W40		1515
06 Jul	0733	0740	0750		SF	S17W40		1515
06 Jul	0807	0824	0925	M1.5	SB	S17W40		1515
06 Jul	0818	0819	0823		SF	S15E75		1520
06 Jul	0820	0820	0827		SF	N14W42		1516
06 Jul	0913	0918	0929	C3.8				1515
06 Jul	1024	1029	1032	M1.8	1N	S17W42		1515
06 Jul	1230	1234	1237		SF	S18W48		1515
06 Jul	1324	1330	1355	M1.2	SF	S20W45		1515
06 Jul	1332	1333	1336		SF	N12W57		1513
06 Jul	1358	1403	1419		SF	S18W42		1515
06 Jul	1450	1500	1512	C7.8				
06 Jul	1601	1604	1613	C5.0	SF	S19W59		1515
06 Jul	1603	1603	1614		SF	S18W42		1515
06 Jul	1707	1710	1715	C3.4				



Flare List

Date	Time			X-ray Class	Imp/ Brtns	Optical		Rgn #
	Begin	Max	End			Location Lat CMD		
06 Jul	1738	1743	1748	C7.2				1515
06 Jul	1848	1855	1905	M1.3	SF	S18W51		1515
06 Jul	1920	1924	1926	C9.2				
06 Jul	1935	1935	1941		SF	S17W50		1515
06 Jul	2005	2006	2010		SF	S11W60		1514
06 Jul	2301	2308	2314	X1.1				1515
07 Jul	0004	0004	0009		SF	S16E67		
07 Jul	0223	0224	0227		SF	S15E68		
07 Jul	0235	0237	0252		SF	S16W64		1514
07 Jul	0254	0255	0300		SF	S17W50		1515
07 Jul	0310	0315	0323	M1.2	SF	S17W51		1515
07 Jul	0338	0345	0353		SF	S17W51		1515
07 Jul	0402	0416	0440	C6.7	SF	N16W65		1513
07 Jul	0456	0629	0635		SF	S20W54		1515
07 Jul	0611	0618	0620		SF	S17W52		1515
07 Jul	0629	0629	0633		SF	S17W52		1515
07 Jul	0711	0714	0717		SF	S16W66		1514
07 Jul	0750	0752	0754		SF	S17W53		1515
07 Jul	0818	0828	0839	M1.0				1520
07 Jul	0953	0953	1003		SF	S20E63		
07 Jul	1036	1044	1049	C6.4				1515
07 Jul	1057	1103	1107	M2.6	SF	S19W58		1515
07 Jul	1210	1213	1215	C2.4				
07 Jul	1302	1306	1309	C3.2				1515
07 Jul	1310	1314	1316	C3.9				1515
07 Jul	1345	1349	1352	C3.7	SF	S20W59		1515
07 Jul	1433	1436	1441	C3.0	SN	S15W66		1515
07 Jul	1442	1447	1454	C3.6				
07 Jul	1559	1604	1615		SF	S15E67		
07 Jul	2356	0009	0016	C8.4	SF	N16W76		1513
08 Jul	0007	0011	0016		SF	S13W77		1514
08 Jul	0035	0043	0055		SF	S24E57		
08 Jul	0130	0130	0133		SF	S17W63		1515
08 Jul	0133	0133	0137		SF	S13W77		1514
08 Jul	0139	0140	0142		SF	S13W77		1514
08 Jul	0203	0209	0214	C3.6				1515
08 Jul	0203	0208	0216		SF	S13W78		1514
08 Jul	0204	0207	0212		SF	S17W64		1515



