

I slightly modified Thorstensen's code to print out the time between evening twilight and morning twilight. For Okie-Tex site (site code = o) near Kenton OK I used same time zone as for Oklahoma City.

W. Romanishin- August 2013 - email: wromanishin at ou.edu - Here is stuff from John T. intro:

\*\*\*\*\* 2022 Night-time Astronomical Calendar for Kitt Peak \*\*\*\*\*

By John Thorstensen, Dartmouth College

This calendar is designed to provide information useful for the planning of nighttime observations. The format should minimize confusion; each line gives the phenomena for a single (local!) night, and each line is labeled with both evening and morning (local) day and date. Note that all times given are LOCAL CIVIL (zone) times.

The rise/set times printed are the times at which the center of the object is 50 arcminutes below the geometrical horizon. At the given twilight, the center of the sun is 0.0 degrees below the geometrical horizon.

The moon positions (and rise/set times) are generated by an implementation of the Low-Precision formulae in the Astronomical Almanac. The Almanac states that the error seldom exceeds 0.3 degrees. Topocentric corrections are included. Comparisons with tables for Kitt Peak in the NOAO Newsletter indicate that the rise-set times are good to +/- 2 min or so. The moon's RA, Dec, and illuminated fraction are given for local midnight, regardless of whether the moon is actually up at that time. Note that the moonrise and moonset times are not printed if they occur near mid-day.

The LST at evening and morning twilight are tabulated. This gives an accurate idea of the range of RA's accessible during the night.

The JD is given (severely rounded off) for local midnight. Again, this avoids any ambiguity.

Some credits: The sidereal time and Julian date routines were originally coded in PL/I by Steve Maker of Dartmouth College. The algorithms originated in the old American Ephemeris. The routine to convert JD back to calendar date is adapted from Numerical Recipes in C, by Press et al.

CAUTIONS: I believe that the program which generates these tables is reasonably accurate. However, it has not been exhaustively tested, so you should be sure to run 'sanity checks' on the results. Also, in view of the approximations used, the results should not be used when high precision is needed. Extension to dates far from the present (1990) should be done with great caution. The code has not been tested for the eastern or southern hemispheres. Rise/set times are slightly inaccurate and rather confusing at circumpolar latitudes, where the concept of a 'night' is blurry.

The daylight savings time conventions (if used) are quite specific (to U. S., post-1986) and subject to change. I know that the code has many infelicities; if you should find actual errors, please notify  
John.Thorstensen@dartmouth.edu

[This output comes from a (hopefully) portable, completely self-contained program in the c language. It is available from the author and may be used freely for scientific or educational purposes. If you use it for profit, please contact the author to arrange a (modest!) fee.  
Source code is copyright John Thorstensen, 1990.]

MOON PHASES FOR 2022, at Kitt Peak

Times and dates are given in local time, zone = 7 hr West.  
They are generally better than +/- 2 minutes.

The end of the previous year and the beginning of the next  
are included for continuity.

NEW		1ST		FULL		LAST	
Dec 04	0 45	Dec 10	18 38	Dec 18	21 38	Dec 26	19 26
Jan 02	11 36	Jan 09	11 13	Jan 17	16 51	Jan 25	6 43
Jan 31	22 49	Feb 08	6 52	Feb 16	10 00	Feb 23	15 35
Mar 02	10 38	Mar 10	3 46	Mar 18	0 21	Mar 24	22 39
Mar 31	23 28	Apr 08	23 48	Apr 16	11 58	Apr 23	4 58
Apr 30	13 31	May 08	17 22	May 15	21 16	May 22	11 45
May 30	4 32	Jun 07	7 49	Jun 14	4 53	Jun 20	20 12
Jun 28	19 53	Jul 06	19 15	Jul 13	11 38	Jul 20	7 19
Jul 28	10 55	Aug 05	4 08	Aug 11	18 36	Aug 18	21 37
Aug 27	1 17	Sep 03	11 09	Sep 10	2 59	Sep 17	14 52
Sep 25	14 54	Oct 02	17 15	Oct 09	13 55	Oct 17	10 16
Oct 25	3 48	Oct 31	23 39	Nov 08	4 03	Nov 16	6 29
Nov 23	15 57	Nov 30	7 39	Dec 07	21 10	Dec 16	1 59
Dec 23	3 18	Dec 29	18 23	Jan 06	16 10	Jan 14	19 13

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2  
 Rise/set times in Mountain time ( 7 hr W), for 500 m above surroundings, in standard time all year.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2022 JANUARY \*\*\*\*\*

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	----- set	Moon: ----- %illum	RA	Dec	Twi-Twi hours
Sat Jan 01/Sun Jan 02	6 21	17 37	19 01	6 00 7 23	1 21 12 22	7 30	16 34	0	18 22.4	-26 19	11.0
Sun Jan 02/Mon Jan 03	6 25	17 38	19 01	6 00 7 24	1 26 12 26	.....	17 40	0	19 28.8	-25 54	11.0
Mon Jan 03/Tue Jan 04	6 29	17 39	19 02	6 01 7 24	1 30 12 31	.....	18 51	3	20 32.9	-23 41	11.0
Tue Jan 04/Wed Jan 05	6 33	17 40	19 03	6 01 7 24	1 35 12 35	.....	20 03	9	21 32.8	-19 58	11.0
Wed Jan 05/Thu Jan 06	6 37	17 40	19 03	6 01 7 24	1 39 12 39	.....	21 11	16	22 28.1	-15 14	11.0
Thu Jan 06/Fri Jan 07	6 41	17 41	19 04	6 01 7 24	1 44 12 43	.....	22 16	25	23 19.2	- 9 52	11.0
Fri Jan 07/Sat Jan 08	6 45	17 42	19 05	6 01 7 24	1 49 12 47	.....	23 17	35	0 07.1	- 4 14	10.9
Sat Jan 08/Sun Jan 09	6 49	17 43	19 06	6 01 7 24	1 53 12 51	.....	0 16	45	0 52.9	1 25	10.9
Sun Jan 09/Mon Jan 10	6 53	17 44	19 06	6 01 7 24	1 58 12 55	.....	1 12	54	1 37.8	6 52	10.9
Mon Jan 10/Tue Jan 11	6 57	17 44	19 07	6 01 7 24	2 03 12 59	.....	2 09	64	2 22.8	11 57	10.9
Tue Jan 11/Wed Jan 12	7 01	17 45	19 08	6 01 7 24	2 08 13 03	.....	3 05	73	3 08.9	16 31	10.9
Wed Jan 12/Thu Jan 13	7 05	17 46	19 09	6 01 7 24	2 12 13 07	.....	4 01	81	3 56.7	20 24	10.9
Thu Jan 13/Fri Jan 14	7 08	17 47	19 09	6 01 7 24	2 17 13 11	.....	4 58	88	4 46.6	23 25	10.9
Fri Jan 14/Sat Jan 15	7 12	17 48	19 10	6 01 7 23	2 22 13 15	.....	5 53	93	5 38.6	25 24	10.9
Sat Jan 15/Sun Jan 16	7 16	17 49	19 11	6 01 7 23	2 26 13 19	15 45	6 46	97	6 32.1	26 12	10.8
Sun Jan 16/Mon Jan 17	7 20	17 50	19 12	6 01 7 23	2 31 13 22	16 36	7 34	99	7 26.3	25 45	10.8
Mon Jan 17/Tue Jan 18	7 24	17 51	19 12	6 01 7 23	2 36 13 26	17 32	.....	100	8 20.1	24 02	10.8
Tue Jan 18/Wed Jan 19	7 28	17 51	19 13	6 01 7 22	2 41 13 30	18 30	.....	98	9 12.6	21 08	10.8
Wed Jan 19/Thu Jan 20	7 32	17 52	19 14	6 01 7 22	2 45 13 34	19 30	.....	95	10 03.4	17 13	10.8
Thu Jan 20/Fri Jan 21	7 36	17 53	19 15	6 00 7 22	2 50 13 37	20 30	.....	89	10 52.4	12 28	10.8
Fri Jan 21/Sat Jan 22	7 40	17 54	19 16	6 00 7 21	2 55 13 41	21 30	.....	82	11 40.3	7 06	10.7
Sat Jan 22/Sun Jan 23	7 44	17 55	19 16	6 00 7 21	3 00 13 45	22 30	.....	73	12 27.6	1 21	10.7
Sun Jan 23/Mon Jan 24	7 48	17 56	19 17	6 00 7 21	3 04 13 48	23 30	.....	63	13 15.5	- 4 34	10.7
Mon Jan 24/Tue Jan 25	7 52	17 57	19 18	5 59 7 20	3 09 13 52	0 33	.....	52	14 04.9	-10 22	10.7
Tue Jan 25/Wed Jan 26	7 56	17 58	19 19	5 59 7 20	3 14 13 56	1 39	.....	41	14 57.2	-15 47	10.7
Wed Jan 26/Thu Jan 27	8 00	17 59	19 20	5 59 7 19	3 18 13 59	2 48	.....	30	15 53.0	-20 28	10.6
Thu Jan 27/Fri Jan 28	8 04	18 00	19 20	5 58 7 19	3 23 14 03	3 59	.....	20	16 52.9	-24 01	10.6
Fri Jan 28/Sat Jan 29	8 08	18 01	19 21	5 58 7 18	3 28 14 06	5 08	.....	12	17 56.2	-26 05	10.6
Sat Jan 29/Sun Jan 30	8 12	18 01	19 22	5 57 7 17	3 33 14 10	6 13	.....	5	19 01.3	-26 23	10.6
Sun Jan 30/Mon Jan 31	8 15	18 02	19 23	5 57 7 17	3 37 14 13	7 09	16 25	1	20 05.8	-24 51	10.6
Mon Jan 31/Tue Feb 01	8 19	18 03	19 24	5 56 7 16	3 42 14 17	7 57	17 36	0	21 07.4	-21 42	10.5

