

**Space Weather Summary**  
**07 - 13 July 1997**

Solar activity was very low to low. A C1.2 flare occurred from a spotless sun on 12 July at 1524UT.

Solar wind data were received from the WIND spacecraft a few hours per day. Solar wind velocities ranged from 340-480 km/sec on 07-09 July. We did not receive any SWE data for the rest of the period. Particle densities increased on 07 July to 23 p/cc and dropped to less than 5 p/cc on 08 July. Particles climbed to 10-13 p/cc on 09 July. No further particle information was received after 09 July. Bz was variable on 07 July ranging from plus 14 nT to minus 10 nT. Bz hovered around zero on 08 July and shifted south to minus 10 nT for the last half of 09 July. Bz hovered around zero for the remainder of the period. Solar sector orientation was toward (phi angle near 315 degrees) during 07-08 July and away (phi angle near 135 degrees) during 10-13 July. Orientation was not discernible on 09 July. **NOTE:** A portion of the WIND data summary provided in the highlights (PRF #1140) was erroneous. The WIND spacecraft was not in the solar wind during 03-04 July. We regret any inconvenience this may have caused.

There were no significant proton enhancements observed at satellite altitudes.

The greater than 2 MeV electron flux was at normal levels.

The geomagnetic field was quiet to unsettled on 07 July and 09 July with isolated periods of active level conditions at all latitudes.

The field was mostly quiet on 08 July and 10-13 July.

**Space Weather Forecast**  
**16 July 1997 - 11 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 <sup>6</sup> hemi.)	X-ray Background	X-ray Flux			Flares				
					C	M	X	S	1	2	3	4
07 July	70	26	30	<A1.0	0	0	0	0	0	0	0	0
08 July	70	25	10	<A1.0	0	0	0	0	0	0	0	0
09 July	70	31	50	A1.0	0	0	0	0	0	0	0	0
10 July	69	17	10	A1.0	0	0	0	0	0	0	0	0
11 July	69	0	0	<A1.0	0	0	0	0	0	0	0	0
12 July	67	0	0	A1.4	1	0	0	0	0	0	0	0
13 July	67	0	0	<A1.0	0	0	0	0	0	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)		
	>1MeV	>10MeV	>100MeV	>.6MeV	>2MeV	>4MeV
07 July	2.6E+5	1.8E+4	4.2E+3		5.6E+5	
08 July	1.7E+5	1.8E+4	4.1E+3		6.7E+5	
09 July	2.2E+5	1.8E+4	4.3E+3		5.3E+5	
10 July	4.0E+5	1.6E+4	3.9E+3		7.7E+5	
11 July	3.8E+5	1.7E+4	3.9E+3		1.8E+6	
12 July	4.4E+5	1.6E+4	3.8E+3		2.4E+6	
13 July	4.6E+5	1.7E+4	3.8E+3		2.0E+6	

