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User's Guide for the Nimbus 7 Scanning Multichannel Microwave Radiometer (SMMR) CELL-ALL Tape

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INTRODUCTION

1.1 Purpose

Nearly two thirds of the surface of the Earth consists of open or ice-covered ocean. Information on the oceans and their physical environment is essential in developing an understanding of the processes that determine weather and climate. The Scanning Multichannel Microwave Radiometer (SMMR), launched aboard Nimbus-7 on October 24, 1978, provides measurements at five microwave frequencies of radiation from the Earth's surface and the surrounding atmosphere. From these measurements, a wide range of physical quantities can be determined. Over the open ocean, sea surface temperature (SST), sea surface wind speed, and the column integrated atmospheric water vapor content can be derived. In addition, estimates of the rainfall rate and atmospheric liquid water content can be made, but it is difficult to validate these retrievals against ground truth data. Over ice-covered ocean, sea ice concentration, sea ice surface temperature, and multi-year ice fraction can be determined. Some research has also been done in the use of SMMR measurements over land areas to retrieve precipitation rates, soil wetness, vegetation density, and snow cover extent and properties. One of the particular advantages of remote sensing at microwave frequencies is that measurements can be made globally during both day and night, even through nonprecipitating clouds, whereas the visible and infrared signatures of the ocean surface are difficult to detect in the presence of clouds.

This report describes the CELL-ALL tape (sometimes referred to in this document as CELL for short), which provides the calibrated radiometric brightness temperatures from SMMR, as well as engineering data. On this tape, information for the area covered in a 30-scan period is averaged and gridded.

1.2 Overview

To derive antenna temperatures, a calibration is first applied to raw radiometer data from the Antenna Temperature Tapes (TAT). This process is described in Section 3. The antenna temperatures are mixtures of horizontally and vertically polarized components; a polarization mixing correction is used to obtain the horizontal and vertical components of the antenna temperatures. The method used to correct for polarization mixing is described in Section 4. The calibrated, polarization-separated antenna temperatures are then binned into evenly spaced, square cells of equal area across the swath of the SMMR scan. Such mapping assures that the data from each channel will be equally weighted when retrieving geophysical parameters using multichannel radiances. Section 5 describes the binning procedure. The antenna temperatures in each cell are then further corrected for spillage of the antenna beam over the horizon into space. This correction is described in Section 6. The longitude, latitude, and incidence angle for each cell are then calculated to complete one record of the CELL-ALL. These calculations are described in Section 7. Finally, an antenna pattern correction is applied to the antenna temperature to derive corrected antenna temperatures for the 156-km resolution (grid-1) cells. The process is described in Section 8. Figure 1.1 presents a flow chart of the data processing procedure. The details for each block appear in subsequent sections of this document.

The calibrated SMMR radiances displayed long-term drift over the 7 years of SMMR observation. In Section 9, the long-term changes in each channel are described. Some important defects are known to exist in the present CELL-ALL data set (such as the drift of 21 GHz radiances). Section 10, Limitations and Uncertainties, provides details. The calibrated radiances of each field of view (FOV) are available on the Temperature Calibrated Tapes (TCT). The TCT radiances are different from the corresponding CELL radiances because a different calibration procedure was used. The differences between the two calibration procedures are also discussed in Section 10.

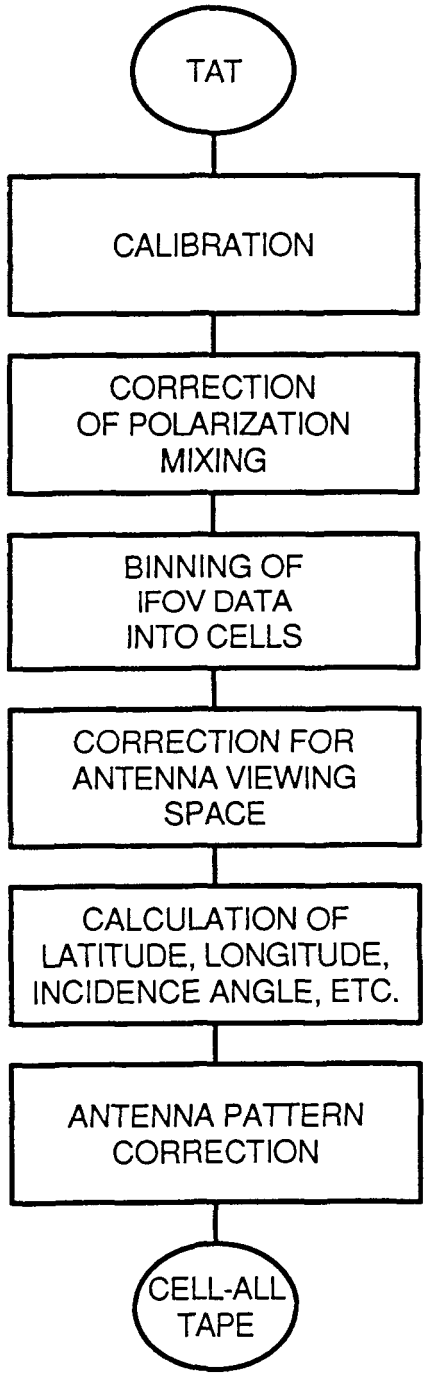

Figure 1.1 Data flow

One data record contains the information for a 30-scan period (122.88 seconds). It covers an area roughly 780 km cross-track x 788 km along-track. This area will subsequently be referred to as one block and is divided into cells by overlaying four different grids. The grid elements are arranged in 5 x 5, 8 x 8, 13 x 13, and 26 x 26 arrays. This yields cells of approximately 156 km x 158 km, 97.5 km x 98.5 km, 60 km x 60.6 km, and 30 km x 30.3 km, which correspond roughly to the resolution at 6.6 GHz, 10.7 GHz, 18 GHz, and 37 GHz, respectively. For each cell, the appropriate antenna temperatures, the view angle with respect to the Earth's surface, incidence angle, the latitude and longitude, and the geography type (land, sea, ice sheet, mixed) are provided. In addition, the day/night status, instrument engineering values, and calibration data are included in the data record. The detailed tape specification is given in Section 11. Available data are listed in the appendix.

Information on the articles to which this document refers can be obtained from the Nimbus project office, NASA, Goddard Space Flight Center, Code 636, Greenbelt, MD, 20771.

INSTRUMENT

The SMMR instrument measures microwave radiation from the Earth's surface and the surrounding atmosphere at five frequencies (6.6 GHz, 10.7 GHz, 18 GHz, 21 GHz, and 37 GHz) in both the horizontal and vertical polarizations. The bandwidth at each frequency is 250 MHz. These brightness temperatures are used to derive the retrieved geophysical quantities. This retrieval is done with physical models that describe how the brightness temperatures depend upon the geophysical parameters. The 6.6 GHz and 10.7 GHz channels are the most sensitive to surface quantities (SST and sea surface wind speed), whereas the 18 GHz, 21 GHz, and 37 GHz channels are more sensitive to atmospheric water vapor and liquid water content. Sea-ice parameters have been found using the 18 GHz and 37 GHz channels. Since the spatial resolution of the instrument is proportional to wavelength, the grid resolutions for SST, wind speed, water vapor, and the ice parameters are 156 km, 98 km, 60 km, and 60 km, respectively.

The Nimbus-7 spacecraft is in a sun-synchronous polar orbit with local noon (ascending) and local midnight (descending) equator crossings. The orbital period is approximately 104.16 minutes, and the equator crossings are separated by 26.1 degrees in longitude (2,900 km). The SMMR instrument is forward viewing and scans 390 km to either side of the orbital track. It is operated on alternate days so that it maps the entire globe twice every 6 days. A combination of oval instantaneous fields of view (IFOV's) and the integration times of the radiometers yields roughly circular beam spots with the following diameters: 6.6 GHz - 148 km, 10.7 GHz - 91 km, 18 GHz - 55 km, 21 GHz - 46 km, and 37 GHz - 27 km. The antenna beam scan lies along a conical surface with a 42-degree half angle so that the distance to the surface of the Earth is constant over the scan. The angle of incidence at the Earth's surface is approximately 50 degrees.

By observing both hot and cold reference sources, the instrument is calibrated in flight. A radio frequency source at the ambient temperature serves as a hot reference, and deep space viewed by a special antenna horn provides a cold reference. This two-point reference system allows the measured antenna counts to be converted to the observed radiances. Radiances are computed with a calibration equation from the radiometric signal from the Earth's surface, the hot and cold calibration counts, and several instrument temperatures in the SMMR microwave circuitry. This calibration equation was developed using prelaunch calibration data.

There are several steps in the calculation of radiances from FOV antenna count measurements: calibration, correction for polarization mixing, binning of FOV data into grids, and antenna pattern correction. Four different grid sizes have been used: 156 km x 158 km (all channels), 97.5 km x 98.5 km (all channels except 6.6 GHz), 60 km x 60.6 km (18 GHz, 21 GHz, and 37 GHz), and 30 km x 30.3 km (37 GHz).

The SMMR has been in continuous alternate-day operation since October 1978, except for a 3-week instrument checkout period just after the instrument was first turned on and a special operation period from April 1986 to June 1986. In March 1985, the 21-GHz radiometer was turned off; however, the steady long-term drift behavior of the 21H channel changed in May 1983. The other channels have drifted a few hundredths of a degree/month over the first 7 years. Currently, the SMMR calibration and the correction of radiance drifts are under investigation.

Further details on the instrument properties can be found in the Nimbus 7 Users' Guide (Gloersen and Hardis, 1978).

SECTION 3

CALIBRATION

An initial calibration is performed for every 30 scans. Average values of the cold and warm calibration counts are computed for the 30-scan period. A gross check of the counts is used to filter out bad calibration counts. When the sun shines directly on the cold horn, the radiometer is known to register abnormal cold calibration counts; therefore, during these time periods, the calibration counts are labeled invalid. If there are no valid calibration data for a particular 30-scan period, the average of calibration counts from the previous block are used. However, these values may not be the most up-to-date if there is a large data gap between blocks.

The average cold and warm calibration counts and the latest instrument engineering data are used to convert raw radiometric radiances to antenna temperatures for the 30-scan period.

The initial calibration equation is as follows:

$$T_A = I + S\,[(C_A - C_W)/(C_C - C_W)] \tag{1}$$

where:

T_A is the antenna temperature
C_A is the radiometer readout count
C_C is the cold calibration count
C_W is the warm calibration count

and I and S are functions of instrument temperatures:

$$I_j = a_{1j} + a_{2j}\,TSW_j - DEL_{1j} \tag{2}$$

$$S_j = a_{3j}\,(TSW_j - 2.7) + DEL_{2j} \tag{3}$$

where:

$$DEL_{kj} = TSW_j - THN_k - (TWG_{kj} - THN_k) / \alpha_{kj} - (TSW_j - TWG_{kj}) / (\alpha_{kj}\,\beta_{kj}). \tag{4}$$

In the above expressions, j indicates one particular radiometer channel, k denotes different signal paths to the radiometer: k=1 for the antenna path, and k=2 for the path from the cold horn to the radiometer. TSW is the switch temperature, THN is the horn temperature, and TWG is the waveguide temperature. The calibration constants α, β, and a_j are listed in Table 3.1. Details of the SMMR calibration are described by Sinha and Kim (1984).

Table 3.1

Coefficients Used in the Calibration Procedure

Channel	a_1	a_2	a_3	α_1	α_2	β_1	β_2
37H	3.8442	0.98197	-0.92226	0.933	0.9	0.923	0.891
37V	-7.1304	1.0191	-1.1194	0.933	0.9	0.923	0.902
21H	-2.1648	1.0067	-1.1138	0.851	0.9	0.944	0.851
21V	-7.4011	1.0244	-1.1042	0.851	0.9	0.938	0.851
18H	-7.8767	1.0264	-1.2204	0.891	0.9	0.938	0.881
18V	-6.7131	1.0220	-1.2034	0.891	0.9	0.955	0.881
10.7H	39.595	0.87679	-1.0889	0.927	0.9	0.955	0.912
10.7V	64.055	0.79425	-1.0669	0.927	0.9	0.955	0.912
6.6H	4.6207	0.98276	-1.1081	0.923	0.9	0.955	0.953
6.6V	-0.31470	0.99976	-1.1015	0.923	0.9	0.955	0.953

CORRECTION FOR POLARIZATION MIXING

The SMMR antenna scans from -25 degrees to +25 degrees off the velocity vector of the satellite during one half-scan period. However, the feed horn remains fixed. The two orthogonal polarizations of the radiation measured by SMMR are actually mixed with respect to the vertical and horizontal components. Furthermore, the possibility of leakage in the ferrite switches, which separate the orthogonal inputs to the common radiometer, may cause additional mixing of the two components in actual measurements.

The correction for polarization mixing is performed by a rotation-like operation on measured antenna temperatures. The equations are as follows:

$$T_v = a\,T'_v + b\,T'_h \tag{5}$$

$$T_h = c\,T'_v + d\,T'_h \tag{6}$$

where the primed T's represent the measured antenna temperatures and the unprimed T's represent corrected antenna temperatures; v and h stand for vertical and horizontal polarization; a, b, c, and d are fitting constants.

The above equations are true only for measurements of vertical and horizontal polarization taken at the same instant. However, in the SMMR instrument, the different polarizations are sampled during successive half-scans for all frequencies except 37 GHz. This means that the IFOV's for the vertical and horizontal polarizations do not coincide. Assuming that the antenna temperatures vary smoothly over the extent of a cell, the collocated measurements can be approximated by interpolating the missing channel values from the FOV's surrounding the subject FOV's. This can be expressed as follows:

$$T'_p(i) = \sum_j \alpha_{ij} T_p(j) \tag{7}$$

where p = v or h, j are the FOV's surrounding the i^{th} FOV, and α_{ij} are precomputed weighting factors. When Equation (7) is combined with Equations (5) and (6), the corrected vertical and horizontal antenna temperatures can be expressed as follows:

$$T_v(i) = aT'_v(i) + b\sum_j \alpha_{ij} T'_h(j) \tag{8}$$

$$T_h(k) = c\sum_j \alpha_{kj} T'_v(j) + dT'_h(k) \tag{9}$$

A detailed description of the correction for polarization mixing used here is given by Gloersen, *et al.* (1980). The coefficients in the correction have been modified slightly as the result of additional analysis of the data since the publication of that paper. Details of this additional analysis are described by Han (1981). The revised coefficients can be computed from information presented in Table 4.1.

Table 4.1

Derivation of Coefficients a, b, c, and d in Equation (6)

Channel (GHz)	δ_H(degrees)	δ_V(degrees)
6.6	4.900	-3.000
10.7	1.295	0.809
18	-2.447	1.137
21	-2.758	9.945
37*	0.884	-0.191
37**	1.016	-0.206

* first half scan

** second half scan

$$a = [(1 - \sin^2(\theta + \delta_H)]/[1 - \sin^2(\theta + \delta_H) - \sin^2(\theta + \delta_V)]$$

$$b = 1 - a$$

$$c = 1 - d$$

$$d = [(1 - \sin^2(\theta + \delta_V)] / [(1 - \sin^2(\theta + \delta_H) - \sin^2(\theta + \delta_V)]$$

where θ is the scan angle and the δ's are additional angles needed in this rotation-like correction to account for possible instrument leakage (Han, 1981).

SECTION 5

BINNING OF IFOV DATA INTO CELLS

Since the footprints of the 10 SMMR IFOV's do not coincide and have different sizes, they were mapped onto cells of equal areas for each channel. This process is necessary for retrieval of geophysical parameters, which requires collocated measurements at multiple frequencies.

The SMMR swath is divided into blocks of 30 consecutive scans. A block is 787 km along-track and 780 km cross-track, and is gridded into cells. Four grid sizes, of dimensions 5 x 5, 8 x 8, 13 x 13, and 26 x 26 were chosen. The 5 x 5 grid has a resolution of 156 km x 158 km. All 10 channels of data are gridded into cells at this size. The 8 x 8 grid has a resolution of 97.5 km x 98.5 km. On this grid, data of all frequencies, except 6.6 GHz, are included. The 13 x 13 grid has a resolution of 60 km x 60.6 km. The cells of this grid contain 18-GHz, 21-GHz, and 37-GHz data. The fourth grid has a resolution of 30 km x 30.3 km, and only 37- GHz data are included in each cell.

The IFOV's are binned into cells determined by their relative locations in the 30-scan data block. The antenna temperature for each channel in a cell is given by a weighted average of all the IFOV data of that channel falling within the cell. The weight is set to one at the center of the cell and decreases linearly to zero on the edge of the cell. The location of the center of the IFOV in the cell is used to determine the weight. Weights of individual IFOV's are also multiplied by a factor of cos (90 θ/25) to account for the uneven distribution of IFOV's in a sinusoidal scan, where θ is the scan angle.

SECTION 6

CORRECTION FOR ANTENNA VIEWING GEOMETRY

Portions of the SMMR antenna pattern spill over the Earth's horizon and view outer space. The antenna patterns were analyzed and the fraction of the beam that views space, (F), was calculated for each frequency and polarization. The values used in the software are shown in Table 6.1.

Table 6.1

Fraction of Antenna Beam Viewing Space

Frequency (GHz)	6.6	10.7	18	21	37
Horizontal	0.0496455	0.0347727	0.0215964	0.0228401	0.0108067
Vertical	0.0655272	0.0401916	0.0225899	0.0232502	0.0133044

The calibrated antenna temperatures for horizontal and vertical polarization were corrected for the effect of cold space in the FOV by the following equation:

$$T'_B = (T_B - 2.7\,F) / (1 - F) \qquad (10)$$

where T_B is the antenna temperature from the measurement, T'_B is the corrected antenna temperature, and 2.7 is the cosmic black body temperature, the brightness temperature of cold space (in K).

SECTION 7

CALCULATION OF LATITUDE, LONGITUDE, AND SPACECRAFT SCANNING CHARACTERISTICS

In addition to the antenna temperatures, other useful quantities relevant to the cell data are also calculated. A day/night/twilight flag is provided for the center of the block. The criteria for setting the flag are the following:

Day:	(0)	Both spacecraft and cell illuminated
Twilight:	(1)	Spacecraft illuminated and cell in shadow
Night:	(2)	Both spacecraft and cell in shadow.

The reflected sun-boresight angles are calculated for each grid-1 cell. These are angles between the spacecraft-to-FOV vector and the vector of the reflected sunlight from the FOV. They can be used to detect possible contamination of the antenna temperatures by sun glint. The latitude and longitude, and the incidence angle at each cell center are computed for all cells in all grids.

All the above parameters are derived from the solar ephemeris and the spacecraft ephemeris and attitude data. Algorithms used to derive these parameters are the same as used in the TAT generation. Details of the computations are described by Chang (1982).

The geographical type for each of the cells (land, ocean, ice sheet, or mixed type) is also specified.

SECTION 8

ANTENNA PATTERN CORRECTION

The SMMR antenna scans conically; i.e., the antenna points away from the nadir axis and is rotated about the nadir axis. One purpose of this instrument is to obtain accurate SST's; however, the presence of even a small amount of land in the sidelobes at 6.6 GHz will render the measurements useless for this purpose. The goal, insofar as SMMR was concerned, was to reduce the effects of land in the sidelobes. We would have liked, in other words, to modify the antenna power pattern by numerical manipulation of the data to reduce the sidelobe level; it was of no interest in this application to try to improve the main-beam resolution.

The antenna pattern correction is applied to data for 52 km x 52 km (15 x 15 grid) cells that are created during data processing, but are not stored on the CELL-ALL tape. The antenna temperatures of all 10 channels of grid-1 (5 x 5) cells are derived by averaging the 15 x 15 grid antenna temperatures. The averaging is done simply on the basis of the area overlap of the cells.

The antenna pattern correction is not applied to the grid -2, -3, and -4 antenna temperatures. Details of the antenna pattern correction procedure are described by Milman (1981).

LONG-TERM TREND OF SMMR BRIGHTNESS TEMPERATURE

The characteristics of the SMMR instrument have been changing through the years. These changes in instrument behavior have affected the calibration of the SMMR measurements. To understand the long-term variations of the calibrated SMMR brightness temperatures, the monthly means and the standard deviations of the brightness temperatures over global ocean areas are analyzed.

Brightness temperatures on CELL-ALL tapes were selected for each channel from all ocean areas between 60°N and 50°S and 600 km away from land masses. Daytime and nighttime data were separated. The means and standard deviations of the brightness temperatures for each month from January 1979 to October 1985 were calculated. For the 21-GHz channels, both the corrected and uncorrected brightness temperatures (see Section 10) were analyzed. Only 6 years of data were analyzed for the 21-GHz channels, because the channels' radiometer has been turned off since March 1985. The statistics of this analysis are listed in Tables 9.1 through 9.12. The values of the monthly mean brightness temperatures are plotted in Figures 9.1 through 9.12, and the corresponding standard deviations are presented in Figures 9.13 through 9.24.

Along with the seasonal variations, the figures show that the monthly mean brightness temperatures have systematic biases between daytime and nighttime for most channels. There are also patterns of increasing or decreasing monthly mean brightness temperatures throughout the first 48 months. Starting in the fifth year, some of these patterns changed. The figures also show trends of decreasing standard deviations starting from the fifth year for most channels.

Similar analyses were performed for the brightness temperatures over land. The statistics of the analyses are listed in Tables 9.13 through 9.24, and the monthly mean brightness temperatures are also plotted in Figures 9.25 through 9.36. The averaged temperatures over land are mostly stable, although the standard deviations are, as expected, larger than those over the ocean because of the greater scene variability over land.

Table 9.1

Monthly Statistics of $T_{6.6V}$ Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	149.20	3.70	16071	149.52	3.66	14236
79	Feb	149.06	3.85	16413	149.71	3.59	14289
79	Mar	148.84	3.90	17408	150.06	3.63	15913
79	Apr	148.54	3.91	16668	150.28	3.53	14338
79	May	148.50	3.82	17199	150.01	3.72	15379
79	June	148.60	3.78	16182	149.79	3.75	14203
79	July	148.31	3.78	16896	149.54	3.58	16582
79	Aug	148.05	3.98	15635	149.77	3.57	15661
79	Sep	148.11	4.11	16550	149.78	3.44	15681
79	Oct	148.06	4.40	16331	149.16	3.80	15983
79	Nov	148.09	4.37	16314	148.93	3.88	16484
79	Dec	148.15	4.06	15896	149.00	3.85	15896
80	Jan	148.20	3.89	16826	149.19	3.84	17314
80	Feb	148.34	3.87	15058	149.50	3.80	15202
80	Mar	148.46	4.04	17811	149.62	3.81	17494
80	Apr	148.22	4.05	16769	150.00	3.70	15300
80	May	147.87	4.05	16900	149.93	3.98	16240
80	June	147.76	3.90	17808	149.48	3.85	17324
80	July	147.95	3.88	17365	149.40	3.63	17032
80	Aug	147.91	4.07	15397	149.55	3.45	14389
80	Sep	147.53	4.36	16436	149.38	3.56	16124
80	Oct	147.43	4.48	17257	148.70	3.96	17795
80	Nov	147.82	4.35	12786	148.52	3.86	13211
80	Dec	147.73	4.09	16101	148.54	3.84	17567
81	Jan	147.80	3.85	17606	148.83	3.82	18117
81	Feb	147.83	3.85	15954	149.17	3.81	15963
81	Mar	147.91	3.93	16991	149.40	3.68	16706
81	Apr	147.77	4.04	16824	149.26	3.82	15735
81	May	147.27	4.04	18101	148.74	4.02	18022
81	June	147.13	3.91	17153	148.72	4.00	17813
81	July	147.23	3.90	17394	149.26	3.66	16398
81	Aug	147.34	4.08	14106	148.97	3.59	13940
81	Sep	147.39	4.38	16762	148.95	3.67	16375
81	Oct	147.18	4.48	16715	148.65	3.78	17052
81	Nov	147.29	4.36	16618	148.26	3.94	17423
81	Dec	147.52	4.06	17379	148.34	3.82	18463
82	Jan	147.74	3.81	15859	148.61	3.71	16797
82	Feb	147.60	3.94	15190	148.88	3.72	15775
82	Mar	147.57	4.03	17076	149.08	3.76	17865
82	Apr	147.37	4.06	17020	148.97	3.92	17175
82	May	147.47	3.99	15627	148.81	3.92	16213
82	June	147.41	3.98	16681	149.08	3.82	15676

Table 9.1 (Continued)

Monthly Statistics of $T_{6.6v}$ Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	147.17	3.94	15650	149.07	3.68	14885
82	Aug	146.96	4.15	12872	148.99	3.73	13161
82	Sep	147.08	4.23	17213	148.56	3.77	17111
82	Oct	147.83	4.31	15440	148.05	4.03	15572
82	Nov	148.02	4.11	14028	147.95	4.13	12446
82	Dec	148.22	3.86	13268	148.26	3.92	12885
83	Jan	148.06	3.84	15159	148.19	3.92	15793
83	Feb	148.25	4.01	14184	148.42	4.10	15510
83	Mar	147.72	4.10	16139	148.87	4.03	15857
83	Apr	146.99	4.16	17534	149.44	4.16	16139
83	May	146.76	4.00	18607	149.50	4.12	17371
83	June	146.78	3.99	16726	149.03	3.96	14865
83	July	146.92	4.06	17070	148.37	3.92	17173
83	Aug	146.87	3.99	18512	148.47	3.78	17910
83	Sep	147.11	4.11	16996	148.45	3.83	17153
83	Oct	147.41	4.13	16088	148.13	3.86	16823
83	Nov	147.47	4.19	12624	147.98	3.95	13224
83	Dec	146.85	4.01	12751	148.28	3.86	13076
84	Jan	146.18	3.70	16583	148.02	3.67	16058
84	Feb	146.14	3.76	16715	148.25	3.84	16531
84	Mar	146.16	3.91	17269	148.31	3.93	16444
84	Apr	145.71	4.08	13386	148.02	4.04	12797
84	May	144.98	3.97	16168	147.69	4.07	16668
84	June	145.05	3.85	15703	147.48	3.93	17336
84	July	144.98	3.81	15470	147.28	3.76	17058
84	Aug	144.86	3.97	9186	147.07	3.90	10180
84	Sep	145.01	4.15	15882	146.96	4.00	16323
84	Oct	145.19	4.19	16082	147.36	3.95	16163
84	Nov	145.70	4.15	15216	147.53	3.71	14993
84	Dec	146.14	3.79	16373	147.50	3.70	15095
85	Jan	146.10	3.63	16311	147.85	3.59	14627
85	Feb	145.81	3.75	15329	148.04	3.89	13906
85	Mar	145.58	3.86	17730	148.16	3.89	16711
85	Apr	145.48	3.96	15265	147.84	3.84	14674
85	May	145.27	3.87	15938	147.32	3.84	15450
85	June	145.19	3.78	14915	147.27	3.84	16401
85	July	145.08	3.74	16554	147.43	3.78	17447
85	Aug	145.42	3.83	14836	147.58	3.68	16229
85	Sep	145.45	4.01	15861	147.27	3.75	16369
85	Oct	145.41	4.20	17119	147.04	3.85	17109

Table 9.2

Monthly Statistics of $T_{6.6H}$ Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	87.37	2.88	16071	88.87	2.55	14236
79	Feb	87.28	2.90	16413	88.96	2.51	14289
79	Mar	87.12	2.96	17408	88.94	2.53	15913
79	Apr	86.88	2.79	16668	88.95	2.36	14338
79	May	86.90	2.65	17199	88.93	2.56	15379
79	June	86.96	2.61	16182	88.85	2.69	14203
79	July	86.69	2.58	16896	88.42	2.60	16582
79	Aug	86.42	2.75	15635	88.43	2.35	15661
79	Sep	86.25	2.94	16550	88.08	2.32	15681
79	Oct	85.95	3.13	16331	87.63	2.59	15983
79	Nov	85.89	3.18	16314	87.42	2.70	16484
79	Dec	86.04	3.06	15896	87.43	2.58	15896
80	Jan	86.01	2.99	16826	87.51	2.60	17314
80	Feb	86.02	2.93	15058	87.80	2.58	15202
80	Mar	86.19	2.99	17811	88.05	2.61	17494
80	Apr	86.19	2.91	16769	88.40	2.58	15300
80	May	86.08	2.83	16900	88.36	2.76	16240
80	June	85.94	2.71	17808	88.07	2.79	17324
80	July	86.01	2.62	17365	88.03	2.59	17032
80	Aug	86.01	2.68	15397	87.98	2.32	14389
80	Sep	85.70	3.03	16436	87.63	2.37	16124
80	Oct	85.50	3.23	17257	87.11	2.74	17795
80	Nov	85.62	3.20	12786	87.09	2.69	13211
80	Dec	85.42	3.03	16101	87.05	2.62	17567
81	Jan	85.68	2.96	17606	87.38	2.62	18117
81	Feb	85.88	2.95	15954	87.66	2.60	15963
81	Mar	85.79	2.94	16991	87.87	2.49	16706
81	Apr	85.70	2.92	16824	87.93	2.63	15735
81	May	85.35	2.78	18101	87.39	2.71	18022
81	June	85.42	2.60	17153	87.15	2.77	17813
81	July	85.56	2.72	17394	87.59	2.71	16398
81	Aug	85.42	2.82	14106	87.54	2.52	13940
81	Sep	85.43	3.01	16762	87.50	2.47	16375
81	Oct	85.23	3.11	16715	87.07	2.59	17052
81	Nov	85.27	3.22	16618	86.77	2.75	17423
81	Dec	85.30	3.12	17379	86.92	2.70	18463
82	Jan	85.49	2.87	15859	87.21	2.52	16797
82	Feb	85.41	2.90	15190	87.34	2.54	15775
82	Mar	85.52	3.03	17076	87.55	2.55	17865
82	Apr	85.29	2.85	17020	87.33	2.60	17175
82	May	85.45	2.78	15627	87.34	2.70	16213
82	June	85.59	2.74	16681	87.64	2.72	15676

Table 9.2 (Continued)

Monthly Statistics of $T_{6.6H}$ Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	85.47	2.73	15650	87.47	2.66	14885
82	Aug	85.47	2.93	12872	87.24	2.62	13161
82	Sep	85.22	2.97	17213	87.12	2.63	17111
82	Oct	85.32	3.13	15440	86.92	2.81	15572
82	Nov	85.63	3.15	14028	86.70	3.00	12446
82	Dec	85.82	3.00	13268	86.89	2.82	12885
83	Jan	85.76	2.99	15159	86.88	2.78	15793
83	Feb	85.84	2.98	14184	87.06	2.85	15510
83	Mar	85.63	3.02	16139	87.29	2.74	15857
83	Apr	85.65	3.07	17534	87.34	2.71	16139
83	May	85.73	2.89	18607	87.39	2.76	17371
83	June	85.45	2.80	16726	87.16	2.78	14865
83	July	85.34	2.89	17070	86.95	3.02	17173
83	Aug	85.22	2.90	18512	86.90	2.86	17910
83	Sep	85.40	3.05	16996	86.89	2.79	17153
83	Oct	85.41	3.11	16088	86.75	2.84	16823
83	Nov	85.40	3.15	12624	86.76	2.77	13224
83	Dec	85.13	3.06	12751	87.00	2.64	13076
84	Jan	85.43	2.93	16583	87.40	2.52	16058
84	Feb	85.62	2.93	16715	87.51	2.63	16531
84	Mar	85.71	2.97	17269	87.54	2.68	16444
84	Apr	85.70	3.00	13386	87.54	2.75	12797
84	May	85.35	2.82	16168	87.17	2.88	16668
84	June	85.62	2.72	15703	86.81	2.87	17336
84	July	85.47	2.68	15470	86.71	2.87	17058
84	Aug	85.23	2.83	9186	86.74	2.91	10180
84	Sep	84.98	2.99	15882	86.52	2.88	16323
84	Oct	85.12	3.20	16082	87.02	2.87	16163
84	Nov	85.28	3.32	15216	87.21	2.59	14993
84	Dec	85.52	3.08	16373	87.33	2.60	15095
85	Jan	85.43	2.91	16311	87.51	2.51	14627
85	Feb	85.47	3.04	15329	87.71	2.72	13906
85	Mar	85.57	3.04	17730	87.62	2.74	16711
85	Apr	85.67	2.95	15265	87.38	2.75	14674
85	May	85.60	2.80	15938	86.97	2.82	15450
85	June	85.59	2.65	14915	86.74	2.83	16401
85	July	85.66	2.64	16554	86.82	2.93	17447
85	Aug	85.95	2.84	14836	87.22	2.85	16229
85	Sep	85.57	3.01	15861	87.06	2.83	16369
85	Oct	85.14	3.22	17119	86.96	2.82	17109

Table 9.3

Monthly Statistics of $T_{10.7v}$ Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	155.65	4.01	16071	155.54	4.24	14236
79	Feb	157.53	3.93	16413	157.34	3.78	14289
79	Mar	157.53	4.02	17408	157.65	3.84	15913
79	Apr	157.39	4.09	16668	157.86	3.67	14338
79	May	157.46	4.08	17199	157.81	3.74	15379
79	June	157.80	4.08	16182	157.82	3.76	14203
79	July	157.83	4.06	16896	157.79	3.51	16582
79	Aug	157.73	4.18	15635	158.01	3.44	15661
79	Sep	158.17	4.12	16550	157.84	3.51	15681
79	Oct	158.60	4.39	16331	157.10	4.02	15983
79	Nov	158.70	4.36	16314	156.60	4.23	16484
79	Dec	158.69	4.07	15896	156.49	4.11	15896
80	Jan	158.47	3.90	16826	156.41	4.06	17314
80	Feb	158.68	4.01	15058	156.86	4.03	15202
80	Mar	159.10	4.25	17811	157.64	3.91	17494
80	Apr	159.22	4.29	16769	158.87	4.02	15300
80	May	158.88	4.40	16900	159.02	4.21	16240
80	June	158.95	4.16	17808	159.01	3.99	17324
80	July	159.11	4.16	17365	158.92	3.66	17032
80	Aug	159.57	4.24	15397	159.25	3.53	14389
80	Sep	159.62	4.42	16436	159.04	3.65	16124
80	Oct	159.56	4.43	17257	157.94	4.07	17795
80	Nov	159.83	4.32	12786	157.21	4.13	13211
80	Dec	159.59	4.13	16101	156.86	4.10	17567
81	Jan	159.44	3.99	17606	156.65	3.96	18117
81	Feb	159.45	3.97	15954	157.18	3.89	15963
81	Mar	159.80	4.10	16991	158.43	3.72	16706
81	Apr	160.03	4.32	16824	159.31	4.01	15735
81	May	159.43	4.22	18101	159.54	4.08	18022
81	June	159.32	4.04	17153	159.97	3.90	17813
81	July	159.57	4.07	17394	160.29	3.61	16398
81	Aug	159.71	4.21	14106	159.50	3.36	13940
81	Sep	159.87	4.39	16762	159.02	3.50	16375
81	Oct	159.75	4.46	16715	158.28	3.89	17052
81	Nov	159.72	4.35	16618	157.38	4.15	17423
81	Dec	159.91	4.17	17379	156.95	4.06	18463
82	Jan	159.86	3.93	15859	156.74	3.89	16797
82	Feb	159.83	4.04	15190	157.36	3.85	15775
82	Mar	160.04	4.20	17076	158.63	3.80	17865
82	Apr	159.76	4.33	17020	159.34	4.12	17175
82	May	159.85	4.26	15627	159.90	4.11	16213
82	June	159.80	4.29	16681	159.72	4.06	15676

Table 9.3 (Continued)

Monthly Statistics of $T_{10.7V}$ Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	159.72	4.25	15650	160.00	3.82	14885
82	Aug	159.80	4.41	12872	160.24	3.58	13161
82	Sep	159.89	4.38	17213	159.19	3.51	17111
82	Oct	160.91	4.49	15440	158.38	3.97	15572
82	Nov	161.09	4.35	14028	157.71	4.32	12446
82	Dec	161.10	4.19	13268	157.49	4.20	12885
83	Jan	160.80	4.31	15159	157.32	4.15	15793
83	Feb	160.86	4.46	14184	157.71	4.23	15510
83	Mar	160.40	4.43	16139	159.02	4.02	15857
83	Apr	159.60	4.38	17534	160.20	4.31	16139
83	May	159.42	4.28	18607	160.85	4.41	17371
83	June	159.65	4.25	16726	161.07	3.97	14865
83	July	160.02	4.22	17070	160.58	3.77	17173
83	Aug	160.14	4.15	18512	160.47	3.43	17910
83	Sep	160.23	4.14	16996	159.73	3.42	17153
83	Oct	160.40	4.15	16088	158.63	3.78	16823
83	Nov	160.04	4.21	12624	157.74	3.92	13224
83	Dec	159.69	4.05	12751	157.53	4.04	13076
84	Jan	158.87	3.79	16583	156.86	3.80	16058
84	Feb	158.94	3.83	16715	157.26	3.77	16531
84	Mar	159.01	4.08	17269	158.36	3.75	16444
84	Apr	158.73	4.18	13386	159.57	3.85	12797
84	May	158.30	4.06	16168	159.87	3.95	16668
84	June	158.14	3.91	15703	159.85	3.74	17336
84	July	158.18	3.89	15470	159.78	3.42	17058
84	Aug	158.33	4.07	9186	159.38	3.14	10180
84	Sep	158.29	4.09	15882	158.81	3.24	16323
84	Oct	158.59	4.07	16082	158.46	3.74	16163
84	Nov	158.76	4.05	15216	157.34	3.81	14993
84	Dec	158.70	3.77	16373	156.41	3.64	15095
85	Jan	158.77	3.68	16311	156.32	3.68	14627
85	Feb	158.83	3.81	15329	156.99	3.74	13906
85	Mar	158.79	3.94	17730	159.19	3.69	16711
85	Apr	158.64	4.00	15265	160.05	3.69	14674
85	May	158.41	3.98	15938	159.88	3.76	15450
85	June	158.31	3.82	14915	160.01	3.65	16401
85	July	158.24	3.85	16554	160.11	3.45	17447
85	Aug	158.64	3.95	14836	160.04	3.19	16229
85	Sep	158.70	3.94	15861	159.38	3.19	16369
85	Oct	158.79	4.12	17119	158.62	3.69	17109

Table 9.4

Monthly Statistics of $T_{10.7H}$ Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	95.38	4.05	16071	95.91	4.09	14236
79	Feb	97.86	3.84	16413	98.12	3.46	14289
79	Mar	98.02	3.90	17408	98.19	3.50	15913
79	Apr	97.94	3.80	16668	98.17	3.20	14338
79	May	98.07	3.78	17199	98.36	3.26	15379
79	June	98.43	3.77	16182	98.55	3.37	14203
79	July	98.45	3.75	16896	98.36	3.29	16582
79	Aug	98.35	3.85	15635	98.44	3.35	15661
79	Sep	98.69	3.91	16550	98.39	3.47	15681
79	Oct	98.89	4.22	16331	98.01	3.93	15983
79	Nov	98.97	4.28	16314	97.77	4.06	16484
79	Dec	98.98	4.08	15896	97.64	3.87	15896
80	Jan	98.73	3.95	16826	97.45	3.79	17314
80	Feb	98.84	3.96	15058	97.79	3.85	15202
80	Mar	99.34	4.19	17811	98.52	3.65	17494
80	Apr	99.55	4.12	16769	99.35	3.71	15300
80	May	99.41	4.13	16900	99.34	3.68	16240
80	June	99.32	3.86	17808	99.28	3.66	17324
80	July	99.40	3.83	17365	99.34	3.41	17032
80	Aug	99.70	3.94	15397	99.48	3.35	14389
80	Sep	99.65	4.22	16436	99.18	3.67	16124
80	Oct	99.57	4.28	17257	98.51	4.00	17795
80	Nov	99.62	4.32	12786	98.16	3.98	13211
80	Dec	99.28	4.20	16101	97.85	3.88	17567
81	Jan	99.30	4.07	17606	97.71	3.78	18117
81	Feb	99.57	3.98	15954	98.09	3.65	15963
81	Mar	99.73	4.05	16991	99.00	3.56	16706
81	Apr	99.95	4.17	16824	99.75	3.59	15735
81	May	99.42	3.92	18101	99.80	3.59	18022
81	June	99.47	3.63	17153	100.04	3.65	17813
81	July	99.78	3.84	17394	100.34	3.52	16398
81	Aug	99.66	4.02	14106	99.74	3.44	13940
81	Sep	99.73	4.14	16762	99.40	3.54	16375
81	Oct	99.48	4.20	16715	98.71	3.87	17052
81	Nov	99.47	4.32	16618	98.18	4.02	17423
81	Dec	99.62	4.26	17379	98.08	3.97	18463
82	Jan	99.53	3.99	15859	97.87	3.66	16797
82	Feb	99.57	3.91	15190	98.16	3.59	15775
82	Mar	100.00	4.14	17076	99.24	3.60	17865
82	Apr	99.57	4.01	17020	99.53	3.71	17175
82	May	99.65	4.01	15627	100.07	3.69	16213
82	June	99.76	3.97	16681	99.71	3.71	15676

Table 9.4 (Continued)

Monthly Statistics of $T_{10.7H}$ Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	99.70	4.00	15650	99.88	3.67	14885
82	Aug	100.12	4.21	12872	100.21	3.68	13161
82	Sep	99.77	4.20	17213	99.60	3.67	17111
82	Oct	100.24	4.51	15440	99.08	3.93	15572
82	Nov	100.66	4.53	14028	98.58	4.27	12446
82	Dec	100.75	4.38	13268	98.59	4.14	12885
83	Jan	100.47	4.46	15159	98.35	4.02	15793
83	Feb	100.57	4.47	14184	98.67	3.99	15510
83	Mar	100.24	4.28	16139	99.51	3.71	15857
83	Apr	100.11	4.69	17534	100.06	3.83	16139
83	May	100.12	4.07	18607	100.51	3.97	17371
83	June	100.01	3.97	16726	100.80	3.65	14865
83	July	100.26	3.99	17070	100.82	3.71	17173
83	Aug	100.27	4.02	18512	100.57	3.57	17910
83	Sep	100.29	4.00	16996	99.99	3.61	17153
83	Oct	100.18	4.15	16088	99.23	3.95	16823
83	Nov	99.89	4.38	12624	98.80	3.91	13224
83	Dec	99.76	4.05	12751	98.78	3.88	13076
84	Jan	100.02	3.73	16583	98.98	3.57	16058
84	Feb	100.45	3.65	16715	99.14	3.47	16531
84	Mar	100.56	3.77	17269	99.96	3.38	16444
84	Apr	100.68	3.88	13386	101.04	3.38	12797
84	May	100.56	3.68	16168	101.15	3.49	16668
84	June	100.54	3.53	15703	101.01	3.42	17336
84	July	100.51	3.52	15470	101.07	3.97	17058
84	Aug	100.65	3.83	9186	101.01	3.67	10180
84	Sep	100.16	3.83	15882	100.38	3.33	16323
84	Oct	100.41	3.99	16082	100.23	3.70	16163
84	Nov	100.33	4.05	15216	99.66	3.63	14993
84	Dec	100.21	3.91	16373	99.10	3.45	15095
85	Jan	100.28	3.76	16311	98.79	3.46	14627
85	Feb	100.71	3.78	15329	99.29	3.47	13906
85	Mar	100.81	3.79	17730	100.93	3.42	16711
85	Apr	100.72	3.75	15265	101.50	3.34	14674
85	May	100.63	3.67	15938	101.35	3.41	15450
85	June	100.54	3.46	14915	101.32	3.41	16401
85	July	100.61	3.49	16554	101.32	3.45	17447
85	Aug	101.08	3.72	14836	101.65	3.22	16229
85	Sep	100.75	3.74	15861	101.16	3.32	16369
85	Oct	100.43	4.08	17119	100.55	3.67	17109

