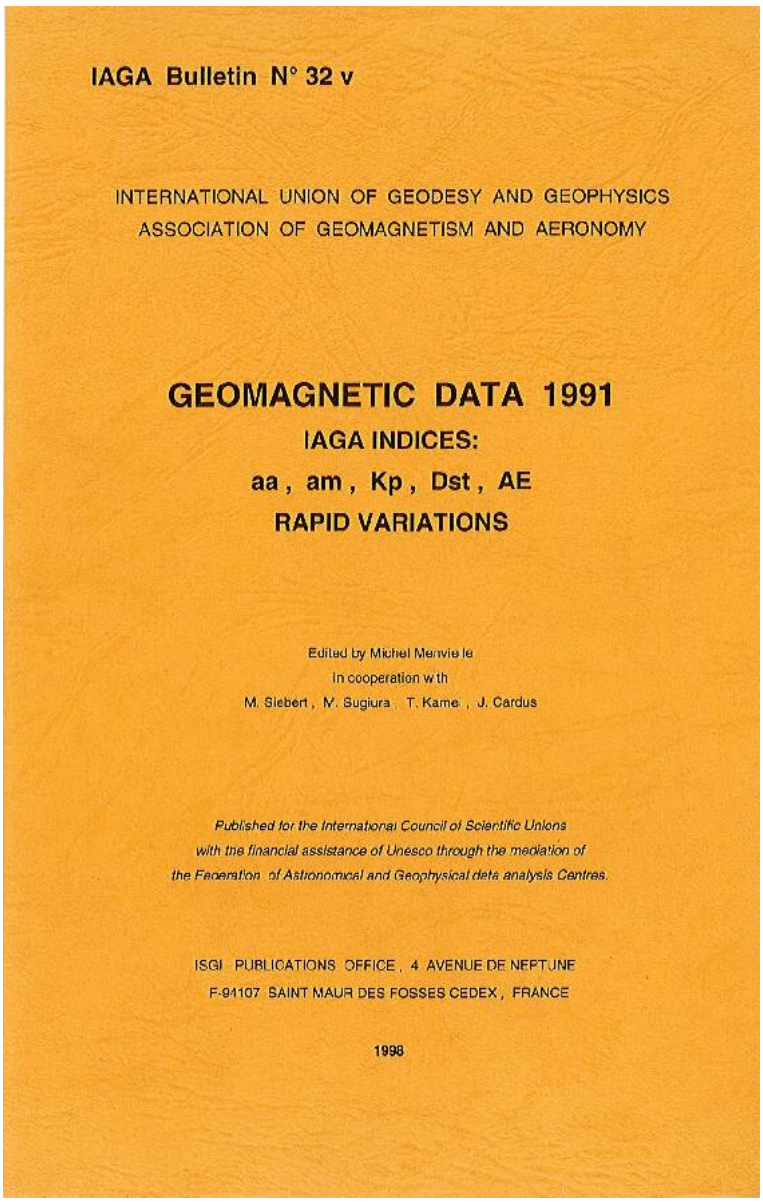


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IAGA Bulletin N° 32 v

INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS
ASSOCIATION OF GEOMAGNETISM AND AERONOMY

GEOMAGNETIC DATA 1991

IAGA INDICES:

aa , am , Kp , Dst , AE

RAPID VARIATIONS

Edited by Michel Menvielle
in cooperation with
M. Siebert , M. Sugiura , T. Kamei , 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
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FOREWORD

While keeping the Bulletin series as homogeneous as possible, the general information is updated in each issue, and we try to improve contents and presentation as well.

The Bulletin 32 series aims at providing a reference publication with all definitive values of indices and rapid variation data for the year. It however may happen that difficulties in the derivation of some indices could cause significant delays so that it is desirable to issue the Bulletin 32 for the year before their definitive values become available. It has already been the case in the past, and it is unfortunately the case for the AE indices this year. Because of the long delays in delivering the necessary records on the part of some of the observatories the derivation of the definitive AE indices has been significantly delayed for 1991. Therefore, we regretfully present provisional AE indices for 1991 in this issue.

A floppy with the same content as the Bulletin (except for the rapid variations) is included, with a software for visualising the tables. The floppies corresponding to the years 1981-1990 have been prepared, and are available on request at the ISGI Publication Office (c/o CETP, 4 Avenue de Neptune, F-94107 SAINT MAUR DES FOSSES CEDEX, FRANCE)

Michel Menvielle

ACKNOWLEDGEMENTS

We wish to acknowledge J.O. CARDUS, M. SIEBERT, H.-J. LINTHE, T. KAMEI and M. SUGIURA for their collaboration in preparing the data published in this Bulletin. Thanks are also due to all the organisations, which support efficiently the preparation and distribution of these geomagnetic data (as listed in Table 1, pages 9-10).

Let us add that M. SUGIURA and T. KAMEI wish specially to acknowledge the valuable assistance of T. ARAKI (Data Analysis Centre for Geomagnetism and Space Magnetism, Kyoto University) in the preparation of the Dst indices.

As for me, I want to make memory of Annick Berthelier. She died on March 24, 1997, after a long illness she fought with outstanding courage. I also wish to acknowledge for the long delay in the preparation of the present Bulletin, and I am pleased to express our thanks to all those who helped in its elaboration.

Michel Menvielle

Saint Maur, Mars 1998

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SECTION 1

PRESENTATION OF THE BULLETIN

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1.1. INTRODUCTION

1.1.1. The IAGA Bulletin 32 series

The IAGA Bulletin N°32 series is a yearly compilation of geomagnetic 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 Publications Office of 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, Indices and Data. Since 1956, it belongs to the Federation of Astronomical and Geophysical Data Analysis Services. Its present address is :

ISGI, CETP - CNRS/IPSL/UVSQ, 4 Avenue de Neptune,
F - 94107 Saint-Maur des Fossés CEDEX, FRANCE.

As for 1989, the elaborated data were provided by the following Institutes, under the responsability of the adjoining collaborators :

- Institut für Geophysik, Göttingen (M. SIEBERT),
  moved in 1996 to GeoForschungZentrum, Potsdam (J. LINTHE):
  Kp, ap, Ap, Cp, Q-days and D-days.
- CETP - CNRS/IPSL/UVSQ, Saint Maur (M. MENVIELLE):
  aa, C-days and K-days, an, Kn, An, as, Ks, As, and am, Km, Am.
- Data Analysis Center for Geomagnetism and Spacemagnetism, Kyoto (M. SUGIURA and T.KAMEI)
  Dst, AL, AU, AE.
- Observatori de l'Ebre, Roquetes (J.O. CARDUS):
  Rapid Variations.

The collection and the publication of the daily character figure C and of the international character figure Ci, together with the lists of selected quiet and disturbed days began in 1906.

The three-hourly K indices (scale 0-9) were introduced by Bartels in 1938, and, a few years later, planetary indices Kp were designed. They are computed from the K indices of 12 observatories which were routinely providing data at the time. The K indices of the selected stations for these early years were published in IAGA Bulletins N°12g and 12l. In addition to Kp, the corresponding range values ap and related daily indices Ap and Cp have been regularly published in the IAGA Bulletin N°12.

In accordance with the recommendations of the IAGA Assemblies in Madrid (1969) and in Moscow (1971), the publication of C and K indices of individual observatories in the IAGA Bulletins ended with the 1969 data, while other indices (Dst, an, Kn, as, Ks, am, Km) 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. Since 1976, the new index aa is published instead of Ci and the C figures are no longer compiled, according to a recommendation of the IAGA Assembly in Grenoble (1975).

A short recall of the definition of the published indices is given in the section 1.3 below. For more details, including the definition of the K indices, one can refer to the following reports:

- M. Siebert, in '*Handbuch der Physik*', vol.49/3, 206-275, Springer Verlag, 1971;
- P. N. Mayaud, *Derivation, Meaning and Use of Geomagnetic Indices*, Geophysical Monograph 22, Am. Geophys. Union, Washington D.C., 1980, gives 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;
- A. Berthelier, *The geomagnetic indices : derivation, meaning and uses in solar - terrestrial physics*, in '*STPW Proceedings*', ed. by J. HRUSKA et al, vol 3, 3-20, US Gov. Publications Office, 1994.

1.1.2. Data Availability

The whole series of geomagnetic indices are available at the World Data Centers (list and addresses in Table 1-a), and the IAGA Bulletins where they are published are available at the ISGI Publications Office (Table 1-c). More detailed information on the length of each series, and on the publication and availability of each index, and of the rapid variations are given below.

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

- The *aa indices* constitute a series of indices beginning in the year 1868. Its description can be found in the IAGA Bulletin N°33, which contains tables and graphs of aa for the years 1868-1967. The values for the years 1968-1975 are published in the IAGA Bulletin N°39. These indices are regularly published in the IAGA Bulletins N°32 since 1976. Provisional values are regularly published in the ISGI Monthly Bulletins, in the monthly tables edited by H. Coffey in the Journal of Geophysical Research, and in the Solar Geophysical Data Publications (Table 1-c). aa indices are available through an e-mail automatic service, and soon at the ISGI WWW homepage (ISGI Publications Office, Table 1-c).

- 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 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. Provisional values are regularly published in the ISGI Monthly Bulletins, in the monthly tables edited by H. Coffey in the Journal of Geophysical Research, and in the Solar Geophysical Data Publications (Table 1-c). They can be sent on request before the end of the next month by the GeoForschungZentrum, Potsdam (Table 1-b). Kp indices are available at the WWW homepage of this Institute.

- The *three-hourly indices an, Kn,* and *as, Ks,* for the Northern and Southern hemispheres and the *planetary 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 Bulletins N°32 from 1968 onwards. Provisional values are regularly published in the ISGI Monthly Bulletin, in the monthly tables edited by H. Coffey in the Journal of Geophysical Research, and in the Solar Geophysical Data Publications (Table 1-c). an, as, and am indices are available through an e-mail automatic service, and soon at the ISGI WWW homepage (ISGI Publications Office, Table 1-c).

- The *equatorial Dst index* is published in the IAGA Bulletin N°32 since 1970. The 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. The 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 the 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 1957-1986 are now published in the IAGA Bulletin N° 40 where is inserted a floppy disk containing the hourly Dst values for these 30 years. This report supersedes earlier Dst publications by Sugiura and co-workers. Provisional Dst indices are regularly published in the ISGI Monthly Bulletin, and in the Solar Geophysical Data Publications (Table 1-c). Dst indices are available at the WDC-C WWW homepage (see Tabla 1-b).

- 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 the 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. The hourly mean values are published in the IAGA Bulletins N°32 since 1981. AE indices are available at the WDC-C WWW homepage (see Tabla 1-b)

- 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 published in the ISGI Monthly Bulletin (Table 1-c).

Tables 1-a, 1-b, and 1-c give present addresses of the ISGI, of the World Data Centers, and of the National Institutes and Data Centers related to this bulletin.

TABLE 1

a - Bulletins and publications

• Solar Geophysical Data monthly publications :

NOAA National Geophysical Data Center
325, Broadway E/GC4, Dept. 961
BOULDER, Colorado 80303-3328 U.S.A.

• IAGA Bulletins and ISGI Monthly Bulletins :

ISGI Publications Office
CETP - 4, avenue de Neptune
94107 SAINT MAUR DES FOSSES CEDEX, France
E-mail automatic service : ISGI.DATA@cetp.ipsl.fr
http://tango.cetp.ipsl.fr/~isgi/homepag1.htm

TABLE 1 (continued)

b - ISGI and World Data Centers

ISGI	International Service of Geomagnetic Indices Service International des Indices Géomagnétiques CETP -CNRS/UVSQ, 4, Avenue de Neptune F-94107 SAINT MAUR DES FOSSES CEDEX, France Telephone 33 1 45 11 42 30 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 80303-3328 U.S.A. Telephone 1 303 497 6324 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
WDC-C	World Data Center-C2 for Geomagnetism Data Analysis Center for Geomagnetism and Space Magnetism Faculty of Science, Kyoto University KYOTO 606-01, Japan Telephone 81 75 753 3929 Telefax 81 75 722 7884 **http://swdcdb.kugi.kyoto-u.ac.jp/**

c - ISGI Collaborating Institutes

M. MENVIELLE	Centre d'études des Environnements Terrestre et Planétaires 4, Avenue de Neptune F-94107 SAINT MAUR DES FOSSES CEDEX, FRANCE
J. LINTHE	GeoForschungZentrum, Potsdam Adolf-Schmidt-Observatorium für Geomagnetismus Lindenstr. 7 D-14823 NIEMEGK, GERMANY **http://www.gfz-potsdam.de/pub/home/obs/kp-ap/**
J. O. CARDUS	Observatori del'Ebre c/ Horta Alta, 38, E-43520 ROQUETES, SPAIN
M. SUGIURA	Working Group on World Data Centers National Committee on Solar-Terrestrial Physics Science Council of Japan Research Institute of Science and Technology Tokai University, 2 -28 Tomigaya, Shibuya-ku TOKYO 151.0063, Japan

1.2. LIST OF OBSERVATORIES

A list of the magnetic observatories where continuous recordings have been made during at least five consecutive years is given pages 29-35. 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 the networks used in Kp, am or aa calculation. (see section 1.3 for the description of these networks in 1989);
- 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 the former 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 36-37. 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 only indicated in this table the opening and closing years, as the other parameters can be found in the preceeding list.

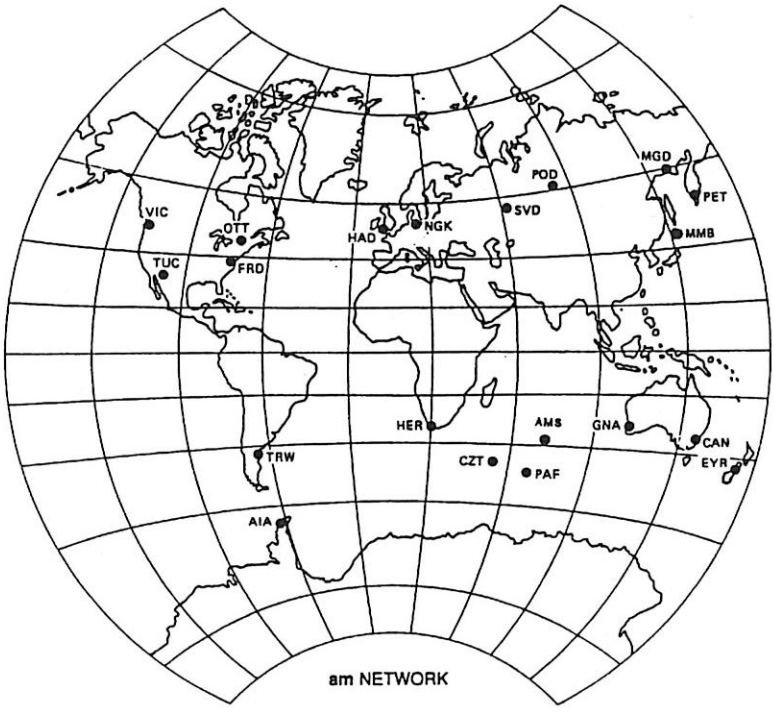


Figure 1 : Distribution of am observatories

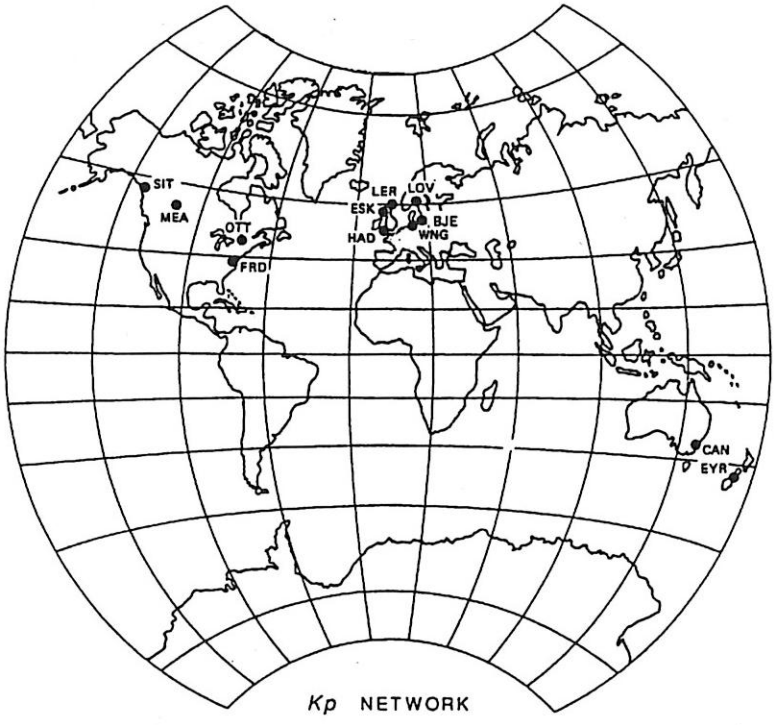


Figure 2 : Distribution of Kp observatories

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.

The aa index is in nanotesla (nT) and it represents the activity level at an invariant magnetic latitude of about 50°. The half-daily and daily mean values of aa are very close to the corresponding values of the am indices. The values for 1991 are given pages 44-46 as follows :

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 noon and after noon.

Aa = daily value of aa

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

The letters C and K indicate the quiet 24-hour 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 refers 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 musical diagram of aa indices (logarithmic scale) is drawn page 43 for the whole year. The monthly and yearly mean values of aa for the years from 1868 onwards are listed pages 47-49. A graph of 12-month running mean values of aa is drawn page 50, covering the full period over which aa has been calculated so far, i.e. 1868-1991. 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	MGD	Magadan	53.8°	G6	EYR	Eyrewell	50.2°
	PET	Petropavlosk	46.4°		CAN	Canberra	45.2°
	MMB	Memambetsu	37.4°				
G2	POD	Podkammenkaya	57.2°	G7	GNA	Gnangara	44.1°
	SVD	Sverdlovsk(1)	52.2°		AMS	Amsterdam	48.3°
G3	HAD	Hartland	50.0°	G8	PAF	Kerguelen	58.8°
	NGK	Niemegk	48.8°		CZT	Crozet	52.4°
					HER	Hermanus	41.1°
G4	OTT	Ottawa	58.9°	G9	AIA	Argentine Isl.	49.7°
	FRD	Frederiksburg	51.8°		TRW	Trelew	27.8°
G5	VIC	Victoria	53.9°				
	TUC	Tucson	39.7°				

(1) Present name : Ekaterinburg

c - List of Kp observatories

Northern Hemisphere			Southern Hemisphere		
Observatory		Corr. Geom. Lat.	Observatory		Corr. Geom. Lat.
MEA	Meanook	62.5°	EYR	Eyrewell	50.2°
SIT	Sitka	60.0°	CAN	Canberra	45.2°
LER	Lerwick	58.9°			
OTT	Ottawa	58.9°			
LOV	Lovö	56.5°			
ESK	Eskdalemuir	54.3°			
BJE	Brorfelde	52.7°			
FRD	Fredericksburg	51.8°			
WNG	Wingst	50.9°			
HAD	Hartland	50.0°			
NGK	Niemegk(2)	48.8°			

(2) Niemegk has replaced Witteveen in the Kp network since April 1st, 1988.

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 54-65, 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;
- an (as) 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 the 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 66-71) are displayed in a similar way

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

Km values are displayed as "musical diagram" according to Bartels solar rotations (page 53).

A compilation of the musical diagrams from 1959 onwards is available on request at ISGI Publication Office (Table 1-a). The monthly and yearly mean values of Am from 1959 onwards are given page 72.

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 has been 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 from 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. It is recommended to use Ap in preference to the sum of the indices Kp.

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 standardization 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 76-81. Kp values are displayed as "musical diagrams" according to Bartels solar rotation page 75. These diagrams are also available on request at GeoForschungZentrum, Potsdam (Table 1-b). The frequencies of Kp indices is given by month page 82. Monthly and yearly mean values of Ap from 1932 onwards are given pages 83-84.

Note - Observatories wishing to compute local equivalent amplitudes ak from their local K indices, may use the conversion table given below, which consists in the amplitudes (in nT) of the middle of each K class, as firstly proposed by Bartels (IATME Bull. 12e, 1951), and following a IAGA WG 5.5 recommandation (Buenos Aires, 1993).

K	0	1	2	3	4	5	6	7	8	9
ak	2.5	7.5	15	30	55	95	160	275	415	666

These values are given here for a K = 9 lower limit L9 = 500 nT; at stations having a different value of L9, they should be multiplied by L9/500, in order to have ak in nT (see IAGA News 32, page 23).

1.3.4. *Dst* index

The Dst index for 1991 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°

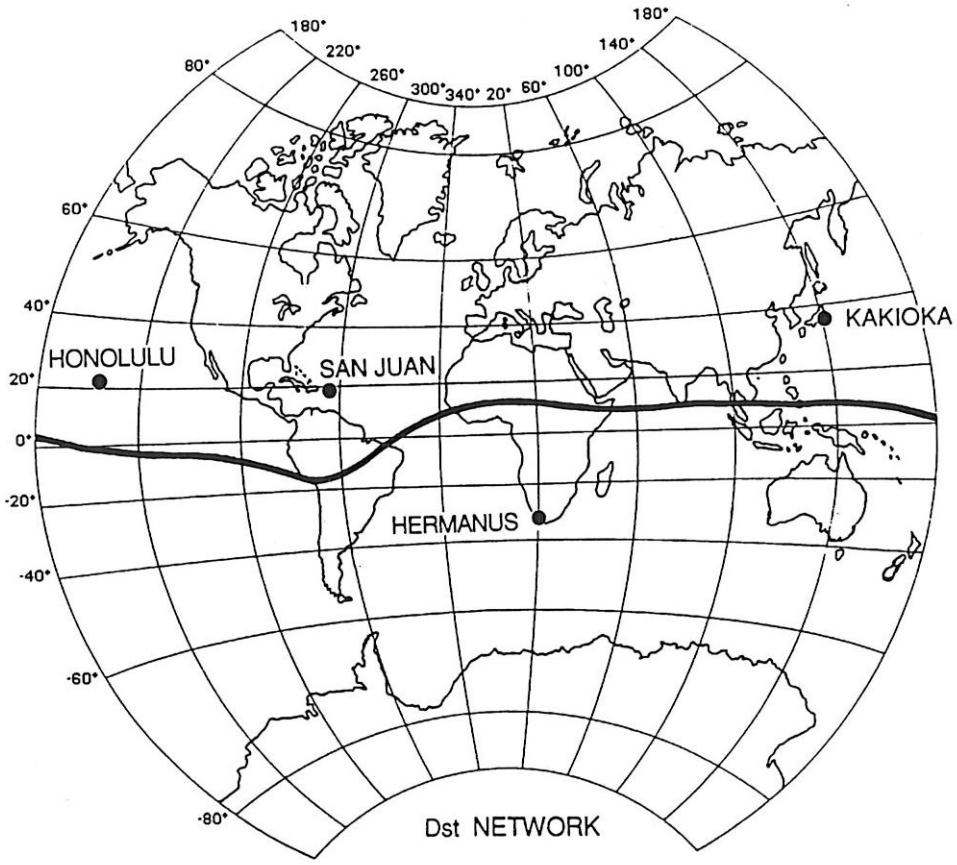


Figure 3 : Distribution of Dst observatories;
the solid line marks the magnetic dip equator.

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 noncyclic 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:

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

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 :

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

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

$$Dst(T) = D(T) / \cos \phi \qquad (5)$$

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 normalization procedure has been found to minimize undesired effects from missing hourly values.

Monthly tables of hourly Dst-values are given pages 90-101, followed by a table of mean values (page 102). The graph of hourly values for the whole year is given pages 87-89; the table of monthly and yearly mean values from 1959 onwards is given page 103.

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

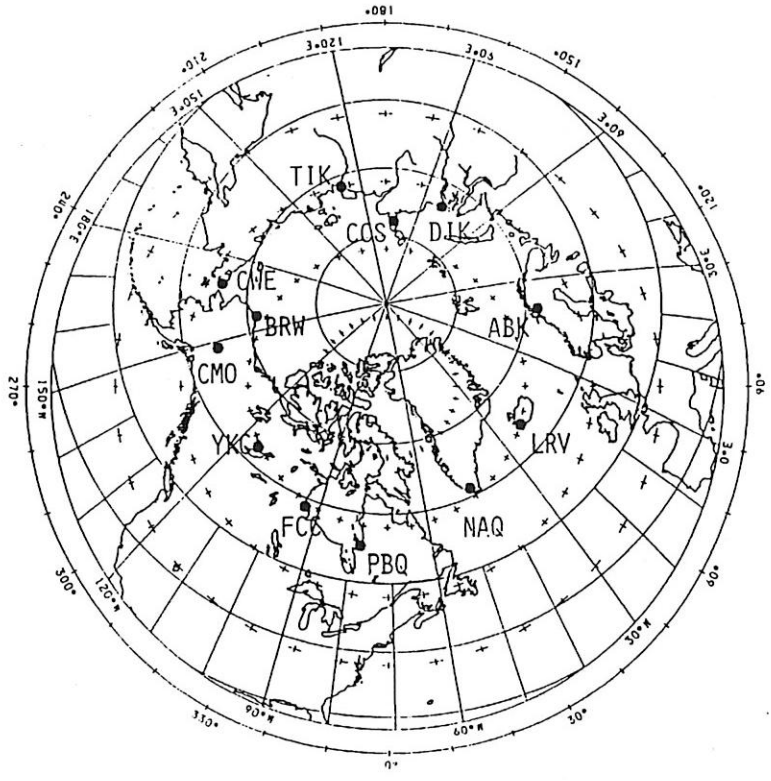


Figure 4 : Distribution of AE(12) stations

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 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).

Because of the long delays in delivering the necessary records on the part of some of the observatories the derivation of the definitive AE indices has been significantly delayed for 1991. Regrettably, therefore, provisional AE indices for 1991 are given in this Bulletin.

Tables of hourly average of AU, AL and AE are given pages 108-131; graph is given page 107. 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. The monthly and yearly mean values from 1957 until 1991 are given page 132.

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 136-137. They are presented on an annual diagram for 1991 page 135. 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 < 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 is lower than 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 < 21	21 < aa < 28	28 < aa < 32	> 32

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

The same rules are applied to select the 48-hour quiet or really quiet intervals, with the same limit for the aa mean value (13 nT) and a limit for Σp equal to 6. One must 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 45 magnetic observatories (see list page 146), 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 for all of them are requested 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, when 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 are measured on the copies from the five observatories and their mean values are calculated.

TABLE 5

a - Collaborating Observatories for Rapid Variations (*ssc*)

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

Note : 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.

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 solar flare effects are given in Section 5.2. of the present Bulletin for the year 1991 (pages 149-171). The format is the following:

a) A summary list gives for each month, the day and time of the beginning of sfe; if the sfe is confirmed the letter C follows the time of the event. Then are indicated the number of observatories having reported a movement (letters A, B, C, see explanation in Step 2 above), and the number of observatories having not reported any movement (letters D, E, X, see Step 2 above).

b) It is followed by detailed tables giving for each event the 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
SV3	ARTI	56.43	58.43	48.50	139.90			1973
ASH	ASHKHABAD	37.95	58.10	30.58	134.62		300	1958
ASO	ASO	32.88	131.02	22.58	199.85	570		1940
PEG	ATHENS	37.97	23.72	32.60	121.60	110		1900-1908
AUT	AU-TAU	22.45	114.05	11.20	184.60	60		1928-1939
AVE	AVERROES	37.99	14.02	38.13	93.59	230		1970
BKC	BACK	57.69	265.77	67.43	326.54			1978
BAG	BAGUIO	16.42	120.60	5.61	191.08	440		1967
BAL	BALDWIN	38.78	264.83	48.90	330.60	340		1901-1909
BLC	BAKER LAKE	64.33	263.97	73.67	319.15	30		1951
BNG	BANGUI	4.43	18.57	4.45	90.33	390		1952
BAP	BARRACKPORE	22.78	88.36	12.20	160.30	10		1904-1914
BRW	BARROW	71.30	203.25	69.10	243.67	7		1949
BTH	BARTH	54.37	12.75	55.00	99.90	20		1898-1903
BTV	BATAVIA	-6.18	106.83	-17.19	177.64	10		1884-1944
BJI	BEI-JING	40.06	116.18	29.12	186.20	43		1957
KGD	BEREZNIAKI	49.82	73.08	40.30	150.00			1965
BEL	BELSK	51.83	20.80	50.19	105.24	180		1960
BIN	BINZA	-4.38	15.26	-3.57	85.40	300		1953
BJN	BJORNOYA	74.50	19.20	71.06	124.67	80		1951
BOC	BOCHUM	51.49	7.23	52.42	92.24	120		1893-1912
BGA	BORGA	-72.97	356.20	-66.46	42.49			1975
BOX	BOROK	58.03	38.97	52.97	324.23			1977
BOU	BOULDER	40.13	254.77	48.88	319.04	1675		1964
BZR	BOUZAREAH	36.80	3.02	39.20	82.40	340		1912-1920
BJE	BRORFELDE	55.63	11.67	55.80	97.60	80		1978
BVZ	BUDAKESZI	47.52	18.90	46.40	101.80	410		1949-1955
BDV	BUDKOV	49.07	14.02	48.82	97.64	496		1967
BY1	BYRD STATION 1	-79.98	240.00	-70.60	336.60	1515		1957-1961
BY2	BYRD STATION 2	-80.01	240.51	-70.60	336.90	1515		1962-1965
CBB	CAMBRIDGE BAY	69.10	255.00	76.77	299.13	17		1972
CAN	CANBERRA	-35.30	149.00	-43.38	226.09	850	420	1980

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt (m)	K=9 lower limit	Open -Closed
		Lat	Long	Lat	Long			
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		1973
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
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

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt (m)	K=9 lower limit	Open -Closed
		Lat	Long	Lat	Long			
FUR	FURSTENFELDBRUCK	48.17	11.28	48.48	94.62	572		1939
GEN	GENOVA MC	44.55	8.96	45.50	91.00	700		1958-1962
GEN	GENOVA C	44.43	8.93	45.50	91.00	350		1933-1969
GIT	GILGIT	35.93	74.30	26.67	148.86	1494		1967
GIM	GILLAM	56.40	265.30	66.11	326.54			1975
GIR	GIRARDVILLE	49.00	287.40	60.01	357.77			1973
GNA	GNANGARA	-31.78	115.95	-42.71	187.94	60	440	1959
GDH	GODHAVN	69.23	306.48	79.25	34.62	8		1926
GOT	GOTTINGEN	51.55	9.97	51.97	95.00	270		1957
GVD	GONZALES VIDELA	-64.82	297.15	-53.88	5.80	60		1961
VLA	GORNOTAYEZHNAYA	43.68	132.17	30.10	199.60	200		1958
GRM	GRAHAMSTOWN	-33.28	26.48	-34.01	90.04	650		1974
GWC	GREAT WHALE RIVER	55.30	282.25	66.21	350.32	25		1965
GRW	GREENWICH	51.48	0.00	53.79	85.10	50		1846-1925
GCK	GROCKA	44.63	20.77	43.28	102.27	231		1958
GUA	GUAM	13.58	144.87	4.57	214.76	150		1957
HLL	HALLET	-72.32	170.22	-74.42	278.16			1957-1963
HBA	HALLEY BAY	-75.50	333.40	-66.36	25.85	30		1957
HBK	HARTEBEESTHOEK	-25.88	27.71	-27.01	93.14			1980
HAD	HARTLAND	50.98	355.52	54.17	80.29	95	530	1957
HTY	HATIZYO	33.07	139.83	23.45	207.83			1978
HVN	HAVANA	22.97	277.85	33.75	347.53			1964
HII	HEARD ISLAND	-53.03	73.37	-61.50	132.30	10		1950-1954
HIS	HEISS ISLAND	80.62	58.05	71.60	156.33	20		1959
HLP	HEL	54.60	18.82	53.19	104.80	4		1957
HLW	HELWAN	29.87	31.33	26.98	108.01	120		1903-1959
HCR	HERCHMER	57.40	265.90	67.16	326.86			1973
HER	HERMANUS	-34.42	19.23	-33.73	82.67	26	300	1941
HNA	HOLLANDIA	-2.57	140.52	-11.94	212.17	98		1957-1962
HKC	HONG KONG 1	22.30	114.18	11.00	184.70	30		1884-1928
HKC	HONG KONG 2	22.20	114.20	11.22	184.82	555		1972
HON	HONOLULU 1-2-3	21.32	202.00	21.46	268.57	4		1902
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

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt (m)	K=9 lower limit	Open -Closed
		Lat	Long	Lat	Long			
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
LUK	LUKIAPANG	31.32	121.03	20.20	190.80	100		1908-1933
LNP	LUNPING	25.00	121.17	14.21	191.28		100	1965
LVV	LVOV	49.90	23.75	47.80	107.10	400		1952
LWI	LWIRO	-2.25	28.80	-4.06	99.10	1680		1958-1970
MBO	MBOUR	14.40	343.02	20.68	56.80	10		1952
MCQ	MACQUARIE ISLAND	-54.50	158.95	-60.54	244.48	4		1951
MGD	MAGADAN	60.12	151.02	51.28	212.15		610	1966
MSC	MAISACH	48.20	11.26	48.50	94.90	480		1927-1932
MQ	MAKERSTOUN	55.58	357.48	52.20	85.30			1841-1849
MAB	MANHAY	50.30	5.68	51.60	90.15	440		1936-1971
MAN	MANILA	14.58	120.98	3.50	191.40			1891-1904
MRN	MARION ISLAND	-46.85	37.87	-49.30	96.75	45		1972
AMS	MARTIN DE VIVIES	-37.83	77.57	-46.94	142.78			1981
MSR	MATOCHKIN SHAR	73.26	56.40	64.80	147.40	250		1937-1944
MRI	MAURITIUS	-20.09	57.55	-26.80	124.40	50		1892-1965
MAW	MAWSON	-67.60	62.88	-73.32	106.62	6		1955
MEA	MEANOOK	54.62	246.67	61.88	304.02	686	1360	1916
MEL	MELBOURNE	-37.83	144.98	46.60	222.30	30		1865-1921
MEV	MELVILLE AFB	53.28	299.47	64.05	14.25			1966
MMB	MEMAMBETSU	43.90	144.20	34.61	210.23	39	340	1950
MNK	MINSK	54.10	26.52	51.32	111.51			1961
MIR	MIRNY	-66.55	93.02	-76.80	151.15		20	1956
MLT	MISALLAT	29.52	30.90	26.72	107.52	120		1960
MIU	MIYAZU	35.32	135.11	25.30	203.32			1973
MIZ	MIZUSAWA	39.01	141.08	29.47	208.21			1969
MFP	MOCA	3.35	8.67	5.27	80.39	1949		1958-1971
MOL	MOLODEZHNAYA	67.67	45.85	70.10	87.50	854		1965
MOS	MOSCOW	55.48	37.32	50.79	121.62	190		1880-1888

LIST OF OBSERVATORIES (continued)

IAGA Code	Name	Geographic		Geomagnetic		Alt (m)	K=9 lower limit	Open -Closed
		Lat	Long	Lat	Long			
MBC	MOULD BAY	76.30	240.60	79.62	259.89	150		1962
MWC	MT WILSON	34.14	241.97	41.19	306.30			1926-1958
MNH	MUNCHEN	48.15	11.61	48.40	95.20	530		1842-1926
MUT	MUNTINLUPA	14.37	121.02	3.58	191.57	62		1951
MMK	MURMANSK	68.25	33.08	63.45	126.43	210		1958-1960
NCK	NAGYCENK	47.63	16.72	46.93	99.59	160		1961
NAI	NAIROBI	-1.28	36.83	-4.60	107.19	1673		1964
NTS	NANTES	47.25	358.44	50.10	81.70	35		1923-1958
NAQ	NARSSARSSUAQ	61.20	314.6O	70.60	38.66	4		1973
NL	NEW ALESUND	78.92	11.93	75.43	130.70	12		1966
NEW	NEWPORT	48.27	242.88	55.14	302.78	780	700	1966
NYI	NEW YEAR ISLAND	54.65	295.85	43.30	5.20			1902-1916
NCE	NICE	43.72	7.30	45.00	89.00			1889-1901
NGK	NIEMEGK	52.07	12.68	51.94	97.77	78	500	1932
NSM	NITSANIM	31.73	34.60	28.21	111.55	150		1963-1967
NOK	NORILSK	69.20	88.00	58.68	165.77			1969
NKK	NOVOKAZALINSK	45.77	62.12	37.76	139.83			1974
NVL	NOVOLAZAREVSKAYA	-70.77	11.82	-66.76	55.88	460		1961
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	750	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

LIST OF OBSERVATORIES (continued)

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

LIST OF OBSERVATORIES (continued)

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

LIST OF OBSERVATORIES (continued)

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 - ... (1894 - 1901 and 1923 - 1928 missing)		
APIA	1905 - ...		
ASO	1940 - ...		
BATAVIA	1884 - 1944 (1899 - 1902 missing)	KUYPER TANGERANG	1950 – 1962 1964 - ...
CAPE CHELYUSKIN	1935 -... (1946-1950 and 1952-1953 missing)		
CAPE TOWN	1932 - 1940	HERMANUS	1941 - ...
CAPE WELLEN	1933 - ... (1944 - 1949 missing)		
CHELTENHAM	1901 - 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 - ...		
FURSTENFELDBRUCK		1939 - ...	
GODHAVN	1926 - ...		
GREENWICH	1846 - 1925	ABINGER HARTLAND	1925 – 1957 1957 - ...
HELWAN	1903 - 1959 (1952 - 1955 missing)	MISSALAT	1960 - ...
HURBANOVO	1938 -...		
HONG KONG	1884 - 1928	AU TAU HONG KONG	1928 – 1939 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 (1871 missing)	SLUTSK VOEIKOVO	1878 – 1941 1947 - ...
LERWICK	1923 - ...		
LOVÖ	1928 - ...		

LIST OF OBSERVATORIES (continued)

Sites of observatories having provided records over 50 years or more

First observatory Name	Open -Closed	Further Observatories, if any Name	Open -Closed
MANILA	1891 - 1904	ANTIPOLO	1910 – 1938
		MUNTINLUPA	1951 - …
MAURITIUS	1892 - 1965		
MEANOOK	1916 - …		
MELBOURNE	1865 - 1921	TOOLANGUI	1922 – 1980
		CANBERRA	1980 - …
OSLO	1843 - 1930		
PILAR	1905 - …		
POTSDAM	1890 - 1907	SEDDEN	1908 – 1931
		NIEMEGK	1932 - …
RUDE SKOV	1907 - 1978	BJORFELDE	1978 - …
SAINT MAUR	1883 - 1900	VAL JOYEUX	1901 – 1936
		CHAMBON LA FORÊT	1936 - …
SAN FERNANDO	1891 - …		
SAN JUAN (PUERTO RICO)	(1925 missing)	1903 – 1924	
SAN MIGUEL	1911 - …		
SITKA	1902 - …		
SODANKYLA	1914 - ... (1945 missing)		
STONYHURST	1865 – 1967 (1944 - 1960 missing)		
SVERDLOVSK	1887 - 1978	VYSOKAYA - DUBRAVA	1932 - …
SWIDER	1921 - …		
TEOLOYUCAN	1923 - …		
TIFLIS	1879 - 1905	KARSANI	1905 – 1934
		DUSHETI	1938 - …
TIKHAYA BAY	1932 - 1958 (1947 - 1950 missing)	HEISS ISLAND	1959 - …
TOKYO	1897 - 1912	KAKIOKA	1913 - …
TROMSÖ	1930 - …		
TUCSON	1910 - …		
UCCLE	1896 - 1919 (1943 - 1945 missing)	MANHAY	1936 – 1971
		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

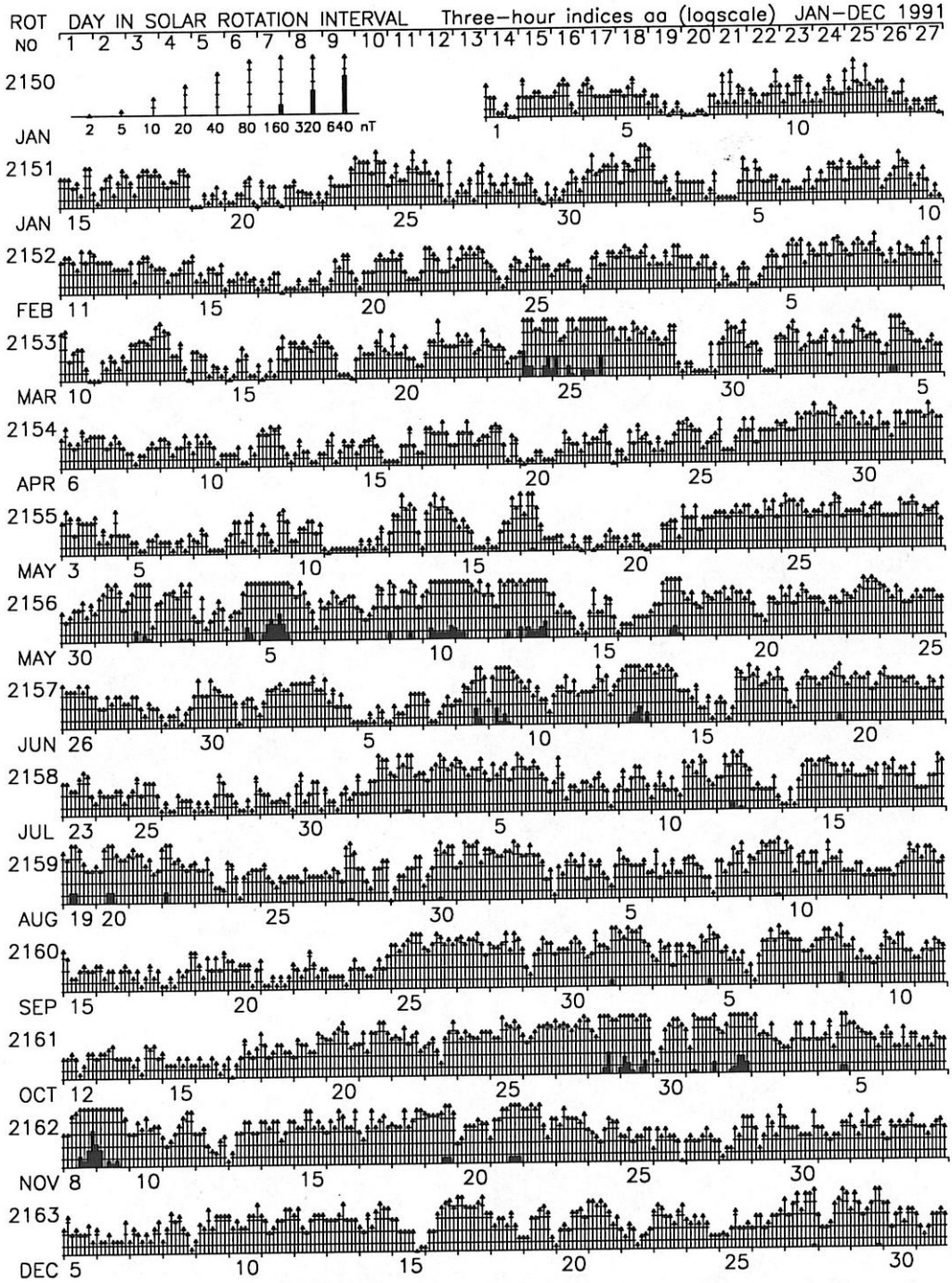
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MUSICAL DIAGRAM OF **aa** 1991



aa INDICES 1991

JAN. 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	10	8	13	4	9	C
2	16	15	17	14	16	
3	16	19	21	13	17	
4	15	20	22	13	18	
5	15	19	16	18	17	
6	6	9	9	6	8	* C C
7	5	4	3	6	4	* C K
8	17	22	17	23	20	
9	13	21	11	23	17	
10	20	18	15	23	19	
11	14	15	11	18	15	
12	36	34	42	29	35	
13	20	12	18	14	16	
14	7	6	7	7	7	* C C
15	27	15	18	25	21	
16	16	16	12	20	16	
17	25	23	18	30	24	
18	25	19	17	26	22	
19	7	5	4	8	6	* C K
20	11	8	7	12	10	C C
21	8	9	9	8	8	C C
22	7	12	12	7	9	* C C
23	12	17	11	17	14	
24	40	58	49	49	49	
25	28	33	22	40	31	
26	26	23	28	22	25	
27	16	13	8	21	14	
28	13	13	12	14	13	C
29	9	12	15	7	11	C C
30	11	11	7	15	11	C
31	26	41	30	37	33	
Mean values	16,6	17,7			17,1	

FEB. 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	47	49	29	68	48	
2	24	22	34	12	23	
3	10	11	12	9	11	* C C
4	14	12	9	17	13	K
5	20	19	25	14	19	
6	10	13	10	13	12	* C C
7	22	22	13	31	22	
8	28	27	23	32	27	
9	35	21	17	38	28	
10	14	10	16	8	12	C
11	33	28	28	33	30	
12	25	20	27	18	23	
13	23	20	18	25	22	
14	21	11	13	19	16	
15	20	11	15	16	16	
16	12	6	8	10	9	* C C
17	10	5	7	8	7	* C C
18	8	6	6	8	7	* C C
19	19	15	11	23	17	K
20	12	20	9	23	16	
21	19	20	30	9	19	
22	29	28	34	23	29	
23	38	32	30	40	35	
24	13	14	14	13	14	
25	24	17	21	20	21	
26	17	10	13	14	14	
27	20	22	17	24	21	
28	40	26	35	31	33	
Mean values	21,6	18,5			20	

MAR. 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	30	22	18	35	26	
2	20	20	21	19	20	
3	11	9	10	10	10	* C C
4	19	12	8	23	15	
5	41	36	35	41	38	
6	52	34	37	49	43	
7	47	44	40	51	46	
8	34	22	26	31	28	
9	36	35	32	40	36	
10	35	19	39	15	27	
11	10	9	6	13	10	* C
12	43	34	28	49	39	
13	33	43	61	15	38	
14	17	8	18	7	12	* C K
15	11	8	7	13	10	* C C
16	17	12	7	22	14	
17	33	27	30	30	30	
18	17	13	26	4	15	
19	24	25	17	32	24	
20	19	19	24	14	19	
21	39	29	22	46	34	
22	34	34	37	32	34	
23	21	18	25	13	19	
24	170	154	180	143	162	
25	124	110	123	112	117	
26	121	133	128	126	127	
27	54	53	46	61	53	
28	27	50	34	44	39	
29	10	6	7	10	8	* C
30	51	46	35	61	48	
31	21	12	21	12	16	
Mean values	39,4	35,3			37,3	

APR. 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	48	34	52	30	41	
2	33	27	32	28	30	
3	43	42	47	38	43	
4	68	68	48	88	68	
5	36	13	25	24	25	
6	28	16	21	23	22	
7	26	12	21	17	19	
8	12	8	8	12	10	* C C
9	20	12	16	16	16	
10	16	13	18	10	14	K
11	10	7	9	8	8	* C
12	33	18	29	22	26	
13	13	4	10	7	8	* C K
14	16	11	13	13	13	C C
15	17	8	13	12	12	C C
16	14	9	7	16	11	* K
17	29	21	24	26	25	
18	29	15	26	18	22	
19	28	15	30	13	22	
20	7	4	4	7	5	* C C
21	14	9	11	12	12	C C
22	20	13	16	18	17	
23	22	9	11	20	16	
24	21	10	11	20	16	
25	28	22	35	15	25	
26	27	16	20	23	22	
27	32	21	26	27	27	
28	46	39	29	56	42	
29	66	69	70	65	67	
30	48	41	49	40	44	
Mean values	28,4	20,2			24,3	

aa INDICES 1991 (continued)

MAY 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	43	44	35	52	44	
2	60	58	56	63	59	
3	29	26	29	26	27	
4	24	12	16	20	18	
5	11	6	8	9	9	C K
6	10	6	7	9	8	C C
7	11	6	11	5	8	C C
8	23	13	17	19	18	K
9	28	12	13	28	20	
10	20	12	12	20	16	
11	7	2	4	5	5	* C C
12	10	6	7	9	8	* C
13	50	35	45	40	43	
14	63	40	51	52	51	
15	15	12	20	7	13	K
16	33	16	8	41	24	
17	58	49	88	20	54	
18	10	3	8	5	7	* C K
19	9	5	6	9	7	* C C
20	9	4	7	6	6	* C C
21	16	8	8	16	12	C
22	36	19	35	21	28	
23	36	33	30	39	34	
24	41	35	31	45	38	
25	57	44	61	40	50	
26	52	35	34	54	44	
27	33	37	32	38	35	
28	43	30	29	43	36	
29	46	31	44	34	39	
30	27	18	18	27	23	
31	73	52	57	68	62	
Mean values	31,7	22,9			27,3	

JUNE 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	100	66	92	73	83	
2	88	53	56	86	71	
3	29	14	20	23	22	
4	92	46	16	122	69	
5	250	175	187	238	213	
6	56	40	72	24	48	
7	48	32	40	40	40	
8	45	22	18	49	33	
9	81	68	75	75	75	
10	147	106	103	150	127	
11	107	101	137	72	104	
12	104	58	63	99	81	
13	152	133	140	145	142	
14	16	20	26	10	18	*
15	36	12	24	25	24	
16	12	7	7	12	10	* C
17	113	54	36	131	83	
18	42	29	37	34	35	
19	48	43	45	46	45	
20	27	21	24	25	24	
21	57	33	45	45	45	
22	31	28	26	33	30	
23	71	64	43	91	67	
24	54	35	51	38	44	
25	45	33	39	39	39	
26	42	30	35	37	36	
27	22	16	18	20	19	*
28	16	15	19	12	16	*
29	10	7	7	10	8	* C
30	40	31	33	38	35	
Mean values	66	46,4			56,2	

JULY 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	23	11	17	17	17	
2	33	25	22	37	29	
3	50	39	46	44	45	
4	29	13	30	13	21	
5	10	4	6	8	7	* C C
6	19	10	8	21	15	K
7	17	9	13	13	13	C
8	86	56	25	117	71	
9	100	111	105	106	106	
10	25	29	36	18	27	
11	38	26	36	28	32	
12	50	34	46	39	42	
13	130	124	91	162	127	
14	85	69	88	67	77	
15	23	11	24	10	17	
16	40	21	11	50	31	
17	66	58	69	55	62	
18	47	24	23	48	35	
19	68	55	42	80	61	
20	47	39	46	40	43	
21	64	37	57	43	50	
22	42	28	32	38	35	
23	32	19	20	32	26	
24	14	11	12	13	13	C
25	24	15	18	21	20	
26	11	5	6	10	8	* C K
27	18	8	7	20	13	K K
28	14	8	9	13	11	* K K
29	13	8	12	9	11	* C K
30	20	14	18	16	17	K
31	15	7	9	13	11	* C
Mean values	40,4	30			35,1	

AUG. 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	65	27	20	71	46	
2	62	67	58	72	65	
3	62	51	42	72	57	
4	64	44	56	52	54	
5	50	47	40	58	49	
6	45	43	59	29	44	
7	31	20	35	16	26	
8	19	15	23	11	17	
9	30	25	22	33	28	
10	19	13	18	14	16	*
11	52	41	49	44	46	
12	73	65	44	94	69	
13	21	12	19	14	17	*
14	30	23	7	46	26	
15	60	37	58	40	49	
16	42	24	31	35	33	
17	43	26	39	31	35	
18	41	26	20	47	34	
19	88	67	114	41	77	
20	77	80	77	80	79	
21	59	36	64	30	47	
22	62	69	98	33	66	
23	26	18	33	12	22	
24	28	16	23	21	22	*
25	18	17	21	13	17	*
26	18	15	17	16	17	*
27	52	34	20	67	43	
28	29	18	17	31	24	
29	26	20	11	35	23	
30	52	61	29	84	56	
31	64	66	60	71	65	
Mean values	45,5	36,2			40,8	

aa INDICES 1991 (continued)

SEP. 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	79	49	54	75	64	
2	36	45	55	28	41	
3	30	26	19	37	28	
4	23	17	25	15	20	
5	30	32	38	24	31	
6	30	17	27	20	23	
7	35	10	33	12	23	
8	48	28	25	50	38	
9	76	58	49	86	67	
10	55	33	50	38	44	
11	38	35	42	31	36	
12	18	16	20	14	17	
13	32	18	15	36	25	
14	48	41	49	40	44	
15	21	11	19	13	16	
16	14	10	13	11	12	C C
17	11	9	9	11	10	* C C
18	14	8	6	16	11	* K K
19	19	21	20	20	20	
20	19	10	17	12	15	
21	10	6	10	7	8	* C C
22	15	14	12	17	15	C
23	8	12	9	11	10	* C C
24	18	9	10	17	14	* C
25	71	46	42	75	58	
26	48	55	49	54	52	
27	66	44	58	52	55	
28	66	39	41	63	52	
29	39	26	19	45	32	
30	38	37	30	46	38	
Mean values	35,2	26,2			30,6	

OCT. 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	55	63	41	77	59	
2	79	67	80	66	73	
3	38	22	29	31	30	
4	66	40	28	77	53	
5	33	17	33	18	25	
6	48	41	21	68	44	
7	56	32	56	31	44	
8	76	64	63	77	70	
9	22	23	30	15	22	
10	48	39	46	42	44	
11	36	22	23	35	29	
12	14	10	13	11	12	* C
13	19	12	16	15	16	* C
14	20	9	9	20	15	
15	11	9	10	10	10	* C C
16	11	7	9	9	9	* C C
17	16	12	9	20	14	*
18	19	26	25	20	22	
19	30	21	23	29	26	
20	38	46	42	43	43	
21	41	55	33	63	48	
22	43	28	40	31	35	
23	39	26	23	41	32	
24	45	34	40	39	39	
25	59	60	53	66	60	
26	57	39	35	61	48	
27	68	70	66	72	69	
28	99	112	65	146	105	
29	158	127	163	122	142	
30	41	49	20	70	45	
31	72	96	65	103	84	
Mean values	46,9	41,2			44	

NOV. 1991+A9	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	128	127	65	191	128	
2	56	41	63	34	48	
3	38	33	29	42	35	
4	64	53	37	80	59	
5	43	33	50	26	38	
6	26	33	32	28	30	
7	26	22	24	24	24	
8	183	144	49	278	164	
9	160	136	193	103	148	
10	40	33	32	41	36	
11	39	43	18	65	41	
12	21	15	23	13	18	*
13	30	20	15	35	25	
14	31	44	42	33	38	
15	45	50	48	48	48	
16	47	49	46	51	48	
17	40	41	38	42	40	
18	54	51	46	60	53	
19	93	69	61	102	81	
20	37	24	23	38	30	
21	95	75	47	122	85	
22	68	67	86	49	67	
23	54	44	51	47	49	
24	36	18	18	36	27	
25	21	17	17	20	19	*
26	15	14	18	12	15	*
27	14	16	13	17	15	* C
28	20	21	8	33	21	*
29	33	34	24	44	34	
30	26	30	29	27	28	
Mean values	52,7	46,6			49,6	

DEC. 1991	Day N	Day S	Half Day am	Half Day pm	Daily aa	Quiet days
1	19	24	19	24	22	
2	32	35	29	38	34	
3	29	25	21	33	27	
4	29	22	22	29	26	
5	17	15	19	13	16	
6	12	11	11	12	12	* C C
7	13	13	11	15	13	* C
8	14	24	22	16	19	
9	22	29	23	28	25	
10	29	28	22	35	28	
11	29	26	21	35	28	
12	28	29	27	30	28	
13	31	28	26	33	29	
14	33	33	19	47	33	
15	12	14	18	8	13	* K
16	37	32	15	54	35	
17	62	55	63	54	59	
18	21	21	24	18	21	
19	19	28	16	31	24	
20	18	25	11	32	21	
21	40	45	56	30	43	
22	9	11	12	9	10	* C
23	27	37	35	29	32	
24	16	17	19	14	17	
25	13	14	9	18	14	*
26	19	23	18	24	21	
27	66	64	53	77	65	
28	43	44	16	72	44	
29	59	60	46	74	60	
30	28	32	32	28	30	
31	19	21	14	26	20	
Mean values	27,2	28,7			27,9	

MONTHLY AND YEARLY **aa** 1868 - 1991

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	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	21.4
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	18.8	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	5.6	6.2	5.9	5.8	8.0	8.9	7.0	7.1	9.3	7.1
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	17.6
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	20.7
1887	16.9	22.9	15.2	20.6	17.3	12.6	12.5	17.2	18.9	14.1	14.6	15.2	16.4
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	9.9	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	24.3
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	20.7
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	18.1
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	13.6	9.4	8.7	12.1	13.1
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	15.0
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	12.5
1907	16.5	25.3	14.3	12.1	16.8	14.9	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	12.6	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	19.8	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

MONTHLY AND YEARLY **aa** 1868 - 1991 (continued)

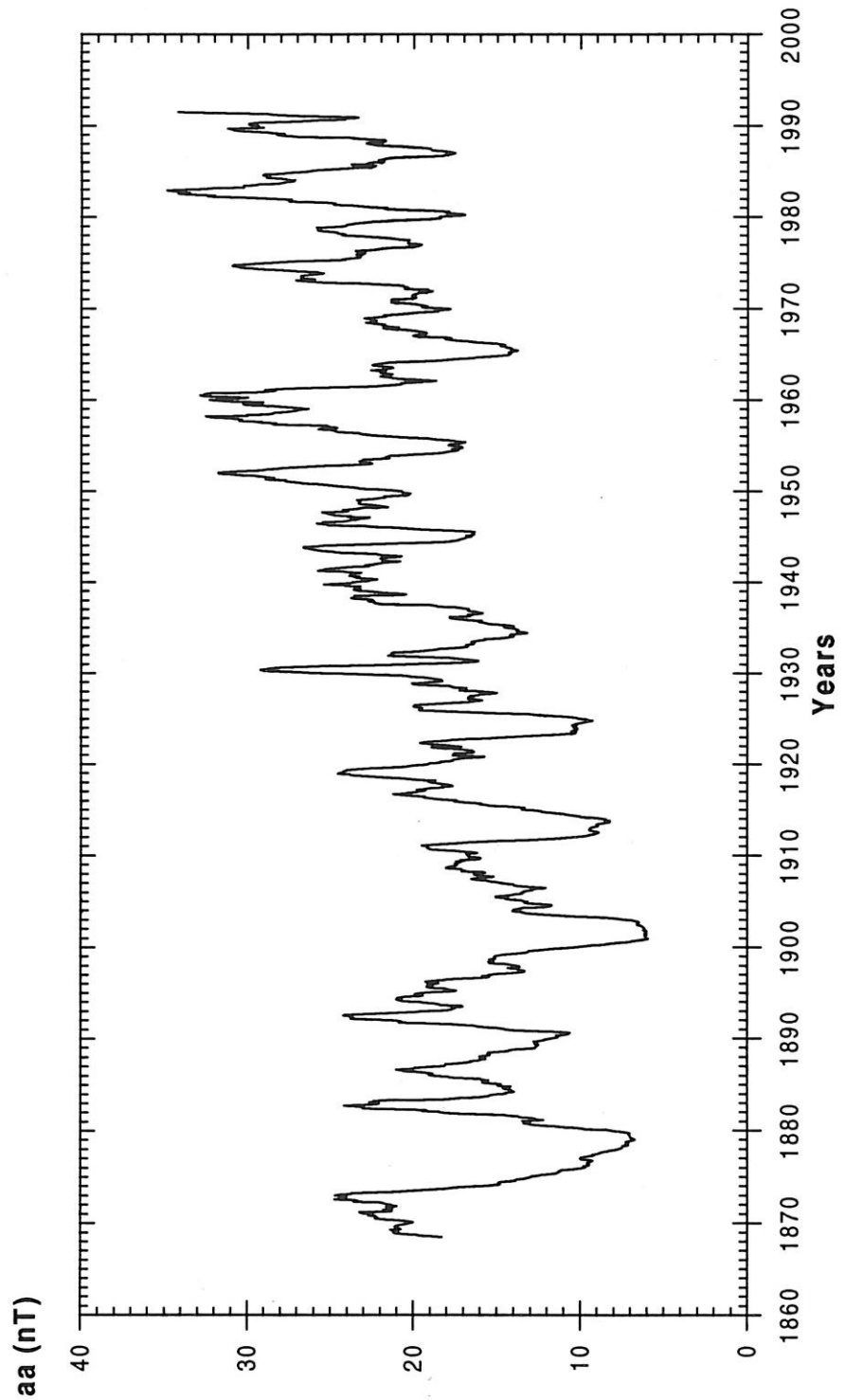
Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1913	10.3	9.5	9.9	9.8	9.0	7.0	7.0	6.7	10.0	10.7	7.6	6.6	8.7
1914	7.1	7.3	10.1	13.5	8.1	10.3	12.9	14.9	11.8	13.3	13.4	9.3	11.0
1915	10.9	13.5	15.0	15.3	13.9	17.9	11.2	14.7	17.0	21.3	24.9	12.4	15.7
1916	16.0	11.6	25.0	19.2	20.2	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	16.6
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	19.9
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	16.7
1928	10.1	13.5	11.3	12.8	23.6	20.2	27.8	15.9	19.6	23.4	18.2	15.6	17.7
1929	13.0	24.0	26.2	13.9	16.3	14.7	18.6	15.9	21.5	25.5	22.7	21.0	19.4
1930	20.9	27.9	30.9	38.2	36.4	33.3	28.3	33.3	28.8	29.3	18.8	17.2	28.6
1931	13.0	15.4	12.9	9.9	12.0	14.7	13.1	17.7	21.2	27.3	23.7	21.1	16.8
1932	20.2	21.4	27.9	28.2	22.2	11.8	12.4	19.1	19.1	17.2	13.8	15.3	19.0
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	16.3
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	20.8	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	19.4	16.5	19.0
1938	46.6	26.0	20.4	26.1	23.7	14.8	19.7	19.9	24.7	24.0	17.8	19.5	23.6
1939	13.5	21.7	27.0	36.1	27.8	22.8	26.1	23.0	19.2	28.4	14.6	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	23.6
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	25.9
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	25.3
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	25.3
1948	20.8	21.0	24.2	17.8	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	32.8	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	28.7
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.8	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	17.2
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	29.3

MONTHLY AND YEARLY **aa** 1868 - 1991 (continued)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
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	28.4
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	14.8	16.8	17.5	13.1	11.7	13.8	14.0
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	22.5
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.9	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	20.0
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	24.6	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	19.3	17.6	12.8	18.7	15.7	20.3	17.1	16.0	14.4	22.3	23.7	22.1	18.3
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	24.8
1982	23.5	49.3	27.6	32.2	26.2	31.5	42.4	32.0	45.9	28.9	33.7	34.5	33.8
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	29.5
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	22.5
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	21.0
1987	14.8	16.8	17.8	13.0	14.8	13.3	19.2	24.3	30.3	25.7	22.3	15.9	19.0
1988	22.4	23.3	24.8	25.2	20.5	19.9	20.1	20.5	22.5	23.1	23.2	25.5	22.6
1989	33.9	27.4	60.0	32.7	25.7	24.9	14.3	28.3	26.6	31.3	34.6	31.3	31.0
1990	27.4	37.7	33.8	37.4	25.1	24.5	21.5	28.1	25.0	25.1	17.4	15.1	26.4
1991	17.1	20.0	37.3	24.3	27.3	56.2	35.1	40.8	30.6	44.0	49.6	27.9	34.2

Unit : nT

TWELVE - MONTH RUNNING MEAN VALUES OF **aa** 1868 - 1991



SECTION 3

3.2 an, as, am INDICES

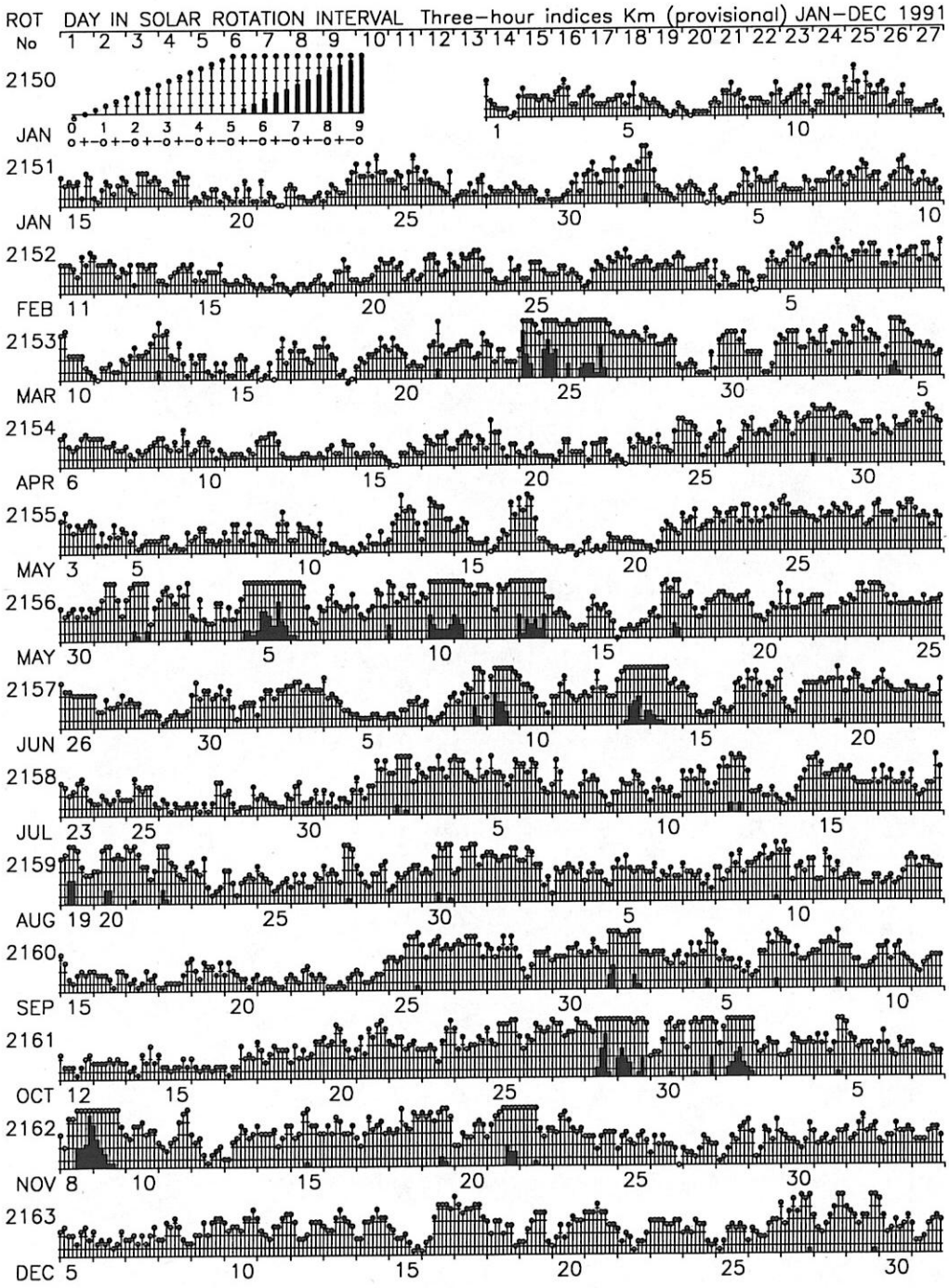
Musical diagram of **Km** 1991 53

Monthly tables of three-hour indices :
an, **as**, **Kn**, **Ks** and daily **An**, **As** values 54

Monthly tables of three-hour indices :
am, **Km** and daily **Am** values 66

Monthly and yearly mean values of **Am**
1959 - 1991 72

MUSICAL DIAGRAM OF **Km** 1991



an, as INDICES 1991

January 1991																				
	Kn								σn		an									An
1	3+	2-	1o	1-	1o	1+	0+	0+	2211	1324	38	13	7	5	7	8	3	3		11
2	2o	3-	2o	2+	3-	2o	2+	2o	4233	3412	16	24	16	18	21	16	17	14		18
3	2-	2o	3o	3+	3o	1+	1+	2-	2454	2323	12	15	28	38	27	9	8	13		19
4	2o	2+	2-	1+	1+	2-	1+	2-	2432	2424	14	20	11	8	9	12	10	12		12
5	2-	2-	1o	2-	3-	1o	2-	2-	4213	2132	11	12	7	13	26	7	11	12		12
6	1-	1+	1-	1-	1-	0+	1-	1o	2211	1221	5	9	5	4	5	2	5	7		5
7	1o	0+	0+	0+	1-	1o	1-	1o	2221	2120	6	2	2	2	5	6	5	6		4
8	1+	1o	2o	3-	3o	2-	2+	2-	3224	4242	10	6	15	22	29	12	19	12		16
9	1o	2-	2-	2o	1+	2-	1+	3-	2232	1523	6	12	12	14	9	11	9	25		12
10	2+	1o	1o	2o	3-	3-	1+	2+	5112	3424	18	6	7	15	22	26	9	19		15
11	1-	1+	1o	3-	3o	2o	2o	2-	2212	5233	4	9	7	21	27	14	15	13		14
12	3o	2o	4-	3o	2-	4o	3-	2+	3224	3432	31	16	45	28	12	58	26	20		30
13	2+	3+	3-	1o	1+	2+	3o	1+	2452	2334	20	36	22	7	10	17	27	9		19
14	1+	1-	1-	0+	1o	1+	1+	1-	2211	2231	8	5	4	2	6	9	8	5		6
15	3-	2-	2-	2o	2o	1o	3+	3-	3222	1144	24	13	12	14	16	6	37	26		19
16	1o	1-	1+	3-	2+	1+	2-	3-	4124	1222	7	5	10	21	18	10	12	23		13
17	2o	1+	1o	3-	3o	3+	2+	3-	2313	2223	15	10	7	26	30	39	19	25		21
18	2o	1+	1+	1+	2+	3o	3o	3-	4324	1244	15	9	9	10	17	30	30	22		18
19	0+	1-	0+	1+	1o	2-	2-	1-	2132	1222	3	4	2	9	6	12	13	4		7
20	1o	1o	1-	2-	1o	2+	2-	0+	4132	2322	7	6	4	11	7	18	13	3		9
21	0+	2o	0+	1o	1+	0+	0+	2-	2621	2222	3	14	3	7	10	3	2	12		7
22	2-	1+	1-	0+	1-	1o	1-	1+	2222	2232	11	10	5	2	5	6	4	9		7
23	1-	1o	1+	2-	1+	1+	2o	3-	3222	2202	4	7	9	11	8	10	15	25		11
24	4-	2+	3-	3+	3-	4+	4-	3-	2223	2632	50	20	25	39	23	70	41	23		36
25	2-	2-	2o	2+	2-	3+	4+	3o	3213	2343	11	13	15	18	11	35	65	28		25
26	2+	3o	2o	2-	2o	2o	1o	3o	3112	3225	18	28	16	12	14	15	6	28		17
27	0+	1o	1o	1o	2+	2-	2+	3-	3211	2235	3	7	7	6	17	11	18	25		12
28	1-	1+	1o	1+	1o	2-	1o	2o	2111	2212	4	8	6	8	7	13	7	15		9
29	2-	1o	1+	1+	1+	0+	0+	1+	2112	3223	11	7	8	10	8	2	3	8		7
30	1-	1-	0+	1-	1+	2o	2+	1o	2224	2321	4	4	3	5	9	16	18	7		8
31	2+	3-	3o	3-	2+	3o	3o	4-	3225	2132	18	22	30	24	17	31	28	44		27
																				14,39

