

Space Weather Summary
14 – 20 July 1997

Solar activity was very low. No optical flares were reported. A 9 degree filament disappeared from the northwest quadrant on 15 July.

Solar wind interplanetary magnetic field data were received from the WIND spacecraft a few hours per day. Solar wind velocity and density data were received from proton monitor data provided by the University of Maryland from their sensor aboard the SOHO spacecraft. Velocities gradually increased from 280 - 500 km/sec during the period. Densities were generally in the range 02 - 10 p/cc with peaks to near 20 p/cc observed on 15 and 17 July. Bz hovered about zero (plus 05 nT - minus 05 nT (GSM)) during most days, but was mostly southward at minus 10 nT on 15 July. Solar sector orientation was away (phi angle near 135 degrees) during most of the period.

There were no significant proton enhancements observed at satellite altitudes.

The greater than 2 MeV electron flux at geosynchronous altitudes was at normal to moderate levels.

The geomagnetic field was mostly quiet to unsettled.

Space Weather Forecast
23 July 1997 -18 August 1997

Solar activity is expected to be very low.

No significant proton enhancements are expected at satellite altitudes.

The greater than 2 MeV electron flux is expected to be normal to moderate.

The geomagnetic field is expected to be quiet to unsettled.



Daily Solar Data

Date	Radio Flux 10.7 cm	Sun spot No.	Sunspot Area (10 ⁶ hemi.)	X-ray Background	X-ray Flux			Flares				
					C	M	X	S	1	2	3	4
14 July	68	11	10	<A1.0	0	0	0	0	0	0	0	0
15 July	69	0	0	<A1.0	0	0	0	0	0	0	0	0
16 July	72	0	0	A1.3	0	0	0	0	0	0	0	0
17 July	72	11	0	<A1.0	0	0	0	0	0	0	0	0
18 July	72	11	0	<A1.0	0	0	0	0	0	0	0	0
19 July	71	0	0	A1.0	0	0	0	0	0	0	0	0
20 July	71	12	10	<A1.0	0	0	0	0	0	0	0	0

Daily Particle Data

Date	Proton Fluence (protons/cm ² -day-sr)			Electron Fluence (electrons/cm ² -day-sr)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
14 July	5.8E+5	1.7E+4	3.7E+3		1.7E+6	
15 July	3.2E+5	1.7E+4	3.8E+3		7.2E+5	
16 July	1.4E+5	1.7E+4	3.7E+3		1.0E+6	
17 July	1.1E+5	1.7E+4	3.7E+3		1.3E+6	
18 July	2.8E+5	1.6E+4	3.8E+3		5.5E+6	
19 July	2.6E+5	1.7E+4	3.9E+3		1.4E+7	
20 July	1.4E+5	1.8E+4	4.2E+3		1.8E+7	

