

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:

\*\*\*\*\* 2020 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 2020, 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 25	23 16	Jan 02	22 47	Jan 10	13 23	Jan 17	7 01
Jan 24	15 44	Feb 01	19 43	Feb 09	1 35	Feb 15	16 19
Feb 23	9 34	Mar 02	13 59	Mar 09	12 49	Mar 16	4 36
Mar 24	4 30	Apr 01	5 22	Apr 07	21 36	Apr 14	17 57
Apr 22	21 27	Apr 30	15 39	May 07	5 46	May 14	9 03
May 22	12 40	May 29	22 30	Jun 05	14 13	Jun 13	1 25
Jun 21	1 42	Jun 28	3 17	Jul 04	23 45	Jul 12	18 31
Jul 20	12 34	Jul 27	7 34	Aug 03	11 00	Aug 11	11 48
Aug 18	21 42	Aug 25	12 59	Sep 02	0 23	Sep 10	4 28
Sep 17	6 01	Sep 23	20 57	Oct 01	16 07	Oct 09	19 41
Oct 16	14 32	Oct 23	8 24	Oct 31	9 51	Nov 08	7 48
Nov 14	23 09	Nov 21	22 46	Nov 30	3 32	Dec 07	18 38
Dec 14	10 19	Dec 21	17 43	Dec 29	21 30	Jan 06	3 39

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.

\*\*\*\*\* 2020 JANUARY \*\*\*\*\*

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
Wed Jan 01/Thu Jan 02		6 16	17 28	18 59	6 08	7 38	1 14	12 24	.....	23 43	40	0 09.0	- 4 56	11.1
Thu Jan 02/Fri Jan 03		6 20	17 29	19 00	6 08	7 39	1 18	12 29	.....	0 38	50	0 52.6	- 0 17	11.1
Fri Jan 03/Sat Jan 04		6 24	17 30	19 00	6 08	7 39	1 23	12 33	.....	1 33	59	1 36.7	4 24	11.1
Sat Jan 04/Sun Jan 05		6 27	17 31	19 01	6 08	7 39	1 28	12 37	.....	2 30	69	2 22.1	8 59	11.1
Sun Jan 05/Mon Jan 06		6 31	17 32	19 02	6 09	7 39	1 32	12 41	.....	3 28	77	3 09.7	13 19	11.1
Mon Jan 06/Tue Jan 07		6 35	17 32	19 03	6 09	7 39	1 37	12 45	.....	4 29	85	4 00.4	17 09	11.1
Tue Jan 07/Wed Jan 08		6 39	17 33	19 03	6 09	7 39	1 42	12 49	.....	5 31	92	4 54.7	20 15	11.1
Wed Jan 08/Thu Jan 09		6 43	17 34	19 04	6 09	7 39	1 47	12 53	.....	6 34	97	5 52.6	22 17	11.1
Thu Jan 09/Fri Jan 10		6 47	17 35	19 05	6 09	7 39	1 51	12 57	.....	7 33	100	6 53.3	23 01	11.1
Fri Jan 10/Sat Jan 11		6 51	17 36	19 06	6 09	7 39	1 56	13 01	.....	8 29	100	7 55.5	22 15	11.1
Sat Jan 11/Sun Jan 12		6 55	17 37	19 07	6 09	7 38	2 01	13 05	.....	9 27	97	8 57.3	19 59	11.0
Sun Jan 12/Mon Jan 13		6 59	17 38	19 07	6 09	7 38	2 06	13 09	.....	10 24	92	9 57.3	16 23	11.0
Mon Jan 13/Tue Jan 14		7 03	17 39	19 08	6 09	7 38	2 10	13 13	.....	11 21	84	10 54.7	11 45	11.0
Tue Jan 14/Wed Jan 15		7 07	17 40	19 09	6 09	7 38	2 15	13 16	.....	12 18	74	11 49.8	6 28	11.0
