

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 OU Norman *****

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. DAYLIGHT SAVINGS time is used using conventions for the USA; for 2007+, 2nd Sunday in March to first Sunday in November.

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 OU Norman

Times and dates are given in local time, zone = 6 hr West.
 They are generally better than +- 2 minutes.
 Daylight savings time used.

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

NEW		1ST		FULL		LAST	
Dec 04	1 45	Dec 10	19 38	Dec 18	22 38	Dec 26	20 26
Jan 02	12 36	Jan 09	12 13	Jan 17	17 51	Jan 25	7 43
Jan 31	23 49	Feb 08	7 52	Feb 16	11 00	Feb 23	16 35
Mar 02	11 38	Mar 10	4 46	Mar 18	2 21	Mar 25	0 39
Apr 01	1 28	Apr 09	1 48	Apr 16	13 58	Apr 23	6 58
Apr 30	15 31	May 08	19 22	May 15	23 16	May 22	13 45
May 30	6 32	Jun 07	9 49	Jun 14	6 53	Jun 20	22 12
Jun 28	21 53	Jul 06	21 15	Jul 13	13 38	Jul 20	9 19
Jul 28	12 55	Aug 05	6 08	Aug 11	20 36	Aug 18	23 37
Aug 27	3 17	Sep 03	13 09	Sep 10	4 59	Sep 17	16 52
Sep 25	16 54	Oct 02	19 15	Oct 09	15 55	Oct 17	12 16
Oct 25	5 48	Nov 01	1 39	Nov 08	5 03	Nov 16	7 29
Nov 23	16 57	Nov 30	8 39	Dec 07	22 10	Dec 16	2 59
Dec 23	4 18	Dec 29	19 23	Jan 06	17 10	Jan 14	20 13

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 JANUARY *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sat Jan 01/Sun Jan 02	6 18	17 29	18 59	6 08	7 39	1 16	12 27	7 45	16 20	0	18 19.6	-26 21	11.1
Sun Jan 02/Mon Jan 03	6 22	17 29	19 00	6 08	7 39	1 21	12 31	.....	17 26	0	19 26.1	-26 01	11.1
Mon Jan 03/Tue Jan 04	6 26	17 30	19 01	6 08	7 39	1 26	12 35	.....	18 38	3	20 30.3	-23 51	11.1
Tue Jan 04/Wed Jan 05	6 30	17 31	19 02	6 08	7 39	1 30	12 39	.....	19 52	9	21 30.5	-20 12	11.1
Wed Jan 05/Thu Jan 06	6 33	17 32	19 02	6 09	7 39	1 35	12 43	.....	21 03	16	22 26.0	-15 30	11.1
Thu Jan 06/Fri Jan 07	6 37	17 33	19 03	6 09	7 39	1 40	12 47	.....	22 10	25	23 17.2	-10 09	11.1
Fri Jan 07/Sat Jan 08	6 41	17 34	19 04	6 09	7 39	1 44	12 51	.....	23 13	34	0 05.2	- 4 31	11.1
Sat Jan 08/Sun Jan 09	6 45	17 35	19 05	6 09	7 39	1 49	12 55	.....	0 14	44	0 51.1	1 08	11.1
Sun Jan 09/Mon Jan 10	6 49	17 35	19 05	6 09	7 39	1 54	12 59	.....	1 12	54	1 36.1	6 36	11.1
Mon Jan 10/Tue Jan 11	6 53	17 36	19 06	6 09	7 39	1 59	13 03	.....	2 10	64	2 21.1	11 43	11.0
Tue Jan 11/Wed Jan 12	6 57	17 37	19 07	6 09	7 38	2 03	13 07	.....	3 08	73	3 07.1	16 18	11.0
Wed Jan 12/Thu Jan 13	7 01	17 38	19 08	6 09	7 38	2 08	13 11	.....	4 06	81	3 54.8	20 12	11.0
Thu Jan 13/Fri Jan 14	7 05	17 39	19 09	6 09	7 38	2 13	13 15	.....	5 04	88	4 44.6	23 15	11.0
Fri Jan 14/Sat Jan 15	7 09	17 40	19 09	6 09	7 38	2 18	13 18	.....	6 00	93	5 36.5	25 17	11.0
Sat Jan 15/Sun Jan 16	7 13	17 41	19 10	6 08	7 37	2 22	13 22	15 40	6 53	97	6 30.0	26 09	11.0
Sun Jan 16/Mon Jan 17	7 17	17 42	19 11	6 08	7 37	2 27	13 26	16 31	7 41	99	7 24.1	25 44	10.9
Mon Jan 17/Tue Jan 18	7 21	17 43	19 12	6 08	7 37	2 32	13 30	17 27	8 24	100	8 17.9	24 05	10.9
Tue Jan 18/Wed Jan 19	7 25	17 44	19 13	6 08	7 36	2 37	13 33	18 27	.....	98	9 10.5	21 13	10.9
Wed Jan 19/Thu Jan 20	7 29	17 45	19 14	6 07	7 36	2 42	13 37	19 28	.....	95	10 01.3	17 20	10.9
Thu Jan 20/Fri Jan 21	7 33	17 46	19 15	6 07	7 36	2 46	13 41	20 30	.....	89	10 50.4	12 37	10.9
Fri Jan 21/Sat Jan 22	7 37	17 47	19 15	6 07	7 35	2 51	13 44	21 31	.....	82	11 38.2	7 17	10.9
Sat Jan 22/Sun Jan 23	7 40	17 48	19 16	6 06	7 35	2 56	13 48	22 33	.....	73	12 25.5	1 33	10.8
Sun Jan 23/Mon Jan 24	7 44	17 49	19 17	6 06	7 34	3 01	13 51	23 36	.....	63	13 13.3	- 4 22	10.8
Mon Jan 24/Tue Jan 25	7 48	17 50	19 18	6 06	7 34	3 06	13 55	0 41	.....	53	14 02.7	-10 11	10.8
Tue Jan 25/Wed Jan 26	7 52	17 51	19 19	6 05	7 33	3 11	13 59	1 49	.....	42	14 54.8	-15 37	10.8
Wed Jan 26/Thu Jan 27	7 56	17 52	19 20	6 05	7 32	3 15	14 02	3 00	.....	31	15 50.5	-20 20	10.7
Thu Jan 27/Fri Jan 28	8 00	17 53	19 21	6 04	7 32	3 20	14 05	4 12	.....	21	16 50.2	-23 57	10.7
Fri Jan 28/Sat Jan 29	8 04	17 54	19 22	6 04	7 31	3 25	14 09	5 23	.....	12	17 53.4	-26 05	10.7
Sat Jan 29/Sun Jan 30	8 08	17 55	19 23	6 03	7 30	3 30	14 12	6 28	.....	6	18 58.5	-26 28	10.7
Sun Jan 30/Mon Jan 31	8 12	17 56	19 23	6 03	7 30	3 35	14 16	7 24	16 11	2	20 03.1	-25 01	10.7
Mon Jan 31/Tue Feb 01	8 16	17 57	19 24	6 02	7 29	3 40	14 19	8 10	17 24	0	21 04.9	-21 55	10.6