### *Daily Geomagnetic Data*

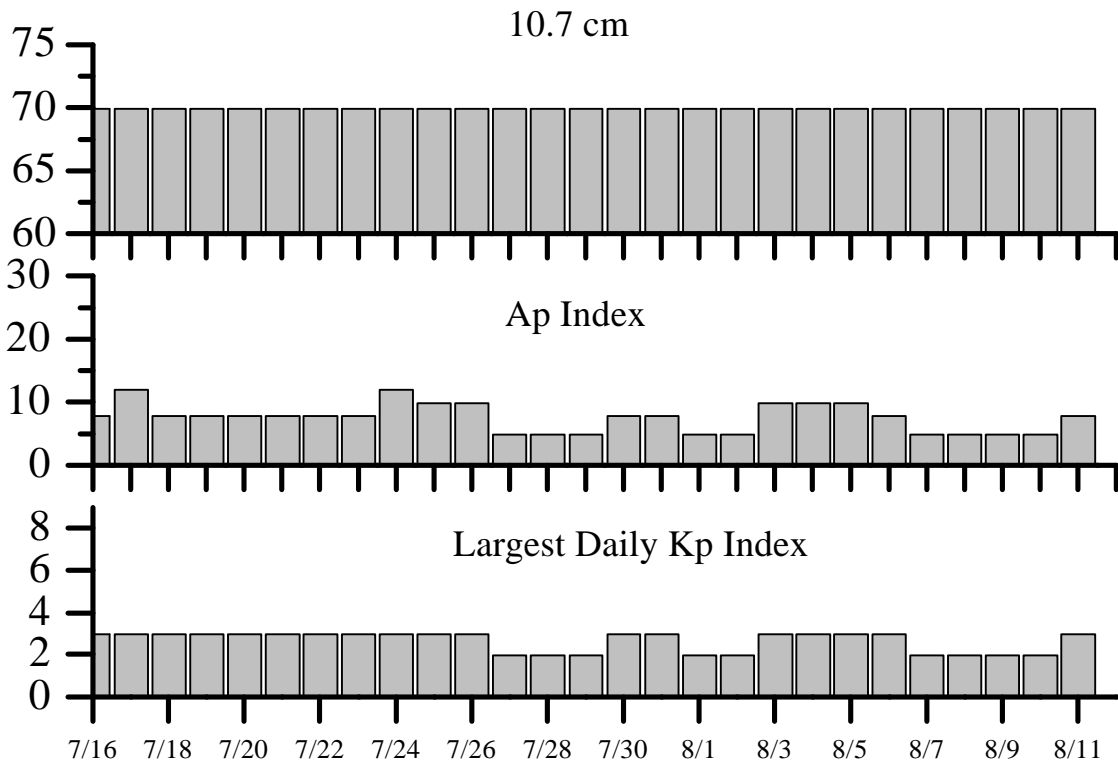
Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
07 July	15	1-3-2-3-2-3-4-4	9	1-1-3-4-2-2-1-2	14	1-3-3-3-3-3-4-3
08 July	6	2-2-1-1-2-2-2-2	1	1-0-0-0-1-0-0-1	5	2-2-1-1-1-2-1-2
09 July	14	3-3-3-2-2-3-4-2	7	1-1-0-1-2-4-3-1	11	3-3-3-1-2-3-3-2
10 July	8	2-2-3-2-2-2-2-2	6	1-2-2-2-3-1-1-1	8	1-1-4-2-2-3-2-1
11 July	5	1-1-1-2-2-1-2-2	3	1-0-0-2-3-0-0-0	4	1-0-1-2-2-1-1-1
12 July	3	1-1-0-0-1-1-2-2	0	1-0-0-0-0-0-0-0	4	1-1-0-0-1-2-2-1
13 July	5	1-1-1-2-1-2-2-2	1	0-0-2-1-0-0-0-0	4	0-1-2-1-1-2-2-1

### *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
16 Jul	70	8	3	30 Jul	70	8	3
17	70	12	3	31	70	8	3
18	70	8	3	01 Aug	70	8	2
19	70	8	3	02	70	5	2
20	70	8	3	03	70	5	3
21	70	8	3	04	70	10	3
22	70	8	3	05	70	10	3
23	70	8	3	06	70	10	3
24	70	12	3	07	70	8	2
25	70	10	3	08	70	5	2
26	70	10	3	09	70	5	2
27	70	5	3	10	70	5	2
28	70	5	3	11	70	8	3
29	70	5	3				



***Energetic Event***

Date	Time (UT)			X-ray		Optical Information			Peak		Sweep Freq		
	Begin	Max	Max	Class	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	
07 July	No Flares Observed							
08 July	No Flares Observed							
09 July	No Flares Observed							
10 July	No Flares Observed							
11 July	No Flares Observed							
12 July	1514	1524	1536	C1.2				
13 July	No Flares Observed							

***Region Summary***

Date	Location		Sunspot Characteristics				Flares				
	° Lat	° CMD	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
<i>Region 8058</i>											
02 Jul	S19E44	121	0010	02	BXO	002	B				
03 Jul	S22E30	122	0000	01	AXX	002	A				
04 Jul	S22E17	122									
12 Jul	S22W87	122									
								0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 122

*Region 8059*

04 Jul	S30E02	137	0000	00	AXX	002	A				
05 Jul	S30W14	140	0000	00	AXX	001	A				
06 Jul	S32W23	136	0000	00	AXX	001	A				
07 Jul	S31W36	134	0020	03	BXO	004	B				
08 Jul	S31W50	135	0010	04	BXO	003	B				
09 Jul	S33W62	134	0020	02	AXX	004	A				
10 Jul	S32W74	133	0020	04							
11 Jul	S32W87	133									
								0	0	0	0

Crossed West Limb.

