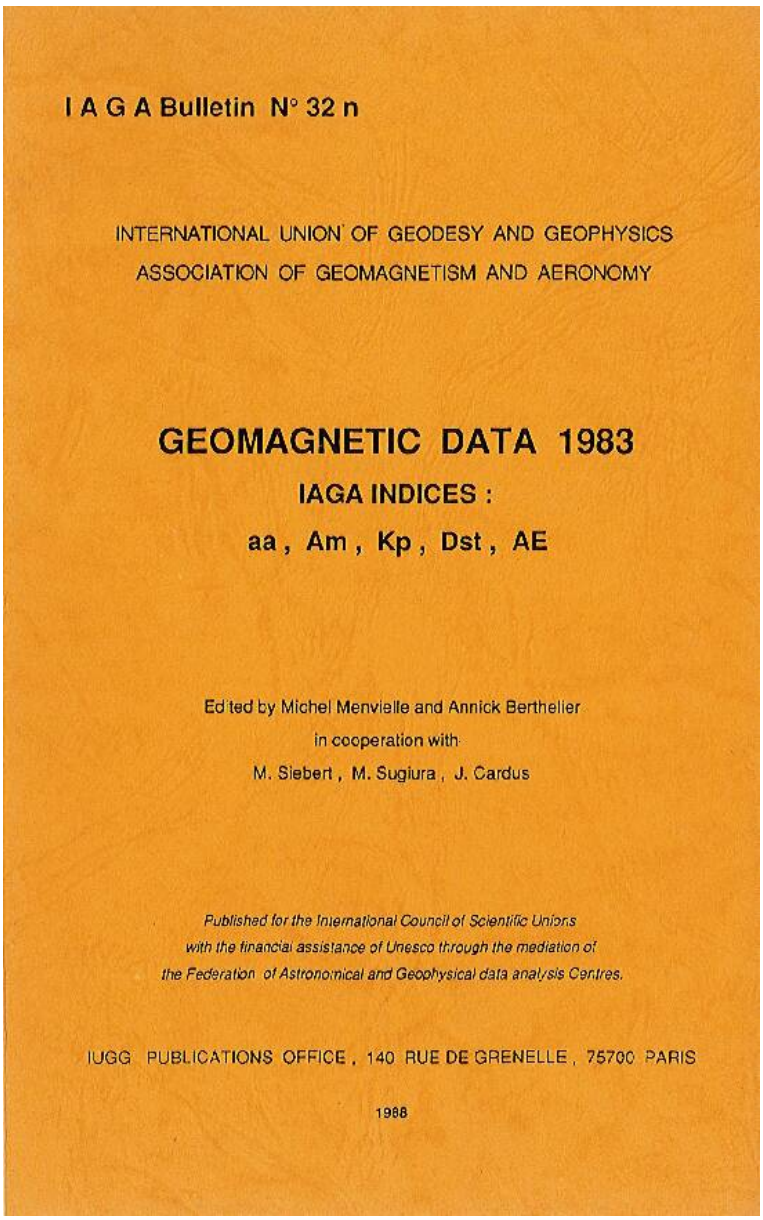


How to cite:

Menvielle, M., Berthelier, A., Siebert, M., Sugiura, M., Cardus, J. O., & IAGA (1988). *IAGA Bulletin No. 32n, Geomagnetic Data 1983, IAGA INDICES: aa, am, Kp, Dst, AE.* IUGG Publications Office. https://doi.org/10.25577/wqwz-w735

I A G A Bulletin N° 32 n

INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS
ASSOCIATION OF GEOMAGNETISM AND AERONOMY

GEOMAGNETIC DATA 1983

IAGA INDICES :

aa , Am , Kp , Dst , AE

Edited by Michel Menvielle and Annick Berthelier
in cooperation with
M. Siebert , M. Sugiura , J. Cardus

Published for the International Council of Scientific Unions
with the financial assistance of Unesco through the mediation of
the Federation of Astronomical and Geophysical data analysis Centres.

IUGG PUBLICATIONS OFFICE , 140 RUE DE GRENELLE , 75700 PARIS

1988

I A G A Bulletin N° 32 n

INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS

ASSOCIATION OF GEOMAGNETISM AND AERONOMY

GEOMAGNETIC DATA 1983

IAGA INDICES :

aa , Am , Kp , Dst , AE

Edited by Michel Menvielle and Annick Berthelier

in cooperation with

M. Siebert , M. Sugiura , J. Cardus

Published for the International Council of Scientific Unions
with the financial assistance of Unesco through the mediation of
the Federation of Astronomical and Geophysical data analysis Centres.

IUGG PUBLICATIONS OFFICE , 140 RUE DE GRENELLE , 75700 PARIS

1988

ACKNOWLEDGEMENTS

We wish to acknowledge J. O. CARDUS, M. SIEBERT, and M. SUGIURA for their cooperation in preparing the data published in this Bulletin. Thanks are also due to all the organisms, that are listed in Tables 1 and 2, page 8, which support efficiently the preparation and distribution of these geomagnetic data.

Let us add that M. SUGIURA, who moved from the Goddard Space Flight Center (Maryland, U.S.A.) to the WDC-C (Kyoto, Japan ; see Table 1) in 1985 and is now at the Tokai University (Tokyo, Japan), wishes specially to acknowledge the valuable assistance of R. S. KENNON (Goddard Space Flight Center) and T. KAMEI and T. ARAKI (Data Analysis Center for Geomagnetism and Space Magnetism, Kyoto University) in the derivation of the indices and in the preparation of the published tables and figures, respectively for the Dst and for the AE indices.

As for us, we are pleased to express our thanks to Hélène ROBIC and Richard SCHEIB (IPGP) and Christine GUERIN (CRPE) for their contribution to this Bulletin.

A. Berthelier, M. Menvielle

Saint-Maur, Paris, Avril 1989.

CONTENTS

Section 1 :	Presentation of the Bulletin	3
Section 2 :	List of Observatories	21
Section 3 :	IAGA Indices	33
	3.1. **aa** indices	35
	3.2. **am** indices	43
	3.3. **Kp** indices	65
	3.4. **Dst** indices	77
	3.5. **AE** indices	97
Section 4 :	Classification of Days	125
Section 5 :	Rapid Variations	131

SECTION 1

PRESENTATION OF THE BULLETIN

1.1.	Introduction	5
1.2.	List of Observatories	9
1.3.	IAGA Indices	11
1.4.	Classification of Days	17
1.5.	Rapid Variations	18

1.1. INTRODUCTION

The IAGA-Bulletin N°32 series is a yearly compilation of magnetic indices and other geomagnetic data, based on the report of a great number of magnetic observatories. The series is the continuation of the former IAGA-Bulletin N°12 and is prepared for publication by the International Service of Geomagnetic Indices (ISGI). The ISGI, formerly called Permanent Service or "C- and K-center" operates under the supervision of IAGA-Division V : Observatories, Instruments, Surveys and Analysis. Since 1954, it forms part of the Federation of Astronomical and Geophysical Data Analysis Centers. Its present address is : ISGI, Institut de Physique du Globe de Paris, Tour 14, 4 Place Jussieu, F-75252 PARIS CEDEX 05, FRANCE.

As for 1983, the elaborated data were provided by the following Institutes, under the responsability of the adjoining collaborators :

- Institut für Geophysik, Göttingen (M. SIEBERT) :
  Kp, ap, Ap, Cp, Q- and D-days.

- Institut de Physique du Globe de Paris, Paris (M. MENVIELLE) :
  aa, C- and K-days, an, Kn, An, as, Ks, As, and am, Km, Am.

- NASA-Goddard Space Flight Center, Greenbelt (M. SUGIURA) :
  Dst.

- Data Analysis Center for Geomagnetism and Spacemagnetism, Kyoto (M. SUGIURA) :
  AL, AU, AE.

- Observatorio del Ebro, Roquetas (J.O. CARDUS) :
  Rapid Variations.

The work began in 1906 with the collection and publication of the daily character figure C and the international character figure Ci, together with the lists of selected quiet and disturbed days. In 1938, this work was extended backwards to 1890.

The three-hourly K-index (scale 0-9) was introduced by Bartels in 1938. From the K-figures of 12 selected stations, planetary indices Kp were derived. Both K and Kp were officially adopted by the IAGA in 1951 and the series of Kp was extended backwards to 1932 during the subsequent period. The K-figures of the selected stations for these early years were published in IAGA-Bulletins N°12g and 12l. In addition to Kp, the corresponding range figures ap and related daily indices Ap and Cp have been regularly published in the IAGA-Bulletin N°12.

In accordance with recommendations of the IAGA-Assemblies in Madrid (1969) and Moscow (1971), the publication in the IAGA-Bulletins of C- and K-indices of individual observatories ended with the 1969 data, whereas planetary indices (Dst, an, Kn, An, as, Ks, As, am, Km, Am) and a survey of magnetic storms were included since 1970.

This change marked the end of the IAGA-Bulletin N°12 series and the beginning of the new IAGA-Bulletin N°32 series. The publication of the Ci, Kp, ap, Ap indices, and of the international quiet and disturbed days, Q- and D-days, continued in the new series. According to a recommendation of the IAGA-Assembly in Grenoble (1975) a new index aa is published instead of Ci since 1976 and the C-figures are no longer compiled.

A short recall of the definition of the published indices is given in the section 1.3 below (pages 11-16). For more details, one can refer to the following two general reports :

- M. Siebert, in "Handbuch der Physik", vol.49/3, 206-275, Springer Verlag, 1971, for the description of several indices .

- P. N. Mayaud, Derivation, Meaning and Use of Geomagnetic Indices, Geophysical Monograph 22, Am. Geophys. Union, Washington D.C., 1980, for an up to date complete review of the present IAGA indices.

Indications concerning their availability are given below, together with some more references.

- The *K-indices* of individual observatories are available on magnetic tape for the years 1969-1974, at the World Data Center A (WDC-A, Table 1). Besides, tables of local K-indices can be found in the bulletins or yearbooks of many observatories. The results of an extensive study on the K index by P. N. Mayaud are given together with practical rules for its determination in the "Atlas des indices K", IAGA-Bulletin N°21, 1967.

- The *aa-indices* form a series of indices beginning in the year 1868. A full description can be found in the IAGA-Bulletin N°33, which contains tables and graphs of aa for the years 1868-1967. Values for the years 1968-1975 are published in the IAGA-Bulletin N°39 ; this index is regularly published in the IAGA-Bulletin N°32 since 1976. The whole serie is available on magnetic tape at World Data Center A (Table 1), and in France through CRPE-CNRS (Table 2). They also regularly appear in Geomagnetic and Solar Data monthly tables edited by H. Coffey in Journal of Geophysical Research and in Solar Geophysical Data Publications (Table 2). They can be sent on request by ISGI, by mail before the end of the next month, or by telex within 1 week (Table 1).

- The meaning of *C, Ci, K and Kp* is explained in textbooks (e.g. Landolt-Börnstein, Zahlenwerte und Funktionen, Band 3, 731-744, Springer Verlag, 1952), in Terrestrial Magnetism and Atmospheric Electricity (*44*, 411, 1939; *45*, 309, 1941) and in the IAGA-Bulletin N°12i. Tables and diagrams of these planetary indices for the whole period 1932-1961 are printed in the IAGA-Bulletin N°18. Kp, Ap, Cp are published in the IAGA-Bulletin N°32, and also in the Geomagnetic and Solar Data monthly tables edited by H. Coffey in Journal of Geophysical Research and in Solar Geophysical Data Publications (Table 2). They are sent on request before the end of the next month by the Institut für Geophysik, Göttingen (Table 2). They are available on magnetic tape at the World Data Centers (Table 1).

- The *three-hourly indices an, Kn, and as, Ks,* for the Northern and Southern hemispheres and the *mondial indices am, Km,* are described by P. N. Mayaud in "Indices Kn, Ks and Km, 1964-1967" (Editions du CNRS, Paris 1968). The indices for the years 1959-1963 are published in the IAGA-Bulletin N°39, and for 1964-1967 in the above quoted publication. They are published in the IAGA-Bulletin N°32 from 1968 onwards, and also appear in the Geomagnetic and Solar Data monthly tables edited by H. Coffey in Journal of Geophysical Research and in Solar Geophysical Data Publications (Table 2). They are available on magnetic tape at World Data Centers (Table 1) and in France through CRPE-CNRS (Table 2). They can be sent on request by mail from ISGI within 6 weeks after the end of the month (Table 1).

- The *equatorial Dst-index* for ring current intensity is published in the IAGA-Bulletin N°32 from 1970 onwards. Hourly values of Dst for the years 1957-1970, based on the data of three stations, have been published by M. Sugiura and D. J. Poros in the report X-645-71-278 of the Goddard Space Flight Center. This report supersedes earlier Dst publications by Sugiura and co-workers. Recently, those Dst values have been recomputed, using the data of four stations. Hourly Dst values for the IGY, based on the data of eight stations, are given in the Annals of the IGY, vol. 35. The same volume contains three-hourly values of Dst for the IGY as determined by Kertz in a somewhat different way. The hourly values from 1957 onwards are available on magnetic tape at the World Data Center (Table 1).

- The *auroral electrojet index AE* was originally introduced by Davis and Sugiura in 1966 (J. Geophys. Res., *71*, 785). It was first derived at the Geophysical Instutute of the University of Alaska, and hourly values were published for the years 1957-1964 in the University of Alaska Reports prepared by T. N. Davis, Y. S. Wang and C. Echols and published in 1967 and 1968. The data for 1965 were prepared by NASA ; from 1966 to 1976, they were prepared by WDC-A. Values from 1978 onwards are computed by the Data Analysis Center for Geomagnetism and Spacemagnetism of Kyoto University and published in the data books of this Institute. They are available on magnetic tape at the World Data Centers (Table 1). Hourly mean values are published in IAGA-Bulletin N°32 since 1981.

- Data on *rapid variations* are collected and prepared for publication at the Observatorio del Ebro (Table 2), according to the decisions made at the IAGA-Assemblies in Madrid (1969) and Grenoble (1975). They are given less extensively than in the former IAGA-Bulletins. Provisional lists are available on request at ISGI within 6 weeks after the end of the month (Table 2).

Table 1 and 2 (next page) give present address of the ISGI, of the World Data Centers, and of the National Institutes and Data Centers related to this bulletin.

TABLE 1

ISGI and World Data Centers

ISGI
International Service of Geomagnetic Indices
Service International des Indices Géomagnétiques
Institut de Physique du Globe de Paris
Tour 14, 4 Place Jussieu
F-75252 PARIS CEDEX 05, France
Telephone 33 1 43 36 25 25 ext. 4935
Telex 202 810 VOLSISM
Telefax 33 1 43 26 40 29

WDC-A
World Data Center-A for Solar-Terrestrial Physics
NOAA code E/GC2, 325 Broadway
BOULDER, Colorado 80303, U.S.A.
Telephone 1 303 497 6324
Telex 592 811 NOAA MASC BDR
Telefax 1 303 497 6513

WDC-B
World Data Center-B
Soviet Geophysical Committee, Academy of Sciences of the U.S.S.R.
Molodezhnaya 3
MOSCOW 117296, U.S.S.R.
Telephone 7 095 130 05 46
7 095 228 67 88
Telex 411 478 SGC SU

WDC-C
World Data Center-C for Geomagnetism
Data Analysis Center for Geomagnetism and Spacemagnetism
Faculty of Science, Kyoto University
KYOTO 606, Japan
Telephone 81 75 751 2111 ext. 3939
Telex 5422 693 LIB KYO J
Telefax 81 75 722 7884

TABLE 2

National Institutes and Data Centers

M. MENVIELLE
Institut de Physique du Globe de Paris
Tour 14, 4 Place Jussieu
F-75252 PARIS CEDEX 05, France

M. SIEBERT
Geophysical Institute, Göttingen University
Institut für Geophysik der Universitat Göttingen
Postfach 2341, Herzberger Landstrasse 180
D-3400 GOTTINGEN, Federal Republic of Germany

J. O. CARDUS
Observatorio del Ebro
Roquetas, TARRAGONA, Espagne

M. SUGIURA
Working Group on World Data Centers
National Committee on Solar-Terrestrial Physics
Science Council of Japan
Geophysical Institute, Faculty of Sciences, Kyoto University
KYOTO 606, Japan

• For access to CRPE available data, one has to contact :
Christine GUERIN
CRPE-CNRS
4, Avenue de Neptune
F-94107 SAINT MAUR CEDEX, France
Telephone 33 1 48 86 12 63
Telex 680 327 CNET GRI
Telefax 33 1 48 89 44 33

• Solar Geophysical Data monthly publications are issued by :
NOAA National Geophysic Data Center
NOAA, NESDIS E/GC4
325, Broadway
BOULDER, Colorado 80303, U.S.A.

1.2. LIST OF OBSERVATORIES

A list of the magnetic observatories at which continuous recordings have been made during at least five consecutive years is given pages 23-30. In this table, the observatories are listed according to the alphabetic order and one has indicated for each station, from left to right :

- its name and three-letter IAGA international code ;
- the geographic and geomagnetic coordinates, and altitude ;
- the K=9 lower limit, given only for the stations which belong to Kp, am or aa networks (see section 1.3 for the description of these networks in 1983) ;
- the opening and closing years.

Note that temporary stations do not appear in this table, as for instance those operating during the International Polar and Geophysical years, but they can be found in the more extensive list published in IAGA-Bulletin n° 20 (1965).

The values of the parameters given in the table has been obtained from the following publications :

- C.R. Bock and R.W. Schumann : Katalog der Jahres mittel der Magnetischen Elemente der Observatorien und der Stationen an deinen eine Zeitlang erdmagnetische Beobachtungen Stattfanden, Geophysikalisches Institut Postdam
  Abhandlungen n° 8, Postdam, 1948;
- Annual mean values of Geomagnetic elements, Geomagnetic Bulletin n°10, Institut of Geological Sciences, Edinburgh, 1981 ;
- Yearbooks of individual observatories.

A list of the stations having provided continuous recordings over at least fifty years is given on pages 31-32. When one observatory has moved, the names of the different consecutive sites are indicated. The stations are listed following the alphabetic order of the oldest observatory. One has indicated in this table the opening and closing years, as the other parameters can be found in the preceeding list.

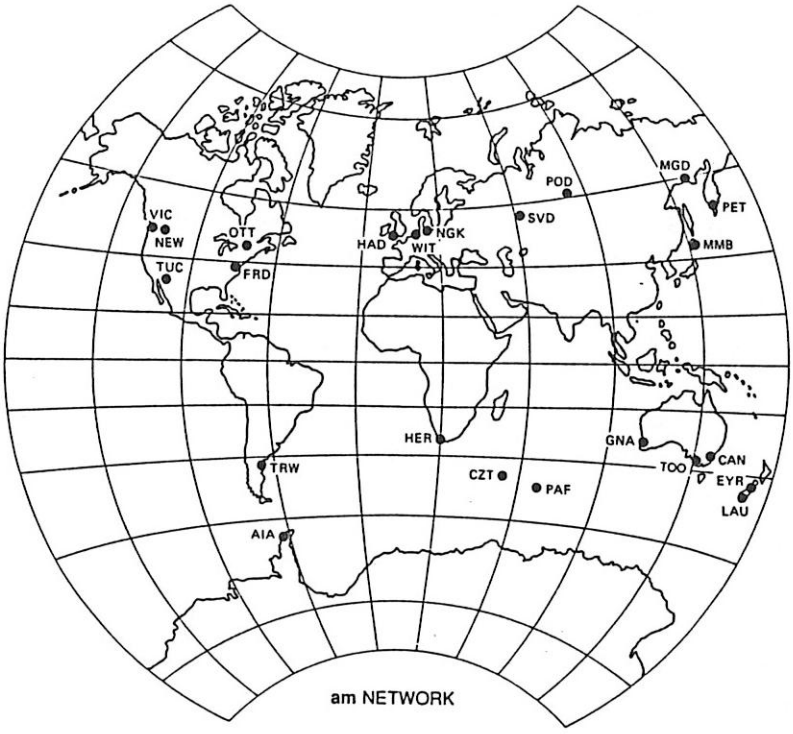


Figure 1

Figure 2

1.3. IAGA INDICES

1.3.1. aa indices

The aa indices are derived using data from two nearly antipodal observatories, where magnetograms were available since 1868. For each three hour interval, K indices are measured at the two stations and converted back into amplitude ; an individual aa index is the average of the northern and southern values, weighted to account for the small difference in latitude of the two stations, or for the slight changes in the very place of the observatory. The observatories and weighting coefficients used to derive aa are the followings :

Northern Hemisphere			*Southern Hemisphere*		
1868-1925	Greenwich	1.007	1868-1919	Melbourne	0.967
1926-1956	Abinger	0.934	1920-1979	Toolangui	1.033
1957-...	Hartland	1.059	1980- ...	Canberra	1.084

Half-daily and daily mean values give an estimate of the activity level very close to the corresponding values derived from am indices. aa is in nanotesla (nT) and it represents the activity level at an invariant magnetic latitude of about 50°. The following values are given pp. 38-39 :

N	=	daily values for the Northern observatory (Greenwich day)
S	=	same for the Southern observatory
am, pm	=	half-daily values of aa indices for the half Greenwich day before, and after noon.

For each month, the average value of daily N, S and aa, are given at the bottom of the tables.

The five international quietest days of the month (see section 4) are indicated by the letter Q. Letters C and K refer to the classification of the quiet 24 and 48 hour intervals as obtained from aa : C = really quiet, K = quiet, but with one or a few slightly disturbed three-hourly intervals (see section 4). The letter on the left column refers to the 24 hour Greenwich day, the right one to a period of 48 hours centered on the Greenwich noon.

A graph of 12-hour running mean values of aa indices is drawn page 37 for the whole year. Monthly and yearly mean values of aa for the years from 1868 onwards are listed pp. 40-41. A graph of 12-month running mean values of aa is drawn page 42, covering the full period when aa has been calculated so far, i.e. 1868-1983. In this graph, the point plotted at the abscissa of a given year corresponds to the average of aa from January to December of that year (unit : nT).

1.3.2. am indices

am, an and as indices are derived from K indices scaled at observatories located in the subauroral zones of the Northern and Southern hemispheres (Figure 1). The stations are arranged in groups (G1 to G9), each group representing a longitude sector in one of the hemisphere. The corrected geomagnetic latitude indicated in the lists below has been calculated by Mayaud for taking into account the actual topography of the main field.

	Northern Hemisphere				*Southern Hemisphere*		
	Observatory	*Corr. Geom. Lat.*			*Observatory*	*Corr. Geom. Lat.*	
G1	Magadan	MGD	53.8°	G6	Eyrewell	EYR	50.2°
	Petropavlosk	PET	46.4°		Lauder	LAU	37.7°
	Memabetsu	MMB	37.4°				
G2	Podkammenkaya	POD	57.2°	G7	Toolangui	TOO	48.0°
	Sverdlovsk	SVD	52.2°		Canberra	CAN	45.2°
					Gnangara	GNA	44.1°
G3	Witteveen	WIT	50.2°	G8	Kerguelen	PAF	58.8°
	Hartland	HAD	50.0°		Crozet	CZT	52.4°
	Niemegk	NGK	48.8°		Hermanus	HER	41.1°
G4	Ottawa	OTT	58.9°	G9	Argentine Islands	AIA	49.7°
	Frederiksburg	FRD	51.8°		Trelew	TRW	27.8°
G5	Victoria	VIC	53.9°				
	Tucson	TUC	39.7°				

For a given time interval, the K values measured at the observatories of one group are averaged and converted back to amplitude. These amplitudes are weighted for balancing the differences in longitude width of the sectors, and the hemispheric averages of these weighted amplitudes give rise to the three-hour an and as indices respectively ; am is equal to (an + as)/2. Am, An and As are the daily mean values of am, an and as. They are all expressed in nanoteslas. For the sake of tradition and convenience, Km, Kn, Ks equivalent values are also made available by means of conversion table; they are as usually expressed by values from 0o to 9o, and 3Km, 3Kn, 3Ks by values from 0 to 27.

Monthly tables of an, and as are given pages 46 to 57, each line corresponding to a Greenwich UT day. Following values are displayed from left to right :

- 3Kn (3Ks) values for the 8 three-hour intervals ;
- σn (σs) values for the 8 three-hour intervals represent, by a code using one digit from 0 to 9, the variance of the sector values of K in Northern (Southern) hemisphere calculated for each given three-hour interval;
- an (as) values for the 8 three-hour intervals ;
- An (As) daily mean value.

At the end of each table, one can find the monthly mean value.

Monthly tables of am (pp. 58 to 63) are displayed in a similar way :

- 3Km values for the 8 three-hour intervals ;
- daily sum ΣKm ;
- am values for the 8 three-hour intervals ;
- Am, daily mean value ;
- Am2, mean value of am over a 48 hours period centered at the middle of the Greenwich day.

Km values are displayed as "musical diagram" according to Bartels solar rotations (page 45). The musical diagrams from 1959 onwards are available on request at CRPE-CNRS (Table 2). Monthly and yearly mean values of Am from 1959 onwards are given page 64.

1.3.3. Kp indices

The planetary three-hour-range index Kp is the mean standardized K-index from 13 observatories between 44° and 60° northern or southern geomagnetic latitude (Figure 2). The scale is 0o to 9o, expressed in thirds of a unit, e.g. 5- is 4 2/3, 5o is 5, 5+ is 5 1/3. This planetary index is designed to measure solar particle radiation by its magnetic effects. Several other indices are derived from Kp, namely the three-hour index ap (the equivalent range) and the daily indices Ap as well as C1p and C9 from the daily sum of ap.

The Kp-stations are :

Northern Hemisphere			*Southern Hemisphere*		
Observatory	*Corr. Geom. Lat.*		*Observatory*	*Corr. Geom. Lat.*	
Meanook	MEA	62.5°	Eyrewell	EYR	50.2°
Sitka	SIT	60.0°	Canberra	CAN	45.2°
Lerwick	LER	58.9°			
Ottawa	OTT	58.9°			
Lovö	LOV	56.5°			
Eskdalemuir	ESK	54.3°			
Brorfelde	BJE	52.7°			
Fredericksburg	FRD	51.8°			
Wingst	WNG	50.9°			
Witteveen	WIT	50.2°			
Hartland	HAD	50.0°			

The three-hour equivalent amplitude ap is related to Kp as follows :

Kp	= 0o	0+	1-	1o	1+	2-	2o	2+	3-	3o	3+	4-	4o	4+
ap	= 0	2	3	4	5	6	7	9	12	15	18	22	27	32

Kp	= 5-	5o	5+	6-	6o	6+	7-	7o	7+	8-	8o	8+	9-	9o
ap	= 39	48	56	67	80	94	111	132	154	179	207	236	300	400

In order to use ap as an equivalent amplitude, it is considered in relation to the conditions at a standard station, which is a station having the lower limit of 500 nT for K = 9. At such a station the average range in nT of the most disturbed of the three force components in a three-hour interval can be taken as 2.ap (for instance, for Kp = 3+, as 36 nT). In other words ap is an equivalent amplitude in the unit 2 nT. The column headed Ap gives the daily average for the eight values ap per day. Therefore, Ap may be called the "equivalent daily amplitude Ap", expressed in the unit 2 nT for a standard station.

Observatories wishing to compute, from their own K indices, a local equivalent amplitude ak, may proceed as follows :

K =	0	1	2	3	4	5	6	7	8	9
ak =	0	3	7	15	27	48	80	140	240	400

This table is valid for all observatories. Using the values of the table, ak has the meaning of an index. If it is desired to convert the index ak into an equivalent amplitude in the unit nT, the conversion factor is obtained from the lower limit for K = 9 valid at the station by dividing the limit by 250. For instance, at Sodankylä, where the lower limit for K = 9 is 1500 nT, the factor is 6, so that, for K = 3, the equivalent amplitude is 90 nT, or, in other words the index ak for Sodankylä expresses equivalent amplitudes in the unit 6 nT. Similary, Ak is the daily average of the ak. Use of the daily Ap (planetary) or Ak (local value) is recommended in preference to the sum of the indices Kp or K.

The last column gives the daily planetary character figure Cp, as defined in Bulletin 12e, p. 111. It should be noted that Cp, introduced for a standardisation of the international character figures Ci, has not been approved by the Association. Instead, Ap was preferred. For a rough conversion of Ci figures (prior to 1932) into Ap, the following table (derived from Bulletin 12e, p.111, Table 2) may be used :

10.Ci =	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ap =	2	4	5	6	8	9	11	12	14	16	19	22	26	31	37	44	52	63	80	110	160

Monthly tables of Kp and derived indices are given pages 68-73. Kp values are displayed as "musical diagrams" according to Bartels solar rotation page 67. These diagrams are also available on request at Geophysical Institute, Göttingen (Table 2). The frequencies of Kp indices is given by month page 74. Monthly and yearly mean values of Ap from 1932 onwards are given page 75.

1.3.4. Dst index

The equatorial Dst-index for the intensity of the ring current is the deviation of the horizontal component H from its quiet time value, averaged over a four low latitude stations network given in the following table.

Observatory	*Symbol*	*Dipole Lat.*	*Dipole Long.*
Honolulu	HON	21.0°N	266.4°
San Juan	SJG	29.9°N	3.2°
Hermanus	HER	33.3°S	80.3°
Kakioka	KAK	26.0°N	206.0°

The exact definition of Dst is given in earlier data publications (see references page 7). Monthly tables of hourly Dst-values are given pages 82 to 93, followed by a table of daily mean values (page 94). The graph of hourly values for the whole year is given pages 79-81; the table of monthly and yearly mean values from 1959 onwards is given page 95.

1.3.5. AE index

The AE indices are derived from geomagnetic variations in the horizontal component observed at selected observatories along the auroral zone in the northern hemisphere (Figure 3, Table 3). These variations are measured from a base line determined for each of the observatories. For each given time (UT), at one minute intervals the AU and AL indices are respectively defined as the maximum and minimum values among the one minute values of the variations from all the AE observatories at this UT. The AE index is defined by AU-AL, A0 is (AU+AL)/2.

For the sake of simplicity the term "AE (Auroral Electrojet) indices" is generally used to mean all the AE-associated indices, i.e. AU, AL, AE and A0. In a superposed plot of one minute values of H from all the AE observatories with a common time axis the AU and AL indices represent the upper and lower envelopes of the plotted points, respectively, and the AE value gives the separation of these envelopes. The AU and AL indices are intended to represent a measure of the maximum current density of the eastward and westward auroral electrojets, respectively. The AE index represents a measure of global auroral electrojet activity.

One minute values of the AE indices (AU, AL, AE and A0) are calculated at the Data Analysis Center for Geomagnetism and Spacemagnetism, (same address as WDC-C, Table 1) and more detailed plots and tables are given in the Data Book series of the World Data Center C2 for Geomagnetism. One minute values of these indices are available on magnetic tape at the World Data Center-A for Solar Terrestrial Physics in Boulder, Colorado and at the World Data Center-C2 for Geomagnetism in Kyoto (See Table 1).

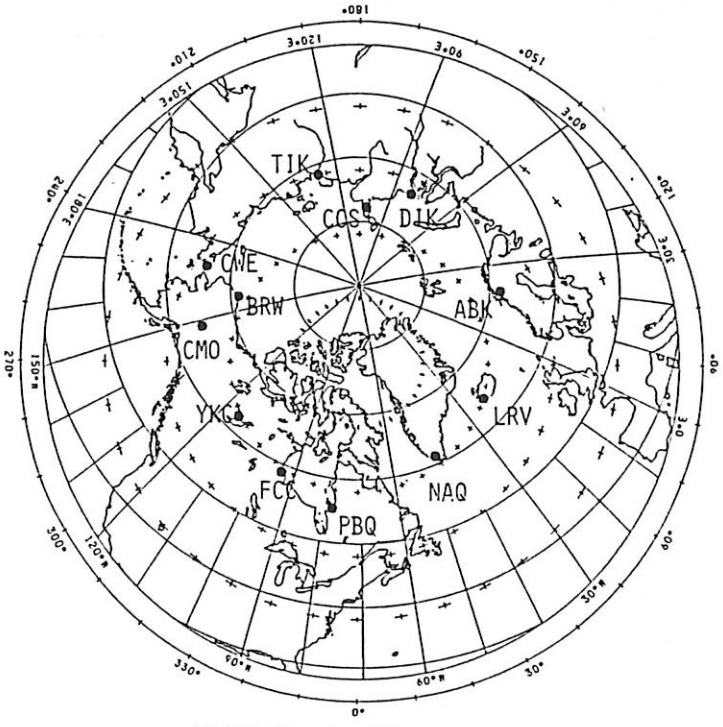
Tables of hourly averages of AU, AL and AE are given pages 100 to 123. The hourly averages of AU, AL and AE are computed from the one minute values of the respective indices, therefore they may not necessarily satisfy the relationship AU - AL = AE exactly. Similarly the daily mean indices are averages of the one minute values for the whole day and are not the daily means of the hourly averages.

Monthly and yearly mean values from 1957 onwards are given page 124.

TABLE 3

List of AE observatories

Observatory	*Symbol*	*Geographic*		*Geomagnetic*	
		Lat. (°N)		Long. (°E)	Lat. (°N)
	Long. (°E)				
Abisko	ABK	68.36	18.82	66.04	115.08
Dixon Island	DIK	73.55	80.57	63.02	161.57
Cape Chelyuskin	CCS	77.72	104.28	66.26	176.46
Tixie Bay	TIK	71.58	129.00	60.44	191.41
Cape Wellen	CWE	66.17	190.17	61.79	237.10
Barrow	BRW	71.30	203.25	68.54	241.15
College	CMO	64.87	212.17	64.63	256.52
Yellowknife	YKC	62.40	245.60	69.00	292.80
Fort Churchill	FCC	58.80	265.90	68.70	322.77
Great Whale River	GWC	55.27	282.22	66.58	347.36
Narssarssuaq	NAQ	61.20	314.16	71.21	36.79
Leirvogur	LRV	64.18	338.30	70.22	71.04



Distribution of AE(12) stations

Figure 3

1.4. CLASSIFICATION OF DAYS

The international five quietest days and the selection of the 24-hour and 48-hour intervals which are really quiet or very quiet are listed month by month pages 127 to 129. The extensive list of international quietest and more disturbed days and a list of magnetic storms are given page 130. These classifications are made according to the following.

1.4.1. Classification deduced from Kp indices

The selection of the quietest and most disturbed days is made on the basis of three criteria:

(a) = the sum of the eight values of Kp ;
(b) = the sum of the squares of these values ;
(c) = the greatest of the eight values of Kp.

According to each of these criteria, a relative "order number" is assigned to each day of a month, the three order numbers are averaged and the days with the lowest and the highest mean order numbers are selected as the five quietest, the ten quietest and the five most disturbed days (Table page 130, with a list of magnetic storms).

It should be noted that these selection criteria give only a relative indication of the character of the selected days with respect to the other days of the same month. As the general disturbance level may be quite different for different years and also for different months of the same year, the selected quietest days of a month may sometimes be rather disturbed or vice versa. In order to indicate such a situation, selected days which do not satisfy certain absolute criteria are marked as follows :

- a selected "quiet day" is considered "not really quiet" and is marked by the letter A if for that day : $Ap > 6$, or marked by the letter K if $Ap \leq 6$, with one Kp value greater than 3 or two Kp values greater than 2+;
- a selected "disturbed day" is considered "not really disturbed" and marked by an asterisk if $Ap < 20$. (see P.N. Mayaud, Ann. Géophys., *26*, 901, 1969).

1.4.2. Classification deduced from aa indices

The selection of the quiet 24-hour intervals is made firstly on the basis of the mean value of aa which must be lower than the fixed value : 13 nT. Then, each individual aa value of the day is represented by a weight p, namely :

p	0	1	2	4	6
aa	≤ 17	$17 < aa \leq 21$	$21 < aa \leq 28$	$28 < aa \leq 32$	> 32

A day with a mean value of $aa \leq 13$nT and for which Σp is higher than, or equal to 4 is a quiet K-day ; if Σp is lower than 4, the day is a really quiet C-day.

The same rules are applied to select the 48-hour quiet or really quiet intervals, with the same limit for the aa mean value (13 nT) and a limit for Σp equal to 6. One has to note that in these intervals every local day (0 h to 24 h in local time) is really quiet, at any longitude. For further details, see P. N. Mayaud, Derivation, Meaning and Use of Geomagnetic Indices, Geophys.Monograph 22, Am.Geophys.Union, Washington 1980.

1.5. RAPID VARIATIONS

1.5.1. Storm sudden commencements (ssc)

Sudden commencements followed by a magnetic storm or by an increase in activity lasting at least one hour are listed according to the data reported monthly by the observatories mentioned in the heading of the list. The final identification of the storm sudden commencements (ssc) is made from copies of records supplied to the Service of Rapid Variations (J.O. CARDUS, Director ; see Table 2 p. 8) by five low-latitude observatories or their supplementary observatories, also listed in the heading of the list. The copies are requested for all events, also for those reported by other observatories only. Furthermore all events are checked on the microfilm-copies of magnetograms of two low latitude observatories. In doubtful cases, attention is especially given to the monthly reports of all observatories. See IAGA-Bulletin N° 39, pp. 103-111 for a full explanation of this method, and some statistical results concerning the years 1968-1975.

In the list of ssc (example given page 133), the time in the column at the left is the mean value obtained from all observatories ; but the earliest and latest times reported by the observatories for the beginning of the event are added in parenthesis. For printing reasons only the minutes are given. These minutes generally belong to the hour of the event ; but if they are underlined they belong to the preceding hour. The next five figures indicate the qualification given to the event by the Service of Rapid Variations, using the above mentioned copies of low latitude stations (if a figure is underlined, it means that the supplementary station is used). The meaning of these numbers is as follows:

2 or 3 — the event can be unmistakably identified as being an ssc from the single record under consideration ; 3 is imposed instead of 2 when the following three features are present : very sharp change of rythm, large amplitude of the sudden move, remarkably morphology of it ;

1 — means that the event seen in this particular record is possibly an ssc, but is not sufficiently clear by itself for stating that it is a true ssc; one needs records from other longitudes for getting a firm judgement ;

0 — means that, from the record under consideration, the event could escape from the attention of the observer or does not deserve to be called an ssc.

After these numbers are given the average duration of the event in minutes (time-interval between the beginning and the maximum of the sudden move) and its average amplitude in nT at the five selected observatories. The next group indicate the number of observatories which have caracterised the ssc event by either letter A, or B, or C, in their monthly reports. A, B, C have the following meaning :

- A = very remarkable
- B = fair, ordinary but unmistakable
- C = very poor, doubtful

Note that the 0 to 3 qualification is given by the Service of Rapid Variations independently of these A, B, C, quality indications.

The last group indicates the number of observatories which have classified the event other than ssc namely :

si = sudden magnetic change which could not be classified as ssc ;

pg = giant pulsations, i.e. exceptional pulsations of very great period and regularity, with sufficient relative amplitude ;

pi = train of pulsations of irregular shape, consisting of several series of oscillations, each series lasting about 10 minutes ; period of the pulsations pi1 : shorter than 40 s, pi2 : 40-150s, pi3 : longer than 150s ;

pc = pulsation of more continuous character, generally with long duration ; period : pcl : 0,2-5s, pc2 : 5,1-10s, pc3 : 10-45s, pc4 : 45-150s, pc5 : 150-600s, pc6 longer than 600s ;

b = bay-like disturbance in the magnetogram ;

ncl = no classification given in the report ;

cr = crochet-like disturbance ;

1.5.2. SOLAR FLARE EFFECTS (sfe)

Solar flare effects (sfe) were reported by many observatories. A check of the reported case has been made by the Service of Rapid Variations (Table 2, p. 8) using reports of the observatories mentioned in the heading of the list. In the list (example given page 134), the time tabulated in the column at the left is the mean value of the times given for the beginning of the phenomenon. The stations that reported the sfe are listed behind the indicated time, grouped in accordance with the quality-indications A, B, C, D, E or X given in their reports. This letter index refers only to the existence of a movement in the curve, not to its being an sfe :

- A = very clear movement,
- B = fair, ordinary movement,
- C = very poor movement,
- D = movement not observed, although records are satisfactory,
- E = the movement cannot be observed because of heavy disturbance
- X = record missing.

Following the three-letter symbol for each station reporting a movement of classA, B, or C, a number is attached that refers to the opinion of the collaborating observatory about the type of movement :

- 3 = certainly a sfe
- 2 = probably a sfe
- 1 = probably not a sfe
- 0 = decidedly not a sfe

However some observatories did not follow the instructions given in the checking list and only reported "Yes" or "No". As the Service did not know whether these indications refer to the existence (or non existence) of a movement in the curves or to the opinion that the existing movement was (or was not) a sfe, we added these observatories, following the two letters Y and N, respectively. When some observatory identified the movement as a phenomenon different from a sfe they have been reported at the end of the list.

Stations in the twilight-zone reporting a movement (A, B or C and also E and X) are indicated by normal brackets ; those in the night-side of the earth by square brackets. Station in these two zones reporting D have been omitted from the list.

Doubtful solar-flare effects are also listed. They were considered as doubtful when most of the well located stations (with respect to the sub-solar point) did not report any movement, or when almost all stations around the world reported a clear movement. Further, some cases were considered doubtful because the totality of data was hindered by simultaneous world wide perturbation, and also when the solar, radio-electric and ionospheric records were available but did not show clear effect that could be associated with the sfe. Nevertheless it is probable that some of these cases are real solar-flare effects.

Note : For technical reasons, the 1983 Rapid Variations Data were not available at the date of publication of the present Bulletin. They will be published in further regular issues of the IAGA-Bulletin N°32 :

- *list of ssc, with 1985 data, in IAGA-Bulletin N°32p ;*
- *list of sfe, with 1987 data, in IAGA-Bulletin N°32r.*

SECTION 2

LIST OF OBSERVATORIES

LIST OF OBSERVATORIES

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
ABN	ABINGER	51.18	359.61	53.58	84.55	244	520	1925-1957
ABK	ABISKO	68.36	18.82	65.88	115.50	380		1945
AAE	ADDIS ABABA	9.03	38.77	5.19	110.97	2442		1958
ADE	ADELAIDE	-34.60	138.40	-43.99	214.06			1973
AGN	AGINCOURT	43.78	280.73	54.65	349.54	175	700	1881-1969
AHM	AHMEDABAD	23.02	72.60	14.03	145.65			1973
ALE	ALERT	82.50	297.50	86.24	163.08	2260		1961
ABG	ALIBAG	18.63	72.87	9.64	145.39	10		1904
AAA	ALMA ATA	43.25	76.92	33.69	152.21	1300		1963
ALM	ALMERIA	36.85	357.53	40.16	76.83	65		1955
ALU	ALOUSHTA	44.68	34.42	40.86	114.94			1957
AML	AMBERLEY	-43.15	172.72	-47.16	254.00	40	530	1929-1977
AWS	ANDREWS AFB	38.20	282.63	49.13	352.23			1972
ANN	ANNAMALAINAGAR	11.40	79.68	1.77	151.20	0		1957
TAN	ANTANANARIVO	-18.92	47.55	-23.85	114.58	1375		1902
ANO	ANTIPOLO	14.60	121.17	3.50	191.60	220		1910-1938
APA	APATITY	67.55	33.33	62.78	125.99			1973
API	APIA	-13.80	188.22	-15.61	261.99	2		1905
ART	ARCTOWSKI	-62.16	301.52	-51.33	9.25	16		1978
ARE	AREQUIPA	-16.47	288.52	-5.45	359.45			1958
AIA	ARGENTINE ISLAND	-65.20	295.70	-54.23	4.73	10	490	1957
SV3	ARTI	56.43	58.43	48.50	139.90			1973
ASH	ASHKHABAD	37.95	58.10	30.58	134.62		300	1958
ASO	ASO	32.88	131.02	22.58	199.85	570		1940
PEG	ATHENS	37.97	23.72	32.60	121.60	110		1900-1908
AUT	AU-TAU	22.45	114.05	11.20	184.60	60		1928-1939
AVE	AVERROES	37.99	14.02	38.13	93.59	230		1970
BKC	BACK	57.69	265.77	67.43	326.54			1978
BAG	BAGUIO	16.42	120.60	5.61	191.08	440		1967
BAL	BALDWIN	38.78	264.83	48.90	330.60	340		1901-1909
BLC	BAKER LAKE	64.33	263.97	73.67	319.15	30		1951
BNG	BANGUI	4.43	18.57	4.45	90.33	390		1952
BAP	BARRACKPORE	22.78	88.36	12.20	160.30	10		1904-1914
BRW	BARROW	71.30	203.25	69.10	243.67	7		1949
BTH	BARTH	54.37	12.75	55.00	99.90	20		1898-1903
BTV	BATAVIA	-6.18	106.83	-17.19	177.64	10		1884-1944
BJI	BEI-JING	40.06	116.18	29.12	186.20	43		1957
KGD	BEREZNIAKI	49.82	73.08	40.30	150.00			1965
BEL	BELSK	51.83	20.80	50.19	105.24	180		1960
BIN	BINZA	-4.38	15.26	-3.57	85.40	300		1953
BJN	BJORNOYA	74.50	19.20	71.06	124.67	80		1951
BOC	BOCHUM	51.49	7.23	52.42	92.24	120		1893-1912
BGA	BORGA	-72.97	356.20	-66.46	42.49			1975
BOX	BOROK	58.03	38.97	52.97	324.23			1977
BOU	BOULDER	40.13	254.77	48.88	319.04	1675		1964
BZR	BOUZAREAH	36.80	3.02	39.20	82.40	340		1912-1920

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
BJE	BRORFELDE	55.63	11.67	55.80	97.60	80		1978
BVZ	BUDAKESZI	47.52	18.90	46.40	101.80	410		1949-1955
BDV	BUDKOV	49.07	14.02	48.82	97.64	496		1967
BY1	BYRD STATION 1	-79.98	240.00	-70.60	336.60	1515		1957-1961
BY2	BYRD STATION 2	-80.01	240.51	-70.60	336.90	1515		1962-1965
CBB	CAMBRIDGE BAY	69.10	255.00	76.77	299.13	17		1972
CAN	CANBERRA	-35.30	149.00	-43.38	226.09	850	420	1980
CCS	CAPE CHELYUSKIN	77.72	104.28	66.72	177.41	10		1935
CGH	CAPE OF GOOD HOPE	-33.93	18.48	-33.10	81.80			1842-1846
CTO	CAPE TOWN	-33.95	18.47	-33.12	82.06	20		1932-1940
CWE	CAPE WELLEN	66.17	190.17	62.36	239.37	10		1933
CY.	CAPO DI MONTE	40.86	14.26	40.90	94.80	160		1883-1911
CPI	CAPRI	40.55	14.22	40.58	94.60			1957
CAO	CASTELLACCIO	44.43	8.93	45.34	90.82	1175	350	1933
CRC	CASTLE ROCK	37.23	237.87	43.56	301.06		460	1970
HVN	CENTRO GEOFISICO	22.97	277.86	34.00	347.40			1965
CPA	CHA-PA	22.35	103.83	11.38	175.03	1550		1957
CLF	CHAMBON LA FORET	48.02	2.27	50.06	85.71			1936
CLH	CHELTENHAM	38.70	283.20	49.65	352.89	72	530	1901-1956
CBI	CHICHIJIMA	27.15	142.30	17.80	210.78	154		197
CHR	CHRISTCHURCH	43.54	172.62	47.60	254.3	10		1902-1928
COI	COIMBRA	40.22	351.58	44.53	71.78	140		1866
BOM	COLABA	18.90	72.82	9.70	145.30	10		1846-1905
CMO	COLLEGE 2	64.87	212.17	65.10	259.23	200		1948
CLL	COLLMBERG	51.32	13.00	51.16	97.70			1935
CSS	COLORADO SPRINGS	38.50	255.51	47.36	320.27			1973
COP	COPENHAGEN	55.69	12.58	55.39	99.64			1892-1900
CZT	CROZET	-46.43	51.87	-51.49	111.46	500		1974
DAL	DALLAS	32.98	263.25	42.73	330.14	210		1964-1974
DRS	DAR ES SALAAM	-6.51	39.18	-10.17	108.56			1896-1900
DAV	DAVAO	7.08	125.58	-3.49	196.39			1968
DVS	DAVIS	-68.60	78.00	-76.81	124.34			1973
DBN	DE BILT	52.10	5.18	53.40	90.56			1899-1938
DDI	DEHRA DUN	30.32	78.06	20.50	151.60	680		1903-1943
DIK	DIXON	73.55	80.57	63.36	162.45	20		1933
DOB	DOMBAS	62.07	9.12	61.97	100.94	660		1916
DOU	DOURBES	50.10	4.60	51.60	88.99	208		1955
DL	DUBLIN	53.35	353.73	56.90	80.00			1841-1850
DRV	DUMONT DURVILLE	-66.66	140.01	-75.06	232.15	40		1957
TFS	DUSHETI	42.08	44.70	36.50	23.50	982		1938
KIV	DYMER	50.72	30.30	47.30	113.60	100		1964
EAA	EAST ANGLIA	52.63	1.30	54.64	87.01			1973
EIC	EASTER ISLAND	-27.17	250.58	-18.37	324.28			1959-1963
EP.	EASTPORT	44.90	293.02	56.20	4.80			1860-1867
EBR	EBRO	40.82	0.50	43.45	81.13	50		1910
ENB	EIELSON AFB	64.67	212.92	65.06	260.11			1966

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
ELI	ELIZABETHVILLE	-11.63	27.42	-13.00	95.93	1230		1932-1957
ESK	ESKDALEMUIR	55.32	356.80	58.04	84.07	245	660	1908
EKP	ESKIMO POINT	61.10	265.93	70.78	324.73		-	1973
EYR	EYREWELL	-43.41	172.35	-47.48	253.71	390	540	1979
FAL	FALMOUTH	50.15	354.92	53.60	79.40	50		1892-1912
FCC	FORT CHURCHILL 1	58.80	265.90	68.53	325.60	15		1964
FCC	FORT CHURCHILL 2	58.77	265.73	68.70	325.20	15		1964
FMM	FORT MCMURRAY	56.70	248.60	64.18	305.05			1973
FSV	FORT SEVERN	55.98	272.35	66.34	336.32			1977
FSM	FORT SMITH	58.00	246.00	65.01	301.02			1973
FYU	FORT YUKON	66.57	214.70	67.08	259.59			1957
FRD	FREDERICKSBURG	38.20	282.63	49.13	352.23	69	520	1956
FTN	FREETOWN	8.46	346.79	14.21	59.59			1961-1967
FUQ	FUQUENE	5.47	286.27	16.47	357.07	2543		1954
FUR	FURSTENFELDBRUCK	48.17	11.28	48.48	94.62	572		1939
GEN	GENOVA MC	44.55	8.96	45.50	91.00	700		1958-1962
GEN	GENOVA C	44.43	8.93	45.50	91.00	350		1933-1969
GIT	GILGIT	35.93	74.30	26.67	148.86	1494		1967
GIM	GILLAM	56.40	265.30	66.11	326.54			1975
GIR	GIRARDVILLE	49.00	287.40	60.01	357.77			1973
GNA	GNANGARA	-31.78	115.95	-42.71	187.94	60	440	1959
GDH	GODHAVN	69.23	306.48	79.25	34.62	8		1926
GOT	GOTTINGEN	51.55	9.97	51.97	95.00	270		1957
GVD	GONZALES VIDELA	-64.82	297.15	-53.88	5.80	60		1961
VLA	GORNOTAYEZHNAYA	43.68	132.17	30.10	199.60	200		1958
GRM	GRAHAMSTOWN	-33.28	26.48	-34.01	90.04	650		1974
GWC	GREAT WHALE RIVER	55.30	282.25	66.21	350.32	25		1965
GRW	GREENWICH	51.48	0.00	53.79	85.10	50		1846-1925
GCK	GROCKA	44.63	20.77	43.28	102.27	231		1958
GUA	GUAM	13.58	144.87	4.57	214.76	150		1957
HLL	HALLET	-72.32	170.22	-74.42	278.16			1957-1963
HBA	HALLEY BAY	-75.50	333.40	-66.36	25.85	30		1957
HBK	HARTEBEESTHOEK	-25.88	27.71	-27.01	93.14			1980
HAD	HARTLAND	50.98	355.52	54.17	80.29	95	530	1957
HTY	HATIZYO	33.07	139.83	23.45	207.83			1978
HVN	HAVANA	22.97	277.85	33.75	347.53			1964
HII	HEARD ISLAND	-53.03	73.37	-61.50	132.30	10		1950-1954
HIS	HEISS ISLAND	80.62	58.05	71.60	156.33	20		1959
HLP	HEL	54.60	18.82	53.19	104.80	4		1957
HLW	HELWAN	29.87	31.33	26.98	108.01	120		1903-1959
HCR	HERCHMER	57.40	265.90	67.16	326.86			1973
HER	HERMANUS	-34.42	19.23	-33.73	82.67	26	300	1941
HNA	HOLLANDIA	-2.57	140.52	-11.94	212.17	98		1957-1962
HKC	HONG KONG 1	22.30	114.18	11.00	184.70	30		1884-1928
HKC	HONG KONG 2	22.20	114.20	11.22	184.82	555		1972
HON	HONOLULU 1-2-3	21.32	202.00	21.46	268.57	4		1902

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
HUA	HUANCAYO	-12.05	284.67	-1.06	355.67	3313		1922
HRB	HURBANOVO	47.87	18.18	46.89	101.07	120		1938
HYB	HYDERABAD	17.42	78.55	7.86	150.69	500		1965
IBD	IBADAN	7.43	3.90	10.17	76.46	300		1956
IRT	IRKUTSK	52.17	104.45	41.18	176.22	470		1887-1914
ISL	ISLAND LAKE	53.90	265.30	63.65	327.61			1976
ISK	ISTANBUL KANDILLY	41.07	29.07	38.31	108.87	130		1947
JSS	JASSY	47.18	27.53	44.40	109.60			1935-1957
KAK	KAKIOKA	36.23	140.18	26.62	207.77	28		1913
KNG	KALININGRAD	54.60	20.20	52.94	106.06			1964
KNY	KANOYA	31.42	130.88	21.12	199.85	105		1957
KNZ	KANOZAN	35.25	139.97	25.63	207.70	342		1961
KGD	KARAGANDA	49.82	73.08	40.56	150.04			1966
TFS	KARSANI	41.83	42.70	36.20	123.50	1100		1905-1934
KZN	KAZAN	55.83	48.85	49.36	131.52	80		1909
KEL	KELES	41.42	69.20	32.40	145.20	450		1936-1963
KEM	KEM	65.00	34.40	60.26	124.74			1973
KEW	KEW	51.47	359.68	54.10	85.10	10		1857-1924
KHB	KHABAROVSK	48.48	135.07	38.39	201.74			1972
KIV	KIEV	50.72	30.30	47.42	113.40	100		1963
KIR	KIRUNA	67.83	20.42	65.14	116.19	390		1950
KLY	KLYUCHI	55.03	82.90	44.70	159.00			1967
KOD	KODAIKANAL	10.23	77.47	0.81	148.93	2323		1902
KTS	KORETS	50.60	61.07	42.64	140.10			1968
KOR	KOROR	7.33	134.50	-2.64	205.21	10		1957-1966
MOS	KRASNAYA	55.47	37.32	50.70	121.70	190		1930
KSA	KSARA	33.82	35.88	30.03	113.26	920		1937-1968
KUY	KUYPER	-6.03	106.73	-17.04	177.54	1		1950-1962
KWJ	KWAJALEIN	9.05	167.20	3.13	237.11			1973
AQU	L'AQUILA	42.38	13.32	42.52	94.35	682		1960
LQA	LA QUIACA	-22.10	294.40	-11.13	5.01	3464		1920
LAS	LAS ACACIAS	-35.00	302.32	-24.24	11.86	20		1964
LDR	LAUDER	-43.03	169.41	-37.70	232.10	370		1977
LRV	LEIRVOGUR	64.18	338.30	69.71	71.98	30		1957
LNN	LENINGRAD	59.95	30.70	56.14	118.32	70		1869-1877
LER	LERWICK	60.13	358.82	62.15	89.55	105	920	1923
LIS	LISBON	38.72	350.85	43.30	70.60			1890-1900
LGR	LOGRONO	42.45	357.50	45.59	78.66	445		1957
MMK	LOPARSKAYA	68.25	33.08	63.30	126.70	200		1961
LOB	LORING AFB	46.95	292.12	57.95	3.89			1966
LA.	LOS ANGELES	34.05	241.74	41.20	305.70			1882-1889
LMM	LOURENCO MARQUES	-25.92	32.58	-27.98	97.96	40		1957
LOV	LOVO	59.35	17.83	57.84	106.75	25	720	1928
LOZ	LOVOZERO	67.97	35.02	62.90	127.64			1957
LUA	LUANDA	-8.92	13.17	-7.63	82.48	53		1956
LB	LUBECK	53.86	10.69	54.00	97.00			1885-1893

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
LUK	LUKIAPANG	31.32	121.03	20.20	190.80	100		1908-1933
LNP	LUNPING	25.00	121.17	14.21	191.28		100	1965
LVV	LVOV	49.90	23.75	47.80	107.10	400		1952
LWI	LWIRO	-2.25	28.80	-4.06	99.10	1680		1958-1970
MBO	MBOUR	14.40	343.02	20.68	56.80	10		1952
MCQ	MACQUARIE ISLAND	-54.50	158.95	-60.54	244.48	4		1951
MGD	MAGADAN	60.12	151.02	51.28	212.15		610	1966
MSC	MAISACH	48.20	11.26	48.50	94.90	480		1927-1932
MQ	MAKERSTOUN	55.58	357.48	52.20	85.30			1841-1849
MAB	MANHAY	50.30	5.68	51.60	90.15	440		1936-1971
MAN	MANILA	14.58	120.98	3.50	191.40			1891-1904
MRN	MARION ISLAND	-46.85	37.87	-49.30	96.75	45		1972
AMS	MARTIN DE VIVIES	-37.83	77.57	-46.94	142.78			1981
MSR	MATOCHKIN SHAR	73.26	56.40	64.80	147.40	250		1937-1944
MRI	MAURITIUS	-20.09	57.55	-26.80	124.40	50		1892-1965
MAW	MAWSON	-67.60	62.88	-73.32	106.62	6		1955
MEA	MEANOOK	54.62	246.67	61.88	304.02	686	1360	1916
MEL	MELBOURNE	-37.83	144.98	46.60	222.30	30		1865-1921
MEV	MELVILLE AFB	53.28	299.47	64.05	14.25			1966
MMB	MEMAMBETSU	43.90	144.20	34.61	210.23	39	340	1950
MNK	MINSK	54.10	26.52	51.32	111.51			1961
MIR	MIRNY	-66.55	93.02	-76.80	151.15		20	1956
MLT	MISALLAT	29.52	30.90	26.72	107.52	120		1960
MIU	MIYAZU	35.32	135.11	25.30	203.32			1973
MIZ	MIZUSAWA	39.01	141.08	29.47	208.21			1969
MFP	MOCA	3.35	8.67	5.27	80.39	1949		1958-1971
MOL	MOLODEZHNAYA	67.67	45.85	70.10	87.50	854		1965
MOS	MOSCOW	55.48	37.32	50.79	121.62	190		1880-1888
MBC	MOULD BAY	76.30	240.60	79.62	259.89	150		1962
MWC	MT WILSON	34.14	241.97	41.19	306.30			1926-1958
MNH	MUNCHEN	48.15	11.61	48.40	95.20	530		1842-1926
MUT	MUNTINLUPA	14.37	121.02	3.58	191.57	62		1951
MMK	MURMANSK	68.25	33.08	63.45	126.43	210		1958-1960
NCK	NAGYCENK	47.63	16.72	46.93	99.59	160		1961
NAI	NAIROBI	-1.28	36.83	-4.60	107.19	1673		1964
NTS	NANTES	47.25	358.44	50.10	81.70	35		1923-1958
NAQ	NARSSARSSUAQ	61.20	314.6O	70.60	38.66	4		1973
NL	NEW ALESUND	78.92	11.93	75.43	130.70	12		1966
NEW	NEWPORT	48.27	242.88	55.14	302.78	780	700	1966
NYI	NEW YEAR ISLAND	54.65	295.85	43.30	5.20			1902-1916
NCE	NICE	43.72	7.30	45.00	89.00			1889-1901
NGK	NIEMEGK	52.07	12.68	51.94	97.77	78	500	1932
NSM	NITSANIM	31.73	34.60	28.21	111.55	150		1963-1967
NOK	NORILSK	69.20	88.00	58.68	165.77			1969
NKK	NOVOKAZALINSK	45.77	62.12	37.76	139.83			1974
NVL	NOVOLAZAREVSKAYA	-70.77	11.82	-66.76	55.88	460		1961

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
NVS	NOVOSIBIRSK	55.03	82.90	44.92	159.07		480	1967
NUR	NURMIJARVI	60.52	24.65	57.71	113.51	105		1953
ODE	ODESSA	46.78	30.88	43.52	112.42	50		1896-1925
OGY	O'GYALIA	47.88	18.19	46.80	101.30	110		1906-1912
OKN	OKINAWA	24.75	125.33	14.14	195.18			1977
ORC	ORCADAS DEL SUR	-60.74	315.22	-50.30	20.00	4		1931-1962
OSL	OSLO	59.98	10.72	59.60	101.10			1843-1930
OTT	OTTAWA	45.40	284.45	56.37	354.11	75	790	1968
PAG	PANAGYURISHTE	42.52	24.18	40.61	104.75	556		1948
PPT	PAPEETE	-17.55	210.38	-15.09	284.44			1958
PAB	PARAMARIBO	5.82	304.78	16.41	16.28	2		1957
PET	PARATUNKA	53.10	158.63	44.80	220.00	110		1973
IRK	PATRONY	52.17	104.45	40.90	176.10	500		1959
PEB	PELLY BAY	68.50	270.20	78.39	323.86			1977
PEK	PEKING 1	39.95	116.47	28.70	186.30			1870-1883
PEK	PEKING 2	40.04	116.18	28.80	186.10			1957-1964
PEG	PENDELI	38.03	23.52	36.38	102.73	495		1958
PRF	PERPIGNAN	42.70	2.88	44.90	84.30	30		1890-1900
PIL	PILAR	-31.67	296.12	-20.73	6.39	336		1905
PLS	PLAISANCE	-20.43	57.67	-27.02	124.68	123		1966
PZ	PLESHCHENITZI	54.50	27.88	51.40	113.10	200		1961
POD	PODKAMENAYA TUNG	61.40	90.00	50.84	165.64		670	1968
POL	POLA	44.86	13.26	44.80	95.90	30		1883-1922
PAF	PORT AUX FRANCAIS	-49.35	70.22	-57.31	130.79	50		1957
PMG	PORT MORESBY	-9.40	147.15	-17.99	219.75	80		1957
PBQ	POSTE DE LA BALEINE	55.30	287.25	66.31	357.38			1984
POT	POSTDAM	52.38	13.06	52.16	98.28	80		1890-1907
PRU	PRUHONICE	49.98	14.55	49.59	98.55	329		1946
QUE	QUETTA	30.18	66.95	21.77	141.35	1737		1953
RIT	RANKIN INLET	62.80	267.90	72.64	326.36			1975
REG	REGENSBERG	47.48	8.44	48.40	91.70	605		1957-1969
RES	RESOLUTE BAY	74.70	265.10	83.14	295.98	25		1954
RDJ	RIO DE JANEIRO	-22.91	316.83	-12.80	26.00	60		1899-1906
ROB	ROBURENT	44.30	7.88	45.41	89.74	815		1964
RSV	RUDE SKOV	55.85	12.45	55.56	99.61	48	600	1907-1978
SAB	SABHAWALA	30.33	77.80	20.78	151.34	498		1964
SFS	SAN FERNANDO	36.47	353.80	40.47	72.90	28		1891
SJG	SAN JUAN 1-2-3	18.38	293.88	29.36	5.21	100		1903
SNA	SANAE	-70.30	357.65	-64.23	46.20	52		1962
STJ	SAINT JOHNS	47.59	307.32	58.20	23.30			1968
PSM	SAINT MAUR	48.81	2.49	50.80	86.60			1883-1900
SMG	SAN MIGUEL	37.77	334.35	45.04	52.61	175		1911
SBA	SCOTT BASE	-77.85	166.78	-78.84	293.24	15		1957
SED	SEDDEN	52.28	13.01	52.10	98.50	40		1908-1931
STF	SDR STROMFJORD	67.02	309.28	76.83	36.25			1972
SSH	SHE-SHAN	31.10	121.19	20.30	191.03	100		1934

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
SHB	SHEPERD BAY	68.75	266.25	78.14	316.78			1966
SHL	SHILLONG	25.55	91.88	14.99	163.95			1975
SSO	SIMOSATO	33.57	135.93	23.62	204.24	59		1954-1978
SIT	SITKA	57.07	224.67	60.31	278.12	22	1020	1902
SOD	SODANKYLA	67.37	26.63	63.68	120.64	178		1914
SLU	SLUTSK	59.68	30.48	55.80	118.30			1878-1941
SGG	SOUTH GEORGIA	-54.28	323.52	-44.82	27.73		350	1974-1982
SPA	SOUTH POLE	-90.00	0.00	-78.98	0.00	2820		1959
SRE	SREDNIKAN	62.43	152.32	53.67	212.35	61		1936-1966
MGD	STEKOLNI	60.12	151.02	51.00	211.80			1966
ODE	STEPANOVKA	46.78	30.88	43.40	112.50	140		1948
STO	STONYHURST	53.85	357.53	56.52	83.91	116		1865-1967
SUA	SURLARI	44.68	26.25	42.32	107.42	84		1949
SVD	SVERDLOVSK	56.73	61.07	48.64	141.89	290	530	1887-1931
SWI	SWIDER	52.12	21.25	50.38	105.79	100		1921
SYO	SYOWA BASE	-69.03	39.60	-70.10	79.70	15		1958-1970
TAM	TAMANRASSET	22.80	5.53	24.94	81.23	1395		1932
TNG	TANGERANG	-6.17	106.63	-17.18	177.43	14		1964
TKT	TASHKENT	41.33	69.62	32.51	145.52	500		1883
TTB	TATUOCA	-1.20	311.48	8.98	220.50	10		1957-1971
TEH	TEHERAN	35.73	51.38	29.36	128.05	1367		1960-1973
SZT	TENERIFE	28.48	343.72	34.60	60.30	310		1959
TEO	TEOLOYUCAN	19.75	260.82	29.35	329.24	2280		1923
TAA	TERRE ADELIE	-66.67	140.02	-75.07	232.18	40		1957
TMP	THOMPSON	55.72	262.12	65.09	322.65			1969
THU	THULE/CAMP TUTO	76.55	291.17	87.53	11.26	480		1932-1952
THL	THULE/QANAQ	77.48	290.83	88.46	14.10	57		1956
TFS	TIFLIS	42.08	44.70	36.62	123.49	982		1879-1905
THY	TIHANY	46.90	17.90	46.01	100.41	187		1949
TKH	TIKHAYA BAY	80.30	52.80	71.74	153.42	10		1932-1958
TIP	TIRUCHIRAPALLI	10.80	78.70	1.26	150.19			1975
TIK	TIXIE BAY	71.58	129.00	60.99	192.81	40		1944
KAK	TOKYO	35.75	139.72	26.10	207.41	20		1897-1912
TOL	TOLEDO	39.88	355.95	43.39	76.18	501		1947
TMK	TOMSK	56.47	84.93	46.21	160.93	200	510	1958-1969
TOO	TOOLANGI	-37.53	145.47	-46.05	222.66	457	510	1922-1980
AGN	TORONTO	43.67	280.50	54.80	349.10			1872-1898
TLE	TOULOUSE	43.61	1.46	46.00	83.20	190		1894-1905
TGO	TOUNGOO	18.93	96.45	7.90	167.80	300		1905-1923
TOH	TOYOHARANEW	46.95	142.75	37.20	208.30	70		1932-1941
TRW	TRELEW	-43.25	294.68	-32.28	4.81		290	1957-1970
TRD	TRIVANDRUM	8.48	76.95	-0.88	148.24	300		1957
TRO	TROMSO	69.67	18.95	67.00	117.16	105		1930
TSN	TSINGTAO	36.07	120.32	25.00	189.90	80		1924-1936
TSU	TSUMEB	-19.22	17.70	-18.59	84.83	1300		1964
TUC	TUCSON	32.25	249.17	40.37	314.57	770	380	1910