***** 2022 FEBRUARY *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Tue Feb 01/Wed Feb 02	8 20	17 58	19 25	6 01	7 28	3 44	14 22	.....	18 38	2	22 02.6	-17 32	10.6
Wed Feb 02/Thu Feb 03	8 24	17 59	19 26	6 01	7 27	3 49	14 25	.....	19 48	5	22 56.3	-12 18	10.6
Thu Feb 03/Fri Feb 04	8 28	18 00	19 27	6 00	7 26	3 54	14 29	.....	20 55	11	23 46.3	- 6 36	10.6
Fri Feb 04/Sat Feb 05	8 32	18 01	19 28	5 59	7 26	3 59	14 32	.....	21 59	19	0 33.9	- 0 47	10.5
Sat Feb 05/Sun Feb 06	8 36	18 02	19 29	5 59	7 25	4 04	14 35	.....	23 00	27	1 20.0	4 54	10.5
Sun Feb 06/Mon Feb 07	8 40	18 03	19 30	5 58	7 24	4 08	14 38	.....	23 59	37	2 05.6	10 15	10.5
Mon Feb 07/Tue Feb 08	8 44	18 04	19 31	5 57	7 23	4 13	14 41	.....	0 58	46	2 51.7	15 04	10.4
Tue Feb 08/Wed Feb 09	8 47	18 05	19 31	5 56	7 22	4 18	14 45	.....	1 57	56	3 39.1	19 14	10.4
Wed Feb 09/Thu Feb 10	8 51	18 06	19 32	5 55	7 21	4 23	14 48	.....	2 56	65	4 28.3	22 33	10.4
Thu Feb 10/Fri Feb 11	8 55	18 07	19 33	5 54	7 20	4 28	14 51	.....	3 52	74	5 19.4	24 53	10.4
Fri Feb 11/Sat Feb 12	8 59	18 08	19 34	5 54	7 19	4 33	14 54	.....	4 46	82	6 12.3	26 06	10.3
Sat Feb 12/Sun Feb 13	9 03	18 09	19 35	5 53	7 18	4 37	14 57	.....	5 36	88	7 06.2	26 04	10.3
Sun Feb 13/Mon Feb 14	9 07	18 10	19 36	5 52	7 17	4 42	15 00	.....	6 21	94	8 00.2	24 46	10.3
Mon Feb 14/Tue Feb 15	9 11	18 11	19 37	5 51	7 16	4 47	15 03	16 17	7 01	98	8 53.5	22 13	10.2
Tue Feb 15/Wed Feb 16	9 15	18 12	19 38	5 50	7 15	4 52	15 06	17 18	7 35	100	9 45.5	18 33	10.2
Wed Feb 16/Thu Feb 17	9 19	18 13	19 38	5 49	7 14	4 57	15 09	18 21	.....	99	10 35.8	13 56	10.2
Thu Feb 17/Fri Feb 18	9 23	18 14	19 39	5 48	7 13	5 02	15 12	19 24	.....	97	11 24.8	8 36	10.1
Fri Feb 18/Sat Feb 19	9 27	18 15	19 40	5 47	7 11	5 06	15 14	20 26	.....	93	12 13.0	2 47	10.1
Sat Feb 19/Sun Feb 20	9 31	18 16	19 41	5 46	7 10	5 11	15 17	21 30	.....	86	13 01.4	- 3 14	10.1
Sun Feb 20/Mon Feb 21	9 35	18 17	19 42	5 44	7 09	5 16	15 20	22 35	.....	78	13 50.8	- 9 11	10.0
Mon Feb 21/Tue Feb 22	9 39	18 18	19 43	5 43	7 08	5 21	15 23	23 41	.....	68	14 42.3	-14 47	10.0
Tue Feb 22/Wed Feb 23	9 43	18 19	19 44	5 42	7 07	5 26	15 26	0 50	.....	57	15 36.7	-19 40	10.0
Wed Feb 23/Thu Feb 24	9 47	18 20	19 45	5 41	7 05	5 30	15 29	2 01	.....	46	16 34.6	-23 31	9.9
Thu Feb 24/Fri Feb 25	9 51	18 21	19 45	5 40	7 04	5 35	15 31	3 11	.....	35	17 35.7	-25 59	9.9
Fri Feb 25/Sat Feb 26	9 55	18 22	19 46	5 39	7 03	5 40	15 34	4 16	.....	24	18 38.8	-26 49	9.9
Sat Feb 26/Sun Feb 27	9 58	18 23	19 47	5 37	7 02	5 45	15 37	5 13	.....	15	19 42.0	-25 55	9.8
Sun Feb 27/Mon Feb 28	10 02	18 24	19 48	5 36	7 00	5 50	15 40	6 02	.....	8	20 43.3	-23 22	9.8
Mon Feb 28/Tue Mar 01	10 06	18 25	19 49	5 35	6 59	5 55	15 42	6 43	16 15	3	21 41.4	-19 26	9.8

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 MARCH *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Tue Mar 01/Wed Mar 02	10 10	18 25	19 50	5 34	6 58	5 59	15 45	7 17	17 26	1	22 35.8	-14 29	9.7
Wed Mar 02/Thu Mar 03	10 14	18 26	19 51	5 32	6 57	6 04	15 48	.....	18 34	0	23 26.9	- 8 54	9.7
Thu Mar 03/Fri Mar 04	10 18	18 27	19 51	5 31	6 55	6 09	15 50	.....	19 40	3	0 15.4	- 3 01	9.7
Fri Mar 04/Sat Mar 05	10 22	18 28	19 52	5 30	6 54	6 14	15 53	.....	20 43	7	1 02.2	2 50	9.6
Sat Mar 05/Sun Mar 06	10 26	18 29	19 53	5 29	6 53	6 19	15 55	.....	21 44	13	1 48.4	8 25	9.6
Sun Mar 06/Mon Mar 07	10 30	18 30	19 54	5 27	6 51	6 23	15 58	.....	22 45	21	2 34.9	13 33	9.6
Mon Mar 07/Tue Mar 08	10 34	18 31	19 55	5 26	6 50	6 28	16 01	.....	23 45	29	3 22.2	18 01	9.5
Tue Mar 08/Wed Mar 09	10 38	18 32	19 56	5 24	6 49	6 33	16 03	.....	0 45	38	4 11.1	21 40	9.5
Wed Mar 09/Thu Mar 10	10 42	18 32	19 57	5 23	6 47	6 38	16 06	.....	1 43	47	5 01.6	24 22	9.4
Thu Mar 10/Fri Mar 11	10 46	18 33	19 58	5 22	6 46	6 43	16 08	.....	2 38	57	5 53.8	25 57	9.4
Fri Mar 11/Sat Mar 12	10 50	18 34	19 58	5 20	6 44	6 47	16 11	.....	3 30	66	6 47.1	26 20	9.4
Sat Mar 12/Sun Mar 13*	10 54	18 35	19 59	6 19	7 43	6 52	16 13	.....	5 16	75	7 40.8	25 28	9.3
Sun Mar 13/Mon Mar 14	9 57	19 36	21 00	6 17	7 42	6 57	16 16	.....	5 57	83	8 32.6	23 29	9.3
Mon Mar 14/Tue Mar 15	10 01	19 37	21 01	6 16	7 40	7 02	16 18	.....	6 34	90	9 24.9	20 12	9.2
Tue Mar 15/Wed Mar 16	10 05	19 37	21 02	6 15	7 39	7 07	16 21	17 06	7 06	95	10 15.9	15 52	9.2
Wed Mar 16/Thu Mar 17	10 09	19 38	21 03	6 13	7 38	7 12	16 23	18 10	.....	99	11 05.8	10 42	9.2
Thu Mar 17/Fri Mar 18	10 13	19 39	21 04	6 12	7 36	7 17	16 26	19 14	.....	100	11 54.9	4 53	9.1
Fri Mar 18/Sat Mar 19	10 17	19 40	21 05	6 10	7 35	7 21	16 28	20 18	.....	99	12 44.1	- 1 16	9.1
Sat Mar 19/Sun Mar 20	10 21	19 41	21 06	6 09	7 33	7 26	16 31	21 24	.....	95	13 34.2	- 7 29	9.1
Sun Mar 20/Mon Mar 21	10 25	19 42	21 06	6 07	7 32	7 31	16 33	22 32	.....	89	14 26.2	-13 24	9.0
Mon Mar 21/Tue Mar 22	10 29	19 42	21 07	6 06	7 30	7 36	16 36	23 42	.....	81	15 20.9	-18 40	9.0
Tue Mar 22/Wed Mar 23	10 33	19 43	21 08	6 04	7 29	7 41	16 38	0 53	.....	72	16 18.7	-22 54	8.9
Wed Mar 23/Thu Mar 24	10 37	19 44	21 09	6 03	7 28	7 46	16 40	2 04	.....	61	17 19.4	-25 47	8.9
Thu Mar 24/Fri Mar 25	10 41	19 45	21 10	6 01	7 26	7 51	16 43	3 10	.....	50	18 22.0	-27 04	8.8
Fri Mar 25/Sat Mar 26	10 45	19 46	21 11	5 59	7 25	7 55	16 45	4 09	.....	38	19 24.6	-26 37	8.8
Sat Mar 26/Sun Mar 27	10 49	19 46	21 12	5 58	7 23	8 00	16 48	4 59	.....	28	20 25.5	-24 32	8.8
Sun Mar 27/Mon Mar 28	10 53	19 47	21 13	5 56	7 22	8 05	16 50	5 41	.....	19	21 23.2	-21 02	8.7
Mon Mar 28/Tue Mar 29	10 57	19 48	21 14	5 55	7 21	8 10	16 52	6 17	.....	11	22 17.5	-16 27	8.7
Tue Mar 29/Wed Mar 30	11 01	19 49	21 15	5 53	7 19	8 15	16 55	6 48	17 19	5	23 08.4	-11 07	8.6
Wed Mar 30/Thu Mar 31	11 04	19 50	21 16	5 52	7 18	8 20	16 57	.....	18 24	2	23 56.9	- 5 22	8.6
Thu Mar 31/Fri Apr 01	11 08	19 51	21 17	5 50	7 16	8 25	17 00	.....	19 28	0	0 43.7	0 30	8.6

