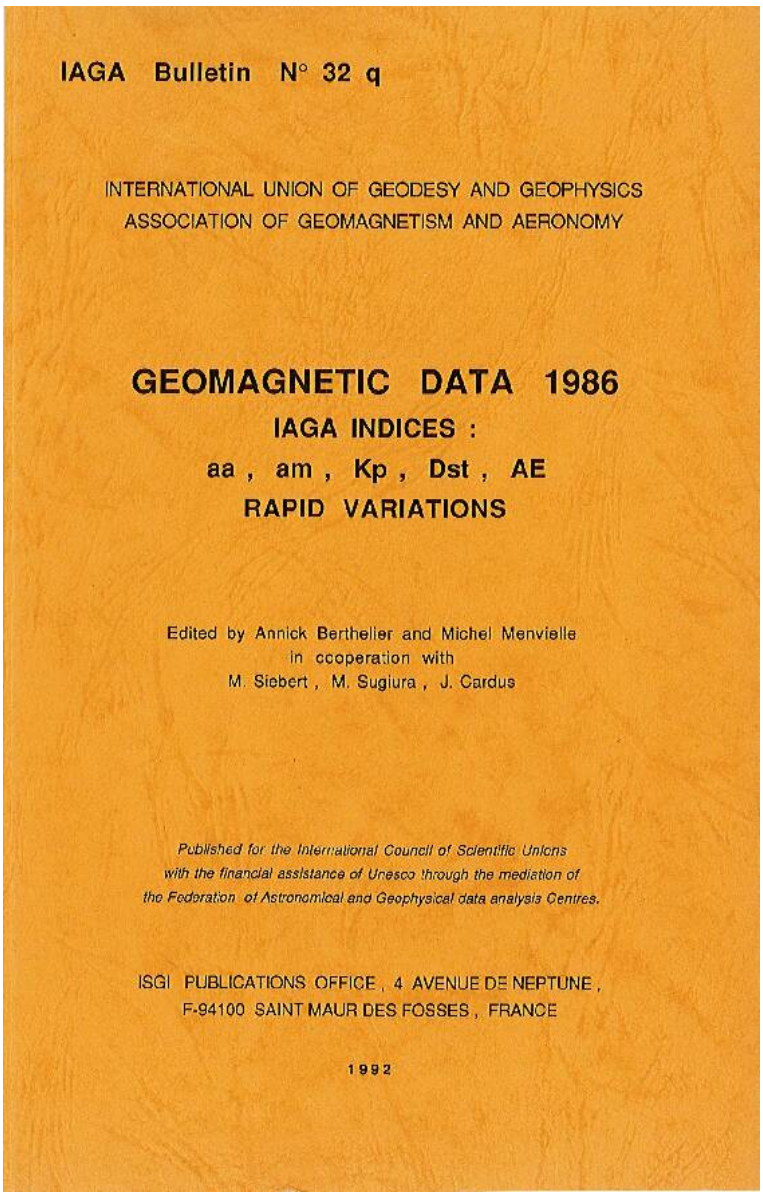


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IAGA Bulletin N° 32 q

INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS
ASSOCIATION OF GEOMAGNETISM AND AERONOMY

GEOMAGNETIC DATA 1986

IAGA INDICES :

aa , am , Kp , Dst , AE

RAPID VARIATIONS

Edited by Annick Berthelier and Michel Menvielle
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.

ISGI PUBLICATIONS OFFICE , 4 AVENUE DE NEPTUNE ,
F-94100 SAINT MAUR DES FOSSES , FRANCE

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FOREWORD

While keeping the IAGA Bulletin 32 series as homogeneous as possible, the general informations are updated in each issue, and we try to improve contents and presentation as well.

In this Bulletin 32q for 1986 we have modified Introductory Texts, in particular those on Dst index (Chapter 1.3.4.), and on Rapid Variations (Chapter 1.5.). More precisely, we now give the Dst definition and derivation processes as they appear in the presentation prepared by M. Sugiura, and published in IAGA Bulletin 40 (*Equatorial Dst Index 1957-1986,* ISGI Publications Office, 1991). A more comprehensive description of the procedures followed to prepare the lists of sudden storm commencements (ssc) and solar flare effects (sfe) has been written by J. Cardus, and is now given in place of the previous description.

We have also added a new presentation of the characterization of quiet days, therefore we give in this issue the tables for 1981 to 1986 included.

The further improvement we wish to set on quickly is to associate to each issue a floppy having the same contents than the Bulletin in hand, and we hope that this will be done with the next issue.

Annick Berthelier, Michel Menvielle

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 organizations which support efficiently the preparation and distribution of these geomagnetic data (as listed in Table 1, page 10).

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 (IPGP), Christine GUERIN and Caroline HUC (CRPE) for their contribution to this Bulletin.

Annick Berthelier, Michel Menvielle
Saint-Maur, Orsay, Avril 1992

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SECTION 1

PRESENTATION OF THE BULLETIN

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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, CRPE - CNRS, 4 Avenue de Neptune,
F - 94107 Saint-Maur des Fossés CEDEX, FRANCE.

As for 1986, 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.

- Data Analysis Center for Geomagnetism and Spacemagnetism, Kyoto (M. SUGIURA) :
  Dst, 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 in 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 13-21). For more details, one can refer to the following 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 a complete review of the present IAGA indices;

- G.K. Rangarajan, *Indices of geomagnetic activity*, in "Geomagnetism", edited by J.A. Jacobs, Academic, San Diego, 1989;

- M. Menvielle and A. Berthelier, *The K-derived planetary indices: description and availability*, Rev. Geophys., 29, 3, 415-432, 1991.

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-a). 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 series is available on magnetic tape at World Data Center A (Table 1-a), and in France at the ISGI Publication office (Table 1-a). 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 1-b). 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-a).

- 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 1-b). They are sent on request before the end of the next month by the Institut für Geophysik, Göttingen (Table 1-b). They are available on magnetic tape at the World Data Centers (Table 1-a).

- 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 1-b). They are available on magnetic tape at World Data Centers (Table 1-a) and in France at the ISGI Publication office (Table 1-a). They can be sent on request by mail from ISGI within 6 weeks after the end of the month (Table 1-a).

- The *equatorial Dst-index* for ring current intensity is published in the IAGA Bulletin N°32 since 1970. 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. 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. Recently, M. Sugiura and T. Kamei recomputed an homogeneous series of Dst values, using the data of four stations. These Dst indices values for the thirty years 1957-1986 are now published in the IAGA Bulletin N° 40. This report supersedes earlier Dst publications by Sugiura and co-workers. The hourly values from 1957 onwards are available on magnetic tape at the World Data Center (Table 1-a).

- 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 Institute 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-a). 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 1-b), according to the decisions made at the IAGA Assemblies in Madrid (1969) and in Grenoble (1975). They are thus 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 1-b).

Tables 1 -a and -b (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

a - ISGI and World Data Centers

ISGI	International Service of Geomagnetic Indices Service International des Indices Géomagnétiques CRPE -CNRS, 4, Avenue de Neptune F-94107 SAINT MAUR DES FOSSES CEDEX, France Telephone 33 1 45 11 42 40 Telex 264 498 OBSMAUR Telefax 33 1 48 89 44 33
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

b - National Institutes and Data Centers

M. MENVIELLE	Laboratoire de Physique de la Terre et des Planètes Batiment 504 - Université PARIS-XI F-91405 ORSAY CEDEX, 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 Institute of Research and Development Tokai University, 2 -28 Tomigaya, Shibuya-ku TOKYO 151, Japan

• 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 29-36. 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 1985) ;
- 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 37-38. 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.

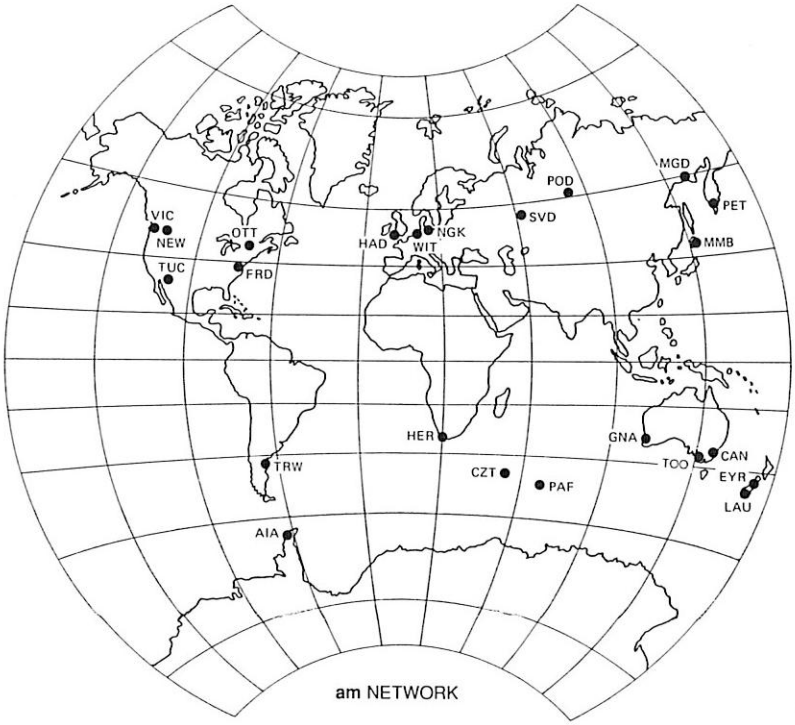


Figure 1 : Distribution of am observatories.



Figure 2 : Distribution of Kp observatories.

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 used to derive aa are given in Table 2-a (next page), with weighting coefficients given in brackets.

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 pages 44-45 :

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.

Letters C and K indicate 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, that on the right one to a period of 48 hours centered on the Greenwich noon. The asterisks mark the five international quietest days of the month (as deduced from Kp, see section 4).

A graph of 12-hour running mean values of aa indices is drawn page 43 for the whole year. Monthly and yearly mean values of aa for the years from 1868 onwards are listed pages 46-47. A graph of 12-month running mean values of aa is drawn page 48, covering the full period when aa has been calculated so far, i.e. 1868-1986. 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 (see Table 2-b, next page). The corrected geomagnetic latitude indicated in this Table has been calculated by Mayaud for taking into account the actual topography of the main field.

TABLE 2

a - List of aa observatories

Northern Hemisphere			*Southern Hemisphere*		
Observatory		*Corr. Geom. Lat.*	*Observatory*		*Corr. Geom. Lat.*
1868-1925	Greenwich *(1.007)*		1868-1919	Melbourne *(0.967)*	
1926-1956	Abinger *(0.934)*		1920-1979	Toolangui *(1.033)*	
1957-...	Hartland *(1.059)*	50.0°	1980- ...	Canberra *(1.084)*	45.2°

b - List of am observatories

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°		Canberra	CAN	45.2°
	Memabetsu	MMB	37.4°				
G2	Podkammenkaya	POD	57.2°	G7	Gnangara	GNA	44.1°
	Sverdlovsk	SVD	52.2°		Amsterdam	AMS	48.3°
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°				

c - List of Kp observatories

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°			

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 a conversion table (see below); they are as usually expressed by values from 0o to 9o, corresponding to the given interval of am (or an, or as).

am	0.0	1.4	3.4	5.4	7.4	10.4	13.4	16.4	20.4	26.4
Km		0o	0+	1-	1o	1+	2-	2o	2+	3-
am	26.4	33.4	40.4	50.4	60.4	70.4	86.4	103.4	120.4	146.4
Km		3o	3+	4-	4o	4+	5-	5o	5+	6-
am	146.4	173.4	200.4	243.4	286.4	330.4	386.4	443.4	500.4	611.4
Km		6o	6+	7-	7o	7+	8-	8o	8+	9- 9o

Monthly tables of an, and as are given pages 52-63, each line corresponding to a Greenwich UT day. Following values are displayed from left to right :

- Kn (Ks) 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 (pages 64-69) are displayed in a similar way :

- Km values for the 8 three-hour intervals ;
- daily sum Σ Km ;
- 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 51). A compilation of the musical diagrams from 1959 onwards is available on request at ISGI Publication Office (Table 1-a). Monthly and yearly mean values of Am from 1959 onwards are given page 70.

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, and Table 2-c). 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.

The other indices derived from Kp are the three-hour index ap (the equivalent range), the daily indices Ap, the Cp and C9 characters that are related to the daily sum of ap.

The three-hour equivalent amplitude ap is deduced 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 two horizontal components in a three-hour interval can be taken as 2 ap (for instance, for Kp = 3+, ap=18, ie 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, page 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, page 111, their 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 74-79. Kp values are displayed as "musical diagrams" according to Bartels solar rotation page 73. These diagrams are also available on request at Geophysical Institute, Göttingen (Table 1-b). The frequencies of Kp indices is given by month page 80. Monthly and yearly mean values of Ap from 1932 onwards are given page 81.

1.3.4. Dst index

The Dst index for 1986 are derived using the data from the four magnetic observatories given in Table 3 .

These observatories were chosen on the basis of the quality of observation and for the reason that their locations are sufficiently distant from the auroral and equatorial electrojets and that they are distributed in longitude as evenly as possible. A map of the network is given in Figure 3 .

The baseline

The baseline for H is defined for each observatory in a manner that takes into account the secular variation. For each observatory, the annual mean values of H, calculated from the "five quietest day" for each month, form the data base for the baseline.

It should be remembered that the final Dst values are determined after each calendar year and that therefore in this determination the annual mean values are available only up to and including the year (referred to below as the current year) for which the Dst is to be deduced.

The baseline is expressed by a power series in time and the coefficients for terms up to the quadratic are determined by the method of least squares, using the annual means for the current year and the four preceding years. Thus, the baseline, H_{base} is expressed as

$$H_{base}(\tau) = A + B\tau + C\tau^2 \qquad (1)$$

where τ is time years measured from a reference epoch.

It is noted here that if the polynomial expansion of the annual means is made in a straighforward manner as described above, an artificial discontinuity, although seldom large enough to be recognized by a casual inspection, can be introduced between the baseline value for the last hour of one year and that for the first hour of the following year, because these two baseline values are calculated from two different polynomials. To minimize such a discontinuity the polynomial determination is actually made in two steps.

From the polynomial expansion determined in the first step, the baseline value at the end of current year is calculated. In the second step, this value is included as an additional data point in the polynomial fitting. This procedure has been found to be satisfactory.

The baseline value $H_{base}(T)$ calculated from (1) for each UT hour of the current year is subtracted from the observed H value, $H_{obs}(T)$:

$$\Delta H(T) = H_{obs}(T) - H_{base}(T) \qquad (2)$$

The deviations, $\Delta H(T)$, form the data base in the following derivation for each of the observatories.

TABLE 3

List of Dst observatories

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°

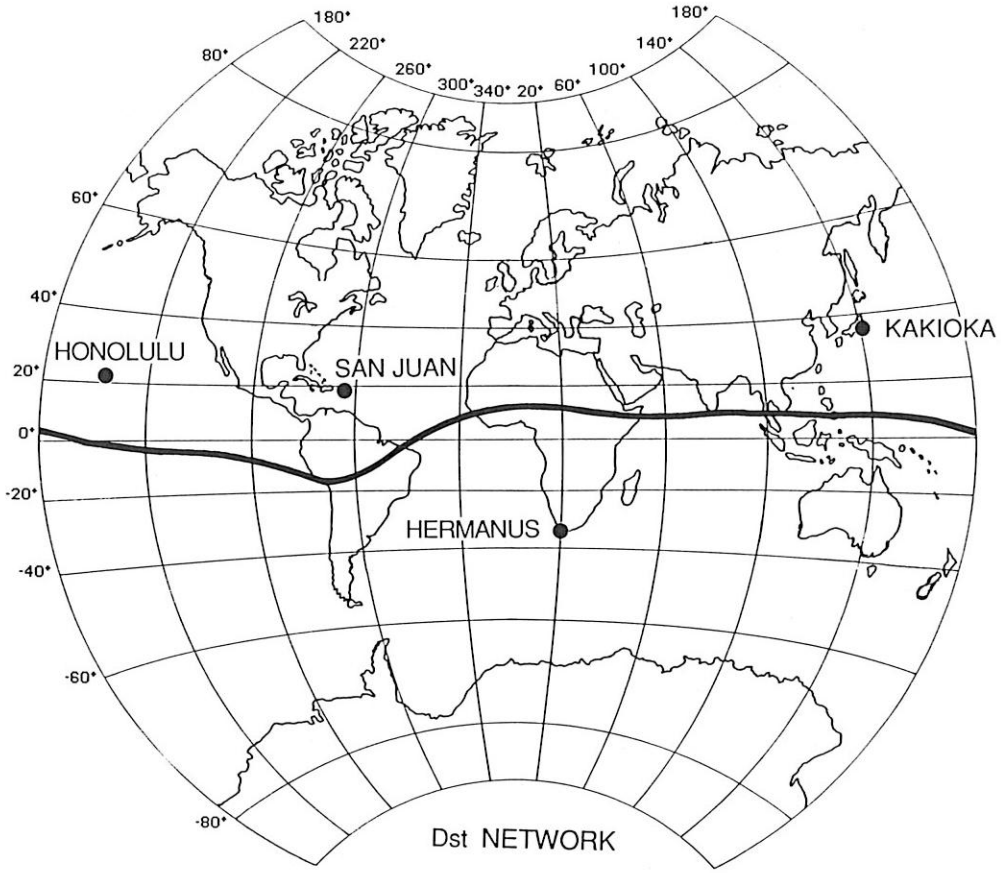


Figure 3 : Distribution of Dst observatories;
the solid line marks the magnetic dip equator.

The Sq elimination

The solar quiet daily variation, Sq, is derived for each observatory as follows. The average Sq variation for each month is determined from the values of H(T) for the internationally selected five quietest days of the month.

These quietest days are determined in UT. In order to define an average Sq variation for the local day of each observatory, we form the averages for the local hours using five quietest days. Also, using hourly values immediately before and immediately after the local days selected, we evaluate the linear change and subtract it from the Sq variation. In this manner we remove from Sq the noncyclyc change, which is part of Dst variation, and also evaluate Sq from the midnight level.

The 12 sets of the monthly average Sq so determined for the year are expanded in a double Fourier series with local time, t, and month number, s, as two variables:

$$S_q(t,s) = \sum_m \sum_n A_{mn} \cos(mt + \alpha_m) \cos(ns + \beta_n) \qquad (3)$$

This representation allows us to calculate Sq(T) at any UT hour, T, of the year. This procedure is applied to each observatory.

The Hourly Equatorial Dst Index.

For each observatory the disturbance variation, D(T), is defined by:

$$D(T) = \Delta H(T) - S_q(T) \qquad (4)$$

Then D(T) is averaged over the four observatories and normalized to the dipole equator by:

$$Dst(T) = \frac{D(T)}{\cos\varphi} \qquad (5)$$

where the denominator is the average of the cosines of the dipole latitudes, ϕ_i (i=1,4), of the observatories contributing to the average. This normarization procedure has been found to minimize undesired effects from missing hourly values.

Monthly tables of hourly Dst-values are given pages 88-99, followed by a table of mean values (page 100). The graph of hourly values for the whole year is given pages 85- 87; the table of monthly and yearly mean values from 1959 onwards is given page 101.

TABLE 4

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
Poste de la Baleine	PBQ	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

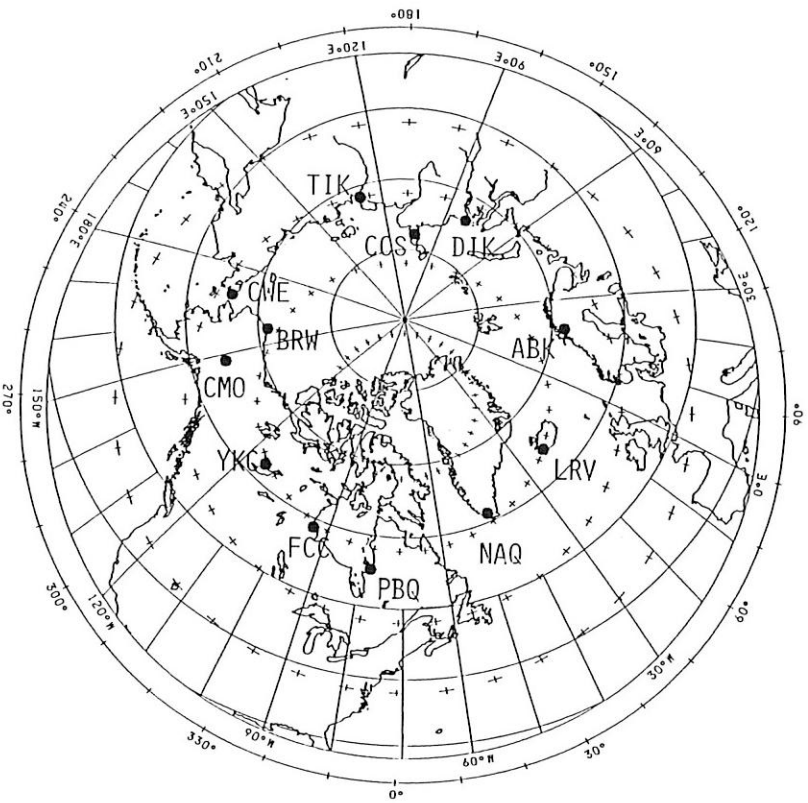


Figure 4 : Distribution of AE(12) stations

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 4, Table 4). 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-a) 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-a).

Tables of hourly averages of AU, AL and AE are given pages 106-129; graph is given page 105. 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 130.

1.4. CLASSIFICATION OF DAYS

The list of the international five quietest days and the selection of the 24-hour and 48-hour intervals which are really quiet (C) or very quiet (K) are given month by month pages 133-134. They are presented on annual diagrams, prepared for the six years 1981 to 1986, pages 135-137. The list of the international quietest and of the more disturbed days, and a list of magnetic storms are also given page 138. 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 of each month 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 138, 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 $\sum p$ is higher than, or equal to 4 is a quiet K-day ; if $\sum p$ 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 $\sum p$ 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)

The old definition, that said that "an ssc is a sudden commencement of a magnetic storm", is now changed into "sudden commencements followed by a magnetic storm *or* by an increase in activity lasting at least one hour".

The change was introduced by P. N. Mayaud (IAGA Bulletin 33 : "*A Hundred Years Series of Geomagnetic Data, 1868-1967. Indices aa and storm sudden commencements*"; see also IAGA Bulletin 39 : "*Supplementary Geomagnetic Data 1957-1975*", including a new list of ssc's 1968-1975). In this new definition more importance is given to the change of rhythm in the magnetic activity, than to the amplitude of the magnetic storm, and therefore some ssc's included in the list are not followed by a real magnetic storm.

The routine procedure of the Service in establishing the final list consists essentially of several steps, following as much as possible the instructions given by Mayaud in order to get a continuous series of homogeneous data.

Step 1. From the monthly reports of Rapid Variations prepared by 43 magnetic observatories (see list page 143), a combined list of all events is compiled.

Step 2. This list is checked against the magnetograms of two low latitude observatories (HON and EBR), and cases reported by only a very few observatories and that are clearly not an ssc in the magnetograms of HON and EBR, are eliminated.

Step 3. All other cases are then included in a new list, and copies of the magnetograms are requested for all of them from the five collaborating low latitude observatories, that are regularly spaced in longitude (Table 5a), or from their supplementary observatories (Table 5b).

Step 4. From the copies of the magnetograms sent by the five observatories as a reply to Step 3, every ssc is evaluated independently for each observatory and a number (0 to 3) is assigned to each event, in the following scale :

0. the event could have escaped the attention of the observers or does not deserve to be called an ssc,
1. the event is possibly an ssc, but is not clear enough in itself to be identified as a true ssc without inspection of other records at different longitudes,
2. the event can be unmistakably identified as an ssc from the single record on consideration,
3. is assigned, instead of 2, where the event presents a very sharp change of rhythm in the agitation, has a large amplitude and its general morphology is remarkable.

If an event gets three codes 0, out of the five observatories, it is rejected from the list.

Step 5. Finally the duration, in minutes, and the amplitude, in nT, from the copies from the five observatories are measured and their mean values are calculated.

TABLE 5

a - Collaborating Observatories for Rapid Variations

Observatory	*Symbol*	*Geographic*		*Geomagnetic*	
		Lat. (°N)	*Long. (°E)*	*Lat. (°N)*	*Long. (°E)*
MBOUR	MBO	14.40	343.02	20.68	56.80
FUQUENE	FUQ	5.47	286.27	16.47	357.07
HONOLULU	HON	21.32	202.00	21.46	268.57
PORT MORESBY	PMG	-9.40	147.15	-17.99	219.75
ALIBAG	ABG	18.63	72.87	9.64	145.39

b - Supplementary Observatories

Observatory	*Symbol*	*Geographic*		*Geomagnetic*	
		Lat. (°N)	*Long. (°E)*	*Lat. (°N)*	*Long. (°E)*
TENERIFE	SZT	28.48	343.72	34.60	60.30
SAN JUAN	SJG	18.38	293.88	29.36	5.21
APIA	API	-13.80	188.22	-15.61	261.99
KANOYA	KNY	31.42	130.88	21.12	199.85
HYDERABAD	HYB	17.42	78.55	7.86	150.69

In the list of storm sudden commencements (section 5.1., pages 143-145) the following indications are given for each event :

a) Day, hour and minute (mean value taken from the monthly reports); first and last minutes thus reported are given in brackets at the end of the line.

b) The five number codes (one for each collaborating observatory) ; if some figures are underlined, it means that the replacement observatory was used.

c) The mean average duration, in minutes, of the event and its average amplitude, in nT.

d) The following figures indicate the number of observatories that in the monthly reports have characterized the ssc by each of the three letters A, B, or C, their meaning being :

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

Please note that the 0 to 3 qualification is given by the Service on Rapid Variations, independently from these A, B, C, qualifications which are given by the observatories, although some sort of correlation must exist among them.

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

si = sudden impulse, but not an ssc,
sfe = solar flare effect
b = bay-like disturbance.

1.5.2 Solar flare effects (sfe).

The aim of the Service is to provide a reliable list of times when a magnetic solar flare effect did occur. Unfortunately, the reports on solar flare effects are not provided by all the observatories sending regularly the monthly reports on Rapid Magnetic Variations to the Service. As the sfe is a phenomenon dependent of longitude, it is not an easy task to provide a complete round the world coverage.

Step 1. The list of all times given in the monthly reports from observatories as possible occurrences of sfe's are checked with data taken mainly from Solar Geophysical Data, on the occurrence of alpha-flares, radio bursts or SID's, as, by definition, the crochet-like disturbance in the magnetograms must be an effect from solar activity and more precisely of a light emission from the Sun.

Times that are not correlated with any of these solar or ionospheric phenomena are eliminated from the list except in the cases when they were reported by more than one observatory or when a single observatory gave the time with the indication that it was confirmed. These exceptions try to take into account the fact that the correlation between solar events and magnetic crochets is not hundred percent.

Step 2. The list prepared in such a way is sent to all magnetic observatories, as a *checking list*, and they are asked to inspect their magnetograms and provide their judgement in two steps :

First : Do the magnetic records show a movement at the time given?

The answer is given by the following letters :

A = very clear movement
B = fair, ordinary movement
C = very poor movement
D = movement not observed, although records are satisfactory
E = movement cannot be observed due to heavy disturbance
X = record missing

Please note that this letter index refers only to the existence of a movement in the curves and not to the opinion of this movement being or not being a sfe.

Second : The opinion of this movement being or not a sfe is given after letters A, B, and possibly C, by a number index :

3 certainly a sfe
2 probably a sfe
1 probably not a sfe
0 certainly not a sfe

The answers from observatories are plotted into world maps for each event ; in these maps are also drawn times showing the sunlit hemisphere and the twilight zones.

Step 3. From these maps a judgement is made about the event being or not a sfe. A simultaneous judgment is done about the existence or not of a solar, ionospheric and radio-sun event that could be the cause of the magnetic disturbance. And finally each event is classified as a sfe, a doubtful sfe or a rejected sfe.

Tables for solar flare effects and for doubtful sfe (section 5.2) are given pages 149-157 with the following format :

a) Month, day and time of the beginning of the sfe; if the sfe is confirmed the letter C follows the time of the event.

b) List of observatories reporting it with the number-index, arranged according to the classifying letter and to longitude.

Stations in the twilight zone, reporting a movement (A, B, 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 lists

The separation into such two tables of sfe and "doubtful" sfe may be rather subjective, due to the fact that we do not really know the mechanism linking the radiation emission from a flare and its effect on the magnetic records.

For instance, if we accept that the link is an ionising radiation from a solar flare producing an electric current in some region of the sunlit ionosphere, can this current extend its effect into the night hemisphere of the earth? And can all flares, observed in the alpha-light, produce such ionisation ? We are aware, from observations of solar flux, that not all frequencies produce similar magnetic effects. Satellite observations of X-ray flares may help in solving these and similar questions, but until now we have a fairly good coverage of alpha-flares and a rather limited of X-flares. Moreover it must be taken into account that not all flares have the same emission of energy and that their effects on the earth therefore may be limited to a smaller, or to a larger region of the earth.

Following the same kind of reasoning, we may find different effects due to the geometric relative position of the angle of emission in the Sun and the angle of reception at the earth.

For all these reasons, the tables of solar-flare-effects do not appear to be directly usable for detailed statistical studies, but they may be a good indication for researchers, where to look in the magnetic records when they study some particular event.

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
ARS	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

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt. (m)	K=9 lower limit	Open -Closed
		Lat.	Long.	Lat.	Long.			
BFE	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
GTT	GÖTTINGEN	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

LIST OF OBSERVATORIES (continued)

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	-37.98	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	314.60	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	HEISS ISLAND	1959 - ...
	(1947 - 1950 missing)		
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

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SECTION 3

3.1. aa INDICES

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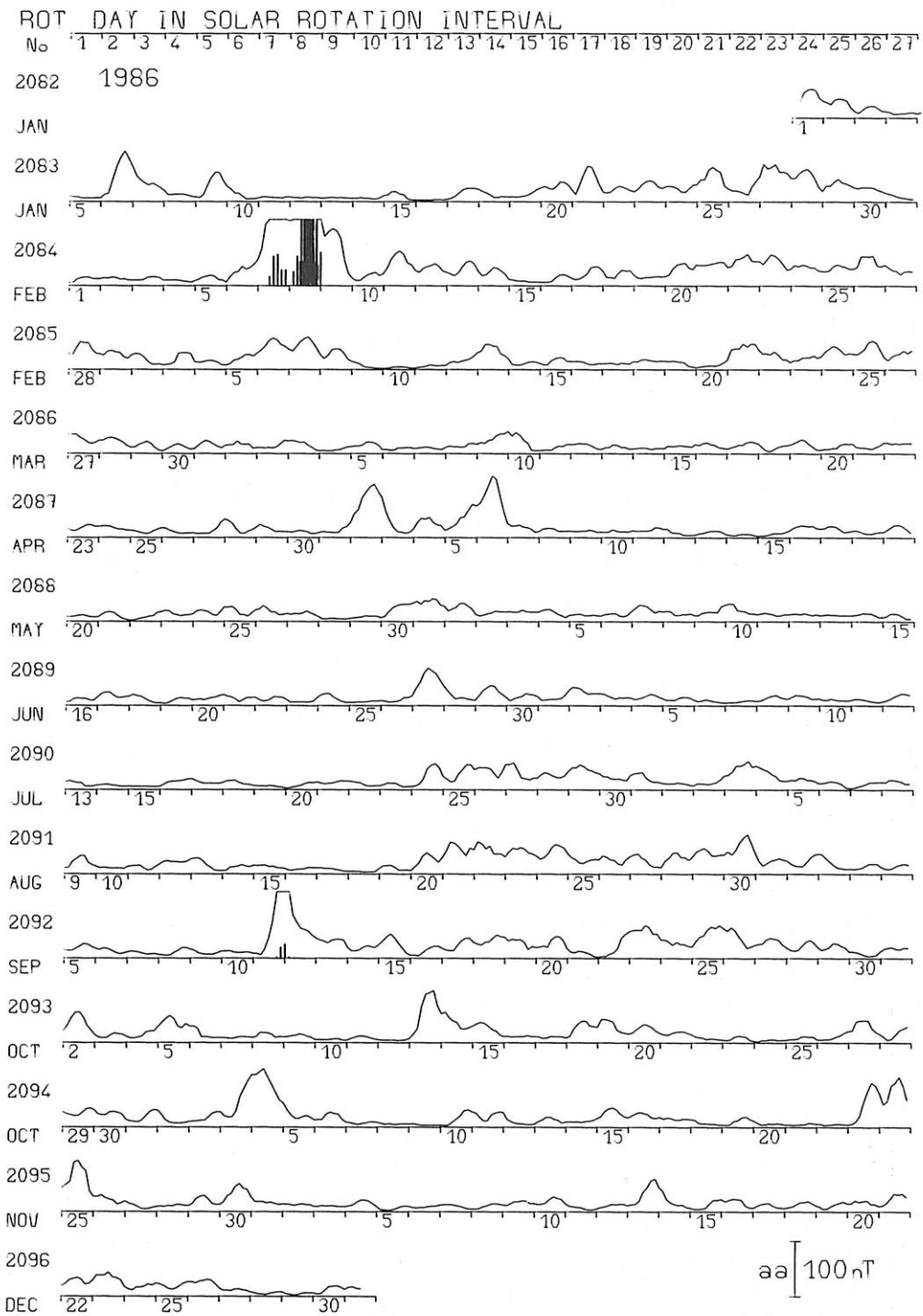
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TWELVE-HOUR RUNNING AVERAGES **aa** 1986



	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	50	30	31	50		8	12	5	15	CC*	38	22	28	32		21	11	15	17		12	6	9	9	C	29	32	28	33	
2	31	24	24	31		12	14	12	14	CC	21	21	27	15		12	9	11	10	C	58	53	28	84		20	9	13	16	
3	17	14	14	17		13	12	10	15	CC*	25	13	8	30		26	19	23	21		50	33	73	11		20	19	18	21	
4	7	9	7	9	CC	10	9	10	10	CC*	18	13	14	17		7	5	5	7	CK*	29	23	16	37		19	17	17	18	
5	7	9	10	6	CC	15	13	9	19	C	18	13	9	22		20	14	13	21	K	32	18	13	37		15	7	12	11	CK*
6	34	36	7	63		20	21	6	35		50	38	30	58		10	7	7	10	CK*	107	62	58	112		13	11	10	14	CK
7	44	49	63	30		126	93	47	173		54	39	37	56		10	10	9	11	CC	25	20	25	19		25	21	19	27	
8	19	14	20	13		253	234	117	370		41	24	27	38		13	10	11	12	CK	15	12	11	16	K	17	13	18	12	
9	35	16	8	44		144	136	180	100		10	9	15	4	C *	28	15	17	26		16	8	12	12	CC	20	9	11	18	
10	18	19	27	9		17	16	13	20		4	4	2	5	CC*	29	36	40	24		14	8	11	12	CC	29	21	31	19	
11	7	7	7	7	CC*	49	36	22	63		6	6	3	9	CC*	11	5	5	11	C	14	11	13	12	CC	17	10	13	13	C
12	10	6	9	8	CC	36	28	27	37		14	9	8	15	C	16	19	17	18	K	13	11	15	9	KC	15	13	13	15	C
13	6	6	6	7	CC*	34	24	24	34		36	37	31	43		13	11	8	16	CC	10	7	5	12	CC	13	10	11	12	CC
14	5	7	6	6	CC*	39	21	27	33		19	11	19	11		10	8	9	9	CC*	9	4	6	7	CC*	18	8	11	15	CC
15	10	15	11	14	KC	9	10	11	8	C *	21	10	11	20		13	11	9	15	CK	8	3	3	8	CC*	13	8	8	14	CC*
16	3	3	3	3	CC*	10	10	6	15	KK*	11	15	15	11	C	22	11	17	16		18	16	13	21		15	5	7	13	CK
17	14	12	4	21	KK	20	14	14	21		12	9	11	9	CC	15	10	9	16	C	21	14	16	19		20	14	15	19	
18	15	15	22	8		33	16	27	22		16	16	15	17		13	13	18	8	K	11	8	12	7	CK	18	12	17	13	K
19	9	10	9	11	CK*	21	13	19	15		19	11	16	14	C	25	14	16	23	K	21	12	10	23	K	11	6	5	13	CC
20	30	22	25	27		32	25	17	40		7	5	4	8	CK*	10	7	7	10	C	13	8	9	12	CK	16	7	10	13	C
21	57	29	21	65		50	28	38	40		29	36	17	47		18	10	18	10		15	9	9	16	CC	13	14	20	7	K
22	28	17	17	29		50	35	33	52		38	31	36	33		23	14	20	17		8	2	2	8	CK*	19	9	15	12	K
23	29	27	18	39		64	34	44	54		25	10	13	22		24	11	15	20		19	11	18	12	C	13	6	11	7	CK*
24	25	20	28	17		40	27	31	36		40	25	24	40		22	15	20	17		19	13	14	18		21	10	16	16	K
25	52	43	32	63		36	28	26	39		48	30	29	50		12	8	13	7	C	22	17	27	13		10	3	6	7	CC*
26	22	16	23	15		44	40	31	53		30	21	22	29		17	10	18	9	CC	22	16	21	17		11	6	9	8	CC*
27	68	46	46	68		36	23	38	20		30	30	35	26		13	4	9	8	C *	21	10	15	16		51	36	18	69	
28	56	46	42	60		52	26	29	49		29	22	24	27		22	20	34	8		10	5	9	6	CC*	25	24	35	14	
29	37	24	19	41							18	16	11	22		21	13	19	15	K	12	5	6	11	CC*	25	21	10	37	
30	24	28	26	26							15	7	5	18	CK*	15	8	11	12	CC*	22	14	7	29		21	11	15	17	
31	14	10	16	8	C						15	15	9	21							31	39	34	36						
N	25.2					45.5					24.4					17.0					22.5					19.0				
S		20.3					35.7					18.3					11.9					15.5					13.0			
M			22.7					40.5					21.3					14.4					18.9					16.0		

	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	21	7	17	12		15	10	12	13	CC	20	18	24	14		17	13	13	17		24	13	31	7		21	22	27	16	
2	29	24	28	25		11	6	8	10	C *	27	26	37	16		44	32	22	55		11	11	10	12	C	15	12	14	13	CC
3	18	16	22	12		41	28	26	43		14	10	10	14	CK	16	11	14	13		26	30	28	29		14	6	10	11	CC
4	20	12	14	18		38	34	44	28		16	11	13	15		13	10	11	12	C	88	98	95	91		16	14	9	21	K
5	18	9	13	14	K	19	18	16	21		24	13	15	22		38	35	29	43		30	29	44	16		7	6	9	4	CK*
6	15	5	11	10	CC	19	7	12	15	CK	22	10	18	15		17	24	30	11		23	17	13	27		8	9	10	8	CC
7	9	4	5	8	CC*	9	5	3	10	CC*	12	8	11	9	CC*	12	7	9	10	CC	10	6	9	7	CK	11	12	12	11	CC
8	16	10	8	18	CC	17	13	14	16	C	10	7	7	11	CC*	13	13	9	17	KC	7	7	9	5	CC*	8	8	5	11	CC*
9	16	13	12	17		24	19	11	33		12	11	16	7	CC	17	9	10	16	CK	5	5	6	4	CC*	12	18	12	18	
10	17	7	13	11	CK	15	9	13	10	C	14	9	13	10	CC*	8	5	6	6	CC*	11	7	4	15	KK	24	13	15	22	
11	11	9	10	10	CC*	13	11	13	11	CK	27	18	9	36		9	8	4	12	CC*	19	21	28	12		12	11	15	8	KK
12	19	8	8	19	KK	23	17	18	22		113	87	145	54		6	5	5	5	CC*	15	18	27	7	K	10	10	5	14	CC
13	15	12	14	13	KK	19	25	28	16		38	31	36	33		49	47	8	88		11	12	6	18	KC	24	23	11	36	
14	10	6	8	8	CC*	12	8	6	14	CK	23	16	19	20		53	36	52	36		9	9	10	9	CK	25	33	45	14	
15	9	4	7	6	CC	16	13	16	13	K	31	30	25	37		31	28	30	29		24	28	16	36		6	8	7	7	CK*
16	15	6	6	15	CK*	14	5	10	9	CC*	13	7	5	15	K	12	10	11	11	C	21	21	17	25		22	24	23	23	
17	22	10	20	12		12	8	11	10	CC	26	15	18	23		12	10	11	12	CC	16	15	18	13		10	12	7	16	CK
18	14	13	13	14	KC	6	3	5	4	CC*	36	23	29	30		27	21	9	39		9	11	14	7	CC	11	12	6	17	KK
19	11	5	8	8	CC	11	11	10	12	KC*	36	36	38	34		33	32	28	37		9	8	4	13	CC*	11	10	11	10	CK
20	9	3	3	9	CC*	26	18	6	38		33	21	20	34		28	21	16	33		11	8	12	7	CC	16	18	15	19	
21	19	8	14	13	CC	41	39	30	50		20	9	17	12		21	15	17	19		4	6	4	5	CC*	25	18	10	33	
22	14	11	16	9	CC	43	51	44	51		8	5	2	11	C *	13	8	15	6	CC	4	7	6	5	CC*	28	25	19	34	
23	12	7	8	12	CC	46	33	31	48		64	44	49	60		11	7	5	12	CC	21	28	4	44		40	32	29	44	
24	28	16	6	39		48	33	32	49		31	32	34	29		4	6	3	6	CC*	91	49	61	80		15	18	17	16	
25	32	20	24	29		31	25	37	19		39	34	21	52		9	8	5	11	CC	90	45	43	92		20	16	24	12	
26	43	32	37	38		26	25	26	25		48	43	54	38		7	7	6	8	CK*	27	23	27	23		32	22	26	29	
27	28	39	46	21		28	29	32	26		34	27	24	37		29	32	21	40		11	13	19	6	C	16	12	15	13	
28	22	25	21	26		28	23	12	39		26	15	19	23		19	11	15	14		8	11	9	10	CC	6	5	8	3	CC*
29	36	39	34	42		36	37	32	42		29	18	20	27		29	19	27	21		20	21	11	30		6	5	8	3	CC*
30	27	21	29	19		47	45	35	58		9	9	12	5	C *	32	26	31	27		33	26	13	46		13	11	6	17	KK
31	27	21	27	21		31	29	37	24							17	9	14	12	C						12	14	12	14	C
N	19.4					24.7					28.6					20.8					23.0					16.0				
S		13.6					20.5					21.4					16.9					20.1					14.8			
M			16.5					22.6					25.0					18.8					21.5					15.4		

ANNUAL MEAN N : 23.86 S : 18.50 M : 21.13 Unit : nT

MONTHLY AND YEARLY **aa** 1868 - 1986

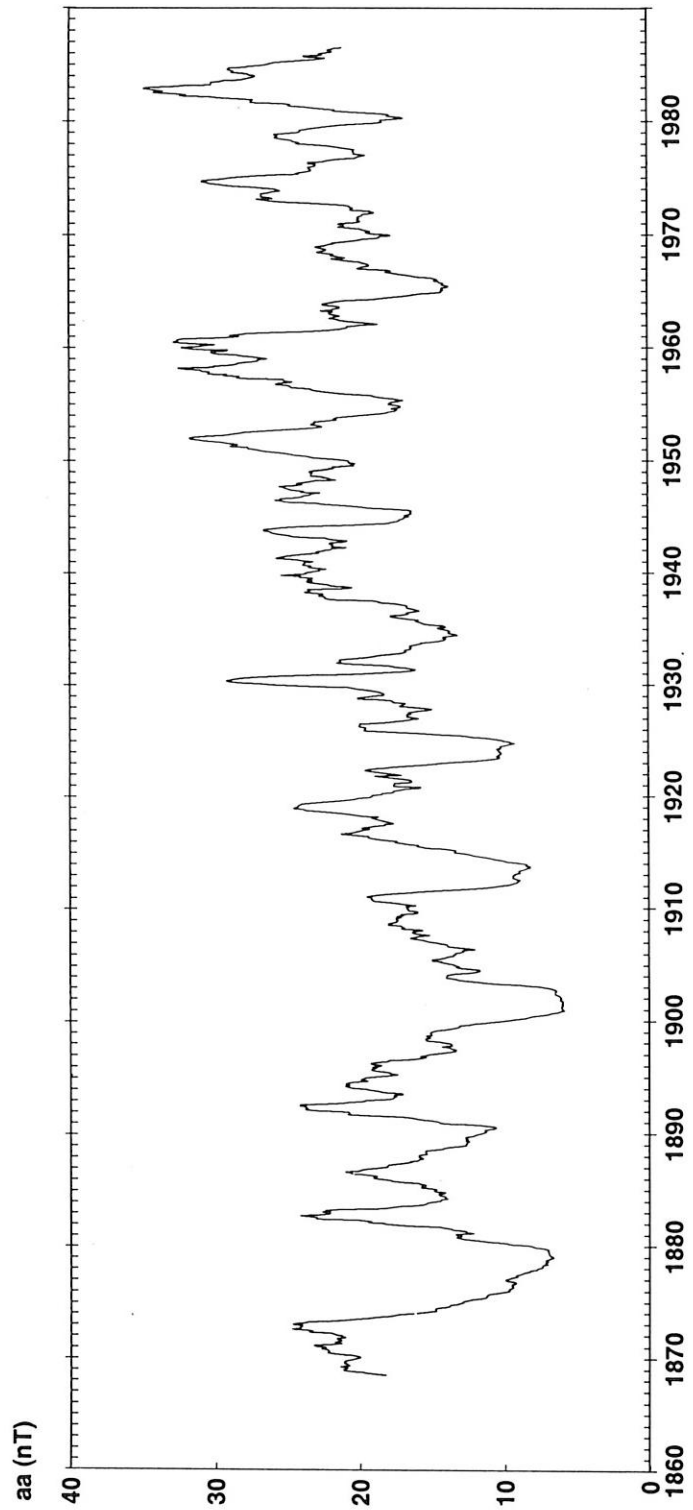
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1868	10.6	16.0	19.7	21.0	16.4	17.9	21.5	19.4	24.0	25.9	13.3	13.7	18.3
1869	19.2	23.6	22.3	29.5	23.1	19.2	17.4	19.9	29.8	17.9	14.7	14.6	20.9
1870	21.6	23.2	21.2	25.8	20.9	16.4	14.1	21.4	35.2	26.2	21.9	19.9	22.3
1871	19.3	24.8	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	20.9
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

MONTHLY AND YEARLY **aa** 1868 - 1986 (continued)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
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	19.1
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	19.1
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	16.4
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	17.4
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	18.3	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	26.2	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
1984	23.8	26.5	31.3	33.1	27.5	24.0	26.7	26.2	33.2	33.7	31.5	29.4	28.9
1985	26.1	24.4	19.2	30.0	15.7	20.1	23.7	22.3	21.4	22.5	24.0	21.5	22.6
1986	22.7	40.5	21.3	14.4	18.9	16.0	16.5	22.6	25.0	18.8	21.5	15.4	21.1

Unit : nT

TWELVE-MONTH RUNNING MEAN VALUES OF **aa** 1868 - 1986



SECTION 3

3.2. an, as, am INDICES

Musical diagram of **Km** 1986 51

Monthly tables of three-hour indices :

an, **as**, **Kn**, **Ks** and daily **An**, **As** values 52

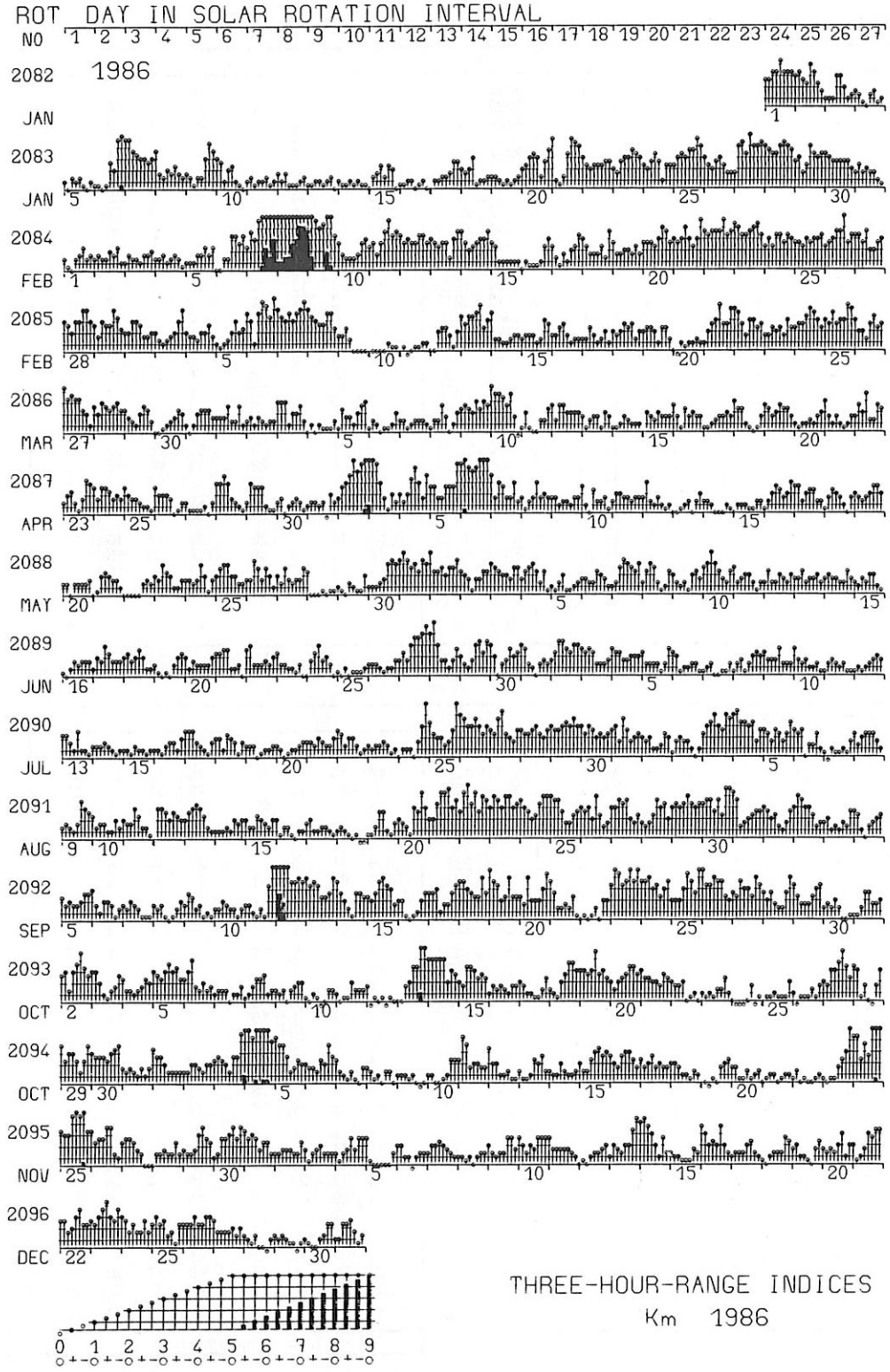
Monthly tables of three-hour indices :

am, **Km** and daily **Am** values 64

Monthly and yearly mean values of **Am**

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MUSICAL DIAGRAM OF **Km** 1986



THREE-HOUR-RANGE INDICES
Km 1986

an , as INDICES 1986

JANUARY 1986

	Kn								σn		an								An
1	3o	3-	4-	4-	5-	4-	3+	4-	3333	4244	31	26	41	43	82	41	37	41	43
2	3-	3+	3o	3-	4+	4-	2+	2-	2522	6423	22	40	28	21	67	42	20	11	31
3	1+	1o	1+	3+	3o	3-	1+	1+	4422	3222	9	6	8	34	33	21	9	8	16
4	2-	1o	1-	1-	1+	2-	1o	1o	3212	3413	11	7	4	4	8	11	7	7	7
5	1+	1-	1+	1o	1+	1o	1-	1-	2422	2433	8	4	8	6	9	7	4	5	6
6	1-	0+	0+	1o	3-	2o	4+	5+	2212	1224	5	3	3	6	22	14	64	105	28
7	4+	5-	4-	3+	3+	3+	3-	3o	3334	4242	69	75	44	40	40	38	25	31	45
8	3+	2-	1+	2+	2o	3-	2-	1+	4112	2333	38	13	9	17	15	24	13	9	17
9	2-	2-	1-	1o	1+	3+	4+	4o	1231	2563	13	11	5	7	9	36	66	52	25
10	3+	3o	1+	2o	2+	1+	1+	0+	5422	4322	34	30	8	14	19	9	8	2	16
11	1-	1+	1o	1o	1+	1+	1-	1-	3410	1213	4	8	6	6	8	9	5	5	6
12	2-	1-	2-	1+	1-	1-	1+	1+	2131	2222	12	4	13	8	5	5	8	9	8
13	1o	0+	1o	1o	1-	1o	1o	0+	2120	2213	6	2	7	6	5	7	7	3	5
14	1-	1-	1-	1+	1o	1+	1o	0+	2324	1223	5	4	4	8	6	8	6	3	6
15	0+	1o	1+	2+	2-	3-	2-	1-	2224	3422	3	6	10	20	11	23	13	4	11
16	0+	0+	1o	1+	1-	1o	1o	0+	2233	3652	2	3	6	8	4	6	7	3	5
17	0o	1-	1+	1+	1+	2-	3-	3-	1242	1222	1	4	8	8	8	12	23	21	11
18	2+	2-	2-	3o	1o	1o	1-	1+	5223	3222	17	11	13	30	6	7	5	8	12
19	1o	1o	1-	1-	1o	1-	1+	1+	3222	4333	7	7	4	5	7	5	8	9	7
20	2+	3-	3o	3o	3o	1+	3-	3+	4434	2242	18	22	29	32	27	9	25	39	25
21	5-	1+	1-	1+	3+	5-	4+	4o	4433	2664	72	8	4	8	39	75	66	57	41
22	3-	2o	2+	3-	2o	3-	3-	3-	2354	2555	24	15	18	23	16	23	26	22	21
23	2+	2-	3-	3o	3o	4o	3+	3o	4232	3531	17	11	24	31	32	54	37	31	30
24	3-	2+	3o	4-	3o	1+	3o	3-	3223	4354	21	17	27	41	28	10	29	21	24
25	2o	3o	3+	3o	4o	4-	5o	4o	1435	2232	16	31	37	33	55	49	96	60	47
26	3+	2o	2o	3-	3o	2+	1+	1+	2134	1332	34	16	16	26	32	17	10	10	20
27	2-	4+	5-	3+	6-	4+	4+	5-	3533	5543	12	65	72	40	126	70	65	71	65
28	4o	4o	3+	4-	4+	4+	4o	4-	3324	5232	59	57	37	47	68	69	56	50	55
29	3-	3+	2-	2+	4+	4-	3+	4-	2412	4354	26	35	12	18	64	47	35	42	35
30	3+	3o	3-	3o	3-	3o	3-	2o	2344	3533	38	29	23	31	23	29	23	16	27
31	2-	3-	2o	2+	2o	2+	1+	0+	4215	0313	13	23	16	19	15	17	9	3	14
											Monthly mean value of An								22.9