Flare List

Date	Time			Optical			Rgn #
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	
08 Jul	0208	0212	0216		SF	S24E56	
08 Jul	0217	0219	0221		SF	S13W78	1514
08 Jul	0303	0306	0311		SF	S13W78	1514
08 Jul	0312	0321	0348	C4.4	SF	S13W78	1514
08 Jul	0336	0336	0342		SF	S17W64	1515
08 Jul	0349	0350	0358		SF	S13W79	1514
08 Jul	0414	0419	0424	C6.6	SF	S17W65	1515
08 Jul	0445	0449	0459		SF	S17W65	1515
08 Jul	B0456	U0458	0509		SF	S19W63	1515
08 Jul	0512	0512	0515		SF	S19W63	1515
08 Jul	0521	0523	0525		SF	S19W64	1515
08 Jul	0528	0534	0540	C5.9	SF	S19W64	1515
08 Jul	0531	0531	0554	M1.3	SF	S17W65	1515
08 Jul	0613	0624	0643	C6.8	1F	S13W80	1515
08 Jul	0645	0647	0650		SF	S13W80	1515
08 Jul	0728	0729	0732		SF	S13W69	1515
08 Jul	0729	0730	0733		SF	S14W80	1515
08 Jul	0737	0737	0744		SF	S20E64	1520
08 Jul	0833	0834	0856		SF	S15E60	1520
08 Jul	0944	0953	0957	M1.1	1F	S21W67	1515
08 Jul	0952	0952	0955		SF	S17E71	1520
08 Jul	1021	1030	1039	C6.9	SF	S19W74	1515
08 Jul	1044	1045	1051	C5.4	SF	S19W74	1515
08 Jul	1205	1209	1229	M1.4	1F	S21W69	1515
08 Jul	1227	1228	1229		SF	S14W74	1515
08 Jul	1254	1302	1313	C6.1	SF	S17E63	1520
08 Jul	1352	1352	1355		SF	S17W76	1515
08 Jul	1435	1443	1455	C6.7	SF	S16W74	1515
08 Jul	1438	1447	1511		SF	S20W70	1515
08 Jul	1447	1506	1510		SF	S16E60	1520
08 Jul	1517	1518	1521		SF	S19W68	1515
08 Jul	1517	1518	1534		SF	S15E57	1520
08 Jul	1538	1538	1542		SF	S15E50	1520
08 Jul	1623	1632	1642	M6.9	1N	S17W74	1515
08 Jul	1714	1715	1729		SF	S16E48	1520
08 Jul	1722	1724	1726		SF	S18W69	1515
08 Jul	1729	1734	1747	C8.8	SF	S16E48	1520
08 Jul	1748	1803	1809	C9.2	SF	S16E30	1519



Flare List

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
08 Jul	1756	1805	1821		SF	S16W72	1515
08 Jul	1836	1836	1843		SF	S16E48	1520
08 Jul	1839	1840	1844		SF	S16W72	1515
08 Jul	1905	1905	1909		SF	S16W73	1515
08 Jul	1921	1924	1928	C6.6	SF	S16E46	1520
08 Jul	2205	2209	2216		SF	S16E51	1520



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 1512																							
25 Jun	S16E39	262	60	5	Dao	4	B	1				2											
26 Jun	S16E25	263	130	6	Dai	7	B	1				4											
27 Jun	S15E11	263	280	8	Dki	20	BG	1				3											
28 Jun	S16W02	263	250	8	Dki	17	BG	2				5											
29 Jun	S16W16	264	290	10	Dki	16	B	1				3											
30 Jun	S16W29	263	180	10	Dso	9	B					2											
01 Jul	S16W41	263	130	8	Cso	5	B																
02 Jul	S16W55	264	120	7	Cso	2	B																
03 Jul	S15W71	266	110	3	Hsx	3	A					1											
04 Jul	S15W84	266	80	2	Hsx	1	A																
								6	0	0	20	0	0	0	0	0							

Crossed West Limb.

