ABSORPTION MEASUREMENTS WITH RIOMETER

Data Summary Nº 7 for the period
April 1965 through September 1965

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RIOMETER MEASUREMENTS

DATA SUMMARY Nº 7

I - INTRODUCTION

This summary is a catalogue of reduced riometer data, for the period of observations from April 1965 through September 1965.

Figure I 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 value of observation is 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 IV through XV . Note that Figs. II and III also show the monthly medians mentioned above.

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

The absorption events at the Riometer of São José dos Campos are listed in the Table III carrying time interval and maximum value of absorption.

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 power 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

non deviative absorption effects of 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" curve, which is assumed, as pointed before, to represent values of zero absorption condition.

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

$$A\ (db) = 10 \log_{10} Ir/Iq$$

where:

Ir = noise power actually received at a given time

Iq = 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 Commitee 1958) has been used.

The absorption during the first minute of each hour of every day throughout a given period of observation is recorded and then averaged. The results give a picture of the daily and seasonal variations 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 Iq is obtained. The actual values of current for each hour are translated to the correct sidereal time and the ratio $\frac{Iq}{Ir}$ 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.

Three flares occurred during the local sunlight hours, namely on April 11. May 15 and September 30, which could be clearly related to the absorption effects shown in the Riometer records, although the peak of absorption is relatively small in most of cases.

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

TABLE I

IMPORTANT FLARES OCCURRED UNDER SUNLIGHT PERIOD

Date 1965	Flare Import.	Period (UT) Start	Max Phase	End	Remarks
April 11	-	1448	1506	1700	Phase record at VLF
16	2	0942	-	1105	H. A. O. - Boulder
May 15	-	1830	1841	2012	Phase record at VLF
16	2+	1314	-	1336	H. A. O. - Boulder
16	-	1900	1914	2040	Phase record at VLF
June 5	-	1800	1815	2004	Phase record at VLF
Sept. 30	2	1313	1351	1504	H. A. O. - Boulder
30	2	1513	1547	1653	H. A. O. - Boulder
30	2	1921	1938	2203	H. A. O. - Boulder

TABLE II

BURST UNDER SUNLIGHT PERIOD AS PUBLISHED BY H. A. O. (Boulder, Colo.)

Date 1965		Type	Burst Time Interval U. T.	Freq. Range MHz
April	9	III	2005 - 2006:15	29 - 41
	11	III	1558 - 1558:30	22 - 41
		III	1648:30 - 1649:30	23 - 41
		III	1740:30 - 1741:30	20 - 41
		III	1741:45 - 1742	23 - 34
		III	1844:45 - 1845:30	22 - 41
		III	1846:15 - 1846:45	22 - 41
		III	1847 - 1847:30	22 - 41
	12	III	1428 - 1428:30	24 - 34
		III	1502:15 - 1502:30	23 - 37
		III	1924:45 - 1925:15	23 - 41
	27	III	2023 - 2023:30	18 - 41
May	1	III	1427 - 1431:30	8 - 41
		IV	1427 - 1448	21 - 41
		III	1643 - 1643:30	8 - 41
	2	III	1623:15 - 1623:45	28 - 41
	7	III	1353 - 1353:15	27 - 41
		III	1403:45 - 1404:45	14 - 41
		III	1553:30 - 1553:45	18 - 41
		III	1719:30 - 1720	22 - 41
		III	1802:30 - 1802:45	21 - 41
		III	1818:15 - 1818:30	11 - 41
		III	1824:45 - 1825:15	24 - 41
	11	III	2025 - 2025:15	22 - 41
	17	III	1154:45 - 1155	17 - 41
		III	1600 - 1600:15	20 - 41
		III	1618:45 - 1619	23 - 37
		III	1638 - 1638:15	24 - 30
		III	1800:45 - 1801	28 - 35
		III	1809:45 - 1810	23 - 41
		III	1815:30 - 1816:45	09 - 41
		III	2002 - 2002:15	22 - 35
		III	2003 - 2003:15	24 - 41
	18	III	1157:15 - 1157:45	13 - 45
		III	1224:15 - 1224:30	17 - 41
		III	1224:30 - 1224:45	17 - 41
		III	1225 - 1225:15	25 - 41
		III	1225:15 - 1225:30	25 - 41
		III	1226:30 - 1227	25 - 41

TABLE II (Cont.)

Date 1965	Burst Type	Time Interval U. T.	Freq. Range MHz
May 18	III	1316:15 - 1316:30	22 - 41
	III	1344 - 1344:15	22 - 41
	III	1402:15 - 1402:30	20 - 41
	III	1414:45 - 1415:15	19 - 41
	III	1421 - 1421:15	20 - 39
	III	1441 - 1441:15	23 - 38
	III	1516 - 1516:15	21 - 41
	III	1519:15 - 1519:30	27 - 31
	III	1554:45 - 1555	29 - 34
	III	1601:15 - 1601:45	20 - 41
	III	1612:45 - 1613	10 - 41
	III	1613:15 - 1613:45	10 - 41
	III	1630:45 - 1631	26 - 38
	III	1635 - 1635:30	19 - 38
	III	1704:30 - 1704:45	25 - 41
	III	1748 - 1748:30	21 - 41
	III	1756:15 - 1756:45	22 - 31
	III	1806:30 - 1807	22 - 41
	III	1824:30 - 1824:45	20 - 35
	III	1830 - 1830:15	21 - 30
	III	1840 - 1840:30	26 - 41
	III	1846 - 1846:15	23 - 41
	III	1921 - 1921:15	23 - 34
	III	1934 - 1934:15	24 - 32
	III	1949 - 1949:15	22 - 41
	III	2005:30 - 2005:45	19 - 37
	III	2006:15 - 2006:45	17 - 41
	III	2019 - 2019:15	26 - 33
19	III	1140:15 - 1143:15	12 - 41
	III	1143:30 - 1143:45	15 - 41
	III	1227:30 - 1227:45	24 - 33
	III	1320:15 - 1320:45	20 - 41
	III	1323 - 1323:15	22 - 38
	III	1402 - 1402:15	25 - 41
	III	1404:45 - 1405	23 - 30
	III	1406 - 1406:45	16 - 41
	III	1407:15 - 1410:15	16 - 41
	III	1411:15 - 1411:30	17 - 41
	III	1457 - 1457:15	25 - 32
	III	1502:15 - 1502:30	21 - 34
	III	1515:45 - 1516:15	16 - 41
	III	1532 - 1532:30	17 - 41

Date 1965		Burst Type	Time Interval U. T.	Freq. Range MHz
May	19	III	1537:30 - 1539:15	08 - 41
		III	1542:30 - 1543	16 - 41
		III	1544:45 - 1545	20 - 31
		III	1550 - 1550:15	21 - 41
		III	1603:30 - 1603:45	29 - 39
		III	1604:45 - 1605	25 - 41
		III	1635:30 - 1636:30	22 - 35
		III	1728:45 - 1729	24 - 41
		III	1831:45 - 1832	22 - 38
		III	1915:30 - 1915:45	29 - 41
		III	1918:15 - 1918:45	16 - 41
		III	1929:30 - 1921	17 - 41
		III	1926 - 1926:45	14 - 41
		III	2008:45 - 2010:30	08 - 41
		III	2015:30 - 2015:45	24 - 35
	20	III	1236:15 - 1236:30	24 - 41
		III	1305:45 - 1306	21 - 32
		III	1321:30 - 1321:45	29 - 38
		III	1329:30 - 1329:45	26 - 41
		III	1412:30 - 1413	28 - 41
		III	1421:15 - 1421:30	24 - 41
		III	1631:15 - 1632	08 - 41
		III	1632:45 - 1633:15	20 - 39
		III	1639:45 - 1640	27 - 37
		III	1640:30 - 1641	19 - 41
		III	1744 - 1744:15	25 - 32
		III	1832:15 - 1832:30	20 - 41
		III	1857:30 - 1857:45	20 - 41
	21	III	1648:45 - 1649	29 - 40
		III	1703:45 - 1704:15	22 - 38
		III	1853:45 - 1854	22 - 41
	22	cont.	1213 - 1835	20 - 41
		III	1549:45 - 1550	16 - 34
		III	1602:45 - 1603:15	16 - 36
		III	1847 - 1848:15	21 - 41
		cont.	1849 - 2000	20 - 41
	23	III	1250:15 - 1250:45	30 - 41
		III	1252:15 - 1252:30	25 - 41
		III	1308:30 - 1309	27 - 41

TABLE II (Cont.)

Date 1965	Burst Type	Time Interval U.T.	Freq. Range MHz
May 23	III	1617:30 - 1619	28 - 41
	III	1619 - 1619:30	26 - 41
	III	1654:15 - 1654:45	22 - 41
	III	1717 - 1717:30	24 - 41
	III	1718:30 - 1719:45	25 - 41
	III	1726:15 - 1727:30	23 - 41
	III	1728:15 - 1728:30	26 - 41
	III	1729 - 1729:30	28 - 41
	III	1732 - 1732:15	28 - 41
	III	1747 - 1747:15	30 - 41
	III	1747:30 - 1749	23 - 41
	III	1749:15 - 1749:30	25 - 41
	III	1752:30 - 1753	28 - 41
	III	1806:45 - 1809:45	16 - 41
	III	1927 - 1927:45	16 - 41
	III	1928 - 1928:45	16 - 41
	III	1929 - 1929:15	24 - 41
	III	1955:45 - 1956:30	23 - 41
	III	2021:30 - 2022	27 - 31
24	III	1623:15 - 1623:30	24 - 38
	III	1751:45 - 1752	23 - 37
	III	1953:45 - 1954:15	20 - 39
	III	1954:30 - 1955	22 - 39
25	III	1130:15 - 1131	16 - 41
	III	1131 - 1132:15	16 - 41
	III	1132:15 - 1133:45	16 - 41
	III	1133:45 - 1134	17 - 38
	III	1136:15 - 1136:45	18 - 41
	III	1140:15 - 1140:45	21 - 41
	III	1233:15 - 1233:45	23 - 41
	III	1234:15 - 1235	20 - 41
	III	1238:30 - 1239:15	16 - 41
	III	1244 - 1244:30	27 - 38
	III	1248 - 1248:15	28 - 39
	III	1346:45 - 1347:15	20 - 41
	III	1347:45 - 1348	29 - 36
	III	1353 - 1353:30	20 - 37

TABLE II (Cont.)

Date 1965	Burst Type	Time Interval U. T.	Freq. Range MHz
May 25	III	1355:15 - 1355:45	23 - 41
	III	1355:45 - 1356:15	21 - 41
	III	1409:15 - 1409:45	16 - 41
	III	1419:45 - 1420:15	20 - 41
	III	1427:15 - 1427:45	20 - 41
	III	1444 - 1444:30	23 - 32
	III	1451 - 1451:30	12 - 37
	III	1503:45 - 1504:15	23 - 41
	III	1512:30 - 1513	27 - 39
	III	1513:30 - 1515:15	11 - 41
	III	1517 - 1517:30	16 - 41
	III	1639 - 1641	08 - 41
	III	1648:15 - 1648:30	27 - 37
	III	1649 - 1649:15	25 - 39
	III	1652:15 - 1652:30	22 - 41
	III	1724:45 - 1725	22 - 41
	III	1736 - 1736:30	10 - 41
	III	1751:30 - 1753	14 - 41
	III	1820:15 - 1821:30	08 - 41
	III	1827:15 - 1828	19 - 41
	III	1956:45 - 1957:45	16 - 41
	III	1957:45 - 1958:15	19 - 41
	III	2005:15 - 2005:30	19 - 41
	III	2006 - 2006:30	08 - 41
	III	2006:30 - 2011:15	08 - 41
26	III	1246:30 - 1247	24 - 39
	III	1348 - 1348:45	12 - 41
	III	1430:45 - 1431:15	12 - 34
	III	1437:45 - 1438	20 - 36
	III	1444:15 - 1444:30	30 - 37
	III	1444:45 - 1445	29 - 38
	III	1445:15 - 1448:15	16 - 38
	III	1452:15 - 1454:15	13 - 41
27	III	1403:15 - 1404	22 - 36
	cont.	1405:15 - 1412:30	11 - 41
	IV	1406:30 - 1412:30	11 - 31
28	III	1849:30 - 1854:15	8 - 41
30	III	1259:45 - 1301:15	15 - 41
June 2	III	1826:45 - 1827	25 - 41

TABLE II (Cont.)