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
TUL	TULSA	35.92	264.22	45.75	330.78	257		1961
UCC	UCCLE	50.80	4.36	52.30	89.40	100		1896-1919
UBA	ULAN BATOR	47.85	106.75	36.84	178.03			1966
WIT	UTRECHT	52.00	5.12	53.40	90.80			1891-1896
VLJ	VAL JOYEUX	48.82	2.02	50.87	85.83			1901-1936
VAL	VALENTIA	51.93	349.75	56.15	74.79	14		1899
VSS	VASSOURAS	-22.40	316.35	-12.53	25.70	457		1915
VIC	VICTORIA	48.52	236.58	54.33	295.66	185	660	1956
VQS	VIEQUES	18.15	294.55	29.11	5.93			1903-1924
VLA	VLADIVOSTOK	43.12	131.90	32.84	199.68			1932
LNN	VOEIKOVO	59.95	30.70	56.00	118.50	70		1947
VOR	VOROSHILOV	43.78	132.03	33.20	199.60	30		1952-1957
VOS	VOSTOK	-78.45	106.87	-89.31	139.62	3500		1958
SVD	VYSOKAYA	56.73	61.07	48.40	141.90	290		1932
WAT	WATHEROO	-30.30	115.90	-41.23	187.82	240		1919-1958
WES	WESTON	42.38	288.68	53.40	359.49			1960
WHS	WHITE SHELL	49.80	264.80	59.56	328.39			1975
WIK	WIEN	48.25	16.36	47.60	69.70			1892-1898
WIA	WIEN-AUHOF	48.20	16.24	47.50	69.60	2050		1929-1950
WIK	WIEN-KOBENZL	48.27	16.32	47.62	69.48	400		1954
WLH	WILHELMSHAVEN	53.53	8.15	54.20	94.50	10		1884-1911
WIL	WILKES	-66.25	110.58	-77.26	182.71			1957-1966
WNG	WINGST	53.75	9.07	54.22	95.21	50	550	1939
WNP	WINNIPEG	49.63	262.87	59.19	326.02			1969-1975
WIT	WITTEVEEN	52.82	6.67	53.79	92.39	17	540	1938-1988
YAK	YAKUTSK	62.02	129.72	51.53	195.40	100		1931
TKT	YANGI BAZAR	41.33	69.62	32.30	145.60	500		1964
YAU	YAUCA	-15.53	285.33	-4.54	356.36			1957-1960
YKC	YELLOWKNIFE	62.47	245.53	69.14	296.56	198		1958
YSS	YUZHNO SAKHALINSK	46.95	142.72	37.49	208.45			1948
KNK2	ZAIMISHCHE	55.83	48.85	49.20	131.60	80		1914-1972
ZAR	ZARIA	11.15	7.65	13.12	80.89			1964
ZKW	ZI KA WEI	31.22	121.43	20.20	191.20	10		1875-1907
ZIN	ZINZEN	37.48	126.63	26.60	195.30	50		1921-1941
ZSC	ZO SE	31.10	121.19	20.00	190.80	100		1933-1974
ZUY	ZUY	52.47	104.03	41.20	17.80	430		1915-1958

Sites of observatories having provided records over 50 years or more

First Observatory Name	Open -Closed	Further Observatories, if any Name	Open -Closed
AGINCOURT	1881 - 1969	OTTAWA	1968 - ...
ALIBAG	1904 - ...		
AMBERLEY	1929 - 1977	LAUDER	1977 - ...
ANTANANARIVO	1890 - 1893	same	1902 - 1922
		same	1929 - ...
APIA	1905 - ...		
BATAVIA	1884 - 1944	KUYPER	1950 - 1962
	(1899 - 1902 missing)	TANGERANG	1964 - ...
CAPE TOWN	1932 - 1940	HERMANUS	1941 - ...
CAPE WELLEN	1933 - ...		
	(1944 - 1949 missing)		
CHELTENHAM	1904 - 1956	FREDERICKSBURG	1956 - ...
COIMBRA	1866 - ...		
COLABA	1846 - 1905	ALIBAG	1904 - ...
DIXON	1933 - ...		
	(1945 and 1947 missing)		
DOMBAS	1916 - ...		
EBRO	1910 - ...		
	(1938 - 1942 missing)		
ESKDALEMUIR	1908 - ...		
FÜRSTENFELDBRUCK	1939 - ...		
GODHAVN	1926 - ...		
GREENWICH	1846 - 1925	ABINGER	1925 - 1957
		HARTLAND	1957 - ...
HELWAN	1903 - 1959	MISSALAT	1960 - ...
	(1952 - 1955 missing)		
HONG KONG	1884 - 1928	AU TAU	1928 - 1939
		HONG KONG	1972 - ...
HONOLULU	1902 - ...		
HUANCAYO	1922 - ...		
KAZAN	1909 - ...		
KELES	1936 - 1963	YANGI BAZAR	1964 - ...
KEW	1858 - 1924		
KODAIKANAL	1902 - ...		
KRASNAYA	1930 - ...		
	(1934 - 1937 and 1939 - 1945 missing)		
LA QUIACA	1920 - ...		
LENINGRAD	1869 - 1877	SLUTSK	1878 - 1941
	(1871 missing)	VOEIKOVO	1947 - ...
LERWICK	1923 - ...		
LOVÖ	1928 - ...		
MANILA	1891 - 1904	ANTIPOLO	1910 - 1938
		MUNTINLUPA	1951 - ...
MAURITIUS	1892 - 1965		

Sites of observatories having provided records over 50 years or more

First Observatory Name	Open -Closed	Further Observatories, if any Name	Open -Closed
MEANOOK	1916 - ...		
MELBOURNE	1865 - 1921	TOOLANGUI	1922 - 1980
		CANBERRA	1980 - ...
OSLO	1843 - 1930		
PILAR	1905 - ...		
POSTDAM	1890 - 1907	SEDDEN	1908 - 1931
		NIEMEGK	1932 - ...
RUDE SKOV	1907 - 1978	BJORFELDE	1978 - ...
SAINT MAUR	1883 - 1900	VAL JOYEUX	1901 - 1936
		CHAMBON LA FORET	1936 - ...
SAN FERNANDO	1891 - ...		
SAN JUAN (PUERTO RICO)	1903 - 1924	same	1926 - 1964
		same	1965 - ...
SAN MIGUEL	1911 - ...		
SITKA	1902 - ...		
SODANKYLA	1914 - 1931 (1945 missing)		
STONYHURST	1865 - 1943	SAME	1961 - 1967
SVERDLOVSK	1887 - 1978	VYSOKAYA - DUBRAVA	1932 - ...
SWIDER	1921 - ...		
TEOLOYUCAN	1923 - ...		
TIFLIS	1879 - 1905	KARSANI	1905 - 1934
		DUSHETI	1938 - ...
TIKHAYA BAY	1932 - 1958 (1947 - 1950 missing)	HEISS ISLAND	1959 - ...
TOKYO	1897 - 1912	KAKIOKA	1913 - ...
TROMSÖ	1930 - ...		
TUCSON	1910 - ...		
UCCLE	1896 - 1919	MANHAY	1936 - 1971 (1943 - 1945 missing)
		DOURBES	1955 - ...
UTRECHT	1891 - 1896	DE BILT	1899 - 1938
		WITTEVEEN	1938 - 1988
VALENTIA	1899 - ...		
VASSOURAS	1915 - ...		
WATHEROO	1919 - 1958	GNANGARA	1959 - ...
WILHELMSHAFEN	1884 - 1911	WINGST	1939 - ...
YAKUTSK	1931 - ...		
ZAIMISHCHE	1914 - 1972		
ZI - KA - WEI	1875 - 1907	LUKIAPANG	1908 - 1933
		ZO - SE	1933 - 1974

SECTION 3

I A G A INDICES

3.1.	**aa** indices	35
3.2.	**an, as, am** indices	43
3.3.	**Kp** indices	65
3.4.	**Dst** indices	77
3.5.	**AU, AL, AE** indices	97

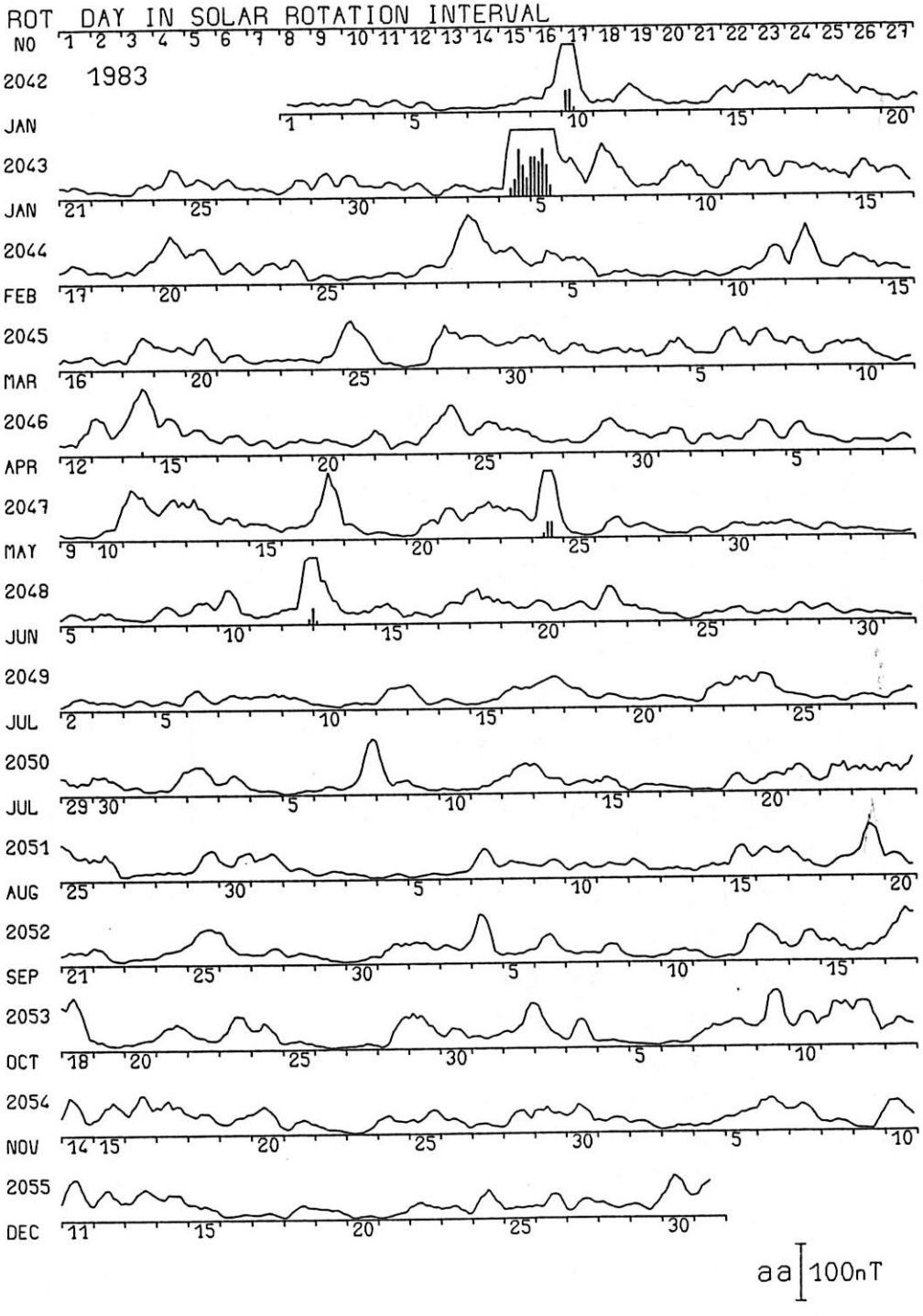
SECTION 3

3.1. aa INDICES

- Twelve-hour running averages (graph) 37
- Half-daily and daily values 38
- Monthly and yearly averages of **aa**

  1868 - 1983 40
- Twelve-month running mean values (graph) 42

TWELVE-HOUR RUNNING AVERAGES **aa** 1983



12-HOUR RUNNING AVERAGES OF THE THREE-HOUR-RANGE INDICES aa 1983

	JAN.					FEB.					MAR.					APR.					MAY					JUNE				
	DAY		HALF DAY			DAY		HALF DAY			DAY		HALF DAY			DAY		HALF DAY			DAY		HALF DAY			DAY		HALF DAY		
	N	S	am	pm		N	S	am	pm		N	S	am	pm		N	S	am	pm		N	S	am	pm		N	S	am	pm	
1	19	17	17	19		20	18	14	24		47	34	28	53		32	34	29	38		38	36	31	42		24	21	27	18	
2	11	21	14	18	Q	12	10	4	18	QK	111	83	121	74		36	22	26	32		25	19	14	31		17	13	12	19	
3	16	23	16	23		16	13	16	13	Q	62	49	56	56		35	20	25	30		26	19	24	21		17	6	12	11	QCK
4	17	19	13	23		90	75	14	151		50	33	28	56		30	33	22	42		42	47	42	47		10	2	7	5	QCC
5	11	13	10	15	QKK	180	188	191	177		38	36	37	37		27	27	31	23		42	32	23	51		17	12	10	19	Q K
6	5	7	5	8	QCC	57	53	64	46		24	10	22	12		54	51	48	58		22	25	26	21		24	11	13	22	
7	7	8	7	8	QCC	62	70	56	77		16	12	20	8	Q K	54	49	46	57		17	16	14	19		14	6	11	9	C
8	17	18	12	23		34	24	39	19		13	10	7	16	QCC	42	38	37	43		26	19	19	26		29	18	17	30	
9	36	41	24	52		40	28	17	51		16	9	9	16	QCC	32	30	22	40		14	7	12	9	QCK	38	21	21	38	
10	93	93	159	28		41	37	54	24		15	13	9	20	Q	42	37	42	37		18	9	7	20	QK	48	38	33	54	
11	17	26	17	27		49	33	18	64		47	32	24	57		13	10	15	8	QC	78	61	62	77		23	11	19	15	
12	30	36	43	23		48	41	49	40		71	46	35	82		18	19	20	17	Q	73	49	51	71		38	17	26	30	
13	12	15	13	15		62	41	57	46		45	25	47	23		62	47	65	45		57	62	61	57		102	103	149	57	
14	17	17	11	23		45	46	49	42		43	33	40	36		76	80	51	105		40	29	32	37		24	17	21	20	
15	46	42	36	52		45	42	26	61		30	20	25	25		83	64	80	66		35	24	30	29		31	29	32	28	
16	45	38	44	39		45	44	42	47		19	14	15	18		45	37	37	45		21	16	15	22		19	12	14	16	
17	57	36	32	62		31	24	22	33		24	15	25	14		32	26	24	35		79	78	37	121		38	16	17	37	
18	64	43	56	51		24	18	21	21		43	22	14	51		24	22	19	27	Q	25	18	27	16		59	41	54	46	
19	29	30	26	33		19	24	19	23		42	35	42	35		19	20	16	23	Q	13	7	12	8	QCC	36	24	35	25	
20	27	15	24	18		64	64	42	86		50	35	34	51		25	25	22	28		18	13	6	25		36	28	33	31	
21	24	18	20	22		57	55	49	63		28	23	26	25		24	13	18	19		46	32	26	52		36	24	24	37	
22	14	11	13	12	QC	37	23	33	28		19	12	14	17		26	27	44	10		59	46	46	60		36	49	22	63	
23	17	11	8	21		35	24	24	35		17	16	16	17		31	20	23	28		54	51	55	51		27	24	29	22	
24	43	28	18	53		38	30	27	42		23	15	16	22		74	67	56	86		92	87	30	149		15	12	14	13	QCK
25	30	28	24	34		8	13	7	15	QC	52	81	67	67		47	41	34	54		20	14	28	6		13	5	4	14	QCC
26	22	28	20	30		13	7	8	13	QCC	21	18	28	11		42	44	42	44		21	16	7	31		29	11	15	25	
27	20	15	18	17		16	15	12	19	Q K	7	5	4	8	QC	26	24	30	20		30	14	19	25		19	9	11	16	
28	17	25	9	33		17	19	10	26		57	57	51	63		26	14	22	18	Q	12	5	11	6	QCK	32	11	14	30	
29	30	31	15	46							52	58	58	52		52	44	35	61		12	9	11	11	QKC	23	17	23	17	
30	27	31	35	23							48	39	40	47		40	30	37	33		26	9	12	23		19	7	14	12	C
31	27	20	19	28							45	51	58	38							28	13	18	23						
N	27.4					43.1					38.0					38.9					35.8					29.8				
S		26.0					38.5					30.4					33.8					28.5					20.6			
M			26.6					40.8					34.2					36.3					32.1					25.1		

	JULY					AUG.					SEP.					OCT.					NOV.					DEC.				
	DAY		HALF DAY			DAY		HALF DAY			DAY		HALF DAY			DAY		HALF DAY			DAY		HALF DAY			DAY		HALF DAY		
	N	S	am	pm		N	S	am	pm		N	S	am	pm		N	S	am	pm		N	S	am	pm		N	S	am	pm	
1	17	5	13	10	QCC	13	7	8	13	C	29	23	30	22		26	22	13	35		37	30	29	38		29	20	23	27	
2	20	7	7	20	KK	52	42	43	50		14	11	10	15	C	42	30	34	38		52	58	79	32		15	20	16	19	
3	22	10	17	15		33	23	20	37		12	8	11	9	CC	25	29	28	27		41	24	14	51		9	8	4	12	QCC
4	20	8	9	19	C	13	8	12	9	C	8	5	4	9	QCC	52	65	42	75		11	12	10	13	QC	8	13	9	12	QC
5	17	8	11	14	QC	6	2	3	5	QCC	9	4	5	8	QCC	17	14	14	17		6	6	7	5	QCC	32	28	26	35	
6	29	23	25	27		16	6	7	15	CC	13	7	9	11	QCC	44	32	24	52		5	8	4	8	QCC	62	37	40	59	
7	27	14	14	27		35	15	12	38		46	25	19	52		20	17	20	17		20	24	14	30		48	37	39	47	
8	26	19	21	24		71	39	94	15		29	22	23	28		27	22	16	33		38	49	40	48		20	15	16	19	
9	29	19	27	20		22	14	25	11		31	24	24	31		12	8	11	9	QC	83	50	35	98		4	8	8	4	QC
10	11	6	10	7	QCK	9	6	8	7	QCC	24	19	18	25		16	15	11	20		62	35	38	59		47	41	39	49	
11	13	6	9	10	QCC	13	9	9	13	C	27	17	19	25		9	17	19	7	QK	66	57	46	77		59	46	32	74	
12	32	17	11	38		48	28	28	48		21	27	26	22		10	13	9	15	QC	85	53	61	77		46	35	26	55	
13	30	29	44	16		41	38	52	26		14	17	13	18		50	64	65	49		48	30	31	47		45	39	34	51	
14	18	8	12	14	CK	21	15	15	21		17	13	11	19		43	32	24	51		43	46	33	56		47	41	42	45	
15	14	5	8	11	QC	21	25	23	24		39	41	24	56		34	33	35	33		41	37	28	51		31	22	28	25	
16	43	17	23	37		12	6	4	14	QCK	31	49	38	42		28	16	16	29		64	47	40	72		11	8	11	8	CK
17	45	46	39	52		13	9	13	9	CC	43	34	52	25		68	55	39	84		59	41	51	49		11	11	9	13	CC
18	43	33	44	33		5	4	4	5	QCC	27	17	16	28		79	78	77	81		43	34	38	39		16	12	4	24	
19	20	19	16	23		20	16	6	31		76	53	37	92		16	12	19	9		29	21	21	29		19	18	21	16	
20	17	11	15	13		24	20	13	31		40	30	33	36		15	11	11	15	K	47	35	37	45		11	5	10	6	QCC
21	16	18	19	15		40	41	38	42		23	19	18	24		35	29	24	40		24	11	12	24		7	5	4	8	QCK
22	26	15	11	30		32	28	17	44		24	22	32	14		34	22	35	22		14	12	18	8	QCK	25	22	22	25	
23	47	37	37	47		42	34	39	37		9	9	7	11	QCC	40	38	19	60		3	5	4	4	QCK	24	18	18	24	
24	48	47	44	52		38	40	45	33		18	21	14	25		42	35	35	42		21	29	25	25		34	29	12	52	
25	24	16	22	18		52	53	65	40		62	37	37	63		15	12	11	16	C	27	26	24	30		19	16	16	19	
26	15	12	13	14	C	44	34	40	38		40	45	60	26		4	6	8	3	QCC	38	23	35	26		42	22	23	41	
27	22	11	15	18		12	8	8	12	QC	23	18	18	23		5	7	5	7	QCC	11	17	11	17		29	18	15	33	
28	23	13	12	24		20	10	15	15		23	18	20	21		20	18	7	31		26	26	11	40		25	19	26	18	
29	29	21	32	18		36	25	15	45		13	11	16	7	CK	54	53	54	52		41	37	40	38		17	20	22	15	
30	36	26	35	27		36	28	37	28		7	6	4	8	QCC	34	26	24	35		40	37	30	47		64	44	39	70	
31	14	13	13	14		43	49	49	43							19	19	21	17							50	53	39	65	
N	25.5					28.5					26.4					30.2					37.5					29.3				
S		17.4					22.0					21.8					27.4					30.7					23.6			
M			21.4					25.2					24.0					28.8					34.1					26.4		

ANNUAL MEAN N 32.53 S 26.74 M 29.59

Unit : nT

MONTHLY AND YEARLY aa 1868 - 1983

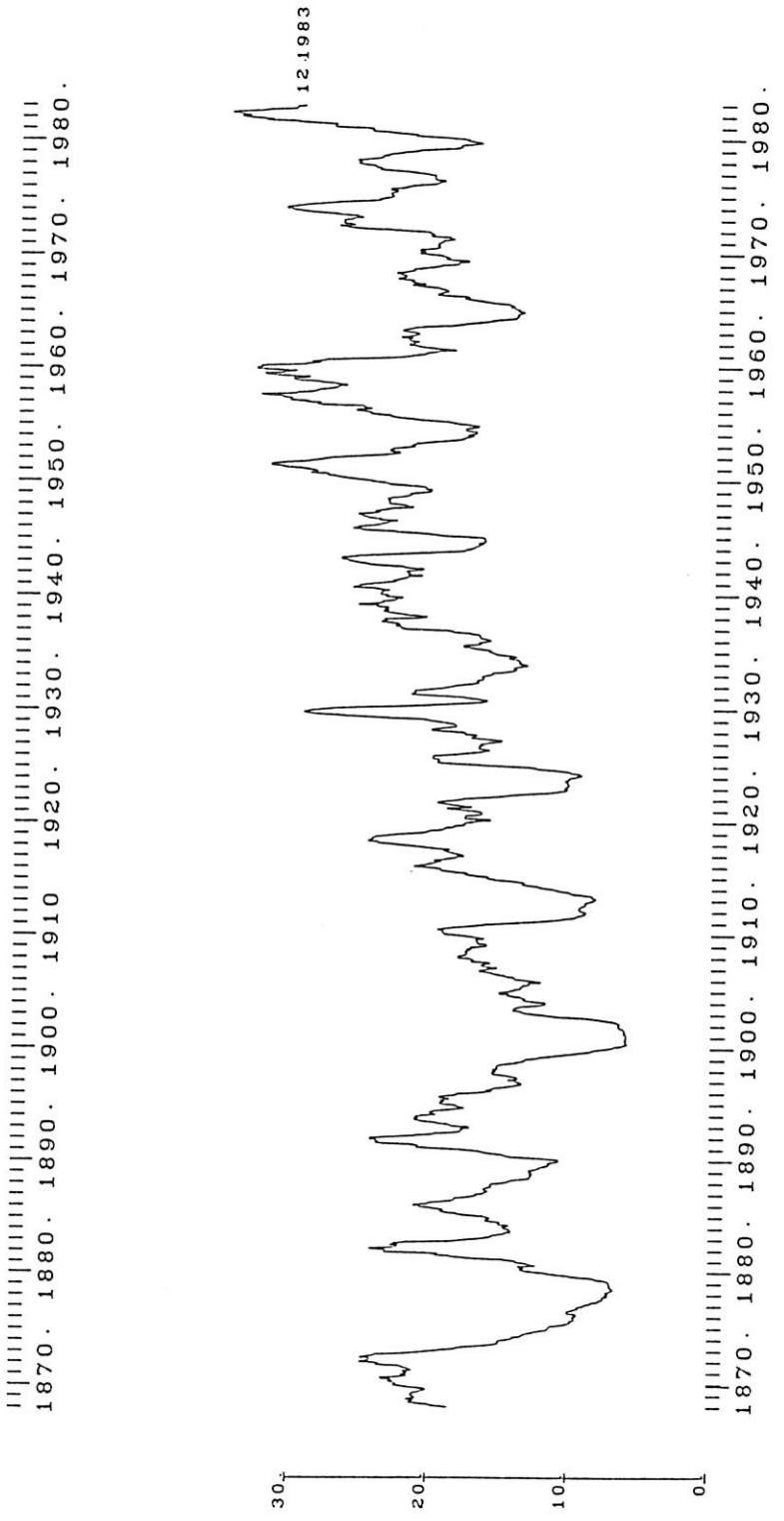
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1868	10.6	16.0	19.7	21.0	16.4	17.9	21.5	19.4	24.0	25.9	13.3	13.7	18.3
1869	19.2	23.6	22.3	29.5	23.1	19.2	17.4	19.9	29.8	17.9	14.7	14.6	20.9
1870	21.6	23.2	21.2	25.8	20.9	16.4	14.1	21.4	35.2	26.2	21.9	19.9	22.3
1871	19.3	24.8	21.4	31.2	17.2	17.1	21.5	23.5	17.7	20.0	28.1	15.7	21.5
1872	17.0	28.0	23.0	23.4	20.4	17.7	25.3	25.2	20.7	38.6	25.0	20.5	23.7
1873	29.4	20.6	24.1	20.8	20.8	25.8	20.6	18.7	19.3	16.6	14.6	12.1	20.3
1874	17.8	16.1	12.7	19.1	14.0	12.8	13.1	13.0	15.7	17.8	14.3	10.1	14.7
1875	10.0	13.5	12.7	12.7	13.0	10.1	11.8	8.7	13.1	11.9	9.8	8.5	11.3
1876	9.8	12.6	11.0	6.5	7.6	7.7	9.1	10.2	10.1	10.5	10.2	10.1	9.6
1877	9.3	9.6	10.4	8.9	13.0	8.9	7.8	7.6	7.4	6.9	11.6	6.8	9.0
1878	7.4	7.5	6.2	8.5	7.3	8.6	4.8	6.4	7.9	6.8	7.1	9.3	7.3
1879	6.2	5.8	8.6	5.5	6.2	5.9	5.8	8.0	8.9	7.0	7.1	9.3	7.0
1880	7.3	4.7	9.8	8.9	13.1	7.3	9.9	23.1	11.4	14.4	14.5	14.6	11.6
1881	15.1	12.8	13.2	11.4	8.5	10.7	12.2	7.8	17.9	14.0	20.2	20.3	13.7
1882	15.7	19.5	16.5	35.9	20.6	19.0	14.5	19.7	15.0	25.0	55.0	20.1	23.0
1883	15.4	26.7	23.3	17.8	13.9	18.5	21.5	12.4	19.5	13.7	17.6	12.0	17.7
1884	9.1	14.3	17.5	15.6	12.8	13.1	15.5	13.0	13.5	16.0	16.9	13.2	14.2
1885	13.2	15.5	13.3	14.0	21.2	14.2	13.0	17.7	22.1	15.9	13.7	12.1	15.5
1886	17.7	17.1	27.6	21.6	22.6	21.6	19.3	18.1	19.0	21.7	20.7	20.6	20.6
1887	16.9	22.9	15.2	20.6	17.3	12.6	12.5	17.2	18.9	14.1	14.5	15.2	16.5
1888	18.2	15.9	15.2	16.4	19.3	14.5	12.9	13.7	15.1	15.0	15.3	14.0	15.5
1889	9.8	11.0	13.9	11.6	10.2	9.8	13.5	12.6	14.6	13.6	18.5	11.8	12.6
1890	11.7	11.8	10.0	8.4	8.4	7.3	10.0	10.3	13.8	15.6	13.3	8.3	10.7
1891	10.4	14.2	20.6	22.5	23.7	11.7	11.2	15.0	22.3	20.7	16.5	16.2	17.1
1892	19.5	35.1	36.3	20.4	25.1	17.7	33.7	22.1	20.1	23.1	15.7	22.1	24.2
1893	18.2	19.1	18.4	14.0	12.0	17.1	14.5	18.5	19.5	20.9	18.5	13.9	17.0
1894	19.2	33.9	20.0	17.4	19.0	20.0	26.3	21.0	22.5	17.0	21.9	12.0	20.8
1895	15.4	20.8	23.0	20.7	16.6	17.6	17.9	10.5	15.9	22.7	22.5	14.5	18.2
1896	25.4	23.6	21.8	17.2	20.6	11.7	15.6	18.1	17.8	17.5	13.1	13.8	18.0
1897	12.0	14.0	14.2	22.2	14.6	12.0	9.3	10.7	11.0	13.8	12.6	17.2	13.6
1898	13.5	15.1	20.5	13.4	15.1	14.3	13.5	14.6	21.5	14.1	13.6	13.0	15.2
1899	14.3	17.8	15.6	14.2	15.9	13.5	11.6	11.4	13.5	9.4	8.7	12.1	13.2
1900	13.5	8.9	12.5	7.2	9.6	4.7	5.2	6.0	5.2	7.1	5.4	5.4	7.6
1901	7.3	7.0	6.5	5.2	6.2	6.0	5.6	6.1	6.0	5.4	5.6	6.4	6.1
1902	6.1	7.6	5.9	7.9	5.6	5.4	6.3	6.2	7.0	7.2	7.6	6.1	6.6
1903	6.5	5.9	6.7	10.3	7.8	11.3	10.8	14.1	14.0	26.3	16.3	13.5	12.0
1904	15.1	12.6	8.7	13.1	13.0	10.5	10.8	10.2	11.2	13.0	11.6	10.6	11.7
1905	16.0	20.3	16.6	16.6	10.6	13.8	11.8	16.8	16.3	11.2	20.1	10.7	15.1
1906	7.6	17.5	14.0	11.6	11.4	11.3	12.4	12.0	14.2	12.7	9.6	16.4	12.6
1907	16.5	25.3	14.3	12.1	16.8	14.8	16.9	15.5	16.8	18.5	14.6	11.5	16.1
1908	13.6	17.0	23.2	15.6	18.9	12.5	10.4	18.2	31.6	15.8	17.4	11.4	17.1
1909	24.8	17.0	19.8	12.1	18.3	11.5	12.6	17.6	27.6	19.4	11.6	13.8	17.2
1910	12.8	14.6	20.9	19.7	17.2	13.7	10.8	20.2	19.2	24.4	17.9	19.5	17.6
1911	21.3	23.7	21.5	21.1	16.6	13.6	15.3	11.9	12.2	12.5	10.6	11.0	15.9
1912	7.6	8.0	7.7	9.4	9.6	8.4	7.8	10.5	9.8	9.5	9.4	9.4	8.9
1913	10.3	9.5	9.9	9.8	9.0	7.0	7.0	6.7	10.0	10.7	7.6	6.6	8.7
1914	7.1	7.3	10.1	13.5	8.1	10,3	12.9	14.9	11.8	13.3	13.4	9.3	11.0
1915	10.9	13.5	15.0	15.3	13.9	17.9	11.2	14.7	17.0	21.3	24.9	12.4	15.7
1916	16.0	11.6	25.0	19.2	20.2	15.7	19.7	21.4	22.4	24.5	24.0	18.9	19.9
1917	25.1	19.1	16.2	16.7	15.9	12.7	14.6	28.1	16.1	20.2	14.8	19.8	18.3
1918	17.8	21.3	19.7	20.5	18.8	15.6	17.4	22.2	28.4	26.4	23.1	28.1	21.6
1919	27.8	26.5	30.7	21.3	27.5	13.9	14.9	22.7	25.3	26.9	14.3	18.4	22.5
1920	16.7	14.1	28.5	17.8	17.7	12.4	14.0	14.8	25.7	17.3	15.1	17.0	17.6
1921	11.7	10.6	15.6	17.2	40.5	12.4	13.3	14.6	12.4	16.2	16.2	17.8	16.5
1922	18.0	18.6	24.1	23.5	18.3	18.6	20.0	20.7	19.7	20.1	13.1	10.4	18.8
1923	10.2	13.7	12.1	10.0	10.1	11.1	8.4	7.3	10.7	12.6	7.8	9.6	10.3
1924	13.6	10.9	12.9	7.3	10.2	12.3	9.7	6.9	12.6	8.7	9.3	7.9	10.2
1925	9.4	8.6	8.6	10.8	11.0	17.7	11.8	13.6	18.0	21.7	13.2	12.9	13.1
1926	27.1	26.2	27.6	27.1	19.6	16.2	11.4	13.2	22.7	23.3	11.9	13.3	20.0
1927	15.5	15.2	20.7	15.6	16.8	11.2	16.5	18.5	20.9	24.7	8.0	15.8	16.6
1928	10.1	13.5	11.3	12.8	23.6	20.2	27.8	15.9	19.6	23.4	18.2	15.6	17.7
1929	13.0	24.0	26.2	13.9	16.3	14.7	18.6	15.9	21.5	25.5	22.7	21.0	19.4
1930	20.9	27.9	30.9	38.2	36.4	33.3	28.3	33.3	28.8	29.3	18.8	17.2	28.6
1931	13.0	15.4	12.9	9.9	12.0	14.7	13.1	17.7	21.2	27.3	23.7	21.1	16.8
1932	20.2	21.4	27.9	28.2	22.2	11.8	12.4	19.1	19.1	17.2	13.8	15.3	19.0

MONTHLY AND YEARLY aa 1868 - 1983 (continued)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1933	15.9	18.4	19.2	21.1	17.5	13.6	12.3	14.2	18.4	16.8	16.0	13.0	16.4
1934	11.5	14.9	20.0	11.3	11.4	10.0	10.3	17.4	17.6	11.6	9.5	15.5	13.4
1935	15.6	16.5	17.8	13.6	11.6	16.4	12.5	9.9	20.7	20.2	15.6	17.7	15.7
1936	17.4	19.8	15.5	22.1	17.5	19.8	18.0	10.2	9.8	15.4	18.0	12.0	16.3
1937	12.2	22.2	18.6	26.3	18.6	18.9	18.8	14.7	14.7	27.8	19.3	16.5	19.0
1938	46.6	26.0	20.4	26.1	23.7	14.8	19.7	19.9	24.7	24.0	17.8	19.5	23.6
1939	13.5	21.7	27.0	36.1	27.8	22.8	26.1	23.0	19.2	28.4	14.5	18.6	23.2
1940	24.8	20.1	43.9	22.4	20.0	23.6	18.4	18.4	20.1	21.9	25.1	23.7	23.5
1941	21.9	27.6	42.9	21.6	19.1	17.4	27.9	22.3	38.2	17.5	23.6	19.3	24.9
1942	14.6	18.8	32.4	24.4	14.2	14.6	23.0	21.9	25.8	30.3	22.8	18.4	21.8
1943	18.1	17.1	21.0	21.9	24.5	21.2	24.4	41.0	35.3	32.8	29.6	23.3	25.8
1944	21.2	17.9	26.6	21.6	16.1	14.9	11.1	16.5	17.5	17.2	11.2	21.8	17.8
1945	16.1	16.4	25.0	19.1	15.4	11.1	15.3	12.1	15.6	17.9	12.0	20.2	16.3
1946	19.2	30.2	43.5	25.0	24.1	22.3	28.6	16.7	41.7	19.6	19.3	14.3	25.4
1947	20.6	17.1	37.9	23.3	19.1	21.1	21.4	32.9	39.1	31.3	20.7	17.9	25.2
1948	20.8	21.0	24.2	17.7	23.7	15.0	16.2	28.3	22.0	36.1	23.1	23.0	22.6
1949	29.8	20.4	24.7	17.6	22.4	17.9	11.8	19.2	17.8	32.7	24.6	15.1	21.2
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	22.5	26.1	29.0	22.4	20.2	12.6	22.2
1954	13.9	24.5	25.5	20.6	12.0	9.7	13.1	16.5	25.4	21.1	14.5	10.9	17.3
1955	19.3	18.2	23.6	21.1	16.7	15.1	12.3	14.3	19.1	17.8	19.9	14.1	17.6
1956	28.7	23.3	27.6	31.7	29.3	23.5	19.8	20.7	22.4	19.3	32.3	18.2	24.7
1957	28.7	26.8	36.7	28.8	18.1	29.1	21.7	20.7	57.0	24.0	29.5	31.7	29.4
1958	25.5	43.2	36.1	27.6	25.2	29.7	36.0	25.1	26.5	24.7	15.0	27.2	28.5
1959	24.3	35.9	29.9	24.2	25.7	21.6	42.5	31.2	36.1	28.2	32.1	30.8	30.2
1960	25.2	23.5	27.6	51.5	31.6	27.6	28.1	27.2	26.4	45.6	45.9	34.5	32.9
1961	20.6	25.1	22.0	21.8	22.3	20.1	36.0	18.5	20.7	23.3	17.3	21.1	22.4
1962	13.2	19.2	15.5	22.6	13.4	18.1	21.0	26.2	29.8	33.3	22.5	23.5	21.5
1963	19.3	15.3	14.9	18.2	20.4	20.5	20.8	22.5	40.2	23.5	20.7	18.9	21.3
1964	20.1	20.1	21.0	21.7	17.5	15.1	16.9	14.8	18.2	16.9	13.8	10.3	17.2
1965	11.8	16.3	14.3	12.6	10.5	15.7	14.7	16.8	17.5	13.1	11.7	13.8	14.1
1966	14.2	14.8	18.6	12.0	14.8	12.5	17.1	20.0	29.4	17.5	16.8	20.5	17.3
1967	18.9	19.8	13.8	15.5	33.1	18.6	14.4	17.5	24.7	17.8	18.9	24.5	19.8
1968	21.1	26.5	23.3	22.2	21.4	24.9	18.0	20.1	22.0	24.8	26.2	20.3	22.6
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.8	17.2	18.7	13.8	20.0
1970	14.4	12.7	26.4	23.1	16.6	18.3	28.4	21.0	19.7	20.6	21.6	16.5	19.9
1971	23.5	21.2	21.1	23.9	21.1	17.0	15.2	17.1	21.4	22.2	18.8	18.6	20.1
1972	21.9	18.3	21.5	18.1	16.6	21.5	14.0	34.2	20.4	20.4	21.8	18.9	20.6
1973	26.1	32.7	36.9	39.6	26.1	27.3	20.9	20.6	22.8	28.2	20.7	19.9	26.8
1974	25.8	26.4	33.7	32.9	29.2	29.2	32.0	30.2	33.7	37.3	26.8	27.5	30.4
1975	27.6	31.1	32.0	24.3	22.7	20.7	21.7	18.1	16.9	20.2	29.3	21.1	23.8
1976	23.3	28.5	33.4	25.4	23.7	17.5	18.4	17.7	23.7	20.4	16.9	18.6	22.3
1977	18.7	21.0	19.9	24.9	20.1	14.2	22.9	23.2	23.0	20.9	17.3	17.0	20.3
1978	25.0	26.2	25.9	31.3	31.2	28.3	19.9	25.6	27.0	20.8	24.6	22.0	25.6
1979	27.3	23.7	26.9	33.5	21.0	16.3	17.9	26.0	22.0	19.3	17.1	16.8	22.5
1980	19.0	17.3	12.7	18.4	15.6	20.0	17.0	15.9	14.2	21.9	23.3	21.7	18.1
1981	16.8	22.9	27.1	33.4	27.3	18.1	27.6	24.3	20.8	34.4	24.5	19.7	24.7
1982	23.5	49.3	27.6	32.2	25.2	31.4	42.4	32.0	45.9	28.9	33.7	34.5	34.0
1983	26.6	40.8	34.2	36.3	32.1	25.1	21.4	25.2	24.0	28.8	34.1	26.4	29.6

Unit : nT

TWELVE-MONTH RUNNING MEAN VALUES OF aa 1868 - 1983

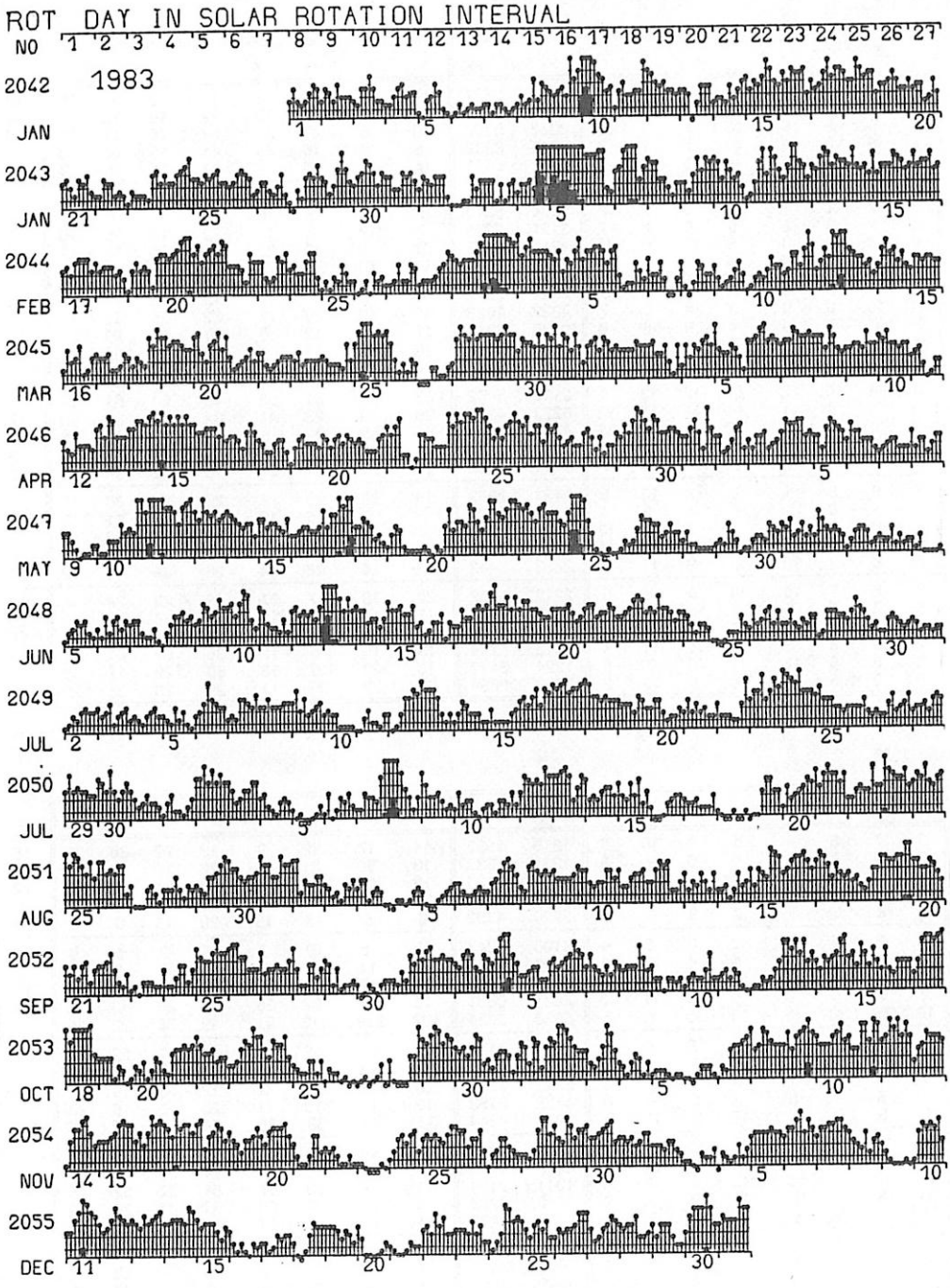


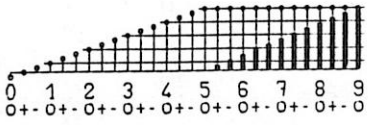
SECTION 3

3.2. an, as, am INDICES

- Musical diagram of **Km** 1983 45
- Monthly tables of three-hour indices :
  an, **as**, **Kn**, **Ks** and daily **An**, **As** values 46
- Monthly tables of three-hour indices :
  am, **Km** and daily **Am** values 58
- Monthly and yearly mean values of **Am**
  1959 - 1983 64

MUSICAL DIAGRAM OF Km 1983





THREE-HOUR-RANGE INDICES
Km 1983

an , as INDICES 1983

JANUARY 1983

	3Kn								σ n		an								An
1	5	8	6	4	5	7	8	7	3332	3331	12	25	15	9	11	19	21	18	16
2	4	6	5	4	9	6	5	5	1231	2322	9	14	13	10	29	16	13	11	14
3	4	3	8	8	12	8	5	4	2032	5322	10	6	23	23	54	24	11	10	20
4	4	3	6	9	11	6	7	7	4245	3332	8	6	15	30	41	15	20	18	19
5	2	0	4	7	10	8	3	1	2132	6531	4	1	10	18	37	21	6	3	13
6	0	1	3	1	4	4	4	2	1133	3453	1	2	7	3	8	10	9	5	6
7	3	2	1	4	4	3	2	2	5234	3213	7	4	3	10	10	7	5	5	6
8	3	5	3	5	9	5	8	7	3121	2235	7	12	6	12	29	13	26	20	16
9	8	4	5	8	5	16	9	11	4211	1233	21	10	13	22	13	109	33	42	33
10	19	21	17	14	11	11	7	8	2625	6624	195	261	145	79	47	41	17	23	101
11	2	6	8	4	6	6	6	12	2322	2212	4	14	23	10	15	16	16	54	19
12	11	10	9	9	9	8	7	7	2322	1623	48	40	29	28	32	25	19	17	30
13	7	6	5	0	4	9	8	8	2230	2354	17	15	12	0	8	27	23	21	15
14	4	4	6	3	8	7	8	9	3141	5764	10	8	14	7	26	17	21	31	17
15	10	7	7	8	10	14	12	9	5443	2245	40	18	20	21	34	75	55	32	37
16	8	11	10	12	11	12	13	6	2112	3462	23	46	34	58	48	54	61	14	42
17	10	7	8	11	14	11	13	12	5223	4374	36	19	23	41	84	41	9	60	47
18	12	9	9	15	12	11	11	11	4231	2554	55	29	32	5	57	47	46	49	51
19	6	8	8	9	12	10	7	7	1320	4434	16	23	24	29	53	34	20	18	27
20	9	8	8	9	4	5	10	7	3421	2333	29	21	21	27	10	12	34	18	22
21	7	9	6	4	9	7	10	5	2431	3643	18	28	16	9	29	20	36	11	21
22	3	4	8	7	8	4	5	4	3243	5223	7	9	25	19	24	10	11	10	14
23	2	6	3	3	4	3	8	10	2541	2235	4	15	7	7	9	7	23	37	14
24	8	9	7	7	9	10	12	14	1512	1352	21	33	17	17	27	35	53	77	35
25	8	8	8	10	8	9	11	7	2222	3442	22	24	22	34	26	29	41	19	27
26	7	6	7	10	11	9	8	3	2213	5452	20	16	17	37	42	29	24	7	24
27	5	6	6	5	4	6	10	3	3412	3442	13	14	16	12	9	16	35	7	15
28	1	0	5	2	7	9	8	11	1031	3344	3	0	11	5	19	32	23	45	17
29	7	6	3	5	10	15	11	7	2213	1244	19	15	6	12	36	92	41	19	30
30	5	8	9	12	11	9	7	9	1224	3433	13	23	27	58	50	29	17	30	31
31	8	9	5	5	10	8	10	8	3323	6654	23	27	13	11	39	25	35	22	24
																			25.9

JANUARY 1983

	3Ks								σ s		as								As
1	6	7	5	4	5	7	10	8	1213	1533	14	17	12	9	13	20	35	26	18
2	5	9	8	6	9	6	7	8	1231	1335	13	30	21	16	28	14	19	21	20
3	6	5	9	8	11	8	6	6	3113	2423	15	13	27	24	45	24	15	15	22
4	5	4	5	8	8	6	7	7	4234	4234	12	10	12	23	23	14	19	19	17
5	3	2	5	6	7	5	3	2	3220	4332	6	5	13	15	20	13	6	5	10
6	3	2	4	3	2	3	2	4	3120	3243	6	5	9	7	5	7	5	9	7
7	4	5	2	4	4	4	2	4	3242	2334	10	11	4	8	10	8	5	9	8
8	4	7	5	6	10	5	9	8	2324	2433	10	17	11	14	38	12	29	21	19
9	7	7	8	9	6	14	11	13	2221	0321	19	19	22	28	15	86	43	64	37
10	19	20	20	15	11	10	7	7	5333	2234	192	239	210	91	49	35	20	20	107
11	4	8	11	7	6	7	8	16	3422	1125	9	22	42	19	16	17	22	107	32
12	13	11	10	8	9	6	6	5	3323	0232	70	42	36	22	30	14	16	12	30
13	7	7	7	1	5	8	7	8	2222	2333	20	18	17	3	12	23	19	21	17
14	4	6	4	5	8	3	6	8	1422	2453	10	15	10	11	23	7	16	23	14
15	9	8	9	8	10	13	13	9	2232	4344	32	23	33	25	39	68	63	28	39
16	8	11	9	12	11	11	12	7	1210	3143	21	49	31	54	46	46	55	18	40
17	8	7	8	11	14	9	11	11	3233	4235	21	20	25	46	74	30	44	43	38
18	10	10	9	12	12	9	12	11	1311	2144	34	37	28	57	51	32	52	46	42
19	5	8	8	8	11	9	7	7	1212	3223	13	25	24	26	41	31	20	19	25
20	9	6	8	8	4	5	9	5	2232	0223	30	15	21	21	9	11	29	12	19
21	7	7	5	5	8	6	9	4	2322	2333	17	20	11	11	23	14	29	10	17
22	4	5	7	6	5	4	5	4	1320	3331	9	11	18	15	13	9	13	8	12
23	1	5	4	4	4	4	9	10	1322	2253	3	12	9	9	8	8	30	39	15
24	7	8	7	8	10	10	11	12	2202	2224	17	24	19	22	34	34	44	57	31
25	9	7	8	8	9	10	7	7	3322	3221	27	22	18	24	21	30	39	17	25
26	6	5	7	9	9	8	7	4	3232	3324	14	13	19	27	32	26	20	9	20
27	5	7	8	5	5	6	9	4	2222	2543	12	20	23	13	11	14	28	9	16
28	2	0	5	4	8	9	9	11	2033	1342	4	0	12	8	26	31	29	42	19
29	8	7	4	6	11	13	10	8	2324	2222	24	20	10	16	45	62	37	21	29
30	7	8	9	12	10	8	5	8	3322	2214	17	25	33	54	35	24	12	24	28
31	8	7	5	5	8	7	8	6	2323	2223	25	20	11	11	23	17	22	15	18
																			25.5

FEBRUARY 1983

	3Kn								σ n		an								An
1	6	8	7	6	9	9	9	3	3651	4662	15	25	20	16	27	30	28	7	21
2	0	1	1	2	2	8	5	7	1213	2422	1	3	2	5	4	25	13	18	9
3	7	5	5	2	6	3	6	8	3144	1354	17	13	12	5	14	6	16	22	13
4	4	5	6	6	6	22	22	15	4233	2333	9	12	16	16	14	329	291	89	97
5	18	21	19	20	20	18	19	17	3652	5534	169	248	192	232	222	150	185	135	192
6	16	14	13	13	15	14	6	4	5343	2422	116	77	66	69	90	86	15	9	66
7	9	11	14	15	16	17	8	11	3334	5325	30	43	77	101	111	138	22	41	70
8	12	11	11	7	8	5	3	7	3543	4326	53	48	48	19	22	12	6	18	28
9	6	6	3	8	12	9	12	11	4414	6365	14	14	6	22	57	32	56	45	31
10	12	12	8	12	9	7	8	6	5536	6432	59	52	22	56	30	20	25	15	35
11	2	4	5	11	14	8	14	12	4343	2264	4	9	13	46	75	25	83	59	39
12	9	7	11	16	15	11	10	7	4323	3143	31	17	41	109	102	49	37	18	51
13	11	9	13	15	14	11	12	11	4352	4655	41	33	69	92	76	44	52	48	57
14	11	11	15	10	10	10	7	13	2324	5304	44	42	87	39	34	38	19	63	46
15	8	10	11	10	13	13	12	9	2231	3663	23	35	42	36	69	62	55	29	44
16	10	14	11	11	11	14	10	10	1133	4443	34	73	41	45	49	72	37	36	48
17	7	9	7	9	11	11	10	8	3412	6463	20	29	17	27	44	41	39	23	30
18	10	8	9	8	9	7	8	5	3223	3353	37	26	28	25	28	19	21	12	25
19	2	6	9	8	9	7	3	10	2133	4313	5	16	32	21	28	11	7	38	21
20	10	10	10	10	12	14	15	16	4234	3545	40	39	38	37	60	84	88	107	62
21	10	13	10	12	12	14	11	14	4212	4535	40	66	34	55	60	76	49	73	57
22	14	8	8	8	7	5	11	9	5243	2333	71	25	24	25	17	11	44	29	31
23	9	10	5	4	5	11	10	11	3412	2654	33	35	13	8	13	41	35	42	28
24	7	8	6	6	9	11	11	5	4524	4551	19	24	15	16	32	47	45	13	26
25	3	4	3	5	4	9	6	4	2423	2743	6	10	6	13	10	27	16	9	12
26	4	1	2	4	2	7	5	5	4234	2655	10	2	4	8	5	18	12	11	9
27	2	3	4	9	4	4	8	8	3233	1124	5	6	9	27	9	9	22	21	14
28	3	2	3	3	6	8	9	10	2123	4542	6	4	6	7	14	22	31	40	16
																			42.1

FEBRUARY 1983

	3Ks								σ s		as								As
1	5	7	6	6	7	7	7	3	3231	2323	11	18	16	16	20	18	19	6	16
2	2	1	1	1	2	7	4	8	2222	2222	5	2	2	3	4	20	10	21	8
3	7	7	8	1	6	1	6	6	3232	2244	17	20	22	3	15	3	15	15	14
4	3	7	5	7	5	21	21	15	1214	3255	7	20	13	20	11	275	278	97	90
5	19	21	18	19	19	18	17	15	3333	4335	182	244	161	175	190	147	142	103	168
6	16	12	13	13	13	13	4	4	4122	2321	109	60	68	64	68	70	10	8	57
7	9	10	14	14	15	15	7	10	2411	4524	27	36	75	83	100	92	19	37	59
8	12	10	9	6	7	4	3	5	2323	3334	59	40	33	16	18	10	6	13	24
9	5	6	4	8	11	8	13	11	5622	3262	13	15	10	22	47	22	61	42	29
10	11	10	6	10	8	7	8	5	2138	6423	43	36	15	37	25	17	24	12	26
11	2	2	6	12	13	8	15	11	2223	2473	4	5	15	53	68	22	89	46	38
12	9	8	9	13	15	10	9	7	2102	3322	29	22	30	65	88	39	30	19	40
13	10	9	11	13	12	9	11	11	2444	2243	38	33	46	65	59	27	50	47	46
14	12	10	12	9	7	10	9	13	2405	2144	52	34	54	33	20	37	31	70	41
15	8	11	10	9	13	12	10	8	1322	2222	26	41	38	32	65	52	34	25	39
16	10	11	9	10	11	12	9	10	2322	3334	35	50	30	37	44	60	30	37	40
17	8	7	6	9	8	9	9	7	2220	3042	21	20	14	30	25	30	29	17	23
18	8	6	8	7	7	5	6	4	3322	2242	26	15	23	20	20	13	16	10	18
19	1	8	8	7	8	7	4	10	1332	3213	3	24	26	17	23	17	8	34	19
20	11	1	9	11	12	12	15	16	5102	4256	47	46	30	45	59	60	98	120	63
21	11	12	9	11	11	12	11	14	2213	3346	43	59	31	42	50	52	42	76	49
22	12	7	7	7	7	4	10	8	5123	1223	54	17	19	19	17	8	38	24	25
23	9	9	4	4	5	10	9	11	4222	3255	30	30	9	9	13	35	30	45	25
24	6	7	6	5	9	10	11	4	2333	5332	15	18	14	12	27	39	47	10	23
25	2	4	2	5	4	8	5	4	2134	2411	5	8	4	11	10	22	12	8	10
26	4	1	2	4	1	4	4	5	3335	1217	10	2	4	10	2	10	9	12	7
27	4	3	4	8	4	4	8	7	6223	2431	8	6	9	23	9	8	21	18	13
28	3	5	4	4	5	5	8	11	1622	2223	7	12	10	10	11	13	22	44	16
																			36.6

MARCH 1983

	3Kn								σ n		an								An
1	9	8	7	9	9	10	11	12	2212	2462	29	24	20	29	31	35	49	57	34
2	18	16	19	17	16	15	15	13	3465	4555	156	106	195	121	113	103	89	65	119
3	15	11	13	14	13	11	11	10	6135	3364	90	41	63	82	69	48	49	38	60
4	10	8	11	7	10	8	11	15	3252	4457	35	26	46	17	37	25	50	89	41
5	9	11	12	13	12	12	10	11	3443	4264	32	47	60	61	58	53	34	48	49
6	13	4	3	3	3	8	6	5	4123	2553	65	10	6	6	7	23	16	13	18
7	9	5	4	7	4	1	0	4	7322	2112	29	13	10	20	9	2	1	9	12
8	8	2	0	2	8	7	6	5	3312	4332	25	5	1	4	23	20	15	11	13
9	6	5	3	4	5	6	8	5	4222	2243	16	11	7	8	11	15	26	13	13
10	1	2	4	5	4	6	9	7	2412	2231	3	5	8	12	10	15	30	19	13
11	7	4	6	9	11	8	12	16	4024	2354	19	9	14	33	42	23	54	109	38
12	13	7	8	12	9	16	15	17	4313	3645	64	17	24	53	32	108	89	146	67
13	16	11	10	10	9	8	8	6	5434	4445	105	48	40	36	33	23	25	15	41
14	7	12	14	11	12	9	11	7	1414	6361	18	52	75	41	54	28	47	20	42
15	7	9	9	8	9	10	8	8	3241	2444	17	29	28	25	31	40	21	24	27
16	4	10	5	6	11	4	5	8	3424	4133	10	34	13	16	44	9	12	23	20
17	9	7	7	8	5	5	5	9	4131	3625	29	19	20	22	11	13	13	32	20
18	8	5	8	6	6	13	11	14	4122	2762	22	12	21	14	15	66	44	79	34
19	11	12	11	12	11	11	9	10	2325	4422	49	56	42	52	50	43	29	34	44
20	12	14	8	6	11	12	13	10	4111	4454	54	71	24	16	48	51	70	37	46
21	12	8	5	6	7	8	10	7	1222	3463	56	21	12	14	18	21	34	17	24
22	7	8	5	5	6	6	7	7	5622	3553	20	26	13	11	16	15	20	20	18
23	6	7	8	4	6	7	7	6	2422	3462	16	17	24	10	16	19	19	14	17
24	7	7	6	5	6	4	10	7	4551	2352	19	18	14	12	14	10	37	18	18
25	10	13	17	17	16	12	13	12	3244	5422	38	66	130	125	111	59	68	59	82
26	13	11	6	4	6	3	7	5	2532	2134	61	41	14	9	15	7	18	13	22
27	0	0	0	4	5	3	3	5	1012	1032	1	0	1	9	11	6	6	13	6
28	5	11	14	12	11	14	12	12	5422	5533	11	43	79	53	49	82	51	59	53
29	13	12	13	10	12	14	12	13	2433	4532	61	57	62	39	53	79	60	64	59
30	8	12	10	11	10	13	10	12	1323	4342	26	52	40	43	35	62	35	54	43
31	11	14	9	13	11	9	11	9	2143	4352	49	78	32	67	47	22	50	32	47
																			36.8

MARCH 1983

	3Ks								σ s		as								As
1	11	9	8	10	10	9	11	13	4221	2136	47	30	24	35	34	31	44	68	39
2	17	15	18	17	16	17	13	13	7343	3855	122	92	147	129	105	121	61	67	106
3	15	10	12	14	9	10	10	11	7034	3234	90	38	52	74	30	40	40	50	52
4	11	9	10	6	9	8	11	13	3220	3467	43	29	40	15	28	25	44	63	36
5	8	11	9	11	11	10	7	10	2414	4235	26	44	27	49	44	38	19	35	35
6	12	5	1	3	3	7	5	3	3420	1521	56	11	3	7	6	20	11	15	7
7	8	5	5	8	4	0	0	4	5333	5101	26	13	13	22	8	1	0	8	11
8	8	2	1	4	8	6	5	5	3212	2112	21	4	2	8	23	16	11	11	12
9	7	3	1	3	3	6	8	4	7422	3442	20	7	3	6	6	14	23	8	11
10	1	2	4	5	3	5	9	6	2212	0311	3	5	9	13	7	13	28	16	12
11	7	5	6	10	10	6	10	13	1222	4235	17	12	15	34	34	14	38	65	29
12	12	6	8	9	9	16	13	18	5022	0434	51	15	21	31	30	108	68	172	62
13	14	10	9	9	8	6	7	4	7320	3323	80	37	29	30	22	16	19	10	30
14	8	11	11	9	11	7	9	6	2430	3140	21	41	48	30	44	18	32	15	31
15	6	8	9	8	8	8	8	7	1233	1143	16	26	27	22	23	23	21	19	22
16	3	9	6	7	9	3	4	5	2513	3124	6	31	16	18	32	6	8	12	16
17	8	7	8	7	3	2	4	7	4235	2335	24	20	21	20	6	4	10	20	16
18	7	5	6	6	4	11	10	14	6201	1636	19	12	15	14	8	47	34	85	29
19	13	11	10	11	11	9	9	8	5323	3113	65	48	39	45	42	31	27	21	40
20	11	13	8	6	9	11	12	9	4320	2431	50	65	23	15	27	44	57	27	39
21	13	7	4	5	6	6	9	6	3222	3240	61	19	9	12	15	15	29	15	22
22	8	8	5	4	4	6	6	5	3433	3333	21	23	11	9	10	14	15	13	15
23	7	5	9	5	5	5	6	5	3212	1353	17	13	27	11	13	13	14	13	15
24	7	5	5	5	5	4	10	6	2132	3252	18	13	11	11	12	8	36	15	16
25	9	12	17	15	14	2	13	12	4531	3534	32	58	137	99	86	55	63	54	73
26	13	9	6	2	5	3	5	4	2222	2332	65	33	14	5	11	6	13	9	20
27	0	0	0	3	3	1	2	4	1111	2222	1	0	0	6	7	3	5	8	4
28	4	11	14	13	11	14	11	13	3222	2443	10	43	72	64	45	82	41	62	52
29	11	11	11	12	12	13	12	11	4314	3304	47	49	50	52	55	67	54	50	53
30	8	10	10	10	9	12	8	12	2314	2224	25	38	35	34	27	52	21	55	36
31	11	14	8	12	10	7	12	8	4314	2303	50	78	22	52	37	19	54	24	42
																			32.0

an , as INDICES 1983 (continued)

APRIL 1983

	3Kn								σ n		an								An
1	5	9	11	12	8	11	10	9	4324	1422	12	32	43	51	22	49	39	27	34
2	9	7	9	8	9	11	10	9	2322	2974	29	18	28	22	30	44	39	32	30
3	9	10	8	7	10	5	4	9	4425	3424	28	37	21	20	34	13	8	30	24
4	5	9	6	9	8	11	11	9	3636	4542	11	32	14	33	24	43	47	32	30
5	14	9	8	7	9	9	7	4	1232	1442	77	27	22	20	31	29	18	10	29
6	10	10	11	14	15	11	12	10	2332	3362	37	37	42	71	87	47	52	36	51
7	9	10	10	13	13	12	11	12	1133	3454	29	39	35	70	61	53	50	56	49
8	11	11	11	8	13	11	8	8	2144	2422	42	44	47	25	66	41	24	22	39
9	7	8	9	9	9	13	10	9	2223	1422	18	21	31	27	27	62	34	32	32
10	12	11	13	10	9	9	9	9	4333	2532	51	42	62	34	27	32	31	31	39
11	6	8	7	5	2	3	6	6	2212	1221	14	21	19	11	5	7	16	14	13
12	8	6	6	10	7	8	8	6	5342	1223	21	14	14	38	18	21	21	16	20
13	12	12	9	15	13	10	10	9	3321	3343	57	58	28	100	63	34	39	33	52
14	10	11	12	12	12	14	15	13	2134	6532	37	46	57	56	59	84	100	67	63
15	17	13	15	13	14	12	14	12	2345	5561	130	66	92	65	79	51	85	51	77
16	12	11	10	11	11	11	10	12	5223	3512	60	41	39	49	46	46	34	56	46
17	8	9	10	8	7	10	11	9	3441	3340	26	30	35	25	19	34	45	29	30
18	8	8	5	5	8	8	9	6	3111	4342	21	22	13	12	25	21	27	16	20
19	2	6	8	8	7	7	8	7	1332	4242	4	14	21	25	19	19	21	18	18
20	8	8	6	8	9	7	9	7	5554	6432	26	21	16	23	27	17	32	17	22
21	7	8	6	5	6	5	8	9	3522	1253	18	23	14	11	15	13	23	32	19
22	10	10	11	12	5	4	2	4	4445	3332	39	34	48	56	12	9	5	10	27
23	9	9	8	8	7	7	7	14	3434	5334	32	33	23	24	18	18	20	73	30
24	12	14	12	14	14	13	15	14	3232	4252	53	73	59	72	82	70	97	84	74
25	12	11	9	10	9	12	12	14	5444	0642	60	42	27	40	29	51	55	71	47
26	12	11	13	9	11	11	7	11	4344	4422	53	42	65	30	41	47	18	46	43
27	10	11	8	7	7	9	6	7	4424	2431	40	47	26	18	20	28	16	19	27
28	9	10	7	6	8	5	7	6	3322	3211	27	40	20	15	26	12	17	16	22
29	9	8	10	10	13	16	14	12	3322	0534	27	24	38	37	66	105	71	57	53
30	10	13	12	9	10	11	11	9	3443	3442	37	64	60	28	35	41	44	29	42
																			36.7

APRIL 1983

	3Ks								σ s		as								As
1	6	8	10	10	8	11	10	8	2244	3442	14	26	34	38	24	44	37	21	30
2	8	8	7	8	8	9	9	9	3332	2447	26	25	20	22	23	31	27	28	25
3	8	9	6	6	9	5	1	8	7422	6323	26	32	16	15	29	11	2	24	19
4	4	9	6	9	8	10	11	8	4636	4334	8	28	14	33	21	36	41	25	26
5	14	8	7	6	9	7	5	2	4123	3122	85	25	17	16	28	20	11	5	26
6	10	10	11	13	13	10	11	9	3134	2253	37	35	41	61	69	34	48	31	45
7	9	11	9	12	11	11	11	12	2214	4234	27	42	32	57	48	45	43	60	44
8	12	10	10	7	13	11	7	6	4332	3431	51	38	39	17	62	44	18	16	36
9	9	8	8	9	8	11	8	9	5323	1332	31	23	26	28	23	41	26	30	29
10	10	10	10	9	9	7	8	9	3321	2334	37	38	40	28	28	20	25	28	31
11	6	6	8	3	0	1	3	4	2122	2231	16	16	24	7	1	3	6	8	10
12	7	7	4	10	7	7	6	6	3322	3424	20	19	8	37	19	19	15	15	19
13	11	12	9	14	14	8	9	9	6212	5225	44	56	28	73	73	23	27	30	44
14	11	10	13	13	11	13	16	13	5355	5441	49	37	70	70	50	65	105	64	64
15	17	12	14	11	13	12	13	12	3333	4365	39	54	79	50	65	52	69	54	70
16	12	10	10	11	11	10	9	12	5343	3543	56	37	35	46	42	36	30	60	43
17	8	8	9	8	5	10	12	11	4443	4242	25	25	29	22	13	34	58	49	32
18	8	6	5	4	5	9	8	5	2222	4323	23	16	11	9	13	28	22	11	17
19	2	6	8	10	7	8	6	5	3422	4453	5	16	23	38	17	21	16	13	19
20	10	8	6	7	9	8	9	9	3342	5457	40	26	15	19	33	22	31	32	27
21	8	8	8	5	4	4	8	8	4322	2264	21	21	22	12	9	9	23	24	18
22	11	9	11	14	4	4	1	2	4223	1223	42	30	44	75	8	8	2	5	27
23	9	8	9	8	4	5	5	14	3233	2235	28	26	27	21	10	12	11	78	27
24	10	14	12	13	14	13	15	15	5553	3355	40	83	57	70	82	61	88	96	72
25	13	10	8	10	8	11	12	14	4334	3336	66	40	26	38	21	49	58	76	47
26	13	10	13	8	11	10	6	10	6333	3432	67	40	70	25	42	40	16	38	42
27	10	10	7	6	7	6	5	5	3444	4343	40	40	20	15	18	15	13	12	22
28	9	10	8	4	8	3	4	5	2532	3333	30	35	23	10	22	6	10	12	19
29	9	9	11	9	12	14	14	12	5320	3432	33	27	46	30	53	83	71	52	49
30	11	12	12	9	8	10	9	9	6142	1354	42	59	55	30	26	35	31	28	38
																			33.9

an , as INDICES 1983 (continued)