Absolute heliographic longitude: 137



**Region Summary- continued.**

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

*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	007	B											
10 Jul	N05W22	081	0010	06	BXO	007	B											
11 Jul	N05W35	081																
12 Jul	N05W48	081																
13 Jul	N05W61	081																

0 0 0 0 0 0 0 0

Still on Disk.

Absolute heliographic longitude: 079



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

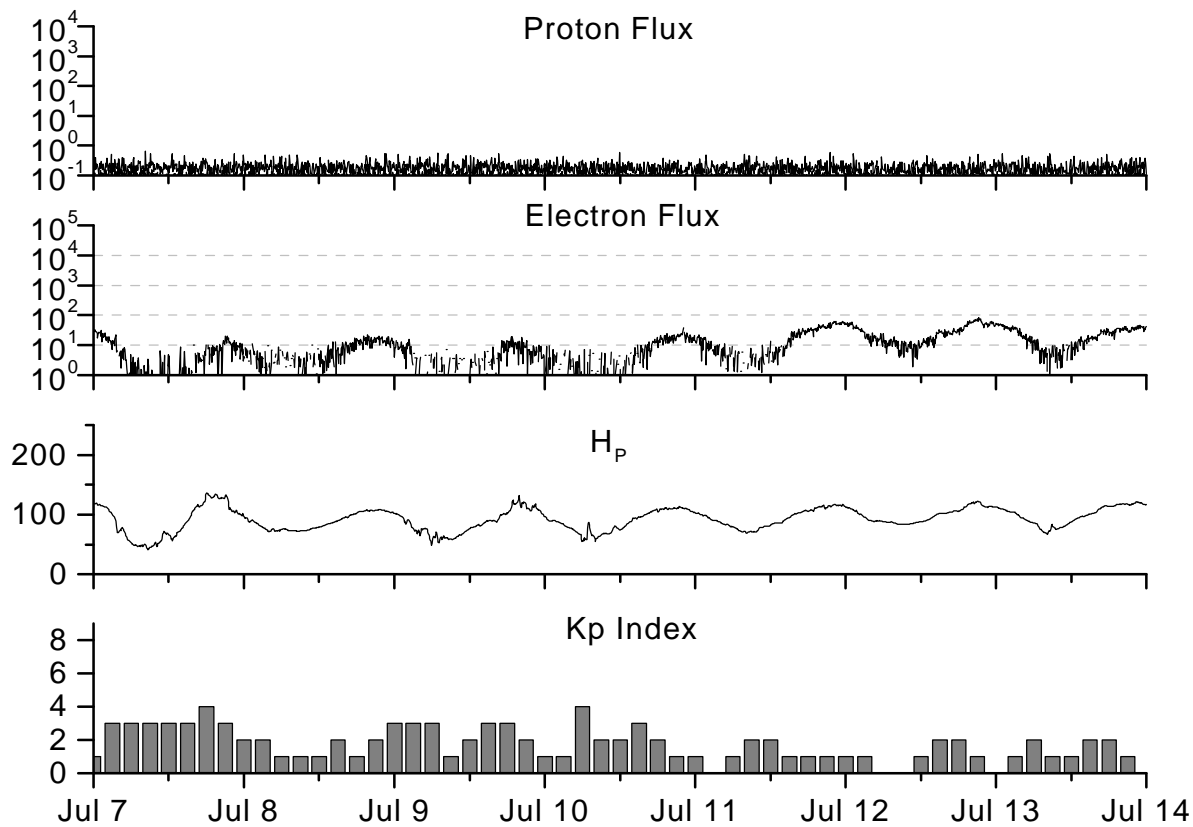
Month	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		**Penticton	Smooth	Planetary	Smooth
	SWO	RI	RI/SWO	SWO	RI	10.7 cm	Value	Ap	Value
<b>1995</b>									
July	23.8	14.5	0.61	28.1	17.0	73.9	76.9	08	12.4
August	25.1	14.3	0.57	25.4	15.4	73.8	76.0	09	12.1
September	16.5	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
<b>1996</b>									
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	70.7	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*	70.1	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*	0.70*	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*
<b>1997</b>									
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 07 July 1997*