Date 1965	Burst Type	Time Interval U. T.	Freq. Range MHz
June 3	III	1740:15 - 1741:30	23 - 41
	III	1744 - 1744:45	25 - 41
5	III	1812:30 - 1815:45	8 - 41
	II	1818 - 1837:30	15 - 41
	III	1821 - 1825:15	21 - 41
	IV	1825 - 1832:15	21 - 41
28	III	1833:45 - 1835	8 - 41
July 8	III	1216:30 - 1217	17 - 30
	III	1255:30 - 1258:30	19 - 41
	III	1449 - 1449:15	23 - 33
	III	1453:45 - 1454	22 - 35
	III	1533 - 1533:15	19 - 33
	III	1540:45 - 1541	22 - 30
	III	1932 - 1932:30	22 - 39
10	III	1827:15 - 1827:45	22 - 41
	III	1510:45 - 1511:30	7 - 41
	III	1511:45 - 1512:30	18 - 41
	III	1512:45 - 1513:15	14 - 41
	III	1514:15 - 1515:30	23 - 41
	III	1516:45 - 1618	19 - 41
	cont.	1913 - 1934	20 - 41
	III	1921:30 - 1922	16 - 41
13	III	1737:15 - 1733:45	25 - 41
14	III	1949:45 - 1950:15	18 - 41
18	III	1417:50 - 1418:15	20 - 41
19	III	1421:45 - 1422	26 - 38
27	III	1924:15 - 1924:30	25 - 41
	III	1927 - 1927:15	26 - 38
Aug. 3	III	1626:15 - 1626:45	12 - 41
	III	2020:45 - 2022:30	8 - 41
	III	2023 - 2024	12 - 41
	III	2023:45 - 2024:30	12 - 37
8	III	2022 - 2022:30	16 - 41
	III	2023:45 - 2024:15	16 - 41
	III	2024:30 - 2025	24 - 39
9	III	1418:30 - 1418:45	21 - 38
	III	1427:15 - 1427:30	25 - 36
	III	1428 - 1428:15	21 - 40
	III	1431:45 - 1432	23 - 36

Date 1965	Burst Type	Time Interval U. T.	Freq. Range MHz
Aug. 9	III	1432:45 - 1433	27 - 35
	III	1438 - 1438:30	23 - 39
	III	1439:45 - 1440	28 - 41
	III	1443:30 - 1443:45	23 - 36
	III	1444:15 - 1444:45	23 - 36
	III	1447 - 1447:15	25 - 38
	III	1447:45 - 1448	24 - 38
	III	1450 - 1450:30	26 - 37
	III	1452:30 - 1453:15	25 - 36
	III	1454:30 - 1454:45	26 - 38
	III	1510:30 - 1510:45	24 - 33
	III	1512:15 - 1512:30	23 - 38
	III	1515:15 - 1516	23 - 33
	III	1517:15 - 1517:30	24 - 38
	III	1519 - 1519:15	21 - 37
	III	1521:45 - 1522	19 - 41
	III	1526:45 - 1527:15	21 - 35
	III	1534:15 - 1534:45	22 - 41
	III	1536:15 - 1536:45	24 - 34
	III	1554:15 - 1554:30	26 - 41
14	III	1735:45 - 1736:15	22 - 41
	III	1739 - 1739:15	23 - 36
	III	1847 - 1847:30	22 - 41
Sept. 6	III	1542:30 - 1543:15	21 - 41
	III	1752:15 - 1752:30	13 - 41
	III	1752:45 - 1753	8 - 41
	III	1850:45 - 1851	23 - 41
	III	1935 - 1935:45	21 - 41
	III	1936:15 - 1937	8 - 41
	III	1938 - 1938:30	8 - 41
	III	1939:15 - 1940	8 - 41
	III	2001:15 - 2001:45	8 - 41
	III	2030:30 - 2031	15 - 41
7	III	1311 - 1311:45	17 - 41
	III	1537:45 - 1538	18 - 35
	III	1731:45 - 1732:15	19 - 41
	III	1957:30 - 1958:30	22 - 41
8	III	1823 - 1823:15	27 - 30
	III	1841:30 - 1841:45	24 - 35

TABLE II (Cont.)

Date 1965	Burst Type	Time Interval U.T.	Freq. Range MHz
Sept. 8	III	1843:15 - 1843:45	25 - 36
	III	1847:45 - 1848	26 - 37
	III	1848:45 - 1849	26 - 30
	III	1900:45 - 1901:15	8 - 33
	III	1917 - 1917:30	17 - 36
	III	1959 - 1959:15	25 - 35
9	III	1559:30 - 1559:45	26 - 41
	III	1600:30 - 1600:45	26 - 36
	III	1603:30 - 1603:45	30 - 37
	III	1606:30 - 1607:30	10 - 41
	III	1616 - 1616:15	22 - 36
	III	1619 - 1619:30	19 - 41
	III	1626 - 1626:15	24 - 36
	III	1626:45 - 1627	19 - 41
	III	1627 - 1628:45	12 - 41
	III	1629:30 - 1629:45	22 - 36
	III	1702:30 - 1703	25 - 37
	III	1707:45 - 1708:15	16 - 38
	III	1723:30 - 1723:45	26 - 34
	III	1724:15 - 1730	26 - 35
	III	1725:30 - 1726	26 - 33
	III	1729:15 - 1729:45	26 - 40
12	III	1640:30 - 1640:45	27 - 33
	III	1719:45 - 1720	15 - 41
	III	1720:15 - 1724:30	8 - 41
	III	1725 - 1725:45	15 - 41
	III	1732:30 - 1732:45	25 - 41
	III	1929:30 - 1929:45	22 - 36
	III	2005:30 - 2006	16 - 32
	III	2008:45 - 2009:45	10 - 41
16	III	1737:30 - 1738:15	16 - 41
25	III	1632:30 - 1633:30	17 - 41
30	III	1906:45 - 1907:15	18 - 41

TABLE III

IONOSPHERIC ABSORPTION

AT THE RIOMETER OF SÃO JOSÉ DOS CAMPOS

Date 1965		Absorption			Related Flare			
		Period (UT)		Max Value (db)	Importance	Period (UT)		
		Start	End			Start	Max Phase	End
April	9	1749	1925	1.49				
	10	1139	1145	1.40				
	11	1450	1550	1.27	-	1448	1506	1700
	15	1456	1525	1.85				
May	6	1900	2000	1.52				
	13	1100	1111	0.93				
	14	1018	1030	1.17				
	15	1023	1030	0.79				
	15	1850	1905	1.17	-	1830	1841	2012
	16	1147	1215	0.17				
	17	1008	1015	0.45				
	17	1702	1710	0.90				
	18	1357	1430	0.49				
	20	1815	1830	0.97				
	23	1601	1613	1.79				
June	11	1115	1130	0.76				
	13	1434	1442	1.49				
	15	1907	1925	1.70				
	17	1037	1039	1.07				
	18	0958	1000	0.93				
	21	1926	1938	0.97				
	24	1940	1943	0.83				
	27	1824	1828	0.93				
	30	1225	1234	1.61				
	30	1247	1305	1.99				
	30	1418	1420	1.58				
	30	1508	1510	1.52				
July	2	1622	1640	1.00				
	2	1715	1740	1.04				
	8	1845	1855	0.45				
	10	1442	1448	1.85				
	12	1556	1604	1.49				
	13	1844	1846	0.61				
	13	1904	1907	1.00				
	13	1916	1918	0.90				

TABLE III (Cont.)

IONOSPHERIC ABSORPTION

AT THE RIOMETER OF SÃO JOSÉ DOS CAMPOS

Date 1965		Absorption Period (UT) Start	End	Max Value (db)	Related Flare Importance	Period (UT) Start	Max Phase	End
July	13	1937	1942	0.64				
	15	1407	1410	0.83				
	17	1507	1510	0.61				
	20	1705	1710	1.52				
	25	1118	1122	0.86				
	25	1422	1424	1.00				
	25	1607	1611	1.04				
	26	1540	1545	1.21				
August	4	1835	1840	1.07				
	4	1845	1852	1.04				
	4	1955	2030	0.72				
	6	1152	1155	0.93				
	14	1012	1015	1.07				
	15	1445	1447	1.07				
	15	1845	1847	1.49				
	16	1000	1010	1.14				
	19	1045	1050	1.10				
	24	1535	1540	0.86				
	26	1837	1838	0.72				
	26	1845	1848	0.90				
September								
	19	1135	1140	1.00				
	19	1407	1411	1.24				
	25	1825	1828	1.61				
	27	1557	1600	1.52				
	30	1920	2001	1.52	2	1921	1938	2203

VI - " QUIET - DAY " CURVE

The "quiet - day " curve for this station has been obtained from all the available data from the operation of the riometer during a period of relatively low absorption.

However in this procedure it seems that some errors have been introduced in the "quiet-day" curve, which became apparent while reduction of riometer data was performed in terms of daily absorption. They occurred as a consequence of including values obtained from hours when the absorption was low but could not be disregarded or considered equal to ZERO.

The whole " quiet - day " curve is being revised continuously using data corresponding to local time between 0300 AM and 0600 AM, when the absorption is low.

Due to equipment failure which occured during the regular operation of the riometer, care should be taken while using the "quiet - day " curve to reduce riometer data (see Appendix I).

During the months of October and November, 1964 the riometer records presented a distortion on the daily curve with the $\frac{I\ max}{I\ min}$ reduced of 15% to 25%. This was attributed to an equipment failure rather than to an external cause, solar or ionospheric. For the above reason the data of October was considered unreliable and was not reduced to absorption.

The " quiet - day " curve "b" of Fig. IV corrected as shown in Fig. III was used in the data reduction in the period from April through September 1965.

The time scale in the "quiet-day" curve is the sidereal hour (referred to the first point of Aries). The sidereal time corresponding to 0000 GMT for the middle of each month is given in the table in Appendix II.

VII - CONCLUSION

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

The riometer records are quiet 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 will provide data for a detailed study of the seasonal variation of non-deviative absorption.

This station will continue its operation and will provide data on ionospheric absorption in a 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 Leimbach, H. - " The Riometer " - A Device for the Continuous Measurements of Ionospheric Absorption Proceeding of IRE, Feb. 1959, Vol. 47, pp. 315 - 320.

2) Little, C.G., and Leimbach, H. - " Some Measurements of High - latitude Ionospheric Absorption Using Extra - terrestrial Radio Waves " - Proceeding 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. Almosph & Terrestrial Physics, Vol. IV, pp. 203-218, 1953 .

4) URSI - AGI Committee - letter in " Questionnaire on 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 nb 12, Dec. 1960, pp. 3896 - 3902 .

6) " Riometer Measurements, Data Summary nº 1 , January to December 1958 " - Radioscience Laboratory, Stanford Electronics Laboratories - Stanford University, Nov. 1959 .

