



ABSORPTION MEASUREMENTS WITH RIOMETER

Data Summary Nº 11 for the period
January 1967 through June 1967

CARLOS ALBERTO ALMEIDA D'OLIVEIRA

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F. DE MENDONÇA

Scientific Report LAFE-061

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The measurements reported herein were
performed in cooperation with the U.S.A.F.
under Grant AF-AFOSR 1019-66, monitored
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Conselho Nacional de Pesquisas
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São José dos Campos
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RIOMETER MEASUREMENTS

DATA SUMMARY Nº 11

I - INTRODUCTION

This summary is a catalogue of reduced riometer data, for the period of observations from January through June 1967.

Figure 1 shows a "quiet-day" curve for São José dos Campos station which was obtained from the available data since the riometer was set in operation at this site, on March 15, 1963.

For each month, the values of the observations are tabulated for the first minute of each hour to the nearest 0.1 db, and the total number of readings for the month as well as the median and quartiles values are indicated in the same table. See for instance Tables V through XVI. Note that Figs. 2 and 3 also show the monthly medians mentioned above.

Table I shows a listing of important flares which occurred under sunlit periods for the station, whereas Tables II and III contain all burst and SCNAs respectively under sunlight period as published by H.A.O. - Boulder (Colorado).

The absorption events measured at São José dos Campos are listed in Table IV carrying time interval, maximum value of absorption, maximum variation about cosmic noise level, and eventual flare to which they are correlated.

The figures 4 through 8 show five portions of riometer records registered at the São José dos Campos station during time intervals containing important solar flares and associated events.

II - DESCRIPTION OF THE EQUIPMENT

RIOMETER: The riometer (Relative Ionospheric Opacity Meter) is a device for measuring ionospheric absorption using the cosmic noise method.

A high gain and stable receiver is switched automatically between an antenna and a noise diode at a given switching frequency (340 Hz).

The antenna, which in our station is an east-west four elements Yagi, points vertically and receives the cosmic noise. If there is a difference between the antenna power and the noise diode power, a wave at the switching frequency appears at the detector of the receiver. The detector output is a DC voltage which has an amplitude that is proportional to the difference between the antenna and the diode signal. The voltage is used to adjust the current of a servo diode in order to reduce the above mentioned difference to zero. The diode noise is proportional to the antenna noise power. The diode current is recorded in a common pen recorder.

The riometer is calibrated daily by connecting a test noise diode in place of the antenna and passing different values of current for readings of the riometer.

The frequency used of 30 MHz is low enough to be sensitive to the nondeviative absorption effects to the lower ionosphere and yet it is sufficiently high so that a signal is detectable even under ionospheric disturbances.

III - MEASUREMENTS TECHNIQUE

In the noise method already mentioned, the absorption is measured by comparing the signal actually received with the signal that would be received in the same sidereal time under conditions of zero absorption. In order to measure the absorption it is necessary to establish the local "quiet-day" curve. This curve is obtained from the riometer recording in the hours before the sunrise, when absorption is low. The values of current observed are transferred to the corresponding sidereal time. The highest reliable readings are considered points of the "quiet-day", which is assumed as pointed before,

to represent values of zero absorption.

Using the "quiet-day" curve, one can obtain the absorption in db at any given time by the relation:

$$A \text{ (db)} = 10 \log_{10} (I_r/I_q)$$

I_r = noise power actually received at a given time

I_q = noise power from the "quiet-day" curve for the corresponding sidereal time.

IV - TYPE OF SCALING AND DATA REDUCTION

In reducing the riometer data, scaling TYPE I (URSI-AGI Committee 1958) has been used.

The absorption during the first minute of each hour of every day throughout a given period of absorption is recorded and then averaged. The results give a picture of the daily and seasonal variation of absorption.

The data reduction was performed in the following manner:

The "quiet-day" curve, assumed to represent zero absorption is plotted and hourly values of I_q are obtained. The actual values of current for each hour are translated to the correct sidereal time and the ratio I_q/I_r is calculated. For the given ratio, the absorption in db is obtained from regular tables.

The following qualifying symbols have been used for values obtained indirectly from the record:

C = failure of equipment

S = interference

U = value uncertain

I = value interpolated

V - ABSORPTION EFFECTS ASSOCIATED WITH SOLAR FLARES

The Sun's ionizing radiation during solar flares is normally enhanced and reaches the lower level of the ionosphere increasing the absorption through the D-region producing the attenuation of the cosmic noise reaching the antenna. Sometimes prior to the observation of attenuation and depending on the relative position of the Sun and antenna beam an enhancement of noise current is observed as a result of the Sun's HF radio emissions, during solar bursts of intensity greater than 1.

Several flares occurred during the local sunlight hours, and fifteen of them could be clearly related to the absorption effects observed in the riometer records showing a maximum variation ranging between 0.16 and 3.09 db.

Some of these solar flares will be described in the following paragraphs.

A large number of events of noise enhancements of the frequency used in the riometer is correlated to radio emissions from the sun on 30 MHz, during solar burst phenomena.

VI - FLARE OF 1 JANUARY 1967 (FIG.4)

As per H.A.O. of Boulder this 1b flare, observed on plage 31, began at 1041 UT and ended at 1056 UT. A SEA of importance 2, associated with the flare, lasted from 1037 to 1123 UT.

One can see the related SCNA at São José dos Campos which lasted from 1037 to near 1100, with a maximum phase at 1041 UT.

Absorption had a maximum value of 1.07 db and a maximum variation of 0.21 db.

VII - FLARE OF 22 FEBRUARY 1967 (FIG.5)

This flare, observed on plage 04, caused an increase in absorption which lasted from 1158 to 1213 UT.

This SCNA had a maximum value of 1.61 db and a maximum variation of 0.31 db.

The H.A.O. of Boulder did not mention any SCNA for this period.

VIII - FLARE OF 28 MARCH 1967

The H.A.O. of Boulder gives the following data and associated events about this flare:

importance 1n
begin 1731 UT
maximum 1740 UT
end 1806 UT
plage n° 40
SFD 1735-1742 UT, importance 1
SPA 1736- - UT, importance 1
SEA 1736-1820 UT, importance 2
SCNA 1737-1810 UT, importance 2
S 1740- - UT, importance 1+

The 30 MHz riometer at SJC registered a SCNA with maximum phase at 1740 UT, but the records were disturbed by strong interference.

IX - FLARES OF 1 APRIL 1967 (FIG.6)

Three flares occurred on 1 April which caused detectable SCNA's at SJC.

The first of them, a 2b flare, began at 1023 and ended at 1101 UT. Note, by the calibration, the delay for the period of the first SCNA.

The other two flares were almost simultaneous as one can see by the following data:

In/1414-1427 UT, plage n° 39

In/1414-1433 UT, plage n° 40

As associated events Boulder gives:

S 1412-1435 UT, importance 1

SCNA 1412-1440 UT, importance 1

SPA 1413-1423 UT

SES 1413-1424 UT

The second SCNA is shown in Fig. 6; note also a type III burst of intensity 3 before the beginning of the SCNA.

X - FLARE OF 19 May 1967 (Fig.7)

The H.A.O. of Boulder gives the following data for this flare and associated events:

importance 2b

begin 1520 UT

maximum 1534 UT

end 1555 UT

plage n° 18

SEA 1529-1549 UT

SPA 1529-1549 UT

SPA 1529- - UT

S 1529-1604 UT, importance 2

SCNA 1533-1537 UT, importance 1

Boulder reports also two bursts: an intensity 3-type II burst and an intensity 2+, type IV burst.

Fig.7 shows a SCNA at SJC with a maximum value of 1.52 db and a maximum variation of 0.55 db related with the absorption detected at Boulder.

The SCNA recording, as one can see, was interrupted by the strong burst at 1538 UT.

XI - FLARES OF 23 MAY 1967 (FIG.8)

Three important flares occurred on 23 May, all of them observed on plage 18.

Data from Boulder of these flares and associated events are reproduced below, all together:

2b/1803-1817-1834 UT
3b/1834-1844-1931 UT
2b/1932-1946-2156 UT
S 1800- - UT, importance 1
SCNA 1804- - UT, importance 1
SPA 1807-1945 UT, importance 3
S 1831-2004 UT, importance 3
SPA 1836-1933 UT, importance 2
SCNA 1838-2100 UT, importance 3
SFD 1844- - UT
SPA 1935-2011 UT, importance 1
SFD 1954- - UT, importance 2

The riometer at São José dos Campos detected three SCNA's, as can be seen in fig. 8.

Two of them are small ones, with maximum values of 1db approximately (but see table IV for correct values).

The third SCNA deserves some comments; this is done below.

Strongly related with the 3b flare of 1834 UT our records showed a SCNA beginning at 1839 UT and ending at 1930 UT, with maximum value at 1845 UT, one minute after the maximum phase of the corresponding flare.

The maximum value of absorption registered at 1845 UT, namely 4.09 db, was the highest value for the first six month of the year.

Four solar bursts of different types and intensity 3 were observed (see table II) within the period under consideration.

XII - CONCLUSION

Except for very strong interference by thunder storms, typical of the summer period in this latitude, this station is placed in a very quiet location.

The riometer records are quite free from man made interferences.

Due to the reasons mentioned before, the results on the absorption deduced from the "quiet-day" curve as it stands now, should be considered qualitative rather than quantitative information.

More results with consistent operation of the riometer are needed and provide data for detailed study of the seasonal variation of non-deviative absorption.

This station will continue its operation and will provide data on ionospheric absorption as during the cooperative program for the International Quiet Sun Year (1964 - 1965).

Data will be sent to the World Data Center, as established in the Guide to International Data Exchange, CIG - IQSY Committee. The recordings are reproduced in the AFCRL publication Geophysics and Space Data Bulletin.

References:

- 1) Little, C.G., and Leinbach, H. - "The Riometer" - A device for the Continuous Measurements of Ionospheric Proceedings of IRE, Feb. 1959, Vol. 47, pp. 315-320.
- 2) Little, C.G., and Leinbach, H. - "Some Measurements of High-latitude Ionospheric Absorption Using Extra-terrestrial Radio-Waves"- Proceedings of IRE, Jan. 1958, Vol. 46, pp. 334-348.
- 3) Mitra, A.P., and Shain, C.A. - "The Measurements of the Ionospheric Absorption Using Observations of 18.3 MHz Cosmic Radio Noise" - J. Atmos. & Terrestrial Physics, Vol. IV, pp. 203-218, 1953.
- 4) URSI - AGI Committee - letter in "Questionnaire and Ionospheric Absorption Measurements", - A2, Appendix A, Sept. 15, 1958.
- 5) Lusignan, B.B. - "Cosmic Noise Absorption Measurements at Stanford, California and Pullman (Washington)", J.G.R., Vol. 65 and 12, Dec. 1960, pp. 3896 - 3902.
- 6) "Riometer Measurements, Data Summary n° 1, January to December 1958" - Radioscience Laboratory, Stanford Electronics Laboratories - Stanford University, Nov. 1959.
- 7) Goldman, S.C. and Horowitz, S. - "Global Riometer Measurements".
- 8) High Altitude Observatory, Boulder, Colorado; Reports from TR# 801 through # 827.

APPENDIX

In order to reduce the time scale of the "quiet-day" curve to the true sidereal time (referred to the first point of Aries) one should add 17h36m to the hours indicated in the figure showing the "quiet-day" curve. That is, the maximum value of the curve corresponds approximately to the sidereal hour 17h36m of SHA = 96°.

The table below indicates the sidereal time corresponding to 00.00 GMT for the middle of each month starting on 1965.

GMT hour		Month	SIDEREAL TIME					
			1965		1966		1967	
h	m		h	m	h	m	h	m
00	00	Jan. 15	04	36	04	36	04	35
00	00	Feb. 15	06	38	06	38	06	37
00	00	Mar. 15	08	28	08	28	08	28
00	00	Apr. 15	10	30	10	31	10	29
00	00	May 15	12	27	12	29	12	28
00	00	Jun. 15	14	29	14	31	14	30
00	00	Jul. 15	16	27	16	29	16	29
00	00	Aug. 15	18	33	18	32	18	31
00	00	Sep. 15	20	35	20	34	20	33
00	00	Oct. 15	22	33	22	32	22	31
00	00	Nov. 15	00	35	00	34	00	34
00	00	Dec. 15	02	33	02	32	02	32

T A B L E I
 LISTING OF IMPORTANT FLARES WHICH OCCURRED UNDER SUNLIT
 PERIOD AT SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	FLARE IMPOR TANCE	TIME INTERVAL			OBSERVED BY	
		START	MAX PHASE	END		
January	2	2b	21.30	-	21.39	H.A.O. Boulder
	29	2n	16.12	16.20	17.39	" "
	30	2n	11.42	-	-	" "
February	4	2b	16.42	16.58	18.35	" "
	13	4b	17.46	18.16	22.42	" "
		2f	20.00	-	-	" "
	18	2n	10.07	-	-	" "
	20	2b	16.45	-	17.00	" "
		2b	17.30	-	17.55	" "
	21	3n	15.20	-	-	" "
		2n	18.03	-	18.38	" "
	22	2b	09.17	-	09.55	" "
		2b	13.50	-	14.30	" "
		2b	14.39	15.01	15.50	" "
		2n	16.23	16.30	16.55	" "
		2b	17.04	18.54	20.04	" "
		2n	19.41	-	20.00	" "
		2n	21.31	-	22.05	" "
	24	2b	19.00	19.07	19.43	" "
	27	2n	16.40	17.14	17.54	" "
		2n	20.53	21.31	23.10	" "
	28	2n	20.20	20.57	21.38	" "
March	3	2x	09.29	-	09.57	" "
	4	2b	14.25	-	15.40	" "
	6	2b	13.08	13.16	14.05	" "
	15	2f	11.46	-	12.24	" "
	23	-	18.20	18.30	19.20	Phase recorded VLF
	23	2n	19.23	-	-	H.A.O. Boulder
	26	3n	15.40	16.55	18.07	" "
	27	2n	16.00	16.14	16.52	" "
	29	2f	08.05	08.10	09.25	" "
		2b	17.53	-	18.20	" "
	30	2n	08.45	09.01	09.30	" "
		2n	11.48	12.03	12.19	" "
	31	2b	11.55	12.07	12.50	" "

T A B L E I (Cont.)

LISTING OF IMPORTANT FLARES WHICH OCCURRED UNDER SUNLIT PERIOD AT SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	FLARE IMPOR TANCE	TIME INTERVAL			OBSERVED BY	
		START	MAX PHASE	ENDE		
April	1	2b	10.23	-	11.01	H.A.O. Boulder
	2	2n	11.18	-	11.50	" "
	3	2n	14.40	-	15.15	" "
	11	2n	11.12	-	11.42	" "
	14	2n	17.05	17.14	17.37	" "
	30	2n	10.50	-	11.33	" "
May	3	2n	15.35	15.51	17.33	" "
	10	2n	11.47	-	12.35	" "
	19	2b	15.20	15.34	15.55	" "
		2b	15.28	-	16.03	" "
	21	2b	19.18	19.26	20.11	" "
	23	2b	18.03	18.17	18.34	" "
		3b	18.34	18.44	19.31	" "
		2b	19.32	19.46	21.56	" "
25	2b	10.37	10.51	12.01	" "	
June	2	2n	08.49	-	10.47	" "
		2n	17.10	-	-	" "
	5	2b	18.58	19.39	20.32	" "
	18	2f	10.46	10.53	11.15	" "

T A B L E II

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)	
January	2*	III	1410:30	1410:45	28 - 40	
	*	III	1514:30	1516	24 - 41	
		II	1519:30	1524	24 - 41	
		III	1532:15	1532:30	25 - 38	
		III	1534:30	1534:45	26 - 36	
		III	1547	1547:15	26 - 41	
		III	1622:30	1622:45	25 - 39	
		III	1643	1643:30	25 - 40	
		III	1651:15	1651:30	26 - 40	
		III	1706:45	1707:15	20 - 37	
		III	1856:30	1856:45	18 - 41	
		III	1856:45	1857:15	18 - 41	
		3	III	2119:30	2122:15	21 - 41
		4	Cont.	1555	1915	25 - 41
		*	Cont.	1915	2114	24 - 41
			III	1947:45	1948:15	- - -
			III	2107	2107:15	25 - 40
			Cont.	2114	2153	22 - 41
			Cont.	2153	2335	24 - 41
		5	III	1558:45	1559	28 - 38
			III	1612	1612:30	28 - 40
		*	Cont.	1615	1859	26 - 41
		*	III	1746:45	1747:15	24 - 41
		*	Cont.	1859	2157	24 - 40
		*	III	1914:30	1914:45	23 - 40
			III	1927:30	1928:15	22 - 41
			III	2052:15	2052:45	22 - 40
		6*	Cont.	1630	2205	23 - 41
		*	III	1719	1719:15	20 - 38
		*	III	1719:30	1719:45	24 - 41
		*	III	1937:30	1938	26 - 41
		*	III	1938:30	1939	26 - 41
	7*	III	1636:30	1637:15	22 - 41	
	*	III	1639	1639:15	24 - 41	
	*	III	1639:30	1639:45	28 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)
January	7*	III	1647	1647:30	24 - 41
	*	III	1727	1727:30	25 - 41
	*	III	1728:15	1728:30	24 - 41
	*	Cont.	1900	2245	27 - 41
		III	1942:30	1942:45	24 - 41
		III	2128:15	2128:30	28 - 41
		III	2142	2142:30	22 - 41
		III	2152:45	2153	22 - 41
	8	III	1545:30	1546	30 - 41
	*	III	1559:45	1600:15	25 - 40
		III	1643:15	1643:45	27 - 41
		III	1735:30	1736	23 - 40
		III	1802:45	1803	22 - 36
	*	Cont.	1909	2036	25 - 41
		III	1926:45	1927:15	25 - 41
		III	1939:45	1940:15	23 - 41
		III	2013:30	2014	28 - 40
		III	2014:45	2015:15	25 - 39
		III	2023:30	2023:45	27 - 41
	9*	III	1551:15	1553:15	27 - 41
		III	1834	1834:15	30 - 41
	10*	III	1713:45	1714	26 - 41
	*	III	1750:15	1750:45	29 - 40
		III	2043:45	2044:15	20 - 41
		III	2045	2045:30	24 - 38
		III	2046:15	2046:45	28 - 41
		III	2056:45	2057	22 - 39
	11*	III	1616:45	1617	30 - 41
		Cont.	1722	1737	24 - 41
		III	1722:15	1732:45	23 - 41
	*	III	1733:30	1733:45	25 - 41
	*	III	1734	1734:45	24 - 41
	III	1747:45	1748	25 - 41	
	III	1838:45	1839:15	25 - 41	
	III	2010:30	2011:30	18 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)		
1967							
January	11	III	2019:45	2020	28	- 38	
		Cont.	2033:15	2059:45	23	- 41	
		III	2033:15	2034	22	- 41	
		III	2044:15	2044:45	16	- 41	
		III	2045:45	2046:15	18	- 41	
		II	2059	2109:30	22	- 41	
		IV	2119	2205	28	- 41	
		III	2138:45	2139	28	- 41	
		III	2140:45	2141:15	25	- 41	
		12	III	1949:30	1949:45	24	- 41
			III	1950:30	1950:45	22	- 41
	III		1951:30	1951:45	22	- 41	
	III		1956:45	1957	30	- 38	
	III		2028:30	2028:45	22	- 36	
	III		2148:45	2149	25	- 41	
	13		Cont.	1810	2108	25	- 41
			III	1953	1953:15	28	- 41
		III	1953:45	1954	24	- 36	
	14	III	1635:30	1635:45	28	- 41	
		III	1647:45	1648	26	- 41	
		III	1737	1737:15	24	- 40	
		III	1813	1813:30	30	- 40	
		III	1814:15	1814:30	29	- 40	
		III	1906:15	1906:30	24	- 40	
		III	1921:15	1921:30	24	- 38	
		III	1923	1923:15	24	- 38	
		Cont.	2020	2043	28	- 41	
		III	2025:30	2025:45	22	- 36	
		III	2032:30	2032:45	22	- 41	
	15*	III	2034:15	2034:30	25	- 41	
		III	2155:45	2156	27	- 38	
		Cont.	1516	1803	24	- 41	
		III	1553:45	1554	22	- 41	
III		1613:15	1613:45	19	- 41		
III		1618:30	1619	19	- 41		
III		1622:45	1623:15	19	- 41		

