ERT Technical Report A345-T1
June 1981
Prepared as part of the
NASA Lageos Project

Variations in atmospheric angular momentum

1 January 1976 - 31 December 1980

Richard D. Rosen
David A. Salstein

ERT, Inc.
696 Virginia Road
Concord, Massachusetts 01742

ERT
ENVIRONMENTAL RESEARCH & TECHNOLOGY, INC.
ATLANTA · CHICAGO · CONCORD, MA · FORT COLLINS, CO
HOUSTON · LOS ANGELES · PITTSBURGH · WASHINGTON, DC

VARIATIONS IN ATMOSPHERIC ANGULAR MOMENTUM, 1 JANUARY 1976 - 31 DECEMBER 1980

by

Richard D. Rosen
David A. Salstein

Environmental Research & Technology, Inc.
696 Virginia Road
Concord, Massachusetts 01742

ERT Technical Report A345-T1

prepared with support provided by the
National Aeronautics and Space Administration
under contract NAS5-25870

June 1981

ABSTRACT

Twice-daily values of the atmosphere's angular momentum about the polar axis during the five years from 1976 through 1980 are presented in graphs and a table. Unlike many previous compilations of this quantity, ours is based on a global data set, incorporating 90% of the mass of the atmosphere. The relationship between changes in the angular momentum of the atmosphere and changes in the length of day is described, as are the main sources of error in the data. The variability in angular momentum is revealed in a preliminary fashion by means of a spectral decomposition.

The data presented in this report should stimulate comparisons with other measures of the length of day and so provide a basis for greater understanding of earth-atmosphere interactions.

TABLE OF CONTENTS

1. INTRODUCTION

In his now classic paper on the general circulation of the atmosphere, Starr (1948) noted that "there is no reason to expect that the partition of angular momentum [between the earth and the atmosphere] should remain constant when seasonal and other short time-intervals are considered". Since then, numerous studies have been undertaken with increasingly better data to quantify more precisely the relationship between changes in earth rotation and atmospheric momentum. Many of these have been summarized by Munk and MacDonald (1960) and by Lambeck (1980). The general conclusion appears to be that short term changes in the length of day (l.o.d.) are due mainly to atmospheric behavior (Lambeck and Cazenave, 1977). Moreover, atmospheric motions seem to play some role in forcing l.o.d. changes even on time scales of up to several years (Lambeck and Hopgood, 1981).

A limiting factor in most of these studies has been the less than global coverage provided by the network of upper-air wind measuring stations. For the most part, these stations are located over land in the Northern Hemisphere and the Southern Hemisphere tropics. In addition, it has generally proven necessary to work with monthly mean values of these wind data, thereby precluding a study of higher frequency changes in atmospheric momentum. In recent years, however, a new type of meteorological data set has become available. Generated by the large meteorological agencies of different countries as part of their operational weather forecasting duties, this set typically contains twice-daily analyses of the wind field at grid points spaced regularly over the entire globe. Utilizing two different examples of these gridded analyses for the same four-month period, Hide et al. (1980) demonstrated their potential for dramatically increasing our ability to determine high frequency changes in the atmosphere's angular momentum. Given the steady improvement also seen in recent years in independent techniques to measure earth rotation, it appears that new advances in the study of earth-atmosphere interactions are likely.

Because of growing interest in the earth rotation problem, it was decided to make some of the new atmospheric angular momentum data more generally available. In this report, therefore, we provide a listing of these data derived from the wind analyses made by the U.S. National

Meteorological Center (NMC) for the five-year period from 1 January 1976 through 31 December 1980. In the next sections, we briefly describe the NMC analysis and the manner in which angular momentum values were derived from it, the relation between these values and changes in l.o.d., the type of errors that exist in our momentum values, and some preliminary results from a spectral decomposition of the angular momentum time series. Our discussion is kept deliberately short, since we anticipate publishing our results in more detail at a later date. The main reason for presenting this report now is to disseminate more rapidly a tabulation of the angular momentum data.

2. THE NMC GLOBAL ANALYSIS AND THE DERIVATION OF ATMOSPHERIC ANGULAR MOMENTUM VALUES

In September 1974, NMC introduced its first operational global analysis scheme. Designed to provide information on the state of the atmosphere twice a day (for 0000 and 1200 UTC) as input to weather forecasting models, this analysis is based on observations from a variety of sources. These include not only the traditional rawinsonde balloons launched at the upper-air stations of the World Weather Watch network, but also satellites and commercial aircraft. Among other variables, the analysis provides zonal (east-west) wind velocities over a grid with points spaced every 2.5° in both latitude and longitude, at each of 12 pressure levels in the vertical. A detailed description of a recent version of the NMC global analysis system is provided by McPherson et al. (1979).

NMC has archived certain general circulation statistics derived from their grid point analyses beginning 1 January 1976 (Miller et al., 1975). Included in this archive are zonally averaged values of the zonal wind, [u]. To derive the angular momentum (M) of the atmosphere about the polar axis, relative to an earth-fixed frame, these [u] values have been integrated, with the appropriate weighting, over latitude (ϕ) and pressure (p):

$$M = \frac{2\pi a^3}{g} \int_{1000\ mb}^{100\ mb} \int_{\pi/2}^{-\pi/2} [u] \cos^2\phi \, d\phi \, dp, \qquad (1)$$

where a is the mean radius of the earth (6.37×10^6 m) and g is the acceleration due to gravity (9.81 m s^{-2}). Equation (1) is based on the assumption that the atmosphere is in hydrostatic equilibrium and ignores the variation with altitude and latitude of the distance of a parcel of air from the center of the earth. In addition, performing the integration over p only to the 100 mb level means we are systematically neglecting 10% of the mass of the atmosphere.

Occasional brief gaps exist in the NMC archive and no attempt has been made to fill these in. However, a gap of over four months duration, from 1 April through 15 August 1977, also exists in the archive. For this period, we obtained copies of the original grid point values from the NMC analysis (for 0000 UTC only) from the National Center for Atmospheric Research, and we used these to calculate both [u] and M.

Values of M available for the period from 1 January 1976 to 31 December 1980 are tabulated in Appendix 1 and displayed in Figs. 1(a)-(e) for each calendar year individually and in Fig. 2 for the period as a whole. Also included in Figs. 1(a)-(e) are values of the angular momentum of the atmosphere over each hemisphere separately. The differences in the results for the Northern and Southern Hemispheres attest to the non-uniform behavior of the zonal winds over the globe and to the importance of acquiring global atmospheric data.

3. RELATIONSHIP BETWEEN M AND CHANGES IN l.o.d.

For simplicity, we treat the (rigid) earth and atmosphere as a closed dynamical system and assume that a change ΔM in the angular momentum of the atmosphere is accompanied by an equal, but opposite, change in the angular momentum of the earth. (Thus, we neglect the effect of external torques, the role played by ocean currents, etc.) The consequent change in the angular velocity ω of the surface of the earth is given by:

$$\Delta\omega = - \frac{\Delta M}{I} \tag{2}$$

where I is the moment of inertia of that portion of the earth which responds to the change in M on the time scale being considered. Fluctuations on the order of one year or less are thought to affect only the earth's crust and mantle (the shell), and since this is the time scale we are primarily interested in here, we have set $I = I_{shell} = 7.04 \times 10^{37}$ kg m^2 (Langley et al., 1981; Jordan and Anderson, 1974).

A change in the angular velocity of the earth's surface is related to a change in the length of day by:

$$\frac{\Delta \text{l.o.d.}}{\text{l.o.d.}} = - \frac{\Delta\omega}{\omega+\Delta\omega} \approx - \frac{\Delta\omega}{\omega} \tag{3}$$

where l.o.d. = 86400 s and $\omega = 7.29 \times 10^{-5}$ s^{-1}. Combining equations (2) and (3), we find the following linear relation between Δl.o.d. and ΔM:

$$- \Delta \text{l.o.d.} = \frac{\text{l.o.d.}}{\omega I} \Delta M$$

For periods on the order of a year or less, therefore, we have

$$\Delta \text{l.o.d.} = \frac{\text{l.o.d.}}{\omega I_{shell}} \Delta M = 1.68 \times 10^{-29} \Delta M \tag{4}$$

where Δl.o.d. is in units of seconds and ΔM is in kg m^2 s^{-1}.

As described earlier, we have plotted (against the left-hand scale) in Figs. 1(a)-(e) the actual values of M contained in Appendix 1. If we treat these M values as departures from a base state of zero atmospheric angular momentum, then we can equate them conveniently to changes in l.o.d. from this hypothetical base state by setting $\Delta M = M$ in (4). The

scale for this Δl.o.d. is given along the right-hand side of each figure. It should be noted that this scale for Δl.o.d. is not the one conventionally used, which instead is based on the departure of the length of day from that of the mean solar day during the nineteenth century. The two scales, therefore, involve their own arbitrary zeroes (Hide et al., 1980). Since we are interested only in changes in l.o.d. within our five-year period, however, this difference between the scales is not of concern here. A more important consideration, particularly when studying inter-annual changes in Δl.o.d. such as those displayed in Fig. 2, is that on time scales of greater than about one year the earth's core is also likely to be involved, in which case it might be more proper to use the moment of inertia of the entire earth ($I_e = 8.04 \times 10^{37}$ kg m^2) in (4). We have not done so here, however.

4. ERRORS

Although it is rather straightforward to delineate the sources of errors in our M values, it is quite another matter to estimate their magnitude. Nevertheless, it is important to do so and we make such an attempt here. Our estimates should be treated with caution, however.

We may divide the types of errors expected in our data into two groups; one is related to the method used to compute angular momentum and the other is related to the inaccuracies in the NMC wind data. With regard to errors of the first type, the most serious is undoubtedly the neglect of the upper atmosphere at pressures less than 100 mb. NMC wind analyses for the 70 and 50 mb levels are available, but their accuracy has been questioned and they were not used here. We have examined some calculations of M made with and without data from these two upper levels, and on this basis we conclude that neglecting the upper 10% of the atmosphere incurs a systematic underestimate in the mean level of M of about 10% or less, but it has a much smaller impact on day-to-day changes in M. (On the other hand, longer period variations in M such as a quasi-biennial cycle, if one exists, may be more seriously affected by the lack of data from much of the stratosphere and above.)

A systematic bias also results from the fact that the lowest level in the NMC analysis is fixed at a constant pressure of 1000 mb, regardless of whether this level lies below or above the earth's surface at a particular grid point. In the first instance, the NMC analysis, which treats the surface of the earth as though it were smooth, places non-zero winds beneath the topography. These spurious winds have been included in our [u] data, but a test in which we removed them from a short period of data revealed that their presence affects M by only about 1%. In the case when the 1000 mb level lies above the earth's surface, our approach neglects the contribution to M made by the mass of the atmosphere lying between it and the surface. Since, however, the average sea-level pressure over the globe is around 1013 mb, this error is a small one.

The second type of errors in our values of M results from inaccuracies in the basic NMC grid point wind analyses themselves. Some aspects of these errors are presented by McPherson et al. (1979) for the version of the NMC global analysis that was introduced in September 1978, but it is

difficult to estimate on the basis of their discussion what the magnitude of the resulting error in M is likely to be. For the present, therefore, we are left to infer this on the basis of two other studies reported in the literature. In the first, Oort (1978) examined the adequacy of the rawinsonde network for determining atmospheric circulation statistics and found that the most significant error in M (on the order of 5%) was caused by the presence of spatial gaps in this network. Oort's study was not based on the NMC analysis, however, and did not, therefore, account for the effect that satellite or aircraft observations might have (contrary to first impressions, the impact of satellite data need not always be beneficial; see Tracton et al., 1981). The second study is the one by Hide et al. (1980) mentioned earlier, in which the authors compared the results of calculating M for a four-month period with the NMC and British Meteorological Office analyses. Differences as large as 10% did occasionally occur, but much of this appeared to be systematic in nature.

Occasional procedural changes at NMC during the five-year period introduce an unknown degree of heterogeneity to our data. Major changes occurred in September 1978 and May 1980 when new modes of analysis were introduced (again see McPherson et al., 1979; also Kistler and Parrish, 1980), but other important modifications have also been made but not always well documented. In addition, there have been continuing changes in the satellite observing systems used in the NMC analysis scheme. For the most part, though, we anticipate that these sorts of changes might cause systematic changes in M but not affect its day-to-day variations significantly.

To summarize, we believe that there is a systematic underestimate in the mean value of M presented in Appendix 1 of about 10%. Random errors in M that would affect estimates of day-to-day changes in l.o.d., however, are probably less than 10%.

5. PRELIMINARY RESULTS OF A SPECTRAL ANALYSIS OF M

It is quite apparent from Figs. 1 and 2 that M varies on a variety of time scales. To provide some further insight into this behavior, we have decomposed the time series of M values into its spectral components. Our results should be considered preliminary in nature, but we feel they are interesting enough to be included here.

Our approach follows that outlined by Welch (1967), in that we first organized our data into eight overlapping blocks spanning most of the five years. Each block consists of 128 consecutive three-day averages of M multiplied by an appropriate weighting function (described by Welch). We used only once-daily values of M (at 00 UTC) for this part of our study. A fast Fourier transform method was then applied to determine the power spectrum in each block. Finally, the resulting eight spectra were averaged to produce the result given in Fig. 3.

Spectra of atmospheric momentum fluctuations with periods of two months and longer have been presented by Lambeck and Hopgood (1981) based on monthly mean values of M. Our data, of course, can reveal higher frequency components, and indeed the spectrum in Fig. 3 covers oscillations with periods ranging from 6 to 128 days. We have superimposed on the figure an estimate of the 95% level of significance based on a power law best-fit to the spectrum. Several peaks in the spectrum do approach or exceed this level of statistical significance, but this alone does not, of course, assure their physical significance. We have studied one of these peaks, the rather broad one at about 50 days, in some detail, however. Its origins do appear to be physically based, and its presence is confirmed by independent measures of Δl.o.d. (see Langley et al., 1981, for a further discussion of this oscillation).

6. FINAL REMARKS

Our purpose has been to provide the geophysics community with an estimate of day-to-day fluctuations in the length of day based on measurements of the atmosphere's angular momentum. Because of certain of our assumptions, we still view our analysis of the atmospheric forcing function as being somewhat preliminary. Initial comparisons between our M data and other, independent measures of Δl.o.d. show good agreement, particularly on the shorter time scales. As yet unexplained differences do exist on all time scales, however, and we hope that release of the M data now will stimulate more comprehensive studies of their relationship to Δl.o.d. Although we expect that most investigators will be able to utilize the data listed in Appendix 1 directly, we can make available (at cost) a magnetic tape containing these values to those who request it.

We hope to be able to update the time series of angular momentum values at regular intervals. We understand, too, that consideration is being given to the calculation of M on a routine basis by the European Center for Medium Range Weather Forecasting. The availability of more than one set of atmospheric values will, of course, allow much better estimates of their probable errors to be made.

From the standpoint of meteorological research, determining the fluctuations in an integrated statistic like M and confirming their accuracy represent but first steps in understanding the reasons for the atmosphere's variable behavior. Our plans for the future, therefore, include a more detailed study of the [u] data to identify those regions in the atmosphere that are most responsible for the changes in M displayed here.

ACKNOWLEDGMENTS

First and foremost, we are indebted to A.J. Miller of NMC for his generosity in providing us with most of the atmospheric data used here. We are also grateful to D.E. Smith of NASA Goddard Space Flight Center for suggesting that we prepare this report and for then helping us improve its quality. We have gained valuable insights into the nature of earth-atmosphere interactions from discussions with R. Hide of the British Meteorological Office. This investigation was performed as part of NASA's Lageos Project under contract NAS5-25870.

REFERENCES

Hide, R., N.T. Birch, L.V. Morrison, D.J. Shea and A.A. White, 1980: Atmospheric angular momentum fluctuations and changes in the length of day. Nature, 286, 114-117.

Jordan, T.H. and D.L. Anderson, 1974: Earth structure from free oscillations and travel times. Geophys. J. Roy. Astr. Soc., 36, 411-459.

Kistler, R.E. and D.F. Parrish, 1980: The NMC global data assimilation system. Research Activities in Atmospheric and Oceanic Modelling, Rep. No. 1, GARP/WCRP Numerical Experimentation Programme, WMO, 3.1.

Lambeck, K., 1980: The Earth's Variable Rotation. Cambridge University Press, 449 pp.

Lambeck, K. and A. Cazenave, 1977: The earth's variable rate of rotation: a discussion of some meteorological and oceanic causes and consequences. Phil. Trans. Roy. Soc. London. A., 284, 495-506.

Lambeck, K. and P. Hopgood, 1981: The earth's rotation and atmospheric circulation, from 1963 to 1973. Geophys. J. R. astr. Soc., 64, 67-89.

Langley, R.B., R.W. King, I.I. Shapiro, R.D. Rosen and D.A. Salstein, 1981: Atmospheric angular momentum and the length of day: a common fluctuation with a period near 50 days. Submitted to Nature.

McPherson, R.D., K.H. Bergman, R.E. Kistler, G.E. Rasch and D.S. Gordon, 1979: The NMC operational global data assimilation system. Mon. Wea. Rev., 107, 1445-1461.

Miller, A.J., W. Collins and D. Dubofsky, 1975: The NMC operational global energy program. Office Note 109, National Meteorological Center, Washington, D.C., 13 pp.

Munk, W.H. and G.J.F. MacDonald, 1960: The Rotation of the Earth. Cambridge University Press, 323 pp.

Oort, A.H., 1978: Adequacy of the rawinsonde network for global circulation studies tested through numerical model output. Mon. Wea. Rev., 106, 174-195.

Starr, V.P., 1948: An essay on the general circulation of the earth's atmosphere. J. Meteor., 5, 39-43.

Tracton, M.S., A.J. Desmarais, R.J. van Haaren and R.D. McPherson, 1981: On the system dependency of satellite sounding impact - comments on recent impact tests results. Mon. Wea. Rev., 109, 197-200.

