

ASTRONOMY 2022

Supplementary Information

Quasar Publishing
Version 1.0

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 2022.

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,

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 2022 that we published in October 2021.

www.quasarastronomy.com.au

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

www.quasarastronomy.com.au

GEOCENTRIC POSITION of the SUN

(0 hr UT, Epoch 2000.0)

	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	RA hh mm.m	Dec. ° ' "	RA hh mm.m	Dec ° ' "	RA hh mm.m	Dec ° ' "	RA hh mm.m	Dec ° ' "	RA hh mm.m	Dec ° ' "	RA hh mm.m	Dec ° ' "
1	18 44.5	-23 02.5	20 57.0	-17 15.1	22 46.4	-07 47.5	00 40.2	+04 19.8	02 31.6	+14 54.7	04 34.3	+21 58.6
2	18 48.9	-22 57.6	21 01.1	-16 58.0	22 50.2	-07 24.7	00 43.9	+04 43.0	02 35.4	+15 12.8	04 38.4	+22 06.8
3	18 53.3	-22 52.2	21 05.1	-16 40.6	22 53.9	-07 01.8	00 47.5	+05 06.1	02 39.3	+15 30.7	04 42.5	+22 14.6
4	18 57.7	-22 46.4	21 09.2	-16 23.0	22 57.6	-06 38.8	00 51.2	+05 29.1	02 43.1	+15 48.4	04 46.6	+22 22.0
5	19 02.1	-22 40.1	21 13.2	-16 05.1	23 01.4	-06 15.7	00 54.8	+05 52.0	02 46.9	+16 05.8	04 50.8	+22 29.0
6	19 06.5	-22 33.4	21 17.3	-15 46.8	23 05.1	-05 52.5	00 58.5	+06 14.7	02 50.8	+16 22.9	04 54.9	+22 35.6
7	19 10.9	-22 26.2	21 21.3	-15 28.4	23 08.8	-05 29.3	01 02.2	+06 37.4	02 54.7	+16 39.8	04 59.0	+22 41.8
8	19 15.3	-22 18.5	21 25.3	-15 09.6	23 12.5	-05 05.9	01 05.8	+07 00.0	02 58.5	+16 56.4	05 03.1	+22 47.6
9	19 19.7	-22 10.5	21 29.2	-14 50.6	23 16.2	-04 42.5	01 09.5	+07 22.4	03 02.4	+17 12.7	05 07.3	+22 53.0
10	19 24.0	-22 02.0	21 33.2	-14 31.4	23 19.9	-04 19.1	01 13.2	+07 44.8	03 06.3	+17 28.7	05 11.4	+22 58.0
11	19 28.4	-21 53.0	21 37.2	-14 11.9	23 23.6	-03 55.5	01 16.8	+08 07.0	03 10.2	+17 44.4	05 15.5	+23 02.6
12	19 32.7	-21 43.7	21 41.1	-13 52.2	23 27.2	-03 32.0	01 20.5	+08 29.0	03 14.1	+17 59.8	05 19.7	+23 06.8
13	19 37.0	-21 33.9	21 45.1	-13 32.2	23 30.9	-03 08.4	01 24.2	+08 50.9	03 18.1	+18 14.9	05 23.8	+23 10.6
14	19 41.3	-21 23.7	21 49.0	-13 12.0	23 34.6	-02 44.7	01 27.9	+09 12.7	03 22.0	+18 29.7	05 28.0	+23 13.9
15	19 45.7	-21 13.1	21 52.9	-12 51.7	23 38.3	-02 21.1	01 31.6	+09 34.3	03 25.9	+18 44.2	05 32.1	+23 16.9
16	19 49.9	-21 02.1	21 56.8	-12 31.1	23 41.9	-01 57.4	01 35.3	+09 55.7	03 29.9	+18 58.3	05 36.3	+23 19.5
17	19 54.2	-20 50.7	22 00.7	-12 10.3	23 45.6	-01 33.7	01 39.0	+10 17.0	03 33.9	+19 12.2	05 40.4	+23 21.6
18	19 58.5	-20 38.9	22 04.5	-11 49.3	23 49.2	-01 10.0	01 42.7	+10 38.1	03 37.8	+19 25.7	05 44.6	+23 23.3
19	20 02.8	-20 26.7	22 08.4	-11 28.1	23 52.9	-00 46.3	01 46.4	+10 59.0	03 41.8	+19 38.9	05 48.8	+23 24.7
20	20 07.0	-20 14.1	22 12.2	-11 06.8	23 56.5	-00 22.6	01 50.1	+11 19.8	03 45.8	+19 51.8	05 52.9	+23 25.6
21	20 11.2	-20 01.1	22 16.1	-10 45.2	00 00.2	+00 01.1	01 53.8	+11 40.3	03 49.8	+20 04.3	05 57.1	+23 26.1
22	20 15.5	-19 47.8	22 19.9	-10 23.5	00 03.8	+00 24.8	01 57.6	+12 00.7	03 53.8	+20 16.5	06 01.2	+23 26.2
23	20 19.7	-19 34.1	22 23.7	-10 01.7	00 07.5	+00 48.5	02 01.3	+12 20.9	03 57.8	+20 28.3	06 05.4	+23 25.8
24	20 23.9	-19 20.0	22 27.5	-09 39.7	00 11.1	+01 12.2	02 05.1	+12 40.9	04 01.8	+20 39.8	06 09.6	+23 25.1
25	20 28.1	-19 05.5	22 31.3	-09 17.5	00 14.7	+01 35.8	02 08.9	+13 00.7	04 05.9	+20 50.9	06 13.7	+23 23.9
26	20 32.2	-18 50.8	22 35.1	-08 55.2	00 18.4	+01 59.4	02 12.6	+13 20.2	04 09.9	+21 01.7	06 17.9	+23 22.4
27	20 36.4	-18 35.6	22 38.9	-08 32.8	00 22.0	+02 22.9	02 16.4	+13 39.6	04 14.0	+21 12.1	06 22.0	+23 20.4
28	20 40.5	-18 20.2	22 42.6	-08 10.2	00 25.7	+02 46.4	02 20.2	+13 58.7	04 18.0	+21 22.2	06 26.2	+23 18.0