Daily Geomagnetic Data

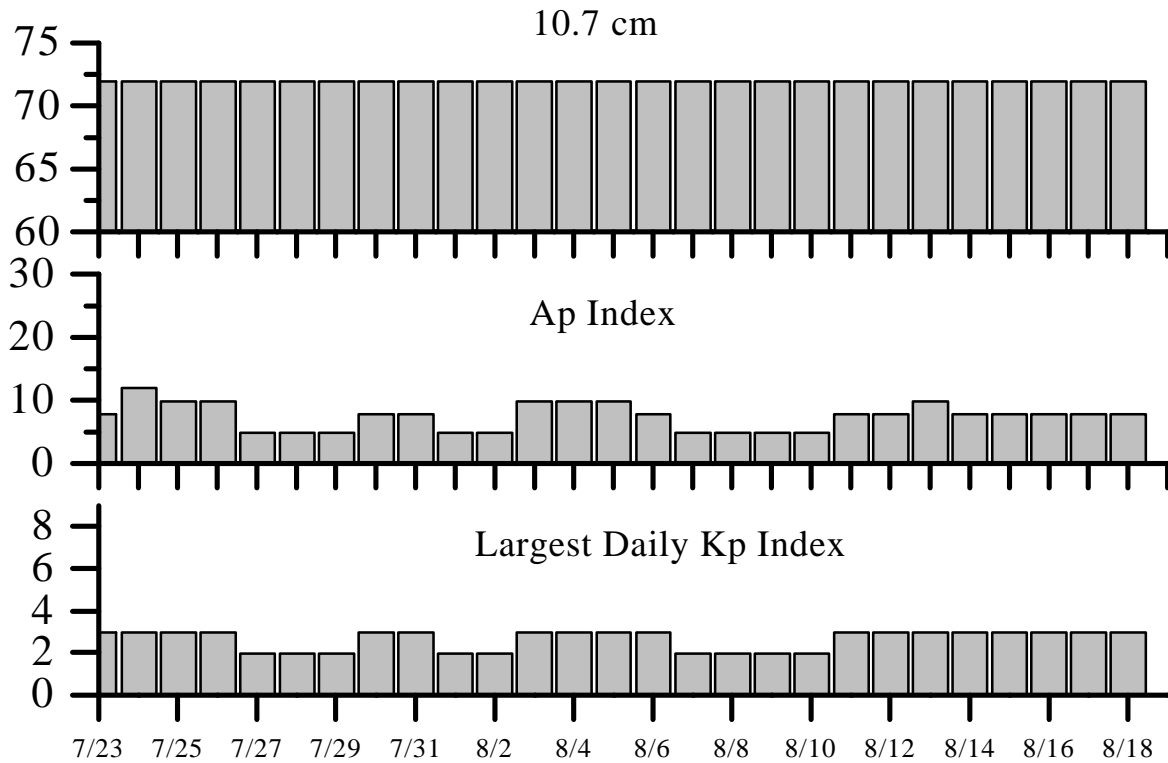
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
14 July	2	0-0-1-1-0-1-2-1	0	0-0-0-0-1-0-1-0	3	0-0-0-1-1-2-1-1
15 July	13	2-3-3-3-3-3-3-2	*	*-*-*-*-*-*-*	14	1-3-2-4-3-3-3-2
16 July	7	2-2-2-2-2-2-2-2	*	*-1-0-0-0-0-0-0	5	2-3-2-1-1-2-2-2
17 July	11	1-2-3-2-1-2-3-4	2	0-1-1-2-1-0-2-0	8	1-1-3-1-1-1-3-3
18 July	11	2-3-2-3-3-3-2-2	8	2-3-3-2-3-0-0-1	10	3-4-3-3-2-2-2-2
19 July	11	2-3-2-2-3-3-2-3	7	1-2-2-4-1-2-1-1	11	2-3-3-3-3-3-2-3
20 July	7	2-1-1-2-3-2-2-2	3	0-1-1-3-2-0-0-0	6	2-1-1-3-2-2-1-2

Alerts and Warnings Issued

Date and Time of Issue (UT)	Type of Alert or Warning	Date and Time of Event (UT)
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No Alerts Issued





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
23 Jul	72	8	3	06 Aug	72	8	3
24	72	12	3	07	72	5	2
25	72	10	3	08	72	5	2
26	72	10	3	09	72	5	2
27	72	5	2	10	72	5	2
28	72	5	2	11	72	8	3
29	72	5	2	12	72	8	3
30	72	8	3	13	72	10	3
31	72	8	3	14	72	8	3
01 Aug	72	5	2	15	72	8	3
02	72	5	2	16	72	8	3
03	72	10	3	17	72	8	3
04	72	10	3	18	72	8	3
05	72	10	3				



Energetic Event

Date	Time (UT)			X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	Max	Class	Integ Flux	Imp Brtns	Location		Rgn #	Radio Flux		Intensity	
							Lat	CMD		245	2695	II	IV

No Event Observed

Flare List

Date	Time			X-ray Class.	Imp / Brtns	Optical Location		Rgn #
	Begin	Max	End			Lat	CMD	
14 July	No Flares Observed							
15 July	No Flares Observed							
16 July	0517	0522	0529	B1.2				
17 July	No Flares Observed							
18 July	No Flares Observed							
19 July	No Flares Observed							
20 July	2109	2112	2116	B1.0				

Region Summary

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

Region 8060

07 Jul	N05E19	079	0010	02	BXO	002	B										
08 Jul	N05E06	079	0000	02	BXO	002	B										
09 Jul	N04W09	081	0030	04	BXO	008	B										
10 Jul	N05W22	081	0010	06	BXO	007	B										
11 Jul	N05W35	081															
12 Jul	N05W48	081															
13 Jul	N05W61	081															
14 Jul	N05W74	081															
15 Jul	N05W87	081															

0 0 0 0 0 0 0 0 0

Crossed West Limb.