Welch, P.D., 1967: The use of fast Fourier transform for the estimation of power spectra: a method based on time averaging over short, modified periodograms. IEEE Transactions on Audio and Electroacoustics, AU-15, 70-73.

Legends for Figures

Fig. 1 Values of the angular momentum (M) of the atmosphere above the globe, the Northern Hemisphere (NH), and the Southern Hemisphere (SH) during calendar years (a) 1976; (b) 1977; (c) 1978; (d) 1979; and (e) 1980. The scale for M is given along the left-hand ordinate of the figure. Inferred values of Δl.o.d., derived from M through equation (4), are to be read off the scale along the right-hand ordinate. Numbers along the abscissa refer to days from 1 January 1976. For convenience, calendar months are also listed along the time scale.

Fig. 2 Values of the angular momentum of the atmosphere above the globe, as in Fig. 1 but for the entire five-year period from 1 January 1976 to 31 December 1980. (Note also that the ordinate scale has been expanded from that in Fig. 1.)

Fig. 3 Power spectrum of the angular momentum of the atmosphere above the globe during the years 1976-1980 (solid curve). The ordinate is a logarithmic scale and is in units of $(\text{kg m}^2 \text{ s}^{-1})^2 \cdot \text{day}$. The abscissa is linear with respect to frequency. The dashed curve is an estimate of the 95% confidence level.

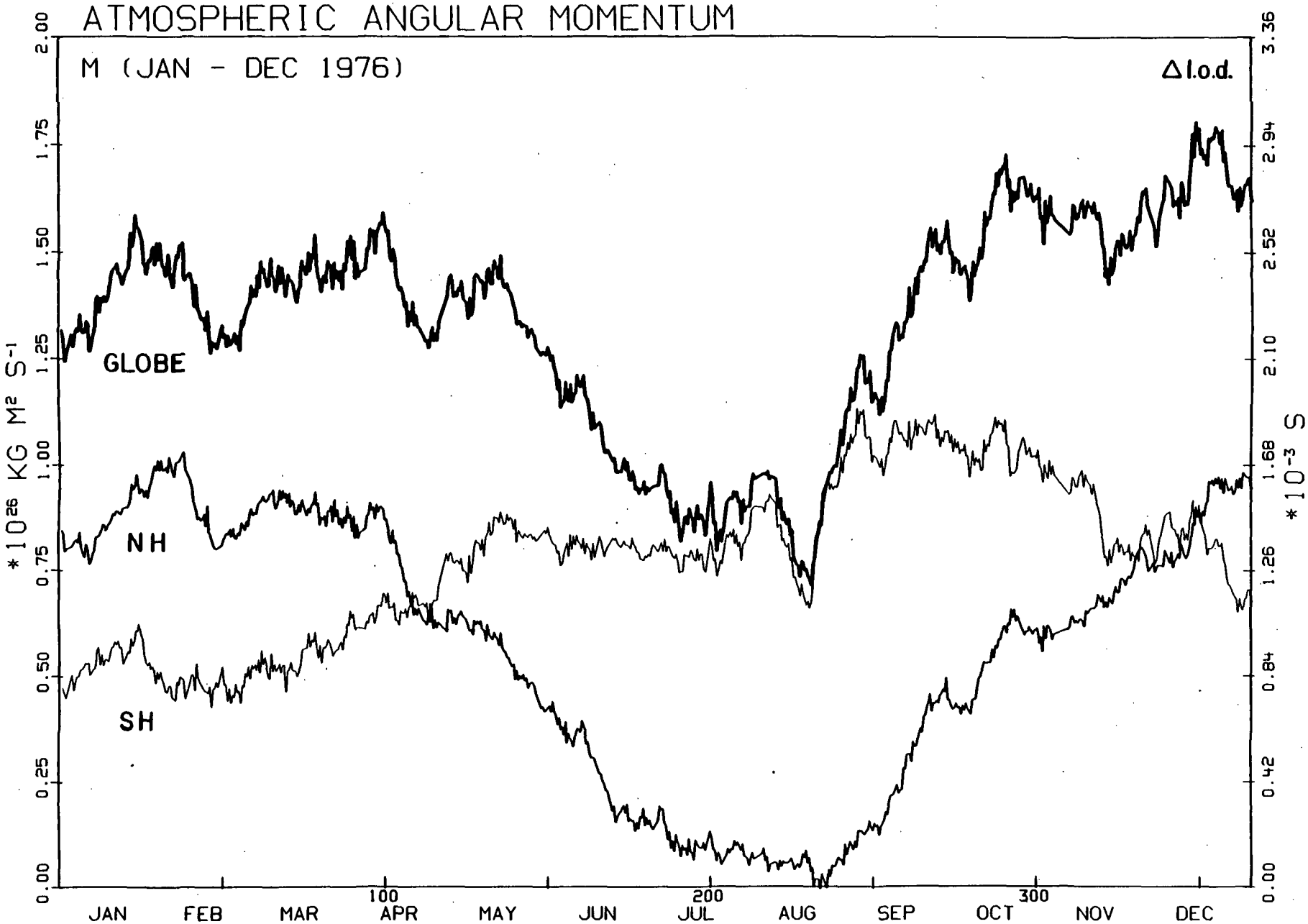
ATMOSPHERIC ANGULAR MOMENTUM
M (JAN - DEC 1976)
Δl.o.d.
GLOBE
NH
SH
*10^26 KG M^2 S^-1
*10^-3 S
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
3.36
2.94
2.52
2.10
1.68
1.26
0.84
0.42
0.00
100
200
300
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Fig. 1(a)

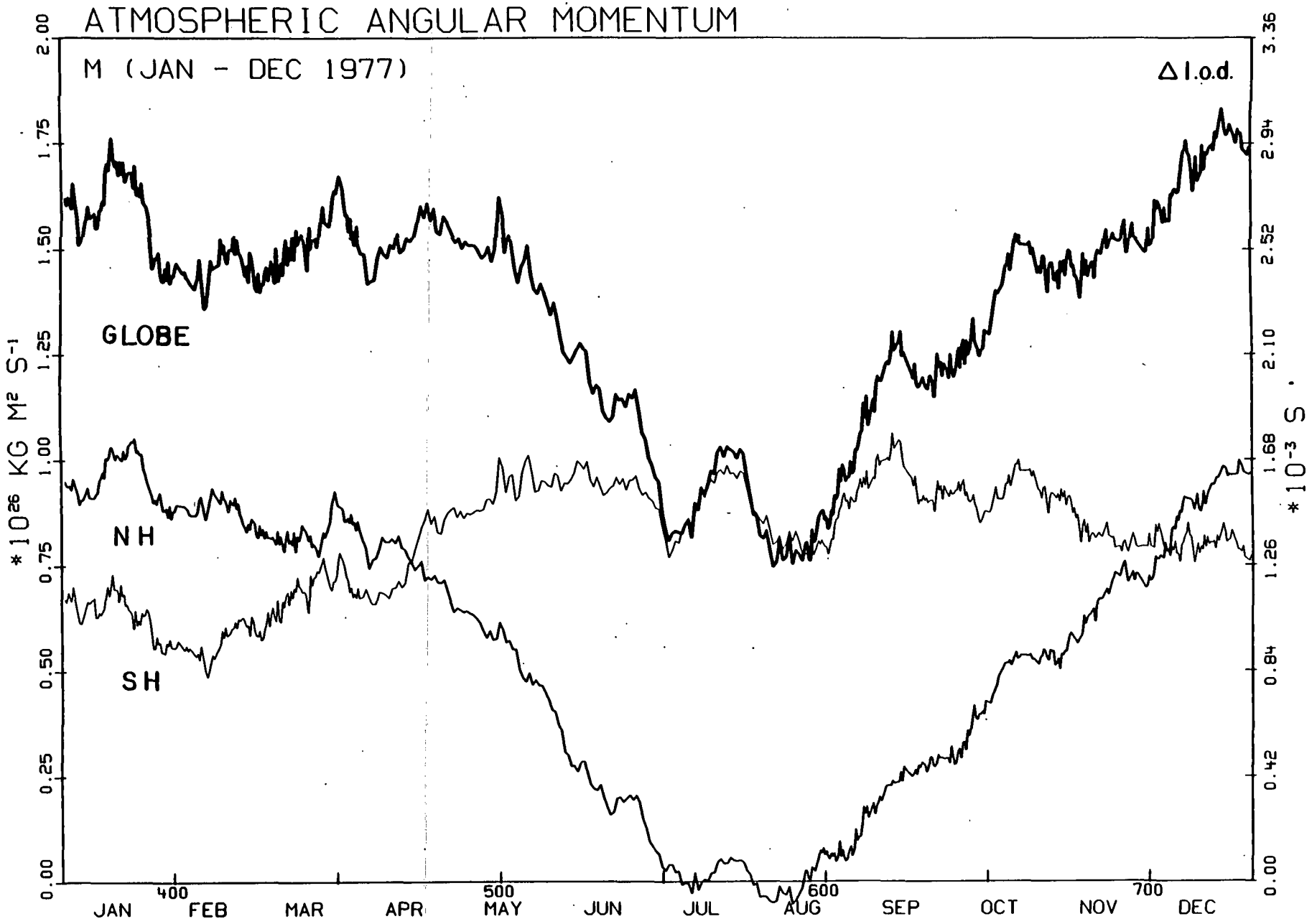
ATMOSPHERIC ANGULAR MOMENTUM
M (JAN - DEC 1977)
Δ l.o.d.
GLOBE
NH
SH
*10²⁶ KG M² S⁻¹
*10⁻³ S
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
3.36
2.94
2.52
2.10
1.68
1.26
0.84
0.42
0.00
400
500
600
700
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Fig. 1(b)

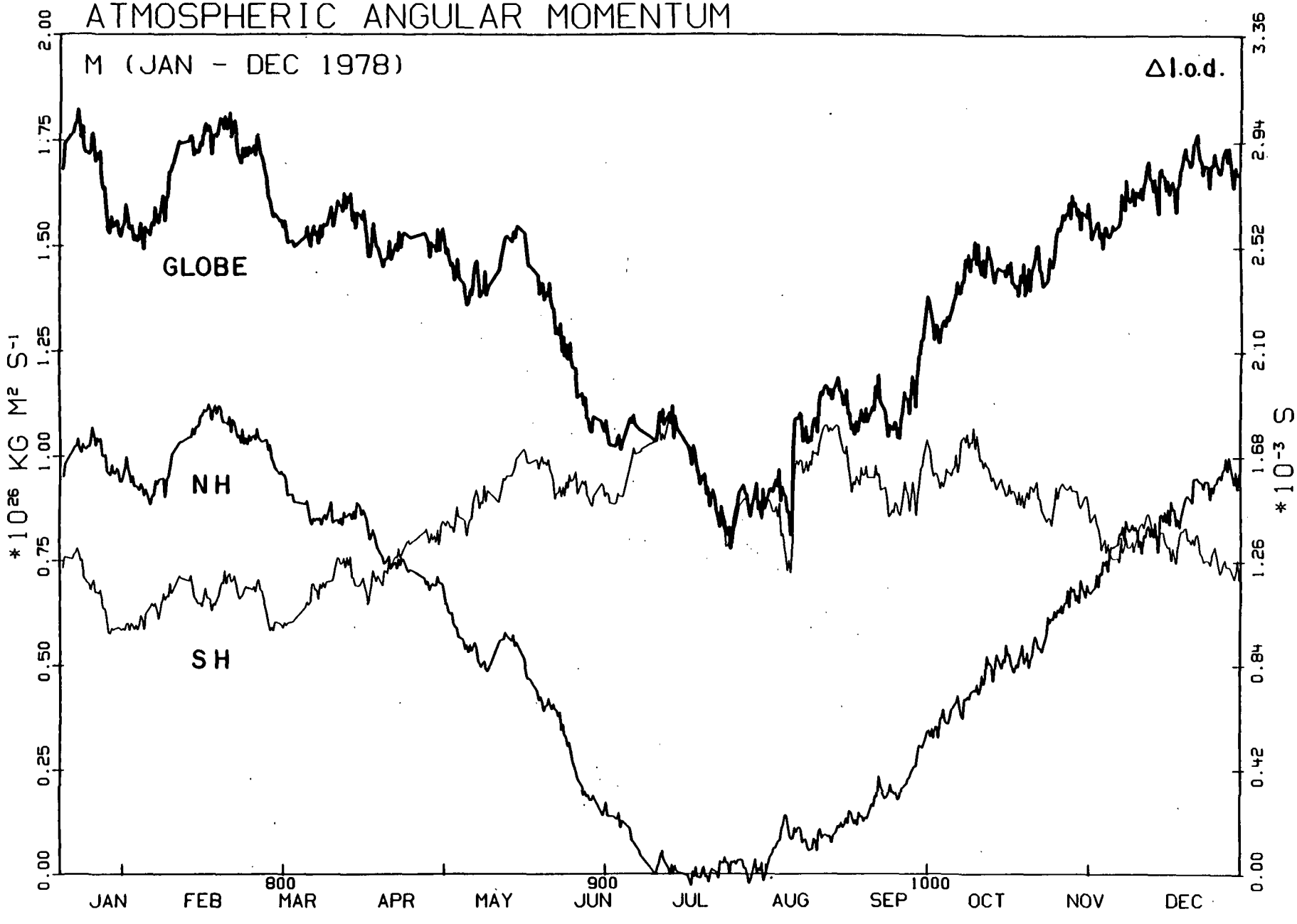
ATMOSPHERIC ANGULAR MOMENTUM
M (JAN - DEC 1978)
Δl.o.d.
GLOBE
NH
SH
*10²⁶ KG M² S⁻¹
*10⁻³ S
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
3.36
2.94
2.52
2.10
1.68
1.26
0.84
0.42
0.00
800
900
1000
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Fig. 1(c)

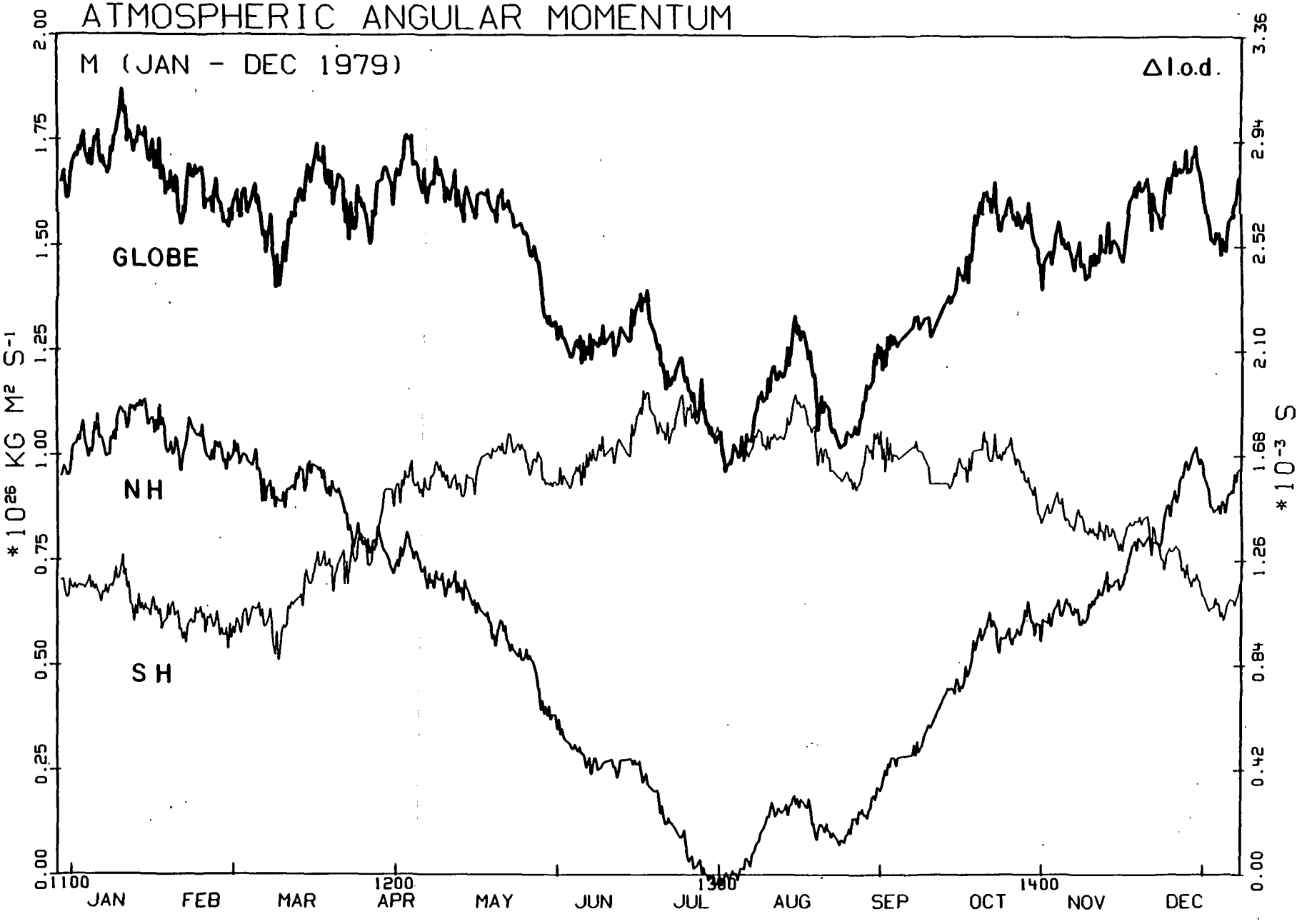
ATMOSPHERIC ANGULAR MOMENTUM
M (JAN - DEC 1979)
Δl.o.d.
GLOBE
NH
SH
*10^26 KG M^2 S^-1
*10^-3 S
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
3.36
2.94
2.52
2.10
1.68
1.26
0.84
0.42
0.00
1100
1200
1300
1400
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Fig. 1(d)

