

Space Weather Highlights 21 - 27 July 2003

**SWO PRF 1456
29 July 2003**

Solar activity was at low levels. Region 410 (S13, L=195 class/area Eki/800 on 22 July) produced several C-class flares early on the 21st, but transitioned into a decay phase by 22 July and flare production ceased. A 16-degree NE-SW filament erupted from near disk center at around 21/0900Z. Faint ejecta were observed on LASCO imagery, but the event was not expected to be geoeffective. Region 417 (S21, L=206 class/area Dai/360 on 22 July), which emerged rather quickly on 20 July, was responsible for several C-class flares before rotating around the west limb on 24 July. Active Regions 409 (N15, L=193 class/area Fkc/490 on 15 July) and 412 (N16, L=202 class/area Dac/200 on 20 July) also produced occasional C-class flares through the 24th. Low levels persisted through the 25th due to a single long duration C1 flare that likely originated from the east limb. Solar activity decreased to very low levels on the 26th and 27th. New Region 421 (S08, L=359 class/area Hax/030 on 27 July) rotated into view late in the period. Limb proximity is hindering a good analysis, but this region appears to be quite active.

A waning high speed solar wind stream was in effect early in the period. Speeds near 600 km/s declined to 450 km/s by late on the 21st. Near nominal solar wind conditions persisted through the 22nd. A weak transient impact was observed at ACE on the 23rd; solar wind speed increased to over 500 km/s and periods of sustained southward Bz occurred. Solar wind speed gradually declined to very low levels just above 300 km/s by the 25th. A strong co-rotating interaction region (CIR) on 26 July, hailed the onset of a large recurrent southern coronal hole stream. Total field measurements in the CIR were over 35 nT, and the Bz component experienced sustained southward periods near -30 nT. The solar wind speed associated with this high speed stream was approximately 800 km/s, and generally ranged between 550 - 800 km/s for the remainder of the period.

There were no greater than 10 MeV proton events at geosynchronous orbit during the period.

The greater than 2 MeV electron flux at geo-synchronous orbit reached high levels on 21 - 23 July.

A gradual decline in solar wind speed from 600 - 700 km/s late in the last period to near 450 km/s early this period resulted in quiet to unsettled levels with isolated active periods on the 21st and 22nd. A weak transient passage on the 23rd produced a very weak disturbance with only isolated active periods. Mostly quiet to unsettled conditions persisted through the 25th. The CIR and associated high speed coronal hole stream on the 26th produced predominantly unsettled to minor storm levels through the remainder of the period.

Space Weather Outlook 30 July - 25 August 2003

Solar activity is expected to be at low to moderate levels. Region 421 has the potential for M-class events through the first half of the period. The block of active longitudes (L = 190 - 205), which rotated around the west limb this period, will return by mid August and may produce moderate solar activity levels.

No greater than 10 MeV proton events at geosynchronous orbit are expected.

The greater than 2 MeV electron flux is expected to reach high levels on July 30 - 05 August, 10 - 11 August, and again on 13 -16 August, due to recurrent coronal hole high

The geomagnetic field is expected to range from quiet to major storm levels during the period. A large, recurrent coronal hole high speed stream is expected to become geoeffective on 28 July - 03 August, and produce active to minor storm levels. Coronal hole effects are expected again on 7 - 9 August and again on 11 - 17 August.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 ⁶ hemi.)	X-ray Background	Flares							
					X-ray Flux			Optical				
					C	M	X	S	1	2	3	4
21 July	156	219	1420	B6.6	16	0	0	12	0	0	0	0
22 July	153	200	1700	B7.2	10	0	0	10	1	0	0	0
23 July	144	164	1420	B5.3	8	0	0	6	1	0	0	0
24 July	125	134	1030	B5.1	4	0	0	0	0	0	0	0
25 July	112	94	340	B4.0	1	0	0	0	0	0	0	0
26 July	103	52	260	B2.8	0	0	0	0	0	0	0	0
27 July	102	60	230	B1.9	0	0	0	1	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
	21 July	3.9E+5	1.2E+4	2.7E+3		7.1E+7
22 July	5.5E+5	1.1E+4	2.6E+3		1.9E+8	
23 July	7.2E+5	1.2E+4	2.6E+3		1.8E+8	
24 July	3.4E+5	1.1E+4	2.6E+3		3.5E+7	
25 July	4.2E+5	1.2E+4	2.7E+3		9.4E+6	
26 July	2.3E+5	1.1E+4	2.5E+3		1.1E+6	
27 July	1.7E+6	1.1E+4	2.4E+3		1.2E+7	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
	21 July	8	4-3-2-1-1-0-1-1	10	4-4-1-1-3-0-0-2	12
22 July	5	2-0-2-2-2-2-1-1	*	*_*_*_*_*_*_*_*	9	3-1-2-3-2-2-3-2
23 July	10	2-2-2-3-2-3-2-3	*	*_*_*_*_*_*_*_*	11	2-2-2-3-2-3-3-4
24 July	6	2-1-1-1-2-1-2-3	*	*_*_*_*_*_*_*_2-2	10	3-2-1-0-2-3-3-4
25 July	8	1-2-4-2-2-1-1-2	10	2-2-3-4-3-1-1-1	11	2-2-4-3-2-3-3-2
26 July	20	2-3-2-3-4-3-4-5	37	2-3-4-3-5-6-6-4	26	3-3-3-3-4-5-5-5
27 July	16	4-4-3-3-3-1-3-2	31	5-4-4-5-5-4-3-2	24	5-4-5-4-3-3-3-2