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)
January 15	III	1628:45	1629	22 - 41
	III	1651:30	1651:45	20 - 41
	III	1717:15	1717:30	22 - 41
	III	1718:30	1718:45	22 - 41
	* III	1719:15	1721	22 - 41
	* III	1727:30	1727:45	22 - 41
	* III	1748:45	1749:15	22 - 41
	* III	1750:30	1750:45	22 - 41
	* III	1751	1751:45	18 - 41
	* III	1820:15	1820:30	20 - 41
	III	1843:15	1843:30	19 - 38
	III	1847	1847:15	24 - 35
	* Cont.	1902	2345	22 - 41
	III	1904:30	1905	21 - 37
	III	1905:30	1906	21 - 37
	III	1931	1931:15	18 - 41
	III	1931:15	1931:45	18 - 41
	III	1931:45	1932	18 - 41
	III	1932	1932:30	18 - 41
	III	1933:30	1934	16 - 41
	III	1940:30	1941	16 - 41
	III	1941	1941:30	16 - 41
	III	1945:15	1945:30	16 - 41
	III	1945:30	1946	16 - 41
	III	1946	1946:30	16 - 41
	III	1946:30	1947:15	16 - 41
	* III	1957	1957:30	16 - 41
	* III	1957:30	1957:45	16 - 41
	* III	1957:45	1958	16 - 41
	* III	1958	1958:30	16 - 41
	* III	1958:30	1959	16 - 41
* III	1959	1959:15	16 - 41	
* III	1959:15	1959:30	16 - 41	
III	2000:30	2000:45	16 - 41	
* III	2002	2002:14	16 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRASIL)

DATE 1967		TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)	
January	15*	III	2002:15	2002:30	16 - 41	
	*	III	2003:30	2003:45	16 - 41	
	*	III	2004:30	2004:45	16 - 41	
	*	III	2007	2007:45	16 - 41	
	*	III	2009	2011	16 - 41	
			III	2018	2018:45	16 - 41
			III	2019:15	2019:45	16 - 41
			III	2019:45	2020:15	16 - 41
			III	2021:45	2022	16 - 41
			III	2023:45	2024:15	16 - 41
			III	2025	2025:15	16 - 41
			III	2031:45	2032	16 - 41
			III	2046:15	2048:45	15 - 41
			III	2056	2056:15	16 - 41
			III	2106:30	2106:45	20 - 38
			III	2115:45	2116:15	20 - 41
			III	2121	2121:30	22 - 41
			III	2147	2147:45	24 - 41
	16*		III	1457:15	1458	24 - 41
	*		III	1458:15	1459	22 - 41
			III	1711:30	1711:45	19 - 38
			III	1721:30	1721:45	24 - 41
			III	1805:30	1805:45	25 - 41
			III	1827:30	1828	22 - 38
			III	1834	1834:30	25 - 40
			III	1837:15	1837:45	22 - 40
			Cont.	1847	2025	28 - 41
			III	1852:15	1852:30	24 - 41
			III	1916:45	1917	24 - 41
	*		III	1939:30	1939:45	23 - 41
	*		III	1940	1940:45	23 - 41
			III	1940:45	1941	23 - 41
			III	1942:30	1942:45	21 - 41
			III	1942:45	1943:15	21 - 41
			III	1943:45	1944	22 - 41
			III	1952	1952:15	23 - 33

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)	
January 16	III	1952:30	1952:45	23 - 37	
	III	2008:30	2009	24 - 41	
	III	2023	2023:15	22 - 40	
	III	2053:30	2053:45	28 - 38	
	III	2102:30	2102:45	22 - 41	
	III	2111:15	2111:30	26 - 38	
	III	2119:30	2119:45	25 - 37	
	17*	Cont.	1501	2325	24 - 41
	*	III	1546:30	1547	28 - 41
	*	III	1650	1650:45	28 - 40
	*	III	1656:45	1657:15	24 - 41
		III	1657:45	1658:15	24 - 41
	*	III	1658:45	1659:30	24 - 41
		III	1706:15	1706:30	22 - 41
		III	1706:45	1707	22 - 41
		III	1707:15	1707:30	22 - 41
		III	1747	1747:30	22 - 41
		III	1751	1751:30	22 - 41
		III	1751:30	1752	22 - 41
	*	III	1756:15	1756:45	20 - 41
	*	III	1802	1803:45	20 - 41
	*	III	1829:45	1830	20 - 40
		III	1836	1836:15	20 - 40
	*	III	1848:15	1848:45	21 - 39
		III	1849:15	1849:30	25 - 41
		III	1851:15	1851:30	21 - 38
		III	1854:15	1854:45	22 - 41
	III	1902	1902:30	21 - 41	
*	III	1904	1904:30	21 - 41	
	III	1947:30	1947:45	22 - 41	
	III	1952:30	1953	22 - 38	
	III	1953	1953:15	22 - 38	
	III	2004:30	2004:45	21 - 41	
	III	2005:30	2006	22 - 39	
	III	2013:30	2014	21 - 37	
	III	2014:45	2015	20 - 36	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
1967						
January	17	III	2015:45	2016:15	23	- 41
		III	2016:15	2016:30	16	- 41
		III	2018:45	2019	25	- 41
		III	2020:45	2021:15	22	- 41
		III	2022:45	2023	24	- 39
		III	2030:30	2031	16	- 41
		III	2048:15	2048:30	22	- 37
		III	2055:45	2056	18	- 36
		III	2146	2146:30	24	- 40
	18*	III	1631:45	1632	22	- 41
		III	1857:45	1858	23	- 39
	19*	III	1524:30	1524:45	30	- 40
	*	III	1551:45	1552:15	22	- 41
		III	1821:45	1822:15	27	- 39
		III	1948:45	1949	28	- 34
	20	Cont.	1509:30	1538:15	25	- 41
	*	III	1510:15	1510:30	25	- 41
	*	III	1510:30	1510:45	25	- 41
	*	III	1512:30	1512:45	21	- 41
	*	III	1512:45	1513	21	- 41
	*	III	1514:30	1514:45	21	- 41
	*	III	1517:30	1517:45	19	- 41
		III	1529:15	1529:30	22	- 41
		Cont.	1538:15	1548:30	30	- 41
		III	1538:15	1538:30	23	- 41
		III	1538:45	1539	23	- 41
		III	1539	1539:15	23	- 41
		III	1540:45	1541	23	- 41
		III	1546:45	1547:30	22	- 41
		III	1600:45	1601:15	23	- 41
		III	1645:30	1645:45	21	- 41
		III	1645:45	1646	21	- 40
		III	1646	1646:30	21	- 40
	*	Cont.	1755	1804	22	- 41
		III	1833:15	1833:30	24	- 39
		III	1906	1906:30	22	- 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
January 20	III	1911:30	1911:45	22 - 41	
	III	1922:30	1922:45	29 - 40	
	III	2016:15	2016:30	24 - 41	
	III	2020:30	2021:45	24 - 36	
	III	2024	2024:15	20 - 40	
	III	2031:15	2032:15	22 - 41	
	III	2032:15	2032:45	22 - 41	
	III	2033:45	2034:15	22 - 41	
	*	III	2034:15	2034:30	22 - 41
	*	III	2034:30	2035	22 - 41
		Cont.	2038:30	2056	26 - 41
		III	2041:45	2042	24 - 41
		III	2044:15	2044:30	24 - 41
		Cont.	2056	2106	28 - 41
		III	2057	2057:30	22 - 41
		III	2058:15	2058:30	24 - 41
		III	2059	2059:15	24 - 41
		III	2059:30	2059:45	24 - 41
	*	Cont.	2122	2215	28 - 41
		III	2134:30	2134:45	23 - 39
	21	III	2149:15	2151:15	21 - 41
		III	2149:30	2151	28 - 39
		II	2151:15	2157:30	28 - 41
		IV	2157:30	2221	28 - 41
	22*	III	1522:15	1522:30	22 - 41
	*	III	1522:45	1523:15	25 - 41
		III	1910:15	1910:30	28 - 38
		III	1916:30	1916:45	28 - 39
	*	Cont.	1921	1931	25 - 41
	*	Cont.	1950	2107	28 - 41
		III	1954:15	1954:45	28 - 41
		III	2011:15	2011:30	24 - 41
	23*	III	1602:45	1603	22 - 41
*	Cont.	1635	1708	27 - 41	
	III	1639:15	1639:30	24 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
January 23	III	1642:15	1642:30	23 - 41	
	III	1647:30	1647:45	18 - 41	
	Cont.	1714:45	1725	21 - 41	
	III	1758:15	1758:30	25 - 41	
	Cont.	1815	2102	28 - 41	
	III	1824:30	1824:45	22 - 41	
	III	1834:45	1835	20 - 38	
	*	III	1839:30	1839:45	18 - 41
	*	III	1839:45	1840:15	22 - 41
	III	1902:15	1902:45	18 - 37	
	*	III	2018:45	2019:30	21 - 39
	*	III	2027:45	2028:15	20 - 41
	III	2028:15	2028:30	20 - 41	
	III	2028:30	2029:45	17 - 41	
	III	2029:45	2031	23 - 41	
	III	2042	2042:15	26 - 41	
	*	III	2042:30	2042:45	22 - 41
	III	2042:45	2043:15	22 - 41	
	III	2043:15	2043:30	22 - 41	
	III	2043:45	2044	22 - 41	
	*	Cont.	2102	2200	28 - 41
	*	III	2156	2156:30	28 - 41
	24*	Cont.	1505	2019:45	25 - 41
	III	1535:30	1536	24 - 41	
	III	1538	1538:15	25 - 41	
	III	1540:45	1541:15	21 - 41	
	III	1614:15	1614:30	20 - 41	
	III	1644:15	1644:30	24 - 41	
	III	1651	1651:15	19 - 36	
	*	III	1653:30	1654:30	22 - 41
	III	1742:45	1743:15	24 - 41	
	III	1743:30	1744	24 - 41	
	III	1744:15	1745	22 - 41	
III	1745:15	1745:45	22 - 41		
III	1846:45	1847	20 - 41		
III	1849	1849:30	24 - 41		

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
1967						
January	24	III	2019:45	2024:45	16	- 41
		III	2025:15	2025:30	25	- 41
		IV	2025:30	2047	28	- 41
	*	Cont.	2047	2357	27	- 41
		III	2130:45	2131:15	27	- 41
		III	2131:30	2132	24	- 41
		III	2144:30	2144:45	24	- 41
		III	2146	2146:15	24	- 41
	25*	Cont.	1520	2000	28	- 41
		III	1553:45	1554:15	22	- 41
		III	1604:45	1605	26	- 41
		III	1643:15	1643:45	20	- 41
		III	1748	1748:30	22	- 35
		III	1857:15	1857:30	22	- 35
		III	1902	1902:45	18	- 41
	*	III	1902:45	1903:15	18	- 41
	*	III	1903:30	1903:45	18	- 41
		III	1904:30	1904:45	20	- 41
	*	III	1933	1933:15	22	- 37
		III	1952:15	1952:30	18	- 40
		III	2011:45	2012	24	- 41
		III	2116:45	2117	26	- 38
	26	Cont.	1615	2110	27	- 41
		III	1631:15	1631:30	22	- 41
		III	1638:30	1638:45	22	- 41
		III	1645:15	1645:45	23	- 41
		III	1732:45	1733:15	20	- 41
	*	III	1805:30	1805:45	21	- 41
	*	III	1826:45	1827	22	- 39
	*	III	1827:45	1828	22	- 39
	*	III	1829:45	1830	22	- 40
		III	2049	2049:15	24	- 40
	27	Cont.	1835	2340	22	- 41
	III	1935:45	1936	20	- 39	
	III	1938:15	1938:30	18	- 36	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)
January 27	III	1954:15 1954:30	19 - 40
	III	2034:45 2035	18 - 40
	III	2045:15 2045:30	25 - 40
28*	Cont.	1415 1840	25 - 41
	III	1616:45 1617:15	20 - 41
	*	III 1701:45 1702	23 - 40
		III 1746:45 1747	22 - 41
		III 1748:15 1748:30	21 - 41
	*	III 1756:15 1756:30	21 - 41
	*	III 1758:15 1758:30	22 - 38
		III 1813:45 1814	22 - 41
	*	Cont. 1840 2200	19 - 41
		III 2119:45 2120	22 - 41
		III 2121 2121:30	22 - 41
	29*	Cont. 1415 1718	28 - 41
	*	III 1526:15 1526:30	29 - 41
	*	III 1526:45 1529:45	21 - 41
	*	III 1531:15 1531:30	22 - 41
*	III 1531:30 1531:45	22 - 41	
*	III 1551 1551:15	29 - 41	
*	III 1551:30 1551:45	29 - 41	
	III 1557:15 1557:30	26 - 41	
	III 1616:30 1616:45	22 - 41	
	III 1619:30 1619:45	23 - 41	
	III 1621:30 1621:45	22 - 38	
	III 1644:15 1644:30	24 - 41	
	III 1650 1650:15	25 - 41	
	III 1652:30 1653	25 - 35	
	III 1653:15 1653:30	24 - 38	
*	III 1653:30 1653:45	24 - 38	
	III 1654 1654:15	24 - 38	
*	Cont. 1718 2000	20 - 41	
	III 1723:15 1723:30	18 - 38	
	III 1724:45 1725	23 - 41	
	III 1730:45 1731	22 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
January 29	III	1738:30	1738:45	22 - 38
	III	1745:45	1746:15	20 - 41
	* III	1753:30	1754	22 - 41
	III	1755:15	1755:30	20 - 41
	III	1838	1838:30	22 - 41
	III	1852:30	1852:45	22 - 41
	III	1853:15	1853:30	22 - 41
	III	1853:45	1854	22 - 41
	* III	1903:15	1903:30	22 - 35
	* III	1903:45	1904:15	16 - 35
	* III	1905:45	1906:15	22 - 41
	III	1949	1949:45	17 - 41
	* Cont.	2000	2201:30	28 - 41
	III	2054:30	2054:45	26 - 40
	III	2056:15	2056:30	25 - 30
	III	2142:15	2142:30	16 - 41
	III	2146:45	2147	24 - 41
	30* Cont.	1405	2310	25 - 41
	* III	1600:45	1601:15	28 - 38
	III	1601:15	1601:45	24 - 41
	III	1604:30	1604:45	22 - 41
	III	1625:30	1626	15 - 41
	* III	1626	1627:15	17 - 41
	III	1638:45	1639	22 - 41
	III	1642	1642:15	24 - 41
	III	1752	1752:30	22 - 39
	III	1928:15	1928:45	22 - 40
	III	1936:15	1936:30	20 - 41
	III	1939	1942	20 - 41
	III	2006:15	2006:30	25 - 39
	* III	2032	2032:15	18 - 41
	III	2032:15	2033:15	16 - 41
	III	2056:30	2057	26 - 41
	III	2057	2057:45	24 - 41
	III	2057:45	2059:30	28 - 41
	III	2100	2100:15	28 - 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)	
January 30	III	2100:15 2100:30	28 - 41	
	III	2107 2107:15	18 - 41	
	III	2107:15 2108:30	16 - 41	
	III	2121 2121:15	25 - 41	
	III	2131:30 2131:45	22 - 41	
	31*	Cont.	1415 2136	26 - 41
	*	III	1453 1453:15	26 - 41
	*	III	1453:30 1454:15	26 - 41
		III	1455:30 1456:30	28 - 41
	*	III	1553:45 1554	22 - 41
		III	1556:30 1556:45	24 - 41
		III	1652 1652:30	22 - 41
		III	1810:30 1810:45	22 - 41
		III	1811:15 1811:30	22 - 41
		III	1839:30 1839:45	22 - 41
		III	1842:15 1842:30	25 - 41
		III	1844 1844:15	21 - 41
		III	1847 1847:15	21 - 41
		III	1917 1917:15	27 - 36
		III	1918:15 1918:45	28 - 38
		III	1919:15 1919:30	24 - 36
		III	1919:45 1920	20 - 35
		III	1923:45 1924	24 - 38
		III	1924:30 1924:45	24 - 38
		III	1925:15 1925:30	22 - 37
		III	1932 1932:15	25 - 40
		III	1940:30 1940:45	21 - 41
		III	1945:30 1945:45	22 - 40
		III	1953 1953:15	22 - 41
		III	1954:15 1954:30	22 - 41
		III	1955:30 1955:45	22 - 41
		III	1956:30 1956:45	22 - 41
		III	2008:15 2008:30	25 - 40
	III	2009 2009:15	22 - 41	
	III	2010:30 2010:45	21 - 40	
	III	2011:15 2011:30	21 - 40	
*	III	2053 2053:15	26 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
January	31*	III	2053:30	2053-45	26 - 41	
	*	III	2057	2057:15	24 - 41	
		III	2100:45	2111:15	28 - 41	
February	1*	Cont.	1420	1900	28 - 41	
		III	1503:30	1503:45	28 - 38	
		III	1543:30	1543:45	29 - 40	
		III	1544:15	1544:30	27 - 36	
		III	1715	1715:15	28 - 40	
		III	1741	1741:15	25 - 38	
		III	1742	1742:15	25 - 34	
		III	2117:15	2117:30	21 - 41	
		III	2138:45	2139:15	25 - 41	
		III	2142:15	2142:30	25 - 41	
		III	2142:30	2142:45	24 - 41	
		III	2142:45	1243	17 - 41	
		III	2143:15	2143:30	29 - 41	
		III	2145:45	2146:15	21 - 41	
		4	III	1538:15	1538:30	28 - 38
			III	1648:15	1648:45	21 - 41
			III	1648:45	1656:15	22 - 41
		*	III	1656:15	1700:30	18 - 41
		*	III	1700:30	1704:15	21 - 41
		*	III	1704:15	1705	25 - 41
			Cont.	1705	1712:15	24 - 41
		*	III	1705:45	1706:45	26 - 41
			III	1712:30	1713	22 - 41
		*	II	1712:30	1731	20 - 41
		*	IV	1717:30	1846:30	22 - 41
			Cont.	1846:30	1900:30	22 - 41
		*	IV	1900:30	1943:15	24 - 41
	*	Cont.	1943:15	2151	26 - 41	
		Cont.	2151	2325	24 - 41	
	5	Cont.	1335	1700	24 - 41	
	*	Cont.	1700	2235	24 - 41	
		III	1910	1910:15	22 - 41	
		III	1910:15	1910:45	22 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
1967					
February	5	III	1910:45	1911:15	22 - 41
		III	1911:15	1912:15	22 - 41
	6	Cont.	1421:30	1845	25 - 41
		III	1644	1644:30	24 - 41
		III	1810:15	1810:30	24 - 41
		Cont.	1845	1920	22 - 41
		Cont.	1920	1945	28 - 41
		III	1935:45	1936:15	22 - 41
		Cont.	2034:45	2330	28 - 41
		III	2045:30	2045:45	22 - 41
		III	2045:45	2046:15	22 - 41
		III	2046:15	2046:30	22 - 41
		III	2046:30	2046:45	24 - 41
		III	2046:45	2047	24 - 41
	7	Cont.	1500	1817	24 - 41
		III	1711:15	1711:30	25 - 41
		Cont.	1817	1900	24 - 41
		III	1827:45	1828:15	23 - 41
		III	1839:15	1839:45	22 - 41
		Cont.	1900	2304	24 - 41
		III	1944:45	1945	23 - 41
		III	1945:15	1945:30	23 - 41
	8*	Cont.	1436:30	2355	24 - 40
		III	1903	1903:15	24 - 41
		III	1903:15	1903:30	24 - 41
		III	1919:30	1920	26 - 38
		III	1920:45	1922:30	24 - 40
		III	1953:30	1953:45	25 - 37
		III	2054:30	2055	23 - 40
	10	III	1608:15	1608:30	27 - 41
		III	1723:45	1724	26 - 41
	11*	III	1622:30	1622:45	26 - 40
		III	1834:45	1835	25 - 40
	12	III	1417	1417:45	25 - 40
		III	1443:45	1446:30	24 - 41
		III	1714	1714:15	27 - 40