7) Goldman, S.C. and Horowitz, S. - " Global Riometer Measurement " .

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São José dos Campos - SP - Brasil

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station ..... - SJ
Month ..... - April
Year ..... - 1965
Riometer ..... - Mark II

Lat. ..... - 23°12'43"S
Long. ..... - 45°51'35"W
DIP ..... - 22.5°S
Mag. Lat. ..... - 11.7°S
Alt. ..... - 623 m

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

TABLE IV

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	0.49	0.61	0.49	0.41	0.41	0.45	0.45	0.49	0.53	0.57	0.53	0.72	0.93	1.11	1.17	1.49	1.34	1.82	1.93	1.37	1.00	0.64	0.61	0.41
2	0.49	0.49	0.37	0.33	0.33	0.53	0.49	0.49	0.45	0.45	0.45	0.76	1.04	1.07	1.55	1.46	1.46	1.46	1.58	1.40	1.27	0.90	0.83	0.61
3	0.49	0.45	0.41	0.29	0.33	0.45	0.41	0.41	0.45	0.41	0.57	2.86	0.97	1.14	1.21	1.61	1.49	1.85	1.96	1.88	1.30	0.79	0.61	0.61
4	0.53	0.45	0.41	0.41	0.41	0.61	0.57	0.53	0.53	0.53	0.68	0.90	0.86	1.14	1.21	1.46	1.49	1.34	1.46	1.43	1.30	0.90	0.61	0.61
5	0.53	0.49	0.45	0.41	0.49	0.57	0.57	0.53	0.53	0.41	0.57	0.83	0.86	1.11	1.17	1.43	1.49	1.49	1.64	1.46	0.79	0.79	0.61	0.61
6	0.53	0.49	0.49	0.41	0.37	0.45	0.49	0.37	0.41	0.41	0.57	0.83	0.79	0.97	1.00	1.11	1.49	1.85	1.64	1.49	1.04	0.79	0.83	0.61
7	0.57	0.37	0.37	0.49	0.41	0.49	0.57	0.49	0.41	0.37	0.53	0.64	0.90	1.04	1.11	1.43	1.49	1.49	1.67	1.49	0.83	0.79	0.93	0.41
8	0.57	0.57	0.41	0.37	0.45	0.53	0.45	0.49	0.61	0.53	0.68	0.83	0.83	1.04	1.11	1.40	1.82	2.23	1.67	1.55	0.83	0.79	0.83	0.64
9	0.57	0.41	0.41	0.41	0.57	0.57	0.57	0.61	0.53	0.53	0.53	0.72	0.93	1.27	1.07	1.40	1.34	1.37	1.52	0.86	0.86	0.83	0.61	0.64
10	0.61	0.41	0.45	0.45	0.45	0.61	0.57	0.53	0.57	0.53	0.64	0.79	0.86	1.24	1.30	1.37	1.49	1.52	1.55	1.55	1.49	1.17	0.93	0.90
11	0.61	0.45	0.41	0.37	0.45	0.37	0.49	0.53	0.57	0.37	0.79	0.93	0.83	1.21	1.30	1.37	1.04	1.40	1.73	1.17	1.11	0.83	0.83	0.64
12	0.53	0.49	0.79	0.41	0.53	0.49	0.53	0.53	0.45	0.09	0.61	0.86	0.76	0.72	1.58	1.52	1.49	1.55	1.30	1.21	0.86	0.83	0.83	0.64
13	0.53	0.49	0.33	0.41	0.33	0.37	0.49	0.41	0.45	0.41	0.57	0.79	0.68	1.46	1.55	1.52	1.49	1.55	1.30	0.97	0.86	0.83	0.83	0.68
14	0.64	0.53	0.53	0.45	0.41	0.49	0.53	0.45	0.41	0.45	0.61	0.68	0.97	1.27	1.70	1.49	1.49	1.40	1.34	1.37	0.90	0.93	0.83	0.90
15	0.68	0.76	0.64	0.45	1.00	0.97	0.97	1.00	0.49	0.68	0.86	1.04	0.90	1.17	1.67	1.49	1.49	1.90	1.67	1.67	0.90	2.15	0.61	0.68

TIME - UT

TABLE V

Month: April
Year: 1965

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	0.61	0.53	0.45	0.41	0.53	0.57	0.57	0.53	0.49	0.49	0.68	1.11	0.90	1.17	1.49	1.49	1.49	1.58	1.82	1.37	0.90	0.93	0.83	0.49
17	0.68	0.53	0.49	0.45	0.53	0.49	0.61	0.53	0.49	0.61	0.72	0.68	0.83	0.96	0.90	1.34	1.82	1.93	1.70	1.40	0.90	0.93	0.83	0.93
18	0.76	0.68	0.53	0.53	0.61	c	c	c	c	c	c	c	c	c	1.61	1.49	1.49	1.61	2.20	1.90	1.14	0.93	0.86	0.72
19	0.76	0.61	0.57	0.57	0.61	0.57	0.72	0.64	0.53	0.61	0.79	0.86	1.00	1.07	1.61	1.82	1.82	1.61	1.90	1.04	0.79	0.61	0.61	0.53
20	0.68	0.64	0.45	0.49	0.64	0.68	0.64	0.53	0.53	0.57	0.68	0.79	0.76	1.04	1.14	1.04	1.34	1.49	1.46	1.43	1.17	0.83	0.64	0.53
21	0.49	0.49	0.41	0.33	0.45	0.49	0.45	0.53	0.45	0.53	0.76	0.72	0.93	1.00	1.11	1.34	1.49	1.64	1.79	1.30	0.93	0.61	0.64	0.53
22	0.53	0.53	0.53	0.53	0.49	0.49	0.49	0.45	0.45	0.53	0.76	0.68	0.72	0.72	0.72	0.76	1.04	1.21	1.52	1.34	1.43	0.83	0.86	0.57
23	0.57	0.57	0.61	0.45	0.57	0.53	0.49	0.37	0.37	0.41	0.61	0.64	0.68	0.72	0.68	0.76	1.07	1.24	1.27	1.46	1.17	0.61	0.41	0.57
24	0.41	0.33	0.41	0.41	0.37	0.45	0.49	0.49	0.49	0.53	0.72	0.57	0.90	0.68	0.79	1.04	1.07	1.24	1.27	1.76	1.43	0.93	0.86	0.57
25	0.41	0.41	0.33	0.41	0.41	0.41	0.53	0.57	0.61	0.86	1.04	0.97	1.24	1.04	c	c	c	c	c	1.34	1.17	0.83	1.00	1.04
26	0.45	0.49	0.37	0.45	0.53	0.61	0.61	0.57	0.49	0.57	0.79	0.61	0.97	0.90	0.79	1.04	1.11	1.27	1.58	1.37	0.61	0.83	0.64	0.61
27	0.49	0.57	0.57	0.57	0.61	0.64	0.64	0.68	0.64	0.72	0.86	0.76	0.93	0.86	1.04	1.00	1.11	1.30	1.17	0.86	0.61	0.37	0.45	0.53
28	0.41	0.33	0.25	0.37	0.37	0.41	0.41	0.41	0.37	0.45	0.64	0.68	0.93	0.83	1.04	1.04	0.68	c	c	c	c	c	c	c
29	c	c	c	c	c	c	c	c	c	c	c	c	0.45	0.57	1.04	1.34	1.43	1.34	0.97	0.76	0.61	0.41	0.37	0.57
30	0.57	0.41	0.49	0.45	0.45	0.57	0.72	0.61	0.72	0.61	0.86	0.72	0.57	0.79	1.34	1.30	1.43	1.07	1.24	0.86	0.83	0.37	0.49	0.37
31																								
	29	29	29	29	29	28	28	28	28	28	28	28	29	29	29	29	29	28	28	29	29	29	29	29
	0.61	0.57	0.53	0.45	0.57	0.57	0.61	0.57	0.53	0.57	0.79	0.86	0.93	1.17	1.15	1.49	1.49	1.61	1.70	1.49	1.17	0.90	0.83	0.68
	0.57	0.49	0.45	0.41	0.45	0.53	0.53	0.53	0.49	0.53	0.68	0.79	0.90	1.04	1.17	1.40	1.49	1.49	1.58	1.38	0.93	0.83	0.83	0.61
	0.49	0.41	0.41	0.41	0.41	0.45	0.49	0.45	0.45	0.41	0.57	0.68	0.76	0.83	1.04	1.04	1.11	1.34	1.30	1.17	0.83	0.64	0.61	0.53

TIME - UT

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

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station ..... - SJ
Month ..... - May
Year ..... - 1965
Riometer ..... - Mark II

Lat. ..... - 23°12'43"S
Long. ..... - 45°51'35"W
DIP ..... - 22.5°S
Mag. Lat. ..... - 11.7°S
Alt. ..... - 623 m

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

TABLE VI

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	0.49	0.25	0.37	0.29	0.33	0.45	0.49	0.45	0.41	0.53	0.61	0.61	0.57	0.53	0.79	1.34	1.11	1.37	1.24	0.76	0.61	0.41	0.37	0.21
2	0.33	0.21	0.21	0.25	0.33	0.37	0.41	0.37	0.49	0.68	0.53	2.57	0.57	0.53	0.76	0.76	1.14	1.07	1.00	0.90	0.83	0.61	0.37	0.41
3	0.21	0.25	0.13	0.21	0.64	0.41	0.53	0.61	0.61	0.76	0.86	2.64	0.53	0.53	0.76	1.04	1.14	1.00	1.27	0.90	0.83	0.61	0.41	0.41
4	0.21	0.13	0.21	0.41	0.29	0.41	0.49	0.53	0.45	0.64	0.61	0.49	0.49	0.49	1.04	1.34	1.46	1.43	1.30	0.90	0.61	0.41	0.41	0.45
5	0.41	0.21	0.13	0.33	0.33	0.41	0.41	0.41	0.41	0.57	0.68	0.57	0.57	0.76	0.76	1.04	1.17	1.14	1.43	1.40	0.93	0.61	0.53	0.29
6	0.29	0.21	0.29	0.33	0.33	0.41	0.41	0.37	0.49	0.57	0.61	0.45	0.53	0.72	0.76	1.04	1.17	1.17	1.43	1.55	1.43	0.86	0.53	0.49
7	0.33	0.25	0.25	0.37	0.37	0.57	0.49	0.45	0.41	0.61	0.53	0.53	0.49	0.72	0.76	0.76	0.90	0.79	1.07	0.93	0.61	0.41	0.45	0.21
8	0.25	0.21	0.21	0.33	0.37	0.37	0.37	0.41	0.41	0.53	0.61	0.97	0.49	0.68	0.76	1.04	1.21	1.24	1.34	1.17	1.21	0.86	0.57	0.37
9	0.41	0.37	0.33	0.37	0.37	0.45	0.37	0.41	0.45	0.68	0.53	0.68	0.72	0.68	1.04	1.07	0.93	1.14	1.07	0.79	0.83	0.86	0.57	0.37
10	0.41	0.25	0.37	0.41	0.41	0.45	0.45	0.41	0.53	0.72	0.76	0.68	0.68	0.68	1.04	1.07	0.93	1.14	1.11	0.93	0.83	0.64	0.49	0.41
11	0.37	0.33	0.41	0.41	0.45	0.45	0.45	0.49	0.53	0.64	0.49	0.64	0.41	0.64	1.04	1.07	1.24	1.14	1.11	0.83	0.93	0.90	0.49	0.41
12	0.41	0.29	0.45	0.45	0.45	0.49	0.49	0.57	0.68	0.79	0.64	0.86	0.61	0.79	0.76	1.11	1.34	1.17	1.11	0.93	0.93	1.00	0.83	0.45
13	0.45	0.41	0.53	0.53	0.53	0.53	0.45	0.41	0.49	0.64	0.53	0.61	0.86	0.76	1.04	1.07	1.00	1.21	1.11	1.17	0.93	0.90	0.63	0.41
14	0.33	0.25	0.33	0.41	0.45	0.53	0.61	0.49	0.68	0.79	0.68	0.83	0.83	0.76	1.04	1.40	1.04	1.21	1.11	0.93	0.61	0.68	0.53	0.41
15	0.37	0.45	0.53	0.45	0.45	0.49	0.53	0.45	0.61	0.68	0.64	0.68	0.57	0.76	0.76	0.83	1.07	1.24	1.14	1.17	0.83	0.46	0.57	0.25

