

Solar activity ranged from low to high levels due to activity from a complex of closely spaced regions in the southern hemisphere. These spotted groups were made up of Regions 1519 (S15, L=107, class/area Hsx/120 on 05 July), 1520 (S16, L=86, class/area Fkc/1460 on 12 July), and 1521 (S21, L=96, class/area Eki/300 on 12 July). Region 1520 grew into a large Fkc spot group with a Beta-Gamma-Delta magnetic configuration with over 1300 millionths in area by 09 July and continued to remain large and magnetically complex as it rotated across the visible disk. Region 1520 produced M1 flares at 09/2307 UTC and 10/0514 UTC, an M2/1f flare at 10/0627 UTC, and a long duration X1/2b flare at 12/1649 UTC. Associated with the X1/2b flare were Type II (1268 km/s) and Type IV radio emissions along with an 800 sfu Tenflare and a geoeffective CME with an estimated plane-of-sky speed of 1453 km/s. Region 1521 produced an M1/1f flare at 14/0458 UTC. Region 1521 continued to grow through the period into an Eki spot group with 300 millionths of area and a Beta-gamma magnetic classification.

A greater than 10 MeV proton event at geosynchronous orbit began at 09/0130 UTC, reached a maximum of 19 pfu at 09/0430 UTC and ended at 09/1445 UTC. This event was likely associated with the 08 July M6/1n flare at 08/1632 UTC from Region 1515 (S18, L=206, class/area Fhc/900 on 06 July). A second greater than 10 MeV proton event began at 12/1835 UTC, reached a maximum of 96 pfu at 12/2225 UTC, and ended at 15/0200 UTC. This event was associated with the X1/2b flare at 12/1649 UTC from Region 1520.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate levels on 09 and 15 July, but reached high levels 10 through 14 July.

Geomagnetic field activity was at unsettled to minor storm levels, on 09 July, with high latitude major storm intervals due to residual CME effects likely associated with the 04 July M1 event. July 10 began with an isolated period of active levels and decreased to quiet to unsettled levels for the remainder of the day. On 11 and 12 July, activity was mostly quiet to unsettled with an isolated active period with high latitude intervals of minor to major storm levels. Quiet conditions were observed from 13 July till late on 14 July when a CME associated with the 12 July X1/2b flare arrived. At 14/1728 UTC, a shock was observed at the ACE spacecraft followed by a sudden impulse (27 nT) at the Boulder magnetometer at 14/1811 UTC. Solar wind speed at the ACE spacecraft increased from approximately 350 km/s to 630 km/s while the Bz component of the interplanetary magnetic field (IMF) went south to around -12 nT. At around 15/0600 UTC, solar wind speed was around 600 km/s while the IMF Bz went south around -16 nT and stayed steadily southward through the end of the period. The geomagnetic field responded with active to major storm levels while minor to severe storm conditions were observed at high latitudes through the end of the summary period.

## **Space Weather Outlook**

### **16 July - 11 August 2012**

Solar activity is expected to be at low to moderate levels through 18 July when Region 1520 is due to rotate off the West limb. Very low to low conditions are expected from 19 July through 20 July. Low to moderate conditions are expected from 21 July through the end of the period as old



Regions 1515 and 1520 are due to return on 21 July and 01 August respectively.

There is a slight chance for a greater than 10 MeV proton event at geosynchronous orbit until Region 1520 departs the visible disk on 18 July and again from 21 July through 11 August as old Regions 1515 and 1520 return.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels from 16 - 22 July, 24 - 27 July, and 03 - 11 August. High levels are expected on 23 July and again on 28 July - 02 August due to recurrent coronal hole effects.

Geomagnetic field activity is expected to begin the period with minor to major storm periods due to the continued influence of the 12 July CME. Conditions will gradually return to quiet to active levels by the end of the day on 16 July. Mostly quiet to unsettled conditions are expected from 17 - 21 July. On 22 - 23 July a coronal hole high speed stream is expected to become geoeffective causing mostly unsettled conditions. Quiet to unsettled conditions will prevail from 24 - 26 July. On 27 July, a co-rotating interaction region followed by a recurrent coronal hole high speed stream is expected to become geoeffective. Active to minor storm conditions are expected on 27 July while unsettled to active conditions are expected on 28 - 29 July. Conditions are expected to return to quiet to unsettled levels on 30 July through the end of the forecast period.