\*\*\*\*\* 2022 FEBRUARY \*\*\*\*\*

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	----- set	Moon: ----- %illum	RA	Dec	Twi-Twi hours
Tue Feb 01/Wed Feb 02	8 23	18 04	19 24	5 56 7 16	3 47 14 20	.....	18 47	2	22 04.9	-17 17	10.5
Wed Feb 02/Thu Feb 03	8 27	18 05	19 25	5 55 7 15	3 52 14 23	.....	19 56	6	22 58.4	-12 01	10.5
Thu Feb 03/Fri Feb 04	8 31	18 06	19 26	5 55 7 14	3 56 14 27	.....	21 00	11	23 48.3	- 6 19	10.5
Fri Feb 04/Sat Feb 05	8 35	18 07	19 27	5 54 7 13	4 01 14 30	.....	22 01	19	0 35.7	- 0 30	10.5
Sat Feb 05/Sun Feb 06	8 39	18 08	19 27	5 53 7 13	4 06 14 33	.....	23 00	28	1 21.8	5 11	10.4
Sun Feb 06/Mon Feb 07	8 43	18 09	19 28	5 53 7 12	4 11 14 37	.....	23 58	37	2 07.4	10 30	10.4
Mon Feb 07/Tue Feb 08	8 47	18 10	19 29	5 52 7 11	4 15 14 40	.....	0 56	47	2 53.6	15 18	10.4
Tue Feb 08/Wed Feb 09	8 51	18 11	19 30	5 51 7 10	4 20 14 43	.....	1 53	56	3 41.0	19 25	10.4
Wed Feb 09/Thu Feb 10	8 55	18 11	19 31	5 50 7 09	4 25 14 46	.....	2 50	65	4 30.2	22 42	10.3
Thu Feb 10/Fri Feb 11	8 59	18 12	19 31	5 50 7 09	4 29 14 50	.....	3 46	74	5 21.5	25 00	10.3
Fri Feb 11/Sat Feb 12	9 03	18 13	19 32	5 49 7 08	4 34 14 53	.....	4 39	82	6 14.4	26 10	10.3
Sat Feb 12/Sun Feb 13	9 07	18 14	19 33	5 48 7 07	4 39 14 56	.....	5 29	89	7 08.3	26 05	10.3
Sun Feb 13/Mon Feb 14	9 11	18 15	19 34	5 47 7 06	4 44 14 59	.....	6 14	94	8 02.4	24 44	10.2
Mon Feb 14/Tue Feb 15	9 15	18 16	19 34	5 46 7 05	4 48 15 02	16 20	6 55	98	8 55.7	22 08	10.2
Tue Feb 15/Wed Feb 16	9 19	18 17	19 35	5 46 7 04	4 53 15 05	17 21	7 31	100	9 47.5	18 25	10.2
Wed Feb 16/Thu Feb 17	9 23	18 17	19 36	5 45 7 03	4 58 15 08	18 22	.....	99	10 37.8	13 46	10.1
Thu Feb 17/Fri Feb 18	9 26	18 18	19 37	5 44 7 02	5 02 15 11	19 22	.....	97	11 26.8	8 25	10.1
Fri Feb 18/Sat Feb 19	9 30	18 19	19 37	5 43 7 01	5 07 15 14	20 23	.....	92	12 15.1	2 35	10.1
Sat Feb 19/Sun Feb 20	9 34	18 20	19 38	5 42 7 00	5 12 15 17	21 25	.....	86	13 03.5	- 3 27	10.1
Sun Feb 20/Mon Feb 21	9 38	18 21	19 39	5 41 6 59	5 16 15 20	22 27	.....	77	13 53.0	- 9 24	10.0
Mon Feb 21/Tue Feb 22	9 42	18 22	19 40	5 40 6 58	5 21 15 23	23 32	.....	67	14 44.6	-14 57	10.0
Tue Feb 22/Wed Feb 23	9 46	18 22	19 40	5 39 6 57	5 26 15 26	0 39	.....	57	15 39.2	-19 49	10.0
Wed Feb 23/Thu Feb 24	9 50	18 23	19 41	5 38 6 56	5 31 15 29	1 48	.....	45	16 37.3	-23 36	9.9
Thu Feb 24/Fri Feb 25	9 54	18 24	19 42	5 37 6 55	5 35 15 32	2 56	.....	34	17 38.5	-26 01	9.9
Fri Feb 25/Sat Feb 26	9 58	18 25	19 43	5 36 6 54	5 40 15 35	4 00	.....	24	18 41.6	-26 46	9.9
Sat Feb 26/Sun Feb 27	10 02	18 25	19 43	5 35 6 52	5 45 15 38	4 58	.....	15	19 44.8	-25 48	9.9
Sun Feb 27/Mon Feb 28	10 06	18 26	19 44	5 34 6 51	5 49 15 40	5 48	.....	8	20 45.9	-23 11	9.8
Mon Feb 28/Tue Mar 01	10 10	18 27	19 45	5 32 6 50	5 54 15 43	6 31	16 26	3	21 43.8	-19 12	9.8

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2  
 Rise/set times in Mountain time ( 7 hr W), for 500 m above surroundings, in standard time all year.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2022 MARCH \*\*\*\*\*