Table 9.5

Monthly Statistics of T_{18V} Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	170.98	7.65	16071	171.71	7.39	14236
79	Feb	171.45	7.82	16413	172.44	7.50	14289
79	Mar	170.76	8.08	17408	172.38	8.43	15913
79	Apr	170.88	8.31	16668	172.11	8.44	14338
79	May	170.25	8.19	17199	170.97	8.48	15379
79	June	170.78	8.47	16182	170.95	8.70	14203
79	July	170.51	8.72	16896	170.58	8.89	16582
79	Aug	170.32	8.91	15635	171.23	9.22	15661
79	Sep	170.28	8.68	16550	171.47	8.84	15681
79	Oct	170.30	9.03	16331	171.41	8.72	15983
79	Nov	170.25	8.67	16314	171.27	8.22	16484
79	Dec	170.59	8.17	15896	172.16	8.02	15896
80	Jan	170.56	7.82	16826	172.22	7.74	17314
80	Feb	170.54	8.12	15058	172.37	8.17	15202
80	Mar	170.89	8.59	17811	171.99	8.83	17494
80	Apr	170.45	8.75	16769	171.37	9.20	15300
80	May	169.97	8.88	16900	170.74	9.14	16240
80	June	169.80	8.36	17808	169.88	8.63	17324
80	July	170.15	8.68	17365	170.08	8.65	17032
80	Aug	169.99	9.07	15397	170.34	9.00	14389
80	Sep	169.55	9.26	16436	170.50	9.21	16124
80	Oct	169.54	8.90	17257	170.07	8.86	17795
80	Nov	169.95	8.63	12786	170.15	8.12	13211
80	Dec	170.11	8.18	16101	170.57	7.81	17567
81	Jan	170.19	7.84	17606	170.89	7.69	18117
81	Feb	170.54	7.82	15954	171.38	7.86	15963
81	Mar	170.83	8.27	16991	171.21	8.65	16706
81	Apr	170.82	8.62	16824	170.54	8.64	15735
81	May	169.75	8.38	18101	169.92	8.54	18022
81	June	169.52	8.12	17153	169.98	8.53	17813
81	July	170.04	8.50	17394	170.98	8.64	16398
81	Aug	170.34	8.77	14106	169.99	8.79	13940
81	Sep	170.50	8.91	16762	170.54	8.81	16375
81	Oct	170.13	8.75	16715	170.21	8.56	17052
81	Nov	170.35	8.52	16618	170.10	8.30	17423
81	Dec	171.07	8.18	17379	170.81	8.10	18463
82	Jan	171.15	7.78	15859	170.94	7.62	16797
82	Feb	170.94	7.81	15190	171.00	7.66	15775
82	Mar	171.36	8.24	17076	171.09	8.52	17865
82	Apr	170.56	8.49	17020	170.50	8.88	17175
82	May	170.21	8.57	15627	170.19	8.58	16213
82	June	170.36	8.73	16681	170.46	8.81	15676

Table 9.5 (Continued)

Monthly Statistics of T_{18V} Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	170.12	8.72	15650	170.53	8.83	14885
82	Aug	170.42	9.24	12872	170.64	9.41	13161
82	Sep	170.43	8.95	17213	170.30	9.08	17111
82	Oct	172.25	9.08	15440	170.44	8.87	15572
82	Nov	172.75	9.02	14028	170.56	8.85	12446
82	Dec	172.59	8.98	13268	170.62	8.57	12885
83	Jan	171.93	9.27	15159	170.46	8.55	15793
83	Feb	172.49	9.28	14184	171.06	8.84	15510
83	Mar	171.54	8.91	16139	171.20	8.91	15857
83	Apr	170.20	8.67	17534	171.43	9.19	16139
83	May	169.84	8.69	18607	171.61	9.15	17371
83	June	170.11	8.63	16726	171.33	8.47	14865
83	July	170.57	8.66	17070	170.69	8.72	17173
83	Aug	170.62	8.75	18512	170.59	8.77	17910
83	Sep	170.62	8.42	16996	170.41	8.64	17153
83	Oct	170.98	8.48	16088	170.06	8.51	16823
83	Nov	170.74	8.26	12624	169.98	8.22	13224
83	Dec	169.96	7.90	12751	170.38	7.92	13076
84	Jan	169.14	7.37	16583	170.58	7.55	16058
84	Feb	169.49	7.61	16715	170.77	7.89	16531
84	Mar	169.49	7.82	17269	170.41	8.24	16444
84	Apr	169.31	8.31	13386	170.07	8.50	12797
84	May	168.65	8.07	16168	169.83	8.26	16668
84	June	168.57	7.90	15703	169.56	7.99	17336
84	July	168.49	7.96	15470	169.09	7.81	17058
84	Aug	168.65	8.44	9186	168.65	7.96	10180
84	Sep	168.36	8.16	15882	168.47	8.20	16323
84	Oct	168.62	8.13	16082	169.30	8.25	16163
84	Nov	168.81	7.96	15216	169.54	8.06	14993
84	Dec	169.17	7.56	16373	169.33	7.34	15095
85	Jan	169.25	7.53	16311	169.63	7.48	14627
85	Feb	169.13	7.36	15329	169.94	7.50	13906
85	Mar	169.11	7.73	17730	170.48	8.10	16711
85	Apr	169.01	7.90	15265	169.99	8.03	14674
85	May	168.66	7.98	15938	169.15	7.78	15450
85	June	168.34	7.74	14915	169.01	7.81	16401
85	July	168.25	7.96	16554	169.15	7.96	17447
85	Aug	169.05	8.35	14836	169.24	8.07	16229
85	Sep	168.56	8.09	15861	168.63	8.11	16369
85	Oct	168.51	8.31	17119	168.50	8.13	17109

Table 9.6

Monthly Statistics of T_{18H} Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	118.72	10.36	16071	120.47	9.64	14236
79	Feb	119.56	10.54	16413	121.48	9.80	14289
79	Mar	118.74	10.85	17408	120.99	11.06	15913
79	Apr	118.96	10.94	16668	120.28	11.05	14338
79	May	118.20	10.85	17199	118.94	11.28	15379
79	June	119.04	11.25	16182	119.22	11.73	14203
79	July	118.59	11.52	16896	118.51	11.93	16582
79	Aug	118.35	11.72	15635	119.22	12.34	15661
79	Sep	118.55	11.43	16550	120.07	11.74	15681
79	Oct	118.61	11.94	16331	120.67	11.43	15983
79	Nov	118.30	11.53	16314	120.42	10.85	16484
79	Dec	118.92	10.98	15896	121.65	10.49	15896
80	Jan	118.79	10.65	16826	121.61	10.14	17314
80	Feb	118.66	10.91	15058	121.70	10.73	15202
80	Mar	119.31	11.52	17811	121.20	11.54	17494
80	Apr	118.91	11.66	16769	120.00	12.28	15300
80	May	118.48	11.79	16900	119.03	12.25	16240
80	June	118.15	11.06	17808	117.88	11.71	17324
80	July	118.50	11.39	17365	118.29	11.68	17032
80	Aug	118.32	11.83	15397	118.58	12.05	14389
80	Sep	117.69	12.16	16436	118.71	12.29	16124
80	Oct	117.92	11.74	17257	118.87	11.67	17795
80	Nov	118.14	11.53	12786	119.18	10.73	13211
80	Dec	118.22	11.04	16101	119.75	10.24	17567
81	Jan	118.45	10.71	17606	120.18	10.12	18117
81	Feb	119.19	10.55	15954	120.71	10.29	15963
81	Mar	119.36	11.09	16991	120.14	11.43	16706
81	Apr	119.47	11.54	16824	119.20	11.53	15735
81	May	118.05	11.03	18101	118.28	11.36	18022
81	June	117.96	10.62	17153	118.19	11.49	17813
81	July	118.83	11.26	17394	119.61	11.85	16398
81	Aug	118.95	11.55	14106	118.37	11.88	13940
81	Sep	119.15	11.64	16762	119.39	11.67	16375
81	Oct	118.69	11.42	16715	119.09	11.29	17052
81	Nov	119.03	11.39	16618	119.31	10.96	17423
81	Dec	120.00	11.11	17379	120.61	10.77	18463
82	Jan	120.05	10.53	15859	120.77	9.98	16797
82	Feb	119.84	10.40	15190	120.59	9.94	15775
82	Mar	120.68	11.09	17076	120.57	11.27	17865
82	Apr	119.54	11.10	17020	119.43	11.60	17175
82	May	118.83	11.26	15627	118.84	11.44	16213
82	June	119.20	11.39	16681	119.17	11.87	15676

Table 9.6 (Continued)

Monthly Statistics of T_{18H} Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	119.00	11.48	15650	119.17	11.98	14885
82	Aug	119.74	12.20	12872	119.33	12.79	13161
82	Sep	119.30	11.81	17213	119.37	12.14	17111
82	Oct	121.26	12.06	15440	120.04	11.62	15572
82	Nov	122.26	12.15	14028	120.38	11.69	12446
82	Dec	122.11	12.13	13268	120.58	11.34	12885
83	Jan	121.23	12.57	15159	120.23	11.30	15793
83	Feb	121.95	12.51	14184	120.98	11.57	15510
83	Mar	120.87	11.82	16139	120.76	11.70	15857
83	Apr	119.75	11.43	17534	120.33	12.07	16139
83	May	119.74	11.45	18607	120.69	12.25	17371
83	June	119.58	11.40	16726	120.32	11.45	14865
83	July	120.67	11.50	17070	120.61	12.00	17173
83	Aug	121.31	11.60	18512	121.05	11.94	17910
83	Sep	121.66	11.05	16996	121.46	11.43	17153
83	Oct	122.38	11.25	16088	121.95	11.18	16823
83	Nov	122.07	10.89	12624	122.21	10.71	13224
83	Dec	120.81	10.49	12751	122.17	10.28	13076
84	Jan	120.35	9.74	16583	122.84	9.71	16058
84	Feb	120.16	9.99	16715	121.78	10.11	16531
84	Mar	120.03	10.18	17269	120.98	10.67	16444
84	Apr	120.49	10.79	13386	120.80	11.26	12797
84	May	120.44	10.36	16168	120.72	11.00	16668
84	June	119.99	10.23	15703	119.72	10.77	17336
84	July	119.45	10.30	15470	118.78	10.68	17058
84	Aug	119.53	10.99	9186	118.43	10.77	10180
84	Sep	118.68	10.59	15882	118.36	10.82	16323
84	Oct	119.08	10.68	16082	119.88	10.71	16163
84	Nov	119.12	10.61	15216	120.59	10.46	14993
84	Dec	119.52	10.20	16373	120.58	9.61	15095
85	Jan	119.65	10.16	16311	120.72	9.70	14627
85	Feb	119.89	9.88	15329	121.03	9.67	13906
85	Mar	120.19	10.18	17730	121.52	10.54	16711
85	Apr	120.04	10.30	15265	120.53	10.65	14674
85	May	119.70	10.38	15938	119.34	10.40	15450
85	June	119.28	10.04	14915	118.98	10.53	16401
85	July	119.28	10.37	16554	119.02	10.92	17447
85	Aug	120.50	10.92	14836	119.65	10.97	16229
85	Sep	119.29	10.52	15861	119.02	10.83	16369
85	Oct	119.00	10.99	17119	119.37	10.67	17109

Table 9.7

Monthly Statistics of T_{21V} (Uncorrected) Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	200.51	14.80	16071	199.49	14.56	14236
79	Feb	201.17	15.10	16413	200.67	14.64	14289
79	Mar	201.07	15.58	17408	201.06	15.84	15913
79	Apr	200.61	15.95	16668	200.92	15.66	14338
79	May	200.05	15.45	17199	199.35	15.48	15379
79	June	200.95	15.89	16182	199.21	16.05	14203
79	July	200.62	16.44	16896	198.63	16.24	16582
79	Aug	200.46	16.97	15635	199.49	17.01	15661
79	Sep	199.95	16.53	16550	199.40	16.57	15681
79	Oct	200.54	17.01	16331	199.25	16.74	15983
79	Nov	200.65	16.20	16314	199.32	16.02	16484
79	Dec	201.22	15.43	15896	200.02	15.49	15896
80	Jan	201.04	14.95	16826	200.23	14.86	17314
80	Feb	200.90	15.64	15058	200.81	15.49	15202
80	Mar	202.18	16.34	17811	201.32	16.42	17494
80	Apr	201.86	16.59	16769	201.27	16.74	15300
80	May	200.95	16.65	16900	200.66	16.90	16240
80	June	200.63	15.92	17808	199.17	16.17	17324
80	July	201.14	16.41	17365	199.56	16.35	17032
80	Aug	201.11	17.11	15397	200.02	17.03	14389
80	Sep	200.30	17.36	16436	199.93	17.64	16124
80	Oct	200.44	16.68	17257	198.94	17.00	17795
80	Nov	200.83	15.97	12786	198.77	15.61	13211
80	Dec	200.77	15.18	16101	199.41	14.97	17567
81	Jan	200.62	14.77	17606	199.69	14.54	18117
81	Feb	201.05	14.95	15954	200.42	14.98	15963
81	Mar	201.83	15.92	16991	200.85	16.21	16706
81	Apr	201.83	16.38	16824	200.21	16.18	15735
81	May	200.05	15.99	18101	199.22	16.14	18022
81	June	199.70	15.71	17153	198.89	16.22	17813
81	July	200.37	16.34	17394	200.90	16.55	16398
81	Aug	200.73	16.73	14106	199.01	16.99	13940
81	Sep	200.31	17.05	16762	199.74	17.27	16375
81	Oct	200.16	16.42	16715	199.03	16.59	17052
81	Nov	200.21	16.00	16618	198.51	15.98	17423
81	Dec	201.30	15.43	17379	199.66	15.52	18463
82	Jan	201.34	14.79	15859	199.78	14.65	16797
82	Feb	201.52	15.02	15190	200.42	14.68	15775
82	Mar	202.42	15.68	17076	200.57	16.04	17865
82	Apr	201.30	16.31	17020	199.78	16.71	17175
82	May	200.47	16.05	15627	199.32	16.23	16213
82	June	200.74	16.38	16681	200.28	16.66	15676

Table 9.7 (Continued)

Monthly Statistics of T_{21V} (Uncorrected) Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	200.66	16.69	15650	200.31	16.87	14885
82	Aug	200.94	17.67	12872	199.78	18.21	13161
82	Sep	200.44	17.21	17213	199.16	17.80	17111
82	Oct	202.83	16.80	15440	199.01	17.46	15572
82	Nov	203.69	16.69	14028	198.89	17.22	12446
82	Dec	203.61	16.71	13268	199.20	16.54	12885
83	Jan	203.06	17.23	15159	199.03	16.50	15793
83	Feb	203.86	17.18	14184	200.33	16.77	15510
83	Mar	202.71	16.95	16139	200.81	16.72	15857
83	Apr	200.62	16.47	17534	200.56	17.08	16139
83	May	199.98	16.67	18607	200.89	17.03	17371
83	June	200.45	16.68	16726	200.81	16.17	14865
83	July	200.80	16.77	17070	199.75	16.99	17173
83	Aug	200.80	17.13	18512	199.28	17.39	17910
83	Sep	200.78	16.59	16996	198.91	17.23	17153
83	Oct	201.51	16.28	16088	198.50	16.81	16823
83	Nov	201.04	15.68	12624	198.45	15.92	13224
83	Dec	200.04	15.06	12751	199.24	15.23	13076
84	Jan	199.52	14.54	16583	200.24	14.71	16058
84	Feb	200.18	15.23	16715	200.44	15.48	16531
84	Mar	200.14	15.50	17269	199.61	15.84	16444
84	Apr	199.62	16.55	13386	199.08	16.69	12797
84	May	198.64	16.06	16168	198.60	16.28	16668
84	June	198.72	15.78	15703	197.88	16.10	17336
84	July	198.72	15.99	15470	197.20	15.99	17058
84	Aug	198.55	17.00	9186	196.54	16.41	10180
84	Sep	197.66	16.37	15882	196.05	16.70	16323
84	Oct	198.05	16.05	16082	197.84	16.31	16163
84	Nov	198.33	15.63	15216	198.47	16.16	14993
84	Dec	198.80	14.85	16373	198.00	14.78	15095
85	Jan	0.0	0.0	0	0.0	0.0	0
85	Feb	0.0	0.0	0	0.0	0.0	0
85	Mar	0.0	0.0	0	0.0	0.0	0
85	Apr	0.0	0.0	0	0.0	0.0	0
85	May	0.0	0.0	0	0.0	0.0	0
85	June	0.0	0.0	0	0.0	0.0	0
85	July	0.0	0.0	0	0.0	0.0	0
85	Aug	0.0	0.0	0	0.0	0.0	0
85	Sep	0.0	0.0	0	0.0	0.0	0
85	Oct	0.0	0.0	0	0.0	0.0	0

Table 9.8

Monthly Statistics of T_{21H} (Uncorrected) Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	168.50	20.98	16071	169.94	19.89	14236
79	Feb	170.21	21.31	16413	172.11	20.00	14289
79	Mar	170.51	21.90	17408	172.60	21.71	15913
79	Apr	170.24	22.16	16668	172.03	21.58	14338
79	May	169.93	21.54	17199	169.93	21.58	15379
79	June	171.53	22.42	16182	170.10	22.55	14203
79	July	170.99	23.21	16896	169.33	23.13	16582
79	Aug	171.67	23.75	15635	171.54	23.82	15661
79	Sep	171.95	23.12	16550	173.49	22.52	15681
79	Oct	173.23	23.69	16331	175.37	22.06	15983
79	Nov	173.26	22.44	16314	176.24	20.80	16484
79	Dec	174.86	21.36	15896	178.67	19.91	15896
80	Jan	175.53	20.64	16826	180.05	19.28	17314
80	Feb	175.82	21.22	15058	181.13	20.03	15202
80	Mar	178.08	22.29	17811	181.26	21.66	17494
80	Apr	177.60	22.69	16769	179.43	22.58	15300
80	May	177.15	22.81	16900	178.45	23.09	16240
80	June	177.16	21.93	17808	176.27	22.68	17324
80	July	178.06	22.70	17365	177.57	22.91	17032
80	Aug	177.83	23.72	15397	178.78	23.15	14389
80	Sep	176.78	23.93	16436	180.21	23.14	16124
80	Oct	177.86	22.80	17257	181.46	21.72	17795
80	Nov	179.29	21.61	12786	184.07	19.12	13211
80	Dec	180.00	20.50	16101	186.46	18.20	17567
81	Jan	180.74	19.52	17606	188.55	17.77	18117
81	Feb	182.41	19.96	15954	189.59	18.68	15963
81	Mar	183.13	21.13	16991	188.13	20.97	16706
81	Apr	182.83	21.88	16824	185.18	21.51	15735
81	May	181.33	21.43	18101	182.46	21.81	18022
81	June	181.21	21.33	17153	181.51	22.57	17813
81	July	181.82	22.81	17394	184.72	23.12	16398
81	Aug	182.93	22.71	14106	184.16	23.20	13940
81	Sep	182.77	22.96	16762	187.74	22.05	16375
81	Oct	182.86	22.05	16715	189.47	20.27	17052
81	Nov	184.33	21.40	16618	191.93	18.59	17423
81	Dec	187.10	20.37	17379	196.21	17.78	18463
82	Jan	188.39	19.56	15859	197.84	17.02	16797
82	Feb	188.65	19.39	15190	197.54	17.80	15775
82	Mar	189.74	20.31	17076	194.96	20.45	17865
82	Apr	188.41	21.51	17020	191.61	21.28	17175
82	May	186.83	21.75	15627	189.10	21.73	16213
82	June	187.33	22.56	16681	189.12	22.82	15676

Table 9.8 (Continued)

Monthly Statistics of T_{21H} (Uncorrected) Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	186.90	22.81	15650	188.97	23.47	14885
82	Aug	188.02	23.75	12872	190.06	24.58	13161
82	Sep	188.13	23.17	17213	193.36	22.54	17111
82	Oct	190.93	22.81	15440	195.92	20.69	15572
82	Nov	193.28	22.54	14028	198.80	19.69	12446
82	Dec	194.80	22.10	13268	201.72	18.30	12885
83	Jan	194.64	21.62	15159	202.54	18.77	15793
83	Feb	197.94	20.75	14184	204.11	19.31	15510
83	Mar	195.66	20.82	16139	202.18	20.43	15857
83	Apr	193.66	21.20	17534	199.27	21.50	16139
83	May	193.29	21.76	18607	197.20	21.99	17371
83	June	192.07	21.56	16726	194.09	22.63	14865
83	July	190.29	22.24	17070	190.79	22.63	17173
83	Aug	187.44	22.56	18512	187.94	22.46	17910
83	Sep	185.96	21.64	16996	186.51	21.79	17153
83	Oct	184.32	21.71	16088	183.53	22.21	16823
83	Nov	186.65	19.50	12624	186.54	18.97	13224
83	Dec	188.01	19.08	12751	192.86	17.30	13076
84	Jan	191.21	18.21	16583	198.49	16.75	16058
84	Feb	198.46	19.88	16715	208.64	17.40	16531
84	Mar	198.57	20.74	17269	205.73	20.14	16444
84	Apr	195.98	21.86	13386	198.41	22.58	12797
84	May	192.50	19.96	16168	193.62	20.05	16668
84	June	196.13	20.03	15703	195.28	21.08	17336
84	July	196.96	20.61	15470	196.17	22.13	17058
84	Aug	197.26	21.16	9186	197.89	22.18	10180
84	Sep	196.75	20.62	15882	201.14	20.88	16323
84	Oct	197.10	20.84	16082	206.97	17.56	16163
84	Nov	200.61	20.60	15216	211.71	15.69	14993
84	Dec	204.32	18.90	16373	213.25	14.78	15095
85	Jan	0.0	0.0	0	0.0	0.0	0
85	Feb	0.0	0.0	0	0.0	0.0	0
85	Mar	0.0	0.0	0	0.0	0.0	0
85	Apr	0.0	0.0	0	0.0	0.0	0
85	May	0.0	0.0	0	0.0	0.0	0
85	June	0.0	0.0	0	0.0	0.0	0
85	July	0.0	0.0	0	0.0	0.0	0
85	Aug	0.0	0.0	0	0.0	0.0	0
85	Sep	0.0	0.0	0	0.0	0.0	0
85	Oct	0.0	0.0	0	0.0	0.0	0

Table 9.9

Monthly Statistics of T_{37V} Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	204.18	7.47	16071	202.52	7.12	14236
79	Feb	204.57	7.46	16413	203.14	7.02	14289
79	Mar	204.44	7.51	17408	203.46	7.67	15913
79	Apr	204.22	7.60	16668	203.33	7.45	14338
79	May	203.94	7.69	17199	202.81	7.42	15379
79	June	204.48	7.87	16182	202.92	7.57	14203
79	July	204.30	7.98	16896	202.66	7.55	16582
79	Aug	204.23	7.96	15635	203.01	8.00	15661
79	Sep	204.07	7.76	16550	202.91	7.90	15681
79	Oct	204.67	8.28	16331	202.95	8.15	15983
79	Nov	204.69	8.15	16314	202.89	7.97	16484
79	Dec	204.70	7.84	15896	203.12	7.90	15896
80	Jan	204.39	7.58	16826	203.02	7.56	17314
80	Feb	204.28	7.88	15058	203.26	7.95	15202
80	Mar	205.04	8.13	17811	203.39	8.04	17494
80	Apr	204.81	8.23	16769	203.47	8.38	15300
80	May	204.44	8.22	16900	203.55	8.28	16240
80	June	204.30	7.69	17808	202.97	7.75	17324
80	July	204.56	7.99	17365	202.99	7.78	17032
80	Aug	204.73	8.29	15397	203.13	8.07	14389
80	Sep	204.38	8.46	16436	203.25	8.55	16124
80	Oct	204.43	8.09	17257	202.87	8.30	17795
80	Nov	204.66	8.18	12786	202.48	7.87	13211
80	Dec	204.54	7.85	16101	202.56	7.64	17567
81	Jan	204.17	7.72	17606	202.65	7.56	18117
81	Feb	204.33	7.52	15954	203.13	7.48	15963
81	Mar	204.75	7.98	16991	203.10	8.07	16706
81	Apr	204.89	8.14	16824	202.86	7.98	15735
81	May	203.92	7.79	18101	202.71	7.90	18022
81	June	203.70	7.55	17153	202.95	7.93	17813
81	July	204.17	7.87	17394	203.74	8.01	16398
81	Aug	204.42	8.14	14106	202.64	8.11	13940
81	Sep	204.32	8.30	16762	202.81	8.25	16375
81	Oct	204.20	8.18	16715	202.63	8.15	17052
81	Nov	204.40	7.99	16618	202.50	8.01	17423
81	Dec	204.84	7.89	17379	202.93	8.01	18463
82	Jan	204.64	7.64	15859	202.70	7.55	16797
82	Feb	204.54	7.53	15190	202.83	7.28	15775
82	Mar	205.16	7.78	17076	203.30	7.91	17865
82	Apr	204.52	7.85	17020	202.99	8.13	17175
82	May	203.99	7.96	15627	202.70	8.12	16213
82	June	204.24	8.03	16681	203.19	8.22	15676

Table 9.9 (Continued)

Monthly Statistics of T_{37V} Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	204.10	8.14	15650	203.23	8.23	14885
82	Aug	204.32	8.46	12872	203.23	8.77	13161
82	Sep	204.21	8.23	17213	202.67	8.52	17111
82	Oct	205.60	8.46	15440	202.53	8.28	15572
82	Nov	205.95	8.58	14028	202.55	8.45	12446
82	Dec	205.84	8.77	13268	202.61	8.44	12885
83	Jan	205.38	9.19	15159	202.35	8.45	15793
83	Feb	205.71	9.19	14184	202.91	8.56	15510
83	Mar	204.91	8.55	16139	203.10	8.38	15857
83	Apr	203.71	8.11	17534	203.45	8.64	16139
83	May	203.43	8.13	18607	203.81	8.44	17371
83	June	203.70	8.05	16726	203.73	8.02	14865
83	July	204.33	8.02	17070	203.26	8.14	17173
83	Aug	204.33	8.04	18512	202.93	8.12	17910
83	Sep	204.22	7.69	16996	202.59	7.97	17153
83	Oct	204.62	7.91	16088	202.32	8.00	16823
83	Nov	204.32	7.88	12624	202.10	7.99	13224
83	Dec	203.38	7.67	12751	202.16	7.81	13076
84	Jan	202.33	7.13	16583	201.96	7.36	16058
84	Feb	202.69	7.33	16715	202.17	7.41	16531
84	Mar	202.59	7.41	17269	201.86	7.64	16444
84	Apr	202.43	7.67	13386	201.83	7.81	12797
84	May	201.75	7.41	16168	201.76	7.74	16668
84	June	201.67	7.24	15703	201.66	7.40	17336
84	July	201.87	7.23	15470	201.57	7.24	17058
84	Aug	202.13	7.84	9186	200.91	7.29	10180
84	Sep	201.48	7.44	15882	200.45	7.57	16323
84	Oct	201.99	7.57	16082	201.26	7.67	16163
84	Nov	202.17	7.53	15216	201.29	7.69	14993
84	Dec	202.37	7.40	16373	200.98	7.25	15095
85	Jan	202.29	7.44	16311	201.08	7.35	14627
85	Feb	202.31	7.03	15329	201.50	7.06	13906
85	Mar	202.45	7.34	17730	202.39	7.59	16711
85	Apr	202.15	7.28	15265	201.97	7.54	14674
85	May	201.82	7.34	15938	201.37	7.27	15450
85	June	201.69	7.15	14915	201.47	7.34	16401
85	July	201.75	7.25	16554	201.70	7.33	17447
85	Aug	202.47	7.61	14836	201.58	7.39	16229
85	Sep	202.05	7.23	15861	200.78	7.40	16369
85	Oct	202.18	7.68	17119	200.58	7.57	17109

Table 9.10

Monthly Statistics of T_{37H} Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	157.15	12.40	16071	154.81	11.37	14236
79	Feb	158.00	12.32	16413	155.82	11.19	14289
79	Mar	157.77	12.28	17408	155.76	12.24	15913
79	Apr	157.43	12.23	16668	155.02	12.02	14338
79	May	157.23	12.53	17199	154.46	12.29	15379
79	June	156.97	13.55	16182	153.62	13.83	14203
79	July	157.89	12.87	16896	154.43	12.63	16582
79	Aug	157.75	12.78	15635	154.88	13.24	15661
79	Sep	157.64	12.42	16550	155.10	12.98	15681
79	Oct	158.59	13.33	16331	155.85	13.15	15983
79	Nov	158.90	13.29	16314	156.22	12.88	16484
79	Dec	158.96	12.93	15896	156.48	12.72	15896
80	Jan	158.28	12.66	16826	156.16	12.19	17314
80	Feb	158.06	12.90	15058	156.47	12.69	15202
80	Mar	159.54	13.30	17811	156.60	12.88	17494
80	Apr	159.35	13.36	16769	156.28	13.75	15300
80	May	158.90	13.33	16900	156.28	13.66	16240
80	June	158.66	12.52	17808	155.51	13.01	17324
80	July	158.99	12.78	17365	155.76	12.94	17032
80	Aug	159.25	13.15	15397	155.91	13.26	14389
80	Sep	158.70	13.53	16436	156.05	13.87	16124
80	Oct	158.93	13.02	17257	156.17	13.44	17795
80	Nov	159.24	13.37	12786	155.96	12.78	13211
80	Dec	158.88	13.01	16101	156.01	12.36	17567
81	Jan	158.40	12.95	17606	156.18	12.23	18117
81	Feb	158.95	12.46	15954	156.92	12.00	15963
81	Mar	159.45	13.03	16991	156.29	13.08	16706
81	Apr	159.86	13.32	16824	155.85	13.20	15735
81	May	158.16	12.63	18101	155.48	13.03	18022
81	June	157.95	12.22	17153	155.79	13.21	17813
81	July	158.84	12.71	17394	157.00	13.52	16398
81	Aug	159.04	13.13	14106	155.31	13.51	13940
81	Sep	158.90	13.26	16762	155.96	13.47	16375
81	Oct	158.69	13.09	16715	155.91	13.18	17052
81	Nov	159.10	13.08	16618	156.16	12.97	17423
81	Dec	159.80	13.06	17379	157.04	13.07	18463
82	Jan	159.33	12.68	15859	156.61	12.17	16797
82	Feb	159.28	12.33	15190	156.60	11.58	15775
82	Mar	160.48	12.81	17076	156.97	12.92	17865
82	Apr	159.17	12.57	17020	155.66	13.36	17175
82	May	158.44	12.83	15627	155.63	13.38	16213
82	June	159.10	12.88	16681	156.29	13.81	15676

Table 9.10 (Continued)

Monthly Statistics of T_{37H} Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	158.90	13.13	15650	156.35	13.88	14885
82	Aug	159.61	13.46	12872	156.45	14.62	13161
82	Sep	158.92	13.20	17213	155.99	14.02	17111
82	Oct	160.81	13.60	15440	156.41	13.26	15572
82	Nov	161.78	13.90	14028	156.76	13.50	12446
82	Dec	161.77	14.25	13268	157.03	13.57	12885
83	Jan	160.97	14.96	15159	156.47	13.49	15793
83	Feb	161.31	14.92	14184	157.19	13.57	15510
83	Mar	160.29	13.66	16139	156.96	13.48	15857
83	Apr	159.53	13.86	17534	157.04	14.63	16139
83	May	159.24	13.80	18607	157.35	14.58	17371
83	June	158.95	12.93	16726	157.40	13.53	14865
83	July	159.78	12.92	17070	157.12	13.86	17173
83	Aug	159.72	12.91	18512	156.55	13.66	17910
83	Sep	159.54	12.30	16996	156.19	13.18	17153
83	Oct	159.91	12.82	16088	156.27	13.16	16823
83	Nov	159.56	12.98	12624	156.32	12.96	13224
83	Dec	158.36	12.63	12751	156.45	12.64	13076
84	Jan	157.44	11.61	16583	156.83	11.67	16058
84	Feb	158.26	11.70	16715	156.87	11.57	16531
84	Mar	158.18	11.70	17269	155.92	12.21	16444
84	Apr	158.40	12.09	13386	155.85	12.81	12797
84	May	157.65	11.64	16168	155.74	12.84	16668
84	June	157.56	11.39	15703	155.43	12.40	17336
84	July	158.17	12.15	15470	155.44	12.37	17058
84	Aug	159.04	13.46	9186	155.43	13.11	10180
84	Sep	156.71	11.76	15882	154.20	12.39	16323
84	Oct	157.75	12.05	16082	156.02	12.32	16163
84	Nov	157.67	12.20	15216	156.41	12.12	14993
84	Dec	157.98	12.17	16373	156.14	11.52	15095
85	Jan	157.64	12.17	16311	155.81	11.61	14627
85	Feb	158.26	11.53	15329	156.58	11.08	13906
85	Mar	158.79	11.71	17730	157.59	12.21	16711
85	Apr	158.43	11.47	15265	156.69	12.40	14674
85	May	158.06	11.57	15938	155.73	12.10	15450
85	June	157.80	11.33	14915	155.87	12.26	16401
85	July	158.00	11.41	16554	156.15	12.42	17447
85	Aug	159.30	11.88	14836	156.46	12.35	16229
85	Sep	158.25	11.32	15861	155.52	12.12	16369
85	Oct	158.01	12.28	17119	155.50	12.08	17109

Table 9.11

Monthly Statistics of T_{21V} (Corrected) Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	200.51	14.80	16071	199.49	14.56	14236
79	Feb	201.19	15.10	16413	200.69	14.64	14289
79	Mar	201.10	15.58	17408	201.10	15.84	15913
79	Apr	200.67	15.94	16668	200.99	15.65	14338
79	May	200.13	15.45	17199	199.45	15.47	15379
79	June	201.06	15.89	16182	199.35	16.04	14203
79	July	200.77	16.43	16896	198.80	16.24	16582
79	Aug	200.64	16.96	15635	199.69	17.00	15661
79	Sep	200.15	16.51	16550	199.63	16.55	15681
79	Oct	200.76	17.00	16331	199.51	16.71	15983
79	Nov	200.90	16.19	16314	199.62	15.98	16484
79	Dec	201.50	15.43	15896	200.35	15.45	15896
80	Jan	201.35	14.94	16826	200.58	14.83	17314
80	Feb	201.24	15.63	15058	201.20	15.46	15202
80	Mar	202.54	16.33	17811	201.73	16.39	17494
80	Apr	202.25	16.58	16769	201.72	16.70	15300
80	May	201.37	16.63	16900	201.14	16.86	16240
80	June	201.09	15.89	17808	199.68	16.13	17324
80	July	201.61	16.40	17365	200.10	16.31	17032
80	Aug	201.61	17.09	15397	200.58	16.97	14389
80	Sep	200.83	17.35	16436	200.55	17.56	16124
80	Oct	200.98	16.67	17257	199.59	16.93	17795
80	Nov	201.40	15.95	12786	199.44	15.52	13211
80	Dec	201.37	15.15	16101	200.11	14.88	17567
81	Jan	201.26	14.73	17606	200.43	14.46	18117
81	Feb	201.71	14.92	15954	201.19	14.90	15963
81	Mar	202.52	15.90	16991	201.64	16.13	16706
81	Apr	202.54	16.34	16824	201.03	16.10	15735
81	May	200.80	15.95	18101	200.07	16.05	18022
81	June	200.48	15.66	17153	199.78	16.15	17813
81	July	201.17	16.31	17394	201.81	16.48	16398
81	Aug	201.56	16.67	14106	199.96	16.92	13940
81	Sep	201.16	17.00	16762	200.75	17.14	16375
81	Oct	201.03	16.38	16715	200.07	16.46	17052
81	Nov	201.11	15.95	16618	199.55	15.84	17423
81	Dec	202.22	15.38	17379	200.75	15.38	18463
82	Jan	202.30	14.74	15859	200.90	14.50	16797
82	Feb	202.51	14.95	15190	201.56	14.55	15775
82	Mar	203.44	15.62	17076	201.73	15.93	17865
82	Apr	202.34	16.24	17020	200.98	16.60	17175
82	May	201.54	15.99	15627	200.56	16.11	16213
82	June	201.85	16.32	16681	201.54	16.55	15676

Table 9.11 (Continued)

Monthly Statistics of T_{21V} (Corrected) Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	201.79	16.65	15650	201.59	16.78	14885
82	Aug	202.11	17.61	12872	201.11	18.10	13161
82	Sep	201.61	17.15	17213	200.53	17.66	17111
82	Oct	203.97	16.78	15440	200.41	17.31	15572
82	Nov	204.88	16.67	14028	200.32	17.07	12446
82	Dec	204.83	16.68	13268	200.65	16.37	12885
83	Jan	204.32	17.16	15159	200.53	16.34	15793
83	Feb	205.19	17.08	14184	201.84	16.60	15510
83	Mar	204.04	16.86	16139	202.36	16.56	15857
83	Apr	201.99	16.40	17534	202.14	16.94	16139
83	May	201.48	16.58	18607	202.51	16.89	17371
83	June	201.89	16.58	16726	202.46	16.84	14865
83	July	202.27	16.70	17070	201.43	16.85	17173
83	Aug	202.28	17.08	18512	201.01	17.26	17910
83	Sep	202.28	16.55	16996	200.66	17.11	17153
33	Oct	203.03	16.27	16088	200.29	16.69	16823
83	Nov	202.60	15.64	12624	200.27	15.78	13224
83	Dec	201.60	14.98	12751	201.10	15.03	13076
84	Jan	201.20	14.42	16583	202.13	14.50	16058
84	Feb	201.86	15.11	16715	202.36	15.27	16531
84	Mar	201.84	15.36	17269	201.51	15.66	16444
84	Apr	201.38	16.45	13386	201.01	16.54	12797
84	May	200.44	15.95	16168	200.56	16.12	16668
84	June	200.53	15.68	15703	199.89	15.93	17336
84	July	200.61	15.87	15470	199.27	15.78	17058
84	Aug	200.50	16.85	9186	198.66	16.23	10180
84	Sep	199.59	16.20	15882	198.16	16.50	16323
84	Oct	199.97	15.91	16082	200.04	16.05	16163
84	Nov	200.28	15.47	15216	200.72	15.82	14993
84	Dec	200.78	14.68	16373	200.24	14.48	15095
85	Jan	0.0	0.0	0	0.0	0.0	0
85	Feb	0.0	0.0	0	0.0	0.0	0
85	Mar	0.0	0.0	0	0.0	0.0	0
85	Apr	0.0	0.0	0	0.0	0.0	0
85	May	0.0	0.0	0	0.0	0.0	0
85	June	0.0	0.0	0	0.0	0.0	0
85	July	0.0	0.0	0	0.0	0.0	0
85	Aug	0.0	0.0	0	0.0	0.0	0
85	Sep	0.0	0.0	0	0.0	0.0	0
85	Oct	0.0	0.0	0	0.0	0.0	0

Table 9.12

Monthly Statistics of T_{21H} (Corrected) Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	168.18	20.97	16071	169.58	19.89	14236
79	Feb	169.36	21.27	16413	171.17	19.99	14289
79	Mar	169.19	21.86	17408	171.09	21.71	15913
79	Apr	168.39	22.10	16668	169.90	21.60	14338
79	May	167.51	21.45	17199	167.25	21.61	15379
79	June	168.67	22.26	16182	166.84	22.62	14203
79	July	167.67	23.08	16896	165.47	23.10	16582
79	Aug	167.72	23.65	15635	167.06	23.85	15661
79	Sep	167.52	22.92	16550	168.44	22.55	15681
79	Oct	168.27	23.47	16331	169.68	22.12	15983
79	Nov	167.73	22.24	16314	169.99	20.88	16484
79	Dec	168.86	21.11	15896	171.84	19.93	15896
80	Jan	168.99	20.30	16826	172.65	19.15	17314
80	Feb	168.70	20.89	15058	173.10	19.96	15202
80	Mar	170.44	21.92	17811	172.64	21.52	17494
80	Apr	169.43	22.27	16769	170.23	22.59	15300
80	May	168.46	22.39	16900	168.63	23.23	16240
80	June	167.79	21.55	17808	165.81	22.83	17324
80	July	168.36	22.27	17365	166.51	22.99	17032
80	Aug	167.63	23.16	15397	167.29	23.51	14389
80	Sep	166.02	23.41	16436	167.98	23.47	16124
80	Oct	166.58	22.31	17257	168.73	21.82	17795
80	Nov	167.45	21.11	12786	170.75	19.17	13211
80	Dec	167.46	19.98	16101	172.54	18.05	17567
81	Jan	167.81	19.05	17606	173.91	17.49	18117
81	Feb	168.91	19.22	15954	174.45	18.21	15963
81	Mar	169.18	20.37	16991	172.40	20.71	16706
81	Apr	168.50	21.18	16824	168.79	21.36	15735
81	May	166.16	20.77	18101	165.55	21.92	18022
81	June	165.64	20.54	17153	163.88	22.67	17813
81	July	165.90	21.86	17394	166.47	23.35	16398
81	Aug	166.31	22.02	14106	165.23	23.29	13940
81	Sep	165.64	22.26	16762	168.29	22.25	16375
81	Oct	165.31	21.39	16715	169.42	20.25	17052
81	Nov	166.21	20.67	16618	171.50	18.46	17423
81	Dec	168.40	19.51	17379	175.14	17.45	18463
82	Jan	168.98	18.45	15859	176.16	16.32	16797
82	Feb	168.69	18.39	15190	175.26	16.90	15775
82	Mar	169.47	19.36	17076	172.16	19.78	17865
82	Apr	167.78	20.06	17020	168.12	21.08	17175
82	May	165.81	20.12	15627	165.00	21.78	16213
82	June	165.65	21.17	16681	164.38	22.95	15676

Table 9.12 (Continued)

Monthly Statistics of T_{21H} (Corrected) Over Global Ocean Areas (50°S - 60°N)

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	164.76	21.57	15650	163.57	23.60	14885
82	Aug	165.05	22.74	12872	164.04	24.59	13161
82	Sep	164.89	21.87	17213	166.93	22.44	17111
82	Oct	167.69	21.32	15440	169.18	20.38	15572
82	Nov	169.44	20.66	14028	171.54	18.83	12446
82	Dec	170.31	20.02	13268	173.85	17.40	12885
83	Jan	169.52	20.10	15159	174.06	17.70	15793
83	Feb	171.59	19.41	14184	175.45	18.36	15510
83	Mar	169.41	19.49	16139	172.52	19.41	15857
83	Apr	166.73	19.49	17534	168.67	20.79	16139
83	May	165.87	20.05	18607	165.99	21.74	17371
83	June	163.93	20.80	16726	162.38	22.01	14865
83	July	161.64	21.00	17078	158.55	23.13	17173
83	Aug	158.52	21.60	18512	154.94	23.08	17910
83	Sep	156.44	20.97	16996	152.87	22.42	17153
83	Oct	154.46	21.36	16088	149.45	22.92	16823
83	Nov	156.06	19.83	12624	151.77	20.10	13224
83	Dec	156.97	18.32	12751	157.58	17.99	13076
84	Jan	159.37	17.13	16583	162.95	17.11	16058
84	Feb	166.32	17.43	16715	172.27	15.96	16531
84	Mar	166.31	18.50	17269	168.95	19.40	16444
84	Apr	162.66	20.61	13386	160.64	22.94	12797
84	May	158.51	18.67	16168	155.63	20.84	16668
84	June	161.69	18.55	15703	156.67	21.71	17336
84	July	161.75	19.20	15470	156.54	22.03	17058
84	Aug	160.56	20.25	9186	157.28	21.78	10180
84	Sep	160.11	19.60	15882	160.57	19.90	16323
84	Oct	160.56	19.23	16082	165.74	17.40	16163
84	Nov	163.38	17.95	15216	170.02	15.59	14993
84	Dec	166.16	16.98	16373	171.58	14.71	15095
85	Jan	0.0	0.0	0	0.0	0.0	0
85	Feb	0.0	0.0	0	0.0	0.0	0
85	Mar	0.0	0.0	0	0.0	0.0	0
85	Apr	0.0	0.0	0	0.0	0.0	0
85	May	0.0	0.0	0	0.0	0.0	0
85	June	0.0	0.0	0	0.0	0.0	0
85	July	0.0	0.0	0	0.0	0.0	0
85	Aug	0.0	0.0	0	0.0	0.0	0
85	Sep	0.0	0.0	0	0.0	0.0	0
85	Oct	0.0	0.0	0	0.0	0.0	0

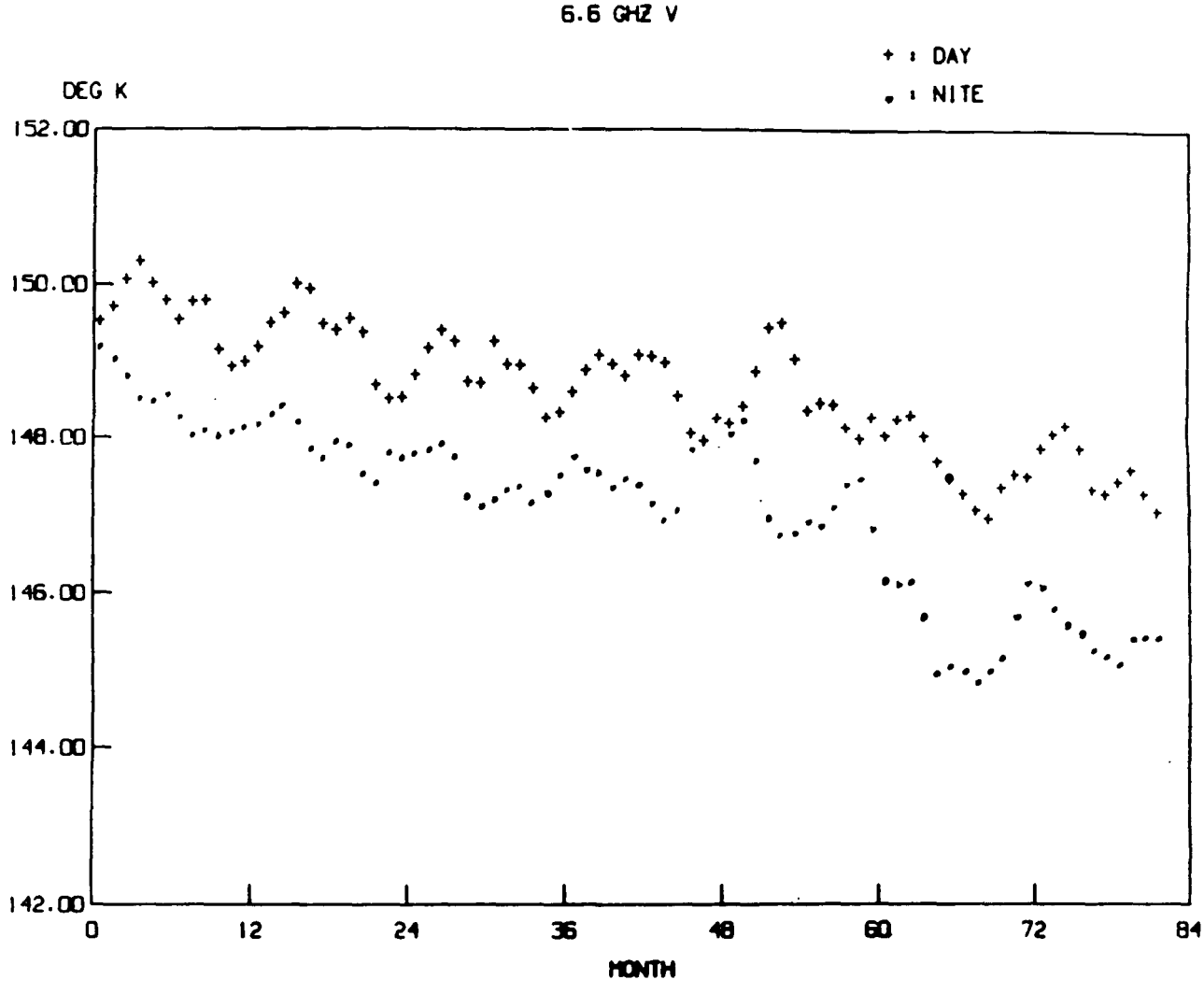

Figure 9.1 Monthly averaged $T_{6.6V}$ over ocean vs. time.