### *Daily Solar Data*

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10 <sup>-6</sup> hemi.)	X-ray Background Flux	Flares							
					X-ray			Optical				
					C	M	X	S	1	2	3	4
09 July	174	137	1860	C2.0	5	1	0	22	0	0	0	0
10 July	173	122	1640	C1.4	10	2	0	5	3	0	0	0
11 July	162	94	1510	B9.0	5	0	0	11	2	0	0	0
12 July	165	132	1750	B7.0	4	0	1	10	3	1	0	0
13 July	147	112	1270	B8.2	6	0	0	19	0	0	0	0
14 July	148	120	1390	B8.7	5	1	0	12	2	0	0	0
15 July	141	134	1440	B6.5	8	0	0	9	1	0	0	0

### *Daily Particle Data*

Date	Proton Fluence (protons/cm <sup>2</sup> -day -sr)			Electron Fluence (electrons/cm <sup>2</sup> -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
	09 July	8.0e+06	9.0e+05	2.0e+04		1.3e+07
10 July	2.6e+06	1.7e+05	2.7e+03		3.9e+07	
11 July	7.3e+05	3.1e+04	2.7e+03		6.8e+07	
12 July	3.5e+06	9.5e+05	3.7e+03		8.3e+07	
13 July	1.1e+07	2.1e+06	3.3e+03		1.6e+08	
14 July	1.7e+08	1.8e+06	2.8e+03		2.2e+08	
15 July	5.7e+07	2.2e+05	2.1e+03		3.6e+06	

### *Daily Geomagnetic Data*

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	09 July	29	4-4-4-3-5-4-3-5	60	5-5-6-5-6-6-6-3	30
10 July	15	4-3-3-4-3-2-2-2	19	4-3-4-4-4-3-2-2	13	4-2-3-3-2-2-2-2
11 July	10	2-2-3-3-2-1-2-3	23	3-3-6-5-2-2-2-2	10	2-3-3-3-1-1-2-3
12 July	11	2-3-3-4-2-2-1-2	27	3-4-6-6-2-2-1-0	11	3-3-4-3-2-2-1-1
13 July	4	1-1-1-2-2-1-2-0	2	1-1-1-2-1-0-0-0	3	1-1-1-1-1-1-1-1
14 July	11	0-1-1-2-3-2-4-4	12	1-1-0-1-2-2-5-4	17	1-1-1-1-2-2-5-5
15 July	39	4-5-6-5-4-4-4-4	88	4-5-7-7-5-7-6-6	60	4-5-6-6-5-5-6-5



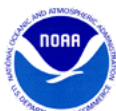
### *Alerts and Warnings Issued*

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
09 Jul 0150	ALERT: Proton Event 10MeV Integral Flux $\geq$ 10pfu	09/0130
09 Jul 0302	ALERT: Geomagnetic K = 5	09/0300
09 Jul 0555	EXTENDED WARNING: Geomagnetic K = 4	08/2235 - 09/1200
09 Jul 1142	EXTENDED WARNING: Geomagnetic K = 4	08/2235 - 10/0000
09 Jul 1329	WARNING: Geomagnetic K = 5	09/1327 - 2200
09 Jul 1428	ALERT: Geomagnetic K = 5	09/1427
09 Jul 1827	SUMMARY: Proton Event 10MeV Integral Flux $\geq$ 10pfu	09/0130 - 1445
09 Jul 1834	CANCELLATION: Proton 10MeV Integral Flux $>$ 10pfu	
09 Jul 2152	EXTENDED WARNING: Geomagnetic K = 5	09/1327 - 10/1300
09 Jul 2158	EXTENDED WARNING: Geomagnetic K = 4	08/2235 - 10/1300
10 Jul 1232	EXTENDED WARNING: Geomagnetic K = 4	08/2235 - 11/0100
10 Jul 1447	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	10/1430
11 Jul 1036	WARNING: Geomagnetic K = 4	11/1035 - 2359
11 Jul 1056	ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	11/1055
11 Jul 2348	EXTENDED WARNING: Geomagnetic K = 4	11/1035 - 12/0600
12 Jul 0855	WARNING: Geomagnetic K = 4	12/0855 - 1900
12 Jul 0904	ALERT: Geomagnetic K = 4	12/0900
12 Jul 1103	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	11/1055
12 Jul 1627	ALERT: X-ray Flux exceeded M5	12/1626
12 Jul 1632	ALERT: Type IV Radio Emission	12/1615
12 Jul 1709	ALERT: Type II Radio Emission	12/1625
12 Jul 1734	WARNING: Proton 10MeV Integral Flux $>$ 10pfu	12/1733 - 13/0400
12 Jul 1735	SUMMARY: X-ray Event exceeded X1	12/1537 - 1730
12 Jul 1740	WARNING: Proton 100MeV Integral Flux $>$ 1pfu	12/1739 - 13/0400
12 Jul 1851	ALERT: Proton Event 10MeV Integral Flux $\geq$ 10pfu	12/1835
12 Jul 2007	SUMMARY: 10cm Radio Burst	12/1614 - 1705
13 Jul 0034	CANCELLATION: Proton 100MeV Integral Flux $>$ 1pfu	



