

ASTRONOMY 2025

Supplementary Information

Quasar Publishing
Version 2025.2

Starting with 2020 (our thirtieth edition) we have made some changes. As part of this we have removed some data from the yearbook.

To decide what could be taken out we reviewed how the people, who value our book, participate in the hobby and how has this evolved over the years. For the true beginners with little more than a sense of wonder and a thirst to know, we believe they are well catered for in Astronomy 2024.

Telescope users have become polarised into two camps. There are those we call the pure observers who, with some knowledge, spend their money on the optics, taking a more low cost approach to their mounts. Then there are the people who ride the back of the technology revolution turning to computer controlled scopes, now much more affordable instruments, that can automatically slew to an object selected from its database.

Keeping this in mind, we had a hard look at the sea of numbers in Part II. Printed rise and set times for all the planets are not used by the beginner or pure observer and not needed by the techies. Besides,

2025 Extra pages

For the 2025 edition (our 35th and final one) we had to reduce the page count. As a result some pages, that have been unchanged for some years, have been removed. They are presented here.

Brightest & Nearest Stars Table

Deep Sky Object table

no one observes the planets (or anything) close to the horizon unless they have to. For this reason we believe the approximate times given in the Rise–Set charts in Part I should suffice. Often the transit times for the outer planets are more valuable, when the planet is high in the northern sky with minimal atmospheric turbulence. Using the same reasoning, the position tables of the Sun, Moon and planets are either not used or not necessary.

When we started these books in 1990 there was no internet (believe it or not!), so some of the information we supplied wasn't easily obtainable elsewhere. Today a lot is available either online, from computer programmes or through cheap (or free) astronomy/planetarium apps on mobile devices.

The data on the following pages (available for download from our web site) is supplementary to the yearbook ASTRONOMY 2025 that we published in October 2024.

www.quasarastronomy.com.au

Version 2025-2
Version 2025.1 of this document
had incorrect rise and set times, this
version corrects them.

In the event you are reading this and don't know what the yearbook we are referring to is, have a look here.

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GEOCENTRIC POSITION of the SUN

(0hr UT, Epoch 2000.0)

	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE		
	RA		Dec.	RA		Dec.	RA		Dec.	RA		Dec.	RA		Dec.	RA		Dec.
	hh	mm.m	° ' "	hh	mm.m	° ' "	hh	mm.m	° ' "	hh	mm.m	° ' "	hh	mm.m	° ' "	hh	mm.m	° ' "
1	18	45.6	-23 01.4	20	57.9	-17 11.1	22	47.3	-07 42.3	00	41.1	+04 25.1	02	32.5	+14 58.7	04	35.2	+22 00.4
2	18	50.0	-22 56.4	21	02.0	-16 53.9	22	51.0	-07 19.4	00	44.7	+04 48.2	02	36.3	+15 16.8	04	39.3	+22 08.5
3	18	54.4	-22 50.9	21	06.1	-16 36.5	22	54.8	-06 56.5	00	48.4	+05 11.3	02	40.1	+15 34.7	04	43.4	+22 16.2
4	18	58.8	-22 44.9	21	10.1	-16 18.8	22	58.5	-06 33.5	00	52.0	+05 34.2	02	44.0	+15 52.3	04	47.6	+22 23.5
5	19	03.2	-22 38.5	21	14.2	-16 00.8	23	02.2	-06 10.4	00	55.7	+05 57.1	02	47.8	+16 09.6	04	51.7	+22 30.4
6	19	07.6	-22 31.7	21	18.2	-15 42.5	23	05.9	-05 47.2	00	59.3	+06 19.8	02	51.7	+16 26.7	04	55.8	+22 36.9
7	19	11.9	-22 24.4	21	22.2	-15 24.0	23	09.6	-05 23.9	01	03.0	+06 42.5	02	55.5	+16 43.5	04	59.9	+22 43.0
8	19	16.3	-22 16.7	21	26.2	-15 05.2	23	13.3	-05 00.6	01	06.6	+07 05.0	02	59.4	+17 00.0	05	04.0	+22 48.8
9	19	20.7	-22 08.5	21	30.2	-14 46.2	23	17.0	-04 37.2	01	10.3	+07 27.4	03	03.3	+17 16.2	05	08.2	+22 54.1
10	19	25.0	-21 59.9	21	34.1	-14 26.9	23	20.7	-04 13.7	01	14.0	+07 49.7	03	07.2	+17 32.1	05	12.3	+22 59.0
11	19	29.4	-21 50.9	21	38.1	-14 07.3	23	24.4	-03 50.2	01	17.6	+08 11.9	03	11.1	+17 47.8	05	16.5	+23 03.5
12	19	33.7	-21 41.4	21	42.0	-13 47.6	23	28.1	-03 26.6	01	21.3	+08 33.9	03	15.0	+18 03.1	05	20.6	+23 07.6
13	19	38.0	-21 31.5	21	46.0	-13 27.6	23	31.8	-03 03.0	01	25.0	+08 55.7	03	18.9	+18 18.1	05	24.7	+23 11.3
14	19	42.3	-21 21.3	21	49.9	-13 07.4	23	35.4	-02 39.4	01	28.7	+09 17.5	03	22.9	+18 32.9	05	28.9	+23 14.6
15	19	46.6	-21 10.6	21	53.8	-12 46.9	23	39.1	-02 15.7	01	32.4	+09 39.0	03	26.8	+18 47.3	05	33.0	+23 17.5
16	19	50.9	-20 59.5	21	57.7	-12 26.3	23	42.7	-01 52.0	01	36.1	+10 00.4	03	30.8	+19 01.4	05	37.2	+23 19.9
17	19	55.2	-20 48.0	22	01.5	-12 05.5	23	46.4	-01 28.3	01	39.8	+10 21.7	03	34.7	+19 15.2	05	41.4	+23 22.0
18	19	59.5	-20 36.1	22	05.4	-11 44.4	23	50.1	-01 04.6	01	43.5	+10 42.7	03	38.7	+19 28.6	05	45.5	+23 23.6
19	20	03.7	-20 23.8	22	09.3	-11 23.2	23	53.7	-00 40.9	01	47.2	+11 03.6	03	42.7	+19 41.7	05	49.7	+23 24.9
20	20	08.0	-20 11.1	22	13.1	-11 01.8	23	57.4	-00 17.2	01	50.9	+11 24.4	03	46.7	+19 54.5	05	53.8	+23 25.7
21	20	12.2	-19 58.0	22	16.9	-10 40.3	00	01.0	+00 06.5	01	54.7	+11 44.9	03	50.7	+20 07.0	05	58.0	+23 26.1
22	20	16.4	-19 44.6	22	20.8	-10 18.5	00	04.6	+00 30.2	01	58.4	+12 05.2	03	54.7	+20 19.1	06	02.2	+23 26.1
23	20	20.7	-19 30.8	22	24.6	-09 56.6	00	08.3	+00 53.9	02	02.2	+12 25.4	03	58.7	+20 30.9	06	06.3	+23 25.7
24	20	24.9	-19 16.6	22	28.4	-09 34.6	00	11.9	+01 17.5	02	05.9	+12 45.3	04	02.7	+20 42.3	06	10.5	+23 24.8
25	20	29.0	-19 02.1	22	32.2	-09 12.4	00	15.6	+01 41.1	02	09.7	+13 05.0	04	06.8	+20 53.3	06	14.6	+23 23.6
26	20	33.2	-18 47.3	22	36.0	-08 50.0	00	19.2	+02 04.7	02	13.5	+13 24.6	04	10.8	+21 04.0	06	18.8	+23 21.9
27	20	37.4	-18 32.1	22	39.7	-08 27.6	00	22.9	+02 28.2	02	17.2	+13 43.9	04	14.9	+21 14.4	06	23.0	+23 19.9
28	20	41.5	-18 16.5	22	43.5	-08 05.0	00	26.5	+02 51.7	02	21.0	+14 02.9	04	18.9	+21 24.3	06	27.1	+23 17.4
29	20	45.6	-18 00.6				00	30.1	+03 15.2	02	24.8	+14 21.8	04	23.0	+21 33.9	06	31.3	+23 14.5
30	20	49.8	-17 44.4				00	33.8	+03 38.5	02	28.6	+14 40.4	04	27.1	+21 43.1	06	35.4	+23 11.2
31	20	53.9	-17 27.9				00	37.4	+04 01.8				04	31.2	+21 52.0			
	JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER		
1	06	39.5	+23 07.5	08	44.4	+18 05.5	10	40.4	+08 23.4	12	28.4	-03 03.8	14	24.4	-14 19.4	16	27.8	-21 44.8
2	06	43.7	+23 03.4	08	48.3	+17 50.3	10	44.1	+08 01.7	12	32.0	-03 27.1	14	28.3	-14 38.6	16	32.2	-21 54.1
3	06	47.8	+22 58.9	08	52.1	+17 34.9	10	47.7	+07 39.8	12	35.6	-03 50.3	14	32.2	-14 57.5	16	36.5	-22 02.9
4	06	51.9	+22 54.0	08	56.0	+17 19.1	10	51.3	+07 17.8	12	39.2	-04 13.5	14	36.1	-15 16.2	16	40.8	-22 11.3
5	06	56.1	+22 48.6	08	59.8	+17 03.1	10	54.9	+06 55.6	12	42.9	-04 36.6	14	40.1	-15 34.6	16	45.2	-22 19.3
6	07	00.2	+22 42.9	09	03.7	+16 46.9	10	58.5	+06 33.4	12	46.5	-04 59.7	14	44.1	-15 52.8	16	49.5	-22 26.8
7	07	04.3	+22 36.8	09	07.5	+16 30.3	11	02.1	+06 11.0	12	50.2	-05 22.7	14	48.1	-16 10.7	16	53.9	-22 33.9
8	07	08.4	+22 30.3	09	11.3	+16 13.5	11	05.7	+05 48.5	12	53.8	-05 45.6	14	52.0	-16 28.4	16	58.2	-22 40.6
9	07	12.5	+22 23.5	09	15.1	+15 56.4	11	09.3	+05 26.0	12	57.5	-06 08.5	14	56.1	-16 45.7	17	02.6	-22 46.8
10	07	16.6	+22 16.2	09	18.9	+15 39.1	11	12.9	+05 03.3	13	01.2	-06 31.2	15	00.1	-17 02.8	17	07.0	-22 52.6
11	07	20.6	+22 08.5	09	22.7	+15 21.5	11	16.5	+04 40.6	13	04.8	-06 53.9	15	04.1	-17 19.6	17	11.4	-22 58.0
12	07	24.7	+22 00.5	09	26.5	+15 03.7	11	20.1	+04 17.8	13	08.5	-07 16.5	15	08.2	-17 36.1	17	15.8	-23 02.8
13	07	28.8	+21 52.1	09	30.3	+14 45.6	11	23.7	+03 54.9	13	12.2	-07 39.0	15	12.3	-17 52.3	17	20.2	-23 07.3
14	07	32.8	+21 43.3	09	34.0	+14 27.3	11	27.3	+03 31.9	13	15.9	-08 01.4	15	16.3	-18 08.2	17	24.6	-23 11.2
15	07	36.9	+21 34.2	09	37.8	+14 08.8	11	30.8	+03 08.9	13	19.6	-08 23.7	15	20.4	-18 23.8	17	29.1	-23 14.7
16	07	40.9	+21 24.7	09	41.5	+13 50.0	11	34.4	+02 45.8	13	23.3	-08 45.9	15	24.5	-18 39.0	17	33.5	-23 17.8
17	07	45.0	+21 14.8	09	45.3	+13 31.0	11	38.0	+02 22.7	13	27.1	-09 08.0	15	28.7	-18 54.0	17	37.9	-23 20.3
18	07	49.0	+21 04.5	09	49.0	+13 11.8	11	41.6	+01 59.5	13	30.8	-09 29.9	15	32.8	-19 08.6	17	42.3	-23 22.4
19	07	53.0	+20 53.9	09	52.7	+12 52.4	11	45.2	+01 36.2	13	34.6	-09 51.7	15	37.0	-19 22.8	17	46.8	-23 24.1
20	07	57.0	+20 43.0	09	56.4	+12 32.8	11	48.8	+01 12.9	13	38.3	-10 13.3	15	41.1	-19 36.7	17	51.2	-23 25.2
21	08	01.0	+20 31.7	10	00.1	+12 13.0	11	52.4	+00 49.6	13	42.1	-10 34.8	15	45.3	-19 50.2	17	55.7	-23 25.9
22	08	05.0	+20 20.0	10	03.8	+11 53.0	11	56.0	+00 26.3	13	45.9	-10 56.2	15	49.5	-20 03.4	18	00.1	-23 26.2
23	08	09.0	+20 08.0	10	07.5	+11 32.8	11	59.5	+00 02.9	13	49.7	-11 17.3	15	53.7	-20 16.2	18	04.5	-23 25.9
24	08	13.0	+19 55.7	10	11.2	+11 12.4	12	03.1	-00 20.4	13	53.5	-11 38.3	15	57.9	-20 28.7	18	09.0	-23 25.2
25	08	16.9	+19 43.0	10	14.9	+10 51.8	12	06.7	-00 43.8	13	57.3	-11 59.2	16	02.2	-20 40.7	18	13.4	-23 24.0
26	08	20.9	+19 30.0	10	18.6	+10 31.1	12	10.3	-01 07.2	14	01.1	-12 19.8	16	06.4	-20 52.4	18	17.9	-23 22.3
27	08	24.8	+19 16.7	10	22.2	+10 10.2	12	13.9	-01 30.5	14	05.0	-12 40.3	16	10.7	-21 03.7	18	22.3	-23 20.2
28	08	28.8	+19 03.1	10	25.9	+09 49.2	12	17.5	-01 53.9	14	08.8	-13 00.5	16	15.0	-21 14.6	18	26.7	-23 17.6
29	08	32.7	+18 49.1	10	29.5	+09 28.0	12	21.1	-02 17.2	14	12.7	-13 20.6	16	19.2	-21 25.1	18	31.2	-23 14.6
30	08	36.6	+18 34.9	10	33.2	+09 06.6	12	24.8	-02 40.6	14	16.6	-13 40.4	16	23.5	-21 35.1	18	35.6	-23 11.0
31	08	40.5	+18 20.3	10	36.8	+08 45.1				14	20.5	-14 00.0				18	40.0	-23 07.0