29	20 44.7	-18 04.4			00 29.3	+03 09.9	02 24.0	+14 17.6	04 22.1	+21 31.8	06 30.3	+23 15.2
30	20 48.8	-17 48.3			00 33.0	+03 33.2	02 27.8	+14 36.2	04 26.2	+21 41.1	06 34.5	+23 12.0
31	20 52.9	-17 31.8			00 36.6	+03 56.6			04 30.2	+21 50.1		
	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
1	06 38.6	+23 08.4	08 43.5	+18 08.9	10 39.6	+08 28.5	12 27.5	-02 58.4	14 23.4	-14 14.9	16 26.8	-21 42.6
2	06 42.7	+23 04.4	08 47.4	+17 53.8	10 43.2	+08 06.7	12 31.2	-03 21.7	14 27.4	-14 34.2	16 31.1	-21 52.0
3	06 46.9	+23 00.0	08 51.3	+17 38.5	10 46.8	+07 44.9	12 34.8	-03 44.9	14 31.3	-14 53.2	16 35.5	-22 00.9
4	06 51.0	+22 55.1	08 55.1	+17 22.8	10 50.5	+07 22.9	12 38.4	-04 08.1	14 35.2	-15 11.9	16 39.8	-22 09.4
5	06 55.1	+22 49.9	08 59.0	+17 06.8	10 54.1	+07 00.7	12 42.0	-04 31.3	14 39.2	-15 30.4	16 44.1	-22 17.5
6	06 59.2	+22 44.3	09 02.8	+16 50.6	10 57.7	+06 38.5	12 45.7	-04 54.3	14 43.1	-15 48.6	16 48.5	-22 25.1
7	07 03.4	+22 38.3	09 06.6	+16 34.1	11 01.3	+06 16.2	12 49.3	-05 17.4	14 47.1	-16 06.6	16 52.9	-22 32.4
8	07 07.5	+22 31.9	09 10.5	+16 17.4	11 04.9	+05 53.7	12 53.0	-05 40.3	14 51.1	-16 24.3	16 57.2	-22 39.1
9	07 11.6	+22 25.1	09 14.3	+16 00.3	11 08.5	+05 31.2	12 56.6	-06 03.2	14 55.1	-16 41.7	17 01.6	-22 45.5
10	07 15.6	+22 17.9	09 18.1	+15 43.1	11 12.1	+05 08.6	13 00.3	-06 26.0	14 59.1	-16 58.9	17 06.0	-22 51.3
11	07 19.7	+22 10.3	09 21.9	+15 25.5	11 15.7	+04 45.9	13 04.0	-06 48.7	15 03.2	-17 15.8	17 10.4	-22 56.8
12	07 23.8	+22 02.4	09 25.6	+15 07.8	11 19.3	+04 23.1	13 07.7	-07 11.3	15 07.2	-17 32.3	17 14.8	-23 01.8
13	07 27.9	+21 54.1	09 29.4	+14 49.8	11 22.8	+04 00.2	13 11.4	-07 33.8	15 11.3	-17 48.6	17 19.2	-23 06.3
14	07 31.9	+21 45.4	09 33.2	+14 31.5	11 26.4	+03 37.2	13 15.1	-07 56.2	15 15.4	-18 04.5	17 23.6	-23 10.3
15	07 36.0	+21 36.3	09 36.9	+14 13.0	11 30.0	+03 14.2	13 18.8	-08 18.5	15 19.5	-18 20.2	17 28.0	-23 14.0
16	07 40.0	+21 26.9	09 40.7	+13 54.3	11 33.6	+02 51.2	13 22.5	-08 40.7	15 23.6	-18 35.5	17 32.4	-23 17.1
17	07 44.1	+21 17.1	09 44.4	+13 35.4	11 37.2	+02 28.0	13 26.2	-09 02.8	15 27.7	-18 50.5	17 36.9	-23 19.8
18	07 48.1	+21 06.9	09 48.2	+13 16.3	11 40.8	+02 04.9	13 29.9	-09 24.8	15 31.8	-19 05.2	17 41.3	-23 22.0
19	07 52.1	+20 56.4	09 51.9	+12 56.9	11 44.4	+01 41.6	13 33.7	-09 46.6	15 36.0	-19 19.5	17 45.7	-23 23.7
20	07 56.1	+20 45.5	09 55.6	+12 37.4	11 47.9	+01 18.4	13 37.4	-10 08.3	15 40.2	-19 33.5	17 50.2	-23 25.0
21	08 00.1	+20 34.3	09 59.3	+12 17.6	11 51.5	+00 55.1	13 41.2	-10 29.8	15 44.3	-19 47.1	17 54.6	-23 25.8
22	08 04.1	+20 22.7	10 03.0	+11 57.6	11 55.1	+00 31.8	13 45.0	-10 51.2	15 48.5	-20 00.4	17 59.0	-23 26.2
23	08 08.1	+20 10.8	10 06.7	+11 37.5	11 58.7	+00 08.4	13 48.8	-11 12.4	15 52.7	-20 13.3	18 03.5	-23 26.0
24	08 12.1	+19 58.6	10 10.4	+11 17.2	12 02.3	-00 14.9	13 52.6	-11 33.4	15 57.0	-20 25.8	18 07.9	-23 25.4
25	08 16.0	+19 46.0	10 14.0	+10 56.6	12 05.9	-00 38.3	13 56.4	-11 54.3	16 01.2	-20 38.0	18 12.4	-23 24.4
26	08 20.0	+19 33.1	10 17.7	+10 36.0	12 09.5	-01 01.7	14 00.2	-12 15.0	16 05.4	-20 49.7	18 16.8	-23 22.8
27	08 23.9	+19 19.8	10 21.4	+10 15.1	12 13.1	-01 25.1	14 04.1	-12 35.5	16 09.7	-21 01.1	18 21.2	-23 20.8
28	08 27.9	+19 06.3	10 25.0	+09 54.1	12 16.7	-01 48.4	14 07.9	-12 55.8	16 14.0	-21 12.1	18 25.7	-23 18.3
29	08 31.8	+18 52.4	10 28.7	+09 32.9	12 20.3	-02 11.8	14 11.8	-13 15.9	16 18.2	-21 22.7	18 30.1	-23 15.4
30	08 35.7	+18 38.2	10 32.3	+09 11.6	12 23.9	-02 35.1	14 15.7	-13 35.8	16 22.5	-21 32.9	18 34.5	-23 11.9
31	08 39.6	+18 23.7	10 36.0	+08 50.1			14 19.5	-13 55.5			18 39.0	-23 08.1