Absolute heliographic longitude: 263

Region 1513

26 Jun	N16E71	216	30	1	Hax	1	A	1				2									
27 Jun	N15E58	216	80	4	Cso	5	B	3				11									
28 Jun	N17E45	216	90	4	Dso	5	BG	2	1		3	1									
29 Jun	N17E30	218	100	6	Dso	8	BG	4	1		6	1									
30 Jun	N17E17	217	120	5	Dso	4	BG	1	2		5	1									
01 Jul	N16E03	218	120	6	Dao	11	BG	2	1		13										
02 Jul	N16W09	218	240	8	Dso	21	BG	5	1		7	3									
03 Jul	N16W22	217	180	8	Dso	10	BG	2			3										
04 Jul	N17W36	218	160	7	Cso	13	BG		1		1			1							
05 Jul	N15W52	220	240	4	Cso	5	B														
06 Jul	N15W65	221	180	3	Hsx	2	A				1										
07 Jul	N16W78	221	180	4	Hsx	2	A	2			2										
08 Jul	N17W89	219	180	6	Hsx	3	A														
								23	7	0	54	6	1	0	0						

Still on Disk.

Absolute heliographic longitude: 218



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 1514																							
27 Jun	S16E55		220	10	7	Bxo	7	B															
28 Jun	S15E42		219	10	5	Bxo	5	B					1										
29 Jun	S16E30		218	60	7	Dao	11	B															
30 Jun	S15E15		219	70	7	Dsi	11	B	2				2										
01 Jul	S15E02		220	10	6	Bxo	7	B	1				6										
02 Jul	S14W13		222	10	1	Axx	3	A	2				3										
03 Jul	S14W27		222	10	4	Axx	7	A															
04 Jul	S14W41		224	plage																			
05 Jul	S14W54		224	plage									1										
06 Jul	S13W67		223	plage									3										
07 Jul	S13W80		223	plage									2										
									5	0	0	18	0	0	0	0	0						

Crossed West Limb.

Absolute heliographic longitude: 220

Region 1515

27 Jun	S16E70		205	200	10	Cso	7	B					2										
28 Jun	S17E58		203	180	10	Dso	6	B					2										
29 Jun	S17E43		205	310	9	Dkc	8	BG	3				7										
30 Jun	S16E30		204	380	11	Ekc	10	BG	1				1										
01 Jul	S17E17		204	850	11	Ekc	28	BG	3				16										
02 Jul	S17E04		205	620	12	Eac	58	BG	8	3			13	4	2								
03 Jul	S16W10		205	570	16	Fkc	45	BGD	14				36										
04 Jul	S17W23		205	640	16	Fkc	45	BGD	10	6			15	5	1								
05 Jul	S17W36		205	670	15	Ekc	56	BGD	11	9			18	5	2	1							
06 Jul	S18W50		206	900	16	Fhc	60	BGD	7	6	1		17	3									
07 Jul	S17W63		206	780	16	Fki	43	BG	5	2			10										
08 Jul	S17W76		206	550	15	Eki	32	BG	7	4			24	4									
									69	30	1	161	21	5	1	0							

Still on Disk.

Absolute heliographic longitude: 205



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 1516																		
29 Jun	N13E43	204	30	5	Dro	4	B											
30 Jun	N14E27	207	60	5	Dso	6	B											
01 Jul	N14E17	205	40	5	Cso	8	B					3						
02 Jul	N14E03	206	10	5	Cro	5	B					1						
03 Jul	N14W12	208	10	2	Axx	2	A					2						
04 Jul	N14W25	208	plage															
05 Jul	N14W39	209	plage															
06 Jul	N20W52	208	0	1	Axx	2	A					1						
07 Jul	N20W65	208	plage															
08 Jul	N20W79	209	plage															
								0	0	0	7	0	0	0	0			

Still on Disk.

Absolute heliographic longitude: 206

Region 1517

01 Jul	N19E26	195	170	4	Dao	18	B											
02 Jul	N19E14	195	130	6	Dao	16	B											
03 Jul	N19W00	195	120	8	Dao	9	B											
04 Jul	N19W13	195	70	6	Dso	7	B											
05 Jul	N18W27	197	10	2	Bxo	5	B											
06 Jul	N19W39	195	30	3	Cro	3	B											
07 Jul	N19W53	196	20	2	Cro	3	B											
08 Jul	N19W67	197	plage															
								0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 195

Region 1518

04 Jul	N09E65	117	10	2	Axx	2	A											
05 Jul	N09E52	118	10	3	Bxo	5	B											
06 Jul	N09E39	117	50	7	Cso	3	B											
07 Jul	N10E24	119	30	6	Cro	4	B											
08 Jul	N09E10	120	30	9	Dso	4	B											
								0	0	0	0	0	0	0	0	0		

Still on Disk.

