



universität
wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

„Production of Star Charts for Stars down to a visual magnitude of 4.5 from present time back to the year -20 000 and their implications in Ethnoastronomy“

verfasst von / submitted by

Klaus G. Kieneswenger, Bakk.rer.nat

angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of
Master of Science (MSc)

Wien, 2016 / Vienna 2016

Studienkennzahl lt. Studienblatt /
degree programme code as it appears on
the student record sheet:

A 066 861

Studienrichtung lt. Studienblatt /
degree programme as it appears on
the student record sheet:

Masterstudium Astronomie

Betreut von / Supervisor:

Univ.- Prof. Dr. Maria G. Firneis

Acknowledgements

First and foremost, I would like to thank Univ.-Prof. Dr. Maria G. Firneis (Institute of Astrophysics, University of Vienna) for her support of this master's thesis and her patience during the process of writing it.

Further I would like to thank Duane Hamacher for providing a lot of interesting papers which were fundamental for this thesis.

Furthermore I want to thank my parents for giving me the opportunity to pursue a carrier in astronomy, without them and their support this thesis would not have been possible.

Finally thanks to all of my family and my friends for keeping me focused and grounded over all these years.

Contents

List of Figures	3
List of Tables	5
1. Introduction	7
2. Calculations	7
2.1. Algorithm	7
2.2. Comparison of Coefficients	10
2.3. Projection	10
2.4. Results and Discussion	13
3. Ramifications	15
3.1. Aboriginal Astronomy	17
3.2. Astronomical Aspects	19
3.2.1. The Sun	19
3.2.2. The Moon	21
3.2.3. Eclipses	21
3.2.4. Other celestial objects/events	23
3.2.5. Orion and the Pleiades	24
3.2.6. Emu in the sky	26
3.2.7. Milky Way	26
3.2.8. Meteoritics and impacts	27
3.2.9. Calendar?	30
4. The Mithras Cult	35
4.1. Tauroctony	36
5. Conclusion	41
Appendices	42
A. Fortran90 Program	42
B. Star Charts	47
C. Tables	92
Bibliography	163

List of Figures

1.	Comparison plots	11
2.	Comparison plots	12
3.	Orthographic projection	13
4.	Stereographic projection	14
5.	Right Ascension and Declination of Alpha Crucis	15
6.	Ursa Major plots	16
7.	Aboriginal Tribes Map	18
8.	Rock engraving at Ngaut Ngaut	20
9.	Crescent-shaped rock engraving at Calga Springs	22
10.	Engraving with possible link to eclipses	23
11.	(11a) shows the emu in the sky above its engraving at Kuring-gai-chase National Park. Picture by Barnaby Norris. (11b) shows the region of the sky around the Southern Cross.	27
12.	The Milky Way	28
13.	Rock Painting, depicting the Milky Way	29
14.	a - Talons; b - Curnow talons	34
15.	Crux through the millennia 1	35
16.	Crux through the millennia 2	36
17.	Mithraea Map	37
18.	Ptuj Mithraeum	38
19.	Tauroctony	40
20.	Northern Sky Chart, Year 1000	48
21.	Northern Sky Chart, Year 0	49
22.	Northern Sky Chart, Year -1000	50
23.	Northern Sky Chart, Year -2000	51
24.	Northern Sky Chart, Year -3000	52
25.	Northern Sky Chart, Year -4000	53
26.	Northern Sky Chart, Year -5000	54
27.	Northern Sky Chart, Year -6000	55
28.	Northern Sky Chart, Year -7000	56
29.	Northern Sky Chart, Year -8000	57
30.	Northern Sky Chart, Year -9000	58
31.	Northern Sky Chart, Year -10000	59
32.	Northern Sky Chart, Year -11000	60
33.	Northern Sky Chart, Year -12000	61
34.	Northern Sky Chart, Year -13000	62
35.	Northern Sky Chart, Year -14000	63
36.	Northern Sky Chart, Year -15000	64
37.	Northern Sky Chart, Year -16000	65
38.	Northern Sky Chart, Year -17000	66
39.	Northern Sky Chart, Year -18000	67
40.	Northern Sky Chart, Year -19000	68

41.	Northern Sky Chart, Year -20000	69
42.	Southern Sky Chart, Year 1000	70
43.	Southern Sky Chart, Year 0	71
44.	Southern Sky Chart, Year -1000	72
45.	Southern Sky Chart, Year -2000	73
46.	Southern Sky Chart, Year -3000	74
47.	Southern Sky Chart, Year -4000	75
48.	Southern Sky Chart, Year -5000	76
49.	Southern Sky Chart, Year -6000	77
50.	Southern Sky Chart, Year -7000	78
51.	Southern Sky Chart, Year -8000	79
52.	Southern Sky Chart, Year -9000	80
53.	Southern Sky Chart, Year -10000	81
54.	Southern Sky Chart, Year -11000	82
55.	Southern Sky Chart, Year -12000	83
56.	Southern Sky Chart, Year -13000	84
57.	Southern Sky Chart, Year -14000	85
58.	Southern Sky Chart, Year -15000	86
59.	Southern Sky Chart, Year -16000	87
60.	Southern Sky Chart, Year -17000	88
61.	Southern Sky Chart, Year -18000	89
62.	Southern Sky Chart, Year -19000	90
63.	Southern Sky Chart, Year -20000	91

Ich habe mich bemüht, sämtliche Inhaber der Bildrechte ausfindig zu machen und ihre Zustimmung zur Verwendung der Bilder in dieser Arbeit eingeholt. Sollte dennoch eine Urheberrechtsverletzung bekannt werden, ersuche ich um Meldung bei mir.

List of Tables

1.	Coefficient comparison	10
2.	Gives the calendar for the Boorong tribe as suggested by Morieson, 1996.	32
3.	ID-Number of the stars and their official designation	93
4.	ID-Number of the stars and their official designation continued	94
5.	ID-Number of the stars and their official designation continued	95
6.	ID-Number of the stars and their official designation continued	96
7.	ID-Number of the stars and their official designation continued	97
8.	ID-Number of the stars and their official designation continued	98
9.	ID-Number of the stars and their official designation continued	99
10.	ID-Number of the stars and their official designation continued	100
11.	Results of the calculations, Right ascension and Declination in Degrees	101
12.	Results of the calculations, Right ascension and Declination in Degrees	102
13.	Results of the calculations, Right ascension and Declination in Degrees	103
14.	Results of the calculations, Right ascension and Declination in Degrees	104
15.	Results of the calculations, Right ascension and Declination in Degrees	105
16.	Results of the calculations, Right ascension and Declination in Degrees	106
17.	Results of the calculations, Right ascension and Declination in Degrees	107
18.	Results of the calculations, Right ascension and Declination in Degrees	108
19.	Results of the calculations, Right ascension and Declination in Degrees	109
20.	Results of the calculations, Right ascension and Declination in Degrees	110
21.	Results of the calculations, Right ascension and Declination in Degrees	111
22.	Results of the calculations, Right ascension and Declination in Degrees	112
23.	Results of the calculations, Right ascension and Declination in Degrees	113
24.	Results of the calculations, Right ascension and Declination in Degrees	114
25.	Results of the calculations, Right ascension and Declination in Degrees	115
26.	Results of the calculations, Right ascension and Declination in Degrees	116
27.	Results of the calculations, Right ascension and Declination in Degrees	117
28.	Results of the calculations, Right ascension and Declination in Degrees	118
29.	Results of the calculations, Right ascension and Declination in Degrees	119
30.	Results of the calculations, Right ascension and Declination in Degrees	120
31.	Results of the calculations, Right ascension and Declination in Degrees	121
32.	Results of the calculations, Right ascension and Declination in Degrees	122
33.	Results of the calculations, Right ascension and Declination in Degrees	123
34.	Results of the calculations, Right ascension and Declination in Degrees	124
35.	Results of the calculations, Right ascension and Declination in Degrees	125
36.	Results of the calculations, Right ascension and Declination in Degrees	126
37.	Results of the calculations, Right ascension and Declination in Degrees	127
38.	Results of the calculations, Right ascension and Declination in Degrees	128
39.	Results of the calculations, Right ascension and Declination in Degrees	129
40.	Results of the calculations, Right ascension and Declination in Degrees	130
41.	Results of the calculations, Right ascension and Declination in Degrees	131
42.	Results of the calculations, Right ascension and Declination in Degrees	132

43.	Results of the calculations, Right ascension and Declination in Degrees	. 133
44.	Results of the calculations, Right ascension and Declination in Degrees	. 134
45.	Results of the calculations, Right ascension and Declination in Degrees	. 135
46.	Results of the calculations, Right ascension and Declination in Degrees	. 136
47.	Results of the calculations, Right ascension and Declination in Degrees	. 137
48.	Results of the calculations, Right ascension and Declination in Degrees	. 138
49.	Results of the calculations, Right ascension and Declination in Degrees	. 139
50.	Results of the calculations, Right ascension and Declination in Degrees	. 140
51.	Results of the calculations, Right ascension and Declination in Degrees	. 141
52.	Results of the calculations, Right ascension and Declination in Degrees	. 142
53.	Results of the calculations, Right ascension and Declination in Degrees	. 143
54.	Results of the calculations, Right ascension and Declination in Degrees	. 144
55.	Results of the calculations, Right ascension and Declination in Degrees	. 145
56.	Results of the calculations, Right ascension and Declination in Degrees	. 146
57.	Results of the calculations, Right ascension and Declination in Degrees	. 147
58.	Results of the calculations, Right ascension and Declination in Degrees	. 148
59.	Results of the calculations, Right ascension and Declination in Degrees	. 149
60.	Results of the calculations, Right ascension and Declination in Degrees	. 150
61.	Results of the calculations, Right ascension and Declination in Degrees	. 151
62.	Results of the calculations, Right ascension and Declination in Degrees	. 152
63.	Results of the calculations, Right ascension and Declination in Degrees	. 153
64.	Results of the calculations, Right ascension and Declination in Degrees	. 154
65.	Results of the calculations, Right ascension and Declination in Degrees	. 155
66.	Results of the calculations, Right ascension and Declination in Degrees	. 156
67.	Results of the calculations, Right ascension and Declination in Degrees	. 157
68.	Results of the calculations, Right ascension and Declination in Degrees	. 158
69.	Results of the calculations, Right ascension and Declination in Degrees	. 159
70.	Results of the calculations, Right ascension and Declination in Degrees	. 160
71.	Results of the calculations, Right ascension and Declination in Degrees	. 161
72.	Results of the calculations, Right ascension and Declination in Degrees	. 162

1. Introduction

The aim of this work is to calculate stellar positions for stars up to a visual magnitude of 4.5 backwards in time to the year -20 000, subsequently producing a stellar position catalogue and star charts illustrating the change in appearance of the sky over the millennia. As is widely known today, the appearance of the night sky changes over time. For this change different timescales have to be considered.

First, there is of course, the nightly motion of the stars across the sky caused by earth's rotation. Then there is the annual shift in position caused by the earth revolving around the sun. In addition there is another movement of the earth that causes a change on a much longer timescale, the precession of the earth's rotational axis. The change due to precession is a very slow process and only shows an effect over a period of thousands of years. It takes the celestial poles about 25 800 years to move along a whole circle due to this shift (in reality this circle is not closed due to perturbations). Hence over the course of many years the celestial poles (northern and southern respectively) move and different stars will come into their vicinity. This of course effects the positions of the stars (thus the constellations).

When looking at the positions of stars over the millennia there is another motion we need to take into account. The motion of the stars themselves, the proper motion. Over the course of thousands of years the stars move considerably due to their proper motion.

Stars with a magnitude brighter than 4.5 were chosen with the aid of SIMBAD, Astronomical Database. After the initial selection some of the stars had to be excluded due to missing data, which resulted in a selection of 868 stars which have been examined in this treatise.

In addition to looking into how the sky has changed over time it is examined how this change might have effected indigenous cultures around the world.

2. Calculations

2.1. Algorithm

The required reduction of star coordinates can be achieved through the following method, described in Jean Meeus' *Astronomical Algorithms* (1991), where equations 1-10 can be found.

For the reduction of the stellar positions the coordinates of the star in question in a reference or starting epoch has to be known (in this case the starting epoch is J2000.0).

Over the course of thousands of years one does not only have to take into account the precessional component, but also the proper motions of the investigated stars. To calculate the effects these have on the final positions, more information about the stars is required. The distance (r) of the star (given in parsecs), the radial velocity. Δr , (in parsecs per year). α_0 and δ_0 designate the coordinates of the star for the starting epoch (J2000.0). $\Delta\alpha$ and $\Delta\delta$ are the proper motion components in radians per year, which can be found through conversion of the annual proper motion $\mu(\alpha)$ and $\mu(\delta)$. t is the number of years from the starting epoch, negative in the past, positive in the future. The following algorithm is used.

$$\begin{aligned}x &= r \cdot \cos(\delta_0) \cdot \cos(\alpha_0) \\y &= r \cdot \cos(\delta_0) \cdot \sin(\alpha_0) \\z &= r \cdot \sin(\delta_0)\end{aligned}\tag{1}$$

$$\begin{aligned}\Delta x &= \frac{x}{r} \cdot \Delta r - z \cdot \Delta\delta \cdot \cos(\alpha_0) - y \cdot \Delta\alpha \\ \Delta y &= \frac{y}{r} \cdot \Delta r - z \cdot \Delta\delta \cdot \sin(\alpha_0) + x \cdot \Delta\alpha \\ \Delta z &= \frac{z}{r} \cdot \Delta r + r \cdot \Delta\delta \cdot \cos(\delta_0)\end{aligned}\tag{2}$$

$$\begin{aligned}x' &= x + t \cdot \Delta x \\ y' &= y + t \cdot \Delta y \\ z' &= z + t \cdot \Delta z\end{aligned}\tag{3}$$

$$\tan(\alpha) = \frac{y'}{x'}\tag{4}$$

$$\tan(\delta) = \frac{z'}{\sqrt{x'^2 + y'^2}}\tag{5}$$

Here α and δ are the final coordinates of the star, reduced for the effects of proper motion while the reference frame is still the one of the starting epoch.

One has to be careful when carrying out these calculations as the arctangent function is not single valued. This ambiguity has to be considered for each result individually. The correct result can be obtained by applying the "second" arctangent function (ATAN2) according to the programming terminology of Fortran90.

Meeus now gives two different methods to calculate the effect of precession on the coordinates of the stars. A low accuracy one and a rigorous one. The low accuracy method can be used if the required accuracy is not too great and the two epochs (starting epoch and final epoch) are not too far apart. Since the stars' positions many millennia ago is

to be investigated, the rigorous method (see below) was applied.

If T is the time interval between the starting epoch and J2000.0 in Julian centuries and t the interval between the starting epoch and the final epoch, the equations for the needed quantities ζ , z and θ which are needed for the calculation are as follows,

$$T = \frac{(JD)_0 - 2451545.0}{36525}, \quad t = \frac{(JD) - (JD)_0}{36525} \quad (6)$$

$$\zeta = (2306''.2181 + 1''.39656 \cdot T - 0''.000139 \cdot T^2) \cdot t + (0''.30188 - 0''.000344 \cdot T) \cdot t^2 + 0''.017998 \cdot t^3 \quad (7)$$

$$z = (2306''.2181 + 1''.39656 \cdot T - 0''.000139 \cdot T^2) \cdot t + (1''.09468 + 0''.000066 \cdot T) \cdot t^2 + 0''.018203 \cdot t^3 \quad (8)$$

$$\theta = (2004''.3109 - 0''.85330 \cdot T - 0''.000217 \cdot T^2) \cdot t - (0''.42665 + 0''.000217 \cdot T) \cdot t^2 - 0''.041833 \cdot t^3. \quad (9)$$

Using the starting epoch J2000.0 we have $T = 0$ which simplifies equations (6) to,

$$t = \frac{(JD) - (JD)_0}{36525} \quad (10)$$

$$\begin{aligned} \zeta &= 2306''.2181 \cdot t + 0''.30188 \cdot t^2 + 0''.017998 \cdot t^3 \\ z &= 2306''.2181 \cdot t + 1''.09468 \cdot t^2 + 0''.018203 \cdot t^3 \\ \theta &= 2004''.3109 \cdot t - 0''.42665 \cdot t^2 - 0''.041833 \cdot t^3 \end{aligned} \quad (11)$$

$$\begin{aligned} A &= \cos(\delta_0) \cdot \sin(\alpha_0 + \zeta) \\ B &= \cos(\theta) \cdot \cos(\delta_0) \cdot \cos(\alpha_0 + \zeta) - \sin(\theta) \cdot \sin(\delta_0) \\ C &= \sin(\theta) \cdot \cos(\delta_0) \cdot \cos(\alpha_0 + \zeta) + \cos(\theta) \cdot \sin(\delta_0) \end{aligned} \quad (12)$$

$$\tan(\alpha - z) = \frac{A}{B} \quad (13)$$

$$\sin(\delta) = C. \quad (14)$$

Where (JD) and $(JD)_0$ are the Julian Days for the final and the initial epoch, respectively making t the time interval between these two in Julian centuries. α_0 and δ_0 designate the right ascension and the declination of the stars in question after the proper motion algorithm is applied. Then α and δ are the final coordinates for the investigated star in the final epoch.

As for the calculation of the proper motion effect on coordinates the same concerns regarding the ambiguity of the arctangent function has to be considered.

A Fortran90 program was written incorporating the algorithm and facilitating the reduction of huge amounts of data. The code of the program can be found in the appendix (A)

The initial data have been sorted by apparent magnitude and reduced through the previously mentioned algorithm.

2.2. Comparison of Coefficients

The coefficients ζ , z and θ have been developed and refined over the years. As a result different values can be found in the literature. Table (1) lists some values of the coefficients that have been used over the years.

Table 1: Coefficient comparison

Source		t	t^2	t^3
Bretagnon & Chapront (1981)	ζ	2306.2177	0.30298	0.018021
	z	2306.2177	1.09609	0.018268
	θ	2004.3129	-0.42597	-0.041830
Williams (1994)	ζ	2306.071060	0.299027	0.018017
	z	2306.065079	1.092516	0.018265
	θ	2004.182023	-0.429466	-0.041822
Meeus (1991)	ζ	2306.2181	0.30188	0.017998
	z	2306.2181	1.09468	0.018203
	θ	2004.3109	-0.42665	-0.041833

The results using the different coefficients can be seen in Figure 1 and 2. Here we can see that the results don't diverge much when small steps of time are considered. But when calculating a few millennia back the results using the values of Bretagnon and Chapront (1981) are almost identical (only differ by a value of about 0.0001) to Meeus' (1991) whilst the results using the values of Williams (1994) strongly diverge. The gap in the graph in figure 2 can be explained through the nature of the right ascension which is displayed on the y axis. The right ascension goes from 0° to 360° degrees and then starts again from 0° .

2.3. Projection

Having reduced the data one can use it to produce star charts. Different projection methods can be used to obtain the resulting charts. In general the stereographic projection is the one that is used most frequently. To demonstrate the use of the stereographic projection, it is compared with the orthographic projection method.

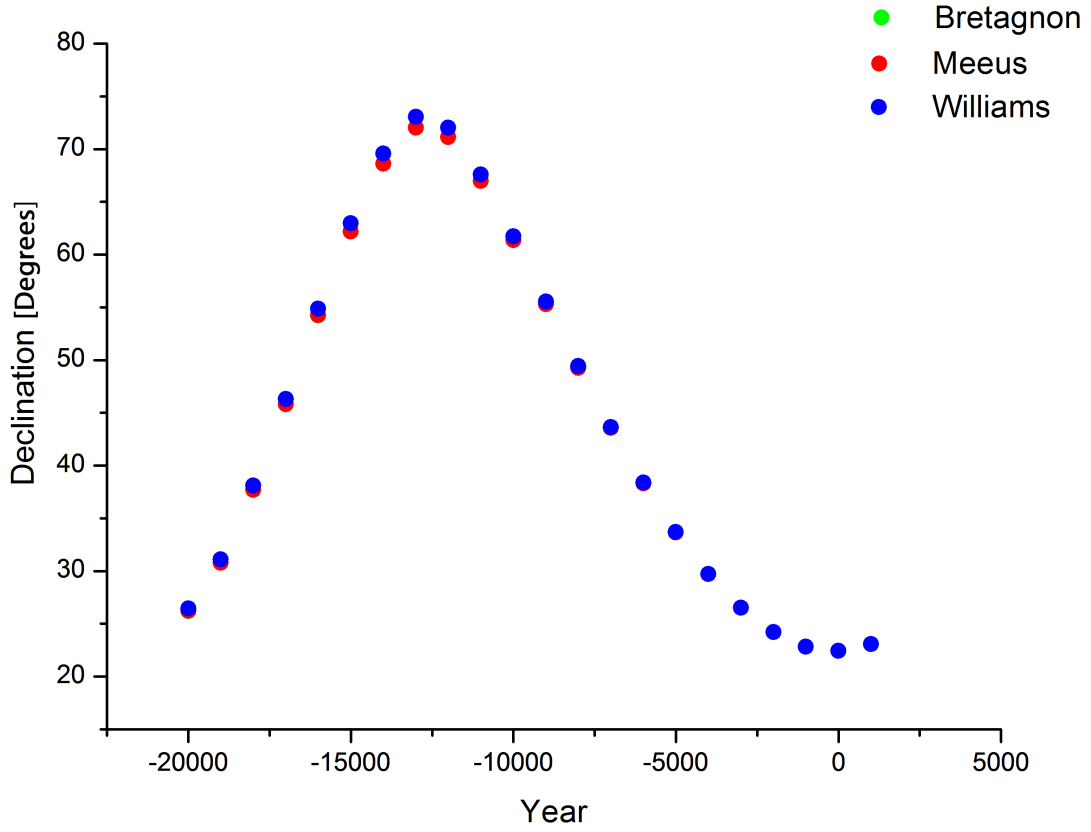


Figure 1: Comparing the results of the different coefficient-methods.

Orthographic projection

$$\begin{aligned} x &= r \cdot \cos(\delta) \cdot \sin(\alpha - \alpha_0) \\ y &= r \cdot (\cos(\delta_0) \cdot \sin(\delta) - \sin(\delta_0) \cdot \cos(\delta) \cdot \cos(\alpha - \alpha_0)) \end{aligned} \quad (15)$$

Stereographic projection

$$\begin{aligned} k &= \frac{2 \cdot r}{1 + \sin(\delta_0) \cdot \sin(\delta) + \cos(\delta_0) \cdot \cos(\delta) \cdot \cos(\alpha - \alpha_0)} \\ x &= k \cdot \cos(\delta) \cdot \sin(\alpha - \alpha_0) \\ y &= k \cdot (\cos(\delta_0) \cdot \sin(\delta) - \sin(\delta_0) \cdot \cos(\delta) \cdot \cos(\alpha - \alpha_0)) \end{aligned} \quad (16)$$

α_0 = reference right ascension

δ_0 = reference declination

α = right ascension

δ = declination

r = radius of the circle onto which the stars will be projected

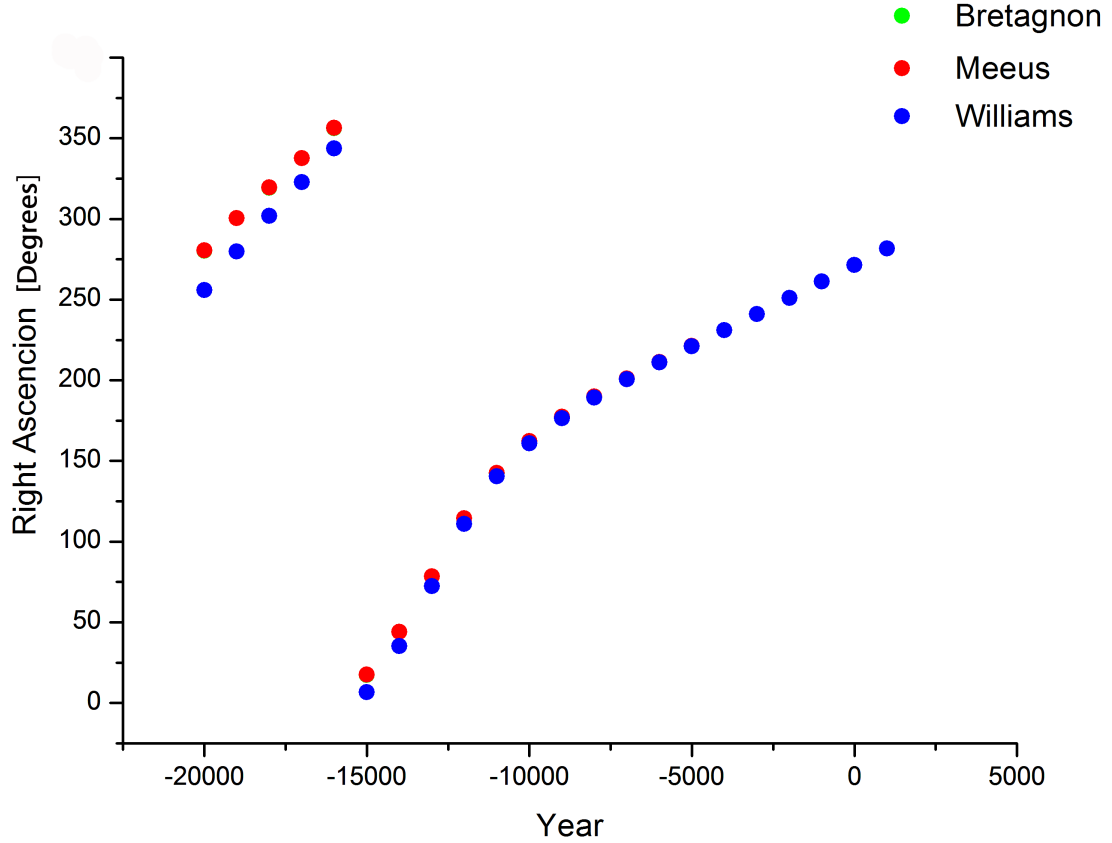


Figure 2: Comparing the results of the different coefficient-methods.

Using $\alpha_0 = 0$ and $\delta_0 = 90$ for stars with a positive declination and $\alpha_0 = 0$ and $\delta_0 = -90$ for stars with a negative declination, the resulting projected data gives star charts which are centred on the celestial poles. The data are then divided into north and south by means of the values of the declination. Stars with a positive declination are plotted on the northern sky and stars with a negative declination on the southern sky.

As can be seen in figures 3 and 4 the results differ greatly. Using the stereographic projection one can more easily distinguish the stars in the border regions of the map. The stereographic projection conserves angles and does depict circles again as circles, making it the ideal choice for the task. hence it is not surprising that the stereographic projection is the one that is used most frequently in cartography. The Star charts that can be found in (appendix B) have been produced using only the stereographic method.

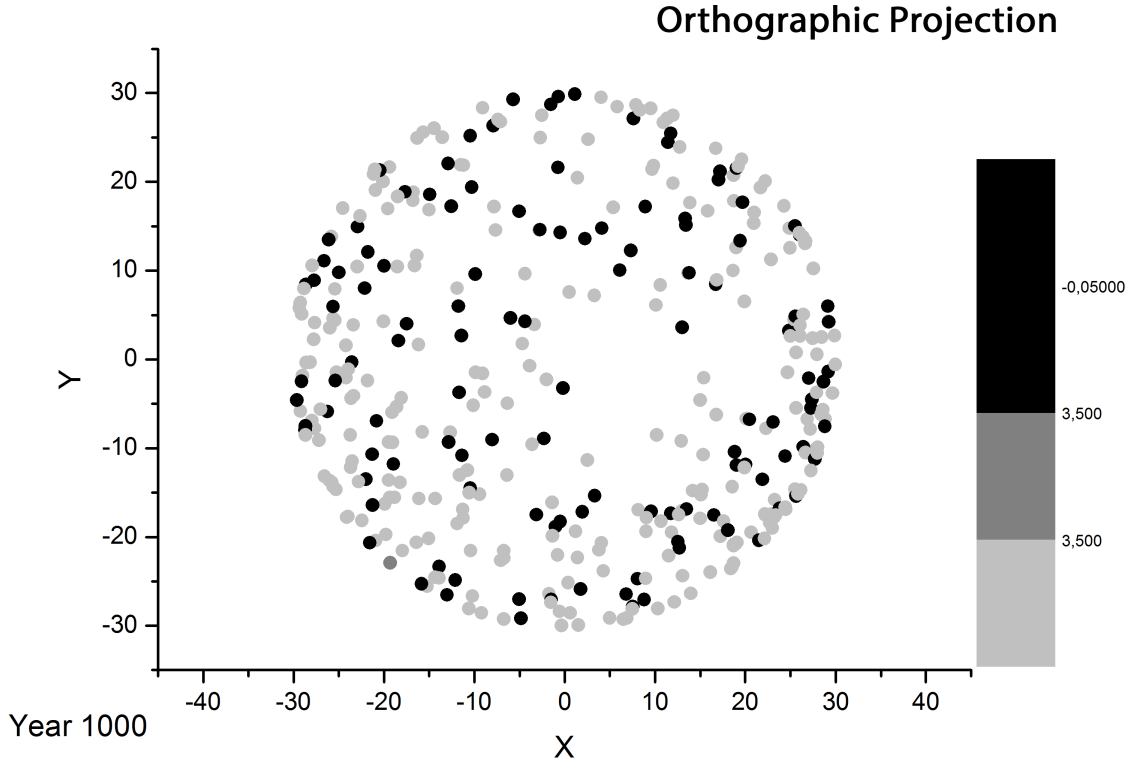


Figure 3: Northern hemisphere in the year 1000 A.D. projected with the orthographic projection method.

2.4. Results and Discussion

The resulting data (see tables in appendix C and figures in appendix B) show the precessional effect very clearly. The restriction to calculating the positions back to the year -20 000 is based on two reasons.

First, we want to examine the effect of precession in the context of ethnoastronomy. For that we need civilizations to be able to observe the night sky. Most cultures do not date back this far rendering the discussion of data before their existence useless from an ethnoastronomical point of view.

Second, the used method is of a finite accuracy. As can be seen in figure 5 the results seem to follow the expected curve up to a certain point, then they become unreasonable and erratic.

The resulting data can be put into tables which are similar to the ones produced by Gerald Hawkins' in his *5000 and 10 000 year star catalogs* (1967) and can be found

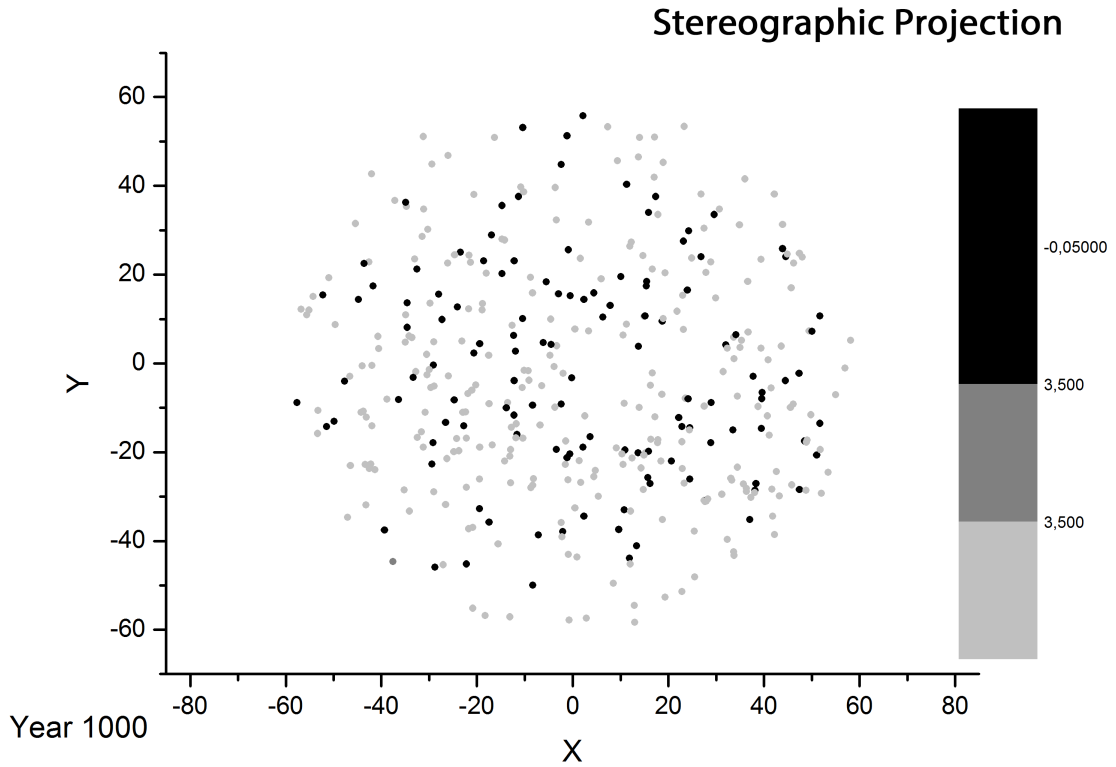


Figure 4: Northern hemisphere in the year 1000 A.D. projected with the stereographic projection method.

in the appendix. Hawkins' star catalogue gives the positions for stars up to a visual magnitude of 2.99 for the years -2500 to 2500 and 10 000 years into the past. Contrary to Hawkins' work nowadays our computing systems allow us to calculate the stellar positions with much more accuracy than back when Hawkins' published his position catalogues.

As is illustrated by figure 5 by the example of α Crucis we can clearly see that the results behave as is to be expected up to the year -20 000, then become more and more erratic. If one were to continue the calculations even further into the past the results would give clearly false positions such as the stars of the southern cross being high up in the sky above the northern hemisphere. Therefore, in this work only the stellar positions up to the year -20 000 have been calculated.

Plotting the data for different constellations the precessional and proper motion effects become clear very quickly. Looking at the famous constellation of Ursa Major, containing the asterism commonly known as the big dipper, we can see the change over

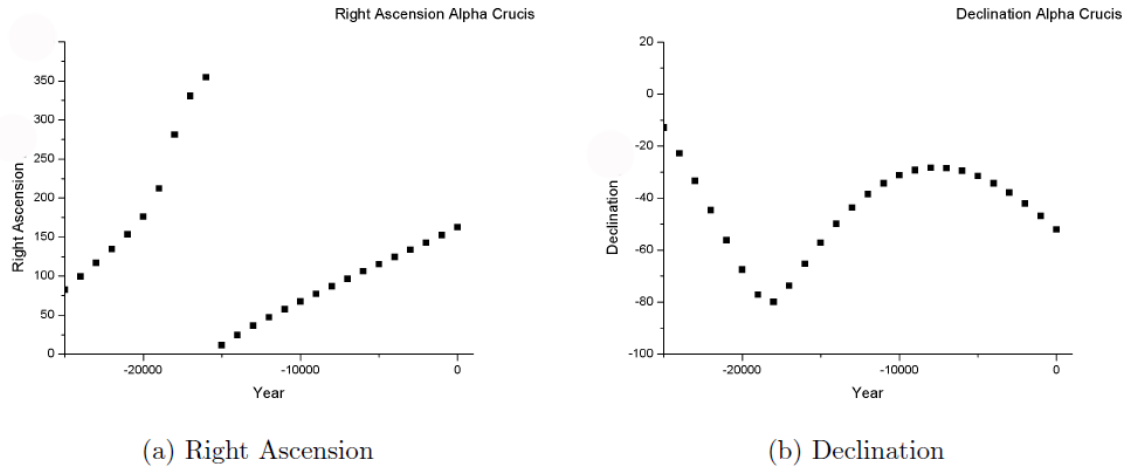


Figure 5: Resulting right ascension (a) and declination (b) for Alpha Crucis calculated back further than 20 000 years into the past.

the millennia very clearly (see figure 6).

The resulting charts can be found in the appendix (B). The plots have been generated using the program OriginPro 8.0.

Probably one of the most interesting aspects of the precessional changes is that the constellations we nowadays refer to as "winter constellations" (i.e. Orion) have actually been visible during summer about half a precessional cycle ago considering the northern hemisphere (vice versa for the southern hemisphere). As will be discussed below this has huge implications for the field of cultural astronomy.

3. Ramifications

Before going into more detail on the possible ramifications for ethnoastronomy I want to introduce the field first.

The term Ethnoastronomy to describe the astronomical knowledge of indigenous communities is outdated. In the past Ethnoastronomy referred to the "study of beliefs and practices concerning the sky among modern people and particularly among indigenous communities, and the uses to which people's knowledge of the skies are put." (Ruggles, 2005) This definition somewhat parallels the definition of the field of Archeoastronomy. "The study of beliefs and practices concerning the sky in the past, and especially in pre-history, and the uses to which people's knowledge of the skies were put." (Ruggles, 2005)

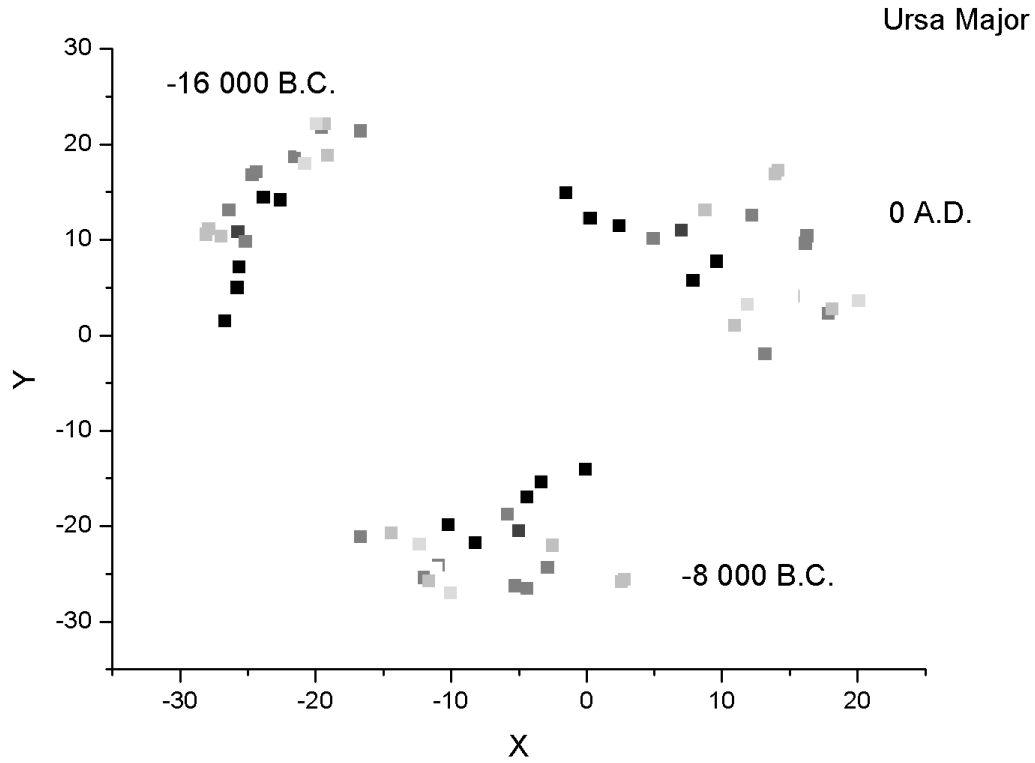


Figure 6: The stars in the constellation of Ursa Major color mapped for their visual magnitude.

One can see these two fields are closely entwined and sometimes they are indistinguishable from one another. It is for this reason that nowadays the fields of Archaeoastronomy and Ethnoastronomy are combined in the field of Cultural Astronomy.

The Field of Cultural Astronomy is a very global one because since the early times mankind has looked up at the sky and many (if not all) cultures have tried to make use of the celestial events that occur, be that in an empirical way. If we speak of ancient astronomy we also have to keep in mind that we are not talking about the modern day science which we know so well, but rather about observing the sky and deriving empirical "laws" from it. In most of the cases we refer to "naked-eye", observational astronomy.

To learn about indigenous astronomical knowledge we have very limited sources of information. Written records, if they survive to this day, can be a valuable source of information, unfortunately not many such records have survived to this day.

A very valuable source for us is the examination of buildings, structures or objects

left behind by those cultures, probably one of the most famous examples being Stonehenge itself. We can examine such structures to look for astronomical significance such as orientation towards a certain direction. These alignments, if present, are of great importance to us.

Some cultures have a long tradition of not writing down their knowledge, passing it on through the generations through song, stories, myth or legend. In these stories there is a lot of information to be found sadly more often than not the information is only accessible to the initiated members of the culture.

As Clive Ruggles (2015) points out, precession might have had substantial social and material consequences. Stellar alignments in temples for example would have to be corrected for precession over time. However to this day there are no confirmed precessionally corrected alignments, even though hints of such have been discovered, as is discussed in Firneis (2007). In said paper the alignment of the Temple of Montuhotep Sankhara, Egypt is examined. The author points out that it is highly likely that this temple shows a correction for precession in its orientation compared to the remains of a precursor-temple approximately a thousand years older.

There are and have been many cultures around the world, arguably one of the oldest (if not the oldest) continuous cultures are the Aboriginal Australians (there are some African tribes who's culture might rival the one of the Aboriginal Australians in terms of age).

Since the timespan we are looking at when calculating stellar positional change is quite large, one of the oldest cultures is the obvious choice when looking at the effects on ethnoastronomy precession might have had.

3.1. Aboriginal Astronomy

The culture of the Aboriginal Australians is believed to be among the oldest continuous cultures. Estimates put the beginnings of this culture at about 40 000 years ago (Bowler(2003)). In this distant past the sea levels were not as high as they are nowadays, facilitating the first settlers journey to Australia. Around 12 000 years in the past, at the end of the last glacial maximum, the melting of ice caused the sea levels to rise, subsequently isolating Australia from the mainland. While one might think this isolation was complete, the oldest remains of Dingos that have been found up to date question the absoluteness of this isolation. The remains suggest that this animal has been introduced to Australia around 3500 years ago most likely by Asian seafarers.

Nevertheless the culture of the Aboriginal Australians lived undisturbed by the rest of the world for a very long time. It was only in 1520 AD when a Portuguese expedition reported the first sighting of a landmass, but a long time passed before the continent was to be set foot on. On April 29th 1770 James Cook arrived in Botany Bay (Sydney)

and claimed the land for the British Crown.

New prison colonies were established in Australia since the ones in the new world could not be used any longer due to the American declaration of independence. The first prisoners arrived in 1788 marking the beginning of a dark time for the Aboriginal tribes. Back then over 400 different tribes each of them subdivided into clans and moieties (i.e. halves of a clan or a tribe between which strict marital rules were established) and with their own languages existed spread out over Australia (Figure 7).

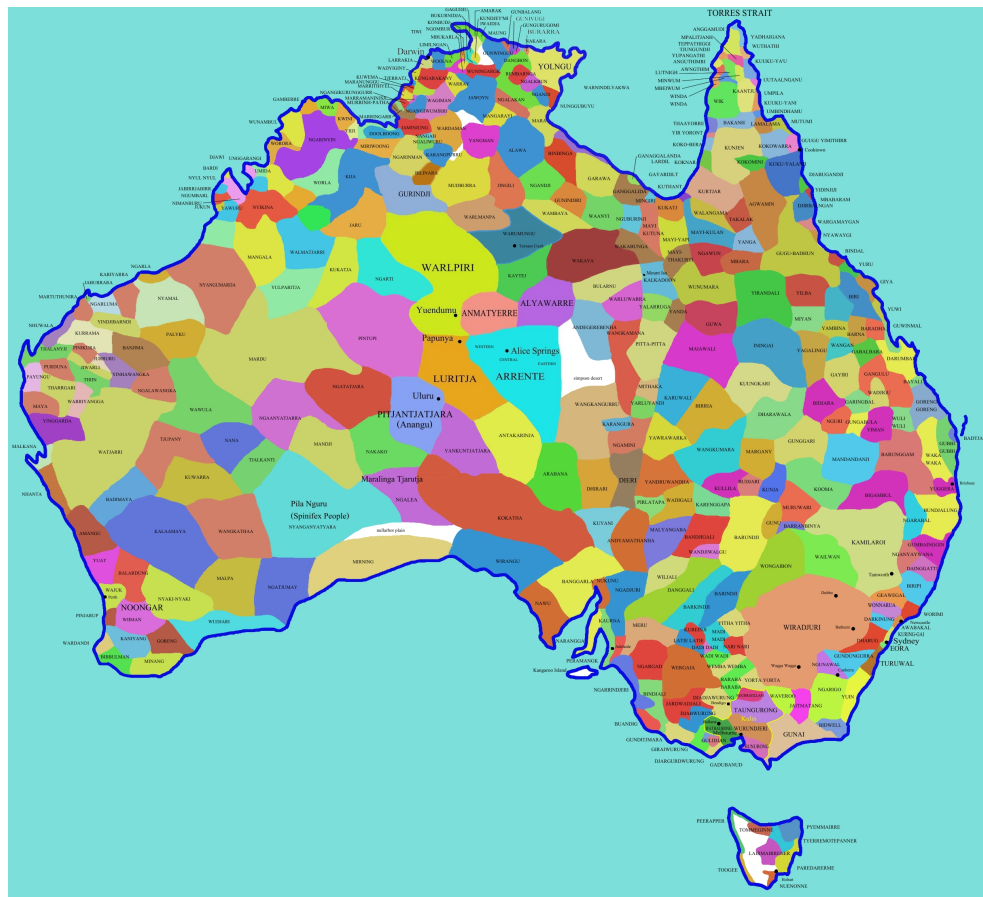


Figure 7: Gives the approximate locations of the aboriginal tribes of Australia. Taken from <http://mappery.com/map-of/Australia-Aboriginal-Tribes-Map>, accessed on 17th of April 2011.

The new inhabitants brought with them diseases and discrimination which decimated the tribes quickly. Almost all of them are gone today, vanished along with their languages, traditions and knowledge. Most of what researchers know about the disappeared tribes comes from the notes of ethnographers and missionaries who lived among the tribes

during the 19th and the beginning of the 20th century. Recently the research in the astronomical knowledge of the Aboriginal Australians has been on the rise and there are a number of researchers currently working on the subject.

Since there have been so many different tribes, each of them with different traditions and stories and lore there is not only one specific Aboriginal Astronomy as such. There are different parts and different stories spread out all over the huge continent, which makes the study of this knowledge even more difficult.

To investigate the astronomical knowledge the different tribes possessed is a difficult task, not only because so many tribes have disappeared but also because the tribes themselves didn't write anything down. Nevertheless some of the knowledge has been passed on orally through stories, myth and legend. Finding and separating the knowledge from the myths is difficult work, but some astronomical aspects have been isolated and will be described below.

3.2. Astronomical Aspects

The Australian Aboriginals have transmitted quite a lot of astronomical information through stories and lore, key aspects of which will be described below to get an overview of what might be hidden in stories.

3.2.1. The Sun

Generally speaking the Sun was mostly considered to be a woman throughout Australia. As she makes her way across the sky she either carries a torch or gathers food, tasks that were traditionally the tasks of the female tribe members. (Wells 1964, Norris & Norris 2009)

Some tribes seem to have observed the path of the sun across the sky more closely noticing the different ways the sun woman seemed to be taking over the course of a year. This change in path is due to the earth's revolving around the sun and results in special paths over the year, specifically on the equinoxes and the summer and winter solstices, where it reaches its northernmost and its southernmost setting and rising points respectively.

The directions of these special setting points of the sun can be identified by close observation and have been discovered by different indigenous populations around the world. The Aboriginal Australians are no exception. Indications in stone arrangements have been found that suggest astronomical orientations. The Wurdi Youang stone arrangement in Victoria, which was built by the Wathaurung people of Victoria for example. It is an oval structure with a diameter of about 50 meters and its major axis is almost exactly east-west aligned. On its western end three groups of stones can be found

which indicate the setting points of the sun at the equinox and both summer and winter solstices. Morieson (2003) first proposed this astronomical alignment and it was later confirmed by Norris et. al (2010) who also showed that the straight sides of the structure also seem to indicate the above mentioned rising and setting points of the sun. Norris and Hamacher (2010) also mention that there are still some unanswered questions and uncertainties regarding the alignment. The best way to clear up the uncertainties would be to find other alignments similar to this one, which is topic of ongoing research.

Apart from stone arrangements engravings have been found that depict the sun, such as the engraving at Ngaut-Ngaut, South Australia (Figure 8).



Figure 8: Rock engraving at Ngaut Ngaut depicting the Sun at Murray River, Southern Australia, Image by Dieter B. Hermann, taken from Herrmann (2007).

It has been suggested/believed that this engraving could show a series of sunspots. However as Dieter B. Hermann (2007) pointed out it is highly unlikely that a series of sunspots with the size required for them to be visible with the naked eye. Dieter B. Herrmann (2007) has investigated the possibility of the engraving depicting a Venus transit. According to N.H. Tindale and H. Hale (1929) these engravings are some 2000 to 3000 years old. In this time there have indeed been some Venus transits which would have been observable from that region. The depiction shows a somewhat symmetrical progression around midday. Considering this there are only a couple of possible transits that might have been observed here. According to Dieter B. Hermann, these are the transits of the 23rd May in the year 60A.D., of the 22nd November 548 B.C. and the one of the 21st of May 1155 B.C. If one of those transits is actually engraved at Ngaut Ngaut, the Aborigines would have had to be able to clearly observe the sun for the whole duration of the event. Rare cloud formations would have to have been there for the observations to be possible at all.

This argumentation makes the transit hypothesis unlikely at best.

3.2.2. The Moon

In many parts of Australia the Moon was thought to be a man. A significant portion of the stories tell of the moon-man, who once in the Dreamtime (sometimes referred to as the Dreaming) was a living being, through some events left the earth and went up into the sky.

The Yolngu people of Arnhem land tell the story of Ngalindi, the moon, being a fat and lazy man (i.e. the full moon). His spouse however got angry with him for his laziness to the point of attacking him with an axe chopping off bit by bit (i.e. the waning moon) until he died. After he dies, the moon man stays dead for three days (i.e. the new moon) after which he starts growing round again (i.e. the waxing moon) starting the cycle all over again (Wells 1964, Norris and Hamacher 2009).

The Tiwi islanders believe that in a long distant past, when it was normal for living things to come back to life once they had died, the moon-man Tjapara had fought with Purukupali and went up into the sky after the battle with a scarred face. He then commanded that every living thing can never come back to life after death with himself being the only exception, since he comes back to life each month after being dead for three days (Haynes 2009).

In coastal areas the connection between the phases of the moon and the tides was made. Haynes (1996, 2000, 2000) states that the Yrrkala tribe of Arnhem land and at Groote Eylandt say that the tides are high when the new moon sets at sunset (the same is true for the full moon setting at sunrise) and that the tides are low when the moon is in the zenith at sunset or sunrise. The Aboriginal explanation for this was that when the tides are high, water is running into the moon and filling it up, thus filling it up and causing it to grow in size. Contrarily when the tides are low the water pours out of the moon and causes him to grow thin again.

Considering that there are a lot of crescent shaped engravings to be found in Australia, it should be noted that some of them are assumed to represent boomerangs rather than the crescent moon. The similarity is significant and should be noted. Norris and Hamacher (2010) point out that while the boomerang and the Crescent moon share distinct characteristics, they also show clear differences. A boomerang usually has rounder ends and straighter sides contrary to the pointed ends and curved lines of the crescent moon. At different engraving sites in Australia crescent shaped engravings can be found, like the one from Calga Springs, New South Wales (Figure 9).

3.2.3. Eclipses

For some of the Aboriginal tribes the moon plays another very important role. They consider him being the cause of solar eclipses. In the Dreamtime the moon and the sun travel along their paths on the sky. These paths, while different, will intersect eventually



Figure 9: Crescent-shaped rock engraving at Calga Springs, taken from Norris & Hamacher (2010).

and when they do the moon will be hiding the sun from view. Astronomically speaking that is a very accurate description of what is happening during a solar eclipse.

A solar eclipse is a rare event, even harder to observe considering that contrary to a lunar eclipse a solar eclipse is not visible everywhere where the sun is above the horizon at the time of the eclipse. As the moon is casting its shadow onto the earth, different regions will experience different grades of totality, if they experience it at all.

Nonetheless an event as remarkable as a solar eclipse has most likely caught the attention of many native populations around the world. Not only does the day grow dark suddenly, but also the fauna of the region reacts to the event. As darkness falls, birds roost and other animals curl up to sleep. The phase of totality doesn't last very long, leading to confusion among the animals. Some tribes explain this phenomenon as the moon man making love to the sun woman once their paths intersect.

Considering that there are rock-engravings of both the sun and the moon, one might ask whether there is an engraving showing sun and moon together depicting an eclipse.

The possibility of an eclipse engraving is discussed by Norris and Hamacher (2010). They suggest that such an engraving can be found at the Basin track, Kuring-gai-chase National park, New South Wales (Figure 10).

The engraving in question shows two figures, one clearly male, the other female,



Figure 10: Rock engraving possibly depicting an eclipse, taken from Norris and Hamacher (2010).

standing close to one another (figure 10). The two superimposed figures seem to be reaching toward a crescent shape above them. The superimposition might represent one of the figures standing in front of the other, thus eclipsing it and the crescent could represent the moon. It was noted by Hamacher and Norris (2010) that the shape and position of the crescent would correspond to a moon, barely visible early in the morning or late in the afternoon. The possible representation might also be a representation of an eclipse. Supported by the orientation of the crescent (northeast - the direction in which an eclipse similar to the crescent engraving might have been visible in the early morning on this location) this is a notable hypothesis. Norris and Hamacher (2010) say that an eclipse with the pointed ends pointing downward towards the horizon occurred on the morning of the 8th of August 1831. However intriguing the theory is, unfortunately we do not have any way of proving that this eclipse was the one that was observed by the local tribes and engraved into the rock as a reminder of this event for future generations, due to a lack of information about the region during this time.

3.2.4. Other celestial objects/events

The great eruption of η Carinae

η Carinae is a blue supergiant star with an apparent magnitude of 4.6 mag (as of February 2012). It is known to be a variable star with at least one significant brightening in the end of the year 1837 which was noted by John Herschel during a series of brightness measurements he made in the 1830s. This growing in brightness is what is today known

as the start of a time of increased brightness of the star and is called the Great Eruption of η Carinae. The brightness peaked around the years 1843-1845 and during its peak the star was the second brightest star in the sky after Sirius.

Hamacher and Frew (2010) argued that this Great Eruption has been witnessed by the aboriginal Australians and subsequently was incorporated into their oral traditions. Using William Stanbridge's 1857 paper as a starting point the researchers tried to find a match for η Carinae, which they suggest to be what is known as *Cullowgullouric War* to the Boorong tribe. Stanbridge describes the star as "a large red star in Rober Carol, marked 966" (Stanbridge 1857). (Rober Carol referring to the constellation of Robur Carolinum (Charles' oak) which the English astronomer Edmond Halley created in 1679 reminding of the oak tree in which Charles II. supposedly hid from Oliver Cromwell's troops after the Battle of Worcester (September 3rd 1651). The constellation was composed of stars which now belong to the eastern region of Carina, Vela and the western region of Centaurus.

The number 966 by which Stanbridge refers to the star pioneering catalogue of 1,942 southern stars by Nicolas Louis de La Caille. Hamacher and Frew (2010) note that the actual designation for η Carinae is 968 Argus and 966 Argus is actually the surrounding Nebula (NGC 3372 - the Carina Nebula). It is very probable that this discrepancy is caused by a transcription error by Stanbridge since he was most likely not in possession of his own copy of La Caille's catalogue. However the description given in the 1857 paper clearly refers to a "large red star" closely associated with the Carina Nebula - η Carinae.

William Stanbridge performed his fieldwork approximately from 1847-1851 (Hamacher and Frew, 2010) only two years after the star reached its maximal brightness. It is interesting to note, that by 1881 when MacPherson published a paper on the topic he refers to the "female crow" (Cullowgullouric War) as a "small red star in King Charles' Oak [Robur Carol]" (MacPherson 1881). Comparing the two remarks on the size of the star in question one can easily see, that while Stanbridge specifically mentions the star being large Macpherson seems to be looking at the star as being small. By the time Macpherson published his work η Carinae had reached a minimum in brightness. It was concluded that this Cullowgullouric War is highly likely to be an aboriginal Australian record of the Great Eruption of η Carinae.

3.2.5. Orion and the Pleiades

A constellation of stars which is definitely eye-catching is the one of Orion - the hunter. In Greek mythology the constellation shows Orion - the hunter - chasing the elusive Pleiades across the sky and fighting against the constellation Taurus. Fascinatingly the motion of the constellation across the sky has been identified with a chase by many cultures around the world, for instance in Vedic (northern India) mythology Orion is identified with Prajapati who chases after his daughter Rohini, Aldebaran and the stars

known as Orion's Belt form an arrow shot at him by the angered Sirius (Ruggles 2005).

When looking at the many stories and myths surrounding the constellation from around the world one from Kapingamarangi in the Caroline Islands of the Federated States of Micronesia stand out. There Orion is said to be a canoe house with three men inside (Ruggles, 2005), an interpretation which can also be encountered in the legends of the coastal Aboriginal tribes of Arnhem land.

In general the Aboriginal Australian interpretation of Orion and the Pleiades share many similarities with the ones of other cultures. Many stories feature the Pleiades as a group of sisters who are often trying to flee from unwanted attention or sexual advances of a male or a group of males frequently accompanied by violence (Haynes, 2000). Customarily Orion plays the part of the unwanted pursuer who in some accounts gets punished for his unseemly behaviour. Considering accounts from all of Australia in some of them Orion is replaced as the chaser by other celestial objects. For instance in the eastern regions Aldebaran or in the Kimberley region the Eaglehawk (Warragunna - Southern Cross) take his place (Haynes, 2000).

The Boorong tribe of north western Victoria know Orion as Kulkunbulla which, as Stanbridge notes, are actually the stars of Orion's Belt and his scabbard (Stanbridge 1857). Kulkunbulla is meant to be a group of young males dancing to music made by Larnankurk, the women of the Pleiades. This celestial dance is supervised by Aldebaran, Gellarlec, an old man chanting and beating rhythm for the dancing people, possibly symbolizing some kind of ritual.

The Adnyamathanha of the Flinders Ranges region tell the tale of Makara, a group of icy maidens. In this region it is believed that when they first appeared before the sun they lost ice crystals they carried, thus bringing the morning frost with them (Curnow 2009).

For the Yolngu tribe of Arnhem land Orion and the Pleiades tell a story which carries an important lesson for them. The story tells of three brothers, all of them excellent fishermen, who one day went out on their boats to fish as usual. On this day however all they could catch was kingfish. Since the kingfish was their clan's totem it was forbidden to them by the law of their tribe to eat that fish. As time passed their hunger grew until they couldn't withstand it any longer and ate the fish. Walu, the sun, saw this and was furious. He took up the boat and carried it into the heavens where the fishermen can still be seen today (figure) complete with the fish trailing behind their boat as a grim reminder to the people (Wells, 1964; Norris and Norris 2009; Haynes, 2000).

The story from Kapingamarangi and the one from the Yolngu tribe share striking similarities which will be subject of future research.

3.2.6. Emu in the sky

When talking about an aboriginal Australian astronomy it should be noted that some tribes constructed constellations not only by connecting bright stars but also by looking at the dark clouds that are visible in the faint band of the Milky Way, comparable to the native populations of South America. These constellations are usually referred to as *Dark cloud constellations*. The best and coincidently most famous example is the so-called *Emu in the Sky*. The emus body is composed of the dark spots in the bright band of the Milky Way, caused by interstellar dust. The head of this constellation is marked by what astronomers call the Coalsack nebula in the constellation of the Southern Cross (Crux). North of Sydney, in the Ku-ring-gai-chase National park an engraving has been found which is a representation of this "celestial" emu.

To the Boorong tribe the emu was strongly connected with the constellations Crux and Centaurus, or more accurate, Crux and the Pointers (two bright stars in the forelegs of Centaurus - α and β Centauri). In the days of the dreamtime there was a man named Bunya. Bunya was being pursued by a giant emu - Tchingal. He was terrified of the colossal emu that he abandoned his spears and fled up a tree (the southern cross) to hide. This being an act of cowardice, Bunya was punished by being turned into an opossum (the star in the head of the southern cross - Gacrux). Tchingal was later slain by two fearless brothers (Berm-Berm-Gle, the Pointers). (Stanbridge 1857)

The engraving at the Ku-ring-gai-chase national park shows a very interesting use of this dark cloud constellation. When the clouds line up above the engraving in the same angle (as can be seen in figure 11) the emu begins to lay its eggs. More on a possible calendar can be found in section 3.2.9.

3.2.7. Milky Way

Not only the dark clouds within the Milky Way, but also the stunning bright band in which they can be found caught the eye of the Australian Aboriginals. A prominent feature of the southern sky it is also heavily featured in myths and stories all across Australia. Some stories tell of the Milky Way river splitting the heaven into two halves, which one does not need a lot of imagination to picture (figure 12).

Analogous to splitting the heaven into two halves for the Aranda and Luritja tribes of Central Australia the bright band serves as a boundary between camps. The stars on one side (east side) of the boundary are seen as Aranda camps, while the stars on the other side (west side) are believed to be Luritja camps. The boundary itself, the Milky Way, is supposed to be many camps of women of both tribe (Maegraith 1932).

According to Stanbridge (1857) for the Boorong tribe the Milky Way was smoke from the huts of the Nurrumbunguttias - the ancient spirit beings who fashioned the land long ago - known as Warring.



(a) Emu in the Sky



(b) Region around Southern Cross

Figure 11: a - Emu in the Sky. (Norris and Norris, 2009) Picture by Barnaby Norris; b - Region around the Southern Cross. Taken from http://scienceblogs.com/startswithabang/2011/03/know_know_know_kno-know_know_y.php 17 April, 2011.

The milky way is arguably one of the most striking features on the southern night sky. It is not surprising that it can be found in artistic representations. In fact there is a rock painting showing the Milky Way (Figure 13). Looking at the image it is next to impossible for the non-initiate to see it as what it is, a representation of the bright band of our Galaxy. With the knowledge of Wardaman elder Bill Yudumduma Harney, who shared the story of the "sky boss" and the rainbow serpent, it is possible to see the painting for what it is. The rainbow serpent represents the Milky Way and the boss of the figure which is called "sky boss" is supposed to be the Coalsack Nebula.

3.2.8. Meteoritics and impacts

As the earth makes its way around the sun it eventually encounters particles of extraterrestrial material ranging wildly in size. It depends on the size of the objects if they survive the initial encounter with the Earth's atmosphere. Some particles are too small and evaporate as they fall down. This leads to a phenomenon known as a meteor or more commonly called a shooting star.

Some of these Objects are big enough to go through the atmosphere and reach down to the ground. In this case manifold effects follow, audible as well as visual. The consequences of the impact depend on the impactor and may include substantial or in some cases even catastrophic damages to the surroundings, craters or tectites.

Prominent remnants of past impacts include for example the Barringer meteor crater in



Figure 12: The Milky Way, taken from <http://apod.nasa.gov/apod/ap100823.html>, accessed on 17th of april 2011.

Arizona USA, the Ries meteor crater in Germany or the Chicxulub crater at Yucatan peninsula which is believed to have caused the Cretaceous-Tertiary extinction event.

Tektites are a byproduct of large impacts. During the impact, ground material is heated up and ejected upwards, the molten material solidifies during its fall back down to the ground. This leads to glassy objects, Tektites, that can be spread over huge areas called strewn fields. These Tektites can appear in various forms and can have different colours, depending on the ground composition before the impact. Australian Aboriginals have used these objects in ceremonies as well as as tools.

Many cultures around the world have been fascinated by transient phenomena such as meteors or comets. Mostly these phenomena have been associated with bad omens or have been seen as representing evil beings trying to harm people.

In the literature there can be found many different stories focussing on meteors from all over Australia. A detailed study of meteor accounts in aboriginal astronomy was published by Hamacher and Norris (2010). The authors give an analysis of Aboriginal Australian observations of meteors representing 97 different tribes spread over Australia. According to Hamacher and Norris (2010) there are certain groups of beliefs in which accounts can be classified to get a better understanding of the native Australian views on meteors.



Figure 13: Rock painting depicting the Milky Way, Norris & Hamacher (2010).

In general there are two main groups of beliefs. The first group centers on meteors being omens of good luck or representations of good spirits, helping the people. On the other hand the second group of beliefs centers on the meteors being malevolent spirits or bad omens. This view is shared especially with many tribes of the Northern territory. Here meteors represent the eyes of evil beings.

Meteors also played a crucial role in ceremonies that were used to either ward off evil (Stanbridge 1857) or bring evil onto others (Hamacher and Norris 2010).

Impact Craters

Gosse's Bluff

This crater is located about 175 km west of Alice Springs, Northern Territory. The crater is presenting itself as a mountain range about 5 km in diameter, rising up 150 m above the plain desert around it. This mountain ring is only the central part (central uplift) of a previously much bigger crater (about 22 km in diameter) which has been eroded over time. The structure was formed about 142 plusminus 0.8 million years ago through an impact. Clearly considering its age it is not possible that this event was witnessed by Australian Aboriginal tribes, still the Western Arrente tribe tell the story of Tnorala (their name for the crater) which is quite fascinating.

Back in the time of the Dreaming, when the land was formed, there was a group of sky women dancing in the region of the sky known as the Milky Way. When one of the women grew weary of the dancing she had to put down her baby into a wooden basket. The woman then continued dancing and unnoticed by them the basket containing the

child plummeted from the sky and hit the ground. The ground where the basket hit was pulled upwards, forming the mountains that can be seen today. It is also said that the parents of the child, the evening star (its mother) and the morning star (its father) continue to search for the kid up to this very day (Hamacher and Norris, 2010).

Even though the event itself could not possibly have been witnessed by the people this story contains an interesting amount of information, citing an object that fell down from the sky as being responsible for the crater forming. It is likely that the Aboriginal Australians have witnessed a younger (probably smaller) crater being formed and then reasoned that for this crater a similar event was the cause.

Wolfe Creek This crater can be found in the northeastern region of Western Australia and is a crater of about 850 times 900m diameter. Its age is estimated to about 300 000 years. To the local Djaru tribe this structure is known as Kandimalal (Tindale 2005) and is known to be a gathering point for emus after the monsoonal rainfalls, which build up a temporary pool of water in its center. Hamacher and Norris (2010) state that there are multiple stories centered around this structure. It is said to have been formed when the rainbow serpent created the nearby Wolfe and Sturt creeks. The crater itself is considered to be the place where the great serpent dove underground causing the circular structure to form.

3.2.9. Calendar?

The view of the sky was influenced by a lot of outside factors, culture, religion, myths to name but a few. The origin stories of the constellations are preserved in myth, explaining how the specific constellations found their place amongst the stars. While today we recognize 88 constellations containing all the stars we can see on the night sky, in ancient times this was not the case. The constellations then were simply connections of some stars, leaving others in between them to not be part of any such grouping.

We can gain some interesting information from these myths. For example, let us have a look at the constellation Aries. The Greek myth concerning the Ram (The ram with the golden fleece) does not only give the story of how the constellation came to find its seat amongst the stars but also why the stars in this constellation are rather dim (because of the loss of the golden fleece).

Amongst myth and sky lore around the world we can find interesting pieces of information. But the constellations did not only have importance in myth and legend and therefore in religious beliefs. As every astronomer today knows, the appearance of constellations on the night sky is depending on the time of year, due to the earth's motion around the sun.

This leads to different stars (therefore different constellations) to be visible during the course of a year.

This leads us to define two terms: the *heliacal rising* and the *heliacal setting* of a constellation. The heliacal rising of a celestial object (i.e. star, constellation, ...) is defined as its first appearance on the eastern pre-dawn sky after a period in which it was not visible. On the other hand the heliacal setting is the opposite, the last visible setting of a star in the evening twilight.

These two special occurrences are important to note because they have been used to mark different times of the year or special annual events like for example the heliacal rising of Sirius in ancient Egypt which coincided with the annual rising of the Nile in Memphis.

This led to the use of the celestial objects in a calendaric way determining the time of year from the appearing or disappearing of certain stars or constellations.

Even though it is not easy to filter out the information out of the few remaining sources we have on Australian Aboriginal knowledge there are quite a few calendaric connections to be found. For example the Boorong tribe of Victoria seems to have had a lot of these connections. A calendar for the Boorong tribe as suggested by Morieson (1996) can be found in Table 2.

Morieson	Boorong Tribe	37 southern latitude		
European month	Celestial being	Location in the sky	Suggested terrestrial counterpart	Activity of terrestrial counterpart
March-April	Star in the head of the Southern Cross (Crux)	Southern cross is upright at midnight at its highest point in the southern sky	Ring-tailed possum	Breeds April to November
April-May	"Emu in the sky"	Fully emerged by early evening, Horizontal at midnight	Emu	Lays eggs April-May to September-October
June	Southern Crown (Corona australis)	Prominent in northern sky by nine in the evening	Willie Wagtail	Lays eggs June to February
July	Canopus (α Car)	Stays low in the southern sky at treetops level	Crow	Lays eggs from July to September
August	2 stars in the end of the tail of Scorpio Antares (α Scorpii)	Directly overhead in the evening	Australian Kestrel	Lays eggs from August to November
September	The Eagle (Aquila)	Directly overhead in the evening	Red-rumped parrot	Lays eggs from August to December-January
	Star in Boötes west of Arcturus	Overhead at ten in the evening	Purple crowned lorikeet	Lays eggs from August to December
	Arcturus (α Boo)	Early in western sky. Gone by ten in the evening	Singing bushlark	Lays eggs from August to January
	The Pointers (α, β Cen)	In north-west in early evening but gone by the end of September	Termite	Termite larvae found in August, September
October	Lyra / Vega (α Lyr) Magellanic Clouds	At lowest point of sky close to horizon	Red-kneed dotterel	Lays eggs from September to December
November	Dolphin (Delphinus)	Leaves sky with setting sun	Malle fowl / Native companion	Lays eggs early in summer
December	Castor (α Gem) Capella (α Aur)	Highest point of southern sky at midnight	Brolga / Australian Crane	Lays eggs from october to april
February-March	Star in Canis Minor	Leaves sky with setting sun	Murray Cod	Spawns in spring after which it gets caught in pools in receding flood waters in forests alongside the Murray
		Appears in north east early evening	Long necked tortoise	Lays eggs early in summer
		At its most prominent in the northern sky but still close to the horizon	Red kangaroo	Comes in to water at the height of summer
		Directly overhead in the evening	Jacky Lizards	killed at the "commencement of the great heat"
				Young jacky lizards are abundant by February

Table 2: Gives the calendar for the Boorong tribe as suggested by Morieson, 1996.

Naturally the constellations that have been outlined are completely different from the ones we consider the western constellations influenced by the unique fauna of the continent.

Considering that some millennia ago (about half the precessional cycle) the constellations we nowadays know as winter constellations have been visible in summer and vice versa, these calendaric functions can not have been used since the beginning of the culture, putting a restraint on the age of the stories containing them.

For example lets consider the southern cross. For some tribes it might have represented the footprint of a bird. The likeness of this constellation with the footprint of said bird (figure 14) might be obvious nowadays, but if we look at how the constellation looked in the past it is not as easy to see the resemblance (Figures 15 and 16).

One can see that the connections that are nowadays in place might not have existed in the past at all. Close examinations of these connections and information buried in the sky lore might help to give some constraints on the age of the Aboriginal tribes and their culture. The effect of precession was most probably never discovered actively by the Aboriginal people but effects of it over generations might have become apparent by the discrepancy in the sky-calendars due to the stellar shift. Since the Aboriginal stories are dynamic and evolving over time (Hamacher and Norris 2010) this might have been observed and slowly accounted for in the stories that have been passed on.

This will be the topic of further research.



(a) Talons



(b) Curnow talons

Figure 14: (14a) shows talons of the wedge tailed eagle, taken from http://www.zoo.org.au/sites/default/files/styles/zv_carousel_large/public/wt-eagle-talons-animal-profile-web620.jpg?itok=n81SH7hb, accessed on 24th of September 2014 (14b) shows curnow's representation of said talons, taken from <http://sa.apana.org.au/~paulc/WilduCross03a.jpg>, accessed on 24th of September 2014.

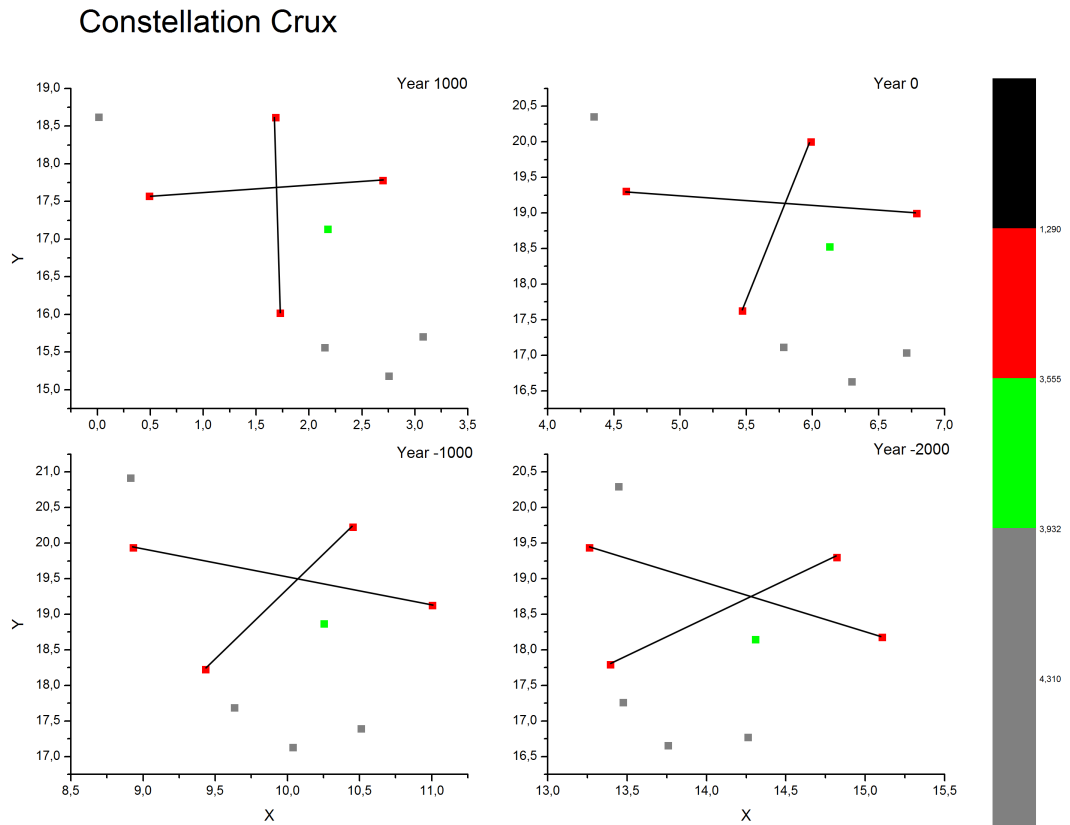


Figure 15: The stars of the Southern Cross plotted for selected years.

4. The Mithras Cult

The cult of Mithras was a so-called "mystery religion" (i.e. a religion centred on secret or mystical rites for initiates, especially any of a number of cults popular during the late Roman Empire) that was widespread in the Roman Empire approximately from the 1st to the 4th century AD. Unfortunately the secret nature of this mystery religion caused a lack of written records as most of the information was never written down. Almost everything we know about the mithraic mysteries (as this cult was also known) we know from temples that have been found all across Europe spread out over what was once the Roman Empire.

Those temples are called mithraea. Many of these mithraea have been found already and can be examined closely (some of the more well known mithraea can be seen in the map in figure 17).

The temples preferably were built in natural caves and caverns in accordance with

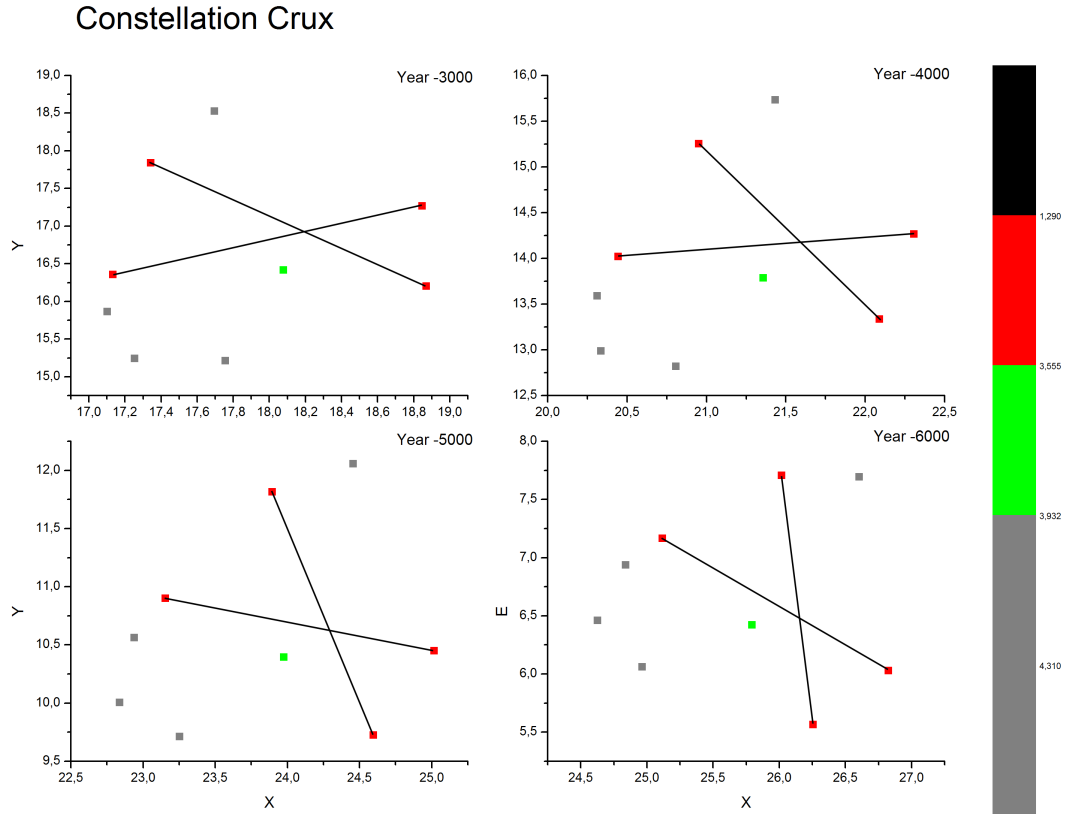


Figure 16: The stars of the Southern Cross plotted for selected years.

the origin myth of the central figure of the cult, Mithras (Mithras is said to have been born from stone in the darkness of a cave). Where this was not possible the mithraeum was built to look as if it was a cavern or a cave, dark and usually windowless. These cult sites were usually not very big, typically holding about a dozen worshippers. That which is remarkable concerning these ritual places is the iconography that can be found there. Lots of symbols and depictions have given scholars a lot to think about (see figure 18).

The iconography can differ in some aspects from temple to temple but one feature that all of them have in common is a depiction of the so-called tauroctony (bull-slaying scene).

4.1. Tauroctony

The tauroctony is the central piece of every mithraeum and therefore a vital part of the mithraic mysteries. It is a depiction of a bull that is slain by none other than Mithras himself (see figure 19). Accompanying the famous slaying scene are a number



Figure 17: A map of some well-known mithraea spread across Europe. Taken from <http://www.mithraeum.eu/map.php> accessed on 25th of September 2014.

of other images that have to be explained in an interpretation regarding its meaning (bull, scorpion, dog, snake, raven, lion, cup). The interpretation of the mithraic imagery - especially the tauroctony - was long governed by the works of Franz Cumont. In the two volumes of his work *Textes et monuments figures relatifs aux mysteres de Mithra* (1896,1899) Cumont describes his interpretations of the images as revealing the Iranian origin of this cult. He argues that Mithras himself is non other than an ancient Iranian god known as Mithra. This view was undisputed until the 1st congress of Mithraic studies in 1971 when two scholars, John Hinnells and R.L.Gordon, criticised serious flaws in the interpretations of Cumont and cast doubt upon the Iranian origin of the cult.

After the fall of Cumont's theories other theories began to emerge, and re-emerge such as the interpretation of K.B. Stark who argued in a paper published in 1869 that the images depicted in the bull-slaying represent not obscure connections to an Iranian myth but rather had a connection with the constellation of a certain part in the night sky seeing as each of the depicted figures has a counterpart amongst the constellations (Bull - Taurus, Scorpion - Scorpius, Dog - Canis Minor, Snake - Hydra, Raven - Corvus, Lion - Leo, Cup - Crater, as well as a symbolism for the Star Spica).

As support for this interpretations, which was so radically different from the reigning opinion, it is argued that astral symbolism seems to have played an important role



Figure 18: Mithraeum in Ptuj (Slovenia), discovered: 1913, taken from http://www.mithraeum.eu/album/monumenta/ptuj_mithraeum_046.jpg, accessed on 25th of September 2014

in the Mithraic Mysteries. This argument was actually added to by Cumont himself as he states that, "the signs of the zodiac, the symbols of the planets, the emblems of the elements, appear time after time on the bas-reliefs, mosaics and paintings of their subterranean temples."

After Cumont's theories were shown seriously flawed at the congress in 1971 it was Roger Beck who re-discovered Stark's interpretation of the imagery and argued that it shows the night sky in between the constellations Taurus and Scorpius. Specifically he even said it represents the night sky during a time when the constellation of Taurus was setting in the west.

Stanley Insler later even went one step further claiming that the depiction shows the sky at the *heliacal setting* of Taurus.

As intriguing as these interpretations where there seemed to be an apparent flaw to them. If indeed the images showed the constellations of the night sky in between Taurus and Scorpius then what of the other constellations visible in this region? Why is there no counterpart, for Gemini, Orion, Cancer or Libra to be found? Additionally a flaw that certainly comes to mind rather quickly, since all the images in the tauroctony seem to have a celestial counterpart, what of the main figure of the image, of Mithras himself?

These questions are the subject of investigation both in the book of Michael Speidel *Mithras - Orion* (1980) and in the one by David Ulansey *The Origins of the Mithraic Mysteries* (1989). Speidel suggests in his work that the mithraic imagery depicts only certain constellations because they lie along a specific part of the night sky - the celestial equator. In addition he suggests a solution for the missing counterpart of Mithras himself, the constellation of Orion.

While Speidel already raises some interesting points it is Ulanseys interpretation of the imagery that we want to take a closer look at. Ulansey states that Speidel's approach was an extremely good one as the introduction of the celestial equator seems to give a plausible explanation for selection of certain constellations that seems to have occurred. But he also argues that there is a flaw in this interpretation, for if the images indeed show only equatorial constellations there seem two very important constellations missing, Aries and Libra - the constellations in which the equinoctial points could be found in Graeco-Roman times. Also Ulansey suggests that Mithras can not be a representation of the constellation Orion for the constellation is always located below Taurus and the imagery clearly suggests that Mithras is above the bull. Starting from these arguments Ulansey tries to give an explanation for the seeming lack of the two most important equatorial constellations at the time and to find a counterpart of Mithras that is consistent with the imagery.

Ulansey first looked into why the equinox constellations of that time, Aries and Libra can not be found in the depictions. He now argues that the reason for this is to be found in the precession of the equinoxes. The precession causes this backward motion of the equinoctial points through the zodiac. In doing so the points travel through one constellation roughly every 2160 years. Today the spring and the autumnal equinoctial points can be found in the constellations Pisces and Virgo respectively. As has previously been mentioned back in the Graeco-Roman times these points could be found in the constellations Aries and Libra. But going back further into the past one finds that previously to the ram and the scales another pair of constellations were the equinoctial constellations, Taurus (spring equinox) and Scorpius (autumn equinox), from about 4000 B.C. to 2000 B.C.

These as one might remember are featured in the tauroctony. It is now suggested that the night sky is depicted from this more distant time. This intriguing hypothesis, while answering the question of the missing constellations, raises another one, because if the theory is correct then why is there an image of a lion? The constellation Leo did not



Figure 19: Mithras killing the sacred bull. Dedicated by a public slave named Apronianus, treasurer of the municipality of Nersae. Marble, 172 CE. From the Mithraeum of Nersae (now Nesce, in the Province of Rieti), taken from https://upload.wikimedia.org/wikipedia/commons/4/45/Tauroctony_Apronianus_Terne.jpg, accessed on 24th of September 2014.

lie on the celestial equator (see image) at that time, but, so says Ulansey, it still fits perfectly because at the time when the spring equinox was found in Taurus, Leo was the position of the summer solstice. The solstices of course linked with the equinoctial points were also influenced by the precession, it is easy to see then how Leo could have come to be included in this depiction. This line of thinking leads Ulansey to even go one step further and suggest then that the cup in the tauroctony might not even represent Crater but rather might symbolize the constellation Aquarius (Aquarius being the position of the winter solstice at the time of the spring equinox in Taurus).

Additional attention has to be paid to the figure of Mithras. It was previously proposed by Speidel (Speidel 1980) that Mithras might represent the constellation Orion

since, as a look at an sky map from the time shows, it is located very close to the constellation of Taurus. It was again Ulansey who looked into Speidel's interpretation and then argues that Mithras cannot possibly represent Orion for Orion, although being close to Taurus on the night sky is always shown below the bull. Mithras on the other hand, as indicated by the tauroctony, was clearly shown to be above Taurus. This leads Ulansey to believe that there should be another constellation that might represent Mithras himself. When investigating this he comes up with a fairly well reasoned argument showing a connection between Mithras and a constellation that is indeed found just above the constellation Taurus, Perseus.

It is then further argued that the scene itself, the bull being slain by Mithras, thus representing the end of the bull could in fact symbolize the end of the "Age of the bull" when the spring equinox moved from Taurus on to Aries. Ulansey then interprets the role of Mithras in the tauroctony as showing how the god Mithras himself brought to an end the age of the bull, therefore attributing him the power to shift the equinoxes as well as the stellar position (precession).

5. Conclusion

The stellar position has changed a lot over the past, alas not many cultures have existed for long enough to have had the opportunity to actually detect this change.

A trip to Australia gave the idea to this thesis since the Australian Aboriginal culture, being among the oldest cultures in the world has had millennia to study the sky and has incorporated their observations in their traditions and stories that have been passed on through the generations.

Apart from the vast evidence of Aboriginal astronomical knowledge there exists research on a calendaric use of different constellations by some Aboriginal tribes spread all over the Australian continent.

As the constellations appearance changes over the course of the millennia, looking into this change and the seasonal visibility of the constellations we know nowadays (the constellations we know as winter constellations now have been visible in summer some 13 000 years ago and vice versa) may put a time restraint on the development of this use and give an insight in the development of oral traditions of the different tribes and a better understanding of an Aboriginal Astronomy.

The example of the mithras cult is given to illustrate that knowledge of the precessional effect on stellar position might already have been noticed and have been hidden in images and or stories from the past. It has to be noted that while there is already quite a bit of evidence of precession affecting stellar-oriented buildings (over time they would have to be adjusted to maintain the stellar alignment) no definite confirmation of corrections of such orientations have been found.

This will be the topic of further research.

Appendices

A. Fortran90 Program

On the following pages the Fortran90 Program that has been written to obtain the results discussed in this thesis is included to give an understanding of the algorithm and to aid in producing star charts for different locations.

```

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!          Author: Kieneswenger Klaus          !!
!!          Matrikelnr: 0804436                !!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

program positions

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!          Declaration of the Variables          !!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

implicit none

real(4)::pi=4.d0*atan(1.d0)                                ! Defining Pi for the use of
transforming between radians and degrees

real(4):: ra0,dec0,r,dr,mua,mud,t,t1,mag
real(4):: x,y,z,dx,dy,dz,x1,y1,z1,ra,dec
real(4):: a,b,c,k1,k2,k3,raz
real(4)::xx,yy,rr
real(4)::xx1,yy1,kk
integer(4):: n,i,neu
integer(4)::id
integer:: read_error
character(40)::numchr

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!          End of the Declaration of the Variables          !!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!          Input of the Data                          !!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

rr=30.d0 !Radius of the star chart (needed for the projection)

n=1000 !Defining the starting point for the calculations of n years into the past from the year 2000
do while(n<23000) !Defining the End point for the calculations, up to x-3000 years

t=((2451545.d0-365.25d0*n)-2451545.d0)/36525.d0          !Calculating the time step in Julian centuries
t1=((2451545.d0-365.25d0*n)-2451545.d0)/365.25d0        !Calculating the time step in Julian days

neu=2000-n

write(numchr,*) neu

open(unit=19,file='1_complete#//trim(adjustl(numchr))//'.txt',status='replace',action='write')
!opens/creates a file with the intention to write the results into, separated by years

do

open(unit=21,file='1_complete.txt',status='old',action='read')          !opens the file containing the
initial data

read(21,*,iostat=read_error) id, ra0, dec0, r, dr, mua, mud, mag          !reads in the initial data, #ID,
initial ra, initial dec, distance, radial velocity, annual shift in right ascension and declination and
magnitudes
if (read_error>0) then
stop "Datenfehler"          !error condition
else if (read_error<0) then
exit
else

```

```

dr=dr/977792.d0                                     ! Division by a conversion
factor to transform the radial velocity from km/s to pc/yr

mua=(mua/15.d0)/13751.d0                             ! Conversion of proper motion
component from arcsec/yr into seconds/yr and then into radians/yr
mud=mud/206265.d0                                   ! Conversion of proper motion
component from arcsec/yr into radians/yr

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!           End of Data Input                       !!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!           Proper motion algorithm                  !!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

x=r*cos(dec0*(pi/180.d0))*cos(ra0*(pi/180.d0))       ! Factor Pi/180 to convert the
degrees into radians                                ! which has to be done because
                                                    ! sine and cosine don't
y=r*cos(dec0*(pi/180.d0))*sin(ra0*(pi/180.d0))       ! use degrees but radians
z=r*sin(dec0*(pi/180.d0))

dx=(x/r)*dr-z*mud*cos(ra0*(pi/180.d0))-y*mua
dy=(y/r)*dr-z*mud*sin(ra0*(pi/180.d0))+x*mua
dz=(z/r)*dr+r*mud*cos(dec0*(pi/180.d0))

x1=x+t1*dx
y1=y+t1*dy
z1=z+t1*dz

ra=atan2(y1,x1)*(180.d0/pi)                          ! Calculation of the Right
Ascension and the Declination                    ! of the investigated star with
                                                    ! respect to the equinox of J2000
                                                    ! the use of atan2 gives the
dec=atan2(z1,sqrt(x1*x1+y1*y1))*(180.d0/pi)
angle in the correct quadrant

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!           Precession algorithm                     !!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

ra0=ra                                                ! Use the previously calculated
Right Ascension and Declination for further processing
dec0=dec

k1=2306.2181d0*t+0.30188d0*t*t+0.017998d0*t*t*t
k2=2306.2181d0*t+1.09468d0*t*t+0.018203d0*t*t*t
k3=2004.3109d0*t-0.42665d0*t*t-0.041833d0*t*t*t

```

```

k1=k1/3600.d0                                ! Transform the factors
k1,k2,k3 from arcsec to degrees

k2=k2/3600.d0

k3=k3/3600.d0

k1=modulo(k1,360.d0)                          ! Reducing the factors k1,k3 to
their real usable value

k3=modulo(k3,360.d0)

a=cos(dec0*(pi/180.d0))*sin((ra0+k1)*(pi/180.d0))

b=cos(k3*(pi/180.d0))*cos(dec0*(pi/180.d0))*cos((ra0+k1)*(pi/180.d0))-
sin(k3*(pi/180.d0))*sin(dec0*(pi/180.d0))

c=sin(k3*(pi/180.d0))*cos(dec0*(pi/180.d0))*cos((ra0+k1)*(pi/180.d0))+cos(k3*(pi/180.d0))*sin(dec0*(pi/180.d0))

raz=atan2(a,b)*(180.d0/pi)                   ! Calculating the value of alpha - k2 and delta with the
same considerations as have been applied above

dec=asin(c)*(180.d0/pi)

ra=raz+modulo(k2,360.d0)                     ! Reducing the value of Ra by the value of k2 which has been
reduced to its real value

ra=modulo(ra,360.d0)

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!! Projections !!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

!Orthographic Projection

xx=rr*(cos(dec*(pi/180.d0))*sin((ra-0.d0)*pi/180.d0))

yy=rr*(cos(90.d0*(pi/180.d0))*sin(dec*(pi/180.d0))-
sin(90.d0*(pi/180.d0))*cos(dec*(pi/180.d0))*cos((ra-0.d0)*pi/180.d0))

!Stereographic Projection

kk=(2*rr)/(1+sin(90.d0*(pi/180.d0))*sin(dec*(pi/180.d0))+cos(90.d0*(pi/180.d0))*cos(dec*(pi/180.d0))*cos((ra-0.d0)*(pi/180.d0)))

xx1=kk*cos(dec*(pi/180.d0))*sin((ra-0.d0)*(pi/180.d0))

yy1=kk*(cos(90.d0*(pi/180.d0))*sin(dec*(pi/180.d0))-
sin(90.d0*(pi/180.d0))*cos(dec*(pi/180.d0))*cos((ra-0.d0)*(pi/180.d0)))

write(19,*) id, ra, dec, xx, yy, mag, numchr, xx1, yy1
! The command to write the results into the previously created text file
! #ID, calculated right ascension, calculated declination, orthographic x, orthographic y, magnitude,
year, stereographic x, stereographic y

end if !end of the if-loop

end do !end of the do-loop
close(unit=21)
n=n+1000                                ! condition to increase n until the ending condition of the
do-loop is met

end do

```

```
close(unit=19)
```

```
! close the previously opened and created text file
```

```
end program
```

B. Star Charts

On the following pages the star charts, produced through the method described in detail in this treatise can be found. The charts are centered on the northern and southern celestial poles respectively.