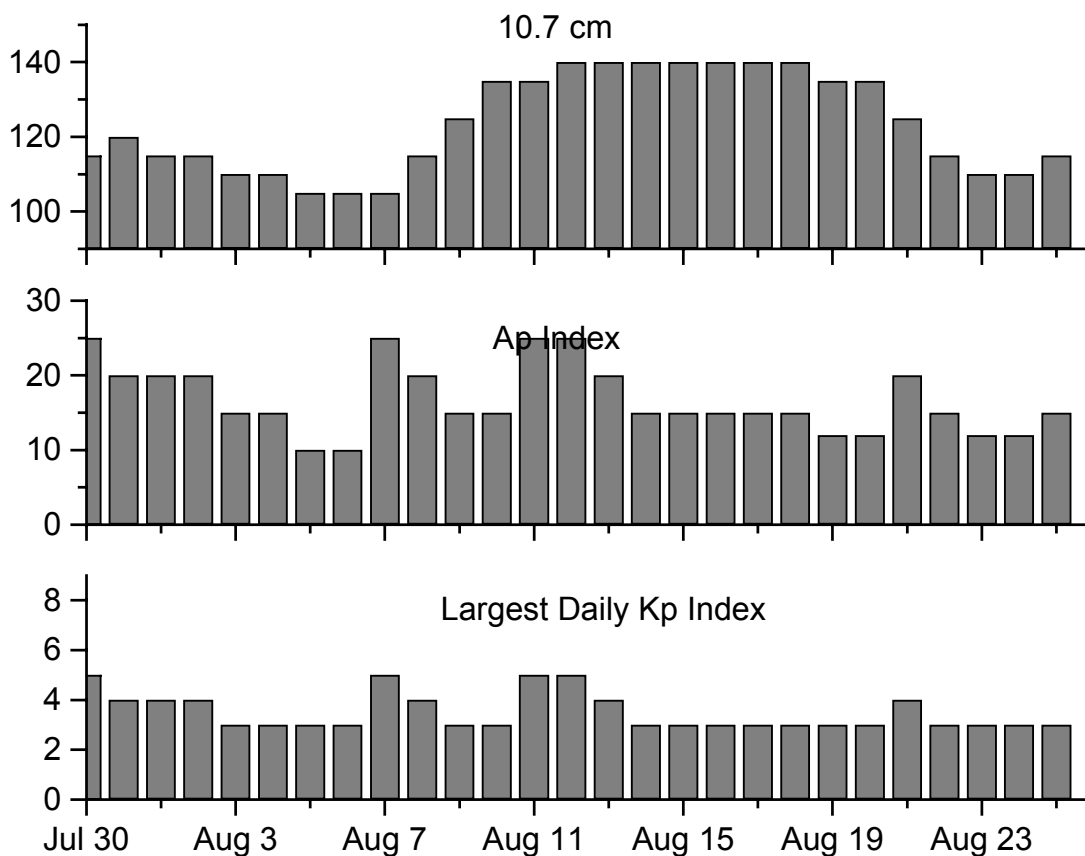


Alerts and Warnings Issued

<u>Date & Time of Issue</u>	<u>Type of Alert or Warning</u>	<u>Date & Time of Event UT</u>
21 Jul 0012	2 - 245 MHz Radio Bursts	20 Jul
21 Jul 0012	245 MHz Radio Noise Storm	20 Jul
21 Jul 0050	ALERT: Geomagnetic K= 4	21 Jul 0050
21 Jul 1123	ALERT: Electron 2MeV Integral Flux > 1000pfu	21 Jul 1105
22 Jul 0018	7 - 245 MHz Radio Bursts	21 Jul
22 Jul 0018	245 MHz Radio Noise Storm	21 Jul
22 Jul 0501	ALERT: Electron 2MeV Integral Flux > 1000pfu	22 Jul 0500
23 Jul 0013	2 - 245 MHz Radio Bursts	22 Jul
23 Jul 0013	245 MHz Radio Noise Storm	22 Jul
23 Jul 0718	ALERT: Electron 2MeV Integral Flux > 1000pfu	23 Jul 0635
23 Jul 1705	WARNING: Geomagnetic K= 4 expected	23 Jul 1707 - 2359
23 Jul 1711	ALERT: Geomagnetic K= 4	23 Jul 1712
23 Jul 2335	EXTENDED WARNING: Geomagnetic K= 4 expected	23 Jul 1707 - 24 Jul 1500
24 Jul 0013	6 - 245 MHz Radio Bursts	23 Jul
24 Jul 0013	245 MHz Radio Noise Storm	23 Jul
24 Jul 0319	ALERT: Type II Radio Emission	23 Jul 0243
24 Jul 2316	WARNING: Geomagnetic K= 4 expected	23 Jul 2317 - 25 Jul 1500
24 Jul 2322	ALERT: Geomagnetic K= 4	24 Jul 2321
25 Jul 0354	1 - 245 MHz Radio Burst	24 Jul
25 Jul 0354	245 MHz Radio Noise Storm	24 Jul
25 Jul 2105	WATCH: Geomagnetic A \geq 20	28 Jul
26 Jul 1425	ALERT: Geomagnetic K= 4	26 Jul 1420
26 Jul 1439	WARNING: Geomagnetic K= 4 expected	26 Jul 1441 - 27 Jul 0000
26 Jul 1716	ALERT: Geomagnetic K= 4	26 Jul 1718
26 Jul 1737	WARNING: Geomagnetic K= 5 expected	26 Jul 1740 - 27 Jul 0000
26 Jul 1752	ALERT: Geomagnetic K= 5	26 Jul 1750
26 Jul 2005	WATCH: Geomagnetic A \geq 20	27 Jul
26 Jul 2009	WATCH: Geomagnetic A \geq 20	29 Jul
26 Jul 2347	EXTENDED WARNING: Geomagnetic K= 5	26 Jul 1740 - 27 Jul 1500
27 Jul 1455	WARNING: Geomagnetic K= 4 expected	27 Jul 1459 - 2359
27 Jul 2325	EXTENDED WARNING: Geomagnetic K= 4 expected	27 Jul 1459 - 28 Jul 1500



Twenty-seven Day Outlook



Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7 cm	Planetary A Index	Largest Kp Index
30 Jul	115	25	5	13 Aug	140	20	4
31	120	20	4	14	140	15	3
01 Aug	115	20	4	15	140	15	3
02	115	20	4	16	140	15	3
03	110	15	3	17	140	15	3
04	110	15	3	18	140	15	3
05	105	10	3	19	135	12	3
06 Aug	105	10	3	20	135	12	3
07	105	25	5	21	125	20	4
08	115	20	4	22	115	15	3
09	125	15	3	23	110	12	3
10	135	15	3	24	110	12	3
11	135	25	5	25	115	15	3
12	140	25	5				



Energetic Events

Date	Time		X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	½ Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	Radio Flux		Intensity	
									245	2695	II	IV
No Events Observed												

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical		Rgn
	Begin	Max	End			Location Lat CMD		
21 July	0004	0007	0010	C1.8	Sf	S22W37		417
	0031	0033	0055	C3.2	Sf	S11W27		410
	0057	0059	0105		Sf	S12W26		410
	0109	0112	0115	C1.2				
	0118	0124	0137	C1.5				
	0150	0155	0158	C1.3				
	0227	0227	0232	C3.3	Sf	S12W30		410
	0319	0328	0336	C1.4				
	0339	0347	0353	C2.3				
	0454	0454	0500		Sf	S12W29		410
	0722	0727	0734	C1.7	Sf	S12W31		410
	0736	0739	0741	C1.7				
	1000	1001	1005		Sf	S12W33		410
	B1359	U1359	1403		Sf	S12W45		410
	1411	1417	1424	C1.3				
	1705	1708	1713	C1.3	Sf	S21W43		417
	2000	2003	2013	C1.1				
	2109	2115	2125	C1.5				
	B2200	U2211	2215		Sf	S21W47		417
	2231	2232	2237	C2.0	Sf	N15W37		409
2359	0001	0030	C2.8	Sf	S21W49		417	
22 July	0158	0206	0243	C3.5	Sf	N17W54		412
	0338	0338	0345	C2.8	Sf	S22W52		417
	0345	0410	0420	C3.5				
	0612	0613	0616		Sf	S20W55		417
	0625	0625	0635	C1.5	Sf	S19W52		417
	0709	0715	0747	C5.2	1f	S21W53		417
	0818	0819	0837	C3.6	Sf	S21W54		417
	1322	1333	1337		Sf	S22W59		417
	1418	1419	1430	C1.3	Sf	S22W58		417
	1518	1523	1535	C1.7	Sf	S22W58		417
1743	1746	1751	C1.8	Sf	N21W46		409	
2123	2125	2129	C1.5	Sf	S21W63		417	
23 July	0020	0020	0024		Sf	S21W62		417
	0131	0142	0152	C1.8	Sf	S21W65		417
	0206	0208	0216		Sf	S21W66		417
	0409	0413	0416	C1.5				409