## *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
13 Jul 0739	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	11/1055
13 Jul 1313	WATCH: Geomagnetic A $\geq$ 20	14/
13 Jul 1633	WARNING: Proton 10MeV Integral Flux $>$ 10pfu	13/1630 - 14/2300
14 Jul 0501	CONTINUED ALERT: Electron 2MeV Integral Flux $\geq$ 1000pfu	11/1055
14 Jul 1459	SUMMARY: 10cm Radio Burst	14/1409 - 1410
14 Jul 1736	WARNING: Geomagnetic Sudden Impulse expected	14/1800 - 1830
14 Jul 1738	WARNING: Geomagnetic K = 4	14/1740 - 15/0300
14 Jul 1738	WARNING: Geomagnetic K = 5	14/1740 - 15/0300
14 Jul 1814	ALERT: Geomagnetic K = 4	14/1812
14 Jul 1817	SUMMARY: Geomagnetic Sudden Impulse	14/1811
14 Jul 1853	ALERT: Geomagnetic K = 5	14/1851
14 Jul 1914	WARNING: Geomagnetic K = 6	14/1915 - 2359
14 Jul 2258	EXTENDED WARNING: Proton 10MeV Integral Flux $>$ 10pfu	13/1630 - 15/1100
15 Jul 0254	EXTENDED WARNING: Geomagnetic K = 5	14/1740 - 15/0900
15 Jul 0254	EXTENDED WARNING: Geomagnetic K = 4	14/1740 - 15/0900
15 Jul 0721	WARNING: Geomagnetic K = 6	15/0730 - 1200
15 Jul 0721	EXTENDED WARNING: Geomagnetic K = 4	14/1740 - 15/1500
15 Jul 0721	EXTENDED WARNING: Geomagnetic K = 5	14/1740 - 15/1200
15 Jul 0754	ALERT: Geomagnetic K = 6	15/0748
15 Jul 1019	SUMMARY: Proton Event 10MeV Integral Flux $\geq$ 10pfu	12/1835 - 15/0200
15 Jul 1121	ALERT: Geomagnetic K = 6	15/1113
15 Jul 1145	EXTENDED WARNING: Geomagnetic K = 6	15/0730 - 1500
15 Jul 1145	EXTENDED WARNING: Geomagnetic K = 4	14/1740 - 16/0000
15 Jul 1145	EXTENDED WARNING: Geomagnetic K = 5	14/1740 - 15/1800
15 Jul 1703	EXTENDED WARNING: Geomagnetic K = 5	14/1740 - 16/0000
15 Jul 1703	WARNING: Geomagnetic K = 6	15/1705 - 2100
15 Jul 2047	ALERT: Geomagnetic K = 6	15/2046