The time interval between the charts is 1000 years. The stars have been plotted color-, and size coded for their magnitude.

X and Y are the projected mappings according to the stereographic projection of the coordinates x and y onto an equatorial plane or an equatorial plane transferred parallel through the north pole with the pole as center.

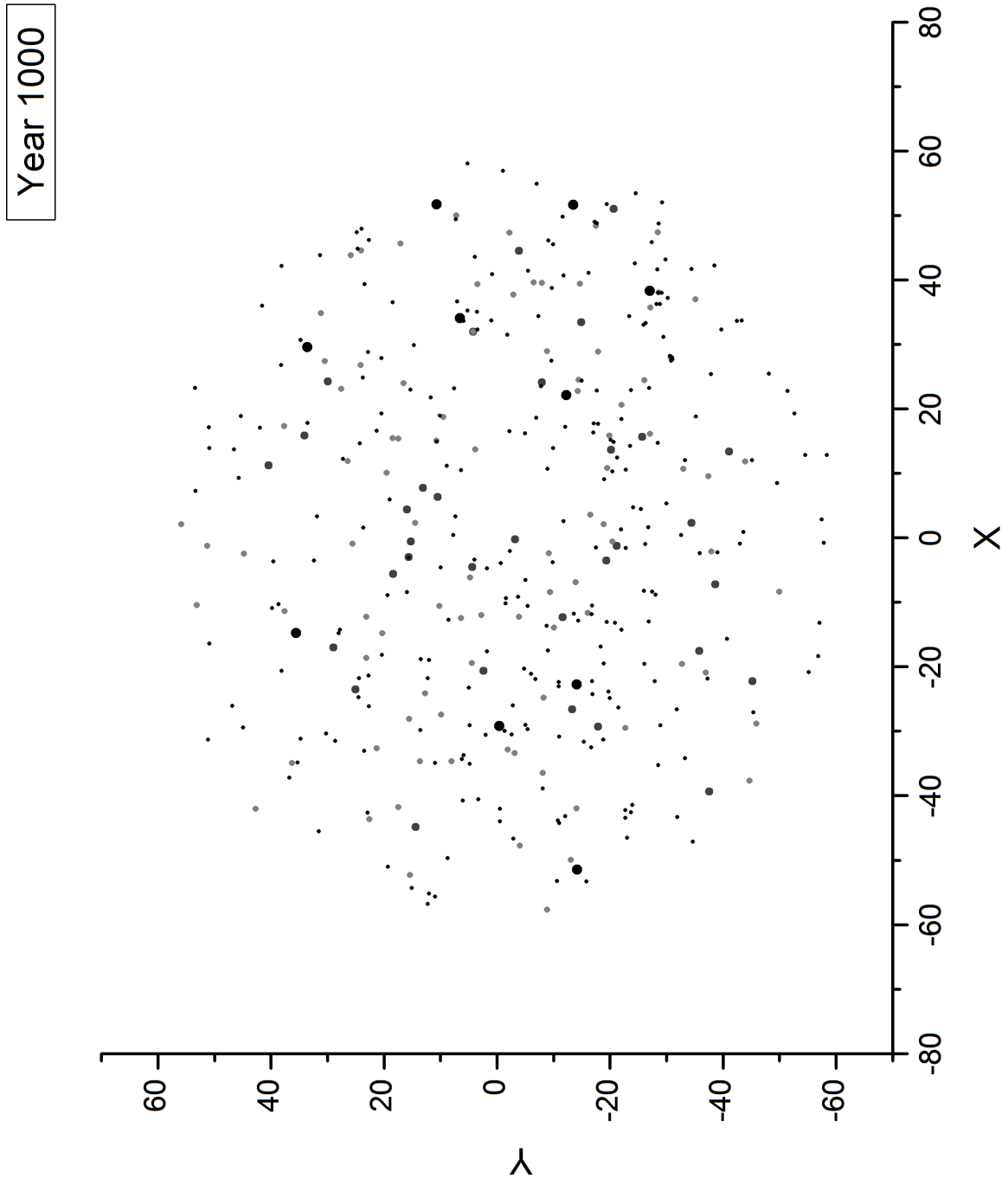


Figure 20: Northern Sky Chart, Year 1000

Year 0

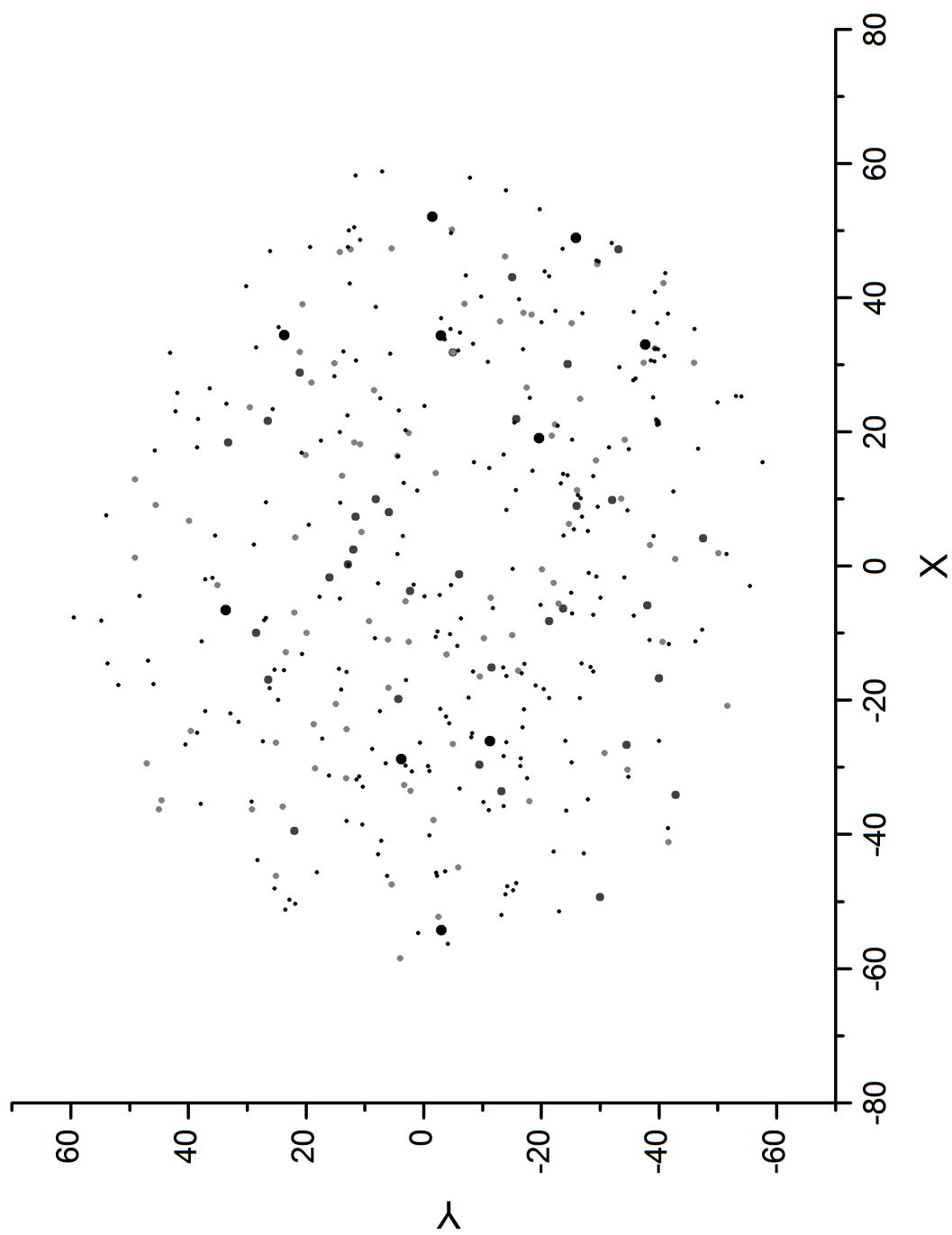


Figure 21: Northern Sky Chart, Year 0

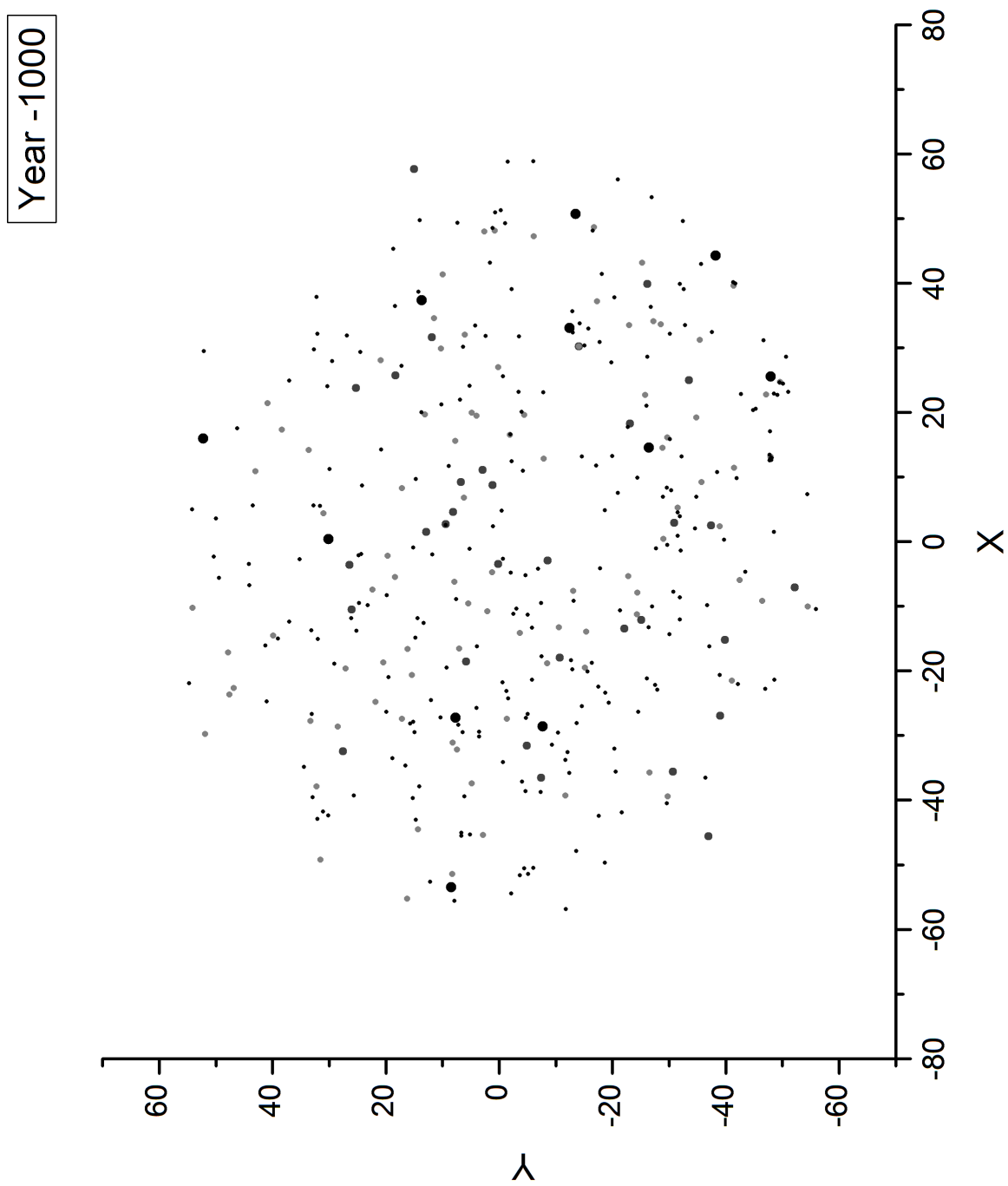


Figure 22: Northern Sky Chart, Year -1000

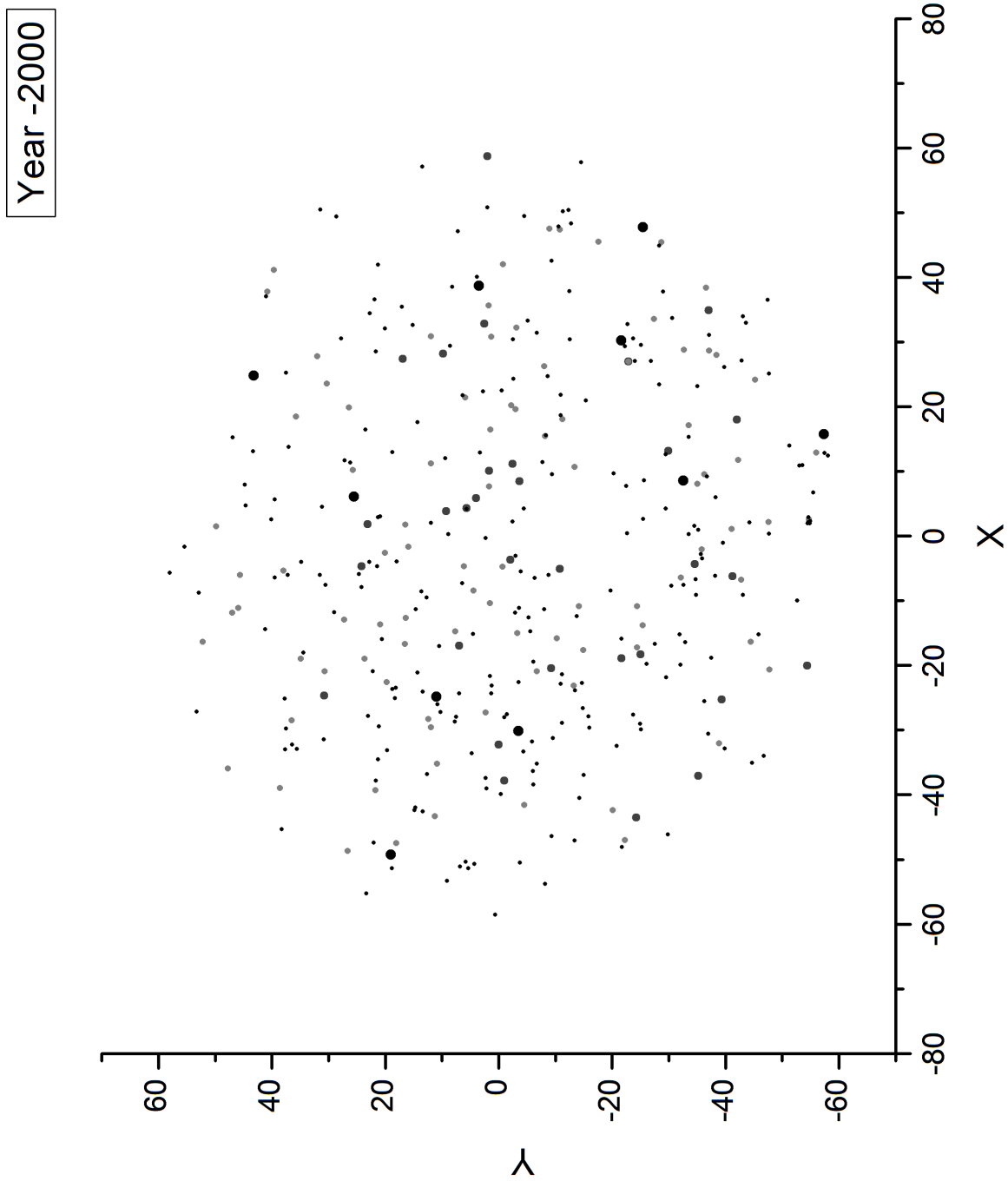


Figure 23: Northern Sky Chart, Year -2000

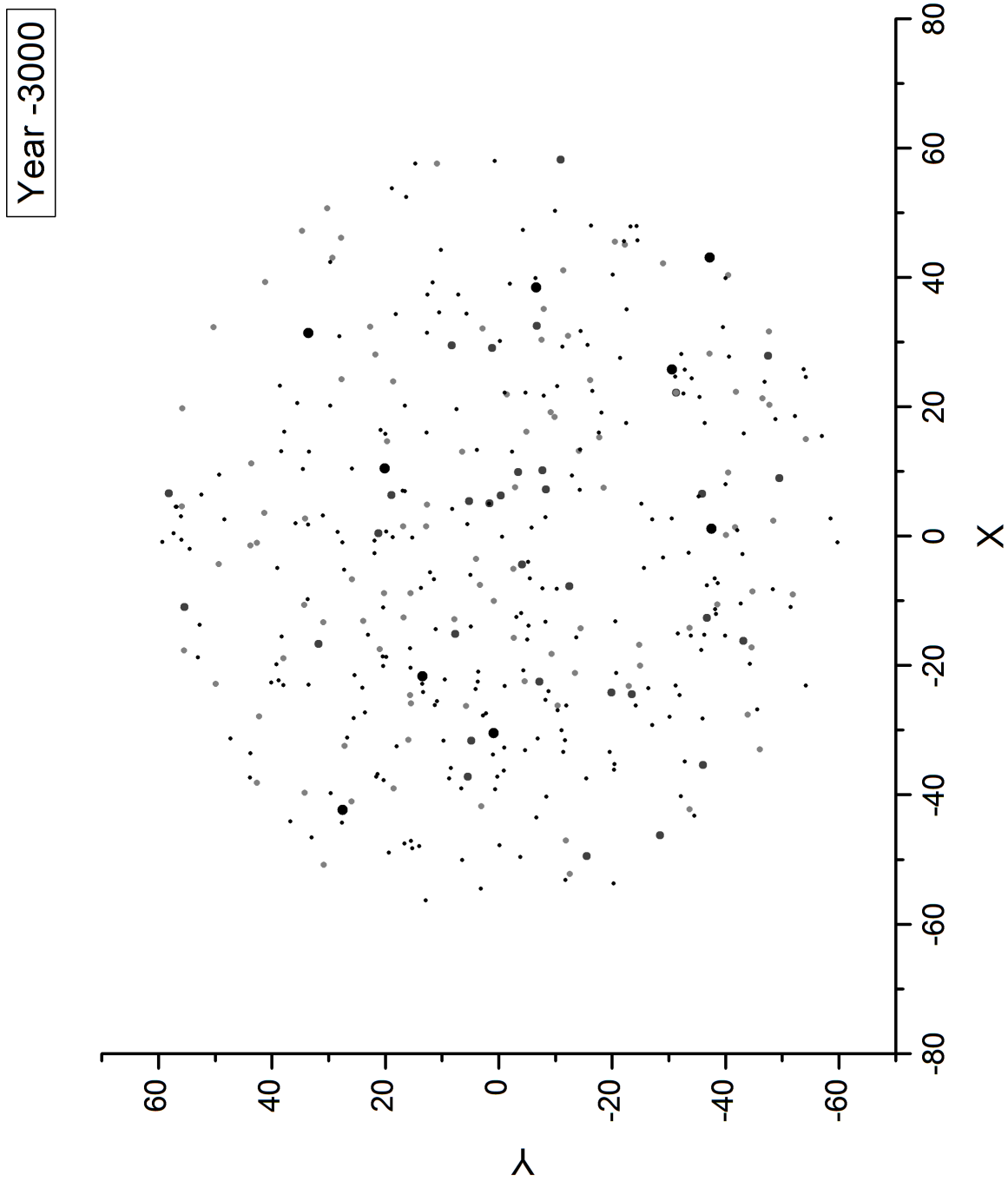


Figure 24: Northern Sky Chart, Year -3000

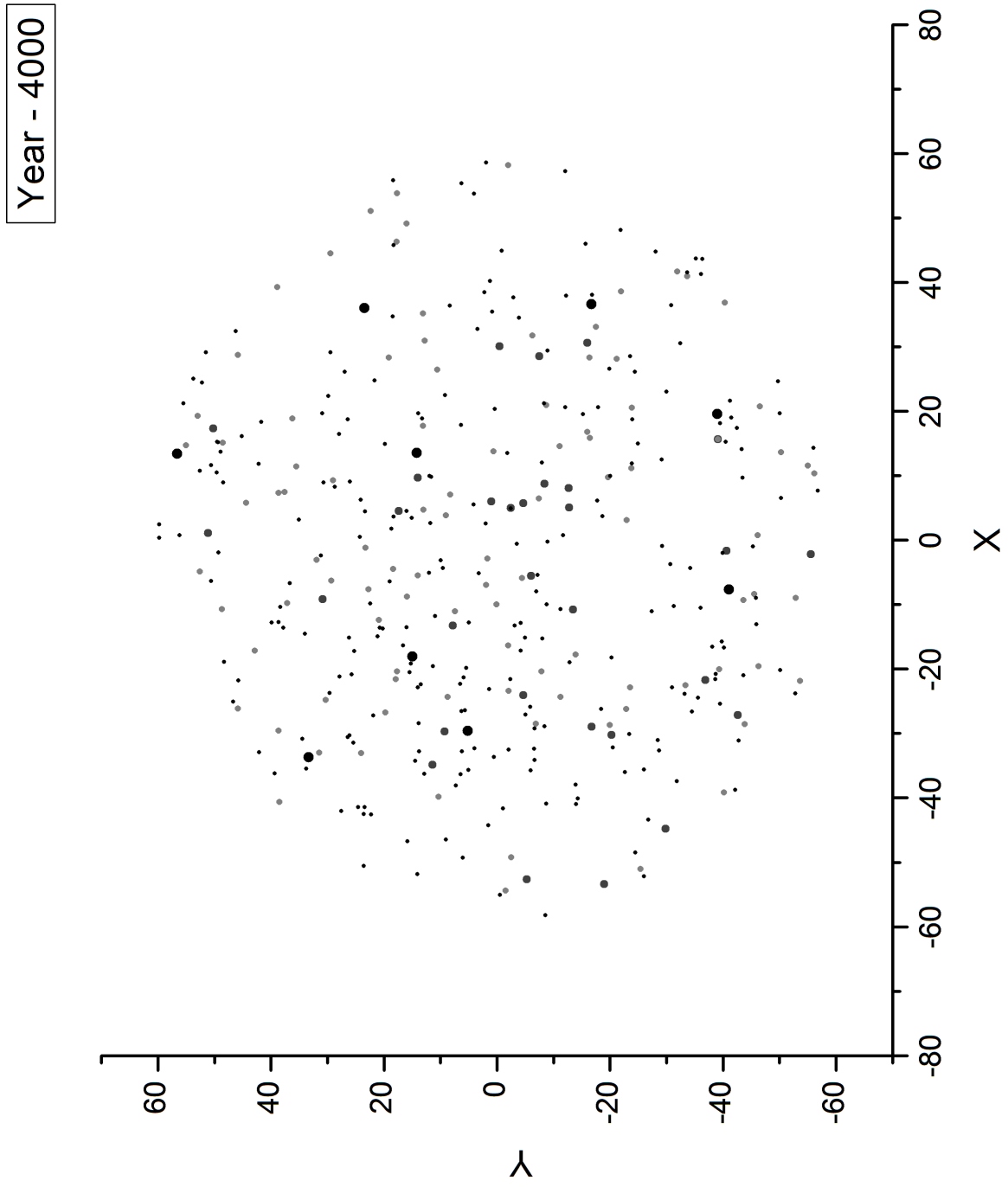


Figure 25: Northern Sky Chart, Year -4000

Year - 5000

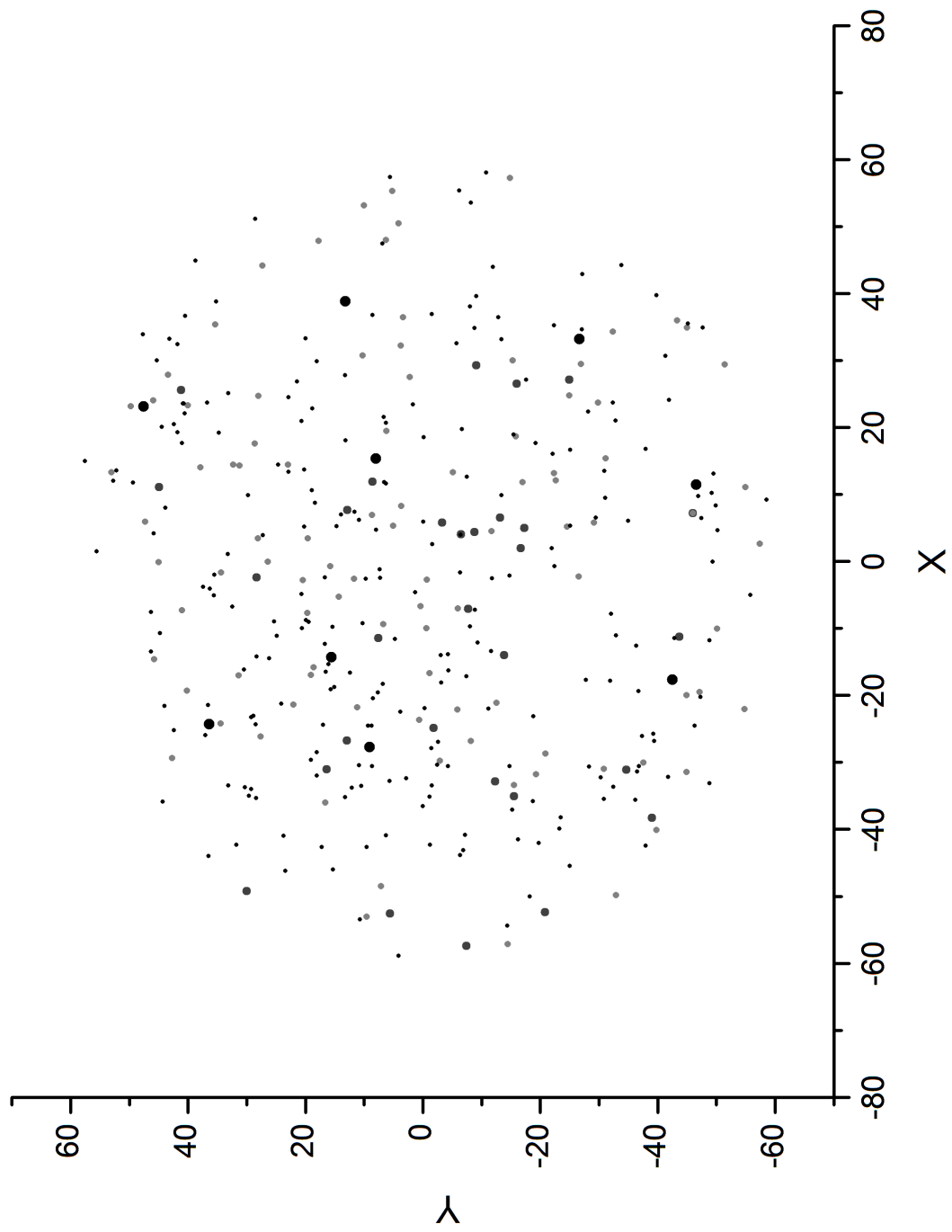


Figure 26: Northern Sky Chart, Year -5000

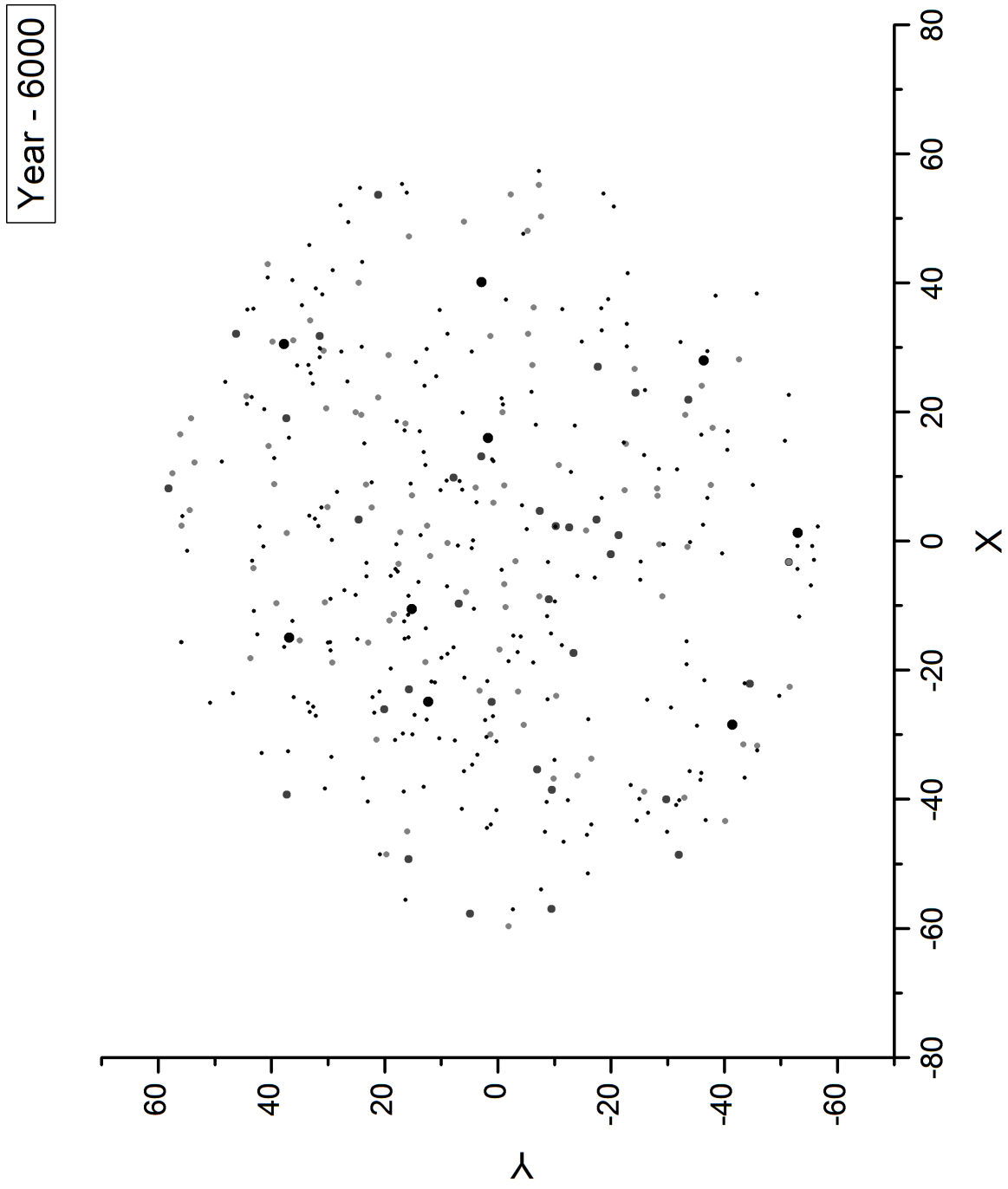


Figure 27: Northern Sky Chart, Year -6000

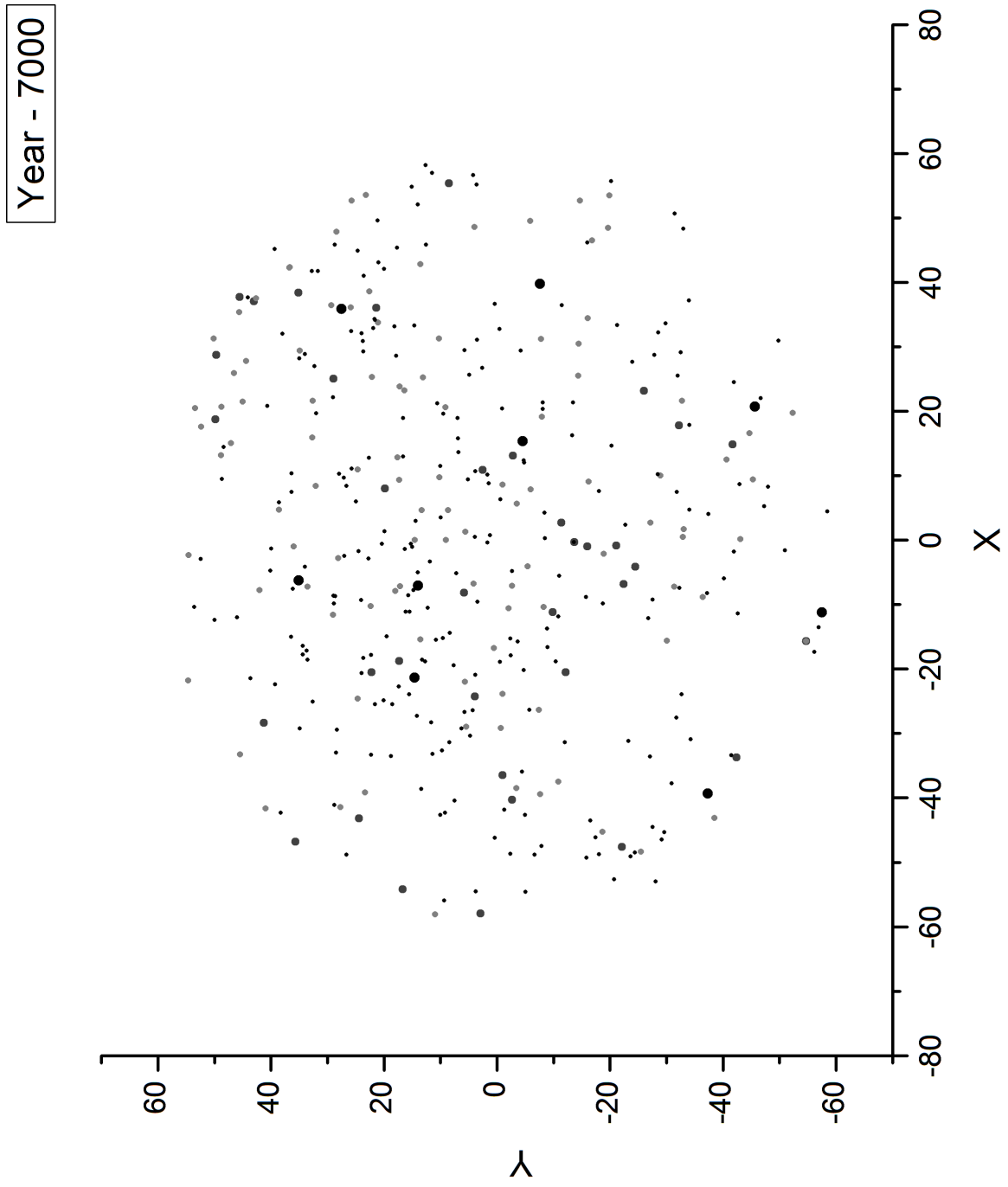


Figure 28: Northern Sky Chart, Year -7000

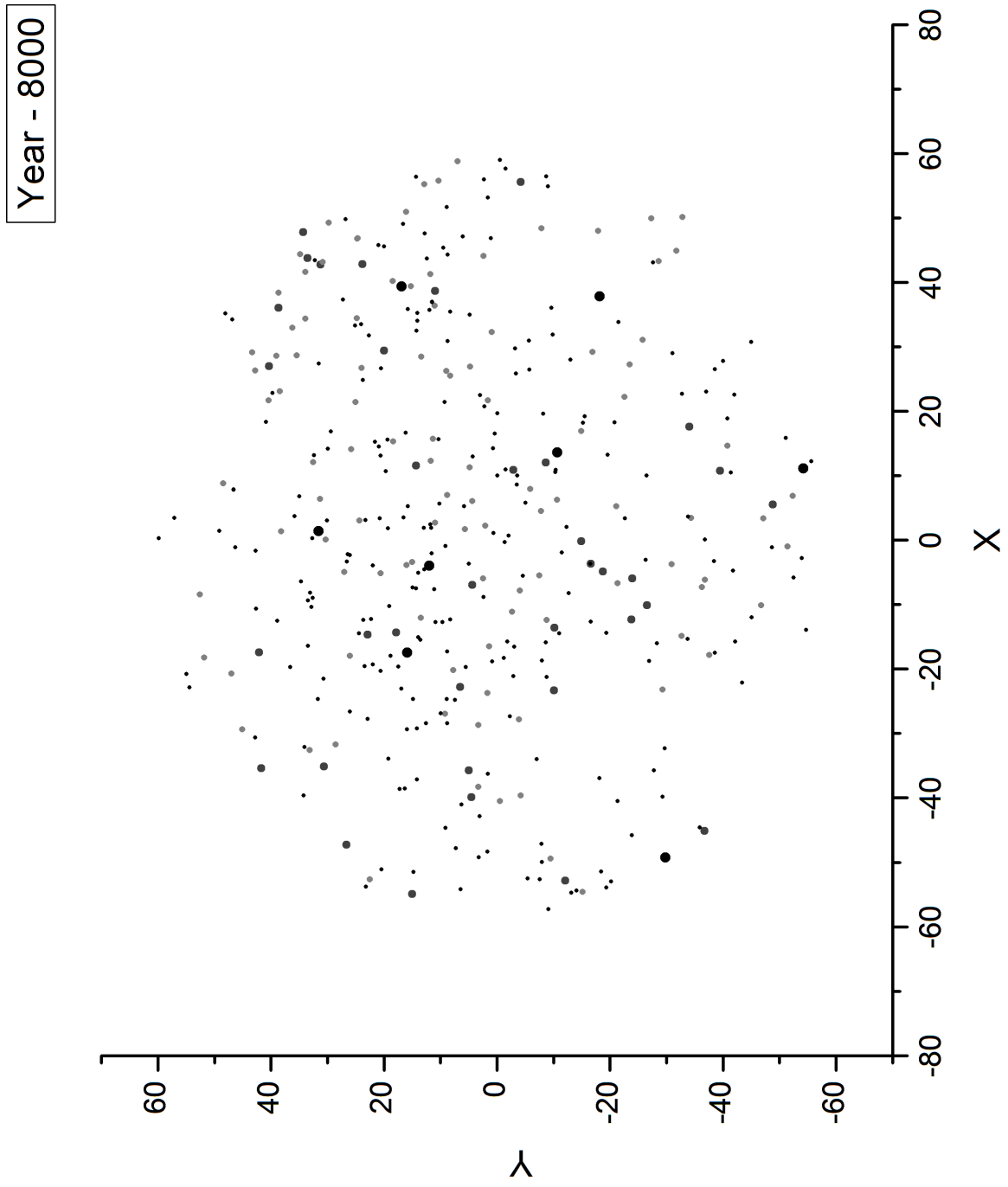


Figure 29: Northern Sky Chart, Year -8000

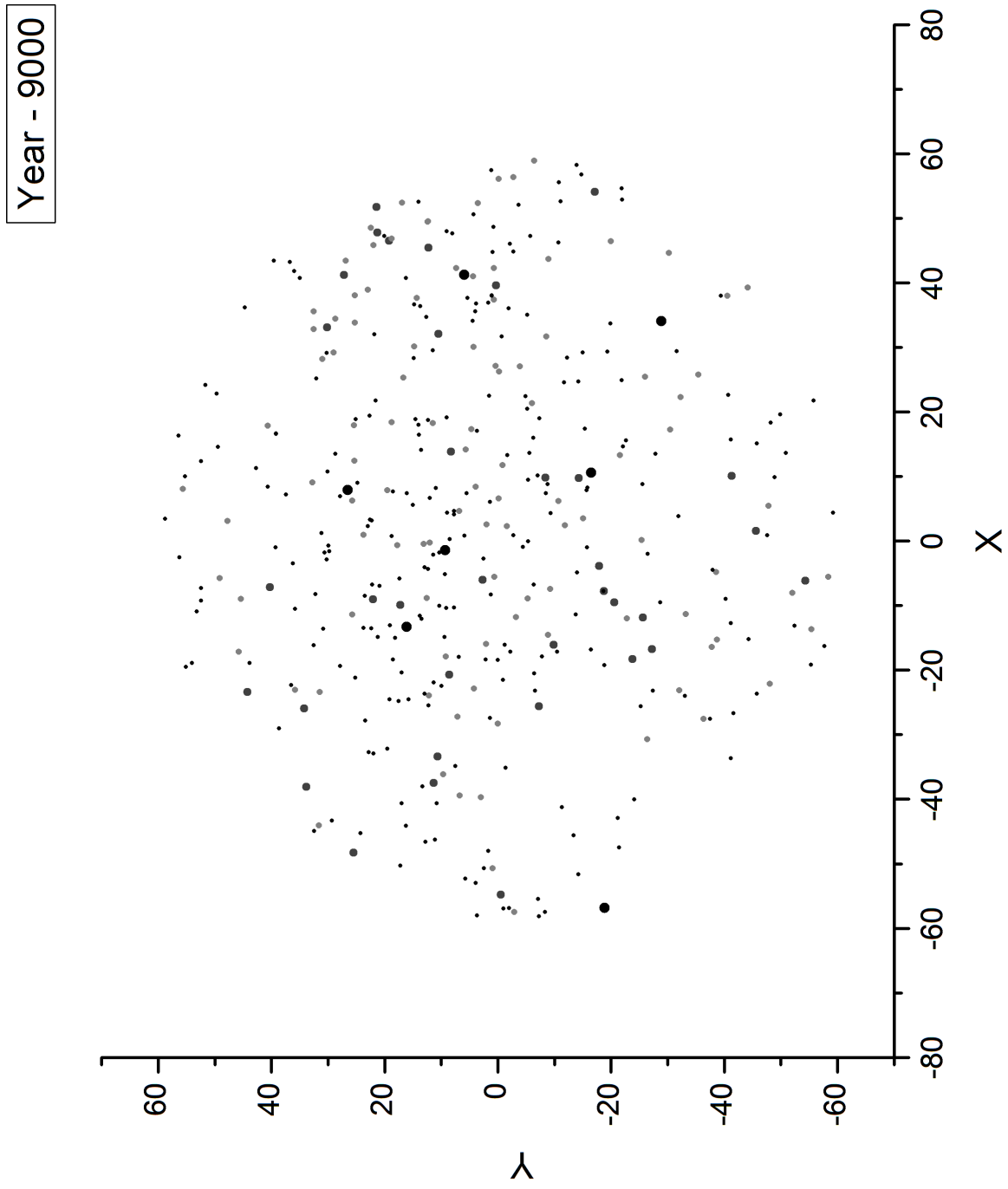


Figure 30: Northern Sky Chart, Year -9000

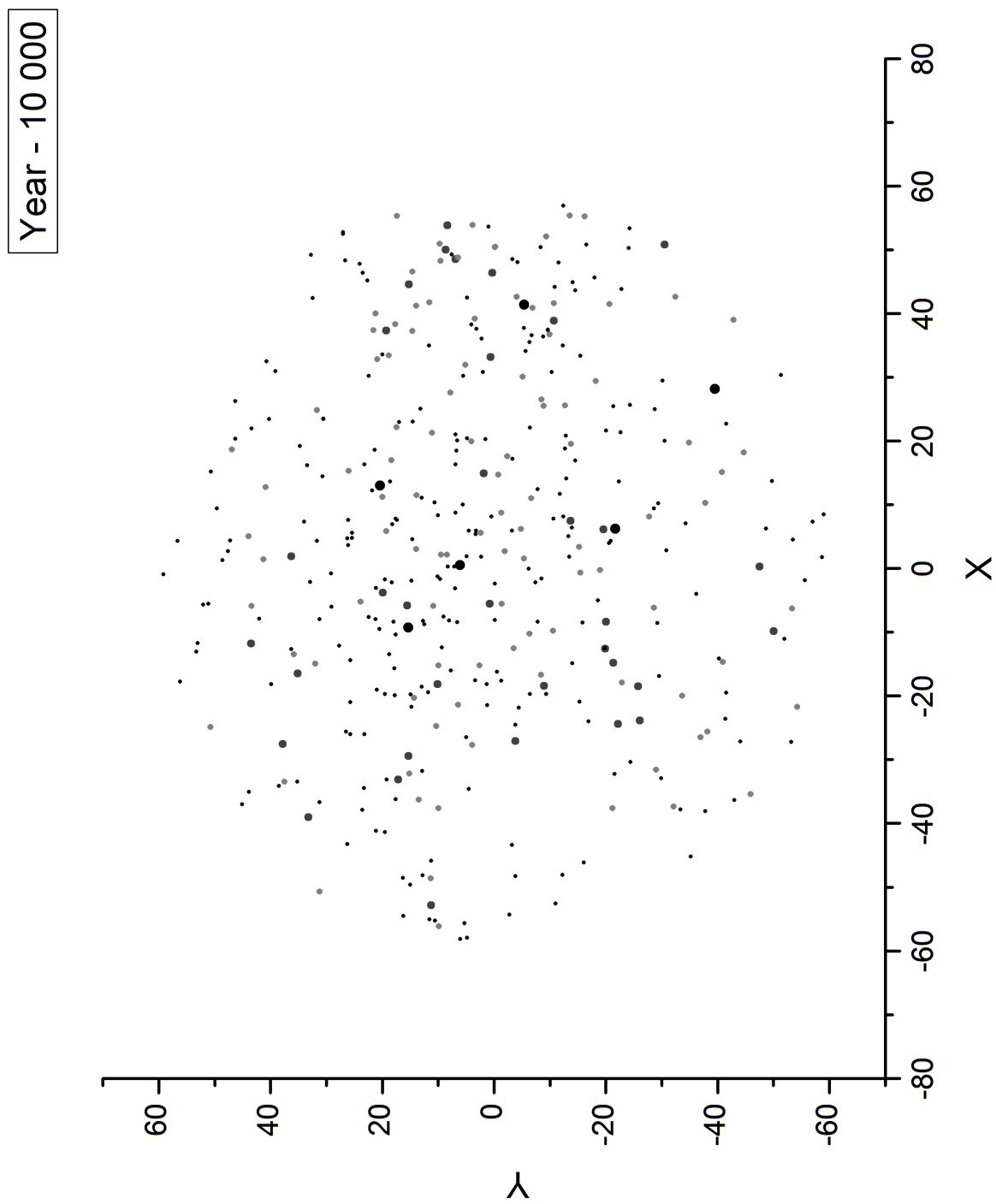


Figure 31: Northern Sky Chart, Year -10000

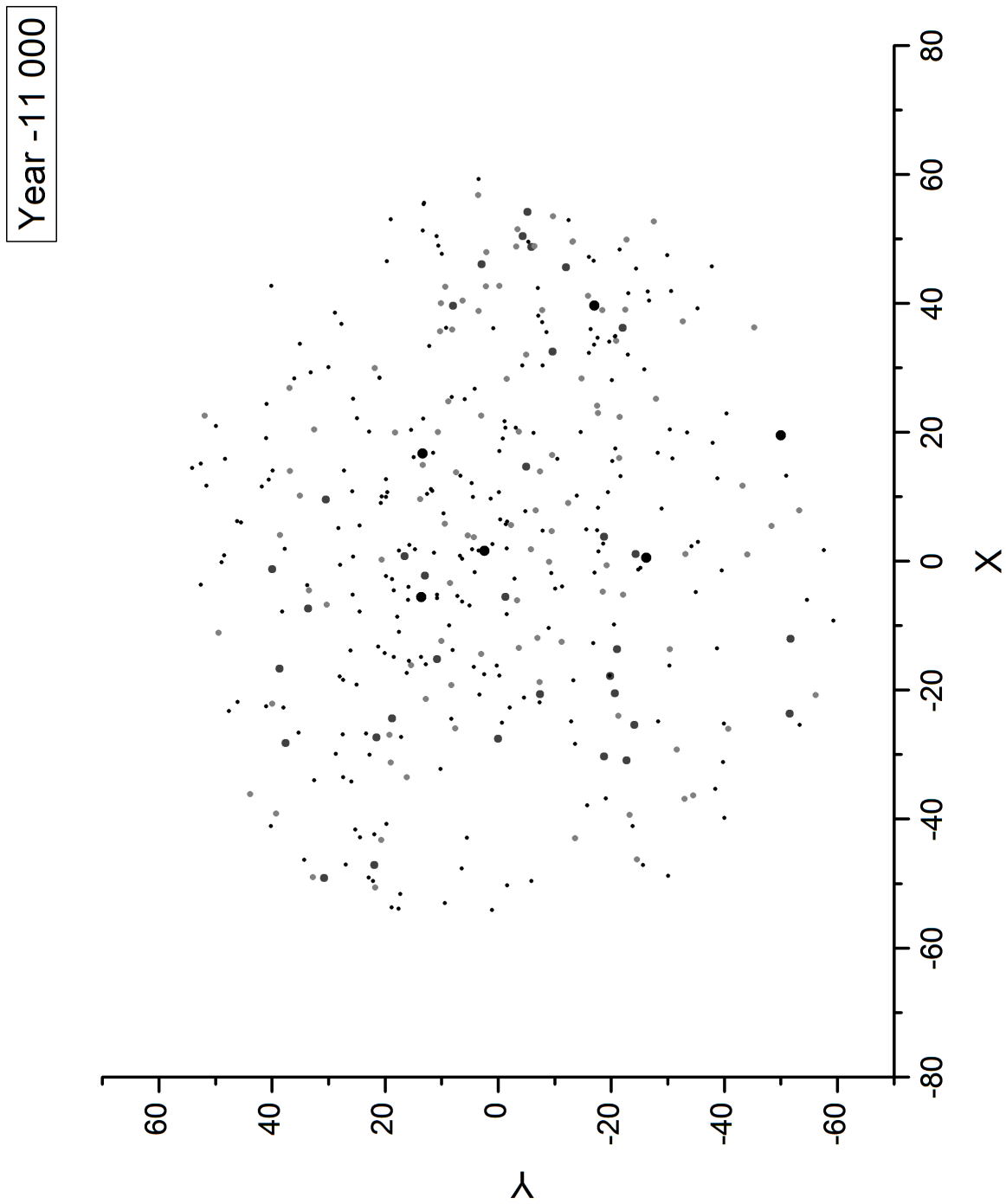


Figure 32: Northern Sky Chart, Year -11000

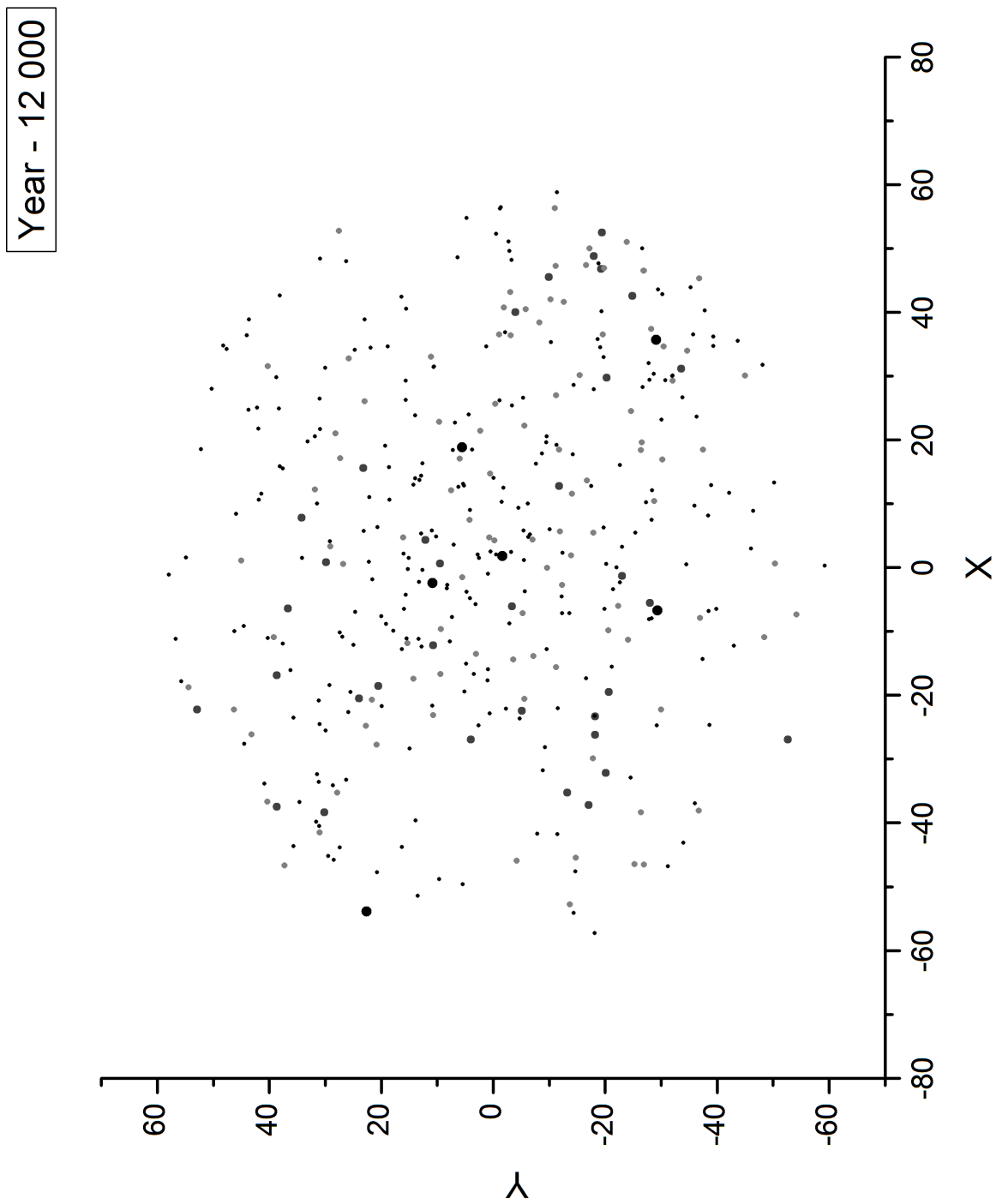


Figure 33: Northern Sky Chart, Year -12000

Year - 13 000

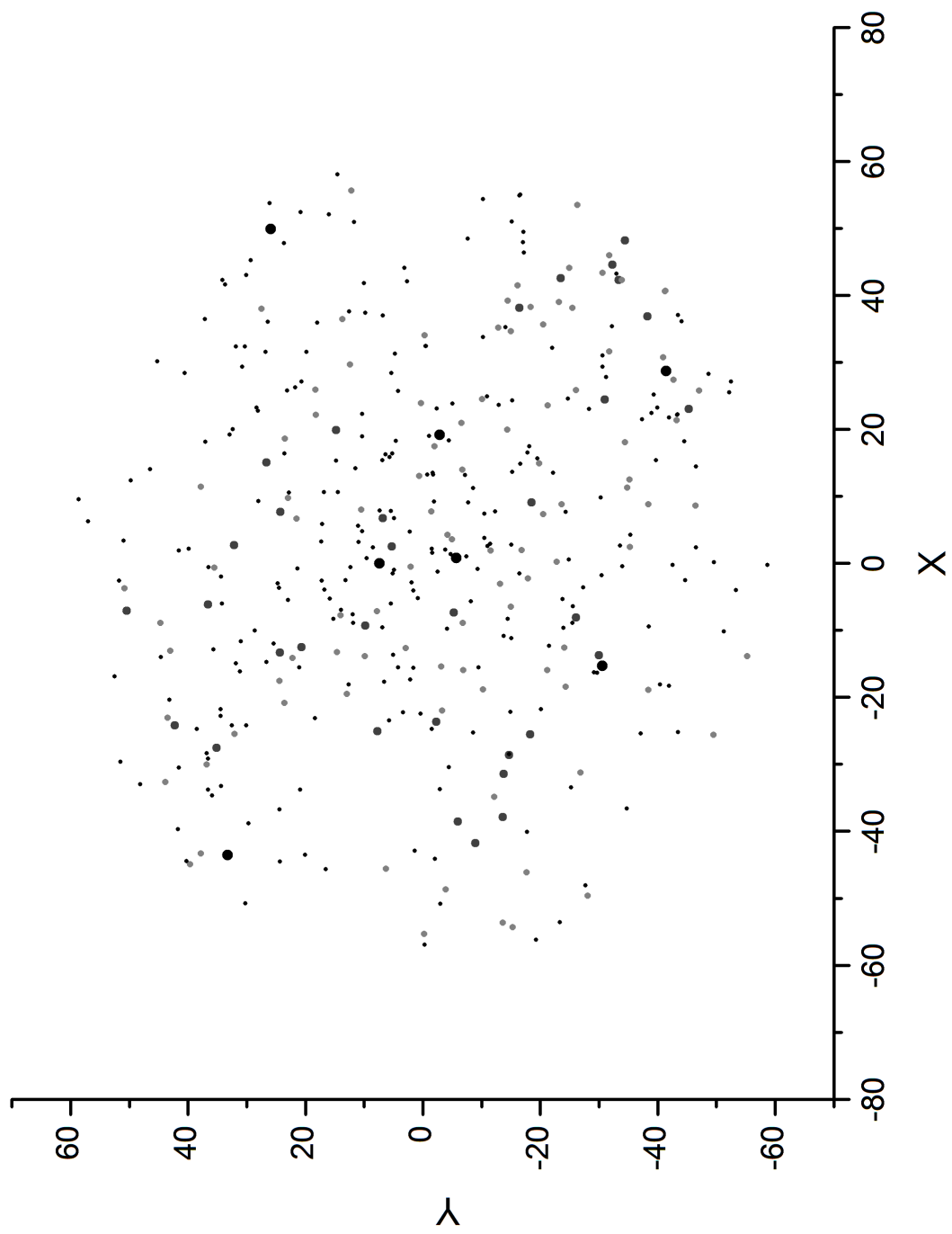


Figure 34: Northern Sky Chart, Year -13000

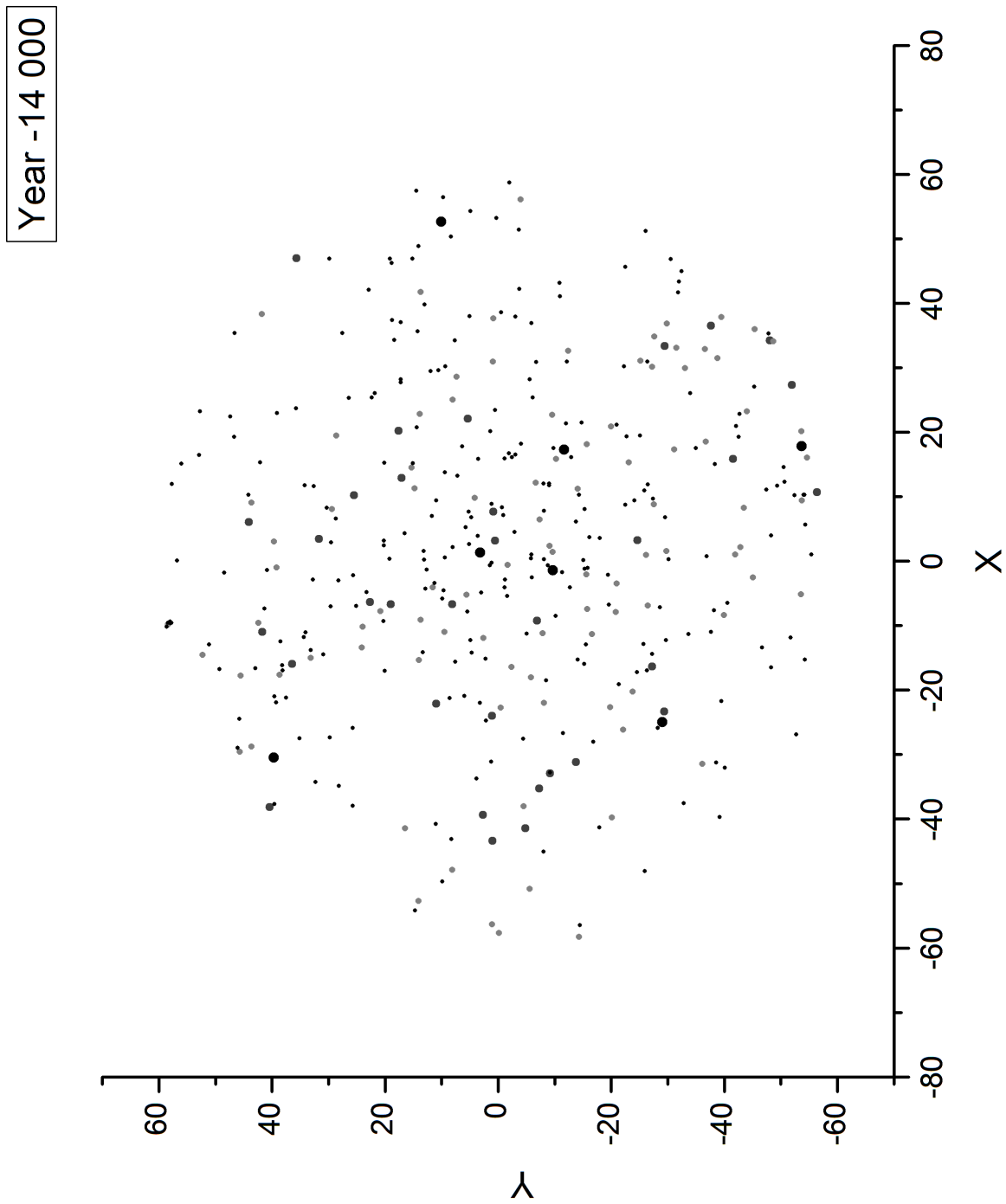


Figure 35: Northern Sky Chart, Year -14000

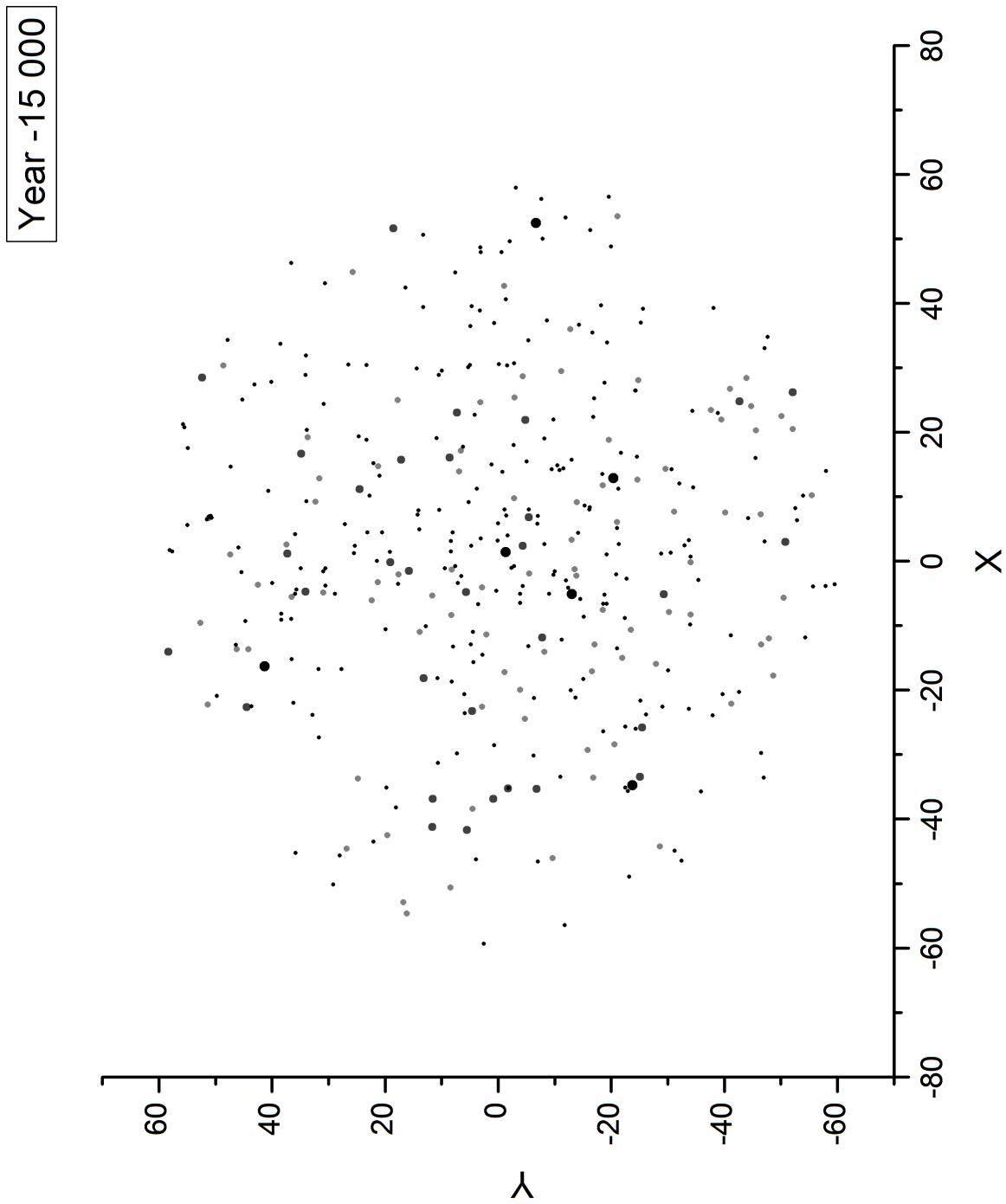


Figure 36: Northern Sky Chart, Year -15000

Year - 16 000

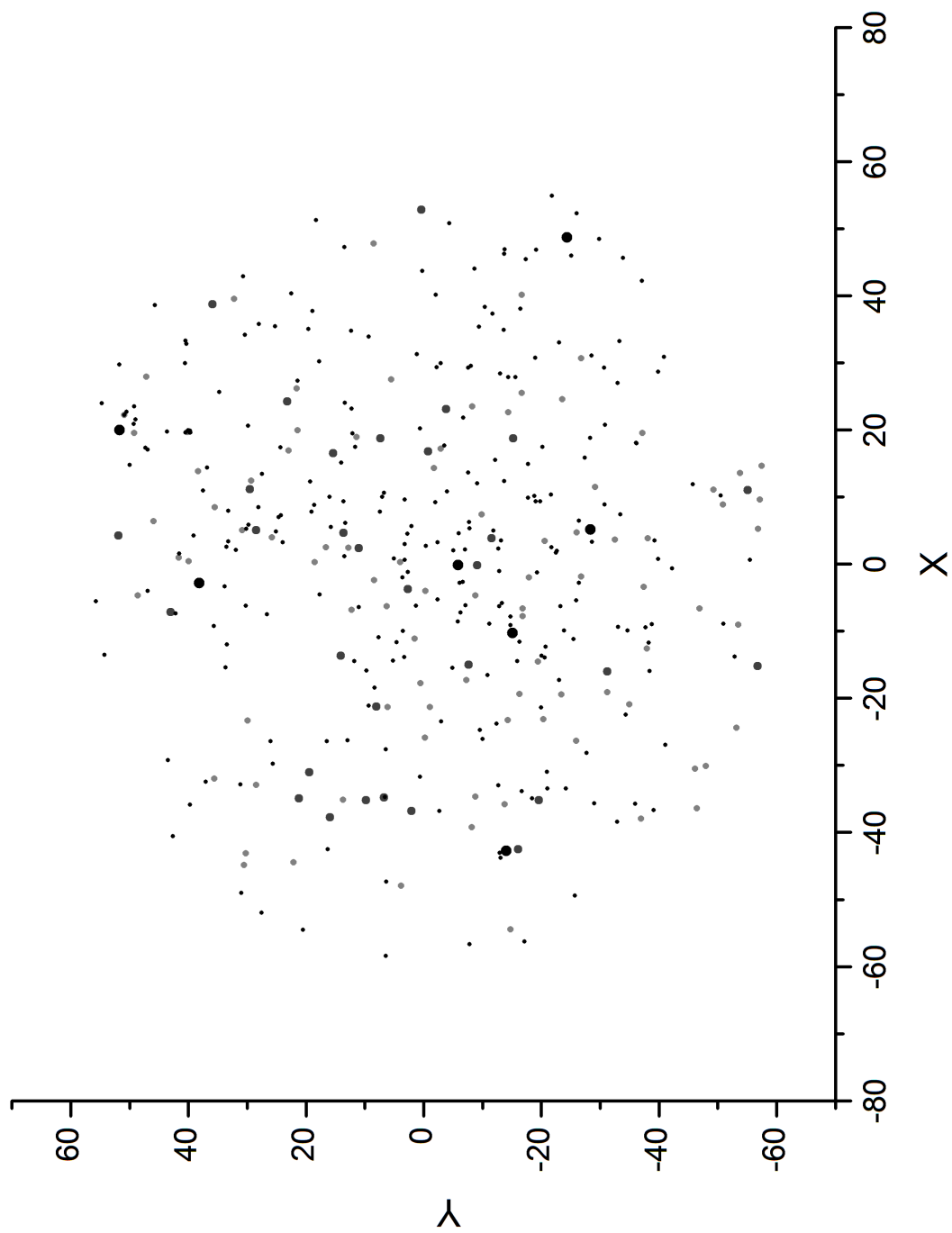


Figure 37: Northern Sky Chart, Year -16000

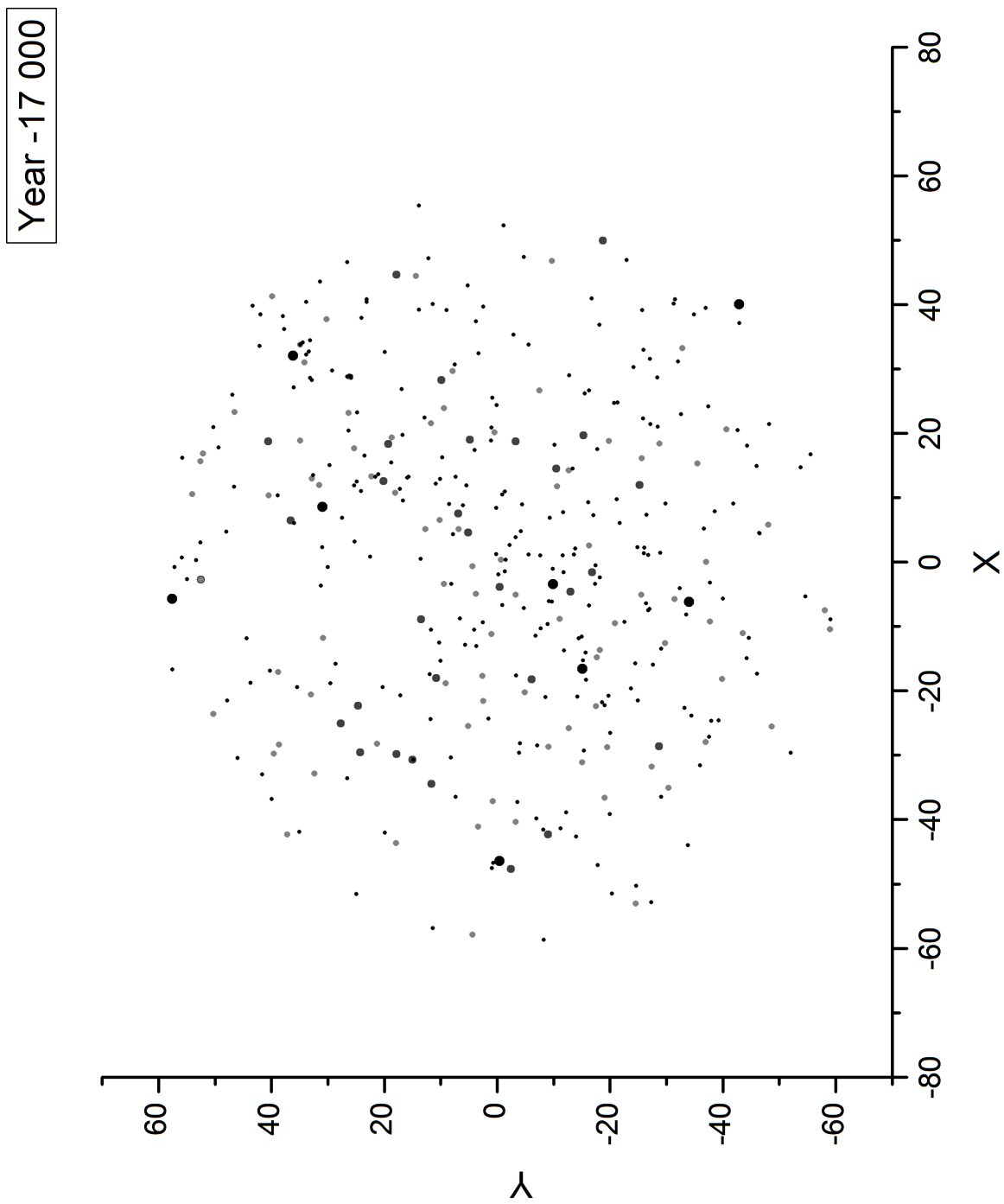


Figure 38: Northern Sky Chart, Year -17000

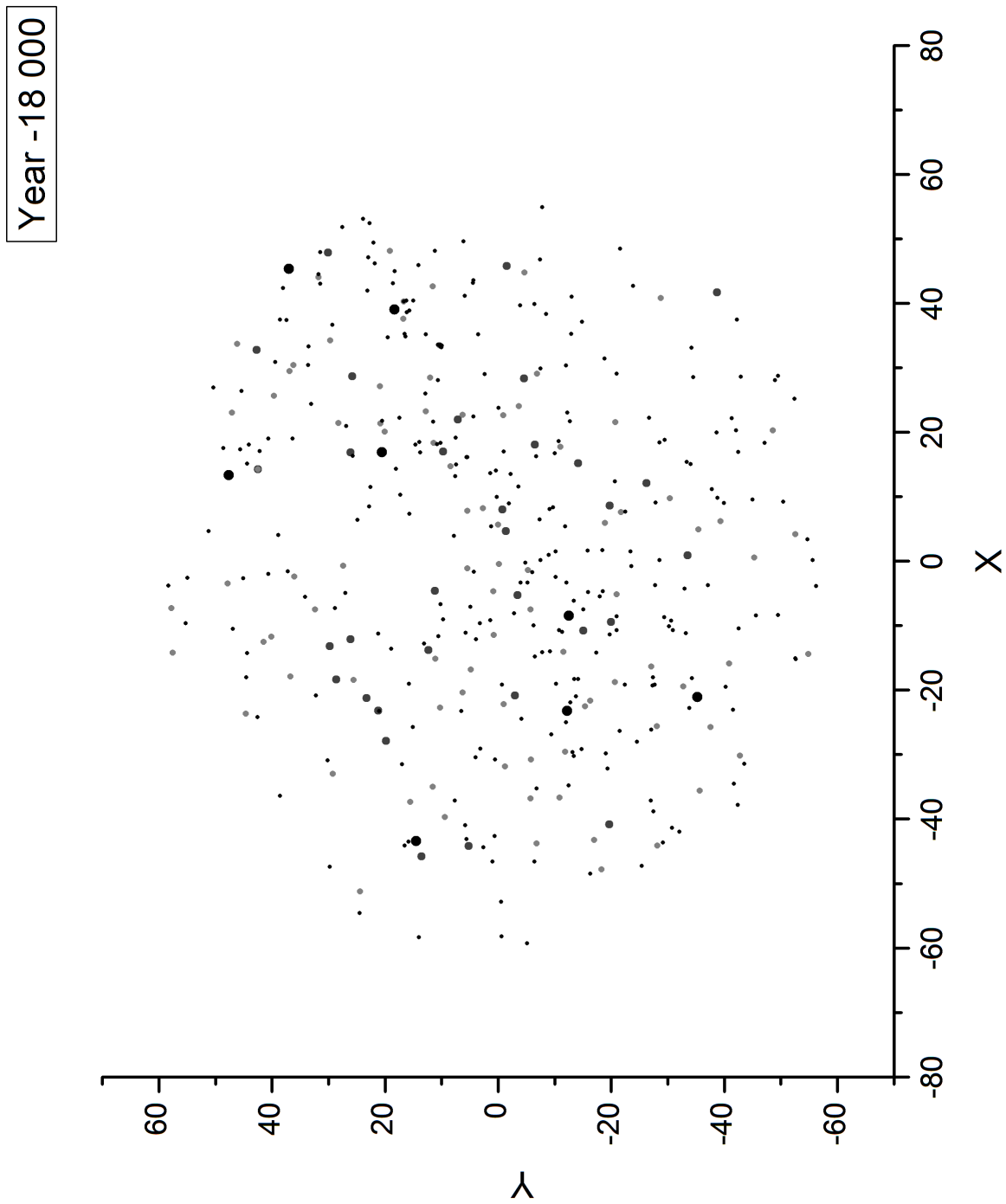


Figure 39: Northern Sky Chart, Year -18000

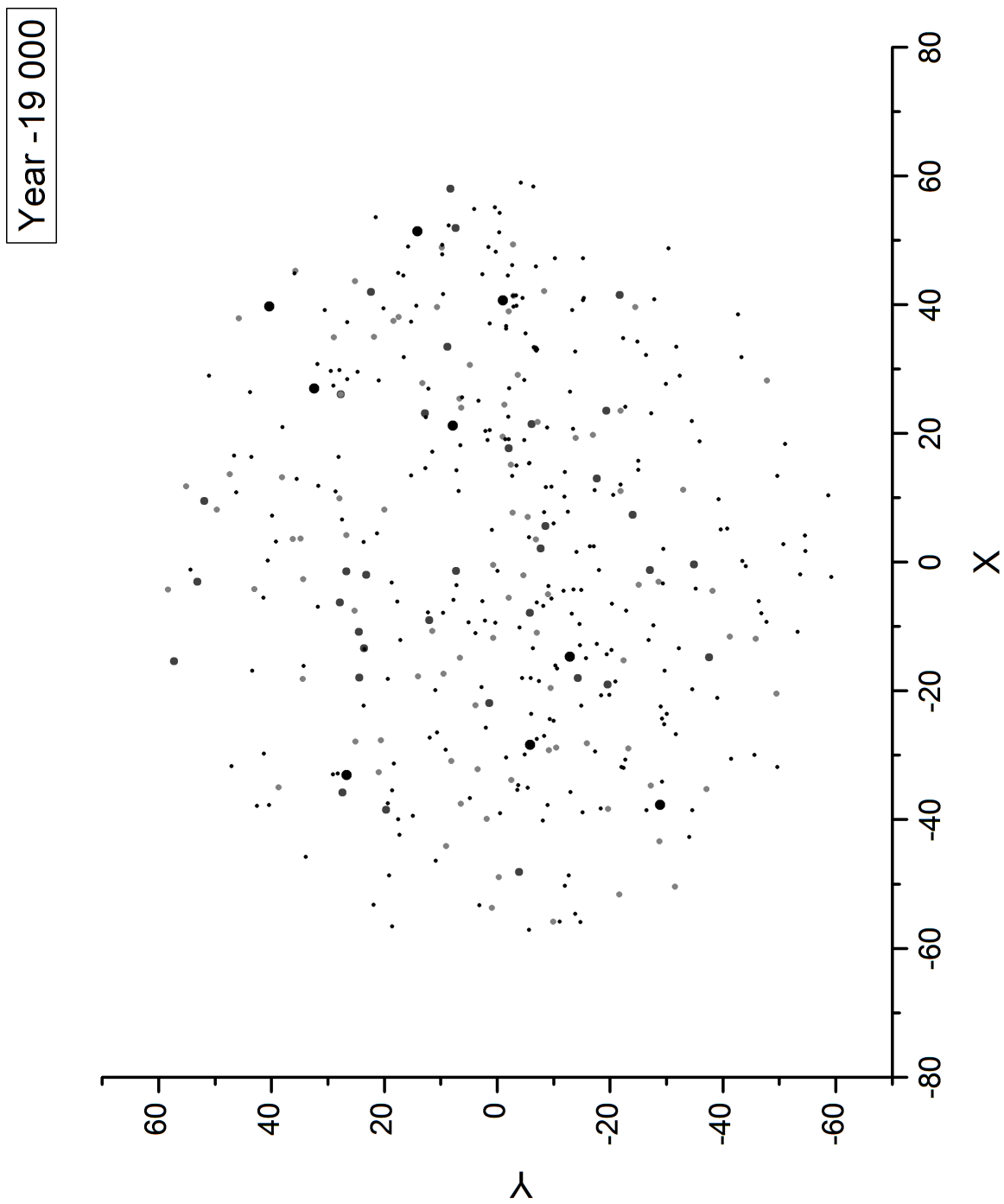


Figure 40: Northern Sky Chart, Year -19000