Wed Jan 15/Thu Jan 16		7 11	17 41	19 10	6 08	7 38	2 20	13 20	.....	13 15	64	12 42.9	0 53	11.0
Thu Jan 16/Fri Jan 17		7 15	17 42	19 11	6 08	7 37	2 25	13 24	.....	14 12	52	13 35.1	- 4 41	11.0
Fri Jan 17/Sat Jan 18		7 19	17 43	19 12	6 08	7 37	2 30	13 28	.....	15 09	41	14 27.0	- 9 55	10.9
Sat Jan 18/Sun Jan 19		7 23	17 44	19 12	6 08	7 37	2 34	13 32	.....	16 06	31	15 19.6	-14 34	10.9
Sun Jan 19/Mon Jan 20		7 27	17 45	19 13	6 08	7 36	2 39	13 35	.....	17 03	21	16 13.3	-18 25	10.9
Mon Jan 20/Tue Jan 21		7 31	17 46	19 14	6 07	7 36	2 44	13 39	.....	18 00	13	17 08.1	-21 15	10.9
Tue Jan 21/Wed Jan 22		7 34	17 47	19 15	6 07	7 35	2 49	13 42	.....	19 00	7	18 03.7	-22 56	10.9
Wed Jan 22/Thu Jan 23		7 38	17 48	19 16	6 07	7 35	2 54	13 46	.....	20 00	3	18 59.2	-23 25	10.8
Thu Jan 23/Fri Jan 24		7 42	17 49	19 17	6 06	7 34	2 58	13 50	.....	21 00	0	19 53.8	-22 41	10.8
Fri Jan 24/Sat Jan 25		7 46	17 50	19 18	6 06	7 34	3 03	13 53	.....	22 00	0	20 46.5	-20 53	10.8
Sat Jan 25/Sun Jan 26		7 50	17 51	19 19	6 05	7 33	3 08	13 57	.....	23 00	2	21 36.9	-18 08	10.8
Sun Jan 26/Mon Jan 27		7 54	17 52	19 19	6 05	7 33	3 13	14 00	.....	24 00	5	22 24.9	-14 40	10.8
Mon Jan 27/Tue Jan 28		7 58	17 53	19 20	6 05	7 32	3 18	14 04	.....	25 00	10	23 10.8	-10 40	10.7
Tue Jan 28/Wed Jan 29		8 02	17 54	19 21	6 04	7 31	3 23	14 07	.....	26 00	16	23 55.0	- 6 18	10.7
Wed Jan 29/Thu Jan 30		8 06	17 55	19 22	6 03	7 31	3 27	14 10	.....	27 00	24	0 38.4	- 1 44	10.7
Thu Jan 30/Fri Jan 31		8 10	17 56	19 23	6 03	7 30	3 32	14 14	.....	28 00	32	1 21.7	2 55	10.7
Fri Jan 31/Sat Feb 01		8 14	17 57	19 24	6 02	7 29	3 37	14 17	.....	29 00	41	2 05.8	7 29	10.6

\*\*\*\*\* 2020 FEBRUARY \*\*\*\*\*

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
Sat Feb 01/Sun Feb 02		8 18	17 58	19 25	6 02	7 28	3 42	14 21	.....	1 15	51	2 51.5	11 49	10.6
Sun Feb 02/Mon Feb 03		8 22	17 59	19 26	6 01	7 28	3 47	14 24	.....	2 13	61	3 39.7	15 46	10.6
Mon Feb 03/Tue Feb 04		8 26	18 00	19 27	6 00	7 27	3 52	14 27	.....	3 13	70	4 31.2	19 07	10.6
Tue Feb 04/Wed Feb 05		8 30	18 01	19 27	6 00	7 26	3 56	14 30	.....	4 15	80	5 26.4	21 35	10.5
Wed Feb 05/Thu Feb 06		8 34	18 02	19 28	5 59	7 25	4 01	14 34	.....	5 15	88	6 25.1	22 53	10.5
Thu Feb 06/Fri Feb 07		8 38	18 03	19 29	5 58	7 24	4 06	14 37	.....	6 13	94	7 26.5	22 48	10.5