Absolute heliographic longitude: 120



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 1519																					
04 Jul	S14E76	107	30	2	Hsx	1	A														
05 Jul	S15E63	107	120	1	Hsx	1	A	1	1												
06 Jul	S15E47	109	80	2	Hsx	1	A														
07 Jul	S15E34	109	70	2	Hsx	1	A														
08 Jul	S16E21	109	80	2	Hsx	1	A	1				1									
								2	1	0		1	0	0	0	0	0				

Still on Disk.
 Absolute heliographic longitude: 109

Region 1520																					
05 Jul	S15E83	88	plage									2									
06 Jul	S15E68	88	plage									2									
07 Jul	S15E54	88	510	16	Fhc	14	BG		1												
08 Jul	S15E42	88	1070	25	Fhc	23	BG	3				12									
								3	1	0		16	0	0	0	0	0				

Still on Disk.
 Absolute heliographic longitude: 88

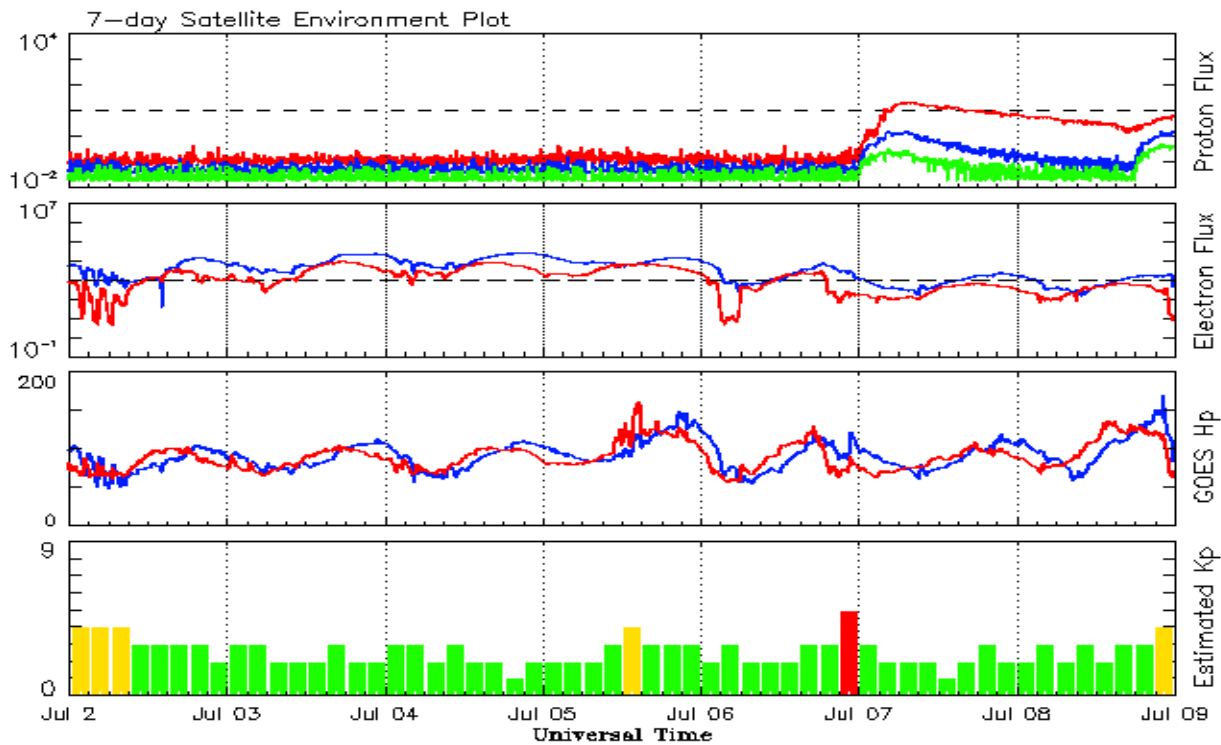


Recent Solar Indices (preliminary)
Observed monthly mean values

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