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	Ks								σs		as									As
1	3o	1+	1+	1+	1o	1o	0+	1-	2343	2212	31	9	9	9	6	7	2	5		10
2	2-	3-	2o	2-	2-	1+	2-	1+	2354	1333	11	22	14	12	13	10	12	9		13
3	2-	2+	2+	3o	2+	1+	1+	2o	2260	4232	12	18	20	30	20	10	8	16		17
4	3-	3-	2o	1+	1o	1+	2o	2o	2445	4242	21	26	14	9	7	9	14	15		14
5	2o	2o	2-	2+	3-	1+	2-	2o	3213	1221	16	15	12	17	24	8	13	14		15
6	1+	2-	1+	1o	1o	1-	0+	1+	4333	3222	9	13	8	7	7	5	3	9		8
7	1+	1o	1-	1-	0+	1-	1o	2-	4431	2242	10	6	5	4	3	4	6	12		6
8	2o	1+	3-	2o	3o	2o	2o	1+	4243	1432	16	10	22	14	32	16	16	10		17
9	1+	2-	2-	2-	1o	1+	2+	3o	4332	243	8	13	11	13	7	8	19	29		14
10	2o	1+	2o	2o	2o	2+	1+	2+	1320	4343	14	9	15	15	15	19	9	20		15
11	1-	1+	1+	2+	3-	2+	2o	1+	5331	3422	5	9	8	19	23	19	15	10		14
12	3+	3-	5-	3o	2-	4-	2+	2o	3221	2240	40	24	86	32	13	43	18	15		34
13	3-	3-	2+	1+	1+	2-	3-	1o	2222	1232	21	22	17	8	9	12	22	7		15
14	1o	1o	1-	1-	1o	1o	1+	1-	1421	3311	7	6	4	5	6	7	8	4		6
15	2+	2o	3-	2+	3-	1-	3o	2+	2322	2211	20	14	23	17	21	5	28	17		18
16	1o	1-	2-	2o	2+	2-	2+	3o	2535	3231	7	4	11	16	17	11	17	29		14
17	2+	2-	1+	3o	3o	3+	3-	3-	2321	1232	20	13	9	32	32	34	21	21		23
18	2+	2o	2o	1+	2+	3+	2+	3-	3433	2222	20	16	15	9	17	34	19	23		19
19	1o	1+	1o	1+	1-	2-	2-	1-	5441	2224	7	9	6	8	5	12	12	4		8
20	1+	1o	1+	2-	1-	2o	2-	1-	3342	2122	10	7	8	11	4	16	12	5		9
21	1-	2+	1o	1+	1o	0o	0+	2+	3353	5123	4	20	7	9	6	1	3	17		8
22	2o	2o	1+	1o	1o	1o	1o	1+	3133	1112	16	14	9	7	6	6	6	8		9
23	0+	1+	2+	2-	1+	1o	2+	3o	2432	3333	3	9	17	12	9	7	18	30		13
24	4-	3-	3-	4-	3-	4o	3o	3+	2432	1324	48	24	26	45	26	56	33	35		37
25	3-	3-	3+	3-	2o	3+	5-	3+	2232	2232	22	21	36	25	14	35	78	35		33
26	2+	3o	3-	2+	2o	1+	1+	3-	2231	1123	19	31	23	17	16	9	8	26		19
27	1o	1+	2-	1+	2o	1+	3-	2+	4432	2323	6	8	11	10	15	9	21	20		13
28	1o	2o	2-	2-	1+	1+	1+	2-	4352	1211	7	15	12	12	8	10	9	12		11
29	1+	1+	2-	2-	1o	1-	1-	1+	2342	223	10	9	11	12	7	5	4	9		8
30	1o	1o	1-	1o	1+	2o	3-	2-	3434	3152	6	7	5	7	8	16	22	11		10
31	3o	3+	4o	3-	2-	3+	3o	4o	2422	2203	27	35	57	21	11	34	30	56		34
																				15,61

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	Kn								σn		an								An
1	3-	1o	3-	4-	3o	4o	5o	5+	3123	1433	21	7	25	46	31	59	94	119	50
2	4o	3o	1+	1+	1+	1o	1-	1+	4323	2231	57	28	8	8	9	7	5	8	16
3	1o	1+	2o	2-	2-	1+	1-	1o	1332	2330	6	9	15	11	11	8	4	6	9
4	2-	1-	0+	1-	1+	1+	2-	3o	3112	2232	13	4	2	4	8	8	11	27	10
5	2+	2-	2+	2o	2o	2-	2o	2+	2213	1213	20	12	18	16	14	13	14	19	16
6	1+	2-	1o	1o	2-	1+	2o	2o	1213	2313	8	12	7	6	11	10	16	15	11
7	1+	2o	2-	2+	3-	3o	2+	3o	2024	3425	9	15	12	20	24	30	19	27	20
8	2o	3-	3-	3o	4-	4-	2+	3-	1224	5434	14	21	25	32	46	42	19	24	28
9	3o	1+	2-	2o	3-	4o	4+	3+	4321	3342	28	10	11	15	25	52	61	39	30
10	2+	2-	2+	3-	2o	2-	2o	2-	1113	2323	18	12	17	23	16	11	15	11	15
11	3-	3-	2+	2+	2o	4-	3-	4-	2322	3423	21	23	19	19	14	44	23	45	26
12	3+	3-	2+	3-	3-	3-	2o	2o	4222	2313	36	24	17	22	25	22	14	14	22
13	2o	2+	1o	3-	3-	2+	3-	2+	1232	2222	15	18	7	23	24	20	23	20	19
14	2-	1+	1o	2-	2+	2+	2+	2+	3332	3224	12	10	7	11	17	19	20	19	14
15	3-	1+	2-	1+	2-	2+	2o	2+	5232	3453	24	9	12	10	13	18	16	20	15
16	1o	1-	1o	2-	1+	2o	1+	1o	1131	1124	6	5	7	12	8	14	10	7	9
17	1-	1o	0+	1-	2-	1+	1o	1-	2223	3123	4	7	3	5	12	8	6	4	6
18	0+	1-	1o	1o	1-	1+	1+	2o	2311	4134	3	4	6	6	5	8	10	14	7
19	1-	1-	1o	2-	2o	3+	3-	2-	2325	1334	5	5	6	13	15	35	21	13	14
20	1+	1-	1+	1+	1+	3-	3o	2+	2134	2542	9	5	10	9	9	25	30	20	15
21	2+	3-	2+	3-	1+	2-	2o	1o	2222	1120	19	21	18	21	8	12	14	6	15
22	2o	3-	3+	3o	2+	2-	2+	3+	2321	2234	14	21	36	31	17	13	18	39	24
23	3-	2+	3o	3-	4-	4o	4-	4-	2203	2422	21	17	29	23	50	52	46	44	35
24	2-	2o	2-	1o	1o	1+	3o	2+	3242	234	13	15	11	6	6	9	30	20	14
25	2+	1+	1+	3o	3o	3-	2+	2-	5143	1314	20	8	10	27	28	22	17	13	18
26	2o	2-	3-	2+	2o	2o	2-	2-	333	5122	15	13	22	20	14	15	13	11	15
27	1-	1o	2o	3-	2+	2o	3o	3o	2223	2111	5	7	14	24	18	16	31	28	18
28	3o	3o	3+	3o	3-	3-	3-	3o	1122	2323	33	28	36	31	25	23	23	30	29
																			18,57

February 1991

	Ks								σs		as								As
1	3+	2-	4-	3o	3-	4-	5+	6-	2222	2221	37	13	42	32	23	46	120	144	57
2	5-	4-	2o	1+	2-	1-	1-	2o	3101	2333	74	42	16	10	11	4	4	15	22
3	2-	2o	2o	2-	1+	1+	0+	1+	3332	2222	11	14	14	12	9	8	3	9	10
4	2o	1-	1-	1o	1o	1o	1+	3+	3332	1334	14	4	5	7	6	6	10	37	11
5	3o	2-	3o	2o	2-	2o	3-	2+	3122	3221	28	13	33	16	13	14	22	20	20
6	2-	2o	2-	1+	1o	1+	2+	2o	2421	2435	11	16	11	10	7	9	19	15	12
7	2-	2o	2o	2-	2+	3o	3-	3o	2222	4232	11	15	14	13	20	28	24	27	19
8	2-	3o	2o	3o	3+	3+	2o	3-	2420	4222	13	30	16	32	37	38	16	21	25
9	3-	2-	1+	2o	2+	4o	4o	3o	3212	2260	26	11	10	16	18	52	54	32	27
10	3-	1+	2-	3-	1+	2-	2-	1+	1032	1421	21	10	13	23	10	11	13	8	14
11	3-	3o	3-	2o	2-	3+	3o	4-	1132	2212	24	27	25	16	11	40	27	47	27
12	3+	2+	3-	2+	4-	3+	3-	3o	4331	5456	35	20	22	18	48	34	23	28	29
13	2+	3-	1o	3o	3-	3-	3-	2+	1232	2222	18	22	7	28	25	22	26	19	21
14	1+	1+	1o	1+	2o	2+	3-	3-	1222	1122	8	10	7	10	14	18	22	22	14
15	3-	1+	2o	1+	2o	2-	2o	3-	2223	1432	25	10	15	8	14	12	15	21	15
16	1o	1o	1+	1o	1-	2-	1+	1-	2223	3332	7	7	8	7	4	11	8	5	7
17	0+	1-	0+	0+	1+	1o	1-	1-	2401	1231	3	5	3	2	8	7	5	4	5
18	0+	1-	1o	1-	0+	1-	1+	2-	2322	231	2	5	6	5	3	4	9	12	6
19	1-	0+	1-	2o	2+	3+	2+	1+	3222	2514	5	2	4	14	17	36	20	9	13
20	1+	1o	1+	1+	1+	2+	3o	3-	4435	3412	9	6	8	10	10	18	33	26	15
21	3-	3+	2+	3o	1+	2o	2+	1+	2313	1542	23	37	17	27	10	14	17	9	19
22	2-	3+	4-	3+	2+	2-	1+	3o	2331	2311	13	37	47	36	20	13	10	30	26
23	3-	2+	4-	3o	3+	4-	4-	3-	2322	1432	22	19	42	32	34	48	41	26	33
24	2+	2+	2-	1-	1o	1+	3-	2o	3221	2421	20	17	11	5	6	8	23	14	13
25	2o	1+	1+	3-	2+	3-	2+	2-	1232	2322	14	10	10	22	18	25	19	11	16
26	1+	1+	2o	2+	1+	2o	2-	2-	1101	1323	9	10	16	17	9	14	11	12	12
27	1-	1-	2o	3-	2+	2o	3o	3-	3332	4334	4	5	15	26	17	14	28	25	17
28	3+	3o	4-	3-	2+	3-	3-	3o	3252	1433	37	33	43	22	17	26	23	29	29
																			19,07

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	Kn								σn		an								An
1	2+	2o	2+	2o	3-	2+	3+	3o	1121	2232	18	16	19	16	26	19	35	28	22
2	3o	2o	2-	2-	3-	2+	3-	1+	2232	3222	27	16	13	13	22	20	22	9	18
3	2+	1o	2-	1+	1o	1o	2o	2o	2212	2221	18	6	13	9	7	6	16	16	11
4	2o	1+	1-	1+	1+	3o	3o	3-	1222	2112	14	10	4	9	10	28	31	24	16
5	2+	3-	4-	4o	4-	4-	3-	3o	2352	2232	19	24	43	57	42	49	25	27	36
6	3-	3o	3o	4-	3o	4-	4o	4-	2212	2453	21	27	31	41	28	47	51	42	36
7	3o	3o	4-	4-	4o	3+	4-	4o	3435	7433	33	31	41	42	56	40	50	59	44
8	3+	3-	2+	3o	2+	4o	3o	3+	2221	2403	39	23	19	31	20	54	29	36	31
9	4-	3+	3o	4o	4+	3+	3-	4o	2205	3321	42	40	29	58	61	37	26	60	44
10	4+	4+	3-	3-	3-	2+	2o	1-	2333	3223	65	65	21	21	26	19	14	4	29
11	1-	0+	1+	1o	2o	1+	1+	2o	2242	1212	4	3	9	7	14	10	8	15	9
12	2-	2+	3-	3o	3-	3o	4-	4-	2222	3343	13	19	26	27	24	30	43	49	29
13	5+	4-	4o	2+	2o	4-	2-	1-	2321	1324	104	48	58	19	16	41	13	5	38
14	2+	2o	2+	3-	1o	1o	2-	1o	2323	1251	20	15	19	23	7	7	12	7	14
15	2-	1-	1o	2o	3-	2+	1o	1o	2322	3121	11	5	7	15	22	19	6	6	11
16	1+	0+	1o	2-	1-	3-	4o	2o	6343	2323	8	3	6	11	5	24	54	14	16
17	3-	3o	2+	3o	2+	2o	3o	3+	3223	2323	24	30	18	27	17	14	32	36	25
18	3o	3o	2+	2o	1+	1+	0+	0+	1221	2312	33	27	19	16	8	8	3	3	15
19	1+	2-	2-	2+	3-	3o	4-	3o	4232	2243	8	12	12	18	21	29	45	31	22
20	2+	4-	3o	3-	3-	1+	2o	1+	2321	3222	19	41	30	26	23	9	15	9	22
21	1o	2+	3o	3+	6-	3+	3-	3o	3321	3221	7	17	28	36	125	38	24	28	38
22	3-	3o	3+	4-	3+	2+	3-	4-	3222	2322	23	31	39	44	34	17	23	50	33
23	3o	3-	2o	3o	3-	2o	2-	2-	4332	2112	33	23	14	27	24	16	13	13	20
24	3o	9-	7-	6o	5-	4o	7o	8-	2233	1344	30	511	211	159	80	55	279	341	208
25	7-	8-	5-	5+	7-	5o	5-	6o	5656	2535	208	350	76	104	204	94	71	156	158
26	6-	6o	6o	6-	7+	6o	5o	4o	3453	2552	144	162	167	131	305	157	90	54	151
27	3+	4-	3+	3+	4-	3+	3+	4o	2302	4233	37	45	38	39	50	38	37	56	43
28	4-	4-	3o	3o	3+	3o	3-	1+	1213	2122	44	44	31	28	35	31	24	9	31
29	1-	1o	1+	1+	1o	1o	1o	2+	3151	2223	5	7	10	8	6	7	7	19	9
30	1+	3o	3o	4-	4o	4o	3+	4-	2313	1223	9	29	31	46	55	54	38	45	38
31	2o	2+	2+	2+	1o	1o	2-	3+	4322	3322	15	18	17	19	6	6	11	37	16
																			39,77

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	Ks								σs		as								As
1	3o	2+	2+	2+	3-	2+	3+	4o	1132	2313	27	17	19	18	25	18	34	57	27
2	3o	2+	2-	2-	2o	2+	3o	1+	2331	2312	27	19	13	12	16	20	27	10	18
3	3-	1-	2-	1o	0+	0+	2o	2+	2222	1221	21	4	13	7	2	3	16	18	11
4	2o	1-	0+	1+	1+	3-	4-	3-	2211	4232	14	5	2	10	8	23	44	23	16
5	2+	3o	4-	4o	4-	4+	3o	3+	3241	3212	19	27	43	53	48	66	27	36	40
6	2+	3-	3+	3o	3-	4o	5-	4-	2212	2165	18	23	34	32	23	54	74	46	38
7	3o	3-	3+	3o	4-	3+	4+	4+	1445	5232	33	26	39	30	46	34	66	66	43
8	4-	2+	2o	3+	2+	4-	3+	4-	1221	1342	42	18	16	36	18	41	37	44	32
9	4o	3+	3-	4o	4o	3-	3-	4+	2531	3423	57	40	24	53	59	26	23	69	44
10	4o	5-	2o	2+	2+	2+	1+	1-	3324	1552	57	73	15	18	17	17	10	4	26
11	0+	0+	1-	1o	2-	1o	1+	2-	2122	2322	3	2	5	7	13	6	8	11	7
12	2-	2+	3o	2+	2+	3-	3+	4o	1301	1213	13	19	32	18	18	25	35	56	27
13	6-	4+	4+	2+	2o	3o	1+	0+	6441	1322	145	65	65	17	14	30	10	3	44
14	2-	1+	2+	2+	1-	0+	1+	1-	4422	3253	13	10	18	17	5	3	9	4	10
15	2+	0+	0+	2-	2-	2o	0+	1o	4223	2123	19	3	3	12	12	15	3	6	9
16	1o	0o	0+	1+	0+	3-	3+	2o	5112	1433	7	1	2	9	2	24	40	15	13
17	3o	3+	3-	3-	2-	1+	3+	3o	3332	2122	28	34	21	25	13	10	36	33	25
18	4o	3o	2o	2-	0+	0+	0o	0+	3021	1211	51	32	15	13	2	3	1	2	15
19	1o	2+	2o	2o	3-	3o	4o	3o	4312	2203	7	18	14	16	22	30	59	29	24
20	3-	4-	3-	3-	2+	1+	2-	1+	2322	4331	23	49	23	22	17	8	13	10	21
21	1+	2-	3o	3+	6-	3+	2+	3-	3332	3522	8	13	32	37	126	34	18	23	36
22	3-	3o	3+	3o	3-	2-	2o	4o	3322	1221	22	28	34	32	25	13	15	53	28
23	3+	3o	1+	2+	2+	1+	1+	1+	2223	5322	34	32	8	19	18	9	9	10	17
24	3-	8+	7-	6+	5-	4+	7o	8o	3434	2244	24	453	210	174	77	65	280	391	209
25	6+	7-	4+	5-	6-	5-	5o	6-	5243	3344	193	229	66	74	146	86	89	125	126
26	6o	6o	6o	5+	7+	5+	5-	5-	5132	2332	149	156	151	108	327	118	73	78	145
27	4+	5-	4+	4-	5-	4+	4-	4+	3311	3122	61	81	61	49	75	64	42	66	62
28	4-	4o	3+	3o	3+	4o	4o	1+	2242	2352	48	57	38	30	36	57	56	10	42
29	1o	1+	1+	1o	0+	0+	0+	2+	4331	1013	7	9	8	6	2	3	2	20	7
30	1o	4-	4-	4o	4-	4-	4-	4+	2255	4323	7	41	46	60	49	49	47	64	45
31	3-	2+	2+	2o	0+	1-	1o	3+	3112	1333	21	19	17	16	2	4	6	34	15
																			39,42

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	Kn								σn		an								An
1	4o	3+	4o	4o	4+	3-	3o	4-	3223	4321	52	35	59	59	67	25	28	41	46
2	3+	3o	4o	4-	3-	3+	3o	3+	1353	3202	34	32	60	50	21	37	29	38	38
3	3-	3o	4o	5o	5-	4-	4-	3+	3314	5222	23	28	56	93	75	41	48	39	50
4	3+	2o	3-	6-	6o	5o	5-	4o	2234	4332	37	16	21	135	156	96	78	55	74
5	4-	3o	3o	3-	3+	3o	2+	3-	2124	2421	42	29	28	23	34	28	18	24	28
6	2+	3o	2o	2-	2o	3o	3-	3-	4503	1122	19	29	14	12	16	27	26	25	21
7	3-	3-	3-	2o	2o	3-	2o	2-	4321	331	24	23	25	14	14	21	15	13	19
8	1+	2-	1+	2-	1+	2-	2-	2+	4223	1413	10	12	9	13	8	12	13	20	12
9	2+	3-	2o	2o	2+	2-	3-	2o	3424	4242	19	22	14	14	17	12	24	14	17
10	1+	2+	2+	3-	3-	2o	1+	2-	4223	3223	10	17	19	24	24	14	8	11	16
11	1o	1+	1o	1+	1+	2-	2o	2-	3233	2322	7	8	7	10	9	11	15	11	10
12	2+	3-	3-	3o	3+	3o	1+	1+	2234	2322	18	25	21	32	38	27	10	9	23
13	1+	1+	2-	2-	2-	1+	1+	2-	2152	2323	8	8	11	12	11	10	10	11	10
14	1o	2o	2+	1+	2-	2o	2+	2+	3122	2213	7	14	17	8	11	16	17	17	13
15	2-	1+	2-	2-	2+	2-	2-	1+	3325	3223	11	8	11	12	17	11	12	9	11
16	1o	1-	1-	1+	2-	3-	2o	1+	223	3201	6	5	4	10	12	24	14	8	10
17	1+	3o	2+	2+	3o	3+	3o	2-	1032	1223	8	29	20	20	28	34	28	13	23
18	2-	2+	3-	3+	3-	2o	3-	2+	2212	2133	11	18	25	34	24	16	22	20	21
19	2o	4-	3+	4-	2-	1+	2+	2+	3535	2223	16	50	39	44	13	9	18	19	26
20	1+	1-	1o	1+	1+	1+	1o	1+	3213	2113	9	4	6	8	10	8	7	9	8
21	1o	1o	1+	3-	2+	2o	2-	2-	3222	3223	7	7	10	22	17	15	11	11	13
22	2+	1+	2o	3-	3-	3-	1+	1-	3202	2233	17	9	14	22	23	23	10	5	15
23	1o	1o	1-	3-	2o	3o	2+	3-	2213	323	6	7	5	24	14	30	19	21	16
24	2+	2o	3o	2o	2o	2-	3+	4o	3534	2231	17	16	27	15	15	11	36	54	24
25	3+	4-	3o	3o	3-	1+	2+	3-	2113	3233	38	48	27	29	25	9	20	23	27
26	3-	4-	3-	1o	2-	2o	2+	3+	2351	2233	24	44	21	7	11	15	19	35	22
27	3o	4o	3-	3-	3o	3o	3+	4-	2723	3334	31	60	23	23	29	28	36	42	34
28	4o	4-	3+	3-	4+	4-	4o	4o	7423	2121	57	48	36	24	68	46	58	58	49
29	5+	5-	4+	5-	5+	4+	4-	4o	4322	3341	116	75	65	76	107	70	42	51	75
30	4+	4+	3+	3+	4-	4-	3+	3o	5322	2422	69	61	40	34	47	45	39	27	45
																			26,53

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	Ks								σs		as								As
1	4o	4-	4o	4-	4+	3-	3-	4o	3332	3235	56	49	56	46	63	26	21	58	47
2	4-	3-	4-	4+	2o	3+	3o	4o	5142	1123	41	25	48	61	15	34	28	60	39
3	4-	3o	4+	5+	5-	4-	4o	4-	2353	3354	45	31	63	108	75	45	58	48	59
4	3o	2-	2+	5+	6o	5o	4o	4-	3121	3221	32	13	18	108	156	98	57	50	67
5	3o	3-	2+	2+	2+	2o	2-	2-	2222	2321	33	24	20	17	19	14	13	13	19
6	2+	3o	2+	2-	1+	3o	3-	2+	3433	2141	19	33	17	13	10	27	26	17	20
7	2+	2+	2+	2o	2o	2o	1+	2-	3242	3313	17	20	20	14	15	16	9	12	15
8	2-	1-	1-	1o	1+	2-	2o	2-	3312	2322	11	4	5	7	8	11	16	13	9
9	2+	2+	2o	2-	2+	2-	3o	2+	3432	4241	20	17	15	11	18	13	33	17	18
10	1+	1+	2+	3-	2o	2-	1-	2-	3233	3423	8	10	17	22	16	11	4	11	12
11	1o	1-	1-	1o	1-	1-	1+	1o	2323	3343	6	5	5	6	5	4	9	6	6
12	2o	3-	3-	2+	3-	2o	1o	1o	4332	2233	16	25	23	20	26	14	6	6	17
13	1-	1o	1-	1-	1o	0+	1-	1o	2233	2224	4	7	4	5	6	3	5	7	5
14	1o	2-	2-	1o	1-	2o	2-	2-	3223	3514	6	11	12	7	5	14	13	11	10
15	1+	1+	1+	1o	1+	1o	1o	0+	2323	2342	9	9	8	7	10	6	7	3	7
16	0+	0+	0o	1o	1-	2o	2-	1o	1110	2311	2	2	1	7	5	15	11	7	6
17	1+	3-	2o	2-	3-	3o	3o	2-	2223	2112	9	22	16	13	22	28	29	13	19
18	2-	2o	3-	3o	2-	1+	2+	2+	3322	2335	12	15	23	31	13	10	19	20	18
19	2-	4o	3o	3o	1+	0+	2-	2-	2522	1222	12	57	30	30	8	3	11	13	21
20	1-	0o	0+	1-	1o	1o	0+	0+	3113	1221	5	1	2	4	6	6	3	2	4
21	1-	1-	1+	2+	2-	1o	1+	1o	2222	2243	5	5	8	19	13	7	8	6	9
22	2-	1o	2-	2o	2o	2+	1+	0+	3434	4411	13	6	13	15	14	17	10	2	11
23	1-	1o	0+	2+	1o	2o	2o	2o	2321	232	4	7	2	17	7	15	15	15	10
24	2o	1+	2o	1+	1+	1o	3-	4-	2232	2424	15	8	16	10	9	6	24	45	17
25	4+	4-	4-	3+	3-	0+	1o	2o	6221	3233	64	46	43	36	23	3	6	15	30
26	2+	3+	3-	1-	1o	1+	2+	4-	3362	2414	19	39	26	5	6	10	17	41	20
27	3+	4+	3-	3o	3o	3-	3+	4-	2643	3255	35	64	24	28	28	23	39	46	36
28	5o	4+	3+	3+	4+	4-	4+	4+	7631	2212	89	61	38	34	64	42	62	63	57
29	6o	5-	4+	5-	6-	5o	4o	5-	5523	1155	150	85	68	76	124	94	53	77	91
30	5-	4+	4-	3o	4-	3+	4-	2+	3341	2322	73	67	41	29	49	38	44	20	45
																			24,8

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	Kn								σn		an								An
1	4-	3+	3+	3o	4o	3+	3+	4-	2421	2112	50	40	37	27	55	37	36	50	42
2	4o	4o	4-	4o	5o	4+	4o	4-	1333	2231	57	57	43	51	92	70	58	49	60
3	3+	4-	3-	2+	3o	3-	3-	3-	3322	2232	37	47	23	18	27	23	23	21	27
4	3-	1+	2+	1+	2o	3o	2+	2+	4222	1412	23	9	18	9	16	27	17	20	17
5	2o	2-	2-	1+	1+	2-	2-	2-	4234	2222	14	11	13	9	10	12	13	13	12
6	2-	2o	2-	1o	1+	1+	1+	2o	3533	2223	11	16	12	6	9	9	8	15	11
7	2-	2+	3-	3-	2-	2-	2-	2-	3423	2235	12	17	21	21	12	11	11	12	15
8	2+	2-	3-	3-	2-	3-	3+	2-	2133	3232	19	13	26	24	13	22	34	11	20
9	3-	3-	2+	2-	2-	3o	4o	3o	3322	1232	22	21	18	11	13	32	51	27	24
10	2-	2-	3-	2+	3-	2+	2o	3o	2444	3222	11	13	25	20	22	19	15	33	20
11	2-	1-	1+	1+	1+	1+	1-	1o	1222	1233	11	5	8	9	8	10	5	7	8
12	1-	1+	1o	2-	1+	2-	2o	1+	1222	1232	4	10	7	12	9	11	16	10	10
13	1+	3-	4-	5o	4+	4o	4-	3o	3442	3212	8	25	48	90	65	54	41	29	45
14	1+	3o	5-	5-	4+	4o	3+	3+	2143	3332	9	33	77	78	61	53	34	38	48
15	2+	2+	3o	3o	2o	1+	1+	2-	2242	2222	17	19	32	27	14	10	10	11	18
16	2-	1o	1+	2-	2+	2+	5o	4o	2132	2312	11	7	9	13	19	18	88	57	28
17	5o	4-	5+	5-	3+	2o	2-	2-	3333	2332	101	47	109	84	40	16	11	11	52
18	1+	1+	1o	1o	1+	1+	0+	1-	2332	1223	9	10	7	7	9	10	3	5	8
19	1+	2-	1o	1+	1o	2-	2+	2o	2213	1224	8	11	6	8	7	11	18	15	11
20	2-	2-	1+	1+	1+	1+	1o	1o	2133	2443	11	11	10	10	10	9	7	7	9
21	1o	0+	1o	2+	3o	3-	3-	2o	2303	2232	6	3	6	17	31	25	23	15	16
22	4-	3o	3+	4o	2+	3-	3o	3+	2222	2212	47	29	37	57	19	25	33	37	36
23	4-	3o	3o	3o	4o	4o	3o	4o	2123	3202	48	31	27	31	53	55	29	59	42
24	4o	3o	4-	3-	4o	3+	4+	3+	2332	2341	54	30	49	24	52	35	67	36	43
25	4o	5o	5-	4-	3+	4-	3+	3o	4443	2133	59	95	73	44	40	49	35	28	53
26	3o	3o	4-	3o	4-	4+	4-	3+	223	3542	29	29	46	33	49	63	42	35	41
27	4-	4-	3o	4-	4-	3-	3o	4-	3254	2212	42	49	31	42	49	22	33	44	39
28	4+	4-	3+	4-	3-	4o	4o	4o	1223	3111	62	43	39	46	26	57	51	59	48
29	4+	4-	3o	3+	3o	3-	3+	3o	4135	4332	65	49	28	38	30	22	36	27	37
30	3-	3-	3o	3o	2+	3o	3-	3o	3425	2322	23	21	31	32	19	33	21	29	26
31	3o	3+	4-	6-	5o	5o	4+	3o	3423	3322	27	37	50	142	99	100	61	29	68
																			30,13

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	Ks								σs		as								As
1	5-	3+	3-	3-	4-	4-	4-	4+	4522	2422	74	34	22	21	48	43	45	61	44
2	4+	4+	4o	4o	5o	5-	4o	4-	3423	3343	69	70	58	56	100	80	57	46	67
3	3-	4-	2+	2-	3-	2o	3-	3o	4431	3322	26	43	20	13	23	15	21	27	24
4	2+	1o	2-	1-	1+	2+	1+	2o	2233	2323	20	7	12	4	9	20	8	16	12
5	2o	1o	2-	1-	0+	1o	1-	1o	4443	1123	15	7	13	4	2	6	5	6	7
6	1o	1+	1+	0+	1-	1-	0+	2o	2220	1213	7	8	9	3	5	4	2	14	7
7	1+	2-	2o	2-	1-	1-	0+	0+	1212	2222	8	11	15	13	5	4	3	3	8
8	2-	1+	3-	2+	1o	2o	2+	1-	3123	3123	12	8	22	17	7	14	18	4	13
9	2-	2-	1+	1+	1o	2o	4-	3-	3231	2332	12	11	10	8	7	15	41	22	16
10	1+	1+	3-	2+	2-	2-	1+	2+	2222	4232	10	9	21	17	12	13	8	18	14
11	1o	0+	1-	1-	0+	0+	0+	0+	3133	1112	6	2	4	4	2	2	2	2	3
12	0+	1o	0+	1+	0+	0+	2+	1-	2321	2242	2	6	3	10	2	3	17	4	6
13	1+	2+	3o	5-	3+	4o	4o	3-	3432	1344	8	17	28	76	40	54	52	23	37
14	1o	3-	4+	5-	4o	4+	3o	3o	4232	1332	6	23	69	73	52	65	33	27	44
15	2-	2o	3-	2o	1o	0+	0+	0+	4131	222	13	14	25	14	7	3	3	3	10
16	1o	0o	0+	1-	1o	1+	4-	3o	3122	123	6	1	3	4	7	8	47	30	13
17	4+	4o	5-	5-	3o	1o	1-	0+	4526	4132	67	59	81	83	29	6	4	3	42
18	0+	0o	0+	0o	0o	0+	0o	0o	2111	1111	3	1	2	1	1	2	1	1	2
19	1-	1-	0o	0o	0o	0+	1o	0+	3211	142	4	5	1	1	0	2	6	3	3
20	1+	0+	1-	1-	0+	0+	0+	0o	4222	2121	8	3	5	4	3	2	3	1	4
21	1-	1-	1-	2-	2-	2-	2-	1-	4432	3243	4	4	4	12	13	11	11	5	8
22	3-	3-	3-	3o	2-	2+	2+	3-	2322	3622	26	24	23	28	11	19	17	23	21
23	3+	3o	3o	3o	3o	3+	3-	4-	3210	1123	40	32	28	32	33	39	23	41	34
24	4o	3-	4-	3-	4-	3-	4o	4o	3234	2226	54	26	43	25	43	24	57	52	41
25	4+	5-	4-	4-	3o	4o	3+	3-	5552	3222	69	78	50	42	29	51	38	26	48
26	3o	3-	4+	3-	3+	4+	3+	3+	1321	2533	27	21	61	25	34	65	37	35	38
27	4o	4-	3-	3+	4-	3-	2o	4o	3312	2202	56	46	24	34	42	23	16	57	37
28	5-	3+	3o	3-	3-	4o	4-	4+	4411	2034	77	37	29	24	22	59	45	66	45
29	4+	4-	3+	3o	3o	2o	3+	3o	5222	2245	66	46	36	28	32	14	40	32	37
30	3-	2-	2+	3-	2o	3-	2+	3o	4412	2310	25	13	19	24	16	26	18	32	22
31	3-	3o	4-	5o	5o	5+	4-	2o	2624	3433	26	32	42	90	97	107	42	16	57
																			24,65

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	Kn								σn		an								An
1	4-	5o	6o	5+	6-	6+	2o	3+	3213	4321	46	92	161	117	127	179	15	39	97
2	4-	5-	5+	4o	4-	5-	4+	6-	2453	2343	46	80	105	56	48	84	67	140	78
3	3-	2+	4-	2o	2o	2+	4-	3+	3232	1233	22	18	45	16	16	19	42	36	27
4	2o	4-	3-	3o	4+	6+	6-	6-	2732	2224	15	46	22	28	64	177	130	123	76
5	5+	7-	7+	7o	7-	8o	7-	6+	3431	3342	120	206	314	269	214	441	233	195	249
6	6-	6-	5+	5-	3+	3-	2o	3+	2524	1123	133	133	105	81	36	24	15	36	70
7	3o	4-	5o	4-	4-	3o	3+	5-	2443	5424	27	44	92	42	42	30	40	75	49
8	3+	3o	2+	3o	3+	5-	4+	4-	2033	3222	37	29	19	28	40	77	67	46	43
9	6o	5-	4-	4+	4o	5o	5-	4o	2324	3322	148	79	50	65	51	97	81	52	78
10	4-	4-	7-	6o	6o	6-	6o	7-	1245	2232	49	46	230	168	164	124	159	209	144
11	7o	7o	6+	5+	5o	4+	5o	5o	4453	4235	244	248	181	108	92	64	93	90	140
12	5-	4+	3o	5+	5-	5o	6-	5+	2425	3222	73	64	30	106	85	93	122	112	86
13	7o	5+	7-	6+	6+	6-	7-	4+	4234	3231	244	110	203	185	180	145	234	62	170
14	4o	3-	3o	3-	3-	2-	2-	1+	4332	3222	58	22	30	23	21	11	11	10	23
15	1+	3-	4+	3+	3o	4-	3-	2o	2264	2331	8	24	61	35	28	43	22	16	30
16	1-	1o	1+	1+	2-	2-	2o	2+	3222	2321	5	7	8	10	11	13	15	17	11
17	3-	3-	2+	5o	6-	5-	6+	6-	2313	2331	23	23	17	103	123	80	198	143	89
18	4o	4o	4+	3-	3-	3o	3+	3+	1452	3131	60	56	61	26	26	33	40	35	42
19	4-	4-	4o	4-	4o	4-	4-	4-	2134	322	42	49	54	50	54	42	44	41	47
20	4-	3o	2+	2+	2o	3o	3o	3+	1332	3223	43	30	19	17	16	29	30	35	27
21	4o	3+	4o	3o	3o	4o	3o	3+	4324	2332	60	37	57	29	30	54	33	37	42
22	4-	4-	4-	3-	3o	3o	3o	4-	2342	1121	41	48	41	21	31	28	33	46	36
23	3o	4-	4-	5-	5o	4+	5-	5-	3423	2232	28	47	42	81	96	67	73	77	64
24	5-	4+	4o	3+	4-	3+	3+	3+	3222	2132	76	70	51	39	47	35	37	37	49
25	4-	3+	3o	4o	3+	4-	3+	4-	2212	1322	42	38	32	52	35	42	37	42	40
26	4-	4-	3+	3o	3+	3+	3+	3+	2321	2132	49	45	37	32	40	35	35	40	39
27	3o	2o	2o	3-	2o	2+	3-	3-	1233	3231	30	15	14	26	15	20	24	24	21
28	2+	3-	3-	2+	2-	2o	2o	2o	3233	2234	20	22	24	19	12	14	14	15	18
29	1+	1o	1+	2-	2o	1+	2-	2o	3113	3022	9	7	10	13	14	9	13	16	11
30	3+	4+	3o	4-	4-	3o	3o	4-	2324	2112	38	65	28	49	42	33	32	49	42
																			64,6

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	Ks								σs		as								As
1	3o	4+	5+	5+	5-	5-	2-	3-	2434	3432	30	70	120	113	85	79	12	23	67
2	4-	4o	4o	4-	3o	5-	4o	6o	6433	3235	44	51	60	48	32	78	51	147	64
3	2+	2-	4-	1+	1+	1+	3+	3+	3442	3164	20	11	41	10	8	10	39	34	22
4	2o	2o	1+	2-	3+	5+	6-	5+	3532	5232	14	16	10	13	39	120	137	120	59
5	6-	7o	7-	6+	6o	7+	6+	6-	6441	1435	133	249	223	188	147	328	186	140	199
6	5o	5+	5+	5-	3-	1+	1o	3o	2735	2334	98	113	108	76	22	10	7	29	58
7	2+	3o	4+	3o	3-	2o	3o	3+	1540	3122	18	33	70	32	23	14	27	34	31
8	3-	2-	2-	2o	2+	4o	4o	3o	1242	1261	25	12	13	16	18	57	54	27	28
9	6+	4o	3o	4-	4-	5-	5-	3o	2032	2133	178	59	31	49	41	85	77	33	69
10	4+	3+	6o	6-	6-	5+	6-	6-	4134	3154	61	40	162	139	126	112	137	140	115
11	6+	6-	6-	5-	5-	4+	5-	5-	3452	4345	180	145	132	73	82	69	84	84	106
12	5-	4o	2+	5-	4-	5o	4+	5-	4213	1144	76	59	17	75	49	90	67	79	64
13	7-	5+	6o	5+	7-	6-	6+	4-	4532	2343	221	105	164	113	209	130	196	46	148
14	4-	2+	3-	2-	1+	1-	1-	1o	2242	2223	45	18	21	13	9	5	4	6	15
15	1o	2+	3o	3-	2o	3-	2o	1o	1322	1234	6	18	32	21	14	23	15	7	17
16	0+	1-	1-	1o	1-	1o	1o	1+	2222	3332	2	4	5	7	5	6	6	8	5
17	2o	3-	2o	4o	5-	5-	6-	5+	1422	2354	15	23	14	60	82	75	141	111	65
18	4+	4-	4-	2+	1+	3-	3+	3+	5352	2552	61	42	48	18	10	24	39	37	35
19	4-	4o	4o	4-	4-	4-	4-	4o	2433	2414	41	51	56	41	41	46	49	53	47
20	4o	3+	2-	1+	1o	2-	3-	2+	2122	3321	60	36	11	9	6	11	26	17	22
21	5-	3-	4-	2+	2o	3-	3+	3o	6232	3222	80	21	49	18	15	26	35	29	34
22	4-	4-	4-	2+	3-	3-	2+	3+	5551	3222	44	44	44	17	24	25	18	34	31
23	3o	4-	3+	5-	5-	4o	5-	5o	3423	2322	32	45	35	73	76	52	86	93	62
24	5-	4+	3+	3o	3+	3o	3-	3o	6323	3321	84	67	38	29	39	27	25	27	42
25	4-	3-	3-	3o	3-	4-	3+	4-	4222	2314	42	26	26	31	26	42	35	49	35
26	4o	3+	3+	3o	3-	3-	3o	3o	4431	2223	51	40	34	29	26	23	27	27	32
27	3+	2-	1+	3-	1+	2-	2+	3o	4112	3334	35	11	10	26	10	13	17	27	19
28	3-	3-	2+	2-	1+	1+	1+	1+	5433	2221	26	25	18	12	9	10	9	8	15
29	1o	0+	1-	1o	2-	0+	1o	1o	3133	4122	6	2	5	6	12	2	6	7	6
30	3+	4-	2+	3-	3o	3-	3+	4-	5532	4225	39	50	18	26	31	22	38	46	34
																			51,53

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	Kn								σn		an								An
1	3o	3+	2+	1+	2+	3o	3-	3-	2522	2112	30	39	18	8	20	28	26	23	24
2	2o	3o	3+	4-	3+	3+	4-	4-	4224	3222	14	27	39	42	36	38	41	50	36
3	4-	4+	4o	3+	4-	3+	4-	4-	3243	2432	50	64	57	39	47	38	44	42	48
4	4o	3-	3o	3-	3-	2o	2o	1+	4222	2213	55	24	33	26	25	15	16	10	26
5	1+	1o	1+	1+	2-	2-	1+	1+	2222	1212	10	7	8	10	12	12	8	9	10
6	1+	1+	1+	2-	2o	3-	3-	3o	1322	221	9	8	8	13	15	23	21	31	16
7	2o	2+	1+	1+	1+	2-	3-	3-	2322	1322	16	20	8	8	10	11	21	23	15
8	3-	3-	4-	4o	4-	7-	6o	5o	4232	3334	22	22	41	51	50	220	164	99	84
9	3-	5-	7o	6+	7o	6+	5o	5-	1346	4643	26	79	255	187	250	182	99	74	144
10	5-	4o	4-	3o	3o	2+	2o	2-	2434	2231	71	60	48	29	29	18	16	12	35
11	3-	3o	4-	4+	3o	3+	3-	3o	1244	2232	26	27	49	70	31	34	21	32	36
12	3o	3o	4-	5-	4o	3+	3+	3+	2333	3223	29	31	41	83	54	38	35	36	43
13	4o	5-	6-	7-	7-	8-	6-	6+	1226	4443	59	80	124	223	221	331	135	175	169
14	6-	6o	6-	6-	5o	3+	4o	3o	2446	3113	130	157	140	121	101	36	51	33	96
15	4-	3o	3-	3-	2-	1+	2o	2-	1221	3142	44	33	21	26	13	9	15	11	22
16	3-	3-	2-	2o	2+	4o	4o	4o	3333	2232	23	22	13	14	18	55	55	51	31
17	5-	5-	5-	3o	3-	4-	3+	4o	2351	3133	74	78	80	33	26	44	37	57	54
18	5-	2+	2-	2o	3o	3+	4o	4-	4225	3232	79	20	12	15	27	38	52	46	36
19	3+	4-	4o	4-	4o	4o	5o	4o	2224	2133	39	44	51	46	56	56	95	54	55
20	3+	4-	5-	4+	4-	3+	4-	4o	2344	3434	37	43	86	64	47	38	43	56	52
21	4o	5-	4-	3+	3+	3o	3+	4o	3333	1331	52	76	42	39	36	33	40	55	47
22	3+	3+	3o	3+	4-	3o	3-	4o	2223	2311	36	36	31	34	47	32	26	56	37
23	3+	3o	2o	2+	3o	3+	3o	2o	1213	2451	35	31	15	20	31	36	31	14	27
24	1+	2-	3-	2+	2-	2o	2+	2-	2223	1123	10	11	23	18	11	16	19	11	15
25	2-	2o	3+	3-	3-	3o	3-	2-	3123	2223	12	15	37	25	24	31	23	13	23
26	1+	2-	2-	1o	2-	1+	1+	2-	3332	1221	8	12	11	7	12	10	9	12	10
27	1+	1+	1+	1+	1o	2-	3+	3o	3222	1244	9	8	8	10	7	12	34	29	15
28	2o	2+	2-	1o	1+	1+	1+	3o	1332	2123	16	20	11	7	8	8	9	29	14
29	2o	2+	3-	2-	2-	1+	1+	2+	1122	2123	16	17	22	11	12	10	9	19	15
30	2-	3-	3o	2-	2-	2-	2+	2-	1412	2133	11	25	33	12	13	13	17	12	17
31	2+	1+	2+	1+	2o	2o	1+	2+	1232	1232	17	10	18	8	16	14	10	19	14
																			40,84

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	Ks								σs		as								As
1	3-	3o	2o	0+	1+	2o	2o	2-	2211	1312	21	28	14	2	10	14	14	11	14
2	1o	2o	3+	3+	2+	3o	3o	3+	3353	3312	6	16	35	34	17	31	30	40	26
3	3+	4-	4o	3+	3o	3+	4-	3+	3563	2332	40	44	51	39	32	35	41	37	40
4	4+	2+	3-	2o	2-	2-	1o	1-	7221	2233	69	19	23	14	13	11	7	5	20
5	0+	0+	0+	1-	0+	1o	1-	0+	2222	2432	3	3	3	5	3	7	4	3	4
6	1-	1o	1o	1+	1o	2o	2-	2+	2112	1212	5	6	6	9	7	16	11	18	10
7	2-	2o	0+	0+	1-	2o	3-	3+	3211	3677	11	15	2	2	5	15	21	39	14
8	4-	3-	3+	4-	3-	6-	5+	4+	7666	3223	45	26	38	49	25	146	120	69	65
9	3-	4o	7+	7-	6+	5+	5o	5-	1325	1475	21	59	288	216	190	117	90	81	133
10	4+	4-	4o	3+	3-	2o	2+	1+	5141	2432	66	49	52	34	26	16	18	8	34
11	2+	3-	3+	4-	3-	2+	2-	2+	2353	1212	20	25	36	48	21	18	11	18	25
12	3-	2+	3o	5-	3o	3+	2o	2+	4421	1321	25	17	31	85	27	38	16	19	32
13	4o	5-	5+	6+	6+	7o	5+	6o	3421	2552	60	80	104	182	185	283	104	167	146
14	6-	6-	5+	5+	5-	4+	4+	4-	6622	4533	144	132	109	115	78	63	67	47	94
15	4o	4-	2+	3-	1-	1-	1-	1o	5524	3333	51	42	19	21	5	5	5	6	19
16	1+	2-	1+	1o	0+	4-	4-	3+	2212	2412	10	12	10	6	3	45	47	38	21
17	5-	4+	5-	4-	3-	4-	3+	4+	2264	2411	78	66	83	41	22	47	40	61	55
18	5-	2+	1+	1-	1+	3o	4-	4-	6123	3132	72	20	10	5	10	27	49	41	29
19	4o	4-	4-	3+	4-	4o	5+	4o	4342	2233	55	41	49	40	48	51	113	58	57
20	3-	4o	5-	4o	3+	3o	3-	3+	1433	3433	24	54	75	57	37	28	25	38	42
21	4o	5-	4o	3+	3+	3o	3o	4-	3231	2342	54	82	51	34	35	27	30	44	45
22	3+	4-	3+	3o	3o	2o	2+	4-	2242	1222	37	45	35	27	27	16	19	48	32
23	3+	2+	2o	2o	3-	3+	3-	1+	3210	2423	34	20	14	16	21	40	24	8	22
24	1+	1+	1+	1o	1-	2o	2o	2-	2322	4113	8	9	10	7	5	14	14	11	10
25	1+	2-	3o	2o	2-	2o	2+	1+	2332	3121	8	12	31	16	12	14	17	9	15
26	1-	2-	1o	0+	1o	0+	0+	1o	1351	4222	5	11	6	2	7	3	3	7	6
27	1o	1-	0+	1o	0o	1-	2+	3o	1411	1323	6	5	2	6	1	4	19	33	10
28	1+	2o	1o	0+	0+	0+	0+	2+	1321	1223	10	15	6	2	2	3	3	17	7
29	2-	1+	1+	1-	1-	1-	1-	2-	3223	3221	13	10	8	5	5	4	4	12	8
30	2-	2+	3-	1+	1o	2-	2+	1o	2412	1521	11	19	25	8	6	13	18	6	13
31	2-	1o	1+	0+	1o	1o	1+	2+	4332	1233	12	6	10	2	6	6	8	18	9
																			34,1

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	Kn								σn		an								An
1	4-	2o	2-	3o	3o	5o	4+	5+	4133	2333	41	15	13	27	27	98	67	114	50
2	3+	4-	6-	5o	5+	5o	3o	4o	3233	3423	39	49	127	94	107	99	30	52	75
3	4-	3+	4-	4+	5o	4+	4-	4+	2232	2332	44	40	46	66	100	66	43	65	59
4	5-	4+	5o	4o	4-	3o	5-	4-	2263	1232	86	66	93	54	46	33	85	47	64
5	4-	5-	4-	4-	4-	3-	4-	5-	3223	4222	47	73	44	50	47	22	43	73	50
6	5-	4+	4-	4+	4+	3+	3-	2o	3214	4422	75	62	46	65	67	38	22	14	49
7	3-	5-	4-	2+	2+	2+	2-	3-	2234	2214	26	74	44	18	19	18	13	24	30
8	3o	3o	3+	3+	2+	2o	1o	2+	3152	2123	28	27	39	35	19	14	7	18	23
9	2+	3-	3-	3-	4-	4-	3o	2+	3332	1312	17	24	23	23	49	43	28	19	28
10	1+	3-	3+	3-	2+	3-	2o	2o	2331	2332	10	21	34	26	20	25	14	14	21
11	4-	4-	4o	3+	4o	4o	3-	2o	1233	2321	49	42	57	36	56	53	26	16	42
12	3-	3+	5-	4o	6-	5-	6-	5-	3253	3152	21	40	73	53	133	75	141	77	77
13	4-	2+	2+	3-	2o	2o	2+	1+	1334	2122	49	19	19	23	15	16	18	10	21
14	1o	1o	2o	2-	3-	3+	4-	5-	2212	3111	6	7	14	11	26	35	49	76	28
15	5-	5-	4+	4o	4-	4o	4o	4o	1312	2221	80	78	68	52	46	52	51	52	60
16	4-	4-	3o	3-	3o	3o	3-	4o	2222	1114	44	49	32	24	33	31	24	51	36
17	3-	4o	3o	4o	3o	3o	4-	3o	2512	2211	23	57	33	53	27	30	44	28	37
18	4-	2+	2o	2o	3o	3o	5+	4+	2312	232	47	17	15	15	29	29	104	64	40
19	4+	4+	7-	6+	5o	4o	3o	3o	2142	3431	64	62	238	195	91	51	30	27	95
20	3+	3o	5o	6+	7-	4+	5o	4o	2443	4433	34	30	90	179	207	70	91	53	94
21	5-	5-	5o	5-	4-	4-	3-	3+	4243	3322	79	81	93	76	46	45	22	39	60
22	4+	6o	6-	4-	4-	3-	2+	3o	2124	2243	69	150	123	47	47	25	20	33	64
23	3+	3o	3o	4o	2o	1+	1+	2o	5444	2124	37	31	29	54	16	8	9	14	25
24	3o	3o	2o	1+	2o	3-	3o	3-	3211	1222	27	31	16	9	16	22	27	24	22
25	3+	3-	2+	2+	2-	2o	2+	3-	5323	2012	35	23	18	17	12	15	17	22	20
26	2-	3-	2o	3-	2-	2o	3-	2+	1203	2123	13	25	15	22	13	14	24	19	18
27	2+	3-	3-	3-	2o	5o	5+	5-	4235	3321	20	22	26	21	15	92	118	83	50
28	3+	3-	2+	2o	3-	3o	3+	4-	2213	4244	37	23	17	14	21	27	38	42	27
29	1+	1+	3-	2+	3-	3-	4-	4-	6323	2232	8	10	24	18	23	25	45	42	24
30	2+	3o	3-	4o	6o	4+	5o	5+	2614	6226	20	33	26	55	151	68	89	111	69
31	3-	3o	5o	5-	5o	5o	3+	4o	2323	3424	26	29	101	86	97	88	38	56	65
																			45,9

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	Ks								σs		as								As
1	3o	2o	2-	2+	2+	4+	4o	4+	3222	3513	32	15	13	18	17	70	56	70	36
2	4-	3+	5+	5o	5+	5-	3o	4+	4324	3426	48	37	109	87	118	81	32	68	73
3	4o	3+	5-	4o	5o	4o	3+	5o	3534	3223	57	34	72	53	89	55	34	89	60
4	5o	5-	5-	3+	4-	3+	5-	3+	6533	4223	100	75	73	40	41	35	78	35	60
5	3+	5o	4-	4-	3+	3-	3+	5o	3322	5223	38	93	49	42	35	21	34	100	52
6	5-	4+	4-	5o	4+	3o	2+	2o	2532	5422	72	64	42	88	70	33	20	16	51
7	2+	4+	4-	2-	2-	2+	1+	3-	3231	2344	20	66	41	12	12	17	10	23	25
8	3+	3o	3o	3o	2-	2-	1o	2o	5143	1222	36	27	31	27	13	11	6	15	21
9	2o	3o	3o	3o	4-	3+	3-	2o	2264	3322	14	30	28	29	42	35	22	15	27
10	1+	2+	3-	3-	2+	3o	2+	2+	3225	6858	9	19	26	25	19	31	17	19	21
11	5-	3+	4-	3o	4o	4-	2+	2o	5332	3452	73	38	46	28	51	46	20	14	40
12	3-	4-	5-	4o	6-	5-	6-	5o	3541	3477	26	47	77	51	131	76	141	100	81
13	4-	2o	2o	2-	2-	1+	2+	2-	4223	3211	48	14	14	12	11	8	17	11	17
14	1o	1o	2-	1o	1+	3+	4-	5o	1321	2314	6	6	12	6	10	35	48	95	27
15	5-	5o	4+	3+	3o	4-	4-	4o	3443	1233	72	89	61	34	29	44	41	58	54
16	4-	4-	3-	2+	2+	2+	3-	4-	3521	2112	48	47	21	17	18	18	25	43	30
17	2+	4-	3o	4-	2+	2o	3o	3-	3523	3041	19	49	28	49	19	16	31	22	29
18	4-	2+	1+	2-	2+	2+	5-	4+	2411	2132	44	18	10	12	18	17	81	64	33
19	4+	4+	7-	6+	4o	3-	2+	3-	4434	3423	63	68	209	181	58	26	18	25	81
20	3o	2+	5-	6o	6o	4+	5-	4o	3321	1343	28	20	76	150	152	63	74	58	78
21	5-	4+	5o	4o	3+	3o	2o	3o	8332	1221	80	69	90	57	34	32	15	27	51
22	5o	6-	5+	4-	3o	3-	3-	3+	3142	4231	98	144	112	48	33	26	21	34	65
23	4-	3o	3-	4-	1+	1-	1o	1+	5333	1332	48	30	23	49	9	5	6	8	22
24	3-	3-	2-	0+	2o	2-	2o	2o	2321	3422	26	25	12	2	15	13	16	16	16
25	3+	3-	2o	2-	1o	2-	2-	2+	5223	2321	39	25	15	13	7	11	13	18	18
26	2-	3-	2-	2+	2-	2-	3-	2o	4333	3221	13	21	13	17	12	12	23	14	16
27	3+	3o	3o	2+	2-	5o	5o	4+	5354	2442	36	27	30	19	11	88	88	70	46
28	3+	3-	2-	1+	3-	3-	3o	4-	3212	2334	38	26	13	10	21	26	33	41	26
29	1o	1+	2o	2+	3o	3o	3o	4-	3332	3413	6	10	16	17	28	28	30	41	22
30	2+	3-	3-	4-	5+	5-	5+	5o	5226	3244	20	22	22	50	118	76	105	92	63
31	3-	3o	5-	5-	5-	5o	3+	4o	2133	2215	26	30	77	83	86	90	38	60	61
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1	5-	5-	4o	4o	4o	4-	5-	4+	3452	3222	72	76	59	53	59	44	81	67		64
2	4-	4o	5o	4+	4-	3+	2-	2+	3355	5324	48	53	95	63	48	35	12	19		47
3	1o	3o	3-	4-	3+	3o	3-	3+	2344	1323	7	29	23	44	38	27	24	40		29
4	2o	3o	3+	3-	3o	2o	2o	3-	2332	3233	14	28	37	21	28	14	16	25		23
5	4o	4-	4o	3+	3o	3+	3+	3-	3474	2543	57	46	60	38	33	36	37	23		41
6	3-	3o	2+	3-	2+	3o	2+	2+	5733	2212	21	32	20	26	20	31	17	20		23
7	3+	3-	3o	3-	3-	2o	3o	2-	5513	2252	40	21	28	24	26	15	29	11		24
8	3+	3o	2+	3o	4o	4-	4+	3o	2523	3463	37	28	18	28	59	43	66	29		39
9	4-	3+	4-	4o	5o	4o	4o	6-	3321	4264	41	35	50	58	89	53	57	136		65
10	4+	5o	4o	2+	3+	3o	3o	3+	3832	1313	63	96	59	19	35	33	28	40		47
11	4-	2+	2+	4+	4o	3o	4-	2o	2313	4121	44	18	17	62	52	31	43	16		35
12	2+	3-	2+	2+	2o	2-	2o	2o	2313	2221	20	21	17	19	16	12	14	16		17
13	2+	2-	2o	2o	2o	3-	3o	4-	2111	3204	19	12	16	16	15	21	29	48		22
14	4-	3+	3+	4o	4-	3+	3o	3o	2212	1114	47	40	35	53	46	37	31	32		40
15	3+	3-	2-	1+	2-	2-	2-	2+	4331	1122	39	21	12	8	13	13	13	18		17
16	2o	2-	2-	2o	2-	1o	2+	2o	2231	3223	15	12	11	14	12	6	18	15		13
17	2-	1+	1+	1o	1+	2+	1+	2-	2211	1322	12	9	8	6	8	19	9	13		11
18	1o	1-	1+	1o	1+	2-	2o	3o	2112	1322	6	5	8	7	8	12	14	27		11
19	3-	2+	2-	3o	2o	2+	2-	2+	1533	1322	24	17	11	28	16	19	13	20		19
20	2o	3o	2o	2+	2-	2-	1o	1+	5523	1122	15	31	14	18	13	12	6	9		15
21	2-	1+	1+	2-	1+	1o	1-	2-	3432	1233	11	8	8	11	8	7	4	11		9
22	2-	2-	1+	2+	3-	2o	1+	2o	2234	2122	12	11	10	17	23	14	9	14		14
23	1+	1o	1o	1o	1o	1o	1+	1+	2122	122	9	7	6	7	6	7	9	10		8
24	2o	2-	1o	1o	2-	2o	2-	3-	2322	2333	14	11	7	7	11	15	12	25		13
25	3+	3+	3o	3o	4o	5-	5-	5o	4641	2234	38	35	31	31	56	81	81	98		56
26	4+	3+	4+	5-	5-	4-	4+	4o	5246	4352	61	36	69	83	71	48	67	57		62
27	4o	5-	4+	5o	5-	5o	4+	3o	2434	5422	55	72	68	88	77	89	63	33		68
28	4-	4-	3+	4o	5-	4-	5-	4o	3312	3434	49	47	35	53	83	42	81	58		56
29	3o	2o	1+	3-	3+	4-	3+	4-	2122	3232	32	14	10	23	39	44	38	44		31
30	3-	3+	3+	3+	4o	4-	4o	4-	3223	4254	24	35	35	37	54	47	55	42		41
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	Ks								σs		as									Ás
1	5-	5-	4-	3+	4-	4o	5+	5-	6653	2323	78	71	50	38	43	51	109	81		65
2	4o	4-	4+	4o	3o	3+	2-	2+	3244	4134	52	43	70	58	33	34	12	17		40
3	0+	3o	2+	3o	3o	3-	3-	3+	1544	5213	2	27	20	27	29	25	22	37		24
4	2-	3-	3-	3o	2+	2-	2-	3o	2334	1244	13	25	25	27	17	13	11	30		20
5	4o	3+	4-	3o	3-	3o	3+	3-	3553	2432	52	38	46	28	23	31	35	22		34
6	2+	3o	2-	3-	2+	3o	2+	2+	4723	1113	18	30	12	21	17	29	17	17		20
7	3o	3-	3-	2o	2o	1+	2-	1o	5331	3243	32	23	21	15	16	10	12	7		17
8	3o	2+	2o	3o	4-	4-	5o	3o	6624	2441	29	20	15	27	47	44	88	29		37
9	3+	3+	4-	4o	5-	4o	4+	6-	3463	5556	38	38	44	55	77	60	69	127		64
10	5-	5+	5-	2o	3-	3+	3-	4o	5754	2225	81	108	80	16	23	40	24	52		53
11	4-	2o	2-	4+	4-	3-	3+	2o	4213	2212	48	15	13	65	45	23	39	15		33
12	2+	2+	2+	3-	1+	2-	2o	2o	1433	2312	17	20	19	22	10	12	14	15		16
13	3-	2-	2o	2-	1+	2o	3o	4-	3214	5331	22	12	15	11	10	15	28	49		20
14	4o	4-	3o	4-	4o	3+	3o	3o	3223	3141	54	43	31	48	55	39	31	29		41
15	3o	3-	1+	1o	1+	2o	2o	2-	4433	4121	30	21	10	6	8	15	14	12		15
16	2o	1+	2-	1+	1+	0+	2o	2-	2343	3221	15	10	13	10	10	3	15	13		11
17	1+	1o	1+	0+	1o	2-	1+	2-	2232	1422	9	7	9	3	7	13	8	12		9
18	0+	1-	1o	1-	1o	0+	1+	3-	2233	3222	3	4	6	4	6	3	10	21		7
19	3o	2o	1+	3-	2+	2+	1+	2+	1433	1322	28	15	9	25	19	20	10	20		18
20	3-	3-	2-	2-	1o	1+	0+	1+	9554	4322	23	22	13	12	7	10	3	8		12
21	2-	1-	1-	1o	1-	1-	1-	1+	4323	1341	11	4	5	7	4	4	5	8		6
22	2-	2-	1o	2o	2+	2o	1o	1+	5432	4333	11	11	7	14	17	14	6	8		11
23	2-	1-	0+	0+	1-	0+	1o	1+	2422	4133	12	5	3	3	5	2	7	10		6
24	2-	1+	1o	1o	1+	1+	2-	2o	3320	3120	13	10	7	7	8	8	13	16		10
25	3o	3+	3-	3o	4o	5o	5+	5+	3654	3444	28	37	23	27	60	93	105	119		62
26	4-	3+	4o	4o	4o	4-	4-	4-	5143	3332	48	40	53	58	59	46	43	46		49
27	5-	4+	4-	4+	5-	5-	4+	3o	3553	3333	74	68	50	63	81	76	64	29		63
28	4o	4-	3-	4-	5-	3+	5-	4o	4510	5125	51	43	25	44	79	38	72	51		50
29	3-	2o	1+	2+	3+	4-	3o	4-	4312	2323	24	14	9	18	35	49	33	46		29
30	3-	3o	3o	3o	3+	4-	4o	3o	2331	2041	23	32	31	29	40	44	58	33		36
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	Kn								σn		an								An
1	3o	4-	4+	4-	3+	3+	6+	6+	2734	4545	29	44	66	43	38	35	186	182	78
2	5o	5o	5-	5+	6o	6-	4-	3+	4324	6534	91	96	77	111	147	125	42	39	91
3	3o	3+	4-	4-	3o	2+	3o	3+	4533	2253	29	36	46	43	27	19	30	35	33
4	2+	3+	4o	3o	4o	3+	5+	5-	2564	1323	19	36	57	30	51	35	112	78	52
5	4-	3-	3+	3-	3-	2o	3-	1+	3231	1122	48	24	40	22	22	15	24	10	26
6	2o	1+	2-	3+	3o	4+	4o	5+	3233	2333	16	10	13	36	32	63	56	113	42
7	5-	4+	4o	3+	4o	3-	3o	3o	2323	1214	85	62	54	38	52	24	31	32	47
8	3+	3+	4o	4+	4+	4o	6-	3+	2324	5172	38	39	59	67	62	59	126	36	61
9	3+	3+	3-	3-	2o	2+	2+	2+	4322	1132	36	37	22	22	16	17	18	20	24
10	3+	4o	4+	3-	4-	4+	3o	3-	4554	2613	40	55	68	23	50	69	31	23	45
11	2o	2o	2o	2+	3-	3o	3+	3-	1124	3443	16	15	15	19	21	32	34	22	22
12	2o	1+	2-	1+	1o	1+	2o	2o	123	2212	15	9	11	9	6	10	16	14	11
13	2-	2o	2-	2-	2+	2o	2o	2-	2223	1221	11	14	13	12	17	14	14	11	13
14	2-	1o	1+	1-	3-	2o	3o	2o	2122	2352	12	7	10	5	21	14	30	15	14
15	2-	1+	2-	1o	1+	1+	2-	1+	2021	2222	11	9	11	6	9	9	13	9	10
16	2-	1+	1+	1+	2-	1+	1+	1+	3221	3121	11	8	8	8	11	9	8	8	9
17	1+	1-	1o	2-	3o	2o	3-	2o	3213	2134	8	4	7	12	29	16	22	16	14
18	3o	2+	2-	2o	3+	3-	2+	3-	1223	3122	33	20	13	16	35	24	18	21	23
19	2-	3-	2o	2+	2o	2+	3+	3+	2222	143	12	26	15	19	15	18	39	38	23
20	3+	3o	4-	4+	4o	3+	3-	2+	2464	4321	38	31	42	70	55	37	25	17	39
21	2+	3+	2o	4o	4o	5-	5-	4+	2544	5665	19	38	16	53	59	83	82	69	52
22	3+	3+	4-	4+	3-	3+	3+	3-	3644	3363	34	37	49	64	25	36	37	22	38
23	2+	2+	3o	3-	1+	3o	4o	5-	2221	3424	19	20	29	21	10	28	54	79	33
24	4o	3-	3+	3-	3o	3+	3+	3+	2233	3132	54	21	37	24	33	34	40	40	35
25	4o	3o	3-	5-	4+	5-	5-	4+	4433	4434	53	31	26	71	69	77	76	70	59
26	3+	3-	4-	3+	5o	5-	4+	4o	3252	6642	39	24	49	38	91	74	65	56	55
27	5o	5-	5-	4o	4-	4+	5-	5-	3263	3443	88	76	83	51	50	61	81	83	72
28	5o	4+	4o	6-	7o	8+	5o	5o	3242	5442	88	67	53	121	264	469	99	97	157
29	6o	7-	6+	5+	5-	5+	6+	5-	7777	8653	172	236	194	116	81	104	181	82	146
30	2+	2+	2+	3o	5-	5o	5-	4o	3434	2542	18	18	18	33	80	102	77	59	51
31	4o	3-	4+	5o	4+	5-	5-	6o	4213	2332	54	24	61	101	69	77	81	165	79
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	Ks								σs		as								As
1	3o	3+	4o	3+	4-	3o	6+	7-	3343	2246	29	35	53	39	42	32	177	203	76
2	5+	5-	5-	5o	6-	5o	3+	3o	4622	6242	106	77	78	93	127	103	38	30	82
3	3o	3+	3+	3o	3-	3-	3o	3+	4231	2445	27	35	37	29	21	22	28	36	29
4	2+	3o	4-	3o	4o	3+	6-	4+	2443	1233	20	27	50	28	54	38	129	69	52
5	4+	3-	3+	3-	2+	2o	3-	2-	6431	3243	63	26	36	25	20	16	25	12	28
6	2+	1o	1o	3+	3+	5-	4+	6-	2023	5332	18	7	7	40	34	85	65	125	48
7	5-	5-	4o	3o	4-	2+	3-	3-	3410	3222	84	73	53	32	42	18	22	23	43
8	3+	3+	5-	4o	4+	4+	5+	4-	2565	3164	35	38	72	59	63	64	118	49	62
9	4-	4o	2+	2+	2o	2-	2o	3-	2322	1233	47	51	19	20	14	13	15	21	25
10	4-	4-	4-	2+	4-	4o	3o	3-	4664	2222	50	49	49	19	45	53	32	23	40
11	3-	2o	2-	3-	2+	3-	3-	3o	2222	3123	21	16	13	21	17	24	23	31	21
12	2+	1+	1+	1o	0+	1+	2o	2+	2153	2311	18	9	9	7	3	9	15	19	11
13	2o	2-	2-	2-	2o	2-	2o	2-	1432	3422	14	12	12	13	15	12	16	12	13
14	2o	1+	1+	1-	2o	2-	3o	2-	3221	3422	14	8	8	4	15	11	33	12	13
15	2+	1+	2-	1o	1+	1+	2-	1+	1121	1331	18	8	11	7	8	9	13	8	10
16	2o	2-	1o	1o	2-	1-	1o	1+	2212	2222	15	12	7	7	11	5	7	8	9
17	1+	1-	1+	2-	3+	2o	2o	2+	2222	2331	9	5	10	11	34	16	14	17	15
18	4o	3o	2-	2+	3o	3o	3-	3-	4422	4122	51	32	13	19	28	28	26	26	28
19	2-	3o	2o	3-	2+	2+	3o	3+	2322	1224	13	29	16	24	17	18	32	36	23
20	4-	4-	4-	5-	4+	4-	3-	2+	4643	1242	48	43	45	77	66	43	24	19	46
21	3+	4+	3-	4o	3+	5-	5-	4+	4632	4543	34	62	21	59	40	73	80	63	54
22	4-	3-	3+	4-	3o	3+	3+	3-	3213	1443	42	25	36	49	29	35	38	23	35
23	3o	3-	3o	2+	2-	4-	4+	5o	5231	1324	27	26	31	20	13	41	62	100	40
24	5-	3o	4o	3-	3+	3+	4-	4-	3342	1222	74	28	54	22	40	37	47	44	43
25	5-	3+	3o	5-	4+	4+	5-	5o	5304	1215	74	39	32	79	68	65	81	90	66
26	4-	3-	4-	3o	4+	4+	4o	4+	3221	2232	48	23	46	33	69	65	51	68	50
27	5o	4+	5-	4o	4-	4+	5o	5-	4423	2221	96	67	73	53	45	62	89	73	70
28	5o	4+	4o	6-	7o	8o	6-	5o	3233	3442	89	70	51	131	251	436	123	98	156
29	6o	7o	7-	6o	5-	6-	6+	5-	3433	4141	158	249	241	159	79	124	181	85	160
30	3-	3-	3-	3o	5-	5+	5-	5-	4542	2423	22	24	21	32	78	105	76	84	55
31	5-	3-	5+	5+	4+	5o	5o	7-	4221	1123	84	26	105	105	66	92	102	210	99
																			48,45

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	Kn								σn		an								An
1	4o	3-	4-	5-	5+	6+	7-	6-	4546	7996	57	25	49	84	120	187	239	125	111
2	6-	5o	3-	3-	3-	3+	3-	3-	8743	2343	130	97	23	25	22	36	25	24	48
3	2-	2o	2+	3+	3o	3-	3-	3o	3233	3434	12	14	17	35	32	25	23	31	24
4	3-	4-	3-	4-	2+	3o	5o	4+	3624	3356	25	43	24	45	19	27	92	64	42
5	4+	3+	3o	3-	3-	3-	3o	2+	5334	3333	61	38	29	21	23	25	27	19	30
6	3o	4-	3-	2o	2o	3o	2+	3-	5731	1523	27	50	23	14	14	30	20	23	25
7	3-	2+	2+	2o	2o	3-	2+	2+	4342	3232	24	17	17	14	16	22	17	17	18
8	3-	2o	3+	4o	6+	7-	7-	8o	3244	7988	23	14	37	54	179	215	221	432	147
9	8-	7-	6+	6-	5o	5o	5-	4-	9984	5458	359	237	191	121	96	97	86	49	155
10	3o	2+	3+	4-	3+	3o	3+	3o	3424	1455	28	19	36	42	37	29	38	31	33
11	2o	2+	1+	2o	3-	3+	5-	4+	4521	2476	16	20	9	15	23	39	79	70	34
12	3-	2+	3-	1+	1o	2-	2-	2o	3443	2524	26	20	22	9	7	12	11	14	15
13	1o	1o	3-	3-	4-	3+	2+	3-	143	2333	6	6	21	24	43	35	19	24	22
14	3o	3o	3-	3-	3o	2o	2+	3o	3333	2232	33	28	25	25	27	14	17	27	25
15	3+	3-	3o	4+	5o	3+	3+	3-	3322	7544	40	21	27	65	103	40	40	24	45
16	3-	3+	3+	4+	4-	3o	3o	4-	3765	3325	25	40	36	63	50	27	29	43	39
17	2+	2o	3o	4o	3o	4o	4o	3-	3322	3363	18	15	27	53	33	51	52	22	34
18	3+	3o	3o	5o	4o	3o	5-	4+	5634	7454	40	30	31	87	60	31	73	63	52
19	4+	4+	4+	4-	5-	6o	6-	5-	6655	6997	65	61	68	49	74	158	134	71	85
20	2-	2o	3o	3-	3-	4-	4o	3+	3232	1553	12	14	27	23	21	44	52	36	29
21	2+	4o	4o	4+	5-	6+	6o	6-	3623	4988	20	51	55	69	78	178	168	135	94
22	5-	5-	5o	5-	5o	3o	2+	3-	6644	5423	80	84	87	80	90	32	19	21	62
23	3o	3-	4-	4+	4o	3+	3+	4-	5434	5535	33	25	47	64	59	40	34	44	43
24	3-	3-	3-	2-	3-	3-	3o	3o	4342	2343	22	25	21	13	22	26	28	33	24
25	2+	2+	3-	1+	2-	2+	3-	2-	5223	3233	17	18	22	10	12	20	24	12	17
26	1+	3-	2+	2+	2o	2-	1+	0+	3632	2232	8	26	17	20	14	12	10	3	14
27	1+	1+	1-	1o	2o	3-	2+	1+	4422	1533	10	10	5	6	14	24	18	10	12
28	2o	1o	1-	1+	2+	2o	3o	3+	5322	1235	15	6	5	10	17	14	29	37	17
29	3o	3-	1-	2-	3+	3-	2o	4-	4622	3515	33	22	5	12	34	26	15	45	24
30	3o	2+	2-	2+	2o	1+	2-	3+	5223	3124	30	18	13	17	16	9	13	38	19
																			44,63