Flare List - continued.

Date	Time			X-ray Class.	Optical		Rgn
	Begin	Max	End		Imp / Brtns	Location Lat CMD	
23 July	0436	0438	0442	C1.9	Sf	S21W66	417
	0552	0601	0617	C3.9	1f	S19W70	417
	0824	0828	0835	B9.7			412
	0919	0923	0928	C1.0			419
	0939	0940	0942		Sf	N17W57	409
	1131	1136	1142	C2.3	Sf	S19W73	417
	1524	1530	1544	C2.2			417
	1714	1749	1806	C1.8			417
	2207	2211	2218	B8.9			417
	24 July	0119	0123	0140	C1.4		
0229		0249	0305	C1.6			417
0649		0734	0743	C1.4			417
1400		1403	1405	C1.2			
25 July	1639	1719	1802	C1.1			
26 July	1841	1846	1849	B7.1			421
	2207	2211	2215	B4.4			414
27 July	1738	1742	1746	B2.8			409
	2017	2020	2023	B4.5			422
	2041	2042	2045		Sf	N14W25	422
	2225	2232	2241	B6.7			421
	2350	2356	0003	B8.1			422



Region Summary

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

Region 405

11 Jul	S10E66	221	0080	03	Hax	002	A											
12 Jul	S10E52	221	0120	07	Cao	003	B											
13 Jul	S11E41	219	0090	07	Cao	010	B											
14 Jul	S11E28	219	0070	07	Dao	019	B											
15 Jul	S11E13	221	0100	07	Dso	011	B											
16 Jul	S11E01	220	0050	07	Cso	005	B											
17 Jul	S10W16	223	0020	02	Cso	003	B											
18 Jul	S10W29	223	0040	04	Hsx	004	A											
19 Jul	S10W43	224	0030	02	Hsx	002	A											
20 Jul	S11W57	225	0020	01	Hsx	001	A											
21 Jul	S12W72	227	0010	00	Axx	001	A											
22 Jul	S09W84	226	0010	00	Hsx	001	A											

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 220

Region 408

13 Jul	N13E23	237	0020	05	Cso	005	B	1			1							
14 Jul	N13E08	239	0020	03	Cao	005	B											
15 Jul	N13W04	238	0020	03	Cso	004	B											
16 Jul	N14W17	238	0010	01	Hrx	001	A											
17 Jul	N12W31	238	0020	03	Cso	002	B											
18 Jul	N13W45	239	0010	00	Hsx	001	A											
19 Jul	N13W58	239																
20 Jul	N13W71	239																
21 Jul	N13W84	239																

1 0 0 1 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 238



Region Summary - continued.

Date	Location		Sunspot Characteristics				Flares										
	Helio		Area (10 ⁻⁶ hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray			Optical						
	(° Lat ° CMD)	Lon						C	M	X	S	1	2	3	4		
<i>Region 409</i>																	
13 Jul	N16E66	194	0250	11	Eao	011	B	5				3					
14 Jul	N15E55	192	0350	15	Eko	023	Bg	2				4					
15 Jul	N15E41	193	0490	18	Fkc	029	B	4									
16 Jul	N16E30	191	0300	16	Fki	034	B										
17 Jul	N15E18	189	0210	14	Eai	045	Bg										
18 Jul	N15E05	189	0160	11	Eao	036	B										
19 Jul	N15W08	189	0120	12	Eao	026	B										
20 Jul	N15W22	190	0160	06	Dao	015	B										
21 Jul	N15W37	192	0060	09	Dao	018	B	1				1					
22 Jul	N16W48	190	0060	07	Cso	011	B	1				1					
23 Jul	N15W61	189	0070	08	Cao	008	B	1				1					
24 Jul	N14W76	191	0040	04	Cso	004	B										
25 Jul	N16W88	190	0020	02	Hrx	002	A										
								14	0	0	0	10	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 189