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

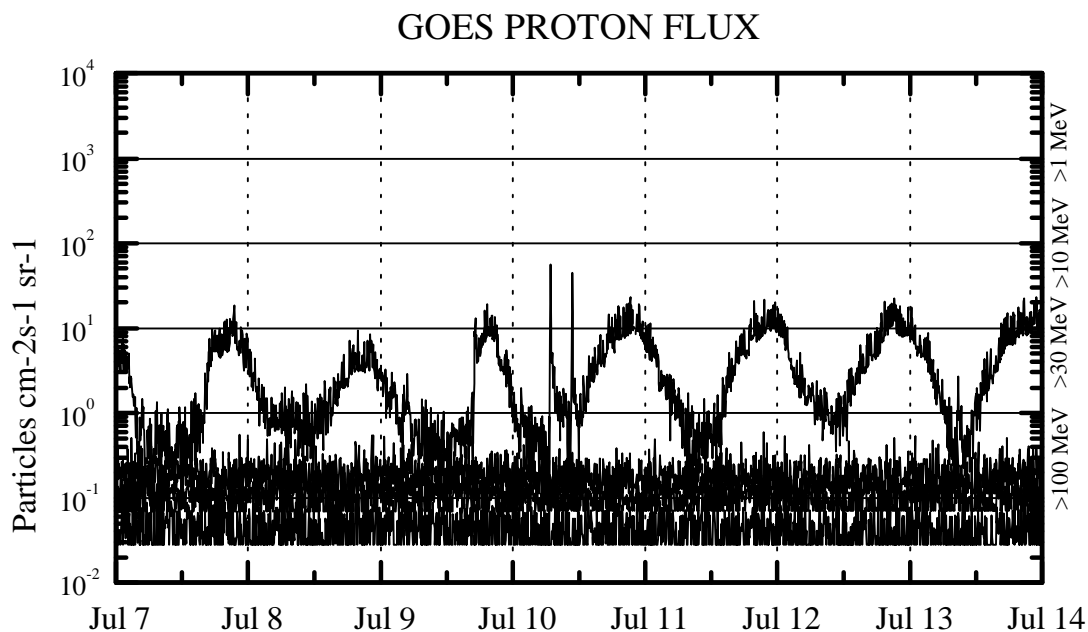
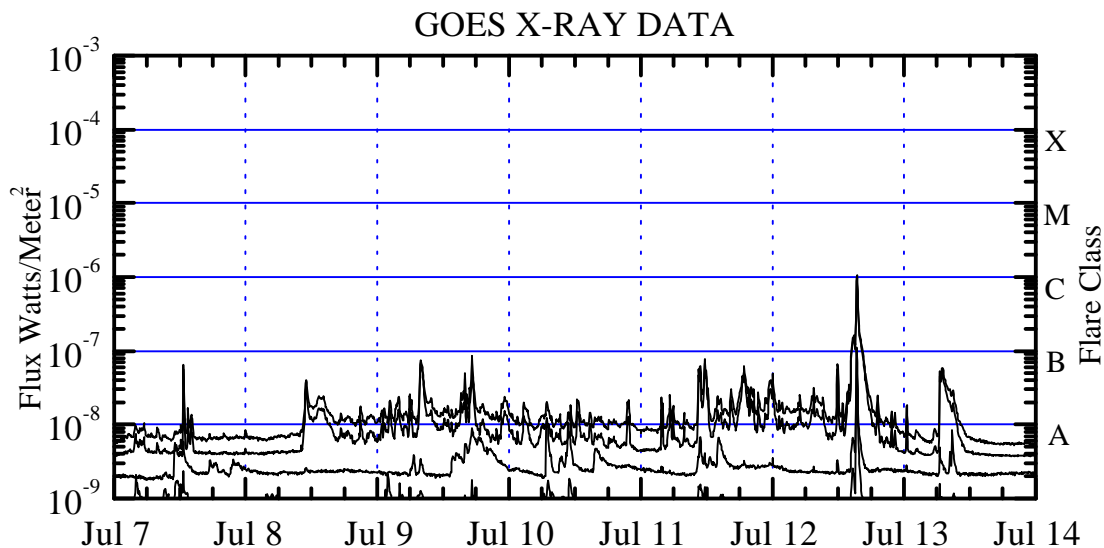
*Electrons* plot contains the five minute averaged integral electron flux (electrons/  $\text{cm}^2$ -sec-sr) with energies greater than 2 MeV at GOES-9.