November 1991																			
	Ks								σs		as								As
1	5+	3+	4o	6-	6+	7o	7o	6+	5224	1442	120	37	60	134	185	271	271	196	159
2	6-	6-	3+	3-	3o	3+	3o	3o	4414	3213	141	126	35	22	31	40	29	27	56
3	3-	3-	2+	4o	4-	3o	3o	4o	2112	2312	21	21	19	51	45	29	29	53	34
4	3+	3o	3o	4o	3-	3+	5+	5+	2223	4222	39	32	30	52	24	37	120	105	55
5	5o	4o	4-	3-	3o	3+	3o	2+	2122	1321	103	56	43	25	29	39	27	19	43
6	3o	4o	3o	2o	2o	4-	3-	3o	2312	222	31	56	29	16	16	41	22	28	30
7	3+	2+	2o	2o	2o	3-	2+	3-	2121	1212	34	19	16	15	14	26	18	23	21
8	4-	2+	5-	5-	6+	6+	7o	9-	4222	2343	44	18	78	73	187	186	247	527	170
9	8-	7+	6+	6+	6-	6-	5o	4-	3333	3332	379	295	197	184	131	123	98	42	181
10	3o	3o	4-	3+	4-	3o	3+	3+	1311	1433	29	31	49	39	49	30	38	38	38
11	3-	2-	2o	3-	3-	4o	5+	6-	4213	3343	21	13	15	25	25	57	105	125	48
12	3+	3-	3o	2-	1-	1+	2-	2o	3222	2333	34	22	27	12	5	9	12	14	17
13	1o	1+	2+	3-	3+	3+	3o	3o	1343	2225	7	10	18	22	39	38	27	31	24
14	4o	4-	3o	4-	4-	2+	3o	4o	3224	2223	58	42	33	43	46	18	28	56	41
15	4-	3o	3o	5o	5+	4-	4o	3+	2133	2353	49	30	32	89	104	49	51	40	56
16	3+	4-	3-	5-	4+	3+	3o	4-	3435	3413	40	46	21	72	62	38	33	48	45
17	3o	2+	3o	4+	4-	3+	4o	3o	2222	1320	28	20	27	69	44	37	57	32	39
18	3o	3o	3+	5-	3+	4-	4+	4+	2343	3312	33	31	34	75	40	42	70	63	49
19	5-	5-	5-	5-	5o	6o	5+	4+	6333	1424	82	71	71	73	90	148	104	61	88
20	3-	2+	3o	3-	2+	4o	4o	4-	2113	1465	21	18	28	25	20	56	57	44	34
21	3-	3+	4o	5o	5-	6+	6+	6o	2131	2634	23	34	57	92	81	199	184	168	105
22	5+	5o	5o	5-	6-	4-	3-	3+	4312	3221	114	89	97	85	125	43	23	34	76
23	3+	3o	4+	5-	4+	3+	3o	3+	4112	3211	34	29	63	78	62	40	29	39	47
24	3-	2+	2+	2-	2+	3o	3-	3-	2222	1132	21	17	18	11	17	27	26	26	20
25	2-	3-	3o	2o	2o	3-	3-	2+	1213	3321	12	23	29	14	15	23	26	19	20
26	2-	3-	2o	3-	2o	2-	2-	1-	2224	2211	11	25	16	23	16	13	11	4	15
27	2o	1+	2-	1o	2o	3-	2+	2+	1213	3314	14	10	13	7	14	23	19	17	15
28	2o	1o	1+	2-	3-	2+	4-	4-	3232	2133	16	7	9	13	24	18	49	48	23
29	4+	3o	1+	2o	3+	3-	3-	4-	2223	2422	64	29	10	15	37	26	22	46	31
30	3+	3o	2+	3-	2o	2o	2+	4o	3423	2123	36	28	18	21	16	15	19	52	26
																			53,53

an, as INDICES 1991 (continued)

December 1991

	Kn								σn		an								An
1	2+	2-	2o	2-	2-	2o	3-	2+	3232	2133	19	11	14	11	12	15	23	17	15
2	3o	2-	2+	3+	4-	3-	3o	3-	5233	3234	30	12	19	36	42	24	30	26	27
3	2o	2-	2o	2+	3o	2+	3-	3o	1323	3244	14	11	15	17	32	18	23	31	20
4	3-	2o	2-	2o	2+	3o	3+	2+	5321	1255	22	16	13	14	17	27	35	19	20
5	2-	2+	2-	1+	1o	2-	2+	1+	3433	2433	13	17	12	10	7	13	18	8	12
6	2-	1o	1-	1o	1+	1o	1o	2-	3130	1313	11	7	5	6	8	6	7	12	8
7	1+	1+	1+	1o	2-	1+	2-	2+	3322	1133	8	8	8	7	11	8	11	20	10
8	1+	1+	2o	2+	3-	3-	1+	1-	2433	3324	9	10	16	18	24	21	8	4	14
9	1o	1+	1+	3-	1+	3o	3o	3o	2122	2334	7	8	10	22	10	28	27	31	18
10	3-	2-	2+	2o	2o	3o	3o	3+	2232	3525	24	11	17	14	16	28	32	40	23
11	3o	2o	1+	1+	2+	3-	3o	3o	3123	2354	28	14	8	8	19	23	29	31	20
12	3o	3-	1o	1+	2o	3o	3-	3-	3323	2333	28	21	7	8	14	27	24	24	19
13	3-	2o	2o	3o	4o	3-	3-	3-	4220	4245	23	15	14	29	58	24	23	24	26
14	2-	2-	3-	3o	3o	4-	3o	3o	2532	3644	12	12	26	30	33	48	29	29	27
15	2+	2-	2-	1o	2-	1o	1-	1-	4221	2222	20	13	11	6	11	7	4	5	10
16	1-	1+	1+	3o	4o	4o	4+	4o	2232	3355	4	8	9	29	52	57	63	51	34
17	4+	4o	4-	4-	4o	4o	4-	3-	5553	5565	63	59	42	44	57	54	48	25	49
18	3o	2o	3o	3-	2o	3o	2o	1o	4342	1423	29	16	31	22	14	28	14	6	20
19	1o	1+	2+	3-	3o	3+	3o	1+	1422	4353	7	8	19	26	32	40	32	9	22
20	1-	1+	2-	1o	2+	3o	3-	2+	3311	4333	5	10	12	7	19	32	21	17	15
21	3+	3+	3+	4o	3+	3o	2+	3-	6433	3434	36	35	39	51	40	32	19	25	35
22	2+	2-	1+	1+	0+	1+	1-	1o	3412	1221	18	11	10	10	3	8	5	7	9
23	3-	3-	2+	3-	3-	3-	3-	3o	5333	3435	24	25	20	24	21	22	23	28	23
24	2+	2o	2o	3o	2+	2o	1-	1-	3332	4222	17	14	14	28	19	16	5	5	15
25	1+	1-	1+	2+	2+	2-	2o	2-	3133	2332	8	4	10	17	20	13	16	13	13
26	1+	3-	2-	1o	2-	2+	2+	2+	4741	2323	9	22	12	7	11	18	18	19	15
27	4-	2o	3-	4o	3+	5-	4+	6-	3314	6577	42	16	24	56	37	74	69	128	56
28	3-	2+	2o	3-	3+	4o	4+	4+	4433	2466	24	20	14	22	38	51	67	70	38
29	3+	3+	3o	2o	3-	3-	4o	5-	2431	2257	34	38	31	16	24	26	59	84	39
30	4-	3o	2-	2-	3-	2+	2+	3-	4323	2344	49	28	11	12	24	19	20	23	23
31	2+	1o	1o	1+	3-	3o	3o	2+	1111	2544	17	7	6	8	24	28	28	17	17
																			22,32

December 1991

	Ks								σs		as								As
1	3o	2+	2+	3-	2o	2+	3+	3+	2314	2333	30	20	18	24	16	20	38	36	25
2	4-	3o	3-	4o	5-	3+	3+	4-	3321	3334	47	27	24	52	74	34	40	48	43
3	2+	2+	3-	3-	3+	3+	3o	3o	1321	2212	18	18	21	22	37	35	33	30	27
4	3o	2+	3-	2+	3+	4-	3+	3o	3122	2432	29	19	22	18	35	42	40	27	29
5	2+	3-	2-	2o	1+	2+	2+	2o	1233	2333	20	22	11	16	10	20	19	14	17
6	2+	2-	2-	2o	1+	1+	1+	2o	1121	1232	17	11	12	15	9	8	8	16	12
7	1+	2-	2o	1+	2o	1+	2o	3-	1222	2421	10	12	15	9	16	9	16	25	14
8	2-	2o	3+	3-	3+	3-	2o	1+	2332	1253	12	16	39	23	34	23	14	8	21
9	2o	3-	3-	4-	2+	3-	3+	3+	3222	1231	15	21	21	46	17	26	40	38	28
10	3o	2+	3-	3-	2+	3+	4-	4o	1133	1333	33	18	23	25	18	38	43	58	32
11	4-	3-	2+	2+	3-	3-	3+	4o	3211	3224	42	24	18	17	23	23	39	55	30
12	4o	3+	2-	2o	2o	3o	3o	3+	3433	1111	53	34	13	16	15	29	29	36	28
13	3-	2+	3-	3o	4-	3+	3o	3o	3433	2522	24	20	24	28	48	39	28	28	30
14	2-	2-	3o	3-	3+	4o	4-	4-	2441	3143	13	13	27	25	36	53	41	44	32
15	3-	3-	2-	2o	2-	1+	1o	1o	2212	3322	21	21	13	14	13	10	7	6	13
16	1o	2-	2-	3+	4o	5-	4+	4o	2223	2233	6	11	12	34	58	77	69	57	41
17	5o	4o	4-	4+	4-	5-	4+	4-	1134	4323	89	53	45	63	47	71	65	44	60
18	3o	2o	3o	3o	2-	2+	3-	1o	1223	3244	28	16	27	29	13	18	24	7	20
19	1+	1+	2o	3+	4-	4-	3+	2-	3422	2333	10	9	16	36	42	49	34	11	26
20	1o	2o	2+	2+	3+	3+	4-	3o	3211	2342	7	14	20	18	35	40	41	31	26
21	4o	4o	4-	4+	4-	4-	2+	3-	3222	2213	53	51	45	63	42	47	20	24	43
22	2+	1+	2+	2-	1-	1+	2-	2+	3321	1221	17	10	17	13	4	10	11	19	13
23	3o	4-	3+	3-	3-	2+	3o	3o	1421	2121	30	43	37	25	23	19	31	27	29
24	2+	2+	2+	3o	2+	2+	2-	1+	2242	2323	18	18	17	27	20	18	12	8	17
25	1+	1o	2-	2o	2+	2+	3-	2+	4423	3352	8	7	11	16	20	19	22	18	15
26	2-	2+	2+	2o	2o	3o	3o	3+	3431	1324	13	17	19	14	14	30	31	38	22
27	5-	3o	4-	5-	4-	5o	5-	5o	4221	2232	81	30	43	85	41	98	78	93	69
28	4-	2o	2o	3-	3o	4o	5o	5o	4121	1133	41	14	16	24	33	51	93	97	46
29	4+	4+	3+	3o	4-	4o	5o	5+	3431	2105	70	70	38	27	43	54	101	112	64
30	5o	4o	3-	3-	3+	2+	3o	3+	5322	3112	93	56	21	26	35	19	29	37	40
31	3+	2o	1+	2+	3o	3o	3o	3+	5312	4321	38	14	10	17	29	28	33	34	25
																			30,23

am INDICES 1991

January 1991																			
	Km								Σ	am								Am	Am2
1	3+	2-	1+	1o	1o	1+	0+	1-	10.7	34	11	8	7	6	8	3	4	10	12
2	2-	3-	2o	2o	2+	2-	2o	2-	16.0	13	23	15	15	17	13	14	12	15	14
3	2-	2o	3-	3+	3-	1+	1+	2o	17.0	12	16	24	34	23	10	8	15	18	16
4	2+	3-	2-	1+	1+	1+	2-	2o	14.3	18	23	12	9	8	10	12	14	13	13
5	2-	2o	1+	2o	3-	1o	2-	2-	14.0	13	14	9	15	25	7	12	13	14	11
6	1o	2-	1o	1-	1o	1-	1-	1+	8.0	7	11	7	5	6	4	4	8	7	8
7	1+	1-	1-	0+	1-	1-	1o	1+	6.7	8	4	4	3	4	5	6	9	5	8
8	2-	1+	2+	2+	3o	2o	2+	2-	16.7	13	8	18	18	31	14	18	11	16	13
9	1o	2-	2-	2o	1+	1+	2o	3o	14.0	7	12	12	14	8	10	14	27	13	14
10	2o	1o	2-	2o	2+	3-	1+	2+	15.3	16	7	11	15	19	22	9	20	15	14
11	1-	1+	1o	2+	3-	2+	2o	2-	14.0	5	9	7	20	25	17	15	12	14	21
12	3+	2+	4+	3o	2-	4o	3-	2+	23.7	35	20	65	30	13	51	22	17	32	25
13	2+	3o	2+	1o	1+	2o	3-	1+	16.0	20	29	19	7	9	15	24	8	16	16
14	1o	1o	1-	0+	1o	1+	1+	1-	7.3	7	6	4	3	6	8	8	4	6	11
15	3-	2o	2+	2o	2+	1-	3o	3-	17.7	22	14	18	16	19	5	32	21	18	13
16	1o	1-	2-	2+	2+	2-	2o	3-	14.3	7	5	11	18	17	11	15	26	14	16
17	2+	2-	1+	3o	3o	3+	2+	3-	19.7	18	12	8	29	31	36	20	23	22	19
18	2+	2-	2-	1+	2+	3o	3-	3-	17.7	18	12	12	9	17	32	25	22	18	18
19	1-	1o	1-	1+	1o	2-	2-	1-	8.7	5	7	4	8	6	12	13	4	7	12
20	1+	1o	1o	2-	1-	2+	2-	1-	10.3	8	6	6	11	5	17	12	4	9	9
21	1-	2+	1-	1+	1+	0+	0+	2o	9.0	4	17	5	8	8	2	3	14	8	9
22	2-	2-	1o	1-	1o	1o	1-	1+	9.0	13	12	7	5	6	6	5	9	8	8
23	0+	1+	2-	2-	1+	1+	2o	3o	12.7	3	8	13	12	9	8	16	27	12	16
24	4-	3-	3-	4-	3-	4+	3+	3o	26.0	49	22	26	42	24	63	37	29	37	27
25	2+	2+	3-	3-	2-	3+	5-	3o	22.7	17	17	26	21	12	35	72	31	29	29
26	2+	3o	2+	2o	2o	2-	1o	3o	17.3	19	29	19	15	15	12	7	27	18	20
27	1-	1o	1+	1+	2o	1+	2+	3-	12.7	4	7	9	8	16	10	20	22	12	12
28	1o	2-	1+	1+	1+	2-	1+	2-	11.3	6	12	9	10	8	11	8	13	10	12
29	2-	1+	1+	2-	1o	0+	0+	1+	9.0	11	8	9	11	7	3	3	9	8	8
30	1-	1-	1-	1o	1+	2o	2+	1+	10.0	5	5	4	6	8	16	20	9	9	13
31	3-	3o	4-	3-	2o	3o	3o	4-	23.7	22	29	44	22	14	32	29	50	30	25
										Monthly mean value of Am								14,9	

February 1991																			
	Km								Σ	am								Am	Am2
1	3o	1+	3+	3+	3o	4o	5+	6-	29.0	29	10	34	39	27	52	107	131	54	42
2	4+	3+	2-	1+	1+	1o	1-	2-	15.3	65	35	12	9	10	6	4	12	19	32
3	1+	2-	2o	2-	1+	1+	0+	1+	11.0	8	12	15	12	10	8	3	8	10	8
4	2-	1-	1-	1-	1o	1o	1+	3o	10.0	13	4	4	5	7	7	10	32	10	12
5	3-	2-	3-	2o	2-	2-	2+	2+	17.0	24	12	26	16	13	13	18	19	18	15
6	1+	2o	1+	1+	1+	1+	2+	2o	13.0	10	14	9	8	9	9	18	15	12	13
7	1+	2o	2-	2o	3-	3o	3-	3o	18.3	10	15	13	16	22	29	21	27	19	18
8	2-	3-	3-	3o	4-	3+	2+	3-	22.0	13	25	21	32	41	40	18	22	27	23
9	3o	1+	1+	2o	3-	4o	4o	3+	21.7	27	10	10	16	22	52	57	35	29	26
10	2+	2-	2o	3-	2-	2-	2o	1+	15.3	19	11	15	23	13	11	14	9	14	23
11	3-	3-	3-	2+	2-	4-	3-	4-	22.0	22	25	22	18	13	42	25	46	27	22
12	3+	3-	2+	2+	3+	3o	2+	3-	22.0	35	22	19	20	37	28	19	21	25	25
13	2o	2+	1o	3-	3-	3-	3-	2+	18.3	16	20	7	26	24	21	24	20	20	19
14	1+	1+	1o	1+	2o	2+	3-	3-	14.7	10	10	7	10	16	19	21	21	14	16
15	3-	1+	2o	1+	2o	2o	2o	2+	15.7	25	9	14	9	14	15	15	20	15	14
16	1o	1o	1o	1+	1o	2-	1+	1o	9.3	7	6	7	9	6	12	9	6	8	9
17	1-	1o	0+	1-	1+	1+	1o	1-	7.0	4	6	3	4	10	8	6	4	6	6
18	0+	1-	1o	1o	1-	1o	1+	2-	7.7	3	4	6	6	4	6	9	13	6	7
19	1-	1-	1-	2o	2o	3+	2+	2-	13.3	5	4	5	14	16	36	20	11	14	11
20	1+	1o	1+	1+	1+	3-	3o	3-	14.7	9	6	9	10	9	21	32	23	15	18
21	3-	3o	2+	3-	1+	2-	2o	1+	17.0	21	29	17	24	9	13	16	8	17	21
22	2o	3o	4-	3o	2+	2-	2o	3+	21.0	14	29	41	33	18	13	14	35	25	22
23	3-	2+	3+	3o	4-	4-	4-	3+	25.7	21	18	36	27	42	50	44	35	34	25
24	2+	2o	2-	1-	1o	1+	3-	2+	14.0	17	16	11	5	6	9	26	17	13	21
25	2+	1+	1+	3-	3-	3-	2+	2-	17.0	17	9	10	25	23	23	18	12	17	16
26	2-	2-	2+	2+	2-	2o	2-	2-	15.0	12	11	19	18	11	15	12	11	14	15
27	1-	1o	2o	3-	2+	2o	3o	3-	16.3	5	6	14	25	18	15	29	26	17	20
28	3+	3o	3+	3o	3-	3-	3-	3o	23.7	35	30	39	27	21	25	23	30	29	25
										Monthly mean value of Am								18,9	

am INDICES 1991 (continued)

March 1991

	Km								Σ	am								Am	Am2
1	3-	2+	2+	2+	3-	2+	3+	4-	21.7	23	17	19	17	25	19	35	43	25	23
2	3o	2+	2-	2-	2+	2+	3-	1+	17.3	27	18	13	12	19	20	24	10	18	19
3	2+	1-	2-	1+	1-	1-	2o	2+	11.7	20	5	13	8	5	5	16	17	11	12
4	2o	1o	0+	1+	1+	3-	3+	3-	14.7	14	7	3	9	9	25	38	23	16	20
5	2+	3-	4-	4o	4-	4o	3-	3o	26.0	19	25	43	55	45	57	26	31	38	32
6	2+	3-	3o	3+	3-	4o	4+	4-	26.0	20	25	33	36	26	51	62	44	37	37
7	3o	3o	3+	3+	4o	3+	4o	4+	28.3	33	28	40	36	51	37	58	62	43	40
8	4-	3-	2+	3o	2+	4-	3o	3+	24.0	41	21	17	33	19	47	33	40	31	39
9	4-	3+	3o	4o	4o	3o	3-	4+	28.0	49	40	27	56	60	32	24	64	44	41
10	4+	4+	2+	2+	3-	2+	2-	1-	20.7	61	69	18	19	22	18	12	4	28	26
11	1-	0+	1o	1o	2-	1+	1+	2-	9.0	4	2	7	7	13	8	8	13	8	13
12	2-	2+	3o	3-	3-	3o	3+	4o	22.7	13	19	29	22	21	27	39	52	28	33
13	6-	4o	4+	2+	2o	3+	2-	1-	24.0	125	56	62	18	15	36	11	4	41	33
14	2o	2-	2+	2+	1o	1-	2-	1o	12.7	16	12	19	20	6	5	11	6	12	12
15	2o	1-	1-	2-	2+	2+	1-	1o	11.3	15	4	5	13	17	17	5	6	10	8
16	1+	0+	1-	1+	0+	3-	4-	2o	12.3	8	2	4	10	3	24	47	14	14	16
17	3-	3o	2+	3-	2o	2-	3+	3+	21.0	26	32	20	26	15	12	34	35	25	24
18	4-	3o	2+	2o	1-	1o	0+	0+	13.3	42	29	17	14	5	6	2	2	15	17
19	1o	2o	2-	2+	3-	3o	4o	3o	19.7	7	15	13	17	21	29	52	30	23	20
20	3-	4-	3-	3-	2+	1+	2o	1+	18.7	21	45	26	24	20	8	14	9	21	24
21	1+	2o	3o	3+	6-	3+	3-	3-	24.0	8	15	30	37	125	36	21	25	37	30
22	3-	3o	3+	3+	3o	2o	2+	4o	23.7	22	29	36	38	29	15	19	51	30	34
23	3o	3o	2-	3-	3-	2-	2-	2-	18.0	33	28	11	23	21	12	11	12	19	72
24	3o	8+	7-	6o	5-	4o	7o	8-	47.3	27	482	211	166	78	60	279	366	209	148
25	6+	7+	5-	5o	6+	5o	5-	6-	45.0	200	289	71	89	175	90	80	141	142	156
26	6-	6o	6o	5+	7+	6-	5-	4+	45.0	146	159	159	119	316	138	82	66	148	117
27	4-	4+	4-	4-	4+	4o	3+	4+	31.3	49	63	50	44	62	51	40	61	53	74
28	4-	4-	3+	3o	3+	4-	3+	1+	25.3	46	50	34	29	36	44	40	9	36	33
29	1o	1+	1+	1o	1-	1-	1-	2+	9.0	6	8	9	7	4	5	4	19	8	20
30	1+	3+	3+	4o	4o	4o	4-	4o	27.7	8	35	38	53	52	51	42	54	42	27
31	2+	2+	2+	2+	1-	1-	1+	3+	15.3	18	18	17	18	4	5	8	36	16	33
										Monthly mean value of Am								39,6	

April 1991

	Km								Σ	am								Am	Am2
1	4o	4-	4o	4o	4+	3-	3-	4-	29.0	54	42	57	53	65	26	24	49	46	37
2	3+	3o	4o	4o	2+	3+	3o	4-	26.7	38	28	54	56	18	35	28	49	38	43
3	3+	3o	4o	5o	5-	4-	4o	4-	31.3	34	29	60	100	75	43	53	43	55	47
4	3+	2o	2+	6-	6o	5o	4+	4o	32.7	34	14	19	122	156	97	67	52	70	55
5	3+	3o	3-	2+	3o	3-	2o	2+	21.3	37	27	24	20	27	21	16	18	24	40
6	2+	3o	2o	2-	2-	3o	3-	3-	19.0	19	31	16	12	13	27	26	21	21	20
7	2+	3-	3-	2o	2o	2+	2-	2-	17.3	20	21	22	14	14	18	12	12	17	16
8	2-	1+	1o	1+	1+	2-	2o	2+	12.7	11	8	7	10	8	12	15	17	11	13
9	2+	2+	2o	2-	2+	2-	3o	2o	17.3	20	19	14	12	17	12	29	16	17	16
10	1+	2o	2+	3-	2+	2-	1o	2-	15.0	9	14	18	23	20	12	6	11	14	13
11	1o	1o	1o	1+	1o	1+	2-	1+	9.7	7	6	6	8	7	8	12	9	8	13
12	2+	3-	3-	3-	3o	3-	1+	1o	18.3	17	25	22	26	32	21	8	7	20	14
13	1o	1+	1o	1+	1+	1o	1o	1+	9.3	6	8	7	9	9	7	7	9	8	11
14	1o	2-	2o	1+	1+	2o	2o	2o	13.3	7	12	15	8	8	15	15	14	12	10
15	1+	1+	1+	1+	2o	1+	1+	1o	11.0	10	8	10	9	14	9	10	6	10	9
16	1-	0+	0+	1+	1+	2+	2-	1o	9.0	4	3	3	8	9	19	13	7	8	11
17	1+	3-	2+	2+	3-	3o	3o	2-	19.0	9	26	18	17	25	31	28	13	21	19
18	2-	2+	3-	3o	2+	2-	2+	2+	18.3	11	17	24	32	19	13	20	20	20	24
19	2o	4o	3+	3+	1+	1o	2o	2o	19.0	14	53	34	37	10	6	15	16	23	17
20	1o	0+	1-	1o	1+	1o	1-	1o	7.0	7	2	4	6	8	7	5	6	6	8
21	1o	1o	1+	2+	2o	2-	1+	1+	12.0	6	6	9	20	15	11	9	8	11	10
22	2o	1o	2o	2+	2+	2+	1+	1-	14.0	15	7	14	18	18	20	10	4	13	12
23	1-	1o	1-	2+	2-	3-	2+	2+	13.7	5	7	4	20	11	22	17	18	13	14
24	2o	2-	3-	2-	2-	1+	3o	4-	17.7	16	12	21	13	12	8	30	50	20	25
25	4o	4-	3+	3o	3-	1o	2-	2+	21.7	51	47	35	32	24	6	13	19	28	26
26	3-	4-	3-	1o	1+	2-	2+	3+	18.7	22	41	24	6	9	13	18	38	21	24
27	3o	4+	3-	3-	3o	3-	3+	4-	25.3	33	62	23	25	29	25	38	44	35	34
28	5-	4o	3+	3o	4+	4-	4o	4o	31.0	73	54	37	29	66	44	60	60	53	57
29	6-	5-	4+	5-	5+	5-	4-	4+	37.3	133	80	67	76	115	82	47	64	83	69
30	5-	4+	3+	3o	4-	4-	4-	3-	29.0	71	64	40	32	48	42	41	23	45	51
										Monthly mean value of Am								25,7	

am INDICES 1991 (continued)

May 1991

	Km								Σ	am								Am	Am2
1	4+	3+	3o	3-	4o	3+	4-	4o	28.3	62	37	29	24	52	40	41	56	43	45
2	4+	4+	4-	4o	5o	5-	4o	4-	33.7	63	64	50	54	96	75	58	48	64	51
3	3o	4-	3-	2o	3-	2+	3-	3-	21.7	32	45	22	15	25	19	22	24	26	33
4	3-	1+	2o	1o	2-	3-	2-	2+	15.3	21	8	15	7	13	23	12	18	15	16
5	2o	1+	2-	1o	1o	1+	1+	1+	11.0	14	9	13	7	6	9	9	10	10	11
6	1+	2-	2-	1-	1o	1o	1-	2o	10.0	9	12	11	5	7	7	5	15	9	10
7	1+	2o	2+	2+	1+	1+	1o	1+	13.0	10	14	18	17	8	8	7	8	11	12
8	2o	2-	3-	2+	1+	2+	3-	1+	16.3	16	11	24	20	10	18	26	8	17	14
9	2+	2o	2o	1+	1+	3-	4-	3-	18.0	17	16	14	9	10	23	46	24	20	18
10	1+	2-	3-	2+	2+	2o	2-	3-	16.7	10	11	23	18	17	16	11	26	17	16
11	1+	0+	1o	1o	1-	1o	0+	1-	6.3	9	3	6	6	5	6	3	5	5	9
12	0+	1+	1-	2-	1-	1o	2+	1o	9.0	3	8	5	11	5	7	17	7	8	15
13	1+	3-	3+	5-	4o	4o	4-	3-	26.3	8	21	38	83	53	54	47	26	41	34
14	1o	3o	5-	5-	4o	4o	3o	3o	27.3	7	28	73	76	56	59	33	33	46	39
15	2o	2o	3o	3-	1+	1o	1o	1o	14.0	15	16	28	21	10	7	6	7	14	20
16	1+	1-	1o	1+	2-	2-	4+	4-	15.7	8	4	6	9	13	13	67	43	20	32
17	5-	4o	5o	5-	3+	2-	1+	1o	25.7	84	53	95	84	34	11	8	7	47	33
18	1o	1o	1-	1-	1-	1o	0+	0+	5.7	6	6	4	4	5	6	2	3	5	7
19	1o	1+	0+	1-	1-	1o	2-	1+	8.0	6	8	3	5	4	7	12	9	7	6
20	1+	1o	1+	1o	1o	1o	1-	1-	8.0	9	7	8	7	6	6	5	4	7	7
21	1-	1-	1-	2o	3-	2+	2+	1+	12.7	5	4	5	14	22	18	17	10	12	16
22	3+	3o	3o	4-	2o	3-	3-	3o	23.3	37	27	30	43	15	22	25	30	29	27
23	4-	3o	3o	3o	4-	4-	3-	4-	26.3	44	31	27	31	43	47	26	50	37	34
24	4o	3o	4-	3-	4-	3o	4+	4-	28.0	54	28	46	24	48	29	62	44	42	47
25	4+	5o	4+	4-	3+	4-	3+	3o	30.7	64	87	61	43	35	50	36	27	50	45
26	3o	3-	4o	3o	4-	4+	3+	3+	27.3	28	25	54	29	41	64	39	35	39	39
27	4-	4-	3o	3+	4-	3-	3-	4-	26.3	49	48	28	38	46	22	25	50	38	42
28	4+	3+	3+	3+	3-	4o	4-	4+	29.0	70	40	34	35	24	58	48	62	46	43
29	4+	4-	3o	3o	3o	2+	3+	3o	25.7	65	48	32	33	31	18	38	29	37	36
30	3-	2+	3-	3o	2+	3o	2+	3o	21.3	24	17	25	28	18	30	19	30	24	33
31	3-	3+	4-	5+	5o	5o	4o	3-	31.7	26	34	46	116	98	103	52	23	62	61
										Monthly mean value of Am								27,4	

June 1991

	Km								Σ	am								Am	Am2
1	3+	5-	6-	5+	5+	6-	2o	3o	35.0	38	81	140	115	106	129	14	31	82	73
2	4-	4+	5-	4o	3+	5-	4o	6-	34.3	45	65	82	52	40	81	59	144	71	59
3	3-	2o	4-	2-	2-	2o	4-	3+	20.7	21	14	43	13	12	15	41	35	24	38
4	2o	3o	2o	3-	4o	6o	6-	6-	31.0	15	31	16	21	51	148	134	121	67	93
5	6-	7-	7o	7-	6+	8-	7-	6o	52.7	126	228	268	228	181	384	209	167	224	167
6	5+	6-	5+	5-	3o	2+	2-	3o	31.0	115	123	106	78	29	17	11	33	64	102
7	3-	3+	5-	3+	3o	3-	3o	4o	26.7	22	38	81	37	33	22	33	54	40	31
8	3o	2+	2o	3-	3o	4+	4+	3+	25.0	31	20	16	22	29	67	61	37	35	47
9	6o	4+	3+	4o	4-	5o	5-	4-	34.7	163	69	40	57	46	91	79	42	73	77
10	4o	4-	6+	6o	6-	5+	6o	6+	43.3	55	43	196	154	145	118	148	175	129	122
11	7-	6+	6o	5o	5o	4+	5o	5o	43.3	212	197	157	91	87	67	88	87	123	114
12	5-	4+	3-	5o	4+	5o	5o	5o	36.0	75	62	23	91	67	91	94	96	75	100
13	7-	5+	6+	6o	6+	6-	7-	4o	47.0	233	108	183	149	194	137	215	54	159	108
14	4o	2+	3-	2+	2o	1+	1+	1+	17.3	51	20	25	18	15	8	8	8	19	54
15	1o	3-	4-	3o	3-	3o	2+	2-	20.0	7	21	47	28	21	33	19	11	23	16
16	1-	1-	1o	1+	1+	1+	2-	2-	9.7	4	5	7	8	8	9	11	13	8	18
17	2+	3-	2o	5-	5o	5-	6o	6-	33.0	19	23	16	82	102	78	170	127	77	53
18	4+	4-	4o	3-	2+	3o	3+	3+	26.7	61	49	54	22	18	28	39	36	38	61
19	4-	4-	4o	4-	4-	4-	4-	4-	29.7	41	50	55	46	47	44	47	47	47	38
20	4o	3o	2o	2-	2-	2+	3o	3-	20.3	52	33	15	13	11	20	28	26	25	35
21	4+	3o	4o	3-	3-	3+	3+	3o	26.3	70	29	53	24	22	40	34	33	38	34
22	4-	4-	4-	2+	3o	3-	3-	3+	25.0	43	46	42	19	28	26	25	40	34	37
23	3o	4-	3+	5-	5-	4o	5-	5-	32.7	30	46	39	77	86	60	80	85	63	53
24	5-	4+	4-	3+	4-	3o	3o	3o	28.7	80	68	45	34	43	31	31	32	46	51
25	4-	3o	3o	4-	3o	4-	3+	4-	27.0	42	32	29	41	30	42	36	45	37	37
26	4-	4-	3+	3o	3o	3o	3o	3+	26.0	50	42	35	30	33	29	31	34	36	33
27	3o	2-	2-	3-	2-	2+	3-	3-	18.3	32	13	12	26	13	17	21	25	20	23
28	3-	3-	3-	2o	1+	2-	2-	2-	16.3	23	24	21	16	10	12	11	11	16	15
29	1+	1-	1o	1+	2-	1o	1+	2-	10.0	8	5	7	9	13	6	9	12	9	17
30	3+	4o	3-	3+	3+	3o	3+	4-	26.7	38	58	23	38	36	27	35	48	38	26
										Monthly mean value of Am								58,0	

am INDICES 1991 (continued)

July 1991

	Km								Σ	am								Am	Am2
1	3-	3o	2o	1-	2o	3-	2+	2+	17.7	25	33	16	5	15	21	20	17	19	25
2	1+	3-	3+	3+	3o	3+	3+	4-	24.0	10	21	37	38	27	35	36	45	31	32
3	4-	4o	4o	3+	3+	3+	4-	3+	28.7	45	54	54	39	40	36	43	39	44	39
4	4+	3-	3o	2+	2+	2-	2-	1o	19.0	62	22	28	20	19	13	12	7	23	23
5	1o	1-	1o	1+	1+	1+	1o	1o	8.7	7	5	6	8	8	10	6	6	7	9
6	1o	1o	1o	2-	2-	2+	2o	3-	13.3	7	7	7	11	11	20	16	24	13	11
7	2-	2+	1-	1-	1o	2-	3-	3o	13.7	13	18	5	5	7	13	21	31	14	21
8	3+	3-	3+	4-	3+	6+	6-	5-	33.0	34	24	40	50	38	183	142	84	74	77
9	3-	4+	7o	7-	7-	6o	5o	5-	43.0	23	69	272	202	220	150	95	77	139	110
10	4+	4o	4-	3o	3o	2+	2+	1+	24.0	69	55	50	32	27	17	17	10	35	61
11	3-	3-	4-	4o	3-	3-	2o	3-	23.0	23	26	43	59	26	26	16	25	31	30
12	3o	3-	3+	5-	3+	3+	3-	3o	26.0	27	24	36	84	40	38	26	27	38	53
13	4o	5-	5+	7-	7-	7+	5+	6o	46.0	59	80	114	203	203	307	120	171	157	120
14	6-	6-	6-	5+	5o	4-	4o	3+	38.3	137	144	125	118	89	50	59	40	95	106
15	4-	3+	2+	3-	1+	1o	1+	1+	17.0	47	37	20	24	9	7	10	8	20	28
16	2o	2+	2-	1+	2-	4-	4o	4-	20.3	16	17	11	10	11	50	51	45	26	32
17	5-	5-	5-	3+	3-	4-	3+	4o	31.0	76	72	81	37	24	45	39	59	54	44
18	5-	2+	2-	1+	2+	3o	4o	4-	23.0	75	20	11	10	18	33	51	43	33	38
19	4-	4-	4-	4-	4o	4o	5+	4o	32.0	47	42	50	43	52	54	104	56	56	51
20	3o	4-	5-	4o	4-	3o	3+	4-	29.0	30	49	80	60	42	33	34	47	47	54
21	4o	5-	4-	3+	3+	3o	3+	4-	29.0	53	79	47	37	36	30	35	49	46	41
22	3+	3+	3o	3o	3+	3-	3-	4o	25.3	37	40	33	30	37	24	23	52	35	32
23	3+	3-	2o	2+	3-	3+	3o	2-	21.0	35	26	14	18	26	38	28	11	25	24
24	1+	1+	2o	2-	1+	2o	2o	2-	13.3	9	10	16	13	8	15	16	11	12	18
25	1+	2o	3+	3-	2+	3-	2+	2-	18.3	10	14	34	21	18	22	20	11	19	14
26	1o	2-	1+	1-	1+	1o	1o	1+	9.3	6	12	8	4	10	6	6	9	8	10
27	1+	1o	1-	1+	1-	1+	3-	3o	12.0	8	6	5	8	4	8	26	31	12	11
28	2-	2+	1+	1-	1-	1o	1o	3-	11.3	13	17	9	5	5	6	6	23	11	13
29	2o	2o	2o	1+	1+	1o	1o	2o	12.7	14	14	15	8	9	7	6	16	11	13
30	2-	3-	3o	1+	1+	2-	2+	1+	15.3	11	22	29	10	10	13	17	9	15	13
31	2o	1+	2o	1-	2-	1+	1+	2+	12.7	15	8	14	5	11	10	9	19	11	14
										Monthly mean value of Am								37,5	

August 1991

	Km								Σ	am								Am	Am2
1	3+	2o	2-	3-	3-	5-	4+	5o	26.3	36	15	13	22	22	84	62	92	43	43
2	4-	4-	5+	5o	5+	5o	3o	4o	35.0	44	43	118	91	113	90	31	60	74	66
3	4o	3+	4o	4o	5o	4o	3+	5-	32.3	51	37	59	60	94	60	38	77	60	66
4	5o	4+	5-	4-	4-	3+	5-	4-	33.0	93	70	83	47	43	34	81	41	62	61
5	4-	5-	4-	4-	4-	3-	3+	5o	30.3	43	83	47	46	41	22	38	87	51	54
6	5-	4+	4-	5-	4+	3+	3-	2o	29.7	74	63	44	77	69	35	21	15	50	46
7	3-	4+	4-	2o	2o	2+	2-	3-	21.3	23	70	43	15	15	17	12	23	27	30
8	3o	3o	3+	3o	2o	2-	1o	2o	19.0	32	27	35	31	16	12	6	16	22	21
9	2o	3o	3-	3-	4-	3+	3-	2+	22.3	16	27	25	26	46	39	25	17	28	22
10	1+	2+	3o	3-	2+	3o	2o	2o	18.7	9	20	30	26	20	28	15	16	21	30
11	4+	3+	4o	3o	4o	4-	3-	2o	27.0	61	40	52	32	54	50	23	15	41	37
12	3-	4-	5-	4o	6-	5-	6-	5o	36.0	23	43	75	52	132	75	141	88	79	54
13	4-	2o	2o	2+	2-	2-	2+	1+	17.0	48	16	16	18	13	12	17	10	19	39
14	1o	1o	2-	1+	2+	3+	4-	5-	19.0	6	7	13	8	18	35	48	85	28	34
15	5-	5-	4+	4-	3+	4-	4-	4o	32.0	76	84	64	43	37	48	46	55	57	49
16	4-	4-	3-	3-	3-	3-	3-	4-	24.3	46	48	26	21	26	24	24	47	33	38
17	3-	4o	3o	4o	3-	3-	3+	3-	25.0	21	53	30	51	23	23	38	25	33	30
18	4-	2+	2-	2-	3-	3-	5o	4+	24.0	46	18	13	13	24	23	93	64	37	59
19	4+	4+	7-	6+	5-	3+	3-	3-	35.0	64	65	223	188	75	39	24	26	88	76
20	3o	3-	5-	6o	6+	4+	5-	4o	35.7	31	25	83	165	180	67	83	56	86	73
21	5-	5-	5o	4+	3+	3+	2+	3o	30.7	79	75	92	66	40	38	19	33	55	77
22	5-	6o	5+	4-	3+	3-	3-	3+	31.7	84	147	118	48	40	26	21	34	65	50
23	4-	3o	3-	4o	2-	1o	1+	2-	19.0	43	30	26	52	12	6	8	11	24	24
24	3-	3o	2o	1o	2o	2+	3-	2+	18.0	26	28	14	6	15	17	22	20	19	17
25	3+	3-	2o	2o	1+	2-	2o	2+	17.3	37	24	16	15	10	13	15	20	19	18
26	2-	3-	2o	2+	2-	2-	3-	2+	17.0	13	23	14	20	13	13	23	17	17	18
27	3o	3-	3o	2+	2-	5o	5o	5-	27.3	28	24	28	20	13	90	103	77	48	34
28	3+	3-	2o	2-	3-	3o	3+	4-	22.3	37	25	15	12	21	27	35	42	27	34
29	1o	1+	2+	2+	3-	3o	3+	4-	19.7	7	10	20	17	25	27	37	41	23	27
30	2+	3o	3-	4o	6-	5-	5o	5o	32.3	20	27	24	52	134	72	97	102	66	55
31	3-	3o	5o	5-	5o	5o	3+	4o	32.7	26	30	89	84	92	89	38	58	63	73
										Monthly mean value of Am								44,0	

am INDICES 1991 (continued)

September 1991																				
	Km								Σ	am									Am	Am2
1	5-	5-	4o	4-	4o	4-	5o	5-	34.3	75	74	55	45	51	48	95	74		65	65
2	4-	4-	5-	4+	4-	3+	2-	2+	27.3	50	48	82	61	41	34	12	18		43	44
3	1-	3o	3-	3+	3+	3-	3-	3+	21.7	5	28	21	36	34	26	23	39		27	26
4	2o	3o	3o	3-	3-	2-	2o	3o	20.0	14	27	31	24	22	13	14	27		22	30
5	4o	4-	4o	3o	3o	3o	3+	3-	26.7	54	42	53	33	28	33	36	22		38	29
6	2+	3o	2o	3-	2+	3o	2+	2+	20.0	19	31	16	23	18	30	17	18		22	25
7	3+	3-	3-	2+	3-	2-	2+	1+	19.0	36	22	24	19	21	12	20	9		20	22
8	3o	3-	2+	3o	4o	4-	5-	3o	26.3	33	24	17	27	53	44	77	29		38	34
9	3+	3+	4-	4o	5-	4o	4+	6-	33.0	39	36	47	57	83	57	63	132		64	61
10	5-	5o	4+	2+	3o	3+	3-	4-	29.0	72	102	70	18	29	36	26	46		50	55
11	4-	2+	2o	4+	4-	3o	4-	2o	24.7	46	17	15	64	48	27	41	16		34	31
12	2+	2+	2+	3-	2-	2-	2o	2o	17.0	18	20	18	21	13	12	14	16		17	20
13	3-	2-	2o	2-	2-	2+	3o	4-	18.7	21	12	15	13	13	18	29	48		21	25
14	4-	4-	3o	4-	4o	3+	3o	3o	27.3	50	42	33	50	51	38	31	31		41	32
15	3+	3-	2-	1o	1+	2o	2-	2o	15.7	34	21	11	7	10	14	13	15		16	20
16	2o	2-	2-	2-	2-	1-	2+	2o	13.7	15	11	12	12	11	4	17	14		12	11
17	2-	1+	1+	1-	1o	2o	1+	2-	11.0	11	8	8	5	7	16	9	13		10	9
18	1-	1-	1o	1o	1o	1+	2-	3-	10.0	5	4	7	6	7	8	12	24		9	12
19	3-	2o	1+	3o	2+	2+	2-	2+	17.7	26	16	10	27	18	20	11	20		19	17
20	2+	3o	2o	2o	1+	2-	1-	1+	14.3	19	27	14	15	10	11	4	8		14	13
21	2-	1o	1o	1+	1o	1-	1-	1+	8.7	11	6	7	9	6	5	4	9		7	9
22	2-	2-	1+	2o	2+	2o	1o	2-	13.7	11	11	8	16	20	14	7	11		12	9
23	2-	1o	1-	1-	1o	1-	1+	1+	8.3	11	6	5	5	6	4	8	10		7	9
24	2o	1+	1o	1o	1+	2-	2-	2+	12.3	14	10	7	7	10	11	13	20		12	15
25	3o	3+	3o	3o	4o	5o	5o	5+	31.7	33	36	27	29	58	87	93	108		59	47
26	4o	3+	4+	4+	4+	4-	4o	4o	32.0	54	38	61	70	65	47	55	51		55	66
27	4+	4+	4o	5-	5-	5-	4+	3o	34.0	65	70	59	75	79	83	63	31		66	57
28	4-	4-	3o	4-	5-	3+	5-	4o	30.7	50	45	30	49	81	40	77	55		53	47
29	3o	2o	1+	2+	3+	4-	3+	4-	22.7	28	14	9	20	37	47	36	45		30	38
30	3-	3+	3o	3o	4-	4-	4o	3+	26.7	23	34	33	33	47	46	56	38		39	40
										Monthly mean value of Am									30,7	

October 1991																				
	Km								Σ	am									Am	Am2
1	3o	3+	4o	4-	3+	3o	6+	6+	33.0	29	40	60	41	40	33	181	193		77	73
2	5o	5o	5-	5o	6-	5+	3+	3+	37.3	98	87	78	102	137	114	40	34		86	80
3	3o	3+	4-	3+	3-	3-	3o	3+	25.0	28	36	41	36	24	21	29	36		31	44
4	2+	3o	4o	3o	4o	3+	6-	5-	30.0	19	32	53	29	53	36	121	74		52	42
5	4o	3-	3+	3-	3-	2o	3-	2-	21.7	55	25	38	24	21	16	25	11		27	36
6	2+	1+	1+	3+	3o	5-	4o	5+	25.3	17	8	10	38	33	74	60	119		45	42
7	5-	4+	4o	3+	4-	3-	3o	3o	28.7	85	67	53	35	47	21	27	27		45	53
8	3+	3+	4+	4+	4+	4+	6-	4-	33.3	37	38	66	63	62	61	122	42		61	46
9	4-	4-	2+	3-	2o	2o	2o	3-	21.0	41	44	20	21	15	15	16	21		24	41
10	4-	4o	4o	3-	4-	4+	3o	3-	28.0	45	52	58	21	48	61	31	23		42	30
11	2+	2o	2o	2+	2+	3o	3o	3o	20.0	18	16	14	20	19	28	29	27		21	24
12	2o	1+	1+	1+	1-	1+	2o	2+	12.3	16	9	10	8	4	10	16	17		11	15
13	2-	2-	2-	2-	2o	2-	2o	2-	14.0	12	13	13	12	16	13	15	11		13	12
14	2-	1+	1+	1-	2+	2-	3o	2-	13.7	13	8	9	4	18	13	31	13		14	13
15	2o	1+	2-	1o	1+	1+	2-	1+	11.7	15	8	11	6	8	9	13	8		10	12
16	2-	1+	1o	1+	2-	1o	1o	1+	10.3	13	10	7	8	11	7	7	8		9	9
17	1+	1-	1+	2-	3o	2o	2+	2o	14.3	9	4	9	12	31	16	18	16		14	15
18	4-	3-	2-	2+	3o	3-	3-	3-	21.3	42	26	13	17	31	26	22	23		25	22
19	2-	3o	2o	3-	2o	2+	3+	3+	20.3	13	28	16	21	16	18	35	37		23	30
20	4-	3+	4-	5-	4+	3+	3-	2+	28.0	43	37	44	74	61	40	24	18		43	37
21	3-	4-	2+	4o	4-	5-	5-	4+	30.0	26	50	18	56	50	78	81	66		53	46
22	3+	3o	4-	4o	3o	3+	3+	3-	26.3	38	31	43	56	27	35	38	22		36	41
23	3-	3-	3o	2+	2-	3+	4o	5o	24.7	23	23	30	20	11	34	58	89		36	35
24	4+	3-	4-	3-	3+	3+	4-	4-	27.3	64	25	45	23	36	36	43	42		39	44
25	4+	3+	3o	5-	4+	5-	5-	5-	33.7	63	35	29	75	69	71	79	80		63	51
26	4-	3-	4-	3+	5-	4+	4o	4+	30.7	44	23	48	36	80	70	58	62		53	63
27	5o	5-	5-	4o	4-	4+	5-	5-	35.7	92	72	78	52	48	61	85	78		71	73
28	5o	4+	4o	6-	7o	8+	5+	5o	44.7	88	68	52	126	257	453	111	97		157	143
29	6o	7-	7-	6-	5-	5+	6+	5-	46.0	165	243	218	137	80	114	181	84		153	140
30	2+	3-	2+	3o	5-	5o	5-	5-	29.3	20	21	19	33	79	103	77	71		53	73
31	4+	3-	5-	5o	4+	5-	5o	6+	37.0	69	25	83	103	67	85	91	188		89	83
										Monthly mean value of Am									47,6	

am INDICES 1991 (continued)

November 1991

	Km								Σ	am								Am	Am2
1	5o	3o	4o	5+	6o	7-	7o	6o	43.0	88	31	55	109	152	229	255	160	135	113
2	6-	5+	3o	3-	3-	3+	3o	3-	28.3	135	112	29	23	26	38	27	25	52	82
3	2o	2+	2+	4-	3+	3o	3-	4-	23.0	16	17	18	43	38	27	26	42	28	30
4	3o	3+	3o	4-	3-	3o	5+	5-	28.7	32	37	27	48	21	32	106	85	49	44
5	5-	4-	3+	3-	3-	3o	3o	2+	25.3	82	47	36	23	26	32	27	19	37	41
6	3o	4o	3-	2o	2o	3+	3-	3-	22.3	29	53	26	15	15	35	21	25	27	25
7	3o	2+	2o	2o	2o	3-	2+	2+	18.7	29	18	16	15	15	24	18	20	19	26
8	3+	2o	4o	4+	6+	6+	7-	8+	41.3	34	16	57	63	183	200	234	480	158	145
9	8-	7o	6+	6o	5+	5+	5o	4-	46.3	369	266	194	152	113	110	92	45	168	161
10	3o	3-	4-	3+	4-	3o	3+	3+	26.0	28	25	42	40	43	29	38	34	35	44
11	2+	2+	2-	2+	3-	4-	5o	5o	25.0	19	17	12	20	24	48	92	97	41	35
12	3o	3-	3-	1+	1o	1+	2-	2o	15.7	30	21	24	10	6	10	12	14	16	28
13	1o	1+	2+	3-	4-	3+	3-	3o	20.0	7	8	20	23	41	37	23	27	23	23
14	4-	3+	3o	3+	3+	2o	3-	4-	25.0	46	35	29	34	36	16	23	41	33	35
15	4-	3-	3o	5-	5+	4-	4-	3o	29.7	45	25	29	77	104	45	46	32	50	43
16	3o	4-	3o	4+	4o	3o	3o	4-	27.7	33	43	28	67	56	32	31	46	42	43
17	3-	2+	3o	4+	3+	4-	4o	3o	26.3	23	17	27	61	38	44	54	27	36	40
18	3+	3o	3o	5-	4-	3+	5-	4+	30.0	36	30	33	81	50	36	72	63	50	52
19	5-	4+	4+	4+	5-	6o	5+	4+	38.0	73	66	69	61	82	153	119	66	86	62
20	2+	2o	3o	3-	2+	4-	4o	3+	23.3	17	16	28	24	20	50	55	40	31	54
21	3-	4-	4o	5-	5-	6+	6+	6o	38.3	21	43	56	80	80	189	176	152	100	83
22	5o	5-	5o	5-	5+	3+	3-	3o	33.7	97	86	92	83	108	37	21	28	69	83
23	3o	3o	4o	5-	4o	3+	3o	4-	28.7	33	27	55	71	60	40	31	42	45	39
24	3-	3-	2+	2-	2+	3o	3o	3o	20.7	21	21	20	12	19	27	27	29	22	26
25	2o	3-	3-	2-	2o	3-	3-	2o	18.3	14	21	25	12	14	22	25	16	19	20
26	1+	3-	2+	3-	2o	2-	1+	0+	14.3	9	26	17	21	15	13	10	3	14	14
27	2-	1+	1+	1o	2o	3-	2+	2o	14.3	12	10	9	7	14	23	18	14	13	12
28	2o	1o	1o	2-	2+	2o	3+	4-	17.0	15	7	7	12	20	16	39	43	20	20
29	4-	3-	1+	2-	3+	3-	2+	4-	21.3	48	26	8	13	35	26	19	46	28	27
30	3o	3-	2o	2+	2o	2-	2o	4-	19.3	33	23	15	19	16	12	16	45	22	24
										Monthly mean value of Am								48,9	

December 1991

	Km								Σ	am								Am	Am2
1	3-	2o	2o	2+	2o	2+	3o	3o	19.3	24	15	16	18	14	18	30	27	20	23
2	3+	2+	3-	4-	4o	3o	3+	3+	25.7	38	20	22	44	58	29	35	37	35	28
3	2o	2o	2+	2+	3+	3o	3o	3o	21.0	16	14	18	20	34	27	28	31	24	27
4	3-	2+	2+	2o	3-	3+	3+	3-	21.3	26	18	18	16	26	34	37	23	25	24
5	2o	2+	2-	2-	1+	2+	2+	2-	15.3	16	19	11	13	9	17	19	11	14	17
6	2o	1+	1+	2-	1+	1o	1o	2o	11.7	14	9	9	11	9	7	7	14	10	11
7	1+	1+	2-	1+	2o	1+	2o	3-	13.7	9	10	12	8	14	8	14	22	12	13
8	1+	2-	3o	2+	3o	3-	2-	1o	16.7	10	13	27	20	29	22	11	6	17	17
9	2-	2o	2o	3+	2o	3o	3o	3+	20.3	11	14	16	34	14	27	33	34	23	21
10	3o	2o	2+	2+	2+	3o	3+	4-	22.0	29	15	20	20	17	33	37	49	28	25
11	3+	2+	2-	2-	3-	3-	3+	4-	21.3	35	19	13	12	21	23	34	43	25	27
12	4-	3o	1+	2-	2o	3o	3-	3o	20.3	41	28	10	12	15	28	26	30	24	25
13	3-	2+	2+	3o	4o	3o	3-	3-	22.7	23	18	19	29	53	32	26	26	28	25
14	2-	2-	3o	3o	3+	4o	3+	3+	23.3	13	13	27	27	35	51	35	36	30	27
15	3-	2+	2-	1+	2-	1+	1-	1o	12.7	21	17	12	10	12	9	5	6	12	19
16	1-	1+	2-	3o	4o	4+	4+	4o	23.3	5	9	11	31	55	67	66	54	37	35
17	5-	4o	4-	4o	4o	4+	4o	3+	32.0	76	56	44	54	52	63	56	34	54	48
18	3o	2o	3o	3-	2o	3-	2+	1o	18.7	28	16	29	25	14	23	19	7	20	27
19	1+	1+	2+	3o	3+	4-	3o	1+	19.3	8	8	18	31	37	44	33	10	24	19
20	1o	2-	2o	2-	3o	3+	3o	3-	18.3	6	12	16	12	27	36	31	24	21	30
21	4-	4-	4-	4o	4-	3+	2+	3-	27.0	45	43	42	57	41	40	19	24	39	30
22	2+	1+	2-	2-	0+	1+	1+	2-	11.7	17	10	13	11	3	9	8	13	11	20
23	3o	3+	3o	3-	3-	3-	3o	3o	23.3	27	34	29	24	22	21	27	27	26	20
24	2+	2o	2o	3o	2+	2+	1+	1o	16.3	18	16	15	27	20	17	8	6	16	16
25	1+	1-	1+	2o	2+	2o	2+	2o	14.0	8	5	10	16	20	16	19	15	14	13
26	2-	2+	2o	1+	2-	3-	3-	3o	17.3	11	19	15	10	12	24	25	28	18	25
27	4+	3-	3+	5-	3+	5-	5-	5+	33.0	61	23	34	71	39	86	73	110	62	42
28	3o	2+	2o	3-	3+	4o	5-	5-	26.7	33	17	15	23	35	51	80	84	42	50
29	4o	4o	3+	3-	3+	3+	5-	5o	30.3	52	54	34	21	34	40	80	98	52	51
30	5-	4-	2o	2+	3o	2+	3-	3o	23.7	71	42	16	19	29	19	25	30	31	35
31	3o	1+	1+	2-	3-	3o	3o	3-	18.7	27	10	8	12	26	28	31	26	21	19
										Monthly mean value of Am								26,3	

MONTHLY AND YEARLY **am** 1959 - 1991

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1959	25.5	35.8	30.2	24.2	25.6	22.8	42.2	31.6	37.0	28.3	33.0	31.7	30.6
1960	25.7	23.5	27.3	53.5	31.5	27.4	27.4	27.9	27.1	45.0	44.5	32.2	32.7
1961	19.5	24.1	21.3	20.7	21.1	20.3	34.4	17.8	19.4	22.0	15.7	19.6	21.3
1962	13.0	18.4	14.0	21.6	12.8	17.1	19.9	24.9	27.8	29.9	20.4	21.1	20.1
1963	17.3	13.9	13.2	15.4	17.9	17.9	19.5	21.2	38.0	22.2	19.0	16.9	19.4
1964	17.9	17.5	19.0	19.7	15.9	13.7	15.4	13.3	16.2	15.0	12.5	9.3	15.4
1965	10.9	14.7	13.2	11.5	9.8	14.9	13.6	14.8	16.2	11.8	10.9	12.3	12.9
1966	12.8	13.2	17.8	11.1	14.0	11.6	15.4	18.2	28.2	16.2	15.4	18.5	16.1
1967	17.7	18.4	12.0	14.0	32.8	17.8	12.8	15.3	24.0	16.8	17.4	23.2	18.5
1968	19.3	25.1	21.9	20.2	21.5	24.3	16.4	18.5	21.1	24.1	25.1	17.7	21.2
1969	15.3	23.5	26.1	22.4	23.6	15.7	12.4	13.5	21.7	14.5	16.9	11.9	18.1
1970	12.5	11.2	24.9	21.0	14.1	16.2	25.5	18.5	17.6	19.2	19.9	14.9	18.0
1971	21.0	19.0	18.4	23.2	20.3	15.8	13.8	15.9	20.1	19.4	17.0	18.2	18.5
1972	20.6	16.9	18.9	17.3	16.2	21.0	12.9	32.2	19.4	19.4	21.1	16.9	19.4
1973	25.0	29.8	34.9	39.5	25.9	26.5	20.4	20.1	21.9	27.4	20.1	19.2	25.8
1974	24.1	25.2	33.7	31.5	28.0	27.2	33.2	30.3	33.5	37.2	27.1	26.1	29.8
1975	25.9	29.5	30.8	24.7	23.3	19.8	21.4	17.9	15.9	18.4	28.8	20.3	23.0
1976	22.0	26.8	33.4	26.4	22.9	16.9	16.2	16.0	21.8	19.2	15.2	18.1	21.2
1977	18.5	20.0	18.7	25.0	18.9	13.9	22.9	22.6	23.9	20.7	16.9	16.8	19.9
1978	24.6	25.4	25.9	32.2	32.5	28.3	18.9	24.3	26.8	19.7	24.3	22.1	25.4
1979	26.5	24.2	27.6	35.3	21.6	17.4	17.9	25.9	21.1	18.6	16.9	16.2	22.4
1980	18.0	17.9	11.8	17.3	15.1	19.4	16.1	15.8	13.7	22.6	22.4	22.5	17.7
1981	16.4	23.3	28.4	35.9	28.3	17.7	28.7	24.2	19.8	34.5	24.9	18.6	25.1
1982	20.7	48.2	26.8	31.8	26.0	32.1	43.7	32.2	50.4	29.0	34.5	35.6	34.1
1983	25.7	39.3	34.3	35.2	32.0	24.1	21.8	25.8	23.0	27.3	32.0	24.1	28.6
1984	20.6	25.7	30.5	34.1	26.5	23.8	26.8	25.7	33.1	33.3	31.5	28.0	28.3
1985	25.0	23.3	17.8	30.3	14.8	19.4	24.4	22.3	20.8	23.0	23.5	21.4	22.1
1986	21.3	40.5	20.7	13.4	18.4	15.2	15.0	22.5	25.6	18.0	20.7	14.7	20.4
1987	13.5	16.6	16.9	11.8	13.5	12.8	17.3	23.5	29.7	24.7	21.3	14.9	18.0
1988	21.0	22.4	23.3	24.4	18.7	18.1	18.4	19.1	20.0	20.9	22.1	24.6	21.1
1989	32.6	25.9	61.8	33.7	25.6	24.9	13.2	30.4	25.9	32.6	33.3	29.2	30.8
1990	23.4	36.3	33.7	40.4	24.5	23.0	20.5	28.2	22.7	24.2	16.1	13.5	25.5
1991	14.9	18.9	39.6	25.7	27.4	58.0	37.5	44.0	30.7	47.6	48.9	26.3	35.0

Unit : nT

SECTION 3

3.3 Kp INDICES

Musical diagram of **Kp** 1991 75

Monthly tables of three-hour indices :

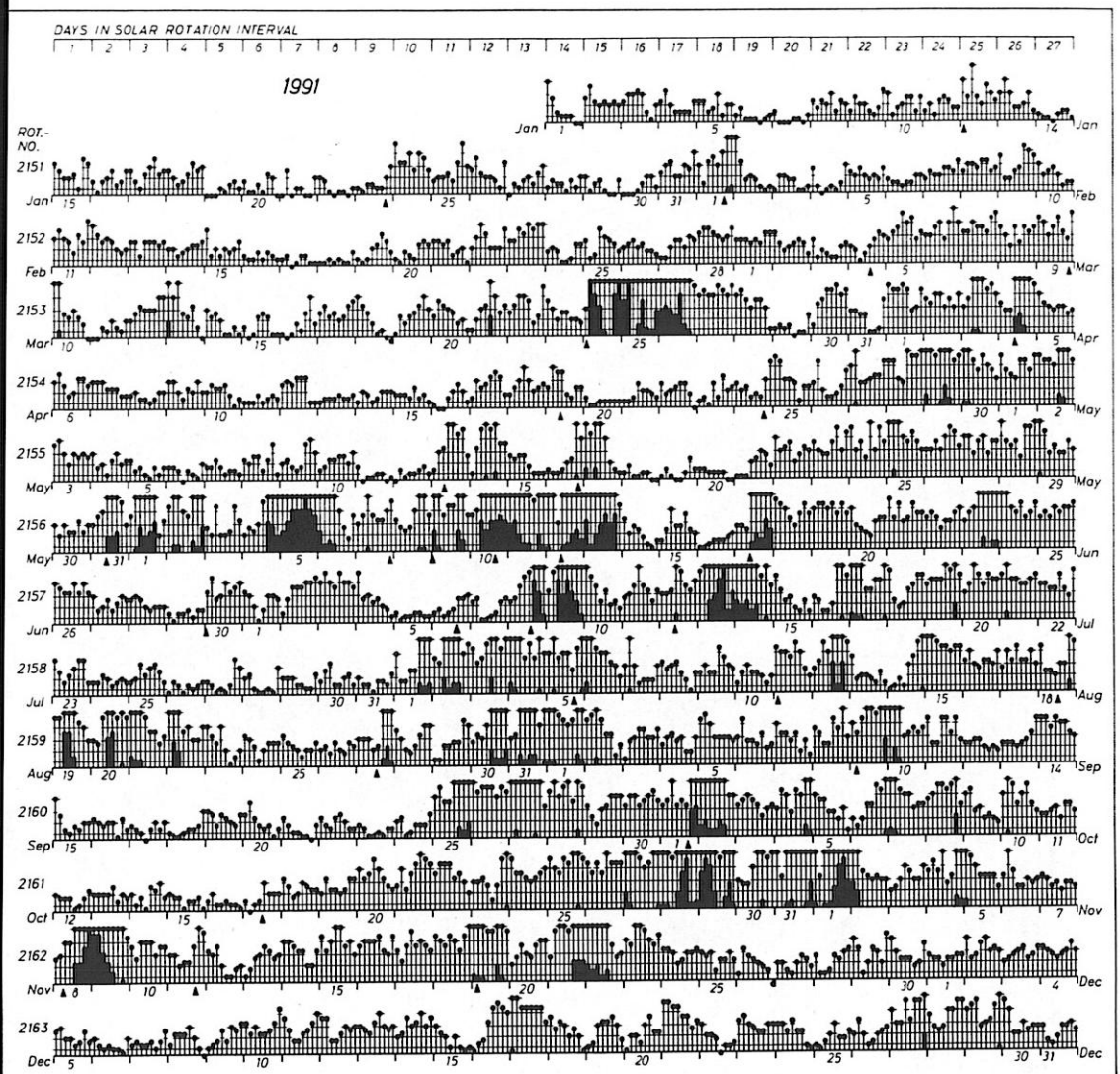
Kp, **ap** and daily **Ap** and **Cp** values 76

Frequencies of **Kp** indices 82

Monthly and yearly mean values of **Ap**

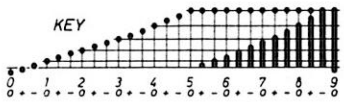
1932 - 1991 83

MUSICAL DIAGRAM OF **Kp** 1991



Kp (after Bartels)

1991



▲ = sudden commencement

Kp INDICES 1991

	Kp								Sum	Jan 1991				ap				Sum	Ap	Cp
1	4o	3-	1+	1o	1o	1o	0+	0+	12-	27	12	5	4	4	4	2	2	60	8	0.4
2	3-	4-	2+	2o	2+	2o	2+	2o	19+	12	22	9	7	9	7	9	7	82	10	0.6
3	2+	3o	3o	3+	3o	1+	1-	2o	19-	9	15	15	18	15	5	3	7	87	11	0.6
4	2+	3+	2o	1+	1+	1+	1+	2+	15+	9	18	7	5	5	5	5	9	63	8	0.4
5	2+	2+	1+	2-	3o	1o	2o	2o	16-	9	9	5	6	15	4	7	7	62	8	0.4
6	1o	2-	1-	1-	1-	0+	1-	1o	7-	4	6	3	3	3	2	3	4	28	4	0.1
7	1+	0+	0+	0+	1-	1-	0+	1o	5o	5	2	2	2	3	3	2	4	23	3	0.1
8	2+	2-	2+	2o	3o	1+	2+	2o	17o	9	6	9	7	15	5	9	7	67	8	0.5
9	1+	3-	2o	2o	1+	1o	2-	3+	15+	5	12	7	7	5	4	6	18	64	8	0.4
10	3o	1o	2-	2o	3-	3-	1+	3-	17o	15	4	6	7	12	12	5	12	73	9	0.5
11	1+	2o	1o	2+	3-	2+	2-	2-	15o	5	7	4	9	12	9	6	6	58	7	0.4
12	4o	3-	5o	3-	2o	4-	3o	2+	25+	27	12	48	12	7	22	15	9	152	19	1.0
13	3o	4o	3o	2-	2-	2o	3o	1+	20-	15	27	15	6	6	7	15	5	96	12	0.7
14	1o	1-	1-	0+	1o	1+	1+	1-	7o	4	3	3	2	4	5	5	3	29	4	0.1
15	3+	3-	2o	2o	2+	1o	4-	3+	20+	18	12	7	7	9	4	22	18	97	12	0.7
16	2-	1-	2-	2o	3-	1+	2-	3-	14+	6	3	6	7	12	5	6	12	57	7	0.4
17	3-	2-	1o	2+	3o	4-	2+	3-	19+	12	6	4	9	15	22	9	12	89	11	0.6
18	3-	2o	1+	2-	2+	3+	3-	3o	19o	12	7	5	6	9	18	12	15	84	10	0.6
19	0+	0+	0+	1o	1-	1+	2-	1o	7-	2	2	2	4	3	5	6	4	28	4	0.1
20	2-	1-	1-	1+	1-	2+	2o	0+	10-	6	3	3	5	3	9	7	2	38	5	0.2
21	0+	3-	0+	1o	1o	0+	0+	2o	8o	2	12	2	4	4	2	2	7	35	4	0.2
22	2o	2-	1-	0+	1-	1-	0+	1o	7+	7	6	3	2	3	3	2	4	30	4	0.1
23	1o	1-	1+	1+	1o	1o	2o	3o	11+	4	3	5	5	4	4	7	15	47	6	0.3
24	5-	3+	3+	4o	3-	4o	4-	3-	28+	39	18	18	27	12	27	22	12	175	22	1.1
25	2-	2o	2o	2+	2-	3+	5-	3o	21-	6	7	7	9	6	18	39	15	107	13	0.8
26	3-	4-	2+	2o	2o	2-	1o	3+	19-	12	22	9	7	7	6	4	18	85	11	0.6
27	0+	1+	1o	2-	2o	1+	2+	3o	13o	2	5	4	6	7	5	9	15	53	7	0.3
28	1o	2-	1+	1+	1-	2-	1o	2o	11-	4	6	5	5	3	6	4	7	40	5	0.2
29	2o	1-	1+	2-	1-	0+	0+	2-	9-	7	3	5	6	3	2	2	6	34	4	0.1
30	0+	0+	0+	1-	1+	2o	2o	1o	8o	2	2	2	3	5	7	7	4	32	4	0.1
31	2+	3o	3+	2o	2o	3o	3-	4o	22+	9	15	18	7	7	15	12	27	110	14	0.8

	Kp								Sum	Feb 1991				ap				Sum	Ap	Cp
1	3o	1+	3+	4-	3o	4o	5+	6-	29+	15	5	18	22	15	27	56	67	225	28	1.2
2	5o	3+	2-	2o	2-	1o	1-	1o	16+	48	18	6	7	6	4	3	4	96	12	0.7
3	1-	2o	2o	2-	2-	1-	1-	1o	10+	3	7	7	6	6	3	3	4	39	5	0.2
4	3-	1o	0+	1-	1o	1-	1+	3o	11-	12	4	2	3	4	3	5	15	48	6	0.3
5	2+	2o	3-	2o	2-	2o	2-	3-	17o	9	7	12	7	6	7	6	12	66	8	0.4
6	2-	1+	1+	1o	1+	1+	2o	2o	12o	6	5	5	4	5	5	7	7	44	6	0.2
7	2-	2+	2o	2o	3-	3-	2+	3+	19o	6	9	7	7	12	12	9	18	80	10	0.6
8	2+	3o	3o	3-	3+	3+	2+	3-	23-	9	15	15	12	18	18	9	12	108	14	0.8
9	4-	2-	2-	2+	3-	4+	4o	4-	24o	22	6	6	9	12	32	27	22	136	17	0.9
10	3o	2o	2+	3-	2o	1o	1+	1+	16-	15	7	9	12	7	4	5	5	64	8	0.4
11	3o	4-	3o	3-	2-	3+	3-	4+	24+	15	22	15	12	6	18	12	32	132	16	0.9
12	4o	3+	3-	3o	3-	2o	2-	2o	21+	27	18	12	15	12	7	6	7	104	13	0.7
13	3-	3-	1+	3-	3-	3-	2+	3-	20-	12	12	5	12	12	12	9	12	86	11	0.6
14	2o	2o	1+	2-	2o	2+	2+	3-	16+	7	7	5	6	7	9	9	12	62	8	0.4
15	4-	1+	2o	1+	2o	2-	2o	3-	17-	22	5	7	5	7	6	7	12	71	9	0.5
16	1+	1o	1o	2-	1o	2-	1+	1o	10o	5	4	4	6	4	6	5	4	38	5	0.2
17	1o	1+	0+	1-	1+	1+	1-	1-	7+	4	5	2	3	5	5	3	3	30	4	0.1
18	1-	1-	1o	1-	1o	1-	1-	2-	7o	3	3	4	3	4	3	3	6	29	4	0.1
19	1o	1-	1o	2o	2+	3+	3-	2-	15-	4	3	4	7	9	18	12	6	63	8	0.4
20	1o	1-	2-	1+	1o	2+	3-	2+	13o	4	3	6	5	4	9	12	9	52	6	0.3
21	3-	3-	2+	3-	1+	2-	2o	1-	16o	12	12	9	12	5	6	7	3	66	8	0.4
22	2o	3o	4o	3+	2o	2o	2o	4-	22o	7	15	27	18	7	7	7	22	110	14	0.8
23	3-	3-	4-	3+	4o	4-	4o	4o	28o	12	12	22	18	27	22	27	27	167	21	1.1
24	2-	2o	2-	1-	1-	1o	2+	2+	12+	6	7	6	3	3	4	9	9	47	6	0.3
25	3-	1o	1+	4-	3o	3-	2+	2-	18+	12	4	5	22	15	12	9	6	85	11	0.6
26	2o	2+	3-	2o	2+	2-	2-	1+	16o	7	9	12	7	9	6	6	5	61	8	0.4
27	1o	1o	2o	3-	3-	2o	3o	3-	17o	4	4	7	12	12	7	15	12	73	9	0.5
28	3+	4-	4-	3+	3o	3-	3o	4-	26+	18	22	22	18	15	12	15	22	144	18	1.0