GEOCENTRIC POSITION of the MOON

(0 hr UT, Epoch 2000.0)

	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE		
	RA		Dec.	RA		Dec.	RA		Dec.	RA		Dec.	RA		Dec.	RA		Dec.
	hh	mm.m	° ' "	hh	mm.m	° ' "	hh	mm.m	° ' "	hh	mm.m	° ' "	hh	mm.m	° ' "	hh	mm.m	° ' "
1	19	45.2	-25 55.2	23	05.2	-07 08.8	23	36.9	-02 50.7	02	53.4	+20 47.8	05	38.3	+28 29.7	09	14.3	+19 17.9
2	20	42.4	-22 22.8	23	56.0	-00 19.2	00	29.1	+04 16.5	03	54.7	+25 11.9	06	42.8	+28 05.7	10	04.0	+14 11.6
3	21	37.1	-17 34.8	00	46.7	+06 31.0	01	22.2	+11 09.4	04	58.0	+27 52.8	07	43.7	+25 57.2	10	50.1	+08 39.1
4	22	29.3	-11 49.6	01	38.5	+12 59.7	02	17.1	+17 22.2	06	01.5	+28 41.7	08	39.9	+22 26.0	11	33.7	+02 55.1
5	23	19.6	-05 27.0	02	32.4	+18 45.3	03	14.5	+22 30.9	07	02.9	+27 43.1	09	31.2	+17 55.6	12	16.1	-02 48.7
6	00	09.1	+01 13.2	03	29.1	+23 26.9	04	14.4	+26 14.6	08	00.8	+25 11.3	10	18.6	+12 46.2	12	58.4	-08 22.7
7	00	59.0	+07 51.7	04	28.6	+26 45.0	05	16.0	+28 18.6	08	54.4	+21 26.2	11	03.1	+07 14.2	13	41.6	-13 37.6
8	01	50.7	+14 08.3	05	29.9	+28 25.2	06	17.6	+28 37.3	09	43.9	+16 47.6	11	45.7	+01 32.1	14	26.7	-18 23.1
9	02	45.1	+19 41.6	06	31.4	+28 21.2	07	17.3	+27 15.3	10	30.0	+11 33.0	12	27.7	-04 09.4	15	14.3	-22 27.6
10	03	43.0	+24 09.1	07	31.0	+26 37.3	08	13.7	+24 25.9	11	13.8	+05 57.2	13	10.0	-09 40.2	16	04.9	-25 37.8
11	04	44.0	+27 09.3	08	27.3	+23 27.4	09	06.2	+20 26.7	11	56.2	+00 12.6	13	53.6	-14 50.2	16	58.4	-27 40.4
12	05	46.8	+28 26.0	09	19.6	+19 10.5	09	55.1	+15 36.7	12	38.3	-05 29.7	14	39.2	-19 28.2	17	53.9	-28 23.8
13	06	49.3	+27 54.4	10	08.3	+14 06.5	10	40.9	+10 12.9	13	20.9	-10 58.9	15	27.5	-23 21.7	18	50.2	-27 41.3
14	07	49.3	+25 42.3	10	53.9	+08 33.5	11	24.6	+04 30.6	14	04.9	-16 04.1	16	18.7	-26 17.4	19	45.9	-25 32.7
15	08	45.2	+22 07.5	11	37.5	+02 46.9	12	07.1	-01 17.4	14	51.1	-20 33.7	17	12.4	-28 02.6	20	39.9	-22 04.7
16	09	36.9	+17 32.1	12	19.9	-03 00.4	12	49.4	-06 59.4	15	39.9	-24 15.2	18	07.8	-28 27.4	21	31.8	-17 28.6
17	10	24.6	+12 17.1	13	02.3	-08 37.6	13	32.4	-12 24.5	16	31.5	-26 56.0	19	03.6	-27 26.9	22	21.8	-11 58.4
18	11	09.4	+06 40.1	13	45.6	-13 54.6	14	16.9	-17 22.0	17	25.6	-28 24.0	19	58.7	-25 02.1	23	10.7	-05 49.1
19	11	52.3	+00 55.1	14	30.7	-18 41.3	15	03.7	-21 40.5	18	21.2	-28 30.2	20	52.2	-21 19.5	23	59.4	+00 43.4
20	12	34.5	-04 46.8	15	18.5	-22 46.4	15	53.2	-25 08.0	19	17.3	-27 09.7	21	43.8	-16 29.8	00	49.3	+07 21.6
21	13	16.9	-10 16.1	16	09.4	-25 57.3	16	45.7	-27 31.7	20	12.7	-24 23.6	22	34.1	-10 45.6	01	41.6	+13 45.3
22	14	00.7	-15 23.6	17	03.6	-27 59.9	17	40.8	-28 39.4	21	06.8	-20 17.8	23	23.8	-04 21.6	02	37.5	+19 30.1
23	14	46.8	-19 58.8	18	00.5	-28 40.7	18	37.6	-28 21.4	21	59.4	-15 02.8	00	14.0	+02 25.5	03	37.7	+24 08.6
24	15	36.0	-23 49.3	18	59.0	-27 49.2	19	34.9	-26 32.4	22	50.9	-08 52.3	01	06.0	+09 15.3	04	41.9	+27 13.3
25	16	28.9	-26 40.6	19	57.7	-25 21.7	20	31.5	-23 13.7	23	42.3	-02 03.5	02	01.1	+15 43.0	05	48.1	+28 23.7
26	17	25.1	-28 16.8	20	55.1	-21 22.5	21	26.7	-18 32.8	00	34.6	+05 02.4	03	00.2	+21 19.1	06	53.6	+27 34.6
27	18	23.8	-28 23.9	21	50.7	-16 04.4	22	20.5	-12 43.0	01	29.1	+11 59.5	04	03.4	+25 32.6	07	55.8	+24 57.8
28	19	23.4	-26 53.7	22	44.4	-09 46.1	23	13.2	-06 02.4	02	26.8	+18 17.9	05	09.6	+27 57.5	08	53.2	+20 56.7
29	20	22.1	-23 47.3				00	05.8	+01 06.3	03	28.1	+23 26.1	06	16.2	+28 20.8	09	45.6	+15 57.8
30	21	18.8	-19 15.1				00	59.4	+08 16.9	04	32.6	+26 55.9	07	20.3	+26 47.7	10	33.8	+10 24.7
31	22	13.0	-13 35.0				01	55.0	+15 00.6				08	19.9	+23 38.1			
	JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER		
1	11	19.0	+04 35.9	13	57.6	-15 52.3	16	59.2	-28 00.3	19	25.8	-26 30.7	22	34.4	-09 57.9	00	44.3	+07 25.6
2	12	02.3	-01 14.5	14	43.8	-20 22.2	17	54.3	-28 36.9	20	20.1	-23 25.8	23	24.0	-03 31.4	01	37.6	+13 52.7
3	12	45.0	-06 55.8	15	32.5	-24 04.4	18	50.5	-27 48.1	21	13.1	-19 05.3	00	14.6	+03 18.4	02	35.1	+19 42.0
4	13	28.1	-12 18.5	16	24.1	-26 46.8	19	46.5	-25 31.7	22	04.8	-13 39.8	01	07.5	+10 09.7	03	37.6	+24 21.7
5	14	12.7	-17 13.2	17	18.5	-28 16.9	20	41.5	-21 51.7	22	55.7	-07 23.4	02	03.8	+16 35.5	04	44.3	+27 20.0
6	14	59.6	-21 29.4	18	14.7	-28 24.3	21	34.9	-16 57.9	23	46.7	-00 33.9	03	04.3	+22 04.0	05	52.9	+28 14.9
7	15	49.4	-24 55.0	19	11.6	-27 03.0	22	26.7	-11 04.8	00	38.7	+06 26.7	04	08.9	+26 02.9	07	00.2	+27 03.4
8	16	42.1	-27 16.8	20	07.8	-24 13.7	23	17.6	-04 30.6	01	33.0	+13 12.7	05	16.0	+28 07.4	08	03.3	+24 02.2
9	17	37.4	-28 22.1	21	02.3	-20 04.5	00	08.4	+02 23.7	02	30.4	+19 14.9	06	22.9	+28 07.8	09	01.0	+19 39.1
10	18	34.1	-28 01.8	21	54.7	-14 48.8	01	00.2	+09 14.8	03	31.4	+24 04.0	07	26.8	+26 13.0	09	53.5	+14 23.3
11	19	30.6	-26 12.9	22	45.5	-08 43.9	01	54.2	+15 37.8	04	35.4	+27 14.6	08	25.9	+22 45.2	10	41.7	+08 38.9
12	20	25.9	-22 59.9	23	35.2	-02 09.0	02	51.0	+21 07.2	05	40.5	+28 31.3	09	19.8	+18 10.8	11	27.0	+02 44.1
13	21	19.0	-18 33.7	00	25.0	+04 35.6	03	51.1	+25 18.7	06	44.4	+27 52.9	10	09.3	+12 53.5	12	10.7	-03 07.4
14	22	10.0	-13 09.3	01	15.9	+11 09.1	04	53.6	+27 52.3	07	45.0	+25 31.9	10	55.4	+07 12.7	12	53.9	-08 45.1
15	22	59.3	-07 03.4	02	09.2	+17 09.5	05	57.0	+28 36.9	08	41.1	+21 48.8	11	39.3	+01 23.0	13	37.7	-13 59.4
16	23	48.0	-00 33.4	03	05.6	+22 14.1	06	59.2	+27 32.9	09	32.8	+17 06.2	12	22.2	-04 23.5	14	23.1	-18 40.5
17	00	37.1	+06 02.6	04	05.4	+26 00.4	07	58.3	+24 52.1	10	20.8	+11 44.2	13	05.3	-09 56.3	15	10.7	-22 37.6
18	01	28.0	+12 25.5	05	07.9	+28 09.2	08	53.3	+20 53.4	11	06.1	+06 00.1	13	49.4	-15 05.1	16	00.8	-25 39.4
19	02	21.7	+18 14.2	06	11.4	+28 29.1	09	44.4	+15 57.7	11	49.7	+00 07.9	14	35.3	-19 38.8	16	53.3	-27 34.4
20	03	19.2	+23 04.9	07	13.5	+27 00.8	10	32.1	+10 24.9	12	32.8	-05 39.9	15	23.5	-23 25.8	17	47.3	-28 13.5
21	04	20.6	+26 33.2	08	12.6	+23 56.7	11	17.4	+04 32.5	13	16.2	-11 11.8	16	14.2	-26 14.2	18	41.8	-27 31.8
22	05	24.7	+28 18.1	09	07.5	+19 36.9	12	01.2	-01 24.5	14	00.9	-16 16.6	17	06.9	-27 53.3	19	35.6	-25 30.2
23	06	29.5	+28 08.9	09	58.4	+14 24.2	12	44.6	-07 13.1	14	47.4	-20 42.6	18	00.9	-28 15.2	20	27.7	-22 15.1
24	07	32.3	+26 09.1	10	46.0	+08 39.5	13	28.4	-12 41.6	15	36.2	-24 18.3	18	55.0	-27 16.9	21	17.8	-17 56.8
25	08	31.2	+22 36.0	11	31.1	+02 41.0	14	13.6	-17 38.6	16	27.3	-26 52.3	19	48.2	-25 00.5	22	06.1	-12 47.3
26	09	25.6	+17 53.6	12	14.9	-03 16.3	15	00.7	-21 53.0	17	20.3	-28 14.8	20	39.7	-21 32.6	22	53.3	-06 59.6
27	10	15.6	+12 26.5	12	58.4	-09 00.0	15	50.1	-25 13.9	18	14.5	-28 18.9	21	29.5	-17 02.5	23	40.2	-00 46.7
28	11	02.3	+06 35.9	13	42.5	-14 19.3	16	41.9	-27 30.2	19	08.7	-27 02.1	22	18.0	-11 41.0	00	28.1	+05 37.1
29	11	46.7	+00 38.7	14	28.1	-19 03.7	17	35.7	-28 32.4	20	02.1	-24 26.4	23	05.9	-05 39.8	01	18.4	+11 55.0
30	12	30.1	-05 12.1	15	15.8	-23 02.9	18	30.7	-28 13.5	20	54.1	-20 37.6	23	54.2	+00 47.8	02	12.2	+17 46.0
31	13	13.4	-10 45.6	16	06.2	-26 05.5	19	25.8	-26 30.7	21	44.7	-15 44.5	00	44.3	+07 25.6	03	10.7	+22 44.2