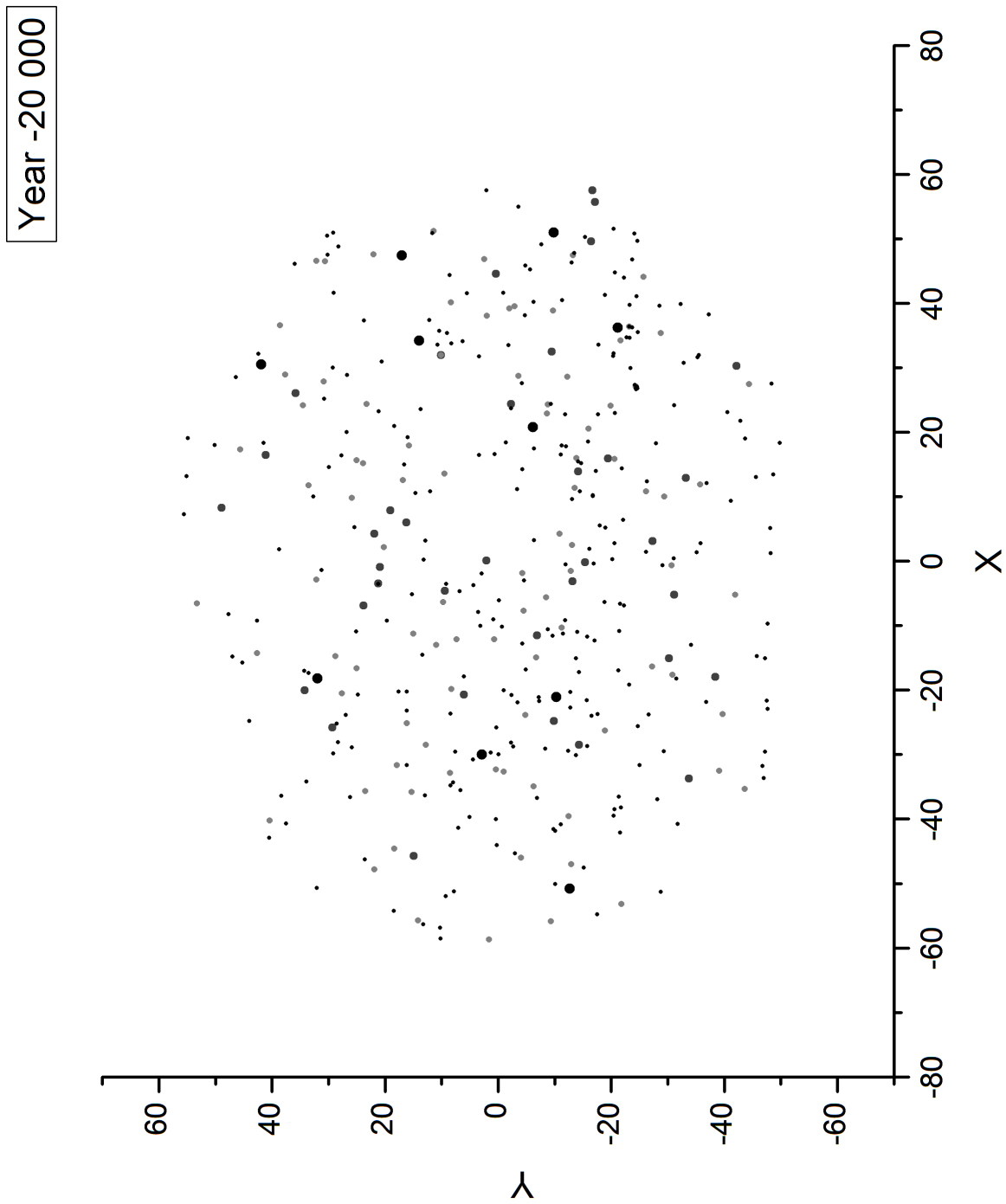


Figure 41: Northern Sky Chart, Year -20000

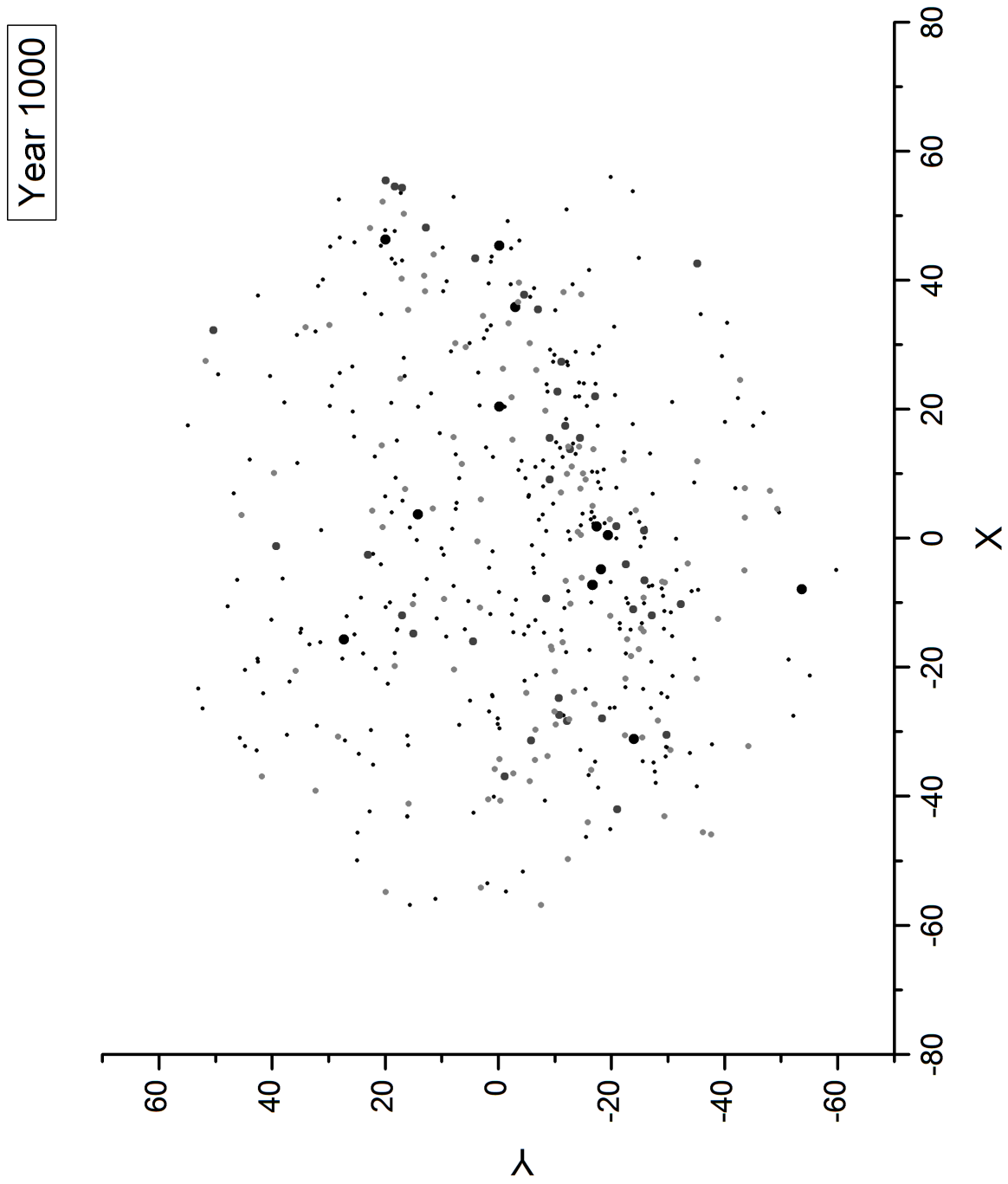


Figure 42: Southern Sky Chart, Year 1000

Year 0

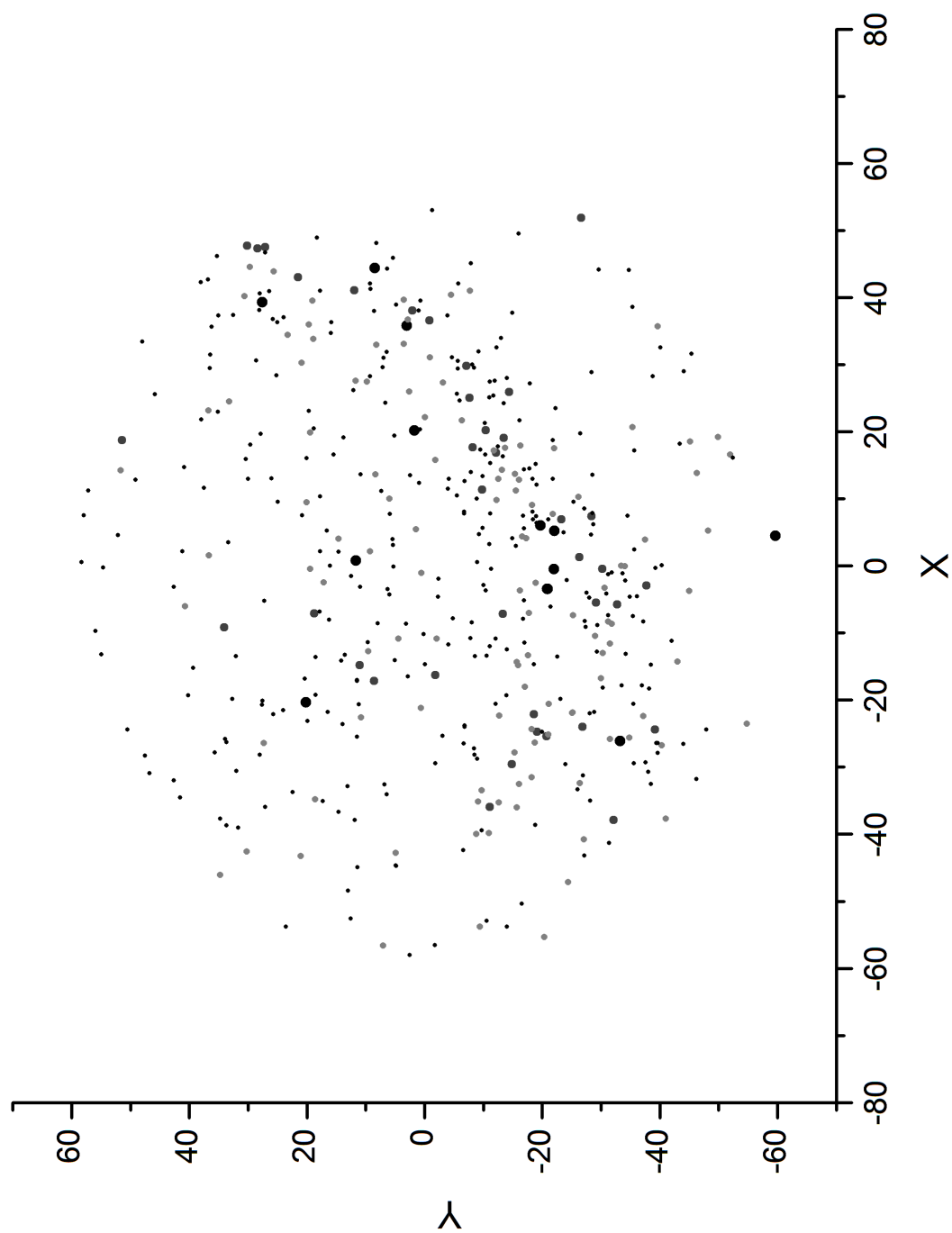


Figure 43: Southern Sky Chart, Year 0

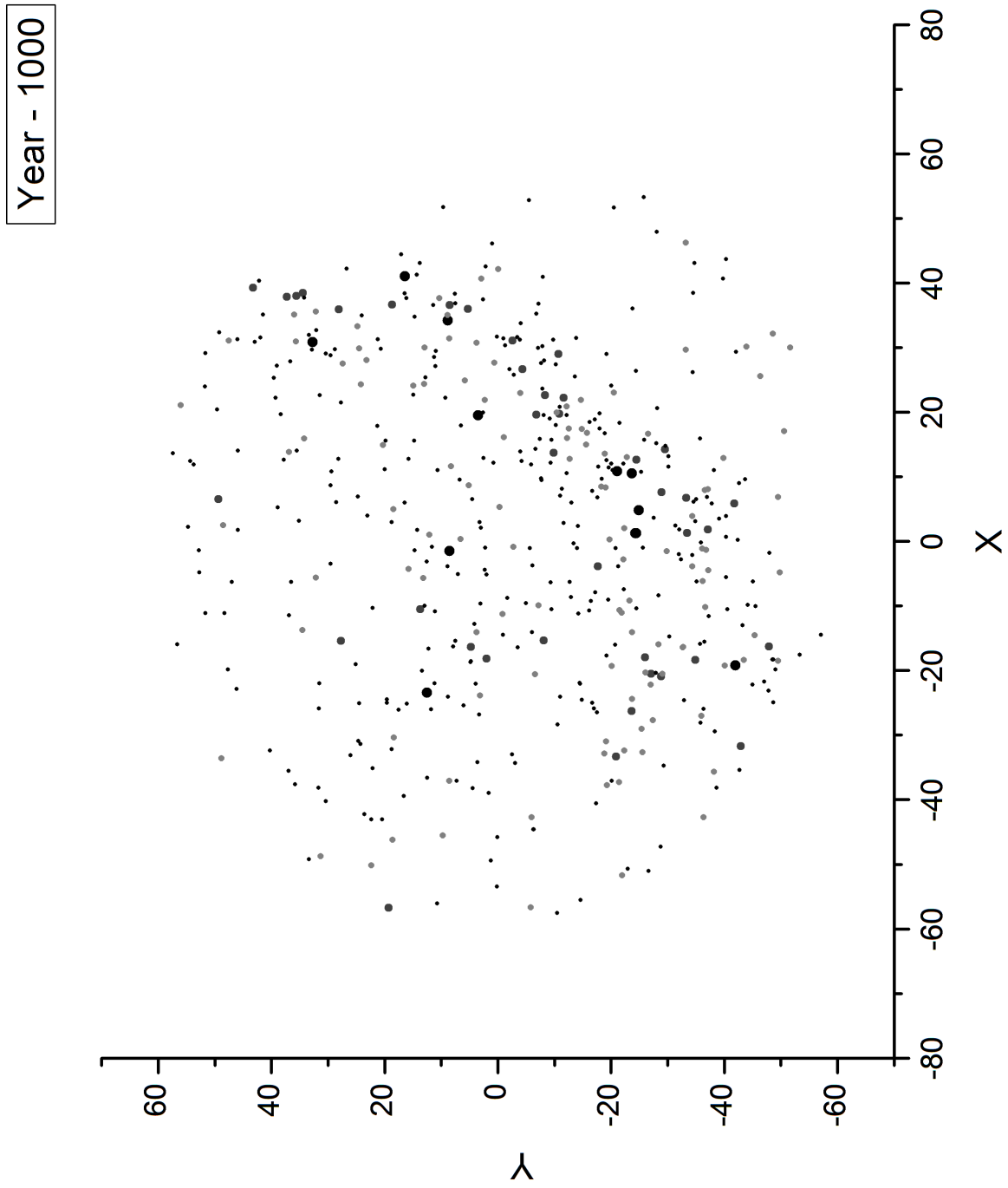


Figure 44: Southern Sky Chart, Year -1000

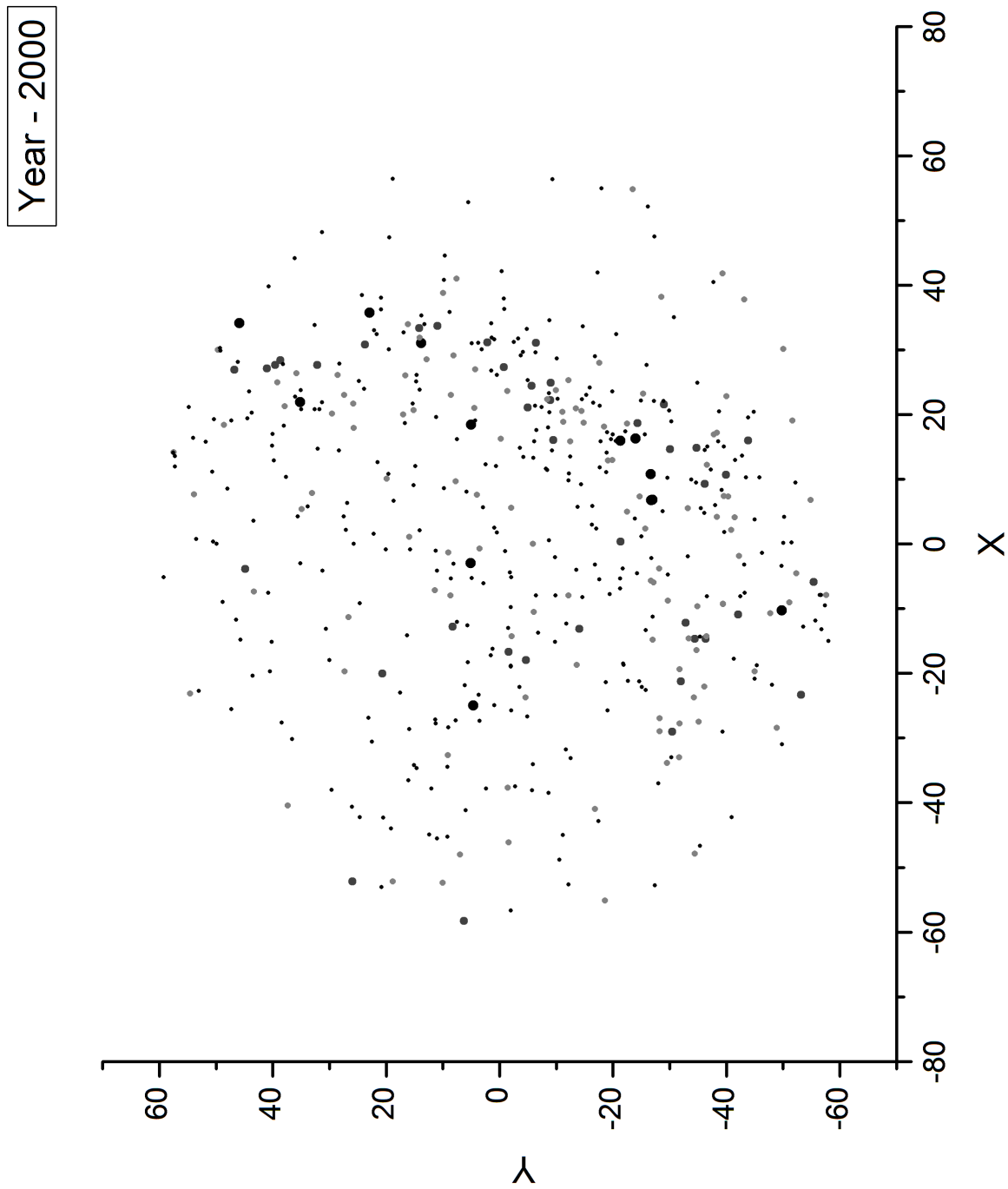


Figure 45: Southern Sky Chart, Year -2000

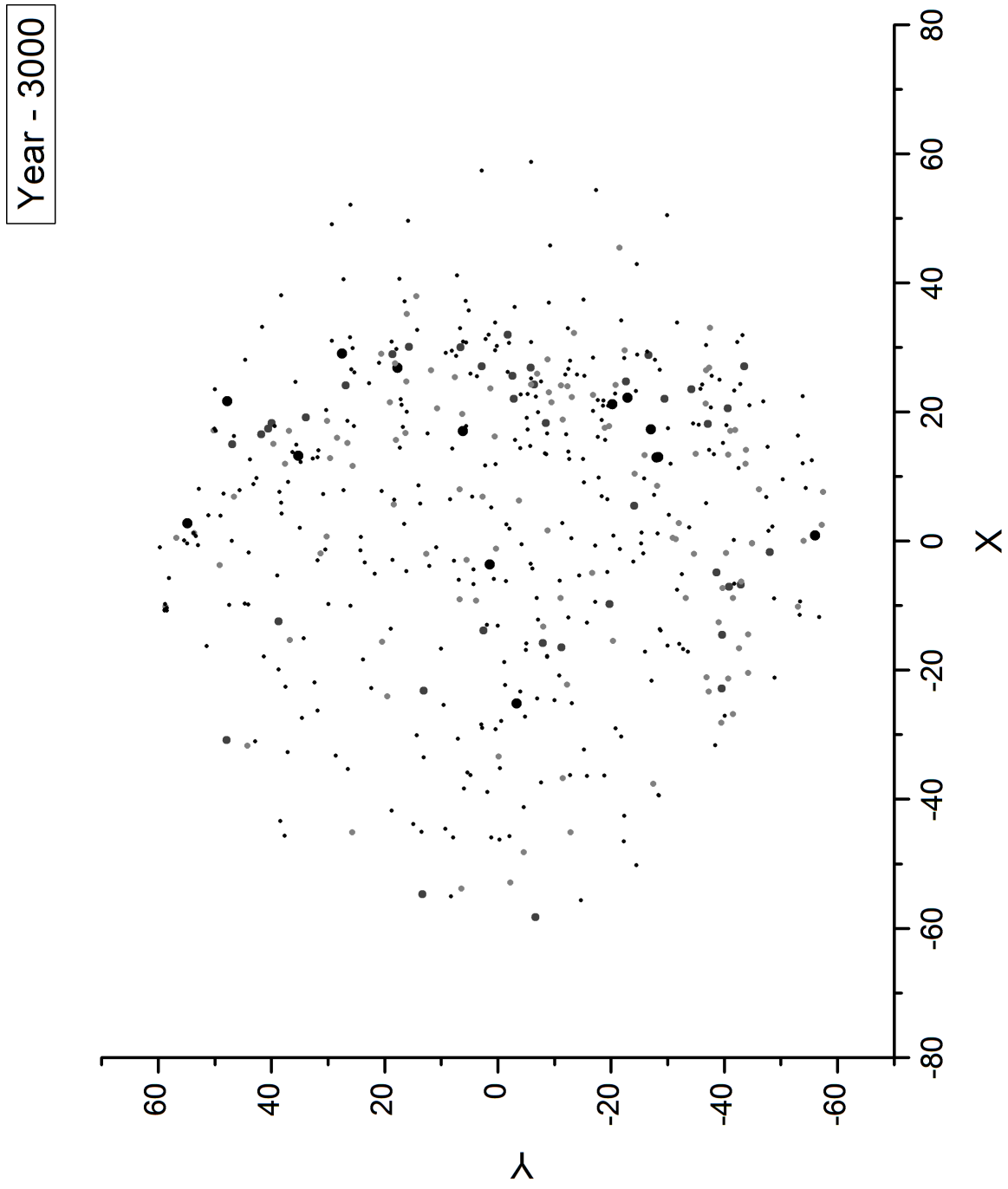


Figure 46: Southern Sky Chart, Year -3000

Year - 4000

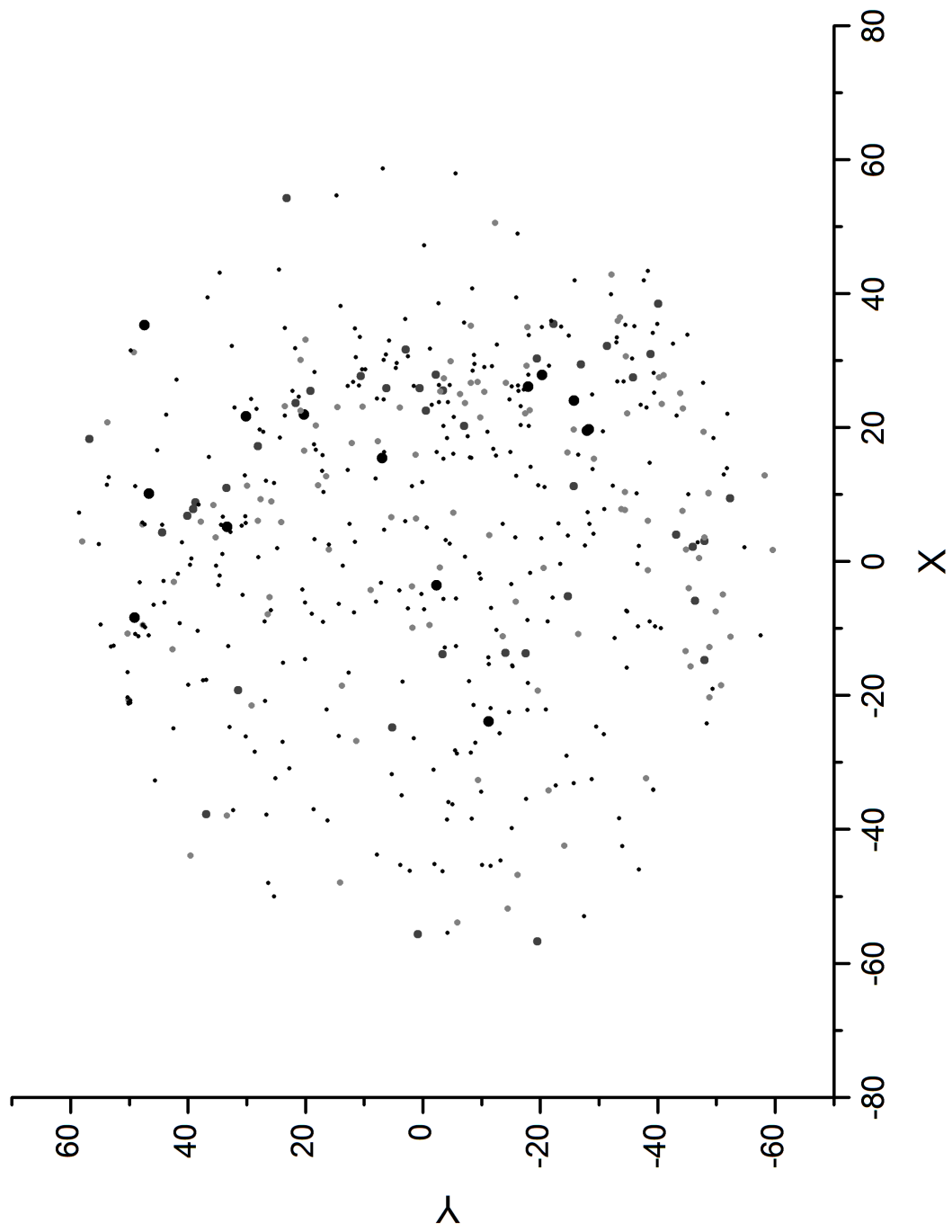


Figure 47: Southern Sky Chart, Year -4000

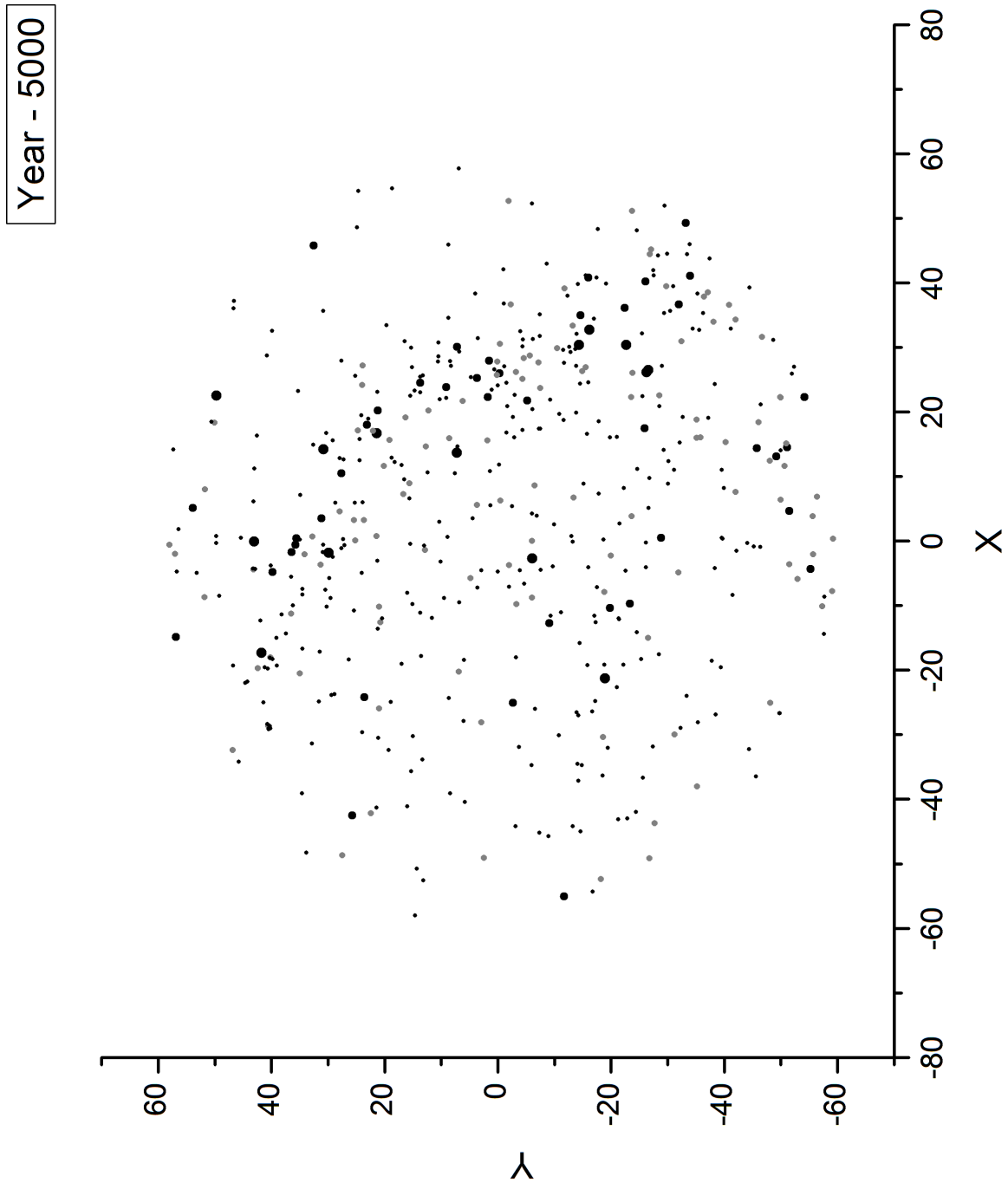


Figure 48: Southern Sky Chart, Year -5000

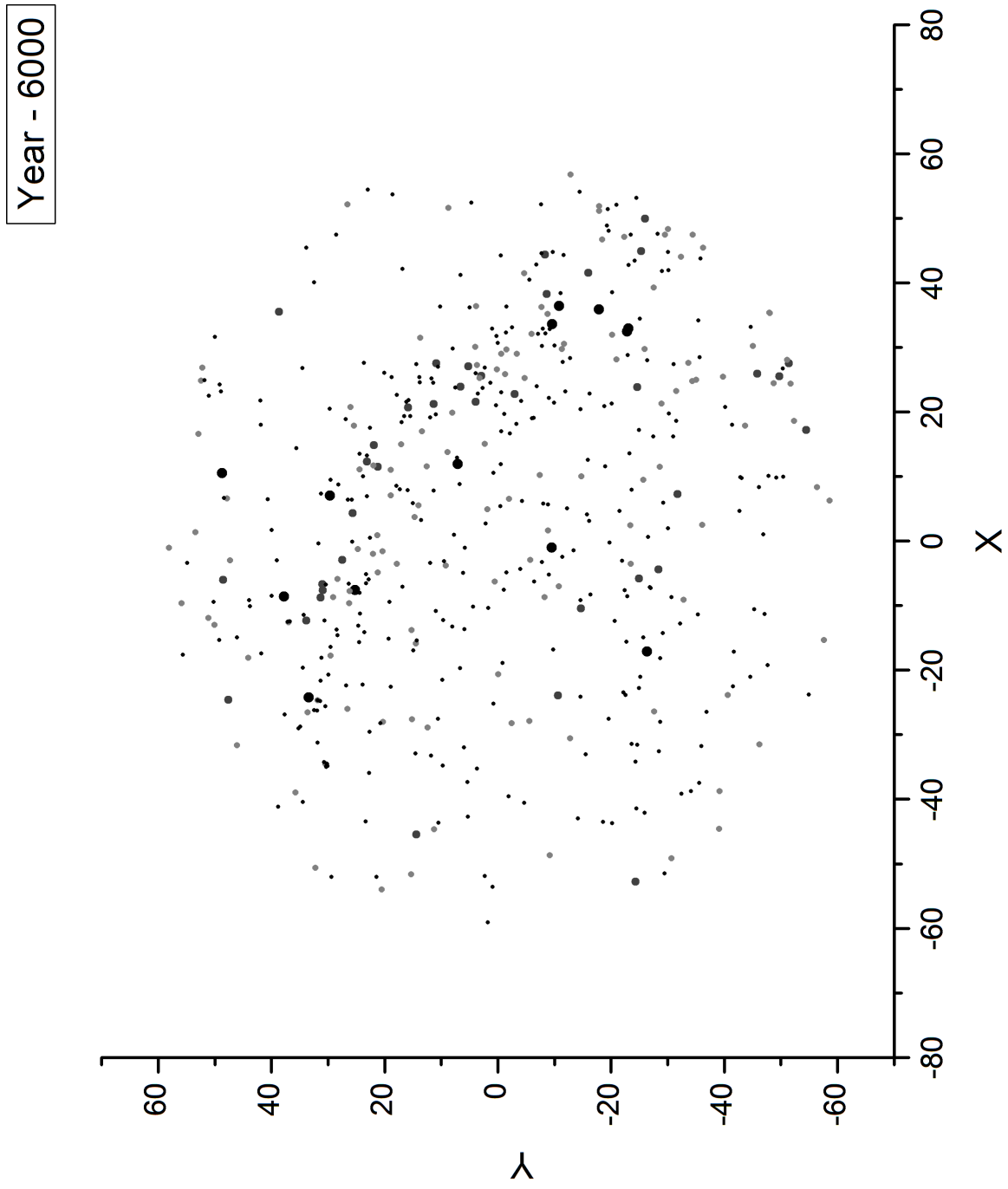


Figure 49: Southern Sky Chart, Year -6000

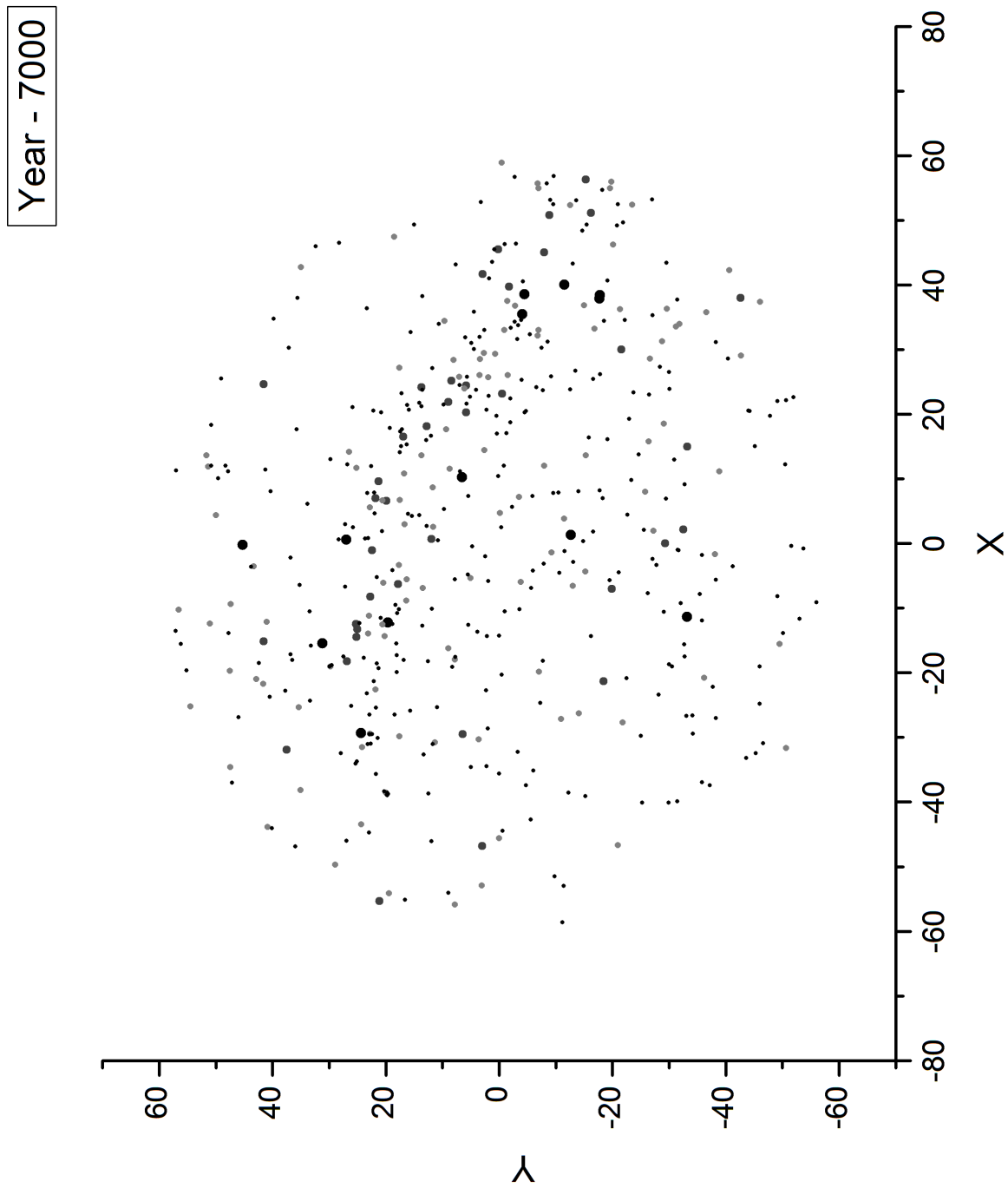


Figure 50: Southern Sky Chart, Year -7000

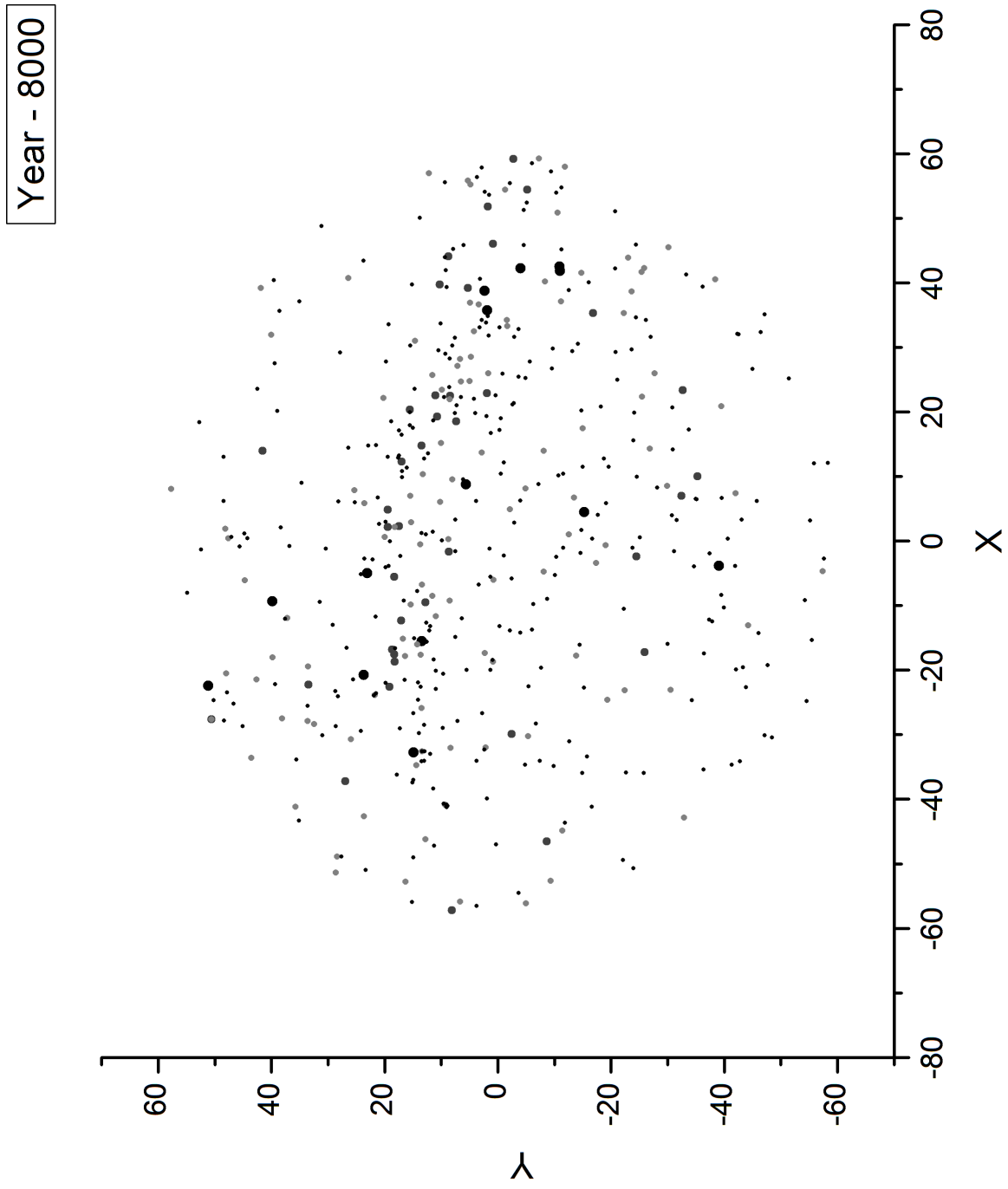


Figure 51: Southern Sky Chart, Year -8000

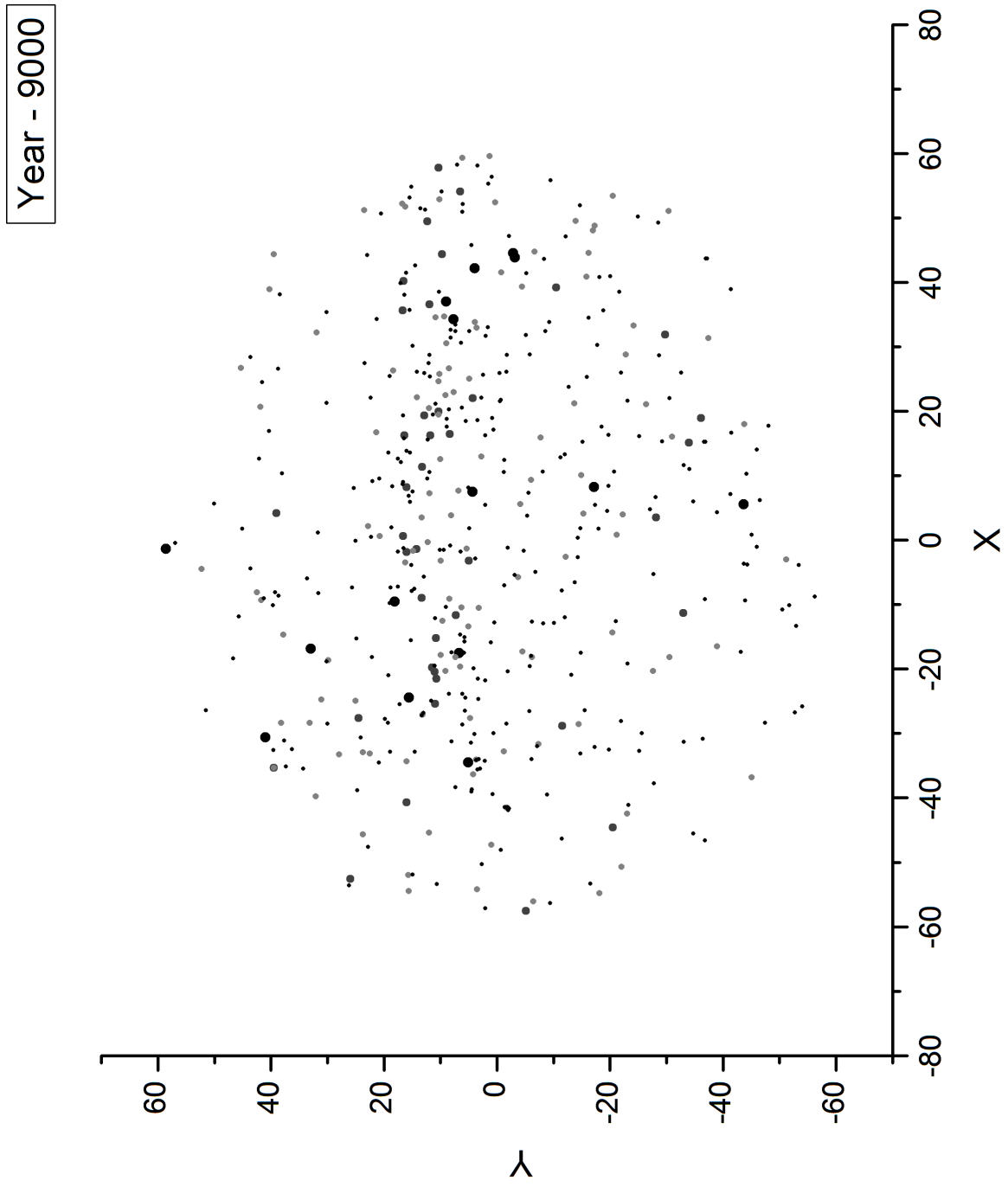


Figure 52: Southern Sky Chart, Year -9000

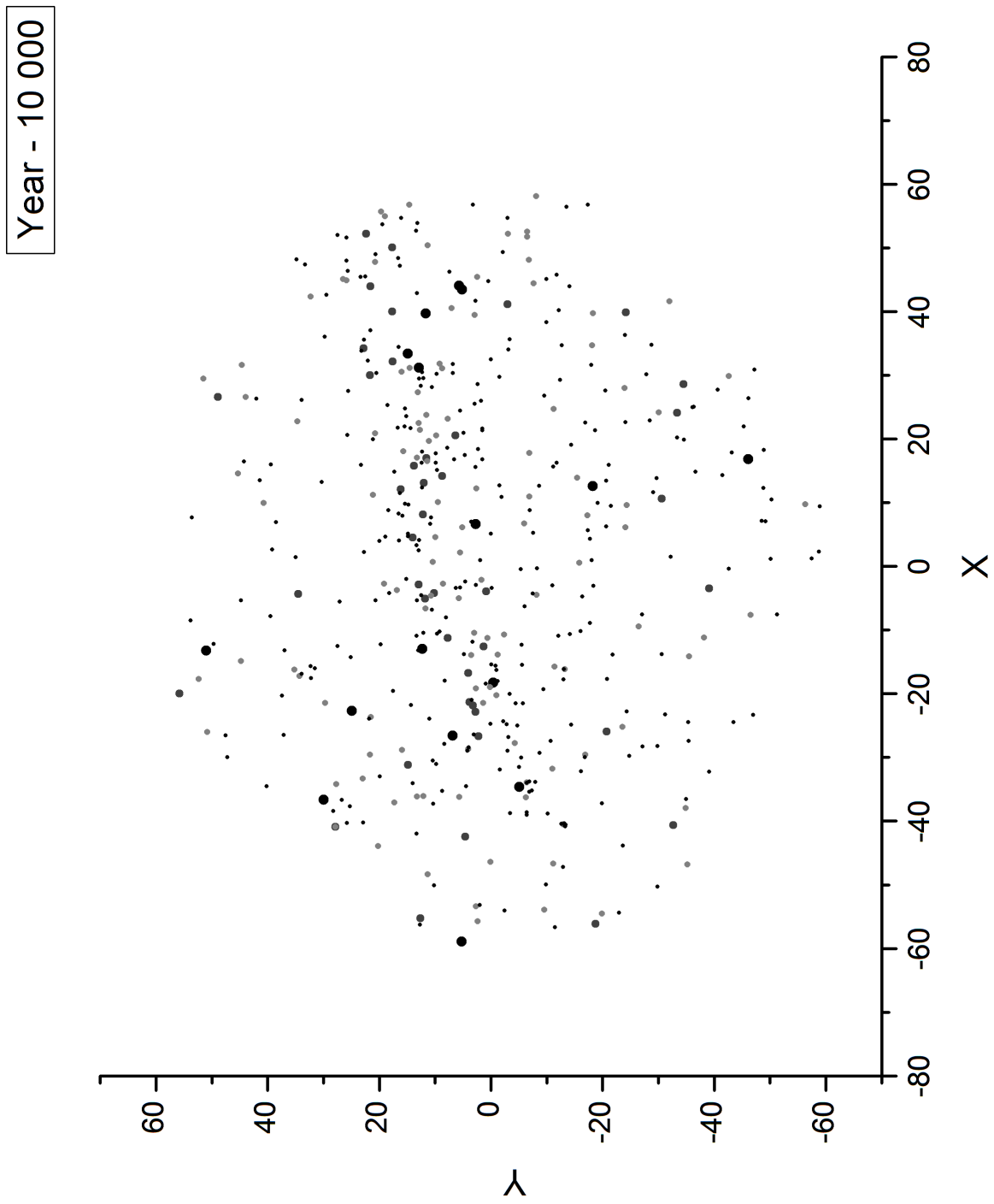


Figure 53: Southern Sky Chart, Year -10000

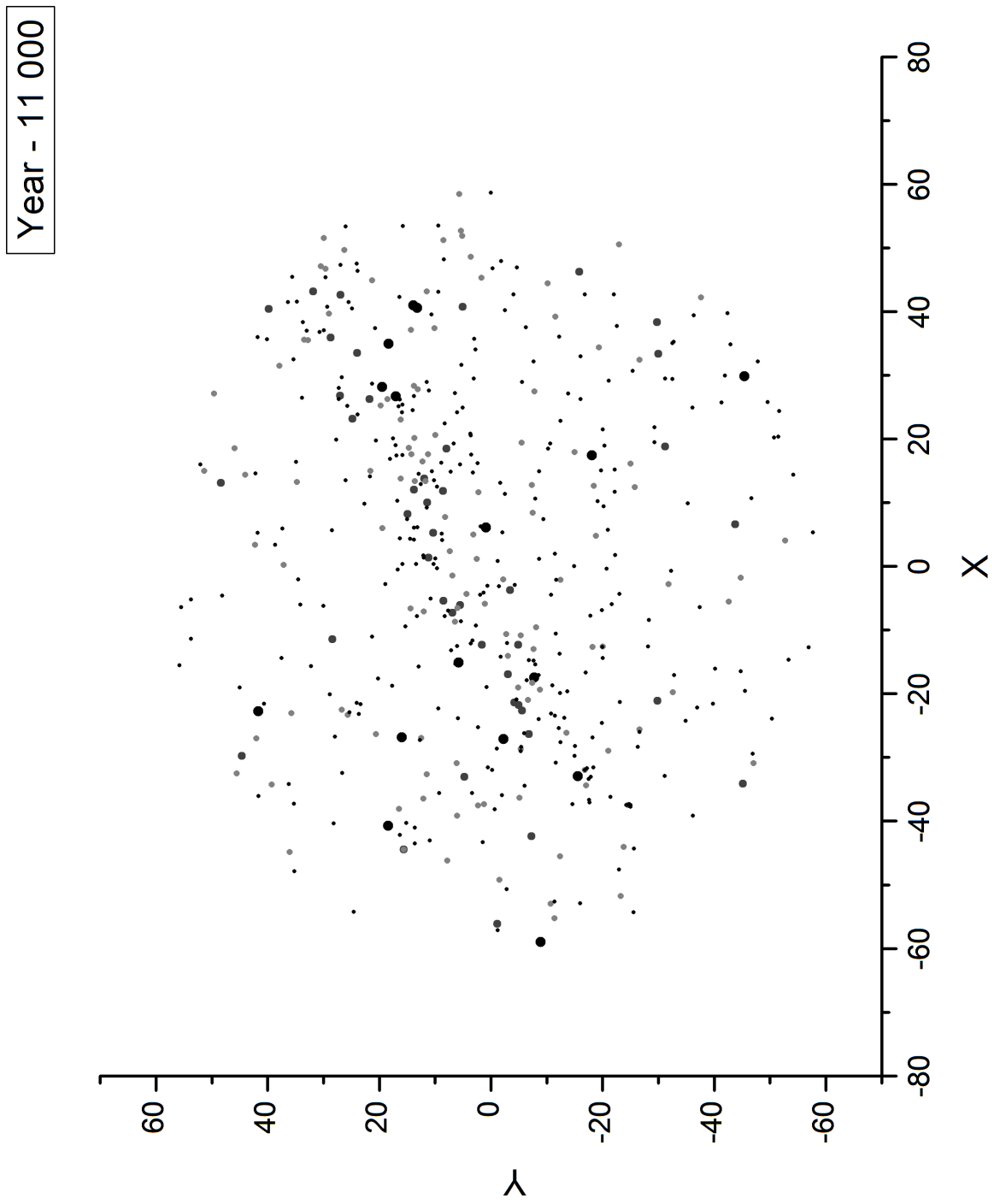


Figure 54: Southern Sky Chart, Year -11000

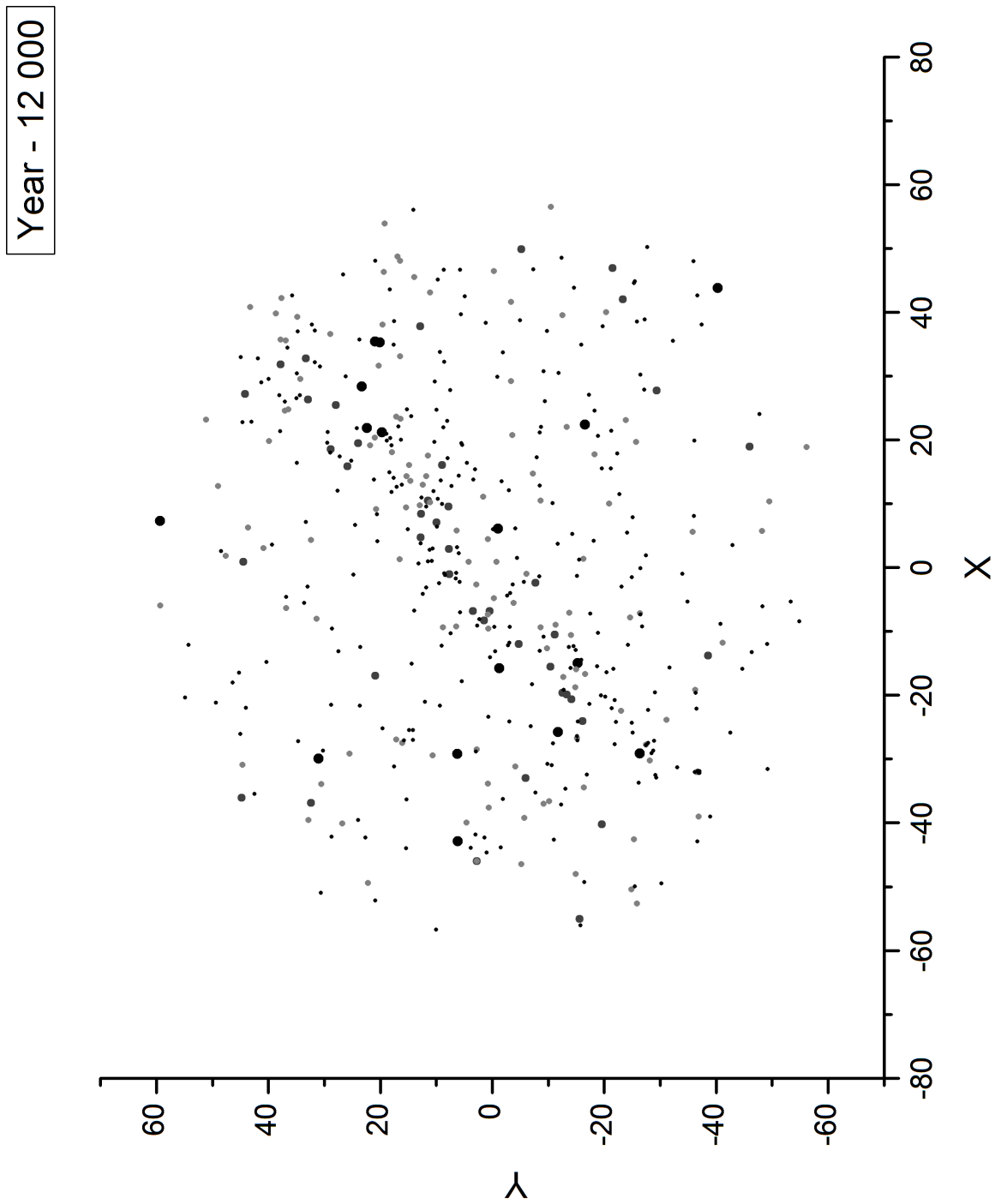


Figure 55: Southern Sky Chart, Year -12000

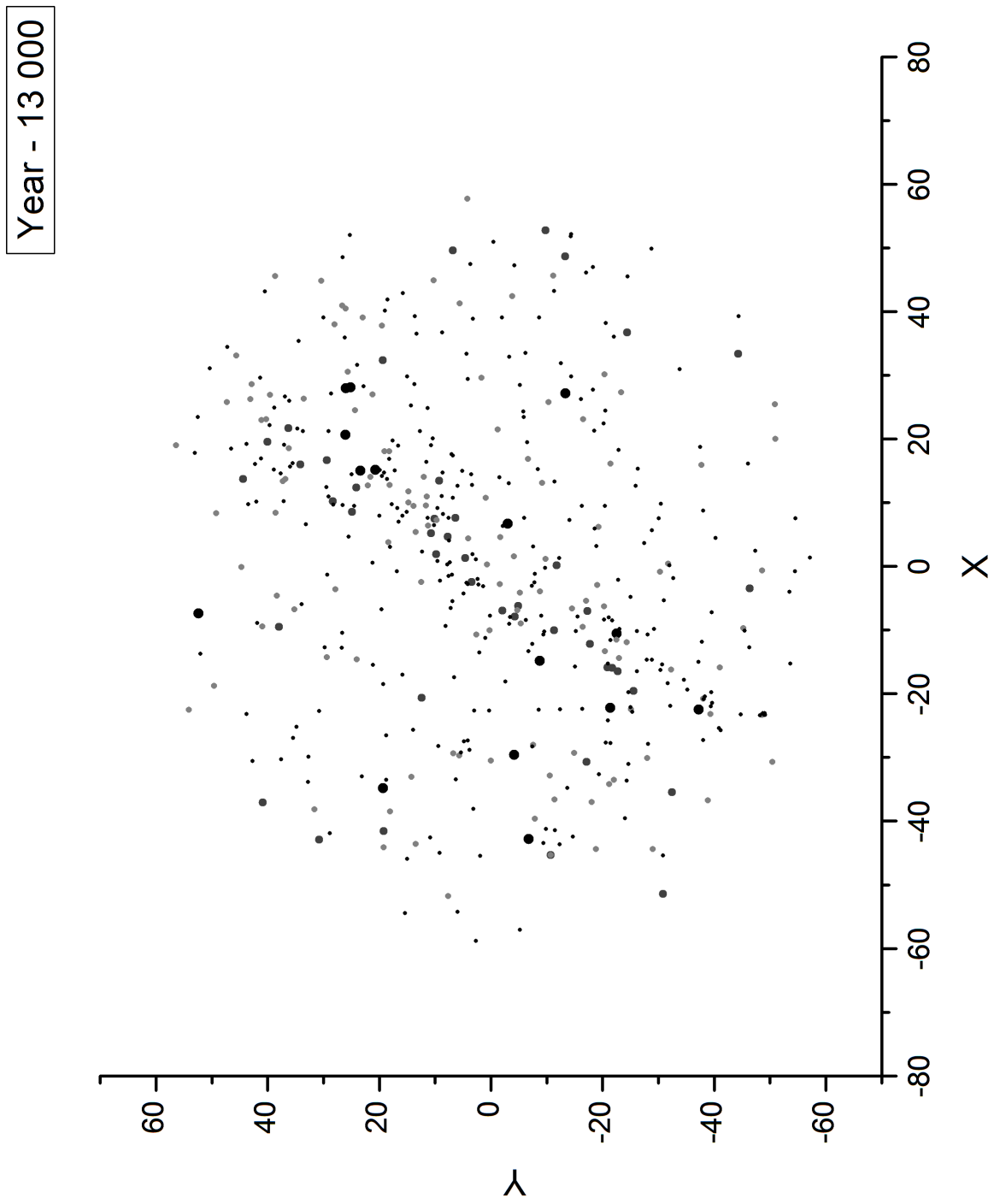


Figure 56: Southern Sky Chart, Year -13000

Year - 14 000

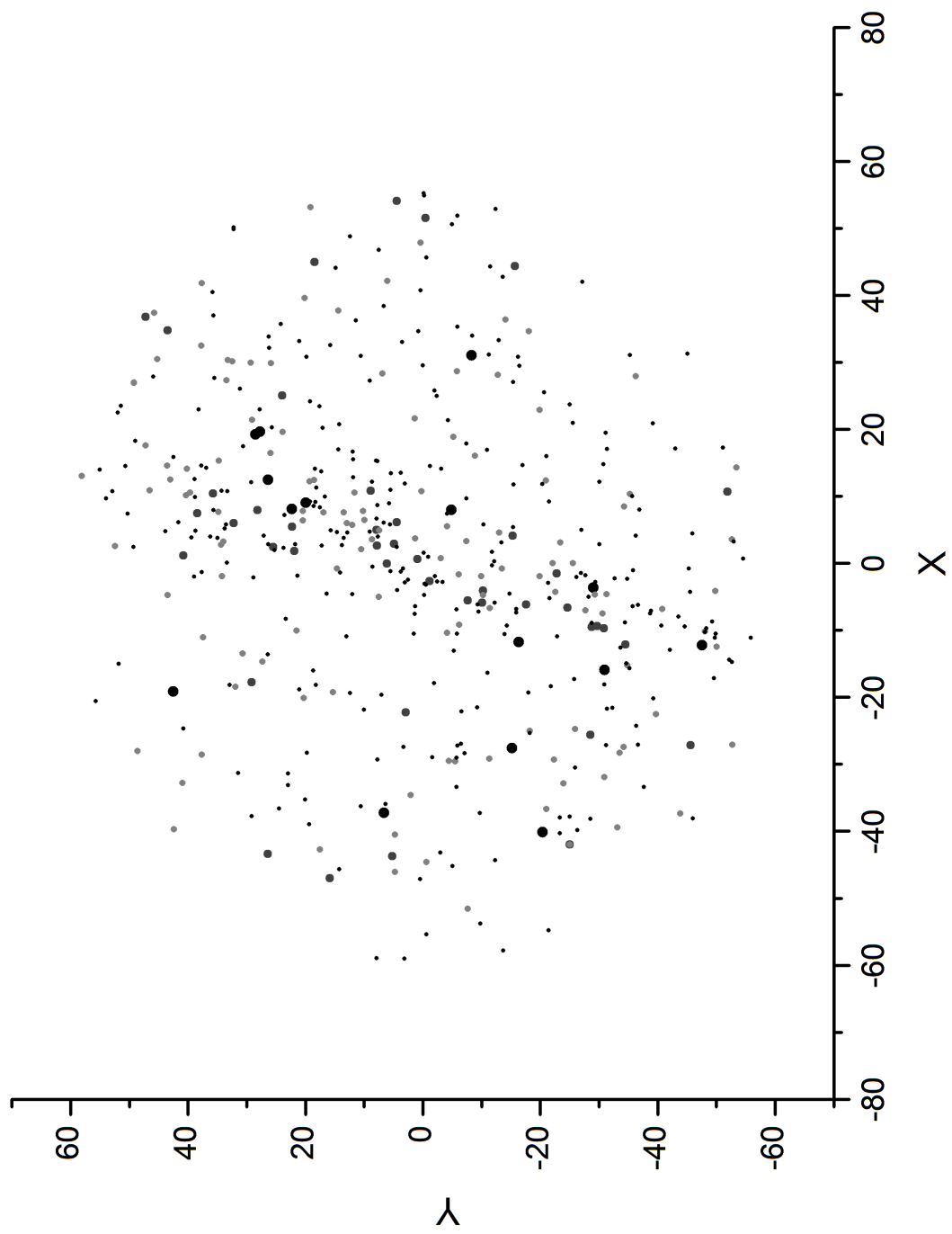


Figure 57: Southern Sky Chart, Year -14000

Year - 15 000

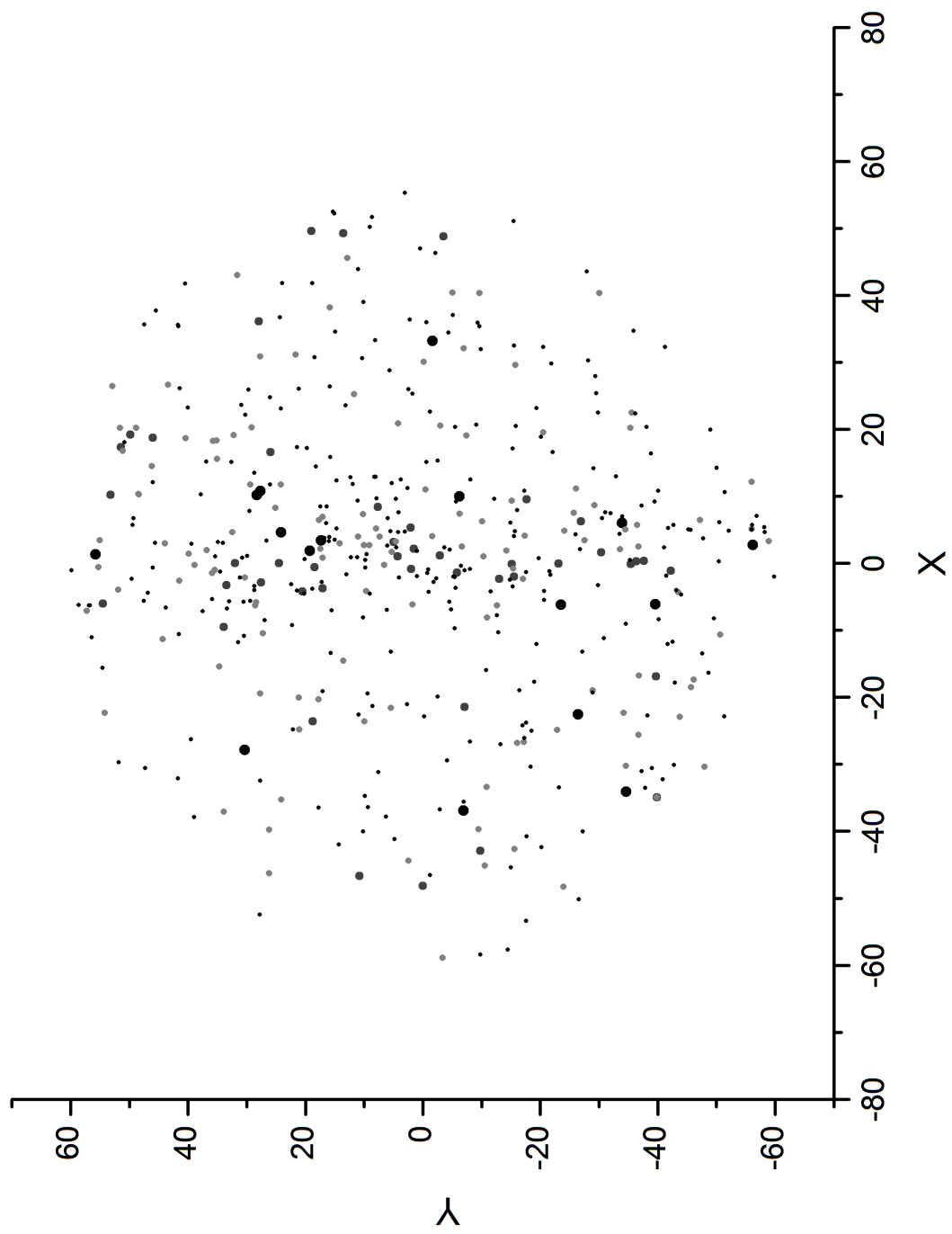


Figure 58: Southern Sky Chart, Year -15000

Year - 16 000

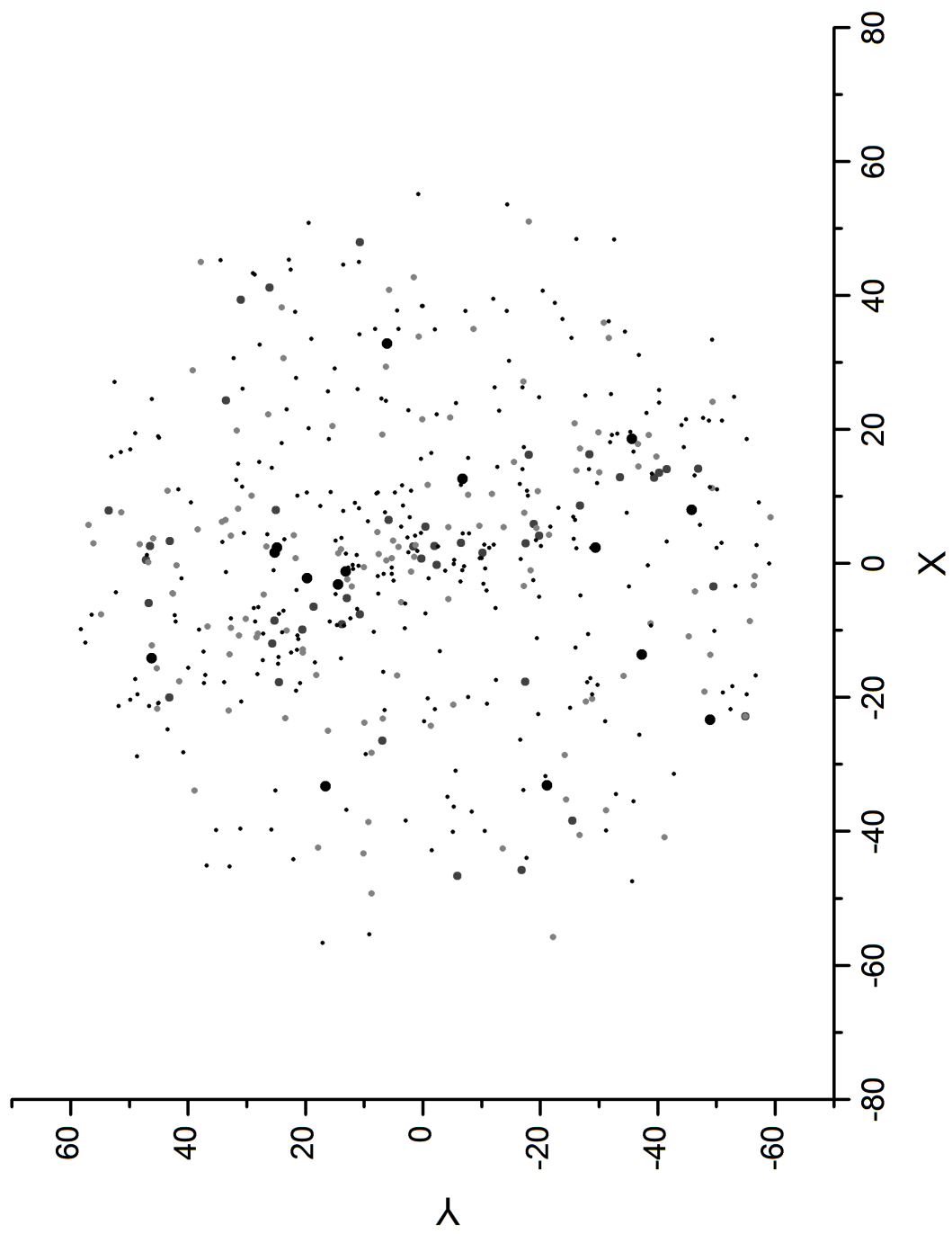


Figure 59: Southern Sky Chart, Year -16000

Year - 17 000

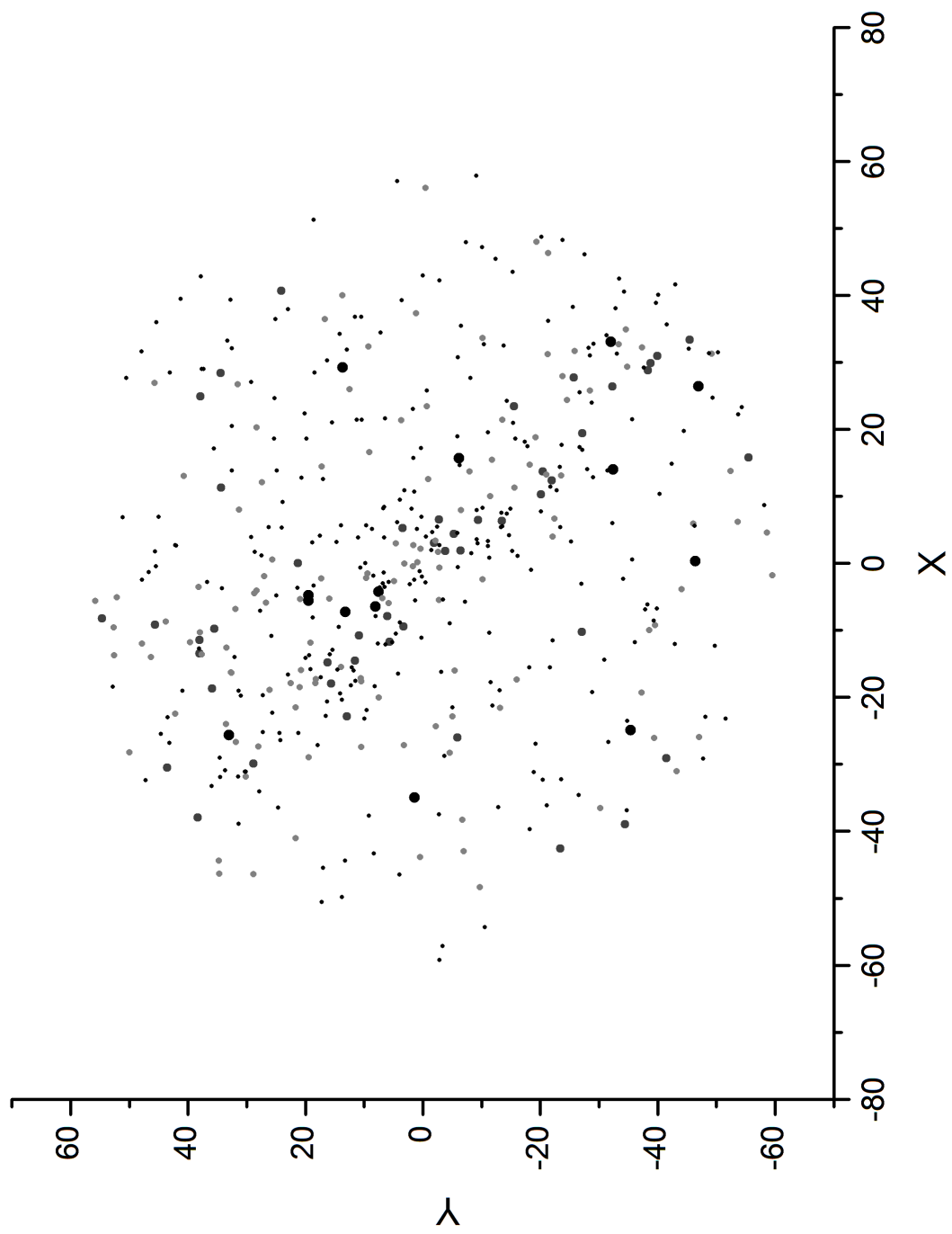


Figure 60: Southern Sky Chart, Year -17000

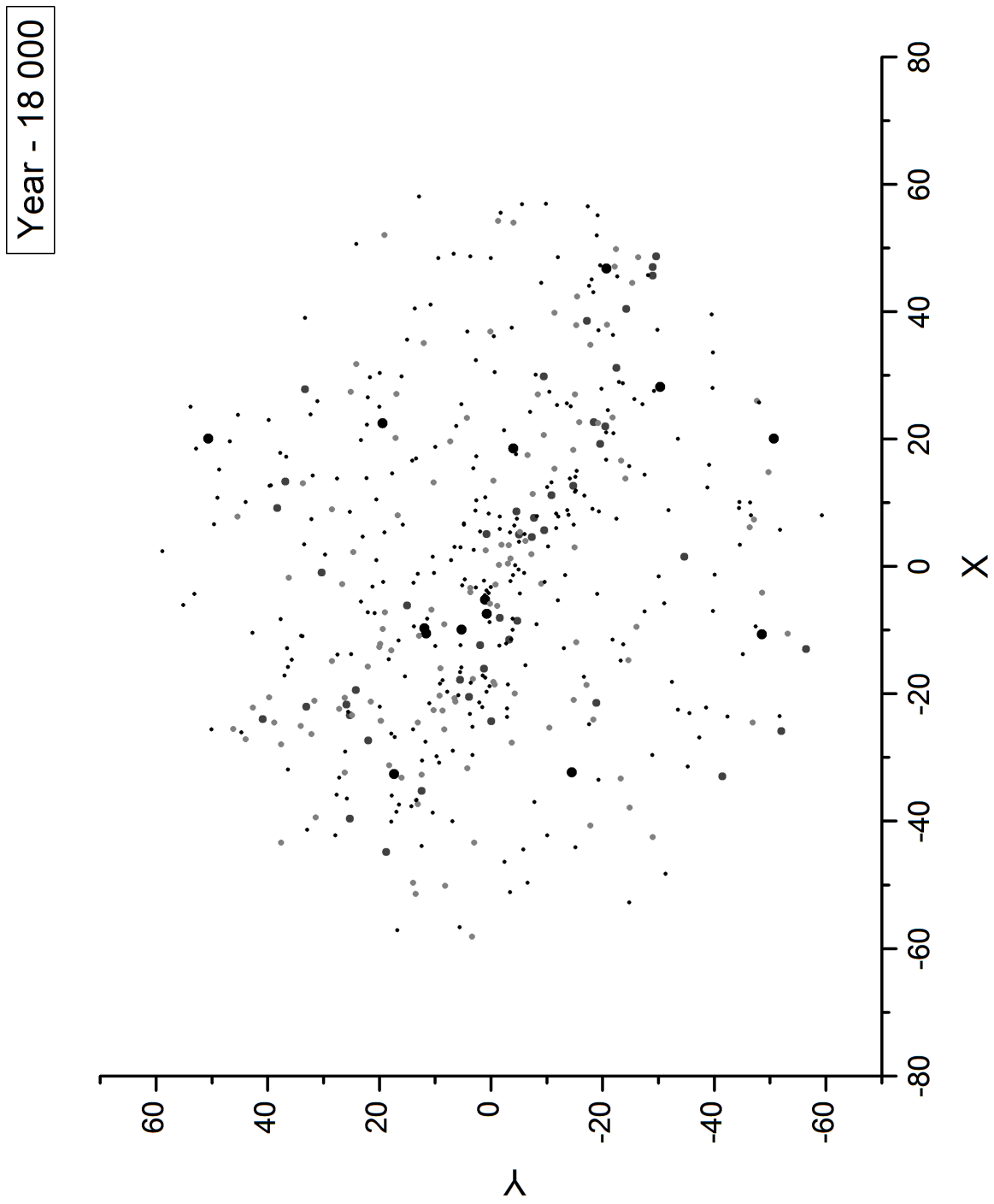


Figure 61: Southern Sky Chart, Year -18000

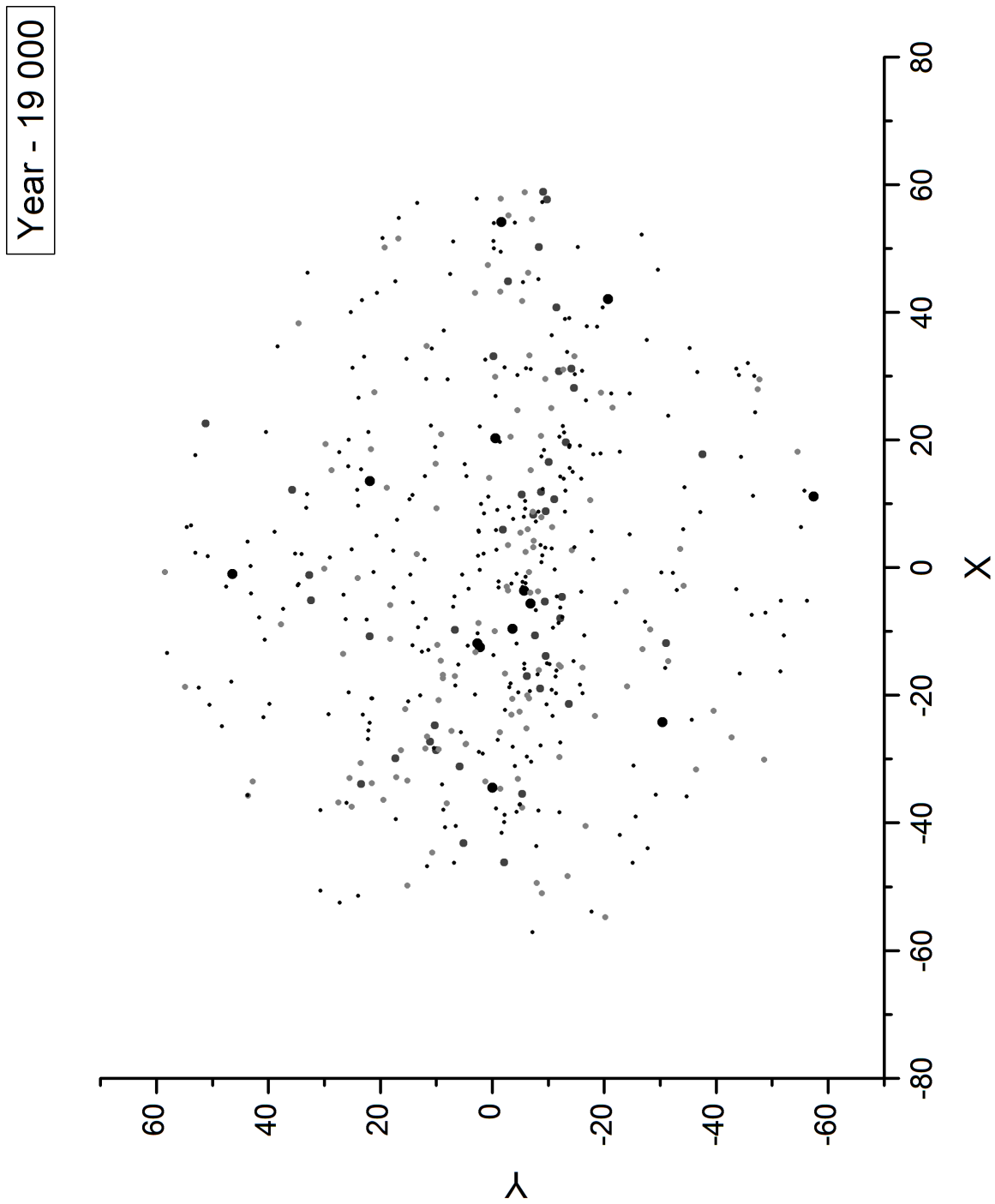


Figure 62: Southern Sky Chart, Year -19000

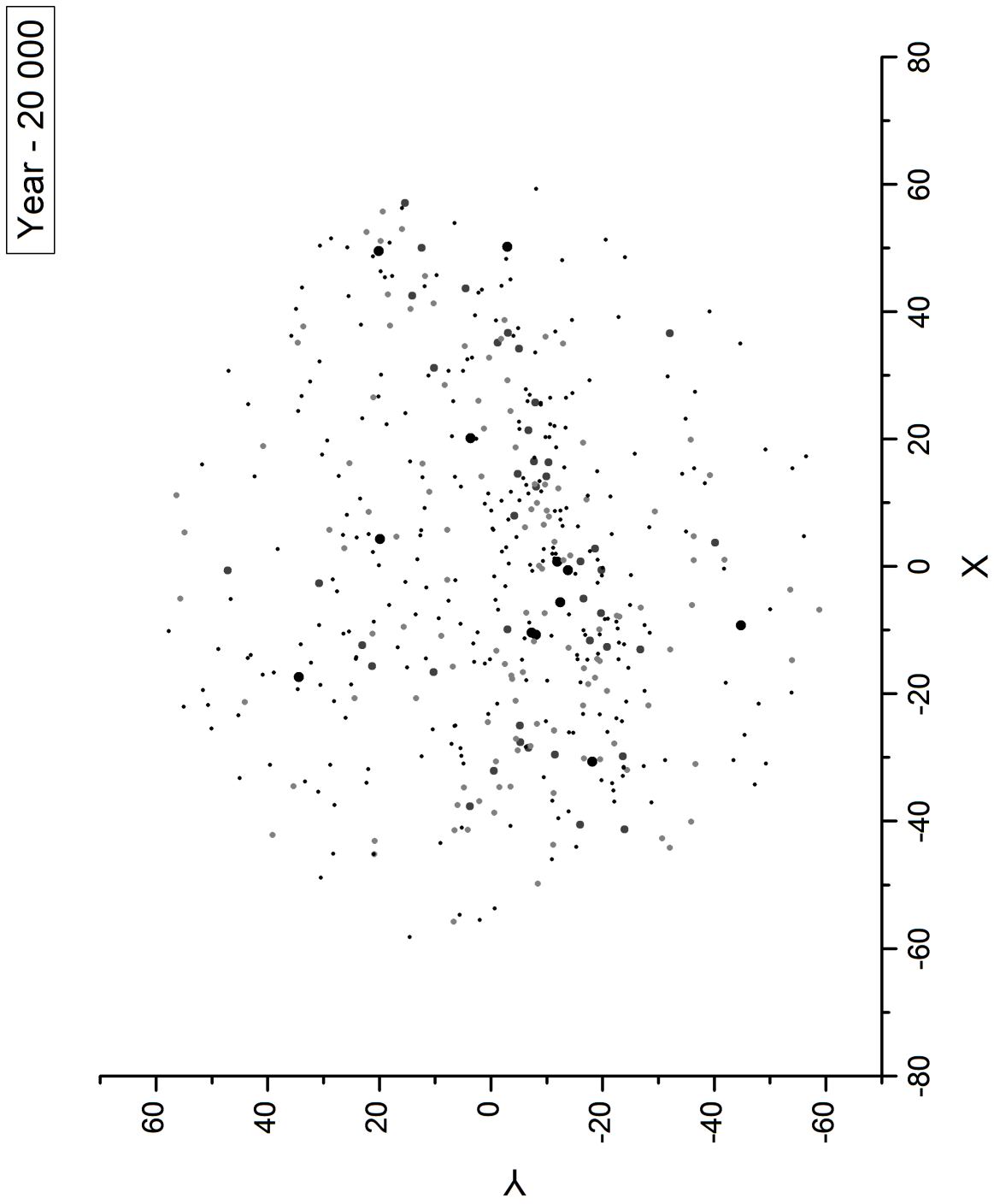


Figure 63: -20000

C. Tables

On the following pages the stellar positions of the selected stars are given for the years 2000 back to the year -20 000 with a time interval of 1000 years.