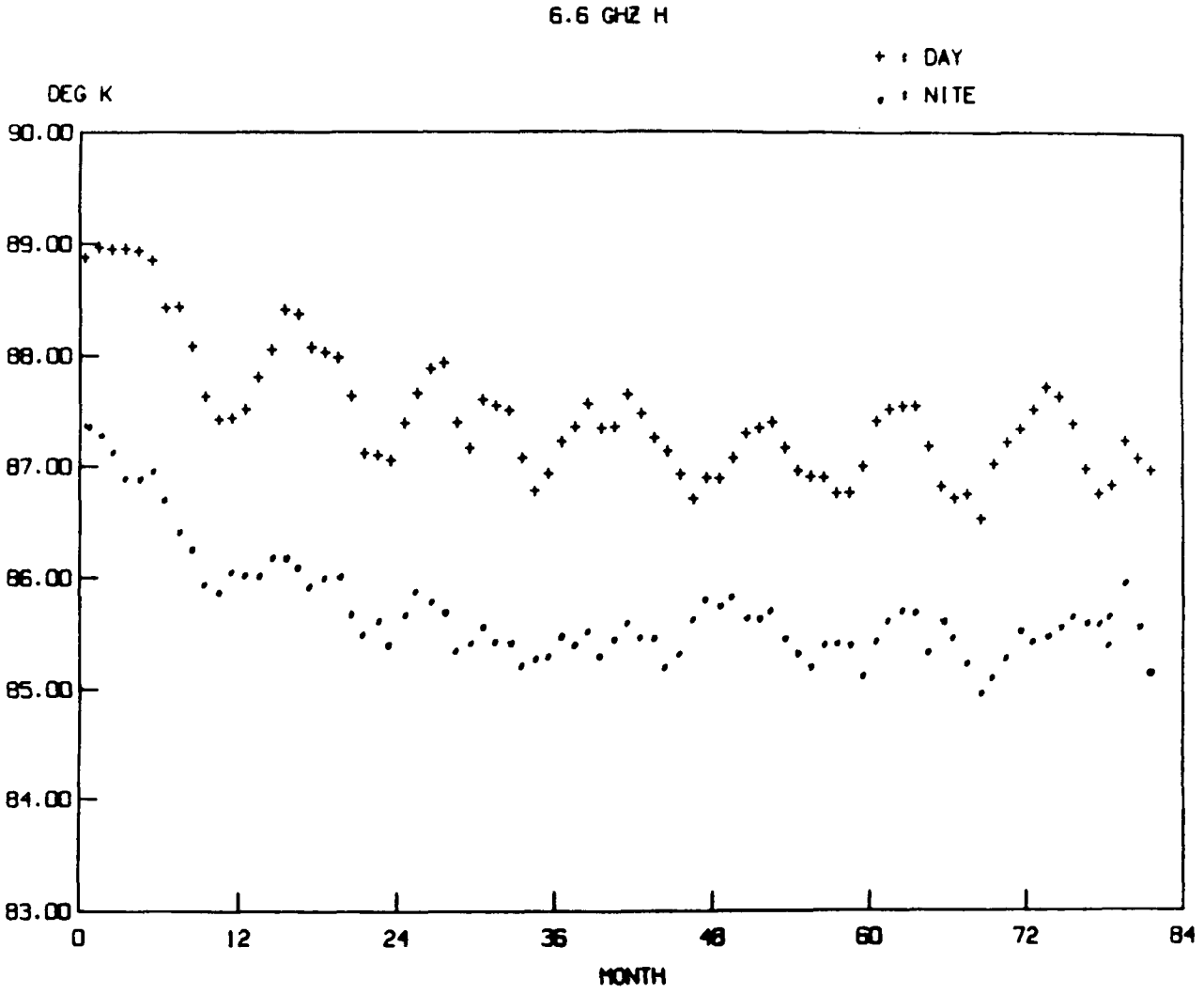

Figure 9.2 Monthly averaged $T_{6.6H}$ over ocean vs. time.

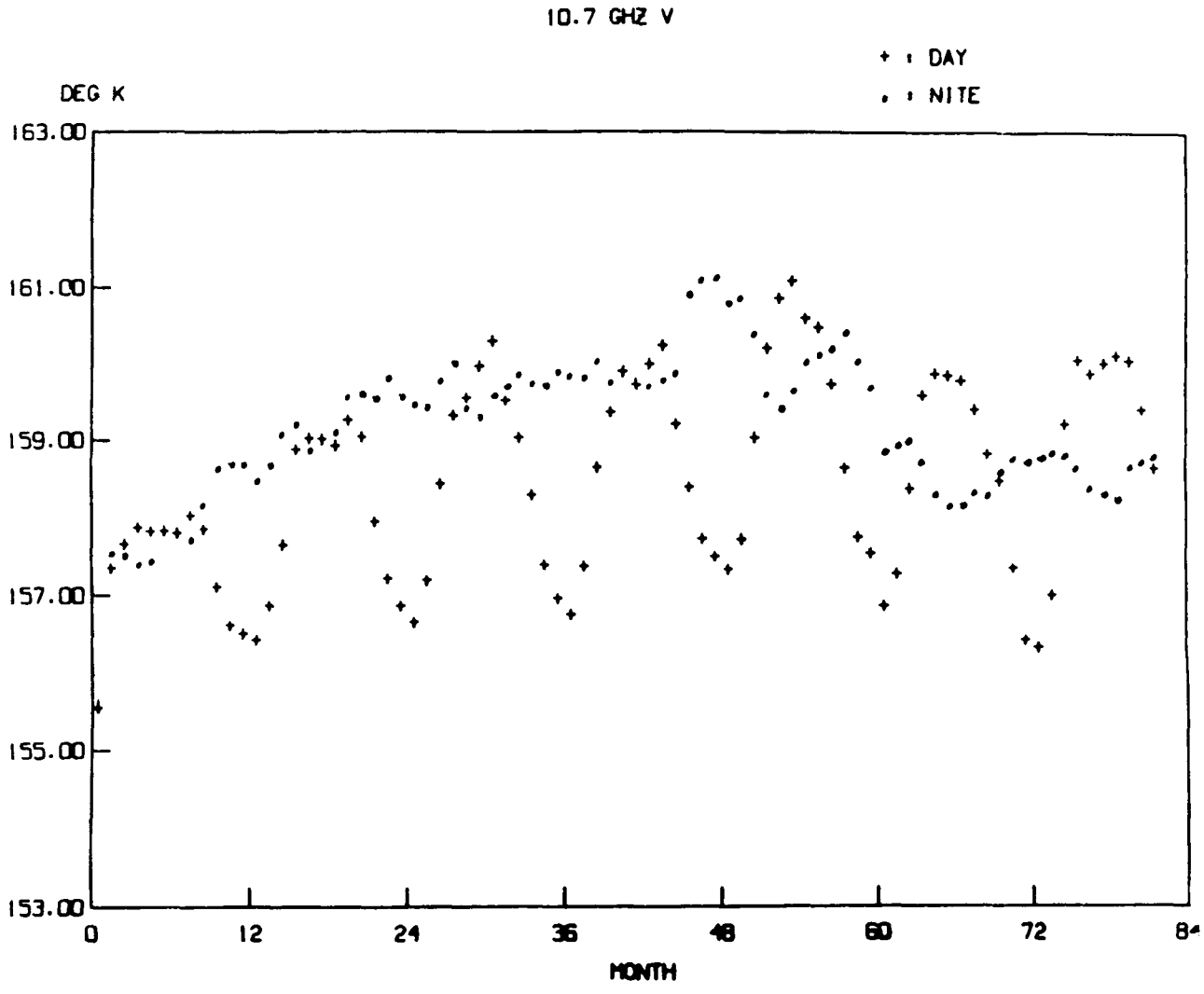

Figure 9.3 Monthly averaged $T_{10.7V}$ over ocean vs. time.

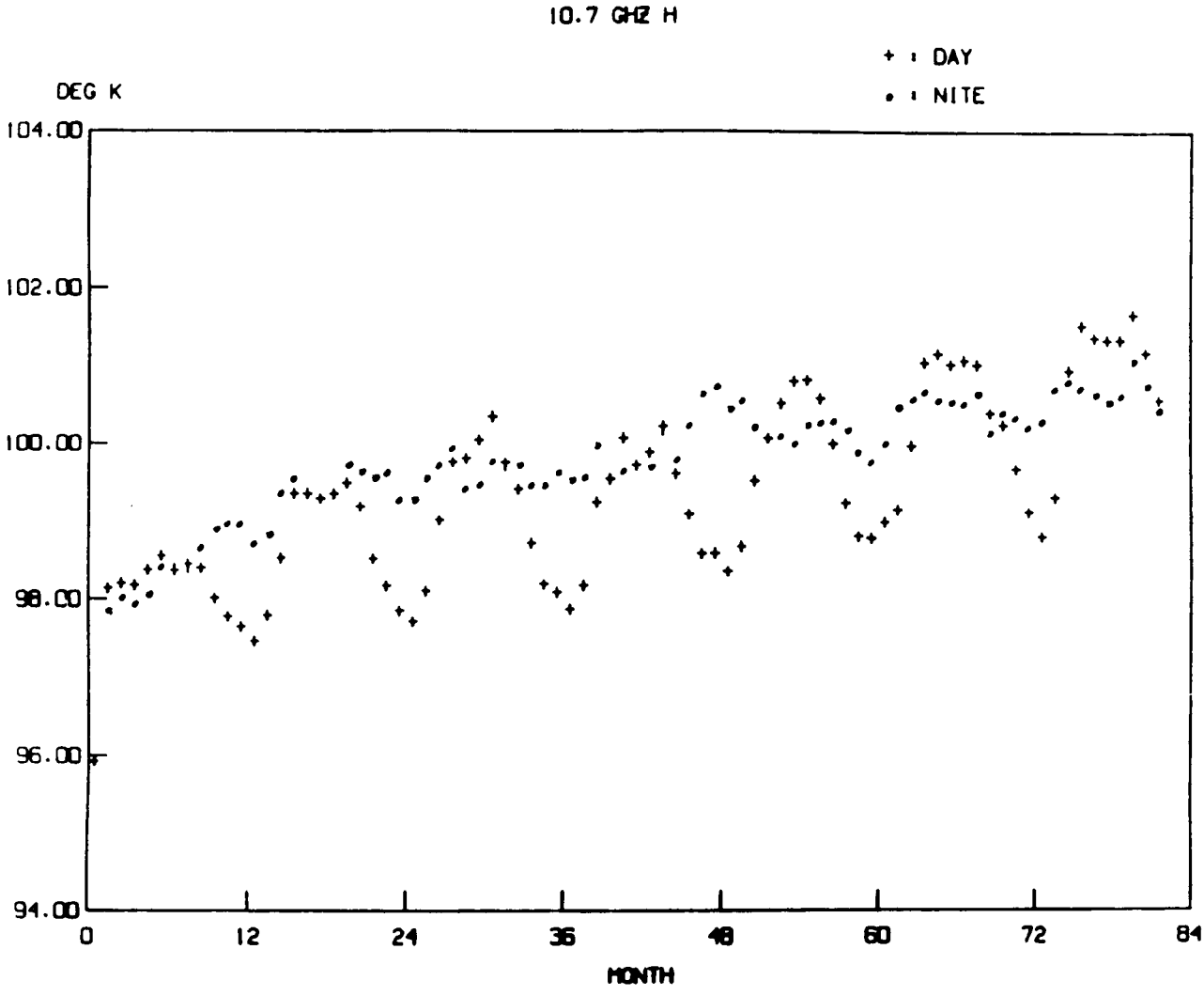

Figure 9.4 Monthly averaged $T_{10.7H}$ over ocean vs. time.

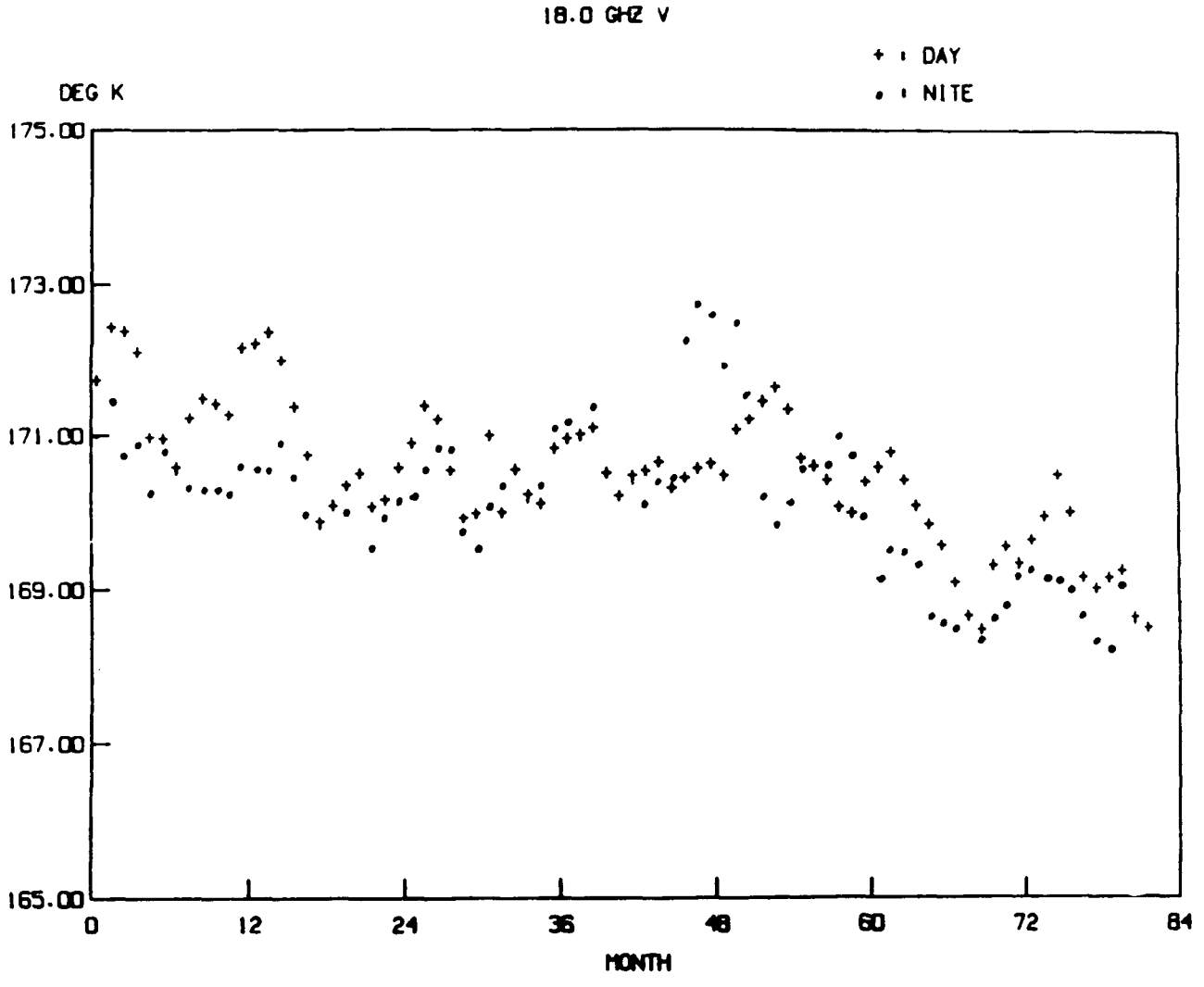

Figure 9.5 Monthly averaged T_{18V} over ocean vs. time.

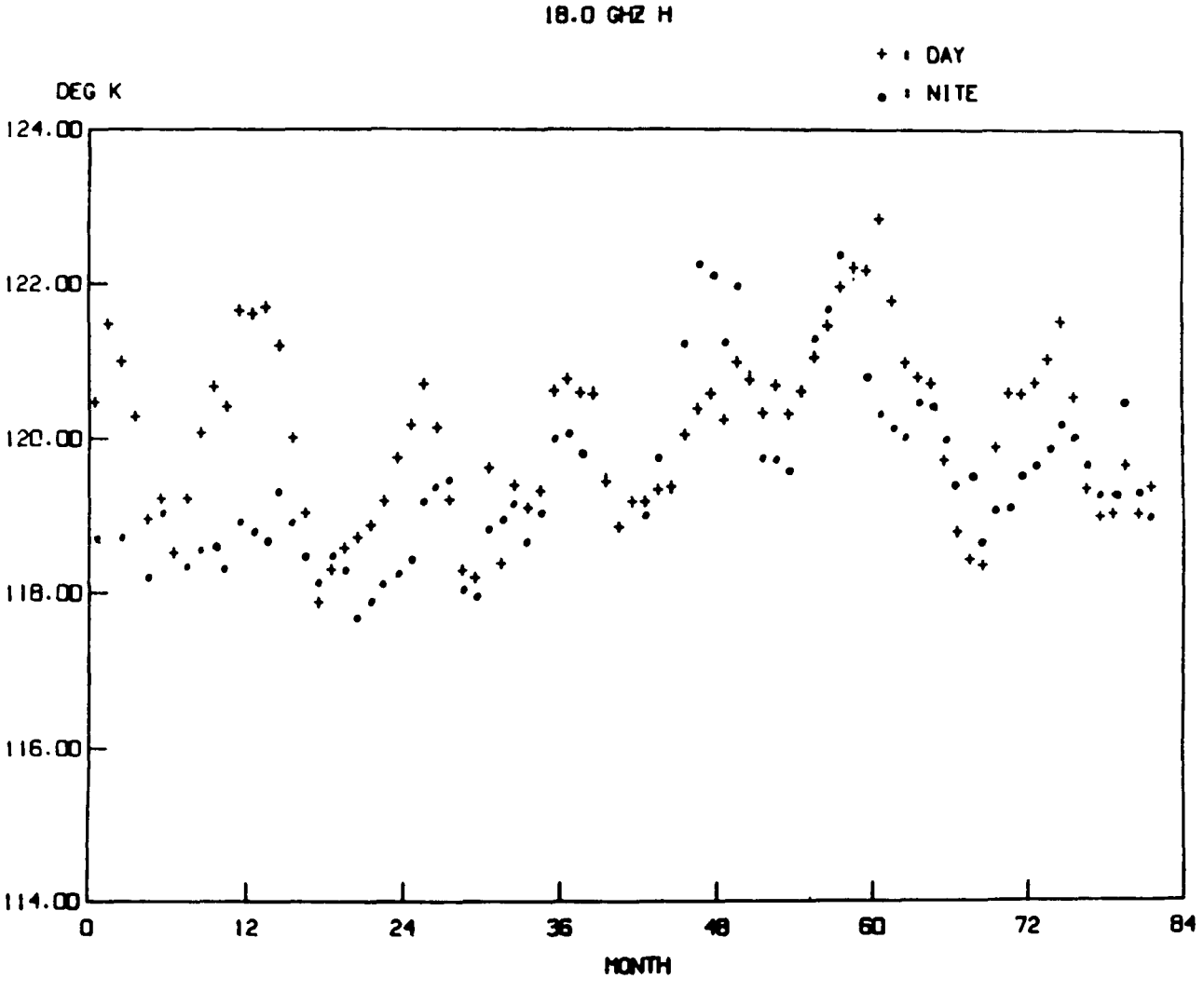

Figure 9.6 Monthly averaged T_{18H} over ocean vs. time.

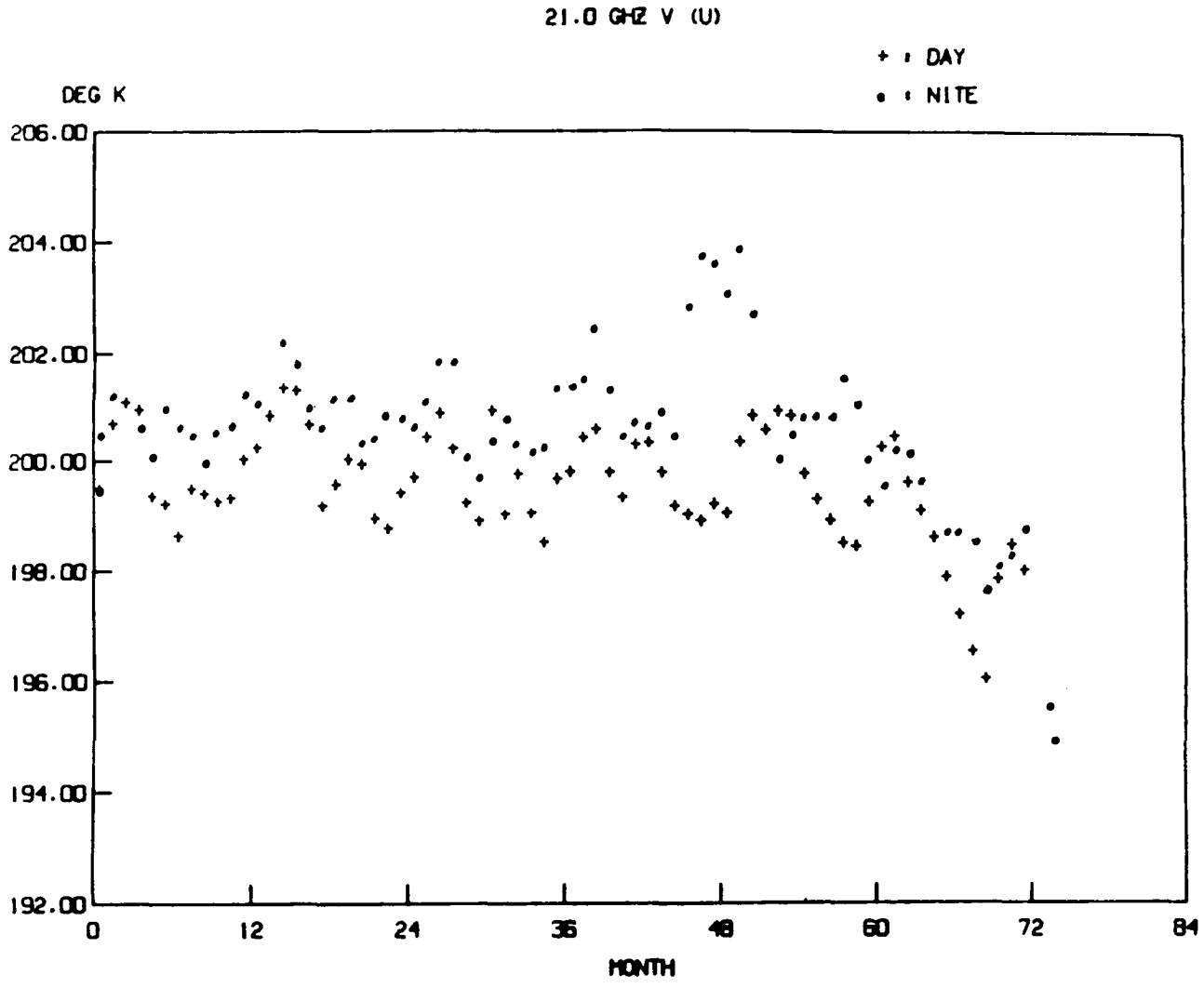

Figure 9.7 Monthly averaged T_{21V} (uncorrected) vs. time.

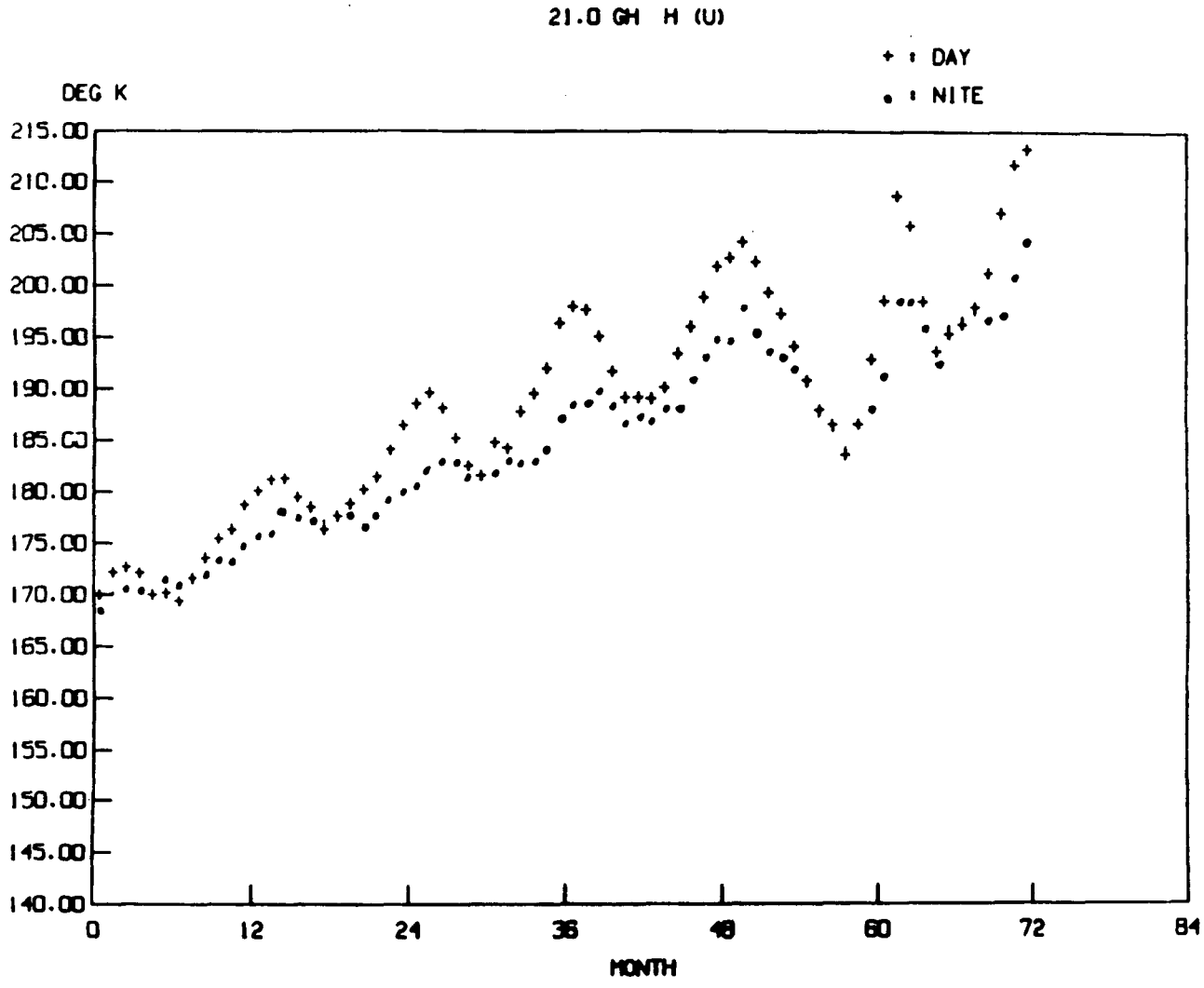

Figure 9.8 Monthly averaged T_{21H} (uncorrected) vs. time.

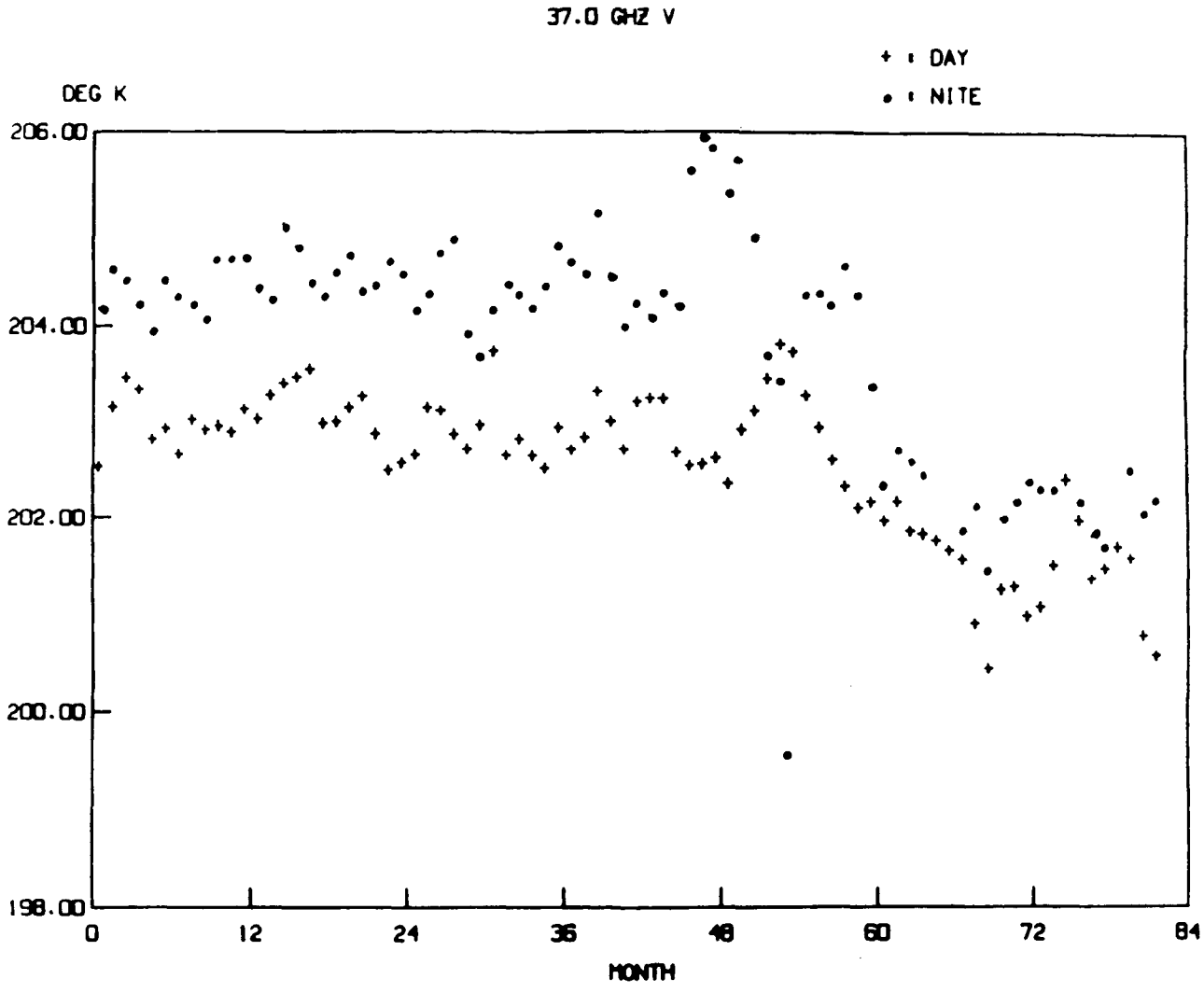

Figure 9.9 Monthly averaged T_{37V} vs. time.

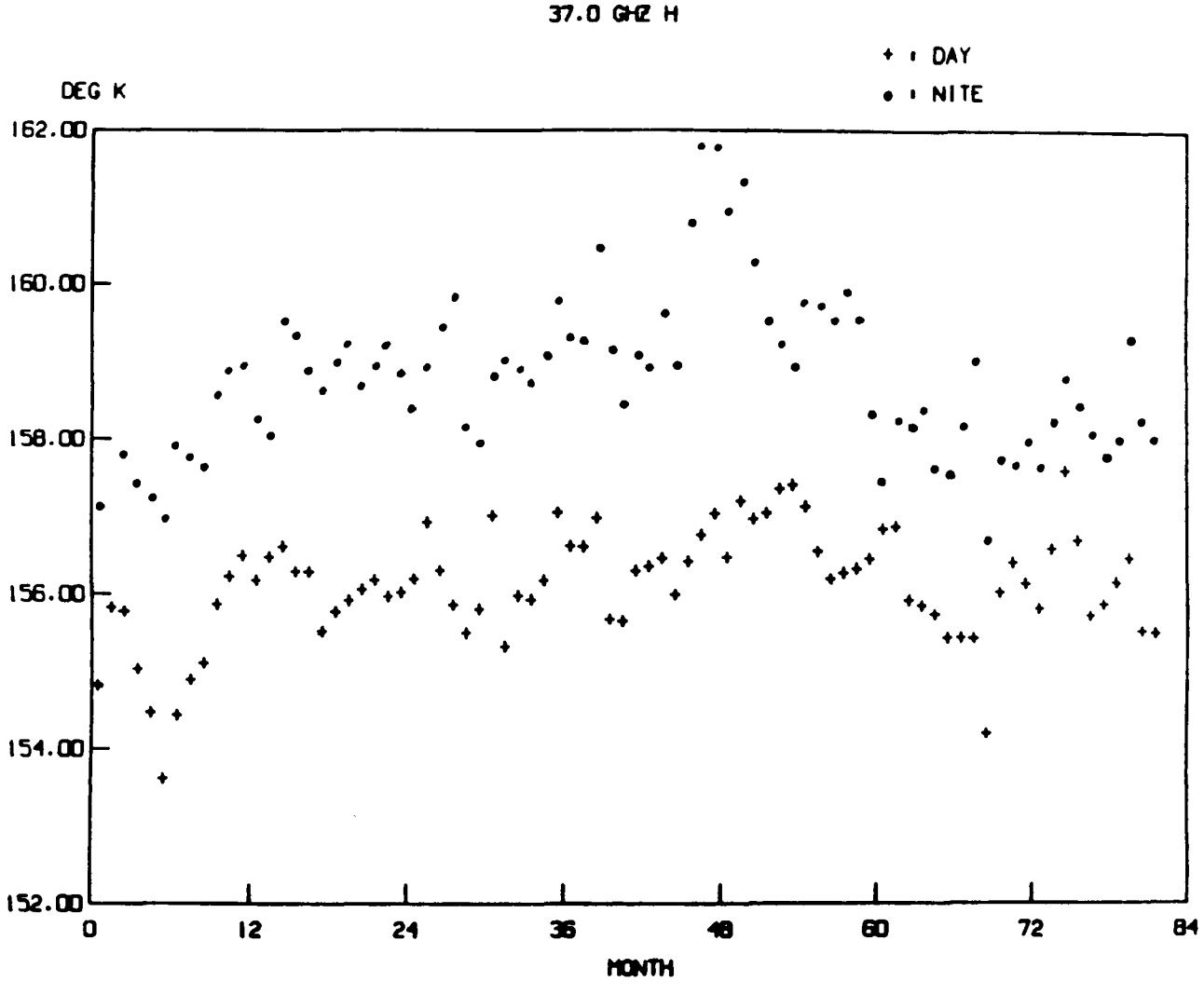

Figure 9.10 Monthly averaged T_{37H} vs. time.

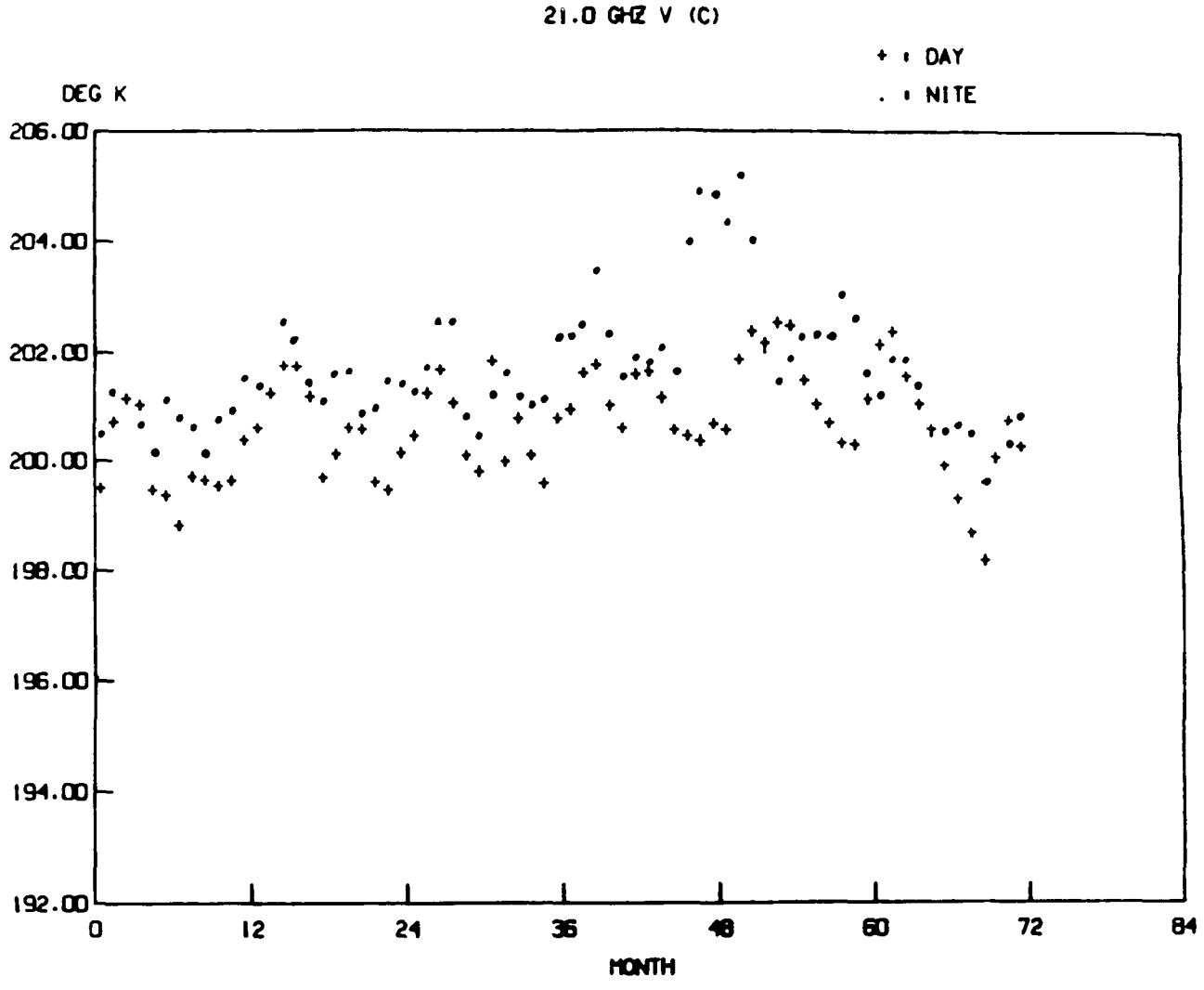

Figure 9.11 Monthly averaged T_{21V} (corrected) vs. time.

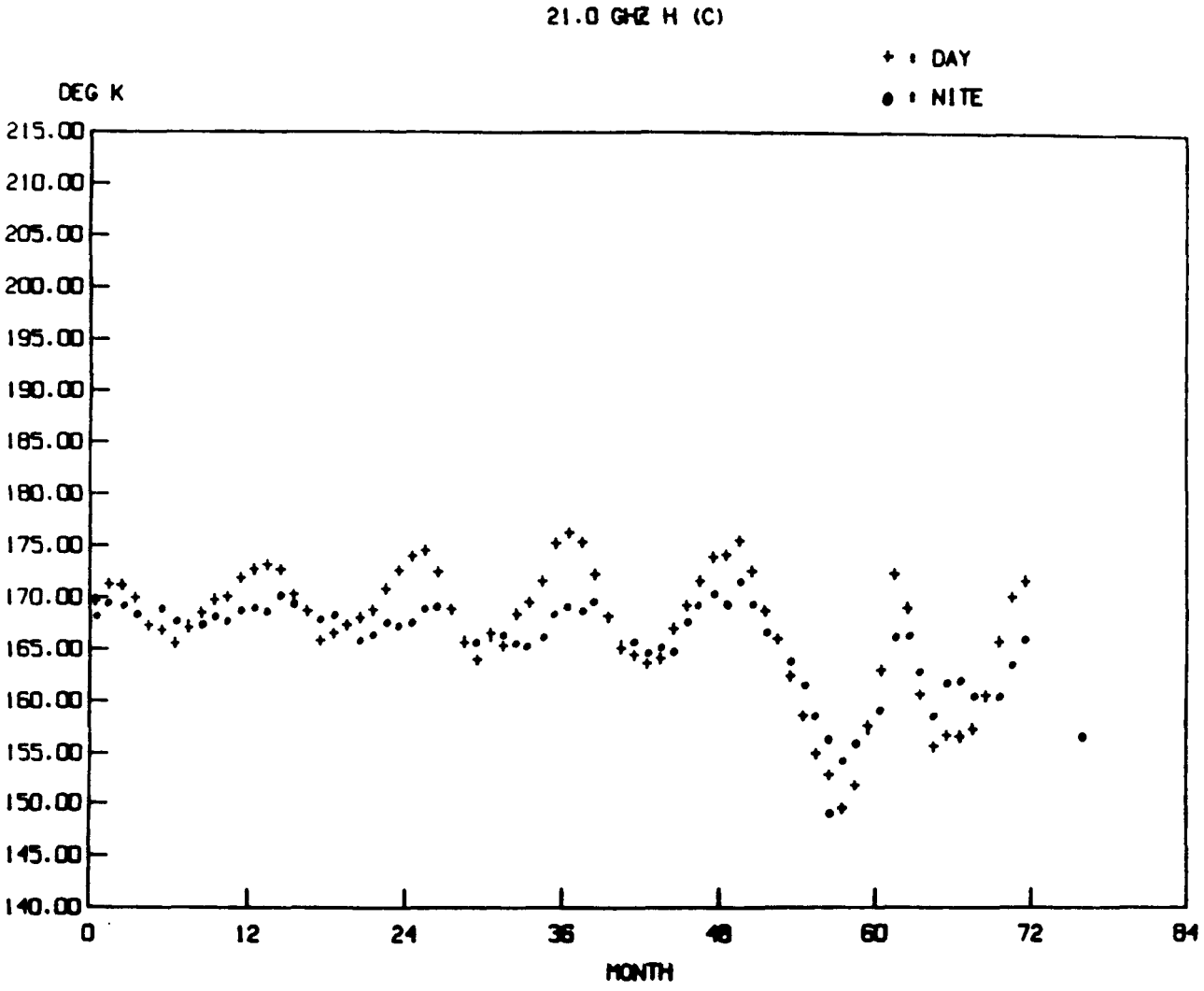

Figure 9.12 Monthly averaged T_{21H} (corrected) vs. time.