MAY 1983

	3Kn								σ n		an						An
1	8	8	9	12	10	6	15	9	2334	2333	23	23	33	54	36	14	88	27	37
2	8	8	4	5	7	11	12	6	1322	3362	26	23	10	13	17	44	51	16	25
3	7	5	8	9	10	7	7	8	1223	3322	20	13	25	28	35	18	20	23	23
4	9	2	11	11	12	12	9	10	3155	2320	32	51	48	50	58	58	30	38	46
5	8	8	6	11	14	11	10	9	2224	3222	23	21	14	41	71	46	38	32	36
6	7	11	10	9	7	8	7	6	2333	2321	20	46	35	31	19	22	20	15	26
7	4	6	6	7	8	6	6	6	2343	1222	9	14	16	19	21	16	14	15	16
8	10	6	8	7	5	7	8	9	2421	2242	34	15	21	20	12	17	25	32	22
9	8	8	5	4	3	3	4	6	3221	2222	23	22	11	8	7	7	9	14	13
10	5	3	2	6	6	7	9	7	2231	3312	11	7	5	16	15	18	32	20	16
11	9	7	15	17	12	17	16	14	0221	2423	29	20	95	126	55	144	106	85	83
12	16	14	13	12	11	13	14	15	2232	2323	107	73	67	53	42	69	73	87	71
13	10	10	16	12	12	13	11	10	3262	4553	40	39	116	53	53	65	41	40	56
14	13	10	10	9	8	10	9	7	3231	1532	61	39	38	32	22	37	31	18	35
15	10	10	8	10	11	9	8	10	3315	3234	34	40	25	36	41	27	24	40	33
16	6	8	7	7	8	8	7	9	2244	3322	16	21	20	20	24	22	20	32	22
17	13	9	12	13	16	12	18	19	1445	4234	66	27	59	62	113	58	163	175	90
18	9	9	11	11	9	6	7	5	2334	4411	29	28	43	41	28	16	17	13	27
19	3	7	8	7	4	3	3	3	4522	3211	7	17	22	20	8	7	7	7	12
20	4	4	3	3	4	4	10	13	3143	2233	8	9	6	6	8	9	34	63	18
21	7	10	10	9	14	14	10	8	4352	2332	20	36	37	29	79	73	40	23	42
22	11	14	15	12	11	13	14	14	1335	3544	42	73	89	57	43	70	79	77	66
23	12	12	15	11	10	13	14	10	2442	1343	57	56	87	46	34	62	72	40	57
24	11	11	9	9	12	20	20	17	4323	2452	46	46	31	28	58	226	241	137	102
25	14	10	7	4	2	1	4	3	3243	3222	74	34	18	8	5	3	10	6	20
26	1	2	4	5	5	8	10	9	2123	3222	3	5	10	11	12	26	34	32	17
27	9	8	8	5	7	9	7	8	3332	2532	28	22	22	13	18	31	19	22	22
28	5	7	3	4	3	3	4	3	3522	2332	12	17	7	8	7	7	9	6	9
29	3	4	4	9	7	5	3	4	2334	4222	7	10	8	30	19	11	6	9	13
30	3	5	7	7	6	9	8	7	1144	3422	6	13	17	20	14	29	24	20	18
31	9	7	11	6	8	10	6	8	2323	3424	27	19	41	16	21	34	15	21	24
																			35.4

MAY 1983

	3Ks								σ s		as								As
1	8	8	10	12	9	4	15	10	4324	2255	26	26	38	54	29	10	90	40	39
2	8	8	4	5	7	9	10	5	3222	5132	26	23	8	11	18	27	38	11	20
3	7	5	8	7	7	3	5	6	2221	1322	19	13	24	18	18	7	11	14	16
4	8	12	10	11	13	12	7	9	2332	3222	22	54	37	44	63	52	18	28	40
5	9	7	5	10	11	10	9	9	2312	3233	29	20	12	37	50	36	33	33	31
6	7	11	8	8	7	6	6	5	1242	4223	20	44	26	24	20	15	16	12	22
7	4	5	6	6	7	4	5	5	1222	2133	8	13	14	14	17	9	11	11	12
8	9	5	5	5	2	4	8	7	3433	1234	31	12	13	13	4	10	25	19	16
9	7	6	5	2	0	0	0	3	3451	0014	17	16	12	4	0	0	0	6	7
10	3	1	2	4	4	4	9	6	2033	3242	6	3	4	8	8	8	27	14	10
11	6	6	14	14	12	18	14	15	3022	4466	16	15	78	80	52	151	83	91	71
12	15	13	12	11	8	12	14	16	8524	3144	101	61	60	48	24	57	77	117	68
13	14	9	14	12	11	11	10	12	5233	3545	78	29	80	56	41	50	38	54	53
14	12	11	10	8	8	9	9	6	3342	3352	55	50	40	23	21	27	31	14	33
15	11	9	9	9	8	7	7	9	5432	2225	45	32	27	27	23	17	17	30	27
16	5	5	6	8	8	6	5	7	2335	3143	13	11	15	22	21	14	13	17	16
17	12	8	10	10	15	14	16	19	5321	3144	51	25	38	34	103	73	18	175	77
18	6	8	9	7	6	4	5	4	2412	3231	15	21	28	20	15	9	11	8	16
19	2	6	7	6	1	0	1	0	2541	3121	5	15	20	16	3	1	2	0	8
20	0	1	1	0	3	0	7	12	2230	1023	1	2	2	0	6	0	18	51	10
21	6	9	8	7	11	11	8	5	2012	3123	16	30	24	19	48	48	22	12	27
22	9	14	14	11	10	11	14	14	3552	2464	29	75	74	44	37	44	72	81	57
23	14	11	12	10	8	11	13	11	5444	2262	72	45	54	39	21	49	63	43	48
24	12	11	8	8	10	19	20	16	7322	2216	52	46	24	24	39	191	39	120	92
25	14	9	4	0	0	0	0	0	4130	0010	82	28	9	0	0	0	1	0	15
26	0	1	2	1	3	4	11	8	1323	1132	1	3	5	3	7	10	44	26	12
27	10	8	7	4	6	5	4	4	2252	2312	35	21	20	10	15	12	8	8	16
28	4	5	2	2	0	0	1	1	1422	1112	8	12	5	4	1	1	2	3	5
29	3	2	2	5	5	2	0	0	1521	6211	6	5	5	12	13	5	1	1	6
30	1	3	4	3	1	5	5	4	2211	1221	3	7	8	7	3	13	12	8	8
31	7	7	8	5	5	6	3	6	4322	2105	19	18	22	11	12	16	7	16	15
																			28.8

an , as INDICES 1983 (continued)

JUNE 1983

	3Kn								σ n		an						An
1	6	11	9	8	7	8	7	6	3232	2323	15	48	29	21	20	24	19	15	24
2	2	5	6	8	8	8	5	6	1323	3322	5	13	16	24	22	21	11	14	16
3	6	5	5	8	5	7	4	5	1323	2323	16	13	12	25	11	20	8	13	15
4	5	3	6	2	3	2	3	2	2343	1323	11	6	14	4	6	4	6	5	7
5	4	4	6	8	7	7	5	5	3333	2222	8	10	14	25	20	20	13	11	15
6	7	4	8	5	9	9	6	7	2331	3423	17	10	24	11	27	28	16	19	19
7	7	8	8	5	4	5	6	3	2232	2323	18	24	21	11	9	12	15	7	15
8	2	5	7	9	9	10	8	9	2435	2212	5	12	19	33	30	39	26	29	24
9	6	8	12	11	9	11	12	10	1243	2452	15	23	56	41	31	43	55	39	38
10	10	11	8	11	14	14	8	7	5135	2431	38	43	23	47	82	72	23	18	43
11	10	8	7	6	5	5	7	6	4433	3332	35	25	17	16	13	11	20	16	19
12	9	10	8	10	9	10	9	12	4234	4321	28	34	22	39	32	38	31	51	34
13	19	22	17	17	14	10	13	9	3656	2243	184	313	124	136	71	36	69	33	121
14	10	9	9	8	8	7	7	7	4222	4323	35	29	31	21	24	17	19	19	24
15	10	8	9	10	8	8	11	6	2313	2321	37	26	27	34	26	25	47	15	30
16	6	3	5	7	7	8	4	7	3242	2322	14	7	12	18	20	24	8	18	15
17	6	5	10	8	8	11	10	10	1362	3532	15	13	34	25	24	44	39	36	29
18	10	14	15	11	11	13	10	13	1312	2421	34	80	88	42	42	69	37	61	57
19	10	12	11	10	10	9	8	8	2434	2312	35	60	43	37	38	31	26	24	37
20	10	10	9	9	10	9	8	9	3324	2312	34	34	28	32	37	27	21	27	30
21	9	10	11	8	9	9	11	9	2324	3332	30	38	41	21	27	29	43	29	32
22	6	7	8	9	11	12	11	8	2243	4421	15	18	23	30	45	56	45	21	32
23	9	7	12	9	9	8	7	10	1223	2211	31	19	52	33	27	25	18	34	30
24	8	7	5	3	5	6	5	2	4422	4413	22	19	13	7	11	16	13	4	13
25	3	1	1	4	5	4	8	6	4234	4222	6	2	3	10	11	10	26	15	10
26	5	10	6	7	10	11	7	10	2332	4222	11	36	15	19	35	46	19	39	28
27	6	5	8	6	6	7	6	9	2122	3312	15	13	26	16	14	19	16	30	19
28	7	3	4	9	10	9	8	8	3335	5322	17	6	8	28	38	29	24	23	22
29	7	9	12	10	9	7	5	7	2343	3222	20	27	51	36	28	20	13	17	27
30	4	3	7	8	7	7	5	6	3235	6112	10	7	18	24	20	19	12	16	16
																			28.0

JUNE 1983

	3Ks								σ s		as						As
1	4	11	8	7	4	6	5	4	2212	3114	9	41	26	19	10	16	11	9	18
2	1	4	6	6	6	4	1	3	2222	3221	2	8	14	14	14	10	2	6	9
3	4	3	3	6	1	3	3	3	1114	1235	8	6	6	16	3	6	6	6	7
4	3	1	4	1	0	0	0	2	2141	0103	6	3	10	2	0	1	0	4	3
5	1	3	4	5	5	6	3	2	2222	2311	2	6	10	13	12	16	7	4	9
6	4	2	7	3	5	6	4	7	2112	2214	9	5	17	6	12	15	9	17	11
7	5	6	6	4	1	1	4	0	2322	2132	12	14	15	9	2	2	10	1	8
8	1	2	4	7	6	7	6	6	1223	5325	2	5	10	17	16	20	15	16	13
9	7	6	10	9	7	6	12	9	5142	1355	17	16	35	31	17	16	51	31	27
10	9	10	8	12	14	12	6	4	6343	2432	32	39	23	52	73	55	16	9	37
11	10	9	6	4	5	2	6	2	5522	4342	40	28	15	9	12	5	16	4	16
12	10	10	8	8	5	6	4	7	6453	2422	35	36	21	26	12	15	10	20	22
13	19	21	16	15	11	9	11	8	4547	4245	174	250	110	93	46	28	49	23	97
14	9	9	8	5	7	7	4	7	4521	2515	32	29	24	11	17	18	8	17	20
15	11	9	10	10	7	8	10	4	4432	3223	48	32	34	37	18	24	34	8	29
16	5	3	4	5	5	7	1	4	4122	4414	13	6	9	12	11	19	2	10	10
17	4	4	8	4	6	7	9	7	3223	4214	10	9	23	10	16	19	31	20	17
18	10	12	15	9	9	11	9	12	4222	1424	36	55	87	33	28	44	29	55	46
19	9	10	11	9	8	8	5	6	4540	3233	29	40	41	30	25	21	12	14	27
20	9	9	9	9	10	7	3	5	5214	2213	29	30	27	29	39	18	6	13	24
21	9	10	10	6	6	6	10	9	6333	3334	29	37	34	16	16	16	36	28	27
22	7	7	7	9	12	12	11	8	4304	4244	20	19	19	29	53	52	47	22	33
23	9	9	12	9	9	8	6	7	3434	4244	33	27	54	32	29	21	15	18	29
24	8	7	4	3	4	2	1	0	6434	4121	23	17	8	6	10	5	3	1	9
25	0	0	0	2	0	0	5	4	0112	0111	0	1	1	4	0	1	11	9	3
26	3	8	5	4	6	7	4	6	2432	0113	6	23	12	10	15	17	8	14	13
27	3	4	8	4	3	5	4	4	3151	1133	7	8	21	8	6	13	10	9	10
28	7	1	2	7	5	5	6	6	5221	3205	17	3	4	17	12	13	15	14	12
29	5	8	10	9	7	5	3	4	4232	3223	13	21	35	27	17	12	6	8	17
30	1	2	5	5	4	3	2	4	2112	4122	3	5	13	12	9	6	5	9	8
																			20.4

JULY 1983

	3Kn								σ n		an								An
1	7	5	4	5	5	4	5	5	3332	1132	19	13	10	11	11	10	12	12	12
2	3	5	6	4	7	8	8	7	1442	2342	6	11	15	10	17	25	23	19	16
3	8	6	7	9	5	7	8	8	2143	2232	21	14	20	27	11	17	23	23	20
4	5	5	5	4	7	8	8	8	2132	4333	13	12	11	10	19	23	24	21	17
5	5	4	3	8	6	8	4	3	2323	5322	13	10	7	21	14	22	10	6	13
6	4	7	9	14	8	8	7	8	3225	3221	10	18	29	77	26	24	20	22	28
7	5	5	6	10	10	8	8	10	1242	3224	12	13	14	34	35	24	22	39	24
8	7	6	10	7	7	8	9	10	2213	4422	18	16	34	19	20	26	28	34	24
9	8	11	7	11	7	8	6	8	2343	2224	24	42	17	41	18	21	23	26	27
10	5	7	5	6	4	4	4	3	2423	3221	11	18	13	15	9	8	8	6	11
11	2	2	5	6	4	4	4	7	2124	2221	4	5	11	16	9	10	10	20	11
12	6	3	3	6	10	10	12	11	2224	3332	14	6	6	14	38	38	54	48	27
13	14	11	11	11	10	6	5	7	3124	3321	73	44	43	41	35	14	11	17	35
14	4	7	9	7	7	6	6	4	2333	2212	8	17	28	18	18	15	16	9	16
15	4	6	3	4	5	4	6	7	2042	4233	8	14	7	10	11	9	16	17	12
16	8	9	8	12	13	9	12	10	2345	5442	22	32	25	51	64	27	56	40	40
17	12	11	12	14	10	11	11	11	2244	2225	57	46	53	72	38	42	44	46	50
18	12	11	9	10	9	9	9	9	4321	4423	56	48	30	34	29	32	28	28	36
19	8	7	7	8	6	9	8	7	3233	3422	26	20	19	25	14	29	21	17	21
20	6	8	8	7	5	5	6	7	1135	3323	16	22	22	17	11	13	14	18	17
21	4	7	5	7	5	7	5	5	1312	3222	10	20	12	18	13	18	11	12	14
22	6	3	4	4	3	4	9	13	4253	3112	16	7	10	9	7	9	27	70	19
23	9	10	11	14	9	9	13	11	3235	4563	30	40	43	83	31	33	63	47	46
24	16	14	13	12	16	10	12	10	9355	3223	112	73	68	56	107	40	51	35	68
25	9	12	8	8	8	7	7	6	1433	3222	31	52	24	25	24	18	18	15	26
26	7	7	7	7	8	6	5	6	3333	4321	18	18	18	18	23	14	11	15	17
27	5	5	8	9	6	7	9	10	2232	2313	12	11	21	33	16	17	27	34	21
28	5	6	7	8	7	9	9	9	3443	1422	12	16	18	23	17	31	28	30	22
29	9	13	8	11	8	8	8	9	3223	3432	27	61	24	41	25	24	22	27	31
30	11	10	9	13	9	7	9	11	2344	2222	45	38	30	69	28	17	31	44	38
31	8	7	4	5	7	6	6	5	3452	3613	25	18	10	13	20	14	14	13	16
																			25.0

JULY 1983

	3Ks								σ s		as								As
1	5	4	2	3	2	1	3	3	4321	2214	11	8	4	6	5	3	6	6	6
2	2	1	5	4	4	4	3	4	2123	3102	4	2	11	8	10	9	7	10	8
3	6	4	5	7	1	4	4	4	2112	2224	16	8	13	20	2	8	8	10	11
4	3	4	2	2	3	4	6	2	2422	0221	6	10	5	4	7	8	14	4	7
5	4	3	3	6	3	4	2	0	3222	1211	10	7	7	15	6	9	4	1	7
6	5	6	6	11	9	7	6	7	4301	2443	12	14	15	48	28	18	14	17	21
7	4	5	3	9	8	8	6	10	1420	1146	8	12	7	30	22	21	15	38	19
8	7	7	9	6	6	4	7	7	6531	6235	20	17	29	14	16	10	19	17	18
9	8	11	5	8	4	5	5	8	2424	1117	25	42	12	23	8	12	13	25	20
10	4	6	5	4	0	1	1	1	5523	0222	10	14	12	8	0	3	3	3	7
11	1	0	2	5	2	1	0	3	3032	4213	2	0	5	13	5	3	1	7	5
12	5	0	2	4	8	7	10	9	2124	3132	11	1	5	9	21	17	39	29	17
13	13	11	11	11	8	4	1	3	7433	3123	67	43	49	41	25	8	3	6	30
14	3	4	7	7	4	5	2	1	2333	3311	6	10	18	18	9	11	5	3	10
15	3	5	3	2	1	2	4	5	3443	2123	7	13	6	5	2	5	9	13	8
16	8	9	5	6	8	5	9	9	6443	1254	21	32	13	14	22	12	27	30	21
17	11	11	12	11	9	11	11	13	3445	5343	49	44	52	50	33	41	44	67	48
18	14	12	10	9	7	9	8	8	3530	1023	74	56	37	30	17	30	21	24	36
19	8	7	7	6	5	9	8	6	4321	22*2	24	20	19	16	11	30	22	14	20
20	6	7	8	4	1	2	3	5	2222	3335	15	19	24	9	3	5	7	12	12
21	5	9	6	8	6	5	4	4	3343	3221	12	28	14	21	14	11	8	8	15
22	7	4	4	5	2	2	5	13	6423	5224	20	10	8	11	5	4	12	66	17
23	8	9	10	12	5	10	13	11	2311	2456	21	31	35	59	13	36	67	42	38
24	15	14	14	11	14	10	8	10	7643	2216	91	75	73	47	79	40	23	38	58
25	9	10	8	7	7	6	5	4	2321	1423	29	37	23	17	17	15	13	9	20
26	6	5	5	5	8	4	3	4	1442	3243	14	11	13	12	21	10	6	9	12
27	4	3	6	10	4	4	5	8	3154	2224	9	6	16	34	10	10	11	22	15
28	5	5	6	6	4	7	8	7	3432	1232	12	12	14	14	9	17	25	19	15
29	8	11	8	8	7	7	6	4	5132	2133	22	50	22	25	18	17	15	10	22
30	11	9	8	13	8	6	6	9	6425	2215	47	32	22	61	22	14	16	30	31
31	7	4	4	4	7	4	4	1	3343	5313	19	10	10	10	18	8	8	3	11
																			18.9

an , as INDICES 1983 (continued)

AUGUST 1983

	3Kn								σ n		an						An
1	3	6	7	4	4	2	4	8	3133	3433	6	14	19	8	8	5	10	21	11
2	11	11	15	11	13	10	11	10	1335	2331	49	49	92	41	70	40	46	37	53
3	10	9	5	7	9	9	11	10	3323	0442	35	28	12	17	29	29	45	37	29
4	6	8	5	3	3	3	4	6	4423	5331	14	21	11	7	7	7	10	15	12
5	3	1	2	1	1	2	2	5	2242	1332	7	2	5	2	2	4	5	12	5
6	3	7	2	4	8	7	7	6	1222	4423	6	20	4	8	21	17	20	15	14
7	3	3	7	6	7	6	13	16	2242	2332	7	6	20	14	19	15	63	108	32
8	18	20	18	12	8	7	4	8	3664	3232	161	208	148	60	26	18	9	24	82
9	12	9	7	7	8	6	4	5	2343	4123	54	31	19	17	21	15	10	11	22
10	4	8	4	6	6	2	2	4	3553	3222	9	22	8	14	15	4	4	10	11
11	5	4	3	6	5	5	8	5	1243	2221	12	10	6	16	13	12	24	11	13
12	8	12	11	9	11	10	14	12	3432	3432	21	51	44	28	47	36	76	51	44
13	12	11	13	14	10	6	9	11	3223	2223	54	43	61	72	37	15	28	42	44
14	8	6	7	6	7	8	8	7	2244	2323	26	14	18	15	20	23	22	18	20
15	8	7	6	9	7	10	4	7	3354	3415	25	19	14	28	18	40	10	19	22
16	3	0	0	1	5	5	7	7	2102	2234	6	1	0	3	12	13	19	17	9
17	5	5	5	6	4	4	5	7	2333	2221	13	12	12	14	10	9	11	19	13
18	3	1	1	1	2	1	0	4	3122	1212	6	3	2	2	5	2	0	10	4
19	0	0	1	8	10	10	8	8	1132	3312	1	1	3	23	40	38	21	21	19
20	3	8	5	6	7	8	10	9	1432	4353	7	24	12	15	20	22	38	27	21
21	12	8	11	14	11	11	10	11	6246	2342	52	23	50	78	41	49	39	46	47
22	5	5	7	8	7	8	12	8	2123	3232	12	12	17	26	20	23	59	22	24
23	9	16	13	11	11	10	13	9	2543	2552	28	112	64	46	41	34	62	33	53
24	10	12	11	13	9	9	10	10	3433	1234	34	51	42	63	31	32	34	39	41
25	15	12	14	13	11	9	13	9	5424	5043	96	53	85	68	50	29	62	29	59
26	13	13	9	10	9	12	12	5	5422	2262	66	64	31	38	33	54	56	12	44
27	7	1	1	2	6	6	4	3	3112	1322	18	2	2	5	15	16	9	6	9
28	6	5	5	9	6	4	7	5	4333	4141	14	13	11	27	16	9	18	13	15
29	7	5	4	8	9	10	12	14	6233	2323	17	12	10	25	32	34	51	80	33
30	12	11	11	8	8	8	8	9	2244	1223	57	45	42	24	21	23	24	32	34
31	13	11	11	9	8	13	11	11	2243	3332	69	43	50	29	23	63	42	49	46
																			28.5

AUGUST 1983

	3Ks								σ s		as						As
1	0	5	6	2	3	1	4	4	1343	4323	1	11	16	4	7	2	8	10	7
2	11	10	13	9	12	9	13	10	4231	4335	48	39	65	28	57	33	70	34	47
3	10	8	4	5	7	8	9	10	5233	2133	38	22	9	11	20	23	33	40	25
4	6	7	4	2	1	7	7	4	2422	3992	16	18	8	5	3	19	20	8	12
5	3	1	1	0	0	0	2	2	2121	1142	7	3	3	1	1	1	4	5	3
6	2	6	0	1	4	4	6	2	2211	2342	4	15	1	3	8	9	15	5	8
7	3	3	6	5	4	3	9	16	3302	2318	6	7	15	13	9	6	28	108	24
8	16	18	16	12	6	4	2	4	5762	2022	117	163	112	52	16	9	4	8	60
9	11	9	5	5	6	4	0	2	3322	1412	50	28	13	13	14	8	1	5	17
10	2	6	4	5	4	1	1	2	2541	1212	5	15	8	11	8	3	2	4	7
11	4	4	2	3	5	2	5	3	1223	5223	8	10	4	7	13	5	12	7	8
12	7	10	10	10	9	8	11	11	4533	2415	17	40	34	35	28	25	48	47	34
13	10	11	11	12	11	5	8	12	3230	3235	39	42	50	54	44	12	21	54	40
14	11	5	6	3	7	7	7	5	4111	4233	43	12	14	7	18	19	19	12	18
15	9	6	4	8	5	10	3	6	3313	1235	32	14	9	26	13	37	7	16	19
16	4	0	0	1	3	5	6	5	3202	1123	9	1	0	2	7	13	14	12	7
17	5	4	4	4	2	1	1	5	2112	3213	12	8	9	10	5	2	3	12	8
18	2	2	0	0	1	0	0	0	2200	2101	4	4	0	0	3	1	0	1	2
19	0	1	1	6	9	9	6	5	2311	4423	1	3	2	16	29	29	15	13	14
20	3	9	4	6	7	8	9	9	3314	3244	7	28	10	16	19	22	31	28	20
21	12	9	11	13	11	11	9	10	7254	3333	52	27	41	61	44	47	28	38	42
22	5	5	8	8	6	7	13	7	1223	2223	13	13	21	26	15	17	66	20	24
23	8	15	12	11	9	10	11	7	5432	0222	21	103	54	46	30	37	41	19	44
24	9	11	10	12	10	7	10	11	5313	3335	31	44	36	58	34	20	38	43	38
25	13	11	14	13	10	10	12	7	4434	2352	63	47	71	62	39	35	57	19	49
26	10	11	8	10	8	10	11	3	4444	2331	40	46	26	38	24	38	43	7	33
27	5	1	0	0	4	5	3	1	6211	3102	12	2	1	1	10	13	7	3	6
28	5	4	5	7	5	2	5	4	3243	2143	11	10	12	19	11	5	13	9	11
29	5	4	4	8	6	9	11	12	5323	1334	12	10	10	22	16	28	43	54	24
30	13	9	10	8	7	8	7	9	3223	2221	62	31	35	22	17	24	18	31	30
31	13	10	10	8	8	13	11	12	1223	2314	64	40	39	2	2	6	41	5	44
																			23.4

SEPTEMBER 1983

	3Kn								σ n		an								An
1	12	12	5	7	7	7	8	8	4422	1325	55	59	11	20	17	17	26	26	29
2	7	5	4	4	3	6	6	8	3324	1324	17	11	9	10	7	15	14	22	13
3	4	7	7	3	5	6	4	2	2321	2422	10	17	20	7	12	15	9	5	12
4	1	0	1	3	1	2	5	6	3112	3432	3	1	3	6	3	5	12	14	6
5	4	2	0	0	4	4	5	5	3101	1443	10	4	0	1	8	9	11	13	7
6	6	6	4	3	4	4	6	5	3532	2324	16	16	8	7	8	9	15	11	11
7	4	6	7	10	12	14	11	9	3231	1553	10	15	19	37	56	78	46	28	36
8	5	4	11	12	10	8	10	9	4344	1422	13	9	43	53	34	25	35	32	31
9	8	7	7	7	8	9	11	10	1333	2211	24	20	19	20	24	29	41	38	27
10	8	6	6	7	7	9	9	7	2222	1422	26	14	15	17	17	32	30	20	21
11	9	6	5	7	8	8	9	7	1243	2441	29	14	13	20	23	26	31	17	22
12	7	9	11	9	11	4	4	6	2351	5221	17	30	47	32	49	8	9	16	26
13	8	4	6	6	8	7	5	8	1234	4324	23	10	16	15	26	19	11	23	18
14	4	4	5	3	5	8	5	7	2223	2642	10	10	13	6	11	24	13	17	13
15	9	6	9	9	7	13	13	12	2222	2637	30	14	28	28	19	69	65	60	39
16	8	10	11	13	13	14	12	9	4437	7523	24	35	46	64	68	79	52	30	50
17	11	13	13	10	8	10	9	8	2214	2642	50	66	61	36	21	39	27	23	40
18	8	7	7	5	5	7	9	10	2333	3544	22	17	20	12	12	18	33	34	21
19	13	12	11	12	13	13	15	16	1414	4545	62	60	42	56	69	70	103	117	72
20	11	11	9	10	12	11	9	7	2522	4653	50	46	29	37	53	4l	29	20	38
21	9	6	8	5	8	9	5	8	3124	6532	29	16	26	11	25	33	13	23	22
22	8	8	9	11	6	5	4	7	4222	4222	26	21	31	44	16	11	8	18	22
23	3	3	1	4	5	4	3	3	1314	3400	6	6	2	10	11	8	6	6	7
24	8	3	3	5	8	8	5	7	3314	2322	21	6	7	12	23	24	12	20	16
25	11	10	9	9	11	15	12	11	3222	2651	50	36	32	29	44	88	54	49	48
26	12	14	14	10	9	6	7	7	3252	3322	59	71	76	37	31	16	19	18	41
27	11	7	7	7	8	6	7	9	2334	2326	44	17	19	20	24	16	19	33	24
28	12	8	3	3	8	8	6	7	2232	5312	51	21	6	6	26	23	14	17	21
29	9	8	4	7	3	3	4	4	5213	1122	33	26	8	17	6	7	8	10	14
30	3	1	2	3	3	1	4	4	1124	1232	7	2	4	7	7	3	8	9	6
																			25.1

SEPTEMBER 1983

	3Ks								σ s		as								As
1	12	12	4	6	6	4	7	8	5230	2233	52	55	10	15	15	10	19	24	25
2	5	6	3	3	2	5	4	5	3212	2224	13	14	6	6	4	12	10	12	10
3	6	7	6	0	2	5	4	0	3421	2320	15	17	15	1	4	11	8	0	9
4	1	0	2	1	0	1	3	4	2112	0232	3	1	5	2	0	2	7	9	4
5	5	1	0	0	1	1	4	4	5200	2244	11	3	0	0	2	3	8	10	5
6	6	6	4	2	3	3	4	3	3633	1024	15	15	9	5	6	7	9	7	9
7	4	6	6	8	10	10	9	7	1104	3415	8	16	15	23	35	37	31	20	23
8	5	5	9	9	8	7	7	7	5442	2232	13	11	28	33	24	19	19	19	21
9	9	7	6	6	5	6	10	9	2202	4123	29	17	15	14	13	16	35	28	21
10	10	5	5	5	5	8	8	7	3222	2244	35	13	11	12	12	24	26	19	19
11	8	5	4	7	7	7	8	5	2433	2233	25	12	10	17	18	20	25	13	18
12	6	8	10	10	11	4	3	6	1244	4324	16	25	34	36	42	9	6	14	23
13	8	4	5	5	8	5	3	8	3133	3225	21	9	13	11	22	12	7	26	15
14	4	4	5	2	3	7	4	4	3222	3313	10	8	11	4	6	19	8	10	10
15	9	5	9	8	7	14	13	11	1232	1225	32	12	29	25	17	83	64	44	38
16	8	9	10	12	11	12	10	8	2325	3323	21	28	40	54	45	51	34	26	37
17	10	12	12	10	6	9	7	7	3212	3323	37	56	52	37	16	32	17	17	33
18	8	5	6	4	3	5	9	9	3122	0333	21	13	15	9	7	12	28	29	17
19	11	12	10	11	11	11	16	16	5323	3337	45	57	39	41	47	47	106	105	61
20	11	10	8	8	9	9	7	5	2521	3343	46	38	25	25	32	33	18	11	29
21	8	6	8	5	8	8	4	7	2322	2224	22	15	24	12	24	24	8	18	18
22	7	8	9	10	7	4	3	4	3425	5215	20	26	27	40	18	9	6	10	20
23	2	2	2	4	4	4	3	4	3322	2214	4	5	4	10	8	9	6	8	7
24	6	3	3	5	9	9	4	6	1204	3111	16	7	7	13	27	27	9	14	15
25	13	10	9	9	10	14	11	12	6513	3154	69	37	28	27	38	82	42	52	47
26	12	13	13	11	10	7	7	8	3233	4221	53	65	64	42	38	19	18	21	40
27	12	6	7	7	8	7	7	9	4232	2123	51	16	19	19	24	18	17	29	24
28	12	7	3	3	8	7	5	7	5422	3325	54	19	6	6	23	19	11	20	20
29	8	8	2	7	1	2	3	4	4425	2322	24	24	4	18	3	5	7	8	12
30	3	0	0	2	2	1	2	5	3112	4223	6	1	1	4	4	3	4	12	4
																			21.1

OCTOBER 1983

	3Kn								σ n		an								An
1	5	4	3	5	4	11	9	12	3222	2527	12	9	7	12	10	45	27	51	22
2	10	12	12	9	9	10	9	9	3652	1455	35	51	54	30	31	34	28	33	37
3	7	8	11	11	11	7	6	11	2234	6423	18	21	41	50	48	20	16	45	32
4	10	7	11	14	17	18	10	8	3345	5322	34	20	47	82	146	169	37	24	70
5	5	4	6	6	8	4	4	8	2222	3211	12	10	15	15	21	9	10	22	14
6	8	7	8	9	10	13	11	10	2342	2442	24	19	25	33	37	68	47	39	37
7	6	10	7	6	5	8	6	7	2332	3323	16	35	18	16	11	22	14	20	19
8	7	6	8	7	8	13	9	6	2222	3441	18	16	22	17	21	62	33	16	26
9	6	4	4	1	5	5	3	4	4332	3222	14	8	10	2	11	11	6	9	9
10	2	3	5	4	4	7	10	5	1112	2363	4	6	13	9	10	17	37	13	14
11	3	6	7	4	5	5	3	1	2132	3322	7	14	18	10	13	12	7	2	10
12	1	2	2	4	3	3	6	8	2222	1343	3	4	4	10	7	7	14	21	9
13	13	11	11	13	11	13	9	10	2326	4644	64	50	41	70	41	68	28	37	50
14	9	6	8	8	10	10	13	15	4113	3554	28	15	24	26	35	38	64	92	40
15	10	10	8	13	11	8	11	9	5635	5263	37	40	21	68	46	21	44	28	38
16	5	12	6	5	9	8	9	9	2532	5156	12	55	15	12	27	26	30	27	26
17	5	8	14	15	15	14	15	15	4236	4454	12	22	75	95	89	78	89	99	70
18	15	12	14	15	14	15	14	7	4453	4962	92	51	73	88	81	89	85	19	72
19	7	7	7	8	3	7	4	1	2424	2313	17	18	20	22	7	17	8	3	14
20	1	5	3	6	2	4	7	7	2223	1154	2	12	7	14	5	9	20	18	11
21	4	2	8	9	9	11	10	11	2233	2432	8	5	26	31	33	43	34	44	28
22	12	11	8	8	9	6	7	8	5514	1144	55	41	23	26	31	14	18	21	29
23	5	5	7	9	11	11	14	13	3126	4453	13	13	17	27	45	42	75	67	37
24	12	7	7	11	10	11	12	7	1226	2342	56	20	18	43	37	41	53	19	36
25	5	4	3	3	6	6	3	6	3204	1324	12	10	6	7	16	14	6	15	11
26	0	3	3	2	1	2	0	0	2122	2311	1	7	7	4	3	4	1	1	4
27	0	0	1	0	1	3	5	0	1122	2332	1	1	2	1	3	6	11	1	3
28	5	1	0	0	1	6	7	14	3211	1212	13	2	1	1	2	16	18	73	16
29	11	10	13	14	14	10	12	11	2254	4343	48	35	66	73	76	36	54	44	54
30	10	8	10	8	9	13	12	5	3352	3883	37	26	39	21	31	65	52	11	35
31	6	4	7	8	9	8	3	8	5232	3314	15	10	18	24	30	21	7	22	18
																			28.7

OCTOBER 1983

	3Ks								σ s		as								As
1	4	4	3	6	4	10	8	10	3312	2413	8	10	7	16	8	36	23	38	18
2	8	11	12	9	9	10	9	9	3631	0233	23	41	52	28	30	37	28	29	34
3	8	7	10	11	9	7	6	9	2323	4325	24	20	40	42	30	19	15	30	28
4	9	8	11	14	17	17	10	8	3223	6442	30	24	44	85	128	137	40	24	64
5	5	6	6	8	6	3	4	8	2123	3333	13	16	15	22	14	6	9	22	15
6	9	7	8	10	10	13	11	9	4211	4353	32	18	22	34	36	63	41	29	34
7	8	10	7	7	5	7	5	8	2331	2214	24	35	20	17	11	17	12	21	20
8	7	7	7	7	7	12	10	7	2423	3421	18	17	17	20	20	55	34	17	25
9	9	4	4	2	4	4	3	4	4131	4322	27	8	8	4	8	9	7	8	10
10	2	4	5	5	3	6	9	3	1222	1233	4	9	12	12	7	14	33	7	12
11	5	5	6	4	6	5	2	0	2331	1221	11	13	15	9	14	13	4	1	10
12	2	3	2	4	3	4	6	8	1022	2115	4	7	5	10	7	8	14	21	10
13	13	14	11	12	10	12	8	10	5224	3322	67	82	44	53	36	56	25	39	50
14	8	7	9	7	9	9	12	12	2202	3254	22	18	30	18	28	30	57	54	32
15	8	10	7	11	10	7	10	6	5323	3423	25	36	19	41	35	17	38	16	28
16	7	9	5	6	7	7	8	7	4531	4322	18	32	12	15	19	17	21	20	19
17	5	8	13	14	13	13	13	14	4222	4325	12	22	61	73	65	63	69	86	56
18	14	11	14	13	14	14	15	8	4343	3552	76	50	80	70	75	79	97	22	69
19	7	6	7	7	1	3	4	2	2233	2422	20	15	19	17	3	7	8	4	12
20	3	6	4	6	2	4	7	6	1322	2133	6	14	9	14	4	8	18	14	11
21	4	4	8	0	8	9	9	0	423	241	0	9	6	6	26	33	3	5	6
22	13	9	7	8	8	6	7	7	5432	2214	65	33	19	26	23	15	18	17	27
23	5	6	6	10	11	9	13	12	3214	4231	12	14	14	36	45	28	70	51	34
24	11	10	6	10	10	10	12	8	4114	2143	50	34	16	39	34	36	55	21	36
25	5	4	3	3	6	7	4	5	3213	1213	13	10	7	7	16	17	8	12	11
26	1	4	3	3	1	2	0	1	1212	1113	3	9	7	7	2	5	1	2	5
27	0	1	2	0	1	2	5	0	1211	2221	1	3	5	1	3	4	11	1	4
28	6	1	0	1	0	7	8	14	2001	0124	15	3	0	2	0	18	22	82	18
29	10	11	12	14	13	10	13	11	3222	3453	38	44	54	73	62	34	65	44	52
30	9	7	8	6	8	11	10	5	3221	3522	29	20	24	16	22	43	40	11	26
31	6	4	7	8	8	6	4	6	2243	3215	15	10	18	22	21	14	8	15	15
																			26.2

an , as INDICES 1983 (continued)

NOVEMBER 1983

	3Kn								σ n		an								An
1	11	10	5	11	10	5	9	11	4425	2335	42	39	12	48	39	11	33	45	34
2	11	14	13	13	11	9	8	8	5224	1323	42	85	68	61	44	32	23	26	48
3	8	5	4	6	9	14	12	8	1323	1353	26	12	10	15	28	85	57	25	32
4	5	4	2	5	8	6	2	4	3311	4533	11	9	5	11	23	16	5	10	11
5	2	2	2	3	2	1	2	2	2112	2122	5	5	5	7	4	2	4	5	5
6	0	1	0	2	4	4	4	2	1213	2223	1	2	1	5	8	8	8	5	5
7	1	4	3	7	9	9	10	11	1133	4334	2	8	6	19	31	33	36	45	23
8	14	8	10	14	12	11	9	10	2236	3525	71	26	35	76	55	45	30	34	47
9	11	12	8	12	12	13	19	13	2526	3765	42	58	24	56	59	69	180	69	70
10	13	10	9	10	12	13	15	11	3354	6573	63	34	33	35	56	65	97	41	53
11	11	6	7	14	14	11	17	14	3233	2214	48	16	18	77	77	42	128	79	61
12	10	11	15	12	17	12	14	11	3234	8775	36	49	101	60	121	54	79	46	68
13	5	8	10	13	13	11	12	11	3456	7375	12	24	34	61	63	47	56	48	43
14	2	9	11	11	14	15	11	7	3512	5433	4	27	49	42	82	98	50	18	46
15	7	7	7	8	11	12	13	12	2203	2544	20	20	19	24	41	57	62	60	38
16	13	8	9	7	11	15	12	13	5132	3543	61	24	33	20	41	87	54	69	49
17	12	11	9	17	12	13	12	10	3514	6543	56	49	27	135	55	67	56	38	60
18	13	14	6	10	10	12	11	7	4523	4432	64	80	14	36	39	58	49	20	45
19	10	9	8	6	8	8	9	10	1231	4345	36	28	22	15	25	25	30	38	27
20	10	8	10	12	12	11	12	9	3324	2443	37	22	37	54	51	49	60	28	42
21	8	4	2	2	4	9	10	6	2421	2564	21	9	5	4	9	32	34	14	16
22	5	5	6	4	2	2	4	3	3221	2231	13	11	15	9	4	4	8	6	9
23	1	1	1	0	0	0	1	0	2231	0122	3	3	3	1	0	1	3	1	2
24	3	5	8	9	8	9	11	4	5344	5352	7	12	25	28	23	28	43	9	22
25	7	9	8	9	8	7	10	11	3424	3563	19	30	22	29	26	18	36	47	28
26	12	10	12	6	9	8	11	5	4142	4363	54	37	53	16	27	25	44	12	34
27	0	4	5	9	9	7	4	3	0155	4432	0	8	12	29	27	17	10	7	14
28	3	3	2	5	10	13	12	8	2223	3353	6	7	5	13	36	62	58	26	27
29	10	9	6	13	11	9	10	11	3223	3355	37	28	15	62	45	27	37	42	37
30	11	7	8	9	10	11	13	8	5221	2352	42	18	25	27	38	47	70	22	36
																			34.4

NOVEMBER 1983

	3Ks								σ s		as								As
1	9	8	5	10	9	4	9	11	5314	3245	27	21	12	38	31	8	33	48	27
2	10	14	14	13	11	9	9	8	2225	2213	34	80	84	63	46	29	28	23	48
3	7	5	4	6	9	14	11	7	2112	2233	20	12	8	14	31	76	47	20	29
4	5	5	1	6	6	5	2	5	2122	2123	12	11	3	14	15	12	5	13	11
5	2	3	3	2	2	1	1	1	3102	2122	5	6	7	5	4	2	3	2	4
6	1	1	0	2	4	4	4	2	1212	1112	3	2	1	4	10	8	8	5	5
7	2	5	3	8	9	9	9	11	1232	1114	4	13	7	26	31	31	31	42	23
8	13	8	9	11	11	9	8	9	3202	5431	62	25	30	50	50	30	26	31	38
9	8	11	8	11	11	12	18	11	5622	2252	25	44	24	41	45	52	149	49	54
10	10	8	9	7	10	11	13	9	1252	6352	35	21	30	20	35	43	61	29	34
11	11	8	9	14	13	10	17	14	2212	0434	46	26	28	75	67	39	134	86	63
12	10	12	14	13	13	9	14	11	5121	8487	39	52	83	65	70	29	78	48	58
13	5	8	8	11	10	10	11	9	1432	3343	13	26	25	45	36	36	44	30	32
14	2	7	10	11	12	13	9	7	2323	3413	4	19	40	41	55	69	27	20	34
15	8	8	9	9	10	12	13	11	2212	0474	22	24	27	31	38	51	64	42	37
16	12	8	10	6	10	14	12	12	5231	3143	57	23	34	16	38	77	59	55	45
17	13	10	9	14	10	11	12	10	3413	1363	62	34	27	82	34	48	53	39	47
18	11	12	6	8	9	11	10	8	2422	1212	43	54	14	26	32	50	34	24	35
19	11	7	6	5	8	8	9	11	2231	1223	41	20	14	12	23	21	29	46	26
20	9	7	11	11	10	10	11	9	2152	2234	29	17	43	42	34	34	47	28	34
21	6	3	3	2	4	8	8	4	2322	1444	16	7	6	5	8	23	24	10	12
22	6	5	7	4	2	2	3	2	2232	2332	15	12	18	10	4	4	7	5	9
23	2	2	1	0	0	0	3	1	2220	0133	5	4	3	0	0	1	6	3	3
24	4	5	8	9	7	9	9	5	4235	2112	8	12	26	31	18	28	33	12	21
25	8	8	8	9	8	7	8	11	2233	3423	23	26	24	28	22	17	22	47	26
26	9	9	8	6	8	8	9	4	5121	1432	33	32	26	16	25	23	33	9	25
27	2	5	5	7	8	5	5	4	2222	2122	4	11	12	18	23	13	13	8	13
28	5	6	4	6	11	13	13	9	3132	2253	13	14	8	14	41	62	69	28	31
29	11	7	8	14	11	7	9	10	3212	1223	44	20	22	78	42	19	31	39	37
30	12	8	8	9	11	10	11	7	2131	3232	57	25	21	28	41	35	46	19	34
																			29.8

DECEMBER 1983

	3Kn								σ n		an								An
1	8	7	6	8	7	7	9	9	2223	2444	24	20	16	22	17	20	30	30	22
2	5	5	5	5	8	7	5	3	2225	4422	11	12	13	13	21	17	12	6	13
3	2	1	0	0	4	4	3	6	2211	3415	4	3	1	1	9	8	7	14	6
4	0	3	3	1	3	6	4	4	0432	1241	0	6	7	3	6	16	9	10	7
5	7	8	9	9	9	11	9	9	2366	4654	18	21	29	29	30	44	32	33	30
6	9	10	10	13	14	10	13	10	3246	3484	30	38	38	67	85	36	61	38	49
7	8	11	11	11	11	12	13	11	4325	4655	26	43	42	46	49	59	62	45	47
8	10	7	7	5	9	4	8	8	3332	5263	38	17	17	13	32	9	24	25	22
9	5	3	1	0	1	1	1	0	3231	2211	13	7	3	1	2	3	3	1	4
10	0	8	11	10	12	11	12	7	1321	5693	1	26	45	34	55	43	60	19	35
11	8	7	9	10	17	15	12	11	3333	4354	21	20	30	37	138	91	53	48	55
12	10	7	7	11	14	12	11	9	3223	4574	35	20	20	41	75	53	46	30	40
13	10	9	7	10	10	9	12	12	2132	4444	36	31	18	40	34	32	53	57	38
14	9	9	9	10	9	10	12	11	2334	3353	29	32	33	35	33	36	55	44	37
15	10	8	10	9	9	8	6	9	2355	5414	36	26	36	31	31	22	14	31	28
16	7	4	2	4	2	1	4	4	2112	3313	20	9	5	10	5	2	8	9	9
17	4	3	0	2	6	6	7	5	4211	4433	8	6	1	5	15	14	18	12	10
18	3	1	0	1	6	9	8	7	1202	2244	7	2	0	2	15	30	26	19	13
19	8	7	7	6	4	6	7	5	3332	2254	23	20	17	16	9	14	17	13	16
20	7	5	1	1	0	1	3	4	4312	1144	19	11	2	2	1	2	6	10	7
21	2	2	0	0	2	5	3	3	2311	2434	4	5	0	0	5	11	6	6	5
22	7	7	6	12	8	10	8	7	3444	3653	18	19	16	52	26	40	21	17	26
23	6	8	8	6	10	6	9	4	3343	7365	15	22	21	15	38	16	28	10	21
24	4	1	3	5	13	12	9	10	5313	2335	8	3	6	12	67	59	33	40	29
25	10	6	5	9	10	8	9	6	5234	4465	34	15	12	30	35	21	32	14	24
26	6	8	5	6	6	8	12	11	4233	2364	14	21	11	16	14	23	54	46	25
27	11	7	4	6	7	8	10	9	5222	4344	47	18	10	14	20	22	40	28	25
28	8	7	7	8	10	6	6	6	2311	4234	22	17	18	26	37	14	14	15	20
29	9	4	8	8	9	5	2	3	4344	3313	28	10	25	23	29	13	5	6	17
30	6	9	12	13	12	16	13	8	4251	4544	16	31	52	64	55	115	66	24	53
31	8	10	8	9	9	14	13	12	3322	1554	23	37	24	33	31	83	62	55	44
																			25.1

DECEMBER 1983

	3Ks								σ s		as								As
1	8	8	7	7	5	7	9	8	2123	2334	26	22	20	19	13	19	30	24	22
2	7	7	6	4	7	7	6	5	1132	2333	17	17	16	10	20	20	14	11	16
3	3	2	1	0	4	3	3	4	2131	3214	6	5	3	0	10	6	6	8	6
4	1	4	4	2	3	7	2	6	2322	1225	2	9	8	4	6	17	5	15	8
5	9	9	9	9	8	10	10	9	3242	1242	31	32	28	30	25	34	34	27	30
6	8	10	10	12	12	9	11	10	2121	3123	22	35	34	52	60	27	43	37	39
7	9	10	9	10	11	11	11	10	2124	3533	27	34	27	40	44	48	49	34	38
8	7	7	5	5	8	4	5	8	3133	3444	19	17	13	11	22	10	13	24	16
9	7	5	3	1	2	1	3	1	3211	1121	19	11	6	3	4	3	7	2	7
10	3	10	10	10	11	10	11	7	4243	2452	7	37	38	39	41	37	50	18	33
11	7	7	10	13	16	12	12	10	1223	2332	17	18	37	65	116	56	51	40	50
12	9	7	8	10	13	10	9	8	2321	4132	28	20	26	35	62	35	30	26	33
13	10	9	8	11	9	10	11	12	1012	1425	34	30	24	45	28	37	41	53	37
14	9	8	10	10	10	8	13	12	1132	3366	31	25	39	40	36	26	69	57	40
15	10	8	8	8	8	6	5	7	4133	2323	40	22	23	25	24	16	12	20	23
16	6	4	2	4	2	0	3	3	1331	2123	14	10	5	8	4	1	7	6	7
17	5	5	3	4	5	5	5	6	3252	1112	11	11	7	9	13	12	13	16	12
18	4	1	0	3	7	9	8	8	1212	4042	8	3	1	6	17	30	24	24	14
19	9	8	8	8	5	7	6	4	4222	1333	27	22	25	21	13	20	16	8	19
20	8	5	1	2	1	0	2	4	2332	2114	23	13	3	5	2	1	5	9	8
21	4	1	2	1	2	4	3	4	2143	3121	9	3	4	3	5	8	6	8	6
22	7	8	6	10	6	9	5	6	2223	4022	17	25	15	36	16	30	12	15	21
23	8	7	7	5	8	6	8	4	2222	2222	21	18	19	12	24	14	21	8	17
24	4	3	6	7	12	11	8	9	4312	4234	8	7	14	20	56	47	25	32	26
25	8	7	5	6	8	7	8	4	1223	5331	26	18	12	16	21	17	22	9	18
26	5	6	8	7	8	7	11	11	1131	1464	12	16	21	20	21	20	47	50	26
27	11	7	4	5	7	8	11	9	5122	3333	48	18	10	12	20	21	41	29	25
28	8	7	9	8	9	5	4	6	2131	3224	22	17	27	25	32	11	10	14	20
29	8	5	8	8	8	5	3	2	3312	2222	23	12	25	22	24	11	7	5	16
30	5	11	13	11	13	15	11	8	3432	2333	11	48	63	42	61	93	47	25	9
31	8	10	9	9	9	13	12	11	2232	0353	24	38	32	29	30	69	57	49	41
																			23.3

am INDICES 1983

JANUARY 1983

	3Km								ΣKm	am							Am	Am2
1	5	8	5	4	5	7	9	8	17.0	13	21	13	9	12	20	28	22	17	14
2	5	8	7	5	9	6	6	6	17.3	11	22	17	13	29	15	16	16	17	18
3	5	4	8	8	11	8	5	5	18.0	12	10	25	24	49	24	13	13	21	19
4	4	4	6	8	9	6	7	7	17.0	10	8	14	26	32	15	20	19	18	17
5	2	1	5	6	9	7	3	2	11.7	5	3	11	16	28	17	6	4	11	12
6	1	2	4	2	3	4	3	3	7.3	3	4	8	5	6	8	7	7	6	8
7	4	4	2	4	4	3	2	3	8.7	8	8	4	9	10	7	5	7	7	8
8	4	6	4	5	10	5	9	8	17.0	8	14	8	13	34	12	27	21	17	15
9	7	6	7	8	6	15	10	12	23.7	20	15	17	25	14	97	38	53	35	67
10	19	21	19	14	11	10	7	8	36.3	193	250	177	85	48	38	18	21	104	69
11	3	7	9	6	6	7	7	14	19.7	6	18	32	14	16	17	19	80	25	30
12	12	11	9	8	9	7	7	6	23.0	59	41	32	25	31	19	18	15	30	27
13	7	7	6	0	4	8	8	8	16.0	19	17	15	1	10	25	21	21	16	16
14	4	5	5	4	8	5	7	9	15.7	10	12	12	9	24	12	18	27	16	19
15	10	7	9	8	10	14	12	9	26.3	36	20	27	23	36	71	59	30	38	34
16	8	11	9	12	11	11	12	6	26.7	22	48	33	56	47	50	58	16	41	40
17	9	7	8	11	14	10	12	12	27.7	28	19	24	43	79	36	56	52	42	43
18	11	9	9	14	12	10	11	11	29.0	44	33	30	76	54	40	49	47	47	43
19	6	8	8	9	11	9	7	7	21.7	15	24	24	27	47	33	20	18	26	31
20	9	7	8	8	4	5	9	6	18.7	29	18	21	24	10	12	31	15	20	22
21	7	8	6	4	8	7	9	5	18.0	18	24	14	10	26	17	33	11	19	17
22	4	4	8	7	7	4	5	4	14.3	8	10	22	17	19	10	12	9	13	14
23	2	5	4	4	4	3	9	10	13.7	4	13	8	8	8	7	27	38	14	16
24	7	9	7	7	9	10	11	13	24.3	19	29	18	20	31	34	48	67	33	28
25	8	8	7	9	8	9	10	7	22.0	24	23	20	29	23	29	40	18	26	29
26	7	6	7	9	10	9	8	4	20.0	17	14	18	32	37	27	22	8	22	22
27	5	7	7	5	4	6	9	4	15.7	12	17	20	12	10	15	32	8	16	15
28	2	0	5	3	8	9	8	11	15.3	4	0	11	6	22	31	26	44	18	17
29	8	7	4	6	10	14	10	7	22.0	22	18	8	14	40	77	39	20	30	30
30	6	8	9	12	11	9	6	9	23.3	15	24	30	56	43	27	14	27	30	30
31	8	8	5	5	9	8	9	7	19.7	24	24	12	11	31	21	28	19	21	22
																		25.7	

FEBRUARY 1983

	3Km								ΣKm	am							Am	Am2
1	5	8	7	6	8	8	8	3	17.7	13	22	18	16	24	24	23	6	18	16
2	1	1	1	2	2	8	5	7	9.0	3	3	2	4	4	23	11	20	9	13
3	7	7	7	2	6	2	6	7	14.7	17	17	17	4	14	5	15	19	14	14
4	4	6	6	7	5	22	21	15	28.7	8	16	14	18	13	302	284	93	94	100
5	19	21	19	20	20	18	18	16	50.3	175	246	176	204	206	148	163	119	180	153
6	16	13	13	13	14	14	5	4	30.7	112	69	67	66	79	78	13	8	62	85
7	9	10	14	15	16	16	7	10	32.3	29	40	76	92	105	115	20	39	65	53
8	12	11	11	7	7	5	3	6	20.7	56	44	41	18	20	11	6	15	26	34
9	6	6	4	8	12	9	12	11	22.7	14	15	8	22	52	27	59	44	30	28
10	12	11	7	11	9	7	8	5	23.3	51	44	18	46	28	19	24	13	30	31
11	2	3	6	11	14	8	14	12	23.3	4	7	14	49	71	24	86	52	38	35
12	9	7	10	15	15	11	10	7	28.0	30	20	35	87	95	44	34	19	46	50
13	10	9	12	14	13	10	12	11	30.3	39	33	57	78	67	35	51	47	51	50
14	11	10	14	10	9	10	8	13	28.3	48	38	71	36	27	37	25	67	44	43
15	8	10	10	10	13	12	11	9	27.7	24	38	40	34	67	57	45	27	42	41
16	10	13	10	11	11	13	9	10	29.0	35	62	36	41	46	66	33	36	44	40
17	7	8	6	9	10	10	10	7	22.3	20	25	16	28	35	35	34	20	27	31
18	9	7	8	8	8	6	7	5	19.3	32	20	26	23	24	16	19	11	21	23
19	2	7	9	7	8	7	3	10	17.7	4	20	29	19	25	17	7	36	20	24
20	11	11	10	11	12	14	15	16	33.3	44	42	34	41	59	72	93	113	62	48
21	11	13	9	11	12	13	11	14	31.3	41	63	33	49	55	64	45	74	53	55
22	13	8	8	8	7	4	11	9	22.7	62	21	21	22	17	10	41	27	28	34
23	9	9	5	4	5	10	9	11	20.7	31	32	11	8	13	38	32	44	26	23
24	7	8	6	6	9	11	11	5	21.0	17	21	14	14	30	43	46	12	25	22
25	2	4	2	5	4	8	6	4	11.7	5	9	5	12	10	25	14	8	11	15
26	4	1	2	4	1	6	4	5	9.0	10	2	4	9	3	14	10	11	8	10
27	3	3	4	8	4	4	8	7	13.7	6	6	9	25	9	8	22	19	13	11
28	3	4	4	4	5	7	8	11	15.3	7	8	8	9	12	18	26	42	16	19
																		39.4	

am INDICES 1983 (continued)

MARCH 1983

	3Km								ΣKm	am								Am	Am2
1	10	9	8	9	9	9	11	13	26.0	38	27	22	32	32	33	46	63	37	58
2	17	15	18	17	16	16	14	13	42.0	139	99	171	125	109	112	75	66	112	83
3	15	10	12	14	11	11	11	11	31.7	90	40	57	78	49	44	44	44	56	58
4	10	9	11	6	9	8	11	14	26.0	39	28	43	16	33	25	47	76	38	41
5	9	11	11	12	12	11	8	11	28.3	29	46	43	55	51	46	26	41	42	37
6	12	5	2	3	3	8	6	4	14.3	60	11	4	6	6	21	14	10	17	23
7	9	5	5	8	4	0	0	4	11.7	27	13	11	21	8	1	1	8	11	11
8	8	2	0	3	8	7	5	5	12.7	23	5	1	6	23	18	13	11	13	10
9	7	4	2	3	4	6	8	5	13.0	18	9	5	7	8	15	25	11	12	12
10	1	2	4	5	4	6	9	7	12.7	3	5	8	13	8	14	29	17	12	15
11	7	5	6	10	10	7	11	15	23.7	18	11	15	34	38	19	46	87	34	30
12	12	6	8	11	9	16	14	18	31.3	58	16	23	42	31	108	79	159	65	57
13	15	11	10	9	9	7	8	5	24.7	93	42	35	33	28	19	22	12	36	52
14	7	11	13	10	11	8	10	7	25.7	19	47	62	35	49	23	39	17	36	29
15	6	9	9	8	9	9	8	8	22.0	16	28	28	24	27	32	21	22	25	25
16	4	9	6	7	10	3	4	7	16.7	8	32	15	17	38	7	10	18	18	21
17	8	7	7	8	4	4	5	8	17.0	26	19	20	21	9	8	11	26	18	17
18	7	5	7	6	5	12	10	14	22.0	20	12	18	14	12	56	39	82	32	32
19	12	12	10	11	11	10	9	9	28.0	57	52	40	48	46	37	28	27	42	43
20	12	13	8	6	10	11	13	9	27.3	52	68	24	15	37	48	64	32	43	36
21	12	7	4	5	6	7	9	6	18.7	58	20	10	13	16	18	32	16	23	27
22	8	8	5	4	5	6	7	7	16.7	21	24	12	10	13	14	17	17	16	17
23	7	6	8	5	6	6	6	6	16.7	17	15	25	11	14	16	16	14	16	15
24	7	6	5	5	5	4	10	6	16.0	19	15	12	12	13	9	37	16	17	33
25	10	13	17	16	15	12	13	12	36.0	35	62	133	112	98	57	65	57	77	51
26	13	10	6	3	5	3	6	5	17.0	63	37	14	7	13	6	16	11	21	28
27	0	0	0	4	4	2	2	4	5.3	1	0	1	8	9	5	5	10	5	17
28	5	11	14	12	11	14	11	12	30.0	11	43	75	58	47	82	46	60	53	41
29	12	12	12	11	12	14	12	12	32.3	54	53	56	45	54	73	57	57	56	52
30	8	11	10	10	9	12	9	12	27.0	25	45	37	39	31	57	28	54	40	48
31	11	14	9	12	11	8	12	9	28.7	50	78	27	60	42	21	52	28	45	41
																		34.5	

APRIL 1983

	3Km								ΣKm	am								Am	Am2
1	5	9	10	11	8	11	10	8	24.0	13	29	39	44	23	46	38	24	32	31
2	9	8	8	8	8	10	9	9	23.0	27	22	24	22	26	37	33	30	28	28
3	9	10	7	7	9	5	2	9	19.3	27	34	19	17	32	12	5	27	22	24
4	4	9	6	9	8	10	11	9	22.0	9	30	14	33	23	39	44	28	28	28
5	14	8	7	7	9	8	6	3	20.7	81	26	20	18	29	25	14	7	28	33
6	10	10	11	13	14	10	11	10	29.7	37	36	41	66	78	40	50	34	48	39
7	9	10	10	13	12	11	11	12	29.3	28	40	34	63	55	49	46	58	47	45
8	11	11	11	8	13	11	8	7	26.7	46	41	43	21	64	43	21	19	37	38
9	8	8	9	9	8	12	9	9	24.0	24	22	29	27	25	51	30	31	30	35
10	11	10	12	9	9	8	9	9	25.7	44	40	51	31	28	26	28	30	35	30
11	6	7	8	4	1	2	5	5	12.7	15	19	21	9	3	5	11	11	12	18
12	8	6	5	10	7	7	7	6	18.7	21	16	11	37	19	20	18	16	20	26
13	11	12	9	14	13	9	9	9	28.7	50	57	28	86	68	29	33	31	48	42
14	11	11	13	13	12	14	15	13	34.0	43	41	64	63	54	74	102	65	63	63
15	17	12	14	12	14	12	14	12	35.7	135	60	85	58	72	52	77	53	74	67
16	12	10	10	11	11	11	9	12	28.7	58	39	37	47	44	41	32	58	45	45
17	8	9	9	8	6	10	12	10	24.0	25	27	32	24	16	34	51	39	31	30
18	8	7	5	5	7	8	8	5	17.7	22	19	12	11	19	25	24	13	18	22
19	2	6	8	9	7	7	7	6	17.3	4	15	22	32	18	20	18	16	18	20
20	9	8	6	8	9	7	9	8	21.3	33	23	16	21	30	20	31	25	25	21
21	7	8	7	5	5	5	8	9	18.0	19	22	18	11	12	11	23	28	18	27
22	11	9	11	13	4	4	1	3	18.7	41	32	46	66	10	9	3	7	27	25
23	9	9	8	8	6	6	6	14	22.0	30	30	25	22	14	15	16	75	28	32
24	11	14	12	14	14	13	15	15	36.0	47	78	58	71	82	66	92	90	73	55
25	13	11	8	10	8	11	12	14	29.0	63	41	26	39	25	50	56	73	47	56
26	12	11	13	9	11	11	7	11	28.3	60	41	67	28	42	43	17	42	43	42
27	10	11	8	6	7	8	6	6	20.7	40	44	23	16	19	22	14	16	24	27
28	9	10	8	5	8	4	6	6	18.7	29	37	21	13	24	9	14	14	20	23
29	9	8	11	9	12	15	14	12	30.0	30	26	42	33	60	94	71	55	51	41
30	10	13	12	9	9	10	10	9	27.3	40	61	58	29	30	38	38	29	40	46
																		35.3	

am INDICES 1983 (continued)

MAY 1983

	3Km								ΣKm	am								Am	Am2
1	8	8	10	12	9	5	15	10	25.7	24	25	36	54	32	12	89	34	38	32
2	8	8	4	5	7	10	11	5	19.3	26	23	9	12	18	35	44	13	23	27
3	7	5	8	8	9	5	6	7	18.3	19	13	25	23	27	13	15	18	19	27
4	9	12	11	11	12	12	8	9	28.0	27	52	43	47	60	55	24	33	43	32
5	8	8	5	10	12	11	10	9	24.3	26	21	13	39	60	41	36	33	34	35
6	7	11	9	9	7	7	7	5	20.7	20	45	30	27	19	18	18	13	24	26
7	4	5	6	7	7	5	5	5	14.7	8	13	15	17	19	13	13	13	14	16
8	9	5	7	7	4	6	8	8	18.0	32	13	17	17	8	14	25	26	19	17
9	7	7	5	3	1	2	2	4	10.3	20	19	11	6	3	4	5	10	10	11
10	4	2	2	5	5	5	9	7	13.0	8	5	4	12	11	13	30	17	13	22
11	8	7	15	15	12	18	15	15	35.0	23	17	87	103	54	147	95	88	77	61
12	16	13	13	12	9	13	14	15	35.0	104	67	63	51	33	63	75	102	70	74
13	12	10	15	12	11	12	10	11	31.0	59	34	98	54	47	57	39	47	54	55
14	12	11	10	9	8	9	9	6	24.7	58	44	39	27	22	32	31	16	34	37
15	10	10	8	9	9	8	7	10	23.7	40	36	26	31	32	22	20	35	30	26
16	6	6	7	8	8	7	7	8	19.0	14	16	17	21	23	18	17	24	19	27
17	12	8	11	11	16	13	17	19	35.7	58	26	48	48	108	65	141	175	84	54
18	8	8	10	9	8	5	6	4	19.3	22	24	36	30	21	12	14	10	21	45
19	3	6	8	7	3	2	2	2	11.0	6	16	21	18	6	4	5	4	10	10
20	2	3	2	1	3	2	8	12	11.0	5	6	4	3	7	5	26	57	14	15
21	7	9	9	8	13	12	9	7	24.7	18	33	30	24	63	60	31	17	35	38
22	10	14	14	11	10	12	14	14	33.0	36	74	82	50	40	57	75	79	62	56
23	13	12	13	11	9	12	13	11	31.3	64	51	70	43	28	55	67	41	52	51
24	11	11	9	8	11	20	20	17	35.7	49	46	28	26	48	208	240	128	97	68
25	14	9	6	2	1	0	2	1	11.7	78	31	14	4	2	1	5	3	17	49
26	1	2	4	3	4	7	10	9	13.3	2	4	8	7	10	18	39	29	15	13
27	9	8	8	5	6	8	6	6	18.7	32	22	21	12	16	22	14	15	19	18
28	4	6	3	3	2	2	2	2	8.0	10	15	6	6	4	4	5	4	7	10
29	3	4	3	8	6	4	1	2	10.3	7	8	7	21	16	8	3	5	9	8
30	2	4	5	5	4	8	7	6	13.7	4	10	12	13	8	21	18	14	13	14
31	8	7	9	5	6	8	5	7	18.3	23	19	32	13	16	25	11	18	20	20
																		32.1	

JUNE 1983

	3Km								ΣKm	am								Am	Am2
1	5	11	9	7	6	7	6	5	18.7	12	45	27	20	15	20	15	12	21	18
2	2	4	6	7	7	6	3	4	13.0	4	10	15	19	18	16	6	10	12	13
3	5	4	4	7	3	5	3	4	11.7	12	9	9	20	7	13	7	10	11	10
4	4	2	5	1	1	1	1	2	5.7	8	4	12	3	3	2	3	4	5	8
5	2	4	5	7	6	7	4	3	12.7	5	8	12	19	16	18	10	7	12	10
6	5	3	8	4	7	8	5	7	15.7	13	7	21	8	19	22	12	18	15	15
7	6	7	7	4	3	3	5	2	12.3	15	19	18	10	6	7	13	4	12	13
8	1	4	6	8	8	9	7	8	17.0	3	8	14	25	23	30	20	22	18	18
9	6	7	11	10	8	9	12	10	24.3	16	19	46	36	24	30	53	35	32	31
10	10	11	8	11	14	13	7	5	26.3	35	41	23	50	77	64	19	13	40	35
11	10	9	6	5	5	4	7	4	16.7	37	27	16	12	12	8	18	10	18	27
12	9	10	8	9	8	9	7	10	23.3	31	35	22	33	22	27	20	36	28	60
13	19	21	16	16	12	9	12	9	38.0	179	281	117	115	59	32	59	28	109	68
14	10	9	9	6	7	7	5	7	20.0	34	29	28	16	20	18	13	18	22	31
15	11	9	9	10	8	8	10	5	23.3	43	29	31	35	22	25	40	12	30	22
16	6	3	4	6	6	8	2	6	13.7	14	6	10	15	16	22	5	14	13	17
17	5	5	9	7	7	9	10	9	20.3	12	11	29	17	20	31	35	28	23	29
18	10	13	15	10	10	12	9	12	30.3	35	68	87	37	35	56	33	58	51	43
19	9	11	11	9	9	8	7	7	23.7	32	50	42	33	32	26	19	19	32	35
20	9	9	9	9	10	8	6	7	22.3	31	32	27	31	38	23	14	20	27	27
21	9	10	10	7	8	8	10	9	23.7	30	38	38	18	22	22	39	28	29	26
22	7	7	8	9	11	12	11	8	24.3	17	19	21	30	49	54	46	21	32	32
23	9	8	12	9	9	8	6	8	23.0	32	23	53	32	28	23	16	26	29	29
24	8	7	5	3	5	5	4	1	12.7	22	18	11	7	11	11	8	3	11	12
25	1	0	1	3	3	3	7	5	7.7	3	1	2	7	6	6	18	12	7	10
26	4	9	5	6	8	9	5	8	18.0	8	30	13	15	25	31	13	26	20	16
27	5	5	8	5	4	6	5	7	15.0	11	11	23	12	10	16	13	20	15	16
28	7	2	3	8	8	8	7	7	16.7	17	4	6	22	25	21	19	18	17	19
29	6	8	11	9	8	6	4	5	19.0	16	24	43	32	22	16	9	12	22	19
30	3	3	6	7	6	5	4	5	13.0	7	6	15	18	14	12	8	12	12	12
																		24.2	

am INDICES 1983 (continued)