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)
February 12	III	2002:30	2003:15	21 - 39
	III	2146:15	2149:45	24 - 41
13*	III	1620:45	1623	22 - 41
	III	1721:15	1721:30	25 - 37
	Cont.	1801:30	1818:30	16 - 41
	III	1818:30	1829	14 - 41
	IV	1829	2005	24 - 41
	III	1831	1831:15	27 - 41
	III	1833:15	1833:45	26 - 41
	* Cont.	2005	0000	24 - 41
14*	III	1620:15	1620:30	28 - 41
15	III	2010:15	2010:30	28 - 37
16*	III	1405:15	1406:30	13 - 41
	III	1501:45	1503:30	19 - 37
	III	1536:15	1536:30	22 - 39
	III	1603:30	1603:45	22 - 39
	* III	1711:15	1711:30	16 - 37
19*	III	1543:30	1543:45	24 - 41
	* III	1619	1619:15	24 - 41
	* Cont.	1714:15	1724	23 - 41
	III	1740:45	1741:45	29 - 41
	III	1834:30	1834:45	20 - 38
	III	1839:45	1840	28 - 40
	III	1849:45	1850:45	30 - 41
	* Cont.	1901:30	1950	24 - 41
	III	2051:45	2052	25 - 38
	III	2052:45	2053	25 - 40
	III	2121:30	2123:30	22 - 41
	III	2132:45	2134	26 - 40
	III	2138:30	2138:45	30 - 40
20	III	1528:30	1528:45	29 - 39
	III	1541:45	1542:15	30 - 40
21*	III	1334:45	1335	25 - 35
	Cont.	1357:45	1408:15	26 - 41
	III	1426	1428:30	26 - 41
	III	1438:45	1439	28 - 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)
February 21*	III	1442:30 1445:30	28 - 40
*	III	1514:15 1516:15	24 - 41
*	III	1517:45 1521:45	23 - 41
	III	1534:45 1535	22 - 41
	III	1538:45 1539	26 - 41
*	III	1604:30 1610:30	23 - 41
	Cont.	1620 1640	24 - 41
*	III	1655 1655:30	24 - 41
*	Cont.	1721:45 2200	24 - 41
*	III	1818:15 1819:45	16 - 41
*	III	1828:45 1833:15	16 - 41
*	III	1844:45 1847:15	16 - 41
	III	1855:40 1857:30	22 - 41
	III	1915 1915:30	24 - 41
	III	1923:45 1925:15	25 - 41
	III	1927:15 1928:30	24 - 41
	III	1935:30 1936	24 - 41
	III	1940:30 1940:45	29 - 41
	III	1947:15 1949:45	16 - 41
	III	1951:30 1954	18 - 41
	III	1955:30 1955:45	25 - 41
*	III	2002:15 2005	16 - 41
	III	2012:15 2012:30	24 - 40
	III	2014:30 2015:30	23 - 41
	III	2017 2021:30	22 - 41
	III	2027:45 2030:45	22 - 41
	III	2039:45 2042:30	24 - 41
	III	2043:45 2045:45	16 - 41
	III	2048:45 2049:15	24 - 41
	III	2051:30 2057:15	16 - 41
	III	2118:15 2118:45	24 - 39
	III	2120:15 2120:30	24 - 39
	III	2129:30 2129:45	22 - 40
	III	2131:45 2133:45	22 - 41
	III	2135:30 2136	29 - 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
February 22	Cont.	1420:15	1431	26 - 40	
	III *	1439:15	1439:30	28 - 41	
*	Cont.	1505:45	1705	20 - 41	
	Cont.	1705	1847:30	24 - 41	
	III	1825:15	1826:30	16 - 41	
	Cont.	1847:30	2200	24 - 41	
	III	1927	1934	15 - 41	
	III	1939:15	1941:30	30 - 41	
	III	1943:15	1946:30	30 - 41	
	III	2013:15	2014	17 - 41	
	III	2018:15	2020:15	22 - 41	
	III	2048:30	2053	22 - 41	
	23*	Cont.	1525:30	0100	24 - 41
	III	1525:30	1526:15	25 - 41	
	III *	1554	1554:15	22 - 41	
	III *	1613:30	1616:45	19 - 41	
III *	1733:15	1733:45	24 - 41		
24*	Cont.	1305:30	1431:18	26 - 41	
III *	1350.5	1315.1	25 - 41		
III *	1422.3	1423.8	26 - 41		
III *	1429.7	1431.3	23 - 41		
Cont. *	1431.3	1508.5	26 - 41		
Cont. *	1508.5	1912.5	25 - 41		
III	1749.3	1749.8	25 - 41		
III	1808.8	1809	26 - 40		
III	1813.5	1814.3	24 - 41		
III	1820.7	1822	22 - 41		
III	1909.3	1913.8	22 - 41		
Cont. *	1912.5	0015	22 - 41		
III	1918.9	1923.3	25 - 41		
III	1934.5	1935	26 - 41		
25	Cont.	1340	1500	25 - 41	
	III	1449.3	1450.1	23 - 41	
	Cont.	1500	1844.4	25 - 41	
	III	1553.8	1554.1	24 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)
February 25	III	1555.7 1556.2	26 - 41
	III	1724.2 1724.8	22 - 41
	III	1844.4 1846.4	15 - 41
	IV	1846.4 2020	24 - 41
	III	1855.5 1855.7	24 - 41
26	Cont.	2020 0059	25 - 41
	Cont.	1351.3 2038.2	26 - 41
	Cont.	2038.2 2054.5	28 - 41
	III	2038.2 2038.7	25 - 41
	III	2052.1 2052.8	22 - 41
	III	2054.2 2054.5	20 - 41
	Cont.	2054.5 2400	28 - 41
	27	III	1326.5 1327.1
III		1339.8 1340.6	27 - 41
Cont.		1350 1640.6	25 - 40
III		1410.7 1411.5	28 - 40
III		1448.3 1448.7	27 - 41
III		1518.6 1519.3	29 - 40
III		1629.4 1629.8	24 - 41
III		1640.6 1642	17 - 41
IV		1642 1723	17 - 41
II		1646.5 1658.7	15 - 41
Cont.		1723 1827.2	25 - 41
III		1801.8 1805.6	17 - 41
III		1823.4 1827.1	22 - 41
Cont.		1827.2 2000	26 - 41
III		1842.5 1843	24 - 40
III		1917 1923	24 - 41
Cont.		2000 2359.3	26 - 41
28		III	2026.1 2027.1
	III	1509.4 1509.9	25 - 41
	Cont.	1523.2 1625	28 - 41
	III	1602.5 1607.9	20 - 41
	III	1612 1613.2	24 - 41
	Cont.	1625 1720.7	24 - 41
	III	1632.3 1632.7	25 - 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
February 28	III	1714.7	1718	17 - 41	
	Cont.	1720.7	1837.1	26 - 41	
	III	1831.6	1837.1	16 - 41	
	Cont.	1837.1	2322	25 - 41	
March 1	III	1936.1	1936.5	26 - 41	
	III	1609.8	1610.2	25 - 41	
	III	1910.6	1910.9	24 - 41	
	III	1940.6	1940.9	28 - 40	
	III	2012.2	2015.4	22 - 41	
	III	2016.2	2020.9	16 - 41	
	III	2022.4	2025.6	16 - 41	
	III	2045.2	2045.5	30 - 38	
	*	III	2102.1	2102.5	22 - 39
	III	2108.6	2112.7	22 - 41	
	III	2118.8	2119.1	25 - 41	
	III	2127.9	2128.2	23 - 37	
	2*	III	1351.5	1352	28 - 40
	*	III	1424.6	1424.9	28 - 38
	*	Cont.	1439.2	1510	26 - 41
	*	III	1450.9	1453	22 - 41
	*	III	1531.5	1531.9	23 - 41
	III	1550.5	1552	26 - 41	
	III	1557.8	1558.2	25 - 41	
	*	III	1600	1605	23 - 41
	*	III	1601	1603	19 - 41
	III	1607.4	1616.5	22 - 41	
	*	IV	1616.5	1706.1	22 - 41
	Cont.	1706.1	1725	22 - 41	
	Cont.	1725	2216	25 - 41	
	III	1927	1929	16 - 41	
	III	2017.6	2018.2	17 - 41	
	III	2019.5	2020	22 - 41	
	III	2029	2029.5	19 - 41	
	III	2054.2	2054.7	22 - 41	
	3*	III	1052	1053	24 - 33
	II	1134	1140	30 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)
March	3	III	1158	1200	19 - 41
		III	1231	1332	30 - 41
	*	III	1317	1320	19 - 41
	*	Cont.	1340	2201.1	24 - 41
	*	III	1649.4	1650	22 - 41
	*	III	1745	1748.2	16 - 41
		III	1801.9	1802.3	22 - 41
		III	1914.7	1915.2	27 - 41
		III	1932.1	1934.7	25 - 41
		III	2000	2001.3	16 - 41
	*	III	2126.1	2127	20 - 41
	4*	Cont.	1350	0030	24 - 41
	*	III	1502.5	1506.4	22 - 41
	*	III	1541.2	1544.3	23 - 41
	*	III	1626	1626.6	25 - 41
	*	III	1631.9	1632.4	25 - 41
	*	III	1656.3	1658.8	22 - 41
	*	III	1744.2	1751	19 - 41
		III	1853.5	1855.2	16 - 41
	5	III	1402.1	1403.3	26 - 41
	*	Cont.	1501.5	1811	24 - 41
	*	IV	1811	1950	27 - 41
		Cont.	1950	2035	25 - 41
		Cont.	2035	0035	24 - 41
		III	2027	2027.5	21 - 41
		III	2032.4	2032.8	22 - 41
		III	2115.8	2116.4	22 - 41
		III	2129	2129.7	21 - 41
	6*	Cont.	1328	2356	24 - 41
		III	1738.7	1739.3	23 - 41
		III	2103.3	2103.1	24 - 41
	7*	III	1107	1312	19 - 41
		Cont.	1304	1308	19 - 41
		III	1347.7	1347.9	29 - 41
	*	III	1353.8	1354.8	27 - 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)
March	7	III	1358.8	1359.4	25 - 41
	*	Cont.	1402.4	1850.8	25 - 41
		III	1402.4	1404.7	26 - 41
	*	III	1500.5	1505.1	25 - 41
		III	1536.9	1537.5	23 - 41
	*	III	1557	1600	22 - 41
	*	III	1617.5	1625.9	22 - 41
	*	III	1704.8	1708.9	19 - 41
	*	III	1738.8	1742.6	20 - 41
		III	1850.8	1903	16 - 41
	*	Cont.	1903	1000	22 - 41
		III	1931.9	1932.5	22 - 41
		III	1936	1937	16 - 41
	8*	Cont.	1230	1415	19 - 41
	*	III	1308	1309	19 - 41
		Cont.	1519	1523	19 - 41
		Cont.	1550.2	1701.2	24 - 41
	*	Cont.	1801.2	2035	26 - 41
		III	1732	1733	25 - 41
	*	III	1755	1756	19 - 41
	*	Cont.	2035	0041	24 - 41
	9	IV	1055	1600	19 - 41
	*	Cont.	1105	2200	19 - 41
		III	1111	1113	09 - 41
	*	Cont.	1317	0100	25 - 41
		III	1440	1441	30 - 41
		III	1443	1443	30 - 41
	III	1521	1523	19 - 41	
	III	1642	1643	19 - 41	
10	IV	1331	1000	22 - 41	
11	IV	1115	1700	19 - 41	
*	Cont.	1317	0040.1	25 - 41	
	III	1905.6	1907	24 - 41	
12*	Cont.	1102	2243	19 - 41	
*	Cont.	1317	2354.8	24 - 41	
13	III	1624.8	1625	26 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)	
March	13	III	1635.7	1636	28 - 38	
	14	III	1714.2	1714.7	24 - 41	
		III	2011.7	2014.5	24 - 41	
		III	2100.3	2100.6	20 - 41	
		III	2120.6	2122.1	20 - 41	
		15	III	2055.8	2057.8	25 - 41
	19	III	1355.2	1355.6	28 - 41	
		III	1428	1428.2	30 - 40	
		III	1434.6	1436.4	22 - 41	
		*	III	1620.4	1621	25 - 40
		III	1713.9	1714.5	22 - 40	
		III	1750.9	1751.2	28 - 41	
		III	1809.4	1809.6	28 - 41	
		III	1944.8	1945.1	28 - 40	
		III	2041.9	2042.2	30 - 38	
		III	2105.2	2105.6	26 - 41	
		20*	Cont.	1318	1428	28 - 39
		*	III	1346.6	1348.4	24 - 39
			III	1354	-	19 - 41
		*	III	1507.3	1510.4	22 - 39
			III	1515.5	1515.7	26 - 39
	*	III	1523.6	1528.1	22 - 41	
	*	III	1538.6	1539.9	25 - 40	
	*	Cont.	1552.3	1705.3	25 - 41	
	*	III	1614.5	1618.9	16 - 41	
	*	III	1633.6	1637.2	16 - 41	
	*	Cont.	1705.3	1722	22 - 41	
	*	Cont.	1722	2203.5	24 - 41	
	*	III	1748.7	1750	16 - 41	
	*	III	1826.2	1829.2	16 - 41	
		III	1858.5	1900.5	16 - 41	
	*	III	1947.9	1948.7	20 - 41	
		III	1958.8	2002	20 - 41	
	III	2035.5	2036	17 - 41		
	III	2052.2	2055.6	17 - 41		
	III	2104.8	2105.4	22 - 41		

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967	TYPE	TIME INTERVAL (UT)	FREQ. RANGE (MHz)
March	21*	Cont. 1211 1225	19 -- 41
	*	Cont. 1350 1825.8	22 -- 40
	*	III 1525 1526	19 -- 41
	*	III 1617.5 1620.3	20 -- 40
	*	III 1702.9 1710.1	24 -- 40
	*	Cont. 1825.8 1842.6	22 -- 41
	*	III 1838.0 1838.3	14 -- 40
	*	Cont. 1842.6 0046.5	22 -- 40
	*	III 2047.6 2050.8	21 -- 40
	22*	Cont. 1303.5 1617.7	28 -- 40
		III 1330.5 1335.8	28 -- 40
	*	III 1506.9 1507.1	25 -- 40
	*	III 1527.8 1529.1	22 -- 40
	*	III 1600.4 1605.8	23 -- 40
	*	II 1617.7 1630.4	25 -- 40
	*	Cont. 1630.4 1940	25 -- 40
	*	III 1733.5 1734.9	15 -- 40
		III 1905.5 1906.6	16 -- 39
	23*	Cont. 1303 1826.3	25 -- 40
	*	III 1401 1402	26 -- 40
		III 1731 1732	19 -- 41
	*	III 1734.1 1736	24 -- 40
		Cont. 1826.3 1928.6	15 -- 40
		III 1928.6 1931	16 -- 40
	*	II 1931.6 1937	26 -- 40
	*	Cont. 1937 0100	24 -- 40
	24*	III 1321 1321.4	30 -- 40
	*	III 1404.2 1405.1	25 -- 40
	*	III 1447.6 1449.2	26 -- 40
	*	III 1456.8 1457	27 -- 40
	*	III 1558.4 1558.8	29 -- 39
	*	III 1613.7 1624.4	24 -- 40
		III 1729 1730	25 -- 40
	*	Cont. 1757.4 1838.3	24 -- 40
	*	III 1858.3 1901.1	26 -- 40
	*	Cont. 1918.7 2019.8	25 -- 40
		III 2104.7 2105	26 -- 40