GEOCENTRIC POSITION of the MOON

(0 hr UT, Epoch 2000.0)

	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	RA hh mm.m	Dec. ° ' "	RA hh mm.m	Dec ° ' "	RA hh mm.m	Dec ° ' "	RA hh mm.m	Dec ° ' "	RA hh mm.m	Dec ° ' "	RA hh mm.m	Dec ° ' "
1	16 55.0	-23 53.2	20 49.0	-22 41.6	21 25.4	-20 22.5	00 34.1	-00 18.1	02 39.4	+14 32.5	05 45.9	+26 23.3
2	18 01.4	-25 59.1	21 48.7	-18 32.0	22 21.6	-15 35.0	01 20.7	+05 33.2	03 27.3	+19 01.1	06 38.8	+26 57.5
3	19 09.0	-26 09.1	22 44.0	-13 23.3	23 14.1	-10 02.5	02 07.3	+11 04.1	04 16.9	+22 38.5	07 31.6	+26 17.5
4	20 15.0	-24 23.7	23 35.3	-07 41.8	00 03.7	-04 07.7	02 54.6	+16 01.6	05 08.2	+25 14.5	08 23.4	+24 26.2
5	21 17.0	-21 00.8	00 23.7	-01 49.4	00 51.4	+01 49.5	03 43.1	+20 14.1	06 00.7	+26 41.6	09 13.6	+21 29.8
6	22 14.1	-16 27.0	01 10.2	+03 56.7	01 38.0	+07 32.9	04 33.2	+23 31.5	06 53.7	+26 55.3	10 02.1	+17 36.4
7	23 06.6	-11 09.7	01 56.0	+09 23.5	02 24.6	+12 49.4	05 24.7	+25 45.3	07 46.4	+25 55.2	10 49.3	+12 55.3
8	23 55.4	-05 31.8	02 42.0	+14 20.4	03 11.9	+17 27.9	06 17.4	+26 48.9	08 38.0	+23 44.3	11 35.7	+07 35.8
9	00 41.7	+00 09.1	03 28.9	+18 38.1	04 00.5	+21 18.6	07 10.4	+26 38.9	09 28.2	+20 28.8	12 22.3	+01 48.3
10	01 26.7	+05 40.1	04 17.5	+22 07.9	04 50.7	+24 12.7	08 03.2	+25 15.1	10 17.1	+16 16.2	13 10.1	-04 15.2
11	02 11.4	+10 50.6	05 07.8	+24 40.7	05 42.4	+26 02.4	08 55.0	+22 40.5	11 04.9	+11 15.4	14 00.4	-10 19.5
12	02 56.9	+15 31.5	05 59.8	+26 08.5	06 35.3	+26 41.5	09 45.5	+19 01.1	11 52.5	+05 36.6	14 54.4	-16 03.9
13	03 43.8	+19 33.6	06 53.0	+26 24.8	07 28.6	+26 06.6	10 34.9	+14 25.2	12 40.7	-00 28.2	15 53.1	-21 02.4
14	04 32.6	+22 47.4	07 46.5	+25 26.4	08 21.5	+24 17.5	11 23.5	+09 02.9	13 30.6	-06 43.8	16 56.5	-24 44.5
15	05 23.4	+25 03.1	08 39.4	+23 14.4	09 13.5	+21 18.0	12 12.0	+03 06.8	14 23.3	-12 50.2	18 03.6	-26 42.4
16	06 15.9	+26 12.1	09 31.1	+19 54.6	10 04.2	+17 15.3	13 01.4	-03 08.0	15 19.9	-18 22.6	19 11.8	-26 39.8
17	07 09.3	+26 08.5	10 21.2	+15 36.2	10 53.6	+12 19.7	13 52.5	-09 22.6	16 20.7	-22 52.2	20 18.0	-24 39.2
18	08 02.6	+24 50.5	11 10.0	+10 31.3	11 42.3	+06 43.8	14 46.4	-15 14.8	17 25.3	-25 51.0	21 19.9	-21 00.1
19	08 54.9	+22 21.4	11 57.9	+04 53.6	12 30.9	+00 42.4	15 43.7	-20 19.3	18 31.9	-26 58.6	22 16.9	-16 10.7
20	09 45.7	+18 48.6	12 45.7	-01 02.3	13 20.2	-05 27.7	16 44.6	-24 10.3	19 37.8	-26 09.9	23 09.3	-10 38.4
21	10 34.8	+14 22.6	13 34.3	-07 00.5	14 11.2	-11 27.3	17 48.2	-26 26.0	20 40.5	-23 36.0	23 58.2	-04 46.3
22	11 22.5	+09 15.3	14 24.8	-12 43.9	15 04.8	-16 55.6	18 52.7	-26 53.9	21 38.9	-19 38.6	00 44.9	+01 07.7
23	12 09.7	+03 39.3	15 18.2	-17 53.5	16 01.6	-21 30.1	19 55.9	-25 34.5	22 32.7	-14 43.0	01 30.5	+06 50.0
24	12 57.1	-02 12.4	16 15.1	-22 08.2	17 01.7	-24 49.0	20 55.9	-22 40.4	23 22.7	-09 11.8	02 16.2	+12 08.9
25	13 45.8	-08 05.2	17 15.5	-25 06.6	18 04.2	-26 34.3	21 52.0	-18 31.2	00 10.1	-03 24.0	03 02.8	+16 53.8
26	14 37.0	-13 42.7	18 18.7	-26 30.0	19 07.4	-26 35.8	22 44.4	-13 28.6	00 55.9	+02 24.9	03 50.9	+20 54.4
27	15 31.8	-18 44.8	19 22.8	-26 07.5	20 09.5	-24 54.5	23 33.6	-07 53.0	01 41.3	+08 01.9	04 40.9	+24 00.4
28	16 30.8	-22 48.1	20 25.6	-24 00.4	21 08.8	-21 42.1	00 20.8	-02 02.2	02 27.1	+13 15.0	05 32.6	+26 02.5
29	17 33.8	-25 27.7			22 04.5	-17 17.2	01 06.8	+03 48.2	03 14.2	+17 52.7	06 25.4	+26 53.7
30	18 39.5	-26 23.2			22 56.9	-12 01.3	01 52.8	+09 24.1	04 03.0	+21 43.5	07 18.3	+26 30.8