TIME - UT

TABLE VII

Month: May
Year: 1965

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	0.37	0.37	0.45	0.37	0.41	0.37	0.41	0.41	0.61	0.41	0.57	0.57	0.64	0.76	0.83	0.93	1.00	0.76	0.61	0.61	0.49	0.37	0.29
17	0.46	0.29	0.37	0.33	0.37	0.41	0.37	0.41	0.57	0.68	0.57	0.57	0.53	0.76	1.04	1.14	1.00	1.24	0.90	0.83	0.29	0.17	0.41	0.33
18	0.33	0.33	0.53	0.41	0.49	0.49	0.53	0.49	0.53	0.61	0.64	0.64	0.76	0.61	0.76	0.72	0.97	0.76	0.57	0.61	0.41	0.49	0.41	0.37
19	0.37	0.37	0.41	0.37	0.37	0.41	0.53	0.45	0.64	0.61	0.61	0.25	0.76	0.76	0.76	1.46	1.14	1.30	0.90	0.83	0.29	0.49	0.45	0.25
20	0.33	0.25	0.33	0.33	0.41	0.41	0.41	0.41	0.57	0.53	0.49	0.45	0.49	0.76	1.04	1.14	1.04	0.79	0.79	0.83	0.41	0.53	0.49	0.25
21	0.25	0.29	0.33	0.29	0.33	0.41	0.68	0.37	0.57	0.45	0.53	0.45	0.45	0.61	0.76	0.90	1.04	0.79	0.79	0.37	0.41	0.45	0.29	0.29
22	0.29	0.25	0.37	0.33	0.33	0.29	0.37	0.41	0.64	0.68	0.53	0.49	0.72	0.76	0.76	0.90	1.17	0.79	1.14	1.17	0.97	0.53	0.33	0.25
23	0.21	0.13	0.33	0.37	0.33	0.37	0.41	0.45	0.68	0.61	0.49	0.49	0.45	0.76	1.04	1.21	1.49	1.34	1.43	1.17	0.86	0.57	0.29	0.29
24	0.13	0.17	0.29	0.29	0.33	0.37	0.29	0.41	0.68	0.53	0.68	0.45	0.41	0.61	0.64	0.83	1.14	1.07	0.93	0.93	1.24	0.79	0.37	0.33
25	0.21	0.25	0.37	0.25	0.29	0.37	0.37	0.41	0.57	0.45	0.68	0.45	0.17	0.61	0.64	0.83	1.14	0.86	0.83	0.83	0.64	0.49	0.33	0.33
26	0.25	0.25	0.37	0.33	0.29	0.13	0.37	0.49	0.64	0.49	0.64	0.41	0.41	0.61	0.64	0.83	1.14	0.86	0.83	0.61	0.64	0.49	0.13	0.21
27	0.29	0.25	0.33	0.29	0.29	0.33	0.21	0.41	0.57	0.41	0.64	0.37	0.64	0.76	1.11	1.27	1.30	0.86	0.93	0.61	0.64	0.53	0.37	0.41
28	0.61	0.29	0.37	0.37	0.41	0.41	0.41	0.49	0.49	0.33	0.61	0.37	0.64	0.76	0.79	0.64	0.93	0.76	0.83	0.61	0.64	0.53	0.41	0.29
29	0.25	0.37	0.41	0.41	0.49	0.45	0.41	0.57	0.64	0.49	0.83	0.57	0.64	0.64	0.79	1.04	1.21	1.37	0.93	0.93	0.68	0.53	0.41	0.33
30	0.33	0.29	0.45	0.41	0.41	0.41	0.37	0.49	0.53	0.45	0.45	0.57	0.64	0.64	0.83	0.93	0.97	0.90	0.93	0.93	0.90	0.57	0.45	0.21
31	0.37	0.37	0.33	0.37	0.41	0.37	0.33	0.53	0.61	0.61	0.57	0.57	0.64	0.76	0.83	0.93	1.00	0.90	0.83	0.83	0.49	0.37	0.29	0.25
	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
	0.41	0.33	0.41	0.41	0.45	0.45	0.49	0.49	0.64	0.68	0.64	0.64	0.68	0.76	1.04	1.14	1.17	1.29	1.14	1.40	0.93	0.68	0.53	0.41
	0.36	0.25	0.37	0.37	0.37	0.41	0.41	0.45	0.57	0.61	0.61	0.57	0.57	0.92	0.79	1.04	1.14	1.17	1.11	0.93	0.83	0.53	0.41	0.33
	0.25	0.29	0.29	0.33	0.33	0.37	0.37	0.41	0.49	0.53	0.53	0.45	0.49	0.64	0.76	0.83	1.04	0.90	0.83	0.83	0.61	0.49	0.37	0.25

TIME - UT

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

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station ..... - SJ
Month ..... - June
Year ..... - 1965
Riometer ..... - Mark II

Lat. ..... - 23°12'43"S
Long. ..... - 45°51'35"W
DIP ..... - 22. 5°S
Mag. Lat. ..... - 11. 7°S
Alt. ..... - 623 m

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

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
1	0.29	0.33	0.41	0.37	0.41	0.37	0.41	0.49	0.53	0.57	0.53	0.53	0.61	0.90	1.00	0.93	1.24	1.14	1.17	0.93	0.90	0.61	0.49	0.29
2	0.25	0.41	0.45	0.41	0.49	0.37	0.45	0.53	0.61	0.53	0.49	0.53	0.86	0.86	1.00	0.97	1.00	1.04	1.07	0.83	0.72	0.61	0.53	0.33
3	0.37	0.45	0.49	0.53	0.53	0.57	0.45	0.64	0.72	0.49	0.45	0.49	0.61	0.90	1.00	1.00	1.04	1.04	1.07	1.11	0.72	0.41	0.57	0.37
4	0.37	0.49	0.57	c	c	c	c	c	c	c	c	c	c	c	1.00	1.04	1.04	1.04	0.83	0.64	0.97	0.68	0.41	0.33
5	0.29	0.41	0.45	0.53	0.53	0.49	0.57	0.68	0.61	0.64	0.68	0.72	0.86	0.90	1.04	1.04	1.04	1.04	1.07	0.86	0.64	0.49	0.45	0.41
6	0.45	0.53	0.49	0.53	0.53	0.49	0.64	0.61	0.53	0.61	0.61	0.45	0.90	0.90	1.04	1.07	1.04	1.04	1.07	0.83	0.64	0.53	0.49	0.41
7	0.53	0.57	0.61	0.57	0.53	0.57	0.57	0.68	0.41	0.61	0.61	0.45	0.90	0.90	1.07	1.11	1.07	1.17	1.07	0.86	0.79	0.57	0.53	0.49
8	0.45	0.53	0.53	0.57	0.49	0.53	0.57	0.61	0.53	0.68	0.72	0.41	0.86	1.21	1.37	1.17	1.07	1.04	1.07	0.86	0.68	0.67	0.49	0.37
9	0.49	0.57	0.53	0.57	0.57	0.57	0.64	0.72	0.64	0.68	0.57	0.68	0.86	0.93	1.07	1.40	1.07	1.07	0.83	0.64	0.17	0.57	0.53	0.33
10	0.37	0.53	0.57	0.53	0.49	0.29	0.41	0.57	0.57	0.64	0.53	0.41	0.86	0.93	1.11	1.14	1.07	1.07	c	c	0.49	0.33	0.25	0.13
11	0.45	0.53	0.49	0.53	0.49	0.45	0.41	0.57	0.53	0.64	0.49	0.41	0.86	1.24	1.14	1.17	1.11	1.07	0.61	0.64	0.49	0.37	0.27	0.45
12	0.53	0.57	0.64	0.61	0.57	0.53	0.61	0.72	0.76	0.83	0.61	0.64	0.86	1.24	1.14	1.17	1.11	1.17	1.07	0.90	0.72	0.61	0.45	0.49
13	0.61	0.53	0.64	0.61	0.57	0.61	0.68	0.79	0.68	0.83	0.57	0.64	0.86	1.24	1.17	1.21	1.11	1.07	1.07	0.90	0.76	0.61	0.49	0.53
14	0.53	0.53	0.57	0.61	0.57	0.57	0.72	0.68	0.64	0.68	0.57	0.64	0.86	0.97	1.17	1.49	1.37	1.17	1.17	1.14	0.79	0.64	0.53	0.45
15	0.57	0.53	0.57	0.64	0.53	0.53	0.68	0.61	0.61	0.57	0.57	0.64	0.90	0.97	1.21	1.24	1.11	1.17	1.07	0.90	0.90	0.97	0.83	0.72