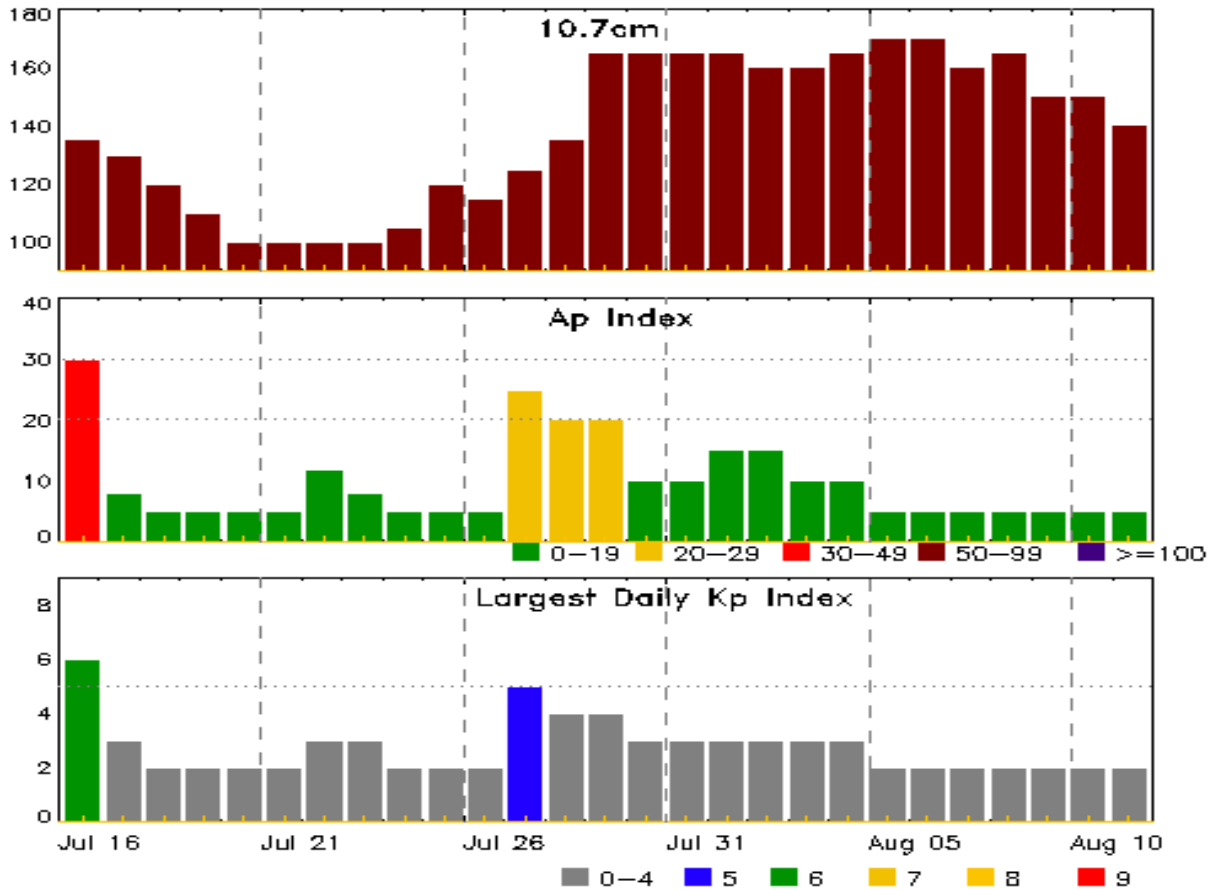


### *Alerts and Warnings Issued*

<b>Date &amp; Time of Issue UTC</b>	<b>Type of Alert or Warning</b>	<b>Date &amp; Time of Event UTC</b>
15 Jul 2047	EXTENDED WARNING: Geomagnetic K = 6	15/1705 - 16/0000
15 Jul 2347	EXTENDED WARNING: Geomagnetic K = 6	15/1705 - 16/0300
15 Jul 2347	EXTENDED WARNING: Geomagnetic K = 5	14/1740 - 16/1300
15 Jul 2347	EXTENDED WARNING: Geomagnetic K = 4	14/1740 - 16/1300



## 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
16 Jul	135	30	6	30 Jul	165	10	3
17	130	8	3	31	165	10	3
18	120	5	2	01 Aug	165	15	3
19	110	5	2	02	160	15	3
20	100	5	2	03	160	10	3
21	100	5	2	04	165	10	3
22	100	12	3	05	170	5	2
23	100	8	3	06	170	5	2
24	105	5	2	07	160	5	2
25	120	5	2	08	165	5	2
26	115	5	2	09	150	5	2
27	125	25	5	10	150	5	2
28	135	20	4	11	140	5	2
29	165	20	4				



### *Energetic Events*

Date	Time			X-ray		Optical Information			Peak		Sweep Freq	
	Begin	Max	Half	Class	Integ	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
			Max		Flux				245	2695	II	IV
14 Jul	0451	0458	0505	M1.0	0.006	SF	S22W36	1521				
09 Jul	2303	2307	2311	M1.1	0.003			1520				
10 Jul	0458	0514	0531	M1.7	0.024			1520				
10 Jul	0605	0627	0647	M2.0	0.033	1F	S17E30	1520				
12 Jul	1537	1649	1730	X1.4	0.460	2B	S15W01	1520	3900	800	2	2

### *Flare List*

Date	Time			X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
	Begin	Max	End				
09 Jul	0003	0004	0041		SF	S17E25	1519
09 Jul	0037	0037	0053		SF	S18W89	1515
09 Jul	0124	0126	0136		SF	S16E36	1520
09 Jul	0457	0457	0503		SF	N18W62	1517
09 Jul	0518	0527	0532		SF	S19W73	1515
09 Jul	0524	0527	0535		SF	S22E36	1520
09 Jul	0706	0713	0722	C4.5	SF	N16W63	1516
09 Jul	0736	0807	0918		SF	S18E39	1520
09 Jul	0805	0830	0858	C7.9	SF	S17W82	1515
09 Jul	0850	0851	0909		SF	S17W83	1515
09 Jul	0921	0932	1005	C6.5			1515
09 Jul	0940	0946	1004		SF	S20E30	1520
09 Jul	1208	1214	1255		SF	S20E28	1520
09 Jul	1314	1314	1315		SF	S17E23	1519
09 Jul	1318	1319	1334		SF	S16E19	1519
09 Jul	1320	1326	1338		SF	S22E45	1520
09 Jul	1356	1402	1404		SF	S20E27	1520
09 Jul	1408	1411	1419		SF	S20E27	1520
09 Jul	1531	1536	1545		SF	S21E26	1520
09 Jul	1917	1917	1922		SF	S17E15	1519
09 Jul	1925	1929	1936		SF	S22E24	1520
09 Jul	1946	1952	1956	C5.0			1515
09 Jul	2047	2048	2053		SF	S17E39	1520
09 Jul	2207	2217	2228	C2.2			1520
09 Jul	2303	2307	2311	M1.1			1520
09 Jul	2339	0017	0057		SF	S17E34	1520