31	19 45.4	-25 25.5			23 46.4	-06 15.2			04 53.7	+24 36.7		
	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
1	08 10.4	+24 55.4	11 11.8	+10 01.9	14 06.3	-11 41.1	16 37.2	-24 31.0	20 33.2	-24 10.8	23 06.0	-10 40.0
2	09 01.1	+22 13.2	11 57.2	+04 32.7	14 57.3	-16 59.9	17 38.6	-26 48.6	21 31.6	-20 12.1	23 55.2	-04 37.0
3	09 49.8	+18 32.8	12 42.6	-01 13.1	15 52.0	-21 32.9	18 42.0	-27 24.1	22 26.1	-15 08.6	00 42.6	+01 31.0
4	10 36.9	+14 04.3	13 29.1	-07 03.1	16 50.7	-24 58.3	19 45.3	-26 12.0	23 17.4	-09 22.4	01 29.4	+07 28.7
5	11 22.7	+08 57.7	14 18.0	-12 43.1	17 53.2	-26 54.5	20 46.7	-23 18.5	00 06.4	-03 14.0	02 16.6	+13 01.9
6	12 08.2	+03 23.6	15 10.3	-17 55.4	18 57.7	-27 05.1	21 44.9	-19 00.1	00 54.2	+02 58.2	03 05.1	+17 57.4
7	12 54.3	-02 27.2	16 06.9	-22 18.4	20 02.2	-25 24.4	22 39.6	-13 38.5	01 41.7	+08 57.3	03 55.3	+22 02.1
8	13 42.2	-08 22.0	17 08.2	-25 27.3	21 04.4	-22 00.8	23 31.4	-07 36.9	02 30.0	+14 27.8	04 47.5	+25 04.2
9	14 33.2	-14 04.7	18 13.4	-26 57.5	22 03.2	-17 13.8	00 21.1	-01 17.6	03 19.6	+19 14.9	05 41.0	+26 54.2
10	15 28.3	-19 14.3	19 20.2	-26 32.7	22 58.3	-11 29.3	01 09.7	+04 59.0	04 11.0	+23 05.4	06 35.0	+27 26.9
11	16 28.5	-23 24.5	20 26.0	-24 11.9	23 50.3	-05 13.6	01 58.1	+10 54.8	05 03.9	+25 48.3	07 28.4	+26 42.1
12	17 33.3	-26 06.3	21 28.5	-20 10.6	00 40.1	+01 09.2	02 47.3	+16 14.0	05 57.7	+27 15.9	08 20.2	+24 44.8
13	18 41.1	-26 55.7	22 26.7	-14 55.5	01 28.8	+07 19.0	03 37.6	+20 42.7	06 51.6	+27 25.4	09 09.9	+21 43.7
14	19 49.1	-25 42.8	23 20.7	-08 56.1	02 17.3	+12 59.0	04 29.4	+24 09.5	07 44.6	+26 18.6	09 57.5	+17 48.7
15	20 54.1	-22 37.5	00 11.5	-02 39.2	03 06.4	+17 55.9	05 22.4	+26 25.8	08 35.8	+24 01.6	10 43.2	+13 10.0
16	21 54.6	-18 04.4	01 00.2	+03 33.4	03 56.6	+21 58.4	06 16.1	+27 26.3	09 25.1	+20 42.5	11 27.8	+07 57.3
17	22 50.3	-12 34.0	01 47.9	+09 24.7	04 48.2	+24 57.4	07 09.5	+27 09.7	10 12.5	+16 30.7	12 12.2	+02 19.8
18	23 41.9	-06 34.4	02 35.6	+14 41.7	05 40.9	+26 46.0	08 02.0	+25 38.8	10 58.5	+11 35.4	12 57.5	-03 32.5
19	00 30.5	-00 28.4	03 24.0	+19 13.7	06 34.2	+27 19.9	08 52.8	+22 59.2	11 43.9	+06 06.1	13 44.9	-09 27.4
20	01 17.4	+05 27.0	04 13.8	+22 51.2	07 27.2	+26 38.3	09 41.9	+19 18.9	12 29.6	+00 12.8	14 35.6	-15 08.7
21	02 03.8	+10 58.7	05 05.1	+25 26.0	08 19.3	+24 43.8	10 29.4	+14 46.9	13 16.7	-05 52.1	15 30.9	-20 14.5
22	02 50.6	+15 55.8	05 57.5	+26 51.2	09 09.8	+21 42.3	11 15.8	+09 32.8	14 06.5	-11 52.6	16 31.4	-24 17.6
23	03 38.6	+20 08.6	06 50.6	+27 02.7	09 58.7	+17 42.2	12 01.9	+03 47.6	15 00.0	-17 28.2	17 36.6	-26 48.3
24	04 28.2	+23 27.7	07 43.4	+25 59.6	10 46.0	+12 53.4	12 48.7	-02 16.2	15 57.9	-22 13.0	18 44.6	-27 23.2
25	05 19.5	+25 44.3	08 35.1	+23 45.3	11 32.5	+07 27.1	13 37.0	-08 23.3	17 00.4	-25 38.9	19 52.2	-25 54.7
26	06 12.1	+26 51.4	09 25.2	+20 26.6	12 18.6	+01 36.0	14 28.0	-14 15.3	18 06.1	-27 21.1	20 56.6	-22 34.9
27	07 05.1	+26 44.6	10 13.5	+16 12.9	13 05.4	-04 26.1	15 22.5	-19 29.7	19 12.6	-27 06.3	21 56.4	-17 49.7
28	07 57.6	+25 24.3	11 00.3	+11 15.4	13 53.8	-10 23.2	16 21.0	-23 42.1	20 17.1	-24 57.9	22 51.4	-12 09.3
29	08 48.8	+22 54.8	11 46.1	+05 46.2	14 44.8	-15 56.9	17 23.0	-26 28.4	21 17.7	-21 14.0	23 42.6	-06 00.8
30	09 38.2	+19 24.2	12 31.8	-00 02.2	15 39.1	-20 46.8	18 27.2	-27 30.8	22 13.9	-16 19.6	00 31.1	+00 13.8
31	10 25.7	+15 02.9	13 18.2	-05 56.2	16 37.2	-24 31.0	19 31.3	-26 42.7	23 06.0	-10 40.0	01 18.3	+06 17.5