TIME - UT

Month: June
Year: 1965

TABLE IX

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	0.57	0.57	0.61	c	c	c	c	c	c	c	c	c	0.61	0.72	0.68	1.00	1.00	1.17	0.83	0.93	0.90	1.00	0.86	0.76
17	0.72	0.61	0.64	0.64	0.68	0.72	0.76	0.76	0.72	0.76	0.49	0.61	0.90	1.00	1.00	1.00	1.04	0.83	0.41	0.41	0.41	0.41	0.49	061
18	0.79	0.68	0.57	0.64	0.41	0.45	0.64	0.68	0.68	0.72	0.72	0.61	0.90	1.00	1.00	1.04	0.79	c	c	0.61	0.61	0.57	0.41	0.37
19	0.61	0.57	0.53	0.49	0.45	0.49	0.64	0.68	0.68	0.68	0.76	0.90	0.90	1.00	1.04	1.04	1.14	1.17	1.07	0.97	0.90	0.41	0.33	0.37
20	0.49	0.45	0.45	0.49	0.45	0.45	0.57	0.61	0.64	0.45	0.49	0.61	0.90	0.76	1.04	1.04	1.17	1.07	1.21	0.97	0.72	0.45	0.37	0.41
21	0.45	0.49	0.45	0.49	0.41	0.41	0.61	0.72	0.64	0.64	0.45	0.61	0.90	0.76	1.07	1.04	1.04	1.07	0.83	0.76	0.78	0.49	0.41	0.37
22	0.49	0.49	0.49	0.49	0.37	0.45	0.53	0.61	0.61	0.61	0.45	0.61	0.90	0.79	1.07	1.07	1.04	1.07	0.86	0.79	0.57	0.45	0.33	0.49
23	0.41	0.45	0.49	0.45	0.41	0.41	0.61	0.53	0.57	0.33	0.41	0.61	0.93	0.83	1.14	0.93	1.04	1.07	1.11	0.49	0.45	0.49	0.37	0.41
24	0.45	0.45	0.45	0.45	0.41	0.37	0.53	0.45	0.57	0.57	0.68	061	0.64	0.83	0.86	0.97	0.83	0.83	0.86	0.68	0.79	0.49	0.33	0.37
25	0.41	0.57	0.64	0.61	0.61	0.64	0.79	0.68	0.90	0.68	0.64	0.61	0.93	0.83	0.86	0.97	0.83	0.83	0.90	0.68	0.33	0.21	0.25	0.29
26	0.29	0.37	0.41	0.37	0.25	0.25	0.49	0.33	0.53	0.25	0.41	0.61	0.68	0.86	0.90	1.00	0.83	0.61	0.57	0.49	0.37	0.25	0.29	0.33
27	0.33	0.29	0.41	0.33	0.21	0.17	0.41	0.25	0.49	0.25	0.37	0.33	0.68	0.86	0.93	0.76	0.83	0.83	0.90	0.72	0.57	0.29	0.37	0.41
28	0.37	0.33	0.41	0.33	0.25	0.25	0.41	0.49	0.61	0.45	0.37	0.61	0.68	0.64	0.97	1.00	0.83	0.83	0.68	0.64	0.61	0.17	0.25	0.25
29	0.25	0.41	0.49	0.41	0.41	0.49	0.68	0.45	0.68	0.45	0.37	0.61	0.68	0.93	0.97	1.00	1.07	1.07	0.90	1.11	0.72	0.72	0.45	0.25
30	0.45	0.45	0.49	0.37	0.37	0.25	0.45	0.41	0.33	0.45	0.37	0.33	0.45	0.93	0.97	1.00	0.83	0.83	0.68	0.61	0.49	0.41	0.37	0.29
31																								
	30	30	30	28	28	28	28	28	28	28	28	28	29	29	30	30	30	29	28	29	30	30	30	30
	0.53	0.57	0.57	0.61	0.63	0.57	0.64	0.68	0.68	0.68	0.61	0.64	0.90	1.00	1.14	1.11	1.11	1.14	1.07	093	0.79	0.61	0.53	0.49
	0.45	0.53	0.49	0.53	0.49	0.49	0.57	0.61	0.61	0.61	0.53	0.61	0.86	0.90	1.04	1.04	1.04	1.07	1.07	0.83	0.72	0.49	0.45	0.37
	0.37	0.41	0.45	0.41	0.41	0.37	0.45	0.49	0.53	0.45	0.45	0.45	0.68	0.83	0.97	1.00	0.83	0.83	0.83	0.64	0.49	0.41	0.33	0.33

TIME - UT

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

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station ..... - SJ
Month ..... - July
Year ..... - 1965
Riometer ..... - Mark II

Lat. ..... - 23°12'43"S
Long. ..... - 45°51'35"W
DIP ..... - 22.5°S
Mag. Lat. ..... - 11.7°S
Alt. ..... - 623 m

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

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
1	0.37	0.41	0.45	0.41	0.37	0.53	0.61	0.41	0.57	0.29	0.37	0.33	0.68	0.68	1.00	0.79	0.83	0.83	0.90	0.57	0.29	0.25	0.37	0.41
2	0.41	0.45	0.45	0.41	0.45	0.61	0.53	0.37	0.57	0.29	0.33	0.61	0.72	0.68	1.00	0.86	0.93	0.93	0.90	0.61	0.61	0.45	0.41	0.53
3	0.61	0.45	0.53	0.49	0.45	0.41	0.61	0.53	0.49	0.49	0.61	0.61	0.45	0.72	0.76	0.79	0.83	0.83	0.72	0.83	0.83	0.49	0.33	0.41
4	0.57	0.64	0.64	0.57	0.49	0.64	1.07	0.49	0.49	0.49	0.33	0.90	0.76	1.00	1.04	0.79	0.83	0.83	0.72	0.64	0.41	0.21	0.33	0.45
5	0.45	0.49	0.57	0.57	0.45	0.64	0.68	0.68	0.45	0.49	0.33	0.54	0.76	0.53	0.68	0.57	0.49	0.49	0.21	0.21	0	0.13	0.04	0
6	0.04	0.17	0	0.09	0.04	0.29	0.17	0.04	0.09	0.13	0.25	0.13	0.17	0.79	0.68	0.57	0.49	0.64	0.25	0.29	0.37	0.49	0.41	0.45
7	0.41	0.45	0.53	0.41	0.41	0.49	0.53	0.41	0.41	0.21	0.37	0.37	0.53	c	0.86	0.79	0.83	0.86	0.97	1.00	0.93	1.00	0.53	0.49
8	0.45	0.53	0.21	0.49	0.45	0.53	0.41	0.72	0.49	0.45	0.61	0.90	0.79	0.83	0.83	0.79	0.83	0.53	0.45	0.53	0.29	0.33	0.41	0.37
9	0.64	0.13	0.64	0	0.17	0.13	0.29	0.68	0.45	0.41	0.61	0.41	0.57	0.64	0.83	0.79	0.83	0.86	0.68	0.57	0.76	0.53	0.61	0.68
10	0.53	0.64	0.64	0.45	0.45	0.64	0.61	0.57	0.68	0.68	0.90	0.93	1.07	1.14	1.33	1.17	1.17	0.97	0.79	0.61	0.61	0.41	0.49	0.49
11	0.49	0.72	0.62	0.64	0.64	0.79	0.68	0.90	0.64	0.64	0.62	0.93	0.83	1.14	1.07	0.93	0.93	0.86	1.14	0.61	0.57	0.41	0.41	0.49
12	0.57	0.57	0.53	0.53	0.53	0.72	0.61	0.86	0.37	0.41	0.61	0.68	0.61	0.90	0.76	0.93	1.17	1.00	0.83	0.64	0.61	0.41	0.33	1.18
13	0.57	0.57	0.61	0.49	0.49	0.68	0.53	0.83	0.37	0.64	0.90	0.97	0.86	0.93	0.86	0.93	0.93	1.00	1.07	0.86	0.72	0.49	0.64	0.61
14	0.68	0.76	0.72	0.72	0.79	0.97	0.68	0.83	0.57	0.64	0.90	0.97	0.90	0.93	0.86	0.93	0.93	1.00	0.86	0.72	0.49	0.64	0.61	c
15	c	c	c	c	c	c	c	c	c	c	c	c	c	0.72	0.86	0.83	0.83	0.68	0.57	0.45	0.37	0.33	0.41	0.49

TIME - UT

TABLE XI

Month: July
Year: 1965

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	0.62	0.64	0.62	0.53	0.64	0.79	0.61	0.57	0.57	0.64	0.61	0.72	0.93	0.76	0.90	0.93	0.83	0.93	0.79	0.57	0.25	0.25	0.41	0.41
17	0.41	0.45	0.41	0.33	0.49	0.53	0.37	0.33	0.17	0.13	0.33	0.45	0.45	0.64	0.57	0.49	0.61	0.61	0.61	0.49	0.45	0.29	0.33	0.41
18	0.53	0.53	0.49	0.45	0.41	0.61	0.53	0.29	0.25	0.33	0.61	0.45	0.49	0.64	0.79	0.83	0.83	0.72	0.83	0.53	0.33	0.45	0.41	0.45
19	0.57	0.57	0.57	0.53	0.64	0.37	0.49	0.49	0.25	0.33	0.37	0.49	0.53	0.79	0.79	0.83	0.83	0.72	0.45	0.41	0.53	0.49	0.49	0.57
20	0.68	0.57	0.68	0.61	0.76	0.68	0.68	0.57	0.49	0.61	0.64	0.49	1.07	1.27	1.14	0.93	1.21	1.07	1.21	0.90	1.00	0.68	0.83	0.68
21	0.90	0.86	0.79	0.83	0.97	0.79	0.76	0.79	0.72	0.86	0.90	0.76	0.79	0.79	0.79	0.83	0.86	0.76	0.68	0.45	0.61	0.61	0.57	0.49
22	0.45	0.41	0.49	0.61	0.64	0.72	061	0.49	0.45	0.61	0.64	0.53	0.79	0.68	0.79	0.83	0.86	0.76	0.53	0.68	0.41	0.33	0.49	0.41
23	0.49	0.53	0.53	0.45	0.68	0.61	0.61	0.49	0.45	0.61	0.64	0.29	0.61	0.72	0.57	0.61	0.64	0.68	0.53	0.53	c	c	c	c
24	c	c	c	c	c	c	c	c	c	c	c	c	c	0.72	0.83	0.83	0.86	1.00	1.07	0.83	0.76	0.61	0.49	0.49
25	0.49	0.49	0.45	0.53	0.68	0.57	0.68	0.45	0.41	0.61	0.64	0.37	0.86	0.83	0.83	0.83	0.86	0.79	0.79	0.61	0.33	0.37	0.45	0.45
26	0.53	0.49	0.41	0.45	0.57	0.49	0.64	0.45	0.41	0.33	0.64	0.57	0.64	0.76	0.83	0.83	0.90	0.79	0.61	0.57	0.37	0.57	0.41	0.41
27	0.45	0.49	0.49	0.41	0.41	0.61	0.64	0.37	0.41	0.61	0.68	0.61	0 68	0.76	0.83	0.83	1.00	0.83	0.83	0.68	0.49	0.45	0.41	0.41
28	0.45	0.57	0.45	0.49	0.61	0.53	0.61	0.33	0.37	0.61	0.68	0.61	0.68	0.76	0.83	0.93	0.90	0.83	0.86	0.72	0.49	0.37	0.45	0.53
29	0.53	0.49	0.45	0.53	0.64	0.49	0.83	0.33	0.37	0.61	0.68	0.64	0.72	0.76	0.93	0.93	1.00	1.07	0.68	0.64	0.53	0.45	0.49	0.53
30	0.53	0.57	0.53	0.49	0.68	0.64	0.68	0.57	0.37	0.33	0.68	0.64	0.72	0.90	0.83	0.93	1.00	0.86	0.90	c	0.61	0.41	0.49	0.49
31	0.53	0.53	0.53	0.86	0.93	0.93	0.68	0.57	0.37	0.33	0.68	0.68	0.76	0.79	0.83	0.83	0.93	0.79	0.49	0.41	0.25	0.41	0.41	0.41
	29	29	29	29	29	29	29	29	29	29	29	29	29	30	31	31	31	31	31	30	29	29	29	29
	0.61	0.57	0.62	0.57	0.68	0.72	0.68	0.68	0.57	0.61	0.68	0.76	0.83	0.90	0.90	0.93	0.93	0.93	0.90	0.68	0.61	0.49	0.49	0.53
	0.53	0.53	0.53	0.49	0.57	0.61	0.61	0.53	0.45	0.49	0.64	0.61	0.72	0.76	0.83	0.83	0.83	0.83	0.79	0.61	0.49	0.45	0.41	0.49
	0.45	0.45	0.45	0.45	0.45	0.49	0.53	0.37	0.37	0.33	0.37	0.45	0.57	0.68	0.79	0.79	0.83	0.72	0.53	0.49	0.37	0.33	0.37	0.41

TIME - UT

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

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station ..... - SJ
Month ..... - August
Year ..... - 1965
Riometer ..... - Mark II

Lat. ..... - 23°12'43"S
Long. ..... - 45°51'35"W
DIP ..... - 22.5°S
Mag. Lat. ..... - 11.7°S
Alt. ..... - 623 m