GEOCENTRIC POSITION OF PLANETS (& Pluto) (0hr UT, Epoch 2000.0)

		MERCURY		VENUS		MARS		JUPITER		SATURN		URANUS		NEPTUNE		PLUTO	
		RA	Dec	RA	Dec	RA	Dec	RA	Dec	RA	Dec	RA	Dec	RA	Dec	RA	Dec
		h m s	° ' "	h m s	° ' "	h m s	° ' "	h m s	° ' "	h m s	° ' "	h m s	° ' "	h m s	° ' "	h m s	° ' "
Jan	4	17 31.8	-22 34.9	22 12.2	-12 22.9	08 14.7	+23 57.2	04 44.7	+21 42.7	23 05.6	-07 57.3	03 23.5	+18 19.8	23 51.0	-02 22.4	20 15.2	-23 10.2
	11	18 14.6	-23 37.1	22 38.9	-09 10.9	08 03.6	+24 41.9	04 42.0	+21 39.2	23 07.8	-07 42.8	03 23.0	+18 17.9	23 51.4	-02 19.3	20 16.1	-23 07.7
	18	19 00.2	-23 43.8	23 03.6	-05 53.5	07 51.6	+25 20.6	04 39.9	+21 36.8	23 10.2	-07 27.1	03 22.6	+18 16.5	23 52.0	-02 15.6	20 17.1	-23 05.2
	25	19 47.5	-22 46.9	23 26.1	-02 35.6	07 40.0	+25 50.0	04 38.5	+21 35.6	23 12.7	-07 10.3	03 22.4	+18 15.8	23 52.6	-02 11.4	20 18.1	-23 02.7
Feb	1	20 35.7	-20 41.4	23 46.3	+00 37.6	07 29.8	+26 08.4	04 37.8	+21 35.7	23 15.5	-06 52.6	03 22.3	+18 15.8	23 53.3	-02 06.7	20 19.0	-23 00.3
	8	21 24.4	-17 24.6	00 03.4	+03 40.0	07 21.9	+26 16.2	04 37.8	+21 37.2	23 18.3	-06 34.0	03 22.4	+18 16.4	23 54.1	-02 01.5	20 20.0	-22 58.0
	15	22 13.1	-12 56.7	00 16.8	+06 24.3	07 16.8	+26 15.1	04 38.5	+21 40.0	23 21.3	-06 14.7	03 22.7	+18 17.6	23 54.9	-01 56.0	20 20.9	-22 55.8
	22	23 00.9	-07 25.9	00 25.3	+08 41.1	07 14.4	+26 07.1	04 39.9	+21 44.1	23 24.4	-05 55.0	03 23.2	+18 19.5	23 55.8	-01 50.2	20 21.7	-22 53.9
Mar	1	23 44.7	-01 24.3	00 27.8	+10 18.4	07 14.8	+25 53.7	04 41.9	+21 49.4	23 27.5	-05 35.0	03 23.8	+18 22.0	23 56.7	-01 44.2	20 22.6	-22 52.1
	8	00 17.2	+03 50.8	00 23.4	+11 00.8	07 17.8	+25 35.8	04 44.5	+21 55.5	23 30.7	-05 14.7	03 24.6	+18 25.1	23 57.6	-01 38.0	20 23.4	-22 50.6
	15	00 28.9	+06 34.4	00 12.3	+10 33.7	07 22.8	+25 13.7	04 47.8	+22 02.5	23 33.9	-04 54.5	03 25.6	+18 28.7	23 58.6	-01 31.7	20 24.1	-22 49.4
	22	00 18.0	+05 44.0	23 57.3	+08 57.0	07 29.8	+24 47.8	04 51.5	+22 10.0	23 37.1	-04 34.4	03 26.6	+18 32.7	23 59.6	-01 25.5	20 24.7	-22 48.4
Apr	29	23 58.0	+02 21.9	23 42.9	+06 35.3	07 38.3	+24 17.8	04 55.8	+22 17.9	23 40.2	-04 14.6	03 27.9	+18 37.2	00 00.5	-01 19.2	20 25.2	-22 47.8
	5	23 47.2	-00 46.8	23 33.6	+04 09.3	07 48.1	+23 43.4	05 00.5	+22 25.9	23 43.3	-03 55.3	03 29.2	+18 42.0	00 01.5	-01 13.1	20 25.7	-22 47.5
	12	23 52.1	-02 02.4	23 31.3	+02 13.5	07 59.0	+23 04.4	05 05.5	+22 33.9	23 46.4	-03 36.5	03 30.6	+18 47.2	00 02.4	-01 07.2	20 26.1	-22 47.5
	19	00 09.9	-01 20.0	23 36.2	+01 04.4	08 10.7	+22 20.5	05 11.0	+22 41.6	23 49.3	-03 18.5	03 32.1	+18 52.5	00 03.3	-01 01.5	20 26.4	-22 47.9
May	26	00 36.8	+00 56.5	23 47.0	+00 43.8	08 23.2	+21 31.6	05 16.7	+22 48.8	23 52.1	-03 01.4	03 33.6	+18 58.1	00 04.2	-00 56.1	20 26.6	-22 48.6
	3	01 10.6	+04 24.4	00 02.3	+01 05.9	08 36.2	+20 37.5	05 22.7	+22 55.5	23 54.8	-02 45.4	03 35.3	+19 03.7	00 05.0	-00 51.1	20 26.7	-22 49.6
	10	01 50.6	+08 45.0	00 21.1	+02 03.0	08 49.8	+19 38.1	05 29.0	+23 01.5	23 57.3	-02 30.5	03 36.9	+19 09.4	00 05.7	-00 46.5	20 26.6	-22 51.0
	17	02 37.4	+13 38.8	00 42.4	+03 27.8	09 03.6	+18 33.5	05 35.4	+23 06.6	23 59.6	-02 17.0	03 38.6	+19 15.1	00 06.4	-00 42.4	20 26.5	-22 52.6
Jun	24	03 32.4	+18 35.6	01 05.7	+05 13.4	09 17.8	+17 23.8	05 42.0	+23 10.7	00 01.7	-02 04.8	03 40.3	+19 20.8	00 07.0	-00 38.8	20 26.3	-22 54.6
	31	04 35.1	+22 43.0	01 30.6	+07 13.3	09 32.2	+16 09.0	05 48.8	+23 13.8	00 03.6	-01 54.2	03 41.9	+19 26.3	00 07.5	-00 35.8	20 26.1	-22 56.8
	7	05 40.7	+25 00.3	01 56.8	+09 21.7	09 46.9	+14 49.4	05 55.6	+23 15.8	00 05.2	-01 45.3	03 43.6	+19 31.7	00 08.0	-00 33.3	20 25.7	-22 59.2
	14	06 41.6	+25 07.2	02 24.2	+11 33.5	10 01.6	+13 25.3	06 02.6	+23 16.7	00 06.6	-01 38.1	03 45.2	+19 36.9	00 08.3	-00 31.5	20 25.3	-23 01.8
Jul	21	07 33.4	+23 31.6	02 52.9	+13 43.6	10 16.5	+11 56.9	06 09.5	+23 16.4	00 07.8	-01 32.8	03 46.7	+19 41.8	00 08.6	-00 30.3	20 24.8	-23 04.6
	28	08 14.7	+20 54.5	03 22.7	+15 47.2	10 31.5	+10 24.4	06 16.5	+23 14.9	00 08.6	-01 29.4	03 48.2	+19 46.4	00 08.7	-00 29.7	20 24.2	-23 07.5
	5	08 44.8	+17 53.5	03 53.7	+17 39.6	10 46.6	+08 48.3	06 23.4	+23 12.2	00 09.2	-01 27.9	03 49.6	+19 50.7	00 08.8	-00 29.7	20 23.6	-23 10.5
	12	09 02.7	+15 03.8	04 25.8	+19 16.7	11 01.9	+07 09.0	06 30.3	+23 08.5	00 09.4	-01 28.3	03 50.8	+19 54.7	00 08.7	-00 30.4	20 22.9	-23 13.4
Aug	19	09 06.6	+13 03.0	04 58.9	+20 34.3	11 17.2	+05 26.7	06 37.1	+23 03.7	00 09.4	-01 30.8	03 52.0	+19 58.2	00 08.6	-00 31.7	20 22.3	-23 16.4
	26	08 55.8	+12 28.8	05 32.9	+21 28.9	11 32.7	+03 42.0	06 43.8	+22 57.8	00 09.0	-01 35.1	03 53.0	+20 01.4	00 08.4	-00 33.6	20 21.6	-23 19.3
	2	08 36.2	+13 34.1	06 07.6	+21 57.5	11 48.3	+01 55.2	06 50.3	+22 51.1	00 08.4	-01 41.3	03 53.9	+20 04.1	00 08.0	-00 36.0	20 20.9	-23 22.1
	9	08 22.4	+15 34.8	06 42.8	+21 58.1	12 04.2	+00 06.9	06 56.7	+22 43.7	00 07.4	-01 49.1	03 54.7	+20 06.3	00 07.6	-00 38.9	20 20.2	-23 24.7
Sep	16	08 28.3	+17 12.2	07 18.2	+21 29.5	12 20.2	-01 42.5	07 02.8	+22 35.6	00 06.2	-01 58.5	03 55.3	+20 08.0	00 07.2	-00 42.4	20 19.6	-23 27.2
	23	08 57.3	+17 16.0	07 53.6	+20 31.5	12 36.4	-03 32.4	07 08.7	+22 26.9	00 04.8	-02 09.3	03 55.7	+20 09.3	00 06.6	-00 46.2	20 18.9	-23 29.4
	30	09 43.2	+15 04.1	08 28.6	+19 05.0	12 52.9	-05 22.2	07 14.4	+22 18.0	00 03.2	-02 21.1	03 56.0	+20 10.0	00 06.0	-00 50.3	20 18.4	-23 31.4
	6	10 34.9	+10 51.3	09 03.2	+17 12.1	13 09.7	-07 11.5	07 19.7	+22 08.9	00 01.4	-02 33.7	03 56.1	+20 10.3	00 05.4	-00 54.7	20 17.9	-23 33.2
Oct	13	11 24.7	+05 34.6	09 37.2	+14 55.1	13 26.9	-08 59.3	07 24.6	+21 59.9	23 59.5	-02 46.8	03 56.0	+20 10.0	00 04.7	-00 59.3	20 17.4	-23 34.6
	20	12 10.7	+00 02.3	10 10.6	+12 17.2	13 44.4	-10 45.2	07 29.2	+21 51.2	23 57.5	-03 00.1	03 55.7	+20 09.3	00 04.0	-01 03.9	20 17.1	-23 35.7
	27	12 53.5	-05 19.7	10 43.4	+09 21.9	14 02.3	-12 28.4	07 33.4	+21 43.0	23 55.5	-03 13.2	03 55.3	+20 08.0	00 03.3	-01 08.6	20 16.8	-23 36.5
	4	13 34.0	-10 18.0	11 15.8	+06 13.2	14 20.7	-14 08.0	07 37.0	+21 35.5	23 53.6	-03 25.8	03 54.7	+20 06.3	00 02.6	-01 13.2	20 16.6	-23 37.0
Nov	11	14 13.0	-14 44.3	11 47.9	+02 54.9	14 39.5	-15 43.2	07 40.2	+21 28.9	23 51.7	-03 37.5	03 54.0	+20 04.2	00 01.9	-01 17.6	20 16.5	-23 37.1
	18	14 50.9	-18 31.1	12 19.9	-00 29.0	14 58.8	-17 13.2	07 42.8	+21 23.5	23 50.0	-03 48.1	03 53.1	+20 01.6	00 01.2	-01 21.8	20 16.5	-23 36.9
	25	15 26.7	-21 29.1	12 52.0	-03 54.3	15 18.6	-18 37.0	07 44.8	+21 19.5	23 48.5	-03 57.2	03 52.2	+19 58.7	00 00.6	-01 25.6	20 16.6	-23 36.4
	1	15 57.4	-23 24.6	13 24.4	-07 16.7	15 38.9	-19 53.6	07 46.1	+21 17.0	23 47.1	-04 04.7	03 51.1	+19 55.4	00 00.1	-01 29.0	20 16.8	-23 35.5
Dec	8	16 15.7	-23 53.9	13 57.3	-10 31.7	15 59.8	-21 02.0	07 46.9	+21 16.3	23 46.1	-04 10.3	03 50.0	+19 52.0	23 59.6	-01 32.0	20 17.1	-23 34.4
	15	16 08.4	-22 12.4	14 30.9	-13 35.1	16 21.1	-22 01.4	07 46.9	+21 17.2	23 45.3	-04 13.9	03 48.8	+19 48.3	23 59.2	-01 34.4	20 17.5	-23 33.0
	22	15 35.0	-18 10.1	15 05.4	-16 22.1	16 42.9	-22 50.8	07 46.2	+21 20.0	23 44.8	-04 15.5	03 47.5	+19 44.6	23 58.9	-01 36.2	20 18.0	-23 31.3
	29	15 14.6	-15 26.6	15 40.9	-18 48.2	17 05.2	-23 29.3	07 44.9	+21 24.4	23 44.7	-04 14.9	03 46.3	+19 40.8	23 58.6	-01 37.3	20 18.6	-23 29.4
	6	15 26.2	-16 12.0	16 17.4	-20 49.0	17 27.8	-23 56.1	07 42.9	+21 30.4	23 44.8	-04 12.2	03 45.2	+19 37.2	23 58.5	-01 37.8	20 19.2	-23 27.3
	13	15 56.8	-18 36.2	16 54.7	-22 20.5	17 50.8	-24 10.7	07 40.3	+21 37.8	23 45.3	-04 07.4	03 44.0	+19 33.6	23 58.5	-01 37.7	20 20.0	-23 25.0
	20	16 36.1	-21 07.8	17 32.7	-23 19.5	18 14.0	-24 12.5	07 37.2	+21 46.2	23 46.1	-04 00.6	03 43.0	+19 30.3	23 58.6	-01 36.8	20 20.8	-23 22.5
	27	17 19.7	-23 06.1	18 11.2	-23 43.5	18 37.3	-24 01.2	07 33.6	+21 55.4	23 47.2	-03 51.8	03 42.0	+19 27.4	23 58.8	-01 35.3	20 21.6	-23 20.0