***** 2022 APRIL *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Fri Apr 01/Sat Apr 02	11 12	19 51	21 18	5 49	7 15	8 30	17 02	.....	20 30	1	1 29.8	6 15	8.5
Sat Apr 02/Sun Apr 03	11 16	19 52	21 19	5 47	7 14	8 35	17 04	.....	21 31	4	2 16.1	11 38	8.5
Sun Apr 03/Mon Apr 04	11 20	19 53	21 20	5 45	7 12	8 40	17 07	.....	22 32	8	3 03.2	16 26	8.4
Mon Apr 04/Tue Apr 05	11 24	19 54	21 21	5 44	7 11	8 45	17 09	.....	23 32	15	3 51.8	20 28	8.4
Tue Apr 05/Wed Apr 06	11 28	19 55	21 22	5 42	7 09	8 49	17 11	.....	0 31	22	4 42.0	23 35	8.3
Wed Apr 06/Thu Apr 07	11 32	19 55	21 23	5 41	7 08	8 54	17 14	.....	1 29	30	5 33.7	25 38	8.3
Thu Apr 07/Fri Apr 08	11 36	19 56	21 24	5 39	7 07	8 59	17 16	.....	2 22	39	6 26.6	26 29	8.3
Fri Apr 08/Sat Apr 09	11 40	19 57	21 25	5 38	7 05	9 04	17 18	.....	3 10	49	7 19.8	26 05	8.2
Sat Apr 09/Sun Apr 10	11 44	19 58	21 26	5 36	7 04	9 09	17 21	.....	3 53	58	8 12.8	24 27	8.2
Sun Apr 10/Mon Apr 11	11 48	19 59	21 27	5 34	7 03	9 14	17 23	.....	4 31	68	9 04.8	21 38	8.1
Mon Apr 11/Tue Apr 12	11 52	19 59	21 28	5 33	7 01	9 19	17 26	.....	5 05	77	9 55.6	17 43	8.1
Tue Apr 12/Wed Apr 13	11 56	20 00	21 29	5 31	7 00	9 24	17 28	.....	5 35	85	10 45.3	12 53	8.0
Wed Apr 13/Thu Apr 14	12 00	20 01	21 30	5 30	6 59	9 29	17 30	.....	6 03	92	11 34.4	7 17	8.0
Thu Apr 14/Fri Apr 15	12 04	20 02	21 31	5 28	6 57	9 34	17 33	18 00	6 31	97	12 23.7	1 10	8.0
Fri Apr 15/Sat Apr 16	12 08	20 03	21 32	5 27	6 56	9 39	17 35	19 06	.....	100	13 13.9	- 5 12	7.9
Sat Apr 16/Sun Apr 17	12 11	20 03	21 33	5 25	6 55	9 44	17 37	20 14	.....	100	14 06.3	-11 27	7.9
Sun Apr 17/Mon Apr 18	12 15	20 04	21 34	5 24	6 54	9 49	17 40	21 25	.....	97	15 01.6	-17 12	7.8
Mon Apr 18/Tue Apr 19	12 19	20 05	21 35	5 22	6 52	9 54	17 42	22 39	.....	92	16 00.4	-22 01	7.8
Tue Apr 19/Wed Apr 20	12 23	20 06	21 37	5 21	6 51	9 59	17 45	23 53	.....	84	17 02.5	-25 28	7.7
Wed Apr 20/Thu Apr 21	12 27	20 07	21 38	5 19	6 50	10 05	17 47	1 03	.....	75	18 06.7	-27 13	7.7
Thu Apr 21/Fri Apr 22	12 31	20 07	21 39	5 17	6 49	10 10	17 50	2 05	.....	64	19 11.0	-27 10	7.6
Fri Apr 22/Sat Apr 23	12 35	20 08	21 40	5 16	6 48	10 15	17 52	2 59	.....	53	20 13.2	-25 24	7.6
Sat Apr 23/Sun Apr 24	12 39	20 09	21 41	5 14	6 46	10 20	17 54	3 43	.....	42	21 11.9	-22 08	7.6
Sun Apr 24/Mon Apr 25	12 43	20 10	21 42	5 13	6 45	10 25	17 57	4 19	.....	31	22 06.5	-17 46	7.5
Mon Apr 25/Tue Apr 26	12 47	20 11	21 43	5 12	6 44	10 30	17 59	4 51	.....	22	22 57.5	-12 37	7.5
Tue Apr 26/Wed Apr 27	12 51	20 12	21 44	5 10	6 43	10 35	18 02	5 19	.....	14	23 45.6	- 7 00	7.4
Wed Apr 27/Thu Apr 28	12 55	20 12	21 46	5 09	6 42	10 40	18 04	5 45	17 18	7	0 31.9	- 1 13	7.4
Thu Apr 28/Fri Apr 29	12 59	20 13	21 47	5 07	6 41	10 45	18 07	6 11	18 19	3	1 17.3	4 31	7.3
Fri Apr 29/Sat Apr 30	13 03	20 14	21 48	5 06	6 40	10 50	18 09	6 38	19 19	1	2 02.8	9 58	7.3
Sat Apr 30/Sun May 01	13 07	20 15	21 49	5 04	6 39	10 55	18 12	.....	20 20	0	2 49.1	14 57	7.3

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
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***** 2022 MAY *****