<i>Region 410</i>																	
13 Jul	S13E63	197	0040	05	Cso	002	B										
14 Jul	S13E49	198	0030	05	Cso	003	B										
15 Jul	S12E38	196	0020	05	Cso	003	B										
16 Jul	S12E28	193	0070	06	Dso	008	Bg	3				3					
17 Jul	S12E12	195	0160	08	Dac	029	Bg	6				4	1				
18 Jul	S11W01	195	0220	10	Dai	042	Bg	4				7					
19 Jul	S12W13	194	0310	11	Eac	038	Bg	3				4	1				
20 Jul	S12W26	194	0620	11	Eac	044	Bgd	11				14					
21 Jul	S12W40	195	0680	11	Ekc	036	Bg	3				7					
22 Jul	S13W53	195	0800	12	Eki	034	Bg										
23 Jul	S13W66	194	0700	12	Eki	021	B										
24 Jul	S13W79	194	0580	13	Eko	012	Bg										
25 Jul	S13W91	193	0070	09	Hax	001	A										
								30	0	0	0	39	2	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 195



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 411

15 Jul	N16E62	172	0110	05	Dso	002	B								
16 Jul	N15E53	168	0060	02	Hsx	002	A								
17 Jul	N14E38	169	0040	02	Hsx	001	A								
18 Jul	N14E26	168	0060	02	Hax	001	A								
19 Jul	N15E13	168	0040	02	Hsx	001	A								
20 Jul	N17W03	171	0030	02	Hsx	001	A								
21 Jul	N15W15	170	0040	02	Hsx	001	A								
22 Jul	N14W27	169	0060	01	Hax	001	A								
23 Jul	N14W40	168	0040	01	Hax	001	A								
24 Jul	N13W54	169	0030	01	Hsx	001	A								
25 Jul	N14W67	169	0020	01	Hsx	001	A								
26 Jul	N14W81	170	0030	01	Hrx	001	A								
27 Jul	N14W94	170													

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 171

Region 412

16 Jul	N16E19	202	0030	04	Cso	008	B								
17 Jul	N16E05	202	0060	05	Dai	015	B	2		1	1				
18 Jul	N17W06	200	0100	09	Dai	027	Bg	3		5					
19 Jul	N16W20	201	0110	09	Dac	017	Bg	1		1					
20 Jul	N16W34	202	0200	08	Dsi	014	Bg								
21 Jul	N15W47	202	0180	10	Dai	012	Bg								
22 Jul	N16W59	201	0180	10	Dao	009	B	1		1					
23 Jul	N16W73	201	0140	08	Dao	005	B								
24 Jul	N15W85	200	0040	01	Hax	001	A								
25 Jul	N17W96	198	0030	01	Hsx	001	A								

7 0 0 8 1 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 202



Region Summary - continued.

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

Region 413

16 Jul	N18E49	172	0030	01	Hsx	001	A												
17 Jul	N18E35	172	0020	01	Hsx	001	A												
18 Jul	N20E22	172	0010	01	Axx	001	A												
19 Jul	N18E09	172	0020	01	Axx	001	A												
20 Jul	N17W03	171	0040	02	Hsx	001	A												
21 Jul	N20W19	174	0010	01	Axx	001	A												
22 Jul	N20W32	174	0000	00	Hrx	001	A												
23 Jul	N20W45	174																	
24 Jul	N20W58	174																	

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 171

Region 414

17 Jul	S02E71	136	0090	03	Hax	001	A												
18 Jul	S02E58	136	0120	02	Hax	001	A												
19 Jul	S01E45	136	0110	02	Hax	002	A												
20 Jul	S02E32	136	0130	03	Hsx	001	A												
21 Jul	S03E19	136	0110	03	Hsx	002	A												
22 Jul	S03E05	137	0100	03	Hsx	001	A												
23 Jul	S03W08	136	0110	03	Hsx	001	A												
24 Jul	S04W20	135	0130	06	Cao	004	B												
25 Jul	S04W34	136	0110	06	Cso	003	B												
26 Jul	S04W49	138	0110	03	Hsx	002	A												
27 Jul	S04W62	138	0110	02	Hsx	001	A												

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 137

Region 415

19 Jul	N13E30	151	0040	06	Dao	011	B	2				2							
20 Jul	N13E16	152	0110	07	Dso	009	B					1							
21 Jul	N12E02	153	0080	10	Dso	010	B												
22 Jul	N12W11	153	0070	10	Cao	008	B												
23 Jul	N12W26	154	0050	08	Cso	006	B												
24 Jul	N11W39	154	0040	02	Hax	002	A												
25 Jul	N13W50	152	0010	04	Bxo	002	B												
26 Jul	N13W63	152																	
27 Jul	N13W76	152																	

2 0 0 3 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 153



Region Summary - continued.