2010									
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	43.8	28.8	84.3	89.6	4	6.5
2011									
January	32.1	18.8	0.59	47.2	30.9	83.7	91.2	6	6.7
February	53.2	29.6	0.55	50.6	33.4	94.5	92.7	6	6.8
March	81.0	55.8	0.69	55.2	36.9	115.3	95.8	7	7.2
April	81.7	54.4	0.67	61.5	41.8	112.6	100.4	9	7.5
May	61.4	41.5	0.68	69.0	47.6	95.9	105.6	9	7.5
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	57.2	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			133.1		6	
February	50.1	33.1	0.66			106.7		7	
March	77.9	64.2	0.82			115.1		14	
April	84.4	55.2	0.65			113.1		9	
May	99.5	69.0	0.69			121.5		8	
June	88.6	64.5	0.73			120.5		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 02 July 2012*

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.

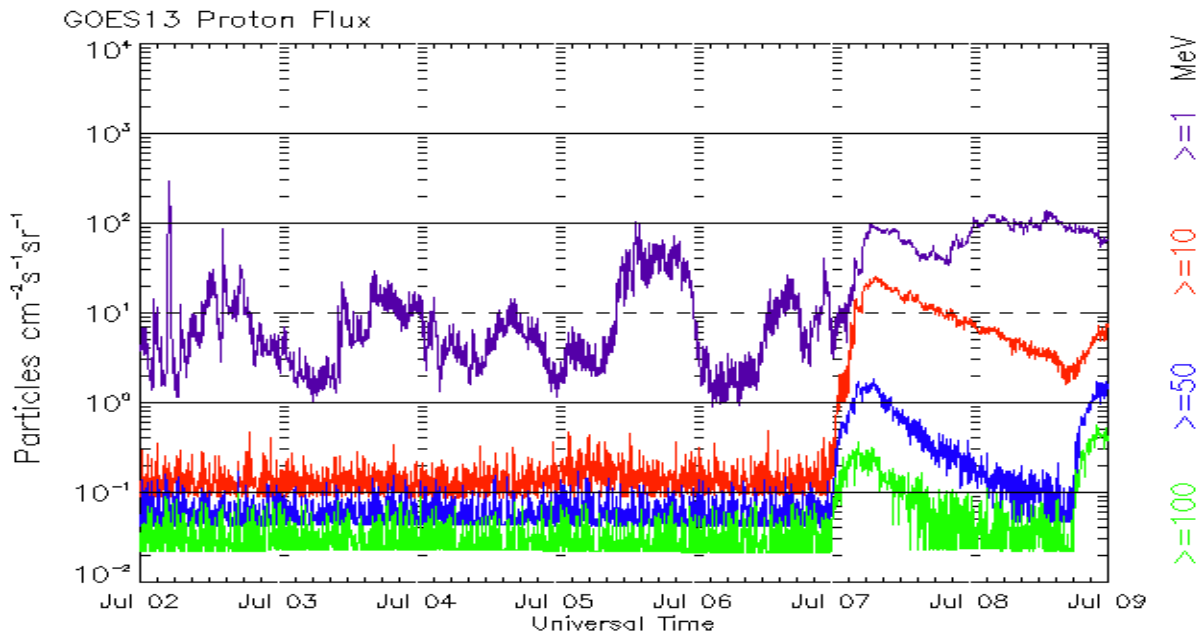
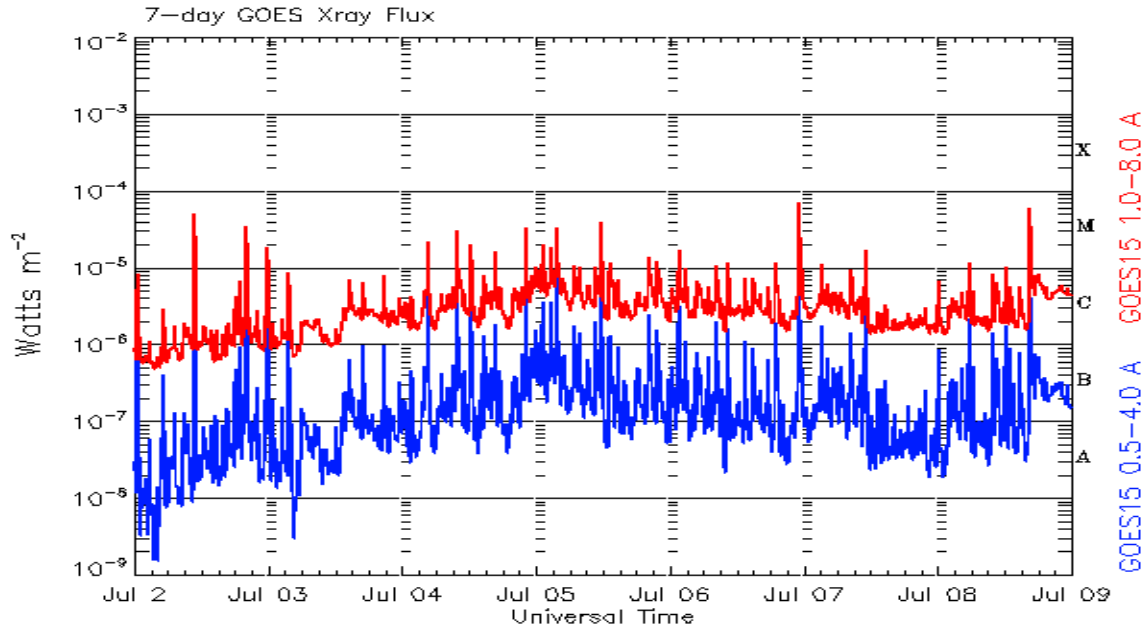
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 02 July 2012*