## *Flare List*

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	Rgn #
10 Jul	0315	0316	0337	C3.9	SF	S22E34	1520
10 Jul	0431	0439	0445	C7.0			1521
10 Jul	0458	0514	0531	M1.7			1520
10 Jul	0557	0600	0604		SF	S16E29	1520
10 Jul	0605	0627	0647	M2.0	1F	S17E30	1520
10 Jul	0757	0757	0804		SF	S18E37	1520
10 Jul	0812	0827	0912	C4.5	1F	S16E07	1519
10 Jul	0900	0904	0908	C4.1	SF	S22E16	1521
10 Jul	1004	1235	1437		1F	S15E29	1520
10 Jul	1208	1224	1231	C5.5			1520
10 Jul	1237	1244	1249	C4.6			1520
10 Jul	1339	1345	1349	C8.2	SF	S22E17	1521
10 Jul	1527	1545	1550	C5.6			1520
10 Jul	2007	2014	2016	C3.2			1520
10 Jul	2357	0009	0023	C3.0			1515
11 Jul	0510	0512	0545		SF	S20E22	1520
11 Jul	0523	0532	0558	C3.4	SF	S22E08	1521
11 Jul	0824	0831	0837	C9.9	1N	S22E05	1521
11 Jul	0826	0828	0851		SF	S20E22	1520
11 Jul	0933	0938	0946		SF	S16E21	1520
11 Jul	1102	1104	1105		SF	S15E19	1520
11 Jul	1120	1126	1130		SF	S15E19	1520
11 Jul	1134	1135	1139		SF	S15E19	1520
11 Jul	1435	1442	1449	C1.7	SF	S18W09	1519
11 Jul	1534	1537	1541		SF	S17E15	1520
11 Jul	1557	1602	1606	C1.9	SF	S17E15	1520
11 Jul	2017	2018	2020		SF	S20E12	1520
11 Jul	2124	2227	2249	C5.6	1N	S18E12	1520
12 Jul	0105	0109	0117	C1.3	SN	S20W03	1521
12 Jul	0123	0136	0143	C4.0	1F	S20E11	1520
12 Jul	0213	0213	0219		SF	S21W10	1521
12 Jul	0303	0303	0331		SF	S22E08	1520
12 Jul	0402	0403	0406		SF	S19W18	1519
12 Jul	0527	0542	0546		SF	S19E09	1520
12 Jul	0746	0805	0821	C3.1			1520
12 Jul	0723	0727	0746	C1.0			1521
12 Jul	0743	0745	0837		SF	S21E07	1520
12 Jul	1215	1217	1221		SF	S19E06	1520



## *Flare List*

Date	Time			X-ray Class	Optical		Rgn #
	Begin	Max	End		Imp/ Brtns	Location Lat CMD	
12 Jul	B1455	U1455	1501		SF	S21W15	1521
12 Jul	1537	1649	1730	X1.4			1520
12 Jul	1547	1548	1558		SF	N13W15	1522
12 Jul	2001	2003	2018		1F	S24W15	1521
12 Jul	1539	1625	2041		2B	S15W01	1520
12 Jul	2119	2135	2301		SF	S22W00	1520
12 Jul	2357	0036	0102		1F	S14W07	1520
13 Jul	0055	0056	0111		SF	S15W23	1521
13 Jul	0112	0116	0120		SF	N13W21	1522
13 Jul	0453	0456	0503		SF	S16W06	1520
13 Jul	0501	0502	0505		SF	N13W23	1522
13 Jul	0529	0535	0540		SF	N13W23	1522
13 Jul	0543	0609	0616		SF	S15W07	1520
13 Jul	0623	0629	0637	C2.4	SF	S23W24	1521
13 Jul	0645	0645	0652		SF	S22W25	1521
13 Jul	0738	U0738	A0749		SF	S15W07	1520
13 Jul	0823	0824	0826		SF	S16W07	1520
13 Jul	0940	0940	0941		SF	S16W07	1520
13 Jul	1107	1111	1113	C1.5	SF	S16W08	1520
13 Jul	1215	1219	1222	C1.5	SF	S22W27	1521
13 Jul	1250	1252	1256		SF	S22W29	1521
13 Jul	1304	1306	1311		SF	S22W29	1521
13 Jul	1347	1347	1352		SF	S21W30	1521
13 Jul	1502	1515	1620		SF	S13W13	1520
13 Jul	1900	1904	1927	C1.3	SF	S13W17	1520
13 Jul	2201	2210	2219	C2.4	SF	S13W18	1520
13 Jul	2228	2235	2242	C2.1			1519
14 Jul	0006	0006	0013		SF	S22W35	1521
14 Jul	0344	0456	0531		1N	S17W22	1520
14 Jul	0426	0501	0526		1F	S16W25	1521
14 Jul	0451	0458	0505	M1.0	SF	S22W36	1521
14 Jul	0532	0537	0541		SF	S17W23	1520
14 Jul	0604	0606	0614		SF	S23W35	1521
14 Jul	0632	0632	0641		SF	S19W34	1521
14 Jul	0718	0725	0733	C2.0	SF	S19W37	1521
14 Jul	0907	0912	0916	C1.4	SF	N12W39	1522
14 Jul	1029	1039	1051	C3.2	SF	S12W25	1520
14 Jul	1108	1109	1114		SF	S23W39	1521