Fri Feb 07/Sat Feb 08		8 42	18 04	19 30	5 57	7 23	4 11	14 40	.....	7 05	98	8 29.0	21 10	10.5
Sat Feb 08/Sun Feb 09		8 45	18 05	19 31	5 57	7 22	4 16	14 43	.....	8 00	100	9 31.0	18 03	10.4
Sun Feb 09/Mon Feb 10		8 49	18 06	19 32	5 56	7 21	4 21	14 46	.....	9 00	98	10 31.3	13 39	10.4
Mon Feb 10/Tue Feb 11		8 53	18 07	19 33	5 55	7 21	4 25	14 49	.....	10 00	94	11 29.4	8 21	10.4
Tue Feb 11/Wed Feb 12		8 57	18 08	19 34	5 54	7 20	4 30	14 52	.....	11 00	87	12 25.3	2 34	10.3
Wed Feb 12/Thu Feb 13		9 01	18 09	19 34	5 53	7 19	4 35	14 55	.....	12 00	78	13 19.8	- 3 17	10.3
Thu Feb 13/Fri Feb 14		9 05	18 10	19 35	5 52	7 17	4 40	14 58	.....	13 00	68	14 13.5	- 8 50	10.3
Fri Feb 14/Sat Feb 15		9 09	18 11	19 36	5 51	7 16	4 45	15 01	.....	14 00	57	15 07.3	-13 47	10.2
Sat Feb 15/Sun Feb 16		9 13	18 12	19 37	5 50	7 15	4 49	15 04	.....	15 00	46	16 01.6	-17 53	10.2
Sun Feb 16/Mon Feb 17		9 17	18 13	19 38	5 49	7 14	4 54	15 07	.....	16 00	35	16 56.6	-20 57	10.2
Mon Feb 17/Tue Feb 18		9 21	18 14	19 39	5 48	7 13	4 59	15 10	.....	17 00	26	17 51.9	-22 52	10.2
Tue Feb 18/Wed Feb 19		9 25	18 15	19 40	5 47	7 12	5 04	15 13	.....	18 00	17	18 47.1	-23 34	10.1
Wed Feb 19/Thu Feb 20		9 29	18 16	19 41	5 46	7 11	5 09	15 16	.....	19 00	11	19 41.4	-23 05	10.1
Thu Feb 20/Fri Feb 21		9 33	18 17	19 41	5 45	7 10	5 14	15 19	.....	20 00	5	20 34.0	-21 30	10.1
Fri Feb 21/Sat Feb 22		9 37	18 18	19 42	5 44	7 09	5 18	15 22	.....	21 00	2	21 24.4	-18 58	10.0
Sat Feb 22/Sun Feb 23		9 41	18 19	19 43	5 43	7 07	5 23	15 24	.....	22 00	0	22 12.6	-15 40	10.0
Sun Feb 23/Mon Feb 24		9 45	18 19	19 44	5 42	7 06	5 28	15 27	.....	23 00	0	22 58.7	-11 46	10.0
Mon Feb 24/Tue Feb 25		9 49	18 20	19 45	5 40	7 05	5 33	15 30	.....	24 00	2	23 43.2	- 7 28	9.9
Tue Feb 25/Wed Feb 26		9 52	18 21	19 46	5 39	7 04	5 38	15 33	.....	25 00	6	0 26.6	- 2 55	9.9
Wed Feb 26/Thu Feb 27		9 56	18 22	19 47	5 38	7 02	5 42	15 35	.....	26 00	11	1 09.6	1 43	9.9
Thu Feb 27/Fri Feb 28		10 00	18 23	19 48	5 37	7 01	5 47	15 38	.....	27 00	18	1 52.9	6 18	9.8
Fri Feb 28/Sat Feb 29		10 04	18 24	19 48	5 36	7 00	5 52	15 41	.....	28 00	25	2 37.4	10 41	9.8
Sat Feb 29/Sun Mar 01		10 08	18 25	19 49	5 34	6 59	5 57	15 44	.....	29 00	34	3 23.9	14 43	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.