JANUARY 1986

	Ks								σs		as								As
1	2+	2+	3o	3o	4-	4-	3o	3o	3204	1224	19	18	30	30	48	42	31	33	31
2	3o	3o	3-	2o	4-	3o	2o	2-	3230	3223	30	28	23	15	49	31	15	11	25
3	1-	1-	1o	2+	3-	2-	1o	1+	3214	3333	4	5	7	20	23	13	6	10	11
4	2-	1+	1-	0+	1+	1+	0+	1+	1212	2322	12	8	5	3	10	10	3	8	7
5	1o	0+	1+	1+	1o	0+	0o	1o	2233	0203	6	2	8	9	7	3	0	6	5
6	1o	1-	0+	1-	3o	2o	5o	6-	1112	2333	6	5	3	4	27	14	96	121	35
7	5-	4+	3+	4-	3o	3o	3-	3+	2112	1231	83	67	37	41	27	31	26	34	43
8	4-	2-	1+	2-	2-	2o	2-	2-	2322	3233	44	13	10	12	12	15	11	11	16
9	2-	1o	1-	1+	1+	3o	4+	4-	1213	3353	13	6	4	10	9	31	68	48	24
10	3o	3-	1-	2-	2+	1o	0+	0+	2223	5322	31	22	5	13	17	7	3	3	13
11	1o	1+	0+	1+	1o	1+	1-	1+	3122	1234	7	8	3	9	6	10	4	8	7
12	2-	1o	1+	0+	1-	1-	1o	2-	2232	2223	11	7	9	3	5	5	6	12	7
13	1-	1-	1o	1+	1-	1o	1+	0+	2132	3233	4	4	6	8	5	6	9	3	6
14	1o	1o	1-	1-	1-	1o	1-	1-	1323	1433	6	6	4	5	5	7	5	5	5
15	1-	2-	2-	2+	1+	2+	2o	0+	1323	2222	4	11	11	18	10	17	15	3	11
16	1o	1-	1o	1-	0+	1-	1-	0o	3211	2431	6	4	6	4	3	4	5	1	4
17	0o	1o	1-	1+	1+	2o	3-	3o	2322	1311	1	6	5	8	9	14	23	27	12
18	2o	2-	2+	3-	0+	1-	1o	1+	2224	2443	14	11	18	22	3	5	7	9	11
19	1o	1+	1o	1o	1o	1-	1o	1+	3331	4333	7	9	7	6	6	4	7	9	7
20	2-	2o	3+	3+	3+	1+	3-	4-	2212	1234	13	15	34	38	35	10	22	45	27
21	5o	1-	1-	1+	3o	4+	5-	4+	7121	2436	91	4	4	9	28	65	75	63	42
22	3+	2+	2-	2o	2+	2+	2+	2+	6322	2423	35	18	11	14	19	19	20	19	19
23	2-	2-	3-	3-	3o	4-	4-	3+	3122	2331	13	13	21	23	28	42	45	35	28
24	2+	1+	3-	3o	2+	1-	2-	2+	3224	4242	18	10	22	29	18	4	13	17	16
25	2+	3-	3+	3o	4-	4-	5-	4-	3422	3432	20	23	40	30	45	47	75	44	41
26	3o	2+	2-	2+	3o	2o	2-	2-	2214	1141	31	17	13	17	28	16	11	12	18
27	2-	4-	4o	3+	5-	4-	4-	4o	2531	2244	13	44	55	36	75	47	42	54	46
28	4-	3+	3+	3-	4-	4o	4-	4-	3134	3132	45	37	35	25	45	54	50	44	42
29	3-	2+	2-	2o	3+	3o	3o	3o	4311	4334	22	20	11	16	40	27	30	28	24
30	3o	3-	2+	2+	2+	3-	3-	2o	1433	1332	28	21	19	18	19	24	22	15	21
31	1+	2-	1o	2-	2-	1o	1-	1-	2424	2222	10	13	7	11	12	7	4	5	9
											Monthly mean value of As								19.8

an , as INDICES 1986 (continued)

FEBRUARY 1986

	Kn								σn		an						An
1	1o	0+	0+	1+	2-	2+	2-	2-	2212	2321	6	3	2	8	13	20	12	12	10
2	1o	2-	1+	1+	2o	2-	2+	1o	2332	3231	7	11	9	10	15	12	20	6	11
3	1+	1+	1o	1o	1o	2o	2-	2o	2211	3123	8	10	7	7	7	14	13	16	10
4	1+	1o	1+	1-	1+	2o	1+	1-	2153	2322	9	7	9	5	10	14	10	4	9
5	1-	1-	1o	1+	2o	3-	2-	2+	3122	2215	4	5	6	9	14	23	12	18	11
6	1-	0+	1o	1+	3+	3+	3-	4-	2212	3314	4	2	6	9	35	40	21	41	20
7	3-	3+	3o	5o	5+	7-	6o	7+	1213	2433	21	38	29	88	113	242	172	305	126
8	6-	6-	6+	6+	7o	7+	8+	8+	4346	4444	122	136	182	188	286	323	491	499	278
9	8+	7-	5-	4o	4+	6o	5+	3+	5544	3212	466	203	73	51	61	172	104	37	146
10	3o	2o	1+	1+	1+	2-	3-	3o	2343	2321	30	15	10	10	9	13	26	32	18
11	3-	2+	2-	3o	4-	5-	3+	4-	3334	3624	21	19	12	30	47	85	40	48	38
12	4-	3o	3o	3o	3o	3+	4-	3-	2235	4443	43	30	30	30	28	37	45	21	33
13	3o	3-	3-	3-	3o	1+	3o	4o	2144	3244	29	26	23	24	28	10	30	54	28
14	4-	3-	2o	2+	3-	3o	3o	3+	6453	2112	47	23	16	20	21	32	31	36	28
15	2+	2o	1o	1o	1+	1+	1+	1-	1223	2223	18	15	6	7	9	8	8	5	10
16	0o	1o	1-	1-	1o	1+	2o	3o	1222	1213	1	6	5	4	7	9	16	27	9
17	2o	1o	1o	2-	1+	2+	3-	4-	2322	2223	14	7	6	11	10	20	21	41	16
18	3o	2+	2-	2o	2o	3-	2-	4o	5214	3422	33	19	13	15	14	23	11	54	23
19	3-	2-	2-	2+	2o	2-	2+	2o	4233	1121	24	12	11	17	15	11	19	15	16
20	3-	2+	3-	2+	3o	4o	4-	3-	3242	2533	21	20	23	19	33	58	43	24	30
21	3o	3-	3+	4o	3o	3-	3+	5o	4333	2242	29	21	36	56	33	24	35	93	41
22	4o	4-	4o	4-	4-	5-	4-	4o	3324	3531	56	44	55	48	49	81	41	52	53
23	5-	4+	4-	4-	4+	5-	4+	3+	3533	5543	71	62	47	43	65	75	70	40	59
24	2+	3+	2+	4-	4-	3-	3+	4-	2425	3344	19	34	20	41	44	23	39	42	33
25	3o	3-	3-	3o	3o	3o	3o	4-	3231	3331	28	25	21	31	29	33	32	43	30
26	3-	3o	3o	4-	4-	5o	3o	4-	2324	5341	22	29	32	46	50	97	31	41	44
27	4-	4-	3-	4o	2+	2+	3o	3o	2233	2134	42	43	26	53	18	19	28	29	32
28	3+	3o	2+	3+	3+	5-	5-	3o	5423	3534	36	30	18	37	37	74	72	29	42
											Monthly mean value of An								43.0

FEBRUARY 1986

	Ks								σs		as						As
1	2-	1-	0+	1o	2-	2+	1o	2-	2242	2524	11	4	3	6	11	19	7	13	9
2	2-	2-	1+	2-	2o	2-	2o	1o	2232	4422	12	11	10	11	16	11	15	7	12
3	1o	2-	1+	1+	1-	1+	2-	2o	3211	3122	6	12	9	8	5	9	12	15	10
4	2-	2-	2o	1+	1o	2-	1+	1o	4243	3343	11	12	16	10	7	11	10	6	10
5	1+	1+	1o	2-	2-	2o	2-	2+	2432	3232	8	8	6	11	11	14	12	20	11
6	0+	0+	2o	1o	4-	3+	3-	3+	2161	3342	3	2	16	7	44	40	25	35	22
7	2+	4-	3o	4+	6-	7o	6-	7o	3341	4633	19	50	31	70	126	249	145	278	121
8	6-	6-	6-	6o	7o	7+	8+	8+	4354	2252	121	121	141	158	273	294	480	477	258
9	8o	5+	5-	4o	4+	6+	5+	3+	2521	3223	442	109	76	51	67	184	105	40	134
10	3-	1+	1+	1+	1o	1+	3-	3+	2231	2224	21	10	8	8	6	8	24	35	15
11	2o	3-	2-	3-	3+	5-	4-	4-	0445	4222	15	23	11	21	34	74	45	42	33
12	3+	3-	3-	3-	2+	3+	3+	3-	4232	3253	36	21	26	23	19	37	35	24	28
13	3-	3-	2-	2+	2+	1+	3o	4-	2433	5314	24	23	13	18	17	10	28	50	23
14	4-	3o	2-	2o	3-	3o	3+	4-	7422	3234	49	28	11	16	24	31	37	47	30
15	3-	3-	1+	1o	1-	1o	1o	1o	4522	2223	24	22	8	7	5	6	7	6	11
16	0+	1+	1-	1-	1-	1-	2+	3+	3123	3423	3	8	5	5	4	5	20	37	11
17	3-	1+	1-	2o	1o	2-	2-	3+	2221	1234	24	10	4	14	6	12	13	34	15
18	3-	2o	2-	1+	1+	2o	1+	3+	3221	2035	26	14	12	9	9	15	9	39	17
19	3-	2-	2-	2o	2-	1+	2+	1+	5321	2241	22	11	13	14	12	10	17	8	13
20	3-	2+	2+	2o	3o	4o	4-	3-	3341	0122	22	20	19	16	30	51	45	24	28
21	3o	2+	3o	4o	3-	2+	3-	5-	4233	4134	31	18	29	51	25	17	24	71	33
22	3+	3o	4-	3o	4-	4+	3+	3+	4221	2331	35	31	42	32	43	67	34	35	40
23	4o	4-	3o	3o	3+	4o	4+	3o	5212	2553	59	41	29	30	38	51	68	32	44
24	2o	3-	2+	3o	3+	3-	3o	3-	2213	3123	14	23	17	27	34	21	28	26	24
25	3o	2+	2+	3-	3-	3-	3-	3+	3434	2213	27	18	19	25	22	23	21	38	24
26	2-	2+	3-	3+	4-	5-	3-	3+	3523	3323	13	18	22	34	42	80	22	37	34
27	3+	3+	2+	3+	2-	2-	3-	3-	4432	3444	38	35	19	40	13	13	25	26	26
28	3o	3-	2o	3o	3o	4-	4-	3o	5402	0444	30	23	15	30	30	50	50	31	32
											Monthly mean value of As								38.1

an , as INDICES 1986 (continued)

MARCH 1986

	Kn								σn		an						An
1	3-	2-	3+	3o	3-	4+	3+	2+	2222	3342	24	12	39	28	22	64	40	17	31
2	2+	2o	3o	3+	3o	2o	2o	2o	3444	3113	17	15	31	34	32	16	14	15	22
3	2o	1+	1o	1+	2o	2+	3-	4o	2212	0323	15	10	7	10	14	19	26	59	20
4	2+	2-	2o	1+	2o	2o	3-	2o	2202	1234	17	12	14	9	16	16	21	14	15
5	1+	1+	1o	1+	2o	3-	2o	2+	5412	0222	8	8	6	9	14	23	16	18	13
6	4-	3o	1o	3+	4o	4o	3+	5+	5313	1355	49	32	6	36	60	60	38	105	48
7	4+	3+	3o	4-	3+	4o	4o	5-	4423	4643	68	34	32	50	37	60	59	74	52
8	4+	4-	3o	3-	3o	4-	4-	2+	3432	4363	70	42	28	22	29	46	49	17	38
9	2-	2-	2o	2-	0+	1-	1-	0+	2321	3222	13	13	16	11	3	5	4	3	9
10	0o	0o	0+	0+	1-	1o	1-	1-	2122	1123	1	1	3	3	4	7	5	5	4
11	0o	0+	0+	1-	1o	1o	1+	1+	1222	1122	1	3	2	4	6	6	9	9	5
12	0+	0+	2+	2+	3-	2o	1o	2+	2254	3122	3	3	17	18	22	14	6	17	13
13	4-	3-	3+	3+	4-	4+	2+	3o	2353	5624	42	23	39	36	49	67	18	28	38
14	4-	1+	2-	1o	1+	1+	2o	2-	2222	2214	49	10	12	6	10	10	14	13	16
15	2-	2o	2-	2-	1+	1+	3o	3-	4322	1243	11	14	11	12	9	10	29	23	15
16	2-	2-	2+	3-	2o	1o	1+	1+	1333	2121	13	11	19	22	15	7	10	10	13
17	1+	1o	3-	2o	1o	2-	2o	1+	3233	1213	9	7	23	14	7	13	14	8	12
18	2o	2-	2-	3-	3-	3-	2-	2o	3523	3223	15	12	13	24	26	25	11	16	18
19	2o	2+	2+	2o	1+	3-	2+	1+	3432	2323	14	20	18	16	9	24	19	10	16
20	0+	0o	1o	1-	1+	1+	2-	1+	3001	2222	2	0	6	4	8	10	11	8	6
21	1o	2-	3-	3o	5-	3o	3o	4-	2131	2242	6	12	22	30	71	32	27	50	31
22	4o	4o	3o	2o	3o	3o	2+	3o	2213	3215	53	55	28	14	33	30	18	27	32
23	2-	2-	2+	2+	2+	2o	3+	2+	4132	1132	13	12	17	18	19	15	34	19	18
24	3-	3-	3-	3+	4+	4o	3+	2+	4343	3342	23	23	22	35	68	55	40	19	36
25	3+	3o	4o	3-	3+	3+	4+	4+	4243	2144	36	27	52	26	38	36	61	64	43
26	3o	2o	2o	1+	3o	3+	3-	3o	3233	3433	27	15	16	10	27	38	23	30	23
27	4o	3+	4-	3o	4-	3-	2+	1+	4323	4221	52	40	50	33	41	24	17	9	33
28	3-	2o	4-	3-	3-	3-	3+	2+	3333	3351	23	16	42	23	21	24	38	18	26
29	2o	2o	1+	1o	2+	3-	2+	1+	3121	3433	16	14	10	7	18	26	18	10	15
30	1-	0o	1o	1+	2-	2o	3-	2o	2112	2133	4	1	6	9	12	14	21	16	10
31	1-	0+	1o	2o	2+	2+	3-	2o	3242	3243	5	3	7	16	20	19	22	14	13
											Monthly mean value of An								22.1

MARCH 1986

	Ks								σs		as						As
1	2+	2-	3-	2+	3-	4-	3o	2+	3323	2233	19	12	26	20	23	44	32	17	24
2	2o	2o	3-	3-	3-	2-	2-	2-	2343	2253	14	15	26	26	23	11	11	13	17
3	2-	1o	1-	1o	1+	2-	3o	4-	3423	2344	13	7	4	6	9	13	31	50	17
4	2o	2-	2-	1+	2o	2+	3o	2o	3221	2143	15	13	13	9	16	17	27	14	16
5	1-	0+	1o	1+	2o	3+	2+	2+	4142	2411	4	2	7	8	16	38	17	18	14
6	4o	3-	1o	4-	5o	5-	3o	5o	7333	1117	54	25	6	49	87	73	33	102	54
7	4o	3+	3o	3+	3o	4-	4o	5-	4533	1465	55	37	28	36	27	45	58	74	45
8	4-	3o	3o	2+	2+	4o	4-	2+	3552	2331	48	31	27	19	20	51	45	17	32
9	2-	2-	3-	1o	0o	0+	0o	0o	2231	1211	13	13	22	7	1	2	1	1	8
10	0o	0+	0+	0+	0o	1+	0+	0+	1122	0232	1	2	3	2	0	8	3	3	3
11	0o	1-	0o	0o	0+	1-	1o	1-	0200	1232	0	5	0	0	3	4	6	5	3
12	0o	1-	2-	2o	2o	1+	0+	2-	1243	2122	1	4	11	15	14	10	3	12	9
13	3o	2+	3o	3+	4-	4o	2+	3o	3432	4223	29	18	29	35	47	59	18	28	33
14	4o	1+	1+	1-	0+	1o	2-	1+	4331	0324	51	8	9	5	3	7	11	10	13
15	1+	1+	2-	1o	1o	1o	3o	3-	5524	1442	9	10	11	7	7	7	27	26	13
16	2-	1+	2o	3-	2-	1-	1+	1+	2433	3232	13	9	16	24	12	4	9	8	12
17	1o	1+	2o	2-	1-	1o	2o	1-	5343	3233	6	8	15	12	5	6	14	5	9
18	2o	1+	2o	3-	2o	2+	1o	2-	4342	2302	15	10	14	26	16	17	7	13	15
19	2o	2+	2o	2o	1o	2+	2o	1+	4422	1353	16	17	15	16	6	17	15	8	14
20	0+	0o	1-	1-	0+	1o	1o	0+	2110	1341	2	1	5	4	3	6	7	2	4
21	1+	2+	3-	3-	4+	2+	3-	4+	3322	3232	8	19	26	26	61	18	21	70	31
22	4+	4-	2+	2-	3+	3o	2+	3-	2422	3325	61	47	18	12	38	31	18	24	31
23	2-	2-	2+	2o	2+	1+	3o	2+	4220	1254	11	12	18	16	17	10	30	19	17
24	2o	2+	3-	3+	4o	4-	3o	2+	3331	1344	15	19	22	38	52	41	30	17	29
25	3o	2+	3+	2+	3-	3o	4+	4o	2241	2244	32	18	38	19	26	28	66	53	35
26	3o	2-	2-	1+	3-	3+	2+	3-	2243	2112	31	13	11	10	25	35	17	25	21
27	4+	3o	4-	3+	3+	2o	2o	1o	6332	2301	69	27	49	37	35	15	16	6	32
28	2+	2-	3-	3-	2o	3-	3o	2+	3422	2441	20	13	26	21	16	23	33	17	21
29	2o	2-	1+	0+	2o	3o	2+	1+	4342	4332	16	12	9	3	15	28	17	9	14
30	0o	0+	1-	1-	1+	2-	2+	2-	1122	3333	1	2	4	5	8	12	18	13	8
31	1o	0o	1-	2-	2+	2o	3-	1+	3133	5133	6	1	4	13	17	14	21	9	11
											Monthly mean value of As								19.5

an , as INDICES 1986 (continued)

APRIL 1986

	Kn								σn		an						An
1	1+	2-	2o	3o	2-	2-	3o	1+	3332	1253	9	11	14	28	13	12	30	9	16
2	2-	2-	1+	2-	1+	1+	2-	2-	2233	2212	11	12	8	13	9	8	12	13	11
3	3o	3o	3o	2-	2+	2+	3-	2-	6322	3233	32	32	31	11	18	19	26	13	23
4	0+	1o	1-	1+	1-	1o	1+	2-	2212	3133	3	7	4	9	5	7	8	11	7
5	1-	2+	2o	2o	1+	2+	3-	3+	1410	2032	5	20	14	14	8	19	26	37	18
6	0+	1+	1o	1-	1o	1o	1+	2o	2333	2123	3	9	7	5	7	7	9	16	8
7	1+	1+	1o	1+	1+	2o	1+	1+	2333	2332	10	8	6	9	9	15	9	10	10
8	1-	1o	1+	3-	2o	1-	1+	2+	2123	1213	4	7	10	22	14	4	8	17	11
9	2+	3o	2+	2o	3o	2+	3-	3-	4422	4423	17	28	19	16	31	20	24	23	22
10	4o	3+	4o	3+	3-	4-	2o	0+	1335	3222	56	40	52	35	24	48	14	2	34
11	1-	2+	1o	0+	1-	2-	1+	3-	3523	2114	5	17	6	3	5	12	9	21	10
12	3-	1+	3-	3-	2o	2+	2o	2+	6244	4122	22	10	24	22	14	17	16	19	18
13	2-	0+	2-	1+	1+	1-	2o	2-	2232	2244	11	3	11	10	10	5	16	13	10
14	1-	1-	1o	1+	1+	1+	1+	1+	3214	2322	5	5	6	10	10	9	9	9	8
15	0+	2-	2-	2-	2+	2+	2o	2o	2223	3130	2	13	12	12	19	17	14	14	13
16	3-	2-	1+	3-	2o	2+	2-	2o	3222	1222	23	13	8	21	15	17	12	15	16
17	1o	1-	1+	2-	2o	2o	3-	2o	0131	2323	6	5	8	13	14	14	21	14	12
18	3o	2o	2+	1+	1o	1-	1+	2o	4343	2113	28	14	20	8	7	5	8	16	13
19	3-	3-	2-	2+	3-	3o	3-	2-	4422	3233	23	25	12	19	26	27	21	12	21
20	1o	1o	1+	2-	1+	1+	2o	2o	2222	3212	7	6	8	12	9	9	16	16	10
21	3o	2-	1+	2o	1+	1o	1+	2+	5131	2323	33	12	8	15	8	6	10	17	14
22	2-	3-	2+	4-	2o	2o	3-	2+	2221	3232	12	25	17	49	14	15	25	18	22
23	2-	2o	2+	2-	1+	2+	3+	3o	2142	3121	12	15	19	12	9	17	37	32	19
24	3-	2o	3-	3o	3-	2o	2+	2o	3122	2122	23	14	25	27	23	15	20	15	20
25	3-	2+	2o	2o	2-	1+	1+	1o	3202	1343	26	18	14	15	13	10	10	7	14
26	3-	2-	2+	2+	2o	1o	1+	2-	2331	3122	24	13	19	17	16	7	9	12	15
27	1+	1+	1o	1o	1o	2-	1-	2-	2321	1232	10	8	6	7	7	11	5	12	8
28	3-	3o	4-	3o	2o	2-	1+	1+	3232	1332	25	28	48	32	16	13	9	9	23
29	2-	3o	3o	3-	3o	1+	1o	1o	2243	2133	11	28	29	23	29	8	7	7	18
30	2-	2o	1-	1+	2-	2o	1+	1o	2222	5224	11	15	4	8	13	16	10	7	11
											Monthly mean value of An								15.2

APRIL 1986

	Ks								σs		as						As
1	2-	1+	1+	3-	1o	1-	3-	1-	3222	2242	13	10	10	22	6	5	24	4	12
2	1+	2-	1-	1+	1o	1+	1+	1o	1422	5410	10	12	5	10	7	8	9	7	9
3	3o	3+	3o	1-	2o	2+	2+	1+	6423	5431	31	35	28	5	14	17	20	8	20
4	0+	1o	0+	1-	0+	0o	0+	1o	3212	2122	2	6	3	4	3	1	3	6	4
5	1-	2+	2-	1+	0+	2o	3-	3o	2321	2233	5	19	11	9	3	15	23	30	14
6	1-	1+	1+	0o	0+	0o	1-	2o	2422	2124	4	9	8	1	3	1	5	16	6
7	1+	1+	1o	1-	1o	1o	1o	1-	2132	3412	8	8	7	5	7	7	7	4	7
8	1-	1+	1+	3-	2-	0o	0+	2-	3232	4123	5	8	9	21	11	1	3	13	9
9	2+	3-	2+	2o	3o	3-	3o	3-	4453	4634	18	24	17	15	31	21	31	23	23
10	5-	4-	4-	3+	3-	4-	1+	0o	5443	4430	85	48	46	39	26	43	10	0	37
11	0+	2o	1-	0o	0o	1+	1o	2o	2531	0235	3	16	4	1	0	10	6	16	7
12	3-	1+	3-	3-	2+	2+	2o	2-	5333	4322	25	8	25	25	17	17	14	13	18
13	1+	1-	1+	2o	2-	0+	2o	2-	2156	7264	10	4	8	14	13	3	16	11	10
14	0+	0+	1o	2-	1-	0+	1-	1o	3218	5313	2	3	7	12	5	3	4	6	5
15	0o	2o	1+	1-	2o	1+	1+	1+	0312	3112	0	15	10	5	14	9	8	10	9
16	2+	2-	0+	2+	1+	2-	1+	1o	3224	1112	20	12	3	18	9	12	9	7	11
17	1-	1-	1o	1o	1+	2-	2-	1+	2112	4433	4	5	7	7	10	12	13	9	8
18	3o	2+	2o	1-	0o	0o	0+	2-	3733	1123	31	20	16	5	1	1	2	11	11
19	3-	2o	1+	2o	3-	2o	2o	2o	5412	4234	22	16	10	14	22	14	16	15	16
20	1-	0+	1-	0+	1o	0+	2-	2-	1222	5233	5	3	5	3	6	3	12	13	6
21	3+	1+	1o	1+	1-	0+	0+	1+	5123	3112	34	10	7	10	5	2	2	9	10
22	1+	3-	2o	3o	1o	1o	3-	3-	2423	2224	10	25	14	33	6	7	22	21	17
23	1+	2o	2+	1-	0+	1o	3o	3-	1341	1322	10	14	20	4	2	7	33	22	14
24	2+	2-	2o	2+	2-	1+	1+	1+	4223	3121	18	12	16	20	13	8	9	8	13
25	3-	2o	1o	1+	1+	0+	0+	0o	4303	2231	22	14	7	8	8	3	2	1	8
26	2+	2-	2-	1+	1+	0o	0o	1-	4322	2013	17	13	13	10	8	0	1	4	8
27	1-	0+	0+	0+	0o	0+	0o	1+	4111	0215	5	2	2	2	0	3	1	10	3
28	3o	3+	4-	3-	1+	1-	0+	0o	2422	2221	29	38	44	26	8	4	3	1	19
29	1o	3-	3-	2+	3-	1o	0+	1-	2422	2322	6	25	22	18	21	7	2	4	13
30	1+	1+	0o	0+	1o	1+	1o	0o	4500	5311	9	10	0	3	7	8	7	1	6
											Monthly mean value of As								11.8

MAY 1986																				
	Kn								σn		an									An
1	1o	1+	2-	1+	2o	0+	2+	2-	2112	2242	7	8	11	9	14	2	17	11		10
2	2o	3o	3o	3+	5o	4o	5o	5+	1233	2345	14	27	27	36	94	59	96	110		58
3	6o	5o	5o	3-	2-	1o	2o	1+	7765	3123	156	100	92	26	12	6	15	10		52
4	1+	1+	2o	4-	5-	3o	2o	4-	4423	2123	9	10	14	48	74	27	15	44		30
5	3-	3-	2o	2o	3-	3o	3-	5-	5452	2424	26	25	15	14	21	31	25	71		29
6	5-	5o	4o	4o	4o	5-	5o	5o	6233	1447	74	95	59	55	59	74	101	97		77
7	4-	2-	3o	3-	2o	2-	3+	2-	5124	4342	47	12	27	24	16	13	34	11		23
8	2-	1-	1+	2o	3o	2o	2+	2-	2231	3142	12	5	10	15	33	14	17	12		15
9	2o	2-	1o	2-	2-	1+	2-	2o	5222	1211	14	11	7	11	13	9	13	14		12
10	3-	1o	1-	3-	2-	2-	2o	1o	5332	1222	23	7	4	22	13	11	14	6		13
11	2-	2-	2+	2o	2o	2-	2o	2o	2132	2141	11	13	18	15	14	12	15	16		14
12	2o	3o	1+	1+	2+	1o	1+	2-	3322	2233	14	28	10	10	17	7	9	12		13
13	1-	1-	1o	1+	2-	1-	2-	2o	3332	2224	5	5	6	9	11	5	12	15		9
14	1+	1+	1+	0+	1-	1-	1+	1o	2432	2323	9	10	10	3	4	5	9	6		7
15	0+	1o	1+	1+	1o	1o	1+	2-	2542	1122	3	7	8	8	6	7	9	12		8
16	1-	1+	2+	3-	2+	2-	2+	3-	1332	3234	5	10	17	24	17	13	18	24		16
17	2+	3-	1+	3-	2+	2+	2o	2-	5524	3223	19	22	9	21	20	20	14	12		17
18	1o	2o	3-	2o	2o	1+	1-	2o	1131	2141	6	14	21	15	14	8	4	15		12
19	2o	2-	2-	2+	3-	3o	3-	2+	4333	2412	15	13	13	17	22	27	25	18		19
20	2o	2-	0+	2-	2-	2-	2-	2o	2322	2221	14	12	3	11	12	13	11	15		11
21	1o	1o	2o	3-	3-	2+	2o	1+	3343	2232	6	6	15	25	21	20	14	8		14
22	1-	1-	1-	0+	1o	2-	2o	2-	3132	4332	5	4	5	3	6	13	16	13		8
23	2o	2o	3o	3-	2+	1+	2-	2o	1323	2121	15	14	32	21	19	10	11	16		17
24	2-	2-	1+	2o	3+	2+	1+	2o	3122	3224	12	13	10	14	34	20	9	16		16
25	2+	3o	3+	3o	2+	2+	2-	2o	2234	1344	17	29	37	31	18	20	12	16		23
26	1+	2o	3+	3-	2o	3-	2o	1+	4223	3212	10	15	36	24	15	24	16	10		19
27	2o	2-	3-	2o	2-	2+	2o	3o	3142	1233	15	13	24	15	12	17	16	30		18
28	3-	1-	0+	1-	1o	0+	1o	1+	2131	1322	23	5	3	5	6	3	7	9		8
29	1+	1o	1-	2-	1+	1o	1o	2o	2032	2332	9	6	5	11	9	6	7	15		9
30	1o	1+	1+	2o	2o	3o	4-	3+	3233	2332	7	8	9	14	16	32	44	37		21
31	3o	4o	3+	3o	3o	3-	3+	3o	4432	4223	30	53	38	27	33	23	39	32		34
											Monthly mean value of An									20.4

MAY 1986																				
	Ks								σs		as									As
1	1-	1o	1+	1-	1-	0o	2-	1-	2212	2041	4	7	8	5	4	0	11	4		5
2	2-	3-	3o	4-	5o	4+	4o	6-	2432	1236	13	24	30	43	97	68	60	132		58
3	6-	5o	5-	3o	2-	1-	2o	1o	7664	4352	140	92	76	33	13	5	16	6		48
4	2o	1+	2o	3o	4o	3o	2-	4-	5541	3024	15	8	14	33	52	32	11	48		27
5	3o	2+	1+	1+	2+	3-	3-	5-	6414	3318	28	19	10	8	20	23	24	80		27
6	5-	5+	5-	4+	4+	5+	5o	5o	7363	2534	76	118	72	62	68	110	99	89		87
7	4-	1+	3o	2+	1+	2-	3+	1o	6334	2352	47	10	28	19	10	12	37	6		21
8	2-	1-	1+	1+	3-	1+	2-	2-	2222	2262	11	4	8	9	21	8	13	11		11
9	1+	1+	1-	1+	1+	1o	1+	1+	4223	4232	10	10	5	8	8	6	8	8		8
10	3-	1-	0o	2-	1o	1-	1+	0+	5313	3212	22	5	1	12	7	5	9	3		8
11	1o	2o	2-	1+	1+	1o	1o	1+	2524	1112	7	16	12	10	8	6	7	8		9
12	2-	3o	1+	0+	1+	1-	0+	0+	3522	3212	12	27	8	2	10	5	2	3		9
13	0o	0o	0+	1-	1-	0o	1-	2-	1122	4122	1	1	3	4	4	1	5	13		4
14	1o	1o	0+	0+	0o	0o	0+	0+	1321	1132	6	6	3	2	1	1	3	2		3
15	0o	1-	1o	0+	0+	0+	1+	1+	1550	2243	1	5	6	3	2	2	10	10		5
16	0+	1-	2o	3-	2+	2o	2o	3+	2235	5316	3	5	15	22	20	14	14	34		16
17	3o	3-	1+	2-	2+	2o	1o	1+	6512	5334	27	21	8	12	17	16	7	9		15
18	0+	1+	2+	2-	1+	0+	0o	1+	2132	2211	2	9	17	13	8	2	1	8		8
19	2o	2o	1+	1o	2-	2o	3-	1+	5520	5331	14	14	8	7	12	16	21	10		13
20	1o	1-	0o	1o	1o	1o	1-	1+	2311	2022	7	5	1	6	6	7	4	10		6
21	0o	0+	2-	2o	2-	1+	2-	1-	2254	2232	1	3	12	14	11	8	11	5		8
22	0o	0o	0o	0o	0o	0+	1o	0+	1011	0122	1	0	1	1	0	2	7	3		2
23	2-	1+	3-	2o	1+	1-	0+	2-	3321	1434	13	9	23	14	10	4	3	11		11
24	2o	1+	1o	2-	2+	2-	0+	1o	5312	3312	14	10	7	11	20	11	2	7		10
25	2o	2+	3o	3-	2-	1+	1-	0+	3314	3133	14	19	30	25	12	8	4	3		14
26	2-	1o	3o	3-	1+	3o	2-	0+	4234	1121	12	7	29	21	9	29	13	2		15
27	2o	1+	3-	2-	1o	1o	1+	2+	4122	2323	15	8	22	11	6	6	9	19		12
28	2o	0o	0o	0o	0+	0o	0o	0+	1110	2111	14	1	1	0	2	1	1	2		3
29	1-	0+	0o	1-	0+	0o	0+	2-	2213	2132	4	2	1	4	3	1	2	13		4
30	1-	0+	0+	1o	1+	3-	3+	3-	3221	4332	5	3	3	6	8	26	34	21		13
31	3+	4o	3+	3-	3o	2o	4-	3+	3344	5125	39	57	35	21	33	15	44	34		35
											Monthly mean value of As									16.6

an , as INDICES 1986 (continued)

JUNE 1986

	Kn								σn		an						An
1	4-	2+	3-	3-	2o	3-	3o	3+	1232	3312	49	19	22	26	16	26	27	39	28
2	2+	2+	2-	1+	2o	2+	3-	3-	4531	2323	18	17	13	9	16	17	21	21	17
3	3o	3-	2+	2o	2o	2o	3-	3-	2333	2233	28	24	20	14	14	14	25	25	21
4	2-	2+	3-	3-	3-	2-	2+	1o	2433	3343	13	17	23	26	22	13	19	6	17
5	1+	1o	2-	2+	1+	1+	2-	2-	3231	2322	8	7	13	17	8	10	11	11	11
6	2-	2-	2-	2-	2+	2+	2o	1+	3232	3311	11	12	11	11	19	17	14	8	13
7	1+	2o	3-	3+	3+	3o	2+	3o	1151	3222	8	15	24	36	36	27	20	31	25
8	1+	2+	3o	3-	2-	1+	1+	2+	2134	2223	10	19	28	21	11	9	9	18	16
9	2+	1+	1o	2-	1+	2+	3-	2o	4243	3311	18	10	7	12	8	17	24	16	14
10	3-	3o	4-	3o	3-	2o	2-	2+	3144	2323	23	30	50	33	24	16	12	19	26
11	2+	2-	2o	3-	2+	2-	1o	2-	3221	1142	17	11	14	21	19	13	7	12	14
12	1+	2+	2-	1+	2+	2-	2-	2+	2322	3223	9	20	11	10	17	13	11	17	14
13	2-	2-	3-	2-	2o	2o	2+	2-	3444	2223	13	13	22	12	14	16	17	12	15
14	2-	2o	2-	2o	2-	2-	3-	2-	2112	3333	12	14	12	15	12	13	22	12	14
15	2-	1o	2-	1+	2+	2+	1+	1o	3232	5225	11	7	12	10	18	18	10	7	12
16	1o	1-	1+	2o	2o	2+	2+	2o	2332	1223	7	4	8	16	15	18	17	14	12
17	1o	2o	2o	3+	3-	2o	2o	2o	1124	3333	7	16	14	40	22	16	14	14	18
18	2o	3-	2-	3-	3+	2o	1+	1+	2333	3123	14	23	13	21	36	16	10	8	18
19	1+	1o	0+	1+	1-	2o	2+	3-	2233	2212	10	6	3	8	4	14	18	24	11
20	2+	1+	2o	2-	2o	2-	2-	2o	2314	3134	19	9	15	11	16	11	13	15	14
21	2+	2o	2+	3o	1+	1+	2-	1-	4433	3223	17	16	18	29	8	9	12	4	14
22	3-	3-	2o	2-	2-	2o	2-	2+	4334	2324	22	23	14	12	11	16	11	20	16
23	2+	2-	1+	1+	1+	1+	2-	1o	4222	2222	17	12	10	9	10	9	13	6	11
24	1-	2o	3-	4-	2+	2+	2o	1o	3324	3341	5	14	22	43	17	19	14	7	18
25	1o	1-	1+	1o	1o	1o	1+	1+	2222	0233	7	5	8	6	6	7	8	9	7
26	1+	2-	2-	2-	1-	1+	1+	2+	2232	2123	9	12	11	11	5	9	10	17	11
27	2-	2+	2-	3o	4+	4-	4o	4+	3322	3321	13	20	12	32	69	49	54	67	40
28	4-	5o	3+	2o	2+	2-	2o	3-	4752	2132	49	88	37	14	20	11	15	24	32
29	2-	1+	2-	2o	3+	4-	3-	3o	3222	5411	13	10	11	15	37	41	23	29	22
30	3o	2-	1-	2o	2o	3-	2+	3-	3321	0234	29	13	5	14	14	22	17	26	18
																	Monthly mean value of An		17.3

JUNE 1986

	Ks								σs		as						As
1	5-	3-	2+	2+	2+	3o	3o	4-	2242	5322	76	24	19	19	17	29	29	46	32
2	3-	2-	2-	0+	1+	1o	2o	2+	5741	2334	21	13	11	2	10	7	14	18	12
3	3o	3-	2+	2-	2o	1+	3o	3-	2544	5232	29	22	19	11	16	10	27	21	19
4	2o	2+	3-	3o	2o	1-	2+	0+	3535	4342	14	17	24	30	16	5	20	2	16
5	1-	0o	1+	2-	0o	0o	1-	1+	3142	0122	5	1	8	11	0	1	4	8	5
6	2-	1+	1+	1o	2+	1+	2-	0+	2222	5241	12	10	8	6	20	10	12	2	10
7	1-	1o	3o	3+	3-	2+	2o	3o	2154	2533	5	6	27	40	22	18	15	27	20
8	1+	2+	3o	2+	1o	0o	1-	2o	1653	1022	8	18	30	18	6	0	4	16	13
9	2o	1+	1-	1o	0+	2-	2+	2-	3222	2243	14	8	4	7	3	13	18	12	10
10	3-	3o	4o	3-	2o	1+	1+	3-	4542	0235	25	32	58	23	16	9	10	23	25
11	3-	1o	2-	2-	2-	1-	0+	1o	5242	2313	25	7	11	11	13	5	2	7	10
12	1+	2+	1+	1+	2-	2-	1+	2o	3412	2213	8	17	10	10	12	12	8	16	12
13	1+	1+	2o	1o	1+	2-	2o	1o	3444	2242	9	9	16	7	8	11	14	7	10
14	1+	2o	2-	1+	1+	1-	2o	2-	3513	4244	9	16	13	9	8	4	16	11	11
15	1+	0+	1+	1o	1+	2o	0+	0+	4245	2311	8	3	9	6	9	14	2	2	7
16	0+	0o	1-	1+	1o	1+	1o	2-	1032	2324	2	0	5	8	6	8	6	11	6
17	1-	2-	1+	3-	2+	1+	1+	1+	2532	4334	4	11	10	23	17	10	10	8	12
18	2-	2+	2-	1+	2o	2-	0+	1-	5422	1221	13	18	11	10	14	12	3	4	11
19	1+	0+	0o	0o	0o	1o	2-	2-	4101	1321	8	2	0	1	1	6	12	11	5
20	2-	1-	1+	1o	1-	1-	1+	2-	4223	2234	11	5	10	6	5	4	8	12	8
21	2+	2+	3-	3-	1-	0+	1o	0o	3644	3120	20	20	23	24	4	2	7	0	13
22	3-	3o	1+	1o	1o	2-	1o	1o	5532	4512	24	31	8	6	7	13	6	7	13
23	3-	1+	1o	0+	0o	0+	1o	0o	5131	1130	23	8	6	2	1	2	6	0	6
24	0+	2-	2+	3-	1+	1+	1-	0o	1322	1240	2	12	18	22	8	10	5	0	10
25	0o	0+	1-	0o	0+	0+	0o	0+	1230	1211	1	2	5	0	2	2	1	2	2
26	1o	1-	1o	0+	0+	0+	1-	1-	3222	1123	6	4	7	3	2	2	4	5	4
27	1+	3-	2o	3-	3+	4-	4+	5-	3534	3235	10	21	14	25	35	48	63	81	37
28	5-	5o	3o	1o	1o	0+	2-	3o	6730	3325	75	90	29	7	7	3	12	28	31
29	2o	1+	1-	2-	3o	3o	2+	4-	4122	5423	15	8	5	13	32	30	18	46	21
30	3+	2o	0o	1o	1o	3-	1+	2-	4301	0121	36	14	0	6	7	21	9	11	13
																	Monthly mean value of As		13.5

an , as INDICES 1986 (continued)

JULY 1986																				
	Kn								σn		an									An
1	3o	2+	1o	1+	1-	2o	2-	2-	5323	2422	33	20	7	8	5	14	12	11		14
2	2o	2+	3+	4-	3-	3-	3o	3o	3323	3313	14	19	35	43	24	21	32	27		27
3	2+	2+	3-	3-	2-	1+	2-	2o	3233	2121	20	19	23	22	13	10	11	14		17
4	2+	2+	2+	2-	2o	2o	2+	2o	4343	1232	19	17	19	13	14	14	17	15		16
5	2o	2-	2-	2-	2-	1+	1+	3-	3122	2243	16	11	13	11	13	10	10	24		14
6	2o	2o	1o	1+	2-	2-	2o	1o	2422	2112	16	14	7	8	11	13	15	7		11
7	1o	1+	2-	1o	1-	1+	1o	2-	3123	1222	6	9	12	6	5	9	7	12		8
8	1o	2-	2o	1+	1+	2+	3-	2o	0333	2231	6	11	14	10	10	20	21	15		13
9	2+	2o	2o	2-	3-	2-	2-	2-	3233	3322	20	15	14	13	23	12	12	11		15
10	2+	2o	1+	2+	1+	2-	2o	1o	3133	1332	20	14	10	18	9	11	14	7		13
11	1o	2-	2-	1+	1o	2-	1+	1o	3233	1323	6	11	11	10	7	12	8	7		9
12	1+	1+	1o	2-	2o	2+	2+	2o	3131	3222	8	9	6	11	14	18	20	15		13
13	3-	3-	2o	1+	3-	1+	1+	1+	2324	3223	22	23	16	9	24	8	10	10		15
14	1+	1+	1+	2-	2-	1+	1+	1+	2333	2233	10	9	10	12	11	9	8	10		10
15	1o	1+	1o	2-	1+	1+	1+	2-	2323	2322	7	9	7	12	8	10	9	12		9
16	1+	1+	1o	2-	2+	2+	1+	2+	3343	2322	10	8	7	12	18	17	10	18		13
17	3o	3o	3-	2-	2o	1+	1o	2+	3232	1222	27	27	26	13	15	9	6	17		18
18	2o	2o	1+	2+	2o	2o	1+	2-	1133	2032	15	14	10	18	14	14	9	13		13
19	2-	2-	2-	1-	1o	2-	1+	2-	2212	1232	12	11	12	5	6	11	10	11		10
20	1+	1o	1-	1o	1+	2-	2-	2-	3232	2322	9	7	4	6	8	12	12	13		9
21	2o	2-	2-	2+	2o	2o	2-	3-	4331	2222	14	12	12	17	16	14	12	22		15
22	3-	3-	2-	2o	2o	2-	1o	1+	2334	1323	24	21	11	16	14	11	6	10		14
23	2-	1+	1+	2-	2o	2-	1-	1+	2322	2321	11	10	8	11	14	11	5	8		10
24	1-	1+	1+	1+	1o	2o	3+	5o	3423	2322	5	8	10	9	6	14	35	100		23
25	3+	3-	2+	2+	2-	2o	3+	5o	3132	1231	40	22	17	17	13	16	34	88		31
26	4-	4-	3o	3o	4-	3+	3-	3-	4223	3222	50	45	31	33	44	34	23	26		36
27	3-	2+	4-	4+	2+	2+	2-	3o	3222	3222	21	17	41	68	18	17	13	29		28
28	3-	2o	2+	3-	3o	2+	2-	2+	3322	2322	23	16	20	23	30	19	13	19		20
29	3o	2+	3o	3o	3+	3o	4-	3-	4233	2233	28	20	27	31	36	29	42	25		30
30	3o	3-	3+	3-	2+	2+	2o	2+	2233	1322	29	21	36	26	19	20	15	20		23
31	3-	3-	2o	4-	3-	2+	2-	2o	4122	3322	24	26	16	46	24	17	13	16		23
											Monthly mean value of An									16.8

JULY 1986																				
	Ks								σs		as									As
1	3o	3-	1+	1o	0+	1o	2-	1+	6424	4243	28	22	8	6	2	6	11	9		12
2	1+	3-	3+	3+	3-	2o	3o	3o	3531	2444	10	21	38	34	21	16	28	28		25
3	3-	2+	3-	2+	1o	1o	1+	1+	4433	2232	24	18	25	18	6	6	8	9		14
4	3o	2o	2o	1+	1+	2o	2+	2-	3411	1233	27	16	15	10	8	16	17	13		15
5	2+	1+	1o	1o	1+	0o	1+	3o	4222	1345	19	8	7	6	8	1	8	27		11
6	2+	2-	0+	0+	0+	1o	1-	0o	4614	3221	17	13	2	3	2	7	5	1		6
7	0+	1o	1+	0o	0o	0+	0+	1o	2331	1224	3	6	9	1	1	3	2	7		4
8	1-	1-	1+	0o	1o	2-	2o	2+	2130	5343	4	5	9	0	6	11	15	17		8
9	2+	1+	2-	1+	3-	1-	0+	1o	3122	2223	18	8	12	10	23	4	3	6		11
10	3o	1+	1o	1+	1-	0+	1-	1-	3312	1322	27	9	6	8	5	2	4	4		8
11	0+	1+	2-	1-	1-	1-	0+	1-	1553	4331	2	8	11	5	4	4	3	5		5
12	0+	1o	0+	1-	1o	1+	1+	2-	3110	2222	2	6	2	4	7	9	10	12		7
13	2+	2+	2-	1-	2+	1-	0+	0o	1332	7211	17	18	11	4	18	5	2	1		10
14	1-	1o	1-	1+	1o	1o	0+	0+	3324	2222	5	6	5	9	6	6	2	3		5
15	1-	0+	0+	1o	0+	0+	0o	0o	2221	1211	4	3	3	6	2	3	1	1		3
16	1-	0+	0o	1o	1+	1+	0+	2-	4211	1222	4	3	1	7	9	10	2	12		6
17	2+	3-	3-	2-	1o	0+	0o	1+	4322	1114	19	24	21	13	6	2	1	9		12
18	2o	2o	1-	2+	2o	1+	0+	1+	3113	6216	14	15	5	18	16	8	2	10		11
19	1o	1+	1-	0o	0o	0+	0o	1-	2130	1112	7	8	4	0	1	2	1	5		4
20	1+	1-	0+	0+	0+	0+	0+	1+	4221	2102	8	4	2	2	3	2	3	8		4
21	1+	1+	1o	2-	1o	1o	1o	2-	3322	2312	9	10	6	12	6	6	6	12		8
22	3-	2o	1+	2o	2-	1-	0+	0+	4456	4321	22	14	10	14	12	4	3	2		10
23	1o	1-	1o	1o	1+	1-	0+	1-	2323	3222	7	4	7	6	9	5	3	4		6
24	0o	1-	1-	1-	0o	1+	3o	5-	1332	1434	1	5	5	5	1	9	28	85		17
25	3+	2+	2o	2-	1o	1+	2+	5o	4332	2315	38	17	15	12	7	9	18	90		26
26	4+	4o	3-	3-	4-	3o	2+	3o	5434	3312	64	54	26	26	44	32	17	33		37
27	3o	2+	4o	4+	2+	2-	1+	3-	2453	4212	30	17	57	68	17	11	8	22		29
28	2+	2+	3-	3-	3o	2o	2+	3-	3324	3335	19	19	22	24	29	16	18	23		21
29	3+	3o	3-	3o	4-	3o	4-	3+	4124	2122	36	28	23	30	42	29	46	39		34
30	3+	2+	3o	3-	2-	3-	2o	2o	5432	3414	34	20	29	23	11	21	14	16		21
31	3-	3o	2-	4-	3o	1+	2+	3-	6332	3332	26	27	12	47	28	9	17	21		23
											Monthly mean value of As									13.3

an , as INDICES 1986 (continued)

AUGUST 1986																				
	Kn								σn		an									An
1	2+	2-	2o	1+	1+	2-	2+	2+	2323	2335	17	13	16	9	9	12	18	20		14
2	1o	2-	2o	2o	2o	1+	1o	2-	2122	2432	6	12	15	14	15	10	6	11		11
3	2o	3+	3+	4o	3+	3o	4o	4-	3335	1433	16	35	40	53	34	33	59	46		40
4	4o	4o	3+	3+	3o	3+	2-	2+	3443	3223	57	56	35	34	32	37	13	19		35
5	2+	2+	2-	3-	2+	2o	3-	3o	3223	2225	19	19	13	22	18	15	22	31		20
6	2o	2o	3-	1-	2-	2-	2+	1o	4332	3422	15	14	22	4	12	12	19	7		13
7	1-	0+	1o	1-	1o	2-	1+	2-	2233	1332	5	3	7	5	6	11	9	13		7
8	3-	1+	2-	2+	3-	3-	2o	1+	4223	3222	21	10	12	20	22	23	16	9		17
9	2-	2-	2o	1+	2o	4-	3+	3o	2230	2313	11	12	14	9	15	42	34	28		21
10	2+	1o	2-	2-	1+	1+	2o	2o	5221	2111	17	7	12	12	9	9	15	14		12
11	2o	2-	2-	3-	3-	2-	2-	1o	4331	2134	14	13	11	26	25	12	11	6		15
12	0+	3-	3+	3o	3-	3o	2+	3-	2544	2122	3	26	34	27	22	31	20	21		23
13	2o	3o	3+	3o	3-	3-	2-	1+	2332	5422	14	29	36	33	25	22	11	8		22
14	1o	1o	1o	2-	1+	2+	2o	2+	2212	1224	7	6	7	12	8	20	14	17		11
15	2o	1+	2-	3-	2+	2o	1+	2-	5234	3202	15	10	11	22	17	15	9	13		14
16	2-	1-	2-	1+	1+	1o	1+	2-	3213	3222	12	5	11	8	9	6	10	12		9
17	2-	2o	1+	1o	2-	2-	1+	1-	3332	2212	12	14	8	7	12	12	8	5		10
18	1+	1+	1o	1+	1-	1o	0+	0o	3342	3121	8	8	7	8	5	7	2	1		6
19	1-	1o	1+	3-	2+	2-	1o	2o	2453	3143	5	6	9	21	20	12	7	15		12
20	2o	1+	1+	1-	3o	3+	4+	3o	5422	2142	15	10	10	5	32	36	63	33		26
21	2+	2+	4-	5-	4+	5-	3o	4-	2342	3322	17	17	42	78	66	78	31	42		46
22	3-	4-	5-	4-	4o	3-	4-	4-	2223	1233	23	50	77	41	60	21	49	44		46
23	3o	4o	4-	3o	4o	4o	3+	3o	1422	4342	28	51	49	33	55	60	35	33		43
24	4-	3+	3-	2+	2+	4-	4o	4-	2312	2433	45	34	23	18	20	41	60	49		36
25	4+	4o	4-	3-	2o	2-	2+	3-	5533	0222	62	52	46	25	14	13	18	22		32
26	3o	3-	3-	2o	4-	2+	1+	2-	2332	1221	27	21	25	15	48	17	10	13		22
27	3-	3o	3+	3+	4o	2+	2-	2+	1422	4222	24	29	40	38	51	18	13	19		29
28	2-	1+	2-	3-	4-	3o	3+	2+	2243	3242	12	8	12	22	48	32	36	19		24
29	3+	4-	3o	3+	4o	3+	3o	4-	4223	4332	34	42	30	38	55	40	33	41		39
30	3+	4-	4-	3o	4-	3-	4+	5-	3433	4233	40	50	41	28	41	22	69	78		46
31	4+	4-	2-	2o	2+	3-	3-	3o	3332	2431	70	42	12	15	18	21	26	28		29
											Monthly mean value of An									23.5

AUGUST 1986																				
	Ks								σs		as									As
1	2-	1+	2o	0+	1-	1o	2+	2-	2532	4212	12	10	14	3	4	6	17	12		10
2	0+	1+	2-	1+	1+	0+	0o	0+	1231	3301	2	9	11	8	9	2	0	2		5
3	2+	3-	3+	4o	2+	3-	4+	4-	2234	3444	17	25	34	52	20	25	62	43		35
4	4+	4+	3o	3+	3-	4-	1+	3-	4336	4322	63	70	31	37	23	41	10	22		37
5	3-	2+	1+	2+	2+	2-	2+	3+	3114	2115	21	17	10	18	18	12	19	39		19
6	2+	2+	2+	0o	1-	1-	2+	1-	6351	2343	20	19	18	1	5	4	20	4		11
7	0o	0o	1-	0+	0+	1-	0o	2-	1021	2302	1	0	5	2	3	5	0	13		4
8	2+	1+	2o	2o	2o	2+	2-	1-	4333	2222	18	9	15	14	16	18	11	5		13
9	1+	1+	1o	1-	2-	4-	3o	3-	3211	2223	9	10	7	4	11	44	33	24		18
10	2+	1o	2-	2-	1-	1-	2-	1-	5223	1112	17	7	11	11	5	5	12	5		9
11	2-	2-	2-	3-	2-	1+	1o	0+	4424	2322	11	12	11	24	13	8	7	3		11
12	0o	3-	3o	2+	2-	2o	2o	1+	0443	2211	0	24	27	20	11	16	15	10		15
13	2o	2+	3o	4-	3o	2+	1o	1o	3443	4231	14	20	28	42	30	20	7	6		21
14	0+	0+	1-	1+	1-	2-	2o	2o	2421	2254	3	3	5	8	4	13	14	15		8
15	2+	1+	1+	2o	1+	2-	1o	2+	5335	5232	17	8	8	16	9	11	7	17		12
16	2-	0+	1o	1o	0o	0o	1-	0+	4333	1120	11	3	6	6	1	1	5	3		5
17	1+	2o	1-	1-	1-	1o	1o	1-	2523	2222	10	15	5	5	5	7	6	4		7
18	0+	1o	0+	0+	0o	0o	0o	0o	2341	1010	3	6	3	2	1	0	1	0		2
19	0+	0+	1+	3-	3-	0+	0+	1+	2255	2215	3	3	8	26	22	3	2	9		10
20	2-	2-	1+	0o	3-	2+	5-	3o	6621	2432	12	13	9	1	26	19	86	33		25
21	2o	2o	3o	4o	5-	5-	3o	4-	2243	2335	16	14	30	52	76	83	32	50		44
22	3-	5-	5o	3+	5-	3-	4+	4o	2232	2243	22	78	100	38	71	26	61	51		56
23	3o	4o	4-	3o	4-	4+	3+	4-	3341	3156	28	56	49	30	50	64	36	46		45
24	4o	3o	3-	2-	2o	3+	4+	4o	4132	3434	51	28	25	11	15	38	65	60		37
25	4-	4-	3+	3-	1+	1+	3-	3-	4332	2344	49	43	39	21	10	10	21	21		27
26	3+	3-	3o	2o	4o	2+	1o	2-	1460	2532	36	23	32	16	59	17	6	11		25
27	3+	3o	4-	3o	3+	2o	2-	2o	1542	2224	36	32	43	30	37	14	13	14		27
28	2o	1+	2-	2+	4-	3o	3+	2-	2221	4043	14	8	11	17	47	32	40	13		23
29	3o	3+	3o	3+	4-	3+	3-	3o	5123	3233	32	34	31	36	50	40	26	28		35
30	3o	4-	3+	3-	4-	2+	5-	5-	2432	5243	28	45	40	21	44	20	74	73		43
31	5-	4o	1+	1+	2o	2o	3o	3o	5132	3343	72	53	9	9	14	15	32	30		29
											Monthly mean value of As									21.5

an , as INDICES 1986 (continued)