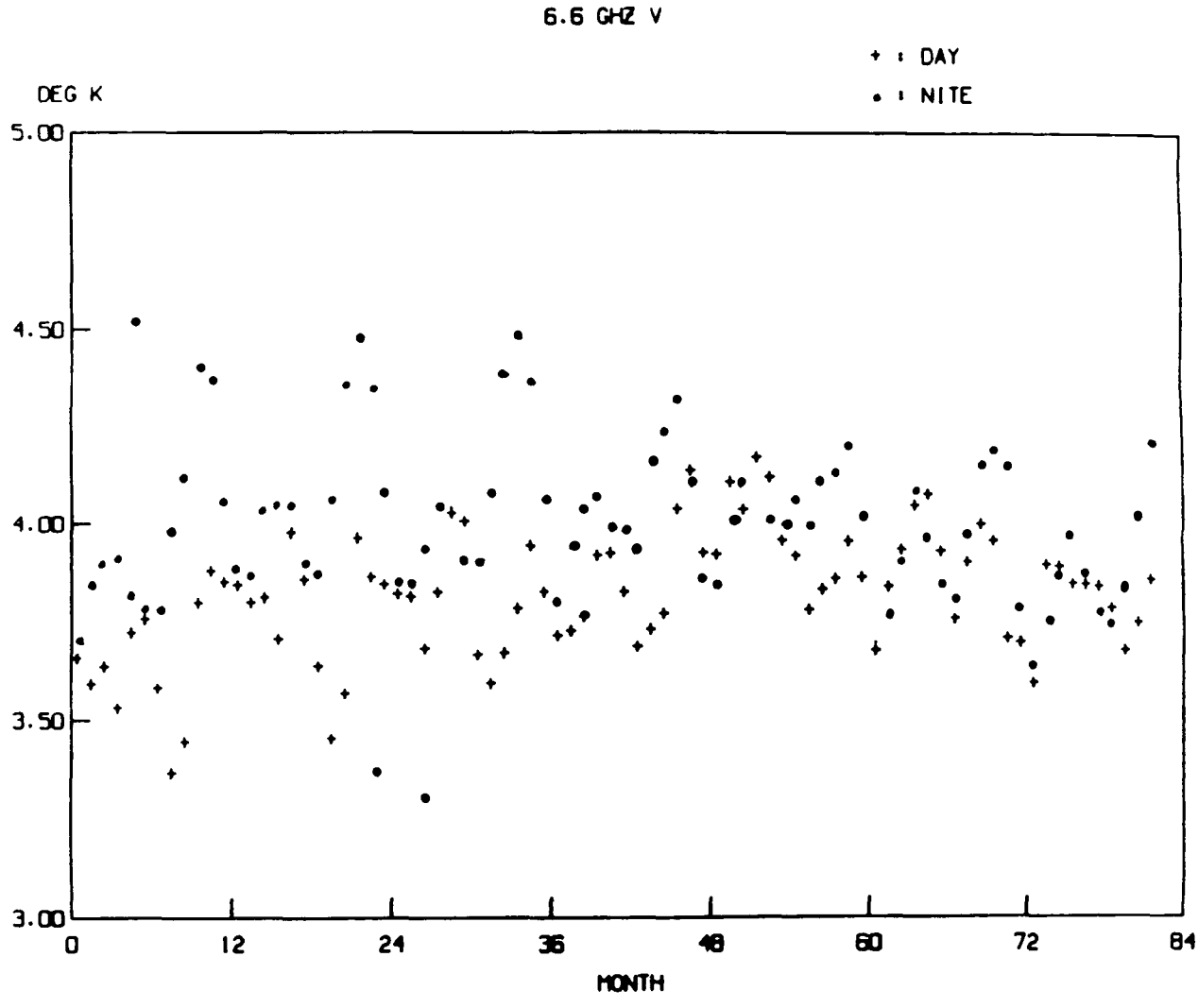

Figure 9.13 Standard deviations about the monthly mean $T_{6.6V}$ vs. time.

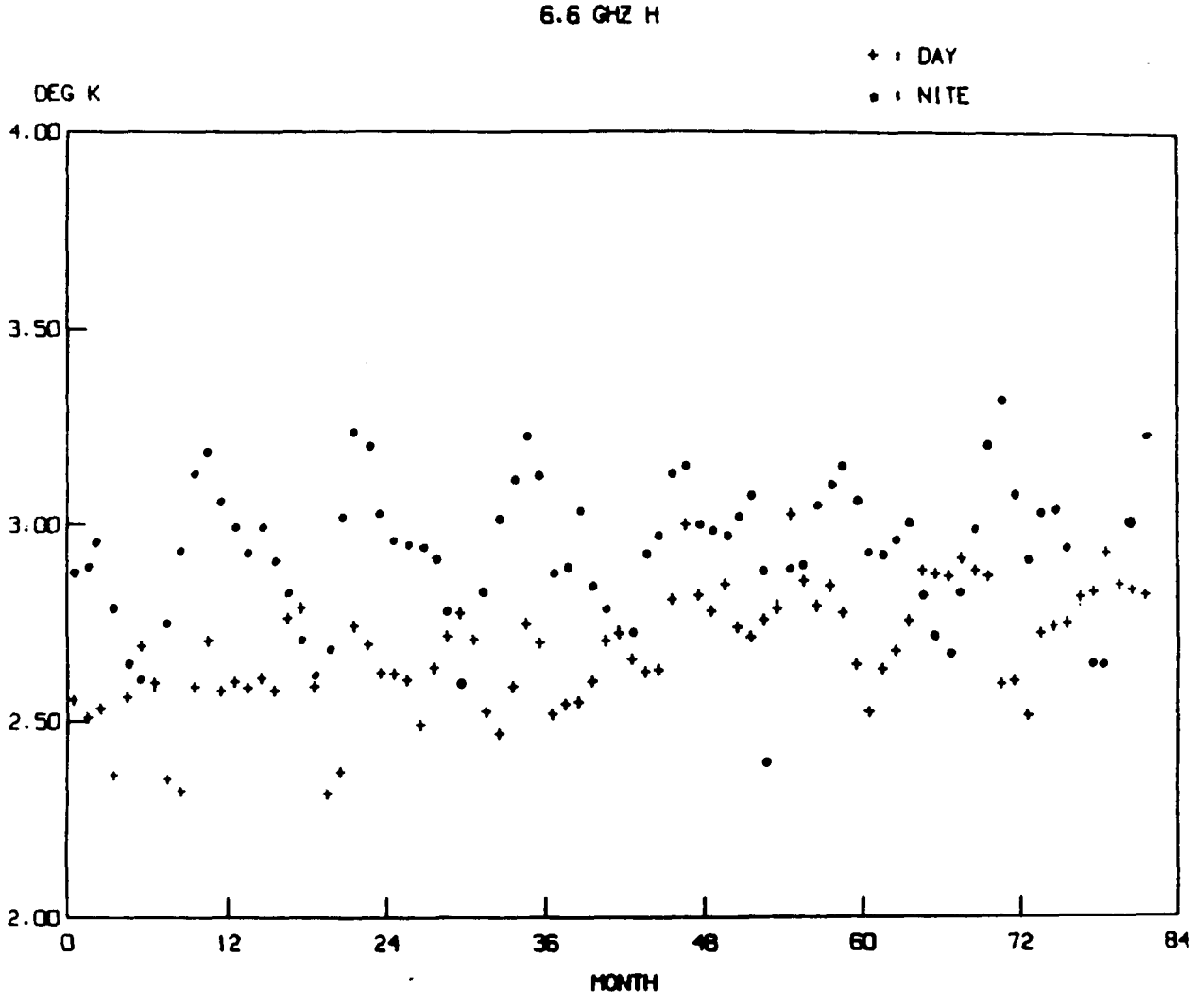

Figure 9.14 Standard deviations about the monthly mean $T_{6.6H}$ vs. time

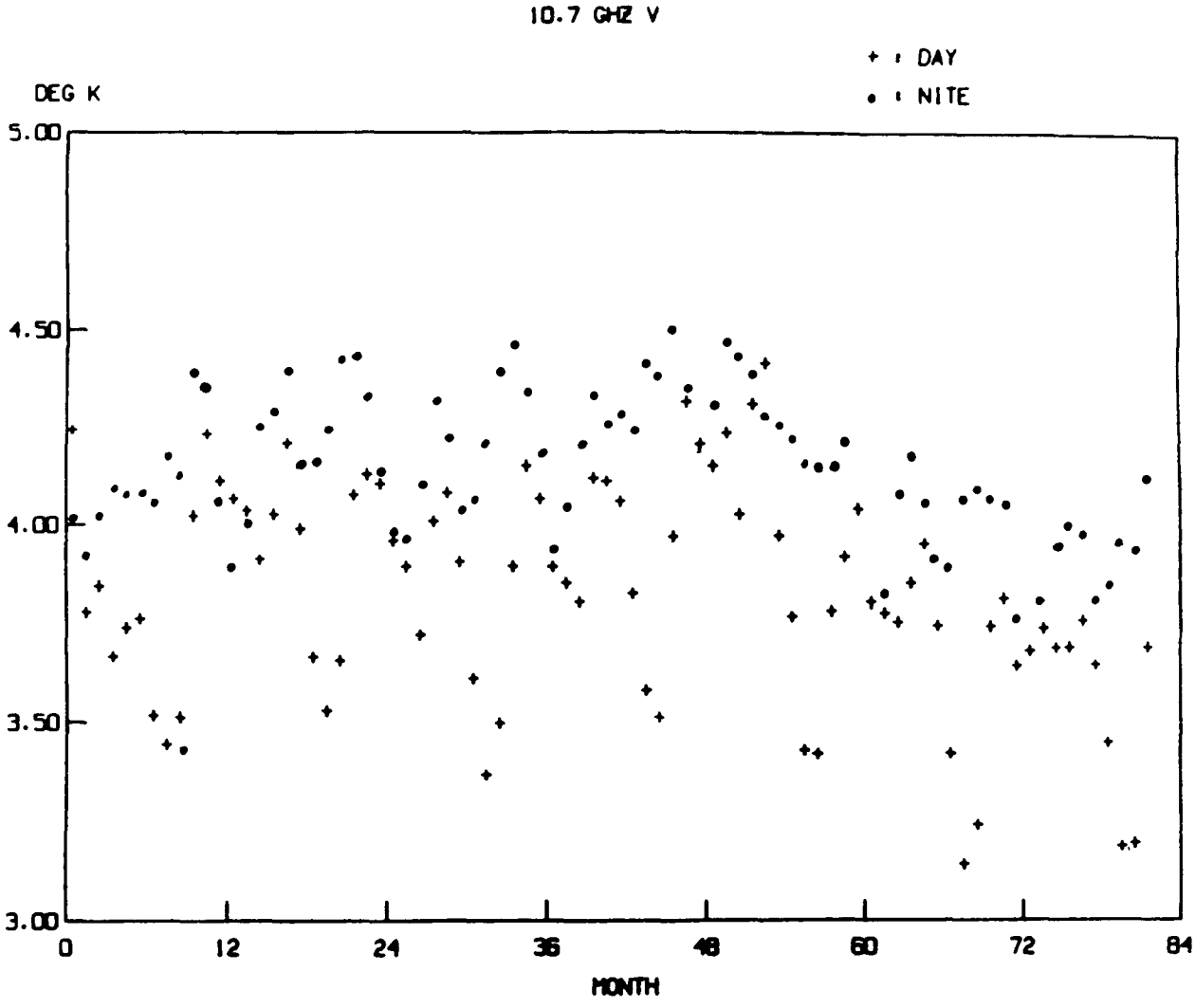

Figure 9.15 Standard deviations about the monthly mean $T_{10.7V}$ vs. time

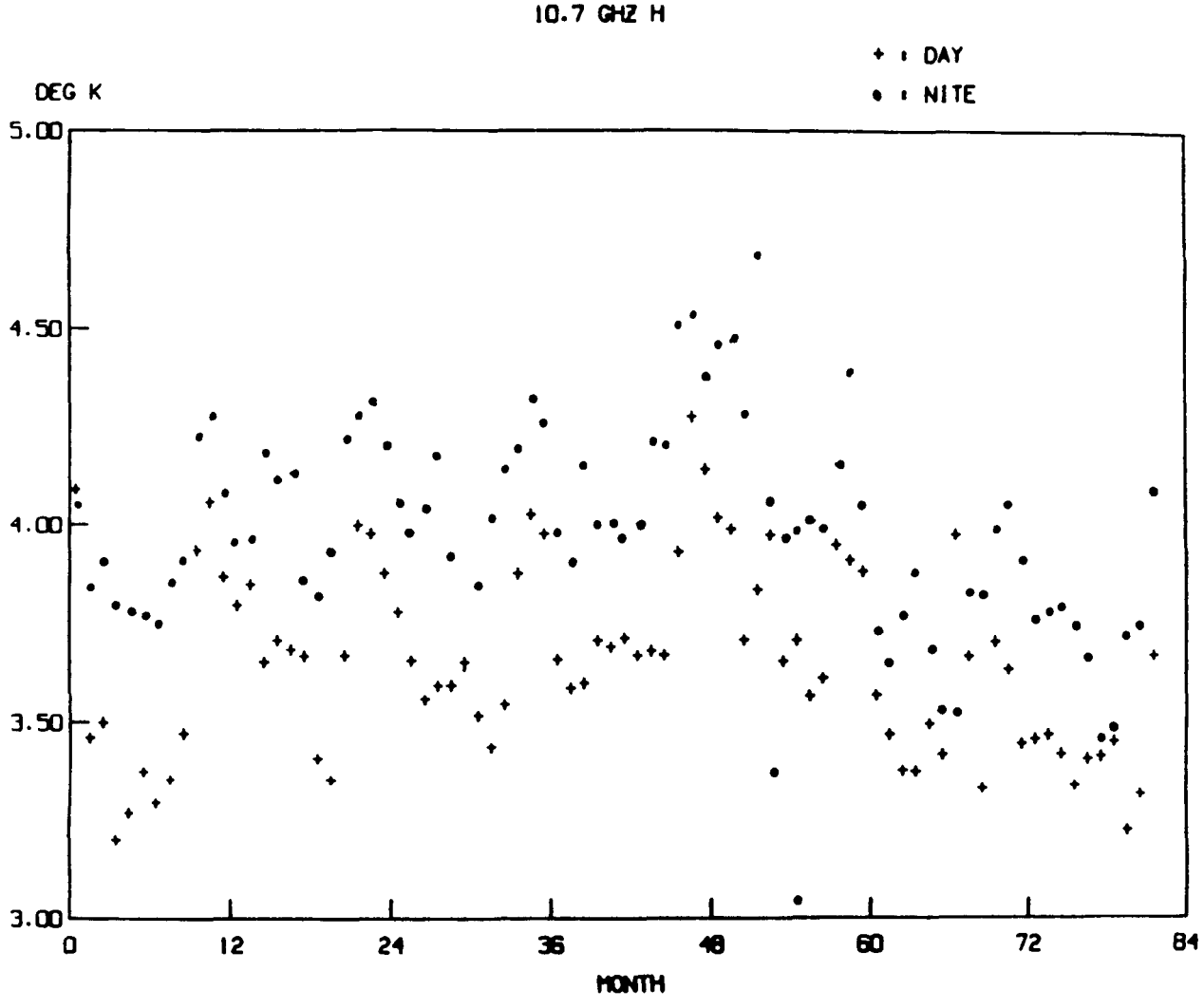

Figure 9.16 Standard deviations about the monthly mean $T_{10.7H}$ vs. time

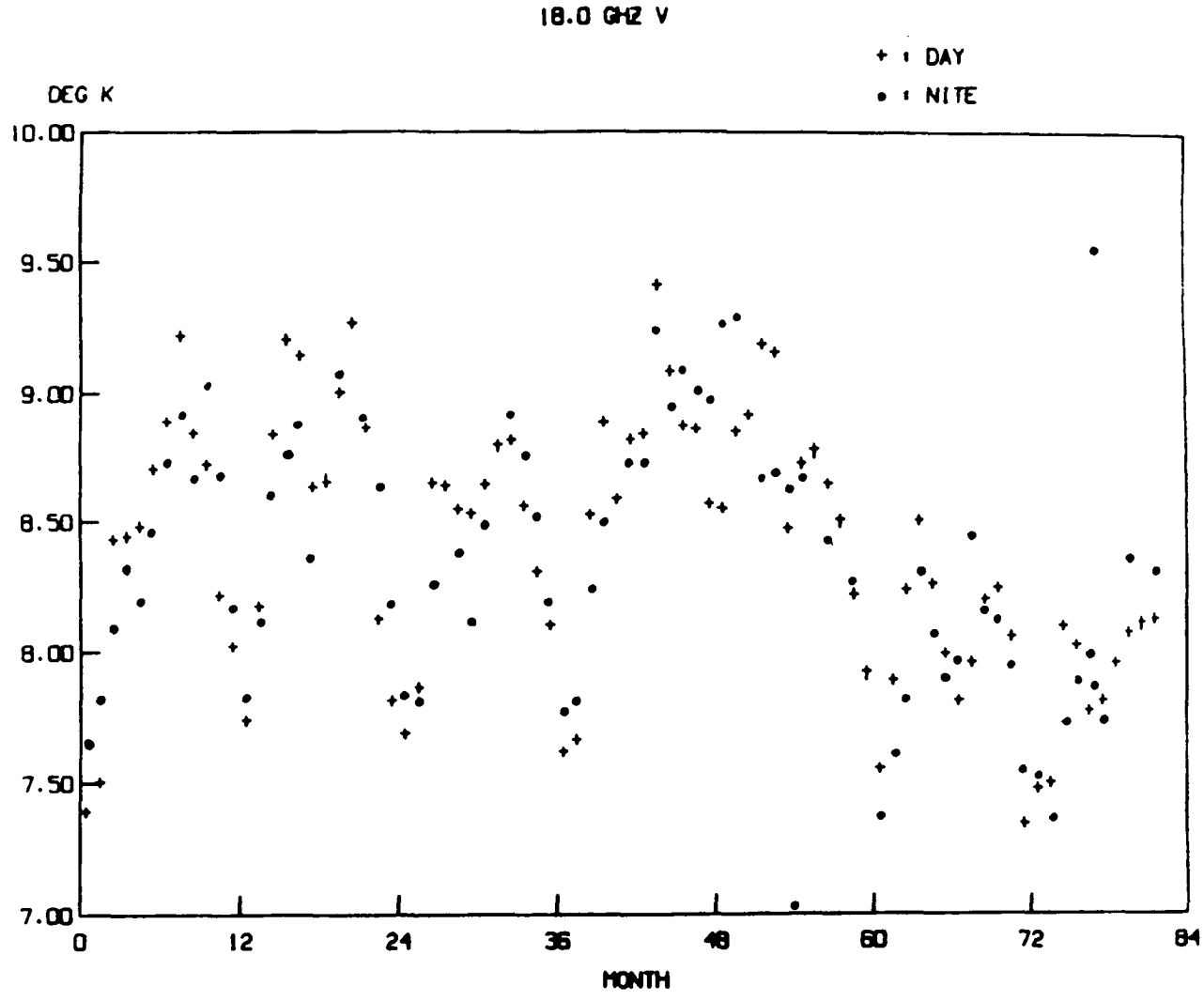

Figure 9.17 Standard deviations about the monthly mean T_{18V} vs. time.

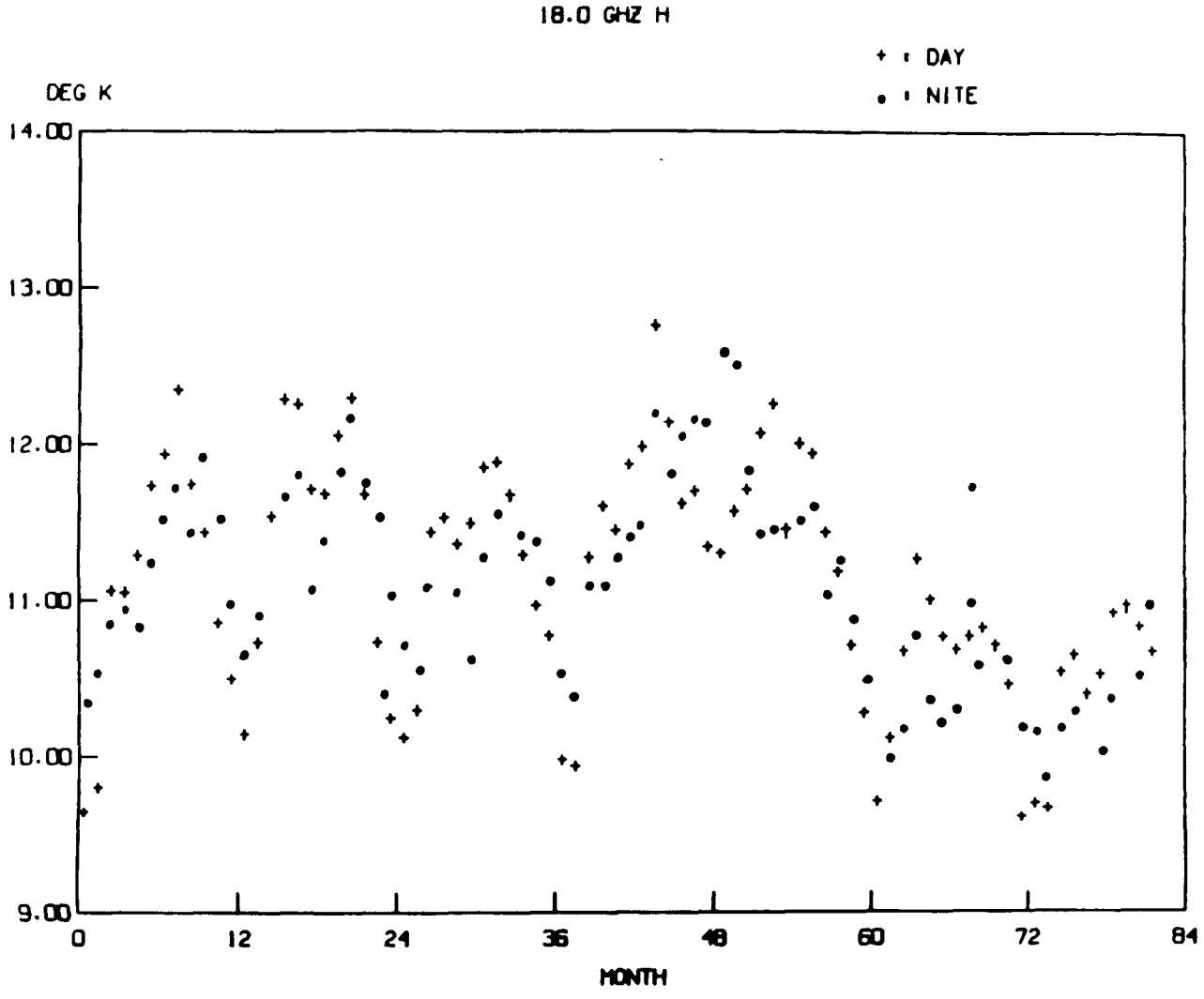

Figure 9.18 Standard deviations about the monthly mean T_{18H} vs. time.

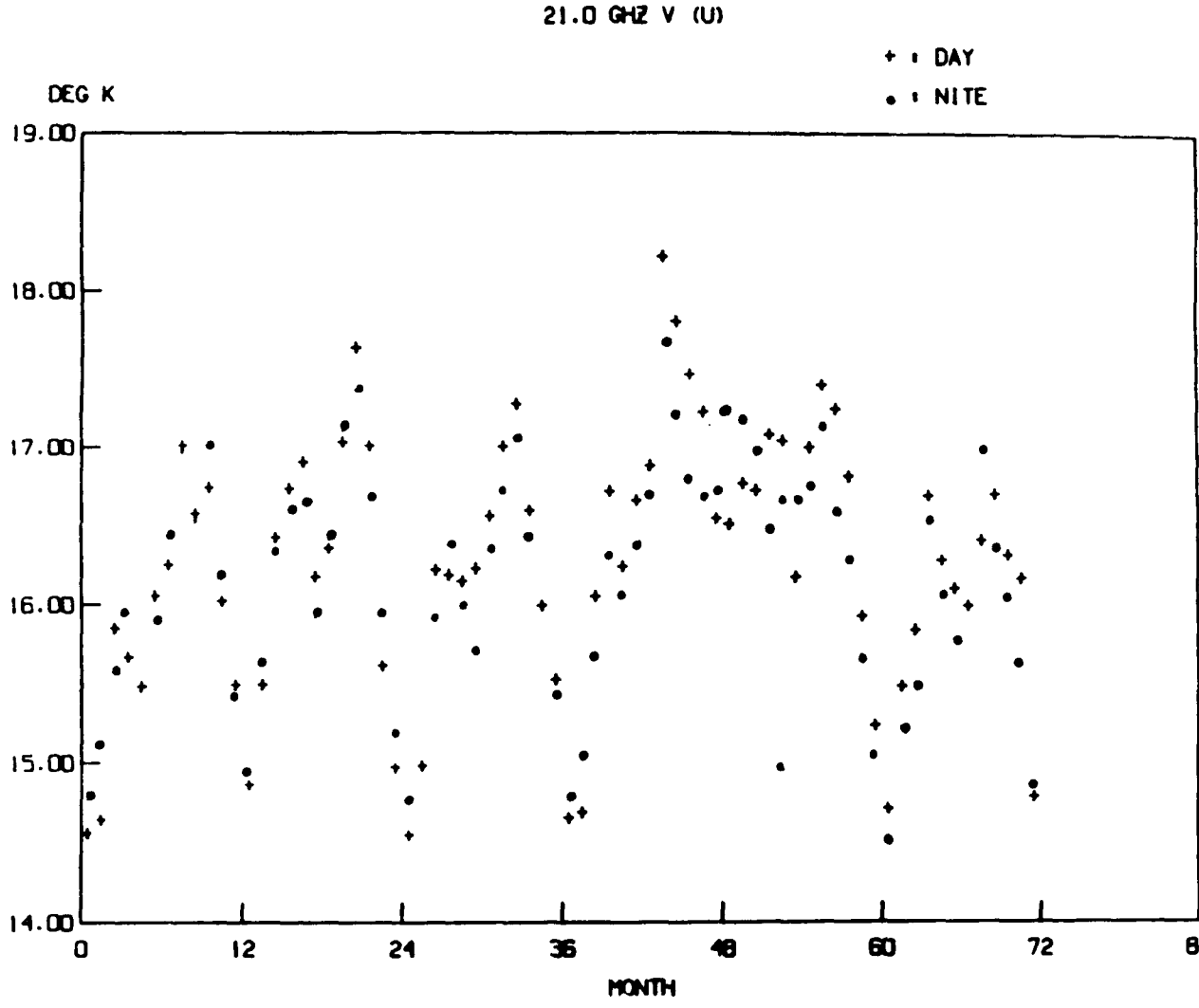

Figure 9.19 Standard deviations about the monthly mean T_{21V} (uncorrected) vs. time.

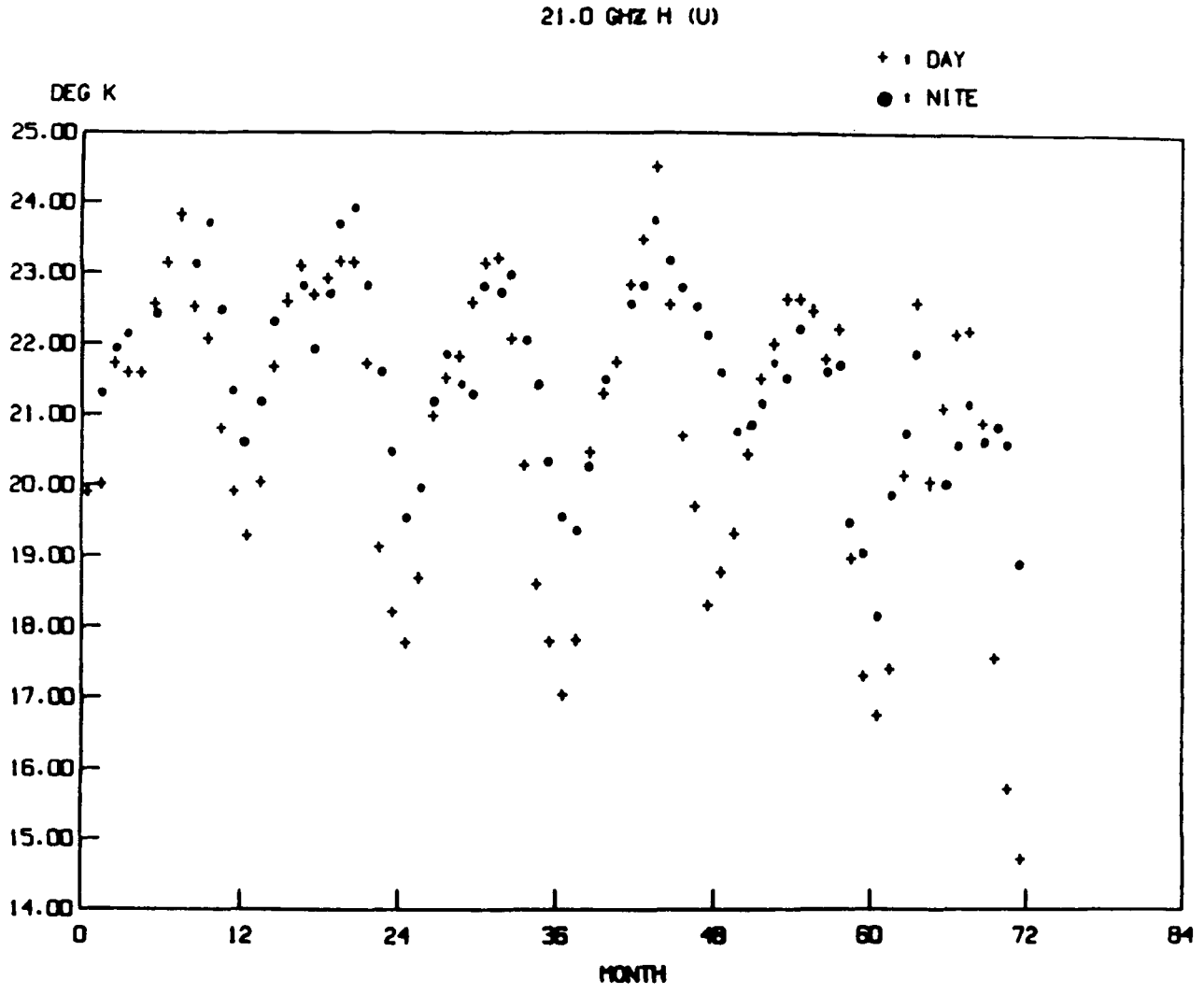

Figure 9.20 Standard deviations about the monthly mean T_{21H} (uncorrected) vs. time.

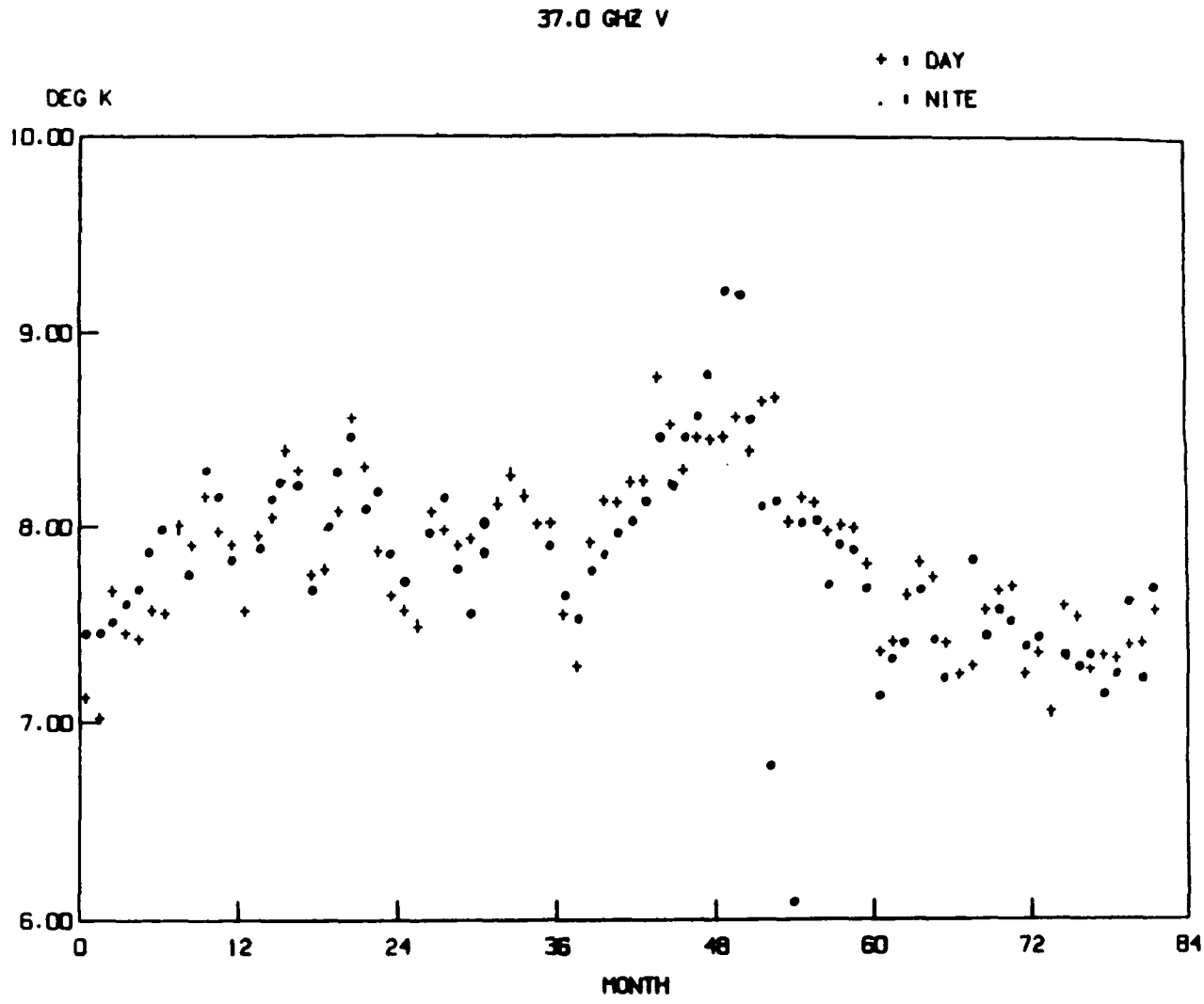

Figure 9.21 Standard deviations about the monthly mean T_{37V} vs. time.

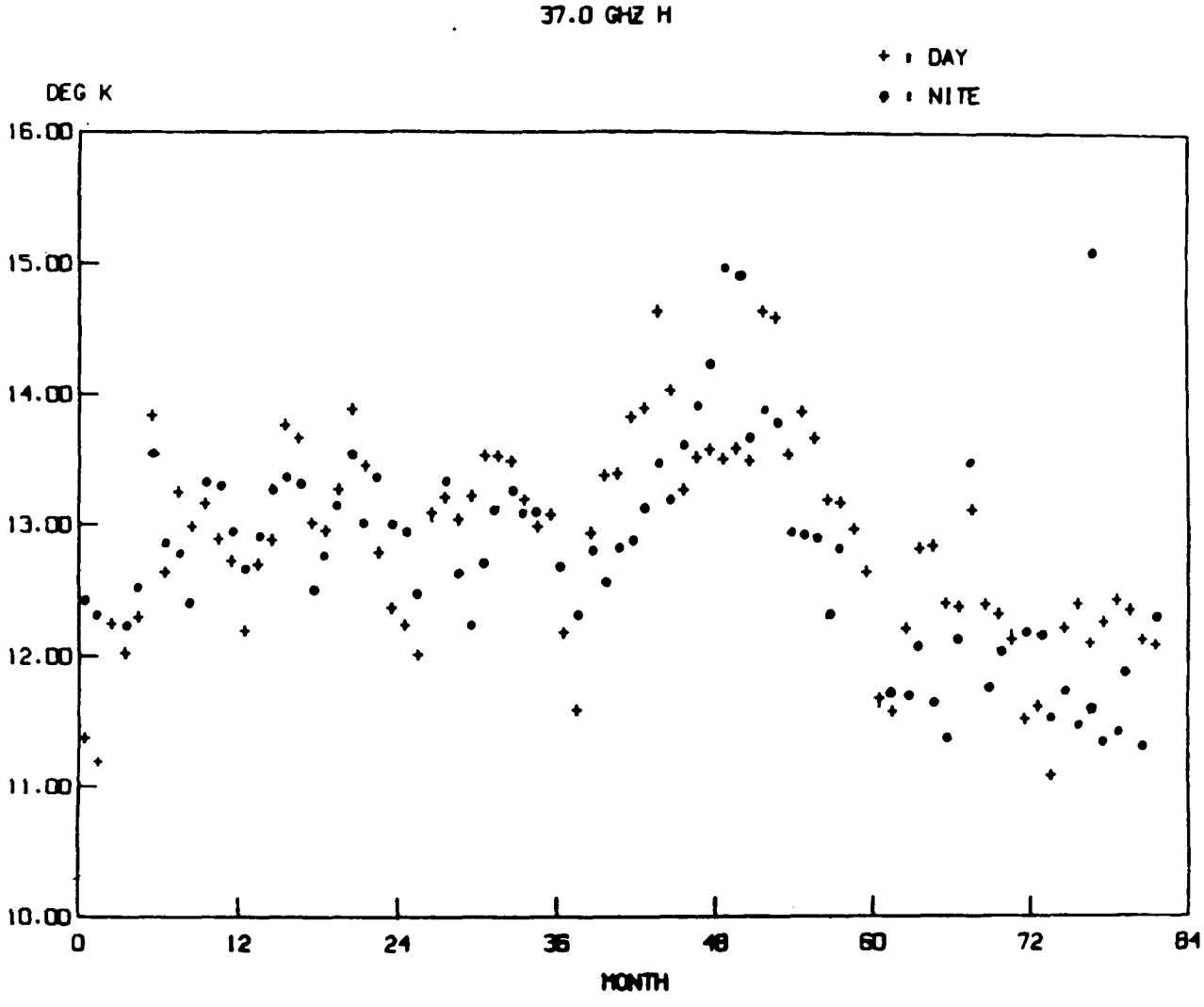

Figure 9.22 Standard deviations about the monthly mean T_{37H} vs. time.

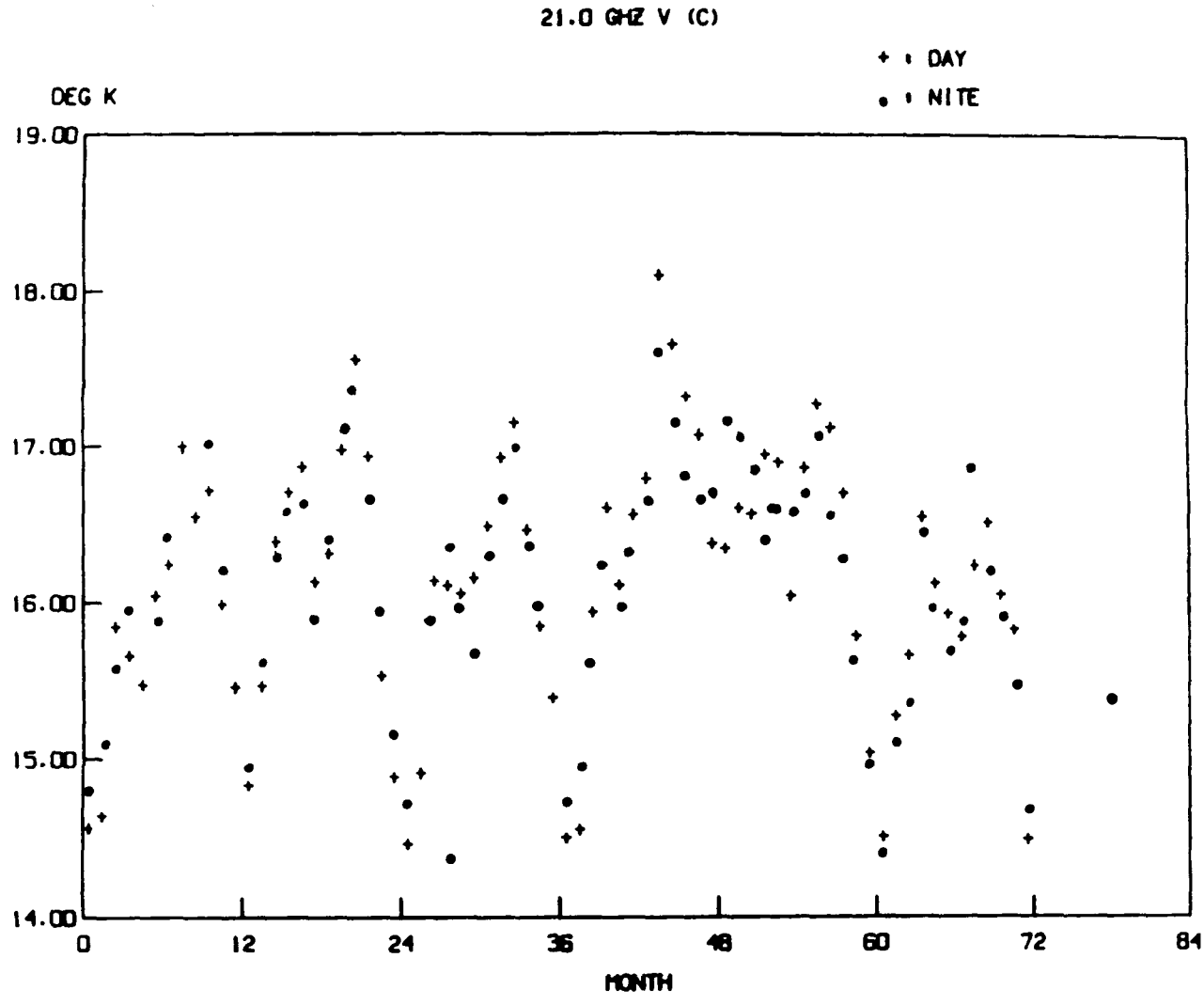

Figure 9.23 Standard deviations about the monthly mean T_{21V} (corrected) vs. time.

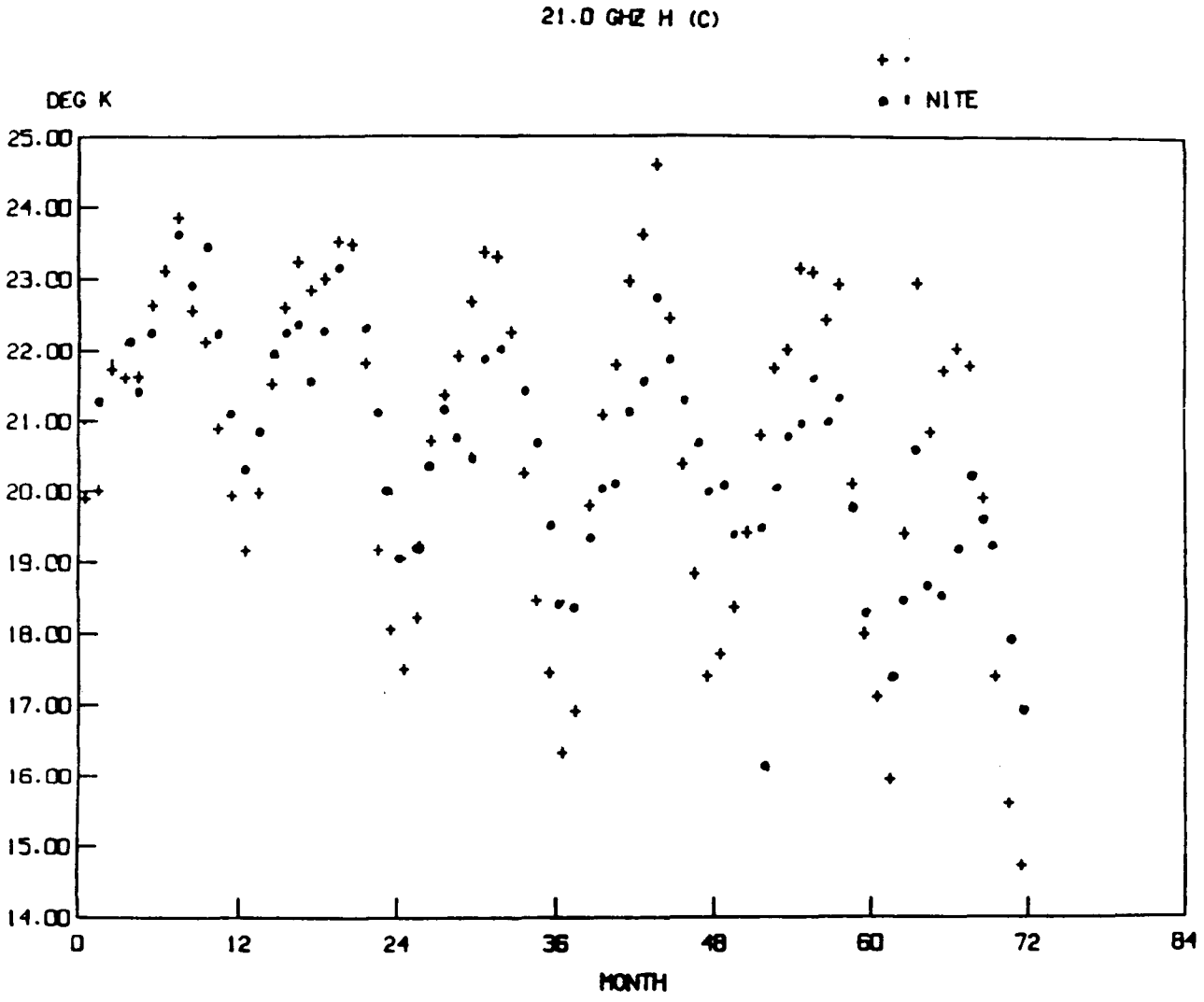

Figure 9.24 Standard deviations about the monthly mean T_{21H} (corrected) vs. time.