\*\*\*\*\* 2020 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	
Sun Mar 01/Mon Mar 02	10 12	18 26	19 50	5 33	6 57	6 02	15 46	.....	1 01	43	4 12.9	18 11	9.7
Mon Mar 02/Tue Mar 03	10 16	18 27	19 51	5 32	6 56	6 06	15 49	.....	2 00	54	5 05.2	20 54	9.7
Tue Mar 03/Wed Mar 04	10 20	18 28	19 52	5 31	6 55	6 11	15 52	.....	3 00	64	6 00.7	22 37	9.6
Wed Mar 04/Thu Mar 05	10 24	18 28	19 53	5 29	6 53	6 16	15 54	.....	3 57	74	6 59.2	23 06	9.6
Thu Mar 05/Fri Mar 06	10 28	18 29	19 54	5 28	6 52	6 21	15 57	.....	4 51	83	7 59.8	22 10	9.6
Fri Mar 06/Sat Mar 07	10 32	18 30	19 54	5 27	6 51	6 26	15 59	.....	5 40	91	9 01.2	19 43	9.5
Sat Mar 07/Sun Mar 08*	10 36	18 31	19 55	6 25	7 49	6 31	16 02	.....	7 24	97	10 02.0	15 52	9.5
Sun Mar 08/Mon Mar 09	9 40	19 32	20 56	6 24	7 48	6 35	16 04	18 31	.....	99	11 00.0	11 04	9.5
Mon Mar 09/Tue Mar 10	9 44	19 33	20 57	6 22	7 47	6 40	16 07	19 45	.....	99	11 58.0	5 19	9.4
Tue Mar 10/Wed Mar 11	9 48	19 34	20 58	6 21	7 45	6 45	16 10	20 57	.....	96	12 54.7	- 0 47	9.4
Wed Mar 11/Thu Mar 12	9 51	19 35	20 59	6 20	7 44	6 50	16 12	22 09	.....	90	13 50.7	- 6 46	9.3
Thu Mar 12/Fri Mar 13	9 55	19 35	21 00	6 18	7 42	6 55	16 15	23 20	.....	82	14 46.5	-12 14	9.3
Fri Mar 13/Sat Mar 14	9 59	19 36	21 01	6 17	7 41	6 59	16 17	0 30	.....	72	15 42.7	-16 52	9.3
Sat Mar 14/Sun Mar 15	10 03	19 37	21 02	6 15	7 40	7 04	16 20	1 37	.....	62	16 39.4	-20 25	9.2
Sun Mar 15/Mon Mar 16	10 07	19 38	21 02	6 14	7 38	7 09	16 22	2 40	.....	51	17 36.1	-22 44	9.2
Mon Mar 16/Tue Mar 17	10 11	19 39	21 03	6 12	7 37	7 14	16 25	3 38	.....	41	18 32.4	-23 46	9.2
Tue Mar 17/Wed Mar 18	10 15	19 40	21 04	6 11	7 35	7 19	16 27	4 30	.....	31	19 27.4	-23 34	9.1
Wed Mar 18/Thu Mar 19	10 19	19 40	21 05	6 09	7 34	7 24	16 29	5 16	.....	23	20 20.5	-22 13	9.1
Thu Mar 19/Fri Mar 20	10 23	19 41	21 06	6 08	7 33	7 29	16 32	5 55	.....	15	21 11.4	-19 54	9.0
Fri Mar 20/Sat Mar 21	10 27	19 42	21 07	6 06	7 31	7 33	16 34	6 30	.....	9	21 59.8	-16 46	9.0
Sat Mar 21/Sun Mar 22	10 31	19 43	21 08	6 05	7 30	7 38	16 37	7 01	17 24	4	22 46.1	-13 00	8.9
Sun Mar 22/Mon Mar 23	10 35	19 44	21 09	6 03	7 28	7 43	16 39	.....	18 20	2	23 30.6	- 8 46	8.9
Mon Mar 23/Tue Mar 24	10 39	19 44	21 10	6 02	7 27	7 48	16 42	.....	19 15	0	0 14.1	- 4 14	8.9
Tue Mar 24/Wed Mar 25	10 43	19 45	21 11	6 00	7 26	7 53	16 44	.....	20 10	1	0 57.0	0 26	8.8