RISE and SET times for ADELAIDE (CST)

		SUN				MERCURY		VENUS		MARS		JUPITER		SATURN		URANUS		NEPTUNE		PLUTO	
		Twilight Beg	Rise	Set	Twilight End	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jan	4	03:22	05:08	19:33	21:18	03:43	18:05	08:56	22:11	20:43	06:28	17:07	03:06	10:02	22:50	15:35	01:56	11:03	23:19	06:25	20:47
	11	03:30	05:14	19:33	21:16	03:54	18:24	09:04	22:00	20:07	05:47	16:36	02:36	09:38	22:24	15:07	01:28	10:36	22:52	05:59	20:21
	18	03:39	05:21	19:31	21:12	04:12	18:42	09:11	21:48	19:30	05:06	16:06	02:06	09:13	21:58	14:39	01:00	10:09	22:25	05:32	19:54
	25	03:49	05:28	19:27	21:06	04:35	18:58	09:15	21:33	18:52	04:25	15:38	01:38	08:49	21:32	14:11	00:32	09:43	21:58	05:06	19:27
Feb	1	03:59	05:35	19:23	20:59	05:02	19:12	09:17	21:17	18:16	03:46	15:09	01:09	08:25	21:06	13:43	00:05	09:16	21:31	04:39	19:01
	8	04:09	05:42	19:17	20:50	05:34	19:22	09:15	20:58	17:41	03:10	14:42	00:42	08:01	20:41	13:16	23:33	08:50	21:04	04:13	18:34
	15	04:18	05:49	19:10	20:41	06:09	19:29	09:08	20:36	17:09	02:37	14:15	00:15	07:38	20:15	12:49	23:06	08:23	20:37	03:46	18:07
	22	04:27	05:56	19:02	20:31	06:45	19:33	08:56	20:10	16:38	02:08	13:49	23:45	07:14	19:50	12:22	22:39	07:57	20:10	03:20	17:40
Mar	1	04:35	06:02	18:53	20:20	07:19	19:31	08:35	19:40	16:11	01:41	13:24	23:19	06:51	19:25	11:55	22:12	07:30	19:43	02:53	17:14
	8	04:42	06:09	18:44	20:10	07:39	19:21	08:06	19:06	15:45	01:18	13:00	22:54	06:27	18:59	11:29	21:45	07:04	19:16	02:27	16:47
	15	04:49	06:14	18:34	19:59	07:31	18:57	07:26	18:28	15:21	00:56	12:36	22:29	06:04	18:34	11:02	21:18	06:38	18:49	02:00	16:20
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RISE and SET times for BRISBANE (EST)

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RISE and SET times for CANBERRA (EST)

		SUN				MERCURY		VENUS		MARS		JUPITER		SATURN		URANUS		NEPTUNE		PLUTO	
		Twilight	Rise	Set	Twilight	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jan	4	03:08	04:55	19:22	21:08	03:29	17:54	08:43	21:59	20:32	06:15	16:55	02:53	09:50	22:38	15:24	01:43	10:51	23:07	06:12	20:36
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RISE and SET times for DARWIN (CST)

		SUN				MERCURY		VENUS		MARS		JUPITER		SATURN		URANUS		NEPTUNE		PLUTO	
		Twi Beg	Rise	Set	Twi End	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jan	4	05:09	06:27	19:17	20:35	05:01	17:49	09:52	22:18	20:25	07:49	16:54	04:21	10:49	23:06	15:30	03:03	11:39	23:46	07:45	20:31
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Feb	1	05:27	06:41	19:20	20:34	06:17	19:01	09:47	21:50	17:53	05:11	14:57	02:24	09:10	21:25	13:39	01:12	09:52	21:58	05:58	18:44
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	13	04:57	06																		

RISE and SET times for HOBART (EST)

		SUN				MERCURY		VENUS		MARS		JUPITER		SATURN		URANUS		NEPTUNE		PLUTO	
		Twilight Beg	Rise	Set	Twilight End	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
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RISE and SET times for MELBOURNE (EST)

		SUN				MERCURY		VENUS		MARS		JUPITER		SATURN		URANUS		NEPTUNE		PLUTO	
		Twi Beg	Rise	Set	Twi End	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jan	4	03:10	05:04	19:46	21:39	03:39	18:17	08:56	22:19	20:56	06:25	17:18	03:03	10:04	22:57	15:45	01:54	11:07	23:24	06:21	21:00
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Feb	1	03:52	05:33	19:33	21:14	04:59	19:23	09:21	21:21	18:30	03:41	15:21	01:06	08:27	21:13	13:54	23:59	09:20	21:36	04:36	19:13
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RISE and SET times for PERTH (WST)

		SUN				MERCURY		VENUS		MARS		JUPITER		SATURN		URANUS		NEPTUNE		PLUTO	
		Twilight Beg	Rise	Set	Twilight End	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
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Feb	1	04:10	05:42	19:18	20:49	05:10	19:06	09:18	21:18	18:08	03:55	15:03	01:17	08:28	21:05	13:39	00:11	09:18	21:31	04:48	18:54
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RISE and SET times for SYDNEY (EST)

		SUN				MERCURY		VENUS		MARS		JUPITER		SATURN		URANUS		NEPTUNE		PLUTO	
		Twi Beg	Rise	Set	Twi End	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
Jan	4	03:07	04:50	19:10	20:53	03:24	17:42	08:37	21:49	20:20	06:11	16:44	02:48	09:43	22:29	15:12	01:37	10:43	22:59	06:07	20:24
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Feb	1	03:42	05:16	19:00	20:34	04:44	18:49	08:56	20:56	17:53	03:28	14:46	00:51	08:05	20:45	13:21	23:42	08:56	21:10	04:21	18:37
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	17	05:15	06:42	17:01	18:28	05:28	16:19	03:06	14:52	12:09	22:31	08:56	18:47	02:09	14:24	06:47	17:03	02:20	14:26	21:33	11:52
	24	05:19	06:46	16:57	18:25	06:10	16:33	03:06	14:43	11:52	22:21	08:35	18:26	01:44	13:58	06:22	16:36	01:53	13:59	21:05	11:24
	31	05:22	06:51	16:54	18:23	06:58	16:55	03:09	14:35	11:35	22:11	08:15	18:05	01:19	13:32	05:56	16:10	01:26	13:32	20:37	10:56
Jun	7	05:26	06:55	16:53	18:22	07:44	17:26	03:13	14:27	11:18	22:02	07:54	17:45	00:53	13:06	05:31	15:44	00:59	13:05	20:09	10:29
	14	05:28	06:58	16:53	18:22	08:18	17:59	03:19	14:21	11:01	21:53	07:33	17:24	00:27	12:39	05:05	15:18	00:32	12:38	19:41	10:01
	21	05:30	07:00	16:54	18:23	08:37	18:29	03:26	14:16	10:45	21:45	07:13	17:03	23:58	12:12	04:39	14:52	00:05	12:10	19:13	09:33
	28	05:32	07:01	16:56	18:25	08:42	18:50	03:35	14:13	10:28	21:37	06:52	16:43	23:31	11:46	04:13	14:25	23:34	11:43	18:44	09:05
Jul	5	05:32	07:01	16:59	18:28	08:35	19:02	03:44	14:10	10:11	21:29	06:31	16:22	23:04	11:19	03:47	13:59	23:06	11:16	18:16	08:37
	12	05:31	06:59	17:02	18:31	08:17	18:59	03:53	14:10	09:54	21:21	06:10	16:02	22:37	10:51	03:21	13:33	22:39	10:48	17:48	08:09
	19	05:29	06:56	17:07	18:34	07:48	18:41	04:02	14:12	09:37	21:13	05:49	15:41	22:09	10:24	02:55	13:06	22:11	10:20	17:19	07:41
	26	05:25	06:52	17:11	18:38	07:08	18:03	04:12	14:15	09:20	21:06	05:28	15:21	21:41	09:56	02:29	12:39	21:43	09:53	16:51	07:13
Aug	2	05:21	06:47	17:16	18:42	06:24	17:13	04:20	14:21	09:03	20:59	05:07	15:00	21:12	09:28	02:02	12:13	21:15	09:25	16:23	06:45
	9	05:15	06:40	17:21	18:46	05:49	16:26	04:28	14:29	08:47	20:52	04:45	14:39	20:44	09:00	01:36	11:46	20:47	08:57	15:54	06:17
	16	05:09	06:33	17:26	18:50	05:31	16:01	04:34	14:38	08:30	20:45	04:23	14:18	20:15	08:32	01:09	11:19	20:19	08:29	15:26	05:49
	23	05:01	06:25	17:31	18:54	05:32	16:03	04:39	14:49	08:14	20:39	04:01	13:57	19:45	08:03	00:42	10:52	19:51	08:02	14:58	05:21
	30	04:53	06:16	17:36	18:59	05:44	16:29	04:42	15:01	07:58	20:33	03:39	13:36	19:15	07:35	00:15	10:24	19:22	07:34	14:30	04:53
Sep	6	04:44	06:07	17:40	19:03	05:56	17:05	04:43	15:14	07:42	20:27	03:16	13:14	18:46	07:06	23:43	09:57	18:54	07:06	14:01	04:25
	13	04:35	05:57	17:45	19:08	06:04	17:42	04:43	15:27	07:27	20:21	02:53	12:52	18:16	06:37	23:16	09:29	18:26	06:38	13:33	03:57
	20	04:25	05:48	17:50	19:13	06:07	18:15	04:41	15:40	07:12	20:16	02:30	12:30	17:46	06:08	22:48	09:01	17:57	06:10	13:05	03:29
	27	04:14	05:38	17:55	19:19	06:08	18:45	04:38	15:54	06:57	20:12	02:06	12:07	17:15	05:40	22:20	08:34	17:29	05:42	12:38	03:02
Oct	4	04:04	05:28	18:00	19:25	06:07	19:11	04:34	16:07	06:43	20:07	01:41	11:43	16:45	05:11	21:52	08:06	17:00	05:14	12:10	02:34
	11	03:53	05:19	18:05	19:31	06:06	19:35	04:30	16:21	06:30	20:03	01:17	11:19	16:15	04:42	21:23	07:37	16:32	04:46	11:42	02:06
	18	03:43	05:10	18:11	19:38	06:05	19:57	04:25	16:34	06:17	19:59	00:52	10:54	15:46	04:13	20:55	07:09	16:04	04:18	11:15	01:39
	25	03:33	05:02	18:17	19:46	06:04	20:14	04:20	16:48	06:05	19:56	00:26	10:29	15:16	03:44	20:26	06:41	15:35	03:50	10:47	01:11
Nov	1	03:23	04:55	18:23	19:55	06:01	20:23	04:16	17:02	05:54	19:53	23:56	10:03	14:47	03:16	19:57	06:12	15:07	03:22	10:20	00:44
	8	03:15	04:48	18:30	20:03	05:50	20:14	04:12	17:16	05:44	19:50	23:29	09:36	14:18	02:48	19:29	05:44	14:39	02:54	09:53	00:17
	15	03:07	04:43	18:36	20:13	05:22	19:31	04:09	17:31	05:34	19:46	23:01	09:09	13:50	02:19	19:00	05:15	14:11	02:26	09:26	23:45
	22	03:01	04:40	18:43	20:22	04:34	18:17	04:08	17:46	05:26	19:43	22:33	08:40	13:22	01:51	18:31	04:47	13:43	01:58	08:59	23:18
	29	02:57	04:37	18:49	20:30	03:54	17:23	04:09	18:02	05:18	19:40	22:05	08:11	12:54	01:24	18:02	04:18	13:15	01:31	08:32	22:51
Dec	6	02:54	04:37	18:55	20:38	03:35	17:11	04:11	18:17	05:12	19:37	21:35	07:42	12:27	00:56	17:33	03:50	12:48	01:03	08:05	22:24
	13	02:54	04:38	19:01	20:45	03:30	17:22	04:16	18:32	05:06	19:33	21:06	07:11	12:00	00:29	17:04	03:21	12:20	00:35	07:39	21:57
	20	02:56	04:40	19:05	20:49	03:34	17:42	04:23	18:45	05:02	19:28	20:36	06:40	11:34	23:58	16:35	02:53	11:53	00:08	07:12	21:30
	27	03:00	04:44	19:08	20:52	03:43	18:04	04:33	18:57	04:58	19:23	20:05	06:09	11:08	23:31	16:07	02:25	11:25	23:37	06:45	21:04