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	1	20 01.5	-22 22.0	19 37.3	-18 37.9	16 45.4	-22 27.7	22 10.7	-12 19.0	20 57.2	-18 05.6	02 33.4	+14 37.8	23 26.4	-04 51.6	19 51.8	-22 42.7
	8	20 36.6	-19 23.1	19 19.8	-17 30.3	17 06.8	-23 05.1	22 16.1	-11 48.6	21 00.3	-17 52.8	02 33.1	+14 36.4	23 26.9	-04 48.2	19 52.8	-22 40.6
	15	20 48.6	-16 42.4	19 02.0	-16 41.0	17 28.6	-23 31.8	22 21.7	-11 16.5	21 03.6	-17 39.5	02 32.9	+14 35.8	23 27.5	-04 44.3	19 53.8	-22 38.6
	22	20 25.9	-16 05.2	18 49.3	-16 15.4	17 50.7	-23 47.4	22 27.5	-10 42.9	21 06.9	-17 25.7	02 32.9	+14 36.0	23 28.1	-04 39.9	19 54.8	-22 36.6
	29	19 52.2	-17 22.4	18 44.6	-16 12.3	18 12.9	-23 51.5	22 33.4	-10 07.9	21 10.2	-17 11.5	02 33.1	+14 37.0	23 28.8	-04 35.1	19 55.8	-22 34.6
Feb	5	19 42.2	-18 48.9	18 48.2	-16 24.7	18 35.2	-23 43.8	22 39.5	-09 31.8	21 13.6	-16 57.1	02 33.4	+14 38.7	23 29.6	-04 29.8	19 56.7	-22 32.7
	12	19 56.4	-19 33.7	18 58.9	-16 42.7	18 57.6	-23 24.2	22 45.7	-08 54.7	21 16.9	-16 42.5	02 33.9	+14 41.3	23 30.5	-04 24.2	19 57.7	-22 30.9
	19	20 24.6	-19 21.6	19 15.2	-16 57.0	19 19.9	-22 53.0	22 51.9	-08 16.8	21 20.2	-16 27.9	02 34.6	+14 44.6	23 31.4	-04 18.4	19 58.5	-22 29.2
	26	21 00.2	-18 07.3	19 35.9	-16 59.8	19 42.2	-22 10.3	22 58.2	-07 38.4	21 23.5	-16 13.4	02 35.4	+14 48.6	23 32.3	-04 12.3	19 59.4	-22 27.7
Mar	5	21 39.9	-15 49.9	19 59.7	-16 45.4	20 04.3	-21 16.4	23 04.5	-06 59.5	21 26.7	-15 59.2	02 36.3	+14 53.2	23 33.3	-04 06.1	20 00.1	-22 26.4
	12	22 22.1	-12 30.2	20 25.8	-16 10.4	20 26.2	-20 12.0	23 10.8	-06 20.5	21 29.7	-15 45.4	02 37.4	+14 58.4	23 34.3	-03 59.9	20 00.8	-22 25.4
	19	23 06.2	-08 09.9	20 53.4	-15 13.1	20 47.9	-18 57.8	23 17.1	-05 41.5	21 32.7	-15 32.1	02 38.6	+15 04.1	23 35.3	-03 53.6	20 01.5	-22 24.5
	26	23 52.7	-02 52.2	21 22.0	-13 52.9	21 09.2	-17 34.4	23 23.3	-05 02.7	21 35.4	-15 19.4	02 39.8	+15 10.3	23 36.2	-03 47.5	20 02.0	-22 24.0
Apr	2	00 42.0	+03 14.7	21 51.3	-12 10.8	21 30.4	-16 02.7	23 29.4	-04 24.3	21 38.1	-15 07.6	02 41.2	+15 16.8	23 37.2	-03 41.5	20 02.5	-22 23.7
	9	01 34.2	+09 46.2	22 20.8	-10 08.6	21 51.2	-14 23.7	23 35.4	-03 46.5	21 40.5	-14 56.6	02 42.7	+15 23.6	23 38.1	-03 35.7	20 02.8	-22 23.7
	16	02 26.6	+15 48.9	22 50.4	-07 48.9	22 11.7	-12 38.3	23 41.2	-03 09.6	21 42.6	-14 46.8	02 44.2	+15 30.6	23 39.0	-03 30.2	20 03.1	-22 24.0
	23	03 13.2	+20 18.5	23 20.0	-05 14.6	22 32.0	-10 47.5	23 46.9	-02 33.7	21 44.6	-14 38.1	02 45.8	+15 37.7	23 39.8	-03 25.0	20 03.2	-22 24.6