Date (eve/morn)	LMST midn	----- Sun: -----			LST twilight:		----- Moon: -----				Twi-Twi		
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sun May 01/Mon May 02	13 11	20 16	21 50	5 03	6 37	11 00	18 14	.....	21 21	2	3 36.9	19 14	7.2
Mon May 02/Tue May 03	13 15	20 17	21 51	5 02	6 36	11 06	18 17	.....	22 21	5	4 26.4	22 39	7.2
Tue May 03/Wed May 04	13 19	20 17	21 53	5 00	6 35	11 11	18 20	.....	23 19	10	5 17.6	25 02	7.1
Wed May 04/Thu May 05	13 22	20 18	21 54	4 59	6 34	11 16	18 22	.....	0 14	16	6 09.9	26 16	7.1
Thu May 05/Fri May 06	13 26	20 19	21 55	4 58	6 33	11 21	18 25	.....	1 05	24	7 02.8	26 17	7.0
Fri May 06/Sat May 07	13 30	20 20	21 56	4 56	6 33	11 26	18 27	.....	1 50	32	7 55.3	25 04	7.0
Sat May 07/Sun May 08	13 34	20 21	21 57	4 55	6 32	11 31	18 30	.....	2 29	42	8 46.8	22 40	7.0
Sun May 08/Mon May 09	13 38	20 21	21 58	4 54	6 31	11 36	18 33	.....	3 03	51	9 37.0	19 12	6.9
Mon May 09/Tue May 10	13 42	20 22	22 00	4 52	6 30	11 41	18 35	.....	3 34	61	10 25.9	14 47	6.9
Tue May 10/Wed May 11	13 46	20 23	22 01	4 51	6 29	11 47	18 38	.....	4 03	71	11 14.1	9 34	6.8
Wed May 11/Thu May 12	13 50	20 24	22 02	4 50	6 28	11 52	18 41	.....	4 30	80	12 02.2	3 45	6.8
Thu May 12/Fri May 13	13 54	20 25	22 03	4 49	6 27	11 57	18 44	.....	4 58	88	12 51.2	- 2 29	6.8
Fri May 13/Sat May 14	13 58	20 25	22 04	4 48	6 26	12 02	18 46	.....	5 27	95	13 42.2	- 8 50	6.7
Sat May 14/Sun May 15	14 02	20 26	22 05	4 47	6 26	12 07	18 49	.....	6 01	99	14 36.5	-14 55	6.7
Sun May 15/Mon May 16	14 06	20 27	22 07	4 45	6 25	12 12	18 52	.....	20 15	100	15 34.8	-20 18	6.6
Mon May 16/Tue May 17	14 10	20 28	22 08	4 44	6 24	12 17	18 55	.....	21 31	98	16 37.5	-24 29	6.6
Tue May 17/Wed May 18	14 14	20 29	22 09	4 43	6 24	12 22	18 58	.....	22 46	94	17 43.5	-27 00	6.6
Wed May 18/Thu May 19	14 18	20 29	22 10	4 42	6 23	12 27	19 01	.....	23 54	86	18 50.6	-27 36	6.5
Thu May 19/Fri May 20	14 22	20 30	22 11	4 41	6 22	12 32	19 04	.....	0 53	77	19 56.1	-26 16	6.5
Fri May 20/Sat May 21	14 26	20 31	22 12	4 40	6 22	12 37	19 07	.....	1 42	67	20 57.9	-23 16	6.5
Sat May 21/Sun May 22	14 29	20 32	22 13	4 39	6 21	12 42	19 10	.....	2 21	56	21 54.8	-19 01	6.4
Sun May 22/Mon May 23	14 33	20 32	22 14	4 38	6 20	12 47	19 13	.....	2 54	45	22 47.3	-13 55	6.4
Mon May 23/Tue May 24	14 37	20 33	22 15	4 38	6 20	12 52	19 16	.....	3 23	34	23 36.2	- 8 20	6.4
Tue May 24/Wed May 25	14 41	20 34	22 16	4 37	6 19	12 57	19 19	.....	3 50	25	0 22.6	- 2 34	6.3
Wed May 25/Thu May 26	14 45	20 34	22 17	4 36	6 19	13 02	19 22	.....	4 16	17	1 07.8	3 09	6.3
Thu May 26/Fri May 27	14 49	20 35	22 18	4 35	6 18	13 07	19 25	.....	4 42	10	1 52.7	8 38	6.3
Fri May 27/Sat May 28	14 53	20 36	22 19	4 34	6 18	13 12	19 28	.....	5 10	5	2 38.2	13 41	6.2
Sat May 28/Sun May 29	14 57	20 37	22 20	4 34	6 18	13 17	19 32	.....	5 41	2	3 25.1	18 06	6.2
Sun May 29/Mon May 30	15 01	20 37	22 21	4 33	6 17	13 22	19 35	.....	6 16	0	4 13.8	21 43	6.2
Mon May 30/Tue May 31	15 05	20 38	22 22	4 32	6 17	13 27	19 38	.....	21 11	0	5 04.2	24 22	6.2
Tue May 31/Wed Jun 01	15 09	20 38	22 23	4 32	6 17	13 32	19 41	.....	22 08	3	5 56.0	25 54	6.1

***** 2022 JUNE *****

Date (eve/morn)	LMST midn	----- Sun: -----			LST twilight:		----- Moon: -----				Twi-Twi		
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Jun 01/Thu Jun 02	15 13	20 39	22 24	4 31	6 16	13 37	19 45	.....	23 00	6	6 48.6	26 14	6.1
Thu Jun 02/Fri Jun 03	15 17	20 40	22 25	4 31	6 16	13 42	19 48	.....	23 47	12	7 40.9	25 21	6.1
Fri Jun 03/Sat Jun 04	15 21	20 40	22 26	4 30	6 16	13 46	19 52	.....	0 28	19	8 32.2	23 18	6.1
Sat Jun 04/Sun Jun 05	15 25	20 41	22 27	4 30	6 15	13 51	19 55	.....	1 03	27	9 21.9	20 10	6.1
Sun Jun 05/Mon Jun 06	15 29	20 41	22 27	4 29	6 15	13 56	19 59	.....	1 35	36	10 10.2	16 07	6.0
Mon Jun 06/Tue Jun 07	15 33	20 42	22 28	4 29	6 15	14 00	20 02	.....	2 03	45	10 57.3	11 16	6.0
Tue Jun 07/Wed Jun 08	15 36	20 43	22 29	4 29	6 15	14 05	20 06	.....	2 30	56	11 43.9	5 48	6.0
Wed Jun 08/Thu Jun 09	15 40	20 43	22 30	4 28	6 15	14 10	20 09	.....	2 57	66	12 31.0	- 0 07	6.0
Thu Jun 09/Fri Jun 10	15 44	20 43	22 30	4 28	6 15	14 14	20 13	.....	3 24	76	13 19.7	- 6 16	6.0
Fri Jun 10/Sat Jun 11	15 48	20 44	22 31	4 28	6 15	14 19	20 17	.....	3 55	85	14 11.2	-12 23	6.0
Sat Jun 11/Sun Jun 12	15 52	20 44	22 31	4 28	6 15	14 23	20 21	.....	4 31	92	15 06.9	-18 04	5.9
Sun Jun 12/Mon Jun 13	15 56	20 45	22 32	4 28	6 15	14 28	20 24	.....	5 14	98	16 07.5	-22 51	5.9
Mon Jun 13/Tue Jun 14	16 00	20 45	22 33	4 27	6 15	14 32	20 28	.....	6 06	100	17 12.8	-26 13	5.9
Tue Jun 14/Wed Jun 15	16 04	20 46	22 33	4 27	6 15	14 37	20 32	.....	21 33	99	18 21.4	-27 42	5.9
Wed Jun 15/Thu Jun 16	16 08	20 46	22 33	4 27	6 15	14 41	20 36	.....	22 39	95	19 30.1	-27 07	5.9
Thu Jun 16/Fri Jun 17	16 12	20 46	22 34	4 27	6 15	14 46	20 40	.....	23 34	89	20 35.9	-24 36	5.9
Fri Jun 17/Sat Jun 18	16 16	20 47	22 34	4 28	6 15	14 50	20 44	.....	0 18	80	21 36.9	-20 34	5.9
Sat Jun 18/Sun Jun 19	16 20	20 47	22 35	4 28	6 15	14 54	20 48	.....	0 55	70	22 32.0	-15 29	5.9
Sun Jun 19/Mon Jun 20	16 24	20 47	22 35	4 28	6 15	14 58	20 52	.....	1 26	60	23 24.0	- 9 49	5.9
Mon Jun 20/Tue Jun 21	16 28	20 47	22 35	4 28	6 16	15 03	20 56	.....	1 54	49	0 12.1	- 3 56	5.9
Tue Jun 21/Wed Jun 22	16 32	20 48	22 35	4 28	6 16	15 07	21 01	.....	2 20	39	0 58.1	1 54	5.9
Wed Jun 22/Thu Jun 23	16 36	20 48	22 35	4 29	6 16	15 11	21 05	.....	2 46	29	1 43.3	7 29	5.9
Thu Jun 23/Fri Jun 24	16 40	20 48	22 36	4 29	6 16	15 15	21 09	.....	3 13	20	2 28.7	12 38	5.9
Fri Jun 24/Sat Jun 25	16 44	20 48	22 36	4 29	6 17	15 19	21 13	.....	3 43	13	3 15.1	17 11	5.9
Sat Jun 25/Sun Jun 26	16 47	20 48	22 36	4 30	6 17	15 23	21 18	.....	4 16	7	4 03.1	20 57	5.9
Sun Jun 26/Mon Jun 27	16 51	20 48	22 36	4 30	6 17	15 27	21 22	.....	4 55	3	4 52.9	23 47	5.9
Mon Jun 27/Tue Jun 28	16 55	20 48	22 36	4 30	6 18	15 31	21 27	.....	5 39	1	5 44.2	25 33	5.9
Tue Jun 28/Wed Jun 29	16 59	20 48	22 36	4 31	6 18	15 35	21 31	.....	6 28	0	6 36.4	26 08	5.9
Wed Jun 29/Thu Jun 30	17 03	20 48	22 35	4 32	6 19	15 38	21 35	.....	21 44	1	7 28.7	25 31	5.9
Thu Jun 30/Fri Jul 01	17 07	20 48	22 35	4 32	6 19	15 42	21 40	.....	22 27	4	8 20.0	23 42	5.9