Kp INDICES 1991 (continued)

	Kp								Sum	Mar 1991				ap				Sum	Ap	Cp
1	3-	3-	3-	2+	3-	2+	3+	3+	22o	12	12	12	9	12	9	18	18	102	13	0.7
2	3+	2+	2-	2o	2+	3-	2+	1+	18o	18	9	6	7	9	12	9	5	75	9	0.5
3	3-	1o	2-	1+	1o	1o	2o	2+	13o	12	4	6	5	4	4	7	9	51	6	0.3
4	2o	2-	1-	1+	2o	3-	3+	3o	17-	7	6	3	5	7	12	18	15	73	9	0.5
5	3-	3+	4-	5-	4o	4+	3-	3+	29-	12	18	22	39	27	32	12	18	180	22	1.1
6	3o	3o	4-	4o	3-	4o	5o	4o	29+	15	15	22	27	12	27	48	27	193	24	1.2
7	3+	3+	4o	4-	4-	3+	4+	5-	30+	18	18	27	22	22	18	32	39	196	24	1.2
8	4-	3o	2o	4-	2+	4-	3+	4-	25+	22	15	7	22	9	22	18	22	137	17	0.9
9	4+	4o	3o	4-	4+	3+	3-	5-	30o	32	27	15	22	32	18	12	39	197	25	1.2
10	5o	6-	3-	2+	3o	2+	2-	0+	23o	48	67	12	9	15	9	6	2	168	21	1.1
11	0+	0+	1+	1o	2o	1+	1o	2o	9+	2	2	5	4	7	5	4	7	36	4	0.2
12	2o	3-	3+	3o	3o	3o	4o	4o	25o	7	12	18	15	15	15	27	27	136	17	0.9
13	6+	4o	5o	3-	2+	3+	1+	0+	25+	94	27	48	12	9	18	5	2	215	27	1.2
14	3o	2+	3-	2o	1-	1-	1+	1-	13+	15	9	12	7	3	3	5	3	57	7	0.4
15	1+	0+	1-	2+	3-	2+	1-	1-	11o	5	2	3	9	12	9	3	3	46	6	0.3
16	1-	0+	1-	2-	1o	3-	4o	2-	13-	3	2	3	6	4	12	27	6	63	8	0.4
17	3-	3+	2+	3-	2o	2+	3+	4-	22+	12	18	9	12	7	9	18	22	107	13	0.8
18	4o	3+	3-	2-	1-	1o	0+	0o	14-	27	18	12	6	3	4	2	0	72	9	0.5
19	1-	2+	2-	2+	3-	3+	4o	3o	20o	3	9	6	9	12	18	27	15	99	12	0.7
20	2+	4-	3+	3o	3-	2-	2o	1o	20-	9	22	18	15	12	6	7	4	93	12	0.7
21	1o	2o	3o	3+	7-	4o	3-	3+	26o	4	7	15	18	111	27	12	18	212	26	1.2
22	3-	3+	4o	4o	4-	2-	2+	5-	26+	12	18	27	27	22	6	9	39	160	20	1.0
23	4-	3o	2o	3-	3-	2o	2o	2-	20-	22	15	7	12	12	7	7	6	88	11	0.6
24	3o	9-	8o	7+	5+	5o	8o	9-	54o	15	300	207	154	56	48	207	300	1287	161	2.0
25	8-	9-	5o	6o	8-	6-	5+	7o	53o	179	300	48	80	179	67	56	132	1041	130	1.9
26	7o	7+	7o	7-	8o	6o	5+	5-	52o	132	154	132	111	207	80	56	39	911	114	1.9
27	4o	4+	4o	4o	5-	4+	4o	5-	34o	27	32	27	27	39	32	27	39	250	31	1.3
28	4o	4+	4-	3o	4-	4-	3o	1o	26+	27	32	22	15	22	22	15	4	159	20	1.0
29	1o	1+	1o	1+	0+	1-	1-	2+	9-	4	5	4	5	2	3	3	9	35	4	0.2
30	1+	3+	4-	4+	4+	5-	4o	4+	30o	5	18	22	32	32	39	27	32	207	26	1.2
31	3-	3-	2+	2+	1-	1-	1o	4-	16o	12	12	9	9	3	3	4	22	74	9	0.5

	Kp								Sum	Apr 1991				ap				Sum	Ap	Cp
1	5-	4+	4+	5-	4+	3-	3o	4+	32+	39	32	32	39	32	12	15	32	233	29	1.3
2	4-	3+	4o	4o	3o	4-	3o	4o	29-	22	18	27	27	15	22	15	27	173	22	1.1
3	3o	4-	5+	5+	5o	4+	5-	4o	35+	15	22	56	56	48	32	39	27	295	37	1.4
4	3+	3-	3-	6+	7-	6-	5o	5-	37o	18	12	12	94	111	67	48	39	401	50	1.6
5	4o	3+	3o	3-	3o	3o	2+	3-	24o	27	18	15	12	15	15	9	12	123	15	0.9
6	3o	4-	3-	2-	2o	3+	3+	3-	22+	15	22	12	6	7	18	18	12	110	14	0.8
7	3o	3o	3o	2+	2+	2+	2-	2-	19+	15	15	15	9	9	9	6	6	84	10	0.6
8	2-	2o	1+	1+	1o	1+	2o	2o	13-	6	7	5	5	4	5	7	7	46	6	0.3
9	3o	3o	2o	1+	2+	2o	3o	2o	19-	15	15	7	5	9	7	15	7	80	10	0.6
10	2o	3-	2+	2+	3-	2-	1-	1+	16-	7	12	9	9	12	6	3	5	63	8	0.4
11	1o	1o	1o	2-	1o	1+	2-	1+	10o	4	4	4	6	4	5	6	5	38	5	0.2
12	3-	3o	3-	3+	3+	3+	1o	1o	20+	12	15	12	18	18	18	4	4	101	13	0.7
13	1o	1+	1+	1+	2-	1+	1+	2-	11o	4	5	5	5	6	5	5	6	41	5	0.2
14	1o	2o	2-	1o	1+	2o	2o	2o	13o	4	7	6	4	5	7	7	7	47	6	0.3
15	2-	2-	2-	1+	2+	1+	2-	1o	13-	6	6	6	5	9	5	6	4	47	6	0.3
16	1-	0+	0+	1+	2o	3-	2o	1o	10+	3	2	2	5	7	12	7	4	42	5	0.2
17	1+	3o	2+	3-	3+	4-	3+	2-	21+	5	15	9	12	18	22	18	6	105	13	0.8
18	2-	2+	3o	4o	3o	2o	2+	3-	21o	6	9	15	27	15	7	9	12	100	12	0.7
19	2+	4o	4-	4-	2-	1+	2+	2+	21+	9	27	22	22	6	5	9	9	109	14	0.8
20	1+	1-	1-	1o	1o	1o	1o	1o	8-	5	3	3	4	4	4	4	4	31	4	0.1
21	1o	1o	1+	3-	2o	2o	2-	1+	13o	4	4	5	12	7	7	6	5	50	6	0.3
22	3-	2-	2o	2+	3-	3-	2-	0+	16o	12	6	7	9	12	12	6	2	66	8	0.4
23	1o	1+	1-	3-	1+	3+	2o	2+	15-	4	5	3	12	5	18	7	9	63	8	0.4
24	3-	2o	2+	1+	2-	1+	3o	4+	19-	12	7	9	5	6	5	15	32	91	11	0.7
25	5-	4+	3o	3o	3-	1o	2+	2+	23+	39	32	15	15	12	4	9	9	135	17	0.9
26	3-	4+	2o	1+	1+	2-	2+	4-	19+	12	32	7	5	5	6	9	22	98	12	0.7
27	4o	5+	3-	3-	3o	3+	3+	4+	29-	27	56	12	12	15	18	18	32	190	24	1.1
28	4+	4+	3o	3-	5o	5-	5-	5o	34-	32	32	15	12	48	39	39	48	265	33	1.3
29	6o	5o	5-	5+	7-	6-	4+	5-	42+	80	48	39	56	111	67	32	39	472	59	1.7
30	5+	5+	4+	4-	5-	4o	4-	3o	34o	56	56	32	22	39	27	22	15	269	34	1.3

Kp INDICES 1991 (continued)

	Kp								Sum	May 1991	ap								Sum	Ap	Cp
1	5-	4-	3+	3o	4+	4+	4-	5-	32-	39	22	18	15	32	32	22	39	219	27	1.2
2	5-	4+	4+	4o	6o	6-	5o	4+	38+	39	32	32	27	80	67	48	32	357	45	1.5
3	4-	4o	3o	2o	3o	3-	3o	3-	24o	22	27	15	7	15	12	15	12	125	16	0.9
4	3o	2-	2o	1o	2+	3o	2o	2+	17+	15	6	7	4	9	15	7	9	72	9	0.5
5	2+	1+	2-	1o	1-	2-	1o	2-	11+	9	5	6	4	3	6	4	6	43	5	0.2
6	2-	2-	1+	0+	1+	1o	1-	2o	10o	6	6	5	2	5	4	3	7	38	5	0.2
7	2-	2-	2+	2-	1o	1+	1+	1o	12o	6	6	9	6	4	5	5	4	45	6	0.3
8	2+	2o	3-	3-	1+	2+	4-	1o	18o	9	7	12	12	5	9	22	4	80	10	0.6
9	2o	2+	2-	1+	2-	4-	4o	3o	20-	7	9	6	5	6	22	27	15	97	12	0.7
10	1+	2-	2+	2+	3-	3-	2o	3o	18o	5	6	9	9	12	12	7	15	75	9	0.5
11	2-	0+	1-	1-	1o	1o	0+	1-	6+	6	2	3	3	4	4	2	3	27	3	0.1
12	0+	1+	1-	1o	1o	1+	2-	1o	8+	2	5	3	4	4	5	6	4	33	4	0.1
13	1+	3o	3+	5o	5o	4+	5-	3-	29+	5	15	18	48	48	32	39	12	217	27	1.2
14	1o	3+	5-	5+	5-	6-	4-	4-	32o	4	18	39	56	39	67	22	22	267	33	1.3
15	3-	2+	3-	3-	2-	1o	1o	1o	15o	12	9	12	12	6	4	4	4	63	8	0.4
16	1+	1o	1o	1+	2o	2+	5+	4o	18+	5	4	4	5	7	9	56	27	117	15	0.8
17	6o	4+	6o	5o	4o	2o	1+	1o	30-	80	32	80	48	27	7	5	4	283	35	1.4
18	1o	2-	1-	1-	1o	1o	0+	0+	7-	4	6	3	3	4	4	2	2	28	4	0.1
19	1-	1+	1-	0+	0+	1o	2+	1+	8o	3	5	3	2	2	4	9	5	33	4	0.1
20	1+	1+	1o	1o	1o	1o	0+	0+	7+	5	5	4	4	4	4	2	2	30	4	0.1
21	1-	1-	1-	2o	2+	3o	3-	2-	14-	3	3	3	7	9	15	12	6	58	7	0.4
22	4o	3o	3+	4-	2o	3-	3+	3o	25o	27	15	18	22	7	12	18	15	134	17	0.9
23	4-	3o	3-	3-	4-	5-	3o	4+	28-	22	15	12	12	22	39	15	32	169	21	1.1
24	5-	3o	4-	2+	5o	3o	5-	4-	30o	39	15	22	9	48	15	39	22	209	26	1.2
25	5o	6-	5o	4o	4-	4+	4-	3o	34+	48	67	48	27	22	32	22	15	281	35	1.4
26	3o	3o	4-	3o	4o	5-	4+	3+	29o	15	15	22	15	27	39	32	18	183	23	1.1
27	4o	4o	3-	4-	4o	3-	4-	4-	28+	27	27	12	22	27	12	22	22	171	21	1.1
28	5o	4-	3+	4-	2+	5-	5-	5o	32+	48	22	18	22	9	39	39	48	245	31	1.3
29	5+	4+	3-	3+	3-	3-	4-	3o	28-	56	32	12	18	12	12	22	15	179	22	1.1
30	3o	2o	3o	2+	2+	3+	2+	3o	21+	15	7	15	9	9	18	9	15	97	12	0.7
31	3o	4-	4o	6+	6+	7-	5-	3o	38-	15	22	27	94	94	111	39	15	417	52	1.6

	Kp								Sum	Jun 1991	ap								Sum	Ap	Cp
1	4-	5+	7o	6+	7-	7+	2o	3+	42-	22	56	132	94	111	154	7	18	594	74	1.8
2	4+	6-	6-	4o	4-	6o	5+	7o	42-	32	67	67	27	22	80	56	132	483	60	1.7
3	3-	2o	4+	2o	2o	2+	4+	3+	23o	12	7	32	7	7	9	32	18	124	16	0.9
4	2o	3-	2+	3o	5-	7+	7o	6+	35+	7	12	9	15	39	154	132	94	462	58	1.7
5	7-	7+	8o	8o	8o	9-	8o	8-	62+	111	154	207	207	207	300	207	179	1572	196	2.1
6	7-	6-	6o	6-	4o	3-	2-	4-	36o	111	67	80	67	27	12	6	22	392	49	1.6
7	3o	4-	5+	4-	3+	3+	4o	5-	31o	15	22	56	22	18	18	27	39	217	27	1.2
8	3+	3-	2+	3-	4o	5+	5+	4-	29+	18	12	9	12	27	56	56	22	212	26	1.2
9	7-	5+	4-	4+	4+	7-	6o	4-	41-	111	56	22	32	32	111	80	22	466	58	1.7
10	4-	4o	7+	7-	7+	7+	8-	7+	51+	22	27	154	111	154	154	179	154	955	119	1.9
11	7o	7+	6+	6-	6-	5-	6+	5+	48+	132	154	94	67	67	39	94	56	703	88	1.8
12	5+	5o	3o	5+	6-	6+	7-	6o	43+	56	48	15	56	67	94	111	80	527	66	1.7
13	7+	5+	6+	7o	8-	7o	8-	4+	53-	154	56	94	132	179	132	179	32	958	120	1.9
14	3+	2o	3-	2+	2-	1o	1-	1+	15o	18	7	12	9	6	4	3	5	64	8	0.4
15	1+	2+	4o	3-	3-	4-	2+	2o	21o	5	9	27	12	12	22	9	7	103	13	0.7
16	1-	1-	1o	1+	1+	1+	2-	2o	10o	3	3	4	5	5	5	6	7	38	5	0.2
17	3-	3-	2+	6-	6+	6o	7+	7-	40-	12	12	9	67	94	80	154	111	539	67	1.7
18	5-	4+	4o	3+	3-	4-	4+	4-	31-	39	32	27	18	12	22	32	22	204	26	1.2
19	4o	4+	4+	4o	4+	4-	4+	4-	33-	27	32	32	27	32	22	32	22	226	28	1.2
20	4o	3-	2+	2o	2-	3o	3+	3+	22+	27	12	9	7	6	15	18	18	112	14	0.8
21	5-	3+	4+	3o	3+	4+	4-	4-	30+	39	18	32	15	18	32	22	22	198	25	1.2
22	3+	4-	3+	2+	3o	3o	4-	4o	26+	18	22	18	9	15	15	22	27	146	18	1.0
23	3o	4-	4o	5o	6o	5o	6-	6-	38o	15	22	27	48	80	48	67	67	374	47	1.5
24	5o	5o	4o	4-	4+	3+	4-	4+	33+	48	48	27	22	32	18	22	32	249	31	1.3
25	3+	4-	3+	4o	4-	4o	4o	4+	30+	18	22	18	27	22	27	27	32	193	24	1.2
26	4o	4-	3+	3+	4o	3+	4o	3+	29o	27	22	18	18	27	18	27	18	175	22	1.1
27	3o	2-	2o	3-	2-	2+	3o	3-	19o	15	6	7	12	6	9	15	12	82	10	0.6
28	3-	3o	3-	2o	2-	2o	2o	2o	18o	12	15	12	7	6	7	7	7	73	9	0.5
29	1+	1-	1+	1+	2-	1o	2-	2-	11-	5	3	5	5	6	4	6	6	40	5	0.2
30	3+	4+	3-	3o	4o	3+	4-	4o	28+	18	32	12	15	27	18	22	27	171	21	1.1

Kp INDICES 1991 (continued)

	Kp								Sum	Jul 1991				ap				Sum	Ap	Cp
1	3+	3o	2o	1-	2-	3o	3o	3-	19+	18	15	7	3	6	15	15	12	91	11	0.7
2	1+	3-	4-	4-	4-	4o	4o	4+	27+	5	12	22	22	22	27	27	32	169	21	1.1
3	4o	5-	4o	4-	5-	4o	4o	4-	33-	27	39	27	22	39	27	27	22	230	29	1.3
4	5-	3-	3o	2+	3-	2o	2-	1o	20o	39	12	15	9	12	7	6	4	104	13	0.7
5	1+	1-	1o	1o	1+	1+	1o	1o	9-	5	3	4	4	5	5	4	4	34	4	0.1
6	1+	2-	1o	1+	2-	3-	3-	3o	15+	5	6	4	5	6	12	12	15	65	8	0.4
7	2+	3-	1-	1-	1o	1+	2+	3-	14-	9	12	3	3	4	5	9	12	57	7	0.4
8	2+	3-	4-	4+	5-	8o	7+	6-	39-	9	12	22	32	39	207	154	67	542	68	1.7
9	3+	5-	8o	7o	8o	7+	7-	6-	51-	18	39	207	132	207	154	111	67	935	117	1.9
10	5o	4+	4-	2+	3+	2o	2+	2-	25-	48	32	22	9	18	7	9	6	151	19	1.0
11	3-	3o	4-	5o	4-	3+	2+	3+	27o	12	15	22	48	22	18	9	18	164	20	1.0
12	3o	3o	3+	6-	5-	4-	3+	4o	31-	15	15	18	67	39	22	18	27	221	28	1.2
13	5-	5o	7-	7o	8o	9-	6o	7+	53+	39	48	111	132	207	300	80	154	1071	134	1.9
14	7-	6+	7-	6o	6+	4+	5+	4-	45+	111	94	111	80	94	32	56	22	600	75	1.8
15	4+	3+	2+	3-	2-	1+	2+	1+	19+	32	18	9	12	6	5	9	5	96	12	0.7
16	3-	2+	1+	1+	2o	5o	5+	4+	24+	12	9	5	5	7	48	56	32	174	22	1.1
17	6-	5+	5+	3+	3+	4o	4o	5+	36+	67	56	56	18	18	27	27	56	325	41	1.5
18	5-	2+	2-	2o	3+	4-	4+	4+	26+	39	9	6	7	18	22	32	32	165	21	1.1
19	4-	4o	4o	4o	5o	5-	6+	4+	36o	22	27	27	27	48	39	94	32	316	40	1.4
20	3o	4-	5o	4+	4-	4+	4o	4o	32o	15	22	48	32	22	32	27	27	225	28	1.2
21	4+	6-	4o	4o	4-	4-	4o	4+	34-	32	67	27	27	22	22	27	32	256	32	1.3
22	4-	4-	3+	3+	4+	3+	3-	5-	29o	22	22	18	18	32	18	12	39	181	23	1.1
23	4-	3-	2-	2+	3o	4-	4-	2-	22+	22	12	6	9	15	22	22	6	114	14	0.8
24	2-	2-	2+	2o	1+	2-	2o	2-	14+	6	6	9	7	5	6	7	6	52	6	0.3
25	2-	2o	3+	2+	3o	3+	3-	2-	20o	6	7	18	9	15	18	12	6	91	11	0.7
26	1-	2-	1+	1-	1+	1o	1+	2-	10-	3	6	5	3	5	4	5	6	37	5	0.2
27	2-	1+	1-	1o	1-	1+	4-	3o	13+	6	5	3	4	3	5	22	15	63	8	0.4
28	2o	2+	1o	1-	1-	1o	1-	3o	11+	7	9	4	3	3	4	3	15	48	6	0.3
29	2o	2o	2o	1+	1+	1o	1o	2+	13o	7	7	7	5	5	4	4	9	48	6	0.3
30	2-	3-	3+	1+	1+	2o	2+	1+	16o	6	12	18	5	5	7	9	5	67	8	0.5
31	2o	1+	1+	1-	2-	2-	1+	2+	12+	7	5	5	3	6	6	5	9	46	6	0.3

	Kp								Sum	Aug 1991				ap				Sum	Ap	Cp
1	4o	2-	2-	3-	3-	6o	6-	6o	30+	27	6	6	12	12	80	67	80	290	36	1.4
2	4-	3+	6+	5+	6o	6o	4o	5-	39+	22	18	94	56	80	80	27	39	416	52	1.6
3	4+	3+	4-	5-	6+	5o	4+	5o	37-	32	18	22	39	94	48	32	48	333	42	1.5
4	6o	5+	5o	4-	5-	4-	5+	4o	38-	80	56	48	22	39	22	56	27	350	44	1.5
5	4o	5+	4-	4o	4o	3-	4+	5+	33+	27	56	22	27	27	12	32	56	259	32	1.3
6	6o	5o	4+	4o	4o	3+	3o	2o	32-	80	48	32	27	27	18	15	7	254	32	1.3
7	3o	5+	3o	1+	2-	2-	2-	3o	21-	15	56	15	5	6	6	6	15	124	16	0.9
8	3+	3-	3o	3+	2+	2-	1-	2+	19+	18	12	15	18	9	6	3	9	90	11	0.6
9	2+	3o	2+	2+	4+	4-	3o	3-	24-	9	15	9	9	32	22	15	12	123	15	0.9
10	1+	2+	3o	2+	2+	2o	1+	2o	17-	5	9	15	9	9	7	5	7	66	8	0.4
11	4+	4o	4o	4-	5-	4o	3-	2o	29+	32	27	27	22	39	27	12	7	193	24	1.2
12	3-	3+	5-	4o	7+	6-	7+	5-	40-	12	18	39	27	154	67	154	39	510	64	1.7
13	4-	2-	2o	2o	2-	1+	2+	1+	16o	22	6	7	7	6	5	9	5	67	8	0.5
14	1-	1o	2-	1o	3o	4-	5-	5+	21o	3	4	6	4	15	22	39	56	149	19	1.0
15	5o	5o	5-	4+	4+	4o	4+	4+	36o	48	48	39	32	32	27	32	32	290	36	1.4
16	3+	4o	3o	3-	3+	3+	3o	4o	27-	18	27	15	12	18	18	15	27	150	19	1.0
17	3-	4o	3+	4+	3+	3+	4o	3o	28o	12	27	18	32	18	18	27	15	167	21	1.1
18	4+	2+	2+	2o	3o	3o	6o	5-	28-	32	9	9	7	15	15	80	39	206	26	1.2
19	5-	5-	8-	8-	6o	4+	4o	3o	42o	39	39	179	179	80	32	27	15	590	74	1.8
20	3o	3-	5-	7+	8-	5-	5+	5-	40o	15	12	39	154	179	39	56	39	533	67	1.7
21	6o	6-	6-	5-	4-	4-	3-	3+	35+	80	67	67	39	22	22	12	18	327	41	1.5
22	5o	7o	6+	4-	4o	3o	3o	4o	36o	48	132	94	22	27	15	15	27	380	48	1.6
23	4o	3+	3-	4o	2o	1-	1+	2o	20o	27	18	12	27	7	3	5	7	106	13	0.8
24	3+	3o	2+	1o	2o	3-	3-	3-	20-	18	15	9	4	7	12	12	12	89	11	0.6
25	3+	3-	2+	2o	1+	2o	2o	3-	18+	18	12	9	7	5	7	7	12	77	10	0.5
26	2o	2+	2-	3-	2o	2-	3-	2+	17+	7	9	6	12	7	6	12	9	68	8	0.5
27	3o	3o	3o	2o	2+	6-	7-	5+	31o	15	15	15	7	9	67	111	56	295	37	1.4
28	4-	3o	2o	2-	2+	3+	4o	4o	24o	22	15	7	6	9	18	27	27	131	16	0.9
29	1o	1o	2+	2+	3-	3-	4+	4o	20+	4	4	9	9	12	12	32	27	109	14	0.8
30	3-	3+	3o	4o	6+	6-	6-	6+	37o	12	18	15	27	94	67	67	94	394	49	1.6
31	3o	3+	6o	5+	6o	6o	4o	5+	39o	15	18	80	56	80	80	27	56	412	52	1.6

Kp INDICES 1991 (continued)

	Kp								Sum	Sep 1991				ap				Sum	Ap	Cp
1	5+	5+	5-	4+	4o	4+	6o	5+	39+	56	56	39	32	27	32	80	56	378	47	1.5
2	4+	5-	6-	4+	3+	3+	1+	2+	29+	32	39	67	32	18	18	5	9	220	28	1.2
3	1o	3-	3o	4-	4-	3o	3o	4-	24-	4	12	15	22	22	15	15	22	127	16	0.9
4	2+	3o	3+	3-	3o	2-	2-	3o	21-	9	15	18	12	15	6	6	15	96	12	0.7
5	4+	5-	4o	3o	3o	3o	3o	3-	28-	32	39	27	15	15	15	15	12	170	21	1.1
6	3o	4+	3-	3-	2+	3+	2o	2+	23-	15	32	12	12	9	18	7	9	114	14	0.8
7	4o	3+	3+	3-	3+	2-	3-	1+	22+	27	18	18	12	18	6	12	5	116	14	0.8
8	4-	3+	2+	2+	4+	4-	5o	3o	28-	22	18	9	9	32	22	48	15	175	22	1.1
9	4o	3+	4+	5o	5o	5-	5o	7o	38+	27	18	32	48	48	39	48	132	392	49	1.6
10	5o	6+	5+	3o	3+	4-	3+	4-	34-	48	94	56	15	18	22	18	22	293	37	1.4
11	4+	2+	2+	4+	4+	3+	4+	3-	28o	32	9	9	32	32	18	32	12	176	22	1.1
12	2+	2+	3-	3-	2o	2-	2o	2-	17+	9	9	12	12	7	6	7	6	68	8	0.5
13	2+	2+	2+	2o	2+	3-	3+	4+	22-	9	9	9	7	9	12	18	32	105	13	0.8
14	4+	4+	4-	4+	4o	4o	3+	3o	31o	32	32	22	32	27	27	18	15	205	26	1.2
15	4o	3-	1+	1o	2-	1+	2o	2o	16o	27	12	5	4	6	5	7	7	73	9	0.5
16	2+	2o	2-	2o	2o	1-	2+	1+	14+	9	7	6	7	7	3	9	5	53	7	0.3
17	2-	1+	1o	0+	1+	2o	1+	2o	11o	6	5	4	2	5	7	5	7	41	5	0.2
18	1o	1-	1-	1o	1+	1+	2-	3o	11-	4	3	3	4	5	5	6	15	45	6	0.3
19	3o	3-	2-	3-	2+	2o	2-	3-	19-	15	12	6	12	9	7	6	12	79	10	0.6
20	3-	4-	2+	2-	1+	2-	1-	1+	15+	12	22	9	6	5	6	3	5	68	8	0.5
21	2+	2-	1o	1o	1-	1-	0+	2-	9+	9	6	4	4	3	3	2	6	37	5	0.2
22	2+	2-	1+	2+	3-	2o	1+	1+	15o	9	6	5	9	12	7	5	5	58	7	0.4
23	2-	1+	1-	1-	1o	1-	1+	1+	9-	6	5	3	3	4	3	5	5	34	4	0.1
24	2o	2+	1-	1o	2-	2-	2-	3-	14-	7	9	3	4	6	6	6	12	53	7	0.3
25	4o	5-	4-	4-	5o	6o	6-	6+	39o	27	39	22	22	48	80	67	94	399	50	1.6
26	5o	4+	5-	5-	5-	4o	5-	4+	36+	48	32	39	39	39	27	39	32	295	37	1.4
27	5o	6-	5o	5o	5o	5+	5o	3+	39+	48	67	48	48	48	56	48	18	381	48	1.6
28	4+	5o	4o	5-	5o	4-	6-	5-	37o	32	48	27	39	48	22	67	39	322	40	1.5
29	3+	2+	2-	3o	3+	4o	4o	4o	26-	18	9	6	15	18	27	27	27	147	18	1.0
30	3+	4o	4o	3+	4-	4o	4+	4-	30+	18	27	27	18	22	27	32	22	193	24	1.2

	Kp								Sum	Oct 1991				ap				Sum	Ap	Cp
1	3+	4-	5o	3+	4-	3+	7o	7+	37-	18	22	48	18	22	18	132	154	432	54	1.6
2	6o	6+	6-	6-	6+	6o	4o	4o	44o	80	94	67	67	94	80	27	27	536	67	1.7
3	3+	4-	4o	4-	3+	2+	3o	3+	27-	18	22	27	22	18	9	15	18	149	19	1.0
4	3o	4+	4o	3-	4+	4o	6o	5+	34-	15	32	27	12	32	27	80	56	281	35	1.4
5	4o	4-	4-	3-	3-	2o	3o	1o	23-	27	22	22	12	12	7	15	4	121	15	0.9
6	2o	1+	2o	3+	3+	5-	4+	5+	26+	7	5	7	18	18	39	32	56	182	23	1.1
7	6-	5+	4+	4o	4o	3o	3+	3+	33o	67	56	32	27	27	15	18	18	260	32	1.3
8	4-	4o	5-	5-	4+	5-	7-	3+	36o	22	27	39	39	32	39	111	18	327	41	1.5
9	4o	4+	3-	3o	2o	2+	2o	2-	22o	27	32	12	15	7	9	7	6	115	14	0.8
10	4o	5+	5-	3+	4o	5-	3+	3-	32o	27	56	39	18	27	39	18	12	236	30	1.3
11	2+	2+	3-	3o	2o	3+	3+	3-	22-	9	9	12	15	7	18	18	12	100	12	0.7
12	2o	2-	2-	2-	1-	1o	2-	2+	13-	7	6	6	6	3	4	6	9	47	6	0.3
13	2o	2o	2o	2o	3-	1+	2o	2-	16-	7	7	7	7	12	5	7	6	58	7	0.4
14	2o	1o	2-	1-	3-	2+	3o	2-	15o	7	4	6	3	12	9	15	6	62	8	0.4
15	2o	2-	2-	1-	1+	1+	2-	1-	11o	7	6	6	3	5	5	6	3	41	5	0.2
16	1+	2o	1o	1o	1+	1o	1o	1-	9+	5	7	4	4	5	4	4	3	36	4	0.2
17	1+	0+	1o	1+	3o	2o	2o	2o	13o	5	2	4	5	15	7	7	7	52	6	0.3
18	3+	3-	2-	2o	3o	3-	2+	2+	20o	18	12	6	7	15	12	9	9	88	11	0.6
19	2o	3+	2+	2+	2o	2+	3+	3+	21o	7	18	9	9	7	9	18	18	95	12	0.7
20	4o	3+	4-	5-	4o	3+	3-	2+	28o	27	18	22	39	27	18	12	9	172	22	1.1
21	3-	4o	2+	4-	4+	5o	5-	4+	31o	12	27	9	22	32	48	39	32	221	28	1.2
22	4-	4+	4+	4+	3+	4-	3o	2o	29-	22	32	32	32	18	22	15	7	180	22	1.1
23	3o	3o	3+	3-	1+	3-	5-	5+	26o	15	15	18	12	5	12	39	56	172	22	1.1
24	5-	4-	4-	3+	3o	3+	4-	4o	29+	39	22	22	18	15	18	22	27	183	23	1.1
25	5-	4o	4-	5-	4+	5o	5+	5-	36+	39	27	22	39	32	48	56	39	302	38	1.4
26	4+	4-	4+	4-	5o	4+	4+	4+	34o	32	22	32	22	48	32	32	32	252	32	1.3
27	6+	5+	5o	5-	4o	4+	5o	5+	40o	94	56	48	39	27	32	48	56	400	50	1.6
28	5+	5+	5-	6+	8-	8+	5+	6-	49-	56	56	39	94	179	236	56	67	783	98	1.9
29	8-	8+	8o	6+	5-	6o	7o	5+	53+	179	236	207	94	39	80	132	56	1023	128	1.9
30	3o	3-	3-	4o	5o	6-	5-	5o	33-	15	12	12	27	48	67	39	48	268	34	1.3
31	5o	3+	5+	6-	5o	5o	5+	7o	42-	48	18	56	67	48	48	56	132	473	59	1.7

Kp INDICES 1991 (continued)

	Kp								Sum	Nov 1991	ap				Sum	Ap	Cp
1	5+	3+	5+	5+	7-	8o	8+	7o	49+	56	18	56	56	111	207	236	132	872	109	1.9
2	7o	6+	4-	3+	3o	3+	3o	3o	33-	132	94	22	18	15	18	15	15	329	41	1.5
3	2o	2+	3o	4o	4-	3o	3o	4o	25o	7	9	15	27	22	15	15	27	137	17	0.9
4	4-	4+	4-	5o	3-	3+	6o	6-	34+	22	32	22	48	12	18	80	67	301	38	1.4
5	6-	5-	4o	3+	3+	3+	3+	2+	30o	67	39	27	18	18	18	18	9	214	27	1.2
6	3+	5o	4-	2+	2+	3o	3-	3o	25+	18	48	22	9	9	15	12	15	148	18	1.0
7	3+	3o	2+	3-	2o	3-	3-	2+	21o	18	15	9	12	7	12	12	9	94	12	0.7
8	3-	3o	4o	4o	7-	7-	8-	9-	43+	12	15	27	27	111	111	179	300	782	98	1.9
9	8+	8+	7+	7-	6o	5o	5+	4+	51+	236	236	154	111	80	48	56	32	953	119	1.9
10	4-	3-	4o	4o	4o	3o	4-	4-	29-	22	12	27	27	27	15	22	22	174	22	1.1
11	3o	3o	2o	2+	2+	4-	5o	5-	26o	15	15	7	9	9	22	48	39	164	20	1.0
12	3+	3o	4-	2o	1o	1o	2-	2o	18-	18	15	22	7	4	4	6	7	83	10	0.6
13	1o	2-	3-	3o	4-	3+	3-	3o	21o	4	6	12	15	22	18	12	15	104	13	0.7
14	4o	4o	4-	3+	3+	2o	2o	3+	26-	27	27	22	18	18	7	7	18	144	18	1.0
15	4+	3+	4o	5o	5o	4-	4o	3o	32+	32	18	27	48	48	22	27	15	237	30	1.3
16	4-	4o	4o	4o	4+	3+	3o	4+	31-	22	27	27	27	32	18	15	32	200	25	1.2
17	3+	2+	4-	5-	4-	4o	4-	3+	29-	18	9	22	39	22	27	22	18	177	22	1.1
18	4+	4o	4-	4+	4o	3+	4+	5o	33o	32	27	22	32	27	18	32	48	238	30	1.3
19	6-	5+	5+	5-	5-	6+	5+	5-	42o	67	56	56	39	39	94	56	39	446	56	1.6
20	2o	3-	4-	3o	3-	4-	4o	4o	26-	7	12	22	15	12	22	27	27	144	18	1.0
21	3-	5-	5o	5o	5-	7-	7-	7-	42o	12	39	48	48	39	111	111	111	519	65	1.7
22	6+	6o	6+	5+	6o	4-	3-	3o	39+	94	80	94	56	80	22	12	15	453	57	1.6
23	4o	4-	5o	5o	5-	4o	4-	4+	34+	27	22	48	48	39	27	22	32	265	33	1.3
24	3+	3+	3o	2o	2+	3o	3o	3+	23+	18	18	15	7	9	15	15	18	115	14	0.8
25	3o	3-	3o	1+	2+	2+	3o	2+	20o	15	12	15	5	9	9	15	9	89	11	0.6
26	1o	3+	3-	2+	2o	2-	1+	0o	14+	4	18	12	9	7	6	5	0	61	8	0.4
27	2o	2o	1+	1o	2o	3-	2+	2-	15o	7	7	5	4	7	12	9	6	57	7	0.4
28	3-	1o	1o	1+	3-	2+	3o	3+	17+	12	4	4	5	12	9	15	18	79	10	0.6
29	4o	3+	1o	2o	3+	3o	2o	4+	23o	27	18	4	7	18	15	7	32	128	16	0.9
30	4o	3o	2+	2+	2+	2-	2o	4-	21+	27	15	9	9	9	6	7	22	104	13	0.7

	Kp								Sum	Dec 1991	ap				Sum	Ap	Cp
1	3-	2+	2+	2-	2+	2+	3-	3-	19o	12	9	9	6	9	9	12	12	78	10	0.5
2	4o	2+	3-	4-	4o	3o	3+	3o	26o	27	9	12	22	27	15	18	15	145	18	1.0
3	2o	2+	3-	3o	3+	2+	3-	3+	22-	7	9	12	15	18	9	12	18	100	12	0.7
4	3+	3o	3-	2+	3-	3o	4-	3o	24-	18	15	12	9	12	15	22	15	118	15	0.8
5	3-	3o	2o	2o	1+	2-	3-	2-	17o	12	15	7	7	5	6	12	6	70	9	0.5
6	2o	1+	1o	1+	1o	1o	1-	2o	10+	7	5	4	5	4	4	3	7	39	5	0.2
7	1+	2-	1+	1+	2-	1o	2-	3-	13-	5	6	5	5	6	4	6	12	49	6	0.3
8	1+	2+	2+	2+	3o	2o	1o	0+	15-	5	9	9	9	15	7	4	2	60	8	0.4
9	1o	1+	2-	3-	2-	3o	3-	3+	17+	4	5	6	12	6	15	12	18	78	10	0.5
10	3+	2+	3o	2+	2+	3-	3+	4+	24-	18	9	15	9	9	12	18	32	122	15	0.9
11	4-	3-	2-	2-	2+	3-	3+	4o	22o	22	12	6	6	9	12	18	27	112	14	0.8
12	4-	4-	2-	2-	2+	3o	3-	3o	22-	22	22	6	6	9	15	12	15	107	13	0.8
13	3o	3-	2+	3+	4o	3o	3-	3o	24o	15	12	9	18	27	15	12	15	123	15	0.9
14	2o	2+	4-	3o	3+	4o	3o	4-	25o	7	9	22	15	18	27	15	22	135	17	0.9
15	3o	2+	2o	1o	2o	1o	1-	1o	13o	15	9	7	4	7	4	3	4	53	7	0.3
16	1-	1+	2-	3+	4+	5-	4+	4o	24+	3	5	6	18	32	39	32	27	162	20	1.0
17	5+	5o	4+	4+	4+	4+	4+	3+	35+	56	48	32	32	32	32	32	18	282	35	1.4
18	4-	3-	3+	3o	2o	3-	2o	1-	20o	22	12	18	15	7	12	7	3	96	12	0.7
19	1o	1+	3o	3+	3+	4-	3o	2-	20+	4	5	15	18	18	22	15	6	103	13	0.7
20	1-	2o	2o	1+	3o	4-	2+	2+	17+	3	7	7	5	15	22	9	9	77	10	0.5
21	5-	5-	4+	4+	4-	4-	3-	3+	31+	39	39	32	32	22	22	12	18	216	27	1.2
22	3o	2o	2o	2-	0+	1o	1o	1+	12+	15	7	7	6	2	4	4	5	50	6	0.3
23	3+	4-	3o	3-	2+	2+	3o	3o	23+	18	22	15	12	9	9	15	15	115	14	0.8
24	3o	3o	2+	3+	2+	2+	1o	1-	18o	15	15	9	18	9	9	4	3	82	10	0.6
25	1o	1-	1+	2o	3o	2-	2-	2+	14-	4	3	5	7	15	6	6	9	55	7	0.3
26	2o	3+	2o	1o	1+	2o	2+	3-	17-	7	18	7	4	5	7	9	12	69	9	0.5
27	4o	3o	3o	5-	3+	5-	5-	6+	34-	27	15	15	39	18	39	39	94	286	36	1.4
28	4-	3-	2+	3-	4o	4o	5-	5-	29-	22	12	9	12	27	27	39	39	187	23	1.1
29	4o	4+	5-	3-	3o	3+	4+	5+	32-	27	32	39	12	15	18	32	56	231	29	1.3
30	5-	4o	2o	2o	3o	2+	3-	3-	23+	39	27	7	7	15	9	12	12	128	16	0.9
31	3-	1+	1o	2-	3-	3-	3o	2+	17+	12	5	4	6	12	12	15	9	75	9	0.5

FREQUENCIES OF **Kp** INDICES 1991

FREQUENCIES OF Kp INDICES, 1991

Kp	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0 o	.	.	1	.	.	.	.	.	.	.	1	.
+	24	2	8	3	10	.	.	.	2	1	.	2
-	23	19	15	5	13	4	12	3	10	5	.	7
1 o	27	22	13	21	27	3	13	5	9	8	8	16
+	28	21	11	27	18	8	25	7	18	9	4	15
-	25	25	11	22	17	10	21	12	21	12	5	18
2 o	34	31	15	21	12	14	14	17	14	22	16	21
+	23	19	22	20	18	10	18	19	23	13	19	31
-	21	35	28	25	19	17	16	22	18	17	18	32
3 o	17	14	17	24	26	12	13	25	17	14	29	34
+	11	12	22	13	9	22	17	19	19	26	27	21
-	6	12	18	10	22	25	23	13	14	17	24	14
4 o	6	7	21	9	12	21	17	27	16	19	24	11
+	.	2	10	13	11	18	14	14	20	18	10	12
-	2	.	8	10	13	5	10	15	11	17	9	10
5 o	1	1	5	5	9	5	6	7	14	11	11	1
+		1	3	6	3	10	5	11	5	14	8	2
-		1	2	2	3	10	5	7	4	6	3	
6 o			2	1	3	6	2	12	2	4	4	.
+			1	1	2	7	3	5	2	5	4	1
-			2	2	1	8	4	1	.	1	7	
7 o			3			6	2	1	1	3	2	
+			2			10	3	3		1	1	
-			2			4	.	3		2	1	
8 o			3			4	4			1	1	
+			.			.	.			2	3	
9 - o			3			1	1				1	
	248	224	248	240	248	240	248	248	240	248	240	248

LIST OF Kp', 1991

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

Month	Day	Eighth	Kp	Kp'
March	04	5	2o	2-
April	11	4	2-	1+
July	06	6	3-	2+
November	04	4	5o	5-

MONTHLY AVERAGES OF Ap AND Cp, 1991

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Ap	8	10	27	17	18	44	27	30	20	31	33	15	23.4
Cp	0.43	0.54	0.89	0.74	0.78	1.24	0.92	1.15	0.88	1.07	1.11	0.73	0.87

MONTHLY AND YEARLY **Ap** 1932 - 1991

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
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	15.6
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	17	16	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

MONTHLY AND YEARLY **Ap** 1932 - 1991 (continued)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1978	15	16	16	23	25	20	13	17	18	12	15	13	16.9
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
1987	8	10	10	7	8	7	11	14	19	16	13	9	11.0
1988	13	15	14	16	12	11	10	10	12	13	12	13	12.7
1989	19	15	41	23	16	17	8	20	17	21	19	16	19.5
1990	14	23	23	27	16	16	14	19	14	15	9	7	16.3
1991	8	10	27	17	18	44	27	30	20	31	33	15	23.4

Unit: 2 nT

SECTION 3

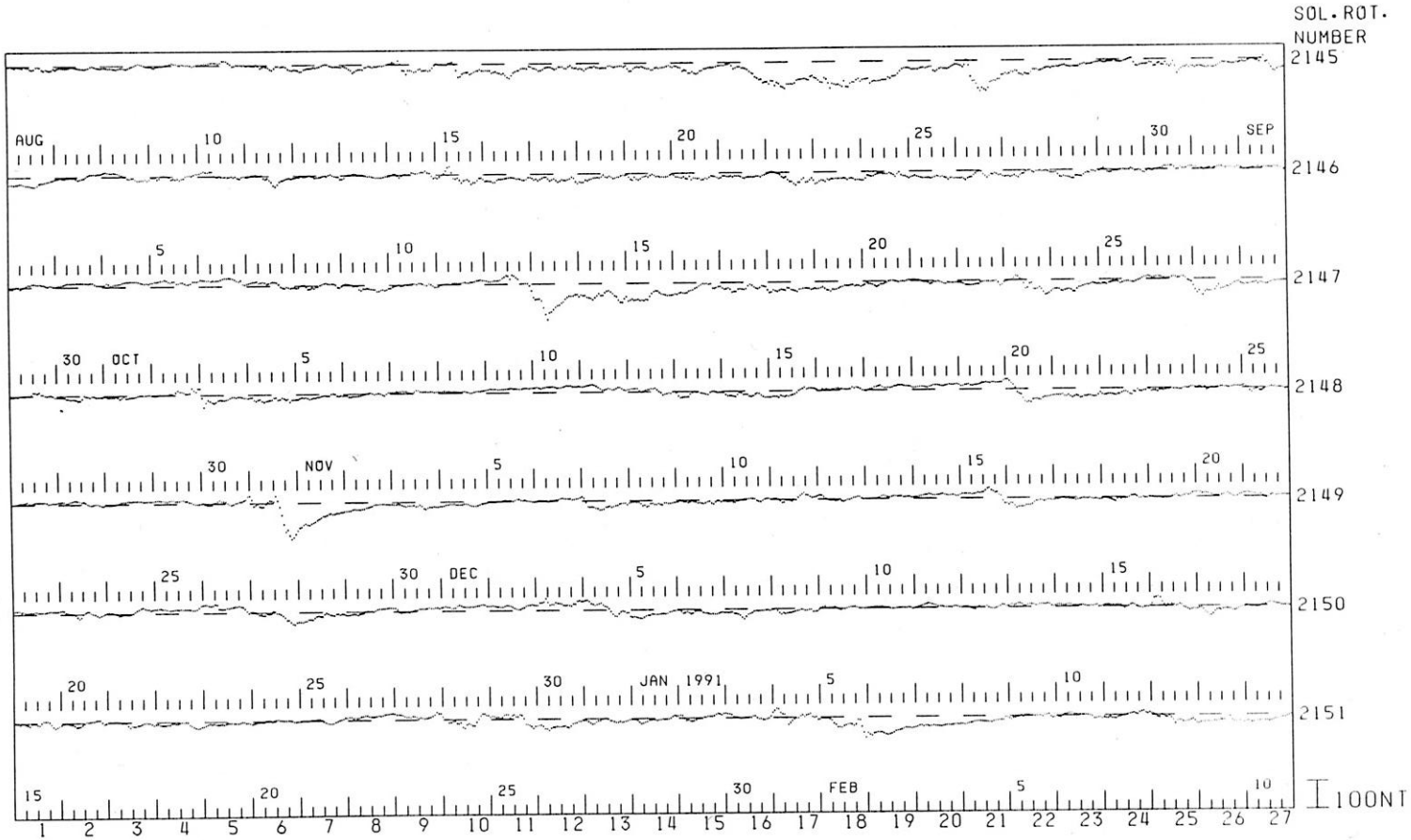
3.4 Dst INDICES

Hourly values of **Dst** 1991 (graph) 87

Monthly tables of **Dst** hourly values 90

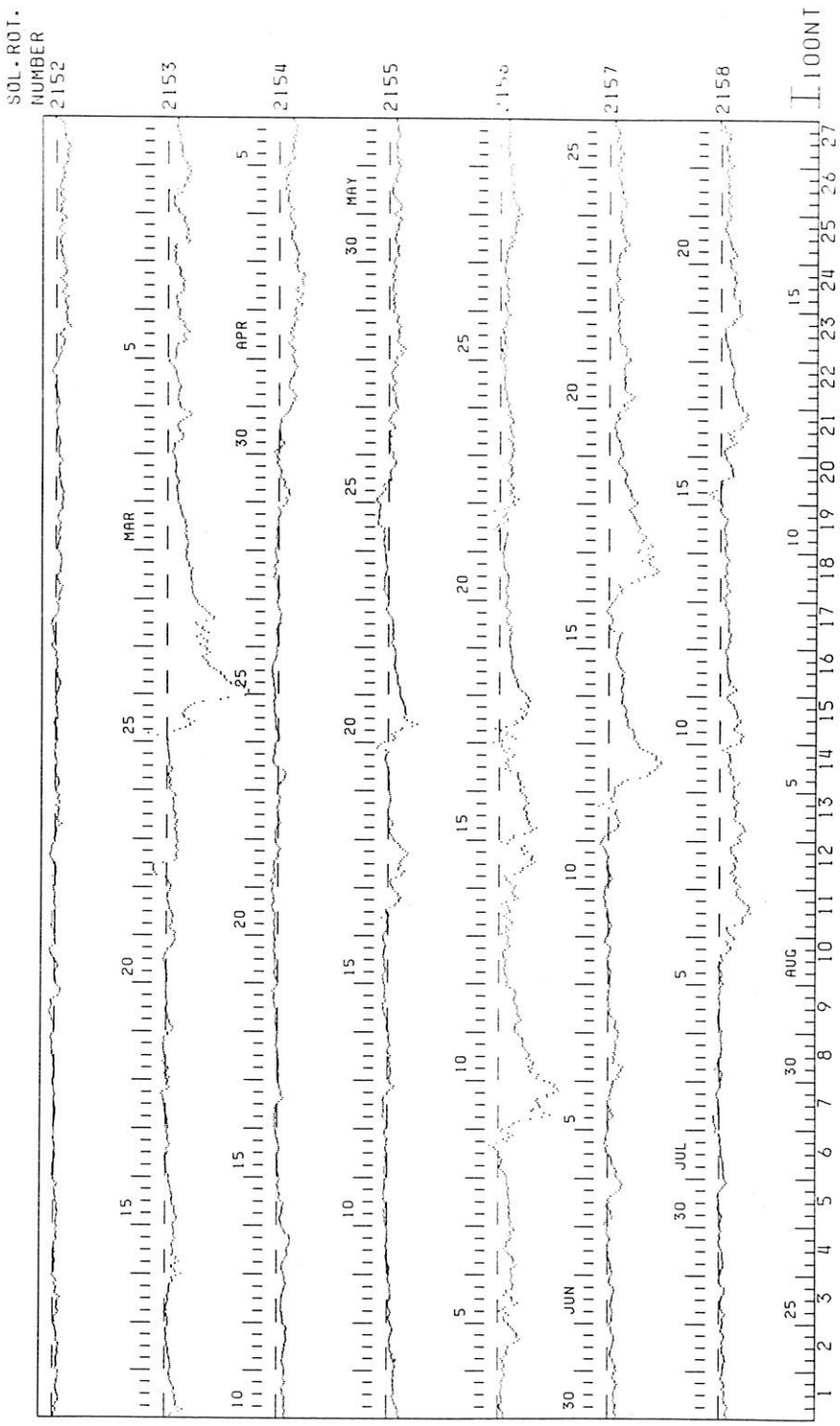
Tables of daily means of **Dst** 102

Monthly and yearly mean values
1957 - 1991 103

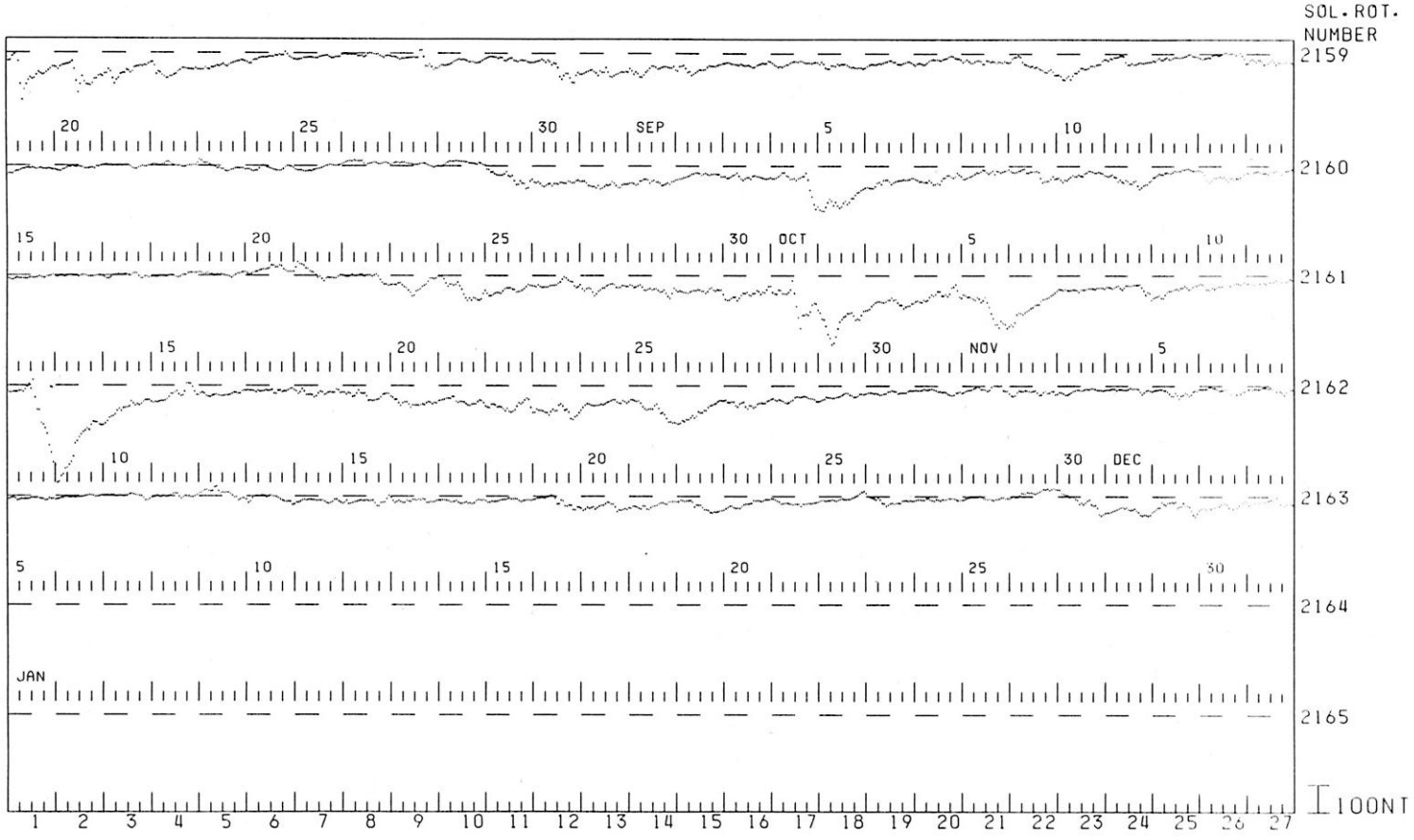


HOURLY VALUES OF Dst 1991

HOURLY VALUES OF **Dst** 1991 (continued)



HOURLY VALUES OF Dst 1991 (continued)



JANUARY 1991

	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
DAY																								
1	-27	-29	-28	-29	-32	-33	-34	-30	-25	-23	-23	-19	-19	-20	-20	-19	-17	-17	-18	-16	-11	-10	-7	-7
2	-4	-4	-10	-16	-14	-11	-15	-19	-16	-9	-8	-8	-8	-14	-16	-16	-19	-20	-19	-20	-20	-18	-15	-13
3	-15	-15	-15	-14	-13	-19	-19	-21	-26	-33	-39	-30	-22	-20	-16	-11	-9	-9	-9	-8	-8	-7	-6	-8
4	-6	-4	-2	-10	-17	-23	-18	-21	-19	-17	-17	-15	-12	-10	-8	-5	-7	-9	-9	-7	-6	-14	-14	-12
5	-8	0	3	5	0	1	1	1	3	-1	-5	-8	-4	-4	-2	1	3	3	4	1	-2	-3	-3	-3
6	-2	-1	0	0	2	3	3	3	2	0	-1	-1	-4	-4	-4	-3	-2	-2	-1	-2	-2	0	-1	-5
7	-4	-2	2	4	6	9	11	14	13	10	8	7	3	2	2	0	-1	0	0	-1	2	3	1	-1
8	-2	0	1	0	-2	-5	-8	-9	-3	1	-3	-2	-3	2	-3	-6	-7	-7	-4	-2	2	7	6	1
9	3	6	8	5	7	11	12	8	2	3	6	8	8	8	4	3	8	9	9	8	10	9	2	0
10	4	5	6	5	4	4	6	7	6	2	2	2	2	2	4	1	-1	-1	1	0	2	4	-3	-3
11	1	3	4	4	2	3	1	2	4	2	-4	-9	-4	-2	4	6	3	-2	-5	-7	-9	-6	-4	-5
12	-2	6	28	30	34	28	13	3	-4	2	-1	4	2	-2	0	5	1	-7	-9	-13	-17	-15	-12	-13
13	-13	-9	-9	-15	-24	-30	-39	-37	-32	-23	-17	-15	-18	-14	-13	-12	-13	-14	-19	-19	-16	-12	-8	-6
14	-4	-2	-3	-4	-5	-4	-7	-7	-5	-2	0	3	6	9	11	8	5	4	3	-1	-2	-1	-1	-3
15	-1	-6	-7	-9	-5	-5	-8	-11	-14	-4	-4	-5	-10	-11	-3	4	4	4	1	-8	-17	-23	-19	-15
16	-11	-7	-5	-4	-7	-8	-10	-13	-19	-17	-16	-11	-5	0	-1	1	2	2	5	6	6	-2	-8	-6
17	-1	0	-2	-1	0	0	-2	-3	-3	-4	-15	-22	-16	-17	-17	-14	-13	-9	-6	-5	-6	-6	-9	-14
18	-11	-10	-13	-15	-15	-14	-12	-12	-8	-7	-10	-9	-6	-4	-5	-3	-4	-13	-17	-22	-26	-28	-26	-22
19	-20	-17	-13	-11	-12	-11	-13	-14	-13	-12	-14	-11	-8	-8	-8	-9	-9	-10	-8	-5	-5	-8	-8	-10
20	-13	-11	-8	-7	-6	-6	-6	-2	0	-1	-4	0	2	3	0	-1	-2	-2	-1	-1	-3	-6	-6	-5
21	-5	-3	-3	-3	-3	-2	1	0	1	3	2	-1	-7	-10	-13	-14	-15	-13	-9	-6	-2	0	2	7
22	6	9	9	5	6	5	6	10	12	14	14	11	10	9	10	12	14	13	14	18	19	19	21	22
23	20	17	17	17	14	10	8	8	6	11	10	8	4	5	4	2	3	5	7	11	16	25	20	20
24	8	-2	-2	-14	-13	-10	-8	-17	-18	-14	-31	-35	-22	-18	-21	-25	-26	-12	-1	11	18	18	13	12
25	6	9	8	5	5	3	5	13	15	14	3	11	14	7	7	14	12	0	-21	-23	-25	-30	-37	-30
26	-28	-26	-25	-30	-39	-40	-45	-37	-33	-33	-31	-32	-32	-30	-29	-33	-35	-29	-21	-19	-17	-12	-12	-8
27	-8	-10	-13	-19	-23	-21	-15	-11	-10	-4	-2	-2	-4	-10	-11	-14	-17	-16	-13	-16	-15	-12	-10	-7
28	-6	-6	-6	-10	-16	-22	-20	-16	-14	-9	-9	-7	-8	-10	-8	-7	-5	-6	-5	-5	-2	4	8	5
29	6	9	7	-3	-11	-10	-13	-14	-12	-9	-4	-3	-3	1	1	4	4	3	5	10	14	12	9	14
30	15	13	12	9	2	1	-1	-3	-4	-3	-3	-2	0	-1	4	4	-3	-7	-6	-9	-10	-7	-4	3
31	16	23	31	29	15	10	9	-3	-29	-22	-14	-8	-5	-4	3	6	0	5	8	11	0	-3	-1	-11

FEBRUARY 1991

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	-10	-6	-6	-7	-7	-10	-14	-25	-31	-40	-40	-42	-36	-32	-29	-28	-29	-35	-30	-12	-13	-38	-61	-79
2	-62	-69	-72	-64	-62	-60	-60	-60	-64	-68	-70	-67	-65	-61	-55	-53	-52	-49	-45	-43	-44	-44	-45	-44
3	-41	-39	-36	-34	-39	-36	-36	-39	-37	-35	-37	-37	-38	-39	-37	-35	-34	-34	-34	-33	-32	-31	-32	-31
4	-31	-33	-31	-28	-27	-25	-22	-21	-20	-20	-21	-22	-22	-23	-23	-24	-20	-19	-18	-16	-16	-16	-6	-7
5	-11	-15	-9	-9	-6	-4	-1	-5	3	3	2	0	-2	-3	-2	-2	-2	-5	0	2	4	-5	-9	-8
6	-4	-6	-8	-3	3	4	5	6	6	4	2	1	1	0	0	0	-1	-2	-6	-13	-13	-11	-10	-14
7	-11	-12	-12	-9	-13	-13	-14	-10	-8	-4	-4	-2	1	2	4	6	2	1	8	10	13	6	3	7
8	4	2	-3	-10	-11	-2	-4	-10	-11	-6	-12	-21	-34	-24	-21	-22	-27	-28	-26	-24	-20	-17	-24	-32
9	-34	-30	-28	-29	-27	-28	-28	-28	-25	-27	-24	-21	-21	-20	-9	-7	-8	-22	-27	-28	-24	-26	-23	-30
10	-28	-25	-26	-30	-29	-24	-25	-25	-24	-23	-24	-24	-27	-24	-22	-19	-18	-18	-14	-12	-12	-9	-5	-2
11	-5	-7	-8	-14	-15	-10	-13	-16	-23	-24	-24	-21	-18	-17	-14	-14	-14	-18	-17	-20	-22	-20	-22	-22
12	-13	-15	-17	-17	-16	-15	-16	-19	-22	-18	-21	-20	-24	-22	-16	-15	-16	-16	-16	-14	-12	-12	-8	-4
13	-9	-6	-8	-12	-18	-23	-18	-15	-17	-17	-17	-21	-27	-19	-11	-11	-13	-14	-9	-7	-15	-11	-5	0
14	-2	-6	-7	-6	-6	-8	-10	-8	-5	-4	-9	-6	-6	-5	-6	-7	-13	-15	-12	-12	-15	-10	-13	-16
15	-12	-12	-12	-13	-14	-16	-18	-16	-14	-13	-16	-12	-9	-10	-9	-7	-8	-6	-5	-12	-15	-7	-1	-1
16	2	4	1	1	2	1	0	-4	-4	-7	-8	-7	-4	-6	-6	-6	-5	-2	-1	-1	-2	-3	-4	-3
17	-2	-1	-3	-4	-6	-7	-8	-8	-8	-8	-6	-4	-3	-3	-2	-3	-6	-5	-3	-2	-1	0	1	2
18	0	-2	-3	-4	-4	-4	-3	0	-2	-3	-1	2	5	4	4	7	6	5	5	7	10	9	6	-1
19	-1	-2	-3	-1	1	6	6	8	12	15	16	11	8	7	9	10	-1	-14	-20	-22	-24	-22	-13	-8
20	-6	-6	-5	-4	-2	-3	-6	-12	-14	-13	-9	-2	1	6	10	12	15	14	5	-5	-4	-3	-4	-4
21	-1	-5	1	7	8	10	5	6	7	6	7	6	-2	-6	-4	-1	0	-1	-1	-2	-3	-2	1	3
22	3	-4	-4	-2	-2	5	-5	-8	-5	-6	-4	3	3	6	12	14	15	12	9	10	9	4	-2	-1
23	0	-3	-4	-8	-7	-7	-17	-26	-15	-11	-11	-14	-13	-13	-17	-14	-6	-18	-18	-12	-14	-17	-10	-5
24	-6	-11	-14	-16	-15	-14	-11	-6	-4	-2	-4	-5	-6	-9	-7	-5	-2	-1	-1	1	-4	-4	-2	-5
25	-10	-9	-7	-7	-8	-8	-8	-4	0	2	-2	-10	-11	-10	-9	-7	-8	-7	-2	-5	-5	-4	-3	-6
26	-8	-12	-13	-14	-19	-20	-19	-16	-11	-9	-10	-4	-5	-9	-9	-7	-8	-9	-5	-3	-5	-5	0	6
27	10	9	4	1	0	2	6	5	6	8	7	13	10	9	5	-2	-7	-10	-13	-12	-13	-11	-6	-14
28	-17	-13	-16	-18	-22	-24	-28	-17	-14	-11	-7	-8	-12	-19	-18	-20	-21	-22	-23	-23	-24	-21	-19	-14

MARCH 1991

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	-8	-10	-11	-12	-13	-17	-18	-13	-12	-15	-18	-20	-16	-21	-16	-10	-9	-12	-13	-18	-25	-27	-24	-25
2	-29	-29	-28	-26	-31	-29	-25	-22	-21	-20	-18	-13	-16	-17	-16	-13	-14	-13	-15	-18	-27	-23	-16	-14
3	-12	-13	-12	-13	-15	-17	-16	-15	-13	-5	-5	-7	-9	-10	-7	-6	-5	-5	-5	-4	-3	-3	-5	-10
4	-14	-14	-12	-12	-10	-6	-5	-4	-2	2	3	-4	-4	-4	-2	-3	6	10	11	6	2	-2	-7	-10
5	-11	-15	-19	-23	-21	-20	-28	-31	-33	-33	-25	-17	-20	-28	-31	-55	-52	-43	-40	-42	-42	-41	-37	-40
6	-43	-43	-39	-35	-35	-36	-46	-33	-25	-28	-34	-40	-39	-32	-25	-18	-29	-36	-40	-40	-34	-39	-32	-27
7	-30	-29	-25	-23	-19	-21	-23	-22	-16	-17	-16	-20	-23	-31	-21	-13	-13	-21	-31	-22	-22	-38	-33	-23
8	-17	-21	-22	-18	-20	-26	-33	-28	-19	-17	-20	-26	-18	-14	-18	-22	-23	-30	-27	-30	-33	-28	-27	-29
9	-37	-42	-48	-46	-44	-42	-48	-43	-49	-54	-48	-45	-34	-35	-35	-35	-33	-31	-33	-31	-32	-25	-16	0
10	-13	-23	-28	-53	-66	-52	-42	-43	-44	-39	-39	-40	-34	-32	-37	-36	-31	-28	-24	-20	-22	-19	-18	-18
11	-21	-24	-23	-22	-21	-21	-19	-17	-15	-13	-16	-14	-10	-12	-9	-6	-7	-8	-8	-6	-6	-6	-12	-13
12	-13	-12	-13	-9	-9	-2	-9	-5	-8	-10	-12	-14	-13	-11	-14	-17	-17	-17	-18	-21	-30	-30	-27	-43
13	-60	-40	-36	-28	-26	-40	-53	-41	-43	-27	-31	-31	-31	-29	-27	-27	-32	-39	-35	-32	-34	-34	-33	-30
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18	-22	-28	-27	-20	-15	-15	-10	-9	-10	-5	-1	0	-4	-6	-7	-5	-4	-3	-4	-2	-2	-3	-3	-3
19	-3	-5	-5	-4	-5	-3	-4	0	-1	0	2	6	8	4	2	0	-6	-8	-18	-24	-28	-32	-34	-32
20	-30	-35	-29	-18	-12	-17	-24	-22	-21	-25	-25	-22	-19	-13	-13	-11	-9	-7	-4	-6	-5	-8	-14	-16
21	-18	-17	-11	-9	-4	1	33	38	44	44	45	42	9	-31	-38	-37	-35	-38	-44	-38	-35	-38	-42	-41
22	-37	-39	-37	-38	-33	-32	-38	-33	-38	-40	-31	-33	-35	-31	-26	-26	-26	-28	-28	-25	-26	-34	-31	-21
23	-15	-12	-17	-12	-13	-16	-12	-8	-10	-18	-22	-20	-12	-11	-13	-11	-11	-9	-9	-8	-6	-7	-5	-4
24	-7	-5	0	31	63	-28	-48	-68	-84	-83	-98	-79	-63	-61	-57	-64	-68	-76	-86	-98	-129	-192	-220	-281
25	-298	-293	-294	-277	-259	-230	-228	-213	-207	-205	-193	-192	-176	-167	-153	-146	-147	-140	-131	-127	-141	-153	-142	-142
26	-136	-118	-143	-143	-130	-106	-120	-148	-133	-125	-128	-108	-103	-140	-166	-168	-154	-150	-140	-134	-125	-113	-108	-108
27	-101	-97	-94	-91	-91	-89	-88	-92	-90	-87	-86	-86	-86	-86	-87	-91	-79	-78	-78	-71	-69	-68	-70	-71
28	-67	-72	-74	-75	-76	-72	-69	-68	-63	-70	-64	-68	-70	-65	-65	-65	-59	-55	-54	-52	-49	-49	-47	-42
29	-38	-40	-39	-39	-38	-37	-36	-35	-37	-41	-43	-39	-35	-32	-31	-30	-31	-33	-33	-32	-32	-31	-28	-26
30	-21	-19	-24	-27	-27	-27	-41	-51	-56	-57	-55	-46	-43	-40	-37	-41	-46	-56	-68	-82	-85	-79	-61	-50
31	-46	-45	-44	-39	-39	-41	-41	-43	-43	-48	-49	-44	-39	-39	-37	-34	-33	-33	-31	-26	-22	-14	-7	-8

APRIL 1991

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	-29	-31	-33	-30	-31	-33	-34	-39	-58	-66	-62	-58	-60	-77	-70	-63	-60	-63	-56	-45	-38	-43	-43	-44
2	-45	-38	-34	-36	-37	-33	-33	-34	-47	-57	-57	-59	-56	-56	-61	-56	-50	-45	-46	-48	-44	-42	-34	-27
3	-29	-30	-29	-28	-30	-24	-30	-27	-33	-73	-78	-67	-66	-73	-68	-72	-72	-66	-68	-62	-58	-60	-61	-52
4	-42	-38	-39	-29	-25	-23	-23	-25	-24	-37	-50	-5	-35	-58	-60	-75	-68	-71	-68	-78	-83	-81	-71	-77
5	-70	-68	-61	-57	-52	-52	-54	-51	-51	-52	-51	-46	-41	-45	-49	-45	-41	-39	-37	-35	-35	-39	-40	-38
6	-33	-30	-30	-34	-33	-29	-31	-32	-32	-30	-33	-29	-24	-25	-24	-21	-28	-31	-34	-29	-27	-29	-31	-30
7	-31	-31	-28	-26	-23	-23	-26	-26	-28	-27	-31	-30	-33	-32	-36	-38	-37	-37	-35	-34	-37	-39	-35	-28
8	-24	-25	-24	-24	-22	-22	-18	-19	-20	-19	-20	-21	-20	-22	-23	-26	-28	-30	-32	-37	-33	-30	-32	-30
9	-26	-27	-21	-21	-21	-23	-26	-31	-34	-40	-41	-39	-38	-41	-46	-49	-50	-50	-49	-46	-34	-30	-27	-21
10	-19	-19	-16	-13	-14	-18	-21	-20	-23	-22	-25	-26	-17	-12	-9	-13	-11	-8	-7	-7	-3	-7	-9	-12
11	-9	-8	-6	-3	-3	-4	-4	-4	-3	-3	-2	-3	-6	-9	-10	-10	-8	-6	-4	-3	1	1	2	3
12	4	7	5	6	8	5	6	7	4	1	5	2	-4	-10	-20	-24	-17	-16	-17	-13	-10	-10	-8	-6
13	-6	-7	-8	-7	-4	-6	-7	-8	-8	-7	-7	-4	-5	-3	-3	-3	0	3	0	0	0	-1	0	-3
14	-1	-1	0	2	4	5	2	5	4	2	-1	3	7	8	9	11	11	12	10	10	17	9	3	0
15	-4	-3	3	5	7	10	10	5	4	7	8	7	7	8	7	9	13	11	8	10	10	8	7	9
16	11	12	11	8	8	10	12	12	9	6	8	7	13	16	19	19	15	11	13	14	13	17	20	18
17	17	16	15	22	19	8	8	14	11	10	13	13	11	10	3	-3	-3	-2	-6	-11	-5	2	5	7
18	8	6	6	7	7	4	1	-5	-12	-6	-5	-2	-2	-1	-4	1	0	-5	-7	-6	-11	-8	-1	0
19	-1	-2	-4	-10	-13	-21	-26	-27	-30	-28	-21	-1	6	12	15	16	16	13	9	10	11	8	9	8
20	3	-5	-6	-5	-3	0	5	6	6	6	8	8	7	7	9	12	11	12	12	12	14	12	8	10
21	11	9	9	11	14	14	14	15	16	19	16	20	20	19	19	17	15	11	8	5	3	4	1	4
22	3	-2	-5	-2	-1	-2	2	4	2	4	0	-4	-11	-8	-9	-10	-12	-13	-8	-6	-2	0	1	1
23	0	-3	-7	-4	-3	0	2	3	2	1	8	15	11	9	6	8	14	9	2	0	5	6	7	10
24	10	7	2	2	0	0	6	5	1	1	5	3	-1	-2	-3	-1	-1	-5	-8	-9	-7	-1	-19	-29
25	-32	-34	-29	-42	-41	-38	-39	-29	-22	-24	-25	-20	-12	-8	-12	-12	-11	-7	-3	3	3	-3	2	4
26	6	13	5	-8	-13	-21	-20	-11	-8	-8	-8	-6	-5	-6	-7	-6	-11	-10	-12	-20	-27	-35	-41	-44
27	-46	-50	-53	-61	-58	-66	-62	-56	-51	-41	-38	-39	-41	-42	-46	-53	-56	-58	-60	-64	-69	-64	-58	-58
28	-57	-53	-49	-56	-60	-53	-48	-40	-36	-48	-55	-53	-44	-44	-53	-48	-57	-58	-59	-68	-66	-57	-64	-64
29	-59	-63	-84	-86	-73	-67	-80	-86	-88	-71	-63	-71	-92	-89	-89	-87	-92	-97	-92	-74	-69	-69	-68	-60
30	-67	-69	-68	-73	-74	-70	-66	-65	-60	-59	-54	-46	-47	-48	-47	-47	-58	-60	-60	-54	-50	-45	-41	-39