Table 9.13

Monthly Statistics of $T_{6.6v}$ Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	253.77	14.85	11203	260.46	17.18	10859
79	Feb	254.41	14.59	10613	260.51	17.89	11496
79	Mar	256.69	14.54	11611	262.13	16.77	11648
79	Apr	257.95	13.22	10964	264.64	15.95	10855
79	May	260.35	11.75	11147	267.33	14.88	12140
79	June	262.65	11.31	9502	269.70	14.89	11494
79	July	263.05	10.52	10575	271.18	13.99	11784
79	Aug	262.61	11.37	10908	271.05	14.24	11398
79	Sep	260.87	12.16	10656	268.06	14.84	9766
79	Oct	259.37	12.57	11513	265.34	15.48	11085
79	Nov	256.66	13.17	11455	263.28	16.19	11124
79	Dec	254.18	13.57	11413	262.18	16.61	10473
80	Jan	253.60	14.59	11698	261.29	17.36	11478
80	Feb	254.88	14.41	9859	261.26	17.51	10497
80	Mar	256.69	14.35	12126	263.20	17.21	12633
80	Apr	258.29	13.50	11149	265.80	15.88	11621
80	May	260.86	12.04	10864	268.25	15.02	12174
80	June	262.71	11.63	10893	269.46	15.50	13246
80	July	263.84	11.27	11762	271.42	14.72	12914
80	Aug	262.59	11.55	10324	271.09	13.23	10971
80	Sep	261.46	12.50	11044	269.16	14.77	11707
80	Oct	259.66	12.91	11723	266.36	15.88	12244
80	Nov	256.54	13.21	9050	263.41	16.25	9234
80	Dec	254.27	13.94	12434	261.96	16.71	10978
81	Jan	254.19	13.60	13043	261.08	16.52	11801
81	Feb	255.39	14.19	10827	260.86	17.65	10898
81	Mar	256.97	13.86	12039	263.09	16.82	11814
81	Apr	258.31	13.10	11449	265.88	15.81	11835
81	May	260.31	11.63	11660	267.69	14.98	12851
81	June	262.64	11.29	10436	269.47	15.50	12813
81	July	262.97	11.16	11059	270.70	14.54	12071
81	Aug	262.53	11.24	9244	271.90	13.73	9754
81	Sep	260.97	12.13	11224	269.31	14.66	11798
81	Oct	259.16	12.60	11332	265.87	15.60	11680
81	Nov	256.54	12.81	11670	262.93	16.04	11563
81	Dec	254.77	13.51	13179	262.37	16.51	11806
82	Jan	253.59	14.76	12017	260.83	18.62	10723
82	Feb	254.75	14.10	10700	260.63	17.83	11041
82	Mar	255.35	13.58	11707	262.50	17.31	12328
82	Apr	258.22	12.76	11268	265.50	16.05	11601
82	May	260.24	11.74	9317	267.68	15.70	10278
82	June	262.75	11.05	10275	269.57	15.69	12423

Table 9.13 (Continued)

Monthly Statistics of $T_{6.6v}$ Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	263.35	10.58	9871	271.19	14.01	11404
82	Aug	262.45	11.33	8692	271.55	14.02	9120
82	Sep	260.93	12.49	11275	269.28	15.04	11874
82	Oct	258.92	12.78	12068	264.91	15.81	10344
82	Nov	256.08	13.17	11531	260.51	16.64	7420
82	Dec	253.65	13.55	11997	259.23	16.64	7983
83	Jan	253.44	13.84	12855	258.89	17.42	10611
83	Feb	255.44	14.56	11715	260.29	18.40	10084
83	Mar	256.26	13.49	11388	262.74	17.15	11147
83	Apr	258.12	12.93	11454	266.49	16.76	10500
83	May	260.48	12.00	11636	269.22	16.11	10859
83	June	262.83	11.28	10569	270.30	16.85	10037
83	July	263.07	10.92	10681	271.30	14.80	12263
83	Aug	262.26	11.52	12015	271.58	14.50	12602
83	Sep	260.91	12.68	11454	269.15	15.26	11755
83	Oct	258.93	12.53	11420	265.58	15.78	11073
83	Nov	256.94	12.69	10835	263.40	16.03	9329
83	Dec	254.46	13.52	12743	262.22	17.15	11433
84	Jan	253.79	13.55	11794	260.39	17.38	11031
84	Feb	254.60	14.37	11195	260.61	18.06	11657
84	Mar	256.22	13.69	11092	263.08	17.46	11708
84	Apr	258.26	12.92	11384	265.34	16.09	11570
84	May	260.75	11.94	11183	268.52	15.43	12033
84	June	262.89	11.42	10712	269.44	15.10	12437
84	July	262.92	11.22	10651	270.96	14.57	11905
84	Aug	262.61	12.13	6948	271.76	15.12	6268
84	Sep	260.21	12.65	10629	269.16	15.48	9326
84	Oct	258.93	12.79	10932	265.63	15.97	11406
84	Nov	256.35	13.31	10764	263.03	18.02	10565
84	Dec	254.15	14.23	12404	261.51	17.70	10056
85	Jan	254.31	14.81	11889	260.69	18.23	10385
85	Feb	254.97	14.67	10324	260.51	18.26	9814
85	Mar	257.27	14.99	11776	262.83	17.87	12113
85	Apr	257.83	13.05	10250	265.85	16.88	11167
85	May	260.57	11.87	10799	268.08	15.62	11422
85	June	262.27	11.23	10140	269.63	15.78	12467
85	July	263.43	11.55	11225	270.77	14.80	12664
85	Aug	262.45	11.71	11224	271.29	14.10	11228
85	Sep	260.56	12.61	11057	268.99	15.40	11810
85	Oct	258.24	12.53	11641	265.60	16.36	12436

Table 9.14

Monthly Statistics of $T_{6.6H}$ Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	239.16	16.40	11203	245.25	18.61	10859
79	Feb	239.45	16.37	10613	245.15	19.03	11496
79	Mar	241.48	16.22	11611	246.70	17.90	11648
79	Apr	242.40	14.56	10964	248.61	16.95	10855
79	May	245.23	13.02	11147	251.65	16.06	12140
79	June	247.57	12.64	9502	254.92	15.65	11494
79	July	248.51	12.47	10575	256.58	15.18	11784
79	Aug	248.58	12.54	10908	256.42	15.47	11398
79	Sep	247.02	12.82	10656	253.20	14.93	9766
79	Oct	245.39	13.11	11513	250.77	15.07	11085
79	Nov	242.17	13.90	11455	248.42	16.19	11124
79	Dec	239.66	15.35	11413	246.57	18.33	10473
80	Jan	239.10	15.86	11698	246.11	18.92	11478
80	Feb	239.61	16.17	9859	245.66	18.33	10497
80	Mar	241.14	15.84	12126	247.45	18.18	12633
80	Apr	242.66	15.39	11149	249.32	16.97	11621
80	May	245.59	12.80	10864	252.30	15.31	12174
80	June	247.31	13.17	10893	254.05	16.08	13246
80	July	248.68	13.25	11762	256.41	16.24	12914
80	Aug	247.97	13.01	10324	255.83	14.76	10971
80	Sep	247.40	12.76	11044	254.43	15.11	11707
80	Oct	245.18	13.40	11723	251.48	15.64	12244
80	Nov	242.22	14.00	9050	248.52	16.40	9234
80	Dec	239.79	14.92	12434	246.70	17.70	10978
81	Jan	239.55	15.20	13043	245.91	18.09	11801
81	Feb	239.99	16.00	10827	245.47	18.79	10898
81	Mar	240.96	15.63	12039	247.02	18.02	11814
81	Apr	242.87	14.60	11449	249.72	17.01	11835
81	May	245.25	13.12	11660	251.62	15.86	12851
81	June	247.76	12.77	10436	254.26	16.39	12813
81	July	248.45	13.46	11059	255.71	16.02	12071
81	Aug	248.45	12.68	9244	256.82	15.08	9754
81	Sep	247.15	12.91	11224	254.65	15.06	11798
81	Oct	245.14	12.95	11332	251.07	15.36	11680
81	Nov	242.46	13.64	11670	248.38	16.09	11563
81	Dec	240.29	14.26	13179	247.33	17.10	11806
82	Jan	238.61	15.92	12017	245.26	19.81	10723
82	Feb	239.57	16.04	10700	245.11	18.99	11041
82	Mar	240.19	15.63	11707	246.64	18.53	12328
82	Apr	242.67	14.71	11268	248.98	17.07	11601
82	May	245.07	12.77	9317	251.91	16.56	10278
82	June	248.07	12.36	10275	254.27	16.30	12423

Table 9.14 (Continued)

Monthly Statistics of $T_{6.6H}$ Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	249.09	12.56	9871	256.34	14.85	11404
82	Aug	248.68	12.47	8692	256.46	15.07	9120
82	Sep	246.96	13.13	11275	254.37	15.68	11874
82	Oct	244.28	13.03	12068	250.08	15.07	10344
82	Nov	241.48	14.33	11531	246.07	16.35	7420
82	Dec	239.36	14.76	11997	244.17	16.67	7983
83	Jan	238.99	15.12	12855	242.98	18.00	10611
83	Feb	240.40	15.98	11715	244.61	18.51	10084
83	Mar	241.13	15.60	11388	246.76	18.38	11147
83	Apr	242.95	14.73	11454	250.23	18.42	10500
83	May	245.53	13.16	11636	252.81	17.01	10859
83	June	247.65	12.44	10569	255.12	17.95	10037
83	July	249.09	13.02	10681	256.64	15.84	12263
83	Aug	248.53	13.22	12015	256.68	16.06	12602
83	Sep	247.05	13.47	11454	254.13	15.78	11755
83	Oct	244.82	13.05	11420	250.53	15.74	11073
83	Nov	242.62	13.15	10835	249.03	16.31	9329
83	Dec	240.31	14.27	12743	247.32	18.27	11433
84	Jan	239.62	14.95	11794	245.25	18.79	11031
84	Feb	240.52	15.28	11195	245.79	18.75	11657
84	Mar	241.67	15.41	11092	247.52	18.40	11708
84	Apr	243.21	14.07	11384	249.47	16.77	11570
84	May	246.48	12.61	11183	252.99	16.13	12033
84	June	248.20	12.74	10712	254.46	15.84	12437
84	July	249.07	13.45	10651	255.91	15.93	11905
84	Aug	248.96	12.67	6948	256.49	16.50	6268
84	Sep	246.43	13.23	10629	254.42	16.16	9326
84	Oct	245.49	13.49	10932	251.08	16.23	11406
84	Nov	242.22	14.22	10764	248.51	18.51	10565
84	Dec	240.00	14.94	12404	246.54	18.52	10056
85	Jan	239.69	15.42	11889	245.71	18.82	10385
85	Feb	240.24	15.75	10324	245.22	18.78	9814
85	Mar	242.47	16.04	11776	247.63	18.72	12113
85	Apr	243.05	14.78	10250	249.73	18.00	11167
85	May	246.02	12.56	10799	252.56	16.36	11422
85	June	247.94	12.44	10140	254.65	16.52	12467
85	July	249.08	13.04	11225	255.89	16.15	12664
85	Aug	248.78	13.03	11224	256.54	15.80	11228
85	Sep	247.00	13.01	11057	254.11	16.09	11810
85	Oct	244.86	13.19	11641	250.98	16.61	12436

Table 9.15

Monthly Statistics of $T_{10.7V}$ Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	250.74	15.53	11203	257.66	18.34	10859
79	Feb	253.33	15.10	10613	259.07	18.25	11496
79	Mar	255.67	14.58	11611	260.83	16.90	11648
79	Apr	257.19	13.37	10964	263.80	15.47	10855
79	May	260.23	11.35	11147	266.99	13.16	12140
79	June	262.83	10.41	9502	269.48	12.40	11494
79	July	263.39	9.36	10575	271.01	11.34	11784
79	Aug	263.07	10.34	10908	270.72	11.07	11398
79	Sep	261.21	11.35	10656	267.76	12.79	9766
79	Oct	259.48	12.53	11513	264.74	14.83	11085
79	Nov	256.37	13.71	11455	262.13	16.11	11124
79	Dec	253.71	14.56	11413	260.29	16.52	10473
80	Jan	252.55	15.76	11698	258.59	17.75	11478
80	Feb	254.10	15.47	9859	258.87	17.60	10497
80	Mar	256.10	15.25	12126	261.23	16.96	12633
80	Apr	258.72	13.75	11149	265.47	15.37	11621
80	May	261.50	11.73	10864	268.43	13.43	12174
80	June	263.89	10.48	10893	270.15	12.76	13246
80	July	265.00	10.06	11762	271.90	11.58	12914
80	Aug	264.38	10.49	10324	272.06	10.90	10971
80	Sep	263.28	11.58	11044	270.06	12.77	11707
80	Oct	261.06	12.73	11723	266.89	14.75	12244
80	Nov	257.53	13.85	9050	263.43	16.14	9234
80	Dec	254.76	14.83	12434	261.08	17.00	10978
81	Jan	254.49	14.61	13043	259.49	16.39	11801
81	Feb	255.66	15.61	10827	258.95	17.06	10898
81	Mar	257.67	14.83	12039	262.11	16.40	11814
81	Apr	259.64	13.42	11449	266.34	15.08	11835
81	May	262.09	11.33	11660	269.06	13.05	12851
81	June	264.71	10.23	10436	271.02	12.54	12813
81	July	265.26	9.83	11059	272.30	11.38	12071
81	Aug	264.77	10.12	9244	273.18	10.87	9754
81	Sep	263.21	11.28	11224	270.49	12.51	11798
81	Oct	261.14	12.36	11332	266.82	14.37	11680
81	Nov	257.92	13.38	11670	263.16	15.74	11563
81	Dec	255.60	14.48	13179	261.76	16.68	11806
82	Jan	254.13	15.97	12017	259.03	18.09	10723
82	Feb	255.46	15.15	10700	259.33	17.52	11041
82	Mar	256.54	14.45	11707	261.84	16.51	12328
82	Apr	259.81	13.17	11268	266.22	15.02	11601
82	May	262.45	11.65	9317	269.19	13.52	10278
82	June	265.06	9.91	10275	271.30	12.52	12423

Table 9.15 (Continued)

Monthly Statistics of $T_{10.7V}$ Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	265.90	9.34	9871	273.33	11.18	11404
82	Aug	265.11	10.17	8692	273.24	11.18	9120
82	Sep	263.50	11.49	11275	270.84	12.63	11874
82	Oct	261.43	12.71	12068	266.57	14.87	10344
82	Nov	258.08	13.71	11531	261.93	16.43	7420
82	Dec	255.14	14.35	11997	259.63	16.76	7983
83	Jan	254.65	14.68	12855	258.27	16.82	10611
83	Feb	256.50	15.27	11715	259.38	17.93	10084
83	Mar	257.72	14.15	11388	262.58	16.45	11147
83	Apr	259.93	13.12	11454	266.96	15.14	10500
83	May	262.74	11.58	11636	270.49	13.66	10859
83	June	265.59	10.19	10569	272.26	12.89	10037
83	July	265.97	9.52	10681	273.82	11.44	12263
83	Aug	265.49	10.15	12015	273.94	11.04	12602
83	Sep	263.86	11.51	11454	271.30	12.91	11755
83	Oct	261.40	12.05	11420	267.36	14.48	11073
83	Nov	258.81	12.87	10835	264.33	15.65	9329
83	Dec	255.97	14.28	12743	262.24	16.72	11433
84	Jan	255.19	14.47	11794	259.78	16.53	11031
84	Feb	255.71	15.12	11195	259.85	17.36	11657
84	Mar	257.75	14.21	11092	263.12	16.45	11708
84	Apr	260.40	13.00	11384	266.78	15.03	11570
84	May	263.62	11.19	11183	271.10	13.17	12033
84	June	265.84	10.05	10712	272.28	12.30	12437
84	July	266.22	9.70	10651	273.90	11.72	11905
84	Aug	265.58	9.98	6948	274.24	11.64	6268
84	Sep	263.38	11.29	10629	271.62	13.66	9326
84	Oct	261.52	12.06	10932	267.75	14.68	11406
84	Nov	258.27	13.71	10764	263.78	16.69	10565
84	Dec	255.29	14.73	12404	261.06	17.03	10056
85	Jan	255.32	15.57	11889	259.75	17.76	10385
85	Feb	255.98	15.45	10324	259.34	17.78	9814
85	Mar	259.09	14.80	11776	263.56	17.18	12113
85	Apr	260.50	12.67	10250	267.79	15.02	11167
85	May	263.48	11.07	10799	270.74	13.38	11422
85	June	265.50	9.88	10140	272.62	12.27	12467
85	July	266.71	9.93	11225	273.81	11.40	12664
85	Aug	265.85	10.02	11224	274.13	11.02	11228
85	Sep	263.88	11.12	11057	271.75	12.77	11810
85	Oct	261.23	11.70	11641	268.05	14.50	12436

Table 9.16

Monthly Statistics of $T_{10.7H}$ Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	238.85	17.38	11203	245.04	19.85	10859
79	Feb	241.71	17.31	10613	246.86	19.42	11496
79	Mar	243.92	16.59	11611	248.79	18.10	11648
79	Apr	245.49	14.62	10964	251.72	16.26	10855
79	May	249.27	12.28	11147	255.47	13.61	12140
79	June	252.14	11.46	9502	258.98	12.36	11494
79	July	253.31	11.04	10575	260.66	11.82	11784
79	Aug	253.29	11.25	10908	260.39	11.57	11398
79	Sep	251.54	11.89	10656	257.38	12.41	9766
79	Oct	249.47	12.86	11513	254.34	14.09	11085
79	Nov	245.64	14.59	11455	251.35	16.37	11124
79	Dec	242.69	16.27	11413	248.61	18.07	10473
80	Jan	241.51	17.11	11698	247.22	19.19	11478
80	Feb	242.45	17.19	9859	247.17	18.64	10497
80	Mar	244.16	16.68	12126	249.37	17.83	12633
80	Apr	247.08	15.13	11149	253.24	16.09	11621
80	May	250.48	12.24	10864	256.81	13.27	12174
80	June	252.85	11.43	10893	259.04	12.75	13246
80	July	254.13	11.45	11762	261.24	12.37	12914
80	Aug	253.86	11.34	10324	261.20	11.73	10971
80	Sep	252.95	11.70	11044	259.44	12.60	11707
80	Oct	250.27	12.87	11723	255.95	14.31	12244
80	Nov	246.56	14.33	9050	252.35	16.17	9234
80	Dec	243.50	15.63	12434	249.61	18.00	10978
81	Jan	242.95	15.86	13043	247.89	17.74	11801
81	Feb	243.47	17.19	10827	247.14	18.43	10898
81	Mar	245.06	16.27	12039	249.78	17.47	11814
81	Apr	247.68	14.66	11449	254.01	15.88	11835
81	May	250.90	12.43	11660	257.09	13.55	12851
81	June	253.84	11.25	10436	259.91	12.83	12813
81	July	254.68	11.54	11059	261.46	12.28	12071
81	Aug	254.52	11.09	9244	262.22	11.59	9754
81	Sep	253.00	11.70	11224	259.86	12.33	11798
81	Oct	250.48	12.57	11332	255.75	13.80	11680
81	Nov	247.01	13.88	11670	252.18	15.87	11563
81	Dec	244.08	15.13	13179	250.29	17.51	11806
82	Jan	242.22	16.95	12017	247.11	19.33	10723
82	Feb	243.34	16.85	10700	247.19	18.74	11041
82	Mar	244.57	16.25	11707	249.54	17.75	12328
82	Apr	247.83	14.72	11268	253.65	15.84	11601
82	May	250.97	12.42	9317	257.25	13.93	10278
82	June	254.16	10.83	10275	259.95	12.45	12423

Table 9.16 (Continued)

Monthly Statistics of $T_{10.7H}$ Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	255.39	11.07	9871	262.35	11.66	11404
82	Aug	254.92	11.03	8692	262.14	11.55	9120
82	Sep	253.06	11.90	11275	259.85	12.60	11874
82	Oct	250.08	12.50	12068	255.27	13.65	10344
82	Nov	246.51	14.44	11531	250.74	15.95	7420
82	Dec	243.72	15.26	11997	247.81	16.66	7983
83	Jan	242.98	15.82	12855	245.53	17.04	10611
83	Feb	244.37	16.51	11715	247.08	17.96	10084
83	Mar	245.66	16.03	11388	250.08	17.48	11147
83	Apr	248.10	14.48	11454	254.48	16.04	10500
83	May	251.38	12.25	11636	258.07	13.87	10859
83	June	254.11	10.85	10569	260.84	12.96	10037
83	July	255.59	11.27	10681	262.88	11.95	12263
83	Aug	255.20	11.47	12015	262.80	11.72	12602
83	Sep	253.38	11.93	11454	260.07	12.66	11755
83	Oct	250.63	12.34	11420	255.83	13.81	11073
83	Nov	247.64	13.17	10835	253.47	15.64	9329
83	Dec	244.73	14.84	12743	250.78	17.53	11433
84	Jan	244.10	15.62	11794	248.27	17.80	11031
84	Feb	244.82	16.14	11195	248.52	18.15	11657
84	Mar	246.54	15.66	11092	251.30	17.19	11708
84	Apr	248.84	13.94	11384	254.73	15.30	11570
84	May	252.98	11.67	11183	259.40	13.16	12033
84	June	254.99	10.92	10712	261.21	12.29	12437
84	July	256.09	11.57	10651	262.77	12.51	11905
84	Aug	255.61	10.92	6948	262.88	12.31	6268
84	Sep	253.19	11.66	10629	260.78	13.56	9326
84	Oct	251.36	12.53	10932	256.85	14.25	11406
84	Nov	247.52	14.20	10764	253.06	16.79	10565
84	Dec	244.36	15.24	12404	249.87	17.81	10056
85	Jan	243.97	15.96	11889	248.50	18.29	10385
85	Feb	244.45	16.49	10324	247.72	18.42	9814
85	Mar	247.42	15.92	11776	251.72	17.87	12113
85	Apr	248.97	14.11	10250	255.42	15.65	11167
85	May	252.41	11.59	10799	258.96	13.48	11422
85	June	254.78	10.77	10140	261.40	12.04	12467
85	July	255.92	11.06	11225	262.71	11.91	12664
85	Aug	255.76	11.06	11224	263.27	11.62	11228
85	Sep	253.74	11.54	11057	260.70	12.54	11810
85	Oct	251.14	12.29	11641	257.06	14.06	12436

Table 9.17

Monthly Statistics of T_{18V} Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	249.05	18.08	11203	257.71	20.89	10859
79	Feb	249.64	18.11	10613	256.95	21.51	11496
79	Mar	252.26	17.40	11611	259.28	20.00	11648
79	Apr	254.49	15.64	10964	263.46	17.74	10855
79	May	259.19	11.80	11147	267.70	14.14	12140
79	June	262.49	9.66	9502	270.80	12.22	11494
79	July	263.20	8.56	10575	272.36	10.92	11784
79	Aug	262.63	9.39	10908	272.07	10.70	11398
79	Sep	260.36	10.61	10656	269.02	12.74	9766
79	Oct	257.34	12.53	11513	265.00	15.85	11085
79	Nov	253.28	14.57	11455	261.86	17.91	11124
79	Dec	250.16	15.83	11413	260.05	18.60	10473
80	Jan	248.52	17.68	11698	257.96	20.66	11478
80	Feb	249.98	17.53	9859	257.75	20.89	10497
80	Mar	251.57	17.58	12126	259.75	20.21	12633
80	Apr	254.59	15.70	11149	264.39	17.59	11621
80	May	258.95	12.28	10864	267.88	14.57	12174
80	June	261.98	9.65	10893	270.03	12.60	13246
80	July	263.26	9.13	11762	271.99	11.22	12914
80	Aug	262.23	9.49	10324	271.97	10.52	10971
80	Sep	260.33	10.90	11044	269.55	12.75	11707
80	Oct	257.48	12.63	11723	265.89	15.65	12244
80	Nov	253.03	14.84	9050	261.86	18.07	9234
80	Dec	249.83	16.24	12434	259.51	19.31	10978
81	Jan	249.73	16.18	13043	258.01	19.04	11801
81	Feb	250.71	17.69	10827	256.96	20.45	10898
81	Mar	252.48	17.03	12039	259.97	19.62	11814
81	Apr	254.77	15.54	11449	264.17	17.43	11835
81	May	258.76	12.08	11660	267.65	14.21	12851
81	June	262.20	9.56	10436	270.25	12.34	12813
81	July	262.88	9.00	11059	271.58	11.06	12071
81	Aug	262.32	9.20	9244	272.53	10.64	9754
81	Sep	260.16	10.67	11224	269.69	12.55	11798
81	Oct	257.25	12.49	11332	265.35	15.27	11680
81	Nov	253.36	14.27	11670	261.30	17.64	11563
81	Dec	250.51	15.84	13179	260.01	19.00	11806
82	Jan	248.67	18.02	12017	257.12	21.11	10723
82	Feb	249.92	17.44	10700	256.54	20.97	11041
82	Mar	250.68	17.29	11707	258.85	20.00	12328
82	Apr	254.96	15.23	11268	263.92	17.50	11601
82	May	258.47	12.82	9317	267.07	15.11	10278
82	June	262.07	9.34	10275	270.10	12.50	12423

Table 9.17 (Continued)

Monthly Statistics of T_{18v} Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	262.95	8.67	9871	272.09	10.83	11404
82	Aug	262.05	9.44	8692	272.09	10.82	9120
82	Sep	260.27	10.77	11275	269.77	12.55	11874
82	Oct	257.30	12.74	12068	264.64	15.95	10344
82	Nov	253.19	14.57	11531	259.16	18.51	7420
82	Dec	249.65	15.75	11997	256.90	19.00	7983
83	Jan	248.74	16.70	12855	255.10	19.65	10611
83	Feb	250.51	17.60	11715	256.13	21.41	10084
83	Mar	251.78	16.69	11388	259.34	19.64	11147
83	Apr	254.74	15.24	11454	264.60	17.53	10500
83	May	258.90	12.44	11636	268.65	14.86	10859
83	June	262.45	9.66	10569	270.61	12.69	10037
83	July	262.98	8.86	10681	272.20	11.08	12263
83	Aug	262.35	9.38	12015	272.34	10.64	12602
83	Sep	260.41	10.82	11454	269.75	12.75	11755
83	Oct	257.29	12.13	11420	265.22	15.25	11073
83	Nov	253.89	13.74	10835	261.99	17.29	9329
83	Dec	250.40	15.79	12743	259.55	18.93	11433
84	Jan	249.24	16.33	11794	256.99	19.51	11031
84	Feb	249.52	17.50	11195	256.46	20.88	11657
84	Mar	251.65	16.83	11092	259.77	19.67	11708
84	Apr	254.62	15.49	11384	263.36	17.65	11570
84	May	259.57	11.78	11183	268.60	13.95	12033
84	June	262.55	9.39	10712	270.39	11.92	12437
84	July	262.97	8.97	10651	271.93	11.30	11905
84	Aug	262.11	9.34	6948	272.30	11.21	6268
84	Sep	259.69	10.85	10629	269.75	13.54	9326
84	Oct	257.04	12.42	10932	265.16	15.47	11406
84	Nov	253.06	14.83	10764	261.25	19.16	10565
84	Dec	249.56	16.39	12404	258.59	19.71	10056
85	Jan	249.41	17.50	11889	257.17	20.96	10385
85	Feb	249.47	17.85	10324	255.97	21.47	9814
85	Mar	252.52	17.73	11776	259.30	20.37	12113
85	Apr	254.57	15.11	10250	264.05	17.22	11167
85	May	258.79	12.27	10799	267.54	14.63	11422
85	June	261.80	9.37	10140	270.29	11.94	12467
85	July	263.08	9.19	11225	271.48	10.92	12664
85	Aug	262.27	9.34	11224	271.91	10.56	11228
85	Sep	259.93	10.72	11057	269.39	12.55	11810
85	Oct	256.63	12.11	11641	265.13	15.16	12436

Table 9.18

Monthly Statistics of T_{18H} Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	239.07	19.96	11203	247.45	22.35	10859
79	Feb	239.48	20.21	10613	246.47	22.71	11496
79	Mar	242.02	19.26	11611	248.95	21.15	11648
79	Apr	244.58	16.74	10964	253.30	18.38	10855
79	May	250.27	12.59	11147	258.24	14.47	12140
79	June	254.03	10.38	9502	262.33	11.80	11494
79	July	255.26	9.71	10575	264.04	10.77	11784
79	Aug	254.86	9.99	10908	263.80	10.60	11398
79	Sep	252.67	11.01	10656	260.78	11.94	9766
79	Oct	249.18	12.82	11513	256.51	15.03	11085
79	Nov	244.08	15.58	11455	252.75	18.10	11124
79	Dec	240.60	17.61	11413	250.17	19.87	10473
80	Jan	238.80	19.16	11698	248.11	21.93	11478
80	Feb	239.85	19.16	9859	247.64	21.79	10497
80	Mar	241.29	18.89	12126	249.57	20.91	12633
80	Apr	244.96	16.68	11149	254.28	17.85	11621
80	May	250.07	12.78	10864	258.38	14.41	12174
80	June	253.41	10.26	10893	261.16	12.18	13246
80	July	254.85	10.10	11762	263.61	11.24	12914
80	Aug	254.18	10.10	10324	263.51	10.48	10971
80	Sep	252.28	11.08	11044	261.20	12.14	11707
80	Oct	248.95	12.92	11723	257.14	14.98	12244
80	Nov	244.04	15.56	9050	252.80	17.91	9234
80	Dec	240.29	17.28	12434	249.86	20.04	10978
81	Jan	239.86	17.59	13043	248.17	20.12	11801
81	Feb	240.32	19.35	10827	246.79	21.64	10898
81	Mar	241.95	18.52	12039	249.65	20.48	11814
81	Apr	245.05	16.86	11449	254.14	18.15	11835
81	May	250.06	13.15	11660	258.21	14.57	12851
81	June	253.99	10.31	10436	261.70	12.11	12813
81	July	255.09	10.13	11059	263.34	11.14	12071
81	Aug	254.71	9.87	9244	264.16	10.56	9754
81	Sep	252.43	11.05	11224	261.52	11.87	11798
81	Oct	248.93	12.98	11332	256.62	14.56	11680
81	Nov	244.56	15.12	11670	252.37	17.66	11563
81	Dec	240.87	16.95	13179	250.51	19.65	11806
82	Jan	238.78	19.28	12017	247.14	22.14	10723
82	Feb	239.88	19.19	10700	246.37	21.99	11041
82	Mar	240.94	18.94	11707	248.74	20.90	12328
82	Apr	245.52	16.72	11268	253.97	18.15	11601
82	May	249.67	13.66	9317	257.78	15.60	10278
82	June	253.96	10.12	10275	261.44	12.09	12423

Table 9.18 (Continued)

Monthly Statistics of T_{18H} Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	255.28	10.06	9871	263.84	10.79	11404
82	Aug	254.59	10.11	8692	263.75	10.51	9120
82	Sep	252.53	11.18	11275	261.47	12.02	11874
82	Oct	248.69	12.74	12068	255.96	14.68	10344
82	Nov	244.09	15.53	11531	250.38	17.97	7420
82	Dec	240.32	16.89	11997	247.31	18.78	7983
83	Jan	239.09	18.10	12855	244.47	19.75	10611
83	Feb	240.49	18.92	11715	245.79	21.39	10084
83	Mar	241.98	18.42	11388	249.11	20.35	11147
83	Apr	245.44	16.44	11454	254.66	18.09	10500
83	May	250.39	13.08	11636	259.06	14.96	10859
83	June	254.10	10.01	10569	262.12	12.38	10037
83	July	255.69	10.11	10681	264.25	10.96	12263
83	Aug	255.37	10.22	12015	264.49	10.49	12602
83	Sep	253.24	11.10	11454	261.81	11.87	11755
83	Oct	249.81	12.44	11420	257.01	14.18	11073
83	Nov	245.71	14.15	10835	253.98	16.95	9329
83	Dec	241.75	16.50	12743	250.71	19.32	11433
84	Jan	240.42	17.55	11794	247.81	20.21	11031
84	Feb	240.42	18.61	11195	246.95	21.34	11657
84	Mar	242.57	18.04	11092	250.01	20.04	11708
84	Apr	245.60	16.29	11384	253.83	17.74	11570
84	May	251.80	12.20	11183	259.83	13.85	12033
84	June	254.65	9.97	10712	262.08	11.48	12437
84	July	255.62	10.26	10651	263.57	11.39	11905
84	Aug	254.80	9.97	6948	263.74	11.19	6268
84	Sep	252.15	10.98	10629	261.55	13.01	9326
84	Oct	249.31	12.81	10932	256.77	14.70	11406
84	Nov	244.49	15.28	10764	252.61	18.85	10565
84	Dec	240.51	17.03	12404	249.35	20.04	10056
85	Jan	239.95	18.00	11889	247.74	21.11	10385
85	Feb	239.78	18.93	10324	246.06	21.84	9814
85	Mar	243.09	18.72	11776	249.66	20.87	12113
85	Apr	245.66	16.30	10250	254.46	17.56	11167
85	May	250.54	12.78	10799	258.61	14.75	11422
85	June	254.03	9.88	10140	261.95	11.30	12467
85	July	255.28	9.83	11225	263.33	10.74	12664
85	Aug	255.04	9.90	11224	264.00	10.42	11228
85	Sep	252.48	10.99	11057	261.24	11.86	11810
85	Oct	249.17	12.56	11641	256.91	14.39	12436

Table 9.19

Monthly Statistics of T_{21V} (Uncorrected) Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	248.06	19.50	11203	255.95	21.34	10859
79	Feb	248.39	19.85	10613	254.77	22.49	11496
79	Mar	251.08	19.20	11611	257.12	20.94	11648
79	Apr	253.36	17.27	10964	261.61	18.46	10855
79	May	259.20	12.33	11147	266.46	13.98	12140
79	June	262.89	9.15	9502	269.86	11.29	11494
79	July	263.82	7.93	10575	271.60	9.83	11784
79	Aug	263.20	8.88	10908	271.18	9.74	11398
79	Sep	260.69	10.44	10656	268.13	11.81	9766
79	Oct	257.62	12.72	11513	263.99	15.22	11085
79	Nov	253.46	15.05	11455	260.86	17.55	11124
79	Dec	249.78	16.88	11413	258.65	18.61	10473
80	Jan	247.82	18.95	11698	256.29	21.01	11478
80	Feb	249.16	18.99	9859	255.85	21.64	10497
80	Mar	250.60	19.43	12126	257.69	21.22	12633
80	Apr	254.21	17.15	11149	263.01	18.07	11621
80	May	259.32	12.71	10864	267.01	14.22	12174
80	June	262.85	9.02	10893	269.55	11.52	13246
80	July	264.25	8.27	11762	271.60	9.94	12914
80	Aug	263.35	8.72	10324	271.58	9.35	10971
80	Sep	261.15	10.48	11044	269.08	11.75	11707
80	Oct	258.11	12.59	11723	265.32	14.84	12244
80	Nov	253.39	15.29	9050	261.13	17.59	9234
80	Dec	249.80	16.97	12434	258.63	19.05	10978
81	Jan	249.46	17.12	13043	256.97	19.09	11801
81	Feb	250.15	19.47	10827	255.46	21.05	10898
81	Mar	251.83	18.52	12039	258.48	20.34	11814
81	Apr	254.42	16.89	11449	262.99	17.82	11835
81	May	259.17	12.55	11660	266.91	13.91	12851
81	June	263.01	8.95	10436	269.79	11.20	12813
81	July	263.90	8.19	11059	271.23	9.83	12071
81	Aug	263.30	8.50	9244	272.02	9.52	9754
81	Sep	260.82	10.40	11224	269.14	11.68	11798
81	Oct	257.71	12.53	11332	264.78	14.63	11680
81	Nov	253.54	14.78	11670	260.53	17.29	11563
81	Dec	250.15	16.75	13179	259.03	18.93	11806
82	Jan	247.97	19.28	12017	255.82	21.38	10723
82	Feb	249.14	18.90	10700	254.97	21.63	11041
82	Mar	249.78	19.20	11707	257.26	20.89	12328
82	Apr	254.70	16.52	11268	262.79	17.90	11601
82	May	258.76	13.51	9317	266.15	14.98	10278
82	June	262.85	8.86	10275	269.57	11.47	12423

Table 9.19 (Continued)

Monthly Statistics of T_{21V} (Uncorrected) Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	263.94	8.00	9871	271.66	9.68	11404
82	Aug	262.99	8.88	8692	271.64	9.74	9120
82	Sep	261.01	10.39	11275	269.28	11.61	11874
82	Oct	257.58	12.88	12068	263.95	15.45	10344
82	Nov	253.19	15.11	11531	258.27	18.33	7420
82	Dec	249.38	16.62	11997	255.99	18.86	7983
83	Jan	248.29	17.87	12855	253.98	19.83	10611
83	Feb	249.84	18.96	11715	254.56	22.01	10084
83	Mar	251.03	18.33	11388	257.78	20.37	11147
83	Apr	254.31	16.74	11454	263.40	18.02	10500
83	May	259.18	13.08	11636	267.77	14.64	10859
83	June	263.21	9.14	10569	270.17	11.57	10037
83	July	263.95	8.18	10681	271.72	9.95	12263
83	Aug	263.31	8.73	12015	271.85	9.54	12602
83	Sep	261.16	10.47	11454	269.31	11.81	11755
83	Oct	257.79	12.18	11420	264.69	14.55	11073
83	Nov	254.05	14.13	10835	261.28	16.94	9329
83	Dec	250.19	16.52	12743	258.70	18.73	11433
84	Jan	248.77	17.48	11794	255.94	19.79	11031
84	Feb	248.67	18.97	11195	254.92	21.58	11657
84	Mar	250.67	18.59	11092	258.10	20.52	11708
84	Apr	253.82	17.14	11384	261.90	18.40	11570
84	May	259.76	12.06	11183	267.68	13.56	12033
84	June	263.19	8.82	10712	269.83	10.86	12437
84	July	263.87	8.16	10651	271.50	10.16	11905
84	Aug	262.87	8.77	6948	271.78	10.12	6268
84	Sep	260.28	10.51	10629	269.15	12.49	9326
84	Oct	257.37	12.56	10932	264.50	14.85	11406
84	Nov	253.12	15.57	10764	260.43	18.83	10565
84	Dec	249.20	17.30	12404	257.62	19.66	10056
85	Jan	0.0	0.0	0	0.0	0.0	0
85	Feb	0.0	0.0	0	0.0	0.0	0
85	Mar	0.0	0.0	0	0.0	0.0	0
85	Apr	0.0	0.0	0	0.0	0.0	0
85	May	0.0	0.0	0	0.0	0.0	0
85	June	0.0	0.0	0	0.0	0.0	0
85	July	0.0	0.0	0	0.0	0.0	0
85	Aug	0.0	0.0	0	0.0	0.0	0
85	Sep	0.0	0.0	0	0.0	0.0	0
85	Oct	0.0	0.0	0	0.0	0.0	0

Table 9.20

Monthly Statistics of T_{21H} (Uncorrected) Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	243.07	20.41	11203	250.61	22.13	10859
79	Feb	243.61	20.76	10613	249.51	22.80	11496
79	Mar	246.47	19.85	11611	252.09	21.18	11648
79	Apr	249.01	17.37	10964	256.61	18.23	10855
79	May	255.67	12.37	11147	262.09	13.66	12140
79	June	259.82	9.15	9502	266.34	10.31	11494
79	July	261.30	8.24	10575	268.18	8.95	11784
79	Aug	261.12	8.60	10908	268.21	8.90	11398
79	Sep	259.22	9.89	10656	265.60	10.51	9766
79	Oct	256.10	11.84	11513	261.66	13.86	11085
79	Nov	251.36	14.64	11455	258.49	16.86	11124
79	Dec	248.00	16.73	11413	256.22	18.50	10473
80	Jan	246.71	18.12	11698	254.64	20.62	11478
80	Feb	248.10	18.05	9859	254.21	20.98	10497
80	Mar	249.45	18.12	12126	255.78	20.24	12633
80	Apr	253.08	15.88	11149	260.50	16.92	11621
80	May	258.64	11.64	10864	264.75	13.03	12174
80	June	262.30	8.38	10893	267.74	10.11	13246
80	July	263.86	8.03	11762	270.18	8.92	12914
80	Aug	263.36	8.03	10324	270.30	8.25	10971
80	Sep	261.32	9.28	11044	268.22	10.14	11707
80	Oct	258.61	10.92	11723	264.88	13.08	12244
80	Nov	254.55	13.45	9050	261.60	15.92	9234
80	Dec	251.38	15.01	12434	259.57	17.57	10978
81	Jan	251.47	15.18	13043	258.45	17.96	11801
81	Feb	252.26	17.13	10827	257.26	19.61	10898
81	Mar	253.62	15.91	12039	259.46	18.64	11814
81	Apr	256.10	14.75	11449	262.90	16.39	11835
81	May	261.09	11.00	11660	266.73	12.65	12851
81	June	264.80	8.08	10436	270.01	9.64	12813
81	July	265.99	7.68	11059	271.65	8.62	12071
81	Aug	265.91	7.29	9244	272.49	8.31	9754
81	Sep	263.74	8.59	11224	270.54	9.65	11798
81	Oct	260.82	10.30	11332	266.74	12.38	11680
81	Nov	257.67	11.99	11670	263.89	15.21	11563
81	Dec	254.93	13.61	13179	263.15	16.60	11806
82	Jan	253.81	15.52	12017	261.21	18.61	10723
82	Feb	254.96	15.12	10700	259.76	19.16	11041
82	Mar	255.40	15.55	11707	261.08	18.64	12328
82	Apr	259.68	13.47	11268	265.53	15.61	11601
82	May	263.32	10.84	9317	268.38	13.09	10278
82	June	266.61	7.73	10275	271.42	9.40	12423

Table 9.20 (Continued)

Monthly Statistics of T_{21H} (Uncorrected) Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	267.87	7.40	9871	273.39	8.20	11404
82	Aug	267.46	7.39	8692	273.91	7.86	9120
82	Sep	266.18	8.10	11275	272.53	9.32	11874
82	Oct	262.87	9.57	12068	268.21	12.36	10344
82	Nov	259.49	11.61	11531	263.94	15.33	7420
82	Dec	257.16	12.95	11997	263.00	15.41	7983
83	Jan	256.71	13.73	12855	261.15	16.41	10611
83	Feb	258.27	14.46	11715	262.60	17.86	10084
83	Mar	259.77	13.55	11388	264.53	16.99	11147
83	Apr	262.39	12.36	11454	268.88	15.01	10500
83	May	266.33	9.80	11636	272.16	11.67	10859
83	June	268.58	7.35	10569	273.74	9.04	10037
83	July	268.84	7.32	10681	274.16	8.29	12263
83	Aug	267.12	7.62	12015	273.41	8.01	12602
83	Sep	264.34	8.77	11454	270.56	9.52	11755
83	Oct	259.89	10.68	11420	265.25	12.10	11073
83	Nov	257.00	12.25	10835	263.38	14.53	9329
83	Dec	255.29	13.77	12743	262.42	16.26	11433
84	Jan	255.82	14.12	11794	261.53	16.92	11031
84	Feb	260.67	13.15	11195	264.18	17.70	11657
84	Mar	261.60	13.90	11092	266.94	16.93	11708
84	Apr	262.24	13.22	11384	268.38	15.09	11570
84	May	266.02	9.33	11183	271.20	10.99	12033
84	June	270.08	7.10	10712	274.44	8.44	12437
84	July	271.66	7.02	10651	276.23	8.47	11905
84	Aug	271.17	6.80	6948	276.61	8.39	6268
84	Sep	269.58	7.30	10629	275.81	9.54	9326
84	Oct	267.71	8.30	10932	272.74	11.17	11406
84	Nov	265.50	10.53	10764	271.02	14.93	10565
84	Dec	263.04	11.67	12404	269.14	15.52	10056
85	Jan	0.0	0.0	0	0.0	0.0	0
85	Feb	0.0	0.0	0	0.0	0.0	0
85	Mar	0.0	0.0	0	0.0	0.0	0
85	Apr	0.0	0.0	0	0.0	0.0	0
85	May	0.0	0.0	0	0.0	0.0	0
85	June	0.0	0.0	0	0.0	0.0	0
85	July	0.0	0.0	0	0.0	0.0	0
85	Aug	0.0	0.0	0	0.0	0.0	0
85	Sep	0.0	0.0	0	0.0	0.0	0
85	Oct	0.0	0.0	0	0.0	0.0	0