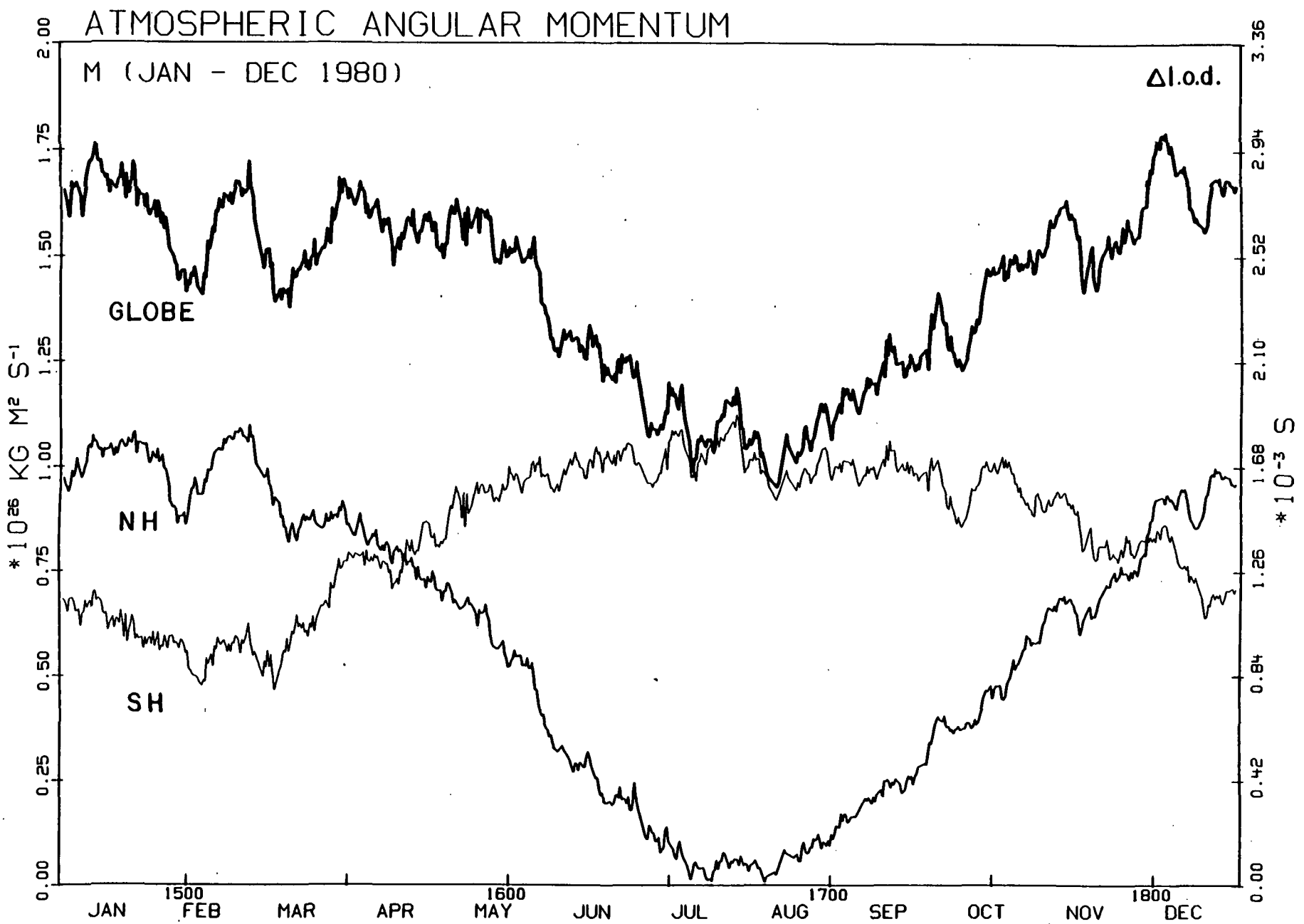
ATMOSPHERIC ANGULAR MOMENTUM
M (JAN - DEC 1980)
Δl.o.d.
GLOBE
NH
SH
*10^26 KG M^2 S^-1
*10^-3 S
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
3.36
2.94
2.52
2.10
1.68
1.26
0.84
0.42
0.00
1500
1600
1700
1800
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Fig. 1(e)

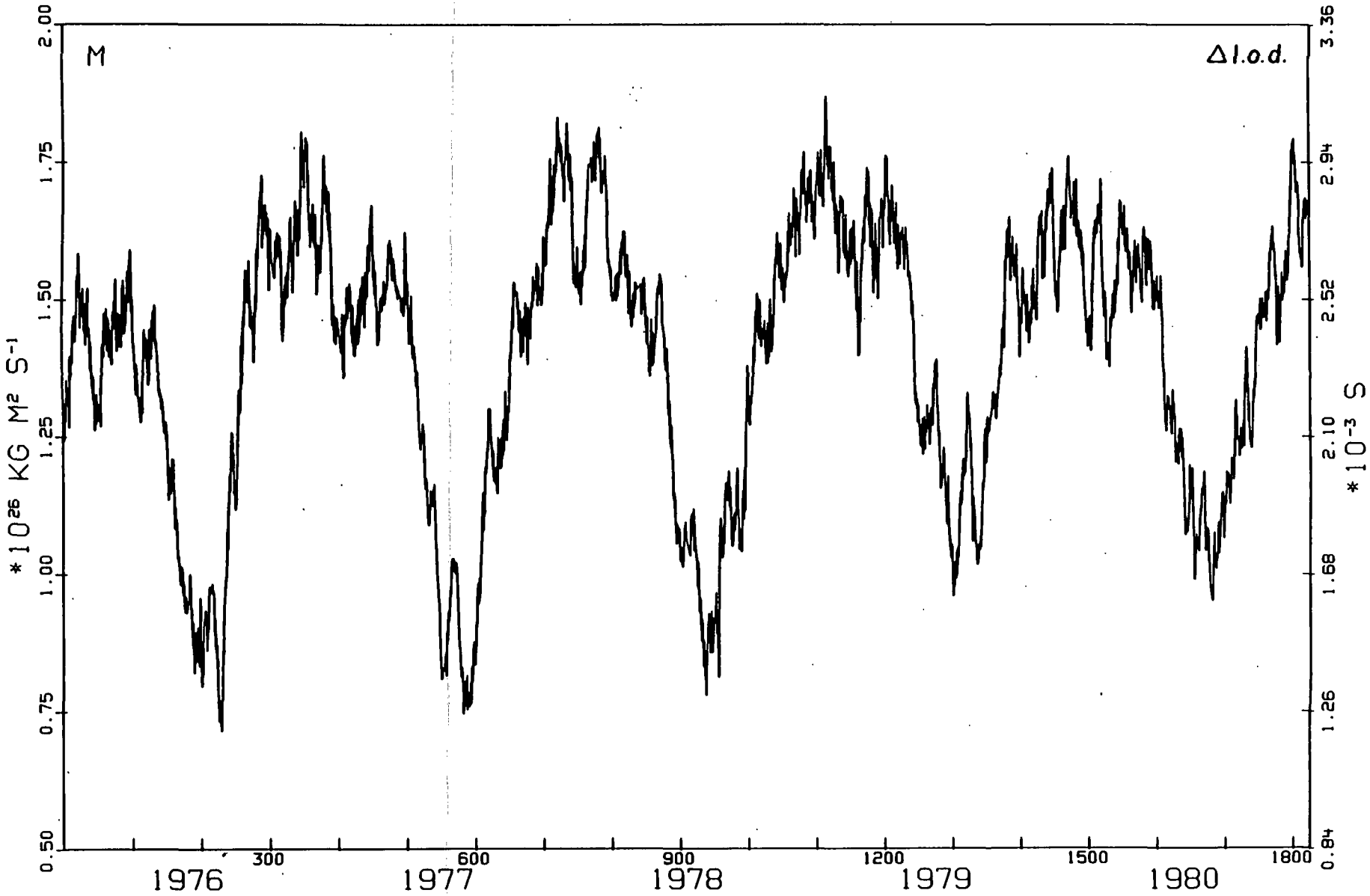
GLOBAL ATMOSPHERIC ANGULAR MOMENTUM
JAN 1976 - DEC 1980
M
Δl.o.d.
*10²⁶ KG M² S⁻¹
*10⁻³ S
2.00
1.75
1.50
1.25
1.00
0.75
0.50
3.36
2.94
2.52
2.10
1.68
1.26
0.84
300
600
900
1200
1500
1800
1976
1977
1978
1979
1980

Fig. 2

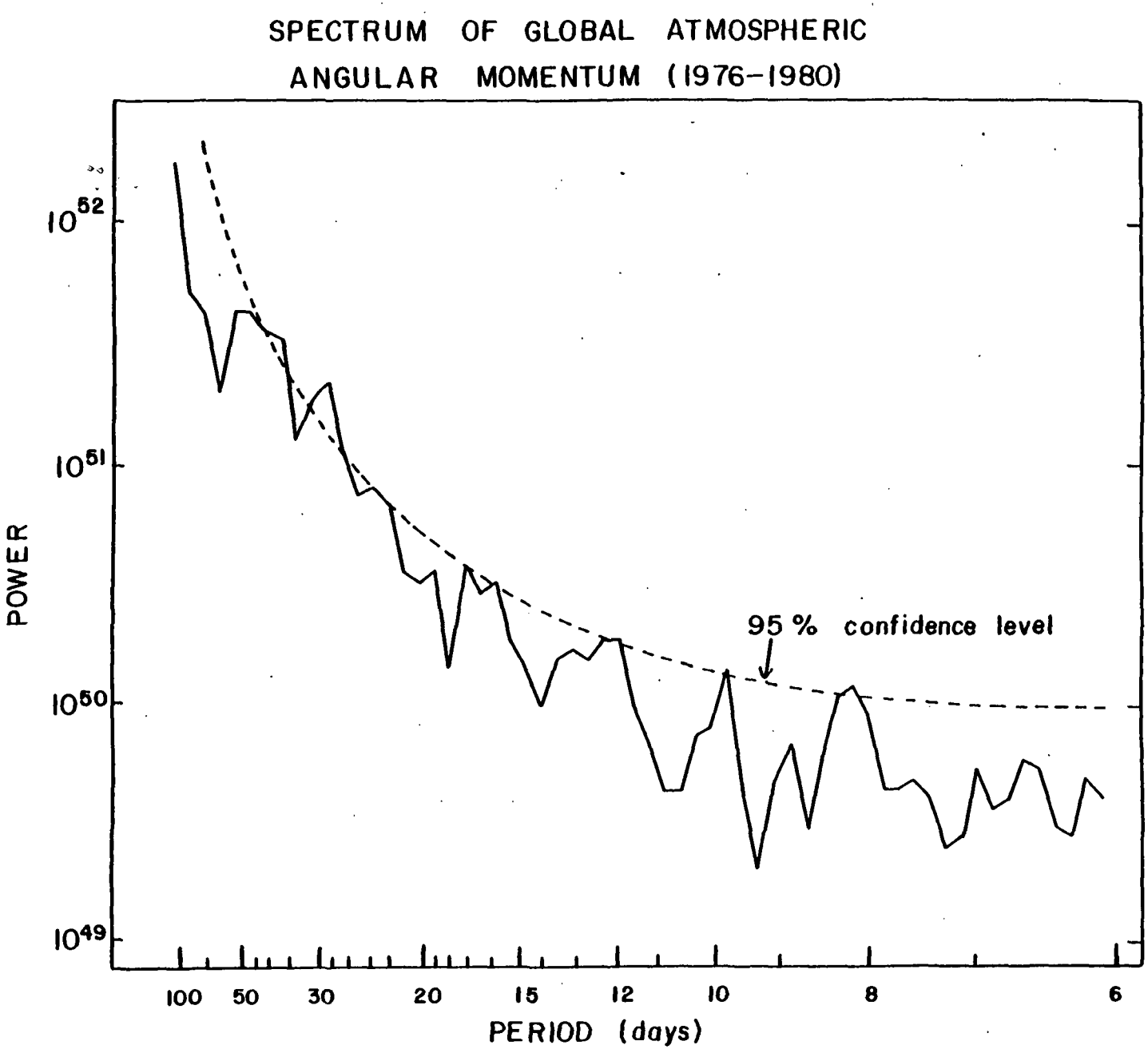
SPECTRUM OF GLOBAL ATMOSPHERIC
ANGULAR MOMENTUM (1976-1980)
POWER
10^{52}
10^{51}
10^{50}
10^{49}
95 % confidence level
100
50
30
20
15
12
10
8
6
PERIOD (days)

Fig. 3

APPENDIX 1

LISTING OF ATMOSPHERIC MOMENTUM VALUES

The following pages contain values of M as defined by equation (1) for twice each day from 1 January 1976 through 31 December 1980. All days in this period are listed and numbered sequentially from 1 to 1827. Missing values of M are indicated by dashes.

Written at the top of each page is the year to which all the entries on that page refer. A typical entry from the first page is the following:

```
54.  2 23 0  1.3097
          12  1.2848
```

where "54." = the 54th day in the five-year sequence

"2 23" = February 23

" 0" / 12 } = 0000 and 1200 UTC, respectively

"1.3097" / 1.2848 } = the values of M at 0000 and 1200 UTC, respectively, in units of 10^{26} kg m^2 s^{-1} (note that although five significant figures are given, this is not intended as a measure of the accuracy of the M values; for a discussion of accuracy, see Section 4).

1.	1	1	0	1.3182	28.	1	28	0	1.4760	55.	2 24 0	1.3027
			12	1.2973				12	1.5051		12	1.2680
2.	1	2	0	1.2421	29.	1	29	0	1.5115	56.	2 25 0	1.3391
			12	1.2610				12	1.4697		12	1.3285
3.	1	3	0	------	30.	1	30	0	1.5203	57.	2 26 0	1.3508
			12	------				12	1.4798		12	1.3631
4.	1	4	0	1.3073	31.	1	31	0	1.5203	58.	2 27 0	1.3748
			12	1.2771				12	1.4798		12	1.3799
5.	1	5	0	1.3048	32.	2	1	0	1.4666	59.	2 28 0	1.4191
			12	1.3212				12	1.4579		12	1.3948
6.	1	6	0	1.3135	33.	2	2	0	1.4427	60.	2 29 0	1.4115
			12	1.3532				12	1.4929		12	1.3953
7.	1	7	0	1.3198	34.	2	3	0	1.4761	61.	3 1 0	1.4444
			12	1.3100				12	1.4322		12	1.4154
8.	1	8	0	1.3118	35.	2	4	0	1.4167	62.	3 2 0	1.4749
			12	1.3383				12	1.4464		12	1.4522
9.	1	9	0	1.3317	36.	2	5	0	1.4922	63.	3 3 0	1.4599
			12	1.2659				12	1.4853		12	1.4371
10.	1	10	0	1.2813	37.	2	6	0	1.5140	64.	3 4 0	1.4191
			12	1.3032				12	1.5159		12	1.4220
11.	1	11	0	1.3153	38.	2	7	0	1.5208	65.	3 5 0	1.4836
			12	1.3902				12	1.4335		12	1.4490
12.	1	12	0	1.3964	39.	2	8	0	------	66.	3 6 0	1.4396
			12	1.3582				12	------		12	1.4065
13.	1	13	0	1.3923	40.	2	9	0	1.4480	67.	3 7 0	1.4224
			12	1.3820				12	1.4490		12	1.4672
14.	1	14	0	1.3968	41.	2	10	0	1.4187	68.	3 8 0	1.4249
			12	1.3828				12	1.3718		12	1.4632
15.	1	15	0	1.3892	42.	2	11	0	1.4225	69.	3 9 0	1.4453
			12	1.4116				12	1.3678		12	1.3953
16.	1	16	0	1.4344	43.	2	12	0	1.3602	70.	3 10 0	1.4201
			12	1.4504				12	1.3450		12	1.4461
17.	1	17	0	1.4598	44.	2	13	0	1.3404	71.	3 11 0	1.4334
			12	1.4620				12	1.3459		12	1.4304
18.	1	18	0	1.4712	45.	2	14	0	1.3167	72.	3 12 0	1.4196
			12	1.4476				12	1.3606		12	1.3945
19.	1	19	0	1.4493	46.	2	15	0	1.3151	73.	3 13 0	1.3817
			12	1.4229				12	1.2614		12	1.4125
20.	1	20	0	------	47.	2	16	0	1.2894	74.	3 14 0	1.4166
			12	------				12	1.2781		12	1.4777
21.	1	21	0	1.4563	48.	2	17	0	1.2856	75.	3 15 0	------
			12	1.4636				12	1.2724		12	------
22.	1	22	0	1.5439	49.	2	18	0	------	76.	3 16 0	1.4461
			12	1.5122				12	------		12	1.4976
23.	1	23	0	1.5312	50.	2	19	0	1.3278	77.	3 17 0	1.4542
			12	1.5839				12	1.2990		12	1.4923
24.	1	24	0	1.5578	51.	2	20	0	1.3079	78.	3 18 0	1.4844
			12	1.5540				12	1.2779		12	1.5374
25.	1	25	0	1.5423	52.	2	21	0	1.3041	79.	3 19 0	1.4700
			12	1.5288				12	1.2817		12	1.4512
26.	1	26	0	1.4728	53.	2	22	0	1.2855	80.	3 20 0	1.4300
			12	1.4701				12	1.2980		12	1.4058
27.	1	27	0	1.4474	54.	2	23	0	1.3097	81.	3 21 0	1.4361
			12	1.4829				12	1.2848		12	1.4440