MAY 1991

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	-42	-50	-55	-45	-41	-38	-33	-34	-35	-33	-36	-38	-26	-25	-33	-29	-27	-27	-28	-33	-34	-40	-29	-22
2	-33	-40	-38	-54	-58	-52	-48	-48	-53	-54	-51	-51	-59	-56	-53	-61	-60	-66	-63	-65	-67	-63	-57	-53
3	-47	-47	-42	-42	-44	-40	-38	-32	-30	-27	-25	-22	-27	-29	-27	-27	-25	-26	-26	-25	-24	-27	-28	-25
4	-28	-31	-32	-30	-28	-26	-22	-20	-24	-18	-14	-12	-15	-14	-12	-12	-13	-14	-17	-19	-22	-22	-20	-16
5	-14	-12	-8	-9	-13	-16	-14	-11	-8	-6	-6	-10	-14	-14	-16	-13	-14	-12	-14	-14	-9	-7	-6	-8
6	-9	-9	-9	-11	-10	-7	-4	-2	1	2	-1	-2	-3	0	2	0	-3	-4	-2	-3	-3	-4	-4	-1
7	2	2	5	5	5	9	6	6	9	3	0	3	5	10	8	9	9	9	7	6	5	6	6	5
8	0	2	7	7	7	6	-1	-1	2	2	5	-1	-1	2	3	4	0	1	0	-3	3	7	7	6
9	3	-1	-2	-3	0	8	13	14	10	10	11	11	10	11	13	11	9	-2	-3	-11	-22	-26	-15	-10
10	-10	-9	-11	-14	-14	-13	-13	-8	-12	-10	-6	-9	-13	-6	-3	-3	-7	-12	-10	-7	-7	-6	-7	-8
11	-5	0	1	0	-2	-3	-1	4	7	8	12	13	13	14	14	5	4	9	9	8	8	7	8	8
12	12	11	14	14	15	11	6	5	7	11	9	9	10	13	13	12	11	10	8	5	9	11	13	14
13	14	10	5	0	-3	-4	0	3	0	19	-5	3	4	4	-10	-26	-31	-41	-43	-48	-40	-38	-29	-21
14	-20	-14	-12	-11	-14	-32	-50	-53	-61	-40	-41	-48	-43	-48	-53	-60	-70	-74	-65	-56	-46	-45	-38	-26
15	-22	-20	-14	-9	-5	-9	-3	-17	-20	-16	-8	-4	-2	-3	-2	-3	-6	-7	-9	-11	-11	-12	-9	-8
16	-7	-5	-5	-7	-6	-5	-4	-4	-5	-6	-4	-3	1	2	4	8	7	6	3	-3	6	37	33	24
17	10	-20	-27	-23	-15	-29	-47	-53	-88	-105	-87	-69	-60	-60	-66	-63	-62	-63	-61	-57	-56	-53	-49	-46
18	-45	-45	-45	-45	-43	-38	-36	-35	-36	-36	-36	-31	-29	-27	-26	-24	-26	-27	-27	-28	-29	-29	-28	-26
19	-23	-19	-13	-16	-21	-20	-18	-19	-21	-19	-20	-20	-19	-18	-17	-14	-8	-4	-1	5	4	-1	-2	-4
20	-4	-3	2	7	11	14	12	12	12	12	12	12	8	8	5	2	2	4	6	7	7	7	8	9
21	10	9	11	14	14	14	13	11	11	14	14	12	24	34	35	35	32	31	30	31	31	28	27	27
22	34	41	38	30	22	17	9	9	17	13	-1	-10	-12	-8	-8	-7	-10	-15	-22	-26	-28	-28	-20	-16
23	-20	-17	-6	-5	-4	-8	-5	-2	-4	-11	-6	-5	-8	-23	-23	-18	-9	-2	-6	-10	-12	-19	-28	-36
24	-33	-31	-27	-26	-25	-27	-23	-27	-19	-14	-16	-22	-28	-22	-16	-15	-15	-11	-15	-20	-25	-33	-25	-21
25	-30	-30	-46	-52	-45	-60	-53	-44	-36	-32	-36	-38	-37	-38	-36	-39	-44	-39	-31	-30	-33	-36	-31	-19
26	-18	-22	-23	-18	-22	-17	-20	-20	-26	-20	-13	-16	-16	-16	-20	-23	-14	-18	-15	-21	-22	-26	-26	-20
27	-20	-22	-26	-37	-35	-32	-33	-33	-37	-28	-27	-24	-23	-27	-28	-27	-33	-35	-35	-36	-39	-46	-41	-26
28	-21	-30	-42	-44	-47	-42	-36	-30	-24	-19	-14	-12	-15	-14	-14	-16	-28	-24	-26	-29	-31	-37	-34	-38
29	-41	-36	-33	-42	-31	-28	-29	-31	-32	-30	-29	-26	-29	-33	-37	-38	-39	-35	-33	-32	-34	-36	-30	-28
30	-27	-23	-24	-23	-16	-11	-8	-11	-18	-16	-17	-15	-13	-13	-15	-17	-20	-17	-15	-19	-22	-28	-28	-26
31	-22	-20	-27	-27	-21	-21	-15	-27	-37	-33	-35	-39	-41	-34	-64	-78	-84	-72	-74	-71	-63	-58	-51	-43

JUNE 1991

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	-40	-28	-25	-24	-43	-33	-11	-23	-31	-65	-75	-56	-56	-53	-26	-36	-34	-54	-57	-59	-55	-51	-52	-54
2	-55	-51	-52	-52	-64	-71	-59	-61	-58	-54	-45	-38	-29	-24	-33	-34	-35	-45	-50	-42	-51	-48	-62	-58
3	-48	-46	-50	-48	-45	-42	-45	-43	-46	-43	-41	-45	-45	-44	-41	-40	-38	-38	-40	-41	-36	-35	-36	-34
4	-35	-32	-28	-22	-14	-6	-9	-13	-14	-17	-9	-2	-5	-3	8	13	31	3	-35	-22	-43	-57	-40	-13
5	-19	-44	-55	-61	-80	-122	-164	-192	-171	-125	-132	-157	-153	-148	-141	-147	-183	-182	-205	-223	-218	-206	-210	-191
6	-172	-143	-145	-150	-122	-118	-126	-114	-129	-132	-120	-107	-114	-116	-110	-103	-99	-92	-92	-92	-92	-90	-80	-75
7	-64	-62	-63	-63	-67	-77	-85	-82	-77	-72	-72	-73	-71	-70	-63	-60	-58	-61	-65	-67	-64	-61	-45	-31
8	-34	-32	-37	-34	-29	-25	-24	-23	-21	-26	-26	-25	-29	-21	-19	-19	-18	-25	-38	-43	-33	-36	-36	-38
9	-34	-14	-29	-40	-31	-29	-51	-51	-43	-31	-22	-29	-43	-42	-37	-35	-13	-30	-60	-73	-62	-54	-52	-57
10	-59	-65	-47	-41	-30	-30	-23	-61	-82	-89	-90	-108	-122	-134	-121	-122	-125	-95	-107	-87	-85	-96	-33	-12
11	-42	-56	-57	-96	-119	-125	-140	-119	-111	-113	-106	-105	-101	-105	-102	-93	-95	-100	-110	-102	-99	-103	-97	-88
12	-80	-81	-94	-81	-79	-81	-74	-72	-71	-72	-43	-25	-37	-34	-27	-36	-34	-53	-58	-29	-19	-39	-12	-12
13	20	-13	-62	-50	-28	-32	-9	12	-28	-58	-68	-63	-89	-85	-100	-103	-94	-82	-109	-106	-100	-114	-109	-108
14	-101	-97	-86	-78	-72	-71	-69	-65	-68	-60	-58	-55	-53	-51	-47	-48	-48	-47	-49	-50	-49	-46	-45	-45
15	-43	-41	-40	-39	-41	-41	-41	-46	-48	-41	-44	-48	-35	-29	-29	-29	-36	-39	-42	-38	-29	-25	-28	-30
16	-29	-32	-33	-30	-27	-25	-25	-30	-32	-35	-34	-35	-34	-31	-29	-23	-19	-18	-18	-16	-16	-16	-17	-14
17	-16	-19	-18	-21	-22	-24	-24	-27	-30	-29	4	19	8	2	-16	-31	-31	-16	-22	-27	18	-19	-34	-57
18	-50	-53	-70	-56	-40	-46	-42	-51	-51	-44	-39	-32	-34	-42	-45	-49	-44	-45	-47	-41	-33	-39	-42	-47
19	-48	-47	-54	-52	-47	-48	-50	-42	-33	-52	-48	-44	-43	-42	-38	-40	-49	-52	-48	-41	-32	-41	-39	-36
20	-32	-33	-37	-30	-25	-28	-26	-26	-24	-18	-19	-20	-19	-18	-18	-17	-20	-19	-24	-21	-18	-19	-18	-12
21	-15	-15	-22	-16	-10	-9	-28	-24	-19	-18	-18	-21	-18	-15	-13	-11	-19	-24	-23	-24	-28	-30	-38	-32
22	-28	-25	-23	-21	-20	-30	-35	-33	-29	-29	-33	-31	-25	-25	-28	-27	-32	-28	-22	-19	-20	-19	-17	-23
23	-23	-23	-29	-28	-24	-26	-26	-33	-44	-34	-44	-53	-45	-42	-55	-58	-57	-56	-58	-61	-59	-68	-59	-66
24	-79	-73	-68	-71	-68	-61	-57	-54	-49	-43	-46	-49	-48	-47	-48	-51	-48	-47	-44	-39	-41	-40	-41	-39
25	-38	-46	-46	-36	-30	-32	-34	-35	-33	-29	-26	-34	-30	-28	-30	-35	-35	-35	-36	-33	-33	-35	-30	-33
26	-27	-35	-33	-28	-28	-31	-31	-32	-27	-23	-27	-26	-24	-25	-28	-31	-33	-37	-32	-30	-23	-21	-26	-27
27	-34	-29	-32	-30	-24	-21	-21	-14	-11	-13	-14	-18	-20	-21	-22	-25	-26	-25	-24	-17	-16	-15	-15	-7
28	-12	-18	-17	-18	-19	-21	-20	-19	-15	-13	-15	-18	-19	-20	-21	-24	-27	-26	-23	-14	-8	-8	-11	-12
29	-18	-20	-18	-13	-13	-13	-12	-9	-7	-2	-3	-4	-2	-2	-3	-2	-5	-9	-10	-6	-1	1	-1	0
30	-3	8	5	-1	-18	-20	-13	-15	-12	-7	4	0	-9	-3	-7	-14	-26	-35	-45	-51	-51	-55	-50	-47

JULY 1991

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	-38	-33	-30	-35	-34	-29	-24	-19	-17	-16	-15	-11	-6	2	3	5	-1	9	9	4	5	4	1	-3
2	-4	-5	-3	-2	0	-10	-19	-22	-16	-11	-13	-7	-3	-1	-1	-11	-6	-9	-12	-12	-14	-19	-18	-21
3	-22	-33	-44	-38	-44	-50	-52	-57	-43	-22	-25	-25	-21	-29	-25	-29	-31	-30	-32	-28	-29	-37	-39	-39
4	-41	-38	-31	-27	-30	-31	-31	-20	-14	-8	-6	-10	-10	-4	-5	-5	-2	-3	-3	-6	-4	-5	-8	-10
5	-8	-7	-8	-9	-10	-10	-12	-11	-6	-2	-1	-2	0	1	-4	-5	-8	-10	-12	-9	0	9	9	6
6	3	-2	-6	-7	-9	-15	-14	-11	-4	-1	4	2	2	0	1	8	9	8	9	13	14	9	11	10
7	9	7	2	-6	-11	-17	-11	-10	-5	-1	3	3	1	2	2	-1	-3	2	5	8	12	17	27	24
8	20	17	11	1	-11	-25	-34	-39	-38	-45	-39	-35	-34	-28	-28	-32	-4	32	17	-19	-12	-13	-23	-24
9	-27	-25	-26	-39	-50	-54	-73	-116	-143	-153	-150	-170	-179	-180	-194	-192	-174	-175	-175	-159	-143	-127	-115	-110
10	-109	-103	-94	-95	-96	-93	-94	-89	-77	-71	-72	-72	-72	-67	-63	-65	-68	-67	-62	-58	-51	-50	-53	-53
11	-54	-55	-50	-47	-49	-52	-55	-55	-55	-57	-51	-53	-60	-53	-47	-41	-38	-37	-35	-31	-28	-31	-33	-33
12	-33	-35	-34	-36	-40	-42	-42	-45	-51	-21	-11	-5	-4	-15	-16	-16	-11	-11	0	5	1	-4	-9	-14
13	-21	-26	-31	-33	-50	-47	-52	-43	-38	-85	-112	-108	-131	-161	-175	-183	-175	-162	-151	-147	-123	-149	-160	-144
14	-108	-113	-144	-158	-152	-122	-127	-135	-134	-122	-107	-110	-115	-111	-103	-99	-100	-95	-91	-88	-82	-76	-84	-94
15	-103	-104	-94	-86	-82	-83	-80	-78	-71	-68	-62	-60	-61	-64	-66	-67	-63	-57	-50	-45	-38	-35	-37	-42
16	-51	-53	-51	-46	-44	-44	-45	-40	-37	-32	-28	-28	-30	-27	-22	-24	-23	-28	-36	-40	-34	-33	-39	-60
17	-69	-56	-55	-67	-82	-89	-94	-79	-66	-60	-57	-59	-60	-61	-57	-57	-61	-56	-58	-56	-56	-59	-61	-70
18	-78	-77	-64	-62	-64	-63	-65	-58	-48	-41	-39	-40	-41	-39	-34	-33	-37	-36	-34	-37	-39	-32	-34	-37
19	-38	-35	-33	-34	-35	-43	-51	-44	-33	-36	-29	-31	-31	-29	-26	-33	-40	-36	-29	-29	-28	-30	-30	-31
20	-32	-37	-34	-37	-38	-42	-59	-55	-61	-73	-72	-62	-60	-56	-59	-52	-49	-49	-55	-50	-41	-44	-47	-41
21	-43	-45	-44	-50	-61	-61	-62	-62	-56	-48	-42	-49	-49	-50	-47	-43	-44	-41	-37	-34	-31	-33	-43	-44
22	-36	-32	-31	-40	-40	-41	-51	-51	-48	-37	-40	-41	-34	-28	-29	-33	-35	-38	-37	-33	-27	-22	-19	-22
23	-27	-32	-25	-25	-28	-32	-35	-30	-23	-22	-19	-21	-23	-23	-21	-13	-20	-23	-19	-16	-10	-10	-14	-15
24	-17	-16	-17	-18	-19	-24	-22	-22	-20	-15	-13	-13	-13	-16	-12	-13	-17	-20	-20	-16	-9	-9	-12	-13
25	-15	-16	-13	-15	-20	-24	-16	-12	-8	-9	-6	-8	-10	-11	-15	-20	-22	-23	-22	-11	-6	-3	-3	-4
26	-5	-9	-9	-11	-16	-18	-17	-18	-15	-15	-14	-15	-13	-10	-6	-3	-2	-1	-5	-6	-3	-5	-11	-6
27	-6	-3	-5	-9	-10	-12	-11	-6	-2	2	2	-1	-1	-1	0	2	1	-1	-7	-12	-17	-24	-30	-25
28	-21	-20	-18	-18	-19	-18	-17	-16	-17	-14	-13	-11	-10	-8	-8	-10	-8	-5	-5	-6	-7	-3	-1	12
29	11	8	12	13	18	17	18	18	2	-1	-2	1	1	0	1	0	5	8	6	3	-1	-6	-7	-7
30	-7	-10	-10	-12	-14	-9	12	6	2	4	1	-2	-8	-8	-9	-11	-12	-11	-10	-11	-8	-8	-9	-9
31	-11	-12	-5	-3	-2	1	2	2	2	-1	-3	-3	-4	-5	-4	-4	-4	-1	0	-2	-5	-7	-4	-8

AUGUST 1991

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	U.T. 23	24
1	-16	-15	-10	-7	-10	-13	-11	-8	0	4	-3	-9	-15	-12	-9	-8	-29	-37	-44	-43	-32	-34	-28	-57
2	-53	-44	-38	-33	-30	-31	-58	-85	-89	-86	-88	-97	-114	-105	-109	-112	-106	-93	-88	-79	-72	-64	-66	-63
3	-69	-79	-74	-63	-56	-58	-62	-54	-43	-49	-58	-61	-58	-54	-66	-62	-61	-54	-45	-46	-42	-45	-55	-69
4	-80	-75	-69	-77	-83	-95	-92	-90	-86	-76	-60	-54	-60	-61	-61	-62	-57	-56	-63	-70	-64	-55	-51	-52
5	-54	-55	-52	-56	-69	-74	-54	-51	-52	-42	-39	-43	-42	-35	-36	-41	-41	-40	-39	-38	-30	-13	-30	-41
6	-63	-79	-77	-81	-88	-81	-66	-55	-54	-62	-66	-77	-77	-65	-68	-65	-63	-62	-56	-54	-51	-41	-34	-28
7	-30	-38	-49	-62	-60	-50	-36	-38	-40	-36	-33	-34	-30	-31	-29	-29	-28	-29	-29	-30	-29	-27	-23	-22
8	-25	-32	-32	-34	-39	-36	-38	-41	-41	-34	-33	-33	-32	-34	-36	-34	-32	-31	-33	-34	-30	-24	-22	-21
9	-24	-20	-14	-23	-28	-37	-35	-26	-27	-30	-25	-24	-19	-19	-27	-26	-23	-22	-25	-27	-35	-32	-27	-21
10	-20	-20	-18	-19	-25	-26	-24	-19	-23	-21	-18	-16	-16	-18	-21	-24	-28	-27	-17	-10	-5	-2	-3	-8
11	-8	-5	6	26	23	37	28	13	-3	-5	-9	-6	-10	-31	-48	-46	-45	-43	-45	-40	-38	-32	-26	-23
12	-23	-18	-15	-16	-25	-35	-49	-58	-43	-38	-49	-35	-28	-49	-73	-81	-73	-77	-91	-99	-94	-99	-96	-82
13	-79	-78	-67	-65	-63	-63	-57	-55	-55	-54	-51	-46	-46	-45	-46	-43	-47	-47	-49	-51	-50	-47	-43	-40
14	-39	-36	-35	-33	-35	-34	-32	-26	-25	-24	-20	-18	-19	-17	-18	-18	-17	-28	-43	-49	-45	-57	-71	-77
15	-70	-69	-68	-69	-68	-71	-68	-52	-48	-48	-46	-50	-48	-53	-55	-57	-51	-50	-51	-58	-54	-44	-37	-36
16	-39	-36	-35	-47	-58	-56	-51	-44	-43	-38	-38	-35	-32	-31	-27	-27	-20	-16	-18	-23	-23	-23	-33	-36
17	-36	-31	-28	-24	-28	-38	-31	-29	-28	-34	-37	-29	-26	-28	-29	-30	-26	-28	-31	-28	-28	-22	-22	-25
18	-38	-45	-34	-28	-27	-29	-29	-24	-20	-22	-21	-21	-24	-29	-34	-33	-30	-33	-18	1	-14	-13	1	2
19	-17	-31	-29	-15	-9	-3	-33	-114	-170	-133	-115	-100	-90	-96	-92	-81	-71	-76	-81	-78	-72	-66	-59	-52
20	-52	-55	-62	-52	-47	-46	-43	-42	-38	-33	-61	-103	-143	-115	-86	-105	-115	-116	-118	-111	-96	-95	-84	-81
21	-86	-76	-75	-61	-69	-93	-112	-99	-92	-78	-75	-74	-63	-66	-73	-68	-54	-51	-50	-47	-50	-46	-47	-41
22	-36	-34	-47	-78	-68	-72	-80	-86	-92	-91	-85	-85	-80	-76	-68	-63	-57	-56	-58	-59	-60	-61	-62	-56
23	-61	-61	-62	-61	-54	-59	-61	-54	-54	-51	-47	-50	-45	-42	-47	-50	-44	-40	-37	-35	-32	-31	-27	-29
24	-31	-34	-39	-38	-28	-25	-25	-20	-18	-17	-18	-17	-14	-15	-15	-10	-12	-7	-10	-9	1	-6	-15	-19
25	-23	-24	-25	-24	-22	-18	-18	-17	-17	-17	-18	-19	-19	-15	-13	-12	-10	-10	-15	-19	-18	-15	-15	-14
26	-7	-6	-5	-8	-7	-8	-7	-7	-12	-12	-11	-16	-12	-4	-1	-3	-5	-6	-5	-11	-14	-17	-12	-10
27	-12	-15	-14	-16	-20	-24	-21	-21	-19	-18	-17	-17	-16	-17	-17	8	8	-15	-47	-48	-41	-50	-60	-55
28	-55	-49	-44	-45	-46	-43	-42	-38	-33	-29	-26	-23	-25	-24	-25	-29	-33	-33	-32	-36	-37	-35	-32	-27
29	-23	-20	-16	-14	-14	-16	-16	-21	-17	-18	-27	-29	-24	-20	-19	-27	-29	-32	-28	-26	-28	-28	-33	-35
30	-34	-34	-32	-30	-28	-23	-28	-34	-26	-32	-43	-37	-39	-53	-85	-95	-82	-74	-74	-90	-105	-107	-81	-71
31	-76	-77	-73	-69	-66	-63	-61	-67	-72	-81	-65	-70	-70	-53	-69	-84	-87	-82	-77	-75	-71	-68	-70	-67

SEPTEMBER 1991

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	-69	-56	-65	-76	-68	-74	-86	-87	-79	-69	-63	-55	-47	-47	-51	-58	-56	-52	-50	-49	-51	-53	-54	-48
2	-61	-64	-49	-48	-45	-55	-70	-67	-80	-76	-71	-66	-60	-62	-61	-59	-51	-46	-47	-47	-49	-46	-42	-41
3	-38	-37	-34	-34	-38	-39	-41	-42	-43	-39	-43	-46	-44	-43	-47	-51	-50	-44	-42	-39	-35	-38	-37	-29
4	-30	-36	-42	-46	-50	-47	-50	-46	-42	-41	-35	-32	-30	-30	-32	-29	-29	-33	-36	-35	-35	-37	-34	-33
5	-34	-40	-32	-39	-53	-56	-56	-45	-45	-47	-39	-43	-40	-40	-39	-43	-48	-51	-50	-53	-54	-52	-53	-56
6	-53	-47	-43	-40	-40	-42	-40	-37	-38	-35	-32	-30	-26	-27	-32	-32	-39	-40	-40	-36	-34	-30	-30	-34
7	-39	-44	-38	-35	-38	-42	-40	-34	-28	-24	-22	-24	-23	-25	-26	-22	-20	-18	-13	-10	-12	-17	-19	-20
8	-24	-32	-28	-23	-29	-34	-35	-30	-27	-25	-29	-38	-39	-26	-28	-31	-29	-30	-36	-30	-32	-34	-29	-32
9	-34	-31	-20	-15	-13	-10	-14	-31	-38	-42	-45	-48	-46	-52	-49	-54	-58	-61	-67	-68	-62	-58	-67	-78
10	-78	-77	-82	-93	-96	-88	-81	-94	-81	-71	-71	-63	-53	-53	-57	-56	-53	-46	-45	-47	-42	-41	-39	-27
11	-22	-23	-27	-18	-21	-15	-15	-13	-10	-9	-11	-32	-41	-41	-35	-40	-40	-36	-32	-34	-35	-33	-32	-31
12	-30	-26	-29	-22	-17	-22	-24	-19	-15	-21	-22	-18	-14	-14	-16	-16	-14	-12	-9	-5	-4	-9	-12	-12
13	-14	-17	-22	-19	-17	-15	-16	-9	-7	-6	-9	-8	-4	0	1	-2	-2	-1	-1	-7	-4	0	-9	-20
14	-37	-35	-25	-21	-25	-31	-24	-24	-29	-40	-39	-36	-29	-24	-31	-40	-33	-34	-32	-34	-32	-28	-32	-34
15	-37	-31	-31	-32	-26	-22	-22	-19	-15	-14	-12	-11	-13	-11	-13	-16	-13	-12	-15	-15	-15	-13	-15	-17
16	-17	-20	-21	-22	-18	-16	-12	-8	-8	-4	-7	-8	-6	-8	-9	-13	-13	-13	-11	-11	-13	-6	-6	-4
17	-1	1	1	0	0	-2	-2	-1	0	0	-2	-1	-1	-2	-6	-12	-14	-14	-9	-7	-4	-6	-6	-3
18	-1	2	4	1	-2	-2	2	5	10	12	8	4	-1	-3	-3	-3	-6	-7	-5	-2	-1	-2	0	0
19	8	20	15	8	7	8	2	-3	-4	-6	-12	-10	-14	-15	-21	-23	-21	-17	-16	-12	-11	-12	-11	-12
20	-16	-15	-15	-19	-22	-20	-19	-12	-4	-2	-4	-8	-11	-13	-16	-17	-19	-20	-19	-14	-7	-3	-3	-5
21	-10	-16	-18	-18	-18	-21	-22	-21	-20	-21	-17	-15	-13	-12	-9	-6	-3	-1	2	1	-1	-2	-1	1
22	4	7	11	14	16	14	17	16	15	15	15	6	-1	4	6	8	11	9	5	4	6	9	10	7
23	4	4	8	10	9	8	10	10	8	6	5	5	3	2	3	5	7	7	5	1	-2	-4	-8	-4
24	-3	-4	-4	1	5	10	14	14	13	16	16	14	13	13	12	11	8	7	6	5	3	9	7	2
25	1	-14	-16	-25	-24	-30	-34	-36	-36	-35	-31	-23	-37	-41	-37	-55	-70	-68	-56	-64	-66	-84	-81	-56
26	-50	-60	-63	-59	-66	-74	-77	-72	-67	-66	-74	-66	-66	-68	-62	-62	-64	-65	-57	-59	-63	-62	-55	-53
27	-58	-58	-57	-63	-73	-75	-77	-77	-82	-74	-86	-82	-77	-71	-73	-69	-59	-65	-73	-81	-80	-71	-67	-68
28	-67	-64	-63	-66	-72	-68	-57	-55	-50	-50	-53	-64	-57	-54	-60	-60	-64	-73	-71	-67	-63	-68	-59	-58
29	-53	-51	-49	-48	-45	-43	-40	-37	-32	-30	-27	-27	-29	-36	-32	-28	-32	-35	-32	-32	-31	-32	-33	-40
30	-40	-40	-46	-45	-41	-36	-33	-27	-38	-48	-53	-47	-43	-43	-48	-38	-36	-39	-40	-42	-45	-47	-48	-46

OCTOBER 1991

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	-43	-47	-47	-44	-39	-34	-26	-25	-37	-39	-49	-48	-46	-53	-47	-44	-39	-38	-27	-51	-88	-112	-140	-157
2	-149	-159	-163	-164	-150	-133	-121	-128	-144	-132	-145	-153	-148	-135	-128	-140	-132	-117	-117	-106	-97	-96	-89	-85
3	-81	-78	-81	-83	-83	-76	-63	-60	-67	-53	-51	-51	-58	-67	-62	-58	-55	-54	-53	-50	-52	-51	-50	-45
4	-45	-49	-52	-58	-57	-60	-60	-60	-53	-60	-69	-67	-63	-67	-54	-45	-43	-35	-35	-41	-44	-39	-26	-33
5	-38	-48	-48	-44	-41	-38	-35	-30	-25	-26	-22	-16	-17	-24	-29	-24	-19	-30	-19	-21	-25	-22	-20	-18
6	-14	-20	-24	-25	-24	-20	-17	-13	-12	-25	-26	-22	-22	-21	-20	-24	-45	-61	-57	-56	-55	-48	-38	-48
7	-46	-44	-51	-59	-51	-53	-46	-41	-34	-38	-38	-33	-37	-38	-29	-25	-20	-20	-23	-26	-26	-23	-25	-28
8	-34	-37	-39	-36	-32	-40	-42	-57	-50	-58	-62	-51	-55	-64	-65	-57	-54	-72	-84	-79	-71	-68	-67	-58
9	-53	-42	-40	-34	-29	-31	-32	-26	-25	-26	-28	-24	-18	-21	-19	-20	-15	-15	-12	-12	-16	-18	-19	-18
10	-17	-18	-22	-33	-51	-59	-60	-53	-44	-43	-41	-39	-43	-40	-48	-57	-44	-45	-50	-45	-46	-42	-36	-32
11	-28	-27	-30	-26	-25	-22	-21	-23	-27	-28	-27	-30	-23	-21	-22	-20	-20	-26	-30	-23	-20	-19	-17	-14
12	-11	-14	-18	-18	-14	-11	-13	-13	-14	-14	-15	-12	-10	-12	-12	-10	-6	-9	-12	-11	-6	-6	-4	0
13	-5	-8	-7	-4	-5	-8	-5	-2	-2	-3	-4	-3	-7	-4	-2	-2	-4	-7	-6	-6	-5	-4	-3	-3
14	-6	-10	-14	-14	-10	-4	-1	0	1	0	0	1	1	-2	-4	3	5	4	-5	-13	-13	-7	-6	-10
15	-8	-7	-8	-8	-7	-5	-5	-6	-7	-4	-2	-2	-4	-8	-9	-7	-2	0	-1	5	8	7	7	7
16	8	9	7	4	5	7	3	3	0	-1	1	0	2	-1	-3	-4	-6	-10	-5	0	4	4	8	10
17	10	5	2	5	8	10	12	16	18	20	19	21	25	34	34	28	28	35	32	20	16	12	11	12
18	12	27	47	40	38	34	24	22	13	10	8	0	-9	-6	-14	-22	-13	-9	-10	-10	-12	-12	-6	-1
19	0	-3	-6	-7	-4	2	-4	-3	-2	3	1	-5	-1	-1	-1	-5	-1	2	-5	-17	-27	-33	-34	-39
20	-36	-35	-35	-36	-30	-29	-37	-43	-47	-57	-65	-78	-75	-60	-56	-51	-42	-38	-34	-24	-12	-12	-14	-12
21	-5	-5	-6	-14	-30	-42	-34	-34	-38	-35	-27	-40	-53	-72	-85	-94	-86	-93	-84	-87	-92	-93	-88	-69
22	-58	-68	-77	-77	-73	-67	-65	-66	-68	-59	-51	-48	-48	-47	-53	-54	-63	-62	-60	-56	-50	-43	-35	-39
23	-40	-41	-44	-37	-42	-46	-45	-45	-44	-39	-38	-38	-37	-31	-26	-16	-7	-12	-19	-24	-25	-41	-47	-43
24	-36	-51	-59	-51	-48	-52	-64	-77	-71	-60	-55	-49	-48	-41	-37	-33	-33	-36	-46	-47	-46	-39	-39	-42
25	-42	-37	-39	-46	-44	-40	-37	-45	-56	-57	-53	-50	-55	-52	-50	-57	-63	-62	-55	-68	-79	-86	-68	-49
26	-56	-62	-59	-62	-65	-66	-68	-63	-59	-58	-58	-54	-56	-60	-60	-67	-61	-51	-47	-56	-59	-54	-57	-55
27	-72	-90	-93	-92	-87	-82	-82	-94	-85	-75	-67	-68	-64	-73	-76	-69	-67	-57	-62	-71	-63	-66	-54	-42
28	-41	-64	-70	-71	-55	-57	-69	-70	-70	-64	-54	-21	-67	-116	-157	-196	-149	-148	-145	-148	-136	-110	-104	-106
29	-129	-140	-162	-165	-188	-217	-231	-254	-249	-226	-197	-172	-163	-155	-151	-142	-142	-139	-150	-166	-162	-165	-149	-134
30	-132	-130	-126	-116	-108	-102	-98	-98	-100	-102	-99	-92	-92	-84	-93	-91	-102	-111	-111	-124	-117	-114	-113	-105
31	-104	-98	-95	-99	-100	-92	-96	-92	-82	-73	-78	-72	-61	-62	-77	-77	-72	-79	-70	-47	-44	-35	-57	-80

NOVEMBER 1991

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	-85	-73	-76	-81	-80	-84	-88	-92	-83	-88	-100	-95	-83	-101	-118	-142	-160	-183	-182	-194	-170	-178	-182	-196
2	-189	-183	-189	-175	-146	-140	-142	-146	-139	-134	-130	-124	-120	-112	-110	-109	-97	-90	-89	-86	-83	-76	-72	-66
3	-59	-53	-54	-57	-53	-57	-58	-57	-54	-55	-57	-63	-55	-55	-55	-52	-50	-50	-50	-53	-49	-48	-47	-48
4	-51	-45	-45	-46	-51	-47	-42	-39	-49	-54	-47	-39	-39	-40	-39	-37	-37	-37	-34	-46	-58	-74	-64	-68
5	-92	-85	-82	-79	-76	-85	-86	-74	-64	-59	-60	-57	-53	-51	-56	-49	-46	-41	-46	-54	-52	-44	-40	-40
6	-36	-32	-36	-42	-54	-54	-57	-49	-51	-47	-43	-43	-42	-41	-40	-39	-41	-36	-33	-30	-32	-36	-32	-26
7	-31	-32	-32	-33	-35	-34	-32	-32	-29	-29	-33	-29	-27	-25	-25	-20	-22	-23	-25	-29	-26	-22	-15	-18
8	-20	-27	-28	-25	-25	-25	-22	-21	-25	-16	-7	2	-15	17	-46	-90	-91	-137	-143	-156	-176	-218	-245	-280
9	-291	-354	-350	-330	-324	-303	-299	-289	-278	-258	-211	-203	-188	-179	-170	-164	-157	-162	-144	-132	-133	-135	-142	-145
10	-144	-138	-130	-118	-114	-112	-105	-93	-86	-93	-83	-82	-81	-78	-59	-67	-74	-69	-73	-68	-61	-55	-54	-54
11	-61	-64	-61	-63	-60	-58	-58	-56	-51	-43	-32	-32	-26	-22	-33	-40	-37	-24	5	5	4	-7	-24	-36
12	-37	-30	-27	-31	-39	-42	-43	-38	-36	-34	-37	-39	-40	-38	-37	-37	-35	-31	-27	-28	-31	-30	-22	-20
13	-20	-18	-20	-20	-21	-25	-20	-23	-23	-21	-18	-21	-20	-17	-30	-31	-20	-19	-25	-22	-22	-18	-13	-12
14	-18	-22	-31	-25	-14	-22	-35	-35	-34	-36	-44	-40	-30	-23	-26	-35	-32	-27	-25	-27	-27	-15	-18	-28
15	-26	-27	-33	-28	-31	-42	-40	-30	-19	-29	-31	-30	-40	-56	-55	-57	-55	-53	-51	-43	-34	-32	-30	-31
16	-40	-45	-53	-52	-64	-74	-65	-61	-61	-69	-80	-71	-72	-72	-73	-71	-68	-71	-64	-60	-62	-68	-63	-65
17	-57	-55	-54	-51	-48	-48	-49	-41	-42	-59	-63	-59	-60	-62	-67	-72	-74	-69	-68	-68	-60	-54	-57	-64
18	-75	-79	-81	-70	-69	-72	-79	-77	-79	-86	-92	-84	-94	-97	-94	-88	-75	-64	-68	-62	-54	-47	-52	-80
19	-98	-97	-86	-90	-91	-92	-97	-99	-107	-95	-87	-92	-91	-72	-67	-75	-90	-87	-96	-120	-123	-113	-108	-99
20	-90	-80	-72	-67	-68	-72	-74	-74	-73	-72	-69	-71	-67	-62	-60	-56	-53	-53	-61	-65	-66	-56	-59	-65
21	-59	-53	-53	-56	-59	-57	-65	-77	-84	-89	-86	-85	-86	-74	-68	-83	-101	-98	-105	-119	-132	-130	-135	-133
22	-137	-139	-136	-126	-130	-123	-123	-116	-108	-117	-111	-95	-99	-98	-90	-91	-80	-74	-72	-69	-66	-59	-55	-56
23	-57	-54	-62	-63	-60	-61	-73	-78	-67	-63	-61	-77	-84	-73	-74	-80	-77	-68	-65	-64	-66	-65	-58	-55
24	-51	-48	-53	-56	-52	-54	-58	-63	-65	-62	-57	-53	-45	-41	-42	-44	-41	-40	-42	-47	-48	-49	-51	-58
25	-59	-57	-53	-50	-43	-45	-45	-47	-46	-44	-42	-40	-36	-31	-28	-29	-35	-37	-43	-42	-39	-32	-32	-33
26	-31	-28	-27	-28	-30	-29	-32	-35	-34	-31	-30	-24	-22	-19	-21	-23	-30	-28	-27	-28	-27	-21	-19	-20
27	-19	-18	-20	-20	-18	-14	-17	-17	-14	-13	-16	-19	-23	-23	-25	-24	-26	-32	-35	-37	-35	-28	-27	-24
28	-29	-26	-21	-19	-18	-16	-12	-9	-6	-10	-15	-15	-16	-21	-17	-7	-2	-2	-3	-4	-2	-19	-21	-21
29	-30	-37	-40	-37	-26	-20	-22	-22	-19	-20	-22	-23	-21	-19	-27	-36	-33	-25	-21	-29	-27	-21	-22	-33
30	-32	-25	-26	-30	-35	-35	-30	-26	-21	-19	-16	-17	-20	-18	-14	-14	-15	-12	-12	-14	-18	-18	-18	-20

DECEMBER 1991

DAY	UNIT=NT 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	U.T. 24
1	-17	-16	-17	-14	-13	-14	-19	-15	-15	-16	-17	-17	-14	-10	-13	-12	-12	-14	-24	-32	-26	-20	-17	-20
2	-22	-19	-17	-17	-15	-15	-18	-19	-24	-30	-38	-39	-27	-36	-48	-38	-35	-27	-31	-38	-33	-23	-19	-21
3	-15	-14	-15	-14	-13	-8	-7	-10	-11	-14	-20	-19	-18	-16	-14	-26	-32	-29	-30	-33	-31	-31	-23	-23
4	-20	-15	-12	-16	-13	-13	-15	-13	-9	-9	-10	-12	-9	-14	-20	-22	-21	-22	-26	-35	-25	-18	-17	-16
5	-15	-13	-10	-9	-12	-19	-17	-14	-14	-14	-14	-13	-10	-9	-9	-9	-12	-13	-15	-19	-18	-11	-14	-13
6	-16	-14	-13	-10	-10	-6	-6	-8	-8	-7	-8	-7	-7	-6	-5	-3	-1	1	0	-1	-5	-4	-3	0
7	0	1	1	-1	2	1	-3	-3	-1	-2	-3	-1	0	4	6	4	1	0	-2	-3	-10	-18	-18	-13
8	-8	-7	-4	-1	-6	-6	-1	-5	-5	-2	3	6	7	6	-4	-12	-7	-2	-3	-3	-6	-6	-3	1
9	6	9	14	19	21	17	15	17	30	33	16	8	11	9	11	11	6	0	-7	-6	-18	-14	-10	-10
10	-15	-27	-22	-10	-3	-2	-2	-2	1	0	-7	-3	1	-2	-3	-4	-9	-14	-18	-21	-23	-21	-22	-34
11	-32	-25	-25	-22	-17	-15	-17	-15	-15	-16	-16	-19	-18	-18	-18	-22	-28	-29	-27	-23	-15	-14	-21	-25
12	-29	-25	-19	-31	-29	-27	-24	-22	-20	-17	-20	-19	-17	-20	-20	-18	-28	-38	-39	-27	-25	-24	-12	0
13	-7	-19	-27	-23	-19	-23	-27	-26	-18	-21	-22	-15	-15	-18	-14	-16	-12	-15	-26	-26	-23	-24	-23	-18
14	-17	-17	-16	-16	-18	-20	-24	-24	-22	-19	-25	-29	-29	-27	-24	-29	-28	-31	-28	-20	-16	-16	-18	-16
15	-20	-25	-25	-21	-23	-22	-21	-18	-16	-15	-15	-12	-10	-13	-13	-12	-13	-19	-23	-19	-18	-16	-16	-18
16	-15	-13	-10	-10	-8	-8	-9	-5	-2	1	0	-10	-31	-30	-17	-20	-37	-40	-35	-36	-51	-53	-42	-43
17	-47	-55	-50	-43	-47	-45	-41	-50	-45	-39	-36	-36	-30	-24	-25	-31	-32	-41	-59	-53	-54	-51	-48	-51
18	-45	-46	-39	-39	-42	-46	-49	-38	-39	-49	-51	-44	-39	-38	-36	-30	-27	-26	-30	-32	-24	-23	-22	-21
19	-23	-23	-16	-18	-21	-20	-19	-18	-24	-41	-34	-35	-35	-44	-52	-52	-54	-62	-64	-60	-61	-59	-56	-55
20	-53	-48	-43	-38	-38	-44	-46	-46	-46	-40	-33	-31	-31	-30	-28	-18	-19	-18	-19	-21	-18	-15	-14	-14
21	-11	-12	-15	-20	-23	-31	-29	-28	-27	-29	-31	-33	-31	-31	-31	-39	-31	-31	-30	-28	-29	-28	-26	-24
22	-23	-19	-16	-19	-20	-18	-17	-15	-17	-20	-16	-13	-11	-13	-14	-13	-13	-8	-6	-2	2	8	13	17
23	9	-2	-6	-8	-11	-15	-8	-15	-27	-29	-38	-34	-29	-27	-30	-28	-27	-28	-20	-18	-17	-20	-17	-20
24	-19	-16	-14	-15	-16	-16	-11	-9	-15	-17	-20	-13	-15	-18	-14	-15	-14	-10	-10	-10	-11	-14	-17	-16
25	-16	-15	-11	-8	-6	-4	-6	-5	-4	-2	-4	-10	-12	-14	-12	-15	-17	-13	-13	-11	-7	-7	-11	-9
26	-11	-6	-2	-6	-5	2	10	8	8	13	11	12	9	7	11	15	19	24	23	26	20	24	27	24
27	23	22	9	7	3	3	-4	-3	-3	-12	-16	-30	-25	-32	-26	-19	-15	-32	-37	-35	-45	-69	-74	-69
28	-64	-62	-63	-60	-57	-54	-50	-47	-43	-42	-46	-43	-50	-53	-51	-47	-55	-61	-70	-74	-70	-71	-74	-70
29	-61	-56	-50	-44	-43	-24	-30	-34	-27	-25	-23	-25	-23	-44	-40	-38	-27	-37	-36	-41	-55	-70	-77	-66
30	-54	-48	-45	-48	-51	-45	-48	-43	-42	-37	-38	-32	-32	-27	-32	-43	-45	-48	-46	-44	-35	-35	-27	-20
31	-23	-34	-30	-28	-25	-23	-25	-23	-20	-24	-20	-18	-14	-16	-10	-7	-17	-30	-35	-35	-30	-24	-30	-32

DAILY MEANS OF EQUATORIAL DST FOR 1991

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	-21	-28	-16	-49	-35	-43	-11	-19	-61	-55	-121	-17
2	-14	-57	-21	-45	-54	-49	-10	-75	-57	-130	-123	-27
3	-16	-36	-9	-52	-31	-42	-34	-58	-41	-62	-54	-19
4	-12	-21	-3	-49	-20	-15	-15	-69	-37	-51	-47	-17
5	-1	-4	-31	-48	-11	-147	-5	-44	-46	-28	-61	-13
6	-1	-2	-35	-30	-4	-114	1	-63	-37	-31	-41	-6
7	4	-2	-23	-31	6	-66	2	-35	-26	-36	-27	-2
8	-2	-16	-24	-25	3	-29	-16	-33	-30	-56	-76	-3
9	7	-24	-37	-35	2	-40	-123	-26	-44	-25	-223	8
10	3	-20	-33	-15	-9	-78	-75	-18	-64	-42	-87	-11
11	-1	-17	-14	-4	6	-99	-46	-14	-27	-24	-36	-21
12	3	-16	-16	-4	11	-52	-20	-56	-17	-11	-34	-23
13	-18	-13	-35	-4	-12	-66	-104	-54	-9	-5	-21	-20
14	0	-9	-28	5	-43	-61	-111	-34	-31	-4	-28	-22
15	-7	-11	-8	7	-10	-38	-67	-55	-18	-3	-38	-18
16	-5	-3	-3	13	3	-26	-37	-35	-11	2	-64	-22
17	-8	-4	-1	7	-52	-18	-64	-29	-4	18	-58	-43
18	-13	2	-9	-1	-33	-45	-47	-23	0	6	-76	-36
19	-11	-1	-8	-2	-13	-44	-34	-70	-6	-8	-95	-39
20	-4	-2	-17	6	7	-23	-50	-79	-13	-40	-67	-31
21	-4	2	-9	12	21	-20	-47	-69	-11	-54	-87	-27
22	12	3	-32	-3	1	-26	-35	-67	10	-58	-99	-11
23	11	-12	-12	4	-12	-45	-22	-47	4	-34	-67	-19
24	-9	-6	-75	-2	-22	-52	-16	-18	8	-48	-51	-14
25	-1	-6	-194	-18	-38	-34	-13	-17	-42	-54	-41	-10
26	-28	-9	-131	-13	-20	-29	-10	-9	-64	-59	-27	11
27	-12	0	-84	-54	-31	-21	-7	-24	-72	-73	-23	-20
28	-8	-18	-63	-54	-28	-17	-11	-35	-62	-95	-14	-57
29	1	0	-35	-78	-33	-7	5	-23	-36	-173	-26	-42
30	0	0	-47	-57	-18	-19	-6	-56	-42	-107	-21	-40
31	3	0	-35	0	-44	0	-3	-71	0	-77	0	-24
MEAN	-5	-12	-35	-21	-17	-46	-33	-43	-30	-46	-61	-20

ANNUAL MEAN -31

DAILY MEAN VALUES OF **Dst** 1991

MONTHLY AND YEARLY **Dst** 1957 - 1991

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1957	-19.8	-24.1	-41.3	-27.8	-5.2	-10.0	-11.7	-3.5	-64.0	-14.4	-20.7	-18.5	-21.7
1958	-18.3	-28.1	-32.3	-19.6	-10.8	-22.8	-27.5	-13.8	-24.9	-17.7	-1.1	-18.9	-19.6
1959	-10.5	-31.5	-25.1	-22.6	-14.3	-6.5	-35.6	-32.0	-39.2	-25.3	-35.1	-30.1	-25.7
1960	-17.7	-11.8	-11.5	-58.3	-28.6	-18.2	-20.7	-21.9	-30.8	-53.9	-54.5	-42.3	-30.9
1961	-17.2	-21.5	-13.6	-11.8	-7.0	-6.5	-28.3	-7.2	-8.8	-28.3	-17.5	-10.9	-14.9
1962	-3.1	-5.4	0.5	-7.6	2.1	0.2	1.1	-7.4	-19.6	-17.9	-11.6	-12.3	-6.8
1963	-6.1	-2.2	1.8	2.0	1.1	0.0	1.9	-4.2	-29.5	-23.3	-15.4	-7.9	-6.8
1964	-8.8	-9.2	-9.8	-10.1	-4.0	-0.1	1.9	2.3	-0.3	-6.2	-0.2	6.1	-3.2
1965	5.7	-1.0	0.8	-3.4	5.7	0.3	1.5	2.5	-2.2	5.3	4.6	2.4	1.8
1966	4.2	0.1	-8.2	-1.6	-3.4	0.2	-3.2	-2.1	-25.2	-10.7	-8.1	-13.9	-6.0
1967	-18.6	-19.3	-2.7	-6.1	-32.6	-25.7	-9.7	-5.0	-20.6	-14.1	-11.8	-18.1	-15.4
1968	-20.4	-26.8	-20.8	-13.9	-12.6	-13.0	-5.4	-6.2	-11.8	-16.6	-32.5	-13.7	-16.1
1969	-7.2	-21.6	-29.1	-19.8	-16.3	-2.5	3.6	-0.3	-8.3	-10.8	-4.1	2.3	-9.5
1970	-3.0	0.0	-28.5	-25.8	-10.2	-12.1	-20.4	-21.4	-13.2	-20.1	-21.5	-17.3	-16.1
1971	-15.0	-17.9	-15.0	-26.6	-17.2	-8.7	-3.5	-9.4	-16.8	-15.6	-14.9	-24.2	-15.4
1972	-19.8	-17.9	-16.9	-15.1	-8.2	-16.4	-10.1	-36.4	-22.7	-22.2	-24.2	-9.9	-18.3
1973	-12.8	-20.4	-23.9	-46.3	-17.0	-10.1	-1.3	-2.9	-10.8	-13.7	-7.3	-0.2	-13.9
1974	-4.2	-5.6	-16.3	-13.7	-8.4	-5.7	-26.6	-13.3	-20.8	-23.0	-17.1	-12.0	-13.9
1975	-10.4	-13.4	-18.2	-10.4	-6.3	0.5	-7.0	-9.0	-4.2	-9.9	-21.4	-9.5	-9.9
1976	-12.3	-11.3	-24.1	-24.6	-13.2	-4.4	-5.7	-7.5	-12.2	-16.2	-14.9	-16.1	-13.5
1977	-13.6	-14.6	-10.9	-23.3	-13.7	-3.6	-13.7	-19.3	-23.5	-25.4	-19.4	-22.4	-17.0
1978	-19.4	-26.1	-28.1	-30.8	-34.5	-14.9	-9.2	-12.1	-27.1	-22.7	-27.4	-13.9	-22.2
1979	-28.8	-26.2	-30.4	-33.4	-12.7	-4.3	1.8	-10.8	-19.3	-18.9	-11.6	-2.5	-16.4
1980	-13.1	-18.5	-3.1	-9.4	-6.6	-11.7	-6.6	-4.3	-4.8	-22.2	-18.1	-19.9	-11.5
1981	-8.5	-21.6	-35.0	-43.5	-29.9	-2.9	-21.6	-26.6	-19.9	-42.5	-27.5	-12.5	-24.3
1982	-4.0	-50.0	-18.8	-25.0	-2.7	-12.4	-31.2	-23.5	-47.8	-23.9	-26.0	-20.0	-23.8
1983	-21.2	-38.0	-35.6	-23.2	-18.5	-10.0	-1.8	-9.9	-4.8	-15.7	-17.5	-10.5	-17.2
1984	-7.5	-18.5	-26.0	-24.8	-17.6	-10.7	-9.5	-12.2	-22.6	-22.2	-20.6	-16.4	-17.4
1985	-18.5	-19.6	-9.6	-22.8	-7.7	-6.2	-11.1	-12.0	-14.2	-21.2	-18.5	-28.1	-15.8
1986	-15.5	-44.9	-26.0	-11.4	-12.4	-2.7	-1.7	-10.9	-23.1	-13.5	-18.7	-8.9	-15.8
1987	-4.5	-8.0	-9.0	-4.0	-2.0	-3.6	-5.3	-15.7	-22.3	-27.9	-22.8	-15.8	-11.7
1988	-24.0	-23.1	-19.9	-23.4	-17.7	-7.8	-10.8	-16.7	-19.0	-23.6	-23.4	-29.6	-19.9
1989	-31.7	-24.1	-64.9	-39.7	-23.5	-25.7	0.4	-25.5	-34.0	-29.0	-37.0	-22.0	-29.7
1990	-20.3	-40.6	-41.7	-51.7	-23.8	-13.2	-4.2	-26.3	-11.5	-14.2	-5.7	-0.1	-21.1
1991	-4.9	-11.8	-35.0	-20.6	-16.6	-45.4	-33.3	-42.7	-29.5	-45.6	-61.0	-20.5	-30.6

Unit: nT

SECTION 3

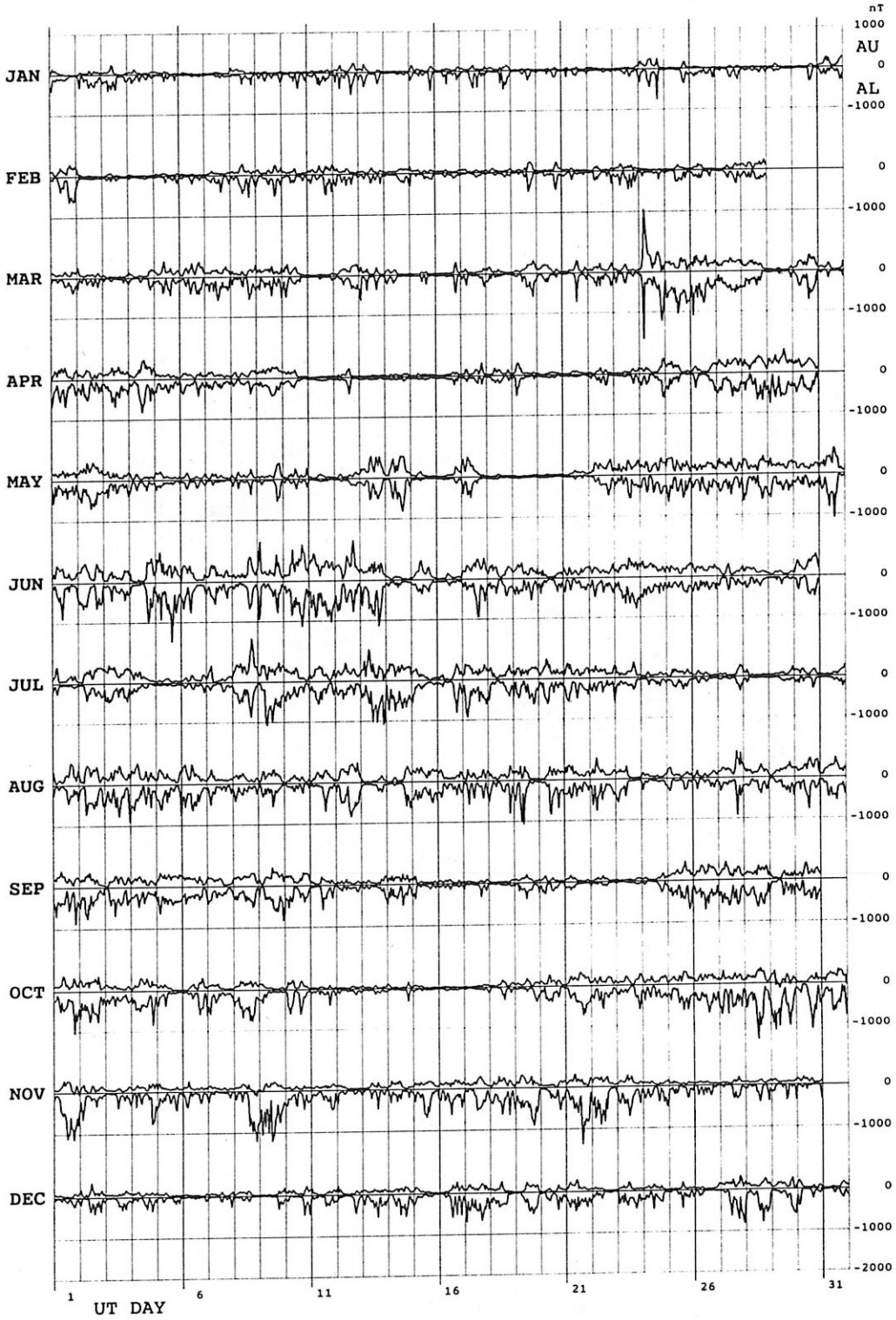
3.5 AU, AL, AE INDICES

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Provisional Hourly values of **AU**, **AL** and **AE** indices
Jan - Dec 1991 108

Monthly and yearly mean values of **AE**
1957 - 1991 132

PROVISIONAL HOURLY VALUES OF **AU** AND **AL** INDICES 1991



PROVISIONAL HOURLY VALUES OF AU, AL, AND AE INDICES

JANUARY 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices JANUARY 1991

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	46	67	161	115	94	113	68	58	58	46	18	21	20	18	1	0	3	13	10	7	5	6	8	6	40
	AL	-286	-404	-188	-93	-121	-152	-78	-99	-100	-115	-83	-94	-112	-112	-118	-78	-82	-48	-21	-18	-13	-13	-6	-7	-102
	AE	332	471	349	208	216	267	147	158	159	161	102	117	133	131	120	78	86	62	32	26	20	21	15	14	143
2		6	19	20	58	71	33	43	37	44	48	33	36	122	79	33	40	66	110	72	57	94	64	39	63	54
		-12	-22	-130	-321	-34	-11	-41	-164	-95	-116	-91	-251	-311	-199	-176	-252	-280	-301	-156	-152	-183	-84	-36	-84	-146
		19	42	152	380	105	45	85	202	139	164	125	288	434	280	211	294	347	413	229	210	278	149	75	148	201
3		52	57	64	71	62	64	76	98	120	236	231	61	50	25	30	15	19	16	9	14	10	16	47	42	62
		-155	-216	-150	-174	-162	-118	-391	-239	-263	-354	-226	-144	-279	-364	-61	-23	-33	-23	-27	-25	-46	-45	-164	-150	-160
		208	274	214	246	226	183	469	338	384	591	457	205	329	390	91	39	53	41	36	40	57	62	212	194	222
4		52	62	69	54	54	63	137	113	62	40	32	50	34	16	20	41	24	40	48	20	38	58	71	77	53
		-133	-87	-50	-78	-209	-165	-97	-108	-29	-20	-34	-164	-79	-18	-20	-37	-67	-116	-101	-18	-24	-16	-86	-64	-76
		185	149	120	132	264	229	236	222	92	60	66	215	114	34	40	79	92	158	150	40	63	75	158	141	130
5		63	78	79	50	53	43	41	47	29	39	60	93	31	60	45	21	7	18	20	15	36	20	18	29	41
		-29	-38	-9	2	-12	-5	-12	-14	-34	-24	-173	-66	-15	-98	-84	-14	-25	-19	-17	-14	-147	-65	-9	-19	-39
		93	117	89	48	66	49	54	61	64	63	234	161	47	159	130	36	33	39	37	30	184	86	28	49	82
6		12	13	26	33	50	39	33	28	21	17	18	18	21	11	8	5	8	7	7	4	11	9	15	22	18
		-11	-10	-7	-7	-24	-3	-3	-6	-4	-6	-8	-28	-42	-44	-20	-16	-24	-26	-19	-58	-38	-15	-25	-20	-19
		25	24	34	42	75	43	37	35	26	24	27	47	63	56	30	22	34	34	27	64	51	25	41	43	39
7		27	21	19	16	18	16	21	26	22	29	27	51	45	41	18	42	16	17	17	18	16	15	22	37	25
		-17	-17	-15	-4	-2	-1	-4	-5	-6	-8	-10	-54	-50	-20	-38	-95	-31	-29	-22	-70	-51	-46	-46	-41	-28
		44	40	35	22	21	18	26	33	28	37	38	107	97	61	57	137	49	47	40	89	68	62	69	79	54
8		65	149	91	75	80	104	110	119	87	73	74	83	80	61	44	18	15	15	10	20	54	27	25	29	63
		-49	-56	-5	-22	-9	-37	-14	-32	-15	-28	-40	-246	-113	-104	-47	-32	-88	-124	-112	-90	-264	-66	-37	-12	-68
		116	206	97	98	90	143	126	153	103	102	114	330	194	166	92	51	105	140	123	112	319	94	62	41	132
9		26	17	32	38	24	19	19	42	30	52	45	22	14	13	26	7	15	24	17	20	20	20	43	48	26
		-6	-9	-39	-111	-89	-3	-6	-23	-152	-183	-99	-21	-14	-23	-42	-108	-64	-19	-27	-19	-22	-33	-114	-222	-60
		33	27	73	151	114	24	26	65	184	236	145	44	28	38	69	115	81	44	46	39	43	55	157	271	88
10		46	34	15	29	15	13	19	28	48	23	22	27	21	21	21	47	35	33	26	23	23	38	38	28	28
		-135	-8	-5	-14	-8	-5	-5	-30	-86	-88	-75	-200	-43	-30	-203	-362	-183	-40	-19	-18	-17	-101	-178	-131	-83
		182	43	22	44	24	19	25	59	134	113	99	227	66	51	224	410	218	74	46	43	41	139	217	160	112
11		34	25	23	22	47	64	42	34	26	42	26	29	56	47	73	35	27	50	47	92	51	26	46	45	42
		-20	-21	-67	-60	-69	-91	-33	-25	-35	-86	-272	-102	-296	-222	-180	-73	-80	-199	-135	-146	-111	-17	-48	-41	-101
		55	47	92	83	118	156	76	59	61	130	299	132	353	271	253	109	108	250	183	239	163	44	95	87	144
12		34	61	92	61	45	96	152	186	56	77	67	43	40	27	34	53	70	133	155	233	232	117	69	58	91
		-52	-30	-226	-22	-9	-78	-384	-185	-31	-58	-117	-133	-24	-26	-31	-74	-212	-539	-312	-245	-160	-29	-26	-70	-128
		87	92	319	84	55	175	538	372	89	136	184	176	64	53	65	127	284	673	469	479	393	147	95	129	220
13		96	85	97	63	57	207	137	99	63	55	19	11	4	8	1	5	6	25	61	48	50	24	26	27	53
		-177	-73	-49	-69	-202	-347	-262	-141	-86	-45	-19	-23	-40	-25	-22	-31	-39	-138	-275	-191	-95	-27	-17	-11	-100
		275	159	147	133	260	554	401	241	150	101	39	35	45	34	24	36	47	165	337	240	147	53	44	39	154
14		18	19	16	29	16	11	15	15	21	24	20	20	16	17	16	20	22	12	15	26	10	12	12	15	17
		-16	-15	-13	-13	-13	-10	-6	-3	-6	-8	-9	-11	-12	-67	-20	-23	-29	-18	-50	-77	-28	-11	-15	-23	-21
		35	36	31	43	31	22	22	19	27	33	29	31	29	85	38	44	52	31	65	104	40	24	28	38	39
15		33	84	169	134	50	39	25	82	49	67	43	29	46	42	23	17	13	12	26	96	122	141	72	62	61
		-50	-210	-132	-90	-13	-19	-21	-38	-44	-102	-17	-17	-67	-96	-44	-14	-16	-8	-37	-307	-465	-168	-25	-18	-84
		85	295	302	225	64	59	46	121	94	170	61	46	114	138	67	32	30	21	65	404	588	311	98	81	146

PROVISIONAL HOURLY VALUES OF AU, AL, AND AE INDICES
(continued)

JANUARY 1991

16	46	30	28	26	20	12	24	53	45	46	40	87	52	51	57	31	24	26	32	33	33	88	112	98	46
	-10	-4	-3	-7	-9	-3	-5	-15	-136	-105	-68	-307	-27	-21	-51	-25	-25	-94	-78	-38	-46	-206	-132	-57	-61
	57	36	31	33	29	15	31	69	182	152	108	394	80	74	109	58	50	122	111	72	80	296	246	156	108
17	61	68	69	55	47	30	47	35	32	65	65	117	149	70	48	33	67	47	34	30	51	26	56	103	58
	-109	-25	-26	-10	0	-6	-15	-11	-19	-154	-210	-346	-413	-73	-49	-129	-399	-114	-18	-29	-131	-46	-54	-126	-105
	171	94	97	66	47	36	63	47	52	221	276	464	563	144	98	163	467	163	53	60	184	72	111	229	164
18	91	56	41	77	91	74	71	51	34	39	38	35	29	36	93	46	42	100	81	111	138	112	96	45	68
	-68	-36	-17	-18	-7	-18	-29	-16	-21	-11	-21	-18	-18	-63	-309	-29	-167	-449	-265	-343	-302	-156	-140	-87	-109
	160	93	59	96	98	92	101	69	55	51	60	54	48	100	403	76	210	551	347	456	441	269	237	132	177
19	25	19	17	21	26	21	17	16	16	38	39	44	31	19	20	21	45	36	22	21	25	11	14	17	24
	-15	-13	-11	-5	-6	-4	-4	-5	-8	-22	-77	-79	-31	-11	-21	-124	-237	-110	-140	-27	-11	-17	-19	-27	-43
	42	33	30	28	34	25	23	22	25	61	116	123	63	32	43	147	282	147	163	50	36	29	34	45	68
20	37	15	11	16	37	16	13	19	14	31	25	58	16	16	19	26	22	60	60	26	22	13	5	3	24
	-51	-21	-10	-4	-8	-6	-9	-20	-5	-15	-88	-15	-12	-14	-16	-69	-164	-176	-146	-36	-23	-15	-16	-16	-40
	89	37	23	22	47	23	23	40	20	46	114	74	29	31	36	96	187	237	208	64	47	30	23	21	65
21	6	12	21	36	52	62	23	9	9	15	29	27	38	55	77	39	17	13	15	10	7	16	23	56	28
	-17	-14	-9	-8	-167	-10	0	-9	-9	-9	-37	-115	-99	-138	-80	-35	-23	-24	-25	-18	-24	-35	-38	-99	-43
	24	27	31	45	221	73	22	20	19	24	66	142	138	194	158	75	41	38	42	28	32	52	61	156	72
22	40	43	63	27	60	28	30	33	35	31	20	18	18	14	18	32	15	16	16	14	13	11	15	9	26
	-30	-29	-11	-3	-9	-12	-9	-7	-4	-4	-6	-11	-13	-17	-20	-68	-43	-23	-21	-10	-14	-32	-50	-9	-19
	71	73	76	32	70	41	40	42	40	36	27	30	32	33	40	101	59	40	38	25	28	45	66	19	46
23	9	11	20	21	21	20	12	25	29	27	38	44	39	35	46	42	28	16	22	33	32	54	80	95	33
	-8	-10	-34	-16	-5	-7	-5	-22	-44	-54	-79	-125	-64	-15	-27	-169	-166	-90	-38	-61	-20	-23	-2	-82	-49
	18	23	55	38	27	28	18	47	74	82	118	170	104	50	74	212	195	107	61	96	53	77	83	178	83
24	82	158	200	118	117	90	76	81	133	225	239	255	124	92	73	75	125	255	89	37	21	37	24	23	115
	-229	-320	-123	-65	-66	2	-12	-55	-239	-315	-443	-199	-95	-107	-63	-99	-166	-749	-154	-4	-12	-14	-12	-21	-148
	312	478	323	184	185	87	89	137	373	541	682	455	219	200	137	175	292	1006	245	42	33	51	37	45	264
25	12	18	17	22	27	31	24	28	20	26	15	17	23	14	19	23	14	88	185	162	47	53	17	31	39
	-17	-13	-9	-10	-5	-6	-6	-1	-2	-15	-18	-27	-21	-22	-15	-53	-134	-306	-354	-244	-82	-97	-163	-136	-73
	30	33	28	33	34	38	32	30	23	42	33	45	45	38	36	78	150	395	540	408	131	152	181	168	113
26	29	19	23	43	51	37	38	44	25	22	16	13	6	13	10	8	3	13	18	18	12	20	30	15	22
	-108	-100	-125	-167	-199	-99	-164	-106	-100	-66	-59	-122	-46	-33	-99	-138	-97	-133	-37	-25	-40	-224	-208	-37	-105
	138	119	149	211	251	137	203	151	126	88	76	136	53	47	110	147	101	147	56	43	53	245	238	54	128
27	22	13	12	12	28	17	17	11	7	7	13	22	32	49	54	32	11	9	11	37	54	56	36	10	24
	-27	-23	-25	-37	-60	-9	-7	-10	-18	-24	-26	-51	-156	-218	-221	-108	-90	-37	-48	-190	-217	-275	-83	-55	-84
	51	38	38	50	90	27	24	21	26	31	39	74	190	268	276	140	101	47	59	228	272	332	120	66	109
28	11	10	12	26	22	24	26	18	13	23	23	31	20	25	17	22	16	13	23	28	23	14	16	35	20
	-33	-36	-18	-28	-71	-36	-42	-13	-16	-33	-58	-82	-55	-30	-35	-67	-44	-123	-72	-20	-13	-16	-42	-110	-45
	45	47	32	56	95	61	68	31	29	57	81	113	77	56	53	90	60	137	96	48	36	30	58	146	67
29	18	8	11	22	28	25	33	55	102	61	44	38	15	10	13	8	6	9	13	12	12	18	17	12	25
	-41	-25	-16	-12	-17	-15	-44	-106	-80	-48	-65	-73	-52	-24	-27	-17	-22	-24	-25	-26	-16	-22	-24	-28	-35
	60	34	29	35	47	42	78	162	183	109	109	112	67	34	41	27	29	34	38	38	29	41	42	41	61
30	12	8	7	10	11	14	23	21	18	17	12	11	11	15	19	23	43	69	62	67	25	25	20	18	23
	-24	-24	-19	-11	-7	-4	-9	-10	-8	-12	-14	-15	-17	-16	-19	-30	-313	-320	-211	-117	-14	-6	-11	-11	-52
	37	34	28	22	20	19	33	32	27	30	27	26	29	33	39	54	357	391	275	186	41	32	32	30	76
31	36	52	59	66	75	80	131	205	261	137	239	146	81	35	37	47	32	47	92	80	171	190	251	265	117
	-25	-35	-79	-176	-178	-108	-40	-183	-170	-62	-39	-112	-45	-18	-32	-59	-96	-117	-57	-77	-165	-296	-280	-162	-109
	62	88	139	243	253	189	172	389	431	200	279	259	127	53	70	107	129	165	149	159	337	487	532	428	227