Date (eve/morn)		LMST	----- Sun: -----				LST twilight:		----- Moon: -----					Twi-Twi
		midn	set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Tue Mar 01/Wed Mar 02	10 14	18 28	19 46	5 31	6 49	5 59	15 46	7 07	17 35	0	22	38.0	-14 13	9.8
Wed Mar 02/Thu Mar 03	10 18	18 29	19 46	5 30	6 48	6 03	15 49	.....	18 41	1	23	28.9	- 8 36	9.7
Thu Mar 03/Fri Mar 04	10 22	18 29	19 47	5 29	6 47	6 08	15 52	.....	19 44	3	0	17.3	- 2 44	9.7
Fri Mar 04/Sat Mar 05	10 26	18 30	19 48	5 28	6 45	6 13	15 54	.....	20 45	7	1	04.1	3 07	9.7
Sat Mar 05/Sun Mar 06	10 30	18 31	19 49	5 27	6 44	6 17	15 57	.....	21 44	13	1	50.3	8 41	9.6
Sun Mar 06/Mon Mar 07	10 33	18 32	19 49	5 25	6 43	6 22	16 00	.....	22 43	21	2	36.7	13 47	9.6
Mon Mar 07/Tue Mar 08	10 37	18 32	19 50	5 24	6 42	6 27	16 02	.....	23 41	29	3	24.1	18 13	9.6
Tue Mar 08/Wed Mar 09	10 41	18 33	19 51	5 23	6 41	6 31	16 05	.....	0 39	38	4	13.0	21 50	9.5
Wed Mar 09/Thu Mar 10	10 45	18 34	19 51	5 22	6 39	6 36	16 08	.....	1 36	48	5	03.6	24 29	9.5
Thu Mar 10/Fri Mar 11	10 49	18 34	19 52	5 20	6 38	6 41	16 11	.....	2 31	57	5	55.8	26 02	9.5
Fri Mar 11/Sat Mar 12	10 53	18 35	19 53	5 19	6 37	6 45	16 13	.....	3 22	67	6	49.2	26 22	9.4
Sat Mar 12/Sun Mar 13	10 57	18 36	19 54	5 18	6 36	6 50	16 16	.....	4 09	75	7	42.9	25 26	9.4
Sun Mar 13/Mon Mar 14	11 01	18 37	19 54	5 17	6 34	6 55	16 19	.....	4 51	83	8	36.1	23 16	9.4
Mon Mar 14/Tue Mar 15	11 05	18 37	19 55	5 15	6 33	7 00	16 21	.....	5 29	90	9	28.3	19 55	9.3
Tue Mar 15/Wed Mar 16	11 09	18 38	19 56	5 14	6 32	7 04	16 24	.....	6 03	95	10	19.2	15 31	9.3
Wed Mar 16/Thu Mar 17	11 13	18 39	19 57	5 13	6 31	7 09	16 26	.....	6 34	99	11	09.0	10 17	9.3
Thu Mar 17/Fri Mar 18	11 17	18 39	19 57	5 11	6 29	7 14	16 29	.....	7 04	100	11	58.2	4 26	9.2
Fri Mar 18/Sat Mar 19	11 21	18 40	19 58	5 10	6 28	7 18	16 32	.....	19 14	99	12	47.5	- 1 45	9.2
Sat Mar 19/Sun Mar 20	11 25	18 41	19 59	5 09	6 27	7 23	16 34	.....	20 17	95	13	37.9	- 7 58	9.2
Sun Mar 20/Mon Mar 21	11 29	18 41	20 00	5 07	6 25	7 28	16 37	.....	21 23	89	14	30.2	-13 52	9.1
Mon Mar 21/Tue Mar 22	11 33	18 42	20 00	5 06	6 24	7 32	16 39	.....	22 31	81	15	25.3	-19 05	9.1
Tue Mar 22/Wed Mar 23	11 37	18 43	20 01	5 05	6 23	7 37	16 42	.....	23 40	71	16	23.6	-23 15	9.1
Wed Mar 23/Thu Mar 24	11 40	18 44	20 02	5 03	6 22	7 42	16 45	.....	0 49	60	17	24.8	-26 01	9.0
Thu Mar 24/Fri Mar 25	11 44	18 44	20 03	5 02	6 20	7 47	16 47	.....	1 55	49	18	27.7	-27 08	9.0
Fri Mar 25/Sat Mar 26	11 48	18 45	20 04	5 00	6 19	7 51	16 50	.....	2 54	37	19	30.5	-26 32	8.9
Sat Mar 26/Sun Mar 27	11 52	18 46	20 04	4 59	6 18	7 56	16 52	.....	3 45	27	20	31.2	-24 18	8.9
Sun Mar 27/Mon Mar 28	11 56	18 46	20 05	4 58	6 16	8 01	16 55	.....	4 29	18	21	28.8	-20 40	8.9
Mon Mar 28/Tue Mar 29	12 00	18 47	20 06	4 56	6 15	8 06	16 57	.....	5 06	10	22	22.7	-16 00	8.8
Tue Mar 29/Wed Mar 30	12 04	18 48	20 07	4 55	6 14	8 10	17 00	.....	5 39	5	23	13.4	-10 36	8.8
Wed Mar 30/Thu Mar 31	12 08	18 48	20 08	4 53	6 13	8 15	17 02	.....	6 09	17	29	01.7	- 4 50	8.8
Thu Mar 31/Fri Apr 01	12 12	18 49	20 08	4 52	6 11	8 20	17 05	.....	6 38	18	30	04.4	1 02	8.7

\*\*\*\*\* 2022 APRIL \*\*\*\*\*

Date (eve/morn)		LMST	----- Sun: -----				LST twilight:		----- Moon: -----					Twi-Twi
		midn	set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Apr 01/Sat Apr 02	12 16	18 50	20 09	4 51	6 10	8 25	17 07	7 07	19 30	1	1	34.4	6 45	8.7
Sat Apr 02/Sun Apr 03	12 20	18 50	20 10	4 49	6 09	8 29	17 10	.....	20 29	4	2	20.6	12 04	8.7
Sun Apr 03/Mon Apr 04	12 24	18 51	20 11	4 48	6 08	8 34	17 12	.....	21 28	9	3	07.7	16 47	8.6
Mon Apr 04/Tue Apr 05	12 28	18 52	20 12	4 46	6 06	8 39	17 15	.....	22 27	15	3	56.2	20 45	8.6
Tue Apr 05/Wed Apr 06	12 32	18 52	20 13	4 45	6 05	8 44	17 17	.....	23 25	23	4	46.4	23 45	8.5
Wed Apr 06/Thu Apr 07	12 36	18 53	20 13	4 44	6 04	8 48	17 20	.....	0 22	31	5	38.0	25 41	8.5
Thu Apr 07/Fri Apr 08	12 40	18 54	20 14	4 42	6 03	8 53	17 23	.....	1 14	40	6	30.8	26 26	8.5
Fri Apr 08/Sat Apr 09	12 44	18 54	20 15	4 41	6 01	8 58	17 25	.....	2 03	49	7	23.9	25 57	8.4
Sat Apr 09/Sun Apr 10	12 48	18 55	20 16	4 39	6 00	9 03	17 28	.....	2 47	59	8	16.6	24 14	8.4
Sun Apr 10/Mon Apr 11	12 51	18 56	20 17	4 38	5 59	9 08	17 30	.....	3 25	69	9	08.4	21 20	8.4
Mon Apr 11/Tue Apr 12	12 55	18 57	20 18	4 36	5 58	9 13	17 33	.....	4 00	77	9	59.0	17 22	8.3
Tue Apr 12/Wed Apr 13	12 59	18 57	20 19	4 35	5 56	9 17	17 35	.....	4 32	86	10	48.6	12 28	8.3
Wed Apr 13/Thu Apr 14	13 03	18 58	20 20	4 34	5 55	9 22	17 38	.....	5 03	92	11	37.6	6 50	8.2
Thu Apr 14/Fri Apr 15	13 07	18 59	20 20	4 32	5 54	9 27	17 40	.....	5 33	97	12	26.9	0 41	8.2
Fri Apr 15/Sat Apr 16	13 11	18 59	20 21	4 31	5 53	9 32	17 43	.....	18 01	100	13	17.3	- 5 41	8.2
Sat Apr 16/Sun Apr 17	13 15	19 00	20 22	4 30	5 52	9 37	17 45	.....	19 07	100	14	09.9	-11 56	8.1
Sun Apr 17/Mon Apr 18	13 19	19 01	20 23	4 28	5 51	9 42	17 48	.....	20 15	97	15	05.6	-17 39	8.1
Mon Apr 18/Tue Apr 19	13 23	19 01	20 24	4 27	5 50	9 47	17 51	.....	21 27	91	16	04.9	-22 23	8.0
Tue Apr 19/Wed Apr 20	13 27	19 02	20 25	4 25	5 48	9 51	17 53	.....	22 38	83	17	07.4	-25 44	8.0
Wed Apr 20/Thu Apr 21	13 31	19 03	20 26	4 24	5 47	9 56	17 56	.....	23 47	74	18	12.0	-27 21	8.0
Thu Apr 21/Fri Apr 22	13 35	19 03	20 27	4 23	5 46	10 01	17 58	.....	0 50	63	19	16.5	-27 09	7.9
Fri Apr 22/Sat Apr 23	13 39	19 04	20 28	4 21	5 45	10 06	18 01	.....	1 44	52	20	18.7	-25 13	7.9
Sat Apr 23/Sun Apr 24	13 43	19 05	20 29	4 20	5 44	10 11	18 04	.....	2 29	41	21	17.2	-21 50	7.9
Sun Apr 24/Mon Apr 25	13 47	19 06	20 30	4 19	5 43	10 16	18 06	.....	3 08	30	22	11.7	-17 21	7.8
Mon Apr 25/Tue Apr 26	13 51	19 06	20 31	4 17	5 42	10 21	18 09	.....	3 41	21	23	02.4	-12 08	7.8
Tue Apr 26/Wed Apr 27	13 55	19 07	20 32	4 16	5 41	10 26	18 11	.....	4 12	13	23	50.4	- 6 29	7.7
Wed Apr 27/Thu Apr 28	13 58	19 08	20 33	4 15	5 40	10 31	18 14	.....	4 40	7	0	36.5	- 0 41	7.7
Thu Apr 28/Fri Apr 29	14 02	19 08	20 34	4 14	5 39	10 36	18 17	.....	5 08	17	20	12.9	5 02	7.7
Fri Apr 29/Sat Apr 30	14 06	19 09	20 35	4 12	5 38	10 41	18 19	.....	5 37	18	19	07.4	10 26	7.6
Sat Apr 30/Sun May 01	14 10	19 10	20 36	4 11	5 37	10 45	18 22	.....	6 08	19	17	53.8	15 21	7.6

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2  
 Rise/set times in Mountain time ( 7 hr W), for 500 m above surroundings, in standard time all year.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2022 MAY \*\*\*\*\*