*H<sub>p</sub>* 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<sub>p</sub>* plot contains the estimated planetary 3-hour K-index (derived by the USAF 55<sup>th</sup> 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<sub>p</sub> 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<sub>p</sub> are "global" parameters that are applicable to a first order approximation over large areas. H<sub>p</sub>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

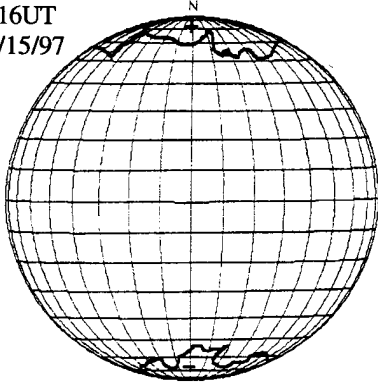
Proton plot contains the five minute averaged integral proton flux (protons/ $\text{cm}^2\text{-sec-sr}$ ) as measured by GOES-9 (W135) for each of the energy thresholds:  $>1$ ,  $>10$ ,  $>30$  and  $>100 \text{ MeV}$ . P10 event threshold is 10 pfu (protons/ $\text{cm}^2\text{-sec-sr}$ ) at greater than 10 MeV.

X-ray plot contains five minute averaged x-ray flux ( $\text{watts/m}^2$ ) 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

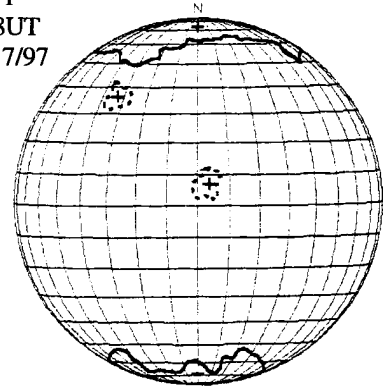




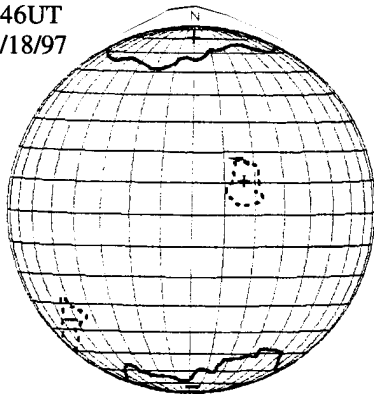
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1516UT  
06/15/97



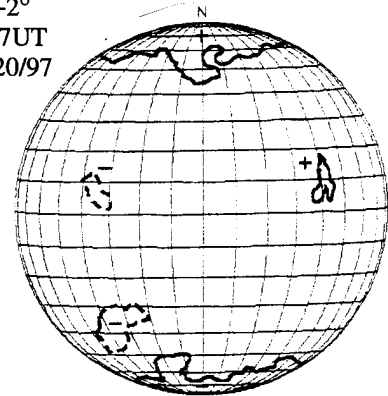
B=+1°  
1858UT  
06/17/97



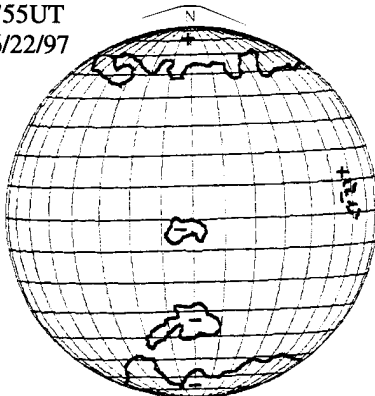
B=+1°  
1946UT  
06/18/97



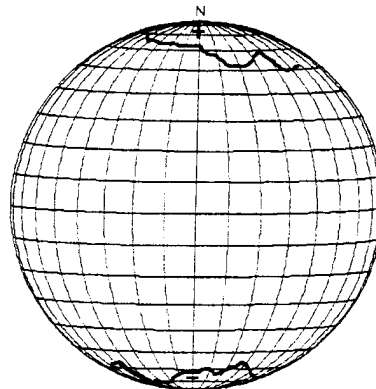
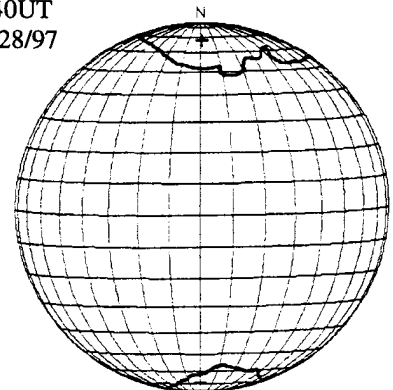
B=+2°  
1737UT  
06/20/97