Wed Mar 25/Thu Mar 26	10 47	19 46	21 12	5 59	7 24	7 58	16 46	.....	21 05	3	1 40.2	5 05	8.8
Thu Mar 26/Fri Mar 27	10 51	19 47	21 13	5 57	7 23	8 03	16 49	.....	22 00	7	2 24.2	9 35	8.7
Fri Mar 27/Sat Mar 28	10 55	19 48	21 13	5 56	7 21	8 08	16 51	.....	22 57	12	3 09.8	13 44	8.7
Sat Mar 28/Sun Mar 29	10 58	19 48	21 14	5 54	7 20	8 12	16 54	.....	23 54	19	3 57.6	17 24	8.7
Sun Mar 29/Mon Mar 30	11 02	19 49	21 15	5 53	7 19	8 17	16 56	.....	0 53	27	4 48.0	20 21	8.6
Mon Mar 30/Tue Mar 31	11 06	19 50	21 16	5 51	7 17	8 22	16 58	.....	1 51	37	5 41.3	22 23	8.6
Tue Mar 31/Wed Apr 01	11 10	19 51	21 17	5 49	7 16	8 27	17 01	.....	2 48	47	6 37.3	23 18	8.5

\*\*\*\*\* 2020 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	
Wed Apr 01/Thu Apr 02	11 14	19 52	21 18	5 48	7 14	8 32	17 03	.....	3 41	58	7 35.3	22 55	8.5
Thu Apr 02/Fri Apr 03	11 18	19 52	21 19	5 46	7 13	8 37	17 05	.....	4 31	68	8 34.4	21 08	8.4
Fri Apr 03/Sat Apr 04	11 22	19 53	21 20	5 45	7 12	8 42	17 08	.....	5 15	79	9 33.6	17 58	8.4
Sat Apr 04/Sun Apr 05	11 26	19 54	21 21	5 43	7 10	8 47	17 10	.....	5 56	88	10 32.2	13 32	8.4
Sun Apr 05/Mon Apr 06	11 30	19 55	21 22	5 42	7 09	8 52	17 12	17 17	6 33	94	11 29.9	8 07	8.3
Mon Apr 06/Tue Apr 07	11 34	19 56	21 23	5 40	7 07	8 57	17 15	18 30	.....	99	12 26.9	2 05	8.3
Tue Apr 07/Wed Apr 08	11 38	19 57	21 24	5 38	7 06	9 02	17 17	19 43	.....	100	13 23.6	- 4 08	8.2
Wed Apr 08/Thu Apr 09	11 42	19 57	21 25	5 37	7 05	9 07	17 20	20 56	.....	98	14 20.7	-10 06	8.2
Thu Apr 09/Fri Apr 10	11 46	19 58	21 26	5 35	7 03	9 12	17 22	22 08	.....	93	15 18.6	-15 21	8.1
Fri Apr 10/Sat Apr 11	11 50	19 59	21 27	5 34	7 02	9 17	17 24	23 19	.....	86	16 17.4	-19 33	8.1
Sat Apr 11/Sun Apr 12	11 54	20 00	21 28	5 32	7 01	9 22	17 27	0 27	.....	77	17 16.6	-22 28	8.1
Sun Apr 12/Mon Apr 13	11 58	20 01	21 30	5 31	6 59	9 27	17 29	1 30	.....	67	18 15.4	-23 59	8.0
Mon Apr 13/Tue Apr 14	12 02	20 01	21 31	5 29	6 58	9 32	17 31	2 26	.....	57	19 12.8	-24 08	8.0
Tue Apr 14/Wed Apr 15	12 06	20 02	21 32	5 27	6 57	9 37	17 34	3 15	.....	47	20 07.9	-23 02	7.9
Wed Apr 15/Thu Apr 16	12 09	20 03	21 33	5 26	6 56	9 42	17 36	3 56	.....	37	21 00.2	-20 52	7.9
Thu Apr 16/Fri Apr 17	12 13	20 04	21 34	5 24	6 54	9 47	17 39	4 33	.....	28	21 49.6	-17 50	7.8
Fri Apr 17/Sat Apr 18	12 17	20 05	21 35	5 23	6 53	9 52	17 41	5 04	.....	20	22 36.4	-14 09	7.8
Sat Apr 18/Sun Apr 19	12 21	20 05	21 36	5 21	6 52	9 57	17 43	5 33	.....	13	23 21.2	- 9 58	7.8