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours
Sun May 01/Mon May 02	14 14	19 11	20 37	4 10 5 36	10 50 18 25	6 42	20 16	2	3 41.7 19 33	7.6
Mon May 02/Tue May 03	14 18	19 11	20 38	4 09 5 35	10 55 18 28	.....	21 15	5	4 31.2 22 52	7.5
Tue May 03/Wed May 04	14 22	19 12	20 39	4 08 5 34	11 00 18 30	.....	22 12	10	5 22.3 25 09	7.5
Wed May 04/Thu May 05	14 26	19 13	20 40	4 06 5 33	11 05 18 33	.....	23 07	17	6 14.6 26 16	7.4
Thu May 05/Fri May 06	14 30	19 13	20 41	4 05 5 32	11 10 18 36	.....	23 57	25	7 07.3 26 11	7.4
Fri May 06/Sat May 07	14 34	19 14	20 42	4 04 5 32	11 15 18 39	.....	0 42	33	7 59.5 24 52	7.4
Sat May 07/Sun May 08	14 38	19 15	20 43	4 03 5 31	11 20 18 42	.....	1 23	42	8 50.7 22 23	7.3
Sun May 08/Mon May 09	14 42	19 16	20 44	4 02 5 30	11 25 18 44	.....	1 58	52	9 40.7 18 51	7.3
Mon May 09/Tue May 10	14 46	19 16	20 45	4 01 5 29	11 30 18 47	.....	2 31	62	10 29.4 14 23	7.3
Tue May 10/Wed May 11	14 50	19 17	20 46	4 00 5 28	11 35 18 50	.....	3 01	72	11 17.4 9 08	7.2
Wed May 11/Thu May 12	14 54	19 18	20 47	3 59 5 28	11 40 18 53	.....	3 30	81	12 05.4 3 17	7.2
Thu May 12/Fri May 13	14 58	19 18	20 48	3 58 5 27	11 45 18 56	.....	4 00	89	12 54.5 - 2 58	7.2
Fri May 13/Sat May 14	15 02	19 19	20 49	3 57 5 26	11 50 18 59	.....	4 32	95	13 45.7 - 9 18	7.1
Sat May 14/Sun May 15	15 06	19 20	20 50	3 56 5 25	11 55 19 02	17 53	5 08	99	14 40.2 -15 22	7.1
Sun May 15/Mon May 16	15 09	19 21	20 51	3 55 5 25	12 00 19 05	19 04	5 50	100	15 39.0 -20 41	7.1
Mon May 16/Tue May 17	15 13	19 21	20 52	3 54 5 24	12 05 19 08	20 18	.....	98	16 42.0 -24 47	7.0
Tue May 17/Wed May 18	15 17	19 22	20 53	3 53 5 24	12 09 19 11	21 31	.....	93	17 48.4 -27 10	7.0
Wed May 18/Thu May 19	15 21	19 23	20 54	3 52 5 23	12 14 19 14	22 39	.....	86	18 55.8 -27 37	7.0
Thu May 19/Fri May 20	15 25	19 23	20 55	3 51 5 22	12 19 19 17	23 38	.....	76	20 01.4 -26 08	6.9
Fri May 20/Sat May 21	15 29	19 24	20 55	3 50 5 22	12 24 19 20	0 28	.....	66	21 02.9 -23 00	6.9
Sat May 21/Sun May 22	15 33	19 25	20 56	3 50 5 21	12 29 19 23	1 09	.....	55	21 59.7 -18 38	6.9
Sun May 22/Mon May 23	15 37	19 25	20 57	3 49 5 21	12 34 19 27	1 44	.....	44	22 52.0 -13 28	6.9
Mon May 23/Tue May 24	15 41	19 26	20 58	3 48 5 20	12 39 19 30	2 15	.....	33	23 40.8 - 7 50	6.8
Tue May 24/Wed May 25	15 45	19 27	20 59	3 47 5 20	12 44 19 33	2 44	.....	24	0 27.1 - 2 03	6.8
Wed May 25/Thu May 26	15 49	19 27	21 00	3 47 5 20	12 48 19 36	3 12	.....	16	1 12.3 3 40	6.8
Thu May 26/Fri May 27	15 53	19 28	21 01	3 46 5 19	12 53 19 40	3 40	.....	9	1 57.3 9 07	6.8
Fri May 27/Sat May 28	15 57	19 29	21 02	3 45 5 19	12 58 19 43	4 09	.....	4	2 43.0 14 07	6.7
Sat May 28/Sun May 29	16 01	19 29	21 03	3 45 5 18	13 03 19 46	4 42	18 08	1	3 30.0 18 28	6.7
Sun May 29/Mon May 30	16 05	19 30	21 03	3 44 5 18	13 08 19 50	5 19	19 07	0	4 18.8 22 00	6.7
Mon May 30/Tue May 31	16 09	19 30	21 04	3 44 5 18	13 12 19 53	6 00	20 05	1	5 09.3 24 32	6.7
Tue May 31/Wed Jun 01	16 13	19 31	21 05	3 43 5 17	13 17 19 56	.....	21 00	3	6 01.1 25 57	6.6

\*\*\*\*\* 2022 JUNE \*\*\*\*\*

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours
Wed Jun 01/Thu Jun 02	16 16	19 31	21 06	3 43 5 17	13 22 20 00	.....	21 52	7	6 53.5 26 11	6.6
Thu Jun 02/Fri Jun 03	16 20	19 32	21 07	3 42 5 17	13 27 20 03	.....	22 39	12	7 45.6 25 11	6.6
Fri Jun 03/Sat Jun 04	16 24	19 33	21 07	3 42 5 17	13 31 20 07	.....	23 21	19	8 36.5 23 02	6.6
Sat Jun 04/Sun Jun 05	16 28	19 33	21 08	3 42 5 17	13 36 20 11	.....	23 58	27	9 26.0 19 50	6.6
Sun Jun 05/Mon Jun 06	16 32	19 34	21 09	3 41 5 17	13 41 20 14	.....	0 31	36	10 14.0 15 43	6.5
Mon Jun 06/Tue Jun 07	16 36	19 34	21 09	3 41 5 16	13 45 20 18	.....	1 01	46	11 00.9 10 51	6.5
Tue Jun 07/Wed Jun 08	16 40	19 35	21 10	3 41 5 16	13 50 20 22	.....	1 29	56	11 47.3 5 21	6.5
Wed Jun 08/Thu Jun 09	16 44	19 35	21 11	3 41 5 16	13 54 20 25	.....	1 58	67	12 34.3 - 0 35	6.5
Thu Jun 09/Fri Jun 10	16 48	19 36	21 11	3 40 5 16	13 59 20 29	.....	2 28	77	13 23.1 - 6 44	6.5
Fri Jun 10/Sat Jun 11	16 52	19 36	21 12	3 40 5 16	14 03 20 33	.....	3 01	86	14 14.8 -12 49	6.5
Sat Jun 11/Sun Jun 12	16 56	19 36	21 12	3 40 5 16	14 08 20 37	.....	3 39	93	15 10.7 -18 27	6.5
Sun Jun 12/Mon Jun 13	17 00	19 37	21 13	3 40 5 16	14 12 20 41	17 51	4 25	98	16 11.7 -23 09	6.5
Mon Jun 13/Tue Jun 14	17 04	19 37	21 13	3 40 5 16	14 17 20 45	19 06	5 19	100	17 17.5 -26 24	6.4
Tue Jun 14/Wed Jun 15	17 08	19 38	21 14	3 40 5 16	14 21 20 48	20 18	6 23	99	18 26.3 -27 45	6.4
Wed Jun 15/Thu Jun 16	17 12	19 38	21 14	3 40 5 16	14 25 20 52	21 23	.....	95	19 35.1 -27 01	6.4
Thu Jun 16/Fri Jun 17	17 16	19 38	21 14	3 40 5 17	14 30 20 56	22 19	.....	88	20 40.8 -24 22	6.4
Fri Jun 17/Sat Jun 18	17 20	19 38	21 15	3 40 5 17	14 34 21 00	23 06	.....	79	21 41.6 -20 12	6.4
Sat Jun 18/Sun Jun 19	17 24	19 39	21 15	3 40 5 17	14 38 21 05	23 44	.....	69	22 37.2 -15 03	6.4
Sun Jun 19/Mon Jun 20	17 27	19 39	21 15	3 41 5 17	14 42 21 09	0 17	.....	59	23 28.4 - 9 19	6.4
Mon Jun 20/Tue Jun 21	17 31	19 39	21 16	3 41 5 17	14 47 21 13	0 47	.....	48	0 16.4 - 3 25	6.4
Tue Jun 21/Wed Jun 22	17 35	19 39	21 16	3 41 5 17	14 51 21 17	1 15	.....	38	1 02.4 2 26	6.4
Wed Jun 22/Thu Jun 23	17 39	19 40	21 16	3 41 5 18	14 55 21 21	1 43	.....	28	1 47.7 8 00	6.4
Thu Jun 23/Fri Jun 24	17 43	19 40	21 16	3 42 5 18	14 59 21 25	2 12	.....	20	2 33.3 13 07	6.4
Fri Jun 24/Sat Jun 25	17 47	19 40	21 16	3 42 5 18	15 03 21 30	2 44	.....	13	3 19.9 17 35	6.4
Sat Jun 25/Sun Jun 26	17 51	19 40	21 16	3 42 5 19	15 07 21 34	3 19	.....	7	4 08.1 21 17	6.4
Sun Jun 26/Mon Jun 27	17 55	19 40	21 16	3 43 5 19	15 11 21 38	3 59	17 59	3	4 58.0 24 01	6.4
Mon Jun 27/Tue Jun 28	17 59	19 40	21 16	3 43 5 19	15 15 21 43	4 43	18 55	1	5 49.4 25 40	6.4
Tue Jun 28/Wed Jun 29	18 03	19 40	21 16	3 44 5 20	15 19 21 47	5 33	19 48	0	6 41.6 26 08	6.5
Wed Jun 29/Thu Jun 30	18 07	19 40	21 16	3 44 5 20	15 23 21 52	6 28	20 37	1	7 33.7 25 23	6.5
Thu Jun 30/Fri Jul 01	18 11	19 40	21 16	3 45 5 20	15 26 21 56	.....	21 20	4	8 24.9 23 29	6.5