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 JULY *****

Date (eve/morn)		LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Fri Jul 01/Sat Jul 02		17 11	20 48	22 35	4 33	6 19	15 46	21 45	.....	23 04	8	9 09.9	20 49	6.0
Sat Jul 02/Sun Jul 03		17 15	20 48	22 35	4 33	6 20	15 50	21 49	.....	23 37	14	9 58.0	17 00	6.0
Sun Jul 03/Mon Jul 04		17 19	20 48	22 35	4 34	6 20	15 53	21 54	.....	0 06	22	10 44.6	12 24	6.0
Mon Jul 04/Tue Jul 05		17 23	20 48	22 34	4 35	6 21	15 57	21 58	.....	0 32	31	11 30.3	7 11	6.0
Tue Jul 05/Wed Jul 06		17 27	20 48	22 34	4 35	6 21	16 00	22 03	.....	0 58	40	12 15.9	1 32	6.0
Wed Jul 06/Thu Jul 07		17 31	20 48	22 33	4 36	6 22	16 04	22 08	.....	1 25	51	13 02.4	- 4 23	6.0
Thu Jul 07/Fri Jul 08		17 35	20 47	22 33	4 37	6 23	16 07	22 12	.....	1 53	62	13 51.1	-10 19	6.1
Fri Jul 08/Sat Jul 09		17 39	20 47	22 32	4 38	6 23	16 11	22 17	.....	2 25	72	14 43.2	-16 01	6.1
Sat Jul 09/Sun Jul 10		17 43	20 47	22 32	4 39	6 24	16 14	22 22	.....	3 03	82	15 40.0	-21 04	6.1
Sun Jul 10/Mon Jul 11		17 47	20 47	22 31	4 39	6 24	16 18	22 27	17 53	3 49	90	16 42.0	-25 01	6.1
Mon Jul 11/Tue Jul 12		17 51	20 46	22 31	4 40	6 25	16 21	22 32	19 07	4 47	96	17 48.7	-27 21	6.2
Tue Jul 12/Wed Jul 13		17 54	20 46	22 30	4 41	6 25	16 24	22 36	20 17	5 54	99	18 57.9	-27 42	6.2
Wed Jul 13/Thu Jul 14		17 58	20 45	22 29	4 42	6 26	16 28	22 41	21 18	.....	99	20 06.3	-25 59	6.2
Thu Jul 14/Fri Jul 15		18 02	20 45	22 29	4 43	6 27	16 31	22 46	22 09	.....	97	21 11.1	-22 26	6.2
Fri Jul 15/Sat Jul 16		18 06	20 45	22 28	4 44	6 27	16 34	22 51	22 50	.....	91	22 10.9	-17 33	6.3
Sat Jul 16/Sun Jul 17		18 10	20 44	22 27	4 45	6 28	16 37	22 56	23 25	.....	83	23 05.7	-11 49	6.3
Sun Jul 17/Mon Jul 18		18 14	20 44	22 26	4 46	6 29	16 40	23 01	23 54	.....	74	23 56.6	- 5 44	6.3
Mon Jul 18/Tue Jul 19		18 18	20 43	22 25	4 47	6 29	16 43	23 06	0 22	.....	64	0 44.7	0 22	6.4
Tue Jul 19/Wed Jul 20		18 22	20 42	22 25	4 48	6 30	16 46	23 11	0 48	.....	54	1 31.3	6 12	6.4
Wed Jul 20/Thu Jul 21		18 26	20 42	22 24	4 49	6 31	16 49	23 16	1 16	.....	43	2 17.5	11 34	6.4
Thu Jul 21/Fri Jul 22		18 30	20 41	22 23	4 50	6 32	16 52	23 21	1 45	.....	34	3 04.2	16 20	6.5
Fri Jul 22/Sat Jul 23		18 34	20 41	22 22	4 51	6 32	16 55	23 26	2 17	.....	25	3 52.2	20 18	6.5
Sat Jul 23/Sun Jul 24		18 38	20 40	22 21	4 52	6 33	16 58	23 31	2 54	.....	17	4 41.7	23 20	6.5
Sun Jul 24/Mon Jul 25		18 42	20 39	22 20	4 53	6 34	17 01	23 36	3 36	17 57	11	5 32.8	25 19	6.6
Mon Jul 25/Tue Jul 26		18 46	20 39	22 19	4 54	6 34	17 04	23 41	4 24	18 52	6	6 24.8	26 08	6.6
Tue Jul 26/Wed Jul 27		18 50	20 38	22 17	4 55	6 35	17 07	23 46	5 17	19 42	2	7 17.1	25 44	6.6
Wed Jul 27/Thu Jul 28		18 54	20 37	22 16	4 57	6 36	17 10	23 51	6 15	20 26	0	8 08.7	24 09	6.7
Thu Jul 28/Fri Jul 29		18 58	20 36	22 15	4 58	6 37	17 12	23 56	.....	21 05	0	8 58.9	21 27	6.7
Fri Jul 29/Sat Jul 30		19 02	20 35	22 14	4 59	6 37	17 15	0 01	.....	21 39	2	9 47.4	17 47	6.7
Sat Jul 30/Sun Jul 31		19 05	20 35	22 13	5 00	6 38	17 18	0 06	.....	22 09	6	10 34.2	13 19	6.8
Sun Jul 31/Mon Aug 01		19 09	20 34	22 12	5 01	6 39	17 21	0 11	.....	22 36	11	11 19.8	8 14	6.8