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

Region 416

20 Jul	S09W42	210	0030	04	Dso	004	B												
21 Jul	S07W58	213	0060	06	Cao	004	B												
22 Jul	S07W68	210	0040	06	Cro	003	B												
23 Jul	S07W82	210	0020	06	Bxo	003	B												
24 Jul	S07W95	210																	
												0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 210

Region 417

20 Jul	S22W36	204	0110	06	Dso	021	B	1		2									
21 Jul	S21W49	204	0150	08	Dso	019	Bg	3		4									
22 Jul	S21W64	206	0360	10	Dai	018	Bg	7		8	1								
23 Jul	S22W76	204	0260	11	Eai	015	Bg	6		5	1								
24 Jul	S22W91	204	0110	09	Cso	005	B	2											
												19	0	0	19	2	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 204

Region 418

20 Jul	S05W08	176	0020	03	Cso	003	B												
21 Jul	S06W23	178	0040	04	Cso	005	B												
22 Jul	S05W37	179	0020	03	Cso	003	B												
23 Jul	S05W51	179	0020	01	Hsx	002	A												
24 Jul	S05W64	179	0010	01	Axx	001	A												
25 Jul	S05W77	179																	
26 Jul	S05W90	179																	
												0	0	0	0	0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 176

Region 419

23 Jul	N10E62	066	0010	01	Axx	002	A	1											
24 Jul	N11E50	065	0010	04	Bxo	003	B												
25 Jul	N10E35	067	0010	02	Axx	003	A												
26 Jul	N11E22	067	0020	08	Cao	008	B												
27 Jul	N11E09	067	0010	03	Bxo	002	B												
												1	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 067



Region Summary - continued.

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

Region 420

24 Jul	N11E79	036	0040	01	Hax	001	A											
25 Jul	N10E64	038	0070	02	Hsx	001	A											
26 Jul	N11E51	038	0100	03	Hsx	001	A											
27 Jul	N11E38	038	0070	02	Hsx	001	A											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 038

Region 421

27 Jul	S08E77	359	0030	02	Hax	001	A											
										0	0	0	0	0	0	0	0	0

Still on Disk.