## *Flare List*

Date	Time			Optical			
	Begin	Max	End	X-ray Class	Imp/Brtns	Location Lat CMD	Rgn #
14 Jul	1143	1144	1149		SF	N11W40	1522
14 Jul	1408	1414	1450	C2.4	SF	S13W28	1520
14 Jul	1538	1544	1549	C2.5	SF	S16W25	1520
15 Jul	1045	1046	1052		SF	S17W36	1520
15 Jul	1432	1436	1440	C1.1	SF	S21W57	1521
15 Jul	1725	1730	1735	C1.0			
15 Jul	1838	1847	1849	C3.8	SF	S17W65	1519
15 Jul	1941	1948	1953	C2.8	SF	S19W60	1519
15 Jul	2027	2046	2051	C1.2	SF	S19W60	1519
15 Jul	2052	2056	2058	C1.6			
15 Jul	2143	2149	2152	C3.5	SF	S15W44	1520
15 Jul	2148	2148	2157		SF	S20W60	1521
15 Jul	2155	2157	2200		SF	S18W66	1519
15 Jul	2353	0011	0031	C2.4	1F	S17W63	1519
15 Jul	2355	2356	0004		SF	S17W60	1521



## Region Summary

Date	Location		Sunspot Characteristics				Flares										
	Lat CMD	Helio Lon	Area 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
								C	M	X	S	1	2	3	4		
<b>Region 1513</b>																	
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		

Crossed West Limb.

Absolute heliographic longitude: 218

<b>Region 1514</b>																	
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 Summary - continued**

Date	Location		Sunspot Characteristics					Flares													
	Lat	CMD	Helio Lon	Area 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical									
									C	M	X	S	1	2	3	4					
<b>Region 1515</b>																					
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							
09 Jul	S15W89		206	320	10	Dao	7	BG	3				4								
									72	30	1	165	21	5	1	0					

Crossed West Limb.  
 Absolute heliographic longitude: 205

<b>Region 1516</b>																					
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	0				

Crossed West Limb.  
 Absolute heliographic longitude: 206



### *Region Summary - continued*

Date	Location		Sunspot Characteristics				Flares									
	Lat	CMD	Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
			Lon	10 <sup>6</sup> hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
<b>Region 1517</b>																
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												
09 Jul	N19W81		198	plage								1				
									0	0	0	1	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 195

<b>Region 1518</b>																
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								
09 Jul	N10W00		116	10	2	Bxo	4	B								
10 Jul	N09W13		116	20	3	Bxo	4	B								
11 Jul	N09W27		117	plage												
12 Jul	N09W40		117	plage												
13 Jul	N09W53		117	plage												
14 Jul	N09W67		118	plage												
15 Jul	N09W81		118	plage												
									0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 116



### *Region Summary - continued*

Date	Location		Sunspot Characteristics					Flares															
	Lat CMD	Helio Lon	Area 10 <sup>6</sup> hemi.	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical												
								C	M	X	S	1	2	3	4								
<b>Region 1519</b>																							
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											
09 Jul	S16E13	104	100	9	Cso	8	B					4											
10 Jul	S16W04	107	60	2	Hsx	1	A	1						1									
11 Jul	S15W18	108	40	2	Hsx	1	A	1				1											
12 Jul	S14W31	108	50	2	Hsx	1	A					1											
13 Jul	S16W45	107	50	1	Hsx	1	A	1															
14 Jul	S16W56	106	50	2	Cso	3	B																
15 Jul	S17W68	105	90	7	Dao	12	B	4				4	1										
								9	1	0		11	2	0	0	0							

Still on Disk.

Absolute heliographic longitude: 107

### **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									
09 Jul	S17E33	84	1320	19	Fkc	57	BGD	1	1			12									
10 Jul	S16E19	84	1370	23	Fkc	60	BGD	5	2			3	2								
11 Jul	S17E06	84	1320	18	Fkc	48	BGD	2				9	1								
12 Jul	S16W09	86	1460	20	Fkc	53	BGD	2		1		5	2	1							
13 Jul	S16W23	86	920	19	Fkc	33	BGD	3				9									
14 Jul	S17W35	85	990	19	Fkc	34	BGD	3				4	1								
15 Jul	S17W48	85	960	18	Fkc	35	BGD	1				2									
								20	4	1		60	6	1	0	0					

Still on Disk.