***** 2022 AUGUST *****

Date (eve/morn)		LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
			set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Mon Aug 01/Tue Aug 02		19 13	20 33	22 10	5 02	6 40	17 23	0 16	.....	23 02	18	12 04.8	2 42	6.9
Tue Aug 02/Wed Aug 03		19 17	20 32	22 09	5 03	6 40	17 26	0 21	.....	23 28	26	12 50.2	- 3 05	6.9
Wed Aug 03/Thu Aug 04		19 21	20 31	22 08	5 04	6 41	17 29	0 26	.....	23 54	36	13 37.1	- 8 55	6.9
Thu Aug 04/Fri Aug 05		19 25	20 30	22 06	5 05	6 42	17 31	0 31	.....	0 24	47	14 26.6	-14 33	7.0
Fri Aug 05/Sat Aug 06		19 29	20 29	22 05	5 07	6 43	17 34	0 37	.....	0 58	58	15 20.0	-19 39	7.0
Sat Aug 06/Sun Aug 07		19 33	20 28	22 04	5 08	6 43	17 37	0 42	.....	1 40	69	16 18.0	-23 52	7.1
Sun Aug 07/Mon Aug 08		19 37	20 27	22 02	5 09	6 44	17 39	0 47	.....	2 30	79	17 20.9	-26 45	7.1
Mon Aug 08/Tue Aug 09		19 41	20 26	22 01	5 10	6 45	17 42	0 52	17 57	3 32	88	18 27.5	-27 54	7.1
Tue Aug 09/Wed Aug 10		19 45	20 25	22 00	5 11	6 46	17 44	0 57	19 01	4 42	95	19 35.3	-27 03	7.2
Wed Aug 10/Thu Aug 11		19 49	20 24	21 58	5 12	6 47	17 47	1 02	19 56	5 58	99	20 41.5	-24 16	7.2
Thu Aug 11/Fri Aug 12		19 53	20 23	21 57	5 13	6 47	17 49	1 07	20 41	.....	100	21 43.9	-19 51	7.3
Fri Aug 12/Sat Aug 13		19 57	20 22	21 55	5 14	6 48	17 52	1 12	21 19	.....	98	22 41.7	-14 19	7.3
Sat Aug 13/Sun Aug 14		20 01	20 21	21 54	5 15	6 49	17 54	1 17	21 52	.....	93	23 35.4	- 8 08	7.4
Sun Aug 14/Mon Aug 15		20 05	20 19	21 52	5 17	6 50	17 57	1 22	22 21	.....	87	0 25.9	- 1 47	7.4
Mon Aug 15/Tue Aug 16		20 09	20 18	21 51	5 18	6 50	17 59	1 27	22 48	.....	78	1 14.4	4 24	7.4
Tue Aug 16/Wed Aug 17		20 12	20 17	21 49	5 19	6 51	18 02	1 32	23 16	.....	69	2 02.1	10 09	7.5
Wed Aug 17/Thu Aug 18		20 16	20 16	21 48	5 20	6 52	18 04	1 37	23 45	.....	59	2 50.0	15 16	7.5
Thu Aug 18/Fri Aug 19		20 20	20 15	21 46	5 21	6 53	18 06	1 42	0 16	.....	49	3 38.6	19 34	7.6
Fri Aug 19/Sat Aug 20		20 24	20 13	21 45	5 22	6 53	18 09	1 47	0 52	.....	40	4 28.5	22 54	7.6
Sat Aug 20/Sun Aug 21		20 28	20 12	21 43	5 23	6 54	18 11	1 52	1 32	.....	31	5 19.7	25 10	7.7
Sun Aug 21/Mon Aug 22		20 32	20 11	21 42	5 24	6 55	18 14	1 57	2 19	.....	22	6 11.9	26 16	7.7
Mon Aug 22/Tue Aug 23		20 36	20 10	21 40	5 25	6 56	18 16	2 02	3 10	17 38	15	7 04.3	26 08	7.7
Tue Aug 23/Wed Aug 24		20 40	20 08	21 39	5 26	6 56	18 18	2 07	4 07	18 24	9	7 56.2	24 47	7.8
Wed Aug 24/Thu Aug 25		20 44	20 07	21 37	5 27	6 57	18 21	2 12	5 06	19 05	4	8 46.9	22 18	7.8
Thu Aug 25/Fri Aug 26		20 48	20 06	21 36	5 28	6 58	18 23	2 17	6 06	19 40	1	9 36.0	18 48	7.9
Fri Aug 26/Sat Aug 27		20 52	20 05	21 34	5 29	6 59	18 26	2 22	.....	20 12	0	10 23.3	14 26	7.9
Sat Aug 27/Sun Aug 28		20 56	20 03	21 32	5 30	6 59	18 28	2 27	.....	20 40	1	11 09.4	9 24	8.0
Sun Aug 28/Mon Aug 29		21 00	20 02	21 31	5 31	7 00	18 30	2 32	.....	21 06	4	11 54.6	3 53	8.0
Mon Aug 29/Tue Aug 30		21 04	20 01	21 29	5 32	7 01	18 33	2 37	.....	21 32	8	12 40.0	- 1 55	8.0
Tue Aug 30/Wed Aug 31		21 08	19 59	21 28	5 33	7 02	18 35	2 42	.....	21 58	15	13 26.4	- 7 46	8.1
Wed Aug 31/Thu Sep 01		21 12	19 58	21 26	5 34	7 02	18 37	2 47	.....	22 26	23	14 14.8	-13 26	8.1

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 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:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Thu Sep 01/Fri Sep 02	21 16	19 56	21 24	5 35	7 03	18 40	2 52	.....	22 59	33	15 06.3	-18 37	8.2
Fri Sep 02/Sat Sep 03	21 19	19 55	21 23	5 36	7 04	18 42	2 56	.....	23 37	43	16 01.8	-23 00	8.2
Sat Sep 03/Sun Sep 04	21 23	19 54	21 21	5 37	7 05	18 44	3 01	.....	0 23	55	17 01.6	-26 12	8.3
Sun Sep 04/Mon Sep 05	21 27	19 52	21 20	5 38	7 05	18 47	3 06	.....	1 18	66	18 05.1	-27 50	8.3
Mon Sep 05/Tue Sep 06	21 31	19 51	21 18	5 39	7 06	18 49	3 11	.....	2 23	76	19 10.5	-27 40	8.3
Tue Sep 06/Wed Sep 07	21 35	19 49	21 16	5 40	7 07	18 51	3 16	17 46	3 35	86	20 15.5	-25 37	8.4
Wed Sep 07/Thu Sep 08	21 39	19 48	21 15	5 41	7 08	18 54	3 21	18 33	4 49	93	21 18.0	-21 51	8.4
Thu Sep 08/Fri Sep 09	21 43	19 47	21 13	5 42	7 08	18 56	3 26	19 14	6 03	98	22 16.7	-16 46	8.5
Fri Sep 09/Sat Sep 10	21 47	19 45	21 12	5 42	7 09	18 58	3 31	19 48	.....	100	23 11.8	-10 47	8.5
Sat Sep 10/Sun Sep 11	21 51	19 44	21 10	5 43	7 10	19 01	3 35	20 18	.....	99	0 03.8	- 4 23	8.6
Sun Sep 11/Mon Sep 12	21 55	19 42	21 08	5 44	7 10	19 03	3 40	20 46	.....	96	0 53.7	2 03	8.6
Mon Sep 12/Tue Sep 13	21 59	19 41	21 07	5 45	7 11	19 05	3 45	21 14	.....	90	1 42.7	8 11	8.6
Tue Sep 13/Wed Sep 14	22 03	19 39	21 05	5 46	7 12	19 08	3 50	21 43	.....	83	2 31.6	13 44	8.7
Wed Sep 14/Thu Sep 15	22 07	19 38	21 04	5 47	7 13	19 10	3 55	22 13	.....	75	3 21.2	18 29	8.7
Thu Sep 15/Fri Sep 16	22 11	19 37	21 02	5 48	7 13	19 12	4 00	22 48	.....	66	4 11.9	22 16	8.8
Fri Sep 16/Sat Sep 17	22 15	19 35	21 00	5 49	7 14	19 15	4 04	23 27	.....	56	5 03.7	24 56	8.8
Sat Sep 17/Sun Sep 18	22 19	19 34	20 59	5 50	7 15	19 17	4 09	0 11	.....	47	5 56.4	26 24	8.8
Sun Sep 18/Mon Sep 19	22 23	19 32	20 57	5 50	7 16	19 19	4 14	1 01	.....	37	6 49.4	26 36	8.9
Mon Sep 19/Tue Sep 20	22 27	19 31	20 56	5 51	7 16	19 22	4 19	1 56	.....	28	7 41.7	25 35	8.9
Tue Sep 20/Wed Sep 21	22 30	19 29	20 54	5 52	7 17	19 24	4 24	2 55	17 03	20	8 32.9	23 23	9.0
Wed Sep 21/Thu Sep 22	22 34	19 28	20 53	5 53	7 18	19 27	4 28	3 55	17 40	13	9 22.4	20 07	9.0
Thu Sep 22/Fri Sep 23	22 38	19 26	20 51	5 54	7 19	19 29	4 33	4 55	18 13	7	10 10.3	15 56	9.0
Fri Sep 23/Sat Sep 24	22 42	19 25	20 50	5 55	7 19	19 31	4 38	5 56	18 42	3	10 56.8	11 01	9.1
Sat Sep 24/Sun Sep 25	22 46	19 24	20 48	5 55	7 20	19 34	4 43	6 57	19 09	1	11 42.5	5 32	9.1
Sun Sep 25/Mon Sep 26	22 50	19 22	20 47	5 56	7 21	19 36	4 47	.....	19 35	0	12 28.1	- 0 19	9.2
Mon Sep 26/Tue Sep 27	22 54	19 21	20 45	5 57	7 22	19 39	4 52	.....	20 01	2	13 14.7	- 6 17	9.2
Tue Sep 27/Wed Sep 28	22 58	19 19	20 44	5 58	7 22	19 41	4 57	.....	20 29	6	14 03.1	-12 07	9.2
Wed Sep 28/Thu Sep 29	23 02	19 18	20 42	5 59	7 23	19 44	5 02	.....	21 00	12	14 54.2	-17 31	9.3
Thu Sep 29/Fri Sep 30	23 06	19 16	20 41	6 00	7 24	19 46	5 06	.....	21 36	20	15 49.0	-22 09	9.3
Fri Sep 30/Sat Oct 01	23 10	19 15	20 39	6 00	7 25	19 48	5 11	.....	22 20	29	16 47.6	-25 38	9.4