82.	3 22 0	1.4266	109.	4 18 0	1.3288	136.	5 15 0	1.4409
	12	1.4763		12	1.3529		12	1.4176
83.	3 23 0	1.4673	110.	4 19 0	1.3242	137.	5 16 0	1.4164
	12	1.4686		12	1.3228		12	1.4268
84.	3 24 0	1.4141	111.	4 20 0	------	138.	5 17 0	1.4093
	12	1.4736		12	------		12	1.4056
85.	3 25 0	1.4383	112.	4 21 0	1.3029	139.	5 18 0	1.3922
	12	1.4558		12	1.2909		12	1.3755
86.	3 26 0	1.4327	113.	4 22 0	1.2942	140.	5 19 0	1.3624
	12	1.4560		12	1.2756		12	1.3306
87.	3 27 0	1.4128	114.	4 23 0	1.2990	141.	5 20 0	1.3358
	12	1.4716		12	1.3238		12	1.3373
88.	3 28 0	1.4548	115.	4 24 0	1.2917	142.	5 21 0	1.3236
	12	1.5243		12	1.3103		12	1.3299
89.	3 29 0	1.4923	116.	4 25 0	1.2928	143.	5 22 0	1.3254
	12	1.5361		12	1.3390		12	1.3257
90.	3 30 0	1.4809	117.	4 26 0	------	144.	5 23 0	1.2998
	12	1.5245		12	------		12	1.3149
91.	3 31 0	1.4375	118.	4 27 0	------	145.	5 24 0	1.3189
	12	1.4720		12	------		12	1.3093
92.	4 1 0	1.4403	119.	4 28 0	1.3949	146.	5 25 0	1.3033
	12	1.4516		12	1.4296		12	1.2764
93.	4 2 0	------	120.	4 29 0	1.4405	147.	5 26 0	------
	12	------		12	1.4454		12	------
94.	4 3 0	1.4580	121.	4 30 0	1.3948	148.	5 27 0	1.2567
	12	1.5075		12	1.4057		12	1.2665
95.	4 4 0	1.5051	122.	5 1 0	1.3958	149.	5 28 0	1.2614
	12	1.5519		12	1.4148		12	1.2570
96.	4 5 0	1.5349	123.	5 2 0	1.4095	150.	5 29 0	1.2775
	12	1.5478		12	1.4310		12	1.2654
97.	4 6 0	1.4945	124.	5 3 0	1.3899	151.	5 30 0	1.2440
	12	1.5442		12	1.3861		12	1.2566
98.	4 7 0	1.5536	125.	5 4 0	1.3798	152.	5 31 0	1.2276
	12	1.5663		12	1.3447		12	1.2168
99.	4 8 0	1.5628	126.	5 5 0	1.3932	153.	6 1 0	1.1769
	12	1.5901		12	1.3520		12	1.1992
100.	4 9 0	1.5630	127.	5 6 0	1.3688	154.	6 2 0	1.1346
	12	1.5440		12	1.4375		12	1.1454
101.	4 10 0	1.5491	128.	5 7 0	1.4463	155.	6 3 0	1.1492
	12	1.4878		12	1.4460		12	1.1936
102.	4 11 0	1.4761	129.	5 8 0	1.4386	156.	6 4 0	1.1584
	12	1.5059		12	1.4290		12	1.1494
103.	4 12 0	1.4880	130.	5 9 0	1.4335	157.	6 5 0	1.1891
	12	1.4519		12	1.3919		12	1.1468
104.	4 13 0	1.4202	131.	5 10 0	1.4120	158.	6 6 0	1.1650
	12	1.4106		12	1.4578		12	1.1675
105.	4 14 0	1.4168	132.	5 11 0	1.4626	159.	6 7 0	1.2101
	12	1.4029		12	1.4244		12	1.1909
106.	4 15 0	1.3718	133.	5 12 0	1.4249	160.	6 8 0	1.1823
	12	1.3830		12	1.4792		12	1.1966
107.	4 16 0	1.3263	134.	5 13 0	1.4657	161.	6 9 0	1.2093
	12	1.3610		12	1.4635		12	1.1621
108.	4 17 0	1.3384	135.	5 14 0	1.4366	162.	6 10 0	1.1554
	12	1.3824		12	1.4902		12	1.1487

163.	6	11	0	1.1185	190.	7	8	0	0.8800	217.	8	4	0	0.9746
			12	1.0823				12	0.8427				12	0.9836
164.	6	12	0	1.1220	191.	7	9	0	0.8206	218.	8	5	0	0.9651
			12	1.0854				12	0.8460				12	0.9718
165.	6	13	0	------	192.	7	10	0	0.8753	219.	8	6	0	------
			12	------				12	0.8787				12	------
166.	6	14	0	1.0991	193.	7	11	0	0.8608	220.	8	7	0	0.9654
			12	1.0886				12	0.8963				12	0.9081
167.	6	15	0	1.0515	194.	7	12	0	0.8825	221.	8	8	0	0.8968
			12	1.0279				12	0.8721				12	0.9205
168.	6	16	0	1.0271	195.	7	13	0	0.8418	222.	8	9	0	0.8685
			12	1.0346				12	0.8846				12	0.8868
169.	6	17	0	------	196.	7	14	0	0.9046	223.	8	10	0	0.8648
			12	------				12	0.8712				12	0.8590
170.	6	18	0	1.0083	197.	7	15	0	0.8826	224.	8	11	0	0.8714
			12	1.0160				12	0.8803				12	0.8338
171.	6	19	0	0.9828	198.	7	16	0	0.8582	225.	8	12	0	0.8463
			12	0.9813				12	0.8329				12	0.7851
172.	6	20	0	0.9843	199.	7	17	0	------	226.	8	13	0	0.7730
			12	0.9821				12	------				12	0.7641
173.	6	21	0	0.9997	200.	7	18	0	0.9573	227.	8	14	0	0.7609
			12	1.0142				12	0.9266				12	0.7330
174.	6	22	0	0.9865	201.	7	19	0	0.8609	228.	8	15	0	0.7711
			12	1.0060				12	0.8644				12	0.7708
175.	6	23	0	0.9646	202.	7	20	0	0.7963	229.	8	16	0	0.7486
			12	0.9633				12	0.8315				12	0.7535
176.	6	24	0	0.9844	203.	7	21	0	0.8472	230.	8	17	0	0.7338
			12	0.9711				12	0.8186				12	0.7288
177.	6	25	0	0.9401	204.	7	22	0	------	231.	8	18	0	0.7147
			12	0.9476				12	------				12	0.7638
178.	6	26	0	0.9311	205.	7	23	0	0.9107	232.	8	19	0	0.7774
			12	0.9439				12	0.9172				12	0.8269
179.	6	27	0	0.9400	206.	7	24	0	0.9205	233.	8	20	0	0.8427
			12	0.9599				12	0.9175				12	0.8662
180.	6	28	0	0.9301	207.	7	25	0	0.9350	234.	8	21	0	0.8576
			12	0.9469				12	0.9225				12	0.9337
181.	6	29	0	0.9368	208.	7	26	0	0.9344	235.	8	22	0	------
			12	0.9434				12	0.9121				12	------
182.	6	30	0	0.9459	209.	7	27	0	0.9145	236.	8	23	0	0.9653
			12	0.9486				12	0.8612				12	0.9816
183.	7	1	0	------	210.	7	28	0	0.9168	237.	8	24	0	0.9793
			12	------				12	0.8896				12	0.9913
184.	7	2	0	0.9512	211.	7	29	0	0.9001	238.	8	25	0	0.9972
			12	0.9968				12	0.9013				12	0.9945
185.	7	3	0	1.0002	212.	7	30	0	0.9000	239.	8	26	0	1.0161
			12	0.9809				12	0.9592				12	1.0478
186.	7	4	0	0.9777	213.	7	31	0	0.9777	240.	8	27	0	1.0825
			12	0.9385				12	0.9658				12	1.0463
187.	7	5	0	0.9219	214.	8	1	0	------	241.	8	28	0	1.0765
			12	0.9379				12	------				12	1.1213
188.	7	6	0	0.8853	215.	8	2	0	------	242.	8	29	0	1.1319
			12	0.8952				12	------				12	1.1285
189.	7	7	0	0.8651	216.	8	3	0	0.9768	243.	8	30	0	1.1816
			12	0.9134				12	0.9788				12	1.1505

244.	8	31	0	1.1540	271.	9	27	0	1.5249	298.	10	24	0	1.6586
			12	1.1795				12	1.5220				12	1.6258
245.	9	1	0	1.2265	272.	9	28	0	1.5420	299.	10	25	0	1.6169
			12	1.2291				12	1.5712				12	1.6308
246.	9	2	0	1.2584	273.	9	29	0	1.5255	300.	10	26	0	1.6232
			12	1.2514				12	1.4959				12	1.6488
247.	9	3	0	1.2568	274.	9	30	0	1.5011	301.	10	27	0	1.5763
			12	1.1917				12	1.4511				12	1.5830
248.	9	4	0	1.1926	275.	10	1	0	1.4873	302.	10	28	0	1.5177
			12	1.2022				12	1.4756				12	1.6194
249.	9	5	0	1.2205	276.	10	2	0	1.4800	303.	10	29	0	1.5672
			12	1.1475				12	1.4534				12	1.5862
250.	9	6	0	1.1569	277.	10	3	0	1.4467	304.	10	30	0	1.6296
			12	1.1708				12	1.4623				12	1.5855
251.	9	7	0	1.1584	278.	10	4	0	1.4675	305.	10	31	0	1.5851
			12	1.1515				12	1.4552				12	1.5733
252.	9	8	0	1.1182	279.	10	5	0	1.4433	306.	11	1	0	------
			12	1.1606				12	1.3863				12	------
253.	9	9	0	1.1262	280.	10	6	0	1.4101	307.	11	2	0	------
			12	1.1522				12	1.4775				12	------
254.	9	10	0	1.1995	281.	10	7	0	1.4431	308.	11	3	0	------
			12	1.1969				12	1.4635				12	------
255.	9	11	0	1.2679	282.	10	8	0	1.4793	309.	11	4	0	------
			12	1.2700				12	1.5100				12	------
256.	9	12	0	1.3049	283.	10	9	0	1.4840	310.	11	5	0	1.5396
			12	1.3263				12	1.5075				12	1.5519
257.	9	13	0	1.3350	284.	10	10	0	1.5922	311.	11	6	0	1.6086
			12	1.3289				12	1.5602				12	1.6068
258.	9	14	0	1.2939	285.	10	11	0	1.5805	312.	11	7	0	1.5751
			12	1.3063				12	1.5750				12	1.5802
259.	9	15	0	1.2994	286.	10	12	0	1.6029	313.	11	8	0	1.5972
			12	1.3374				12	1.6368				12	1.6119
260.	9	16	0	1.3361	287.	10	13	0	1.6330	314.	11	9	0	1.6214
			12	1.3531				12	1.6829				12	1.5792
261.	9	17	0	1.4171	288.	10	14	0	1.6523	315.	11	10	0	1.5956
			12	1.3482				12	1.6908				12	1.6177
262.	9	18	0	1.3568	289.	10	15	0	1.6792	316.	11	11	0	1.6047
			12	1.4144				12	1.6999				12	1.6057
263.	9	19	0	1.4388	290.	10	16	0	1.6919	317.	11	12	0	1.5895
			12	1.4013				12	1.7258				12	1.6152
264.	9	20	0	1.4518	291.	10	17	0	1.6497	318.	11	13	0	1.5907
			12	1.4652				12	1.6699				12	1.5749
265.	9	21	0	1.4527	292.	10	18	0	1.5944	319.	11	14	0	1.5918
			12	1.4790				12	1.6423				12	1.5650
266.	9	22	0	1.4761	293.	10	19	0	1.6176	320.	11	15	0	1.5161
			12	1.5176				12	1.6405				12	1.5093
267.	9	23	0	1.5445	294.	10	20	0	1.6235	321.	11	16	0	1.4428
			12	1.5548				12	1.6711				12	1.4610
268.	9	24	0	1.5100	295.	10	21	0	------	322.	11	17	0	1.4248
			12	1.5390				12	------				12	1.4878
269.	9	25	0	1.5523	296.	10	22	0	1.6736	323.	11	18	0	1.4460
			12	1.5020				12	1.6511				12	1.4601
270.	9	26	0	1.5183	297.	10	23	0	1.6290	324.	11	19	0	1.5102
			12	1.4957				12	1.6378				12	1.5265

325.	11	20	0	1.5253	339.	12	4	0	1.6265	353.	12	18	0	1.7665
			12	1.4917				12	1.6798				12	1.7594
326.	11	21	0	1.5426	340.	12	5	0	------	354.	12	19	0	1.7708
			12	1.5361				12	------				12	1.7652
327.	11	22	0	1.5113	341.	12	6	0	1.6588	355.	12	20	0	1.7943
			12	1.5089				12	1.6500				12	1.7823
328.	11	23	0	1.5222	342.	12	7	0	1.6069	356.	12	21	0	1.7814
			12	1.5497				12	1.6210				12	1.7540
329.	11	24	0	1.5037	343.	12	8	0	1.6100	357.	12	22	0	1.7867
			12	1.5360				12	1.6288				12	1.7127
330.	11	25	0	1.5375	344.	12	9	0	1.5798	358.	12	23	0	1.7356
			12	1.5601				12	1.6642				12	1.6894
331.	11	26	0	1.5832	345.	12	10	0	1.6549	359.	12	24	0	1.6562
			12	1.5692				12	1.6082				12	1.6569
332.	11	27	0	1.6217	346.	12	11	0	1.6196	360.	12	25	0	1.6564
			12	1.6428				12	1.6108				12	1.6261
333.	11	28	0	1.6364	347.	12	12	0	1.6736	361.	12	26	0	1.6255
			12	1.6503				12	1.7058				12	1.6473
334.	11	29	0	1.6110	348.	12	13	0	1.7787	362.	12	27	0	1.5953
			12	1.5972				12	1.7224				12	1.6525
335.	11	30	0	------	349.	12	14	0	1.8042	363.	12	28	0	1.6077
			12	------				12	1.7621				12	1.6370
336.	12	1	0	1.5610	350.	12	15	0	1.7903	364.	12	29	0	1.6583
			12	1.5131				12	1.7293				12	1.6567
337.	12	2	0	1.5348	351.	12	16	0	1.7428	365.	12	30	0	1.6725
			12	1.5772				12	1.7185				12	1.6742
338.	12	3	0	------	352.	12	17	0	1.7286	366.	12	31	0	1.6256
			12	------				12	1.7036				12	1.6180

367.	1	1	0	1.6212	394.	1	28	0	1.4538	421.	2 24 0 1.4874
			12	1.6028				12	1.4634		12 1.4760
368.	1	2	0	1.6235	395.	1	29	0	1.4799	422.	2 25 0 1.4573
			12	1.6151				12	1.4788		12 1.4364
369.	1	3	0	1.5953	396.	1	30	0	1.4921	423.	2 26 0 1.4606
			12	1.6552				12	1.4450		12 1.4223
370.	1	4	0	------	397.	1	31	0	1.4249	424.	2 27 0 1.4920
			12	------				12	1.4226		12 1.4778
371.	1	5	0	1.5530	398.	2	1	0	1.4552	425.	2 28 0 1.4499
			12	1.5095				12	1.4270		12 1.4092
372.	1	6	0	1.5173	399.	2	2	0	1.4693	426.	3 1 0 1.3998
			12	1.5304				12	1.4191		12 1.4434
373.	1	7	0	------	400.	2	3	0	1.4361	427.	3 2 0 1.3981
			12	------				12	1.4341		12 1.4168
374.	1	8	0	1.6001	401.	2	4	0	1.4547	428.	3 3 0 1.4160
			12	1.5720				12	1.4663		12 1.4464
375.	1	9	0	------	402.	2	5	0	------	429.	3 4 0 1.4581
			12	------				12	------		12 1.4256
376.	1	10	0	1.5854	403.	2	6	0	1.4469	430.	3 5 0 1.4487
			12	1.5487				12	1.4414		12 1.4718
377.	1	11	0	1.5498	404.	2	7	0	1.4472	431.	3 6 0 1.4408
			12	1.5923				12	1.4322		12 1.4201
378.	1	12	0	1.5922	405.	2	8	0	1.4288	432.	3 7 0 1.5018
			12	1.6130				12	1.4203		12 1.4243
379.	1	13	0	1.6053	406.	2	9	0	------	433.	3 8 0 1.4382
			12	1.6829				12	------		12 1.4689
380.	1	14	0	1.7023	407.	2	10	0	1.4046	434.	3 9 0 1.4387
			12	1.6861				12	1.4216		12 1.4988
381.	1	15	0	1.7310	408.	2	11	0	1.4332	435.	3 10 0 1.5222
			12	1.7617				12	1.4750		12 1.4630
382.	1	16	0	1.7096	409.	2	12	0	------	436.	3 11 0 1.5049
			12	1.6949				12	------		12 1.4750
383.	1	17	0	1.7090	410.	2	13	0	1.3586	437.	3 12 0 1.5285
			12	1.6744				12	1.3649		12 1.4744
384.	1	18	0	1.7073	411.	2	14	0	------	438.	3 13 0 1.5437
			12	1.6773				12	------		12 1.5102
385.	1	19	0	1.7063	412.	2	15	0	1.4731	439.	3 14 0 1.5201
			12	1.6592				12	1.4536		12 1.5343
386.	1	20	0	1.6694	413.	2	16	0	------	440.	3 15 0 1.5276
			12	1.6808				12	------		12 1.5190
387.	1	21	0	1.6810	414.	2	17	0	1.4605	441.	3 16 0 1.4889
			12	1.6817				12	1.4630		12 1.4497
388.	1	22	0	1.6444	415.	2	18	0	1.5234	442.	3 17 0 1.5509
			12	1.6971				12	1.4904		12 1.5003
389.	1	23	0	1.6277	416.	2	19	0	1.5101	443.	3 18 0 1.5222
			12	1.6454				12	1.4780		12 1.5198
390.	1	24	0	1.6242	417.	2	20	0	1.4662	444.	3 19 0 1.5258
			12	1.6564				12	1.4986		12 1.5049
391.	1	25	0	1.6108	418.	2	21	0	1.4997	445.	3 20 0 ------
			12	1.6040				12	1.4968		12 ------
392.	1	26	0	1.5996	419.	2	22	0	1.5296	446.	3 21 0 1.5997
			12	1.5801				12	1.4877		12 1.5637
393.	1	27	0	1.5511	420.	2	23	0	1.5223	447.	3 22 0 ------
			12	1.5111				12	1.4919		12 ------