	30	03 47.8	+22 44.9	23 49.7	-02 29.0	22 52.0	-08 52.3	23 52.4	-01 59.0	21 46.3	-14 30.6	02 47.4	+15 45.0	23 40.6	-03 20.2	20 03.3	-22 25.4
May	7	04 06.3	+23 12.2	00 19.5	+00 24.4	23 11.7	-06 53.8	23 57.7	-01 25.8	21 47.7	-14 24.6	02 49.0	+15 52.2	23 41.3	-03 15.9	20 03.3	-22 26.6
	14	04 07.5	+21 53.8	00 49.5	+03 21.8	23 31.3	-04 53.1	00 02.8	-00 54.3	21 48.9	-14 20.1	02 50.6	+15 59.3	23 42.0	-03 12.0	20 03.1	-22 28.0
	21	03 55.8	+19 20.8	01 19.8	+06 19.8	23 50.7	-02 51.1	00 07.6	-00 24.7	21 49.7	-14 17.1	02 52.1	+16 06.3	23 42.5	-03 08.7	20 02.9	-22 29.7
	28	03 42.3	+16 45.5	01 50.6	+09 14.4	00 09.9	-00 48.9	00 12.0	+00 02.9	21 50.2	-14 15.7	02 53.7	+16 13.1	23 43.0	-03 05.9	20 02.6	-22 31.6
Jun	4	03 37.7	+15 26.4	02 22.0	+12 01.9	00 29.0	+01 12.5	00 16.2	+00 28.0	21 50.4	-14 15.9	02 55.2	+16 19.7	23 43.4	-03 03.8	20 02.2	-22 33.8
	11	03 46.5	+15 49.5	02 54.2	+14 38.2	00 48.0	+03 12.1	00 20.0	+00 50.7	21 50.4	-14 17.8	02 56.6	+16 25.9	23 43.7	-03 02.2	20 01.7	-22 36.1
	18	04 08.8	+17 34.4	03 27.2	+16 59.4	01 06.9	+05 09.0	00 23.3	+01 10.5	21 50.0	-14 21.2	02 58.0	+16 31.7	23 43.9	-03 01.3	20 01.1	-22 38.5
	25	04 44.0	+20 02.7	04 01.2	+19 01.7	01 25.7	+07 02.3	00 26.2	+01 27.4	21 49.3	-14 26.1	02 59.3	+16 37.1	23 44.0	-03 01.0	20 00.6	-22 41.0
Jul	2	05 32.0	+22 26.3	04 36.0	+20 41.2	01 44.4	+08 51.2	00 28.7	+01 41.2	21 48.3	-14 32.4	03 00.5	+16 42.0	23 44.0	-03 01.4	19 59.9	-22 43.7
	9	06 31.7	+23 44.3	05 11.6	+21 54.5	02 03.0	+10 34.7	00 30.6	+01 51.5	21 47.1	-14 40.0	03 01.5	+16 46.4	23 43.9	-03 02.3	19 59.2	-22 46.3
	16	07 36.9	+23 02.3	05 47.9	+22 38.7	02 21.5	+12 12.4	00 32.0	+01 58.3	21 45.6	-14 48.7	03 02.5	+16 50.3	23 43.7	-03 03.9	19 58.5	-22 49.0
	23	08 39.0	+20 17.5	06 24.6	+22 52.0	02 39.8	+13 43.6	00 32.9	+02 01.4	21 43.9	-14 58.3	03 03.3	+16 53.5	23 43.4	-03 06.0	19 57.8	-22 51.6
	30	09 33.2	+16 11.9	07 01.3	+22 33.1	02 58.0	+15 07.8	00 33.1	+02 00.7	21 42.1	-15 08.5	03 03.9	+16 56.2	23 43.1	-03 08.7	19 57.1	-22 54.1
Aug	6	10 19.4	+11 28.4	07 38.0	+21 42.3	03 15.9	+16 24.5	00 32.8	+01 56.3	21 40.1	-15 19.1	03 04.5	+16 58.2	23 42.6	-03 11.9	19 56.5	-22 56.5
	13	10 58.8	+06 36.6	08 14.1	+20 20.6	03 33.4	+17 33.7	00 31.9	+01 48.2	21 38.1	-15 29.9	03 04.8	+16 59.6	23 42.1	-03 15.5	19 55.8	-22 58.7
	20	11 32.0	+01 56.7	08 49.7	+18 30.2	03 50.5	+18 35.3	00 30.4	+01 36.6	21 36.0	-15 40.5	03 05.0	+17 00.3	23 41.5	-03 19.4	19 55.2	-23 00.8
	27	11 59.0	-02 12.5	09 24.5	+16 14.0	04 07.1	+19 29.4	00 28.3	+01 21.8	21 34.0	-15 50.8	03 05.0	+17 00.3	23 40.9	-03 23.7	19 54.6	-23 02.7