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE
1967					(MHz)
March	25*	Cont.	1248	0016	22 - 39
	*	III	1424.4	1426.3	24 - 38
26*	*	Cont.	1254	1504.2	27 - 40
	*	III	1447.3	1453.2	20 - 40
	*	III	1545.7	1546.1	29 - 40
	*	III	1553.2	1553.5	28 - 40
	*	III	1604.2	1604.6	30 - 40
	*	III	1611.6	1611.9	28 - 40
	*	III	1618.8	1622.7	28 - 40
	*	Cont.	1857.4	2048	25 - 40
	*	Cont.	1248	1732	25 - 40
	*	III	1313.5	1315.2	23 - 40
27*	*	III	1329	1353.3	24 - 40
	*	III	1503.9	1505	20 - 40
	*	III	1543.5	1545.4	24 - 40
	*	III	1632.5	1633.2	16 - 40
	*	III	1719.1	1720	17 - 40
	*	II	1732	1739.4	26 - 40
	*	II	1739.4	1749.8	24 - 40
	*	Cont.	1749.8	2138.6	24 - 40
	28	III	1309.8	1310.5	30 - 40
	*	III	1326.1	1331.6	25 - 40
28	*	III	1406	1406.3	28 - 38
	*	III	1430.1	1430.3	25 - 40
29*	*	Cont.	1503.5	0100	25 - 40
	*	III	1737	1739.1	16 - 41
	*	III	1118	1118	17 - 34
	*	III	1210	1211	19 - 41
	*	III	1325	1326	25 - 32
	*	III	1327	1329	19 - 41
	*	III	1330	1331	19 - 41
	*	III	1442.5	1442.9	29 - 40
	*	III	1509.5	1509.8	28 - 40
	*	III	1734.9	1735.2	26 - 36
29*	*	Cont.	1841.8	2041	26 - 40
	*	III	2036.4	2038.2	17 - 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SCJ AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)		
1967							
March	30	II	1015	-	30	- 41	
	*	Cont.	1055	-	28	- 41	
	*	Cont.	1234	-	19	- 41	
	*	III	1243.6	1245.3	25	- 39	
		III	1329.2	1329.5	28	- 36	
		Cont.	1359.8	1612.4	27	- 40	
	*	III	1550	1552.3	22	- 40	
		III	1606.9	1610.1	21	- 40	
	*	Cont.	1658.3	0100	26	- 40	
		III	1718.6	1731.3	16	- 40	
		III	1809.5	1810.5	24	- 40	
		III	1838.4	1843.6	16	- 40	
		III	1938.4	1941.1	14	- 40	
		31	III	1036	1037	25	- 37
		III	1047	1048	25	- 41	
		III	1059	1100	19	- 41	
		III	1112	1115	19	- 41	
		III	1121	1122	19	- 41	
	*	Cont.	1324	0100	26	- 40	
		III	1416.7	1417.3	28	- 40	
	*	III	1421.3	1424.7	25	- 40	
	*	III	1541.9	1543.7	24	- 40	
	*	III	1702	1703.7	16	- 40	
		III	1710.6	1711	16	- 40	
		III	1817	1820.7	17	- 40	
		III	1904.2	1904.5	28	- 40	
	April	1*	III	1143	1143	19	- 41
*		III	1145	1145	19	- 41	
*		III	1255.4	1256	27	- 35	
*		III	1317.7	1319.5	25	- 40	
*		III	1354.3	1354.7	21	- 40	
*		III	1410.5	1412.8	20	- 40	
		Cont.	1507	0100	27	- 40	
*		III	1605.7	1615.1	16	- 40	
		III	1632.4	1634.5	27	- 30	
*		III	1702.8	1704	19	- 40	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE	
1967					(MHz)	
April	1	III	1801.3	1802	25 - 40	
		III	1820.3	1820.8	25 - 40	
		III	1841.3	1841.6	28 - 40	
		III	1853.2	1855	16 - 40	
		III	2027.1	2027.5	30 - 40	
		II	2103.8	2108.5	24 - 39	
	2*	Cont.	1329	0100	27 - 41	
			III	1757.3	1800.4	24 - 41
	*		III	1832.8	1833	25 - 41
			III	1908.2	1909	13 - 41
			III	1934.4	1940.5	12 - 41
	3*		III	1249	1250.1	26 - 41
	*		Cont.	1250.1	0100	26 - 41
			III	1421.5	1427.4	25 - 41
			III	1526.6	1528.6	27 - 40
	*		III	1623.4	1626.8	21 - 41
			III	1630.6	1635.1	21 - 41
			III	1655.1	1700.2	25 - 41
			III	1714.2	1720	24 - 41
			III	1742.8	1743	26 - 41
			III	1817.8	1829.3	16 - 41
			III	1829.1	1833.1	13 - 41
			III	1853.9	1855.2	13 - 41
			III	1939	1939.4	28 - 41
			III	1944	1948.5	13 - 41
			III	2015.7	2016	28 - 41
			III	2022.4	2023.1	16 - 41
			III	2034.8	2035.4	26 - 41
			III	2042.3	2042.7	27 - 41
			III	2055.4	2057.3	25 - 41
	4*		Cont.	1248	0059	26 - 41
	*		III	1320.3	1321.3	22 - 41
	*		III	1423.7	1425	25 - 41
	*		III	1707.5	1709.2	25 - 41
			III	1948.3	1948.6	25 - 41
			III	2027.7	2027.9	27 - 39

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
April	5*	Cont.	1302	2215.9	26 - 41	
	*	III	1359.3	1400.4	17 - 41	
		III	1517.4	1517.8	13 - 41	
		III	1539.4	1543	16 - 41	
		III	1629.4	1629.7	25 - 41	
		III	1721.8	1722.1	26 - 41	
		III	1816.9	1820.3	25 - 41	
		III	1851.2	1851.5	25 - 41	
		III	1905.2	1906.6	12 - 41	
		III	2052.7	2055.1	25 - 41	
		6*	Cont.	1221	0100	25 - 41
			III	1948.5	1948.8	25 - 41
		7*	Cont.	1537	0130	26 - 41
			III	1844.3	1851.3	16 - 41
		*	III	1856.8	1905.7	27 - 41
		8*	Cont.	1519	0130	26 - 41
		9*	Cont.	1530	0130	26 - 41
		10	Cont.	1600.9	1624.8	25 - 41
			III	1749.6	1749.8	30 - 38
		11	III	1650.2	1651.9	30 - 41
		*	III	1658	1701.2	16 - 41
			III	1705.5	1706	20 - 37
			III	1716.2	1716.7	22 - 39
		*	Cont.	1751	2213.7	26 - 41
		12*	III	1719	1719.7	22 - 41
			III	1819.6	1821.7	22 - 41
			Cont.	1938.3	2008.3	26 - 41
		13	III	1936.6	1946	27 - 40
		14	III	1600	1607.7	25 - 41
			III	1627.1	1627.4	26 - 38
			III	1637	1637:2	26 - 38
			Cont.	1703.2	1712.2	25 - 41
		*	III	1707.3	1712.2	13 - 41
	*	Cont.	1712.2	1724.2	28 - 41	
		Cont.	1724.2	1737.7	24 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
April	14	III	1726.2	1727	16 - 41	
		III	1759.5	1800.2	28 - 41	
		III	1831.8	1832.2	26 - 40	
	*	Cont.	1920.5	2053	26 - 41	
	17	III	1731.4	1734.3	16 - 41	
		III	1815.5	1815.9	25 - 38	
	21	III	1141	1143	19 - 32	
	23	III	2031.7	2037.2	30 - 41	
	24	III	1235.6	1237	27 - 41	
	25	III	1329.2	1332	19 - 41	
	26	III	1243.7	1247.7	22 - 41	
		III	1315.5	1316.6	25 - 41	
	27	III	1712.7	1713.1	25 - 39	
		III	1405.3	1406.5	22 - 38	
	28	III	1604	1604.6	26 - 41	
		III	1923	1923.3	25 - 40	
	29	III	1600.1	1600.5	19 - 41	
		III	1638.2	1638.4	28 - 41	
	30	III	1705.8	1706.2	25 - 41	
		III	1738.5	1740	11 - 41	
	May	2	III	2006.1	2006.4	26 - 38
			III	1552.9	1554.9	26 - 41
	3	3	III	1637.6	1638.6	14 - 41
			III	1703.2	1703.6	28 - 41
	3	3	III	1904.3	1904.7	19 - 41
			III	1958.7	1959.1	24 - 41
	3	3	III	2041.2	2041.5	30 - 39
			III	1607	1608.3	22 - 41
	3	3	III	1637.2	1638.2	30 - 41
			III	1833.8	1834	26 - 41
3	3	III	1850.9	1852.5	26 - 41	
		III	1827.8	1828.7	24 - 38	
3	3	III	2034.9	2035.3	24 - 41	
		III	1514.1	1514.4	22 - 41	
3	3	III	1534.8	1535.3	22 - 36	
		III	1544	1545.1	20 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)
May	3*	IV	1548	1623.5	11 - 41
		III	1549.6	1558.6	08 - 41
	*	Cont.	1623.5	1655.3	13 - 41
		III	1818.2	1818.7	26 - 36
		III	1846	1846.2	20 - 41
		III	1850.7	1851.1	21 - 41
		III	1929.6	1929.9	19 - 41
		III	2015.5	2015.8	20 - 34
		III	2025.1	2025.4	22 - 34
	4	III	1726	1727	19 - 41
	6	III	1531.9	1532.2	23 - 38
		III	1617.1	1617.5	26 - 39
	*	III	1626.7	1627.1	13 - 41
	10*	III	1241	1243	21 - 41
	*	III	1416	1416	19 - 41
		III	1516.9	1517.1	22 - 36
	14*	III	1536.1	1536.5	24 - 41
	16	III	1714.3	1714.7	26 - 40
		III	1756.3	1756.6	20 - 41
		III	2009.5	2010.6	28 - 41
	17	III	1115	1116	19 - 41
	18*	III	1229	1232.3	13 - 41
		III	1830.6	1831.7	12 - 41
	*	IV	1848.4	2040	20 - 41
	19	III	1128	1129	26 - 36
		III	1312.1	1317.3	20 - 40
		III	1424.2	1424.6	24 - 38
		III	1427.5	1427.8	24 - 40
	*	III	1506.1	1507	20 - 41
	*	III	1506.5	1507.2	21 - 41
		Cont.	1515	1537.9	12 - 41
		Cont.	1520.3	1558.6	11 - 41
	*	II	1537.2	1558.2	09 - 41
	*	IV	1537.9	-	09 - 41
	*	IV	1558.6	1910	20 - 41
	20	III	1303.3	1303.5	28 - 39

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)		
1967							
May	20	III	1353.8	1354.1	22	- 41	
		Cont.	1410	1513.5	24	- 41	
	*	III	1415.7	1419	13	- 41	
	*	IV	1513.5	1645	22	- 41	
		III	1514.9	1516	09	- 41	
	*	II	1519	1553	09	- 41	
		III	1811.6	1814.2	24	- 40	
		III	1821.2	1821.4	25	- 36	
		III	1832.1	1832.3	28	- 39	
		III	1905.7	1905.7	30	- 40	
		III	2028.1	2028.5	20	- 41	
		21	Cont.	1042	1048	19	- 41
			III	1056	1058	24	- 41
		*	III	1136	1140	19	- 41
		*	III	1341	1346	19	- 41
		*	III	1521	1522	19	- 41
			Cont.	1636	1922.1	25	- 41
			III	1755.5	1756	09	- 41
		*	IV	1922.1	2230.6	20	- 41
		*	III	1923.6	1924.5	09	- 41
		*	II	1929.5	1951	09	- 41
		22*	Cont.	1140	0200	22	- 41
		*	III	1457.3	1505	24	- 41
			III	1807.3	1807.7	13	- 41
			III	1813.5	1813.9	12	- 41
			III	1945.2	1946	11	- 41
		23	III	1139.2	1139.4	23	- 36
			III	1142.8	1143.4	23	- 41
			III	1156.4	1156.7	30	- 40
			III	1200.1	1200.4	24	- 38
			III	1209.1	1209.4	22	- 41
			III	1218.8	1220.7	28	- 41
			III	1239	1239.2	29	- 41
			III	1249.2	1250.1	26	- 41
			III	1336.8	1337.2	26	- 41
			III	1411.4	1414.3	27	- 39

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE
1967					(MHz)
May	23	III	1501.5	1506.9	26 - 41
		IV	1537	1900	24 - 41
	*	III	1741.9	1742.4	12 - 41
	*	III	1837.1	1840.7	11 - 41
		III	1841.2	1843.4	11 - 41
	*	II	1843.4	1900	11 - 41
		IV	1900	2029	12 - 41
		IV	2029	0200	24 - 41
	24*	Cont.	1130	1604	24 - 41
		III	1203.2	1205.2	20 - 41
		III	1442	1451.1	23 - 41
		III	1548	1553.3	21 - 41
		Cont.	1604	1651	23 - 41
		Cont.	1651	1813	26 - 41
		III	1804.8	1810	10 - 41
	*	III	1811.4	1813	12 - 41
		IV	1813	1913.2	12 - 41
		II	1816	1822.3	12 - 41
	*	Cont.	1913.2	2240	25 - 41
	25*	IV	1136	1452	22 - 41
	*	Cont.	1452	1605.5	24 - 41
		III	1456	1459.9	18 - 41
		III	1554.5	1557.7	13 - 41
	*	Cont.	1605.5	1629.8	14 - 41
		Cont.	1629.8	1922.4	24 - 41
		III	1711	1712.8	13 - 41
		III	1720.7	1723.8	10 - 41
		III	1729	1738.2	12 - 41
		Cont.	1922.4	1949	10 - 41
		Cont.	1949	2040	26 - 41
	26*	III	1411.7	1413	27 - 41
	27*	III	1421.7	1422	26 - 41
		III	1508.7	1508.9	22 - 41
		III	1519.4	1529	24 - 41
	*	Cont.	1615.4	2023.2	22 - 41
		III	1718	1718	19 - 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE	
1967					(MHz)	
May	27	III	1853.1	1853.7	13 - 41	
		III	1903.4	1903.8	13 - 41	
		III	1926.7	1927	12 - 41	
		III	2001.5	2002	30 - 41	
	*	Cont.	2023.2	2100	20 - 41	
	28	IV	1105	2155	19 - 41	
		*	III	1347	1347	19 - 41
		Cont.	1557	1910	24 - 41	
		*	III	1558.5	1559	13 - 41
		III	1658.6	1659	14 - 35	
		III	1735.2	1735.5	12 - 41	
		III	1740.3	1740.7	12 - 41	
		III	1746.6	1747	13 - 41	
		III	1753.1	1753.5	14 - 41	
		III	1758.7	1759	13 - 41	
		III	1816.5	1816.7	12 - 41	
		III	1832.5	1833.6	12 - 41	
	Cont.	1910	1955.5	20 - 41		
	III	1954.8	1955.5	09 - 41		
	IV	1955.5	2150	24 - 41		
	III	2006.5	2007.2	12 - 41		
	29*	III	1426.6	1427.1	13 - 41	
	*	III	1523	1523.3	16 - 35	
	III	1639.8	1640	14 - 40		
	*	III	1654.7	1655.1	12 - 39	
	III	1853.4	1904.4	08 - 41		
	IV	1904.4	2035	18 - 41		
	III	1924.5	1927.3	10 - 41		
	III	1936.6	1939.1	09 - 41		
	30	III	1151.2	1151.6	22 - 40	
		III	1157.9	1158.3	26 - 41	
		III	1254.2	1300	24 - 41	
		III	1311.1	1315.3	16 - 41	
		III	1405.7	1409.4	26 - 41	
		III	1428.1	1428.5	20 - 35	
		III	1707.7	1708	28 - 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)		
May	30*	III	1717.7	1718.5	14 - 41		
		Cont.	1824	1900	25 - 41		
	31	III	1915.9	1919.4	15 - 41		
		III	1955.4	1956	26 - 41		
		III	2012.2	2012.8	26 - 41		
		III	1221.7	1221.9	20 - 41		
		III	1339.8	1340.3	19 - 41		
		III	1417.5	1419.1	16 - 41		
		III	1543.5	1545.6	10 - 41		
		III	2026.8	2027.1	22 - 41		
		June	1	Cont.	1130	1728	20 - 41
				III	1132.6	1134.4	16 - 41
			III	1139.3	1146.5	16 - 41	
			III	1150.1	1150.7	16 - 41	
III	1407.4		1408	20 - 41			
III	1421.8		1424.3	16 - 41			
III	1447.8		1448.3	15 - 41			
III	1646.5		1646.9	24 - 41			
III	1824.8		1825.1	24 - 41			
Cont.	1858.1		2255	24 - 41			
2	III		1151	1151.2	22 - 39		
	III		1157.7	1204.9	20 - 41		
	III		1226.3	1229.5	21 - 41		
	III		1241.4	1248.3	16 - 41		
	III	1255	1255.5	22 - 41			
	III	1312.6	1319.2	20 - 41			
	Cont.	1329.4	1638.9	23 - 41			
	III	1411.4	1418.1	16 - 41			
	III	1425.8	1428.7	12 - 41			
	III	1610.4	1610.6	9 - 41			
	III	1628.7	1632	7 - 41			
	Cont.	1638.9	2130.8	12 - 41			
III	1734.5	1735.1	9 - 41				
III	2020.9	2021.7	12 - 41				
3*	Cont.	1138.5	1427.3	19 - 41			
	Cont.	1429.3	2236.5	12 - 41			
	III	1738.7	1739.2	9 - 41			

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
1967						
June	4*	Cont.	1128	1506.7	20	- 41
		III	1133.9	1134.5	14	- 41
	III	1333.6	1334.1	16	- 41	
		III	1436.4	1441.7	16	- 41
	*	Cont.	1506.7	1738.4	12	- 41
		III	1605.6	1606.5	12	- 41
		III	1736.8	1738.4	12	- 41
		Cont.	1738.4	0140	20	- 41
		III	1809	1818.5	12	- 41
		III	1825.3	1825.7	11	- 41
	5*	Cont.	1137.3	1416.2	20	- 41
	*	III	1356.2	1357.2	10	- 41
	*	III	1414.2	1416.2	10	- 41
	*	Cont.	1416.2	2051.1	12	- 41
		III	1625.5	1627.3	8	- 41
		III	1636.2	1638.8	8	- 41
		III	1658	1659.2	16	- 41
		III	1718.3	1723.3	7	- 41
	6*	Cont.	1128	1235.7	13	- 41
		III	1217.7	1225.4	12	- 41
	*	Cont.	1235.7	1410.1	12	- 41
	*	Cont.	1410.1	1600.8	13	- 41
		III	1446.6	1447.5	12	- 41
		III	1502.5	1509	11	- 41
	*	Cont.	1600.8	1737.3	12	- 41
		III	1700.4	1705.2	7	- 41
		III	1712.2	1713.5	7	- 41
		III	1950.3	1955.7	8	- 41
	7*	Cont.	1223	0150	16	- 41
		III	1229.3	1230	14	- 41
	8	Cont.	1233	0000	16	- 41
		III	1415.6	1416	24	- 40
		III	1421.1	1421.3	23	- 35
	III	1501.5	1508.7	22	- 41	
	III	1718.4	1718.8	23	- 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE 1967		TYPE	TIME	INTERVAL (UT)	FREQ. RANGE (MHz)			
June	9*	III	1604.2	1604.5	24 - 40			
		III	1711	1711.5	20 - 41			
		III	1835.6	1835.9	24 - 40			
	10	III	1737	1737.3	25 - 36			
		III	1216.4	1216.6	22 - 40			
	11	*	III	1323	1324.6	11 - 40		
			III	1345.8	1346.8	24 - 40		
	12*	III	III	1813.8	1814.4	15 - 40		
			III	1411.4	1416.6	17 - 40		
	13	III	1705.3	1705.9	20 - 41			
	15	III	III	1405.3	1406.4	16 - 41		
			III	1957.4	1958.3	9 - 41		
	16	III	III	1510	1510.5	30 - 41		
			III	1655.4	1658.7	25 - 41		
			III	1730.7	1730.9	27 - 41		
			III	1811.2	1815	25 - 41		
			III	1824	1824	- - -		
			III	1843.9	1844.5	27 - 41		
			III	1934.5	1936	26 - 41		
			III	2025.7	2026.1	30 - 41		
			17*	III	III	1048	1050	- - -
					III	1156	1156	- - -
					III	1207	1207	- - -
			*	III	III	1515.6	1523.8	17 - 41
	III	1652.5			1655	25 - 41		
	III	1921.2			1921.5	25 - 41		
	III	1931.8			1934.1	12 - 41		
	18	III			III	1147.9	1150.1	20 - 41
					III	1242	1242	- - -
			III	1333.9	1334.3	24 - 41		
	*	III	III	1430.7	1432.6	11 - 41		
			III	1436.6	1446.3	16 - 41		
			III	1522.4	1526	25 - 41		
III			1537.8	1538.2	26 - 37			
III			1610	1610.4	22 - 41			
III			1709.1	1709.5	22 - 41			
III			1731.6	1732	8 - 41			

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
1967						
June	18	III	1733	1733	19	- 41
		III	1800	1810	19	- 41
		III	1812.9	1821.8	8	- 41
		III	1828.3	1828.7	22	- 41
		III	1835.1	1835.4	26	- 37
		III	1905.4	1912.8	8	- 41
		III	1916.8	1917.1	26	- 39
		III	2024.1	2031.8	22	- 41
	19	III	1201.3	1207.7	19	- 41
		Cont.	1223.2	1320	17	- 41
		III	1706.1	1706.4	28	- 40
	20	III	1151.7	1156.1	20	- 41
		III	1215.3	1220.8	15	- 41
		III	1225.7	1230.7	19	- 41
		III	1248.6	1248.8	26	- 38
	*	III	1312.6	1320.6	22	- 41
	*	III	1352.2	1353.6	10	- 41
	*	III	1409.5	1412.4	24	- 41
	*	III	1423	1423.2	30	- 41
	*	III	1518	1520.4	22	- 41
		III	1534.5	1540.6	24	- 41
	*	III	1624.2	1626.2	20	- 41
		III	1633.1	1633.4	28	- 41
		III	1700.2	1706.6	22	- 41
		III	1723.7	1735.4	12	- 41
		III	1834	1834.4	24	- 41
	*	III	1853.3	1858.4	10	- 41
		III	1941.7	1942.8	25	- 41
	21	III	1220.5	1220.8	22	- 41
		III	1246.3	1246.5	28	- 41
		III	2006.6	2006.8	26	- 41
	22*	III	1004	1006	19	- 41
		III	1128	1128	24	- 39
	*	III	1135.7	1140.3	15	- 41
		III	1146	1146.5	19	- 41
		III	1157.5	1201.6	15	- 41
		III	1241.5	1249.6	22	- 41

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
1967						
June	22*	III	1258.3	1303.6	16	- 41
		III	1325.4	1342.8	12	- 41
	IV	1327	-	15	- 41	
	*	III	1348.6	1352.7	20	- 41
		III	1400	1403.4	26	- 41
	*	Cont.	1431	0053.4	16	- 41
	*	III	1502.4	1503.9	16	- 41
	*	III	1524.1	1525.8	16	- 41
	*	III	1603.6	1604.4	08	- 41
	*	III	1635.6	1637.1	08	- 41
	*	III	1701.1	1702.8	11	- 41
	*	III	1708.5	1711.7	18	- 41
		III	1719.3	1719.8	12	- 41
	*	III	1749.2	1754.6	10	- 41
		III	1815.7	1827.2	08	- 41
	*	III	1837.6	1838.2	08	- 41
		III	1934.1	1935	08	- 41
	*	III	1941.7	1943.8	08	- 41
	23	III	1151.7	1153	20	- 41
	*	Cont.	1153	1702	20	- 41
	*	III	1228	1228.5	16	- 41
	*	III	1609.7	1614	18	- 41
	*	Cont.	1751.8	1855.5	24	- 41
		III	1855.5	1900.1	18	- 41
		IV	1900.1	1913.3	18	- 41
		Cont.	1913.3	1938	22	- 41
		III	1932.5	1936.5	10	- 41
		Cont.	1938	2105.8	24	- 41
	24*	III	1125.8	1126.3	16	- 33
		Cont.	1200	1323	20	- 41
	*	III	1244	1247	16	- 41
	*	III	1429.4	1429.8	17	- 41
		III	1442.1	1442.5	22	- 41
	III	1514.9	1517	20	- 41	
*	III	1544.9	1546.5	08	- 41	
	Cont.	1546.5	0230	22	- 41	
*	III	1657.9	1705	08	- 41	

T A B L E II (Cont.)