JULY 1983

	3Km								ΣKm	am							Am	Am2
1	6	5	3	4	4	3	4	4	11.0	15	11	7	8	8	7	9	9	9	10
2	2	3	5	4	6	7	6	6	13.0	5	6	13	9	14	17	15	15	12	12
3	7	5	6	8	3	5	6	7	15.7	18	11	16	23	7	12	15	17	15	14
4	4	5	4	3	5	6	7	5	13.0	10	11	8	7	13	15	19	12	12	12
5	5	4	3	7	4	6	3	2	11.3	12	8	7	18	10	16	7	4	10	16
6	5	6	8	13	9	8	7	7	21.0	11	16	22	62	27	21	17	20	25	19
7	4	5	4	9	9	8	7	10	18.7	10	13	10	32	28	22	18	38	21	21
8	7	7	9	7	7	7	8	8	20.0	19	17	32	17	18	18	23	25	21	24
9	8	11	6	9	5	6	7	8	20.0	24	42	14	32	13	16	18	26	23	20
10	5	6	5	5	2	2	2	2	9.7	11	16	13	12	5	5	5	4	9	11
11	1	1	4	6	3	3	2	5	8.3	3	2	8	14	7	6	5	13	7	7
12	5	1	2	5	9	9	11	10	17.3	12	3	5	12	29	28	47	38	22	25
13	13	11	11	11	9	5	3	5	22.7	70	43	46	41	30	11	7	12	33	29
14	3	5	8	7	5	5	5	3	13.7	7	13	23	18	13	13	11	6	13	12
15	3	6	3	3	3	3	5	6	10.7	7	14	6	7	7	7	12	15	9	14
16	8	9	7	9	11	7	11	10	24.0	21	32	19	33	43	19	42	35	31	31
17	12	11	12	13	10	11	11	12	30.7	53	45	52	61	36	41	44	57	49	44
18	13	12	9	9	8	9	8	8	25.3	65	52	33	32	23	31	24	26	36	34
19	8	7	7	7	5	9	8	6	19.0	25	20	19	20	13	29	21	16	20	21
20	6	8	8	5	3	4	4	6	14.7	15	21	23	13	7	9	10	15	14	16
21	5	8	5	7	5	6	4	4	14.7	11	24	13	20	13	14	10	10	14	13
22	7	4	4	4	3	3	7	13	15.0	18	9	9	10	6	6	19	68	18	23
23	8	10	10	14	8	10	13	11	28.0	26	35	39	71	22	35	65	44	42	46
24	15	14	13	12	15	10	10	10	33.0	102	74	70	52	93	40	37	36	63	49
25	9	11	8	8	8	6	6	5	20.3	30	44	24	21	21	16	15	12	23	28
26	6	6	6	6	8	5	4	5	15.3	16	14	15	15	22	12	8	12	14	16
27	4	4	7	9	5	6	7	9	17.0	10	9	18	33	13	14	19	28	18	16
28	5	6	6	7	5	8	9	8	18.0	12	14	16	19	13	24	27	24	19	22
29	8	12	8	9	8	8	7	7	22.3	25	55	23	33	21	21	19	19	27	30
30	11	10	8	13	8	6	8	10	24.7	46	35	26	65	25	16	24	37	34	26
31	8	6	4	5	7	5	5	4	14.7	22	14	10	12	19	11	11	8	13	16
																		21.8	

AUGUST 1983

	3Km								ΣKm	am							Am	Am2
1	2	5	7	3	3	2	4	6	10.7	4	13	18	6	7	4	9	15	10	21
2	11	11	14	10	13	10	12	10	30.3	48	44	78	35	64	36	58	36	50	33
3	10	8	5	6	8	8	10	10	21.7	37	25	11	14	24	26	39	38	27	29
4	6	7	4	3	2	5	6	5	12.7	15	19	10	6	5	13	15	12	12	15
5	3	1	2	0	0	1	2	4	4.3	7	3	4	1	1	2	5	8	4	7
6	2	7	1	3	6	5	7	4	11.7	5	18	2	6	14	13	17	10	11	9
7	3	3	7	6	6	5	11	16	19.0	6	6	18	14	14	11	46	108	28	49
8	17	19	17	12	8	6	3	6	29.3	139	186	130	56	21	14	6	16	71	54
9	12	9	6	6	7	5	3	4	17.3	52	29	16	15	17	11	6	8	19	16
10	3	7	4	5	5	2	1	3	10.0	7	19	8	12	11	4	3	7	9	9
11	4	4	2	5	5	4	7	4	11.7	10	10	5	11	13	9	18	9	11	15
12	7	11	10	9	10	9	13	11	26.7	19	45	39	31	38	30	62	49	39	36
13	11	11	12	13	11	5	8	11	27.3	46	42	56	63	41	13	24	48	42	37
14	10	5	6	5	7	8	8	6	18.3	35	13	16	11	19	21	21	15	19	22
15	9	6	5	9	6	10	4	7	18.7	28	16	11	27	15	39	9	17	20	16
16	3	0	0	1	4	5	6	6	8.3	7	1	0	2	10	13	16	15	8	12
17	5	4	4	5	3	3	3	6	11.0	12	10	10	12	7	6	7	16	10	9
18	2	1	0	0	2	0	0	2	2.3	5	3	1	1	4	1	0	5	3	5
19	0	1	1	7	10	10	7	7	14.3	1	2	2	20	34	34	18	17	16	12
20	3	8	5	6	7	8	10	9	18.7	7	26	11	15	20	22	34	27	20	29
21	12	8	11	13	11	11	9	11	28.7	52	25	45	70	42	48	33	42	45	33
22	5	5	7	8	7	7	13	8	20.0	13	12	19	26	17	20	62	21	24	37
23	8	16	12	11	10	10	12	8	29.0	24	107	59	46	35	35	51	26	48	43
24	9	11	10	13	9	8	10	11	27.0	32	47	39	61	32	26	36	41	39	46
25	14	11	14	13	11	9	12	8	30.7	80	50	78	65	45	32	59	24	54	46
26	12	12	9	10	9	11	11	4	26.0	53	55	28	38	28	46	49	10	38	31
27	6	1	1	1	5	6	4	2	8.7	15	2	2	3	13	15	8	4	8	16
28	5	5	5	8	5	3	6	5	14.0	13	11	12	23	13	7	15	11	13	13
29	6	5	4	8	8	9	11	13	21.3	14	11	10	24	24	31	47	67	29	27
30	12	10	10	8	7	8	8	9	24.0	59	38	38	23	19	23	21	32	32	37
31	13	11	11	8	8	13	11	11	28.7	66	41	44	26	23	64	41	50	44	37
																		25.9	

am INDICES 1983 (continued)

SEPTEMBER 1983

	3Km								ΣKm	am							Am	Am2
1	12	12	4	7	6	6	8	8	21.0	53	57	10	17	16	14	23	25	27	27
2	6	5	3	4	2	6	5	7	12.7	15	13	7	8	5	14	12	17	11	14
3	5	7	7	2	4	5	4	1	11.7	12	17	18	4	8	13	8	3	10	9
4	1	0	2	2	1	2	4	5	5.7	3	1	4	4	2	4	9	11	5	5
5	4	1	0	0	2	3	4	5	6.3	10	3	0	0	5	6	10	12	6	7
6	6	6	4	3	3	4	5	4	11.7	15	16	8	6	7	8	12	9	10	12
7	4	6	7	9	11	12	10	8	22.3	9	15	17	30	45	58	39	24	30	23
8	5	4	10	11	9	8	9	8	21.3	13	10	35	43	29	22	27	25	26	28
9	9	7	7	7	7	8	10	9	21.3	27	19	17	17	18	23	38	33	24	23
10	9	6	5	6	6	9	9	7	19.0	31	14	13	14	14	28	28	19	20	21
11	9	5	5	7	8	8	9	6	19.0	27	13	11	18	21	23	28	15	20	23
12	6	9	11	10	11	4	4	6	20.3	16	27	41	34	45	8	8	15	24	21
13	8	4	6	5	8	6	4	8	16.3	22	10	15	13	24	15	9	25	17	15
14	4	4	5	2	4	8	5	6	12.7	10	9	12	5	8	21	11	14	11	16
15	9	5	9	8	7	14	13	12	25.7	31	13	29	26	18	76	65	52	39	33
16	8	9	11	12	12	13	11	9	28.3	23	32	43	59	56	65	43	28	44	47
17	11	13	12	10	7	10	8	7	26.0	44	61	56	36	18	36	22	20	37	34
18	8	6	7	5	4	6	9	9	18.0	22	15	17	11	9	15	30	32	19	28
19	12	12	11	11	12	12	16	16	34.0	53	59	41	48	58	58	05	111	67	48
20	11	11	9	9	11	10	8	6	25.0	48	42	27	31	42	37	23	16	33	42
21	8	6	8	5	8	9	4	7	18.3	26	15	25	11	24	28	10	20	20	25
22	8	8	9	11	7	4	3	6	18.7	23	23	29	42	17	10	7	14	21	17
23	2	3	1	4	4	4	3	3	8.0	5	6	3	10	10	9	6	7	7	9
24	7	3	3	5	8	8	4	7	15.0	19	7	7	12	25	25	10	17	15	19
25	12	10	9	9	11	14	11	11	29.0	60	36	30	28	41	85	48	50	47	43
26	12	13	13	10	10	7	7	7	26.3	56	68	70	40	34	18	18	19	40	41
27	11	6	7	7	8	7	7	9	20.7	47	16	19	19	24	17	18	31	24	23
28	12	7	3	3	8	8	5	7	17.7	53	20	6	6	25	21	12	19	20	21
29	9	8	3	7	2	3	3	4	13.0	29	25	6	17	4	6	7	9	13	12
30	3	0	1	3	2	1	3	4	5.7	6	1	2	6	5	3	6	10	5	7
																		23.1	

OCTOBER 1983

	3Km								ΣKm	am							Am	Am2
1	4	4	3	6	4	10	8	11	16.7	10	9	7	14	9	40	25	45	20	21
2	9	11	12	9	9	10	9	9	26.0	29	46	53	29	30	36	28	31	35	33
3	8	7	10	11	10	7	6	10	23.0	21	20	40	46	39	19	15	37	30	34
4	9	8	11	14	17	18	10	8	31.7	32	22	45	83	137	153	38	24	67	44
5	5	5	6	7	7	4	4	8	15.3	12	13	15	19	17	8	10	22	15	36
6	9	7	8	9	10	13	11	10	25.7	28	18	24	33	36	66	44	34	35	27
7	7	10	7	6	5	7	5	8	18.3	20	35	19	16	11	20	13	21	19	25
8	7	6	7	7	7	12	9	6	20.3	18	16	20	18	20	58	33	16	25	19
9	7	4	4	1	4	4	3	4	10.3	20	8	9	3	9	10	6	8	9	15
10	2	4	5	4	4	6	10	4	13.0	4	8	12	10	9	16	35	10	13	12
11	4	5	6	4	6	5	2	1	11.0	9	13	16	9	14	13	5	2	10	11
12	1	2	2	4	3	4	6	8	10.0	3	5	4	10	7	8	14	21	9	21
13	13	13	11	13	10	13	8	10	30.3	65	66	43	62	39	62	26	38	50	34
14	8	6	9	8	9	10	13	14	25.7	25	16	27	22	32	34	61	73	36	37
15	9	10	7	12	10	7	11	8	24.7	31	38	20	54	40	19	41	22	33	34
16	6	11	6	5	8	8	8	8	20.0	15	43	14	13	23	22	26	23	22	30
17	5	8	13	14	14	13	14	15	32.0	12	22	68	84	77	70	79	93	63	56
18	14	11	14	14	14	14	15	8	34.7	84	50	77	79	78	84	91	21	71	60
19	7	7	7	7	2	5	4	1	13.3	19	17	19	19	5	12	8	3	13	26
20	2	5	4	6	2	4	7	6	12.0	4	13	8	14	4	8	19	16	11	12
21	4	3	8	9	9	10	9	10	20.7	9	7	26	33	29	38	33	39	27	25
22	12	10	8	8	9	6	7	7	22.3	60	37	21	26	27	14	18	19	28	27
23	5	5	6	9	11	10	14	12	24.0	12	13	16	31	45	35	72	59	35	31
24	12	9	7	11	10	10	12	7	26.0	53	27	17	41	35	38	54	20	36	33
25	5	4	3	3	6	6	3	6	12.0	12	10	7	7	16	15	7	14	11	16
26	1	4	3	3	1	2	0	1	5.0	2	8	7	6	2	5	1	2	4	6
27	0	1	2	0	1	2	5	0	3.7	1	2	4	1	3	5	11	1	4	3
28	6	1	0	0	0	7	7	14	11.7	14	2	0	1	1	17	20	77	17	23
29	11	10	12	14	13	10	12	11	31.0	43	39	60	73	69	35	59	44	53	40
30	9	8	9	7	9	12	11	5	23.3	33	23	32	19	27	54	46	11	31	32
31	6	4	7	8	8	7	3	7	16.7	15	10	18	23	26	18	7	19	17	25
																		27.4	

am INDICES 1983 (continued)

NOVEMBER 1983

	3Km								ΣKm	am							Am	Am2
1	10	9	5	11	10	4	9	11	23.0	34	30	12	43	35	9	33	46	30	36
2	10	14	14	13	11	9	8	8	29.0	38	83	76	62	45	30	25	25	48	35
3	8	5	4	6	9	14	12	8	22.0	23	12	9	14	29	80	52	22	30	25
4	5	4	2	5	7	6	2	5	12.0	12	10	4	12	19	14	5	11	11	18
5	2	3	3	3	2	1	2	2	6.0	5	6	6	6	4	2	4	4	5	6
6	1	1	0	2	4	4	4	2	6.0	2	2	1	4	9	8	8	5	5	6
7	1	4	3	8	9	9	10	11	18.3	3	10	6	23	31	32	34	43	23	25
8	13	8	9	13	12	10	9	9	27.7	66	26	32	63	53	37	28	33	42	40
9	9	12	8	11	12	13	18	12	31.7	33	51	24	49	52	61	164	59	62	49
10	11	9	9	9	11	12	14	10	28.3	49	27	32	27	45	54	79	35	44	53
11	11	8	8	14	14	10	17	14	32.0	47	21	23	76	72	40	131	82	62	59
12	10	11	15	13	15	11	14	11	33.3	37	50	92	62	96	42	79	47	63	59
13	5	8	9	12	11	11	11	10	25.7	12	25	30	53	49	41	50	39	37	42
14	2	8	11	11	13	14	10	7	25.3	4	23	44	42	69	83	39	19	40	37
15	8	8	8	9	10	12	13	12	26.7	21	22	23	28	40	54	63	51	38	40
16	12	8	10	7	10	14	12	13	28.7	59	24	34	18	39	82	56	62	47	51
17	12	11	9	16	11	12	12	10	31.0	59	41	27	109	44	58	54	39	54	52
18	12	13	6	9	10	12	11	8	27.0	54	67	14	31	35	54	41	22	40	38
19	10	8	7	5	8	8	9	11	22.0	38	24	18	13	24	23	29	42	26	31
20	9	7	10	11	11	11	12	9	26.7	33	19	40	48	43	41	54	28	38	29
21	7	4	2	2	4	9	9	5	14.0	19	8	5	5	9	27	29	12	14	21
22	6	5	6	4	2	2	4	2	10.3	14	11	16	9	4	4	8	5	9	10
23	2	2	1	0	0	0	2	1	2.7	4	4	3	0	0	1	4	2	2	7
24	3	5	8	9	7	9	10	5	18.7	7	12	25	29	20	28	38	11	21	17
25	8	9	8	9	8	7	9	11	23.0	21	28	23	28	24	17	29	47	27	28
26	11	10	10	6	8	8	10	5	22.7	44	35	40	16	26	24	38	11	29	25
27	1	4	5	8	8	6	5	4	13.7	2	9	12	24	25	15	11	8	13	15
28	4	4	3	5	10	13	13	9	20.3	10	10	7	13	38	62	63	27	29	28
29	11	8	7	13	11	8	10	10	26.0	41	24	18	70	43	23	34	40	37	38
30	11	8	8	9	10	11	12	7	25.3	49	21	23	28	39	41	58	20	35	32
																		32.0	

DECEMBER 1983

	3Km								ΣKm	am							Am	Am2
1	8	8	7	8	6	7	9	9	20.7	25	21	18	21	15	20	30	27	22	24
2	6	6	6	5	7	7	5	4	15.3	14	15	15	11	20	19	13	9	15	14
3	2	2	1	0	4	3	3	5	6.7	5	4	2	1	10	7	6	11	6	8
4	0	4	3	2	3	6	3	5	8.7	1	8	7	4	6	16	7	12	8	13
5	8	9	9	9	9	10	9	9	24.0	25	27	28	29	28	39	33	30	30	27
6	8	10	10	12	14	9	12	10	28.3	26	36	36	59	72	31	52	37	44	39
7	8	10	10	11	11	12	12	10	28.0	26	38	34	43	46	54	56	39	42	38
8	9	7	6	5	9	4	7	8	18.3	28	17	15	12	27	9	19	24	19	24
9	6	4	2	1	1	1	2	1	6.0	16	9	5	2	3	3	5	2	6	15
10	2	9	11	10	11	10	12	7	24.0	4	31	41	36	48	40	55	18	34	26
11	7	7	10	12	17	14	12	11	30.0	19	19	34	51	127	73	52	44	52	43
12	9	7	8	10	13	11	10	9	25.7	32	20	23	38	69	44	38	28	37	45
13	10	9	8	11	9	10	11	12	26.7	35	30	21	42	31	34	47	55	37	38
14	9	9	10	10	10	9	13	12	27.3	30	29	36	38	35	31	62	51	39	37
15	10	8	9	9	9	7	5	8	21.7	38	24	30	28	27	19	13	25	26	27
16	7	4	2	4	2	1	4	3	9.0	17	10	5	9	4	2	8	7	8	11
17	4	4	2	3	6	5	6	6	12.0	10	9	4	7	14	13	15	14	11	8
18	4	1	0	2	6	9	8	8	12.7	8	2	0	4	16	30	25	21	13	16
19	8	8	8	7	5	7	6	4	17.7	25	21	21	19	11	17	16	10	18	17
20	8	5	1	1	0	1	2	4	7.3	21	12	2	3	1	2	5	9	7	8
21	3	2	1	1	2	4	3	3	6.3	6	4	2	2	5	10	6	7	5	10
22	7	8	6	11	8	10	6	6	20.7	17	22	16	44	21	35	16	16	23	18
23	7	7	7	6	9	6	8	4	18.0	18	20	20	14	31	15	25	9	19	17
24	4	2	4	6	13	12	9	10	20.0	8	5	10	16	62	53	29	36	27	24
25	9	7	5	8	9	7	9	5	19.7	30	17	12	23	28	19	27	12	21	26
26	5	7	6	7	7	8	11	11	20.7	13	19	16	18	17	22	50	48	25	24
27	11	7	4	5	7	8	10	9	20.3	48	18	10	13	20	21	40	28	25	26
28	8	7	8	8	10	5	5	6	19.0	22	17	23	25	34	12	12	14	20	22
29	8	5	8	8	8	5	3	3	16.0	25	11	25	23	26	12	6	6	17	23
30	6	10	12	12	12	16	12	8	29.3	14	40	58	53	58	104	56	25	51	36
31	8	10	9	9	9	14	12	12	27.7	24	38	28	31	30	76	59	52	42	46
																		24.2	

MONTHLY AND YEARLY **Am** 1959 - 1983

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1959	25.5	35.7	30.1	24.1	25.5	22.7	42.1	31.5	36.9	28.2	33.0	31.6	30.6
1960	25.7	23.5	27.3	53.4	31.5	27.3	27.3	27.8	27.0	45.0	44.4	32.1	32.7
1961	19.4	24.0	21.3	20.6	21.1	20.3	34.4	17.8	19.4	21.9	15.7	19.6	21.3
1962	12.9	18.3	14.0	21.6	12.7	17.0	19.8	24.9	27.8	29.8	20.4	21.1	20.0
1963	17.2	13.9	13.2	15.4	17.8	17.9	19.4	21.2	38.0	22.2	19.0	16.8	19.3
1964	17.8	17.5	19.0	19.7	15.9	13.7	15.3	13.3	16.1	15.0	12.4	9.2	15.4
1965	10.8	14.6	13.2	11.5	9.7	14.8	13.6	14.8	16.1	11.8	10.8	12.2	12.8
1966	12.8	13.2	17.8	11.0	14.0	11.6	15.4	18.2	28.2	16.1	15.3	18.5	16.0
1967	17.6	18.4	11.9	14.0	32.7	17.7	12.8	15.3	23.9	16.7	17.4	23.2	18.5
1968	19.3	25.0	21.8	20.2	21.5	24.2	16.3	18.5	21.0	24.0	25.1	17.7	21.2
1969	15.2	23.5	26.0	22.4	23.5	15.6	12.3	13.4	21.6	14.4	16.8	11.9	18.0
1970	12.5	11.1	24.9	20.9	14.0	16.2	25.4	18.4	17.6	19.1	19.8	14.9	17.9
1971	20.9	19.0	18.3	23.2	20.3	15.7	13.7	15.9	20.0	19.4	16.9	18.1	18.4
1972	20.5	16.8	18.9	17.3	16.2	20.9	12.8	32.2	19.3	19.4	21.1	16.9	19.4
1973	24.9	29.8	34.8	39.4	25.9	26.5	20.4	20.0	21.8	27.3	20.0	19.1	25.8
1974	24.1	25.2	33.6	31.5	28.0	27.2	33.1	30.3	33.4	37.1	27.1	26.0	29.7
1975	25.8	29.5	30.7	24.7	23.2	19.8	21.3	17.8	15.9	18.4	28.8	20.2	23.0
1976	21.9	26.7	33.4	26.3	22.9	16.8	16.2	15.9	21.8	19.2	15.2	18.0	21.2
1977	18.4	19.9	18.7	25.0	18.8	13.8	22.9	22.5	23.8	20.7	16.8	16.8	19.8
1978	24.6	25.3	25.9	32.2	32.5	28.2	18.8	24.3	26.8	19.7	24.2	22.0	25.4
1979	26.5	24.2	27.6	35.3	21.7	17.5	18.0	25.8	21.2	18.7	17.0	16.3	22.5
1980	18.1	18.0	11.9	17.4	15.1	19.4	16.2	16.0	13.8	22.6	22.5	22.6	17.8
1981	16.4	23.3	28.5	35.9	28.5	17.8	28.7	24.2	19.9	34.6	25.0	18.6	25.1
1982	20.7	48.3	26.9	31.8	26.0	32.1	43.7	32.3	50.5	29.2	34.6	35.5	34.3
1983	25.7	39.4	34.5	35.3	32.1	24.2	21.8	25.9	23.1	27.4	32.0	24.2	28.8

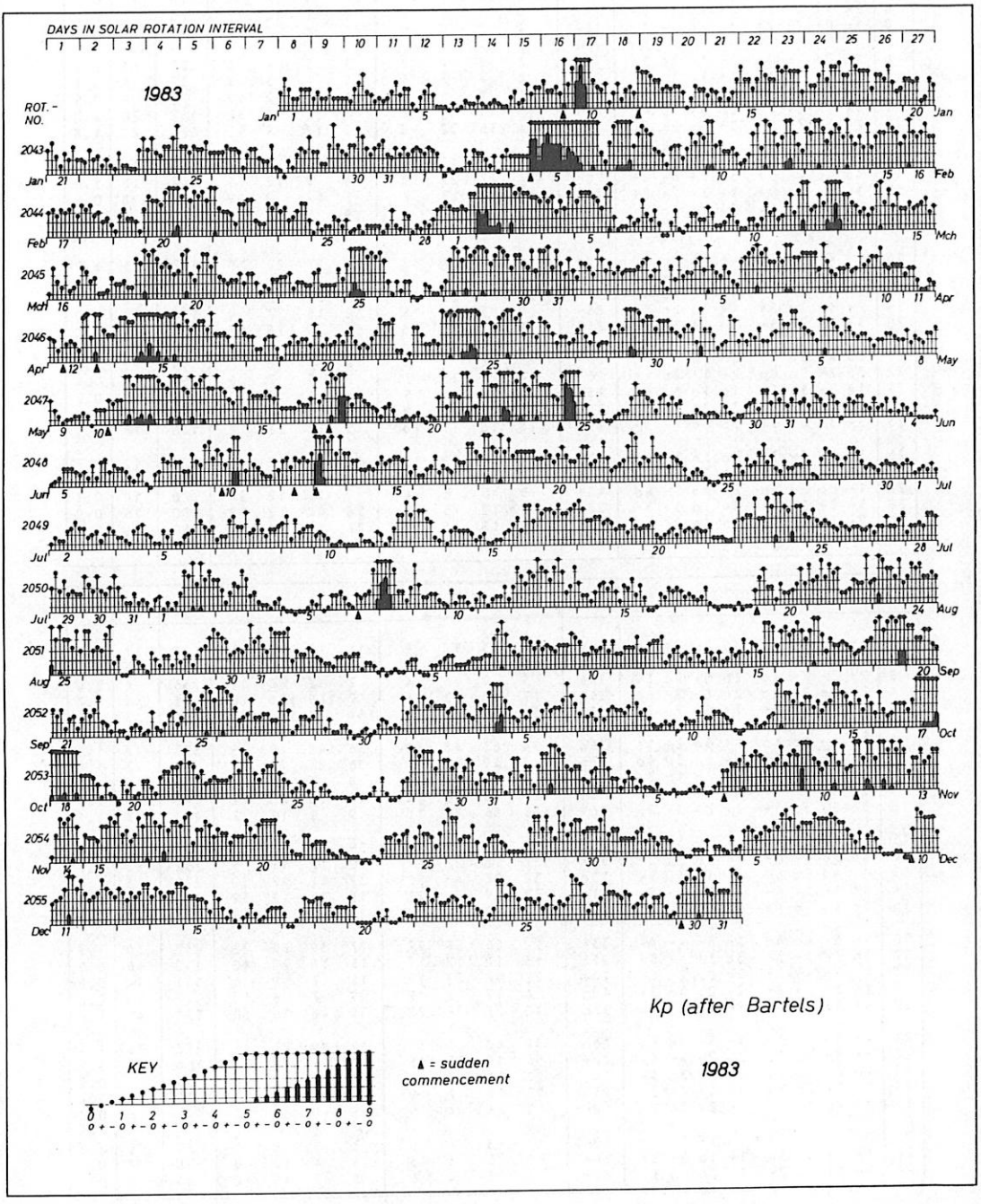
Unit : nT

SECTION 3

3.3. Kp INDICES

- Musical diagram of **Kp** 1983 67
- Monthly tables of three-hour indices :
  Kp, **ap** and daily **Ap** and **Cp** values 68
- Frequencies of **Kp** indices 74
- Monthly and yearly mean values of **Ap**
  1932-1983 75

MUSICAL DIAGRAM OF **Kp** 1983



Kp INDICES 1983

	Kp	Sum	Jan 1983	ap	Sum	Ap	Cp
1	2+ 4- 3- 2- 2- 3- 3- 3-	20o	9 22 12 6	6 12 12 12	91	11	0.7
2	2- 2+ 2- 2- 3- 2- 2- 2-	15o	6 9 6 6	12 6 6 6	57	7	0.4
3	2- 1+ 3- 3+ 4o 2+ 2o 1+	19-	6 5 12 18	27 9 7 5	89	11	0.6
4	2- 1+ 2- 2+ 3+ 2o 3- 3-	18-	6 5 6 9	18 7 12 12	75	9	0.5
5	1o 0+ 2- 2+ 3o 2o 1- 1-	12-	4 2 6 9	15 7 3 3	49	6	0.3
6	1- 0+ 1o 0+ 1- 1+ 1o 1o	6+	3 2 4 2	3 5 4 4	27	3	0.1
7	2- 1o 1- 1o 1+ 1o 1- 1-	8o	6 4 3 4	5 4 3 3	32	4	0.1
8	2- 2+ 1o 1+ 3o 2o 3- 3-	17-	6 9 4 5	15 7 12 12	70	9	0.5
9	3+ 2+ 2+ 3- 2o 5+ 3o 4+	25+	18 9 9 12	7 56 15 32	158	20	1.0
10	7+ 8+ 7o 5o 3+ 3- 2+ 3o	39o	154 236 132 48	18 12 9 15	624	78	1.8
11	1o 2o 3o 1+ 2+ 3- 2o 4+	19-	4 7 15 5	9 12 7 32	91	11	0.7
12	4o 4o 4- 3+ 3+ 2+ 3- 2+	26-	27 27 22 18	18 9 12 9	142	18	1.0
13	3- 3- 2o 0+ 1+ 3- 2+ 2+	16+	12 12 7 2	5 12 9 9	68	8	0.5
14	2- 2+ 2o 1+ 2+ 1+ 2o 3+	16+	6 9 7 5	9 5 7 18	66	8	0.4
15	4+ 3+ 3+ 2+ 3+ 5- 4- 3+	28+	32 18 18 9	18 39 22 18	174	22	1.1
16	3+ 4+ 4o 4+ 4o 4o 4o 2o	30o	18 32 27 32	27 27 27 7	197	25	1.2
17	4+ 3- 3- 4- 5- 3+ 4+ 4+	30o	32 12 12 22	39 18 32 32	199	25	1.2
18	5- 4- 4- 5+ 4+ 4o 4o 4o	34-	39 22 22 56	32 27 27 27	252	32	1.3
19	2+ 4- 4- 3+ 4+ 3o 2o 2+	25-	9 22 22 18	32 15 7 9	134	17	0.9
20	3+ 3+ 3o 3+ 1o 1+ 3+ 3-	21+	18 18 15 18	4 5 18 12	108	14	0.8
21	3o 4- 2+ 1+ 3- 2o 3+ 2o	20+	15 22 9 5	12 7 18 7	95	12	0.7
22	2o 2- 3o 2o 2+ 1+ 2o 1+	16-	7 6 15 7	9 5 7 5	61	8	0.4
23	1o 3- 1+ 1+ 1o 1o 3o 4o	15+	4 12 5 5	4 4 15 27	76	10	0.5
24	3o 4o 3- 2+ 3+ 3+ 4o 5o	28-	15 27 12 9	18 18 27 48	174	22	1.1
25	3+ 3+ 3- 3+ 3o 3o 4- 3-	25o	18 18 12 18	15 15 22 12	130	16	0.9
26	3- 3- 3- 3+ 3o 3o 3- 1o	21o	12 12 12 18	15 15 12 4	100	12	0.7
27	2+ 3o 3o 2o 2- 2- 3+ 1o	18o	9 15 15 7	6 6 18 4	80	10	0.6
28	1- 0o 2- 1o 2+ 3o 3- 4o	15+	3 0 6 4	9 15 12 27	76	10	0.5
29	3- 3- 1+ 1+ 3+ 5o 3+ 3-	22+	12 12 5 5	18 48 18 12	130	16	0.9
30	2+ 3+ 3+ 5- 4o 3o 2+ 3o	26o	9 18 18 39	27 15 9 15	150	19	1.0
31	3+ 4- 2+ 2o 3o 2+ 3o 2+	22o	18 22 9 7	15 9 15 9	104	13	0.7

	Kp	Sum	Feb 1983	ap	Sum	Ap	Cp
1	3- 3o 3- 2+ 3o 3- 2+ 1o	20-	12 15 12 9	15 12 9 4	88	11	0.6
2	0o 1- 0+ 1- 1- 3- 1+ 3-	9o	0 3 2 3	3 12 5 12	40	5	0.2
3	2+ 2+ 2- 1o 2o 0+ 2o 3-	14+	9 9 6 4	7 2 7 12	56	7	0.4
4	2o 2o 2o 2o 2o 8- 8- 6o	31+	7 7 7 7	7 179 179 80	473	59	1.7
5	7+ 8o 7+ 7+ 7+ 6o 7o 7-	57o	154 207 154 154	154 80 132 111	1146	143	2.0
6	6+ 6- 5o 5o 5+ 5o 2+ 1+	36o	94 67 48 48	56 48 9 5	375	47	1.5
7	3+ 5- 5+ 5+ 5+ 6o 3o 4o	37o	18 39 56 56	56 80 15 27	347	43	1.5
8	5- 4+ 4o 3- 2+ 2o 1o 3-	24-	39 32 27 12	9 7 4 12	142	18	1.0
9	3o 3o 2- 3- 4o 3+ 4o 4-	25+	15 15 6 12	27 18 27 22	142	18	1.0
10	5+ 5+ 3o 3+ 2+ 2+ 3- 2o	26+	56 56 15 18	9 9 12 7	182	23	1.1
11	1o 1+ 2o 4o 5- 3- 5+ 5-	26-	4 5 7 27	39 12 56 39	189	24	1.1
12	4o 3o 4- 6- 6o 4o 3o 2+	32-	27 15 22 67	80 27 15 9	262	33	1.3
13	4+ 4o 5o 5+ 4+ 3+ 4o 5-	35o	32 27 48 56	32 18 27 39	279	35	1.4
14	4+ 4- 5+ 4- 3o 4- 3- 5-	31o	32 22 56 22	15 22 12 39	220	28	1.2
15	3- 4- 4o 4o 5- 4+ 4o 3o	30+	12 22 27 27	39 32 27 15	201	25	1.2
16	4- 5+ 4o 4- 4o 5- 4- 4-	33-	22 56 27 22	27 39 22 22	237	30	1.3
17	3o 3+ 3- 3+ 3o 3+ 4- 3-	25o	15 18 12 18	15 18 22 12	130	16	0.9
18	4- 3+ 4- 3- 3o 2o 2+ 2-	22+	22 18 22 12	15 7 9 6	111	14	0.8
19	1o 3- 3+ 2+ 2+ 2o 1o 3+	18o	4 12 18 9	9 7 4 18	81	10	0.6
20	4+ 4o 4o 4- 5- 5o 5+ 6o	37o	32 27 27 22	39 48 56 80	331	41	1.5
21	4+ 5o 4o 5- 4+ 5- 4o 5o	36o	32 48 27 39	32 39 27 48	292	36	1.4
22	5+ 3+ 3o 3o 3- 2- 4- 4-	26+	56 18 15 15	12 6 22 22	166	21	1.1
23	4o 4o 2o 2- 2- 4- 3+ 4-	24o	27 27 7 6	6 22 18 22	135	17	0.9
24	3o 3+ 2o 2+ 3o 4- 4- 2o	23o	15 18 7 9	15 22 22 7	115	14	0.8
25	1- 2- 1o 1+ 1+ 2+ 2o 1+	12-	3 6 4 5	5 9 7 5	44	6	0.2
26	2o 1- 1o 1+ 1- 1+ 1+ 1+	10-	7 3 4 5	3 5 5 5	37	5	0.2
27	1+ 1- 1+ 3o 1+ 1o 3- 2+	14-	5 3 5 15	5 4 12 9	58	7	0.4
28	1- 1+ 1o 2- 1+ 2o 3o 3+	14+	3 5 4 6	5 7 15 18	63	8	0.4

Kp INDICES 1983 (continued)

	Kp	Sum	Mar 1983	ap	Sum	Ap	Cp
1	4- 3+ 3o 3o 3+ 3o 4+ 4+	28o	22 18 15 15	18 15 32 32	167	21	1.1
2	7o 7- 7o 6- 6- 6o 5o 5o	48o	132 111 132 67	67 80 48 48	685	86	1.8
3	6o 4+ 5- 4+ 4+ 4o 4o 4-	35+	80 32 39 32	32 27 27 22	291	36	1.4
4	4+ 4- 4o 3- 4- 3o 4+ 5o	31-	32 22 27 12	22 15 32 48	210	26	1.2
5	4- 4+ 4+ 4+ 4o 4- 3o 5-	32o	22 32 32 32	27 22 15 39	221	28	1.2
6	5+ 2o 1- 1o 1o 2o 1+ 2-	15o	56 7 3 4	4 7 5 6	92	12	0.7
7	4- 2+ 2- 3- 1+ 0o 0o 1+	13o	22 9 6 12	5 0 0 5	59	7	0.4
8	3- 1- 0+ 1o 2+ 2+ 2- 2-	13-	12 3 2 4	9 9 6 6	51	6	0.3
9	3o 2+ 1o 1o 1+ 2o 3- 1+	15-	15 9 4 4	5 7 12 5	61	8	0.4
10	1- 1- 2- 2- 1o 2- 3+ 2+	13o	3 3 6 6	4 6 18 9	55	7	0.3
11	3- 2- 2o 3+ 4o 2+ 4+ 6o	26+	12 6 7 18	27 9 32 80	191	24	1.2
12	5o 3- 3o 4o 3+ 6o 6- 7+	37o	48 12 15 27	18 80 67 154	421	53	1.6
13	6o 4o 4o 3+ 3o 2+ 3- 2o	27+	80 27 27 18	15 9 12 7	195	24	1.2
14	3- 5- 5+ 3+ 4+ 3o 4o 3-	30o	12 39 56 18	32 15 27 12	211	26	1.2
15	3- 3+ 3- 3o 3+ 4- 2+ 3o	24o	12 18 12 15	18 22 9 15	121	15	0.9
16	1o 4- 2+ 2- 4o 1+ 2- 2+	18o	4 22 9 6	27 5 6 9	88	11	0.6
17	4- 3+ 2+ 3- 1o 1o 1+ 3-	18o	22 18 9 12	4 4 5 12	86	11	0.6
18	2o 2o 2+ 2- 2- 4+ 4o 6-	24-	7 7 9 6	6 32 27 67	161	20	1.0
19	5- 5o 4+ 4- 4o 4- 3o 3+	32-	39 48 32 22	27 22 15 18	223	28	1.2
20	5- 6- 3o 2+ 4- 5- 5- 4-	32+	39 67 15 9	22 39 39 22	252	32	1.3
21	4+ 3- 2+ 2o 2+ 2+ 3o 2o	21o	32 12 9 7	9 9 15 7	100	12	0.7
22	3o 3o 2o 1o 2- 1+ 2+ 2+	17-	15 15 7 4	6 5 9 9	70	9	0.5
23	3- 3- 3o 1+ 2o 2o 2- 2-	17o	12 12 15 5	7 7 6 6	70	9	0.5
24	3o 3+ 2- 2- 2- 2- 3+ 2+	19-	15 18 6 6	6 6 18 9	84	10	0.6
25	4- 5+ 6+ 6- 5+ 4+ 5- 4+	40-	22 56 94 67	56 32 39 32	398	50	1.6
26	5- 4o 2o 1- 2o 1o 2o 2o	18+	39 27 7 3	7 4 7 7	101	13	0.7
27	0+ 0o 0+ 2- 1+ 1- 1- 1+	6+	2 0 2 6	5 3 3 5	26	3	0.1
28	2o 4o 5+ 5- 4o 6- 4+ 5-	35-	7 27 56 39	27 67 32 39	294	37	1.4
29	5o 5+ 5- 4- 4+ 5o 5- 4+	37o	48 56 39 22	32 48 39 32	316	40	1.4
30	3+ 4+ 4+ 4- 3+ 5- 3o 5-	31+	18 32 32 22	18 39 15 39	215	27	1.2
31	5- 5+ 3+ 5- 4- 3- 4o 3o	31+	39 56 18 39	22 12 27 15	228	28	1.2

	Kp	Sum	Apr 1983	ap	Sum	Ap	Cp
1	2+ 4- 4- 3+ 3- 5- 4o 3o	27+	9 22 22 18	12 39 27 15	164	20	1.0
2	4- 3- 3+ 3- 3o 3o 3o 3+	25-	22 12 18 12	15 15 15 18	127	16	0.9
3	4- 4o 2+ 3o 4- 2- 1o 3+	23-	22 27 9 15	22 6 4 18	123	15	0.9
4	2o 4o 2+ 3- 3- 4- 4o 3o	24+	7 27 9 12	12 22 27 15	131	16	0.9
5	5+ 3+ 3- 2+ 3+ 3- 2- 1+	23-	56 18 12 9	18 12 6 5	136	17	0.9
6	4- 4o 4+ 5- 6- 4+ 5- 4-	35o	22 27 32 39	67 32 39 22	280	35	1.4
7	4- 4+ 4- 5+ 5+ 4o 4o 4+	35-	22 32 22 56	56 27 27 32	274	34	1.4
8	4+ 4+ 4+ 3o 5o 4- 3- 2+	30-	32 32 32 15	48 22 12 9	202	25	1.2
9	3o 3o 3+ 3- 3o 5- 3+ 4-	27-	15 15 18 12	15 39 18 22	154	19	1.0
10	4o 4o 5- 3+ 3o 3+ 3+ 3+	29o	27 27 39 18	15 18 18 18	180	22	1.1
11	2+ 3o 3o 2- 1- 1- 2- 1+	14+	9 15 15 6	3 3 6 5	62	8	0.4
12	3o 3- 2- 4- 2+ 3- 2+ 2-	20o	15 12 6 22	9 12 9 6	91	11	0.7
13	5- 5o 3o 6o 5o 4- 3+ 3+	34o	39 48 15 80	48 22 18 18	288	36	1.4
14	4o 5- 5- 4+ 4+ 5+ 6o 5+	39-	27 39 39 32	32 56 80 56	361	45	1.5
15	7- 5+ 6o 5- 5+ 5- 6- 4o	42+	111 56 80 39	56 39 67 27	475	59	1.7
16	5o 4+ 4- 4o 4+ 4+ 4- 5o	34+	48 32 22 27	32 32 22 48	263	33	1.3
17	3+ 3+ 3+ 3o 2o 4o 4+ 3+	27-	18 18 18 15	7 27 32 18	153	19	1.0
18	3o 3o 2- 2- 3- 3o 3o 2-	20-	15 15 6 6	12 15 15 6	90	11	0.6
19	1- 2o 2+ 3o 2+ 3- 3- 2o	18-	3 7 9 15	9 12 12 7	74	9	0.5
20	4o 3+ 2o 3- 2o 2+ 3o 2+	22-	27 18 7 12	7 9 15 9	104	13	0.7
21	3+ 4- 2+ 2- 2o 2- 3- 3+	21-	18 22 9 6	7 6 12 18	98	12	0.7
22	4+ 4o 4o 4+ 1+ 1+ 0+ 1o	21-	32 27 27 32	5 5 2 4	134	17	0.9
23	4- 4- 3o 2o 2o 2+ 2o 5o	24-	22 22 15 7	7 9 7 48	137	17	0.9
24	5- 5+ 5- 5o 6- 6- 6+ 6o	43+	39 56 39 48	67 67 94 80	490	61	1.7
25	5- 4o 3o 4o 4- 4+ 5- 5+	34-	39 27 15 27	22 32 39 56	257	32	1.3
26	5o 4+ 5- 3o 4- 4o 3- 4+	32-	48 32 39 15	22 27 12 32	227	28	1.2
27	4o 4- 3o 2o 3- 3- 2o 2+	22+	27 22 15 7	12 12 7 9	111	14	0.8
28	3+ 4- 3- 2o 3o 2- 2o 2o	20+	18 22 12 7	15 6 7 7	94	12	0.7
29	4- 3o 4- 3+ 5o 6o 6- 5-	35o	22 15 22 18	48 80 67 39	311	39	1.4
30	4o 4+ 4+ 3+ 4o 4o 4o 3+	31+	27 32 32 18	27 27 27 18	208	26	1.2

Kp INDICES 1983 (continued)

	Kp	Sum	May 1983	ap	Sum	Ap	Cp
1	3o 3- 3+ 4- 3+ 2o 6o 3+	27+	15 12 18 22	18 7 80 18	190	24	1.1
2	3+ 3- 1+ 2- 2o 4+ 4o 2o	21+	18 12 5 6	7 32 27 7	114	14	0.8
3	3- 2o 3- 2+ 3+ 2o 2o 3-	20-	12 7 12 9	18 7 7 12	84	10	0.6
4	3o 4+ 4- 4- 5- 5- 4- 3+	31o	15 32 22 22	39 39 22 18	209	26	1.2
5	3o 3- 2o 4o 6- 4o 4- 3+	28+	15 12 7 27	67 27 22 18	195	24	1.2
6	3- 4o 3+ 3- 2+ 3- 3- 2o	22+	12 27 16 12	9 12 12 7	109	14	0.8
7	1+ 2o 2o 3- 3- 2+ 2o 2o	17o	5 7 7 12	12 9 7 7	66	8	0.4
8	3o 2- 2+ 2o 2- 3- 3- 3+	19+	15 6 9 7	6 12 12 18	85	11	0.6
9	3o 2o 1+ 1- 1o 1o 1+ 1+	12-	15 7 5 3	4 4 5 5	48	6	0.3
10	2- 1+ 0+ 2o 2o 2o 3o 3-	15o	6 5 2 7	7 7 15 12	61	8	0.4
11	3o 3o 5+ 6o 4+ 6- 6o 5+	39-	15 15 56 80	32 67 80 56	401	50	1.6
12	6o 5+ 5- 4+ 4o 6- 5o 6-	41-	80 56 39 32	27 67 48 67	416	52	1.6
13	4o 4- 6- 4+ 5- 5+ 4o 4o	36-	27 22 67 32	39 56 27 27	297	37	1.4
14	5o 4o 4- 3o 3- 4o 4o 2o	28+	48 27 22 15	12 27 27 7	165	23	1.1
15	4- 3+ 3+ 3+ 4- 3+ 3o 4o	28-	22 18 18 18	22 18 15 27	158	20	1.0
16	2o 2o 2o 2o 3- 2+ 2+ 3o	18+	7 7 7 7	12 9 9 15	73	9	0.5
17	5- 3- 3+ 4+ 6- 5- 7+ 7+	40o	39 12 18 32	67 39 154 154	515	64	1.7
18	3o 2+ 3+ 3+ 3- 2+ 2o 2-	21-	15 9 18 18	12 9 7 6	94	12	0.7
19	1o 2o 2+ 2- 1- 1- 1o 1-	10o	4 7 9 6	3 3 4 3	39	5	0.2
20	1o 1+ 1- 0+ 1o 1- 3o 5o	13o	4 5 3 2	4 3 15 48	84	10	0.6
21	2o 3+ 3+ 3o 5+ 6o 4+ 2o	29+	7 18 18 15	56 80 32 7	233	29	1.3
22	3+ 5+ 5+ 4o 4o 5o 6+ 6o	39+	18 56 56 27	27 48 94 80	406	51	1.6
23	5o 4+ 5+ 4o 4- 5- 5+ 4o	36+	48 32 56 27	22 39 56 27	307	38	1.4
24	4o 4o 3o 3- 5- 8o 8- 7-	41-	27 27 15 12	39 207 179 111	617	77	1.8
25	5o 3+ 2o 1o 0+ 0+ 1+ 0+	14-	48 18 7 4	2 2 5 2	88	11	0.6
26	0+ 1- 1o 1+ 1+ 3- 4o 3+	15-	2 3 4 5	5 12 27 18	76	10	0.5
27	3+ 3- 2+ 1+ 3- 3o 2o 3-	20o	18 12 9 5	12 15 7 12	90	11	0.6
28	2o 2+ 1- 1- 1- 1+ 1o 1-	9+	7 9 3 3	3 5 4 3	37	5	0.2
29	1o 1o 1- 3o 2- 1o 0+ 1-	9+	4 4 3 15	6 4 2 3	41	5	0.2
30	1- 2- 2o 2+ 1+ 3+ 3+ 2o	17-	3 6 7 9	5 18 18 7	73	9	0.5
31	3o 2+ 3+ 2- 2+ 3+ 2o 2+	20+	15 9 18 6	9 18 7 9	91	11	0.7

	Kp	Sum	Jun 1983	ap	Sum	Ap	Cp
1	2- 4+ 3- 2+ 2- 3o 3- 2o	20+	6 32 12 9	6 15 12 7	99	12	0.7
2	0+ 2- 2+ 2o 3- 3- 2- 1+	15-	2 6 9 7	12 12 6 5	59	7	0.4
3	2+ 1+ 2- 2+ 1o 2+ 1o 2-	14-	9 5 6 9	4 9 4 6	52	6	0.3
4	1+ 1- 2- 0+ 0+ 0+ 0+ 1o	6o	5 3 6 2	2 2 2 4	26	3	0.1
5	1- 1o 1+ 2+ 2+ 2+ 2o 2-	14-	3 4 5 9	9 9 7 6	52	6	0.3
6	2o 1+ 3- 1+ 3o 3+ 2o 3-	18+	7 5 12 5	15 18 7 12	81	10	0.6
7	2+ 2+ 2o 1+ 1o 2- 2o 1-	13+	9 9 7 5	4 6 7 3	50	6	0.3
8	0+ 2- 2o 3+ 3o 4- 3o 3o	20o	2 6 7 18	15 22 15 15	100	12	0.7
9	2o 2o 4- 3o 3- 4+ 5- 3+	26-	7 7 22 15	12 32 39 18	152	19	1.0
10	4o 4- 3- 4o 6+ 6+ 3o 2o	32o	27 22 12 27	94 94 15 7	298	37	1.4
11	4- 3- 2+ 2- 1+ 1+ 3o 2o	18o	22 12 9 6	5 5 15 7	81	10	0.6
12	3o 3+ 2+ 3+ 3o 3+ 3o 4-	25o	15 18 9 18	15 18 15 22	130	16	0.9
13	7o 8- 6- 5- 5o 4- 5o 4-	42+	132 179 67 39	48 22 48 22	557	70	1.7
14	4- 3o 3o 2o 2o 2+ 2o 3-	21-	22 15 15 7	7 9 7 12	94	12	0.7
15	3+ 3- 3o 3+ 3+ 3o 4o 2-	24+	18 12 15 18	18 15 27 6	129	16	0.9
16	2+ 1+ 1+ 2o 2+ 3+ 2- 2+	17-	9 5 5 7	9 18 6 9	68	8	0.5
17	2o 2- 3o 3- 3- 4+ 4+ 4-	24+	7 6 15 12	12 32 32 22	138	17	0.9
18	3+ 5o 6- 4o 4- 5+ 4- 5-	35+	18 48 67 27	22 56 22 39	299	37	1.4
19	3+ 4- 4- 4- 4- 4- 3o 3o	28-	18 22 22 22	22 22 15 15	158	20	1.0
20	4- 3+ 3- 3+ 4o 3+ 3- 3-	26-	22 18 12 18	27 18 12 12	139	17	0.9
21	3+ 4o 4o 2+ 3- 3+ 4+ 3o	27o	18 27 27 9	12 18 32 15	158	20	1.0
22	2- 2o 2+ 3- 4o 5o 5- 2+	25-	6 7 9 12	27 48 39 9	157	20	1.0
23	3o 3- 5- 3+ 3o 3+ 2o 3o	25o	15 12 39 18	15 18 7 15	139	17	0.9
24	3- 2+ 2- 1- 1+ 2- 1+ 1-	12+	12 9 6 3	5 6 5 3	49	6	0.3
25	0+ 0o 0+ 1o 1o 1o 3o 2o	9-	2 0 2 4	4 4 15 7	38	5	0.2
26	1+ 3- 2o 2+ 3+ 4o 2+ 3o	21o	5 12 7 9	18 27 9 15	102	13	0.7
27	2- 1+ 2+ 2- 2- 2o 2o 3o	16-	6 5 9 6	6 7 7 15	61	8	0.4
28	2+ 1o 1- 3- 4- 3+ 3o 3-	19+	9 4 3 12	22 18 15 12	95	12	0.7
29	2o 3- 4- 4- 3+ 2+ 2- 2o	21+	7 12 22 22	18 9 6 7	103	13	0.7
30	2- 1+ 2o 2+ 2o 2o 2- 2o	15o	6 5 7 9	7 7 6 7	54	7	0.3

Kp INDICES 1983 (continued)

	Kp								Sum	Jul 1983 ap								Sum	Ap	Cp
1	2+	2o	1o	1+	2-	1+	2o	1+	13o	9	7	4	5	6	5	7	5	48	6	0.3
2	1o	2-	1+	1+	2+	3-	3+	3-	16+	4	6	5	5	9	12	18	12	71	9	0.5
3	3-	2-	2o	2+	1+	2o	3-	2+	17o	12	6	7	9	5	7	12	9	67	8	0.5
4	2-	2-	1+	1o	2+	3-	3o	2o	16-	6	6	5	4	9	12	15	7	64	8	0.4
5	2-	1o	1o	2+	2-	2+	1o	1o	12o	6	4	4	9	6	9	4	4	46	6	0.3
6	2-	2o	2+	5-	3+	3-	2+	3-	22-	6	7	9	39	18	12	9	12	112	14	0.8
7	1+	2-	2-	3+	4-	3-	3-	4o	21o	5	6	6	18	22	12	12	27	108	14	0.8
8	2o	2+	3+	2+	2-	2+	2+	3-	19o	7	9	18	9	6	9	9	12	79	10	0.6
9	3o	4-	1+	3+	2o	2+	3-	3-	21o	15	22	5	18	7	9	12	12	100	12	0.7
10	2-	2o	2-	1+	1-	1-	1o	1-	10-	6	7	6	5	3	3	4	3	37	5	0.2
11	1-	1-	1-	2-	1o	1o	1-	2o	8+	3	3	3	6	4	4	3	7	33	4	0.1
12	2-	1-	1+	2+	4-	4-	5-	4-	22-	6	3	5	9	22	22	39	22	128	16	0.9
13	5o	4o	4o	3+	3o	1+	1o	2o	24-	48	27	27	18	15	5	4	7	151	19	1.0
14	1-	2o	2+	2o	2o	2o	2-	1o	14-	3	7	9	7	7	7	6	4	50	6	0.3
15	1+	2-	1-	1-	1o	1o	2-	2o	10o	5	6	3	3	4	4	6	7	38	5	0.2
16	3-	3+	2o	4+	4+	3o	4+	4-	28-	12	18	7	32	32	15	32	22	170	21	1.1
17	4o	4o	4-	4+	4-	4-	4o	4+	32-	27	27	22	32	22	22	27	32	211	26	1.2
18	5-	4o	3o	3o	3+	3+	3-	3o	27o	39	27	15	15	18	18	12	15	159	20	1.0
19	3-	2o	2+	2+	2-	3o	2+	2o	18+	12	7	9	9	6	15	9	7	74	9	0.5
20	2+	2+	3-	1+	1o	1+	2-	2o	15-	9	9	12	5	4	5	6	7	57	7	0.4
21	1+	2+	2-	2o	2-	2o	2-	2-	14+	5	9	6	7	6	7	6	6	52	6	0.3
22	2+	1o	1o	1o	1-	1-	3-	5-	14o	9	4	4	4	3	3	12	39	78	10	0.5
23	3o	3+	3+	5-	3o	3o	5-	4o	29o	15	18	18	39	15	15	39	27	186	23	1.1
24	6-	5o	4o	4-	6o	4o	4o	3+	36-	67	48	27	22	80	27	27	18	316	40	1.4
25	3o	4-	3-	2+	3-	2+	2o	2-	20+	15	22	12	9	12	9	7	6	92	12	0.7
26	2+	2o	2-	2o	2o	2-	2-	2o	15+	9	7	6	7	7	6	6	7	55	7	0.3
27	1+	2o	2o	3o	2o	2o	3-	3+	18+	5	7	7	15	7	7	12	18	78	10	0.5
28	1+	2o	2o	2+	2o	3+	3+	3o	19+	5	7	7	9	7	18	18	15	86	11	0.6
29	3o	4+	3-	4-	2+	3-	2+	2+	23+	15	32	12	22	9	12	9	9	120	15	0.8
30	4o	3+	3-	4o	3-	2+	3o	4o	26o	27	18	12	27	12	9	15	27	147	18	1.0
31	3o	2o	1+	1+	2+	1+	2-	1+	14+	15	7	5	5	9	5	6	5	57	7	0.4

	Kp								Sum	Aug 1983 ap								Sum	Ap	Cp
1	1-	2-	2o	1-	1+	1-	1+	2+	11-	3	6	7	3	5	3	5	9	41	5	0.2
2	4+	4o	5+	3+	5+	4-	4+	4-	34o	32	27	56	18	56	22	32	22	265	33	1.3
3	4-	3-	1+	2+	3+	3o	4+	4-	24+	22	12	5	9	18	15	32	22	135	17	0.9
4	2o	2+	1+	1o	1o	1-	1+	2-	11+	7	9	5	4	4	3	5	6	43	5	0.2
5	1-	0+	0+	0o	0+	0+	1-	1+	4o	3	2	2	0	2	2	3	5	19	2	0.0
6	1o	2o	0+	1-	2o	2o	2+	2-	12o	4	7	2	3	7	7	9	6	45	6	0.3
7	1o	1-	2o	2-	2o	2+	4+	6o	20o	4	3	7	6	7	9	32	80	148	18	1.0
8	7+	8-	6+	4+	2+	2+	1+	3-	34+	154	179	94	32	9	9	5	12	494	62	1.7
9	5-	3o	2-	2-	2o	2o	1+	1o	17+	39	15	6	6	7	7	5	4	89	11	0.6
10	1-	2+	1o	2-	2-	1o	0+	1+	10o	3	9	4	6	6	4	2	5	39	5	0.2
11	2o	2-	1-	1+	2-	2-	3-	1+	13o	7	6	3	5	6	6	12	5	50	6	0.3
12	3-	4+	4-	3o	4o	4-	5o	4+	31-	12	32	22	15	27	22	48	32	210	26	1.2
13	4o	3+	4+	5o	4o	2o	3-	4+	30-	27	18	32	48	27	7	12	32	203	25	1.2
14	3o	2-	2-	1o	2o	3-	3o	2+	17+	15	6	6	4	7	12	15	9	74	9	0.5
15	3o	2o	1o	3-	2+	3+	2-	3-	19-	15	7	4	12	9	18	6	12	83	10	0.6
16	1+	0o	0o	0+	2-	1+	2+	2o	9o	5	0	0	2	6	5	9	7	34	4	0.1
17	2+	2o	1+	2-	1+	1o	1+	2+	13+	9	7	5	6	5	4	5	9	50	6	0.3
18	1-	0+	0o	0+	0+	0+	0o	1-	3-	3	2	0	2	2	2	0	3	14	2	0.0
19	0o	0+	0+	2o	3+	4o	2+	2+	15-	0	2	2	7	18	27	9	9	74	9	0.5
20	1o	3-	2-	2-	2o	3-	4o	3-	18+	4	12	6	6	7	12	27	12	86	11	0.6
21	4+	3o	3+	5-	3+	4+	4-	4o	31-	32	15	18	39	18	32	22	27	203	25	1.2
22	2-	2-	2o	3o	3-	3-	5o	3-	21+	6	6	7	15	12	12	48	12	118	15	0.8
23	3o	6o	5-	4o	4o	3+	5-	3-	32+	15	80	39	27	27	18	39	12	257	32	1.3
24	3+	4+	4o	4+	3+	3+	4-	3+	30-	18	32	27	32	18	18	22	18	185	23	1.1
25	6o	4o	5+	4o	4o	3+	5-	3o	34+	80	27	56	27	27	18	39	15	289	36	1.4
26	5-	5-	3o	3+	3o	4+	5o	2-	30-	39	39	15	18	15	32	48	6	212	26	1.2
27	2+	0+	0+	1-	2+	2-	1+	1-	10-	9	2	2	3	9	6	5	3	39	5	0.2
28	3-	2o	1+	2+	2+	1+	3-	2-	16+	12	7	5	9	9	5	12	6	65	8	0.4
29	3-	2+	1+	2+	3o	3+	4o	5-	24-	12	9	5	9	15	18	27	39	134	17	0.9
30	4+	4o	4-	2+	3-	3o	3-	3+	26o	32	27	22	9	12	15	12	18	147	18	1.0
31	5o	4-	4o	3+	3-	5-	4+	4+	32o	48	22	27	18	12	39	32	32	230	29	1.3

Kp INDICES 1983 (continued)

	Kp	Sum	Sep 1983	ap	Sum	Ap	Cp
1	4+ 5- 2- 3- 2+ 2+ 3o 3-	24-	32 39 6 12	9 9 15 12	134	17	0.9
2	2o 2- 1+ 1+ 1o 2o 2o 2+	14-	7 6 5 5	4 7 7 9	50	6	0.3
3	2o 2+ 2+ 1- 1+ 1+ 1o 0+	11+	7 9 9 3	5 5 4 2	44	6	0.2
4	1- 0o 0+ 1- 0+ 0+ 1+ 2-	5+	3 0 2 3	2 2 5 6	23	3	0.1
5	2- 0+ 0o 0o 1o 1o 1+ 2-	7o	6 2 0 0	4 4 5 6	27	3	0.1
6	2o 2o 1o 1o 1o 1+ 2- 2-	12-	7 7 4 4	4 5 6 6	43	5	0.2
7	2- 2o 2o 4- 4+ 5+ 4o 3o	26o	6 7 7 22	32 56 27 15	172	22	1.1
8	2+ 2o 4- 4- 3+ 3- 3+ 3-	24-	9 7 22 22	18 12 18 12	120	15	0.8
9	3o 3- 2+ 3o 3o 3o 4o 4-	25-	15 12 9 15	15 15 27 22	130	16	0.9
10	3+ 2o 2o 3- 2+ 3- 3+ 2+	21-	18 7 7 12	9 12 18 9	92	12	0.7
11	3+ 2o 2o 3- 3- 3- 4- 2+	21+	18 7 7 12	12 12 22 9	99	12	0.7
12	2+ 3o 3+ 3+ 4- 1o 2- 2+	21-	9 15 18 18	22 4 6 9	101	13	0.7
13	3- 2- 2o 1+ 2+ 2- 1o 2+	15o	12 6 7 5	9 6 4 9	58	7	0.4
14	2o 1+ 2o 1o 1+ 2+ 2- 2o	14-	7 5 7 4	5 9 6 7	50	6	0.3
15	3+ 2o 3o 3- 2o 5- 5- 4+	27-	18 7 15 12	7 39 39 32	169	21	1.1
16	3- 4o 4+ 4- 4o 5- 4o 3+	31-	12 27 32 22	27 39 27 18	204	26	1.2
17	4o 5+ 5o 4- 2o 3+ 3- 3-	29-	27 56 48 22	7 18 12 12	202	25	1.2
18	3o 3- 2+ 2- 2o 2+ 3o 3+	20+	15 12 9 6	7 9 15 18	91	11	0.7
19	5- 5o 4o 5- 5o 5- 6+ 6+	41-	39 48 27 39	48 39 94 94	428	54	1.6
20	4+ 4+ 3+ 3+ 4o 4o 3- 2+	28+	32 32 18 18	27 27 12 9	175	22	1.1
21	3+ 3- 3+ 1+ 2+ 3- 1+ 2+	19+	18 12 18 5	9 12 5 9	88	11	0.6
22	3+ 3- 3+ 4+ 2o 2- 1o 2o	20+	18 12 18 32	7 6 4 7	104	13	0.7
23	1o 1o 0+ 1+ 2- 1+ 1- 1o	8+	4 4 2 5	6 5 3 4	33	4	0.1
24	3o 1+ 1o 2- 3- 3o 2- 2+	17-	15 5 4 6	12 15 6 9	72	9	0.5
25	5- 4+ 4- 3+ 4+ 5+ 5- 4o	34+	39 32 22 18	32 56 39 27	265	33	1.3
26	5o 5+ 5- 4+ 3+ 2o 2+ 3-	30-	48 56 39 32	18 7 9 12	221	28	1.2
27	4o 2+ 2+ 3- 3- 2o 2o 4-	22-	27 9 9 12	12 7 7 22	105	13	0.8
28	4o 3o 1- 1+ 2+ 2+ 2o 2+	18o	27 15 3 5	9 9 7 9	84	10	0.6
29	4- 3+ 1o 2o 1- 1- 1+ 1+	14o	22 18 4 7	3 3 5 5	67	8	0.5
30	1- 0o 0+ 1- 1o 0+ 1- 1+	5o	3 0 2 3	4 2 3 5	22	3	0.0

	Kp	Sum	Oct 1983	ap	Sum	Ap	Cp
1	2o 2- 1o 1+ 1o 4o 3- 4-	17+	7 6 4 5	4 27 12 22	87	11	0.6
2	3+ 5o 4o 3+ 4- 3+ 3+ 3+	29+	18 48 27 18	22 18 18 18	187	23	1.1
3	3- 3o 4+ 4o 3+ 2+ 2o 4-	25+	12 15 32 27	18 9 7 22	142	18	1.0
4	3o 3+ 4+ 5o 6o 7- 4- 3o	35o	15 18 32 48	80 111 22 15	341	43	1.5
5	2o 2- 3- 2o 3- 1+ 2- 3-	17-	7 6 12 7	12 5 6 12	67	8	0.5
6	3+ 3- 3o 3o 4- 5o 4o 3+	28o	18 12 15 15	22 48 27 18	175	22	1.1
7	2+ 4o 2o 2+ 2- 3- 2- 3-	19+	9 27 7 9	6 12 6 12	88	11	0.6
8	3o 3- 3- 2+ 3o 5- 3+ 2+	24o	15 12 12 9	15 39 18 9	129	16	0.9
9	3- 2- 1o 1- 1o 1+ 1o 1+	11-	12 6 4 3	4 5 4 5	43	5	0.2
10	0+ 1o 2- 1+ 1+ 2+ 4- 2-	13+	2 4 6 5	5 9 22 6	59	7	0.4
11	2- 2+ 2+ 2o 2- 1+ 0+ 0o	12-	6 9 9 7	6 5 2 0	44	6	0.2
12	0+ 1o 1- 1+ 1- 1o 2- 2o	9-	2 4 3 5	3 4 6 7	34	4	0.1
13	5- 5+ 4o 4o 3+ 5- 3o 4-	33-	39 56 27 27	18 39 15 22	243	30	1.3
14	4- 3- 3+ 2+ 3o 3+ 5- 5-	28-	22 12 18 9	15 18- 39 39	172	22	1.1
15	4o 4- 3o 4o 3+ 2+ 4- 3o	27o	27 22 15 27	18 9 22 15	155	19	1.0
16	2o 4o 2+ 2- 2o 3o 3o 3o	21o	7 27 9 6	7 15 15 15	101	13	0.7
17	2+ 3+ 5o 5o 5+ 5+ 5+ 6+	38o	9 18 48 48	56 56 56 94	385	48	1.6
18	5+ 5o 5+ 6- 5o 5o 6- 3o	40o	56 48 56 67	48 48 67 15	405	51	1.6
19	3o 3o 3- 2o 1- 2o 1o 1-	15o	15 15 12 7	3 7 4 3	66	8	0.4
20	0o 2+ 1+ 2o 1- 1o 2+ 2+	12o	0 9 5 7	3 4 9 9	46	6	0.3
21	2- 1o 3- 3+ 3+ 4- 4- 4o	23+	6 4 12 18	18 22 22 27	129	16	0.9
22	5o 4o 4- 3- 3+ 2o 2+ 3-	26-	48 27 22 12	18 7 9 12	155	19	1.0
23	2+ 2+ 2+ 3- 4o 3+ 5o 5-	27-	9 9 9 12	27 18 48 39	171	21	1.1
24	4+ 3o 2+ 3+ 4- 4- 5- 3o	28o	32 15 9 18	22 22 39 15	172	22	1.1
25	2+ 2o 1o 1+ 2o 2- 1o 2o	13+	9 7 4 5	7 6 4 7	49	6	0.3
26	0+ 1+ 2- 1o 0+ 0+ 0+ 0+	6-	2 5 6 4	2 2 2 2	25	3	0.1
27	0o 0+ 1- 0+ 0+ 1- 1+ 0o	4-	0 2 3 2	2 3 5 0	17	2	0.0
28	2+ 1- 0o 0o 0+ 2o 2+ 5o	13-	9 3 0 0	2 7 9 48	78	10	0.5
29	5- 4+ 5- 5- 5- 3+ 5- 4o	35o	39 32 39 39	39 18 39 27	272	34	1.3
30	4o 3+ 4- 2+ 3+ 4o 4- 2-	26o	27 18 22 9	18 27 22 6	149	19	1.0
31	3- 2o 3- 3- 2+ 2+ 1- 3-	18o	12 7 12 12	9 9 3 12	76	10	0.5

Kp INDICES 1983 (continued)