Table 3: ID-Number of the stars and their official designation

#	Designation		#	Designation		#	Designation	
1	Alpha	And	41	Eta	Aqr	81	Beta	Boo
2	Beta	And	42	Tau	Aqr	82	Rho	Boo
3	Delta	And	43	tet	Aqr	83	zet	Boo
4	Omikron	And	44	91	Aqr	84	Tet	Boo
5	Lambda	And	45	Phi	Aqr	85	Upsilon	Boo
6	37	And	46	iota	Aqr	86	lambda	boo
7	zet	And	47	99	Aqr	87	51	boo
8	upsilon	And	48	psi02	Aqr	88	sigma	boo
9	kappa	And	49	c01	Aqr	89	tau	boo
10	phi	And	50	k	Aqr	90	alpha	cae
11	iota	And	51	105	Aqr	91	Beta	Cam
12	29	And	52	Beta	Ara	92	alpha	cam
13	epsilon	And	53	Alpha	Ara	93	7	cam
14	eta	And	54	Zet	Ara	94	Delta	Cap
15	alpha	Ant	55	Gamma	Ara	95	Beta	Cap
16	alf	Aps	56	Delta	Ara	96	Alpha02	Cap
17	Gamma	Aps	57	Tet	Ara	97	Gamma	Cap
18	beta	Aps	58	Eta	Ara	98	Zet	Cap
19	Alpha	Aql	59	eps01	Ara	99	Tet	Cap
20	Gamma	Aql	60	Alpha	Ari	100	omega	cap
21	Zet	Aql	61	Beta	Ari	101	psi	cap
22	Tet	Aql	62	41	Ari	102	5	cap
23	Delta	Aql	63	Gamma	Ari	103	iota	cap
24	Lambda	Aql	64	del	Ari	104	Alpha	Car
25	Beta	Aql	65	Alpha	Aur	105	Beta	Car
26	Eta	Aql	66	Beta	Aur	106	Epsilon	Car
27	Epsilon	Aql	67	Tet	Aur	107	Iota	Car
28	i	Aql	68	Iota	Aur	108	Tet	Car
29	l	Aql	69	Epsilon	Aur	109	Upsilon	Car
30	iota	Aql	70	Eta	Aur	110	Omega	Car
31	38	Aql	71	Delta	Aur	111	p	Car
32	Beta	Aqr	72	Zet	Aur	112	q	Car
33	Alpha	Aqr	73	32	Aur	113	a	Car
34	Delta	Aqr	74	pi	aur	114	l	Car
35	zet	Aqr	75	kappa	aur	115	Chi	Car
36	88	Aqr	76	Alpha	Boo	116	u	Car
37	Lambda	Aqr	77	Epsilon	Boo	117	c	Car
38	Epsilon	Aqr	78	Eta	Boo	118	s	Car
39	Gamma	Aqr	79	Gamma	Boo	119	x	car
40	98	Aqr	80	Delta	Boo	120	i	car

Table 4: ID-Number of the stars and their official designation continued

#	Designation		#	Designation		#	Designation	
121	I	Car	161	i	cen	201	Alpha	Cha
122	h	Car	162	ksi02	cen	202	Gamma	Cha
123	d	car	163	n	cen	203	beta	cha
124	g	car	164	j	cen	204	tet	cha
125	n	car	165	e	cen	205	del02	cha
126	r	car	166	chi	cen	206	Alpha	Cir
127	G	car	167	ups02	cen	207	Beta	Cir
128	Alpha	Cas	168	v	cen	208	Alpha	Cma
129	Beta	Cas	169	a	cen	209	Epsilon	CMA
130	Delta	Cas	170	B	cen	210	Delta	Cma
131	Epsilon	Cas	171	Alpha	Cen A	211	Beta	Cma
132	Eta	Cas	172	Alpha	Cen B	212	Eta	Cma
133	zet	Cas	173	Alpha	Cep	213	Zet	Cma
134	50	cas	174	Beta	Cep	214	Omikron	Cma
135	kappa	cas	175	Gamma	Cep	215	Sigma	CMA
136	tet	cas	176	Zet	Cep	216	Kappa	Cma
137	omikron	cas	177	Eta	Cep	217	Omi01	Cma
138	Beta	Cen	178	Iota	Cep	218	7	Cma
139	Tet	Cen	179	Mu	Cep	219	Omega	Cma
140	Gamma	Cen	180	Delta	Cep	220	tet	Cma
141	Epsilon	Cen	181	epsilon	cep	221	Gamma	Cma
142	Eta	Cen	182	tet	cep	222	ksi01	cma
143	Zet	Cen	183	nu	cep	223	iota	cma
144	Delta	Cen	184	kappa	cep	224	30	cma
145	Iota	Cen	185	pi	cep	225	8	cma
146	Lambda	Cen	186	Beta	Cet	226	lambda	cma
147	Kappa	Cen	187	Alpha	Cet	227	Alpha	Cmi
148	Nu	Cen	188	Eta	Cet	228	Beta	Cmi
149	Mu	Cen	189	Gamma	Cet	229	gamma	cmi
150	Phi	Cen	190	Tau	Cet	230	Beta	Cnc
151	ups01	cen	191	Iota	Cet	231	Delta	Cnc
152	Tau	Cen	192	Tet	Cet	232	alpha	cnc
153	Sigma	Cen	193	Zet	Cet	233	iot	cnc a
154	d	Cen	194	Upsilon	Cet	234	Alpha	Col
155	Pi	Cen	195	Delta	Cet	235	Beta	Col
156	Rho	Cen	196	87	cet	236	Delta	Col
157	b	Cen	197	89	cet	237	Epsilon	Col
158	Psi	Cen	198	73	cet	238	Eta	Col
159	c01	cen	199	65	cet	239	gamma	col
160	2	cen	200	7	cet	240	kappa	col

Table 5: ID-Number of the stars and their official designation continued

#	Designation		#	Designation		#	Designation	
241	beta	com	281	Iota	Cyg	321	delta	equ
242	42	com	282	31	Cyg	322	Alpha	Eri
243	gamma	com	283	Kappa	Cyg	323	Beta	Eri
244	Alpha	Cra	284	Eta	Cyg	324	Tet	Eri
245	beta	cra	285	58	cyg	325	Gamma	Eri
246	gamma	cra	286	Rho	Cyg	326	Delta	Eri
247	Alpha	CrB	287	tet02	cyg	327	Phi	Eri
248	Beta	CrB	288	41	Cyg	328	Upsilon	Eri
249	Gamma	CrB	289	81	cyg	329	Chi	Eri
250	epsilon	crb	290	52	cyg	330	Epsilon	Eri
251	tet	Crb	291	sigma	cyg	331	52	Eri
252	Delta	Crt	292	33	cyg	332	53	Eri
253	alpha	crt	293	ups	cyg	333	Eta	Eri
254	Gamma	Crt	294	39	cyg	334	Nu	Eri
255	beta	crt	295	tet	cyg	335	d	Eri
256	Alpha	Cru	296	Beta	Del	336	57	Eri
257	Beta	Cru	297	Alpha	Del	337	omi01	Eri
258	Gamma	Cru	298	Epsilon	Del	338	11	Eri
259	Delta	Cru	299	gam02	del	339	iota	eri
260	Epsilon	Cru	300	delta	del	340	g	eri
261	Zet	Cru	301	Alpha	Dor	341	tau06	eri
262	eta	cru	302	Beta	Dor	342	Kappa	eri
263	tet01	cru	303	Gamma	Dor	343	lambda	eri
264	Mu	Cru 1	304	delta	dor	344	e	eri
265	Gamma	Crv	305	Gamma	Dra	345	19	eri
266	Beta	Crv	306	Beta	Dra	346	54	eri
267	Delta	Crv	307	Delta	Dra	347	omega	eri
268	Epsilon	Crv	308	Zet	Dra	348	40	eri
269	Alpha	Crv	309	Iota	Dra	349	pi	eri
270	eta	crv	310	Chi	Dra	350	Tau	Eri 4
271	Alpha	Cvn	311	Ksi	Dra	351	Alpha	For
272	beta	cvn	312	Lambda	Dra	352	beta	for
273	Alpha	Cyg	313	Epsilon	Dra	353	Beta	Gem
274	Gamma	Cyg	314	Kappa	Dra	354	Gamma	Gem
275	Epsilon	Cyg	315	Tet	Dra	355	Mu	Gem
276	Delta	Cyg	316	43	dra	356	Epsilons	Gem
277	Beta	Cyg	317	tau	dra	357	Eta	Gem
278	Zet	Cyg	318	Eta	Draco	358	Ksi	Gem
279	Ksi	Cyg	319	Alpha	draconis	359	Delta	Gem
280	Tau	Cyg	320	Alpha	Equ	360	Kappa	Gem

Table 6: ID-Number of the stars and their official designation continued

#	Designation		#	Designation		#	Designation	
361	Lambda	Gem	401	111	her	441	Delta	Leo
362	Tet	Gem	402	102	her	442	Epsilon	Leo
363	Iota	Gem	403	lambda	her	443	Tet	Leo
364	Zet	Gem	404	94	her	444	Zet	Leo
365	Upsilon	Gem	405	Alpha	Hor	445	Eta	Leo
366	nu	gem	406	Alpha	Hya	446	Omikron	Leo
367	1	gem	407	Gamma	Hya	447	Rho	Leo
368	rho	gem	408	Nu	Hya	448	Mu	Leo
369	sigma	gem	409	Zet	Hya	449	Iota	Leo
370	tau	gem	410	Pi	Hya	450	Sigma	Leo
371	Alpha	Gem A	411	Epsilon	Hya	451	upsilon	leo
372	Alpha	Gem B	412	Ksi	Hya	452	lambda	leo
373	Alpha	Gru	413	Lambda	Hya	453	31	leo
374	Beta	Gru	414	42	Hya	454	b	leo
375	Gamma	Gru	415	Tet	Hya	455	phi	leo
376	Epsilon	Gru	416	Iota	Hya	456	Kappa	Leo
377	Iota	Gru	417	39	Hya	457	Alpha	Lep
378	del01	gru	418	del	Hya	458	Beta	Lep
379	zet	gru	419	beta	hya	459	Epsilon	Lep
380	del02	gru	420	eta	hya	460	Mu	Lep
381	tet	gru	421	12	hya	461	Zet	Lep
382	lambda	gru	422	rho	hya	462	Gamma	Lep
383	Beta	Her	423	E	Hya	463	Eta	Lep
384	Zet	Her	424	sigma	hya	464	Delta	Lep
385	Alpha	Her	425	Beta	Hya	465	lambda	lep
386	Delta	Her	426	Alpha	Hya	466	kappa	lep
387	Pi	Her	427	Gamma	Hya	467	iota	lep
388	Mu	Her	428	del	Hya	468	Beta	Lib
389	Eta	Her	429	eps	Hya	469	Sigma	Lib
390	Ksi	Her	430	Alpha	Ind	470	Upsilon	Lib
391	Gamma	Her	431	Beta	Ind	471	Tau	Lib
392	Iota	Her	432	del	ind	472	Gamma	Lib
393	Omikron	Her	433	tet	ind	473	tet	Lib
394	109	Her	434	Alpha	Lac	474	16	lib
395	Tet	Her	435	1	Lac	475	46	Lmi
396	Tau	Her	436	5	lac	476	beta	Lmi
397	Epsilon	Her	437	beta	lac	477	21	Lmi
398	110	her	438	Alpha	Leo	478	Alpha	Lup
399	sigma	her	439	Gamma	Leo	479	Beta	Lup
400	phi	Her	440	Beta	Leo	480	Gamma	Lup

Table 7: ID-Number of the stars and their official designation continued

#	Designation		#	Designation		#	Designation	
481	Delta	Lup	521	Delta	Mus	561	Pi	Ori
482	Epsilon	Lup	522	Lambda	Mus	562	Eta	Ori
483	Zet	Lup	523	Gamma	Mus	563	Lambda	Ori
484	Eta	Lup	524	epsilon	Mus	564	Tau	Ori
485	Iota	Lup	525	gam02	Nor	565	Sigma	Ori
486	Phi01	Lup	526	Nu	Oct	566	9	Ori
487	Kappa	Lup	527	bet	oct	567	40	ori
488	Chi	Lup	528	delta	oct	568	mu	ori
489	Rho	Lup	529	Alpha	Oph	569	e	ori
490	lambda	lup	530	Eta	Oph	570	32	ori
491	tet	Lup	531	Zet	Oph	571	2	ori
492	mu	lup	532	Delta	Oph	572	37	ori
493	omi	lup	533	Beta	Oph	573	chi01	ori
494	f	lup	534	Kappa	Oph	574	67	ori
495	omega	lup	535	Epsilon	Oph	575	ksi	ori
496	tau02	lup	536	Tet	Oph	576	rho	ori
497	sigma	lup	537	Nu	Oph	577	10	ori
498	Alf	Lyn	538	72	Oph	578	pi	Ori 4
499	38	Lyn	539	Gamma	Oph	579	pi	Ori 5
500	32	lyn	540	Lambda	Oph	580	Delta	Ori A
501	15	lyn	541	67	Oph	581	Alpha	Pav
502	2	lyn	542	70	Oph	582	Beta	Pav
503	Alpha	Lyr	543	b	oph	583	Delta	Pav
504	Gamma	Lyr	544	d	oph	584	Eta	Pav
505	Beta	Lyr	545	phi	oph	585	Epsilon	Pav
506	R	Lyr	546	36	oph	586	Zet	Pav
507	12	lyr	547	sig	oph	587	lambda	Pav
508	kappa	lyr	548	iota	oph	588	Gamma	Pav
509	6	lyr	549	ksi	oph	589	pi	pav
510	tet	lyr	550	chi	oph	590	ksi	pav
511	eta	lyr	551	68	oph	591	kappa	pav
512	30	Mon	552	omega	oph	592	Epsilon	Peg
513	Alpha	Mon	553	psi	oph	593	Beta	Peg
514	Gamma	Mon	554	Beta	Ori	594	Alpha	Peg
515	delta	mon	555	Alpha	Ori	595	Gamma	Peg
516	zeta	mon	556	Gamma	Ori	596	Eta	Peg
517	18	mon	557	Epsilon	Ori	597	Zet	Peg
518	eps	mon a	558	zet	Ori	598	Tet	Peg
519	Alpha	Mus	559	Kappa	Ori	599	Mu	Peg
520	Beta	Mus	560	Iota	Ori	600	Iota	Peg

Table 8: ID-Number of the stars and their official designation continued

#	Designation		#	Designation		#	Designation	
601	Lambda	Peg	641	Alpha	Pic	681	Gamma	Pyx
602	1	Peg	642	Beta	Pic	682	Alpha	Ret
603	kappa	peg	643	Alpha	PsA	683	Beta	Ret
604	ksi	peg	644	epsilon	psa	684	epsilon	ret
605	29	peg	645	Delta	Psa	685	alpha	scl
606	9	peg	646	beta	psa	686	beta	scl
607	ups	peg	647	iota	psa	687	gamma	scl
608	Alpha	Per	648	mu	psa	688	Alpha	Sco
609	Beta	Per	649	Eta	Psc	689	Lambda	Sco
610	Zet	Per	650	Gamma	Psc	690	Tet	Sco
611	Epsilon	Per	651	Alpha	Psc	691	Epsilon	Sco
612	Gamma	Per	652	Omega	Psc	692	Delta	Sco
613	Delta	Per	653	iota	psc	693	Kappa	Sco
614	Rho	Per	654	omi	psc	694	Upsilon	Sco
615	Upsilon	Per	655	tet	psc	695	Tau	Sco
616	Eta	Per	656	epsilon	psc	696	Pi	Sco
617	41	Per	657	30	psc	697	Sigma	Sco
618	Kappa	Per	658	delta	psc	698	Mu01	Sco
619	Omikron	Per	659	106	psc	699	Iota	Sco
620	Tau	Per	660	beta	psc	700	G	Sco
621	c	Per	661	Pi	Pup	701	Eta	Sco
622	iota	per	662	Rho	Pup	702	zet02	Sco
623	ksi	per	663	Tau	Pup	703	Rho	Sco
624	Phi	Per	664	Nu	Pup	704	Omega	Sco
625	tet	Per	665	Sigma	Pup	705	zet	sco
626	51	per	666	Ksi	Pup	706	H	Sco
627	16	Per	667	c	pup	707	N	sco
628	58	per	668	a	pup	708	q	sco
629	lambda	per	669	l	Pup	709	10	sco
630	psi	per	670	P	Pup	710	Beta	Sco 1
631	sigma	per	671	j	Pup	711	Mu	Sco 2
632	Alpha	Phe	672	J	pup	712	nu	Sco A
633	Beta	Phe	673	16	pup	713	Alpha	Sct
634	Gamma	Phe	674	h02	pup	714	beta	sct
635	Epsilon	Phe	675	h01	pup	715	Alpha	Ser
636	Kappa	Phe	676	q	pup	716	Eta	Ser
637	Delta	Phe	677	b	Pup	717	Ksi	Ser
638	zet	Phe	678	Zet	Puppis	718	Mu	Ser
639	eta	phe	679	Alpha	Pyx	719	Beta	Ser
640	psi	phe	680	Beta	Pyx	720	Epsilon	Ser

Table 9: ID-Number of the stars and their official designation continued

#	Designation		#	Designation		#	Designation	
721	Delta	Ser	762	Ksi	Tau	802	Psi	Uma
722	Gamma	Ser	763	Delta	Tau	803	Mu	Uma
724	omi	ser	764	77	Tau	804	Iota	Uma
725	53	ser	765	20	Tau	805	Tet	Uma
726	lambda	ser	766	38	Tau	806	Delta	Uma
727	alpha	sex	767	f	Tau	807	Omikron	Uma
728	Gamma	Sge	768	23	tau	808	Lambda	Uma
729	Delta	Sge	769	k	Tau	809	Nu	Uma
730	beta	sge	770	d	tau	810	Kappa	Uma
731	alpha	sge	771	tau	tau	811	h	uma
732	Epsilon	Sgr	772	c	tau	812	Chi	Uma
733	Sigma	Sgr	773	49	tau	813	Ksi	Uma
734	zet	Sgr	774	19	tau	814	Upsilon	Uma
735	Delta	Sgr	775	upsilon	tau	815	10	Uma
736	Lambda	Sgr	776	10	tau	816	80	Uma
737	Pi	Sgr	777	del03	tau	817	26	uma
738	Gamma	Sgr	778	37	tau	818	zet	Uma a
739	Eta	Sgr	779	119	tau	819	Alpha	Umi
740	Phi	Sgr	780	71	tau	820	Beta	Umi
741	Tau	Sgr	781	Alpha	Tel	821	Gamma	Umi
742	Ksi	Sgr	782	zet	Tel	822	epsilon	Umi
743	Omikron	Sgr	783	Alpha	TrA	823	5	umi
744	Mu	Sgr	784	Beta	TrA	824	zet	umi
745	rho01	Sgr	785	Gamma	TrA	825	del	umi
746	Alpha	Sgr	786	Delta	TrA	826	Gamma	Vel
747	bet01	Sgr	787	Eps	Tra	827	Delta	Vel
748	iota	sgr	788	Beta	Tri	828	Lambda	Vel
749	bet02	sgr	789	Alpha	Tri	829	Kappa	Vel
750	tet01	sgr	790	Gamma	Tri	830	Mu	Vel
751	Alpha	Tau	791	Alpha	Tuc	831	N	Vel
752	Beta	Tau	792	Gamma	Tuc	832	Phi	Vel
753	Eta	Tau	793	zet	tuc	833	Psi	Vel
754	Zet	Tau	794	kappa	tuc	834	Omikron	Vel
755	Lambda	Tau	795	epsilon	tuc	835	c	Vel
756	Tet02	Tau	796	delta	tuc	836	b	Vel
757	Epsilon	Tau	797	Epsilon	Uma	837	q	Vel
758	Omikron	Tau	798	Alpha	Uma	838	p	Vel
759	27	Tau	799	Eta	Uma	839	a	Vel
760	Gamma	Tau	800	Beta	Uma	840	d	Vel
761	17	Tau	801	Gamma	Uma	841	e	Vel

Table 10: ID-Number of the stars and their official designation continued

#	Designation	
842	x	vel
843	M	vel
844	i	vel
845	w	vel
846	Alpha	Vir
847	Gamma	Vir
848	Epsilon	Vir
849	Delta	Vir
850	Zet	Vir
851	Beta	Vir
852	109	Vir
853	Eta	Vir
854	Mu	vir
855	3	Vir
856	Iota	Vir
857	omikron	vir
858	kappa	vir
859	tau	Vir
860	tet	vir
861	110	vir
862	Gam02	Vol
863	Beta	Vol
864	zet	Vol
865	Delta	Vol
866	Alpha	Vol
867	epsilon	vol
868	alpha	vul

	208	-1,47	104	-0,72	76	-0,04	171	-0,01	503	0,03	65	0,08	554	0,12
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	101,29	-16,72	95,99	-52,70	213,92	19,18	219,90	-60,83	279,23	38,78	79,17	46,00	78,63	-8,20
1000	90,25	-15,81	90,47	-52,39	202,52	24,64	203,28	-56,24	270,81	38,22	61,09	44,22	66,70	-9,86
0	79,23	-15,97	85,05	-52,62	191,02	30,53	189,21	-51,04	262,45	38,48	44,25	40,94	54,96	-12,59
-1000	68,26	-17,18	79,81	-53,37	179,12	36,64	176,91	-45,61	254,19	39,56	28,88	36,54	43,42	-16,26
-2000	57,38	-19,40	74,82	-54,62	166,41	42,75	165,72	-40,20	246,06	41,43	14,84	31,42	32,01	-20,72
-3000	46,57	-22,53	70,18	-56,34	152,32	48,58	155,20	-35,01	238,08	44,04	1,83	25,93	20,59	-25,80
-4000	35,77	-26,46	65,97	-58,48	136,18	53,73	145,05	-30,20	230,21	47,34	349,50	20,38	8,91	-31,29
-5000	24,83	-31,05	62,33	-61,01	117,39	57,71	135,02	-25,93	222,42	51,28	337,52	15,02	356,64	-36,99
-6000	13,50	-36,15	59,47	-63,86	96,04	59,93	124,97	-22,31	214,61	55,80	325,62	10,10	343,30	-42,64
-7000	1,40	-41,57	57,73	-66,96	73,52	59,95	114,77	-19,49	206,60	60,82	313,57	5,84	328,29	-47,91
-8000	347,98	-47,10	57,68	-70,22	52,02	57,77	104,35	-17,57	198,06	66,32	301,20	2,46	310,94	-52,34
-9000	332,42	-52,38	60,41	-73,45	32,91	53,81	93,66	-16,68	188,22	72,21	288,39	0,16	290,88	-55,34
-10000	313,72	-56,92	67,76	-76,32	16,22	48,68	82,65	-16,92	174,76	78,42	275,12	-0,85	268,62	-56,26
-11000	291,14	-59,93	81,65	-78,18	1,27	42,85	71,28	-18,35	145,04	84,46	261,38	-0,40	245,86	-54,72
-12000	265,41	-60,50	99,88	-78,15	347,26	36,72	59,50	-21,04	48,59	85,34	247,21	1,60	224,41	-50,83
-13000	239,38	-58,10	114,42	-75,96	333,50	30,63	47,19	-25,02	8,81	78,96	232,61	5,22	204,93	-45,06
-14000	215,65	-52,98	121,25	-72,24	319,37	24,90	34,13	-30,29	332,04	71,50	217,47	10,42	187,03	-38,01
-15000	194,64	-45,91	121,82	-67,75	304,40	19,96	19,92	-36,79	338,82	63,79	201,50	17,08	169,82	-30,24
-16000	175,35	-37,66	118,10	-63,03	288,19	16,31	3,81	-44,38	325,96	56,18	184,15	24,97	152,43	-22,32
-17000	156,51	-28,98	111,34	-58,58	270,55	14,57	344,26	-52,69	312,44	49,04	164,41	33,61	134,00	-14,95
-18000	137,05	-20,72	102,27	-54,91	251,47	15,42	318,01	-60,80	297,75	42,91	140,53	42,12	113,89	-9,06
-19000	116,12	-13,93	91,52	-52,60	231,11	19,46	279,80	-66,24	281,73	38,54	110,25	48,65	91,78	-5,82
-20000	93,36	-10,02	79,87	-52,28	209,59	27,03	233,01	-64,80	264,54	36,81	73,46	50,21	67,92	-6,54
	227	0,34	555	0,42	322	0,5	138	0,6	19	0,77	751	0,99	846	1,04
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	114,83	5,22	88,79	7,41	24,43	-57,24	210,96	-60,37	297,70	8,87	68,98	16,51	201,30	-11,16
1000	101,65	7,26	75,32	6,63	14,84	-62,47	194,75	-55,23	285,47	6,72	54,84	13,94	188,31	-5,77
0	88,35	8,06	62,10	4,60	4,09	-67,98	181,05	-49,69	273,21	5,73	41,22	10,25	175,61	-0,17
-1000	75,08	7,58	49,22	1,42	350,68	-73,58	168,95	-44,09	260,98	5,95	28,11	5,68	162,94	5,35
-2000	61,99	5,85	36,69	-2,71	330,38	-78,89	157,82	-38,69	248,89	7,36	15,41	0,49	150,08	10,52
-3000	49,20	2,99	24,44	-7,59	291,15	-82,67	147,24	-33,66	236,98	9,91	2,92	-5,05	136,83	15,07
-4000	36,70	-0,84	12,30	-12,99	235,92	-81,95	136,93	-29,19	225,26	13,46	350,38	-10,67	123,05	18,72
-5000	24,43	-5,42	0,02	-18,67	203,46	-77,46	126,69	-25,39	213,65	17,88	337,52	-16,09	108,75	21,20
-6000	12,22	-10,55	347,28	-24,38	185,89	-71,87	116,41	-22,41	201,99	22,98	324,07	-21,04	94,04	22,31
-7000	359,80	-15,98	333,71	-29,84	173,62	-66,05	106,00	-20,37	190,01	28,59	309,79	-25,18	79,15	21,91
-8000	346,85	-21,49	318,90	-34,70	163,47	-60,28	95,43	-19,36	177,31	34,49	294,55	-28,19	64,35	19,98
-9000	332,98	-26,76	302,54	-38,54	154,18	-54,69	84,65	-19,46	163,34	40,41	278,41	-29,73	49,80	16,62
-10000	317,76	-31,44	284,54	-40,90	145,14	-49,40	73,65	-20,75	147,35	45,99	261,65	-29,54	35,53	11,98
-11000	300,85	-35,08	265,26	-41,34	135,96	-44,49	62,37	-23,27	128,50	50,67	244,66	-27,50	21,39	6,30
-12000	282,14	-37,16	245,48	-39,58	126,35	-40,11	50,73	-27,01	106,28	53,66	227,76	-23,66	7,06	-0,20
-13000	261,99	-37,14	225,97	-35,64	116,10	-36,41	38,54	-31,98	81,40	54,11	211,06	-18,19	352,06	-7,22
-14000	241,15	-34,72	207,09	-29,83	104,98	-33,60	25,49	-38,13	56,07	51,52	194,34	-11,39	335,78	-14,36
-15000	220,38	-29,89	188,66	-22,57	92,83	-31,94	10,98	-45,37	32,30	46,14	177,15	-3,66	317,49	-21,08
-16000	199,95	-22,98	170,07	-14,44	79,54	-31,76	353,83	-53,45	10,50	38,70	158,79	4,50	296,45	-26,52
-17000	179,54	-14,57	150,54	-6,13	65,02	-33,42	331,37	-61,82	349,84	30,10	138,40	12,30	272,32	-29,55
-18000	158,36	-5,45	129,19	1,38	49,19	-37,28	297,75	-68,89	329,19	21,27	115,09	18,57	245,78	-28,96
-19000	135,42	3,25	105,35	6,73	31,87	-43,63	249,03	-70,66	307,49	13,37	88,53	21,71	218,45	-24,12
-20000	109,76	9,88	79,06	8,21	12,29	-52,63	204,29	-64,37	284,05	7,86	59,71	20,04	191,60	-15,37

Table 11: Results of the calculations, Right ascension and Declination in Degrees

	688	1,09	353	1,15	643	1,16	273	1,25	257	1,3	172	1,33	256	1,4
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	247,35	-26,43	116,33	28,03	344,41	-29,62	310,36	45,28	191,93	-59,69	219,90	-60,84	186,65	-63,10
1000	232,32	-23,63	100,80	29,82	330,18	-34,71	301,87	42,00	178,39	-54,14	203,24	-56,33	173,84	-57,53
0	218,05	-19,68	85,04	30,14	314,82	-39,10	293,43	39,40	166,61	-48,59	189,15	-51,22	162,75	-52,05
-1000	204,51	-14,87	69,47	28,95	298,21	-42,38	285,01	37,55	155,86	-43,27	176,83	-45,87	152,62	-46,85
-2000	191,58	-9,51	54,46	26,37	280,55	-44,18	276,63	36,49	145,68	-38,35	165,65	-40,54	143,01	-42,08
-3000	179,02	-3,87	40,21	22,61	262,47	-44,25	268,29	36,26	135,81	-33,97	155,15	-35,44	133,68	-37,85
-4000	166,58	1,77	26,74	17,95	244,80	-42,55	260,02	36,85	126,06	-30,25	145,03	-30,71	124,44	-34,28
-5000	153,99	7,13	13,89	12,69	228,19	-39,29	251,83	38,26	116,31	-27,31	135,06	-26,51	115,21	-31,45
-6000	141,00	11,96	1,42	7,08	212,90	-34,80	243,72	40,48	106,50	-25,24	125,08	-22,96	105,92	-29,47
-7000	127,42	15,97	349,04	1,40	198,78	-29,46	235,67	43,47	96,59	-24,14	114,98	-20,19	96,54	-28,40
-8000	113,13	18,87	336,44	-4,10	185,51	-23,58	227,61	47,21	86,55	-24,07	104,67	-18,32	87,05	-28,30
-9000	98,15	20,38	323,30	-9,16	172,68	-17,47	219,45	51,67	76,37	-25,08	94,10	-17,45	77,42	-29,23
-10000	82,63	20,30	309,33	-13,47	159,85	-11,39	211,05	56,81	66,00	-27,19	83,22	-17,68	67,62	-31,22
-11000	66,79	18,50	294,32	-16,69	146,61	-5,62	202,12	62,61	55,38	-30,44	72,01	-19,08	57,58	-34,28
-12000	50,83	14,97	278,18	-18,45	132,57	-0,47	192,12	69,04	44,39	-34,80	60,38	-21,73	47,21	-38,42
-13000	34,77	9,85	261,00	-18,40	117,37	3,68	179,52	76,03	32,79	-40,27	48,23	-25,65	36,32	-43,64
-14000	18,44	3,34	243,02	-16,30	100,79	6,38	156,17	83,31	20,17	-46,79	35,36	-30,84	24,57	-49,90
-15000	1,40	-4,23	224,48	-12,06	82,77	7,14	47,59	86,22	5,76	-54,25	21,38	-37,26	11,33	-57,15
-16000	342,97	-12,36	205,44	-5,82	63,45	5,52	359,32	78,80	347,78	-62,40	5,56	-44,78	355,06	-65,22
-17000	322,20	-20,33	185,61	2,07	43,06	1,27	341,22	70,27	321,54	-70,48	346,42	-53,09	331,00	-73,62
-18000	298,00	-26,91	164,26	10,96	21,66	-5,56	326,23	61,81	275,88	-75,85	320,72	-61,34	281,55	-79,96
-19000	269,91	-30,31	140,23	19,76	358,79	-14,52	311,39	53,96	219,16	-73,23	282,71	-67,16	212,17	-77,13
-20000	239,24	-28,65	112,20	26,63	333,24	-24,59	296,03	47,39	182,35	-64,07	234,68	-66,16	176,09	-67,51
	438	1,4	209	1,51	371	1,59	689	1,62	258	1,63	556	1,64	752	1,68
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	152,09	11,97	104,66	-28,97	113,65	31,89	263,40	-37,10	187,79	-57,11	81,28	6,35	81,57	28,61
1000	138,57	16,55	94,85	-28,03	97,48	33,43	246,66	-35,65	174,83	-51,47	67,97	4,88	65,95	27,10
0	124,55	20,26	85,13	-28,03	81,13	33,41	230,71	-32,74	163,32	-45,91	54,96	2,21	50,94	24,21
-1000	110,01	22,85	75,50	-28,98	65,10	31,83	215,80	-28,64	152,66	-40,63	42,31	-1,50	36,71	20,21
-2000	95,14	24,09	66,00	-30,84	49,80	28,85	201,91	-23,69	142,47	-35,80	29,97	-6,05	23,22	15,37
-3000	80,19	23,88	56,63	-33,56	35,39	24,74	188,84	-18,23	132,50	-31,56	17,82	-11,22	10,33	10,00
-4000	65,49	22,22	47,34	-37,08	21,85	19,81	176,32	-12,55	122,60	-28,04	5,65	-16,78	357,81	4,38
-5000	51,27	19,24	38,03	-41,29	8,96	14,36	164,05	-6,93	112,67	-25,35	353,17	-22,48	345,36	-1,22
-6000	37,63	15,14	28,55	-46,12	356,47	8,68	151,75	-1,61	102,66	-23,58	340,06	-28,05	332,73	-6,53
-7000	24,48	10,18	18,59	-51,48	344,06	3,03	139,17	3,14	92,55	-22,82	325,92	-33,19	319,66	-11,27
-8000	11,63	4,59	7,65	-57,24	331,41	-2,33	126,10	7,07	82,31	-23,12	310,40	-37,52	305,93	-15,16
-9000	358,76	-1,37	354,75	-63,26	318,24	-7,12	112,41	9,92	71,93	-24,53	293,29	-40,59	291,43	-17,90
-10000	345,51	-7,44	337,90	-69,25	304,28	-11,05	98,05	11,43	61,36	-27,07	274,76	-41,97	276,17	-19,20
-11000	331,44	-13,33	312,74	-74,49	289,37	-13,79	83,09	11,38	50,53	-30,73	255,41	-41,29	260,29	-18,83
-12000	316,10	-18,65	273,80	-77,14	273,47	-15,00	67,64	9,63	39,25	-35,50	236,08	-38,47	244,01	-16,66
-13000	299,05	-22,94	231,39	-75,02	256,68	-14,39	51,80	6,13	27,25	-41,34	217,33	-33,67	227,49	-12,69
-14000	280,08	-25,58	201,34	-69,14	239,20	-11,76	35,55	0,93	14,00	-48,17	199,24	-27,26	210,74	-7,04
-15000	259,35	-25,96	180,18	-61,60	221,17	-7,09	18,66	-5,77	358,47	-55,82	181,40	-19,70	193,51	0,03
-16000	237,44	-23,61	162,63	-53,46	202,53	-0,53	0,64	-13,65	338,32	-63,91	163,15	-11,55	175,25	8,13
-17000	215,02	-18,42	146,03	-45,39	182,88	7,56	340,62	-22,17	307,69	-71,27	143,66	-3,53	155,12	16,62
-18000	192,35	-10,76	129,09	-38,08	161,38	16,52	317,30	-30,34	258,48	-74,44	122,14	3,34	131,96	24,47
-19000	169,00	-1,42	111,12	-32,35	136,72	25,18	289,27	-36,47	209,32	-69,67	98,05	7,67	104,74	30,01
-20000	143,93	8,31	91,97	-29,24	107,48	31,54	256,61	-38,08	177,12	-59,95	71,70	7,85	73,77	31,02

Table 12: Results of the calculations, Right ascension and Declination in Degrees

	105	1,7	557	1,7	373	1,74	797	1,76	558	1,79	798	1,79	732	1,8
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	138,30	-69,72	84,05	-1,20	332,06	-46,96	193,51	55,96	85,19	-1,94	165,93	61,75	276,04	-34,38
1000	134,91	-65,69	71,44	-2,39	315,42	-51,41	181,92	61,48	72,64	-3,02	148,72	66,90	259,48	-34,13
0	130,61	-61,90	59,05	-4,73	296,67	-54,66	168,17	67,05	60,31	-5,25	126,20	71,05	243,32	-32,31
-1000	125,74	-58,45	46,92	-8,11	276,20	-56,21	150,08	72,30	48,23	-8,53	97,39	73,17	227,95	-29,11
-2000	120,49	-55,38	35,03	-12,37	255,30	-55,74	123,62	76,44	36,38	-12,70	66,75	72,40	213,55	-24,81
-3000	114,97	-52,76	23,26	-17,31	235,58	-53,33	86,83	77,95	24,65	-17,58	41,15	69,06	200,03	-19,73
-4000	109,24	-50,64	11,41	-22,73	217,97	-49,38	51,38	75,86	12,86	-22,96	21,83	64,23	187,19	-14,18
-5000	103,36	-49,07	359,21	-28,42	202,50	-44,39	26,72	71,36	0,73	-28,63	6,83	58,71	174,76	-8,45
-6000	97,36	-48,07	346,27	-34,11	188,73	-38,80	9,76	65,87	347,89	-34,35	354,33	52,98	162,43	-2,80
-7000	91,29	-47,69	332,14	-39,52	176,08	-32,95	356,70	60,05	333,86	-39,81	332,80	41,91	149,92	2,51
-8000	85,17	-47,96	316,30	-44,25	164,07	-27,11	345,57	54,23	318,11	-44,65	322,63	36,90	136,95	7,22
-9000	79,02	-48,89	298,35	-47,81	152,25	-21,53	335,33	48,58	300,20	-48,36	312,37	32,44	123,32	11,04
-10000	72,90	-50,51	278,37	-49,64	140,26	-16,40	325,38	43,24	280,14	-50,38	301,77	28,68	108,88	13,68
-11000	66,85	-52,81	257,20	-49,27	127,80	-11,98	315,33	38,35	258,73	-50,19	290,64	25,80	93,61	14,85
-12000	60,99	-55,80	236,15	-46,54	114,59	-8,51	304,85	34,07	237,36	-47,62	278,80	23,99	77,63	14,31
-13000	55,49	-59,45	216,20	-41,70	100,47	-6,31	293,72	30,57	217,12	-42,87	266,13	23,48	61,10	11,90
-14000	50,77	-63,71	197,47	-35,19	85,32	-5,67	281,70	28,11	198,20	-36,42	252,54	24,50	44,15	7,61
-15000	47,67	-68,45	179,46	-27,58	69,10	-6,92	268,66	26,96	180,08	-28,82	237,91	27,29	26,71	1,57
-16000	48,19	-73,41	161,38	-19,45	51,84	-10,27	254,46	27,44	161,97	-20,69	222,11	32,03	8,45	-5,93
-17000	57,24	-77,92	142,38	-11,52	33,44	-15,83	239,04	29,91	143,02	-12,72	204,74	38,82	348,70	-14,40
-18000	81,69	-80,14	121,67	-4,74	13,50	-23,47	222,28	34,66	122,42	-5,87	184,81	47,59	326,36	-22,99
-19000	107,76	-78,02	98,77	-0,39	351,02	-32,74	203,80	41,88	99,67	-1,40	159,47	57,79	300,05	-30,23
-20000	117,83	-72,87	73,83	0,05	323,79	-42,49	182,38	51,52	74,90	-0,79	269,11		269,11	-33,81
	826	1,81	608	1,82	210	1,84	799	1,85	690	1,86	66	1,9	354	1,9
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	122,38	-47,34	51,08	49,86	107,10	-26,39	206,89	49,31	264,33	-43,00	89,88	44,95	99,43	16,40
1000	114,67	-44,68	34,13	45,77	96,95	-25,23	196,78	54,49	246,64	-41,60	71,71	44,05	84,99	16,63
0	106,97	-42,69	19,06	40,77	86,87	-25,05	185,82	59,97	229,92	-38,65	54,40	41,52	70,70	15,46
-1000	99,28	-41,42	5,49	35,29	76,89	-25,85	173,13	65,59	214,49	-34,49	38,42	37,65	56,79	12,99
-2000	91,63	-40,89	352,97	29,66	67,03	-27,59	156,96	71,04	200,31	-29,48	23,81	32,83	43,36	9,38
-3000	84,05	-41,11	341,11	24,16	57,29	-30,24	133,73	75,71	187,13	-23,99	10,36	27,42	30,43	4,87
-4000	76,56	-42,08	329,59	19,01	47,64	-33,72	99,16	78,29	174,64	-18,31	357,74	21,76	17,87	-0,30
-5000	69,20	-43,79	318,16	14,43	37,99	-37,92	60,63	77,25	162,52	-12,72	345,60	16,13	5,48	-5,89
-6000	61,95	-46,21	306,64	10,59	28,16	-42,77	32,40	73,25	150,47	-7,47	333,63	10,76	352,98	-11,62
-7000	54,83	-49,32	294,90	7,68	17,86	-48,14	13,60	67,89	138,24	-2,79	321,57	5,90	340,07	-17,24
-8000	47,81	-53,08	282,89	5,87	6,62	-53,92	359,66	62,05	125,62	1,08	309,18	1,77	326,39	-22,45
-9000	40,87	-57,48	270,57	5,29	353,55	-59,94	348,03	56,09	112,49	3,91	296,30	-1,38	311,62	-26,90
-10000	34,00	-62,49	257,96	6,05	336,99	-65,90	337,44	50,24	98,77	5,45	282,85	-3,33	295,53	-30,20
-11000	27,82	-68,08	245,05	8,21	313,79	-71,14	327,14	44,63	84,49	5,51	268,79	-3,87	278,13	-31,94
-12000	20,82	-74,25	231,80	11,79	280,22	-74,16	316,67	39,41	69,69	3,95	254,16	-2,81	259,71	-31,73
-13000	16,17	-80,93	218,07	16,75	241,41	-73,06	305,67	34,77	54,44	0,69	239,02	-0,05	240,79	-29,37
-14000	35,33	-87,81	203,59	23,00	210,04	-68,00	293,84	30,94	38,69	-4,24	223,33	4,42	221,84	-24,90
-15000	157,62	-84,02	187,81	30,36	186,97	-60,77	280,94	28,21	22,21	-10,71	206,92	10,52	202,99	-18,56
-16000	154,55	-76,24	169,82	38,51	168,07	-52,62	260,80	26,97	4,50	-18,46	189,38	18,02	183,94	-10,80
-17000	145,41	-68,39	147,94	46,78	150,57	-44,35	251,35	27,66	344,69	-26,99	169,88	26,50	164,06	-2,25
-18000	134,14	-60,86	119,63	53,75	132,96	-36,68	234,53	30,70	321,32	-35,41	147,04	35,15	142,42	6,19
-19000	121,39	-54,16	83,40	56,81	114,43	-30,49	216,27	36,46	292,60	-41,99	118,90	42,41	118,05	13,16
-20000	107,53	-48,93	44,62	53,32	94,71	-26,87	196,05	45,10	258,27	-44,05	84,54	45,55	90,53	16,74

Table 13: Results of the calculations, Right ascension and Declination in Degrees

	581	1,91	783	1,92	827	1,95	106	1,95	439	1,98	60	2	211	2
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	306,41	-56,74	252,17	-69,03	131,18	-54,71	125,63	-59,51	154,99	19,84	31,79	23,46	95,67	-17,96
1000	285,63	-59,16	227,65	-66,21	124,23	-51,27	120,34	-56,48	140,91	24,60	18,06	18,45	84,70	-17,94
0	263,50	-59,58	207,92	-61,77	117,21	-48,38	114,78	-53,89	126,09	28,49	4,99	13,01	73,83	-18,98
-1000	242,04	-57,89	192,08	-56,49	110,13	-46,10	109,04	-51,80	110,52	31,18	352,33	7,44	63,10	-21,05
-2000	222,84	-54,43	178,80	-50,87	103,19	-44,47	103,19	-50,23	94,44	32,41	339,83	2,01	52,52	-24,05
-3000	206,25	-49,74	167,08	-45,25	95,87	-43,53	97,28	-49,24	78,28	32,05	327,26	-3,01	42,05	-27,89
-4000	191,84	-44,35	156,28	-39,85	88,75	-43,29	91,36	-48,82	62,49	30,13	314,43	-7,36	31,56	-32,45
-5000	178,96	-38,65	145,96	-34,86	81,68	-43,78	85,47	-49,01	47,42	26,82	301,22	-10,80	20,87	-37,58
-6000	167,05	-32,94	135,84	-30,42	74,68	-44,99	79,67	-49,80	33,17	22,38	287,60	-13,09	9,65	-43,13
-7000	155,65	-27,44	125,72	-26,66	67,77	-46,92	73,99	-51,19	19,63	17,13	273,64	-14,04	357,41	-48,93
-8000	144,39	-22,36	115,45	-23,74	60,96	-49,56	68,48	-53,18	6,55	11,34	259,49	-13,53	343,36	-54,73
-9000	133,00	-17,90	104,94	-21,76	54,27	-52,89	63,23	-55,75	353,58	5,29	245,30	-11,54	326,28	-60,13
-10000	121,24	-14,24	94,10	-20,86	47,73	-56,91	58,36	-58,90	340,33	-0,74	231,16	-8,10	304,58	-64,46
-11000	108,93	-11,60	82,90	-21,14	41,46	-61,58	54,13	-62,58	326,39	-6,45	217,04	-3,34	277,59	-66,68
-12000	95,95	-10,20	71,27	-22,70	35,71	-66,89	51,06	-66,72	311,35	-11,47	202,76	2,56	248,20	-65,77
-13000	82,23	-10,25	59,14	-25,61	31,34	-72,77	50,31	-71,17	294,86	-15,36	187,96	9,40	221,47	-61,73
-14000	67,72	-11,94	46,37	-29,91	31,48	-79,06	54,56	-75,57	276,75	-17,58	172,08	16,85	199,13	-55,45
-15000	52,36	-15,42	32,72	-35,62	55,06	-84,80	69,16	-78,97	257,15	-17,59	154,34	24,47	179,91	-47,86
-16000	36,00	-20,74	17,68	-42,67	126,40	-83,68	94,64	-79,45	236,42	-15,00	133,73	31,52	162,10	-39,73
-17000	18,25	-27,83	0,20	-50,90	139,63	-76,90	112,85	-76,34	214,98	-9,72	109,25	36,84	144,36	-31,72
-18000	358,20	-36,42	337,81	-59,81	135,31	-69,49	117,62	-71,40	192,89	-2,04	80,88	38,81	125,75	-24,64
-19000	333,95	-45,77	304,38	-67,87	126,28	-62,39	114,77	-66,13	169,60	7,35	50,63	36,08	105,69	-19,50
-20000	301,83	-54,02	253,13	-70,56	115,14	-56,19	108,25	-61,33	143,91	17,15	21,28	28,54	84,09	-17,55

	406	2	819	2,01	186	2,04	559	2,05	1	2,06	733	2,06	2	2,06
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	141,90	-8,66	37,95	89,26	10,90	-17,99	86,94	-9,67	2,10	29,09	283,82	-26,30	17,43	35,62
1000	129,57	-4,68	357,17	83,80	358,22	-23,55	75,14	-10,54	349,48	23,58	268,26	-26,87	3,93	30,18
0	117,13	-1,61	348,79	78,25	345,04	-29,09	63,50	-12,52	337,35	18,27	252,81	-25,93	351,30	24,62
-1000	104,56	0,37	341,70	72,82	331,04	-34,30	52,05	-15,51	325,45	13,39	237,83	-23,57	339,21	19,23
-2000	91,93	1,17	334,94	67,58	315,91	-38,83	40,77	-19,40	313,59	9,15	223,53	-19,98	327,37	14,23
-3000	79,35	0,73	328,25	62,60	299,49	-42,28	29,57	-24,03	301,65	5,76	209,95	-15,43	315,58	9,84
-4000	66,91	-0,94	321,53	57,96	281,93	-44,27	18,26	-29,22	289,59	3,36	196,98	-10,20	303,71	6,26
-5000	54,68	-3,76	314,74	53,73	263,82	-44,52	6,57	-34,80	277,39	2,11	184,41	-4,57	291,68	3,67
-6000	42,64	-7,59	307,81	49,97	245,97	-42,95	354,09	-40,55	265,13	2,09	171,95	1,19	279,47	2,22
-7000	30,71	-12,29	300,72	46,75	229,08	-39,74	340,27	-46,19	252,85	3,32	159,31	6,81	267,12	2,00
-8000	18,68	-17,69	293,43	44,15	213,41	-35,20	324,36	-51,37	240,60	5,79	146,17	12,02	254,68	3,07
-9000	6,23	-23,60	285,90	42,24	198,83	-29,70	305,59	-55,55	228,36	9,45	132,25	16,52	242,17	5,45
-10000	352,93	-29,80	278,10	41,08	184,98	-23,57	283,66	-58,02	215,99	14,18	117,32	19,96	229,59	9,08
-11000	338,16	-35,99	270,00	40,75	171,39	-17,11	259,67	-58,09	203,28	19,88	101,32	21,99	216,79	13,90
-12000	321,15	-41,75	261,57	41,31	157,55	-10,63	235,96	-55,48	180,84	26,37	84,34	22,27	203,54	19,78
-13000	301,05	-46,41	252,79	42,84	142,96	-4,46	214,30	-50,54	175,06	33,45	66,66	20,56	189,42	26,56
-14000	277,52	-49,07	243,61	45,40	127,14	0,96	194,84	-43,90	158,01	40,74	48,58	16,79	173,74	33,99
-15000	251,55	-48,77	234,01	49,05	109,69	5,07	176,77	-36,22	137,30	47,59	30,21	11,08	155,42	41,64
-16000	225,36	-45,12	223,94	53,87	90,41	7,21	159,04	-28,13	111,34	52,82	11,38	3,74	132,82	48,70
-17000	200,63	-38,52	213,36	59,92	69,43	6,68	140,70	-20,31	80,03	54,68	351,50	-4,70	104,20	53,65
-18000	177,38	-29,95	202,20	67,27	47,14	2,99	120,99	-13,65	47,12	51,79	329,65	-13,42	70,31	54,41
-19000	154,64	-20,60	190,26	75,97	23,85	-3,96	99,41	-9,30	17,11	44,52	304,65	-21,08	36,39	49,78
-20000	131,21	-11,85	175,44	86,09	359,31	-13,69	76,06	-8,61	350,64	34,51	275,72	-25,60	6,58	40,76

Table 14: Results of the calculations, Right ascension and Declination in Degrees

	139	2,06	820	2,08	529	2,1	609	2,12	374	2,13	440	2,13	140	2,18
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	211,67	-36,37	222,68	74,16	263,73	12,56	47,04	40,96	340,67	-46,88	177,26	14,57	190,38	-48,96
1000	197,48	-31,16	225,73	78,18	252,20	13,79	31,42	36,64	324,87	-51,84	164,34	20,10	177,26	-43,41
0	184,35	-25,54	238,07	81,72	240,84	16,08	17,16	31,54	306,78	-55,85	150,89	25,31	165,33	-37,88
-1000	171,93	-19,79	267,72	83,49	229,67	19,35	3,96	26,03	286,34	-58,35	136,67	29,88	154,11	-32,62
-2000	159,92	-14,19	299,44	82,06	218,64	23,46	351,50	20,40	264,52	-58,87	121,56	33,49	143,30	-27,80
-3000	148,05	-8,97	313,83	78,59	207,63	28,27	339,45	14,92	243,25	-57,28	105,62	35,81	132,66	-23,60
-4000	136,11	-4,35	317,97	74,48	196,44	33,61	327,55	9,85	224,09	-53,88	89,17	36,61	122,06	-20,16
-5000	123,96	-0,54	317,67	70,25	184,76	39,29	315,59	5,39	207,45	-49,21	72,73	35,78	111,40	-17,60
-6000	111,50	2,26	315,19	66,10	172,11	45,11	303,40	1,77	192,91	-43,77	56,80	33,39	100,64	-16,05
-7000	98,73	3,88	311,47	62,16	157,82	50,77	290,90	-0,82	179,86	-37,97	41,68	29,65	89,77	-15,57
-8000	85,69	4,19	306,93	58,50	141,00	55,86	278,07	-2,20	167,68	-32,10	27,40	24,86	78,79	-16,24
-9000	72,45	3,11	301,76	55,20	120,70	59,79	264,94	-2,24	155,88	-26,40	13,76	19,30	67,69	-18,07
-10000	59,06	0,63	296,03	52,32	96,84	61,73	251,55	-0,84	144,06	-21,08	0,42	13,26	56,41	-21,07
-11000	45,50	-3,21	289,77	49,93	71,38	61,01	237,94	2,01	131,86	-16,37	346,96	7,01	44,86	-25,21
-12000	31,65	-8,31	282,96	48,10	47,36	57,57	224,06	6,28	119,01	-12,52	332,94	0,86	32,82	-30,45
-13000	17,22	-14,51	275,55	46,93	26,24	51,99	209,75	11,88	105,28	-9,81	317,88	-4,84	19,95	-36,70
-14000	1,73	-21,59	267,49	46,52	7,57	45,01	194,64	18,65	90,51	-8,57	301,33	-9,60	5,60	-43,83
-15000	344,40	-29,16	258,72	47,02	350,18	37,28	178,13	26,31	74,65	-9,13	282,99	-12,84	348,63	-51,58
-16000	324,13	-36,61	249,21	48,60	332,99	29,38	159,23	34,42	57,68	-11,76	262,81	-13,87	326,75	-59,33
-17000	299,50	-42,80	238,97	51,46	315,07	21,98	136,42	42,11	39,55	-16,65	241,12	-12,08	295,85	-65,66
-18000	269,86	-45,97	228,07	55,84	295,73	15,96	107,97	47,81	19,97	-23,79	218,43	-7,16	254,04	-67,56
-19000	237,28	-44,27	216,77	62,00	274,62	12,41	74,10	49,17	358,08	-32,85	194,99	0,71	212,91	-62,87
-20000	205,91	-37,22	205,88	70,16	251,88	12,58	39,42	44,50	331,85	-42,93	170,32	10,83	181,49	-53,48

	247	2,21	828	2,23	305	2,23	580	2,23	274	2,24	107	2,25	678	2,25
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	233,67	26,71	137,00	-43,43	269,15	51,49	83,00	0,30	305,56	40,26	139,27	-59,28	120,90	-40,00
1000	223,12	30,44	127,92	-40,05	263,41	51,86	70,25	-0,99	296,61	37,38	132,53	-55,27	112,13	-37,52
0	212,59	34,89	119,03	-37,33	257,86	52,78	57,74	-3,44	287,72	35,27	125,70	-51,74	103,40	-35,82
-1000	201,89	39,91	110,28	-35,35	252,58	54,22	45,51	-6,93	278,86	33,98	118,79	-48,75	94,71	-34,94
-2000	190,75	45,35	101,65	-34,15	247,66	56,15	33,52	-11,28	270,06	33,54	111,81	-46,34	86,10	-34,90
-3000	178,74	51,01	93,15	-33,76	243,20	58,52	21,66	-16,30	261,33	33,98	104,78	-44,57	77,58	-35,71
-4000	165,13	56,67	84,78	-34,18	239,34	61,27	9,73	-21,77	252,69	35,27	97,72	-43,47	69,16	-37,35
-5000	148,84	61,94	76,57	-35,41	236,30	64,35	357,44	-27,46	244,15	37,39	90,65	-43,08	60,85	-39,79
-6000	128,40	66,26	68,49	-37,42	234,44	67,66	344,42	-33,13	235,67	40,32	83,59	-43,41	52,61	-42,98
-7000	103,03	68,76	60,55	-40,19	234,40	71,12	330,21	-38,46	227,21	43,99	76,56	-44,48	44,37	-46,88
-8000	75,10	68,58	52,71	-43,68	237,43	74,53	314,36	-43,07	218,65	48,38	69,59	-46,29	36,03	-51,45
-9000	49,56	65,66	44,89	-47,87	245,77	77,55	296,52	-46,47	209,79	53,43	62,67	-48,84	27,36	-56,63
-10000	28,70	60,75	37,01	-52,73	261,99	79,46	276,81	-48,12	200,32	59,10	55,83	-52,13	18,00	-62,40
-11000	11,64	54,67	28,95	-58,23	283,08	79,28	256,06	-47,60	189,58	65,34	49,12	-56,14	7,17	-68,69
-12000	356,79	47,97	20,49	-64,35	298,90	76,85	235,46	-44,78	176,00	72,04	42,67	-60,86	352,71	-75,39
-13000	342,92	41,03	11,26	-71,07	305,97	72,97	215,85	-39,89	154,17	78,85	36,79	-66,26	325,30	-82,00
-14000	329,12	34,18	0,19	-78,33	306,72	68,37	197,32	-33,37	99,71	83,74	32,45	-72,25	246,19	-84,59
-15000	314,70	27,79	338,57	-85,97	303,38	63,51	179,39	-25,75	28,99	80,42	33,09	-78,61	192,82	-78,59
-16000	299,13	22,34	184,41	-85,46	297,14	58,78	161,28	-17,62	339,40	72,67	57,23	-84,23	170,95	-70,49
-17000	282,05	18,46	162,94	-77,22	288,61	54,58	142,18	-9,70	340,82	64,15	121,22	-83,10	154,70	-62,11
-18000	263,28	16,92	149,14	-68,95	278,20	51,41	121,29	-2,95	324,58	55,75	135,01	-76,42	139,40	-54,05
-19000	242,94	18,53	135,78	-61,11	266,31	49,86	98,13	1,33	308,45	48,12	131,25	-69,05	123,70	-46,94
-20000	221,32	23,93	122,10	-54,21	253,62	50,57	72,90	1,62	291,77	42,06	122,75	-61,99	107,24	-41,58

Table 15: Results of the calculations, Right ascension and Declination in Degrees

	128	2,25	141	2,27	129	2,27	818	2,27	478	2,28	691	2,29	692	2,29
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	10,13	56,54	204,97	-53,47	2,29	59,15	200,98	54,93	220,48	-47,39	252,54	-34,29	240,08	-22,62
1000	356,87	50,99	190,13	-48,15	349,95	53,65	190,55	60,29	204,70	-42,69	236,65	-31,84	225,60	-19,25
0	345,13	45,48	177,08	-42,57	338,97	48,31	178,69	65,87	190,58	-37,35	221,68	-28,13	211,83	-14,87
-1000	334,30	40,22	165,17	-37,02	328,79	43,33	163,81	71,43	177,67	-31,75	207,67	-23,47	198,68	-9,79
-2000	323,98	35,39	153,96	-31,74	319,04	38,83	142,28	76,47	165,58	-26,17	194,51	-18,18	185,98	-4,27
-3000	313,91	31,14	143,13	-26,91	309,50	34,95	107,45	79,77	153,94	-20,86	181,95	-12,56	173,48	1,39
-4000	303,94	27,59	132,44	-22,71	300,06	31,79	63,86	79,29	142,48	-16,03	169,72	-6,87	160,93	6,93
-5000	293,96	24,86	121,75	-19,29	290,62	29,45	32,41	75,40	131,02	-11,89	157,55	-1,37	148,08	12,08
-6000	283,91	23,05	110,97	-16,77	281,15	28,00	12,91	70,05	119,41	-8,60	145,18	3,69	134,69	16,56
-7000	273,77	22,24	100,05	-15,28	271,62	27,51	359,08	64,25	107,58	6,34	132,39	8,06	120,62	20,06
-8000	263,51	22,48	88,96	-14,90	262,01	28,02	347,79	58,38	95,49	-5,25	119,03	11,48	105,82	22,31
-9000	253,13	23,83	77,69	-15,72	252,32	29,57	337,65	52,65	83,15	-5,43	105,02	13,70	90,42	23,05
-10000	242,57	26,31	66,23	-17,76	242,48	32,16	327,92	47,18	70,58	-6,96	90,38	14,48	74,65	22,13
-11000	231,75	29,90	54,51	-21,04	232,44	35,81	318,15	42,10	57,76	-9,86	75,25	13,65	58,76	19,48
-12000	220,53	34,61	42,40	-25,54	222,05	40,51	308,01	37,55	44,61	-14,11	59,75	11,14	42,89	15,20
-13000	208,63	40,39	29,65	-31,20	211,09	46,22	297,23	33,71	30,93	-19,64	43,97	6,95	27,00	9,47
-14000	195,57	47,17	15,83	-37,93	199,14	52,91	285,58	30,80	16,34	-26,32	27,82	1,21	10,80	2,56
-15000	180,41	54,81	0,13	-45,55	185,33	60,49	272,90	29,10	0,19	-33,93	10,97	-5,83	353,77	-5,17
-16000	161,03	62,95	341,01	-53,68	167,48	68,72	259,04	28,97	341,34	-42,06	352,84	-13,79	335,15	-13,18
-17000	132,11	70,59	315,36	-61,40	137,92	76,81	243,94	30,75	317,86	-49,85	332,52	-22,04	314,01	-20,64
-18000	84,63	74,58	278,65	-66,48	74,06	80,70	227,52	34,82	287,28	-55,60	308,78	-29,48	289,45	-26,26
-19000	33,41	70,66	234,20	-65,41	15,76	74,69	209,53	41,42	249,98	-56,56	280,62	-34,35	261,40	-28,32
-20000	359,60	61,22	196,68	-57,71	346,97	64,61	189,09	50,66	213,18	-51,06	248,80	-34,40	231,51	-25,24
	142	2,32	800	2,35	632	2,37	693	2,38	77	2,39	212	2,4	592	2,4
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	218,88	-42,16	165,46	56,38	6,57	-42,31	265,62	-39,03	221,25	27,07	111,02	-29,30	326,05	9,88
1000	203,69	-37,39	149,07	61,51	353,73	-47,77	248,53	-37,78	210,31	31,59	101,15	-27,76	313,74	5,62
0	189,88	-32,03	128,94	65,73	339,38	-53,11	232,25	-35,00	199,20	36,66	91,34	-27,15	301,33	2,21
-1000	177,07	-26,42	104,44	68,25	322,71	-57,92	217,06	-31,00	187,66	42,11	81,61	-27,50	288,79	-0,17
-2000	164,91	-20,84	77,67	68,34	302,99	-61,65	202,97	-26,11	175,25	47,74	71,99	-28,80	276,15	-1,38
-3000	153,08	-15,56	52,95	65,94	280,29	-63,63	189,78	-20,68	161,37	53,27	62,49	-30,99	263,50	-1,35
-4000	141,35	-10,78	32,65	61,74	256,46	-63,34	177,22	-15,00	145,16	58,33	53,09	-34,03	250,97	-0,08
-5000	129,54	-6,72	16,30	56,52	234,31	-60,82	164,98	-9,37	125,66	62,38	43,73	-37,84	238,62	2,38
-6000	117,51	-3,57	2,61	50,82	215,33	-56,60	152,76	-4,01	102,63	64,69	34,29	-42,34	226,48	5,91
-7000	105,22	-1,51	350,54	45,02	199,31	-51,31	140,32	0,80	77,82	64,65	24,53	-47,44	214,47	10,38
-8000	92,65	-0,68	339,34	39,34	185,42	-45,44	127,43	4,82	54,46	62,17	14,09	-53,03	202,41	15,62
-9000	79,85	-1,18	328,49	33,96	172,82	-39,33	113,95	7,80	34,43	57,78	2,29	-59,01	190,03	21,44
-10000	66,85	-3,07	317,62	29,08	160,81	-33,24	99,82	9,48	17,52	52,15	347,81	-65,17	176,91	27,63
-11000	53,64	-6,36	306,42	24,85	148,88	-27,38	85,07	9,64	2,71	45,82	327,83	-71,08	162,48	33,93
-12000	40,13	-10,98	294,66	21,48	136,59	-21,98	69,80	8,13	348,98	39,15	296,80	-75,59	145,98	39,95
-13000	26,09	-16,83	282,13	19,21	123,56	-17,31	54,09	4,86	335,52	32,45	253,55	-76,29	126,54	45,07
-14000	11,11	-23,76	268,69	18,28	109,49	-13,70	37,94	-0,12	321,67	26,03	215,74	-72,11	103,58	48,40
-15000	354,49	-31,48	254,25	18,99	94,15	-11,56	21,14	-6,65	306,88	20,30	189,95	-65,10	77,68	48,93
-16000	335,08	-39,50	238,74	21,58	77,44	-11,33	3,22	-14,44	290,74	15,77	170,27	-56,98	50,96	46,03
-17000	311,13	-46,85	222,02	26,24	59,37	-13,45	343,32	-22,97	272,96	13,08	152,75	-48,63	25,47	39,95
-18000	280,88	-51,76	203,75	33,07	39,93	-18,21	320,13	-31,30	253,51	13,00	135,45	-40,78	1,62	31,59
-19000	245,57	-51,82	183,01	41,90	18,87	-25,67	292,12	-37,78	232,56	16,20	117,43	-34,26	338,57	22,17
-20000	211,08	-45,84	157,32	52,07	355,23	-35,50	259,09	-39,86	210,31	23,09	98,35	-30,09	315,07	13,07

Table 16: Results of the calculations, Right ascension and Declination in Degrees

	593	2,42	530	2,43	801	2,44	173	2,46	829	2,46	275	2,48	594	2,49
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	345,94	28,08	257,59	-15,72	178,46	53,69	319,64	62,59	140,53	-55,01	311,55	33,97	346,19	15,21
1000	334,02	22,81	243,41	-13,89	164,39	59,20	313,60	58,52	132,82	-50,96	301,50	30,57	333,82	9,98
0	322,36	18,03	229,67	-10,83	147,39	64,30	307,34	54,87	125,16	-47,44	291,49	27,99	321,50	5,27
-1000	310,78	13,92	216,43	-6,75	125,90	68,39	300,91	51,71	117,50	-44,52	281,51	26,33	309,08	1,30
-2000	299,17	10,66	203,64	-1,90	99,36	70,56	294,36	49,09	109,83	-42,26	271,56	25,63	296,49	-1,74
-3000	287,49	8,40	191,14	3,48	71,02	70,06	287,71	47,07	102,15	-40,71	261,66	25,93	283,72	-3,66
-4000	275,74	7,25	178,71	9,11	46,18	67,06	281,00	45,67	94,46	-39,90	251,84	27,21	270,86	-4,35
-5000	263,97	7,28	166,09	14,74	26,59	62,42	274,25	44,94	86,80	-39,87	242,08	29,45	258,00	-3,75
-6000	252,22	8,51	152,96	20,09	11,02	56,95	267,49	44,91	79,16	-40,61	232,37	32,59	245,26	-1,88
-7000	240,52	10,90	139,03	24,84	357,94	51,13	260,75	45,59	71,57	-42,15	222,60	36,57	232,69	1,19
-8000	228,85	14,39	124,08	28,66	346,27	45,29	254,05	46,98	64,01	-44,47	212,61	41,31	220,24	5,34
-9000	217,09	18,89	108,01	31,17	335,29	39,63	247,41	49,11	56,48	-47,57	202,12	46,74	207,79	10,42
-10000	205,02	24,28	91,00	32,03	324,49	34,32	240,88	51,95	48,94	-51,43	190,62	52,75	195,07	16,25
-11000	192,29	30,42	73,43	31,02	313,50	29,53	234,52	55,52	41,38	-56,05	177,22	59,19	181,69	22,64
-12000	178,34	37,11	55,76	28,05	302,02	25,46	228,48	59,78	33,79	-61,41	160,05	65,78	167,09	29,33
-13000	162,29	44,07	38,28	23,25	289,81	22,33	223,13	64,69	26,24	-67,49	135,07	71,77	150,48	35,92
-14000	142,77	50,74	20,95	16,90	276,67	20,42	219,36	70,17	19,12	-74,25	96,40	75,21	130,91	41,79
-15000	118,02	56,13	3,43	9,37	262,48	20,02	219,79	75,96	14,60	-81,59	51,72	73,38	107,53	45,99
-16000	87,36	58,61	345,08	1,19	247,14	21,46	233,75	81,24	71,19	-88,49	18,54	66,97	80,59	47,30
-17000	54,18	56,68	325,07	-6,94	230,58	25,03	227,08	82,66	153,60	-81,92	354,80	58,54	52,21	44,78
-18000	23,78	50,44	302,49	-13,92	212,60	30,91	303,75	78,09	147,61	-73,57	334,88	49,58	24,93	38,56
-19000	357,46	41,42	276,78	-18,22	192,59	39,10	306,45	71,54	137,16	-65,38	315,94	41,08	359,51	29,67
-20000	333,53	31,28	248,47	-18,02	168,78	49,23	301,16	64,86	125,07	-57,84	296,71	34,07	335,06	19,54
	187	2,51	143	2,52	441	2,53	144	2,56	531	2,58	265	2,59	457	2,6
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	45,57	4,09	208,88	-47,29	168,53	20,52	182,09	-50,72	249,29	-10,57	183,95	-17,54	83,18	-17,82
1000	32,67	-0,21	194,07	-42,10	154,95	25,85	169,76	-45,17	235,69	-8,00	171,27	-11,99	72,21	-19,01
0	20,08	-5,20	180,77	-36,54	140,60	30,61	158,47	-39,79	222,53	-4,34	158,85	-6,59	61,39	-21,22
-1000	7,64	-10,63	168,48	-30,94	125,30	34,47	147,78	-34,78	209,77	0,19	146,44	-1,61	50,71	-24,36
-2000	355,11	-16,24	156,82	-25,55	109,07	37,07	137,42	-30,30	197,31	5,35	133,89	2,72	40,14	-28,31
-3000	342,23	-21,76	145,47	-20,59	92,22	38,13	127,19	-26,49	184,96	10,89	121,08	6,16	29,55	-32,96
-4000	328,70	-26,90	134,23	-16,25	75,32	37,51	116,99	-23,48	172,46	16,56	108,00	8,51	18,74	-38,15
-5000	314,26	-31,33	122,93	-12,70	58,94	35,28	106,75	-21,37	159,52	22,08	94,71	9,62	7,40	-43,71
-6000	298,78	-34,69	111,49	-10,10	43,47	31,64	96,43	-20,25	145,82	27,16	81,32	9,39	355,01	-49,46
-7000	282,32	-36,65	99,87	-8,59	28,98	26,92	86,04	-20,19	131,08	31,46	67,97	7,80	340,81	-55,13
-8000	265,25	-36,92	88,05	-8,27	15,28	21,42	75,56	-21,22	115,15	34,60	54,76	4,91	323,64	-60,30
-9000	248,09	-35,40	76,05	-9,22	2,06	15,44	64,97	-23,36	98,11	36,20	41,67	0,83	302,16	-64,33
-10000	231,35	-32,14	63,87	-11,47	348,93	9,27	54,21	-26,60	80,37	35,98	28,59	-4,29	276,08	-66,24
-11000	215,23	-27,37	51,45	-15,00	335,43	3,19	43,16	-30,93	62,47	33,81	15,24	-10,26	248,28	-65,24
-12000	199,62	-21,37	38,66	-19,78	321,16	-2,48	31,58	-36,29	44,90	29,77	1,24	-16,88	223,07	-61,39
-13000	184,16	-14,49	25,22	-25,73	305,67	-7,34	19,09	-42,62	27,76	24,12	346,00	-23,84	201,86	-55,47
-14000	168,31	-7,08	10,67	-32,70	288,66	-10,89	4,99	-49,80	10,84	17,20	328,75	-30,72	183,59	-48,30
-15000	151,41	0,37	354,18	-40,43	269,98	-12,57	347,89	-57,56	353,62	9,46	308,53	-36,81	166,76	-40,53
-16000	132,76	7,23	334,29	-48,45	249,81	-11,82	324,70	-65,28	335,39	1,43	284,58	-41,06	150,12	-32,71
-17000	111,73	12,59	308,55	-55,69	228,51	-8,26	289,21	-71,20	315,35	-6,10	257,21	-42,14	132,77	-25,48
-18000	88,08	15,25	274,47	-60,02	206,37	-1,87	240,89	-71,57	292,73	-12,02	228,50	-39,09	114,05	-19,64
-19000	62,36	14,02	235,31	-58,70	183,21	6,91	199,97	-65,12	267,30	-14,82	200,77	-32,05	93,63	-16,25
-20000	35,76	8,20	200,19	-51,30	158,09	17,14	171,38	-55,12	239,84	-13,00	174,60	-22,14	71,67	-16,47

Table 17: Results of the calculations, Right ascension and Declination in Degrees

	234	2.6	468	2.61	734	2.61	67	2.62	710	2.62	715	2.63	61	2.64
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	84.91	-34.07	229.25	-9.38	285.65	-29.88	89.93	37.21	241.36	-19.81	236.07	6.43	28.66	20.81
1000	75.91	-35.00	216.01	-5.28	269.64	-30.63	73.01	36.40	227.09	-16.54	223.86	10.00	15.16	15.67
0	67.04	-36.77	203.19	-0.41	253.71	-29.82	56.71	34.04	213.46	-12.27	211.86	14.41	2.24	10.17
-1000	58.31	-39.34	190.66	4.96	238.27	-27.54	41.39	30.38	200.40	-7.25	199.93	19.45	349.63	4.60
-2000	49.71	-42.65	178.18	10.58	223.59	-23.99	27.12	25.74	187.73	-1.78	187.88	24.92	337.10	-0.76
-3000	41.19	-46.62	165.52	16.18	209.74	-19.45	13.76	20.45	175.23	3.88	175.42	30.56	324.42	-5.66
-4000	32.62	-51.17	152.39	21.47	196.60	-14.23	1.06	14.83	162.65	9.45	162.18	36.12	311.41	-9.84
-5000	23.82	-56.21	138.53	26.16	183.95	-8.61	348.71	9.17	149.71	14.67	147.73	41.28	298.00	-13.03
-6000	14.39	-61.65	123.78	29.92	171.51	-2.88	336.42	3.71	136.18	19.24	131.66	45.63	284.17	-15.02
-7000	3.61	-67.39	108.09	32.41	158.97	2.72	323.93	-1.28	121.89	22.85	113.75	48.70	270.03	-15.64
-8000	349.68	-73.27	91.67	33.34	146.02	7.90	310.99	-5.54	106.80	25.20	94.32	50.02	255.75	-14.77
-9000	327.42	-78.84	74.93	32.53	132.39	12.37	297.44	-8.81	91.03	26.02	74.32	49.28	241.50	-12.42
-10000	282.55	-82.41	58.31	29.96	117.87	15.83	283.19	-10.82	74.87	25.14	54.92	46.47	227.34	-8.67
-11000	226.96	-80.47	42.09	25.77	102.36	17.92	268.26	-11.32	58.62	22.49	36.82	41.87	213.24	-3.65
-12000	196.84	-74.69	26.29	20.21	85.91	18.33	252.75	-10.12	42.46	18.19	20.01	35.91	198.96	2.44
-13000	178.91	-67.72	10.62	13.57	68.73	16.82	236.78	-7.14	26.36	12.41	4.04	29.01	184.12	9.35
-14000	164.74	-60.37	354.61	6.22	51.06	13.28	220.38	-2.38	10.04	5.46	348.23	21.59	168.13	16.78
-15000	151.49	-53.00	337.64	-1.40	32.98	7.80	203.39	4.00	352.97	-2.28	331.88	14.11	150.21	24.23
-16000	137.95	-45.94	318.97	-8.66	14.32	0.63	185.40	11.72	334.42	-10.27	314.30	7.15	129.38	30.94
-17000	123.47	-39.67	297.86	-14.67	354.54	-7.76	165.60	20.28	313.49	-17.69	294.89	1.51	104.81	35.70
-18000	107.65	-34.80	273.91	-18.17	332.70	-16.59	142.77	28.77	289.34	-23.28	273.30	-1.78	76.73	37.00
-19000	90.38	-32.15	247.59	-17.82	307.50	-24.54	115.37	35.63	261.89	-25.36	249.71	-1.59	47.16	33.66
-20000	71.91	-32.64	220.23	-12.70	277.97	-29.48	82.96	38.35	232.58	-22.43	224.82	2.98	18.50	25.74

	266	2.65	479	2.67	519	2.68	78	2.68	130	2.68	68	2.69	145	2.7
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	188.60	-23.40	224.63	-43.13	189.30	-69.14	208.67	18.40	21.45	60.24	74.25	33.17	200.15	-36.71
1000	175.73	-17.82	208.97	-38.66	175.94	-63.57	196.73	23.63	6.48	54.84	58.27	30.93	186.61	-31.27
0	163.30	-12.30	194.76	-33.46	164.91	-58.05	184.56	29.23	353.70	49.26	43.15	27.38	174.00	-25.66
-1000	151.04	-7.11	181.66	-27.90	155.08	-52.77	171.85	34.94	342.24	43.79	28.96	22.85	161.97	-20.15
-2000	138.75	-2.49	169.32	-22.27	145.88	-47.87	158.18	40.48	331.57	38.62	15.61	17.64	150.23	-14.97
-3000	126.29	1.34	157.41	-16.84	137.00	-43.44	143.11	45.50	321.32	33.92	2.87	12.06	138.57	-10.35
-4000	113.59	4.18	145.65	-11.85	128.25	-39.60	126.24	49.59	311.26	29.85	350.46	6.40	126.82	-6.47
-5000	100.66	5.85	133.85	-7.50	119.53	-36.43	107.49	52.25	301.25	26.51	338.12	0.91	114.90	-3.52
-6000	87.58	6.24	121.85	-3.99	110.75	-34.02	87.51	53.06	291.19	24.04	325.57	-4.13	102.76	-1.65
-7000	74.46	5.28	109.57	-1.52	101.88	-32.45	67.54	51.83	281.03	22.52	312.60	-8.47	90.44	-0.99
-8000	61.38	2.98	96.98	-0.25	92.88	-31.78	48.81	48.72	270.73	22.04	299.06	-11.84	77.96	-1.62
-9000	48.36	-0.57	84.11	-0.30	83.73	-32.07	31.82	44.12	260.27	22.67	284.86	-13.98	65.38	-3.55
-10000	35.33	-5.26	71.00	-1.75	74.40	-33.37	16.39	38.49	249.62	24.45	270.06	-14.65	52.69	-6.77
-11000	22.08	-10.94	57.65	-4.63	64.86	-35.72	2.00	32.21	238.72	27.40	254.79	-13.68	39.80	-11.22
-12000	8.24	-17.42	44.01	-8.91	55.02	-39.14	348.03	25.61	227.46	31.53	239.19	-10.99	26.49	-16.78
-13000	353.28	-24.44	29.89	-14.49	44.79	-43.63	333.88	19.02	215.65	36.81	223.34	-6.61	12.40	-23.30
-14000	336.42	-31.62	14.94	-21.23	33.97	-49.22	319.01	12.82	202.91	43.20	207.14	-0.69	356.93	-30.56
-15000	316.62	-38.33	358.52	-28.87	22.20	-55.86	302.91	7.48	188.57	50.60	190.24	6.52	339.12	-38.15
-16000	292.78	-43.53	339.59	-36.97	8.69	-63.51	285.19	3.61	171.17	58.77	172.03	14.64	317.53	-45.35
-17000	264.73	-45.76	316.53	-44.67	351.11	-72.00	265.68	1.95	147.13	67.08	151.56	23.00	290.48	-50.82
-18000	234.53	-43.72	287.42	-50.33	318.18	-80.53	244.52	3.23	107.73	73.50	127.55	30.49	257.93	-52.54
-19000	205.33	-37.27	252.57	-51.50	228.59	-82.59	222.05	7.99	52.50	73.07	99.00	35.29	224.02	-48.96
-20000	178.36	-27.54	217.30	-46.52	179.22	-73.55	198.40	16.32	11.00	64.94	66.81	35.12	193.40	-40.53

Table 18: Results of the calculations, Right ascension and Declination in Degrees

	694	2,7	735	2,71	830	2,72	20	2,72	661	2,73	318	2,74	532	2,74
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	262,69	-37,30	275,25	-29,83	161,69	-49,42	296,57	10,61	109,29	-37,10	246,00	61,51	243,59	-3,69
1000	245,93	-35,78	259,28	-29,55	151,27	-44,30	284,66	8,65	100,47	-35,67	242,97	63,91	230,64	-0,63
0	229,99	-32,80	243,67	-27,77	141,34	-39,63	272,75	7,81	91,72	-35,08	240,98	66,53	218,05	3,41
-1000	215,11	-28,66	228,74	-24,63	131,67	-35,55	260,90	8,12	83,05	-35,33	240,42	69,28	205,74	8,21
-2000	201,25	-23,68	214,62	-20,41	122,11	-32,15	249,19	9,58	74,50	-36,44	241,93	72,01	193,56	13,56
-3000	188,20	-18,20	201,26	-15,40	112,60	-29,55	237,65	12,12	66,07	-38,35	246,36	74,50	181,30	19,20
-4000	175,70	-12,52	188,47	-9,90	103,08	-27,81	226,29	15,64	57,78	-41,04	254,60	76,44	168,66	24,89
-5000	163,44	-6,90	176,00	-4,19	93,55	-27,00	215,04	19,99	49,58	-44,45	266,52	77,42	155,30	30,34
-6000	151,14	-1,61	163,55	1,47	84,00	-27,17	203,72	25,02	41,40	-48,51	279,68	77,16	140,88	35,24
-7000	138,56	3,11	150,84	6,81	74,44	-28,32	192,08	30,57	33,12	-53,18	290,57	75,69	125,09	39,19
-8000	125,49	6,99	137,59	11,54	64,83	-30,46	179,74	36,45	24,50	-58,39	297,57	73,35	107,89	41,77
-9000	111,80	9,78	123,57	15,38	55,13	-33,58	166,12	42,41	15,12	-64,10	301,01	70,30	89,58	42,61
-10000	97,46	11,23	108,65	17,99	45,24	-37,66	150,46	48,12	4,04	-70,23	301,76	67,37	70,87	41,47
-11000	82,53	11,12	92,85	19,08	34,97	-42,66	131,76	53,05	348,60	-76,63	300,50	64,15	52,51	38,35
-12000	67,11	9,30	76,33	18,39	24,00	-48,53	109,27	56,41	317,30	-82,63	297,64	60,94	34,92	33,50
-13000	51,31	5,74	59,31	15,78	11,78	-55,22	83,56	57,25	240,35	-83,94	293,40	57,87	18,05	27,26
-14000	35,10	0,50	41,97	11,25	357,12	-62,58	57,13	54,95	194,69	-78,00	287,86	55,06	1,47	20,05
-15000	18,24	-6,23	24,25	4,99	337,04	-70,26	32,57	49,74	174,02	-70,30	281,01	52,69	344,55	12,33
-16000	0,23	-14,13	5,82	-2,67	302,49	-76,99	10,41	42,43	158,49	-62,24	272,86	50,99	326,58	4,68
-17000	340,18	-22,64	345,97	-11,20	242,97	-78,43	33,95	33,95	143,88	-54,34	263,41	50,30	306,80	-2,11
-18000	316,78	-30,79	323,66	-19,70	196,26	-72,16	329,37	25,24	128,84	-47,13	252,79	51,02	284,66	-6,95
-19000	288,64	-36,84	297,65	-26,70	169,06	-62,84	308,16	17,42	112,82	-41,30	241,33	53,59	260,12	-8,48
-20000	255,88	-38,33	267,45	-29,97	148,34	-52,97	285,43	11,86	95,77	-37,73	229,77	58,46	233,97	-5,48

	847	2,74	533	2,75	480	2,77	560	2,77	259	2,78	108	2,78	383	2,79
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	190,42	-1,45	265,87	4,57	233,79	-41,17	83,86	-5,91	183,79	-58,75	160,74	-64,39	247,56	21,49
1000	177,81	4,09	253,58	5,52	217,75	-37,27	71,69	-7,09	171,36	-53,18	152,13	-59,29	236,87	24,09
0	165,18	9,60	241,47	7,61	203,07	-32,44	59,73	-9,39	160,32	-47,76	143,97	-54,55	226,32	27,57
-1000	152,28	14,82	229,59	10,75	189,55	-27,05	47,98	-12,71	150,08	-42,66	136,04	-50,24	215,82	31,80
-2000	138,91	19,46	217,91	14,77	176,85	-21,42	36,42	-16,88	140,26	-38,03	128,19	-46,47	205,24	36,66
-3000	124,95	23,24	206,33	19,52	164,67	-15,83	24,93	-21,75	130,65	-34,00	120,35	-43,28	194,33	41,97
-4000	110,37	25,89	194,67	24,80	152,70	-10,54	13,31	-27,12	121,12	-30,67	112,49	-40,77	182,73	47,59
-5000	95,33	27,17	182,65	30,40	140,71	-5,78	1,27	-32,78	111,57	-28,16	104,59	-38,98	169,85	53,27
-6000	80,10	26,95	169,90	36,09	128,52	-1,76	348,40	-38,50	101,96	-26,54	96,62	-37,96	154,78	58,73
-7000	65,02	25,22	155,93	41,57	116,00	1,29	334,17	-43,98	92,27	-25,88	88,61	-37,77	136,22	63,48
-8000	50,34	22,07	140,14	46,48	103,11	3,18	317,94	-48,82	82,47	-26,24	80,53	-38,42	112,99	66,77
-9000	36,12	17,69	122,04	50,31	89,85	3,75	299,20	-52,49	72,55	-27,65	72,39	-39,95	85,92	67,66
-10000	22,25	12,33	101,55	52,45	76,27	2,87	278,00	-54,34	62,46	-30,14	64,16	-42,37	59,11	65,67
-11000	8,45	6,21	79,55	52,34	62,42	0,50	255,46	-53,85	52,12	-33,71	55,82	-45,69	36,13	61,25
-12000	354,31	-0,38	57,63	49,79	48,31	-3,36	233,39	-50,89	41,39	-38,35	47,33	-49,91	17,14	55,24
-13000	339,33	-7,12	37,01	45,01	33,80	-8,63	212,95	-45,78	30,02	-44,04	38,63	-55,03	0,73	48,33
-14000	322,92	-13,60	17,92	38,51	18,60	-15,16	194,14	-39,09	17,54	-50,71	29,64	-61,04	345,49	40,99
-15000	304,44	-19,18	359,78	30,88	2,18	-22,71	176,29	-31,40	3,05	-58,27	20,32	-67,91	330,38	33,65
-16000	283,46	-23,06	341,76	22,71	343,65	-30,85	158,48	-23,32	344,30	-66,41	10,60	-75,57	314,59	26,79
-17000	260,04	-24,22	322,96	14,72	321,65	-38,82	139,85	-15,54	314,64	-74,23	0,60	-83,95	297,53	21,03
-18000	235,00	-21,84	302,59	7,83	294,44	-45,18	119,63	-8,99	259,53	-78,08	167,94	-87,10	278,81	17,20
-19000	209,45	-15,69	280,15	3,27	261,56	-47,66	97,39	-4,90	204,34	-73,03	157,29	-77,76	258,38	16,26
-20000	183,88	-6,29	255,72	2,51	226,64	-44,17	73,28	-4,63	172,91	-63,14	145,24	-68,28	236,58	19,16

Table 19: Results of the calculations, Right ascension and Declination in Degrees

	306	2,79	323	2,79	384	2,8	425	2,8	662	2,81	695	2,81	595	2,83
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	262,61	52,30	76,96	-5,09	250,32	31,60	6,44	-77,25	121,89	-24,30	248,97	-28,22	3,31	15,18
1000	257,06	53,28	64,75	-6,89	240,92	33,80	352,58	-82,91	111,25	-21,82	233,71	-25,54	350,59	9,63
0	251,79	54,79	52,77	-9,77	231,62	36,80	296,83	-87,85	100,64	-20,30	219,24	-21,68	338,07	4,25
-1000	246,89	56,77	41,00	-13,58	222,38	40,52	196,51	-84,58	90,07	-19,78	205,56	-16,93	325,52	-0,70
-2000	242,49	59,19	29,38	-18,17	213,09	44,86	178,98	-78,82	79,59	-20,30	192,53	-11,60	312,78	-4,96
-3000	238,73	61,97	17,75	-23,32	203,58	49,72	169,01	-73,04	69,21	-21,83	179,94	-5,97	299,75	-8,29
-4000	235,86	65,06	5,87	-28,86	193,53	54,98	160,78	-67,39	58,96	-24,32	167,52	-0,32	286,42	-10,51
-5000	234,27	68,36	353,41	-34,53	182,38	60,51	153,14	-61,97	48,79	-27,71	155,01	5,08	272,89	-11,44
-6000	234,65	71,76	339,92	-40,09	169,07	66,11	145,68	-56,87	38,61	-31,89	142,14	9,97	259,28	-11,00
-7000	238,28	75,05	324,86	-45,18	151,44	71,44	138,21	-52,17	28,24	-36,77	128,73	14,06	245,76	-9,18
-8000	247,33	77,88	307,72	-49,35	125,45	75,71	130,57	-47,94	17,41	-42,23	114,64	17,08	232,41	-6,07
-9000	263,84	79,55	288,28	-52,05	88,63	77,32	122,68	-44,27	5,64	-48,15	99,87	18,76	219,22	-1,78
-10000	284,17	79,24	267,08	-52,73	52,20	75,04	114,45	-41,27	352,14	-54,33	84,53	18,87	206,05	3,51
-11000	299,28	76,91	245,53	-51,08	26,31	69,96	105,77	-39,03	335,54	-60,46	68,83	17,28	192,61	9,61
-12000	306,46	73,27	224,99	-47,18	7,91	63,56	96,58	-37,66	313,53	-65,89	52,95	13,97	178,50	16,29
-13000	307,84	68,94	206,01	-41,47	352,98	56,56	86,80	-37,31	283,61	-69,31	36,93	9,02	163,11	23,24
-14000	305,41	64,33	188,26	-34,47	339,33	49,36	76,36	-38,10	248,24	-69,00	20,63	2,65	145,68	30,00
-15000	300,25	59,73	171,02	-26,70	325,74	42,29	65,19	-40,18	216,25	-64,57	3,62	-4,84	125,31	35,85
-16000	292,87	55,44	153,44	-18,74	311,45	35,73	53,19	-43,72	190,88	-57,41	345,23	-12,99	101,36	39,73
-17000	283,58	51,86	134,73	-11,30	295,95	30,21	40,20	-48,86	169,69	-48,95	324,51	-21,07	74,31	40,37
-18000	272,59	49,48	114,19	-5,34	278,92	26,44	25,86	-55,72	150,13	-40,26	300,33	-27,88	46,15	36,94
-19000	260,26	48,88	91,52	-2,09	260,31	25,28	9,07	-64,37	130,60	-32,31	272,09	-31,63	18,90	29,67
-20000	247,24	50,68	67,02	-2,89	240,40	27,62	345,16	-74,63	110,27	-26,23	241,04	-30,32	352,96	19,70
	848	2,83	52	2,83	736	2,83	53	2,84	458	2,84	784	2,85	791	2,86
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	195,54	10,96	261,33	-55,53	276,99	-25,42	262,96	-49,88	82,06	-20,76	238,79	-63,43	334,63	-60,26
1000	183,06	16,45	241,11	-53,72	261,58	-25,30	244,02	-48,27	71,40	-22,02	218,36	-59,63	315,74	-64,83
0	170,32	22,02	222,77	-50,26	246,45	-23,71	226,46	-45,06	60,88	-24,26	201,42	-54,67	292,44	-67,97
-1000	157,04	27,40	206,60	-45,64	231,87	-20,78	210,60	-40,65	50,49	-27,40	187,11	-49,13	265,79	-68,86
-2000	142,95	32,28	192,30	-40,32	217,99	-16,74	196,30	-35,46	40,18	-31,34	174,54	-43,39	239,90	-67,18
-3000	127,82	36,31	179,37	-34,69	204,77	-11,87	183,20	-29,87	29,83	-35,96	163,06	-37,74	218,14	-63,45
-4000	111,64	39,12	167,33	-29,04	192,05	-6,44	170,91	-24,19	19,22	-41,11	152,19	-32,40	200,70	-58,50
-5000	94,65	40,42	155,80	-23,63	179,61	-0,72	159,07	-18,67	8,03	-46,64	141,60	-27,52	186,36	-52,95
-6000	77,43	40,00	144,46	-18,66	167,15	5,02	147,38	-13,54	355,72	-52,36	131,08	-23,29	173,95	-47,20
-7000	60,61	37,89	133,07	-14,33	154,37	10,52	135,58	-9,03	341,41	-58,02	120,44	-19,83	162,65	-41,54
-8000	44,63	34,28	121,46	-10,83	140,97	15,50	123,50	-5,33	323,73	-63,19	109,59	-17,31	151,89	-36,14
-9000	29,59	29,45	109,48	-8,34	126,69	19,63	110,98	-2,66	301,01	-67,15	98,44	-15,86	141,29	-31,18
-10000	15,30	23,72	97,08	-7,04	111,38	22,56	97,97	-1,22	272,98	-68,83	86,95	-15,58	130,52	-26,82
-11000	1,39	17,41	84,21	-7,08	95,03	23,96	84,44	-1,19	243,69	-67,37	75,09	-16,59	119,37	-23,24
-12000	347,37	10,80	70,86	-8,59	77,84	23,53	70,41	-2,69	218,25	-63,06	62,80	-18,96	107,62	-20,63
-13000	332,74	4,22	56,99	-11,64	60,15	21,09	55,88	-5,82	197,53	-56,83	49,99	-22,71	95,13	-19,19
-14000	316,96	-1,89	42,50	-16,25	42,20	16,67	40,77	-10,56	179,86	-49,54	36,47	-27,86	81,80	-19,18
-15000	299,52	-7,00	27,13	-22,37	24,04	10,45	24,84	-16,83	163,54	-41,78	21,87	-34,33	67,54	-20,80
-16000	280,08	-10,39	10,37	-29,83	5,34	2,82	7,57	-24,42	147,33	-34,08	5,45	-41,98	52,25	-24,27
-17000	258,64	-11,22	351,21	-38,29	345,46	-5,66	348,03	-32,91	130,34	-27,04	345,78	-50,42	35,74	-29,70
-18000	235,65	-8,81	327,79	-46,99	323,42	-14,10	324,57	-41,46	111,98	-21,46	319,83	-58,74	17,50	-37,11
-19000	211,70	-2,84	297,04	-54,19	298,12	-21,07	294,84	-48,35	91,94	-18,33	282,68	-64,56	356,29	-46,25
-20000	186,95	6,38	257,62	-56,58	269,12	-24,48	258,18	-50,58	70,42	-18,79	236,54	-63,67	328,84	-56,25

Table 20: Results of the calculations, Right ascension and Declination in Degrees

	94		2,87		753		2,87		785		2,88		610		2,88		228		2,89		696		2,89		737		2,89	
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	326,76	-16,13			56,87	24,11	229,73	-68,68	58,53	31,88	111,79	8,29	58,53	31,88	229,73	-68,68	111,79	8,29	239,71	-26,11	239,71	-26,11	287,44	-21,02	287,44	-21,02	287,44	-21,02
1000	312,72	-20,29			42,34	20,51	208,84	-64,35	43,24	28,37	98,16	9,74	43,24	28,37	208,84	-64,35	98,16	9,74	224,93	-22,70	224,93	-22,70	272,50	-21,98	272,50	-21,98	272,50	-21,98
0	298,12	-23,44			28,56	15,96	192,48	-59,11	28,92	23,85	84,50	9,88	28,92	23,85	192,48	-59,11	84,50	9,88	210,94	-18,28	210,94	-18,28	257,57	-21,48	257,57	-21,48	257,57	-21,48
-1000	283,05	-25,32			15,42	10,77	179,02	-53,51	15,46	18,66	70,99	8,70	15,46	18,66	179,02	-53,51	70,99	8,70	197,67	-13,16	197,67	-13,16	242,96	-19,57	242,96	-19,57	242,96	-19,57
-2000	267,76	-25,75			2,73	5,21	167,30	-47,91	2,65	13,09	57,77	6,28	2,65	13,09	167,30	-47,91	57,77	6,28	184,91	-7,63	184,91	-7,63	228,89	-16,40	228,89	-16,40	228,89	-16,40
-3000	252,60	-24,68			350,24	-0,42	156,59	-42,53	350,21	7,45	44,93	2,75	350,21	7,45	156,59	-42,53	44,93	2,75	172,43	-1,97	172,43	-1,97	215,43	-12,20	215,43	-12,20	215,43	-12,20
-4000	237,89	-22,18			337,69	-5,86	146,43	-37,54	337,88	2,00	32,44	-1,67	337,88	2,00	146,43	-37,54	32,44	-1,67	159,95	3,55	159,95	3,55	202,51	-7,21	202,51	-7,21	202,51	-7,21
-5000	223,80	-18,45			324,83	-10,84	136,53	-33,08	325,41	-3,01	20,19	-6,78	325,41	-3,01	136,53	-33,08	20,19	-6,78	147,24	8,66	147,24	8,66	189,95	-1,72	189,95	-1,72	189,95	-1,72
-6000	210,34	-13,73			311,47	-15,08	126,69	-29,29	312,60	-7,31	7,96	-12,35	312,60	-7,31	126,69	-29,29	7,96	-12,35	134,07	13,08	134,07	13,08	177,49	4,03	177,49	4,03	177,49	4,03
-7000	197,36	-8,28			297,47	-18,30	116,78	-26,28	299,31	-10,67	355,46	-18,14	299,31	-10,67	116,78	-26,28	355,46	-18,14	120,30	16,55	120,30	16,55	164,84	9,76	164,84	9,76	164,84	9,76
-8000	184,59	-2,37			282,84	-20,23	106,70	-24,17	285,48	-12,82	342,31	-23,89	285,48	-12,82	106,70	-24,17	342,31	-23,89	105,88	18,78	105,88	18,78	151,66	15,21	151,66	15,21	151,66	15,21
-9000	171,69	3,75			267,70	-20,65	96,40	-23,07	271,18	-13,57	328,10	-29,29	271,18	-13,57	96,40	-23,07	328,10	-29,29	90,90	19,55	90,90	19,55	137,63	20,06	137,63	20,06	137,63	20,06
-10000	158,27	9,81			252,25	-19,43	85,82	-23,07	256,51	-12,77	312,38	-33,95	256,51	-12,77	85,82	-23,07	312,38	-33,95	75,55	18,69	75,55	18,69	122,45	23,96	122,45	23,96	122,45	23,96
-11000	143,88	15,47			236,72	-16,54	74,92	-24,26	241,63	-10,36	294,83	-37,39	241,63	-10,36	74,92	-24,26	294,83	-37,39	60,03	16,16	60,03	16,16	106,01	26,50	106,01	26,50	106,01	26,50
-12000	128,10	20,36			221,19	-12,07	63,65	-26,68	226,58	-6,37	275,48	-39,07	226,58	-6,37	63,65	-26,68	275,48	-39,07	44,46	12,01	44,46	12,01	88,38	27,28	88,38	27,28	88,38	27,28
-13000	110,59	23,95			205,57	-6,21	51,90	-30,39	211,30	-0,92	254,85	-38,50	211,30	-0,92	51,90	-30,39	254,85	-38,50	28,77	6,39	28,77	6,39	69,91	26,00	69,91	26,00	69,91	26,00
-14000	91,29	25,66			189,53	0,79	39,49	-35,40	195,51	5,78	233,85	-35,48	195,51	5,78	39,49	-35,40	233,85	-35,48	12,70	-0,44	12,70	-0,44	51,03	22,55	51,03	22,55	51,03	22,55
-15000	70,53	24,96			172,54	8,55	26,09	-41,68	178,70	13,43	213,17	-30,14	178,70	13,43	26,09	-41,68	213,17	-30,14	355,73	-8,14	355,73	-8,14	32,01	17,03	32,01	17,03	32,01	17,03
-16000	48,93	21,56			153,80	16,55	11,02	-49,15	160,08	21,55	192,90	-22,93	160,08	21,55	11,02	-49,15	192,90	-22,93	337,09	-16,19	337,09	-16,19	12,74	9,79	12,74	9,79	12,74	9,79
-17000	26,97	15,53			132,32	23,92	352,80	-57,59	138,53	29,34	172,58	-14,49	138,53	29,34	352,80	-57,59	172,58	-14,49	315,79	-23,79	315,79	-23,79	352,73	1,38	352,73	1,38	352,73	1,38
-18000	4,64	7,38			107,20	29,32	327,61	-66,31	112,83	35,44	151,36	-5,71	112,83	35,44	107,20	29,32	151,36	-5,71	290,83	-29,60	290,83	-29,60	331,10	-7,39	331,10	-7,39	331,10	-7,39
-19000	341,28	-1,98			78,51	30,99	285,90	-72,94	82,75	37,89	128,25	2,21	82,75	37,89	285,90	-72,94	128,25	2,21	262,09	-31,83	262,09	-31,83	306,76	-15,22	306,76	-15,22	306,76	-15,22
-20000	315,74	-11,13			48,19	27,41	228,64	-71,70	50,58	34,86	102,56	7,57	50,58	34,86	48,19	27,41	102,56	7,57	231,41	-28,80	231,41	-28,80	278,94	-20,16	278,94	-20,16	278,94	-20,16

	271		2,9		276		2,9		324		2,9		426		2,9		611		2,9		32		2,91		697		2,91	
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	194,01	38,32			296,24	45,13	288,44	43,00	44,57	-40,30	29,69	-61,57	29,69	-61,57	288,44	43,00	44,57	-40,30	59,46	40,01	322,89	-5,57	245,30	-25,59	245,30	-25,59	245,30	-25,59
1000	181,96	43,82			288,44	43,00	35,06	-44,59	21,81	-66,60	43,24	-36,54	21,81	-66,60	35,06	-44,59	43,24	-36,54	28,30	32,00	309,59	-9,59	230,41	-22,62	230,41	-22,62	230,41	-22,62
0	168,86	49,37			280,64	41,58	25,39	-49,43	13,49	-71,94	28,30	32,00	13,49	-71,94	25,39	-49,43	28,30	32,00	28,30	32,00	295,95	-12,61	216,26	-18,55	216,26	-18,55	216,26	-18,55
-1000	154,02	54,68			272,89	40,91	15,29	-54,70	3,83	-77,51	14,51	26,78	3,83	-77,51	15,29	-54,70	14,51	26,78	14,51	26,78	282,04	-14,44	202,83	-13,66	202,83	-13,66	202,83	-13,66
-2000	136,61	59,31			265,21	41,00	4,24	-60,26	348,99	-83,15	1,60	21,21	348,99	-83,15	4,24	-60,26	1,60	21,21	21,21	26,78	268,00	-14,93	189,97	-8,25	189,97	-8,25	189,97	-8,25
-3000	115,98	62,66			257,62	41,84	351,33	-65,91	286,58	-87,76	349,25	15,58	286,58	-87,76	351,33	-65,91	349,25	15,58	349,25	15,58	254,06	-14,03	177,44	-2,60	177,44	-2,60	177,44	-2,60
-4000	92,64	64,06			250,17	43,43	334,62	-71,34	196,69	-84,25	337,16	10,15	196,69	-84,25	334,62	-71,34	337,16	10,15	337,16	10,15	240,39	-11,82	164,98	3,01	164,98	3,01	164,98	3,01
-5000	68,95	63,14			242,86	45,73	310,29	-75,88	179,25	-78,55	325,09	5,17	179,25	-78,55	310,29	-75,88	325,09	5,17	325,09	5,17	227,13	-8,42	152,33	8,32	152,33	8,32	152,33	8,32
-6000	47,56	60,09			235,69	48,71	274,64	-78,09	169,26	-72,80	312,82	0,87	169,26	-72,80	274,64	-78,09	312,82	0,87	312,82	0,87	214,25	-4,02	139,25	13,05	139,25	13,05	139,25	13,05
-7000	29,44	55,53			228,64	52,33	236,93	-76,57	161,02	-67,17	300,21	-2,52	161,02	-67,17	236,93	-76,57	300,21	-2,52	300,21	-2,52	201,64	1,14	125,56	16,92	125,56	16,92	125,56	16,92
-8000	14,06	50,06			221,70	56,56	209,95	-72,20	153,33	-61,73	287,18	-4,80	153,33	-61,73	209,95	-72,20	287,18	-4,80	287,18	-4,80	189,07	6,86	111,15	19,64	111,15	19,64	111,15	19,64
-9000	0,52	44,11			214,82	61,38	191,65	-66,54	145,72	-56,56	273,72	-5,76	145,72	-56,56	191,65	-66,54	273,72	-5,76	273,72	-5,76	176,19	12,88	96,07	20,95	96,07	20,95	96,07	20,95
-10000	348,00	38,00			207,97	66,75	177,68	-60,37	137,94	-51,73	259,90	-5,28	137,94	-51,73	177,68	-60,37	259,											