SEPTEMBER 1986																		
	Kn								σn		an							An
1	3-	3o	2o	3-	1+	1+	2o	3-	2223	3213	24	29	16	23	10	9	15	24	19
2	3o	4o	4-	3o	3+	3-	1+	2o	5541	3423	30	60	48	32	35	21	10	14	31
3	2-	2+	1+	2-	1+	2o	2-	3-	2333	0223	12	17	9	11	9	15	11	23	13
4	2+	2+	1+	1-	2-	2o	2+	2+	3322	2233	20	17	8	4	11	16	19	17	14
5	2+	2-	2o	2o	2o	2+	3-	3o	4133	2334	18	13	15	14	14	18	25	28	18
6	3+	2-	1+	2o	2o	2o	1o	2-	6523	2313	38	13	8	14	14	16	7	11	15
7	2-	1+	2o	2o	2-	1o	1o	1+	2211	1113	12	10	15	14	13	7	6	8	11
8	2-	1+	2o	1+	1-	1+	2-	2o	4344	2122	13	10	14	8	4	8	12	16	11
9	2o	3-	2+	2-	2-	1o	1+	1-	2354	1212	15	21	18	12	13	6	8	5	12
10	2-	1+	2+	2o	1+	1+	1o	2-	2322	2212	12	10	18	16	10	9	7	12	12
11	2-	2o	1+	1o	2-	1+	4-	5o	2122	3432	12	14	9	6	13	9	43	100	26
12	5o	7-	6+	5+	4-	3+	4o	4-	4662	2145	90	243	186	107	50	37	51	46	101
13	4o	3+	4-	4-	2+	2+	3-	4o	3364	2234	56	37	45	42	19	20	25	56	38
14	4-	3-	2+	1+	1o	3o	3-	2+	5324	2423	41	21	18	8	7	27	26	20	21
15	2+	2+	3-	4-	4-	3+	3+	2o	3332	5554	17	18	25	42	49	39	36	14	30
16	2-	2o	1o	0+	1-	1+	2+	3o	5433	2222	12	14	7	3	5	8	18	30	12
17	3-	3-	3-	1+	2o	2o	3o	4-	2311	3224	26	21	26	8	14	14	28	42	22
18	4-	3+	3o	3o	2+	3-	4o	3-	4312	1332	48	40	27	28	19	21	55	26	33
19	5-	4-	4-	2+	3-	4o	2+	2+	2122	5423	82	47	41	17	21	56	18	19	38
20	2+	1+	4o	2o	2+	2o	3+	4+	1241	2132	17	9	57	15	17	15	34	66	29
21	4-	3o	2-	2-	2o	2-	2+	1o	3522	1230	45	31	11	11	14	11	20	6	19
22	0+	1-	0+	1-	1+	0+	2+	2o	1231	2221	2	4	3	5	9	3	18	16	8
23	3o	5-	5-	3+	3+	5-	4o	4+	4442	3255	33	84	78	36	39	77	54	62	58
24	4-	4-	4o	3o	4-	2+	3o	4-	2354	3222	41	42	57	29	42	20	33	45	39
25	2o	2o	2+	3o	5-	4-	3o	5o	0233	3421	14	16	17	27	74	49	29	89	39
26	5-	4-	3+	4o	4-	4-	3-	2o	3333	3333	78	44	37	59	49	44	21	14	43
27	3-	3-	4o	3+	3o	3-	4o	3+	2344	1334	24	21	56	36	31	23	54	40	36
28	3-	2o	3-	2o	1+	2-	3o	4o	2232	2135	22	16	26	14	10	11	30	57	23
29	3+	2o	2-	2o	2-	3-	3o	3+	3120	4332	37	16	12	14	13	24	29	38	23
30	1+	1+	2-	2o	1+	1-	1-	1-	2221	3233	9	10	12	16	9	4	4	4	9
											Monthly mean value of An								26.8

SEPTEMBER 1986																		
	Ks								σs		as							As
1	3o	2+	2+	2o	1o	1-	2o	3-	3344	3542	30	20	17	16	6	5	14	22	16
2	3+	4o	3o	3-	3-	2+	2-	1+	5422	2221	35	58	31	26	25	20	11	8	27
3	2-	2-	0+	1+	1-	2-	1o	3o	2221	2213	12	13	3	8	4	11	6	28	11
4	3-	2+	1-	0o	1+	2-	2o	2+	4320	3323	25	18	5	0	8	11	15	18	13
5	3-	2-	2-	1+	2-	2-	2+	2+	5223	1224	23	13	12	9	13	11	20	17	15
6	3o	2-	1o	2+	2-	1o	0+	1o	6604	3224	31	12	7	17	13	7	2	7	12
7	1+	1+	2o	1+	1o	1-	0o	0+	2412	3412	10	8	14	10	7	4	1	2	7
8	2-	1+	2-	0+	0+	0+	1+	2o	4320	2223	12	8	11	3	3	2	8	14	8
9	2-	3-	2-	1o	1+	0+	1-	0+	1444	4221	11	23	13	7	9	3	4	2	9
10	1o	1+	2o	2-	1-	1o	0+	1-	2222	2332	7	9	14	11	5	6	2	5	7
11	2-	2-	1o	0+	1+	0o	3+	5o	2221	2114	13	13	6	2	8	1	38	92	22
12	5+	7o	7-	5o	4-	4-	4+	3+	3561	2253	118	275	215	90	44	48	66	38	112
13	4+	4-	3+	3+	2o	2o	3-	4o	5355	2335	63	46	35	34	15	16	26	60	37
14	4-	3o	2-	1o	0+	2+	3-	2+	4332	2421	49	28	12	7	3	20	24	19	20
15	2+	2o	2+	4-	4o	3+	3o	1+	3313	5231	18	16	18	44	52	37	31	8	28
16	2o	2+	0+	0o	0+	0+	2o	3-	5411	2224	15	17	2	1	3	3	14	24	10
17	3o	3-	3o	1o	1+	2-	3-	4-	2120	3322	27	21	28	7	9	12	23	41	21
18	4o	4-	3o	3-	2+	2+	4o	3-	6321	2334	51	43	28	21	18	19	54	22	32
19	4+	4o	3o	2o	2o	4o	2+	2o	2301	4133	66	54	32	14	15	53	19	16	34
20	2+	2-	4o	2-	2-	2-	3o	4+	3332	2234	20	12	55	13	12	13	29	67	28
21	4-	2+	1o	1+	1+	1o	2+	0+	3101	1252	41	19	7	8	8	7	19	3	14
22	0+	0+	0o	0+	1o	0+	2o	2-	2211	0133	2	3	1	2	7	2	14	12	5
23	4-	5-	4o	3o	4-	5-	4o	5-	5322	2235	50	71	58	32	42	73	51	85	58
24	4-	4-	4o	3o	3+	2+	3o	4o	3245	3234	46	44	52	29	37	18	32	53	39
25	2o	2o	2o	3+	4+	4-	2+	5-	2314	3234	14	16	14	35	67	44	20	85	37
26	4+	3+	3+	4-	4-	4-	2+	2o	3432	2332	63	39	40	48	41	50	18	15	39
27	3o	2+	3+	3o	3o	2o	4o	4-	3111	3425	27	17	39	30	29	16	57	42	32
28	3-	2o	3-	2-	1o	1-	3-	4o	3223	1344	22	14	25	11	6	5	26	53	20
29	3+	2+	2-	2-	2-	2+	3o	3+	3432	4433	38	18	12	12	12	20	29	39	23
30	1+	1+	1+	2-	1o	0+	0o	0+	1233	4112	9	10	9	13	7	2	1	3	7
											Monthly mean value of As								24.8

an , as INDICES 1986 (continued)

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	Kn								σn		an						An
1	1-	1-	1+	3o	3-	2o	2-	2+	3133	3315	5	5	9	27	24	15	13	17	14
2	3-	3o	2-	3+	4o	5o	3+	3o	4636	1622	23	32	11	39	53	91	39	29	40
3	3o	3o	2+	1+	1o	2-	2o	3o	6643	2212	30	30	19	8	7	12	14	28	19
4	2o	1+	1+	1o	2-	2-	3-	2o	3221	2130	15	10	9	7	11	13	21	14	13
5	3o	3-	2+	3+	4-	3+	3+	3-	3325	3233	31	26	20	34	44	37	38	23	32
6	2+	3o	4o	2o	2-	2+	2-	2o	3343	2421	17	31	52	14	11	19	11	15	21
7	1o	1+	1+	2-	0+	1+	1+	2-	1323	2145	7	9	10	11	3	9	10	13	9
8	1-	1-	2-	2+	2o	3-	1+	1+	2354	2333	5	5	13	20	15	23	8	8	12
9	1+	1o	2-	1-	2-	2o	2+	2+	2221	2433	8	6	12	5	12	14	20	20	12
10	1-	0+	1o	1o	0+	0+	1+	2-	3221	1233	5	3	7	6	2	2	10	12	6
11	1o	0+	1o	1o	2o	2-	1+	1+	2232	3132	7	2	6	6	16	13	10	9	9
12	2-	0+	0+	0+	1-	0+	1-	0+	2221	1223	12	2	3	3	5	3	5	3	5
13	0+	0+	2o	2o	3+	4-	6-	5-	2233	2242	2	3	14	16	40	43	127	73	40
14	4-	4o	4o	4o	4+	2o	3o	3o	3423	2035	47	55	56	54	61	14	33	28	44
15	2-	2-	3+	3+	3+	3-	3o	2+	3223	2332	13	12	40	38	37	21	29	17	26
16	1o	2-	1+	2-	1+	1+	2o	2-	2232	1223	7	12	9	12	10	8	14	12	11
17	2+	1+	1+	1o	1o	0+	1+	2+	3232	3135	17	10	9	7	6	3	9	20	10
18	1o	1o	1-	2o	3-	4-	4-	3+	1222	2432	7	6	4	14	26	49	42	36	23
19	3o	3o	3o	3+	5-	3o	3o	3-	2222	4132	28	28	28	35	73	27	31	22	34
20	2o	2-	2o	2+	3-	3+	3+	3-	4412	4342	16	12	15	20	26	38	37	23	23
21	3o	3-	2+	2o	2+	2o	3-	2o	2251	2023	28	22	20	16	17	14	24	16	20
22	2o	2-	2o	2o	1o	1o	1+	0+	3222	3123	15	12	15	15	6	7	9	2	10
23	1+	1-	1o	1-	1+	1+	3-	1+	3331	2235	8	5	7	5	8	10	21	9	9
24	0+	0o	0o	0o	1o	2-	0+	1o	3111	3332	2	1	1	1	6	13	3	7	4
25	0+	0+	1-	1o	1o	1o	1o	2o	2122	1213	2	3	4	6	7	6	7	16	6
26	1+	0o	1-	1-	1-	2-	1o	2-	3111	1133	8	1	4	4	5	11	6	12	6
27	2o	2-	3-	3+	4o	5-	3+	3-	2235	5663	14	12	26	37	59	84	37	23	37
28	3+	3o	1-	1+	0+	0+	2-	3o	3222	2226	37	30	5	9	3	2	13	30	16
29	3+	3-	3o	3o	3-	1+	3-	4-	3252	2243	34	22	30	32	21	9	21	48	27
30	3-	3-	2+	3-	2+	3+	3+	4o	2223	2444	26	24	19	23	20	35	36	57	30
31	2o	2-	2o	2-	1+	2o	2-	2o	2353	3444	15	11	16	12	9	16	11	14	13
											Monthly mean value of An								18.7

OCTOBER 1986

	Ks								σs		as						As
1	1-	0+	1-	3-	3-	2-	1+	2o	2132	3325	4	2	5	26	24	13	10	15	12
2	3-	3-	1+	3-	3+	5-	3+	3-	5335	1622	23	22	9	22	34	74	38	25	31
3	3o	3-	2-	1o	0+	1o	2-	3-	5221	1322	33	23	13	6	2	7	11	26	15
4	3-	1+	1o	1-	1o	1+	2+	2o	3331	1211	21	9	7	5	7	10	18	14	11
5	3o	3-	2o	3+	4-	3o	3+	2+	2522	7031	30	22	16	34	47	32	37	18	30
6	2+	3-	4o	2-	1o	2o	1o	1+	5242	1321	20	26	59	11	6	14	7	9	19
7	1o	1o	1o	1+	0+	1o	1o	2-	3414	2342	6	7	6	8	2	6	6	11	7
8	1o	1o	1o	2-	2+	3-	1o	1+	1323	3211	6	6	7	12	19	26	6	8	11
9	1o	1o	1o	0+	1o	2-	2o	2o	2321	2243	7	6	7	2	7	13	14	14	9
10	0+	0o	1o	1-	0o	0+	1o	1+	3132	1324	2	1	7	4	1	2	7	10	4
11	1o	0+	1-	1-	2-	1+	1+	1+	2110	3321	6	2	4	4	11	8	8	8	6
12	2-	0o	1-	0+	1-	0o	0+	0o	2112	2031	13	1	5	3	5	0	2	1	4
13	0o	0+	1+	2o	3+	3+	6+	6-	1323	3142	1	3	9	15	37	36	174	131	51
14	4o	4+	4o	4-	4+	2o	3o	3-	5331	1144	58	69	59	46	62	15	30	25	46
15	2+	2-	3+	3+	3-	2+	3-	2+	2332	4122	18	11	37	35	26	18	26	20	24
16	1o	2-	2-	2o	1o	1-	2-	1+	2332	3222	7	12	11	14	6	5	11	10	10
17	2o	2-	1-	1-	1-	1-	1+	3-	1221	4214	14	13	5	5	4	4	10	23	10
18	1+	1o	1o	2+	3-	4-	4-	3o	1221	2543	9	6	6	17	25	42	43	28	22
19	3o	3+	3-	3o	4+	3-	3o	2+	2222	3333	32	37	22	32	70	23	29	20	33
20	2+	1+	2-	2o	3o	3+	3+	3o	1122	3151	17	9	13	16	28	38	36	29	23
21	3o	2+	2o	2+	2o	2-	3-	2+	2121	2221	30	17	15	17	16	12	26	19	19
22	2+	1+	1+	2o	0o	0+	1-	0+	2113	2322	18	10	9	15	1	2	5	3	8
23	1o	0+	1o	1-	1+	1+	2+	1o	4233	2314	7	3	6	4	8	9	17	6	8
24	0+	0o	0o	0o	0o	2-	0o	0+	3111	1301	2	1	1	1	1	11	0	3	3
25	0o	1-	1-	1-	1-	0+	1-	2+	1212	2321	1	5	5	5	4	2	4	17	5
26	1-	0o	0+	0+	0+	1o	0+	1+	3122	1211	5	1	3	3	3	7	3	10	4
27	2+	2o	3o	3-	3o	5-	3+	2+	2021	2552	18	16	33	25	32	72	35	19	31
28	3+	3o	0+	2-	0+	0o	2-	3-	4231	2024	37	30	2	13	2	0	11	25	15
29	4-	2+	3-	3o	2+	1+	2o	4o	2132	1226	46	17	25	28	20	8	16	51	26
30	3+	3o	3-	3o	2+	3o	3o	4-	4221	2324	40	28	23	28	18	29	33	46	31
31	2-	1o	1+	1o	1-	1+	1o	1+	2533	2343	11	6	10	6	5	10	6	9	8
											Monthly mean value of As								17.3

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	Kn								σn		an						An
1	4-	3-	3-	2+	1+	1o	1+	1o	3542	2113	41	25	26	17	8	7	9	7	18
2	1o	1o	2-	2o	2-	2-	2+	2-	1220	2233	6	6	11	14	11	12	17	11	11
3	2o	3-	2+	2o	1+	3o	3o	4+	2222	1542	14	21	19	16	9	27	29	64	25
4	6-	5o	4o	5o	5o	5+	5o	4o	2323	3553	135	98	53	102	98	108	95	54	93
5	5-	4o	4o	3-	1+	2o	2+	2+	2263	2442	73	56	56	26	10	14	20	19	34
6	2o	2-	2o	1+	2+	2o	4-	3o	2341	2153	16	13	15	10	17	14	47	29	20
7	2+	1+	1o	1o	1+	1o	0+	2o	2301	2120	19	10	6	6	8	6	3	14	9
8	2-	1+	1o	1o	1-	1+	1o	1-	2231	2311	11	9	6	7	5	9	7	4	7
9	1o	1o	1o	1o	1+	1-	0+	0+	1122	2222	7	6	6	6	8	4	2	2	5
10	1-	1o	0+	0+	1-	1o	2+	2+	2322	2122	4	6	3	3	5	7	18	19	8
11	2+	4o	3+	2-	2o	2o	2-	2o	3451	1411	19	58	37	12	14	15	13	14	23
12	4-	2o	2o	1o	1o	1+	1o	1o	2221	1321	41	14	14	7	6	10	6	7	13
13	1o	0+	0+	1-	2+	2+	3-	1o	1222	3231	7	3	3	5	19	17	26	7	11
14	1+	1+	1o	2o	1+	1o	1-	1+	2123	3224	10	8	6	15	9	7	5	10	9
15	2+	1+	1+	2o	3o	3+	3-	3o	4232	2324	17	9	10	14	32	38	23	27	21
16	2+	2o	2-	3-	3o	3+	3-	2o	2124	5521	18	14	11	22	32	35	23	14	21
17	2+	2-	2-	3-	2-	2o	2-	2-	2424	3122	17	13	13	24	13	15	11	12	15
18	2-	2-	2-	1o	1o	1-	1+	1o	1221	3221	13	12	11	6	7	5	9	7	9
19	0o	0+	0o	1-	0+	2-	2+	2o	1111	1222	1	3	1	4	2	11	18	14	7
20	2-	2-	0+	1-	1+	1-	1o	1+	4221	3223	13	12	3	4	8	4	6	9	7
21	0+	0+	1-	1o	0+	1o	1-	1-	2222	2022	2	3	5	6	3	6	5	4	4
22	0+	1+	0+	0+	0o	0+	1-	1o	2122	2222	3	8	2	3	1	3	5	6	4
23	0+	0+	1-	0+	1+	2o	3o	5-	2212	2222	3	3	4	3	10	14	31	81	19
24	5-	5-	2o	3+	2+	4+	5+	5o	7313	2454	71	73	15	39	17	68	108	91	60
25	4-	3o	3+	5-	5+	5o	6-	4-	5523	4396	45	32	37	76	105	87	133	48	70
26	3+	2+	3+	3o	4o	4-	1+	1-	4255	4321	35	20	34	29	59	48	10	5	30
27	2+	3-	3-	2+	2-	1+	1-	0+	4354	1412	19	21	22	20	13	10	5	2	14
28	0o	2-	1+	2o	1+	1+	2+	1+	2635	4132	1	11	10	14	9	8	19	8	10
29	2-	1o	1+	2-	3o	4-	3-	2o	6434	4533	12	7	10	12	31	50	25	15	20
30	1-	2-	3-	3o	3o	4o	3-	4o	2223	2735	5	11	25	28	33	54	26	51	29
																		Monthly mean value of An	20.9

NOVEMBER 1986

	Ks								σs		as						As
1	3o	3o	2+	2o	1+	1o	1+	2-	1132	1122	29	28	20	15	8	6	10	11	16
2	1+	2-	2+	2o	2-	1o	2+	2+	3310	2413	9	11	17	16	12	6	17	18	13
3	3o	3o	2+	2+	1+	2+	3-	5+	4321	2425	27	29	19	17	8	20	23	104	31
4	6-	5+	5-	5+	5+	5+	5+	4+	6212	4436	144	115	71	117	114	105	111	64	105
5	4+	4-	3+	3-	1+	1+	2+	2o	2333	1223	64	46	37	23	9	9	19	15	28
6	2o	1+	1+	1+	2+	2o	4-	3-	2222	2332	15	10	9	9	18	15	41	22	17
7	2o	1+	1o	1-	1+	0+	0o	2-	2112	3213	16	9	7	4	9	3	1	13	8
8	2-	2-	0+	1o	0+	1o	1+	0+	2221	1231	12	11	3	6	2	7	8	2	6
9	1o	1o	1o	1-	1o	0+	0o	0+	2131	1202	6	6	7	4	7	3	0	2	4
10	1+	1o	0+	1-	0+	1+	3-	3-	2322	2222	8	7	2	4	2	8	21	22	9
11	3-	4+	4-	2-	2o	2o	2-	1+	2433	2123	23	67	42	13	16	14	12	8	24
12	4-	2+	2-	1o	1o	1+	1-	1-	3411	2222	41	18	13	6	7	10	5	5	13
13	1+	1o	1+	1+	2+	2o	3-	1+	2311	2233	8	6	8	8	20	15	24	8	12
14	1o	1o	1o	2-	1+	1-	1+	1-	3142	2222	7	7	6	13	10	5	8	5	8
15	2o	1+	1+	3-	3o	3+	3o	3+	3242	3213	14	10	9	22	29	34	30	40	24
16	3-	2-	2-	3o	3-	3-	2+	2o	1322	3232	25	13	12	27	25	23	19	15	20
17	3-	2-	2o	2+	2-	2o	2o	1+	3224	3322	24	12	15	19	11	16	14	10	15
18	2-	2+	2-	1o	1o	0+	1o	1o	2333	2202	13	20	11	6	6	3	7	6	9
19	0o	0+	0o	1-	0+	2o	2o	2+	2212	2511	1	3	1	5	3	15	14	20	8
20	2-	2-	1-	1-	1o	1-	1o	1+	3223	4321	13	12	4	5	7	4	6	10	8
21	0+	1-	1o	1o	0+	0+	1+	1o	1201	2213	2	5	7	6	3	3	9	6	5
22	1-	1+	1-	1o	0+	0+	1-	1+	2321	1322	4	10	4	6	2	2	4	8	5
23	1o	1-	1-	1-	2-	3-	3+	5o	3122	2223	6	4	5	4	11	21	37	101	24
24	4o	4+	3-	4o	3-	5+	6-	5o	6221	4226	55	64	23	54	26	104	130	93	69
25	3o	3-	3o	4+	5o	4+	5o	3o	2301	4352	33	24	32	66	87	67	100	30	55
26	3o	3-	2+	2+	3o	3+	1+	1+	2223	3353	33	22	18	20	29	38	9	9	22
27	2+	3-	2+	2+	1+	1+	0+	1-	1224	1233	17	22	18	19	9	8	2	5	13
28	1-	1o	1+	2-	1+	1+	2+	1+	2322	4242	4	7	8	12	8	8	20	8	9
29	2-	1+	1+	2-	3-	3+	3-	2+	2124	4723	12	10	8	13	25	39	24	20	19
30	1+	1o	2+	2o	3-	3+	3-	4-	3032	3422	8	7	17	15	23	40	23	44	22
																		Monthly mean value of As	20.7

an , as INDICES 1986 (continued)

DECEMBER 1986

	Kn								σn		an								An
1	3+	2+	3o	3o	2-	2+	3-	1o	3355	3643	37	17	30	32	13	19	23	6	22
2	1+	1+	2-	2-	2o	2-	1o	2+	3333	5316	10	10	13	13	15	11	7	19	12
3	2-	1-	2-	2o	2+	2-	1+	1+	4344	5313	11	5	12	14	20	12	9	10	12
4	1+	0+	1+	2o	2+	2-	2+	3-	5245	2344	10	3	9	14	20	12	20	24	14
5	3-	0+	0o	0+	1-	0o	0+	1o	3222	2123	21	2	1	3	4	1	2	7	5
6	2-	2o	1-	1o	0o	1-	1+	1+	4511	1222	12	16	4	7	1	5	9	8	8
7	1o	2-	2o	2o	2o	2-	1+	1-	1211	3343	7	11	14	15	15	12	9	5	11
8	1o	1-	0+	1o	0+	1o	2-	2-	4321	1233	6	4	2	6	3	7	11	11	6
9	2o	1o	1-	1o	1o	2+	2+	2-	3022	2223	15	6	4	7	7	20	17	11	11
10	3o	2+	1o	2o	2o	3-	3-	3o	1314	2536	29	20	7	15	14	26	26	30	21
11	3-	2o	2o	2-	2-	2+	1+	1o	3052	2321	25	14	15	11	13	17	10	6	14
12	0+	1-	0+	1o	1o	2-	2-	2o	2421	2336	3	5	3	6	7	11	11	16	8
13	1o	2-	1+	1o	2o	2o	3+	5-	2231	2122	7	11	10	6	14	16	35	72	21
14	4o	4+	4-	3o	2o	1o	3o	2-	1524	2153	54	67	45	32	16	7	33	11	33
15	1+	1-	1o	1o	1-	1o	2-	1+	2114	2312	8	5	7	6	5	7	12	10	8
16	3+	3o	2o	3-	2-	4o	2o	1+	2433	1542	40	28	16	21	13	53	16	9	25
17	1-	1o	1+	1o	2o	2+	2-	1+	1231	5312	5	6	9	7	14	19	12	8	10
18	1-	0+	1-	1o	1o	1+	3-	3-	2211	1333	5	2	5	6	7	10	21	21	10
19	1o	2o	1o	1-	1-	1-	1+	2+	2111	3132	7	14	6	5	5	4	10	19	9
20	2-	1o	1o	1o	2+	3-	1o	2o	3111	1334	11	7	7	7	17	26	6	16	12
21	2o	1-	1o	2-	3o	3-	4-	4-	3342	1364	16	4	6	12	29	21	42	41	21
22	3-	3o	1+	2o	4-	4o	2+	3-	2430	4523	22	28	10	14	41	55	18	23	26
23	3-	2o	3-	4o	5-	3+	3-	4-	3324	2213	23	16	24	52	79	35	23	50	38
24	3o	3-	2-	3-	2-	2-	3-	2-	4533	3333	27	25	11	25	12	12	22	11	18
25	2o	3o	3-	3o	1+	2-	1-	3-	3533	5523	16	32	23	30	10	11	4	21	18
26	2+	2+	2+	3+	3-	3-	3o	3+	2224	4564	20	18	17	36	22	21	33	34	25
27	3-	2-	2o	2o	2-	2+	1+	2+	2233	2334	24	11	16	14	11	17	8	18	15
28	1+	1-	0+	1+	0o	0+	0o	1-	3233	1212	9	5	3	10	1	2	1	4	4
29	1+	1o	1+	1o	0+	1-	0o	1-	3134	2213	8	6	8	6	3	4	1	4	5
30	1o	1-	0o	0+	1+	1+	2o	2o	3312	5355	7	4	1	3	8	10	16	15	8
31	1o	1o	2+	3-	3-	2-	1-	1o	3443	4340	7	7	17	21	23	13	5	6	12
											Monthly mean value of An								14.9

DECEMBER 1986

	Ks								σs		as								As
1	3+	3o	3o	2+	2-	3-	2+	2-	1423	2234	34	28	28	17	11	21	18	11	21
2	1+	1+	2o	2o	2-	1+	1+	3-	2111	2135	10	8	14	14	13	10	8	22	12
3	2o	1-	1o	1+	2-	1+	1+	1+	3122	2334	14	4	7	10	13	10	8	9	9
4	1o	1-	1o	1+	3-	2o	3-	3-	4324	3232	7	5	7	9	22	16	25	26	15
5	3-	1-	1-	0+	0+	0+	0+	2-	3332	1114	26	5	4	3	2	2	2	11	7
6	2+	2-	1o	1o	0o	1+	1+	1+	2352	1322	18	13	7	7	1	8	10	10	9
7	1+	2o	2+	2+	2o	2-	2-	1+	3311	1243	9	15	17	19	14	13	12	8	13
8	1-	1o	1-	1o	0+	1-	1+	1+	2220	2322	5	7	4	7	3	5	9	10	6
9	2-	1+	1+	1+	1+	3-	3o	2-	2323	2312	13	10	8	9	10	26	30	11	15
10	2o	2-	1+	2-	2-	3-	3-	3-	2222	2232	15	13	9	12	13	23	25	24	17
11	3-	1+	1+	2-	2-	1+	1+	1-	2113	4221	22	10	10	11	12	9	10	5	11
12	1-	1-	1-	1+	2-	1o	2-	2o	1221	1222	4	4	4	9	11	7	12	15	8
13	1o	2o	2-	1+	2o	2o	3+	5-	1322	1333	6	14	11	9	14	16	40	71	23
14	4+	4+	4-	3-	2-	1-	3-	1+	7332	2123	62	70	49	23	13	5	21	9	32
15	1+	1o	1o	1-	1-	1-	2o	1+	2323	2232	10	6	7	4	4	4	14	10	7
16	4-	3-	2+	2+	2+	4-	2-	1+	4211	1233	45	26	17	17	17	44	13	9	24
17	1o	1+	1o	1+	2o	2+	1+	1o	2123	4123	7	8	7	9	14	18	9	7	10
18	1o	0+	1+	1+	2-	1+	3o	2+	2232	2231	6	2	9	10	12	10	27	17	12
19	2o	2o	1+	1o	1-	0+	2o	3-	3312	2222	15	15	8	7	5	3	15	21	11
20	2o	2-	2+	2-	2o	3o	1+	2-	1232	2222	14	12	18	13	14	32	8	13	16
21	2-	1o	1o	2-	3+	3o	3+	3+	1312	1133	13	6	6	13	34	27	35	38	22
22	3-	3-	2-	2+	3o	4-	2o	2+	2321	4423	22	21	12	17	31	48	15	19	23
23	2+	3-	3o	3+	4o	3o	3-	4-	1402	0323	17	23	32	40	59	29	23	46	34
24	3o	2+	2-	2o	2-	2-	3o	2-	2123	3111	28	19	12	14	11	13	29	13	17
25	2+	3-	2+	2+	1o	2-	1-	2+	3314	3321	17	21	18	18	6	11	5	18	14
26	2+	3-	3-	3o	2+	2o	3-	3-	1320	1222	17	21	21	32	17	15	24	26	22
27	3-	2-	2-	2-	1+	2o	1+	2o	2221	1132	21	13	11	11	9	14	9	15	13
28	1+	1-	1o	1o	0o	0o	0o	1+	1440	1102	8	5	6	7	1	1	0	8	5
29	1+	1+	1+	1o	1-	1-	0+	1o	1113	3331	8	9	8	7	5	4	3	6	6
30	1o	1-	0+	0+	1o	1+	2+	3-	2212	0233	7	5	2	2	7	10	18	21	9
31	1o	1o	2+	2+	2+	2-	1-	1+	2322	2232	6	7	18	18	18	12	5	10	12
											Monthly mean value of As								14.7

am INDICES 1986

JANUARY 1986

	Km								ΣKm	am							Am	Am2
1	3-	3-	3+	3+	4+	4-	3+	3+	26.7	25	22	35	36	65	42	34	37	37	36
2	3-	3+	3-	2+	4o	3+	2+	2-	22.3	26	34	25	18	58	37	18	11	28	28
3	1o	1o	1+	3o	3o	2+	1+	1+	14.3	6	6	8	27	28	17	8	9	14	16
4	2-	1+	1-	0+	1+	2-	1-	1o	8.7	11	8	5	3	9	11	5	7	7	9
5	1o	0+	1+	1o	1+	1-	0+	1o	7.0	7	3	8	7	8	5	2	6	6	6
6	1-	1-	0+	1-	3-	2o	5-	5+	17.0	5	4	3	5	25	14	80	113	31	31
7	5-	5-	4-	3+	3o	3+	3-	3o	28.3	76	71	41	40	33	35	26	32	44	42
8	4-	2-	1+	2o	2-	2+	2-	1+	15.7	41	13	9	15	13	20	12	10	17	18
9	2-	1+	1-	1+	1+	3+	4+	4-	17.7	13	9	5	8	9	34	67	50	24	20
10	3o	3-	1o	2-	2+	1+	1-	0+	13.0	32	26	6	13	18	8	5	3	14	19
11	1o	1+	1-	1+	1o	1+	1-	1o	8.3	6	8	5	8	7	10	5	7	7	8
12	2-	1o	2-	1-	1-	1-	1o	1+	8.7	12	6	11	5	5	5	7	10	8	7
13	1-	0+	1o	1o	1-	1o	1+	0+	6.3	5	3	6	7	5	7	8	3	6	6
14	1o	1-	1-	1o	1o	1+	1-	1-	7.0	6	5	4	7	6	8	5	4	6	7
15	0+	1+	1+	2+	2-	2+	2o	0+	11.7	3	9	10	19	11	20	14	3	11	8
16	1-	1-	1o	1o	0+	1-	1o	0+	5.7	4	4	6	6	3	5	6	2	5	7
17	0o	1-	1o	1+	1+	2-	3-	3-	11.3	1	5	7	8	8	13	23	24	11	11
18	2o	2-	2o	3-	1-	1o	1o	1+	12.3	16	11	16	26	5	6	6	9	12	12
19	1o	1+	1o	1o	1o	1-	1o	1+	8.3	7	8	6	6	7	5	7	9	7	11
20	2o	2+	3o	3+	3o	1+	3-	4-	21.3	15	18	31	35	31	10	23	42	26	21
21	5-	1o	1-	1+	3+	4+	4+	4o	23.7	82	6	4	9	34	70	70	60	42	32
22	3o	2o	2o	2+	2+	3-	3-	3-	19.7	29	16	15	18	18	21	23	21	20	29
23	2o	2-	3-	3o	3o	4-	4-	3o	22.7	15	12	22	27	30	48	41	33	29	25
24	2+	2o	3-	3+	3-	1o	3-	2+	19.0	19	14	24	35	23	7	21	19	20	27
25	2+	3o	3+	3o	4-	4-	5-	4o	27.7	18	27	38	32	50	48	85	52	44	32
26	3o	2o	2o	3-	3o	2+	2-	2-	18.3	32	16	15	22	30	17	11	11	19	35
27	2-	4o	4+	3+	5o	4o	4o	4+	30.7	13	54	63	38	100	59	54	63	56	43
28	4o	4-	3+	3+	4o	4+	4o	4-	30.3	52	47	36	36	56	61	53	47	49	47
29	3-	3o	2-	2+	4o	3+	3o	3+	23.3	24	28	11	17	52	37	32	35	30	35
30	3o	3-	3-	3-	3-	3-	3-	2o	21.0	33	25	21	25	21	26	22	16	24	25
31	2-	2+	2-	2o	2-	2-	1o	1-	12.7	12	18	12	15	13	12	7	4	12	13
										Monthly mean value of Am								21.5	

FEBRUARY 1986

	Km								ΣKm	am							Am	Am2
1	1+	0+	0+	1o	2-	2+	1+	2-	10.0	9	3	3	7	12	19	9	12	9	9
2	1+	2-	1+	1+	2o	2-	2+	1o	12.7	10	11	10	10	15	11	17	7	11	11
3	1o	2-	1+	1+	1o	2-	2-	2o	11.7	7	11	8	8	6	11	13	15	10	11
4	1+	1+	2-	1+	1+	2-	1+	1-	10.7	10	10	12	8	8	12	10	5	9	9
5	1o	1o	1o	1+	2-	2+	2-	2+	12.3	6	7	6	10	13	19	12	19	12	9
6	0+	0+	2-	1+	3+	3+	3-	3+	16.3	3	2	11	8	40	40	23	38	21	25
7	2+	4-	3o	5-	5+	7o	6o	7+	39.3	20	44	30	79	119	246	159	292	124	107
8	6-	6-	6o	6o	7o	7+	8+	8+	54.3	122	128	161	173	280	308	486	488	268	231
9	8+	6o	5-	4o	4+	6+	5+	3+	42.3	454	156	75	51	64	178	105	39	140	171
10	3-	2-	1+	1+	1+	1+	3-	3o	15.3	25	13	9	9	8	10	25	33	17	37
11	2+	3-	2-	3-	3+	5-	4-	4-	24.7	18	21	11	25	40	80	42	45	35	30
12	3+	3-	3o	3-	3-	3+	3+	3-	23.7	40	25	28	26	24	37	40	22	30	34
13	3o	3-	2+	3-	3-	1+	3o	4o	21.7	27	25	18	21	22	10	29	52	26	27
14	4-	3-	2o	2+	3-	3o	3+	4-	23.3	48	25	14	18	23	31	34	41	29	25
15	3-	2+	1o	1o	1o	1o	1o	1-	10.7	21	18	7	7	7	7	7	5	10	14
16	0+	1o	1-	1-	1-	1o	2+	3o	9.7	2	7	5	5	5	7	18	32	10	10
17	2+	1+	1-	2-	1+	2o	2+	3+	15.0	19	9	5	13	8	16	17	38	16	16
18	3o	2+	2-	2-	2-	2+	1+	4-	17.7	29	17	12	12	12	19	10	47	20	19
19	3-	2-	2-	2o	2o	2-	2+	2-	15.7	23	12	12	15	14	11	18	11	15	18
20	3-	2+	3-	2+	3o	4o	4-	3-	23.3	21	20	21	18	31	54	44	24	29	26
21	3o	2+	3o	4o	3o	2+	3o	5-	25.3	30	19	33	53	29	20	29	82	37	39
22	4-	3+	4-	3+	4-	5-	3+	4-	29.3	45	37	49	40	46	74	37	43	46	45
23	4+	4o	3+	3+	4o	4+	4+	3+	31.0	65	52	38	36	52	63	69	36	51	44
24	2+	3o	2+	3+	3+	3-	3+	3+	23.7	17	28	18	34	39	22	34	34	28	34
25	3o	3-	2+	3o	3-	3o	3-	4-	23.0	28	22	20	28	25	28	26	41	27	29
26	2+	3-	3o	3+	4-	5o	3-	3+	26.0	18	24	27	40	46	88	26	39	39	36
27	3+	3+	3-	4-	2o	2o	3o	3o	23.0	40	39	23	46	15	16	27	28	29	34
28	3o	3-	2+	3o	3o	4+	4+	3o	25.7	33	26	17	33	33	62	61	30	37	29
										Monthly mean value of Am								40.5	

am INDICES 1986 (continued)

MARCH 1986

	Km								ΣKm	am								Am	Am2
1	3-	2-	3o	3-	3-	4o	3+	2+	22.3	22	12	32	24	23	54	36	17	28	31
2	2o	2o	3o	3o	3o	2-	2-	2o	18.3	16	15	28	30	27	13	12	14	19	20
3	2o	1+	1o	1+	2-	2o	3o	4o	16.3	14	8	6	8	12	16	29	54	18	17
4	2o	2-	2o	1+	2o	2+	3-	2o	16.0	16	13	14	9	16	17	24	14	15	16
5	1o	1-	1o	1+	2o	3o	2+	2+	13.7	6	5	7	8	15	30	17	18	13	19
6	4o	3o	1o	4-	5-	4+	3+	5o	29.0	52	29	6	43	74	66	35	103	51	41
7	4+	3+	3o	4-	3o	4o	4o	5-	30.0	62	35	30	43	32	53	58	74	48	51
8	4o	3+	3o	3-	3-	4-	4-	2+	25.3	59	37	27	21	25	49	47	17	35	35
9	2-	2-	2+	1+	0+	0+	0+	0+	8.3	13	13	19	9	2	3	2	2	8	13
10	0o	0o	0+	0+	0+	1o	1-	1-	3.3	1	1	3	3	2	7	4	4	3	3
11	0o	1-	0o	0+	1-	1-	1+	1o	4.7	0	4	1	2	4	5	8	7	4	5
12	0+	0+	2o	2o	2+	2-	1-	2o	11.3	2	3	14	16	18	12	4	15	11	15
13	3+	3-	3+	3+	4-	4+	2+	3o	26.0	35	21	34	36	48	63	18	28	35	25
14	4-	1+	1+	1-	1o	1+	2-	2-	12.7	50	9	10	5	7	8	12	11	14	20
15	1+	2-	2-	1+	1+	1+	3o	3-	14.3	10	12	11	10	8	9	28	24	14	13
16	2-	1+	2+	3-	2-	1o	1+	1+	13.3	13	10	17	23	13	6	10	9	13	14
17	1+	1o	2+	2-	1o	1+	2o	1o	11.7	8	7	19	13	6	10	14	7	11	12
18	2o	2-	2o	3-	3-	3-	1+	2o	17.0	15	11	14	25	21	21	9	15	16	15
19	2o	2+	2+	2o	1o	3-	2+	1+	16.0	15	18	17	16	7	21	17	9	15	12
20	0+	0o	1o	1-	1o	1+	1+	1-	6.3	2	0	6	4	6	8	9	5	5	11
21	1o	2o	3-	3o	4+	3-	3-	4o	22.3	7	16	24	28	66	25	24	60	31	26
22	4o	4o	3-	2-	3+	3o	2+	3-	23.7	57	51	23	13	35	31	18	26	32	31
23	2-	2-	2+	2+	2+	2-	3o	2+	17.3	12	12	18	17	18	13	32	19	18	22
24	2+	3-	3-	3+	4o	4-	3+	2+	24.3	19	21	22	36	60	48	35	18	32	29
25	3+	3-	4-	3-	3o	3o	4+	4o	26.7	34	22	45	22	32	32	64	59	39	34
26	3o	2o	2o	1+	3-	3+	2+	3o	19.7	29	14	14	10	26	37	20	27	22	34
27	4+	3o	4-	3+	3+	2+	2+	1o	23.3	61	33	50	35	38	19	17	7	33	29
28	3-	2o	3+	3-	2+	3-	3+	2+	21.3	22	15	34	22	19	24	36	17	24	20
29	2o	2-	1+	1-	2+	3o	2+	1+	14.7	16	13	9	5	17	27	18	9	14	14
30	0+	0+	1-	1o	1+	2-	2+	2o	9.7	2	2	5	7	10	13	19	15	9	11
31	1-	0+	1o	2o	2+	2+	3-	2-	13.0	5	2	6	15	19	17	22	12	12	13
										Monthly mean value of Am								20.7	

APRIL 1986

	Km								ΣKm	am								Am	Am2
1	2-	2-	2-	3-	1+	1+	3o	1o	14.3	11	11	12	25	9	9	27	6	14	14
2	1+	2-	1o	2-	1+	1+	1+	1+	11.0	10	12	7	12	8	8	10	10	10	14
3	3o	3o	3o	1+	2o	2+	3-	1+	18.7	32	33	30	8	16	18	23	10	21	14
4	0+	1o	0+	1o	1-	1-	1-	1+	6.0	3	7	3	6	4	4	5	8	5	10
5	1-	2+	2-	2-	1o	2+	3-	3+	15.7	5	20	12	11	6	17	24	34	16	11
6	0+	1+	1+	0+	1-	1-	1o	2o	7.7	3	9	8	3	5	4	7	16	7	10
7	1+	1+	1o	1o	1+	2-	1+	1o	10.0	9	8	6	7	8	11	8	7	8	9
8	1-	1+	1+	3-	2-	0+	1o	2o	11.0	5	8	9	21	12	2	6	15	10	12
9	2+	3-	2+	2o	3o	3-	3o	3-	20.7	17	26	18	15	31	21	28	23	22	26
10	4+	4-	4-	3+	3-	4-	2-	0o	23.0	70	44	49	37	25	45	12	1	35	26
11	1-	2o	1-	0+	0+	2-	1+	2+	9.3	4	16	5	2	2	11	8	18	8	14
12	3-	1+	3-	3-	2o	2+	2o	2o	17.7	24	9	24	23	15	17	15	16	18	14
13	2-	0+	1+	2-	2-	1-	2o	2-	11.0	11	3	9	12	11	4	16	12	10	10
14	1-	1-	1o	2-	1o	1o	1o	1o	8.0	4	4	6	11	7	6	7	7	7	8
15	0o	2o	2-	1+	2o	2-	2-	2-	12.0	1	14	11	8	16	13	11	12	11	11
16	3-	2-	1o	2+	2-	2o	2-	2-	14.7	22	12	6	19	12	15	11	11	14	12
17	1-	1-	1o	1+	2-	2-	2+	2-	11.0	5	5	7	10	12	13	17	11	10	13
18	3o	2+	2+	1o	1-	0+	1-	2-	12.0	30	17	18	7	4	3	5	13	12	14
19	3-	2+	2-	2+	3-	3-	2+	2o	18.7	23	20	11	17	24	21	19	14	19	12
20	1o	1-	1o	1o	1o	1o	2o	2o	9.7	6	5	6	7	7	6	14	14	8	13
21	3o	2-	1+	2-	1o	1-	1o	2-	12.0	33	11	8	13	7	4	6	13	12	14
22	2-	3-	2o	4-	1+	2-	3-	2+	18.0	11	25	16	41	10	11	23	20	20	15
23	2-	2o	2+	1+	1-	2-	3+	3o	16.0	11	15	20	8	5	12	35	27	17	17
24	3-	2-	2+	3-	2+	2-	2o	2-	17.0	21	13	20	23	18	11	15	11	17	17
25	3-	2o	2-	2-	1+	1o	1o	1-	12.0	24	16	11	11	10	6	6	4	11	13
26	3-	2-	2o	2o	2-	0+	1-	1+	12.3	21	13	16	14	12	3	5	8	12	9
27	1+	1-	1-	1-	1-	1o	0+	2-	7.0	8	5	4	5	4	7	3	11	6	13
28	3o	3o	4-	3o	2-	1+	1o	1-	17.3	27	33	46	29	12	8	6	5	21	17
29	1+	3-	3-	3-	3-	1o	1-	1o	14.7	8	26	25	21	25	7	4	6	15	11
30	1+	2-	0+	1-	1+	2-	1+	1-	9.0	10	12	2	5	10	12	8	4	8	8
										Monthly mean value of Am								13.5	

am INDICES 1986 (continued)

MAY 1986

	Km								ΣKm	am							Am	Am2
1	1o	1o	1+	1o	1+	0o	2o	1o	8.7	6	7	9	7	9	1	14	7	8	13
2	2-	3-	3o	3+	5o	4+	5-	6-	30.3	13	25	29	40	96	63	78	121	58	53
3	6o	5o	5-	3o	2-	1-	2o	1+	24.3	148	96	84	29	12	5	15	8	50	52
4	2-	1+	2o	4-	4+	3o	2-	4-	21.3	12	9	14	41	63	29	13	46	28	21
5	3o	3-	2-	2-	2+	3o	3-	5-	21.7	27	22	12	11	20	27	25	75	27	42
6	5-	5+	4+	4o	4+	5o	5o	5o	37.7	75	106	65	59	63	92	100	93	82	57
7	4-	2-	3o	3-	2-	2-	3+	1+	19.0	47	11	28	22	13	13	35	8	22	35
8	2-	1-	1+	2-	3o	2-	2o	2-	13.7	12	4	9	12	27	11	15	11	13	13
9	2-	2-	1o	1+	1+	1+	1+	2-	11.3	12	11	6	9	10	8	10	11	10	12
10	3-	1o	0+	2+	1+	1+	2-	1-	11.3	22	6	3	17	10	8	11	5	10	11
11	1+	2o	2o	2-	2-	1+	2-	2-	13.3	9	15	15	12	11	9	11	12	12	11
12	2-	3o	1+	1o	2-	1o	1-	1o	11.3	13	27	9	6	13	6	5	7	11	9
13	0+	0+	1-	1o	1+	0+	1+	2o	7.3	3	3	5	7	8	3	8	14	6	7
14	1+	1+	1o	0+	0+	0+	1o	1-	6.3	8	8	7	2	2	3	6	4	5	6
15	0+	1o	1o	1-	1-	1-	1+	2-	7.3	2	6	7	5	4	4	10	11	6	7
17	3-	3-	1+	2+	2+	2+	1+	1+	16.3	23	21	8	17	18	18	10	10	16	16
18	1-	2-	2+	2o	2-	1-	0+	2-	11.0	4	11	19	14	11	5	2	12	10	12
19	2o	2-	1+	2-	2+	3-	3-	2o	16.3	15	13	10	12	17	21	23	14	16	12
20	2-	1+	0+	1+	1+	1+	1o	2-	10.0	11	9	2	8	9	10	7	13	9	12
21	1-	1-	2o	2+	2o	2o	2-	1o	12.3	4	5	14	19	16	14	13	6	11	9
22	0+	0+	0+	0+	0+	1+	2-	1+	6.0	3	2	3	2	3	8	12	8	5	10
23	2o	2-	3o	2+	2o	1o	1o	2o	15.0	14	12	28	17	14	7	7	14	14	12
24	2-	2-	1+	2-	3o	2o	1-	2-	13.7	13	11	8	12	27	16	5	11	13	15
25	2o	3-	3+	3o	2o	2o	1+	1+	17.7	16	24	34	28	15	14	8	10	19	18
26	2-	2-	3o	3-	2-	3-	2o	1o	16.3	11	11	33	22	12	26	15	6	17	15
27	2o	1+	3-	2-	1+	2-	2-	3-	15.0	15	10	23	13	9	11	12	24	15	13
28	2+	0+	0+	0+	1-	0+	1-	1-	5.7	18	3	2	3	4	2	4	5	5	7
29	1o	1-	0+	1+	1o	1-	1-	2o	7.7	6	4	3	8	6	4	5	14	6	6
30	1o	1-	1o	1+	2-	3o	3+	3o	15.0	6	5	6	10	12	29	39	29	17	20
31	3+	4o	3+	3-	3o	2+	4-	3o	25.3	35	55	36	24	33	19	41	33	35	32
										Monthly mean value of Am								18.5	

JUNE 1986

	Km								ΣKm	am							Am	Am2
1	4+	3-	2+	3-	2o	3o	3o	4-	23.7	63	21	20	23	16	28	28	42	30	26
2	2+	2o	2-	1-	2-	2-	2+	2+	14.7	19	15	12	5	13	12	18	19	14	20
3	3o	3-	2+	2-	2o	2-	3-	3-	18.7	29	23	20	13	15	12	26	23	20	19
4	2o	2+	3-	3o	2+	1+	2+	1-	16.7	14	17	23	28	19	9	19	4	17	15
5	1o	1-	1+	2o	1-	1-	1o	1+	8.7	6	4	10	14	4	5	7	9	7	9
6	2-	2-	1+	1+	2+	2o	2-	1-	12.7	12	11	9	9	19	14	13	5	12	12
7	1o	1+	3-	3+	3o	3-	2+	3o	19.3	6	10	26	38	29	22	18	29	22	19
8	1+	2+	3o	2+	1+	1-	1o	2+	14.3	9	19	29	20	9	4	7	17	14	16
9	2o	1+	1o	1+	1-	2o	3-	2o	13.0	16	9	6	9	5	15	21	14	12	17
10	3-	3o	4o	3o	2+	2-	2-	3-	21.0	24	31	54	28	20	12	11	21	25	20
11	3-	1+	2-	2o	2o	1+	1-	1+	13.0	21	9	12	16	16	9	4	10	12	13
12	1+	2+	1+	1+	2o	2-	1+	2o	13.3	8	18	10	10	14	12	10	16	12	12
13	2-	2-	2+	1+	2-	2o	2o	1+	14.0	11	11	19	9	11	14	15	10	13	13
14	1+	2o	2-	2-	1+	1+	2+	2-	13.3	10	15	12	12	10	9	19	12	12	11
15	1+	1-	2-	1+	2-	2o	1o	1-	10.3	9	5	11	8	13	16	6	5	9	9
16	1-	0+	1o	2-	1+	2-	2-	2-	10.0	5	2	7	12	10	13	12	13	9	11
17	1o	2o	2-	3o	2+	2-	2-	2-	15.0	6	14	12	31	19	13	12	11	15	14
18	2o	3-	2-	2o	3-	2o	1o	1o	15.0	14	21	12	16	25	14	7	6	14	12
19	1+	1-	0+	1-	0+	1+	2o	2+	9.0	9	4	2	4	3	10	15	17	8	10
20	2o	1o	2-	1+	2-	1o	1+	2-	11.7	15	7	13	9	11	7	10	13	11	13
21	2+	2+	3-	3-	1o	1-	1+	0+	13.3	18	18	21	26	6	5	10	2	13	14
22	3-	3o	2-	1+	1+	2o	1+	2-	15.0	23	27	11	9	9	15	9	13	15	11
23	2+	1+	1+	1o	1o	1-	1+	0+	9.3	20	10	8	6	6	5	9	3	8	11
24	0+	2-	2+	3o	2-	2o	1+	1-	13.0	3	13	20	32	12	15	10	4	14	9
25	1-	0+	1o	0+	1-	1-	1-	1-	5.0	4	3	7	3	4	4	4	5	4	7
26	1+	1+	1+	1o	0+	1o	1o	2-	9.0	8	8	9	7	3	6	7	11	7	9
27	2-	2+	2-	3o	4o	4-	4o	5-	25.0	11	20	13	28	52	48	58	74	38	33
28	4+	5o	3o	2-	2-	1o	2-	3-	21.0	62	89	33	11	13	7	13	26	32	33
29	2o	1+	1+	2o	3+	3+	2+	3+	19.0	14	9	8	14	34	36	20	38	22	18
30	3o	2-	0+	1+	2-	3-	2-	2+	14.7	33	13	3	10	11	21	13	18	15	20
										Monthly mean value of Am								15.2	

am INDICES 1986 (continued)

JULY 1986

	Km								ΣKm	am							Am	Am2
1	3o	3-	1+	1o	1-	1+	2-	1+	13.0	30	21	8	7	4	10	12	10	13	17
2	2-	2+	3+	3+	3-	2+	3o	3o	21.7	12	20	36	39	23	18	30	28	26	20
3	3-	2+	3-	2+	1+	1+	1+	2-	15.7	22	19	24	20	9	8	9	12	15	18
4	3-	2o	2+	2-	2-	2o	2+	2o	16.7	23	16	17	11	11	15	17	14	16	13
5	2+	1+	1+	1+	1+	1o	1+	3-	12.7	18	9	10	9	10	6	9	25	12	12
6	2+	2o	1-	1o	1o	1+	1+	1-	10.3	17	14	4	6	6	10	10	4	9	9
7	1-	1o	2-	0+	0+	1o	1-	1+	7.0	4	7	11	3	3	6	5	10	6	7
8	1-	1+	2-	1-	1+	2o	2+	2o	12.0	5	8	11	5	8	16	18	16	11	10
9	2+	2-	2-	2-	3-	1+	1+	1+	14.0	19	12	13	12	23	8	8	9	13	14
10	3-	2-	1+	2-	1o	1o	1+	1o	11.7	24	12	8	13	7	7	9	6	11	10
11	1-	1+	2-	1+	1o	1+	1-	1o	9.0	4	10	11	8	6	8	5	6	7	7
12	1-	1o	1-	1o	1+	2-	2o	2o	10.3	5	7	4	7	10	13	15	14	9	10
13	2+	3-	2-	1o	3-	1o	1o	1-	13.0	20	21	13	7	21	6	6	5	12	12
14	1o	1+	1+	2-	1+	1+	1-	1o	9.7	7	8	8	11	8	8	5	6	8	8
15	1o	1o	1-	1+	1-	1o	1-	1o	7.3	6	6	5	9	5	6	5	7	6	6
16	1o	1o	1-	1+	2-	2-	1o	2o	10.3	7	6	4	9	13	13	6	15	9	11
17	3-	3-	3-	2-	2-	1o	1-	2-	14.7	23	26	23	13	11	6	4	13	15	14
18	2o	2o	1o	2+	2o	2-	1-	2-	13.3	14	14	7	18	15	11	5	11	12	10
19	1+	1+	1+	0+	1-	1o	1-	1+	8.0	10	9	8	3	4	6	5	8	7	7
20	1+	1-	0+	1-	1o	1o	1+	1+	7.7	8	5	3	4	6	7	8	10	6	7
21	2-	2-	1+	2o	2-	1+	1+	2+	13.3	11	11	9	14	11	10	9	17	12	12
22	3-	2+	1+	2o	2-	1+	1-	1o	13.0	23	17	10	15	13	8	5	6	12	11
23	1+	1o	1+	1+	2-	1+	1-	1o	9.7	9	7	8	8	12	8	4	6	8	7
24	0+	1o	1+	1o	0+	2-	3o	5o	13.7	3	7	8	7	3	11	31	93	20	18
25	3+	2+	2o	2o	1+	2-	3-	5o	20.3	39	19	16	15	10	12	26	89	28	33
26	4o	4-	3o	3o	4-	3o	2+	3o	25.7	57	49	28	29	44	33	20	30	36	37
27	3-	2+	4-	4+	2+	2o	1+	3-	21.3	26	17	49	68	17	14	10	26	28	27
28	3-	2+	3-	3-	3o	2+	2o	3-	20.3	21	18	21	24	29	18	15	21	21	22
29	3o	3-	3-	3o	3+	3o	4-	3o	24.3	32	24	25	30	39	29	44	32	32	28
30	3o	2+	3o	3-	2o	2+	2o	2+	19.7	32	20	32	24	15	20	14	18	22	27
31	3-	3-	2o	4-	3-	2-	2o	2+	19.7	25	26	14	47	26	13	15	18	23	19
										Monthly mean value of Am								15.0	