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2  
 Rise/set times in Mountain time ( 7 hr W), for 500 m above surroundings, in standard time all year.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2022 JULY \*\*\*\*\*

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours
Fri Jul 01/Sat Jul 02	18 15	19 40	21 16	3 45 5 21	15 30 22 01	.....	21 58 9	9 14.4	20 31	6.5
Sat Jul 02/Sun Jul 03	18 19	19 40	21 16	3 46 5 21	15 34 22 05	.....	22 32 15	10 02.2	16 38	6.5
Sun Jul 03/Mon Jul 04	18 23	19 40	21 16	3 46 5 22	15 38 22 10	.....	23 03 23	10 48.6	11 59	6.5
Mon Jul 04/Tue Jul 05	18 27	19 40	21 15	3 47 5 22	15 41 22 14	.....	23 31 31	11 34.1	6 45	6.5
Tue Jul 05/Wed Jul 06	18 31	19 40	21 15	3 48 5 23	15 45 22 19	.....	23 59 41	12 19.5	1 05	6.5
Wed Jul 06/Thu Jul 07	18 34	19 40	21 15	3 48 5 23	15 49 22 23	.....	0 27 52	13 06.0	- 4 49	6.6
Thu Jul 07/Fri Jul 08	18 38	19 40	21 14	3 49 5 24	15 52 22 28	.....	0 58 62	13 54.8	-10 44	6.6
Fri Jul 08/Sat Jul 09	18 42	19 39	21 14	3 50 5 24	15 56 22 33	.....	1 32 73	14 47.1	-16 22	6.6
Sat Jul 09/Sun Jul 10	18 46	19 39	21 14	3 50 5 25	15 59 22 37	.....	2 13 83	15 44.1	-21 21	6.6
Sun Jul 10/Mon Jul 11	18 50	19 39	21 13	3 51 5 25	16 03 22 42	.....	3 02 91	16 46.4	-25 12	6.6
Mon Jul 11/Tue Jul 12	18 54	19 39	21 13	3 52 5 26	16 06 22 47	17 53	4 01 96	17 53.3	-27 25	6.7
Tue Jul 12/Wed Jul 13	18 58	19 38	21 12	3 53 5 26	16 10 22 51	19 02	5 09 99	19 02.6	-27 38	6.7
Wed Jul 13/Thu Jul 14	19 02	19 38	21 11	3 53 5 27	16 13 22 56	20 03	6 22 99	20 11.0	-25 46	6.7
Thu Jul 14/Fri Jul 15	19 06	19 38	21 11	3 54 5 28	16 16 23 01	20 55	..... 96	21 15.6	-22 06	6.7
Fri Jul 15/Sat Jul 16	19 10	19 37	21 10	3 55 5 28	16 20 23 06	21 39	..... 90	22 15.2	-17 06	6.7
Sat Jul 16/Sun Jul 17	19 14	19 37	21 10	3 56 5 29	16 23 23 10	22 15	..... 82	23 09.9	-11 19	6.8
Sun Jul 17/Mon Jul 18	19 18	19 36	21 09	3 57 5 29	16 26 23 15	22 47	..... 73	0 00.6	- 5 12	6.8
Mon Jul 18/Tue Jul 19	19 22	19 36	21 08	3 58 5 30	16 29 23 20	23 17	..... 63	0 48.7	0 54	6.8
Tue Jul 19/Wed Jul 20	19 26	19 35	21 07	3 59 5 31	16 33 23 25	23 45	..... 53	1 35.4	6 44	6.9
Wed Jul 20/Thu Jul 21	19 30	19 35	21 07	3 59 5 31	16 36 23 30	0 14	..... 43	2 21.8	12 05	6.9
Thu Jul 21/Fri Jul 22	19 34	19 34	21 06	4 00 5 32	16 39 23 35	0 45	..... 33	3 08.7	16 47	6.9
Fri Jul 22/Sat Jul 23	19 38	19 34	21 05	4 01 5 32	16 42 23 39	1 19	..... 24	3 57.0	20 40	6.9
Sat Jul 23/Sun Jul 24	19 41	19 33	21 04	4 02 5 33	16 45 23 44	1 57	..... 17	4 46.7	23 37	7.0
Sun Jul 24/Mon Jul 25	19 45	19 33	21 03	4 03 5 34	16 48 23 49	2 41	..... 10	5 37.9	25 30	7.0
Mon Jul 25/Tue Jul 26	19 49	19 32	21 02	4 04 5 34	16 51 23 54	3 29	17 44 5	6 30.1	26 12	7.0
Tue Jul 26/Wed Jul 27	19 53	19 31	21 01	4 05 5 35	16 54 23 59	4 22	18 34 2	7 22.3	25 41	7.1
Wed Jul 27/Thu Jul 28	19 57	19 31	21 00	4 06 5 36	16 57 0 04	5 19	19 19 0	8 13.8	23 59	7.1
Thu Jul 28/Fri Jul 29	20 01	19 30	20 59	4 07 5 36	17 00 0 09	6 17	19 59 0	9 03.8	21 11	7.1
Fri Jul 29/Sat Jul 30	20 05	19 29	20 58	4 08 5 37	17 03 0 14	..... 20	34 2	9 52.0	17 27	7.2
Sat Jul 30/Sun Jul 31	20 09	19 28	20 57	4 09 5 38	17 06 0 18	..... 21	05 6	10 38.6	12 55	7.2
Sun Jul 31/Mon Aug 01	20 13	19 28	20 56	4 10 5 38	17 09 0 23	..... 21	34 12	11 23.9	7 48	7.2