	355	2,91	663	2,93	612	2,95	596	2,95	33	2,95	267	2,95	109	2,96
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	95,74	22,51	102,48	-50,61	46,20	53,51	340,75	30,22	331,45	0,32	187,47	-16,52	146,78	-65,07
1000	80,64	22,37	96,28	-49,69	29,16	49,10	329,20	25,18	318,55	-4,24	174,71	-10,91	140,44	-60,58
0	65,79	20,78	90,11	-49,36	14,28	43,90	317,90	20,69	305,39	-7,98	162,23	-5,39	133,95	-56,48
-1000	51,46	17,88	84,03	-49,63	0,99	38,34	306,68	16,92	291,95	-10,66	149,76	-0,22	127,34	-52,81
-2000	37,75	13,89	78,10	-50,50	348,79	32,73	295,46	14,02	278,29	-12,13	137,13	4,34	120,61	-49,66
-3000	24,63	9,07	72,39	-51,94	337,25	27,33	284,19	12,12	264,56	-12,26	124,22	8,07	113,78	-47,08
-4000	11,95	3,70	66,95	-53,92	326,05	22,34	272,90	11,29	250,95	-11,04	110,97	10,74	106,87	-45,12
-5000	359,47	-1,96	61,86	-56,41	314,94	17,95	261,61	11,60	237,62	-8,53	97,44	12,17	99,89	-43,82
-6000	346,91	-7,64	57,22	-59,37	303,77	14,34	250,36	13,04	224,63	-4,88	83,77	12,25	92,86	-43,23
-7000	333,98	-13,07	53,21	-62,75	292,42	11,67	239,16	15,59	211,93	-0,27	70,10	10,93	85,80	-43,36
-8000	320,36	-17,95	50,12	-66,50	280,84	10,07	227,95	19,18	199,35	5,09	56,56	8,26	78,72	-44,25
-9000	305,81	-21,95	48,61	-70,54	268,98	9,68	216,61	23,72	186,62	10,99	43,17	4,35	71,63	-45,91
-10000	290,17	-24,72	50,14	-74,72	256,85	10,57	204,91	29,12	173,36	17,19	29,85	-0,64	64,56	-48,35
-11000	273,50	-25,89	58,31	-78,66	244,44	12,82	192,47	35,25	159,08	23,40	16,34	-6,52	57,52	-51,57
-12000	256,05	-25,18	79,92	-81,27	231,66	16,43	178,70	41,93	143,20	29,24	2,27	-13,08	50,58	-55,57
-13000	238,17	-22,44	110,02	-80,58	218,38	21,37	162,59	48,88	125,10	34,18	347,10	-20,01	43,88	-60,33
-14000	220,14	-17,73	126,61	-76,74	204,29	27,58	142,51	55,55	104,38	37,47	330,10	-26,90	37,81	-65,80
-15000	201,96	-11,27	130,18	-71,48	188,85	34,90	116,22	60,84	81,30	38,30	310,39	-33,09	33,41	-71,89
-16000	183,27	-3,46	127,04	-65,79	171,04	43,02	83,01	62,92	56,96	36,06	287,23	-37,57	34,42	-78,34
-17000	163,39	5,11	120,09	-60,25	149,00	51,33	48,05	60,26	32,68	30,71	260,75	-39,05	59,47	-83,85
-18000	141,33	13,53	110,56	-55,38	119,56	58,35	17,67	53,41	9,00	22,83	232,59	-36,52	118,94	-82,52
-19000	116,05	20,34	99,20	-51,79	80,74	61,19	352,12	44,19	345,48	13,43	204,92	-29,90	132,41	-75,75
-20000	87,15	23,49	86,72	-50,14	40,03	57,08	329,07	34,26	321,06	3,88	178,55	-20,15	129,06	-68,17
	372	2,97	442	2,98	325	2,98	698	2,98	21	2,99	613	2,99	738	2,99
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	113,65	31,89	146,46	23,77	59,51	-13,51	252,97	-38,05	286,35	13,86	55,73	47,79	271,45	-30,42
1000	97,48	33,43	131,92	27,99	47,92	-16,78	236,41	-35,66	274,87	12,86	38,72	44,01	255,48	-29,74
0	81,13	33,41	116,61	31,15	36,47	-20,89	220,90	-31,95	263,46	12,97	23,44	39,23	239,97	-27,57
-1000	65,10	31,83	100,66	32,95	25,06	-25,69	206,50	-27,28	252,16	14,19	9,62	33,86	225,21	-24,11
-2000	49,80	28,85	84,44	33,20	13,47	-30,98	193,07	-21,97	241,03	16,45	356,86	28,25	211,28	-19,64
-3000	35,39	24,74	68,44	31,87	1,43	-36,56	180,35	-16,35	220,06	19,68	344,78	22,68	198,09	-14,45
-4000	21,85	19,81	53,08	29,09	348,52	-42,19	168,03	-10,70	219,21	23,75	333,07	17,40	185,42	-8,85
-5000	8,96	14,36	38,56	25,10	334,20	-47,56	155,85	-5,27	208,33	28,54	321,45	12,62	173,03	-3,11
-6000	336,47	8,68	24,85	20,20	317,84	-52,28	143,53	-0,33	197,21	33,87	309,74	8,56	160,60	2,52
-7000	344,06	3,03	11,77	14,68	298,92	-55,80	130,87	3,89	185,49	39,60	297,79	5,40	147,86	7,76
-8000	331,41	-2,33	359,00	8,81	277,65	-57,53	117,71	7,14	172,66	45,51	285,52	3,32	134,54	12,34
-9000	318,24	-7,12	346,20	2,86	255,38	-57,01	104,00	9,18	157,93	51,32	272,92	2,49	120,44	15,96
-10000	304,28	-11,05	332,98	-2,89	234,04	-54,20	89,75	9,80	140,20	56,59	260,00	3,01	105,46	18,30
-11000	289,37	-13,79	318,96	-8,13	214,77	-49,48	75,04	8,83	118,27	60,60	246,76	4,98	89,65	19,08
-12000	273,47	-15,00	303,79	-12,51	197,49	-43,40	59,97	6,21	92,07	62,32	233,19	8,41	73,18	18,06
-13000	256,68	-14,39	287,22	-15,56	181,50	-36,44	44,58	1,95	64,28	60,93	219,17	13,26	56,28	15,15
-14000	239,19	-11,77	269,19	-16,82	165,97	-29,03	28,73	-3,85	38,60	56,50	204,45	19,45	39,08	10,38
-15000	221,16	-7,10	249,89	-15,84	150,12	-21,63	12,09	-10,97	16,24	49,83	188,53	26,78	21,49	3,95
-16000	202,52	-0,53	229,68	-12,35	133,23	-14,78	354,02	-19,04	356,22	41,85	170,55	34,92	3,11	-3,79
-17000	182,87	7,56	208,80	-6,38	114,74	-9,20	333,51	-27,45	337,12	33,40	149,02	43,22	343,21	-12,27
-18000	161,37	16,51	187,12	1,71	94,30	-5,84	309,14	-35,07	317,72	25,34	121,70	50,35	320,72	-20,58
-19000	136,70	25,18	163,90	11,14	71,97	-5,75	279,67	-40,02	297,16	18,73	87,11	53,86	294,46	-27,18
-20000	107,46	31,54	137,82	20,53	48,28	-9,84	246,13	-39,84	275,06	14,88	49,29	51,09	264,14	-29,85

Table 22: Results of the calculations, Right ascension and Declination in Degrees

	79	3	213	3	214	3	407	3	788	3	802	3,01	375	3,01
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	218,02	38,31	95,08	-30,06	105,76	-23,83	199,73	-23,17	32,39	34,99	167,42	44,50	328,48	-37,36
1000	207,87	42,94	85,52	-30,04	95,34	-22,82	186,46	-17,74	18,05	29,96	152,60	49,74	312,75	-41,67
0	197,38	48,06	76,06	-30,94	84,98	-22,80	173,73	-12,13	4,74	24,49	135,71	54,28	295,67	-44,81
-1000	186,18	53,51	66,73	-32,73	74,73	-23,79	161,28	-6,64	352,13	18,88	116,38	57,60	277,51	-46,40
-2000	173,64	59,10	57,54	-35,37	64,62	-25,76	148,88	-1,52	339,93	13,43	95,01	59,14	259,02	-46,21
-3000	158,63	64,54	48,45	-38,78	54,62	-28,62	136,31	2,98	327,88	8,36	73,20	58,56	241,13	-44,26
-4000	139,32	69,37	39,39	-42,89	44,71	-32,31	123,47	6,62	315,76	3,92	52,87	55,98	224,50	-40,80
-5000	113,51	72,72	30,21	-47,59	34,76	-36,72	110,30	9,19	303,45	0,31	35,01	51,87	209,33	-36,20
-6000	82,34	73,46	20,66	-52,81	24,59	-41,74	96,84	10,50	290,86	-2,26	19,53	46,75	195,43	-30,85
-7000	53,12	71,15	10,29	-58,42	13,87	-47,24	83,20	10,43	278,00	-3,62	5,83	41,08	182,43	-25,09
-8000	30,54	66,68	358,24	-64,31	2,06	-53,09	69,53	8,95	264,92	-3,65	353,26	35,20	169,94	-19,20
-9000	13,38	61,05	342,66	-70,23	348,22	-59,08	55,91	6,08	251,69	-2,29	341,27	29,37	157,55	-13,43
-10000	359,36	54,89	319,25	-75,61	330,68	-64,84	42,34	1,92	238,36	0,48	329,40	23,81	144,90	-8,05
-11000	346,89	48,54	280,61	-78,79	306,68	-69,61	28,70	-3,38	224,89	4,59	317,27	18,75	131,65	-3,32
-12000	334,99	42,23	235,12	-77,25	274,27	-71,92	14,70	-9,64	211,14	9,95	304,55	14,42	117,53	0,45
-13000	322,99	36,18	203,79	-71,79	239,12	-70,31	359,90	-16,61	196,81	16,39	290,96	11,12	102,32	2,90
-14000	310,37	30,65	183,05	-64,65	210,11	-65,17	343,64	-23,96	181,37	23,69	276,32	9,18	85,95	3,66
-15000	296,73	25,98	166,48	-56,88	187,64	-57,96	325,02	-31,15	164,02	31,47	260,52	8,97	68,48	2,38
-16000	281,78	22,62	151,14	-49,04	168,67	-49,81	302,97	-37,31	143,53	39,11	243,55	10,82	50,02	-1,17
-17000	265,32	21,11	135,61	-41,66	150,88	-41,52	276,81	-41,11	118,36	45,43	225,40	14,99	30,56	-7,02
-18000	247,35	22,08	119,13	-35,36	132,88	-33,84	247,44	-41,01	87,77	48,58	205,88	21,54	9,80	-14,95
-19000	227,93	26,07	101,35	-31,01	113,88	-27,70	217,61	-36,23	54,29	46,66	184,36	30,29	346,82	-24,34
-20000	207,03	33,44	82,30	-29,59	93,60	-24,22	189,48	-27,35	22,58	39,39	159,14	40,49	319,83	-33,90
	268	3,02	356	3,02	699	3,02	821	3,03	754	3,03	69	3,04	385	3,06
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	182,53	-22,62	100,98	25,13	266,90	-40,13	230,18	71,83	84,41	21,14	75,49	43,82	258,66	14,39
1000	169,90	-17,07	85,57	25,45	249,61	-38,99	232,18	75,35	69,59	19,89	57,98	41,62	247,33	16,01
0	157,61	-11,70	70,33	24,29	233,11	-36,30	239,54	78,53	55,22	17,31	41,71	38,01	236,16	18,65
-1000	145,44	-6,77	55,58	21,73	217,75	-32,36	255,59	80,74	41,43	13,58	26,81	33,37	225,15	22,20
-2000	133,20	-2,50	41,49	18,00	203,54	-27,51	278,70	81,04	28,22	8,95	13,11	28,07	214,21	26,53
-3000	120,78	0,90	28,08	13,36	190,28	-22,09	297,48	79,22	15,49	3,71	0,30	22,46	203,22	31,48
-4000	108,15	3,24	15,23	8,08	177,69	-16,43	307,17	76,14	3,01	-1,89	348,05	16,81	191,91	36,89
-5000	95,35	4,38	2,71	2,44	165,45	-10,78	310,67	72,55	350,54	-7,58	336,05	11,39	179,93	42,56
-6000	82,47	4,24	350,24	-3,29	153,28	-5,42	310,74	68,81	337,78	-13,09	324,04	6,44	166,74	48,25
-7000	69,60	2,77	337,52	-8,84	140,91	-0,58	308,83	65,14	324,43	-18,14	311,80	2,17	151,57	53,65
-8000	56,81	0,04	324,24	-13,94	128,12	3,49	305,65	61,64	310,25	-22,41	299,16	-1,17	133,46	58,26
-9000	44,08	-3,88	310,13	-18,27	114,77	6,53	301,57	58,40	295,06	-25,55	286,04	-3,38	111,70	61,40
-10000	31,28	-8,85	294,99	-21,50	100,77	8,30	296,78	55,49	278,87	-27,23	272,41	-4,24	87,00	62,28
-11000	18,17	-14,72	278,78	-23,24	86,15	8,57	291,34	52,98	261,90	-27,15	258,30	-3,60	62,04	60,43
-12000	4,33	-21,30	261,65	-23,20	70,99	7,17	285,27	50,93	244,51	-25,14	243,78	-1,35	39,46	56,11
-13000	349,18	-28,30	243,91	-21,15	55,38	4,04	278,54	49,44	227,01	-21,20	228,84	2,52	19,80	50,01
-14000	331,87	-35,33	225,85	-17,06	39,29	-0,82	271,10	48,61	209,51	-15,52	213,38	7,95	2,19	42,79
-15000	311,27	-41,68	207,55	-11,10	22,56	-7,25	262,90	48,58	191,80	-8,41	197,08	14,79	345,47	35,02
-16000	286,37	-46,22	188,77	-3,59	4,70	-14,98	253,90	49,53	173,35	-0,32	179,34	22,73	328,64	27,25
-17000	257,49	-47,46	168,91	4,91	344,88	-23,52	244,12	51,68	153,37	8,09	159,13	31,24	310,86	20,15
-18000	227,31	-44,34	147,00	13,55	321,78	-31,95	233,67	55,31	130,87	15,79	134,84	39,30	291,51	14,57
-19000	198,79	-37,12	121,90	20,96	293,76	-38,62	222,89	60,70	105,00	21,23	104,72	44,99	270,33	11,63
-20000	172,54	-27,13	92,95	25,05	260,49	-40,97	212,80	68,11	75,97	22,42	69,43	45,56	247,55	12,50

Table 23: Results of the calculations, Right ascension and Declination in Degrees

	803	3,07	520	3,07	95	3,08	307	3,08	277	3,09	804	3,1	408	3,11
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	155,58	41,50	191,57	-68,11	305,25	-14,78	288,14	67,66	292,68	27,96	134,80	48,04	162,41	-16,19
1000	139,97	46,20	177,81	-62,56	291,04	-17,41	287,71	65,91	282,62	26,27	116,81	51,37	150,14	-11,15
0	122,61	49,89	166,43	-57,02	276,55	-18,74	286,49	64,24	272,61	25,53	97,31	53,09	137,93	-6,68
-1000	103,63	52,09	156,31	-51,69	262,00	-18,67	284,67	62,71	262,68	25,77	77,32	52,91	125,64	-3,00
-2000	83,82	52,45	146,87	-46,73	247,67	-17,19	282,40	61,38	252,85	26,97	58,18	50,86	113,21	-0,29
-3000	64,46	50,90	137,78	-42,26	233,76	-14,41	279,80	60,28	243,14	29,09	40,77	47,27	100,65	1,29
-4000	46,60	47,67	128,84	-38,36	220,37	-10,53	276,99	59,46	233,54	32,09	25,26	42,60	88,05	1,65
-5000	30,59	43,20	119,93	-35,16	207,46	-5,77	274,05	58,94	223,99	35,87	11,36	37,27	75,49	0,74
-6000	16,22	37,91	110,98	-32,72	194,88	-0,39	271,05	58,74	214,35	40,36	358,59	31,65	63,07	-1,39
-7000	3,07	32,18	101,93	-31,13	182,36	5,36	268,07	58,87	204,40	45,45	346,52	26,00	50,80	-4,68
-8000	350,65	26,31	92,74	-30,47	169,59	11,24	265,19	59,33	193,79	51,06	334,74	20,57	38,63	-9,00
-9000	338,51	20,54	83,41	-30,79	156,21	16,97	262,51	60,12	181,86	57,04	322,91	15,58	26,39	-14,19
-10000	326,27	15,12	73,89	-32,13	141,80	22,21	260,16	61,22	167,40	63,19	310,75	11,25	13,82	-20,11
-11000	313,57	10,29	64,14	-34,54	125,98	26,59	258,28	62,58	147,96	69,09	298,03	7,82	0,47	-26,55
-12000	300,13	6,32	54,09	-38,04	108,51	29,60	257,09	64,11	119,09	73,70	284,56	5,54	345,75	-33,25
-13000	285,71	3,55	43,62	-42,64	89,46	30,74	256,82	65,70	79,22	74,89	270,24	4,68	328,80	-39,81
-14000	270,18	2,32	32,50	-48,33	69,27	29,58	257,65	67,17	41,61	71,36	255,04	5,50	308,54	-45,56
-15000	253,51	2,98	20,34	-55,09	48,59	25,95	259,57	68,30	14,53	64,69	238,95	8,20	284,12	-49,47
-16000	235,75	5,82	6,21	-62,84	27,84	19,99	262,20	68,91	353,85	56,64	221,92	12,90	256,09	-50,25
-17000	216,89	10,99	347,48	-71,36	6,95	12,17	264,72	68,92	335,67	48,21	203,71	19,56	227,16	-47,11
-18000	196,69	18,38	312,52	-79,65	345,32	3,25	266,32	68,46	317,94	40,16	183,68	27,95	199,98	-40,39
-19000	174,30	27,58	230,99	-81,33	321,97	-5,67	266,77	67,81	299,58	33,37	160,44	37,42	174,94	-31,31
-20000	147,92	37,52	182,08	-72,54	295,81	-12,90	266,71	67,25	280,17	28,89	131,28	46,49	150,91	-21,35

	739	3,11	430	3,12	146	3,12	235	3,12	386	3,13	54	3,13	409	3,13
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	274,41	-36,76	309,39	-47,29	173,95	-63,02	87,74	-35,77	258,76	24,84	254,66	-55,99	133,85	5,95
1000	257,54	-36,32	291,11	-50,12	163,11	-57,56	78,99	-36,53	248,55	26,45	234,73	-53,59	120,50	9,31
0	241,17	-34,31	271,68	-51,24	153,37	-52,36	70,41	-38,12	238,49	28,99	216,96	-49,68	106,88	11,55
-1000	225,70	-30,93	252,19	-50,46	144,22	-47,56	62,02	-40,50	228,56	32,37	201,38	-44,77	93,10	12,53
-2000	211,27	-26,48	233,79	-47,91	135,36	-43,25	53,81	-43,61	218,68	36,49	187,56	-39,31	79,33	12,16
-3000	197,78	-21,30	217,10	-43,94	126,63	-39,54	45,77	-47,38	208,74	41,24	174,98	-33,64	65,78	10,46
-4000	185,00	-15,70	202,14	-39,01	117,94	-36,51	37,84	-51,72	198,49	46,48	163,18	-28,06	52,58	7,55
-5000	172,64	-9,97	188,59	-33,51	109,22	-34,25	29,89	-56,58	187,55	52,08	151,80	-22,79	39,76	3,59
-6000	160,39	-4,36	175,99	-27,77	100,45	-32,81	21,71	-61,87	175,27	57,86	140,54	-18,03	27,25	-1,21
-7000	147,98	0,87	163,93	-22,07	91,60	-32,27	12,88	-67,52	160,49	63,56	129,20	-13,97	14,88	-6,64
-8000	135,13	5,46	152,04	-16,65	82,67	-32,65	2,42	-73,45	141,17	68,71	117,62	-10,80	2,35	-12,47
-9000	121,66	9,14	139,99	-11,73	73,63	-34,00	347,12	-79,52	114,61	72,38	105,69	-8,67	349,32	-18,45
-10000	107,43	11,64	127,53	-7,55	64,46	-36,34	309,52	-84,95	81,44	73,16	93,35	-7,77	335,34	-24,30
-11000	92,43	12,67	114,42	-4,36	55,08	-39,68	222,13	-84,36	50,00	70,42	80,59	-8,22	319,90	-29,65
-12000	76,74	12,02	100,54	-2,42	45,41	-44,02	188,65	-78,25	25,74	65,10	67,37	-10,12	302,51	-34,00
-13000	60,52	9,54	85,80	-2,01	35,28	-49,35	172,74	-71,26	6,93	58,39	53,66	-13,54	282,95	-36,75
-14000	43,83	5,22	70,20	-3,36	24,39	-55,66	160,22	-64,07	350,86	51,03	39,32	-18,47	261,49	-37,25
-15000	26,61	-0,82	53,76	-6,64	12,14	-62,90	148,22	-56,93	335,74	43,50	24,04	-24,84	239,03	-35,04
-16000	8,50	-8,30	36,41	-11,90	336,93	-70,94	135,70	-50,15	320,43	36,26	7,23	-32,47	216,54	-30,09
-17000	348,79	-16,75	17,83	-19,04	331,90	-79,37	122,16	-44,15	304,20	29,87	347,79	-40,97	194,44	-22,85
-18000	326,36	-25,32	357,27	-27,70	253,48	-84,45	107,29	-39,49	286,56	25,08	323,60	-49,51	172,37	-14,08
-19000	299,75	-32,53	333,20	-37,07	185,78	-77,47	91,08	-36,93	267,34	22,81	291,44	-56,16	149,45	-4,86
-20000	268,26	-36,00	302,98	-45,38	161,08	-67,26	73,81	-37,32	246,78	24,06	250,91	-57,46	124,59	3,31

Table 24: Results of the calculations, Right ascension and Declination in Degrees

	147	3,13	387	3,16	70	3,16	498	3,16	740	3,16	664	3,17	308	3,17
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	224,79	-42,10	258,76	36,81	76,63	41,23	140,26	34,39	281,41	-26,99	99,44	-43,20	257,20	65,71
1000	209,21	-37,65	250,11	38,30	59,47	39,17	124,52	38,15	265,76	-27,34	91,82	-42,65	256,83	66,97
0	195,03	-32,46	241,62	40,59	43,40	35,70	107,76	40,62	250,28	-26,17	84,28	-42,84	257,39	68,22
-1000	181,94	-26,90	233,27	43,62	28,58	31,17	90,36	41,51	235,32	-23,60	76,87	-43,76	258,96	69,38
-2000	169,57	-21,28	225,06	47,30	14,87	25,95	73,00	40,70	221,07	-19,84	69,63	-45,39	261,59	70,33
-3000	157,61	-15,85	216,89	51,58	2,00	20,37	56,34	38,30	207,56	-15,16	62,59	-47,69	265,15	71,00
-4000	145,80	-10,85	208,66	56,36	349,67	14,72	40,80	34,56	194,64	-9,85	55,77	-50,61	269,34	71,28
-5000	133,92	-6,50	200,10	61,57	337,56	9,27	26,43	29,82	182,08	-4,20	49,18	-54,12	273,73	71,15
-6000	121,84	-3,00	190,74	67,12	325,41	4,26	13,04	24,42	169,62	1,54	42,83	-58,15	277,83	70,61
-7000	109,47	0,54	179,43	72,90	313,00	-0,08	0,30	18,68	156,93	7,08	36,75	-62,66	281,24	69,71
-8000	96,78	0,72	162,79	78,71	300,16	-3,50	347,86	12,86	143,73	12,16	30,99	-67,62	283,74	68,52
-9000	83,81	0,63	126,72	83,65	286,80	-5,77	335,36	7,22	129,74	16,47	25,80	-72,98	285,26	67,13
-10000	70,60	-0,86	55,43	83,63	272,90	-6,68	322,45	2,01	114,77	19,67	22,08	-78,72	285,79	65,59
-11000	57,16	-3,79	18,04	78,31	258,52	-6,06	308,81	-2,47	98,77	21,41	25,52	-84,71	285,37	63,97
-12000	43,44	-8,12	0,10	71,68	243,72	-3,80	294,18	-5,89	81,88	21,38	129,24	-87,68	284,00	62,33
-13000	29,26	-13,75	346,99	64,69	228,53	0,10	278,42	-7,89	64,36	19,38	158,75	-81,51	281,68	60,73
-14000	14,24	-20,53	335,08	57,64	212,86	5,59	261,51	-8,08	46,48	15,35	155,52	-74,58	278,33	59,23
-15000	338,77	-36,29	323,06	50,75	196,40	12,49	243,57	-6,17	28,31	9,44	148,05	-67,50	273,90	57,96
-16000	338,77	-36,29	310,24	44,35	178,55	20,47	224,76	-1,97	9,59	1,98	138,52	-60,54	268,33	57,09
-17000	315,70	-43,94	296,22	38,89	158,33	28,99	205,05	4,43	349,74	-6,51	127,33	-54,04	261,65	56,88
-18000	286,71	-49,51	280,75	35,00	134,20	37,02	184,06	12,71	327,77	-15,19	114,56	-48,49	254,03	57,64
-19000	232,19	-50,60	263,83	33,44	104,59	42,68	160,82	22,14	302,50	-22,67	100,36	-44,53	245,97	59,76
-20000	217,26	-45,60	245,76	35,06	70,09	43,32	133,61	31,25	273,21	-26,83	85,08	-42,96	238,73	63,55
	831	3,18	206	3,19	561	3,19	459	3,19	700	3,19	278	3,2	534	3,2
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	142,81	-57,03	220,63	-64,98	72,46	6,96	76,37	-22,37	267,46	-37,04	318,23	30,23	254,42	9,38
1000	135,23	-52,83	202,30	-60,16	59,03	4,66	65,84	-24,16	250,62	-35,99	307,65	26,45	242,67	11,41
0	127,70	-49,12	187,41	-54,69	45,97	1,24	55,45	-26,88	234,46	-33,41	297,14	23,47	231,12	14,46
-1000	120,16	-45,98	174,70	-49,02	33,27	-3,12	45,17	-30,45	219,31	-29,58	286,67	21,40	219,75	18,39
-2000	112,61	-43,48	163,31	-43,42	20,84	-8,17	34,92	-34,75	205,19	-24,81	276,22	20,30	208,47	23,04
-3000	105,03	-41,66	152,68	-38,12	8,48	-13,69	24,53	-39,65	191,95	-19,46	265,81	20,22	197,10	28,23
-4000	97,44	-40,56	142,45	-33,27	355,95	-19,40	13,74	-45,00	179,31	-13,81	255,48	21,18	185,38	33,78
-5000	89,85	-40,23	132,38	-29,02	342,94	-25,05	2,11	-50,64	167,00	-8,15	245,24	23,14	172,95	39,46
-6000	82,27	-40,67	122,30	-25,50	329,08	-30,32	348,96	-56,35	154,70	-2,74	235,06	26,06	159,29	45,00
-7000	74,72	-41,90	112,10	-22,83	314,04	-34,85	333,13	-61,81	142,17	2,17	224,87	29,86	143,77	50,06
-8000	67,19	-43,91	101,72	-21,14	297,60	-38,25	312,95	-66,45	129,16	6,32	214,53	34,47	125,75	54,13
-9000	59,69	-46,72	91,09	-20,52	279,84	-40,07	286,99	-69,36	115,54	9,43	203,79	39,80	105,02	56,61
-10000	52,19	-50,31	80,20	-21,05	261,23	-39,98	257,21	-69,43	101,22	11,25	192,25	45,74	82,47	56,89
-11000	44,69	-54,67	68,99	-22,81	242,49	-37,82	229,49	-66,40	86,25	11,55	179,20	52,16	60,02	54,73
-12000	37,19	-59,78	57,40	-25,83	224,23	-33,71	206,95	-61,06	70,74	10,13	163,41	58,78	39,26	50,37
-13000	29,80	-65,64	45,30	-30,14	206,64	-27,93	188,52	-54,35	54,79	6,94	142,51	65,08	20,51	44,33
-14000	22,89	-72,19	32,44	-35,71	189,45	-20,90	172,29	-46,94	38,43	2,00	112,78	69,82	3,17	37,19
-15000	18,26	-79,35	18,36	-42,48	172,11	-13,06	156,80	-39,33	21,47	-4,52	74,04	70,75	346,37	29,47
-16000	35,52	-86,63	2,17	-50,31	153,90	-5,01	141,03	-31,98	3,46	-12,31	37,30	66,71	329,23	21,72
-17000	146,12	-84,05	341,88	-58,79	133,98	2,49	124,23	-25,51	343,57	-20,86	9,11	59,29	310,96	14,64
-18000	147,00	-75,87	312,76	-66,83	111,66	8,31	105,92	-20,70	320,55	-29,23	346,43	50,41	290,97	9,14
-19000	138,20	-67,65	267,34	-71,18	86,70	11,02	85,93	-18,53	292,92	-35,80	325,94	41,38	268,99	6,37
-20000	126,98	-59,92	217,13	-67,24	59,80	9,15	64,50	-20,05	260,44	-38,08	305,78	33,35	245,34	7,58

Table 25: Results of the calculations, Right ascension and Declination in Degrees

	805	3,2	481	174	175	3,22	427	3,24	535	3,24	22	3,24
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	143.21	51.68	230.34	-40.65	322.16	70.56	354.84	-77.63	324.58	-4.69	302.83	0.82
1000	125.25	55.72	214.56	-36.53	318.39	66.26	345.57	-72.11	231.51	-1.75	290.00	-1.66
0	104.98	58.28	200.13	-31.55	313.73	62.22	337.58	66.76	218.79	2.18	277.06	-2.97
-1000	83.36	58.89	186.78	-26.09	308.54	58.52	330.08	61.69	206.38	6.91	264.13	-3.02
-2000	62.24	57.43	174.21	-20.45	303.00	55.22	322.76	56.96	194.12	12.19	251.32	-1.82
-3000	43.16	54.21	162.09	-14.91	297.19	52.38	315.50	52.65	181.80	17.78	238.76	0.58
-4000	26.57	49.77	150.14	-9.72	291.19	50.06	308.21	48.83	169.14	23.44	226.47	4.04
-5000	12.09	44.60	138.14	-5.10	285.04	48.31	300.84	45.58	155.81	28.87	214.42	8.41
-6000	359.14	39.10	125.92	-1.28	278.78	47.17	293.36	42.98	141.48	33.74	202.47	13.48
-7000	347.13	33.56	113.37	1.54	272.43	46.67	285.74	41.07	123.42	37.70	190.38	19.08
-8000	335.62	28.23	100.46	3.18	266.02	46.84	277.98	39.93	108.86	40.31	177.82	24.97
-9000	324.22	23.31	87.21	3.47	259.57	47.72	270.05	39.62	90.79	41.21	164.35	30.90
-10000	312.65	18.99	73.68	2.31	253.13	49.32	261.95	40.17	72.29	40.15	149.41	36.55
-11000	300.64	15.47	59.91	-0.32	246.73	51.64	253.66	41.64	54.06	37.12	132.37	41.47
-12000	288.00	12.99	45.88	-4.41	240.47	54.69	245.17	44.06	36.51	32.33	112.75	45.03
-13000	274.60	11.78	31.43	-9.87	234.50	58.46	236.46	47.47	19.63	26.12	90.67	46.50
-14000	260.36	12.10	16.25	-16.54	229.18	62.88	227.52	51.87	3.01	18.89	67.19	45.28
-15000	245.21	14.17	359.77	-24.16	225.26	67.87	218.32	57.28	346.03	11.10	43.86	41.24
-16000	229.10	18.15	341.04	-32.28	224.65	73.19	208.90	63.70	327.97	3.32	21.58	34.77
-17000	211.83	24.14	318.64	-40.09	232.58	78.24	199.44	71.11	308.06	-3.65	0.18	26.62
-18000	192.87	32.03	290.88	-46.08	259.43	81.06	190.86	79.44	285.71	-8.69	338.83	17.69
-19000	170.96	41.47	257.65	-47.95	290.34	78.84	209.44	88.45	260.84	-10.43	316.50	9.15
-20000	143.17	51.36	223.00	-43.85	300.88	73.19	337.47	81.17	234.30	-7.57	292.32	2.50
	536	3,25	504	3,25	665	3,25	301	3,26	410	3,26	34	3,27
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	260.50	-25.00	284.74	32.69	112.31	-43.30	68.50	-55.04	211.59	-26.68	343.66	-15.82
1000	245.33	-23.35	275.41	31.72	104.38	-41.60	63.30	-57.33	197.76	-21.58	330.17	-20.94
0	230.72	-20.38	266.16	31.64	96.51	-40.63	58.63	-60.06	184.67	-16.06	316.03	-25.40
-1000	216.81	-16.32	257.01	32.46	88.72	-40.43	54.67	-63.16	172.07	-10.41	301.17	-28.90
-2000	203.55	-11.44	247.98	34.16	81.03	-40.97	51.72	-66.56	159.69	-4.90	285.63	-31.13
-3000	190.80	-6.03	239.08	36.69	73.49	-42.27	50.30	-70.15	147.28	0.19	269.71	-31.88
-4000	178.32	-0.37	230.29	39.99	66.11	-44.28	51.37	-73.78	134.66	4.64	253.83	-31.05
-5000	165.84	5.29	221.52	43.98	58.90	-46.97	56.82	-77.20	121.69	8.18	238.40	-28.71
-6000	153.09	10.66	212.64	48.59	51.86	-50.29	69.87	-79.90	108.34	10.61	223.70	-25.06
-7000	139.80	15.47	203.42	53.75	44.96	-54.22	91.82	-80.94	94.65	11.74	209.74	-20.37
-8000	125.74	19.41	193.43	59.38	38.18	-58.71	113.55	-79.68	80.74	11.44	196.37	-14.91
-9000	110.81	22.16	181.83	65.36	31.49	-63.73	126.20	-76.71	66.74	9.66	183.29	-8.96
-10000	95.03	23.43	166.70	71.51	24.86	-69.25	131.18	-72.88	52.73	6.45	170.13	-2.78
-11000	78.62	22.96	142.82	77.29	18.45	-75.27	131.62	-68.68	38.70	1.90	156.47	3.33
-12000	61.85	20.63	98.24	80.76	13.11	-81.73	129.25	-64.35	24.47	-3.82	141.85	9.05
-13000	44.95	16.47	45.91	78.51	28.88	-88.49	124.87	-60.05	9.70	-10.51	125.84	13.95
-14000	27.92	10.66	14.92	72.19	118.83	-84.01	118.83	-55.94	353.85	-17.87	108.10	17.49
-15000	10.51	3.48	355.07	64.49	158.90	-76.49	111.26	-52.24	336.13	-25.46	88.55	19.05
-16000	352.15	-4.62	338.74	56.42	149.70	-68.88	102.17	-49.20	315.51	-32.56	67.47	18.06
-17000	332.00	-12.98	323.15	48.53	138.80	-61.46	91.60	-47.22	290.83	-37.99	45.41	14.17
-18000	309.02	-20.54	307.07	41.44	126.47	-54.65	79.64	-46.76	262.30	-40.12	22.75	7.46
-19000	282.35	-25.66	289.95	35.92	112.81	-49.02	66.56	-48.36	231.67	-37.50	359.33	-1.49
-20000	252.42	-26.28	271.69	32.93	98.12	-45.30	52.91	-52.57	202.03	-29.97	334.23	-11.61

Table 26: Results of the calculations, Right ascension and Declination in Degrees

	460	3,28	3	3,28	110	3,3	469	3,3	641	3,3	537	3,31	309	3,31
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	78,23	-16,21	9,83	30,86	133,43	-70,04	226,02	-25,28	102,05	-61,94	269,76	-9,77	231,23	58,97
1000	67,07	-17,86	356,84	25,33	147,35	-65,19	211,76	-20,93	99,37	-60,97	256,06	-9,05	225,93	62,65
0	56,06	-20,53	344,49	19,83	141,06	-60,65	198,29	-15,86	96,58	-60,25	242,62	-7,05	221,40	66,71
-1000	45,19	-24,09	332,47	14,63	134,61	-56,48	185,41	-10,35	93,74	-59,80	229,56	-3,88	218,07	71,03
-2000	34,40	-28,42	320,56	9,96	128,02	-52,76	172,88	-4,71	90,94	-59,62	216,89	0,26	216,94	75,53
-3000	23,52	-33,37	308,60	6,02	121,32	-49,54	160,44	0,80	88,23	-59,71	204,54	5,15	220,82	79,97
-4000	12,31	-38,78	296,50	3,01	114,49	-46,89	147,86	5,91	85,69	-60,05	192,34	10,57	239,09	83,77
-5000	31,84	-55,58	259,33	0,90	107,56	-44,86	134,92	10,37	83,38	-60,63	180,05	16,28	285,12	84,70
-6000	347,17	-50,17	271,82	0,35	100,54	-43,51	121,49	13,90	81,36	-61,44	167,37	22,01	315,30	81,64
-7000	331,84	-55,58	259,33	0,90	107,56	-44,86	134,92	10,37	83,38	-60,63	180,05	16,28	285,12	84,70
-8000	313,30	-60,21	246,82	2,74	86,24	-42,98	93,12	17,25	78,53	-63,63	139,35	32,40	323,97	72,49
-9000	290,72	-63,31	234,30	5,84	78,98	-43,87	78,40	16,70	77,97	-64,94	123,31	36,32	321,45	67,76
-10000	265,00	-64,03	221,71	10,12	71,67	-45,57	63,56	14,57	78,20	-66,30	105,72	38,81	317,30	63,13
-11000	239,36	-61,93	208,86	15,47	64,31	-48,09	48,71	10,91	79,40	-67,61	86,85	39,42	312,02	58,69
-12000	216,65	-57,37	195,44	21,74	56,94	-51,44	33,82	5,85	81,70	-68,72	67,37	37,89	305,77	54,52
-13000	197,16	-51,10	180,94	28,73	49,61	-55,62	18,68	-0,42	85,03	-69,44	48,02	34,19	298,56	50,74
-14000	179,81	-43,81	164,56	36,12	42,49	-60,61	2,88	-7,62	88,88	-69,56	29,17	28,58	290,32	47,48
-15000	163,35	-36,05	145,09	43,37	36,00	-66,37	345,77	-15,37	92,31	-69,00	10,68	21,46	280,98	44,95
-16000	146,73	-28,38	120,97	49,48	31,36	-72,79	326,48	-23,06	94,28	-67,80	352,02	13,38	270,42	43,44
-17000	129,15	-21,42	91,26	52,80	33,37	-79,56	303,97	-29,74	94,12	-66,21	332,40	5,04	258,63	43,29
-18000	110,03	-16,04	58,25	51,59	70,36	-84,82	277,54	-33,94	91,79	-64,64	310,94	-2,59	245,64	44,93
-19000	89,11	-13,31	26,77	45,49	128,19	-81,30	247,91	-33,90	87,82	-63,52	286,94	-8,12	231,58	48,82
-20000	66,64	-14,37	358,91	35,86	134,54	-73,48	217,65	-28,60	83,35	-63,28	260,38	-9,83	216,74	55,37
	55	3,31	357	3,32	741	3,32	806	3,32	633	3,32	443	3,32	701	3,33
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	261,35	-56,38	93,72	22,51	286,74	-27,67	183,86	57,03	16,52	-46,72	168,56	15,43	258,04	-43,24
1000	240,90	-54,57	78,67	22,14	271,03	-28,46	170,57	62,59	4,98	-52,20	155,23	20,74	240,53	-41,19
0	222,40	-51,09	63,92	20,35	255,39	-27,73	154,15	67,92	352,09	-57,80	141,28	25,52	224,19	-37,69
-1000	206,17	-46,44	49,70	17,28	240,18	-25,54	132,11	72,42	336,83	-63,22	126,56	32,14	209,19	-33,10
-2000	191,85	-41,11	36,11	13,16	225,68	-22,08	102,26	75,02	317,56	-67,97	111,06	32,18	195,40	-27,81
-3000	178,94	-35,47	23,10	8,25	211,94	-17,61	68,87	74,55	292,60	-71,25	95,01	33,48	182,52	-22,15
-4000	166,94	-29,84	10,50	2,82	198,88	-12,42	41,24	71,24	263,14	-72,04	78,83	33,19	170,21	-16,41
-5000	155,45	-24,44	358,07	-2,86	186,28	-6,79	21,21	66,32	235,18	-69,98	62,99	31,32	158,17	-10,85
-6000	144,17	-19,49	345,53	-8,53	173,86	-0,99	6,11	60,71	212,92	-65,82	47,84	28,05	146,12	-5,71
-7000	132,85	-15,18	332,58	-13,92	161,33	4,72	353,69	54,89	195,76	-60,52	33,49	23,62	133,83	-1,23
-8000	121,31	-11,70	318,91	-18,73	148,35	10,07	342,68	49,12	181,80	-54,69	19,82	18,34	121,11	2,36
-9000	109,42	-9,22	304,30	-22,64	134,65	14,77	332,31	43,59	169,62	-48,72	6,57	12,47	107,86	4,82
-10000	97,11	-7,92	288,60	-25,27	119,97	18,48	322,10	38,44	158,28	-42,82	353,36	6,31	94,05	5,95
-11000	84,34	-7,95	271,88	-26,29	104,19	20,86	311,70	33,81	147,17	-37,18	339,78	0,12	79,72	5,56
-12000	71,09	-9,44	254,42	-25,42	87,37	21,53	300,82	29,88	135,83	-31,99	325,37	-5,77	64,94	3,53
-13000	57,32	-12,46	236,59	-22,54	69,75	20,25	289,25	26,85	123,91	-27,47	309,67	-10,96	49,74	-0,16
-14000	42,93	-17,04	218,63	-17,71	51,63	16,88	276,80	24,97	111,09	-23,88	292,31	-14,92	34,03	-5,46
-15000	27,65	-23,12	200,51	-11,18	33,17	11,52	263,32	24,51	97,16	-21,58	273,13	-17,04	17,52	-12,19
-16000	10,98	-30,56	181,87	-3,34	14,24	4,43	248,73	25,78	81,97	-20,95	252,29	-16,68	359,66	-20,06
-17000	351,91	-39,01	162,00	5,18	354,34	-3,89	232,93	29,08	65,45	-22,43	230,30	-13,41	339,46	-28,52
-18000	328,54	-47,73	139,93	13,48	332,57	-12,63	215,73	34,63	47,57	-26,40	207,59	-7,20	315,43	-36,54
-19000	297,69	-55,01	114,63	20,10	307,77	-20,51	196,58	42,52	28,13	-33,09	184,15	1,50	285,96	-42,28
-20000	257,82	-57,48	85,81	22,98	279,03	-25,47	173,78	52,53	6,33	-42,47	159,16	11,72	251,56	-43,08

Table 27: Results of the calculations, Right ascension and Declination in Degrees

	666	3,34	131	3,34	682	3,34	176	3,36	111	3,36	807	3,36	482	3,37
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	117,32	-24,86	28,60	63,67	63,61	-62,47	332,71	58,20	158,01	-61,69	127,57	60,72	230,67	-44,69
1000	106,82	-22,77	12,29	58,45	60,84	-65,10	324,22	53,45	149,37	-56,69	105,43	63,24	214,42	-40,58
0	96,35	-21,64	358,78	52,89	59,30	-67,92	316,00	49,15	141,13	-52,10	81,56	63,62	199,73	-35,59
-1000	85,95	-21,53	346,98	47,33	59,54	-70,81	307,89	45,39	133,07	-47,99	58,70	61,74	186,29	-30,12
-2000	75,63	-22,44	336,18	41,99	62,39	-73,58	299,82	42,24	125,08	-44,44	38,81	58,04	173,74	-24,48
-3000	65,44	-24,33	325,94	37,05	68,95	-75,96	291,76	39,78	117,10	-41,52	22,11	53,20	161,72	-18,95
-4000	55,36	-27,14	315,97	32,65	79,95	-77,54	283,67	38,06	109,11	-39,30	7,87	47,74	149,96	-13,77
-5000	45,35	-30,81	306,10	28,93	93,98	-77,88	275,56	37,13	101,07	-37,84	355,28	42,07	138,20	-9,16
-6000	35,28	-35,22	296,21	26,00	107,04	-76,84	267,44	37,02	93,00	-37,18	343,69	36,46	126,29	-5,32
-7000	24,95	-40,28	286,20	23,96	116,09	-74,72	259,30	37,75	84,88	-37,36	332,63	31,13	114,09	-2,46
-8000	14,02	-45,87	276,04	22,93	120,96	-71,94	251,14	39,35	76,73	-38,39	321,74	26,26	101,57	-0,74
-9000	1,94	-51,84	265,69	22,96	122,65	-68,83	242,94	41,81	68,52	-40,31	310,74	22,03	88,73	-0,31
-10000	347,74	-58,00	255,12	24,13	122,07	-65,59	234,68	45,14	60,23	-43,11	299,42	18,61	75,59	-1,28
-11000	329,66	-63,94	244,28	26,48	119,82	-62,36	226,28	49,32	51,83	-46,80	287,61	16,19	62,19	-3,70
-12000	304,87	-68,84	233,10	30,03	116,22	-59,24	217,67	54,36	43,24	-51,38	275,21	14,97	48,48	-7,56
-13000	271,49	-71,10	221,40	34,79	111,41	-56,34	208,72	60,23	34,39	-56,84	262,11	15,12	34,32	-12,80
-14000	235,65	-69,18	208,91	40,72	105,43	-53,78	199,23	66,91	25,16	-63,16	248,26	16,85	19,41	-19,30
-15000	206,18	-63,57	195,11	47,76	98,26	-51,75	188,72	74,35	15,34	-70,30	233,59	20,27	3,20	-26,81
-16000	183,12	-55,88	178,89	55,75	89,89	-50,46	175,07	82,45	4,39	-78,20	217,91	25,47	344,74	-34,96
-17000	163,31	-47,34	157,65	64,25	80,31	-50,23	29,55	88,46	346,83	-86,73	200,82	32,42	322,49	-42,98
-18000	144,47	-38,88	124,42	71,91	69,65	-51,45	345,73	79,65	171,13	-84,13	181,42	40,93	294,44	-49,39
-19000	125,29	-31,43	70,57	74,40	58,25	-54,53	331,25	70,48	156,02	-74,79	157,63	50,37	260,01	-51,75
-20000	105,13	-26,11	21,67	68,01	46,87	-59,89	317,61	61,54	142,80	-65,46	124,92	59,02	223,80	-47,90

	411	3,38	562	3,38	849	3,38	112	3,38	148	3,39	563	3,39	23	3,4
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	131,69	6,42	81,12	-2,40	193,90	3,40	154,27	-61,33	207,38	-41,69	83,78	9,93	291,38	3,12
1000	118,33	9,63	68,63	-3,85	181,33	8,93	146,09	-56,50	193,04	-36,46	70,11	8,68	278,74	1,65
0	104,71	11,70	56,37	-6,43	168,65	14,51	138,17	-52,08	179,92	-30,90	56,75	6,17	266,11	1,40
-1000	90,94	12,49	44,36	-10,02	155,63	19,87	130,37	-48,16	167,62	-25,31	43,79	2,58	253,59	2,39
-2000	77,23	11,94	32,56	-14,43	142,01	24,71	122,59	-44,81	155,81	-19,96	31,21	-1,89	241,27	4,55
-3000	63,74	10,08	20,84	-19,48	127,63	28,73	114,80	-42,10	144,21	-15,06	18,90	-7,01	229,20	7,79
-4000	50,62	7,03	8,97	-24,97	112,45	31,60	106,98	-40,08	132,62	-10,81	6,65	-12,55	217,35	11,95
-5000	37,87	2,97	356,66	-30,67	96,64	33,06	99,13	-38,82	120,92	-7,41	354,21	-18,26	205,59	16,85
-6000	25,42	-1,90	343,51	-36,33	80,58	32,95	91,24	-38,34	109,03	-5,01	341,26	-23,86	193,73	22,30
-7000	13,08	-7,35	329,03	-41,61	64,69	31,22	83,32	-38,68	96,92	-3,77	327,44	-29,07	181,44	28,08
-8000	0,55	-13,17	312,70	-46,13	49,34	28,02	75,37	-39,87	84,64	-3,78	312,40	-33,52	168,30	33,97
-9000	347,47	-19,09	294,19	-49,35	34,63	23,56	67,39	-41,90	72,19	-5,10	295,94	-36,80	153,77	39,64
-10000	333,41	-24,83	273,74	-50,72	20,44	18,11	59,35	-44,80	59,60	-7,74	278,11	-38,49	137,17	44,69
-11000	317,85	-30,02	252,41	-49,82	6,49	11,94	51,21	-48,56	46,80	-11,68	259,36	-38,23	117,93	48,52
-12000	300,37	-34,16	231,56	-46,60	352,33	5,35	42,95	-53,18	33,64	-16,83	240,37	-35,85	96,04	50,41
-13000	280,77	-36,63	212,01	-41,38	337,47	-1,34	34,51	-58,64	19,80	-23,09	221,71	-31,46	72,55	49,74
-14000	259,39	-36,82	193,69	-34,65	321,35	-7,71	25,87	-64,94	4,77	-30,26	203,54	-25,34	49,23	46,29
-15000	237,14	-34,33	175,99	-26,95	303,39	-13,18	17,09	-72,01	347,67	-38,02	185,55	-17,94	27,23	40,41
-16000	214,92	-29,18	158,10	-18,87	283,18	-16,96	8,71	-79,81	327,08	-45,79	167,13	-9,78	6,54	32,80
-17000	193,05	-21,81	139,19	-11,13	260,74	-18,14	13,16	-88,14	300,91	-82,37	147,49	-1,59	346,36	24,23
-18000	171,12	-13,00	118,51	-4,68	236,67	-15,92	159,42	-82,90	267,89	-55,69	125,77	5,64	325,70	15,63
-19000	148,23	-3,81	95,64	-0,80	211,82	-9,99	150,35	-73,86	231,62	-53,53	101,34	10,47	303,59	8,16
-20000	123,31	4,23	70,83	-0,91	186,57	-0,75	138,74	-64,90	198,70	-45,83	74,42	11,18	279,48	3,38

Table 28: Results of the calculations, Right ascension and Declination in Degrees

	113	3,4	114	3,4	358	3,4	597	3,4	850	3,4	755	3,4	177	3,4
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	137,74	-58,97	146,31	-62,51	101,32	12,90	340,37	10,83	203,67	0,60	60,17	12,49	311,32	61,84
1000	131,10	-55,07	139,43	-58,06	87,27	13,37	327,92	5,82	191,06	5,90	46,53	9,17	306,02	58,13
0	124,35	-51,64	132,51	-54,04	73,32	12,48	315,41	1,44	178,50	11,45	33,39	4,89	300,28	54,85
-1000	117,51	-48,76	125,53	-50,50	59,67	10,30	302,73	-2,09	165,76	17,00	20,65	-0,11	294,24	52,07
-2000	110,60	-46,46	118,48	-47,52	46,64	6,97	289,86	-4,58	152,57	22,25	8,16	-5,57	287,99	49,85
-3000	103,64	-44,80	111,36	-45,14	33,64	2,70	276,84	-5,87	138,69	26,90	355,69	-11,21	281,59	48,25
-4000	96,66	-43,82	104,19	-43,42	21,18	-2,29	263,78	-5,87	123,97	30,64	342,97	-16,78	275,09	47,30
-5000	89,67	-43,53	96,97	-42,39	8,87	-7,74	250,81	-4,58	108,42	33,14	329,71	-22,00	268,55	47,03
-6000	82,70	-43,96	89,73	-42,10	356,45	-13,42	238,03	-2,04	92,28	34,14	315,66	-26,54	262,00	47,46
-7000	75,77	-45,11	82,47	-42,56	343,59	-19,07	225,46	1,63	75,96	33,50	284,64	-32,25	255,49	48,60
-8000	68,90	-46,99	75,21	-43,80	329,96	-24,38	213,02	6,27	59,93	31,22	267,92	-32,78	249,06	50,46
-9000	62,11	-49,60	67,96	-45,82	315,17	-29,03	200,51	11,72	44,47	27,47	237,92	-32,78	242,75	53,04
-10000	55,42	-52,93	60,72	-48,63	298,97	-32,60	187,64	17,78	29,63	22,49	250,88	-31,51	236,65	56,32
-11000	48,89	-56,98	53,51	-52,22	281,28	-34,64	173,95	24,22	15,20	16,55	233,97	-28,42	230,92	60,28
-12000	42,69	-61,71	46,38	-56,59	262,42	-34,73	158,83	30,73	0,81	9,95	217,40	-23,69	225,89	64,89
-13000	37,20	-67,09	39,47	-61,73	242,98	-32,62	141,50	36,87	345,96	3,01	201,10	-17,57	222,42	70,05
-14000	33,59	-73,02	33,17	-67,58	223,55	-28,32	121,10	41,93	330,08	-3,88	184,71	-10,41	222,88	75,56
-15000	36,08	-79,23	28,72	-74,05	204,34	-22,08	97,22	44,92	312,54	-10,17	167,68	-2,64	235,21	80,67
-16000	65,62	-84,25	31,55	-80,84	185,12	-14,36	70,69	44,77	292,79	-15,12	149,26	5,18	274,24	82,51
-17000	122,44	-82,27	79,36	-85,69	165,25	-5,79	43,67	40,97	270,59	-17,76	128,64	12,21	303,29	78,53
-18000	133,59	-75,65	133,85	-81,09	143,83	2,74	17,87	33,93	246,33	-17,08	105,16	17,25	307,72	72,20
-19000	129,63	-68,45	136,37	-73,43	119,92	9,92	353,39	24,73	220,95	-12,47	78,85	18,76	302,86	65,58
-20000	121,17	-61,61	129,44	-65,62	93,01	13,90	329,20	14,77	195,23	-4,03	50,91	15,43	294,25	59,53

	483	3,41	634	3,41	756	3,41	789	3,41	484	3,41	388	3,42	614	3,42
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	228,07	-52,10	22,09	-43,32	67,17	15,87	28,27	29,58	240,03	-38,40	266,61	27,72	46,29	38,84
1000	211,10	-47,78	10,95	-48,60	53,10	13,10	14,45	24,46	223,98	-34,96	256,89	28,73	30,89	34,51
0	196,16	-42,64	358,84	-54,11	39,57	9,24	1,43	18,98	209,14	-30,46	247,33	30,64	16,73	29,42
-1000	182,79	-37,09	345,00	-59,61	26,54	4,54	348,93	13,46	195,39	-25,25	237,97	33,40	3,57	23,92
-2000	170,48	-31,45	328,20	-64,73	13,88	-0,75	336,68	8,14	182,48	-19,68	228,77	36,93	351,08	18,32
-3000	158,83	-25,98	306,80	-68,85	1,40	-6,35	324,46	3,28	170,09	-14,03	219,67	41,15	338,96	12,89
-4000	147,51	-20,90	280,07	-71,06	348,83	-12,01	312,08	-0,88	157,96	-8,57	210,53	45,94	326,94	7,86
-5000	136,29	-16,41	251,33	-70,55	335,89	-17,44	299,44	-4,13	145,81	-3,54	201,15	51,21	314,83	3,48
-6000	124,98	-12,68	226,21	-67,48	322,31	-22,35	286,50	-6,27	133,43	0,81	191,14	56,86	302,47	-0,05
-7000	113,48	-9,88	206,49	-62,73	307,86	-26,41	273,31	-7,14	120,69	4,27	179,80	62,75	289,79	-2,51
-8000	101,71	-8,16	190,82	-57,10	292,42	-29,28	259,94	-6,64	107,50	6,60	165,71	68,69	276,78	-3,74
-9000	89,66	-7,66	177,57	-51,07	276,10	-30,64	246,50	-4,73	93,86	7,60	145,61	74,26	263,47	-3,59
-10000	77,31	-8,47	165,59	-44,94	259,21	-30,24	233,02	-1,44	79,84	7,14	112,88	78,29	249,94	-2,00
-11000	64,67	-10,65	154,09	-38,94	242,16	-27,98	219,46	3,14	65,52	5,12	67,91	78,42	236,22	1,06
-12000	51,67	-14,22	142,51	-33,24	225,27	-23,94	205,63	8,87	50,93	1,54	32,39	74,21	222,25	5,53
-13000	38,17	-19,15	130,44	-28,09	208,60	-18,32	191,17	15,58	36,02	-3,53	9,65	67,83	207,85	11,30
-14000	23,88	-25,35	117,49	-23,75	191,92	-11,44	175,52	22,99	20,53	-9,93	352,73	60,62	192,65	18,20
-15000	8,26	-32,66	103,40	-20,58	174,73	-3,69	157,83	30,68	3,99	-17,42	337,87	53,18	176,03	25,95
-16000	350,34	-40,76	87,96	-19,03	156,34	4,38	136,93	37,96	345,60	-25,56	323,33	45,94	156,96	34,06
-17000	328,36	-49,01	71,10	-19,58	135,87	11,98	111,50	43,58	324,16	-33,64	308,18	39,38	133,94	41,63
-18000	299,51	-55,97	52,82	-22,70	112,51	17,92	81,40	45,77	298,15	-40,33	291,91	34,14	105,40	47,06
-19000	262,13	-58,89	33,06	-28,70	86,04	20,62	49,30	42,99	266,87	-43,52	274,30	31,07	71,79	48,06
-20000	222,51	-55,08	11,27	-37,64	57,49	18,48	18,97	35,25	232,87	-41,02	255,54	31,08	37,67	43,10

Table 29: Results of the calculations, Right ascension and Declination in Degrees

2000	582	3,43	24	3,43	808	3,44	444	3,44	115	3,44	132	3,45	188	3,45
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	311,24	-66,20	286,56	-4,88	154,27	42,91	154,17	23,42	119,20	-52,98	12,28	57,82	17,15	-10,18
1000	286,64	-68,92	273,27	-5,82	138,43	47,57	139,92	28,09	112,78	-50,54	358,46	52,43	4,54	-15,61
0	259,30	-69,21	260,02	-5,46	120,75	51,15	124,82	31,86	106,28	-48,68	346,38	47,04	351,71	-21,16
-1000	233,83	-66,97	246,96	-3,84	101,42	53,19	108,92	34,40	99,75	-47,41	335,33	41,89	338,38	-26,55
-2000	213,00	-62,87	234,21	-1,05	81,34	53,35	92,48	35,45	93,24	-46,78	324,90	37,18	324,25	-31,45
-3000	196,36	-57,73	221,78	2,76	61,89	51,59	76,01	34,87	86,77	-46,79	314,79	33,04	309,11	-35,52
-4000	182,59	-52,13	209,64	7,40	44,08	48,19	60,02	32,73	80,40	-47,44	304,85	29,60	292,92	-38,38
-5000	170,58	-46,44	197,61	12,66	28,21	43,60	44,86	29,23	74,17	-48,72	294,95	26,98	275,93	-39,72
-6000	159,57	-40,90	185,47	18,32	14,00	38,26	30,62	24,65	68,11	-50,62	285,05	25,26	258,67	-39,35
-7000	149,06	-35,71	172,89	24,14	0,98	32,53	17,15	19,31	62,27	-53,12	275,10	24,54	241,79	-37,25
-8000	138,72	-31,00	159,46	29,86	348,67	26,71	4,17	13,50	56,71	-56,20	265,09	24,85	225,74	-33,62
-9000	128,29	-26,95	144,72	35,14	336,63	21,03	351,33	7,49	51,53	-59,83	255,00	26,24	210,62	-28,74
-10000	117,57	-23,69	128,18	39,57	324,48	15,74	338,24	1,54	46,96	-63,99	244,80	28,73	196,25	-22,94
-11000	106,40	-21,40	109,57	42,59	311,87	11,07	324,50	-4,04	43,52	-68,61	234,41	32,32	182,25	-16,51
-12000	94,66	-20,25	89,12	43,64	298,53	7,29	309,72	-8,91	42,53	-73,58	223,71	36,99	168,13	-9,77
-13000	82,28	-20,40	67,70	42,29	284,25	4,72	293,58	-12,63	47,91	-78,58	212,48	42,72	153,38	-3,04
-14000	69,16	-22,03	46,40	38,46	268,89	3,69	275,92	-14,72	71,39	-82,35	200,33	49,46	137,44	3,23
-15000	55,22	-25,27	25,83	32,47	252,43	4,54	256,83	-14,67	111,71	-81,61	186,48	57,11	119,77	8,49
-16000	40,27	-30,22	5,87	24,87	234,90	7,54	236,61	-12,10	128,69	-76,68	169,10	65,45	100,04	11,99
-17000	23,94	-36,91	345,86	16,36	216,27	12,81	215,59	-6,90	129,29	-70,50	142,56	73,80	78,24	12,88
-18000	5,31	-45,20	324,88	7,86	196,24	20,28	193,79	0,68	123,36	-64,28	89,77	79,16	54,88	10,45
-19000	342,23	-54,64	302,05	0,58	173,93	29,51	170,65	10,00	114,21	-58,70	27,29	75,27	30,60	4,41
-20000	309,18	-63,66	276,82	-3,80	147,41	39,45	144,93	19,81	103,32	-54,37	353,57	65,62	5,60	-4,86
2000	149	3,46	80	3,47	189	3,47	781	3,48	389	3,49	81	3,49	215	3,49
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	207,40	-42,47	228,88	33,32	40,83	3,24	276,74	-45,97	250,72	38,92	225,49	40,39	105,43	-27,93
1000	193,02	-37,24	218,81	37,37	28,03	-1,32	258,23	-45,71	242,23	41,17	216,05	44,62	95,49	-26,93
0	179,89	-31,68	208,66	42,05	15,50	-6,47	240,35	-43,71	233,89	44,16	206,47	49,41	85,63	-26,87
-1000	167,60	-26,10	198,22	47,24	3,05	-11,96	223,75	-40,24	225,70	47,81	196,49	54,64	75,86	-27,78
-2000	155,82	-20,74	187,11	52,77	350,45	-17,54	208,60	-35,68	217,60	52,05	185,64	60,18	66,22	-29,61
-3000	144,26	-15,84	174,71	58,46	337,40	-22,93	194,76	-30,41	209,47	56,80	173,02	63,84	56,71	-32,32
-4000	132,73	-11,59	159,92	64,03	323,66	-27,83	181,89	-24,78	201,11	61,97	156,78	71,32	47,27	-35,83
-5000	121,09	-8,18	140,89	69,02	308,99	-31,90	169,64	-19,08	192,08	67,47	133,08	76,01	37,83	-40,06
-6000	109,26	-5,77	115,25	72,58	293,32	-34,80	157,67	-13,57	181,41	73,21	97,42	78,48	28,20	-44,90
-7000	97,23	-4,50	83,68	73,51	276,82	-36,21	145,68	-8,47	166,08	78,99	58,38	77,17	18,10	-50,27
-8000	85,02	-4,47	53,63	71,26	259,91	-35,93	133,44	-4,04	132,43	84,12	30,47	72,87	7,01	-56,04
-9000	72,65	-5,75	30,36	66,69	243,12	-33,88	120,74	-0,49	55,67	84,51	11,87	67,21	354,00	-62,07
-10000	60,12	-8,34	12,68	60,87	226,83	-30,20	107,45	1,94	16,98	79,31	357,82	61,04	337,18	-68,03
-11000	47,38	-12,23	358,18	54,46	211,15	-25,13	93,51	3,00	359,87	72,94	345,79	54,71	312,72	-73,25
-12000	34,27	-17,34	345,16	47,83	195,90	-18,95	78,94	2,51	347,69	66,28	334,49	48,44	276,00	-76,01
-13000	20,49	-23,56	332,57	41,26	180,67	-12,00	63,78	0,31	336,76	59,57	323,15	42,41	235,09	-74,25
-14000	5,53	-30,71	319,70	35,00	164,91	-4,64	48,04	-3,64	325,84	52,98	311,26	36,85	204,53	-68,66
-15000	348,50	-38,48	306,01	29,40	147,97	2,65	31,59	-9,31	314,28	46,75	298,42	32,06	182,66	-61,21
-16000	327,98	-46,28	291,10	24,89	129,15	9,22	14,10	-16,52	301,65	41,19	284,32	28,45	164,61	-53,06
-17000	301,81	-52,95	274,69	22,08	107,88	14,13	354,82	-24,88	287,67	36,78	268,78	26,54	147,67	-44,91
-18000	268,58	-56,38	256,70	21,63	84,03	16,20	332,49	-33,69	272,20	34,14	251,75	26,93	130,47	-37,47
-19000	231,93	-54,31	237,24	24,24	58,28	14,32	305,13	-41,51	255,30	34,01	233,31	30,22	112,28	-31,57
-20000	198,76	-46,63	216,47	30,42	31,79	7,94	271,28	-45,72	237,30	37,12	213,52	36,87	92,90	-28,29

Table 30: Results of the calculations, Right ascension and Declination in Degrees

	376	3,49	190	3,5	598	3,5	832	3,5	809	3,5	178	3,51	326	3,51
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	342,14	-51,32	26,02	-15,94	332,55	6,20	149,22	-54,57	169,62	33,09	342,42	66,20	55,81	-9,76
1000	325,99	-56,31	14,37	-21,39	319,90	1,56	140,58	-50,01	155,65	38,40	333,85	61,06	43,94	-13,56
0	307,01	-60,35	2,54	-27,13	307,09	-2,29	132,17	-45,96	140,39	43,14	325,79	56,26	32,27	-18,16
-1000	285,01	-62,80	350,24	-32,94	294,07	-5,14	123,85	-42,50	123,59	46,89	317,97	51,87	20,65	-23,39
-2000	261,40	-63,09	337,10	-38,56	280,86	-6,82	115,57	-39,71	105,33	49,22	310,25	47,98	8,87	-29,03
-3000	238,83	-61,12	322,70	-43,68	267,59	-7,21	107,29	-37,65	86,25	49,78	302,56	44,65	356,61	-34,88
-4000	219,18	-57,35	306,68	-47,92	254,40	-6,28	99,01	-36,37	67,41	48,46	294,84	41,96	343,47	-40,66
-5000	202,61	-52,41	288,91	-50,87	241,40	-4,07	90,72	-35,91	49,78	45,46	287,07	39,96	328,90	-46,07
-6000	188,39	-46,84	269,84	-52,11	228,67	-0,70	82,45	-36,29	33,75	41,14	279,24	38,71	312,36	-50,69
-7000	175,73	-41,01	250,48	-51,44	216,17	3,68	74,17	-37,54	19,21	35,91	271,35	38,26	293,48	-54,00
-8000	163,95	-35,20	231,98	-48,94	203,74	8,88	65,90	-39,64	5,77	30,14	263,39	38,64	272,62	-55,45
-9000	152,54	-29,62	214,97	-44,92	191,13	14,71	57,58	-42,60	352,97	24,12	255,36	39,87	251,11	-54,67
-10000	141,11	-24,48	199,44	-39,79	177,96	20,95	49,17	-46,41	340,36	18,12	247,24	41,99	230,60	-51,72
-11000	129,33	-19,98	184,96	-33,94	163,72	27,32	40,58	-51,05	327,51	12,40	239,01	45,00	211,94	-46,98
-12000	116,94	-16,34	171,01	-27,69	147,75	33,45	31,66	-56,50	314,01	7,25	230,64	48,92	195,00	-40,97
-13000	103,71	-13,84	156,99	-21,35	129,29	38,79	22,16	-62,76	299,53	3,01	222,10	53,73	179,14	-34,16
-14000	89,51	-12,75	142,38	-15,29	107,77	42,55	11,58	-69,78	283,80	0,08	213,35	59,45	163,60	-26,98
-15000	74,26	-13,39	126,66	-9,94	83,40	43,77	358,31	-77,47	266,69	-1,07	204,40	66,03	147,64	-19,89
-16000	57,90	-16,02	109,44	-5,88	57,61	41,72	329,27	-85,51	248,26	0,00	195,40	73,43	130,60	-13,45
-17000	40,35	-20,83	90,51	-3,82	32,31	36,37	191,36	-84,56	228,63	3,62	187,46	81,57	111,93	-8,41
-18000	21,29	-27,85	69,91	-4,52	7,97	28,42	164,95	-75,66	207,85	9,88	291,26	89,23	91,37	-5,69
-19000	359,82	-36,82	47,96	-8,60	344,37	18,98	149,19	-66,56	185,55	18,50	336,74	80,35	69,05	-6,32
-20000	333,69	-46,93	24,90	-16,34	320,28	9,48	134,53	-57,87	160,52	28,70	326,80	70,84	45,49	-11,11
	445	3,51	599	3,51	216	3,52	230	3,52	505	3,52	728	3,53	359	3,53
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	151,83	16,76	342,50	24,60	102,46	-32,51	124,13	9,19	282,52	33,36	299,69	19,49	110,03	21,98
1000	137,94	21,32	330,58	19,51	93,15	-31,75	110,44	11,75	273,32	32,60	288,57	17,21	94,99	23,19
0	123,42	24,97	318,84	14,96	83,92	-31,90	96,55	13,07	264,20	32,72	277,47	15,95	79,90	22,94
-1000	108,31	27,42	307,12	11,15	74,79	-32,94	82,63	13,05	255,19	33,73	266,42	15,76	65,10	21,26
-2000	92,81	28,45	295,35	8,24	65,80	-34,84	68,88	11,67	246,31	35,59	255,46	16,65	50,83	18,27
-3000	77,29	27,95	283,51	6,39	56,94	-37,56	55,47	9,04	237,56	38,26	244,62	18,59	37,19	14,20
-4000	62,12	25,97	271,61	5,68	48,17	-41,03	42,47	5,32	228,91	41,68	233,93	21,50	24,13	9,31
-5000	47,57	22,66	259,73	6,17	39,41	-45,17	29,86	0,72	220,28	45,76	223,31	25,30	11,49	3,88
-6000	33,72	18,27	247,92	7,84	30,51	-49,91	17,47	-4,54	211,54	50,45	212,66	29,87	359,02	-1,85
-7000	20,46	13,07	236,19	10,66	21,20	-55,16	5,07	-10,23	202,42	55,66	201,75	35,07	346,41	-7,59
-8000	7,54	7,33	224,49	14,53	10,99	-60,85	352,34	-16,10	192,48	61,31	190,24	40,77	333,35	-13,09
-9000	354,64	1,31	212,69	19,35	358,91	-66,86	338,88	-21,89	180,78	67,31	177,60	46,80	319,49	-18,04
-10000	341,37	-4,72	200,54	24,98	342,61	-72,95	324,26	-27,25	165,04	73,44	162,95	52,89	304,56	-22,08
-11000	327,32	-10,46	187,63	31,28	315,57	-78,44	308,03	-31,79	138,48	79,08	144,95	58,62	288,37	-24,84
-12000	312,05	-15,53	173,36	38,01	266,31	-80,89	289,89	-34,96	86,77	81,74	121,81	63,19	270,98	-25,90
-13000	295,22	-19,46	156,78	44,85	218,13	-77,50	269,95	-36,20	36,07	78,24	92,82	65,34	252,68	-24,93
-14000	276,64	-21,69	136,50	51,19	190,73	-70,83	248,80	-35,02	8,95	71,46	61,50	63,88	233,86	-21,79
-15000	256,50	-21,66	111,00	55,91	172,18	-63,08	227,31	-31,27	350,86	63,70	33,36	58,92	214,82	-16,54
-16000	235,28	-18,98	80,34	57,46	156,37	-55,07	206,05	-25,15	335,38	55,71	9,71	51,60	195,51	-9,48
-17000	213,46	-13,58	48,38	54,65	140,97	-47,32	184,95	-17,22	320,24	48,02	348,88	43,10	175,47	-1,12
-18000	191,17	-5,81	19,42	47,92	124,94	-40,44	163,37	-8,28	304,42	41,20	329,03	34,40	153,86	7,72
-19000	167,87	3,56	353,95	38,77	107,78	-35,22	140,34	0,54	287,47	36,03	308,84	26,55	129,57	15,81
-20000	142,42	13,23	330,33	28,78	89,48	-32,61	114,86	7,62	269,38	33,46	287,56	20,77	101,70	21,19

Table 31: Results of the calculations, Right ascension and Declination in Degrees

	742	3,53	757	3,53	446	3,53	485	3,54	717	3,54	412	3,54	711	3,54
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	284.43	-21.11	67.15	19.18	145.29	9.89	214.85	-46.06	264.40	-15.40	173.25	-31.86	253.08	-38.02
1000	269.47	-21.78	52.79	16.40	131.76	14.08	199.64	-41.10	250.19	-14.16	161.21	-26.42	236.53	-35.64
0	254.58	-20.99	39.02	12.51	117.80	17.28	185.96	-35.65	236.36	-11.62	149.59	-21.32	221.01	-31.94
-1000	240.07	-18.82	25.82	7.78	103.47	19.28	173.35	-30.04	223.00	-7.98	138.15	-16.77	206.61	-27.27
-2000	226.11	-15.43	13.06	2.47	88.96	19.91	161.43	-24.54	210.12	-3.43	126.75	-12.95	193.18	-21.97
-3000	212.76	-11.05	0.54	-3.14	74.51	19.11	149.88	-19.39	197.60	1.75	115.28	-10.01	180.45	-16.35
-4000	199.92	-5.95	347.99	-8.79	60.37	16.95	138.45	-14.79	185.25	7.33	103.72	-8.10	168.13	-10.69
-5000	187.40	-0.39	335.14	-14.19	46.71	13.56	126.97	-10.94	172.80	13.05	92.08	-7.31	155.94	-5.27
-6000	174.93	5.36	321.73	-19.06	33.53	9.17	115.33	-8.00	159.95	18.63	80.41	-7.70	143.63	-0.32
-7000	162.21	11.05	307.55	-23.08	20.71	4.01	103.47	-6.13	146.39	23.79	68.73	-9.27	130.96	3.91
-8000	148.90	16.38	292.49	-25.94	8.03	-1.69	91.39	-5.46	131.81	28.20	57.06	-12.00	117.81	7.17
-9000	134.70	21.05	276.62	-27.33	355.15	-7.68	79.10	-6.08	116.01	31.48	45.33	-15.83	104.09	9.22
-10000	119.35	24.68	260.18	-27.01	341.69	-13.69	66.60	-8.03	99.03	33.23	33.39	-20.66	89.84	9.84
-11000	102.75	26.88	243.54	-24.87	327.19	-19.39	53.88	-11.92	81.17	33.14	20.98	-26.38	75.12	8.89
-12000	85.07	27.28	226.95	-20.97	311.19	-24.39	40.81	-15.91	62.94	31.03	7.65	-32.84	60.05	6.28
-13000	66.66	25.60	210.47	-15.48	293.29	-28.15	27.17	-21.72	44.79	26.93	352.72	-39.82	44.64	2.02
-14000	47.95	21.78	193.89	-8.69	273.43	-30.04	12.52	-28.60	26.86	21.08	335.07	-46.94	28.79	-3.78
-15000	29.12	15.98	176.73	-0.98	251.98	-29.47	356.12	-36.30	8.93	13.84	313.01	-53.44	12.14	-10.89
-16000	10.00	8.56	158.28	7.13	229.73	-26.10	336.71	-44.36	350.45	5.73	284.72	-57.96	354.08	-18.96
-17000	350.04	0.08	137.67	14.86	207.32	-51.82	312.20	-51.82	330.63	-2.57	251.09	-58.58	333.58	-27.36
-18000	328.33	-8.61	113.99	20.99	184.81	-11.83	280.25	-56.78	308.55	-10.03	217.74	-54.29	309.22	-35.00
-19000	303.80	-16.18	86.96	23.88	161.56	-2.39	242.57	-56.55	283.51	-15.19	188.78	-46.12	279.77	-39.96
-20000	275.77	-20.64	57.74	21.86	136.47	6.88	206.94	-50.07	255.69	-16.19	163.53	-35.92	246.25	-39.80

	327	3,55	461	3,55	328	3,55	718	3,55	191	3,56	252	3,56	583	3,56
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	34.13	-51.51	86.74	-14.82	64.47	-33.80	237.41	-3.43	4.86	-8.82	169.84	-14.78	302.18	-66.18
1000	25.10	-56.35	75.46	-15.68	55.07	-36.60	224.52	8.51	352.05	-14.38	157.42	-9.49	276.78	-67.72
0	15.59	-61.59	64.33	-17.61	45.76	-40.17	211.98	4.48	338.91	-19.78	145.09	-4.65	250.74	-66.77
-1000	5.01	-67.11	53.36	-20.51	36.47	-44.41	199.68	9.54	325.21	-24.73	132.66	-0.47	227.81	-63.55
-2000	351.99	-72.74	42.53	-24.29	27.05	-49.20	187.44	15.02	310.75	-28.91	120.05	2.82	209.11	-58.82
-3000	332.81	-78.13	31.74	-28.80	17.23	-54.45	175.01	20.67	295.47	-31.98	107.24	5.03	193.80	-53.25
-4000	296.78	-82.20	20.81	-33.90	6.54	-60.01	162.08	26.24	279.52	-33.67	94.30	6.04	180.72	-47.32
-5000	241.92	-82.09	9.46	-39.41	354.08	-65.72	148.34	31.41	263.27	-33.77	81.32	5.76	169.01	-41.35
-6000	206.77	-77.85	357.27	-45.15	337.93	-71.29	133.47	35.85	247.21	-32.26	68.43	4.18	158.05	-35.56
-7000	187.99	-72.26	343.58	-50.86	314.00	-76.09	117.30	39.16	231.72	-29.24	55.70	1.38	147.42	-30.13
-8000	175.16	-66.35	327.49	-56.19	277.19	-78.61	99.93	40.97	216.98	-24.95	43.13	-2.55	136.80	-25.24
-9000	164.62	-60.43	307.85	-60.56	236.83	-77.09	81.83	40.95	202.90	-19.67	30.61	-7.46	125.95	-21.04
-10000	154.97	-54.64	284.09	-63.17	208.49	-72.39	63.70	39.01	189.21	-13.68	17.89	-13.18	114.68	-17.71
-11000	145.51	-49.11	257.70	-63.15	189.56	-66.26	46.13	35.23	175.53	-7.25	4.62	-19.51	102.85	-15.45
-12000	135.80	-43.94	232.21	-60.24	174.92	-59.54	29.31	29.91	161.38	-0.70	350.29	-26.21	90.36	-14.43
-13000	125.53	-39.31	209.89	-54.95	161.95	-52.63	13.04	23.39	146.26	5.64	334.17	-32.93	77.14	-14.86
-14000	114.42	-35.41	190.50	-48.08	149.33	-45.80	356.83	16.07	129.64	11.27	315.35	-39.11	63.11	-16.89
-15000	102.25	-32.53	172.82	-40.34	136.27	-39.33	340.04	8.40	111.05	15.58	292.91	-43.86	48.19	-20.64
-16000	88.85	-31.02	155.58	-32.33	122.22	-33.62	321.97	0.97	90.33	17.79	266.74	-45.98	32.16	-26.14
-17000	74.13	-31.32	137.81	-24.72	106.81	-29.21	301.89	-5.39	67.78	17.13	238.48	-44.39	14.49	-33.32
-18000	58.06	-33.87	118.74	-18.33	89.84	-26.79	279.33	-9.56	44.09	13.11	210.72	-38.92	354.09	-41.85
-19000	40.60	-39.08	97.96	-14.25	71.36	-27.15	254.43	-10.22	19.82	5.79	184.73	-30.41	328.56	-50.88
-20000	21.41	-47.22	75.55	-13.74	51.65	-31.04	228.12	-6.27	354.83	-4.12	159.93	-20.27	293.56	-58.15

Table 32: Results of the calculations, Right ascension and Declination in Degrees

	360	3.57	615	3.57	310	3.58	486	3.58	361	3.58	82	3.58	96	3.59
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	116.11	24.40	24.50	48.63	275.26	72.73	230.45	-36.26	109.52	16.54	217.96	30.37	304.51	-12.55
1000	100.84	26.18	9.99	43.34	279.88	72.10	215.12	-32.15	95.07	17.74	207.12	35.03	290.50	-15.12
0	85.37	26.50	356.98	37.79	283.69	71.05	200.94	-27.19	80.60	17.54	196.03	40.20	276.24	-16.41
-1000	70.07	25.32	344.95	32.28	286.42	69.68	187.71	-21.73	66.36	15.95	184.35	45.69	261.94	-16.31
-2000	55.28	22.74	333.52	27.04	288.02	68.09	175.13	-16.08	52.55	13.10	171.59	51.28	247.84	-14.84
-3000	41.17	18.98	322.39	22.28	288.58	66.38	162.91	-10.51	39.26	9.17	157.01	56.69	234.14	-12.08
-4000	27.75	14.31	311.35	18.18	288.23	64.64	150.78	-5.27	26.44	4.41	139.59	61.48	220.92	-8.23
-5000	14.88	9.00	300.28	14.89	287.13	62.95	138.53	-0.61	13.94	-0.94	118.36	65.03	208.13	-3.50
-6000	2.33	3.33	289.10	12.56	285.40	61.38	125.99	3.25	1.53	-6.63	93.62	66.56	195.62	1.86
-7000	349.79	-2.44	277.75	11.31	283.16	59.99	113.05	6.08	348.90	-12.40	68.25	65.55	183.14	7.61
-8000	336.94	-8.05	266.26	11.24	280.50	58.82	99.70	7.67	335.71	-17.97	45.67	62.24	170.37	13.50
-9000	323.45	-13.20	254.60	12.39	277.49	57.93	85.99	7.88	321.61	-23.03	26.89	57.30	156.92	19.25
-10000	309.02	-17.56	242.77	14.80	274.19	57.34	72.01	6.60	306.25	-27.22	11.10	51.40	142.37	24.54
-11000	293.42	-20.78	230.71	18.45	270.63	57.09	57.83	3.80	289.46	-30.11	357.11	44.99	126.33	28.95
-12000	276.60	-22.43	218.25	23.32	266.86	57.20	43.43	-0.48	271.30	-31.24	343.96	38.40	108.54	31.99
-13000	258.72	-22.17	205.12	29.31	262.89	57.67	28.67	-6.11	252.16	-30.26	330.89	31.89	89.09	33.11
-14000	240.12	-19.75	190.82	36.30	258.75	58.52	13.23	-12.91	232.62	-27.00	317.30	25.78	68.49	31.88
-15000	221.11	-15.14	174.47	44.06	254.48	59.79	356.51	-20.57	213.06	-21.60	302.72	20.44	47.48	28.13
-16000	201.73	-8.56	154.46	52.10	250.17	61.50	337.62	-28.62	193.45	-14.40	286.76	16.38	26.54	22.06
-17000	181.65	-0.43	127.89	59.35	246.03	63.72	315.26	-36.19	173.32	-5.98	269.19	14.24	5.57	14.16
-18000	160.10	8.51	91.71	63.49	242.61	66.54	288.09	-41.79	151.84	2.82	249.99	14.71	343.96	5.23
-19000	135.93	17.09	50.54	61.59	241.28	69.98	256.26	-43.30	127.96	10.75	229.33	18.40	320.71	-3.62
-20000	108.01	23.41	15.38	53.66	245.54	73.74	223.14	-39.08	100.92	15.96	207.29	25.67	294.80	-10.70
	260	3.59	564	3.59	833	3.59	584	3.6	56	3.6	192	3.6	362	3.6
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	185.34	-60.40	79.40	-6.84	142.68	-40.47	266.43	-64.72	262.78	-60.68	21.01	-8.18	103.20	33.96
1000	172.75	-54.86	67.34	-8.44	132.90	-36.36	242.64	-63.22	240.91	-58.91	8.52	-13.51	86.64	34.45
0	161.68	-49.43	55.48	-11.11	123.28	-32.92	221.80	-59.76	221.47	-55.38	355.89	-19.04	70.25	33.34
-1000	151.47	-44.30	43.84	-14.74	113.72	-30.25	204.39	-55.04	204.79	-50.65	342.87	-24.50	54.50	30.75
-2000	141.74	-39.62	32.34	-19.18	104.20	-28.42	189.71	-49.64	190.37	-45.25	329.16	-29.59	39.66	26.92
-3000	132.25	-35.51	20.85	-24.23	94.71	-27.50	176.88	-43.98	177.55	-39.59	314.52	-33.98	25.76	22.17
-4000	122.84	-32.07	9.14	-29.72	85.25	-27.52	165.22	-38.36	165.74	-33.95	298.83	-37.31	12.64	16.81
-5000	113.44	-29.42	356.88	-35.41	75.84	-28.47	154.22	-33.01	154.51	-28.57	282.20	-39.23	0.04	11.15
-6000	103.98	-27.63	343.61	-41.06	66.47	-30.37	143.54	-28.09	143.53	-23.65	265.08	-39.51	347.66	5.45
-7000	94.43	-26.77	328.78	-46.35	57.12	-33.16	132.92	-23.79	132.56	-19.35	248.07	-38.05	335.21	-0.02
-8000	84.78	-26.91	311.74	-50.82	47.71	-36.82	122.16	-20.26	121.41	-15.85	231.71	-34.97	322.38	-5.00
-9000	74.99	-28.09	292.13	-53.91	38.11	-41.29	111.13	-17.65	109.95	-13.32	216.24	-30.53	308.94	-9.21
-10000	65.04	-30.33	270.36	-54.98	28.08	-46.53	99.74	-16.11	98.08	-11.92	201.56	-25.01	294.70	-12.35
-11000	54.85	-33.64	247.94	-53.65	17.22	-52.48	87.91	-15.79	85.77	-11.80	187.36	-18.74	279.58	-14.12
-12000	44.29	-38.03	226.56	-49.96	4.80	-59.05	75.59	-16.80	72.97	-13.07	173.18	-12.02	263.63	-14.22
-13000	33.16	-43.48	207.00	-44.35	349.23	-66.05	62.74	-19.25	59.64	-15.83	158.49	-5.17	247.02	-12.47
-14000	21.06	-49.95	188.93	-37.38	326.43	-72.96	49.24	-23.20	45.66	-20.13	142.74	1.40	229.89	-8.76
-15000	7.22	-57.35	171.58	-29.62	286.17	-78.00	34.87	-28.66	30.80	-25.93	125.35	7.14	212.28	-3.18
-16000	349.81	-65.47	154.05	-21.65	230.70	-77.01	19.21	-35.57	14.56	-33.13	105.89	11.33	193.94	4.03
-17000	323.30	-73.63	135.50	-14.17	192.86	-70.24	1.36	-43.73	355.99	-41.46	84.25	13.08	174.30	12.43
-18000	271.43	-78.89	115.26	-8.10	168.60	-61.41	339.40	-52.65	333.13	-50.28	60.82	11.55	152.32	21.26
-19000	209.68	-75.11	92.98	-4.67	148.89	-52.28	309.21	-60.94	302.30	-58.00	36.35	6.29	126.60	29.16
-20000	175.61	-65.43	68.90	-5.19	130.38	-43.85	265.74	-65.08	260.69	-61.10	11.24	-2.51	96.07	33.89

Table 33: Results of the calculations, Right ascension and Declination in Degrees

	462	3,6	758	3,6	810	3,6	62	3,61	470	3,61	413	3,61	851	3,61
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	86,12	-22,45	51,20	9,03	135,91	47,16	42,50	27,26	234,26	-28,14	152,65	-12,35	177,67	1,76
1000	75,72	-23,22	37,95	5,08	118,04	50,52	28,19	22,75	219,47	-24,32	140,46	-7,68	164,61	7,34
0	65,44	-24,97	25,13	0,34	98,68	52,31	14,71	17,58	205,56	-19,61	128,21	-3,74	151,33	12,59
-1000	55,28	-27,63	12,58	-4,95	78,79	52,20	1,85	12,05	192,37	-14,30	115,81	-0,73	137,61	17,22
-2000	45,20	-31,12	0,12	-10,52	59,67	50,21	349,34	6,46	179,70	-8,69	103,28	1,20	123,34	20,92
-3000	35,11	-35,33	347,49	-16,12	42,21	46,65	336,93	1,09	167,27	-3,08	90,66	1,92	108,53	23,41
-4000	24,86	-40,13	334,41	-21,46	26,62	41,97	324,38	-3,83	154,83	2,29	78,08	1,40	93,35	24,48
-5000	14,18	-45,39	320,62	-26,24	12,62	36,60	311,53	-8,02	142,14	7,14	65,62	-0,35	78,10	24,00
-6000	2,61	-50,96	305,92	-30,12	359,76	30,90	298,24	-11,23	129,02	11,22	53,34	-3,25	63,11	22,00
-7000	339,43	-56,62	290,24	-32,78	347,59	25,15	284,51	-13,25	115,36	14,26	41,20	-7,19	48,58	18,62
-8000	343,45	-62,06	273,78	-33,90	335,71	19,61	270,41	-13,89	101,16	16,02	29,11	-12,00	34,56	14,06
-9000	312,87	-66,69	256,93	-33,27	323,76	14,48	256,07	-13,02	86,52	16,30	16,81	-17,54	20,91	8,58
-10000	286,15	-69,54	240,15	-30,87	311,46	10,01	241,65	-10,63	71,60	15,00	3,97	-23,59	333,50	-4,09
-11000	255,47	-69,41	223,76	-26,80	298,56	6,44	227,20	-6,75	56,55	12,08	350,10	-29,94	7,36	2,43
-12000	227,16	-66,04	207,82	-21,32	284,88	4,03	212,65	-1,53	41,43	7,63	334,49	-36,24	338,83	-10,69
-13000	204,23	-60,29	192,05	-14,72	270,32	3,08	197,75	4,85	26,11	1,81	316,30	-42,00	322,79	-16,94
-14000	185,33	-53,16	176,02	-7,36	254,85	3,84	182,05	12,13	10,26	-5,14	294,67	-46,41	304,80	-22,29
-15000	168,45	-45,36	159,07	0,32	238,47	6,53	164,89	19,92	353,33	-12,88	269,50	-48,42	284,43	-25,98
-16000	152,07	-37,43	140,49	7,70	221,15	11,26	145,30	27,62	334,48	-20,88	242,31	-47,08	261,77	-27,14
-17000	135,18	-29,99	119,51	13,90	202,66	17,98	122,15	34,22	312,65	-28,28	215,55	-42,18	237,57	-25,07
-18000	117,06	-23,79	95,70	17,68	182,37	26,40	94,71	38,15	286,82	-33,66	190,51	-34,43	212,88	-19,58
-19000	97,34	-19,82	69,43	17,66	158,88	35,84	64,07	37,62	257,14	-35,17	166,76	-25,02	188,18	-11,15
-20000	76,09	-19,22	42,03	12,85	129,65	44,74	33,31	31,75	225,98	-31,28	143,08	-15,34	162,97	-0,87
	521	3,62	649	3,62	702	3,62	759	3,62	834	3,63	296	3,63	4	3,63
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	195,57	-71,55	22,87	15,35	253,65	-42,36	57,29	24,05	130,07	-52,92	309,39	14,60	345,48	42,33
1000	180,69	-66,03	9,73	10,00	236,49	-39,95	42,75	20,49	122,89	-49,62	297,65	11,53	334,28	37,10
0	168,94	-60,45	356,97	4,42	220,54	-36,18	28,96	15,96	115,66	-46,89	285,88	9,48	323,57	32,31
-1000	158,75	-55,06	344,36	-1,12	205,90	-31,43	15,82	10,78	108,40	-44,79	274,09	8,53	313,11	28,11
-2000	149,37	-49,98	331,66	-6,34	192,38	-26,05	3,12	5,24	101,14	-43,36	262,36	8,73	302,75	24,65
-3000	140,41	-45,35	318,66	-10,98	179,67	-20,37	350,63	-0,40	93,88	-42,63	250,75	10,07	292,41	22,04
-4000	131,65	-41,27	305,22	-14,76	167,47	-14,68	338,08	-5,85	86,67	-42,62	239,30	12,51	282,06	20,37
-5000	122,94	-37,84	291,32	-17,44	155,46	-9,23	325,23	-10,85	79,52	-43,34	228,00	15,94	271,68	19,71
-6000	114,19	-35,13	277,01	-18,80	143,38	-4,25	311,87	-15,11	72,46	-44,78	216,77	20,25	261,29	20,11
-7000	105,35	-33,23	262,49	-18,71	131,03	0,03	297,88	-18,37	65,50	-46,93	205,45	25,29	250,88	21,58
-8000	96,38	-32,22	247,97	-17,10	118,24	3,36	283,24	-20,34	58,65	-49,78	193,77	30,91	240,45	24,10
-9000	87,25	-32,16	233,62	-14,06	104,92	5,53	268,08	-20,80	51,91	-53,31	181,30	36,92	229,91	27,65
-10000	77,93	-33,11	219,46	-9,69	91,08	6,32	252,62	-19,62	45,33	-57,51	167,44	43,10	219,13	32,16
-11000	68,39	-35,11	205,38	-4,20	76,76	5,59	237,06	-16,76	38,98	-62,36	151,28	49,10	207,86	37,59
-12000	58,56	-38,19	191,09	2,19	62,03	3,23	221,50	-12,32	33,15	-67,82	131,64	54,34	195,70	43,84
-13000	48,36	-42,37	176,14	9,21	46,91	-0,75	205,85	-6,48	28,70	-73,85	107,51	57,89	181,91	50,79
-14000	37,63	-47,66	159,90	16,49	31,28	-6,29	189,81	0,50	29,26	-80,28	79,61	58,58	165,10	58,16
-15000	26,07	-54,06	141,61	23,49	14,81	-13,20	172,81	8,27	62,23	-85,90	51,25	55,75	142,38	65,33
-16000	13,08	-61,51	120,41	29,36	356,90	-21,14	154,09	16,27	135,53	-83,09	25,44	49,81	108,56	70,67
-17000	356,95	-69,91	95,83	32,92	336,51	-29,55	132,65	23,66	142,12	-75,89	2,45	41,81	63,84	71,08
-18000	330,39	-78,76	68,49	32,84	312,15	-37,35	107,58	29,11	136,00	-68,39	340,99	32,88	24,63	65,45
-19000	250,13	-83,74	40,28	28,34	282,32	-42,63	78,94	30,84	126,16	-61,30	319,64	24,16	356,20	56,44
-20000	184,92	-75,87	12,85	19,74	247,92	-42,79	48,62	27,34	114,53	-55,20	297,37	16,99	333,26	46,37