Absolute heliographic longitude: 359

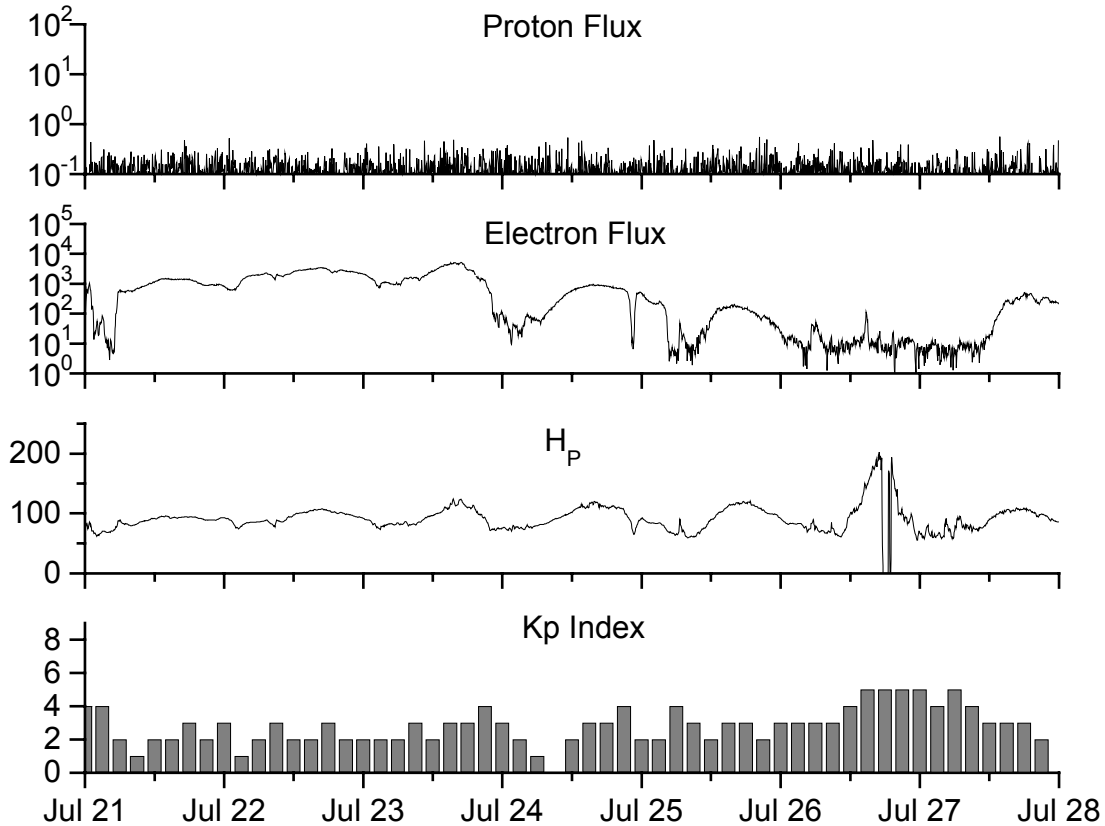


**Recent Solar Indices (preliminary)
of the observed monthly mean values**

Month	Sunspot Numbers			Radio Flux		Geomagnetic			
	Observed values SWO	Ratio RI	Ratio RI/SWO	Smooth values SWO	Smooth values RI	*Penticton 10.7 cm	Smooth Value	Planetary Ap	Smooth Value
2001									
July	124.6	81.1	0.66	172.1	111.7	131.3	183.9	9	12.9
August	159.4	106.4	0.67	176.7	113.6	163.1	188.8	11	13.0
September	229.1	150.7	0.66	178.8	114.1	233.8	191.3	13	12.8
October	197.3	125.5	0.64	179.5	114.0	208.1	191.9	20	12.0
November	178.6	106.5	0.60	183.7	115.5	212.7	193.7	16	12.0
December	217.5	132.2	0.61	184.5	114.6	235.6	193.9	09	12.2
2002									
January	189.0	114.1	0.60	184.8	113.5	227.3	194.6	08	12.4
February	194.5	107.4	0.55	188.6	114.7	205.0	197.2	10	12.8
March	153.1	98.4	0.64	188.9	113.4	180.3	195.7	10	13.0
April	194.9	120.7	0.62	186.2	110.5	189.8	191.5	15	13.2
May	204.1	120.8	0.59	183.6	108.9	178.4	188.0	15	13.3
June	146.0	88.3	0.60	179.9	106.3	148.7	183.0	11	13.5
July	183.5	99.9	0.54	175.4	102.7	173.5	173.5	13	13.9
August	191.0	116.4	0.61	169.3	98.7	183.9	169.5	16	14.3
September	206.4	109.6	0.53	163.4	94.6	175.8	164.2	14	14.9
October	153.9	97.5	0.63	158.7	90.5	167.0	159.5	23	15.5
November	159.8	95.5	0.60	150.5	85.3	168.7	154.3	16	16.1
December	147.9	80.8	0.55	144.6	82.1	158.6	150.9	13	17.0
2003									
January	149.3	79.5	0.53			144.6		13	
February	87.9	46.2	0.53			124.6		15	
March	119.7	61.5	0.51			132.3		19	
April	114.3	60.0	0.52			126.5		20	
May	89.6	55.2	0.62			116.2		25	
June	118.4	77.4	0.65			129.4		24	

NOTE: All smoothed values after June 1999 and monthly values after December 2000 are preliminary estimates. The lowest smoothed sunspot index number for Cycle 22, RI = 8.0, occurred in May 1996. The highest smoothed sunspot number for Cycle 22, RI= 158.5, occurred July 1989. *After June 1991, the 10.7 cm radio flux data source is Penticton, B.C. Canada. Prior to that, it was Ottawa.