448.	3	23	0	1.5527	475.	4	19	0	1.5645	502.	5	16	0	1.4923
			12	1.5841				12	------				12	------
449.	3	24	0	1.6223	476.	4	20	0	1.6016	503.	5	17	0	1.5321
			12	1.6385				12	------				12	------
450.	3	25	0	1.6318	477.	4	21	0	1.5745	504.	5	18	0	1.5176
			12	1.6538				12	------				12	------
451.	3	26	0	1.6718	478.	4	22	0	1.6081	505.	5	19	0	1.4563
			12	1.6579				12	------				12	------
452.	3	27	0	1.6442	479.	4	23	0	1.5675	506.	5	20	0	1.4204
			12	1.6032				12	------				12	------
453.	3	28	0	1.5790	480.	4	24	0	1.5960	507.	5	21	0	1.4568
			12	1.5807				12	------				12	------
454.	3	29	0	1.5406	481.	4	25	0	1.5404	508.	5	22	0	1.4722
			12	1.5722				12	------				12	------
455.	3	30	0	1.5248	482.	4	26	0	1.5351	509.	5	23	0	1.5083
			12	1.5410				12	------				12	------
456.	3	31	0	1.5093	483.	4	27	0	1.5765	510.	5	24	0	1.4407
			12	1.5538				12	------				12	------
457.	4	1	0	1.5117	484.	4	28	0	1.5655	511.	5	25	0	1.4039
			12	------				12	------				12	------
458.	4	2	0	1.4884	485.	4	29	0	------	512.	5	26	0	1.3935
			12	------				12	------				12	------
459.	4	3	0	1.4885	486.	4	30	0	1.5298	513.	5	27	0	1.4170
			12	------				12	------				12	------
460.	4	4	0	1.4179	487.	5	1	0	1.5159	514.	5	28	0	1.3967
			12	------				12	------				12	------
461.	4	5	0	1.4235	488.	5	2	0	1.5260	515.	5	29	0	1.3704
			12	------				12	------				12	------
462.	4	6	0	1.4265	489.	5	3	0	1.5022	516.	5	30	0	1.3431
			12	------				12	------				12	------
463.	4	7	0	1.4770	490.	5	4	0	1.5178	517.	5	31	0	1.3715
			12	------				12	------				12	------
464.	4	8	0	1.5040	491.	5	5	0	1.5085	518.	6	1	0	1.3338
			12	------				12	------				12	------
465.	4	9	0	1.4880	492.	5	6	0	1.5096	519.	6	2	0	1.2871
			12	------				12	------				12	------
466.	4	10	0	1.4793	493.	5	7	0	1.5070	520.	6	3	0	1.2534
			12	------				12	------				12	------
467.	4	11	0	1.5099	494.	5	8	0	1.4944	521.	6	4	0	1.2426
			12	------				12	------				12	------
468.	4	12	0	1.5011	495.	5	9	0	1.4782	522.	6	5	0	1.2280
			12	------				12	------				12	------
469.	4	13	0	1.5345	496.	5	10	0	1.4865	523.	6	6	0	1.2432
			12	------				12	------				12	------
470.	4	14	0	1.4912	497.	5	11	0	1.5054	524.	6	7	0	1.2592
			12	------				12	------				12	------
471.	4	15	0	1.4997	498.	5	12	0	1.4705	525.	6	8	0	1.2745
			12	------				12	------				12	------
472.	4	16	0	1.5271	499.	5	13	0	1.5012	526.	6	9	0	1.2633
			12	------				12	------				12	------
473.	4	17	0	1.5183	500.	5	14	0	1.6227	527.	6	10	0	1.2560
			12	------				12	------				12	------
474.	4	18	0	1.5301	501.	5	15	0	1.5829	528.	6	11	0	1.1819
			12	------				12	------				12	------

529.	6	12	0	1.1560	556.	7	9	0	0.8259	583.	8	5	0	0.7882
			12	------				12	------				12	------
530.	6	13	0	1.1754	557.	7	10	0	0.8469	584.	8	6	0	0.7468
			12	------				12	------				12	------
531.	6	14	0	1.1670	558.	7	11	0	0.8575	585.	8	7	0	0.7568
			12	------				12	------				12	------
532.	6	15	0	1.1140	559.	7	12	0	0.8165	586.	8	8	0	0.8072
			12	------				12	------				12	------
533.	6	16	0	1.0987	560.	7	13	0	0.8976	587.	8	9	0	0.7619
			12	------				12	------				12	------
534.	6	17	0	1.0899	561.	7	14	0	0.8808	588.	8	10	0	0.7699
			12	------				12	------				12	------
535.	6	18	0	1.1018	562.	7	15	0	0.9335	589.	8	11	0	0.8180
			12	------				12	------				12	------
536.	6	19	0	1.1539	563.	7	16	0	0.9177	590.	8	12	0	0.7543
			12	------				12	------				12	------
537.	6	20	0	1.1408	564.	7	17	0	0.9387	591.	8	13	0	0.7861
			12	------				12	------				12	------
538.	6	21	0	1.1434	565.	7	18	0	0.9732	592.	8	14	0	0.7765
			12	------				12	------				12	------
539.	6	22	0	1.1246	566.	7	19	0	0.9657	593.	8	15	0	0.7604
			12	------				12	------				12	------
540.	6	23	0	1.1552	567.	7	20	0	1.0172	594.	8	16	0	0.8028
			12	------				12	------				12	0.8043
541.	6	24	0	1.1449	568.	7	21	0	1.0300	595.	8	17	0	0.7675
			12	------				12	------				12	0.7643
542.	6	25	0	1.1648	569.	7	22	0	1.0071	596.	8	18	0	0.8339
			12	------				12	------				12	0.8045
543.	6	26	0	1.1182	570.	7	23	0	1.0305	597.	8	19	0	0.8088
			12	------				12	------				12	0.8371
544.	6	27	0	1.0636	571.	7	24	0	1.0231	598.	8	20	0	0.8615
			12	------				12	------				12	0.8717
545.	6	28	0	1.0492	572.	7	25	0	1.0183	599.	8	21	0	0.8772
			12	------				12	------				12	0.8796
546.	6	29	0	1.0034	573.	7	26	0	1.0031	600.	8	22	0	0.8568
			12	------				12	------				12	0.8642
547.	6	30	0	0.9855	574.	7	27	0	1.0238	601.	8	23	0	0.8361
			12	------				12	------				12	0.8471
548.	7	1	0	0.9572	575.	7	28	0	1.0132	602.	8	24	0	0.8788
			12	------				12	------				12	0.8692
549.	7	2	0	0.9487	576.	7	29	0	0.9606	603.	8	25	0	0.9137
			12	------				12	------				12	0.9067
550.	7	3	0	0.8769	577.	7	30	0	0.9169	604.	8	26	0	0.9161
			12	------				12	------				12	0.9771
551.	7	4	0	0.8376	578.	7	31	0	0.8701	605.	8	27	0	0.9479
			12	------				12	------				12	0.9862
552.	7	5	0	0.8097	579.	8	1	0	0.8677	606.	8	28	0	0.9784
			12	------				12	------				12	0.9488
553.	7	6	0	0.8266	580.	8	2	0	0.8207	607.	8	29	0	0.9567
			12	------				12	------				12	0.9569
554.	7	7	0	0.8312	581.	8	3	0	0.8130	608.	8	30	0	0.9948
			12	------				12	------				12	0.9665
555.	7	8	0	0.8282	582.	8	4	0	0.8319	609.	8	31	0	0.9727
			12	------				12	------				12	1.0235

610.	9	1	0	1.0213	637.	9	28	0	1.2278	664.	10	25	0	1.4857
			12	1.0387				12	1.2197				12	1.5010
611.	9	2	0	1.0602	638.	9	29	0	1.2121	665.	10	26	0	------
			12	1.0676				12	1.1929				12	------
612.	9	3	0	1.1334	639.	9	30	0	1.2487	666.	10	27	0	1.4422
			12	1.0986				12	1.2146				12	1.4571
613.	9	4	0	1.1499	640.	10	1	0	1.1956	667.	10	28	0	1.4413
			12	1.0812				12	1.2073				12	1.4817
614.	9	5	0	------	641.	10	2	0	1.2352	668.	10	29	0	1.4802
			12	------				12	1.2642				12	1.4339
615.	9	6	0	1.1414	642.	10	3	0	1.2165	669.	10	30	0	1.3960
			12	1.1112				12	1.2726				12	1.4587
616.	9	7	0	1.1792	643.	10	4	0	1.2830	670.	10	31	0	1.4656
			12	1.1961				12	1.2252				12	1.4656
617.	9	8	0	1.1844	644.	10	5	0	1.2820	671.	11	1	0	1.4249
			12	1.1851				12	1.2475				12	1.4235
618.	9	9	0	------	645.	10	6	0	1.2627	672.	11	2	0	1.4476
			12	------				12	1.2978				12	1.4048
619.	9	10	0	1.2262	646.	10	7	0	1.3335	673.	11	3	0	1.4686
			12	1.2310				12	1.2810				12	1.4448
620.	9	11	0	1.2250	647.	10	8	0	1.2671	674.	11	4	0	1.4708
			12	1.2452				12	1.2611				12	1.4355
621.	9	12	0	1.3018	648.	10	9	0	1.2445	675.	11	5	0	1.4760
			12	1.2581				12	1.2589				12	1.4954
622.	9	13	0	------	649.	10	10	0	1.2631	676.	11	6	0	1.4920
			12	------				12	1.3057				12	1.4550
623.	9	14	0	1.2812	650.	10	11	0	------	677.	11	7	0	1.4614
			12	1.3023				12	------				12	1.4323
624.	9	15	0	1.2451	651.	10	12	0	1.2955	678.	11	8	0	1.4339
			12	1.2543				12	1.3229				12	1.4098
625.	9	16	0	------	652.	10	13	0	------	679.	11	9	0	1.3822
			12	------				12	------				12	1.4292
626.	9	17	0	------	653.	10	14	0	1.3999	680.	11	10	0	1.4871
			12	------				12	1.3918				12	1.4368
627.	9	18	0	1.2052	654.	10	15	0	------	681.	11	11	0	1.4717
			12	1.1918				12	------				12	1.4336
628.	9	19	0	1.2264	655.	10	16	0	1.4126	682.	11	12	0	1.4516
			12	1.1795				12	1.4338				12	1.4662
629.	9	20	0	1.1703	656.	10	17	0	1.4591	683.	11	13	0	1.4682
			12	1.1755				12	1.4592				12	1.4291
630.	9	21	0	1.1844	657.	10	18	0	1.4872	684.	11	14	0	1.4815
			12	1.1940				12	1.4483				12	1.4957
631.	9	22	0	1.1789	658.	10	19	0	------	685.	11	15	0	1.4887
			12	1.1694				12	------				12	1.4860
632.	9	23	0	1.1658	659.	10	20	0	1.5326	686.	11	16	0	------
			12	1.1973				12	1.5150				12	------
633.	9	24	0	1.1973	660.	10	21	0	1.5304	687.	11	17	0	1.5436
			12	1.1810				12	1.5100				12	1.4993
634.	9	25	0	1.1478	661.	10	22	0	------	688.	11	18	0	1.5107
			12	1.1961				12	------				12	1.5223
635.	9	26	0	1.2502	662.	10	23	0	------	689.	11	19	0	1.5352
			12	1.2182				12	------				12	1.5223
636.	9	27	0	1.2319	663.	10	24	0	1.5076	690.	11	20	0	------
			12	1.1973				12	1.5150				12	------

691.	11 21 0	1.5165	705.	12 5 0	1.5978	719.	12 19 0	1.7363
	12	1.5184		12	1.5638		12	1.7423
692.	11 22 0	1.5528	706.	12 6 0	1.5667	720.	12 20 0	1.7463
	12	1.5667		12	1.5640		12	1.7323
693.	11 23 0	1.5248	707.	12 7 0	1.6293	721.	12 21 0	1.7775
	12	1.4895		12	1.6240		12	1.7615
694.	11 24 0	------	708.	12 8 0	1.6403	722.	12 22 0	------
	12	------		12	1.6405		12	------
695.	11 25 0	1.5595	709.	12 9 0	1.6313	723.	12 23 0	1.8317
	12	1.5262		12	1.6350		12	1.8103
696.	11 26 0	1.5246	710.	12 10 0	1.6708	724.	12 24 0	1.7813
	12	1.5200		12	1.7007		12	1.7679
697.	11 27 0	------	711.	12 11 0	1.7287	725.	12 25 0	1.7753
	12	------		12	1.7341		12	1.7950
698.	11 28 0	------	712.	12 12 0	1.7567	726.	12 26 0	------
	12	------		12	1.7255		12	------
699.	11 29 0	1.4904	713.	12 13 0	1.7225	727.	12 27 0	1.7639
	12	1.4928		12	1.6890		12	1.7497
700.	11 30 0	1.5484	714.	12 14 0	1.6366	728.	12 28 0	1.7830
	12	1.5066		12	1.6750		12	1.7714
701.	12 1 0	1.5091	715.	12 15 0	1.7193	729.	12 29 0	1.7744
	12	1.5219		12	1.6601		12	1.7356
702.	12 2 0	1.6149	716.	12 16 0	1.6718	730.	12 30 0	------
	12	1.5928		12	1.6789		12	------
703.	12 3 0	1.6127	717.	12 17 0	1.7449	731.	12 31 0	1.7211
	12	1.6035		12	1.6868		12	1.7396
704.	12 4 0	1.5858	718.	12 18 0	1.7285			
	12	1.5612		12	1.7218			

732.	1	1	0	1.6792	759.	1	28	0	1.5243	786.	2	24	0	1.7160
			12	1.7403				12	1.5540				12	1.7073
733.	1	2	0	------	760.	1	29	0	1.5471	787.	2	25	0	1.6941
			12	------				12	1.5902				12	1.7313
734.	1	3	0	------	761.	1	30	0	1.5657	788.	2	26	0	1.7088
			12	------				12	1.5532				12	1.7314
735.	1	4	0	1.7676	762.	1	31	0	------	789.	2	27	0	1.7110
			12	1.7886				12	------				12	1.7338
736.	1	5	0	1.7915	763.	2	1	0	1.6179	790.	2	28	0	1.7180
			12	1.8214				12	1.5581				12	1.7266
737.	1	6	0	1.7878	764.	2	2	0	1.6119	791.	3	1	0	1.7369
			12	1.7562				12	1.6146				12	1.7130
738.	1	7	0	1.7820	765.	2	3	0	1.6735	792.	3	2	0	1.7620
			12	1.7287				12	1.6747				12	1.7485
739.	1	8	0	1.7198	766.	2	4	0	------	793.	3	3	0	1.7172
			12	1.7215				12	------				12	1.7104
740.	1	9	0	1.7153	767.	2	5	0	------	794.	3	4	0	------
			12	1.7212				12	------				12	------
741.	1	10	0	1.7658	768.	2	6	0	1.7464	795.	3	5	0	1.6622
			12	1.7566				12	1.7406				12	1.6142
742.	1	11	0	1.6989	769.	2	7	0	------	796.	3	6	0	1.6085
			12	1.7190				12	------				12	1.5837
743.	1	12	0	1.7047	770.	2	8	0	------	797.	3	7	0	1.5670
			12	1.7231				12	------				12	1.5746
744.	1	13	0	1.6581	771.	2	9	0	1.7461	798.	3	8	0	------
			12	1.6338				12	1.7590				12	------
745.	1	14	0	1.6386	772.	2	10	0	1.7561	799.	3	9	0	1.5580
			12	1.5775				12	1.7135				12	1.5598
746.	1	15	0	1.5364	773.	2	11	0	1.7260	800.	3	10	0	1.5438
			12	1.5294				12	1.7193				12	1.5585
747.	1	16	0	1.5694	774.	2	12	0	1.7204	801.	3	11	0	1.5345
			12	1.5440				12	1.7438				12	1.5072
748.	1	17	0	1.5451	775.	2	13	0	1.7356	802.	3	12	0	------
			12	1.5588				12	1.7766				12	------
749.	1	18	0	1.5572	776.	2	14	0	1.7880	803.	3	13	0	1.5121
			12	1.5278				12	1.7699				12	1.4976
750.	1	19	0	1.5219	777.	2	15	0	1.7827	804.	3	14	0	------
			12	1.5425				12	1.7670				12	------
751.	1	20	0	1.5536	778.	2	16	0	1.7158	805.	3	15	0	------
			12	1.5960				12	1.7594				12	------
752.	1	21	0	1.5743	779.	2	17	0	1.7632	806.	3	16	0	------
			12	1.5414				12	1.7578				12	------
753.	1	22	0	1.5382	780.	2	18	0	1.7837	807.	3	17	0	1.5221
			12	1.5472				12	1.8009				12	1.5439
754.	1	23	0	1.5128	781.	2	19	0	1.7994	808.	3	18	0	1.5174
			12	1.5251				12	1.7758				12	1.4983
755.	1	24	0	1.5104	782.	2	20	0	1.8056	809.	3	19	0	1.5326
			12	1.5154				12	1.7749				12	1.5473
756.	1	25	0	1.5526	783.	2	21	0	1.7899	810.	3	20	0	1.5261
			12	1.5358				12	1.8131				12	1.5345
757.	1	26	0	1.4914	784.	2	22	0	1.7564	811.	3	21	0	1.5062
			12	1.5436				12	1.7895				12	1.5482
758.	1	27	0	------	785.	2	23	0	1.7954	812.	3	22	0	1.5211
			12	------				12	1.7592				12	1.5518