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

TABLE XII

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	0.37	0.37	0.33	0.45	0.45	0.53	0.49	0.49	0.37	0.61	0.45	0.72	0.76	0.79	0.83	0.93	1.07	0.86	0.83	0.76	0.45	0.45	0.41	∪
2	0.37	0.41	0.41	0.41	0.53	0.72	0.45	0.49	0.61	0.64	0.76	0.76	0.79	0.79	0.61	0.83	0.97	0.83	0.76	0.53	0.53	0.53	0.37	0.41
3	0.37	0.41	0.37	0.49	0.53	0.68	0.45	0.49	0.61	0.64	0.49	0.53	0.68	0.79	0.83	0.97	1.07	1.21	1.10	0.83	0.57	0.45	0.41	0.45
4	0.37	0.37	0.37	0.41	0.45	0.45	0.41	0.45	0.61	0.64	0.76	0.79	0.68	0.79	0.49	0.61	0.64	0.68	0.64	0.45	0.76	0.61	0.45	0.37
5	0.33	0.41	0.33	0.49	0.53	0.61	0.37	0.45	0.33	0.64	0.53	0.45	0.68	0.61	0.61	∪	∪	0.90	0.86	0.64	0.53	0.64	0.55	0.57
6	0.53	0.45	0.49	0.68	0.79	0.93	0.72	0.72	0.86	0.90	0.79	0.83	0.83	0.79	0.83	0.97	1.10	0.97	0.86	0.57	0.45	0.53	0.41	0.49
7	0.33	0.33	0.41	0.45	0.53	0.90	0.72	0.68	0.86	0.93	0.79	0.86	0.86	0.79	0.93	0.97	1.00	0.97	1.19	0.90	0.49	0.57	0.53	0.49
8	0.49	0.49	0.53	0.72	0.64	0.90	0.68	0.68	0.86	0.93	1.07	0.86	0.86	0.93	0.93	1.24	1.37	1.10	1.07	0.93	0.76	0.68	0.57	0.49
9	0.49	0.45	0.49	0.64	0.57	0.93	0.64	0.64	0.86	0.93	0.83	0.64	0.72	0.83	0.93	1.90	1.64	1.33	1.10	1.00	1.04	0.72	0.61	0.61
10	0.57	0.57	0.79	0.93	1.04	0.97	1.14	1.07	1.33	1.40	1.27	1.11	1.10	1.17	1.85	1.49	1.40	1.37	1.14	1.04	0.83	0.72	0.76	0.64
11	0.61	0.53	0.72	1.00	1.07	1.46	1.27	1.33	1.64	1.70	1.58	1.61	1.64	1.43	1.70	1.76	1.43	1.07	1.07	0.79	0.76	0.72	0.68	0.61
12	0.53	0.61	0.68	0.79	0.90	0.93	0.83	0.90	0.86	1.10	1.21	1.21	1.10	1.43	1.72	1.93	1.96	1.79	1.40	1.40	1.24	0.79	0.68	0.53
13	0.49	0.45	0.68	0.86	0.97	1.04	1.10	1.04	1.33	1.10	1.33	1.49	1.37	1.17	0.93	1.27	1.21	1.14	0.97	0.83	0.72	0.72	0.57	0.53
14	0.53	0.53	0.61	0.86	0.79	0.68	0.79	0.90	1.04	1.10	1.24	1.24	1.14	1.17	1.43	1.52	1.72	1.61	1.30	0.97	0.76	0.68	0.68	0.64
15	0.53	0.53	0.68	0.76	0.90	0.90	0.79	0.90	1.04	1.14	1.24	1.24	1.14	1.17	1.43	1.52	1.49	1.87	1.72	1.55	1.24	0.61	0.61	0.53

TIME - UT

TABLE XIII

Month: August
Year: 1965

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	0.49	0.49	0.64	0.68	0.83	0.86	0.76	0.90	1.04	1.00	1.24	1.00	1.14	1.17	1.17	1.30	1.27	1.33	1.37	1.21	c	c	c	c
17	c	c	c	c	c	c	c	c	c	c	c	c	1.46	c	1.46	1.85	1.79	1.37	1.10	0.72	0.97	0.68	0.57	0.53
18	0.45	0.41	0.64	0.68	0.79	0.83	0.76	0.90	0.90	1.00	1.04	0.79	0.90	0.83	0.97	1.30	1.21	1.40	1.67	1.04	1.07	0.79	0.76	0.64
19	0.72	0.57	0.68	0.79	0.97	0.79	0.72	0.90	1.04	1.04	1.04	0.79	0.93	1.17	1.21	1.33	1.33	1.43	0.86	0.61	0.49	0.57	0.45	0.53
20	0.41	0.33	0.49	0.68	0.72	0.76	0.45	0.90	0.90	1.04	0.79	0.79	0.79	0.83	0.86	0.76	0.90	0.64	0.68	0.53	0.49	0.37	0.37	0.33
21	0.25	0.37	0.53	0.41	0.61	0.37	0.21	0.61	0.37	0.79	0.83	0.72	0.79	0.83	0.86	1.00	0.93	0.97	0.97	0.93	1.24	0.79	0.61	0.45
22	0.29	0.29	0.33	0.53	0.68	0.72	0.41	0.61	0.93	0.79	0.86	0.83	0.79	0.83	0.97	1.14	1.30	1.55	1.00	0.93	0.79	0.68	0.41	0.33
23	0.33	0.37	0.53	0.45	0.45	0.68	0.41	0.61	0.64	0.57	0.86	0.72	0.83	0.93	0.97	1.14	1.49	1.24	1.04	0.76	0.68	0.45	0.53	0.33
24	0.29	0.37	0.49	0.37	0.61	0.41	0.41	0.61	0.64	0.83	0.90	0.72	0.83	0.83	c	1.14	1.14	1.30	1.43	0.90	0.72	0.49	0.33	0.41
25	0.33	0.41	0.57	0.61	0.86	0.61	0.64	0.61	0.68	0.61	0.90	0.76	0.83	0.83	1.24	1.40	1.37	1.14	1.14	1.10	0.76	0.49	0.33	0.33
26	0.41	0.37	0.64	0.53	0.61	0.37	0.37	0.61	0.68	0.37	0.57	0.53	0.61	0.83	0.90	1.07	0.86	0.72	0.79	0.79	0.72	0.41	0.45	0.45
27	0.29	0.45	0.57	0.49	0.83	0.57	0.64	0.61	0.68	0.64	0.72	0.76	0.83	0.93	1.29	1.21	1.10	0.93	0.76	0.64	0.57	0.45	0.45	0.45
28	0.37	0.49	0.57	0.64	0.68	0.57	0.64	0.61	0.72	0.64	c	c	0.83	0.93	1.27	1.21	1.24	1.46	1.21	0.93	0.61	0.45	0.45	0.41
29	0.33	0.41	0.61	0.61	0.57	0.57	0.64	0.90	0.97	0.68	0.76	0.76	0.83	0.83	1.00	1.14	1.17	1.00	0.93	0.90	0.53	0.45	0.37	0.37
30	0.41	0.53	0.49	0.57	0.57	0.53	0.61	0.90	1.00	0.93	0.76	0.79	0.83	0.83	0.93	1.14	1.00	1.04	0.90	0.64	0.57	0.49	0.37	0.29
31	0.37	0.45	0.45	0.53	0.49	0.49	0.61	0.61	0.72	0.72	0.79	0.79	0.61	0.83	1.30	0.93	c	0.90	0.83	0.57	0.49	0.49	0.45	0.45
	30	30	30	30	30	30	30	30	30	30	29	29	31	30	30	30	29	31	31	31	30	30	30	29
	0.53	0.52	0.64	0.76	0.81	0.90	0.76	0.90	1.04	1.04	1.21	1.00	1.10	1.17	1.43	1.49	1.49	1.37	1.19	0.97	0.83	0.72	0.61	0.53
	0.41	0.45	0.53	0.61	0.68	0.72	0.64	0.67	0.86	0.90	0.83	0.79	0.83	0.93	0.97	1.11	1.17	1.04	1.07	0.83	0.72	0.58	0.45	0.49
	0.33	0.37	0.41	0.45	0.53	0.53	0.41	0.61	0.64	0.64	0.76	0.72	0.79	0.79	0.86	0.97	1.07	0.93	0.86	0.64	0.53	0.45	0.41	0.37

TIME - UT

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

MEAN VALUE OF ABSORPTION DURING THE FIRST MINUTE OF EACH HOUR

Station	- SJ	Lab.	- 23°12'43"S	Freq.	- 30MHz
Month	- September	Long.	- 45°51'35"W	Bandwith.....	- 30 KHz
Year	- 1965	DIP	- 22.5°S	Diode Load Resist....	- 750 ohm
Riometer	- Mark II	Mag. Lat.	- 11.7°S	Audio Threshold	- 3
		Alt.	- 623 m	Int. Time.....	- 4 sec
				ACG Time	- 4 sec

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
1	0.49	0.57	0.68	0.64	0.57	0.53	0.61	0.76	0.72	0.68	0.53	0.90	0.72	0.93	1.04	1.04	1.00	0.86	0.90	0.86	0.76	0.61	0.53	0.53
2	0.57	0.72	0.61	0.61	0.61	0.49	0.76	0.76	0.76	0.49	0.79	0.90	0.72	0.97	1.07	1.04	1.14	1.14	0.93	0.90	0.90	0.76	0.64	0.53
3	0.53	0.76	0.72	0.79	0.79	0.76	0.76	0.76	0.86	1.04	1.04	0.90	0.72	0.72	1.07	1.10	1.40	1.46	1.52	1.43	1.14	1.04	0.93	0.79
4	0.79	0.90	0.83	0.86	1.04	0.86	0.76	0.76	0.90	0.79	0.79	0.61	0.93	1.21	1.33	1.58	1.49	1.49	1.58	1.46	1.10	0.68	0.61	0.61
5	0.57	0.76	0.79	0.83	0.76	0.68	0.76	0.76	0.90	1.07	1.04	0.90	0.72	0.97	1.10	1.14	1.14	0.90	1.04	0.86	0.97	0.79	0.72	0.72
6	0.68	0.90	0.90	0.83	0.97	0.83	0.76	1.04	0.93	1.07	1.07	0.90	0.93	1.21	1.61	1.40	1.27	1.40	1.14	0.79	0.76	0.61	0.61	0.64
7	0.72	0.90	0.83	1.00	0.97	0.79	1.04	1.07	0.93	1.14	0.83	0.93	0.61	0.97	1.37	1.17	1.24	1.00	0.93	0.86	0.68	0.61	0.57	061
8	0.57	0.79	0.76	1.00	0.93	0.83	1.04	1.07	0.93	1.14	0.86	0.93	0.93	1.24	1.37	1.46	1.37	1.46	1.61	1.14	0.79	0.72	0.64	0.64
9	0.76	0.86	0.86	1.00	0.90	0.64	0.33	1.07	0.97	0.64	1.10	0.93	0.72	1.00	1.14	1.24	1.61	1.90	1.46	1.55	1.24	0.72	0.93	0.97
10	0.86	0.93	0.90	1.24	0.86	0.79	1.04	1.10	0.97	1.17	0.86	0.93	0.93	1.24	1.40	1.49	1.43	1.46	1.30	1.21	1.00	0.83	0.79	0.72
11	0.79	1.00	0.83	1.21	0.86	0.76	1.04	1.10	1.00	1.17	1.10	0.93	1.17	1.24	1.43	1.30	1.17	1.10	1.04	0.76	0.72	0.61	0.61	0.64
12	0.72	0.93	0.79	0.93	0.83	0.76	0.76	0.79	1.04	1.21	1.10	0.93	0.93	1.27	0.97	0.97	0.93	0.97	0.97	0.72	0.53	0.53	0.53	0.61
13	0.64	0.86	0.76	0.79	0.83	0.76	0.76	0.83	0.93	0.97	0.64	0.72	0.72	0.79	0.97	0.64	0.97	0.76	0.83	0.64	0.57	0.53	0.57	0.61
14	0.72	0.79	0.72	0.68	0.79	0.76	0.76	0.83	0.93	1.00	0.68	0.72	0.93	1.27	1.24	1.04	1.10	1.10	0.93	0.96	0.83	0.76	0.61	0.57
15	0.72	0.76	0.86	0.68	0.79	0.76	1.04	1.14	1.07	1.24	0.86	0.72	0.72	1.04	1.24	1.27	1.33	1.40	1.46	1.24	0.79	0.68	0.61	0.68