AUGUST 1986

	Km								ΣKm	am							Am	Am2
1	2o	2-	2o	1o	1o	1+	2+	2o	13.3	14	12	15	6	6	9	17	16	12	13
2	1-	2-	2-	2-	2-	1o	0+	1o	9.7	4	11	13	11	12	6	3	7	8	16
3	2o	3o	3+	4o	3o	3o	4+	4-	26.3	16	30	37	53	27	29	61	45	37	32
4	4o	4+	3o	3+	3o	3+	2-	3-	25.3	60	63	33	36	27	39	11	21	36	33
5	2+	2+	2-	2+	2+	2-	2+	3+	18.3	20	18	11	20	18	13	20	35	19	19
6	2+	2+	2+	0+	1+	1+	2+	1o	13.3	18	17	20	3	9	8	20	6	13	13
7	0+	0o	1o	1-	1-	1+	1-	2-	6.3	3	1	6	4	5	8	5	13	6	9
8	2+	1+	2o	2+	2+	2+	2o	1o	15.7	20	10	14	17	19	20	14	7	15	12
9	1+	2-	1+	1o	2-	4-	3o	3-	16.3	10	11	10	7	13	43	33	26	19	16
10	2+	1o	2-	2-	1o	1o	2o	1+	12.0	17	7	12	11	7	7	14	9	11	16
11	2-	2-	2-	3-	2+	1+	1+	1-	13.3	13	13	11	25	19	10	9	5	13	14
12	0o	3-	3o	3-	2o	3-	2+	2o	17.3	1	25	31	23	16	23	17	15	19	19
13	2o	3-	3o	3+	3o	3-	1+	1o	19.0	14	24	32	38	28	21	9	7	22	17
14	1-	1-	1o	1+	1o	2o	2o	2o	10.7	5	5	6	10	6	16	14	16	10	12
15	2o	1+	1+	2+	2-	2-	1+	2o	13.7	16	9	9	19	13	13	8	15	13	12
16	2-	1-	1+	1o	1-	0+	1o	1o	7.7	11	4	9	7	5	3	7	7	7	9
17	2-	2o	1o	1o	1+	1+	1o	1-	10.0	11	14	6	6	9	10	7	4	8	7
18	1o	1o	1-	1-	0+	1-	0+	0o	4.7	6	7	5	5	3	4	2	0	4	6
19	1-	1-	1+	3-	3-	1o	1-	2-	11.3	4	4	9	24	21	7	5	12	11	8
20	2o	2-	1+	0+	3o	3o	5-	3o	19.0	14	12	9	3	29	27	74	33	25	24
21	2o	2o	3+	4+	5-	5-	3o	4-	27.7	16	16	36	65	71	80	32	46	45	46
22	3-	4+	5o	3+	4+	3-	4o	4-	30.0	23	64	89	40	66	23	55	48	51	50
23	3o	4o	4-	3o	4o	4+	3+	3+	28.7	28	53	49	31	53	62	36	40	44	41
24	4-	3o	3-	2o	2+	3+	4+	4o	25.3	48	31	24	14	18	39	62	54	36	41
25	4o	4-	4-	3-	2-	2-	2+	3-	22.3	55	47	43	23	12	12	20	21	29	31
26	3o	3-	3o	2o	4o	2+	1+	2-	20.0	31	22	28	15	53	17	8	12	23	24
27	3o	3o	4-	3+	4-	2o	2-	2+	22.7	30	31	41	34	44	16	13	17	28	23
28	2-	1+	2-	2+	4-	3o	3+	2o	19.0	13	8	12	20	48	32	38	16	23	26
29	3o	3+	3o	3+	4o	3+	3o	3+	26.3	33	38	30	37	52	40	29	35	37	36
30	3+	4-	3+	3-	4-	3-	5-	5-	28.7	34	48	40	25	43	21	72	75	45	41
31	5-	4-	1+	2-	2o	2+	3o	3o	21.7	71	47	10	12	16	18	29	29	29	33
										Monthly mean value of Am								22.5	

am INDICES 1986 (continued)

SEPTEMBER 1986

	Km								ΣKm	am							Am	Am2
1	3o	3-	2+	2+	1+	1o	2o	3-	17.3	27	25	17	19	8	7	15	23	18	25
2	3o	4o	3+	3o	3o	2+	2-	2-	22.0	32	59	39	29	30	20	11	11	29	20
3	2-	2o	1o	1+	1o	2-	1+	3-	12.7	12	15	6	9	7	13	8	26	12	14
4	3-	2+	1o	0+	1+	2-	2+	2+	14.0	23	18	6	2	9	13	17	17	13	14
5	2+	2-	2-	2-	2-	2o	3-	3-	16.3	20	13	13	12	13	14	22	23	16	16
6	3+	2-	1+	2o	2o	2-	1-	1+	14.0	34	12	8	15	14	11	4	9	13	14
7	2-	1+	2o	2-	1+	1-	1-	1-	10.0	11	9	14	12	10	5	4	5	9	9
8	2-	1+	2-	1-	0+	1-	1+	2o	9.7	12	9	13	5	3	5	10	15	9	10
9	2-	3-	2o	1+	2-	1-	1o	1-	11.7	13	22	16	10	11	4	6	4	11	10
10	1+	1+	2o	2-	1+	1o	1-	1+	10.7	9	10	16	13	8	7	4	8	9	9
11	2-	2-	1+	1-	1+	1-	4-	5o	16.0	12	13	8	4	10	5	41	96	24	55
12	5+	7o	7-	5o	4-	4-	4o	4-	39.0	104	259	201	99	47	43	59	42	107	74
13	4o	4-	3+	3+	2+	2+	3-	4o	25.7	60	41	40	38	17	18	25	58	37	36
14	4-	3-	2o	1o	1-	3-	3-	2+	17.7	45	25	15	7	5	24	25	20	21	24
15	2+	2+	3-	4-	4-	3+	3o	2-	22.7	17	17	21	43	50	38	33	11	29	21
16	2o	2o	1-	0+	1-	1o	2o	3o	11.7	14	15	5	2	4	6	16	27	11	19
17	3-	3-	3o	1+	2-	2-	3-	4-	19.3	26	21	27	8	11	13	25	42	22	23
18	4-	4-	3o	3-	2+	2+	4o	3-	24.3	49	42	27	24	18	20	55	24	32	33
19	5-	4-	3+	2o	2+	4o	2+	2+	24.7	74	50	36	16	18	55	19	17	36	31
20	2+	2-	4o	2o	2o	2o	3o	4+	21.3	18	11	56	14	15	14	32	66	28	26
21	4-	3-	1+	1+	2-	1+	2+	1-	15.0	43	25	9	9	11	9	19	5	16	17
22	0+	1-	0+	1-	1+	0+	2o	2o	7.7	2	4	2	4	8	3	16	14	7	20
23	4-	5-	4+	3+	4-	5-	4o	5-	33.0	42	77	68	34	41	75	52	74	58	42
24	4-	4-	4o	3o	3+	2+	3o	4-	26.7	44	43	54	29	40	19	32	49	39	39
25	2o	2o	2o	3o	5-	4-	3-	5o	25.0	14	16	15	31	71	47	24	87	38	41
26	5-	4-	3+	4o	4-	4-	2+	2o	27.3	71	41	39	53	45	47	19	14	41	43
27	3-	2+	4-	3o	3o	2+	4o	4-	24.7	25	19	48	33	30	19	55	41	34	29
28	3-	2o	3-	2-	1+	1+	3o	4o	18.7	22	15	25	13	8	8	28	55	22	25
29	3+	2+	2-	2-	2-	3-	3o	3+	19.7	38	17	12	13	12	22	29	38	23	20
30	1+	1+	1+	2o	1+	0+	0+	0+	8.3	9	10	10	15	8	3	2	3	8	13
																	Monthly mean value of Am		25.7	

OCTOBER 1986

	Km								ΣKm	am							Am	Am2
1	1-	0+	1o	3-	3-	2o	2-	2o	13.0	4	3	7	26	24	14	12	16	13	13
2	3-	3o	1+	3o	4-	5-	3+	3o	24.7	23	27	10	30	44	83	39	27	35	27
3	3o	3o	2o	1o	1-	1+	2-	3o	15.7	32	27	16	7	5	10	12	27	17	23
4	2+	1+	1+	1o	1+	2-	2+	2o	13.3	18	10	8	6	9	12	19	14	12	16
5	3o	3-	2+	3+	4-	3+	3+	2+	24.0	30	24	18	34	45	34	38	20	30	26
6	2+	3o	4o	2-	1+	2+	1+	2-	17.7	19	29	55	13	9	17	9	12	20	21
7	1o	1+	1+	1+	0+	1o	1+	2-	9.3	6	8	8	9	2	7	8	12	8	9
8	1-	1o	1+	2o	2+	3-	1o	1+	12.3	5	6	10	16	17	24	7	8	12	9
9	1o	1o	1+	0+	1+	2o	2+	2+	11.7	7	6	9	3	9	14	17	17	10	10
10	1-	0+	1o	1-	0o	0+	1+	2-	6.0	4	2	7	5	1	2	8	11	5	7
11	1o	0+	1-	1-	2o	2-	1+	1+	9.0	7	2	5	5	14	11	9	8	8	7
12	2-	0o	1-	0+	1-	0o	1-	0+	4.3	13	1	4	3	5	1	4	2	4	7
13	0+	0+	2-	2o	3+	3+	6o	5o	22.0	2	3	11	16	38	40	150	102	45	37
14	4o	4+	4o	4-	4+	2o	3o	3o	28.3	53	62	57	50	62	15	32	27	45	50
15	2o	2-	3+	3+	3o	2+	3o	2+	21.0	16	12	39	37	31	19	27	18	25	24
16	1o	2-	1+	2-	1+	1o	2-	2-	11.3	7	12	10	13	8	7	12	11	10	13
17	2o	2-	1o	1o	1-	0+	1+	3-	10.7	15	11	7	6	5	3	10	22	10	10
18	1+	1o	1-	2o	3-	4-	4-	3o	18.0	8	6	5	16	26	45	43	32	23	21
19	3o	3o	3-	3o	5-	3-	3o	3-	24.7	30	32	25	33	72	25	30	21	34	30
20	2o	1+	2o	2+	3o	3+	3+	3-	20.0	16	10	14	18	27	38	37	26	23	26
21	3o	2+	2+	2+	2+	2-	3-	2+	19.0	29	20	18	17	17	13	25	18	20	21
22	2o	2-	2-	2o	0+	1-	1o	0+	9.7	16	11	12	15	3	4	7	3	9	10
23	1o	1-	1o	1-	1+	1+	2+	1+	9.7	7	4	7	5	8	10	19	8	9	6
24	0+	0o	0o	0o	0+	2-	0o	1-	3.0	2	1	1	1	3	12	1	5	3	5
25	0o	1-	1-	1o	1-	1-	1-	2o	6.3	1	4	5	6	5	4	5	16	6	5
26	1o	0o	1-	1-	1-	1+	1-	2-	6.7	6	1	4	4	4	9	4	11	5	10
27	2o	2o	3o	3o	4-	5-	3+	3-	24.3	16	14	29	31	46	78	36	21	34	24
28	3+	3o	0+	2-	0+	0o	2-	3o	13.3	37	30	3	11	2	1	12	28	16	26
29	3+	2+	3o	3o	2+	1+	2+	4-	21.3	40	19	27	30	20	9	19	49	27	23
30	3o	3-	3-	3-	2+	3o	3+	4o	23.7	33	26	21	25	19	32	34	52	30	24
31	2-	1+	2-	1+	1o	2-	1+	2-	11.7	13	9	13	9	7	13	8	12	11	20
																	Monthly mean value of Am		18.0	

NOVEMBER 1986

	Km								ΣKm	am							Am	Am2
1	3+	3o	3-	2o	1+	1o	1+	1+	16.0	35	27	23	16	8	7	10	9	17	14
2	1+	1+	2o	2o	2-	1+	2+	2o	14.0	8	8	14	15	11	9	17	14	12	13
3	3-	3-	2+	2o	1+	3-	3-	5-	21.0	21	25	19	16	9	23	26	84	28	43
4	6-	5+	4+	5+	5+	5+	5o	4o	40.3	140	107	62	109	106	106	103	59	99	70
5	4+	4o	4-	3-	1+	2-	2+	2+	22.3	68	51	47	25	9	11	19	17	31	42
6	2o	2-	2-	1+	2+	2o	4-	3-	17.3	16	11	12	10	18	14	44	26	19	15
7	2+	1+	1o	1-	1+	1-	0+	2o	9.7	18	9	6	5	8	5	2	14	8	13
8	2-	1+	1-	1o	0+	1+	1+	0+	8.0	11	10	4	7	3	8	8	3	7	7
9	1o	1o	1o	1-	1o	0+	0o	0+	5.3	6	6	6	5	7	3	1	2	5	5
10	1o	1o	0+	0+	1-	1o	2+	2+	9.0	6	7	2	3	4	7	20	20	9	14
11	3-	4+	3+	2-	2o	2o	2-	2-	19.3	21	62	40	12	15	14	13	11	24	20
12	4-	2o	2-	1o	1o	1+	1-	1o	12.3	41	16	13	6	6	10	5	6	13	11
13	1o	1-	1-	1o	2+	2o	3-	1+	11.7	7	4	5	6	20	16	25	8	11	10
14	1+	1o	1o	2o	1+	1o	1o	1+	10.0	9	7	6	14	10	6	7	8	8	12
15	2o	1+	1+	2+	3o	3+	3-	3o	19.0	15	10	10	18	31	36	26	33	22	17
16	3-	2-	2-	3-	3o	3o	3-	2o	19.3	21	13	11	24	28	29	21	14	20	22
17	2+	2-	2o	3-	2-	2o	2-	2-	15.7	20	12	14	21	12	16	13	11	15	16
18	2-	2o	2-	1o	1o	1-	1+	1o	10.3	13	16	11	6	7	4	8	6	9	8
19	0o	0+	0o	1-	0+	2-	2o	2+	7.3	1	3	1	4	3	13	16	17	7	7
20	2-	2-	0+	1-	1o	1-	1o	1+	8.3	13	12	3	4	7	4	6	9	7	8
21	0+	1-	1o	1o	0+	1-	1o	1-	5.7	2	4	6	6	3	5	7	5	5	5
22	1-	1+	0+	1-	0o	0+	1-	1o	5.0	4	9	3	4	1	2	4	7	4	4
23	1-	1-	1-	0+	2-	2+	3+	5o	14.7	5	4	5	3	11	18	34	91	21	24
24	4+	4+	2+	4-	3-	5-	5+	5o	32.3	63	68	19	47	22	86	119	92	65	53
25	3+	3o	3+	5-	5o	5-	5+	3+	32.7	39	28	34	71	96	77	116	39	63	58
26	3+	3-	3-	3-	4-	4-	1+	1o	21.0	34	21	26	25	44	43	10	7	26	39
27	2+	3-	2+	2+	2-	1+	0+	0+	13.3	18	22	20	20	11	9	3	3	13	15
28	0+	1+	1+	2-	1+	1+	2+	1+	11.0	3	9	9	13	9	8	19	8	10	9
29	2-	1+	1+	2-	3o	4-	3-	2+	17.7	12	8	9	12	28	45	24	17	19	16
30	1o	1+	3-	3-	3o	4-	3-	4-	20.7	6	9	21	22	28	47	24	47	26	27
																		Monthly mean value of Am	20.8

DECEMBER 1986

	Km								ΣKm	am							Am	Am2
1	3+	3-	3o	3-	2-	2+	2+	1+	19.3	36	22	29	24	12	20	20	9	22	23
2	1+	1+	2-	2-	2o	1+	1+	2+	13.0	10	9	13	13	14	10	8	20	12	12
3	2-	1-	1+	2-	2o	2-	1+	1+	11.7	12	4	9	12	16	11	8	9	10	10
4	1+	1-	1+	2-	3-	2o	3-	3-	15.0	8	4	8	11	21	14	22	25	14	12
5	3-	0+	0+	0+	0+	0o	0+	1+	5.7	23	3	3	3	3	1	2	9	6	11
6	2o	2o	1o	1o	0o	1o	1+	1+	9.7	15	15	6	7	1	7	10	9	9	9
7	1+	2-	2o	2+	2o	2-	2-	1o	13.7	8	13	16	17	14	12	11	7	12	9
8	1o	1-	0+	1o	0+	1o	1+	2-	7.3	6	5	3	6	3	6	10	11	6	8
9	2o	1+	1o	1+	1+	3-	3-	2-	14.0	14	8	6	8	8	23	23	11	13	12
10	3-	2o	1+	2-	2-	3-	3-	3o	17.7	22	16	8	13	13	24	25	27	19	17
11	3-	2-	2-	2-	2-	2-	1+	1o	13.3	23	12	12	11	12	13	10	6	12	13
12	1-	1-	1-	1o	1+	1+	2-	2o	9.3	4	5	4	7	9	9	11	16	8	9
13	1o	2-	2-	1+	2o	2o	3+	5-	17.7	6	12	11	8	14	16	38	71	22	26
14	4o	4+	4-	3o	2o	1o	3o	1+	22.3	58	69	47	28	14	6	27	10	32	27
15	1+	1o	1o	1-	1-	1-	2-	1+	8.3	9	6	7	5	5	5	13	10	8	14
16	4-	3o	2o	2+	2o	4-	2o	1+	20.0	42	27	16	19	15	49	15	9	24	16
17	1o	1o	1+	1+	2o	2+	1+	1o	11.3	6	7	8	8	14	18	10	7	10	12
18	1-	0+	1o	1+	1+	1+	3-	2+	11.0	5	2	7	8	9	10	24	19	11	11
19	2-	2o	1o	1o	1-	1-	2-	2+	11.0	11	14	7	6	5	4	12	20	10	12
20	2-	1+	2-	1+	2o	3o	1o	2o	14.0	12	10	13	10	15	29	7	14	14	12
21	2o	1-	1o	2-	3o	3-	3+	3+	17.7	14	5	6	13	31	24	38	40	21	19
22	3-	3-	2-	2o	3+	4o	2+	3-	21.3	22	24	11	15	36	52	17	21	25	28
23	2+	2+	3o	4-	4+	3o	3-	4-	25.0	20	20	28	46	69	32	23	48	36	31
24	3o	3-	2-	2+	2-	2-	3-	2-	17.3	28	22	11	19	11	12	25	12	18	25
25	2o	3o	2+	3-	1+	2-	1-	2+	16.0	16	27	20	24	8	11	4	20	16	18
26	2+	2+	2+	3+	2+	2+	3o	3o	21.0	18	20	19	34	19	18	29	30	23	18
27	3-	2-	2-	2-	1+	2o	1+	2o	14.3	22	12	13	12	10	16	8	16	14	14
28	1+	1-	1-	1+	0o	0+	0o	1o	5.3	8	5	4	8	1	2	0	6	4	7
29	1+	1o	1+	1o	1-	1-	0+	1-	7.0	8	7	8	7	4	4	2	5	6	4
30	1o	1-	0o	0+	1o	1+	2+	2+	9.0	7	4	1	3	7	10	17	18	8	8
31	1o	1o	2+	2+	2+	2-	1-	1+	12.7	7	7	18	20	20	12	5	8	12	16
																		Monthly mean value of Am	14.7

MONTHLY AND YEARLY **Am** 1959 - 1986

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
1984	20.6	25.7	30.6	34.2	26.6	23.8	26.9	25.8	33.1	33.5	31.5	28.1	28.4
1985	25.0	23.4	17.7	30.3	14.8	19.6	24.4	22.3	20.9	23.0	23.5	21.5	22.2
1986	21.5	40.5	20.7	13.5	18.5	15.2	15.0	22.5	25.7	18.0	20.8	14.7	20.5

Unit : nT

SECTION 3

3.3. Kp INDICES

Musical diagram of **Kp** 1986 73

Monthly tables of three-hour indices :

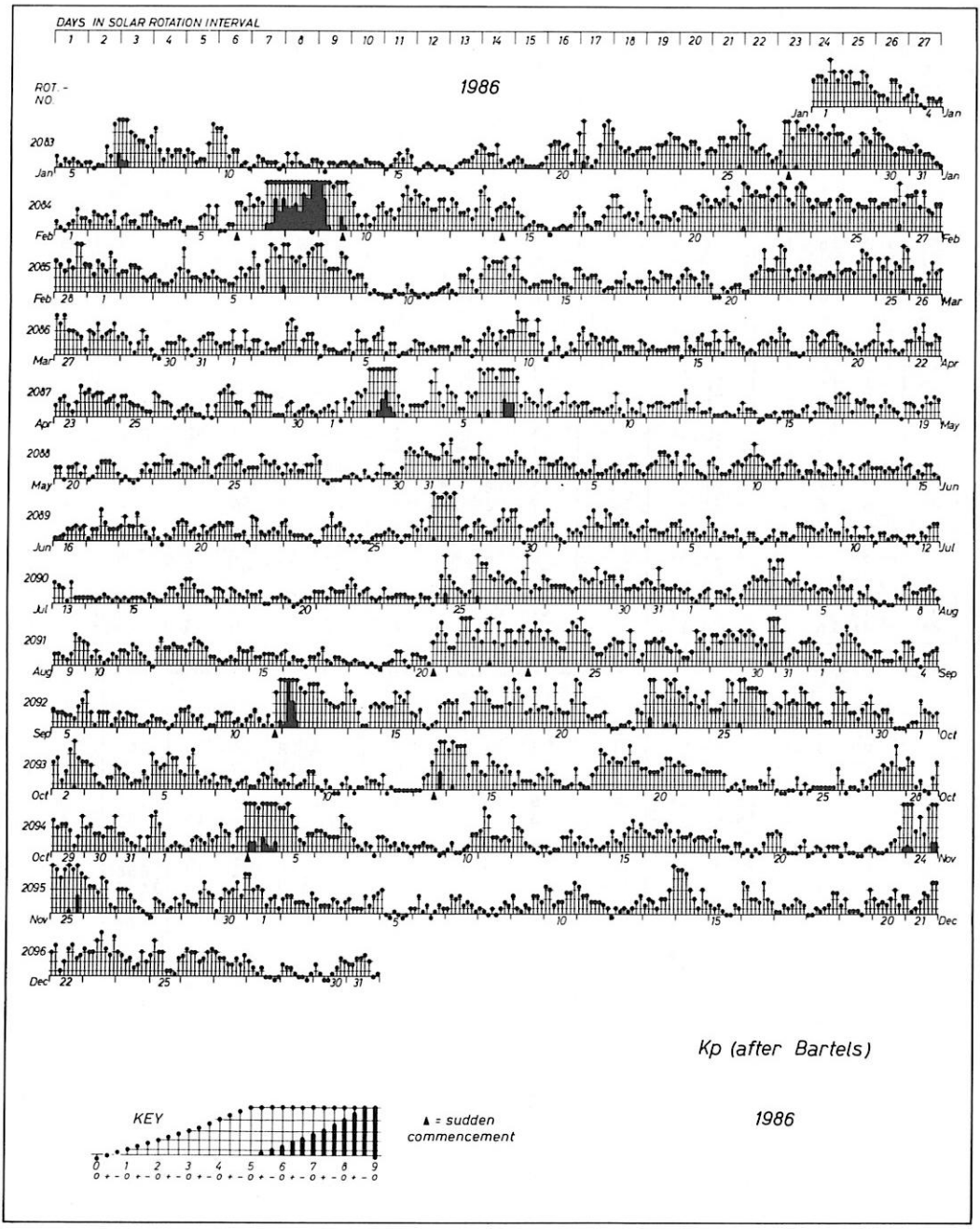
Kp, **ap** and daily **Ap** and **Cp** values 74

Frequencies of **Kp** indices 80

Monthly and yearly mean values of **Ap**

1932 - 1986 81

MUSICAL DIAGRAM OF **Kp** 1986



Kp INDICES 1986

	Kp								Sum	Jan 1986 ap								Sum	Ap	Cp
1	3+	4-	4-	3+	5o	4o	3+	4o	30+	18	22	22	18	48	27	18	27	200	25	1.2
2	4-	4o	3o	3o	4o	4-	3-	2o	26o	22	27	15	15	27	22	12	7	147	18	1.0
3	2-	2-	1+	3+	3+	3-	1+	2-	17o	6	6	5	18	18	12	5	6	76	10	0.5
4	2+	2-	1-	0+	1+	1+	1o	1+	10o	9	6	3	2	5	5	4	5	39	5	0.2
5	2-	1-	1+	1o	1+	1o	1-	1o	9-	6	3	5	4	5	4	3	4	34	4	0.1
6	1o	0+	1-	1-	3-	2-	5-	6+	18o	4	2	3	3	12	6	39	94	163	20	1.0
7	6-	6-	4o	4-	3+	3+	3-	4-	32o	67	67	27	22	18	18	12	22	253	32	1.3
8	4+	2+	1+	2+	2-	2+	2+	2-	18+	32	9	5	9	6	9	9	6	85	11	0.6
9	2+	2o	1o	1+	1+	3o	5-	4+	20o	9	7	4	5	5	15	39	32	116	14	0.8
10	4+	4-	2-	2+	2+	1-	1o	0+	16+	32	22	6	9	9	3	4	2	87	11	0.6
11	1-	2-	1+	1o	1o	1o	0+	1-	8-	3	6	5	4	4	4	2	3	31	4	0.1
12	2o	1o	2o	1o	1-	1-	1+	1+	10o	7	4	7	4	3	3	5	5	38	5	0.2
13	1o	0o	1o	1o	1-	1o	1o	1-	6+	4	0	4	4	3	4	4	3	26	3	0.1
14	1o	1-	1-	1+	1o	1o	1o	1-	7+	4	3	3	5	4	4	4	3	30	4	0.1
15	0+	1-	1+	2o	1+	2+	2-	0+	10o	2	3	5	7	5	9	6	2	39	5	0.2
16	0+	1-	1o	1-	0+	1-	1-	0+	5-	2	3	4	3	2	3	3	2	22	3	0.0
17	0o	1-	1o	1+	1+	2-	2+	3o	11+	0	3	4	5	5	6	9	15	47	6	0.3
18	3-	2o	2o	3o	1+	1-	1o	1+	14o	12	7	7	15	5	3	4	5	58	7	0.4
19	2-	1+	1-	1-	1-	1-	1o	2-	8+	6	5	3	3	3	3	4	6	33	4	0.1
20	3o	3+	3+	3-	3o	1o	2+	4o	23-	15	18	18	12	15	4	9	27	118	15	0.8
21	6-	2-	1-	1+	3o	5-	5o	4+	26+	67	6	3	5	15	39	48	32	215	27	1.2
22	3+	3-	2+	3-	2o	2+	3-	3-	21-	18	12	9	12	7	9	12	12	91	11	0.7
23	3-	2-	3o	3o	3+	4o	4-	4-	25o	12	6	15	15	18	27	22	22	137	17	0.9
24	3o	3-	3+	3+	3-	1o	2+	3-	21o	15	12	18	18	12	4	9	12	100	12	0.7
25	2+	4-	4-	3o	4-	4-	5+	5-	30o	9	22	22	15	22	22	56	39	207	26	1.2
26	4o	3-	2+	3-	3o	2o	1+	2-	20-	27	12	9	12	15	7	5	6	93	12	0.7
27	2+	5+	5o	4-	5+	4+	4+	5-	35o	9	56	48	22	56	32	32	39	294	37	1.4
28	4+	5-	4o	4-	4o	5-	4o	4o	33+	32	39	27	22	27	39	27	27	240	30	1.3
29	3+	4-	2o	2+	4o	4-	3+	4+	27-	18	22	7	9	27	22	18	32	155	19	1.0
30	4o	4-	3o	3-	2o	3-	3-	2+	23o	27	22	15	12	7	12	12	9	116	14	0.8
31	2+	3o	2+	2o	2o	2-	1o	1-	15o	9	15	9	7	7	6	4	3	60	8	0.4

	Kp								Sum	Feb 1986 ap								Sum	Ap	Cp
1	1+	1-	0+	1o	1+	3-	2-	2-	11-	5	3	2	4	5	12	6	6	43	5	0.2
2	1+	2+	2o	2-	2o	1+	2+	1-	14-	5	9	7	6	7	5	9	3	51	6	0.3
3	2-	2o	1+	1+	1-	2o	2o	2+	13+	6	7	5	5	3	7	7	9	49	6	0.3
4	2-	1+	1o	1o	1+	2-	1+	0+	10-	6	5	4	4	5	6	5	2	37	5	0.2
5	1-	1-	1-	2-	2o	3o	2-	3o	13+	3	3	3	6	7	15	6	15	58	7	0.4
6	0+	0+	1o	1o	3+	3+	3-	4o	16o	2	2	4	4	18	18	12	27	87	11	0.6
7	3o	4-	3+	6-	6-	8-	7-	8-	43+	15	22	18	67	67	179	111	179	658	82	1.8
8	7o	7o	7+	7-	8o	8-	9o	9-	61+	132	132	154	111	207	179	400	300	1615	202	2.1
9	9-	8-	5+	5-	5o	6+	5+	4o	47o	300	179	56	39	48	94	56	27	799	100	1.9
10	3+	2o	1o	2o	1o	2-	3o	3+	17+	18	7	4	7	4	6	15	18	79	10	0.6
11	2+	3-	2-	3-	4o	5-	4-	4+	26o	9	12	6	12	27	39	22	32	159	20	1.0
12	4o	3+	4-	3-	3-	4-	4-	3-	26+	27	18	22	12	12	22	22	12	147	18	1.0
13	4-	3+	2+	2+	3-	2-	3-	4+	23o	22	18	9	9	12	6	12	32	120	15	0.8
14	5-	4-	2-	3-	3o	3+	3o	4-	26-	39	22	6	12	15	18	15	22	149	19	1.0
15	2+	2o	1-	1o	1+	1o	1o	1-	10o	9	7	3	4	5	4	4	3	39	5	0.2
16	0o	1-	1-	1o	1-	1o	2+	3o	9+	0	3	3	4	3	4	9	15	41	5	0.2
17	2+	1o	1-	1+	1+	2o	3o	4o	16-	9	4	3	5	5	7	15	27	75	9	0.5
18	4o	3o	2o	2+	2-	2+	1+	4+	21o	27	15	7	9	6	9	5	32	110	14	0.8
19	4-	2o	1+	2o	2o	2-	2+	2-	17-	22	7	5	7	7	6	9	6	69	9	0.5
20	3o	3o	3-	2+	3+	4o	4-	3o	25o	15	15	12	9	18	27	22	15	133	17	0.9
21	4-	3+	4-	5-	3+	3o	4-	5+	31-	22	18	22	39	18	15	22	56	212	26	1.2
22	5-	4o	4+	4o	4o	5-	4-	4o	33+	39	27	32	27	27	39	22	27	240	30	1.3
23	5+	5-	4-	3+	5-	5o	5-	4-	35o	56	39	22	18	39	48	39	22	283	35	1.4
24	3o	4-	3+	3+	4-	2+	4-	4o	27o	15	22	18	18	22	9	22	27	153	19	1.0
25	4-	4-	3-	3+	3o	3o	4-	4-	27-	22	22	12	18	15	15	22	22	148	18	1.0
26	3o	3+	3+	4-	4-	6-	3+	4o	30o	15	18	18	22	22	67	18	27	207	26	1.2
27	4o	4+	3o	4+	3-	2+	3+	3+	27+	27	32	15	32	12	9	18	18	163	20	1.0
28	4-	3+	3-	4-	3o	5o	5o	3+	30-	22	18	12	22	15	48	48	18	203	25	1.2

Kp INDICES 1986 (continued)

	Kp								Sum	Mar 1986 ap								Sum	Ap	Cp
1	3+	2+	4-	3+	3-	4+	4-	2+	26-	18	9	22	18	12	32	22	9	142	18	1.0
2	3-	3-	3+	3+	3o	2o	2-	2o	21-	12	12	18	18	15	7	6	7	95	12	0.7
3	2+	2-	1+	1+	2-	2+	3o	5-	18+	9	6	5	5	6	9	15	39	94	12	0.7
4	3-	2o	2o	2-	2+	2o	3-	2o	17+	12	7	7	6	9	7	12	7	67	8	0.5
5	2-	2-	1+	1+	2o	3o	2+	3o	16+	6	6	5	5	7	15	9	15	68	8	0.5
6	4+	3+	1o	4-	5o	5-	4o	6-	32-	32	18	4	22	48	39	27	67	257	32	1.3
7	5o	4o	4-	4o	3+	4+	5-	5o	34o	48	27	22	27	18	32	39	48	261	33	1.3
8	5o	4-	3o	3o	3o	4+	4o	3-	29-	48	22	15	15	15	32	27	12	186	23	1.1
9	2o	2+	2+	1+	0+	1-	0+	0+	10-	7	9	9	5	2	3	2	2	39	5	0.2
10	0o	0o	1-	0+	0+	1+	1-	0+	4-	0	0	3	2	2	5	3	2	17	2	0.0
11	0o	0+	0o	0+	0+	1-	1o	1+	4o	0	2	0	2	2	3	4	5	18	2	0.0
12	1-	0+	2+	2+	3o	2-	1-	2+	13+	3	2	9	9	15	6	3	9	56	7	0.4
13	4o	3+	4-	4-	4-	4o	2+	3+	28o	27	18	22	22	22	27	9	18	165	21	1.1
14	4o	2o	2-	1o	1+	1+	2-	2-	15-	27	7	6	4	5	5	6	6	66	8	0.4
15	2-	2+	2o	1+	1+	1o	3o	3o	16-	6	9	7	5	5	4	15	15	66	8	0.4
16	2+	2o	2+	2+	2-	1-	1o	1o	13+	9	7	9	9	6	3	4	4	51	6	0.3
17	2-	2-	3-	1+	1o	2-	2-	1o	13-	6	6	12	5	4	6	6	4	49	6	0.3
18	3-	2o	2-	3-	2+	2+	1o	2-	16+	12	7	6	12	9	9	4	6	65	8	0.4
19	2+	3o	2+	2o	1+	3-	2+	1+	17+	9	15	9	7	5	12	9	5	71	9	0.5
20	0o	0o	1o	0+	1o	1+	1+	1-	6-	0	0	4	2	4	5	5	3	23	3	0.1
21	1-	2+	3-	3+	5-	3o	3o	4o	24-	3	9	12	18	39	15	15	27	138	17	0.9
22	5o	5-	3o	2o	3o	3+	3-	3+	27o	48	39	15	7	15	18	12	18	172	22	1.1
23	2+	2o	2+	2+	3-	2+	4-	3-	20+	9	7	9	9	12	9	22	12	89	11	0.6
24	3o	3o	3-	4-	5-	4+	4o	2+	28-	15	15	12	22	39	32	27	9	171	21	1.1
25	4o	3+	4o	3-	4-	3+	5+	5-	31o	27	18	27	12	22	18	56	39	219	27	1.2
26	4-	2o	2o	1+	3-	4o	3-	3+	22-	22	7	7	5	12	27	12	18	110	14	0.8
27	5-	4o	4+	3o	3o	3-	2+	1o	25o	39	27	32	15	15	12	9	4	153	19	1.0
28	3o	3-	4-	2+	3-	3o	4-	2+	23+	15	12	22	9	12	15	22	9	116	14	0.8
29	3-	2+	2-	1-	2-	3o	2+	1o	15+	12	9	6	3	6	15	9	4	64	8	0.4
30	0+	0o	1o	2-	2-	2-	2+	2o	11-	2	0	4	6	6	6	9	7	40	5	0.2
31	1o	0+	1o	2o	2+	3-	3-	2-	14-	4	2	4	7	9	12	12	6	56	7	0.4

	Kp								Sum	Apr 1986 ap								Sum	Ap	Cp
1	1+	2-	2-	3o	1+	1+	3o	1o	14+	5	6	6	15	5	5	15	4	61	8	0.4
2	2o	2o	1-	2-	1o	1o	1+	2-	11+	7	7	3	6	4	4	5	6	42	5	0.2
3	4-	4o	3+	1o	2o	3-	3-	2-	21o	22	27	18	4	7	12	12	6	108	14	0.8
4	0+	1+	1o	1o	1-	1-	1o	2-	8-	2	5	4	4	3	3	4	6	31	4	0.1
5	1-	3o	2o	2o	1o	2+	3-	3+	17o	3	15	7	7	4	9	12	18	75	9	0.5
6	1-	2-	2-	0+	1-	1-	1o	2o	9-	3	6	6	2	3	3	4	7	34	4	0.1
7	2-	2-	1o	1+	1o	1+	1+	1+	11-	6	6	4	5	4	5	5	5	40	5	0.2
8	1-	1+	1+	2+	2o	0+	1o	2o	11o	3	5	5	9	7	2	4	7	42	5	0.2
9	3-	3+	3-	2-	3o	2+	3o	3o	22-	12	18	12	6	15	9	15	15	102	13	0.7
10	5-	4o	4o	3-	3-	4o	2-	0o	24-	39	27	27	12	12	27	6	0	150	19	1.0
11	1-	2+	1+	0+	1-	2-	1o	3-	11-	3	9	5	2	3	6	4	12	44	6	0.2
12	3+	2-	3-	2+	2-	2+	2o	2+	18+	18	6	12	9	6	9	7	9	76	10	0.5
13	2o	1-	1+	1+	1+	1-	2o	2-	11o	7	3	5	5	5	3	7	6	41	5	0.2
14	1o	1+	1o	1o	1o	1+	1+	1+	9+	4	5	4	4	4	5	5	5	36	4	0.2
15	0+	2+	1+	1o	2+	3-	2-	2-	13+	2	9	5	4	9	12	6	6	53	7	0.3
16	3o	2o	1-	3o	2o	2+	2-	1+	16o	15	7	3	15	7	9	6	5	67	8	0.5
17	1-	1o	1-	2-	2o	2-	2+	2o	12o	3	4	3	6	7	6	9	7	45	6	0.3
18	3+	3-	2o	1-	1-	0+	1-	2+	13-	18	12	7	3	3	2	3	9	57	7	0.4
19	3o	3-	2-	2o	3-	3o	3-	2-	19+	15	12	6	7	12	15	12	6	85	11	0.6
20	1+	1o	1-	2-	1o	1+	2-	2o	11-	5	4	3	6	4	5	6	7	40	5	0.2
21	4-	2-	1o	2o	1o	1-	1o	2o	13o	22	6	4	7	4	3	4	7	57	7	0.4
22	2o	3+	2+	4-	2-	2-	3-	2+	20-	7	18	9	22	6	6	12	9	89	11	0.6
23	2-	2+	3-	2-	1o	2o	4-	3o	18o	6	9	12	6	4	7	22	15	81	10	0.6
24	3+	3-	3o	3o	2o	2+	3-	2-	21-	18	12	15	15	7	9	12	6	94	12	0.7
25	3-	3-	2o	2-	2-	1+	1o	1o	14o	12	12	7	6	6	5	4	4	56	7	0.4
26	3o	3-	2o	2o	2-	0+	1o	1+	14o	15	12	7	7	6	2	4	5	58	7	0.4
27	2-	1+	1-	1-	0+	2-	0+	2-	8+	6	5	3	3	2	6	2	6	33	4	0.1
28	3o	3+	4-	3o	2o	2o	1o	1-	19-	15	18	22	15	7	7	4	3	91	11	0.7
29	2-	3o	3o	3-	3-	1-	1-	1-	15o	6	15	15	12	12	3	3	3	69	9	0.5
30	2-	2o	1-	1o	1+	2-	1o	1-	10o	6	7	3	4	5	6	4	3	38	5	0.2

Kp INDICES 1986 (continued)

	Kp								Sum	May 1986				ap				Sum	Ap	Cp
1	1o	1+	2-	1o	2o	0o	2+	1+	11-	4	5	6	4	7	0	9	5	40	5	0.2
2	2o	3o	3-	3+	6-	5o	6-	7-	34o	7	15	12	18	67	48	67	111	345	43	1.5
3	7+	6o	5+	3-	2-	1-	2-	2-	27o	154	80	56	12	6	3	6	6	323	40	1.5
4	2-	2-	2o	4o	5o	3o	2-	4-	23-	6	6	7	27	48	15	6	22	137	17	0.9
5	3o	3-	1+	1+	3o	3-	3o	5+	22+	15	12	5	5	15	12	15	56	135	17	0.9
6	5-	6-	5o	4+	5o	7-	6+	6+	44o	39	67	48	32	48	111	94	94	533	67	1.7
7	4+	2-	3o	2+	2o	2-	3+	2-	20o	32	6	15	9	7	6	18	6	99	12	0.7
8	2o	1o	1+	2o	3o	2-	2o	2-	15-	7	4	5	7	15	6	7	6	57	7	0.4
9	2o	2o	1o	1+	1+	1o	1+	2-	12-	7	7	4	5	5	4	5	6	43	5	0.2
10	3o	1+	1-	2+	1+	1o	2o	1-	12+	15	5	3	9	5	4	7	3	51	6	0.3
11	2-	2-	2o	2o	2-	2-	2o	2o	15-	6	6	7	7	6	6	7	7	52	6	0.3
12	2+	3+	1+	1+	2o	1o	1o	1+	14-	9	18	5	5	7	4	4	5	57	7	0.4
13	1-	1-	1-	1o	1-	1o	1+	2+	8+	3	3	3	4	3	4	5	9	34	4	0.1
14	1+	1+	1o	0o	0+	1-	1-	1o	6+	5	5	4	0	2	3	3	4	26	3	0.1
15	0+	1o	1o	1o	1-	1-	1+	2-	8-	2	4	4	4	3	3	5	6	31	4	0.1
16	0+	1o	2o	2o	2-	1+	3-	3o	14o	2	4	7	7	6	5	12	15	58	7	0.4
17	3-	3o	1o	2+	2o	2+	2-	2-	17-	12	15	4	9	7	9	6	6	68	8	0.5
18	1-	2-	2+	2-	1+	1o	0+	2o	11o	3	6	9	6	5	4	2	7	42	5	0.2
19	2o	2-	1o	2-	3-	2o	3-	2+	16o	7	6	4	6	12	7	12	9	63	8	0.4
20	2-	2-	0+	2-	2-	2o	1o	2-	12-	6	6	2	6	6	7	4	6	43	5	0.2
21	0+	1-	2-	2+	2+	2+	2o	1o	13-	2	3	6	9	9	9	7	4	49	6	0.3
22	0+	1-	0+	0o	0+	1+	2o	1+	6+	2	3	2	0	2	5	7	5	26	3	0.1
23	2o	2o	3o	2+	2+	1o	1+	2o	16o	7	7	15	9	9	4	5	7	63	8	0.4
24	2o	2-	1+	2-	3-	2+	1-	2-	14o	7	6	5	6	12	9	3	6	54	7	0.3
25	2o	3-	3o	3o	2o	2+	1+	2-	18o	7	12	15	15	7	9	5	6	76	10	0.5
26	2-	2-	3+	3-	2o	3-	2o	1o	17o	6	6	18	12	7	12	7	4	72	9	0.5
27	2+	2-	2+	1+	1+	2+	2+	3+	17o	9	6	9	5	5	9	9	18	70	9	0.5
28	3-	0+	0o	0+	0+	0+	1-	1o	6-	12	2	0	2	2	2	3	4	27	3	0.1
29	1o	1-	0+	1+	1-	1-	1o	2+	8o	4	3	2	5	3	3	4	9	33	4	0.1
30	1o	1o	1-	1o	2-	3+	4-	3+	16-	4	4	3	4	6	18	22	18	79	10	0.6
31	3o	4-	3+	3o	3-	3-	4o	3+	26-	15	22	18	15	12	12	27	18	139	17	0.9

	Kp								Sum	Jun 1986				ap				Sum	Ap	Cp
1	4+	2+	2+	3-	2-	3-	3-	4o	23-	32	9	9	12	6	12	12	27	119	15	0.8
2	3-	2+	2-	1o	2o	2o	3-	2+	17-	12	9	6	4	7	7	12	9	66	8	0.4
3	3+	3-	2+	1+	2-	1+	3-	3-	18o	18	12	9	5	6	5	12	12	79	10	0.6
4	2o	2o	2+	3-	2o	2-	2o	1o	16-	7	7	9	12	7	6	7	4	59	7	0.4
5	1+	1o	1+	2+	1o	1o	1+	2-	11o	5	4	5	9	4	4	5	6	42	5	0.2
6	2o	1+	1o	1+	2o	2o	1+	1o	12o	7	5	4	5	7	7	5	4	44	6	0.2
7	2-	2o	2+	3+	3+	3o	2+	3+	21+	6	7	9	18	18	15	9	18	100	12	0.7
8	1o	2+	3o	2o	1+	1o	1-	2+	14-	4	9	15	7	5	4	3	9	56	7	0.4
9	3-	2-	1o	1o	1+	2o	2+	2o	14o	12	6	4	4	5	7	9	7	54	7	0.3
10	3-	3o	4o	3o	3-	2o	2-	2+	21+	12	15	27	15	12	7	6	9	103	13	0.7
11	3-	1o	2o	2+	2o	1+	1-	1+	13+	12	4	7	9	7	5	3	5	52	6	0.3
12	1+	2+	1+	1o	2o	2-	1o	2+	13o	5	9	5	4	7	6	4	9	49	6	0.3
13	2-	1+	2o	1-	2-	2o	2+	2-	13+	6	5	7	3	6	7	9	6	49	6	0.3
14	2-	2-	1+	2-	1+	2-	3-	2-	14-	6	6	5	6	5	6	12	6	52	6	0.3
15	2o	1-	1+	1o	2o	2o	1o	1-	11-	7	3	5	4	7	7	4	3	40	5	0.2
16	1-	1-	1o	2-	2-	2o	2-	2o	11+	3	3	4	6	6	7	6	7	42	5	0.2
17	1-	2-	2-	4-	2+	2-	2-	2-	15o	3	6	6	22	9	6	6	6	64	8	0.4
18	2o	3o	2o	2o	3+	2o	1+	1-	16+	7	15	7	7	18	7	5	3	69	9	0.5
19	2-	1-	0o	1o	1-	2-	2+	3-	11-	6	3	0	4	3	6	9	12	43	5	0.2
20	2+	1+	2-	1o	2o	1+	2-	2o	13+	9	5	6	4	7	5	6	7	49	6	0.3
21	2+	2o	2+	2+	1o	1o	1+	0+	13-	9	7	9	9	4	4	5	2	49	6	0.3
22	3o	3-	1+	1o	1+	2-	1+	2+	15-	15	12	5	4	5	6	5	9	61	8	0.4
23	3-	1+	1o	1o	1o	1-	1o	0+	9o	12	5	4	4	4	3	4	2	38	5	0.2
24	0+	2-	2o	3+	2o	2+	2-	0+	14-	2	6	7	18	7	9	6	2	57	7	0.4
25	1o	0+	1o	0+	0+	1-	1o	1o	6-	4	2	4	2	2	3	4	4	25	3	0.1
26	1+	2-	1+	1o	0+	1o	1o	2o	10-	5	6	5	4	2	4	4	7	37	5	0.2
27	2-	3-	2-	3o	5+	5-	5-	5o	29-	6	12	6	15	56	39	39	48	221	28	1.2
28	5-	5o	3o	2-	2o	1o	2+	3-	22+	39	48	15	6	7	4	9	12	140	18	1.0
29	2o	1+	1+	2-	3-	4-	3-	4-	19o	7	5	5	6	12	22	12	22	91	11	0.7
30	4-	2o	0+	2-	2-	2o	2+	3-	16+	22	7	2	6	6	7	9	12	71	9	0.5

Kp INDICES 1986 (continued)

	Kp	Sum	Jul 1986	ap	Sum	Ap	Cp
1	4- 2+ 1o 1- 0+ 2- 1+ 2-	13-	22 9 4 3	2 6 5 6	57	7	0.4
2	1+ 2o 3o 4- 2+ 2o 4- 3+	21+	5 7 15 22	9 7 22 18	105	13	0.8
3	2+ 2+ 3- 2+ 1+ 1o 2- 2o	16-	9 9 12 9	5 4 6 7	61	8	0.4
4	3- 2- 2- 1+ 1+ 2- 2+ 2+	15o	12 6 6 5	5 6 9 9	58	7	0.4
5	3- 1+ 2- 1+ 2- 1o 1+ 3o	14o	12 5 6 5	6 4 5 15	58	7	0.4
6	2+ 2- 1- 1+ 1o 1o 2- 1-	10+	9 6 3 5	4 4 6 3	40	5	0.2
7	0+ 1+ 1+ 1- 0+ 1- 1o 2-	7+	2 5 5 3	2 3 4 6	30	4	0.1
8	1- 1+ 1+ 1- 1o 2+ 2+ 2o	12-	3 5 5 3	4 9 9 7	45	6	0.3
9	2o 2- 1+ 2- 2+ 2- 1+ 1+	13+	7 6 5 6	9 6 5 5	49	6	0.3
10	3o 2- 1o 2o 1o 1o 2o 1o	13-	15 6 4 7	4 4 7 4	51	6	0.3
11	0+ 1+ 1+ 1- 1o 1o 1- 0+	7-	2 5 5 3	4 4 3 2	28	4	0.1
12	1o 1o 0+ 1+ 1o 2o 2+ 2+	11+	4 4 2 5	4 7 9 9	44	6	0.2
13	3- 2+ 2o 1- 3- 1o 1o 1o	13+	12 9 7 3	12 4 4 4	55	7	0.3
14	1o 1o 1- 1o 1+ 1o 1- 1o	8-	4 4 3 4	5 4 3 4	31	4	0.1
15	1- 1o 1- 1o 1o 1o 1- 1+	7+	3 4 3 4	4 4 3 5	30	4	0.1
16	1o 1- 1- 1+ 2o 2o 1+ 2+	11+	4 3 3 5	7 7 5 9	43	5	0.2
17	3o 3o 2+ 2- 2- 1o 1- 2o	15+	15 15 9 6	6 4 3 7	65	8	0.4
18	2o 2- 1- 2o 2- 1+ 1o 2-	12o	7 6 3 7	6 5 4 6	44	6	0.2
19	1+ 1+ 2- 0+ 0+ 1o 1o 1+	8+	5 5 6 2	2 4 4 5	33	4	0.1
20	1o 1- 0o 0+ 1- 1o 1o 2-	6+	4 3 0 2	3 4 4 6	26	3	0.1
21	2- 2- 1o 2o 2- 2- 2- 2+	14-	6 6 4 7	6 6 6 9	50	6	0.3
22	3o 2+ 1+ 2- 2o 1o 1- 1o	13o	15 9 5 6	7 4 3 4	53	7	0.3
23	2o 1o 1o 1+ 1+ 1+ 1o 1o	10o	7 4 4 5	5 5 4 4	38	5	0.2
24	0+ 1+ 1o 1o 0+ 1+ 3+ 6o	15-	2 5 4 4	2 5 18 80	120	15	0.8
25	3+ 3- 2o 2- 1+ 2- 3+ 6-	22-	18 12 7 6	5 6 18 67	139	17	0.9
26	4+ 4+ 3+ 3o 4- 3+ 3- 3o	28-	32 32 18 15	22 18 12 15	164	20	1.0
27	3- 2o 4- 5o 2- 2+ 2o 3+	23-	12 7 22 48	6 9 7 18	129	16	0.9
28	3o 2+ 2+ 2+ 2+ 2o 2- 2o	18o	15 9 9 9	9 7 6 7	71	9	0.5
29	3+ 3o 3- 3o 4o 3- 4- 3+	26-	18 15 12 15	27 12 22 18	139	17	0.9
30	3+ 2+ 3+ 2o 2o 2+ 2o 3-	20o	18 9 18 7	7 9 7 12	87	11	0.6
31	3o 3- 2o 4o 2+ 2o 2o 2+	20+	15 12 7 27	9 7 7 9	93	12	0.7

	Kp	Sum	Aug 1986	ap	Sum	Ap	Cp
1	2o 2- 2o 1o 1- 1+ 2- 2o	12+	7 6 7 4	3 5 6 7	45	6	0.3
2	0+ 2- 2- 1+ 2o 1o 0+ 1+	10-	2 6 6 5	7 4 2 5	37	5	0.2
3	2+ 3- 3+ 3o 3+ 3o 5- 4o	26+	9 12 18 15	18 15 39 27	153	19	1.0
4	5- 5- 3o 3- 3o 4- 2o 3-	26+	39 39 15 12	15 22 7 12	161	20	1.0
5	2o 2+ 2- 2o 2o 2- 2+ 3+	17+	7 9 6 7	7 6 9 18	69	9	0.5
6	2+ 2o 2+ 0+ 2- 1+ 2+ 1o	13+	9 7 9 2	6 5 9 4	51	6	0.3
7	1- 0+ 1- 0+ 0+ 1+ 1o 2+	7o	3 2 3 2	2 5 4 9	30	4	0.1
8	3- 2- 2- 2o 2o 2+ 2o 1o	15+	12 6 6 7	7 9 7 4	58	7	0.4
9	2- 2- 1+ 1o 2- 4- 3+ 3o	17+	6 6 5 4	6 22 18 15	82	10	0.6
10	3- 1+ 2o 1+ 1- 1o 2- 1+	12o	12 5 7 5	3 4 6 5	47	6	0.3
11	2o 2o 2- 3- 2+ 2- 1+ 1-	14+	7 7 6 12	9 6 5 3	55	7	0.3
12	0+ 2+ 3+ 2+ 2+ 3- 2+ 2+	18o	2 9 18 9	9 12 9 9	77	10	0.5
13	2o 3- 3+ 3o 3- 2+ 1+ 1+	19-	7 12 18 15	12 9 5 5	83	10	0.6
14	1o 1- 1o 1+ 1o 2+ 2o 2o	11+	4 3 4 5	4 9 7 7	43	5	0.2
15	2+ 1+ 1+ 2- 2- 2- 1+ 2-	13o	9 5 5 6	6 6 5 6	48	6	0.3
16	2o 1- 1+ 1o 1o 0+ 1+ 1+	9o	7 3 5 4	4 2 5 5	35	4	0.2
17	2- 2+ 1o 1- 1+ 1+ 1o 1-	10o	6 9 4 3	5 5 4 3	39	5	0.2
18	1- 1o 1- 1- 0+ 1- 0+ 0o	4+	3 4 3 3	2 3 2 0	20	2	0.0
19	1- 1- 1o 2o 2o 1o 0+ 2-	9+	3 3 4 7	7 4 2 6	36	4	0.2
20	2- 1+ 1+ 1- 3o 4- 5- 4-	20o	6 5 5 3	15 22 39 22	117	15	0.8
21	2+ 2+ 4- 5o 5o 5o 3+ 4o	31-	9 9 22 48	48 48 18 27	229	29	1.3
22	3o 5- 5+ 3o 5- 3- 4o 4o	31+	15 39 56 15	39 12 27 27	230	29	1.3
23	3o 4o 4+ 3o 4o 5- 4o 3+	30+	15 27 32 15	27 39 27 18	200	25	1.2
24	4o 3+ 3o 2+ 2+ 4o 5- 4+	28o	27 18 15 9	9 27 39 32	176	22	1.1
25	5o 4o 4- 2+ 2- 2- 2+ 3-	23+	48 27 22 9	6 6 9 12	139	17	0.9
26	3+ 3o 3o 2- 4o 3- 1o 2-	20+	18 15 15 6	27 12 4 6	103	13	0.7
27	3o 3o 3+ 3o 3+ 2+ 2o 3-	23-	15 15 18 15	18 9 7 12	109	14	0.8
28	2o 1+ 1+ 2o 4o 3+ 4- 2+	20o	7 5 5 7	27 18 22 9	100	12	0.7
29	4- 4- 3o 4- 4o 4- 3+ 4o	29o	22 22 15 22	27 22 18 27	175	22	1.1
30	4- 4o 4- 3- 3+ 3- 5+ 5o	30+	22 27 22 12	18 12 56 48	217	27	1.2
31	5o 4o 1+ 2- 2+ 2o 3o 3o	22+	48 27 5 6	9 7 15 15	132	16	0.9

Kp INDICES 1986 (continued)