Absolute heliographic longitude: 079



Region Summary- continued.

Date	Location		Sunspot Characteristics				Flares								
	(° Lat ° CMD)	Helio	Area (hemi)	Extent (helio)	Spot Class	Spot Count	Mag Class	X-ray				Optical			
		Lon (10 ⁻⁶)						C	M	X	S	1	2	3	4

Region 8061

14 Jul	S21W02	008	0010	00	AXX	001	A											
15 Jul	S21W15	008																
16 Jul	S21W28	008																
17 Jul	S21W41	008																
18 Jul	S21W54	008																
19 Jul	S21W67	008																
20 Jul	S21W80	008																

Still on Disk.

Absolute heliographic longitude: 008

Region 8062

17 Jul	N23E66	260	0000	00	AXX	001	A											
18 Jul	N23E52	261	0000	00	AXX	001	A											
19 Jul	N23E39	261																
20 Jul	N23E26	261																

Still on Disk.

Absolute heliographic longitude: 261

Region 8063

20 Jul	S25W12	299	0010	03	BXO	002	B											

Still on Disk.

Absolute heliographic longitude: 299



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

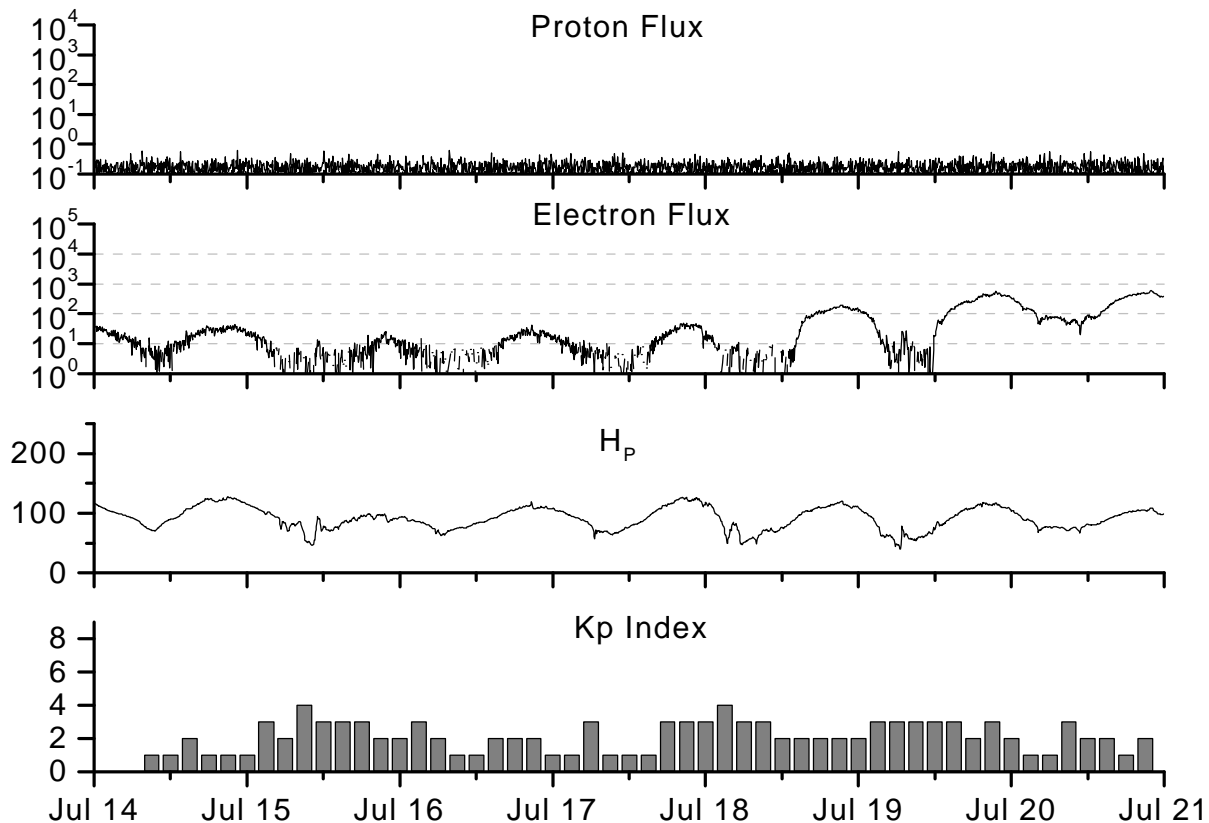
Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		**Penticton	Smooth	Planetary	Smooth
	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
1995									