Table 9.21

Monthly Statistics of T_{37V} Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	240.45	28.33	11203	251.98	29.12	10859
79	Feb	240.27	29.50	10613	249.16	32.24	11496
79	Mar	244.05	28.39	11611	252.68	30.04	11648
79	Apr	248.33	25.11	10964	259.88	25.51	10855
79	May	257.91	16.05	11147	267.38	17.56	12140
79	June	263.25	8.88	9502	271.85	11.79	11494
79	July	264.13	7.46	10575	273.56	9.70	11784
79	Aug	263.63	8.11	10908	273.15	9.52	11398
79	Sep	261.16	9.74	10656	270.29	11.59	9766
79	Oct	257.22	13.49	11513	265.35	16.38	11085
79	Nov	250.96	18.55	11455	260.59	20.90	11124
79	Dec	244.57	23.43	11413	257.20	23.50	10473
80	Jan	240.54	27.22	11698	252.68	28.27	11478
80	Feb	241.40	27.86	9859	250.54	30.80	10497
80	Mar	242.86	28.89	12126	252.63	30.66	12633
80	Apr	249.16	24.97	11149	261.62	24.78	11621
80	May	257.74	16.58	10864	267.82	17.62	12174
80	June	263.11	8.63	10893	271.47	11.84	13246
80	July	264.42	7.73	11762	273.42	9.87	12914
80	Aug	263.60	8.07	10324	273.37	9.23	10971
80	Sep	261.49	9.72	11044	271.08	11.49	11707
80	Oct	257.84	12.94	11723	266.75	15.59	12244
80	Nov	250.87	18.74	9050	261.00	20.47	9234
80	Dec	244.60	23.17	12434	257.19	23.31	10978
81	Jan	242.78	24.72	13043	253.76	25.54	11801
81	Feb	242.69	27.78	10827	250.11	30.16	10898
81	Mar	245.07	27.39	12039	254.31	29.11	11814
81	Apr	249.69	24.15	11449	261.49	24.16	11835
81	May	257.70	16.26	11660	267.64	17.11	12851
81	June	263.15	8.57	10436	271.63	11.27	12813
81	July	264.05	7.56	11059	272.96	9.69	12071
81	Aug	263.49	7.83	9244	273.73	9.38	9754
81	Sep	261.02	9.70	11224	270.92	11.46	11798
81	Oct	257.19	13.21	11332	265.89	15.71	11680
81	Nov	250.71	18.65	11670	259.98	20.60	11563
81	Dec	244.12	23.98	13179	257.05	24.10	11806
82	Jan	239.95	28.48	12017	251.51	29.22	10723
82	Feb	241.07	28.09	10700	249.07	31.10	11041
82	Mar	241.66	28.94	11707	252.16	30.31	12328
82	Apr	250.07	23.70	11268	261.31	24.41	11601
82	May	256.77	17.98	9317	266.32	19.16	10278
82	June	262.79	8.73	10275	271.12	12.01	12423

Table 9.21 (Continued)

Monthly Statistics of T_{37V} Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	263.83	7.61	9871	273.28	9.62	11404
82	Aug	263.02	8.20	8692	273.23	9.58	9120
82	Sep	261.16	9.70	11275	271.01	11.36	11874
82	Oct	256.83	13.64	12068	264.73	16.87	10344
82	Nov	249.99	19.39	11531	256.80	22.70	7420
82	Dec	243.11	23.90	11997	253.27	24.49	7983
83	Jan	240.52	26.52	12855	249.33	27.48	10611
83	Feb	241.93	27.90	11715	248.38	31.56	10084
83	Mar	243.46	27.47	11388	252.87	29.48	11147
83	Apr	248.99	24.58	11454	261.34	25.31	10500
83	May	256.77	17.60	11636	267.98	18.53	10859
83	June	262.97	9.09	10569	271.67	12.07	10037
83	July	263.82	7.70	10681	273.25	9.86	12263
83	Aug	263.25	8.09	12015	273.38	9.42	12602
83	Sep	261.24	9.66	11454	270.98	11.54	11755
83	Oct	257.25	12.69	11420	265.78	15.50	11073
83	Nov	251.35	17.53	10835	260.53	20.28	9329
83	Dec	244.27	23.38	12743	256.67	23.53	11433
84	Jan	240.89	26.05	11794	251.62	27.27	11031
84	Feb	239.92	28.58	11195	248.64	31.42	11657
84	Mar	241.98	28.75	11092	252.58	30.38	11708
84	Apr	247.94	25.83	11384	259.22	26.55	11570
84	May	258.01	15.38	11183	268.41	16.51	12033
84	June	263.04	8.37	10712	271.42	11.13	12437
84	July	263.66	7.84	10651	272.94	10.15	11905
84	Aug	262.71	8.26	6948	273.38	9.99	6268
84	Sep	260.22	9.94	10629	270.72	12.39	9326
84	Oct	256.54	13.26	10932	265.27	15.98	11406
84	Nov	249.65	19.67	10764	259.31	22.72	10565
84	Dec	242.71	24.56	12404	254.86	25.21	10056
85	Jan	240.73	27.15	11889	251.08	29.13	10385
85	Feb	239.99	28.55	10324	247.88	31.96	9814
85	Mar	243.73	28.42	11776	252.34	30.38	12113
85	Apr	248.74	23.94	10250	261.03	24.20	11167
85	May	256.55	17.09	10799	266.74	18.21	11422
85	June	262.23	8.62	10140	271.33	10.95	12467
85	July	263.60	7.80	11225	272.47	9.64	12664
85	Aug	262.93	7.96	11224	272.85	9.34	11228
85	Sep	260.54	9.62	11057	270.45	11.33	11810
85	Oct	256.47	12.64	11641	265.56	15.21	12436

Table 9.22

Monthly Statistics of T_{37H} Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	232.28	29.76	11203	243.54	30.05	10859
79	Feb	232.11	30.89	10613	240.56	32.90	11496
79	Mar	235.80	29.61	11611	244.18	30.71	11648
79	Apr	240.49	25.82	10964	251.69	25.82	10855
79	May	250.95	16.66	11147	259.92	17.74	12140
79	June	256.25	9.87	9502	264.71	11.41	11494
79	July	258.00	8.46	10575	266.92	9.16	11784
79	Aug	257.64	8.73	10908	266.72	8.99	11398
79	Sep	255.15	10.49	10656	263.79	10.93	9766
79	Oct	250.77	14.14	11513	258.57	15.91	11085
79	Nov	243.65	19.74	11455	253.31	21.22	11124
79	Dec	237.04	24.95	11413	249.42	24.35	10473
80	Jan	232.77	28.44	11698	244.78	29.06	11478
80	Feb	233.51	29.03	9859	242.53	31.31	10497
80	Mar	234.97	29.79	12126	244.68	30.99	12633
80	Apr	241.87	25.58	11149	253.85	24.73	11621
80	May	251.12	16.97	10864	260.54	17.53	12174
80	June	256.73	9.28	10893	264.68	11.31	13246
80	July	258.19	8.59	11762	267.11	9.40	12914
80	Aug	257.60	8.74	10324	267.07	8.67	10971
80	Sep	255.42	10.23	11044	264.73	10.84	11707
80	Oct	251.34	13.56	11723	260.03	15.14	12244
80	Nov	243.94	19.67	9050	254.02	20.47	9234
80	Dec	237.12	24.10	12434	249.66	23.85	10978
81	Jan	235.03	25.83	13043	246.11	26.17	11801
81	Feb	234.82	29.10	10827	242.28	30.81	10898
81	Mar	237.27	28.27	12039	246.60	29.44	11814
81	Apr	242.60	24.92	11449	254.11	24.48	11835
81	May	251.30	16.99	11660	260.66	17.25	12851
81	June	257.07	9.33	10436	265.24	10.77	12813
81	July	258.30	8.53	11059	266.84	9.31	12071
81	Aug	257.87	8.48	9244	267.53	8.88	9754
81	Sep	255.18	10.34	11224	264.76	10.77	11798
81	Oct	250.78	14.04	11332	259.16	15.30	11680
81	Nov	243.82	19.64	11670	253.01	20.75	11563
81	Dec	236.45	24.97	13179	249.58	24.52	11806
82	Jan	232.18	29.49	12017	243.67	29.83	10723
82	Feb	233.34	29.31	10700	241.19	31.64	11041
82	Mar	234.29	30.10	11707	244.49	30.75	12328
82	Apr	243.13	24.73	11268	253.97	24.77	11601
82	May	250.41	18.55	9317	259.67	19.59	10278
82	June	256.98	9.47	10275	264.81	11.49	12423

Table 9.22 (Continued)

Monthly Statistics of T_{37H} Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	258.34	8.94	9871	267.27	9.24	11404
82	Aug	257.57	8.94	8692	267.16	8.95	9120
82	Sep	255.41	10.40	11275	264.87	10.79	11874
82	Oct	250.32	14.08	12068	258.18	16.12	10344
82	Nov	242.96	20.34	11531	250.08	22.49	7420
82	Dec	235.82	24.75	11997	245.87	24.36	7983
83	Jan	233.11	27.52	12855	241.22	27.41	10611
83	Feb	234.34	28.81	11715	240.48	31.41	10084
83	Mar	236.26	28.56	11388	245.33	29.74	11147
83	Apr	242.25	25.33	11454	254.03	25.52	10500
83	May	250.68	18.00	11636	260.92	18.60	10859
83	June	257.07	9.48	10569	265.54	11.63	10037
83	July	258.50	8.83	10681	267.40	9.41	12263
83	Aug	258.05	8.94	12015	267.54	8.97	12602
83	Sep	255.64	10.30	11454	264.86	10.73	11755
83	Oct	251.13	13.51	11420	259.22	14.91	11073
83	Nov	244.55	18.37	10835	253.97	20.39	9329
83	Dec	237.12	24.24	12743	249.55	23.99	11433
84	Jan	233.70	27.04	11794	244.31	27.64	11031
84	Feb	232.93	29.29	11195	241.36	31.43	11657
84	Mar	235.28	29.42	11092	245.41	30.28	11708
84	Apr	241.35	26.25	11384	252.32	26.41	11570
84	May	252.35	15.74	11183	262.03	16.43	12033
84	June	257.37	9.06	10712	265.39	10.50	12437
84	July	258.57	8.89	10651	267.03	9.77	11905
84	Aug	257.55	8.92	6948	267.27	9.52	6268
84	Sep	254.88	10.27	10629	264.93	11.83	9326
84	Oct	250.90	13.89	10932	259.20	15.45	11406
84	Nov	243.12	20.25	10764	252.76	22.29	10565
84	Dec	235.70	25.02	12404	247.92	25.40	10056
85	Jan	233.47	27.49	11889	243.95	29.05	10385
85	Feb	232.70	29.15	10324	240.45	31.90	9814
85	Mar	236.93	28.99	11776	245.38	30.49	12113
85	Apr	242.56	24.61	10250	254.34	24.22	11167
85	May	250.97	17.42	10799	260.62	18.20	11422
85	June	257.05	9.16	10140	265.61	10.08	12467
85	July	258.33	8.41	11225	266.84	9.00	12664
85	Aug	258.05	8.52	11224	267.46	8.74	11228
85	Sep	255.45	10.14	11057	264.84	10.58	11810
85	Oct	251.15	13.33	11641	259.74	14.66	12436

Table 9.23

Monthly Statistics of T_{21V} (Corrected) Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	248.06	19.50	11203	255.95	21.34	10859
79	Feb	248.42	19.85	10613	254.79	22.49	11496
79	Mar	251.12	19.20	11611	257.16	20.94	11648
79	Apr	253.43	17.26	10964	261.67	18.46	10855
79	May	259.29	12.33	11147	266.54	13.99	12140
79	June	263.03	9.14	9502	269.98	11.28	11494
79	July	263.99	7.92	10575	271.75	9.83	11784
79	Aug	263.40	8.86	10908	271.36	9.74	11398
79	Sep	260.91	10.42	10656	268.32	11.81	9766
79	Oct	257.87	12.69	11513	264.21	15.23	11085
79	Nov	253.75	15.03	11455	261.12	17.56	11124
79	Dec	250.09	16.86	11413	258.93	18.62	10473
80	Jan	248.17	18.92	11698	256.61	21.03	11478
80	Feb	249.54	18.96	9859	256.19	21.66	10497
80	Mar	251.00	19.39	12126	258.05	21.24	12633
80	Apr	254.66	17.12	11149	263.41	18.09	11621
80	May	259.81	12.67	10864	267.43	14.24	12174
80	June	263.33	8.99	10893	269.99	11.51	13246
80	July	264.79	8.24	11762	272.07	9.94	12914
80	Aug	263.90	8.67	10324	272.08	9.35	10971
80	Sep	261.75	10.44	11044	269.61	11.77	11707
80	Oct	258.75	12.54	11723	265.88	14.87	12244
80	Nov	254.05	15.25	9050	261.72	17.61	9234
80	Dec	250.47	16.93	12434	259.25	19.07	10978
81	Jan	250.15	17.07	13043	257.61	19.11	11801
81	Feb	250.89	19.41	10827	256.14	21.08	10898
81	Mar	252.60	18.45	12039	259.18	20.38	11814
81	Apr	255.24	16.84	11449	263.71	17.85	11835
81	May	260.03	12.51	11660	267.65	13.94	12851
81	June	263.89	8.93	10436	270.57	11.20	12813
81	July	264.82	8.17	11059	272.03	9.83	12071
81	Aug	264.26	8.48	9244	272.86	9.54	9754
81	Sep	261.79	10.35	11224	270.00	11.71	11798
81	Oct	258.70	12.47	11332	265.67	14.66	11680
81	Nov	254.55	14.70	11670	261.45	17.33	11563
81	Dec	251.18	16.69	13179	259.97	18.96	11806
82	Jan	249.04	19.21	12017	256.83	21.40	10723
82	Feb	250.27	18.82	10700	255.96	21.67	11041
82	Mar	250.93	19.12	11707	258.26	20.95	12328
82	Apr	255.87	16.46	11268	263.85	17.94	11601
82	May	259.98	13.45	9317	267.23	15.00	10278
82	June	264.11	8.83	10275	270.69	11.47	12423

Table 9.23 (Continued)

Monthly Statistics of T_{21V} (Corrected) Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	265.24	7.99	9871	272.79	9.68	11404
82	Aug	264.31	8.86	8692	272.81	9.76	9120
82	Sep	262.34	10.34	11275	270.47	11.65	11874
82	Oct	258.92	12.78	12068	265.13	15.48	10344
82	Nov	254.54	15.01	11531	259.46	18.35	7420
82	Dec	250.76	16.54	11997	257.23	18.86	7983
83	Jan	249.71	17.79	12855	255.26	19.85	10611
83	Feb	251.17	18.87	11715	255.87	22.08	10084
83	Mar	252.56	18.25	11388	259.13	20.43	11147
83	Apr	255.86	16.64	11454	264.83	18.10	10500
83	May	260.76	13.02	11636	269.25	14.68	10859
83	June	264.81	9.15	10569	271.66	11.54	10037
83	July	265.63	8.22	10681	273.19	10.00	12263
83	Aug	264.99	8.75	12015	273.34	9.61	12602
83	Sep	262.87	10.46	11454	270.84	11.89	11755
83	Oct	259.54	12.17	11420	266.21	14.66	11073
83	Nov	255.80	14.09	10835	262.84	17.05	9329
83	Dec	251.94	16.49	12743	260.33	18.80	11433
84	Jan	250.56	17.42	11794	257.60	19.89	11031
84	Feb	250.55	18.87	11195	256.57	21.67	11657
84	Mar	252.58	18.50	11092	259.79	20.62	11708
84	Apr	255.73	17.03	11384	263.60	18.52	11570
84	May	261.72	12.03	11183	269.41	13.64	12033
84	June	265.19	8.84	10712	271.59	10.90	12437
84	July	265.91	8.22	10651	273.28	10.20	11905
84	Aug	264.95	8.82	6948	273.63	10.17	6268
84	Sep	262.38	10.52	10629	271.04	12.59	9326
84	Oct	259.49	12.50	10932	266.35	14.95	11406
84	Nov	255.23	15.50	10764	262.35	18.91	10565
84	Dec	251.29	17.21	12404	259.51	19.77	10056
85	Jan	0.0	0.0	0	0.0	0.0	0
85	Feb	0.0	0.0	0	0.0	0.0	0
85	Mar	0.0	0.0	0	0.0	0.0	0
85	Apr	0.0	0.0	0	0.0	0.0	0
85	May	0.0	0.0	0	0.0	0.0	0
85	June	0.0	0.0	0	0.0	0.0	0
85	July	0.0	0.0	0	0.0	0.0	0
85	Aug	0.0	0.0	0	0.0	0.0	0
85	Sep	0.0	0.0	0	0.0	0.0	0
85	Oct	0.0	0.0	0	0.0	0.0	0

Table 9.24

Monthly Statistics of T_{21H} (Corrected) Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
79	Jan	242.83	20.42	11203	250.39	22.12	10859
79	Feb	242.79	20.81	10613	248.81	22.75	11496
79	Mar	245.09	19.92	11611	250.88	21.11	11648
79	Apr	247.01	17.43	10964	254.84	18.13	10855
79	May	253.29	12.43	11147	259.92	13.56	12140
79	June	256.72	9.24	9502	263.52	10.31	11494
79	July	257.57	8.30	10575	264.92	9.01	11784
79	Aug	256.85	8.75	10908	264.40	8.82	11398
79	Sep	254.32	10.12	10656	261.39	10.35	9766
79	Oct	250.68	12.23	11513	256.90	13.58	11085
79	Nov	245.35	14.99	11455	253.01	16.52	11124
79	Dec	241.52	17.07	11413	250.39	18.17	10473
80	Jan	239.55	18.50	11698	248.13	20.21	11478
80	Feb	240.27	18.52	9859	247.30	20.46	10497
80	Mar	241.08	18.66	12126	248.29	19.70	12633
80	Apr	244.01	16.41	11149	252.52	16.33	11621
80	May	249.02	12.08	10864	256.16	12.67	12174
80	June	252.72	8.94	10893	258.90	10.32	13246
80	July	253.21	8.34	11762	260.65	9.08	12914
80	Aug	252.24	8.62	10324	260.19	8.16	10971
80	Sep	249.38	9.97	11044	257.57	9.78	11707
80	Oct	246.15	11.75	11723	253.75	12.38	12244
80	Nov	241.54	14.19	9050	250.01	15.23	9234
80	Dec	237.99	15.55	12434	247.28	16.89	10978
81	Jan	237.55	15.81	13043	245.72	17.15	11801
81	Feb	237.65	18.06	10827	243.93	18.71	10898
81	Mar	238.47	17.02	12039	245.72	17.73	11814
81	Apr	240.03	15.54	11449	248.76	15.66	11835
81	May	244.35	11.85	11660	251.86	12.09	12851
81	June	247.57	8.64	10436	254.48	9.87	12813
81	July	248.18	8.22	11059	255.73	8.98	12071
81	Aug	247.28	8.05	9244	256.09	8.13	9754
81	Sep	244.65	9.56	11224	253.60	9.06	11798
81	Oct	241.39	11.53	11332	249.45	11.53	11680
81	Nov	237.83	13.27	11670	245.95	14.04	11563
81	Dec	234.72	14.46	13179	244.74	15.64	11806
82	Jan	232.99	16.34	12017	241.85	17.68	10723
82	Feb	233.08	16.40	10700	240.34	17.99	11041
82	Mar	233.03	16.97	11707	241.46	17.41	12328
82	Apr	236.66	14.72	11268	244.99	14.74	11601
82	May	239.62	12.00	9317	247.38	12.61	10278
82	June	242.39	8.75	10275	249.67	9.96	12423

Table 9.24 (Continued)

Monthly Statistics of T_{21H} (Corrected) Over Global Land Mass

		Nite			Day		
Yr	Mon	Avg	Rms	N.Data	Avg	Rms	N.Data
82	July	242.86	8.39	9871	251.26	9.09	11404
82	Aug	241.71	8.45	8692	251.06	8.33	9120
82	Sep	240.18	9.67	11275	249.34	8.78	11874
82	Oct	236.89	11.37	12068	245.26	11.56	10344
82	Nov	233.00	13.41	11531	241.14	14.36	7420
82	Dec	230.30	14.06	11997	239.10	14.66	7983
83	Jan	228.89	15.07	12855	236.40	15.35	10611
83	Feb	232.16	16.61	11715	237.12	16.40	10084
83	Mar	230.11	15.38	11388	238.28	15.54	11147
83	Apr	232.54	14.55	11454	241.10	13.67	10500
83	May	235.98	11.95	11636	243.46	11.63	10859
83	June	237.58	8.98	10569	244.98	10.57	10037
83	July	236.65	8.96	10681	245.75	9.58	12263
83	Aug	234.63	9.78	12015	244.63	9.18	12602
83	Sep	231.25	11.42	11454	241.12	10.03	11755
83	Oct	226.16	13.48	11420	235.99	12.16	11073
83	Nov	223.03	15.34	10835	233.55	14.31	9329
83	Dec	221.27	16.13	12743	231.19	15.51	11433
84	Jan	221.16	16.51	11794	229.85	15.76	11031
84	Feb	224.52	15.50	11195	232.49	15.87	11657
84	Mar	224.98	16.55	11092	234.69	15.49	11708
84	Apr	225.40	16.37	11384	235.48	14.00	11570
84	May	228.31	12.40	11183	237.67	11.70	12033
84	June	231.88	10.03	10712	240.22	10.45	12437
84	July	232.68	9.00	10651	241.56	10.26	11905
84	Aug	230.89	8.90	6948	241.16	9.39	6268
84	Sep	229.03	9.76	10629	239.47	9.72	9326
84	Oct	227.02	11.93	10932	237.25	10.68	11406
84	Nov	224.45	13.25	10764	234.44	13.72	10565
84	Dec	222.40	14.64	12404	232.97	13.88	10056
85	Jan	0.0	0.0	0	0.0	0.0	0
85	Feb	0.0	0.0	0	0.0	0.0	0
85	Mar	0.0	0.0	0	0.0	0.0	0
85	Apr	0.0	0.0	0	0.0	0.0	0
85	May	0.0	0.0	0	0.0	0.0	0
85	June	0.0	0.0	0	0.0	0.0	0
85	July	0.0	0.0	0	0.0	0.0	0
85	Aug	0.0	0.0	0	0.0	0.0	0
85	Sep	0.0	0.0	0	0.0	0.0	0
85	Oct	0.0	0.0	0	0.0	0.0	0

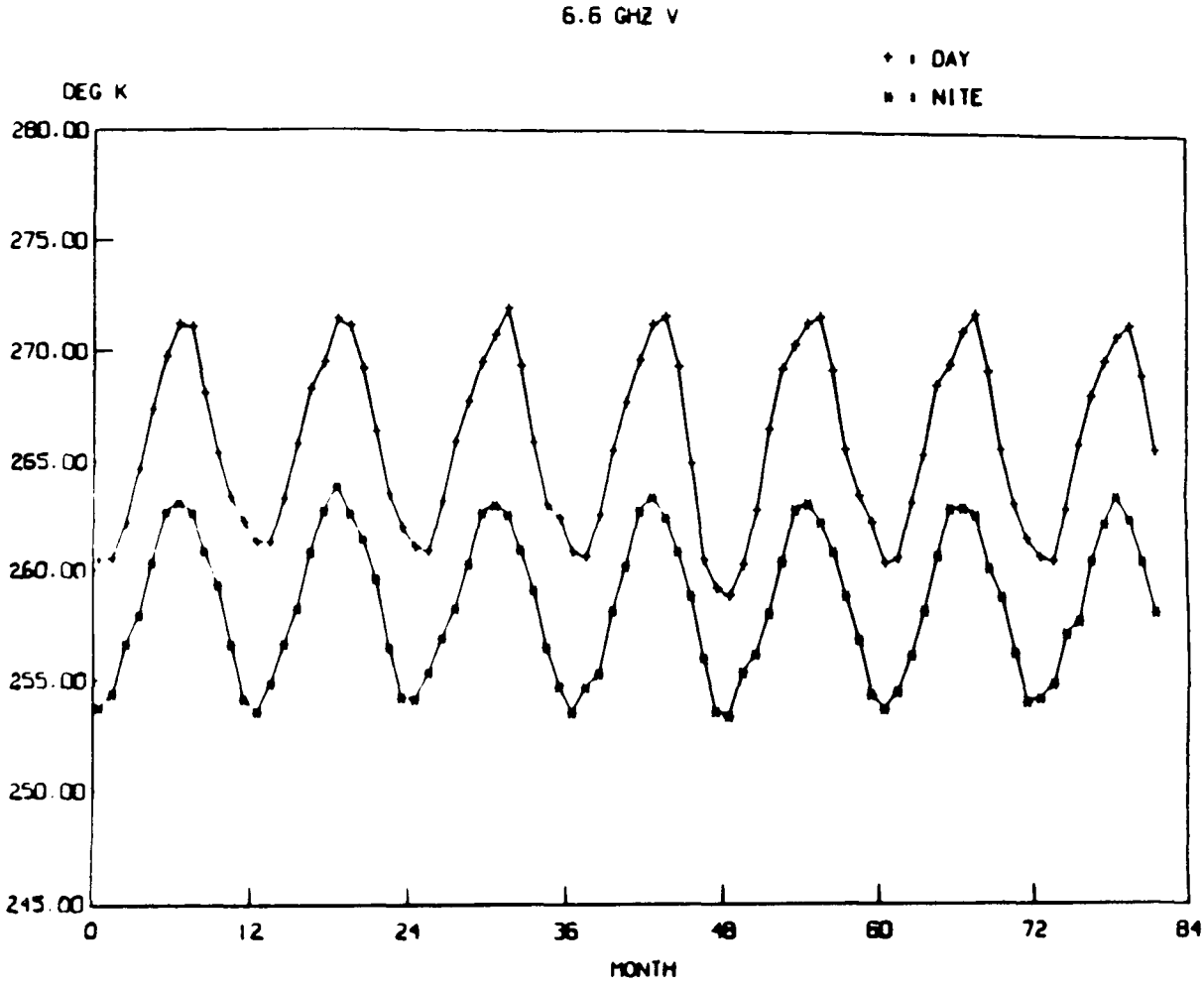

Figure 9.25 Monthly averaged $T_{6.6V}$ over land vs. time.

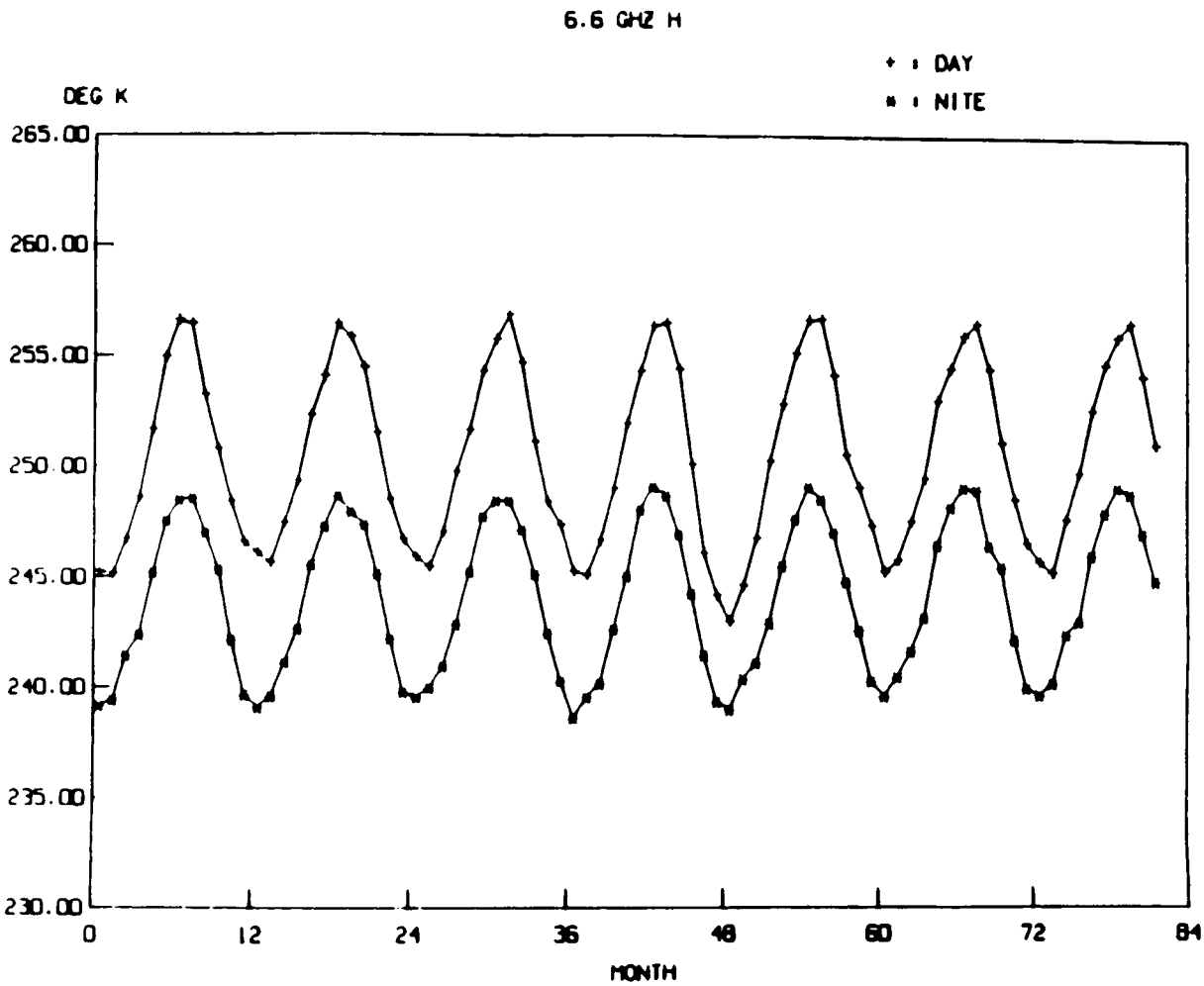

Figure 9.26 Monthly averaged $T_{6.6H}$ over land vs. time.

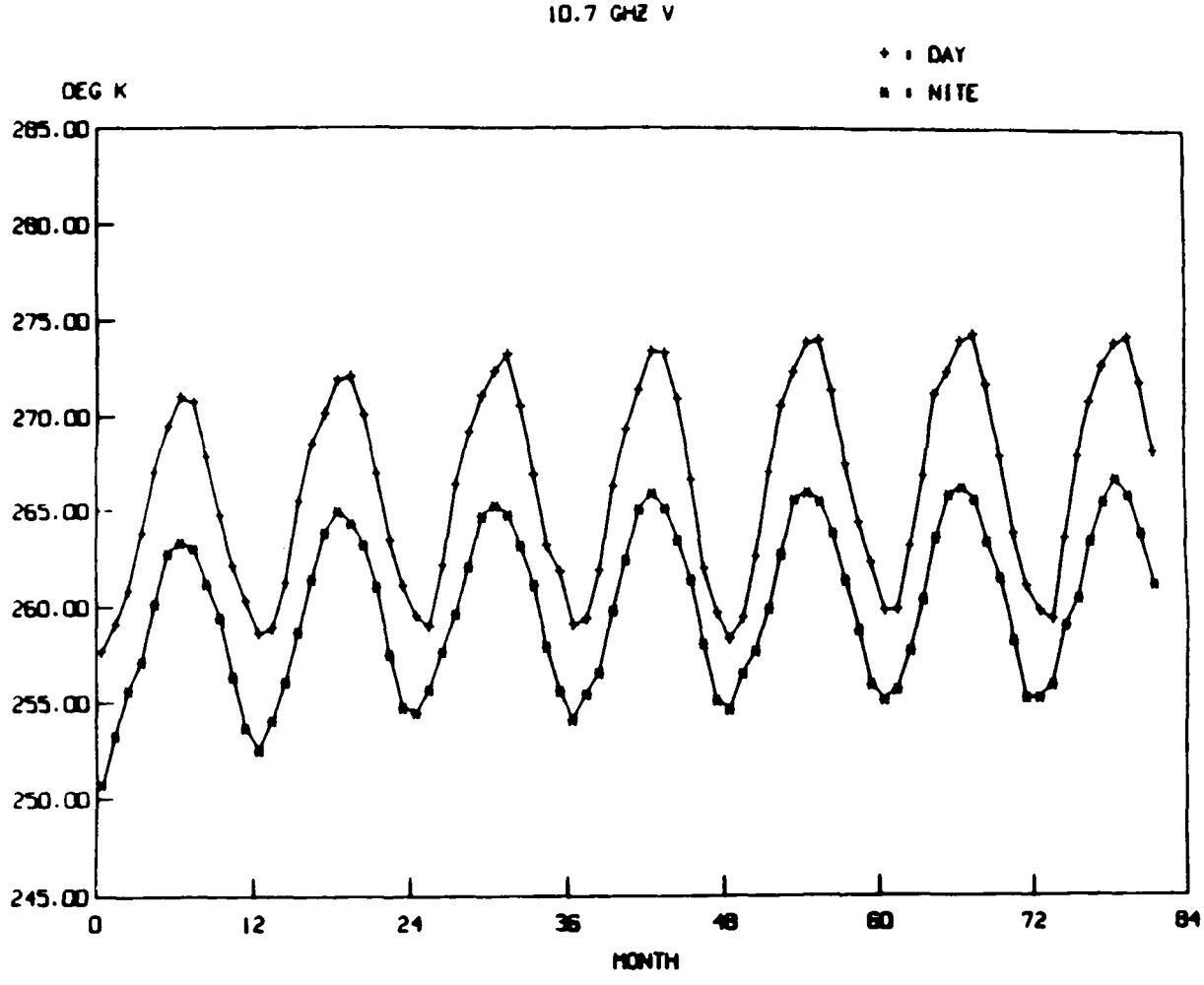

Figure 9.27 Monthly averaged $T_{10.7V}$ over land vs. time.

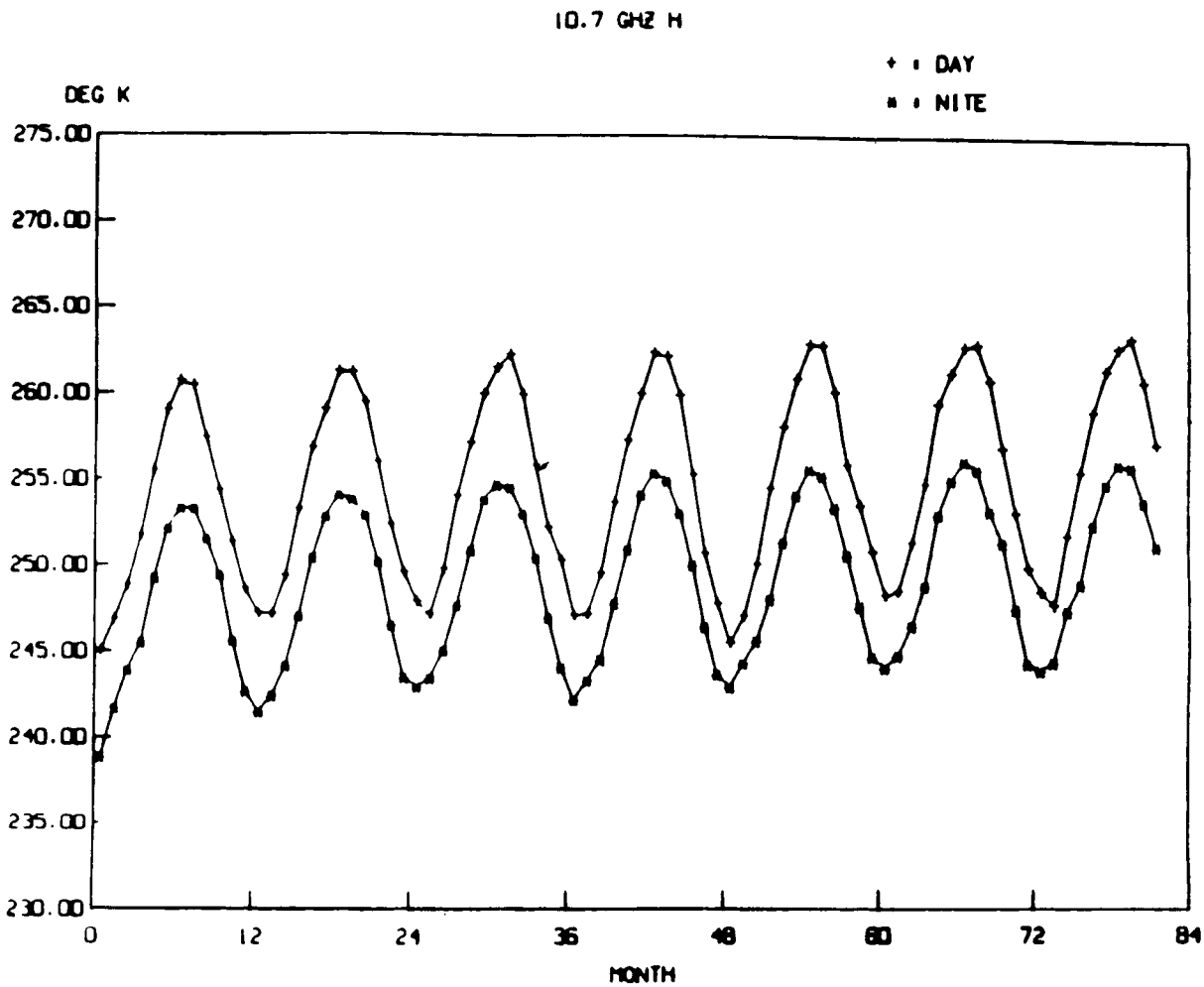

Figure 9.28 Monthly averaged $T_{10.7H}$ over land vs. time.

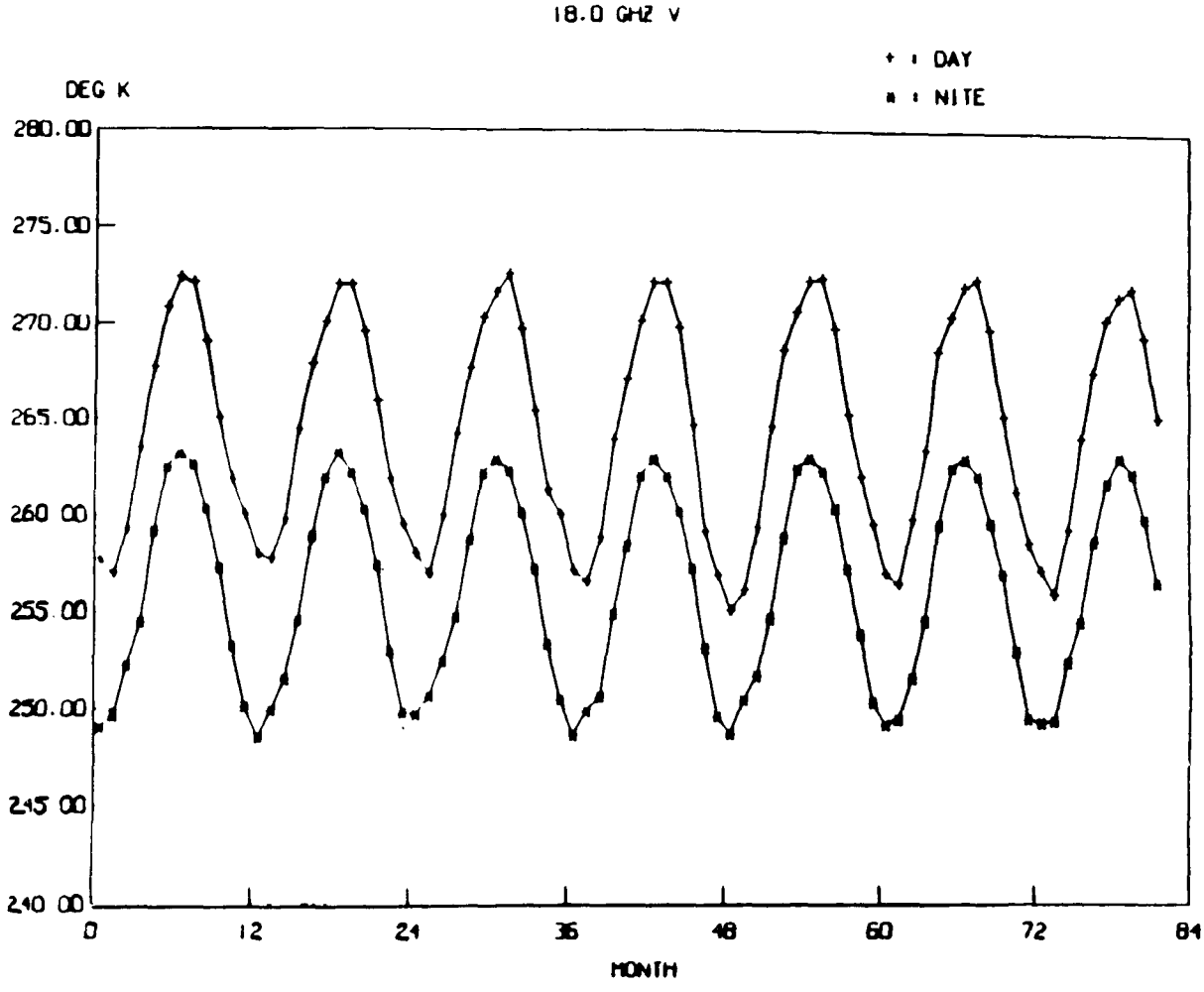

Figure 9.29 Monthly averaged T_{18V} over land vs. time.

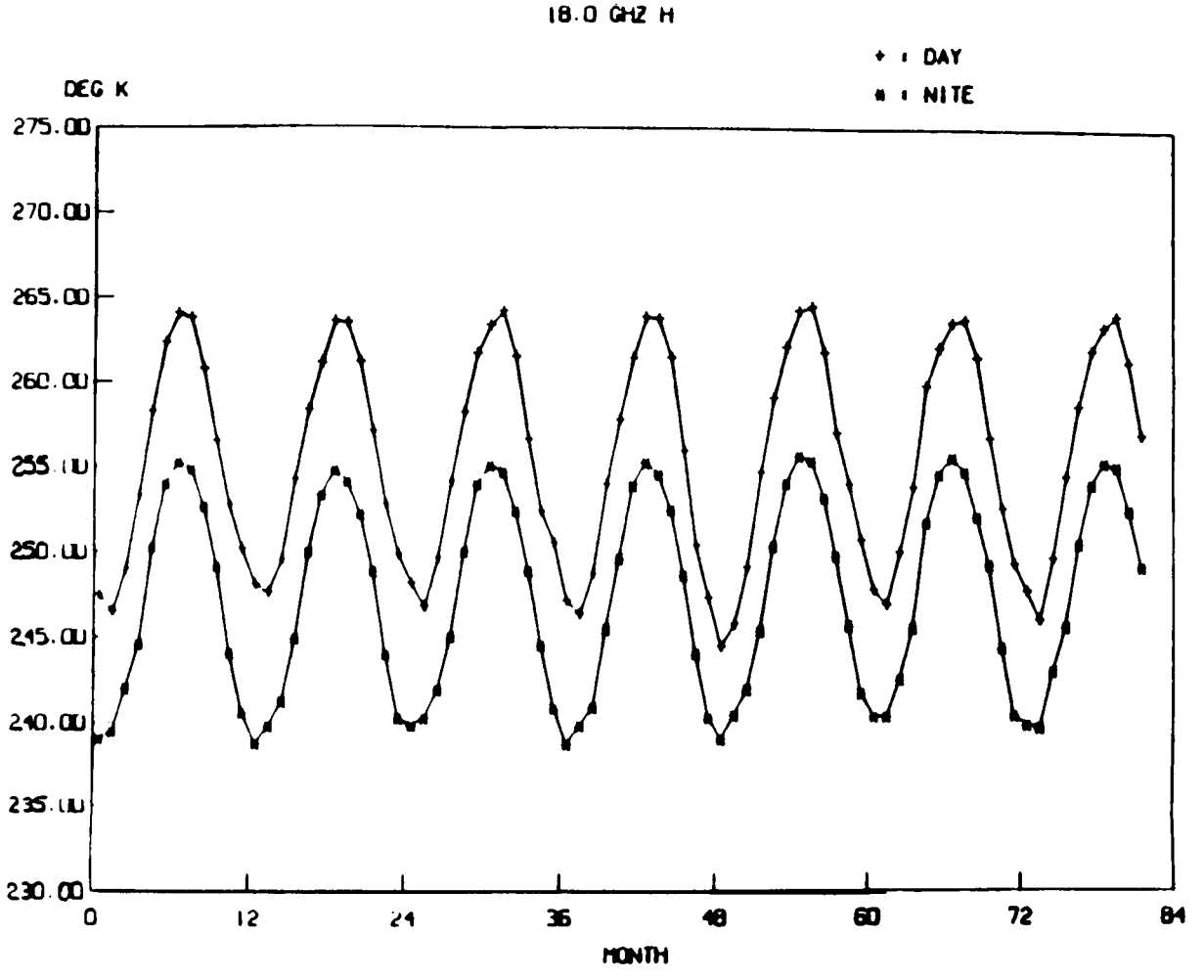

Figure 9.30 Monthly averaged T_{18H} over land vs. time.