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

FEBRUARY 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices FEBRUARY 1991

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	123	126	124	53	44	36	60	106	115	222	162	165	106	137	82	63	215	248	300	214	222	186	231	240	149
	AL	-37	-77	-79	-11	-3	-4	-24	-100	-198	-377	-275	-237	-279	-84	-79	-73	-258	-628	-546	-490	-588	-610	-596	-305	-248
	AE	160	203	203	65	48	42	86	207	315	601	438	403	386	222	162	137	474	877	847	705	810	797	827	546	398
2		172	61	43	59	28	18	9	14	22	12	15	43	22	34	8	4	16	4	15	10	2	7	4	5	26
		-193	-92	-38	-42	-29	-28	-27	-27	-41	-33	-39	-38	-43	-46	-39	-44	-42	-36	-30	-25	-29	-33	-35	-34	-44
		366	153	82	102	59	47	38	43	64	47	55	82	65	81	49	49	60	41	46	36	31	40	39	39	71
3		5	4	8	27	33	57	58	82	76	49	27	24	23	29	30	16	23	6	1	3	4	2	5	5	25
		-29	-25	-22	-36	-87	-62	-25	-13	-103	-55	-13	-19	-28	-93	-55	-27	-26	-23	-22	-18	-16	-19	-18	-22	-36
		34	30	30	64	121	120	84	96	180	105	41	45	53	123	85	44	50	31	24	22	20	21	23	28	61
4		16	53	38	15	27	14	12	14	15	13	15	22	15	15	19	16	15	11	13	16	18	16	31	21	19
		-26	-61	-32	-10	-7	-7	-7	-10	-24	-17	-23	-42	-29	-25	-37	-56	-48	-40	-36	-24	-20	-21	-20	-20	-27
		43	115	72	25	35	22	20	25	40	31	40	65	44	40	56	73	64	53	50	41	38	38	52	42	47
5		19	25	57	48	29	28	48	27	69	70	63	59	40	27	24	22	24	28	30	27	27	49	59	47	39
		-35	-19	-17	-11	-3	-3	-9	-7	-10	-27	-50	-158	-99	-29	-34	-44	-44	-88	-108	-23	-8	-137	-175	-50	-49
		54	45	75	60	33	32	59	36	80	98	114	218	141	56	59	58	69	117	139	51	36	187	236	99	90
6		34	37	40	52	36	27	28	24	26	22	34	30	45	41	22	23	24	20	24	30	32	14	34	30	30
		-28	-46	-47	-50	-20	0	0	-5	-5	-21	-71	-114	-195	-80	-25	-25	-30	-38	-35	-103	-63	-13	-39	-41	-46
		63	84	87	103	57	28	29	30	33	44	107	145	241	122	48	48	54	59	60	134	96	28	74	72	77
7		22	29	28	44	42	64	77	115	65	60	67	49	58	60	40	50	47	39	39	39	41	73	80	60	54
		-17	-24	-73	-95	-101	-128	-165	-87	-53	-41	-153	-158	-198	-73	-122	-403	-243	-86	-26	-13	-23	-48	-149	-208	-112
		40	53	102	140	144	193	244	204	119	103	221	208	257	135	163	454	291	125	66	54	65	123	230	268	167
8		77	81	110	65	62	74	77	63	97	176	234	287	223	84	128	81	97	120	98	60	41	87	96	80	108
		-55	-38	-30	-105	-67	0	-18	-73	-208	-239	-291	-435	-363	-349	-146	-65	-188	-536	-190	-47	-19	-31	-122	-248	-161
		133	120	141	171	129	75	96	137	307	417	527	724	588	434	275	147	286	657	289	107	62	119	219	328	270
9		98	126	133	86	51	36	46	42	57	47	39	119	131	86	54	62	83	234	235	158	82	80	110	173	99
		-275	-157	-52	-40	-21	-17	-37	-75	-72	-73	-80	-208	-228	-95	-91	-101	-164	-504	-416	-144	-82	-108	-194	-249	-145
		373	283	186	127	73	54	84	118	131	121	121	328	360	182	146	164	248	740	652	303	165	189	306	422	245
10		67	86	67	68	41	49	72	43	75	76	74	140	153	42	20	21	28	26	16	45	38	36	53	46	58
		-44	-70	-50	-32	-20	-17	-37	-50	-195	-157	-116	-188	-131	-32	-27	-21	-52	-33	-47	-140	-126	-39	-26	-29	-70
		112	157	117	101	61	67	110	94	271	234	192	328	286	76	48	43	81	60	63	186	165	75	80	77	128
11		80	72	110	60	115	125	83	50	59	60	116	227	132	71	71	34	123	213	135	182	107	97	183	244	115
		-132	-141	-96	-215	-129	1	4	-24	-97	-130	-85	-70	-14	-21	-51	-66	-432	-496	-200	-249	-101	-139	-422	-240	-148
		213	214	207	276	244	123	78	75	157	192	202	298	146	92	122	101	555	709	335	433	209	236	606	484	263
12		184	111	88	148	91	60	48	60	51	74	69	66	133	138	110	70	29	52	30	44	19	25	28	69	75
		-120	-226	-287	-134	-3	-8	-13	-76	-193	-132	-66	-56	-276	-169	-107	-72	-77	-244	-85	-15	-14	-18	-20	-80	-104
		305	337	376	283	94	68	61	138	245	207	136	123	410	309	218	143	107	297	116	60	34	44	49	149	180
13		51	44	65	50	64	46	27	23	28	39	66	99	158	102	63	47	48	31	22	47	88	77	52	57	58
		-60	-34	-20	-28	-101	-113	-18	-13	-14	-44	-77	-220	-181	-36	-16	-148	-126	-38	-8	-49	-232	-129	-25	-47	-74
		112	80	86	78	167	159	46	37	44	84	144	321	341	139	81	195	175	70	31	96	321	208	77	105	133
14		42	43	25	36	52	44	52	54	39	56	40	48	57	74	109	94	121	104	84	104	104	99	107	92	70
		-35	-45	-12	-10	-15	-20	-22	-26	-11	-27	-23	-25	-46	-95	-149	-153	-200	-168	-221	-185	-80	-62	-110	-248	-83
		78	88	37	46	68	65	76	81	51	84	65	74	104	170	259	248	322	273	306	289	186	161	218	341	154
15		163	65	51	63	65	68	60	79	90	57	23	20	33	45	58	63	24	20	38	76	74	70	50	43	58
		-302	-33	-10	-2	-1	-18	-66	-28	-10	-16	-20	-20	-26	-36	-135	-70	-106	-76	-105	-149	-125	-145	-31	-26	-65
		465	98	62	65	66	88	128	108	102	75	43	41	60	83	194	134	130	96	144	226	200	216	82	70	124

16	37	31	53	44	39	34	46	51	29	61	88	42	33	28	30	40	23	19	29	31	29	42	58	79	42
	-18	-9	-12	-7	-6	-3	-9	-26	-45	-92	-80	-22	-20	-40	-59	-28	-62	-122	-109	-96	-56	-47	-40	-60	-45
	56	41	66	51	46	38	57	79	76	153	169	65	53	69	90	69	86	142	139	127	87	91	99	141	87
17	56	67	83	72	82	74	39	18	28	23	12	18	26	33	57	73	43	29	23	27	32	35	31	51	43
	-37	-31	-25	-10	-26	-6	0	-4	-3	-13	-22	-34	-39	-50	-95	-111	-76	-59	-59	-57	-21	-22	-24	-34	-36
	94	99	108	82	109	81	37	23	33	37	35	53	65	84	153	185	120	88	83	84	54	57	55	87	79
18	67	45	20	31	48	68	101	85	53	39	52	32	23	16	18	16	21	23	40	38	27	51	64	91	45
	-33	-22	-14	-9	-13	-12	-14	-17	-55	-57	-36	-17	-23	-31	-33	-37	-44	-79	-120	-81	-24	-64	-78	-67	-41
	101	69	34	42	62	82	116	104	110	98	90	50	47	48	52	55	67	102	161	120	52	116	144	159	87
19	60	31	17	18	24	43	45	60	48	42	31	23	60	103	31	47	226	245	245	208	154	50	40	38	79
	-24	-17	-17	-17	-13	-8	-10	-58	-14	-1	-5	-17	-98	-124	-26	-73	-474	-387	-314	-197	-134	-31	-28	-39	-89
	86	49	35	36	38	53	57	120	63	45	38	41	159	229	59	122	700	633	560	405	288	83	69	78	168
20	36	23	18	19	16	17	27	31	45	25	13	30	44	26	46	33	43	131	234	226	112	68	93	60	59
	-36	-38	-21	-12	-7	-6	-18	-85	-95	-64	-50	-64	-81	-32	-68	-63	-60	-348	-436	-283	-95	-48	-73	-104	-91
	73	61	40	31	24	24	47	117	142	91	64	94	125	59	114	97	104	480	671	510	208	117	168	165	151
21	51	37	34	52	50	47	32	39	71	80	49	22	21	34	33	32	30	18	17	32	29	26	30	24	37
	-91	-103	-101	-71	-44	-21	-15	-31	-95	-209	-84	-37	-30	-55	-65	-39	-35	-39	-37	-37	-85	-26	-16	-17	-58
	142	141	135	125	95	70	49	71	168	291	135	61	52	89	99	72	66	59	56	71	114	54	47	42	96
22	22	18	14	11	10	40	67	103	67	125	60	51	39	14	25	33	25	38	40	15	21	43	76	50	42
	-28	-34	-26	-28	-18	-25	-201	-210	-122	-199	-117	-88	-55	-26	-20	-25	-22	-42	-141	-29	-13	-122	-306	-83	-83
	51	53	40	39	29	66	269	315	189	326	178	140	95	41	45	58	48	82	182	45	35	166	382	134	125
23	60	43	65	75	65	93	138	172	103	38	43	100	71	76	126	68	103	134	40	29	91	58	44	52	79
	-90	-121	-155	-118	-79	-149	-351	-226	-58	-14	-57	-199	-148	-268	-448	-85	-192	-404	-154	-41	-277	-215	-28	-28	-163
	151	165	221	194	144	244	490	399	161	53	101	300	220	344	575	154	296	539	195	71	369	274	73	81	242
24	40	44	34	38	27	30	28	25	17	17	14	13	20	16	18	14	13	14	30	28	21	21	22	23	24
	-29	-29	-42	-138	-52	-32	-50	-15	-35	-25	-52	-27	-35	-69	-59	-53	-37	-59	-210	-70	-48	-19	-21	-62	-53
	69	74	77	177	80	63	78	41	54	44	67	41	56	85	78	68	52	73	240	99	69	41	44	86	77
25	24	38	23	15	17	21	18	20	21	40	61	78	141	92	64	59	55	52	41	40	25	34	33	28	43
	-76	-29	-28	-17	-11	-10	-10	-8	-16	-37	-264	-260	-270	-174	-200	-241	-236	-64	-42	-194	-66	-16	-47	-42	-98
	101	68	52	33	30	32	29	29	38	78	326	339	411	266	264	301	291	118	84	235	92	51	81	71	143
26	29	42	34	79	68	81	66	151	104	108	121	52	43	31	24	20	32	23	20	33	26	22	19	20	52
	-52	-61	-95	-152	-147	-107	-164	-194	-85	-201	-163	-37	-31	-15	-41	-37	-24	-97	-162	-27	-24	-6	-16	-21	-82
	83	104	129	232	216	189	231	346	190	311	285	89	76	48	66	58	57	121	183	61	52	30	37	41	135
27	17	12	9	10	9	11	14	37	31	47	106	82	37	19	42	39	39	98	143	135	78	100	119	97	55
	-23	-27	-25	-30	-27	-20	-20	-46	-74	-74	-178	-207	-81	-48	-54	-99	-136	-220	-294	-336	-60	-59	-170	-190	-104
	41	39	35	40	38	32	35	85	107	122	285	290	119	69	97	139	176	319	438	472	139	161	289	287	160
28	135	125	117	88	59	61	160	151	163	128	50	21	63	123	123	107	126	193	102	115	153	248	151	108	120
	-161	-117	-62	-60	-120	-200	-157	-68	-215	-177	-26	-43	-96	-201	-248	-248	-197	-252	-147	-188	-205	-153	-109	-153	-150
	297	243	179	149	180	262	318	221	379	306	77	66	160	325	372	356	325	446	250	304	359	402	261	261	271

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

MARCH 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices — MARCH 1991

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	108	144	102	102	68	72	69	108	79	80	63	83	138	173	104	84	70	54	77	168	139	156	119	127	104
AL	-113	-133	-25	-35	-9	-58	-105	-47	-29	-26	-39	-66	-166	-213	-202	-170	-82	-167	-171	-297	-372	-287	-218	-172	-129
AE	223	178	128	138	79	130	175	156	110	107	104	150	305	387	306	255	152	222	248	466	511	443	337	300	234
2	262	150	70	76	50	59	36	64	53	94	80	73	74	95	91	87	42	32	83	125	112	60	35	46	81
	-278	-81	-37	-68	-107	-6	-6	-24	-40	-158	-100	-68	-47	-49	-176	-177	-36	-22	-103	-219	-146	-27	-19	-19	-84
	542	232	108	145	158	65	43	89	95	253	181	143	122	146	269	265	79	55	187	345	259	88	55	67	166
3	64	68	41	23	16	16	23	47	24	30	30	23	24	19	24	25	41	21	22	39	27	46	72	59	34
	-50	-74	-13	-9	-5	-2	-2	-61	-72	-53	-6	-11	-11	-12	-23	-28	-31	-26	-24	-124	-41	-25	-75	-135	-38
	116	143	55	33	22	18	25	110	97	85	38	35	36	32	48	53	73	48	48	164	69	72	148	195	73
4	127	84	97	71	52	25	24	26	27	35	66	40	45	33	35	38	40	42	58	158	161	211	170	192	77
	-141	-65	-42	-27	0	0	-3	-6	-3	-7	-51	-110	-62	-25	-17	-17	-17	-15	-28	-212	-298	-184	-210	-82	-68
	269	149	140	99	52	25	28	32	31	44	118	152	108	59	53	55	58	58	88	372	461	396	381	275	146
5	172	120	124	68	84	97	108	176	287	398	170	111	138	130	166	228	128	80	66	107	111	158	170	132	147
	-138	-96	-77	-86	-69	-155	-146	-164	-388	-343	-111	-35	-179	-295	-316	-446	-100	-30	-46	-133	-146	-138	-73	-102	-159
	311	216	201	155	155	253	256	341	675	742	282	147	317	426	482	675	228	111	114	241	258	297	244	235	307
6	97	58	39	59	141	219	227	138	91	190	209	343	223	127	64	136	249	345	380	247	228	265	161	107	181
	-83	-84	-27	-31	-66	-196	-219	-60	-48	-238	-414	-259	-152	-113	-107	-274	-412	-320	-424	-270	-303	-158	-30	-61	-181
	181	143	66	92	209	416	448	199	141	430	624	604	376	241	172	410	662	666	805	518	532	424	193	168	363
7	105	97	115	108	109	80	142	168	145	170	138	191	106	117	92	93	95	191	194	263	169	165	150	72	136
	-189	-223	-155	-195	-355	-155	-138	-139	-352	-143	-105	-433	-581	-457	-232	-301	-122	-257	-231	-264	-218	-334	-251	-39	-245
	296	320	271	304	466	236	281	308	498	314	245	624	688	575	325	395	218	449	427	529	388	500	402	112	382
8	59	138	91	67	84	88	61	54	54	49	137	116	46	44	31	31	128	165	173	183	101	142	173	285	104
	-42	-195	-88	-32	-48	-21	-69	-42	-22	-16	-196	-248	-29	-23	-28	-45	-263	-562	-477	-400	-213	-172	-255	-339	-159
	102	333	179	100	133	111	132	98	77	67	335	365	76	68	60	77	393	728	651	585	315	316	430	626	265
9	140	98	162	178	91	120	119	145	173	169	155	193	102	167	253	99	66	110	103	130	71	61	79	207	133
	-316	-232	-219	-321	-19	-73	-123	-131	-263	-143	-191	-197	-104	-286	-473	-198	-36	-137	-230	-233	-47	-79	-214	-534	-200
	457	332	383	499	111	194	243	278	436	313	348	392	206	453	726	298	103	249	334	364	119	141	294	742	334
10	131	102	238	188	293	176	74	48	85	127	179	185	230	120	83	60	62	39	44	31	25	21	26	25	108
	-300	-127	-337	-517	-234	-161	-21	-16	-68	-134	-167	-171	-191	-90	-107	-87	-139	-111	-32	-15	-15	-16	-21	-23	-125
	432	231	576	706	529	337	95	65	155	263	348	357	422	210	190	148	202	51	77	47	41	38	48	49	234
11	23	21	19	15	15	13	12	13	12	26	31	17	41	25	25	22	20	19	20	20	21	41	60	56	24
	-28	-25	-19	-16	-15	-15	-16	-14	-12	-12	-23	-82	-44	-33	-15	-22	-24	-27	-29	-17	-34	-41	-114	-74	-31
	51	46	39	32	31	29	29	28	25	39	55	100	86	59	41	45	45	48	49	38	56	83	175	131	57
12	41	40	36	35	44	88	135	125	153	176	145	174	107	101	110	79	168	232	235	253	249	281	246	126	141
	-75	-71	-23	-16	-16	-58	-94	-45	-142	-230	-121	-105	-59	-54	-87	-134	-216	-324	-248	-278	-315	-325	-221	-331	-150
	116	112	59	52	60	147	231	172	296	407	267	280	167	157	198	214	384	557	484	531	565	608	467	458	291
13	92	214	136	69	76	113	84	163	91	36	20	28	24	26	39	75	192	125	61	31	22	18	21	17	74
	-344	-621	-85	-19	-30	-81	-113	-368	-116	-38	-31	-31	-24	-21	-27	-139	-356	-201	-70	-53	-16	-19	-26	-27	-119
	437	836	222	89	107	195	197	532	209	75	52	60	49	47	66	215	549	327	132	86	39	37	47	44	194
14	33	90	121	136	123	53	57	73	103	123	120	67	33	23	15	17	22	17	15	15	18	19	23	21	56
	-34	-168	-221	-132	-83	-30	-42	-88	-195	-161	-129	-59	-31	-21	-23	-26	-20	-15	-18	-21	-25	-21	-25	-25	-67
	68	258	343	269	207	84	100	163	299	286	249	127	65	44	38	44	43	34	34	38	44	41	49	47	124
15	20	20	19	19	17	16	18	16	17	16	49	67	57	30	55	87	30	27	19	16	16	19	24	20	29
	-31	-23	-25	-23	-28	-28	-28	-24	-27	-23	-38	-168	-56	-23	-47	-242	-51	-28	-28	-22	-13	-17	-21	-23	-43
	52	44	44	44	41	45	47	41	45	41	88	236	114	54	103	330	82	57	49	40	30	37	46	44	73

PROVISIONAL HOURLY VALUES OF AU, AL, AND AE INDICES
(continued)
MARCH 1991

16	21	19	20	21	21	21	22	20	22	33	37	28	24	27	25	43	44	42	232	296	111	52	37	32	52
	-31	-29	-31	-28	-23	-23	-21	-22	-20	-17	-53	-44	-37	-34	-31	-30	-35	-39	-348	-462	-128	-33	-24	-52	-66
	53	49	51	50	45	44	44	43	43	52	92	74	62	61	57	74	79	83	581	759	241	85	63	85	119
17	48	80	48	68	133	91	34	36	35	45	33	30	24	30	41	47	50	54	68	51	69	146	92	114	61
	-44	-133	-43	-31	-154	-276	-82	-17	-11	-17	-38	-29	-36	-33	-27	-36	-42	-57	-115	-69	-80	-272	-320	-190	-90
	93	214	93	99	288	369	117	54	48	64	72	60	60	63	69	83	93	111	184	121	149	419	413	305	152
18	133	83	159	164	103	55	54	37	67	45	49	105	82	53	35	56	32	30	22	27	27	28	26	27	62
	-177	-200	-163	-36	-120	-65	-9	-8	-87	-75	-23	-63	-48	-41	-42	-28	-24	-19	-9	-3	-11	-19	-18	-28	-55
	312	284	323	201	224	120	63	46	156	121	73	169	131	95	77	84	57	51	32	30	39	47	46	55	118
19	27	26	31	62	52	88	57	42	39	56	96	93	92	128	131	224	192	221	233	215	316	298	201	103	126
	-32	-30	-32	-53	-70	-70	-35	-10	-37	-34	-206	-78	-58	-118	-346	-320	-313	-213	-377	-407	-579	-271	-174	-202	-169
	59	56	64	116	123	158	93	53	78	92	303	173	151	247	478	544	507	435	610	623	896	570	375	306	296
20	138	86	102	123	137	191	177	217	189	187	200	117	113	102	53	30	26	39	106	81	55	30	25	32	107
	-96	-52	-32	-8	-27	-77	-128	-153	-214	-126	-217	-114	-56	-36	-33	-34	-39	-35	-114	-38	-4	-9	-17	-24	-70
	236	139	135	132	165	269	306	371	403	314	418	232	169	139	88	65	66	75	221	120	60	39	43	57	178
21	29	32	38	30	28	30	70	66	69	67	69	105	192	312	274	85	53	34	24	45	53	141	95	39	82
	-30	-25	-21	-20	-19	-14	7	-3	-3	-13	-20	-38	-172	-715	-287	-80	-53	-51	-36	-42	-50	-81	-166	-56	-83
	60	58	60	50	47	45	63	69	74	81	90	144	364	1027	561	167	107	87	61	88	104	223	262	96	166
22	63	51	91	55	53	119	127	124	152	93	127	227	98	66	81	61	41	51	52	71	124	192	238	137	104
	-41	-66	-90	-109	-139	-127	-260	-229	-348	-115	-96	-337	-146	-86	-176	-89	-33	-57	-100	-106	-142	-336	-308	-184	-155
	105	118	181	165	194	247	388	355	501	209	223	565	244	153	258	151	75	108	153	179	268	529	547	322	260
23	48	85	85	39	47	34	35	33	84	107	173	200	106	46	33	54	31	45	76	43	32	29	41	60	65
	-31	-78	-263	-164	-46	-31	-32	-29	-36	-145	-245	-277	-135	-25	-26	-30	-35	-49	-107	-46	-16	-16	-30	-42	-81
	79	163	348	204	94	66	68	63	121	253	419	478	241	72	60	85	67	96	184	91	48	45	72	103	147
24	66	70	120	379	1550	1260	830	555	433	418	390	182	83	234	180	294	479	497	405	296	17	153	49	180	380
	-63	-66	-134	-425	-1643	-269	-280	-304	-177	-176	-170	-244	-342	-117	-232	-309	-416	-433	-319	-547	-1114	-1211	-915	-404	-430
	130	137	255	804	3195	1529	1110	860	610	595	561	426	426	351	413	604	895	932	725	844	1131	1366	965	585	810
25	205	253	218	205	258	151	169	201	189	104	89	81	71	113	323	340	223	269	294	250	39	50	178	128	183
	-216	-646	-635	-498	-493	-466	-381	-416	-545	-403	-751	-654	-1042	-885	-561	-556	-564	-449	-485	-573	-806	-724	-741	-708	-592
	422	900	854	703	753	618	550	618	735	508	840	735	1114	999	885	897	788	719	781	825	846	775	920	838	776
26	197	234	121	368	203	396	299	226	263	131	259	217	233	350	394	161	107	177	205	190	208	179	256	258	235
	-347	-397	-1082	-550	-523	-350	-658	-386	-299	-620	-481	-634	-785	-637	-307	-307	-158	-294	-407	-346	-450	-357	-356	-218	-456
	545	633	1204	920	726	746	957	612	562	751	741	852	1019	988	703	469	266	471	613	538	659	537	613	476	692
27	163	212	116	145	159	119	198	238	228	245	229	205	248	324	282	208	244	221	201	242	255	255	269	173	216
	-218	-247	-91	-270	-194	-157	-304	-313	-278	-356	-404	-432	-369	-332	-502	-474	-467	-449	-538	-341	-473	-415	-426	-360	-350
	382	461	209	417	353	278	502	551	506	602	634	637	618	656	784	682	712	671	741	583	729	671	696	533	567
28	253	135	114	142	106	176	159	201	245	186	261	163	144	210	165	148	117	178	149	99	47	37	34	28	146
	-422	-392	-382	-408	-192	-245	-231	-348	-218	-224	-179	-215	-163	-252	-367	-176	-153	-261	-164	-50	-18	-23	-25	-31	-214
	676	529	498	551	299	422	391	550	464	412	441	379	309	463	533	324	271	440	314	150	66	61	59	60	361
29	31	29	29	30	24	19	13	9	13	42	37	66	14	10	12	4	9	13	16	12	27	47	109	75	29
	-37	-42	-40	-32	-30	-24	-27	-23	-21	-20	-35	-88	-43	-29	-23	-19	-25	-24	-18	-15	-34	-52	-179	-114	-41
	69	72	70	63	55	43	40	33	36	63	74	156	58	39	36	24	36	38	36	28	62	100	288	190	71
30	49	54	79	71	99	207	203	244	218	178	114	206	161	102	224	380	362	270	261	323	293	198	109	85	187
	-43	-43	-96	-124	-159	-320	-383	-384	-269	-193	-123	-223	-170	-100	-394	-721	-448	-567	-531	-488	-396	-328	-107	-33	-277
	93	98	176	196	259	528	588	630	487	372	239	430	332	204	618	1102	812	838	793	811	690	527	218	119	465
31	62	75	107	88	81	66	48	87	108	192	162	79	37	20	11	11	12	13	20	27	27	55	78	223	70
	-19	-32	-68	-30	-19	-6	-2	-28	-40	-188	-90	-25	-20	-21	-19	-24	-19	-12	-16	-17	-29	-43	-38	-153	-40
	82	108	175	119	101	73	50	116	150	382	253	106	57	42	30	36	32	27	38	46	57	98	116	377	111

PROVISIONAL HOURLY VALUES OF AU, AL, AND AE INDICES (continued)

APRIL 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices APRIL 1991

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	16	111	145	250	202	98	242	274	185	317	259	192	321	263	157	99	76	107	57	42	58	210	219	269	174
	AL	-664	-498	-284	-268	-200	-107	-271	-429	-531	-320	-249	-217	-573	-658	-351	-217	-131	-185	-71	-81	-95	-188	-355	-364	-304
	AE	680	609	430	519	404	206	514	703	717	638	509	411	895	922	509	317	208	293	129	124	154	398	575	634	479
2		112	148	139	118	91	91	155	177	264	227	221	201	102	38	38	105	149	64	55	146	162	187	168	137	137
		-197	-189	-269	-363	-90	-92	-408	-348	-465	-510	-366	-170	-41	-60	-144	-212	-271	-51	-75	-163	-318	-161	-276	-94	-222
		310	338	409	482	182	183	563	526	730	738	588	372	144	99	184	318	421	115	132	311	481	349	444	232	360
3		129	116	147	151	130	180	182	200	310	295	117	239	222	214	335	295	176	166	228	166	145	165	217	190	196
		-92	-94	-185	-201	-142	-258	-250	-269	-557	-419	-457	-674	-307	-290	-390	-439	-212	-131	-279	-222	-224	-254	-267	-365	-291
		222	211	333	353	273	438	433	470	867	714	575	914	530	504	725	735	389	298	508	389	370	420	485	556	488
4		72	119	105	68	58	70	102	146	161	258	176	263	430	469	476	287	369	260	314	323	307	128	251	279	229
		-93	-100	-151	-105	-54	-37	-69	-112	-111	-380	-462	-571	-820	-654	-584	-345	-203	-110	-168	-226	-522	-192	-273	-384	-280
		167	220	257	175	113	108	171	258	273	639	639	835	1251	1123	1061	633	572	371	484	551	829	321	524	664	510
5		205	86	128	117	114	81	86	104	110	75	87	94	119	136	82	42	79	101	96	56	43	83	30	29	91
		-296	-331	-200	-94	-92	-101	-235	-212	-242	-189	-117	-145	-284	-336	-207	-119	-154	-225	-114	-48	-46	-132	-126	-42	-170
		502	418	330	212	207	182	322	317	353	264	205	241	404	473	290	162	233	328	212	105	90	215	157	72	262
6		36	68	122	147	137	157	120	98	122	119	111	79	64	33	25	69	117	123	90	181	103	56	103	71	98
		-72	-298	-363	-350	-252	-175	-132	-130	-158	-167	-115	-106	-128	-37	-35	-87	-255	-419	-151	-225	-127	-64	-166	-194	-175
		109	367	486	498	390	332	252	229	281	288	228	187	193	70	62	157	373	543	243	408	231	120	270	265	274
7		108	69	127	178	124	177	180	139	84	83	86	101	110	72	118	103	83	64	43	76	87	67	76	44	100
		-204	-69	-146	-237	-134	-183	-262	-206	-89	-41	-78	-121	-195	-111	-229	-207	-121	-79	-114	-59	-64	-71	-132	-71	-134
		313	139	274	416	259	360	442	347	174	125	165	224	306	184	348	311	205	144	159	137	153	139	208	116	235
8		38	77	114	158	159	72	49	37	73	132	148	112	97	77	60	53	56	119	156	193	195	178	205	125	112
		-36	-111	-185	-114	-99	-40	-19	-31	-74	-129	-111	-149	-143	-106	-88	-67	-60	-162	-382	-279	-170	-145	-150	-102	-123
		75	189	300	274	259	113	69	70	149	262	260	262	242	184	148	121	116	282	540	474	367	325	356	227	236
9		158	120	175	166	172	140	236	190	123	211	239	252	166	189	274	265	255	241	281	260	184	186	176	153	200
		-114	-130	-182	-89	-103	-208	-198	-165	-168	-160	-207	-213	-314	-368	-436	-408	-409	-345	-187	-229	-289	-199	-97	-99	-221
		273	251	358	256	276	348	434	355	292	372	447	466	481	559	711	674	665	586	469	491	474	386	273	252	423
10		145	166	143	112	127	179	114	111	145	151	159	207	124	50	37	27	19	38	43	29	34	39	36	24	94
		-144	-127	-89	-84	-67	-56	-93	-124	-201	-173	-241	-173	-114	-55	-38	-64	-43	-20	-25	-2	3	-7	-12	-24	-82
		290	295	234	197	194	236	208	237	347	325	402	382	240	106	77	92	63	59	69	32	30	47	49	49	177
11		20	14	13	9	11	14	10	15	17	20	24	26	28	26	30	22	27	24	34	37	30	34	47	30	23
		-25	-29	-33	-30	-30	-33	-42	-38	-49	-53	-48	-55	-59	-63	-57	-55	-61	-55	-27	-29	-30	-32	-38	-42	-42
		46	43	46	40	41	48	54	54	67	75	74	83	88	89	88	78	90	81	63	67	61	67	87	74	67
12		29	28	44	24	81	23	20	81	81	78	55	58	171	162	229	81	39	35	28	28	29	30	22	30	62
		-47	-38	-41	-39	-51	-59	-47	-29	-43	-57	-57	-66	-155	-198	-409	-216	-56	-21	-14	-17	-7	-20	-32	-38	-73
		76	66	85	63	133	82	69	111	125	136	114	125	328	361	639	298	95	57	43	46	38	51	55	68	136
13		36	24	25	27	20	21	25	28	30	26	32	35	46	43	37	35	33	29	32	31	35	54	46	26	32
		-44	-49	-39	-45	-33	-35	-30	-29	-36	-48	-48	-48	-57	-40	-40	-48	-38	-29	-25	-6	-14	-32	-48	-46	-38
		80	74	65	73	55	57	56	58	67	75	81	84	103	85	77	84	72	59	58	37	50	87	95	73	71
14		37	27	23	20	30	69	52	42	44	64	72	49	44	39	34	36	35	64	87	59	73	82	30	32	48
		-47	-48	-38	-39	-45	-51	-64	-47	-42	-46	-58	-54	-44	-42	-45	-42	-29	-93	-91	-64	-32	-42	-25	-33	-48
		85	76	62	60	75	121	117	91	86	111	131	104	89	83	80	80	66	157	179	124	106	125	56	67	97
15		23	28	17	28	17	16	39	74	55	33	40	47	39	43	57	27	39	43	36	36	45	41	34	34	37
		-46	-42	-41	-41	-42	-36	-29	-56	-59	-45	-49	-52	-48	-60	-81	-45	-56	-52	-30	-18	-21	-36	-31	-34	-44
		70	71	59	69	59	53	70	130	115	79	91	101	89	103	139	73	96	96	67	54	67	78	66	69	82

PROVISIONAL HOURLY VALUES OF AU, AL, AND AE INDICES
(continued)

APRIL 1991

16	28	20	20	22	21	17	20	21	30	34	38	35	46	43	49	83	101	88	52	89	89	37	40	35	44
	-43	-43	-38	-37	-34	-33	-35	-41	-42	-51	-54	-58	-67	-73	-58	-71	-88	-209	-90	-58	-114	-20	-24	-33	-59
	71	63	59	59	55	50	57	63	74	86	93	95	114	118	108	155	190	299	144	148	205	59	65	69	104
17	43	52	48	58	169	159	58	43	34	49	50	71	95	153	160	133	44	74	223	325	128	49	45	39	96
	-44	-37	-49	-49	-76	-138	-58	-36	-44	-43	-49	-44	-57	-120	-154	-186	-29	-36	-55	-205	-103	-1	-17	-26	-69
	88	90	98	108	245	297	117	80	79	93	100	116	152	274	316	321	73	111	278	531	232	51	63	65	166
18	33	26	27	23	38	40	61	186	162	85	105	149	135	110	71	39	52	57	40	65	150	99	39	39	76
	-32	-34	-31	-38	-57	-113	-99	-120	-170	-135	-90	-112	-185	-157	-113	-80	-33	-12	0	-25	-59	-130	-38	-40	-79
	66	61	59	63	96	154	161	308	333	221	196	262	321	268	186	120	86	70	40	91	210	231	78	80	157
19	46	37	63	96	241	305	293	171	181	74	55	53	49	57	56	52	49	40	43	37	81	69	44	41	93
	-86	-33	-38	-65	-507	-338	-288	-125	-80	-59	-82	-70	-40	-34	-33	-24	-24	-24	-7	-4	-39	-95	-33	-25	-90
	133	71	102	163	748	644	581	297	262	135	139	124	91	92	89	77	74	65	50	40	121	166	78	66	184
20	42	35	22	14	15	11	13	18	26	32	37	60	52	67	75	64	56	55	42	47	35	28	24	30	37
	-21	-22	-23	-32	-36	-37	-36	-44	-37	-46	-58	-54	-52	-49	-38	-41	-68	-43	-11	-4	0	-15	-26	-26	-34
	63	58	46	47	51	49	51	63	64	79	97	116	105	116	114	106	125	99	54	52	35	44	51	57	73
21	29	25	25	24	25	24	30	36	60	87	99	59	90	85	72	52	49	47	42	43	41	32	34	37	48
	-32	-26	-23	-22	-26	-35	-25	-18	-13	-35	-36	-33	-46	-37	-31	-33	-27	-5	3	-4	-4	-8	-28	-30	-24
	61	52	48	47	52	60	56	56	73	124	137	93	137	123	103	86	77	53	38	47	46	41	63	68	73
22	34	49	49	22	19	15	22	68	74	85	96	164	102	42	31	76	119	70	31	32	51	29	20	18	55
	-34	-51	-106	-24	-24	-31	-35	-87	-153	-88	-64	-199	-213	-70	-39	-103	-284	-247	-35	-20	-19	-20	-25	-26	-83
	69	101	156	47	43	47	58	156	228	174	162	364	316	113	70	180	404	317	67	53	71	49	46	45	139
23	22	20	19	41	21	21	18	16	32	63	61	57	42	46	40	37	64	122	129	72	61	76	76	150	54
	-28	-26	-29	-35	-37	-37	-35	-39	-28	-62	-50	-60	-27	-32	-29	-25	-40	-128	-244	-93	-17	-53	-87	-209	-60
	51	47	49	76	60	59	54	56	61	125	112	118	70	79	70	64	105	250	374	167	79	130	163	360	116
24	115	138	137	76	62	103	169	112	121	79	52	27	19	29	39	30	42	65	106	178	170	355	380	267	120
	-172	-294	-266	-116	-45	-89	-276	-202	-197	-41	-21	-25	-27	-45	-118	-74	-79	-169	-145	-179	-174	-541	-590	-440	-180
	288	433	404	193	108	192	445	315	319	122	74	54	47	75	158	105	122	235	253	357	344	897	971	708	301
25	187	174	250	250	217	306	277	132	165	211	158	200	199	114	59	25	34	26	36	33	69	49	38	34	135
	-331	-322	-397	-341	-130	-275	-228	-101	-108	-152	-81	-88	-215	-84	-18	-14	-3	-11	-10	-2	-36	-14	-9	-23	-125
	519	497	649	592	348	581	505	234	274	364	240	290	415	200	78	40	38	38	47	37	106	64	48	58	261
26	48	50	118	148	179	129	61	98	75	36	29	26	38	30	21	41	50	71	138	175	227	246	212	242	104
	-12	-11	-61	-170	-366	-186	-109	-27	-56	-27	-28	-27	-26	-52	-26	-84	-60	-164	-208	-164	-195	-255	-446	-354	-130
	61	62	179	319	546	316	170	125	131	65	58	54	65	83	49	126	111	236	347	340	423	502	659	597	234
27	184	225	334	301	213	248	198	172	138	156	330	222	211	220	241	304	289	355	349	300	174	214	340	310	251
	-482	-496	-404	-348	-449	-370	-139	-172	-147	-97	-217	-188	-192	-284	-500	-591	-326	-455	-374	-483	-409	-467	-284	-211	-337
	667	721	738	650	664	619	338	344	286	254	548	412	405	506	742	895	616	810	724	784	584	682	625	522	589
28	177	170	323	224	225	158	189	56	171	226	215	290	232	355	343	421	360	384	341	285	236	204	128	75	241
	-289	-270	-232	-450	-224	-174	-181	-37	-69	-231	-319	-264	-152	-387	-684	-507	-592	-317	-528	-686	-278	-200	-454	-369	-329
	468	441	555	675	450	333	370	93	241	458	535	555	385	743	1028	929	953	701	869	972	515	404	584	446	571
29	213	339	302	252	209	257	341	434	259	286	209	290	339	367	408	575	438	337	236	216	299	281	228	316	310
	-337	-585	-765	-324	-55	-278	-556	-631	-397	-386	-107	-363	-615	-524	-536	-586	-544	-531	-365	-233	-280	-346	-357	-265	-415
	552	926	1067	577	265	536	898	1065	657	673	317	653	955	892	945	1162	983	869	602	450	580	627	586	582	726
30	222	198	298	223	244	320	282	158	108	178	152	212	204	241	305	338	301	280	235	230	171	70	101	129	217
	-360	-287	-394	-508	-376	-341	-280	-133	-80	-137	-390	-334	-396	-434	-452	-411	-514	-389	-223	-341	-201	-42	-47	-173	-302
	583	486	692	732	621	663	563	292	189	317	544	546	601	676	757	750	816	670	459	573	373	113	148	303	520

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

MAY 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices MAY 1991

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	195	180	146	198	172	127	114	206	163	180	274	223	92	158	233	125	177	170	183	176	234	203	98	190	176
	AL	-174	-546	-359	-123	-351	-138	-77	-166	-173	-210	-334	-222	-252	-162	-423	-228	-216	-245	-200	-115	-321	-292	-88	-200	-234
	AE	371	728	506	321	524	266	192	373	336	391	609	446	345	321	656	354	394	416	383	292	556	496	187	391	411
2		169	200	291	242	211	333	260	195	447	409	231	233	317	375	451	380	352	312	358	252	194	225	267	168	286
		-285	-432	-403	-521	-210	-174	-264	-187	-333	-328	-397	-444	-677	-525	-555	-605	-436	-555	-269	-293	-329	-302	-262	-236	-376
		455	634	695	764	422	508	525	383	781	737	628	677	995	900	1006	986	789	868	629	546	524	529	530	404	663
3		179	154	162	194	240	90	99	79	115	203	90	116	188	116	71	65	89	69	77	156	121	124	158	201	132
		-281	-310	-256	-196	-398	-119	-96	-54	-119	-233	-77	-81	-298	-282	-153	-115	-108	-114	-65	-179	-145	-71	-215	-388	-181
		462	466	419	392	639	210	196	134	234	437	167	199	486	398	225	181	199	183	143	337	267	196	373	589	314
4		179	132	42	37	33	72	160	165	107	53	31	28	44	58	92	64	90	85	36	80	87	96	49	56	78
		-310	-225	-78	-26	-37	-70	-209	-233	-116	-44	-42	-34	-42	-63	-139	-114	-245	-139	-36	-48	-68	-98	-73	-56	-106
		490	358	120	65	70	142	370	398	224	99	75	63	87	121	232	179	337	225	74	129	156	196	124	112	185
5		178	188	157	173	180	226	155	124	60	84	70	101	86	69	62	59	50	53	73	73	45	41	45	107	102
		-123	-238	-142	-136	-122	-178	-123	-108	-54	-90	-58	-64	-73	-73	-72	-47	-89	-82	-52	-28	-10	-15	-30	-79	-87
		302	428	301	311	304	405	280	234	114	175	129	166	159	143	134	107	140	136	126	103	56	57	76	188	190
6		57	39	82	57	87	157	177	120	34	28	23	47	46	37	88	84	70	41	41	31	40	76	92	167	72
		-56	-39	-49	-54	-70	-203	-207	-143	-31	-38	-43	-43	-37	-38	-73	-188	-192	-107	-35	-21	-28	-65	-103	-128	-83
		114	78	133	112	158	360	385	264	66	68	67	90	83	76	161	273	262	149	77	53	69	142	196	296	156
7		116	68	32	25	26	108	160	97	113	152	67	53	64	95	110	79	50	45	47	45	32	31	21	52	70
		-73	-32	-22	-20	-16	-17	-121	-113	-36	-44	-54	-45	-38	-28	-25	-8	-39	-9	-21	-6	-2	-9	-11	-34	-34
		190	101	55	46	43	127	282	211	150	196	123	100	103	124	137	87	90	55	69	52	34	41	33	87	106
8		117	76	41	31	30	122	196	105	81	52	83	125	78	70	59	82	123	151	263	136	83	45	48	42	93
		-57	-163	-70	-26	-22	-19	-220	-77	-26	-31	-46	-63	-71	-55	-25	-64	-93	-222	-365	-75	-24	-24	-32	-41	-80
		176	240	112	58	54	142	417	183	108	84	130	189	150	126	85	146	217	374	629	212	108	70	81	84	174
9		75	65	39	69	70	72	53	44	75	50	70	91	99	73	56	40	133	233	378	359	408	187	88	54	120
		-61	-57	-37	-56	-126	-58	-45	-36	-27	-29	-24	-27	-30	-15	-31	-44	-84	-146	-527	-446	-442	-202	-66	-35	-110
		137	124	78	126	198	132	99	81	103	81	95	119	129	89	88	85	218	381	906	807	852	390	154	90	232
10		50	40	33	24	24	93	74	131	75	63	124	263	196	64	41	36	95	99	43	67	64	73	273	120	90
		-58	-91	-29	-16	-10	-25	-68	-114	-94	-40	-57	-147	-242	-94	-44	-51	-85	-90	-29	-28	-25	-59	-193	-173	-77
		108	132	63	41	36	119	143	245	169	103	181	410	439	158	86	87	181	189	73	95	90	133	466	294	168
11		48	49	41	28	18	15	26	24	48	83	91	109	89	86	55	55	29	44	43	35	31	35	32	24	47
		-31	-21	-16	-17	-18	-19	-25	-28	-35	-45	-50	-59	-51	-41	-47	-30	-33	-49	-19	-15	-18	-7	-9	-19	-29
		80	71	57	46	37	36	52	54	85	128	142	168	140	127	103	85	63	94	62	51	51	43	41	43	77
12		29	21	19	23	75	115	80	36	27	39	36	34	37	49	90	76	57	44	97	131	150	100	102	104	66
		-24	-23	-18	-25	-19	-46	-68	-48	-32	-29	-39	-43	-45	-47	-105	-134	-173	-140	-155	-169	-179	-95	-106	-91	-77
		54	44	38	49	95	162	150	86	60	69	76	78	83	97	196	211	230	184	252	302	330	196	210	196	144
13		132	236	195	227	228	178	140	154	166	470	544	385	244	151	302	524	403	299	533	397	264	273	105	105	277
		-96	-119	-142	-167	-177	-96	-50	-69	-140	-516	-472	-280	-124	-216	-395	-318	-464	-498	-404	-330	-263	-147	-26	-39	-231
		229	356	338	396	406	276	192	224	307	987	1016	665	368	368	698	843	867	797	937	728	529	422	132	146	509
14		72	51	61	57	213	247	390	474	254	138	314	173	266	434	539	501	535	511	273	196	135	149	122	100	259
		-29	-31	-27	-24	-72	-184	-394	-499	-273	-79	-345	-522	-349	-386	-513	-715	-815	-565	-331	-69	-44	-55	-184	-204	-280
		102	84	90	82	286	432	785	974	528	218	660	695	616	821	1053	1217	1350	1077	604	267	180	205	307	305	539
15		51	53	51	47	44	29	93	93	125	151	80	60	50	35	41	33	20	22	26	30	35	33	28	25	52
		-51	-44	-42	-50	-32	-33	-34	-38	-40	-78	-43	-27	-30	-21	-5	-24	-19	-27	-27	-22	-21	-21	-17	-24	-32
		103	99	93	99	77	63	129	133	166	229	123	87	81	56	48	58	40	50	54	53	57	55	46	50	85

16	28	23	15	13	14	18	20	28	27	34	56	57	51	48	74	47	69	105	261	229	184	141	124	109	74
	-27	-30	-36	-32	-29	-33	-38	-55	-41	-34	-40	-39	-35	-25	-27	-11	-37	-75	-134	-146	-87	-42	-64	-40	-48
	55	53	52	46	45	52	59	85	70	70	97	97	88	75	102	58	107	180	396	377	271	184	189	149	123
17	363	444	212	136	283	490	423	392	265	281	282	159	152	117	131	60	82	39	39	32	45	30	21	19	187
	-111	-405	-201	-105	-133	-432	-411	-328	-496	-328	-159	-126	-91	-87	-161	-55	-64	-36	-48	-19	-22	-25	-29	-34	-163
	475	851	415	243	416	923	835	721	762	609	442	285	244	205	293	116	148	76	88	52	68	56	51	54	351
18	12	7	4	0	-2	9	7	17	19	28	64	47	37	23	17	20	16	15	13	11	13	11	11	14	17
	-33	-38	-45	-41	-46	-45	-59	-43	-51	-57	-49	-36	-26	-17	-19	-23	-25	-22	-13	-8	-18	-33	-34	-42	-34
	46	46	50	40	44	55	68	61	71	86	113	84	64	41	37	44	42	39	27	20	33	45	45	57	52
19	15	12	11	6	0	-2	0	0	1	7	4	15	12	9	9	13	19	12	19	30	31	30	28	34	13
	-37	-44	-35	-29	-35	-39	-43	-42	-35	-34	-31	-27	-26	-22	-18	-22	-20	-23	-14	-10	-9	-7	-25	-18	-27
	53	57	48	37	37	36	43	42	37	41	37	43	38	32	28	36	40	37	33	41	41	38	54	52	41
20	30	20	14	17	18	20	20	23	31	31	32	28	25	23	20	32	27	27	28	28	36	35	35	32	26
	-24	-34	-41	-29	-27	-29	-30	-27	-29	-30	-26	-26	-23	-18	-18	-14	-5	-5	-1	-1	-5	-10	-9	-16	-20
	54	55	56	47	46	51	52	51	61	62	59	55	49	42	39	47	33	33	30	29	41	45	45	49	47
21	27	16	15	14	17	25	42	51	55	62	106	131	86	83	97	78	72	88	103	75	65	56	47	48	61
	-20	-22	-27	-22	-23	-25	-24	-26	-26	-33	-40	-90	-55	-17	-22	-3	-1	-41	-64	16	7	-5	-21	-18	-25
	47	39	43	37	41	51	68	78	82	95	147	222	142	100	120	82	74	130	167	58	57	61	69	67	87
22	79	64	70	120	96	297	321	274	203	149	295	247	232	189	173	182	145	242	293	351	392	219	95	176	204
	-25	-15	-33	-38	-25	-107	-159	-144	-79	-48	-198	-242	-230	-221	-215	-230	-203	-323	-477	-370	-302	-80	-64	-139	-165
	105	80	105	159	122	405	482	419	283	198	493	491	463	411	388	412	348	565	771	723	695	300	160	317	371
23	168	110	162	95	280	148	71	117	215	166	156	108	356	355	270	226	136	179	203	244	231	328	372	234	205
	-270	-155	-207	-64	-128	-155	-18	-36	-225	-177	-70	-72	-184	-423	-549	-543	-106	-185	-257	-252	-222	-245	-305	-246	-212
	440	266	371	161	409	304	89	154	440	344	227	181	541	779	820	770	243	365	461	497	455	573	678	481	419
24	185	258	208	194	174	310	318	184	75	65	107	214	209	261	300	215	86	118	317	420	306	286	290	294	225
	-314	-298	-139	-77	-73	-218	-422	-361	-64	-13	-63	-171	-431	-369	-201	-191	-179	-253	-369	-475	-410	-308	-274	-287	-248
	500	557	348	273	249	530	740	546	140	79	171	386	641	631	501	407	265	372	687	896	718	595	566	582	474
25	198	378	395	397	395	429	378	123	71	156	354	250	232	140	82	269	257	186	199	328	245	198	71	128	244
	-264	-414	-654	-511	-254	-326	-356	-97	-65	-77	-388	-409	-345	-219	-109	-384	-557	-481	-161	-389	-324	-173	-86	-215	-302
	464	793	1050	910	650	755	734	221	136	234	742	659	578	359	192	654	815	667	361	718	570	372	158	343	547
26	206	196	139	237	131	87	175	195	237	102	181	215	173	180	237	296	250	248	265	261	131	207	112	117	191
	-186	-334	-276	-192	-150	-131	-154	-244	-412	-82	-83	-234	-352	-346	-450	-498	-170	-302	-276	-331	-124	-155	-198	-209	-245
	394	532	416	430	282	219	330	440	650	185	264	450	526	527	688	794	421	552	542	594	256	363	311	327	437
27	194	303	386	247	264	285	201	233	134	210	300	233	211	382	178	159	116	66	54	113	240	277	232	129	214
	-292	-221	-404	-420	-368	-307	-181	-217	-131	-223	-369	-177	-250	-496	-256	-262	-126	-93	-71	-100	-207	-351	-243	-109	-245
	487	525	791	668	633	593	383	451	266	433	670	411	462	878	435	421	243	160	127	214	447	629	476	238	460
28	225	369	348	325	263	131	97	180	199	158	137	181	213	118	57	255	308	354	313	446	316	259	278	295	243
	-317	-644	-478	-526	-311	-150	-79	-89	-113	-188	-75	-95	-256	-189	-57	-330	-311	-366	-618	-573	-373	-319	-335	-425	-301
	543	1014	827	852	575	281	176	270	312	347	213	277	469	307	115	585	620	720	932	1020	691	579	614	722	544
29	184	323	376	163	210	200	187	169	239	202	263	181	190	188	230	162	117	104	156	281	271	286	316	239	218
	-502	-522	-581	-354	-180	-101	-90	-89	-277	-232	-294	-202	-244	-380	-415	-281	-247	-163	-236	-421	-267	-347	-302	-191	-288
	688	846	959	519	391	302	277	259	516	435	557	385	435	568	645	443	364	267	393	703	539	633	619	431	507
30	273	271	248	131	118	124	194	198	210	232	142	123	142	132	86	109	212	174	161	208	256	227	245	152	182
	-192	-241	-200	-168	-88	-189	-208	-275	-105	-299	-111	-50	-101	-180	-322	-362	-252	-201	-284	-326	-222	-201	-255	-127	-207
	467	513	449	300	207	314	403	473	316	531	253	173	243	313	408	472	465	376	446	535	478	428	501	281	389
31	161	231	249	198	317	151	255	409	397	391	440	295	228	588	630	451	387	394	118	106	153	99	77	72	283
	-95	-249	-394	-365	-309	-106	-226	-436	-534	-813	-554	-464	-462	-491	-1078	-515	-496	-222	-10	-9	-53	-95	-63	-55	-337
	257	481	645	565	627	258	483	845	932	1205	994	760	691	1079	1710	967	885	617	129	116	207	195	142	128	622

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

JUNE 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices JUNE 1991

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	143	240	125	221	440	398	352	303	347	379	316	161	164	155	156	256	181	109	100	130	133	147	234	277	228
	AL	-80	-147	-50	-110	-282	-368	-442	-319	-573	-897	-546	-129	-107	-123	-56	-189	-62	-40	-42	-44	-55	-63	-105	-315	-214
	AE	224	389	175	333	722	767	795	624	921	1277	864	291	272	279	213	446	245	150	142	174	188	210	339	593	443
2		279	277	277	407	394	459	488	379	328	284	150	128	93	115	70	106	384	487	432	279	351	284	305	106	286
		-505	-431	-527	-481	-645	-550	-531	-586	-437	-291	-172	-71	-94	-69	-37	-45	-325	-627	-505	-344	-515	-523	-431	-67	-367
		785	709	804	889	1041	1010	1020	967	767	577	323	200	188	184	108	152	709	1114	938	623	867	809	737	173	654
3		80	65	69	56	138	237	208	293	130	166	191	162	116	122	146	126	76	150	216	326	272	291	314	197	173
		-72	-91	-84	-50	-86	-102	-182	-435	-109	-67	-62	-201	-203	-209	-249	-196	-125	-203	-212	-422	-278	-178	-288	-289	-183
		153	157	154	107	226	341	392	729	240	235	254	364	321	332	396	324	202	353	428	748	552	469	602	487	357
4		243	92	47	48	46	35	29	43	86	30	55	48	37	29	95	108	504	509	468	496	607	414	183	226	187
		-214	-115	-45	-57	-52	-46	-47	-45	-51	-39	-36	-9	-2	-26	-103	-189	-568	-977	-847	-369	-598	-593	-97	-233	-223
		458	208	93	107	100	82	77	88	138	71	92	58	40	56	199	297	1073	1487	1316	866	1205	1008	280	460	411
5		257	587	489	530	750	476	253	486	194	234	326	173	369	445	412	119	223	268	414	338	275	193	170	140	338
		-204	-345	-498	-262	-383	-919	-229	-303	-210	-217	-537	-662	-528	-785	-762	-1484	-989	-449	-296	-754	-567	-420	-284	-328	-517
		462	932	988	792	1134	1396	483	790	405	452	865	837	898	1232	1175	1604	1213	718	711	1093	844	613	455	469	857
6		42	329	418	417	378	330	222	348	408	245	229	237	122	103	64	51	57	72	64	74	64	63	192	129	194
		-365	-438	-658	-483	-341	-282	-116	-242	-631	-759	-286	-216	-202	-133	-120	-67	-63	-75	-46	-71	-74	-75	-142	-274	-257
		409	769	1076	901	720	613	339	591	1040	1005	516	454	325	237	184	119	120	148	111	146	138	139	334	403	452
7		154	115	146	241	379	435	321	413	384	154	264	168	164	187	177	139	122	195	281	288	160	149	147	145	222
		-277	-161	-104	-208	-341	-343	-406	-425	-546	-127	-257	-173	-90	-146	-204	-62	-42	-175	-269	-394	-158	-130	-110	-111	-219
		431	278	250	451	722	780	729	839	931	282	522	342	255	334	382	202	164	371	550	682	319	280	257	256	442
8		131	193	151	93	142	163	163	106	157	212	120	178	104	155	184	491	610	610	463	325	245	216	167	303	237
		-109	-166	-154	-67	-65	-117	-49	-39	-41	-81	-58	-82	-111	-118	-172	-402	-666	-601	-547	-238	-147	-118	-70	-156	-182
		241	361	306	161	208	281	213	146	199	295	179	262	216	274	357	895	1277	1211	1010	564	393	334	237	459	420
9		304	724	990	309	203	206	240	256	182	180	166	297	221	199	211	137	267	667	382	470	272	169	116	81	302
		-241	-944	-779	-161	-94	-55	-34	-152	-112	-49	-81	-165	-200	-214	-369	-256	-192	-588	-781	-286	-294	-188	-64	-95	-266
		546	1669	1770	471	299	262	274	409	295	231	249	463	422	414	582	395	460	1255	1164	756	567	358	181	177	569
10		131	180	143	146	180	151	427	429	778	362	250	468	480	369	570	491	528	912	753	697	487	266	294	203	404
		-187	-102	-277	-250	-196	-185	-274	-843	-762	-467	-640	-402	-580	-532	-510	-801	-867	-1130	-887	-504	-437	-183	-235	-383	-485
		319	282	421	398	377	336	702	1273	1541	830	892	871	1062	902	1081	1293	1395	2042	1641	1202	924	450	530	587	890
11		518	444	540	502	684	611	459	366	415	261	133	317	379	337	358	466	504	465	322	334	427	477	273	296	412
		-304	-263	-657	-566	-338	-690	-902	-835	-307	-469	-292	-335	-612	-625	-488	-541	-762	-883	-729	-725	-1028	-719	-631	-541	-594
		823	709	1197	1069	1022	1303	1363	1202	724	731	427	654	992	964	847	1008	1266	1348	1052	1060	1456	1197	905	838	1006
12		328	374	371	404	355	321	201	45	109	194	325	619	534	446	342	368	764	996	637	336	350	266	274	202	382
		-368	-571	-761	-556	-727	-527	-158	-78	-81	-230	-508	-524	-362	-304	-214	-237	-494	-771	-441	-213	-321	-145	-72	-128	-366
		697	946	1133	961	1083	849	360	125	191	424	833	1144	896	751	557	607	1260	1768	1078	550	671	412	347	330	749
13		284	269	207	173	228	216	203	246	347	221	405	417	180	463	221	262	337	389	198	429	346	192	146	119	271
		-163	-621	-402	-187	-157	-164	-230	-275	-712	-594	-597	-840	-737	-884	-383	-252	-505	-1142	-964	-664	-389	-149	-167	-140	-472
		448	891	610	362	386	381	435	523	1060	816	1004	1258	918	1347	605	514	843	1532	1163	1094	735	342	314	260	743
14		110	102	84	60	48	18	31	75	76	87	86	84	72	78	48	37	30	29	30	23	18	22	33	59	56
		-64	-79	-143	-126	-39	-52	-42	-24	-105	-116	-56	-184	-79	-122	-72	-38	-40	-41	-34	-46	-50	-55	-60	-69	-72
		175	182	228	187	88	71	74	100	182	205	144	269	152	201	121	77	71	70	64	70	69	77	93	129	129
15		42	47	91	121	171	209	208	220	455	477	347	207	175	140	159	283	311	199	107	83	65	63	45	40	178
		-86	-113	-121	-93	-138	-213	-277	-277	-199	-311	-346	-120	-160	-143	-205	-234	-295	-146	-129	-80	-31	-54	-56	-51	-161
		129	162	214	216	301	423	487	498	656	789	694	329	335	284	366	518	607	346	238	164	96	117	102	91	340

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

JUNE 1991

16	30	24	24	22	45	33	28	45	78	154	117	107	76	52	52	38	42	61	58	71	83	54	62	57
	-45	-46	-51	-43	-51	-50	-45	-48	-36	-39	-64	-127	-153	-57	-89	-49	-47	-71	-51	-19	-25	-56	-39	-52	-56
	76	71	75	66	74	96	79	77	81	118	219	246	262	134	141	102	86	113	114	78	97	140	93	114	115
17	192	220	175	195	338	326	307	223	202	290	331	408	294	456	505	408	361	239	262	325	517	425	248	202	310
	-120	-192	-78	-90	-257	-224	-153	-152	-200	-143	-100	-327	-421	-564	-934	-933	-431	-149	-247	-207	-343	-557	-351	-242	-309
	312	414	253	287	596	551	462	376	403	435	433	735	717	1022	1440	1343	793	389	509	533	861	982	601	445	621
18	125	183	320	279	356	198	278	282	297	150	100	60	42	27	88	104	94	196	218	307	296	278	248	200	197
	-125	-183	-83	-231	-236	-155	-180	-189	-355	-199	-43	-19	-15	-36	-129	-156	-186	-400	-417	-301	-223	-207	-178	-224	-186
	251	367	403	511	593	355	459	473	653	350	144	81	58	64	217	261	282	597	636	608	520	485	426	425	384
19	154	188	218	235	322	354	263	320	396	224	109	142	189	99	77	114	259	225	272	171	203	154	105	242	210
	-236	-320	-394	-197	-263	-383	-317	-266	-306	-307	-38	-89	-283	-275	-80	-114	-314	-533	-406	-172	-134	-56	-108	-291	-245
	391	509	613	433	586	739	581	587	703	532	148	233	473	376	157	229	573	759	678	343	337	211	213	534	456
20	87	133	167	62	208	72	76	98	34	29	36	35	26	35	25	71	42	76	132	96	135	151	89	138	86
	-167	-129	-376	-116	-198	-63	-60	-111	-68	-39	-29	-22	-23	-61	-26	-73	-139	-205	-337	-143	-149	-248	-113	-124	-126
	254	263	544	180	407	136	138	210	103	69	67	58	50	97	52	146	183	282	469	240	284	400	203	262	212
21	250	185	111	65	100	267	209	84	103	117	176	187	127	77	75	108	237	133	159	203	232	255	269	234	165
	-333	-337	-98	-41	-66	-111	-298	-201	-61	-21	-35	-101	-149	-111	-63	-128	-247	-230	-229	-211	-302	-280	-150	-168	-165
	583	523	210	107	168	379	508	286	165	140	212	289	277	190	139	236	484	364	389	414	534	537	421	403	332
22	298	234	97	144	241	267	222	236	181	175	105	134	165	195	126	133	162	105	98	139	186	269	347	174	185
	-213	-245	-54	-87	-304	-477	-369	-193	-164	-142	-122	-66	-108	-371	-253	-203	-143	-236	-121	-156	-217	-300	-375	-298	-217
	513	480	151	232	546	746	592	431	346	318	228	200	274	568	380	336	305	342	219	296	403	570	723	473	403
23	165	206	133	118	244	201	301	299	286	323	306	202	208	477	460	271	374	322	248	374	362	172	329	321	279
	-131	-237	-192	-117	-284	-328	-327	-530	-487	-425	-650	-230	-312	-520	-649	-438	-393	-484	-617	-677	-781	-530	-513	-565	-434
	296	444	326	237	529	530	630	830	775	750	957	433	521	998	1110	710	767	807	866	1052	1144	702	843	886	714
24	249	359	402	233	210	278	226	275	281	357	312	228	301	242	245	191	132	196	157	164	253	237	106	170	242
	-413	-496	-502	-300	-311	-444	-286	-236	-286	-394	-368	-348	-219	-175	-253	-241	-226	-420	-148	-209	-243	-347	-152	-156	-299
	663	856	905	534	522	723	513	513	569	751	682	578	522	419	499	432	359	616	305	373	496	585	259	326	542
25	253	237	176	114	277	239	219	186	159	184	225	156	94	66	96	205	178	211	182	256	288	278	344	282	204
	-285	-267	-127	-244	-259	-267	-193	-152	-135	-174	-209	-268	-235	-146	-111	-284	-352	-355	-376	-406	-283	-211	-228	-251	-242
	539	504	305	359	537	507	413	340	295	360	435	425	330	213	208	490	531	566	559	663	572	490	574	534	448
26	326	233	159	93	227	235	240	188	206	254	197	140	166	127	129	168	247	240	219	222	183	296	230	195	205
	-375	-361	-210	-130	-170	-351	-324	-241	-102	-245	-143	-146	-273	-134	-137	-271	-342	-264	-270	-162	-167	-183	-323	-168	-229
	702	595	370	224	398	587	565	430	309	499	340	287	440	262	268	440	589	504	490	384	350	480	554	363	435
27	199	191	159	90	56	36	40	75	155	232	313	170	68	32	36	83	65	113	123	134	96	141	171	234	171
	-192	-246	-204	-70	-39	-34	-42	-25	-65	-205	-352	-290	-48	-45	-51	-91	-127	-235	-213	-78	-102	-186	-165	-222	-139
	392	438	365	161	96	70	82	101	221	438	666	461	117	79	88	175	193	349	337	213	198	328	337	456	265
28	223	107	134	213	200	185	205	167	147	190	195	160	93	93	69	93	88	98	131	106	104	96	70	71	135
	-229	-165	-136	-290	-294	-204	-205	-51	-44	-65	-182	-190	-82	-91	-174	-202	-259	-156	-138	-90	-86	-76	-61	-52	-147
	452	274	272	505	495	391	411	219	192	257	378	350	175	184	243	295	347	255	270	197	190	172	132	123	283
29	67	34	33	36	40	62	102	94	77	88	115	106	94	59	31	40	43	34	40	56	66	95	97	91	67
	-52	-44	-50	-52	-53	-48	-33	-121	-38	-52	-52	-109	-221	-104	-76	-58	-62	-38	-38	-88	-79	-93	-56	-45	-69
	120	79	84	88	93	110	136	215	116	141	169	216	316	164	108	99	106	72	80	144	146	189	154	136	137
30	72	179	297	379	338	230	241	207	145	150	132	208	206	347	399	325	356	449	467	452	551	445	293	183	294
	-79	-86	-98	-283	-353	-165	-56	-94	-55	-47	-12	-88	-215	-426	-440	-487	-370	-370	-344	-503	-342	-232	-85	-124	-223
	151	266	396	663	693	397	298	302	202	198	145	297	423	775	841	813	727	819	812	956	894	677	379	308	518

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

JULY 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices JULY 1991

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	156	190	389	403	115	41	50	78	49	61	67	65	99	135	151	172	212	99	113	207	129	80	55	135
AL	-190	-79	-58	-137	-254	-109	-31	-35	-41	-32	-23	-30	-27	-29	-43	-37	-26	-27	-69	-67	-98	-58	-48	-37	-66
AE	312	236	249	526	658	225	73	87	120	81	84	97	94	128	179	189	198	239	169	180	306	187	130	93	202
2	47	42	37	34	170	264	224	307	294	240	352	256	127	142	249	353	313	400	377	396	397	376	377	327	254
	-31	-32	-34	-27	-37	-141	-214	-426	-337	-197	-256	-123	-87	-98	-113	-257	-290	-222	-172	-218	-249	-332	-320	-284	-187
	80	74	72	62	208	406	439	734	633	438	609	381	216	241	363	611	603	622	549	615	647	709	698	613	443
3	354	310	277	268	457	354	389	375	352	418	317	243	187	159	167	250	225	241	292	355	349	401	331	354	309
	-147	-425	-427	-326	-474	-390	-431	-350	-236	-167	-170	-103	-158	-323	-119	-198	-198	-100	-351	-290	-359	-447	-247	-269	-269
	503	736	704	594	932	744	821	726	589	586	488	347	347	482	288	449	326	343	644	645	708	849	578	485	580
4	323	275	174	97	242	281	187	172	279	282	126	130	177	154	124	121	104	83	71	61	62	66	59	35	154
	-263	-180	-249	-108	-158	-194	-187	-95	-112	-95	-56	-22	-71	-93	-108	-103	-91	-9	-5	-3	-25	-41	-40	-37	-98
	587	456	424	206	401	475	376	267	392	377	183	153	248	248	233	224	197	93	76	65	89	108	100	74	252
5	40	23	56	76	60	43	37	67	76	110	106	117	109	53	36	36	27	44	60	55	39	41	37	38	58
	-40	-33	-43	-32	-49	-39	-34	-27	-27	-36	-49	-60	-21	-17	-45	-59	-59	-62	-62	-37	-29	-28	-37	-31	-40
	81	57	101	109	110	83	72	95	104	146	155	177	130	70	83	96	88	107	124	93	69	70	85	70	99
6	51	53	90	100	131	87	37	55	75	175	195	130	94	63	71	60	64	45	45	95	190	195	177	108	99
	-29	-52	-64	-126	-100	-51	-23	-26	-24	-81	-136	-160	-109	-35	-58	-56	-80	-30	-15	-68	-103	-243	-189	-77	-81
	82	107	156	228	232	138	61	81	100	256	331	291	203	98	130	117	146	76	61	164	295	439	366	187	181
7	116	174	282	328	416	121	12	12	25	26	37	51	55	55	108	71	46	55	83	125	137	158	132	119	114
	-78	-71	-117	-190	-152	-77	-41	-56	-52	-36	-16	-25	-45	-43	-121	-223	-204	-165	-78	-81	-65	-122	-97	-85	-93
	196	246	400	519	568	199	55	70	79	63	54	77	101	98	231	295	252	222	162	207	203	280	230	205	209
8	185	268	292	414	433	385	359	465	391	231	387	389	283	191	264	330	621	853	1081	830	433	379	383	318	424
	-123	-249	-267	-267	-277	-385	-514	-458	-374	-489	-227	-172	-331	-180	-232	-439	-699	-860	-625	-368	-218	-186	-93	-104	-339
	310	518	560	682	710	771	873	924	766	722	616	562	615	372	497	770	1321	1714	1708	1200	652	566	476	423	764
9	199	160	177	391	426	336	418	197	43	205	375	268	247	328	272	171	318	325	396	471	256	363	385	412	297
	2	-32	-47	-188	-176	-221	-189	-1000	-1076	-734	-651	-581	-746	-986	-652	-492	-403	-573	-588	-479	-640	-361	-336	-310	-477
	196	194	226	580	602	558	607	1198	1120	941	1028	850	995	1315	925	664	722	899	985	951	897	725	721	723	776
10	301	260	315	231	257	237	194	214	272	191	315	344	269	103	98	74	108	76	97	65	33	24	50	97	176
	-373	-479	-324	-237	-291	-419	-333	-319	-294	-120	-255	-334	-374	-225	-144	-129	-117	-135	-261	-112	-50	-39	-56	-102	-230
	676	740	640	469	548	657	528	534	567	312	571	678	643	329	242	204	225	212	359	178	84	64	107	200	407
11	179	87	88	146	148	311	287	317	323	383	317	338	179	139	144	188	142	66	41	41	72	171	279	120	188
	-236	-195	-108	-228	-250	-236	-430	-462	-560	-452	-250	-449	-218	-191	-167	-293	-186	-83	-63	-30	-50	-261	-334	-194	-247
	417	283	197	375	398	548	718	780	884	836	569	788	397	330	312	483	329	151	105	72	123	433	615	315	436
12	114	189	274	227	166	164	203	261	261	444	396	218	256	191	164	224	280	314	225	160	146	105	150	165	221
	-134	-289	-300	-202	-235	-446	-216	-437	-292	-324	-338	-164	-165	-207	-88	-144	-148	-330	-198	-64	-86	-59	-104	-169	-210
	250	479	621	527	369	399	419	698	553	769	735	384	421	399	253	369	428	646	424	225	233	165	255	335	431
13	256	278	274	490	113	301	449	778	707	333	225	428	246	74	152	57	203	366	298	287	254	29	87	199	287
	-348	-415	-297	-365	-107	-222	-329	-524	-559	-252	-676	-1004	-717	-642	-583	-1025	-766	-627	-526	-407	-349	-1084	-1023	-387	-551
	606	695	572	855	222	523	778	1303	1266	586	902	1434	964	717	736	1083	969	995	825	695	604	1113	1110	586	839
14	176	282	234	425	370	419	392	348	101	198	256	361	202	265	386	347	258	285	323	333	318	355	322	124	295
	-113	-452	-720	-507	-215	-446	-365	-434	-757	-558	-537	-540	-268	-429	-606	-682	-469	-434	-658	-536	-459	-365	-441	-477	-478
	290	734	954	933	585	865	758	783	860	758	794	902	470	696	992	1030	728	720	982	870	779	721	765	601	774
15	184	230	229	258	295	177	130	90	153	108	133	118	83	53	71	28	13	2	18	55	28	57	62	28	108
	-546	-386	-327	-144	-185	-117	-93	-109	-188	-216	-142	-154	-104	-94	-85	-46	-74	-40	-53	-85	-102	-108	-72	-60	-147
	730	617	557	403	481	295	223	199	342	325	276	272	187	147	157	75	89	43	73	141	131	167	135	89	256

PROVISIONAL HOURLY VALUES OF AU, AL, AND AE INDICES
(continued)