LISTING OF BURSTS WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS PUBLISHED BY H.A.O. BOULDER (COLORADO) AND AS OBSERVED (*) ON THE RIOMETER OF SÃO JOSÉ DOS CAMPOS (BRAZIL)

DATE		TYPE	TIME INTERVAL (UT)		FREQ. RANGE (MHz)	
1967						
June	24	III	1849.9	1850.2	08	- 41
		III	1921.3	1926	08	- 41
		III	1941.7	1943.3	08	- 41
	25	III	1134.5	1135	15	- 34
		Cont.	1217	1249.2	22	- 41
		Cont.	1445.2	0230	22	- 41
	*	III	1642.5	1643.2	10	- 41
	*	III	1724.9	1731.1	09	- 41
	*	III	1756.3	1759.5	08	- 41
		III	1933.3	1933.8	12	- 41
	26*	Cont.	1145.2	1852	16	- 41
	*	III	1318.4	1319	10	- 41
	*	III	1322.5	1323.2	10	- 41
	*	III	1534.4	1540.3	10	- 41
		III	1710.3	1719.4	12	- 41
	*	III	1725.7	1726.6	09	- 41
		III	1736.4	1737.1	08	- 41
	*	III	1837.8	1838.2	10	- 41
		Cont.	1852	2200	12	- 41
		III	1921.8	1922.4	08	- 41
	*	III	1934.4	1936.6	08	- 41
		III	2014.2	2014.7	10	- 41
		III	2028	2039.9	09	- 41
	27*	Cont.	0113.7	1404	14	- 41
	*	III	1146	1150.5	11	- 41
	*	III	1259.8	1301.7	12	- 41
	*	Cont.	1404	1603.2	14	- 41
	*	III	1602.5	1603.2	09	- 41
	*	Cont.	1603.2	0230	16	- 41
		III	1704	1704.4	12	- 41
		III	1817.4	1817.8	11	- 41
		III	1822.4	1823	11	- 41
	28*	Cont.	1140	1600.4	18	- 41
		III	1456.6	1500.5	12	- 41
		III	1507.3	1507.7	12	- 41
	*	Cont.	1600.4	1825	22	- 36
		Cont.	1825	2000	20	- 41
	29*	Cont.	1127	0210	16	- 41
	30*	Cont.	1138	2249	16	- 41

T A B L E III

SCNAs WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS
PUBLISHED BY H.A.O. BOULDER (COLORADO)

DATE 1967	Impor tance	Time Interval (UT)		Related SCNA at SJC Riometer	
		Start	End	Start	End
Jan. 11	1	2020	2037	2020	2042
13	-	1435	-		
14	-	1704	1716		
20	1	1758	1801		
31	1-	1832	-		
Feb. 1	1-	1228	1406	1225	-
7	1-	1535	1555		
	1	1600	1720		
	-	1807	-		
	-	2056	-		
13	2+	1800	-		
17	1	1938	-		
22	1-	1805	1840		
	2	1842	-		
23	-	1615	-		
24	1-	1901	1922		
25	1+	1953	2013		
27	2+	1645	-		
	1-	2120	-		
Mar. 2	1-	1602	1622	1716	-
4	-	1715	-		
9	2	1010	1045		
26	-	1607	-		
28	2	1737	1810		
29	1+	1735	1801	1737	1750
30	1	0853	0922	1735	1758
Apr. 1	1	1312	1357	1413	1430
	1	1412	1414		
	1-	1605	1619		
2	1	0937	-		
3	1	1434	-		
8	1-	1013	1025		
10	1	1601	1635		
14	1-	1711	1724		
28	1	0904	0920		

T A B L E III (Cont.)

SCNAs WHICH OCCURRED UNDER SUNLIT PERIOD AT SJC AS
 PUBLISHED BY H.A.O. BOULDER (COLORADO)

DATE 1967	Impor tance	Time Interval (UT)		Related SCNA st SJC Riometer		
		Start	End	Start	End	
May	18	1-	1831	1910		
		1-	1933	1959		
	19	1	1533	1537	1528	-
	21	1-	1537	1546	1537	1547
	23	1	1804	-	1812	1827
		3	1838	2100	1839	1930
	25	2	1034	1213		
	26	1-	1238	1249		
	30	1-	1733	-		

T A B L E IV

SCNAs OBSERVED WITH THE RIOMETER AT SÃO JOSÉ DOS CAMPOS

DATE 1967	ABSORPTION					RELATED FLARE			
	PERIOD UT			Max. value (db)	Max va- riation (db)	Impor- tance	PERIOD UT		
	Start	Max Phase	End				Start	Max Phase	End
Jan. 1	1037	1041	1100	1.07	0.21	1b	1041	1045	1056
2	1240	1245	1252	1.49	0.16	Sb	1226	-	1252
10	0907	0915	1053	0.72	0.47				
11	2020	2027	2042	1.46	0.16	Sb	2018	-	-
12	0852	0853	0857	1.14	0.46	Sf	0823	-	0833
Feb. 1	1225	1240	-	1.99	0.41				
10	1525	1527	1528	2.94	0.46				
14	0912	0914	0916	1.00	0.28				
22	1158	1205	1213	1.61	0.31	1b	1130	-	1145
23	1145	1154	1213	1.76	0.27				
	1338	1348	1357	2.67	0.29				
Mar. 4	1213	1217	1224	1.85	0.42				
	1716	1722	-	2.53	0.57	1n	1656	1700	1705
12	1007	1013	1018	0.79	0.22				
	1259	1302	1304	1.79	0.30				
	1339	1343	1344	2.35	0.77				
14	1649	1654	1710	2.83	0.60				
28	1737	1740	1750	3.80	0.97	1n	1731	1740	1806
29	1735	-	1758	3.28	1.05	1n	1728	-	-
Apr. 1	1038	1039	1048	1.04	0.32	2b	1023	-	1101
	1413	1417	1430	3.22	0.97	1n	1414	-	1427
May 19	1528	1536	-	1.52	0.55	2b	1520	1534	1555
21	1537	-	1547	1.49	0.45	1b	1533	1538	1559
23	1812	1821	1827	1.17	0.17	2b	1803	1817	1834
	1839	1845	1930	4.09	3.09	3b	1834	1844	1931
	1939	1950	2000	1.00	0.39	2b	1932	1946	2156
29	1130	-	1145	0.45	0.41				

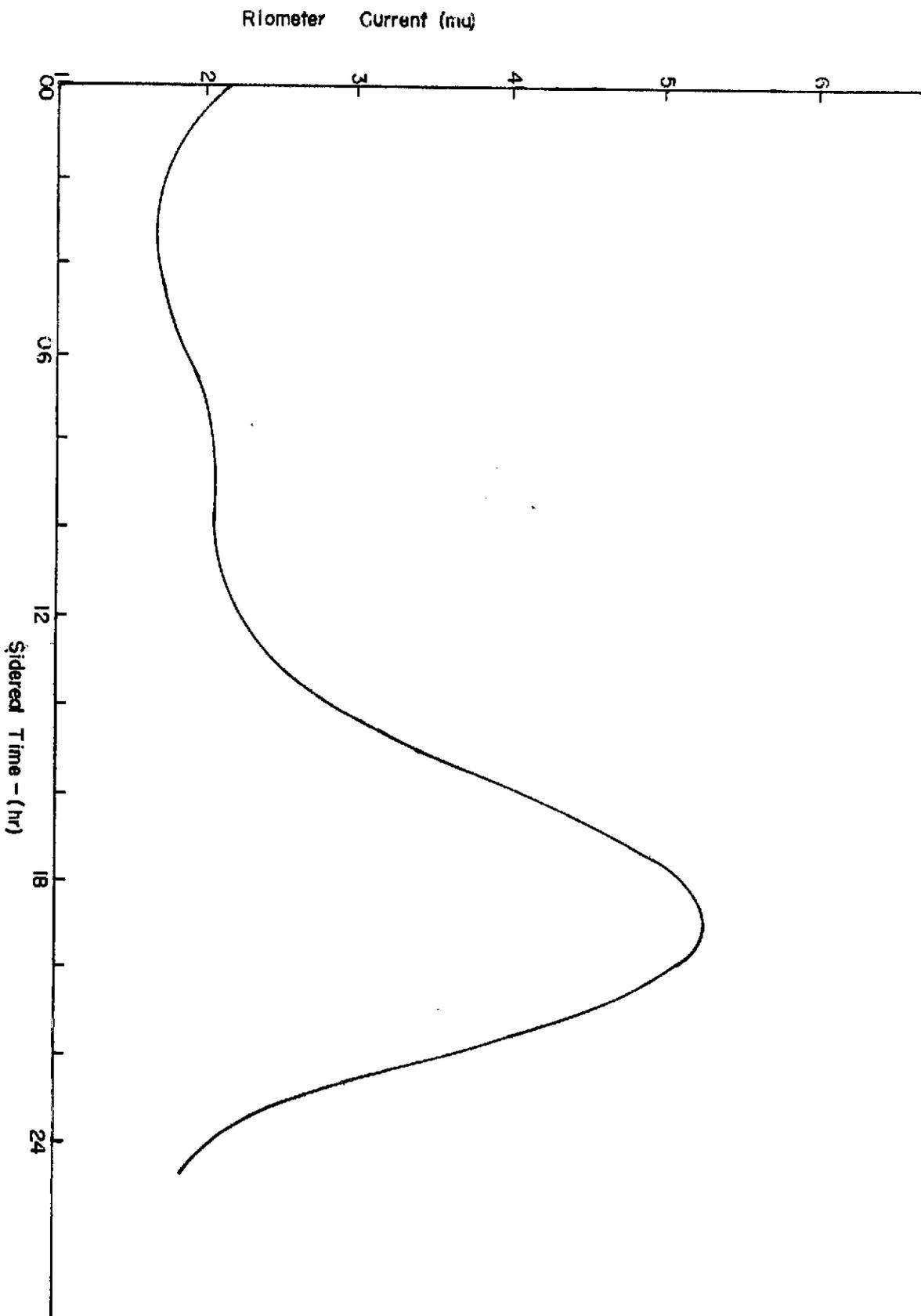


FIG.1 OLIIFT-DAY CURVE

SÃO JOSÉ DOS CAMPOS — SP (BRASIL)

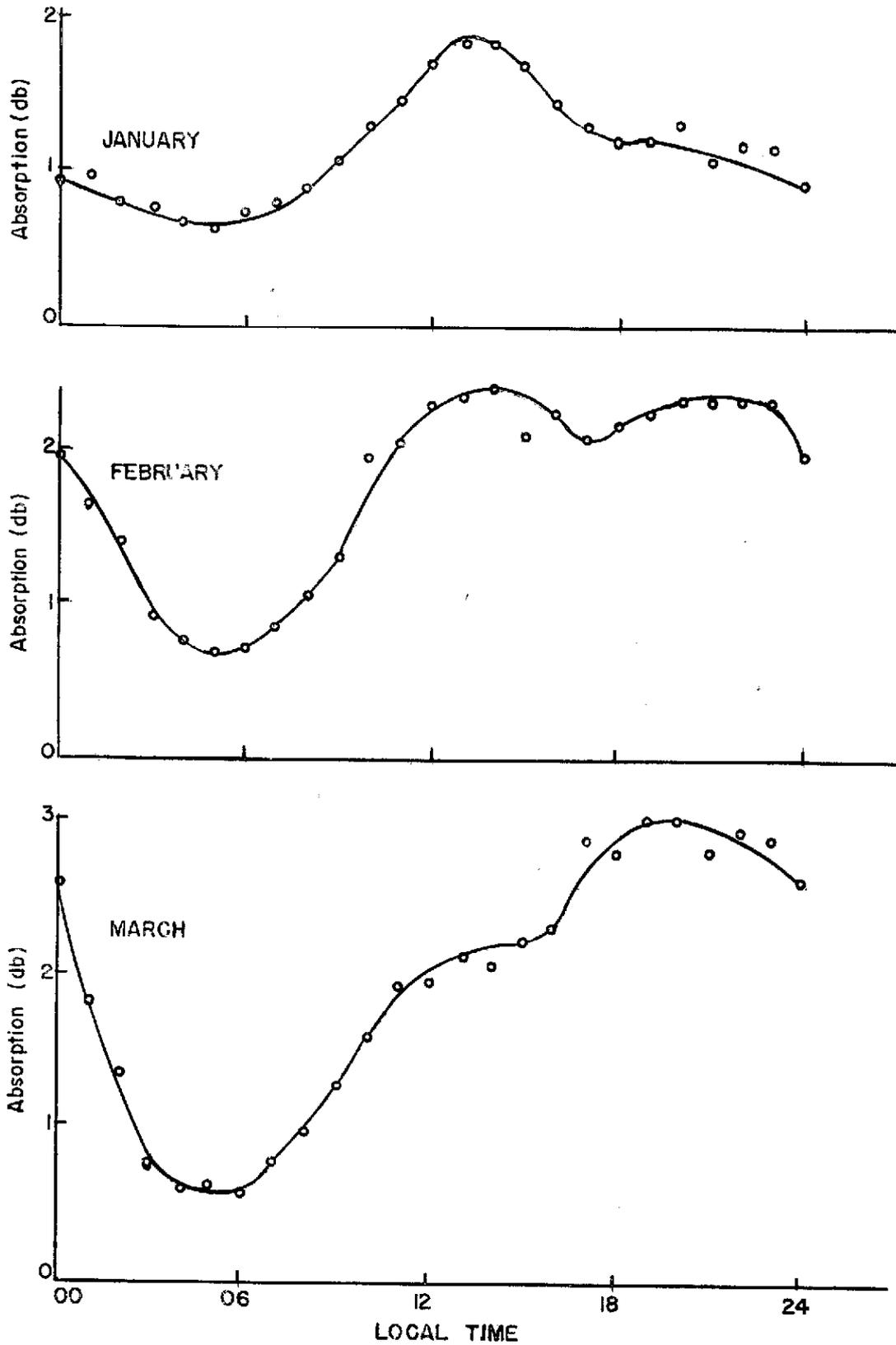


Fig. 2—MEDIAN MONTHLY ABSORPTION CURVES (JANUARY—MARCH—1967)

SÃO JOSÉ DOS CAMPOS - SP (BRASIL)

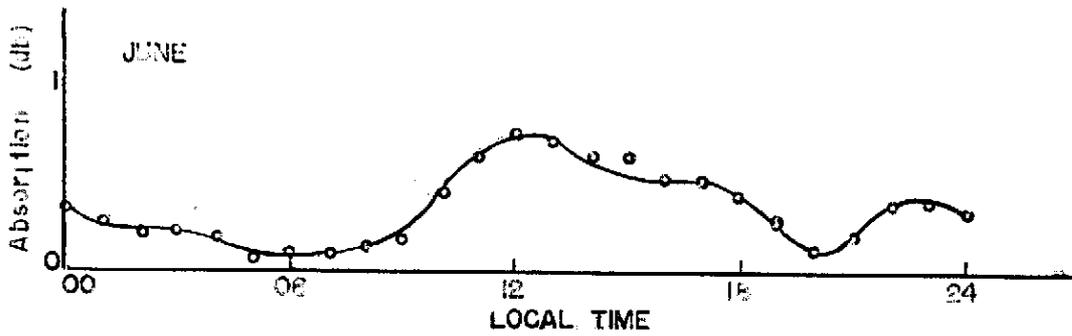
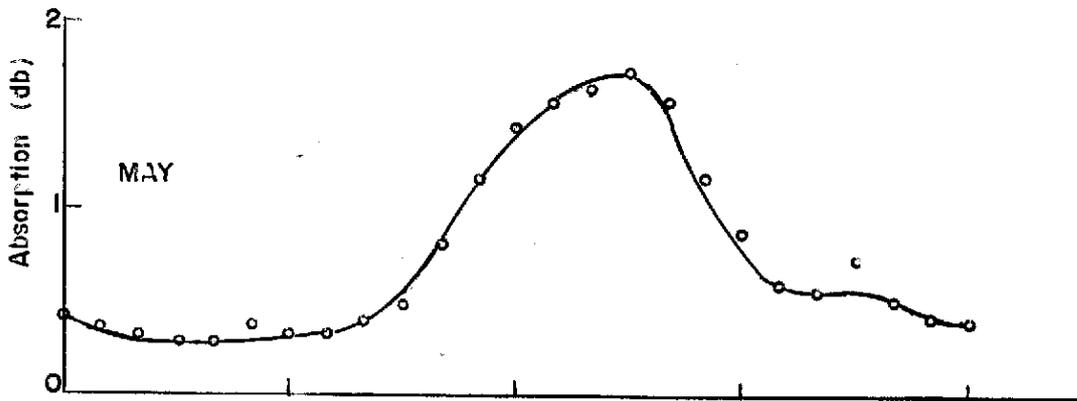
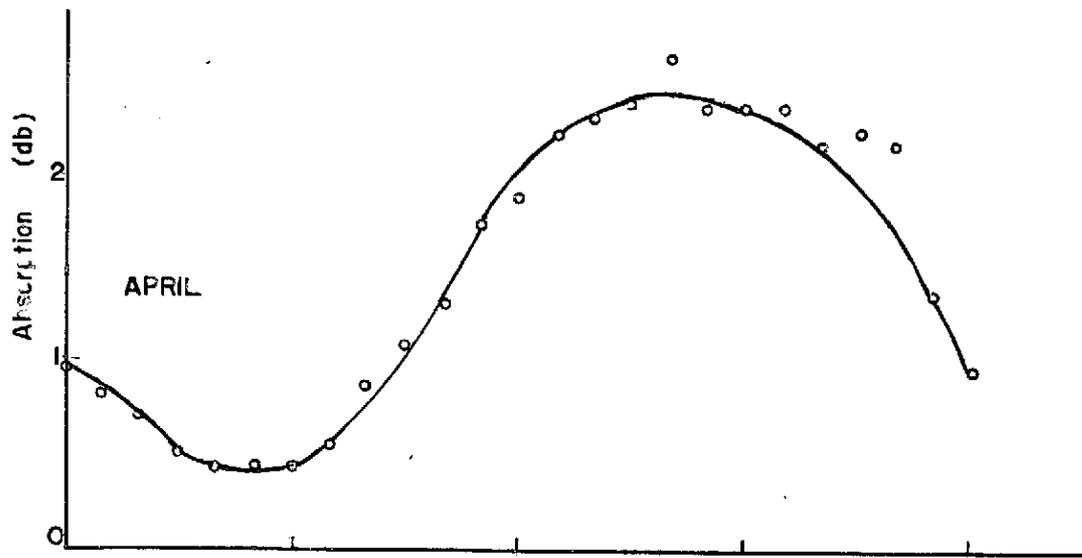