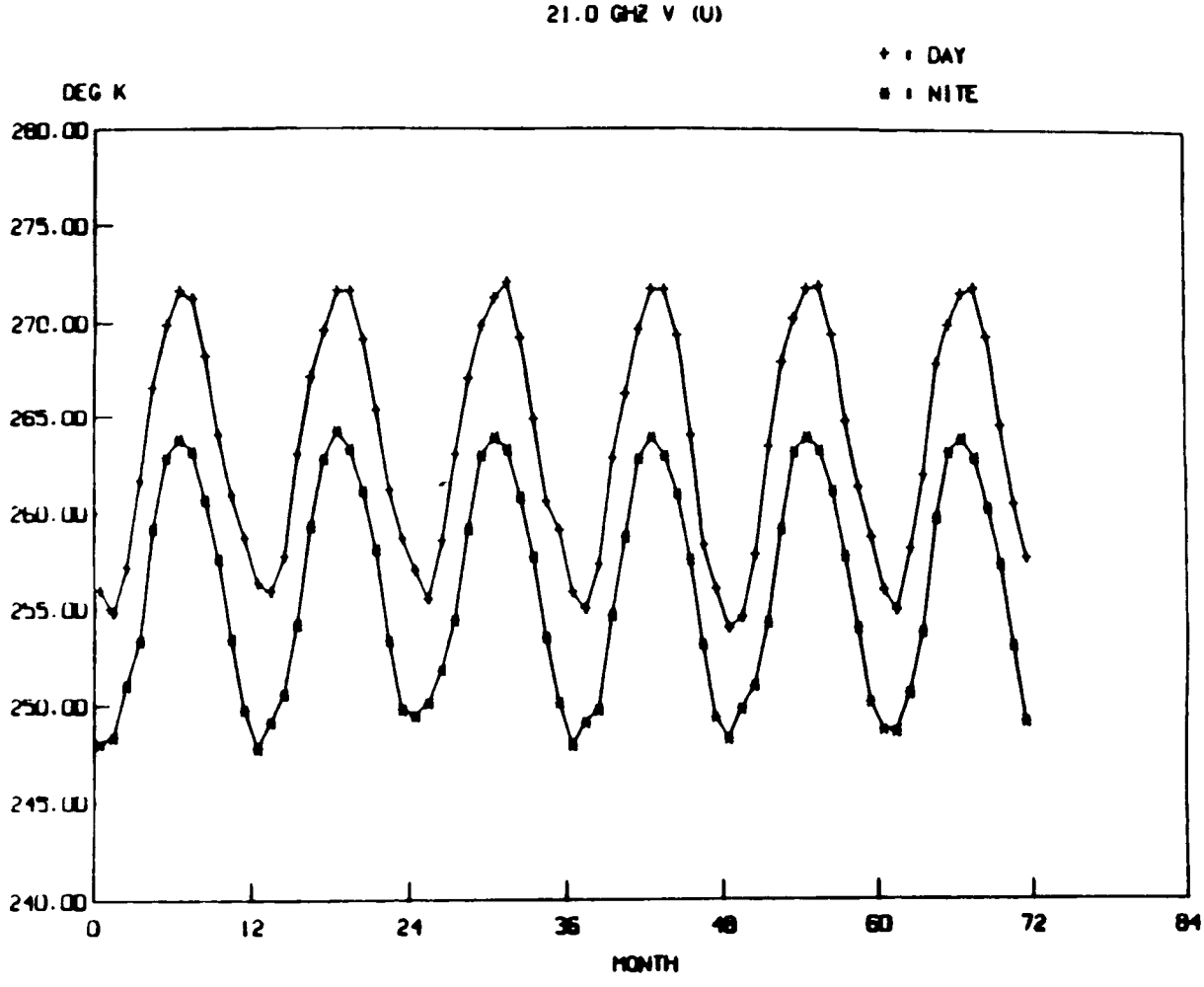

Figure 9.31 Monthly averaged T_{21V} (uncorrected) over land vs. time.

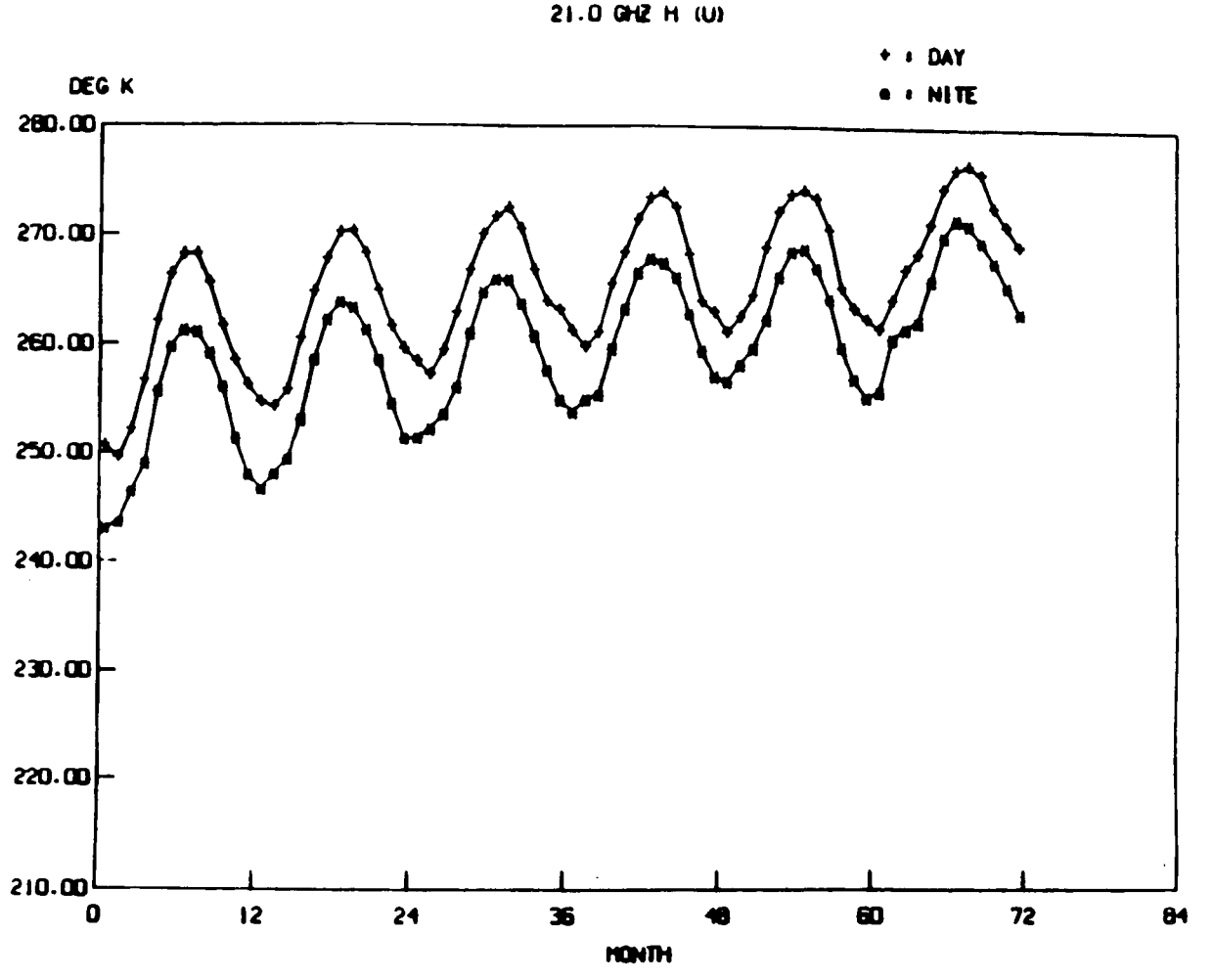

Figure 9.32 Monthly averaged T_{21H} (uncorrected) over land vs. time.

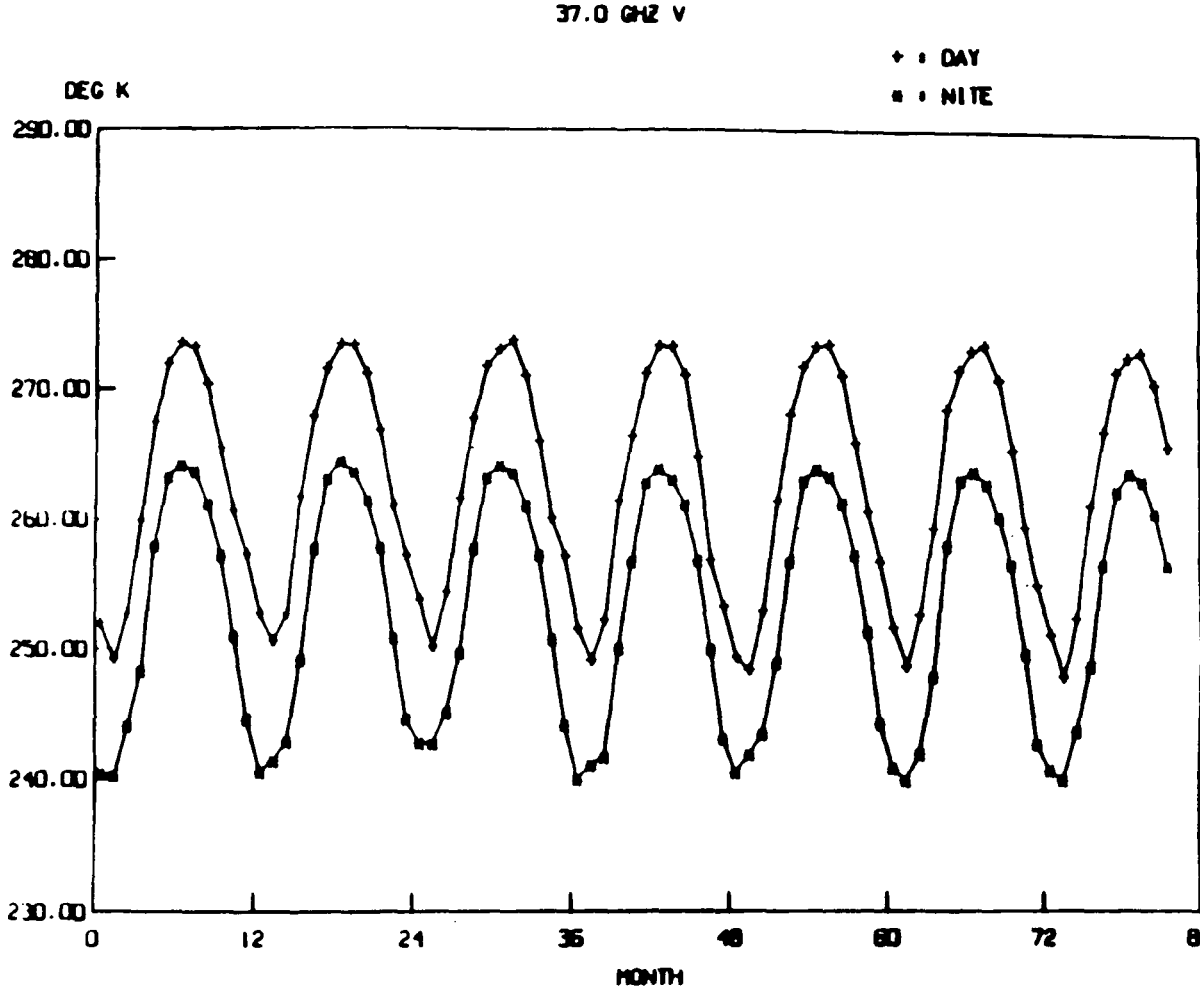

Figure 9.33 Monthly averaged T_{37V} over land vs. time.

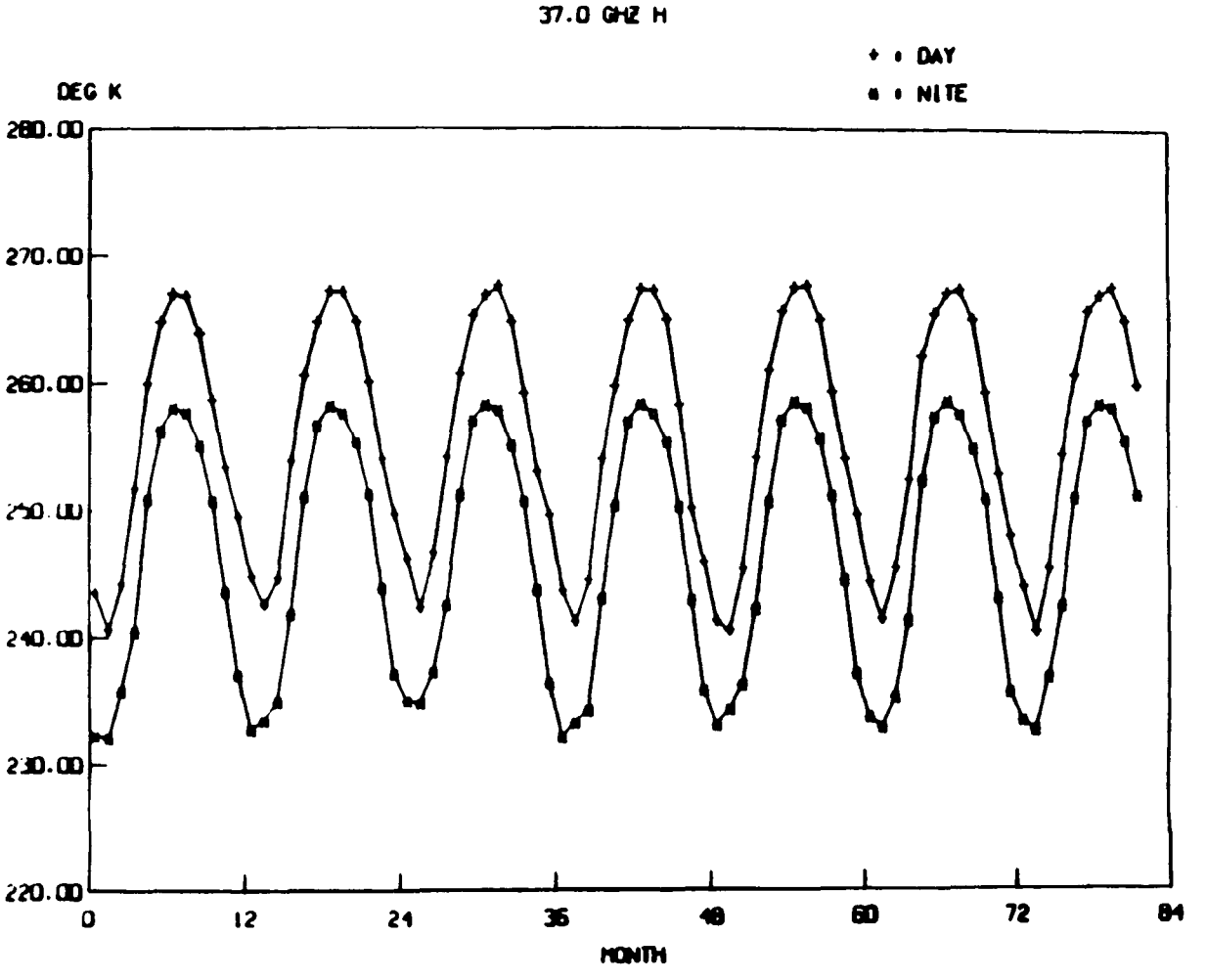

Figure 9.34 Monthly averaged T_{37H} over land vs. time.

C-2

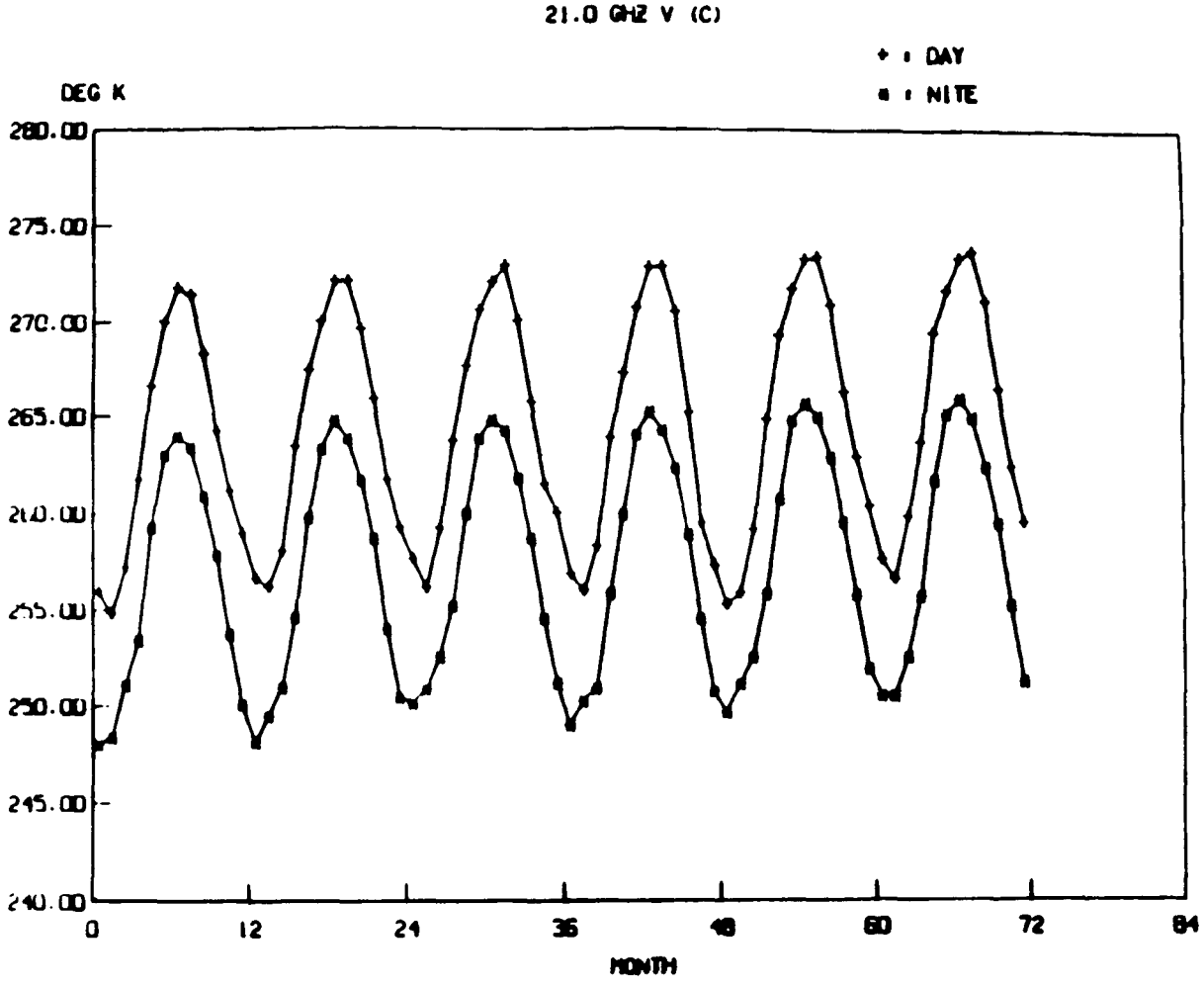

Figure 9.35 Monthly averaged T_{21V} (corrected) over land vs. time.

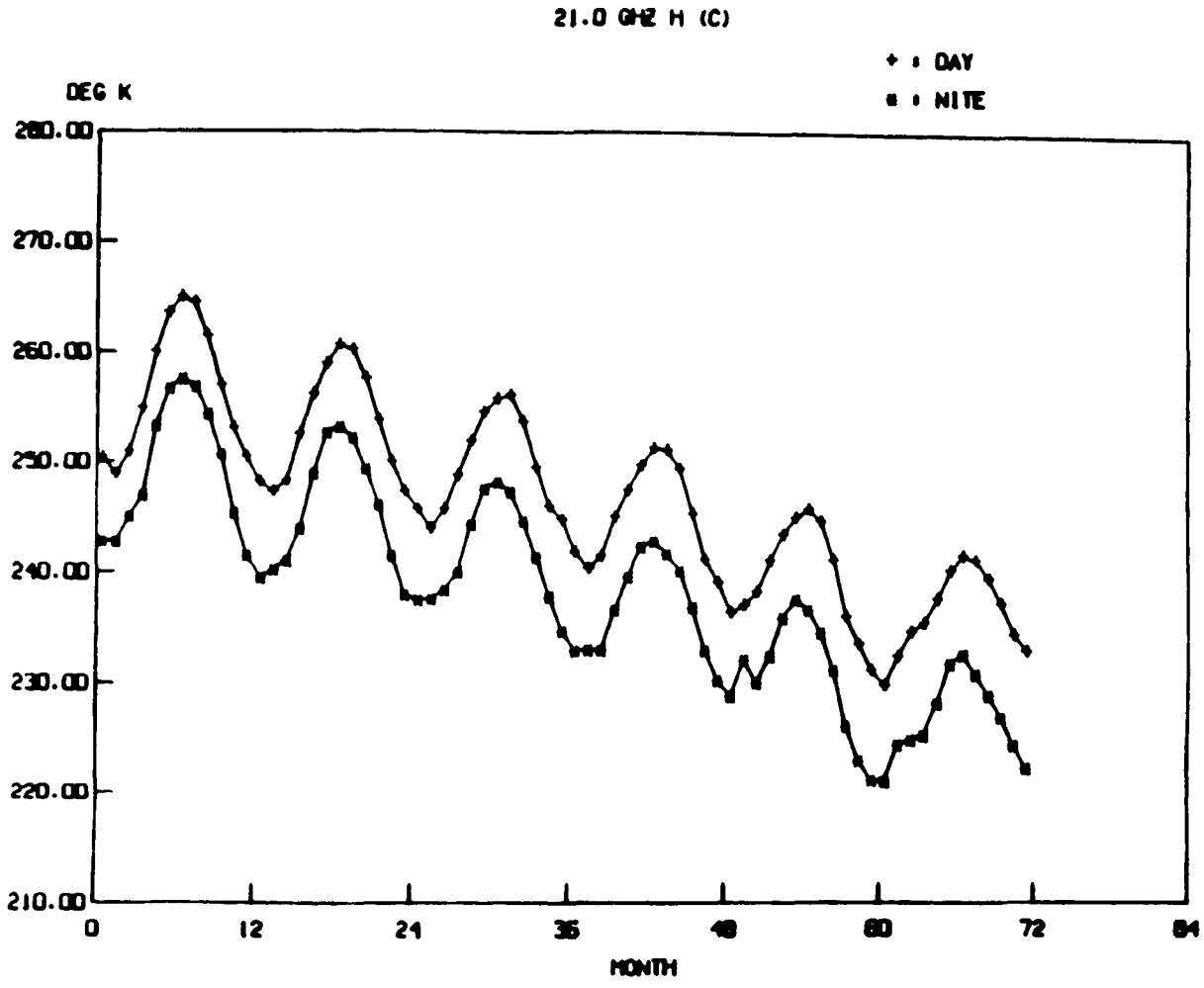

Figure 9.36 Monthly averaged T_{21H} (corrected) over land vs. time.

SECTION 10

LIMITATIONS AND UNCERTAINTIES

The calibration coefficients are derived from prelaunch test data. Discrepancies have been found between the calibrated radiances and radiances derived from modeling. Radiances on the Temperature Calibrated Tape (TCT) are adjusted based on the model computation. The conversions to TCT radiances from CELL radiances can be formulated as follows:

TCT Radiance (K) = Intercept+Slope*CELL Radiance (K).

The values for "Intercept" and "Slope" are listed in Table 10.1.

Table 10.1

Coefficients for Conversion from CELL to TCT Radiances

Channel	Slope	Intercept
6.6V	0.939393	18.013421
6.6H	1.005305	-2.580036
10.7V	0.950320	16.271413
10.7H	1.001119	-1.372152
18V	0.913121	24.899658
18H	1.017032	-5.840604
21V	0.901859	25.439325
21H	1.090770	-27.530466
37V	0.904517	27.996153
37H	0.989356	-2.108813

The conversion factors are derived by comparing CELL radiances with TCT radiances for certain limited areas on day 34 of 1979. Several known changes in the instrument throughout 1979 may affect the calibration. When the sun shines into the cold horns (defined as when the subsatellite latitude minus the sun declination angle is between -123 degrees and -43 degrees), the cold calibration counts are affected, but are not corrected. Instead, the cold and warm calibration values

just before this happens are used in the antenna temperature calibration over the entire range from -123 degrees to -43 degrees. As a result, when the normal cold calibration counts are resumed, a sudden jump in the counts may occur. The amplitude and sign vary with channel and orbit number. A worst-case jump is 15 counts for the 6.6-GHz vertical and horizontal channels, corresponding to a 2-K jump in brightness temperature. The correction for polarization mixing was derived empirically and probably contains unavoidable errors due to atmospheric interference, particularly in the higher frequency channels.

Because of an instrument malfunction of an unknown nature, the 21-GHz horizontal brightness temperature drifts with time, and the day/night temperature difference increases with time. The following correction formulas for the 21-GHz brightness temperature are recommended (Kim *et al.*, 1984):

$$T'21_H = T21H - \Delta T_{21H} \tag{11}$$

$$T'21_V = T21v - \Delta T_{21V} \tag{12}$$

where T_{21H} and T'_{21H} are measured and adjusted 21-GHz horizontal brightness temperatures, T_{21V} and T'_{21V} are measured and adjusted vertical brightness temperatures, respectively; ΔT_{21H} and ΔT_{21V} are defined in the following:

$$\Delta T_{21H} = (\Delta T_X/D)\cos^2\phi_y \tag{13}$$

$$\Delta T_{21V} = (\Delta T_X/D)\sin^2\phi_y \tag{14}$$

where:

$$D = 1 - \sin^2\phi_X - \sin^2\phi_y \tag{15}$$

$$\Delta T_X = (\cos^2\delta\phi_X - \sin^2\delta\phi_X\tan^2\delta\phi_y)\,\Delta T_H \tag{16}$$

$$\Delta T_H = n_W\{a1 + a2\,[(1 - \exp(-a3t)]\} \tag{17}$$

n_W = Time in units of 6 days, starting at zero on zero hour, January 1, 1979

t = Time in minutes after the SMMR turn-on for the day

ϕ_X = $\phi + \delta\phi_X$

ϕ_y = $\phi + \delta\phi_y$

ϕ = antenna scan angle

$\delta\phi_X$ = -2.8°

$\delta\phi_y$ = 10°

a_1 = 0.0366

a_2 = 0.0954

a_3 = 0.00247

This correction scheme was developed only for data over the ocean and was used through May 1983. After May 1983, the behavior of the instrument changed; no suitable correction scheme has yet been developed. The CELL-ALL data do not contain any of the corrections for 21 GH_Z brightness temperatures described above.

SECTION 11

CELL-ALL TAPE FORMAT

The SMMR CELL-ALL tape is a 1,600 bpi, 9-track tape. It is generated on the IBM 3081, at the NASA Goddard Space Flight Center's National Space and Earth Sciences Computing Center (NSESCC). It contains CELL-ALL data derived from the Nimbus 7 SMMR.

11.1 Gross Format

The first file of the tape will contain the Nimbus Observation Processing System (NOPS) Standard Header written twice in EBCDIC, using odd parity. This file contains identifier information, data coverage, and generation information. Each Standard Header will be contained in one record, and each record will be separated by an inter-record gap. This file and every other will be followed by an end-of-file mark (tape mark).

Each subsequent file, except for the last two files, will contain data from one data orbit (southbound equator crossing to southbound equator crossing). The first record of each file will contain the documentation information for that file. Each subsequent record, except the last record, will contain data covering a time period equal to 30 scan periods (122.88 seconds). This covers an area of roughly 787 km x 780 km. The last record of the file will be a dummy record containing no valid data other than the first 32 bits.

A maximum of 3 days of data, approximately 42 orbits, will be contained on one tape. The tape will be terminated by a file containing one dummy record followed by a trailer documentation file and a double end-of-file mark.

Each block of data contains one logical record. The record length is 630 bytes for the header and trailer files, and is 15,120 bytes for the data files.

11.2 NOPS Standard Header File

The first file of each tape contains the NOPS Standard Header information. The first 126-character group, in its most general form, will consist of:

1.	*NIMBUS-7bNOPSbSPECbNObT	(1-24 character count)
2.	XXXXXX (6-digit specification number; 234011 for CELL-ALL tapes)	(25-30 character count)
3.	bSQbNOb	(31-37 character count)
4.	YY (2-character PDFC code; BK for CELL-ALL)	(38-39 character count)
5.	XXXXX (5-digit sequence number)	(40-44 character count)
6.	-X (copy number 1 or 2)	(45-46 character count)
7.	bSMMRb	(47-52 character count)
8.	SACC	(53-56 character count)
9.	bTObYYYY (4-character destination facility ID; always IPD for SMMR tapes)	(57-64 character count)

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10. $_bSTART_b19XX_bDDD_bHHMMSS_b$ (65-87 character count)
(start year, day of year,
hours, minutes, seconds)

11. $_bTO_b19XX_bDDD_bHHMMSS_b$ (88-106 character count)
(end date and time of data)

12. $GEN_b19XX_bDDD_bHHMMSS_b$ (107-126 character count)
(date and time when tape was generated)

Further explanations for some of the above items follow:

Item 5: The five-digit sequence numbers will have the following form, which is an Information Processing Division standard:

First	=	The last digit of the year in which the data were acquired,
Second to Fourth	=	Julian day of the year on which the data were acquired,
Fifth	=	Sequence number for this particular product (usually a 1).

Item 6: Unless the tape is produced again for any reason, the first character will be the hyphen. If the tape is produced again, an ascending alphabetical character will replace the hyphen, and the most recent reasons for the remake will be recorded in the fourth 126-character group of the header record.

Item 7: The first character will remain a blank, unless it is needed to remove ambiguities in the first digit of Item 5. This may occur if data are being acquired on or after October 24, 1988.

Item 11: For the SMMR CELL-ALL tapes, the end date and time of data will not be entered, and this item will take the form, $_bTO_b19_b0_{bbb}0_b000000_b$.

The first 126-character group, described above, will uniquely identify any tape. The second group of 126 characters will contain continuation documentation of the first 126 characters, when required. The third, fourth, and fifth groups of 126 characters each are intended for the use of the subsystem analysts for further identification of their data. These characters contain blanks, EBCDIC, Binary Coded Decimal (BCD), binary characters, or zeros.

EXAMPLE:

*NIMBUS-7$_b$NOPS$_b$SPEC$_b$NO$_b$T234071$_b$SQ$_b$NO$_b$BK00101-1$_b$SMMR$_b$SACC$_b$TO$_b$IPD

$_b$START$_b$1979$_b$125$_b$010325$_b$TO$_b$19$_b$0$_{bbb}$0$_b$000000$_b$GEN$_b$1980$_b$232$_b$221045

indicates NOPS SMMR CELL-ALL sequence no. 101 copy 1

data starting on: day 125 of 1979 at 01:03:25

data ending on: unavailable

tape generated on: day 232 of 1980 at 22:10:45

11.3 Documentation Logical Record

The first physical record of every data file consists of a documentation logical record. Each documentation logical record consists of six 16-bit words followed by 15,108 8-bit EBCDIC (odd parity) characters. The first six 16-bit words contain the following:

WORD	DESCRIPTION
1	Physical Record Number - Starts at 16 and counts by 16 for each physical record within a file.
2	Record ID and Logical Record Number - This word has a value of 4097 (decimal). This places the value 16 in the first eight bits, which indicates a documentation record. A one in the lowest-order byte indicates logical record number one of the file.
3	Year of Century - Calendar year of current data.
4	Day of Year - Calendar day of year for the start of following data.
5	Orbit Number - Orbit number of following data. Orbits begin and end on descending equator crossings.

11.4 Data Logical Record Format

Each data-type logical record contains 7,560 16-bit words. Each word is a 2's complement signed integer unless otherwise noted. The gross layout is described immediately below. A detailed description follows:

DIMENSION	WORD	DESCRIPTION
1	1	Physical record number (*16) record identifier (2-bit flags + 6-bit positive integer)
1	2	Logical record number (8-bit positive integer)
1	3	Year of century
1	4	Day of year
2	5-6	Second of day of center of block (32-bit integer)
1	7	Orbit number
1	8	Day/Twilight/Night flag
64	9-72	Engineering values used for calibration
20	73-92	Calibration count averages
20	93-112	Calibration count standard deviations

DIMENSION	WORD	DESCRIPTION
GRID-1		
5,5	113-137	Latitudes (*100 degrees)
5,5	138-162	Longitudes (*100 degrees)
5,5	163-187	Incidence angles (*100 degrees)
5,5	188-212	Reflected sun-boresight angles (*100 degrees)
5,5	213-237	Geography and quality filters (16-bit flags)
10,5,5	238-487	Antenna temperatures (*10 Kelvins)
25	488-512	Spares
GRID-2		
8,8	513-576	Latitudes (*100 degrees)
8,8	577-640	Longitudes (*100 degrees)
8,8	641-704	Incidence angles (*100 degrees)
8,8	705-768	Geography and quality filters (16-bit flags)
8,8,8	769-1280	Antenna temperatures (*10 Kelvins)
GRID-3		
13,13	1281-1449	Latitudes (*100 degrees)
13,13	1450-1618	Longitudes (*100 degrees)
13,13	1619-1787	Incidence angles (*100 degrees)
13,13	1788-1956	Geography and quality filters (16-bit flags)
6,13,13	1957-2970	Antenna temperatures (*10 Kelvins)
GRID-4		
26,26	2971-3646	Latitudes (*100 degrees)
26,26	3647-4322	Longitudes (*100 degrees)
26,26	4323-4998	Incidence angles (*100 degrees)
26,26	4999-5674	Geography and quality filters (16-bit flags)
2,26,26	5675-7026	Antenna temperatures (*10 Kelvins)
5,5,10	7027-7276	Standard deviations of antenna temperatures for all frequencies in grid-1(*10 Kelvins)
284	7277-7560	Spares

DETAILED DESCRIPTION OF INDIVIDUAL ITEMS

- Physical Record Number - It is the number of this record within the file. It starts at 16 and increments by 16 if treated as a 16-bit integer. If treated as a 12-bit integer, it starts at 1 and increments by 1.

- Record ID - (2-bit flags + 6-bit positive integer) - Identifies record type, last record in a file, and records in last file. The most significant bit (MSB) will be set to "1" for the last record in a file. The second MSB will be set to "1" for all records in the last file. The record types are as follows:

TYPE OF RECORD	VALUE OF RECORD IDENTIFIER
Documentation Logical Record	16
Data Logical Record	17
Dummy Logical Record	18

- Logical Record Number - This starts at 1 and increments by 1 for each logical record within a file.

- Year of Century - Calendar year of data (two digits).

- Day of Year - Calendar day of year of data (1-366).

- Second of Day - Second of day of point at center of grids [e.g., cell (3,3) of grid-1]. One record covers data for roughly 122 seconds centered about this time.

- Orbit Number - A data orbit starts at one descending node and ends at the following descending node.

- Day/Twilight/Night - Code describing illumination of spacecraft and illumination of Earth.

  0 = Day (Spacecraft and cells both illuminated)
  1 = Twilight (Spacecraft illuminated, cells in shadow)
  2 = Night (Spacecraft and cells in shadow)

- Engineering values - The 64 latest values of the engineering housekeeping data are included. See Figure 11.1 for the individual quantities. All temperatures are in units of one-tenth Kelvins. Other values are raw counts.

- Calibration Count Averages - These are the hot and cold calibration counts averaged over a time period of 30 scans. These values are optionally used in the calibration equation. They appear in the following order:

  1. Hot Calibration 6.6 GHz H
  2. Hot Calibration 6.6 GHz V
  3. Hot Calibration 10.69 GHz H
  4. Hot Calibration 10.69 GHz V
  5. Hot Calibration 18 GHz H
  6. Hot Calibration 18 GHz V
  7. Hot Calibration 21 GHz H
  8. Hot Calibration 21 GHz V
  9. Hot Calibration 37 GHz H
  10. Hot Calibration 37 GHz V
  11. Cold Calibration 6.6 GHz H

6.6 GHz + XTL Current 1	10.69 GHz + XTL Current 2	18 GHz + XTL Current 3	21 GHz + XTL Current 4	6.6 GHz Dicke SW. Temp. Plat. 5	10.69 GHz Dicke SW. Temp. Plat. 6	18 GHz Dicke SW. Temp. Plat. 7	21 GHz Dicke SW. Temp. Plat. 8
6.6 GHz - XTL Current 9	10.69 GHz - XTL Current 10	18 GHz - XTL Current 11	21 GHz - XTL Current 12	Antenna Feed Horn Temp #1 Aperture Plat. 13	Antenna Feed Horn Temp #2 6.6 GHz-H Port. Plat. 14	37 GHz Horiz. Dicke SW. Temp. Plat. 15	37 GHz Vert. Dicke SW. Temp. Plat. 16
37 GHz Horiz. + XTL Current 17	6.6 GHz Dicke SW. Temp. Eng. 18	37 GHz Vert. + XTL Current 19	10.69 GHz Dicke SW. Temp. Eng. 20	6 & 10 GHz Calibration Horn Temp. #1 Plat. 21	18 GHz V Feed Horn Wave Guide Temp. #1 Plat. 22	18 & 21 GHz Calibration Horn Temp. #2 Plat. 23	21 GHz V Feed Horn Wave Guide Temp. #6 Plat. 24
37 GHz Horiz. - XTL Current 25	6.6 GHz Local Osc. Temp. Eng. 26	37 GHz Vert. - XTL Current 27	10.69 GHz Local Osc. Temp. Eng. 28	6.6 GHz Chassis Bulkhead Temp. #1 Plat. 29	18 GHz-H Feed Horn Wave Guide Temp. #2 Plat. 30	37 GHz Calibration Horn Temp. #3 Plat. 31	21 & 37V GHz Chassis Bulkhead Temp. #4 Plat. 32
18 GHz Dicke SW. Temp. Eng. 33	Motor Commutator Temp. Eng. 34	21 GHz Dicke SW. Temp. Eng. 35	6.6 GHz Chassis Bulkhead Temp. Eng. 36	10.69 GHz Chassis Bulkhead Temp. #2 Plat. 37	37 GHz V Feed Horn Wave Guide Temp. #3 Plat. 38	18 & 37H GHz Chassis Bulkhead Temp. #3 Plat. 39	Antenna Feed Horn Temp. #4 6.6 GHz-V Port Plat. 40
18 GHz Local Osc. Temp. Eng. 41	Antenna Feed Horn Temp. Eng. Aperture 42	21 GHz Local Osc. Temp. Eng. 43	10.69 GHz Chassis Bulkhead Temp. Eng. 44	6.6 GHz Cal. Horn Wave Guide Temp. #1 Plat. 45	37 GHz-H Feed Horn Wave Guide Temp. #4 Plat. 46	21 GHz Cal. Horn Wave Guide Temp. #4 Plat. 47	Antenna Feed Horn Temp. #3 37 GHz Ortho Plat. 48
37 GHz Horiz. Dicke SW. Temp. Eng. 49	6 & 10.69 GHz Calibration Horn Temp. Eng. 50	37 GHz Vert. Dicke SW. Temp. Eng. 51	18 & 37H GHz Chassis Bulkhead Temp. Eng. 52	10.69 GHz Cal. Horn Wave Guide Temp. #2 Plat. 53	21 GHz-H Feed Horn Wave Guide Temp. #5 Plat. 54	37 GHz-V Cal. Horn Wave Guide Temp. #5 Plat. 55	37 GHz-H Cal. Horn Wave Guide Temp. #6 Plat. 56
37 GHz Local Osc. Temp. Eng. 57	Power Supply Temp. Eng. 58	Eng. Mux. Calibrate High 59	Eng. Mux. Calibrate Low 60	18 GHz Cal. Horn Wave Guide Temp. #3 Plat. 61	Data Chassis Temp. Plat. 62	Temp. Mux. Calibrate High 63	Temp. Mux. Calibrate Low 64

Figure 11.1 SMMR Engineering Values

12. Cold Calibration 6.6 GHz V
13. Cold Calibration 10.69 GHz H
14. Cold Calibration 10.69 GHz V
15. Cold Calibration 18 GHz H
16. Cold Calibration 18 GHz V
17. Cold Calibration 21 GHz H
18. Cold Calibration 21 GHz V
19. Cold Calibration 37 GHz H
20. Cold Calibration 37 GHz V

- Calibration Count Standard Deviations - These are the standard deviations of the hot and cold calibration counts averaged over 30 scans. They appear in the same order as item 9.

11.5 Grid-1 Data

Grid-1 data appear in 5 x 5 arrays. The first index specifies the cross-track cell number (column). If one is above the ground looking in the spacecraft velocity direction, cell number one is the left-most cell. The second index specifies the along-track cell number (row). Row number increases in the along-track direction. The layout of cells relative to the orbital track is pictured in Figure 11.2.

Note: Under IBM FORTRAN, the elements of the 5 x 5 array A are stored as follows: A(1,1), A(2,1), A(3,1), A(4,1), A(5,1), A(1,2), A(2,2)...

- Latitudes - Geodetic latitudes of the cell centers expressed in 1/100 of a degree. Latitudes vary from 90 degrees at the North Pole to -90 degrees at the South Pole.

- Longitudes - Geodetic longitudes of the cell centers expressed in 1/100 of a degree. Values increase eastward to 180 degrees and decrease westward to -180 degrees.

- Incidence Angles - Incidence angles to the center of the cells expressed in 1/100 of a degree. The incidence angle is defined as the angle between the normal to the Earth's surface at the FOV and the spacecraft-to-FOV vector.

- Reflected Sun-Boresight Angles - Reflected sun-boresight angles at cell centers expressed in 1/100 of a degree. The reflected sun-boresight angle is the angle between the spacecraft-to-FOV vector (boresight) and the vector describing the ray of the sun striking the spacecraft.

- Geography and Quality Filters - Sixteen 1-bit flags are available to describe conditions affecting data quality and describe the FOV surface type.

MSB	1-8	Not used
	9	NOOP (mixed geography type; data not retrieved)
	10	Ocean
	11	Not used
	12	Land
	13	Not used
	14	Ice sheet
	15	Not used
LSB	16	Not used

Flag values 0 = no, not present, or false
1 = yes, present, or true

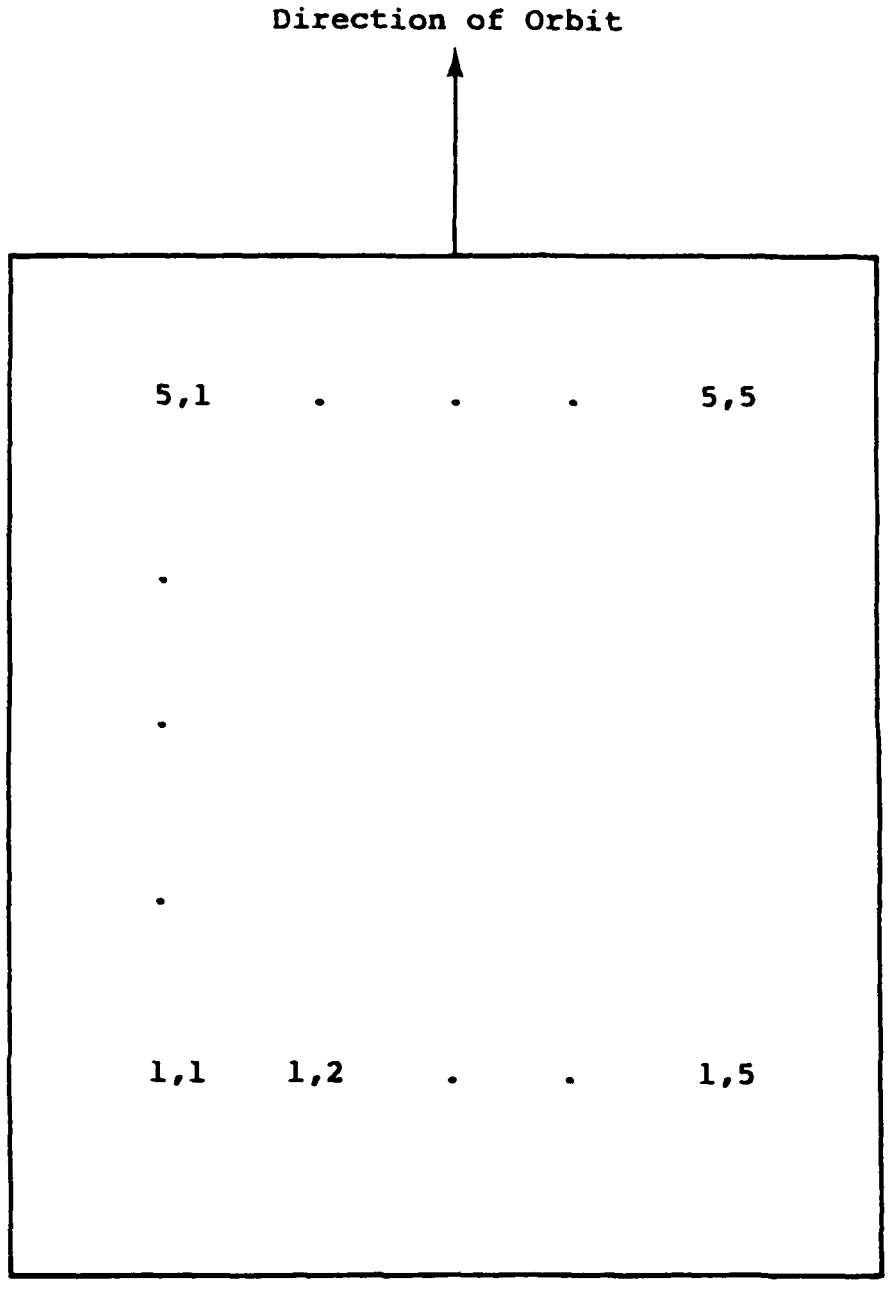

Figure 11.2 Cell Layout

- Antenna Temperatures - Antenna temperatures for each frequency are expressed in 1/10 Kelvins, in a 10 x 5 x 5 array. The first index indicates the frequency and polarization, in the following order:

  6.6 GHz H
  6.6 GHz V
  10.69 GHz H
  10.69 GHz V
  18 GHz H
  18 GHz V
  21 GHz H
  21 GHz V
  37 GHz H
  37 GHz V

The second and third indices are the cross-track and along-track cell numbers. For each type of data, information for the 25 grid points is stored in the same order; e.g., data for grid point (1,1) are stored in words 113, 138, 163, 188, 213, and 238-247; data for grid point (2,1) are stored in words 114, 139, 164, 189, 214, and 248-257; data for grid point (5,5) are stored in words 137, 162, 187, 212, 237, and 478-487.