*Weekly Geosynchronous Satellite Environment Summary
Week Beginning 21 Jul 2003*

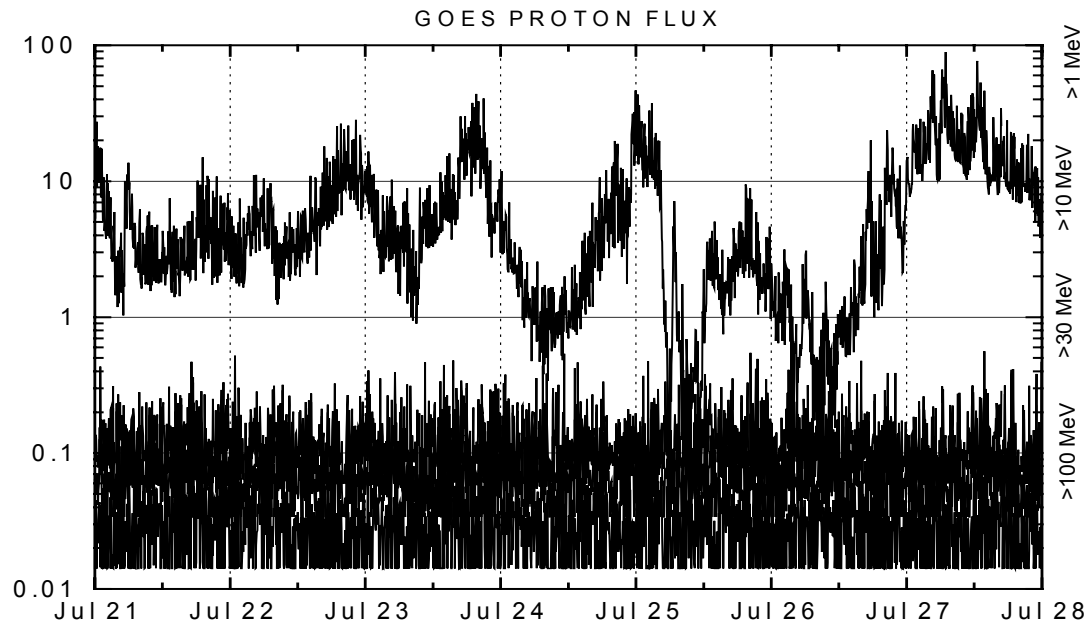
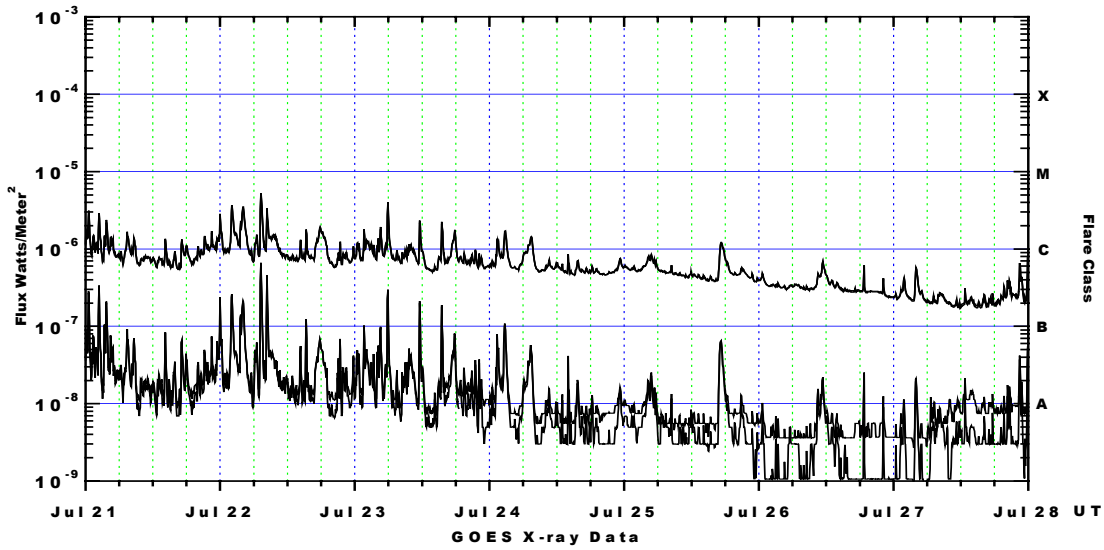
Protons plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W113) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

Electrons plot contains the five-minute averaged integral electron flux (electrons/cm²-sec-sr) with energies greater than 2 MeV at GOES-12.

H_p plot contains the five minute averaged magnetic field H - component in nanoteslas (nT) as measured by GOES-12. The H component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

K_p plot contains the estimated planetary 3-hour K-index (derived by the Air Force Weather Agency) in real time from magnetometers at Meanook, Canada; Sitka, AK; Glenlea, Canada; St. Johns, Canada; Ottawa, Canada; Newport, WA; Fredericksburg, VA; Boulder, CO; Fresno, CA and Heartland, UK. These data are made available through cooperation from the Geological Survey of Canada (GSC) and the US Geological Survey. These may differ from the final K_p values derived from a more extensive network of magnetometers. The data included here are those now available in real time at the SWO 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 K_p are "global" parameters that are applicable to a first order approximation over large areas. H_p 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

X-ray plot contains five-minute averaged x-ray flux (watts/m²) as measured by GOES 12 and 10 in two wavelength bands, .05 - .4 and .1 - .8 nm. The letters A, B, C, M and X refer to x-ray event levels for the .1 - .8 nm band.

Proton plot contains the five-minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-11 (W113) for each of the energy thresholds: >1, >10, >30 and >100 MeV. P10 event threshold is 10 pfu (protons/cm²-sec-sr) at greater than 10 MeV.