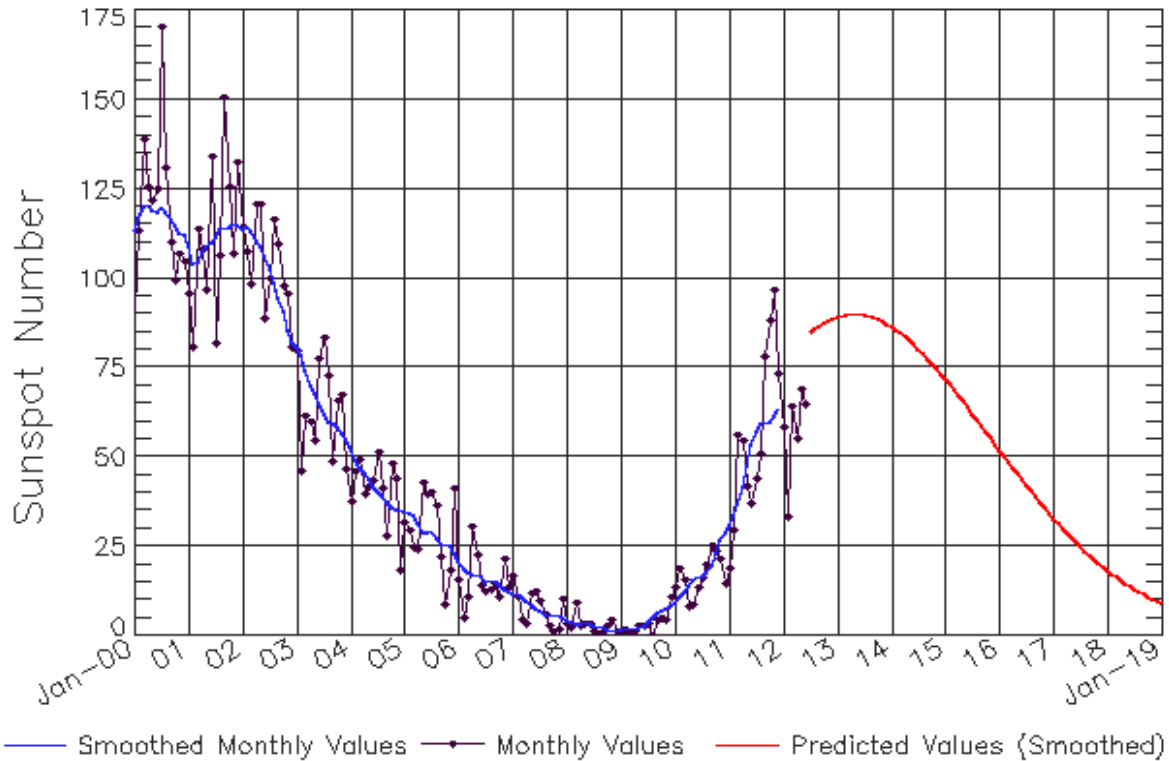
The x-ray plots contains five-minute averages x-ray flux (Watt/m²) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