B=+2°  
1755UT  
06/22/97



B=+3°  
1940UT  
06/28/97



B=+3°  
1536UT  
06/29/97

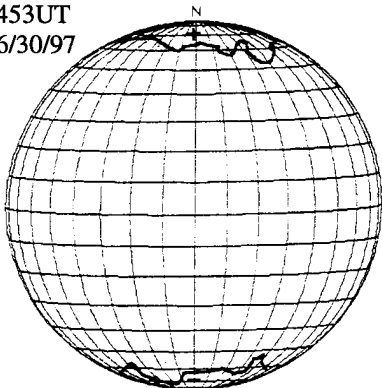
No Data Available: 6/9/97 - 6/15/97; 6/16/97 & 6/19/97; 6/23/97 - 6/27/97

*Coronal hole maps from the National Solar Observatory, Kitt Peak, Arizona*

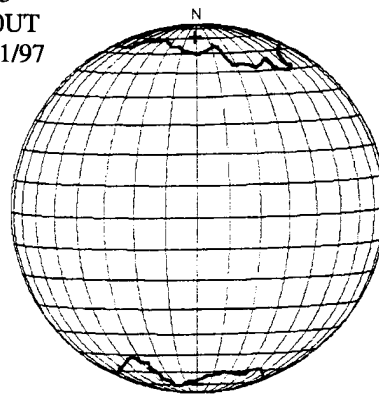
These maps are reproductions of the coronal hole contours as derived from the Kitt Peak 1083 nm raw data images. These are preliminary data, where solid (and dashed) lines are used to indicate more (and less) confidence in an inference and are printed whenever they are available at SWO.



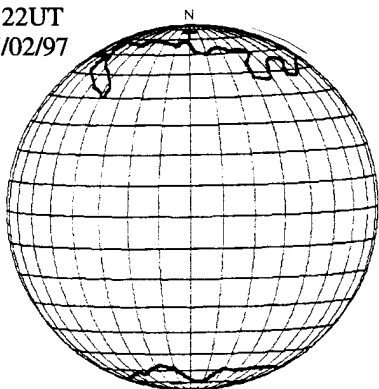
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06/30/97



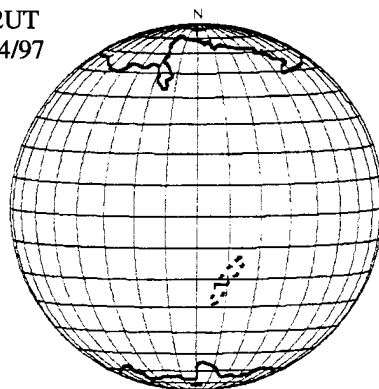
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07/01/97



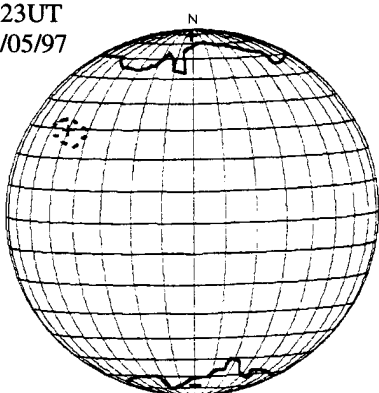
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1522UT  
07/02/97



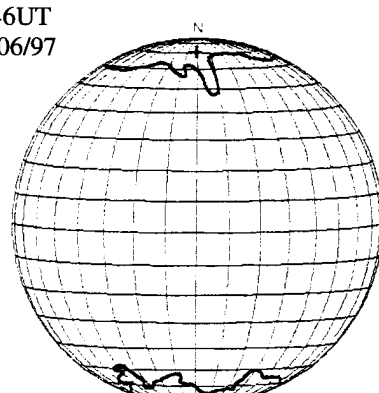
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1512UT  
07/04/97



B=+3°  
1523UT  
07/05/97



B=+3°  
1646UT  
07/06/97



No Data Available  
7/3/97

*Coronal hole maps from the National Solar Observatory, Kitt Peak, Arizona*

These maps are reproductions of the coronal hole contours as derived from the Kitt Peak 1083 nm raw data images. These are preliminary data, where solid (and dashed) lines are used to indicate more (and less) confidence in an inference and are printed whenever they are available at SWO.