\*\*\*\*\* 2022 AUGUST \*\*\*\*\*

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours
Mon Aug 01/Tue Aug 02	20 17	19 27	20 55	4 11 5 39	17 12 0 28	.....	22 02 19	12 08.8	2 15	7.3
Tue Aug 02/Wed Aug 03	20 21	19 26	20 54	4 12 5 40	17 15 0 33	.....	22 30 27	12 54.2	- 3 31	7.3
Wed Aug 03/Thu Aug 04	20 25	19 25	20 53	4 12 5 40	17 17 0 38	.....	22 59 37	13 41.0	- 9 19	7.3
Thu Aug 04/Fri Aug 05	20 29	19 24	20 52	4 13 5 41	17 20 0 43	.....	23 31 48	14 30.7	-14 54	7.4
Fri Aug 05/Sat Aug 06	20 33	19 23	20 51	4 14 5 42	17 23 0 48	.....	0 07 59	15 24.2	-19 56	7.4
Sat Aug 06/Sun Aug 07	20 37	19 23	20 50	4 15 5 42	17 26 0 53	.....	0 51 70	16 22.4	-24 03	7.4
Sun Aug 07/Mon Aug 08	20 41	19 22	20 48	4 16 5 43	17 28 0 58	.....	1 43 80	17 25.5	-26 49	7.5
Mon Aug 08/Tue Aug 09	20 45	19 21	20 47	4 17 5 44	17 31 1 03	.....	2 46 88	18 32.1	-27 50	7.5
Tue Aug 09/Wed Aug 10	20 49	19 20	20 46	4 18 5 44	17 34 1 07	17 46	3 56 95	19 39.9	-26 51	7.5
Wed Aug 10/Thu Aug 11	20 52	19 19	20 45	4 19 5 45	17 37 1 12	18 42	5 10 99	20 45.9	-23 56	7.6
Thu Aug 11/Fri Aug 12	20 56	19 18	20 43	4 20 5 46	17 39 1 17	19 29	6 23 100	21 48.0	-19 25	7.6
Fri Aug 12/Sat Aug 13	21 00	19 17	20 42	4 21 5 46	17 42 1 22	20 09	..... 98	22 45.6	-13 48	7.6
Sat Aug 13/Sun Aug 14	21 04	19 16	20 41	4 22 5 47	17 45 1 27	20 43	..... 93	23 39.1	- 7 35	7.7
Sun Aug 14/Mon Aug 15	21 08	19 15	20 40	4 23 5 48	17 47 1 32	21 14	..... 86	0 29.6	- 1 13	7.7
Mon Aug 15/Tue Aug 16	21 12	19 14	20 38	4 24 5 48	17 50 1 37	21 44	..... 78	1 18.2	4 58	7.8
Tue Aug 16/Wed Aug 17	21 16	19 13	20 37	4 25 5 49	17 52 1 41	22 14	..... 68	2 06.1	10 41	7.8
Wed Aug 17/Thu Aug 18	21 20	19 11	20 36	4 26 5 50	17 55 1 46	22 44	..... 58	2 54.1	15 45	7.8
Thu Aug 18/Fri Aug 19	21 24	19 10	20 34	4 26 5 50	17 58 1 51	23 18	..... 48	3 43.0	19 59	7.9
Fri Aug 19/Sat Aug 20	21 28	19 09	20 33	4 27 5 51	18 00 1 56	23 55	..... 39	4 33.2	23 15	7.9
Sat Aug 20/Sun Aug 21	21 32	19 08	20 31	4 28 5 52	18 03 2 01	0 37	..... 30	5 24.7	25 24	7.9
Sun Aug 21/Mon Aug 22	21 36	19 07	20 30	4 29 5 52	18 05 2 06	1 24	..... 22	6 17.0	26 23	8.0
Mon Aug 22/Tue Aug 23	21 40	19 06	20 29	4 30 5 53	18 08 2 10	2 15	..... 14	7 09.5	26 08	8.0
Tue Aug 23/Wed Aug 24	21 44	19 05	20 27	4 31 5 53	18 10 2 15	3 11	17 17 9	8 01.4	24 41	8.1
Wed Aug 24/Thu Aug 25	21 48	19 04	20 26	4 32 5 54	18 13 2 20	4 09	17 58 4	8 52.0	22 05	8.1
Thu Aug 25/Fri Aug 26	21 52	19 02	20 24	4 33 5 55	18 16 2 25	5 08	18 35 1	9 40.8	18 30	8.1
Fri Aug 26/Sat Aug 27	21 56	19 01	20 23	4 33 5 55	18 18 2 30	6 06	19 08 0	10 28.0	14 04	8.2
Sat Aug 27/Sun Aug 28	21 59	19 00	20 22	4 34 5 56	18 21 2 34	.....	19 37 1	11 13.9	8 59	8.2
Sun Aug 28/Mon Aug 29	22 03	18 59	20 20	4 35 5 57	18 23 2 39	.....	20 06 4	11 59.0	3 27	8.2
Mon Aug 29/Tue Aug 30	22 07	18 57	20 19	4 36 5 57	18 26 2 44	.....	20 33 9	12 44.3	- 2 21	8.3
Tue Aug 30/Wed Aug 31	22 11	18 56	20 17	4 37 5 58	18 28 2 49	.....	21 02 15	13 30.7	- 8 11	8.3
Wed Aug 31/Thu Sep 01	22 15	18 55	20 16	4 38 5 59	18 31 2 54	.....	21 32 24	14 19.2	-13 48	8.4

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2  
 Rise/set times in Mountain time ( 7 hr W), for 500 m above surroundings, in standard time all year.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2022 SEPTEMBER \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----	LST twilight: eve morn	----- Moon: -----	Twi-Twi hours
		set twi.end twi.beg rise		rise set %illum RA Dec	
Thu Sep 01/Fri Sep 02	22 19	18 54 20 14	4 38 5 59	18 33 2 58	..... 22 07 33 15 10.8 -18 55 8.4
Fri Sep 02/Sat Sep 03	22 23	18 52 20 13	4 39 6 00	18 36 3 03	..... 22 47 44 16 06.5 -23 11 8.4
Sat Sep 03/Sun Sep 04	22 27	18 51 20 12	4 40 6 00	18 38 3 08	..... 23 35 55 17 06.4 -26 16 8.5
Sun Sep 04/Mon Sep 05	22 31	18 50 20 10	4 41 6 01	18 41 3 13	..... 0 32 67 18 09.8 -27 46 8.5
Mon Sep 05/Tue Sep 06	22 35	18 49 20 09	4 41 6 02	18 43 3 17	..... 1 37 77 19 15.1 -27 28 8.5
Tue Sep 06/Wed Sep 07	22 39	18 47 20 07	4 42 6 02	18 46 3 22	..... 2 48 86 20 19.9 -25 17 8.6
Wed Sep 07/Thu Sep 08	22 43	18 46 20 06	4 43 6 03	18 48 3 27	17 20 4 00 93 21 22.0 -21 26 8.6
Thu Sep 08/Fri Sep 09	22 47	18 45 20 04	4 44 6 03	18 50 3 31	18 02 5 11 98 22 20.5 -16 16 8.7
Fri Sep 09/Sat Sep 10	22 51	18 43 20 03	4 45 6 04	18 53 3 36	18 38 6 20 100 23 15.3 -10 14 8.7
Sat Sep 10/Sun Sep 11	22 55	18 42 20 01	4 45 6 05	18 55 3 41	19 11 ..... 99 0 07.2 - 3 48 8.7
Sun Sep 11/Mon Sep 12	22 59	18 41 20 00	4 46 6 05	18 58 3 45	19 41 ..... 95 0 57.2 2 38 8.8
Mon Sep 12/Tue Sep 13	23 03	18 39 19 59	4 47 6 06	19 00 3 50	20 11 ..... 90 1 46.3 8 45 8.8
Tue Sep 13/Wed Sep 14	23 07	18 38 19 57	4 47 6 06	19 03 3 55	20 42 ..... 82 2 35.4 14 15 8.8
Wed Sep 14/Thu Sep 15	23 10	18 37 19 56	4 48 6 07	19 05 3 59	21 14 ..... 74 3 25.2 18 57 8.9
Thu Sep 15/Fri Sep 16	23 14	18 36 19 54	4 49 6 08	19 08 4 04	21 50 ..... 65 4 16.2 22 39 8.9
Fri Sep 16/Sat Sep 17	23 18	18 34 19 53	4 50 6 08	19 10 4 09	22 31 ..... 55 5 08.3 25 13 8.9
Sat Sep 17/Sun Sep 18	23 22	18 33 19 51	4 50 6 09	19 13 4 13	23 16 ..... 46 6 01.2 26 35 9.0
Sun Sep 18/Mon Sep 19	23 26	18 32 19 50	4 51 6 10	19 15 4 18	0 07 ..... 36 6 54.3 26 41 9.0
Mon Sep 19/Tue Sep 20	23 30	18 30 19 49	4 52 6 10	19 18 4 23	1 01 ..... 28 7 46.7 25 32 9.1
Tue Sep 20/Wed Sep 21	23 34	18 29 19 47	4 52 6 11	19 21 4 27	1 58 ..... 20 8 37.8 23 13 9.1
Wed Sep 21/Thu Sep 22	23 38	18 28 19 46	4 53 6 11	19 23 4 32	2 57 ..... 13 9 27.3 19 52 9.1
Thu Sep 22/Fri Sep 23	23 42	18 26 19 44	4 54 6 12	19 26 4 37	3 56 17 08 7 10 15.0 15 36 9.2
Fri Sep 23/Sat Sep 24	23 46	18 25 19 43	4 55 6 13	19 28 4 41	4 55 17 39 3 11 01.4 10 37 9.2
Sat Sep 24/Sun Sep 25	23 50	18 24 19 42	4 55 6 13	19 31 4 46	5 54 18 07 0 11 47.1 5 05 9.2
Sun Sep 25/Mon Sep 26	23 54	18 22 19 40	4 56 6 14	19 33 4 51	6 54 18 35 0 12 32.8 - 0 46 9.3
Mon Sep 26/Tue Sep 27	23 58	18 21 19 39	4 57 6 15	19 36 4 55	..... 19 04 2 13 19.3 - 6 43 9.3
Tue Sep 27/Wed Sep 28	0 02	18 20 19 37	4 57 6 15	19 38 5 00	..... 19 34 6 14 07.8 -12 31 9.3
Wed Sep 28/Thu Sep 29	0 06	18 18 19 36	4 58 6 16	19 41 5 04	..... 20 08 12 14 59.1 -17 51 9.4
Thu Sep 29/Fri Sep 30	0 10	18 17 19 35	4 59 6 16	19 44 5 09	..... 20 46 21 15 54.0 -22 22 9.4
Fri Sep 30/Sat Oct 01	0 14	18 16 19 33	4 59 6 17	19 46 5 14	..... 21 32 30 16 52.7 -25 44 9.4