Absolute heliographic longitude: 84



**Region Summary - continued**

Date	Location		Sunspot Characteristics					Flares															
	Lat CMD	Lon	Helio 10 <sup>6</sup> hemi.	Area	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical											
									C	M	X	S	1	2	3	4							
<b>Region 1521</b>																							
09 Jul	S22E21		96	110	7	Dao	11	B															
10 Jul	S22E05		98	190	9	Dsi	17	B	3				2										
11 Jul	S22W07		97	150	11	Eso	15	BG	2				1	1									
12 Jul	S21W21		97	210	11	Esi	18	BG	2				3	1									
13 Jul	S21W34		96	260	11	Eki	16	B	2				7										
14 Jul	S21W47		96	280	11	Eki	16	B	1	1			6	1									
15 Jul	S21W60		96	300	12	Eki	17	BG	1				3										
									11	1	0		22	3	0	0	0	0					

Still on Disk.

Absolute heliographic longitude: 98

**Region 1522**

12 Jul	N13W21		98	20	3	Cro	4	B					1									
13 Jul	N13W36		98	20	4	Dao	5	B					3									
14 Jul	N13W49		98	20	4	Cao	7	B	1				2									
15 Jul	N13W62		98	40	5	Dao	9	B														
									1	0	0		6	0	0	0	0	0				

Still on Disk.

Absolute heliographic longitude: 98

**Region 1523**

12 Jul	S27E31		46	10	3	Bxo	6	B														
13 Jul	S27E17		46	20	6	Dao	7	B														
14 Jul	S28E04		45	50	7	Dao	10	B														
15 Jul	S28W08		45	50	8	Dao	11	B														
									0	0	0		0	0	0	0	0	0				

Still on Disk.

Absolute heliographic longitude: 45



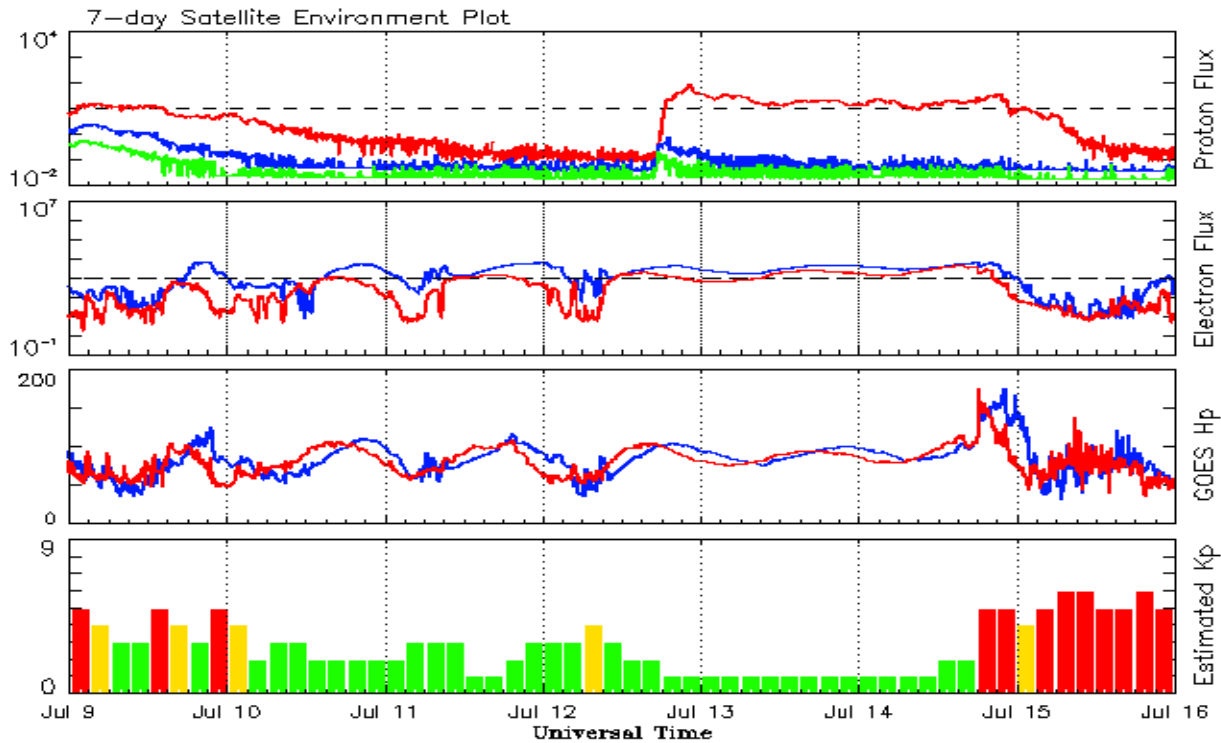


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

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
<b>2010</b>									
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
<b>2011</b>									
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
<b>2012</b>									
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 09 July 2012*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-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.