July	23.8	14.5	0.61	28.1	17.0	73.9	76.9	08	12.4
August	25.1	14.3	0.57	25.4	15.4	73.8	76.0	09	12.1
September	16.5	11.8	0.72	22.0	13.4	72.0	74.8	13	11.8
October	31.6	21.1	0.67	19.7	12.1	77.9	73.8	16	11.4
November	15.7	09.0	0.57	18.5	11.4	74.2	73.2	09	10.7
December	16.2	10.0	0.62	17.6	10.8	72.6	72.8	09	10.0
1996									
January	17.6	11.5	0.55	16.8	10.4	74.5	72.4	09	09.8
February	09.1	04.4	0.48	16.2	10.1	71.5	72.2	10	09.8
March	12.1	09.2	0.76	15.4	09.7	72.7	72.1	11	09.9
April	08.5	04.8	0.60	13.6	08.6	69.3	71.6	11	09.7
May	11.8	05.5	0.47	12.9	08.1*	72.1	71.4	07	09.5
June	18.8	11.8	0.63	13.5	08.6*	69.6	71.8	05	09.4
July	13.2	08.2	0.67	13.4	08.5*	71.2	72.0	07	09.3
August	20.5	14.4	0.68	13.1	08.4*	72.4	72.1	09	09.4
September	02.9	01.6	0.62	13.3	08.5*	69.4	72.3*	15	09.3*
October	02.3	01.8	0.78	14.0	09.0*	69.2	72.6*	13	09.1*
November	26.7	18.6*	0.72*	15.4	10.0*	78.7	73.0*	08	09.1*
December	21.1	12.7*	0.60*	12.7	10.6*	77.8	73.3*	07	09.3*
1997									
January	09.0	06.5*	0.72*			74.0		09	
February	11.3	07.6*	0.67*			73.8		11	
March	14.4	08.8*	0.61*			73.5*		08*	
April	24.5	15.8*	0.64*			74.5*		10*	
May	28.6	18.5*	0.64			74.6*		08*	
June	22.1	13.1*	0.59			72.4*		08*	