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 Jun 2012



Updated 2012 Jul 9

NOAA/SWPC Boulder, CO USA

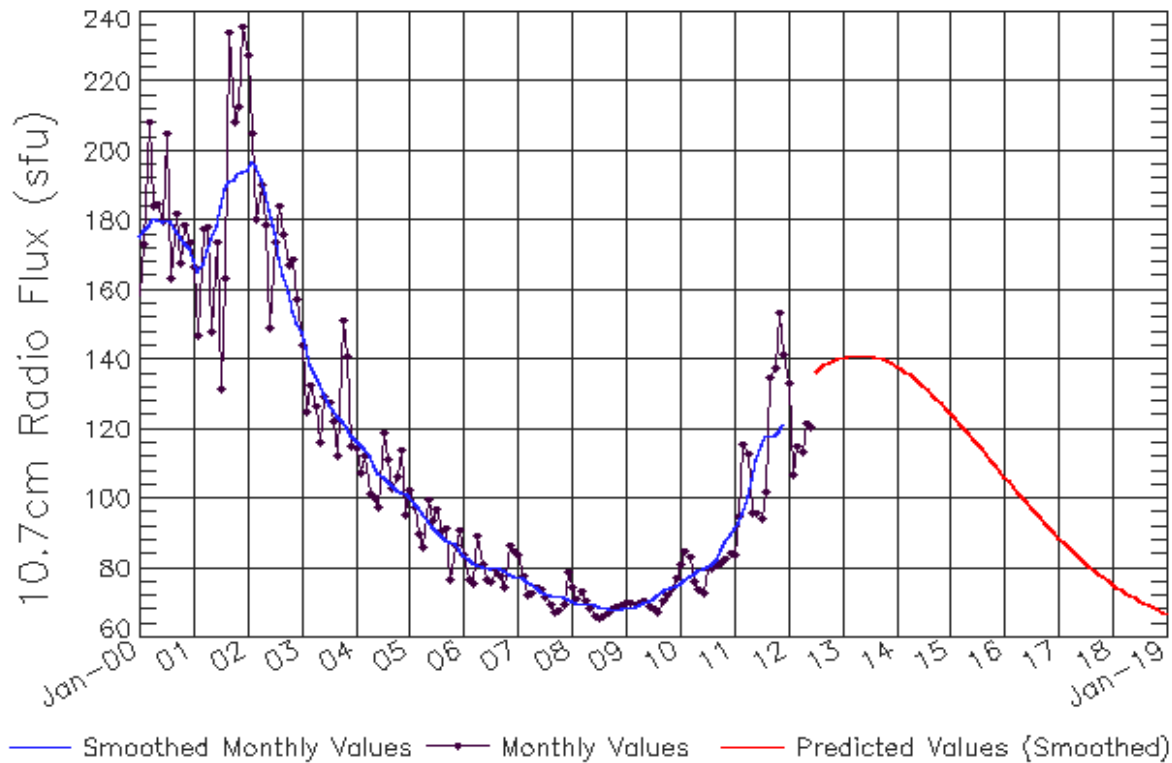
Smoothed Sunspot Number Prediction

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 (1)	69 (2)	71 (3)	72 (5)	71 (5)	72 (6)	73 (7)	77 (7)	81 (8)	83 (9)	85 (9)	87 (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 Jun 2012