Sep	3	12 18.1	-05 26.8	09 58.5	+13 35.4	04 22.9	+20 16.2	00 25.8	+01 04.1	21 32.1	-16 00.4	03 04.9	+16 59.6	23 40.2	-03 28.1	19 54.1	-23 04.4
	10	12 25.3	-07 05.5	10 31.8	+10 38.2	04 37.9	+20 56.3	00 22.9	+00 44.1	21 30.3	-16 09.2	03 04.6	+16 58.3	23 39.5	-03 32.7	19 53.7	-23 05.8
	17	12 15.9	-06 06.0	11 04.5	+07 26.5	04 51.8	+21 30.4	00 19.7	+00 22.6	21 28.7	-16 17.0	03 04.1	+16 56.4	23 38.8	-03 37.4	19 53.4	-23 06.9
	24	11 52.7	-02 06.2	11 36.8	+04 04.3	05 04.5	+21 59.3	00 16.3	+00 00.3	21 27.3	-16 23.5	03 03.5	+16 53.8	23 38.1	-03 42.0	19 53.1	-23 07.8
Oct	1	11 37.6	+02 01.2	12 08.8	+00 35.6	05 15.7	+22 24.0	00 12.9	-00 22.1	21 26.1	-16 28.7	03 02.8	+16 50.7	23 37.4	-03 46.5	19 53.0	-23 08.4
	8	11 49.3	+02 38.1	12 40.8	-02 55.1	05 25.1	+22 45.7	00 09.5	-00 43.6	21 25.3	-16 32.4	03 01.9	+16 47.1	23 36.8	-03 50.8	19 52.9	-23 08.7
	15	12 22.3	-00 14.9	13 13.0	-06 23.7	05 32.4	+23 05.5	00 06.4	-01 03.4	21 24.7	-16 34.6	03 01.0	+16 43.1	23 36.1	-03 54.8	19 53.0	-23 08.8
	22	13 03.7	-04 48.7	13 45.7	-09 46.0	05 37.3	+23 24.6	00 03.5	-01 20.9	21 24.5	-16 35.3	02 59.9	+16 38.7	23 35.5	-03 58.4	19 53.1	-23 08.6
	29	13 47.1	-09 42.8	14 19.0	-12 57.4	05 39.4	+23 43.5	00 01.1	-01 35.4	21 24.6	-16 34.4	02 58.8	+16 34.1	23 35.0	-04 01.6	19 53.3	-23 08.1
Nov	5	14 30.8	-14 18.9	14 53.2	-15 53.3	05 38.4	+24 02.6	23 59.1	-01 46.4	21 25.0	-16 31.9	02 57.7	+16 29.2	23 34.6	-04 04.2	19 53.7	-23 07.3
	12	15 14.9	-18 20.1	15 28.3	-18 29.3	05 34.4	+24 21.2	23 57.7	-01 53.6	21 25.8	-16 27.8	02 56.5	+16 24.4	23 34.2	-04 06.4	19 54.1	-23 06.3
	19	15 59.8	-21 36.7	16 04.5	-20 40.7	05 27.3	+24 37.8	23 56.9	-01 56.8	21 26.9	-16 22.2	02 55.3	+16 19.5	23 34.0	-04 07.9	19 54.7	-23 05.1
	26	16 45.7	-24 00.8	16 41.5	-22 23.5	05 17.5	+24 50.4	23 56.8	-01 55.9	21 28.3	-16 15.2	02 54.2	+16 14.8	23 33.8	-04 08.7	19 55.3	-23 03.7
Dec	3	17 32.5	-25 24.8	17 19.4	-23 34.0	05 06.1	+24 57.0	23 57.2	-01 50.9	21 30.0	-16 06.8	02 53.2	+16 10.3	23 33.7	-04 08.9	19 56.0	-23 02.0
	10	18 18.8	-25 41.5	17 57.7	-24 09.6	04 54.2	+24 56.9	23 58.3	-01 41.9	21 31.9	-15 57.1	02 52.2	+16 06.2	23 33.8	-04 08.5	19 56.8	-23 00.2
	17	19 01.9	-24 47.6	18 36.2	-24 08.8	04 43.0	+24 51.1	23 59.9	-01 29.1	21 34.1	-15 46.1	02 51.3	+16 02.5	23 33.9	-04 07.3	19 57.6	-22 58.3
	24	19 34.5	-22 54.4	19 14.6	-23 31.5	04 33.6	+24 42.2	00 02.1	-01 12.7	21 36.5	-15 34.1	02 50.6	+15 59.3	23 34.1	-04 05.5	19 58.5	-22 56.2
	31	19 42.3	-20 48.1	19 52.3	-22 18.9	04 26.9	+24 33.3	00 04.8	-00 53.0	21 39.2	-15 20.9	02 50.0	+15 56.8	23 34.5	-04 03.1	19 59.4	-22 54.1