Sun Apr 19/Mon Apr 20	12 25	20 06	21 37	5 20	6 51	10 02	17 46	6 00	17 10	8	0 04.7	- 5 28	7.7
Mon Apr 20/Tue Apr 21	12 29	20 07	21 38	5 18	6 49	10 07	17 48	6 27	18 04	4	0 47.5	- 0 47	7.7
Tue Apr 21/Wed Apr 22	12 33	20 08	21 39	5 17	6 48	10 12	17 51	.....	18 59	1	1 30.4	3 55	7.6
Wed Apr 22/Thu Apr 23	12 37	20 09	21 40	5 15	6 47	10 17	17 53	.....	19 55	0	2 14.2	8 31	7.6
Thu Apr 23/Fri Apr 24	12 41	20 10	21 42	5 14	6 46	10 22	17 56	.....	20 51	1	2 59.3	12 49	7.5
Fri Apr 24/Sat Apr 25	12 45	20 10	21 43	5 12	6 45	10 27	17 58	.....	21 49	4	3 46.6	16 38	7.5
Sat Apr 25/Sun Apr 26	12 49	20 11	21 44	5 11	6 43	10 32	18 01	.....	22 48	9	4 36.3	19 48	7.4
Sun Apr 26/Mon Apr 27	12 53	20 12	21 45	5 09	6 42	10 37	18 03	.....	23 46	15	5 28.7	22 05	7.4
Mon Apr 27/Tue Apr 28	12 57	20 13	21 46	5 08	6 41	10 43	18 06	.....	0 44	23	6 23.4	23 17	7.4
Tue Apr 28/Wed Apr 29	13 01	20 14	21 47	5 07	6 40	10 48	18 08	.....	1 38	32	7 19.8	23 15	7.3
Wed Apr 29/Thu Apr 30	13 05	20 14	21 48	5 05	6 39	10 53	18 11	.....	2 27	42	8 17.2	21 54	7.3
Thu Apr 30/Fri May 01	13 09	20 15	21 50	5 04	6 38	10 58	18 13	.....	3 12	53	9 14.5	19 14	7.2

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2  
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\*\*\*\*\* 2020 MAY \*\*\*\*\*

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 May 01/Sat May 02	13 13	20 16	21 51	5 02	6 37	11 03	18 16	.....	3 52	65	10 11.1	15 20	7.2
Sat May 02/Sun May 03	13 16	20 17	21 52	5 01	6 36	11 08	18 18	.....	4 29	75	11 06.9	10 24	7.1
Sun May 03/Mon May 04	13 20	20 18	21 53	5 00	6 35	11 13	18 21	.....	5 04	85	12 02.2	4 43	7.1
Mon May 04/Tue May 05	13 24	20 19	21 54	4 58	6 34	11 18	18 23	.....	5 38	93	12 57.5	- 1 23	7.1
Tue May 05/Wed May 06	13 28	20 19	21 55	4 57	6 33	11 23	18 26	18 29	6 14	98	13 53.5	- 7 29	7.0
Wed May 06/Thu May 07	13 32	20 20	21 57	4 56	6 32	11 29	18 29	19 42	.....	100	14 50.9	-13 10	7.0
Thu May 07/Fri May 08	13 36	20 21	21 58	4 54	6 31	11 34	18 31	20 54	.....	99	15 49.9	-18 01	6.9
Fri May 08/Sat May 09	13 40	20 22	21 59	4 53	6 30	11 39	18 34	22 06	.....	95	16 50.4	-21 39	6.9
Sat May 09/Sun May 10	13 44	20 23	22 00	4 52	6 29	11 44	18 37	23 13	.....	89	17 51.4	-23 52	6.9
Sun May 10/Mon May 11	13 48	20 23	22 01	4 51	6 29	11 49	18 39	0 15	.....	82	18 51.6	-24 35	6.8