813.	3 23 0	1.5469	840.	4 19 0	------	867.	5 16 0	1.4440
	12	1.5482		12	------		12	1.4700
814.	3 24 0	------	841.	4 20 0	------	868.	5 17 0	1.4871
	12	------		12	------		12	1.5089
815.	3 25 0	1.5920	842.	4 21 0	------	869.	5 18 0	1.5205
	12	1.5460		12	------		12	1.5234
816.	3 26 0	------	843.	4 22 0	------	870.	5 19 0	------
	12	------		12	------		12	------
817.	3 27 0	1.6065	844.	4 23 0	1.5293	871.	5 20 0	1.5100
	12	1.5951		12	1.5206		12	1.5332
818.	3 28 0	1.5947	845.	4 24 0	1.5106	872.	5 21 0	1.5187
	12	1.5813		12	1.4734		12	1.5460
819.	3 29 0	1.6243	846.	4 25 0	1.5085	873.	5 22 0	------
	12	1.5891		12	1.4978		12	------
820.	3 30 0	1.6165	847.	4 26 0	1.5016	874.	5 23 0	------
	12	1.6028		12	1.4865		12	------
821.	3 31 0	1.6240	848.	4 27 0	1.5384	875.	5 24 0	1.5299
	12	1.5601		12	1.4886		12	1.4899
822.	4 1 0	1.5794	849.	4 28 0	1.5283	876.	5 25 0	1.4535
	12	1.5417		12	1.5405		12	1.4527
823.	4 2 0	1.5786	850.	4 29 0	1.5189	877.	5 26 0	------
	12	1.5736		12	1.4813		12	------
824.	4 3 0	1.5727	851.	4 30 0	1.4934	878.	5 27 0	------
	12	1.5617		12	1.4692		12	------
825.	4 4 0	1.5825	852.	5 1 0	1.4529	879.	5 28 0	1.4304
	12	1.5496		12	1.4596		12	1.3863
826.	4 5 0	1.5251	853.	5 2 0	1.4196	880.	5 29 0	1.4120
	12	1.4748		12	1.4365		12	1.4119
827.	4 6 0	1.4748	854.	5 3 0	1.4685	881.	5 30 0	1.3725
	12	1.5065		12	1.4240		12	1.3896
828.	4 7 0	1.5528	855.	5 4 0	------	882.	5 31 0	1.3820
	12	1.5244		12	------		12	1.4122
829.	4 8 0	1.4987	856.	5 5 0	1.4100	883.	6 1 0	1.3744
	12	1.4956		12	1.3837		12	1.3534
830.	4 9 0	------	857.	5 6 0	1.3608	884.	6 2 0	1.3499
	12	------		12	1.3689		12	1.2920
831.	4 10 0	1.4507	858.	5 7 0	1.3982	885.	6 3 0	1.3054
	12	1.4676		12	1.3852		12	1.2901
832.	4 11 0	1.4687	859.	5 8 0	1.4346	886.	6 4 0	1.3164
	12	1.4728		12	1.4587		12	1.2482
833.	4 12 0	1.5115	860.	5 9 0	1.4645	887.	6 5 0	1.2856
	12	1.4671		12	1.4188		12	1.2378
834.	4 13 0	------	861.	5 10 0	1.3799	888.	6 6 0	1.2663
	12	------		12	1.3883		12	1.2303
835.	4 14 0	1.5053	862.	5 11 0	1.3928	889.	6 7 0	1.2710
	12	1.4878		12	1.4400		12	1.2310
836.	4 15 0	1.5323	863.	5 12 0	1.3841	890.	6 8 0	1.2113
	12	1.4951		12	1.4035		12	1.2079
837.	4 16 0	1.5224	864.	5 13 0	------	891.	6 9 0	1.2094
	12	1.5308		12	------		12	1.1390
838.	4 17 0	------	865.	5 14 0	------	892.	6 10 0	------
	12	------		12	------		12	------
839.	4 18 0	1.5228	866.	5 15 0	------	893.	6 11 0	1.1492
	12	1.5190		12	------		12	1.1207

894.	6 12 0	1.1398	921.	7 9 0	1.1194	948.	8 5 0	0.8917
	12	1.0910		12	1.0443		12	0.8584
895.	6 13 0	1.0892	922.	7 10 0	1.0942	949.	8 6 0	0.9221
	12	1.0639		12	1.0676		12	0.8765
896.	6 14 0	1.0569	923.	7 11 0	------	950.	8 7 0	------
	12	1.0933		12	------		12	------
897.	6 15 0	------	924.	7 12 0	------	951.	8 8 0	0.9218
	12	------		12	------		12	0.9226
898.	6 16 0	------	925.	7 13 0	------	952.	8 9 0	0.9146
	12	------		12	------		12	0.9299
899.	6 17 0	1.0826	926.	7 14 0	1.0211	953.	8 10 0	0.9450
	12	1.0688		12	1.0080		12	0.9290
900.	6 18 0	1.0582	927.	7 15 0	0.9786	954.	8 11 0	0.9685
	12	1.0844		12	1.0243		12	0.8939
901.	6 19 0	1.0502	928.	7 16 0	1.0125	955.	8 12 0	0.9278
	12	1.0266		12	0.9770		12	0.9100
902.	6 20 0	------	929.	7 17 0	0.9645	956.	8 13 0	0.9075
	12	------		12	0.9322		12	0.8685
903.	6 21 0	1.0234	930.	7 18 0	0.9436	957.	8 14 0	0.8687
	12	1.0238		12	0.9522		12	0.8136
904.	6 22 0	1.0426	931.	7 19 0	0.9571	958.	8 15 0	0.8647
	12	1.0498		12	0.9085		12	1.0245
905.	6 23 0	1.0149	932.	7 20 0	0.9223	959.	8 16 0	1.0881
	12	1.0300		12	0.8801		12	1.0905
906.	6 24 0	------	933.	7 21 0	0.9058	960.	8 17 0	1.0894
	12	------		12	0.9194		12	1.1034
907.	6 25 0	------	934.	7 22 0	0.9046	961.	8 18 0	1.0961
	12	------		12	0.8724		12	1.0353
908.	6 26 0	1.0894	935.	7 23 0	0.8556	962.	8 19 0	1.0505
	12	1.0780		12	0.8323		12	1.0715
909.	6 27 0	1.0960	936.	7 24 0	0.8804	963.	8 20 0	1.0316
	12	1.0747		12	0.8608		12	1.0456
910.	6 28 0	------	937.	7 25 0	0.8479	964.	8 21 0	1.0366
	12	------		12	0.8260		12	1.0727
911.	6 29 0	1.0609	938.	7 26 0	0.8126	965.	8 22 0	1.0904
	12	1.0592		12	0.8332		12	1.0896
912.	6 30 0	------	939.	7 27 0	0.7808	966.	8 23 0	1.0574
	12	------		12	0.8265		12	1.1305
913.	7 1 0	------	940.	7 28 0	0.8532	967.	8 24 0	1.1529
	12	------		12	0.8720		12	1.1455
914.	7 2 0	------	941.	7 29 0	0.8840	968.	8 25 0	1.1619
	12	------		12	0.9126		12	1.1682
915.	7 3 0	------	942.	7 30 0	------	969.	8 26 0	1.1665
	12	------		12	------		12	1.1471
916.	7 4 0	1.0355	943.	7 31 0	0.9305	970.	8 27 0	1.1609
	12	1.0630		12	0.9130		12	1.1351
917.	7 5 0	1.1039	944.	8 1 0	0.9095	971.	8 28 0	1.1585
	12	1.0813		12	0.8767		12	1.1660
918.	7 6 0	1.1108	945.	8 2 0	0.8578	972.	8 29 0	1.1769
	12	1.0749		12	0.8791		12	1.1884
919.	7 7 0	------	946.	8 3 0	------	973.	8 30 0	1.1560
	12	------		12	------		12	1.1526
920.	7 8 0	1.1036	947.	8 4 0	0.9351	974.	8 31 0	1.1228
	12	1.0782		12	0.8744		12	1.1243

975.	9	1	0	1.1594	1002.	9	28	0	1.2791	1029.	10	25	0	1.4161
			12	1.1004				12	1.3143				12	1.4583
976.	9	2	0	1.1040	1003.	9	29	0	1.3121	1030.	10	26	0	1.3850
			12	1.0644				12	1.2715				12	1.4175
977.	9	3	0	1.0759	1004.	9	30	0	1.2953	1031.	10	27	0	1.4492
			12	1.0527				12	1.3176				12	1.3961
978.	9	4	0	1.0845	1005.	10	1	0	1.3245	1032.	10	28	0	1.4444
			12	1.0598				12	1.3100				12	1.4528
979.	9	5	0	1.0799	1006.	10	2	0	1.3333	1033.	10	29	0	1.4716
			12	1.1107				12	1.3232				12	1.5001
980.	9	6	0	1.0940	1007.	10	3	0	1.3400	1034.	10	30	0	1.5020
			12	1.0812				12	1.3504				12	1.4429
981.	9	7	0	1.1142	1008.	10	4	0	1.3684	1035.	10	31	0	1.4413
			12	1.0813				12	1.3795				12	1.4050
982.	9	8	0	------	1009.	10	5	0	1.4152	1036.	11	1	0	------
			12	------				12	1.3908				12	------
983.	9	9	0	1.1169	1010.	10	6	0	1.3864	1037.	11	2	0	1.4204
			12	1.1096				12	1.4150				12	1.4719
984.	9	10	0	1.1666	1011.	10	7	0	1.4168	1038.	11	3	0	1.4562
			12	1.1395				12	1.4695				12	1.4505
985.	9	11	0	1.1937	1012.	10	8	0	1.4529	1039.	11	4	0	1.4773
			12	1.1308				12	1.4811				12	1.5198
986.	9	12	0	------	1013.	10	9	0	1.4414	1040.	11	5	0	1.5445
			12	------				12	1.4706				12	1.5366
987.	9	13	0	1.1068	1014.	10	10	0	1.4713	1041.	11	6	0	1.5510
			12	1.0833				12	1.5111				12	1.5759
988.	9	14	0	1.0467	1015.	10	11	0	1.4580	1042.	11	7	0	1.5633
			12	1.0751				12	1.5065				12	1.5788
989.	9	15	0	1.0693	1016.	10	12	0	1.4524	1043.	11	8	0	1.5738
			12	1.0624				12	1.4340				12	1.6033
990.	9	16	0	1.0813	1017.	10	13	0	1.4703	1044.	11	9	0	1.5665
			12	1.0793				12	1.4282				12	1.6213
991.	9	17	0	1.0438	1018.	10	14	0	1.4619	1045.	11	10	0	1.5962
			12	1.0423				12	1.5000				12	1.6050
992.	9	18	0	1.0877	1019.	10	15	0	1.4788	1046.	11	11	0	1.5734
			12	1.1144				12	1.4681				12	1.5897
993.	9	19	0	1.1532	1020.	10	16	0	1.4375	1047.	11	12	0	1.5396
			12	1.1354				12	1.4148				12	1.5825
994.	9	20	0	1.1381	1021.	10	17	0	1.4379	1048.	11	13	0	------
			12	1.1013				12	1.4489				12	------
995.	9	21	0	1.1467	1022.	10	18	0	------	1049.	11	14	0	1.5693
			12	1.1912				12	------				12	1.6032
996.	9	22	0	1.1706	1023.	10	19	0	1.4418	1050.	11	15	0	1.5613
			12	1.1170				12	1.4446				12	1.5178
997.	9	23	0	1.1949	1024.	10	20	0	1.4288	1051.	11	16	0	------
			12	1.2430				12	1.4562				12	------
998.	9	24	0	1.2775	1025.	10	21	0	1.4361	1052.	11	17	0	1.5545
			12	1.2786				12	1.4626				12	1.5589
999.	9	25	0	1.3175	1026.	10	22	0	1.4145	1053.	11	18	0	1.5210
			12	1.3442				12	1.4131				12	1.5334
1000.	9	26	0	1.3801	1027.	10	23	0	1.4018	1054.	11	19	0	1.4951
			12	1.3697				12	1.4081				12	1.5452
1001.	9	27	0	1.3436	1028.	10	24	0	1.3833	1055.	11	20	0	1.5457
			12	1.3228				12	1.4329				12	1.5247

1056.	11 21 0	1.5217	1070.	12 5 0	1.6323	1084.	12 19 0	1.7365
	12	1.5314		12	1.6625		12	1.7092
1057.	11 22 0	1.5502	1071.	12 6 0	1.6146	1085.	12 20 0	1.7037
	12	1.5391		12	1.5777		12	1.6720
1058.	11 23 0	------	1072.	12 7 0	1.6801	1086.	12 21 0	1.6943
	12	------		12	1.6858		12	1.6936
1059.	11 24 0	1.5502	1073.	12 8 0	1.6684	1087.	12 22 0	1.6915
	12	1.5672		12	1.6692		12	1.6404
1060.	11 25 0	1.6250	1074.	12 9 0	1.6336	1088.	12 23 0	1.6963
	12	1.6065		12	1.6593		12	1.6925
1061.	11 26 0	1.5862	1075.	12 10 0	1.6251	1089.	12 24 0	1.7229
	12	1.6581		12	1.6453		12	1.7004
1062.	11 27 0	1.6184	1076.	12 11 0	1.6561	1090.	12 25 0	1.6925
	12	1.6056		12	1.6373		12	1.6774
1063.	11 28 0	1.6142	1077.	12 12 0	1.5815	1091.	12 26 0	1.6750
	12	1.6384		12	1.6424		12	1.7106
1064.	11 29 0	1.5987	1078.	12 13 0	1.6462	1092.	12 27 0	1.7273
	12	1.6316		12	1.6801		12	1.7351
1065.	11 30 0	1.6291	1079.	12 14 0	1.6981	1093.	12 28 0	1.7019
	12	1.6170		12	1.7198		12	1.7361
1066.	12 1 0	1.6394	1080.	12 15 0	1.7358	1094.	12 29 0	------
	12	1.6126		12	1.7109		12	------
1067.	12 2 0	1.6451	1081.	12 16 0	1.7077	1095.	12 30 0	1.6411
	12	1.6583		12	1.6918		12	1.6910
1068.	12 3 0	1.6926	1082.	12 17 0	1.6989	1096.	12 31 0	1.6769
	12	1.7030		12	1.7402		12	1.6690
1069.	12 4 0	1.6617	1083.	12 18 0	1.7609			
	12	1.6611		12	1.7683			

Page intentionally left blank

Page intentionally left blank

1097.	1	1	0	1.6483	1124.	1	28	0	1.7033	1151.	2 24 0	1.6154
			12	1.6567				12	1.6971		12	1.6283
1098.	1	2	0	1.6772	1125.	1	29	0	1.7364	1152.	2 25 0	1.5650
			12	1.6420				12	1.7488		12	1.5662
1099.	1	3	0	1.6097	1126.	1	30	0	1.6796	1153.	2 26 0	1.6210
			12	1.6134				12	1.7224		12	1.6307
1100.	1	4	0	1.6671	1127.	1	31	0	1.6792	1154.	2 27 0	1.6303
			12	1.6971				12	1.7516		12	1.5745
1101.	1	5	0	1.7048	1128.	2	1	0	1.6550	1155.	2 28 0	------
			12	1.7167				12	1.6876		12	------
1102.	1	6	0	1.7085	1129.	2	2	0	1.6700	1156.	3 1 0	1.6116
			12	1.7337				12	1.6201		12	1.6331
1103.	1	7	0	1.7229	1130.	2	3	0	1.6495	1157.	3 2 0	1.6444
			12	1.7508				12	1.6311		12	1.5986
1104.	1	8	0	1.7684	1131.	2	4	0	1.6739	1158.	3 3 0	1.6152
			12	1.7205				12	1.6491		12	1.5642
1105.	1	9	0	1.7060	1132.	2	5	0	1.6247	1159.	3 4 0	1.5214
			12	1.6911				12	1.6635		12	1.5329
1106.	1	10	0	1.7274	1133.	2	6	0	1.6584	1160.	3 5 0	1.4818
			12	1.6881				12	1.5714		12	1.5255
1107.	1	11	0	1.7214	1134.	2	7	0	1.5489	1161.	3 6 0	1.5395
			12	1.7556				12	1.5568		12	1.5706
1108.	1	12	0	1.7493	1135.	2	8	0	1.5906	1162.	3 7 0	1.4857
			12	1.7726				12	1.5765		12	1.4633
1109.	1	13	0	1.7075	1136.	2	9	0	1.6438	1163.	3 8 0	1.3985
			12	1.6937				12	1.6898		12	1.4770
1110.	1	14	0	1.7107	1137.	2	10	0	1.6886	1164.	3 9 0	1.4015
			12	1.6849				12	1.6614		12	1.4242
1111.	1	15	0	1.6841	1138.	2	11	0	1.6597	1165.	3 10 0	1.4640
			12	1.6692				12	1.6874		12	1.5054
1112.	1	16	0	1.6846	1139.	2	12	0	1.6679	1166.	3 11 0	1.4596
			12	1.7316				12	1.6736		12	1.5098
1113.	1	17	0	1.7199	1140.	2	13	0	1.6818	1167.	3 12 0	1.5597
			12	1.7577				12	1.6826		12	1.5506
1114.	1	18	0	1.7662	1141.	2	14	0	1.6606	1168.	3 13 0	1.5770
			12	1.7931				12	1.5854		12	1.5693
1115.	1	19	0	1.8065	1142.	2	15	0	1.6081	1169.	3 14 0	1.5668
			12	1.8470				12	1.6015		12	1.6090
1116.	1	20	0	1.8697	1143.	2	16	0	1.6052	1170.	3 15 0	1.6012
			12	1.8120				12	1.6126		12	1.6308
1117.	1	21	0	1.8279	1144.	2	17	0	1.5759	1171.	3 16 0	1.6330
			12	1.7447				12	1.6334		12	1.6046
1118.	1	22	0	1.7720	1145.	2	18	0	1.6554	1172.	3 17 0	1.6044
			12	1.7622				12	1.6142		12	1.6546
1119.	1	23	0	1.7475	1146.	2	19	0	1.5982	1173.	3 18 0	1.6906
			12	1.7197				12	1.5993		12	1.6801
1120.	1	24	0	1.7443	1147.	2	20	0	1.5525	1174.	3 19 0	1.6489
			12	1.7403				12	1.5567		12	1.6806
1121.	1	25	0	1.7798	1148.	2	21	0	1.5523	1175.	3 20 0	------
			12	1.7591				12	1.5417		12	------
1122.	1	26	0	1.7609	1149.	2	22	0	1.5836	1176.	3 21 0	1.7401
			12	1.7564				12	1.5570		12	1.6995
1123.	1	27	0	1.7779	1150.	2	23	0	1.5910	1177.	3 22 0	1.7052
			12	1.7395				12	1.6057		12	1.6963