	Kp	Sum	Nov 1983	ap	Sum	Ap	Cp
1	4o 4o 2+ 3+ 3+ 1+ 3+ 4+	26o	27 27 9 18	18 5 18 32	154	19	1.0
2	4+ 6o 5o 5- 4+ 3+ 3o 3+	34o	32 80 48 39	32 18 15 18	282	35	1.4
3	3+ 2o 2- 3- 3o 5+ 4+ 3o	25+	18 7 6 12	15 56 32 15	161	20	1.0
4	2o 2o 1o 2- 3- 2o 1o 2-	14o	7 7 4 6	12 7 4 6	53	7	0.3
5	1o 1o 1- 1+ 1- 0+ 0+ 1-	6o	4 4 3 5	3 2 2 3	26	3	0.1
6	0+ 0+ 0+ 1- 1o 1- 1+ 0+	5o	2 2 2 3	4 3 5 2	23	3	0.1
7	0+ 1o 1+ 3- 3- 3+ 3+ 4-	18+	2 4 5 12	12 18 18 22	93	12	0.7
8	5+ 3+ 4o 4+ 4o 4- 3o 3+	31o	56 18 27 32	27 22 15 18	215	27	1.2
9	4- 5- 3+ 4o 4+ 4o 7o 5o	36o	22 39 18 27	32 27 132 48	345	43	1.5
10	5o 4- 3+ 3- 3+ 4o 6- 3+	31o	48 22 18 12	18 27 67 18	230	29	1.3
11	5- 3- 3o 5o 5o 4- 6o 5+	35+	39 12 15 48	48 22 80 56	320	40	1.4
12	4- 5o 6o 4+ 5+ 4+ 5o 4+	38o	22 48 80 32	56 32 48 32	350	44	1.5
13	2+ 4- 4- 4+ 3+ 4- 4+ 4+	30-	9 22 22 32	18 22 32 32	189	24	1.1
14	1o 3+ 5- 4+ 5- 5+ 4o 2o	29+	4 18 39 32	39 56 27 7	222	28	1.2
15	3+ 3o 3o 3- 4o 4o 5- 4+	29o	18 15 15 12	27 27 39 32	185	23	1.1
16	5o 3+ 4- 3- 3+ 5- 4o 5+	32o	48 18 22 12	18 39 27 56	240	30	1.3
17	5o 4+ 4o 6o 4- 4+ 4+ 4o	36-	48 32 27 80	22 32 32 27	300	38	1.4
18	5- 5o 2+ 4- 4- 4+ 4o 3o	31-	39 48 9 22	22 32 27 15	214	27	1.2
19	4- 3+ 3+ 2+ 3o 3o 3o 4+	26o	22 18 18 9	15 15 15 32	144	18	1.0
20	4- 3o 4o 4+ 4+ 4+ 4+ 3+	31+	22 15 27 32	32 32 32 18	210	26	1.2
21	3o 2+ 1+ 1o 1o 3o 3o 2o	17-	15 9 5 4	4 15 15 7	74	9	0.5
22	2+ 2+ 2+ 1+ 1o 1- 1+ 1o	12+	9 9 9 5	4 3 5 4	48	6	0.3
23	1- 1- 1- 0o 0+ 0o 1- 0+	3+	3 3 3 0	2 0 3 2	16	2	0.0
24	1+ 3- 3- 3o 2+ 3o 3+ 2-	20o	5 12 12 15	9 15 18 6	92	12	0.7
25	3- 4- 3o 3o 3- 2- 3o 4o	24-	12 22 15 15	12 6 15 27	124	16	0.9
26	5o 4+ 4+ 2+ 3- 3- 4- 2o	27o	48 32 32 9	12 12 22 7	174	22	1.1
27	0+ 2- 2+ 3- 3- 2o 2- 1o	14+	2 6 9 12	12 7 6 4	58	7	0.4
28	1o 1o 1o 2- 3+ 4+ 4+ 3+	20o	4 4 4 6	18 32 32 18	118	15	0.8
29	4+ 3+ 2+ 5- 4- 3- 4- 4o	29-	32 18 9 39	22 12 22 27	181	23	1.1
30	4o 3o 3+ 3+ 3+ 4o 5- 3-	28+	27 15 18 18	18 27 39 12	174	22	1.1

	Kp	Sum	Dec 1983	ap	Sum	Ap	Cp
1	3+ 3+ 2+ 2+ 2+ 2+ 3o 3+	22+	18 18 9 9	9 9 15 18	105	13	0.8
2	2o 3- 2+ 2- 2+ 2+ 2o 1o	16+	7 12 9 6	9 9 7 4	63	8	0.4
3	1- 1- 0+ 0+ 1o 1o 1o 2o	7o	3 3 2 2	4 4 4 7	29	4	0.1
4	0o 1+ 1+ 1o 1- 2+ 1o 1+	9o	0 5 5 4	3 9 4 5	35	4	0.2
5	3o 3+ 3o 2+ 3- 3+ 3o 4-	24+	15 18 15 9	12 18 15 22	124	16	0.9
6	3+ 4+ 5- 4o 5o 3+ 4- 4-	32o	18 32 39 27	48 18 22 22	226	28	1.2
7	4- 4+ 4o 4o 4o 4+ 4o 4-	32o	22 32 27 27	27 32 27 22	216	27	1.2
8	4- 3o 2+ 2- 3- 1o 2+ 3-	19+	22 15 9 6	12 4 9 12	89	11	0.6
9	2o 1o 0+ 0+ 0+ 1- 1- 0o	5+	7 4 2 2	2 3 3 0	23	3	0.1
10	0o 3o 5- 4+ 4o 4o 4o 3-	27-	0 15 39 32	27 27 27 12	179	22	1.1
11	3- 3o 3+ 4o 6o 5o 4o 5-	33-	12 15 18 27	80 48 27 39	266	33	1.3
12	4- 3o 3+ 4- 5- 4o 4- 3+	29+	22 15 18 22	39 27 22 18	183	23	1.1
13	4o 4- 3o 4- 3+ 4- 4+ 4+	30o	27 22 15 22	18 22 32 32	190	24	1.1
14	3+ 4o 4- 3+ 4- 4- 4+ 4+	30+	18 27 22 18	22 22 32 32	193	24	1.2
15	4o 3+ 3+ 3o 3o 3- 2- 4-	25-	27 18 18 15	15 12 6 22	133	17	0.9
16	3o 2o 1o 2- 1- 0o 1o 1+	11-	15 7 4 6	3 0 4 5	44	6	0.2
17	2+ 1+ 1- 1o 2- 2o 2o 2o	13o	9 5 3 4	6 7 7 7	48	6	0.3
18	1+ 0o 0o 1- 2- 3o 3- 3-	12o	5 0 0 3	6 15 12 12	53	7	0.3
19	3o 3o 2+ 2+ 1+ 2o 2o 2o	18o	15 15 9 9	5 7 7 7	74	9	0.5
20	3o 2o 0+ 0+ 0+ 0+ 1- 1+	8+	15 7 2 2	2 2 3 5	38	5	0.2
21	1- 2- 0+ 0+ 1- 1+ 1o 1o	7o	3 6 2 2	3 5 4 4	29	4	0.1
22	3- 2+ 2+ 4- 3- 3+ 2+ 2+	22-	12 9 9 22	12 18 9 9	100	12	0.7
23	3- 3o 3- 2o 3o 2+ 3- 2-	20o	12 15 12 7	15 9 12 6	88	11	0.6
24	1+ 0+ 1o 2- 4+ 4+ 3o 4o	20o	5 2 4 6	32 32 15 27	123	15	0.9
25	4- 3- 2- 3- 3- 2+ 3- 2-	20o	22 12 6 12	12 9 12 6	91	11	0.7
26	2o 3o 2- 2+ 2o 3- 5- 4+	23-	7 15 6 9	7 12 39 32	127	16	0.9
27	4o 3o 1+ 2o 2o 3- 4o 3+	22+	27 15 5 7	7 12 27 18	118	15	0.8
28	3+ 3o 3- 3+ 3o 2- 2o 3-	22-	18 15 12 18	15 6 7 12	103	13	0.7
29	3o 2- 3- 3- 3o 2- 1- 1o	16+	15 6 12 12	15 6 3 4	73	9	0.5
30	3- 4o 4+ 5o 4+ 5+ 5- 3+	34-	12 27 32 48	32 56 39 18	264	33	1.3
31	3o 4o 3+ 3+ 3+ 5o 5- 4+	31o	15 27 18 18	18 48 39 32	215	27	1.2

FREQUENCIES OF Kp INDICES 1983

Kp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0o	1	1	3	.	.	1	.	6	4	6	2	6
0+	4	2	3	1	7	8	.	15	8	12	10	12
1-	8	8	7	3	14	6	13	14	10	10	10	12
1o	16	10	11	2	12	9	18	11	17	14	15	15
1+	18	15	11	4	13	16	22	20	19	12	8	11
2-	19	8	20	12	9	23	29	23	17	16	8	15
2o	19	18	17	15	32	29	35	19	28	18	8	18
2+	29	15	19	15	15	26	32	22	27	26	12	21
3-	33	19	17	20	24	24	24	21	24	21	18	25
3o	22	19	20	28	18	26	17	14	13	19	21	26
3+	31	14	16	25	26	22	16	17	20	23	29	23
4-	11	20	18	25	10	20	12	10	11	17	19	18
4o	15	20	16	24	19	9	14	16	12	16	19	19
4+	10	8	22	20	8	5	6	17	10	4	28	14
5-	4	11	17	16	8	5	6	9	10	12	10	7
5o	3	7	7	9	6	4	2	5	4	11	11	4
5+	2	12	7	9	9	1	.	3	4	6	6	1
6-	.	2	7	5	6	2	1	.	.	2	1	.
6o	.	5	5	5	6	.	1	3	.	1	4	1
6+	.	1	1	1	1	2		1	2	1	.	
7-	.	1	1	1	1	.		.		1	.	
7o	1	1	2		.	1		.			1	
7+	1	4	1		2	.		1				
8-	.	2			1	1		1				
8o	.	1			1							
8+	1											
9-												
o												
	248	224	248	240	248	240	248	248	240	248	240	248

Reduction of Kp to Kp' due to solar flare effects

Month	Day	Eighth	Kp	Kp'
Mar	17	5	1o	1-
Jun	16	6	3+	3o

MONTHLY MEAN VALUES Ap Cp 1983

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Ap	16	27	23	24	22	15	12	16	14	17	21	15	18.5
Cp	0.75	0.99	0.95	1.04	0.88	0.72	0.63	0.73	0.69	0.77	0.93	0.71	0.82

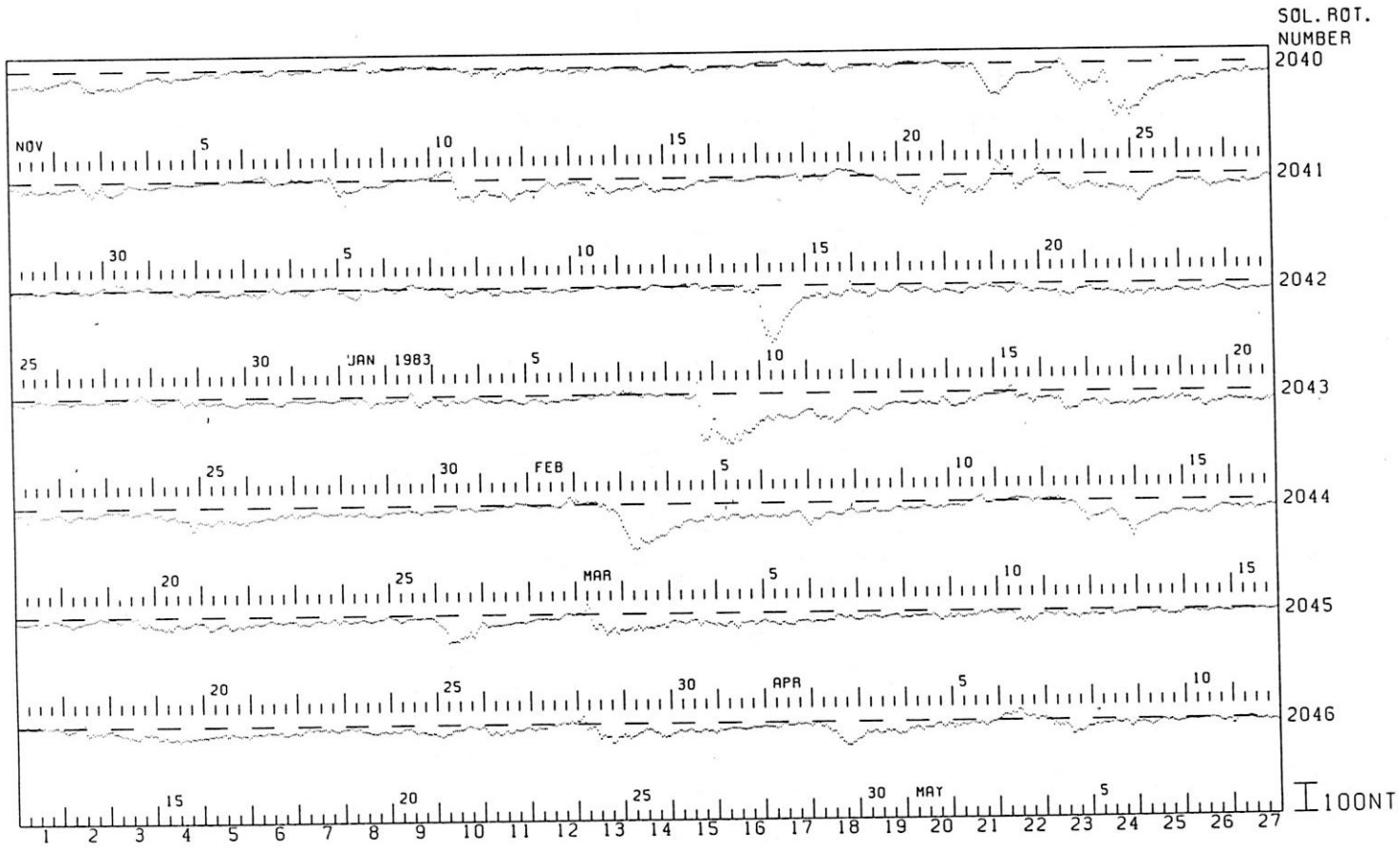
MONTHLY AND YEARLY **Ap** 1932 - 1983

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1932	11	12	18	17	15	7	7	12	12	10	8	9	11.5
1933	10	11	12	12	12	8	7	9	12	10	9	7	10.1
1934	6	8	11	6	7	5	6	9	10	6	5	8	7.2
1935	9	10	10	8	6	9	7	5	13	12	8	9	8.9
1936	9	11	9	15	10	12	11	5	5	9	10	5	9.1
1937	7	13	12	20	13	12	12	10	9	20	12	10	12.5
1938	28	16	13	18	18	9	13	12	17	16	10	11	15.3
1939	7	15	19	28	21	15	19	19	13	22	9	11	16.5
1940	15	12	36	18	13	16	12	11	14	14	16	15	16.1
1941	14	18	33	15	11	11	19	16	27	11	16	11	16.8
1942	9	12	22	17	8	8	13	13	17	22	15	11	13.8
1943	11	9	13	14	14	12	15	31	25	24	20	14	17.0
1944	13	12	17	15	9	8	6	9	10	11	6	14	10.8
1945	10	10	17	13	9	7	9	7	10	11	8	13	10.4
1946	12	22	33	20	18	16	22	11	34	13	12	9	18.6
1947	12	12	32	18	14	16	16	25	32	23	14	11	18.8
1948	12	13	17	13	19	10	10	20	15	27	16	13	15.4
1949	20	14	19	14	18	14	8	14	13	25	15	9	15.4
1950	12	18	14	18	16	14	14	25	22	28	20	16	18.1
1951	16	22	21	27	20	17	20	22	40	24	18	20	22.3
1952	19	26	33	34	27	18	15	13	23	20	12	15	21.2
1953	15	15	21	16	16	13	16	19	21	16	14	7	15.7
1954	9	16	16	14	7	6	8	10	17	15	9	6	11.0
1955	12	12	14	14	11	9	8	9	13	11	13	8	11.3
1956	18	15	20	27	26	17	13	15	18	14	24	10	18.0
1957	17	17	26	21	11	22	16	14	49	14	18	18	20.1
1958	15	27	26	20	17	24	25	18	20	16	8	15	19.2
1959	14	24	24	17	19	15	32	23	28	19	22	19	21.3
1960	15	14	18	42	24	20	20	20	20	36	32	21	23.6
1961	12	16	14	14	13	14	28	11	13	16	10	12	14.4
1962	7	11	8	14	7	9	12	15	19	20	13	13	12.3
1963	11	9	8	10	11	11	12	13	28	15	12	11	12.6
1964	12	12	13	13	10	9	9	8	11	10	7	5	9.9
1965	6	9	8	8	6	10	8	9	10	7	6	7	7.7
1966	7	8	13	7	9	6	9	11	21	11	9	11	10.2
1967	11	11	7	9	25	12	8	9	16	10	10	14	12.0
1968	11	16	13	13	13	17	10	12	14	16	17	10	13.5
1969	8	15	17	14	17	9	8	8	15	9	10	7	11.3
1970	7	7	18	15	9	10	19	13	11	12	12	9	11.9
1971	12	12	11	15	13	9	8	9	13	12	11	10	11.3
1972	13	10	12	11	10	14	8	24	13	12	14	10	12.6
1973	16	20	25	30	17	17	12	12	14	18	12	11	17.0
1974	15	16	23	21	18	17	24	19	23	26	18	15	19.6
1975	16	18	20	16	13	11	12	10	10	12	18	12	13.9
1976	13	17	23	17	14	10	9	9	13	12	9	10	12.9
1977	10	11	11	16	11	8	14	13	16	13	10	10	11.9
1978	15	16	17	24	25	20	13	17	18	12	15	13	17.0
1979	16	15	19	25	14	12	12	18	14	12	10	9	14.5
1980	10	11	8	11	10	13	11	10	8	14	13	13	11.1
1981	9	14	18	28	20	12	19	15	12	23	15	10	16.3
1982	12	33	18	22	17	22	30	21	36	18	21	21	22.4
1983	16	27	23	24	22	15	12	16	14	17	21	15	18.5

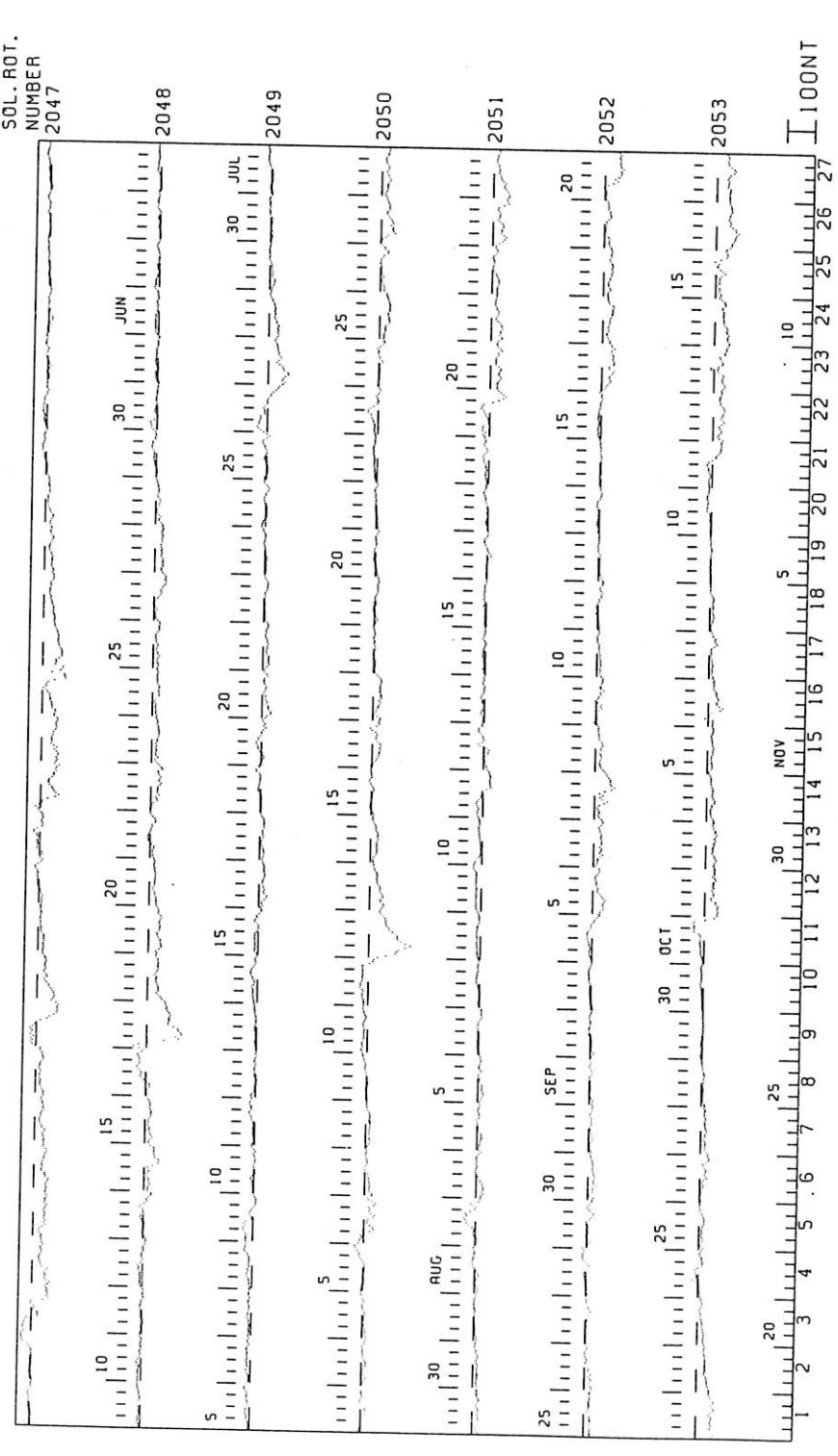
SECTION 3

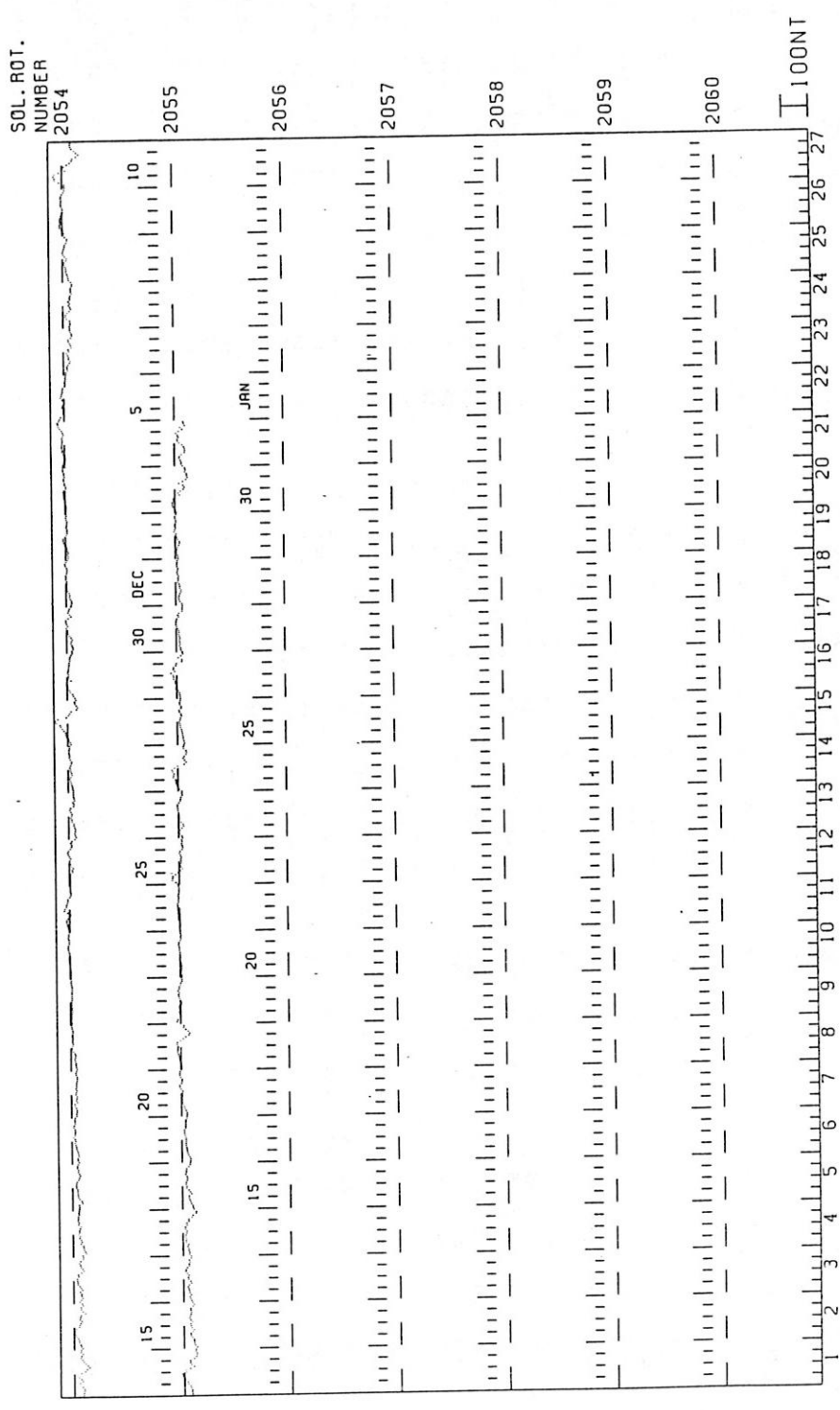
3.4. Dst INDICES

- Hourly values of **Dst** 1983 (graph) 79
- Monthly tables of **Dst** hourly values 82
- Tables of daily means of **Dst** 94
- Monthly and yearly mean values
  1957-1983 95



HOURLY VALUES OF Dst 1983


SOL. ROT. NUMBER
2047
2048
2049
2050
2051
2052
2053
JUN
JUL
AUG
SEP
OCT
NOV
HOUR


SOL. ROT. NUMBER
2054
2055
2056
2057
2058
2059
2060
DEC
JAN
1 HOUR

JANUARY 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-13	-12	-11	-11	-20	-24	-28	-31	-33	-39	-36	-29	-18	-3	-1	-1	-4	-8	-5	-7	-5	-5	-1	2
2	6	4	0	-1	-7	-14	-13	-7	-6	-1	4	6	12	13	16	14	7	5	5	5	7	0	0	-2
3	-2	3	0	-1	3	1	1	-7	-20	-27	-30	-32	-30	-21	-12	-15	-14	-11	-7	-12	-16	-17	-15	-11
4	-11	-10	-7	-9	-8	-8	-12	-18	-27	-24	-26	-25	-17	-11	-12	-14	-15	-17	-15	-12	-13	-15	-11	-12
5	-16	-19	-19	-16	-10	-6	-7	-5	-7	-12	-14	-13	-14	-16	-18	-18	-14	-12	-10	-9	-8	-8	-10	-14
6	-16	-14	-13	-12	-10	-8	-8	-6	-5	-6	-4	-2	-1	3	5	3	2	0	-5	-6	-4	-2	-2	-3
7	-6	-6	-4	-3	-4	-4	-1	-1	-1	-6	-8	-10	-12	-11	-11	-7	-2	4	6	5	4	3	1	0
8	-2	-2	-2	-3	-8	-3	-1	0	2	6	8	7	-5	-2	6	7	9	7	0	-9	-8	-6	-5	-9
9	-17	-17	-15	-10	-9	-12	-17	-17	-16	-15	-17	-14	-7	-3	-6	-2	-1	-22	-24	-17	-18	-27	-26	-14
10	-16	-79	-132	-158	-187	-171	-191	-213	-201	-203	-181	-173	-155	-131	-118	-117	-105	-92	-84	-76	-69	-65	-58	-48
11	-48	-50	-51	-42	-42	-41	-30	-33	-36	-47	-49	-47	-40	-30	-34	-36	-39	-37	-44	-40	-29	-23	-23	10
12	-16	-23	-27	-29	-24	-32	-30	-33	-45	-46	-42	-38	-32	-17	-23	-26	-26	-27	-27	-30	-25	-20	-14	-8
13	-7	-12	-14	-19	-22	-28	-32	-31	-27	-26	-24	-20	-16	-13	-14	-18	-22	-24	-31	-33	-29	-31	-26	-23
14	-22	-24	-26	-28	-29	-31	-35	-38	-36	-35	-29	-22	-18	-15	-18	-20	-20	-16	-6	-8	-6	-3	-13	-10
15	-14	-14	-10	-14	-15	-17	-21	-29	-35	-31	-26	-19	-8	-6	-2	-8	-22	-20	-21	-32	-31	-33	-25	-24
16	-24	-24	-25	-28	-27	-33	-33	-31	-30	-28	-40	-51	-37	-36	-41	-43	-46	-41	-41	-30	-24	-21	-22	-20
17	-18	-18	-14	-15	-26	-29	-28	-29	-28	-33	-31	-28	-27	-33	-33	-35	-34	-34	-41	-41	-45	-36	-29	-39
18	-44	-41	-35	-35	-37	-36	-49	-44	-38	-30	-30	-28	-36	-28	-30	-35	-37	-34	-31	-33	-31	-26	-23	-23
19	-25	-27	-30	-35	-33	-34	-30	-28	-32	-35	-35	-26	-21	-23	-30	-30	-27	-24	-26	-23	-19	-17	-16	-16
20	-20	-21	-24	-27	-29	-32	-35	-35	-30	-27	-29	-29	-26	-23	-24	-25	-28	-27	-23	-24	-23	-24	-22	-17
21	-14	-15	-17	-19	-21	-24	-24	-21	-18	-16	-17	-16	-11	-9	-7	-6	-8	-11	-12	-17	-16	-15	-14	-12
22	-11	-12	-12	-13	-12	-15	-22	-20	-18	-15	-10	-13	-14	-13	-13	-15	-15	-16	-15	-15	-17	-14	-11	-11
23	-9	-9	-12	-16	-15	-12	-13	-13	-10	-9	-6	-3	3	6	3	-4	-5	1	7	11	7	2	-5	-8
24	-14	-16	-18	-24	-24	-17	-14	-15	-11	-5	-3	-5	-4	-1	-1	-11	-19	-28	-23	-20	-18	-11	-20	-23
25	-17	-11	-15	-17	-24	-24	-25	-22	-20	-17	-22	-19	-16	-19	-25	-25	-27	-29	-32	-33	-30	-25	-23	-21
26	-19	-16	-19	-23	-18	-14	-14	-18	-15	-17	-19	-18	-19	-17	-19	-23	-30	-29	-29	-29	-23	-15	-15	-14
27	-12	-11	-13	-14	-15	-16	-18	-20	-19	-17	-16	-14	-12	-13	-14	-13	-13	-15	-17	-18	-18	-18	-16	-13
28	-12	-10	-10	-9	-9	-10	-13	-22	-24	-16	-8	-7	-9	-12	-17	-28	-39	-36	-28	-23	-24	-19	-22	-26
29	-20	-18	-21	-22	-19	-15	-10	-15	-16	-14	-13	-8	7	12	6	-21	-32	-37	-39	-29	-23	-22	-23	-17
30	-12	-8	-8	-14	-15	-17	-30	-35	-31	-24	-19	-17	-22	-24	-26	-20	-21	-24	-21	-16	-12	-8	-7	-10
31	-10	-14	-18	-22	-24	-19	-20	-22	-25	-25	-26	-25	-20	-17	-17	-18	-18	-16	-21	-23	-28	-29	-31	-32

FEBRUARY 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-29	-25	-19	-17	-14	-14	-20	-23	-20	-24	-29	-30	-24	-22	-23	-24	-24	-25	-20	-18	-16	-18	-17	-19
2	-19	-19	-18	-16	-12	-8	-6	-7	-9	-13	-16	-11	-5	-3	-1	2	-1	-4	-1	-1	2	10	7	-1
3	0	6	13	5	4	6	9	3	2	0	-7	-10	-11	-1	1	2	0	-3	-5	-8	-6	-4	-4	1
4	2	0	-4	-6	-4	-7	-11	-6	-3	-9	-15	-18	-18	-15	-10	-5	41	-46	-151	-172	-166	-168	-158	-131
5	-95	-93	-142	-148	-165	-159	-166	-181	-171	-181	-183	-166	-150	-174	-170	-149	-137	-143	-146	-144	-131	-132	-116	-118
6	-104	-100	-101	-92	-86	-93	-98	-101	-91	-82	-81	-85	-90	-86	-89	-95	-94	-92	-91	-86	-82	-75	-72	-67
7	-63	-61	-62	-63	-78	-87	-89	-98	-91	-90	-89	-100	-98	-93	-111	-105	-104	-99	-92	-84	-80	-71	-67	-61
8	-59	-61	-64	-63	-70	-76	-81	-80	-65	-55	-59	-64	-68	-66	-62	-55	-49	-46	-43	-43	-41	-38	-39	-41
9	-39	-37	-39	-39	-41	-45	-45	-45	-43	-40	-34	-39	-41	-46	-39	-39	-45	-46	-47	-49	-39	-24	-22	-31
10	-35	-43	-54	-53	-56	-53	-48	-47	-47	-47	-41	-31	-26	-36	-36	-28	-20	-19	-18	-11	-11	-12	-11	-12
11	-11	-12	-11	-10	-9	-8	-6	2	15	18	-4	-18	-27	-22	-19	-20	-16	-14	-31	-34	-44	-38	-27	-25
12	-27	-27	-25	-23	-23	-22	-26	-32	-30	-24	-33	-47	-65	-71	-64	-70	-65	-63	-64	-63	-55	-46	-41	-39
13	-39	-41	-37	-36	-34	-40	-50	-54	-46	-37	-40	-45	-53	-55	-52	-50	-51	-49	-47	-51	-52	-44	-57	-52
14	-47	-53	-50	-45	-40	-38	-39	-47	-40	-35	-33	-34	-36	-35	-32	-28	-37	-36	-30	-27	-21	-36	-31	-27
15	-22	-19	-29	-29	-27	-30	-45	-43	-40	-37	-43	-56	-60	-62	-53	-50	-43	-46	-49	-42	-43	-41	-35	-34
16	-29	-30	-32	-36	-33	-37	-38	-36	-38	-32	-38	-38	-38	-47	-43	-40	-44	-46	-43	-38	-32	-40	-33	-28
17	-28	-25	-23	-22	-24	-28	-24	-22	-19	-19	-22	-30	-32	-34	-33	-30	-31	-32	-31	-27	-27	-24	-22	-20
18	-21	-26	-33	-35	-40	-43	-42	-34	-32	-27	-25	-27	-29	-33	-31	-28	-30	-31	-32	-29	-21	-22	-19	-16
19	-14	-15	-16	-16	-12	-9	-13	-17	-20	-18	-15	-18	-24	-27	-25	-22	-22	-22	-17	-15	-13	-13	-14	-18
20	-28	-30	-28	-25	-24	-36	-39	-43	-39	-35	-35	-33	-42	-48	-45	-47	-48	-48	-48	-62	-86	-85	-69	-55
21	-51	-55	-59	-58	-55	-63	-64	-59	-54	-48	-43	-47	-55	-48	-43	-49	-54	-54	-49	-57	-60	-57	-54	-63
22	-63	-54	-50	-48	-48	-50	-49	-46	-45	-43	-38	-39	-40	-42	-44	-40	-35	-30	-28	-36	-36	-31	-25	-24
23	-36	-41	-36	-28	-34	-33	-30	-31	-28	-21	-19	-21	-20	-24	-26	-30	-30	-32	-27	-28	-29	-28	-27	-23
24	-24	-30	-33	-32	-27	-31	-34	-34	-31	-25	-23	-24	-24	-31	-36	-36	-35	-33	-37	-37	-37	-34	-28	-25
25	-26	-25	-24	-21	-23	-25	-25	-22	-21	-20	-16	-14	-18	-19	-22	-21	-25	-31	-30	-24	-21	-21	-22	-23
26	-20	-21	-21	-18	-17	-19	-21	-23	-21	-17	-11	-8	-9	-13	-15	-15	-15	-13	-9	-11	-16	-20	-22	-17
27	-17	-18	-17	-16	-17	-17	-16	-13	-8	-7	-9	-6	-3	-5	-6	-3	-5	0	7	6	5	4	2	4
28	1	-3	-7	-5	-7	-9	-11	-8	-3	-4	-2	-3	-6	-5	-8	-9	-10	-8	-2	3	9	24	26	15

MARCH 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	8	17	11	0	2	4	6	11	6	7	6	9	4	-8	-8	0	-4	-19	-26	-19	-19	-25	-32	-43
2	-60	-83	-96	-108	-124	-149	-166	-162	-167	-162	-127	-135	-141	-142	-146	-137	-137	-129	-123	-124	-117	-116	-117	-114
3	-105	-94	-90	-83	-85	-87	-88	-79	-68	-66	-63	-59	-60	-64	-65	-69	-66	-63	-64	-51	-49	-50	-42	-49
4	-61	-63	-60	-54	-51	-54	-62	-56	-47	-42	-44	-44	-43	-52	-56	-55	-51	-49	-47	-45	-51	-56	-52	-45
5	-45	-48	-50	-51	-50	-51	-49	-45	-51	-55	-52	-45	-49	-51	-48	-40	-35	-35	-34	-32	-37	-50	-58	-67
6	-77	-84	-71	-60	-60	-63	-61	-55	-50	-41	-39	-38	-39	-41	-44	-46	-47	-47	-42	-33	-30	-28	-25	-29
7	-37	-42	-39	-37	-37	-37	-37	-35	-31	-26	-25	-35	-37	-36	-36	-36	-36	-37	-34	-28	-24	-20	-20	-21
8	-26	-32	-30	-25	-24	-26	-28	-26	-25	-25	-22	-14	-16	-19	-18	-20	-26	-26	-25	-20	-19	-25	-22	-18
9	-16	-15	-16	-16	-16	-15	-19	-19	-16	-11	-5	-2	1	5	10	13	16	19	4	-6	-7	-7	-7	0
10	-1	-2	-3	-3	-4	-3	0	5	8	8	9	12	9	9	8	8	7	6	-1	-7	1	4	8	1
11	2	2	5	8	7	4	5	7	12	6	-14	-16	-13	-8	-6	-5	-8	-12	-22	-33	-43	-38	-49	-73
12	-77	-65	-61	-59	-60	-58	-55	-54	-51	-45	-43	-39	-36	-42	-49	-61	-76	-76	-77	-75	-81	-101	-113	-132
13	-115	-97	-93	-89	-85	-83	-82	-78	-70	-67	-65	-61	-56	-54	-54	-55	-57	-53	-48	-42	-42	-40	-40	-41
14	-38	-42	-44	-49	-45	-42	-39	-47	-50	-52	-51	-48	-45	-52	-49	-41	-35	-31	-29	-25	-20	-22	-22	-22
15	-24	-28	-29	-25	-24	-31	-36	-33	-27	-27	-23	-21	-28	-38	-32	-30	-31	-27	-28	-20	-21	-19	-23	-22
16	-20	-23	-23	-25	-25	-25	-25	-23	-21	-19	-19	-19	-25	-30	-24	-20	-20	-19	-14	-10	-10	-11	-13	-18
17	-18	-23	-21	-24	-27	-35	-36	-31	-27	-25	-26	-22	-19	-18	-17	-16	-15	-13	-10	-5	-2	-6	-8	-10
18	-10	-8	-5	-6	-12	-17	-21	-18	-11	-8	-9	-12	-8	-8	-5	-3	-20	-31	-33	-35	-30	-22	-30	-36
19	-39	-39	-42	-40	-43	-48	-47	-40	-46	-49	-36	-28	-27	-31	-36	-37	-35	-33	-31	-26	-21	-20	-25	-22
20	-22	-23	-31	-34	-49	-49	-47	-40	-38	-35	-31	-28	-26	-29	-39	-46	-47	-43	-38	-33	-38	-41	-36	-32
21	-30	-35	-33	-27	-26	-30	-31	-29	-27	-23	-19	-16	-16	-20	-24	-22	-23	-26	-26	-23	-20	-19	-20	-19
22	-20	-28	-34	-31	-29	-31	-33	-33	-27	-24	-19	-19	-17	-18	-22	-22	-24	-22	-17	-11	-12	-21	-28	-23
23	-15	-17	-18	-25	-26	-25	-20	-23	-21	-18	-15	-15	-18	-21	-23	-24	-21	-19	-16	-15	-16	-14	-9	-6
24	-4	-9	-13	-12	-15	-21	-26	-24	-21	-15	-14	-12	-14	-12	-13	-13	-14	-11	-14	-11	-11	-11	-11	-14
25	-21	-25	-35	-39	-45	-50	-64	-103	-99	-98	-99	-96	-100	-86	-86	-79	-83	-78	-62	-78	-84	-65	-50	-41
26	-27	-30	-37	-45	-43	-39	-41	-41	-39	-40	-40	-37	-36	-35	-35	-33	-31	-29	-30	-29	-29	-30	-33	-29
27	-25	-24	-22	-19	-17	-17	-18	-18	-16	-17	-19	-19	-19	-17	-19	-20	-16	-9	-3	2	1	1	-2	-4
28	-2	1	2	0	-4	13	34	21	-22	-43	-54	-56	-39	-40	-49	-62	-77	-69	-64	-56	-52	-68	-74	-60
29	-58	-62	-61	-59	-56	-50	-62	-59	-45	-53	-62	-56	-50	-54	-51	-53	-54	-47	-46	-48	-43	-41	-51	-50
30	-35	-30	-27	-28	-34	-30	-33	-35	-40	-37	-33	-26	-28	-24	-26	-37	-46	-39	-30	-32	-36	-38	-40	-42
31	-46	-38	-42	-46	-49	-49	-40	-35	-33	-43	-50	-57	-49	-36	-39	-37	-36	-33	-32	-34	-44	-42	-36	-33

APRIL 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-29	-27	-32	-38	-36	-35	-38	-43	-45	-46	-37	-36	-42	-45	-45	-47	-46	-37	-32	-33	-31	-32	-30	-31
2	-35	-40	-36	-33	-34	-33	-34	-36	-35	-31	-30	-31	-32	-19	-12	-14	-15	-20	-24	-23	-17	-19	-25	-30
3	-30	-32	-30	-28	-21	-17	-20	-20	-15	-16	-20	-21	-26	-25	-21	-20	-18	-16	-15	-14	-12	-15	-22	-26
4	-24	-21	-23	-24	-21	-15	-17	-19	-19	-18	-16	-16	-16	-18	-17	-10	-15	-20	-27	-34	-34	-25	-27	-22
5	-15	-26	-25	-19	-14	-20	-24	-25	-22	-16	-18	-20	-16	-20	-15	-9	-5	-11	-9	-7	-3	-3	-7	-10
6	-15	-12	-10	-13	-10	-5	0	-4	-10	-14	-37	-33	-31	-38	-46	-35	-29	-35	-41	-36	-29	-20	-18	-18
7	-9	-10	-13	-15	-17	-22	-19	-12	-10	-6	-15	-21	-27	-25	-19	-22	-24	-28	-32	-24	-19	-20	-19	-22
8	-17	-11	-17	-15	-21	-22	-20	-20	-7	-2	-3	-12	-19	-22	-18	-15	-14	-12	-10	-13	-10	-9	-9	-11
9	-7	-3	-4	-1	-1	-1	-4	-10	-18	-14	-11	-6	-10	-13	-15	-12	-20	-19	-18	-20	-19	-15	-19	-12
10	-9	-6	-6	-5	-4	-7	-11	-10	-13	-7	-11	-10	-14	-10	-7	-8	-5	-3	-4	-6	-9	-8	-8	-10
11	-11	-7	-2	-3	-5	-2	-1	-2	-2	-1	-4	-5	-5	-3	-2	-2	-2	-2	-6	-5	-5	-4	-3	0
12	2	-1	-4	-3	-1	3	-3	-6	-4	-6	-9	3	-2	-3	0	4	-4	-1	-5	-2	0	0	-7	-8
13	-8	-15	-21	-19	-14	-13	-12	-4	1	0	0	8	-22	-32	-29	-20	-27	-22	-24	-20	-28	-24	-17	-15
14	-13	-12	-22	-23	-24	-27	-31	-34	-31	-35	-42	-37	-40	-42	-45	-44	-37	-27	-27	-30	-30	-25	-30	-28
15	-32	-46	-45	-45	-38	-39	-47	-49	-49	-47	-44	-47	-55	-49	-47	-44	-46	-48	-42	-43	-45	-41	-40	-42
16	-39	-39	-41	-35	-36	-36	-32	-36	-33	-32	-27	-27	-37	-35	-26	-28	-32	-32	-34	-37	-32	-33	-34	-42
17	-36	-29	-28	-31	-28	-28	-31	-29	-25	-21	-24	-25	-25	-26	-27	-22	-23	-33	-34	-34	-31	-28	-26	-24
18	-28	-32	-28	-21	-18	-12	-10	-17	-16	-12	-12	-15	-16	-13	-12	-19	-18	-12	-15	-19	-21	-22	-17	-15
19	-13	-12	-12	-10	-11	-16	-16	-11	-13	-21	-22	-23	-24	-26	-29	-30	-31	-31	-28	-23	-25	-22	-25	-28
20	-27	-22	-23	-26	-27	-25	-19	-15	-13	-15	-12	-19	-23	-29	-32	-28	-25	-27	-27	-33	-33	-34	-31	-33
21	-39	-40	-44	-46	-41	-34	-35	-33	-24	-21	-20	-22	-19	-20	-16	-11	-7	-6	-9	-13	-12	-15	-16	-11
22	-9	-15	-27	-36	-39	-33	-27	-31	-38	-39	-34	-25	-24	-31	-33	-29	-21	-22	-23	-23	-21	-16	-13	-12
23	-16	-19	-23	-20	-13	-16	-17	-16	-17	-7	-4	-8	-8	-7	-1	-2	2	5	1	0	2	9	3	1
24	9	8	16	26	3	-22	-15	-19	-12	-12	-25	-39	-55	-46	-42	-49	-48	-48	-71	-72	-64	-50	-48	-49
25	-40	-48	-46	-56	-50	-47	-44	-38	-34	-33	-27	-21	-24	-21	-25	-31	-35	-34	-39	-50	-46	-52	-48	-48
26	-42	-37	-38	-33	-27	-27	-31	-32	-29	-25	-22	-27	-33	-33	-34	-35	-29	-25	-26	-31	-29	-30	-35	-39
27	-32	-24	-27	-27	-27	-24	-22	-20	-20	-21	-21	-21	-24	-24	-26	-24	-23	-21	-17	-18	-19	-18	-18	-15
28	-13	-15	-17	-16	-17	-18	-23	-21	-19	-11	-7	-8	-12	-12	-13	-12	-9	-5	-8	-9	-7	-6	-9	-11
29	-17	-11	-4	0	-6	-16	-19	-13	-22	-29	-38	-36	-35	-47	-62	-60	-73	-77	-85	-86	-86	-77	-76	-67
30	-63	-62	-57	-47	-37	-42	-43	-39	-33	-35	-42	-46	-43	-42	-33	-34	-39	-34	-34	-41	-46	-49	-43	-46

MAY 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-43	-36	-29	-26	-30	-24	-20	-24	-30	-35	-24	-25	-24	-25	-24	-17	-12	-10	-10	-19	-25	-19	-11	-14
2	-14	-27	-17	-23	-20	-13	-14	-17	-17	-12	-8	-9	-10	-13	-12	-7	-12	-19	-21	-13	-9	-5	-5	-2
3	1	6	14	19	20	18	16	26	22	23	36	36	32	18	14	9	10	14	13	1	0	7	8	5
4	8	-2	2	-5	-21	-12	-17	-24	-19	-23	-14	-19	-26	-33	-53	-52	-45	-41	-43	-45	-40	-33	-26	-25
5	-26	-24	-18	-18	-22	-19	-14	-15	-16	-16	-13	-12	-5	-11	-13	-15	-13	-8	-8	-13	-25	-28	-20	-13
6	-12	-14	-11	-11	-14	-16	-19	-25	-20	-16	-12	-8	-4	-1	-5	-9	-6	-3	-9	-11	-14	-12	-9	-9
7	-8	-6	-3	0	-4	-5	-6	-3	-1	0	0	0	-2	1	2	-1	-1	-4	-10	-12	-13	-9	-6	-9
8	-21	-20	-11	-3	1	-2	-2	-2	2	5	2	-5	-7	-7	-6	-8	-5	-2	-8	-11	-7	-6	-7	-11
9	-10	-4	-2	-1	-2	-9	-6	-3	-1	3	5	3	4	4	2	4	7	7	5	0	-4	-3	-3	-6
10	-5	-4	1	2	3	1	1	0	-2	-2	-4	-5	-3	-3	-2	-1	3	8	13	30	34	34	36	37
11	31	25	30	31	27	26	22	16	-23	-23	-21	-7	-10	-7	4	1	-42	-61	-54	-60	-56	-55	-54	-49
12	-57	-64	-52	-46	-50	-47	-44	-50	-57	-36	-31	-30	-27	-24	-24	-28	-33	-34	-31	-29	-38	-34	-32	-31
13	-31	-31	-24	-20	-25	-35	-46	-40	-44	-40	-41	-44	-43	-38	-43	-46	-51	-42	-43	-44	-50	-48	-43	-44
14	-46	-46	-43	-47	-51	-53	-43	-41	-39	-28	-28	-31	-30	-30	-32	-36	-37	-39	-42	-47	-43	-34	-34	-35
15	-34	-35	-33	-32	-30	-37	-38	-28	-25	-20	-18	-18	-20	-23	-23	-27	-33	-31	-31	-28	-28	-22	-25	-31
16	-31	-30	-25	-21	-18	-17	-18	-19	-15	-16	-16	-20	-17	-13	-16	-17	-20	-28	-29	-26	-24	-22	-16	-17
17	3	14	20	14	19	10	21	17	15	22	13	5	-2	-15	-39	-48	-63	-73	-76	-74	-75	-79	-70	-52
18	-58	-63	-63	-60	-55	-50	-44	-42	-35	-30	-25	-36	-33	-26	-25	-31	-28	-28	-30	-33	-30	-27	-21	-18
19	-18	-20	-21	-20	-19	-23	-21	-21	-22	-14	-11	-12	-10	-9	-9	-9	-7	-8	-10	-11	-11	-9	-8	-8
20	-11	-12	-11	-12	-15	-10	-7	-5	0	3	4	4	5	4	5	4	5	9	13	15	4	-7	-12	-3
21	-2	-10	-9	0	10	8	7	8	9	0	8	11	21	21	9	-8	-11	-8	-5	-11	-11	-8	-4	4
22	7	17	4	-6	-9	-26	-53	-65	-55	-48	-43	-40	-32	-29	-28	-31	-40	-47	-47	-56	-52	-56	-65	-49
23	-54	-58	-54	-60	-61	-55	-47	-56	-45	-35	-37	-37	-36	-41	-41	-44	-50	-54	-53	-51	-54	-58	-55	-44
24	-44	-49	-47	-37	-35	-35	-33	-29	-29	-27	-27	-20	-15	-4	-14	-16	-21	-44	-84	-82	-79	-35	-65	-72
25	-75	-46	-49	-48	-59	-69	-69	-70	-68	-65	-60	-57	-55	-55	-56	-56	-55	-52	-50	-47	-43	-42	-40	-40
26	-41	-41	-38	-35	-35	-36	-36	-32	-31	-29	-26	-27	-23	-21	-23	-23	-26	-26	-25	-31	-35	-36	-35	-30
27	-33	-31	-27	-26	-27	-27	-29	-30	-27	-24	-18	-18	-17	-20	-22	-27	-31	-32	-26	-22	-21	-25	-24	-19
28	-19	-20	-24	-29	-29	-22	-18	-17	-14	-12	-10	-10	-11	-10	-11	-16	-16	-16	-16	-13	-13	-15	-13	-12
29	-9	-3	-5	-7	-6	-5	-4	-1	2	5	4	5	8	12	11	13	11	7	4	5	7	5	2	-3
30	-3	1	4	6	8	8	6	8	13	12	12	12	10	9	8	8	4	-1	-2	-6	-1	0	0	-1
31	-1	-7	-6	-5	1	-1	-7	-14	-9	-4	0	2	3	5	1	-2	-4	1	6	6	4	1	3	5

JUNE 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	2	1	3	1	-10	-4	-13	-15	-15	-11	-2	-5	-3	1	-1	-1	-3	-1	1	-4	-6	-9	-8	-6
2	-6	-6	-6	-4	-2	1	2	-1	-3	-1	1	1	3	2	3	1	1	3	4	4	2	4	5	6
3	5	3	3	-1	-1	-1	0	0	3	0	1	2	6	7	3	1	1	0	1	6	8	7	2	0
4	-3	-6	-4	0	2	4	4	3	3	5	6	6	3	4	6	7	9	12	12	10	8	6	4	5
5	4	3	6	10	9	8	9	3	5	5	3	7	12	10	4	1	2	5	5	6	9	11	12	12
6	10	13	10	9	12	11	10	7	8	15	17	12	7	4	3	6	3	0	2	3	2	-2	1	6
7	4	3	-1	0	2	-6	-9	-4	2	3	3	2	4	7	6	5	2	1	-4	-4	-2	-2	-4	-2
8	5	9	9	9	8	9	9	8	13	15	13	18	8	3	-1	3	4	2	-3	-2	-1	-7	-10	-11
9	-10	-6	1	3	1	1	-3	-7	-6	3	6	11	8	0	1	3	14	9	-4	-13	-11	-18	-27	-28
10	-15	-14	-16	-21	-20	-17	-17	-13	-10	-12	-18	-16	-13	-31	-51	-55	-52	-40	-37	-35	-35	-36	-34	-22
11	-15	-14	-20	-28	-24	-20	-17	-16	-17	-13	-12	-13	-14	-19	-21	-23	-23	-20	-17	-19	-18	-17	-12	-6
12	-4	-2	-2	-7	-14	-15	-14	-2	5	15	21	15	18	24	30	33	25	25	22	25	29	31	17	12
13	25	46	29	-4	-64	-116	-106	-127	-124	-116	-113	-98	-78	-78	-81	-80	-83	-86	-81	-75	-71	-72	-69	-67
14	-63	-54	-48	-40	-34	-41	-40	-40	-37	-34	-31	-32	-33	-25	-31	-36	-39	-38	-38	-39	-37	-38	-31	-29
15	-33	-28	-40	-48	-47	-45	-44	-44	-37	-33	-32	-38	-41	-42	-42	-39	-41	-44	-49	-44	-36	-37	-37	-33
16	-28	-27	-26	-26	-26	-22	-21	-19	-13	-14	-19	-20	-21	-21	-22	-22	-24	-21	-19	-19	-16	-17	-20	-18
17	-15	-11	-11	-10	-11	-14	-15	-8	-1	6	7	8	4	2	-2	-4	-8	-7	-18	-20	-17	-10	-4	0
18	0	0	-3	-6	-11	-24	-22	-19	-31	-25	-25	-26	-27	-34	-38	-30	-32	-36	-31	-28	-27	-42	-38	-31
19	-23	-16	-13	-24	-17	-15	-19	-18	-16	-20	-16	-21	-20	-24	-26	-28	-27	-26	-25	-24	-20	-22	-20	-16
20	-18	-13	-14	-14	-12	-13	-12	-9	-10	-14	-24	-25	-23	-24	-26	-25	-20	-18	-18	-18	-17	-19	-21	-17
21	-16	-22	-19	-17	-15	-19	-24	-18	-16	-11	-14	-18	-17	-12	-11	-10	-9	-11	-17	-22	-22	-22	-25	-23
22	-16	-9	-9	-8	-7	-11	-11	-5	1	0	-4	-13	-18	-24	-28	-25	-29	-33	-40	-44	-41	-41	-42	-37
23	-30	-25	-25	-30	-31	-29	-31	-29	-23	-26	-26	-24	-26	-22	-22	-26	-27	-26	-29	-28	-25	-28	-31	-27
24	-27	-21	-13	-14	-19	-13	-7	-6	-7	-11	-13	-15	-18	-15	-9	-8	-12	-11	-12	-10	-10	-7	-5	-2
25	-1	-1	-4	-3	-2	0	3	5	6	9	9	8	7	7	11	15	16	13	13	4	4	1	1	4
26	12	19	19	21	23	10	-2	-3	1	7	8	4	3	0	2	3	2	1	0	0	0	-3	-2	-5
27	-5	3	8	6	6	7	0	-4	2	5	8	7	5	4	5	3	5	2	-1	-1	-1	0	-4	-4
28	4	10	11	10	10	11	10	10	11	9	10	1	4	3	3	2	5	5	0	0	2	2	4	12
29	16	12	11	12	10	7	4	-1	1	5	5	7	3	1	0	0	-2	1	3	5	8	8	4	0
30	-1	-2	-2	0	1	2	4	3	1	1	6	6	2	-2	0	5	10	7	6	8	7	4	3	5

JULY 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	5	2	-3	1	0	1	2	1	3	6	10	12	10	8	9	8	6	5	6	7	8	7	7	6
2	7	6	4	3	7	11	12	11	13	16	15	14	9	6	7	9	13	11	11	9	14	19	20	15
3	8	6	5	4	6	10	14	16	8	12	11	13	13	11	12	12	11	14	14	9	4	10	10	6
4	9	8	7	7	8	6	7	9	8	11	14	11	12	9	7	7	9	11	10	6	6	10	9	6
5	7	7	10	8	11	11	16	19	17	14	16	10	11	12	10	9	11	15	18	27	28	26	24	23
6	24	24	24	23	26	32	34	35	28	31	24	3	4	9	13	9	4	-2	-8	-9	-10	-10	-6	-2
7	0	1	1	2	2	3	6	10	10	4	-6	-2	-3	0	2	-2	-4	-5	-3	-1	2	-5	0	7
8	9	6	0	2	3	5	5	6	5	5	3	5	6	11	12	14	19	20	13	13	14	19	18	13
9	12	16	12	4	2	2	1	-4	-2	-5	1	5	4	5	5	5	2	0	5	5	2	-3	1	-1
10	0	0	2	4	6	4	2	2	4	2	6	7	5	3	2	2	2	3	5	7	7	8	7	9
11	11	12	14	15	15	16	15	16	20	14	10	10	16	18	22	24	23	20	15	10	6	7	9	5
12	2	3	12	11	11	10	11	11	12	12	12	11	5	-1	-1	-2	4	13	11	5	5	-4	-11	-11
13	-8	-15	-11	-10	-21	-28	-29	-20	-17	-21	-17	-16	-12	-13	-15	-19	-21	-21	-19	-18	-18	-19	-16	-12
14	-10	-11	-14	-17	-16	-14	-13	-10	-7	-5	-8	-12	-14	-11	-11	-10	-15	-16	-15	-16	-15	-14	-9	-4
15	-3	-2	-5	-5	-4	-4	-5	-7	-4	-2	2	7	8	6	5	3	2	1	0	1	4	15	17	6
16	5	1	-3	-10	-11	-9	-5	3	10	11	12	17	18	12	9	2	-1	-1	-7	-16	-9	-13	-7	-4
17	-13	-19	-31	-34	-25	-23	-23	-15	-19	-14	-11	-13	-8	-7	-12	-14	-15	-9	-7	-7	-9	-20	-16	-8
18	-8	-11	-17	-24	-21	-21	-21	-22	-15	-12	-13	-16	-15	-19	-16	-16	-12	-9	-10	-13	-11	-15	-18	-17
19	-14	-7	-7	-7	-5	-6	-6	-2	-2	-5	-5	-2	-3	-6	-4	-5	-10	-13	-13	-14	-15	-10	-6	-2
20	-2	-4	-7	-8	-7	-6	-5	-8	-9	-7	-3	-2	-1	-1	0	2	3	0	-1	-3	-2	1	5	7
21	12	11	9	7	2	-3	-6	-6	-5	-6	-6	-1	3	5	5	4	-1	-2	-8	-13	-10	-4	4	6
22	5	5	0	-3	-5	-6	-7	-4	0	3	7	7	5	0	-1	1	5	6	11	15	10	-1	-10	1
23	12	23	32	36	29	29	25	23	24	9	9	10	13	8	0	1	0	-4	-11	-14	-21	-30	-37	-42
24	-53	-60	-51	-55	-62	-74	-72	-58	-55	-51	-41	-31	-38	-46	-44	-37	-39	-35	-34	-33	-31	-28	-23	-27
25	-32	-36	-32	-35	-32	-35	-34	-28	-28	-23	-20	-23	-23	-21	-23	-23	-20	-19	-14	-12	-8	-4	-4	-7
26	-9	-10	-14	-18	-18	-19	-12	-10	-11	-12	-9	-10	-8	-6	-3	1	1	-1	1	1	2	0	-1	-2
27	-2	-5	-8	-8	-11	-7	-3	-2	-3	-6	-9	-10	-6	1	2	2	4	0	3	2	3	5	2	-5
28	-5	-5	2	3	1	-3	-5	-8	-9	-7	-9	-6	-2	3	5	7	10	9	9	9	7	7	9	10
29	9	6	3	-3	-12	-7	-8	-12	-16	-15	-11	-17	-15	-11	-4	3	3	1	-4	-4	-2	-2	2	5
30	-2	-3	-5	-14	-16	-11	-2	-1	-4	-14	-14	-16	-15	-10	-7	-4	-5	-3	-4	-4	-2	-8	-9	-12
31	-15	-12	-9	-11	-11	-9	-5	-6	-9	-7	-6	-8	-7	-9	-5	-1	0	0	-4	-6	-2	3	4	5

AUGUST 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	6	5	3	2	-1	-4	-6	-4	-2	-4	-6	-5	-6	-5	-3	0	6	12	14	14	19	23	28	31
2	20	16	12	6	9	-1	-22	-35	-31	-21	-11	-11	-16	-33	-38	-25	-18	-22	-18	-35	-40	-28	-16	-12
3	-26	-27	-18	-16	-17	-19	-16	-16	-14	-14	-11	-10	-9	-1	5	-3	-9	-7	-8	-4	-3	-3	-5	-5
4	-4	-8	-13	-18	-13	-14	-11	-12	-12	-14	-15	-16	-15	-14	-12	-14	-15	-14	-12	-7	-4	-4	-2	-3
5	-3	-3	-1	-1	-1	2	1	-4	-6	-6	-3	-2	-2	0	2	3	6	4	3	5	9	9	13	14
6	17	20	20	16	19	18	14	12	11	12	12	11	10	13	15	14	10	7	4	8	11	13	16	16
7	15	14	15	17	20	21	20	16	21	28	26	26	22	19	21	19	19	19	20	20	20	-5	-16	-20
8	-33	-63	-95	-100	-107	-131	-149	-131	-116	-105	-102	-102	-94	-85	-74	-71	-64	-61	-60	-60	-57	-51	-43	-38
9	-40	-45	-51	-50	-41	-39	-48	-48	-45	-39	-36	-39	-35	-29	-27	-26	-24	-28	-26	-24	-18	-16	-14	-13
10	-10	-10	-10	-13	-20	-23	-23	-23	-22	-23	-22	-26	-27	-26	-27	-25	-21	-19	-20	-17	-13	-9	-7	-7
11	-10	-8	-3	0	4	2	1	0	-1	-3	-2	-5	-9	-9	-6	-1	3	7	5	-1	-1	0	2	2
12	1	2	-5	-12	-17	-20	-24	-26	-26	-30	-28	-33	-29	-21	-14	-14	-16	-18	-12	0	6	-16	-25	-23
13	-26	-28	-16	-5	-11	-13	-18	-20	-24	-27	-23	-31	-29	-29	-25	-26	-26	-26	-28	-30	-30	-27	-19	-13
14	-5	-5	-5	-6	-7	-8	-8	-3	-2	0	0	-3	-8	-5	-2	-2	-3	1	-1	-5	-4	-2	0	1
15	1	-5	-11	-11	-6	-3	-1	3	4	2	-6	-7	-4	-2	-2	-7	-11	-12	-11	-11	-11	-14	-15	-13
16	-10	-8	-7	-6	-4	-3	0	2	5	5	4	3	3	5	2	-2	-3	-3	-1	-1	0	-5	-8	-12
17	-7	-6	-7	-8	-5	-7	-4	-2	1	2	3	4	3	2	1	1	3	2	3	6	5	1	-5	-2
18	3	6	8	7	7	9	8	9	11	10	10	9	10	12	13	13	13	14	12	8	8	8	7	7
19	9	11	13	12	11	12	15	17	21	25	24	35	35	27	15	2	0	-1	3	6	-1	-5	-10	-5
20	1	2	0	0	-3	0	-2	-4	-5	-5	-1	-5	-14	-12	-5	-3	2	1	0	4	-5	-14	-20	-19
21	-15	-17	-17	-19	-22	-21	-22	-24	-34	-37	-35	-34	-31	-32	-37	-37	-37	-38	-36	-34	-31	-29	-26	-25
22	-16	-14	-17	-13	-11	-7	-6	-13	-11	-4	-4	-2	-4	-4	-1	-1	-3	-8	-13	-28	-27	-18	-15	-6
23	0	0	-5	-17	-26	-52	-46	-42	-44	-37	-45	-41	-37	-31	-27	-21	-24	-31	-30	-32	-28	-25	-22	-20
24	-16	-14	-19	-22	-22	-22	-24	-30	-33	-28	-24	-20	-19	-24	-26	-24	-18	-16	-14	-17	-23	-25	-27	-29
25	-26	-20	-15	-11	-14	-9	-12	-23	-21	-21	-18	-21	-22	-20	-17	-13	-17	-23	-23	-18	-15	-16	-15	-16
26	-9	-14	-12	-12	-15	-15	-15	-16	-14	-13	-14	-18	-15	-12	-12	-16	-18	-15	-10	-12	-7	-6	-7	-8
27	-11	-11	-10	-7	-7	-6	-7	-5	-4	-2	-2	-1	-2	-4	-3	-5	-3	-2	0	-1	-2	-2	-5	-7
28	-10	-11	-11	-9	-3	-1	-2	-7	-13	-15	-12	-5	-3	1	6	7	9	6	5	0	2	0	6	4
29	-1	-7	-9	-9	-4	5	8	6	4	11	24	31	32	37	41	31	35	18	3	-1	12	17	-10	-16
30	-17	-19	-25	-21	-26	-25	-24	-21	-15	-15	-10	-7	0	2	3	-1	-3	0	-3	-1	0	-1	-8	-16
31	-9	-5	-10	-10	-12	-14	-17	-16	-16	-11	-4	-2	-3	-2	-1	1	-6	-7	-7	-4	-2	-5	-7	-9

SEPTEMBER 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-6	-11	-14	-17	-21	-17	-14	-14	-15	-13	-9	-6	-5	-1	-3	-11	-10	-4	-3	-6	-9	-10	-7	-7
2	-4	2	1	3	4	3	4	4	2	2	1	3	3	4	4	3	1	-1	-7	-11	-9	-8	-9	-7
3	-2	3	4	2	-1	0	-1	-2	0	3	5	5	10	11	11	10	9	8	6	6	7	6	4	1
4	5	8	9	10	11	10	11	12	13	13	11	12	13	13	13	12	11	10	6	4	5	4	6	7
5	11	16	17	18	17	18	19	18	17	18	18	17	16	18	19	18	19	18	17	17	18	23	28	28
6	27	24	21	15	9	5	2	3	4	3	5	8	7	8	9	10	10	11	12	12	9	9	10	11
7	15	18	17	19	14	17	21	23	19	12	5	4	3	2	-12	-27	-25	-25	-23	-24	-26	-25	-22	-20
8	-14	-11	-10	-8	-5	-1	1	-7	-15	-16	-19	-9	13	18	5	-2	2	4	10	16	19	17	6	6
9	4	3	2	2	11	11	7	2	0	2	7	7	11	11	7	2	1	1	-1	4	6	2	3	0
10	-2	2	3	7	2	2	4	4	6	8	8	7	6	5	2	-1	-2	3	9	5	4	1	0	2
11	0	4	5	3	4	4	3	2	3	3	8	7	1	5	8	5	8	6	6	5	5	4	0	-1
12	0	0	2	1	0	2	1	1	-1	-2	-4	-14	-13	-6	-2	-1	2	6	9	10	7	0	-2	-4
13	-3	-1	-2	2	5	6	2	0	-1	3	-1	0	2	2	5	8	8	9	11	15	14	9	7	7
14	5	5	7	9	10	11	9	7	9	10	11	16	18	18	20	15	7	4	8	14	17	12	11	15
15	16	22	13	23	24	22	17	3	4	6	10	14	18	20	29	26	21	-12	-33	-49	-58	-49	-40	-31
16	-26	-25	-25	-27	-32	-39	-36	-31	-32	-36	-38	-30	-20	-20	-20	-21	-24	-30	-28	-41	-36	-28	-24	-24
17	-27	-39	-40	-31	-35	-34	-41	-39	-38	-33	-25	-18	-19	-25	-27	-27	-22	-20	-16	-14	-15	-17	-19	-19
18	-20	-19	-19	-20	-22	-26	-25	-25	-21	-18	-15	-9	-5	-3	-5	-9	-8	-6	-3	-7	-15	-21	-18	-12
19	-14	-25	-36	-43	-49	-41	-31	-33	-33	-38	-39	-35	-26	-19	-24	-25	-27	-23	-18	-22	-41	-57	-53	-50
20	-57	-60	-57	-53	-46	-40	-40	-45	-36	-30	-27	-25	-20	-21	-23	-20	-20	-15	-12	-13	-16	-17	-23	-22
21	-21	-22	-21	-21	-23	-25	-20	-23	-22	-22	-20	-16	-12	-12	-17	-17	-18	-17	-17	-20	-20	-22	-19	-21
22	-26	-27	-23	-16	-18	-23	-20	-14	-22	-12	-13	-16	-10	-5	-4	-7	-7	-3	-1	0	-3	-8	-8	-5
23	-4	-2	-2	-2	-2	-3	0	-2	-4	-4	-2	-6	-7	-10	-13	-18	-18	-13	-10	-6	-4	-3	-3	-1
24	-2	-6	-11	-8	-2	1	1	1	3	4	6	8	4	-4	-11	-10	-5	3	10	13	13	12	8	9
25	15	-1	-6	-14	-8	-1	2	-9	-6	0	-5	-2	2	2	-9	-14	-20	-23	-15	-7	-1	-3	-9	-16
26	-16	-20	-5	-2	-17	-18	-19	-31	-21	-20	-19	-24	-23	-20	-19	-16	-17	-18	-16	-16	-14	-11	-9	-7
27	-10	-8	-4	-4	-3	-8	-13	-15	-11	-10	-9	-6	-5	-5	-11	-9	-9	-10	-5	-4	-9	-11	-12	-13
28	-10	-11	-13	-8	-2	1	0	-3	-3	-2	-2	-1	-2	0	-1	-7	-10	-7	-2	0	-2	-5	-3	0
29	-3	-12	-13	-8	-4	-6	-6	-6	-5	-4	-2	4	5	4	4	3	0	0	0	3	4	2	-2	-4
30	-7	-6	-3	1	2	2	3	4	5	6	5	3	2	4	7	8	7	8	9	10	7	5	1	-1