Mon May 11/Tue May 12	13 52	20 24	22 02	4 49	6 28	11 54	18 42	1 08	.....	73	19 49.7	-23 53	6.8
Tue May 12/Wed May 13	13 56	20 25	22 04	4 48	6 27	11 59	18 45	1 54	.....	63	20 44.7	-21 59	6.7
Wed May 13/Thu May 14	14 00	20 26	22 05	4 47	6 26	12 04	18 48	2 33	.....	53	21 36.2	-19 07	6.7
Thu May 14/Fri May 15	14 04	20 27	22 06	4 46	6 25	12 09	18 51	3 07	.....	44	22 24.6	-15 30	6.7
Fri May 15/Sat May 16	14 08	20 27	22 07	4 45	6 25	12 15	18 53	3 37	.....	34	23 10.4	-11 22	6.6
Sat May 16/Sun May 17	14 12	20 28	22 08	4 44	6 24	12 20	18 56	4 04	.....	26	23 54.4	- 6 53	6.6
Sun May 17/Mon May 18	14 16	20 29	22 09	4 43	6 23	12 25	18 59	4 30	.....	18	0 37.3	- 2 12	6.6
Mon May 18/Tue May 19	14 20	20 30	22 10	4 42	6 23	12 30	19 02	4 57	.....	11	1 20.1	2 33	6.5
Tue May 19/Wed May 20	14 23	20 30	22 12	4 41	6 22	12 35	19 05	5 24	17 48	6	2 03.5	7 13	6.5
Wed May 20/Thu May 21	14 27	20 31	22 13	4 40	6 21	12 40	19 08	5 53	18 44	2	2 48.3	11 39	6.5
Thu May 21/Fri May 22	14 31	20 32	22 14	4 39	6 21	12 45	19 11	6 26	19 42	0	3 35.1	15 39	6.4
Fri May 22/Sat May 23	14 35	20 33	22 15	4 38	6 20	12 50	19 14	.....	20 41	0	4 24.5	19 02	6.4
Sat May 23/Sun May 24	14 39	20 33	22 16	4 37	6 20	12 55	19 17	.....	21 40	2	5 16.5	21 35	6.4
Sun May 24/Mon May 25	14 43	20 34	22 17	4 36	6 19	13 00	19 20	.....	22 39	6	6 11.0	23 05	6.3
Mon May 25/Tue May 26	14 47	20 35	22 18	4 36	6 19	13 05	19 23	.....	23 35	12	7 07.2	23 22	6.3
Tue May 26/Wed May 27	14 51	20 36	22 19	4 35	6 18	13 10	19 27	.....	0 26	19	8 04.2	22 20	6.3
Wed May 27/Thu May 28	14 55	20 36	22 20	4 34	6 18	13 15	19 30	.....	1 12	29	9 00.9	20 00	6.2
Thu May 28/Fri May 29	14 59	20 37	22 21	4 33	6 17	13 20	19 33	.....	1 53	39	9 56.7	16 27	6.2
Fri May 29/Sat May 30	15 03	20 38	22 22	4 33	6 17	13 24	19 36	.....	2 30	50	10 51.2	11 54	6.2
Sat May 30/Sun May 31	15 07	20 38	22 23	4 32	6 17	13 29	19 40	.....	3 04	62	11 44.7	6 35	6.2
Sun May 31/Mon Jun 01	15 11	20 39	22 24	4 31	6 16	13 34	19 43	.....	3 37	73	12 37.9	0 46	6.1

\*\*\*\*\* 2020 JUNE \*\*\*\*\*

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 Jun 01/Tue Jun 02	15 15	20 39	22 25	4 31	6 16	13 39	19 46	.....	4 10	83	13 31.7	- 5 12	6.1
Tue Jun 02/Wed Jun 03	15 19	20 40	22 25	4 30	6 16	13 44	19 50	.....	4 46	91	14 26.8	-10 58	6.1
Wed Jun 03/Thu Jun 04	15 23	20 41	22 26	4 30	6 16	13 49	19 53	18 31	5 25	97	15 23.9	-16 09	6.1