DEEP SKY OBJECTS

Catalogue #	Ben net	Type	Con	Mag	Size	RA	Dec	Mth 10 ^{µm}	Map	Notes
NGC 55	1	G	Scl	7.9	32' × 6'	00 14.9	-39 11	10		A bright galaxy in the Sculptor Group
NGC 104	2	GC	Tue	4.0	43'	00 24.1	-72 05	10	1	47 Tucanae
NGC 205		G	And	8.1	22' × 11'	00 40.4	+41 41	10	3,9	M110
NGC 221		G	And	8.1	9' × 7'	00 42.7	+40 52	10	3,9	M32
NGC 224		G	And	3.4	3.2° × 1.0°	00 42.7	+41 16	10	3,9	M31, Andromeda Galaxy
NGC 247	3	G	Cet	9.2	21' × 7'	00 47.1	-20 46	10		
NGC 253	4	G	Scl	7.2	28' × 7'	00 47.6	-25 18	10		Silver Coin galaxy. Large, bright edge-on spiral
SMC		G								Small Magellanic Cloud
NGC 288	5	GC	Tue	2.3	6.6° × 3.7°	00 52.6	-72 48	10	1	Near galaxy NGC 253
NGC 300	6	G	Scl	8.1	14'	00 52.8	-26 35	10		
NGC 346		BN	Tue	8.3	22' × 16'	00 54.9	-37 41	10		Nebula in the SMC
NGC 362	7	GC	Tue	6.8	13'	01 03.2	-70 51	11	1	
NGC 598		G	Tri	5.7	71' × 42'	01 33.9	+30 39	11	3	M33, Triangulum Galaxy
NGC 613	8	G	Scl	10.1	6' × 4'	01 34.3	-29 25	11		
NGC 628		G	Psc	9.4	11' × 10'	01 36.7	+15 47	11	3	M74
NGC 891		G	And	9.9	14' × 3'	02 22.6	+42 21	11		
NGC 1039		OC	Per	5.2	35'	02 42.1	+42 47	11	3	M34
NGC 1068	9	G	Cet	8.9	7' × 6'	02 42.7	-00 01	11	2	M77, Cetus A
NGC 1097	10	G	For	9.5	9' × 6'	02 46.3	-30 17	11		
NGC 1232	10a	G	Eri	10.1	7' × 7'	03 09.8	-20 35	12		
NGC 1261	11	GC	Hor	8.4	7'	03 12.3	-55 13	12		
NGC 1269		G	Eri	8.5	11' × 10'	03 17.3	-41 06	12		
NGC 1291	12	G	Eri	8.6	10' × 8'	03 17.3	-41 08	12		
NGC 1313	13	G	Ret	8.7	9' × 7'	03 18.3	-66 30	12		
NGC 1316	14	G	For	8.5	12' × 9'	03 22.7	-37 13	12		
NGC 1350	14a	G	For	10.7	5' × 3'	03 31.1	-33 38	12		
NGC 1360	15	PN	For	9.4	11' × 8'	03 33.2	-25 52	12		
NGC 1365	16	G	For	9.6	11' × 6'	03 33.6	-36 08	12		
NGC 1380	17	G	For	10.2	5' × 2'	03 36.5	-34 59	12		
NGC 1387	18	G	For	10.9	3' × 3'	03 37.0	-35 31	12		
NGC 1399	19	G	For	9.6	7' × 7'	03 38.5	-35 27	12		In Fornax galaxy group
NGC 1398	19a	G	For	9.8	7' × 5'	03 38.9	-26 20	12		
NGC 1404	20	G	Eri	10.2	3' × 3'	03 38.9	-35 35	12		
NGC 1433	21	G	Hor	10.1	7' × 6'	03 42.0	-47 13	12		
Pleiades		OC	Tau	1.2	2°	03 47.0	+24 07	12	3	M45, Contains Merope Nebula
NGC 1512	21a	G	Hor	10.6	9' × 6'	04 03.9	-43 21	12		
NGC 1532		G	Eri	9.9	11' × 3'	04 12.1	-32 52	12		
NGC 1535	22	PN	Eri	9.4	48' × 42"	04 14.3	-12 44	12		
NGC 1549	23	G	Dor	9.7	5' × 4'	04 15.7	-55 36	12		
NGC 1553	24	G	Dor	9.4	5' × 3'	04 16.2	-55 47	12		Near galaxy NGC 1549
NGC 1566	25	G	Dor	9.7	7' × 5'	04 20.0	-54 56	12		
NGC 1617	25a	G	Dor	10.7	4' × 2'	04 31.7	-54 36	12		
NGC 1672	26	G	Dor	10.2	7' × 6'	04 45.7	-59 15	12		
NGC 1763	27	BN	Dor		25' × 20'	04 56.8	-66 24	12		
NGC 1783	28	GC	Dor	10.9	3'	04 58.9	-66 00	12		Part of LMC
NGC 1818	30	OC	Dor	9.7	3'	05 04.2	-66 24	1		
NGC 1792	29	G	Col	10.2	5' × 3'	05 05.2	-37 59	1		
NGC 1808	31	G	Col	9.9	7' × 4'	05 07.7	-37 31	1		Near galaxy NGC 1792

See page next for legend.

Catalogue #	Ben net	Type	Con	Mag	Size	RA	Dec	Mth 10 ^{µm}	Map	Notes
NGC 1866	33	OC	Dor	9.7	5'	05 13.5	-65 28	1		
NGC 1851	32	GC	Col	7.1	11'	05 14.1	-40 03	1		
LMC		G	Dor	0.4	10.8° × 9.2°	05 23.6	-69 45	1	1	Large Magellanic Cloud
NGC 1904	34	GC	Lep	7.7	9'	05 24.2	-24 31	1	2	M79, Rich and compressed, well resolved
NGC 1912		OC	Aur	6.4	21'	05 28.7	+35 51	1	3,5	M38, 100 stars, magnitude 9.5 in splendid field
NGC 1952		BN	Tau	8.4	6' × 4'	05 34.5	+22 01	1	5,3	M1, Crab Nebula
NGC 1976		BN	Ori	4.0	90' × 60'	05 35.3	-05 23	1	2	M42, Orion Nebula
NGC 1982		BN	Ori	7.0	20' × 15'	05 35.5	-05 16	1	2	M43, de Mairan's Nebula; part of Orion Nebula
NGC 1960		OC	Aur	6.0	12'	05 36.3	+34 08	1	3,5	M36, 60 stars, magnitude 9 to 14
NGC 2070	35	BN	Dor	8.3	40' × 25'	05 38.6	-69 06	1	1	Tarantula Nebula
NGC 2068		BN	Ori	8.0	8' × 6'	05 46.8	+00 05	1	2,3	M78, Brightest and largest in group of four nebulae
NGC 2099		OC	Aur	5.6	23'	05 52.3	+32 33	1	3,5	M37, 150 stars, magnitude 9 to 12.5
NGC 2168		OC	Gem	5.1	28'	06 08.9	+24 31	1	3,5	M35, 200 stars, magnitude 9 to 16
NGC 2174		BN	Ori		40' × 30'	06 09.4	+20 40	1		Near open cluster M35
NGC 2214	36	OC	Dor	10.9	4'	06 12.8	-68 16	1		Edge of LMC
NGC 2243	36a	OC	CMa	9.4	5'	06 29.8	-31 17	1		
NGC 2237		BN	Mon	5.5	90' × 90'	06 30.9	+05 03	1		Rosette Nebula
NGC 2287		OC	CMa	4.5	38'	06 46.0	-20 45	1	4	M41, 80 stars, magnitude 7 and fainter, with magnitude 6.9 red star near centre
NGC 2298	37	GC	Pup	9.3	7'	06 49.0	-36 00	1		
NGC 2323		OC	Mon	5.9	16'	07 02.5	-08 23	2	4	M50, Rich cluster, 80 stars magnitude 8 to 12
NGC 2362		OC	CMa	4.1	8'	07 18.7	-24 57	2	4	Tau Canis Majoris
NGC 2392		PN	Gem	8.6	47" × 43"	07 29.2	+20 55	2		Eskimo Nebula
NGC 2422		OC	Pup	4.4	29'	07 36.6	-14 29	2	4	M47, Large coarse cluster with 30 stars
NGC 2438		PN	Pup	11.0	73" × 68"	07 41.8	-14 44	2		In M46
NGC 2437		OC	Pup	6.1	27'	07 41.8	-14 49	2	4	M46, Rich open cluster, 100 stars, planetary nebula NGC 2438 in same field
NGC 2440		PN	Pup	9.3	74" × 42"	07 41.9	-18 13	2		
NGC 2447		OC	Pup	6.2	22'	07 44.5	-23 51	2	4	M93, 80 stars magnitude 8 to 13
NGC 2477		OC	Pup	5.8	27'	07 52.2	-38 32	2	4	160 stars, magnitude 10 to 12, central concentration
NGC 2467	37a	BN	Pup	7.1	15'	07 52.5	-26 26	2		Near open cluster M93
NGC 2489	38	OC	Pup	7.9	8'	07 56.2	-30 04	2		
NGC 2516		OC	Car	3.8	29'	07 58.1	-60 45	2	1	80 stars 6 th magnitude and fainter, central concentration
NGC 2547		OC	Vel	4.7	20'	08 10.2	-49 12	2	4	Rich in stars with strong central concentration
NGC 2506	39	OC	Mon	7.6	8'	08 12.0	-10 47	2		
NGC 2548		OC	Hya	5.8	54'	08 13.7	-05 45	2	4	Caldwell 54
NGC 2627	40	OC	Pyx	8.4	11'	08 37.3	-29 57	2		M48, Large cluster of 80 stars magnitude 8 to 13
NGC 2632		OC	Cnc	3.1	95'	08 40.0	+19 40	2	5	M44, Beehive Cluster
NGC 2671	40a	OC	Vel	11.6	4'	08 46.2	-41 53	2		
NGC 2682		OC	Cnc	6.9	29'	08 51.4	+11 49	2	5	M67, 200 stars magnitude 10 to 15, large and rich