Fig.3-MEDIAN MONTHLY ABSORPTION CURVES (APRIL-JUNE-1967)

FIG. 4 SCNA of 1 January 1967 observed with the 30 MHz receiver at São José dos Campos

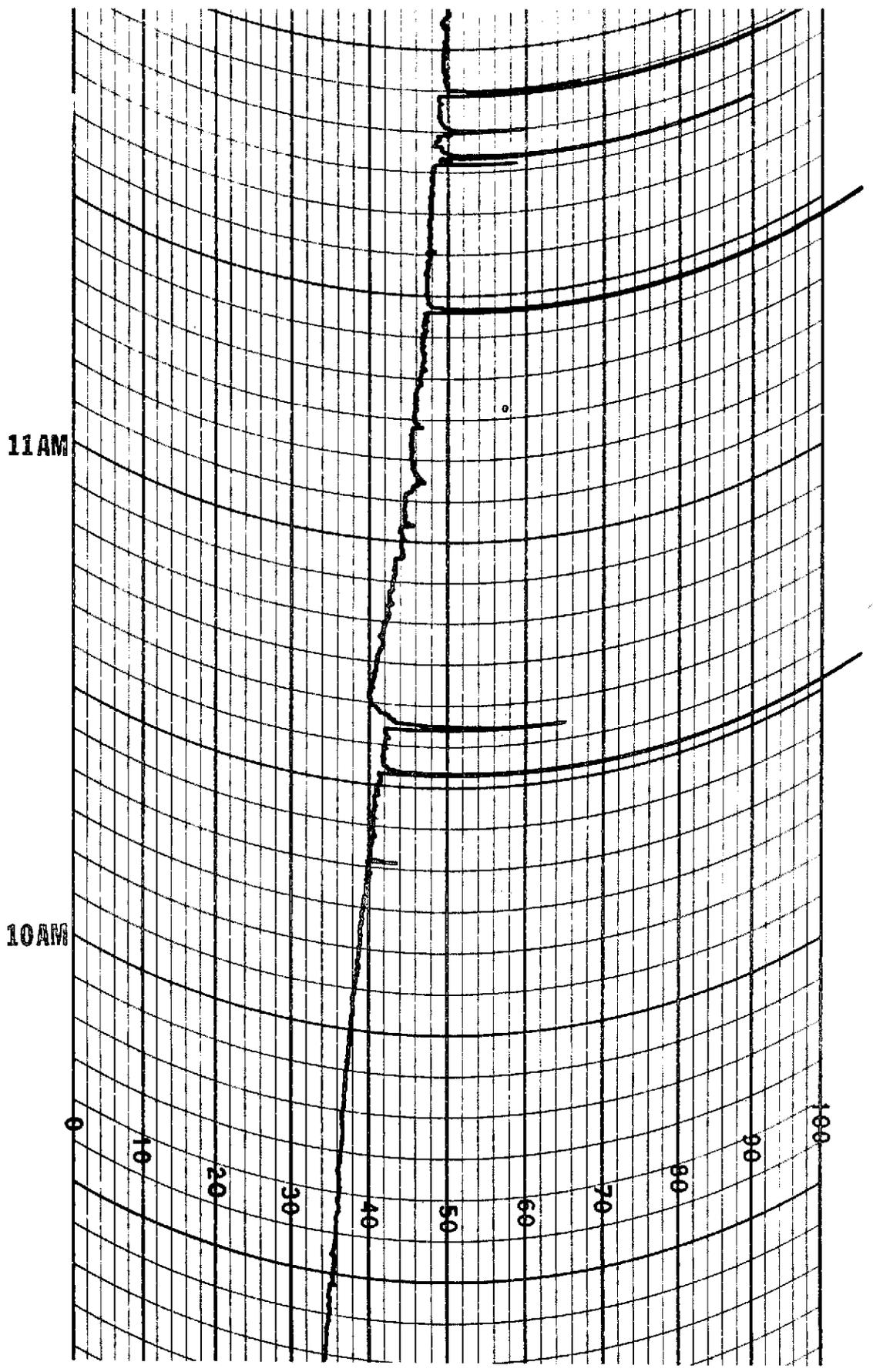
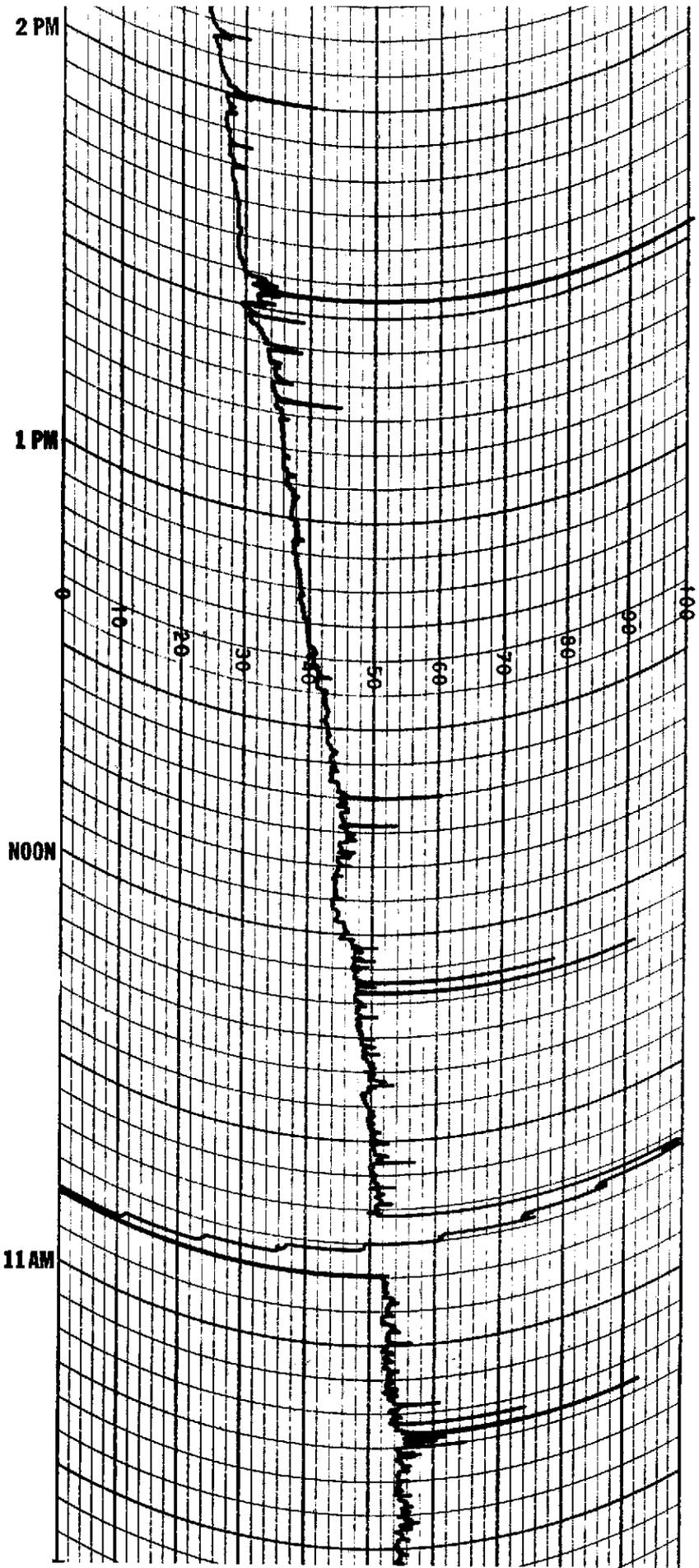


Fig. 5 - SCNA of 22 February 1967 observed with the 30 MHz riometer at São José dos Campos (Brazil).



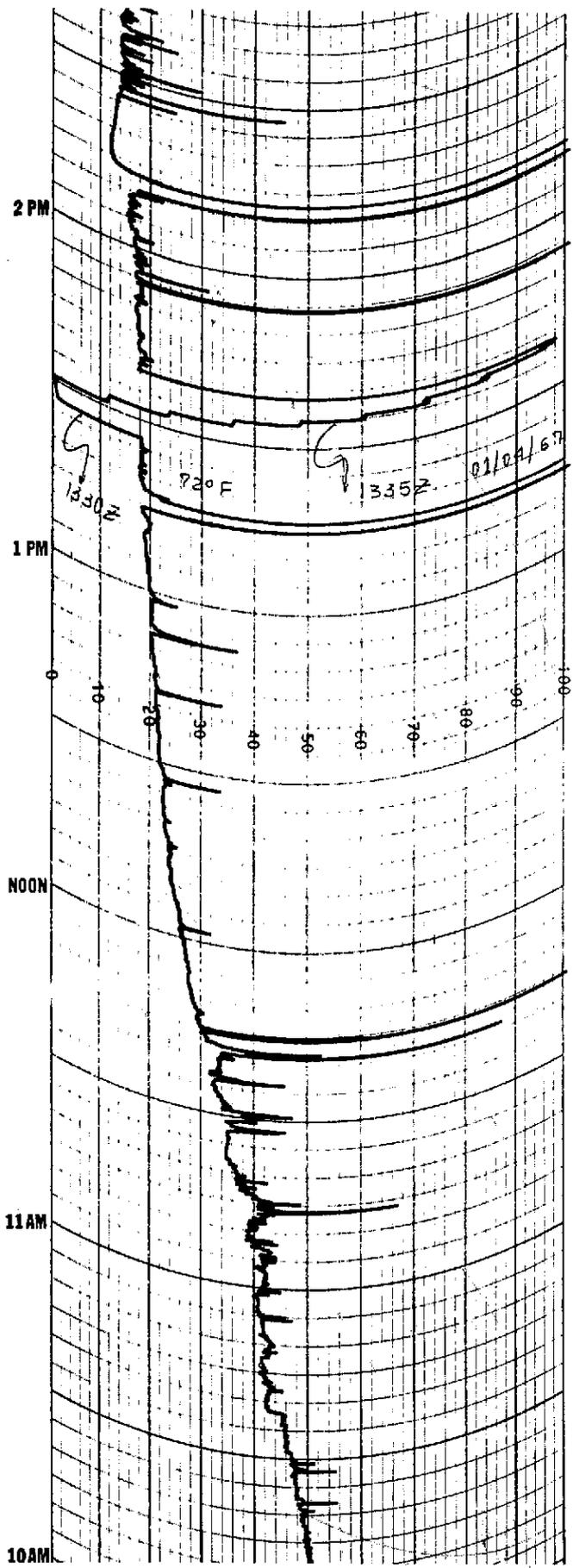
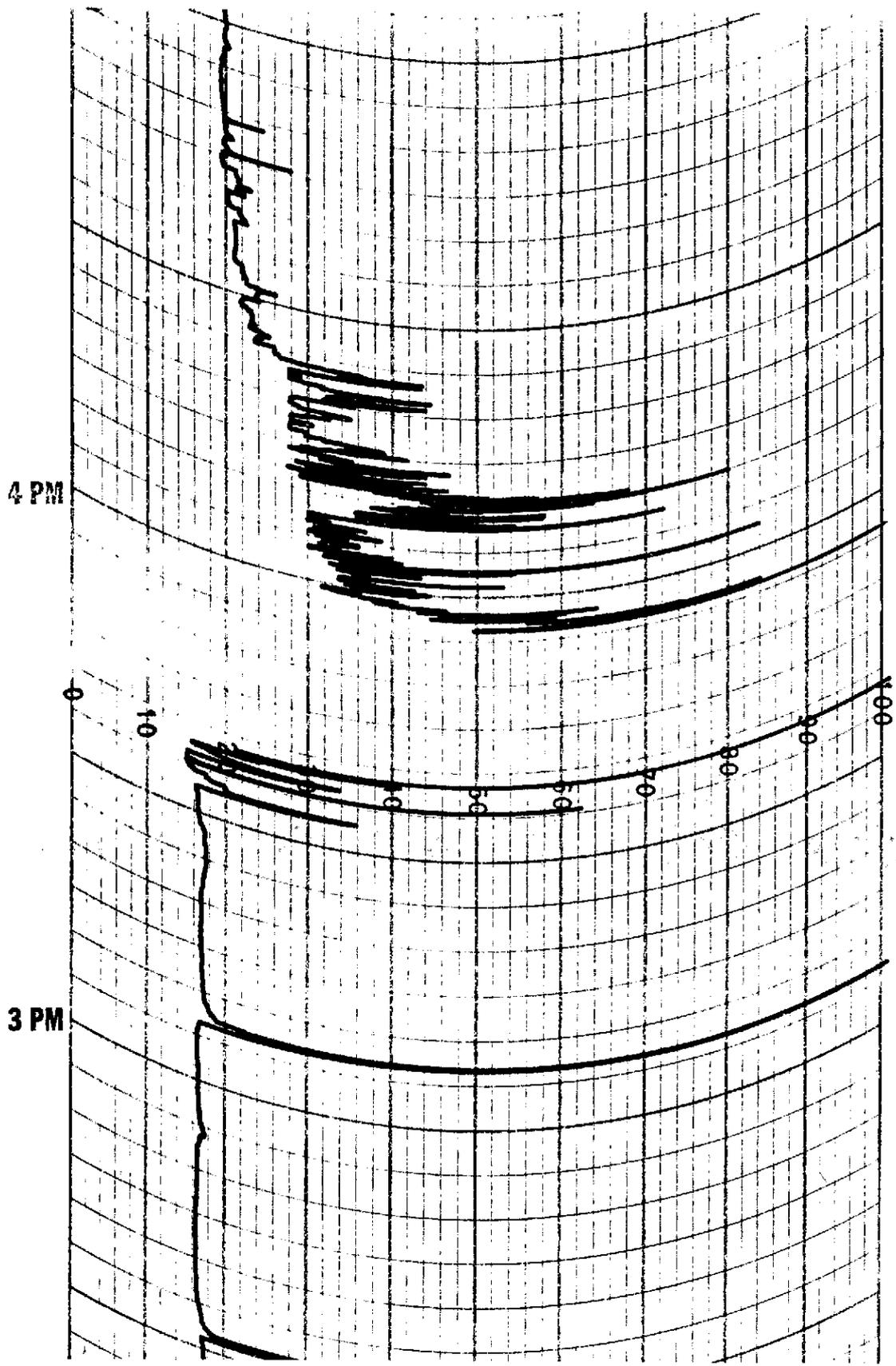


Fig. 7 - SCNA of 19 May 1967 observed with a 30 MHz riometer at São José dos Campos



P. R. - CNPq
 Comissão Nacional de Atividades Espaciais
 São José dos Campos - SP

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station - SJ
 Month - January
 Year - 1967
 Riometer - Mark II
 Lat. - 23°12'23"S
 Long. - 45°51'35"W
 DIP - 22.5°
 Mag. Lat. - 11.7°
 Alt. - 623 m
 Freq. - 30 MHz
 Bandwidth - 30 KHz
 Diode Load Resist - 750 ohm
 Audio Threshold - 3
 Int. Time - 4 sec
 ACG Time - 4 sec

TABLE V

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.61	0.86	0.79	0.90	0.93	0.93	0.83	0.64	0.57	0.61	0.72	0.93	0.97	1.24	1.43	1.64	1.90	2.22	2.12	1.52	1.24	1.00	0.90	1.21
2	1.00	0.90	1.04	0.68	0.61	0.61	0.72	0.64	0.61	0.64	0.68	0.90	1.04	1.33	1.33	1.79	2.07	2.12	1.72	1.49	1.37	1.30	1.33	1.33
3	1.04	0.93	1.58	1.50	1.30	0.97	0.72	0.68	0.61	0.61	0.72	0.93	1.07	1.33	1.49	1.76	1.90	2.38	1.99	1.43	1.30	1.27	1.33	1.37
4	1.07	0.93	1.21	1.30	1.30	1.21	1.10	0.86	0.64	0.72	0.90	0.97	1.21	1.43	1.58	1.76	1.95	1.90	2.12	2.09	1.73	1.43	1.33	1.70
5	1.07	0.97	1.00	1.30	1.17	0.72	0.76	0.72	0.68	0.68	0.83	0.90	0.83	0.90	1.24	1.30	1.58	1.79	1.79	2.07	1.73	1.27	0.90	0.93
6	1.07	0.97	1.00	0.93	0.72	0.76	0.76	0.76	0.64	0.72	0.68	0.83	1.10	1.30	1.40	1.68	1.64	1.82	1.73	2.01	2.01	1.40	1.33	1.37
7	1.65	1.27	1.21	0.93	0.72	0.76	0.79	0.79	0.68	0.76	0.83	0.97	1.04	1.30	1.55	1.67	1.96	2.23	1.87	1.55	1.24	0.93	1.17	1.37
8	1.10	0.90	0.86	0.93	0.93	0.76	0.79	0.64	0.61	0.64	0.79	0.83	1.00	1.24	1.24	1.30	1.40	1.58	1.33	1.14	1.07	0.93	0.90	0.83
9	0.72	1.04	0.86	0.93	0.93	0.76	0.83	0.68	0.76	0.72	0.93	1.07	1.07	1.24	1.27	1.40	1.93	1.90	1.52	0.83	0.76	0.93	0.90	1.24
10	1.14	1.33	1.24	0.93	0.93	0.53	0.37	0.29	0.29	0.33	0.79	0.83	1.04	1.27	1.37	1.64	1.64	1.99	1.43	0.79	0.61	0.53	0.76	0.93
11	0.76	0.72	0.86	0.93	0.61	0.37	0.25	0.17	0.17	0.25	0.35	0.97	1.04	1.27	1.52	1.76	1.79	1.90	1.76	1.52	1.14	1.35	1.17	1.27
12	1.04	1.10	1.14	0.93	0.93	0.79	0.86	0.76	0.76	0.79	0.79	0.83	1.07	1.27	1.49	1.70	2.12	2.12	1.70	1.37	1.40	1.21	0.90	0.97
13	1.04	1.10	1.14	0.93	0.93	0.68	0.57	0.37	0.37	0.33	0.57	0.79	1.10	1.27	1.30	1.46	1.33	1.55	1.07	0.68	0.93	0.90	0.90	0.97
14	0.83	0.76	0.57	0.61	0.61	0.68	0.61	0.49	0.53	0.64	0.93	0.90	1.04	1.21	1.30	1.62	1.99	1.96	1.61	1.04	0.64	0.49	0.49	0.61
15	0.72	0.53	0.57	0.61	0.61	0.68	0.61	0.45	0.45	0.41	0.63	0.83	0.97	1.14	1.40	1.46	1.67	1.70	1.58	1.00	0.64	0.49	0.49	0.61