Table 34: Results of the calculations, Right ascension and Declination in Degrees

	522	3,63	667	3,64	471	3,64	35	3,65	760	3,65	811	3,66	431	3,66
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	176,40	-66,73	116,31	-37,97	234,66	-29,78	337,21	0,02	64,95	15,63	142,88	63,06	313,70	-58,45
1000	165,45	-61,24	107,42	-35,89	219,72	-25,98	324,26	-4,85	50,94	12,68	121,21	66,79	292,84	-61,51
0	155,81	-55,97	98,57	-34,64	205,70	-21,27	311,04	-8,99	37,47	8,67	95,52	68,56	269,78	-62,60
-1000	146,84	-51,05	89,79	-34,23	192,46	-15,96	297,49	-12,16	24,49	3,85	68,94	67,78	246,78	-61,45
-2000	138,23	-46,58	81,09	-34,68	179,77	-10,35	283,64	-14,14	11,86	-1,50	45,59	64,70	226,12	-58,31
-3000	129,77	-42,66	72,50	-35,98	167,36	-4,73	269,64	-14,78	359,37	-7,13	26,70	60,10	208,53	-53,80
-4000	121,36	-39,37	64,02	-38,10	154,97	0,65	255,68	-14,03	346,76	-12,76	11,37	54,71	193,56	-48,49
-5000	112,92	-36,79	55,65	-40,99	142,37	5,51	241,96	-11,93	333,74	-18,13	358,34	49,01	180,44	-42,82
-6000	104,43	-34,99	47,33	-44,61	129,38	9,62	228,59	-8,60	320,05	-22,92	346,70	43,30	168,48	-37,09
-7000	95,85	-34,04	38,97	-48,90	115,87	12,70	215,57	-4,22	305,48	-26,81	335,81	37,81	157,16	-31,56
-8000	87,17	-33,97	30,39	-53,80	101,84	14,52	202,76	1,00	289,94	-29,46	325,24	32,71	146,08	-26,41
-9000	78,37	-34,85	21,31	-59,28	87,36	14,89	189,92	6,84	273,59	-30,56	314,67	28,16	134,94	-21,83
-10000	69,43	-36,69	11,14	-65,26	72,59	13,69	176,69	13,06	256,73	-29,89	303,85	24,32	123,49	-18,01
-11000	60,30	-39,52	358,55	-71,67	57,66	10,88	162,60	19,38	239,80	-27,38	292,59	21,38	111,54	-15,14
-12000	50,92	-43,36	339,26	-78,24	42,63	6,54	147,10	25,45	223,07	-23,13	280,73	19,50	98,94	-13,43
-13000	41,17	-48,21	293,93	-83,56	27,37	0,82	129,57	30,75	206,55	-17,35	268,17	18,90	85,60	-13,11
-14000	30,88	-54,06	219,04	-81,81	11,57	-6,07	109,52	34,60	189,98	-10,38	254,82	19,78	71,46	-14,36
-15000	19,67	-60,89	185,73	-74,73	354,67	-13,79	86,98	36,16	172,84	-2,60	240,59	22,31	56,45	-17,37
-16000	6,72	-68,63	166,86	-66,58	335,86	-21,82	62,82	34,72	154,41	5,42	225,36	26,64	40,44	-22,24
-17000	348,91	-77,13	151,11	-58,31	314,02	-29,31	38,33	30,05	133,83	12,87	208,83	32,83	23,09	-28,94
-18000	299,73	-85,22	135,69	-50,51	288,08	-34,85	14,28	22,59	110,32	18,57	190,29	40,80	3,60	-37,30
-19000	191,70	-81,45	119,66	-43,84	258,11	-36,53	350,44	13,27	83,72	20,91	168,06	50,18	340,18	-46,73
-20000	163,90	-71,28	102,74	-39,13	226,57	-32,77	325,83	3,42	55,19	18,37	137,87	59,72	308,98	-55,64
	36	3,66	350	3,66	719	3,66	57	3,66	133	3,67	679	3,68	97	3,68
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	347,36	-21,17	49,88	-21,76	236,55	15,42	271,66	-50,09	9,24	53,90	130,90	-33,19	325,02	-16,66
1000	333,74	-26,43	38,79	-25,75	225,08	18,95	252,37	-49,31	356,13	48,34	120,89	-29,92	310,92	-20,79
0	319,33	-31,10	27,71	-30,44	213,73	23,29	234,10	-46,79	344,39	42,83	110,95	-27,48	296,25	-23,87
-1000	303,95	-34,84	16,44	-35,65	202,36	28,26	217,47	-42,87	333,46	37,59	101,04	-25,94	281,11	-25,65
-2000	287,67	-37,30	4,68	-41,21	190,74	33,67	202,52	-37,98	323,00	32,81	91,17	-25,34	265,78	-25,97
-3000	270,83	-38,21	352,00	-46,87	178,56	39,32	188,94	-32,54	312,75	28,62	81,37	-25,72	250,60	-24,78
-4000	253,97	-37,44	337,77	-52,36	165,35	44,96	176,34	-26,86	302,58	25,16	71,66	-27,06	235,90	-22,18
-5000	237,70	-35,08	321,16	-57,27	150,50	50,25	164,34	-21,24	292,38	22,55	62,03	-29,33	221,83	-18,37
-6000	222,34	-31,35	301,37	-61,05	133,34	54,77	152,60	-15,91	282,10	20,90	52,45	-32,48	208,39	-13,61
-7000	207,96	-26,55	278,46	-62,98	113,42	57,92	140,84	-11,09	271,73	20,27	42,83	-36,44	195,42	-8,16
-8000	194,37	-21,02	254,30	-62,51	91,25	59,10	128,84	-7,00	261,25	20,73	33,01	-41,15	182,63	-2,28
-9000	181,22	-15,03	231,73	-59,66	68,64	57,93	116,43	-3,85	250,64	22,31	22,72	-46,53	169,69	3,76
-10000	168,13	-8,87	212,17	-54,95	47,61	54,53	103,50	-1,85	239,86	25,03	11,49	-52,49	156,20	9,68
-11000	154,67	-2,82	195,31	-49,02	28,94	49,41	90,01	-1,21	228,82	28,88	358,47	-58,89	141,75	15,16
-12000	140,40	2,81	180,18	-42,37	12,26	43,10	75,95	-2,10	217,33	33,83	341,93	-65,49	125,92	19,78
-13000	124,92	7,61	165,82	-35,38	356,74	36,09	61,34	-4,62	205,09	39,83	318,07	-71,61	108,43	23,06
-14000	107,90	11,09	151,43	-28,41	341,55	28,79	46,13	-8,82	191,55	46,78	280,53	-75,49	89,26	24,44
-15000	89,24	12,68	136,35	-21,88	325,91	21,63	30,16	-14,66	175,64	54,51	234,80	-74,22	68,74	23,40
-16000	69,08	11,84	120,03	-16,29	309,18	15,15	12,99	-21,96	155,02	62,55	200,21	-68,14	47,44	19,71
-17000	47,82	8,20	102,07	-12,35	290,82	10,08	353,83	-30,36	124,36	69,68	175,94	-59,87	25,77	13,47
-18000	25,72	1,77	82,33	-10,87	270,56	7,32	331,19	-39,15	77,77	72,57	155,93	-51,00	3,63	5,18
-19000	2,59	-7,03	60,97	-12,71	248,52	7,86	302,75	-46,81	31,12	67,98	137,12	-42,54	340,30	-4,25
-20000	337,46	-17,22	38,35	-18,47	225,17	12,52	266,92	-50,49	358,85	58,45	118,14	-35,46	314,58	-13,39

Table 35: Results of the calculations, Right ascension and Declination in Degrees

	248	3,68	319	3,68	578	3,68	650	3,69	329	3,7	390	3,71	761	3,71
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	231.96	29.11	211.10	64.38	72.80	5.61	349.29	3.28	28.99	-51.61	269.44	29.25	56.22	24.11
1000	221.66	32.89	204.40	69.31	59.62	3.36	336.31	-2.04	19.16	-56.78	259.78	29.78	41.71	20.47
0	211.35	37.36	197.89	74.52	46.78	0.00	323.18	-6.86	8.51	-62.30	250.23	31.24	27.94	15.89
-1000	200.83	42.37	191.59	79.95	34.29	-4.26	309.73	-10.91	356.11	-68.00	240.83	33.58	14.82	10.67
-2000	189.81	47.78	185.69	85.53	22.04	-9.23	295.91	-13.93	339.83	-73.60	231.54	36.73	2.14	5.11
-3000	177.82	53.38	356.00	88.82	9.87	-14.67	281.79	-15.70	314.43	-78.44	222.33	40.61	349.65	-0.52
-4000	164.07	58.96	352.11	83.17	337.52	-20.34	267.51	-16.07	272.39	-80.79	213.07	45.13	337.09	-5.94
-5000	147.33	64.12	346.16	77.57	344.69	-25.97	253.31	-15.00	229.04	-78.75	203.55	50.18	324.22	-10.89
-6000	125.94	68.25	340.02	72.09	331.02	-31.28	239.37	-12.54	202.45	-73.92	193.42	55.67	310.85	-15.09
-7000	99.20	70.42	333.73	66.77	316.16	-35.91	225.80	-8.83	185.73	-62.15	182.03	61.45	296.84	-18.26
-8000	70.40	69.78	327.25	61.69	299.84	-39.47	212.55	-4.06	173.20	-62.14	168.06	67.33	282.21	-20.12
-9000	45.08	66.45	320.50	56.90	282.09	-41.52	199.44	1.55	162.47	-56.16	148.66	72.91	267.08	-20.48
-10000	24.92	61.31	313.39	52.46	263.37	-41.68	186.17	7.77	152.45	-50.38	118.14	77.13	251.67	-19.19
-11000	8.54	55.15	305.83	48.46	244.41	-39.78	172.32	14.34	142.54	-44.92	75.31	77.79	236.18	-16.24
-12000	354.23	48.47	297.68	44.99	225.91	-35.89	157.34	20.94	132.34	-39.93	38.60	74.00	220.69	-11.73
-13000	340.78	41.62	288.84	42.18	208.13	-30.30	140.57	27.13	121.54	-35.59	14.39	67.69	205.10	-5.83
-14000	327.32	34.90	279.16	40.18	190.86	-23.40	121.35	32.27	109.88	-32.12	356.55	60.35	189.08	1.18
-15000	313.20	28.67	268.54	39.22	173.55	-15.66	99.29	35.48	97.16	-29.83	341.09	52.63	172.08	8.95
-16000	297.91	23.37	256.89	39.56	155.49	-7.64	74.82	35.84	83.22	-29.07	326.11	45.03	153.32	16.93
-17000	281.12	19.64	244.15	41.50	135.88	-0.10	49.27	32.74	68.01	-30.25	310.58	38.04	131.79	24.27
-18000	262.66	18.21	230.27	45.36	114.00	5.91	23.97	26.30	51.46	-33.76	293.88	32.33	106.59	29.60
-19000	242.64	19.87	215.16	51.45	89.56	8.99	359.25	17.36	33.41	-39.93	275.76	28.79	77.84	31.16
-20000	221.34	25.25	198.38	60.05	63.11	7.64	334.35	7.22	13.20	-48.89	256.35	28.40	47.51	27.47
	812	3,71	25	3,71	720	3,71	463	3,72	71	3,72	579	3,72	852	3,72
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	176.51	47.78	298.83	6.41	237.70	4.48	89.10	-14.17	89.88	54.29	73.56	2.44	221.56	1.89
1000	162.54	53.25	286.52	4.39	225.36	7.93	77.76	-14.84	69.57	53.32	60.66	0.27	209.05	6.44
0	146.33	58.29	274.20	3.52	213.24	12.24	66.57	-16.60	50.63	50.56	48.06	-2.99	196.72	11.60
-1000	126.98	62.37	261.95	3.84	201.25	17.22	55.56	-19.35	33.70	46.43	35.76	-7.17	184.38	17.12
-2000	104.22	64.82	249.87	5.35	189.19	22.65	44.70	-23.00	18.71	41.40	23.67	-12.06	171.79	22.75
-3000	79.68	65.01	238.00	7.96	176.78	28.29	33.91	-27.41	5.24	35.89	11.62	-17.45	158.63	28.22
-4000	56.49	62.88	226.37	11.58	163.69	33.87	23.04	-32.44	352.82	30.24	359.36	-23.11	144.60	33.22
-5000	36.66	58.95	214.90	16.04	149.50	39.09	11.82	-37.92	341.03	24.72	346.57	-28.77	129.42	37.38
-6000	20.17	53.89	203.43	21.19	133.82	43.56	359.86	-43.67	329.53	19.54	332.85	-34.14	113.01	40.34
-7000	6.10	48.23	191.72	26.85	116.40	46.83	346.56	-49.45	318.04	14.93	317.83	-38.88	95.60	41.72
-8000	333.56	42.36	179.40	32.83	97.45	48.44	331.06	-54.94	306.36	11.07	301.17	-42.56	77.74	41.30
-9000	341.84	36.52	165.94	38.89	77.77	48.04	312.24	-59.63	294.33	8.16	282.90	-44.71	60.16	39.04
-10000	330.39	30.93	150.65	44.70	58.43	45.57	289.24	-62.73	281.84	6.40	263.51	-44.93	43.35	35.12
-11000	318.81	25.78	132.66	49.78	40.20	41.25	262.98	-63.34	268.86	5.96	243.93	-43.01	27.40	29.84
-12000	306.75	21.29	111.25	53.40	23.18	35.48	236.83	-61.00	255.35	6.98	224.96	-39.05	12.06	23.53
-13000	293.92	17.72	86.70	54.66	6.99	28.66	213.60	-56.10	241.30	9.58	206.91	-33.38	356.87	16.55
-14000	280.11	15.36	60.97	52.92	351.01	21.23	193.51	-49.44	226.64	13.80	189.54	-26.42	341.24	9.28
-15000	265.16	14.57	36.42	48.23	334.54	13.65	175.38	-41.77	211.16	19.61	172.26	-18.67	324.53	2.20
-16000	249.00	15.71	13.93	41.28	316.87	6.51	157.92	-33.74	194.44	26.87	154.33	-10.68	306.10	-4.05
-17000	231.61	19.08	352.88	32.98	297.35	0.59	140.07	-26.01	175.59	35.28	134.95	-3.21	285.44	-8.58
-18000	212.85	24.89	332.15	24.30	275.61	-3.05	121.04	-19.42	152.97	44.16	113.44	2.71	262.46	-10.31
-19000	192.20	33.08	310.65	16.35	251.79	-3.22	100.35	-15.04	123.74	51.99	89.50	5.74	237.71	-8.21
-20000	168.15	43.22	287.65	10.56	226.61	1.02	78.04	-14.13	85.66	55.69	63.63	4.44	212.08	-1.77

Table 36: Results of the calculations, Right ascension and Declination in Degrees

	668	3,72	538	3,72	279	3,72	762	3,73	280	3,73	330	3,73	193	3,74
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	118,05	-40,58	271,84	9,56	316,23	43,93	51,79	9,73	318,70	38,05	53,23	-9,46	27,87	-10,34
1000	109,47	-38,33	260,03	9,94	307,20	40,22	38,46	5,81	308,79	34,08	41,55	-13,23	15,54	-15,50
0	100,93	-36,86	248,35	11,44	298,27	37,19	25,56	1,08	298,97	30,86	30,03	-17,74	3,12	-21,01
-1000	92,44	-36,21	236,86	14,00	289,38	34,93	12,96	-4,21	289,18	28,47	18,54	-22,82	350,34	-26,60
-2000	84,03	-36,39	225,54	17,51	280,52	33,47	0,47	-9,80	279,41	26,98	6,87	-28,27	336,87	-31,99
-3000	75,71	-37,39	214,35	21,82	271,70	32,88	347,82	-15,41	269,65	26,46	354,74	-33,87	322,39	-36,86
-4000	67,51	-39,20	203,12	26,78	334,74	20,78	334,74	-20,78	259,93	26,92	341,75	-39,38	306,65	-40,82
-5000	59,43	-41,77	191,64	32,21	254,22	34,32	320,97	-25,59	250,25	28,35	327,47	-44,48	289,62	-43,48
-6000	51,42	-45,07	179,54	37,90	245,57	36,34	306,30	-29,51	240,62	30,73	311,43	-48,80	271,68	-44,49
-7000	44,43	-49,05	166,33	43,63	236,95	39,20	290,68	-32,21	230,96	34,01	293,38	-51,88	253,56	-43,66
-8000	35,36	-53,67	151,32	49,07	228,30	42,86	274,26	-33,38	221,19	38,14	273,65	-53,22	236,04	-41,05
-9000	26,98	-58,88	133,72	53,75	219,50	47,28	257,43	-32,81	211,10	43,06	253,32	-52,51	219,59	-36,89
-10000	17,94	-64,66	112,90	57,02	210,35	52,44	240,66	-30,45	200,35	48,69	233,70	-49,77	204,22	-31,55
-11000	7,46	-70,95	89,28	58,12	200,53	58,30	224,27	-26,42	188,37	54,94	215,55	-45,29	189,60	-25,35
-12000	353,09	-77,65	64,88	56,53	189,35	64,80	208,29	-20,96	174,01	61,63	198,87	-39,50	175,26	-18,64
-13000	321,14	-84,21	41,97	52,35	175,15	71,82	192,50	-14,37	154,75	68,41	183,13	-32,82	160,65	-11,74
-14000	221,68	-84,73	21,37	46,15	151,94	78,98	176,42	-7,00	124,78	74,21	167,68	-25,65	145,20	-5,05
-15000	182,92	-77,59	2,49	38,63	91,82	83,80	159,44	0,70	78,55	76,21	151,80	-18,43	128,33	0,93
-16000	165,07	-69,44	344,32	30,47	22,41	79,56	140,80	8,11	34,50	72,10	134,84	-11,69	109,58	5,49
-17000	150,29	-61,23	325,81	22,36	354,17	71,28	119,75	14,35	5,11	64,30	116,23	-6,16	88,73	7,81
-18000	135,69	-53,45	306,12	15,19	335,49	62,43	95,84	18,16	343,18	55,25	95,63	-2,77	66,03	6,99
-19000	120,38	-46,74	284,65	10,08	318,81	53,90	69,45	18,15	323,73	46,22	73,11	-2,62	42,06	2,45
-20000	104,21	-41,86	261,35	8,44	302,27	46,45	41,93	13,33	304,66	38,24	49,23	-6,61	17,26	-5,82
	311	3,74	391	3,74	539	3,75	98	3,75	835	3,76	526	3,76	763	3,76
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	268,38	56,87	245,48	19,15	266,97	2,71	321,67	-22,41	136,04	-47,10	325,37	-77,39	65,73	17,54
1000	264,15	57,22	234,52	21,93	254,50	3,63	307,08	-26,31	127,46	-43,38	289,54	-80,78	51,55	14,65
0	260,15	57,97	223,68	25,58	242,23	5,71	291,82	-29,07	118,96	-40,31	243,01	-80,34	37,93	10,68
-1000	256,47	59,10	212,90	29,97	230,21	8,85	276,07	-30,42	110,49	-37,96	210,67	-76,41	24,84	5,89
-2000	253,24	60,57	202,00	34,96	218,42	12,90	260,21	-30,24	102,05	-36,38	191,40	-71,13	12,15	0,55
-3000	250,58	62,33	190,73	40,37	206,76	17,69	244,67	-28,53	93,63	-35,60	177,94	-65,48	359,64	-5,08
-4000	248,67	64,33	178,71	46,01	195,07	23,01	229,78	-25,45	85,25	-35,67	167,08	-59,85	347,06	-10,71
-5000	247,76	66,49	165,35	51,65	183,06	28,67	215,67	-21,24	76,93	-36,57	157,49	-54,40	334,13	-16,09
-6000	248,16	68,72	149,78	56,93	170,39	34,42	202,27	-16,20	68,66	-38,30	148,50	-49,28	320,58	-20,90
-7000	250,30	70,88	130,97	61,35	156,56	39,98	189,36	-10,60	60,44	-40,86	139,76	-44,59	306,21	-24,84
-8000	254,70	72,79	108,25	64,18	141,02	44,99	176,65	-4,71	52,22	-44,20	131,03	-40,43	290,93	-27,56
-9000	261,69	74,18	82,81	64,63	123,26	48,97	163,78	1,20	43,92	-48,31	122,13	-36,90	274,83	-28,78
-10000	270,86	74,75	57,96	62,41	103,16	51,31	150,38	6,85	35,41	-53,16	112,94	-34,11	258,22	-28,26
-11000	280,52	74,25	36,25	57,94	81,45	51,47	136,06	11,92	26,48	-58,72	103,35	-32,17	241,46	-25,91
-12000	288,38	72,62	17,77	51,93	59,60	49,19	120,48	16,01	16,72	-64,97	93,25	-31,21	224,83	-21,81
-13000	293,01	70,07	1,43	45,01	38,87	44,64	103,45	18,68	5,20	-71,86	82,57	-31,37	208,35	-16,17
-14000	294,19	66,87	346,06	37,64	19,58	38,31	84,98	19,43	348,50	-79,24	71,22	-32,77	191,79	-9,28
-15000	292,27	63,36	330,68	30,26	1,26	30,78	65,36	17,86	297,61	-86,00	59,11	-35,57	174,64	-1,53
-16000	287,68	59,87	314,55	23,37	343,10	22,65	44,98	13,78	195,27	-82,48	46,08	-39,89	156,20	6,54
-17000	280,83	56,81	297,05	17,62	324,19	14,65	24,06	7,33	169,22	-74,03	31,85	-45,82	135,57	14,12
-18000	272,09	54,65	277,82	13,87	303,76	7,69	2,35	-1,05	152,64	-65,28	15,72	-53,42	111,93	20,02
-19000	261,96	53,92	256,82	13,12	281,25	3,04	339,04	-10,48	137,38	-56,91	355,78	-62,55	85,08	22,59
-20000	251,28	55,20	234,43	16,32	256,75	2,14	312,79	-19,50	121,99	-49,56	325,01	-72,42	56,18	20,26

Table 37: Results of the calculations, Right ascension and Declination in Degrees

	37	3,77	862	3,77	72	3,77	281	3,77	38	3,77	302	3,77	600	3,77
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	343.15	-7.58	107.19	-70.50	75.62	41.08	292.43	51.73	311.92	-9.50	83.41	-62.49	331.75	25.35
1000	329.97	-12.70	108.74	-68.80	58.53	38.91	286.09	49.86	298.23	-12.69	81.41	-63.23	320.21	20.72
0	316.36	-17.18	109.12	-67.00	42.55	35.36	279.69	48.57	284.25	-14.70	79.90	-64.15	308.78	16.80
-1000	302.23	-20.75	108.55	-65.20	27.81	30.77	273.29	47.91	270.11	-15.39	78.96	-65.19	297.36	13.75
-2000	287.60	-23.13	107.23	-63.49	14.16	25.51	266.94	47.87	256.04	-14.70	78.70	-66.30	285.91	11.68
-3000	272.66	-24.12	105.33	-61.92	1.34	19.92	260.69	48.46	242.25	-12.66	79.22	-67.40	274.44	10.71
-4000	257.68	-23.64	102.98	-60.55	349.03	14.26	254.58	49.67	228.87	-9.43	80.58	-68.41	262.99	10.87
-5000	242.99	-21.70	100.30	-59.42	336.93	8.82	248.68	51.48	215.94	-5.18	82.77	-69.27	251.62	12.19
-6000	228.78	-18.44	97.37	-58.58	324.78	3.83	243.02	53.86	203.34	-0.15	85.73	-69.90	240.33	14.61
-7000	215.11	-14.08	94.28	-58.05	312.35	-0.48	237.67	56.80	190.87	5.43	89.24	-70.22	229.11	18.07
-8000	201.87	-8.85	91.08	-57.86	299.48	-3.85	232.76	60.24	178.25	11.33	93.03	-70.20	217.84	22.46
-9000	188.81	-3.02	87.85	-58.02	286.09	-6.07	228.48	64.17	165.09	17.28	96.71	-69.80	206.33	27.68
-10000	175.57	3.17	84.68	-58.53	272.17	-6.92	225.32	68.53	150.97	22.99	99.93	-69.02	194.25	33.59
-11000	161.74	9.44	81.64	-59.40	257.76	-6.23	224.41	73.22	135.42	28.08	102.35	-67.89	181.07	40.03
-12000	146.83	15.45	78.85	-60.58	242.95	-3.90	228.95	77.95	118.03	32.05	103.69	-66.42	165.98	46.73
-13000	130.31	20.75	76.46	-62.02	227.76	0.07	248.13	81.79	98.66	34.31	103.75	-64.70	147.64	53.27
-14000	111.76	24.74	74.63	-63.65	212.08	5.61	286.28	82.00	77.68	34.30	102.38	-62.80	124.20	58.79
-15000	91.07	26.70	73.53	-65.35	195.60	12.54	307.95	77.84	55.87	31.65	99.47	-60.88	94.38	61.82
-16000	68.67	25.95	73.30	-66.99	177.72	20.54	311.42	71.99	34.02	26.39	94.97	-59.15	61.01	60.78
-17000	45.37	22.12	74.03	-68.48	157.43	29.03	307.14	65.80	12.36	18.98	88.93	-57.89	30.13	55.50
-18000	21.84	15.36	75.79	-69.72	133.22	36.98	298.99	59.94	350.46	10.15	81.56	-57.50	3.86	47.33
-19000	358.02	6.33	78.80	-70.67	103.54	42.49	288.49	55.02	327.39	1.00	73.36	-58.39	340.58	37.88
-20000	333.09	-3.78	83.67	-71.18	69.13	42.94	276.60	51.69	302.09	-6.91	65.39	-60.98	318.30	28.56

	743	3,77	616	3,77	863	3,78	434	3,78	58	3,78	813	3,78	617	3,78
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	286.17	-21.74	42.67	55.90	126.43	-66.14	337.82	50.28	252.45	-59.04	169.55	31.53	56.30	42.58
1000	271.12	-22.56	25.64	51.29	123.26	-62.90	327.81	45.32	231.84	-56.42	155.75	37.01	39.95	38.86
0	256.13	-21.92	10.94	45.98	119.32	-59.95	318.22	40.85	213.82	-52.31	140.73	41.93	25.02	34.14
-1000	241.48	-19.87	357.90	40.39	114.88	-57.34	308.85	36.99	198.27	-47.25	124.22	45.90	11.32	28.80
-2000	227.40	-16.56	345.95	34.81	110.09	-55.15	299.57	33.82	184.61	-41.72	106.23	48.48	358.53	23.19
-3000	213.94	-12.25	334.65	29.49	105.05	-53.41	290.33	31.44	172.24	-36.06	87.32	49.33	346.32	17.59
-4000	201.02	-7.18	323.68	24.63	99.85	-52.16	281.09	29.92	160.66	-30.54	68.52	48.31	334.37	12.24
-5000	188.46	-1.63	312.82	20.39	94.56	-51.45	271.85	29.32	149.50	-25.36	50.77	45.59	322.45	7.40
-6000	175.99	4.14	301.90	16.94	89.23	-51.29	262.61	29.65	138.49	-20.73	34.57	41.51	310.36	3.26
-7000	163.30	9.86	290.83	14.43	83.91	-51.69	253.36	30.94	127.40	-16.82	19.85	36.49	297.97	0.06
-8000	150.07	15.26	279.54	12.98	78.66	-52.68	244.08	33.19	116.10	-13.79	6.27	30.90	285.19	-2.03
-9000	135.98	20.02	268.01	12.70	73.55	-54.25	234.72	36.38	104.49	-11.80	353.37	25.05	272.04	-2.81
-10000	120.75	23.79	256.23	13.69	68.68	-56.40	225.18	40.49	92.50	-11.01	340.69	19.21	258.55	-2.17
-11000	104.28	26.16	244.15	15.99	64.21	-59.10	215.28	45.50	80.10	-11.54	327.82	13.65	244.77	-0.04
-12000	86.68	26.75	231.71	19.61	60.43	-62.32	204.73	51.36	67.27	-13.49	314.37	8.65	230.70	3.60
-13000	68.30	25.28	218.76	24.54	57.90	-65.94	192.99	58.03	53.94	-16.90	299.99	4.54	216.23	8.67
-14000	49.55	21.66	204.97	30.71	57.64	-69.79	178.86	65.38	39.95	-21.79	284.42	1.73	201.09	15.06
-15000	30.66	16.01	189.80	38.00	61.54	-73.44	158.99	73.11	25.01	-28.11	267.55	0.66	184.78	22.52
-16000	11.48	8.69	172.20	46.11	72.06	-76.13	120.89	79.91	8.51	-35.69	249.39	1.76	166.45	30.67
-17000	351.48	0.24	150.11	54.45	88.24	-76.69	50.35	80.26	349.28	-44.18	230.06	5.39	144.75	38.79
-18000	329.78	-8.48	119.79	61.55	101.72	-74.70	6.65	72.87	325.02	-52.79	209.58	11.63	117.85	45.50
-19000	305.29	-16.18	78.71	64.26	107.39	-71.06	342.57	63.43	291.84	-59.56	187.57	20.28	84.95	48.53
-20000	277.25	-20.88	36.45	59.68	107.09	-66.87	323.54	53.87	249.07	-60.75	162.83	30.62	49.44	45.58

Table 38: Results of the calculations, Right ascension and Declination in Degrees

[illegible]

	249	3,84	394	3,84	722	3,84	764	3,84	837	3,84	838	3,84	744	3,84
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	235.69	26.30	275.92	21.77	239.11	15.66	67.14	15.96	153.68	-42.12	159.33	-48.23	273.44	-21.06
1000	225.22	29.83	265.32	21.78	227.67	19.34	53.07	13.19	143.36	-37.38	149.07	-43.21	258.54	-20.67
0	214.79	34.10	254.83	22.82	216.40	23.86	39.53	9.32	133.33	-33.22	139.24	-38.67	243.93	-18.87
-1000	204.24	38.97	244.49	24.85	205.18	29.05	26.50	4.61	123.43	-29.74	129.63	-34.74	229.83	-15.80
-2000	193.32	44.28	234.31	27.81	193.79	34.73	13.85	-0.68	113.59	-27.05	120.12	-31.51	216.33	-11.68
-3000	181.64	49.87	224.23	31.58	181.89	40.70	1.36	-6.29	103.76	-25.25	110.63	-29.08	203.37	-6.77
-4000	168.57	55.50	214.16	36.08	169.00	46.73	348.80	-11.94	93.94	-24.38	101.14	-27.53	190.80	-1.34
-5000	153.11	60.87	203.91	41.16	154.42	52.51	335.86	-17.38	84.13	-24.50	91.64	-26.90	178.36	4.35
-6000	133.86	65.45	193.16	46.71	137.23	57.61	322.29	-22.29	74.33	-25.61	82.13	-27.24	165.79	10.04
-7000	109.68	68.45	181.41	52.56	116.57	61.41	307.84	-26.35	64.55	-27.70	72.60	-28.56	152.77	15.45
-8000	81.96	68.96	167.79	58.50	92.65	63.16	292.41	-29.22	54.72	-30.75	63.04	-30.86	139.00	20.27
-9000	55.46	66.64	150.78	64.17	67.77	62.31	276.10	-30.58	44.76	-34.71	53.37	-34.11	124.23	24.18
-10000	33.44	62.12	127.98	68.89	44.92	59.00	259.21	-30.19	34.49	-39.55	43.49	-38.30	108.32	26.81
-11000	15.54	56.24	97.64	71.37	25.27	53.87	242.17	-27.94	23.61	-45.20	33.20	-43.39	91.38	27.79
-12000	0.21	49.60	64.12	70.29	8.22	47.60	225.28	-23.90	11.60	-51.59	22.17	-49.34	73.69	26.85
-13000	346.08	42.63	35.51	65.79	352.67	40.74	208.62	-18.28	357.50	-58.57	9.77	-56.06	55.67	23.88
-14000	332.18	35.66	13.19	59.16	337.61	33.70	191.94	-11.40	339.18	-65.82	354.71	-63.41	37.58	18.95
-15000	317.76	29.06	354.61	51.46	322.25	26.95	174.75	-3.66	311.54	-72.47	333.64	-70.98	19.39	12.34
-16000	302.27	23.30	337.52	43.43	305.93	20.99	156.35	4.41	266.75	-75.88	296.80	-77.31	0.70	4.46
-17000	285.28	19.01	320.48	35.69	288.18	16.52	135.88	12.00	218.31	-72.71	237.48	-77.86	340.83	-4.07
-18000	266.60	16.96	302.58	28.99	268.76	14.36	112.52	17.95	185.57	-64.89	193.87	-71.19	318.78	-12.30
-19000	246.32	18.00	283.33	24.28	247.79	15.43	86.04	20.64	162.06	-55.48	167.65	-61.84	293.59	-18.79
-20000	224.74	22.85	262.70	22.71	225.63	20.44	57.49	18.50	141.82	-46.02	147.19	-52.05	265.01	-21.51

	151	3,84	39	3,85	487	3,85	332	3,85	351	3,85	683	3,85	713	3,85
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	209.67	-44.80	335.41	-1.39	227.98	-48.74	69.55	-14.30	48.02	-28.99	56.05	-64.81	278.80	-8.24
1000	194.97	-39.65	322.40	-6.16	211.46	-44.44	58.17	-16.71	37.42	-33.25	53.64	-68.05	265.22	-8.35
0	181.67	-34.11	309.10	-10.16	196.73	-39.32	46.95	-20.06	26.76	-38.17	53.04	-71.45	251.78	-7.15
-1000	169.31	-28.51	295.45	-13.16	183.40	-33.78	35.84	-24.22	15.81	-43.58	55.40	-74.80	238.65	-4.71
-2000	157.54	-23.10	281.52	-14.93	171.03	-28.15	24.72	-29.03	4.20	-49.31	62.73	-77.78	225.89	-1.18
-3000	146.05	-18.11	267.46	-15.36	159.24	-22.67	13.36	-34.33	351.32	-55.15	77.40	-79.82	213.49	3.26
-4000	134.64	-13.74	253.48	-14.39	147.74	-17.58	1.45	-39.91	336.19	-60.78	97.65	-80.12	201.34	8.38
-5000	123.14	-10.17	239.77	-12.09	136.29	-13.09	348.52	-45.53	317.33	-65.72	114.85	-78.50	189.24	13.97
-6000	111.48	-7.57	226.44	-8.58	124.71	-9.37	333.94	-50.91	293.21	-69.17	124.56	-75.63	176.90	19.79
-7000	99.62	-6.07	213.46	-4.06	112.91	-6.62	316.92	-55.60	264.70	-70.15	128.52	-72.17	163.98	25.58
-8000	87.55	-5.79	200.69	1.26	100.82	-4.98	296.82	-59.02	236.95	-68.18	128.99	-68.49	150.06	31.04
-9000	75.31	-6.79	187.86	7.14	88.43	-4.60	273.95	-60.46	214.10	-63.90	127.31	-64.81	134.71	35.82
-10000	62.89	-9.12	174.61	13.36	75.76	-5.56	250.20	-59.42	195.96	-58.24	124.17	-61.24	117.60	39.45
-11000	50.24	-12.75	160.47	19.63	62.81	-7.93	227.98	-55.97	180.80	-51.87	119.90	-57.88	98.72	41.43
-12000	37.24	-17.64	144.89	25.58	49.52	-11.69	208.31	-50.62	167.14	-45.22	114.65	-54.81	78.58	41.30
-13000	23.60	-23.67	127.26	30.70	35.75	-16.82	190.79	-43.99	153.97	-38.58	108.46	-52.14	58.06	38.82
-14000	8.83	-30.70	107.17	34.29	21.18	-23.20	174.47	-36.59	140.54	-32.27	101.30	-49.99	37.94	34.11
-15000	352.13	-38.45	84.71	35.54	5.26	-30.63	158.38	-28.92	126.30	-26.64	93.11	-48.54	18.44	27.56
-16000	332.09	-46.40	60.78	33.81	346.99	-38.76	141.69	-21.50	110.84	-22.19	83.84	-48.02	359.18	19.72
-17000	306.48	-53.45	36.58	28.91	324.71	-46.87	123.71	-15.01	93.87	-19.51	73.50	-48.73	339.45	11.29
-18000	273.33	-57.56	12.78	21.33	295.93	-53.47	103.93	-10.35	75.32	-19.32	62.17	-51.03	318.33	3.20
-19000	235.69	-56.17	349.06	11.98	259.74	-55.91	82.25	-8.62	55.33	-22.29	50.12	-55.29	295.03	-3.26
-20000	201.35	-48.87	324.44	2.22	221.87	-51.86	59.03	-10.91	34.05	-28.90	37.96	-61.89	269.24	-6.38

Table 41: Results of the calculations, Right ascension and Declination in Degrees

	217	3,85	395	3,85	152	3,85	236	3,85	619	3,86	786	3,86	405	3,86
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	103.53	-24.18	269.06	37.25	189.43	-48.54	95.53	-33.44	56.08	32.29	243.86	-63.69	63.50	-42.29
1000	93.18	-23.38	260.54	37.76	176.40	-42.98	86.42	-33.33	40.84	28.60	222.67	-60.34	55.28	-45.08
0	82.90	-23.57	252.14	39.08	164.53	-37.46	77.42	-34.10	26.60	23.95	204.97	-55.69	47.20	-48.53
-1000	72.74	-24.76	243.90	41.18	153.34	-32.22	68.54	-35.73	13.22	18.67	190.10	-50.33	39.20	-52.57
-2000	62.70	-26.90	235.82	44.01	142.54	-27.44	59.79	-38.18	0.47	13.08	177.16	-44.70	31.21	-57.14
-3000	52.79	-29.93	227.89	47.51	131.90	-23.29	51.17	-41.38	348.07	7.46	165.43	-39.11	23.03	-62.13
-4000	42.95	-33.75	220.05	51.61	121.29	-17.90	42.61	-45.25	335.76	2.07	154.42	-33.78	14.33	-67.47
-5000	33.05	-38.26	212.20	56.24	110.62	-19.41	34.00	-49.74	323.29	-2.84	143.78	-28.89	4.26	-73.07
-6000	22.88	-43.36	204.14	61.33	99.85	-15.93	25.14	-54.75	310.48	7.00	133.25	-24.61	350.39	-78.76
-7000	12.09	-48.92	195.52	66.82	88.97	-15.53	15.66	-60.20	297.21	-10.18	122.66	-21.09	321.48	-84.04
-8000	0.09	-54.79	185.50	72.63	77.99	-16.28	4.85	-66.01	283.43	-12.13	111.88	-18.46	242.97	-85.35
-9000	345.83	-60.75	171.50	78.65	66.88	-18.19	351.05	-72.01	269.20	-12.67	100.83	-16.88	198.95	-80.51
-10000	327.41	-66.39	140.56	84.32	55.60	-21.26	329.59	-77.79	254.66	-11.67	89.46	-16.45	181.60	-74.37
-11000	301.82	-70.84	52.68	85.10	44.05	-25.47	287.21	-81.80	239.92	-9.07	77.72	-17.29	169.86	-67.96
-12000	267.83	-72.52	12.36	79.26	31.99	-30.76	230.30	-80.31	225.02	-4.93	65.58	-19.46	159.62	-61.49
-13000	233.05	-70.17	355.35	72.25	19.08	-37.06	197.60	-74.42	209.86	0.63	52.94	-23.02	149.55	-55.09
-14000	205.49	-64.55	342.52	64.95	4.65	-44.22	178.21	-67.12	194.14	7.41	39.63	-27.98	139.02	-48.93
-15000	184.12	-57.16	330.41	57.65	347.52	-51.96	162.87	-59.39	177.34	15.09	25.33	-34.29	127.61	-43.24
-16000	165.77	-49.00	317.86	50.64	325.34	-59.66	148.47	-51.68	158.62	23.19	9.38	-41.84	114.98	-38.36
-17000	148.31	-40.82	304.28	44.33	293.97	-65.81	133.73	-44.46	136.84	30.88	350.48	-50.32	100.92	-34.78
-18000	130.49	-33.35	289.37	39.30	252.01	-67.42	117.96	-38.33	110.78	36.77	325.76	-58.97	85.34	-33.11
-19000	111.57	-27.50	273.06	36.31	211.43	-62.47	100.89	-34.08	80.33	38.86	289.67	-65.68	68.32	-34.04
-20000	91.36	-24.41	255.61	36.22	180.44	-52.99	82.62	-32.66	48.07	35.41	241.76	-66.01	50.16	-38.25
	642	3,86	703	3,86	6	3,87	447	3,87	765	3,87	17	3,87	237	3,88
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	86.82	-51.07	239.22	-29.21	14.19	38.50	158.20	9.31	56.46	24.37	248.36	-78.90	82.80	-35.47
1000	80.98	-51.68	224.17	-25.75	0.84	32.97	144.87	14.20	41.92	20.74	216.20	-75.42	73.98	-36.58
0	75.36	-52.86	210.00	-21.28	348.40	27.39	131.07	18.36	28.13	16.17	195.60	-70.36	65.30	-38.52
-1000	70.05	-54.55	196.62	-16.12	336.51	22.03	116.75	21.49	15.00	10.96	181.05	-64.79	56.76	-41.24
-2000	65.14	-56.73	183.83	-10.57	324.90	17.11	102.00	23.36	2.31	5.40	169.41	-59.16	48.36	-44.66
-3000	60.75	-59.33	171.37	-4.92	313.35	12.83	87.03	23.80	349.82	-0.23	159.25	-53.70	40.02	-48.72
-4000	57.03	-62.31	158.97	0.58	301.75	9.37	72.17	22.76	337.27	-5.66	149.86	-48.56	31.65	-53.33
-5000	54.25	-65.57	146.39	5.64	290.00	6.91	57.69	20.32	324.42	-10.62	140.85	-43.86	23.02	-58.41
-6000	52.86	-69.05	133.41	10.01	278.11	5.55	43.75	16.65	311.06	-14.83	131.97	-39.70	13.75	-63.88
-7000	53.70	-72.60	119.90	13.43	266.10	5.41	30.33	11.97	297.09	-18.01	123.07	-36.20	2.99	-69.63
-8000	58.40	-76.01	105.80	15.64	253.99	6.54	17.28	6.54	282.48	-19.91	114.04	-33.44	348.59	-75.50
-9000	69.80	-78.80	91.19	16.42	241.81	8.93	4.31	0.61	267.38	-20.29	104.79	-31.53	323.27	-80.98
-10000	89.68	-80.07	76.20	15.62	229.51	12.55	351.07	-5.57	251.98	-19.04	95.25	-30.56	266.89	-83.67
-11000	110.83	-78.97	61.01	13.17	216.96	17.33	337.12	-11.71	236.50	-16.12	85.39	-30.62	213.59	-80.15
-12000	123.62	-75.85	45.71	9.12	203.91	23.17	321.97	-17.46	221.01	-11.64	75.13	-31.80	189.05	-73.85
-13000	128.11	-71.63	30.22	3.61	189.93	29.90	305.14	-22.33	205.43	-5.76	64.42	-34.17	173.52	-66.81
-14000	127.29	-66.89	14.28	-3.15	174.29	37.30	286.28	-25.73	189.41	1.24	53.17	-37.81	160.49	-59.55
-15000	122.98	-62.03	357.39	-10.81	155.83	44.94	265.43	-26.96	172.42	9.01	41.19	-42.75	147.88	-52.36
-16000	116.12	-57.39	338.75	-18.90	132.69	51.97	243.11	-25.43	153.66	17.00	28.18	-49.02	134.73	-45.55
-17000	107.15	-53.36	317.33	-26.60	102.87	56.81	220.13	-20.90	132.14	24.36	13.43	-56.61	120.50	-39.60
-18000	96.39	-50.44	292.00	-32.57	67.46	57.21	196.96	-13.66	106.94	29.74	355.08	-65.35	104.88	-35.11
-19000	84.21	-49.23	262.60	-34.94	32.88	52.08	173.36	-4.44	78.16	31.35	326.31	-74.57	87.80	-32.88
-20000	71.29	-50.35	231.18	-31.94	3.30	42.75	148.38	5.51	47.77	27.71	261.20	-79.97	69.54	-33.80

Table 42: Results of the calculations, Right ascension and Declination in Degrees

	26	3.88	63	3.88	284	3.88	415	3.88	448	3.88	635	3.88	314	3.88
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	298.12	1.01	28.38	19.29	299.08	35.08	138.59	2.31	148.19	26.01	2.35	-45.75	188.37	69.79
1000	285.33	-1.05	14.96	14.15	289.72	32.79	125.47	6.13	133.58	30.35	349.06	-51.25	176.33	75.35
0	272.48	-1.92	2.06	8.64	280.41	31.34	112.07	8.90	118.11	33.64	333.88	-56.50	157.69	80.80
-1000	259.68	-1.53	349.45	3.07	271.16	30.78	98.47	10.46	101.89	35.59	315.88	-61.05	113.12	84.96
-2000	247.05	0.09	336.88	-2.29	261.98	31.13	84.80	10.69	85.33	35.97	294.38	-64.24	43.02	83.63
-3000	234.68	2.86	324.13	-7.19	252.91	32.37	71.24	9.58	68.97	34.75	270.09	-65.39	13.40	78.59
-4000	222.57	6.62	311.03	-11.34	243.95	34.47	57.96	7.19	53.28	32.03	245.87	-64.13	358.65	72.95
-5000	210.66	11.22	297.48	-14.50	235.08	37.39	45.02	3.67	38.51	28.08	224.50	-60.79	348.10	67.29
-6000	198.77	16.47	283.50	-16.44	226.24	41.07	32.38	-0.79	24.65	23.21	206.71	-56.04	339.13	61.79
-7000	186.66	22.15	269.21	-16.99	217.30	45.45	19.91	-5.99	11.50	17.72	191.75	-50.49	330.82	56.56
-8000	173.95	28.04	254.80	-16.04	208.09	50.46	7.35	-11.70	358.73	11.89	178.64	-44.57	322.72	51.69
-9000	160.17	33.89	240.43	-13.60	198.23	56.05	354.36	-17.68	346.00	5.99	166.58	-38.57	314.59	47.25
-10000	144.72	39.32	226.20	-9.76	187.07	62.12	340.49	-23.65	332.93	0.28	154.95	-32.72	306.23	43.33
-11000	127.01	43.86	212.03	-4.66	173.20	68.53	325.22	-29.27	319.15	-4.93	143.29	-27.23	297.49	40.05
-12000	106.66	46.83	197.71	1.48	152.85	74.93	308.01	-34.04	304.30	-9.30	131.19	-22.30	288.23	37.50
-13000	84.10	47.54	182.83	8.43	115.17	79.94	288.48	-37.35	288.14	-12.40	118.34	-18.21	278.33	35.85
-14000	60.66	45.49	166.81	15.84	57.26	79.65	266.79	-38.47	270.57	-13.78	104.48	-15.26	267.69	35.25
-15000	37.83	40.75	148.87	23.23	18.49	73.69	243.79	-36.84	251.73	-12.99	89.43	-13.82	256.20	35.91
-16000	16.16	33.83	128.08	29.82	335.55	65.72	220.65	-32.33	231.91	-9.74	73.11	-14.31	243.79	38.04
-17000	355.26	25.48	103.66	34.42	337.59	57.26	197.99	-25.30	211.31	-4.01	55.49	-17.07	230.33	41.86
-18000	334.19	16.64	75.88	35.56	320.82	49.06	175.60	-16.55	189.83	3.90	36.51	-22.37	215.62	47.58
-19000	311.95	8.44	46.69	32.11	303.80	41.88	152.61	-7.13	166.74	13.30	15.78	-30.21	199.09	55.37
-20000	287.78	2.44	18.29	24.16	286.01	36.61	127.90	1.46	140.68	22.89	352.04	-40.21	178.80	65.23

	333	3.89	377	3.89	853	3.89	839	3.89	153	3.9	766	3.9	154	3.9
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	44.11	-8.90	347.59	-45.25	184.98	0.67	131.51	-46.04	187.01	-50.23	60.79	5.99	202.76	-39.41
1000	31.97	-13.22	332.67	-50.48	172.20	6.24	123.06	-42.67	174.17	-44.66	47.66	2.73	188.85	-34.05
0	19.93	-18.19	315.62	-55.00	159.29	11.67	114.67	-39.97	162.49	-39.18	34.91	-1.47	176.00	-28.46
-1000	7.78	-23.59	296.02	-58.28	146.03	16.66	106.30	-38.00	151.50	-34.01	22.46	-6.39	163.85	-22.93
-2000	355.26	-29.16	274.34	-59.74	132.23	20.93	97.96	-36.82	140.88	-29.32	10.16	-11.80	152.08	-17.70
-3000	342.03	-34.65	252.30	-59.05	117.82	24.18	89.67	-36.45	130.43	-25.28	357.75	-17.44	140.45	-13.00
-4000	327.69	-39.72	231.87	-56.35	102.87	26.15	81.43	-36.90	120.01	-22.01	344.97	-23.05	128.78	-9.02
-5000	311.90	-44.01	214.03	-52.13	87.61	26.66	73.27	-38.18	109.55	-19.63	331.50	-28.34	116.97	-5.94
-6000	294.48	-47.06	198.61	-46.93	72.38	25.63	65.18	-40.26	99.01	-18.25	317.02	-32.98	104.97	-3.92
-7000	275.73	-48.44	184.98	-41.21	57.48	23.12	57.15	-43.12	88.36	-17.94	301.32	-36.60	92.78	-3.08
-8000	256.49	-47.88	172.47	-35.29	43.07	19.30	49.12	-46.74	77.63	-18.75	284.40	-38.80	80.45	-3.52
-9000	237.77	-45.36	160.52	-29.44	29.13	14.37	41.02	-51.08	66.77	-20.70	266.63	-39.26	67.99	-5.27
-10000	220.26	-41.13	148.69	-23.87	15.46	8.61	32.70	-56.12	55.74	-23.79	248.60	-37.80	55.41	-8.33
-11000	204.00	-35.57	136.57	-18.81	1.72	2.26	23.93	-61.83	44.43	-28.00	230.92	-34.45	42.63	-12.63
-12000	188.63	-29.06	123.85	-14.51	347.46	-4.39	14.26	-68.19	32.63	-33.28	213.88	-29.45	29.44	-18.08
-13000	173.58	-21.98	110.27	-11.25	332.14	-10.99	2.48	-75.14	19.96	-39.56	197.36	-23.13	15.51	-24.56
-14000	158.22	-14.70	95.63	-9.37	315.18	-17.05	342.83	-82.50	5.77	-46.71	180.95	-15.87	0.24	-31.85
-15000	141.89	-7.70	79.84	-9.22	295.99	-21.91	242.06	-87.02	348.80	-54.48	164.02	-8.11	342.68	-39.58
-16000	123.98	-1.58	62.87	-11.13	274.33	-24.71	180.45	-79.94	326.46	-62.26	145.86	-0.45	321.29	-47.09
-17000	104.04	2.81	44.72	-15.37	250.54	-24.53	161.96	-71.42	293.72	-68.49	125.71	6.30	294.07	-53.04
-18000	81.94	4.47	25.18	-21.98	225.62	-20.79	147.06	-62.92	248.75	-69.84	103.01	11.00	260.51	-55.30
-19000	58.11	2.44	3.60	-30.75	200.47	-13.56	132.38	-54.99	207.05	-64.36	77.81	12.25	225.13	-52.05
-20000	33.22	-3.82	338.22	-40.93	175.15	-3.65	117.19	-48.27	176.73	-54.64	51.05	8.85	193.60	-43.71

Table 43: Results of the calculations, Right ascension and Declination in Degrees

	155	3,9	396	512	3,9	540	3,9	636	3,9	854	3,9	397	3,91
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA
2000	170,25	-54,49	244,94	46,31	126,42	-3,91	247,73	1,98	6,55	-43,68	220,77	-5,66	255,07
1000	159,34	-49,12	237,51	48,99	113,86	-1,10	235,24	4,66	353,75	-49,26	207,77	-0,97	245,56
0	149,21	-44,08	230,32	52,28	101,20	0,59	223,03	8,34	339,34	-54,70	195,11	4,33	236,18
-1000	139,51	-39,51	223,37	56,11	88,50	1,07	211,04	12,85	322,43	-59,62	182,56	9,97	226,91
-2000	130,04	-35,54	216,67	60,42	75,89	0,32	199,15	17,97	302,13	-63,42	169,90	15,68	217,67
-3000	120,65	-32,27	210,22	65,14	63,46	-1,64	187,15	23,49	278,47	-65,39	156,83	21,19	208,31
-4000	111,27	-29,79	204,03	70,20	51,28	-4,70	174,75	29,19	253,68	-64,98	143,09	26,19	198,59
-5000	101,87	-28,19	198,16	75,53	39,33	-8,72	161,57	34,78	231,00	-62,28	128,46	30,35	188,06
-6000	92,43	-27,51	192,89	81,09	27,49	-13,52	147,19	39,96	211,92	-57,93	112,87	33,33	175,89
-7000	82,93	-27,81	190,98	86,80	15,56	-18,93	131,19	44,34	196,04	-52,57	96,45	34,81	160,36
-8000	73,38	-29,11	350,36	87,30	3,24	-24,75	113,32	47,43	182,33	-46,72	79,62	34,59	137,79
-9000	63,73	-31,42	349,42	81,37	350,10	-30,73	93,87	48,75	169,91	-40,71	62,88	32,60	102,79
-10000	53,92	-34,74	343,84	75,37	335,58	-36,60	73,73	47,97	158,09	-34,78	46,60	28,97	61,65
-11000	43,83	-39,05	337,29	69,34	319,01	-41,92	54,03	45,05	146,34	-29,13	30,89	23,94	31,20
-12000	33,26	-44,33	330,01	63,36	299,72	-46,11	35,47	40,26	134,23	-24,01	15,56	17,80	10,78
-13000	21,84	-50,55	321,92	57,50	277,54	-48,39	18,04	34,02	121,43	-19,65	0,22	10,89	355,04
-14000	8,91	-57,61	312,88	51,90	253,37	-48,00	1,26	26,79	107,64	-16,37	344,31	3,58	341,07
-15000	352,90	-65,36	302,69	46,78	228,99	-44,63	344,43	19,05	92,67	-14,56	327,18	-3,63	327,39
-16000	329,31	-73,28	291,18	42,46	205,76	-38,58	326,80	11,38	76,40	-14,63	308,14	-10,06	313,14
-17000	283,60	-79,24	278,23	39,36	183,77	-30,62	307,62	4,53	58,83	-16,98	286,62	-14,76	297,77
-18000	218,79	-77,31	263,81	38,06	162,23	-21,69	286,34	-0,49	39,90	-21,91	262,56	-16,53	280,92
-19000	181,27	-68,85	248,04	39,19	140,06	-12,91	262,83	-2,40	19,33	-29,48	236,69	-14,30	262,53
-20000	157,88	-58,68	231,29	43,38	116,32	-5,77	237,67	0,03	356,01	-39,40	210,18	-7,58	242,88
	416	3,91	334	119	3,92	472	3,93	513	3,93	745	3,94	285	3,94
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA
2000	144,96	-1,14	69,08	-3,35	167,15	-58,98	233,88	-14,79	115,31	-9,55	290,42	-17,85	314,29
1000	132,11	3,05	56,70	-5,89	156,94	-53,68	220,15	-10,99	103,35	-7,70	275,83	-19,12	304,98
0	119,01	6,32	44,57	-9,44	147,49	-48,73	206,95	-6,33	91,37	-6,98	261,20	-18,98	295,74
-1000	105,69	8,46	32,66	-13,83	138,42	-44,26	194,18	-1,07	79,47	-7,42	246,80	-17,44	286,56
-2000	92,24	9,35	20,84	-18,86	129,56	-40,34	181,62	4,51	67,71	-9,00	232,84	-14,61	277,41
-3000	78,81	8,92	8,92	-24,32	120,77	-37,09	169,04	10,14	56,13	-11,66	219,43	-10,69	268,31
-4000	65,57	7,18	356,59	-29,99	112,00	-34,58	156,18	15,56	44,74	-15,27	206,52	-5,33	259,27
-5000	52,62	4,23	343,49	-35,61	103,20	-32,88	142,76	20,46	33,44	-19,70	193,97	-0,57	250,31
-6000	39,97	0,23	329,17	-40,85	94,36	-32,05	128,60	24,54	22,06	-24,79	181,54	5,12	241,41
-7000	27,53	-4,63	313,17	-45,33	85,46	-32,13	113,60	27,48	10,35	-30,37	168,92	10,89	232,53
-8000	15,10	-10,15	295,21	-48,57	76,51	-33,15	97,83	28,98	357,90	-36,24	155,79	16,47	223,58
-9000	2,36	-16,12	275,51	-50,05	67,47	-35,13	81,59	28,83	344,15	-42,15	141,78	21,55	214,40
-10000	348,90	-22,28	255,00	-49,40	58,31	-38,07	65,22	26,92	328,33	-47,75	126,57	25,76	204,73
-11000	334,19	-28,33	234,92	-46,57	48,93	-41,99	43,02	23,32	309,52	-52,50	109,97	28,70	194,06
-12000	317,62	-33,84	216,06	-41,82	39,21	-46,85	33,12	18,21	287,10	-55,62	92,02	29,90	181,39
-13000	298,58	-38,21	198,45	-35,58	28,92	-52,66	17,30	11,85	261,76	-56,20	73,08	29,02	163,98
-14000	276,89	-40,66	181,60	-28,34	17,63	-59,37	1,16	4,58	235,91	-53,71	53,68	25,89	132,29
-15000	253,16	-40,41	164,77	-20,58	4,37	-66,91	344,11	-3,19	211,84	-48,40	34,19	20,59	67,00
-16000	228,78	-37,06	147,21	-12,87	346,08	-75,07	325,38	-10,85	189,97	-41,06	14,60	13,48	17,69
-17000	204,94	-30,82	128,16	-5,95	305,93	-82,75	304,13	-17,52	169,43	-32,57	354,46	5,09	352,52
-18000	181,80	-22,44	107,05	-0,83	212,61	-82,09	279,77	-21,90	149,04	-23,88	332,95	-3,73	333,83
-19000	158,65	-12,99	83,74	1,23	174,14	-73,18	252,63	-22,46	127,73	-16,10	309,00	-11,76	316,63
-20000	134,38	-3,91	58,76	-1,00	153,61	-63,13	224,24	-18,07	104,83	-10,61	281,80	-17,11	299,40

Table 44: Results of the calculations, Right ascension and Declination in Degrees

	231	3,94	620	3,94	238	3,95	704	3,95	120	3,95	134	3,95	320	3,95
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	131,17	18,15	43,56	52,76	89,79	-42,82	241,70	-20,67	137,82	-62,32	30,86	72,42	318,96	5,25
1000	116,73	21,33	26,88	48,21	82,18	-43,20	227,35	-17,43	131,99	-58,38	12,49	67,23	306,40	1,50
0	101,86	23,24	12,27	42,94	74,72	-44,32	213,66	-13,17	125,90	-54,86	358,66	61,66	293,69	-1,27
-1000	86,78	23,73	359,17	37,36	67,45	-46,15	200,55	-8,17	119,63	-51,82	347,18	56,09	280,85	-2,91
-2000	71,82	22,74	347,07	31,77	60,39	-48,63	187,86	-2,70	113,23	-49,31	336,97	50,72	267,98	-3,31
-3000	57,28	20,36	335,58	26,41	53,57	-51,72	175,36	2,96	106,72	-47,39	327,44	45,71	255,19	-2,45
-4000	43,33	16,78	324,39	21,50	47,01	-55,37	162,80	8,54	100,15	-46,08	318,24	41,19	242,60	-0,36
-5000	29,97	12,24	313,28	17,22	40,72	-59,51	149,90	13,76	93,54	-45,42	309,19	37,25	230,26	2,85
-6000	17,09	7,01	302,08	13,75	34,75	-64,09	136,44	18,34	86,92	-45,44	300,13	34,01	218,14	7,04
-7000	4,44	1,34	290,70	11,23	29,17	-69,06	122,24	21,98	80,32	-46,15	290,99	31,56	206,11	12,02
-8000	351,71	-4,49	279,08	9,80	24,25	-74,39	107,25	24,37	73,76	-47,57	281,70	29,98	193,95	17,62
-9000	338,56	-10,23	267,21	9,59	21,08	-80,01	91,59	25,24	67,28	-49,69	272,21	29,36	181,31	23,64
-10000	324,60	-15,56	255,08	10,68	27,42	-85,80	75,52	24,42	60,90	-52,51	262,50	29,78	167,73	29,82
-11000	309,46	-20,12	242,67	13,11	144,73	-87,16	59,34	21,85	54,72	-56,04	252,52	31,28	152,59	35,85
-12000	292,87	-23,48	229,90	16,89	161,00	-81,01	43,22	17,61	48,90	-60,25	242,21	33,92	135,15	41,26
-13000	274,77	-25,13	216,62	21,99	157,34	-74,39	27,15	11,89	43,83	-65,08	231,47	37,73	114,73	45,35
-14000	255,41	-24,65	202,50	28,31	130,36	-67,64	10,84	4,98	40,45	-70,45	220,16	42,73	91,30	47,26
-15000	235,21	-21,74	186,95	35,71	141,59	-60,93	353,77	-2,75	41,54	-76,09	207,96	48,92	66,05	46,19
-16000	214,73	-16,42	168,93	43,86	131,31	-54,53	335,22	-10,77	56,33	-81,10	194,28	56,25	40,91	41,94
-17000	193,88	-9,02	146,46	52,07	119,49	-48,82	314,28	-18,24	97,35	-82,27	177,61	64,59	17,07	35,00
-18000	172,23	-0,16	116,33	58,81	106,14	-44,31	290,07	-23,92	122,43	-77,82	153,66	73,45	354,31	26,31
-19000	148,81	9,12	77,13	61,10	91,35	-41,71	262,50	-26,12	125,34	-71,46	100,31	80,21	331,66	17,04
-20000	122,38	17,20	37,06	56,46	75,52	-41,78	233,02	-23,27	120,37	-64,93	27,55	76,38	307,98	8,60
	637	3,95	73	3,95	585	3,95	746	3,95	156	3,95	747	3,95	488	3,96
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	22,81	-49,07	87,87	39,15	300,15	-72,91	290,97	-40,62	182,91	-52,37	290,66	-44,46	237,74	-33,63
1000	12,11	-54,43	70,71	38,11	268,96	-74,29	273,41	-41,76	170,51	-46,81	272,41	-45,57	222,31	-30,04
0	0,30	-60,03	54,29	35,52	238,14	-72,65	255,78	-41,20	159,23	-41,40	254,10	-44,90	207,91	-25,46
-1000	346,34	-65,65	38,94	31,66	214,02	-68,70	238,79	-38,99	148,60	-36,36	236,58	-42,55	194,43	-20,22
-2000	328,24	-70,90	24,71	26,87	196,12	-63,56	222,93	-35,40	138,32	-31,82	220,39	-38,80	181,63	-14,63
-3000	302,65	-74,99	11,43	21,49	182,09	-57,95	208,29	-30,76	128,20	-27,94	205,62	-34,05	169,22	-8,99
-4000	268,29	-76,54	358,80	15,84	170,24	-52,26	194,74	-25,44	118,11	-24,84	192,05	-28,67	156,95	-3,55
-5000	234,47	-74,67	346,53	10,18	159,61	-46,73	181,98	-19,76	107,98	-22,62	179,35	-22,98	144,56	1,42
-6000	209,69	-70,34	334,32	4,78	149,61	-41,53	169,67	-14,00	97,79	-21,38	167,15	-17,27	131,86	5,68
-7000	192,15	-64,87	321,90	-0,12	139,88	-36,80	157,48	-8,42	87,51	-21,17	155,11	-11,79	118,70	8,99
-8000	178,52	-58,98	309,06	-4,26	130,16	-32,66	145,11	-3,27	77,15	-22,04	142,94	-6,78	105,05	11,11
-9000	166,85	-53,00	295,63	-7,38	120,28	-29,25	132,29	1,21	66,67	-24,02	130,38	-2,48	90,93	11,83
-10000	156,06	-47,15	281,54	-9,23	110,08	-26,70	118,81	4,74	56,01	-27,11	117,23	0,87	76,46	11,03
-11000	145,50	-41,59	266,81	-9,58	99,46	-25,14	104,52	7,03	45,08	-31,28	103,36	2,99	61,76	8,63
-12000	134,72	-36,48	251,53	-8,25	88,40	-24,72	89,40	7,81	33,65	-36,50	88,72	3,63	46,88	4,67
-13000	123,37	-32,01	235,78	-5,17	76,61	-25,56	73,50	6,84	21,36	-42,71	73,34	2,58	31,72	-0,74
-14000	111,16	-28,44	219,58	-0,34	64,22	-27,81	56,93	3,96	7,58	-49,81	57,28	-0,31	16,02	-7,41
-15000	97,88	-26,07	202,76	6,07	51,04	-31,56	39,70	-0,84	351,00	-57,56	40,52	-5,08	359,26	-15,04
-16000	83,37	-25,29	184,84	13,80	36,84	-36,90	21,66	-7,45	328,67	-65,43	22,86	-11,63	340,64	-23,16
-17000	67,55	-26,52	165,03	22,33	21,15	-43,83	2,32	-15,52	294,08	-71,81	3,79	-19,66	319,00	-30,96
-18000	50,39	-30,16	142,02	30,77	2,87	-52,24	340,69	-24,42	244,35	-72,85	342,27	-28,59	293,05	-37,10
-19000	31,71	-36,49	114,22	37,49	339,09	-61,64	315,21	-32,95	201,33	-66,68	316,55	-37,25	262,55	-39,54
-20000	10,81	-45,60	81,29	39,95	301,38	-70,16	284,22	-38,92	172,15	-56,72	284,62	-43,36	229,97	-36,43

Table 45: Results of the calculations, Right ascension and Declination in Degrees

	218	3,96	815	3,96	864	3,96	601	3,96	40	3,97	638	3,97	378	3,97
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	99,17	-19,26	135,16	41,78	115,46	-72,61	341,63	23,57	350,74	-20,10	17,10	-55,25	337,32	-43,50
1000	88,29	-18,88	118,27	45,18	117,49	-70,11	317,96	18,49	337,35	-25,43	6,10	-60,71	321,60	-48,29
0	77,50	-19,55	100,19	47,09	117,61	-67,51	317,96	13,98	323,22	-30,26	353,32	-66,31	303,96	-52,09
-1000	66,84	-21,26	81,61	47,27	116,36	-64,95	306,21	10,23	308,15	-34,25	336,92	-71,75	284,46	-54,40
-2000	56,32	-23,93	63,48	45,66	114,16	-62,55	294,39	7,39	292,14	-37,06	312,97	-76,39	263,97	-54,81
-3000	45,91	-27,48	46,57	42,52	111,28	-60,36	282,49	5,61	275,43	-38,39	276,91	-78,82	243,97	-53,23
-4000	35,52	-31,79	31,14	38,19	107,90	-58,47	270,54	4,99	258,55	-38,07	237,70	-77,53	225,66	-49,94
-5000	25,00	-36,72	17,09	33,08	104,16	-56,92	258,61	5,57	242,10	-36,11	210,01	-73,36	209,41	-45,39
-6000	14,04	-42,15	4,07	27,54	100,17	-55,75	246,76	7,33	226,50	-32,72	191,79	-67,96	194,98	-40,04
-7000	2,22	-47,90	351,69	21,85	95,99	-55,00	223,25	14,17	211,88	-28,18	178,28	-62,17	181,84	-34,29
-8000	348,82	-53,76	339,59	16,28	91,69	-54,70	223,25	14,17	198,10	-22,80	167,01	-56,34	169,49	-28,41
-9000	332,69	-59,40	327,40	11,05	87,34	-54,87	211,40	19,05	184,85	-16,88	156,78	-50,65	157,46	-22,67
-10000	312,16	-64,24	314,84	6,42	83,01	-55,53	199,18	24,72	171,75	-10,70	146,91	-45,24	145,35	-17,29
-11000	285,80	-67,25	301,63	2,64	78,78	-56,67	186,20	31,02	158,36	-4,53	136,98	-40,25	132,83	-12,51
-12000	255,46	-67,24	287,59	0,01	74,76	-58,27	171,81	37,74	144,24	1,31	126,67	-35,83	119,59	-8,59
-13000	226,81	-63,83	272,60	-1,17	71,14	-60,30	155,09	44,50	128,96	6,45	115,71	-32,15	105,41	-5,86
-14000	202,97	-57,85	256,64	-0,60	68,16	-62,69	134,68	50,69	112,15	10,39	103,88	-29,45	90,15	-4,65
-15000	182,92	-50,35	239,78	1,94	66,20	-65,31	109,19	55,19	93,63	12,57	91,02	-28,00	73,78	-5,30
-16000	164,73	-42,17	222,02	6,59	65,80	-68,01	78,88	56,48	73,49	12,37	77,00	-28,16	56,30	-8,09
-17000	146,89	-34,02	203,20	13,27	67,67	-70,52	47,52	53,50	52,12	9,36	61,75	-30,26	37,71	-13,18
-18000	128,35	-26,67	182,75	21,69	72,50	-72,53	18,99	46,70	29,86	3,43	45,17	-34,65	17,72	-20,50
-19000	108,48	-21,15	159,47	31,16	80,47	-73,61	353,69	37,52	6,67	-5,07	26,97	-41,54	355,49	-29,67
-20000	87,10	-18,66	131,13	40,17	90,48	-73,32	330,07	27,54	341,75	-15,25	6,12	-50,97	329,10	-39,66
	335	3,97	680	3,97	541	3,97	865	3,98	669	3,98	157	3,99	514	3,99
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	66,01	-34,02	130,03	-35,31	270,16	2,93	109,21	-67,96	115,95	-28,95	220,49	-37,79	93,71	-6,27
1000	56,68	-36,71	120,28	-32,10	257,69	3,52	108,89	-66,13	105,93	-26,96	205,55	-33,11	81,55	-6,50
0	47,45	-40,17	110,59	-29,69	245,39	5,30	107,73	-64,37	95,96	-25,90	191,80	-27,81	69,53	-7,89
-1000	38,28	-44,30	100,95	-28,16	233,33	8,17	105,93	-62,74	86,05	-25,81	178,94	-22,21	57,71	-10,38
-2000	29,01	-49,02	91,34	-27,55	221,51	11,98	103,65	-61,30	76,24	-26,68	166,63	-16,62	46,10	-13,86
-3000	19,41	-54,20	81,81	-27,89	209,85	16,58	101,01	-60,09	66,54	-28,49	154,61	-11,28	34,65	-18,17
-4000	9,07	-59,73	72,35	-29,17	198,19	21,78	98,13	-59,16	56,96	-31,19	142,62	-6,43	23,23	-23,14
-5000	357,16	-65,45	62,98	-31,36	186,29	27,36	95,09	-58,52	47,43	-34,72	130,48	-2,29	11,60	-28,58
-6000	341,94	-71,12	53,66	-34,42	173,80	33,11	91,96	-58,21	37,86	-38,98	118,08	0,92	359,44	-34,30
-7000	319,45	-76,19	44,30	-38,28	160,27	38,76	88,82	-58,24	28,06	-43,89	105,36	3,01	346,30	-40,05
-8000	283,13	-79,25	34,77	-42,89	145,14	43,96	85,74	-58,62	17,72	-49,35	92,33	3,84	331,57	-45,51
-9000	239,93	-78,22	24,80	-48,18	127,83	48,25	82,80	-59,34	6,29	-55,27	79,06	3,28	314,56	-50,25
-10000	209,50	-73,67	13,97	-54,07	108,09	51,04	80,13	-60,39	352,77	-61,46	65,61	1,28	294,71	-53,67
-11000	189,92	-67,57	1,44	-60,45	86,41	51,74	77,85	-61,74	335,13	-67,60	51,98	-2,14	272,28	-55,05
-12000	175,15	-60,86	345,49	-67,10	64,20	49,97	76,17	-63,32	309,27	-72,89	38,10	-6,92	248,78	-53,87
-13000	162,21	-53,95	321,87	-73,43	42,91	45,82	75,33	-65,03	270,90	-75,39	23,74	-12,92	226,16	-50,11
-14000	149,68	-47,10	281,84	-77,61	23,09	39,73	75,56	-66,70	229,86	-73,05	8,48	-19,95	205,39	-44,22
-15000	136,74	-40,61	231,40	-76,17	4,39	32,30	76,99	-68,13	199,64	-66,88	351,63	-27,70	186,18	-36,86
-16000	122,83	-34,86	196,28	-69,73	346,00	24,14	79,46	-69,12	177,53	-58,95	332,11	-35,63	167,64	-28,71
-17000	107,58	-30,38	172,82	-61,34	327,04	15,98	82,35	-69,52	158,79	-50,45	308,40	-42,76	148,80	-20,47
-18000	90,80	-27,84	153,55	-52,53	306,65	8,74	84,86	-69,38	140,90	-42,22	279,17	-47,38	128,77	-13,05
-19000	72,51	-28,04	135,33	-44,20	284,23	3,65	86,56	-68,90	122,59	-35,09	245,62	-47,30	106,91	-7,62
-20000	53,01	-31,74	116,90	-37,32	259,78	2,20	87,87	-68,29	103,35	-30,11	212,44	-41,43	83,11	-5,64

Table 46: Results of the calculations, Right ascension and Declination in Degrees

	264	3,99	121	4	286	4	269	4	315	4	336	4	449	4
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	193,65	-57,18	156,10	-74,03	323,50	45,59	182,10	-24,73	240,47	58,57	71,38	-3,25	170,98	10,53
1000	179,95	-51,65	150,79	-69,04	314,20	41,42	169,46	-19,17	235,97	61,41	58,98	-5,59	157,81	15,91
0	167,93	-46,08	145,00	-64,30	305,08	37,88	157,20	-13,80	232,22	64,60	46,84	-8,96	144,16	20,82
-1000	156,91	-40,73	138,92	-59,88	296,04	35,05	145,09	-8,87	229,55	68,05	34,92	-13,21	129,86	24,95
-2000	146,47	-35,76	132,63	-55,84	287,03	33,00	132,94	-4,61	228,56	71,67	23,12	-18,13	114,88	27,98
-3000	136,32	-31,34	126,18	-52,25	278,06	31,80	120,64	-1,22	230,44	75,28	11,25	-23,53	99,36	29,65
-4000	126,28	-27,60	119,57	-49,17	269,12	31,48	108,16	1,11	237,55	78,60	359,03	-29,19	83,61	29,79
-5000	116,24	-24,65	112,82	-46,67	260,22	32,05	95,53	2,26	253,74	81,01	346,10	-34,84	68,04	28,36
-6000	106,13	-22,61	105,95	-44,80	251,36	33,52	82,81	2,13	278,51	81,49	332,02	-40,19	52,99	25,49
-7000	95,91	-21,56	98,95	-43,62	242,54	35,87	70,11	0,70	299,25	79,67	316,30	-44,85	38,62	21,38
-8000	85,57	-21,57	91,84	-43,15	233,69	39,08	57,46	-2,00	309,81	76,44	298,60	-48,36	24,86	16,30
-9000	75,08	-22,70	84,62	-43,46	224,73	43,12	44,85	-5,88	313,53	72,58	279,01	-50,19	11,50	10,53
-10000	64,40	-24,97	77,30	-44,56	215,52	47,95	32,15	-10,82	313,43	68,49	258,38	-49,91	358,18	4,34
-11000	53,47	-28,38	69,89	-46,49	205,77	53,54	19,11	-16,68	311,00	64,33	237,98	-47,40	344,49	-2,01
-12000	42,14	-32,93	62,40	-49,27	195,04	59,85	5,33	-23,25	306,92	60,22	218,73	-42,89	329,96	-8,18
-13000	30,15	-38,58	54,88	-52,90	182,28	66,79	350,18	-30,29	301,47	56,27	200,78	-36,79	314,09	-13,75
-14000	17,06	-45,27	47,43	-57,38	164,66	74,15	332,79	-37,38	294,71	52,63	183,70	-29,61	296,42	-18,20
-15000	1,99	-52,84	40,29	-62,69	130,40	81,02	311,94	-43,81	286,64	49,49	166,75	-21,83	276,73	-20,84
-16000	343,07	-60,99	34,11	-68,77	54,70	82,25	286,50	-48,42	277,21	47,11	149,16	-14,03	255,20	-20,97
-17000	315,70	-68,79	30,95	-75,48	8,10	75,35	256,82	-49,63	266,40	45,86	130,16	-6,94	232,42	-18,06
-18000	271,55	-73,47	40,93	-82,24	344,85	66,46	225,97	-46,36	254,27	46,19	109,15	-1,55	209,05	-12,06
-19000	220,09	-70,61	105,77	-84,41	326,76	57,45	197,19	-38,98	241,05	48,60	85,92	0,85	185,20	-3,44
-20000	184,19	-61,58	134,81	-77,61	309,79	49,15	170,98	-28,92	227,22	53,62	60,97	-1,00	160,19	6,79
	712	4	790	4	621	4	792	4	866	4	364	4,01	816	4,01
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	243,00	-19,46	34,33	33,85	62,17	47,71	349,36	-58,24	135,61	-66,40	106,03	20,57	201,31	54,99
1000	228,73	-16,33	19,98	28,91	44,73	44,40	333,38	-63,54	131,30	-62,53	91,13	21,40	190,93	60,34
0	215,08	-12,16	6,63	23,48	28,98	39,93	313,24	-68,05	126,37	-58,99	76,28	20,79	179,15	65,92
-1000	201,99	-7,22	353,98	17,88	14,75	34,73	287,62	-70,94	121,04	-55,84	61,77	18,78	164,40	71,48
-2000	189,32	-1,79	341,73	12,39	1,68	29,16	258,53	-71,26	115,43	-53,15	47,79	15,52	143,04	76,55
-3000	176,82	3,87	329,62	7,25	349,39	23,53	231,80	-68,88	109,61	-50,96	34,41	11,26	108,22	79,90
-4000	164,26	9,47	317,45	2,71	337,55	18,10	210,60	-64,60	103,65	-49,33	21,54	6,24	64,11	79,48
-5000	151,35	14,75	305,06	-1,02	325,86	13,10	194,08	-59,32	97,60	-48,29	9,01	0,73	32,34	75,59
-6000	137,85	19,42	292,37	-3,73	314,11	8,73	180,54	-53,63	91,49	-47,86	356,55	-5,02	12,80	70,23
-7000	123,58	23,16	279,39	-5,24	302,13	5,21	168,72	-47,87	85,35	-48,09	343,87	-10,72	358,99	64,43
-8000	108,48	25,67	266,15	-5,41	289,81	2,72	157,81	-42,26	79,24	-48,97	330,62	-16,12	347,73	58,57
-9000	92,66	26,66	252,75	-4,17	277,12	1,44	147,27	-36,99	73,18	-50,53	316,49	-20,90	337,62	52,84
-10000	76,39	25,95	239,25	-1,51	264,06	1,52	136,73	-32,20	67,23	-52,76	301,21	-24,68	327,92	47,37
-11000	60,00	23,45	225,63	2,52	250,64	3,06	125,89	-28,06	61,49	-55,66	284,65	-27,07	318,18	42,29
-12000	43,70	19,26	211,75	7,81	236,87	6,10	114,52	-24,76	56,14	-59,22	266,94	-27,68	308,06	37,73
-13000	27,48	13,57	197,34	14,21	222,67	10,62	102,42	-22,51	51,54	-63,37	248,44	-26,22	297,31	33,88
-14000	11,08	6,67	181,88	21,48	207,82	16,55	89,46	-21,56	48,45	-68,02	229,59	-22,59	285,69	30,96
-15000	353,99	-1,05	164,61	29,26	191,89	23,71	75,52	-22,16	48,69	-72,91	210,63	-16,94	273,03	29,24
-16000	335,49	-9,07	144,38	36,91	174,12	31,80	60,52	-24,58	56,60	-77,43	191,42	-9,60	259,21	29,08
-17000	314,68	-16,57	119,72	43,33	153,18	40,21	44,34	-29,03	78,88	-79,95	171,43	-1,15	244,13	30,84
-18000	290,72	-22,32	89,87	46,72	126,98	47,76	26,65	-35,62	105,01	-78,38	149,78	7,59	227,73	34,87
-19000	263,46	-24,64	56,93	45,19	93,71	52,15	6,58	-44,28	116,09	-73,76	125,40	15,30	209,77	41,45
-20000	234,24	-21,98	25,25	38,25	56,08	50,56	341,68	-54,51	116,39	-68,13	97,55	20,04	189,38	50,66

Table 47: Results of the calculations, Right ascension and Declination in Degrees

	586	4,01	194	4,02	287	4,02	288	4,02	525	4,02	27	4,03	681	4,03
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	280,76	-71,43	30,00	-21,08	303,87	47,71	307,35	30,37	244,96	-50,16	284,91	15,07	132,63	-27,71
1000	251,59	-71,01	18,17	-26,16	296,14	44,93	297,16	27,40	226,98	-47,02	273,57	14,19	122,05	-24,35
0	226,08	-68,05	6,07	-31,62	288,41	42,80	287,02	25,29	210,83	-42,66	262,31	14,41	111,52	-21,85
-1000	206,16	-63,47	353,38	-37,23	280,69	41,39	276,92	24,13	196,35	-37,50	251,17	15,72	101,00	-20,30
-2000	190,49	-58,09	339,67	-42,70	273,01	40,72	266,87	23,95	183,16	-31,94	240,19	18,06	90,53	-19,75
-3000	177,49	-52,41	324,45	-47,69	265,39	40,81	256,91	24,75	170,87	-26,29	229,37	21,34	80,12	-20,22
-4000	166,04	-46,76	307,25	-51,75	247,04	26,53	247,04	26,53	159,09	-20,80	218,63	23,45	69,81	-21,71
-5000	155,49	-41,35	288,01	-54,36	250,43	43,24	237,26	29,22	147,53	-15,71	207,86	30,24	59,59	-24,18
-6000	145,37	-36,34	267,42	-55,07	243,12	45,55	227,51	32,76	135,96	-11,21	196,81	35,58	49,43	-27,55
-7000	135,40	-31,87	246,94	-53,69	235,92	48,56	217,68	37,09	124,19	-7,51	185,12	41,30	39,22	-31,74
-8000	125,38	-28,08	227,91	-50,40	228,82	52,24	207,56	42,11	112,10	-4,80	172,25	47,20	28,78	-36,67
-9000	115,13	-25,11	210,84	-45,63	221,78	56,57	196,82	47,73	99,64	-3,25	157,35	52,99	17,80	-42,24
-10000	104,55	-23,09	195,45	-39,85	214,79	61,52	184,86	53,84	86,78	-3,02	139,24	58,20	5,78	-48,32
-11000	93,54	-22,15	181,16	-33,45	207,86	67,08	170,62	60,26	73,53	-4,21	116,65	62,08	351,85	-54,72
-12000	82,04	-22,44	167,32	-26,76	201,15	73,22	151,93	66,59	59,90	-6,90	89,65	63,57	334,47	-61,10
-13000	69,98	-24,05	153,32	-20,09	195,62	79,91	124,63	71,90	45,81	-11,09	61,42	61,86	310,91	-66,73
-14000	57,26	-27,11	138,58	-13,82	202,66	86,96	85,37	74,06	31,08	-16,73	35,84	57,13	278,29	-70,03
-15000	43,74	-31,67	122,62	-8,40	337,69	85,04	45,05	71,14	15,32	-23,66	13,81	50,29	240,55	-69,04
-16000	29,09	-37,77	105,03	-4,44	335,81	77,21	15,17	64,43	357,82	-31,62	354,12	42,25	208,07	-63,70
-17000	12,65	-45,32	85,64	-2,67	326,73	69,28	352,61	56,03	337,31	-40,08	335,27	33,84	182,79	-55,80
-18000	352,92	-54,08	64,58	-3,84	333,01	61,63	333,01	47,22	311,70	-47,94	316,08	25,90	161,40	-46,90
-19000	326,00	-63,23	42,15	-8,47	302,75	54,78	314,06	38,98	278,76	-53,00	295,69	19,47	141,33	-38,14
-20000	282,99	-69,93	18,51	-16,68	288,93	49,34	294,68	32,34	240,46	-52,21	273,78	15,85	121,15	-30,65

	28	4,03	219	4,03	233	4,03	41	4,03	542	4,03	91	4,03	298	4,03
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	285,42	-5,74	108,70	-26,77	131,67	28,76	338,84	0,12	271,36	2,50	75,86	60,44	308,30	11,30
1000	272,05	-6,57	98,58	-25,46	116,19	31,87	325,93	-4,80	258,84	3,25	54,56	58,10	296,33	8,33
0	258,73	-6,11	88,51	-25,12	100,07	33,61	312,75	-9,02	246,53	5,18	35,93	54,16	284,30	6,40
-1000	245,62	-4,38	78,54	-25,75	83,70	33,80	299,24	-12,30	234,50	8,21	19,97	49,20	272,25	5,60
-2000	232,82	-1,49	68,69	-27,35	67,59	32,40	285,42	-14,42	222,75	12,20	6,07	43,72	260,26	5,98
-3000	220,36	2,41	58,96	-29,85	52,16	29,55	271,42	-15,22	211,21	16,98	353,59	38,07	248,41	7,52
-4000	208,18	7,12	49,32	-33,19	37,62	25,52	257,44	-14,63	199,70	22,37	341,99	32,52	236,74	10,16
-5000	196,12	12,42	39,70	-37,28	23,94	20,61	243,68	-12,68	187,99	28,16	330,88	27,31	225,23	13,78
-6000	183,92	18,09	29,93	-42,02	10,94	15,12	230,26	-9,48	175,72	34,15	319,94	22,61	213,81	18,26
-7000	171,28	23,90	19,75	-47,32	358,32	9,33	217,20	-5,21	162,40	40,09	308,98	18,59	202,29	23,42
-8000	157,77	29,56	8,70	-53,06	345,74	3,51	204,38	-0,07	147,43	45,64	297,82	15,43	190,39	29,11
-9000	142,94	34,74	355,99	-59,08	332,87	-2,08	191,55	5,72	130,10	50,34	286,36	13,28	177,68	35,13
-10000	126,35	39,01	340,11	-65,11	319,37	-7,15	178,39	11,93	109,97	53,60	274,53	12,29	163,56	41,23
-11000	107,77	41,84	318,08	-70,58	304,92	-11,37	164,42	18,29	87,44	54,71	262,28	12,59	147,19	47,03
-12000	87,48	42,67	285,76	-74,11	289,30	-14,36	149,10	24,46	64,14	53,24	249,58	14,29	127,57	51,93
-13000	66,33	41,12	246,29	-73,65	272,45	-15,73	131,81	29,93	41,92	49,27	236,38	17,45	104,03	55,05
-14000	45,33	37,15	213,20	-68,98	254,50	-15,09	112,02	34,05	21,54	43,30	222,53	22,10	77,44	55,36
-15000	25,01	31,07	189,12	-61,89	235,70	-12,22	89,66	35,97	2,58	36,00	207,75	28,21	50,55	52,35
-16000	5,20	23,42	169,76	-53,76	216,26	-7,07	65,50	34,93	344,18	28,05	191,50	35,63	25,67	46,38
-17000	345,24	14,90	152,08	-45,44	196,10	0,12	40,84	30,62	325,36	20,17	172,69	44,07	3,02	38,41
-18000	324,22	6,41	134,44	-37,65	174,72	8,83	16,59	23,40	305,31	13,27	149,08	52,82	341,51	29,48
-19000	301,24	-0,81	115,96	-31,28	151,06	18,13	352,63	14,18	283,47	8,55	116,64	60,09	319,90	20,74
-20000	275,81	-5,06	96,33	-27,40	123,61	26,33	328,02	4,27	259,85	7,40	73,43	62,09	297,18	13,57

Table 48: Results of the calculations, Right ascension and Declination in Degrees