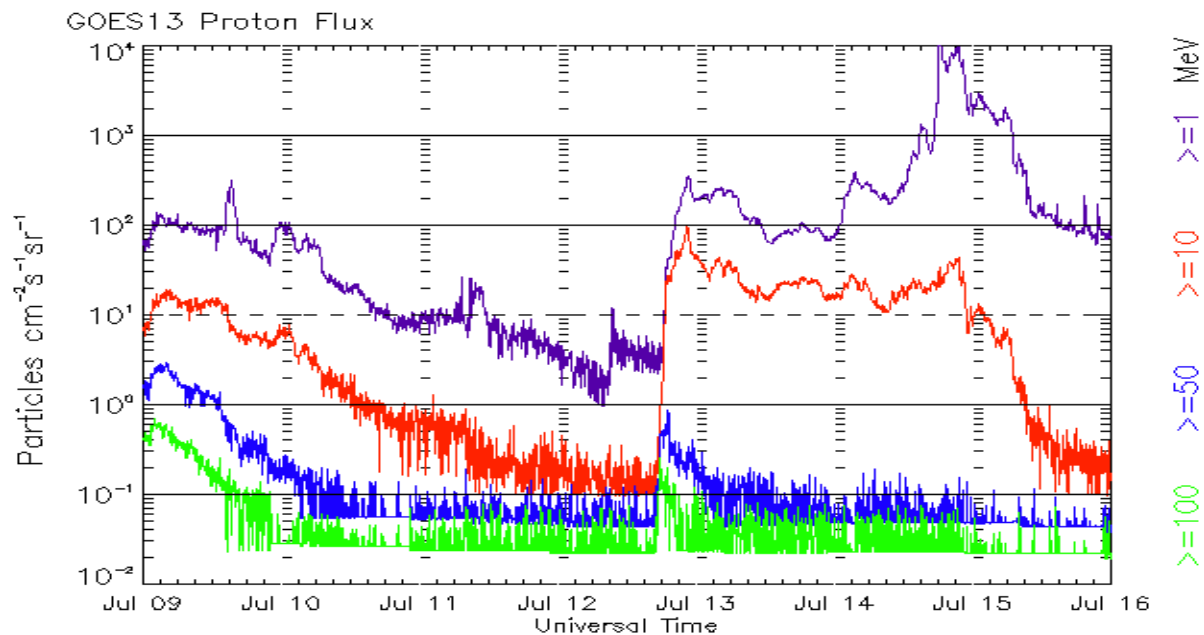
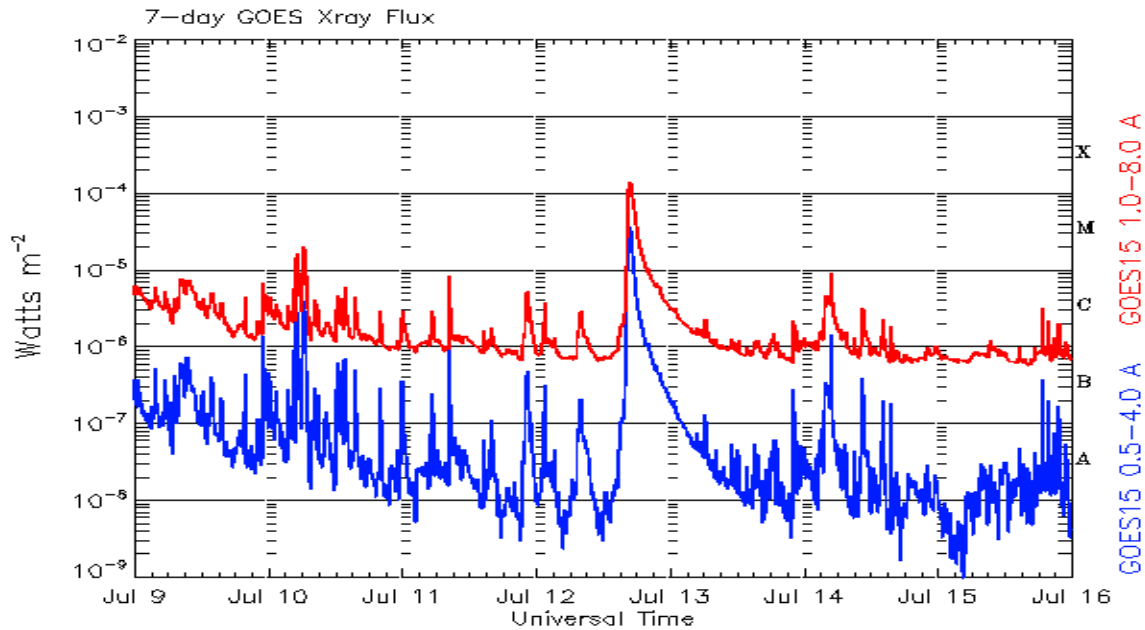
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 09 July 2012*

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

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm<sup>2</sup> -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.



## ***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

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