***** 2022 OCTOBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Sat Oct 01/Sun Oct 02	23 14	19 13	20 38	6 01	7 25	19 51	5 16	.....	23 12	40	17 49.5	-27 39	9.4
Sun Oct 02/Mon Oct 03	23 18	19 12	20 36	6 02	7 26	19 53	5 21	.....	0 13	52	18 53.3	-27 55	9.4
Mon Oct 03/Tue Oct 04	23 22	19 11	20 35	6 03	7 27	19 56	5 25	.....	1 22	63	19 56.9	-26 24	9.5
Tue Oct 04/Wed Oct 05	23 26	19 09	20 33	6 04	7 28	19 59	5 30	16 30	2 34	74	20 58.3	-23 12	9.5
Wed Oct 05/Thu Oct 06	23 30	19 08	20 32	6 04	7 29	20 01	5 35	17 11	3 46	83	21 56.5	-18 37	9.5
Thu Oct 06/Fri Oct 07	23 34	19 07	20 31	6 05	7 29	20 04	5 40	17 46	4 56	91	22 51.2	-13 02	9.6
Fri Oct 07/Sat Oct 08	23 37	19 05	20 29	6 06	7 30	20 06	5 44	18 17	6 03	96	23 43.1	- 6 50	9.6
Sat Oct 08/Sun Oct 09	23 41	19 04	20 28	6 07	7 31	20 09	5 49	18 45	7 09	99	0 33.1	- 0 24	9.6
Sun Oct 09/Mon Oct 10	23 45	19 02	20 27	6 08	7 32	20 11	5 54	19 13	.....	100	1 22.3	5 54	9.7
Mon Oct 10/Tue Oct 11	23 49	19 01	20 25	6 08	7 33	20 14	5 59	19 41	.....	98	2 11.4	11 47	9.7
Tue Oct 11/Wed Oct 12	23 53	19 00	20 24	6 09	7 33	20 17	6 03	20 10	.....	94	3 01.3	16 58	9.8
Wed Oct 12/Thu Oct 13	23 57	18 58	20 23	6 10	7 34	20 19	6 08	20 43	.....	88	3 52.4	21 14	9.8
Thu Oct 13/Fri Oct 14	0 01	18 57	20 21	6 11	7 35	20 22	6 13	21 21	.....	81	4 44.9	24 24	9.8
Fri Oct 14/Sat Oct 15	0 05	18 56	20 20	6 12	7 36	20 25	6 18	22 03	.....	72	5 38.3	26 20	9.9
Sat Oct 15/Sun Oct 16	0 09	18 55	20 19	6 12	7 37	20 27	6 22	22 52	.....	63	6 32.0	26 59	9.9
Sun Oct 16/Mon Oct 17	0 13	18 53	20 18	6 13	7 38	20 30	6 27	23 45	.....	54	7 25.1	26 20	9.9
Mon Oct 17/Tue Oct 18	0 17	18 52	20 16	6 14	7 39	20 33	6 32	0 42	.....	45	8 16.9	24 29	10.0
Tue Oct 18/Wed Oct 19	0 21	18 51	20 15	6 15	7 39	20 36	6 37	1 41	.....	35	9 06.9	21 33	10.0
Wed Oct 19/Thu Oct 20	0 25	18 49	20 14	6 16	7 40	20 38	6 41	2 41	16 12	27	9 55.1	17 39	10.0
Thu Oct 20/Fri Oct 21	0 29	18 48	20 13	6 16	7 41	20 41	6 46	3 42	16 42	18	10 41.7	12 57	10.1
Fri Oct 21/Sat Oct 22	0 33	18 47	20 12	6 17	7 42	20 44	6 51	4 42	17 09	11	11 27.4	7 38	10.1
Sat Oct 22/Sun Oct 23	0 37	18 46	20 11	6 18	7 43	20 47	6 56	5 44	17 36	6	12 13.1	1 51	10.1
Sun Oct 23/Mon Oct 24	0 41	18 45	20 10	6 19	7 44	20 50	7 00	6 48	18 02	2	12 59.5	- 4 10	10.2
Mon Oct 24/Tue Oct 25	0 45	18 44	20 09	6 20	7 45	20 52	7 05	7 54	18 29	0	13 47.7	-10 10	10.2
Tue Oct 25/Wed Oct 26	0 48	18 42	20 08	6 20	7 46	20 55	7 10	.....	18 59	1	14 38.8	-15 51	10.2
Wed Oct 26/Thu Oct 27	0 52	18 41	20 07	6 21	7 47	20 58	7 15	.....	19 34	4	15 33.5	-20 51	10.2
Thu Oct 27/Fri Oct 28	0 56	18 40	20 06	6 22	7 47	21 01	7 19	.....	20 16	9	16 32.1	-24 46	10.3
Fri Oct 28/Sat Oct 29	1 00	18 39	20 05	6 23	7 48	21 04	7 24	.....	21 06	17	17 34.3	-27 14	10.3
Sat Oct 29/Sun Oct 30	1 04	18 38	20 04	6 24	7 49	21 07	7 29	.....	22 06	26	18 38.4	-27 56	10.3
Sun Oct 30/Mon Oct 31	1 08	18 37	20 03	6 24	7 50	21 10	7 34	.....	23 13	37	19 42.3	-26 50	10.4
Mon Oct 31/Tue Nov 01	1 12	18 36	20 02	6 25	7 51	21 13	7 38	.....	0 24	48	20 43.8	-24 01	10.4