1178.	3 23 0	1.7335	1205.	4 19 0	1.7599	1232.	5 16 0	1.6177
	12	1.6578		12	1.6891		12	1.6183
1179.	3 24 0	1.6451	1206.	4 20 0	1.6955	1233.	5 17 0	1.6328
	12	1.6781		12	1.6972		12	1.5851
1180.	3 25 0	1.6346	1207.	4 21 0	1.6883	1234.	5 18 0	1.5975
	12	1.6745		12	1.6551		12	1.5906
1181.	3 26 0	1.5960	1208.	4 22 0	1.6438	1235.	5 19 0	1.6063
	12	1.6303		12	1.6241		12	1.5831
1182.	3 27 0	1.6395	1209.	4 23 0	1.6815	1236.	5 20 0	1.5728
	12	1.6668		12	1.6315		12	1.5423
1183.	3 28 0	------	1210.	4 24 0	1.6003	1237.	5 21 0	------
	12	------		12	1.6372		12	------
1184.	3 29 0	1.6551	1211.	4 25 0	1.6462	1238.	5 22 0	1.5483
	12	1.5529		12	1.6523		12	1.5519
1185.	3 30 0	1.6070	1212.	4 26 0	1.6442	1239.	5 23 0	1.5396
	12	1.5128		12	1.7090		12	1.5265
1186.	3 31 0	1.5790	1213.	4 27 0	1.6906	1240.	5 24 0	1.5323
	12	1.6008		12	1.6657		12	1.5228
1187.	4 1 0	1.5373	1214.	4 28 0	1.6798	1241.	5 25 0	1.4937
	12	1.5393		12	1.6660		12	1.4772
1188.	4 2 0	1.5673	1215.	4 29 0	1.6526	1242.	5 26 0	1.4743
	12	1.6400		12	1.6026		12	1.4987
1189.	4 3 0	1.6024	1216.	4 30 0	1.6372	1243.	5 27 0	1.4879
	12	1.6129		12	1.6278		12	1.4633
1190.	4 4 0	1.5895	1217.	5 1 0	1.6073	1244.	5 28 0	1.4625
	12	1.5989		12	1.6354		12	1.4311
1191.	4 5 0	1.5635	1218.	5 2 0	1.6467	1245.	5 29 0	1.3851
	12	1.5409		12	1.6775		12	1.3584
1192.	4 6 0	1.5027	1219.	5 3 0	1.5916	1246.	5 30 0	1.3281
	12	1.5170		12	1.6308		12	1.3316
1193.	4 7 0	1.5803	1220.	5 4 0	1.6070	1247.	5 31 0	1.3141
	12	1.5694		12	1.5881		12	1.3328
1194.	4 8 0	1.5769	1221.	5 5 0	1.5555	1248.	6 1 0	1.3094
	12	1.6477		12	1.6176		12	1.3082
1195.	4 9 0	------	1222.	5 6 0	1.6381	1249.	6 2 0	1.3188
	12	------		12	1.6269		12	1.3192
1196.	4 10 0	1.6543	1223.	5 7 0	------	1250.	6 3 0	1.2769
	12	1.6813		12	------		12	1.3063
1197.	4 11 0	1.6849	1224.	5 8 0	1.5866	1251.	6 4 0	1.3082
	12	1.6778		12	1.5643		12	1.2800
1198.	4 12 0	------	1225.	5 9 0	1.5776	1252.	6 5 0	1.2809
	12	------		12	1.6202		12	1.2688
1199.	4 13 0	1.6418	1226.	5 10 0	1.6212	1253.	6 6 0	------
	12	1.5947		12	1.6252		12	------
1200.	4 14 0	1.6524	1227.	5 11 0	------	1254.	6 7 0	1.2346
	12	1.6804		12	------		12	1.2339
1201.	4 15 0	1.6652	1228.	5 12 0	1.6191	1255.	6 8 0	1.2537
	12	1.6649		12	1.6324		12	1.2690
1202.	4 16 0	1.7000	1229.	5 13 0	1.6025	1256.	6 9 0	1.2745
	12	1.7013		12	1.5943		12	1.2552
1203.	4 17 0	1.7562	1230.	5 14 0	1.5808	1257.	6 10 0	1.2843
	12	1.7622		12	1.5828		12	1.2188
1204.	4 18 0	1.7508	1231.	5 15 0	1.5551	1258.	6 11 0	1.2733
	12	1.7499		12	1.5889		12	1.2277

1259.	6	12	0	1.2589	1286.	7	9	0	1.1780	1313.	8	5	0	1.1513
			12	1.2403				12	1.1994				12	1.1267
1260.	6	13	0	1.2882	1287.	7	10	0	------	1314.	8	6	0	1.1345
			12	1.2279				12	------				12	1.1339
1261.	6	14	0	1.2753	1288.	7	11	0	1.2315	1315.	8	7	0	1.1829
			12	1.2712				12	1.2299				12	1.1507
1262.	6	15	0	1.2630	1289.	7	12	0	1.1924	1316.	8	8	0	1.1963
			12	1.2577				12	1.1744				12	1.2089
1263.	6	16	0	1.2799	1290.	7	13	0	1.1853	1317.	8	9	0	1.2113
			12	1.2647				12	1.1527				12	1.1790
1264.	6	17	0	1.3087	1291.	7	14	0	1.1529	1318.	8	10	0	1.1796
			12	1.2646				12	1.1285				12	1.2001
1265.	6	18	0	------	1292.	7	15	0	1.1482	1319.	8	11	0	1.1963
			12	------				12	1.0984				12	1.1849
1266.	6	19	0	------	1293.	7	16	0	1.0915	1320.	8	12	0	1.1878
			12	------				12	1.1018				12	1.2071
1267.	6	20	0	1.2935	1294.	7	17	0	1.1369	1321.	8	13	0	1.2566
			12	1.2364				12	1.1803				12	1.2122
1268.	6	21	0	1.2580	1295.	7	18	0	1.1060	1322.	8	14	0	1.2452
			12	1.2578				12	1.1081				12	1.2820
1269.	6	22	0	1.2838	1296.	7	19	0	1.0729	1323.	8	15	0	1.3146
			12	1.3037				12	1.0767				12	1.3312
1270.	6	23	0	------	1297.	7	20	0	1.0510	1324.	8	16	0	1.2889
			12	------				12	1.0670				12	1.3098
1271.	6	24	0	------	1298.	7	21	0	1.0444	1325.	8	17	0	1.2744
			12	------				12	1.0474				12	1.2944
1272.	6	25	0	1.2703	1299.	7	22	0	1.0298	1326.	8	18	0	1.2951
			12	1.2727				12	1.0436				12	1.2791
1273.	6	26	0	1.3466	1300.	7	23	0	1.0395	1327.	8	19	0	1.2571
			12	1.3098				12	1.0548				12	1.2294
1274.	6	27	0	1.3392	1301.	7	24	0	1.0028	1328.	8	20	0	1.2497
			12	1.3544				12	0.9919				12	1.2157
1275.	6	28	0	1.3617	1302.	7	25	0	0.9608	1329.	8	21	0	1.1884
			12	1.3848				12	0.9760				12	1.1934
1276.	6	29	0	1.3434	1303.	7	26	0	0.9794	1330.	8	22	0	1.1234
			12	1.3738				12	0.9783				12	1.0600
1277.	6	30	0	1.3653	1304.	7	27	0	0.9944	1331.	8	23	0	1.1168
			12	1.3919				12	1.0245				12	1.1414
1278.	7	1	0	1.3646	1305.	7	28	0	1.0198	1332.	8	24	0	1.1020
			12	1.3200				12	1.0081				12	1.1268
1279.	7	2	0	------	1306.	7	29	0	0.9930	1333.	8	25	0	1.1186
			12	------				12	1.0011				12	1.1158
1280.	7	3	0	1.2912	1307.	7	30	0	1.0445	1334.	8	26	0	1.1031
			12	1.2699				12	0.9995				12	1.0656
1281.	7	4	0	1.2519	1308.	7	31	0	1.0073	1335.	8	27	0	1.0550
			12	1.2619				12	1.0503				12	1.0623
1282.	7	5	0	1.2130	1309.	8	1	0	1.0336	1336.	8	28	0	------
			12	1.2173				12	1.0366				12	------
1283.	7	6	0	1.1946	1310.	8	2	0	1.0323	1337.	8	29	0	1.0289
			12	1.1563				12	1.0715				12	1.0176
1284.	7	7	0	1.1990	1311.	8	3	0	1.0988	1338.	8	30	0	1.0226
			12	1.1639				12	1.1101				12	1.0242
1285.	7	8	0	1.1675	1312.	8	4	0	1.1389	1339.	8	31	0	1.0273
			12	1.1864				12	1.1349				12	1.0557

1340.	9	1	0	1.0504	1367.	9	28	0	------	1394.	10	25	0	1.5539
			12	1.0497				12	------				12	1.5681
1341.	9	2	0	1.0446	1368.	9	29	0	------	1395.	10	26	0	1.5744
			12	1.0545				12	------				12	1.5546
1342.	9	3	0	1.0696	1369.	9	30	0	------	1396.	10	27	0	1.6020
			12	1.0521				12	------				12	1.5533
1343.	9	4	0	1.0499	1370.	10	1	0	------	1397.	10	28	0	1.5207
			12	1.0839				12	------				12	1.5102
1344.	9	5	0	1.0907	1371.	10	2	0	1.3808	1398.	10	29	0	1.4990
			12	1.1286				12	1.3623				12	1.4962
1345.	9	6	0	1.1301	1372.	10	3	0	1.3761	1399.	10	30	0	1.4579
			12	1.1678				12	1.3824				12	1.4558
1346.	9	7	0	1.1584	1373.	10	4	0	1.3917	1400.	10	31	0	1.3955
			12	1.1609				12	1.4187				12	1.4593
1347.	9	8	0	1.1724	1374.	10	5	0	1.4480	1401.	11	1	0	------
			12	1.1763				12	1.4339				12	------
1348.	9	9	0	1.2429	1375.	10	6	0	1.4316	1402.	11	2	0	1.4855
			12	1.2167				12	1.4175				12	1.4859
1349.	9	10	0	1.2647	1376.	10	7	0	1.4327	1403.	11	3	0	1.4568
			12	1.2329				12	1.4755				12	1.4899
1350.	9	11	0	1.2586	1377.	10	8	0	1.4127	1404.	11	4	0	1.5243
			12	1.2037				12	1.4803				12	1.5393
1351.	9	12	0	1.2509	1378.	10	9	0	1.4644	1405.	11	5	0	1.5580
			12	1.2122				12	1.5265				12	1.5431
1352.	9	13	0	1.2824	1379.	10	10	0	1.5730	1406.	11	6	0	1.5040
			12	1.2534				12	1.5494				12	1.5173
1353.	9	14	0	1.2878	1380.	10	11	0	------	1407.	11	7	0	1.4953
			12	1.2635				12	------				12	1.4928
1354.	9	15	0	1.2839	1381.	10	12	0	1.6042	1408.	11	8	0	1.5091
			12	1.2750				12	1.5753				12	1.4881
1355.	9	16	0	1.2596	1382.	10	13	0	1.6270	1409.	11	9	0	1.4798
			12	1.2692				12	1.6193				12	1.4625
1356.	9	17	0	------	1383.	10	14	0	1.6293	1410.	11	10	0	1.4424
			12	------				12	1.6054				12	1.4761
1357.	9	18	0	------	1384.	10	15	0	1.6137	1411.	11	11	0	1.4901
			12	------				12	1.5790				12	1.5108
1358.	9	19	0	------	1385.	10	16	0	1.6135	1412.	11	12	0	1.4528
			12	------				12	1.6509				12	1.4559
1359.	9	20	0	------	1386.	10	17	0	1.5883	1413.	11	13	0	1.4594
			12	------				12	1.5384				12	1.4209
1360.	9	21	0	1.3067	1387.	10	18	0	1.5351	1414.	11	14	0	1.4286
			12	1.3310				12	1.5565				12	1.4270
1361.	9	22	0	1.3212	1388.	10	19	0	1.5725	1415.	11	15	0	1.4778
			12	1.3328				12	1.5705				12	1.4548
1362.	9	23	0	1.3017	1389.	10	20	0	1.5836	1416.	11	16	0	1.4839
			12	1.3107				12	1.5994				12	1.4551
1363.	9	24	0	1.3138	1390.	10	21	0	1.6150	1417.	11	17	0	1.4786
			12	1.3246				12	1.6071				12	1.4624
1364.	9	25	0	------	1391.	10	22	0	1.5620	1418.	11	18	0	1.5265
			12	------				12	1.5692				12	1.4888
1365.	9	26	0	1.3286	1392.	10	23	0	1.5482	1419.	11	19	0	1.4881
			12	1.2826				12	1.5815				12	1.4839
1366.	9	27	0	------	1393.	10	24	0	1.5682	1420.	11	20	0	1.5375
			12	------				12	1.5422				12	1.5564

1421.	11	21	0	1.4838	1435.	12	5	0	1.6185	1449.	12 19 0	1.6804
			12	1.5030				12	1.5846		12	1.6750
1422.	11	22	0	1.5150	1436.	12	6	0	1.5785	1450.	12 20 0	1.6510
			12	1.5105				12	1.5592		12	1.6169
1423.	11	23	0	1.5036	1437.	12	7	0	1.5412	1451.	12 21 0	------
			12	1.4975				12	1.5685		12	------
1424.	11	24	0	1.4796	1438.	12	8	0	1.5752	1452.	12 22 0	1.5498
			12	1.4719				12	1.6266		12	1.5142
1425.	11	25	0	1.4628	1439.	12	9	0	1.6504	1453.	12 23 0	1.5146
			12	1.4983				12	1.6635		12	1.5058
1426.	11	26	0	1.5325	1440.	12	10	0	1.6259	1454.	12 24 0	1.5330
			12	1.5543				12	1.6599		12	1.5178
1427.	11	27	0	1.5863	1441.	12	11	0	1.6756	1455.	12 25 0	1.5324
			12	1.6074				12	1.7017		12	1.4776
1428.	11	28	0	1.6167	1442.	12	12	0	1.6670	1456.	12 26 0	1.5196
			12	1.6237				12	1.6771		12	1.4990
1429.	11	29	0	1.6424	1443.	12	13	0	1.6873	1457.	12 27 0	1.4873
			12	1.6168				12	1.6746		12	1.5302
1430.	11	30	0	1.6478	1444.	12	14	0	1.6808	1458.	12 28 0	1.5592
			12	1.6556				12	1.6910		12	1.5638
1431.	12	1	0	1.6298	1445.	12	15	0	1.7292	1459.	12 29 0	1.5720
			12	1.6321				12	1.6756		12	1.5676
1432.	12	2	0	------	1446.	12	16	0	1.6766	1460.	12 30 0	1.5992
			12	------				12	1.6809		12	1.5984
1433.	12	3	0	1.6624	1447.	12	17	0	1.7136	1461.	12 31 0	1.6304
			12	1.6245				12	1.7144		12	1.6643
1434.	12	4	0	1.5381	1448.	12	18	0	1.7391			
			12	1.6277				12	1.6979			