OCTOBER 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-1	0	2	7	9	10	8	6	9	10	12	16	15	17	17	15	9	4	3	1	-6	-9	-17	-24
2	-25	-27	-36	-39	-36	-36	-41	-45	-36	-31	-26	-18	-16	-19	-14	-13	-13	-10	-8	-9	-16	-21	-23	-21
3	-7	-11	-15	-15	-16	-23	-32	-22	-26	-29	-22	-29	-28	-29	-26	-26	-28	-24	-22	-20	-18	-26	-31	-31
4	-26	-18	-14	-18	-17	-13	-11	-18	-35	-46	-27	-20	-30	-18	-36	-61	-71	-60	-55	-56	-56	-50	-45	-41
5	-35	-30	-22	-18	-17	-15	-19	-23	-21	-19	-15	-20	-20	-26	-26	-23	-15	-13	-12	-12	-10	-11	-10	-11
6	-5	4	-1	-4	-2	-1	-1	-10	-20	-16	-20	-7	2	-7	-10	-17	-16	-27	-16	-15	-19	-21	-22	-23
7	-17	-13	-11	-13	-11	-14	-14	-13	-14	-12	-11	-12	-9	-7	-8	-7	-9	-4	-1	-2	0	-4	-8	-7
8	-6	-8	-9	-6	-5	-2	-3	0	5	-2	1	3	1	-2	-5	-5	-13	-12	-16	-11	-8	-9	-16	-18
9	-17	-11	-10	-7	-5	-3	-5	-5	-4	-4	-5	-7	-9	-6	-1	1	0	2	1	-1	-2	-1	-2	-2
10	1	2	0	3	7	7	6	3	2	3	2	2	4	7	8	7	5	-2	-5	-7	-9	-5	-5	-3
11	-4	-3	-5	-4	0	0	-5	-3	-4	-3	-2	-3	-5	-4	-6	-4	-2	-2	-2	-3	-1	0	-1	1
12	3	7	9	8	10	10	8	7	6	8	10	8	7	7	6	3	1	1	1	-2	-5	-1	-3	5
13	2	-11	-16	-21	-29	-33	-28	-28	-35	-41	-45	-27	-27	-43	-44	-41	-39	-42	-40	-34	-35	-46	-37	-34
14	-28	-27	-23	-20	-16	-16	-21	-22	-20	-22	-26	-26	-27	-30	-34	-35	-37	-36	-41	-37	-25	-22	-18	-19
15	-17	-16	-19	-26	-24	-19	-18	-19	-24	-24	-30	-30	-34	-30	-33	-33	-31	-25	-23	-29	-28	-28	-32	-28
16	-26	-20	-18	-18	-20	-16	-12	-10	-7	-5	-8	-11	-10	-8	-17	-25	-24	-21	-21	-15	-16	-15	-15	-12
17	-5	-2	-8	-7	-6	-1	2	-12	-31	-47	-37	-50	-58	-60	-59	-67	-58	-56	-55	-57	-55	-53	-58	-52
18	-55	-65	-61	-55	-51	-52	-56	-54	-51	-54	-57	-55	-46	-54	-63	-65	-60	-54	-63	-62	-55	-52	-49	-46
19	-46	-46	-43	-41	-38	-38	-38	-35	-34	-28	-29	-31	-31	-30	-30	-31	-30	-30	-30	-28	-26	-25	-27	-29
20	-26	-23	-22	-22	-24	-24	-23	-21	-20	-17	-19	-18	-16	-14	-13	-13	-12	-9	-10	-13	-16	-18	-14	-12
21	-11	-9	-8	-7	-5	-3	-4	-1	7	20	7	4	8	11	10	1	-14	-15	-15	-12	-13	-7	-4	-9
22	-13	-17	-6	-1	-12	-15	-11	-9	-10	-11	-10	-12	-15	-18	-19	-18	-16	-13	-10	-1	-5	-3	-1	-2
23	-4	-1	0	1	-3	-6	-8	-10	-12	-12	-9	-14	-25	-20	-17	-21	-21	-17	-14	-10	-22	-30	-32	-26
24	-28	-22	-16	-16	-16	-17	-16	-13	-11	-15	-17	-23	-20	-17	-15	-15	-14	-17	-17	-13	-13	-14	-15	-11
25	-13	-11	-8	-6	-7	-6	-6	-8	-8	-7	-6	-9	-8	-6	-8	-11	-9	-7	-4	-4	-3	-1	-1	0
26	2	4	6	1	1	-2	2	5	3	2	0	0	-1	-2	-3	-2	-3	-4	-2	-2	-1	-2	-1	-2
27	-1	1	2	2	1	2	3	3	4	5	5	7	7	9	9	6	6	5	5	5	7	7	8	5
28	2	2	3	6	9	11	11	11	12	12	14	14	12	11	13	18	35	37	36	36	40	36	-3	-36
29	-45	-46	-48	-46	-46	-48	-40	-40	-25	-23	-32	-32	-30	-26	-32	-30	-31	-32	-40	-36	-29	-35	-34	-35
30	-34	-30	-31	-34	-39	-36	-32	-29	-24	-27	-26	-28	-30	-31	-36	-32	-36	-40	-35	-35	-29	-27	-25	-28
31	-28	-25	-19	-16	-16	-14	-15	-20	-20	-29	-31	-26	-23	-20	-23	-23	-24	-20	-17	-16	-15	-16	-16	-13

NOVEMBER 1983

UNIT=NT

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-9	-7	-14	-18	-18	-17	-16	-14	-15	-16	-20	-20	-21	-23	-19	-18	-18	-16	-16	-13	-17	-20	-21	-20
2	-17	-17	-19	-18	10	-3	-3	-14	-44	-53	-40	-31	-31	-37	-35	-31	-29	-29	-24	-19	-20	-21	-20	-21
3	-17	-15	-11	-13	-12	-12	-15	-14	-12	-12	-10	-8	-9	-9	-7	-10	-20	-29	-25	-21	-24	-15	-15	-11
4	-8	-6	-5	-7	-11	-12	-14	-16	-14	-12	-11	-13	-13	-12	-12	-14	-15	-12	-8	-3	-2	-3	-3	-2
5	-2	-2	-3	-4	-2	0	0	0	1	-1	-1	-1	-1	-2	-2	-3	-5	-4	-2	-1	-1	-2	1	1
6	1	2	2	2	1	1	2	5	5	3	4	7	16	16	15	14	13	11	15	16	14	10	10	9
7	8	10	11	11	12	8	5	8	11	13	14	18	18	12	0	-13	-14	-21	-28	-30	-31	-33	-31	-32
8	-37	-24	-18	-22	-29	-30	-25	-22	-31	-40	-35	-28	-33	-36	-39	-42	-39	-34	-27	-25	-23	-24	-26	-30
9	-30	-29	-35	-41	-38	-32	-30	-31	-35	-33	-19	-12	-15	-17	-30	-32	-28	-23	-21	-40	-39	-45	-44	-49
10	-54	-53	-48	-46	-47	-51	-45	-43	-47	-43	-36	-33	-33	-32	-32	-31	-32	-32	-28	-28	-39	-38	-34	-25
11	-16	-20	-20	-14	-16	-14	-9	-14	-14	-15	-16	-23	-35	-27	-18	-8	-7	-12	2	-19	-39	-43	-42	-36
12	-40	-51	-57	-58	-64	-68	-70	-74	-82	-72	-70	-59	-50	-54	-51	-45	-48	-49	-53	-57	-55	-54	-53	-47
13	-48	-46	-47	-46	-47	-49	-49	-40	-41	-42	-44	-39	-44	-49	-61	-67	-62	-52	-43	-42	-39	-44	-42	-38
14	-36	-35	-36	-38	-39	-32	-24	-21	-32	-27	-18	-11	-27	-41	-48	-57	-51	-43	-36	-31	-25	-28	-33	-26
15	-27	-33	-28	-25	-20	-20	-17	-11	-8	-2	-3	-10	-20	-22	-26	-30	-23	-25	-28	-43	-34	-28	-28	-35
16	-32	-23	-29	-34	-30	-30	-25	-33	-29	-24	-17	-16	-15	-14	-20	-18	-30	-39	-35	-29	-27	-23	-28	-37
17	-38	-36	-49	-46	-42	-40	-39	-30	-34	-31	-25	-28	-22	-25	-25	-28	-31	-22	-23	-20	-21	-21	-24	-23
18	-24	-26	-27	-25	-38	-35	-27	-23	-21	-21	-20	-20	-16	-15	-16	-18	-24	-27	-30	-27	-23	-24	-20	-20
19	-23	-27	-22	-22	-27	-25	-23	-21	-18	-17	-15	-12	-15	-13	-7	-13	-13	-14	-13	-8	-10	-13	-13	-12
20	-14	-20	-19	-21	-21	-18	-14	-13	-23	-19	-21	-22	-17	-18	-21	-18	-20	-19	-20	-22	-23	-23	-19	-18
21	-20	-23	-20	-19	-19	-17	-15	-17	-18	-16	-10	-4	-5	-7	-9	-7	-7	-8	-6	-7	-9	-8	-5	-4
22	-5	-6	-3	-5	-6	-6	-7	-9	-6	-7	-6	-5	-5	-6	-6	-6	-6	-6	-7	-7	-6	-4	-3	-4
23	-3	-4	-5	-3	-3	-2	0	0	0	1	2	1	0	1	3	5	6	5	2	2	3	5	4	3
24	0	1	3	6	7	10	10	5	0	-5	6	18	16	11	10	7	5	5	-2	-6	-6	-4	-4	-3
25	-5	-7	-5	-6	-5	-4	-6	-13	-12	-16	-9	-6	-2	-3	-6	-2	2	4	1	-5	-10	-11	-8	-12
26	-22	-28	-25	-23	-25	-25	-23	-20	-20	-13	-12	-9	-12	-13	-9	-5	-8	-19	-21	-17	-23	-21	-19	-19
27	-19	-19	-17	-16	-14	-11	-9	-7	-10	-15	-13	-10	-9	-7	-10	-13	-14	-9	-5	-6	-4	-4	-4	-6
28	-7	-12	-10	-5	-3	3	6	7	13	19	24	27	40	45	35	4	-4	-8	-14	-33	-38	-33	-28	-27
29	-32	-29	-23	-20	-12	-9	-3	-1	2	0	-15	-8	-6	-6	-3	-5	-6	-7	-8	-8	-11	-10	-12	-16
30	-20	-19	-24	-23	-20	-16	-18	-21	-17	-11	-6	-4	-3	0	-5	-1	1	1	-7	-17	-12	-6	-9	-12

DECEMBER 1983

DAY	UNIT=NT 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-17	-19	-21	-20	-16	-13	-14	-11	-7	-3	-3	-2	-4	-3	0	-1	0	-3	-5	-5	-3	1	3	-1
2	-7	-10	-10	-8	-10	-7	-6	-4	1	6	8	8	1	-4	-7	-6	-6	-3	-5	-6	-6	-3	-1	-4
3	-2	-2	-4	-5	-4	-1	-1	0	3	4	5	6	3	-3	-3	1	1	4	4	1	3	3	7	7
4	7	6	2	0	-3	-2	1	3	8	8	10	10	9	8	8	9	6	3	6	10	16	22	24	25
5	20	17	12	-1	1	1	1	6	4	-2	-1	5	12	9	8	5	5	3	-4	-5	-4	-6	-6	-7
6	-8	-9	-15	-14	-13	-17	-22	-25	-19	-19	-16	-12	-20	-18	-29	-27	-24	-19	-18	-27	-32	-30	-27	-24
7	-24	-23	-26	-27	-24	-14	-9	-10	-16	-23	-29	-26	-21	-25	-20	-26	-25	-27	-32	-29	-28	-29	-33	-34
8	-30	-22	-21	-19	-17	-13	-13	-12	-10	-6	-8	-13	-16	-9	-4	-1	-3	-6	-8	-9	-14	-17	-17	-10
9	-4	-7	-3	1	8	9	7	7	8	6	3	0	-2	-2	-1	3	4	3	2	4	3	0	-5	-9
10	-9	-9	-9	10	26	27	31	27	11	-12	-3	-8	-19	-29	-36	-40	-52	-61	-53	-46	-36	-32	-30	-32
11	-29	-30	-29	-29	-26	-23	-15	-13	-3	0	4	6	-8	-6	-23	-37	-27	-23	-23	-37	-45	-48	-47	-43
12	-44	-49	-42	-39	-39	-38	-31	-27	-26	-34	-38	-30	-27	-25	-32	-26	-22	-24	-27	-29	-26	-26	-35	-39
13	-33	-30	-26	-24	-29	-24	-22	-20	-17	-22	-30	-27	-20	-18	-21	-15	-9	-11	-15	-23	-22	-26	-23	-30
14	-31	-25	-25	-22	-22	-18	-21	-12	-12	-13	-10	-12	-15	-16	-10	-10	-16	-15	-23	-23	-35	-39	-50	-51
15	-43	-40	-39	-34	-31	-28	-25	-26	-35	-30	-25	-17	-17	-14	-15	-19	-20	-18	-13	-15	-16	-17	-25	-30
16	-31	-32	-33	-30	-25	-22	-20	-19	-18	-16	-16	-17	-17	-16	-13	-11	-11	-11	-15	-15	-16	-15	-16	-20
17	-20	-21	-21	-17	-13	-11	-9	-6	-4	-3	-4	-4	-6	-6	0	4	5	-2	-4	-4	1	4	4	3
18	-1	-2	-2	0	1	3	4	6	8	11	11	10	9	13	12	1	-9	-18	-29	-33	-27	-18	-11	-12
19	0	12	9	0	-3	1	3	0	3	3	-4	-5	0	3	5	6	3	8	4	3	-1	-2	-6	-6
20	-7	-7	-3	-4	-5	-7	-7	-5	-2	1	0	-1	0	0	2	2	2	4	3	-1	-4	-3	-4	-2
21	-2	-1	-2	-3	-3	-1	3	3	3	4	4	5	5	6	6	3	3	2	3	2	1	1	0	2
22	4	11	24	23	22	12	2	-6	-12	-8	-4	-8	-8	-7	-9	-6	-2	-5	-12	-15	-12	-10	-12	-11
23	-14	-12	-4	-2	-6	-12	-19	-17	-10	-2	-3	-2	-1	-1	1	1	2	2	-3	-8	-9	-11	-15	-14
24	-14	-6	-1	1	5	6	8	16	14	13	18	20	11	0	-24	-31	-25	-20	-24	-30	-33	-30	-22	-21
25	-24	-26	-24	-21	-21	-19	-18	-17	-15	-12	-11	-10	-8	-11	-13	-16	-14	-9	-8	-15	-15	-10	-10	-12
26	-13	-12	-11	-10	-6	2	1	0	4	4	10	10	12	20	6	11	10	2	0	-19	-20	-7	-16	-23
27	-21	-17	-16	-12	-14	-13	-12	-14	-12	-10	-11	-10	-6	-2	0	0	-1	-3	-10	-7	-11	-22	-23	-23
28	-24	-22	-15	-12	-11	-13	-15	-20	-20	-15	-15	-13	-9	-10	-10	-12	-8	-6	-8	-10	-6	-5	-6	-7
29	-10	-10	-9	-4	-4	-7	-10	-13	-16	-16	-10	-7	-4	-4	3	0	-2	0	-1	-4	-3	0	0	-4
30	-5	-2	1	6	8	8	3	4	-1	-18	-13	-21	-31	-35	-30	-16	-29	-41	-46	-44	-43	-37	-39	-37
31	-29	-25	-25	-22	-17	-19	-26	-36	-38	-37	-34	-28	-18	-12	-11	-15	-12	-7	-16	-28	-21	-38	-34	-32

DAILY MEANS OF EQUATORIAL DST FOR 1983

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	-14	-21	-5	-37	-23	-5	5	5	-10	5	-17	-7
2	2	-6	-128	-27	-13	1	11	-15	-1	-24	-24	-4
3	-12	0	-69	-21	15	2	10	-11	4	-23	-14	1
4	-15	-45	-52	-21	-25	4	9	-11	10	-35	-10	8
5	-12	-148	-47	-15	-16	7	15	2	18	-18	-2	3
6	-5	-89	-48	-22	-11	7	13	13	10	-11	8	-20
7	-3	-85	-33	-19	-4	0	1	16	-2	-9	-3	-24
8	-1	-58	-23	-14	-6	5	9	-83	0	-6	-30	-12
9	-14	-40	-5	-11	0	-3	3	-33	4	-4	-31	1
10	-126	-33	3	-8	7	-26	4	-18	4	1	-39	-16
11	-37	-15	-12	-4	-13	-17	14	-1	4	-3	-20	-23
12	-28	-44	-66	-2	-39	12	5	-17	0	5	-58	-32
13	-23	-46	-65	-16	-40	-70	-17	-23	4	-32	-47	-22
14	-21	-37	-39	-31	-39	-38	-12	-3	11	-26	-33	-22
15	-20	-41	-27	-45	-28	-40	2	-6	1	-26	-23	-25
16	-32	-37	-20	-34	-20	-21	0	-2	-29	-15	-27	-19
17	-30	-26	-19	-28	-21	-7	-16	-1	-27	-37	-30	-6
18	-34	-29	-17	-18	-37	-24	-16	9	-15	-56	-24	-3
19	-27	-17	-35	-21	-14	-21	-7	11	-33	-33	-17	2
20	-26	-45	-36	-25	-1	-18	-2	-4	-31	-17	-19	-2
21	-15	-54	-24	-23	1	-17	0	-29	-20	-3	-12	2
22	-14	-41	-24	-26	-35	-21	2	-10	-12	-10	-6	-2
23	-5	-28	-18	-7	-49	-27	5	-28	-6	-14	1	-7
24	-14	-31	-14	-30	-39	-12	-45	-22	2	-16	4	-7
25	-22	-22	-69	-39	-55	5	-22	-18	-6	-7	-6	-15
26	-20	-16	-35	-31	-31	5	-7	-13	-17	0	-18	-2
27	-15	-6	-14	-22	-25	2	-3	-5	-9	5	-10	-11
28	-18	-1	-34	-12	-16	6	1	-2	-4	14	0	-12
29	-17		-53	-43	2	5	-5	11	-2	-36	-10	-6
30	-18		-34	-43	5	3	-8	-11	3	-31	-11	-19
31	-22		-41		-1		-5	-7		-20		-24
MEAN	-21	-38	-36	-23	-18	-10	-2	-10	-5	-16	-18	-10

ANNUAL MEAN -17

MONTHLY AND YEARLY **Dst** 1957 - 1983

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1957	-19.8	-24.1	-41.3	-27.8	-5.2	-10.0	-11.7	-3.5	-64.0	-14.4	-20.7	-18.5	-21.7
1958	-18.3	-28.1	-32.3	-19.6	-10.8	-22.8	-27.5	-13.8	-24.9	-17.7	-1.1	-18.9	-19.6
1959	-10.5	-31.5	-25.1	-22.6	-14.3	-6.5	-35.6	-32.0	-39.2	-25.3	-35.1	-30.1	-25.7
1960	-17.7	-11.8	-11.5	-58.3	-28.6	-18.2	-20.7	-21.9	-30.8	-53.9	-54.5	-42.3	-30.9
1961	-17.2	-21.5	-13.6	-11.8	-7.0	-6.5	-28.3	-7.2	-8.8	-28.3	-17.5	-10.9	-14.9
1962	-3.1	-5.4	0.5	-7.6	2.1	0.2	1.1	-7.4	-19.6	-17.9	-11.6	-12.3	-6.8
1963	-6.1	-2.2	1.8	2.0	1.1	0.0	1.9	-4.2	-29.5	-23.3	-15.4	-7.9	-6.8
1964	-8.8	-9.2	-9.8	-10.1	-4.0	-0.2	1.8	2.3	-0.3	-6.2	-0.2	6.1	-3.2
1965	5.7	-1.0	0.8	-3.4	5.7	0.3	1.4	2.5	-2.2	5.3	4.6	2.4	1.8
1966	4.2	0.1	-8.2	-1.6	-3.4	0.2	-3.2	-2.1	-25.2	-10.7	-8.1	-13.9	-6.0
1967	-18.6	-19.3	-2.7	-6.1	-32.6	-25.7	-9.7	-5.0	-20.6	-14.1	-11.8	-18.1	-15.4
1968	-20.4	-26.8	-20.8	-13.9	-12.6	-13.0	-5.4	-6.2	-11.8	-16.6	-32.5	-13.7	-16.1
1969	-7.2	-21.6	-29.1	-19.8	-16.3	-2.5	3.6	-0.3	-8.3	-10.8	-4.1	2.3	-9.5
1970	-3.0	0.0	-28.5	-25.8	-10.2	-12.1	-20.4	-21.4	-13.2	-20.1	-21.5	-17.3	-16.1
1971	-15.0	-17.9	-15.0	-26.6	-17.2	-8.7	-3.5	-9.4	-16.8	-15.6	-14.9	-24.2	-15.4
1972	-19.8	-17.9	-16.9	-15.1	-8.2	-16.4	-10.1	-36.4	-22.7	-22.2	-24.2	-9.9	-18.3
1973	-12.8	-20.4	-23.9	-46.3	-17.0	-10.1	-1.3	-2.9	-10.8	-13.7	-7.3	-0.2	-13.9
1974	-4.2	-5.6	-16.3	-13.7	-8.4	-5.7	-26.6	-13.3	-20.8	-23.0	-17.1	-12.0	-13.9
1975	-10.4	-13.4	-18.2	-10.4	-6.3	0.5	-7.0	-9.0	-4.2	-9.9	-21.4	-9.5	-9.9
1976	-12.3	-11.3	-24.1	-24.6	-13.2	-4.4	-5.7	-7.5	-12.2	-16.2	-14.9	-16.1	-13.5
1977	-13.6	-14.6	-10.9	-23.3	-13.7	-3.6	-13.7	-19.3	-23.5	-25.4	-19.4	-22.4	-17.0
1978	-19.4	-26.1	-28.1	-30.8	-34.5	-14.9	-9.2	-12.1	-27.1	-22.7	-27.4	-13.9	-22.2
1979	-28.8	-26.2	-30.4	-33.4	-12.7	-4.3	1.8	-10.8	-19.3	-18.9	-11.6	-2.5	-16.4
1980	-13.1	-18.5	-3.1	-9.4	-6.6	-11.7	-6.6	-4.3	-4.8	-22.2	-18.1	-19.9	-11.5
1981	-8.5	-21.6	-35.0	-43.6	-29.9	-2.9	-21.6	-26.6	-19.9	-42.5	-27.5	-12.5	-24.3
1982	-3.9	-50.0	-18.8	-25.0	-2.7	-12.5	-31.0	-23.4	-47.8	-23.9	-26.1	-20.1	-23.8
1983	-21.2	-37.9	-35.5	-23.2	-18.4	-10.1	-1.8	-9.9	-5.0	-15.5	-17.6	-10.5	-17.2

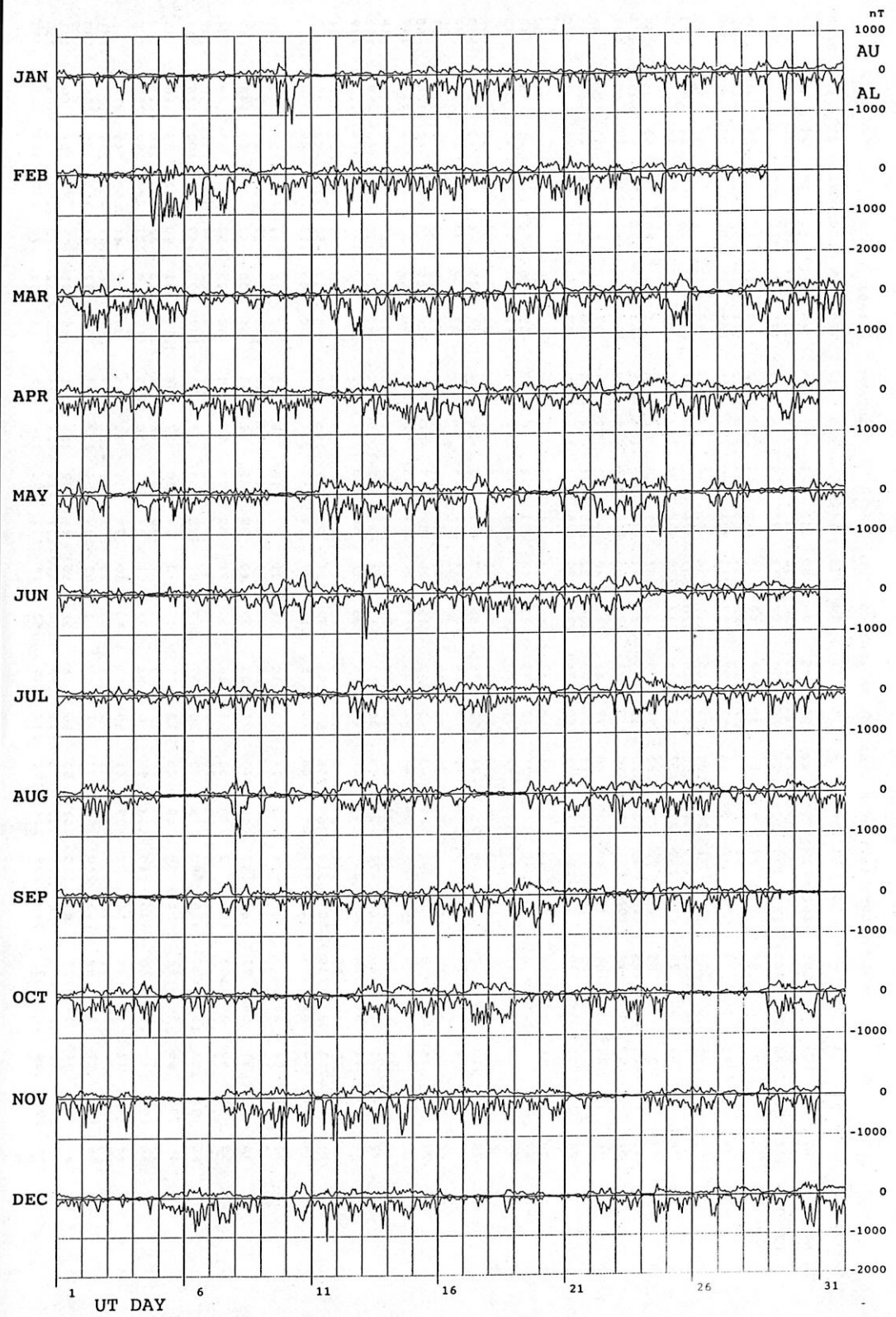
Unit : nT

SECTION 3

3.5. AU, AL, AE INDICES

- Hourly values of **AU** and **AL** 1983 (graph) 99
- Monthly tables of hourly values of **AU**, **AL** and **AE** indices 100
- Monthly and yearly mean values of **AE** 1957-1983 124

HOURLY VALUES OF **AU** AND **AL** 1983



HOURLY VALUES (nT) OF AU, AL AND AE INDICES JANUARY 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	78	102	174	123	84	105	181	122	91	42	28	36	55	40	32	22	25	28	40	44	67	27	43	63	69
	AL	-53	-44	-37	-64	-160	-201	-73	-5	-32	-21	-21	-36	-52	-11	-37	-52	-118	-232	-134	-44	-93	-72	-22	-21	-68
	AE	132	146	212	188	246	307	255	129	124	64	50	73	108	52	70	75	144	261	175	89	161	100	66	85	138
2		71	68	69	66	69	67	72	67	58	59	48	24	68	55	114	64	23	32	23	32	57	30	34	36	54
		-11	-10	-8	-6	-6	-5	-4	-3	0	0	-8	-12	-69	-257	-166	-24	-48	-112	-141	-44	-49	-16	-13	-19	-43
		82	79	77	72	76	73	77	71	59	59	57	37	137	313	281	90	72	146	165	77	106	47	47	56	98
3		40	48	32	29	35	33	50	71	105	107	171	65	121	136	82	98	86	73	50	40	52	48	43	43	69
		-17	-27	-25	-24	-43	-42	-86	-147	-292	-269	-285	-270	-420	-587	-374	-112	-60	-56	-32	-104	-28	-50	-34	-41	-143
		58	76	59	55	80	76	137	219	398	377	457	336	542	725	458	212	147	130	83	145	81	99	78	85	213
4		42	44	45	33	41	55	61	70	72	82	74	79	31	81	59	58	78	53	51	48	68	50	55	46	57
		-38	-41	-21	-23	-44	-58	-44	-80	-125	-310	-137	-163	-359	-424	-185	-185	-196	-116	-63	-17	-173	-136	-6	-11	-123
		80	87	67	58	87	114	106	151	198	393	212	242	391	506	244	244	274	170	116	66	242	186	63	59	181
5		42	36	32	32	32	34	37	40	39	88	77	63	73	48	92	52	32	31	27	30	30	32	32	30	44
		-21	-36	-24	-3	-1	-3	-11	-70	-136	-213	-89	-109	-204	-323	-385	-51	-84	-192	-40	-6	-10	-8	-7	-10	-85
		64	74	57	36	35	39	50	111	176	302	168	174	278	372	478	104	116	225	69	37	42	42	41	41	130
6		29	29	29	31	28	29	31	38	35	27	25	29	27	59	55	34	21	23	26	25	38	29	36	41	32
		-11	-7	-17	-5	0	0	-2	-6	-118	-21	-28	-33	-83	-142	-93	-71	-60	-121	-55	-15	-52	-43	-5	-11	-42
		41	37	47	38	28	29	35	46	154	49	54	63	111	201	149	106	81	144	81	41	92	73	41	52	75
7		55	50	35	37	45	50	45	53	65	87	119	91	99	122	58	30	41	38	33	29	27	23	31	43	54
		-52	-78	-20	-12	-5	-7	-6	-8	-11	-24	-53	-78	-86	-127	-73	-43	-26	-14	-14	-25	-6	-9	-7	-18	-33
		108	129	57	51	52	58	53	62	78	113	173	170	185	249	132	74	68	53	48	55	35	33	39	62	89
8		41	56	53	67	61	110	102	60	52	53	48	62	97	139	100	54	40	44	75	135	121	71	92	126	77
		-17	-22	-4	-14	-64	-18	0	-1	0	-3	-3	-43	-215	-226	-84	-7	-10	-61	-284	-286	-45	0	-46	-188	-68
		59	78	58	82	127	130	103	62	52	57	52	106	312	366	184	63	52	106	360	422	167	71	139	314	147
9		163	138	121	83	84	110	143	161	121	82	140	128	76	36	34	69	132	323	229	212	215	138	157	142	135
		-141	-72	-42	-7	-12	-40	-160	-76	-25	-33	-200	-170	-15	-14	-23	-207	-1005	-672	-190	-104	-218	-280	-146	-59	-163
		304	211	164	91	97	152	305	238	147	116	340	298	93	51	58	276	1137	995	420	317	434	418	304	201	299
10		108	-20	-9	7	-99	-138	6	-51	23	2	15	39	40	115	129	61	69	38	34	43	57	40	39	36	24
		-252	-914	-671	-753	-889	-1230	-651	-519	-269	-286	-259	-185	-72	-134	-105	-87	-166	-86	-65	-42	-57	-30	-48	-28	-325
		360	894	662	760	789	1090	658	467	293	288	274	225	113	249	235	149	237	125	100	86	115	72	88	66	350
11		19	22	19	34	32	29	38	21	23	14	10	10	14	21	22	18	16	18	12	14	24	25	13	73	23
		-21	-23	-22	-15	-23	-21	-22	-24	-25	-28	-25	-22	-23	-18	-16	-20	-13	-16	-21	-22	-22	-22	-15	-74	-23
		42	46	42	51	56	52	62	47	49	43	37	33	39	40	39	39	31	35	34	38	47	48	29	148	47
12		45	55	44	60	84	108	105	72	37	51	56	36	52	71	82	28	28	31	38	27	54	37	43	49	54
		-91	-110	-49	-176	-110	-337	-310	-8	-38	-328	-174	-30	-60	-235	-145	-135	-285	-241	-148	-262	-294	-116	-55	-86	-159
		136	166	94	237	195	447	416	80	76	379	230	67	113	307	228	164	315	274	187	290	349	154	100	136	214
13		58	46	56	65	76	64	52	58	58	28	13	17	17	13	24	10	27	86	116	81	90	41	38	46	49
		-104	-148	-106	-118	-137	-94	-77	-81	-53	-27	-17	-65	-121	-87	-70	-281	-228	-372	-293	-142	-133	-243	-154	-211	-140
		162	196	163	184	214	160	130	140	113	55	30	82	139	101	94	292	256	458	410	224	223	284	192	257	190
14		51	48	48	37	49	46	54	82	99	61	50	33	40	30	79	34	22	25	30	19	41	59	45	75	48
		-77	-47	-60	-39	-48	-41	-190	-157	-83	-81	-75	-114	-161	-375	-269	-119	-100	-207	-269	-36	-49	-81	-283	-179	-131
		129	96	110	77	98	89	245	240	184	143	127	149	201	405	349	154	123	234	300	57	91	141	328	254	180
15		84	87	96	74	99	122	83	120	61	50	66	103	58	36	49	172	211	191	186	141	105	93	81	69	101
		-429	-182	-195	-115	-127	-198	-232	-216	-163	-125	-175	-140	-104	-81	-147	-721	-722	-294	-225	-422	-273	-204	-306	-206	-250
		514	270	292	190	227	321	316	338	224	176	242	244	163	118	197	894	934	485	412	563	379	297	387	276	352

16	59	71	70	43	79	122	109	126	126	68	63	20	195	116	162	190	177	211	151	128	112	79	61	64	108
	-123	-157	-285	-178	-141	-422	-179	-178	-204	-88	-477	-476	-382	-378	-274	-367	-345	-433	-536	-246	-11	-21	-75	-161	-256
	182	230	356	222	221	544	289	306	330	157	541	497	578	495	438	558	523	645	688	374	124	101	137	226	365
17	78	88	106	110	65	78	61	70	73	96	223	107	136	149	89	109	56	50	110	102	138	69	100	145	100
	-334	-225	-228	-129	-102	-141	-120	-105	-152	-311	-560	-455	-760	-625	-139	-320	-208	-224	-495	-683	-390	-138	-230	-538	-317
	413	315	336	240	168	221	182	176	226	409	784	562	897	776	229	431	265	274	606	785	529	207	330	685	419
18	108	74	40	130	81	112	70	84	78	70	79	118	50	121	160	99	98	77	80	65	107	149	73	53	91
	-377	-320	-135	-170	-184	-271	-284	-204	-176	-69	-395	-682	-559	-286	-441	-231	-370	-262	-130	-103	-414	-351	-72	-22	-271
	485	396	177	302	266	384	354	289	255	140	475	801	611	409	601	331	470	341	211	169	522	501	146	76	363
19	43	61	62	63	69	111	91	96	84	78	75	50	47	120	98	88	66	64	53	47	55	49	37	68	70
	-20	-62	-156	-168	-109	-143	-110	-32	-135	-245	-268	-108	-159	-586	-532	-260	-231	-224	-193	-68	-40	-136	-57	-179	-176
	64	124	219	232	179	255	203	128	220	323	344	160	207	706	631	349	298	289	247	116	96	186	95	248	247
20	71	81	80	88	63	72	81	83	68	88	83	44	32	35	35	29	21	43	42	89	105	121	56	42	65
	-254	-193	-165	-63	-85	-121	-216	-175	-133	-295	-161	-49	-67	-65	-102	-114	-146	-120	-160	-456	-455	-243	-45	-28	-163
	326	275	247	152	149	194	298	259	201	384	245	95	100	101	138	143	168	165	203	546	561	365	102	71	229
21	52	70	52	74	85	81	74	68	39	28	33	36	32	42	74	58	94	37	31	78	45	42	45	36	54
	-40	-58	-50	-25	-71	-244	-104	-22	-16	-24	-39	-66	-98	-113	-242	-265	-155	-30	-81	-389	-197	-40	-51	-40	-103
	93	129	103	101	158	327	180	91	56	53	73	103	130	156	316	324	250	69	113	468	242	83	97	76	158
22	43	48	42	56	49	82	103	120	91	84	92	50	90	42	78	50	44	37	32	31	48	67	46	47	61
	-29	-26	-14	-43	-24	-95	-202	-199	-61	-190	-128	-179	-353	-333	-80	-11	-31	-50	-71	-101	-138	-93	-50	-43	-106
	72	75	58	100	74	179	307	320	153	274	221	230	444	375	159	62	76	87	105	132	187	162	96	91	168
23	44	51	53	49	68	87	94	75	55	64	90	74	51	40	32	32	35	42	39	40	37	80	194	181	67
	-63	-40	-40	-74	-115	-58	-26	-18	-57	-119	-68	-51	-22	-7	-3	-3	0	0	5	6	0	-159	-293	-173	-57
	107	91	93	124	185	146	122	94	113	183	160	126	73	48	36	36	35	43	33	32	36	239	488	355	125
24	217	254	230	136	150	176	191	106	144	119	109	165	132	98	95	103	250	244	162	117	175	154	151	309	166
	-210	-146	-96	-83	-99	-105	-8	-11	-23	-16	-65	-59	-25	-3	-171	-222	-175	-154	-181	-119	-233	-161	-236	-468	-128
	428	401	327	220	250	283	200	117	168	136	175	225	158	102	267	326	426	399	344	237	408	315	387	777	295
25	237	173	114	98	100	130	94	90	65	60	96	103	152	174	101	103	81	97	159	150	104	94	73	54	113
	-199	-70	-31	-37	-86	-222	-144	-46	-18	-23	-290	-431	-385	-295	-362	-367	-300	-181	-461	-105	-68	-107	-158	-22	-184
	437	243	145	136	187	353	240	137	84	84	386	535	538	470	464	472	382	278	621	256	173	202	232	77	297
26	45	65	134	128	96	100	111	70	76	86	99	152	243	146	149	79	86	127	131	123	44	49	37	50	101
	-25	-29	-150	-92	-43	-96	-101	-4	-20	-69	-451	-258	-158	-333	-182	-145	-149	-205	-316	-127	-19	-27	-11	-21	-126
	70	96	285	221	141	197	214	75	97	156	551	411	402	480	332	226	235	332	448	252	64	77	49	72	228
27	62	58	80	83	126	107	96	142	160	108	112	66	46	50	60	47	25	36	95	129	81	56	43	39	79
	-62	-38	-84	-103	-66	-19	-127	-125	-51	-50	-57	-11	-12	-55	-81	-23	-47	-134	-305	-352	-51	-22	-7	-9	-79
	125	97	165	187	193	127	224	268	212	159	169	78	59	105	142	71	72	171	401	482	132	78	50	49	159
28	35	35	40	36	36	38	40	55	73	66	50	41	54	40	100	177	242	119	117	130	205	131	187	291	97
	-9	-8	-9	-6	-4	-3	-4	-61	-133	-8	-2	-8	-20	-66	-175	-352	-245	-109	-148	-154	-115	-121	-353	-203	-97
	44	43	49	42	41	42	45	118	208	75	52	49	74	107	276	530	488	230	265	285	321	252	541	495	195
29	222	174	150	112	74	70	79	63	60	62	73	73	76	90	72	95	224	257	173	102	68	89	76	89	109
	-86	-100	-55	-16	-7	-14	-2	-11	-9	-6	-7	-94	-158	-62	-123	-421	-730	-565	-138	-24	-54	-66	-69	-113	-122
	309	275	206	130	83	84	82	75	70	68	80	168	235	153	196	518	955	822	311	128	123	156	146	202	232
30	81	66	69	67	81	97	85	84	77	71	96	214	205	105	57	56	45	66	55	59	62	69	92	113	86
	-63	-54	-59	-159	-58	-78	-110	-209	-348	-56	-285	-632	-362	-153	-184	-256	-187	-265	-174	-86	-37	-59	-253	-380	-188
	145	121	129	227	140	177	197	293	425	128	382	847	568	259	243	312	234	333	231	146	100	130	345	494	275
31	89	117	108	112	154	134	143	83	68	49	45	51	39	65	89	45	59	107	169	145	177	158	227	190	109
	-141	-194	-220	-224	-269	-140	-71	-27	-11	-8	-21	-70	-111	-291	-296	-198	-252	-412	-599	-350	-304	-296	-199	-135	-202
	231	311	330	338	424	275	215	111	80	57	67	122	151	357	386	244	313	520	768	496	481	454	426	325	312

HOURLY VALUES (nT) OF AU, AL AND AE INDICES FEBRUARY 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	78	56	71	53	71	140	83	52	50	58	55	64	76	113	99	98	157	131	85	32	38	37	34	27	73
	AL	-92	-24	-31	-15	-36	-260	-157	-65	-9	-104	-212	-199	-182	-312	-247	-228	-281	-313	-230	-24	-17	-27	-44	-37	-131
	AE	171	81	103	69	108	401	241	118	60	164	269	264	258	427	348	327	439	445	316	58	55	64	79	65	205
2		31	29	36	36	32	28	22	19	20	21	23	26	26	21	22	22	24	79	39	42	29	39	39	33	31
		-30	-39	-65	-55	-12	-6	-7	-14	-9	-5	-19	-61	-24	-23	-26	-34	-86	-282	-140	-75	-16	-32	-155	-170	-58
		62	69	102	92	44	35	30	34	30	27	43	88	51	45	49	57	112	362	180	118	46	72	195	203	89
3		28	44	35	45	29	47	73	54	81	71	41	43	42	63	38	23	34	41	51	75	51	87	111	90	54
		-76	-7	-10	-32	-39	-52	-42	-88	-18	0	-5	-23	-51	-66	-20	-25	-22	-33	-54	-54	-87	-28	-137	-66	-43
		105	52	45	78	69	100	116	144	99	71	47	67	94	130	58	49	58	75	107	129	138	115	249	158	98
4		85	105	141	156	151	165	128	140	106	159	203	160	113	92	58	36	224	-24	-10	40	104	55	115	152	111
		-55	-39	-17	-17	-9	-99	-96	-36	-5	-97	-198	-100	-80	-19	-17	-24	-459	-1040	-1261	-1152	-776	-527	-304	-254	-278
		141	144	158	173	160	265	225	177	111	257	402	261	194	112	76	62	684	1015	1250	1193	880	583	420	407	390
5		135	121	-1	-176	-93	-184	-56	126	217	-145	31	127	-11	-95	1	257	191	91	-16	-26	-18	54	34	30	24
		-189	-329	-787	-1148	-812	-1038	-815	-628	-432	-1050	-838	-456	-1042	-984	-607	-576	-589	-863	-1038	-919	-1067	-893	-697	-603	-766
		325	450	785	970	718	853	758	755	650	905	870	583	1030	888	608	834	781	955	1021	892	1048	948	732	634	791
6		187	242	147	58	99	219	192	208	116	73	126	142	166	220	152	152	191	132	58	32	39	42	21	36	127
		-546	-527	-626	-274	-228	-506	-444	-431	-123	-97	-328	-888	-584	-710	-602	-759	-671	-216	-79	-74	-54	-39	-38	-52	-371
		733	770	775	333	327	726	637	640	240	172	456	1031	751	931	755	912	863	349	139	107	94	81	59	89	499
7		74	55	81	79	91	147	251	175	144	143	148	122	249	101	125	186	247	170	98	71	51	74	64	95	127
		-207	-378	-283	-517	-543	-518	-524	-597	-502	-425	-892	-731	-564	-954	-714	-856	-384	-129	-65	-62	-127	-201	-132	-479	-449
		282	434	364	597	635	666	775	773	647	569	1041	854	814	1055	840	1043	632	301	164	135	179	276	196	574	577
8		93	142	111	169	159	151	174	80	166	109	70	121	143	61	66	57	37	35	31	22	11	38	56	50	90
		-526	-429	-368	-325	-313	-351	-330	-322	-356	-157	-130	-159	-154	-224	-104	-26	-29	-31	-36	-22	-26	-66	-255	-233	-207
		619	571	480	495	473	503	505	402	523	268	200	281	297	286	172	85	66	67	67	44	37	105	312	284	298
9		61	74	63	67	71	68	90	102	66	96	87	177	189	112	155	147	231	254	274	166	141	118	151	166	130
		-115	-64	-42	-119	-209	-110	-51	-34	-57	-215	-377	-208	-220	-212	-514	-346	-241	-341	-283	-280	-462	-337	-203	-234	-220
		177	138	106	187	280	178	142	137	125	312	464	385	410	325	670	493	474	596	559	448	604	456	355	401	351
10		123	157	132	158	135	185	221	146	105	121	208	119	144	139	77	39	46	50	46	59	40	36	34	35	107
		-226	-233	-367	-628	-295	-213	-132	-154	-327	-262	-193	-325	-259	-110	-98	-81	-146	-237	-351	-67	-31	-54	-35	-40	-203
		349	390	499	786	430	400	355	301	433	384	402	445	404	249	176	121	193	288	398	127	73	91	70	76	310
11		20	17	31	43	41	37	51	73	81	94	85	117	168	110	59	39	31	80	178	127	195	222	79	59	85
		-25	-13	-63	-124	-97	-109	-62	-82	-136	-123	-186	-344	-557	-102	-110	-41	-129	-164	-293	-271	-361	-382	-81	-107	-165
		46	30	95	168	139	146	114	156	217	219	272	462	725	214	171	81	162	246	473	399	557	606	161	167	251
12		38	106	34	44	37	69	66	138	122	100	88	99	179	237	344	189	83	103	156	158	90	47	35	23	108
		-162	-304	-153	-53	-32	-58	-86	-292	-255	-127	-458	-1071	-653	-496	-676	-241	-72	-111	-122	-268	-187	-69	-131	-93	-257
		201	411	187	98	69	127	153	431	379	228	548	1171	832	734	1021	432	157	216	279	427	278	117	167	116	366
13		78	102	53	65	79	129	116	148	72	123	93	130	179	98	83	87	75	48	36	156	99	152	153	126	103
		-278	-481	-165	-157	-262	-316	-307	-498	-223	-180	-180	-730	-576	-232	-359	-406	-99	-53	-73	-229	-177	-302	-300	-161	-281
		356	584	219	223	342	446	424	647	296	304	273	861	757	331	443	494	175	102	110	387	278	454	453	288	385
14		167	149	131	99	53	45	61	99	123	101	91	124	91	56	67	87	177	82	38	30	53	119	142	81	94
		-397	-453	-197	-295	-114	-56	-85	-545	-520	-199	-166	-249	-149	-136	-242	-333	-348	-256	-81	-15	-33	-437	-291	-126	-238
		564	602	329	395	168	101	147	646	645	301	258	374	242	193	311	421	526	339	121	46	86	557	433	208	334
15		82	82	99	112	152	125	127	148	117	116	132	120	205	126	160	228	102	149	163	69	75	54	60	47	119
		-74	-65	-165	-244	-442	-367	-260	-87	-163	-100	-220	-511	-487	-503	-349	-678	-198	-419	-419	-333	-137	-79	-163	-243	-279
		157	148	264	357	594	493	388	236	281	217	353	631	693	629	510	908	301	569	583	403	213	134	224	291	399

16	53	45	85	137	145	124	104	88	114	158	175	152	154	111	134	185	210	175	77	78	95	67	106	113	120
	-61	-35	-268	-542	-149	-184	-144	-198	-349	-405	-336	-297	-534	-487	-361	-683	-685	-457	-91	-132	-130	-101	-395	-393	-309
	114	80	354	680	294	309	249	288	464	564	512	450	689	599	496	869	896	634	170	212	225	169	501	507	430
17	73	55	94	127	119	106	78	105	58	29	64	87	66	53	51	68	71	92	75	46	56	57	42	40	71
	-175	-43	-147	-297	-150	-157	-248	-135	-83	-16	-94	-332	-268	-90	-253	-295	-279	-194	-295	-120	-136	-287	-92	-58	-177
	249	98	242	425	269	264	327	240	141	46	159	420	335	145	305	364	352	287	371	166	193	345	135	98	249
18	47	69	81	95	115	133	114	152	76	42	37	52	83	83	72	40	41	70	77	123	82	71	47	34	77
	-58	-341	-401	-379	-351	-244	-201	-181	-62	-82	-109	-218	-470	-152	-122	-164	-173	-261	-259	-201	-161	-74	-29	-14	-196
	106	410	482	475	467	378	316	334	139	125	147	270	554	236	195	205	215	333	337	326	244	145	77	49	274
19	25	20	18	15	44	50	70	85	166	144	109	105	155	53	93	67	55	32	37	39	38	57	107	136	72
	-15	-13	-4	-7	-9	-44	-166	-319	-270	-222	-116	-163	-154	-225	-121	-110	-81	-184	-106	-53	-43	-45	-66	-309	-119
	41	34	23	22	53	94	236	406	438	368	227	268	310	280	215	179	137	217	144	93	82	103	173	445	191
20	175	246	260	141	112	148	167	112	215	149	149	234	179	172	211	260	276	219	178	64	-10	17	120	147	164
	-484	-383	-209	-62	-108	-295	-377	-395	-146	-105	-65	-376	-675	-457	-384	-715	-314	-333	-440	-374	-545	-640	-208	-268	-348
	659	629	469	203	221	445	545	509	363	254	215	611	855	630	596	976	591	553	618	439	533	658	330	416	513
21	108	132	88	169	240	406	285	185	119	126	226	178	94	90	113	240	234	209	204	133	137	170	147	3	168
	-373	-438	-357	-126	-64	-386	-318	-246	-267	-100	-580	-443	-329	-297	-279	-823	-644	-354	-428	-572	-399	-311	-742	-581	-394
	481	571	446	296	305	794	604	432	386	227	807	621	423	387	393	1063	879	564	633	707	537	482	890	584	563
22	117	119	205	132	97	64	62	96	117	97	69	55	79	109	105	40	61	34	39	155	107	98	94	143	96
	-197	-282	-183	-100	-123	-93	-73	-122	-152	-126	-280	-106	-173	-162	-89	-111	-97	-30	-69	-417	-288	-65	-218	-336	-162
	315	402	390	233	220	158	136	219	271	225	350	161	253	272	195	152	159	65	109	573	396	165	313	480	259
23	96	201	94	174	175	85	80	41	36	33	38	33	39	37	46	33	57	84	89	82	86	109	110	123	83
	-451	-131	-53	-209	-222	-39	-39	-28	-64	-45	-44	-35	-64	-53	-54	-168	-296	-214	-357	-285	-148	-115	-206	-357	-153
	548	332	148	383	397	124	120	70	101	80	83	69	104	92	102	202	354	299	447	368	235	225	317	481	237
24	124	96	85	112	137	146	212	158	100	91	108	114	205	142	105	109	170	159	182	201	199	166	84	61	136
	-129	-141	-166	-159	-170	-156	-176	-208	-61	-52	-93	-244	-463	-501	-322	-281	-350	-433	-416	-565	-218	-73	-57	-37	-228
	253	237	252	271	308	303	388	368	162	144	203	360	670	644	429	391	521	592	600	767	418	241	143	99	365
25	28	18	38	62	42	83	68	74	73	117	128	132	55	103	79	83	178	201	126	73	45	50	49	34	81
	-25	-27	-35	-126	-130	-203	-60	-42	-78	-180	-120	-86	-63	-95	-97	-254	-250	-258	-131	-73	-60	-85	-55	-63	-108
	54	46	73	188	173	286	128	116	152	298	250	220	118	199	178	338	429	460	259	147	106	135	105	99	190
26	46	83	81	44	19	19	30	41	42	55	60	42	37	29	45	48	15	53	50	79	124	115	94	118	57
	-77	-83	-132	-30	-12	-9	-9	-16	-25	-80	-120	-53	-45	-46	-52	-59	-63	-166	-150	-90	-66	-41	-77	-72	-66
	124	167	214	75	32	29	40	58	68	137	181	96	83	75	98	109	80	220	201	170	191	158	172	191	124
27	140	81	42	40	45	56	74	71	80	107	131	95	71	103	69	36	26	27	23	30	65	69	39	42	65
	-60	-33	-18	-7	-34	-37	-7	-12	-46	-164	-270	-143	-64	-81	-23	-7	-13	-7	-3	-3	-89	-153	-59	-58	-58
	200	114	60	48	79	93	81	84	128	273	401	239	136	185	92	43	40	35	27	33	155	222	99	102	124
28	25	24	19	29	34	33	20	40	39	29	25	38	45	28	25	28	29	83	62	127	74	55	103	118	47
	-19	-22	-23	-40	-83	-43	-12	-51	-42	-50	-39	-61	-73	-26	-17	-30	-78	-246	-122	-192	-114	-10	-74	-87	-65
	46	47	44	69	118	76	32	93	82	81	66	100	119	55	44	59	108	331	186	321	189	65	178	206	113

HOURLY VALUES (nT) OF AU, AL AND AE INDICES — MARCH 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	74	81	99	98	177	164	85	79	52	43	40	68	76	62	101	101	143	261	223	233	366	225	110	6	124
	AL	-116	-34	-97	-149	-136	-53	2	-1	-9	-15	-14	-40	-39	-46	-76	-214	-211	-282	-158	-345	-342	-320	-251	-384	-139
	AE	191	116	198	248	315	218	83	81	62	59	55	109	117	109	178	316	355	543	381	578	709	545	362	390	263
2		5	108	137	133	116	138	100	71	60	64	150	137	142	139	155	172	95	307	276	221	175	33	39	22	125
		-356	-338	-767	-788	-631	-553	-174	-733	-618	-448	-717	-596	-442	-857	-614	-331	-381	-450	-475	-320	-353	-791	-506	-422	-528
		361	448	906	922	749	692	275	804	679	512	868	734	585	997	770	504	477	758	752	541	529	826	545	444	653
3		50	100	91	127	116	179	149	181	173	156	152	153	215	128	112	153	127	107	180	125	109	97	128	83	133
		-433	-250	-278	-261	-303	-101	-90	-362	-244	-246	-212	-752	-354	-145	-247	-413	-358	-248	-410	-314	-110	-91	-345	-562	-297
		483	352	371	389	420	281	240	544	418	403	365	907	570	274	359	567	486	356	591	441	220	189	474	647	431
4		120	102	179	103	106	148	175	151	83	76	45	71	103	102	209	88	103	133	122	176	175	159	142	122	125
		-337	-297	-318	-154	-55	-99	-286	-318	-58	-66	-55	-84	-398	-626	-373	-97	-96	-318	-266	-419	-443	-705	-412	-149	-268
		458	401	498	257	162	248	462	470	143	142	102	156	502	729	582	185	200	451	388	596	618	865	555	272	393
5		90	101	137	164	179	155	204	203	166	158	225	202	214	113	221	205	123	84	107	174	203	166	98	62	156
		-38	-123	-193	-337	-243	-286	-348	-166	-294	-257	-668	-334	-270	-340	-638	-386	-163	-150	-207	-374	-367	-439	-486	-526	-318
		128	225	331	502	424	442	553	371	461	416	894	537	486	454	860	591	286	234	315	550	571	606	585	589	475
6		110	107	93	64	45	22	16	23	25	27	22	21	12	10	22	22	32	86	89	55	32	41	29	65	44
		-493	-420	-83	-27	-18	-23	-21	-30	-23	-13	-14	-13	-11	-18	-43	-88	-112	-190	-222	-60	-38	-94	-100	-107	-94
		605	528	176	92	64	45	37	53	49	41	36	35	24	29	65	110	145	277	312	115	71	136	131	174	140
7		85	84	63	71	51	78	84	78	36	58	109	140	108	44	28	27	19	14	14	15	8	24	39	54	56
		-166	-196	-225	-129	-60	-138	-117	-50	-51	-79	-151	-155	-105	-53	-33	-26	-32	-21	-9	-12	-16	-29	-49	-80	-83
		252	281	289	201	112	217	201	129	87	139	261	297	215	99	62	53	52	35	24	28	26	55	90	136	139
8		84	74	101	70	44	48	40	45	38	54	67	86	113	170	67	80	166	231	155	111	144	139	116	106	98
		-136	-115	-215	-25	-15	-8	-12	-12	-16	-54	-38	-63	-123	-269	-103	-148	-336	-300	-248	-115	-83	-108	-105	-94	-114
		222	190	317	95	61	57	52	59	55	109	107	150	237	439	172	229	502	531	403	226	227	248	223	201	213
9		101	105	160	121	63	91	92	86	85	64	38	47	35	35	31	31	43	56	106	88	45	38	25	26	67
		-96	-319	-175	-35	-17	-16	-33	-62	-13	-12	-7	-11	-9	-12	-14	-16	-14	-21	-152	-114	-49	-93	-42	-14	-56
		198	425	335	157	81	108	127	148	99	77	46	60	45	49	46	48	58	78	258	202	95	132	68	41	124
10		24	23	22	32	32	45	42	37	59	57	42	32	26	22	33	31	34	31	51	95	172	46	51	48	45
		-13	-17	-77	-65	-78	-106	-49	-25	-44	-38	-16	-11	-12	-13	-16	-17	-22	-28	-39	-171	-277	-43	-38	-61	-53
		38	40	100	98	111	151	91	62	104	95	59	45	38	37	50	48	57	60	90	268	450	90	90	110	99
11		58	55	59	41	35	35	33	37	43	118	184	101	72	116	62	37	41	108	200	134	213	286	133	111	96
		-85	-160	-14	-5	-33	-11	-12	-20	-16	-105	-190	-120	-357	-299	-75	-20	-31	-158	-430	-609	-537	-377	-675	-786	-214
		145	216	74	46	69	47	46	58	60	225	376	223	430	417	138	58	73	267	631	744	750	664	809	898	311
12		111	174	91	39	36	53	60	110	91	104	143	141	70	100	169	247	46	75	140	210	202	82	52	193	114
		-396	-462	-229	-80	-105	-69	-143	-312	-189	-171	-259	-528	-97	-435	-557	-800	-913	-811	-979	-683	-809	-528	-1019	-627	-467
		508	637	321	120	142	122	204	423	281	276	404	670	168	536	727	1048	960	887	1119	893	1012	612	1071	821	582
13		80	81	65	99	64	45	67	110	110	130	139	163	77	26	27	38	45	66	98	104	89	56	41	41	78
		-152	-75	-47	-259	-192	-88	-125	-240	-245	-334	-382	-519	-425	-76	-42	-59	-140	-251	-253	-210	-217	-147	-54	-14	-189
		233	157	112	359	257	134	193	351	355	465	523	683	503	103	69	98	185	318	352	314	307	204	95	56	268
14		28	44	60	109	103	70	113	217	236	108	89	112	125	111	105	124	85	80	72	106	118	63	49	53	99
		-21	-103	-149	-506	-402	-137	-81	-464	-648	-330	-229	-177	-420	-211	-183	-267	-245	-197	-114	-152	-235	-45	-46	-127	-229
		50	148	210	616	507	208	195	682	885	440	319	290	546	323	288	392	331	277	187	258	353	110	97	181	329
15		49	58	41	84	38	122	65	59	71	92	87	40	88	69	89	154	158	118	111	136	118	85	61	35	85
		-87	-221	-54	-124	-127	-157	-190	-190	-74	-130	-219	-83	-185	-240	-362	-544	-563	-308	-208	-65	-114	-277	-67	-38	-193
		138	280	97	209	166	280	256	249	146	223	308	124	274	310	451	698	722	427	320	201	233	364	129	73	278

16	28	18	36	59	93	72	54	72	46	35	23	73	104	188	38	25	24	23	18	50	42	30	52	84	54
	-14	-42	-98	-129	-286	-202	-59	-82	-29	-60	-23	-100	-576	-468	-75	-35	-27	-70	-35	-29	-79	-19	-73	-195	-117
	44	61	136	189	380	276	114	155	77	97	47	173	681	657	114	61	52	95	54	79	122	49	127	280	172
17	59	76	97	139	148	132	142	97	64	61	83	62	31	35	37	29	20	17	42	39	48	26	58	112	69
	-124	-111	-296	-249	-264	-272	-164	-127	-25	-31	-250	-75	-23	-15	-51	-63	-19	-6	-32	-131	-96	-31	-89	-322	-119
	184	188	394	390	413	405	307	226	90	93	334	138	55	50	89	93	39	24	74	171	145	58	148	436	189
18	60	33	25	26	38	77	91	57	69	75	58	43	44	33	41	68	160	293	279	257	195	159	117	154	102
	-114	-12	-8	-15	-15	-149	-192	-152	-107	-25	-25	-21	-19	-38	-19	-34	-288	-574	-466	-433	-216	-117	-495	-378	-163
	175	46	34	42	55	227	283	210	177	101	84	65	64	72	60	103	448	868	746	690	412	276	613	533	266
19	136	103	217	246	205	233	230	204	169	215	249	172	182	257	221	86	189	187	229	162	85	113	156	119	182
	-237	-471	-334	-416	-539	-302	-162	-218	-264	-164	-178	-324	-310	-614	-523	-98	-235	-372	-503	-267	-51	-57	-179	-198	-292
	374	576	553	664	745	536	392	423	434	380	429	498	492	871	744	185	425	560	732	429	137	170	336	318	475
20	133	162	133	192	323	213	217	61	61	51	47	69	91	119	279	285	343	185	208	300	233	210	106	79	171
	-128	-322	-573	-392	-410	-316	-187	-54	-48	-26	-115	-185	-165	-219	-548	-647	-432	-237	-356	-584	-549	-314	-132	-75	-292
	263	485	708	586	733	529	405	116	110	78	163	255	258	339	827	933	776	423	564	885	783	525	239	156	464
21	135	101	121	89	78	82	51	46	54	67	67	58	42	48	66	85	91	92	148	134	126	82	67	71	83
	-330	-553	-129	-36	-38	-69	-94	-80	-46	-58	-117	-88	-50	-40	-181	-235	-340	-270	-281	-365	-114	-44	-141	-140	-160
	466	656	251	127	117	153	146	126	101	126	185	148	93	89	248	320	431	363	430	501	241	127	210	212	244
22	90	75	132	164	129	87	91	79	69	49	58	24	29	50	91	83	52	56	71	100	121	168	166	57	87
	-153	-237	-155	-180	-34	-16	-74	-73	-97	-161	-61	-12	-29	-44	-182	-334	-141	-93	-65	-159	-264	-223	-162	-22	-124
	244	313	288	345	164	103	166	152	167	211	120	37	59	95	274	417	193	150	137	261	386	392	329	80	212
23	61	55	59	76	65	78	114	149	142	194	141	131	94	121	129	64	33	29	84	124	121	119	108	50	97
	-56	-165	-88	-91	-112	-139	-248	-365	-182	-134	-102	-117	-101	-169	-279	-143	-34	-12	-106	-289	-108	-88	-30	-4	-132
	118	221	148	168	179	219	362	515	325	329	245	249	196	291	408	208	67	41	190	414	230	208	139	55	230
24	52	66	64	92	112	190	198	147	100	72	62	73	78	127	122	74	35	56	134	196	231	166	147	219	117
	-36	-168	-119	-256	-169	-169	-163	-108	-68	-143	-40	-47	-66	-124	-155	-96	-36	-40	-276	-429	-400	-173	-179	-197	-152
	89	235	183	350	283	361	361	256	168	216	103	121	146	252	277	170	71	96	411	626	632	340	326	417	270
25	190	148	169	240	179	203	131	27	221	111	211	322	300	457	391	291	304	289	270	245	201	109	81	73	215
	-253	-171	-350	-402	-414	-485	-571	-850	-508	-477	-676	-635	-504	-822	-472	-354	-487	-228	-647	-852	-129	7	-10	-42	-430
	444	320	520	643	594	689	703	878	730	589	888	958	805	1280	864	646	791	517	917	1097	331	100	92	116	646
26	103	35	115	118	108	32	28	14	13	15	14	13	14	23	12	13	24	25	44	50	68	46	32	25	41
	-72	-35	-111	-64	-224	-97	-47	-24	-24	-24	-20	-25	-26	-40	-30	-26	-27	-42	-48	-42	-63	-43	-20	-12	-49
	175	70	227	184	334	131	77	39	38	41	36	39	42	64	43	39	52	68	93	93	132	90	52	38	92
27	16	16	29	20	17	15	15	17	21	23	20	34	40	35	33	32	26	28	31	36	57	77	68	54	32
	-10	-13	-19	-16	-14	-5	-7	-12	-17	-19	-45	-52	-44	-76	-36	-20	-21	-19	-11	-7	-37	-86	-76	-21	-28
	28	30	49	36	32	22	23	30	39	43	65	86	86	112	70	52	48	48	43	44	95	165	146	75	61
28	31	32	43	79	148	75	103	110	166	122	106	95	162	294	285	280	233	249	329	275	247	162	95	146	161
	-6	-3	-11	-64	-354	-106	-48	-67	-252	-369	-465	-302	-300	-447	-484	-722	-725	-757	-634	-415	-511	-579	-279	-172	-336
	38	36	56	144	504	182	153	178	419	493	573	398	463	741	770	1003	959	1006	963	690	758	742	375	319	498
29	136	148	247	259	111	185	211	195	175	277	171	96	223	110	233	233	247	191	222	221	196	169	132	61	185
	-402	-533	-378	-217	-120	-123	-281	-205	-154	-246	-210	-261	-270	-234	-323	-548	-581	-391	-482	-496	-117	-82	-307	-278	-302
	539	682	627	478	232	309	493	401	330	524	382	357	493	344	556	781	830	582	705	717	313	252	440	341	488
30	45	72	132	196	229	113	135	171	195	154	187	77	57	71	147	272	199	161	136	196	206	157	185	185	153
	-72	-37	-87	-215	-371	-201	-258	-207	-253	-158	-306	-184	-37	-59	-285	-631	-682	-169	-142	-236	-281	-225	-219	-504	-243
	118	109	220	413	601	316	394	379	448	314	494	262	96	131	433	905	882	330	278	432	489	384	405	691	397
31	201	206	97	245	225	148	39	45	128	310	252	191	167	237	146	70	51	28	170	208	215	145	77	55	152
	-390	-290	-313	-384	-795	-275	-47	-29	-141	-530	-596	-446	-271	-390	-188	-54	-71	-43	-375	-622	-481	-121	-27	-93	-290
	593	497	411	629	1021	424	87	76	270	841	849	638	438	628	335	124	122	72	546	831	696	267	105	150	444