TIME - UT

TABLE XV

Month: September
Year: 1965

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	0.79	1.04	0.93	0.86	0.90	0.76	0.76	0.86	0.93	1.00	0.68	0.72	1.17	1.27	1.04	1.07	1.37	1.43	1.46	1.40	1.10	0.86	0.93	0.76
17	0.86	0.79	0.79	0.83	0.76	0.76	1.04	0.90	1.00	1.04	0.90	0.72	0.97	1.30	1.14	1.46	1.90	2.12	2.23	1.70	0.97	0.76	0.64	0.72
18	0.90	0.97	0.90	0.79	0.90	0.90	1.04	0.90	1.00	1.04	0.90	0.72	1.21	1.30	1.55	1.72	1.76	1.46	1.27	1.07	0.90	0.76	0.79	0.83
19	0.17	0.90	0.86	0.79	0.72	0.90	1.04	0.90	1.04	1.04	0.93	0.93	1.21	1.33	1.33	1.43	1.72	2.04	1.87	1.14	0.90	0.68	0.76	0.79
20	0.97	0.97	0.83	1.00	0.83	0.90	1.04	0.90	1.07	1.04	0.93	0.72	0.97	1.10	1.37	1.24	1.24	1.10	1.07	0.97	0.86	0.76	0.72	0.72
21	0.90	0.90	0.83	0.97	0.83	0.90	1.04	1.21	1.07	1.07	0.93	0.93	1.21	1.46	1.76	1.85	1.79	1.87	1.40	1.04	0.90	0.93	1.04	1.21
22	1.04	0.83	0.79	0.97	0.79	0.90	1.07	0.93	1.14	0.83	0.68	0.72	0.97	1.14	c	1.04	1.00	1.00	0.97	0.83	0.72	0.49	0.53	0.57
23	0.72	0.57	0.68	0.45	0.41	0.61	0.64	0.57	0.64	0.61	0.61	0.61	c	1.14	1.21	1.55	1.40	1.10	0.90	0.79	0.77	0.49	0.61	0.68
24	0.86	0.64	0.76	0.64	0.41	0.61	0.64	0.57	0.64	0.61	0.61	0.72	0.79	0.90	1.14	1.30	1.07	0.90	0.53	0.57	0.61	0.49	0.61	0.64
25	0.79	0.61	0.76	0.61	0.41	0.61	0.68	0.61	0.68	0.53	0.61	0.72	1.24	1.40	1.49	1.64	1.76	1.70	1.58	1.24	0.97	1.04	1.14	1.30
26	1.27	1.04	0.97	0.86	0.79	0.76	0.83	0.86	0.93	0.86	0.93	c	c	0.93	0.83	0.90	1.21	1.17	0.76	0.53	0.53	c	c	0.72
27	0.79	0.68	0.72	0.57	0.61	0.61	0.68	0.64	0.93	0.64	0.61	0.72	1.04	0.97	1.17	1.21	1.40	1.43	1.14	1.14	0.93	0.57	0.76	1.04
28	0.93	0.97	0.79	0.57	0.61	0.61	0.68	0.68	0.49	0.45	0.61	0.61	0.68	0.68	0.68	0.97	1.04	1.04	0.97	1.04	0.93	0.83	0.83	0.86
29	0.86	0.61	0.45	0.33	0.37	0.61	0.45	0.68	0.53	0.53	0.41	0.41	0.68	0.90	1.04	1.49	1.79	2.09	1.99	1.79	1.40	1.21	1.40	1.46
30	1.10	0.68	0.45	0.53	0.61	0.61	0.49	0.45	0.53	0.53	0.61	0.41	0.68	0.90	1.27	1.61	1.82	1.85	1.55	c	1.00	c	1.24	1.33
31																								
	30	30	30	30	30	30	30	30	30	30	30	29	28	30	29	30	30	30	30	29	30	28	29	30
	0.90	0.93	0.86	1.00	0.90	0.83	1.04	1.07	1.00	1.07	0.93	0.93	1.04	1.27	1.37	1.49	1.72	1.70	1.55	1.24	1.00	0.83	0.93	0.86
	0.79	0.86	0.79	0.83	0.79	0.76	0.76	0.83	0.93	1.00	0.83	0.72	0.93	1.14	1.14	1.30	1.37	1.40	1.14	1.04	0.90	0.72	0.64	0.72
	0.64	0.68	0.72	0.64	0.61	0.61	0.68	0.68	0.72	0.61	0.61	0.72	0.72	0.93	1.07	1.04	1.10	1.04	0.93	0.79	0.72	0.61	0.61	0.61

TIME - UT

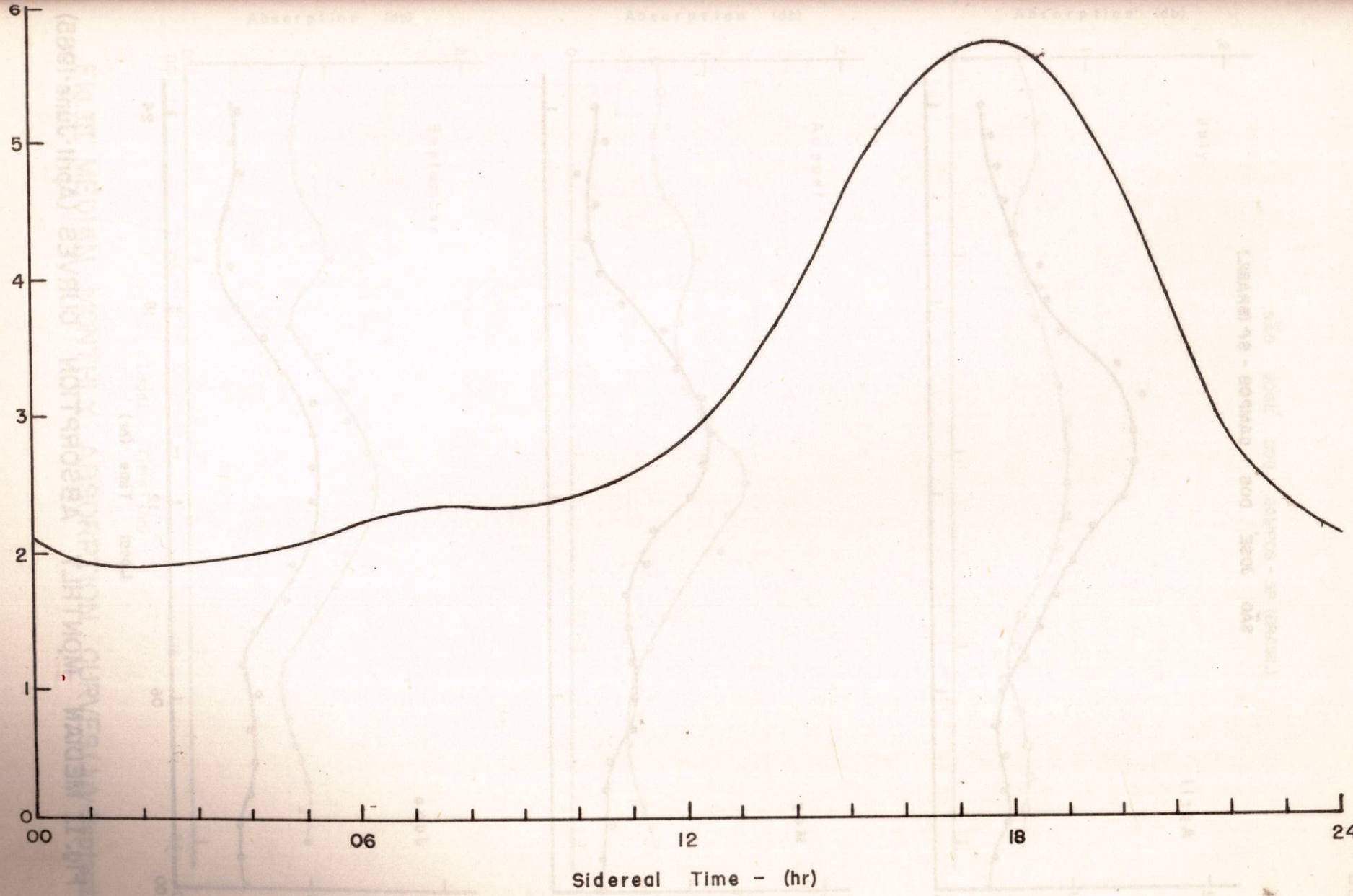

Fig. I QUIET-DAY CURVE

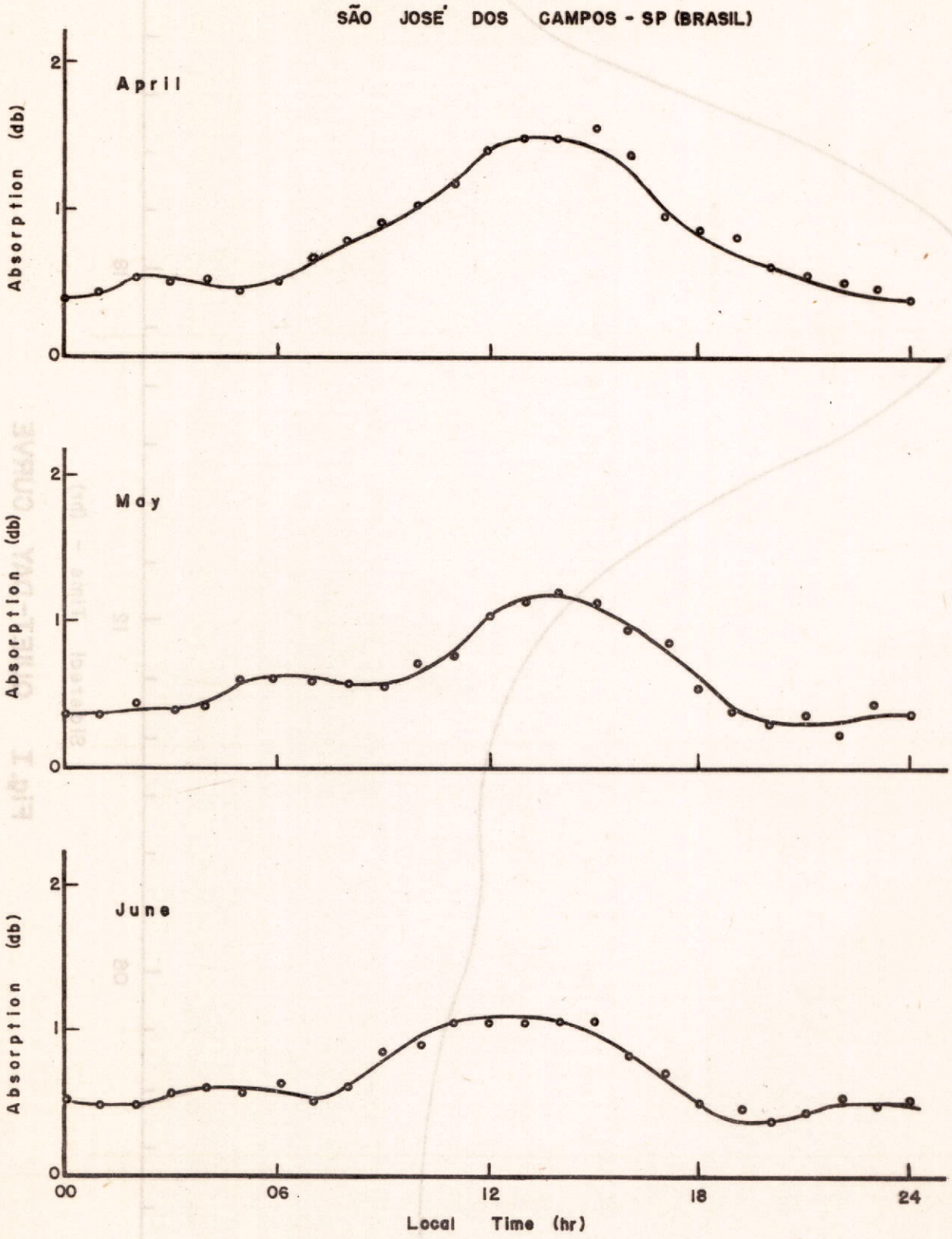

Fig. II MEDIAN MONTHLY ABSORPTION CURVES (April-June-1965)