	489	4,03	652	4,04	179	4,04	261	4,04	337	4,04	450	4,04	490	4,04
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	219,47	-49,43	359,83	6,86	325,88	58,78	184,61	-64,00	62,97	-6,84	170,28	6,03	227,21	-45,28
1000	203,57	-44,67	347,05	1,36	318,28	54,38	172,13	-58,43	50,87	-9,90	157,29	11,38	211,14	-40,95
0	189,44	-39,30	334,26	-3,88	310,76	50,46	161,31	-52,99	38,99	-13,89	143,93	16,26	196,64	-35,83
-1000	176,60	-33,69	321,26	-8,59	303,25	47,08	151,41	-47,84	27,26	-18,61	130,06	20,37	183,38	-30,30
-2000	164,60	-28,12	307,92	-12,51	295,72	44,30	142,01	-43,13	15,50	-23,88	115,62	23,43	170,97	-24,66
-3000	153,08	-22,84	294,18	-15,39	288,17	42,19	132,85	-38,96	3,47	-29,48	100,72	25,20	159,07	-19,20
-4000	141,77	-18,06	280,11	-17,00	280,58	40,80	123,79	-35,45	350,82	-35,18	85,59	25,51	147,38	-14,12
-5000	130,48	-13,95	265,88	-17,23	272,98	40,15	114,73	-32,67	337,14	-40,68	70,58	24,32	135,69	-9,66
-6000	119,05	-10,70	251,71	-16,02	265,38	40,28	105,61	-30,73	321,90	-45,63	55,96	21,71	123,84	-6,01
-7000	107,42	-8,46	237,78	-13,43	257,78	41,20	96,40	-29,68	304,67	-49,59	41,88	17,86	111,73	-3,36
-8000	95,55	-7,37	224,17	-9,59	250,20	42,92	87,07	-29,59	285,38	-52,03	28,30	13,00	99,31	-1,86
-9000	83,44	-7,54	210,81	-4,69	242,62	45,45	77,62	-30,51	264,69	-52,46	15,04	7,38	86,60	-1,67
-10000	71,09	-9,02	197,50	1,07	235,03	48,77	68,00	-32,46	243,97	-50,67	1,77	1,26	73,61	-2,85
-11000	58,49	-11,86	183,91	7,45	227,43	52,90	58,16	-35,48	224,42	-46,83	348,09	-5,11	60,37	-5,47
-12000	45,54	-16,03	169,57	14,19	219,81	57,81	47,99	-39,56	206,43	-41,34	333,53	-11,39	46,82	-9,49
-13000	32,04	-21,48	153,88	20,93	212,24	63,48	37,33	-44,70	189,67	-34,68	317,54	-17,19	32,80	-14,86
-14000	17,64	-28,09	136,13	27,16	204,98	69,89	25,88	-50,89	173,48	-27,32	299,63	-21,95	17,98	-21,44
-15000	1,67	-35,66	115,63	32,12	199,13	76,95	13,04	-58,06	157,09	-19,71	279,49	-24,95	1,76	-29,01
-16000	342,97	-43,80	92,13	34,81	202,61	84,43	357,38	-66,09	139,76	-12,44	257,31	-25,42	343,14	-37,15
-17000	319,51	-51,69	66,35	34,21	314,51	86,26	334,28	-74,55	120,83	-22,77	233,82	-22,77	320,49	-45,07
-18000	288,48	-57,60	39,90	29,82	327,91	78,27	283,57	-81,21	99,85	-2,10	209,86	-16,91	291,68	-51,22
-19000	250,04	-58,66	14,00	22,04	320,55	69,90	208,72	-78,19	76,84	-1,21	185,72	-8,35	256,45	-53,07
-20000	212,35	-53,10	348,59	11,95	309,89	61,86	173,62	-68,41	52,36	-4,61	160,78	1,86	220,14	-48,62
	158	4,05	84	4,05	159	4,05	622	4,05	855	4,05	42	4,05	85	4,05
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	215,14	-37,89	216,30	51,85	220,91	-35,17	47,27	49,61	176,46	6,53	342,40	-13,59	207,37	15,80
1000	200,52	-32,96	207,70	56,69	206,16	-30,48	30,34	45,28	163,53	12,06	328,95	-18,66	195,29	20,97
0	187,06	-27,52	198,82	61,93	192,50	-25,16	15,32	40,13	150,25	17,26	314,94	-23,05	183,00	26,48
-1000	174,41	-21,91	189,21	67,48	179,65	-19,53	1,75	34,56	136,43	21,81	300,26	-26,46	170,21	32,07
-2000	162,26	-16,39	177,79	73,20	167,30	-13,88	349,19	28,93	121,96	25,42	284,99	-28,62	156,55	37,46
-3000	150,34	-11,21	161,42	78,87	155,18	-8,48	337,24	23,51	106,86	27,80	269,39	-29,32	141,66	42,30
-4000	138,41	-6,60	127,51	83,67	143,05	-3,57	325,57	18,53	91,37	28,74	253,84	-28,47	125,21	46,19
-5000	126,33	-2,77	59,08	84,14	130,72	0,63	313,96	14,21	75,84	28,13	238,72	-26,14	107,21	48,68
-6000	113,99	0,08	20,18	79,62	118,07	3,89	302,25	10,73	60,62	26,00	224,24	-22,51	88,21	49,41
-7000	101,38	1,79	2,55	73,94	105,07	6,01	290,34	8,27	45,97	22,51	210,43	-17,85	69,21	48,20
-8000	88,50	2,21	350,79	68,08	91,73	6,83	278,19	6,99	31,92	17,91	197,14	-12,41	51,19	45,19
-9000	75,43	1,26	341,05	62,29	78,13	6,23	265,79	7,00	18,32	12,44	184,09	-6,47	34,59	40,70
-10000	62,21	-1,10	332,00	56,69	64,37	4,16	253,17	8,39	4,88	6,39	170,90	-0,28	19,30	35,13
-11000	48,82	-4,82	323,05	51,38	50,46	0,64	240,30	11,19	351,19	0,01	157,15	5,87	4,89	28,84
-12000	35,15	-9,84	313,81	46,46	36,34	-4,23	227,11	15,39	336,80	-6,37	142,38	11,63	350,82	22,16
-13000	20,93	-16,01	304,00	42,07	21,76	-10,31	213,43	20,92	321,18	-12,38	126,13	16,57	336,51	15,41
-14000	5,69	-23,15	293,38	38,41	6,30	-17,39	198,88	27,67	303,81	-17,49	108,07	20,14	321,40	8,98
-15000	348,68	-30,91	281,74	35,74	349,28	-25,12	182,81	35,43	284,32	-21,01	88,11	21,68	304,96	3,35
-16000	328,72	-38,72	268,95	34,38	329,66	-32,93	164,04	43,81	262,73	-22,17	66,62	20,59	286,77	-0,82
-17000	304,19	-45,53	254,92	34,73	306,08	-39,82	140,47	51,98	239,60	-20,28	44,21	16,57	266,66	-2,77
-18000	273,89	-49,50	239,63	37,23	277,48	-44,13	109,05	58,19	215,72	-15,09	21,33	9,74	244,80	-1,68
-19000	239,80	-48,50	223,07	42,29	245,06	-43,83	69,73	59,41	191,50	-6,93	357,80	0,71	221,64	2,98
-20000	207,01	-41,85	205,05	50,22	212,84	-37,91	31,27	53,81	166,51	3,29	332,73	-9,37	197,45	11,27

Table 49: Results of the calculations, Right ascension and Declination in Degrees

	623	4,06	840	4,06	201	4,07	59	4,07	207	4,07	180	4,07	195	4,07
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	59,74	35,79	131,10	-42,65	124,63	-76,92	254,90	-53,16	229,38	-58,80	337,29	58,42	39,87	0,33
1000	43,99	32,35	122,21	-39,33	128,86	-73,58	235,63	-50,83	211,15	-54,51	328,28	53,46	27,19	-4,31
0	29,35	27,86	113,38	-36,72	129,42	-70,06	218,23	-47,01	195,64	-49,34	319,66	48,93	14,72	-9,54
-1000	15,70	22,67	104,59	-34,90	127,88	-66,56	202,79	-42,18	182,13	-43,76	311,25	44,93	2,27	-15,09
-2000	2,81	17,11	95,84	-33,90	125,05	-63,23	188,96	-36,76	169,93	-38,11	302,91	41,53	349,58	-20,71
-3000	350,40	11,47	87,14	-33,77	121,40	-60,15	176,28	-31,12	158,55	-32,63	294,60	38,81	336,35	-26,11
-4000	338,18	6,01	78,51	-34,49	117,18	-57,39	164,35	-25,53	147,62	-27,54	286,28	36,84	322,31	-30,99
-5000	325,90	0,98	69,96	-36,07	112,55	-50,24	152,79	-20,24	136,85	-23,01	277,93	35,67	307,21	-34,99
-6000	313,35	-3,37	61,48	-38,48	107,61	-53,09	141,34	-15,44	126,07	-19,19	269,56	35,34	291,03	-37,75
-7000	300,40	-6,81	53,03	-41,68	102,43	-51,65	129,78	-11,35	115,15	-16,26	261,16	35,88	273,98	-38,94
-8000	286,96	-9,09	44,53	-45,64	97,05	-50,74	117,95	-8,15	104,01	-14,33	252,73	37,31	256,60	-38,36
-9000	273,05	-10,02	35,86	-50,31	91,52	-50,41	105,75	-6,02	92,60	-13,54	244,25	39,63	239,49	-35,99
-10000	258,77	-9,44	26,77	-55,68	85,87	-50,67	93,12	-5,14	80,88	-13,98	235,67	42,85	223,06	-32,00
-11000	244,21	-7,29	16,86	-61,68	80,14	-51,56	80,06	-5,65	68,85	-15,74	226,93	46,97	207,36	-26,68
-12000	229,43	-3,56	5,23	-68,27	74,39	-53,08	66,56	-7,65	56,43	-18,84	217,91	51,97	192,15	-20,35
-13000	214,35	1,65	349,37	-75,29	68,70	-55,26	52,58	-11,18	43,51	-23,30	208,45	57,85	176,97	-13,34
-14000	198,73	8,17	317,98	-82,07	63,22	-58,06	37,97	-16,24	29,82	-29,07	198,21	64,56	161,25	-6,04
-15000	182,07	15,72	236,16	-83,72	58,20	-61,47	22,45	-22,74	14,89	-36,05	186,41	72,06	144,33	1,07
-16000	163,58	23,87	188,38	-77,01	54,18	-65,41	5,41	-30,46	357,84	-44,01	169,81	80,21	125,58	7,31
-17000	142,10	31,86	166,62	-68,50	52,24	-69,76	345,74	-39,00	336,89	-52,47	96,64	87,49	104,47	11,78
-18000	116,22	38,35	149,73	-59,85	54,83	-74,20	321,45	-47,45	308,60	-60,19	357,89	80,86	80,96	13,33
-19000	85,44	41,28	133,65	-51,76	67,33	-77,87	289,69	-53,89	269,08	-64,34	337,90	71,45	55,71	10,97
-20000	52,20	38,61	117,31	-44,96	92,92	-78,62	250,46	-55,01	224,97	-61,29	322,51	62,07	29,71	4,25

	253	4,07	99	4,07	254	4,08	365	4,08	428	4,08	220	4,09	566	4,09
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	164,94	-18,30	316,49	-17,23	171,22	-17,68	113,98	26,90	35,44	-68,66	103,55	-12,04	74,09	13,51
1000	152,85	-13,14	302,20	-20,75	158,85	-12,31	98,40	28,48	31,61	-73,32	91,94	-11,28	60,20	11,36
0	140,86	-8,48	287,43	-23,07	146,61	-7,34	82,65	28,56	30,24	-78,14	80,40	-11,65	46,74	8,05
-1000	128,81	-4,55	272,37	-24,02	134,33	-3,00	67,16	27,13	36,11	-82,90	69,00	-13,12	33,75	3,78
-2000	116,63	-1,51	257,32	-23,48	121,90	0,48	52,25	24,31	75,10	-86,43	57,77	-15,63	21,15	-1,21
-3000	104,30	0,46	242,61	-21,51	109,27	2,92	38,10	20,35	136,37	-84,51	46,70	-19,08	8,77	-6,66
-4000	91,89	1,26	228,45	-18,26	96,49	4,18	24,68	15,52	149,24	-79,89	35,72	-23,34	356,36	-12,31
-5000	79,47	0,83	214,91	-13,95	83,66	4,17	11,82	10,12	149,86	-74,95	24,69	-28,26	343,66	-17,91
-6000	67,13	-0,83	201,89	-8,85	70,87	2,87	359,28	4,43	147,06	-70,06	13,36	-33,68	330,36	-23,16
-7000	54,90	-3,66	189,19	-3,21	58,20	0,33	346,75	-1,30	142,79	-65,33	1,35	-39,43	316,15	-27,76
-8000	42,77	-7,55	176,50	2,71	45,66	-3,37	333,92	-6,78	137,69	-60,86	348,13	-45,26	300,84	-31,34
-9000	30,60	-12,38	163,48	8,64	33,16	-8,08	320,46	-11,75	131,97	-56,69	332,91	-50,87	284,40	-33,54
-10000	18,15	-18,01	149,73	14,30	20,46	-13,65	306,10	-15,87	125,71	-52,90	314,67	-55,77	267,07	-34,01
-11000	5,05	-24,25	134,83	19,33	7,24	-19,89	290,65	-18,79	118,89	-49,57	292,56	-59,22	249,31	-32,57
-12000	350,75	-30,86	118,46	23,31	352,99	-26,58	274,08	-20,13	111,46	-46,78	267,00	-60,29	231,61	-29,20
-13000	334,48	-37,51	100,43	25,71	336,98	-33,36	256,55	-19,57	103,34	-44,64	240,65	-58,36	214,22	-24,07
-14000	315,20	-43,61	80,90	26,03	318,28	-39,70	238,36	-16,89	94,44	-43,29	216,37	-53,61	197,04	-17,50
-15000	291,89	-48,22	60,35	23,89	295,87	-44,72	219,73	-12,11	84,67	-42,91	194,87	-46,80	179,63	-9,88
-16000	264,51	-50,06	39,32	19,19	269,48	-47,19	200,66	-5,41	73,98	-43,73	175,23	-38,78	161,36	-1,75
-17000	235,25	-48,02	18,03	12,22	240,74	-45,91	180,74	2,78	62,32	-46,02	156,20	-30,34	141,38	6,15
-18000	207,17	-42,11	356,16	3,58	212,38	-40,62	159,16	11,73	49,69	-50,05	136,67	-22,34	118,85	12,74
-19000	181,38	-33,36	332,83	-5,74	186,04	-32,16	134,71	20,25	36,08	-56,14	115,81	-15,85	93,33	16,48
-20000	157,01	-23,23	306,84	-14,19	161,13	-21,96	106,22	26,37	21,42	-64,56	93,28	-12,24	65,45	15,68

Table 50: Results of the calculations, Right ascension and Declination in Degrees

	567	4,09	624	4,09	670	4,09	122	4,09	602	4,09	338	4,1	221	4,1
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	84,23	9,29	25,92	50,69	117,31	-46,37	143,61	-59,23	320,52	19,80	45,60	-23,62	105,94	-15,63
1000	70,58	8,16	11,16	45,41	109,69	-44,15	136,37	-54,96	308,98	15,87	34,59	-27,87	94,64	-14,64
0	57,22	5,78	358,03	39,84	102,07	-42,62	129,14	-51,16	297,44	12,79	23,51	-32,74	83,40	-14,73
-1000	44,24	2,30	345,99	34,29	94,49	-41,82	121,87	-47,90	285,87	10,71	12,14	-38,06	72,27	-15,91
-2000	31,62	-2,07	334,59	28,99	86,97	-41,75	114,56	-45,24	274,27	9,71	0,15	-43,65	61,30	-18,13
-3000	19,26	-7,11	323,55	24,14	79,55	-42,42	107,22	-43,22	262,72	9,86	347,02	-49,24	50,47	-21,31
-4000	6,96	-12,57	312,62	19,93	72,25	-43,82	99,84	-41,91	251,25	11,15	332,07	-54,54	39,74	-25,33
-5000	354,47	-18,21	301,68	16,51	65,10	-45,93	92,45	-41,32	239,91	13,54	314,44	-59,08	28,98	-30,05
-6000	341,46	-23,74	290,63	14,02	58,11	-48,70	85,06	-41,49	228,68	16,93	293,51	-62,26	17,95	-35,34
-7000	327,59	-28,88	279,41	12,58	51,26	-52,12	77,68	-42,43	217,46	21,23	269,94	-63,37	6,32	-41,03
-8000	312,53	-33,26	268,03	12,30	44,55	-56,15	70,32	-44,15	206,08	26,30	246,18	-62,06	353,54	-46,92
-9000	296,06	-36,48	256,48	13,24	37,99	-60,77	62,98	-46,65	194,24	32,00	224,76	-58,54	338,79	-52,73
-10000	278,25	-38,09	244,74	15,43	31,61	-65,94	55,67	-49,93	181,48	38,17	206,41	-53,44	320,88	-58,02
-11000	259,55	-37,75	232,75	18,87	25,61	-71,65	48,39	-53,98	167,11	44,56	190,48	-47,33	298,49	-62,04
-12000	240,63	-35,31	220,37	23,54	20,86	-77,85	41,19	-58,79	150,05	50,78	175,98	-40,66	271,52	-63,72
-13000	222,04	-30,84	207,34	29,36	23,06	-84,43	34,21	-64,35	128,86	56,17	162,02	-33,77	243,02	-62,20
-14000	203,92	-24,66	193,19	36,23	132,42	-87,39	27,94	-70,59	102,39	59,57	147,86	-27,00	217,07	-57,59
-15000	185,96	-17,18	177,10	43,93	155,64	-80,43	24,22	-77,41	71,98	59,62	132,90	-20,76	194,77	-50,79
-16000	167,56	-8,93	157,51	52,01	150,23	-72,82	35,06	-84,35	42,14	55,76	116,63	-15,55	174,92	-42,75
-17000	147,90	-0,62	131,54	59,50	140,85	-65,26	125,11	-85,26	15,81	48,76	98,71	-12,07	156,00	-34,29
-18000	126,09	6,74	95,62	64,13	129,46	-58,14	142,32	-77,89	352,50	39,98	79,03	-11,11	136,78	-26,28
-19000	101,50	11,70	53,52	62,76	116,54	-52,03	137,02	-69,89	330,51	30,71	57,79	-13,46	116,41	-19,74
-20000	74,33	12,52	17,28	55,08	102,51	-47,58	127,41	-62,19	308,41	22,26	35,28	-19,65	94,51	-15,97

	7	4,1	8	4,1	856	4,1	244	4,1	429	4,11	524	4,11	625	4,11
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	11,84	24,27	24,20	41,41	214,00	-6,00	287,37	-37,90	39,90	-68,27	184,39	-67,96	41,05	49,23
1000	358,87	18,75	10,14	36,19	201,07	-0,95	270,21	-38,73	36,84	-72,65	172,04	-62,39	24,93	44,58
0	346,40	13,22	357,23	30,72	188,43	4,58	253,11	-37,88	36,52	-77,17	161,57	-56,94	10,61	39,27
-1000	334,15	7,96	345,10	25,28	175,84	10,30	236,68	-35,47	43,06	-81,55	152,06	-51,76	357,60	33,69
-2000	321,91	3,20	333,41	20,11	163,05	15,96	221,29	-31,73	70,85	-84,83	143,07	-47,00	345,47	28,14
-3000	309,52	-0,82	321,93	15,44	149,80	21,25	207,00	-27,02	120,13	-84,22	134,32	-42,74	333,84	22,86
-4000	296,90	-3,90	310,46	11,45	135,84	25,89	193,65	-21,66	140,37	-80,41	125,67	-39,08	322,43	18,06
-5000	284,03	-5,86	298,89	8,32	121,04	29,54	180,97	-15,96	144,66	-75,85	117,02	-36,11	311,05	13,95
-6000	270,97	-6,56	287,16	6,20	105,40	31,88	168,63	-10,21	143,73	-71,18	108,30	-33,92	299,56	10,69
-7000	257,83	-5,91	275,26	5,22	89,18	32,66	156,32	-4,66	140,60	-66,62	99,49	-32,57	287,86	8,46
-8000	244,71	-3,92	263,21	5,47	72,79	31,76	143,75	0,43	136,28	-62,25	90,55	-32,13	275,93	7,38
-9000	231,64	-0,64	251,03	7,00	56,65	29,18	130,65	4,80	131,14	-58,16	81,47	-32,64	263,77	7,56
-10000	218,57	3,82	238,72	9,81	41,01	25,10	116,83	8,16	125,35	-54,41	72,21	-34,16	251,38	9,08
-11000	205,32	9,34	226,20	13,87	25,84	19,76	102,16	10,22	118,94	-51,08	62,74	-36,71	238,75	11,96
-12000	191,56	15,71	213,31	19,11	10,90	13,47	86,66	10,70	111,86	-48,25	52,98	-40,31	225,78	16,18
-13000	176,79	22,71	199,72	25,41	355,74	6,54	70,42	9,37	104,07	-46,03	42,81	-44,98	212,29	21,68
-14000	160,27	29,99	184,90	32,62	339,81	-0,64	53,57	6,11	95,48	-44,55	32,03	-50,70	197,89	28,35
-15000	141,00	36,97	167,95	40,42	322,45	-7,55	36,15	0,93	86,01	-44,00	20,25	-57,46	181,94	35,99
-16000	117,80	42,68	147,33	48,23	302,99	-13,49	17,94	-5,97	75,59	-44,60	6,56	-65,19	163,25	44,21
-17000	90,18	45,68	120,74	54,87	280,97	-17,45	358,42	-14,21	64,20	-46,62	348,14	-73,68	139,74	52,19
-18000	59,78	44,48	86,70	58,16	256,51	-18,28	336,58	-23,09	51,84	-50,36	309,82	-81,93	108,48	58,19
-19000	29,92	38,67	49,43	55,81	230,54	-15,04	310,91	-31,32	38,60	-56,15	215,65	-81,89	69,57	59,28
-20000	2,38	29,25	16,33	47,95	204,17	-7,51	280,04	-36,66	24,56	-64,26	174,59	-72,27	31,56	53,67

Table 51: Results of the calculations, Right ascension and Declination in Degrees

	202	4,11	787	4,11	245	4,12	4,17	4,12	653	4,12	100	4,12	339	4,12
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	158,87	-78,61	234,18	-66,32	287,51	-39,34	147,87	-14,85	354,99	5,63	312,96	-26,92	40,17	-39,86
1000	154,91	-73,47	213,38	-62,27	270,14	-40,18	135,85	-10,46	342,16	0,29	297,70	-30,14	30,25	-44,40
0	149,76	-68,51	196,62	-57,18	252,83	-39,34	123,80	-6,87	329,26	-4,68	281,82	-32,03	20,04	-49,46
-1000	144,08	-63,80	182,68	-51,63	236,22	-36,92	111,64	-4,26	316,13	-9,01	265,66	-32,40	9,19	-54,89
-2000	138,09	-59,42	170,51	-45,99	220,71	-33,17	99,41	-2,75	302,66	-12,45	249,69	-31,19	357,05	-60,51
-3000	131,87	-55,42	159,40	-40,52	206,35	-28,44	87,16	-2,42	288,85	-14,76	234,32	-28,53	342,47	-66,07
-4000	125,46	-51,88	148,88	-35,40	192,98	-23,08	74,97	-3,32	274,81	-15,76	219,79	-24,65	323,29	-71,13
-5000	118,88	-48,85	138,65	-30,80	180,31	-17,40	62,93	-5,39	260,74	-15,36	206,09	-19,85	296,35	-74,78
-6000	112,13	-46,42	128,49	-26,85	168,01	-11,68	51,04	-8,56	246,82	-13,55	193,04	-14,42	262,13	-75,66
-7000	105,23	-44,62	118,26	-23,69	155,77	-6,17	39,26	-12,70	233,21	-10,43	180,38	-8,65	230,46	-73,20
-8000	98,16	-43,51	107,85	-21,46	143,29	-1,13	27,43	-17,68	219,92	-6,14	167,77	-2,79	207,29	-68,50
-9000	90,94	-43,15	97,19	-20,25	130,31	3,19	15,30	-23,33	206,83	-0,89	154,87	2,87	190,35	-62,73
-10000	83,57	-43,58	86,24	-20,19	116,65	6,51	2,47	-29,47	193,70	5,13	141,32	8,06	176,70	-56,51
-11000	76,04	-44,83	74,96	-21,34	102,18	8,54	348,39	-35,86	180,15	11,68	126,81	12,44	164,59	-50,16
-12000	68,37	-46,95	63,30	-23,79	86,89	9,02	332,25	-42,15	165,68	18,48	111,08	15,63	153,01	-43,90
-13000	60,56	-49,95	51,14	-27,55	70,88	7,71	313,01	-47,77	149,65	25,16	94,07	17,20	141,28	-37,94
-14000	52,67	-53,85	38,31	-32,65	54,24	4,50	289,72	-51,80	131,30	31,16	75,89	16,76	128,93	-32,52
-15000	44,82	-58,65	24,44	-39,05	36,99	-0,61	262,66	-53,08	109,97	35,66	56,83	14,05	115,57	-27,98
-16000	37,29	-64,35	8,84	-46,63	18,93	-7,45	234,28	-50,74	85,63	37,63	37,15	9,01	100,91	-24,73
-17000	30,93	-70,88	350,01	-55,12	359,52	-15,67	207,45	-44,93	59,37	36,13	16,83	1,88	84,77	-23,33
-18000	29,01	-78,10	324,39	-63,73	337,74	-24,57	182,95	-36,66	32,95	30,94	355,38	-6,81	67,13	-24,37
-19000	55,08	-84,88	284,44	-70,06	312,03	-32,90	159,81	-27,22	7,37	22,67	331,79	-16,12	48,07	-28,38
-20000	131,92	-82,18	231,92	-69,00	280,87	-38,40	136,69	-18,01	342,23	12,59	304,63	-24,42	27,52	-35,74
	379	4,13	748	4,13	250	4,13	568	4,13	782	4,13	857	4,13	435	4,13
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	345,22	-52,75	298,82	-41,87	239,40	26,88	90,60	9,65	277,21	-49,07	181,30	8,73	333,99	37,75
1000	329,34	-57,89	281,17	-43,79	229,09	30,15	76,90	9,05	258,00	-48,77	168,48	14,26	323,27	32,99
0	310,40	-62,17	263,07	-44,01	218,85	34,19	63,44	7,16	239,54	-46,67	155,31	19,56	312,80	28,84
-1000	287,93	-64,91	245,34	-42,49	208,56	38,88	50,34	4,10	222,56	-43,07	141,56	24,33	302,45	25,41
-2000	263,23	-65,47	228,66	-39,42	198,00	44,07	37,63	0,05	207,23	-38,38	127,07	28,26	292,13	22,83
-3000	239,47	-63,65	213,33	-35,16	186,82	49,60	25,24	-4,77	193,33	-33,00	111,83	31,04	281,81	21,18
-4000	219,02	-59,92	199,25	-30,07	174,47	55,29	13,02	-10,13	180,49	-27,30	96,04	32,40	271,51	20,54
-5000	202,08	-55,00	186,16	-24,51	160,00	60,86	0,72	-15,78	168,33	-21,56	80,06	32,19	261,22	20,93
-6000	187,77	-49,44	173,70	-18,77	141,94	65,88	348,04	-21,49	156,47	-16,02	64,34	30,40	250,96	22,36
-7000	175,15	-43,65	161,52	-13,12	118,48	69,61	334,63	-26,96	144,64	-10,93	49,21	27,19	240,72	24,80
-8000	163,51	-37,88	149,30	-7,81	89,75	70,99	320,10	-31,87	132,57	-6,51	34,79	22,77	230,44	28,21
-9000	152,29	-32,35	136,74	-3,08	60,75	69,35	304,14	-35,81	120,07	-2,97	20,95	17,42	219,99	32,54
-10000	141,09	-27,25	123,60	0,80	36,62	65,16	286,64	-38,34	107,01	-0,55	7,42	11,42	209,17	37,72
-11000	129,58	-22,78	109,70	3,57	17,58	59,41	267,85	-39,02	93,33	0,53	353,82	5,03	197,60	43,67
-12000	117,49	-19,13	94,96	4,92	1,75	52,81	248,42	-37,56	79,02	0,08	339,67	-1,45	184,66	50,26
-13000	104,62	-16,57	79,37	4,60	347,47	45,84	229,08	-33,93	64,10	-2,05	324,46	-7,65	169,21	57,28
-14000	90,80	-15,37	63,00	2,40	333,61	38,82	210,20	-28,36	48,58	-5,92	307,68	-13,09	148,91	64,27
-15000	75,93	-15,84	45,92	-1,77	319,36	32,13	191,68	-21,25	32,31	-11,49	288,90	-17,14	119,32	70,02
-16000	59,97	-18,24	28,01	-7,86	304,12	26,21	173,00	-13,15	14,94	-18,61	268,00	-19,02	77,71	71,97
-17000	42,81	-22,79	8,87	-15,63	287,46	21,68	153,36	-4,74	355,74	-26,93	245,34	-17,99	36,62	68,10
-18000	24,15	-29,56	347,65	-24,53	269,15	19,30	131,89	3,01	333,37	-35,73	221,65	-13,62	6,19	60,24
-19000	3,15	-38,38	322,78	-33,55	249,25	19,91	107,84	8,71	305,73	-43,58	197,45	-6,07	342,54	50,81
-20000	337,61	-48,56	292,22	-40,62	228,06	24,29	81,16	10,61	271,17	-47,79	172,51	3,93	321,52	41,33

Table 52: Results of the calculations, Right ascension and Declination in Degrees

	767	4,14	473	4,14	9	4,14	418	4,14	366	4,14	527	4,14	841	4,14
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	52,72	12,94	238,46	-16,73	355,10	44,33	129,41	5,70	97,24	20,21	341,51	-81,38	129,41	-42,99
1000	39,15	9,06	224,47	-13,29	343,23	38,87	116,06	8,72	82,41	20,20	295,62	-85,74	120,65	-39,79
0	26,09	4,35	211,07	-8,91	332,07	33,71	102,47	10,57	67,79	18,76	217,61	-84,20	111,95	-37,32
-1000	13,39	-0,93	198,14	-3,84	321,30	29,02	88,79	11,12	53,63	16,02	189,67	-79,01	103,28	-35,62
-2000	0,87	-6,52	185,53	1,65	310,72	24,98	75,19	10,34	40,04	12,16	175,98	-73,39	94,65	-34,74
-3000	348,28	-12,15	172,99	7,27	300,19	21,71	61,84	8,28	27,00	7,45	166,01	-67,80	86,08	-34,72
-4000	335,34	-17,54	160,26	12,76	289,65	19,34	48,86	5,05	14,37	2,13	157,42	-62,42	77,58	-35,54
-5000	332,80	-22,40	147,08	17,83	279,06	17,96	36,23	0,84	1,94	-3,51	149,42	-57,32	69,17	-37,20
-6000	307,46	-26,41	133,23	22,18	268,43	17,64	23,86	-4,15	349,42	-9,24	141,65	-52,61	60,83	-39,67
-7000	292,24	-29,24	118,56	25,49	257,75	18,42	11,54	-9,69	336,50	-14,76	133,90	-48,35	52,52	-42,92
-8000	276,25	-30,60	103,09	27,46	247,03	20,31	358,97	-15,55	322,87	-19,80	126,05	-44,63	44,18	-46,91
-9000	259,80	-30,27	87,02	27,83	236,22	23,29	345,78	-21,49	308,24	-24,01	117,99	-41,54	35,67	-51,61
-10000	243,31	-28,18	70,67	26,46	225,22	27,34	331,49	-27,20	292,43	-27,03	109,63	-39,16	26,77	-56,98
-11000	227,06	-24,40	54,38	23,34	213,85	32,39	315,61	-32,28	275,47	-28,45	100,90	-37,58	17,06	-62,99
-12000	211,14	-19,16	38,28	18,61	201,77	38,36	297,68	-36,22	257,62	-27,98	91,73	-36,91	5,68	-69,57
-13000	195,34	-12,71	22,28	12,52	188,45	45,16	277,60	-38,38	239,33	-25,43	82,05	-37,26	349,94	-76,59
-14000	179,22	-5,40	6,04	5,36	172,86	52,56	255,86	-38,16	220,92	-20,85	71,80	-38,73	316,00	-83,36
-15000	162,20	2,33	349,00	-2,46	153,02	60,13	233,46	-35,23	202,46	-14,47	60,90	-41,45	224,06	-83,92
-16000	143,49	9,89	330,39	-10,38	125,01	66,77	211,29	-29,69	183,62	-6,70	49,25	-45,54	182,89	-76,60
-17000	122,31	16,37	309,33	-17,53	84,94	69,95	189,56	-22,08	163,74	1,83	36,68	-51,11	163,25	-68,07
-18000	98,12	20,51	285,08	-22,64	41,84	66,95	167,75	-13,19	141,88	10,24	22,75	-58,27	147,18	-59,54
-19000	71,27	20,82	257,75	-24,10	8,59	58,95	144,90	-4,14	117,03	17,11	6,24	-67,05	131,53	-51,65
-20000	43,23	16,24	228,83	-20,54	343,12	48,76	119,99	3,51	88,78	20,45	341,19	-77,26	115,45	-45,12

	569	4,14	262	4,15	367	4,15	515	4,15	101	4,15	251	4,15	603	4,16
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	80,99	-7,81	181,72	-64,61	91,03	23,26	107,97	0,49	311,52	-25,27	233,23	31,36	326,16	25,65
1000	69,01	-9,24	169,71	-59,05	75,90	22,66	95,08	1,60	296,42	-28,34	223,17	35,08	314,90	21,34
0	57,23	-11,76	159,25	-53,65	61,12	20,64	82,23	1,47	280,77	-30,08	213,10	39,48	303,72	17,80
-1000	45,66	-15,24	149,62	-48,58	46,92	17,37	69,52	0,10	264,90	-30,32	202,85	44,44	292,55	15,15
-2000	34,23	-19,55	140,43	-43,95	33,36	13,09	57,06	-2,44	249,24	-29,02	192,12	49,82	281,35	13,51
-3000	22,82	-24,51	131,46	-39,88	20,37	8,08	44,89	-6,01	234,17	-26,30	180,43	55,44	270,16	12,95
-4000	11,21	-29,93	122,56	-36,46	7,77	2,60	32,95	-10,44	219,87	-22,38	166,95	61,08	259,02	13,50
-5000	359,08	-35,60	113,66	-33,79	355,31	-3,08	21,10	-15,54	206,34	-17,56	150,24	66,39	247,96	15,15
-6000	345,98	-41,28	104,70	-31,93	342,72	-8,68	9,11	-21,10	193,41	-12,11	128,12	70,73	236,98	17,85
-7000	331,34	-46,66	95,66	-30,97	329,68	-13,93	356,67	-26,90	180,80	-6,32	99,19	73,02	226,04	21,53
-8000	314,49	-51,29	86,50	-30,95	315,93	-18,54	343,35	-32,69	168,20	-0,44	67,73	72,25	215,01	26,08
-9000	294,93	-54,61	77,23	-31,91	301,25	-22,17	328,63	-38,14	155,25	5,27	41,19	68,63	203,66	31,39
-10000	272,97	-55,97	67,79	-33,90	285,54	-24,48	311,94	-42,83	141,60	10,51	21,04	63,25	191,62	37,34
-11000	250,10	-54,89	58,14	-36,93	268,92	-25,14	292,87	-46,17	126,91	14,94	5,06	56,98	178,31	43,76
-12000	228,22	-51,38	48,19	-41,01	251,66	-23,90	271,61	-47,53	110,94	18,16	351,19	50,29	162,79	50,37
-13000	208,26	-45,87	37,77	-46,14	234,09	-20,70	249,16	-46,40	93,62	19,74	338,14	43,50	143,53	56,67
-14000	189,95	-38,94	26,61	-52,29	216,41	-15,61	226,95	-42,66	75,10	19,26	325,04	36,90	118,44	61,70
-15000	172,49	-31,18	14,14	-59,42	198,51	-8,89	205,79	-36,66	55,74	16,47	311,25	30,83	86,77	63,85
-16000	154,96	-23,18	359,02	-67,42	179,99	-0,95	185,56	-29,03	35,81	11,35	296,32	25,72	53,00	61,69
-17000	136,50	-15,62	336,49	-75,92	160,09	7,59	165,54	-20,50	15,32	4,16	279,89	22,17	23,25	55,57
-18000	116,40	-9,42	281,75	-82,68	137,82	15,80	144,79	-11,98	353,79	-4,54	261,85	20,91	358,23	47,07
-19000	94,30	-5,79	201,89	-78,83	112,14	22,18	122,38	-4,66	330,23	-13,76	242,30	22,67	335,81	37,67
-20000	70,40	-6,05	169,64	-68,81	82,88	24,62	97,80	-0,15	303,29	-21,86	221,45	28,10	314,07	28,73

Table 53: Results of the calculations, Right ascension and Declination in Degrees

	368	4,16	768	4,16	543	4,17	380	4,17	705	4,17	340	4,17	43	4,18
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	112,28	31,78	56,58	23,95	261,59	-24,18	337,44	-43,75	241,09	-11,37	57,36	-36,20	334,21	-7,78
1000	96,02	33,10	42,07	20,33	246,49	-22,61	321,72	-48,55	227,55	-8,12	48,04	-39,56	320,86	-12,47
0	79,65	32,83	28,31	15,77	231,93	-19,71	304,05	-52,36	214,48	-3,89	38,76	-43,61	307,08	-16,35
-1000	63,68	31,00	15,18	10,57	218,04	-15,71	284,49	-54,68	201,80	1,07	29,39	-48,25	292,86	-19,14
-2000	48,46	27,79	2,50	5,01	203,94	-10,87	263,94	-55,09	189,36	6,50	19,71	-53,36	278,30	-20,64
-3000	34,16	23,48	350,01	-0,62	192,05	-5,47	243,87	-53,51	176,92	12,15	9,31	-58,81	263,64	-20,71
-4000	20,70	18,37	337,45	-6,06	179,58	0,21	225,51	-50,22	164,23	17,75	357,46	-64,46	249,14	-19,34
-5000	7,86	12,78	324,58	-11,03	167,11	5,91	209,25	-45,67	150,99	23,02	342,61	-70,06	235,04	-16,62
-6000	355,37	6,97	311,20	-15,25	154,36	11,35	194,81	-40,33	136,92	27,65	321,43	-75,11	221,43	-12,73
-7000	342,91	1,22	297,18	-18,44	141,05	16,25	181,69	-34,57	121,84	31,29	288,40	-78,42	208,28	-7,90
-8000	330,16	-4,21	282,53	-20,35	126,96	20,31	169,35	-28,71	105,72	33,59	247,20	-78,08	195,39	-2,37
-9000	316,82	-9,04	267,38	-20,73	111,94	23,20	157,34	-22,97	88,81	34,24	215,54	-74,17	182,48	3,63
-10000	302,64	-12,96	251,93	-19,48	96,04	24,60	145,27	-17,61	71,55	33,06	194,91	-68,50	169,17	9,82
-11000	287,46	-15,62	236,40	-16,55	79,45	24,26	132,77	-12,84	54,42	30,05	179,76	-62,12	155,00	15,92
-12000	271,26	-16,70	220,87	-12,06	62,49	22,04	119,57	-8,94	37,66	25,36	166,94	-55,47	139,48	21,55
-13000	254,18	-15,90	205,26	-6,17	45,40	17,96	105,44	-6,21	21,24	19,27	154,89	-48,82	122,11	26,20
-14000	236,46	-13,05	189,22	0,84	28,22	12,19	90,23	-4,99	4,80	12,13	142,72	-42,38	102,60	29,23
-15000	218,24	-8,15	172,23	8,60	10,71	5,05	73,91	-5,63	347,77	4,38	129,85	-36,46	81,12	29,94
-16000	199,45	-1,41	153,47	16,59	352,31	-3,03	56,49	-8,41	329,43	-3,43	115,86	-31,45	58,37	27,80
-17000	179,63	6,76	131,98	23,94	332,20	-11,37	37,94	-13,47	308,97	-10,47	100,43	-27,89	35,23	22,69
-18000	157,91	15,64	106,84	29,30	309,36	-18,93	18,00	-20,77	285,74	-15,54	83,44	-26,44	12,08	15,03
-19000	133,02	23,99	78,16	30,90	282,96	-24,10	355,81	-29,93	259,74	-17,16	64,98	-27,85	348,54	5,68
-20000	103,73	29,74	47,87	27,27	253,34	-24,83	329,46	-39,94	232,08	-13,99	45,27	-32,76	323,59	-4,04
	86	4,18	289	4,18	626	4,18	644	4,18	706	4,18	135	4,19	160	4,19
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	214,10	46,09	326,70	49,31	63,72	48,41	340,16	-27,04	249,09	-35,26	8,25	62,93	207,36	-34,45
1000	204,44	50,90	317,60	44,91	46,08	45,21	325,94	-32,01	233,03	-32,56	355,18	57,37	193,39	-29,21
0	194,30	56,13	308,70	41,09	30,15	40,81	310,71	-36,18	217,96	-28,64	343,90	51,87	180,36	-23,65
-1000	183,13	61,63	299,89	37,92	15,79	35,64	294,41	-39,21	203,90	-23,83	333,63	46,64	167,96	-18,05
-2000	169,92	67,21	291,13	35,49	2,65	30,09	277,30	-40,74	190,69	-18,45	323,92	41,82	155,89	-12,68
-3000	152,52	72,52	282,38	33,87	350,33	24,45	259,93	-40,60	178,06	-12,81	314,49	37,54	143,91	-7,77
-4000	126,72	76,82	273,65	33,09	338,48	18,99	243,00	-38,77	165,75	-7,19	305,18	33,91	131,84	-3,55
-5000	89,38	78,58	264,93	33,19	326,82	13,94	227,02	-35,47	153,46	-1,86	295,87	31,03	119,56	-0,22
-6000	52,36	76,61	256,24	34,18	315,11	9,50	212,16	-31,01	140,96	2,95	286,51	29,00	107,01	2,03
-7000	26,95	72,08	247,57	36,05	303,18	5,89	198,32	-25,72	128,05	6,97	277,06	27,88	94,22	3,05
-8000	9,74	66,48	238,89	38,79	290,93	3,30	185,17	-19,93	114,61	9,95	267,49	27,74	81,25	2,74
-9000	356,53	60,48	230,13	42,39	278,29	1,90	172,34	-13,91	100,60	11,65	257,79	28,63	68,15	1,06
-10000	345,15	54,42	221,19	46,82	265,27	1,85	159,43	-7,93	86,08	11,88	247,91	30,59	54,97	-1,99
-11000	334,49	48,45	211,88	52,06	251,88	3,24	146,03	-2,27	71,17	10,49	237,80	33,63	41,64	-6,34
-12000	323,89	42,75	201,89	58,07	238,13	6,14	131,75	2,74	55,98	7,44	227,34	37,76	27,99	-11,86
-13000	312,87	37,47	190,58	64,81	223,94	10,54	116,27	6,71	40,50	2,78	216,37	42,98	13,67	-18,40
-14000	301,09	32,86	176,33	72,18	209,11	16,36	99,37	9,18	24,60	-3,34	204,53	49,25	358,14	-25,71
-15000	288,25	29,22	152,65	79,79	193,23	23,45	81,03	9,65	7,87	-10,68	191,19	56,51	340,51	-33,40
-16000	274,14	26,94	81,95	84,64	175,56	31,50	61,44	7,70	349,64	-18,82	174,82	64,59	319,52	-40,77
-17000	258,62	26,50	12,45	79,06	154,78	39,95	40,87	3,12	328,86	-27,10	150,84	72,98	293,66	-46,59
-18000	241,68	28,42	346,94	70,19	128,83	47,63	19,37	-3,98	304,18	-34,32	102,99	79,38	262,60	-48,96
-19000	223,32	33,17	329,01	61,06	95,75	52,30	356,45	-13,09	274,65	-38,56	34,82	76,92	229,41	-46,20
-20000	203,32	41,02	312,58	52,48	57,91	51,04	330,89	-23,14	241,71	-37,55	357,71	67,43	198,47	-38,35

Table 54: Results of the calculations, Right ascension and Declination in Degrees

	181	4,19	858	4,19	196	4,2	246	4,2	303	4,2	341	4,2	398	4,2
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	333,76	57,04	213,22	-10,27	41,24	10,11	286,60	-37,06	64,01	-51,49	56,71	-23,25	281,42	20,55
1000	324,86	52,24	200,09	-5,34	27,94	5,54	269,58	-37,77	57,63	-54,26	45,99	-26,58	270,69	20,05
0	316,29	47,92	187,32	0,06	15,05	0,34	252,65	-36,82	51,66	-57,56	35,30	-30,68	260,07	20,60
-1000	307,87	44,16	174,69	5,63	2,38	-5,21	236,40	-34,32	46,20	-61,31	24,50	-35,39	249,59	22,16
-2000	299,53	41,04	161,96	11,11	349,68	-10,83	221,16	-30,53	41,45	-65,44	13,37	-40,57	239,27	24,68
-3000	291,21	38,64	148,88	16,21	336,71	-16,24	206,98	-25,76	37,77	-69,87	1,56	-46,02	229,09	28,08
-4000	282,89	37,02	135,26	20,64	323,20	-21,14	193,71	-20,36	35,99	-74,48	348,53	-51,53	218,98	32,26
-5000	274,56	36,21	120,96	24,11	308,96	-25,23	181,06	-14,62	38,39	-79,13	333,49	-56,76	208,79	37,09
-6000	266,24	36,26	106,01	26,32	293,93	-28,17	168,74	-8,82	52,93	-83,32	315,43	-61,27	198,28	42,45
-7000	257,92	37,18	90,58	27,05	278,21	-29,69	156,41	-3,23	98,30	-85,02	293,57	-64,36	187,05	48,20
-8000	249,59	38,98	74,99	26,18	262,09	-29,57	143,78	1,91	134,70	-82,17	268,68	-65,28	174,45	54,16
-9000	241,25	41,66	59,54	23,71	245,96	-27,76	130,59	6,32	144,23	-77,53	243,82	-63,60	159,38	60,07
-10000	232,84	45,21	44,43	19,75	230,13	-24,31	116,63	9,71	144,76	-72,48	221,84	-59,65	139,98	65,44
-11000	224,30	49,63	29,62	14,52	214,70	-19,43	101,80	11,79	141,77	-67,34	203,27	-54,09	113,90	69,31
-12000	215,53	54,89	14,90	8,26	199,51	-13,38	86,11	12,26	136,82	-62,26	187,16	-47,54	81,55	70,25
-13000	206,35	60,99	359,85	1,27	184,20	-6,44	69,68	10,90	130,43	-57,34	172,35	-40,44	49,83	67,46
-14000	196,50	67,87	343,92	-6,11	168,24	1,01	52,66	7,58	122,74	-52,74	157,87	-33,18	24,08	61,74
-15000	185,22	75,50	326,40	-13,37	150,94	8,50	35,08	2,35	113,73	-48,67	142,95	-26,14	3,30	54,39
-16000	168,25	83,72	306,54	-19,78	131,56	15,34	16,75	-4,59	103,33	-45,42	126,95	-19,81	345,01	46,31
-17000	16,06	86,99	283,73	-24,29	109,40	20,52	357,13	-12,84	91,51	-43,38	109,39	-14,86	327,38	38,25
-18000	344,84	78,06	258,09	-25,60	84,34	22,76	335,23	-21,65	78,32	-43,07	90,01	-12,13	309,28	30,95
-19000	329,86	68,90	230,79	-22,66	57,28	20,82	309,61	-29,74	63,95	-45,03	68,89	-12,55	290,02	25,38
-20000	315,81	60,08	203,43	-15,25	29,77	14,22	279,03	-34,86	48,84	-49,81	46,40	-16,93	269,43	22,68

	399	4,2	506	4,2	570	4,2	604	4,2	627	4,2	793	4,2	671	4,2
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	248,53	42,44	283,83	43,95	82,70	5,95	341,67	12,17	42,65	38,32	5,02	-64,87	119,21	-22,88
1000	240,54	44,82	276,24	42,95	69,41	4,61	329,22	7,25	27,48	33,79	351,24	-70,76	108,47	-20,63
0	232,73	47,88	268,71	42,69	56,41	2,07	316,76	2,92	13,53	28,58	331,70	-76,38	97,76	-19,36
-1000	225,09	51,56	261,27	43,16	43,76	-1,52	304,18	-0,58	0,52	23,03	297,82	-80,65	87,10	-19,13
-2000	217,59	55,78	253,96	44,36	31,42	-5,98	291,43	-3,06	348,12	17,45	247,36	-80,98	76,53	-19,94
-3000	210,14	60,47	246,83	46,25	19,28	-11,09	278,55	-4,36	336,03	12,10	210,82	-77,04	66,08	-21,76
-4000	202,59	65,56	239,88	48,80	7,13	-16,61	265,65	-4,41	324,01	7,21	190,22	-71,46	55,75	-24,53
-5000	194,64	70,96	233,15	51,96	354,70	-22,31	252,85	-3,17	311,87	3,02	176,26	-65,50	45,49	-28,17
-6000	185,43	76,62	226,62	55,70	341,66	-27,91	240,23	-0,69	299,48	-0,26	165,06	-59,57	35,19	-32,58
-7000	171,66	82,41	220,32	59,96	327,61	-33,12	227,82	2,92	286,77	-2,44	155,11	-53,88	24,66	-37,64
-8000	119,43	87,50	214,27	64,71	312,18	-37,56	215,54	7,53	273,77	-3,36	145,66	-48,57	13,56	-43,24
-9000	19,39	84,41	208,58	69,92	295,13	-40,80	203,21	12,98	260,51	-2,89	136,34	-43,75	1,36	-49,22
-10000	0,21	78,27	203,70	75,56	276,58	-42,35	190,53	19,08	247,06	-0,98	126,85	-39,56	347,18	-55,37
-11000	349,27	71,89	201,63	81,57	257,11	-41,87	177,06	25,63	233,44	2,36	117,01	-36,13	329,50	-61,29
-12000	339,81	65,44	226,98	87,51	237,59	-39,21	162,18	32,35	219,57	7,07	106,66	-33,61	306,00	-66,22
-13000	330,41	59,03	335,11	84,64	218,64	-34,53	145,04	38,80	205,24	13,04	95,66	-32,17	275,11	-68,76
-14000	320,46	52,81	337,36	77,70	200,39	-28,19	124,65	44,31	190,03	20,07	83,91	-32,00	241,03	-67,42
-15000	309,60	46,99	330,90	70,48	182,45	-20,66	100,35	47,85	173,27	27,87	71,34	-33,32	211,36	-62,33
-16000	297,52	41,89	321,78	63,28	164,16	-12,50	72,88	48,22	153,88	35,92	57,85	-36,31	187,47	-54,90
-17000	284,03	37,97	310,85	56,44	144,70	-4,43	44,76	44,78	130,29	43,26	43,29	-41,16	166,94	-46,38
-18000	269,03	35,82	298,33	50,43	123,25	2,55	18,20	37,94	101,01	48,18	27,28	-47,99	147,56	-37,78
-19000	252,63	36,13	284,35	45,88	99,28	7,07	353,43	28,87	67,06	48,43	8,78	-56,82	127,95	-30,05
-20000	235,15	39,62	269,27	43,56	73,01	7,48	329,37	19,04	33,34	42,78	344,13	-67,30	107,36	-24,36

Table 55: Results of the calculations, Right ascension and Declination in Degrees

	491	4.21	587	4.21	44	4.21	769	4.21	476	4.22	45	4.22	182	4.22
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	241.65	-36.80	283.05	-62.19	348.97	-9.09	66.34	22.29	156.97	36.71	348.58	-6.05	307.40	62.99
1000	225.71	-33.49	259.67	-62.32	335.73	-14.39	51.73	19.44	141.92	41.53	335.52	-11.29	302.96	59.78
0	210.90	-29.09	237.45	-60.26	322.05	-19.16	37.78	15.48	125.41	45.43	322.10	-16.02	298.07	56.94
-1000	197.13	-23.96	218.07	-56.47	307.78	-23.11	24.46	10.68	107.47	47.97	308.18	-19.95	292.89	54.53
-2000	184.18	-18.41	201.65	-51.58	292.89	-25.93	11.65	5.34	88.64	48.80	293.73	-22.79	287.49	52.58
-3000	171.74	-12.75	187.53	-46.10	277.54	-27.38	359.11	-0.28	69.92	47.78	278.86	-24.31	281.97	51.16
-4000	159.54	-7.25	174.97	-40.42	262.04	-27.30	346.60	-5.90	52.24	45.06	263.85	-24.38	276.37	50.27
-5000	147.31	-2.14	163.37	-34.82	246.77	-25.68	333.86	-11.25	36.10	40.98	248.99	-22.96	270.75	49.95
-6000	134.85	2.31	152.30	-29.51	232.00	-22.65	320.61	-16.05	21.46	35.97	234.55	-20.15	265.16	50.20
-7000	121.98	5.87	141.42	-24.68	217.87	-18.42	306.68	-20.00	7.99	30.37	220.65	-16.13	259.63	51.05
-8000	108.63	8.82	130.48	-20.51	204.28	-13.25	291.96	-22.79	355.27	24.52	207.22	-11.14	254.23	52.48
-9000	94.81	9.43	119.29	-17.16	191.00	-7.40	276.50	-24.14	342.86	18.67	194.06	-5.42	249.01	54.51
-10000	80.58	9.06	107.71	-14.80	177.68	-1.13	260.52	-23.83	330.37	13.08	180.84	0.79	244.10	57.11
-11000	66.04	7.11	95.64	-13.62	163.91	5.26	244.29	-21.76	317.42	8.01	167.15	7.20	239.68	60.25
-12000	51.26	3.57	83.02	-13.76	149.19	11.46	228.04	-17.95	303.70	3.74	152.49	13.52	236.11	63.89
-13000	36.17	-1.47	69.81	-15.37	133.01	17.03	211.80	-12.57	288.95	0.62	136.33	19.31	234.12	67.91
-14000	20.54	-7.87	55.92	-18.55	114.90	21.40	195.37	-5.86	273.02	-0.95	118.14	24.00	235.18	72.06
-15000	3.92	-15.35	41.22	-23.36	94.68	23.86	178.27	1.80	255.88	-0.60	97.66	26.86	242.19	75.81
-16000	345.53	-23.50	25.38	-29.77	72.61	23.70	159.82	9.93	237.63	2.00	75.14	27.11	258.28	77.99
-17000	324.22	-31.58	7.72	-37.63	49.42	20.45	139.08	17.74	218.32	7.01	51.41	24.20	278.02	77.25
-18000	298.55	-38.29	346.82	-46.53	25.81	14.12	115.10	24.01	197.79	14.33	27.34	18.12	289.41	73.90
-19000	267.84	-41.57	319.63	-55.42	1.85	5.32	87.53	27.03	175.31	23.53	3.16	9.44	291.57	69.40
-20000	234.37	-39.30	281.23	-61.55	336.79	-4.85	57.66	25.04	149.26	33.55	338.23	-0.69	288.47	64.81
	316	4.22	588	4.22	822	4.22	707	4.22	645	4.23	161	4.23	714	4.23
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	275.19	71.34	321.61	-65.37	251.49	82.04	247.85	-34.70	343.99	-32.54	206.42	-33.04	281.79	-4.75
1000	278.52	70.66	298.55	-69.19	280.45	82.46	231.90	-31.90	329.66	-37.67	192.67	-27.76	268.53	-5.24
0	281.14	69.68	270.69	-70.82	302.61	80.31	216.95	-27.90	314.06	-42.08	179.80	-22.16	255.35	-4.45
-1000	282.91	68.50	242.40	-69.67	312.19	76.83	202.98	-23.03	297.05	-45.35	167.51	-16.55	242.41	-2.43
-2000	283.83	67.18	218.63	-66.20	314.81	72.92	189.84	-17.62	278.88	-47.10	155.50	-11.17	229.79	0.72
-3000	283.97	65.82	200.08	-61.37	314.04	68.95	177.25	-11.97	260.28	-47.06	143.55	-6.25	217.48	4.83
-4000	283.43	64.48	185.22	-55.91	311.45	65.09	164.94	-6.36	242.22	-45.22	131.47	-2.03	205.40	9.68
-5000	282.33	63.22	172.63	-50.29	307.79	61.46	152.64	-1.05	225.40	-41.83	119.15	1.31	193.37	15.08
-6000	280.78	62.11	161.33	-44.78	303.41	58.14	140.10	3.72	210.05	-37.26	106.55	3.56	181.13	20.78
-7000	278.87	61.19	150.73	-39.59	298.51	55.20	127.14	7.68	195.97	-31.89	93.69	4.59	168.33	26.56
-8000	276.69	60.49	140.42	-34.88	293.19	52.72	113.64	10.59	182.80	-26.07	80.63	4.28	154.55	32.12
-9000	274.31	60.04	130.11	-30.81	287.50	50.73	99.57	12.20	170.10	-20.07	67.46	2.60	139.31	37.11
-10000	271.80	59.85	119.58	-27.50	281.48	49.30	85.00	12.32	157.44	-14.16	54.19	-0.44	122.21	41.06
-11000	269.23	59.92	108.68	-25.13	275.13	48.49	70.05	10.82	144.41	-8.61	40.79	-4.77	103.12	43.43
-12000	266.65	60.24	97.28	-23.85	268.45	48.35	54.84	7.66	130.65	-3.72	27.07	-10.27	82.49	43.70
-13000	264.10	60.79	85.28	-23.83	261.43	48.93	39.36	2.91	115.83	0.17	12.70	-16.76	61.32	41.55
-14000	261.59	61.51	72.60	-25.23	254.07	50.30	23.45	-3.29	99.72	2.62	357.12	-24.00	40.58	37.06
-15000	259.12	62.40	59.16	-28.20	246.39	52.52	6.70	-10.66	82.28	3.19	339.51	-31.59	20.63	30.60
-16000	256.67	63.43	44.80	-32.85	238.45	55.68	348.43	-18.81	63.58	1.47	318.67	-38.82	1.14	22.76
-17000	254.27	64.65	29.21	-39.26	230.44	59.86	327.58	-27.02	43.78	-2.80	293.24	-44.49	341.38	14.24
-18000	252.13	66.15	11.63	-47.37	222.85	65.16	302.82	-34.11	22.87	-9.60	262.96	-46.79	320.43	5.94
-19000	250.95	68.03	350.12	-56.90	217.17	71.66	273.29	-38.14	0.35	-18.54	230.57	-44.09	297.44	-0.86
-20000	252.46	70.23	318.89	-66.73	220.14	79.13	240.53	-36.89	334.90	-28.70	200.00	-36.37	272.03	-4.50

Table 56: Results of the calculations, Right ascension and Declination in Degrees

	400	4,23	290	4,23	342	4,23	672	4,23	197	4,24	203	4,24	18	4,24
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	242,19	44,93	311,42	30,72	36,75	-47,70	118,33	-48,10	41,03	-13,86	184,59	-79,31	250,77	-77,52
1000	234,39	47,86	301,13	27,42	27,50	-52,42	110,97	-45,78	29,18	-18,41	172,42	-73,75	219,85	-74,21
0	226,78	51,40	290,90	24,96	17,86	-57,58	103,61	-44,12	17,32	-23,55	163,17	-68,29	198,99	-69,25
-1000	219,32	55,50	280,70	23,42	7,38	-63,06	96,27	-43,15	5,23	-29,05	154,98	-63,04	183,95	-63,67
-2000	211,98	60,07	270,54	22,87	355,07	-68,69	88,97	-42,90	352,61	-34,68	147,26	-58,11	171,89	-57,96
-3000	204,64	65,05	260,44	23,31	338,71	-74,20	81,77	-43,36	339,04	-40,16	139,73	-53,56	161,38	-52,39
-4000	197,08	70,35	250,43	24,75	312,78	-78,92	74,68	-44,53	324,09	-45,14	132,26	-49,49	151,70	-47,10
-5000	188,75	75,91	240,51	27,13	269,80	-81,04	67,73	-46,40	307,32	-49,21	124,76	-45,95	142,42	-42,24
-6000	177,67	81,64	230,63	30,42	226,99	-78,80	60,94	-48,93	288,66	-51,87	117,16	-43,03	133,28	-37,92
-7000	145,63	87,20	220,70	34,52	201,24	-73,91	54,33	-52,10	268,68	-52,68	109,44	-40,79	124,12	-34,25
-8000	20,83	85,77	220,54	39,36	184,94	-68,14	47,89	-55,87	248,61	-51,42	101,57	-39,31	114,81	-31,34
-9000	0,23	79,82	199,85	44,86	172,59	-62,12	41,67	-60,24	229,66	-48,22	93,52	-38,63	105,26	-29,29
-10000	349,88	73,67	188,14	50,90	161,87	-56,11	35,77	-65,16	212,35	-43,46	85,27	-38,83	95,40	-28,21
-11000	341,13	67,48	174,50	57,31	151,74	-50,25	30,52	-70,61	196,51	-37,56	76,81	-39,95	85,17	-28,21
-12000	332,55	61,34	157,22	63,79	141,57	-44,67	27,05	-76,54	181,59	-30,93	68,11	-42,04	74,52	-29,36
-13000	323,56	55,35	132,92	69,59	130,94	-39,56	31,01	-82,74	166,94	-23,93	59,14	-45,13	63,37	-31,76
-14000	313,82	49,65	97,39	72,97	119,54	-35,11	94,96	-86,88	151,92	-16,94	49,86	-49,26	51,62	-35,48
-15000	303,04	44,47	56,17	71,59	107,08	-31,63	146,20	-81,65	135,90	-10,40	40,22	-54,44	39,07	-40,55
-16000	291,00	40,14	23,10	65,72	93,36	-29,48	146,43	-74,40	118,35	-4,93	30,15	-60,70	25,34	-46,99
-17000	277,53	37,11	358,53	57,55	78,28	-29,14	139,09	-67,03	98,90	-1,31	19,53	-68,02	9,61	-54,74
-18000	262,58	35,96	337,93	48,64	61,81	-31,10	128,83	-60,03	77,50	-0,45	8,02	-76,39	349,74	-63,55
-19000	246,28	37,33	318,50	40,05	43,94	-35,82	116,73	-53,94	54,51	-3,19	352,60	-85,76	318,82	-72,45
-20000	228,91	41,86	298,90	32,83	24,48	-43,62	103,41	-49,41	30,43	-9,94	170,84	-83,84	259,36	-76,93
	724	4,24	859	4,24	102	4,25	343	4,25	241	4,25	272	4,25	794	4,25
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	265,35	-12,88	210,41	1,54	304,41	-12,51	77,29	-8,75	197,97	27,88	188,44	41,36	18,94	-68,88
1000	251,40	-11,74	197,79	6,63	290,41	-15,07	65,40	-10,54	186,09	33,08	176,07	46,84	10,25	-74,31
0	237,78	-9,32	185,26	12,12	276,16	-16,36	53,72	-13,37	173,61	38,42	162,36	52,25	359,43	-79,92
-1000	224,59	-5,79	172,60	17,74	261,88	-16,26	42,22	-17,13	160,13	43,63	146,56	57,24	337,82	-85,47
-2000	211,83	-1,35	159,52	23,21	247,81	-14,78	30,84	-21,66	145,17	48,40	127,86	61,32	225,77	-87,23
-3000	199,41	3,76	145,76	28,24	234,12	-12,02	19,42	-26,78	128,34	52,29	105,98	63,85	186,56	-81,96
-4000	187,12	9,29	131,08	32,48	220,91	-8,18	7,71	-32,31	109,55	54,84	82,24	64,25	174,02	-76,23
-5000	174,72	15,01	115,40	35,60	208,14	-3,46	355,36	-38,01	89,47	55,61	59,43	62,38	165,12	-70,56
-6000	161,89	20,63	98,85	37,25	195,64	1,90	341,87	-43,63	69,46	54,40	39,60	58,67	157,28	-65,08
-7000	148,29	25,88	81,89	37,23	183,16	7,64	326,63	-48,84	50,82	51,38	22,90	53,75	149,80	-59,85
-8000	133,61	30,41	65,06	35,46	170,40	13,52	308,97	-53,14	34,09	46,94	8,59	48,14	142,36	-54,96
-9000	117,62	33,83	48,81	32,07	156,96	19,27	288,56	-55,94	19,12	41,50	355,78	42,22	134,78	-50,47
-10000	100,32	35,73	33,32	27,31	142,43	24,56	266,09	-56,60	5,36	35,44	343,75	36,24	126,91	-46,46
-11000	82,04	35,76	18,42	21,48	126,39	28,97	243,37	-54,79	352,23	29,03	331,93	30,43	118,61	-43,04
-12000	63,38	33,72	3,76	14,89	108,61	32,01	222,15	-50,67	339,16	22,57	319,85	24,99	109,78	-40,31
-13000	44,87	29,65	348,84	7,88	89,17	33,14	202,95	-44,76	325,64	16,31	307,14	20,18	100,30	-38,41
-14000	26,69	23,79	333,07	0,82	68,57	31,92	185,27	-37,64	311,18	10,61	293,46	16,31	90,05	-37,51
-15000	8,63	16,55	315,84	-5,75	47,57	28,18	168,23	-29,87	295,36	5,91	278,57	13,77	78,94	-37,81
-16000	350,14	8,44	296,55	-11,12	26,63	22,12	150,92	-22,00	277,88	2,81	262,31	13,01	66,89	-39,52
-17000	330,42	0,16	274,87	-14,38	5,66	14,23	132,54	-14,75	258,64	1,97	244,67	14,48	53,83	-42,90
-18000	308,58	-7,30	251,03	-14,38	344,06	5,30	112,44	-9,02	237,82	4,03	225,66	18,57	39,60	-48,18
-19000	283,94	-12,49	225,85	-10,47	320,83	-3,55	90,35	-6,01	215,67	9,37	205,14	25,46	23,81	-55,58
-20000	256,64	-13,61	200,15	-2,54	294,94	-10,65	66,55	-6,98	192,17	17,97	182,38	34,97	5,07	-65,18

Table 57: Results of the calculations, Right ascension and Declination in Degrees

	770	4,25	10	4,25	628	4,25	823	4,25	344	4,26	291	4,26	500	4,26
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	68.91	10.16	17.38	47.24	69.17	41.26	216.88	75.70	49.98	-43.07	319.35	39.39	125.71	43.19
1000	55.35	7.57	3.60	41.77	52.32	38.54	220.35	80.09	40.29	-47.23	309.62	35.49	108.09	45.71
0	42.21	3.90	351.10	36.19	36.71	34.56	238.02	83.87	30.45	-52.08	300.00	32.30	89.67	46.58
-1000	29.47	-0.64	339.41	30.76	22.34	29.68	284.16	84.87	20.16	-57.50	290.43	29.91	71.32	45.66
-2000	17.02	-5.81	328.19	25.71	9.01	24.26	314.87	81.89	8.84	-63.33	280.90	28.39	53.90	43.07
-3000	4.66	-11.35	317.18	21.22	356.40	18.61	323.01	77.56	355.21	-69.38	271.41	27.79	37.89	39.14
-4000	332.14	-17.02	306.22	17.46	344.22	13.03	323.55	73.00	336.06	-75.24	261.96	28.13	23.31	34.26
-5000	339.17	-22.53	295.19	14.57	332.17	7.74	321.17	68.48	303.11	-79.84	252.57	29.42	9.91	28.81
-6000	325.42	-27.59	284.04	12.68	320.01	3.00	317.35	64.15	252.63	-80.40	243.24	31.62	357.32	23.09
-7000	310.61	-31.84	272.75	11.91	307.54	-0.96	312.68	60.08	214.70	-76.18	233.92	34.71	345.15	17.38
-8000	294.61	-34.93	261.34	12.31	294.65	-3.92	307.40	56.36	193.17	-69.95	224.52	38.64	333.07	11.92
-9000	277.51	-36.47	249.79	13.93	281.26	-5.66	301.62	53.04	178.40	-63.11	214.89	43.35	320.76	6.96
-10000	259.72	-36.17	238.08	16.78	267.41	-5.99	295.37	50.20	166.21	-56.12	204.74	48.80	307.94	2.73
-11000	241.81	-33.92	226.12	20.82	253.15	-4.78	288.64	47.90	154.92	-49.22	193.62	54.90	294.41	-0.48
-12000	224.25	-29.81	213.71	26.01	238.54	-1.97	281.38	46.23	143.66	-42.61	180.61	61.56	280.03	-2.39
-13000	207.14	-24.10	200.52	32.25	223.57	2.42	273.56	45.27	131.88	-36.51	163.62	68.53	264.75	-2.72
-14000	190.25	-17.15	185.98	39.40	208.07	8.30	265.10	45.15	119.16	-31.20	137.11	75.09	248.60	-1.21
-15000	173.05	-9.38	169.03	47.18	191.67	15.45	255.97	45.99	105.18	-27.09	89.83	78.71	231.65	2.27
-16000	154.82	-1.36	147.76	55.00	173.69	23.54	246.11	47.97	89.72	-24.66	37.59	75.61	213.84	7.76
-17000	134.77	6.14	118.95	61.54	153.02	31.94	235.52	51.28	72.65	-24.45	5.48	68.02	194.88	15.09
-18000	112.14	12.00	80.65	64.21	128.05	39.52	224.24	56.15	53.96	-27.02	343.39	59.09	174.01	23.83
-19000	86.70	14.72	40.56	60.60	97.42	44.25	212.43	62.79	33.54	-32.72	324.43	50.16	149.79	33.09
-20000	59.27	12.80	7.88	51.77	62.62	43.56	200.57	71.45	10.70	-41.60	306.12	42.16	120.00	41.03
	772	4,27	162	4,26	771	4,26	163	4,27	299	4,27	465	4,27	772	4,27
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	134.62	11.86	196.73	-49.91	70.56	22.96	193.36	-40.18	311.66	16.12	79.89	-13.18	69.54	12.51
1000	120.76	15.27	182.93	-44.42	55.80	20.45	180.06	-34.64	300.06	12.92	68.44	-14.70	55.74	9.95
0	106.53	17.52	170.51	-38.83	41.68	16.76	167.71	-29.08	288.43	10.67	57.16	-17.25	42.41	6.29
-1000	92.09	18.43	158.97	-33.41	28.22	12.17	155.93	-23.74	276.80	9.50	46.05	-20.74	29.52	1.74
-2000	77.67	17.93	147.92	-28.37	15.30	6.94	144.45	-18.85	265.20	9.46	35.03	-25.02	16.96	-3.44
-3000	63.53	16.05	137.12	-23.88	2.74	1.36	133.05	-14.59	253.71	10.55	23.98	-29.95	4.55	-9.00
-4000	49.83	12.92	126.38	-20.10	330.27	-4.30	121.61	-11.15	242.37	12.73	12.66	-35.34	352.02	-14.68
-5000	36.63	8.74	115.60	-17.18	337.63	-9.77	110.05	-8.69	231.18	15.92	0.72	-41.01	339.09	-20.20
-6000	23.83	3.75	104.71	-15.24	324.55	-14.77	98.36	-7.32	220.08	20.01	347.65	-46.72	325.46	-25.27
-7000	11.25	-1.81	93.69	-14.37	310.80	-19.02	86.54	-7.14	208.92	24.87	332.73	-52.16	310.85	-29.55
-8000	358.59	-7.69	82.54	-14.66	296.26	-22.19	74.62	-8.20	197.46	30.36	315.07	-56.87	295.12	-32.68
-9000	345.49	-13.64	71.25	-16.14	280.90	-23.99	62.62	-10.52	185.32	36.32	293.93	-60.19	278.34	-34.29
-10000	331.55	-19.35	59.78	-18.82	264.91	-24.16	50.49	-14.05	171.93	42.54	269.81	-61.34	260.87	-34.11
-11000	316.30	-24.47	48.06	-22.70	248.56	-22.57	38.11	-18.74	156.41	48.72	245.05	-59.82	243.22	-32.00
-12000	299.37	-28.54	35.90	-27.72	232.10	-19.18	25.21	-24.49	137.55	54.35	222.27	-55.77	225.80	-28.03
-13000	280.58	-30.98	22.98	-33.82	215.64	-14.13	11.39	-31.16	114.04	58.55	202.28	-49.84	208.76	-22.44
-14000	260.18	-31.23	8.75	-40.87	199.03	-7.66	355.92	-38.53	85.93	60.10	184.36	-42.70	191.86	-15.56
-15000	238.81	-28.91	352.20	-48.62	181.86	-0.10	337.63	-46.20	56.37	58.04	167.41	-34.93	174.61	-7.82
-16000	217.19	-23.98	331.38	-56.55	163.47	8.05	314.56	-53.35	29.25	52.59	150.41	-27.09	156.31	0.24
-17000	195.57	-16.80	302.68	-63.43	142.96	16.06	284.42	-58.39	5.44	44.83	132.50	-19.85	136.13	7.85
-18000	173.62	-8.04	263.06	-66.55	119.33	22.76	248.13	-58.95	343.64	35.96	113.06	-14.09	113.29	13.85
-19000	150.43	1.24	220.88	-63.13	92.06	26.44	212.77	-53.86	322.33	27.13	91.76	-10.92	87.52	16.72
-20000	124.89	9.49	187.43	-54.29	62.18	25.24	182.97	-44.52	300.36	19.66	68.82	-11.56	59.68	14.90

Table 58: Results of the calculations, Right ascension and Declination in Degrees

	654	4,27	708	4,27	492	4,27	419	4,28	198	4,28	15	4,28	369	4,28
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	26,35	9,16	264,14	-38,64	229,63	-47,88	178,23	-33,91	37,04	8,46	156,79	-31,07	115,83	28,88
1000	13,33	3,91	247,16	-37,20	213,08	-43,68	165,92	-28,39	23,94	3,66	145,50	-26,19	99,99	30,66
0	0,59	-1,65	231,02	-34,26	198,26	-38,63	154,15	-23,14	11,20	-1,66	134,42	-21,91	83,92	30,91
-1000	347,89	-7,24	215,98	-30,14	184,83	-33,12	142,65	-18,36	358,59	-7,25	123,41	-18,39	68,07	29,61
-2000	335,00	-12,59	202,02	-25,15	172,36	-27,48	131,23	-14,24	345,88	-12,83	112,40	-15,75	52,84	26,88
-3000	321,68	-17,41	188,93	-19,65	160,48	-21,98	119,78	-10,95	332,82	-18,12	101,37	-14,11	38,41	22,97
-4000	307,78	-21,40	176,42	-13,93	148,89	-16,84	108,23	-8,65	319,16	-22,81	90,32	-13,54	24,79	18,17
-5000	293,23	-24,28	164,20	-8,26	137,35	-12,28	96,59	-7,45	304,74	-26,61	79,29	-14,07	11,81	12,79
-6000	278,15	-25,80	151,97	-2,90	125,68	-8,50	84,88	-7,41	289,54	-29,19	68,31	-15,71	359,20	7,11
-7000	262,78	-25,78	139,48	1,92	113,78	-5,66	73,15	-8,58	273,73	-30,28	57,36	-18,41	346,67	1,40
-8000	247,43	-24,17	126,52	5,92	101,58	-3,95	61,41	-10,94	257,64	-29,74	46,39	-22,12	333,89	-4,07
-9000	232,36	-21,03	112,95	8,86	89,07	-3,50	49,62	-14,44	241,67	-27,52	35,25	-26,74	320,56	-9,01
-10000	217,65	-16,55	98,71	10,48	76,27	-4,42	37,66	-19,00	226,07	-23,75	23,70	-32,18	306,39	-13,13
-11000	203,20	-10,95	83,86	10,56	63,19	-6,74	25,30	-24,53	210,88	-18,63	11,34	-38,33	291,20	-16,06
-12000	188,68	-4,47	68,48	8,95	49,78	-10,49	12,16	-30,89	195,90	-12,44	357,50	-45,00	274,95	-17,46
-13000	173,66	2,56	52,69	5,58	35,90	-15,61	357,61	-37,88	180,73	-5,48	341,09	-51,90	257,75	-16,98
-14000	157,54	9,78	36,47	0,52	21,24	-21,99	340,64	-45,17	164,83	1,88	320,25	-58,44	239,84	-14,44
-15000	139,61	16,64	19,60	-6,08	5,25	-29,44	319,64	-52,11	147,51	9,17	292,42	-63,41	221,44	-9,78
-16000	119,15	22,36	1,59	-13,89	346,98	-37,58	292,54	-57,48	128,04	15,68	257,45	-64,82	202,51	-3,19
-17000	95,75	25,82	341,59	-22,37	324,78	-45,70	259,08	-59,30	105,83	20,39	222,16	-61,34	182,68	4,95
-18000	69,85	25,84	318,31	-30,56	296,32	-52,33	224,32	-56,06	80,86	22,05	192,61	-53,97	161,12	13,95
-19000	42,83	21,61	290,29	-36,77	260,66	-54,89	193,84	-48,43	54,11	19,56	167,93	-44,62	136,58	22,65
-20000	15,97	13,30	257,55	-38,50	223,11	-51,03	167,73	-38,30	26,99	12,55	145,50	-34,87	107,71	29,05

	655	4,28	656	4,28	773	4,28	46	4,28	749	4,28	292	4,28	824	4,28
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	351,99	6,38	15,74	7,89	63,88	8,89	331,61	-13,87	290,80	-44,80	303,35	56,57	236,01	77,79
1000	339,33	1,00	2,89	2,39	50,49	5,88	317,88	-18,40	272,47	-45,91	297,45	53,72	249,16	80,43
0	326,59	-3,97	350,21	-3,20	37,51	1,86	303,61	-22,03	254,07	-45,23	291,38	51,39	271,51	81,42
-1000	313,61	-8,27	337,44	-8,60	24,90	-2,94	288,80	-24,50	236,49	-42,86	285,20	49,60	293,23	80,16
-2000	300,30	-11,65	324,36	-13,53	12,51	-8,27	273,65	-25,57	220,25	-39,09	278,95	48,41	305,56	77,33
-3000	286,66	-13,90	310,82	-17,71	0,13	-13,89	258,47	-25,16	205,46	-34,31	272,70	47,83	310,47	73,81
-4000	272,80	-14,84	296,72	-20,87	347,47	-19,52	243,60	-23,28	191,88	-28,90	266,49	47,87	311,26	70,08
-5000	258,91	-14,41	282,14	-22,75	334,25	-24,90	229,27	-20,08	179,17	-23,20	260,36	48,55	309,75	66,37
-6000	245,17	-12,60	267,26	-23,20	320,15	-29,70	215,56	-15,79	166,97	-17,48	254,35	49,85	306,86	62,83
-7000	231,70	-9,51	252,36	-22,12	304,93	-33,58	202,38	-10,66	154,94	-11,99	248,51	51,77	303,06	59,55
-8000	218,52	-5,30	237,67	-19,56	288,55	-36,14	189,49	-4,94	142,78	-6,97	242,88	54,30	298,60	56,60
-9000	205,51	-0,14	223,34	-15,65	271,22	-37,05	176,59	1,09	130,22	-2,66	237,57	57,41	293,61	54,05
-10000	192,41	5,74	209,29	-10,60	253,44	-36,08	163,28	7,19	117,08	0,68	232,74	61,08	288,14	51,96
-11000	178,85	12,12	195,32	-4,64	235,79	-33,21	149,14	13,03	103,21	2,80	228,73	65,27	282,23	50,39
-12000	164,34	18,73	181,06	1,99	218,62	-28,59	133,70	18,25	88,58	3,44	226,35	69,89	275,86	49,40
-13000	148,26	25,16	166,00	8,95	201,91	-22,53	116,59	22,36	73,21	2,39	227,60	74,74	269,03	49,05
-14000	129,87	30,87	149,51	15,85	185,31	-15,39	97,60	24,75	57,15	-0,51	237,89	79,19	261,69	49,44
-15000	108,61	35,05	130,89	22,08	168,27	-7,61	76,95	24,84	40,40	-5,29	266,01	81,36	253,83	50,66
-16000	84,50	36,67	109,50	26,76	150,04	0,24	55,21	22,20	22,74	-11,84	294,66	79,02	245,47	52,84
-17000	58,63	34,89	85,26	28,79	129,85	7,36	32,99	16,79	3,65	-19,87	303,95	73,85	236,67	56,13
-18000	32,63	29,50	59,07	27,14	107,02	12,60	10,44	8,99	342,10	-28,80	302,23	67,94	227,69	60,70
-19000	7,35	21,12	32,41	21,43	81,51	14,48	347,08	-0,38	316,32	-37,44	295,51	62,30	219,27	66,74
-20000	342,37	10,93	6,14	12,20	54,26	11,67	321,80	-9,99	284,30	-43,51	286,34	57,58	214,07	74,35

Table 59: Results of the calculations, Right ascension and Declination in Degrees

	544	4,29	842	4,29	646	4,29	629	4,29	774	4,29	605	4,29	545	4,29
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	261.84	-29.87	159.83	-55.60	337.88	-32.35	61.65	50.35	56.30	24.47	332.50	33.18	247.78	-16.61
1000	246.07	-28.29	150.18	-50.56	323.17	-37.19	43.82	46.98	41.76	20.82	321.53	28.51	233.69	-13.88
0	230.96	-25.33	141.02	-45.94	307.24	-41.15	27.87	42.46	27.97	16.25	310.76	24.48	220.13	-10.05
-1000	216.66	-21.23	132.11	-41.86	290.07	-43.84	13.58	37.22	14.84	11.03	300.06	21.24	207.09	-5.36
-2000	203.16	-16.31	123.31	-38.42	272.08	-44.91	0.55	31.64	2.15	5.47	289.38	18.88	194.45	-0.09
-3000	190.27	-10.85	114.55	-35.69	254.03	-44.21	348.35	26.02	349.66	-0.16	278.69	17.52	182.01	5.52
-4000	177.77	-5.15	105.80	-33.74	236.75	-41.81	336.64	20.62	337.11	-5.59	268.01	17.21	169.50	11.18
-5000	165.37	0.53	97.02	-32.64	220.72	-38.01	325.11	15.66	324.26	-10.54	257.37	17.96	156.65	16.64
-6000	152.80	5.92	88.22	-32.42	206.01	-33.17	313.56	11.33	310.91	-14.75	246.77	19.78	143.19	21.60
-7000	139.78	10.75	79.40	-33.11	192.38	-27.65	301.80	7.85	296.94	-17.92	236.21	22.61	128.87	25.74
-8000	126.11	14.74	70.53	-34.74	179.45	-21.77	289.74	5.38	282.35	-19.80	225.59	26.41	113.58	28.73
-9000	111.67	17.58	61.60	-37.29	166.83	-15.79	277.33	4.10	267.26	-20.17	214.78	31.09	97.39	30.23
-10000	96.44	19.00	52.54	-40.78	154.11	-9.98	264.56	4.13	251.88	-18.91	203.51	36.56	80.58	30.00
-11000	80.57	18.75	43.25	-45.18	140.89	-4.62	251.43	5.60	236.41	-15.98	191.35	42.73	63.56	27.92
-12000	64.27	16.70	33.54	-50.48	126.83	-0.01	237.94	8.53	220.94	-11.49	177.58	49.41	46.65	24.05
-13000	47.71	12.83	23.12	-56.65	111.64	3.48	223.99	12.94	205.36	-5.61	160.91	56.33	29.95	18.57
-14000	30.91	7.28	11.37	-63.65	95.15	5.41	209.37	18.75	189.35	1.39	139.00	62.84	13.24	11.79
-15000	13.62	0.29	356.71	-71.36	77.36	5.35	193.67	25.82	172.35	9.16	108.47	67.56	356.04	4.10
-16000	355.31	-7.72	332.72	-79.40	58.41	2.95	176.12	33.86	153.59	17.14	69.99	68.16	337.68	-3.96
-17000	335.14	-16.14	259.97	-84.56	38.46	-1.97	155.33	42.32	132.05	63.63	33.79	63.63	317.29	-11.61
-18000	311.99	-23.91	189.51	-78.52	17.41	-9.26	129.07	50.04	106.82	29.86	5.35	55.65	294.04	-17.69
-19000	284.83	-29.38	164.00	-69.10	354.65	-18.45	95.08	54.68	78.02	31.45	341.91	46.22	267.65	-20.61
-20000	254.01	-30.33	145.92	-59.43	328.73	-28.42	56.18	53.22	47.62	27.79	320.44	36.81	239.10	-18.73

	775	4,29	685	4,3	103	4,3	11	4,3	263	4,3	345	4,3	420	4,3
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	66.58	22.81	14.65	-29.36	320.56	-16.84	354.53	43.27	180.76	-63.31	53.45	-21.63	130.81	3.40
1000	51.89	19.97	2.38	-34.87	306.40	-20.67	342.69	37.81	168.90	-57.77	42.45	-25.36	117.63	6.53
0	37.87	16.02	349.36	-40.44	291.70	-23.38	331.51	32.66	158.48	-52.40	31.49	-29.82	104.24	8.53
-1000	24.50	11.22	335.11	-45.79	276.63	-24.76	320.71	28.00	148.84	-47.37	20.40	-34.86	90.74	9.26
-2000	11.65	5.87	319.12	-50.52	261.47	-24.66	310.07	23.99	139.62	-42.80	8.92	-40.31	77.30	8.67
-3000	359.09	0.25	300.99	-54.17	246.55	-23.09	299.48	20.77	130.59	-38.79	356.65	-45.95	64.08	6.80
-4000	346.57	-5.38	280.88	-56.19	232.15	-20.18	288.87	18.46	121.64	-35.45	343.01	-51.53	51.18	3.75
-5000	333.82	-10.73	259.90	-56.20	218.37	-16.14	278.20	17.15	112.67	-32.86	327.19	-56.70	38.62	-0.31
-6000	320.58	-15.53	239.68	-54.16	205.17	-11.23	267.49	16.91	103.65	-31.10	308.25	-60.92	26.31	-5.18
-7000	306.67	-19.48	221.38	-50.41	192.36	-5.70	256.74	17.78	94.53	-30.24	285.79	-63.50	14.04	-10.65
-8000	291.98	-22.27	205.20	-45.42	179.64	0.17	245.95	19.76	85.32	-30.33	261.19	-63.75	1.53	-16.50
-9000	276.57	-23.63	190.69	-39.66	166.69	6.14	235.07	22.84	75.97	-31.41	237.45	-61.49	348.41	-22.48
-10000	260.62	-23.32	177.24	-33.46	153.10	11.92	223.99	26.97	66.47	-33.52	216.71	-57.15	334.18	-28.30
-11000	244.43	-21.26	164.25	-27.14	138.46	17.17	212.52	32.09	56.75	-36.66	199.01	-51.40	318.32	-33.58
-12000	228.21	-17.46	151.16	-20.96	122.40	21.47	200.32	38.13	46.70	-40.86	183.38	-44.80	300.32	-37.77
-13000	211.99	-12.08	137.48	-15.22	104.67	24.32	186.82	44.96	36.16	-46.09	168.77	-37.77	279.99	-40.23
-14000	195.56	-5.37	122.81	-10.29	85.35	25.18	170.97	52.36	24.80	-52.34	154.30	-30.68	257.80	-40.30
-15000	178.46	2.31	106.78	-6.63	64.84	23.60	150.74	59.84	12.00	-59.55	139.26	-23.92	234.86	-37.58
-16000	159.99	10.45	89.20	-4.80	43.69	19.42	122.35	66.26	356.23	-67.59	123.06	-18.03	212.23	-32.16
-17000	139.20	18.28	70.08	-5.39	22.24	12.82	82.67	69.08	332.10	-76.00	105.27	-13.66	190.21	-24.60
-18000	115.13	24.57	49.56	-8.87	0.26	4.34	40.87	65.83	274.98	-82.12	85.68	-11.67	168.30	-15.73
-19000	87.44	27.59	27.74	-15.45	336.97	-5.07	8.29	57.78	201.66	-77.78	64.44	-12.94	145.54	-6.65
-20000	57.43	25.57	4.18	-24.91	311.15	-13.93	342.91	47.58	169.94	-67.78	41.91	-18.15	120.91	1.10

Table 60: Results of the calculations, Right ascension and Declination in Degrees

	507	4,3	776	4,3	92	4,3	87	4,3	270	4,3	451	4,3	630	4,3
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	283.63	36.90	54.22	0.40	73.51	66.34	231.12	37.38	188.02	-16.20	174.24	0.82	54.12	48.19
1000	274.91	36.00	41.60	-3.20	50.17	63.70	221.68	41.20	175.31	-10.61	161.38	6.25	37.17	44.30
0	266.26	35.94	29.25	-7.61	30.76	59.43	212.20	45.64	162.87	-5.11	148.31	11.30	21.98	39.44
-1000	257.73	36.73	17.06	-12.63	14.80	54.25	202.48	50.60	150.45	0.07	134.84	15.69	8.25	34.03
-2000	249.32	38.33	4.83	-18.02	1.26	48.67	192.22	55.95	137.86	4.66	120.88	19.13	355.57	28.41
-3000	241.06	40.71	352.32	-23.53	349.25	43.04	180.81	61.54	124.99	8.43	106.47	21.39	343.56	22.86
-4000	232.92	43.81	339.21	-28.88	338.15	37.59	167.14	67.16	111.77	11.16	91.77	22.26	331.90	17.61
-5000	224.87	47.59	325.19	-33.77	327.56	32.52	148.90	72.42	98.27	12.66	77.04	21.67	320.32	12.90
-6000	216.82	51.96	309.97	-37.84	317.16	27.99	121.88	76.49	84.60	12.82	62.55	19.63	308.65	8.91
-7000	208.59	56.89	293.45	-40.70	306.76	24.16	84.49	77.76	70.93	11.60	48.48	16.28	296.74	5.84
-8000	199.89	62.31	275.84	-41.98	296.20	21.16	49.32	75.32	57.37	9.02	34.84	11.80	284.53	3.85
-9000	190.11	68.15	257.73	-41.40	285.38	19.13	25.01	70.44	43.98	5.19	21.51	6.42	271.99	3.12
-10000	177.75	74.34	239.82	-38.93	274.23	18.20	7.94	64.48	30.65	0.27	8.21	0.40	259.13	3.74
-11000	157.30	80.59	222.62	-34.73	262.69	18.49	354.33	58.08	17.16	-5.55	354.55	-6.04	245.97	5.79
-12000	100.21	85.04	206.21	-29.09	250.72	20.10	342.16	51.55	3.14	-12.06	340.06	-12.57	232.48	9.29
-13000	28.51	81.62	190.29	-22.36	238.24	23.10	330.36	45.12	348.07	-18.98	324.16	-18.81	218.53	14.20
-14000	2,31	74.53	174.35	-14.92	225.12	27.52	318.23	39.00	331.23	-25.89	306.24	-24.21	203.86	20.42
-15000	346.23	66.76	157.73	-7.22	211.10	33.36	305.27	33.51	311.77	-32.15	285.87	-28.04	187.96	27.77
-16000	332.21	58.91	139.73	0.17	195.64	40.54	291.10	29.06	288.92	-36.79	263.09	-29.39	169.94	35.92
-17000	318.17	51.39	119.65	6.41	177.68	48.85	275.48	26.17	262.70	-38.54	238.70	-27.52	148.27	44.19
-18000	303.30	44.73	97.04	10.38	154.78	57.73	258.30	25.51	234.64	-36.31	213.82	-22.22	120.63	51.23
-19000	287.26	39.64	72.11	10.79	121.53	65.52	239.67	27.77	206.91	-29.95	189.06	-13.94	85.61	54.54
-20000	270.12	37.02	45.82	6.61	73.25	67.96	219.76	33.49	180.44	-20.32	164.02	-3.76	47.64	51.50