*Preliminary estimates.

The lowest smoothed sunspot indices number for Cycle 21, RI = 12.3, occurred September 1986. The highest smoothed sunspot number for Cycle 22, RI=158.5, occurred July 1989.

** From June 1991 onward, 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 14 July 1997

Protons plot contains the five minute averaged integral proton flux (protons/ cm^2 -sec-sr) as measured by GOES-9 (W135) for each of three energy thresholds: greater than 10, 50, and 100 MeV.

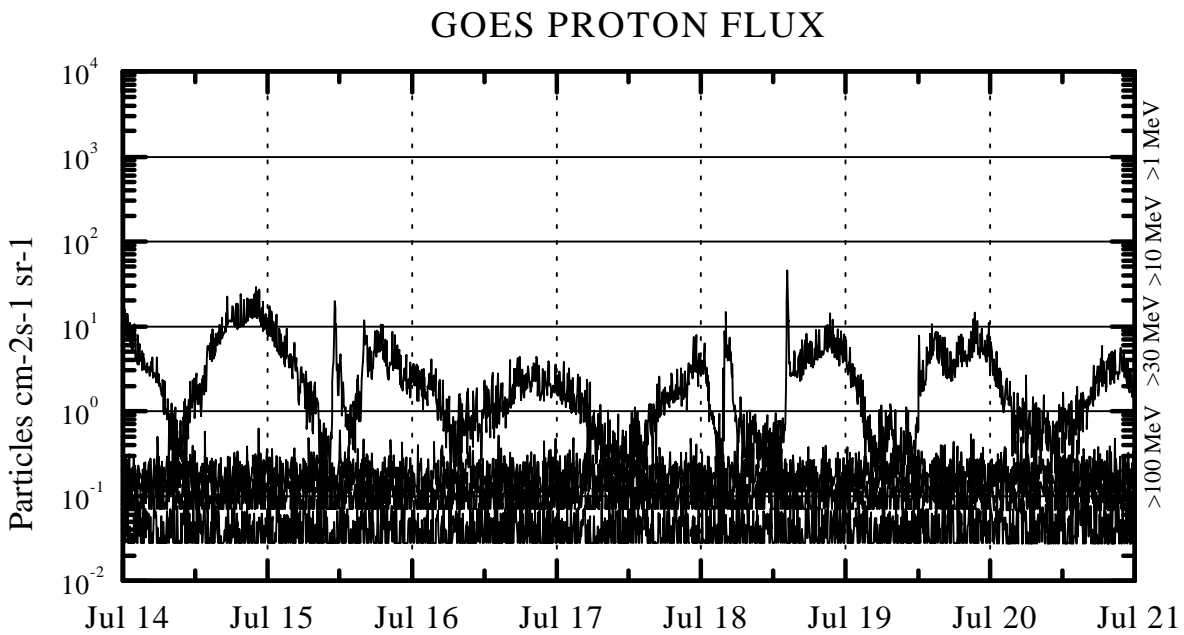
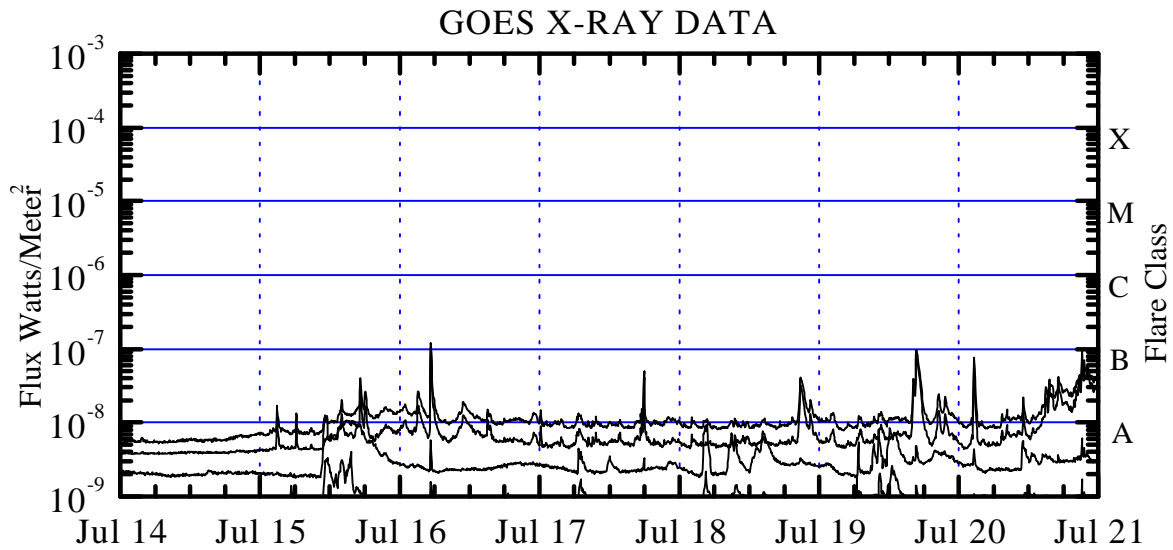
Electrons plot contains the five minute averaged integral electron flux (electrons/ cm^2 -sec-sr) with energies greater than 2 MeV at GOES-9.

H_p plot contains the five minute averaged magnetic field H component in nanoteslas (nT) as measured by GOES-9. 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 USAF 55th Space Weather Squadron) 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. 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_{parallel} is subject to a more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