Updated 2012 Jul 9

NOAA/SWPC Boulder, CO USA

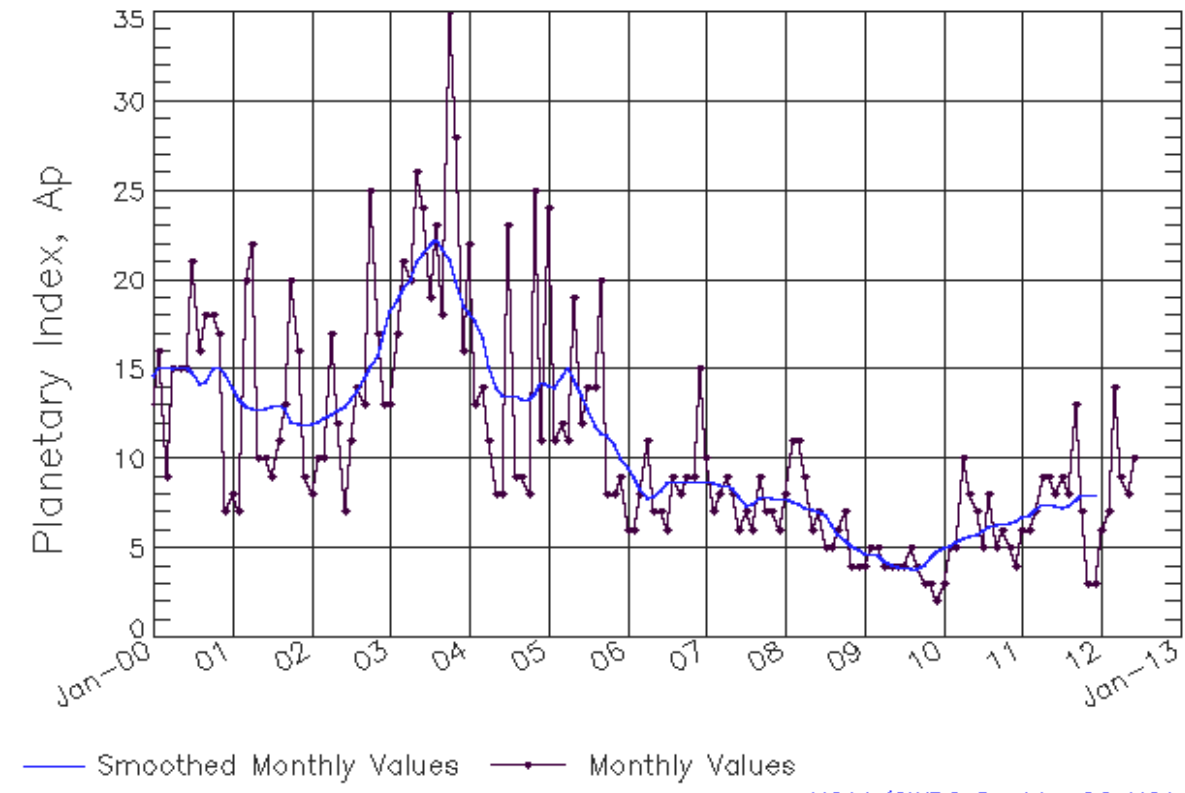
Smoothed F10.7cm Radio Flux Prediction

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 (1)	128 (1)	129 (2)	130 (3)	129 (4)	128 (4)	129 (5)	131 (6)	133 (7)	135 (8)	137 (8)	139 (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 Jun 2012



Updated 2012 Jul 9

NOAA/SWPC Boulder, CO USA

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