	Kp								Sum	Sep 1986	ap				Sum	Ap	Cp
1	3+	3o	2+	2-	1o	1o	2-	3-	17-	18	15	9	6	4	4	6	12	74	9	0.5
2	4-	4+	4-	3+	3-	2o	2-	1+	23-	22	32	22	18	12	7	6	5	124	16	0.9
3	2o	2o	1o	1o	1o	2o	1+	3o	13+	7	7	4	4	4	7	5	15	53	7	0.3
4	3o	2+	1o	0+	2-	2-	2o	2+	14+	15	9	4	2	6	6	7	9	58	7	0.4
5	2+	2o	2o	2-	2-	1+	3-	3+	17o	9	7	7	6	6	5	12	18	70	9	0.5
6	4o	2o	1-	2o	2o	2o	1-	1+	15-	27	7	3	7	7	7	3	5	66	8	0.4
7	2o	1+	2o	2-	2-	1-	1-	1o	11o	7	5	7	6	6	3	3	4	41	5	0.2
8	2-	1+	1+	1o	0+	1-	2-	2+	10+	6	5	5	4	2	3	6	9	40	5	0.2
9	2+	3-	2-	1+	2-	0+	1-	1-	11+	9	12	6	5	6	2	3	3	46	6	0.3
10	2o	2-	2o	2o	1o	1+	1-	1+	12o	7	6	7	7	4	5	3	5	44	6	0.2
11	2-	2+	1+	1-	2-	1-	4o	6-	18o	6	9	5	3	6	3	27	67	126	16	0.9
12	5+	9-	7+	6-	4+	4o	5-	5-	45-	56	300	154	67	32	27	39	39	714	89	1.8
13	5-	4o	3+	3o	3-	3-	3o	5-	28o	39	27	18	15	12	12	15	39	177	22	1.1
14	4o	3+	2o	1-	1-	3-	3o	3-	19o	27	18	7	3	3	12	15	12	97	12	0.7
15	3o	3-	3-	4o	4-	3+	4o	2o	25+	15	12	12	27	22	18	27	7	140	18	1.0
16	2-	2+	1-	0+	1-	1o	3-	3o	12+	6	9	3	2	3	4	12	15	54	7	0.3
17	3+	3o	3+	1+	2o	2o	3o	4o	22o	18	15	18	5	7	7	15	27	112	14	0.8
18	4+	4o	3+	3-	3-	3-	4+	3o	27o	32	27	18	12	12	12	32	15	160	20	1.0
19	5o	4+	4-	2o	2+	4+	2+	3-	27-	48	32	22	7	9	32	9	12	171	21	1.1
20	3-	2o	5-	2+	2o	2o	3+	5o	24o	12	7	39	9	7	7	18	48	147	18	1.0
21	5-	3o	2-	1+	2-	2-	2o	1-	17-	39	15	6	5	6	6	7	3	87	11	0.6
22	0+	0+	1-	1-	1o	0+	2+	2o	8-	2	2	3	3	4	2	9	7	32	4	0.1
23	4-	6o	5o	4-	4-	5+	5-	5+	37+	22	80	48	22	22	56	39	56	345	43	1.5
24	4o	4-	4+	3o	4-	3-	3+	4o	29-	27	22	32	15	22	12	18	27	175	22	1.1
25	2+	2+	2+	3o	5+	5-	3+	5+	29-	9	9	9	15	56	39	18	56	211	26	1.2
26	5o	4+	4+	4+	4o	4o	2+	2o	30+	48	32	32	32	27	27	9	7	214	27	1.2
27	3o	3-	4o	3o	3+	3o	4+	4o	27+	15	12	27	15	18	15	32	27	161	20	1.0
28	3o	3-	3o	2o	1o	1o	3o	4+	20o	15	12	15	7	4	4	15	32	104	13	0.7
29	4o	3o	2o	2o	1+	2+	3o	4-	21+	27	15	7	7	5	9	15	22	107	13	0.8
30	2o	2-	2+	2+	1+	0+	0+	0+	11-	7	6	9	9	5	2	2	2	42	5	0.2

	Kp								Sum	Oct 1986	ap				Sum	Ap	Cp
1	1-	1o	1o	3+	2+	2o	2-	2o	14o	3	4	4	18	9	7	6	7	58	7	0.4
2	3+	4-	1+	2+	4+	5+	4-	3+	27+	18	22	5	9	32	56	22	18	182	23	1.1
3	3+	3o	2o	1o	1-	2-	2-	3o	16+	18	15	7	4	3	6	6	15	74	9	0.5
4	3-	2o	2-	1o	1+	1+	2+	2-	14o	12	7	6	4	5	5	9	6	54	7	0.3
5	4o	3+	3-	3o	4o	4-	4-	2+	27-	27	18	12	15	27	22	22	9	152	19	1.0
6	2o	4-	4+	2+	1+	2-	1+	2o	19-	7	22	32	9	5	6	5	7	93	12	0.7
7	1o	2-	2-	1+	0+	1o	1+	2-	10o	4	6	6	5	2	4	5	6	38	5	0.2
8	1-	1-	1+	2o	2-	3-	1+	1o	11+	3	3	5	7	6	12	5	4	45	6	0.3
9	1+	1o	2o	1-	1o	1+	2+	2+	12o	5	4	7	3	4	5	9	9	46	6	0.3
10	1-	0+	1+	1-	0o	0o	1o	2-	6-	3	2	5	3	0	0	4	6	23	3	0.1
11	1-	0o	1-	1-	2-	1+	1+	1o	7+	3	0	3	3	6	5	5	4	29	4	0.1
12	2o	0o	1-	0+	0+	0+	0+	0+	4+	7	0	3	2	2	2	2	2	20	2	0.0
13	0+	0+	2-	2o	3+	4+	7-	5o	24-	2	2	6	7	18	32	111	48	226	28	1.2
14	4+	5+	5-	5-	5-	2o	3+	3+	32+	32	56	39	39	39	7	18	18	248	31	1.3
15	2+	2o	4o	3+	3o	2+	3o	2+	22+	9	7	27	18	15	9	15	9	109	14	0.8
16	1o	2+	1+	1+	1+	1o	2o	2-	12o	4	9	5	5	5	4	7	6	45	6	0.3
17	3-	2o	1+	1+	1-	1-	1o	3-	12+	12	7	5	5	3	3	4	12	51	6	0.3
18	1o	1-	1-	2o	3-	4+	4o	3+	19-	4	3	3	7	12	32	27	18	106	13	0.8
19	4-	3+	3+	4-	5-	3+	3+	3-	28o	22	18	18	22	39	18	18	12	167	21	1.1
20	3-	2+	2+	2+	3-	4-	4-	3o	23-	12	9	9	9	12	22	22	15	110	14	0.8
21	3+	3o	2+	2+	2o	2o	3-	2+	20o	18	15	9	9	7	7	12	9	86	11	0.6
22	2+	2+	2+	2o	0+	1-	1o	0+	11+	9	9	9	7	2	3	4	2	45	6	0.3
23	1+	1-	1-	1-	1+	1o	3-	1+	10-	5	3	3	3	5	4	12	5	40	5	0.2
24	0+	0o	0o	0+	0+	2-	0o	1o	4-	2	0	0	2	2	6	0	4	16	2	0.0
25	0+	1-	1-	1-	1-	1-	1-	3-	7o	2	3	3	3	3	3	3	12	32	4	0.1
26	1+	0o	1-	1-	0+	1+	1-	2-	7-	5	0	3	3	2	5	3	6	27	3	0.1
27	2o	2+	3o	3-	3+	5-	3-	3-	23+	7	9	15	12	18	39	12	12	124	16	0.9
28	4-	3+	1-	1+	0+	0o	2-	3+	14+	22	18	3	5	2	0	6	18	74	9	0.5
29	4-	3o	3+	3+	3-	1o	2o	4o	23o	22	15	18	18	12	4	7	27	123	15	0.9
30	3o	3+	2+	2+	2o	3o	3o	4o	23o	15	18	9	9	7	15	15	27	115	14	0.8
31	2+	2+	2-	1+	1o	2o	1-	2o	13+	9	9	6	5	4	7	3	7	50	6	0.3

Kp INDICES 1986 (continued)

	Kp								Sum	Nov 1986	ap				Sum	Ap	Cp
1	4o	4+	3+	2+	1-	1o	1+	1o	18o	27	32	18	9	3	4	5	4	102	13	0.7
2	1-	1-	2-	2o	2-	1+	2+	2-	12o	3	3	6	7	6	5	9	6	45	6	0.3
3	2o	3+	3-	2+	1o	3-	3o	5o	22o	7	18	12	9	4	12	15	48	125	16	0.9
4	6o	6o	5-	6+	6-	5+	6o	5-	45-	80	80	39	94	67	56	80	39	535	67	1.7
5	5-	5o	4o	3o	2-	1+	2+	2+	24+	39	48	27	15	6	5	9	9	158	20	1.0
6	3-	3-	2+	2o	2o	2o	4o	3+	21o	12	12	9	7	7	7	27	18	99	12	0.7
7	3o	2-	1o	1-	1+	1o	0o	2o	11-	15	6	4	3	5	4	0	7	44	6	0.2
8	2o	2-	1o	1+	1-	1+	1o	0+	9+	7	6	4	5	3	5	4	2	36	4	0.2
9	1o	1o	1+	1o	1o	1-	0o	0+	6+	4	4	5	4	4	3	0	2	26	3	0.1
10	1-	1+	0+	0+	1-	1o	2+	2+	9o	3	5	2	2	3	4	9	9	37	5	0.2
11	3-	5-	4o	2o	2o	2-	2o	2-	21-	12	39	27	7	7	6	7	6	111	14	0.8
12	4o	3o	3-	1+	1o	1-	0+	1o	14o	27	15	12	5	4	3	2	4	72	9	0.5
13	1o	0+	1-	1-	2o	2o	3-	1+	11-	4	2	3	3	7	7	12	5	43	5	0.2
14	2o	1+	1o	2-	1o	1-	1o	1+	10o	7	5	4	6	4	3	4	5	38	5	0.2
15	3-	2-	1+	2+	3o	4-	3-	3+	21-	12	6	5	9	15	22	12	18	99	12	0.7
16	3-	2+	2o	3-	3-	3+	3-	2-	20o	12	9	7	12	12	18	12	6	88	11	0.6
17	3-	2o	2o	2+	2-	2o	2o	2-	16+	12	7	7	9	6	7	7	6	61	8	0.4
18	2o	3-	2-	1o	1o	0+	1+	1+	11+	7	12	6	4	4	2	5	5	45	6	0.3
19	0+	1-	0o	1-	0+	1+	2+	2+	8o	2	3	0	3	2	5	9	9	33	4	0.1
20	3-	2+	1-	0+	0+	0+	1o	2-	9+	12	9	3	2	2	2	4	6	40	5	0.2
21	0o	0+	1o	1-	0o	1o	1o	1o	5o	0	2	4	3	0	4	4	4	21	3	0.0
22	0o	1+	0+	0+	0o	0o	1-	1o	4-	0	5	2	2	0	0	3	4	16	2	0.0
23	1-	0+	0+	1-	1+	2-	3o	5+	13+	3	2	2	3	5	6	15	56	92	12	0.7
24	6-	5+	3-	4o	2+	5-	6o	6o	37-	67	56	12	27	9	39	80	80	370	46	1.5
25	5o	5-	4o	5-	5+	5-	7-	4+	39+	48	39	27	39	56	39	111	32	391	49	1.6
26	4o	3+	3+	3-	4o	4-	1+	1o	23+	27	18	18	12	27	22	5	4	133	17	0.9
27	3o	3o	3o	2+	2-	1o	1-	0+	15o	15	15	15	9	6	4	3	2	69	9	0.5
28	0o	2o	2-	1+	1-	1o	2o	1+	10o	0	7	6	5	3	4	7	5	37	5	0.2
29	2+	2-	1+	1+	3-	4-	3-	2+	18o	9	6	5	5	12	22	12	9	80	10	0.6
30	1-	2o	3o	3-	3o	4-	2+	4+	22-	3	7	15	12	15	22	9	32	115	14	0.8

	Kp								Sum	Dec 1986	ap				Sum	Ap	Cp
1	4+	3o	3+	3o	1+	2o	2+	1o	20+	32	15	18	15	5	7	9	4	105	13	0.8
2	2o	2+	2+	2-	2-	2-	1+	3-	16-	7	9	9	6	6	6	5	12	60	8	0.4
3	2o	1+	1+	1+	2o	2-	1o	2-	12+	7	5	5	5	7	6	4	6	45	6	0.3
4	2o	1o	1o	1o	2+	1+	2+	3-	14-	7	4	4	4	9	5	9	12	54	7	0.3
5	3o	0+	0o	1-	0+	0o	0+	1o	6-	15	2	0	3	2	0	2	4	28	4	0.1
6	1o	2+	1-	1+	0o	1-	1+	1o	8+	4	9	3	5	0	3	5	4	33	4	0.1
7	1o	2+	2o	2+	1+	2-	1+	1-	13-	4	9	7	9	5	6	5	3	48	6	0.3
8	1o	1-	0+	1o	0+	1o	2-	1+	7+	4	3	2	4	2	4	6	5	30	4	0.1
9	2+	1o	1-	1+	1o	2+	2+	2-	13-	9	4	3	5	4	9	9	6	49	6	0.3
10	3+	3o	1+	2-	2-	3-	3-	4-	20o	18	15	5	6	6	12	12	22	96	12	0.7
11	3+	2+	2+	2-	2-	2-	1+	1o	15+	18	9	9	6	6	6	5	4	63	8	0.4
12	0o	1o	1-	1o	1-	1o	2-	2+	8+	0	4	3	4	3	4	6	9	33	4	0.1
13	1+	2o	2-	1o	2o	2o	3o	5o	18o	5	7	6	4	7	7	15	48	99	12	0.7
14	5-	5-	4+	3o	2o	1o	3o	2-	24+	39	39	32	15	7	4	15	6	157	20	1.0
15	1+	1o	1+	1-	0+	0+	1+	1o	7+	5	4	5	3	2	2	5	4	30	4	0.1
16	4-	3+	2o	2o	2-	4-	2o	2-	20o	22	18	7	7	6	22	7	6	95	12	0.7
17	1-	1-	1+	1+	1+	2o	2-	1+	10+	3	3	5	5	5	7	6	5	39	5	0.2
18	0+	0+	1o	1-	1o	1+	3-	3-	10o	2	2	4	3	4	5	12	12	44	6	0.2
19	1+	2o	1-	1-	1-	0+	2-	3o	10+	5	7	3	3	3	2	6	15	44	6	0.2
20	2o	1+	2-	1+	2o	3o	1+	2+	15o	7	5	6	5	7	15	5	9	59	7	0.4
21	2+	1-	1o	2-	3-	2+	4-	4-	18o	9	3	4	6	12	9	22	22	87	11	0.6
22	3o	4-	1o	2o	3+	4-	2+	3-	22-	15	22	4	7	18	22	9	12	109	14	0.8
23	3+	3o	3o	4o	5-	3+	3-	4+	28+	18	15	15	27	39	18	12	32	176	22	1.1
24	3o	3-	2o	2+	1+	2-	3o	2o	18o	15	12	7	9	5	6	15	7	76	10	0.5
25	3-	4o	3+	3o	1o	1o	1-	3-	18+	12	27	18	15	4	4	3	12	95	12	0.7
26	3-	3+	3o	3+	2o	2+	3o	3+	23o	12	18	15	18	7	9	15	18	112	14	0.8
27	3o	2+	2+	2-	2-	2+	2-	3-	18-	15	9	9	6	6	9	6	12	72	9	0.5
28	2o	1+	1-	1+	0+	0+	0o	0+	6+	7	5	3	5	2	2	0	2	26	3	0.1
29	2-	1+	1+	1-	0+	0+	0o	1-	6+	6	5	5	3	2	2	0	3	26	3	0.1
30	2-	1-	0o	0+	1-	1+	2+	2o	9o	6	3	0	2	3	5	9	7	35	4	0.2
31	2-	2-	2o	2+	2+	2o	0+	1-	13o	6	6	7	9	9	7	2	3	49	6	0.3

FREQUENCIES OF **Kp** INDICES 1986

Kp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0-	2	1	7	1	4	1	1	1	.	9	9	7
0+	9	4	13	9	14	9	11	11	10	17	18	17
1-	28	12	10	28	20	13	22	16	17	30	22	23
1o	28	13	16	31	29	34	45	18	13	20	29	28
1+	23	14	17	27	27	30	34	26	15	26	23	33
2-	18	15	24	40	39	39	32	27	21	18	19	30
2o	13	14	19	29	32	38	28	25	31	23	22	25
2+	21	15	34	16	21	27	27	27	19	25	19	26
3-	19	14	24	23	15	22	12	15	19	16	21	14
3o	15	19	23	18	15	8	12	20	22	12	11	18
3+	15	22	14	8	9	6	11	15	13	21	7	11
4-	18	27	15	5	3	4	6	13	10	11	4	7
4o	14	14	11	4	2	2	2	16	16	6	9	2
4+	8	6	7	.	2	1	2	2	12	5	3	3
5-	7	9	7	1	1	3	.	8	8	5	8	3
5o	3	4	5		4	2	1	6	4	1	3	1
5+	3	4	1		2	1	.	2	5	2	4	
6-	3	3	1		3		1		2	.	2	
6o	.	.			1		1		1	.	5	
6+	1	1			2				.	.	1	
7-		2			2				.	.1	1	
7o		2			.				.			
7+		1			1				1			
8-		4							.			
8o		1							.			
8+		.							.			
9-		2							1			
9o		1										
	248	224	248	240	248	240	248	248	240	248	240	248

LIST OF Kp', 1986

Reduction of Kp to Kp' due to solar flare effects as far as data were available.

Month	Day	Eighth	Kp	Kp'
Feb	06	3	1o	1-
	14	4	3-	2+

MONTHLY AVERAGES OF Ap AND Cp, 1986

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Ap	14	27	13	8	12	8	8	12	17	11	13	8	12.5
Cp	0.64	0.88	0.63	0.41	0.49	0.42	0.40	0.62	0.73	0.53	0.56	0.42	0.56

MONTHLY AND YEARLY **Ap** 1932 - 1986

	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
1984	13	17	21	25	17	15	16	16	24	23	21	18	18.8
1985	16	15	11	21	9	11	14	13	13	14	15	13	13.7
1986	14	27	13	8	12	8	8	12	17	11	13	8	12.5

SECTION 3

3.4. Dst INDICES

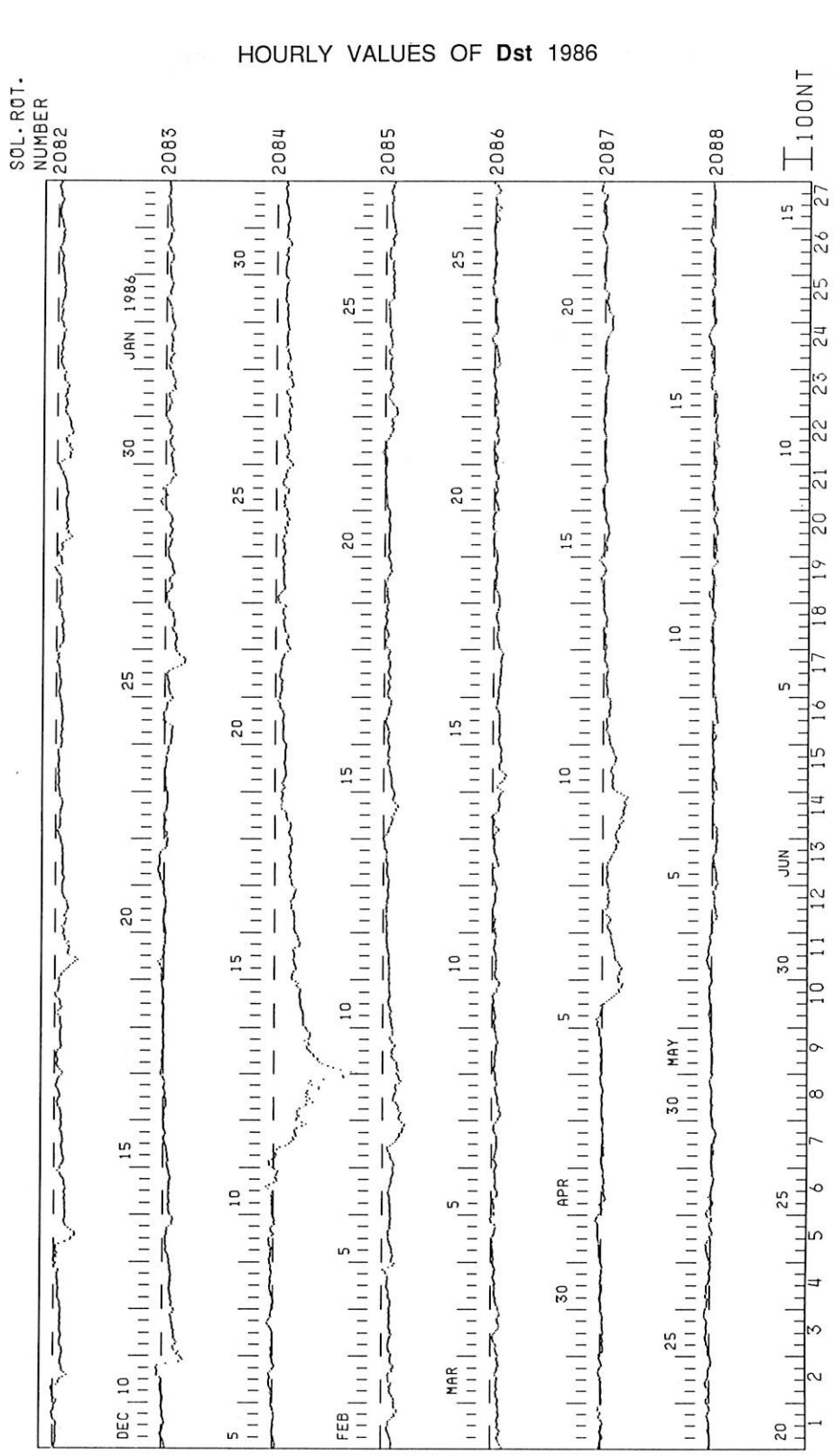
Hourly values of **Dst** 1986 (graph) 85

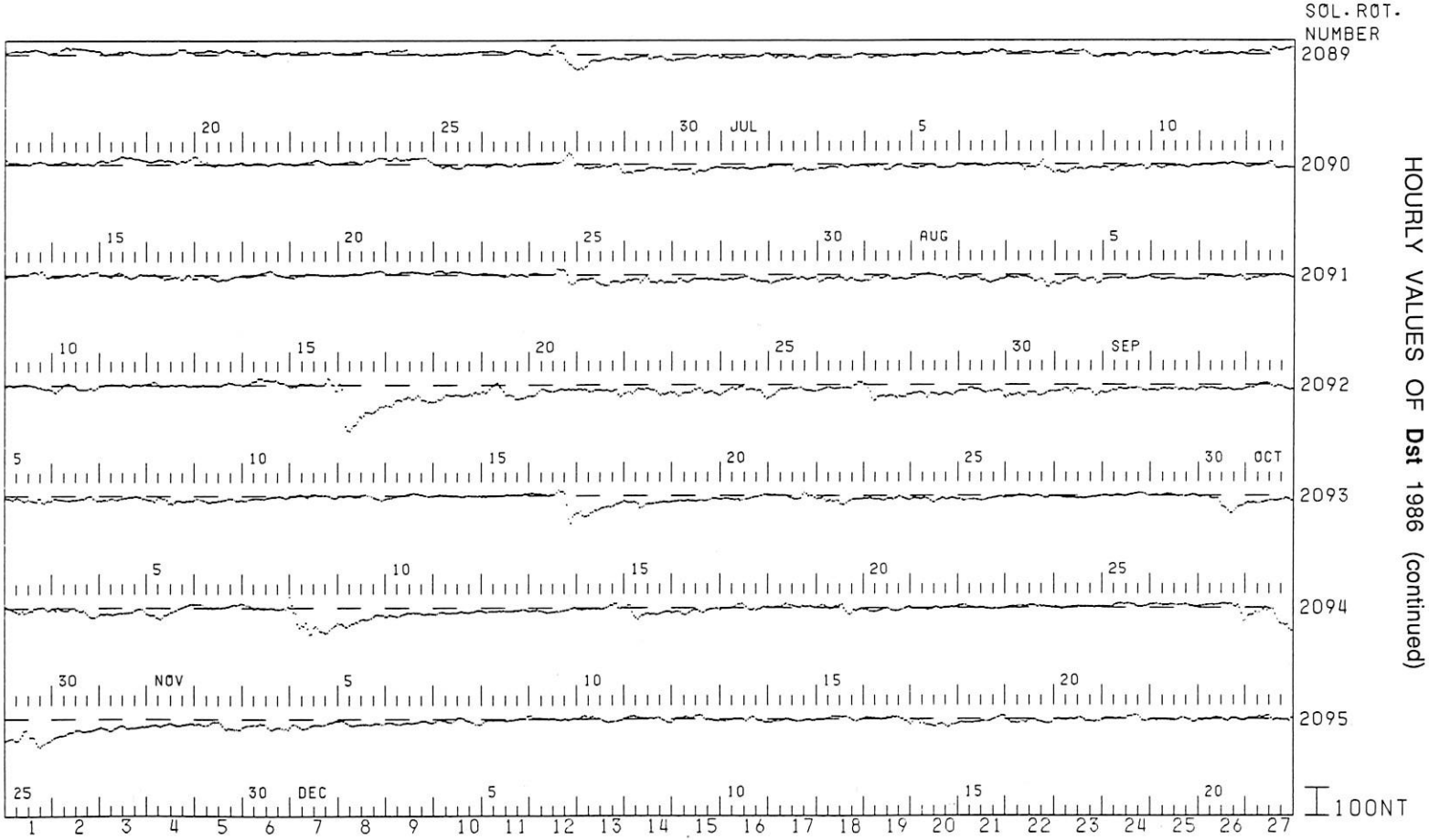
Monthly tables of **Dst** hourly values 88

Tables of daily means of **Dst** 100

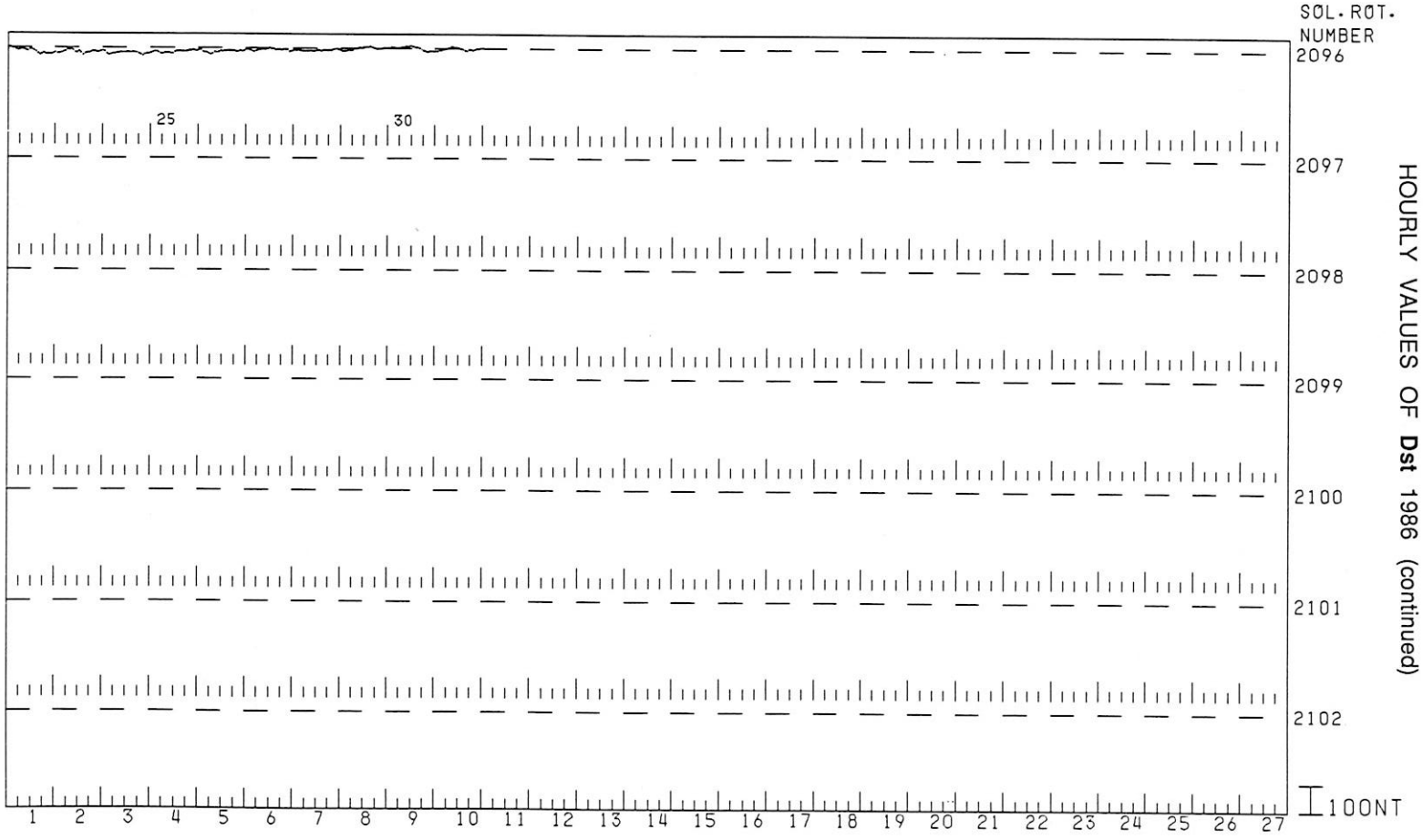
Monthly and yearly mean values

1957 - 1986 101


HOURLY VALUES OF Dst 1986
SOL.ROT.
NUMBER
2082
2083
2084
2085
2086
2087
2088
DEC
JAN 1986
FEB
MAR
APR
MAY
JUN
100NT



HOURLY VALUES OF **Dst** 1986 (continued)



HOURLY VALUES OF **Dst** 1986 (continued)

JANUARY 1986

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	-25	-24	-21	-14	-15	-16	-20	-15	-14	-18	-22	-20	-19	-17	-20	-24	-25	-26	-27	-31	-33	-25	-22	-24
2	-18	-13	-16	-19	-17	-20	-22	-16	-18	-19	-21	-24	-25	-28	-29	-30	-31	-27	-31	-31	-29	-25	-25	-27
3	-26	-24	-23	-22	-20	-16	-17	-20	-20	-23	-19	-17	-11	-10	-9	-16	-19	-21	-21	-24	-26	-21	-25	-28
4	-24	-21	-21	-18	-17	-13	-11	-9	-8	-10	-12	-11	-14	-18	-22	-21	-16	-12	-14	-13	-10	-7	-9	-14
5	-14	-13	-12	-11	-8	-5	0	4	3	-2	-5	-7	-9	-10	-10	-9	-6	-4	-5	-6	-4	-3	-1	-2
6	-3	-5	-6	-6	-3	1	3	4	4	5	2	1	1	5	16	16	15	17	20	15	-18	-65	-79	-73
7	-66	-57	-62	-46	-41	-42	-51	-56	-50	-45	-45	-44	-43	-45	-40	-40	-39	-37	-35	-35	-33	-31	-40	-44
8	-43	-35	-33	-36	-34	-31	-33	-31	-28	-28	-26	-27	-28	-29	-31	-31	-31	-33	-32	-31	-29	-29	-28	-25
9	-24	-24	-22	-23	-19	-14	-12	-13	-13	-12	-11	-11	-10	-12	-16	-15	-17	-17	-25	-35	-34	-37	-38	-35
10	-27	-24	-22	-23	-22	-20	-24	-24	-22	-22	-22	-23	-21	-22	-22	-24	-23	-24	-28	-29	-26	-23	-22	-20
11	-18	-16	-15	-19	-19	-18	-16	-16	-15	-14	-13	-11	-9	-5	-4	-3	-7	-10	-9	-6	-2	-2	-3	-2
12	0	-3	-4	-6	-3	-3	-7	-11	-12	-11	-12	-10	-6	-8	-9	-7	-4	-4	-6	-7	-7	-4	0	7
13	8	8	7	4	4	4	4	5	3	1	2	4	2	-2	-3	-2	1	-2	0	-3	-3	0	1	0
14	0	0	0	1	1	3	2	1	-1	-3	-3	1	2	2	1	0	0	-1	1	1	3	4	4	5
15	5	5	7	7	4	6	7	10	14	19	9	2	2	-3	-2	1	-2	-2	-7	-6	-7	-6	-7	-9
16	-8	-8	-7	-5	-3	0	0	-1	0	-2	-6	-7	-6	-8	-7	-8	-8	-7	-6	-2	-1	-2	-2	-1
17	-1	2	5	10	11	14	15	19	20	20	17	13	15	14	13	17	13	10	4	-6	-11	-10	-11	-15
18	-15	-9	-11	-11	-4	1	0	-3	-4	-9	-7	-2	1	-4	-8	-10	-10	-11	-13	-14	-15	-14	-15	-14
19	-11	-9	-9	-7	-5	-6	-6	-7	-4	-2	-2	-3	-5	-7	-7	-9	-10	-8	-7	-12	-14	-16	-15	-18
20	-23	-26	-25	-27	-27	-27	-28	-27	-30	-30	-21	-5	5	1	1	2	1	-6	-9	-9	-10	-11	-23	-32
21	-27	-23	-20	-19	-16	-15	-17	-16	-14	-12	-11	-9	-10	-16	-30	-48	-61	-73	-75	-76	-70	-55	-53	-45
22	-40	-42	-38	-38	-40	-44	-44	-41	-41	-36	-31	-27	-34	-36	-36	-37	-35	-31	-32	-31	-24	-18	-14	-15
23	-17	-11	-6	-8	-5	-9	-14	-20	-25	-26	-25	-18	-16	-20	-27	-34	-33	-30	-27	-27	-27	-24	-20	-16
24	-13	-12	-13	-12	-11	-16	-19	-20	-24	-24	-18	-17	-23	-24	-27	-22	-18	-19	-24	-26	-26	-23	-18	-12
25	-4	-4	-2	9	15	16	10	-1	-8	-4	-1	8	7	-6	-17	-21	-23	-29	-39	-35	-29	-30	-32	-28
26	-28	-25	-25	-25	-20	-23	-25	-30	-28	-22	-18	-18	-17	-23	-24	-18	-17	-17	-22	-23	-19	-14	-12	-7
27	-2	0	-4	-10	-14	-13	-16	-23	-21	-20	-15	-11	-14	-24	-37	-34	-31	-35	-37	-34	-29	-26	-26	-25
28	-16	-14	-12	-22	-18	-17	-20	-26	-32	-23	-20	-22	-23	-21	-25	-25	-25	-20	-21	-25	-31	-33	-34	-32
29	-27	-26	-23	-23	-24	-21	-21	-21	-17	-13	-10	-9	-3	-9	-16	-15	-17	-20	-22	-26	-24	-21	-19	-17
30	-18	-14	-15	-15	-15	-12	-16	-22	-25	-25	-24	-21	-16	-13	-11	-5	-6	-11	-14	-17	-17	-18	-24	-24
31	-21	-16	-14	-17	-19	-18	-15	-14	-15	-13	-14	-12	-11	-14	-13	-10	-6	-11	-11	-14	-14	-14	-11	-10

FEBRUARY 1986

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	-10	-12	-13	-12	-10	-9	-7	-3	-3	-2	-3	-6	-8	-5	-6	-7	-9	-9	-8	-9	-6	-4	1	2
2	1	2	2	-1	2	5	2	3	7	9	9	11	10	6	9	11	5	-1	-7	-10	-6	-1	-1	1
3	4	2	0	3	4	-1	-1	-1	1	-2	-3	0	-1	1	3	9	15	19	14	10	4	7	5	3
4	0	0	0	-4	-5	-3	-1	3	4	6	8	8	8	7	6	8	7	5	2	3	6	5	5	8
5	8	11	8	7	7	5	6	3	8	13	11	14	11	2	-4	1	6	7	0	-7	-6	-8	-6	-2
6	1	1	1	1	2	3	2	3	2	4	5	2	-1	16	24	12	-5	-15	-13	-9	-12	-16	-18	-7
7	2	13	13	15	3	-9	-14	-10	-1	-16	-27	-48	-60	-68	-77	-74	-85	-84	-81	-81	-89	-108	-121	-107
8	-87	-88	-97	-90	-90	-91	-100	-115	-123	-147	-126	-135	-123	-129	-123	-127	-169	-170	-144	-132	-139	-187	-259	-256
9	-307	-286	-249	-222	-202	-182	-171	-165	-164	-150	-148	-140	-133	-126	-124	-133	-129	-117	-131	-137	-137	-135	-127	-123
10	-119	-112	-112	-111	-110	-110	-110	-110	-108	-105	-103	-100	-100	-101	-100	-97	-96	-96	-99	-99	-92	-85	-92	-82
11	-70	-67	-68	-70	-75	-84	-82	-80	-77	-76	-73	-76	-77	-78	-74	-71	-79	-94	-97	-98	-92	-91	-88	-85
12	-80	-78	-75	-78	-76	-76	-77	-76	-77	-75	-75	-71	-65	-65	-67	-62	-63	-70	-75	-75	-78	-81	-82	-76
13	-70	-66	-65	-65	-61	-58	-62	-65	-62	-59	-60	-62	-64	-62	-57	-55	-57	-62	-63	-60	-61	-67	-67	-65
14	-66	-62	-57	-55	-58	-60	-63	-63	-61	-51	-50	-47	-47	-46	-40	-31	-30	-27	-33	-34	-26	-31	-34	-33
15	-28	-34	-40	-35	-29	-35	-37	-40	-44	-44	-43	-44	-42	-40	-38	-38	-42	-40	-42	-42	-41	-42	-44	-45
16	-44	-39	-35	-33	-32	-32	-33	-33	-34	-35	-34	-32	-31	-32	-35	-35	-33	-31	-25	-20	-21	-19	-12	-21
17	-20	-22	-22	-26	-26	-27	-25	-27	-30	-25	-20	-18	-21	-22	-24	-23	-26	-25	-26	-28	-33	-35	-37	-48
18	-59	-56	-51	-47	-45	-45	-50	-50	-48	-42	-38	-37	-35	-34	-34	-34	-38	-37	-33	-30	-31	-33	-41	-37
19	-20	-14	-12	-11	-16	-22	-28	-36	-38	-36	-33	-33	-32	-32	-33	-34	-34	-33	-30	-33	-35	-31	-29	-28
20	-31	-35	-38	-39	-33	-34	-36	-32	-28	-28	-32	-32	-42	-40	-37	-36	-46	-44	-45	-53	-50	-45	-45	-47
21	-45	-41	-33	-37	-33	-34	-38	-35	-36	-47	-50	-49	-40	-32	-28	-29	-33	-40	-39	-39	-43	-44	-52	-64
22	-64	-58	-52	-44	-42	-46	-51	-49	-43	-43	-47	-43	-42	-36	-32	-34	-47	-54	-53	-55	-52	-49	-50	-51
23	-56	-56	-51	-50	-51	-60	-58	-55	-51	-53	-53	-46	-41	-40	-48	-60	-66	-63	-61	-58	-50	-58	-58	-54
24	-46	-44	-43	-44	-51	-56	-52	-52	-49	-43	-46	-37	-42	-43	-42	-41	-41	-42	-45	-45	-49	-47	-46	-45
25	-43	-40	-42	-45	-44	-43	-42	-42	-45	-43	-38	-36	-36	-38	-38	-37	-38	-39	-39	-40	-44	-48	-44	-38
26	-36	-35	-36	-35	-36	-38	-39	-42	-44	-43	-36	-40	-43	-40	-46	-54	-56	-52	-46	-38	-40	-42	-40	-43
27	-43	-41	-40	-46	-48	-49	-46	-45	-44	-43	-42	-41	-39	-35	-36	-37	-38	-40	-38	-38	-34	-36	-42	-39
28	-39	-39	-41	-40	-39	-37	-35	-33	-30	-26	-23	-24	-29	-28	-29	-37	-44	-52	-51	-61	-60	-52	-49	-50

MARCH 1986

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	-49	-50	-48	-43	-40	-36	-33	-35	-32	-38	-39	-30	-28	-28	-27	-30	-42	-40	-46	-46	-39	-36	-36	-36
2	-37	-37	-33	-29	-26	-26	-27	-30	-29	-32	-35	-40	-34	-36	-31	-30	-30	-32	-31	-30	-32	-32	-29	-31
3	-30	-32	-35	-35	-34	-31	-27	-27	-28	-28	-23	-22	-22	-23	-22	-25	-24	-25	-17	-15	-8	-28	-44	-48
4	-37	-38	-40	-43	-42	-38	-39	-38	-36	-31	-29	-26	-25	-25	-27	-24	-26	-33	-29	-32	-33	-33	-34	-33
5	-33	-33	-33	-33	-33	-32	-30	-29	-30	-29	-27	-24	-26	-28	-30	-31	-35	-36	-34	-37	-41	-44	-42	-41
6	-41	-45	-44	-42	-36	-33	-31	-29	-24	-22	-21	-31	-42	-50	-55	-61	-65	-66	-74	-77	-76	-83	-84	-75
7	-67	-63	-64	-68	-72	-64	-61	-63	-58	-52	-41	-42	-44	-46	-49	-53	-52	-49	-52	-64	-71	-64	-63	-60
8	-55	-64	-61	-55	-56	-54	-55	-47	-40	-36	-39	-35	-37	-41	-47	-49	-37	-35	-30	-30	-39	-39	-39	-39
9	-38	-34	-34	-33	-34	-29	-28	-30	-34	-30	-29	-24	-23	-22	-24	-27	-29	-28	-26	-25	-25	-25	-27	-25
10	-24	-25	-25	-26	-25	-25	-27	-25	-24	-24	-23	-23	-25	-23	-22	-20	-17	-17	-17	-16	-15	-15	-16	-17
11	-15	-15	-14	-15	-17	-16	-16	-14	-13	-14	-14	-15	-13	-15	-14	-17	-16	-18	-21	-20	-20	-17	-18	-21
12	-20	-22	-23	-23	-20	-18	-16	-16	-16	-16	-17	-18	-15	-13	-14	-14	-14	-15	-13	-8	-7	-7	-8	-3
13	-1	-8	-12	-18	-21	-22	-25	-30	-31	-35	-38	-33	-42	-42	-50	-48	-56	-55	-45	-39	-37	-40	-44	-43
14	-41	-39	-34	-32	-33	-33	-32	-33	-30	-29	-26	-25	-25	-24	-18	-19	-21	-25	-19	-19	-18	-22	-24	-23
15	-20	-19	-17	-17	-21	-22	-24	-19	-18	-16	-12	-10	-10	-13	-14	-19	-21	-22	-22	-25	-29	-28	-29	-23
16	-18	-16	-16	-18	-21	-24	-21	-17	-19	-25	-26	-22	-19	-17	-20	-23	-24	-24	-24	-19	-18	-17	-21	-23
17	-21	-13	-6	-4	-6	-10	-14	-19	-17	-15	-12	-8	-6	-9	-12	-12	-9	-8	-9	-10	-16	-12	-11	-14
18	-19	-19	-15	-12	-13	-14	-13	-14	-11	-6	-8	-11	-14	-14	-19	-23	-29	-28	-24	-26	-26	-25	-21	-19
19	-15	-18	-24	-22	-18	-18	-18	-18	-18	-18	-18	-17	-18	-20	-22	-20	-23	-21	-18	-19	-17	-21	-21	-21
20	-20	-15	-12	-12	-11	-11	-11	-10	-9	-6	-7	-7	-6	-5	-3	-4	-4	-8	-6	-5	-3	-3	-3	-8
21	-8	-9	-11	-9	-4	3	8	1	-9	-8	-5	-8	-11	-16	-21	-20	-28	-33	-32	-27	-31	-32	-26	-29
22	-37	-45	-49	-46	-46	-43	-34	-30	-25	-18	-14	-17	-20	-20	-26	-32	-28	-29	-24	-22	-24	-26	-29	-26
23	-22	-21	-20	-21	-22	-24	-28	-25	-18	-16	-17	-25	-28	-28	-27	-25	-23	-22	-21	-24	-26	-21	-19	-19
24	-18	-18	-17	-18	-17	-18	-17	-15	-14	-13	-15	-23	-32	-32	-30	-30	-35	-32	-33	-34	-30	-31	-31	-29
25	-32	-35	-32	-28	-30	-30	-29	-31	-21	-17	-15	-17	-17	-18	-21	-29	-32	-32	-27	-31	-35	-42	-37	-39
26	-36	-35	-34	-31	-30	-28	-27	-27	-26	-25	-25	-25	-25	-24	-29	-28	-29	-25	-23	-22	-26	-29	-30	-35
27	-42	-44	-37	-33	-30	-26	-27	-31	-32	-38	-32	-27	-28	-28	-25	-26	-29	-32	-32	-29	-30	-30	-28	-26
28	-28	-29	-28	-24	-23	-21	-22	-27	-22	-23	-24	-23	-26	-25	-19	-19	-22	-25	-27	-31	-28	-28	-24	-27
29	-30	-26	-22	-21	-19	-23	-21	-15	-12	-9	-10	-12	-18	-24	-30	-33	-33	-29	-27	-26	-30	-34	-33	-30
30	-28	-28	-24	-20	-18	-20	-17	-15	-14	-14	-16	-16	-15	-17	-15	-13	-9	-13	-15	-15	-17	-15	-11	-9
31	-10	-12	-12	-9	-8	-9	-8	-6	-7	-5	-6	-6	-4	-8	-12	-14	-14	-18	-19	-14	-3	0	3	-2

Dst INDICES 1986 (continued)

APRIL 1986

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	-5	-11	-13	-11	-9	-7	-9	-19	-23	-23	-22	-17	-14	-15	-16	-16	-16	-15	-15	-15	-13	-14
2	-17	-21	-18	-14	-10	-11	-12	-14	-16	-19	-21	-20	-20	-20	-20	-21	-19	-16	-13	-9	-9	-8	-13	-18
3	-22	-27	-32	-34	-35	-29	-30	-31	-25	-22	-22	-23	-23	-20	-17	-16	-15	-15	-20	-20	-19	-15	-15	-15
4	-15	-12	-10	-10	-12	-13	-13	-14	-12	-13	-15	-15	-17	-18	-18	-18	-22	-22	-19	-18	-16	-16	-15	-13
5	-12	-11	-8	-9	-13	-15	-14	-11	-11	-9	-9	-5	-7	-8	-6	-5	-3	-9	-19	-19	-19	-25	-29	-26
6	-21	-15	-13	-11	-13	-16	-15	-16	-14	-15	-17	-16	-15	-14	-11	-9	-7	-10	-12	-13	-13	-16	-16	-15
7	-11	-10	-12	-7	-7	-10	-12	-11	-7	-4	-3	-3	-2	-5	-7	-9	-12	-13	-13	-11	-13	-16	-17	-17
8	-15	-12	-11	-7	-4	-3	-2	-2	-2	-10	-22	-23	-19	-18	-17	-14	-12	-10	-10	-7	-6	-8	-9	-8
9	-8	-5	-9	-14	-22	-22	-15	-6	-7	-8	-6	1	-6	-14	-22	-24	-26	-28	-27	-26	-24	-25	-28	-31
10	-39	-30	-20	-19	-29	-37	-44	-45	-51	-46	-38	-28	-25	-27	-27	-31	-34	-31	-31	-30	-32	-34	-32	-29
11	-26	-25	-22	-23	-26	-29	-26	-25	-25	-25	-27	-27	-26	-26	-25	-25	-24	-20	-15	-13	-16	-17	-18	-20
12	-20	-22	-20	-21	-21	-23	-28	-25	-25	-26	-26	-29	-29	-29	-29	-31	-32	-30	-29	-31	-32	-35	-38	-33
13	-29	-24	-22	-20	-19	-17	-15	-15	-16	-16	-20	-20	-20	-19	-18	-14	-11	-11	-12	-14	-19	-19	-22	-23
14	-24	-24	-22	-22	-20	-19	-14	-10	-7	-9	-12	-10	-9	-11	-11	-14	-12	-9	-9	-9	-12	-15	-15	-14
15	-15	-14	-12	-11	-6	-2	-2	0	-1	0	-2	-3	-5	-8	-1	3	1	-2	1	-1	1	0	-4	-9
16	-17	-18	-16	-15	-13	-10	-7	-4	-7	-9	-14	-16	-11	-10	-10	-10	-15	-17	-17	-13	-9	-8	-8	-6
17	-7	-9	-12	-14	-13	-10	-6	-1	-1	-4	-11	-15	-17	-19	-14	-11	-9	-12	-15	-17	-15	-14	-16	-14
18	-11	-5	-6	-8	-4	-3	-10	-16	-14	-12	-10	-8	-8	-8	-6	-3	-2	-3	-6	-6	-3	-1	1	2
19	3	-11	-19	-22	-18	-18	-18	-15	-15	-12	-13	-9	-10	0	4	7	7	1	-6	-11	-13	-14	-12	-9
20	-7	-8	-10	-7	-4	-3	-4	-4	-4	-5	-8	-10	-8	-3	3	4	6	5	8	6	0	0	4	1
21	-1	1	1	1	-5	-7	-7	-5	-1	-2	-7	-8	-6	-3	-2	0	0	-1	0	-1	0	-1	2	2
22	2	1	-1	-9	-16	-14	-10	-4	-4	-14	-23	-17	-10	-5	-5	-4	-2	-5	-15	-20	-16	-13	-8	2
23	3	3	1	-1	-4	-8	-11	-8	-3	-1	-6	-8	-9	-11	-10	-6	2	2	-4	-4	5	2	4	-5
24	-8	-8	-9	-6	-7	-10	-9	-9	-7	-5	-7	-8	-4	-5	0	2	4	0	-2	-9	-9	-5	-3	0
25	0	-1	-12	-15	-14	-15	-11	-12	-13	-12	-10	-12	-15	-13	-12	-12	-11	-10	-11	-12	-13	-10	-8	-4
26	-6	-8	-7	-6	-3	0	-1	-4	-7	-9	-9	-10	-8	-2	-2	-6	-5	-4	-7	-8	-7	-10	-8	-5
27	-2	-2	0	2	3	2	2	3	3	4	4	6	7	8	9	8	8	8	9	8	10	16	14	10
28	6	-2	-7	-10	-3	3	-2	-15	-19	-16	-14	-12	-13	-12	-8	-10	-13	-12	-13	-10	-8	-10	-10	-9
29	-7	-7	-2	-4	-1	-3	-12	-12	-10	-8	-11	-7	-9	-8	-9	-7	-8	-9	-7	-6	-6	-7	-10	-9
30	-10	-8	-4	-4	-4	-4	-3	-4	-5	-5	-4	-3	-5	-4	-7	-8	-8	-6	-3	-1	1	1	2	0

MAY 1986

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	-3	-1	0	-1	1	-1	-3	-3	1	2	-2	-3	-3	-2	-1	0	1	1	1	6	5	6	6
2	8	13	14	11	17	9	3	3	1	-2	-5	3	-11	-21	-30	-39	-48	-57	-66	-65	-72	-75	-79	-64
3	-64	-61	-60	-67	-68	-73	-75	-69	-65	-61	-54	-50	-51	-49	-49	-48	-46	-44	-42	-39	-38	-37	-35	-36
4	-34	-31	-26	-23	-23	-28	-34	-34	-29	-20	-6	-7	-16	-24	-22	-27	-28	-23	-25	-24	-24	-27	-30	-26
5	-24	-22	-19	-18	-19	-23	-22	-22	-21	-20	-20	-24	-23	-30	-33	-37	-39	-44	-49	-53	-53	-53	-62	-59
6	-52	-53	-50	-54	-55	-61	-66	-64	-72	-78	-68	-72	-78	-81	-78	-81	-84	-89	-84	-84	-90	-94	-80	-71
7	-56	-46	-41	-40	-41	-38	-40	-43	-43	-40	-34	-33	-36	-40	-46	-49	-50	-53	-50	-46	-42	-41	-39	-35
8	-32	-30	-28	-28	-28	-26	-21	-15	-16	-20	-19	-17	-18	-18	-26	-28	-26	-25	-29	-32	-31	-29	-30	-28
9	-21	-18	-19	-20	-19	-18	-17	-15	-16	-14	-14	-16	-17	-20	-21	-17	-18	-15	-9	-7	-8	-10	-11	-10
10	-12	-15	-14	-10	-8	-8	-9	-12	-12	-7	-2	-5	-14	-13	-13	-17	-17	-14	-12	-8	-6	-4	-5	-6
11	-7	-6	-4	-4	-6	-2	-1	-3	-2	0	4	4	6	6	-1	-7	-9	-11	-10	-6	-1	5	13	7
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13	-10	-8	-4	-2	-1	-1	-2	-3	-2	1	2	2	-2	-5	-10	-14	-15	-15	-12	-10	-8	-5	-7	-5
14	-6	-9	-11	-9	-9	-9	-7	-7	-9	-10	-10	-10	-10	-10	-10	-9	-6	-3	-2	-5	-5	-3	-2	-1
15	-3	-5	-8	-9	-8	-9	-9	-9	-7	-8	-10	-10	-8	-9	-9	-9	-12	-14	-14	-16	-18	-16	-10	-7
16	-5	-5	-6	-8	-8	-9	-10	-12	-7	-9	-11	-8	-8	-8	-9	-12	-14	-18	-21	-26	-31	-33	-32	-30
17	-32	-32	-30	-33	-29	-22	-17	-19	-17	-14	-12	-11	-13	-13	-16	-16	-9	-1	0	-1	-1	-5	-6	-4
18	-3	-1	1	0	2	3	-1	-5	-6	-6	-6	-7	-8	-7	-9	-10	-6	-4	0	2	5	7	5	1
19	1	-3	-8	-8	-5	-8	-8	-3	2	6	3	3	3	3	0	-6	-9	-8	2	12	10	8	9	4
20	0	-2	-5	-6	-5	-5	-5	-4	-3	0	3	-1	-3	-3	-1	1	2	5	2	0	-4	-5	-2	2
21	6	8	6	1	-2	-4	-3	-1	5	9	12	9	5	2	0	0	1	0	-2	-8	-9	-11	-9	-7
22	-4	0	1	2	2	3	5	6	10	12	12	9	7	6	8	9	6	6	7	11	16	16	15	15
23	13	7	5	6	5	4	11	11	7	10	10	8	8	3	1	-2	-2	-2	1	0	-1	-4	-4	-1
24	-5	0	4	6	6	10	11	12	13	14	10	5	-1	0	-9	-10	-6	-2	0	2	0	-6	-5	8
25	12	14	9	4	0	-7	-11	-7	-1	5	0	-3	-1	-6	-5	-9	-10	-11	-14	-12	-9	-9	-8	-6
26	-6	-6	-4	-2	-5	-4	-6	-11	-11	-12	-8	-7	-8	-13	-13	-15	-18	-21	-19	-17	-11	-9	-9	-9
27	-11	-7	-4	-1	-2	-2	-5	-12	-8	-2	-2	-3	-5	-4	-4	-4	-5	-1	0	2	3	2	-3	-7
28	-7	-3	-4	-4	-6	-6	-8	-8	-7	-7	-6	-5	-4	-3	-6	-6	-7	-6	-6	-6	-3	-2	0	-1
29	-2	-3	-2	0	2	3	5	6	4	1	1	1	1	2	3	4	5	4	4	3	5	3	-2	-4
30	-4	-3	-1	1	-1	2	6	7	11	13	15	13	8	5	8	8	7	7	3	1	1	3	3	0
31	-5	-3	-6	-5	-1	-9	-12	-19	-23	-21	-17	-18	-17	-14	-12	-12	-12	-12	-13	-12	-8	-9	-17	-16