1462.	1	1	0	1.6557	1489.	1	28	0	1.6065	1516.	2 24 0	1.6690
			12	1.6360				12	1.6091		12	1.6721
1463.	1	2	0	1.6169	1490.	1	29	0	1.6269	1517.	2 25 0	1.6378
			12	1.5899				12	1.5883		12	1.6550
1464.	1	3	0	1.6391	1491.	1	30	0	1.6263	1518.	2 26 0	1.6458
			12	1.6723				12	1.6123		12	1.6516
1465.	1	4	0	1.6599	1492.	1	31	0	1.5747	1519.	2 27 0	1.6591
			12	1.6630				12	1.5982		12	1.7199
1466.	1	5	0	1.6711	1493.	2	1	0	1.5619	1520.	2 28 0	1.6577
			12	1.6525				12	1.5881		12	1.6385
1467.	1	6	0	1.6426	1494.	2	2	0	1.5593	1521.	2 29 0	1.5824
			12	1.5910				12	1.5220		12	1.5621
1468.	1	7	0	1.6296	1495.	2	3	0	1.5098	1522.	3 1 0	------
			12	1.6478				12	1.5042		12	------
1469.	1	8	0	1.6875	1496.	2	4	0	1.4964	1523.	3 2 0	------
			12	1.7062				12	1.4821		12	------
1470.	1	9	0	1.7226	1497.	2	5	0	1.4739	1524.	3 3 0	1.4695
			12	1.7198				12	1.4404		12	1.5129
1471.	1	10	0	1.7334	1498.	2	6	0	1.4444	1525.	3 4 0	1.5127
			12	1.7549				12	1.4644		12	1.5151
1472.	1	11	0	1.7613	1499.	2	7	0	1.4630	1526.	3 5 0	1.4716
			12	1.7219				12	1.4650		12	1.4814
1473.	1	12	0	1.7210	1500.	2	8	0	1.4145	1527.	3 6 0	1.4119
			12	1.7226				12	1.4381		12	1.3902
1474.	1	13	0	1.6926	1501.	2	9	0	1.4304	1528.	3 7 0	------
			12	1.6915				12	1.4570		12	------
1475.	1	14	0	1.6809	1502.	2	10	0	1.4501	1529.	3 8 0	1.4189
			12	1.6887				12	1.4711		12	1.3955
1476.	1	15	0	1.6476	1503.	2	11	0	1.4549	1530.	3 9 0	1.4208
			12	1.6744				12	1.4261		12	1.4146
1477.	1	16	0	1.6712	1504.	2	12	0	------	1531.	3 10 0	1.4086
			12	1.6623				12	------		12	1.4200
1478.	1	17	0	1.6567	1505.	2	13	0	1.4070	1532.	3 11 0	1.3769
			12	1.6638				12	1.4561		12	1.4272
1479.	1	18	0	1.6801	1506.	2	14	0	1.4466	1533.	3 12 0	1.4687
			12	1.6808				12	1.5329		12	1.4476
1480.	1	19	0	1.7149	1507.	2	15	0	1.5152	1534.	3 13 0	1.4493
			12	1.6824				12	1.5314		12	1.4666
1481.	1	20	0	1.6335	1508.	2	16	0	1.5656	1535.	3 14 0	1.4648
			12	1.6917				12	1.5535		12	1.4787
1482.	1	21	0	1.6463	1509.	2	17	0	1.6047	1536.	3 15 0	1.4863
			12	1.6634				12	1.6007		12	1.5102
1483.	1	22	0	1.6764	1510.	2	18	0	1.6320	1537.	3 16 0	1.4720
			12	1.7196				12	1.6161		12	1.4871
1484.	1	23	0	1.7071	1511.	2	19	0	1.6108	1538.	3 17 0	1.4654
			12	1.6147				12	1.6446		12	1.4955
1485.	1	24	0	1.6524	1512.	2	20	0	1.6365	1539.	3 18 0	1.4967
			12	1.6423				12	1.6391		12	1.5353
1486.	1	25	0	1.6410	1513.	2	21	0	1.6257	1540.	3 19 0	1.4759
			12	1.6407				12	1.6466		12	1.4942
1487.	1	26	0	1.6136	1514.	2	22	0	1.6192	1541.	3 20 0	------
			12	1.6440				12	1.6418		12	------
1488.	1	27	0	1.6012	1515.	2	23	0	1.6575	1542.	3 21 0	1.5182
			12	1.5940				12	1.6739		12	1.5155

1543.	3 22 0	1.5305	1570.	4 18 0	1.6071	1597.	5 15 0	1.4809
	12	1.5628		12	1.5600		12	1.5054
1544.	3 23 0	1.5360	1571.	4 19 0	1.5466	1598.	5 16 0	1.5356
	12	1.5271		12	1.5299		12	1.5259
1545.	3 24 0	1.6102	1572.	4 20 0	1.5582	1599.	5 17 0	1.4963
	12	1.5815		12	1.5551		12	1.4987
1546.	3 25 0	1.5916	1573.	4 21 0	1.5723	1600.	5 18 0	1.5210
	12	1.6196		12	1.5943		12	1.5057
1547.	3 26 0	1.6276	1574.	4 22 0	1.5959	1601.	5 19 0	1.5160
	12	1.6812		12	1.5802		12	1.5092
1548.	3 27 0	1.6460	1575.	4 23 0	1.6012	1602.	5 20 0	1.5433
	12	1.6736		12	1.5864		12	1.5261
1549.	3 28 0	1.6775	1576.	4 24 0	1.5569	1603.	5 21 0	------
	12	1.6633		12	1.5779		12	------
1550.	3 29 0	1.6322	1577.	4 25 0	1.5773	1604.	5 22 0	1.4838
	12	1.6556		12	1.5189		12	1.4860
1551.	3 30 0	------	1578.	4 26 0	1.5188	1605.	5 23 0	1.4943
	12	------		12	1.5100		12	1.4950
1552.	3 31 0	1.6172	1579.	4 27 0	1.5271	1606.	5 24 0	1.5151
	12	1.6263		12	1.4938		12	1.4931
1553.	4 1 0	------	1580.	4 28 0	1.5278	1607.	5 25 0	1.5225
	12	------		12	1.5272		12	1.5431
1554.	4 2 0	1.6714	1581.	4 29 0	1.5781	1608.	5 26 0	1.4899
	12	1.6524		12	1.6046		12	1.4748
1555.	4 3 0	1.6488	1582.	4 30 0	1.6163	1609.	5 27 0	1.4699
	12	1.5973		12	1.5979		12	1.4609
1556.	4 4 0	1.6192	1583.	5 1 0	1.5975	1610.	5 28 0	1.3894
	12	1.5866		12	1.6318		12	1.3855
1557.	4 5 0	1.5938	1584.	5 2 0	------	1611.	5 29 0	1.3819
	12	1.6108		12	------		12	1.3630
1558.	4 6 0	1.6120	1585.	5 3 0	1.5775	1612.	5 30 0	1.3571
	12	1.6231		12	1.5365		12	1.3348
1559.	4 7 0	1.6306	1586.	5 4 0	1.5994	1613.	5 31 0	1.3029
	12	1.5989		12	1.5249		12	1.3062
1560.	4 8 0	1.5754	1587.	5 5 0	1.6123	1614.	6 1 0	1.2792
	12	1.5545		12	1.5750		12	1.2742
1561.	4 9 0	1.5856	1588.	5 6 0	1.5647	1615.	6 2 0	1.2825
	12	1.5718		12	1.5771		12	1.2598
1562.	4 10 0	1.5844	1589.	5 7 0	------	1616.	6 3 0	------
	12	1.5870		12	------		12	------
1563.	4 11 0	1.5532	1590.	5 8 0	1.6112	1617.	6 4 0	1.3258
	12	1.5329		12	1.5537		12	1.3026
1564.	4 12 0	1.4758	1591.	5 9 0	1.6077	1618.	6 5 0	------
	12	1.5153		12	1.6061		12	------
1565.	4 13 0	1.5227	1592.	5 10 0	1.6014	1619.	6 6 0	1.3230
	12	1.5415		12	1.5887		12	1.2994
1566.	4 14 0	1.5136	1593.	5 11 0	1.6064	1620.	6 7 0	1.3001
	12	1.5528		12	1.5843		12	1.3051
1567.	4 15 0	1.5380	1594.	5 12 0	1.5912	1621.	6 8 0	1.3075
	12	1.5592		12	1.5470		12	1.3037
1568.	4 16 0	1.5818	1595.	5 13 0	1.5059	1622.	6 9 0	1.2726
	12	1.5893		12	1.4839		12	1.2892
1569.	4 17 0	1.5852	1596.	5 14 0	1.4918	1623.	6 10 0	1.2833
	12	1.5693		12	1.4875		12	1.2549

1624.	6 11 0	1.2542	1651.	7 8 0	1.1673	1678.	8 4 0	1.0232
	12	1.3101		12	1.1721		12	1.0336
1625.	6 12 0	1.3357	1652.	7 9 0	1.1484	1679.	8 5 0	------
	12	1.3217		12	1.1361		12	------
1626.	6 13 0	1.2852	1653.	7 10 0	1.1773	1680.	8 6 0	0.9835
	12	1.3092		12	1.1936		12	0.9737
1627.	6 14 0	1.3120	1654.	7 11 0	1.1435	1681.	8 7 0	------
	12	1.2844		12	1.1128		12	------
1628.	6 15 0	1.2918	1655.	7 12 0	------	1682.	8 8 0	------
	12	1.2482		12	------		12	------
1629.	6 16 0	1.2030	1656.	7 13 0	1.0589	1683.	8 9 0	0.9509
	12	1.2420		12	1.0067		12	0.9589
1630.	6 17 0	1.2180	1657.	7 14 0	0.9900	1684.	8 10 0	------
	12	1.2355		12	1.0199		12	------
1631.	6 18 0	1.2187	1658.	7 15 0	1.0172	1685.	8 11 0	------
	12	1.2137		12	1.0652		12	------
1632.	6 19 0	1.2070	1659.	7 16 0	1.0593	1686.	8 12 0	1.0765
	12	1.2206		12	1.0735		12	1.0501
1633.	6 20 0	1.2001	1660.	7 17 0	------	1687.	8 13 0	------
	12	1.2504		12	------		12	------
1634.	6 21 0	1.2547	1661.	7 18 0	1.0472	1688.	8 14 0	------
	12	1.2220		12	1.0660		12	------
1635.	6 22 0	1.2654	1662.	7 19 0	1.0605	1689.	8 15 0	1.0096
	12	1.2485		12	1.0662		12	1.0341
1636.	6 23 0	1.2466	1663.	7 20 0	1.0522	1690.	8 16 0	1.0258
	12	1.2592		12	1.0416		12	1.0326
1637.	6 24 0	1.2515	1664.	7 21 0	1.0750	1691.	8 17 0	1.0431
	12	1.2639		12	1.1071		12	1.0900
1638.	6 25 0	1.2317	1665.	7 22 0	1.1073	1692.	8 18 0	1.0961
	12	1.2117		12	1.1107		12	1.0670
1639.	6 26 0	1.2156	1666.	7 23 0	1.1238	1693.	8 19 0	1.0597
	12	1.2487		12	1.1193		12	1.0379
1640.	6 27 0	1.2150	1667.	7 24 0	1.1560	1694.	8 20 0	1.0636
	12	1.1917		12	1.1570		12	1.0691
1641.	6 28 0	------	1668.	7 25 0	------	1695.	8 21 0	1.0930
	12	------		12	------		12	1.1115
1642.	6 29 0	------	1669.	7 26 0	1.1449	1696.	8 22 0	1.1246
	12	------		12	1.1660		12	1.1478
1643.	6 30 0	1.0749	1670.	7 27 0	1.1474	1697.	8 23 0	1.1490
	12	1.0710		12	1.1869		12	1.1300
1644.	7 1 0	1.1036	1671.	7 28 0	1.1734	1698.	8 24 0	1.1492
	12	1.0881		12	1.1407		12	1.1364
1645.	7 2 0	1.0887	1672.	7 29 0	1.0944	1699.	8 25 0	1.1079
	12	1.0877		12	1.0900		12	1.0902
1646.	7 3 0	1.0762	1673.	7 30 0	1.0453	1700.	8 26 0	1.0657
	12	1.0886		12	1.0424		12	1.1071
1647.	7 4 0	1.0993	1674.	7 31 0	1.0494	1701.	8 27 0	1.1132
	12	1.0882		12	1.0664		12	1.1263
1648.	7 5 0	1.1076	1675.	8 1 0	1.0510	1702.	8 28 0	1.1404
	12	1.1317		12	1.0607		12	1.1506
1649.	7 6 0	1.1263	1676.	8 2 0	1.0837	1703.	8 29 0	1.1287
	12	1.1990		12	1.0680		12	1.1872
1650.	7 7 0	1.1696	1677.	8 3 0	1.0809	1704.	8 30 0	1.1710
	12	1.1850		12	1.0674		12	1.1850

1705.	8	31	0	1.1848	1732.	9	27	0	------	1759.	10	24	0	1.4688
			12	1.1627				12	------				12	1.4811
1706.	9	1	0	1.1595	1733.	9	28	0	1.4132	1760.	10	25	0	1.4827
			12	1.1840				12	1.4022				12	1.4745
1707.	9	2	0	------	1734.	9	29	0	1.3812	1761.	10	26	0	1.5140
			12	------				12	1.3513				12	1.4926
1708.	9	3	0	1.1347	1735.	9	30	0	1.3405	1762.	10	27	0	1.4895
			12	1.1276				12	1.3441				12	1.4591
1709.	9	4	0	------	1736.	10	1	0	1.2925	1763.	10	28	0	1.4647
			12	------				12	1.2789				12	1.5104
1710.	9	5	0	1.1783	1737.	10	2	0	1.3129	1764.	10	29	0	1.5166
			12	1.1818				12	1.2766				12	1.5096
1711.	9	6	0	1.2123	1738.	10	3	0	1.2716	1765.	10	30	0	1.4989
			12	1.1895				12	1.2464				12	1.5019
1712.	9	7	0	1.2095	1739.	10	4	0	1.2396	1766.	10	31	0	1.5176
			12	1.1975				12	1.2565				12	1.5241
1713.	9	8	0	1.2001	1740.	10	5	0	1.2478	1767.	11	1	0	1.5629
			12	1.1986				12	1.2296				12	1.5860
1714.	9	9	0	1.1724	1741.	10	6	0	------	1768.	11	2	0	1.5701
			12	1.2016				12	------				12	1.5689
1715.	9	10	0	------	1742.	10	7	0	1.2570	1769.	11	3	0	1.5813
			12	------				12	1.2870				12	1.5970
1716.	9	11	0	1.2489	1743.	10	8	0	1.3056	1770.	11	4	0	1.5994
			12	1.2149				12	1.3361				12	1.6134
1717.	9	12	0	1.3029	1744.	10	9	0	1.3198	1771.	11	5	0	1.6166
			12	1.2653				12	1.3236				12	1.6179
1718.	9	13	0	1.3168	1745.	10	10	0	1.3518	1772.	11	6	0	1.6203
			12	1.2843				12	1.3410				12	1.6333
1719.	9	14	0	1.2737	1746.	10	11	0	1.3579	1773.	11	7	0	1.6038
			12	1.2884				12	1.4012				12	1.5891
1720.	9	15	0	1.2449	1747.	10	12	0	1.4233	1774.	11	8	0	1.6022
			12	1.2440				12	1.4443				12	1.5894
1721.	9	16	0	------	1748.	10	13	0	1.4703	1775.	11	9	0	1.5907
			12	------				12	1.4678				12	1.5622
1722.	9	17	0	1.2500	1749.	10	14	0	1.4538	1776.	11	10	0	1.5414
			12	1.2146				12	1.4584				12	1.5493
1723.	9	18	0	1.2163	1750.	10	15	0	1.4744	1777.	11	11	0	1.4862
			12	1.2424				12	1.4576				12	1.4396
1724.	9	19	0	1.2355	1751.	10	16	0	1.4606	1778.	11	12	0	1.4157
			12	1.2668				12	1.4610				12	1.4421
1725.	9	20	0	1.2547	1752.	10	17	0	------	1779.	11	13	0	------
			12	1.2417				12	------				12	------
1726.	9	21	0	1.2287	1753.	10	18	0	1.5021	1780.	11	14	0	1.5115
			12	1.2444				12	1.4441				12	1.5251
1727.	9	22	0	1.2332	1754.	10	19	0	1.4633	1781.	11	15	0	1.4532
			12	1.2603				12	1.4493				12	1.4325
1728.	9	23	0	------	1755.	10	20	0	1.4936	1782.	11	16	0	1.4205
			12	------				12	1.4902				12	1.4387
1729.	9	24	0	1.2762	1756.	10	21	0	1.4817	1783.	11	17	0	1.4852
			12	1.2798				12	1.5031				12	1.4995
1730.	9	25	0	1.2324	1757.	10	22	0	1.4995	1784.	11	18	0	------
			12	1.3107				12	1.4772				12	------
1731.	9	26	0	1.3653	1758.	10	23	0	1.4659	1785.	11	19	0	1.5209
			12	1.3304				12	1.4837				12	1.5493

1786.	11	20	0	1.5230	1800.	12	4	0	1.7377	1814.	12	18	0	------
			12	1.4978				12	1.7448				12	------
1787.	11	21	0	1.5208	1801.	12	5	0	1.7730	1815.	12	19	0	1.5701
			12	1.5359				12	1.7714				12	1.5579
1788.	11	22	0	1.5376	1802.	12	6	0	1.7564	1816.	12	20	0	1.5667
			12	1.5149				12	1.7848				12	1.5779
1789.	11	23	0	1.5095	1803.	12	7	0	1.7876	1817.	12	21	0	1.6287
			12	1.5330				12	1.7783				12	1.6467
1790.	11	24	0	1.5705	1804.	12	8	0	1.7929	1818.	12	22	0	1.6748
			12	1.5350				12	1.7675				12	1.6775
1791.	11	25	0	1.5528	1805.	12	9	0	1.7458	1819.	12	23	0	1.6820
			12	1.5884				12	1.7641				12	1.6830
1792.	11	26	0	1.5653	1806.	12	10	0	------	1820.	12	24	0	1.6785
			12	1.5628				12	------				12	1.6855
1793.	11	27	0	1.5467	1807.	12	11	0	1.6945	1821.	12	25	0	1.6532
			12	1.5335				12	1.6964				12	1.6462
1794.	11	28	0	1.5426	1808.	12	12	0	1.7018	1822.	12	26	0	1.6680
			12	1.5461				12	1.7078				12	1.6813
1795.	11	29	0	1.5458	1809.	12	13	0	1.7003	1823.	12	27	0	1.6796
			12	1.5768				12	1.7145				12	1.6789
1796.	11	30	0	1.6099	1810.	12	14	0	1.6905	1824.	12	28	0	1.6669
			12	1.6172				12	1.6830				12	1.6692
1797.	12	1	0	1.6183	1811.	12	15	0	1.6132	1825.	12	29	0	1.6537
			12	1.6189				12	1.6149				12	1.6685
1798.	12	2	0	1.6820	1812.	12	16	0	1.6031	1826.	12	30	0	------
			12	1.6714				12	1.5832				12	------
1799.	12	3	0	1.7078	1813.	12	17	0	1.5921	1827.	12	31	0	------
			12	1.6985				12	1.5790				12	------

ERT
ENVIRONMENTAL RESEARCH & TECHNOLOGY, INC.
696 VIRGINIA ROAD, CONCORD, MASSACHUSETTS 01742, USA

CONCORD, MA (617) 369-8910 **FORT COLLINS, CO** (303) 493-8878
PITTSBURGH (412) 261-2910 **WASHINGTON, DC** (202) 659-8913
HOUSTON (713) 977-6611 **LOS ANGELES** (213) 889-5313
ATLANTA (404) 955-3121 **CHICAGO** (312) 620-5900