HOURLY VALUES (nT) OF AU, AL AND AE INDICES APRIL 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	53	73	93	176	169	122	153	192	187	279	296	238	157	129	144	155	221	83	182	210	93	60	89	121	153
	AL	-74	-177	-198	-321	-205	-139	-416	-441	-336	-186	-486	-171	-274	-309	-198	-333	-372	-108	-288	-465	-100	-41	-190	-285	-255
	AE	128	252	293	498	376	262	570	635	524	466	783	410	432	439	343	488	593	191	470	676	194	102	280	407	409
2		91	106	102	109	103	165	129	193	134	79	110	136	146	104	81	160	174	191	190	198	111	83	110	114	130
		-468	-280	-144	-204	-161	-84	-364	-264	-53	-31	-149	-281	-84	-42	-79	-440	-418	-412	-291	-374	-191	-85	-206	-268	-224
		560	387	247	314	266	251	495	458	188	111	260	418	232	147	160	601	592	604	481	572	302	168	316	383	355
3		81	112	88	127	109	218	103	82	79	116	70	128	98	79	31	34	35	47	35	43	52	114	169	206	94
		-321	-301	-264	-161	-258	-244	-102	-53	-27	-54	-51	-115	-407	-95	-15	-90	-157	-13	-5	-25	-46	-409	-403	-318	-164
		404	414	353	290	368	463	207	137	107	170	123	245	506	176	48	125	193	61	42	69	100	523	573	525	259
4		174	120	107	146	175	134	223	224	174	143	232	244	193	136	75	146	171	322	315	246	231	189	126	95	181
		-329	-342	-347	-284	-212	-289	-217	-167	-174	-139	-218	-263	-302	-241	-194	-306	-293	-417	-507	-467	-194	-53	-91	-105	-256
		503	464	456	431	389	424	441	392	349	283	451	508	496	378	270	452	465	739	823	714	426	243	218	201	438
5		121	141	139	58	62	137	126	127	98	104	99	80	112	72	61	46	97	128	105	79	54	39	44	66	91
		-75	-519	-349	-53	-26	-53	-140	-138	-139	-106	-54	-75	-84	-138	-39	-37	-65	-157	-145	-43	-2	-4	-24	-72	-106
		197	661	489	112	89	191	267	265	237	211	154	156	197	211	102	83	163	286	250	123	56	44	68	140	198
6		98	93	140	102	147	204	128	149	243	285	194	158	248	306	214	205	205	239	211	202	207	169	118	116	182
		-135	-135	-173	-102	-98	-228	-137	-158	-364	-334	-339	-299	-605	-437	-368	-351	-222	-333	-299	-245	-161	-295	-155	-205	-257
		234	229	314	205	246	433	266	309	608	620	533	458	854	743	583	556	427	573	511	448	368	464	274	322	441
7		158	183	141	93	208	208	111	74	116	94	179	191	164	143	69	195	156	161	194	175	161	151	211	149	154
		-302	-185	-240	-64	-302	-351	-194	-53	-105	-120	-393	-850	-524	-172	-111	-393	-273	-313	-484	-373	-224	-332	-659	-346	-307
		462	369	382	158	510	561	307	129	222	215	573	1042	689	317	181	589	429	474	679	549	386	484	870	496	461
8		124	187	146	138	150	182	164	127	83	83	108	87	138	190	72	112	133	68	100	64	96	69	86	69	116
		-189	-292	-265	-273	-135	-343	-514	-174	-91	-97	-170	-161	-493	-552	-103	-193	-409	-183	-73	-19	-81	-113	-82	-73	-212
		314	481	412	412	286	526	679	302	175	181	280	249	631	743	176	306	542	252	174	84	178	183	169	143	328
9		101	91	69	70	69	86	59	116	110	95	101	95	105	81	56	136	213	144	97	150	140	147	190	153	111
		-182	-144	-172	-104	-64	-103	-37	-149	-223	-185	-89	-218	-218	-196	-163	-280	-654	-322	-108	-159	-330	-248	-232	-378	-206
		284	236	243	175	135	190	97	267	334	280	191	314	324	278	219	417	867	466	206	309	471	395	423	532	319
10		130	117	93	103	76	153	60	87	96	75	72	130	92	57	83	102	102	65	114	123	111	94	149	134	101
		-384	-195	-398	-224	-130	-343	-308	-185	-595	-246	-89	-289	-148	-90	-152	-282	-253	-38	-232	-321	-165	-85	-353	-249	-240
		516	314	492	328	208	498	369	273	692	322	161	420	241	148	236	385	356	104	346	445	277	179	503	383	341
11		80	89	71	84	80	41	28	74	72	55	42	45	37	34	35	25	23	25	32	49	75	59	46	42	52
		-247	-113	-57	-179	-85	-155	-33	-157	-214	-55	-24	-25	-22	-17	-15	-12	-20	-10	-15	-25	-92	-63	-18	-19	-70
		328	204	129	265	166	197	62	232	287	111	68	71	61	52	50	38	44	36	47	75	168	122	65	61	123
12		52	121	64	78	47	55	33	30	75	166	62	142	96	60	43	68	83	107	148	131	175	124	69	119	90
		-21	-85	-151	-141	-17	-70	-95	-46	-50	-224	-114	-165	-161	-34	-20	-72	-214	-200	-181	-130	-87	-95	-50	-70	-104
		74	207	216	221	65	125	128	77	126	391	178	309	259	95	64	141	298	307	329	261	263	219	119	189	194
13		198	134	154	91	187	149	100	100	143	128	75	255	270	177	94	68	66	94	134	224	181	155	196	145	147
		-508	-529	-309	-205	-252	-305	-123	-110	-174	-29	-21	-357	-741	-303	-274	-64	-30	-74	-288	-401	-375	-129	-210	-213	-251
		707	664	464	298	440	456	224	211	317	158	97	612	1012	480	369	133	97	169	422	625	557	285	407	358	398
14		230	272	214	233	347	291	191	270	412	325	234	237	267	225	306	231	236	223	176	294	307	194	226	168	255
		-98	-299	-339	-249	-330	-377	-300	-251	-344	-420	-302	-318	-443	-419	-599	-353	-476	-640	-273	-497	-735	-328	-302	-284	-374
		328	572	555	483	679	669	493	522	758	747	537	556	711	645	907	585	713	863	449	792	1044	522	530	452	630
15		240	208	187	177	269	167	177	323	263	255	183	240	182	291	283	267	300	284	262	223	115	100	127	219	223
		-774	-736	-527	-365	-293	-219	-456	-408	-469	-316	-340	-402	-195	-344	-503	-662	-655	-541	-557	-350	-86	-122	-114	-564	-417
		1016	946	715	544	563	387	635	732	733	573	523	642	378	636	786	929	956	826	819	574	202	224	242	784	640

16	206	159	264	187	266	152	152	139	149	112	199	200	149	221	187	191	211	231	184	155	131	242	203	166	186
	-521	-607	-610	-234	-274	-201	-203	-218	-258	-137	-407	-495	-525	-402	-226	-284	-302	-289	-305	-341	-240	-524	-627	-485	-363
	728	767	874	422	541	354	356	359	408	250	607	695	674	623	414	475	514	520	489	497	373	767	832	653	550
17	134	177	172	151	160	133	127	156	164	137	102	65	58	77	65	93	236	283	239	228	255	208	88	136	152
	-242	-225	-208	-181	-292	-183	-151	-157	-307	-292	-143	-52	-18	-47	-106	-181	-474	-407	-555	-453	-550	-249	-60	-109	-235
	378	403	381	333	453	317	280	314	472	430	245	119	77	124	172	275	711	691	794	681	805	458	149	245	388
18	182	135	87	146	156	69	99	61	36	46	72	76	95	78	99	171	159	83	75	177	171	100	84	56	105
	-216	-155	-47	-62	-155	-106	-95	-67	-45	-28	-17	-52	-166	-44	-166	-256	-242	-42	-38	-290	-222	-81	-27	0	-109
	399	291	135	209	312	175	194	129	82	74	90	129	262	123	266	427	402	126	113	468	394	182	111	55	214
19	44	32	44	59	101	124	125	88	148	276	274	293	244	177	230	266	291	198	133	99	62	90	179	157	156
	-5	-16	-18	-38	-93	-218	-92	-35	-134	-359	-315	-206	-294	-355	-412	-356	-249	-175	-112	-87	-27	-51	-138	-270	-169
	49	49	62	98	195	343	219	125	283	636	590	500	539	534	643	624	541	373	245	186	90	141	318	429	325
20	169	199	202	138	169	169	108	78	152	135	177	187	177	160	203	157	149	227	240	238	268	186	215	207	179
	-205	-313	-328	-269	-290	-149	-31	-36	-129	-72	-60	-117	-240	-334	-322	-211	-174	-168	-315	-415	-238	-112	-158	-184	-203
	374	514	531	409	460	320	140	115	281	207	238	305	418	495	525	369	323	396	555	653	507	299	374	392	383
21	143	136	195	226	156	204	249	178	117	139	57	63	94	100	55	44	78	84	114	176	211	292	243	184	147
	-289	-314	-300	-233	-194	-250	-186	-120	-31	-47	-18	-25	-155	-130	-93	-58	-67	-87	-161	-153	-188	-266	-148	-197	-155
	432	451	497	460	352	455	437	299	150	187	76	89	251	231	149	103	145	171	275	329	400	558	391	382	303
22	220	264	197	168	130	89	157	255	312	350	178	70	45	37	41	46	62	61	56	65	61	65	74	100	129
	-219	-297	-298	-332	-288	-312	-234	-321	-420	-501	-81	-29	-18	-20	-16	-41	-44	-63	-32	-7	-2	-6	-23	-56	-152
	439	562	496	501	420	402	393	577	734	852	259	100	64	58	57	87	106	124	88	72	63	71	98	156	283
23	138	119	89	135	230	228	209	174	210	186	172	211	183	118	74	56	59	78	100	124	128	187	285	138	151
	-138	-169	-227	-238	-110	-135	-151	-190	-208	-111	-99	-168	-183	-111	-21	-18	-2	-2	-27	-44	-21	-113	-518	-174	-132
	276	289	318	374	341	364	361	366	419	299	271	380	367	231	97	74	61	80	128	169	149	301	805	313	285
24	150	181	126	227	212	183	278	164	151	385	369	244	267	311	260	346	278	344	325	227	325	392	292	169	259
	-123	-135	-304	-372	-305	-261	-285	-183	-46	-382	-728	-601	-549	-414	-183	-543	-282	-644	-428	-380	-460	-547	-337	-336	-368
	273	317	432	601	519	446	565	348	198	769	1098	846	817	726	444	889	561	990	754	608	787	941	630	506	628
25	220	206	245	202	157	174	160	100	106	98	154	155	173	119	111	222	328	286	258	274	296	252	284	237	201
	-290	-346	-355	-315	-84	-60	-78	-49	-23	-46	-431	-304	-346	-183	-288	-303	-432	-631	-628	-470	-358	-467	-534	-334	-306
	511	553	601	519	242	235	239	149	130	145	585	460	519	304	400	526	760	918	887	746	656	720	820	571	508
26	175	158	117	139	106	215	213	219	189	113	184	184	154	242	296	261	184	99	118	117	95	198	220	176	174
	-482	-397	-134	-115	-74	-219	-711	-375	-111	-105	-158	-93	-113	-557	-647	-535	-230	-84	-89	-60	-55	-177	-426	-426	-266
	659	557	252	255	181	436	925	595	301	219	343	278	268	800	944	796	414	184	208	178	150	375	647	603	440
27	162	206	167	128	157	67	52	100	105	70	45	96	102	88	74	144	85	58	45	70	81	102	93	105	100
	-266	-439	-221	-104	-250	-248	-69	-50	-116	-43	-30	-154	-249	-178	-176	-291	-287	-83	-57	-53	-142	-169	-69	-118	-161
	429	646	389	233	409	316	121	151	222	114	76	250	351	268	252	436	372	141	103	123	224	272	162	224	262
28	116	156	171	190	146	196	152	90	62	67	57	95	131	119	123	55	52	78	120	117	97	122	142	164	117
	-253	-287	-406	-470	-245	-232	-229	-51	-41	-44	-19	-30	-229	-102	-112	-38	-14	-61	-132	-149	-83	-91	-111	-100	-147
	370	445	579	662	392	429	382	142	104	111	77	126	360	222	236	93	66	139	252	267	181	214	254	264	265
29	184	157	87	113	185	174	206	189	386	544	412	276	265	313	327	360	237	241	198	142	237	405	292	201	255
	-180	-278	-68	-37	-106	-217	-158	-29	-228	-331	-434	-320	-485	-745	-514	-591	-493	-718	-652	-716	-562	-509	-328	-162	-369
	365	437	156	152	292	393	365	219	615	876	847	596	751	1059	842	952	730	959	851	860	800	915	621	364	626
30	202	128	94	64	136	173	168	198	202	180	276	246	176	110	100	216	153	190	217	231	272	277	239	219	186
	-295	-463	-181	-42	-64	-579	-376	-441	-256	-227	-321	-262	-245	-192	-135	-352	-148	-178	-269	-322	-365	-301	-214	-368	-275
	497	592	276	108	202	753	545	640	459	408	598	509	422	304	236	568	301	368	486	554	638	579	454	588	462

HOURLY VALUES (nT) OF AU, AL AND AE INDICES MAY 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	169	136	125	172	111	58	139	129	222	225	178	204	155	52	43	49	29	37	62	276	343	187	69	37	134
	AL	-219	-193	-181	-294	-112	-39	-89	-226	-289	-282	-261	-427	-280	-55	-49	-20	-40	-44	-47	-386	-627	-91	-63	-34	-181
	AE	389	331	308	467	225	99	228	356	511	507	439	632	436	108	92	70	71	83	110	663	970	279	132	73	316
2		37	112	116	94	68	76	103	75	72	83	86	102	111	85	85	150	299	409	388	284	189	106	61	62	136
		-42	-92	-157	-227	-76	-20	-31	-36	-27	-83	-74	-81	-129	-127	-261	-340	-426	-290	-255	-527	-141	-7	-40	-62	-148
		79	205	275	322	146	98	136	112	101	167	160	184	242	213	348	491	726	700	645	812	332	113	103	125	285
3		60	55	44	30	31	32	25	51	35	38	55	51	52	30	23	30	40	41	50	91	62	69	100	87	49
		-71	-53	-58	-16	-15	-16	-17	-21	-24	-14	-12	-19	-19	-15	-3	-2	-4	1	-20	-56	-13	-26	-52	-107	-27
		132	109	103	47	47	49	42	73	59	53	68	71	72	45	27	32	44	39	71	148	76	96	153	195	77
4		139	61	62	185	220	312	270	262	258	266	362	308	215	453	346	223	187	144	92	111	120	97	138	114	206
		-175	-63	-35	-127	-308	-275	-239	-263	-259	-295	-305	-276	-327	-611	-676	-360	-228	-208	-129	-92	-170	-128	-87	-186	-243
		315	125	98	314	529	587	510	527	518	562	669	586	544	1065	1023	584	416	353	223	204	291	225	225	301	450
5		95	62	46	33	50	92	36	72	23	48	189	95	100	214	115	205	147	69	52	94	206	108	83	50	95
		-68	-132	-96	-46	-49	-166	-47	-40	-40	-39	-323	-218	-148	-640	-307	-543	-325	-147	-24	-64	-336	-279	-94	-50	-176
		164	195	143	81	100	259	84	114	65	88	513	313	249	855	423	749	473	218	77	159	543	389	178	101	272
6		63	100	67	53	182	123	152	172	137	91	91	67	81	96	59	99	87	102	69	111	99	78	67	66	96
		-60	-175	-87	-47	-374	-468	-422	-188	-165	-259	-48	-84	-94	-228	-115	-164	-170	-162	-170	-85	-44	-64	-105	-115	-162
		125	276	156	101	558	592	576	361	303	351	141	152	176	325	174	264	259	265	240	197	145	144	172	182	260
7		40	37	51	75	66	77	108	44	46	37	49	112	68	37	40	42	46	85	119	130	87	46	47	92	66
		-38	-36	-46	-74	-78	-110	-186	-40	-18	-24	-30	-121	-223	-69	-43	-47	-44	-149	-239	-142	-68	-26	-36	-73	-82
		79	75	98	150	145	188	295	86	65	63	81	235	292	106	83	90	92	236	359	273	157	73	84	165	149
8		165	66	21	18	34	86	80	22	18	52	153	110	51	25	43	41	26	82	171	106	79	86	105	165	75
		-352	-164	-32	-43	-40	-64	-151	-75	-27	-32	-111	-200	-58	-30	-75	-212	-112	-100	-280	-176	-52	-107	-101	-270	-119
		519	230	54	62	75	151	232	98	46	85	265	310	109	55	118	253	139	183	451	282	132	194	206	435	195
9		75	61	34	14	118	94	47	19	23	18	22	19	16	13	12	11	28	39	38	37	40	36	25	36	36
		-154	-48	-51	-41	-79	-153	-112	-28	-20	-23	-20	-18	-20	-39	-34	-27	-21	-27	-26	-40	-34	-33	-29	-29	-46
		230	110	86	56	198	248	160	48	44	41	42	38	37	53	47	38	50	67	65	78	75	70	55	66	83
10		30	55	42	40	25	9	10	14	35	71	85	70	82	80	45	53	48	50	47	66	59	64	50	43	49
		-31	-43	-47	-50	-38	-32	-35	-25	-20	-67	-95	-74	-174	-200	-88	-85	-129	-73	-45	-26	-16	-26	-14	-14	-60
		62	98	90	92	65	42	45	40	56	139	182	146	257	280	134	138	177	124	93	93	75	91	65	58	110
11		94	45	46	84	93	71	53	191	394	424	264	278	293	176	189	382	316	300	363	294	198	140	172	175	210
		-60	-32	-37	-53	-93	-56	-44	-135	-524	-668	-348	-163	-267	-123	-93	-407	-496	-886	-505	-454	-344	-102	-292	-657	-285
		155	78	84	138	187	128	99	327	918	1092	612	442	560	301	284	789	812	1186	869	749	544	243	466	834	496
12		203	143	319	365	186	181	206	289	209	176	92	142	106	78	92	220	334	250	175	202	276	267	179	249	206
		-543	-731	-500	-339	-481	-219	-134	-252	-335	-243	-64	-395	-376	-245	-98	-356	-648	-475	-258	-307	-650	-592	-323	-477	-377
		747	876	820	705	669	401	342	542	545	421	157	538	484	325	191	577	983	726	435	511	928	860	503	727	584
13		171	112	117	94	157	143	294	393	178	325	284	160	216	208	293	332	255	151	211	264	268	221	235	186	219
		-284	-110	-124	-201	-217	-394	-458	-576	-279	-302	-313	-283	-479	-265	-390	-399	-391	-142	-266	-420	-313	-315	-402	-455	-324
		456	223	243	297	376	538	752	970	457	628	597	443	695	474	683	731	648	295	479	686	582	538	638	642	545
14		143	170	296	170	186	119	150	129	85	193	106	103	138	69	97	114	190	291	275	245	135	114	106	88	155
		-376	-460	-587	-394	-262	-152	-318	-226	-123	-290	-208	-92	-99	-130	-315	-263	-255	-409	-532	-297	-139	-85	-92	-127	-260
		520	631	883	566	450	273	469	356	209	484	315	196	238	200	412	377	446	702	808	544	276	200	199	216	415
15		203	157	179	163	187	153	73	104	54	136	147	286	265	151	117	172	86	117	134	109	148	224	243	138	156
		-417	-554	-399	-314	-238	-286	-143	-111	-38	-74	-79	-413	-389	-246	-151	-204	-109	-255	-235	-126	-116	-342	-444	-184	-245
		621	712	579	479	426	440	217	216	93	212	227	701	656	398	269	377	196	373	370	236	265	567	689	323	402

16	143	114	52	44	45	114	127	91	57	125	121	94	26	78	119	80	167	156	141	113	186	172	66	114	100
	-145	-145	-39	-41	-31	-85	-183	-154	-43	-81	-266	-189	-67	-135	-242	-275	-279	-292	-200	-92	-158	-197	-94	-112	-148
	290	261	92	86	77	201	312	246	102	207	388	284	94	213	363	356	447	448	341	206	345	369	161	227	255
17	187	147	178	117	95	78	96	90	68	102	207	282	250	502	413	428	360	143	287	174	368	293	237	177	220
	-289	-266	-213	-49	-20	-20	-9	-33	-17	-42	-103	-264	-333	-622	-869	-603	-746	-830	-705	-771	-634	-848	-526	-69	-370
	478	414	393	167	116	99	105	123	86	144	311	547	584	1125	1282	1032	1107	974	992	947	1004	1142	763	247	591
18	80	47	25	31	29	81	135	163	109	69	52	39	77	107	49	31	49	105	98	112	84	64	33	38	71
	-36	-32	-34	-120	-94	-111	-163	-234	-112	-33	-45	-40	-68	-199	-167	-73	-45	-113	-56	-124	-93	-53	-31	-28	-88
	118	81	60	152	125	193	300	398	223	103	97	80	147	308	216	105	94	220	155	237	178	118	66	68	160
19	24	30	70	32	59	155	70	138	148	102	79	32	44	28	23	31	39	41	50	57	47	38	39	26	58
	-32	-44	-52	-42	-65	-184	-258	-184	-203	-216	-55	-36	-18	-11	-19	-25	-27	-6	-21	-13	-9	-53	-20	-27	-67
	57	75	124	76	125	340	330	323	352	318	134	70	63	40	42	57	67	49	73	72	57	92	59	53	127
20	32	24	25	53	31	31	45	17	17	18	24	23	59	72	52	45	61	64	79	131	216	333	346	216	84
	-41	-33	-44	-50	-37	-44	-48	-47	-37	-31	-24	-32	-21	-87	-54	-20	-23	-12	-1	-75	-136	-488	-378	-115	-78
	74	58	70	104	69	76	94	66	55	50	49	57	81	160	106	66	84	77	80	208	353	821	724	331	163
21	79	52	34	30	73	61	55	66	142	198	151	105	121	145	240	302	190	202	230	166	98	57	54	50	121
	-40	-42	-35	-35	-39	-44	-30	-26	-52	-123	-129	-74	-124	-234	-358	-444	-210	-95	-201	-67	-38	-22	-24	-29	-105
	120	94	70	65	113	106	86	93	195	322	280	179	246	380	599	747	401	297	432	234	138	81	79	80	227
22	56	75	98	126	303	201	263	337	280	163	273	254	292	161	270	306	419	413	343	370	448	365	215	311	264
	-34	-56	-58	-75	-238	-374	-653	-370	-269	-160	-182	-528	-525	-422	-425	-477	-571	-447	-390	-490	-480	-503	-550	-599	-370
	91	132	158	203	542	576	917	708	549	325	456	783	817	583	696	785	991	861	735	861	929	870	767	912	635
23	207	245	341	229	246	215	227	311	336	213	116	191	119	92	121	318	349	298	356	355	298	215	226	284	246
	-456	-326	-319	-212	-248	-228	-327	-340	-571	-184	-84	-347	-237	-131	-136	-578	-676	-750	-462	-489	-345	-447	-312	-303	-354
	664	572	661	442	496	444	555	652	907	398	200	539	357	224	257	896	1025	1049	819	844	644	663	540	588	602
24	181	188	205	256	129	88	146	132	149	172	128	80	110	212	173	121	347	151	35	386	295	323	169	73	177
	-268	-353	-385	-458	-193	-171	-106	-186	-52	-112	-217	-159	-105	-293	-116	-108	-333	-1074	-1140	-719	-509	-527	-147	-108	-327
	450	542	591	716	324	259	254	320	202	285	346	240	217	506	290	231	680	1226	1175	1105	805	851	317	183	505
25	104	119	111	47	25	17	12	11	3	8	10	14	22	16	5	12	18	27	28	29	23	20	14	8	29
	-121	-186	-275	-85	-52	-39	-48	-37	-116	-44	-24	-46	-34	-32	-47	-52	-36	-37	-27	-28	-33	-38	-47	-46	-64
	226	307	387	134	78	56	61	49	119	53	35	61	57	49	53	64	56	65	57	58	56	60	63	55	94
26	8	5	10	3	5	5	2	17	10	24	76	79	48	43	52	66	69	124	151	254	306	333	153	116	82
	-52	-48	-45	-40	-40	-39	-41	-53	-49	-57	-49	-43	-53	-85	-104	-80	-164	-316	-259	-344	-396	-367	-124	-121	-124
	62	55	56	44	46	44	44	72	60	83	126	123	102	128	156	146	234	441	411	600	703	701	278	238	206
27	45	93	166	220	136	221	111	68	71	41	65	25	57	59	121	223	266	259	106	49	74	180	42	37	114
	-79	-100	-399	-375	-202	-144	-160	-57	-46	-89	-85	-30	-91	-149	-253	-401	-356	-436	-103	-24	-57	-112	-70	-37	-161
	125	195	566	596	338	365	272	126	118	131	151	55	149	208	375	624	623	696	211	74	132	292	113	75	275
28	29	15	102	237	159	39	23	20	21	20	19	16	11	32	16	22	40	61	51	34	31	32	44	47	47
	-36	-39	-65	-157	-166	-32	-30	-43	-36	-35	-35	-32	-17	-7	-14	-26	-58	-76	-46	-48	-25	-28	-43	-44	-47
	67	56	168	395	325	72	54	63	57	56	55	50	29	41	31	49	99	138	98	82	57	61	88	93	95
29	59	40	35	42	64	50	41	25	27	26	62	94	99	56	35	41	32	31	39	41	50	47	48	41	47
	-57	-40	-36	-30	-67	-47	-37	-38	-37	-44	-38	-61	-78	-25	-17	-17	-27	-19	-7	-10	-12	-26	-36	-27	-35
	116	81	73	73	132	99	79	64	65	71	102	157	178	81	53	60	61	51	47	51	63	74	85	69	83
30	43	52	52	58	63	46	73	41	57	52	27	42	54	41	42	66	137	190	289	230	124	60	63	86	83
	-36	-41	-31	-39	-39	-45	-82	-55	-33	-43	-27	-27	-23	-27	-11	-46	-139	-242	-303	-190	-75	-46	-34	-71	-71
	80	94	85	98	103	93	157	97	91	96	55	70	78	69	53	113	276	433	593	422	201	106	99	158	155
31	194	179	130	79	101	154	206	166	113	159	135	83	33	89	82	118	154	124	108	104	101	103	101	100	122
	-151	-169	-248	-106	-63	-86	-233	-189	-55	-48	-86	-99	-26	-42	-93	-67	-179	-172	-77	-67	-46	-46	-145	-118	-109
	347	350	380	187	166	241	440	357	169	209	222	183	60	132	176	185	334	297	186	172	148	151	246	219	231

HOURLY VALUES (nT) OF AU, AL AND AE INDICES JUNE 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	104	105	72	252	256	261	196	157	159	113	119	87	73	113	115	85	140	87	116	111	124	152	87	44	130
	AL	-75	-48	-56	-163	-422	-351	-158	-129	-203	-148	-35	-59	-62	-38	-113	-93	-135	-44	-50	-63	-47	-154	-37	-10	-112
	AE	180	154	128	416	679	613	354	287	363	262	155	147	136	152	229	178	275	132	168	176	172	308	125	56	243
2		57	50	45	36	26	50	55	106	157	103	97	87	150	118	72	64	64	38	69	79	83	51	58	55	74
		-29	-34	-32	-39	-38	-41	-30	-44	-179	-172	-83	-65	-139	-191	-101	-60	-53	-46	-38	-37	-24	-38	-33	-31	-66
		87	85	78	76	65	92	86	151	336	275	181	153	289	309	173	125	118	85	108	117	108	90	92	87	140
3		124	91	111	66	37	23	36	19	92	176	95	51	34	26	16	55	54	62	72	51	68	85	85	58	66
		-101	-74	-140	-86	-80	-45	-69	-39	-33	-198	-193	-55	-27	-28	-53	-52	-173	-108	-56	-80	-157	-109	-56	-35	-85
		226	166	252	153	117	69	106	59	126	375	289	107	61	55	69	107	227	171	129	132	227	195	141	93	152
4		95	69	61	37	20	33	63	104	93	48	22	14	24	24	30	27	27	38	46	43	35	48	48	52	46
		-42	-73	-65	-56	-29	-42	-53	-240	-135	-40	-19	-17	-19	-27	-19	-36	-26	-41	-21	-24	-23	-39	-53	-39	-49
		137	143	126	94	51	77	118	345	229	90	42	32	43	52	49	64	54	79	68	67	60	89	102	92	96
5		54	27	41	37	36	48	86	37	80	187	207	76	44	77	99	103	63	108	125	73	55	46	55	86	77
		-38	-23	-36	-29	-52	-30	-21	-34	-20	-42	-175	-78	-10	-47	-62	-292	-58	-40	-67	-49	-6	-9	-21	-59	-54
		92	51	77	66	89	79	109	72	101	230	383	155	55	125	162	395	122	149	193	122	61	56	76	145	132
6		62	68	78	53	35	34	80	133	98	50	43	46	59	70	134	84	153	157	134	137	100	127	71	138	89
		-35	-41	-86	-45	-34	-34	-36	-134	-161	-54	-28	-35	-31	-36	-142	-203	-295	-268	-145	-77	-47	-173	-91	-82	-96
		98	110	165	99	70	68	117	268	260	104	72	82	92	106	276	287	448	426	281	215	148	301	162	221	186
7		92	133	110	29	105	216	94	65	40	78	131	67	36	31	32	51	73	73	120	128	82	55	50	49	81
		-76	-93	-104	-60	-49	-226	-172	-57	-28	-39	-27	-76	-20	-17	-30	-43	-95	-172	-228	-51	-95	-60	-48	-42	-79
		170	227	215	89	154	443	267	122	69	118	160	144	57	50	63	95	169	246	348	180	178	117	99	93	161
8		61	65	56	51	59	88	148	102	58	73	111	160	209	217	132	182	266	214	166	173	159	162	244	277	143
		-42	-39	-32	-26	-27	-25	-123	-134	-72	-35	-91	-340	-342	-353	-237	-234	-319	-313	-155	-97	-145	-227	-232	-294	-164
		105	105	90	78	87	114	271	237	132	110	203	501	552	570	369	416	586	528	322	272	306	389	476	571	308
9		225	123	104	80	107	128	134	164	269	293	216	120	58	58	73	79	84	148	179	245	365	380	350	301	178
		-211	-99	-78	-21	-34	-43	-183	-196	-352	-297	-158	-68	-79	-28	-34	-11	-73	-195	-360	-557	-429	-366	-326	-268	-186
		438	223	183	102	142	171	317	360	622	592	374	189	139	86	107	90	158	345	540	803	795	748	678	570	365
10		268	331	283	238	282	364	196	192	197	250	299	191	283	478	511	556	491	376	152	116	76	64	62	79	264
		-355	-293	-243	-271	-289	-237	-103	-153	-292	-214	-319	-200	-311	-649	-565	-643	-405	-208	-119	-41	-14	-34	-44	-45	-252
		624	626	527	511	572	603	300	345	490	465	619	391	595	1127	1077	1199	896	584	273	158	92	100	108	125	517
11		141	192	147	194	315	260	180	160	134	122	80	58	87	103	77	40	34	63	91	180	115	72	86	71	125
		-71	-328	-318	-197	-188	-245	-188	-112	-64	-59	-82	-106	-98	-131	-227	-119	-78	-71	-70	-190	-110	-52	-55	-41	-133
		214	521	467	393	504	506	368	272	198	181	163	166	187	235	304	160	113	135	162	371	227	124	142	114	259
12		107	196	206	221	237	188	140	118	167	50	73	152	134	79	69	104	66	66	64	62	82	76	55	45	115
		-68	-218	-281	-232	-271	-292	-111	-48	-55	-54	-46	-102	-37	-27	-18	-62	-57	-29	-20	-19	-15	-18	-38	-22	-89
		177	416	488	454	509	481	252	167	223	105	120	255	171	106	88	166	124	96	85	82	99	94	93	68	205
13		63	229	312	134	724	585	345	490	439	522	437	162	256	194	282	401	382	438	335	259	185	155	233	166	322
		-26	-85	-769	-1133	-735	-223	-50	-130	-347	-306	-399	-466	-335	-433	-402	-516	-353	-232	-300	-415	-209	-146	-376	-223	-359
		90	315	1082	1269	1460	809	396	622	786	828	836	629	592	628	685	918	736	670	636	676	396	303	611	390	682
14		215	202	81	118	193	119	55	39	51	133	121	52	41	88	104	76	51	26	54	69	95	92	89	170	97
		-238	-191	-171	-234	-241	-155	-56	-46	-50	-218	-95	-34	-42	-45	-140	-223	-165	-79	-71	-152	-111	-154	-181	-182	-136
		454	394	253	352	435	274	112	87	102	352	218	87	84	134	245	299	217	106	126	222	208	248	272	353	235
15		235	225	239	223	226	184	183	153	127	148	287	277	271	155	75	117	104	251	289	147	112	145	56	63	179
		-229	-460	-397	-380	-296	-232	-359	-231	-116	-182	-303	-268	-274	-267	-208	-184	-105	-230	-415	-166	-101	-138	-79	-50	-236
		465	687	637	604	523	417	543	384	244	331	591	546	546	422	284	302	210	482	706	315	215	284	136	114	416

16	63	118	49	49	56	30	36	49	111	147	119	130	111	105	101	186	173	70	50	17	17	49	88	124	85
	-61	-153	-99	-52	-124	-58	-51	-41	-56	-99	-137	-165	-93	-89	-195	-392	-332	-147	-38	-27	-45	-61	-64	-142	-113
	125	272	150	102	181	89	89	91	168	247	257	297	205	195	297	578	506	218	90	45	63	110	153	267	200
17	107	130	73	85	92	151	171	84	46	35	75	83	124	152	109	166	88	143	241	291	195	163	257	213	136
	-99	-104	-91	-47	-49	-67	-312	-124	-17	-25	-25	-55	-135	-216	-307	-323	-81	-123	-438	-486	-245	-102	-243	-221	-164
	207	235	166	133	142	219	484	209	65	62	102	139	260	370	417	490	170	267	680	779	441	266	502	435	302
18	142	160	181	213	191	311	226	335	420	214	253	227	255	256	152	139	240	283	184	96	236	263	289	215	228
	-125	-80	-214	-412	-425	-403	-225	-346	-617	-227	-336	-197	-338	-486	-291	-198	-345	-261	-149	-58	-211	-436	-294	-221	-287
	269	241	397	627	618	715	451	682	1038	442	590	424	594	742	443	338	586	545	335	156	448	701	584	437	517
19	160	100	182	183	161	125	205	212	178	198	140	225	211	157	160	135	188	170	150	106	96	99	78	164	158
	-132	-154	-148	-276	-243	-113	-193	-418	-240	-331	-214	-242	-450	-349	-433	-264	-258	-207	-149	-114	-61	-187	-104	-157	-226
	294	255	332	460	405	238	398	630	418	530	354	468	662	507	593	399	447	379	300	222	158	287	183	322	385
20	286	210	149	208	166	57	100	181	222	196	260	186	110	166	198	129	48	49	62	39	125	108	148	145	148
	-275	-308	-171	-275	-303	-197	-160	-220	-308	-355	-415	-211	-105	-318	-524	-250	-105	-92	-28	-24	-64	-62	-166	-178	-213
	562	519	321	484	469	254	260	402	531	552	675	398	215	485	722	380	154	142	91	64	191	171	315	324	362
21	239	202	146	134	165	219	167	189	88	140	106	85	70	109	76	89	90	166	218	167	113	105	129	151	140
	-323	-296	-270	-143	-199	-433	-320	-259	-127	-123	-111	-115	-72	-87	-121	-313	-228	-213	-455	-232	-67	-89	-162	-320	-212
	563	499	417	279	364	653	488	449	215	263	217	201	142	197	197	402	319	381	675	400	182	196	293	472	353
22	101	85	38	7	84	142	79	56	104	169	186	208	244	282	271	261	384	392	317	290	241	202	201	177	188
	-119	-60	-53	-45	-76	-256	-187	-38	-51	-253	-406	-323	-360	-385	-503	-335	-491	-476	-583	-504	-335	-186	-145	-204	-266
	221	146	92	53	160	398	266	95	156	423	592	533	605	668	775	596	876	869	901	796	576	389	347	383	455
23	185	109	77	108	147	127	160	263	379	297	273	253	178	153	191	240	383	407	352	248	184	217	197	240	224
	-259	-86	-57	-111	-207	-466	-472	-383	-422	-381	-359	-432	-332	-372	-399	-425	-473	-325	-384	-288	-273	-173	-310	-384	-324
	445	197	135	221	356	594	633	646	802	679	633	686	511	526	590	665	857	733	738	538	458	391	509	625	549
24	193	97	117	154	162	54	41	49	144	227	175	129	131	55	61	79	49	30	28	39	40	32	23	20	89
	-253	-93	-163	-160	-139	-91	-60	-23	-75	-119	-116	-55	-106	-61	-42	-92	-102	-89	-32	-19	-17	-16	-24	-31	-82
	447	192	280	316	303	145	102	73	220	347	292	185	238	118	104	172	152	120	62	59	58	49	49	52	172
25	20	16	15	16	17	17	17	22	22	27	24	44	68	32	18	19	30	22	82	128	113	105	99	88	44
	-46	-52	-52	-44	-37	-34	-28	-27	-39	-46	-51	-42	-31	-60	-29	-44	-77	-69	-130	-208	-144	-107	-51	-83	-64
	66	69	68	62	56	51	46	51	63	74	76	86	100	93	47	64	108	92	214	338	259	213	152	173	109
26	71	66	25	19	136	190	138	118	79	72	118	109	119	128	136	153	159	148	77	69	63	87	108	153	106
	-87	-50	-40	-30	-29	-151	-88	-45	-51	-106	-61	-65	-62	-131	-231	-242	-195	-173	-36	-22	-46	-77	-83	-150	-94
	159	118	66	51	166	342	227	163	131	179	181	175	182	261	369	396	354	321	115	93	110	166	192	304	201
27	59	54	47	38	37	132	178	131	121	125	78	54	37	32	25	23	59	121	172	189	127	120	232	134	97
	-59	-80	-46	-42	-32	-49	-225	-149	-21	-36	-90	-48	-24	-30	-44	-57	-98	-243	-354	-201	-125	-75	-190	-180	-104
	120	135	94	80	70	182	404	281	143	162	170	103	63	63	70	82	158	365	527	391	253	197	422	315	202
28	113	55	34	23	23	28	38	41	60	52	170	125	106	123	124	128	136	184	209	188	209	163	109	122	107
	-208	-54	-39	-32	-41	-41	-32	-31	-44	-43	-75	-107	-100	-141	-168	-231	-179	-87	-256	-262	-115	-64	-81	-185	-109
	322	110	75	57	66	71	72	73	105	96	247	233	207	265	292	360	316	272	466	451	325	229	192	308	217
29	168	137	125	108	242	182	215	204	212	204	162	104	131	92	84	121	86	78	53	47	39	44	68	97	125
	-119	-91	-139	-112	-109	-80	-131	-294	-177	-101	-239	-86	-123	-85	-34	-151	-97	-78	-77	-46	-27	-30	-47	-69	-106
	288	228	264	222	352	263	346	499	389	305	402	191	255	178	120	272	184	156	130	93	67	75	115	167	232
30	73	39	42	40	50	31	47	105	165	102	52	72	103	134	60	41	48	53	62	81	93	112	87	74	74
	-104	-38	-45	-30	-37	-48	-47	-63	-153	-107	-32	-40	-113	-196	-62	-13	-41	-120	-58	-50	-53	-135	-151	-68	-75
	178	78	88	71	87	80	96	168	319	211	85	113	217	332	123	55	90	173	121	131	148	248	240	144	150

HOURLY VALUES (nT) OF AU, AL AND AE INDICES JULY 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	129	171	121	147	129	94	128	95	79	99	129	90	68	72	48	53	47	44	59	68	64	85	84	125	93
	AL	-110	-236	-197	-179	-155	-120	-80	-50	-37	-26	-88	-94	-34	-30	-38	-52	-43	-38	-100	-54	-58	-59	-58	-125	-86
	AE	240	408	318	327	285	214	209	145	117	126	217	185	103	102	88	106	92	83	160	124	124	146	143	251	180
2		72	41	59	73	34	48	101	101	45	74	69	130	172	99	71	70	72	71	60	121	117	135	129	148	88
		-58	-17	-47	-54	-77	-52	-32	-110	-39	-24	-33	-68	-267	-158	-76	-96	-148	-190	-37	-42	-45	-186	-136	-93	-87
		132	58	108	129	112	101	134	211	84	98	102	198	440	258	147	167	222	263	99	164	164	322	267	243	176
3		164	86	106	71	31	16	36	102	127	223	156	103	72	36	50	70	43	57	76	147	164	118	121	102	95
		-113	-98	-106	-66	-36	-33	-25	-39	-134	-232	-163	-75	-33	-24	-21	-27	-83	-108	-63	-66	-63	-50	-80	-99	-76
		278	185	213	139	68	51	62	142	262	455	320	178	105	60	72	98	127	166	140	214	228	169	202	202	172
4		42	27	42	51	118	105	84	68	79	59	62	28	45	29	59	67	83	86	146	209	190	121	70	54	80
		-43	-57	-58	-50	-162	-103	-60	-35	-38	-55	-59	-35	-42	-28	-56	-182	-210	-186	-151	-149	-186	-107	-105	-47	-92
		86	85	102	102	281	208	144	104	117	114	121	64	87	58	115	250	294	274	299	360	378	230	176	102	173
5		87	88	55	46	25	15	18	50	114	234	121	80	30	36	44	62	81	81	78	85	62	55	45	38	68
		-67	-138	-65	-53	-51	-49	-45	-25	-54	-218	-141	-118	-56	-25	-28	-41	-30	-129	-71	-24	-25	-31	-24	-38	-64
		155	228	122	100	77	66	64	76	168	452	262	199	86	62	73	103	112	211	150	111	88	86	69	76	133
6		58	84	110	78	59	118	94	71	86	109	232	247	267	117	81	118	147	125	148	199	188	158	109	74	128
		-40	-44	-95	-218	-137	-163	-85	-44	-42	-54	-227	-246	-422	-200	-131	-163	-322	-323	-117	-98	-121	-192	-234	-107	-159
		100	129	205	297	196	281	179	116	129	163	460	494	690	318	213	282	470	450	266	298	309	351	344	183	288
7		34	42	44	115	56	40	13	45	128	285	301	193	170	157	138	147	202	106	83	105	142	173	224	120	128
		-54	-55	-58	-194	-178	-55	-39	-25	-42	-254	-325	-185	-288	-234	-239	-256	-233	-252	-120	-55	-103	-322	-286	-99	-165
		90	99	103	310	235	96	53	70	170	539	626	378	458	391	377	404	437	359	204	161	246	497	512	221	293
8		65	97	107	116	77	93	133	190	212	183	195	85	102	57	42	22	35	111	150	131	99	107	106	104	109
		-39	-70	-190	-170	-208	-69	-149	-489	-273	-205	-196	-67	-70	-148	-47	-28	-43	-144	-301	-157	-47	-52	-84	-115	-140
		105	167	298	287	286	163	283	680	486	388	392	153	173	205	91	52	80	256	453	290	147	160	192	220	250
9		117	66	174	271	152	55	72	55	125	121	134	62	73	71	66	34	81	96	87	80	142	207	192	122	111
		-190	-61	-128	-418	-259	-53	-32	-69	-85	-117	-446	-81	-56	-47	-60	-60	-140	-218	-103	-85	-111	-250	-277	-135	-145
		309	128	303	691	412	109	104	125	211	239	581	143	130	119	126	95	223	316	191	166	254	458	471	258	257
10		113	132	118	99	77	69	83	68	120	35	32	31	35	40	24	36	26	27	22	37	57	43	30	36	58
		-103	-102	-130	-168	-98	-27	-54	-226	-260	-135	-25	-16	-26	-13	-34	-84	-62	-49	-39	-53	-99	-78	-43	-45	-82
		217	234	248	267	176	97	138	294	381	171	58	49	61	54	59	121	90	78	62	91	158	122	73	82	141
11		50	39	28	21	13	36	32	23	51	77	126	117	125	85	58	56	68	50	47	63	65	50	42	35	57
		-50	-55	-41	-34	-33	-25	-34	-55	-52	-41	-119	-212	-175	-73	-27	-28	-71	-112	-52	-60	-37	-35	-25	-29	-61
		102	95	71	56	48	62	66	78	103	119	245	329	301	159	86	85	140	163	100	125	103	86	68	64	119
12		37	34	32	15	13	9	25	38	32	45	69	171	304	222	175	201	109	140	268	319	302	325	303	186	141
		-32	-41	-44	-50	-48	-53	-37	-39	-39	-38	-32	-83	-456	-351	-264	-206	-62	-92	-394	-606	-327	-308	-178	-64	-160
		70	77	78	67	62	64	62	78	71	84	102	255	760	573	439	408	172	234	663	926	629	634	483	251	302
13		92	158	159	206	229	233	172	210	205	221	140	199	241	81	112	83	75	82	49	58	52	84	86	80	138
		-110	-203	-373	-185	-270	-433	-354	-161	-127	-318	-282	-481	-338	-60	-68	-57	-76	-111	-59	-38	-44	-69	-137	-89	-185
		203	362	533	392	501	668	527	372	332	540	422	681	580	142	181	141	153	195	108	97	98	154	225	171	324
14		60	75	85	97	81	146	91	123	65	103	183	199	171	105	99	66	23	41	49	106	138	56	26	47	93
		-56	-99	-158	-170	-122	-106	-154	-193	-52	-33	-109	-148	-180	-242	-230	-103	-97	-129	-57	-40	-156	-112	-51	-54	-119
		117	175	244	268	203	252	245	316	117	136	293	348	352	347	329	171	121	171	107	148	296	170	78	103	213
15		66	75	67	72	82	94	160	135	61	73	85	57	52	48	67	63	81	94	101	144	188	113	106	177	94
		-84	-116	-83	-118	-129	-99	-103	-111	-52	-35	-57	-89	-87	-51	-37	-29	-87	-206	-142	-92	-80	-46	-86	-136	-90
		152	192	152	191	211	194	263	246	114	108	142	146	140	100	105	93	170	302	244	237	269	161	193	315	185

16	233	241	133	219	244	269	126	33	64	103	110	98	158	139	79	73	55	104	172	220	279	261	274	245	164
	-149	-159	-232	-179	-145	-182	-105	-39	-31	-88	-94	-60	-218	-165	-79	-53	-94	-125	-182	-268	-299	-271	-291	-251	-157
	384	401	366	398	390	451	231	74	97	192	206	159	376	304	159	127	150	230	355	490	579	533	567	498	321
17	145	228	218	260	209	170	93	147	264	221	217	200	152	105	90	117	235	238	125	103	222	191	118	131	175
	-289	-417	-370	-367	-303	-327	-154	-171	-230	-483	-352	-292	-337	-142	-227	-302	-325	-482	-157	-64	-170	-476	-153	-94	-279
	435	646	589	628	513	499	248	319	495	705	570	492	490	249	317	421	561	721	283	169	394	668	273	227	455
18	108	99	175	201	207	236	192	148	68	125	138	118	156	79	66	169	106	81	129	122	88	161	181	107	136
	-69	-66	-446	-387	-261	-352	-353	-184	-39	-134	-268	-250	-207	-100	-131	-220	-244	-54	-94	-145	-93	-257	-241	-139	-197
	178	166	621	589	469	589	546	334	109	259	406	369	363	179	197	390	351	136	224	269	182	420	423	247	334
19	95	154	144	116	99	144	118	123	147	144	60	101	136	88	64	95	141	225	133	154	148	169	106	53	123
	-157	-225	-222	-111	-85	-197	-115	-74	-135	-164	-56	-92	-205	-156	-120	-210	-205	-302	-310	-236	-216	-196	-92	-70	-165
	254	379	366	228	185	341	234	197	283	309	117	194	342	245	186	306	347	528	445	391	365	367	200	124	289
20	41	128	141	99	52	175	119	135	150	48	24	22	29	29	31	26	41	65	61	65	66	70	77	107	75
	-81	-172	-213	-120	-59	-144	-152	-275	-292	-146	-52	-25	-21	-29	-32	-38	-118	-66	-54	-92	-79	-65	-108	-141	-107
	123	300	355	221	112	319	271	411	443	194	77	48	51	60	64	65	160	132	117	159	145	136	187	249	183
21	78	83	86	136	210	175	183	135	99	95	83	76	55	37	63	91	111	106	135	146	161	167	70	57	110
	-125	-71	-69	-110	-338	-274	-210	-108	-90	-177	-129	-121	-22	-38	-98	-234	-242	-283	-219	-121	-138	-67	-61	-70	-142
	204	155	156	246	548	449	393	244	190	273	212	198	78	76	163	327	354	390	355	269	300	236	133	129	253
22	110	146	154	166	161	203	151	82	77	57	71	69	70	52	56	68	51	35	40	96	170	296	225	131	114
	-189	-233	-215	-120	-124	-134	-119	-47	-100	-104	-136	-77	-75	-68	-77	-133	-142	-71	-25	-81	-118	-259	-563	-193	-142
	300	380	369	287	286	338	271	130	178	162	208	147	145	121	134	202	194	107	65	178	289	556	790	326	257
23	78	49	46	56	35	56	122	182	237	391	276	100	72	62	91	127	184	281	324	471	351	347	272	322	189
	-59	-47	-37	-34	-42	-46	-24	-99	-183	-366	-234	-70	-66	-63	-97	-218	-318	-353	-553	-421	-554	-417	-440	-497	-218
	138	97	84	91	78	103	148	282	421	758	511	171	139	126	188	346	504	636	879	894	905	765	713	820	408
24	370	361	349	295	255	214	261	175	239	245	138	129	282	378	131	280	264	200	225	312	210	97	128	264	242
	-551	-365	-422	-432	-370	-489	-308	-198	-226	-381	-116	-67	-555	-462	-69	-147	-353	-227	-228	-186	-157	-122	-107	-394	-289
	923	728	773	728	626	704	569	375	466	627	256	197	837	840	200	427	618	428	454	498	368	220	237	660	532
25	203	209	143	175	131	126	114	89	179	94	113	110	72	66	126	109	54	64	101	109	94	127	111	73	116
	-397	-305	-220	-270	-260	-277	-103	-58	-146	-233	-61	-112	-138	-128	-207	-171	-109	-79	-128	-64	-156	-184	-104	-135	-168
	601	516	363	446	391	403	217	147	326	327	174	223	211	196	333	281	164	144	230	174	251	313	217	209	286
26	100	142	168	104	107	54	72	103	123	67	74	74	140	125	140	130	118	81	52	41	60	79	89	102	98
	-188	-153	-187	-151	-144	-101	-112	-159	-144	-37	-43	-112	-140	-253	-371	-182	-301	-172	-47	-20	-50	-61	-73	-147	-139
	289	296	355	256	252	156	185	263	267	104	117	186	280	378	512	313	420	254	100	61	110	142	163	251	238
27	44	82	68	70	51	38	73	91	127	128	146	67	96	59	41	44	55	74	125	154	86	62	138	154	86
	-46	-58	-68	-67	-75	-59	-81	-216	-153	-174	-452	-175	-84	-23	-24	-54	-58	-184	-128	-100	-34	-41	-93	-261	-113
	91	141	137	138	126	98	154	307	280	302	599	243	181	83	65	99	115	259	255	255	121	104	232	417	200
28	85	34	29	41	79	172	180	147	131	164	142	104	62	70	121	105	138	133	231	277	198	99	118	96	123
	-101	-45	-53	-57	-52	-244	-270	-193	-85	-126	-156	-97	-81	-25	-74	-89	-92	-52	-127	-259	-151	-41	-101	-142	-113
	187	79	82	100	132	417	451	341	218	291	299	202	144	95	196	195	230	186	359	537	350	141	220	240	237
29	59	122	159	207	131	124	131	135	206	163	261	224	192	127	57	74	98	179	181	158	97	138	62	69	140
	-103	-91	-186	-608	-391	-149	-111	-245	-274	-194	-223	-341	-287	-164	-73	-29	-79	-146	-227	-122	-47	-90	-96	-134	-184
	163	213	346	815	523	274	243	380	480	357	485	566	480	291	131	104	179	326	409	281	145	230	159	205	324
30	208	230	247	183	197	169	123	83	151	185	283	332	176	78	42	51	53	71	163	158	196	267	135	173	165
	-275	-310	-547	-406	-258	-205	-241	-153	-207	-262	-607	-391	-120	-248	-70	-55	-45	-40	-111	-164	-206	-232	-165	-230	-231
	484	541	795	590	455	375	365	236	359	448	891	724	296	327	113	107	99	113	275	323	403	500	301	405	397
31	130	69	107	76	89	78	67	75	39	35	52	76	107	100	77	92	59	38	68	42	60	52	42	33	69
	-248	-150	-101	-78	-149	-238	-117	-35	-98	-161	-61	-64	-199	-195	-134	-99	-48	-39	-63	-43	-96	-94	-74	-43	-109
	379	221	209	155	238	317	185	110	138	197	113	140	306	295	211	192	108	78	133	87	158	148	118	76	180

HOURLY VALUES (nT) OF AU, AL AND AE INDICES AUGUST 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	49	50	80	116	121	91	125	88	124	92	87	87	82	93	69	50	38	51	63	68	99	76	133	194	89
	AL	-13	-12	-25	-99	-79	-78	-111	-149	-62	-41	-37	-26	-61	-165	-100	-50	-103	-107	-38	-46	-67	-65	-138	-137	-75
	AE	63	64	107	216	201	170	237	238	186	133	124	113	144	259	170	101	143	159	103	115	167	142	272	332	165
2		212	184	230	305	158	212	273	323	213	98	74	145	217	326	209	151	120	152	202	276	150	130	172	222	198
		-173	-473	-354	-174	-148	-81	-485	-406	-185	-35	-66	-71	-407	-521	-386	-156	-80	-152	-330	-712	-413	-127	-184	-255	-266
		386	658	584	480	307	294	758	730	399	133	141	217	624	849	596	309	201	306	534	989	565	258	357	479	465
3		155	117	91	61	150	60	64	47	55	53	54	74	118	122	102	202	145	119	264	201	131	109	291	145	122
		-333	-178	-40	-17	-91	-19	-28	-20	-28	-33	-22	-80	-161	-183	-197	-136	-180	-139	-337	-269	-76	-55	-199	-225	-127
		489	296	131	79	241	80	93	67	84	87	77	155	280	306	299	339	326	259	602	471	208	166	490	371	250
4		103	129	137	122	103	80	81	107	70	45	39	63	76	76	53	44	28	25	22	34	73	111	91	88	75
		-98	-133	-196	-223	-131	-50	-34	-68	-95	-77	-20	-51	-59	-102	-68	-96	-95	-43	-24	-33	-84	-189	-112	-114	-91
		202	263	334	346	235	131	115	175	165	122	60	115	136	179	123	141	125	70	47	68	157	302	205	203	167
5		64	48	30	15	19	16	19	17	28	33	29	22	23	28	25	27	23	21	22	18	18	25	30	30	26
		-42	-27	-28	-26	-31	-27	-29	-26	-41	-26	-27	-20	-20	-21	-18	-5	-9	-11	-17	-27	-29	-22	-9	-14	-23
		108	77	60	42	51	44	49	43	70	59	56	42	44	50	44	33	32	33	40	46	49	48	40	46	50
6		30	29	26	21	34	37	19	18	20	27	29	34	36	45	72	72	86	96	65	107	175	103	56	67	54
		-10	-20	-28	-22	-12	-27	-16	-11	-18	-23	-24	-22	-15	-26	-36	-59	-101	-192	-76	-52	-138	-133	-32	-26	-47
		41	50	55	44	47	66	36	31	40	52	54	56	52	73	109	133	189	290	143	160	313	237	89	95	102
7		42	49	80	74	43	55	46	51	56	49	43	64	85	91	98	50	46	69	155	215	192	320	146	203	97
		-23	-27	-53	-35	-17	-12	-26	-22	-30	-30	-25	-16	-49	-15	-69	-46	-71	-32	-82	-115	-181	-445	-498	-481	-100
		67	78	134	110	62	68	73	74	86	80	69	81	135	107	168	97	117	102	238	331	374	767	645	685	198
8		456	297	114	173	219	225	32	250	246	362	334	176	58	49	46	31	56	41	37	28	28	28	91	144	147
		-413	-867	-696	-800	-1062	-280	-304	-323	-257	-354	-348	-93	-31	-34	-37	-48	-33	-29	-27	-21	-23	-33	-88	-105	-263
		870	1164	810	974	1282	506	336	574	504	717	683	270	90	84	84	81	91	72	65	51	52	62	181	251	411
9		159	170	216	91	57	30	14	5	19	23	22	24	43	77	45	39	44	41	20	25	21	18	22	20	52
		-326	-466	-382	-106	-53	-60	-49	-41	-35	-32	-29	-24	-27	-49	-37	-25	-39	-68	-18	-45	-51	-45	-34	-31	-86
		487	636	599	199	111	92	63	46	55	55	52	50	71	128	83	65	84	110	40	72	73	64	58	52	139
10		31	35	27	112	194	174	188	95	67	98	111	111	82	79	66	55	45	41	43	44	36	34	29	45	77
		-17	-22	-25	-57	-191	-212	-95	-41	-17	-36	-43	-147	-81	-83	-74	-73	-62	-34	-13	-8	-6	-16	-19	-31	-58
		49	58	54	170	385	386	283	137	85	135	154	258	163	163	140	130	109	76	57	53	43	51	49	77	136
11		68	93	81	58	67	70	41	29	30	33	88	112	177	126	48	47	40	45	96	139	143	124	49	59	78
		-42	-114	-81	-36	-49	-46	-28	-17	-23	-25	-43	-69	-210	-151	-28	-14	-25	-45	-153	-175	-118	-72	-19	-21	-67
		111	209	164	95	117	117	70	46	54	59	131	182	388	278	76	62	66	91	250	315	263	197	69	82	145
12		103	88	111	203	273	308	304	272	341	313	340	363	212	224	341	365	364	385	355	246	198	247	290	150	267
		-154	-102	-138	-173	-377	-224	-165	-297	-341	-258	-219	-351	-385	-208	-245	-407	-400	-305	-223	-258	-162	-127	-64	-376	-248
		257	191	249	377	650	533	469	570	682	571	560	715	599	433	587	774	766	692	579	506	362	375	356	528	516
13		167	170	84	215	295	305	174	258	350	244	269	243	263	112	56	39	40	83	141	168	145	239	131	91	178
		-442	-159	-31	-99	-267	-274	-78	-232	-375	-244	-320	-454	-442	-43	-22	-25	-24	-150	-230	-295	-155	-357	-213	-76	-209
		610	330	116	315	563	579	252	490	726	488	590	699	706	155	79	65	65	234	372	464	300	597	345	168	388
14		103	157	81	47	65	145	84	118	100	77	39	46	54	78	116	80	84	133	112	156	139	113	56	52	93
		-85	-305	-154	-33	-29	-125	-118	-41	-48	-31	-23	-34	-42	-143	-107	-52	-121	-183	-196	-113	-182	-121	-35	-46	-99
		189	464	236	81	95	270	202	159	149	109	63	80	97	223	224	133	206	318	309	270	322	235	92	100	193
15		79	175	157	149	71	101	58	37	36	102	149	171	78	42	68	93	175	185	65	47	59	109	97	63	99
		-79	-313	-184	-84	-45	-53	-44	-56	-23	-38	-178	-279	-81	-19	-64	-220	-355	-280	-30	-18	-43	-129	-131	-48	-116
		159	490	342	234	117	155	102	93	60	140	328	451	160	62	134	314	532	467	97	65	103	238	229	112	216

16	55	47	38	18	12	6	10	17	22	19	31	50	57	77	89	90	94	103	139	112	107	119	156	163	68
	-52	-121	-68	-14	-24	-31	-43	-45	-40	-35	-35	-34	-39	-76	-157	-230	-294	-169	-280	-149	-117	-102	-161	-175	-104
	109	169	108	34	37	39	53	63	62	54	66	84	97	154	246	321	390	274	420	261	225	221	318	339	173
17	253	226	222	163	184	187	95	58	54	60	108	65	44	29	30	35	24	22	30	26	28	41	74	42	88
	-188	-216	-147	-94	-83	-88	-24	-20	-32	-58	-95	-53	-39	-36	-43	-36	-28	-23	-19	-35	-32	-38	-86	-34	-65
	443	444	370	258	267	275	119	78	87	119	204	119	84	67	74	73	53	46	50	63	62	81	161	77	153
18	32	31	29	35	19	16	18	24	36	49	38	33	43	50	34	21	18	16	17	14	16	17	24	30	28
	-29	-27	-26	-32	-20	-20	-20	-18	-30	-40	-38	-33	-41	-40	-35	-22	-27	-30	-28	-26	-37	-41	-28	-23	-30
	62	59	56	68	41	37	39	43	66	90	77	67	85	91	71	43	45	48	45	42	55	59	53	55	58
19	27	19	19	17	20	29	27	25	27	28	27	53	79	161	185	304	302	233	109	75	64	107	131	69	89
	-16	-20	-21	-19	-22	-27	-20	-17	-18	-23	-30	-32	-42	-135	-341	-388	-261	-160	-46	-23	-8	-53	-166	-76	-82
	44	41	41	38	44	58	49	43	47	52	58	86	121	297	528	694	564	394	156	100	73	161	297	146	172
20	39	42	72	172	175	92	101	92	98	69	143	188	192	77	63	74	122	142	166	259	254	218	238	266	140
	-20	-28	-37	-238	-268	-136	-65	-64	-44	-25	-52	-78	-296	-173	-173	-114	-88	-278	-220	-220	-217	-215	-217	-212	-145
	60	71	110	410	444	229	166	157	143	95	196	267	490	251	237	190	211	422	387	480	472	434	456	479	286
21	196	166	258	228	316	364	236	217	278	215	145	195	265	276	282	360	357	296	283	230	164	104	229	201	244
	-269	-302	-302	-440	-268	-223	-160	-331	-429	-560	-318	-468	-461	-306	-287	-287	-335	-255	-217	-181	-101	-103	-330	-101	-293
	466	468	560	669	585	587	397	549	707	776	464	664	727	583	570	649	693	553	501	413	266	208	560	303	538
22	128	95	49	48	63	71	140	143	81	81	163	90	147	106	78	64	116	181	208	265	243	98	75	67	117
	-57	-62	-36	-18	-26	-84	-130	-152	-61	-71	-137	-153	-192	-98	-67	-49	-164	-266	-239	-394	-486	-54	-41	-73	-130
	186	159	87	67	89	156	271	295	143	153	301	243	340	206	146	115	282	448	448	660	729	153	117	141	247
23	68	175	158	219	186	252	168	195	265	249	249	232	227	168	62	71	230	289	230	197	123	127	88	116	181
	-88	-121	-188	-460	-780	-537	-123	-267	-366	-235	-285	-270	-215	-207	-186	-123	-154	-356	-363	-389	-288	-119	-104	-153	-266
	157	298	347	680	966	790	291	463	632	485	536	503	443	377	249	195	385	646	594	587	412	247	193	269	448
24	197	165	161	164	216	131	184	160	193	180	268	243	237	188	128	162	156	84	110	182	175	199	209	252	181
	-303	-291	-256	-245	-359	-174	-176	-364	-410	-243	-495	-565	-289	-364	-152	-264	-258	-131	-93	-146	-332	-523	-396	-280	-296
	501	457	419	410	576	306	361	524	603	424	764	809	528	554	281	427	416	217	205	329	508	723	605	533	478
25	220	195	189	146	168	61	138	182	261	155	244	256	186	221	159	84	176	228	287	184	105	89	99	134	174
	-422	-642	-123	-104	-335	-195	-170	-343	-572	-261	-614	-497	-223	-328	-210	-36	-217	-227	-471	-168	-50	-79	-143	-280	-280
	644	838	313	250	503	257	308	526	833	417	859	755	410	551	370	121	395	456	759	353	156	169	242	414	454
26	103	205	169	142	194	177	151	77	178	213	207	219	157	125	125	219	162	63	79	159	89	55	76	80	143
	-213	-315	-265	-126	-184	-461	-153	-87	-150	-490	-588	-479	-241	-205	-201	-507	-314	-34	-26	-196	-219	-63	-48	-47	-234
	318	521	435	269	378	639	305	164	329	704	796	699	400	332	327	727	477	98	106	356	309	119	125	128	377
27	93	91	33	27	24	19	19	15	17	16	19	31	97	118	99	76	122	76	31	40	48	37	39	81	53
	-110	-169	-39	-19	-18	-13	-11	-14	-20	-27	-30	-34	-72	-158	-201	-139	-270	-106	-35	-36	-69	-46	-29	-51	-72
	204	261	74	47	43	34	32	30	38	45	51	67	171	277	300	216	393	183	67	78	117	84	70	133	126
28	102	92	75	81	65	50	89	141	188	171	111	105	50	40	52	41	32	34	59	113	83	42	54	53	80
	-157	-103	-84	-116	-145	-69	-153	-240	-228	-213	-118	-97	-35	-14	-60	-61	-31	-61	-72	-121	-165	-23	-16	-18	-100
	260	196	160	198	212	120	243	382	416	385	231	203	86	55	114	103	64	97	132	236	248	67	71	72	181
29	88	139	183	170	139	116	68	91	91	88	93	106	124	115	78	98	125	246	289	212	166	240	256	177	146
	-152	-275	-341	-217	-152	-44	-18	-28	-56	-134	-153	-78	-162	-115	-150	-99	-55	-118	-121	-228	-116	-139	-356	-75	-141
	241	415	525	388	292	161	87	120	147	223	246	184	287	230	230	198	181	366	411	442	283	380	614	253	288
30	203	183	83	196	138	232	121	170	139	139	84	104	55	44	75	86	82	83	107	72	133	116	174	148	124
	-146	-258	-120	-94	-160	-233	-291	-187	-140	-138	-30	-150	-96	-58	-173	-252	-209	-118	-84	-20	-167	-245	-328	-177	-161
	350	442	204	290	298	465	412	358	279	277	115	254	152	103	249	340	292	202	192	94	300	361	502	327	286
31	202	165	250	189	137	159	189	107	141	93	87	82	106	121	101	148	307	173	153	122	209	149	131	195	155
	-190	-213	-441	-309	-178	-188	-341	-139	-146	-220	-112	-102	-108	-142	-156	-73	-574	-359	-216	-93	-461	-313	-143	-279	-229
	393	379	691	500	316	347	531	246	287	314	200	186	215	264	259	222	883	533	370	216	670	463	275	476	385

HOURLY VALUES (nT) OF AU, AL AND AE INDICES SEPTEMBER 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	176	159	186	201	214	106	69	44	40	88	54	66	55	58	97	98	53	50	67	65	92	99	91	74	96
	AL	-388	-374	-409	-532	-321	-145	-14	-10	-13	-163	-74	-54	-41	-50	-194	-256	-170	-55	-47	-64	-151	-253	-83	-35	-162
	AE	565	533	596	734	537	252	84	55	54	252	129	120	97	109	293	355	225	106	115	130	244	353	175	110	259
2		60	61	111	73	48	25	20	20	38	38	49	67	43	30	35	46	46	62	113	57	62	82	78	50	55
		-24	-18	-74	-126	-45	-7	-4	-14	-26	-31	-27	-35	-48	-26	-32	-46	-180	-194	-223	-84	-35	-150	-137	-40	-68
		84	80	186	200	95	33	25	35	65	70	78	102	92	58	68	93	227	258	338	141	97	233	216	90	124
3		43	64	56	71	80	118	85	51	42	36	35	28	29	27	31	28	48	52	63	42	28	28	26	30	48
		-9	-33	-97	-42	-67	-227	-129	-72	-14	-19	-21	-20	-28	-46	-41	-33	-139	-126	-103	-70	-15	-5	-3	-10	-57
		52	97	153	115	148	345	215	124	57	56	57	49	59	75	73	62	188	179	167	112	44	33	30	41	105
4		23	21	18	20	23	30	27	22	27	22	24	23	24	27	25	29	24	31	37	56	49	28	35	61	29
		-10	-9	-13	-6	-9	-11	-12	-12	-18	-23	-27	-32	-29	-26	-27	-31	-56	-87	-48	-99	-90	-26	-12	-87	-33
		34	30	32	26	32	41	39	35	45	46	52	57	55	54	53	61	82	119	86	155	140	56	47	149	64
5		77	34	28	27	15	16	18	24	23	28	28	23	26	26	27	28	28	35	31	36	74	51	40	32	32
		-163	-32	-2	-15	-12	-9	-5	-6	-12	-18	-21	-20	-20	-24	-26	-21	-26	-63	-46	-24	-72	-99	-27	-8	-32
		241	66	30	43	29	27	25	31	36	47	49	44	46	51	54	49	54	100	78	61	147	151	68	41	65
6		28	30	58	96	92	165	160	91	64	64	60	58	42	37	50	63	38	66	82	117	103	63	45	43	71
		0	-3	-118	-307	-175	-143	-115	-56	-32	-24	-27	-27	-24	-30	-58	-97	-93	-120	-99	-129	-65	-32	-37	-106	-80
		27	34	177	403	268	308	276	148	97	89	88	86	68	68	110	161	133	187	182	247	169	96	84	151	152
7		33	48	47	87	96	64	80	63	71	128	104	119	252	209	322	289	292	361	320	245	129	63	51	45	147
		-54	-47	-40	-45	-52	-43	-5	-9	-22	-41	-87	-187	-412	-293	-403	-426	-291	-474	-379	-280	-201	-119	-79	-93	-170
		88	96	88	132	149	108	85	72	95	171	192	307	665	503	726	716	584	836	700	526	331	183	131	139	318
8		42	42	67	52	58	36	72	125	152	213	302	181	80	54	27	21	87	113	69	83	151	117	81	64	95
		-150	-59	-141	-163	-56	-11	-24	-218	-326	-208	-375	-267	-57	-52	-33	-76	-111	-226	-71	-23	-53	-46	-48	-44	-118
		192	102	208	216	115	47	96	344	480	423	678	449	137	107	61	99	199	341	142	107	206	164	130	110	215
9		70	73	128	76	56	50	79	54	48	49	48	82	37	41	61	76	62	89	222	126	108	145	119	125	84
		-50	-65	-229	-128	-25	-21	-30	-42	-26	-28	-31	-52	-36	-40	-115	-86	-92	-172	-368	-174	-73	-231	-191	-191	-104
		121	139	358	205	82	71	110	96	75	79	80	135	74	83	177	162	156	262	591	301	181	378	312	317	189
10		79	83	95	60	52	76	106	65	50	62	69	58	45	33	46	100	86	34	104	126	100	69	29	68	71
		-93	-43	-147	-86	-24	-43	-91	-32	-28	-163	-76	-50	-56	-37	-69	-354	-203	-17	-170	-325	-151	-172	-19	-44	-104
		173	127	242	147	76	120	197	98	79	226	146	109	103	70	116	455	290	52	275	452	251	242	48	112	175
11		89	77	113	112	64	54	51	53	45	33	34	103	117	42	46	39	76	90	61	73	126	41	53	53	68
		-149	-185	-215	-51	-28	-91	-17	-31	-26	-20	-24	-110	-242	-73	-71	-83	-255	-261	-87	-43	-259	-52	-58	-80	-105
		239	263	328	163	92	146	69	85	71	54	58	213	360	116	118	123	332	353	149	117	386	94	112	134	174
12		36	39	90	146	75	129	95	135	151	137	147	150	135	121	84	41	33	30	32	32	58	69	64	79	88
		-36	-25	-88	-268	-162	-172	-239	-205	-298	-196	-357	-460	-295	-368	-252	-26	-29	-40	-37	-44	-60	-142	-111	-79	-166
		74	64	179	415	238	301	335	342	451	334	505	611	431	490	337	68	62	70	69	77	119	212	175	160	255
13		91	131	84	50	30	34	70	51	59	69	109	86	102	101	42	68	27	22	31	39	55	92	114	96	69
		-167	-310	-253	-47	-10	-14	-101	-160	-182	-186	-164	-177	-269	-110	-230	-162	-29	-26	-43	-91	-58	-121	-313	-213	-143
		259	441	338	99	42	49	172	212	242	256	275	264	372	213	272	232	57	49	74	131	113	214	429	310	213
14		72	72	72	64	62	41	58	44	46	41	34	26	42	21	28	69	100	70	24	38	29	90	69	45	52
		-71	-54	-79	-9	-29	-10	-33	-32	-152	-15	-14	-16	-24	-12	-23	-160	-348	-277	-84	-34	-23	-55	-29	-9	-66
		145	128	153	74	92	51	91	77	199	57	49	44	67	34	51	230	450	348	109	73	52	146	99	55	120
15		40	62	73	82	67	53	76	137	164	123	69	30	27	28	43	45	114	221	131	190	219	127	175	94	100
		-17	-22	-90	-57	-44	-19	-36	-115	-235	-182	-37	-27	-20	-17	-16	-16	-68	-591	-745	-706	-472	-196	-275	-140	-173
		58	85	163	140	112	73	112	254	400	306	107	59	48	46	59	62	184	813	876	897	692	323	452	235	273