JUNE 1986

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	-20	-25	-23	-18	-17	-19	-20	-17	-15	-13	-11	-12	-9	-9	-6	-8	-11	-17	-15	-18	-16	-18	-19	-22
2	-19	-18	-22	-19	-19	-21	-17	-11	-6	-5	-4	-4	-4	-6	-4	-5	-4	-6	-9	-12	-7	-6	-5	-8
3	-10	-20	-20	-16	-18	-14	-11	-7	-7	-6	-9	-10	-11	-10	-9	-9	-9	-7	-5	-6	-8	-7	-6	-4
4	-4	-4	-8	-13	-16	-15	-10	-4	-7	-6	-11	-21	-21	-19	-19	-18	-16	-15	-16	-18	-17	-15	-13	-12
5	-13	-12	-6	-3	-5	-5	-4	-2	-4	-8	-7	-8	-6	-4	-4	-6	-7	-5	-3	-3	-3	-5	-4	-6
6	-8	-9	-6	-3	4	5	0	0	-1	1	2	2	2	-1	-3	-8	-12	-11	-9	-10	-6	-3	0	0
7	0	1	4	8	11	11	10	1	-6	-12	-7	-8	-12	-5	-5	1	0	0	2	-5	-12	-19	-17	-9
8	-8	-10	-11	-15	-13	-13	-13	-10	-11	-11	-12	-15	-18	-18	-16	-15	-15	-10	-7	-5	-3	-7	-12	-14
9	-19	-16	-15	-9	-7	-6	-3	0	3	2	-2	-5	-5	-2	2	1	-5	-8	-8	-6	-5	-8	-10	-11
10	-14	-13	-11	-10	-8	-2	-2	-5	-13	-22	-18	-12	-15	-14	-16	-15	-11	-10	-10	-12	-12	-8	-11	-13
11	-15	-17	-11	-10	-10	-9	-8	-9	-10	-12	-14	-13	-10	-8	3	7	4	6	8	7	5	-1	2	-2
12	-4	-3	-3	3	3	-1	6	9	6	6	4	0	3	8	10	11	15	18	15	12	9	5	0	-5
13	-9	-11	-8	-3	2	2	1	1	5	4	4	4	-2	-1	4	4	5	5	0	-4	-2	-4	-4	2
14	5	5	2	-1	1	3	1	2	2	0	1	-1	-3	-4	-2	3	7	13	13	8	3	4	6	6
15	10	11	6	6	7	5	1	0	-3	0	1	1	4	2	2	-1	-2	-1	-1	-2	0	2	1	2
16	2	4	6	8	9	11	11	9	8	11	12	10	11	13	14	16	15	12	11	9	7	5	-1	3
17	4	4	5	6	14	16	18	24	22	16	22	21	20	18	18	18	18	17	15	13	12	13	11	10
18	10	4	-2	-4	0	2	-1	1	3	4	8	8	5	8	8	10	7	6	6	4	2	-2	-2	-1
19	-1	-3	-2	-2	0	0	0	1	3	1	0	1	1	2	4	9	15	17	17	15	7	7	6	4
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22	2	2	0	0	5	8	7	8	8	3	0	-1	1	-1	0	4	6	5	4	7	6	3	0	-1
23	-1	1	2	2	-1	-2	0	4	6	5	4	5	8	9	10	9	10	7	3	2	2	2	1	1
24	4	6	7	13	10	12	13	10	10	14	15	3	-2	-1	-2	1	0	-4	-5	-3	-2	-4	-3	-3
25	-3	-2	-3	-4	-3	0	0	2	1	0	1	0	1	-1	1	4	3	5	5	5	6	6	8	9
26	8	8	8	8	11	11	10	9	8	8	7	4	1	1	4	7	11	12	11	12	11	11	8	4
27	2	0	-2	-4	-6	-7	-4	1	3	2	14	26	31	31	10	4	4	1	-21	-30	-38	-41	-48	-53
28	-60	-56	-52	-57	-49	-45	-31	-25	-23	-23	-25	-26	-24	-21	-21	-17	-16	-14	-13	-17	-19	-19	-20	-17
29	-18	-21	-22	-20	-18	-16	-12	-11	-9	-10	-8	-10	-17	-19	-15	-11	-11	-9	-9	-11	-18	-23	-21	-23
30	-25	-23	-20	-20	-19	-18	-15	-13	-14	-16	-16	-17	-15	-13	-9	-7	-7	-4	-5	-8	-7	-6	-6	-14

JULY 1986

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	-14	-9	-12	-13	-14	-17	-14	-12	-11	-13	-14	-13	-11	-10	-8	-6	-6	-7	-10	-9	-6	-3	3	3
2	1	-5	-10	-15	-10	-7	-8	-14	-16	-13	-10	-7	-9	-11	-12	-8	-8	-8	-13	-19	-18	-16	-12	-7
3	-7	-9	-11	-11	-11	-12	-10	-10	-15	-18	-16	-13	-12	-13	-15	-13	-12	-11	-7	-3	-2	0	2	1
4	-1	-4	-11	-14	-13	-8	-6	-6	-10	-13	-11	-11	-8	-6	-6	-8	-6	-6	-4	-5	-4	-4	-3	-5
5	-7	-9	-10	-6	-3	-1	0	0	-1	-3	-3	-6	-5	-2	2	4	1	-1	0	-1	0	0	-1	5
6	5	-1	-6	-5	-5	-3	0	5	3	3	2	2	4	5	3	8	14	13	11	8	8	13	13	10
7	6	7	7	3	2	2	5	5	7	8	8	8	6	3	4	3	1	2	4	5	6	4	6	7
8	2	3	5	5	8	7	10	13	13	9	7	8	9	11	12	9	5	0	-5	-9	-10	-13	-12	-7
9	-9	-6	-4	-6	-8	-9	-5	-2	2	2	2	-2	-8	-10	-7	-1	3	4	4	0	1	2	5	3
10	-4	-9	-7	-6	-4	-3	0	0	-1	-5	-8	-8	-6	-3	-2	1	5	8	5	2	5	9	8	6
11	3	4	6	9	11	6	1	0	0	3	4	3	1	1	3	5	3	3	0	-3	0	4	2	1
12	1	7	10	12	11	11	11	10	8	6	4	4	13	24	22	18	14	13	12	17	20	19	22	23
13	17	14	6	5	6	7	5	3	-1	1	2	0	-3	0	5	6	7	9	10	7	7	2	0	1
14	-1	4	4	4	6	9	10	8	6	3	2	2	6	5	0	-1	-1	1	2	0	-2	-2	2	8
15	11	14	13	8	8	9	13	15	17	19	23	28	28	26	23	24	24	21	20	19	19	16	15	13
16	12	9	9	9	11	13	17	16	16	12	14	13	10	11	8	3	4	10	10	8	12	16	18	25
17	27	25	18	11	1	3	8	1	-3	-7	-8	-7	0	-2	-4	-4	-4	-4	-3	-4	0	3	2	6
18	6	1	-4	-3	-2	-1	3	4	4	3	0	-1	-3	-5	-2	-1	0	2	4	4	3	0	-1	1
19	0	-3	-5	-4	-3	0	3	4	5	7	7	8	11	14	14	10	9	5	1	-1	-3	-1	0	0
20	1	3	2	3	5	7	9	9	9	6	2	-2	0	4	10	10	9	11	14	18	21	21	21	20
21	19	14	12	15	21	23	18	14	14	15	18	15	17	20	20	18	19	21	21	22	21	15	9	7
22	1	-3	-3	-8	-14	-11	-8	-6	-7	-11	-13	-17	-18	-16	-14	-9	-3	-1	-2	-2	-1	-2	-3	-3
23	-5	-7	-10	-9	-8	-3	1	3	1	0	-1	-4	-6	-8	-9	-9	-4	0	-5	-9	-7	-4	-3	-2
24	0	0	1	1	4	3	3	2	3	3	3	4	6	5	3	5	7	13	21	30	39	34	23	-6
25	3	-1	-1	-9	-16	-15	-16	-16	-13	-10	-12	-13	-10	-6	-7	-11	-8	-9	-3	-1	0	-5	-19	-32
26	-35	-32	-30	-32	-35	-27	-26	-25	-26	-26	-24	-19	-16	-15	-14	-15	-16	-15	-17	-18	-22	-22	-20	-21
27	-21	-20	-19	-24	-22	-23	-23	-22	-20	-19	-37	-39	-30	-24	-24	-27	-28	-24	-21	-18	-16	-15	-12	-13
28	-14	-15	-16	-15	-15	-12	-17	-18	-19	-16	-15	-15	-16	-18	-20	-20	-19	-16	-14	-15	-14	-14	-13	-11
29	-9	-10	-7	-6	-3	-4	-5	-5	-8	-5	-4	-8	-19	-29	-25	-23	-21	-17	-20	-24	-22	-23	-23	-21
30	-21	-17	-16	-19	-18	-14	-10	-10	-10	-12	-15	-6	-4	-7	-12	-14	-12	-6	-5	-7	-6	-6	-4	-4
31	-6	-9	-12	-7	-7	-9	-5	-1	-3	-7	-20	-23	-21	-19	-13	-9	-6	-3	-4	-3	-8	-11	-13	-12

AUGUST 1986

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	-14	-16	-16	-12	-10	-11	-7	-5	-3	-4	-6	-9	-13	-15	-15	-16	-14	-13	-13	-15	-12	-8	-1
2	-1	-1	-4	-8	-7	-7	-3	-2	-1	-5	-6	-6	-9	-8	-6	-9	-7	-4	-3	-1	0	-2	-3	-1
3	-1	-1	-3	1	0	0	3	-5	-11	-22	-13	-11	-13	-10	-13	-9	-5	6	13	-10	-16	-16	-23	-31
4	-35	-29	-24	-31	-31	-34	-31	-26	-21	-19	-13	-19	-17	-16	-21	-21	-18	-15	-12	-13	-14	-15	-18	-15
5	-12	-12	-14	-21	-25	-24	-19	-15	-10	-9	-9	-12	-10	-9	-9	-10	-8	-7	-5	-4	-9	-20	-19	-13
6	-6	-4	-5	-12	-14	-16	-15	-10	-8	-6	-7	-9	-8	-5	-6	-8	-8	-11	-15	-13	-8	-5	-5	-7
7	-8	-6	-2	-2	-3	-4	-5	-6	-3	-1	1	2	3	2	-2	-1	4	5	3	-1	-1	-1	-4	-8
8	-12	-12	-10	-9	-6	-6	-9	-7	-5	-4	0	7	8	6	-6	-14	-16	-14	-14	-12	-12	-14	-14	-15
9	-13	-11	-8	-7	-7	-7	-5	-3	-1	0	0	-1	2	5	6	10	7	2	9	13	1	-10	-12	-9
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13	-17	-15	-4	-2	-1	-10	-10	-8	-13	-16	-19	-25	-24	-22	-20	-21	-22	-19	-17	-12	-10	-9	-9	-8
14	-8	-9	-10	-10	-10	-9	-6	-4	-1	1	4	5	7	10	11	8	3	-1	-4	-5	-7	-9	-10	-11
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16	-5	-5	-7	-8	-5	-4	-3	-1	0	0	-3	-1	-1	1	3	4	6	6	5	8	10	11	10	7
17	0	-1	0	-1	-3	-1	0	3	6	7	6	6	6	8	6	6	7	3	3	4	1	0	1	5
18	5	8	11	13	12	6	4	5	6	8	10	9	7	8	7	5	3	2	1	-1	-2	-3	-1	0
19	2	4	3	2	1	1	-1	-1	-3	-6	-9	-11	-11	-9	-4	0	-1	-4	-4	-1	-1	-4	-8	-10
20	0	2	3	4	3	2	2	-1	-3	-2	-3	-3	-3	1	19	17	14	17	12	-2	-30	-37	-38	-33
21	-24	-21	-19	-18	-20	-21	-18	-15	-17	-23	-30	-34	-38	-37	-41	-41	-41	-29	-26	-26	-27	-28	-33	-31
22	-29	-24	-21	-25	-22	-20	-20	-21	-32	-25	-17	-11	-19	-29	-29	-31	-32	-27	-24	-28	-32	-30	-30	-29
23	-32	-34	-29	-19	-17	-25	-26	-31	-31	-25	-22	-16	-18	-18	-18	-18	-20	-17	-22	-20	-19	-22	-22	-22
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27	-25	-23	-24	-23	-14	-9	-7	-9	-15	-16	-14	-11	-6	-11	-18	-19	-20	-18	-17	-16	-19	-21	-20	-17
28	-16	-14	-13	-9	-4	-2	-3	-2	2	3	-1	-3	-4	-9	-7	-8	-15	-14	-22	-17	-14	-13	-11	-12
29	-17	-22	-19	-13	-13	-14	-13	-11	-8	-11	-15	-21	-24	-21	-27	-30	-34	-29	-28	-25	-25	-19	-18	-18
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31	-30	-36	-38	-38	-29	-27	-23	-18	-18	-16	-14	-14	-19	-25	-26	-26	-20	-18	-17	-17	-24	-35	-33	-30

SEPTEMBER 1986

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
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3	-19	-20	-21	-20	-14	-9	-6	-6	-8	-8	-8	-8	-8	-11	-11	-11	-11	-13	-12	-9	-7	-5	-11	-19
4	-24	-21	-21	-16	-14	-16	-13	-11	-13	-13	-11	-9	-6	-4	-3	-6	-6	-1	-5	-4	-7	-7	-11	-12
5	-14	-7	-2	-3	-6	-6	-5	-2	-1	0	2	3	2	-1	-4	-5	-8	-11	-10	-14	-16	-17	-16	-17
6	-20	-27	-29	-22	-15	-10	-2	2	4	3	0	-4	-10	-15	-17	-17	-19	-19	-17	-14	-13	-18	-17	-12
7	-8	-3	-4	0	-2	0	2	2	-1	0	0	0	1	-2	-5	-6	-6	-2	-1	-1	-1	-3	-2	1
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9	-5	-7	-6	-4	-1	-4	-4	-4	-4	-3	-5	-8	-8	-5	-2	1	2	6	5	4	2	0	0	0
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11	-11	-10	-6	-9	-5	3	2	1	0	0	3	3	-2	-5	-5	-4	-3	-3	4	21	17	-1	-3	-24
12	-25	3	-18	-101	-151	-166	-170	-158	-149	-146	-134	-116	-121	-113	-102	-102	-101	-104	-102	-96	-91	-83	-81	-82
13	-76	-78	-80	-81	-72	-61	-56	-58	-60	-53	-52	-45	-48	-55	-55	-48	-41	-46	-56	-56	-60	-67	-62	-65
14	-65	-63	-55	-57	-54	-46	-38	-39	-41	-42	-40	-38	-39	-40	-43	-43	-41	-40	-36	-40	-32	-29	-34	-34
15	-28	-27	-32	-28	-18	-9	-3	2	5	-10	-14	-27	-41	-41	-38	-40	-44	-54	-55	-54	-51	-51	-49	-44
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21	-48	-47	-41	-38	-30	-23	-17	-17	-18	-18	-16	-13	-17	-16	-15	-14	-13	-17	-22	-23	-23	-24	-26	-26
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23	2	-2	-14	-28	-50	-60	-57	-47	-44	-44	-40	-45	-43	-40	-41	-42	-46	-51	-44	-46	-45	-46	-38	-37
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OCTOBER 1986

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
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3	-19	-13	-11	-14	-14	-16	-18	-19	-19	-20	-17	-17	-17	-16	-15	-13	-14	-9	-5	-3	-4	-12	-16	-21
4	-19	-21	-17	-17	-19	-15	-11	-12	-16	-17	-15	-12	-11	-10	-10	-6	-6	-6	-4	-3	-6	-7	-12	-13
5	-15	-18	-18	-19	-24	-15	-7	-9	-11	-11	-17	-30	-29	-32	-27	-20	-19	-21	-23	-24	-20	-20	-20	-20
6	-16	-11	-13	-16	-17	-19	-22	-27	-27	-22	-23	-22	-21	-20	-18	-17	-16	-13	-11	-13	-16	-20	-21	-18
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9	-10	-5	-4	-6	-5	-2	-2	-5	-7	-8	-7	-6	0	0	1	-2	-2	-5	-9	-12	-15	-16	-20	-18
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15	-20	-23	-25	-26	-26	-24	-27	-31	-45	-44	-39	-33	-31	-31	-31	-30	-29	-29	-25	-26	-24	-25	-26	-25
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26	-2	-1	0	1	-2	-2	0	3	5	4	4	1	-1	-3	-4	-2	-2	-5	-4	-2	0	1	2	-1
27	-5	-6	-3	-3	-2	-2	-8	-13	-11	-11	-12	-27	-40	-43	-47	-56	-65	-65	-58	-50	-43	-39	-39	-37
28	-31	-25	-29	-29	-26	-28	-30	-30	-26	-27	-23	-22	-19	-19	-19	-20	-20	-18	-16	-16	-10	-12	-15	-21
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NOVEMBER 1986

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	-25	-29	-31	-30	-32	-38	-41	-44	-39	-32	-30	-26	-20	-19	-16	-13	-9	-5	-3	1	3	6	9	9
2	8	8	8	9	7	-3	-3	-6	-3	-7	-6	-4	-3	-5	-4	-4	-1	0	2	5	9	6	7	10
3	10	9	4	5	2	-2	-8	-6	-3	-5	-7	-8	-6	-7	-5	-5	-6	-10	-9	-10	-8	-6	-10	1
4	35	6	-20	-24	-61	-76	-68	-69	-59	-79	-100	-98	-77	-71	-77	-87	-90	-91	-95	-93	-85	-77	-73	-67
5	-59	-63	-61	-67	-73	-74	-68	-62	-62	-56	-58	-50	-46	-45	-47	-47	-44	-42	-37	-30	-29	-30	-30	-31
6	-36	-36	-31	-32	-33	-34	-36	-35	-31	-27	-25	-22	-23	-23	-21	-23	-23	-22	-26	-29	-28	-25	-25	-26
7	-26	-29	-26	-21	-19	-20	-23	-23	-24	-23	-23	-23	-23	-19	-18	-20	-20	-22	-22	-20	-19	-16	-13	-14
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13	-11	-6	-6	-7	-6	-5	-4	-1	4	9	9	11	6	1	-7	-12	-11	-7	-13	-9	-8	-4	-1	-3
14	-1	-3	-3	-2	0	0	-1	2	7	12	7	6	5	2	0	-3	-3	3	1	0	1	3	-1	-3
15	-4	1	4	7	6	0	-4	-9	-5	-1	2	1	6	8	-6	-18	-26	-28	-22	-12	-14	-12	-9	-6
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18	3	6	6	7	5	2	-1	-1	-3	-5	-5	-3	-2	-3	-6	-6	-7	-8	-8	-6	-7	-8	-6	-5
19	-5	-3	-1	1	2	1	2	4	4	3	0	3	5	6	6	4	1	4	1	2	1	-1	-1	-3
20	-4	0	-2	-5	-8	-5	-5	-3	-2	-1	0	1	2	0	0	0	0	0	0	-1	-3	-1	0	0
21	0	1	1	1	0	0	5	8	10	11	12	9	10	10	10	9	8	3	1	0	1	2	2	6
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25	-85	-81	-78	-76	-75	-81	-84	-81	-73	-62	-47	-43	-51	-68	-68	-71	-89	-101	-105	-98	-93	-90	-86	-84
26	-77	-73	-68	-66	-63	-64	-64	-60	-55	-52	-53	-51	-44	-44	-45	-48	-50	-49	-48	-47	-47	-44	-42	-39
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30	-34	-31	-28	-26	-26	-25	-23	-26	-24	-20	-21	-21	-23	-32	-40	-43	-39	-35	-34	-34	-37	-40	-37	-42

DECEMBER 1986

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	-33	-24	-21	-23	-28	-32	-38	-39	-37	-35	-31	-27	-24	-24	-25	-25	-26	-25	-23	-19	-17	-16	-14	-11
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3	-20	-16	-16	-17	-19	-21	-22	-23	-22	-19	-18	-16	-18	-20	-18	-17	-16	-14	-11	-11	-11	-14	-16	-18
4	-16	-13	-8	-6	-8	-10	-11	-14	-15	-15	-12	-8	1	1	1	-1	-8	-10	-11	-15	-17	-23	-23	-24
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7	-3	-2	2	6	9	6	-2	4	6	0	-3	0	-3	-7	-11	-13	-15	-14	-13	-12	-12	-10	-9	-7
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9	-16	-10	0	1	0	1	4	6	3	0	0	4	8	10	11	9	0	-4	-3	-4	-4	-9	-9	-10
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13	-1	4	4	1	1	1	-1	-1	-2	-4	-2	-1	3	0	1	6	3	5	3	-3	-2	-10	-10	-17
14	-22	-14	-6	-5	-9	-20	-7	-19	-24	-24	-25	-27	-29	-29	-23	-21	-20	-23	-28	-32	-29	-24	-23	-22
15	-20	-16	-14	-16	-16	-16	-16	-17	-15	-14	-14	-13	-11	-11	-12	-12	-11	-9	-4	-1	2	4	8	9
16	7	-4	-10	-16	-15	-15	-18	-17	-12	-12	-16	-12	-7	-4	-5	-6	-11	-12	-14	-17	-18	-19	-19	-16
17	-12	-5	-2	-3	-5	-6	-7	-6	-2	-1	-4	-2	2	3	0	-6	-12	-10	-11	-12	-13	-11	-12	-12
18	-7	-3	0	0	2	2	-1	-3	0	0	-2	-1	-1	5	7	7	11	11	8	1	-9	-10	-12	-9
19	-5	-4	-3	-9	-12	-4	-4	-5	-5	-6	-9	-9	-8	-7	-4	1	2	1	-1	-5	-6	-14	-14	-10
20	-6	-7	-8	-4	-3	-5	-4	-2	1	4	1	0	0	-6	-8	-10	-4	1	1	0	-2	-5	-9	-8
21	-9	-3	1	2	0	0	3	6	4	4	7	10	10	0	-9	-4	-3	-5	-5	-6	-6	-5	-10	1
22	0	0	-3	-5	-9	-11	-9	-7	-9	-13	-14	-10	-9	-11	-17	-24	-30	-25	-21	-25	-27	-25	-25	-22
23	-19	-22	-23	-21	-18	-15	-8	-9	-8	-11	-19	-20	-16	-21	-28	-23	-21	-21	-18	-16	-15	-18	-17	-14
24	-13	-15	-24	-28	-26	-24	-22	-21	-20	-18	-19	-19	-18	-18	-19	-18	-18	-19	-22	-27	-31	-25	-24	-22
25	-20	-17	-14	-15	-19	-22	-24	-21	-20	-21	-22	-22	-17	-14	-14	-14	-15	-16	-14	-11	-11	-9	-11	-12
26	-10	-10	-14	-17	-18	-22	-25	-23	-17	-19	-17	-13	-14	-13	-13	-11	-12	-11	-12	-16	-16	-12	-14	-13
27	-6	-6	-8	-13	-14	-13	-10	-8	-7	-7	-7	-3	-1	-3	-4	-8	-7	-7	-8	-7	-6	-7	-14	-13
28	-10	-9	-9	-10	-11	-11	-13	-11	-11	-11	-12	-12	-10	-10	-11	-8	-8	-10	-9	-9	-7	-5	-4	-7
29	-10	-11	-12	-11	-8	-10	-9	-4	-3	-1	-1	0	2	3	3	4	3	-1	-4	-4	-4	-3	-2	-2
30	-2	0	3	1	0	0	-1	1	3	5	4	7	7	4	2	1	-1	-5	-9	-13	-15	-11	-13	-13
31	-12	-11	-9	-8	-6	-5	-3	-1	4	5	2	1	0	-3	-5	-10	-11	-6	-6	-9	-7	-4	-3	-2

DAILY MEAN VALUES OF **Dst** 1986

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	-22	-7	-38	-14	0	-16	-9	-11	-15	-8	-19	-26
2	-23	3	-32	-16	-23	-10	-11	-4	-19	-17	1	-21
3	-20	4	-27	-23	-53	-10	-10	-8	-11	-14	-4	-17
4	-14	4	-33	-15	-25	-13	-7	-21	-11	-12	-67	-11
5	-6	4	-33	-13	-33	-6	-2	-13	-7	-20	-50	-7
6	-6	-1	-50	-14	-72	-3	5	-9	-13	-18	-28	-2
7	-44	-46	-58	-10	-43	-3	5	-2	-2	-11	-21	-4
8	-31	-135	-44	-10	-25	-12	3	-8	-1	-3	-16	-1
9	-20	-164	-28	-17	-15	-6	-2	-2	-2	-7	-15	-1
10	-23	-102	-22	-33	-10	-12	-1	-2	9	-3	-4	-5
11	-11	-80	-16	-23	-1	-5	3	-4	-2	-3	-22	-9
12	-6	-74	-15	-28	-13	5	13	-10	-105	-2	-16	-1
13	2	-62	-34	-18	-6	0	5	-14	-60	-11	-3	-1
14	1	-46	-27	-14	-7	3	3	-3	-43	-51	1	-21
15	2	-40	-20	-4	-10	2	18	-6	-31	-29	-6	-10
16	-4	-30	-21	-12	-14	9	12	1	-26	-19	-11	-12
17	7	-27	-11	-12	-15	15	2	3	-25	-11	-5	-6
18	-8	-41	-18	-6	-2	4	1	5	-27	-4	-3	0
19	-8	-28	-19	-9	0	4	3	-3	-30	-20	2	-6
20	-16	-39	-8	-2	-2	10	9	-2	-24	-13	-2	-3
21	-34	-40	-15	-2	0	3	17	-27	-23	-14	5	-1
22	-34	-47	-30	-9	8	3	-7	-25	-12	-14	6	-15
23	-20	-54	-23	-3	4	4	-5	-23	-40	-5	2	-18
24	-19	-45	-24	-5	2	4	9	-20	-35	-8	-36	-21
25	-10	-41	-28	-11	-4	2	-10	-21	-23	1	-78	-16
26	-21	-42	-28	-6	-10	8	-23	-20	-36	0	-54	-15
27	-21	-41	-31	6	-4	-5	-23	-16	-25	-29	-36	-8
28	-23	-40	-25	-9	-5	-29	-16	-9	-21	-22	-25	-10
29	-19	0	-24	-7	2	-15	-14	-20	-19	-12	-28	-4
30	-17	0	-16	-4	5	-13	-11	-20	-17	-18	-31	-2
31	-14	0	-8	0	-12	0	-10	-25	0	-22	0	-5
MEAN	-16	-45	-26	-11	-12	-3	-2	-11	-23	-14	-19	-9

ANNUAL MEAN -16

MONTHLY AND YEARLY **Dst** 1957 - 1986

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	-28.0	-32.3	-19.6	-10.8	-22.8	-27.5	-13.8	-24.9	-17.7	-1.0	-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	-17.6	-11.8	-11.5	-58.3	-28.6	-18.2	-20.7	-21.9	-30.8	-53.9	-54.5	-42.3	-30.8
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	.5	-7.6	2.1	.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	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	-.2	1.9	2.3	-.3	-6.2	-.2	6.1	-3.2
1965	5.7	-1.0	.8	-3.3	5.7	.3	1.5	2.5	-2.2	5.3	4.6	2.4	1.8
1966	4.2	.1	-8.2	-1.6	-3.3	.2	-3.2	-2.1	-25.1	-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	-.3	-8.3	-10.8	-4.1	2.3	-9.5
1970	-3.0	.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	-17.1	-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	-.2	-13.9
1974	-4.2	-5.6	-16.3	-13.7	-8.4	-5.7	-26.5	-13.3	-20.8	-23.0	-17.1	-12.0	-13.9
1975	-10.4	-13.4	-18.1	-10.4	-6.3	.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	-27.0	-22.7	-27.4	-13.9	-22.2
1979	-28.8	-26.1	-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	-43.5	-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
1984	-7.5	-18.5	-26.1	-24.8	-17.5	-10.8	-9.5	-12.3	-22.6	-22.2	-20.5	-16.4	-17.4
1985	-18.5	-19.6	-9.6	-22.8	-7.6	-6.2	-11.1	-12.0	-14.2	-21.3	-18.5	-28.1	-15.8
1986	-15,5	-44,9	-26.0	-11.4	-12.4	-2,7	-1,7	-10,9	-23.2	-13,5	-18,8	-9.0	-15,8

Unit : nT

SECTION 3

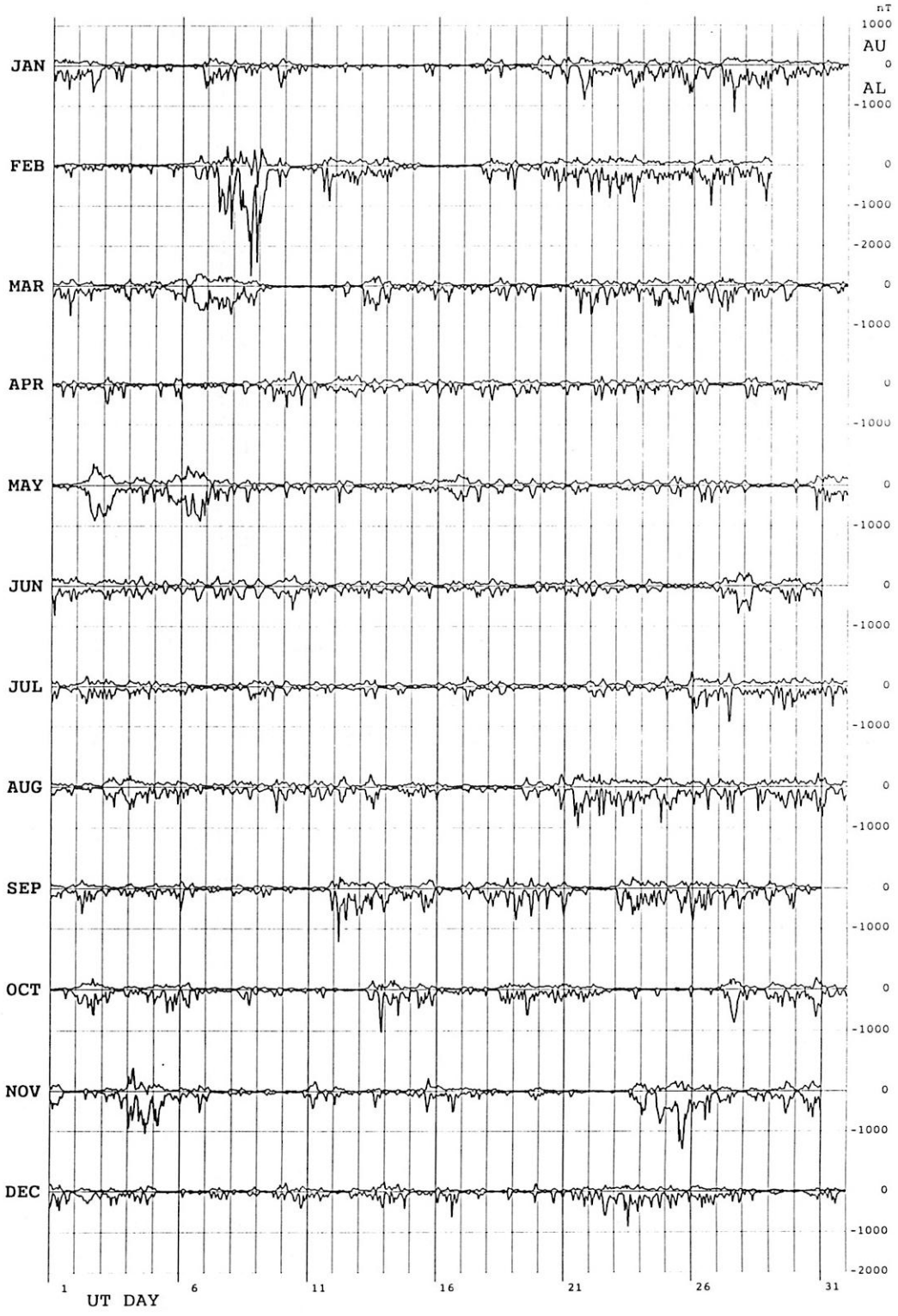
3.5. AU, AL, AE INDICES

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Monthly and yearly mean values of **AE** 1957-1986 130

HOURLY VALUES OF **AU** AND **AL** 1986



HOURLY VALUES (nT) OF AU, AL AND AE INDICES JANUARY 1986

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	112	151	146	122	83	88	80	105	155	79	187	142	73	69	160	65	74	137	64	98	72	89	73	64	104
	AL	-186	-374	-227	-124	-193	-109	-123	-160	-334	-375	-375	-141	-103	-201	-585	-338	-221	-312	-325	-363	-247	-308	-133	-95	-248
	AE	298	526	375	246	277	199	204	266	490	456	563	284	176	271	747	404	296	449	390	461	320	398	207	160	353
2		92	86	106	117	123	96	138	106	59	25	47	84	125	90	85	104	59	44	35	41	33	32	24	21	74
		-351	-211	-110	-244	-268	-187	-181	-71	-161	-144	-92	-186	-657	-541	-473	-421	-330	-370	-284	-105	-91	-74	-72	-22	-235
		444	297	218	362	392	284	320	177	221	170	140	270	783	632	560	525	390	414	321	148	126	107	98	44	310
3		12	13	19	24	22	32	43	55	90	83	81	74	65	48	63	44	105	43	29	17	16	21	25	31	44
		-11	-26	-81	-74	-20	-21	-47	-61	-76	-168	-338	-90	-34	-77	-409	-365	-161	-53	-15	-48	-27	-31	-33	-33	-96
		24	39	101	100	44	54	91	117	168	252	419	165	100	125	473	410	267	97	45	66	43	53	60	65	141
4		33	24	39	54	30	26	23	13	21	20	19	29	24	38	26	20	34	24	14	12	7	11	13	25	24
		-50	-39	-48	-67	-24	-27	-10	-6	-15	-10	-19	-34	-94	-150	-68	-25	-123	-14	-22	-15	-35	-15	-50	-44	-42
		84	64	89	122	55	55	34	20	36	31	39	63	119	188	94	46	159	39	36	27	43	27	65	71	67
5		14	17	13	14	15	19	20	28	28	47	28	35	41	25	17	11	13	16	16	19	15	10	12	11	20
		-31	-11	-14	-14	-7	-10	-32	-42	-136	-109	-43	-89	-146	-39	-13	-12	-23	-9	-9	-7	-7	-23	-13	-17	-36
		46	29	27	28	23	29	54	71	164	157	71	125	188	65	31	24	38	26	26	27	23	34	26	29	57
6		11	13	11	10	14	19	16	16	17	21	37	34	26	27	31	21	19	20	26	76	102	-27	68	41	27
		-15	-10	-14	-11	-9	-6	-7	-24	-8	-6	-37	-78	-48	-4	-2	-9	-12	-17	-20	-117	-371	-565	-366	-493	-94
		27	23	25	22	24	26	24	42	26	28	75	113	75	32	33	31	32	38	47	194	474	537	435	535	122
7		157	196	141	116	128	159	194	142	74	46	59	101	99	97	62	71	44	75	40	20	30	29	68	117	94
		-396	-249	-340	-449	-152	-179	-218	-307	-174	-59	-72	-357	-298	-212	-210	-164	-93	-366	-167	-39	-33	-69	-159	-231	-208
		553	446	482	566	281	339	413	450	248	106	131	459	398	310	273	236	138	442	209	60	63	100	228	349	303
8		156	98	51	59	34	48	47	62	52	40	47	77	58	41	25	30	63	23	18	23	22	15	24	27	47
		-375	-80	-31	-49	-29	-31	-38	-17	-21	-120	-182	-64	-34	-24	-63	-245	-99	-58	-40	-123	-186	-108	-44	-20	-87
		532	179	84	109	64	80	87	80	74	160	230	142	93	66	89	276	163	82	58	147	208	125	69	48	135
9		58	56	52	81	72	40	28	22	41	61	74	40	31	21	23	25	13	53	92	135	177	184	126	75	66
		-33	-51	-57	-40	-23	-3	-13	-21	-58	-121	-74	-3	-12	-23	-20	-21	-65	-352	-448	-542	-358	-126	-312	-330	-129
		91	107	110	122	96	44	42	44	100	183	149	45	44	45	44	46	79	406	541	677	536	310	439	406	196
10		89	112	121	82	62	49	37	43	28	23	20	40	32	50	19	6	9	9	3	11	3	5	7	8	36
		-144	-97	-77	-178	-42	-35	-34	-92	-61	-43	-31	-98	-217	-41	-14	-25	-42	-107	-138	-48	-12	-12	-10	-9	-67
		234	210	199	261	105	86	72	137	90	68	52	139	250	92	34	32	52	116	142	60	16	17	18	18	104
11		8	13	23	45	34	33	43	12	17	6	4	18	12	11	13	5	3	19	7	5	8	10	10	11	15
		-11	-14	-25	-27	-34	-38	-13	-6	-13	-18	-14	-32	-57	-18	-8	-18	-16	-72	-55	-29	-14	-9	-2	-4	-23
		20	28	49	73	69	72	57	19	31	25	18	51	70	29	22	24	20	92	62	35	24	21	13	15	39
12		10	10	23	12	18	24	37	46	88	36	9	9	16	10	9	6	8	16	5	9	18	10	21	24	20
		-6	-19	-31	-12	-9	-13	-48	-171	-51	-11	-12	-12	-14	-13	-17	-12	-13	-43	-58	-31	-102	-115	-24	-2	-35
		17	30	54	24	27	38	87	219	140	48	22	22	31	25	26	18	22	60	63	40	121	127	46	26	55
13		26	16	19	31	35	22	16	22	37	26	19	33	23	19	15	8	9	9	10	10	8	9	5	5	18
		-11	-6	-8	-5	-3	-6	-9	-48	-67	-27	-11	-12	-10	-10	-11	-12	-13	-36	-10	-7	-6	-4	-6	-7	-14
		38	24	28	37	39	29	26	71	106	54	30	45	35	30	27	22	23	47	21	18	14	14	12	13	33
14		7	11	11	11	8	8	9	11	21	24	23	26	22	21	14	7	12	16	8	9	10	10	7	7	13
		-9	-10	-14	-6	-4	-28	-4	-23	-15	-59	-58	-40	-18	-7	-7	-10	-14	-52	-43	-17	-2	-1	-2	-1	-19
		18	22	26	17	13	37	14	36	37	84	81	67	41	28	21	19	26	69	53	26	13	11	10	9	32
15		8	8	12	13	9	9	12	15	22	24	37	32	38	52	22	15	22	53	22	23	23	14	13	10	21
		-1	-7	-6	-5	-4	-3	-2	-1	0	0	-40	-171	-152	-109	-31	-35	-145	-270	-57	-22	-17	-12	-10	-5	-46
		10	16	19	18	13	13	15	16	22	24	78	204	191	162	54	51	168	324	80	46	41	28	24	16	68

16	14	13	10	10	7	9	10	12	19	27	35	20	15	16	18	17	14	14	15	12	11	7	5	6	14
	-5	-5	-6	-9	-11	-15	-16	-20	-20	-89	-58	-15	-12	-10	-14	-14	-17	-10	-7	-4	-4	-4	-5	-5	-16
	20	19	17	19	20	25	28	34	40	117	94	36	29	26	32	32	32	25	22	17	16	12	10	12	31
17	6	8	9	17	16	25	22	33	26	33	49	44	36	30	25	32	24	27	35	93	99	185	161	103	47
	-4	-5	-3	-3	-7	-8	-48	-46	-5	-7	-61	-45	-24	-10	-8	-9	-11	-14	-68	-213	-97	-67	-147	-122	-43
	11	14	13	22	23	34	72	81	33	41	111	89	61	41	34	42	35	42	104	307	197	253	309	226	91
18	121	85	78	61	55	53	87	53	78	133	141	61	31	18	9	4	4	8	13	9	22	20	40	26	50
	-123	-72	-40	-14	-21	-13	-30	-14	-43	-310	-230	-10	-9	-20	-18	-25	-33	-55	-120	-80	-81	-66	-82	-20	-64
	245	158	120	76	77	67	118	68	122	443	372	71	41	38	28	30	37	64	135	91	104	86	124	47	115
19	37	27	27	32	28	36	24	23	20	30	42	29	31	20	44	34	14	20	13	23	49	144	177	175	46
	-30	-4	-5	-11	-38	-50	-15	-12	-43	-39	-19	-26	-29	-24	-91	-112	-38	-56	-60	-42	-84	-119	-101	-122	-49
	68	32	33	43	67	88	40	36	64	69	62	56	61	45	135	147	53	77	75	65	133	264	279	297	95
20	234	232	193	135	154	156	130	250	163	120	120	83	62	37	16	18	12	10	24	59	132	167	151	68	114
	-157	-186	-152	-133	-227	-166	-172	-264	-338	-195	-107	-25	-10	-30	-26	-12	-18	-11	-92	-235	-107	-149	-226	-361	-141
	393	419	346	269	383	323	303	515	502	316	228	108	72	68	42	31	31	22	117	296	239	317	377	429	256
21	153	212	111	103	71	43	42	42	48	56	56	60	153	203	145	184	166	81	137	132	106	83	115	107	109
	-459	-235	-49	-35	-11	-5	-11	-14	-24	-21	-37	-94	-214	-329	-346	-618	-850	-655	-576	-480	-426	-113	-321	-541	-269
	613	448	161	139	83	49	54	57	74	78	94	155	369	533	492	803	1017	736	714	613	532	197	437	649	379
22	48	43	47	53	45	47	62	90	80	61	42	45	54	86	87	50	34	44	33	36	54	37	40	22	52
	-187	-72	-86	-217	-172	-144	-145	-175	-154	-268	-198	-154	-164	-172	-159	-194	-217	-248	-92	-59	-85	-158	-75	-55	-152
	236	116	134	271	218	193	208	266	236	329	240	200	220	259	247	245	252	293	126	95	140	196	116	79	205
23	24	28	28	21	32	49	47	63	77	111	153	72	84	41	67	83	88	99	73	45	87	81	56	69	66
	-105	-175	-23	-13	-12	-41	-146	-215	-269	-199	-148	-160	-124	-271	-520	-568	-304	-458	-268	-150	-431	-171	-155	-378	-221
	129	204	51	34	44	91	194	279	346	311	302	232	208	313	588	652	393	558	342	196	519	253	212	447	287
24	71	49	30	28	57	93	115	108	140	99	161	93	79	38	53	10	12	12	49	41	47	66	34	25	63
	-130	-11	-32	-42	-77	-217	-170	-140	-257	-241	-409	-249	-317	-223	-116	-41	-43	-119	-317	-233	-95	-168	-180	-44	-161
	202	61	64	71	135	311	286	249	398	341	571	343	396	262	169	53	56	132	366	274	144	235	215	70	225
25	42	13	55	108	87	81	56	45	87	107	56	26	59	51	93	91	81	157	188	166	108	130	134	145	90
	-40	-34	-76	-325	-238	-33	-22	-14	-156	-322	-77	-36	-154	-299	-498	-456	-200	-334	-505	-701	-416	-688	-581	-364	-274
	84	48	132	433	326	115	79	60	244	429	134	64	214	350	592	548	281	492	694	868	526	819	716	510	365
26	124	117	107	89	46	41	67	48	39	42	41	46	52	78	44	63	31	14	11	13	13	22	20	22	50
	-243	-357	-209	-68	-43	-37	-111	-76	-116	-74	-222	-271	-349	-290	-215	-134	-63	-108	-51	-41	-28	-58	-34	-9	-133
	368	476	317	158	90	79	179	125	156	117	264	317	401	368	259	198	94	123	63	55	42	81	55	32	184
27	23	37	43	115	133	131	178	191	134	124	154	130	136	198	109	161	179	103	95	73	74	95	83	126	118
	-7	-28	-141	-527	-265	-105	-313	-427	-166	-114	-251	-428	-478	-1169	-559	-526	-561	-541	-303	-224	-360	-380	-250	-390	-355
	32	67	185	643	399	238	492	619	301	239	406	558	614	1367	668	687	741	645	398	298	434	477	334	517	473
28	106	80	149	98	121	106	125	103	123	118	119	81	112	104	142	107	110	59	38	98	117	105	113	132	107
	-225	-89	-511	-446	-369	-175	-258	-262	-260	-417	-445	-521	-494	-600	-260	-340	-497	-227	-147	-364	-600	-281	-197	-419	-350
	332	170	662	545	492	281	384	365	384	535	565	603	607	705	402	448	608	288	186	463	718	387	311	552	458
29	92	77	73	58	65	71	63	54	56	69	76	58	105	75	123	89	32	50	63	46	58	83	80	68	70
	-172	-129	-143	-76	-240	-178	-26	-43	-46	-84	-68	-175	-356	-318	-515	-305	-244	-269	-340	-160	-159	-337	-227	-85	-196
	265	207	217	135	306	251	91	98	103	154	145	234	461	394	639	395	277	320	404	206	218	420	309	154	267
30	53	71	74	64	70	80	97	51	97	98	85	88	50	38	38	42	36	41	31	37	44	47	39	27	58
	-38	-130	-252	-126	-62	-213	-214	-149	-238	-309	-288	-97	-72	-82	-44	-115	-115	-262	-131	-183	-174	-298	-201	-134	-164
	91	202	328	191	133	295	311	201	336	407	374	185	124	120	83	158	151	304	162	221	220	345	242	163	223
31	36	50	56	76	124	83	62	50	35	52	61	57	34	62	39	17	3	21	12	8	8	8	12	11	41
	-19	-102	-138	-267	-266	-169	-53	-31	-108	-147	-84	-53	-88	-151	-52	-16	-117	-102	-37	-11	-17	-32	-6	-9	-86
	56	153	195	343	392	252	117	83	143	200	145	110	122	213	92	34	121	123	50	20	26	41	20	21	128

HOURLY VALUES (nT) OF AU, AL AND AE INDICES FEBRUARY 1986

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	14	14	18	27	25	18	20	28	30	28	41	62	56	44	63	36	63	57	54	41	42	36	39	25	37
	AL	-4	-12	-42	-42	-6	0	-1	0	-5	-26	-48	-175	-111	-73	-82	-201	-285	-63	-36	-71	-48	-22	-3	-2	-56
	AE	19	27	60	70	32	19	21	28	37	55	90	237	167	118	146	237	349	121	91	113	91	59	41	27	94
2		24	32	36	38	57	33	43	43	32	41	41	46	45	35	37	29	35	29	33	59	41	49	39	41	39
		0	0	-5	-87	-104	-15	-25	-56	-96	-7	-26	-29	-138	-80	-18	-79	-71	-95	-99	-101	-107	-3	3	2	-51
		24	31	41	127	162	49	69	100	129	48	68	76	184	115	56	109	106	125	133	162	149	52	35	38	91
3		29	22	25	32	33	35	47	35	43	38	43	32	29	29	33	39	46	35	28	27	25	49	60	53	36
		0	-2	-12	-37	-16	-11	0	-7	-38	-86	-61	-10	-21	-12	-19	-144	-50	-9	-9	-2	-4	-24	-163	-140	-37
		30	24	38	70	50	47	46	44	82	125	105	43	51	42	53	184	97	45	38	30	30	74	223	194	74
4		27	27	33	20	21	21	21	30	42	30	26	27	25	24	33	43	19	18	19	20	23	20	19	24	26
		-60	-16	-8	-6	-3	-4	-3	-7	-44	-36	-7	-10	-12	-12	-10	-78	-78	-96	-202	-63	-3	-8	-10	-8	-33
		88	44	41	27	25	26	24	37	87	67	34	38	38	36	44	122	97	115	223	83	27	29	30	33	59
5		16	17	24	18	27	21	24	20	31	34	43	48	41	32	41	42	57	43	43	31	38	65	55	49	36
		-9	-5	-1	0	-1	-2	-1	-21	-2	-5	-71	-44	-53	-78	-109	-278	-59	-13	-33	-102	-26	-24	-36	-60	-43
		26	23	25	19	29	24	26	43	34	40	115	93	95	110	150	321	117	57	78	134	66	90	92	110	80
6		39	49	52	54	54	59	55	68	73	49	61	81	121	113	112	106	256	251	107	88	64	82	94	106	91
		-10	-9	-25	-36	-2	3	0	-13	-2	-32	-27	-68	-254	-290	-327	-299	-331	-187	-63	-62	-39	-30	-339	-183	-109
		49	59	78	91	56	55	57	81	76	82	90	150	376	403	440	406	587	438	170	150	104	113	434	289	201
7		65	46	35	60	110	114	64	33	98	146	103	42	117	115	206	231	137	499	222	106	176	-230	167	68	114
		-51	-13	-7	-25	-80	-291	-176	-33	-41	-311	-1136	-963	-564	-742	-668	-1205	-1153	-1055	-541	-231	-537	-1564	-707	-642	-531
		118	59	43	86	190	407	241	67	139	458	1240	1006	682	858	875	1437	1291	1556	765	338	715	1334	875	710	645
8		198	157	85	65	206	375	280	50	96	38	229	104	83	-10	-47	-236	-78	144	410	216	-27	-529	-99	-27	70
		-381	-214	-42	-62	-215	-924	-1095	-592	-1044	-988	-991	-1104	-1389	-1870	-1595	-2740	-1463	-800	-574	-454	-1437	-2402	-1291	-1086	-1031
		581	372	128	128	422	1300	1376	642	1141	1028	1221	1209	1473	1859	1548	2503	1384	945	985	671	1411	1872	1191	1058	1102
9		173	442	305	201	205	72	39	23	27	39	5	4	3	16	50	13	24	124	211	83	16	13	32	88	92
		-1425	-1217	-992	-826	-604	-592	-239	-135	-78	-113	-84	-77	-87	-104	-125	-85	-69	-225	-524	-152	-78	-141	-203	-289	-353
		1598	1659	1298	1028	810	665	278	160	106	153	90	82	90	121	176	98	94	350	736	235	94	156	236	377	445
10		57	27	32	-4	-7	-3	-4	-10	-7	-7	-8	-14	-9	-11	-9	0	0	-2	-4	-2	17	7	10	29	3
		-267	-146	-107	-42	-44	-45	-40	-36	-39	-40	-43	-40	-39	-37	-44	-50	-121	-48	-42	-66	-68	-97	-45	-54	-67
		325	174	139	37	36	41	35	25	32	33	34	26	29	26	34	50	120	45	37	63	85	105	55	84	70
11		15	25	43	41	65	20	28	31	46	10	24	99	146	137	82	32	166	145	234	185	152	171	127	113	89
		-41	-66	-192	-74	-130	-41	-30	-38	-41	-33	-60	-291	-637	-311	-53	-53	-581	-872	-420	-329	-190	-278	-270	-230	-219
		58	91	235	116	197	62	58	71	88	43	85	391	784	449	135	87	748	1019	655	515	342	449	398	344	309
12		107	119	121	155	124	121	139	109	115	82	73	63	127	89	47	65	80	91	123	134	134	191	160	125	112
		-186	-260	-214	-211	-145	-141	-314	-224	-114	-85	-121	-199	-406	-292	-157	-142	-429	-240	-276	-485	-318	-224	-234	-104	-230
		294	380	336	367	271	263	454	334	230	168	195	263	534	382	205	208	510	332	400	620	453	415	395	229	343
13		106	117	119	112	74	43	50	43	54	68	84	90	159	160	88	35	39	32	59	71	196	181	149	229	98
		-134	-148	-236	-203	-6	-29	-59	-112	-186	-95	-255	-166	-242	-267	-163	-118	-116	-92	-224	-309	-242	-100	-194	-397	-171
		242	266	356	316	81	73	110	155	242	164	340	257	403	428	251	154	157	125	284	381	439	282	344	627	270
14		212	97	113	103	139	99	79	57	52	59	44	20	13	21	19	68	25	34	16	35	50	49	32	26	61
		-208	-73	-286	-234	-45	-25	-17	-58	-140	-91	-14	-17	-15	-19	-26	-87	-67	-29	-35	-65	-36	-50	-27	-27	-70
		421	172	400	338	185	125	97	116	193	151	58	39	29	42	46	156	93	64	52	101	87	101	61	53	132
15		37	42	33	58	84	48	29	21	17	15	17	23	6	11	9	16	12	10	4	4	6	6	7	2	22
		-84	-101	-55	-31	-6	-3	-7	-12	-15	-16	-18	-24	-27	-20	-23	-24	-24	-23	-23	-23	-18	-16	-19	-21	-26
		121	144	88	90	92	52	37	35	33	32	37	48	33	31	33	40	36	34	28	28	25	23	27	24	49

16	1	2	4	12	11	10	16	21	13	10	7	7	11	3	5	16	6	9	15	11	9	18	23	7	10
	-22	-20	-17	-23	-15	-9	-18	-50	-34	-20	-19	-24	-24	-18	-16	-25	-37	-35	-17	-16	-7	-18	-13	-13	-21
	24	23	22	36	27	20	35	73	48	31	27	32	36	22	21	42	44	46	34	29	18	36	37	21	33
17	13	12	7	8	6	8	9	18	28	17	25	24	18	28	45	20	20	29	49	63	74	111	80	90	33
	-11	-17	-8	-10	-5	-5	-4	-10	-8	-11	-17	-11	-13	-19	-32	-31	-78	-228	-146	-80	-72	-332	-272	-446	-78
	25	30	17	19	12	14	15	29	38	30	42	36	31	48	78	52	99	258	196	144	148	444	353	537	112
18	143	186	75	50	63	119	128	63	44	67	80	34	58	35	21	16	59	59	43	21	23	69	106	132	71
	-341	-145	-76	-126	-151	-128	-118	-69	-87	-101	-144	-117	-150	-139	-56	-86	-350	-218	-39	-19	-23	-152	-596	-480	-163
	486	332	153	177	214	247	246	133	131	168	226	152	209	174	78	102	410	278	83	41	48	222	703	614	235
19	107	54	36	17	31	23	32	23	21	32	39	49	19	15	5	11	7	19	20	30	51	19	30	19	30
	-134	-48	-21	-6	-18	-21	-48	-74	-90	-79	-97	-149	-127	-57	-16	-26	-54	-84	-78	-59	-122	-74	-20	-15	-63
	242	103	58	24	50	46	81	98	112	111	137	199	148	73	23	38	62	105	99	91	175	94	52	35	94
20	37	60	74	114	56	77	75	55	57	61	83	68	36	122	39	60	195	165	147	152	131	88	76	100	89
	-185	-271	-342	-150	-36	-91	-287	-165	-25	-35	-38	-131	-385	-170	-98	-201	-639	-415	-425	-374	-213	-48	-354	-396	-228
	223	333	416	265	93	170	363	221	83	98	122	200	422	293	138	262	835	582	574	527	344	137	431	497	318
21	62	100	79	65	47	78	155	108	84	207	117	130	59	80	50	28	36	33	37	36	78	67	120	185	85
	-163	-250	-175	-215	-202	-117	-308	-298	-67	-363	-553	-299	-113	-212	-52	-44	-82	-183	-178	-61	-189	-202	-367	-733	-226
	226	351	255	280	250	197	463	406	151	571	671	430	173	292	103	73	119	218	216	98	268	270	488	919	312
22	172	104	120	66	53	99	172	155	61	71	128	87	98	92	49	83	237	164	133	167	122	99	62	159	115
	-394	-188	-212	-94	-105	-441	-661	-247	-45	-81	-354	-364	-339	-386	-238	-247	-812	-499	-272	-336	-372	-189	-132	-510	-313
	567	293	333	161	159	541	834	403	107	154	483	453	438	480	288	331	1050	664	407	504	496	289	195	670	429
23	165	169	204	89	180	126	96	85	142	105	84	104	76	59	153	211	268	173	128	136	112	117	71	54	129
	-582	-492	-715	-236	-476	-469	-287	-171	-289	-399	-205	-317	-185	-310	-752	-913	-681	-549	-257	-306	-431	-299	-133	-147	-400
	748	662	920	326	657	597	383	257	432	505	290	422	261	370	907	1125	950	723	387	443	544	417	205	201	530
24	53	54	54	62	120	76	108	66	86	124	69	49	103	92	99	44	35	32	53	35	75	68	83	74	71
	-181	-220	-109	-102	-310	-331	-112	-106	-102	-140	-338	-300	-261	-464	-183	-226	-209	-317	-369	-178	-236	-317	-284	-174	-232
	235	274	164	165	432	409	221	172	189	265	408	349	365	557	283	271	246	351	423	214	312	386	369	249	304
25	83	54	70	64	94	90	87	66	71	133	85	46	64	58	46	46	52	61	83	89	74	98	57	42	71
	-327	-206	-212	-365	-207	-142	-195	-156	-127	-380	-253	-125	-189	-220	-52	-273	-253	-146	-285	-344	-166	-498	-86	-39	-219
	411	261	283	429	303	233	283	222	198	514	340	172	254	279	99	320	305	208	369	434	241	596	144	82	291
26	21	27	52	50	47	99	65	115	133	101	99	120	88	94	146	263	133	80	54	55	49	74	51	115	89
	-72	-149	-190	-83	-63	-286	-300	-384	-297	-249	-404	-479	-334	-356	-441	-994	-418	-185	-366	-209	-56	-151	-60	-362	-287
	94	177	243	134	111	386	366	499	430	351	503	599	423	452	588	1258	551	266	421	265	106	225	112	478	377
27	105	62	121	125	106	139	119	121	62	85	118	110	33	32	34	35	21	36	46	81	34	70	69	83	77
	-321	-141	-221	-486	-213	-217	-263	-268	-89	-61	-273	-506	-100	-46	-28	-45	-40	-106	-166	-317	-203	-128	-308	-298	-202
	427	203	343	611	320	356	382	389	152	146	392	617	133	79	63	81	62	144	213	400	238	198	377	382	280
28	60	69	84	86	87	64	60	70	74	72	83	94	60	74	84	117	143	216	161	174	177	112	109	70	100
	-152	-105	-203	-292	-107	-21	-81	-81	-78	-34	-170	-435	-199	-169	-268	-538	-440	-538	-902	-661	-196	-339	-190	-195	-266
	212	175	288	379	196	86	142	151	153	107	255	530	260	245	353	655	584	755	1064	836	375	452	299	266	367