Catalogue #	Ben net	Type	Con	Mag	Size	RA	Dec	Mth 10 μ m	Map	Notes
NGC 2808	41	GC	Car	6.3	14'	09 12.0	-64 52	3	1	Large and rich, compressed centre, magnitude 13 to 15
NGC 2903		G	Leo	9.0	13'×6'	09 32.2	+21 30	3		
NGC 2972	41a	OC	Vel	9.9	4'	09 40.3	-50 20	3		
NGC 2997	41b	G	Ant	9.4	9'×7'	09 45.6	-31 11	3		
NGC 3114		OC	Car	4.2	35'	10 02.5	-60 08	3		Rich cluster, stars magnitude 9 to 14
NGC 3115	42	G	Sex	8.9	7'×3'	10 05.2	-07 43	3		
NGC 3132	43	PN	Vel	8.2	84"×53"	10 07.0	-40 26	3	4	Eight-burst Nebula
NGC 3201	44	GC	Vel	6.8	18'	10 17.6	-46 25	3	4	
NGC 3242	45	PN	Hya	8.6	45"×36"	10 24.8	-18 39	3		Ghost of Jupiter
NGC 3293		OC	Car	4.7	6'	10 35.8	-58 13	3	1	
NGC 3351		G	Leo	9.7	7'×5'	10 44.0	+11 42	3	5	M95
NGC 3372		BN	Car	3.0	120"×120"	10 45.1	-59 52	3	1	Eta Carinae
NGC 3368		G	Leo	9.3	8'×5'	10 46.8	+11 49	3	5	M96
NGC 3379		G	Leo	9.3	5'×5'	10 47.8	+12 35	3	5	M105, in group of three galaxies
NGC 3352		OC	Car	3.0	55'×50'	11 05.2	-58 44	4	1	Rich and large, 150 stars magnitude 7 to 12
NGC 3521		G	Leo	9.0	11'×5'	11 05.8	-00 02	4		
NGC 3621	46	G	Hya	9.2	12'×7'	11 18.3	-32 49	4		
NGC 3623		G	Leo	9.3	10'×3'	11 18.9	+13 05	4	5	M65
NGC 3627		OC	Car	8.5	5'	11 19.7	-63 30	4		Melotte 105
NGC 3628		G	Leo	8.9	9'×4'	11 20.2	+13 00	4	5	M66
NGC 3766		OC	Cen	5.3	15'×3'	11 20.3	+13 35	4		Near galaxies M65/66
IC 2948		BN	Cen	7.0	1.2°×0.8°	11 36.2	-61 37	4	1	Rich cluster, 100 stars magnitude 7 to 12
NGC 3918		PN	Cen	8.4	13"	11 39.4	-63 28	4		Running Chicken Nebula
NGC 3960	48	OC	Cen	8.3	6'	11 50.3	-57 11	4		
NGC 3923	49	G	Hya	10	6'×4'	11 50.9	-55 41	4		
NGC 4192		G	Com	10.1	10'×3'	11 51.0	-28 48	4		
NGC 4216		G	Vir	10.0	8'×2'	12 13.8	+14 54	4	7	M98
NGC 4254		G	Com	9.9	5'×5'	12 15.9	+13 09	4		Edge-on galaxy
NGC 4258		G	CVn	8.4	19'×7'	12 18.8	+14 25	4	7	M99
NGC 4303		G	Vir	9.6	7'×6'	12 19.0	+47 18	4	5,7	M106
NGC 4321		G	Com	9.4	7'×6'	12 21.9	+04 28	4	6,7	M61
NGC 4361		PN	Crv	10.9	2'×2'	12 22.9	+15 49	4	7	M100
NGC 4374		G	Vir	9.1	7'×6'	12 24.5	-18 47	4		
NGC 4382		G	Com	9.1	7'×6'	12 25.1	+12 53	4	7	M84, Bright centre, in same field as M86
NGC 4372	50	GC	Mus	7.2	19'	12 25.8	-72 40	4		M85
NGC 4406		G	Vir	8.9	9'×6'	12 26.2	+12 57	4	7	Caldwell 108
NGC 4472		G	Vir	8.4	10'×8'	12 29.8	+08 00	4	7	M86
NGC 4486		G	Vir	8.6	8'×7'	12 30.8	+12 23	4	7	M49
NGC 4501		G	Com	9.6	7'×4'	12 32.0	+14 25	4	7	M88
NGC 4548		G	Com	10.1	5'×4'	12 35.4	+14 30	4	7	M91
NGC 4552		G	Vir	9.8	5'×5'	12 35.7	+12 33	4	7	M89
NGC 4565		G	Com	9.6	16'×2'	12 36.3	+25 59	4		
NGC 4569		G	Vir	9.5	10'×4'	12 36.8	+13 10	4	7	M90
NGC 4579		G	Vir	9.7	6'×5'	12 37.7	+11 49	4	7	M58, Bright diffuse nucleus, dark lanes
NGC 4590	51	GC	Hya	7.3	12'	12 39.5	-26 45	4	6	M68, Rich and compressed
NGC 4594	52	G	Vir	8.0	9'×4'	12 40.0	-11 37	4	6	M104, Sombrero Galaxy
NGC 4621		G	Vir	9.6	5'×4'	12 42.0	+11 39	4	7	M59
NGC 4631		G	CVn	9.2	16'×3'	12 42.1	+32 32	4		Whale Galaxy
NGC 4649		G	Vir	8.8	7'×6'	12 43.7	+11 33	4	7	M60

Catalogue #	Ben net	Type	Con	Mag	Size	RA	Dec	Mth 10 μ m	Map	Notes
NGC 4697	53	G	Vir	9.2	7'×5'	12 48.6	-05 48	4		Caldwell 52
NGC 4699	54	G	Vir	10.2	4'×3'	12 49.0	-08 40	4		
NGC 4736		G	CVn	8.2	11'×9'	12 50.9	+41 07	4	5,7	M94
NGC 4753	55	G	Vir	10.5	6'×3'	12 52.4	-01 12	4		
NGC 4755		OC	Cru	4.2	10'	12 53.6	-60 21	4	1	Jewel Box
NGC 4826		G	Com	8.5	10'×5'	12 56.7	+21 41	4	7	M64, Black Eye Galaxy
NGC 4833	56	GC	Mus	8.4	14'	12 59.6	-70 52	4		Near globular cluster NGC 4372
NGC 4945	57	G	Cen	8.6	20'×4'	13 05.4	-49 28	5	6	Big edge-on spiral, small galaxy in same field
NGC 4976	58	G	Cen	10.2	6'×3'	13 08.6	-49 30	5		
NGC 5024		GC	Com	7.7	13'	13 12.9	+18 10	5	7	M53, Bright centre region, very compressed
NGC 5055		G	CVn	8.6	13'×7'	13 15.8	+42 02	5	5,7	M63, Sunflower Galaxy
NGC 5061	59	G	Hya	10.5	4'×3'	13 18.1	-26 50	5		
NGC 5068	59a	G	Vir	9.8	7'×6'	13 18.9	-21 02	5		
NGC 5128	60	G	Cen	6.8	26'×20'	13 25.5	-43 01	5		Centaurus A (radio source)
NGC 5139	61	GC	Cen	3.9	36'	13 26.8	-47 29	5	6	Omega Centauri
NGC 5194		G	CVn	8.4	11'×8'	13 29.9	+47 12	5	7	M51, Whirlpool Galaxy
NGC 5189	62	PN	Mus	10.3	140"	13 -65 58		5	1	Dunlop's best planetary nebula
NGC 5236	63	G	Hya	7.5	15'×13'	13 37.0	-29 52	5	6	M83, Southern Pinwheel Galaxy
NGC 5253	63a	G	Cen	10.7	5'×2'	13 39.9	-31 39	5		
NGC 5272		GC	CVn	6.3	18'	13 42.2	+28 23	5	7	M3, Large bright globular, brightens suddenly towards the middle
NGC 5286	64	GC	Cen	7.4	9'	13 46.4	-51 22	5		
IC 4406		PN	Lup	11.0	2'×2'	14 22.4	-44 09	5		Retina Nebula
NGC 5634	66	GC	Vir	9.5	5'	14 29.6	-05 59	5		
NGC 5617	65	OC	Cen	6.3	10'	14 29.8	-60 43	5		
NGC 5824	67	GC	Lup	9.1	6'	15 04.0	-33 04	6		
NGC 5897	68	GC	Lib	8.4	13'	15 17.4	-21 01	6		
NGC 5904		GC	Ser	5.7	23'	15 18.6	+02 05	6	6	M5, Bright, large very compressed in middle, slightly oval in shape
NGC 5927	69	GC	Lup	8	6'	15 28.0	-50 40	6		
NGC 5986	70	GC	Lup	7.6	10'	15 46.1	-37 47	6		
NGC 5999	71	OC	Nor	9	3'	15 52.2	-56 28	6		
NGC 6005	72	OC	Nor	10.7	3'	15 55.8	-57 26	6		
NGC 6067	72a	OC	Nor	11.2	5'	16 01.5	-53 32	6		Tr 23 (Trumpeter)
NGC 6093	73	GC	Sco	7.3	9'	16 13.2	-54 13	6	6	100 stars, large brightness range, central conc.
NGC 6121	75	GC	Sco	5.4	26'	16 17.0	-22 59	6	6	M80, Strong central concentration, bright and large
NGC 6124		OC	Sco	5.8	40'	16 23.6	-26 32	6	6	M4, Near Antares
NGC 6101	74	GC	Aps	9.2	11'	16 25.3	-40 39	6	6	Near planetary nebula NGC 6153
NGC 6144	77	GC	Sco	9	9'	16 25.8	-72 12	6		Caldwell 107
NGC 6134	76	OC	Nor	7.2	6'	16 27.3	-26 02	6		
NGC 6139	78	GC	Sco	9.1	6'	16 27.7	-49 09	6		
NGC 6171	79	GC	Oph	7.8	10'	16 27.7	-38 51	6		
NGC 6167	79a	OC	Nor	6.7	7'	16 32.5	-13 03	6	6	M107
NGC 6192	79b	OC	Sco	8.5	7'	16 34.4	-49 36	6		
NGC 6193		OC	Ara	5.2	14'	16 40.3	-43 22	6		
NGC 6205		GC	Her	5.8	17'	16 41.3	-48 46	6		In nebula NGC 6188
						16 41.7	+36 28	6	7	M13, Great Hercules Cluster