OTHER GRIDS

Grid-2 data appear in 8 x 8 x 8 arrays; the first index indicates the channel in the order 10.69 H, 10.69 V, ..., 37 V.
Grid-3 data appear in 6 x 13 x 13 arrays; the first index indicates the channel in the order 18H, 18V, ..., 37V.
Grid-4 data are in 2 x 26 x 26 arrays; the first index indicates 37 H or 37 V.

STANDARD DEVIATIONS

The standard deviations of the antenna temperatures are given in 1/10 of a degree Kelvin for all frequencies in grid-1. The right index indicates the frequency, the left index specifies the cross-track cell number, and the middle index specifies the along-track cell number. Values for different frequencies appear in the following order:

6.6 GHz H
6.6 GHz V
10.69 GHz H
10.69 GHz V
18 GHz H
18 GHz V
21 GHz H
21 GHz V
37 GHz H
37 GHz V

SPARES

All spares will be zero filled.

11.6 Dummy Logical Record

The last record of every data file and the next to the last file on any tape consist of a dummy logical record. Each dummy logical record consists of 15,120 bytes. Of these, only the first four bytes contain usable information. Other information is to be ignored. The first 2 bytes are to be treated as a 16-bit positive integer, containing the physical record number. This starts at 16 and increments by 16 for every physical record within a file. The third byte consists of two 1-bit flags and a positive 6-bit integer. The MSB is set to "1" for the last record in a file. The second MSB is set to "1" for all records in the last file. The 6-bit integer is set to 18 to indicate a dummy logical record. Thus, the third byte has a decimal value of 146 for the last record in a data file, and a value of 210 for the record in the last file on the tape. The fourth byte contains the logical record number, which starts at 1 and increments by 1 for each record in a file. No other valid information appears in this record.

11.7 Trailer Documentation File

The last file on the tape is called a Trailer Documentation File (TDF). The TDF consists of all NOPS standard header records of the input tapes used in the production of the CELL-ALL tape. Every TDF is 630 bytes in length, with one record per block. The first record of this file is the TDF identifier. It consists of 10 asterisks (*) followed by:

> "NOPS TRAILER DOCUMENTATION FILE FOR TAPE PRODUCT T234071 GENERATED ON DDD HH MM".

The second record is a duplication of the CELL-ALL tape NOPS standard header record with the correct end time for the data set. It is followed by the accumulation of TDF's of all input tapes.

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LIST OF ACRONYMS, INITIALS, AND ABBREVIATIONS

BCD	Binary Coded Decimal
bpi	Bits per inch
EBCDIC	Extended Binary Coded Decimal Interchange Code
FOV	Field of view
IFOV	Instantaneous field of view
LSB	Least significant bit
MSB	Most significant bit
NOPS	Nimbus Observation Processing System
NOOP	No operation
NSESCC	National Space and Earth Sciences Computing Center
SMMR	Scanning Multichannel Microwave Radiometer
SST	Sea surface temperature
TAT	Antenna Temperature Tapes
TCT	Temperature Calibrated Tapes
TDF	Trailer Documentation File

APPENDIX A

AVAILABLE DATA FROM YEAR-1 TO YEAR-7

1) Available Year-1 Data

YEAR	DAY	START ORBIT	END ORBIT
78	302	66	79
78	303	80	92
78	304	93	106
78	305	108	120
78	306	121	134
78	307	135	148
78	308	149	162
78	309	163	175
78	310	176	189
78	311	190	203
78	312	204	217
78	313	218	231
78	314	232	245
78	315	246	258
78	316	259	272
78	317	273	286
78	318	287	300
78	319	301	314
78	320	327	328
78	321	329	341
78	322	342	342
78	323	356	369
78	325	383	397
78	327	412	424
78	329	438	452
78	331	467	480
78	333	494	507
78	334	508	508
78	335	521	534
78	337	549	563
78	338	576	577
78	339	578	590
78	341	604	618
78	343	632	646
78	345	661	673
78	347	688	701
78	349	716	729
78	351	743	756
78	353	771	784
78	355	798	812
78	356	825	825
78	357	826	839
78	359	853	867
78	361	881	894
78	363	909	922
78	365	936	949
79	2	965	978
79	4	992	1005
79	6	1020	1033
79	8	1047	1060

YEAR	DAY	START ORBIT	END ORBIT
79	10	1074	1087
79	12	1103	1116
79	14	1131	1143
79	16	1157	1171
79	18	1185	1198
79	20	1214	1226
79	22	1241	1254
79	24	1269	1282
79	26	1296	1309
79	28	1323	1337
79	30	1351	1365
79	31	1379	1379
79	32	1380	1392
79	34	1406	1419
79	36	1435	1448
79	38	1462	1475
79	40	1490	1503
79	42	1518	1531
79	43	1545	1545
79	44	1546	1558
79	46	1573	1586
79	48	1601	1614
79	50	1628	1641
79	52	1656	1669
79	54	1684	1696
79	56	1711	1724
79	58	1739	1752
79	59	1753	1758
79	60	1767	1779
79	62	1794	1807
79	64	1821	1835
79	66	1849	1862
79	68	1876	1890
79	70	1905	1918
79	72	1933	1945
79	73	1946	1946
79	74	1960	1973
79	76	1987	2001
79	77	2015	2015
79	78	2016	2028
79	80	2043	2056
79	82	2071	2084
79	84	2099	2111
79	86	2125	2139
79	88	2157	2166
79	90	2181	2194
79	92	2209	2222
79	94	2236	2249
79	96	2264	2277
79	98	2291	2305

YEAR	DAY	START ORBIT	END ORBIT
79	100	2321	2332
79	102	2348	2360
79	104	2376	2388
79	105	2402	2402
79	106	2403	2415
79	108	2430	2443
79	110	2457	2471
79	111	2484	2485
79	112	2486	2498
79	114	2513	2526
79	116	2541	2553
79	117	2567	2567
79	118	2568	2581
79	120	2595	2609
79	122	2623	2637
79	123	2650	2650
79	124	2651	2664
79	125	2665	2672
79	126	2679	2692
79	128	2707	2719
79	130	2734	2747
79	132	2761	2775
79	133	2788	2789
79	134	2790	2802
79	136	2817	2830
79	138	2844	2857
79	139	2871	2872
79	140	2873	2885
79	142	2900	2913
79	144	2928	2941
79	145	2954	2954
79	146	2955	2968
79	148	2982	2996
79	150	3010	3023
79	152	3037	3051
79	154	3066	3079
79	155	3092	3093
79	156	3094	3106
79	158	3121	3134
79	160	3148	3162
79	161	3175	3176
79	162	3177	3189
79	164	3203	3217
79	166	3232	3244
79	167	3258	3258
79	168	3259	3272
79	170	3286	3299
79	172	3314	3327
79	173	3341	3341
79	174	3342	3355

YEAR	DAY	START ORBIT	END ORBIT
79	176	3369	3383
79	178	3398	3410
79	180	3424	3437
79	182	3453	3466
79	183	3479	3480
79	184	3481	3493
79	186	3507	3521
79	188	3536	3549
79	190	3565	3576
79	192	3591	3604
79	194	3618	3632
79	196	3647	3659
79	198	3673	3687
79	200	3704	3714
79	202	3729	3742
79	204	3759	3769
79	206	3784	3797
79	208	3812	3824
79	210	3840	3853
79	212	3868	3880
79	214	3895	3908
79	216	3923	3935
79	218	3950	3963
79	220	3977	3991
79	222	4006	4018
79	224	4033	4046
79	226	4061	4074
79	227	4088	4088
79	228	4089	4101
79	230	4115	4128
79	232	4143	4156
79	234	4172	4184
79	236	4198	4212
79	237	4225	4226
79	238	4227	4239
79	239	4253	4253
79	240	4254	4267
79	242	4281	4295
79	244	4310	4322
79	246	4337	4350
79	248	4364	4378
79	250	4392	4405
79	252	4419	4433
79	254	4447	4461
79	256	4475	4487
79	258	4502	4516
79	260	4530	4543
79	262	4559	4571
79	264	4586	4599
79	265	4613	4613

YEAR	DAY	START ORBIT	END ORBIT
79	266	4614	4625
79	268	4641	4654
79	270	4669	4682
79	271	4696	4696
79	272	4697	4709
79	274	4723	4737
79	276	4751	4764
79	277	4778	4778
79	278	4779	4792
79	280	4806	4820
79	282	4834	4847
79	283	4861	4861
79	284	4862	4875
79	286	4890	4903
79	288	4917	4929
79	290	4944	4958
79	292	4972	4985
79	293	5000	5000
79	294	5001	5013
79	296	5028	5041
79	298	5056	5069
79	300	5084	5096
79	302	5111	5124
79	304	5139	5151

2) Available Year-2 Data

YEAR	DAY	START ORBIT	END ORBIT
79	306	5166	5179
79	308	5194	5207
79	309	5221	5221
79	310	5222	5234
79	312	5248	5262
79	314	5276	5290
79	315	5304	5304
79	316	5305	5317
79	318	5331	5344
79	320	5360	5373
79	322	5387	5400
79	324	5414	5427
79	326	5442	5455
79	328	5470	5483
79	330	5498	5511
79	332	5525	5538
79	334	5553	5565
79	336	5580	5594
79	338	5609	5621
79	340	5636	5649
79	342	5663	5676
79	344	5691	5704
79	346	5718	5732
79	348	5746	5760
79	350	5775	5787
79	352	5802	5815
79	354	5830	5842
79	356	5856	5869
79	358	5884	5898
79	360	5913	5925
79	362	5940	5953
79	364	5967	5981
80	1	5996	6008
80	3	6023	6036
80	4	6050	6050
80	5	6051	6063
80	7	6078	6090
80	9	6106	6119
80	11	6134	6146
80	13	6160	6173
80	15	6188	6202
80	16	6216	6216
80	17	6217	6228
80	19	6243	6257
80	21	6271	6284
80	22	6299	6299
80	23	6300	6312
80	25	6326	6340
80	27	6355	6367
80	29	6382	6395

YEAR	DAY	START ORBIT	END ORBIT
80	31	6409	6423
80	33	6437	6451
80	35	6464	6478
80	37	6493	6506
80	39	6521	6533
80	41	6548	6561
80	43	6576	6589
80	44	6603	6603
80	45	6604	6616
80	46	6617	6617
80	47	6630	6644
80	49	6659	6671
80	51	6686	6699
80	53	6714	6727
80	55	6741	6754
80	57	6769	6782
80	59	6796	6809
80	60	6824	6824
80	61	6825	6837
80	63	6851	6865
80	65	6880	6892
80	66	6907	6907
80	67	6908	6920
80	69	6935	6948
80	71	6963	6975
80	73	6990	7003
80	75	7018	7031
80	77	7045	7058
80	79	7073	7086
80	81	7100	7114
80	82	7128	7128
80	83	7129	7141
80	85	7155	7169
80	87	7183	7197
80	88	7211	7211
80	89	7212	7224
80	91	7239	7252
80	93	7267	7279
80	95	7294	7307
80	97	7322	7335
80	98	7349	7349
80	99	7350	7362
80	101	7377	7390
80	103	7404	7418
80	105	7433	7445
80	107	7459	7473
80	109	7488	7500
80	110	7515	7515
80	111	7516	7528
80	113	7543	7556

YEAR	DAY	START ORBIT	END ORBIT
80	115	7571	7584
80	117	7598	7611
80	119	7625	7638
80	121	7654	7666
80	123	7681	7694
80	125	7708	7722
80	127	7737	7750
80	129	7764	7777
80	131	7792	7804
80	132	7819	7819
80	133	7820	7832
80	135	7846	7860
80	137	7875	7887
80	138	7902	7902
80	139	7903	7915
80	141	7929	7943
80	142	7957	7957
80	143	7958	7970
80	145	7985	7998
80	147	8012	8026
80	149	8041	8053
80	151	8068	8081
80	153	8096	8109
80	155	8123	8136
80	157	8150	8164
80	159	8179	8191
80	161	8206	8219
80	163	8233	8246
80	165	8262	8274
80	167	8289	8302
80	169	8317	8330
80	171	8344	8357
80	173	8372	8385
80	175	8400	8413
80	176	8414	8427
80	177	8428	8440
80	179	8454	8468
80	181	8483	8496
80	182	8510	8510
80	183	8511	8523
80	185	8537	8551
80	187	8566	8578
80	189	8593	8606
80	191	8620	8634
80	193	8648	8661
80	195	8676	8689
80	197	8704	8717
80	199	8732	8744
80	201	8759	8772
80	203	8787	8799

YEAR	DAY	START ORBIT	END ORBIT
80	204	8813	8814
80	205	8815	8827
80	207	8842	8855
80	209	8870	8882
80	210	8896	8897
80	211	8898	8910
80	213	8925	8937
80	215	8952	8965
80	217	8980	8993
80	219	9008	9021
80	220	9035	9035
80	221	9036	9048
80	223	9063	9076
80	225	9091	9103
80	226	9118	9118
80	227	9119	9131
80	229	9145	9159
80	231	9173	9186
80	232	9201	9201
80	233	9202	9214
80	235	9228	9241
80	236	9256	9256
80	237	9257	9269
80	238	9283	9283
80	239	9284	9297
80	240	9298	9298
80	241	9311	9322
80	242	9339	9339
80	243	9340	9352
80	245	9367	9380
80	247	9394	9408
80	248	9422	9422
80	249	9423	9435
80	250	9436	9436
80	251	9450	9463
80	253	9477	9489
80	254	9505	9505
80	255	9506	9518
80	257	9533	9546
80	259	9560	9573
80	260	9587	9587
80	261	9588	9601
80	263	9615	9629
80	265	9643	9656
80	267	9671	9684
80	269	9699	9712
80	270	9726	9726
80	271	9727	9739
80	273	9754	9767
80	275	9781	9795

YEAR	DAY	START ORBIT	END ORBIT
80	277	9810	9822
80	278	9823	9823
80	279	9836	9850
80	281	9864	9877
80	282	9891	9891
80	283	9892	9905
80	285	9919	9933
80	286	9947	9947
80	287	9948	9960
80	289	9975	9988
80	291	10003	10016
80	293	10030	10043
80	295	10058	10071
80	297	10085	10098
80	298	10113	10113
80	299	10114	10126
80	301	10141	10154
80	303	10169	10181
80	304	10196	10196
80	305	10197	10209

3) Available Year-3 Data

YEAR	DAY	START ORBIT	END ORBIT
80	307	10223	10237
80	308	10251	10251
80	309	10252	10264
80	311	10279	10292
80	313	10306	10319
80	315	10334	10347
80	317	10362	10375
80	319	10389	10402
80	321	10417	10430
80	323	10445	10458
80	325	10472	10486
80	326	10500	10500
80	327	10501	10512
80	329	10528	10541
80	331	10555	10568
80	333	10583	10596
80	335	10611	10624
80	337	10638	10652
80	339	10666	10679
80	341	10693	10707
80	342	10721	10721
80	343	10722	10734
80	344	10735	10735
80	345	10749	10762
80	347	10777	10789
80	348	10804	10804
80	349	10805	10817
80	351	10831	10845
80	353	10860	10872
80	354	10886	10886
80	355	10887	10900
80	357	10914	10928
80	358	10942	10942
80	359	10943	10955
80	361	10970	10983
80	363	10998	11011
80	365	11025	11039
81	1	11053	11066
81	3	11080	11094
81	5	11108	11121
81	6	11122	11122
81	7	11135	11148
81	9	11163	11177
81	11	11191	11204
81	12	11205	11205
81	13	11218	11232
81	15	11247	11260
81	17	11274	11287
81	18	11288	11288
81	19	11301	11315

YEAR	DAY	START ORBIT	END ORBIT
81	21	11329	11342
81	22	11356	11356
81	23	11357	11370
81	25	11384	11398
81	27	11412	11425
81	29	11439	11453
81	31	11467	11481
81	33	11496	11508
81	34	11509	11510
81	35	11522	11536
81	37	11550	11564
81	38	11577	11578
81	39	11579	11591
81	41	11605	11619
81	42	11632	11633
81	43	11634	11646
81	44	11660	11660
81	45	11661	11674
81	47	11688	11702
81	49	11716	11730
81	51	11744	11757
81	53	11771	11785
81	54	11798	11799
81	55	11800	11812
81	56	11813	11813
81	57	11826	11840
81	59	11854	11867
81	60	11881	11882
81	61	11883	11895
81	63	11909	11923
81	65	11937	11951
81	67	11965	11978
81	69	11993	12006
81	71	12020	12033
81	73	12047	12061
81	75	12075	12089
81	76	12102	12103
81	77	12104	12116
81	79	12131	12144
81	81	12158	12172
81	82	12185	12186
81	83	12187	12199
81	84	12200	12200
81	85	12213	12227
81	87	12241	12255
81	89	12269	12282
81	91	12296	12310
81	93	12324	12337
81	95	12352	12365
81	97	12379	12393

YEAR	DAY	START ORBIT	END ORBIT
81	99	12407	12420
81	101	12435	12448
81	103	12462	12476
81	105	12490	12503
81	107	12518	12531
81	109	12545	12559
81	111	12573	12586
81	113	12600	12614
81	115	12628	12641
81	117	12656	12669
81	119	12683	12697
81	121	12711	12724
81	123	12739	12752
81	125	12767	12780
81	126	12794	12794
81	127	12795	12808
81	129	12822	12835
81	131	12849	12863
81	132	12877	12877
81	133	12878	12890
81	135	12904	12918
81	137	12932	12946
81	138	12960	12960
81	139	12961	12973
81	141	12987	13001
81	143	13015	13029
81	145	13043	13056
81	147	13070	13084
81	149	13098	13112
81	151	13126	13139
81	153	13153	13167
81	155	13181	13194
81	157	13208	13222
81	159	13236	13250
81	160	13264	13264
81	161	13265	13277
81	162	13278	13278
81	163	13291	13305
81	165	13319	13333
81	167	13347	13360
81	169	13374	13388
81	171	13402	13416
81	172	13429	13429
81	173	13430	13443
81	175	13457	13471
81	177	13485	13499
81	179	13512	13526
81	181	13540	13554
81	183	13568	13581
81	185	13595	13609

YEAR	DAY	START ORBIT	END ORBIT
81	187	13623	13636
81	188	13637	13651
81	189	13652	13664
81	191	13678	13692
81	193	13706	13720
81	194	13733	13734
81	195	13735	13747
81	197	13761	13775
81	199	13789	13803
81	200	13816	13816
81	201	13817	13830
81	203	13845	13858
81	205	13872	13886
81	206	13899	13899
81	207	13900	13913
81	209	13927	13941
81	211	13955	13968
81	212	13969	13969
81	213	13982	13996
81	215	14010	14023
81	216	14038	14038
81	217	14039	14051
81	219	14065	14079
81	221	14093	14107
81	223	14122	14134
81	224	14135	14135
81	225	14148	14162
81	227	14176	14190
81	229	14204	14217
81	231	14231	14245
81	233	14260	14272
81	235	14287	14300
81	237	14314	14328
81	239	14342	14355
81	241	14369	14383
81	243	14397	14411
81	245	14425	14438
81	247	14452	14466
81	249	14480	14494
81	250	14507	14507
81	251	14508	14521
81	253	14536	14549
81	255	14563	14576
81	257	14591	14604
81	259	14618	14632
81	261	14646	14660
81	263	14673	14687
81	265	14701	14715
81	267	14729	14742
81	269	14756	14770

YEAR	DAY	START ORBIT	END ORBIT
81	271	14784	14798
81	272	14811	14812
81	273	14813	14825
81	275	14839	14853
81	277	14867	14881
81	278	14894	14894
81	279	14895	14908
81	281	14922	14936
81	283	14950	14963
81	285	14978	14991
81	287	15005	15019
81	289	15033	15046
81	290	15060	15060
81	291	15061	15074
81	293	15088	15102
81	295	15116	15129
81	297	15143	15157
81	299	15171	15185
81	301	15199	15212
81	303	15226	15240

4) Available Year-4 Data

YEAR	DAY	START ORBIT	END ORBIT
81	305	15255	15268
81	306	15281	15281
81	307	15282	15295
81	309	15309	15323
81	311	15337	15350
81	312	15364	15364
81	313	15365	15378
81	315	15392	15405
81	317	15420	15433
81	319	15448	15461
81	321	15475	15489
81	323	15503	15516
81	325	15530	15544
81	327	15558	15571
81	328	15585	15586
81	329	15587	15599
81	331	15613	15627
81	333	15642	15655
81	335	15670	15682
81	337	15696	15710
81	339	15724	15737
81	340	15751	15751
81	341	15752	15765
81	343	15779	15793
81	345	15807	15821
81	347	15834	15848
81	349	15862	15876
81	351	15890	15903
81	352	15904	15904
81	353	15917	15931
81	355	15945	15959
81	357	15973	15986
81	359	16001	16014
81	361	16028	16042
81	362	16055	16055
81	363	16056	16069
81	365	16083	16096
82	2	16111	16124
82	4	16139	16152
82	6	16166	16180
82	7	16193	16194
82	8	16195	16207
82	10	16221	16235
82	12	16249	16263
82	13	16277	16277
82	14	16278	16290
82	16	16304	16318
82	18	16332	16346
82	19	16359	16360
82	20	16361	16373

YEAR	DAY	START ORBIT	END ORBIT
82	22	16387	16401
82	24	16415	16429
82	26	16443	16456
82	28	16470	16483
82	30	16498	16511
82	32	16526	16539
82	34	16553	16567
82	35	16580	16581
82	36	16582	16594
82	38	16608	16622
82	40	16636	16650
82	42	16664	16677
82	43	16678	16678
82	44	16691	16705
82	46	16720	16733
82	48	16747	16760
82	50	16774	16788
82	52	16802	16816
82	53	16829	16829
82	54	16830	16843
82	56	16857	16871
82	58	16886	16898
82	60	16913	16926
82	62	16941	16954
82	64	16968	16981
82	66	16996	17009
82	68	17024	17037
82	69	17050	17051
82	70	17052	17064
82	72	17078	17092
82	74	17106	17119
82	76	17134	17147
82	78	17161	17175
82	80	17189	17202
82	82	17218	17230
82	84	17245	17258
82	86	17272	17285
82	88	17300	17313
82	90	17327	17341
82	92	17355	17369
82	94	17383	17396
82	96	17410	17424
82	98	17438	17451
82	100	17465	17479
82	102	17493	17507
82	103	17520	17521
82	104	17522	17534
82	106	17548	17562
82	108	17576	17590
82	109	17603	17604

YEAR	DAY	START ORBIT	END ORBIT
82	110	17605	17617
82	112	17631	17645
82	114	17659	17673
82	115	17686	17686
82	116	17687	17700
82	118	17715	17728
82	119	17729	17729
82	120	17742	17755
82	121	17769	17769
82	122	17770	17783
82	124	17797	17811
82	126	17825	17838
82	128	17852	17866
82	130	17880	17894
82	131	17908	17908
82	132	17909	17921
82	134	17935	17949
82	136	17963	17977
82	137	17990	17991
82	138	17992	18004
82	140	18018	18032
82	142	18046	18060
82	143	18073	18073
82	144	18074	18087
82	146	18101	18115
82	148	18129	18142
82	149	18156	18156
82	150	18157	18170
82	152	18184	18197
82	154	18212	18225
82	156	18239	18253
82	158	18267	18281
82	159	18294	18295
82	160	18296	18308
82	162	18322	18336
82	164	18350	18364
82	165	18377	18378
82	166	18379	18391
82	168	18406	18419
82	170	18433	18447
82	172	18461	18474
82	174	18488	18502
82	176	18516	18530
82	178	18544	18557
82	180	18571	18585
82	182	18599	18612
82	184	18626	18640
82	186	18654	18668
82	188	18682	18695
82	189	18696	18696

YEAR	DAY	START ORBIT	END ORBIT
82	190	18709	18723
82	192	18737	18751
82	193	18764	18765
82	194	18766	18778
82	198	18821	18834
82	199	18848	18848
82	200	18849	18861
82	202	18875	18889
82	204	18903	18916
82	206	18931	18944
82	208	18958	18972
82	210	18986	18999
82	214	19042	19055
82	218	19097	19109
82	222	19152	19165
82	224	19179	19193
82	226	19207	19221
82	230	19263	19276
82	232	19290	19303
82	233	19317	19317
82	234	19318	19331
82	236	19346	19359
82	238	19373	19387
82	240	19401	19414
82	242	19428	19442
82	244	19456	19469
82	246	19484	19497
82	248	19511	19525
82	249	19538	19539
82	250	19540	19552
82	252	19566	19580
82	254	19594	19608
82	256	19622	19635
82	258	19649	19663
82	260	19677	19691
82	261	19704	19704
82	262	19705	19718
82	264	19732	19746
82	266	19760	19774
82	267	19787	19787
82	268	19788	19801
82	270	19815	19829
82	272	19843	19857
82	273	19870	19870
82	274	19871	19884
82	276	19898	19912
82	278	19926	19939
82	280	19953	19967
82	282	19981	19995
82	284	20013	20022

YEAR	DAY	START ORBIT	END ORBIT
82	286	20036	20050
82	288	20064	20078
82	289	20091	20092
82	290	20093	20105
82	292	20119	20133
82	294	20147	20161
82	295	20174	20174
82	296	20175	20188
82	298	20202	20216
82	300	20230	20244
82	301	20257	20257
82	302	20258	20271
82	304	20285	20299

5) Available Year-5 Data

YEAR	DAY	START ORBIT	END ORBIT
82	306	20313	20326
82	308	20340	20354
82	310	20368	20382
82	312	20396	20409
82	314	20423	20437
82	316	20451	20465
82	317	20478	20479
82	318	20480	20492
82	320	20506	20520
82	322	20534	20548
82	324	20562	20575
82	326	20589	20603
82	328	20617	20631
82	329	20644	20644
82	330	20645	20658
82	332	20672	20686
82	334	20700	20714
82	335	20727	20727
82	336	20728	20741
82	338	20755	20769
82	340	20783	20796
82	341	20797	20797
82	342	20810	20824
82	344	20838	20852
82	345	20865	20866
82	346	20867	20879
82	348	20893	20907
82	350	20921	20935
82	351	20948	20949
82	352	20950	20962
82	354	20976	20990
82	356	21004	21018
82	357	21031	21031
82	358	21032	21044
82	360	21059	21073
82	362	21087	21101
82	363	21114	21114
82	364	21115	21128
83	1	21143	21156
83	3	21170	21184
83	5	21197	21211
83	6	21212	21212
83	7	21225	21239
83	9	21253	21266
83	11	21280	21294
83	13	21308	21322
83	15	21336	21349
83	17	21363	21377
83	19	21391	21405
83	20	21418	21419

YEAR	DAY	START ORBIT	END ORBIT
83	21	21420	21432
83	23	21446	21460
83	25	21474	21488
83	26	21489	21501
83	27	21502	21515
83	29	21529	21543
83	31	21557	21570
83	33	21585	21598
83	35	21612	21626
83	37	21640	21653
83	39	21667	21681
83	41	21695	21709
83	42	21722	21723
83	43	21724	21736
83	44	21747	21750
83	45	21751	21764
83	47	21778	21792
83	48	21805	21806
83	49	21807	21819
83	50	21830	21833
83	51	21834	21847
83	52	21857	21861
83	53	21862	21875
83	54	21888	21889
83	55	21890	21902
83	57	21916	21930
83	59	21944	21957
83	60	21971	21971
83	61	21972	21985
83	63	21999	22013
83	65	22027	22040
83	67	22054	22068
83	69	22082	22096
83	71	22110	22123
83	73	22137	22151
83	75	22165	22179
83	77	22193	22206
83	79	22220	22234
83	81	22248	22262
83	82	22275	22276
83	83	22277	22289
83	85	22303	22317
83	87	22331	22345
83	88	22358	22358
83	89	22359	22372
83	91	22387	22400
83	93	22414	22427
83	94	22441	22441
83	95	22442	22455
83	96	22456	22456

YEAR	DAY	START ORBIT	END ORBIT
83	97	22469	22483
83	98	22496	22497
83	99	22498	22510
83	101	22524	22538
83	102	22539	22539
83	103	22552	22566
83	105	22580	22593
83	107	22607	22621
83	108	22622	22622
83	109	22635	22649
83	110	22662	22663
83	111	22664	22676
83	113	22690	22704
83	115	22719	22731
83	116	22745	22746
83	117	22747	22759
83	119	22773	22787
83	121	22802	22814
83	122	22828	22828
83	123	22829	22842
83	125	22856	22870
83	127	22886	22897
83	128	22911	22911
83	129	22912	22925
83	131	22940	22953
83	133	22967	22981
83	134	22982	22982
83	135	22995	23008
83	137	23022	23036
83	138	23049	23050
83	139	23051	23063
83	140	23064	23065
83	141	23077	23091
83	143	23105	23119
83	144	23132	23133
83	145	23134	23146
83	147	23160	23174
83	148	23175	23175
83	149	23188	23202
83	151	23216	23229
83	153	23244	23257
83	154	23258	23258
83	155	23272	23284
83	157	23300	23312
83	158	23313	23313
83	159	23327	23340
83	160	23341	23341
83	161	23354	23367
83	163	23381	23395
83	165	23409	23423

YEAR	DAY	START ORBIT	END ORBIT
83	167	23438	23450
83	169	23465	23478
83	171	23492	23506
83	172	23507	23507
83	173	23522	23533
83	174	23534	23535
83	175	23548	23561
83	176	23562	23562
83	177	23576	23589
83	178	23590	23590
83	179	23605	23616
83	180	23617	23618
83	181	23631	23644
83	183	23658	23672
83	185	23686	23699
83	187	23714	23727
83	189	23742	23754
83	191	23769	23782
83	193	23797	23810
83	195	23824	23837
83	197	23852	23865
83	199	23880	23893
83	201	23907	23920
83	203	23935	23948
83	205	23963	23976
83	206	23990	23990
83	207	23991	24003
83	209	24018	24031
83	211	24045	24059
83	212	24072	24073
83	213	24074	24086
83	215	24101	24114
83	217	24128	24142
83	219	24156	24169
83	221	24183	24197
83	223	24211	24224
83	224	24238	24238
83	225	24239	24252
83	227	24266	24280
83	229	24294	24307
83	230	24321	24321
83	231	24322	24335
83	233	24349	24363
83	235	24377	24390
83	237	24405	24418
83	239	24432	24446
83	241	24460	24473
83	243	24487	24501
83	245	24515	24529
83	246	24542	24543

YEAR	DAY	START ORBIT	END ORBIT
83	247	24544	24556
83	249	24571	24584
83	251	24598	24611
83	252	24625	24625
83	253	24626	24639
83	255	24653	24667
83	257	24681	24694
83	258	24708	24708
83	259	24709	24722
83	261	24736	24750
83	263	24764	24778
83	265	24791	24805
83	267	24819	24833
83	269	24847	24860
83	271	24874	24888
83	273	24902	24916
83	274	24929	24930
83	275	24931	24943
83	277	24957	24971
83	279	24985	24999
83	281	25013	25026
83	283	25040	25054
83	285	25068	25082
83	287	25096	25109
83	288	25110	25110
83	289	25124	25137
83	291	25151	25165
83	292	25178	25178
83	293	25179	25192
83	295	25207	25220
83	297	25234	25247
83	298	25261	25261
83	299	25262	25275
83	301	25289	25303
83	303	25318	25330

6) Available Year-6 Data

YEAR	DAY	START ORBIT	END ORBIT
83	305	25344	25358
83	307	25373	25386
83	309	25400	25413
83	311	25427	25441
83	313	25455	25469
83	314	25482	25483
83	315	25484	25496
83	317	25510	25524
83	319	25539	25552
83	321	25567	25579
83	323	25594	25607
83	325	25622	25635
83	327	25649	25662
83	329	25676	25690
83	331	25705	25717
83	332	25731	25731
83	333	25732	25745
83	335	25759	25773
83	337	25787	25800
83	339	25814	25828
83	341	25842	25856
83	342	25869	25870
83	343	25871	25883
83	345	25898	25911
83	347	25925	25939
83	348	25952	25953
83	349	25954	25966
83	351	25980	25994
83	353	26008	26022
83	354	26035	26035
83	355	26036	26049
83	357	26063	26077
83	359	26091	26105
83	360	26118	26118
83	361	26119	26132
83	363	26146	26160
83	365	26174	26187
84	2	26201	26214
84	4	26229	26243
84	5	26256	26257
84	6	26258	26270
84	8	26285	26298
84	10	26312	26325
84	11	26339	26340
84	12	26341	26353
84	14	26367	26381
84	16	26396	26408
84	17	26422	26423
84	18	26424	26436
84	20	26450	26464

YEAR	DAY	START ORBIT	END ORBIT
84	22	26478	26492
84	23	26505	26505
84	24	26506	26519
84	26	26533	26547
84	28	26561	26575
84	30	26589	26602
84	32	26616	26630
84	34	26644	26657
84	36	26672	26685
84	38	26699	26712
84	40	26728	26740
84	41	26741	26741
84	42	26756	26768
84	44	26782	26796
84	45	26810	26810
84	46	26811	26823
84	48	26837	26851
84	49	26852	26852
84	50	26866	26879
84	51	26892	26893
84	52	26894	26906
84	54	26921	26934
84	56	26949	26962
84	57	26975	26975
84	58	26976	26989
84	60	27003	27017
84	62	27032	27045
84	64	27059	27072
84	66	27086	27099
84	68	27114	27128
84	70	27141	27154
84	72	27169	27183
84	73	27196	27197
84	74	27198	27210
84	76	27224	27238
84	78	27252	27266
84	79	27279	27280
84	80	27281	27293
84	82	27307	27321
84	84	27335	27348
84	85	27363	27363
84	86	27364	27376
84	87	27377	27377
84	88	27390	27404
84	90	27420	27432
84	92	27447	27459
84	93	27460	27460
84	94	27473	27487
84	95	27501	27501
84	96	27502	27514

YEAR	DAY	START ORBIT	END ORBIT
84	98	27529	27542
84	99	27543	27543
84	100	27557	27569
84	101	27584	27584
84	102	27585	27597
84	103	27610	27611
84	104	27612	27625
84	106	27640	27653
84	107	27666	27667
84	108	27668	27680
84	110	27695	27708
84	112	27724	27736
84	113	27750	27750
84	114	27751	27763
84	115	27764	27764
84	116	27778	27791
84	118	27806	27819
84	120	27834	27846
84	122	27861	27874
84	123	27888	27888
84	124	27889	27902
84	126	27916	27929
84	128	27944	27957
84	130	27972	27984
84	132	27999	28012
84	134	28027	28040
84	136	28055	28067
84	138	28082	28095
84	140	28110	28123
84	142	28138	28150
84	143	28151	28151
84	144	28165	28178
84	146	28193	28206
84	147	28220	28220
84	148	28221	28233
84	149	28234	28234
84	150	28248	28261
84	152	28276	28289
84	153	28303	28303
84	154	28304	28316
84	156	28332	28344
84	157	28345	28345
84	158	28359	28372
84	160	28386	28399
84	161	28400	28400
84	162	28414	28427
84	164	28442	28455
84	166	28469	28482
84	168	28497	28510
84	169	28524	28524

YEAR	DAY	START ORBIT	END ORBIT
84	170	28525	28537
84	172	28552	28565
84	174	28580	28592
84	176	28608	28620
84	177	28621	28621
84	178	28635	28648
84	180	28663	28676
84	181	28690	28690
84	182	28691	28703
84	183	28704	28704
84	184	28718	28731
84	186	28746	28758
84	187	28773	28773
84	188	28774	28786
84	190	28801	28814
84	192	28829	28842
84	194	28856	28869
84	196	28884	28897
84	198	28912	28924
84	200	28939	28952
84	202	28967	28980
84	204	28995	29007
84	206	29022	29035
84	208	29050	29063
84	209	29064	29064
84	210	29078	29090
84	212	29105	29118
84	214	29133	29146
84	216	29160	29173
84	217	29174	29175
84	218	29188	29201
84	220	29216	29229
84	221	29243	29243
84	222	29244	29256
84	224	29271	29284
84	238	29465	29477
84	240	29492	29505
84	242	29520	29533
84	244	29548	29560
84	246	29576	29588
84	247	29589	29590
84	248	29605	29616
84	249	29617	29630
84	250	29631	29643
84	252	29659	29671
84	254	29685	29699
84	256	29714	29726
84	258	29740	29754
84	260	29770	29781
84	262	29797	29809

YEAR	DAY	START ORBIT	END ORBIT
84	264	29823	29837
84	266	29852	29865
84	268	29879	29892
84	270	29907	29920
84	271	29934	29934
84	272	29935	29947
84	274	29962	29975
84	276	29990	30003
84	278	30018	30030
84	280	30045	30057
84	281	30058	30058
84	282	30073	30086
84	284	30101	30113
84	286	30129	30141
84	288	30156	30169
84	289	30182	30183
84	290	30184	30196
84	292	30210	30224
84	294	30240	30252
84	295	30266	30266
84	296	30267	30279
84	298	30293	30307
84	300	30322	30335
84	301	30336	30348
84	302	30349	30362
84	304	30376	30390

7) Available Year-7 Data

YEAR	DAY	START ORBIT	END ORBIT
84	306	30405	30417
84	307	30431	30431
84	308	30432	30445
84	310	30459	30473
84	312	30487	30500
84	314	30515	30528
84	316	30543	30556
84	317	30557	30557
84	318	30571	30583
84	319	30584	30585
84	320	30598	30611
84	321	30612	30612
84	322	30625	30639
84	323	30653	30653
84	324	30654	30666
84	326	30680	30694
84	328	30708	30722
84	329	30735	30736
84	330	30737	30749
84	332	30763	30777
84	334	30791	30805
84	335	30818	30818
84	336	30819	30819
84	338	30846	30860
84	339	30861	30861
84	340	30875	30888
84	341	30889	30889
84	342	30902	30915
84	343	30916	30916
84	344	30930	30943
84	345	30944	30944
84	346	30958	30971
84	347	30972	30972
84	348	30985	30998
84	349	30999	30999
84	350	31012	31026
84	351	31027	31027
84	352	31041	31054
84	354	31069	31081
84	355	31082	31082
84	356	31096	31109
84	357	31110	31110
84	358	31124	31136
84	359	31137	31137
84	360	31151	31164
84	361	31165	31165
84	362	31179	31192
84	363	31193	31206
84	364	31207	31219
84	365	31220	31220

YEAR	DAY	START ORBIT	END ORBIT
84	366	31234	31247
85	1	31248	31248
85	2	31262	31275
85	3	31276	31289
85	4	31290	31302
85	5	31303	31303
85	6	31317	31330
85	7	31331	31331
85	8	31345	31358
85	10	31372	31385
85	11	31386	31386
85	12	31400	31413
85	13	31414	31414
85	14	31428	31440
85	15	31454	31454
85	16	31455	31468
85	17	31469	31469
85	18	31483	31496
85	19	31497	31497
85	20	31510	31524
85	22	31538	31551
85	24	31566	31579
85	26	31593	31606
85	28	31621	31634
85	29	31635	31635
85	30	31648	31661
85	31	31675	31676
85	32	31677	31689
85	34	31704	31717
85	36	31731	31745
85	37	31758	31759
85	38	31760	31772
85	40	31786	31800
85	42	31814	31827
85	44	31842	31855
85	45	31856	31856
85	46	31869	31883
85	47	31884	31884
85	48	31897	31910
85	50	31925	31938
85	51	31939	31939
85	52	31952	31966
85	54	31980	31993
85	56	32007	32021
85	58	32035	32049
85	59	32050	32050
85	60	32063	32076
85	62	32091	32104
85	64	32118	32132
85	65	32133	32133

YEAR	DAY	START ORBIT	END ORBIT
85	66	32146	32159
85	68	32174	32187
85	69	32188	32188
85	70	32201	32215
85	71	32216	32229
85	72	32230	32242
85	73	32243	32243
85	74	32256	32270
85	75	32271	32271
85	76	32285	32297
85	78	32312	32325
85	79	32326	32327
85	80	32340	32353
85	81	32367	32367
85	82	32368	32380
85	84	32395	32408
85	86	32423	32436
85	88	32450	32463
85	90	32478	32491
85	92	32506	32519
85	93	32532	32533
85	94	32534	32546
85	96	32560	32574
85	98	32589	32602
85	99	32616	32616
85	100	32617	32629
85	102	32644	32657
85	104	32672	32685
85	105	32699	32699
85	106	32700	32712
85	108	32727	32737
85	110	32755	32768
85	111	32781	32781
85	112	32782	32795
85	114	32810	32823
85	116	32838	32850
85	118	32865	32878
85	119	32879	32879
85	120	32893	32905
85	122	32921	32931
85	124	32948	32961
85	125	32962	32962
85	126	32976	32989
85	127	33003	33003
85	128	33004	33016
85	129	33017	33017
85	130	33031	33044
85	132	33059	33072
85	134	33086	33099
85	136	33114	33127

YEAR	DAY	START ORBIT	END ORBIT
85	138	33142	33155
85	140	33169	33182
85	142	33197	33210
85	144	33225	33238
85	146	33253	33265
85	148	33280	33293
85	150	33308	33321
85	152	33336	33348
85	154	33363	33376
85	156	33391	33403
85	158	33418	33431
85	160	33446	33459
85	161	33473	33473
85	162	33474	33486
85	164	33501	33514
85	165	33515	33515
85	166	33529	33542
85	168	33557	33569
85	170	33584	33597
85	172	33612	33624
85	173	33639	33639
85	174	33640	33652
85	176	33668	33678
85	178	33695	33708
85	180	33722	33735
85	182	33750	33763
85	183	33764	33764
85	184	33778	33791
85	186	33806	33818
85	187	33819	33819
85	188	33833	33846
85	189	33847	33860
85	190	33861	33873
85	192	33888	33901
85	193	33902	33902
85	194	33916	33929
85	195	33930	33931
85	196	33944	33956
85	198	33971	33984
85	200	33999	34012
85	202	34028	34039
85	204	34054	34067
85	206	34082	34095
85	207	34096	34109
85	208	34110	34122
85	210	34137	34150
85	212	34165	34178
85	214	34193	34205
85	216	34220	34233
85	218	34248	34260

YEAR	DAY	START ORBIT	END ORBIT
85	220	34276	34288
85	221	34289	34289
85	222	34303	34316
85	224	34331	34344
85	226	34358	34371
85	228	34386	34399
85	229	34400	34400
85	230	34414	34426
85	232	34441	34454
85	234	34469	34482
85	236	34497	34509
85	238	34524	34537
85	240	34552	34565
85	241	34579	34579
85	242	34580	34592
85	244	34607	34620
85	246	34635	34647
85	248	34663	34675
85	250	34690	34703
85	252	34718	34731
85	254	34746	34758
85	256	34773	34786
85	257	34787	34787
85	258	34801	34814
85	260	34829	34841
85	262	34856	34869
85	264	34884	34896
85	266	34911	34924
85	268	34939	34952
85	270	34967	34979
85	272	34994	35007
85	274	35022	35035
85	276	35050	35062
85	278	35077	35090
85	280	35105	35118
85	281	35132	35132
85	282	35133	35145
85	284	35160	35173
85	286	35188	35200
85	288	35216	35228
85	290	35243	35256
85	291	35270	35270
85	292	35271	35283
85	294	35298	35311
85	296	35326	35339
85	298	35354	35367
85	300	35381	35392
85	302	35409	35422
85	304	35436	35449

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16. Abstract
The SMMR instrument onboard the Nimbus 7 satellite has been in operation since October 1978. It provided global coverage of passive microwave observations at 6.6, 10.7, 18, 21, and 37 GHz. The observed brightness temperature can be used to retrieve geophysical parameters, principally sea surface temperature, atmospheric water vapor and liquid water content over oceans, sea ice concentration, and snow cover over land. The SMMR CELL-ALL Tape contains earth-located calibrated brightness temperature data which have been appropriately binned into cells of various grid sizes, allowing intercomparisons of observations made at different frequencies (with correspondingly different footprint sizes). This user's guide describes the operation of the instrument, the flow of the data processing the calibration procedure, and the characteristics of the calibrated brightness temperatures and how they are binned. Detailed data tape specifications and lists of available data are also provided.

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