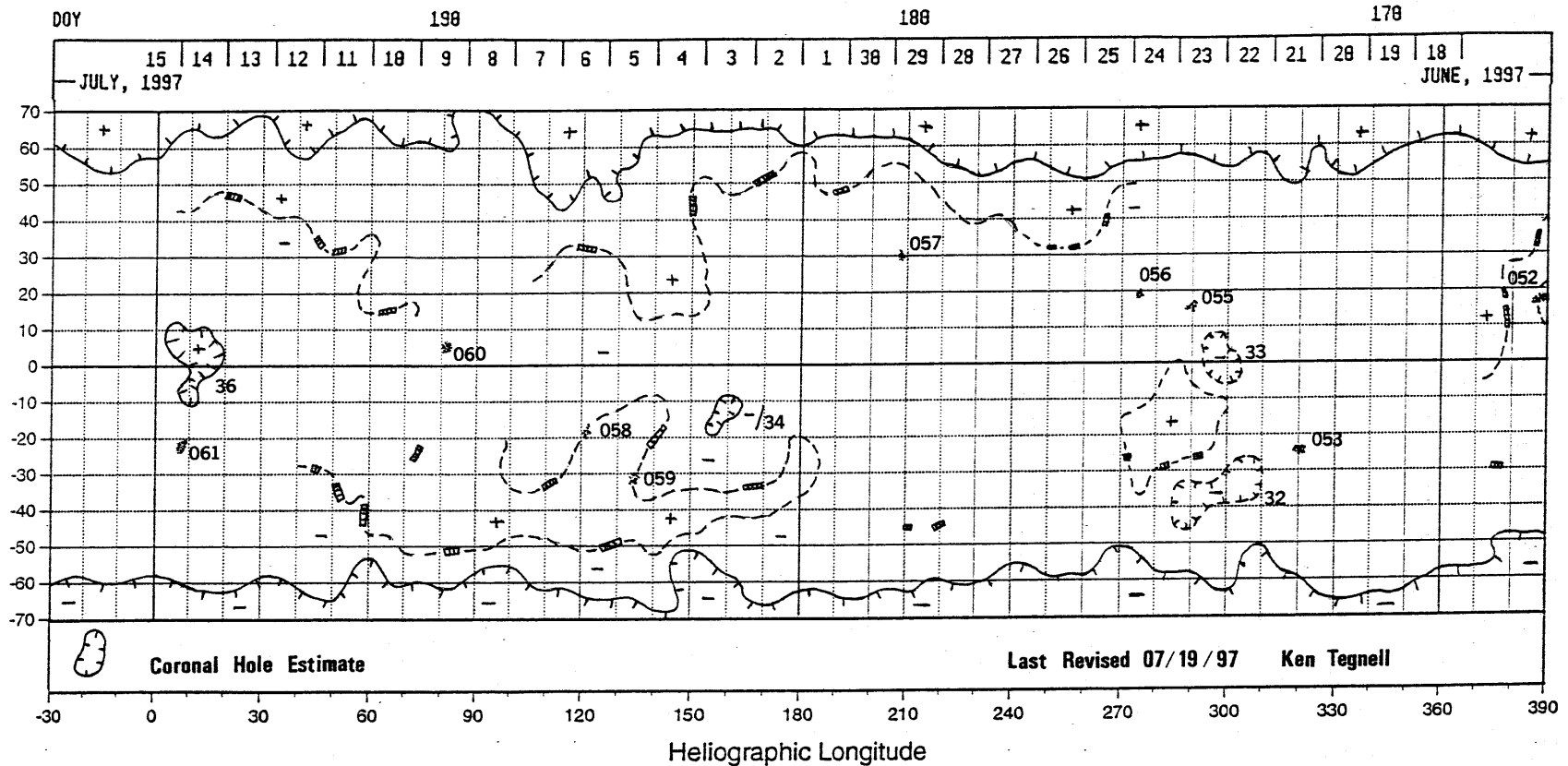
Weekly GOES Satellite X-ray and Proton Plots

Proton plot contains the five minute averaged integral proton flux (protons/cm²-sec-sr) as measured by GOES-9 (W135) 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.

X-ray plot contains five minute averaged x-ray flux (watts/m²) as measured by GOES 8 and 9 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



Carrington Rotation 1924



H-alpha Synoptic Chart - a partial and preliminary map of the sun in absolute heliographic coordinates (solar latitude and longitude). The Carrington Rotation serial number appearing at the top of the chart is a continuation of the sequence begun by R. Carrington on 09 November 1852. Dates along the top of the chart are the times of central meridian passage of the solar longitudes directly below those dates. Features on the map are as follows: filaments (cross-hatched areas), filament channels (solid lines outside an active area), plage corridors (solid lines inside an active area), 01 and estimated neutral lines (dashed lines) are lines of magnetic polarity change (neutral lines), plages (dotted areas whose dot density is roughly equal to brightness), strong active regions (stippled areas overlaid with diagonal lines; source of x-ray flares class M2 or greater, or two or more class M1 flares), large sunspots (large dots), coronal holes (solid lines with tick marks directed toward center of coronal hole, from 1083 nm spectroheliograms), SWO region number showing the last 3 digits of a 4-digit number.