Catalogue #	Ben nett	Type	Con	Mag	Size	RA	Dec	Mth 10 ^{pm}	Map	Notes
NGC 6218	80	GC	Oph	6.1	1.5'	16 47.2	-01 57	6	6	M12
NGC 6216	81	OC	Sco	10.1	4'	16 49.4	-44 44	6		
NGC 6235	82	GC	Oph	8.9	5'	16 53.4	-22 11	6		
NGC 6231		OC	Sco	2.6	14'	16 54.2	-41 49	6	6	A few stars with strong central concentration
IC 4628		BN	Seo		1.5° × 1.5°	16 57.0	-40 27	6		Prawn Nebula
NGC 6254	83	GC	Oph	6.6	1.5'	16 57.1	-04 06	6	6	M10
NGC 6253	84	OC	Ara	10.2	5'	16 59.1	-52 43	6		
NGC 6266	85	GC	Oph	6.4	14'	17 01.2	-30 07	7	6	M62
NGC 6273	86	GC	Oph	6.8	14'	17 02.6	-26 16	7	6	M19
NGC 6284	87	GC	Oph	8.9	6'	17 04.5	-24 46	7		
NGC 6287	88	GC	Oph	9.3	5'	17 05.2	-22 42	7		
NGC 6293	89	GC	Oph	8.3	8'	17 10.2	-26 35	7		
NGC 6302		PN	Seo	9.7	83" × 24"	17 13.7	-37 06	7		Bug Nebula
NGC 6304	90	GC	Oph	8.3	7'	17 14.5	-29 28	7		
NGC 6316	91	GC	Oph	8.1	5'	17 16.6	-28 08	7	7,9	M92
NGC 6341		GC	Her	6.5	14'	17 17.1	+43 08	7		
NGC 6318	91a	OC	Sco	11.8	5'	17 17.8	-39 27	7		
NGC 6333	92	GC	Oph	7.9	9'	17 19.2	-18 31	7	6	M9
NGC 6356	93	GC	Oph	8.2	7'	17 23.6	-17 49	7		
NGC 6352	94	GC	Ara	7.8	7'	17 25.5	-48 25	7		
NGC 6362	95	GC	Ara	8.1	11'	17 31.9	-67 03	7		Caldwell 81
NGC 6388	96	GC	Seo	6.8	9'	17 36.3	-44 44	7		
NGC 6402	97	GC	Oph	7.6	12'	17 37.6	-03 15	7	6,7	M14
NGC 6405		OC	Sco	4.2	33'	17 40.3	-32 15	7	6,8	M6, Butterfly Cluster
NGC 6397	98	GC	Ara	5.3	26'	17 40.7	-53 40	7	1,6	Loose structure, possibly the nearest globular
NGC 6440	98a	GC	Sgr	9.3	5'	17 48.9	-20 22	7		
NGC 6445	98b	PN	Sgr	11.2	3' × 1'	17 49.2	-20 01	7		Crescent Nebula
NGC 6441	99	GC	Sco	7.4	8'	17 50.2	-37 03	7		
NGC 6475		OC	Sco	3.3	80'	17 53.9	-34 48	7	6,8	M7, Ptolemy's Cluster
NGC 6494		OC	Sgr	5.5	30'	17 57.1	-18 59	7	6,8	M23, 150 stars, moderate brightness range, lies in good star field
NGC 6496	100	GC	CrA	8.6	7'	17 59.0	-44 16	7		
NGC 6514		BN	Sgr	6.3	20' × 20'	18 02.7	-22 58	7	6,8	M20, Trifid Nebula
NGC 6520		OC	Sgr	7.6	6'	18 03.4	-27 53	7		Near Barnard 86
NGC 6522	101	GC	Sgr	9.9	6'	18 03.6	-30 02	7		Near NGC 6528
NGC 6523		BN	Sgr	5.0	45' × 30'	18 03.7	-24 23	7	6,8	M8, Lagoon Nebula
NGC 6531		OC	Sgr	5.9	15'	18 04.2	-22 29	7	6,8	M21
NGC 6528	102	GC	Sgr	9.6	4'	18 04.8	-30 03	7		Near NGC 6522
NGC 6544	103	GC	Sgr	7.5	9'	18 07.3	-25 00	7		
NGC 6541	104	GC	CrA	6.3	13'	18 08.0	-43 42	7	8	
NGC 6553	105	GC	Sgr	8.3	9'	18 09.3	-25 54	7		
NGC 6572		PN	Oph	8.0	16" × 13"	18 12.1	+06 51	7		
NGC 6569	106	GC	Sgr	8.4	6'	18 13.6	-31 50	7		
NGC 6603	107a	OC	Sgr	11.1	5'	18 18.4	-18 25	7		In M24, Sagittarius Star Cloud
NGC 6584	107	GC	Tel	7.9	8'	18 18.6	-52 13	7	8	M16, Eagle Nebula
NGC 6611		BN	Ser	6.0	120" × 25"	18 18.8	-13 47	7	6,8	M24, Small Sagittarius Star Cloud
IC 4715		OC	Sgr	3.0	95'	18 19.6	-18 10	7	8	M18
NGC 6613		OC	Sgr	6.9	9'	18 19.9	-17 08	7	8	
NGC 6618	108	BN	Sgr	6.0	20' × 15'	18 20.8	-16 11	7	8	M17, Swan Nebula
NGC 6624	109	GC	Sgr	7.6	9'	18 23.7	-30 22	7		

Catalogue #	Ben nett	Type	Con	Mag	Size	RA	Dec	Mth 10 ^{pm}	Map	Notes
NGC 6626	110	GC	Sgr	6.9	11'	18 24.5	-24 52	7	6,8	M28, Large, round, increasingly compressed in the middle
NGC 6633		OC	Oph	4.6	20'	18 27.3	+06 31	7		Near open cluster IC 4756
NGC 6638	111	GC	Sgr	9.2	7'	18 30.9	-25 30	7		
NGC 6637	112	GC	Sgr	7.7	7'	18 31.4	-32 21	7	1,6,8	M69
IC 4725		OC	Sgr	4.6	29'	18 31.8	-19 07	7	8	M25, 30 stars loosely scattered
NGC 6642	112a	GC	Sgr	8.9	5'	18 31.9	-23 29	7		
NGC 6652	113	GC	Sgr	8.5	4'	18 35.8	-32 59	7		
NGC 6656	114	GC	Sgr	5.2	24'	18 36.4	-23 54	7	8	M22, Fine globular, only Omega Centauri and 47 Tucanae are brighter
NGC 6681	115	GC	Sgr	7.8	8'	18 43.2	-32 18	7	1,6,8	M70
NGC 6694		OC	Set	8.0	14'	18 45.2	-09 24	7	8	M26
NGC 6705	116	OC	Set	5.8	13'	18 51.1	-06 16	7	8	M11, Wild Duck Cluster
NGC 6712	117	GC	Set	8.1	7'	18 53.1	-08 42	7		
NGC 6720		PN	Lyr	9.4	86" × 62"	18 53.6	+33 02	7	7,9	M57, Ring Nebula
NGC 6715	118	GC	Sgr	7.7	9'	18 55.1	-30 29	7	8	M54
NGC 6723	119	GC	Sgr	6.8	11'	18 59.6	-36 38	7		
NGC 6726		BN	CrA		2' × 2'	19 01.7	-36 53	8		
NGC 6744	120	G	Pav	8.3	20' × 13'	19 09.8	-63 51	8	1	Starfish Cluster
NGC 6752	121	GC	Pav	5.4	20'	19 10.9	-59 59	8	1	M56, Irregularly round, compressed in the middle
NGC 6779		GC	Lyr	8.3	7'	19 16.6	+30 11	8	9	
NGC 6809	122	GC	Sgr	6.3	19'	19 40.0	-30 58	8	8	M55
NGC 6818	123	PN	Sgr	10.0	22" × 15"	19 44.0	-14 09	8		Near galaxy NGC 6822
NGC 6838		GC	Sge	8.3	7'	19 53.8	+18 47	8	9	M71
NGC 6853		PN	Vul	7.3	8' × 6'	19 59.6	+22 43	8	9	M27, Dumbbell Nebula
NGC 6864	124	GC	Sgr	8.6	6'	20 06.1	-21 55	8	8	M75
NGC 6913		OC	Cyg	6.6	10'	20 23.9	+38 32	8	9	M29
NGC 6981	125	GC	Aqr	9.2	6'	20 53.5	-12 32	8	8	M72
NGC 6992		BN	Cyg	7.0	60' × 8'	20 56.4	+31 43	8		Part of Veil Nebula
NGC 7000		BN	Cyg	4.0	100' × 60'	21 01.8	+44 12	9	9	North American Nebula
NGC 7009	126	PN	Aqr	8.3	44" × 23"	21 04.2	-11 22	9		Saturn Nebula
NGC 7078		GC	Peg	6.4	12'	21 30.0	+12 10	9	9	M15, Bright, irregularly round, well resolved into faint stars
NGC 7092		OC	Cyg	4.6	31'	21 32.2	+48 26	9	9	M39, Northern limit
NGC 7089	127	GC	Aqr	6.5	13'	21 33.5	-00 49	9	8	M2
NGC 7099	128	GC	Cap	6.9	11'	21 40.4	-23 11	9	8	M30
NGC 7293	129	PN	Aqr	6.3	15' × 12'	22 29.6	-20 50	9	8	Helix Nebula
NGC 7410	129a	G	Gru	10.6	6' × 2'	22 55.0	-39 40	9		
IC 1459	129b	G	Gru	9.97	5' × 3'	22 57.0	-36 28	9		
NGC 7662		PN	And	8.6	32" × 28"	23 25.9	+42 32	10		Snowball Nebula
NGC 7793	130	G	Scl	9.1	9' × 6'	23 57.8	-32 36	10		

LEGEND									
Catalogue	Bennett					Con			
	Catalogue number (NGC New General Catalogue, IC Index Catalogue)					Magnitude of object			
Type	Object type:					In arcminutes (most PN in arcseconds)			
	G Galaxy					Right Ascension (hh mm.m, Epoch 2000.0)			
	GC Globular Cluster					Declination (° ', Epoch 2000.0)			
	OC Open Cluster					Month the object is highest at 10 pm.			
	BN Bright Nebula					All Sky Map number			
	PN Planetary Nebula					Common name and/or description			

CONSTELLATIONS — Abbreviations and Culmination at 9pm

Name	Genitive	Abr.	Map	Cul.	Name	Genitive	Abr.	Map	Cul.	Name	Genitive	Abr.	Map	Cul.
Andromeda	Andromedae	And	3, 9	Nov 23	Crater	Crateris	Crt	4, 6	Apr 26	Orion	Orionis	Ori	2, 3	Jan 27
Antlia	Antliae	Ant	4, 6	Apr 10	Crux	Crucis	Cru	1	May 12	Pavo	Pavonis	Pav	1, 8	Aug 29
Apus	Apodis	Aps	1	Jul 5	Cygnus	Cygni	Cyg	9	Sep 13	Pegasus	Pegasi	Peg	9, 3	Oct 16
Aquarius	Aquarii	Aqr	8	Oct 9	Delphinus	Delphini	Del	9, 8	Sep 14	Perseus	Persei	Per	3	Dec 22
Aquila	Aquilae	Aql	8, 9	Aug 30	Dorado	Doradus	Dor	2, 1	Jan 31	Phoenix	Phoenicis	Phe	2, 8	Nov 18
Ara	Arae	Ara	1, 6	Jul 25	Draco	Draconis	Dra	7, 9	Jul 8	Pictor	Pictoris	Pic	1, 2	Jan 30
Aries	Arietis	Ari	3	Dec 14	Equuleus	Equulei	Equ	9, 8	Sep 22	Pisces	Piscium	Psc	3, 9	Nov 11
Auriga	Aurigae	Aur	3, 5	Feb 4	Eridanus	Eridani	Eri	2, 1	Dec 25	Piscis	Piscis	PsA	8	Oct 9
Boötes	Boötis	Boo	7	Jun 16	Fornax	Fornacis	For	2	Dec 17	Austrinus	Austrini	Pup	4, 2	Feb 22
Caelum	Caeli	Cae	2, 4	Jan 15	Gemini	Geminorum	Gem	5, 4	Feb 19	Pyxis	Pyxidis	Pyx	4	Mar 21
Camelopardalis	Camelopardalis	Cam	3, 5	Feb 6	Grus	Gruis	Gru	8, 1	Oct 12	Reticulum	Reticuli	Ret	1	Jan 3
Cancer	Cancri	Cnc	5, 4	Mar 16	Hercules	Herculis	Her	7, 9	Jul 28	Sagitta	Sagittae	Sge	9	Aug 30
Canes Venatici	Canum Venaticorum	CVn	5, 7	May 22	Horologium	Horologii	Hor	2, 1	Dec 25	Sagittarius	Sagittarii	Sgr	8, 6	Aug 21
Canis Major	Canis Majoris	CMa	4, 2	Feb 16	Hydra	Hydrae	Hya	4, 6	Apr 29	Scorpius	Scorpii	Sco	6, 8	Jul 18
Canis Minor	Canis Minoris	CMi	5, 4	Feb 28	Hydrus	Hydri	Hya	1	Dec 10	Sculptor	Sculptoris	Scl	2, 8	Nov 10
Capricornus	Capricorni	Cap	8	Sep 22	Indus	Indi	Ind	1, 8	Sep 26	Scutum	Scuti	Sct	8	Aug 15
Carina	Carinae	Car	1, 4	Mar 17	Lacerta	Lacertae	Lac	9	Oct 12	Serpens	Serpentis	Ser	6, 7	Jul 21
Cassiopeia	Cassiopeiae	Cas	3, 9	Nov 23	Leo	Leonis	Leo	5, 7	Apr 15	Sextans	Sextantis	Sex	4	Apr 8
Centaurus	Centauri	Cen	1, 6	May 14	Leo Minor	Leonis Minoris	LMi	5, 7	Apr 9	Taurus	Tauri	Tau	3, 5	Jan 14
Cepheus	Cephei	Cep	9, 3	Nov 13	Lepus	Leporis	Lep	2, 4	Jan 28	Telescopium	Telescopii	Tel	8, 1	Aug 24
Cetus	Ceti	Cet	2, 3	Nov 29	Libra	Librae	Lib	6	Jun 23	Triangulum	Trianguli	Tri	3	Dec 7
Chamaeleon	Chamaeleontis	Cha	1	Apr 15	Lupus	Lupi	Lup	6	Jun 23	Triangulum Australe	Trianguli Australis	TrA	1	Jul 7
Circinus	Circini	Cir	1, 6	Jun 14	Lynx	Lyncis	Lyn	5, 3	Mar 5	Tucana	Tucanae	Tuc	1	Nov 1
Columba	Columbae	Col	4, 2	Feb 1	Lyra	Lyrae	Lyr	9, 7	Aug 18	Ursa Major	Ursae Majoris	UMa	5, 7	Apr 25
Coma Berenices	Comae Berenices	Com	7, 5	May 17	Mensa	Mensae	Men	1	Jan 28	Ursa Minor	Ursae Minoris	UMi	7	Jun 27
Corona Australis	Coronae Australis	CrA	8, 6	Aug 14	Microscopium	Microscopii	Mic	8	Sep 18	Vela	Velorum	Vel	4, 1	Mar 30
Corona Borealis	Coronae Borealis	CrB	7	Jul 3	Monoceros	Monocerotis	Mon	4, 5	Feb 19	Virgo	Virginis	Vir	6, 7	May 26
Corvus	Corvi	Crv	6, 4	May 12	Musca	Muscae	Mus	1	May 14	Volans	Volantis	Vol	1	Mar 4
					Norma	Normae	Nor	6, 1	Jul 3	Vulpecula	Vulpeculae	Vul	9	Sep 8
					Octans	Octantis	Oct	1	Circum					
					Ophiuchus	Ophiuchi	Oph	6, 7	Jul 26					

The Map numbers in the table above refer to the All Sky Maps in Astronomy 2025 (and many earlier editions).