\*\*\*\*\* 2022 OCTOBER \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----	LST twilight: eve morn	----- Moon: -----	Twi-Twi hours
		set twi.end twi.beg rise		rise set %illum RA Dec	
Sat Oct 01/Sun Oct 02	0 17	18 15 19 32	5 00 6 18	19 49 5 18	..... 22 26 41 17 54.6 -27 36 9.5
Sun Oct 02/Mon Oct 03	0 21	18 13 19 31	5 01 6 18	19 52 5 23	..... 23 27 52 18 58.2 -27 44 9.5
Mon Oct 03/Tue Oct 04	0 25	18 12 19 30	5 01 6 19	19 54 5 27	..... 0 35 64 20 01.5 -26 05 9.5
Tue Oct 04/Wed Oct 05	0 29	18 11 19 28	5 02 6 20	19 57 5 32	..... 1 45 74 21 02.5 -22 47 9.6
Wed Oct 05/Thu Oct 06	0 33	18 09 19 27	5 03 6 20	20 00 5 37	..... 2 55 84 22 00.3 -18 07 9.6
Thu Oct 06/Fri Oct 07	0 37	18 08 19 26	5 03 6 21	20 02 5 41	16 36 4 02 91 22 54.7 -12 29 9.6
Fri Oct 07/Sat Oct 08	0 41	18 07 19 25	5 04 6 22	20 05 5 46	17 09 5 08 97 23 46.4 - 6 15 9.7
Sat Oct 08/Sun Oct 09	0 45	18 06 19 23	5 05 6 22	20 08 5 51	17 39 6 11 99 0 36.4 0 11 9.7
Sun Oct 09/Mon Oct 10	0 49	18 04 19 22	5 05 6 23	20 10 5 55	18 09 7 14 100 1 25.5 6 28 9.7
Mon Oct 10/Tue Oct 11	0 53	18 03 19 21	5 06 6 24	20 13 6 00	18 39 ..... 98 2 14.8 12 19 9.8
Tue Oct 11/Wed Oct 12	0 57	18 02 19 20	5 07 6 24	20 16 6 04	19 11 ..... 93 3 04.9 17 28 9.8
Wed Oct 12/Thu Oct 13	1 01	18 01 19 19	5 07 6 25	20 19 6 09	19 45 ..... 87 3 56.3 21 39 9.8
Thu Oct 13/Fri Oct 14	1 05	18 00 19 17	5 08 6 26	20 21 6 14	20 24 ..... 80 4 49.0 24 44 9.8
Fri Oct 14/Sat Oct 15	1 09	17 58 19 16	5 09 6 27	20 24 6 18	21 08 ..... 72 5 42.7 26 34 9.9
Sat Oct 15/Sun Oct 16	1 13	17 57 19 15	5 09 6 27	20 27 6 23	21 57 ..... 63 6 36.6 27 06 9.9
Sun Oct 16/Mon Oct 17	1 17	17 56 19 14	5 10 6 28	20 30 6 27	22 50 ..... 53 7 29.8 26 21 9.9
Mon Oct 17/Tue Oct 18	1 21	17 55 19 13	5 11 6 29	20 33 6 32	23 46 ..... 44 8 21.6 24 24 10.0
Tue Oct 18/Wed Oct 19	1 24	17 54 19 12	5 11 6 29	20 36 6 37	0 44 ..... 35 9 11.6 21 21 10.0
Wed Oct 19/Thu Oct 20	1 28	17 53 19 11	5 12 6 30	20 39 6 41	1 43 ..... 26 9 59.7 17 22 10.0
Thu Oct 20/Fri Oct 21	1 32	17 52 19 10	5 13 6 31	20 41 6 46	2 41 ..... 18 10 46.3 12 36 10.0
Fri Oct 21/Sat Oct 22	1 36	17 51 19 09	5 13 6 32	20 44 6 51	3 40 ..... 11 11 32.1 7 13 10.1
Sat Oct 22/Sun Oct 23	1 40	17 50 19 08	5 14 6 32	20 47 6 55	4 40 16 36 5 12 17.7 1 24 10.1
Sun Oct 23/Mon Oct 24	1 44	17 49 19 07	5 15 6 33	20 50 7 00	5 41 17 04 2 13 04.3 - 4 37 10.1
Mon Oct 24/Tue Oct 25	1 48	17 48 19 06	5 15 6 34	20 53 7 05	6 45 17 33 0 13 52.7 -10 36 10.2
Tue Oct 25/Wed Oct 26	1 52	17 47 19 05	5 16 6 35	20 56 7 09	7 52 18 06 1 14 44.0 -16 14 10.2
Wed Oct 26/Thu Oct 27	1 56	17 46 19 04	5 17 6 36	20 59 7 14	..... 18 43 4 15 38.9 -21 08 10.2
Thu Oct 27/Fri Oct 28	2 00	17 45 19 03	5 18 6 36	21 02 7 18	..... 19 27 10 16 37.8 -24 55 10.2
Fri Oct 28/Sat Oct 29	2 04	17 44 19 02	5 18 6 37	21 06 7 23	..... 20 20 18 17 40.0 -27 13 10.3
Sat Oct 29/Sun Oct 30	2 08	17 43 19 02	5 19 6 38	21 09 7 28	..... 21 20 27 18 43.9 -27 46 10.3
Sun Oct 30/Mon Oct 31	2 12	17 42 19 01	5 20 6 39	21 12 7 32	..... 22 27 38 19 47.3 -26 31 10.3
Mon Oct 31/Tue Nov 01	2 16	17 41 19 00	5 20 6 40	21 15 7 37	..... 23 36 49 20 48.3 -23 36 10.3