RISE and SET times for ADELAIDE (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	1	03:19	05:05	19:33	21:18	06:26	20:46	06:15	20:06	03:10	17:30	09:07	22:21	07:36	21:25	14:46	01:30	10:44	23:14	06:16	20:35	
	8	03:26	05:11	19:33	21:17	06:44	20:42	05:34	19:17	03:01	17:26	08:47	21:57	07:13	21:00	14:18	01:02	10:17	22:47	05:49	20:09	
	15	03:35	05:17	19:32	21:14	06:37	20:16	04:51	18:30	02:54	17:22	08:26	21:34	06:49	20:35	13:51	00:34	09:51	22:20	05:23	19:42	
	22	03:44	05:24	19:29	21:09	05:50	19:23	04:12	17:49	02:48	17:17	08:06	21:10	06:25	20:10	13:23	00:07	09:24	21:53	04:57	19:15	
29	03:54	05:32	19:25	21:02	04:45	18:27	03:40	17:17	02:42	17:12	07:46	20:47	06:02	19:45	12:56	23:35	08:57	21:26	04:30	18:49		
Feb	5	04:04	05:39	19:20	20:54	04:02	17:55	03:15	16:54	02:37	17:06	07:27	20:24	05:39	19:20	12:29	23:08	08:31	20:59	04:04	18:22	
	12	04:14	05:46	19:13	20:45	03:45	17:45	02:57	16:38	02:33	16:59	07:07	20:01	05:15	18:55	12:02	22:41	08:05	20:32	03:37	17:55	
	19	04:23	05:53	19:05	20:35	03:46	17:45	02:45	16:28	02:30	16:52	06:47	19:37	04:52	18:30	11:35	22:14	07:38	20:05	03:11	17:29	
	26	04:31	05:59	18:57	20:25	03:58	17:50	02:38	16:21	02:27	16:44	06:28	19:14	04:28	18:05	11:08	21:47	07:12	19:38	02:44	17:02	
Mar	5	04:39	06:06	18:48	20:15	04:17	17:54	02:34	16:17	02:24	16:36	06:09	18:51	04:05	17:40	10:42	21:20	06:46	19:11	02:17	16:35	
	12	04:46	06:12	18:39	20:04	04:41	17:59	02:35	16:13	02:22	16:26	05:49	18:28	03:41	17:15	10:16	20:53	06:19	18:45	01:51	16:08	
	19	04:53	06:18	18:29	19:53	05:11	18:03	02:38	16:10	02:20	16:16	05:30	18:05	03:17	16:50	09:50	20:27	05:53	18:18	01:24	15:41	
	26	04:59	06:23	18:19	19:43	05:44	18:06	02:43	16:07	02:19	16:06	05:10	17:42	02:53	16:24	09:24	20:00	05:27	17:51	00:57	15:14	
Apr	2	05:05	06:29	18:09	19:33	06:23	18:11	02:49	16:04	02:17	15:54	04:51	17:19	02:28	15:59	08:58	19:34	05:01	17:24	00:30	14:47	
	9	05:10	06:34	18:00	19:24	07:06	18:17	02:57	16:00	02:15	15:42	04:31	16:55	02:04	15:33	08:32	19:07	04:34	16:57	23:59	14:20	
	16	05:15	06:40	17:51	19:15	07:49	18:24	03:06	15:55	02:14	15:30	04:11	16:32	01:39	15:07	08:07	18:41	04:08	16:30	23:31	13:53	
	23	05:20	06:45	17:42	19:07	08:23	18:29	03:15	15:50	02:12	15:17	03:51	16:08	01:14	14:41	07:41	18:15	03:41	16:03	23:04	13:25	
30	05:25	06:51	17:35	19:00	08:38	18:28	03:25	15:44	02:10	15:04	03:30	15:45	00:49	14:15	07:16	17:48	03:15	15:36	22:37	12:58		
May	7	05:30	06:56	17:28	18:54	08:31	18:16	03:35	15:38	02:07	14:51	03:10	15:21	00:23	13:48	06:50	17:22	02:48	15:09	22:09	12:30	
	14	05:34	07:02	17:22	18:49	08:00	17:54	03:46	15:32	02:05	14:37	02:49	14:57	23:53	13:22	06:24	16:56	02:22	14:42	21:41	12:03	
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RISE and SET times for BRISBANE (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	1	03:24	04:56	18:47	20:19	06:16	20:01	06:02	19:24	03:00	16:45	08:49	21:44	07:23	20:44	14:08	01:13	10:20	22:43	06:06	19:50
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RISE and SET times for CANBERRA (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	1	03:05	04:52	19:21	21:08	06:13	20:35	06:02	19:55	02:57	17:19	08:55	22:09	07:24	21:14	14:35	01:17	10:32	23:03	06:03	20:24
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Feb	5	03:51	05:26	19:08	20:43	03:49	17:44	03:02	16:43	02:24	16:55	07:14	20:12	05:26	19:09	12:17	22:56	08:19	20:47	03:51	18:11
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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
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RISE and SET times for HOBART (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
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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	1	03:07	05:01	19:45	21:39	06:22	20:58	06:13	20:17	03:06	17:42	09:08	22:29	07:35	21:36	14:55	01:29	10:47	23:20	06:12	20:48
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Nov	5	03:30	05:09	18:59	20:38	05:06	18:46	05:23	19:13	22:19	07:46	15:15	03:33	11:53	01:47	19:11	05:32	14:43	03:15	09:58	00:40
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RISE and SET times for PERTH (WST)

		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	1	03:34	05:14	19:26	21:05	06:34	20:40	06:22	20:01	03:18	17:23	09:12	22:18	07:43	21:20	14:43	01:35	10:47	23:14	06:24	20:29
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Nov	5	03:46	05:16	18:45	20:15	05:12	18:33	05:30	18:59	21:59	07:58	15:12	03:28	12:00	01:32	18:57	05:39	14:42	03:09	10:10	00:21
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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	1	03:04	04:47	19:09	20:53	06:08	20:23	05:57	19:43	02:52	17:07	08:48	21:59	07:18	21:03	14:24	01:11	10:24	22:53	05:58	20:12
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Feb	29	03:37	05:13	19:03	20:38	04:26	18:05	03:21	16:55	02:24	16:48	07:27	20:25	05:43	19:23	12:34	23:16	08:38	21:05	04:12	18:26
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