HOURLY VALUES (nT) OF AU, AL AND AE INDICES MARCH 1986

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	80	47	56	39	36	40	73	112	129	88	79	70	54	82	65	94	169	160	180	149	115	78	46	41	87
	AL	-268	-230	-73	-75	-88	-24	-67	-275	-299	-199	-161	-320	-221	-157	-45	-333	-728	-348	-377	-295	-134	-76	-59	-181	-210
	AE	348	279	129	115	125	65	140	387	429	289	241	391	276	240	111	429	898	510	558	445	249	155	105	223	297
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	210	174	155	187	195	116	143	169	321	450	359	190	107	71	233	478	380	249	106	66	52	31	45	42	189
19	24	45	50	64	41	33	58	68	51	46	41	33	19	12	15	28	40	46	24	35	42	18	20	12	36
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	48	46	53	83	164	87	58	162	187	375	116	165	263	834	705	208	92	204	239	377	246	225	217	822	249
22	155	125	167	135	141	109	63	41	36	26	50	55	83	102	118	108	65	52	38	55	109	98	70	91	87
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	57	49	40	40	43	44	45	122	99	83	76	127	116	181	273	192	233	68	124	261	64	56	60	65	105

HOURLY VALUES (nT) OF AU, AL AND AE INDICES APRIL 1986

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	18	20	24	33	23	37	17	23	39	92	71	64	33	18	16	11	22	23	41	110	96	73	34	26	40
	AL	-25	-18	-16	-44	-44	-62	-29	-26	-30	-311	-210	-98	-34	-27	-27	-29	-71	-66	-32	-324	-235	-71	-24	-24	-78
	AE	44	39	41	78	68	100	48	50	70	403	282	162	67	45	43	41	94	90	74	434	332	145	59	51	119
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		-48	-44	-109	-32	-77	-83	-23	-20	-76	-153	-67	-135	-42	-56	-123	-74	-50	-30	-40	-25	-54	-84	-52	-61	-65
		76	90	171	59	120	117	39	45	112	195	100	169	64	72	139	85	61	48	71	41	76	122	88	107	95
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		40	47	58	203	387	123	50	40	47	86	42	47	40	42	30	32	42	184	465	340	175	284	507	156	144
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		68	45	35	36	43	113	128	91	73	51	39	68	48	40	53	36	32	43	105	56	56	188	133	47	68
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		51	44	99	131	66	45	111	88	55	49	54	56	77	86	206	242	255	143	68	52	53	50	56	81	92
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		72	45	40	30	28	33	45	42	67	284	314	304	148	130	68	47	36	33	26	16	25	39	68	184	89
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		329	267	393	190	134	232	223	186	310	281	158	248	430	334	239	322	341	434	537	466	402	308	267	210	302
13		64	84	77	59	18	14	29	44	35	44	67	108	162	75	60	53	22	32	43	64	99	115	125	106	67
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		216	263	209	99	37	38	43	94	112	71	103	294	350	197	155	154	79	70	104	118	223	350	306	163	160
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		170	189	167	185	144	99	83	91	105	128	123	328	188	251	202	141	76	41	60	44	42	60	42	58	126
15		35	25	16	15	22	27	44	61	67	49	41	58	103	118	82	55	47	31	39	39	27	20	20	88	47
		-16	-15	-17	-23	-20	-21	-55	-54	-64	-45	-28	-49	-169	-221	-159	-78	-66	-46	-10	-6	-1	-7	-15	-82	-53
		52	41	34	40	43	49	101	117	132	95	70	108	273	341	241	134	114	79	50	46	29	29	36	172	101

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	455	399	257	157	161	102	50	44	46	62	147	289	90	41	92	212	333	183	74	49	62	161	70	40	149
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	46	42	37	38	39	37	35	61	47	94	199	194	178	240	135	83	262	398	304	202	117	162	162	83	133
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	42	56	71	80	101	61	49	51	49	50	43	78	86	65	62	46	48	45	50	96	132	213	146	144	78
21	94	80	60	41	40	30	27	34	21	41	57	69	41	26	24	22	20	26	38	27	28	29	28	30	40
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	321	354	215	76	66	55	56	110	39	56	81	221	81	48	42	43	33	30	46	33	43	46	40	70	92
22	40	43	42	105	103	114	47	42	89	211	146	46	27	18	26	35	30	58	114	99	91	90	91	61	74
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	57	64	73	368	380	253	88	70	136	616	420	105	46	37	64	55	104	144	357	267	173	203	373	172	193
23	37	26	22	34	24	59	119	61	60	49	54	51	49	36	30	28	36	37	98	187	98	66	65	109	60
	-31	-20	-19	-28	-27	-64	-241	-180	-24	-25	-53	-39	-25	-26	-29	-20	-15	-16	-109	-474	-130	-35	-41	-200	-78
	69	47	42	63	53	125	362	242	86	75	108	91	75	62	59	49	52	53	207	661	229	102	108	310	139
24	102	44	28	30	22	44	52	41	74	48	90	108	67	41	55	38	44	55	71	80	60	44	44	49	55
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	351	119	44	47	39	149	133	172	227	215	183	368	108	93	218	87	63	110	150	119	91	122	66	75	140
25	48	102	105	89	75	54	54	37	39	50	62	101	100	51	14	15	21	28	30	36	35	29	33	39	52
	-24	-92	-273	-200	-68	-36	-86	-40	-50	-128	-106	-136	-138	-95	-39	-44	-25	-19	-21	-66	-33	-26	-28	-28	-75
	74	194	379	291	145	91	142	79	90	178	169	238	238	146	54	60	46	48	51	103	69	56	62	68	128
26	58	74	89	76	65	54	32	45	77	107	144	137	54	29	27	15	25	19	21	21	22	17	25	30	53
	-44	-95	-266	-208	-78	-28	-27	-31	-143	-238	-257	-194	-56	-26	-19	-18	-10	-15	-17	-16	-20	-15	-16	-22	-77
	103	169	357	285	144	83	60	78	221	345	401	331	110	56	46	34	36	35	40	38	43	34	43	53	131
27	34	28	28	20	21	19	21	20	40	27	42	32	22	21	20	23	24	26	25	27	28	32	46	55	28
	-21	-22	-93	-17	-17	-24	-23	-25	-20	-25	-39	-28	-33	-24	-17	-14	-24	-17	-16	-24	-11	-14	-29	-40	-26
	56	51	122	39	39	45	46	47	62	53	82	61	57	46	37	38	48	44	42	52	40	46	76	96	55
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	-96	-361	-327	-225	-36	-20	-70	-276	-248	-323	-159	-28	-32	-20	-70	-43	-17	-18	-31	-44	-19	-20	-24	-22	-105
	181	491	462	389	117	63	209	407	380	512	266	74	64	44	126	79	48	69	63	71	47	40	44	44	179
29	24	49	69	62	53	107	73	52	83	47	47	83	86	48	17	20	22	36	38	31	28	18	18	16	47
	-19	-40	-71	-270	-191	-110	-88	-250	-169	-83	-61	-167	-415	-208	-28	-32	-20	-46	-14	-6	-9	-17	-25	-29	-99
	45	90	142	334	246	219	163	302	253	131	109	251	502	256	46	53	43	83	53	39	39	36	45	47	147
30	15	18	33	29	30	29	31	39	49	24	41	73	61	59	35	53	45	49	38	33	32	22	20	26	37
	-28	-27	-32	-32	-26	-79	-28	-44	-34	-36	-42	-54	-127	-164	-73	-55	-96	-148	-61	-22	-8	-11	-15	-15	-52
	45	47	66	62	58	110	61	85	85	61	84	128	188	224	109	109	142	198	100	57	41	35	37	43	91

HOURLY VALUES (nT) OF AU, AL AND AE INDICES MAY 1986

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	35	33	29	20	16	27	23	37	36	35	27	40	36	39	45	29	18	21	26	31	45	40	48	48	33
	AL	-12	-19	-16	-12	-20	-32	-20	-57	-45	-39	-27	-31	-38	-40	-129	-51	-32	-27	-18	-10	-19	-9	-11	-29	-31
	AE	48	53	45	33	36	60	43	95	82	74	54	71	75	79	175	80	50	48	45	42	65	49	59	78	64
2		55	59	59	68	77	116	73	128	126	98	190	235	262	318	535	440	413	471	304	256	335	266	207	175	219
		-63	-43	-22	-85	-100	-114	-48	-240	-235	-115	-208	-467	-639	-705	-785	-867	-773	-750	-470	-434	-548	-637	-690	-769	-409
		119	102	83	154	179	232	123	369	362	214	400	703	902	1023	1321	1307	1186	1221	774	690	884	904	897	945	629
3		176	240	229	222	257	255	192	206	131	111	59	56	40	58	65	58	58	59	66	114	98	82	64	57	123
		-677	-756	-619	-477	-501	-607	-487	-416	-223	-273	-192	-93	-70	-86	-165	-130	-72	-108	-99	-97	-176	-95	-75	-68	-273
		855	997	849	700	759	863	680	623	355	385	252	150	111	145	230	189	130	167	165	211	275	178	140	126	397
4		43	64	70	71	119	160	207	193	140	114	169	110	127	203	84	75	75	57	40	35	38	96	144	114	106
		-42	-67	-180	-70	-73	-113	-170	-98	-61	-42	-39	-67	-433	-410	-130	-106	-221	-93	-32	-22	-40	-68	-401	-269	-135
		86	132	251	143	194	274	379	292	202	157	209	177	561	614	214	181	297	150	73	58	79	166	546	385	243
5		95	110	86	58	52	117	79	71	53	38	36	122	142	97	87	118	162	209	261	255	236	238	159	87	124
		-127	-88	-162	-97	-66	-250	-243	-158	-47	-47	-30	-147	-406	-227	-263	-334	-384	-393	-460	-487	-325	-396	-416	-291	-244
		224	200	249	157	120	368	324	230	100	85	67	270	548	325	350	452	547	603	721	743	561	635	576	379	368
6		198	148	237	155	265	480	455	370	297	345	260	196	294	366	338	315	236	179	281	224	336	226	230	160	275
		-320	-371	-293	-242	-468	-744	-766	-722	-695	-363	-186	-377	-617	-699	-745	-712	-848	-867	-584	-325	-375	-743	-406	-143	-526
		520	520	531	398	735	1226	1223	1094	993	710	447	574	911	1065	1085	1028	1085	1047	866	549	711	971	637	305	801
7		142	148	130	60	23	24	125	135	109	94	142	61	80	99	75	116	134	133	162	99	56	38	38	35	94
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		621	542	322	92	46	49	253	474	315	180	510	157	154	221	255	282	283	338	555	282	104	75	60	88	261
8		66	61	33	15	15	21	48	63	77	88	69	90	136	134	107	50	45	27	45	78	56	30	41	58	61
		-214	-137	-62	-17	-29	-37	-49	-45	-36	-55	-36	-90	-380	-407	-202	-105	-65	-24	-50	-122	-101	-22	-39	-135	-102
		282	199	96	33	45	59	98	110	114	144	106	180	516	541	309	155	111	51	96	201	158	52	81	195	164
9		62	61	56	50	62	40	27	55	57	65	41	77	45	60	45	32	29	27	35	28	27	27	28	31	44
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		239	164	130	133	169	98	70	85	91	163	91	214	148	142	107	79	47	42	49	41	37	49	52	48	104
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		229	406	280	111	31	30	34	65	109	59	85	129	108	175	61	79	58	180	261	170	132	72	66	49	124
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		48	43	59	86	141	224	155	84	50	74	72	169	94	75	71	69	150	128	102	58	86	116	75	70	96
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		53	84	196	565	307	79	41	40	133	212	289	296	306	188	251	164	82	48	53	40	51	63	71	65	153
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		44	51	76	67	169	130	108	100	161	191	203	162	155	128	141	127	219	130	104	141	226	310	243	168	148

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	142	140	157	146	159	217	197	245	157	156	281	265	141	334	308	270	427	482	625	578	446	340	391	583	299
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	47	42	36	49	57	70	207	177	294	355	174	100	82	229	160	139	143	138	129	160	244	70	52	39	133
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	98	123	132	58	130	185	142	168	229	170	234	277	192	132	78	71	174	111	90	73	59	158	193	143	142
24	90	76	69	59	66	51	35	44	28	54	67	93	120	122	124	103	47	47	38	38	37	49	41	38	64
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	161	204	150	116	99	69	48	63	48	78	92	162	286	342	314	251	89	73	43	37	48	75	55	54	123
25	36	53	95	126	150	205	235	111	51	37	157	210	84	97	62	47	32	26	36	27	31	50	47	48	86
	-13	-33	-69	-154	-200	-188	-220	-164	-25	-28	-57	-283	-99	-45	-44	-71	-69	-18	-27	-21	-32	-34	-18	-22	-81
	50	87	165	281	352	395	457	276	77	66	215	494	184	143	107	119	101	45	64	49	63	85	66	71	167
26	79	38	33	19	15	98	111	129	91	140	164	81	59	31	56	57	121	105	84	80	48	29	45	42	73
	-106	-17	-22	-17	-24	-107	-189	-418	-206	-166	-370	-108	-23	-10	-46	-76	-437	-362	-153	-125	-57	-20	-25	-20	-129
	187	57	56	37	39	207	302	549	298	307	534	190	83	43	103	133	559	467	239	206	106	50	72	63	204
27	81	113	83	57	29	37	117	105	57	64	79	66	61	50	35	31	35	33	28	40	33	51	112	131	64
	-45	-189	-100	-52	-24	-13	-77	-205	-131	-29	-43	-22	-26	-63	-60	-53	-28	-16	-16	-11	-9	-21	-67	-174	-62
	127	304	184	111	54	51	195	312	189	94	123	90	88	113	95	85	64	50	45	52	43	73	181	307	126
28	114	68	42	31	29	18	11	21	18	22	31	39	43	20	30	12	11	15	23	21	21	24	31	34	30
	-161	-100	-78	-53	-29	-15	-20	-27	-11	-20	-37	-28	-60	-11	-21	-28	-18	-8	-12	-18	-22	-27	-30	-24	-36
	276	169	121	85	60	34	32	49	31	44	70	68	104	33	52	41	29	23	36	40	44	53	62	59	67
29	39	39	29	20	16	11	13	21	29	34	46	57	50	37	29	19	18	17	23	22	30	47	94	159	37
	-27	-30	-24	-20	-22	-26	-21	-20	-20	-24	-53	-29	-44	-25	-50	-22	-21	-18	-22	-20	-20	-29	-100	-193	-37
	67	70	54	41	39	38	34	42	50	59	100	87	96	62	79	41	40	35	45	43	51	76	195	354	75
30	103	39	23	17	14	20	15	10	18	33	32	56	88	85	58	39	60	116	236	222	203	179	143	121	80
	-54	-42	-24	-21	-25	-20	-21	-18	-15	-22	-20	-21	-27	-60	-66	-29	-48	-188	-627	-199	-74	-223	-155	-76	-86
	158	83	48	39	40	40	37	28	35	57	53	78	116	146	125	69	109	304	864	421	278	403	299	198	168
31	86	168	212	136	153	262	206	213	171	221	216	176	139	87	79	66	73	110	190	223	171	176	195	154	162
	-69	-109	-395	-239	-117	-300	-428	-324	-188	-216	-254	-154	-251	-227	-146	-148	-152	-188	-254	-394	-152	-149	-148	-247	-219
	156	279	609	376	272	563	636	538	361	439	470	331	390	314	225	215	226	298	445	618	324	326	344	403	382

HOURLY VALUES (nT) OF AU, AL AND AE INDICES JUNE 1986

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	197	140	207	143	160	208	132	102	191	165	165	87	79	86	94	69	115	187	197	130	132	159	242	218	150
	AL	-219	-362	-718	-243	-216	-164	-53	-44	-178	-251	-206	-144	-129	-95	-168	-108	-99	-346	-369	-122	-50	-85	-294	-324	-208
	AE	417	503	926	388	378	374	186	147	370	417	372	231	209	181	262	178	215	533	566	253	183	246	537	543	359
2		99	146	97	82	78	76	65	36	76	88	71	53	63	68	55	41	36	63	84	96	131	93	110	141	81
		-162	-129	-168	-203	-173	-124	-101	-81	-156	-88	-68	-23	-93	-164	-74	-100	-121	-127	-115	-75	-132	-94	-139	-198	-121
		262	276	267	287	253	201	167	118	233	178	140	77	157	233	130	141	158	191	199	173	264	189	250	340	203
3		147	157	104	118	161	169	109	96	111	157	131	92	73	96	65	69	53	67	54	106	178	94	77	75	107
		-192	-322	-285	-116	-116	-345	-228	-159	-64	-164	-135	-116	-88	-118	-149	-162	-100	-58	-29	-39	-243	-152	-72	-65	-147
		340	481	391	236	278	516	338	256	176	322	266	208	161	214	214	232	153	126	84	146	421	247	151	141	254
4		91	126	149	147	145	58	30	85	125	167	242	255	141	89	43	38	27	33	73	110	116	48	44	44	101
		-64	-87	-181	-276	-258	-84	-29	-54	-222	-153	-229	-325	-199	-192	-147	-61	-38	-46	-142	-101	-190	-49	-34	-29	-133
		156	215	331	424	405	143	61	141	347	321	472	580	340	281	191	100	65	81	216	212	307	99	79	74	235
5		77	57	45	25	21	14	15	66	124	147	106	49	35	31	27	29	21	35	49	39	35	32	52	92	51
		-74	-87	-38	-16	-22	-20	-20	-20	-134	-188	-120	-37	-18	-15	-15	-38	-47	-75	-110	-35	-26	-25	-44	-116	-56
		152	145	84	42	44	35	37	87	260	335	227	87	55	48	42	68	69	110	159	76	62	58	97	209	108
6		136	190	164	152	98	49	91	47	31	64	115	56	52	77	92	182	131	106	107	104	68	43	33	30	92
		-176	-192	-149	-124	-59	-26	-41	-85	-47	-48	-93	-38	-26	-130	-330	-370	-299	-300	-191	-135	-94	-17	-18	-22	-125
		313	384	315	277	158	76	133	133	79	113	209	95	78	207	422	552	431	406	300	240	163	61	52	52	219
7		32	40	21	22	93	39	107	126	137	244	265	119	41	78	78	64	79	68	85	67	113	147	90	58	92
		-22	-27	-22	-24	-21	-29	-50	-162	-294	-184	-241	-158	-41	-50	-230	-338	-211	-90	-67	-31	-46	-224	-172	-20	-115
		54	68	45	46	115	69	159	289	433	430	507	278	82	129	310	402	291	158	153	99	160	373	263	79	208
8		52	51	67	84	96	151	139	134	162	170	144	51	41	37	22	17	20	24	30	42	64	119	152	203	86
		-29	-32	-93	-121	-190	-283	-243	-329	-299	-321	-103	-50	-21	-28	-31	-27	-32	-19	-21	-13	-69	-168	-284	-286	-129
		82	84	161	207	288	436	384	464	463	492	248	102	63	66	53	45	53	44	52	56	134	288	437	490	216
9		167	121	106	77	60	30	25	20	34	34	35	35	44	66	73	90	101	135	147	146	147	114	118	137	86
		-288	-206	-150	-137	-82	-27	-20	-17	-29	-27	-43	-54	-59	-61	-160	-132	-161	-258	-305	-273	-149	-112	-112	-121	-124
		456	328	257	215	144	58	46	39	65	62	78	89	104	128	233	223	263	394	452	421	297	227	231	259	211
10		181	221	170	145	127	165	165	205	219	278	220	110	109	89	86	65	44	50	59	96	80	74	70	128	131
		-156	-193	-135	-100	-257	-253	-224	-580	-400	-336	-177	-81	-170	-175	-100	-40	-56	-86	-74	-101	-51	-42	-49	-154	-166
		338	416	307	246	385	420	391	786	620	615	398	192	279	265	186	106	102	137	133	198	133	117	121	283	299
11		174	166	103	117	96	81	46	51	103	108	73	94	48	53	87	68	28	23	29	26	34	30	29	46	71
		-307	-210	-43	-86	-148	-80	-24	-28	-144	-219	-155	-78	-57	-32	-89	-130	-43	-21	-18	-15	-13	-18	-23	-49	-85
		483	377	147	205	246	163	71	81	248	328	229	173	105	85	177	198	72	44	48	41	48	48	53	96	157
12		33	63	61	63	89	97	51	77	38	27	65	73	74	42	37	42	56	39	69	86	113	121	121	135	70
		-37	-55	-112	-114	-132	-238	-104	-33	-26	-27	-36	-62	-145	-44	-32	-26	-51	-125	-72	-69	-51	-188	-145	-166	-87
		70	119	175	178	222	337	156	111	65	55	101	135	219	87	70	68	108	165	142	157	165	311	268	303	158
13		62	44	67	63	56	77	136	88	64	38	36	65	75	63	51	51	56	88	112	122	110	105	80	47	73
		-40	-38	-50	-181	-138	-61	-68	-296	-67	-18	-16	-84	-72	-56	-60	-112	-125	-169	-109	-181	-85	-66	-49	-34	-91
		103	83	119	246	196	140	205	385	133	57	53	150	148	120	111	164	182	258	221	305	196	173	131	82	165
14		56	70	64	82	55	90	76	65	49	56	75	79	62	39	35	35	29	43	72	117	231	128	71	54	72
		-90	-59	-85	-84	-77	-175	-87	-48	-16	-92	-99	-110	-164	-105	-57	-42	-14	-17	-46	-47	-210	-170	-56	-11	-82
		147	130	150	167	134	266	165	115	66	148	175	189	226	144	92	78	43	60	119	165	443	299	128	65	155
15		35	30	14	31	66	72	101	88	68	70	90	118	87	55	61	74	90	64	50	40	25	30	24	24	59
		-16	-30	-29	-38	-64	-71	-135	-100	-48	-55	-99	-129	-134	-47	-30	-260	-307	-103	-19	-17	-13	-20	-25	-24	-76
		52	61	44	71	131	145	238	189	118	126	189	248	221	103	91	334	397	167	71	58	40	51	50	49	135

16	21	26	29	21	29	35	56	75	55	51	42	32	42	84	143	80	59	50	74	121	104	97	66	47	60
	-25	-24	-23	-31	-28	-29	-24	-38	-57	-165	-96	-38	-31	-29	-75	-128	-114	-118	-38	-62	-103	-53	-35	-50	-59
	47	51	53	53	59	65	81	115	113	217	138	71	74	114	219	209	173	169	113	184	208	152	103	97	120
17	39	34	33	70	43	32	47	71	49	47	69	145	100	79	92	46	40	54	52	70	57	50	49	65	60
	-20	-16	-28	-43	-74	-23	-43	-103	-24	-21	-69	-151	-285	-128	-180	-251	-93	-94	-74	-124	-54	-33	-55	-30	-84
	61	50	62	115	119	56	92	175	75	69	139	297	386	207	273	297	134	148	127	194	112	84	105	97	145
18	87	110	184	185	168	119	90	46	48	48	126	132	109	76	68	66	80	73	60	36	32	37	28	26	85
	-62	-104	-217	-283	-176	-136	-52	-46	-33	-29	-101	-229	-148	-81	-37	-66	-85	-157	-54	-24	-23	-42	-23	-16	-93
	150	215	402	469	346	257	144	93	83	77	229	362	257	158	105	134	166	230	116	62	56	81	52	43	179
19	31	50	37	15	14	13	7	9	9	10	13	19	32	28	21	29	28	30	32	50	92	123	92	111	37
	-29	-38	-37	-30	-25	-24	-27	-26	-26	-31	-33	-34	-26	-28	-22	-31	-28	-28	-24	-34	-137	-174	-126	-90	-46
	62	90	76	46	40	39	35	36	36	43	47	54	59	56	44	61	56	58	57	85	230	299	220	202	85
20	84	34	39	31	40	90	83	49	39	50	44	69	85	60	71	73	39	45	60	61	78	44	54	85	59
	-134	-22	-23	-22	-21	-80	-132	-111	-26	-37	-27	-25	-25	-17	-28	-141	-99	-23	-32	-78	-73	-12	-26	-82	-54
	220	57	64	54	62	171	216	161	66	89	73	95	111	79	99	214	138	69	93	140	153	58	81	169	114
21	156	129	97	91	84	60	164	103	136	169	188	114	56	39	33	10	22	36	52	107	82	33	29	38	85
	-224	-178	-65	-95	-159	-32	-109	-131	-198	-143	-251	-252	-48	-25	-26	-19	-26	-38	-81	-172	-132	-29	-27	-36	-104
	381	309	163	187	245	94	275	235	336	314	439	366	106	65	60	31	49	75	134	280	215	62	58	75	190
22	71	110	99	152	98	51	35	27	28	27	45	57	57	81	84	93	67	47	65	67	58	60	86	82	69
	-124	-268	-139	-245	-161	-43	-32	-15	-19	-31	-71	-106	-57	-56	-93	-188	-176	-109	-49	-35	-53	-56	-70	-78	-95
	196	379	239	399	261	96	68	43	49	59	117	163	114	137	178	282	243	156	115	102	112	117	158	161	164
23	91	147	132	98	105	156	144	84	49	48	26	27	37	35	27	24	22	25	31	41	50	28	17	19	61
	-67	-163	-165	-72	-68	-114	-52	-27	-23	-50	-54	-30	-16	-16	-12	-13	-17	-26	-43	-162	-96	-36	-26	-24	-57
	159	311	299	172	174	271	197	113	73	99	82	58	55	52	40	38	39	52	76	205	147	66	44	43	119
24	19	21	20	43	67	103	169	165	143	63	93	91	95	71	87	75	88	91	63	47	37	38	31	45	74
	-22	-28	-27	-28	-77	-173	-116	-94	-64	-32	-39	-45	-58	-53	-87	-84	-133	-136	-70	-23	-21	-21	-21	-45	-62
	42	51	49	72	145	278	287	261	208	96	134	136	154	124	174	159	222	228	134	72	59	60	53	91	137
25	48	55	29	20	25	17	44	53	25	16	20	26	53	34	36	41	25	27	40	48	44	26	18	25	33
	-31	-39	-28	-20	-26	-24	-15	-53	-34	-25	-26	-29	-27	-47	-68	-90	-88	-38	-20	-69	-23	-18	-19	-21	-37
	80	95	59	41	53	43	60	107	61	42	47	56	82	81	104	131	114	65	61	118	69	45	38	47	71
26	30	49	24	21	12	64	66	100	42	49	103	83	63	49	27	16	23	25	36	46	59	97	93	90	53
	-24	-32	-23	-32	-29	-15	-31	-58	-38	-18	-40	-58	-41	-33	-39	-65	-23	-14	-12	-52	-83	-128	-144	-94	-47
	56	83	48	54	43	81	98	159	82	68	144	142	105	83	67	82	46	39	49	100	143	226	238	186	101
27	50	52	97	104	194	178	210	144	51	144	134	131	102	121	139	81	107	241	239	337	278	291	218	122	157
	-38	-35	-51	-305	-299	-167	-157	-107	-31	-72	-215	-144	-68	-152	-207	-93	-137	-386	-689	-569	-494	-446	-346	-404	-234
	89	88	149	411	495	347	368	253	83	217	349	275	171	274	347	175	244	628	929	907	773	738	565	527	392
28	158	278	213	342	249	266	124	67	68	50	33	19	21	53	52	36	26	40	48	78	101	72	95	96	108
	-395	-325	-398	-503	-634	-396	-191	-37	-20	-25	-30	-29	-25	-109	-140	-111	-69	-66	-63	-94	-156	-109	-137	-205	-178
	554	605	612	847	884	664	315	106	89	76	64	50	46	162	192	147	96	107	112	174	259	183	233	302	287
29	77	41	43	37	34	23	51	42	48	68	120	142	173	138	124	119	108	202	128	94	140	145	140	195	101
	-102	-54	-48	-66	-41	-43	-59	-38	-105	-171	-89	-157	-252	-340	-353	-115	-192	-438	-221	-94	-53	-116	-274	-381	-158
	180	96	92	104	77	67	112	81	154	240	209	300	425	479	479	235	301	641	350	190	194	262	416	577	261
30	112	152	189	105	69	40	17	24	31	55	63	68	53	35	66	55	84	56	38	40	62	107	117	171	75
	-222	-164	-394	-245	-78	-29	-33	-11	-19	-102	-72	-82	-50	-93	-106	-148	-266	-117	-47	-57	-75	-137	-114	-264	-122
	336	318	584	352	149	70	51	37	51	157	135	151	104	128	172	204	351	173	87	98	139	246	232	436	198

HOURLY VALUES (nT) OF AU, AL AND AE INDICES JULY 1986

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	139	85	86	65	141	116	62	20	13	15	25	44	39	17	7	11	16	43	65	50	49	51	50	78	54
	AL	-377	-204	-109	-120	-298	-234	-80	-19	-22	-20	-21	-29	-26	-40	-49	-58	-79	-109	-143	-73	-58	-39	-41	-68	-96
	AE	516	290	196	186	440	351	143	40	36	35	47	74	67	58	56	70	95	153	208	125	109	92	92	147	151
2		47	89	79	76	105	112	138	167	251	254	142	51	77	136	81	61	68	91	148	156	120	66	106	98	113
		-33	-60	-91	-146	-303	-193	-244	-264	-432	-356	-124	-54	-69	-284	-198	-36	-122	-139	-246	-282	-169	-68	-156	-295	-182
		82	150	171	223	409	306	383	432	684	611	266	106	147	421	280	98	190	231	395	440	290	135	263	394	296
3		59	135	193	116	74	76	136	135	109	104	57	46	39	34	44	25	25	29	21	38	29	44	71	111	73
		-55	-105	-322	-246	-143	-66	-110	-312	-201	-224	-202	-86	-35	-58	-50	-79	-84	-103	-79	-97	-48	-54	-71	-137	-124
		116	241	516	362	218	144	247	447	310	330	260	134	75	92	94	104	110	133	101	135	78	99	144	249	197
4		161	125	121	104	77	101	71	94	116	84	40	37	55	79	48	47	63	85	134	74	30	27	53	85	80
		-297	-150	-170	-138	-80	-229	-108	-49	-67	-186	-77	-60	-31	-29	-123	-86	-148	-162	-323	-89	-33	-40	-53	-73	-117
		459	276	291	242	158	330	179	143	183	271	117	98	87	109	172	134	212	248	458	164	64	69	107	159	197
5		119	128	89	58	26	31	60	53	60	41	53	88	58	40	31	22	28	22	31	54	68	65	85	114	59
		-161	-111	-53	-42	-66	-68	-102	-147	-85	-123	-100	-79	-40	-91	-109	-97	-92	-58	-49	-129	-108	-69	-82	-231	-96
		280	240	143	101	93	99	163	201	146	165	155	168	98	132	141	121	121	81	81	184	177	136	169	346	156
6		90	107	92	119	92	69	41	23	21	36	52	52	35	35	32	38	23	27	33	28	24	27	22	21	47
		-132	-95	-103	-211	-171	-73	-23	-12	-21	-28	-139	-74	-24	-23	-26	-38	-40	-29	-81	-69	-39	-27	-35	-36	-65
		223	203	195	331	264	142	64	37	42	66	193	127	60	58	58	77	63	57	115	98	64	56	58	58	113
7		19	19	17	21	28	44	52	47	47	35	29	45	62	54	46	43	33	33	24	27	44	50	55	65	39
		-33	-26	-26	-31	-27	-34	-71	-97	-36	-82	-27	-27	-46	-34	-20	-29	-104	-116	-40	-21	-31	-39	-58	-71	-47
		54	46	44	53	55	80	124	144	83	118	57	73	109	89	67	72	138	150	66	49	76	90	114	137	87
8		68	65	39	25	33	49	109	59	44	23	22	22	22	40	65	87	73	84	103	155	148	134	122	99	70
		-57	-32	-28	-30	-33	-22	-93	-69	-29	-17	-23	-23	-15	-18	-102	-208	-337	-268	-193	-163	-302	-164	-173	-192	-108
		126	98	69	56	67	72	203	129	74	41	46	46	37	58	169	295	412	353	297	319	450	300	296	292	179
9		95	146	94	72	91	105	124	64	49	43	66	123	137	138	47	29	35	36	31	21	30	18	30	59	70
		-116	-200	-145	-60	-27	-141	-255	-79	-25	-27	-61	-122	-119	-344	-122	-45	-11	-21	-15	-30	-32	-34	-41	-53	-89
		213	346	241	133	119	247	379	144	75	71	127	246	256	483	170	75	46	58	47	52	63	54	72	114	160
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		66	83	94	110	106	68	82	58	104	98	161	326	182	143	139	212	197	108	67	44	46	61	60	61	111
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	169	176	105	79	64	54	55	84	95	113	146	210	153	74	113	194	236	97	64	90	68	77	106	101	113
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	146	172	279	181	103	83	67	49	57	121	318	263	289	261	238	181	40	32	46	60	76	80	160	195	146
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	107	102	105	63	52	104	99	107	72	92	76	67	64	68	63	69	70	55	81	53	38	49	89	127	78
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	169	81	42	39	38	34	45	69	63	59	59	73	92	103	43	37	47	53	52	58	123	219	272	232	88
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	274	173	349	314	295	109	171	115	125	188	259	425	447	214	114	47	41	72	91	135	187	125	78	60	184
23	62	85	57	56	32	49	33	13	19	37	128	131	119	84	57	47	38	32	36	32	29	33	52	29	54
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	166	180	161	98	62	106	86	45	49	70	221	305	362	218	154	170	60	54	64	77	53	56	124	60	125
24	20	42	38	54	47	44	77	92	78	56	64	67	34	29	21	20	25	41	87	107	104	77	196	253	70
	-30	-29	-33	-45	-57	-76	-131	-152	-103	-37	-63	-117	-50	-29	-22	-37	-57	-31	-47	-28	-10	-27	-99	-339	-69
	51	72	71	100	104	120	208	244	181	94	128	184	86	59	43	58	83	72	135	136	116	105	297	593	139
25	183	139	65	107	125	63	20	50	50	26	51	23	19	12	13	10	16	19	35	39	136	147	367	324	85
	-147	-144	-71	-92	-141	-138	-52	-64	-115	-28	-53	-120	-73	-25	-48	-38	-36	-66	-50	-100	-284	-287	-227	-673	-128
	332	284	137	200	267	202	72	115	166	55	106	144	94	38	62	48	52	87	87	139	421	435	595	997	214
26	110	143	182	178	151	203	162	136	209	144	85	108	172	138	82	86	99	95	115	89	127	93	171	163	135
	-299	-273	-563	-550	-500	-226	-247	-129	-169	-131	-88	-67	-522	-341	-214	-194	-272	-257	-200	-123	-113	-96	-183	-372	-255
	409	417	746	730	652	431	410	265	378	275	174	176	695	480	297	281	373	353	315	212	240	191	354	535	391
27	78	38	43	66	105	131	104	164	234	333	204	116	85	53	32	33	38	48	43	54	75	92	105	121	100
	-147	-43	-43	-57	-206	-302	-161	-170	-322	-894	-862	-297	-81	-36	-44	-62	-73	-31	-42	-62	-128	-155	-224	-209	-194
	227	82	88	124	313	434	266	335	557	1229	1067	414	168	90	76	96	111	80	86	117	203	248	330	331	294
28	93	111	78	93	53	115	112	162	157	102	77	93	70	100	72	41	69	80	95	59	83	73	97	116	92
	-108	-119	-223	-140	-106	-165	-208	-204	-104	-168	-142	-72	-188	-231	-306	-116	-138	-210	-128	-101	-73	-116	-77	-154	-150
	202	231	302	235	160	281	321	366	261	271	220	166	259	333	379	157	207	291	224	161	157	190	175	271	242
29	83	74	112	100	76	52	74	145	106	76	112	167	183	121	91	74	84	73	58	158	185	169	190	191	115
	-204	-190	-473	-238	-53	-26	-40	-305	-168	-50	-58	-357	-610	-523	-259	-142	-259	-127	-73	-216	-539	-285	-415	-359	-249
	288	264	587	339	130	79	115	451	274	126	171	524	794	645	351	217	344	200	132	374	725	455	606	551	364
30	125	123	82	73	102	71	122	189	201	158	126	137	103	79	74	55	59	82	78	62	69	116	69	57	101
	-370	-175	-157	-75	-284	-236	-130	-248	-340	-186	-138	-224	-90	-90	-160	-201	-60	-244	-93	-68	-63	-194	-181	-60	-169
	495	299	240	149	387	308	253	438	542	344	265	362	194	170	235	257	120	326	172	131	132	311	250	118	271
31	57	65	126	119	95	55	46	74	85	198	179	92	79	116	76	68	54	55	51	40	106	114	99	118	90
	-45	-97	-188	-265	-92	-19	-24	-20	-49	-248	-514	-201	-116	-214	-154	0	-9	-30	-35	-63	-219	-106	-51	-187	-123
	103	163	315	385	188	75	71	95	134	447	694	294	195	331	232	68	64	86	87	104	325	221	151	306	214

HOURLY VALUES (nT) OF AU, AL AND AE INDICES AUGUST 1986

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	113	84	75	81	67	64	49	82	91	71	48	56	81	72	42	36	24	51	70	92	61	32	41	38	63
	AL	-195	-144	-196	-144	-110	-50	-67	-56	-63	-46	-8	-13	-16	-11	-61	-122	-56	-72	-175	-195	-101	-19	-21	-26	-82
	AE	309	229	271	226	178	115	117	138	155	118	58	70	98	85	103	158	80	124	246	287	163	51	63	65	146
2		21	27	27	33	23	49	70	89	77	88	52	87	93	80	54	51	42	41	39	36	39	21	17	46	50
		-26	-23	-20	-37	-10	-59	-34	-45	-51	-54	-19	-42	-126	-40	-23	-22	-11	-13	-10	-13	-17	-25	-24	-27	-32
		47	50	48	72	34	109	105	136	129	144	72	130	221	121	78	74	55	55	50	51	57	47	42	73	83
3		81	100	117	150	117	215	167	163	149	249	215	158	125	109	85	53	62	73	121	197	146	162	228	170	142
		-69	-163	-208	-303	-219	-163	-133	-233	-217	-260	-481	-140	-129	-135	-146	-65	-50	-3	-151	-178	-197	-318	-316	-381	-194
		150	263	326	454	337	379	301	398	367	510	696	300	256	245	233	119	113	77	272	376	344	482	545	551	337
4		176	293	160	173	181	148	106	119	163	108	112	129	119	111	73	48	67	99	72	55	61	94	65	39	115
		-395	-541	-275	-285	-492	-328	-201	-124	-167	-151	-93	-133	-263	-244	-171	-110	-135	-386	-73	-18	-40	-157	-144	-24	-206
		572	835	437	460	675	477	307	244	332	260	207	264	384	356	246	159	202	486	145	73	102	252	209	64	323
5		57	92	102	119	78	91	69	65	62	73	112	123	108	97	79	60	51	78	50	50	119	163	128	99	89
		-79	-282	-264	-254	-279	-169	-151	-37	-55	-29	-37	-208	-257	-58	-81	-88	-138	-143	-31	-44	-112	-412	-196	-91	-146
		137	375	367	374	358	261	220	103	119	104	151	332	366	157	161	149	190	221	82	95	231	576	325	190	235
6		80	118	102	91	102	88	61	38	42	41	54	80	85	60	44	29	30	64	85	58	34	47	35	36	63
		-38	-95	-272	-145	-61	-51	-199	-34	-12	-13	-18	-19	-23	-46	-104	-55	-19	-88	-164	-127	-18	-16	-23	-33	-70
		119	214	374	238	163	141	260	73	55	55	73	101	110	107	149	85	51	152	249	185	52	65	59	69	133
7		34	30	31	27	31	26	63	90	85	61	53	43	47	68	65	71	29	34	40	52	46	61	100	122	54
		-25	-25	-22	-19	-12	-4	-14	-65	-55	-41	-28	-30	-28	-28	-40	-178	-29	-18	-22	-22	-33	-54	-137	-137	-44
		60	56	53	46	44	30	78	156	142	103	82	75	77	97	105	249	58	54	64	76	80	115	237	260	100
8		142	146	171	73	42	73	124	123	149	105	85	78	82	121	72	62	138	94	44	46	85	56	38	29	91
		-176	-99	-118	-34	-34	-81	-151	-144	-128	-74	-19	-33	-31	-32	-131	-269	-292	-189	-60	-54	-41	-34	-30	-51	-96
		319	246	291	108	78	154	275	267	277	180	105	112	115	154	205	331	431	284	105	101	126	91	69	81	188
9		52	62	85	100	85	60	33	47	46	35	30	39	31	35	80	56	117	196	89	60	94	98	138	108	74
		-82	-112	-79	-92	-64	-60	-43	-52	-30	-25	-43	-43	-93	-19	-85	-229	-296	-621	-233	-13	-83	-48	-167	-170	-116
		135	175	164	192	150	122	77	100	78	61	74	83	125	55	166	286	414	817	323	74	177	147	306	280	191
10		108	120	117	89	44	29	47	88	96	106	58	26	35	47	81	53	51	57	70	75	42	31	30	40	64
		-250	-327	-309	-78	-44	-46	-53	-50	-148	-145	-70	-25	-22	-30	-60	-105	-118	-89	-109	-180	-11	-24	-26	-39	-98
		359	448	427	167	89	76	102	139	245	252	130	52	58	79	143	159	170	146	180	256	53	56	57	80	163
11		42	61	69	82	111	181	152	77	69	70	131	143	136	86	62	56	35	41	46	61	92	72	37	25	81
		-51	-59	-244	-201	-222	-219	-115	-26	-17	-30	-185	-328	-262	-290	-192	-152	-62	-25	-26	-155	-203	-117	-61	-27	-136
		93	120	314	283	334	401	268	105	87	102	318	473	399	378	255	209	97	67	72	217	295	189	99	54	218
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		53	59	76	101	150	514	509	555	470	455	167	96	97	76	48	48	121	214	155	48	55	65	94	80	179
13		19	32	47	48	55	122	106	117	176	321	278	163	150	63	58	37	33	79	47	35	38	46	48	54	91
		-49	-52	-52	-49	-60	-141	-312	-220	-196	-209	-389	-227	-532	-323	-145	-94	-298	-169	-46	-26	-50	-41	-49	-52	-158
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14		51	43	28	31	32	23	27	20	34	24	34	29	52	51	41	25	40	66	46	63	66	93	72	84	45
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		101	73	63	76	99	79	58	52	60	49	57	45	128	160	130	86	82	213	192	138	118	330	202	237	118
15		112	131	77	48	31	56	105	84	35	49	69	87	35	29	25	53	28	35	38	48	32	53	76	113	60
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	314	188	151	123	79	62	84	104	142	72	73	84	67	46	40	55	60	49	65	60	54	50	62	83	90
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	120	123	108	167	108	196	69	63	50	50	55	68	79	84	53	61	50	133	166	156	112	71	55	60	94
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	60	86	88	74	76	61	65	69	173	261	330	571	466	216	145	148	153	129	87	70	109	144	374	325	178
20	121	137	101	55	43	37	37	60	50	40	17	21	18	25	72	88	71	52	68	179	294	305	210	127	93
	-93	-92	-86	-82	-43	-72	-31	-30	-80	-78	-23	-24	-27	-28	-126	-229	-143	-66	-34	-172	-550	-437	-293	-197	-127
	215	230	188	138	87	110	68	91	131	120	41	45	46	53	200	318	215	118	102	351	846	743	504	325	220
21	77	84	39	36	61	34	40	73	147	239	214	177	299	200	163	285	321	192	146	153	130	126	168	181	149
	-62	-76	-60	-60	-62	-50	-32	-54	-203	-720	-407	-363	-957	-558	-421	-378	-640	-416	-312	-171	-82	-167	-278	-490	-292
	140	160	100	97	124	86	74	127	351	961	622	542	1257	760	586	664	962	608	458	324	212	294	447	672	443
22	168	109	132	248	132	103	89	144	315	126	50	81	158	131	78	82	77	52	71	181	207	148	129	165	132
	-349	-229	-322	-346	-320	-103	-56	-234	-709	-105	-32	-82	-683	-413	-59	-134	-135	-164	-98	-405	-436	-293	-203	-403	-263
	518	340	455	596	453	208	146	379	1026	232	83	165	842	545	138	217	213	217	170	586	644	442	332	569	396
23	150	118	91	109	134	140	107	161	144	108	184	111	131	128	72	142	172	124	161	123	75	102	147	109	127
	-482	-190	-118	-173	-217	-412	-717	-482	-303	-330	-252	-87	-255	-357	-88	-305	-650	-319	-255	-159	-150	-94	-351	-284	-293
	632	310	210	283	352	554	825	644	448	439	438	200	387	486	161	448	822	443	416	283	225	197	498	393	421
24	89	136	128	89	139	75	103	68	43	43	35	61	55	60	80	87	157	228	204	155	158	121	205	172	112
	-225	-286	-427	-175	-250	-184	-209	-290	-126	-81	-72	-47	-74	-33	-177	-286	-285	-358	-878	-337	-265	-168	-338	-439	-250
	315	423	556	265	391	260	313	359	170	124	108	109	131	95	258	375	442	587	1083	492	424	290	544	611	364
25	176	185	196	178	87	59	73	80	121	70	47	60	35	44	39	21	26	55	85	106	72	60	117	105	87
	-362	-398	-551	-571	-341	-257	-285	-262	-405	-150	-54	-189	-102	-98	-112	-73	-92	-238	-187	-136	-96	-55	-173	-155	-223
	539	584	748	751	430	318	359	343	527	221	102	250	137	143	151	95	118	293	273	242	168	115	291	261	311
26	141	127	87	119	116	99	132	82	81	43	39	21	64	111	202	76	39	28	26	23	42	54	66	83	79
	-366	-429	-128	-101	-202	-138	-280	-133	-145	-131	-28	-21	-48	-418	-563	-143	-55	-40	-48	-37	-84	-69	-123	-183	-163
	508	557	216	221	319	237	413	216	227	175	67	43	113	530	767	220	95	69	75	61	126	123	190	266	243
27	96	201	176	112	128	112	68	78	130	52	53	116	117	164	71	51	47	32	32	36	80	110	81	83	93
	-174	-219	-312	-236	-220	-42	-45	-196	-560	-271	-89	-231	-462	-655	-271	-81	-144	-79	-38	-16	-150	-220	-100	-132	-206
	271	420	490	349	348	155	114	276	692	324	143	349	581	820	343	133	192	112	70	53	231	330	181	216	300
28	67	48	44	34	28	52	43	41	53	56	33	54	120	85	46	121	146	113	176	98	57	33	57	79	70
	-84	-93	-54	-52	-64	-49	-50	-33	-37	-25	-29	-51	-594	-217	-54	-283	-421	-366	-273	-118	-79	-58	-80	-149	-138
	152	142	98	86	93	102	95	75	90	82	63	107	715	303	101	404	567	480	449	217	137	91	138	228	209
29	89	163	90	73	128	118	82	62	115	165	140	163	114	178	213	151	159	90	99	77	110	108	135	225	127
	-161	-157	-193	-125	-186	-288	-210	-127	-263	-366	-205	-284	-400	-502	-528	-401	-232	-114	-137	-79	-163	-271	-293	-536	-259
	252	320	285	198	315	408	293	190	379	532	346	448	516	681	742	553	392	204	236	157	273	380	429	762	387
30	154	84	49	78	139	97	113	121	72	55	99	91	140	136	135	89	63	49	96	181	337	193	123	165	119
	-414	-79	-65	-171	-486	-314	-222	-287	-134	-84	-290	-141	-312	-273	-355	-150	-113	-67	-174	-371	-623	-521	-252	-516	-267
	569	164	114	249	627	412	336	409	206	140	390	234	454	410	492	240	176	117	271	553	960	715	376	682	387
31	170	128	216	195	93	63	48	41	30	40	28	36	74	46	46	41	57	35	41	38	137	112	113	113	81
	-727	-390	-502	-396	-95	-44	-83	-35	-21	-24	-25	-45	-115	-194	-171	-193	-108	-63	-55	-36	-211	-351	-227	-216	-180
	898	519	719	592	189	109	132	77	52	65	54	82	190	242	218	236	165	99	96	76	348	464	340	330	262

HOURLY VALUES (nT) OF AU, AL AND AE INDICES SEPTEMBER 1986

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	120	74	95	67	74	72	70	58	70	65	50	58	34	18	14	21	31	46	58	70	91	104	59	45	61
	AL	-240	-172	-169	-184	-186	-198	-98	-97	-113	-239	-91	-51	-48	-27	-36	-53	-90	-94	-114	-102	-42	-117	-60	-47	-111
	AE	361	247	265	251	261	270	168	156	184	305	141	110	82	46	51	75	123	142	172	174	134	222	119	93	173
2		88	86	112	111	181	225	161	103	98	124	69	69	61	88	78	81	95	58	55	51	57	50	58	37	91
		-84	-304	-206	-164	-325	-629	-443	-90	-43	-328	-265	-70	-68	-333	-141	-249	-282	-141	-107	-48	-69	-41	-41	-32	-188
		172	391	320	276	507	855	604	194	142	452	335	139	130	422	220	330	378	200	163	100	127	93	100	70	280
3		44	57	80	80	51	41	58	25	21	22	34	23	23	16	14	15	38	33	33	45	39	51	92	76	42
		-51	-78	-166	-196	-117	-7	-78	-16	-13	-14	-22	-15	-14	-15	-25	-44	-77	-175	-98	-42	-20	-31	-189	-136	-68
		96	136	247	277	168	49	136	42	35	37	56	39	38	31	39	60	116	209	132	87	60	84	283	212	111
4		121	83	132	85	70	39	34	34	26	23	15	18	35	23	20	31	25	50	43	64	51	62	66	73	51
		-167	-52	-106	-217	-144	-86	-25	-49	-70	-26	-20	-22	-45	-85	-43	-47	-36	-131	-78	-202	-51	-71	-76	-180	-84
		289	136	240	304	215	125	60	83	97	50	36	40	81	108	64	79	62	182	122	267	104	134	142	254	136
5		90	120	120	53	46	31	66	43	53	64	66	50	42	69	51	47	48	44	60	92	102	78	63	118	67
		-247	-260	-49	-37	-45	-22	-61	-152	-82	-67	-87	-37	-6	-55	-48	-178	-125	-85	-28	-114	-258	-185	-113	-252	-108
		338	382	170	91	91	53	127	195	135	132	154	88	49	125	100	226	173	130	89	207	361	264	177	372	176
6		172	169	147	87	40	25	18	16	38	84	95	145	75	39	30	45	25	22	24	26	41	42	55	33	62
		-553	-387	-215	-47	-12	-22	-23	-17	-6	-22	-138	-225	-131	-37	-16	-71	-21	-10	-15	-24	-26	-48	-34	-16	-88
		726	558	364	135	52	47	41	33	45	107	234	371	206	77	47	117	47	33	41	51	69	91	90	50	151
7		22	34	49	48	37	28	61	39	32	27	51	61	35	22	19	16	14	23	30	26	27	27	26	32	33
		-15	-13	-26	-95	-106	-28	-98	-93	-75	-39	-26	-74	-38	-25	-31	-24	-27	-22	-21	-47	-26	-23	-22	-21	-42
		39	48	77	144	144	58	159	133	107	66	78	136	73	47	51	40	42	46	52	75	55	51	50	54	76
8		53	62	62	45	56	100	94	88	64	58	22	25	27	22	32	25	25	19	25	18	28	66	69	64	48
		-73	-184	-169	-72	-83	-92	-136	-82	-70	-54	-20	-20	-21	-27	-48	-34	-59	-80	-36	-24	-32	-65	-139	-117	-72
		128	247	231	117	140	192	231	171	135	113	43	46	48	50	82	60	85	100	62	43	61	133	209	183	121
9		63	52	40	19	56	98	71	47	51	67	75	65	53	52	44	24	24	31	23	22	19	21	23	35	45
		-109	-96	-56	-20	-46	-219	-170	-44	-31	-70	-149	-162	-47	-13	-15	-20	-20	-21	-10	-14	-15	-12	-12	-18	-58
		174	148	97	40	103	318	241	92	82	138	225	227	101	66	61	45	44	54	34	36	34	34	37	54	104
10		48	53	46	26	23	29	62	48	44	38	29	25	24	25	19	16	20	25	26	27	30	27	22	20	31
		-32	-40	-68	-21	-13	-15	-115	-90	-36	-7	-13	-19	-11	-7	-1	-7	-16	-15	-11	-12	-10	-9	-9	-11	-25
		81	94	114	49	37	44	178	138	81	46	42	45	37	33	21	24	37	42	38	40	42	36	32	32	57
11		13	13	25	20	38	44	44	40	24	31	28	46	35	31	40	28	13	15	41	43	108	180	204	121	51
		-10	-11	-19	-45	-74	-26	-38	-38	-23	-29	-23	-33	-52	-77	-52	-32	-18	-9	-29	-23	-53	-338	-546	-271	-78
		24	26	45	66	113	71	83	78	48	61	51	80	87	109	93	61	32	25	71	68	163	519	752	394	130
12		36	96	133	46	-5	300	163	252	214	104	129	148	112	62	76	144	167	156	140	81	141	131	93	89	125
		-63	-63	-262	-628	-1317	-453	-413	-421	-292	-233	-706	-785	-275	-110	-179	-298	-255	-305	-305	-135	-431	-680	-515	-449	-399
		100	159	395	674	1312	754	577	674	507	338	837	934	389	173	255	443	424	462	446	218	573	811	608	539	525
13		74	107	119	72	135	45	141	139	170	138	110	133	109	86	21	29	39	54	119	155	114	144	171	150	107
		-429	-639	-530	-302	-299	-176	-336	-126	-216	-412	-187	-517	-173	-129	-83	-24	-73	-123	-210	-247	-144	-323	-584	-537	-284
		505	747	650	376	434	221	478	266	386	551	298	651	283	216	105	54	113	179	331	404	260	468	757	689	393
14		106	95	130	53	79	43	49	33	24	25	33	26	30	32	67	17	18	52	63	56	52	67	49	59	53
		-367	-306	-368	-183	-112	-160	-136	-35	-21	-30	-139	-92	-22	-47	-114	-97	-75	-299	-264	-86	-253	-130	-137	-242	-155
		474	402	499	238	191	204	185	69	46	56	173	119	53	80	181	115	95	352	328	143	307	198	188	303	208
15		56	70	60	51	58	43	40	36	61	90	116	145	111	102	103	142	205	235	170	215	168	77	26	18	100
		-246	-81	-40	-49	-98	-78	-145	218	-85	-42	-307	-513	-595	-152	-216	-474	-465	-318	-246	-373	-252	-106	-18	-20	-214
		303	153	101	101	157	121	18[illegible]	[illegible]4	147	132	423	660	708	254	320	617	671	553	418	589	421	184	46	39	315