BRIGHTEST and NEAREST STARS (next page)

The column descriptions are:

Designation The name of the star in the system created by Bayer, who numbered the stars in the constellations using Greek letters (p. 151). They were usually ordered by their brightness, Alpha being the brightest in most cases.

Name Common name for each star.

Constellation The star's constellation.

RA and Dec. The position of the star, epoch 2000.0.

Magnitude App. The apparent magnitude as seen in the sky.

Magnitude Abs. The absolute magnitude. This is a good indication of how the stars' true luminosities compare. It is the brightness of the star if placed at a distance of 10 parsecs (approximately 32.6 light-years) from Earth.

Spectral Type The spectral classification of the star (see below).

Parallax see glossary.

Proper Motion see glossary.

Distance, **ly** is light-year and **pc** is parsec, see glossary.

Note (d) is a visual double star.

(sb) is a spectroscopic binary.

(eb) is an eclipsing binary.

(v) indicates the star is variable.

The spectral type of a star gives a broad indication of its temperature and colour. The primary classes are **O**, **B**, **A**, **F**, **G**, **K** and **M**, remembered by the mnemonic **Oh Be A Fine Girl(Guy) Kiss Me**.

There are also the *colder* star classes **L** and **T**. The classes are then broken down into ten subclasses (1 to 10) and also given a luminosity class I, II, III, IV, etc. A discussion of this is beyond this publication.

- The O class stars are the hottest blue stars.
- B and A are white (e.g., Sirius, Rigel).
- F and G are yellow (e.g., Capella, and the Sun).
- Late K (subclass > 5) and M stars are the cooler orange and red stars (e.g., Aldebaran, Betelgeuse).

It is an interesting exercise trying to see the colour of stars, but it is worthwhile knowing the limitations of the human eye. The photosensitive part of the eye is the retina. It consists of two types of light receptors, rods and cones. The cones perceive colour and rods see only shades of grey. The cones only work when there is sufficient light. Starlight, to the unaided eye, activates rods and cones to different degrees. Faint stars are only seen as grey (that is no colour).

The colours of stars can be imaged simply. Mount a camera on a tripod and take a time exposure of several minutes. The resulting star trails often show the colours very well. An equatorially tracked time exposure (for example piggy-backed on a telescope) with the camera slightly out of focus results in nicely coloured discs of the brightest stars. If in focus, the colour of the brightest stars can be lost as their images can saturate the detector. All such photography should be conducted in country areas, away from city lights.

THE BRIGHTEST STARS

Designation	Name	Constellation	RA (2000.0)	Dec (2000.0)	Magnitude		Spectral Type	Parallax	Distance		Note (p. 140)	
					App	Abs			pc	ly		
1	α CMa	Sirius	Canis Major	06 45.1	−16 43	−1.44	1.5	A1 V	0.3800	2.63	8.58	d
2	α Car	Canopus	Carina	06 23.9	−52 42	−0.74	−5.6	F0 Ib	0.0104	96	310	
3	α Cen	Rigel Kent	Centaurus	14 39.6	−60 50	−0.28	4.1	G2V + K0V	0.7472	1.34	4.37	d
4	α Boo	Arcturus	Boötes	14 15.7	+19 11	−0.05	−0.3	K2 III	0.0889	11.3	36.7	
5	α Lyr	Vega	Lyra	18 36.9	+38 47	0.03	0.6	A0 V	0.1289	7.76	25.3	v
6	α Aur	Capella	Auriga	05 16.7	+46 00	0.08	−0.5	G8III + G0III	0.0773	12.9	42.2	sb, v
7	β Ori	Rigel	Orion	05 14.5	−08 12	0.15	−6.8	B8 Ia	0.0042	240	780	d, v
8	α CMi	Procyon	Canis Minor	07 39.3	+05 14	0.38	2.7	F5 IV−V	0.2861	3.50	11.4	d
9	α Eri	Achernar	Eridanus	01 37.7	−57 14	0.45	−2.8	B5 IV	0.0227	44.1	144	v
10	α Ori	Betelgeuse	Orion	05 55.2	+07 24	0.50	−5.2	M2 Iab	0.0076	131	430	v
11	β Cen	Hadar	Centaurus	14 03.8	−60 22	0.61	−5.4	B1 II + B	0.0062	161	525	d, v
12	α Cru	Acrux	Crux	12 26.6	−63 06	0.74	−4.2	B0.5IV + B0.5V	0.0102	98	320	d
13	α Aql	Altair	Aquila	19 50.8	+08 52	0.76	2.2	A7 IV−V	0.1950	5.13	16.7	
14	α Tau	Aldebaran	Taurus	04 35.9	+16 31	0.87	−0.6	K5 III	0.0501	20.0	65	v
15	α Sco	Antares	Scorpius	16 29.4	−26 26	0.96	−5.1	M1.5Iab + B4V	0.0067	150	490	d, v
16	α Vir	Spica	Virgo	13 25.2	−11 10	0.98	−3.5	B1III−IV + B2V	0.0124	80	262	sb, v
17	β Gem	Pollux	Gemini	07 45.3	+28 02	1.15	1.1	K0 III	0.0967	10.3	33.7	
18	α PsA	Fomalhaut	Piscis Austrinus	22 57.7	−29 37	1.16	1.7	A3 V	0.1301	7.69	25.1	
19	α Cyg	Deneb	Cygnus	20 41.4	+45 17	1.25	−7.2	A2 Ia	0.0020	500	1600	v
20	β Cru	Mimosa	Crux	12 47.7	−59 41	1.26	−3.9	B0.5 III	0.0093	108	353	v
21	α Leo	Regulus	Leo	10 08.4	+11 58	1.36	−0.5	B7 V	0.0421	23.8	78	d
22	ε CMa	Adhara	Canis Major	06 58.6	−28 58	1.50	−4.1	B2 II	0.0076	132	430	d
23	α Gem	Castor	Gemini	07 34.6	+31 53	1.58	0.6	A1V + Am	0.0633	15.8	52	d, sb
24	λ Sco	Shaula	Scorpius	17 33.6	−37 06	1.62	−5.0	B1.5 III	0.0046	215	700	sb, v
25	γ Cru	Gacrux	Crux	12 31.2	−57 07	1.63	−0.5	M3 III	0.0371	27.0	88	v
26	γ Ori	Bellatrix	Orion	05 25.1	+06 21	1.64	−2.7	B2 III	0.0134	75	243	
27	β Tau	Elnath	Taurus	05 26.3	+28 36	1.65	−1.4	B7 III	0.0249	40.2	131	
28	β Car	Miaplacidus	Carina	09 13.2	−69 43	1.67	−1.0	A0 III	0.0293	34.1	111	
29	ε Ori	Alnilam	Orion	05 36.2	−01 12	1.69	−6.4	B0 Ia	0.0024	410	1340	
30	γ Vel	Regor	Vela	08 09.5	−47 20	1.70	−5.4	O9Ib + WC8	0.0039	258	840	sb, v

THE NEAREST STARS

Note, this list does not include some recently discovered brown dwarf stars.

No	Star Name	Constellation	RA 2000.0 Dec		Magnitude		Spect Type	Parallax "	Proper Motion "/yr	Distance	
			hh mm.m	° ' "	Apparent	Absolute				pc	ly
--	Sun				-26.72	4.85	G2 V				
1	Proxima Centauri	Centaurus	14 29.7	-62 40	11.09	15.53	M5.5 V	0.7720	3.85	1.30	4.23
	Alpha Centauri A	Centaurus	14 39.6	-60 50	-0.01	4.38	G2 V	0.7472	3.71	1.34	4.37
	B				1.34	5.71	K0 V				
2	Barnard's Star	Ophiuchus	17 57.8	+04 41	9.53	13.22	M4.0 V	0.5470	10.36	1.83	5.96
3	Wolf 359	Leo	10 56.5	+07 00	13.44	16.55	M6.0 V	0.4191	4.70	2.39	7.78
4	Lalande 21185	Ursa Major	11 03.3	+35 58	7.47	10.44	M2.0 V	0.3934	4.80	2.54	8.29
5	Sirius	Canis Major	06 45.1	-16 43	-1.44	1.46	A1 V	0.3800	1.34	2.63	8.58
	B				8.44	11.34	DA2				
6	L 726-8 (UV Ceti)	Cetus	01 39.0	-17 57	12.54	15.40	M5.5 V	0.3737	3.37	2.68	8.73
	B				12.99	15.85	M6.0 V				
7	Ross 154	Sagittarius	18 49.8	-23 50	10.43	13.07	M3.5 V	0.3369	0.67	2.97	9.68
8	Ross 248	Andromeda	23 41.9	+44 10	12.29	14.79	M5.5 V	0.3160	1.62	3.16	10.32
9	Epsilon Eridani	Eridanus	03 32.9	-09 27	3.73	6.19	K2 V	0.3100	0.98	3.23	10.52
10	Lacaille 9352	Piscis Austrinus	23 05.9	-35 51	7.34	9.75	M1.5 V	0.3036	6.90	3.29	10.74
11	Ross 128	Virgo	11 47.7	+00 48	11.13	13.51	M4.0 V	0.2987	1.36	3.35	10.92
12	L 789-6 (EZ Aquarii)	Aquarius	22 38.6	-15 18	13.33	15.64	M5.0 V	0.2895	3.25	3.45	11.27
	B				13.27	15.58	M				
	C				14.03	16.34	M				
13	Procyon	Canis Minor	07 39.3	+05 14	0.38	2.66	F5 IV-V	0.2861	1.26	3.50	11.40
	B				10.70	12.98	DA				
14	61 Cygni	Cygnus	21 06.9	+38 45	5.21	7.49	K5.0 V	0.2860	5.28	3.50	11.40
	B				6.03	8.31	K7.0 V				
15	Σ 2398	Draco	18 42.8	+59 38	8.90	11.16	M3.0 V	0.2830	2.24	3.53	11.53
	B				9.69	11.95	M3.5 V				
16	Groombridge 34	Andromeda	00 18.4	+44 01	8.08	10.32	M1.5 V	0.2806	2.92	3.56	11.63
	B				11.06	13.30	M3.5 V				
17	Epsilon Indi	Indus	22 03.4	-56 47	4.69	6.89	K5 Ve	0.2758	4.70	3.63	11.83
18	DX Cancri	Cancer	08 29.8	+26 47	14.78	16.98	M6.5 V	0.2758	1.29	3.63	11.83
19	Tau Ceti	Cetus	01 44.1	-15 56	3.49	5.68	G8 Vp	0.2744	1.92	3.64	11.89
20	GJ 1061	Horologium	03 36.0	-44 31	13.03	15.21	M5.5 V	0.2720	0.81	3.68	11.99
21	YZ Ceti	Cetus	01 12.5	-17 00	12.02	14.17	M4.5 V	0.2688	1.37	3.72	12.13
22	Luyten's Star	Canis Minor	07 27.4	+05 14	9.86	11.97	M3.5 V	0.2638	3.74	3.79	12.37