JULY 1991

16	93	31	33	100	85	131	23	11	10	32	12	3	12	17	44	105	173	298	398	335	234	134	217	133	111
	-117	-59	-81	-99	-106	-165	-47	-39	-42	-61	-54	-48	-44	-45	-74	-127	-444	-524	-802	-518	-226	-83	-196	-353	-181
	211	91	115	200	192	296	72	51	53	94	67	52	57	63	118	233	619	824	1201	854	461	218	414	487	293
17	113	128	389	351	350	349	340	250	279	139	156	172	220	144	110	257	158	187	213	210	365	307	217	260	236
	-242	-143	-451	-792	-916	-681	-575	-278	-397	-251	-229	-345	-298	-232	-179	-539	-300	-300	-452	-371	-491	-493	-608	-445	-417
	355	273	841	1143	1267	1030	917	529	678	391	385	519	518	376	290	797	460	488	666	583	856	801	826	706	654
18	197	220	291	179	62	154	69	40	37	34	58	103	77	84	76	111	78	195	197	268	346	190	130	169	140
	-514	-466	-117	-116	-63	-111	-117	-60	-37	-34	-37	-92	-94	-81	-72	-168	-179	-271	-316	-342	-422	-278	-146	-197	-180
	712	687	409	295	126	266	186	101	75	69	95	196	172	166	149	279	258	467	514	611	769	470	277	367	321
19	221	94	125	264	262	273	191	76	243	140	131	210	209	94	221	223	230	281	272	267	248	300	229	200	209
	-419	-90	-76	-377	-376	-466	-380	-149	-175	-61	-62	-269	-334	-132	-309	-494	-440	-351	-389	-624	-544	-300	-228	-293	-306
	641	185	201	641	639	740	572	227	419	202	194	480	545	228	531	719	671	632	662	893	793	600	458	494	515
20	167	80	148	174	215	304	286	480	428	262	348	176	107	143	208	109	122	236	148	130	118	168	180	95	201
	-184	-90	-114	-216	-108	-404	-488	-491	-613	-540	-220	-186	-102	-179	-346	-152	-77	-161	-240	-160	-92	-165	-108	-193	-235
	352	171	263	390	323	709	775	972	1043	804	570	363	210	324	556	262	200	397	389	291	211	334	289	288	437
21	99	215	317	378	235	347	241	92	113	83	170	190	229	174	76	69	140	117	122	199	228	265	237	109	185
	-196	-327	-474	-542	-559	-382	-322	-115	-81	-107	-119	-324	-487	-256	-125	-126	-154	-213	-244	-282	-279	-285	-399	-158	-273
	296	544	792	920	795	731	564	209	195	191	290	514	717	431	203	195	294	332	368	482	507	551	637	268	459
22	180	195	219	157	156	301	214	182	149	168	224	164	171	205	207	105	80	127	101	96	125	107	226	308	174
	-158	-307	-313	-185	-118	-285	-325	-186	-123	-113	-96	-103	-356	-232	-206	-184	-65	-186	-192	-134	-164	-87	-155	-554	-201
	339	503	533	342	274	586	539	369	274	283	321	269	529	438	415	290	146	314	295	231	289	195	383	864	376
23	271	129	120	122	47	101	108	79	77	78	81	144	150	155	141	174	241	385	254	135	53	42	72	58	134
	-349	-210	-145	-200	-121	-77	-123	-162	-148	-111	-145	-173	-208	-175	-199	-154	-199	-296	-256	-108	-50	-48	-52	-47	-156
	621	340	265	323	169	178	231	242	226	190	226	318	359	331	340	329	441	681	511	244	103	91	126	106	291
24	42	38	36	34	30	61	137	107	44	21	66	40	54	63	58	56	78	112	126	94	53	58	88	84	66
	-44	-34	-35	-30	-33	-36	-69	-189	-100	-53	-70	-63	-102	-103	-174	-98	-138	-213	-123	-73	-49	-64	-86	-140	-88
	87	74	72	66	63	98	206	297	145	75	136	103	157	167	233	155	217	327	250	168	104	123	175	226	155
25	54	25	17	21	68	193	107	191	180	137	141	100	146	109	147	122	54	98	137	195	134	81	74	81	109
	-83	-66	-76	-75	-105	-142	-218	-216	-252	-198	-160	-56	-152	-112	-218	-305	-200	-160	-242	-199	-116	-67	-66	-60	-148
	139	92	94	97	174	335	325	408	432	335	302	157	299	222	366	429	256	259	381	396	250	149	141	141	258
26	48	47	47	47	88	151	127	76	73	56	36	71	109	95	61	44	35	21	28	26	37	45	34	40	60
	-65	-50	-37	-40	-48	-148	-161	-69	-41	-45	-48	-50	-104	-126	-87	-49	-41	-37	-47	-31	-26	-27	-27	-35	-60
	114	98	85	88	138	300	288	146	115	101	84	121	213	222	148	93	76	59	76	58	63	73	62	76	121
27	30	54	77	45	42	48	75	65	21	22	27	30	28	30	25	33	47	58	120	187	229	289	251	215	85
	-42	-61	-67	-67	-39	-25	-21	-36	-34	-51	-61	-58	-49	-33	-27	-23	-41	-112	-183	-181	-285	-354	-190	-201	-93
	72	116	145	113	82	75	97	102	56	74	89	89	79	64	53	56	89	172	305	369	514	643	442	418	180
28	113	101	77	166	111	26	11	19	45	12	16	18	27	28	21	19	18	26	35	39	30	26	28	38	44
	-103	-62	-65	-148	-135	-30	-20	-18	-37	-35	-42	-46	-46	-39	-35	-36	-30	-33	-28	-33	-39	-37	-34	-38	-49
	217	165	142	314	247	57	33	38	83	49	59	66	74	67	57	56	48	59	64	73	70	64	64	77	93
29	31	26	30	23	30	43	59	50	44	47	64	82	68	95	64	29	29	39	59	87	113	145	237	139	68
	-40	-42	-43	-38	-31	-35	-24	-17	-35	-47	-60	-89	-116	-99	-151	-111	-95	-76	-111	-117	-75	-93	-54	-71	-70
	72	69	74	63	63	79	84	68	80	94	125	171	185	195	216	142	125	116	171	206	189	238	293	212	139
30	154	146	151	137	122	45	115	171	163	109	86	47	26	24	32	74	109	148	173	156	76	40	41	47	100
	-92	-160	-139	-89	-186	-47	-15	-45	-161	-103	-61	-49	-50	-50	-39	-66	-86	-305	-227	-131	-58	-47	-55	-52	-96
	248	307	291	227	308	93	130	217	324	213	148	96	77	76	73	141	196	455	401	288	135	88	98	100	197
31	35	34	28	24	21	29	35	35	23	24	29	31	80	84	54	86	33	77	129	133	162	175	187	275	76
	-51	-43	-34	-40	-35	-35	-31	-48	-43	-51	-59	-65	-72	-115	-98	-68	-84	-119	-171	-111	-86	-252	-155	-149	-84
	87	78	62	65	57	65	68	83	68	76	90	98	153	200	153	155	118	197	302	245	250	428	344	425	161

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

AUGUST 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices — AUGUST 1991

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	336	176	52	44	88	125	141	102	84	89	121	229	277	257	214	364	548	528	483	222	223	124	232	375	226
AL	-252	-105	-3	-9	-22	-104	-42	-31	-12	-17	-51	-80	-92	-303	-444	-329	-219	-252	-246	-87	-210	-122	-141	-371	-148
AE	589	282	56	54	112	230	185	134	97	106	174	310	370	562	659	694	768	781	730	309	434	247	374	747	375
2	200	94	92	94	74	304	431	505	462	427	232	261	361	413	352	387	465	374	196	84	105	180	234	180	271
	-159	-81	-61	-44	-17	-108	-716	-589	-428	-416	-424	-433	-417	-546	-550	-381	-484	-322	-175	-51	-54	-104	-465	-503	-314
	361	177	154	140	92	414	1148	1095	891	843	657	695	779	960	902	770	950	697	372	136	159	285	699	684	586
3	191	193	132	131	174	226	338	128	174	384	381	325	304	487	461	297	286	210	178	149	140	197	294	183	249
	-507	-339	-145	-148	-387	-330	-423	-171	-71	-321	-533	-279	-502	-768	-528	-371	-248	-300	-165	-77	-46	-106	-494	-908	-340
	698	533	279	280	563	557	762	300	246	707	915	605	807	1256	990	669	535	511	344	227	188	303	789	1093	590
4	277	369	319	298	390	460	535	449	280	161	158	139	161	187	355	231	90	138	285	329	178	225	127	157	262
	-486	-543	-511	-615	-419	-328	-388	-319	-294	-119	-233	-21	-39	-238	-463	-289	-44	-73	-379	-540	-134	-165	-131	-208	-291
	764	912	830	914	809	789	925	769	575	281	392	162	201	427	820	522	134	213	665	870	312	390	258	366	554
5	107	153	320	391	362	283	291	173	190	163	290	211	167	151	123	103	141	116	66	59	69	155	314	360	198
	-341	-376	-361	-489	-605	-600	-321	-271	-144	-129	-423	-183	-290	-72	-73	-101	-161	-96	-34	-15	-10	-94	-205	-749	-256
	448	530	682	881	968	884	614	445	335	293	715	395	458	224	196	204	303	213	101	74	79	250	519	1110	455
6	314	440	460	501	316	244	134	124	245	502	431	268	211	282	226	200	223	110	93	153	134	105	100	100	246
	-542	-277	-310	-554	-382	-214	-226	-217	-213	-554	-630	-457	-401	-521	-379	-235	-414	-269	-173	-161	-81	-69	-85	-117	-312
	856	717	771	1055	699	459	361	342	460	1057	1061	726	613	805	606	436	638	380	267	315	216	175	186	217	559
7	123	166	192	317	378	177	228	118	103	113	135	101	120	124	109	100	97	119	84	97	106	130	142	112	145
	-76	-113	-324	-506	-316	-174	-219	-233	-54	-53	-79	-67	-67	-144	-101	-47	-69	-170	-53	-35	-24	-105	-231	-118	-141
	200	281	517	824	694	353	448	352	157	166	215	170	188	270	210	148	168	291	138	132	132	235	373	231	287
8	178	172	200	239	172	134	233	182	243	278	194	173	143	100	82	63	88	119	79	64	64	106	155	131	150
	-144	-256	-425	-294	-184	-79	-185	-207	-263	-257	-94	-145	-163	-188	-82	-50	-103	-95	-119	-54	-45	-78	-241	-169	-163
	323	429	625	533	357	215	419	391	507	536	289	319	308	290	165	114	192	215	200	120	111	185	396	301	314
9	89	33	98	171	312	295	114	172	205	266	272	222	200	339	350	194	255	259	191	214	150	69	45	44	190
	-90	-30	-79	-223	-320	-247	-117	-250	-116	-116	-233	-134	-175	-555	-406	-165	-217	-204	-128	-136	-86	-51	-10	-46	-172
	180	64	178	394	633	542	232	423	323	384	506	357	375	896	757	360	473	465	321	351	236	121	56	90	363
10	27	32	66	82	64	134	132	126	191	213	131	106	145	83	59	118	175	132	80	52	34	38	61	119	100
	-12	-26	-67	-82	-73	-89	-118	-59	-175	-196	-41	-59	-137	-41	-20	-65	-187	-239	-41	8	-10	-13	-26	-118	-79
	41	60	135	165	139	224	251	187	367	410	173	166	284	125	79	185	363	373	121	43	45	52	88	237	180
11	71	38	47	133	95	166	241	281	218	164	217	109	152	271	327	328	231	235	178	138	137	88	45	106	167
	-98	-23	-17	-77	-63	-36	-65	-39	-87	-63	-91	-91	-243	-376	-684	-420	-290	-166	-95	-96	-141	-59	-26	-73	-142
	170	62	65	212	159	203	307	321	306	228	310	202	397	649	1012	749	522	402	274	235	279	148	71	180	311
12	84	52	77	189	303	356	337	349	273	280	297	198	303	437	428	483	425	390	287	273	505	291	188	126	289
	-207	-48	-47	-144	-381	-497	-449	-487	-451	-270	-302	-83	-574	-682	-839	-689	-638	-607	-468	-561	-494	-486	-253	-172	-410
	291	101	126	333	685	853	787	837	725	551	600	283	877	1120	1269	1173	1064	999	756	835	999	778	443	299	699
13	84	28	28	12	11	20	31	14	13	12	29	39	29	46	20	56	89	67	128	181	105	68	49	61	51
	-86	-53	-44	-37	-36	-33	-34	-38	-37	-39	-54	-57	-52	-54	-62	-130	-214	-149	-151	-245	-142	-58	-44	-55	-79
	172	82	73	51	48	54	66	54	52	52	84	97	82	101	83	188	304	217	280	427	247	127	94	117	131
14	21	9	7	9	24	13	68	115	107	48	34	32	31	42	53	52	110	283	346	400	314	247	199	188	115
	-57	-39	-36	-31	-31	-27	-37	-77	-56	-30	-32	-30	-30	-27	-51	-52	-141	-348	-581	-295	-354	-556	-627	-416	-165
	79	49	45	41	56	42	106	193	164	79	67	63	61	70	106	105	251	633	927	695	669	803	827	604	281
15	287	291	241	233	342	342	217	277	375	288	251	213	184	109	111	272	173	243	300	325	262	276	265	316	258
	-412	-430	-303	-187	-352	-435	-234	-373	-391	-274	-188	-152	-127	-201	-256	-324	-169	-314	-482	-500	-351	-269	-255	-436	-309
	699	722	545	421	694	778	451	652	767	564	441	367	312	312	369	597	343	558	783	825	614	545	521	753	568

16	238	212	297	288	200	125	74	104	99	69	89	68	82	94	105	58	97	107	156	154	102	242	238	161	144
	-237	-271	-253	-385	-291	-62	-42	-104	-186	-160	-67	-53	-74	-61	-199	-179	-104	-223	-332	-81	-61	-192	-283	-254	-173
	476	484	551	674	492	188	117	209	286	230	158	122	158	156	304	239	203	331	489	235	163	435	521	417	318
17	93	70	34	47	292	154	145	104	123	220	193	87	62	49	105	112	111	100	277	288	117	60	195	267	138
	-73	-37	-48	-43	-250	-558	-211	-52	-61	-256	-415	-92	-59	-48	-105	-144	-129	-111	-396	-416	-123	-35	-179	-331	-174
	167	108	82	91	543	713	357	157	185	476	608	180	123	98	212	257	242	212	674	705	241	96	375	599	313
18	217	120	175	101	59	74	99	35	43	55	86	123	166	127	114	174	112	68	95	138	384	348	200	209	139
	-506	-364	-209	-126	-31	-35	-87	-144	-27	-36	-37	-53	-131	-253	-230	-279	-108	-117	-63	-173	-794	-475	-134	-156	-190
	724	485	385	228	92	111	187	180	71	92	124	178	298	382	346	455	221	187	159	311	1179	823	335	365	330
19	243	193	255	226	135	185	359	58	74	179	352	219	221	186	54	58	34	42	40	37	42	36	35	49	138
	-385	-491	-383	-107	-60	-56	-664	-1012	-323	-1070	-453	-259	-159	-148	-39	-37	-47	-79	-76	-19	-19	-24	-23	-35	-249
	630	685	638	334	196	242	1025	1071	398	1251	807	479	381	335	94	96	82	122	117	56	61	60	59	85	388
20	34	22	28	30	25	33	88	144	130	247	348	209	112	270	286	144	119	260	245	227	167	224	220	181	158
	-37	-30	-56	-69	-42	-46	-85	-156	-148	-91	-751	-835	-416	-389	-299	-198	-177	-260	-676	-381	-251	-252	-234	-354	-260
	72	53	85	100	68	79	174	301	280	339	1100	1046	530	660	585	343	296	521	922	609	419	476	454	535	419
21	161	335	187	354	375	329	248	356	152	168	227	147	156	92	109	120	127	100	77	108	178	197	228	88	192
	-342	-333	-355	-319	-177	-330	-446	-371	-138	-71	-195	-402	-201	-238	-147	-198	-300	-120	-56	-80	-147	-152	-273	-140	-231
	504	669	543	673	553	660	695	728	291	241	423	551	359	331	257	319	429	222	134	189	326	350	502	229	424
22	127	169	272	158	167	419	538	316	262	235	172	253	215	178	107	89	118	106	114	116	145	195	238	213	205
	-147	-162	-623	-577	-154	-481	-761	-416	-389	-268	-107	-496	-332	-298	-178	-118	-132	-139	-132	-169	-234	-298	-373	-323	-304
	275	333	896	735	322	901	1300	733	652	505	280	751	548	476	286	208	251	246	247	285	381	493	612	537	510
23	134	166	194	182	259	183	199	178	182	235	339	119	51	49	40	25	25	27	26	32	35	33	38	25	116
	-434	-483	-561	-400	-302	-254	-236	-218	-161	-420	-268	-73	-46	-47	-42	-41	-31	-41	-39	-24	-21	-24	-30	-32	-176
	569	649	756	582	562	438	436	397	344	656	609	194	97	98	84	68	57	70	66	57	56	57	69	58	293
24	79	163	143	83	101	106	107	60	56	65	56	51	54	53	80	69	28	35	38	41	62	74	123	129	77
	-82	-269	-171	-69	-70	-101	-68	-20	-19	-36	-34	-44	-45	-39	-61	-57	-84	-51	-65	-47	-55	-57	-162	-152	-77
	162	434	315	153	172	208	177	81	75	101	91	96	100	93	141	126	114	87	104	89	118	132	286	282	156
25	164	261	268	276	124	97	69	72	113	90	77	100	55	34	40	81	102	104	163	151	91	83	126	56	117
	-179	-244	-305	-248	-85	-23	-36	-59	-70	-59	-52	-46	-39	-39	-56	-123	-282	-262	-247	-124	-47	-59	-100	-59	-119
	344	507	574	525	210	122	107	131	185	150	130	147	96	74	98	204	385	367	410	276	139	144	226	116	236
26	40	32	60	132	201	60	53	57	21	19	73	120	69	34	35	75	84	114	119	183	168	139	81	99	86
	-39	-44	-52	-118	-266	-129	-32	-15	-30	-37	-61	-119	-72	-49	-57	-66	-156	-218	-116	-146	-237	-142	-56	-70	-97
	80	77	112	251	468	191	86	73	52	56	135	241	142	84	93	141	241	333	236	330	406	283	138	170	184
27	162	160	173	208	262	235	231	177	238	238	197	211	155	98	74	135	264	662	506	455	296	623	337	365	269
	-104	-144	-318	-249	-158	-111	-142	-126	-168	-165	-86	-101	-120	-76	-89	-50	-126	-499	-916	-332	-191	-455	-328	-179	-218
	266	305	492	458	420	347	373	303	408	404	285	313	276	175	163	186	391	1162	1423	787	487	1078	665	544	488
28	255	206	137	217	158	174	191	109	83	136	107	144	122	146	185	284	335	227	203	130	196	184	145	76	173
	-200	-192	-173	-174	-225	-193	-119	-66	-47	-107	-110	-105	-85	-150	-321	-323	-400	-209	-129	-103	-180	-299	-277	-121	-179
	457	400	311	391	384	369	311	176	132	245	218	250	209	297	507	608	736	436	332	234	376	484	422	198	353
29	40	33	33	60	102	101	172	156	151	126	219	179	181	220	240	191	268	290	280	379	264	217	248	216	182
	-34	-20	-21	-30	-70	-110	-146	-138	-121	-88	-132	-75	-259	-242	-215	-291	-339	-216	-257	-394	-253	-155	-203	-448	-177
	74	54	54	91	174	212	320	295	273	214	352	255	442	463	455	483	608	507	539	773	518	373	451	665	360
30	238	249	183	150	159	175	206	193	247	314	319	191	316	442	480	383	300	229	317	420	423	452	172	89	277
	-236	-152	-158	-137	-137	-318	-145	-122	-89	-240	-355	-446	-492	-775	-254	-194	-112	-112	-152	-275	-267	-235	-152	-52	-234
	475	403	343	288	297	493	352	316	338	555	676	638	810	1219	735	578	413	342	470	696	691	688	325	141	512
31	94	77	60	147	201	205	214	250	274	265	325	278	310	313	498	379	326	258	172	176	216	122	235	260	236
	-89	-59	-78	-155	-144	-132	-183	-465	-472	-278	-259	-465	-435	-442	-421	-558	-294	-218	-215	-187	-209	-136	-301	-407	-275
	184	138	139	303	346	339	398	716	747	544	585	744	746	756	920	938	621	477	387	364	425	259	537	668	512

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

SEPTEMBER 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices SEPTEMBER 1991

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	201	215	161	250	275	263	328	408	269	281	284	177	132	147	243	171	180	88	56	173	209	255	249	225	218
	AL	-359	-448	-691	-439	-324	-366	-425	-342	-373	-369	-385	-184	-64	-165	-551	-449	-307	-137	-91	-227	-864	-498	-326	-383	-365
	AE	560	664	853	690	600	630	753	752	644	652	671	362	198	313	796	622	488	226	148	401	1073	754	576	608	585
2		169	151	212	179	172	277	266	332	263	373	206	187	232	180	92	188	200	102	77	73	69	56	54	45	173
		-497	-261	-205	-282	-214	-584	-674	-755	-397	-511	-190	-320	-430	-315	-298	-278	-266	-127	-105	-47	-97	-139	-165	-24	-299
		667	413	418	462	387	861	941	1088	662	885	398	509	664	496	392	468	466	230	183	122	166	195	220	70	473
3		41	25	25	73	162	130	138	175	177	278	285	189	97	229	265	251	166	87	77	94	180	262	192	112	155
		-22	-18	-25	-69	-336	-434	-296	-268	-296	-684	-377	-305	-255	-367	-420	-381	-337	-148	-71	-62	-409	-395	-282	-304	-273
		64	44	51	142	499	565	435	444	474	964	663	495	353	598	687	633	505	236	149	157	589	657	475	417	429
4		92	159	165	216	225	160	237	254	260	202	149	119	193	179	70	59	59	116	160	150	140	93	48	120	151
		-222	-246	-237	-209	-169	-157	-293	-467	-303	-255	-113	-106	-377	-280	-220	-138	-95	-151	-172	-136	-168	-207	-90	-237	-170
		315	406	403	426	396	318	532	723	564	458	264	227	571	461	291	199	155	268	333	287	309	300	139	358	363
5		142	178	210	349	290	238	223	308	217	212	264	321	261	176	248	251	263	268	260	228	215	309	261	293	249
		-327	-215	-502	-635	-376	-215	-235	-392	-255	-291	-409	-327	-282	-306	-387	-426	-365	-320	-368	-330	-355	-330	-329	-306	-345
		470	395	713	985	668	454	460	701	473	505	675	650	544	484	636	678	629	589	629	559	570	639	591	600	596
6		260	234	168	219	234	193	240	203	203	188	193	222	176	128	83	153	248	152	151	50	43	66	111	164	170
		-234	-211	-147	-404	-315	-238	-213	-260	-221	-210	-221	-278	-165	-206	-180	-185	-310	-223	-237	-57	-12	-33	-100	-249	-205
		446	315	315	623	549	432	454	465	425	400	416	502	343	336	265	339	559	376	389	107	55	100	211	414	376
7		242	207	210	201	189	171	120	161	160	144	183	207	182	136	72	22	58	30	47	43	53	54	86	136	130
		-406	-353	-322	-312	-154	-119	-89	-109	-269	-188	-128	-175	-189	-212	-194	-129	-178	-130	-68	-35	-42	-36	-114	-133	-170
		649	561	533	514	343	290	210	272	431	333	313	383	372	349	268	152	237	162	116	78	96	91	201	269	301
8		189	209	182	233	222	231	163	179	189	235	257	209	242	220	232	236	305	320	302	318	226	120	63	147	218
		-276	-300	-220	-328	-249	-160	-158	-155	-98	-118	-233	-360	-230	-320	-267	-315	-357	-335	-501	-469	-246	-117	-37	-62	-246
		466	509	403	563	472	391	321	335	288	354	491	570	473	542	501	552	663	656	804	787	473	237	101	210	465
9		162	93	37	25	74	163	208	228	206	204	180	196	446	329	338	321	346	279	217	233	271	296	108	216	216
		-240	-46	-14	-14	-29	-224	-326	-259	-312	-256	-263	-349	-299	-492	-563	-595	-516	-602	-411	-237	-333	-389	-827	-756	-348
		402	140	51	40	103	389	535	489	519	462	444	546	746	823	902	917	864	882	629	471	605	685	936	973	565
10		208	248	208	245	219	250	173	179	80	92	85	60	83	121	187	125	231	316	282	306	294	291	265	146	196
		-284	-317	-328	-517	-246	-307	-380	-236	-24	-64	-23	-44	-100	-145	-284	-185	-174	-230	-386	-275	-286	-240	-116	-63	-219
		493	565	537	762	466	558	554	417	105	158	109	104	184	268	473	312	405	547	669	582	581	531	381	210	415
11		81	103	60	81	30	41	34	31	44	58	212	152	147	128	92	89	116	69	45	132	94	46	41	39	82
		-37	-49	-27	-34	-24	-19	-8	-9	-28	-34	-232	-575	-296	-305	-310	-192	-135	-57	-42	-172	-308	-73	-25	-16	-125
		119	153	89	116	55	61	44	41	73	93	445	728	445	434	403	283	251	126	88	305	119	67	56	208	
12		29	90	49	43	92	96	42	43	77	147	61	60	64	57	30	24	27	38	53	64	95	80	48	38	60
		-22	-31	-81	-69	-110	-142	-43	-32	-42	-107	-43	-55	-73	-89	-78	-58	-66	-53	-66	-139	-158	-104	-31	-22	-71
		53	122	131	113	202	239	86	76	120	256	105	116	138	147	109	84	94	93	120	204	253	185	80	61	133
13		25	90	66	39	47	94	102	74	59	43	48	48	39	28	32	62	38	24	132	117	84	186	227	171	78
		-30	-84	-86	-42	-23	-46	-93	-83	-32	-53	-32	-53	-29	-39	-43	-74	-84	-48	-138	-161	-80	-173	-322	-371	-92
		56	174	154	82	71	141	196	158	92	73	81	102	69	68	77	138	124	74	271	278	165	360	550	543	171
14		57	158	152	93	215	77	107	164	189	155	185	177	74	77	248	158	105	134	231	130	49	135	106	142	138
		-468	-177	-300	-83	-267	-106	-292	-256	-295	-238	-159	-159	-44	-71	-502	-362	-223	-199	-268	-150	-25	-63	-139	-270	-221
		525	336	453	178	483	184	400	421	486	495	424	338	120	149	752	521	329	333	500	281	74	199	245	412	360
15		103	173	191	42	18	18	44	57	66	31	39	39	40	42	34	28	39	52	24	35	69	58	33	39	55
		-272	-220	-350	-65	-28	-22	-26	-73	-38	-20	-22	-30	-43	-53	-54	-85	-120	-85	-33	-26	-53	-97	-42	-44	-79
		376	393	542	107	47	41	71	130	105	52	63	71	84	96	89	114	161	138	58	62	124	156	77	84	135

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

SEPTEMBER 1991

16	61	78	73	45	37	44	69	89	47	71	103	85	61	35	30	21	16	16	21	86	52	21	39	32	51
	-52	-80	-60	-48	-33	-18	-90	-67	-12	-27	-84	-138	-65	-29	-43	-40	-42	-43	-42	-83	-53	-32	-38	-65	-54
	114	159	134	93	71	63	160	156	60	100	189	225	128	66	74	63	58	60	65	170	106	53	78	98	106
17	44	29	43	31	59	50	37	37	25	24	20	15	12	20	43	51	77	38	39	37	51	99	85	55	43
	-138	-21	-17	-12	-20	-25	-10	-14	-22	-22	-28	-35	-38	-34	-57	-138	-320	-138	-60	-38	-117	-181	-77	-15	-66
	183	51	60	44	80	76	48	52	47	47	49	51	51	55	102	190	398	178	100	76	168	280	163	72	109
18	38	28	16	19	20	18	20	20	23	25	26	31	26	24	33	39	24	23	20	26	61	64	85	63	32
	-13	-21	-19	-11	-25	-22	-32	-11	-13	-16	-24	-37	-40	-42	-43	-51	-36	-38	-31	-22	-72	-65	-57	-42	-33
	52	51	36	31	46	40	53	31	36	42	51	69	68	68	78	91	62	62	53	50	133	130	142	107	66
19	87	82	81	53	61	78	88	121	93	123	124	206	140	109	81	94	81	39	20	41	56	39	48	85	85
	-81	-16	-18	-8	-198	-73	-150	-175	-141	-141	-198	-384	-202	-184	-164	-167	-165	-79	-36	-30	-56	-42	-80	-232	-126
	169	99	100	62	259	151	239	297	235	266	323	592	344	294	247	263	248	119	58	71	112	81	129	318	211
20	50	57	73	98	123	168	81	24	29	24	56	72	118	76	45	24	53	36	26	32	39	37	22	52	59
	-95	-78	-228	-167	-245	-267	-64	-32	-26	-25	-34	-173	-195	-182	-118	-118	-142	-80	-55	-16	-9	-3	-10	-50	-100
	146	136	302	267	369	436	145	56	56	50	91	247	314	259	165	143	195	117	81	48	48	40	33	103	160
21	62	74	88	88	88	161	95	72	103	88	50	41	25	25	32	23	21	19	20	39	44	59	29	18	59
	-146	-111	-131	-109	-121	-184	-130	-100	-139	-68	-46	-40	-38	-32	-31	-34	-29	-25	-22	-23	-13	-21	-32	-52	-70
	209	186	221	198	259	345	226	174	243	158	97	82	65	58	64	58	52	45	43	63	57	81	61	71	130
22	27	15	31	39	65	47	101	101	60	44	74	141	105	57	87	70	48	23	20	29	32	30	30	40	55
	-94	-19	-10	-36	-33	-41	-62	-14	-15	-28	-36	-93	-92	-61	-95	-87	-42	-27	-24	-22	-15	-13	-18	-35	-42
	122	35	42	75	99	89	164	116	75	73	111	235	198	119	183	159	91	51	45	53	48	43	48	76	98
23	42	36	21	22	17	24	17	20	24	26	29	34	35	39	23	20	16	18	48	69	71	73	70	58	35
	-42	-19	-9	-7	-6	-10	-3	-7	-15	-19	-24	-26	-29	-43	-35	-32	-42	-39	-61	-69	-58	-57	-55	-30	-31
	84	55	30	30	24	34	20	28	39	46	54	62	65	83	59	52	59	58	111	139	129	131	125	89	67
24	34	46	64	74	70	40	19	23	26	22	24	22	25	35	63	83	55	94	125	193	108	49	110	78	62
	-22	-33	-90	-60	-24	-2	2	-3	-11	-15	-18	-19	-20	-27	-50	-96	-123	-220	-271	-207	-94	-30	-91	-126	-69
	57	79	155	135	95	42	16	27	37	37	43	43	47	64	114	181	180	315	398	401	202	80	202	204	131
25	129	102	123	154	169	182	142	185	249	261	179	151	180	199	299	359	463	250	218	236	243	124	188	121	204
	-127	-242	-277	-168	-375	-305	-269	-230	-354	-209	-106	-173	-426	-277	-406	-451	-418	-171	-127	-416	-685	-609	-421	-167	-309
	256	345	400	323	545	489	411	417	604	471	287	325	608	478	706	811	881	422	346	653	929	734	610	289	514
26	94	102	152	231	211	196	251	356	350	299	208	131	207	208	387	330	331	280	322	271	258	206	101	127	234
	-139	-183	-332	-306	-278	-266	-194	-432	-288	-307	-391	-705	-448	-369	-567	-313	-304	-212	-391	-300	-366	-337	-134	-226	-324
	234	286	485	538	490	463	446	790	639	607	601	837	656	579	956	644	636	493	713	572	624	544	235	354	559
27	119	151	192	259	229	270	443	339	287	222	94	152	90	72	240	238	173	300	320	299	161	125	79	116	207
	-401	-283	-304	-561	-377	-322	-481	-434	-443	-603	-610	-446	-304	-134	-459	-437	-238	-558	-593	-543	-309	-197	-148	-171	-390
	521	434	496	822	607	594	925	774	732	827	706	600	395	207	699	676	412	859	914	843	471	322	227	287	598
28	143	124	199	188	154	171	158	126	115	197	200	94	294	342	219	217	288	274	215	275	333	224	100	176	201
	-307	-305	-415	-360	-388	-335	-230	-214	-177	-393	-376	-532	-657	-637	-399	-327	-455	-553	-595	-348	-401	-262	-89	-333	-379
	451	429	615	550	544	508	390	341	294	591	578	628	952	980	619	546	745	827	810	624	735	487	189	510	581
29	95	70	36	19	33	46	22	22	13	18	30	101	141	202	116	80	141	71	82	73	150	59	122	182	80
	-156	-63	-79	-81	-71	-88	-59	-24	-20	-28	-40	-84	-388	-345	-79	-103	-242	-295	-189	-116	-375	-131	-218	-381	-152
	252	134	116	101	105	135	82	47	34	48	72	187	530	549	196	184	383	367	273	190	525	190	341	564	233
30	97	101	77	118	163	125	42	127	263	386	387	240	110	127	177	229	146	117	222	249	279	186	153	114	176
	-109	-133	-235	-287	-285	-219	-58	-60	-416	-377	-388	-313	-289	-271	-467	-456	-301	-205	-211	-505	-420	-325	-260	-268	-286
	208	235	313	406	449	346	101	188	681	764	776	553	400	399	646	686	448	322	434	755	700	512	414	383	463

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

OCTOBER 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices OCTOBER 1991

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	123	129	126	127	120	131	180	161	363	386	300	152	190	126	75	133	144	138	348	306	203	134	134	233	186
	AL	-228	-223	-192	-80	-126	-346	-496	-249	-430	-476	-407	-394	-324	-170	-169	-225	-212	-216	-597	-1039	-504	-713	-598	-420	-368
	AE	351	352	318	207	247	477	677	410	794	863	708	548	516	297	245	359	358	356	945	1346	709	847	733	654	555
2		294	261	152	144	146	224	209	260	110	249	221	254	257	244	323	261	190	377	223	52	61	89	105	128	201
		-656	-271	-404	-443	-298	-460	-338	-464	-514	-748	-644	-273	-463	-530	-545	-527	-652	-753	-315	-117	-131	-313	-154	-231	-427
		950	533	556	587	445	684	548	724	625	998	866	529	721	775	869	790	843	1131	540	170	193	402	260	359	629
3		162	169	117	125	115	122	60	100	147	148	84	78	99	60	82	63	51	62	54	83	117	143	81	68	100
		-336	-185	-200	-300	-208	-191	-109	-108	-266	-348	-134	-130	-208	-231	-189	-179	-115	-124	-67	-129	-224	-276	-225	-212	-196
		498	354	318	426	324	314	170	208	413	498	218	210	309	293	273	244	167	187	122	214	342	419	307	281	296
4		37	91	94	163	124	109	137	172	321	314	291	228	169	214	317	246	147	113	123	257	140	182	149	166	179
		-146	-287	-205	-242	-456	-430	-396	-441	-490	-322	-377	-317	-346	-364	-375	-286	-211	-91	-109	-289	-834	-544	-130	-151	-327
		184	378	300	406	581	539	534	614	812	637	669	545	516	579	693	534	359	205	234	548	975	728	280	318	507
5		107	89	93	164	127	81	112	171	132	103	83	68	78	58	26	19	30	16	32	25	20	25	21	25	71
		-354	-344	-140	-140	-117	-84	-77	-175	-364	-133	-32	-43	-32	-60	-36	-36	-52	-49	-38	-30	-17	-24	-20	-29	-101
		462	433	233	305	244	166	190	347	498	237	116	112	111	120	63	56	84	67	71	57	39	50	42	55	173
6		25	22	20	18	17	52	76	89	127	142	177	69	94	47	48	177	218	173	321	284	115	73	106	57	106
		-36	-42	-22	-20	-30	-76	-69	-37	-62	-191	-149	-42	-88	-34	-83	-327	-594	-436	-404	-431	-122	-50	-148	-610	-171
		62	65	43	39	48	128	145	126	189	333	327	112	183	82	132	506	813	611	726	717	239	124	256	667	278
7		116	129	133	126	158	118	120	141	126	170	74	80	47	50	51	32	31	36	31	41	56	48	37	48	83
		-374	-443	-579	-182	-133	-87	-186	-297	-231	-195	-64	-128	-72	-37	-54	-110	-101	-85	-68	-90	-50	-97	-177	-123	-165
		491	573	713	308	292	206	307	439	359	366	140	210	120	88	107	143	133	122	100	132	108	146	215	172	249
8		74	83	110	101	109	108	234	171	217	159	112	190	132	184	160	229	217	86	118	184	213	147	99	120	148
		-379	-272	-255	-252	-160	-346	-443	-381	-674	-522	-476	-425	-413	-505	-382	-747	-602	-762	-647	-563	-221	-161	-178	-249	-417
		453	355	366	353	270	455	678	552	892	682	589	617	546	691	544	978	821	849	766	748	436	308	277	369	567
9		150	162	127	149	87	69	59	55	55	55	63	50	34	30	24	30	17	23	41	42	58	71	38	23	63
		-225	-244	-233	-318	-105	-100	-184	-82	-39	-37	-65	-41	-32	-35	-36	-47	-39	-52	-30	-30	-32	-53	-47	-35	-89
		376	406	360	467	192	169	243	138	95	93	130	91	67	66	61	78	58	77	72	74	91	125	86	59	153
10		32	66	198	132	184	147	238	228	87	46	43	49	54	110	211	216	137	94	97	63	91	54	30	31	110
		-30	-96	-395	-443	-592	-448	-381	-233	-38	-26	-38	-67	-78	-361	-599	-485	-275	-169	-191	-132	-64	-45	-35	-41	-219
		64	163	593	576	777	596	619	462	125	73	82	117	133	473	811	703	413	265	289	196	157	100	67	73	330
11		30	39	44	41	29	33	38	22	72	54	76	40	48	31	21	21	43	114	57	37	27	28	51	32	43
		-62	-82	-51	-47	-72	-33	-17	-38	-123	-23	-61	-65	-125	-112	-109	-46	-76	-388	-271	-54	-37	-33	-137	-120	-91
		92	121	96	88	102	66	55	60	197	78	138	106	174	144	132	69	120	504	329	92	65	62	189	153	135
12		25	47	37	40	30	33	44	33	29	21	28	23	36	51	63	70	58	40	44	46	33	52	55	51	41
		-18	-43	-107	-45	-18	-16	-13	-13	-15	-22	-56	-32	-35	-39	-38	-30	-54	-110	-130	-62	-41	-32	-75	-64	-46
		44	91	145	85	48	49	58	47	45	43	86	56	71	90	101	101	114	152	175	110	75	86	131	116	88
13		79	54	22	33	41	33	52	37	19	14	17	51	94	62	23	21	20	24	23	39	53	37	55	103	42
		-47	-27	-21	-11	-25	-19	-46	-24	-16	-21	-26	-48	-131	-88	-53	-76	-99	-86	-34	-27	-78	-51	-75	-67	-50
		127	82	45	45	67	53	99	61	36	35	43	100	227	151	77	97	120	112	59	68	132	90	132	172	93
14		123	91	57	36	23	20	36	35	29	22	18	14	15	22	37	34	21	34	91	159	66	37	40	38	46
		-44	-30	-15	-13	-10	-8	-30	-19	-28	-19	-22	-27	-32	-36	-39	-43	-35	-35	-167	-312	-93	-23	-30	-46	-48
		167	122	73	51	35	29	67	55	58	41	41	42	48	59	76	78	56	70	260	472	160	62	71	86	95
15		64	70	76	60	49	39	49	51	56	22	18	9	10	11	9	8	14	17	17	22	22	20	15	15	31
		-93	-46	-31	-32	-19	-14	-6	-22	-67	-27	-19	-28	-34	-32	-32	-37	-36	-31	-23	-22	-18	-19	-17	-21	-30
		157	116	107	93	70	54	56	73	124	50	37	38	45	43	42	46	50	49	42	45	41	41	34	37	62

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

OCTOBER 1991

16	15	16	20	20	23	30	29	23	22	26	21	16	14	33	18	23	18	12	14	14	15	17	16	15	20
	-17	-14	-17	-18	-24	-34	-35	-70	-42	-41	-35	-29	-32	-47	-36	-42	-40	-50	-41	-24	-28	-16	-14	-9	-31
	34	32	38	39	47	65	65	93	65	68	57	45	46	81	54	65	59	62	56	38	45	34	32	25	52
17	23	29	16	15	12	12	13	19	23	27	27	32	32	42	46	38	28	50	68	61	53	63	65	40	35
	-32	-36	-17	-13	-7	-6	-8	-14	-20	-27	-33	-40	-35	-32	-31	-46	-35	-40	-73	-29	-13	-44	-88	-135	-36
	56	66	34	29	21	19	21	34	43	55	60	72	68	75	78	85	64	92	143	92	67	108	154	175	71
18	30	34	39	36	38	37	21	38	72	56	73	132	176	107	140	94	17	29	25	41	80	103	100	74	66
	-86	-14	-4	-1	-2	-2	-1	-5	-27	-11	-36	-78	-204	-176	-303	-108	-35	-33	-39	-41	-139	-71	-31	-31	-62
	116	49	44	38	41	39	23	43	99	68	109	212	382	284	445	203	54	63	65	83	221	176	132	106	129
19	50	66	96	82	51	60	34	54	63	82	132	209	138	136	68	21	19	33	72	115	98	113	95	61	81
	-27	-53	-61	-37	-38	-49	-26	-28	-63	-32	-48	-124	-74	-46	-31	-37	-32	-99	-173	-269	-364	-342	-209	-214	-103
	77	119	157	119	89	110	61	82	126	114	181	334	213	183	100	59	52	134	247	386	464	456	305	276	185
20	145	121	98	57	60	73	52	134	277	263	88	128	156	127	91	27	142	145	134	74	40	23	41	19	105
	-170	-80	-141	-78	-28	-308	-258	-330	-364	-286	-312	-374	-183	-140	-165	-100	-147	-264	-178	-24	-17	-13	-35	-62	-169
	316	202	240	135	88	382	311	464	642	550	401	503	340	268	257	129	290	411	313	99	59	37	77	81	275
21	29	54	72	117	226	247	147	157	232	176	166	130	229	341	327	280	242	274	178	210	227	208	80	73	184
	-23	-64	-61	-197	-310	-261	-189	-212	-152	-350	-402	-348	-394	-395	-387	-442	-730	-549	-667	-439	-453	-414	-386	-281	-338
	52	119	133	315	537	508	337	369	385	527	569	480	624	737	716	723	973	824	846	651	681	623	467	355	523
22	112	85	140	200	106	47	101	167	232	114	94	101	107	76	166	177	226	193	197	126	55	57	129	89	129
	-210	-282	-317	-186	-81	-78	-139	-378	-335	-138	-490	-569	-199	-168	-202	-270	-296	-175	-190	-210	-68	-50	-76	-142	-219
	323	367	458	387	187	125	241	546	567	253	586	671	308	245	370	448	523	369	388	338	124	107	205	231	349
23	61	54	89	93	93	85	91	106	232	206	158	121	84	48	38	17	33	124	149	145	152	280	276	223	123
	-232	-162	-226	-96	-115	-173	-169	-117	-102	-191	-154	-91	-55	-26	-28	-22	-48	-244	-309	-237	-364	-591	-446	-150	-181
	293	217	315	189	209	259	260	223	335	398	314	213	140	75	67	40	83	369	459	384	517	872	723	374	305
24	174	75	44	84	140	121	88	142	221	124	80	65	72	103	75	78	173	175	212	162	230	224	142	45	127
	-115	-193	-376	-142	-59	-100	-241	-311	-137	-30	-39	-99	-300	-216	-143	-117	-294	-314	-305	-229	-270	-195	-308	-256	-200
	290	268	420	227	200	221	330	454	359	156	119	165	374	320	220	196	468	490	519	392	502	421	451	302	328
25	55	102	121	120	180	195	119	108	99	75	220	200	69	192	330	294	318	246	139	197	134	194	128	138	165
	-214	-248	-383	-195	-81	-122	-84	-152	-102	-246	-466	-376	-292	-358	-626	-450	-363	-330	-613	-524	-289	-287	-267	-220	-304
	270	350	505	315	261	318	204	260	202	322	688	577	363	551	957	745	682	578	753	722	424	483	396	358	470
26	128	74	73	93	144	205	246	103	90	165	244	172	127	233	218	202	195	260	124	189	128	124	95	164	158
	-298	-202	-266	-407	-360	-415	-333	-199	-231	-326	-290	-252	-429	-562	-704	-575	-423	-480	-222	-294	-412	-386	-188	-259	-355
	427	276	339	500	505	620	579	302	321	492	535	425	557	797	923	779	619	742	348	484	541	511	284	424	514
27	107	104	153	336	158	109	129	140	174	165	111	119	97	165	271	210	125	174	177	234	182	89	82	80	154
	-601	-550	-751	-630	-224	-141	-162	-275	-739	-249	-146	-171	-572	-572	-487	-553	-329	-248	-457	-288	-387	-567	-152	-143	-391
	708	655	904	967	383	251	292	416	914	415	258	291	670	739	760	765	456	423	636	524	570	658	235	224	546
28	136	89	222	152	194	153	141	190	141	139	226	285	345	289	389	290	287	293	150	84	39	44	69	132	187
	-182	-601	-541	-322	-294	-240	-221	-437	-246	-389	-470	-1061	-1384	-714	-1046	-829	-874	-323	-82	-161	-179	-197	-425	-375	-483
	319	691	764	475	489	394	363	628	387	529	697	1347	1731	1004	1436	1120	1161	617	233	245	218	241	495	507	670
29	203	234	218	318	-55	83	-37	-29	-119	-27	62	104	86	20	139	228	175	77	-33	75	67	173	99	121	91
	-671	-829	-980	-677	-1165	-751	-743	-616	-1062	-650	-375	-329	-178	-109	-457	-562	-503	-807	-1046	-648	-704	-429	-218	-155	-611
	875	1063	1199	995	1108	834	705	587	942	622	439	435	265	130	597	791	679	885	1013	724	772	604	318	277	702
30	38	32	7	26	25	20	13	20	16	23	22	86	97	118	176	134	91	86	245	186	60	124	118	92	77
	-111	-119	-178	-184	-247	-102	-39	-46	-38	-52	-130	-330	-359	-586	-827	-1129	-840	-530	-667	-374	-62	-210	-493	-462	-338
	150	152	185	211	272	123	53	68	55	76	153	418	458	705	1005	1264	932	617	913	562	124	335	612	554	416
31	85	108	118	47	110	207	193	219	277	219	203	252	208	178	155	352	281	326	302	286	170	167	185	-36	192
	-311	-358	-223	-153	-127	-123	-218	-206	-196	-141	-667	-696	-555	-657	-498	-472	-404	-506	-246	-58	-232	-87	-465	-782	-349
	396	467	341	201	238	331	412	426	473	361	872	949	765	837	654	826	686	834	549	346	403	255	652	745	542

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

NOVEMBER 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices NOVEMBER 1991

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	89	70	61	62	74	90	143	149	215	300	180	237	289	278	286	193	67	45	-18	5	172	172	15	-46	130
	AL	-168	-66	-67	-63	-99	-164	-436	-480	-560	-475	-526	-674	-1113	-1011	-990	-599	-845	-866	-1133	-878	-790	-606	-780	-499	-579
	AE	258	137	128	125	173	256	581	630	777	776	707	912	1403	1289	1276	792	913	912	1114	883	963	779	796	451	710
2		110	158	155	200	62	55	44	12	10	21	125	187	162	66	33	84	62	68	122	129	163	123	94	89	97
		-217	-441	-656	-450	-179	-80	-57	-56	-82	-83	-181	-133	-133	-138	-182	-327	-124	-133	-80	-103	-141	-76	-40	-64	-173
		328	600	812	652	243	137	102	69	93	105	308	321	297	206	215	412	186	202	203	233	305	199	135	153	272
3		71	60	67	50	65	50	44	58	53	54	92	90	113	96	53	25	49	53	71	64	104	157	138	130	75
		-20	-13	-11	-24	-16	-31	-13	-29	-29	-31	-86	-378	-266	-93	-67	-47	-86	-192	-99	-53	-133	-132	-265	-302	-101
		92	74	79	75	81	82	58	88	84	86	178	469	379	190	121	73	136	246	170	118	237	290	403	433	177
4		87	70	80	114	133	183	131	122	115	148	130	124	111	63	47	58	205	115	134	210	205	100	193	223	129
		-157	-45	-14	-359	-61	-14	-28	-213	-213	-271	-111	-76	-41	-32	-42	-73	-172	-119	-132	-771	-727	-664	-325	-432	-205
		244	115	95	149	493	245	145	151	330	421	242	201	153	96	90	133	379	236	267	982	933	765	519	655	335
5		73	215	204	114	100	125	86	98	100	70	75	69	48	80	55	74	73	90	133	91	59	81	64	71	94
		-377	-319	-139	-180	-243	-237	-124	-206	-59	-28	-73	-83	-272	-228	-87	-72	-169	-417	-446	-124	-16	-28	-36	-64	-168
		451	534	344	295	344	363	211	305	160	99	149	154	321	309	144	147	243	508	580	215	75	110	101	136	262
6		82	128	111	108	129	263	142	86	87	64	59	61	78	91	75	60	90	117	91	57	80	94	69	118	98
		-26	-102	-177	-341	-178	-178	-90	5	-109	-49	-46	-22	-27	-47	-51	-45	-249	-270	-109	-38	-38	-48	-53	-176	-111
		108	231	288	451	509	443	233	80	197	114	106	84	106	140	127	106	341	388	201	97	119	143	123	295	210
7		136	140	135	84	95	110	105	85	71	101	61	57	57	70	89	99	52	35	42	80	78	64	74	60	82
		-254	-117	-12	-46	-57	22	9	0	-22	-10	-9	-15	-15	-32	-32	-32	-29	-30	-44	-106	-152	-52	-8	-11	-44
		391	258	147	131	138	167	82	75	71	125	72	66	73	86	122	132	82	66	87	187	231	117	82	71	128
8		78	95	87	89	106	97	120	177	173	145	159	100	54	165	61	58	43	-8	26	-89	-42	-121	38	23	68
		-22	-205	-157	-34	-50	-22	-43	-254	-104	0	-36	-28	-47	-232	-843	-639	-752	-970	-721	-934	-1008	-1213	-773	-799	-412
		100	300	245	123	156	120	164	432	278	145	196	129	101	398	905	699	796	961	748	844	966	1091	811	823	480
9		39	23	-13	11	105	186	192	105	116	116	192	185	185	236	207	173	129	144	120	151	101	77	82	62	122
		-653	-449	-1053	-772	-500	-860	-442	-450	-1001	-473	-228	-1204	-1109	-1027	-671	-611	-336	-533	-756	-571	-465	-385	-268	-304	-630
		693	472	1040	785	606	1047	635	557	1118	591	421	1390	1295	1264	879	785	466	678	876	722	567	463	351	366	753
10		69	85	70	102	39	34	42	56	70	121	98	65	47	53	48	34	88	136	67	77	77	85	70	90	72
		-368	-339	-189	-199	-202	-172	-105	-99	-76	-311	-372	-84	-21	-40	-48	-87	-273	-451	-218	-94	-234	-295	-248	-253	-199
		437	425	260	301	241	206	148	156	147	434	471	150	68	93	96	122	362	588	285	172	312	380	318	344	271
11		82	68	53	80	111	105	89	68	81	64	90	94	101	125	54	112	70	93	102	147	166	130	106	102	96
		-191	-110	-88	-110	-132	-87	-54	-31	-22	-50	-129	-235	-141	-127	-196	-264	-258	-151	-403	-470	-452	-280	-68	-233	-178
		273	178	142	191	243	192	143	100	104	115	220	330	243	253	251	377	329	245	506	618	619	410	175	336	275
12		127	105	119	102	107	72	100	69	59	37	32	29	38	34	37	28	42	40	30	40	36	38	47	34	58
		-320	-80	-46	-45	-27	-22	-86	-92	-72	-14	-4	-13	-14	-11	-8	-18	-96	-82	-63	-19	-16	-31	-44	-130	-56
		448	185	165	148	134	95	188	163	133	52	36	42	53	46	46	47	139	123	94	60	53	70	92	164	116
13		34	39	38	39	61	48	65	99	168	158	104	79	103	59	182	124	70	69	49	63	69	54	38	53	78
		-37	-43	-11	7	5	5	4	-79	-214	-76	-42	-20	-52	-177	-466	-219	-15	4	-18	-102	-122	-48	-10	-4	-72
		72	82	49	31	55	42	60	180	384	235	147	99	156	237	649	344	86	65	67	167	192	102	48	58	150
14		85	76	102	212	148	163	125	148	184	135	210	187	108	60	49	37	27	21	43	79	51	54	84	55	102
		-53	-123	-321	-165	-50	-115	-127	-118	-292	-165	-105	-237	-133	-16	-32	-39	-43	-40	-71	-200	-52	-29	-72	-91	-112
		139	199	423	377	199	279	254	267	477	302	316	426	242	76	82	76	71	61	115	280	104	83	158	147	215
15		102	162	116	131	144	88	169	152	112	110	129	167	134	182	184	184	183	132	155	77	88	70	61	89	130
		-150	-304	-113	-61	-89	-133	-213	-130	-131	-331	-593	-613	-683	-426	-552	-296	-172	-74	-113	-41	-56	-43	-6	-223	-231
		253	467	230	193	233	223	383	283	245	443	722	781	818	609	737	480	356	208	269	118	145	113	67	313	362

PROVISIONAL HOURLY VALUES OF AU, AL, AND AE INDICES
(continued)

NOVEMBER 1991

16	119	146	109	111	118	142	161	120	130	132	50	160	127	114	192	221	183	148	216	140	112	108	169	132	140
	-259	-276	-58	-44	-91	-281	-258	-98	-147	-294	-359	-629	-329	-241	-248	-172	-176	-123	-211	-122	-249	-460	-287	-123	-231
	378	422	168	156	211	425	421	219	278	427	410	790	457	357	441	394	359	272	427	263	362	569	456	256	372
17	117	98	131	131	80	78	102	93	147	166	108	188	241	256	299	244	201	178	98	117	86	66	56	67	140
	-45	-49	-83	-19	-4	-11	-56	-7	-105	-172	-183	-537	-482	-495	-481	-427	-400	-269	-327	-298	-94	-52	-153	-254	-208
	162	148	214	150	84	89	160	100	254	339	293	726	724	752	781	672	601	447	426	415	180	119	210	322	349
18	61	33	80	169	101	89	119	160	291	167	181	178	247	241	148	111	52	145	199	162	130	63	75	18	134
	-316	-365	-372	-265	-145	-154	-175	-288	-327	-313	-389	-637	-490	-232	-283	-199	-85	-159	-643	-237	-109	-72	-353	-514	-297
	377	399	452	435	247	243	296	449	619	481	571	816	738	475	432	311	138	306	843	400	240	135	429	533	432
19	109	157	116	120	212	302	313	273	238	183	105	108	132	155	247	284	60	177	125	93	125	83	43	75	160
	-373	-191	-284	-377	-343	-496	-299	-479	-398	-344	-330	-344	-488	-386	-542	-727	-801	-904	-779	-463	-581	-506	-88	-40	-440
	482	349	401	499	556	799	614	753	637	528	435	453	622	542	790	1011	862	1082	904	557	707	589	131	116	601
20	64	59	43	48	48	46	44	61	52	73	46	68	64	14	4	36	38	129	154	152	107	152	165	133	75
	-33	-27	-33	-39	-45	-44	-82	-94	-90	-273	-162	-184	-261	-229	-250	-67	-65	-351	-550	-434	-233	-316	-239	-126	-176
	98	86	76	87	93	91	127	156	143	348	209	254	326	244	255	104	104	482	705	587	340	469	405	259	252
21	69	111	160	160	181	149	155	304	322	122	162	205	146	139	193	111	50	94	70	27	11	104	226	203	145
	-53	-90	-175	-311	-288	-216	-296	-526	-509	-368	-544	-621	-283	-217	-855	-1368	-831	-924	-762	-791	-840	-752	-156	-137	-496
	123	202	336	472	470	366	452	831	833	492	707	827	430	357	1049	1479	882	1019	833	819	851	856	382	340	642
22	95	182	212	211	218	221	177	167	240	199	111	158	159	224	256	122	89	67	92	85	52	52	57	67	146
	-442	-449	-244	-761	-661	-322	-547	-423	-910	-784	-556	-646	-837	-303	-549	-155	-83	-46	-40	-39	-28	-24	-36	-138	-376
	538	632	457	974	880	544	726	591	1151	985	668	806	997	529	806	278	173	115	133	125	82	77	93	206	524
23	64	95	147	123	116	109	96	119	206	286	140	180	198	253	106	95	73	81	67	55	93	116	109	77	125
	-203	-349	-415	-316	-163	-230	-432	-324	-415	-311	-491	-715	-537	-445	-251	-215	-167	-92	-76	-102	-246	-406	-140	-59	-296
	268	444	562	439	280	340	529	444	622	598	632	897	736	699	358	312	241	174	144	158	340	524	250	137	422
24	84	95	76	100	90	72	81	112	103	77	47	40	40	34	31	81	50	61	47	90	97	115	120	154	79
	-113	-302	-268	-176	-73	-155	-272	-215	-201	-80	-31	-21	-21	-107	-372	-331	-61	-128	-133	-389	-275	-289	-499	-423	-206
	198	397	344	277	164	227	355	328	305	159	79	62	62	142	405	413	111	190	180	480	373	405	619	578	286
25	80	68	73	47	116	83	90	78	59	46	34	31	51	59	46	30	33	54	94	73	55	64	65	53	62
	-108	-76	-100	-44	-134	-202	-64	-194	-139	-10	-10	-11	-31	-46	-41	-45	-107	-282	-285	-109	-69	-113	-131	-20	-99
	188	144	174	92	251	285	155	273	200	57	45	43	83	107	88	77	140	337	381	183	125	178	197	72	161
26	47	71	54	80	76	96	83	60	70	73	67	97	73	58	47	51	51	41	46	48	47	42	38	41	61
	3	-10	-21	-229	-186	-85	-43	-140	-245	-72	-82	-199	-73	-78	-147	-244	-168	-23	-62	-44	-35	3	3	2	-90
	43	82	75	310	262	182	127	202	317	147	150	298	147	136	194	296	219	64	109	93	84	38	33	38	152
27	41	62	69	68	53	64	62	49	42	33	38	44	100	128	68	103	99	201	140	95	56	76	68	81	77
	2	-6	-32	-57	5	6	-1	0	-2	-3	-7	-72	-262	-324	-170	-275	-335	-272	-265	-127	-25	-43	-45	-87	-100
	38	68	102	126	47	56	64	48	45	36	46	117	363	453	239	379	436	474	406	224	82	120	113	169	177
28	66	88	64	50	58	62	69	52	59	73	71	80	109	111	125	74	59	42	44	47	86	79	114	120	75
	-86	-86	2	0	-20	-46	-43	-28	-9	-36	-200	-165	-323	-406	-210	-45	-24	-12	-1	-20	-173	-375	-93	-144	-106
	152	175	61	49	78	109	112	80	69	111	272	246	433	518	336	119	84	55	45	68	260	455	208	264	182
29	85	117	114	122	91	73	53	56	51	53	82	69	59	56	81	71	80	85	55	69	73	70	96	126	79
	-190	-139	-171	-36	-30	13	4	0	-3	-6	-90	-19	-1	-55	-373	-291	-25	0	-32	-78	-6	-17	-65	-363	-82
	275	256	285	158	121	59	48	56	55	60	174	90	60	112	455	363	107	85	88	149	81	88	161	490	162
30	156	125	116	71	79	136	197	126	131	152	85	54	70	134	130	70	30	57	44	48	45	59	73	110	96
	-43	6	-39	-11	-71	-84	-20	7	-43	-129	-24	-14	-42	-31	-5	1	-14	3	0	-5	-14	-20	-179	-353	-47
	199	118	155	82	151	221	217	118	175	283	109	68	113	166	134	68	45	53	43	54	59	80	253	464	143

PROVISIONAL HOURLY VALUES OF **AU**, **AL**, AND **AE** INDICES
(continued)

DECEMBER 1991

Provisional Hourly Values (nT) of AU, AL and AE Indices DECEMBER 1991

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	72	72	55	46	54	61	51	56	27	34	19	29	36	24	18	23	21	35	97	110	86	66	76	120	54
AL	-66	-46	-28	-15	-14	-22	-58	-84	-18	-19	-50	-83	-111	-53	-42	-41	-103	-140	-220	-203	-97	-24	-38	-116	-70
AE	140	118	84	62	70	83	110	140	47	54	71	112	147	79	61	65	124	177	319	314	184	91	115	237	125
2	186	70	52	23	33	98	36	49	92	170	345	224	149	63	108	89	121	51	92	161	167	74	106	58	109
	-166	-22	-1	-3	0	-28	-8	-29	-143	-339	-296	-121	-164	-380	-311	-126	-211	-71	-224	-335	-87	-31	-110	-83	-137
	353	93	54	28	33	127	44	78	237	510	642	347	314	444	420	217	334	123	316	496	255	106	217	142	247
3	58	70	60	61	58	72	61	48	61	48	58	55	93	58	76	105	72	124	173	136	114	102	84	88	81
	-47	-17	-17	-17	-28	-4	-6	-13	-23	-29	-61	-102	-220	-189	-207	-304	-122	-189	-278	-129	-107	-73	-80	-111	-99
	105	88	79	79	87	77	68	62	85	77	120	158	314	247	284	409	195	315	452	266	222	176	166	200	181
4	80	57	89	82	98	126	126	69	43	32	43	47	69	104	79	78	73	66	111	111	74	66	76	101	79
	-125	-9	-52	-31	-49	-80	-5	-13	-10	-18	-48	-99	-185	-183	-283	-112	-12	-72	-175	-340	-193	-92	-41	-131	-98
	207	66	142	114	148	206	131	83	54	51	93	147	254	288	363	191	86	139	287	452	268	159	118	232	178
5	79	60	52	62	63	55	56	102	92	64	29	16	11	27	41	28	16	50	28	27	36	26	41	36	46
	-26	-2	-8	-4	-28	-113	-103	-46	-21	-25	-10	-24	-19	-27	-24	-126	-87	-167	-70	-61	-146	-66	-5	-20	-51
	106	63	61	66	92	169	160	148	113	90	40	41	30	55	66	155	105	218	98	89	184	93	46	58	98
6	42	46	52	57	46	38	31	33	29	34	21	35	28	25	41	17	14	10	12	13	21	44	85	46	34
	-27	-21	-14	-7	-4	-4	-3	-20	-15	-17	-29	-49	-22	-19	-34	-19	-15	-13	-9	-6	-27	-107	-89	-48	-26
	71	68	67	65	51	43	35	54	46	52	51	85	51	45	76	37	29	24	22	20	49	153	175	96	61
7	47	46	69	61	67	59	68	32	35	37	40	59	111	49	26	17	17	23	25	27	63	86	112	39	51
	-36	-9	-10	-6	-4	-13	-6	-4	-3	-7	-2	-100	-119	-27	-12	-19	-45	-73	-22	-27	-72	-258	-64	-24	-40
	84	56	79	69	71	72	74	36	38	46	43	161	231	76	39	36	63	98	48	55	137	346	177	64	92
8	39	49	57	84	90	99	88	90	97	90	70	48	116	122	102	80	26	24	22	18	11	11	12	16	61
	-36	-25	-13	-32	-34	-19	-1	-87	-94	-90	-45	-13	-45	-116	-113	-32	-13	-16	-6	-8	-5	-4	-2	-6	-36
	77	75	71	117	125	118	89	178	193	181	115	62	161	239	216	113	39	40	29	27	17	15	15	23	97
9	19	26	23	24	25	14	14	20	30	26	14	18	18	20	38	28	48	124	62	85	116	115	190	68	48
	-6	-2	0	4	3	0	-2	-8	3	0	-11	-24	-9	-17	-17	-16	-106	-314	-136	-121	-202	-177	-106	-61	-55
	26	29	22	19	21	14	17	29	26	25	26	44	28	37	56	44	155	440	199	208	319	293	298	130	104
10	89	66	129	98	93	65	130	110	54	67	41	39	30	62	33	38	31	97	157	233	157	88	131	118	90
	-98	-136	-80	-15	7	-16	-13	-35	6	-26	-26	-19	-28	-37	-40	-47	-157	-467	-300	-191	-141	-219	-457	-275	-117
	189	204	210	114	86	82	143	146	47	94	69	59	59	99	73	85	189	566	459	425	299	309	589	394	208
11	175	60	61	57	48	31	12	12	20	14	9	12	28	41	70	55	105	76	68	75	128	113	78	142	62
	-24	-46	-97	-61	-42	-54	-26	-8	-21	-27	-40	-29	-45	-262	-188	-224	-234	-141	-117	-29	-183	-157	-130	-162	-98
	200	108	158	119	91	86	39	21	42	42	50	42	73	304	258	280	340	218	187	105	313	272	210	306	161
12	210	68	133	94	59	35	23	16	20	17	16	15	15	37	23	18	39	87	98	66	38	56	89	75	56
	-104	-5	-59	-40	-55	-21	-21	-17	-19	-18	-20	-27	-23	-40	-54	-103	-290	-443	-278	-187	-82	-46	-37	-49	-85
	316	74	193	136	114	56	45	34	39	36	36	43	40	78	77	122	330	531	376	254	121	103	127	125	142
13	114	100	93	82	52	77	54	74	83	68	127	99	96	78	103	57	66	114	50	108	109	111	69	80	86
	-175	-250	-109	-22	-42	-55	-105	-181	-151	-129	-315	-274	-165	-401	-542	-93	-67	-286	-253	-234	-165	-269	-149	-134	-190
	290	351	204	105	94	132	160	256	235	198	442	373	261	479	647	151	133	401	304	342	275	381	219	215	277
14	82	74	73	52	84	82	108	125	127	56	128	111	153	81	68	178	165	158	115	99	42	55	51	74	97
	-28	-10	-2	-16	-66	-140	-207	-284	-129	-88	-144	-491	-286	-301	-344	-234	-540	-367	-159	-45	-76	-191	-118	-273	-189
	110	84	77	68	151	223	316	410	257	145	272	602	440	384	412	412	706	525	276	146	119	248	170	348	288
15	89	148	151	119	114	61	54	54	67	37	31	37	46	47	47	25	11	10	9	20	12	10	9	6	51
	-250	-193	-92	-44	-78	-62	-83	-86	-44	-26	-19	-27	-22	-61	-58	-47	-76	-40	-22	-19	-11	-15	-17	-13	-59
	341	343	244	164	192	123	138	141	112	64	50	65	68	108	105	73	89	51	31	40	24	26	27	20	110

PROVISIONAL HOURLY VALUES OF AU, AL, AND AE INDICES
(continued)

DECEMBER 1991

16	12	15	16	14	20	36	46	37	38	77	83	95	202	155	115	159	278	117	56	115	176	168	72	90	91
	-9	-6	-8	-12	-23	-86	-83	-41	-49	-54	-146	-437	-584	-273	-71	-269	-516	-95	-63	-154	-522	-261	-74	-109	-164
	21	22	25	26	43	122	130	79	89	132	230	533	787	429	187	430	795	212	121	271	700	430	148	200	257
17	92	72	129	192	196	144	103	144	77	85	110	60	108	114	169	222	206	193	80	183	135	63	95	102	128
	-285	-689	-199	-367	-429	-283	-127	-326	-352	-157	-403	-401	-440	-248	-357	-659	-596	-421	-321	-389	-123	-143	-371	-232	-347
	378	763	329	560	626	427	230	471	430	244	514	462	548	363	527	883	802	615	403	573	259	206	467	336	476
18	96	76	95	50	55	87	79	89	81	191	271	138	82	33	26	42	39	33	12	30	24	9	8	7	69
	-148	-238	-104	-167	-192	-265	-187	-202	-333	-313	-282	-279	-262	-262	-275	-248	-30	-28	-44	-26	-28	-13	-9	-9	-164
	244	315	199	217	247	353	267	292	415	505	553	418	344	295	302	290	70	61	57	57	53	23	18	16	234
19	4	4	10	6	10	9	30	35	61	160	240	172	150	145	129	168	177	154	109	163	170	78	13	12	92
	-10	-10	-7	-4	-10	-65	-89	-142	-215	-249	-152	-238	-404	-459	-350	-361	-522	-436	-364	-389	-257	-109	-20	-27	-204
	14	15	18	11	20	75	119	178	277	410	393	411	555	605	480	530	700	591	474	553	429	188	35	41	297
20	12	0	2	10	37	44	54	79	69	18	16	12	5	8	20	107	167	85	73	88	43	54	67	38	46
	-36	-26	-17	-15	-72	-157	-139	-200	-206	-90	-65	-33	-39	-55	-82	-310	-420	-115	-166	-261	-79	-75	-129	-84	-120
	50	26	20	26	109	202	193	279	276	109	82	46	45	64	103	418	588	200	240	350	124	130	198	124	167
21	71	93	179	233	166	149	148	140	203	285	219	64	111	70	59	98	105	80	54	47	47	45	64	67	117
	-190	-214	-317	-377	-177	-227	-287	-180	-460	-411	-133	-356	-290	-193	-173	-253	-243	-149	-277	-361	-211	-151	-280	-238	-256
	262	309	497	611	344	377	436	321	663	697	353	421	402	264	233	351	349	231	332	409	260	197	345	306	374
22	59	59	90	92	57	68	65	58	63	68	39	20	15	14	13	12	12	13	15	18	19	21	23	25	39
	-75	-153	-110	-56	-36	-116	-63	-62	-126	-181	-68	-14	-12	-18	-23	-27	-37	-34	-21	-14	-6	-2	-2	-5	-53
	134	213	200	149	94	185	130	121	189	250	109	35	27	33	37	40	49	48	38	32	26	24	25	31	93
23	39	60	75	74	76	122	77	74	81	111	221	167	67	68	31	38	39	62	55	40	53	65	46	48	75
	-69	-304	-264	-136	-116	-288	-61	-199	-300	-345	-228	-158	-186	-164	-178	-277	-282	-423	-299	-89	-97	-258	-179	-210	-213
	110	366	341	210	192	411	139	274	382	457	450	326	253	233	209	316	323	486	355	131	150	324	227	258	288
24	48	72	66	82	116	95	42	81	62	148	119	67	83	85	44	40	113	59	33	25	18	14	11	15	64
	-190	-218	-103	-127	-178	-115	-25	-72	-179	-431	-91	-91	-138	-177	-212	-237	-258	-268	-81	-44	-36	-24	-44	-29	-140
	240	291	170	210	294	211	67	153	242	580	212	159	221	262	257	278	372	328	116	70	56	39	57	45	205
25	29	36	27	28	24	37	35	27	29	34	42	73	195	113	59	47	27	39	66	49	31	54	61	55	51
	-27	-52	-19	-3	-2	-4	-11	-47	-107	-73	-46	-184	-425	-87	-77	-166	-103	-142	-192	-80	-26	-39	-166	-129	-92
	56	88	47	32	27	42	47	76	137	107	89	257	621	201	137	214	130	182	260	131	59	93	229	185	144
26	50	31	56	46	28	47	71	53	26	19	19	23	22	24	24	22	27	33	41	43	55	81	149	154	48
	-47	-6	-26	-90	-146	-101	-121	-40	-41	-17	-13	-30	-8	-15	-11	-11	-15	-8	-16	-29	-21	-21	-26	-18	-37
	98	38	83	136	174	148	193	94	67	37	33	54	30	39	36	35	43	42	58	73	77	103	177	173	85
27	144	131	118	100	159	184	133	170	118	173	119	235	198	62	54	98	154	143	324	272	120	63	147	193	151
	-31	-14	-17	-72	-85	-41	-23	-59	-297	-368	-624	-286	-178	-244	-253	-421	-590	-713	-189	-497	-587	-673	-811	-298	-307
	176	147	136	173	244	226	157	231	416	542	744	522	377	307	309	520	745	857	515	770	709	738	959	492	459
28	115	122	144	88	74	82	75	97	75	78	51	62	87	110	159	165	210	271	201	127	122	159	115	53	118
	-128	-85	-88	-29	-67	-110	-156	-147	-80	-66	-162	-426	-526	-342	-376	-781	-528	-424	-392	-561	-504	-404	-119	-41	-273
	244	208	233	117	142	193	231	244	156	145	214	488	614	453	536	947	739	696	593	690	628	565	236	95	392
29	45	44	66	82	106	155	132	157	147	104	137	129	116	44	45	49	67	151	217	269	110	0	5	101	103
	-30	-20	-52	-45	-60	-68	-67	-108	-118	-76	-76	-48	-82	-159	-237	-149	-136	-140	-421	-445	-533	-572	-594	-315	-190
	76	66	119	128	167	224	200	266	265	181	214	178	200	204	282	199	205	293	639	715	644	572	600	417	294
30	127	206	164	130	65	30	24	28	20	23	13	25	16	31	43	82	8	13	19	47	79	93	55	33	57
	-149	-406	-371	-143	-25	-18	-13	-16	-21	-18	-17	-37	-42	-90	-230	-143	-48	-34	-40	-73	-79	-101	-18	-9	-89
	277	613	536	273	91	49	38	45	42	42	30	62	59	122	274	225	58	48	60	122	159	195	74	43	147
31	29	4	5	3	8	15	14	10	38	40	37	23	22	21	29	26	45	116	144	174	136	94	94	76	50
	-22	-22	-18	-17	-12	-10	-8	-6	-14	-16	-91	-102	-16	-38	-23	-37	-106	-158	-209	-211	-66	-36	-133	-142	-63
	52	27	24	21	20	26	22	16	53	58	129	126	39	60	53	64	152	275	353	386	203	130	228	220	114

MONTHLY AND YEARLY **AE** 1957 - 1991

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual mean
1957							159	145	311	156	168	217	
1958	193	255	301	263	231	273	270	201	185	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	156.5
1967	135	139	121	168	278	205	177	172	204	123	161	196	173.4
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	197.5
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	192	238	244	293	311	308	214	240	246	193	215	177	239.2
1979	213	196	248	298	253	255	224	255	217	189	153	158	221.7
1980	150	165	123	182	184	262	204	181	166	196	199	151	180.2
1981	148	196	239	325	320	219	280	280	207	253	218	159	237.0
1982	179	387	221	305	291	368	373	319	347	276	255	278	299.9
1983	219	321	318	382	292	284	262	265	230	264	283	238	279.8
1984	214	254	301	330	315	284	280	261	311	302	247	255	279.6
1985	226	235	176	271	183	220	265	224	202	204	200	186	216.0
1986	187	273	208	138	203	188	172	232	217	161	188	138	192.2
1987	123	155	164	115	167	160	195	255	271	254	201	147	183.9
1988	180	215	218	233	196	234							
1989													
1990	181	298	296	363	292	249	215	289	220	204	132	108	237.3
1991	120	151	275	270	304	477	364	389	320	332	319	206	294.1

Unit: nT

The definitive indices for July 1988 to December1989 were not available at the date of publication of this Bulletin The values for 1990 and 1991 correspond to provisional indices (see IAGA Bulletin 32u, page 21, and this Bulletin, page 21)

SECTION 4

CLASSIFICATION OF DAYS

CLASSIFICATION OF DAYS

Quiet days 1991

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

C : indicates very quiet period
K : indicates quiet period
This characterization is deduced from aa values - see text page 22
The first column is relative to the UT day,
the second column to the 48 hour interval centered on UT day

An asterisk in the first column indicates that the UT day is one of
the five quitest days of the month - according to Kp, see text page 22

CLASSIFICATION OF DAYS (continued)

JANUARY 1991

Five international quietest days (from Kp)	:	67 14 19 22
24-hours quiet intervals (from aa) C - very quiet	:	167 14 19 20 21 22 28 29 30
K - quiet	:	NONE
48-hours quiet intervals (from aa) C - very quiet	:	6 14 20 21 22 29
K - quiet	:	7 19

FEBRUARY 1991

Five international quietest days (from Kp)	:	36 16 17 18
24-hours quiet intervals (from aa) C - very quiet	:	36 10 16 17 18
K - quiet	:	4
48-hours quiet intervals (from aa) C - very quiet	:	36 16 17 18
K - quiet	:	19

MARCH 1991

Five international quietest days (from Kp)	:	3 11 14 15 29
24-hours quiet intervals (from aa) C - very quiet	:	3 11 14 15 29
K - quiet	:	NONE
48-hours quiet intervals (from aa) C - very quiet	:	3 15
K - quiet	:	14

APRIL 1991

Five international quietest days (from Kp)	:	8 11 13 16 20
24-hours quiet intervals (from aa) C - very quiet	:	8 11 13 14 15 20 21
K - quiet	:	16
48-hours quiet intervals (from aa) C - very quiet	:	8 14 15 20 21
K - quiet	:	10 13

MAY 1991

Five international quietest days (from Kp)	:	11 12 18 19 20
24-hours quiet intervals (from aa) C - very quiet	:	567 11 12 18 19 20 21
K - quiet	:	15
48-hours quiet intervals (from aa) C - very quiet	:	67 11 19 20
K - quiet	:	58 18

JUNE 1991

Five international quietest days (from Kp)	:	14 16 27 28 29
24-hours quiet intervals (from aa) C - very quiet	:	16 29
K - quiet	:	NONE
48-hours quiet intervals (from aa) C - very quiet	:	NONE
K - quiet	:	NONE

CLASSIFICATION OF DAYS (continued)

JULY 1991

Five international quietest days (from Kp)	:	5 26 28 29 31
24-hours quiet intervals (from aa) C - very quiet	:	57 24 26 29 31
K - quiet	:	27 28
48-hours quiet intervals (from aa) C - very quiet	:	5
K - quiet	:	6 26 27 28 29 30

AUGUST 1991

Five international quietest days (from Kp)	:	10 13 24 25 26
24-hours quiet intervals (from aa) C - very quiet	:	NONE
K - quiet	:	NONE
48-hours quiet intervals (from aa) C - very quiet	:	NONE
K - quiet	:	NONE

SEPTEMBER 1991

Five international quietest days (from Kp)	:	17 18 21 23 24
24-hours quiet intervals (from aa) C - very quiet	:	16 17 21 23 24
K - quiet	:	18
48-hours quiet intervals (from aa) C - very quiet	:	16 17 21 22 23
K - quiet	:	18

OCTOBER 1991

Five international quietest days (from Kp)	:	12 13 15 16 17
24-hours quiet intervals (from aa) C - very quiet	:	12 15 16
K - quiet	:	NONE
48-hours quiet intervals (from aa) C - very quiet	:	13 15 16
K - quiet	:	NONE

NOVEMBER 1991

Five international quietest days (from Kp)	:	12 25 26 27 28
24-hours quiet intervals (from aa) C - very quiet	:	NONE
K - quiet	:	NONE
48-hours quiet intervals (from aa) C - very quiet	:	27
K - quiet	:	NONE

DECEMBER 1991

Five international quietest days (from Kp)	:	67 15 22 25
24-hours quiet intervals (from aa) C - very quiet	:	67 22
K - quiet	:	15
48-hours quiet intervals (from aa) C - very quiet	:	6
K - quiet	:	NONE

CLASSIFICATION OF DAYS (continued)

CLASSIFICATION OF DAYS 1991 (continued)

INTERNATIONAL QUIET AND DISTURBED DAYS 1991

Month	Quietest Days 1 - 5					Quietest Days 6 - 10					Most Disturbed Days 1 - 5				
Jan	7	6	14	19	22	30	29	21	20	28	24	12*	31*	25*	15*
Feb	18	17	16	3	6	4K	24	20	19A	26A	1	23	28*	9*	11*
Mar	29	11	15	3	14A	16A	18A	4A	31A	2A	24	25	26	27	30
Apr	20	11	13	16	8	15	14	21	10A	23A	29	4	3	39	28
May	11	18	20	12	19	6	5	7	21A	15A	31	2	25	14	17
Jun	16	29	14A	28A	27A	15A	20A	3A	22A	30A	5	13	10	11	1
Jul	5	26	31	28K	29	24	7A	27A	6A	30A	13	9	14	8	17
Aug	10A	13A	26A	25A	24A	8A	23A	29A	9A	7A	19	20	12	2	31
Sep	23	21	17	18K	24A	16A	22A	20A	12A	15A	25	1	9	27	28
Oct	16	15	12	17K	13A	14A	18A	19A	11A	9A	29	28	31	2	1
Nov	27A	26A	28A	25A	12A	7A	13A	30A	24A	29A	9	1	8	21	19
Dec	6	7	22K	15A	25A	8A	26A	5A	31A	9A	17	27	29	21	28

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

VERY QUIET INTERVALS, 1991

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

First Eighth			last Eighth			Duration Eighths
Jan	06	E3	07	E8	14
	13	E8	14	E8	9
	22	E3	23	E6	12
Feb	16	E7	18	E7	17
Mar	28	E8	29	E7	8
Apr	20	E1	21	E3	11

First Eighth			last Eighth			Duration Eighths
May	11	E2	12	E6	13
	18	E3	19	E6	12
	19	E8	21	E3	12
Jul	4	E8	6	E1	10
Oct	16	E3	17	E4	10

LIST OF MAGNETIC STORMS, 1991

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 7-	7o	7+	Eighths with 8-	8o	8+	Kp = 9-	9o
Mar	24	E2	24	03.41	23	1	3	2	2	3	.	3	.
Jun	01	E2	-	-	5	1	1	1	.	.	.	.	.
	04	E5	-	-	16	2	1	2	1	4	.	1	.
	10	E3	10	17.16	16	1	1	5	1	.	.	.	.
	12	E4	12	10.12	12	1	2	1	2	.	.	.	.
	17	E4	17	10.18	6	1	.	1	.	.	.	.	.
Jul	08	E5	08	16.36	4	.	.	1	.	1	.	.	.
	09	E2	-	-	8	1	1	1	.	2	.	.	.
	13	E1	-	-	13	3	1	1	.	1	.	1	.
Aug	12	E5	-	-	4	.	.	2	.	.	.	.	.
	19	E1	-	-	5	.	.	.	2	.	.	.	.
	20	E3	-	-	10	.	.	1	1	.	.	.	.
Oct	01	E7	01	18.14	8	.	1	1	.	.	.	.	.
	27	E7	-	-	18	.	1	.	2	1	2	.	.
Nov	01	E3	-	-	8	1	2	.	.	1	1	.	.
	08	E5	08	06.47	11	3	.	1	1	.	2	1	.