	777	4,3	183	4,3	164	4,3	493	4,3	29	4,3	452	4,3	528	4,3
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	66.37	17.93	326.36	61.12	177.42	-63.79	222.91	-43.58	309.59	-1.11	142.93	22.97	216.73	-83.67
1000	52.14	15.09	319.17	56.68	166.09	-58.28	207.32	-39.01	296.58	-4.14	128.34	26.96	189.88	-78.51
0	38.48	11.16	312.00	52.68	156.04	-52.99	193.19	-33.76	283.41	-6.05	113.03	29.83	176.05	-72.92
-1000	25.36	6.40	304.80	49.19	146.69	-48.06	180.18	-28.18	270.15	-6.70	97.20	31.30	165.88	-67.38
-2000	12.65	1.07	297.55	46.28	137.69	-43.61	167.90	-22.57	256.96	-6.06	81.22	31.23	157.12	-62.03
-3000	0.14	-4.55	290.25	43.99	128.87	-39.74	156.04	-17.18	243.98	-4.16	65.54	29.62	148.99	-56.98
-4000	347.57	-10.19	282.91	42.38	120.10	-36.53	144.34	-12.26	231.30	-1.10	50.50	26.61	141.14	-52.33
-5000	334.66	-15.57	275.54	41.49	111.31	-34.07	132.58	-7.99	218.92	2.95	36.28	22.46	133.39	-48.15
-6000	321.16	-20.42	268.14	41.35	102.47	-32.45	120.63	-4.59	206.74	7.81	22.79	17.45	125.60	-44.52
-7000	306.85	-24.40	260.75	41.98	93.54	-31.70	108.41	-2.24	194.57	13.28	9.84	11.87	117.72	-41.52
-8000	291.62	-27.19	253.35	43.39	84.52	-31.90	95.90	-1.08	182.12	19.13	357.11	5.99	109.67	-39.23
-9000	275.58	-28.47	245.97	45.60	75.39	-33.07	83.12	-1.24	168.97	25.13	344.27	0.08	101.41	-37.73
-10000	259.00	-28.03	238.59	48.61	66.11	-35.24	70.11	-2.80	154.65	30.98	330.92	-5.59	92.90	-37.08
-11000	242.25	-25.77	231.22	52.41	56.63	-38.42	56.87	-5.76	138.56	36.28	316.69	-10.69	84.11	-37.36
-12000	225.61	-21.74	223.90	56.99	46.85	-42.63	43.33	-10.11	120.17	40.49	301.25	-14.84	75.01	-38.64
-13000	209.11	-16.15	216.75	62.34	36.61	-47.85	29.30	-15.74	99.27	42.91	284.37	-17.59	65.54	-40.98
-14000	192.53	-9.30	210.11	68.41	25.62	-54.08	14.39	-22.51	76.47	42.85	266.05	-18.46	55.66	-44.43
-15000	175.37	-1.56	205.23	75.12	13.33	-61.25	357.97	-30.18	53.05	39.94	246.56	-17.04	45.28	-49.04
-16000	156.93	6.53	208.41	82.18	358.27	-69.27	338.97	-38.27	30.18	34.32	226.26	-13.11	34.25	-54.85
-17000	136.32	14.16	277.18	86.42	334.87	-77.74	315.67	-45.92	8.12	26.63	205.38	-6.78	22.27	-61.88
-18000	112.70	20.15	320.52	80.17	269.65	-83.87	286.11	-51.45	346.29	17.72	183.69	1.53	8.48	-70.15
-19000	85.82	22.84	318.45	72.14	192.95	-78.34	250.80	-52.38	323.69	8.74	160.41	10.97	348.70	-79.54
-20000	56.85	20.64	309.87	64.21	164.98	-68.18	215.44	-47.12	299.32	1.20	134.18	20.11	247.33	-86.83

Table 61: Results of the calculations, Right ascension and Declination in Degrees

	123	4,32	242	4,32	546	4,32	508	4,32	421	4,33	709	4,33	136	4,33
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	130.15	-59.76	197.50	17.53	258.84	-26.60	274.97	36.06	131.59	-13.55	241.85	-20.87	17.78	55.15
1000	124.49	-56.38	185.24	22.95	243.68	-24.50	266.24	36.00	119.76	-10.30	227.47	-17.63	3.59	49.68
0	118.58	-53.45	172.61	28.50	229.19	-21.11	257.62	36.77	107.88	-8.04	213.74	-13.37	351.11	44.10
-1000	112.50	-51.03	159.28	33.90	215.45	-16.67	249.13	38.37	95.96	-6.88	200.61	-8.36	339.68	38.68
-2000	106.30	-49.16	144.92	38.85	202.42	-11.46	240.79	40.75	84.08	-6.88	187.90	-2.89	328.87	33.61
-3000	100.04	-47.87	129.23	42.96	189.89	-5.76	232.58	43.85	72.30	-8.04	175.40	2.78	318.37	29.06
-4000	93.75	-47.20	112.15	45.83	177.63	0.17	224.48	47.61	60.68	-10.32	162.82	8.37	308.00	25.20
-5000	87.48	-47.17	94.02	47.10	165.36	6.07	216.39	51.97	49.22	-13.63	149.92	13.60	297.63	22.14
-6000	81.25	-47.78	75.62	46.56	152.77	11.69	208.15	56.84	37.85	-17.82	136.45	18.19	287.19	20.01
-7000	75.11	-49.03	57.86	44.23	139.60	16.76	199.47	62.18	26.43	-22.78	122.25	21.83	276.63	18.89
-8000	69.09	-50.94	41.29	40.38	125.60	20.97	189.78	67.90	14.69	-28.34	107.26	24.23	265.94	18.88
-9000	63.24	-53.49	26.01	35.35	110.63	24.01	177.63	73.90	2.25	-34.31	91.61	25.11	255.10	20.02
-10000	57.66	-56.67	11.71	29.51	94.72	25.57	158.23	79.93	348.54	-40.47	75.54	24.29	244.09	22.34
-11000	52.51	-60.45	357.95	23.16	78.09	25.38	109.48	84.50	332.74	-46.50	59.35	21.72	232.82	25.83
-12000	48.17	-64.80	344.20	16.62	61.04	23.31	37.67	82.25	313.77	-51.83	43.24	17.48	221.15	30.49
-13000	45.47	-69.61	329.95	10.18	43.85	19.40	8.35	75.74	290.68	-55.63	27.15	11.76	208.82	36.26
-14000	46.58	-74.65	314.69	4.26	26.56	13.82	351.79	68.34	203.80	-56.78	10.83	4.85	195.35	43.07
-15000	57.35	-79.22	297.94	-0.66	8.94	6.89	338.11	60.73	235.84	-54.50	353.76	-2.89	179.86	50.74
-16000	86.55	-81.24	279.39	-3.90	350.47	-0.90	324.80	53.24	209.78	-48.99	335.19	-10.90	160.49	58.91
-17000	113.98	-78.56	258.98	-4.72	330.36	-8.88	310.84	46.29	186.34	-41.22	314.21	-18.38	133.10	66.58
-18000	121.87	-73.23	237.01	-2.45	307.68	-15.98	295.74	40.46	164.48	-32.29	289.97	-24.05	91.28	71.09
-19000	119.53	-67.33	213.90	3.26	281.74	-20.63	279.30	36.49	142.83	-23.37	262.35	-26.22	42.99	68.49
-20000	112.83	-61.80	189.70	12.25	252.96	-20.91	261.71	35.30	120.32	-15.81	232.84	-23.34	7.03	59.72
	222	4,33	381	4,33	165	4,33	589	4,33	12	4,34	647	4,34	547	4,34
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	97.96	-23.42	346.72	-43.52	193.28	-48.94	272.15	-63.67	9.22	33.72	326.24	-33.03	261.63	4.14
1000	87.58	-23.15	331.90	-48.73	179.85	-43.41	248.50	-62.67	356.27	28.16	310.85	-37.17	249.30	5.54
0	77.29	-23.89	315.10	-53.22	167.69	-37.84	227.21	-59.63	344.02	22.65	294.37	-40.16	237.19	8.06
-1000	67.12	-25.61	295.99	-56.49	156.30	-32.50	209.19	-55.16	332.15	17.44	277.05	-41.66	225.32	11.57
-2000	57.10	-28.25	275.00	-58.00	145.35	-27.57	193.98	-49.86	320.43	12.76	259.50	-41.46	213.63	15.92
-3000	47.17	-31.73	253.60	-57.43	134.59	-23.23	180.75	-44.20	308.70	8.80	242.43	-39.58	202.01	20.92
-4000	37.27	-35.95	233.57	-54.89	123.88	-19.64	168.80	-38.50	296.84	5.74	226.39	-36.23	190.23	26.38
-5000	27.22	-40.79	215.86	-50.81	113.11	-16.93	157.59	-33.00	284.84	3.73	211.56	-31.75	178.00	32.07
-6000	16.76	-46.14	200.41	-45.73	102.24	-15.21	146.76	-27.88	272.70	2.90	197.79	-26.49	164.91	37.75
-7000	5.43	-51.85	186.68	-40.07	91.25	-14.59	136.00	-23.33	260.47	3.32	184.80	-20.76	150.43	43.09
-8000	352.47	-57.74	174.05	-34.18	80.13	-15.11	125.13	-19.52	248.20	5.00	172.21	-14.84	134.01	47.69
-9000	315.19	-68.58	161.99	-28.32	68.89	-16.82	113.97	-16.59	235.90	7.94	159.66	-9.01	115.25	51.02
-10000	285.95	-71.75	150.04	-22.72	57.48	-19.72	102.41	-14.73	223.49	12.05	146.77	-3.51	94.38	52.48
-11000	251.36	-71.55	137.81	-17.61	45.80	-23.79	90.39	-14.07	210.81	17.25	133.19	1.35	72.53	51.62
-12000	220.59	-67.61	124.97	-13.23	33.65	-28.97	77.85	-14.77	197.55	23.39	118.63	5.26	51.26	48.39
-13000	196.84	-61.22	111.25	-9.88	20.69	-35.20	64.73	-16.94	183.22	30.30	102.89	7.82	31.46	43.14
-14000	177.59	-53.57	96.45	-7.91	6.32	-42.32	50.96	-20.64	167.01	37.69	85.90	8.62	13.04	36.37
-15000	160.24	-45.47	80.48	-7.68	349.43	-50.07	36.33	-25.91	147.68	45.02	67.78	7.31	355.35	28.66
-16000	143.18	-37.54	63.32	-9.54	327.89	-57.89	20.44	-32.68	123.50	51.34	48.71	3.65	337.54	20.59
-17000	125.39	-30.53	44.99	-13.73	297.90	-64.38	2.48	-40.76	93.25	-2.35	28.75	-2.35	318.77	12.88
-18000	106.33	-25.38	25.31	-20.33	257.27	-66.69	340.72	-49.65	59.24	53.93	7.63	-10.39	298.29	6.46
-19000	85.88	-23.21	3.64	-29.10	216.08	-62.46	311.57	-58.04	26.99	47.88	344.49	-19.78	275.70	2.59
-20000			338.34	-39.28	183.96	-53.27	270.51	-62.71	358.90	38.23	317.71	-29.17	251.20	2.66

Table 62: Results of the calculations, Right ascension and Declination in Degrees

	725	4,34	509	4,34	229	4,34	166	4,34	422	4,34	167	4,34	606	4,34
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	260.21	-12.85	281.19	37.61	112.04	8.93	211.51	-41.18	132.11	5.84	210.43	-45.60	326.13	17.35
1000	246.27	-11.24	272.61	36.93	98.36	10.38	196.91	-36.09	118.73	9.07	195.61	-40.47	314.31	13.07
0	232.72	-8.40	264.11	37.08	84.64	10.53	183.56	-30.59	105.11	11.17	182.23	-34.94	302.48	9.60
-1000	219.62	-4.51	255.73	38.06	71.06	9.35	171.07	-24.97	91.34	11.98	169.85	-29.34	290.59	7.10
-2000	206.93	0.21	247.48	39.84	57.79	6.91	159.11	-19.52	77.62	11.45	158.07	-23.92	278.64	5.68
-3000	194.52	5.50	239.38	42.38	44.91	3.38	147.40	-14.47	64.13	9.59	146.60	-18.91	266.69	5.43
-4000	182.17	11.13	231.42	45.62	32.40	-1.06	135.71	-10.03	50.99	6.54	135.22	-14.51	254.81	6.36
-5000	169.61	16.82	223.55	49.49	20.13	-6.18	123.91	-6.38	38.23	2.47	123.77	-10.89	243.05	8.44
-6000	156.52	22.31	215.67	53.95	7.89	-11.76	111.90	-3.73	25.76	-2.42	112.16	-8.23	231.44	11.59
-7000	142.58	27.28	207.62	58.94	355.39	-17.56	99.65	-2.20	13.39	-7.90	100.35	-6.07	219.90	15.71
-8000	127.50	31.39	199.10	64.39	342.27	-23.32	87.18	-1.94	0.83	-13.75	88.33	-6.31	208.28	20.65
-9000	111.16	34.24	189.45	70.26	328.10	-28.73	74.54	-3.01	347.71	-19.72	76.14	-7.24	196.32	26.27
-10000	93.69	35.44	176.90	76.46	312.45	-33.40	61.74	-5.43	333.58	-25.51	63.76	-9.49	183.63	32.39
-11000	75.52	34.71	153.68	82.66	294.99	-36.87	48.74	-9.19	317.92	-30.75	51.15	-13.05	169.60	38.80
-12000	57.23	31.96	142.92	85.85	275.74	-38.58	35.41	-14.20	300.28	-34.91	38.19	-17.86	153.38	45.14
-13000	39.22	27.29	16.36	80.57	255.21	-38.07	21.46	-20.36	280.47	-37.40	24.60	-23.84	133.78	50.83
-14000	21.52	21.02	356.09	73.24	234.27	-35.10	6.42	-27.47	258.88	-37.56	9.91	-30.84	109.68	54.92
-15000	3.80	13.53	341.85	65.52	213.61	-29.82	349.47	-35.24	236.43	-35.00	353.31	-38.58	81.41	56.11
-16000	345.43	5.37	328.63	57.83	193.34	-22.65	329.30	-43.09	214.09	-29.76	333.41	-46.57	52.02	53.54
-17000	325.61	-2.75	314.99	50.55	173.00	-14.24	304.00	-49.91	192.16	-22.32	307.96	-53.75	24.82	47.47
-18000	303.45	-9.79	300.34	44.21	151.76	-5.46	272.16	-53.76	170.20	-13.48	274.79	-58.06	0.40	39.07
-19000	278.38	-14.24	284.43	39.53	128.63	2.48	236.43	-52.34	147.28	-4.32	236.75	-56.88	337.55	29.66
-20000	250.80	-14.37	267.41	37.38	102.89	7.88	203.08	-45.20	122.37	3.62	201.98	-49.69	314.82	20.62
	843	4,35	204	4,35	401	4,35	510	4,35	74	4,35	825	4,35	30	4,35
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	144.21	-49.36	125.16	-77.48	281.76	18.18	289.09	38.13	89.98	45.94	263.05	86.59	294.18	-1.29
1000	135.32	-45.10	129.91	-74.06	270.73	17.54	280.43	36.71	71.60	45.05	318.62	84.18	281.20	-2.97
0	126.60	-41.44	130.61	-70.43	259.78	17.98	271.83	36.12	54.13	42.49	329.08	79.57	268.18	-3.42
-1000	117.95	-38.44	129.06	-66.82	248.96	19.47	263.32	36.36	38.03	38.60	329.07	74.72	255.26	-2.61
-2000	109.34	-36.18	126.17	-63.37	238.27	21.95	254.91	37.42	23.37	33.75	325.99	69.96	242.56	-0.57
-3000	100.74	-34.72	122.42	-60.18	227.71	25.34	246.64	39.29	9.90	28.33	321.61	65.40	230.14	2.57
-4000	92.15	-34.09	118.10	-57.32	217.20	29.53	238.50	41.93	357.28	22.67	316.54	61.11	218.00	6.67
-5000	83.60	-34.33	113.35	-54.85	206.58	34.37	230.47	45.27	345.16	17.04	311.01	57.19	206.05	11.53
-6000	75.07	-35.44	108.29	-52.84	195.60	39.74	222.49	49.26	333.22	11.68	305.15	53.68	194.07	16.94
-7000	66.57	-37.41	102.98	-51.33	183.85	45.46	214.43	53.85	321.21	6.84	298.99	50.66	181.80	22.71
-8000	58.07	-40.23	97.47	-50.36	170.69	51.33	206.11	59.00	308.88	2.74	292.56	48.20	168.85	28.58
-9000	49.49	-43.89	91.79	-49.98	155.11	57.04	197.14	64.64	296.08	-0.40	285.86	46.34	154.73	34.27
-10000	40.75	-48.36	85.99	-50.22	135.64	62.06	186.73	70.73	282.72	-2.33	278.88	45.16	138.89	39.38
-11000	31.65	-53.61	80.10	-51.11	110.84	65.47	172.49	77.15	268.76	-2.85	271.62	44.70	120.80	43.42
-12000	21.90	-59.63	74.18	-52.66	81.63	66.11	143.02	83.38	254.25	-1.79	264.05	45.04	100.34	45.72
-13000	10.89	-66.36	68.30	-54.88	52.78	63.37	55.97	84.87	239.20	0.96	256.16	46.22	78.13	45.67
-14000	356.94	-73.71	62.61	-57.76	28.04	57.82	10.57	78.60	223.61	5.41	247.94	48.32	55.48	42.95
-15000	332.59	-81.33	57.37	-61.27	7.15	50.51	35.14	70.84	207.28	11.48	239.41	51.39	33.54	37.72
-16000	246.44	-85.40	53.12	-65.35	348.37	42.33	336.69	62.83	189.80	18.96	230.62	55.50	12.57	30.52
-17000	184.85	-78.62	50.97	-69.87	330.15	34.02	322.57	55.02	170.34	27.45	221.70	60.72	352.04	22.09
-18000	162.73	-69.69	53.58	-74.50	311.36	26.39	307.88	47.91	147.48	36.13	213.08	67.12	331.05	13.33
-19000	145.95	-60.73	67.02	-78.33	292.15	20.47	292.15	42.19	119.19	43.42	206.33	74.75	308.62	5.41
-20000	130.09	-52.43	94.69	-78.94	269.68	17.51	275.39	38.70	84.48	46.59	212.62	83.37	284.06	-0.07

Table 63: Results of the calculations, Right ascension and Declination in Degrees

	124	4,35	168	4,35	64	4,35	75	4,35	239	4,35	243	4,35	304	4,35
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	139,05	-57,54	215,08	-56,39	47,91	19,73	93,85	29,50	89,38	-35,28	186,73	28,27	86,19	-65,74
1000	131,97	-53,56	198,84	-51,42	33,92	15,52	77,95	29,17	80,57	-35,78	174,00	33,86	85,89	-66,12
0	124,85	-50,08	184,83	-45,94	20,58	10,55	62,42	27,35	71,88	-37,11	160,39	39,33	85,95	-66,53
-1000	117,67	-47,15	172,33	-40,33	7,72	5,10	47,57	24,20	63,33	-39,26	145,50	44,36	86,38	-66,91
-2000	110,45	-44,85	160,78	-34,85	355,12	-0,54	33,51	19,99	54,94	-42,16	128,93	48,52	87,16	-67,23
-3000	103,19	-43,21	149,78	-29,71	342,51	-6,09	20,20	15,01	46,66	-45,74	110,61	51,35	88,24	-67,46
-4000	95,92	-42,28	139,05	-25,10	329,66	-11,27	7,43	9,57	38,44	-49,94	91,04	52,44	89,55	-67,58
-5000	88,65	-42,07	128,38	-21,17	316,34	-15,81	354,96	3,94	30,14	-54,67	71,39	51,57	90,99	-67,58
-6000	81,40	-42,61	117,64	-18,07	302,41	-19,42	342,50	-1,61	21,52	-59,87	52,84	48,87	92,45	-67,44
-7000	74,19	-43,90	106,75	-15,94	287,84	-21,82	329,77	-6,82	12,11	-65,45	36,02	44,70	93,83	-67,19
-8000	67,02	-45,95	95,67	-14,88	272,73	-22,77	316,50	-11,41	0,88	-71,32	20,87	39,50	95,06	-66,82
-9000	59,91	-48,74	84,38	-15,00	257,31	-22,11	302,48	-15,07	344,91	-77,28	6,97	33,65	96,06	-66,35
-10000	52,86	-52,29	72,85	-16,35	241,84	-19,80	287,61	-17,50	312,93	-82,59	353,79	27,49	96,78	-65,78
-11000	45,91	-56,56	61,05	-18,98	226,48	-15,92	271,89	-18,40	244,73	-83,57	340,81	21,28	97,14	-65,12
-12000	39,13	-61,56	48,89	-22,88	211,22	-10,63	255,50	-17,52	201,46	-78,47	327,54	15,31	97,04	-64,35
-13000	32,83	-67,24	36,17	-28,03	195,82	-4,17	238,66	-14,75	181,15	-71,58	313,53	9,88	96,35	-63,48
-14000	27,92	-73,54	22,55	-34,37	179,86	3,15	221,49	-10,09	166,64	-64,21	298,40	5,40	94,87	-62,55
-15000	28,32	-80,26	7,41	-41,76	162,69	10,91	203,93	-3,74	153,53	-56,76	281,84	2,34	92,44	-61,61
-16000	65,10	-85,97	349,54	-49,90	143,49	18,51	185,62	4,00	140,31	-49,56	263,73	1,27	88,91	-60,80
-17000	135,44	-82,50	326,51	-58,12	121,33	24,97	165,83	12,59	126,22	-43,04	244,16	2,73	84,21	-60,35
-18000	139,96	-74,99	293,83	-64,74	95,65	28,88	143,50	21,15	110,86	-37,80	223,30	7,09	78,51	-60,57
-19000	133,13	-67,29	249,95	-66,25	67,14	28,66	117,34	28,19	94,10	-34,62	201,18	14,41	72,35	-61,80
-20000	123,06	-60,10	208,22	-60,36	37,87	23,34	86,84	31,46	76,18	-34,39	177,19	24,28	67,02	-64,35
	494	4,35	501	4,35	571	4,35	495	4,35	631	4,35	750	4,35	778	4,35
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	229,46	-30,15	104,32	58,42	72,65	8,90	234,51	-42,57	52,64	48,00	299,93	-35,28	61,17	22,08
1000	214,69	-26,01	82,40	58,78	59,17	6,63	218,30	-38,74	35,83	44,00	283,34	-37,32	46,69	18,82
0	200,85	-21,06	61,19	57,06	46,08	3,25	203,52	-33,96	20,78	39,07	266,35	-37,79	32,88	14,53
-1000	187,76	-15,62	42,16	53,60	33,38	-1,07	189,94	-28,61	7,15	33,61	249,55	-36,61	19,69	9,51
-2000	175,17	-9,99	25,65	48,95	20,98	-6,07	177,24	-23,01	354,54	27,98	233,49	-33,91	6,95	4,04
-3000	162,81	-4,44	11,25	43,61	8,70	-11,53	165,09	-17,44	342,58	22,43	218,46	-29,96	354,43	-1,60
-4000	150,43	0,77	358,37	37,98	356,30	-17,20	153,20	-12,16	330,93	17,21	204,46	-25,11	341,85	-7,15
-5000	137,80	5,38	346,45	32,36	343,48	-22,80	141,32	-7,39	319,36	12,54	191,31	-19,66	328,97	-12,31
-6000	124,79	9,14	335,06	26,97	329,91	-28,05	129,27	-3,36	307,68	8,61	178,71	-13,93	315,55	-16,82
-7000	111,29	11,81	323,87	22,03	315,27	-32,62	116,91	-0,26	295,76	5,61	166,33	-8,17	301,44	-20,37
-8000	97,35	13,18	312,62	17,73	299,34	-36,11	104,19	1,71	283,53	3,71	153,86	-2,65	286,60	-22,66
-9000	83,04	13,08	301,11	14,24	282,14	-38,12	91,11	2,39	270,98	3,06	140,97	2,36	271,13	-23,45
-10000	68,52	11,43	289,18	11,76	264,03	-38,31	77,71	1,65	258,12	3,78	127,39	6,59	255,28	-22,56
-11000	53,89	8,23	276,74	10,47	245,65	-36,51	64,02	-0,58	244,97	5,92	112,92	9,72	239,31	-19,95
-12000	39,14	3,57	263,73	10,54	227,55	-32,75	50,04	-4,28	231,48	9,51	97,46	11,42	223,37	-15,68
-13000	24,11	-2,39	250,11	12,13	210,00	-27,28	35,65	-9,41	217,53	14,49	81,04	11,38	207,43	-9,94
-14000	8,42	-9,43	235,82	15,34	192,79	-20,47	19,11	-15,82	202,85	20,77	63,81	9,35	191,20	-3,01
-15000	351,48	-17,19	220,74	20,21	175,45	-12,75	4,32	-23,29	186,90	28,16	45,92	5,25	174,15	4,75
-16000	332,39	-25,13	204,55	26,71	157,28	-4,68	346,00	-31,44	168,77	36,30	27,34	-0,85	155,55	12,80
-17000	310,00	-32,34	186,58	34,66	137,46	2,99	324,23	-39,53	146,91	44,52	7,74	-8,65	134,45	20,33
-18000	283,29	-37,34	165,48	43,61	115,23	9,16	297,17	-46,18	119,02	51,40	346,36	-17,55	109,93	26,04
-19000	252,71	-38,19	138,49	52,47	90,26	12,40	264,06	-49,08	83,86	54,43	321,85	-26,48	81,92	28,21
-20000	221,15	-33,55	101,48	58,56	63,19	11,13	228,48	-45,98	46,13	51,09	292,59	-33,49	52,00	25,25

Table 64: Results of the calculations, Right ascension and Declination in Degrees

	402	436	496	346	516	437	639	437	436	437	13	437
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	272.19	20.81	216.55	-45.38	122.15	-2.98	10.84	-57.46	337.38	47.71	9.64	29.31
1000	261.54	21.12	201.25	-40.50	109.53	-0.56	358.88	-63.02	327.21	42.78	356.76	23.82
0	251.01	22.45	187.47	-35.08	96.82	0.72	344.36	-68.55	317.44	38.35	344.47	18.38
-1000	240.62	24.76	174.77	-29.47	84.12	0.77	324.67	-73.63	307.86	34.55	322.48	13.22
-2000	230.36	27.96	162.76	-23.94	71.55	-0.42	295.38	-77.30	298.37	31.47	320.58	8.59
-3000	220.17	31.94	151.12	-18.74	59.19	-2.78	257.04	-77.92	288.90	29.21	308.61	4.68
-4000	209.93	36.60	139.61	-14.07	47.09	-6.20	223.89	-75.07	279.44	27.83	296.49	1.69
-5000	199.42	41.80	128.06	-10.13	35.20	-10.51	201.60	-70.24	269.98	27.39	284.19	-0.22
-6000	188.27	47.39	116.33	-7.11	23.38	-15.54	185.93	-64.65	260.51	27.91	271.74	-0.93
-7000	175.90	53.20	104.37	-5.15	11.40	-21.10	173.56	-58.84	251.04	29.40	259.22	-0.37
-8000	161.35	58.96	92.18	-4.39	358.92	-26.97	162.80	-53.09	241.54	31.87	246.68	1.48
-9000	143.06	64.24	79.76	-4.94	345.48	-32.91	152.77	-47.56	231.94	35.27	234.13	4.58
-10000	119.00	68.22	67.14	-6.83	330.50	-38.60	142.95	-42.39	222.12	39.60	221.52	8.85
-11000	89.00	69.68	54.30	-10.08	313.29	-43.58	132.97	-37.69	211.88	44.80	208.68	14.17
-12000	58.24	67.70	41.12	-14.64	293.32	-47.21	122.55	-33.64	200.85	50.84	195.28	20.41
-13000	32.32	62.76	27.38	-20.43	270.70	-48.72	111.46	-30.41	188.37	57.63	180.83	27.37
-14000	11.41	55.98	12.66	-27.30	246.65	-47.46	99.51	-28.23	172.99	65.02	164.56	34.72
-15000	353.38	48.24	356.24	-35.01	222.91	-43.33	86.54	-27.39	150.81	72.54	145.34	41.94
-16000	336.41	40.21	336.89	-43.08	200.45	-36.78	72.46	-28.18	110.11	78.47	121.67	48.06
-17000	319.27	32.52	312.61	-50.57	179.04	-38.58	57.17	-30.94	48.73	77.81	92.63	51.52
-18000	301.11	25.93	281.19	-55.61	157.81	-19.67	40.54	-35.93	8.61	70.48	60.19	50.57
-19000	281.48	21.42	244.06	-55.58	135.68	-11.19	22.14	-43.33	344.04	61.06	28.85	44.75
-20000	260.37	20.17	208.53	-49.32	111.82	-4.64	0.62	-53.08	324.25	51.44	0.88	35.28
	686	437	779	437	240	437	844	438	590	438	548	438
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	353.24	-37.82	83.05	18.59	94.14	-35.14	165.04	-42.23	275.81	-61.49	253.50	10.17
1000	339.30	-43.24	68.52	17.23	85.28	-35.19	153.87	-37.01	252.92	-60.94	241.76	12.30
0	323.83	-48.17	54.42	14.55	76.55	-36.10	143.18	-32.25	231.74	-58.34	230.21	15.43
-1000	306.41	-52.15	40.85	10.77	67.95	-37.84	132.73	-28.08	213.42	-54.19	218.84	19.44
-2000	287.02	-54.69	27.82	6.12	59.51	-40.36	122.38	-24.65	197.78	-49.11	207.53	24.17
-3000	266.44	-55.35	15.19	0.85	51.22	-43.61	112.05	-22.07	184.16	-43.56	196.10	29.42
-4000	246.15	-53.99	2.76	-4.75	43.02	-47.51	101.70	-20.43	171.88	-37.88	184.29	35.02
-5000	227.48	-50.83	350.27	-10.45	34.81	-51.98	91.33	-19.81	160.42	-32.35	171.69	40.72
-6000	210.90	-46.33	337.42	-15.95	26.43	-56.97	80.96	-20.25	149.37	-27.16	157.77	46.26
-7000	196.17	-40.97	323.91	-20.98	17.54	-62.40	70.57	-21.75	138.44	-22.51	141.86	51.25
-8000	182.78	-35.13	309.47	-25.21	7.48	-68.19	60.15	-24.30	127.40	-18.56	123.31	55.18
-9000	170.16	-29.12	293.95	-28.27	354.62	-74.23	49.62	-27.87	116.09	-15.49	102.02	57.41
-10000	157.82	-23.19	277.39	-29.82	333.39	-80.17	38.85	-32.41	104.38	-13.47	79.12	57.35
-11000	145.31	-17.58	260.06	-29.55	281.26	-84.22	27.59	-37.85	92.19	-12.66	56.67	54.83
-12000	132.24	-12.58	242.38	-27.33	193.65	-9.72	15.42	-44.12	79.48	-13.22	36.16	50.16
-13000	118.28	-8.48	224.70	-23.18	187.95	-74.92	1.61	-51.07	66.19	-15.26	17.71	43.93
-14000	103.18	-5.66	207.12	-17.31	171.46	-67.54	344.74	-58.44	52.25	-18.86	0.61	36.68
-15000	86.80	-4.54	189.37	-10.07	145.17	-59.96	321.85	-65.58	37.48	-24.06	343.97	28.95
-16000	69.12	-5.55	170.93	-1.95	144.28	-52.52	287.70	-70.86	21.51	-30.79	326.89	21.28
-17000	50.22	-9.02	150.98	6.38	130.22	-45.64	242.81	-71.12	3.56	-38.86	308.63	14.37
-18000	30.06	-15.08	128.57	13.89	115.02	-39.92	203.85	-65.38	342.03	-47.80	288.60	9.14
-19000	8.23	-23.55	102.94	19.03	98.49	-36.10	175.62	-56.34	313.62	-56.36	266.61	6.74
-20000	343.43	-33.76	74.38	19.88	80.81	-35.09	152.80	-46.28	273.89	51.50	243.00	8.36

	453	4,38	860	4,38	223	4,39	47	4,39	730	4,39	224	4,39	549	4,39
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	151.98	10.00	197.49	-5.54	104.03	-17.05	351.51	-20.64	295.26	17.48	109.68	-24.95	260.25	-21.11
1000	138.52	14.59	184.66	-6.60	92.90	-16.24	338.11	-26.00	284.04	15.61	99.33	-23.56	245.43	-19.41
0	124.60	18.32	171.96	5.53	81.84	-16.49	323.96	-30.87	272.83	14.80	89.03	-23.16	231.13	-16.40
-1000	110.21	20.93	159.13	10.97	70.89	-17.82	308.84	-34.92	261.70	15.08	78.82	-23.75	217.44	-12.31
-2000	95.50	22.20	145.96	15.98	60.10	-20.16	292.73	-37.79	250.69	16.44	68.74	-25.33	204.32	-7.40
-3000	80.71	22.03	132.26	20.26	49.45	-23.43	275.89	-39.17	239.82	18.82	58.78	-27.84	191.64	-1.94
-4000	66.15	20.43	117.93	23.53	38.87	-27.52	258.86	-38.89	229.09	22.15	48.91	-31.21	179.14	3.79
-5000	52.04	17.50	103.05	25.52	28.23	-32.29	242.25	-36.95	218.42	26.30	39.06	-35.33	166.57	9.53
-6000	38.46	13.45	87.83	26.03	17.29	-37.60	226.52	-33.56	207.65	31.15	29.06	-40.12	153.62	14.99
-7000	25.34	8.51	72.57	24.98	5.08	-43.31	211.81	-29.01	196.54	36.56	18.64	-45.46	140.01	19.88
-8000	12.48	2.93	57.56	22.42	352.82	-49.20	197.97	-23.62	184.69	42.38	7.35	-51.23	125.50	23.89
-9000	359.58	-3.04	42.96	18.49	337.81	-55.00	184.69	-17.69	171.47	48.40	354.41	-57.25	109.99	26.65
-10000	346.26	-9.14	28.73	13.40	319.32	-60.22	171.58	-11.50	155.91	54.32	338.42	-63.24	93.55	27.84
-11000	332.09	-15.07	14.65	7.41	295.87	-64.06	158.20	-5.34	136.60	59.61	316.81	-68.61	76.47	27.21
-12000	316.57	-20.45	0.34	0.77	267.65	-65.37	144.11	0.51	112.08	63.36	286.40	-72.11	59.12	24.65
-13000	299.28	-24.78	345.31	-6.20	238.57	-63.35	128.87	5.64	82.84	64.33	249.62	-71.90	41.78	20.23
-14000	279.99	-27.44	328.93	-13.08	212.88	-58.32	112.13	9.58	53.23	61.75	217.19	-67.62	24.46	14.17
-15000	258.89	-27.78	310.52	-19.27	191.12	-51.28	93.70	11.76	27.27	56.10	192.55	-60.74	6.86	6.83
-16000	236.64	-25.33	289.50	-23.94	171.77	-43.17	73.66	11.57	5.08	48.49	172.56	-52.66	348.38	-1.31
-17000	213.98	-20.01	265.76	-26.01	153.22	-34.80	52.38	8.59	344.98	39.97	154.37	-44.26	328.20	-9.53
-18000	191.17	-12.25	240.07	-24.47	134.27	-26.98	30.19	2.69	325.37	31.45	136.32	-36.32	305.35	-16.74
-19000	167.78	-2.86	213.75	-18.92	114.13	-20.73	7.03	-5.79	305.12	23.98	117.46	-29.74	279.14	-21.36
-20000	142.72	6.83	187.62	-9.80	92.50	-17.32	342.11	-15.98	283.61	18.80	97.42	-25.65	250.09	-21.45
	673	4,39	731	4,39	184	4,4	511	4,4	370	4,4	572	4,4	48	4,4
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	122.26	-19.25	295.02	18.01	302.22	77.71	288.44	39.15	107.78	30.25	83.71	9.49	349.48	-9.18
1000	111.09	-16.74	283.85	16.17	307.92	74.46	279.95	37.78	91.74	31.20	70.08	8.23	336.34	-14.50
0	99.94	-15.25	272.71	15.37	309.28	70.94	271.52	37.22	75.71	30.61	56.76	5.72	322.77	-19.32
-1000	88.81	-14.82	261.63	15.65	308.18	67.41	263.17	37.48	60.14	28.51	43.83	2.13	308.60	-23.33
-2000	77.77	-15.48	250.67	17.01	305.61	64.01	254.94	38.56	45.31	25.11	31.28	-2.34	293.81	-26.25
-3000	66.85	-17.20	239.86	19.39	302.11	60.85	246.84	40.42	31.33	20.68	18.98	-7.46	278.53	-27.81
-4000	56.07	-19.92	229.18	22.71	297.99	58.01	238.89	43.02	18.10	15.53	6.75	-13.00	263.07	-27.87
-5000	45.38	-23.56	218.55	26.85	293.41	55.55	231.06	46.33	5.40	9.96	354.31	-18.70	247.79	-26.41
-6000	34.69	-27.98	207.83	31.69	288.50	53.53	223.29	50.27	352.95	4.23	341.35	-24.31	233.01	-23.52
-7000	23.78	-33.08	196.76	37.10	283.33	52.00	215.50	54.80	340.44	-1.39	327.50	-29.52	218.84	-19.43
-8000	12.36	-38.71	184.93	42.91	277.96	51.01	207.50	59.89	327.58	-6.63	312.43	-33.97	205.23	-14.37
-9000	359.93	-44.71	171.73	48.93	272.43	50.58	198.99	65.47	314.06	-11.21	295.91	-37.26	191.96	-8.62
-10000	345.71	-50.83	156.15	54.85	266.77	50.76	189.29	71.51	299.68	-14.81	278.01	-38.94	178.70	-2.44
-11000	328.48	-56.70	136.75	60.15	261.02	51.58	176.34	77.93	284.30	-17.09	259.17	-38.66	165.02	3.91
-12000	306.55	-61.61	111.98	63.91	255.25	53.03	148.73	84.35	267.96	-17.72	240.12	-36.26	150.44	10.09
-13000	278.82	-64.38	82.39	64.84	249.54	55.13	45.74	85.63	250.84	-16.45	221.42	-31.84	134.47	15.70
-14000	247.71	-63.71	52.54	62.19	244.03	57.87	4.92	78.89	233.17	-13.15	203.23	-25.70	116.64	20.18
-15000	218.68	-59.38	26.56	56.47	238.99	61.22	348.02	71.11	215.07	-7.87	185.24	-18.28	96.70	22.83
-16000	194.04	-52.40	4.44	48.82	234.90	65.10	334.31	63.19	196.40	-0.84	166.83	-10.13	74.88	22.94
-17000	172.55	-43.99	344.43	40.29	232.82	69.39	320.76	55.50	176.64	7.48	147.21	-1.94	51.84	19.99
-18000	152.33	-35.19	324.90	31.80	235.05	73.80	306.46	48.55	154.88	16.36	125.51	5.26	28.29	13.94
-19000	131.97	-27.07	304.72	24.36	246.62	77.51	291.05	42.99	129.83	24.51	101.14	10.06	4.36	5.28
-20000	110.62	-20.85	283.29	19.23	271.13	78.48	274.61	39.66	100.39	29.83	74.30	10.74	339.40	-4.91

Table 66: Results of the calculations, Right ascension and Declination in Degrees

	125	4,4	347	4,4	432	4,4	433	4,4	573	4,4	591	4,4	607	4,4
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	98.74	-52.98	73.22	-5.45	329.48	-54.99	319.97	-53.45	88.60	20.28	284.24	-67.23	351.34	23.40
1000	93.24	-52.40	61.03	-7.63	311.17	-59.28	301.04	-57.05	73.87	19.46	258.11	-67.35	339.05	18.01
0	87.80	-52.35	49.08	-10.84	289.85	-62.13	279.91	-58.99	59.49	17.27	233.79	-65.06	326.99	13.02
-1000	82.50	-52.83	37.33	-14.94	266.50	-62.92	257.93	-58.86	45.65	13.90	213.54	-61.00	314.99	8.65
-2000	77.40	-53.82	25.70	-19.75	243.59	-61.46	237.09	-56.67	32.39	9.55	197.05	-55.90	302.91	5.11
-3000	72.59	-55.30	14.00	-25.07	223.29	-58.07	218.65	-52.84	19.62	4.51	183.23	-50.34	290.70	2.57
-4000	68.15	-57.22	1.96	-30.70	206.09	-53.38	202.71	-47.92	7.14	-0.98	171.09	-44.67	278.37	1.16
-5000	64.19	-59.56	349.21	-36.40	191.43	-47.96	188.74	-42.40	354.73	-6.64	159.95	-39.16	265.99	0.98
-6000	60.87	-62.26	335.30	-41.86	178.51	-42.23	176.11	-36.63	342.10	-12.22	149.34	-33.99	253.62	2.06
-7000	58.46	-65.27	319.66	-46.73	166.63	-36.47	164.28	-30.89	328.93	-29.32	138.93	-29.32	241.34	4.37
-8000	57.40	-68.49	301.84	-50.52	155.30	-30.92	152.81	-25.42	314.95	-21.98	128.48	-25.32	229.13	7.84
-9000	58.51	-71.81	281.84	-52.66	144.09	-25.78	141.34	-20.40	299.95	-25.52	117.83	-22.13	216.90	12.35
-10000	63.33	-74.98	260.48	-52.66	132.69	-21.23	129.57	-16.05	283.87	-27.68	106.83	-19.91	204.46	17.78
-11000	74.10	-77.48	239.28	-50.34	120.86	-17.47	117.29	-12.59	266.85	-28.13	95.38	-18.79	191.46	23.96
-12000	91.39	-78.42	219.40	-45.92	108.37	-14.73	104.30	-10.24	249.25	-26.65	83.42	-18.93	177.40	30.68
-13000	108.73	-77.10	201.08	-39.87	95.08	-13.26	90.50	-9.27	231.46	-23.19	70.89	-20.46	161.51	37.63
-14000	118.82	-73.84	183.83	-32.71	80.90	-13.31	75.81	-9.92	213.65	-17.87	57.69	-23.49	142.69	44.30
-15000	121.48	-69.50	166.89	-24.95	65.76	-15.11	60.20	-12.40	195.71	-11.00	43.69	-28.08	119.61	49.77
-16000	118.98	-64.75	149.43	-17.15	49.60	-18.86	43.60	-16.85	177.19	-3.00	28.57	-34.23	91.63	52.67
-17000	112.97	-60.14	130.69	-10.04	32.23	-24.65	25.75	-23.27	157.34	5.49	11.68	-41.88	60.75	51.58
-18000	104.41	-56.19	110.06	-4.58	13.11	-32.40	6.02	-31.47	135.18	13.50	351.60	-50.71	30.92	46.19
-19000	94.05	-53.51	87.31	-2.00	350.97	-41.71	342.91	-40.89	109.79	19.55	324.90	-59.85	4.04	37.60
-20000	82.70	-52.70	62.84	-3.57	322.83	-51.48	313.40	-50.08	81.11	21.62	284.56	-66.60	339.27	27.39

	867	4,4	169	4,4	403	4,4	14	4,4	574	4,4	861	4,4	454	4,4
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	121.98	-68.62	215.76	-39.51	262.68	26.11	14.30	23.42	91.89	14.77	225.73	2.09	165.58	20.18
1000	120.54	-65.72	200.98	-34.60	252.63	27.30	1.25	17.91	77.67	14.27	213.22	6.39	151.95	25.36
0	118.03	-62.98	187.43	-29.18	242.72	29.42	348.68	12.36	63.71	12.42	200.93	11.36	137.56	29.92
-1000	114.78	-60.48	174.75	-23.56	232.93	32.41	336.35	7.02	50.17	9.36	188.67	16.78	122.27	33.51
-2000	111.02	-58.29	162.62	-18.03	223.22	36.18	324.03	2.14	37.11	5.28	176.21	22.41	106.16	35.81
-3000	106.91	-56.45	150.75	-12.83	213.49	40.62	311.55	-2.03	24.46	0.43	163.25	27.96	89.56	36.57
-4000	102.54	-55.02	138.90	-8.19	203.55	45.61	298.80	-5.28	12.07	-4.97	149.45	33.15	73.02	35.68
-5000	98.01	-54.03	126.92	-4.32	193.09	51.04	285.78	-7.42	359.70	-10.64	134.51	37.63	57.04	33.24
-6000	93.38	-53.50	114.71	-1.41	181.55	56.74	272.55	-8.28	347.05	-16.34	118.25	41.01	41.93	29.47
-7000	88.71	-53.46	102.22	0.38	167.98	62.52	259.21	-7.79	333.82	-21.78	100.79	42.88	27.74	24.65
-8000	84.05	-53.92	89.48	0.89	150.56	68.00	245.87	-5.92	319.64	-26.65	82.64	42.97	14.25	19.11
-9000	79.48	-54.90	76.53	0.04	126.24	72.44	232.60	-2.73	304.25	-30.59	64.57	41.15	1.16	13.12
-10000	75.08	-56.40	63.42	-2.19	93.13	74.43	219.35	1.67	287.51	-33.17	47.22	37.57	348.08	6.96
-11000	70.99	-58.39	50.12	-5.81	58.32	72.69	205.96	7.14	269.61	-34.00	30.80	32.51	334.57	0.91
-12000	67.41	-60.83	36.54	-10.72	31.02	67.84	192.11	13.50	251.00	-32.80	15.12	26.32	320.20	-4.71
-13000	64.69	-63.66	22.39	-16.82	10.67	61.27	177.32	20.50	232.25	-29.48	359.74	19.36	304.57	-9.48
-14000	63.40	-66.73	7.25	-23.90	353.95	53.89	160.88	27.80	213.69	-24.21	344.06	12.02	287.36	-12.92
-15000	64.40	-69.78	350.34	-31.66	338.60	46.24	141.82	34.82	195.28	-17.32	327.44	4.77	268.46	-14.43
-16000	68.79	-72.41	330.50	-39.55	323.29	38.78	119.03	40.64	176.54	-9.30	309.22	-1.76	248.08	-13.48
-17000	77.04	-74.04	306.00	-46.51	307.18	32.07	91.97	43.84	156.76	-0.82	288.83	-6.72	226.63	-9.71
-18000	87.27	-74.13	275.48	-50.72	289.74	26.83	62.02	42.96	134.99	7.16	266.11	-9.00	204.40	-3.16
-19000	95.72	-72.66	240.82	-49.94	270.75	24.00	32.26	37.45	110.41	13.22	241.50	-7.51	181.20	5.70
-20000	100.49	-70.06	207.51	-43.39	250.39	24.58	4.57	28.17	82.89	15.49	215.88	-1.62	156.06	15.85

Table 67: Results of the calculations, Right ascension and Declination in Degrees

	185	4,41	348	4,41	657	4,41	404	4,41	518	4,41	687	4,42	497	4,42
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	346.97	75.39	63.82	-7.65	0.49	-6.01	269.63	30.19	95.94	4.59	349.71	-32.53	218.15	-50.46
1000	339.38	70.06	52.33	-9.63	347.60	-11.54	260.10	30.69	82.72	4.52	335.75	-37.83	202.26	-45.64
0	332.22	64.97	40.91	-12.48	334.42	-16.82	250.70	32.10	69.65	3.19	320.54	-42.56	188.20	-40.24
-1000	325.22	60.17	29.53	-16.07	320.73	-21.54	241.44	34.38	56.86	0.65	303.83	-46.31	175.44	-34.62
-2000	318.25	55.75	18.08	-20.22	306.38	-25.41	232.30	37.46	44.40	-2.92	285.68	-48.65	163.52	-29.08
-3000	311.25	51.78	6.41	-24.75	291.37	-28.12	223.23	41.27	32.22	-7.37	266.73	-49.23	152.10	-23.84
-4000	304.18	48.32	354.29	-29.45	275.87	-29.43	214.13	45.72	20.20	-12.47	248.00	-47.95	140.88	-19.11
-5000	297.01	45.44	341.43	-34.07	260.21	-29.20	204.81	50.70	8.14	-18.01	230.42	-44.98	129.69	-15.07
-6000	289.73	43.20	327.52	-38.31	244.79	-27.41	194.91	56.12	355.74	-23.75	214.40	-40.69	118.37	-11.88
-7000	282.32	41.67	312.27	-41.82	229.40	-24.20	183.84	61.86	342.63	-29.44	199.85	-35.47	106.86	-9.71
-8000	274.79	40.89	295.58	-44.21	215.63	-19.79	170.31	67.74	328.37	-34.77	186.39	-29.69	95.13	-8.67
-9000	267.12	40.91	277.69	-45.07	201.87	-14.43	151.50	73.40	312.50	-39.33	173.57	-23.65	83.16	-8.87
-10000	259.32	41.78	259.22	-44.11	188.34	-8.40	121.14	77.84	294.74	-42.66	160.92	-17.62	70.96	-10.39
-11000	251.37	43.53	240.95	-41.25	174.67	-1.96	76.38	78.73	275.17	-44.21	148.03	-11.86	58.50	-13.23
-12000	243.26	46.18	223.38	-36.63	160.38	4.59	37.99	74.95	254.50	-43.54	134.48	-6.66	45.69	-17.40
-13000	235.01	49.76	206.59	-30.51	144.95	10.87	13.57	68.62	233.79	-40.50	119.94	-2.35	32.32	-22.83
-14000	226.62	54.27	190.22	-23.23	127.82	16.39	355.89	61.27	213.76	-35.31	104.12	0.64	18.04	-29.43
-15000	218.17	59.72	173.72	-15.19	108.56	20.46	340.65	53.58	194.50	-28.41	86.91	1.85	2.16	-36.98
-16000	209.87	66.09	156.36	-6.86	87.06	22.28	325.87	46.00	175.49	-20.38	68.36	0.81	343.52	-45.13
-17000	202.49	73.32	137.37	1.10	63.81	21.09	310.53	39.03	155.96	-11.93	48.61	-2.79	319.97	-53.05
-18000	200.02	81.27	115.99	7.69	39.64	16.50	294.03	33.33	134.99	-3.99	27.73	-9.04	288.47	-58.99
-19000	274.55	87.45	91.80	11.54	15.15	8.73	276.13	29.74	111.84	2.15	5.35	-17.66	249.19	-59.99
-20000	327.18	79.57	65.29	11.11	350.07	-1.34	256.95	29.26	86.27	4.83	340.30	-27.84	211.04	-54.26
	423	4,42	550	4,42	726	4,42	466	4,42	225	4,43	293	4,43	437	4,43
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	222.57	-27.96	246.76	-18.46	236.61	7.35	78.31	-12.94	99.47	-18.24	319.48	34.90	335.89	52.23
1000	208.30	-23.41	232.50	-15.63	224.58	10.91	66.83	-14.61	88.50	-17.85	309.28	31.00	326.30	47.40
0	194.88	-18.19	218.82	-11.72	212.75	15.29	55.53	-17.31	77.62	-18.52	299.18	27.85	317.11	43.07
-1000	182.08	-12.63	205.70	-6.96	201.00	20.30	44.39	-20.92	66.87	-20.23	289.12	25.55	308.11	39.31
-2000	169.65	-7.00	193.00	-1.64	189.13	25.75	33.35	-25.31	56.28	-22.92	279.09	24.18	299.21	36.24
-3000	157.33	-1.57	180.52	3.98	176.86	31.41	22.24	-30.32	45.80	-26.48	269.10	23.78	290.35	33.92
-4000	144.89	3.41	168.00	9.63	163.82	37.01	10.83	-35.76	35.35	-30.80	259.17	24.38	281.50	32.41
-5000	132.14	7.68	155.15	15.04	149.56	42.24	358.75	-41.45	24.77	-35.75	249.30	25.95	272.65	31.78
-6000	118.95	11.01	141.73	19.92	133.63	46.74	345.47	-47.13	13.78	-41.18	239.49	28.48	263.81	32.04
-7000	105.31	13.16	127.51	23.96	115.75	50.01	330.27	-52.48	1.94	-46.94	229.67	31.90	254.97	33.20
-8000	91.27	13.95	112.38	26.83	96.17	51.57	312.26	-57.03	348.57	-52.81	219.75	36.16	246.11	35.29
-9000	76.97	13.25	96.42	28.22	75.84	51.06	290.86	-60.09	332.58	-58.44	209.51	41.19	237.19	38.28
-10000	62.55	11.03	79.90	27.89	56.05	48.45	266.76	-60.91	312.39	-63.28	198.61	46.90	228.13	42.16
-11000	48.08	7.32	63.17	25.75	37.63	44.00	242.41	-59.08	286.68	-66.36	186.46	53.20	218.80	46.92
-12000	33.51	2.25	46.51	21.83	20.62	38.16	220.18	-54.82	257.01	-66.51	171.96	59.90	208.98	52.53
-13000	18.59	-4.00	30.00	16.34	4.57	31.36	200.61	-48.77	228.58	-63.30	152.81	66.62	198.27	58.96
-14000	2.91	-11.17	13.39	9.56	348.79	24.02	182.97	-41.58	204.60	-72.33	124.17	72.33	185.83	66.14
-15000	345.80	-18.88	356.24	1.87	332.57	16.59	166.15	-33.82	184.32	-50.06	81.75	74.56	169.21	73.91
-16000	326.36	-26.55	337.82	-6.21	315.21	9.65	149.19	-26.03	165.95	-41.91	39.17	71.08	137.04	81.53
-17000	303.45	-33.17	317.28	-13.87	296.13	3.97	131.26	-18.90	147.97	-33.72	8.87	63.69	50.21	83.36
-18000	276.34	-37.22	293.74	-19.94	274.95	0.53	111.74	-13.30	129.33	-26.31	346.08	54.78	1.79	75.73
-19000	245.98	-36.91	266.93	-22.78	251.80	0.47	90.34	-10.34	109.36	-20.69	326.07	45.74	339.52	66.35
-20000	215.29	-31.27	237.96	-20.75	227.30	4.70	67.32	-11.24	87.88	-18.08	306.65	37.62	322.00	57.00

Table 68: Results of the calculations, Right ascension and Declination in Degrees

	205	4,43	674	4,43	300	4,43	675	4,44	294	4,44	551	4,44	658	4,44
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	161.45	-80.54	123.51	-40.35	310.86	15.07	122.84	-39.62	305.97	32.19	270.44	1.31	12.17	7.59
1000	157.76	-75.31	114.66	-37.62	299.18	11.89	113.93	-36.97	296.02	29.32	257.80	1.88	359.32	2.06
0	152.64	-70.22	105.84	-35.67	287.46	9.69	105.07	-35.10	286.11	27.32	245.35	3.65	346.58	-3.48
-1000	146.94	-65.36	97.06	-34.54	275.72	8.57	96.24	-34.07	276.26	26.23	233.15	6.53	333.72	-8.74
-2000	140.93	-60.80	88.34	-34.26	264.02	8.60	87.49	-33.89	266.46	26.11	221.20	10.37	320.54	-13.46
-3000	134.70	-56.61	79.70	-34.85	252.43	9.77	78.81	-34.57	256.74	26.94	209.43	14.99	306.89	-17.35
-4000	128.28	-52.85	71.15	-36.28	240.98	12.03	70.23	-36.10	247.13	28.73	197.69	20.21	292.73	-20.14
-5000	121.68	-49.59	62.69	-38.54	229.69	15.31	61.76	-38.45	237.60	31.40	185.72	25.81	278.17	-21.62
-6000	114.92	-46.90	54.30	-41.58	218.48	19.47	53.35	-41.57	228.11	34.92	173.20	31.56	263.41	-21.63
-7000	107.99	-44.84	45.92	-45.36	207.20	24.40	44.94	-45.42	218.53	39.20	159.68	37.19	248.71	-20.14
-8000	100.88	-43.46	37.42	-49.83	195.59	29.92	36.40	-49.96	208.69	44.17	144.63	42.37	234.28	-17.21
-9000	93.60	-42.82	28.62	-54.95	183.27	35.89	27.54	-55.13	198.23	49.75	127.53	46.63	220.20	-13.01
-10000	86.14	-42.96	19.16	-60.67	169.64	42.07	17.96	-60.90	186.59	55.84	108.13	49.41	206.36	-7.73
-11000	78.50	-43.94	8.31	-66.95	153.86	48.13	6.90	-67.19	172.65	62.27	86.90	50.14	192.52	-1.61
-12000	70.67	-45.79	354.23	-73.65	134.75	53.55	352.33	-73.89	154.03	68.68	65.09	48.45	178.29	5.09
-13000	62.67	-48.54	329.89	-80.38	111.21	57.43	326.63	-80.52	125.58	74.13	44.03	44.40	163.12	12.06
-14000	54.51	-52.22	263.98	-84.28	83.58	58.61	259.75	-83.96	82.48	76.19	24.28	38.40	146.37	18.87
-15000	46.27	-56.85	200.66	-79.47	54.90	56.26	200.21	-78.96	39.92	72.75	5.55	31.01	127.31	24.86
-16000	38.14	-62.42	175.25	-71.48	28.51	50.66	175.18	-70.99	10.68	65.66	347.08	22.86	105.37	29.13
-17000	30.65	-68.92	157.87	-62.99	5.05	42.82	157.76	-62.52	349.06	57.18	328.00	14.66	80.63	30.55
-18000	25.74	-76.28	142.06	-54.72	343.33	33.90	141.88	-54.28	330.18	48.47	307.45	7.33	54.21	28.21
-19000	36.81	-84.01	126.09	-47.32	321.90	25.06	125.85	-46.92	311.78	40.44	284.82	2.14	27.61	21.91
-20000	130.33	-84.12	109.46	-41.58	299.67	17.61	109.15	-41.25	292.90	34.07	260.09	0.62	1.51	12.38
	200	4,44	575	4,44	684	4,44	349	4,44	552	4,44	640	4,44	502	4,45
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	3.66	-18.93	92.98	14.21	64.12	-59.30	56.54	-12.10	248.03	-21.47	28.41	-46.30	94.91	59.01
1000	350.78	-24.47	78.81	13.81	60.09	-61.87	44.80	-15.65	233.46	-18.75	18.17	-51.39	73.00	58.41
0	337.29	-29.83	64.88	12.08	56.86	-64.76	33.21	-20.01	219.52	-14.91	7.19	-56.82	52.59	55.84
-1000	322.90	-34.67	51.36	9.11	54.81	-67.88	21.64	-25.02	206.21	-10.20	354.75	-62.41	34.67	51.77
-2000	307.39	-38.65	38.30	5.12	54.50	-71.12	9.87	-30.46	193.39	-4.91	339.51	-67.87	19.15	46.74
-3000	290.75	-41.38	25.66	0.33	56.95	-74.31	357.60	-36.12	180.85	0.70	318.96	-72.72	5.50	41.20
-4000	273.31	-42.53	13.27	-5.03	63.79	-77.15	344.39	-41.75	168.35	6.34	289.80	-75.93	353.11	35.52
-5000	255.72	-41.94	0.92	-10.69	76.90	-79.14	329.73	-47.01	155.62	11.75	254.40	-76.10	341.50	29.96
-6000	238.72	-39.66	348.31	-16.40	95.13	-79.62	313.04	-51.50	142.38	16.64	224.12	-73.09	330.27	24.72
-7000	222.75	-35.92	335.11	-21.89	111.84	-78.33	293.97	-54.67	128.44	20.72	202.71	-68.20	319.14	20.02
-8000	207.88	-31.04	320.98	-26.83	122.28	-75.72	272.93	-55.96	113.67	23.68	187.01	-62.49	307.88	16.02
-9000	193.91	-25.37	305.62	-30.87	127.08	-72.40	251.32	-55.03	98.12	25.20	174.25	-56.48	296.31	12.91
-10000	180.45	-19.20	288.88	-33.59	128.12	-68.74	230.82	-51.91	81.98	25.06	162.91	-50.44	284.32	10.88
-11000	167.04	-12.82	270.91	-34.57	126.68	-64.95	212.24	-47.02	65.56	23.14	152.09	-44.56	271.84	10.09
-12000	153.21	-6.53	252.18	-33.51	123.41	-61.16	195.40	-40.86	49.12	19.45	141.23	-39.01	258.81	10.70
-13000	138.48	-0.68	233.28	-30.31	118.66	-57.50	179.64	-33.90	32.73	14.15	129.89	-33.96	245.21	12.82
-14000	122.40	4.29	214.58	-25.13	112.52	-54.12	164.18	-26.56	16.18	7.50	117.75	-29.67	230.96	16.55
-15000	104.63	7.80	196.05	-18.29	105.03	-51.19	148.26	-19.28	359.04	-0.15	104.52	-26.45	215.89	21.88
-16000	85.07	9.21	177.27	-10.30	96.15	-48.98	131.22	-12.62	340.62	-8.28	90.00	-24.71	199.60	28.75
-17000	63.94	7.88	157.49	-1.81	85.90	-47.84	112.50	-7.33	320.01	-16.14	74.11	-24.93	181.32	36.91
-18000	41.64	3.43	135.80	6.23	74.37	-48.21	91.80	-4.36	296.26	-22.52	56.81	-27.56	159.46	45.83
-19000	18.40	-4.07	111.35	12.40	61.83	-50.58	69.25	-4.75	269.00	-25.74	38.07	-33.02	130.95	54.20
-20000	353.79	-14.02	83.97	14.84	48.85	-55.45	45.40	-9.33	239.35	-24.02	17.47	-41.48	92.22	58.98

Table 69: Results of the calculations, Right ascension and Declination in Degrees

	659	4,45	676	4,45	31	4,45	576	4,45	868	4,45	93	4,45	424	4,45
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	25,36	5,49	124,64	-36,66	293,52	7,38	78,32	2,86	292,18	24,66	74,32	53,75	129,69	3,34
1000	12,49	0,22	115,30	-33,90	281,29	5,76	63,35	1,12	281,79	23,07	54,97	51,36	116,51	6,39
0	359,82	-5,34	106,02	-31,95	269,07	5,31	52,68	-1,76	271,45	22,45	37,55	47,49	103,13	8,29
-1000	347,10	-10,92	96,79	-30,86	256,95	6,05	40,31	-5,63	261,20	22,83	22,12	42,61	89,66	8,92
-2000	334,10	-16,23	87,62	-30,66	245,00	7,95	28,19	-10,29	251,07	24,20	8,33	37,18	76,26	8,23
-3000	320,57	-20,99	78,54	-31,37	233,27	10,92	16,18	-15,53	241,06	26,51	355,71	31,52	63,09	6,27
-4000	306,37	-24,89	69,56	-32,95	221,74	14,83	4,05	-21,12	231,17	29,70	343,82	25,94	50,25	3,14
-5000	291,46	-27,63	60,67	-35,38	210,30	19,53	351,49	-26,82	221,31	33,67	332,31	20,65	37,73	-0,98
-6000	275,99	-28,96	51,84	-38,62	198,77	24,85	338,15	-32,36	211,35	38,33	320,90	15,88	25,44	-5,89
-7000	260,26	-28,70	42,97	-42,60	186,85	30,59	323,59	-37,40	201,04	43,57	309,39	11,81	13,19	-11,39
-8000	244,64	-26,83	33,93	-47,27	174,12	36,56	307,45	-41,54	189,98	49,27	297,61	8,63	0,67	-17,24
-9000	229,40	-23,46	24,45	-52,58	159,98	42,47	289,57	-44,32	177,50	55,29	285,46	6,53	347,49	-23,21
-10000	214,62	-18,77	14,09	-58,46	143,65	47,94	270,26	-45,26	162,39	61,36	272,90	5,67	333,19	-28,99
-11000	200,14	-13,02	1,94	-64,82	124,29	52,38	250,35	-44,05	142,45	67,00	259,90	6,19	317,21	-34,19
-12000	185,65	-6,47	345,83	-71,46	101,52	55,00	230,79	-40,70	114,42	71,16	246,46	8,19	299,06	-38,28
-13000	170,67	0,55	319,30	-77,75	76,38	54,96	212,12	-35,45	78,43	72,02	232,54	11,73	278,60	-40,58
-14000	154,60	7,66	267,13	-81,02	51,26	51,91	194,25	-28,74	44,08	68,63	217,99	16,78	256,35	-40,46
-15000	136,78	14,32	213,10	-77,37	28,00	46,23	176,65	-21,06	17,54	62,21	202,51	23,26	233,45	-37,55
-16000	116,54	19,73	183,73	-69,89	6,70	38,70	158,61	-12,97	356,46	54,26	185,50	30,97	210,93	-31,99
-17000	93,57	22,86	163,80	-61,39	346,43	30,19	139,30	-5,21	337,75	45,82	165,84	39,50	189,02	-24,34
-18000	68,29	22,58	146,47	-52,90	326,05	21,64	117,97	1,22	319,50	37,70	141,51	47,94	167,18	-15,44
-19000	41,90	18,18	129,44	-45,18	304,56	14,18	94,22	4,95	300,61	30,80	109,61	54,37	144,45	-6,42
-20000	15,49	9,79	111,92	-39,07	281,39	9,24	68,42	4,49	280,64	26,22	70,13	55,44	119,80	1,21
	90	4,46	467	4,46	126	4,46	317	4,46	88	4,46	255	4,46	226	4,46
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	70,14	-41,86	78,07	-11,87	158,90	-57,56	288,80	73,36	218,67	29,75	167,91	-22,83	97,04	-32,58
1000	62,14	-44,10	66,48	-13,56	149,59	-52,55	292,55	71,33	207,74	34,37	155,77	-17,51	87,81	-32,35
0	54,33	-47,02	55,07	-16,28	140,74	-47,96	294,14	69,07	196,56	39,52	143,82	-12,65	78,67	-33,02
-1000	46,68	-50,57	43,82	-19,93	132,12	-43,89	294,14	66,73	184,81	45,00	131,89	-8,46	69,66	-34,56
-2000	39,17	-54,67	32,67	-24,35	123,60	-40,44	292,95	64,45	172,00	50,60	119,86	-5,13	60,80	-36,93
-3000	31,74	-59,25	21,46	-29,38	115,11	-37,67	290,80	62,31	157,40	56,03	107,72	-2,83	52,05	-40,07
-4000	24,25	-64,24	9,95	-34,85	106,62	-35,66	288,20	60,40	140,03	60,84	95,47	-1,67	43,38	-43,91
-5000	16,43	-69,57	357,77	-40,54	98,11	-34,46	285,05	58,78	118,95	64,42	83,18	-1,74	34,67	-48,36
-6000	7,61	-75,17	344,41	-46,20	89,56	-34,12	281,56	57,49	94,43	65,99	70,93	-3,05	25,72	-53,36
-7000	355,52	-80,94	329,16	-51,51	80,99	-34,67	277,82	56,57	69,21	65,03	58,77	-5,56	16,19	-58,81
-8000	323,15	-86,47	311,22	-55,97	72,39	-36,12	273,92	56,07	46,62	61,75	46,67	-9,19	5,40	-64,62
-9000	210,33	-85,74	290,07	-58,94	63,72	-38,48	269,92	56,00	27,75	56,81	34,52	-13,82	351,88	-70,64
-10000	183,93	-79,76	266,45	-59,69	54,94	-41,75	265,91	56,37	11,84	50,88	22,12	-19,32	331,68	-76,49
-11000	171,85	-73,38	242,60	-57,85	45,97	-45,94	261,95	57,20	357,73	44,41	9,09	-25,52	293,89	-80,87
-12000	162,05	-66,89	220,68	-53,61	36,67	-51,02	258,17	58,45	344,45	37,75	354,91	-32,20	238,38	-80,32
-13000	152,53	-60,40	201,23	-47,59	26,83	-56,97	254,70	60,10	331,25	31,16	338,76	-39,04	202,36	-74,91
-14000	142,55	-54,06	183,57	-40,40	16,01	-63,78	251,73	62,07	317,54	24,97	319,52	-45,48	181,33	-67,72
-15000	131,71	-48,08	166,69	-32,62	3,16	-71,36	249,53	64,28	302,80	19,56	295,91	-50,57	165,23	-59,97
-16000	119,68	-42,76	149,62	-24,80	344,00	-79,51	248,44	66,60	286,66	15,46	267,58	-52,90	150,45	-52,18
-17000	106,25	-38,57	131,55	-17,63	275,15	-86,25	248,90	68,85	268,89	13,30	236,92	-51,19	135,49	-44,83
-18000	91,32	-36,08	111,84	-11,99	185,08	-80,43	251,43	70,85	249,47	13,80	207,72	-45,35	119,60	-38,52
-19000	74,97	-36,02	90,23	-9,02	161,51	-71,00	256,62	72,34	228,59	17,57	181,40	-36,55	102,45	-34,06
-20000	57,55	-39,11	66,96	-9,95	144,78	-61,43	264,83	72,91	206,33	24,93	156,95	-26,36	84,10	-32,39

Table 70: Results of the calculations, Right ascension and Declination in Degrees

	352	4,47	455	4,47	845	4,47	49	4,47	170	4,47	456	4,47	577	4,47
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	42,27	-32,41	169,17	-3,65	135,02	-41,25	346,67	-23,74	177,79	-45,17	141,16	26,18	74,64	1,71
1000	31,79	-36,90	156,44	1,68	125,74	-37,65	332,92	-28,97	165,74	-39,65	126,24	30,04	61,79	-0,35
0	21,11	-41,95	143,56	6,53	116,54	-34,76	318,27	-33,58	154,48	-34,39	110,53	32,72	49,24	-3,52
-1000	9,94	-47,41	130,38	10,65	107,39	-32,66	302,58	-37,22	143,66	-29,56	94,30	33,94	36,99	-7,62
-2000	357,82	-53,08	116,84	13,78	98,28	-31,41	285,93	-39,53	133,05	-25,34	77,98	33,57	24,94	-12,45
-3000	343,96	-58,71	102,96	15,72	89,21	-31,05	268,72	-40,24	122,51	-21,87	62,08	31,65	12,93	-17,80
-4000	327,15	-63,92	88,91	16,32	80,20	-31,59	251,59	-39,25	111,95	-19,28	46,96	28,36	0,72	-23,43
-5000	305,76	-68,10	74,87	15,51	71,25	-33,02	235,16	-36,65	101,34	-17,65	32,72	23,97	347,99	-29,11
-6000	279,14	-70,31	61,06	13,33	62,37	-35,33	219,77	-32,72	90,67	-17,09	19,28	18,80	334,34	-34,53
-7000	250,53	-69,74	47,58	9,92	53,51	-38,47	205,42	-27,78	79,93	-17,62	6,39	13,14	319,37	-39,35
-8000	225,37	-66,52	34,40	5,43	44,58	-42,41	191,90	-22,15	69,14	-19,28	353,72	7,26	302,73	-43,15
-9000	205,39	-61,54	21,38	0,08	35,44	-47,11	178,83	-16,14	58,25	-22,04	340,93	1,43	284,39	-45,45
-10000	189,26	-55,59	8,25	-5,91	25,82	-52,50	165,82	-10,00	47,18	-25,89	327,63	-4,08	264,84	-45,82
-11000	175,33	-49,17	354,60	-12,30	15,29	-58,56	152,44	-4,04	35,76	-30,78	313,49	-8,95	245,01	-44,03
-12000	162,42	-42,61	339,93	-18,79	2,91	-65,19	138,27	1,45	23,68	-36,63	298,18	-12,80	225,80	-40,16
-13000	149,67	-36,17	323,63	-24,98	346,33	-72,19	122,91	6,07	10,44	-43,33	281,54	-15,22	207,57	-34,54
-14000	136,49	-30,14	305,03	-30,27	317,66	-78,85	106,07	9,34	355,12	-50,69	263,57	-15,74	190,09	-27,61
-15000	122,37	-24,88	283,68	-33,85	256,83	-81,79	87,66	10,71	335,94	-58,31	244,51	-14,01	172,77	-19,86
-16000	106,95	-20,86	259,80	-34,78	202,59	-76,83	67,82	9,67	309,41	-65,21	224,66	-9,86	154,85	-11,86
-17000	89,99	-18,69	234,51	-32,35	175,40	-68,59	46,87	5,90	271,33	-69,10	204,14	-3,38	135,55	-4,34
-18000	71,47	-19,03	209,18	-26,48	156,10	-59,72	25,03	-0,61	228,01	-67,03	182,66	4,99	114,17	1,66
-19000	51,50	-22,51	184,37	-17,84	138,72	-51,19	2,03	-9,44	193,21	-59,52	159,34	14,43	90,39	4,81
-20000	30,16	-29,53	159,52	-7,63	121,49	-43,80	336,85	-19,61	166,74	-49,37	132,74	23,47	64,67	3,69

	382	4,48	474	4,48	137	4,48	50	4,48	127	4,48	817	4,48	517	4,48
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	331,53	-39,54	224,30	-4,35	11,18	48,28	311,93	-5,03	136,29	-72,60	143,71	52,05	101,97	2,41
1000	315,80	-44,00	211,41	9,35	357,94	42,74	298,62	-8,23	134,63	-68,61	125,47	55,98	88,93	2,94
0	298,55	-47,34	198,85	5,20	345,89	37,20	285,07	-10,30	131,43	-64,78	104,93	58,38	75,97	2,21
-1000	279,99	-49,17	186,42	10,71	334,57	31,92	271,39	-11,09	127,33	-61,20	83,13	58,78	63,23	0,26
-2000	260,93	-49,18	173,90	16,39	323,64	27,09	257,76	-10,55	122,65	-57,96	61,98	57,10	50,78	-2,81
-3000	242,44	-47,37	161,00	21,94	312,90	22,88	244,36	-8,69	117,56	-55,12	42,98	53,66	38,62	-6,83
-4000	225,33	-43,98	147,44	27,09	302,18	19,43	231,30	-5,65	112,19	-52,73	26,49	49,00	26,65	-11,62
-5000	209,83	-39,42	132,97	31,50	291,41	16,88	218,61	-1,58	106,60	-50,85	12,10	43,62	14,72	-16,96
-6000	195,77	-34,08	117,44	34,83	280,54	15,34	206,19	3,31	100,85	-49,53	359,18	37,91	2,55	-22,64
-7000	182,74	-28,32	100,95	36,72	269,57	14,90	193,86	8,79	94,97	-48,79	347,17	32,17	349,79	-28,43
-8000	170,31	-22,43	83,87	36,93	258,48	15,62	181,33	14,66	89,01	-48,68	335,60	26,63	336,01	-34,03
-9000	158,06	-16,65	66,75	35,33	247,28	17,51	168,23	20,65	83,00	-49,22	324,10	21,50	320,69	-39,09
-10000	145,62	-11,23	50,05	32,02	235,92	20,58	154,08	26,48	76,98	-50,43	312,35	16,98	303,37	-43,14
-11000	132,65	-6,42	33,98	27,22	224,28	24,80	138,38	31,76	71,00	-52,32	300,11	13,29	283,89	-45,60
-12000	118,86	-2,53	18,42	21,22	212,16	30,11	120,63	35,99	65,16	-54,89	287,17	10,68	262,76	-45,92
-13000	104,02	0,10	2,98	14,38	199,18	36,43	100,63	38,52	59,62	-58,13	273,40	9,40	241,10	-43,77
-14000	88,04	1,12	347,13	7,05	184,72	43,62	78,80	38,70	54,70	-61,98	258,73	9,71	220,00	-39,23
-15000	70,92	0,16	330,21	-0,29	167,58	51,40	56,13	36,14	51,02	-66,36	243,12	11,85	199,87	-32,71
-16000	52,75	-3,02	311,55	-6,99	145,47	59,15	33,63	30,88	49,98	-71,05	226,51	15,97	180,34	-24,83
-17000	33,53	-8,53	290,52	-12,14	114,35	65,36	11,61	23,42	54,68	-75,59	208,69	22,12	160,64	-16,31
-18000	12,99	-16,19	266,95	-14,56	72,75	67,07	349,64	14,59	70,87	-78,82	189,11	30,15	139,84	-8,05
-19000	350,27	-25,48	241,38	-13,09	32,17	62,24	326,79	5,46	96,57	-78,65	166,41	39,56	117,11	-1,29
-20000	323,56	-35,21	214,96	-7,07	0,99	52,82	301,99	-2,41	112,96	-74,76	137,76	49,05	92,06	2,33

Table 71: Results of the calculations, Right ascension and Declination in Degrees

	677	4,48	51	4,48	660	4,49	295	4,49	477	4,49	89	4,49	321	4,49
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	118,16	-38,86	355,68	-14,55	345,97	3,82	294,11	50,22	151,86	35,24	206,82	17,46	318,62	10,01
1000	109,33	-36,62	342,54	-19,99	333,22	-1,40	287,36	48,17	136,56	39,76	194,89	22,64	306,42	6,33
0	100,54	-35,18	328,85	-25,07	320,31	-6,07	280,56	46,75	119,95	43,22	182,73	28,15	294,13	3,59
-1000	91,81	-34,58	314,40	-29,45	307,11	-9,95	273,74	45,98	102,19	45,24	170,03	33,73	281,76	1,95
-2000	83,15	-34,83	299,08	-32,80	293,57	-12,79	266,96	45,89	83,91	45,53	156,43	39,10	269,38	1,49
-3000	74,59	-35,93	283,02	-34,80	279,75	-14,40	260,26	46,47	65,97	44,05	141,51	43,94	257,09	2,24
-4000	66,15	-37,85	266,57	-35,23	265,82	-14,66	253,69	47,71	49,11	40,98	124,95	47,82	244,96	4,18
-5000	57,81	-40,55	250,25	-34,03	251,97	-13,53	247,27	49,60	33,63	36,67	106,76	50,30	233,04	7,22
-6000	49,54	-44,00	234,51	-31,29	238,37	-11,07	241,04	52,11	19,44	31,50	87,52	51,00	221,30	11,24
-7000	41,25	-48,13	219,61	-27,25	225,09	-7,41	235,05	55,22	6,23	25,81	68,31	49,76	209,61	16,08
-8000	32,79	-52,89	205,50	-22,20	212,09	-2,74	229,36	58,90	353,58	19,91	50,16	46,73	197,77	21,58
-9000	23,91	-58,25	191,95	-16,43	199,19	2,74	224,08	63,12	341,11	14,05	33,54	42,23	185,42	27,57
-10000	14,14	-64,15	178,62	-10,22	186,09	8,82	219,55	67,85	328,43	8,50	18,30	36,69	172,10	33,82
-11000	2,41	-70,52	165,08	-3,84	172,38	15,24	216,57	73,02	315,18	3,52	4,00	30,45	157,13	40,05
-12000	345,48	-77,18	150,85	2,38	157,53	21,70	217,88	78,48	301,06	-0,58	350,06	23,85	139,62	45,79
-13000	308,32	-83,20	135,47	8,06	140,88	27,77	235,60	83,53	285,83	-3,42	335,92	17,20	118,63	50,34
-14000	227,24	-83,12	118,47	12,71	121,79	32,82	293,69	84,21	269,38	-4,61	321,01	10,87	93,87	52,70
-15000	188,04	-76,32	99,59	15,69	99,88	36,00	318,66	78,94	251,75	-3,78	304,83	5,33	66,81	51,91
-16000	168,29	-68,17	78,87	16,31	75,53	36,38	319,36	72,23	233,08	-0,64	286,97	1,20	40,19	47,71
-17000	152,42	-59,86	56,74	14,01	50,07	33,35	313,05	65,36	213,43	4,89	267,24	-0,76	15,59	40,73
-18000	137,09	-51,96	33,75	8,59	24,86	27,00	303,48	58,89	192,57	12,61	245,78	0,24	352,70	32,05
-19000	121,21	-45,11	10,09	0,36	0,26	18,12	291,86	53,40	169,71	21,95	222,99	4,75	330,36	22,87
-20000	104,49	-40,15	345,15	-9,80	335,54	7,97	278,91	49,57	143,18	31,69	199,11	12,88	307,36	14,59

	727	4,49	780	4,49	795	4,49	553	4,49	796	4,5	648	4,5
	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC	RA	DEC
2000	151,98	0,37	66,59	15,62	359,98	-65,58	246,03	-20,04	336,83	-64,97	332,10	-32,99
1000	139,06	4,96	52,55	12,80	345,39	-71,09	231,64	-17,14	316,72	-69,64	317,01	-37,52
0	125,87	8,74	39,05	8,91	324,61	-76,17	217,88	-13,16	290,25	-72,74	300,71	-41,02
-1000	112,37	11,47	26,04	4,18	291,14	-79,66	204,70	-8,35	259,23	-73,21	283,36	-43,11
-2000	98,64	12,98	13,40	-1,13	247,42	-79,58	191,98	-2,98	230,86	-70,80	265,48	-43,53
-3000	84,83	13,15	0,91	-6,74	214,58	-75,95	179,48	2,65	209,06	-66,44	247,85	-42,20
-4000	71,14	11,96	348,33	-12,39	194,31	-70,76	166,97	8,30	192,52	-61,12	231,16	-39,29
-5000	57,73	9,48	335,36	-17,80	180,18	-65,09	154,16	13,69	179,17	-55,43	215,74	-35,11
-6000	44,67	5,84	321,74	-22,68	168,85	-59,36	140,80	18,52	167,62	-49,72	201,53	-30,02
-7000	31,91	1,25	307,24	-26,69	158,87	-53,80	126,67	22,50	157,03	-44,21	188,25	-24,37
-8000	19,30	-4,10	291,76	-29,51	149,50	-48,53	111,70	25,31	146,88	-39,04	175,53	-18,46
-9000	6,56	-9,99	275,40	-30,79	140,31	-43,66	95,93	26,64	136,82	-34,37	162,96	-12,55
-10000	353,30	-16,18	258,49	-30,31	131,01	-39,31	79,63	26,28	126,58	-30,34	150,17	-6,90
-11000	339,06	-22,38	241,45	-27,98	121,38	-35,60	63,12	24,13	115,95	-27,10	136,80	-1,79
-12000	323,26	-28,22	224,59	-23,87	111,23	-32,68	46,64	20,23	104,76	-24,83	122,51	2,46
-13000	305,29	-33,15	207,95	-18,20	100,41	-30,72	30,25	14,76	92,89	-23,71	107,06	5,46
-14000	284,78	-36,47	191,30	-11,28	88,79	-29,90	13,73	8,00	80,22	-23,94	90,34	6,80
-15000	261,92	-37,36	174,13	-3,53	76,26	-30,47	356,60	0,32	66,67	-25,73	72,40	6,08
-16000	237,77	-35,21	155,73	4,53	62,73	-32,65	338,15	-7,75	52,13	-29,27	53,41	3,02
-17000	213,59	-29,96	135,24	12,09	48,06	-36,69	317,51	-15,42	36,37	-34,69	33,48	-2,48
-18000	189,93	-22,14	111,85	17,96	31,98	-42,75	293,78	-21,50	18,87	-42,03	12,42	-10,20
-19000	166,38	-12,75	85,37	20,55	13,75	-50,92	266,69	-24,32	358,30	-51,12	349,48	-19,53
-20000	141,91	-3,14	56,85	18,31	351,01	-61,01	237,42	-22,21	330,86	-61,19	323,09	-29,25

Table 72: Results of the calculations, Right ascension and Declination in Degrees

References

- Bretagnon, P. and Chapront, J., 1981. Note sur les formules pour le calcul de la prècession. *Astronomy and Astrophysics*, 103, 103-107
- Bowler, 2003, Nature Vol. 421, 20th february 2003
- Cumont, F. Textes et monuments figurés relatifs aux Mystères de Mithra: pub. avec une introduction critique, 1896. Bruxelles, Lamertin
- Curnow, P., 2006. Kaurua Night Skies. *The Bulletin of the Astronomical Society of South Australia*, June 2006, 8-10
- Curnow, P., 2009. Adnyamathanha Night Skies. *The Bulletin of the Astronomical Society of South Australia*, June 2009, 12-14
- Curnow, P., 2010. Boorong Skies. *The Bulletin of the Astronomical Society of South Australia*, June 2010, 4-6
- Firneis, M.G. (2007) in *Egyptian Temple Architecture: 100 Years of Hungarian Excavations in Egypt, 1907-2007 - American University in Cairo Press Series*, Vörös, G., American University in Cairo Press 2007 pages 165-169
- Flood, J. 2004. Archaeology of the Dreamtime. Gecko Books, South Australia
- Fredrick, S., 2008. The Sky of Knowledge - A Study of the Ethnoastronomy of the Aboriginal People of Australia. MPhil thesis, School of Archaeology & Ancient History, University of Leicester, UK
- Hamacher, D.W., Frew, D.J., 2010. An Aboriginal Australian Record of the Great Eruption of Eta Carinae. *Journal of Astronomical History and Heritage*, 13(3), 220-234
- Hamacher, D.W. and Norris, R.P., 2009. Australian Aboriginal Geomythology: eyewitness accounts of cosmic impacts? *Archaeoastronomy*, 22, 60-93, in press. E-print: arXiv:1009.4251
- Hamacher, D.W. and Norris, R.P., 2010. Meteors in Australian Aboriginal Dreamings. *WGN - Journal of the International Meteor Organisation*, 38(3), 87-98.
- Hamacher, D.W. and Norris, R.P. 2011. Comets in Australian Aboriginal Astronomy. *Journal for Astronomical History and Heritage*, 14(1), 31-40, in press. E-print: arXiv:1010.0801
- Handbook of Archaeoastronomy and Ethnoastronomy*, Ruggles, C.L.N. (Ed.), 2015, Springer New York
- Hawkins, G.S. and Rosenthal, S.K., 1967. 5000 and 1000 Year Star Catalogs, Smithsonian Contributions to Astrophysics, Volume 10, Number 2

- Haynes, R.D., 1992. Aboriginal Astronomy. *Australian Journal of Astronomy* Vol.4, No.3, pp. 127-140
- Haynes, R.F., Haynes, R.D., Malin, D. and McGee, R.X., 1996, Chapter 1 in *Explorers of the Southern Sky*. Cambridge, Cambridge University Press.
- Haynes, R.D., 2000. Astronomy and the Dreaming: The Astronomy of the Aboriginal Australians. *Astronomy Across Cultures: The History of Non-Western Astronomy*. H. Selin and X.Sun. Dordrecht, Kluwer Academic Publishers, pp. 53-90.
- Haynes, R.D., 2009. Dreaming the Stars. *EarthSong journal*, Spring 2009, 5-12
- Herrmann, D.B., 2006. *Sterne der Traumzeit*. Berlin, DUDEN PAETEC Schulbuchverlag
- Kötz, A., 1911, Über die astronomischen Kenntnisse der Naturvölker Australiens und der Südsee., PhD thesis, University of Leipzig
- Hawkins, G.S. and Rosenthal, S.K., 1967. 5000 and 1000 Year Star Catalogs, Smithsonian Contributions to Astrophysics, Volume 10, Number 2
- MacPherson, P., 1881. Astronomy of the Australian Aborigines. *Journal and Proceedings of the Royal Society of New South Wales*, Vol.15, pp. 71-80
- Maegraith, B.G., 1932. The Astronomy of the Aranda and Luritja Tribes. *Transactions of the Royal Society of South Australia*, Vol 56, 19-26
- Meeus, J., 1991. *Astronomical Algorithms*. Virginia, USA, Willmann-Bell, Inc.
- Morieson, J., 1996. *The night sky of the Boorong - Partial Reconstruction of a Disappeared Culture in North-West Victoria*. MA thesis, Australian Centre, University of Melbourne
- Norris, R.P., 2010. Australian Aboriginal Astronomy in the International Year of Astronomy 2009. *CAPjournal*, No.9 October 2010, 5-9
- Norris, R.P. and Hamacher, D.W., 2009. The Astronomy of Aboriginal Australia. *Proceedings IAU Symposium*, 260, 10-17
- Norris, R.P. and Norris, C., 2009. *Emu Dreaming: an Introduction to Australian Aboriginal Astronomy*. Sydney: Emu Dreaming Press.
- Ruggles, C., 2005. *Ancient Astronomy: an encyclopedia of cosmologies and myth*. California: ABC-CLIO
- Stanbridge, W.E., 1858. On the astronomy and mythology of the Aborigines of Victoria. *Transactions Philosophical Institute Victoria*, 2, 137-140

Speidel, M.P., Mithras - Orion: Greek Hero and Roman Army God, 1980. Leiden, The Netherlands, E.J. Brill

Tindale, N.B., 2005. Celestial Lore of Some Australian Tribes. In *Songs from the Sky: Indigenous Astronomical and Cosmological Traditions of the World*. Edited by V.D. Chamberlain, J.B. Carlson and M.J. Young. Oxford, Ocarina Books, pp. 358-379

Ulansey, D., The Origins of the Mithraic Mysteries: Cosmology and Salvation in the Ancient World, 1989. New York, USA, Oxford University Press

Wells, A.E., 1964. Skies of Arnhem Land.

Williams, J.G., 1994. Contributions to the Earth's Obliquity Rate, Precession, and Nutation. *The Astronomical Journal*, 108 (2), 711-724

<http://aboriginalastronomy.blogspot.com/>

<http://www.emudreaming.com/>

Abstract (in German)

Die Präzession der Erdachse hat große Auswirkung auf die von der Erde aus gesehenen Sternpositionen. Über den Lauf der Jahrtausende werden Veränderungen am Sternenhimmel sichtbar. Mithilfe von astronomischen Algorithmen können die Positionen der Sterne und deren Veränderungen über längere Zeiträume berechnet werden. Bei kleineren Zeiträumen kann die Eigenbewegung der Sterne vernachlässigt werden, bei größeren muss diese berücksichtigt werden. In dieser Arbeit werden die ursprünglichen Sternpositionen von Sternen bis zur 4.5 ten visuellen Magnitude, bezogen auf die Epoche J2000.0, rückwärts bis zum Jahr -20 000 berechnet und mit den berechneten Werten Positionstabellen und Sternkarten erstellt.

Auch wenn die Präzession der Erdachse früheren Kulturen noch unbekannt war, ist es möglich, dass diese bereits die Verschiebung der Sternpositionen über mehrere Generationen hinweg beobachten konnten. So ist es vorstellbar, dass sich das Kenntnis vom sich verändernden Sternenhimmel in Traditionen und Geschichten im Verlauf der Generationen verbreitet und erhalten hat.

Hier wird eine der ältesten noch fortbestehenden Kulturen der Welt - die Kultur der Aborigines, der Ureinwohner Australiens - auf astronomische Kenntnisse und Hinweise auf eine Überlieferung zu Sternpositionen untersucht.

In den Traditionen und Geschichten der Aborigines kann viel astronomisches Wissen gefunden werden, welches hier auszugsweise angeführt wird. Außerdem wird als Beispiel, wie Beobachtungen der Effekte der Präzession in Traditionen weitergegeben werden können, der Mithras Kult angeführt und eine mögliche astronomische Deutung der von diesem verwendeten Symbolik diskutiert.

Das im Rahmen dieser Arbeit erstellte Programm kann leicht für verschiedene Positionen auf der Erde adaptiert werden um so weitere Untersuchungen zu unterstützen.

Abstract (in English)

The precession of Earth's rotational axis has a great influence on the stellar positions, as viewed from Earth. Over the course of millennia the changes on the sky become apparent. Using astronomical algorithms it is possible to calculate the stellar positions and their changes over time. When investigating long periods of time the proper motion of the stars has to be taken into account. In this work, the stellar positions for stars down to a visual magnitude of 4.5 are calculated backwards until the year -20 000 and subsequently star charts are being generated using the obtained data.

Even though the precession itself was unknown to early cultures, it is possible that they observed the shift in stellar position caused by it over the course of generations. Thus it is possible that the knowledge of the changing sky has been conserved and passed on through the generations.

Here one of the oldest continuous cultures - the culture of the aborigines, the indigenous Australians - is examined for astronomical knowledge and information about stellar positions.

In the traditions and stories of the aboriginal tribes much astronomical knowledge can be found, which is discussed here in extracts. Further, as an example how observations of the effects of precession can be passed on in traditions, the cult of mithras and its imagery is discussed.

The program that has been written in the course of this work can be adapted easily for different positions on Earth and thus will facilitate further research.