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2
 Rise/set times in Central time (6 hr W), uncorrected for elevation, DAYLIGHT time used, * shows clock reset.
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2022 NOVEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Tue Nov 01/Wed Nov 02	1 16	18 35	20 01	6 26	7 52	21 16	7 43	.....	1 35	60	21 41.8	-19 49	10.4
Wed Nov 02/Thu Nov 03	1 20	18 34	20 00	6 27	7 53	21 19	7 48	.....	2 45	71	22 36.1	-14 34	10.4
Thu Nov 03/Fri Nov 04	1 24	18 33	19 59	6 28	7 54	21 23	7 53	16 19	3 52	80	23 27.4	- 8 38	10.5
Fri Nov 04/Sat Nov 05	1 28	18 32	19 58	6 29	7 55	21 26	7 58	16 47	4 57	88	0 16.6	- 2 23	10.5
Sat Nov 05/Sun Nov 06*	1 32	18 31	19 58	5 29	6 56	21 29	8 02	17 14	5 00	94	1 04.9	3 52	10.5
Sun Nov 06/Mon Nov 07	2 36	17 30	18 57	5 30	6 57	21 32	8 07	16 41	6 04	98	1 54.4	10 06	10.6
Mon Nov 07/Tue Nov 08	2 40	17 30	18 56	5 31	6 58	21 35	8 12	17 10	7 07	100	2 43.6	15 31	10.6
Tue Nov 08/Wed Nov 09	2 44	17 29	18 56	5 32	6 59	21 39	8 17	17 41	8 11	99	3 34.4	20 08	10.6
Wed Nov 09/Thu Nov 10	2 48	17 28	18 55	5 33	7 00	21 42	8 21	18 16	.....	97	4 26.9	23 44	10.6
Thu Nov 10/Fri Nov 11	2 52	17 27	18 54	5 34	7 01	21 45	8 26	18 57	.....	92	5 20.7	26 06	10.7
Fri Nov 11/Sat Nov 12	2 56	17 26	18 54	5 34	7 02	21 48	8 31	19 43	.....	86	6 15.3	27 11	10.7
Sat Nov 12/Sun Nov 13	3 00	17 26	18 53	5 35	7 03	21 52	8 36	20 35	.....	79	7 09.4	26 55	10.7
Sun Nov 13/Mon Nov 14	3 04	17 25	18 52	5 36	7 04	21 55	8 41	21 30	.....	71	8 02.1	25 24	10.7
Mon Nov 14/Tue Nov 15	3 07	17 24	18 52	5 37	7 05	21 59	8 45	22 29	.....	62	8 52.9	22 45	10.8
Tue Nov 15/Wed Nov 16	3 11	17 24	18 51	5 38	7 06	22 02	8 50	23 28	.....	52	9 41.5	19 07	10.8
Wed Nov 16/Thu Nov 17	3 15	17 23	18 51	5 39	7 07	22 05	8 55	0 27	.....	43	10 28.2	14 40	10.8
Thu Nov 17/Fri Nov 18	3 19	17 23	18 51	5 40	7 08	22 09	9 00	1 27	.....	33	11 13.7	9 33	10.8
Fri Nov 18/Sat Nov 19	3 23	17 22	18 50	5 40	7 09	22 13	9 05	2 27	.....	24	11 58.8	3 58	10.8
Sat Nov 19/Sun Nov 20	3 27	17 21	18 50	5 41	7 10	22 16	9 09	3 28	.....	16	12 44.4	- 1 57	10.9
Sun Nov 20/Mon Nov 21	3 31	17 21	18 49	5 42	7 11	22 20	9 14	4 33	.....	9	13 31.7	- 7 58	10.9
Mon Nov 21/Tue Nov 22	3 35	17 20	18 49	5 43	7 12	22 23	9 19	5 41	15 56	4	14 21.8	-13 48	10.9
Tue Nov 22/Wed Nov 23	3 39	17 20	18 49	5 44	7 13	22 27	9 24	6 53	16 29	1	15 15.7	-19 07	10.9
Wed Nov 23/Thu Nov 24	3 43	17 20	18 48	5 45	7 13	22 31	9 28	8 07	17 08	0	16 14.0	-23 29	10.9
Thu Nov 24/Fri Nov 25	3 47	17 19	18 48	5 45	7 14	22 34	9 33	.....	17 55	2	17 16.6	-26 27	11.0
Fri Nov 25/Sat Nov 26	3 51	17 19	18 48	5 46	7 15	22 38	9 38	.....	18 53	7	18 21.9	-27 40	11.0
Sat Nov 26/Sun Nov 27	3 55	17 19	18 48	5 47	7 16	22 42	9 43	.....	20 00	14	19 27.4	-26 59	11.0
Sun Nov 27/Mon Nov 28	3 59	17 18	18 48	5 48	7 17	22 46	9 47	.....	21 13	24	20 30.7	-24 29	11.0
Mon Nov 28/Tue Nov 29	4 03	17 18	18 48	5 49	7 18	22 49	9 52	.....	22 26	34	21 30.1	-20 30	11.0
Tue Nov 29/Wed Nov 30	4 07	17 18	18 48	5 49	7 19	22 53	9 57	.....	23 37	45	22 25.2	-15 25	11.0
Wed Nov 30/Thu Dec 01	4 11	17 18	18 47	5 50	7 20	22 57	10 02	.....	0 45	56	23 16.7	- 9 38	11.0

***** 2022 DECEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Thu Dec 01/Fri Dec 02	4 14	17 18	18 47	5 51	7 21	23 01	10 06	.....	1 50	67	0 05.6	- 3 32	11.1
Fri Dec 02/Sat Dec 03	4 18	17 17	18 47	5 52	7 22	23 05	10 11	.....	2 53	77	0 53.1	2 38	11.1
Sat Dec 03/Sun Dec 04	4 22	17 17	18 47	5 52	7 23	23 09	10 16	.....	3 55	85	1 40.3	8 35	11.1
Sun Dec 04/Mon Dec 05	4 26	17 17	18 48	5 53	7 23	23 13	10 20	.....	4 57	92	2 28.3	14 05	11.1
Mon Dec 05/Tue Dec 06	4 30	17 17	18 48	5 54	7 24	23 17	10 25	15 42	6 00	96	3 17.8	18 53	11.1
Tue Dec 06/Wed Dec 07	4 34	17 17	18 48	5 55	7 25	23 21	10 30	16 15	7 02	99	4 09.3	22 46	11.1
Wed Dec 07/Thu Dec 08	4 38	17 17	18 48	5 55	7 26	23 25	10 34	16 53	8 02	100	5 02.5	25 32	11.1
Thu Dec 08/Fri Dec 09	4 42	17 17	18 48	5 56	7 27	23 29	10 39	17 37	.....	99	5 57.0	27 01	11.1
Fri Dec 09/Sat Dec 10	4 46	17 18	18 48	5 57	7 27	23 33	10 44	18 27	.....	96	6 51.6	27 11	11.1
Sat Dec 10/Sun Dec 11	4 50	17 18	18 48	5 57	7 28	23 38	10 48	19 21	.....	91	7 45.2	26 02	11.2
Sun Dec 11/Mon Dec 12	4 54	17 18	18 49	5 58	7 29	23 42	10 53	20 19	.....	85	8 36.9	23 42	11.2
Mon Dec 12/Tue Dec 13	4 58	17 18	18 49	5 59	7 30	23 46	10 58	21 18	.....	78	9 26.2	20 21	11.2
Tue Dec 13/Wed Dec 14	5 02	17 18	18 49	5 59	7 30	23 50	11 02	22 16	.....	69	10 13.3	16 09	11.2
Wed Dec 14/Thu Dec 15	5 06	17 19	18 50	6 00	7 31	23 54	11 07	23 15	.....	60	10 58.7	11 17	11.2
Thu Dec 15/Fri Dec 16	5 10	17 19	18 50	6 01	7 32	23 59	11 11	0 13	.....	50	11 43.0	5 55	11.2
Fri Dec 16/Sat Dec 17	5 14	17 19	18 50	6 01	7 32	0 03	11 16	1 12	.....	41	12 27.4	0 13	11.2
Sat Dec 17/Sun Dec 18	5 18	17 20	18 51	6 02	7 33	0 07	11 20	2 13	.....	31	13 13.0	- 5 39	11.2
Sun Dec 18/Mon Dec 19	5 22	17 20	18 51	6 02	7 33	0 12	11 25	3 18	.....	21	14 00.9	-11 28	11.2
Mon Dec 19/Tue Dec 20	5 25	17 21	18 52	6 03	7 34	0 16	11 29	4 27	.....	13	14 52.3	-16 56	11.2
Tue Dec 20/Wed Dec 21	5 29	17 21	18 52	6 03	7 34	0 21	11 34	5 39	.....	7	15 48.4	-21 42	11.2
Wed Dec 21/Thu Dec 22	5 33	17 21	18 53	6 04	7 35	0 25	11 38	6 54	15 40	2	16 49.4	-25 18	11.2
Thu Dec 22/Fri Dec 23	5 37	17 22	18 53	6 04	7 35	0 29	11 43	8 06	16 34	0	17 54.6	-27 17	11.2
Fri Dec 23/Sat Dec 24	5 41	17 23	18 54	6 05	7 36	0 34	11 47	.....	17 38	1	19 01.7	-27 20	11.2
Sat Dec 24/Sun Dec 25	5 45	17 23	18 54	6 05	7 36	0 38	11 51	.....	18 51	5	20 07.9	-25 25	11.2
Sun Dec 25/Mon Dec 26	5 49	17 24	18 55	6 06	7 37	0 43	11 56	.....	20 07	11	21 10.6	-21 45	11.2
Mon Dec 26/Tue Dec 27	5 53	17 24	18 55	6 06	7 37	0 48	12 00	.....	21 22	20	22 08.7	-16 49	11.2
Tue Dec 27/Wed Dec 28	5 57	17 25	18 56	6 06	7 37	0 52	12 04	.....	22 34	30	23 02.5	-11 03	11.2
Wed Dec 28/Thu Dec 29	6 01	17 26	18 57	6 07	7 38	0 57	12 09	.....	23 41	40	23 52.9	- 4 53	11.2
Thu Dec 29/Fri Dec 30	6 05	17 26	18 57	6 07	7 38	1 01	12 13	.....	0 46	51	0 41.1	1 21	11.2
Fri Dec 30/Sat Dec 31	6 09	17 27	18 58	6 07	7 38	1 06	12 17	.....	1 49	62	1 28.4	7 22	11.2
Sat Dec 31/Sun Jan 01	6 13	17 28	18 58	6 08	7 38	1 10	12 21	.....	2 51	72	2 15.8	12 56	11.2