TIME - UT

TABLE VI

Month: January
Year: 1967

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0.86	0.79	0.90	0.72	0.61	0.72	0.61	0.53	0.57	0.61	0.72	0.79	0.93	1.14	1.33	1.58	1.87	1.79	1.79	1.27	0.86	0.90	0.90	1.30
17	0.86	1.17	0.90	0.93	0.72	0.72	0.64	0.57	0.53	0.79	0.76	0.72	0.86	1.21	1.30	1.52	1.79	1.73	1.49	1.37	1.00	0.90	1.21	1.30
18	1.33	1.17	1.17	0.93	0.97	0.86	0.68	0.61	0.68	0.72	0.83	0.83	1.04	1.33	1.55	1.67	1.85	1.99	1.87	1.79	1.43	1.17	1.21	1.04
19	0.93	1.17	0.93	0.93	0.97	0.76	0.63	0.57	0.54	0.64	0.72	0.86	1.21	1.27	1.33	1.52	1.79	1.90	1.70	1.30	0.97	0.90	1.21	1.07
20	1.37	1.21	1.30	1.30	1.33	1.10	1.04	0.63	0.68	0.68	0.72	0.83	1.14	1.27	1.30	1.55	c	1.82	1.76	1.27	1.27	1.17	1.37	1.49
21	1.37	1.37	1.70	1.30	1.24	1.10	1.04	0.25	0.72	0.76	0.57	1.06	1.37	1.49	1.61	1.76	1.76	1.73	1.33	1.10	0.97	1.17	1.21	1.37
22	1.00	1.21	0.93	0.93	0.97	0.79	0.61	0.54	0.61	0.72	0.86	0.93	c	c	c	1.96	2.23	1.90	1.70	1.67	1.40	1.64	1.73	1.07
23	1.43	1.76	1.70	1.30	0.97	1.14	1.10	1.10	0.64	0.76	0.83	0.97	1.17	1.24	1.43	1.67	1.67	1.85	1.27	1.04	1.37	1.33	1.70	1.55
24	1.73	1.49	1.30	1.30	1.24	1.17	0.83	0.72	0.72	0.86	0.96	0.86	1.17	1.21	1.52	1.61	1.79	1.76	1.49	1.43	1.37	1.33	1.70	1.58
25	1.90	2.07	2.15	2.01	1.76	1.40	1.06	0.86	1.06	0.90	0.97	1.24	1.43	1.61	1.79	2.01	2.17	1.82	1.61	1.58	1.37	1.33	1.40	1.58
26	1.33	1.24	1.30	1.30	1.24	0.97	1.04	0.96	0.93	1.04	1.06	1.21	1.43	1.58	1.76	1.96	1.96	1.79	1.14	0.76	0.49	0.76	0.97	1.14
27	1.07	1.27	1.30	1.30	1.40	1.43	0.72	0.72	0.61	0.79	0.83	0.90	1.10	1.33	1.49	1.73	1.85	1.33	1.10	1.10	0.90	1.33	1.43	1.64
28	1.52	1.27	0.93	0.93	0.79	0.72	0.64	0.61	0.57	0.64	0.86	1.16	1.14	1.24	1.46	1.82	1.93	1.93	1.76	1.52	1.33	1.33	1.73	1.64
29	1.52	1.27	1.30	1.30	1.40	1.49	0.97	0.83	0.86	0.79	1.04	1.27	1.49	1.64	1.76	1.99	1.96	1.61	1.70	1.49	1.33	1.33	1.43	1.67
30	1.55	1.37	1.30	1.17	1.27	0.93	1.06	0.81	0.76	0.86	0.90	1.14	1.49	1.52	1.79	2.07	1.87	1.85	1.70	1.82	1.93	1.96	1.43	1.52
31	1.43	1.14	1.58	2.15	2.60	1.52	1.04	0.86	0.72	0.96	0.93	1.14	1.27	1.27	1.58	1.73	1.82	1.52	1.67	2.07	1.93	1.96	1.46	1.40
Count	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	30	31	31	31	31	31	31	31
HIQ	1.43	1.27	1.30	1.30	1.27	1.10	1.00	0.79	0.72	0.79	0.86	1.00	1.21	1.33	1.58	1.76	1.96	1.96	1.79	1.58	1.40	1.33	1.43	1.52
Median	1.07	1.17	1.14	0.93	0.94	0.79	0.76	0.68	0.64	0.72	0.79	0.96	1.07	1.27	1.43	1.67	1.85	1.82	1.70	1.43	1.27	1.21	1.21	1.30
LQ	0.93	0.93	0.90	0.93	0.72	0.72	0.64	0.53	0.57	0.64	0.72	0.83	1.04	1.24	1.30	1.52	1.67	1.73	1.49	1.10	0.93	0.90	0.90	1.04

TIME - UT

Month: February
Year: 1967

TABLE VIII

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	2.28	2.12	1.95	1.96	1.30	1.21	1.00	0.76	0.72	0.61	0.83	1.04	1.24	1.76	1.82	1.99	2.07	2.30	1.96	c	c	c	c	c
17	c	c	c	c	c	c	c	c	0.41	0.49	0.68	1.33	1.49	1.96	2.30	2.28	2.48	2.53	2.92	2.79	2.83	2.92	2.83	3.14
18	3.60	3.28	3.30	3.07	3.32	3.77	2.33	1.82	1.33	1.00	1.10	1.33	1.46	1.64	1.93	1.82	1.67	1.73	1.58	1.82	1.87	2.25	2.25	2.17
19	2.30	2.12	2.15	2.01	c	1.30	0.86	0.64	0.68	0.79	1.00	1.17	1.84	1.61	1.96	2.33	2.38	2.53	2.88	2.79	2.83	2.97	3.26	3.16
20	2.30	1.58	1.43	1.10	1.04	1.00	0.76	0.72	0.72	0.72	0.90	0.93	1.40	1.55	2.07	2.23	2.35	2.50	2.83	2.79	2.83	2.97	3.26	3.50
21	3.62	2.94	2.35	1.76	1.40	1.04	0.97	0.68	0.61	0.61	0.90	1.07	1.30	1.76	2.09	2.62	2.65	2.45	0.00	3.60	2.83	2.99	2.97	2.81
22	2.94	2.94	2.35	2.04	1.67	1.55	1.00	0.83	0.83	0.79	1.00	1.14	1.33	1.70	2.04	2.81	2.60	2.43	2.83	3.16	2.83	2.67	2.33	2.55
23	2.65	2.65	2.17	1.58	1.46	1.30	0.90	0.79	0.68	0.76	1.00	1.04	1.70	1.73	2.45	2.74	2.86	2.40	2.50	2.79	2.86	3.01	3.34	3.52
24	3.62	3.62	3.65	3.16	3.46	1.49	0.61	0.53	0.61	0.68	0.86	1.04	1.21	1.79	2.23	2.67	2.81	2.40	2.50	2.45	2.53	2.69	2.67	2.86
25	2.94	2.94	2.99	2.53	2.43	1.67	0.64	0.61	0.57	0.72	0.79	0.86	1.33	1.61	c	c	c	c	c	c	c	c	c	c
26	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
27	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
28	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
29	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
30	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
31	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Count	21	21	21	21	20	21	20	20	21	21	21	22	23	21	21	21	21	21	21	20	20	20	20	20
UQ	2.94	2.94	2.94	2.53	2.46	1.55	1.10	0.83	0.83	0.79	0.90	1.10	1.40	1.76	2.09	2.40	2.48	2.50	2.62	2.79	2.83	2.92	2.88	2.86
Median	2.50	2.30	2.30	1.96	1.64	1.40	0.90	0.76	0.68	0.72	0.83	1.04	1.30	1.61	2.01	2.28	2.35	2.40	2.09	2.25	2.09	2.17	2.75	2.30
LQ	2.23	2.12	1.85	1.58	1.33	1.21	0.76	0.68	0.61	0.61	0.79	0.93	1.21	1.40	1.79	1.86	2.01	2.01	1.87	1.93	2.09	2.12	2.07	2.07

TIME - UT

Month: March
Year: 1967

TABLE X

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	2.23	2.30	2.50	2.45	1.96	1.27	0.49	0.37	0.45	0.53	0.57	0.57	1.14	1.49	1.27	1.52	1.52	1.40	1.96	2.72	2.55	2.72	2.72	2.45
17	2.45	2.53	2.12	0.97	0.90	0.53	0.45	0.29	0.29	0.33	0.45	0.83	1.07	1.40	1.82	1.90	2.35	2.17	2.72	2.60	2.86	3.14	3.28	3.01
18	2.76	2.86	3.07	3.20	1.87	1.37	0.72	0.64	0.64	0.68	0.90	1.04	1.40	1.64	2.01	1.90	2.07	2.17	2.93	2.62	2.88	3.16	3.28	3.01
19	3.32	2.55	1.67	1.58	1.58	1.40	1.07	0.97	1.04	0.93	1.04	1.21	1.73	1.90	1.99	1.87	2.07	2.50	2.63	2.62	2.90	3.16	3.28	3.32
20	3.34	2.88	2.17	1.43	0.90	0.83	0.61	0.57	0.61	0.53	0.61	0.97	1.49	1.46	1.43	1.82	2.04	1.93	2.53	2.65	2.92	3.16	3.30	3.01
21	2.45	2.35	2.62	2.43	2.35	2.03	1.37	0.76	0.61	0.53	0.76	0.83	1.04	1.40	1.27	1.79	1.70	2.17	2.93	3.42	3.69	4.05	4.05	4.08
22	4.10	4.22	2.38	1.33	0.72	0.57	0.61	0.61	0.72	0.76	0.86	0.86	1.21	1.64	2.07	2.30	2.58	2.50	3.28	3.42	3.73	3.96	3.30	3.32
23	3.36	3.48	3.77	2.94	1.61	1.10	0.76	0.49	0.49	0.53	0.83	0.61	1.14	1.40	1.55	2.30	2.58	2.50	2.83	2.97	3.28	3.50	4.08	3.62
24	3.36	3.50	3.22	2.38	1.99	1.85	1.52	0.68	0.64	0.64	0.76	1.07	1.49	1.64	1.79	2.28	1.99	2.60	2.83	3.46	3.77	3.50	3.01	2.69
25	2.79	2.94	2.30	1.43	0.97	0.86	0.64	0.61	0.64	0.64	0.64	0.90	1.40	1.79	1.96	2.23	2.23	2.50	2.83	2.72	3.03	3.22	3.32	3.32
26	3.36	3.62	3.54	2.22	1.30	1.27	0.97	0.57	0.61	0.57	0.76	1.17	1.61	1.52	2.12	2.23	2.53	2.50	2.55	2.72	3.05	3.24	3.01	3.01
27	2.81	2.97	2.99	3.07	2.62	2.60	2.07	1.24	0.83	0.64	0.72	1.10	1.67	1.82	2.09	2.22	2.53	2.50	2.55	2.76	3.07	3.24	3.32	3.62
28	4.15	3.84	2.81	1.90	1.27	1.07	0.76	0.66	0.66	0.76	0.86	1.14	1.58	1.79	2.28	2.76	2.81	3.24	3.34	3.50	3.84	4.00	4.08	4.08
29	4.15	3.86	4.22	3.66	2.94	2.28	1.43	0.61	0.83	0.76	0.83	1.27	1.82	1.70	2.01	2.72	2.53	2.50	2.58	2.79	3.10	3.24	3.32	3.32
30	3.40	3.58	3.96	3.36	2.43	2.04	1.43	0.97	0.67	0.57	0.45	1.16	1.90	2.15	2.22	2.15	2.53	2.50	2.88	3.56	3.87	4.01	4.08	4.08
31	4.15	4.36	3.67	3.64	3.65	2.83	1.14	0.83	0.58	0.72	0.76	1.17	1.52	1.87	2.17	2.35	2.79	2.81	2.88	3.12	3.42	3.58	3.62	4.08
Count	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	29	30	31	31	30	30	31	31	31
UQ	3.36	3.48	3.48	3.07	2.40	1.85	1.67	0.76	0.68	0.72	0.83	1.10	1.52	1.76	2.04	2.23	2.53	2.50	2.58	2.79	3.10	3.24	3.32	3.32
Median	2.79	2.94	2.30	1.43	0.97	0.76	0.61	0.61	0.61	0.61	0.61	0.97	1.27	1.58	1.93	1.96	2.12	2.07	2.22	2.60	2.86	2.98	3.01	3.01
LQ	2.76	2.76	2.48	2.22	1.30	1.04	0.62	0.49	0.49	0.53	0.61	0.83	1.14	1.43	1.55	1.61	1.85	1.95	1.93	1.99	2.32	2.40	2.62	2.72

TIME - UT

P. R. - CNPq
 Comissão Nacional de Atividades Espaciais
 São José dos Campos - SP

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station - SJ
 Month - April
 Year - 1967
 Riometer - Mark II
 Lat. - 23° 12' 43" S
 Long. - 45° 51' 35" W
 DIP - 22.5° S
 Mag. Lat. - 11.7°
 Alt. - 623 m
 Freq. - 30 MHz
 Bandwidth - 30 KHz
 Diode Load Resist - 750 ohm
 Audio Threshold - 3
 Int. Time - 4 sec
 ACG Time - 4 sec

TABLE XI

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.62	3.93	3.03	2.53	2.50	1.40	0.41	0.37	0.41	0.37	0.57	0.90	1.76	1.67	1.82	2.38	2.79	3.73	3.36	3.14	3.42	3.58	3.62	3.62
2	3.05	2.17	1.33	1.21	0.57	0.72	0.68	0.57	0.53	0.53	0.61	0.90	1.64	1.64	2.04	1.99	2.09	2.81	3.38	3.16	3.44	3.58	3.62	3.62
3	3.73	3.30	3.40	3.16	1.96	1.49	1.14	0.57	0.53	0.45	0.49	0.86	1.24	1.58	2.01	2.92	2.79	3.24	3.38	3.18	3.46	3.58	3.20	3.20
4	3.32	3.58	3.73	1.96	1.17	0.90	0.57	0.68	0.53	0.64	0.61	0.76	1.17	1.76	1.96	1.64	2.79	2.83	2.94	3.22	3.46	3.60	3.62	4.10
5	4.68	4.47	3.16	2.22	1.52	1.04	0.57	0.37	0.37	0.37	0.57	1.17	1.58	1.70	1.96	2.23	2.38	2.43	2.94	3.24	2.81	2.92	2.94	2.94
6	3.07	3.36	3.20	2.38	1.70	1.43	0.61	0.45	0.37	0.37	0.53	0.86	1.40	1.67	1.90	2.88	2.79	2.83	2.97	3.26	3.50	3.60	3.62	3.64
7	3.78	4.05	3.03	1.43	0.97	0.93	0.49	0.35	0.37	0.25	0.37	0.79	1.40	1.37	2.48	2.22	2.79	2.83	3.42	2.88	2.81	2.35	2.35	1.90
8	2.04	2.67	1.73	1.46	0.93	0.79	0.68	0.57	0.49	0.45	0.57	0.93	1.33	1.40	1.87	1.87	2.09	2.15	2.30	2.62	2.81	2.94	2.94	2.97
9	3.12	2.62	1.58	1.21	0.97	1.14	0.79	0.49	0.49	0.45	0.64	0.76	0.93	1.14	1.37	1.55	1.82	2.15	2.33	2.65	3.12	3.20	3.20	3.24
10	3.14	2.65	1.82	1.14	0.83	0.61	0.57	0.45	0.41	0.45	0.57	0.90	0.80	1.30	1.61	1.87	1.82	2.17	2.33	2.67	2.58	2.85	2.35	2.17
11	1.82	1.70	1.30	0.76	0.49	0.53	0.45	0.45	0.41	0.45	0.53	0.83	0.79	1.27	1.79	2.15	2.38	2.86	2.65	2.92	3.12	3.20	3.20	3.26
12	2.88	2.17	1.37	0.93	0.83	0.97	0.76	0.53	0.45	0.49	0.64	0.86	0.93	1.24	1.55	2.12	2.38	2.88	2.38	2.12	2.28	2.35	2.85	2.40
13	2.38	2.22	1.73	1.58	1.24	1.27	0.79	0.49	0.45	0.37	0.57	0.97	1.24	1.21	2.04	2.12	2.38	2.22	1.79	1.90	1.79	1.61	1.46	1.00
14	1.07	0.90	0.68	0.45	0.65	0.57	0.49	0.53	0.53	0.49	0.61	0.86	1.17	1.61	1.73	1.55	2.09	2.22	2.40	2.72	2.60	2.65	2.65	2.72
15	2.65	2.28	1.79	0.83	0.72	0.53	0.45	0.53	0.49	0.53	0.64	0.90	0.79	0.90	0.97	1.52	1.85	1.61	1.61	1.21	0.90	0.93	0.93	1.00