16	23	42	60	31	29	38	36	17	10	8	11	19	14	4	7	8	15	13	16	20	33	26	33	79	25
	-30	-79	-171	-126	-87	-23	-12	-15	-20	-26	-29	-37	-33	-77	-21	-23	-21	-18	-21	-17	-20	-11	-17	-89	-43
	54	122	232	158	117	62	49	34	31	35	41	56	48	82	28	32	38	32	38	38	54	39	51	169	68
17	83	62	43	37	95	114	169	140	81	62	16	7	3	21	11	16	29	50	36	63	64	120	159	145	68
	-143	-112	-63	-48	-100	-169	-275	-118	-43	-33	-24	-24	-24	-40	-27	-30	-133	-107	-67	-44	-170	-241	-273	-323	-110
	227	176	108	86	195	283	444	258	125	95	41	31	27	61	39	47	162	159	104	109	235	362	433	469	178
18	138	128	84	117	143	98	151	67	88	94	82	69	47	69	35	31	95	121	276	99	58	67	47	65	95
	-370	-265	-106	-289	-451	-241	-218	-52	-90	-223	-137	-67	-45	-74	-92	-63	-135	-236	-467	-205	-55	-102	-140	-88	-176
	510	394	191	407	595	339	369	120	179	317	220	136	93	144	127	95	232	359	745	306	114	171	189	154	271
19	74	147	151	101	97	103	104	118	110	65	46	42	52	41	66	187	274	169	68	70	37	60	102	104	100
	-150	-658	-781	-524	-346	-174	-307	-447	-113	-53	-48	-79	-99	-210	-135	-363	-697	-493	-78	-56	-47	-67	-202	-323	-269
	226	807	933	625	444	277	411	566	223	118	95	123	152	251	201	551	972	663	147	126	85	127	305	428	369
20	88	79	50	54	44	44	79	123	139	71	43	22	24	30	33	22	28	64	84	51	51	84	132	156	66
	-160	-99	-70	-68	-13	-10	-84	-523	-336	-77	-40	-46	-41	-45	-73	-96	-165	-143	-218	-199	-76	-103	-453	-656	-158
	248	179	122	123	59	54	164	646	476	148	83	68	66	76	107	119	194	208	304	251	128	189	586	814	225
21	154	104	67	60	54	41	34	30	25	23	36	27	26	21	15	12	15	32	36	56	33	25	24	35	41
	-465	-393	-160	-119	-94	-202	-109	-58	-11	-25	-52	-49	-59	-34	-57	-41	-52	-51	-103	-123	-172	-59	-28	-17	-105
	621	498	228	179	148	243	144	89	37	49	88	76	85	55	74	54	68	84	140	180	206	84	52	53	147
22	26	40	31	23	20	18	18	23	19	29	22	16	16	9	13	5	11	14	21	46	44	43	49	41	25
	-12	-17	-25	-19	-16	-26	-22	-20	-28	-36	-41	-38	-23	-21	-62	-24	-21	-17	-19	-31	-34	-18	-16	-14	-25
	39	58	58	43	37	44	41	43	47	65	63	55	41	31	76	30	33	33	41	78	79	62	66	55	51
23	36	52	69	89	131	203	201	125	133	78	97	103	61	68	81	224	296	202	221	186	134	188	127	62	132
	-24	-48	-318	-412	-408	-570	-415	-135	-77	-28	-80	-278	-84	-275	-197	-522	-670	-413	-571	-436	-186	-551	-447	-139	-303
	61	101	389	502	539	774	617	260	211	108	179	383	146	345	279	747	967	616	794	623	321	739	575	202	437
24	81	152	83	57	88	121	199	137	143	94	112	67	39	95	132	76	41	61	172	164	134	178	98	92	109
	-144	-414	-286	-137	-171	-341	-385	-440	-267	-135	-362	-130	-57	-299	-463	-162	-92	-51	-254	-315	-346	-415	-322	-113	-254
	226	567	371	196	260	462	584	577	411	231	475	199	97	394	596	238	134	114	428	480	481	594	421	206	364
25	59	28	65	33	42	55	61	39	64	74	98	99	123	169	175	88	77	150	71	38	25	64	126	96	80
	-49	-34	-66	-129	-120	-35	-61	-53	-54	-77	-236	-326	-296	-631	-517	-325	-206	-394	-143	-31	-33	-128	-461	-730	-214
	109	63	132	163	162	91	122	93	118	151	335	427	420	801	693	414	285	545	216	70	59	194	588	828	295
26	93	109	99	173	151	72	51	110	131	106	76	81	101	43	25	74	148	142	71	97	61	58	50	54	91
	-785	-546	-238	-390	-374	-163	-66	-208	-508	-436	-154	-561	-508	-97	-29	-96	-413	-432	-157	-138	-102	-99	-76	-45	-276
	879	656	339	564	525	236	118	319	641	544	230	644	610	142	54	172	562	576	229	237	165	158	127	100	368
27	90	62	65	33	32	55	93	73	104	96	75	62	58	53	74	53	34	21	65	183	203	143	109	96	81
	-89	-155	-118	-89	-74	-148	-535	-315	-290	-254	-197	-161	-190	-26	-250	-84	-65	-73	-118	-512	-520	-338	-246	-216	-211
	179	218	184	123	106	204	628	389	395	351	273	224	250	80	324	138	100	95	184	696	724	483	357	313	293
28	125	111	130	69	29	44	60	50	39	25	25	26	19	13	16	22	11	14	19	33	67	74	83	186	54
	-303	-183	-129	-93	-87	-75	-127	-285	-60	-39	-53	-199	-75	-14	-25	-45	-49	-34	-16	-59	-267	-298	-289	-443	-135
	429	296	260	163	117	119	188	336	99	65	78	225	95	28	41	68	61	49	37	93	335	373	373	629	190
29	132	97	103	102	99	40	36	42	34	56	41	38	38	12	30	40	37	53	63	40	71	120	91	56	61
	-314	-51	-194	-219	-73	-13	-35	-112	-59	-74	-50	-37	-16	-16	-59	-173	-168	-222	-429	-252	-133	-527	-467	-117	-159
	447	149	298	323	173	54	71	155	94	130	91	76	55	28	89	214	206	276	493	293	205	649	560	175	221
30	68	44	24	33	47	43	52	35	26	23	52	82	29	11	7	15	11	14	14	12	14	14	14	15	29
	-42	-18	-21	-24	-68	-51	-93	-42	-45	-13	-71	-140	-174	-35	-14	-60	-31	-72	-38	-17	-14	-14	-13	-16	-47
	111	64	46	57	115	95	145	77	71	38	124	223	204	46	21	77	43	86	52	30	30	29	28	32	77

HOURLY VALUES (nT) OF AU, AL AND AE INDICES OCTOBER 1986

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	13	13	14	15	25	22	19	27	37	34	29	39	33	50	36	26	19	20	20	20	30	38	46	61	29
	AL	-7	-7	-11	-20	-20	-11	-5	-6	2	0	-6	-14	-17	-74	-221	-89	-27	-34	-9	-13	-36	-86	-98	-155	-40
	AE	21	21	25	36	46	34	24	34	33	34	36	53	51	125	258	117	47	56	31	35	67	126	145	217	70
2		49	60	66	70	98	105	170	136	162	126	134	157	142	116	131	281	198	103	103	171	144	109	114	110	127
		-159	-124	-313	-332	-326	-312	-221	-142	-110	-143	-184	-430	-334	-380	-216	-589	-606	-105	-104	-259	-360	-234	-230	-257	-270
		208	185	379	403	425	417	391	279	273	271	319	589	477	498	348	872	805	209	208	431	505	344	344	367	398
3		122	81	54	45	67	67	42	37	47	56	44	28	19	15	16	14	15	19	22	20	38	77	54	63	44
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	-149	-197	-187	-241	-69	-85	-109	-323	-194	-178	-156	-427	-221	-35	-29	-40	-81	-98	-294	-191	-206	-194	-315	-450	-186
	248	324	363	393	164	184	224	441	299	280	219	518	298	72	57	62	97	118	316	245	296	277	409	576	270
30	93	72	67	79	104	86	77	49	31	63	51	41	50	57	1	7	56	166	274	277	200	163	116	197	99
	-201	-52	-114	-229	-124	-64	-76	-59	-33	-196	-129	-129	-261	-183	-183	-256	-220	-526	-673	-582	-358	-355	-422	-420	-243
	295	126	181	308	229	151	154	108	65	261	181	171	312	242	185	265	277	692	948	860	558	519	538	618	344
31	72	64	70	76	26	23	36	37	49	64	53	65	105	77	19	9	7	8	6	7	7	14	45	74	42
	-119	-52	-106	-137	-36	-24	-46	-175	-207	-169	-193	-171	-131	-91	-34	-25	-129	-157	-130	-53	-32	-41	-86	-181	-105
	191	117	177	213	63	48	84	214	257	234	247	237	237	169	54	34	136	165	137	62	40	56	132	256	148

HOURLY VALUES (nT) OF AU, AL AND AE INDICES NOVEMBER 1986

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	117	62	149	166	145	135	136	175	171	101	83	45	26	11	16	10	9	8	11	10	9	13	14	15	68
	AL	-213	-264	-433	-271	-327	-282	-332	-331	-218	-110	-162	-147	-28	-16	-17	-19	-17	-13	-10	-9	-9	-7	-8	-8	-135
	AE	331	327	583	438	472	417	469	507	390	213	247	193	56	28	34	30	27	23	23	20	20	21	23	25	205
2		13	15	18	26	28	22	19	24	35	71	59	28	28	16	23	13	14	31	31	23	24	19	19	32	26
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		74	86	83	134	339	195	156	147	175	85	104	240	66	97	69	43	125	303	494	258	180	211	213	168	168
4		198	381	199	214	540	591	200	55	66	102	76	155	243	226	147	117	65	22	-70	96	163	104	83	101	170
		-918	-788	-410	-355	-720	-573	-231	-92	-101	-229	-741	-548	-455	-543	-838	-669	-1046	-773	-820	-679	-474	-202	-260	-113	-524
		1117	1169	610	570	1262	1165	433	148	168	333	818	705	699	770	986	787	1112	796	749	776	637	307	344	215	695
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		671	900	545	967	1012	647	490	331	445	427	114	161	152	86	85	50	130	224	240	126	202	136	214	315	361
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		373	237	116	96	111	163	194	132	71	62	28	58	92	152	184	182	86	115	687	558	334	146	135	219	189
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		110	148	174	87	36	34	102	139	189	121	173	97	43	57	290	704	688	458	188	154	189	295	245	198	205

16	94	151	146	120	107	102	67	48	41	33	47	61	60	63	37	78	60	50	40	59	57	48	80	88	72
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	181	255	248	208	148	220	125	159	74	67	138	310	132	140	189	588	542	209	103	141	221	154	162	120	201
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	-57	-45	-30	-62	-56	-34	-1	-8	-34	-145	-78	-133	-79	-11	-32	-56	-192	-79	-44	-31	-23	-28	-44	-70	-57
	109	107	108	168	142	114	64	61	99	201	112	201	131	37	78	101	252	107	70	49	52	55	76	104	108
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	79	38	40	46	141	142	82	79	29	34	79	43	29	46	48	36	18	47	114	70	52	38	30	21	57
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	-6	-8	-4	-2	-2	-3	-2	-4	-1	-2	-6	-12	-10	-15	-16	-69	-115	-131	-74	-43	-196	-209	-106	-59	-46
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	174	224	93	102	134	62	23	77	77	32	39	56	39	62	71	22	43	47	65	104	40	66	41	22	71
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	19	22	20	18	21	59	160	136	103	40	26	40	54	35	42	26	57	54	34	30	44	19	23	25	46
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	19	22	20	17	21	20	25	27	23	34	22	22	36	40	213	87	54	232	361	251	334	463	431	502	136
24	202	123	77	181	149	49	28	12	11	48	85	53	9	26	43	82	147	78	-4	69	48	89	62	45	71
	-287	-585	-401	-476	-463	-108	-33	-13	-12	-35	-80	-67	-41	-20	-44	-369	-486	-630	-807	-740	-599	-608	-398	-404	-321
	490	708	478	658	613	158	63	26	25	84	166	121	51	47	88	452	635	709	803	809	647	699	461	449	393
25	87	118	117	129	185	182	203	195	251	193	94	104	177	204	248	152	29	57	21	134	170	103	81	62	137
	-426	-427	-421	-406	-463	-523	-409	-368	-242	-375	-313	-565	-1262	-953	-1279	-1440	-1152	-555	-699	-563	-495	-204	-227	-323	-587
	514	546	538	535	649	705	613	565	495	570	408	670	1440	1157	1528	1593	1182	612	721	698	665	308	308	385	725
26	77	49	20	49	51	62	66	70	100	124	161	100	46	88	24	54	163	54	36	14	19	15	17	26	62
	-506	-277	-280	-436	-413	-320	-246	-263	-253	-292	-256	-298	-715	-173	-109	-197	-537	-189	-58	-80	-28	-30	-25	-42	-251
	584	327	300	486	465	383	313	333	354	417	418	399	762	261	133	252	700	245	95	94	47	45	43	70	314
27	41	58	37	97	98	92	69	70	100	70	44	84	38	17	9	10	22	9	9	13	7	6	7	4	42
	-106	-178	-292	-218	-251	-210	-189	-240	-193	-93	-102	-305	-143	-40	-58	-150	-93	-37	-42	-18	-15	-16	-20	-14	-126
	148	237	330	316	349	303	259	311	294	165	148	390	183	58	67	160	116	48	51	32	23	22	27	20	169
28	5	11	12	20	14	31	74	61	72	56	31	76	30	16	19	0	8	11	34	22	10	12	18	24	28
	-18	-16	-21	-22	-89	-98	-84	-132	-139	-148	-110	-239	-98	-35	-64	-102	-103	-54	-267	-163	-37	-27	-26	-49	-89
	23	28	35	43	104	131	159	193	212	205	142	316	129	52	84	102	111	66	301	185	47	40	45	74	118
29	16	27	52	37	40	55	38	34	52	102	56	41	67	55	133	252	216	197	179	97	99	107	73	24	85
	-40	-90	-206	-142	-129	-80	-83	-120	-169	-191	-107	-92	-124	-213	-495	-565	-344	-403	-220	-129	-188	-194	-125	-35	-187
	56	117	260	180	170	136	122	155	222	295	165	134	191	269	629	818	561	601	400	227	288	302	199	59	273
30	30	21	18	28	40	67	48	83	132	142	117	82	29	111	194	213	255	156	131	124	91	81	132	110	101
	-21	-19	-15	-15	-51	-122	-78	-147	-317	-276	-185	-236	-515	-464	-293	-363	-649	-310	-145	-315	-212	-132	-161	-473	-230
	51	42	34	43	93	190	126	231	450	419	304	320	546	576	488	577	904	467	277	439	304	213	295	584	332

HOURLY VALUES (nT) OF AU, AL AND AE INDICES — DECEMBER 1986

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	172	183	142	53	71	80	104	94	66	180	134	74	31	17	13	21	47	23	38	25	28	18	10	23	69
	AL	-385	-321	-164	-46	-48	-99	-226	-361	-134	-453	-245	-144	-75	-19	-23	-128	-294	-189	-228	-60	-11	-9	-11	-22	-154
	AE	557	505	307	100	119	179	331	455	200	633	380	219	107	38	36	150	342	213	266	86	39	28	22	46	223
2		30	34	35	35	55	75	94	86	56	51	63	79	44	73	20	25	24	19	27	15	9	28	29	35	43
		-41	-71	-89	-78	-116	-86	-99	-129	-199	-212	-210	-278	-279	-197	-198	-188	-112	-83	-43	-20	-43	-102	-133	-165	-132
		72	107	125	114	171	162	194	216	256	263	274	358	323	271	220	215	137	103	71	36	53	131	164	200	176
3		58	25	26	26	18	21	37	39	71	102	65	55	77	20	13	36	26	21	18	21	16	32	34	25	37
		-109	-27	-37	-58	-41	-46	-136	-97	-137	-336	-134	-148	-130	-111	-311	-186	-82	-40	-62	-109	-28	-63	-119	-59	-109
		169	53	63	85	59	68	173	137	208	438	200	204	208	133	326	223	110	62	81	131	45	96	155	85	146
4		19	25	34	24	21	21	36	32	30	66	46	54	114	107	33	23	13	20	66	141	150	108	124	78	58
		-31	-45	-146	-40	-9	-28	-49	-225	-163	-82	-98	-129	-278	-194	-18	-33	-41	-93	-264	-321	-157	-149	-100	-48	-114
		51	70	180	65	32	49	86	257	194	148	145	183	392	303	52	57	55	114	332	463	308	259	225	128	173
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		197	195	86	36	25	28	23	15	16	19	21	17	23	50	25	21	20	19	15	11	29	36	26	29	41
6		21	23	29	62	66	44	13	12	12	26	31	32	23	13	10	10	12	11	20	34	26	17	15	17	24
		-14	-9	-19	-143	-53	0	-3	-1	-3	-7	-46	-46	-22	-19	-10	-15	-13	-12	-44	-73	-34	-22	-3	-12	-26
		37	34	50	206	120	45	18	14	15	33	78	78	46	33	20	26	27	24	65	109	62	40	20	31	51
7		22	19	20	21	32	48	72	92	66	66	64	33	42	103	72	40	34	23	27	20	24	29	28	22	42
		-19	-28	0	-3	-5	-57	-157	-70	2	-30	-137	-89	-39	-174	-175	-176	-46	-23	-13	-90	-186	-94	-3	-2	-67
		42	49	20	25	38	105	230	162	63	96	202	123	82	278	248	218	82	46	41	111	210	124	33	25	111
8		16	19	35	46	42	21	18	21	38	30	39	27	28	17	13	12	27	34	42	49	46	91	124	67	38
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		22	25	91	107	38	17	19	25	64	48	50	32	35	29	23	31	100	136	140	122	71	138	187	120	69
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		165	115	104	38	17	21	20	20	39	34	25	19	23	17	18	46	163	63	59	71	272	230	265	171	84
10		91	106	133	226	148	41	14	10	35	42	43	36	44	100	75	38	18	70	102	137	129	98	77	49	78
		-49	-47	-202	-94	-26	-1	-9	-7	-29	-37	-106	-224	-227	-194	-88	-41	-78	-389	-399	-274	-84	-233	-160	-56	-127
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	86	306	404	156	52	46	56	144	107	117	300	230	147	71	95	678	335	91	131	325	280	97	50	38	181
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	37	32	33	34	44	63	93	106	58	23	19	57	42	87	114	104	206	115	92	150	169	101	67	46	79
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	171	69	29	31	24	25	39	38	67	298	193	33	80	169	225	269	70	47	81	250	490	186	247	349	145
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	84	78	149	401	244	153	61	68	77	178	266	92	52	223	527	702	746	432	284	248	200	205	238	278	249
23	73	89	93	95	100	68	67	88	125	75	132	151	59	147	114	64	54	59	49	67	96	107	167	115	94
	-155	-230	-316	-127	-80	-39	-81	-26	-73	-98	-479	-256	-324	-864	-411	-84	-160	-330	-309	-241	-218	-358	-504	-174	-247
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	176	262	462	360	171	149	173	198	187	189	323	471	244	206	185	112	79	142	385	521	263	148	125	67	233
25	44	41	46	51	88	150	86	38	30	51	42	68	43	13	12	9	33	18	13	10	6	10	41	47	41
	-74	-111	-203	-103	-318	-429	-76	-100	-167	-260	-353	-146	-55	-83	-100	-160	-116	-57	-32	-29	-30	-38	-266	-202	-146
	119	153	250	155	406	580	162	139	198	312	395	214	99	97	113	171	150	76	46	40	36	49	308	250	188
26	63	110	116	107	103	120	136	133	69	88	87	57	63	46	44	38	49	54	29	55	61	58	68	48	75
	-47	-115	-113	-152	-119	-163	-229	-187	-73	-133	-403	-145	-136	-304	-94	-83	-250	-284	-111	-195	-304	-334	-101	-91	-174
	111	226	230	259	223	283	365	320	142	221	491	203	200	351	140	123	300	339	141	251	366	393	170	141	250
27	71	57	55	48	33	50	71	97	60	37	38	25	32	22	14	20	47	31	16	11	12	41	64	45	42
	-151	-137	-77	-74	-94	-63	-136	-183	-88	-66	-74	-106	-118	-9	-48	-254	-133	-21	-14	-66	-52	-287	-259	-104	-109
	223	195	133	123	127	113	207	281	148	104	112	132	151	32	63	275	182	53	31	78	65	330	325	150	151
28	35	30	38	30	17	20	15	25	19	60	40	36	23	8	8	13	12	12	12	3	3	3	6	7	20
	-39	-32	-103	-23	-3	-4	-23	-74	-76	-241	-93	-48	-27	-36	-25	-17	-51	-22	-15	-11	-7	-7	-10	-11	-42
	76	64	141	54	20	25	39	99	95	302	133	84	51	45	34	32	64	34	27	15	11	12	18	19	62
29	9	23	27	27	44	30	46	31	29	31	18	16	25	29	12	8	7	3	2	1	3	7	9	8	19
	-12	-25	-51	-61	-48	-29	-104	-57	-71	-53	-16	-47	-16	-30	-6	-6	-13	-11	-10	-8	-13	-11	-16	-24	-31
	23	49	79	89	92	60	150	88	101	84	34	64	41	59	18	15	21	15	12	9	17	19	25	34	50
30	16	14	21	20	16	9	7	8	10	11	10	17	12	14	18	29	30	14	16	32	71	57	63	40	23
	-38	-11	-17	-9	-7	-3	-4	-6	-16	-46	-36	-38	-82	-59	-111	-139	-74	-114	-104	-106	-140	-222	-91	-80	-65
	56	27	39	30	24	13	12	14	27	57	47	55	95	74	131	170	105	130	122	139	212	281	155	122	89
31	22	17	26	11	11	23	39	80	30	28	36	30	14	24	78	36	34	25	15	15	10	7	15	18	27
	-47	-38	-112	-62	-14	-49	-111	-177	-20	-17	-35	-243	-144	-182	-314	-141	-72	-65	-19	-18	-12	-11	-26	-17	-81
	71	56	139	73	27	73	150	258	51	45	71	274	159	207	394	178	107	91	36	34	23	19	42	37	109

MONTHLY AND YEARLY **AE** 1957 - 1986

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1957						159.	145.	311.	156.	168.	217.	96.3	192.7
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.	262.	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
1984	213.	253.	300.	329.	314.	283.	279.	260.	310.	301.	246.	254.	278.5
1985	225.	234.	175.	270.	182.	219.	264.	223.	201.	203.	199.	185.	215.0
1986	187.	273.	208.	138.	202.	188.	172.	232.	217.	161.	187.	138.	191.9

Unit : nT

SECTION 4

CLASSIFICATION OF DAYS

CLASSIFICATION OF DAYS 1986

JANUARY

Five international quietest days (from Kp)	:	11 13 14 16 19
24-hours quiet intervals (from aa) C - very quiet	:	4 5 11 12 13 14 16 19 31
K - quiet	:	15 17
48-hours quiet intervals (from aa) C - very quiet	:	4 5 11 12 13 14 15 16 17 19
K - quiet	:	

FEBRUARY

Five international quietest days (from Kp)	:	1 3 4 15 16
24-hours quiet intervals (from aa) C - very quiet	:	1 2 3 4 15
K - quiet	:	16
48-hours quiet intervals (from aa) C - very quiet	:	1 2 3 4 5
K - quiet	:	16

MARCH

Five international quietest days (from Kp)	:	9 10 11 20 30
24-hours quiet intervals (from aa) C - very quiet	:	9 10 11 12 16 17 20 30
K - quiet	:	NONE
48-hours quiet intervals (from aa) C - very quiet	:	10 11 17 19
K - quiet	:	20 30

APRIL

Five international quietest days (from Kp)	:	4 6 14 27 30
24-hours quiet intervals (from aa) C - very quiet	:	2 4 6 7 8 11 13 14 15 17 20 25 26 27 30
K - quiet	:	18
48-hours quiet intervals (from aa) C - very quiet	:	7 13 14 26 30
K - quiet	:	4 5 6 8 12 15 19 29

MAY

Five international quietest days (from Kp)	:	14 15 22 28 29
24-hours quiet intervals (from aa) C - very quiet	:	1 9 10 11 13 14 15 18 20 21 22 28 29
K - quiet	:	18 19 20 22
48-hours quiet intervals (from aa) C - very quiet	:	9 10 11 12 13 14 15 21 23 28 29
K - quiet	:	18 19 20 22

JUNE

Five international quietest days (from Kp)	:	5 15 23 25 26
24-hours quiet intervals (from aa) C - very quiet	:	5 6 11 13 14 15 16 19 20 23 25 26
K - quiet	:	21
48-hours quiet intervals (from aa) C - very quiet	:	12 13 14 15 19 25 26
K - quiet	:	5 6 16 18 22 23 24

CLASSIFICATION OF DAYS 1986 (continued)

JULY

Five international quietest days (from Kp)	:	7 11 14 16 20
24-hours quiet intervals (from aa) C - very quiet	:	6 7 8 10 11 14 15 16 19 20 21 22 23
K - quiet	:	5 12 13 18
48-hours quiet intervals (from aa) C - very quiet	:	6 7 8 11 14 15 18 19 20 21 22 23
K - quiet	:	10 12 13 16

AUGUST

Five international quietest days (from Kp)	:	2 7 16 18 19
24-hours quiet intervals (from aa) C - very quiet	:	1 2 6 7 10 11 14 16 17 18
K - quiet	:	19
48-hours quiet intervals (from aa) C - very quiet	:	1 7 8 16 17 18 19
K - quiet	:	6 11 14 15

SEPTEMBER

Five international quietest days (from Kp)	:	7 8 10 22 30
24-hours quiet intervals (from aa) C - very quiet	:	3 7 8 9 10 22 30
K - quiet	:	16
48-hours quiet intervals (from aa) C - very quiet	:	7 8 9 10
K - quiet	:	3

OCTOBER

Five international quietest days (from Kp)	:	10 11 12 24 26
24-hours quiet intervals (from aa) C - very quiet	:	4 7 9 10 11 12 16 17 22 23 24 25 26 31
K - quiet	:	8
48-hours quiet intervals (from aa) C - very quiet	:	7 8 10 11 12 17 22 23 24 25
K - quiet	:	9 26

NOVEMBER

Five international quietest days (from Kp)	:	8 9 19 21 22
24-hours quiet intervals (from aa) C - very quiet	:	2 7 8 9 14 18 19 20 21 22 27 28
K - quiet	:	10 13
48-hours quiet intervals (from aa) C - very quiet	:	8 9 13 18 19 20 21 22 28
K - quiet	:	7 10 12 14

DECEMBER

Five international quietest days (from Kp)	:	5 8 15 28 29
24-hours quiet intervals (from aa) C - very quiet	:	2 3 5 6 7 8 12 15 17 19 28 29 31
K - quiet	:	11 18 30
48-hours quiet intervals (from aa) C - very quiet	:	2 3 6 7 8 12 28 29
K - quiet	:	4 5 11 15 17 18 19 30

CLASSIFICATION OF DAYS 1981 - 1982

QUIET DAYS 1981

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	..	..	..	..	..	CC	..	..	CK*	..	.K	.K
2	..	..	..	..	C.	..	..	..	..	..	C.*	..
3	..	..	C.	..	CC*	..	K.	..	..	..	..	..
4	..	..	..	..	CC*	C.	..	..	..	..	..	..
5	..	..	..	CK*	CC*	CC	..	..	..	C.*	..	..
6	..	..	..	.C	CC*	..	..	..	C.	..*	..	CC*
7	CK	..	..	.K	CC*	..	..	.K	CK*	..	..	CK*
8	..	..	..	..	..	..	..	CK*	..	..	..	..
9	CK	..	CK*	KK*	..	CK*	CC*	C.*	..	..	C.*	..
10	..	CC*	.K	CK*	..	CC*	CK*	..	..	..	..	..
11	..	..	CK*	..	..	CC	..	..	..	..	..	C.
12	CK*	..	..	..	..	CC*	..	..	..	..	..	..
13	CC	.K	..	..	..	CC	..	..	..	..	K.	..
14	CC	CC*	..	..	..	CC*	..	..*	..	..	..	CK
15	..	..	..	C.*	..	..	CK*	..	..	..	..	KC
16	..	..	..	..	..	..	..	..*	.C	..*	..	CK*
17	..	.C*	..	..	..	..	..	..	CC*	..	..	..
18	CK*	CC*	..	..	..	..	..	..	..	K.*	..	..
19	CC*	C.	..	..	..	..	..	..	..	..	..	..
20	CC*	.K	KK	..	..	..	..	C.	..	..	..	C.
21	CC*	CC*	KK	..	..	CK	C.*	..	C.	..	..	CC*
22	..	.K	CK*	..	C.	CC	..	..	..	..	..	CC*
23	..	..	CC*	..	..	CK*	..	..	CK*	..	..	..
24	..	..	CK*	..	..	..	..	..	..	..	..	..
25	C.	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	C.	..	..	..*	..	..	..	C.
27	..	..	..	..	C.	..	..	..	..	..	CK*	C.
28	..	..	..	..	..	..	..	..	C.*	..	KK	..
29	..		..	..	CC	..	CC*	..	..	..	CC*	..
30	..		..	..*	CC	..	..	..	..	..	CC*	..
31	..		..		..		..	..		C.*		..

QUIET DAYS 1982

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	..	..	..	..	..	..	..	..	..*	..	..	CC*
2	..	..	..	..	..	..	..*	..	..	..	..	CC*
3	..	..	..	..	..	..*	CC*	..	..	..	..	..
4	..	..	..	..	..	C.*	CC*	..	..	..	..*	..
5	C.	..	..	..	..	C.*	CC*	..	..	..	..	..
6	..	..	CC*	..	C.	..	..	..	..	..	..	CK*
7	..	..	CC*	C.*	CC*	..	..	..	..	..	CC*	..
8	..	..	..	..	CC*	..	..	C.*	..	..	..	..
9	CC*	..*	..	..	CC	..	..	..	..	K.*	..*	..
10	CC	..	..	..	CC	..	..*	..	..*	..	..	..
11	CC	..	..	..	.C	..	..	..	..	..	..	..
12	CC*	..	..	..	CC	..	..	..	..	..	..	..
13	CC*	..	..	..	CC	..	..	..	..	..	..	C.*
14	C.*	..	..	CK*	..	..	..	.K*	..	..	..	..
15	..	..*	..*	..	..	..	..	CC*	..	..*	..	..
16	..	..*	CC*	..	..	..	..	KK*	..	..	..	..
17	..	..	..	..	..	C.*	..	..	..*	..	K.*	..
18	..	..	..	..	..	..*	..	..	..	..	..	..
19	C.*	..	..	..*	..	..	..	..*	..	..	..	..
20	C.	..	..	..	..	..	..	..	..	..	..*	..
21	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	CC*	..	..	..	..	K.*	..	..
23	..	..	..	..*	CC*	..	..	..	..	CC*	..	..
24	..	..	..	..	CC*	..	..	..	..	CK*	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..*	..	..	..	..	..	..	..	..
27	..	..*	..	..	..	..	..	..	..	..	..	..
28	..	..*	C.*	..	..	..	..	..	..	..	..	..
29	..		..	..	..	..	..	..	..*	..	..	..
30	..		..	..	..	..	..	..	..*	..	..	..
31	..		..		..		..	..		..		C.*

C : indicates very quiet period; K : indicates quiet period.
This characterization is deduced from aa values - see text page 13.
The first column is relative to the U.T. day, the second column to the 48 hour interval centered on U.T. day.
An asterisk in the third column indicates that the U.T. day is one of the five quietest days of the month - according to Kp, see text page 22.

CLASSIFICATION OF DAYS 1983 - 1984

QUIET DAYS 1983

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	..	..	..	..	..	..	CC*	C.	..	..	..	..
2	..*	K.*	..	..	..	..	KK	..	C.	..	..	..
3	..	..*	..	..	..	CK*	..	..	CC	..	..	CC*
4	..	..	..	..	..	CC*	.C	C.	CC*	..	C.*	C.*
5	KK*	..	..	..	..	.K*	C.*	CC*	CC*	..	CC*	..
6	CC*	..	..	..	..	..	..	CC	CC*	..	CC*	..
7	CC*	..	.K*	..	..	C.	..	..	..	..	..	..
8	..	..	CC*	..	..	..	..	..	..	..	..	..
9	..	..	CC*	..	CK*	..	..	..	..	C.*	..	C.*
10	..	..	..*	..	K.*	..	CK*	CC*	..	..	..	..
11	..	..	..	C.*	..	..	CC*	C.	..	K.*	..	..
12	..	..	..	..*	..	..	..	..	..	C.*	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	CK	..	..	..	..	..
15	..	..	..	..	..	..	C.*	..	..	..	..	..
16	..	..	..	..	..	..	..	CK*	..	..	..	CK
17	..	..	..	..	..	..	..	CC	..	..	..	CC
18	..	..	..	..*	..	..	..	CC*	..	..	..	..
19	..	..	..	..*	CC*	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	K.	..	CC*
21	..	..	..	..	..	..	..	..	..	..	..	CK*
22	C.*	..	..	..	..	..	..	..	..	..	CK*	..
23	..	..	..	..	..	..	..	..	CC*	..	CK*	..
24	..	..	..	..	..	CK*	..	..	..	..	..	..
25	..	C.*	..	..	..	CC*	..	..	..	C.	..	..
26	..	CC*	..	..	..	..	C.	..	..	CC*	..	..
27	..	.K*	C.*	..	..	..	..	C.*	..	CC*	..	..
28	..	..	..	..*	CK*	..	..	..	..	..	..	..
29	..		..	..	KC*	..	..	..	CK	..	..	..
30	..		..	..	..	C.	..	..	CC*	..	..	..
31	..		..		..		..	..		..		..

QUIET DAYS 1984

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	..	..	..	..	..	..	..	..	..	KK*	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	C.*	..	..	..	..	..	..	..*	..	..
5	..	..	C.*	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	CC*	..	..	..	..
7	C.*	..	..	..	KC*	..	..*	CK*	CC*	..	..	..
8	CC*	..*	..	..	CC*	..	..	..	..	..	..	..
9	CC*	..	..	..	..	..	..	..	..	..	..	CK*
10	..	..	..	C.	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..
12	C.*	..	..	..	..	CK*	..	..	..	..	K.*	..
13	..	..	..	..	..	CC*	..	..	..	..	..*	..
14	C.	..	C.*	..	..	CC*	..	..	..	..	..	..
15	KC*	..	..	..	..	..	..	..	..*	..	..	..
16	C.	CC*	..	CC*	C.*	..	..	..	..*	..	..	..
17	.K	..	..	.K	..	..	..	..	CC*	C.*	..	..
18	..	..	..	..*	..	..	..	CC*	CK*	..	..	..
19	..	C.*	..	..	..	..	..	..	..	..	..	K.*
20	..	..	CC*	..	..	..	..	..	..	..	..	CC*
21	..	..	C.*	..	..	CC*	C.*	CK*	..	..	..	..
22	..	..*	..	CC*	..	CC*	..	CC*	..	..	..	..
23	C.	..	..	.K*	..	..	..*	K.	..	..	..	..
24	CC	..	..	C.*	..	..	..	..	..	..	..	C.*
25	..	..*	..	..	..	..	..	..	..	..	..	C.*
26	..	..	..	..	..	..	C.*	..	..	..	..*	..
27	..	..	..	..	..*	K.	..	..	..	..	..*	..
28	..	..	..	..	..	..	..	..	..	..	C.*	..
29	..		..	..	..	..	..	..	..	..	..	..
30	..		..	..	..	..	..*	..	..	CC*	..	..
31	..		..		K.*		..	..		K.*		..

C : indicates very quiet period; K : indicates quiet period.
This characterization is deduced from aa values - see text page 13.
The first column is relative to the U.T. day, the second column to the 48 hour interval centered on U.T. day.
An asterisk in the third column indicates that the U.T. day is one of the five quietest days of the month - according to Kp, see text page 22.

CLASSIFICATION OF DAYS 1985 - 1986

QUIET DAYS 1985

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	..	..	..	..	..	..	..	..	K.	CC*	..	..
2	..	..	..	..	..	C.	CC*	..	CC*	CK	..	..
3	..	.K	..	..	..	CC*	CK	..	CC*	..	..	..
4	C.	C.*	..	..	..	CC	..	CC	CC*	..	..	..
5	CC*	..	..	K.	..	CK	..	CC*	CC*	..	..	..
6	CC*	..	..	CC*	..	..	..	CC*	..	..	..	CC
7	CC*	..	..	CC	..	..	..	CC*	C.	..	CK	CC*
8	..	..	..	..	..	..	..	CC	..	..	CK	CC*
9	..	..	CK*	..	..	..	K.	CC*	..	C.	..	C.*
10	..	..	..	..	CC	..	..	.K	..	CK	..	..
11	..	..	CK	..	C.	..	..	KK*	..	..	..	..
12	..	..	..	CC*	..	..	..	..	KK	..	CC*	K.
13	..	..	C.*	CC	..	CK	..	..	C.	..	..	..
14	..	..	..	.K	C.	CC*	..	..	..	..	..	..
15	..	C.	..	CC*	..	CC	KK	..	..	..	..	..
16	..	.*	..	.K	..	CC*	C.*	..	..	..	..	K.
17	..	..	..	CK*	..	.K	..	..	..	..	..	..
18	C.*	CK*	..	CK*	..	CK*	..	..	C.	..	..	..
19	..	K.*	..	..	..	CC*	..	..	..	..	..	..
20	K.*	..	CK*	..	CK	..	..	..	..	C.	CC*	..
21	..	..	CC*	..	.K	C.	CK*	..	..	..	CK*	CC*
22	..	..	CC*	..	CK*	CC	CK*	..	..	..	.K	KC
23	..	..	CC	..	CC*	KC	..	..	..	..	CC*	C.*
24	C.	..	KK	..	CC	CK	..	C.	..	K.	CC*	.K
25	..	..	CK	..	KK	..	..	..	..	..	CC	KK
26	.K	CC*	..	..	..	..	..	..	..	CC*	K.	K.
27	..	..	..	..	KK	..	..	..	..	CC*	..	..
28	..	..	..	..	CC*	..	..	..	K.	CK*	C.	..
29	..		C.	..	CC*	..	C.*	..	CC*	.K	..	C.
30	..		K.	..	CC*	..	..	..	CC	CC*	..	..
31	..		..		C.		..	..		..		..

QUIET DAYS 1986

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	..	CC*	..	..	C.	..	..	CC	..	..	..	..
2	..	CC	..	C.	..	..	..	C.*	..	..	C.	CC
3	..	CC*	..	..	..	..	..	..	CK	..	..	CC
4	CC	CC*	..	CK*	..	..	..	..	..	C.	..	.K
5	CC	.C	..	.K	..	CK*	K.	..	..	..	..	CK*
6	..	..	..	CK*	..	CK	CC	CK	..	..	..	CC
7	..	..	..	CC	..	..	CC*	CC*	CC*	CC	CK	CC
8	..	..	..	CK	K.	..	CC	.C	CC*	KC	CC*	CC*
9	..	..	C.*	..	CC	..	..	..	CC	CK	CC*	..
10	..	..	CC*	..	CC	..	CK	C.	CC*	CC*	KK	..
11	CC*	..	CC*	C.	CC	C.	CC*	CK	..	CC*	..	KK
12	CC	..	C.	.K	KC	.C	KK	..	..	CC*	.K	CC
13	CC*	..	..	CC	CC	CC	KK	..	..	..	KC	..
14	CC*	..	..	CC*	CC*	CC	CC*	CK	..	..	CK	..
15	KC	C.*	..	CK	CC*	CC*	CC	.K	..	..	..	CK*
16	CC*	KK*	C.	..	..	CK	CK*	CC*	K.	C.	..	..
17	KK	..	CC	C.	..	..	..	CC	..	CC	..	CK
18	..	..	..	K.	CK	.K	KC	CC*	..	..	CC	KK
19	CK*	..	.C	.K	.K	CC	CC	KC*	..	..	CC*	CK
20	..	..	CK*	C.	CK	C.	CC*	..	..	..	CC	..
21	..	..	..	..	CC	K.	CC	..	..	..	CC*	..
22	..	..	..	..	CK*	.K	CC	..	C.*	CC	CC*	..
23	..	..	..	..	.C	CK*	CC	..	..	CC	..	..
24	..	..	..	..	..	.K	..	..	..	CC*	..	..
25	..	..	..	C.	..	CC*	..	..	..	CC	..	..
26	..	..	..	CC	..	CC*	..	..	..	CK*	..	..
27	..	..	..	C.*	..	..	..	..	..	..	C.	..
28	..	..	..	..	CC*	..	..	..	..	..	CC	CC*
29	..		..	.K	CC*	..	..	..	..	..	..	CC*
30	..		CK*	CC*	..	..	..	..	C.*	..	..	KK
31	C.		..		..		..	..		C.		C.

C : indicates very quiet period; K : indicates quiet period.
This characterization is deduced from aa values - see text page 13.
The first column is relative to the U.T. day, the second column to the 48 hour interval centered on U.T. day.
An asterisk in the third column indicates that the U.T. day is one of the five quietest days of the month - according to Kp, see text page 22.

CLASSIFICATION OF DAYS 1986 (continued)

INTERNATIONAL QUIET AND DISTURBED DAYS 1986

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

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

VERY QUIET INTERVALS, 1986

Kp not exceeding 1+ for at least 8 intervals (= one day) in succession

First. . . . . last Eighth				Duration Eighths
Jan	05 E2	06 E4		11
	12 E4	15 E3		24
	15 E8	17 E5		14
Feb	15 E3	16 E6		12
Mar	09 E4	12 E2		23
	19 E8	21 E1		10
Apr	07 E3	08 E3		9
	14 E1	15 E1		9
May	12 E6	13 E7		10
	14 E1	15 E7		15
	28 E2	29 E7		14
Jun	23 E2	24 E1		8
	24 E8	26 E1		10
Jul	06 E8	07 E7		8
	10 E8	12 E5		14
	13 E6	16 E4		23
	19 E4	20 E7		12
	23 E2	24 E6		13

First. . . . . last Eighth				Duration Eighths
Aug	06 E8	07 E7		8
	17 E3	19 E3		17
Oct	12 E2	13 E2		9
	22 E5	23 E6		10
	24 E7	25 E7		9
Nov	08 E3	10 E6		20
	12 E4	13 E4		9
	18 E4	19 E6		11
	21 E1	23 E5		21
Dec	05 E2	06 E1		8
	07 E7	08 E6		8
	11 E7	12 E6		8
	15 E1	15 E8		8

LIST OF MAGNETIC STORMS, 1986

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
Feb 07 E4	09 17.48	20	2 2 1	4 1 .	2 1
May 02 E5	—	7	1 . 1	. . .	. .
Sep 11 E8	11 18.36	5	. . 1	. . .	1 .

SECTION 5

RAPID VARIATIONS

5.1. List of ssc 1986 143

5.2. List of sfe 1986 149

SECTION 5

5.1. List of ssc 1986

STORM SUDDEN COMMENCEMENTS (ssc) 1986

Sudden commencements followed by a storm or period of storminess, as selected from the monthly reports of the 43 observatories listed below by their three letter code. The name of observatories together with their coordinates and operation dates are given in Section 2 (pages 29-36). The alternative codes used by observatories are given in brackets.

SOD DOB NUR MNK WNG WIT IRT NGK VAL HAD DOU BDV CLF HRB UBA NAG GCK MMB AQU TFS EBR COI SPT FRD ALM KAK HTY KNY QUE SZT(TEN) LNP HVN LUA PMG LMM(MPO) GN A LAS(ACS) CAN(CNB) AMS TRW(TWA) CZT KGL DUM and checked with the records of HON and EBR. Measurements of quality, duration and amplitude are from copies provided by the five low-latitude Observatories (MBO, FUQ, HON PMG, ABG) or their five supplementary Observatories (SZT(TEN), SJG, API, KNY, HYB).

JANUARY 1986									
06/01	14:33	22122	7.0	20	4A	7B	3C		(27-37)
25/01	02:35	12222	5.6	12	3A	4B	3C		(35-37)

FEBRUARY 1986									
06/02	13:12	22222	6.2	23	9A	14B	9C		(10-16)
14/02	14:34	02101	4.5	13	7A	10B	9C		(30-40)
16/02	18:39	11122	3.3	12	2A	5B	1C	1si	(35-42)

MARCH 1986									
06/03	10:44	00011	6.6	10	2A	3B	6C		(42-46)
08/03	16:25	12121	5.5	25	- -	- -	3C	1si	(24-27)

STORM SUDDEN COMMENCEMENTS (ssc) 1986 (continued)

APRIL 1986									
09/04	10:34	21122	3.5	7	3A	10B	7C	1si	(30-38)
15/04	04:35	11122	6.9	13	4A	10B	2C	1si	(31-36)

MAY 1986	None

JUNE 1986	None

JULY 1986	None

AUGUST 1986									
20/08	13:51	22222	6.2	21	9A	22B	12C	2si	(50-52)

SEPTEMBER 1986									
11/09	18:36	12011	4.1	30	19A	17B	2C		(27-40)
11/09	23:08	22111	2.4	43	2A	1B	2C		(06-10)

STORM SUDDEN COMMENCEMENTS (ssc) 1986 (continued)

OCTOBER 1986								
13/10	10:55	11012	6.6	11	3A	4B	6C	(51-57)
13/10	14:54	22111	4.3	15	- -	11B	6C	(54-55)

NOVEMBER 1986								
03/11	23:53	33333	2.6	69	24A	4B	1C	(48-58)
24/11	09:24	11122	6.8	18	1A	5B	3C	(20-30)

DECEMBER 1986	None

SECTION 5

5.2. List of sfe **1986**

Solar - flare effects (sfe) 1986 149

Doubtful solar - flare effects (sfe) 1986 154

SOLAR-FLARE EFFECTS (sfe) 1986

Day, month and time of commencement of solar-flare effects (sfe). The letter C indicates that the sfe is confirmed. The list of observatories reporting a movement (A, B, C, D, E, X, see text) are given for each event ; normal brackets indicate stations in the twilight zone, square brackets stations in the night side of earth. The collaborating 63 observatories are identified by their IAGA three letter code. The alternative codes used by observatories are given in brackets. The codes refer to the List of Observatories given in Section 2 (pages 29-36) where coordinates and operation dates are indicated.

NOK KIR YAK NUR MGD LER LNN ARS KZN BFE ESK MEA WNG PET IRT NGK VAL GTT HAD KIV KGD BDV HRB YSS THY ODE OTT GCK MMB AAA AQU TFS TKT EBR COI SPT FRD PEN KAK HTY TUC KNY QUE SZT(TEN) LNP HON ABG SJG HYB GUA ETT PMG API PPT TAN LMM(MPO) GNA HER LAS(ACS) CAN(CNB) TRW(TWA) EYR AIA

	JANUARY 1986								16/01 16:16 C
A	FRD3	(PEN2)	TUC2	ACS1	AIA-				
B	TEN0	PPT1							
C	[YAK0] HER0	MEA0	OTT2	(AQU1)	SPT1	(HON0)	SJG2	[PMG0]	MPO1
D	VAL	EBR	COI	TWA					
E									
X	[NOK]	HAD	[KGD]						

	FEBRUARY 1986								04/02 07:35 C
A	ARS3	KZN-	IRT0	KIV2	BDV3	HRB3	ODE2	GCK3	(MMB3)
	AAA2	AQU1	TKT2	EBR3	COI3	PEN3	KAK3	HTY3	KNY3
	QUE3	LNP3	ABG3	HYB3	GUA3	ETT3	TAN3	MPO3	GNA2
	HER3	(AIA-)							
B	NUR1	(MGD0)	BFE2	WNG3	NGK2				
C	NOK3	(YAK2)	LNN-	(ESK0)	(PET1)	(VAL0)	GTT2	(HAD0)	(YSS1)
	THY0	TFS1	SPT2	[TUC0]	(TEN0)	[SJG0]	PMG0	CNB2	
D									
E									
X	(KIR)[MEA] KGD								

FEBRUARY 1986									04/02 10:22 C
A	ARS3	KZN0	ESK2	NGK3	HRB3	TKT2	ETT3	AIA-	
B	NUR2	LNN-	BFE2	WNG3	VAL0	GTT3	HAD2	KIV2	BDV3
	ODE2	GCK3	AAA1	PEN2	TEN1	(LNP2)	MPO2	ACS1	TWA1
C	[YAK0]	(IR `0)	AQU1	EBR1	COI2	SPT2	QUE1	ABG0	HYB1
	[PMG0]	TAN2	HER0						
D	LER	THY	TFS	GNA					
E									
X	KIR	[MEA]	KGD						

FEBRUARY 1986									06/02 06:18 C
A	ARS2	KZN1	IRT0	HRB3	MMB3	AAA2	TKT2	PEN3	KAK3
	HTY3	KNY3	QUE0	LNP3	ABG3	ETT2	TAN3	GNA2	HER3
	CNB3	EYR2							
B	(WNG3)	KIV2	(BDV2)	ODE2	GCK0	AQU2	TFS3	HYB3	GUA2
	PMG1	(AIA-)							
C	NOK2	YAK3	(NUR1)	(MGD1)	LNN-	(BFE1)	(ESK0)	(PET2)	(NGK2)
	GTT2)	YSS1	[OTT1]	(EBR0)	(COI2)	(SPT0)			
D	THY								
E									
X	(KIR)	[MEA]	(HAD)	KGD	MPO				

MARCH 1986									03/03 12:52 C
A	MPO2								
B	[YAK2]	WNG2	KIV1	HRB1	HER0				
C	(NOK0)	KIR-	NUR1	LER1	LNN-	ARS0	BFE2	(MEA0)	[PET1]
	NGK1	VAL0	GTT2	HAD1	BDV3	THY1	ODE2	OTT2	GCK0
	AQU1	TFS1	COI2	SPT1	PEN2	TEN1	ABG1	(ETT0)	ACS1
	TWA1	AIA-							
D	KZN	TKT	EBR	FRD	QUE	TAN			
E	SJG								
X	ESK								

MARS 1986									05/03 07:06 C
A	IRT0	HRB3	AQU1	ABG3	GNA2				
B	KIR-	NUR2	MGD0	LER1	WNG2	KIV2	GCK1	MMB2	TFS3
	KAK2	KNY2	HYB3	GUA3	ETT2	MPO2			
C	NOK2	YAK3	LNN-	ARS2	KZN2	BFE1	NGK2	(VAL0)	GTT0
	HAD1	KGD0	BDV3	YSS1	ODE2	AAA2	TKT2	EBR0	PEN1
	HTY3	LNP3	PMG1	TAN1	HER0				
D	THY	COI	SPT	QUE	CNB				
E									
X	ESK								

APRIL 1986	none

MAY 1986									10/05 11:47
A	KIR-	COI3							
B	NOK1	YAK3	NUR2	LER2	KZN1	BFE2	WNG2	(PET1)	IRT2
	NGK2	VAL1	GTT2	HAD2	KIV2	KGD1	HRB1	ODE2	GCK0
	[MMB0]	AAA2	AQU1	EBR2	FRD0	[KAK0]	(TUC0)	[KNY0]	ABG2
	HER0	(AIA-)							
C	LNN-	ARS1	(MEA1)	(YSS1)	THY0	SPT2	PEN2	TEN1	(LNP1)
	[HON0]	ETT0	[PMG0]	MPO0	TWA0	[EYR0]			
D	TFS	TKT	QUE	SJG	HYB	TAN	ACS		
E									
X	ESK	BDV	OTT						

JUNE 1986	none

JULY 1986	none

AUGUST 1986	none

SEPTEMBER 1986								26/09 10:10	
A	NOK0 HAD1	KIR- KIV2	(YAK2) BDV1	NUR1 EBR1	LER1 COI3	ESK1 ABG3	WNG2 ACS0	IRT2	NGK2
B	(MGD0) (OTT2)	LNN- GCK0	ARS2 AQU1	KZN2 TFS2	[PET1] TKT3	VAL2 PEN2	GTT1 (LNP2)	THY1 MPO2	ODE2 HER0
C	KGD0 [GUA0]	(YSS0) ETT0	[MMB0] [PMG0]	SPT2 GNA1	[KAK0] (TWA0)	[HTY0] [EYR0]	(KNY0)	QUE1	TEN1
D	AIA								
E	BFE	[MEA]	HRB	(FRD)	HYB	[PPT]	TAN	[CNB]	
X	AAA								

OCTOBER 1986	none

NOVEMBER 1986	none

DECEMBER 1986	none

DOUBTFUL SOLAR-FLARE EFFECTS (sfe) 1986

JANUARY 1986	None

FEBRUARY 1986	None

MARCH 1986	None

APRIL 1986							20/04 11:25		
A	KIR- FRD3	NUR2 SJG3	LER2	WNG2	HAD2	KIV2	BDV2	HRB0	AQU1
B	(YAK3) VAL1 [KAK0]	LNN- GTT2 (TUC0)	ARS2 KGD0 [KNY0]	KZN2 ODE2 TEN2	BFE2 GCK1 (LNP2)	(MEA2) [MMB0] HER0	[PET3] TFS3 ACS1	IRT2 EBR0 (AIA-)	NGK2 PEN3
C	NOK3 ABG1	(MGD2) [GUA0]	[YSS1] [PMG0]	THY1 MPO1	AAA1 [CNB0]	TKT1 TWA1	SPT2 [EYR0]	[HTY0]	[HON0]
D	OTT	COI	QUE	ETT	TAN				
E									
X	ESK	HYB							

DOUBTFUL SOLAR-FLARE EFFECTS (sfe) 1986 (continued)

APRIL 1986						24/04 06:06 C			
A	KIR- ABG3	LER1 ETT2	KZN2	HRB3	MMB2	[FRD0]	KAK2	KNY2	LNP3
B	NOK3 NGK1 [SJG0]	YAK3 VAL1 HYB1	NUR1 KIV2 PMG1	MGD1 KGD0 MPO1	ARS2 ODE2 HER0	[MEA1] AAA1 (EYR0)	WNG2 TFS3 [AIA-]	PET2 TKT2	IRT2 EBR0
C	LNN- (TEN1)	GTT2 GUA0	BDV3 CNB2	YSS1	THY0	AQU1	SPT1	PEN2	HTY2
D	COI	QUE	TAN						
E	BFE	GCK							
X	ESK	HAD	[OTT]	GNA	[ACS]				

MAY 1986							04/05 09:50 C		
A	NOK2 (PET2) AQU1 HER0	KIR- IRT3 TFS2 [EYR1]	YAK3 VAL2 TKT3	NUR2 KIV2 COI3	LER2 BDV2 PEN2	LNN- ODE2 (KAK0)	ARS2 GCK0 KNY0	KZN1 (MMB0) ABG3	WNG3 AAA2 [PMG1]
B	MGD0 (HTY0)	BFE2 TEN1	NGK1 (SJG0)	GTT2 MPO0	HAD2 (GNA1)	KGD0 (AIA-)	(YSS1)	EBR0	(FRD0)
C	SPT1	QUE1	LNP1	[API1]	(ACS0)	(TWA0)			
D	TAN								
E	(MEA)	THY	HYB	ETT	[PPT]	[CNB]			
X	ESK	HRB	(OTT)						

JUNE 1986	None

DOUBTFUL SOLAR-FLARE EFFECTS (sfe) 1986 (continued)

JULY 1986									23/07 07:05
A	KIR-	ESK2	HRB3	COI2					
B	NUR2	LER2	LNN-	ARS2	KZN1	BFE1	WNG2	NGK1	VAL2
	HAD1	KIV2	BDV2	ODE2	TFS2	TEN1			
C	NOK0	YAK1	(MEA0)	PET1	IRT0	GTT2	KGD1	[OTT0]	GCK0
	AAA1	AQU1	TKT1	[FRD0]	LNP1	[SJG0]	ETT0	MPO0	[ACS0]
	[TWA0]	[AIA-]							
D	MGD	YSS	THY	MMB	EBR	SPT	KAK	HTY	KNY
	ABG	HYB	GUA	PMG	TAN	GNA	HER		
E									
X	PEN	QUE							

AUGUST 1986	None

SEPTEMBER 1986	None

OCTOBER 1986									06/10 08:25
A	YAK1	(PET3)	HRB3	ODE2	(MMB0)	TFS1	(KAK0)	KNY0	ABG3
	(PMG0)	(EYR0)							
B	NOK2	KIR-	ESK1	WNG2	NGK0	(YSS1)	HTY0	API1]	GNA1
C	(MGD1)	LER1	LNN-	ARS2	KZN2	VAL0	GTT1	HAD1	KIV1
	THY1	[OTT0]	GCK0	AAA1	TKT1	EBR0	COI2	[FRD0]	QUE1
	LNP1	[SJG0]	(GUA0)	ETT0	MPO1	HER0			
D	NUR	BDV	AQU	SPT	TEN	HYB			
E	BFE	[MEA]	PEN	[PPT]	TAN	(CNB)			
X	IRT	KGD							

DOUBTFUL SOLAR-FLARE EFFECTS (sfe) 1986 (continued)

OCTOBER 1986							12/10 10:55		
A	HRB3								
B	KIR-	ODE2	TFS3	(LNP2)	ABG2	AIA-			
C	(NOK2)	(YAK1)	NUR1	ARS2	BFE3	ESK1	WNG1	[PET1]	NGK0
	GTT2	HAD1	KIV1	BDV0	[YSS0]	(OTT0)	GCK0	AAA2	TKT1
	PEN1	[HTY0]	QUE1	TEN0	HYB1	[GUA0]	[PMG0]	MPO1	(GNA1)
	HER0	ACS0	TWA0						
D	LER	LNN	KZN	VAL	KGD	THY	AQU	EBR	COI
	SPT	SJG	ETT	TAN					
E									
X									

NOVEMBER 1986	None

DECEMBER 1986	None

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