Calendar for Kitt Peak, west longitude (h.m.s) = 7 26 28, latitude (d.m) = 31 57.2  
 Rise/set times in Mountain time ( 7 hr W), for 500 m above surroundings, in standard time all year.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2022 NOVEMBER \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: ----- set twi.end twi.beg rise	LST twilight: eve morn	----- Moon: ----- rise set %illum RA Dec	Twi-Twi hours	
Tue Nov 01/Wed Nov 02	2 20	17 40 18 59	5 21 6 40	21 18 7 42	..... 0 46 61 21 45.8 -19 18	10.4
Wed Nov 02/Thu Nov 03	2 24	17 39 18 58	5 22 6 41	21 21 7 46	..... 1 53 71 22 39.8 -14 01	10.4
Thu Nov 03/Fri Nov 04	2 28	17 38 18 58	5 23 6 42	21 25 7 51	..... 2 57 81 23 30.8 - 8 04	10.4
Fri Nov 04/Sat Nov 05	2 32	17 38 18 57	5 23 6 43	21 28 7 56	..... 4 00 89 0 19.8 - 1 49	10.4
Sat Nov 05/Sun Nov 06	2 35	17 37 18 56	5 24 6 44	21 31 8 00	16 10 5 01 95 1 08.0 4 26	10.5
Sun Nov 06/Mon Nov 07	2 39	17 36 18 56	5 25 6 45	21 34 8 05	16 39 6 02 98 1 56.3 10 23	10.5
Mon Nov 07/Tue Nov 08	2 43	17 35 18 55	5 26 6 46	21 38 8 10	17 09 7 04 100 2 45.6 15 47	10.5
Tue Nov 08/Wed Nov 09	2 47	17 35 18 55	5 26 6 46	21 41 8 14	17 42 8 06 99 3 36.5 20 22	10.5
Wed Nov 09/Thu Nov 10	2 51	17 34 18 54	5 27 6 47	21 44 8 19	18 19 ..... 97 4 29.1 23 54	10.6
Thu Nov 10/Fri Nov 11	2 55	17 33 18 53	5 28 6 48	21 48 8 24	19 01 ..... 92 5 23.0 26 14	10.6
Fri Nov 11/Sat Nov 12	2 59	17 33 18 53	5 29 6 49	21 51 8 29	19 48 ..... 86 6 17.6 27 15	10.6
Sat Nov 12/Sun Nov 13	3 03	17 32 18 52	5 29 6 50	21 55 8 33	20 40 ..... 79 7 11.7 26 56	10.6
Sun Nov 13/Mon Nov 14	3 07	17 31 18 52	5 30 6 51	21 58 8 38	21 35 ..... 70 8 04.4 25 21	10.6
Mon Nov 14/Tue Nov 15	3 11	17 31 18 52	5 31 6 52	22 02 8 43	22 32 ..... 61 8 55.1 22 39	10.7
Tue Nov 15/Wed Nov 16	3 15	17 30 18 51	5 32 6 52	22 05 8 47	23 30 ..... 52 9 43.6 18 59	10.7
Wed Nov 16/Thu Nov 17	3 19	17 30 18 51	5 32 6 53	22 09 8 52	0 28 ..... 42 10 30.3 14 30	10.7
Thu Nov 17/Fri Nov 18	3 23	17 29 18 50	5 33 6 54	22 12 8 57	1 25 ..... 33 11 15.7 9 23	10.7
Fri Nov 18/Sat Nov 19	3 27	17 29 18 50	5 34 6 55	22 16 9 01	2 24 ..... 24 12 00.8 3 46	10.7
Sat Nov 19/Sun Nov 20	3 31	17 28 18 50	5 35 6 56	22 20 9 06	3 23 ..... 16 12 46.4 - 2 09	10.7
Sun Nov 20/Mon Nov 21	3 35	17 28 18 49	5 35 6 57	22 23 9 11	4 25 ..... 9 13 33.8 - 8 10	10.8
Mon Nov 21/Tue Nov 22	3 39	17 28 18 49	5 36 6 58	22 27 9 16	5 31 16 01 4 14 24.0 -13 59	10.8
Tue Nov 22/Wed Nov 23	3 42	17 27 18 49	5 37 6 59	22 31 9 20	6 41 16 37 1 15 18.1 -19 16	10.8
Wed Nov 23/Thu Nov 24	3 46	17 27 18 49	5 38 6 59	22 34 9 25	7 53 17 18 0 16 16.6 -23 34	10.8
Thu Nov 24/Fri Nov 25	3 50	17 27 18 49	5 38 7 00	22 38 9 30	..... 18 08 3 17 19.3 -26 29	10.8
Fri Nov 25/Sat Nov 26	3 54	17 27 18 49	5 39 7 01	22 42 9 34	..... 19 07 7 18 24.6 -27 37	10.8
Sat Nov 26/Sun Nov 27	3 58	17 26 18 48	5 40 7 02	22 46 9 39	..... 20 15 15 19 30.0 -26 51	10.9
Sun Nov 27/Mon Nov 28	4 02	17 26 18 48	5 41 7 03	22 50 9 44	..... 21 26 24 20 33.1 -24 18	10.9
Mon Nov 28/Tue Nov 29	4 06	17 26 18 48	5 41 7 04	22 54 9 48	..... 22 37 34 21 32.3 -20 15	10.9
Tue Nov 29/Wed Nov 30	4 10	17 26 18 48	5 42 7 05	22 57 9 53	..... 23 45 46 22 27.3 -15 08	10.9
Wed Nov 30/Thu Dec 01	4 14	17 26 18 48	5 43 7 05	23 01 9 58	..... 0 51 57 23 18.6 - 9 21	10.9

\*\*\*\*\* 2022 DECEMBER \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: ----- set twi.end twi.beg rise	LST twilight: eve morn	----- Moon: ----- rise set %illum RA Dec	Twi-Twi hours	
Thu Dec 01/Fri Dec 02	4 18	17 26 18 48	5 43 7 06	23 05 10 02	..... 1 53 67 0 07.4 - 3 13	10.9
Fri Dec 02/Sat Dec 03	4 22	17 26 18 48	5 44 7 07	23 09 10 07	..... 2 54 77 0 54.9 2 56	10.9
Sat Dec 03/Sun Dec 04	4 26	17 26 18 48	5 45 7 08	23 13 10 12	..... 3 54 85 1 42.2 8 52	10.9
Sun Dec 04/Mon Dec 05	4 30	17 26 18 48	5 46 7 09	23 17 10 16	..... 4 54 92 2 30.2 14 20	11.0
Mon Dec 05/Tue Dec 06	4 34	17 26 18 49	5 46 7 09	23 21 10 21	15 42 5 55 96 3 19.8 19 07	11.0
Tue Dec 06/Wed Dec 07	4 38	17 26 18 49	5 47 7 10	23 26 10 26	16 17 6 56 99 4 11.4 22 57	11.0
Wed Dec 07/Thu Dec 08	4 42	17 26 18 49	5 47 7 11	23 30 10 30	16 57 7 55 100 5 04.7 25 40	11.0
Thu Dec 08/Fri Dec 09	4 46	17 26 18 49	5 48 7 12	23 34 10 35	17 42 ..... 99 5 59.3 27 06	11.0
Fri Dec 09/Sat Dec 10	4 50	17 26 18 49	5 49 7 12	23 38 10 39	18 32 ..... 96 6 53.9 27 13	11.0
Sat Dec 10/Sun Dec 11	4 53	17 26 18 50	5 50 7 13	23 42 10 44	19 26 ..... 91 7 47.5 26 01	11.0
Sun Dec 11/Mon Dec 12	4 57	17 27 18 50	5 50 7 14	23 46 10 49	20 23 ..... 85 8 39.1 23 38	11.0
Mon Dec 12/Tue Dec 13	5 01	17 27 18 50	5 51 7 14	23 51 10 53	21 20 ..... 77 9 28.3 20 14	11.0
Tue Dec 13/Wed Dec 14	5 05	17 27 18 51	5 52 7 15	23 55 10 58	22 17 ..... 69 10 15.3 16 00	11.0
Wed Dec 14/Thu Dec 15	5 09	17 27 18 51	5 52 7 16	23 59 11 02	23 14 ..... 60 11 00.6 11 07	11.0
Thu Dec 15/Fri Dec 16	5 13	17 28 18 51	5 53 7 16	0 04 11 07	0 11 ..... 50 11 45.0 5 44	11.0
Fri Dec 16/Sat Dec 17	5 17	17 28 18 52	5 53 7 17	0 08 11 11	1 08 ..... 40 12 29.4 0 01	11.0
Sat Dec 17/Sun Dec 18	5 21	17 28 18 52	5 54 7 17	0 12 11 16	2 07 ..... 30 13 15.1 - 5 51	11.0
Sun Dec 18/Mon Dec 19	5 25	17 29 18 52	5 54 7 18	0 17 11 20	3 09 ..... 21 14 03.1 -11 39	11.0
Mon Dec 19/Tue Dec 20	5 29	17 29 18 53	5 55 7 19	0 21 11 25	4 16 ..... 13 14 54.7 -17 06	11.0
Tue Dec 20/Wed Dec 21	5 33	17 30 18 53	5 55 7 19	0 25 11 29	5 26 ..... 6 15 50.9 -21 50	11.0
Wed Dec 21/Thu Dec 22	5 37	17 30 18 54	5 56 7 20	0 30 11 34	6 39 15 52 2 16 52.1 -25 22	11.0
Thu Dec 22/Fri Dec 23	5 41	17 31 18 54	5 56 7 20	0 34 11 38	7 50 16 47 0 17 57.4 -27 16	11.0
Fri Dec 23/Sat Dec 24	5 45	17 31 18 55	5 57 7 21	0 39 11 43	..... 17 52 1 19 04.5 -27 14	11.0
Sat Dec 24/Sun Dec 25	5 49	17 32 18 55	5 57 7 21	0 43 11 47	..... 19 05 5 20 10.6 -25 14	11.0
Sun Dec 25/Mon Dec 26	5 53	17 32 18 56	5 58 7 21	0 48 11 51	..... 20 19 12 21 13.0 -21 31	11.0
Mon Dec 26/Tue Dec 27	5 57	17 33 18 57	5 58 7 22	0 52 11 56	..... 21 32 20 22 11.0 -16 32	11.0
Tue Dec 27/Wed Dec 28	6 00	17 34 18 57	5 59 7 22	0 57 12 00	..... 22 41 30 23 04.6 -10 45	11.0
Wed Dec 28/Thu Dec 29	6 04	17 34 18 58	5 59 7 22	1 01 12 04	..... 23 46 41 23 54.8 - 4 34	11.0
Thu Dec 29/Fri Dec 30	6 08	17 35 18 58	5 59 7 23	1 06 12 09	..... 0 48 52 0 42.9 1 39	11.0
Fri Dec 30/Sat Dec 31	6 12	17 36 18 59	6 00 7 23	1 11 12 13	..... 1 49 62 1 30.2 7 39	11.0
Sat Dec 31/Sun Jan 01	6 16	17 36 19 00	6 00 7 23	1 15 12 17	..... 2 49 72 2 17.7 13 12	11.0