TIME - UT

Month: April
Year: 1967

TABLE XI

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	1.27	1.14	0.72	0.69	0.53	0.45	0.53	0.53	0.53	0.49	0.68	0.83	0.90	1.10	1.46	1.52	1.85	1.64	1.87	2.15	2.30	2.35	2.35	2.43
17	2.97	2.53	1.33	0.79	1.10	1.00	0.72	0.53	0.53	0.45	0.83	1.33	1.17	1.55	1.67	1.52	1.55	c	c	c	c	c	c	c
18	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	1.90	1.96	2.09	1.85	1.85	1.96
19	2.23	2.17	1.61	0.79	0.79	0.64	0.61	0.61	0.57	0.45	0.68	0.72	0.97	1.00	1.17	1.52	2.15	2.25	2.53	2.79	2.92	2.94	3.22	2.76
20	2.25	1.64	0.76	0.41	0.49	0.45	0.45	0.45	0.41	0.41	0.53	0.33	1.07	1.21	1.14	1.30	1.87	1.99	1.96	1.73	1.87	1.40	0.97	1.07
21	1.37	1.30	0.64	0.33	0.57	0.72	0.45	0.37	0.45	0.37	0.53	0.57	0.90	0.97	1.10	1.52	1.55	1.70	1.99	2.23	1.53	1.40	0.97	0.76
22	0.72	0.97	1.10	1.24	1.14	1.14	0.64	0.53	0.45	0.49	0.68	0.19	0.83	1.14	1.61	1.52	2.15	2.28	2.30	2.23	2.35	1.40	0.97	1.10
23	1.27	1.17	0.90	0.68	0.79	0.61	0.41	0.57	0.37	0.33	0.64	1.04	1.61	1.87	2.86	2.79	3.28	3.44	3.30	2.81	2.35	1.85	1.43	1.58
24	1.87	1.90	1.37	0.97	1.10	0.93	0.57	0.41	0.41	0.49	0.76	1.10	2.09	2.69	2.43	2.38	2.33	2.33	2.04	1.52	1.40	0.93	0.64	0.64
25	0.61	0.53	0.57	0.49	0.49	0.57	0.49	0.49	0.37	0.41	0.57	0.86	1.34	1.82	2.15	2.09	2.17	2.35	2.07	1.79	1.61	1.40	1.43	1.14
26	1.49	1.30	0.86	0.97	0.79	0.49	0.45	0.41	0.41	0.41	0.61	0.83	1.04	1.58	1.87	2.38	2.86	2.62	2.67	2.58	2.35	1.85	1.46	1.37
27	1.37	1.33	1.07	0.79	0.68	0.45	0.37	0.25	0.29	0.29	0.53	0.45	0.79	1.30	1.55	1.52	1.61	1.55	1.61	1.80	1.17	0.93	0.86	0.83
28	1.17	1.38	1.10	0.97	0.86	0.61	0.53	0.53	0.29	0.29	0.45	0.53	0.76	1.27	1.55	1.82	2.22	2.40	2.69	2.86	2.35	1.61	1.46	1.43
29	1.79	1.73	1.17	0.79	0.64	0.57	0.53	0.37	0.35	0.33	0.64	0.68	0.72	1.24	1.50	1.82	2.45	2.40	2.72	2.60	2.35	1.85	1.46	1.64
30	1.58	1.61	1.46	1.17	0.79	0.53	0.41	0.33	0.33	0.37	c	0.61	0.90	1.24	1.55	1.85	2.22	c	2.15	2.28	2.35	2.35	1.93	2.15
31																								
Count	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29	29	29	29	29	29	29	29
UQ	3.12	3.30	1.73	1.46	1.24	1.04	0.68	0.53	0.53	0.49	0.64	0.90	1.40	1.67	2.01	2.23	2.79	2.85	2.94	2.92	3.12	3.20	3.20	3.20
Median	2.23	2.17	1.37	0.97	0.83	0.72	0.53	0.45	0.45	0.45	0.57	0.86	1.07	1.30	1.73	1.87	2.22	2.35	2.38	2.52	2.35	2.35	2.35	2.15
LQ	1.37	1.30	0.90	0.76	0.64	0.53	0.45	0.37	0.37	0.37	0.63	0.76	0.86	1.21	1.46	1.52	1.85	2.15	1.99	1.96	1.79	1.40	1.40	1.10

TIME - UT

P.R. - CNPq
 Comissão Nacional de Atividades Espaciais
 São José dos Campos - SP

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station - SU
 Month - May
 Year - 1967
 Riometer - Mark II

Lat. - 23°12'43"S
 Long. - 45°51'15"W
 DIP - 22.5°S
 Mag. Lat. - 11.7°
 Alt. - 623 m

Freq. - 30 MHz
 Bandwidth - 30 KHz
 Diode Load Resist. - 750 ohm
 Audio Threshold - 3
 Int. Time - 4 sec
 ACG Time - 4 sec

TABLE XIII

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.85	1.82	1.27	1.04	0.86	0.61	0.49	0.35	0.37	0.37	0.61	0.37	0.90	0.93	1.17	1.43	1.52	1.33	1.37	1.52	1.58	1.58	1.67	1.87
2	2.01	1.52	1.17	1.07	1.00	0.49	0.33	0.29	0.37	0.53	0.64	0.53	0.49	0.49	0.76	1.21	1.27	1.55	1.82	1.96	2.01	2.01	1.90	1.90
3	2.33	1.90	1.00	0.72	0.76	0.97	0.93	0.76	0.57	0.79	0.83	1.00	0.97	0.86	1.17	1.43	1.55	1.95	1.85	1.96	1.58	1.41	0.90	0.45
4	0.29	0.17	0.33	0.41	0.40	0.49	0.23	0.22	0.29	0.23	0.33	0.61	0.79	1.30	1.43	1.67	2.09	2.38	2.33	1.96	1.30	0.79	0.57	0.45
5	0.76	0.61	0.61	0.45	0.35	0.29	0.25	0.25	0.17	0.33	0.41	0.41	1.17	1.27	1.96	2.83	2.94	3.01	2.65	1.99	1.17	0.79	0.51	0.37
6	0.49	0.53	0.53	0.41	0.29	0.25	0.25	0.21	0.12	0.25	0.33	0.57	0.53	1.07	1.43	1.70	1.82	1.87	1.43	0.93	0.79	0.49	0.41	0.37
7	0.41	0.45	0.29	0.37	0.35	0.33	0.29	0.25	0.29	0.37	0.37	0.53	0.72	0.83	1.17	1.46	1.61	1.64	1.87	1.55	0.73	0.49	0.41	0.37
8	0.49	0.49	0.45	0.41	0.41	0.29	0.21	0.21	0.17	0.29	0.29	0.49	0.49	0.41	0.97	1.21	1.37	1.46	1.46	1.17	0.79	0.49	0.25	0.25
9	0.49	0.29	0.29	0.29	0.29	0.29	0.21	0.21	0.17	0.33	0.21	0.45	0.45	0.57	0.97	1.46	1.87	1.93	1.90	1.79	1.58	1.21	0.73	0.79
10	0.97	0.83	0.45	0.37	0.41	0.37	0.37	0.25	0.25	0.37	0.25	0.41	0.41	0.79	1.43	1.70	1.87	1.70	1.49	1.17	0.79	0.64	0.64	0.29
11	0.37	0.37	0.29	0.25	0.35	0.29	0.21	0.21	0.37	0.41	0.27	0.37	0.64	0.79	1.17	1.49	1.90	1.73	1.73	1.58	1.17	0.83	0.49	0.41
12	0.57	0.53	0.45	0.41	0.37	0.37	0.33	0.33	0.29	0.45	0.33	0.33	0.61	0.79	1.17	1.70	1.90	2.23	1.93	1.79	1.58	1.37	0.83	0.84
13	0.72	0.45	0.41	0.41	0.53	0.53	0.45	0.49	0.41	0.45	0.41	0.45	0.61	0.76	1.17	1.52	1.90	1.76	1.93	2.01	2.01	1.21	0.49	0.41
14	0.49	0.41	0.29	0.21	0.25	0.25	0.25	0.21	0.23	0.29	0.21	0.41	0.57	0.76	1.17	1.27	1.70	2.01	2.17	1.96	1.58	1.70	0.72	0.68
15	0.79	0.83	0.41	0.41	0.41	0.41	0.41	0.41	0.49	0.45	0.45	0.72	0.72	1.21	1.17	1.73	1.73	1.82	1.73	1.58	1.30	0.86	0.72	0.61

TIME - UT

Month: May
Year: 1967

TABLE XIV

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0.72	0.37	0.41	0.37	0.37	0.33	0.33	0.37	0.41	0.43	0.41	0.49	0.49	0.76	1.00	1.07	1.10	1.10	1.14	0.79	0.79	0.68	0.37	0.49
17	0.49	0.41	0.37	0.33	0.25	0.25	0.25	0.17	0.33	0.29	0.25	0.49	0.49	0.97	1.21	1.27	1.52	1.61	1.76	1.58	1.58	1.27	0.79	0.64
18	0.79	0.61	0.41	0.33	0.29	0.25	0.29	0.39	0.37	0.29	0.33	0.57	0.49	0.76	1.00	1.30	1.55	1.85	1.76	1.58	1.17	0.90	0.61	0.53
19	0.72	0.53	0.45	0.37	0.41	0.41	0.41	0.29	0.49	0.49	0.45	0.41	0.45	0.76	1.00	1.10	1.14	1.00	1.14	1.17	0.93	0.73	0.45	0.57
20	0.49	0.37	0.41	0.25	0.37	0.45	0.41	0.29	0.41	0.45	0.41	0.41	0.45	0.76	1.00	1.14	0.93	1.00	1.14	1.17	1.17	1.50	0.83	0.76
21	0.79	0.64	0.41	0.37	0.41	0.33	0.29	0.72	0.37	0.33	0.37	0.37	0.41	0.76	1.21	1.37	1.64	1.67	1.55	1.55	1.17	1.10	0.68	0.64
22	0.73	0.93	0.90	0.72	0.64	0.53	0.33	0.25	0.37	0.41	0.33	0.33	0.41	0.76	0.79	0.93	0.97	1.04	1.14	1.17	0.49	0.61	0.37	0.41
23	0.33	0.33	0.49	0.49	0.37	0.29	0.25	0.21	0.33	0.23	0.20	0.35	0.41	0.76	1.00	0.93	1.24	1.21	1.30	1.17	0.49	0.61	0.41	0.53
24	0.53	0.68	0.61	0.37	0.29	0.29	0.13	0.21	0.25	0.09	0.09	0.29	0.83	0.97	1.00	1.21	1.27	1.21	1.17	1.17	0.39	0.45	0.41	0.33
25	0.33	0.45	0.37	0.33	0.29	0.21	0.25	0.25	0.37	0.25	0.41	0.64	0.37	0.33	0.79	0.97	1.49	1.49	1.17	1.17	0.64	0.79	0.61	0.79
26	1.00	0.61	0.21	0.21	0.25	0.13	0.17	0.21	0.21	0.13	0.21	0.64	1.21	1.17	1.49	1.87	1.73	1.49	1.59	1.58	1.21	1.37	0.97	1.10
27	1.61	1.36	0.97	0.68	0.61	0.41	0.49	0.49	0.37	0.17	0.17	0.37	1.00	1.64	1.70	2.23	2.23	2.17	2.01	2.01	1.37	1.52	1.14	1.30
28	1.37	0.93	0.41	0.25	0.25	0.25	0.29	0.33	0.49	0.29	0.29	0.37	0.37	0.49	0.83	1.00	1.55	1.73	2.01	2.25	1.37	1.55	1.73	1.53
29	1.14	0.68	0.45	0.49	0.37	0.37	0.29	0.29	0.29	0.21	0.25	0.17	0.15	0.49	0.83	1.04	1.10	1.07	1.17	0.79	0.86	1.04	1.07	0.76
30	2.28	0.43	0.57	0.41	0.33	0.29	0.25	0.37	0.45	0.17	0.21	0.33	0.49	1.17	1.27	1.73	2.07	1.96	1.79	1.79	0.86	1.07	0.73	0.53
31	0.49	0.45	0.63	0.45	0.41	0.33	0.37	0.41	0.37	0.29	0.17	0.53	0.76	1.43	1.52	1.49	1.37	1.10	0.93	0.79	0.33	0.57	0.49	0.57
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
UQ	1.14	0.83	0.57	0.45	0.41	0.41	0.37	0.37	0.41	0.45	0.41	0.53	0.76	1.07	1.27	1.70	1.87	1.87	1.90	1.96	1.58	1.30	0.83	0.76
Median	0.72	0.53	0.45	0.41	0.37	0.33	0.29	0.29	0.37	0.33	0.33	0.41	0.49	0.79	1.17	1.43	1.55	1.64	1.73	1.78	1.17	0.90	0.61	0.57
LQ	0.49	0.41	0.37	0.33	0.29	0.29	0.25	0.21	0.29	0.29	0.25	0.37	0.45	0.76	1.00	1.14	1.27	1.21	1.17	1.17	0.79	0.64	0.41	0.41

TIME - UT

P. R. - CNPq
 Comissão Nacional de Atividades Espaciais
 São José dos Campos - SP

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station	- SJ	Lat.	- 23° 12' 43" S	Freq.	- 30 MHz
Month	- June	Long.	- 45° 51' 35" W	Bandwidth	- 30 KHz
Year	- 1987	DIP	- 22.5° S	Diode Load Resist	- 750 ohm
Riometer	- Mark II	Mag. Lat.	- 11.7°	Audio Threshold	- 3
		Alt.	- 623 m	Int. Time	- 4 sec
				ACG Time	- 4 sec

TABLE XV

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	0.64	0.53	0.37	0.33	0.37	0.41	0.37	0.41	0.17	0.13	0.13	c	0.79	0.68	0.90	0.79	0.93	0.79	0.61	0.17	0.21	0.17	0.33	
2	0.45	0.49	0.49	0.41	0.29	0.29	0.29	0.29	0.13	0.09	0.13	0.13	0.13	0.57	0.90	1.14	1.70	1.55	1.61	1.27	1.30	1.10	0.33	0.37
3	0.41	0.45	0.37	0.37	0.33	0.33	0.33	0.33	0.25	0.09	0.25	0.09	0.37	0.57	0.68	0.97	1.04	0.93	0.97	0.79	0.33	0.25	0.13	0.17
4	0.25	0.41	0.41	0.29	0.25	0.25	0.25	0.33	0.29	0.04	0.04	0.09	0.13	0.41	0.53	0.79	0.83	0.93	0.97	1.00	0.90	0.29	0.00	0.21
5	0.29	0.37	0.25	0.25	0.21	0.17	0.13	0.25	0.21	0.00	0.00	0.04	0.13	0.41	0.53	0.57	0.64	0.57	0.41	0.45	0.21	0.29	0.29	0.76
6	1.17	0.30	0.53	0.33	0.37	0.25	0.25	0.29	0.25	0.25	0.33	0.21	0.37	0.61	0.76	0.61	0.68	0.57	0.61	0.45	0.41	0.33	0.09	0.29
7	1.10	0.45	0.72	0.86	0.76	0.45	0.25	0.33	0.17	0.13	c	0.04	0.37	0.61	0.97	1.27	1.49	1.61	1.61	1.00	0.37	0.21	0.13	0.21
8	0.29	0.33	0.29	0.29	0.21	0.29	0.21	0.25	0.09	0.09	0.13	0.04	0.13	0.17	0.76	1.07	1.27	1.27	0.79	1.00	0.79	0.53	0.13	0.13
9	0.41	0.29	0.29	0.13	0.13	0.04	0.00	0.09	0.04	c	c	c	0.13	0.17	0.37	0.49	0.68	0.61	0.41	0.29	0.09	0.13	c	0.04
10	0.17	0.33	0.25	0.21	0.09	0.25	0.29	0.41	c	c	c	c	c	0.21	0.37	0.49	0.53	0.61	0.61	0.64	0.45	0.29	c	0.00
11	0.17	0.21	0.21	0.21	0.33	0.25	0.25	0.37	0.17	c	0.04	c	0.13	0.21	0.37	0.49	0.53	0.61	0.41	0.29	0.29	0.17	0.00	0.04
12	0.09	0.17	0.25	0.17	0.17	0.09	0.17	0.25	0.13	c	0.00	0.00	0.13	0.21	0.41	0.72	0.72	0.61	0.61	0.45	0.13	0.09	0.04	0.09
13	0.25	0.21	0.25	0.25	0.25	0.13	0.13	0.17	0.09	c	c	c	0.13	0.21	0.41	0.57	0.72	0.61	0.61	0.68	0.86	0.25	0.09	0.04
14	0.13	0.17	0.21	0.25	0.15	0.09	0.04	0.13	c	c	c	c	c	0.21	0.25	0.33	0.53	0.61	0.61	0.49	0.49	0.41	0.25	0.41
15	0.68	0.57	0.45	0.41	0.33	0.21	0.17	0.15	c	c	c	c	c	0.21	0.45	0.41	0.53	0.41	0.09	c	0.09	0.17	0.04	0.13

TIME - UT

Month: June
Year: 1967

TABLE XVI

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0.25	0.29	0.33	0.33	0.25	0.17	0.17	0.17	0.09	c	c	c	0.17	0.45	0.49	0.61	0.57	0.61	0.61		0.37	0.21	0.09	0.17
17	0.29	0.25	0.33	0.33	0.25	0.21	0.13	0.09	0.00	c	c	0.13	0.17	0.49	0.49	0.79	0.57	0.61	0.61	0.53	0.41	0.09	0.13	0.21
18	0.37	0.53	0.49	0.41	0.33	0.17	0.13	0.13	c	c	c	c	0.17	0.49	0.53	0.64	0.76	0.79	0.61	0.37	0.13	0.13	0.13	0.17
19	0.25	0.25	0.29	0.25	0.17	0.13	0.17	0.17	0.04	c	c	0.13	0.17	0.29	0.57	0.83	0.76	0.61	0.61	0.37	0.25	0.29	0.21	0.21
20	0.37	0.41	0.33	0.21	0.25	0.09	0.09	0.09	0.00	c	c	0.13	0.17	0.29	0.57	0.64	0.57	0.61	0.25	0.21	0.17	0.17	0.13	0.17
21	0.33	0.45	0.41	0.37	0.21	0.17	0.21	0.13	c	c	0.04	0.13	0.17	0.53	0.61	0.49	0.57	0.41	0.45	0.41	0.21	0.21	0.17	0.13
22	0.25	0.33	0.33	0.29	0.17	0.04	0.04	c	c	c	c	c	0.17	0.33	0.61	0.86	0.97	0.61	0.64	0.57	0.49	0.41	0.33	0.41
23	0.49	0.49	0.41	0.37	0.29	0.21	0.17	0.13	c	c	c	c	0.17	0.33	0.64	0.86	0.97	0.97	0.83	0.61	0.25	0.00	0.00	0.04
24	0.21	0.21	0.29	0.37	0.25	0.17	0.17	0.04	c	c	c	0.13	0.17	0.37	0.64	0.86	0.97	0.97	0.83	0.61	0.57	0.49	0.29	0.41
25	0.37	0.41	0.45	0.41	0.29	0.21	0.21	c	0.00	c	c	c	0.21	0.37	0.68	0.90	0.97	0.97	1.00	1.17	1.49	0.90	0.45	0.49
26	0.61	0.49	0.53	0.49	0.37	0.25	0.25	0.09	c	c	c	0.13	0.21	0.37	0.49	0.53	0.41	0.41	0.45	0.13	0.04	0.13	0.13	0.21
27	0.37	0.45	0.68	0.68	0.37	0.37	0.41	0.13	0.09	0.00	c	0.13	0.41	0.61	0.72	0.72	0.61	0.61	0.64	0.49	0.33	0.17	0.04	0.17
28	0.49	0.45	0.37	0.37	0.45	0.29	0.33	0.09	0.04	0.00	c	c	0.21	0.41	0.72	0.53	0.53	0.41	0.29	0.33	0.37	0.21	0.25	0.33
29	0.53	0.57	0.53	0.45	0.41	0.33	0.25	0.17	0.04	c	c	0.13	0.21	0.45	0.72	0.90	0.97	0.79	0.49	0.33	0.41	0.49	0.37	0.37
30	0.57	0.68	0.68	0.57	0.37	0.25	0.29	c	0.00	c	c	c	0.04	0.45	0.79	0.90	0.79	0.61	0.68	0.53	0.41	0.25	0.21	0.37
31																								
Count	30	30	30	30	30	30	30	27	21	11	9	18	26	30	30	30	30	30	30	28	30	30	28	30
UQ	0.49	0.49	0.49	0.41	0.33	0.29	0.25	0.29	0.23	0.13	0.19	0.13	0.21	0.49	0.72	0.90	0.97	0.93	0.79	0.66	0.53	0.33	0.25	0.37
Median	0.37	0.41	0.37	0.33	0.25	0.21	0.21	0.17	0.09	0.09	0.09	0.13	0.17	0.39	0.59	0.72	0.72	0.61	0.61	0.49	0.39	0.23	0.13	0.21
LQ	0.25	0.29	0.29	0.25	0.21	0.17	0.13	0.13	0.04	0.07	0.04	0.09	0.13	0.21	0.49	0.53	0.57	0.61	0.45	0.35	0.21	0.17	0.09	0.13

TIME - UT