SECTION 5

RAPID VARIATIONS

5.1 List of ssc 1991 141

5.2 List of sfe 1991 147

SECTION 5

5.1 List of ssc 1991

STORM SUDDEN COMMENCEMENTS (**ssc**) 1991

Sudden commencements followed by a storm or a period of storminess, as selected from the monthly reports of the 44 observatories listed below by their three letter code. The name of observatories together with their geographical coordinates and operation dates are given in section 2 (pages 29-35). The alternatives codes used by observatories are given in brackets:

SOD CMO(COL) DOB NUR LER ESK WNG NGK VAL HAD DOU BDV CLF HRB NAG SUA GCK MMB AQU EBR COI BJI SPT FRD PEG(PEN) ALM KAK HTY KNY QUE SZT(TEN) LNP HYB ETT PMG TAN LMM(MPO) GNA HER CNB AMS CZT PAF DRV

Events are checked with the record 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(HYD)).

JANUARY 1991										
1201	0151	-2222	4.1	23	6A	13B	6C	3-		(0147-0153)
2301	2030	22222	3.9	10	1A	9B	12C	3-		(2027-2032)

FEBRUARY 1991										
0102	1842	22222	2.5	33	21A	6B	4C	1-		(1840-1847)
0402	2214	12222	4.1	20	1A	13B	8C	3-		(2213-2215)

MARCH 1991										
0403	1619	22222	5.9	14	5A	13B	10C	1-	2sfe	(1618-1620)
0903	2245	22222	3.2	33	17A	14B	2C	1-		(2242-2224)
1203	0453	11-11	4.0	7		2B	9C	1-		(0452-0455)
1603	1559	22112	3.5	7		1B	5C		5sfe	(1556-1600)
1903	1404	11111	3.1	6		1B	3C			(1404-1405)
2103	0600	22222	3.7	22	8A	12B	7C	1-		(0555-0602)
2403	0147	12122	3.4	11		3B	3C		1si	(0146-0148)
2403	0341	33333	3.2	103	37A	2B	2C			(0339-0342)

APRIL 1991										
0404	1122	33233	3.4	60	28A	8B		1-		(1120-1124)
1904	1056	22222	3.2	23	8A	8B	1C		1si	(1053-1101)
2304	1040	21112	7.4	14		2B	7C		1si	(1039-1042)
2404	2045	22212	5.8	20	5A	9B	6C	1-		(2042-2047)

STORM SUDDEN COMMENCEMENTS (**ssc**) 1991 (continued)

MAY 1991											
1305	0857	22223	4.7	32	18A	19B	2C	2-			(0855-0858)
1605	2041	33223	3.6	54	29A	11B		2-			(2039-2044)
2105	1227	22222	2.4	12		8B	14C	1-			(1223-1230)
2205	0018	22222	3.1	20	9A	5B	8C	1-			(0013-0020)
3105	1039	33222	4.9	33	6A	14B		1-			(1038-1040)

JUNE 1991											
0406	1405	11001	5.7	26		1B	2C		1si		(1405-1406)
0406	1535	22222	3.7	42	2A	6B	1C	2-			(1532-1536)
0506	0919	--223	5.5	77	1A	2B	1C				(0918-0921)
0706	2227	22222	5.1	31	10A	8B	2C	2-			(2224-2231)
0906	0040	33223	2.8	65	18A	7B		2-			(0039-0042)
1006	1715	-2223	2.9	61	21A	3B		2-			(1713-1717)
1206	1012	22222	2.9	36	18A	15B	1C	4-			(1009-1015)
1706	1019	3-223	4.3	48	17A	19B	1C	5-			(1015-1024)
1706	1922	33333	7.9	88	5A		1C				(1919-1925)
3006	0116	22222	4.3	20	6A	14B	5C	1-			(0115-0120)

JULY 1991											
0307	0252	12122	7.7	18		1B	1C		1si	1sfe	(0251-0252)
0607	1528	22222	4.4	14	2A	5B	7C	1-	3si	4sfe	(1526-1530)
0807	1636	23233	4.1	101	37A	2B	1C	2-			(1634-1642)
1207	0924	-2222	2.8	41	17A	14B	4C	1-			(0918-0927)
1307	0234	11122	3.3	15	1A		1C		1si		(0234-0234)
1607	1559	22222	3.2	9	1A	1B	8C			1sfe	(0555-1601)
1907	1904	22222	3.0	18	2A	2B	6C	1-	2si		(1902-1906)
3007	0557	22222	7.2	23	2A	3B	5C				(0551-0600)

AUGUST 1991										
0208	0533	11222	3.8	13	1A	5B	5C			(0532-0535)
0508	2046	22222	3.7	22	6A	14B	6C	2-		(2044-2049)
1108	0254	22222	5.2	41	22A	9B	3C	2-		(0250-0257)
1808	1833	22222	3.2	42	25A	7B		2-		(1832-1835)
2008	0800	12222	5.0	53	11A	3B	3C	1-	1si	(0759-0802)
2708	1515	32222	5.6	45	23A	8B	2C	1-		(1511-1517)

STORM SUDDEN COMMENCEMENTS (**ssc**) 1991 (continued)

SEPTEMBER 1991											
0909	0516	22222	6.1	14	1A	2B	7C				(0515-0517)

OCTOBER 1991											
0110	1814	22222	4.1	34	18A	20B	1C	1-			(1813-1815)
0410	1416	22222	7.7	22		1B	3C			2sfe	(1415-1417)
0610	0958	10011	2.8	5		1B	3C				(0957-1000)
0710	1358	11111	3.2	22	1A	4B	2C	1-	1si		(1357-1400)
1710	1331	221-1	3.3	20	2A	12B	7C	1-			(1330-1332)
1810	0145	22222	5.5	26	3A	2B	1C		1si		(0142-0146)
2810	1054	22333	1.7	47	18A	7B	2C	1-			(1052-1056)

NOVEMBER 1991											
0811	0647	22222	2.6	21	12A	14B	8C	2-		1sfe	(0643-0649)
0811	1312	22121	9.6	61	3A	6B					(1312-1313)
1011	1353	22111	6.1	23	2A	2B	1C		1si		(1352-1355)
1111	1751	12221	4.0	27	5A	17B	2C	1-	1si		(1748-1754)
1911	0421	21121	2.2	19	5A	12B	8C	1-			(0420-0422)

DECEMBER 1991											
2312	1802	11121	3.1	12	1A	1B	6C		1si		(1801-1803)
2612	1640	12111	6.6	14		2B	9C	1-			(1639-1641)
2712	1546	12222	8.2	24	1A	1B	1C			1sfe	(1546-1547)
3112	1426	12222	5.5	26		3B	4C	1-	1si	1sfe	(1425-1427)

SECTION 5

5.2 List of sfe 1991

Solar-flare effects 1991

Summary list 149

Extended list 152

Doubtful solar-flare effects 1991

Summary list 161

Extended list 164

SOLAR FLARE EFFECTS (**sfe**) – Summary list 1991

	JANUARY							
C	25/01	06:27	15A	10B	12C	1D	2E	0X

	FEBRUARY							
C	03/02	06:56	2A	11B	17C	6D	1E	3X
	03/02	10:40	6A	11B	19C	4D	1E	2X
C	04/02	10:45	4A	8B	15C	7D	0E	1X
C	06/02	07:45	6A	22B	12C	5D	0E	1X
C	25/02	08:09	6A	7B	24C	4D	1E	2X

	MARCH							
C	04/03	13:58	15A	10B	4C	3D	0E	0X
C	05/03	03:05	2A	6B	14C	4D	1E	0X
C	05/03	05:00	3A	11B	11C	8D	0E	0X
C	05/03	09:10	5A	12B	14C	5D	5E	1X
C	06/03	10:50	7A	16B	10C	7D	4E	0X
C	07/03	07:43	20A	6B	9C	1D	6E	1X
C	11/03	07:32	6A	16B	13C	5D	1E	2X
C	12/03	12:42	16A	15B	8C	1D	1E	0X
C	13/03	15:44	10A	13B	10C	1D	1E	1X
C	16/03	00:44	6A	4B	6C	1D	0E	0X
C	16/03	10:49	3A	12B	12C	7D	0E	0X
C	19/03	01:56	4A	5B	3C	2D	0E	1X
C	23/03	12:27	10A	10B	10C	10D	1E	0X
C	25/03	08:10	11A	5B	10C	2D	16E	1X
C	29/03	06:39	20A	5B	6C	11D	0E	0X

	APRIL							
	10/04	08:05	2A	11B	19C	10D	0E	0X
C	11/04	11:13	20A	8B	7C	3D	0E	0X
C	16/04	11:27	6A	12B	18C	5D	0E	1X

SOLAR FLARE EFFECTS (**sfe**) – Summary list 1991 (continued)

	MAY							
C	30/05	09:36	9A	13B	12C	3D	3E	1X
C	31/05	02:40	4A	11B	17C	1D	1E	1X
C	31/05	04:01	2A	10B	18C	5D	3E	2X

	JUNE							
C	04/06	03:37	28A	4B	7C	1D	0E	0X
C	06/06	01:00	12A	10B	6C	0D	14E	1X
C	12/06	07:06	4A	7B	17C	13D	0E	1X
C	15/06	08:11	29A	5B	6C	3D	0E	1X
	19/06	12:30	11A	13B	6C	9D	1E	2X
C	25/06	09:02	7A	9B	17C	3D	4E	2X

	JULY							
	01/07	12:42	10A	17B	10C	7D	0E	0X
	08/07	07:37	19A	9B	8C	4D	2E	1X
C	31/07	00:47	5A	8B	16C	1D	1E	1X

	AUGUST							
C	02/08	03:03	6A	8B	17C	2D	2E	0X
	08/08	05:28	17A	13B	8C	3D	0E	1X
C	13/08	10:18	8A	8B	22C	4D	2E	0X

	SEPTEMBER							
C	05/09	01:06	2A	4B	10C	2D	0E	1X
C	05/09	05:25	1A	5B	27C	7D	1E	1X
C	05/09	12:05	9A	8B	16C	6D	1E	0X
C	08/09	09:06	11A	9B	11C	7D	0E	1X

SOLAR FLARE EFFECTS (**sfe**) – Summary list 1991 (continued)

	OCTOBER							
C	12/10	10:05	4A	7B	19C	5D	1E	1X
	13/10	07:07	12A	11B	14C	4D	0E	1X
C	27/10	05:39	8A	7B	11C	1D	15E	3X

	NOVEMBER
	none

	DECEMBER							
	09/12	10:24	17A	22B	3C	1D	1E	1X
C	24/12	10:18	3A	15B	15C	3D	1E	2X
C	26/12	10:47	1A	7B	21C	8D	0E	2X

SOLAR FLARE EFFECTS (**sfe**) 1991

Times of commencements of solar-flare effects selected from the monthly lists sent by 44 observatories as reported in the table of *ssc* and checked by the following 46 observatories, identified by their IAGA three letter code (see section 2, pages 29-35):

DOB YAK NUR LER SV3 ESK WNG NGK HAD KIV DOU CLF HRB THY ODE SUA GCK AAA AQU ISK EBR COI BJI SPT FRD PEN KAK HTY TUC QUE TEN LNP ABG SJG HYB MBO GUA ETT AAE FUQ TAN MPO GNA HER CNB EYR

JANUARY **C** **25/01** **06:27**

A	YAK3	KIV2	THY2	ODE2	SUA3	AAA1	ISK2	PEN2	KAK3	QUE1
	LNP2	ABG3	AAE1	GNA3	CNB3					
B	(WNG2)	(DOU1)	(CLF0)	GCK1	AQU2	(EBR2)	GUA1	ETT0	MPO3	HER3
C	(DOB0)	(NUR1)	SV30	(NGK0)	(HAD0)	BJI1	(SPT0)	HTY3	(TEN0)	MBO-)
	[FUQ2]	EYR1								
D	TAN									
E	HRB	HYB								
X										

FEBRUARY **C** **03/02** **06:56**

A	YAK2	ABG3								
B	(DOB3)	(WNG2)	(DOU0)	(CLF0)	THY0	SUA2	BJI1	LNP2	HYB3	GUA0
	ETT3									
C	NUR1	(LER0)	SV32	(ESK0)	NGK0	KIV2	ODE2	GCK0	AAA1	AQU1
	[FRD0]	KAK1	QUE1	[SJG0]	AAE1	[FUQ2]	GNA1			
D	HRB	ISK	HTY	TAN	HER	EYR				
E	PEN									
X	(MBO)	MPO	CNB							

FEBRUARY **C** **03/02** **10:40**

A	DOB3	[YAK2]	KIV2	DOU2	THY1	SUA3				
B	NUR2	SV32	WNG2	NGK1	CLF0	ODE2	GCK0	ISK2	EBR2	(LNP2)
	ABG2									
C	LER0	ESK0	HAD0	AAA1	AQU2	(BJI1)	SPT0	PEN2	[KAK0]	[HTY0]
	QUE1	TEN1	HYB1	[GUA1]	ETT0	AAE2	(FUQ2)	GNA1	[EYR0]	
D	COI	MBO	TAN	HER						
E	HRB									
X	MPO	[CNB	]							

FEBRUARY **C** **04/02** **10:45**

A	SUA2	ISK3	AAE2	HER3						
B	ESK1	WNG3	HAD0	KIV2	THY1	ODE2	PEN1	ABG2		
C	DOB2	[YAK0]	NUR2	LER1	SV30	NGK0	DOU1	CLF2	HRB1	GCK0
	AQU1	SPT0	QUE1	HYB3	MPO3					
D	AAA	EBR	COI	TEN	ETT	TAN	GNA			
E										
X	MBO									

FEBRUARY **C** **06/02** **07:45**

A	DOB3	KIV2	ODE2	SUA3	COI2	PEN3				
B	(YAK2)	NUR2	(LER1)	SV32	(ESK1)	WNG2	NGK1	DOU1	HRB2	THY0
	GCK0	ISK1	[FRD0][TUC0]		ABG2	[SJG0]	GUA1	ETT0	AAE2	[FUQ3]
	MPO1	CNB1								
C	HAD1	CLF0	AAA0	AQU1	BJI0	SPT0	KAK0	HTY0	QUE1	TEN0
	HYB1	(EYR0)								
D	EBR	LNP	TAN	GNA	HER					
E										
X	MBO									

SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

FEBRUARY **C** **25/02** **08:09**

A	SV31	AAA1	QUE1	LNP2	ABG3	AAE2				
B	DOB0	ESK0	WNG1	KIV2	THY0	ODE2	HYB1			
C	YAK0	NUR1	LER0	NGK0	HAD0	CLF0	SUA2	GCK0	AQU1	ISK2
	BJI0	SPT0	[FRD0]	PEN1	HTY0	[TUC0]	TEN1	[SJG0]	MBO-	GUA0
	ETT0	GNA1	HER2	CNB2						
D	EBR	COI	KAK	TAN						
E	HRB									
X	DOU	MPO								

MARCH **C** **04/03** **13:58**

A	ESK2	WNG3	DOU2	HRB3	THY1	ODE2	SUA3	AQU3	ISK3	COI3
	PEN3	TEN3	MBO3	MPO1	HER3					
B	LER2	NGK2	HAD2	KIV2	GCK1	EBR2	SPT3	SJG0	AAE2	FUQ2
C	CLF0	FRD1	TUC0	(ABG1)						
D	DOB	NUR	TAN							
E										
X										

MARCH **C** **05/03** **03:05**

A	BJI3	LNP3								
B	[WNG0]	[THY0]	KAK3	ABG1	HYB0	CNB2				
C	[DOB0]	[LER0]	[NGK0]	(ODE1)	(SUA1)	[FRD0]	HTY2	[TEN1]	[SJG0]	GUA0
	ETT0	[FUQ2]	GNA1	EYR1						
D	SV3	AAA	QUE	TAN						
E	YAK									
X										

MARCH **C** **05/03** **05:00**

A	YAK2	LNP3	ABG2							
B	(WNG0)	(NGK0)	(CLF0)	(THY1)	SUA2	BJI1	KAK3	HYB2	ETT1	AAE1
	CNB2									
C	(NUR1)	(LER0)	(HAD0)	ODE2	AAA2	(AQU0)	PEN1	HTY0	QUE1	[TEN1]
	MPO0									
D	SV3	KIV	ISK	GUA	TAN	GNA	HER	EYR		
E										
X										

MARCH **C** **05/03** **09:10**

A	DOB0	SV32	AAA3	ABG3	AAE2					
B	WNG1	DOU1	CLF0	THY0	ODE1	SUA2	ISK2	EBR2	QUE1	TEN2
	LNP2	[FUQ2]								
C	NUR1	LER0	ESK0	NGK0	HAD0	GCK0	AQU0	BJI1	SPT1	[FRD0]
	[TUC0]	ETT0	MPO0	GNA1						
D	KIV	COI	HYB	TAN	HER					
E	(YAK	)	HRB	PEN	(CNB	)[EYR	]			
X	MBO									

MARCH **C** **06/03** **10:50**

A	DOB0	ESK0	HAD0	DOU1	CLF2	TEN3	MBO3			
B	LER1	SV32	WNG2	NGK0	THY1	ODE2	SUA2	AQU1	EBR2	PEN2
	[KAK0]	[TUC0]	ABG2	SJG0	(FUQ3)	[EYR0]				
C	NUR1	(BJI1)	SPT1	(FRD0)	[HTY0]	QUE1	ETT0	MPO0	(GNA1)	[CNB0]
D	KIV	AAA	ISK	COI	HYB	TAN	HER			
E	(YAK)	HRB	GCK	AAE						
X										

SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

MARCH **C** **07/03** **07:43**

A	SV33	WNG2	KIV2	CLF2	THY1	ODE2	SUA3	AAA3	AQU2	EBR2
	COI3	QUE1	LNP3	ABG3	HYB2	MBO3	ETT3	AAE2	GNA3	CNB1
B	NUR2	ESK0	NGK2	GCK0	ISK2	KAK3				
C	LER0	BJI1	SPT0	HTY2	TEN1	GUA0	[FUQ2]	MPO0	HER2	
D	TAN									
E	DOB	YAK	HAD	HRB	PEN	(EYR	)			
X	DOU									

MARCH **C** **11/03** **07:32**

A	YAK2	SUA3	AAA3	COI2	LNP2	ABG3				
B	DOB2	NUR2	LER1	ESK0	WNG2	HAD1	KIV2	THY0	ODE2	ISK2
	BJI3	PEN2	KAK3	ETT3	AAE2	GNA2				
C	NGK1	CLF0	HRB1	GCK0	AQU0	SPT0	[FRD0]	HTY3	QUE1	TEN0
	[SJG0]	HYB3	GUA1							
D	EBR	MBO	TAN	HER	CNB					
E	SV3									
X	DOU	MPO								

MARCH **C** **12/03** **12:42**

A	[YAK2]	ESK0	WNG3	HAD1	KIV2	DOU2	ODE2	SUA3	ISK3	COI3
	PEN3	QUE1	ABG2	MBO3	AAE2	FUQ3				
B	DOB3	NUR2	LER2	SV30	NGK1	CLF0	THY0	GCK1	AQU2	EBR2
	SPT1	FRD1	TEN3	SJG1	MPO2					
C	(AAA0)	[BJI1]	[KAK0]	[HTY0]	(TUC0)	[GUA0]	ETT0	HER2		
D	TAN									
E	HRB									
X										

MARCH **C** **13/03** **15:44**

A	[YAK1]	HAD2	KIV2	THY1	SUA3	ISK3	[ABG3]	MBO3	FUQ3	[CNB0]
B	DOB3	NUR1	ESK0	WNG3	NGK1	DOU0	CLF0	GCK0	AQU1	FRD2
	PEN2	TUC2	SJG2							
C	LER1	(SV30)	(ODE2)	[AAA0]	EBR0	[BJI0]	SPT1	[GUA0]	MPO1	HER0
D	COI									
E	HRB									
X	TEN									

MARCH **C** **16/03** **00:44**

A	YAK3	KAK3	LNP3	GNA3	CNB3	EYR2				
B	[WNG0]	BJI2	HTY3	GUA2						
C	[ODE1]	[SUA0]	(AAA0)	[AQU0]	(ABG0)	(HYB3)				
D	TUC									
E										
X										

MARCH **C** **16/03** **10:49**

A	ISK3	COI2	AAE2							
B	NUR1	LER2	SV32	ESK2	WNG3	HAD2	DOU2	HRB2	THY0	ODE2
	SUA2	TEN2								
C	NGK1	KIV2	CLF0	GCK0	AAA2	AQU0	SPT1	PEN1	QUE1	ABG0
	ETT3	MPO0								
D	DOB	EBR	SJG	HYB	MBO	TAN	HER			
E										
X										

SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

MARCH **C** **19/03** **01:56**

A	YAK2	LNP3	GUA3	EYR2	
B	BJI3	KAK3	HTY3	GNA2	CNB3
C	[NGK0]	AAA2	HYB3		
D	QUE	ETT			
E					
X	ABG				

MARCH **C** **23/03** **12:27**

A	DOB2	WNG3	NGK1	HAD2	KIV2	DOU1	CLF3	HRB3	ODE2	SUA3
B	[YAK1]	NUR2	LER2	THY1	GCK0	AQU1	ISK3	PEN2	TEN2	ABG2
C	[BJI0]	SPT1	FRD0	[KAK0]	[HTY0]	SJG0	MBO2	FUQ1	MPO2	[EYR0]
D	SV3	AAA	EBR	COI	QUE	HYB	ETT	AAE	TAN	HER
E	ESK									
X										

MARCH **C** **25/03** **08:10**

A	KIV2 (CNB2)	ODE2	SUA3	AAA3	ISK2	QUE1	LNP3	ABG3	HYB0	ETT0
B	WNG2	CLF0	AQU1	KAK0	HER0					
C	LER0	ESK0	HAD0	BJI1	SPT1	HTY0	TEN1	[FUQ2]	MPO1	GNA1
D	COI	TAN								
E	DOB	YAK	NUR	SV3	NGK	HRB	THY	GCK	EBR	[FRD]
	PEN	[TUC]	[SJG]	MBO	GUA	AAE				
X	DOU									

MARCH **C** **29/03** **06:39**

A	YAK3	SV33	KIV2	HRB1	ODE2	SUA3	AAA3	ISK2	BJI3	PEN3
	KAK3	HTY3	QUE1	LNP3	ABG3	HYB3	GUA2	ETT3	AAE2	GNA3
B	NUR2	WNG2	THY1	GCK1	MPO2					
C	AQU2	SPT1	(TEN1)[SJG0][FUQ2]			HER2				
D	DOB	LER	ESK	NGK	HAD	DOU	CLF	EBR	COI	TAN
	CNB									
E										
X										

APRIL **10/04** **08:05**

A	SUA2	ABG3								
B	DOB2	YAK1	WNG2	KIV2	DOU1	ODE2	AQU2	PEN2	HYB3	ETT3
	GNA1									
C	NUR2	LER0	ESK0	NGK1	HAD0	HRB1	THY0	GCK0	AAA0	BJI0
	SPT1	KAK1	HTY0	QUE1	GUA1	[FUQ2]	MPO1	HER0	(CNB1)	
D	SV3	CLF	ISK	EBR	COI	TEN	LNP	MBO	AAE	TAN
E										
X										

APRIL **C** **11/04** **11:13**

A	DOB3	NUR2	SV33	ESK2	WNG3	HAD3	KIV2	DOU2	CLF2	HRB3
	ODE2	SUA3	ISK3	COI3	PEN3	QUE1	TEN3	MBO3	AAE2	MPO3
B	LER2	NGK2	THY1	GCK3	AQU2	EBR2	SPT2	FRD2		
C	(YAK1)	AAA2	[HTY0]	ABG1	SJG1	ETT2	FUQ2			
D	HYB	TAN	HER							
E										
X										

SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

APRIL **C** **16/04** **11:27**

A	(YAK2)	WNG3	DOU1	ODE2	SUA2	ISK3				
B	NUR1	ESK0	HAD1	KIV2	THY1	GCK1	AQU2	EBR1	PEN2	[KAK0]
	ABG2	FUQ3								
C	LER1	SV32	NGK1	CLF1	HRB1	AAA1	(BJI0)	SPT1	FRD0	[HTY0]
	QUE1	TEN2	SJG0	HYB1	[GUA0]	ETT0	MPO1	[CNB0]		
D	DOB	COI	AAE	TAN	HER					
E										
X	MBO									

MAY **C** **30/05** **09:36**

A	YAK2	DOU2	SUA3	AAA2	COI2	QUE1	TEN3	ABG3	MBO3	
B	ESK0	WNG1	HAD1	KIV1	THY1	GCK0	EBR2	KAK0	HTY3	LNP2
	HYB3	AAE1	HER2							
C	NUR1	LER0	NGK1	CLF0	ODE2	AQU1	BJI1	SPT1	(FRD0)	PEN1
	ETT0	(FUQ2)								
D	DOB	ISK	TAN							
E	SV3	HRB	[CNB	]						
X	MPO									

MAY **C** **31/05** **02:40**

A	YAK3	[TEN1]	LNP3	GUA2						
B	(DOU0)	(CLF0)	(THY1)	BJI2	[FRD0]	KAK1	HTY3	QUE1	[SJG0]	[FUQ2]
	GNA2									
C	NUR1	SV30	(WNG0)	(NGK0)	KIV1	ODE2	(SUA1)	(GCK0)	AAA2	(AQU1)
	[SPT0]	HYB3	[MBO2]	ETT0	[MPO3]	CNB2	EYR2			
D	DOB									
E	(HRB	)								
X	ABG									

MAY **C** **31/05** **04:01**

A	LNP3	ABG3								
B	LER0	WNG0	DOU0	(CLF0)	THY0	SUA2	KAK1	(TUC0)	GUA1	CNB1
C	NUR1	ESK-	NGK1	(HAD0)	KIV1	ODE2	GCK0	AAA0	AQU0	BJI0
	[FRD0]	PEN1	HTY0	QUE1	[SJG0]	HYB2	(MPO1)	EYR2		
D	DOB	ISK	AAE	TAN	GNA					
E	YAK	HRB	[MBO]							
X	SV3	ETT								

JUNE **C** **04/06** **03:37**

A	DOB3	YAK3	NUR2	SV33	WNG3	NGK3	KIV2	(DOU1)	(CLF1)	HRB0
	THY0	ODE2	SUA1	GCK1	AAA3	(AQU3)	ISK3	BJI1	PEN2	KAK3
	HTY3	QUE1	ABG3	HYB0	GUA2	AAE2	GNA2	EYR0		
B	LER0	ETT1	TAN3	CNB2						
C	(ESK0)	(HAD0)	(EBR1)	[FRD0]	(TUC0)	[SJG0]	(MPO3)			
D	LNP									
E										
X										

SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

	JUNE						**C**	**06/06**	**01:00**	
A	SV31	(NGK1)	(DOU0)	(SUA3)	HTY2	QUE1	LNP3	ABG3	GUA0	GNA2
	CNB2	EYR1								
B	(LER0)	(WNG0)	(KIV2)	(ODE2)	(GCK0)	[AQU1]	BJI2	KAK3	ETT0	
	[MPO3]									
C	(ESK0)	(HAD0)	[EBR1]	[SPT1]	[TEN1]	[AAE2]				
D										
E	(DOB)	YAK	(NUR)	(CLF)	(HRB)	(THY)	AAA	(ISK)	[COI]	(FRD)
	[PEN]	TUC	[SJG]	HYB						
X	[MBO]									

	JUNE						**C**	**12/06**	**07:06**	
A	DOB0	SV33	LNP2	ABG3						
B	YAK2	THY0	ODE2	SUA2	ISK2	PEN3	AAE2			
C	NUR1	WNG1	NGK0	KIV1	GCK0	AAA3	BJI1	SPT0	[FRD0]	KAK3
	HTY0	[TUC0]	QUE1	HYB3	GUA0	ETT0	MPO3			
D	LER	ESK	HAD	CLF	HRB	AQU	EBR	COI	TEN	MBO
	TAN	GNA	HER							
E										
X	DOU									

	JUNE						**C**	**15/06**	**08:11**	
A	YAK2	SV33	WNG3	NGK3	HAD1	KIV2	DOU2	CLF2	HRB3	THY1
	ODE2	SUA3	GCK1	AAA3	AQU2	ISK3	EBR2	BJI3	PEN3	KAK3
	QUE1	TEN3	LNP3	ABG3	HYB3	ETT3	AAE2	GNA3	HER3	
B	DOB2	LER2	SPT3	HTY3	GUA0					
C	NUR1	ESK0	(FRD0)	[TUC0]	[SJG0]	[FUQ2]				
D	COI	TAN	MPO							
E										
X	MBO									

	JUNE							**19/06**	**12:30**	
A	YAK2	NUR2	SV30	KIV2	THY2	ODE2	SUA3	AQU2	ISK3	ABG3
	[GNA2]									
B	DOB0	LER1	WNG3	NGK1	DOU0	CLF0	GCK1	EBR1	SPT1	PEN2
	[KAK0]	TEN2	HYB0							
C	(BJI1)	FRD1	[HTY0]	QUE1	ETT0	MPO1				
D	ESK	HAD	COI	TUC	SJG	MBO	AAE	TAN	HER	
E	HRB									
X	AAA	FUQ								

	JUNE						**C**	**25/06**	**09:02**	
A	DOB0	YAK2	SV32	KIV2	SUA3	AAA3	ABG3			
B	ESK0	WNG2	DOU0	THY0	ODE2	KAK0	QUE2	(GUA1)	AAE2	
C	NUR1	LER0	NGK0	HAD0	CLF0	AQU1	ISK1	BJI1	SPT0	HTY0
	TEN2	(SJG0)	MBO2	ETT0	[FUQ2]	MPO3	GNA1			
D	COI	LNP	HER							
E	HRB	GCK	PEN	HYB						
X	EBR	TAN								

SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

JULY **01/07** **12:42**

A	YAK3	SV30	KIV2	THY1	ODE2	SUA3	AAA1	AQU1	PEN2	MBO2
B	NUR2	WNG2	NGK3	DOU0	CLF0	GCK1	ISK1	[KAK0]	TEN1	ABG2
	HYB1	[GUA0]	ETT0	AAE2	FUQ2	MPO2	[CNB0]			
C	LER0	ESK1	HAD0	HRB1	EBR1	(BJI1)	SPT1	[HTY0]	QUE1	[GNA1]
D	DOB	COI	FRD	TUC	SJG	TAN	HER			
E										
X										

JULY **08/07** **07:37**

A	DOB1	YAK2	SV31	WNG2	HAD1	KIV2	DOU1	CLF3	THY2	ODE2
	SUA3	AAA0	AQU1	EBR1	COI3	KAK0	ABG3	HYB1	MBO2	
B	NUR1	ESK1	NGK2	GCK0	ISK1	PEN2	[TUC0]	TEN2	GNA1	
C	LER1	BJI1	SPT1	HTY0	QUE1	ETT0	[FUQ2]	MPO1		
D	LNP	GUA	TAN	HER						
E	HRB	(CNB	)							
X	AAE									

JULY **C** **31/07** **00:47**

A	YAK3	SV30	BJI3	LNP3	GUA2					
B	[THY0]	[SUA2]	KAK3	HTY3	TUC0	ABG1	CNB3	EYR2		
C	(NUR1)	(LER0)	(ESK0)	(WNG0)	(NGK0)	[HAD0]	[CLF0]	(ODE2)	[GCK0]	AAA2
	[AQU1]	[ISK1]	[EBR0]	[SPT0]	ETT0	GNA1				
D	HYB									
E	[PEN	]								
X	[MPO	]								

AUGUST **C** **02/08** **03:03**

A	DOB2	YAK2	AAA2	KAK3	LNP3	ABG3				
B	NUR1	SV30	(THY0)	SUA2	ISK1	HTY2	QUE1	ETT0		
C	(ESK0)	(WNG0)	KIV2	(DOU1)	ODE2	(GCK0)	(AQU1)	(EBR0)	BJI0	[SPT0]
	[FRD0]	HYB1	[FUQ2]	(TAN3)	(MPO3)	GNA1	CNB2			
D	GUA	EYR								
E	(HRB)	(PEN)								
X										

AUGUST **08/08** **05:28**

A	DOB3	YAK3	NUR2	SV33	ESK1	HAD1	KIV2	DOU2	ODE2	SUA3
	AAA2	AQU1	ISK1	(COI2)	ABG3	ETT0	AAE2			
B	LER1	WNG2	NGK2	HRB2	THY1	GCK1	EBR1	PEN2	KAK0	(TEN1)
	[FUQ3]	GNA1	(HER0)							
C	CLF0	BJI1	SPT1	HTY0	QUE1	[MBO2]	TAN3	CNB1		
D	LNP	HYB	GUA							
E										
X	MPO									

AUGUST **C** **13/08** **10:18**

A	DOB2	YAK2	DOU0	THY1	ODE2	SUA3	AAA1	ABG2		
B	LER2	ESK1	WNG2	NGK2	KIV2	ISK1	PEN1	(FUQ3)		
C	NUR1	SV32	HAD0	CLF0	GCK0	AQU1	EBR1	BJI1	SPT0	(FRD1)
	(KAK0)	(HTY0)	[TUC0]	QUE1	SJG0	MBO-	[GUA0]	ETT0	TAN3	MPO3
	(GNA1)	HER0								
D	COI	TEN	LNP	HYB						
E	HRB	AAE								
X										

SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

SEPTEMBER **C** **05/09** **01:06**

A	AAA2	LNP3								
B	BJI1	KAK3	GUA1	ETT0						
C	YAK2	[WNG0]	[KIV2]	[THY0]	[SUA0]	HTY3	TUC2	ABG1	GNA1	CNB2
D	HYB	EYR								
E										
X	[MBO	]								

SEPTEMBER **C** **05/09** **05:25**

A	LNP3									
B	DOB0	THY0	SUA2	ABG2	AAE1					
C	YAK2	NUR1	LER0	SV32	(ESK0)	WNG0	NGK0	(HAD0)	KIV2	DOU1
	ODE1	GCK0	AAA1	ISK0	BJI1	[FRD0]	KAK1	HTY0	[TUC0]	QUE2
	[SJG0]	HYB1	GUA1	ETT0	[FUQ2]	MPO2	GNA1			
D	CLF	HRB	AQU	PEN	TAN	HER	EYR			
E	CNB									
X	[MBO	]								

SEPTEMBER **C** **05/09** **12:05**

A	DOB2	(YAK2)	SV30	DOU2	THY2	SUA3	AAA1	ISK3	MBO3	
B	NUR1	WNG3	KIV2	CLF0	GCK0	AQU1	TEN1	ABG1		
C	LER0	ESK0	NGK1	HAD0	EBR1	(BJI1)	SPT1	FRD1	PEN2	[KAK0]
	[HTY0]	QUE1	HYB1	ETT0	AAE1	MPO3				
D	ODE	COI	SJG	FUQ	TAN	HER				
E	HRB									
X										

SEPTEMBER **C** **08/09** **09:06**

A	YAK3	SV33	WNG3	DOU2	CLF1	THY1	SUA3	AAA3	ISK3	EBR2
	PEN3									
B	NUR1	NGK1	KIV2	GCK1	AQU1	SPT2	TEN2	ETT2	AAE2	
C	LER0	ESK0	HAD0	ODE2	BJI0	(KAK0)	(HTY0)	QUE1	ABG1	HYB2
	GNA1									
D	DOB	HRB	COI	LNP	MBO	TAN	HER			
E										
X	MPO									

OCTOBER **C** **12/10** **10:05**

A	ESK1	DOU2	SUA3	AAE2						
B	LER1	THY0	ISK0	TEN2	ABG1	(FUQ3)	HER3			
C	(YAK1)	NUR1	WNG1	NGK0	HAD0	KIV2	CLF0	ODE2	GCK0	AAA0
	AQU0	SPT0	(FRD0)	PEN1	QUE1	HYB0	MBO2	ETT1	MPO2	
D	DOB	SV3	EBR	COI	TAN					
E	HRB									
X	GNA									

OCTOBER **13/10** **07:07**

A	DOB3	YAK2	LER1	SV31	ESK1	WNG2	KIV2	DOU2	ODE2	SUA3
	ABG3	[FUQ3]								
B	NUR2	NGK1	HAD1	HRB2	THY1	GCK1	[FRD0]	PEN1	HYB2	AAE2
	MPO2									
C	CLF0	AAA2	AQU1	ISK0	BJI1	SPT0	KAK0	HTY0	QUE1	GUA0
	ETT3	HER0	CNB1	(EYR1)						
D	EBR	COI	LNP	TAN						
E										
X	GNA									

SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

OCTOBER **C** **27/10** **05:39**

A	(DOB0)	SV33	KIV2	AAA3	(AQU1)	LNP3	ABG3	ETT0		
B	(THY0)	BJI1	KAK3	QUE2	GNA2	HER0	CNB2			
C	(LER0)	(ESK0)	(HAD0)	(CLF0)	(EBR0)	(SPT0)	HTY1	[TUC0]	[TEN1]	GUA1
	EYR1									
D	HYB									
E	YAK	(NUR)	(WNG)	(NGK)	(DOU)	(HRB)	ODE	GCK	ISK	[FRD]
	PEN	[SJG]	[MBO]	AAE	[FUQ]					
X	SUA	TAN	MPO							

NOVEMBER

none

DECEMBER **09/12** **10:24**

A	[YAK3]	SV31	WNG2	NGK2	KIV2	DOU1	CLF0	THY1	ODE2	SUA3
	AAA0	EBR1	COI2	PEN3	ABG3	MBO3	(CNB1)			
B	DOB3	NUR1	HAD0	GCK0	AQU1	ISK2	SPT0	[FRD0]	[KAK0]	[HTY0]
	[TUC0]	QUE1	TEN2	(SJG1)	HYB0	[GUA1]	ETT0	AAE2	(FUQ3)	GNA1
	HER1	(EYR0)								
C	LER0	ESK0	(BJI1)							
D	TAN									
E	HRB									
X	MPO									

DECEMBER **C** **24/12** **10:18**

A	DOU1	SUA2	AAE2							
B	LER1	SV32	ESK0	WNG2	NGK0	HAD0	KIV2	ODE2	GCK0	ISK1
	SPT0	PEN3	TEN2	ABG2	HER3					
C	NUR1	CLF1	HRB1	AAA0	AQU0	EBR1	(BJI0)	[KAK0]	[HTY0]	QUE1
	HYB0	MBO2	ETT0	(FUQ2)	GNA2					
D	DOB	COI	TAN							
E	[YAK	]								
X	THY	MPO								

DECEMBER **C** **26/12** **10:47**

A	AAE2									
B	KIV2	DOU0	ODE2	SUA3	ISK1	PEN2	ABG1			
C	[YAK0]	NUR1	LER0	SV30	ESK0	WNG1	NGK0	HAD0	HRB0	GCK0
	AQU1	EBR1	SPT0	[FRD0]	[KAK0]	QUE2	TEN1	(SJG0)	HYB1	ETT3
	(FUQ2)									
D	DOB	CLF	AAA	COI	MBO	TAN	GNA	HER		
E										
X	THY	MPO								

DOUBTFUL SOLAR FLARE EFFECTS – Summary list 1991

	JANUARY							
C	22/01	05:47	1A	2B	16C	11D	0E	2X
C	27/01	14:40	1A	2B	11C	16D	0E	1X

	FEBRUARY							
C	04/02	01:48	1A	7B	16C	2D	0E	0X
C	14/02	12:30	2A	8B	15C	11D	0E	0X

	MARCH							
	02/03	06:59	6A	13B	18C	6D	0E	1X
C	07/03	23:17	4A	8B	18C	1D	3E	0X
C	15/03	04:03	1A	1B	12C	6D	0E	1X
C	19/03	01:18	1A	1B	5C	7D	0E	1X
C	22/03	08:38	3A	9B	9C	6D	14E	2X

	APRIL							
C	11/04	03:09	0A	2B	12C	6D	0E	0X
C	11/04	06:09	2A	3B	14C	19D	0E	1X
C	11/04	06:51	1A	8B	22C	12D	0E	0X
C	15/04	09:35	2A	9B	15C	10D	0E	2X
C	15/04	14:29	1A	4B	19C	9D	0E	1X
C	17/04	01:44	0A	3B	14C	7D	0E	1X

	MAY							
	11/05	13:15	2A	9B	10C	15D	0E	0X
C	12/05	08:57	4A	10B	9C	16D	1E	1X
C	16/05	06:45	3A	4B	13C	17D	1E	2X
C	22/05	07:47	12A	9B	7C	5D	12E	0X
C	29/05	12:07	3A	8B	18C	6D	5E	1X
C	29/05	23:41	2A	6B	16C	3D	2E	1X

DOUBTFUL SOLAR FLARE EFFECTS – Summary list 1991 (continued)

	JUNE							
C	04/06	13:57	9A	9B	10C	7D	7E	1X

	JULY							
	02/07	08:08	12A	23B	7C	2D	1E	0X
	23/07	14:35	20A	15B	6C	0D	2E	1X
C	30/07	07:07	5A	8B	15C	4D	8E	3X
	31/07	06:32	3A	18B	18C	4D	0E	2X

	AUGUST							
C	03/08	01:23	2A	7B	21C	3D	3E	2X
C	05/08	05:30	3A	10B	17C	6D	2E	2X
	25/08	04:57	6A	7B	14C	8D	1E	1X
C	25/08	09:21	4A	9B	18C	9D	1E	1X

	SEPTEMBER							
	03/09	07:15	1A	12B	19C	11D	0E	2X
C	24/09	07:50	7A	6B	13C	16D	0E	0X

	OCTOBER							
C	01/10	06:11	4A	6B	21C	3D	8E	0X
	04/10	14:14	23A	15B	4C	2D	0E	0X
	07/10	12:58	14A	12B	9C	2D	6E	0X
C	15/10	07:00	1A	5B	15C	17D	0E	1X
C	30/10	06:16	4A	5B	14C	7D	2E	1X

DOUBTFUL SOLAR FLARE EFFECTS – Summary list 1991 (continued)

	NOVEMBER							
C	02/11	06:23	12A	13B	10C	3D	4E	1X
	04/11	11:10	1A	12B	18C	6D	2E	2X
C	30/11	03:40	2A	7B	18C	4D	0E	1X

	DECEMBER							
	30/12	10:15	2A	7B	15C	-9D	0E	2X

DOUBTFUL SOLAR FLARE EFFECTS (**sfe**) 1991

JANUARY **C** **22/01** **05:47**

A	LNP3									
B	ABG3	ETT3								
C	YAK2	[LER0]	(WNG0)	(NGK0)	[HAD0]	KIV1	(THY0)	SUA1	BJI1	[FRD0]
	KAK0	HTY2	QUE1	AAE1	[FUQ2]	CNB3				
D	SV3	ODE	AAA	ISK	PEN	HYB	GUA	TAN	GNA	HER
	EYR									
E										
X	[MBO]	MPO								

JANUARY **C** **27/01** **14:40**

A	COI2									
B	SJG1	FUQ3								
C	[YAK1]	WNG0	THY0	EBR1	SPT0	FRD0	TEN2	[ABG1]	MBO2	AAE2
	MPO3									
D	DOB	LER	ESK	NGK	HAD	DOU	CLF	HRB	SUA	GCK
	AQU	ISK	PEN	TUC	TAN	HER				
E										
X	(KIV)									

FEBRUARY **C** **04/02** **01:48**

A	LNP2									
B	[DOB1]	YAK0	[LER0]	[ESK0]	[WNG0]	[THY0]	[SUA1]			
C	[NUR1]	[NGK0]	[HAD0]	[KIV1]	[AQU1]	BJI1	[FRD0]	KAK3	HTY2	[TEN1]
	ABG1	GUA0	ETT0	[MPO3]	CNB2	EYR2				
D	HYB	GNA								
E										
X										

FEBRUARY **C** **14/02** **12:30**

A	MBO3	HER3								
B	DOB1	LER0	ESK0	WNG2	HAD1	KIV2	THY0	MPO2		
C	[YAK1]	NUR1	NGK0	DOU1	CLF0	ODE2	SUA1	AQU1	EBR1	SPT0
	TEN2	ABG1	SJG0	[GUA1]	FUQ1					
D	SV3	HRB	GCK	ISK	COI	FRD	PEN	QUE	ETT	AAE
	TAN									
E										
X										

MARCH **02/03** **06:59**

A	YAK2	KIV2	DOU2	SUA3	HYB1	CNB1				
B	DOB2	WNG2	CLF0	THY0	ODE2	GCK0	PEN2	ABG2	GUA0	ETT3
	AAE2	[FUQ2]	MPO1							
C	NUR1	LER0	ESK0	NGK0	HAD0	HRB1	AAA0	AQU1	ISK2	SPT1
	[FRD0]	KAK0	HTY0	(TEN2)	[SJG0]	(MBO-)	GNA1	(EYR0)		
D	SV3	EBR	COI	BJI	LNP	TAN	HER			
E										
X	QUE									

DOUBTFUL SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

MARCH **C** **07/03** **23:17**

A	[DOB0]	LNP3	[ABG3]	EYR2						
B	[WNG0]	[DOU0]	[THY0]	[SUA1]	[AQU0]	TUC2	GUA2	CNB2		
C	[LER0]	[SV30]	[ESK0]	[NGK0]	[HAD0]	[CLF0]	[ODE2]	[GCK0]	[AAA0]	BJI0
	[SPT0]	(FRD1)	KAK0	HTY0	[TEN1]	(SJG0)	(FUQ2)	[MPO0]		
D	GNA									
E	YAK	[HRB]	[PEN]							
X										

MARCH **C** **15/03** **04:03**

A	LNP3									
B	ABG1									
C	YAK2	(WNG0)	(NGK0)	(THY0)	AAA2	BJI1	KAK3	HTY0	HYB0	GUA2
AAE1		CNB2								
D	SV3	QUE	TAN	MPO	GNA	EYR				
E										
X	ETT									

MARCH **C** **19/03** **01:18**

A	LNP3						
B	GUA1						
C	BJI1	KAK1	HTY3	[MPO0]	CNB2		
D	YAK	AAA	TUC	HYB	ETT	GNA	EYR
E							
X	ABG						

MARCH **C** **22/03** **08:38**

A	DOU1	LNP3	ABG3							
B	NUR1	WNG2	NGK1	KIV1	CLF0	THY1	AQU1	QUE1	ETT0	
C	ODE2	BJI1	SPT1	[FRD0]	KAK0	TEN1	(GUA0)	[FUQ2]	HER0	
D	ISK	EBR	COI	HTY	TAN	GNA				
E	DOB	YAK	LER	SV3	ESK	HAD	HRB	SUA	GCK	AAA
	PEN	HYB	AAE	(CNB)						
X	MBO	MPO								

APRIL **C** **11/04** **03:09**

A										
B	(THY0)	LNP2								
C	YAK2	(LER0)	(WNG0)	AAA0	BJI0	KAK0	HTY3	[TEN0]	ABG0	HYB2
	ETT1	CNB1								
D	SV3	QUE	GUA	TAN	GNA	EYR				
E										
X										

APRIL **C** **11/04** **06:09**

A	LNP3	ABG3								
B	SV32	THY0	ETT2							
C	YAK2	LER0	WNG0	KIV2	ODE2	AAA0	BJI1	SPT0	KAK0	HTY3
	QUE1	HYB3	MPO3	GNA1						
D	DOB	NUR	ESK	NGK	HAD	DOU	CLF	HRB	SUA	GCK
	AQU	ISK	EBR	COI	PEN	GUA	TAN	HER	CNB	
E										
X	AAE									

DOUBTFUL SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

APRIL **C** **11/04** **06:51**

A	DOB3									
B	KIV2	THY0	ODE2	LNP2	ABG2	ETT3	AAE2	[FUQ2]		
C	YAK2	NUR1	LER0	SV30	ESK0	WNG2	NGK0	HRB1	SUA1	GCK0
	AQU1	BJI0	SPT0	[FRD0]	PEN1	KAK0	HTY0	[TUC0]	QUE1	TEN0
	HYB3	MPO2								
D	HAD	DOU	CLF	AAA	ISK	EBR	COI	GUA	TAN	GNA
	HER	CNB								
E										
X										

APRIL **C** **15/04** **09:35**

A	SV32	AAA0								
B	WNG2	KIV2	DOU0	THY0	ODE2	SUA2	QUE1	ABG3	AAE2	
C	YAK1	NUR1	LER0	ESK0	HRB1	GCK1	AQU1	EBR2	BJI0	SPT1
	HYB1	ETT0	[FUQ2]	MPO3	HER1					
D	DOB	NGK	HAD	CLF	ISK	COI	TEN	LNP	TAN	GNA
E										
X	PEN	MBO								

APRIL **C** **15/04** **14:29**

A	ISK3									
B	DOB2	WNG3	THY0	SUA2						
C	(YAK1)	NUR1	LER0	SV32	ESK0	NGK0	KIV2	CLF0	ODE2	GCK0
	AQU1	SPT2	FRD1	PEN1	TEN2	(ABG1)	SJG1	FUQ2	MPO3	
D	HAD	DOU	HRB	EBR	COI	TUC	AAE	TAN	HER	
E										
X	MBO									

APRIL **C** **17/04** **01:44**

A										
B	YAK2	LNP2	GUA1							
C	[WNG0]	(ODE1)	(SUA1)	AAA0	[AQU0]	BJI1	[FRD0]	KAK3	HTY3	TUC0
	ABG0	[SJG0]	[FUQ2]	[MPO3]						
D	SV3	QUE	HYB	ETT	GNA	CNB	EYR			
E										
X	[MBO]									

MAY **11/05** **13:15**

A	ISK3	COI3								
B	WNG3	THY1	ODE1	SUA2	GCK0	AQU2	SPT2	PEN2	TEN2	
C	(YAK0)	NUR1	SV30	NGK1	KIV2	HRB1	EBR2	ABG1	MBO2	MPO3
D	DOB	LER	ESK	HAD	DOU	CLF	AAA	FRD	TUC	QUE
	SJG	AAE	FUQ	TAN	HER					
E										
X										

MAY **C** **12/05** **08:57**

A	YAK2	AAA2	AQU3	PEN2						
B	WNG2	KIV2	THY0	KAK0	HTY0	TEN1	ABG2	HYB2	ETT1	[FUQ3]
C	HAD0	ODE1	SUA1	GCK0	BJI0	[TUC0]	AAE1	MPO1	GNA1	
D	DOB	NUR	LER	SV3	ESK	NGK	DOU	CLF	ISK	EBR
	SPT	QUE	LNP	MBO	TAN	HER				
E	HRB									
X	COI									

DOUBTFUL SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

MAY **C** **16/05** **06:45**

A	LNP3	ABG3	ETT1							
B	THY0	ODE1	KAK3	AAE1						
C	YAK1	NUR1	SV30	WNG1	NGK0	SUA1	GCK0	AQU1	BJI0	SPT0
	PEN1	HTY2	TEN1							
D	DOB	LER	ESK	HAD	KIV	CLF	HRB	AAA	ISK	EBR
	COI	QUE	GUA	TAN	GNA	HER	CNB			
E	HYB									
X	DOU	MPO								

MAY **C** **22/05** **07:47**

A	YAK2	DOU1	CLF3	SUA3	COI3	[FRD0]	[TUC0]	ABG3	[SJG1]	HYB0
	MBO3	[FUQ3]								
B	WNG2	NGK1	THY0	ODE2	AQU1	EBR1	TEN2	GUA1	ETT0	
C	ISK1	BJI1	SPT1	KAK0	HTY0	QUE1	MPO1			
D	KIV	PEN	TAN	GNA	HER					
E	DOB	NUR	LER	SV3	ESK	HAD	HRB	GCK	AAA	LNP
	AAE	(CNB)								
X										

MAY **C** **29/05** **12:07**

A	COI3	PEN3	TEN2							
B	DOU0	THY0	ODE1	SUA2	ISK2	EBR2	ABG3	MPO3		
C	NUR1	SV30	WNG0	NGK1	HAD0	KIV1	CLF0	AAA1	AQU1	(BJI0)
	SPT1	FRD0	[KAK0]	[HTY0]	(TUC0)	QUE1	SJG0	ETT0		
D	LER	ESK	HYB	AAE	TAN	HER				
E	DOB	YAK	HRB	GCK	MBO					
X	FUQ									

MAY **C** **29/05** **23:41**

A	YAK2	LNP3								
B	[THY0]	[SUA1]	KAK3	[TEN1]	GUA2	CNB2				
C	(NUR1)	(WNG0)	(NGK0)	[GCK0]	AAA0	[AQU1]	BJI1	[SPT0]	FRD0	HTY2
	TUC1	(ABG1)	(SJG0)	[MBO-]	(FUQ1)	[MPO3]				
D	SV3	GNA	EYR							
E	[HRB]	(ODE)								
X	(ETT)									

JUNE **C** **04/06** **13:57**

A	(YAK2)	SV32	KIV2	DOU1	CLF0	ISK3	[KAK0]	[HTY0]	(ABG3)	
B	LER0	ESK1	WNG3	NGK1	AQU1	[GUA0]	(ETT0)	FUQ3	MPO3	
C	HAD0	GCK0	EBR1	[BJI0]	SPT1	FRD0	TUC0	SJG0	AAE1	[CNB0]
D	DOB	NUR	COI	QUE	TEN	TAN	HER			
E	HRB	THY	ODE	SUA	AAA	PEN	(HYB)			
X	MBO									

JULY **02/07** **08:08**

A	DOB2	YAK2	SV33	DOU2	SUA2	AAA2	KAK0	TEN1	ABG3	HYB3
	MBO3	AAE2								
B	NUR1	ESK1	WNG2	NGK1	HAD0	KIV2	THY0	ODE2	ISK1	EBR1
	BJI1	SPT1	(FRD1)	PEN2	[TUC1]	QUE1	[SJG2]	GUA2	ETT3	TAN3
	MPO2	GNA2	HER1							
C	LER1	CLF0	GCK0	AQU1	HTY0	[FUQ2]	(CNB0)			
D	COI	LNP								
E	HRB									
X										

DOUBTFUL SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

JULY **23/07** **14:35**

A	DOB2	(YAK3)	NUR2	SV32	KIV2	DOU2	CLF0	THY2	ODE2	SUA3
	(AAA0)	AQU1	ISK0	EBR1	COI3	PEN3	[KAK0]	TEN3	(HYB2)	FUQ3
B	LER1	WNG2	NGK1	HAD0	GCK1	[BJI1]	SPT1	TUC0	(QUE1)	(ABG2)
	SJG0	[GUA0]	[ETT1]	AAE2	[EYR0]					
C	ESK0	FRD1	[HTY0]	[GNA1]	HER0	[CNB0]				
D										
E	HRB	MBO								
X	MPO									

JULY **C** **30/07** **07:07**

A	YAK2	SUA2	AAA0	LNP3	ABG3					
B	DOB0	WNG1	KIV2	THY1	ISK1	KAK3	ETT0	[FUQ3]		
C	NUR1	SV30	NGK0	CLF0	ODE2	AQU1	BJI1	SPT0	[FRD0]	HTY2
	QUE1	TEN1	HYB0	GUA0	GNA1					
D	COI	TAN	HER	CNB						
E	LER	ESK	HAD	HRB	GCK	PEN	MBO	AAE		
X	DOU	EBR	MPO							

JULY **31/07** **06:32**

A	YAK3	SUA3	ABG3							
B	DOB3	NUR1	SV30	WNG2	NGK1	HAD0	KIV2	THY0	ODE2	GCK0
	EBR0	KAK0	[TUC0]	LNP1	HYB1	ETT0	AAE2	[FUQ3]		
C	LER1	ESK0	CLF0	HRB1	AAA2	AQU1	ISK1	BJI1	SPT0	[FRD0]
	PEN1	HTY0	QUE2	TEN2	[SJG0]	(MBO2)	GUA0	GNA1		
D	COI	TAN	HER	CNB						
E										
X	DOU	MPO								

AUGUST **C** **03/08** **01:23**

A	(DOB0)	LNP3								
B	YAK0	(LER0)	SV30	(ESK0)	(WNG0)	(THY1)	ABG3			
C	(NGK0)	[HAD0]	[DOU0]	[CLF0]	(ODE2)	(SUA0)	(GCK0)	AAA0	[AQU1]	(ISK0)
	[EBR0]	BJI1	[SPT0]	(FRD0)	KAK0	HTY0	TUC0	QUE1	[SJG0]	HYB1
	GNA1									
D	ETT	CNB	EYR							
E	(NUR)	(HRB)	GUA							
X	[PEN	][MPO	]							

AUGUST **C** **05/08** **05:30**

A	SUA3	LNP3	ABG2							
B	DOB0	YAK1	LER0	ESK0	WNG1	DOU0	CLF0	THY0	HTY0	[MBO2]
C	NUR1	NGK0	HAD0	KIV2	ODE2	GCK0	AAA0	AQU0	ISK0	BJI1
	SPT0	KAK0	[TUC0]	QUE1	GUA0	ETT0	[FUQ2]			
D	SV3	EBR	HYB	TAN	GNA	CNB				
E	HRB	AAE								
X	PEN	MPO								

AUGUST **25/08** **04:57**

A	YAK3	THY1	KAK3	LNP2	ABG3	ETT0				
B	WNG1	DOU1	SUA2	HTY2	HYB0	AAE2	CNB2			
C	NUR1	LER1	NGK0	(HAD0)	ODE2	GCK0	AQU1	ISK1	(EBR0)	BJI1
	(SPT0)	PEN1	[FUQ2]	GNA1						
D	DOB	SV3	KIV	AAA	QUE	GUA	TAN	EYR		
E	HRB									
X	MPO									

DOUBTFUL SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

AUGUST **C** **25/08** **09:21**

A	YAK2	KIV2	SUA3	AAE2						
B	NUR2	WNG2	NGK1	THY0	ODE2	ISK1	PEN2	TEN1	ETT0	
C	LER0	SV30	ESK0	HAD0	GCK0	AAA0	AQU0	EBR0	BJI0	SPT0
	(KAK0)	(HTY0)	[TUC0]	QUE1	ABG1	[FUQ2]	HER0	[EYR1]		
D	DOB	DOU	CLF	COI	LNP	HYB	MBO	TAN	GNA	
E	HRB									
X	MPO									

SEPTEMBER **03/09** **07:15**

A	YAK2									
B	DOB1	ESK0	KIV2	DOU1	THY0	SUA3	KAK1	TEN2	ABG2	ETT3
	AAE2	MPO2								
C	NUR1	LER0	WNG1	NGK1	HAD0	ODE2	GCK0	AAA0	ISK0	BJI0
	SPT0	[FRD0]	HTY0	[TUC0]	QUE1	[SJG0]	GUA1	[FUQ2]	CNB1	
D	SV3	CLF	HRB	AQU	EBR	COI	PEN	LNP	MBO	TAN
	HER									
E										
X	HYB	GNA								

SEPTEMBER **C** **24/09** **07:50**

A	ODE2	SUA3	AAA2	ISK3	LNP2	AAE2	MPO3			
B	THY0	PEN3	ABG2	HYB3	ETT3	GNA2				
C	YAK1	NUR1	LER0	WNG0	NGK0	KIV2	GCK0	AQU1	BJI1	KAK0
	HTY3	MBO3	[FUQ1]							
D	DOB	SV3	ESK	HAD	DOU	CLF	HRB	EBR	COI	SPT
	QUE	TEN	GUA	TAN	HER	CNB				
E										
X										

OCTOBER **C** **01/10** **06:11**

A	DOU0	SUA2	LNP3	ABG3						
B	YAK2	WNG2	KIV2	ODE2	ISK1	PEN1				
C	(HAD0)	CLF0	AAA0	AQU1	EBR0	BJI1	(SPT0)	[FRD0]	KAK0	HTY0
	[TUC0]	QUE1	[SJG0]	HYB0	GUA0	ETT0	[FUQ2]	MPO1	HER0	CNB2
	EYR0									
D	HRB	TAN	GNA							
E	DOB	NUR	SV3	NGK	THY	GCK	(MBO)	AAE		
X										

OCTOBER **04/10** **14:14**

A	DOB2	[YAK3]	LER1	(SV31)	WNG2	NGK1	KIV2	DOU1	THY2	SUA3
	(AAA2)	AQU1	EBR1	COI3	PEN2	[KAK0]	[HTY0]	TEN3	(ABG3)	MBO3
	AAE1	HER0	[CNB0]							
B	NUR1	HAD1	CLF0	ODE2	ISK1	[BJI1]	TUC0	(QUE1)	SJG0	[HYB1]
	[GUA0]	[ETT0]	TAN3	MPO2	[GNA1]					
C	ESK0	GCK0	SPT1	FRD0						
D	HRB	FUQ								
E										
X										

DOUBTFUL SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

OCTOBER **07/10** **12:58**

A	DOB0	[YAK2]	SV33	NGK1	KIV2	DOU1	CLF3	SUA3	COI2	FRD0
	(TUC0)	ABG3	SJG0	FUQ3						
B	NUR1	WNG1	THY1	ODE2	AQU1	EBR1	PEN2	[KAK0]	QUE1	TEN2
	[GUA0]	[CNB0]								
C	LER0	(AAA0)	[BJI1]	SPT0	[HTY0]	(ETT0)	MPO1	[GNA1]	HER0	
D	HRB	TAN								
E	ESK	HAD	GCK	ISK	MBO	AAE				
X										

OCTOBER **C** **15/10** **07:00**

A	LNP3									
B	SUA2	ABG2	HYB2	ETT0	AAE2					
C	DOB0	YAK0	NUR1	(LER0)	SV30	(ESK0)	WNG1	NGK0	ODE2	GCK0
	AAA0	ISK0	QUE1	GUA0	MPO1					
D	HAD	KIV	DOU	CLF	HRB	AQU	EBR	BJI	SPT	PEN
	KAK	HTY	TAN	GNA	HER	CNB	EYR			
E										
X	THY									

OCTOBER **C** **30/10** **06:16**

A	LNP3	ABG3	HYB1	ETT0						
B	(WNG1)	(DOU0)	THY0	ISK1	GNA2					
C	(DOB0)	NUR1	(NGK0)	KIV2	ODE1	SUA1	GCK0	AAA1	AQU1	BJI1
	KAK3	HTY2	QUE2	GUA0						
D	SV3	PEN	AAE	TAN	HER	CNB	EYR			
E	YAK	HRB								
X	MPO									

NOVEMBER **C** **02/11** **06:23**

A	(DOB2)	YAK2	NUR1	SV31	KIV2	(DOU1)	(CLF0)	ODE2	SUA3	AAA2
	ABG3	[FUQ3]								
B	(ESK0)	(WNG2)	(NGK0)	GCK0	AQU1	(EBR0)	[FRD0]	KAK3	(TEN2)	GUA0
	AAE2	HER0	CNB2							
C	(LER0)	(HAD1)	BJI1	(SPT1)	HTY0	HYB0	(MBO3)	ETT0	GNA1	EYR1
D	QUE	LNP	TAN							
E	HRB	THY	ISK	PEN						
X	MPO									

NOVEMBER **04/11** **11:10**

A	SUA3									
B	[YAK1]	LER1	ESK0	WNG3	HAD1	DOU0	CLF0	AQU1	SPT1	[KAK0]
	ABG2	MBO2								
C	DOB0	NUR1	SV30	NGK1	KIV1	ODE1	GCK0	AAA0	ISK2	[BJI0]
	[HTY0]	[TUC0]	QUE1	HYB1	ETT0	AAE1	FUQ2	(GNA1)		
D	EBR	COI	TEN	SJG	TAN	HER				
E	HRB	PEN								
X	THY	MPO								

DOUBTFUL SOLAR FLARE EFFECTS (**sfe**) 1991 (continued)

NOVEMBER **C** **30/11** **03:40**

A	[SUA-]	LNP3								
B	[DOB2]	[KIV2]	[ISK2]	BJI1	KAK3	ABG2	ETT0			
C	YAK1	[NUR1]	(SV30)	[ESK0]	[WNG0]	[NGK0]	[DOU1]	[ODE2]	[GCK0]	AAA0
	[AQU1]	HTY1	QUE1	[TEN1]	HYB0	AAE1	[FUQ2]	GNA1		
D	GUA	TAN	CNB	EYR						
E										
X	MPO									

DECEMBER **30/12** **10:15**

A	SUA2	HER2								
B	SV31	ESK1	WNG2	ODE1	TEN2	ABG2	AAE2			
C	DOB0	[YAK0]	NUR1	NGK0	HAD0	KIV2	GCK0	AAA0	ISK1	EBR1
	SPT0	PEN2	HYB3	MBO-	ETT3					
D	LER	DOU	CLF	HRB	AQU	COI	QUE	TAN	GNA	
E										
X	THY	MPO								

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IAGA Symposium No. 3, Symposium on Magnetism of the Earth's Interior, Pittsburgh, 1964
IAGA Symposium No. 4, Communications présentées à la Réunion de Cambridge (Mass.),1965
IAGA Symposium No. 5, Communications présentées à la Réunion de Sao José dos Campos (Brésil),
IAGA Symposium No. 6, Symposium on Aurora and Magnetic Storms, Birkeland, 1967
IAGA Symposium No. 7, Symposium on Upper Atmospheric Winds, Waves and Ionospheric Drifts, St Gall, 1967
IAGA Symposium No. 8, Symposium on Laboratory Measurements of Aeronomic Interest, Toronto, 1963
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- ...91.dat for hourly or three hourly, and daily values
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You can use the visualization software in two ways :

1 - Directly from the diskette :
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2 - Installation on a drive of your computer
Hit INSTAL <drive>: , then ENTER (Example : INSTAL C:)
Hit the command : INTERAA, then give the current year : 1991

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