16	78	70	88	134	161	164	157	232	168	325	324	157	172	155	91	77	276	273	189	158	85	91	151	109	162
	-61	-62	-97	-100	-238	-352	-364	-281	-208	-363	-375	-501	-282	-452	-187	-81	-574	-670	-341	-392	-232	-214	-279	-190	-287
	140	133	185	234	400	517	522	514	377	689	701	658	455	608	278	159	851	944	531	551	317	306	432	301	450
17	197	225	187	150	163	248	216	162	296	129	63	27	89	53	52	71	155	134	71	50	85	57	40	99	126
	-394	-556	-298	-331	-373	-534	-375	-198	-553	-142	-27	-14	-117	-114	-198	-196	-323	-437	-89	-16	-146	-119	-37	-122	-238
	592	782	486	481	537	784	593	362	850	272	91	43	207	167	251	269	479	572	161	67	231	177	79	223	365
18	79	54	79	70	125	147	109	92	130	113	47	27	48	40	63	49	85	106	83	146	162	164	124	55	92
	-365	-105	-106	-156	-226	-148	-205	-163	-224	-45	-30	-17	-41	-41	-157	-172	-207	-275	-123	-186	-552	-357	-102	-51	-169
	445	160	186	228	351	296	314	256	356	159	79	46	90	82	221	222	293	381	206	332	715	522	226	106	261
19	126	93	211	268	410	188	111	104	154	230	308	175	153	303	308	238	296	235	245	219	167	222	134	143	210
	-211	-661	-606	-512	-485	-85	-90	-102	-452	-412	-496	-394	-342	-561	-471	-416	-377	-184	-454	-781	-832	-693	-577	-586	-449
	338	754	819	782	897	274	201	208	608	643	806	571	496	864	779	655	674	419	700	1000	1000	916	711	730	660
20	228	158	178	143	118	81	93	124	115	120	92	143	180	110	84	69	107	77	78	79	83	68	94	33	111
	-650	-508	-255	-150	-352	-224	-257	-228	-205	-399	-246	-377	-695	-271	-270	-218	-326	-279	-114	-59	-115	-189	-126	-37	-273
	879	666	434	294	472	305	351	354	322	520	339	520	877	382	354	287	435	357	193	139	199	258	221	70	384
21	49	92	85	148	134	69	80	116	132	142	89	72	54	115	102	146	55	102	103	115	51	38	38	114	93
	-58	-305	-321	-310	-247	-109	-70	-161	-194	-152	-90	-117	-111	-162	-279	-393	-165	-197	-132	-114	-31	-11	-22	-255	-167
	108	398	406	459	382	178	151	279	327	295	179	190	166	279	382	540	221	301	237	230	83	50	61	370	261
22	105	118	103	74	128	62	107	148	113	102	159	213	135	42	20	43	17	34	28	35	38	73	63	40	83
	-426	-313	-120	-32	-104	-175	-196	-94	-94	-64	-283	-367	-176	-41	-17	-50	-81	-31	-29	-20	-37	-86	-114	-72	-126
	531	431	223	107	232	237	303	242	208	167	444	581	312	84	38	94	100	66	58	56	76	159	178	113	210
23	29	25	38	43	49	34	27	27	40	29	65	101	49	36	87	61	65	86	80	38	18	18	33	35	46
	-12	-13	-18	-59	-32	-13	-9	-23	-32	-27	-78	-95	-25	-37	-135	-234	-210	-175	-115	-76	-26	-23	-17	-16	-63
	42	38	57	103	81	47	37	50	73	56	144	198	76	74	223	296	277	262	196	116	45	43	51	53	110
24	38	48	48	20	13	12	14	21	29	15	30	58	124	132	133	244	197	69	25	60	88	98	87	55	69
	-54	-114	-184	-103	-53	-48	-11	-12	-22	-28	-24	-33	-366	-416	-314	-390	-253	-99	-65	-53	-66	-45	-41	-26	-118
	93	163	233	125	66	61	26	33	52	43	56	92	491	550	449	636	452	168	91	114	155	143	129	81	188
25	103	118	120	144	123	65	111	134	131	142	152	108	90	99	137	264	198	217	158	160	107	106	164	136	137
	-80	-175	-454	-164	-54	-5	-62	-184	-58	-89	-66	-42	-54	-90	-274	-480	-392	-475	-175	-268	-140	-79	-314	-670	-202
	185	294	574	308	177	70	174	320	191	232	219	151	145	190	412	745	591	694	334	429	248	186	479	806	340
26	142	98	174	136	90	179	201	154	137	247	185	113	97	118	84	23	37	65	107	71	69	88	85	75	116
	-468	-347	-322	-215	-391	-340	-500	-440	-254	-587	-291	-199	-172	-190	-38	-18	-72	-168	-264	-161	-72	-176	-228	-69	-249
	610	445	497	351	482	520	703	596	393	836	477	313	270	309	122	42	111	235	372	233	141	265	314	144	366
27	130	174	115	48	36	77	78	54	76	35	58	81	96	88	35	27	32	51	36	79	64	103	65	94	72
	-241	-425	-125	-30	-48	-108	-154	-77	-103	-23	-103	-291	-387	-317	-171	-84	-141	-156	-39	-77	-32	-216	-261	-156	-157
	372	600	242	80	85	186	232	132	180	58	162	373	485	407	207	112	174	208	75	157	97	320	327	251	230
28	135	178	109	109	53	31	22	46	36	22	15	26	47	71	54	66	90	36	28	46	88	71	51	69	62
	-250	-612	-462	-92	-67	-9	-7	-18	-30	-25	-19	-23	-49	-251	-329	-384	-302	-76	-23	-19	-115	-135	-30	-144	-145
	385	791	572	203	120	40	30	64	66	48	35	49	96	324	385	451	394	113	51	65	203	206	83	215	208
29	95	109	131	143	70	69	50	48	34	40	62	26	19	13	12	7	6	15	22	19	15	35	25	27	46
	-229	-256	-162	-121	-6	-48	-29	-25	-16	-18	-182	-23	-18	-19	-17	-15	-22	-23	-56	-80	-17	-54	-42	-35	-63
	325	365	294	265	77	118	79	73	50	58	246	50	38	33	30	22	30	38	79	100	33	90	68	63	109
30	22	19	15	29	21	24	26	27	19	19	17	12	8	13	13	11	9	18	21	18	16	21	28	59	20
	-15	-31	-21	-18	-10	-7	-11	-14	-16	-15	-17	-21	-20	-14	-11	-9	-33	-27	-46	-24	-15	-16	-15	-125	-23
	38	52	37	48	31	32	37	42	35	35	35	34	29	28	25	21	43	46	69	42	32	37	44	185	44

HOURLY VALUES (nT) OF AU, AL AND AE INDICES OCTOBER 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	65	81	81	81	42	30	59	64	56	38	58	51	57	94	72	43	154	103	75	122	132	127	148	145	82
	AL	-179	-66	-65	-20	-10	-10	-26	-28	-18	-21	-25	-20	-29	-79	-74	-100	-488	-308	-185	-125	-210	-179	-603	-397	-136
	AE	246	149	147	102	53	40	86	93	75	61	84	72	87	174	147	144	643	412	261	249	342	307	752	543	220
2		154	102	127	191	341	240	167	149	161	135	190	105	140	162	129	128	91	37	50	82	136	160	180	114	145
		-271	-353	-346	-321	-309	-266	-227	-260	-496	-35	-134	-154	-359	-251	-148	-228	-353	-30	-30	-69	-313	-388	-222	-265	-243
		426	456	474	514	651	507	395	409	658	172	325	260	499	413	277	357	445	67	81	152	449	548	402	380	388
3		104	89	49	104	97	83	142	179	143	239	261	205	128	61	194	182	118	71	115	127	157	181	209	157	141
		-114	-225	-85	-216	-254	-207	-334	-441	-314	-353	-463	-293	-237	-186	-546	-338	-228	-141	-182	-162	-147	-222	-233	-370	-262
		219	315	136	321	352	292	478	621	458	593	725	499	366	248	741	520	346	213	298	290	304	404	442	529	405
4		128	55	76	62	73	106	174	187	333	276	392	227	145	68	235	211	285	150	113	113	89	67	50	43	152
		-257	-32	-40	-90	-232	-210	-380	-419	-231	-352	-554	-312	-151	-108	-339	-1004	-562	-117	-138	-175	-370	-222	-154	-69	-272
		387	87	116	153	306	316	556	607	565	629	946	541	296	177	575	1216	848	267	253	290	461	290	206	113	425
5		31	29	24	14	18	28	26	32	69	83	81	36	25	29	5	5	9	14	20	23	33	39	39	75	33
		-38	-28	-19	-19	-25	-19	-21	-41	-72	-146	-131	-44	-28	-39	-28	-28	-26	-25	-16	-14	-23	-22	-25	-89	-40
		70	57	45	34	43	47	47	74	142	230	213	82	54	68	34	34	37	39	37	37	57	62	65	165	74
6		84	51	64	58	35	70	77	99	85	152	239	138	106	58	55	175	237	200	153	99	61	52	93	56	104
		-227	-56	-49	-40	-38	-40	-139	-362	-282	-260	-193	-14	-42	-29	-40	-287	-504	-451	-359	-153	-21	-32	-201	-160	-166
		311	108	114	99	74	111	217	462	369	413	433	153	149	88	96	462	742	651	514	254	83	85	295	216	271
7		47	54	58	128	97	78	63	70	89	63	61	78	34	36	31	49	45	41	45	38	31	56	53	52	58
		-79	-35	-58	-284	-190	-151	-23	-32	-80	-43	-48	-63	-38	-32	-50	-109	-203	-110	-109	-46	-17	-48	-83	-161	-87
		126	91	117	414	287	230	86	104	170	108	110	142	73	68	82	159	249	152	155	85	48	105	137	215	146
8		64	72	100	79	55	58	72	83	98	82	60	46	89	54	34	165	212	119	187	149	63	73	76	86	91
		-204	-139	-84	-13	-59	-63	-81	-15	-31	-48	-21	-28	-52	-83	-107	-231	-557	-278	-342	-316	-111	-111	-136	-81	-133
		269	212	185	93	115	122	154	100	130	131	83	76	143	138	142	396	770	398	530	465	175	185	212	168	225
9		92	115	111	72	34	37	54	42	29	28	28	33	38	46	48	26	27	22	18	23	14	25	24	31	42
		-54	-75	-48	-13	-5	-24	-28	-99	-12	-17	-20	-24	-49	-60	-106	-42	-47	-16	-37	-61	-34	-50	-23	-10	-40
		147	191	160	87	39	62	83	143	41	46	50	58	88	106	155	68	75	39	56	84	48	76	47	41	83
10		20	17	21	21	21	20	23	22	19	39	38	34	30	28	18	16	33	67	55	119	115	57	38	20	37
		-8	-7	-7	-4	-3	-11	-71	-89	-35	-40	-30	-72	-155	-36	-32	-28	-75	-202	-212	-242	-287	-71	-13	-12	-73
		29	24	28	26	25	32	96	112	55	81	70	108	186	65	52	46	109	270	268	362	402	129	52	33	111
11		31	29	52	25	34	63	104	87	89	47	52	51	36	46	37	44	38	14	19	13	18	14	16	18	41
		-24	-27	-83	-95	-63	-76	-313	-283	-203	-51	-34	-63	-46	-53	-107	-116	-16	-13	-11	-53	-19	-13	-9	-9	-74
		56	57	135	120	98	140	418	371	294	99	88	116	84	99	145	161	54	29	31	66	38	27	26	28	116
12		12	13	22	42	30	21	20	18	26	23	38	35	35	39	51	47	23	42	79	120	200	136	69	66	50
		-6	-6	-11	-24	-12	-11	-17	-18	-26	-25	-103	-42	-60	-28	-32	-57	-87	-141	-163	-127	-85	-12	-7	-22	-47
		19	19	34	67	43	32	38	37	53	50	142	79	96	68	84	105	110	183	243	247	285	149	77	89	98
13		131	125	176	133	193	257	150	173	186	398	245	74	88	113	276	286	291	242	141	101	127	113	121	70	175
		-183	-482	-260	-376	-485	-379	-156	-208	-304	-362	-271	-428	-251	-438	-293	-678	-327	-264	-205	-279	-403	-433	-165	-115	-323
		315	608	438	510	680	636	307	381	492	761	517	502	340	552	571	965	618	507	348	381	531	546	286	186	499
14		95	91	93	66	58	78	135	134	177	156	218	197	136	251	246	242	194	230	147	199	153	107	144	159	155
		-153	-202	-211	-118	-77	-93	-291	-271	-206	-298	-289	-344	-363	-458	-303	-300	-294	-520	-451	-289	-136	-176	-418	-693	-290
		250	295	305	185	135	172	428	407	384	455	508	541	500	710	550	543	489	750	600	489	291	284	563	853	445
15		164	134	111	87	109	93	88	122	124	144	110	175	125	182	76	142	99	22	77	176	174	144	98	125	121
		-382	-142	-92	-82	-239	-398	-178	-161	-159	-374	-471	-305	-378	-564	-333	-300	-184	-59	-102	-496	-328	-124	-203	-284	-264
		546	277	204	170	350	492	267	285	284	519	582	480	503	746	409	442	284	83	181	672	503	270	302	409	386

16	92	82	91	88	82	86	105	43	23	32	45	64	94	90	140	266	154	79	31	65	68	51	44	44	82
	-105	-88	-80	-141	-178	-398	-116	-46	-19	-18	-35	-165	-180	-341	-313	-340	-159	-153	-57	-37	-228	-199	-88	-105	-149
	198	172	172	230	261	485	222	90	43	51	81	230	274	432	454	606	313	233	89	103	297	251	133	151	232
17	67	56	60	86	83	106	100	173	335	305	272	140	294	278	289	240	283	259	227	165	179	179	175	204	190
	-174	-80	-110	-277	-261	-175	-149	-289	-684	-475	-465	-758	-465	-331	-711	-415	-663	-395	-412	-741	-543	-214	-714	-423	-413
	242	137	172	365	344	282	251	463	1020	781	738	898	760	610	1001	655	946	654	640	906	723	394	890	628	604
18	147	155	108	194	272	290	253	182	186	138	82	135	254	270	291	307	202	186	147	109	157	127	103	93	183
	-588	-733	-194	-187	-373	-419	-354	-343	-506	-389	-501	-460	-711	-591	-532	-480	-592	-469	-527	-614	-472	-109	-194	-218	-440
	736	889	303	383	646	710	608	526	693	528	584	596	966	862	824	787	794	656	674	723	630	237	298	313	624
19	81	60	76	86	72	73	62	50	52	34	54	44	40	24	46	9	34	35	24	19	12	7	16	8	42
	-310	-237	-134	-142	-208	-159	-132	-97	-153	-202	-89	-108	-63	-32	-33	-85	-202	-107	-45	-41	-19	-19	-19	-14	-110
	392	298	211	230	281	233	196	149	206	236	144	154	105	56	80	95	237	144	69	60	32	27	35	24	154
20	6	9	17	33	61	56	63	50	22	32	70	57	36	14	13	13	14	10	18	40	69	69	68	57	37
	-12	-10	-13	-78	-245	-145	-77	-29	-36	-26	-187	-145	-45	-24	-21	-28	-20	-27	-23	-130	-195	-185	-73	-54	-76
	20	20	30	111	306	202	141	80	60	59	259	203	83	39	36	42	35	38	43	170	264	255	142	113	115
21	25	17	18	23	29	21	36	37	42	82	87	98	61	40	46	102	150	135	96	170	116	132	79	97	73
	-23	-13	-18	-9	-8	-11	-15	-18	-11	-37	-118	-175	-24	-17	-42	-125	-220	-180	-156	-156	-135	-193	-75	-304	-87
	49	31	37	33	37	33	51	56	53	121	207	275	86	58	89	228	371	316	253	327	252	326	155	402	160
22	97	121	204	142	100	129	64	40	72	104	57	104	92	96	72	41	33	47	60	42	36	37	65	67	80
	-599	-364	-143	-35	-79	-357	-108	-21	-98	-422	-403	-330	-471	-301	-78	-78	-111	-146	-166	-128	-23	-29	-135	-154	-199
	697	486	349	178	180	488	172	62	171	527	460	434	564	398	151	120	144	194	227	171	60	67	202	222	280
23	52	80	111	84	79	76	93	71	71	72	79	117	131	75	165	93	104	142	59	142	200	187	146	166	108
	-95	-132	-97	-23	-36	-65	-164	-117	-71	-89	-387	-466	-628	-198	-464	-309	-198	-429	-187	-156	-696	-696	-226	-173	-254
	149	214	208	107	116	142	259	188	144	163	467	583	760	273	630	403	303	572	247	299	897	884	373	339	363
24	115	143	84	50	30	114	56	50	40	71	96	133	153	116	68	79	62	57	138	82	53	61	55	81	83
	-387	-330	-16	-12	-64	-131	-108	-53	-27	-86	-161	-353	-524	-84	-95	-271	-222	-149	-613	-436	-115	-129	-126	-211	-196
	503	474	100	63	96	246	166	104	68	159	257	486	677	201	164	351	285	207	752	519	169	192	182	293	280
25	57	44	47	47	43	41	38	30	28	12	18	23	15	15	44	13	40	13	19	15	21	24	48	40	31
	-180	-76	-11	-29	-15	-8	-6	-10	-7	-9	-28	-49	-30	-34	-68	-167	-38	-16	-23	-17	-44	-26	-49	-76	-42
	239	121	58	77	59	50	46	41	36	22	48	73	46	50	113	181	78	29	43	34	65	51	98	117	74
26	30	22	35	34	43	49	49	38	37	33	38	21	16	27	26	23	33	17	8	9	9	10	8	8	26
	-13	-14	-34	-22	-15	-13	-11	-6	-8	-13	-82	-42	-30	-17	-26	-95	-64	-22	-9	-9	-11	-13	-14	-13	-25
	44	36	69	57	59	63	60	45	47	48	122	64	48	44	53	118	97	40	18	19	21	24	23	22	52
27	12	12	20	27	36	43	50	76	59	45	20	27	16	13	12	9	9	13	14	30	18	16	17	29	26
	-13	-15	-17	-22	-17	-13	-34	-19	-14	-11	-13	-14	-13	-14	-13	-52	-39	-32	-20	-87	-73	-17	-16	-19	-25
	25	28	38	49	54	57	86	95	73	56	34	42	30	28	26	62	50	46	35	118	92	34	34	49	52
28	48	91	118	52	15	14	13	16	15	14	15	15	13	11	12	30	46	48	53	70	66	73	87	99	43
	-23	-113	-51	-12	-11	-9	-8	-11	-14	-10	-9	-11	-11	-10	-8	-7	-23	-43	-32	-19	-9	-33	-297	-499	-53
	72	204	169	65	27	24	21	27	29	26	26	27	25	22	21	37	70	92	86	90	76	107	385	600	97
29	180	200	169	176	153	173	165	205	237	282	246	201	95	199	112	56	69	195	118	201	108	77	106	70	158
	-332	-334	-286	-241	-210	-253	-368	-358	-508	-657	-601	-468	-240	-492	-439	-66	-188	-261	-496	-293	-144	-335	-446	-278	-346
	513	535	457	418	364	426	534	563	746	939	847	669	336	691	552	123	258	457	615	495	253	413	553	349	504
30	110	60	87	120	131	91	65	114	116	100	208	274	155	161	177	159	163	181	169	108	62	48	42	42	122
	-268	-320	-281	-270	-293	-180	-166	-343	-309	-447	-428	-429	-466	-537	-452	-445	-480	-645	-622	-339	-208	-38	-36	-110	-338
	380	381	369	391	425	271	232	458	426	547	637	704	622	698	630	604	643	827	792	447	271	86	79	154	461
31	30	35	41	55	35	19	57	73	73	94	142	81	70	45	67	35	15	26	31	26	44	51	62	31	52
	-177	-163	-207	-69	-17	-8	-33	-274	-266	-227	-327	-192	-176	-408	-192	-104	-113	-142	-44	-23	-43	-157	-341	-91	-158
	208	199	249	124	53	27	90	349	340	322	470	275	247	453	260	140	130	170	76	49	88	209	404	123	211

HOURLY VALUES (nT) OF AU, AL AND AE INDICES — NOVEMBER 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	20	72	62	61	54	39	75	61	82	137	161	92	129	121	66	20	16	40	108	108	103	201	227	165	92
	AL	-12	-56	-375	-390	-92	-65	-101	-64	-91	-273	-391	-438	-514	-138	-41	-28	-46	-113	-221	-130	-313	-421	-265	-107	-195
	AE	33	128	438	453	147	104	177	126	174	411	553	531	644	260	109	49	63	153	331	240	418	624	493	273	289
2		192	114	74	155	130	91	134	136	152	162	107	117	146	68	80	87	38	100	60	54	98	75	62	51	103
		-141	-182	-317	-715	-222	-26	-112	-139	-375	-335	-101	-470	-360	-201	-140	-76	-47	-274	-143	-47	-120	-159	-91	-123	-205
		335	296	391	871	354	118	246	276	528	497	209	588	507	270	222	164	85	374	204	102	219	235	154	176	309
3		90	78	87	66	65	35	40	29	43	41	52	78	134	135	71	39	174	156	141	184	88	83	66	63	85
		-265	-206	-58	-28	-9	-12	-20	-3	-11	-35	-34	-128	-229	-135	-71	-109	-646	-813	-316	-461	-308	-234	-72	-31	-176
		355	284	146	95	76	48	61	33	55	77	86	207	364	272	143	150	821	970	459	645	397	318	139	95	262
4		41	68	39	51	79	53	29	22	25	18	32	44	67	34	24	61	55	19	22	14	20	38	27	25	38
		-45	-135	-42	-29	-27	-15	-4	-18	-22	-13	-49	-141	-85	-120	-203	-190	-71	-33	-52	-20	-27	-51	-30	-36	-61
		86	203	82	80	107	70	33	40	48	31	82	186	153	156	229	252	126	53	76	36	49	90	57	62	100
5		16	11	28	52	46	37	38	20	33	40	35	23	28	25	27	9	6	4	6	6	8	9	7	7	22
		-14	-8	-11	-5	-33	-8	-4	-6	-26	-55	-30	-20	-23	-31	-71	-33	-30	-27	-22	-27	-59	-42	-8	-6	-25
		31	19	40	58	80	46	42	26	60	96	65	44	52	57	99	43	37	32	29	35	68	52	17	14	48
6		10	8	8	10	11	8	8	11	11	12	12	18	24	19	17	17	16	12	13	13	10	10	11	14	13
		-7	-7	-12	-12	-17	-28	-13	-2	-4	-9	-15	-20	-40	-22	-29	-29	-24	-21	-25	-18	-10	-11	-6	-7	-16
		18	15	21	24	29	36	21	14	15	22	27	39	65	42	46	46	40	34	40	32	22	23	18	22	30
7		12	11	12	11	16	32	40	48	34	23	19	31	79	69	73	198	234	235	187	140	182	147	103	130	86
		-2	-2	-6	-11	-5	-26	-21	-25	-8	-6	-4	-13	-52	-138	-344	-249	-287	-220	-216	-414	-408	-318	-374	-203	-140
		15	14	19	24	22	59	62	74	44	30	24	45	132	209	418	448	522	456	404	556	591	466	478	334	227
8		86	189	100	52	122	143	128	154	169	189	82	183	170	166	270	248	103	107	99	40	51	107	139	159	136
		-317	-366	-103	-244	-299	-137	-117	-110	-273	-252	-680	-637	-517	-374	-394	-209	-147	-409	-303	-164	-201	-447	-326	-237	-303
		403	555	204	296	421	281	247	265	443	442	763	822	688	541	666	459	252	517	403	204	254	556	466	398	439
9		126	93	93	107	114	83	102	98	139	192	83	118	109	167	279	248	155	101	122	186	229	160	134	73	138
		-212	-343	-638	-397	-414	-332	-314	-262	-283	-542	-403	-107	-657	-747	-569	-585	-420	-181	-206	-1053	-452	-198	-299	-499	-421
		339	437	731	505	528	416	417	361	422	735	487	225	768	916	850	834	575	283	329	1240	682	360	434	572	560
10		90	156	88	85	91	100	119	82	66	95	81	86	97	92	135	88	117	139	143	170	204	115	49	56	106
		-498	-345	-218	-239	-266	-303	-375	-272	-276	-151	-577	-397	-439	-344	-701	-414	-379	-720	-671	-658	-468	-103	-96	-153	-378
		589	501	307	324	358	404	495	355	343	247	658	485	537	437	837	504	497	860	816	828	672	219	145	210	485
11		162	112	60	38	30	30	32	20	38	31	63	91	61	75	72	48	19	17	45	86	92	137	80	85	64
		-274	-432	-51	-25	-29	-30	-26	-29	-35	-31	-72	-799	-324	-97	-69	-57	-57	-36	-63	-343	-1065	-439	-158	-390	-205
		437	544	111	64	60	60	59	50	73	63	136	892	386	173	142	105	77	54	109	430	1158	577	239	476	270
12		103	91	158	172	122	259	189	115	1	172	142	105	114	107	199	197	254	303	213	158	163	131	162	100	155
		-429	-356	-343	-303	-429	-426	-482	-771	-820	-364	-223	-472	-765	-492	-649	-638	-384	-304	-360	-364	-613	-330	-201	-139	-444
		532	447	502	475	552	685	672	887	821	537	366	578	880	600	849	837	639	608	575	523	777	462	365	240	600
13		62	74	57	100	100	91	138	170	112	155	72	160	138	181	208	233	190	129	150	140	108	116	102	48	126
		-114	-139	-111	-264	-294	-174	-285	-354	-220	-366	-457	-647	-382	-501	-637	-339	-168	-155	-214	-269	-649	-501	-271	-87	-316
		177	213	168	366	396	266	424	525	333	522	530	809	521	683	846	574	359	285	364	409	759	618	374	135	444
14		39	28	23	84	59	76	70	116	125	70	40	135	109	213	150	177	201	316	208	56	29	61	47	49	103
		-39	-19	-17	-68	-152	-264	-208	-157	-392	-201	-27	-200	-643	-936	-860	-699	-386	-712	-499	-51	-41	-89	-51	-96	-284
		79	47	40	152	212	341	278	274	518	272	68	336	753	1150	1011	877	588	1029	709	109	71	150	99	146	388
15		67	67	51	49	51	48	87	94	86	52	69	118	53	139	206	287	141	119	157	78	221	140	150	56	108
		-95	-50	-59	-20	-11	-17	-41	-75	-5	-21	-63	-238	-415	-401	-494	-191	-69	-148	-228	-376	-427	-201	-350	-557	-190
		163	118	111	70	63	67	128	170	91	74	133	357	469	542	702	480	211	269	386	455	650	342	502	613	299

16	179	149	117	83	113	102	127	166	144	97	55	63	94	72	75	119	196	160	193	111	116	127	156	78	120
	-353	-353	-301	-152	-8	-59	-163	-323	-211	-63	-42	-57	-40	-105	-388	-356	-444	-354	-350	-129	-62	-293	-653	-384	-235
	533	502	419	236	122	162	291	490	356	160	98	121	135	178	464	476	642	515	543	240	180	422	811	463	356
17	124	253	132	94	208	118	165	132	122	126	146	156	112	55	63	138	140	133	138	111	134	133	87	82	129
	-270	-331	-265	-218	-197	-27	-99	-110	-158	-578	-686	-337	-174	-121	-252	-668	-610	-463	-240	-161	-442	-490	-274	-380	-315
	395	584	398	313	406	146	265	243	281	705	833	495	287	177	316	807	752	598	379	273	577	623	363	464	445
18	150	126	194	140	191	161	96	41	50	90	97	104	160	132	109	97	156	197	155	114	105	100	75	72	121
	-279	-133	-204	-94	-352	-320	-32	-17	-22	-111	-347	-305	-193	-71	-376	-372	-395	-555	-577	-96	-101	-158	-124	-146	-224
	430	259	399	235	544	482	129	59	73	202	445	410	354	204	487	470	551	753	734	212	206	258	199	219	346
19	92	84	73	103	85	78	79	76	71	34	59	64	70	39	74	104	83	89	75	53	121	165	109	81	82
	-269	-299	-150	-73	-129	-288	-217	-58	-35	-25	-67	-136	-132	-86	-351	-121	-58	-247	-340	-148	-237	-344	-246	-115	-174
	361	385	224	177	214	366	297	135	107	60	127	202	204	126	427	226	142	337	417	203	359	510	356	197	257
20	67	124	164	135	105	98	91	109	137	207	140	133	186	132	64	94	162	73	148	96	93	92	110	80	118
	-90	-161	-158	-226	-84	-54	-140	-53	-294	-330	-344	-331	-619	-264	-338	-507	-354	-146	-445	-469	-310	-87	-309	-163	-261
	158	286	324	362	191	152	233	163	432	538	484	465	807	398	403	602	517	220	594	566	404	180	420	244	381
21	82	73	90	72	62	37	35	23	16	14	24	32	26	42	49	25	54	54	47	28	24	23	51	64	44
	-107	-123	-72	-36	-10	-14	-7	-11	-8	-22	-49	-67	-64	-107	-71	-84	-101	-261	-327	-112	-50	-38	-33	-104	-78
	190	197	163	109	74	51	43	34	24	37	74	100	91	149	122	110	156	316	376	142	75	61	84	169	123
22	59	74	85	64	73	61	106	106	79	42	34	24	33	21	25	18	25	10	8	29	15	14	14	25	43
	-144	-33	-19	-34	3	-32	-83	-31	-33	-57	-26	-11	-16	-36	-35	-26	-24	-27	-24	-55	-66	-30	-37	-23	-37
	204	108	104	99	69	95	191	139	112	100	62	36	50	57	61	44	50	38	33	85	82	45	52	49	82
23	21	11	8	8	10	10	14	20	23	19	24	20	18	10	6	6	8	10	11	11	10	10	10	15	13
	-7	-6	-9	-4	-3	-7	-24	-55	-13	-3	-5	-8	-10	-8	-13	-16	-14	-12	-15	-13	-10	-8	-6	-4	-11
	29	19	18	13	14	18	39	76	37	24	30	29	28	19	19	23	23	23	27	25	21	19	18	21	26
24	13	17	20	16	39	61	57	49	89	96	44	43	30	57	43	72	44	40	104	175	62	34	23	28	52
	-9	-9	-23	-153	-81	-33	-32	-87	-433	-136	-8	-4	-42	-147	-234	-272	-110	-74	-370	-361	-67	-40	-25	-46	-117
	24	28	44	171	122	95	90	137	523	232	53	48	74	205	278	346	155	114	475	536	129	75	49	75	170
25	39	66	42	56	71	109	72	158	101	161	147	135	108	97	67	48	36	54	50	123	94	84	127	209	94
	-95	-285	-101	-89	-172	-268	-133	-157	-136	-123	-208	-165	-323	-310	-155	-117	-153	-216	-189	-175	-270	-346	-306	-568	-211
	134	352	143	146	244	379	206	315	237	285	356	302	432	408	223	166	190	271	240	299	364	431	434	777	306
26	205	159	107	86	53	93	125	191	88	58	47	38	73	83	80	43	49	158	149	83	111	79	44	20	93
	-356	-270	-449	-373	-245	-222	-471	-515	-88	-41	-70	-110	-239	-347	-191	-176	-241	-334	-370	-131	-222	-106	-29	-26	-234
	562	430	557	459	299	317	596	707	177	100	118	149	312	431	272	221	290	493	520	214	334	186	74	46	328
27	13	7	13	19	18	39	48	40	63	68	87	43	71	97	90	99	68	30	30	17	13	10	13	15	42
	-8	-10	-14	-10	-6	-48	-116	-134	-154	-233	-293	-175	-183	-360	-189	-244	-118	-36	-26	-30	-55	-32	-13	-11	-104
	22	18	28	31	25	87	165	175	218	301	380	219	255	458	280	344	187	67	57	48	69	43	28	27	147
28	13	10	7	10	10	14	15	21	17	16	18	18	27	45	38	71	177	246	256	104	115	138	97	85	65
	-25	-23	-25	-27	-27	-19	-16	-42	-34	-40	-5	0	-2	-61	-344	-263	-185	-265	-486	-559	-301	-146	-74	-126	-129
	39	34	34	37	38	33	31	64	52	57	24	19	30	107	383	336	364	512	744	664	418	285	172	212	195
29	129	107	113	155	150	110	84	55	50	118	126	120	92	77	66	41	52	40	62	100	117	114	143	96	96
	-119	-156	-72	-71	-65	-48	1	-7	-25	-118	-561	-487	-354	-98	-113	-135	-189	-93	-150	-191	-144	-277	-356	-114	-164
	249	264	185	227	216	159	82	63	75	236	687	608	447	176	180	178	242	134	213	291	262	392	500	211	262
30	161	183	179	105	101	55	69	99	134	112	86	91	92	76	76	45	63	89	92	129	183	128	171	105	109
	-264	-255	-79	-60	-41	-9	-30	-146	-270	-99	-42	-149	-296	-499	-201	-57	-259	-426	-754	-490	-177	-150	-104	-61	-205
	426	439	259	167	143	65	100	246	405	212	128	241	389	576	278	103	324	516	848	620	360	279	276	166	315

HOURLY VALUES (nT) OF AU, AL AND AE INDICES DECEMBER 1983

DAY\UT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	MEAN
1	AU	79	130	154	121	97	82	105	88	67	64	84	61	44	46	49	32	48	33	44	35	57	44	51	52	69
	AL	-126	-178	-139	-82	-89	-44	-98	-71	-19	-61	-158	-179	-134	-24	-31	-42	-194	-87	-49	-59	-201	-325	-70	-55	-105
	AE	206	309	293	205	187	126	204	160	86	126	243	240	179	72	81	75	243	121	94	95	258	370	122	108	175
2		36	36	33	54	68	85	102	54	80	53	35	39	46	53	89	113	77	71	31	26	18	29	12	23	53
		-38	-37	-59	-119	-168	-114	-15	-15	-26	-40	-21	-55	-119	-195	-300	-314	-170	-34	-45	-84	-55	-28	-19	-44	-88
		74	75	93	174	236	199	117	70	108	94	57	95	165	249	390	428	248	106	76	111	74	58	32	68	142
3		33	34	32	46	58	54	27	22	24	22	25	40	33	80	126	67	21	28	28	18	18	15	13	18	37
		-79	-19	-12	-12	-10	-10	-6	-12	-20	-18	-20	-29	-54	-206	-174	-43	-26	-52	-77	-35	-20	-25	-32	-11	-42
		113	54	46	59	69	65	34	36	45	41	45	70	88	287	302	111	49	81	106	54	38	40	45	30	80
4		11	9	15	24	23	42	48	35	31	16	22	17	21	14	23	20	47	48	57	26	20	23	20	17	26
		-12	-13	-15	-15	-23	-37	-39	-13	-16	-18	-17	-15	-17	-29	-81	-235	-402	-117	-5	-3	-6	-7	-6	-7	-48
		24	23	30	40	47	79	87	49	48	35	40	32	39	44	106	257	451	166	63	30	27	31	27	24	75
5		18	25	33	59	69	91	103	164	159	83	115	109	58	52	47	115	119	124	118	105	158	152	177	97	98
		-8	-28	-127	-260	-108	-149	-193	-252	-200	-195	-194	-305	-179	-199	-297	-383	-312	-255	-260	-165	-408	-286	-342	-101	-217
		28	55	160	320	178	241	297	418	360	279	310	415	238	252	344	499	433	381	380	272	567	438	519	200	316
6		81	77	54	81	179	235	200	163	138	206	146	142	158	177	275	153	82	56	107	108	143	75	55	106	133
		-99	-336	-358	-193	-301	-474	-286	-239	-293	-470	-855	-643	-328	-703	-693	-305	-122	-231	-520	-563	-441	-230	-142	-149	-374
		181	415	413	275	481	709	487	403	433	677	1002	786	487	880	969	460	205	288	627	672	585	306	197	256	508
7		104	91	64	148	109	46	47	126	109	105	128	103	159	126	117	129	172	159	186	150	131	87	58	73	114
		-163	-177	-114	-316	-114	-6	-18	-86	-427	-642	-513	-370	-379	-383	-456	-639	-572	-551	-631	-179	-120	-284	-412	-163	-322
		268	268	179	464	225	54	66	214	536	748	642	474	539	509	574	769	746	712	819	331	253	372	471	237	436
8		76	106	78	71	95	78	46	46	56	58	60	37	75	68	99	51	26	10	12	13	47	69	45	37	57
		-169	-308	-86	-146	-207	-90	-45	-78	-246	-96	-99	-148	-339	-363	-176	-35	-43	-34	-41	-50	-364	-262	-110	-14	-148
		246	415	164	218	304	170	93	125	303	154	161	186	416	432	277	87	70	45	54	64	411	331	156	53	206
9		38	26	38	34	39	33	29	24	25	22	26	23	19	14	10	8	7	9	10	14	14	10	6	4	20
		-23	-5	-5	-8	-1	-3	-2	-2	-5	-5	-4	-7	-9	-11	-12	-15	-16	-18	-15	-11	-8	-8	-7	-6	-9
		62	32	44	43	40	36	32	27	30	29	32	31	30	26	24	24	24	27	26	25	22	18	14	10	30
10		7	10	11	23	33	30	54	59	131	182	164	148	103	191	381	347	334	288	189	100	113	67	27	24	126
		-6	-6	-5	-6	-3	-18	-122	-169	-443	-347	-247	-293	-454	-536	-533	-581	-528	-319	-398	-179	-249	-110	-41	-36	-235
		13	16	17	30	36	49	176	229	576	530	412	443	558	727	915	929	863	609	588	281	363	178	70	61	361
11		48	48	81	57	52	68	96	92	114	109	112	131	91	185	114	222	111	74	43	41	59	105	146	160	98
		-81	-87	-216	-186	-96	-78	-80	-111	-284	-270	-149	-194	-183	-398	-1125	-416	-127	-147	-94	-162	-461	-568	-420	-137	-253
		130	137	298	243	148	147	177	204	399	379	262	326	275	584	1241	639	239	222	139	204	521	674	567	298	352
12		102	125	165	120	126	120	120	79	110	118	131	52	98	89	207	223	163	227	90	87	103	103	105	129	125
		-154	-266	-149	-112	-198	-102	-11	8	-47	-132	-184	-361	-115	-219	-614	-428	-266	-155	-236	-221	-375	-331	-320	-162	-215
		258	392	315	234	324	223	131	71	158	251	316	414	214	308	821	653	430	384	328	309	478	435	425	292	340
13		147	102	151	133	100	138	112	88	85	101	127	153	110	102	92	144	88	94	95	100	147	97	127	128	115
		-99	-127	-136	-233	-188	-65	-57	-40	-43	-194	-312	-154	-244	-365	-206	-267	-170	-157	-427	-803	-426	-105	-360	-456	-235
		247	230	289	367	288	203	169	129	130	295	440	307	356	468	299	412	259	252	523	903	575	204	489	585	351
14		131	109	96	109	137	173	268	160	101	62	77	165	92	96	201	163	118	123	185	140	168	211	131	102	138
		-107	-74	-127	-57	-120	-104	-352	-135	-144	-73	-90	-390	-205	-123	-413	-462	-287	-325	-353	-482	-561	-399	-411	-257	-252
		239	183	223	167	258	278	620	296	246	136	169	557	297	219	615	626	406	449	539	623	730	610	543	360	391
15		112	150	153	149	99	96	136	107	156	123	88	45	58	68	73	39	46	35	41	53	19	31	73	77	84
		-352	-279	-177	-60	-33	-105	-63	-215	-332	-275	-265	-134	-80	-263	-131	-134	-298	-185	-88	-16	-27	-113	-451	-340	-184
		466	430	331	210	132	202	200	323	489	399	354	180	139	332	206	174	345	220	130	70	47	145	524	419	269

16	108	124	216	96	49	39	41	29	25	26	51	61	37	34	13	14	13	12	3	10	9	10	10	17	11
	-169	-214	-90	-22	-8	-38	-28	-37	-15	-31	-76	-106	-73	-14	-14	-35	-28	-72	-85	-65	-78	-20	-32	-72	-59
	278	338	307	119	58	78	70	67	41	58	128	168	110	50	28	51	42	84	89	75	88	31	43	90	104
17	28	33	34	29	17	14	16	14	12	16	28	29	23	45	59	39	23	28	36	15	26	25	20	24	26
	-205	-60	-72	-83	-14	-15	-19	-15	-8	-9	-35	-42	-72	-143	-262	-37	-21	-146	-142	-37	-35	-45	-43	-23	-66
	234	93	106	113	32	30	35	29	21	26	64	71	96	189	323	77	45	175	179	52	61	71	64	47	93
18	22	18	17	17	16	17	18	20	21	22	27	25	29	35	32	47	117	155	179	124	171	123	85	84	59
	-60	-39	-23	-14	-3	-3	-2	-1	-2	-3	-6	-7	-12	-9	-23	-212	-391	-424	-307	-252	-108	-46	-15	-59	-84
	82	58	40	32	20	21	20	22	24	25	33	34	43	45	56	260	510	580	488	377	281	169	100	143	144
19	132	103	62	64	62	109	111	113	115	83	78	43	25	46	42	55	51	44	78	34	35	59	102	93	72
	-159	5	-28	-44	-51	-108	-16	-63	3	-15	-52	-29	-17	-65	-44	-87	-73	-53	-189	-55	-25	-31	-129	-106	-60
	292	98	90	109	113	218	129	177	111	98	132	73	43	113	87	144	126	98	268	89	60	91	232	199	133
20	77	76	88	73	39	19	20	18	21	22	17	15	20	16	12	18	19	9	12	14	15	26	14	18	28
	-72	-54	-100	-28	-3	-2	-3	-6	-7	-12	-8	-8	-10	-8	-10	-14	-18	-21	-18	-21	-46	-113	-32	-10	-26
	150	131	189	102	43	22	24	25	29	35	25	24	31	26	24	34	39	31	31	36	61	139	46	29	55
21	16	16	27	24	21	17	17	15	21	25	30	34	44	36	27	22	12	22	26	22	27	41	103	109	31
	-5	-6	-45	-48	-15	-5	-2	-5	-4	-5	-10	-31	-34	-30	-20	-34	-69	-147	-75	-31	-31	-55	-63	-31	-33
	21	23	73	73	37	22	20	20	26	31	41	66	78	67	48	57	82	170	102	54	59	96	167	141	66
22	107	80	106	54	64	37	42	58	40	129	186	142	82	45	46	108	78	168	181	66	44	43	33	39	82
	-12	-9	-13	-9	-9	-13	-63	-230	-185	-362	-478	-193	-158	-215	-240	-415	-282	-362	-258	-68	-39	-122	-92	-37	-161
	120	89	119	64	74	50	105	289	227	492	665	336	241	262	287	524	361	531	441	135	84	167	125	77	244
23	69	57	59	48	67	73	106	105	61	45	43	50	36	41	47	44	30	33	25	60	100	144	84	37	61
	-102	-110	-184	-150	-108	-221	-256	-117	-163	-155	-30	-49	-151	-231	-387	-309	-143	-101	-52	-165	-308	-162	-81	-56	-158
	172	168	244	199	175	295	363	223	225	200	73	100	188	273	436	355	175	135	78	227	409	306	165	93	220
24	23	24	24	22	24	23	24	30	29	24	32	28	32	62	238	270	100	157	136	126	102	135	78	70	76
	-42	-28	-3	-4	-2	-2	-4	-4	-17	-7	-5	-19	-113	-654	-715	-341	-156	-500	-410	-198	-253	-421	-346	-141	-183
	67	53	28	27	26	25	29	34	47	32	38	48	146	717	954	612	257	658	548	326	356	557	424	212	259
25	88	65	76	102	78	53	47	62	84	70	48	76	49	24	48	43	36	39	63	63	33	39	37	24	56
	-176	-437	-132	-91	-105	-76	-103	-141	-147	-124	-93	-400	-216	-336	-473	-180	-100	-93	-184	-264	-87	-72	-118	-105	-177
	265	503	209	193	184	130	151	205	233	195	142	477	266	360	522	224	137	133	248	328	120	111	156	130	234
26	27	24	41	46	61	41	69	68	77	56	53	57	62	78	50	32	26	67	55	52	147	179	145	137	69
	-72	-42	-75	-307	-195	3	-23	-63	-106	-82	-29	-66	-45	-43	-97	-130	-125	-256	-556	-492	-469	-578	-282	-238	-182
	99	67	117	354	256	38	93	132	184	139	82	124	108	122	148	163	153	325	611	545	617	759	428	377	252
27	213	147	101	88	73	63	107	57	64	62	46	38	40	63	83	63	83	96	195	160	140	123	183	133	101
	-291	-43	-49	-133	-63	-26	-24	-40	-27	-35	-48	-40	-33	-130	-99	-102	-123	-308	-325	-317	-440	-291	-107	-79	-132
	505	191	151	223	137	90	131	97	92	98	96	78	74	195	183	167	207	405	521	478	581	415	291	212	234
28	108	182	130	142	100	86	64	75	82	116	74	85	83	115	102	72	58	30	26	31	38	40	46	44	80
	-99	-88	-49	-48	-17	0	-30	-63	-143	-194	-150	-105	-191	-340	-245	-57	-15	-38	-45	-181	-101	-89	-126	-44	-102
	208	271	179	191	117	86	95	140	226	311	225	191	275	456	349	131	74	68	72	212	140	129	173	89	184
29	52	69	63	64	49	41	76	117	141	81	55	60	40	65	81	50	46	35	26	29	31	33	44	65	59
	-59	-269	-69	-3	-40	-49	-296	-264	-195	-122	-120	-140	-139	-324	-262	-171	-67	-38	-78	-112	-76	-42	-40	-36	-126
	112	339	132	68	90	90	372	382	337	205	177	201	180	390	344	223	114	74	105	142	108	76	85	102	185
30	69	72	56	94	127	112	127	180	232	179	279	138	177	289	142	109	215	172	148	152	225	70	52	93	146
	-44	-76	-20	-21	-142	-35	-72	-432	-181	-322	-592	-677	-813	-670	-275	-269	-714	-782	-871	-627	-343	-31	-59	-282	-348
	113	149	77	117	270	148	200	612	415	503	872	815	990	960	418	379	930	955	1021	780	570	102	111	376	495
31	96	62	67	99	161	170	134	141	190	183	129	190	178	142	140	119	145	121	155	126	153	121	153	129	138
	-199	-89	-70	-179	-284	-166	-215	-181	-220	-179	-228	-462	-369	-227	-153	-286	-813	-453	-327	-426	-560	-299	-165	-348	-287
	296	153	138	279	445	337	350	323	412	363	357	652	548	370	293	406	959	576	484	553	714	422	318	479	426

MONTHLY AND YEARLY **AE** 1957 - 1983

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1957							159.	145.	311.	156.	168.	217.	96.3
1958	193.	255.	302.	263.	231.	273.	270.	201.	186.	175.	132.	183.	221.9
1959	184.	256.	205.	193.	208.	206.	274.	225.	270.	217.	246.	236.	226.8
1960	171.	162.	183.	317.	207.	235.	225.	211.	212.	324.	277.	255.	231.6
1961	156.	168.	141.	166.	154.	163.	252.	145.	149.	143.	129.	149.	159.7
1962	90.	95.	100.	160.	110.	131.	140.	172.	198.	221.	152.	155.	143.6
1963	132.	95.	94.	109.	124.	142.	137.	156.	229.	153.	130.	115.	134.6
1964	116.	122.	133.	149.	124.	95.	99.	88.	137.	142.	97.	71.	114.4
1965	83.	121.	113.	93.	94.	178.	132.	130.	143.	89.	87.	101.	113.6
1966	108.	130.	152.	145.	162.	146.	180.	176.	223.	152.	148.	157.	156.4
1967	135.	139.	121.	168.	278.	205.	177.	172.	204.	123.	161.	196.	173.3
1968	187.	227.	256.	231.	268.	302.	213.	203.	206.	184.	198.	163.	219.9
1969	132.	169.	227.	255.	268.	225.	172.	175.	198.	161.	152.	110.	187.1
1970	118.	104.	210.	233.	199.	243.	276.	222.	203.	194.	192.	135.	194.1
1971	188.	177.	194.	245.	241.	230.	189.	195.	213.	189.	155.	153.	197.4
1972	192.	156.	203.	203.	193.	238.	177.	259.	196.	202.	180.	133.	194.3
1973	221.	252.	315.	337.	241.	273.	232.	223.	225.	261.	192.	183.	247.1
1974	201.	226.	324.	309.	297.	278.	322.	307.	306.	326.	248.	245.	282.3
1975	198.	246.	283.	227.	238.	542.	240.	220.	188.	197.	244.	180.	250.3
1976													
1977													
1978	191.	237.	243.	284.	310.	307.	213.	239.	245.	192.	214.	176.	237.6
1979	212.	195.	247.	297.	252.	254.	223.	254.	216.	188.	152.	157.	220.6
1980	149.	164.	122.	181.	183.	261.	203.	180.	165.	195.	198.	150.	179.3
1981	147.	195.	238.	324.	319.	218.	279.	279.	206.	252.	217.	158.	236.0
1982	178.	386.	220.	304.	290.	367.	372.	318.	346.	275.	254.	277.	298.9
1983	218.	320.	317.	381.	291.	283.	261.	264.	229.	263.	282.	237.	278.8

Unit : nT

SECTION 4

CLASSIFICATION OF DAYS

CLASSIFICATION OF DAYS 1983

JANUARY

Five international quietest days (from Kp)		: 2 5 6 7 22
24-hours quiet intervals (from aa)	C - very quiet	: 6 7 22
	K - quiet	: 5
48-hours quiet intervals (from aa)	C - very quiet	: 6 7
	K - quiet	: 5

FEBRUARY

Five international quietest days (from Kp)		: 2 3 25 26 27
24-hours quiet intervals (from aa)	C - very quiet	: 25 26
	K - quiet	: 2
48-hours quiet intervals (from aa)	C - very quiet	: 26
	K - quiet	: 27

MARCH

Five international quietest days (from Kp)		: 7 8 9 10 27
24-hours quiet intervals (from aa)	C - very quiet	: 8 9 27
	K - quiet	: NONE
48-hours quiet intervals (from aa)	C - very quiet	: 8 9
	K - quiet	: 7

APRIL

Five international quietest days (from Kp)		: 11 12 18 19 28
24-hours quiet intervals (from aa)	C - very quiet	: 11
	K - quiet	: NONE
48-hours quiet intervals (from aa)	C - very quiet	: NONE
	K - quiet	: NONE

MAY

Five international quietest days (from Kp)		: 9 10 19 28 29
24-hours quiet intervals (from aa)	C - very quiet	: 9 19 28
	K - quiet	: 10 29
48-hours quiet intervals (from aa)	C - very quiet	: 19 29
	K - quiet	: 9 28

JUNE

Five international quietest days (from Kp)		: 3 4 5 24 25
24-hours quiet intervals (from aa)	C - very quiet	: 3 4 7 24 25 30
	K - quiet	: NONE
48-hours quiet intervals (from aa)	C - very quiet	: 4 25
	K - quiet	: 3 5 24

JULY

Five international quietest days (from Kp)		: 1 5 10 11 15
24-hours quiet intervals (from aa)	C - very quiet	: 1 5 10 11 14 15 26
	K - quiet	: 2
48-hours quiet intervals (from aa)	C - very quiet	: 1 4 11
	K - quiet	: 2 10 14

AUGUST

Five international quietest days (from Kp)		: 5 10 16 18 27
24-hours quiet intervals (from aa)	C - very quiet	: 1 4 5 6 10 11 16 17 18 27
	K - quiet	: NONE
48-hours quiet intervals (from aa)	C - very quiet	: 5 6 10 17 18
	K - quiet	: 16

SEPTEMBER

Five international quietest days (from Kp)		: 4 5 6 23 30
24-hours quiet intervals (from aa)	C - very quiet	: 2 3 4 5 6 23 29 30
	K - quiet	: NONE
48-hours quiet intervals (from aa)	C - very quiet	: 3 4 5 6 23 30
	K - quiet	: 29

OCTOBER

Five international quietest days (from Kp)		: 9 11 12 26 27
24-hours quiet intervals (from aa)	C - very quiet	: 9 12 25 26 27
	K - quiet	: 11 20
48-hours quiet intervals (from aa)	C - very quiet	: 26 27
	K - quiet	: NONE

NOVEMBER

Five international quietest days (from Kp)		: 4 5 6 22 23
24-hours quiet intervals (from aa)	C - very quiet	: 4 5 6 22 23
	K - quiet	: NONE
48-hours quiet intervals (from aa)	C - very quiet	: 5 6
	K - quiet	: 22 23

DECEMBER

Five international quietest days (from Kp)		: 3 4 9 20 21
24-hours quiet intervals (from aa)	C - very quiet	: 3 4 9 16 17 20 21
	K - quiet	: NONE
48-hours quiet intervals (from aa)	C - very quiet	: 3 17 20
	K - quiet	: 16 21

CLASSIFICATION OF DAYS 1983 (continued)

Month	Quietest Days 1-5					Quietest Days 6-10					Most Disturbed Days 1-5				
Jan	6	7	5K	2A	22A	13A	14A	8A	23A	28A	10	18	17	16	15
Feb	26	2K	25	27A	3A	28A	19A	1A	18A	24A	5	6	7	20	4
Mar	27	8	10A	9A	7A	22A	23A	24A	17A	6A	2	12	25	3	29
Apr	11A	19A	18A	12A	28A	21A	20A	27A	22A	3A	24	15	14	29	6
May	28	19	29K	9K	10A	7A	26A	20A	30A	16A	24	17	12	22	11
Jun	4	25K	24	7	3	5	30A	2A	27A	16A	13	18	10	21	19
Jul	11	10	15	5	1	14	21	31A	20A	26A	24	17	23	16	18
Aug	18	5	16	10	27	1	4	6	11	17	8	25	2	23	31
Sep	30	4	5	23	6	3	14	2	13A	29A	19	25	26	16	17
Oct	27	26	12	9	11	20	25	10A	19A	5A	18	17	4	13	29
Nov	23	6	5	22	4A	27A	21A	7A	24A	28A	12	9	11	17	2
Dec	9	21	3	4	20K	16K	17	18A	2A	29A	30	11	6	31	7

These days are arranged according to their degree of quietness or disturbance, respectively.

Gives consecutive sequences of three-hour-intervals (Eighths E of the Greenwich day) in which at least one Kp reached or surpassed 7+, and no Kp was smaller than 5-.

Beginning	s.c. d. GMT	Duration Eighths	Number of Eighths with Kp= 7- 7o 7+	8- 8o 8+	9- 9o
Jan 10 E1	09 15.45	4	. 1 1	. . 1	. .
Feb 04 E6	04 16.14	17	1 1 4	2 1 .	. .
Mar 12 E6	—	4	. . 1	. . .	. .
May 17 E5	17 11.51	4	. . 2	. . .	. .
May 24 E5	24 12.39	5	1 . .	1 1 .	. .
Jun 13 E1	13 01.17	5	. 1 .	1 . .	. .
Aug 07 E8	07 08.26	4	. . 1	1 . .	. .

SECTION 5

RAPID VARIATIONS

For technical reasons, the 1983 rapid variations data were not available at the date of publication of the present Bulletin (see page 20). As example of the presentation of these data, we give hereafter the beginning of the 1981 list.

LIST OF SSC 1981 :

Sudden commencements followed by a storm or period of storminess as selected from reports of the following 47 Observatories identified by their IAGA three letter code (see list pp. 23-32 above).

SOD, DOB, NUR, MOS, ESK, HLP, WNG, WIT, IRK, NGK, VAL, BEL, HAD, KIV, DOU, BDV, VIC, FUR, CLF, HRB, OTT, SUR, MMB, AQU, TFS, EBR, COI, TOL, FRD, PEN, ALM, KAK, HAY, KNY, TEN, LNP, BNG, LUA, PMG, HUA, MPO, GNA, ACS, TWA, CZT, KGL, DUM, and the records from HON.

Copies of the magnetograms sent by five low-latitude observatories (MBO, FUQ, HON, PMG, ABG) or their supplementary observatories (TEN, SJG, KNY, HYB) have been used for qualifying the ssc's and for measuring their duration and amplitude.

JANUARY

17/01 - 06:02 (01-04)	11122	5.9	12	2A	2B		2si
29/01 - 06:56 (51-60)	23232	4.7	21	17A	7B	7C	3si

etc...

For technical reasons, the 1983 rapid variations data were not available at the date of publication of the present Bulletin (see page 20). As example of the presentation of these data, we give hereafter the beginning of the 1981 list.

LIST OF SFE 1981 :

Times of commencements of solar-fare effects (sfe) are checked by the following 58 observatories, identified by their IAGA three letter code (list pp. 23-32 above) :

ABK SOD COL DOB YAK NUR LOV SIT SVD KNS MNK WNG NGK VAL GTT KIV DOU KGD BDV VIC NEW HRB UBA ODE NKK MMB VLA AAA AQU TKT ISK EBR COI SPT FRD PEN ASH KAK HTY TUC LNP HON SJG HYB MBO MUT GUA HUA PPT MPO GNA HER ACS TOO TWA EYR MCQ MAW

JANUARY

26/01 - 12:34
A: WNG3 ODE3 NKK2 AQU2 EBR2 MBO2
B: NUR2 (SVD1) NGK3 VAL2 GTT2 BDV3 ISK0 SPT1 ASH2 [MUT 1]
C: SOD- [SIT1] KNS1 KIV- (KGD1) [NEW1] [MMB0] [VLA-] (AAA1) COI1 [KAK0] [HTY0] SJG2 MPO2 ACS0 MAW1
D: LOV FRD HER TWA
E: [COL] (DOB) DOU PEN [LNP] (MCQ)
Y: MNK
N: HUA

etc...

Reproduction photomécanique
IMPRIMERIE LOUIS-JEAN
BP 87 — 05002 GAP
Tél. : 92.51.35.23
Dépôt légal : 457 — Juin 1989
Imprimé en France

TRANSACTIONS OF IAGA MEETINGS

Bulletin

No. 3 Transactions of the Rome Meeting, 1922
No. 5 Transactions of the Madrid Meeting, 1924
No. 8 Comptes rendus de l'Assemblée de Stockholm, 1930
No. 13 Transactions of the Oslo Meeting, 1948
No. 14 Transactions of the Brussels Meeting, 1951
No. 15a Le Noyau Terrestre, Rome, 1954
No. 15b Problèmes de la Physique de la haute atmosphère, 1954
No. 16 Transactions of the Toronto Meeting, 1957
No. 16a Paléomagnétisme et Variation Séculaire, Toronto, 1957
No. 16b Aéronomie, Toronto, 1957
No. 16c Rapid Magnetic Variations, Utrecht, 1959
No. 19 Transactions of the Helsinki and Berkeley Meetings 1960/1963
No. 21 Atlas of Indices K (Vol. 1 : Text ; Vol. 2 : Figures)
No. 24 Programme and Abstracts of the St Gall Meeting, 1957
No. 25 Transactions of the St Gall Meeting, 1967
No. 26 Programme and abstracts of the General Scientific Assembly, Madrid, 1969
No. 27 Transactions of the General Scientific Assembly, Madrid, 1969
No. 28 The World Magnetic Survey, 1957-1969
No. 29 Grid values for the IGRF 1965
No. 31 Transactions of the XV General Assembly, Moscow, 1971
No. 34 Programme and abstracts for the Second General Scientific Assembly, Kyoto, 1973
No. 35 Transactions of the Second General Scientific Assembly, Kyoto, 1973
No. 36 Programme and Abstracts of the XVI General Assembly, Grenoble, 1975
No. 37 Transactions of the XVI General Assembly, Grenoble, 1975
No. 38 Grid values and charts of the IGRF 1975
No. 41 Transactions of the III General Scientific Assembly, Seattle, 1977
No. 44 Transactions of the XVII General Assembly, Canberra, 1979
No. 45 Program and abstracts of the IV General Scientific Assembly, Edimbourg, 1981
No. 46 Transactions of the IV General Scientific Assembly, Edimbourg, 1981
No. 48a Program and abstracts of the XVIII General Assembly, Hambourg, 1983
No. 48b Program and abstracts of the IAGA/IAMAT Joint symposium on middle atmospheric sciences Hambourg, 1983
No. 49 Transactions of the XVIII General Assembly, Hambourg, (1983-1985)
No. 50 Program and abstracts of the V Scientific Assembly, Prague, 1985
No. 51 Transactions of the V Scientific Assembly, Prague, 1985

PROCEEDINGS OF IAGA SYMPOSIA

IAGA Symposium No. 2, Communications présentées à la Réunion de Berkeley, 1963
IAGA Symposium No. 3, Symposium on Magnetism of the Earth's Interior, Pittsburgh, 1964
IAGA Symposium No. 4, Communications présentées à la Réunion de Cambridge (Mass.),1965
IAGA Symposium No. 5, Communications présentées à la Réunion de Sao José dos Campos (Brésil),
IAGA Symposium No. 6, Symposium on Aurora and Magnetic Storms, Birkeland, 1967
IAGA Symposium No. 7, Symposium on Upper Atmospheric Winds, Waves and Ionospheric Drifts, St Gall, 1967
IAGA Symposium No. 8, Symposium on Laboratory Measurements of Aeronomic Interest, Toronto, 1963
IAGA Symposium No. 9, Symposium on Multidisciplinary Studies of Unusual Regions of the Upper Mantle, Madrid, 1969

INTERNATIONAL ASSOCIATION OF GEOMAGNETISM AND AERONOMY

The following IAGA Publications are on sale at the IUGG Publications Office,
140, rue de Grenelle, 75005 Paris France

GEOMAGNETIC INDICES AND GEOMAGNETIC DATA

No. 12	Geomagnetic Indices, K and C, 1940-1946
No. 12a	Geomagnetic Indices, K and C, 1947
No. 12b	Geomagnetic Indices, K and C, 1948
No. 12c	Geomagnetic Indices, K and C, 1949
No. 12d	Geomagnetic K-Indices, International Polar Year, August 1932 to 1933
No. 12e	Geomagnetic Indices, K and C, 1950
No. 12f	Geomagnetic Indices, K and C, 1951
No. 12g	Geomagnetic Indices, K and C, 1952
No. 12h	Geomagnetic Indices, K and C, 1953
No. 12i	Geomagnetic Indices, K and C, 1954
No. 12j	Geomagnetic Indices, K and C, 1955
No. 12k	Geomagnetic Indices, K and C, 1956
No. 12l	Geomagnetic Data, 1957, Indices K and C, Rapid Variations
No. 12m1	Geomagnetic Data, 1958, Indices K and C
No. 12m2	Geomagnetic Data, 1958, Rapid Variations
No. 12n1	Geomagnetic Data, 1959, Indices K and C
No. 12n2	Geomagnetic Data, 1959, Rapid Variations
No. 12o1	Geomagnetic Data, 1960, Indices K and C
No. 12o2	Geomagnetic Data, 1960, Rapid Variations
No. 12p1	Geomagnetic Data, 1961, Indices K and C
No. 12p2	Geomagnetic Data, 1961, Rapid Variations
No. 12q1	Geomagnetic Data, 1962, Indices K and C
No. 12q2	Geomagnetic Data, 1962, Rapid Variations
No. 12r1	Geomagnetic Data, 1963, Indices K and C
No. 12r2	Geomagnetic Data, 1963, Rapid Variations
No. 12s1	Geomagnetic Data, 1964, Indices K and C
No. 12s2	Geomagnetic Data, 1964, Rapid Variations
No. 12t1	Geomagnetic Data, 1965, Indices K and C
No. 12t2	Geomagnetic Data, 1965, Rapid Variations
No. 12u1	Geomagnetic Data, 1966, Indices K and C
No. 12u2	Geomagnetic Data, 1966, Rapid Variations
No. 12v1	Geomagnetic Data, 1967, Indices K and C
No. 12v2	Geomagnetic Data, 1967, Rapid Variations
No. 12w1	Geomagnetic Data, 1968, Indices K and C
No. 12w2	Geomagnetic Data, 1968, Rapid Variations
No. 12x1	Geomagnetic Data, 1969, Indices K and C
No. 12x2	Geomagnetic Data, 1969, Rapid Variations
No. 18	Geomagnetic Planetary Indices Kp, Ap and Cp, 1932 to 1961
No. 20	List of Geomagnetic Observatories
No. 21	Atlas of K Indices (Vol. 1 : Text ; Vol. 2 : Figures)
No. 32a	Geomagnetic Data, 1970, Indices, Rapid Variations, Magnetic Storms
No. 32b	Geomagnetic Data, 1971, Indices, Rapid Variations, Special Intervals
No. 32c	Geomagnetic Data, 1972, Indices, Rapid Variations, Special Intervals
No. 32d	Geomagnetic Data, 1973, Indices, Rapid Variations, Special Intervals
No. 32e	Geomagnetic Data, 1974, Indices, Rapid Variations, Special Intervals
No. 32f	Geomagnetic Data, 1975, Indices, Rapid Variations, Special Intervals
No. 32g	Geomagnetic Data, 1976, Indices, Rapid Variations, Special Intervals
No. 32h	Geomagnetic Data, 1977, Indices, Rapid Variations, Special Intervals
No. 32i	Geomagnetic Data, 1978, Indices, Rapid Variations, Special Intervals
No. 32j	Geomagnetic Data, 1979, Indices, Rapid Variations, Special Intervals
No. 32k	Geomagnetic Data, 1980, Indices, Rapid Variations, Special Intervals
No. 32l	Geomagnetic Data, 1981, IAGA indices : aa, Am, Kp, Dst, AE, Rapid Variations
No. 32m	Geomagnetic Data, 1982, IAGA indices : aa, Am, Kp, Dst, AE
No. 32n	Geomagnetic Data, 1983, IAGA indices : aa, Am, Kp, Dst, AE
No. 33	A hundred year series of Geomagnetic Data 1868-1967
No. 39	Supplementary Geomagnetic Data, 1957-1975