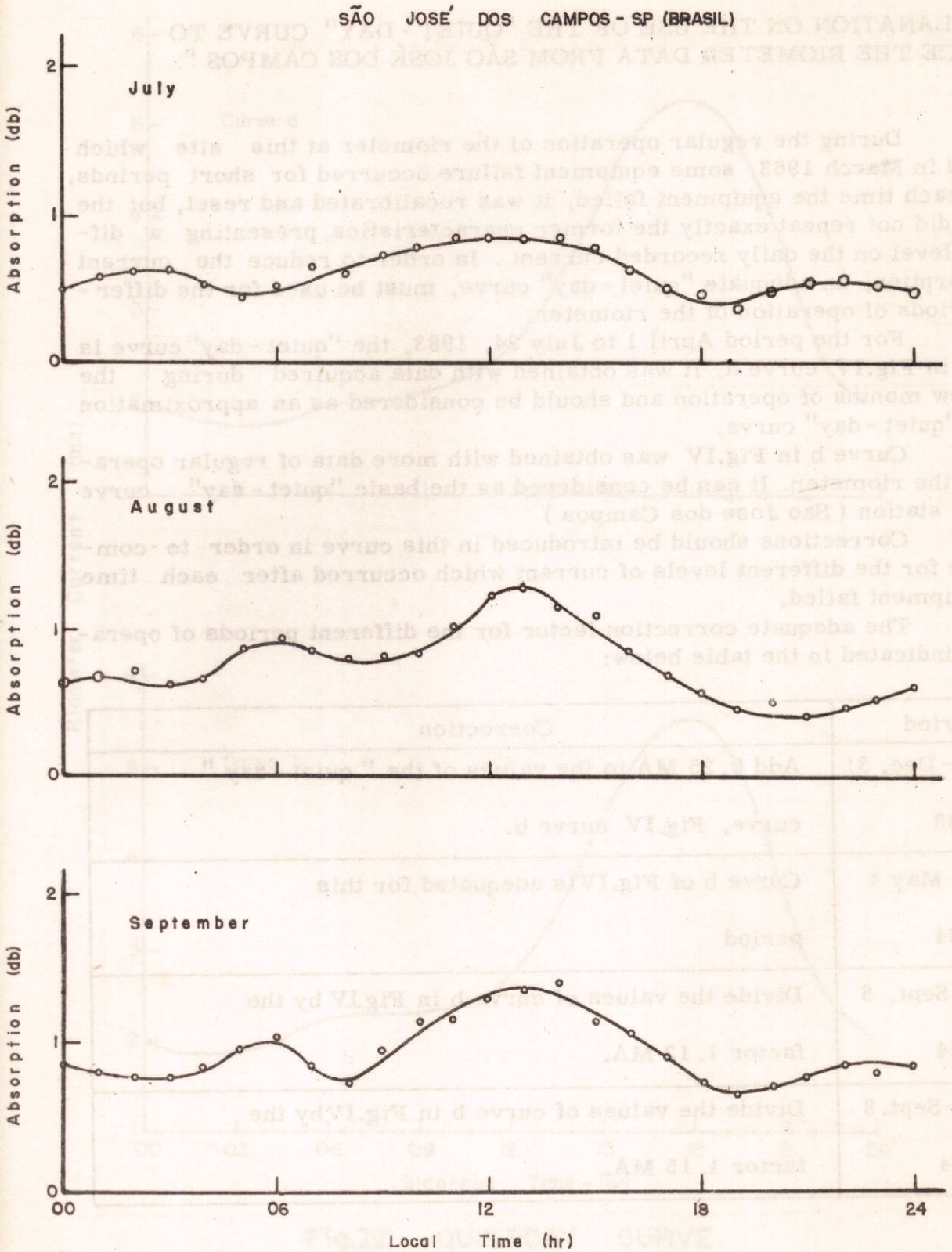

Fig.III MEDIAN MONTHLY ABSORPTION CURVES (July-September-1965)

APPENDIX I

" EXPLANATION ON THE USE OF THE "QUIET - DAY" CURVE TO REDUCE THE RIOMETER DATA FROM SÃO JOSÉ DOS CAMPOS ".

During the regular operation of the riometer at this site which started in March 1963, some equipment failure occurred for short periods. After each time the equipment failed, it was recalibrated and reset, but the output did not repeat exactly the former characteristics, presenting a different level on the daily recorded current . In order to reduce the current to absorption, an adequate "quiet - day" curve, must be used for the different periods of operation of the riometer.

For the period April 1 to July 24, 1963, the "quiet - day" curve is shown in Fig.IV curve a. It was obtained with data acquired during the first few months of operation and should be considered as an approximation to the "quiet - day" curve.

Curve b in Fig.IV was obtained with more data of regular operation of the riometer. It can be considered as the basic "quiet - day" curve for our station (São José dos Campos)

Corrections should be introduced in this curve in order to compensate for the different levels of current which occurred after each time the equipment failed.

The adequate correction factor for the different periods of operation is indicated in the table below:

Period	Correction
Aug. 1 - Dec. 31 1963	Add 0.25 MA to the values of the " quiet - day " curve, Fig.IV curve b.
Jan. 1 - May 4 1964	Curve b of Fig.IV is adequated for this period
May 6 - Sept. 5 1964	Divide the values of curve b in Fig.IV by the factor 1.12 MA.
Sept. 7 - Sept. 8 1964	Divide the values of curve b in Fig.IV by the factor 1.15 MA.

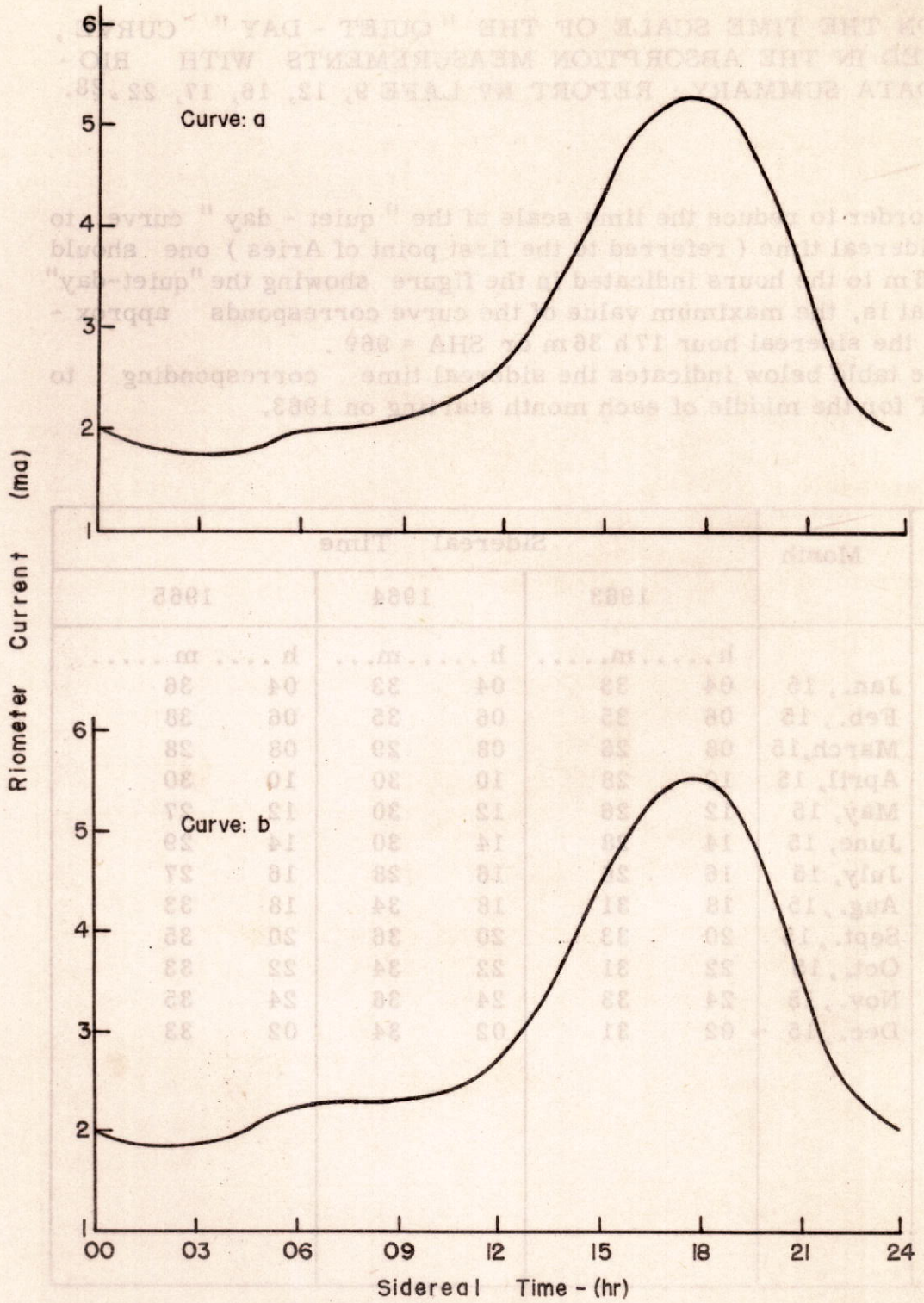

Fig.IV QUIET-DAY CURVE

APPENDIX II

" NOTE ON THE TIME SCALE OF THE " QUIET - DAY " CURVE , PRESENTED IN THE ABSORPTION MEASUREMENTS WITH RIOMETER DATA SUMMARY ; REPORT Nº LAFE 9, 12, 16, 17, 22 , 28.

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 17 h 36 m 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 17 h 36 m or SHA = 96º .

The table below indicates the sidereal time corresponding to 00:00 GMT for the middle of each month starting on 1963.

GMT hour	Month	Sidereal Time					
		1963		1964		1965	
h... m..		h..... m.....		h ..... m...		h .... m	
00:00	Jan., 15	04	33	04	33	04	36
"	Feb., 15	06	35	06	35	06	38
"	March,15	08	26	08	29	08	28
"	April, 15	10	28	10	30	10	30
"	May, 15	12	26	12	30	12	27
"	June, 15	14	28	14	30	14	29
"	July, 15	16	26	16	28	16	27
"	Aug., 15	18	31	18	34	18	33
"	Sept., 15	20	33	20	36	20	35
"	Oct., 15	22	31	22	34	22	33
"	Nov., 15	24	33	24	36	24	35
"	Dec., 15	02	31	02	34	02	33