Thu Jun 04/Fri Jun 05	15 27	20 41	22 27	4 30	6 15	13 53	19 57	19 43	6 08	100	16 23.3	-20 21	6.0
Fri Jun 05/Sat Jun 06	15 31	20 42	22 28	4 29	6 15	13 58	20 00	20 52	.....	100	17 24.3	-23 15	6.0
Sat Jun 06/Sun Jun 07	15 34	20 42	22 29	4 29	6 15	14 03	20 04	21 58	.....	97	18 25.9	-24 39	6.0
Sun Jun 07/Mon Jun 08	15 38	20 43	22 29	4 28	6 15	14 07	20 08	22 56	.....	93	19 26.2	-24 33	6.0
Mon Jun 08/Tue Jun 09	15 42	20 43	22 30	4 28	6 15	14 12	20 11	23 47	.....	86	20 24.0	-23 04	6.0
Tue Jun 09/Wed Jun 10	15 46	20 44	22 31	4 28	6 15	14 17	20 15	0 29	.....	78	21 18.3	-20 28	6.0
Wed Jun 10/Thu Jun 11	15 50	20 44	22 31	4 28	6 15	14 21	20 19	1 06	.....	69	22 09.0	-17 00	5.9
Thu Jun 11/Fri Jun 12	15 54	20 45	22 32	4 28	6 15	14 26	20 23	1 38	.....	60	22 56.6	-12 55	5.9
Fri Jun 12/Sat Jun 13	15 58	20 45	22 32	4 28	6 15	14 30	20 26	2 06	.....	50	23 41.7	- 8 27	5.9
Sat Jun 13/Sun Jun 14	16 02	20 45	22 33	4 27	6 15	14 35	20 30	2 33	.....	41	0 25.3	- 3 45	5.9
Sun Jun 14/Mon Jun 15	16 06	20 46	22 33	4 27	6 15	14 39	20 34	2 59	.....	32	1 08.2	1 02	5.9
Mon Jun 15/Tue Jun 16	16 10	20 46	22 34	4 27	6 15	14 43	20 38	3 26	.....	23	1 51.3	5 45	5.9
Tue Jun 16/Wed Jun 17	16 14	20 46	22 34	4 27	6 15	14 48	20 42	3 54	.....	16	2 35.6	10 16	5.9
Wed Jun 17/Thu Jun 18	16 18	20 47	22 34	4 28	6 15	14 52	20 46	4 26	17 32	9	3 21.8	14 26	5.9
Thu Jun 18/Fri Jun 19	16 22	20 47	22 35	4 28	6 15	14 56	20 50	5 01	18 30	5	4 10.5	18 02	5.9
Fri Jun 19/Sat Jun 20	16 26	20 47	22 35	4 28	6 16	15 00	20 54	5 43	19 30	1	5 02.1	20 52	5.9
Sat Jun 20/Sun Jun 21	16 30	20 47	22 35	4 28	6 16	15 05	20 59	.....	20 30	0	5 56.4	22 42	5.9
Sun Jun 21/Mon Jun 22	16 34	20 48	22 35	4 28	6 16	15 09	21 03	.....	21 28	1	6 52.8	23 19	5.9
Mon Jun 22/Tue Jun 23	16 38	20 48	22 35	4 29	6 16	15 13	21 07	.....	22 22	4	7 50.4	22 37	5.9
Tue Jun 23/Wed Jun 24	16 41	20 48	22 36	4 29	6 17	15 17	21 11	.....	23 11	9	8 47.8	20 34	5.9
Wed Jun 24/Thu Jun 25	16 45	20 48	22 36	4 29	6 17	15 21	21 16	.....	23 54	17	9 44.1	17 17	5.9
Thu Jun 25/Fri Jun 26	16 49	20 48	22 36	4 30	6 17	15 25	21 20	.....	0 32	26	10 38.8	12 57	5.9
Fri Jun 26/Sat Jun 27	16 53	20 48	22 36	4 30	6 18	15 29	21 24	.....	1 06	37	11 32.0	7 50	5.9
Sat Jun 27/Sun Jun 28	16 57	20 48	22 36	4 31	6 18	15 33	21 29	.....	1 39	48	12 24.3	2 13	5.9
Sun Jun 28/Mon Jun 29	17 01	20 48	22 35	4 31	6 18	15 36	21 33	.....	2 12	60	13 16.5	- 3 37	5.9
Mon Jun 29/Tue Jun 30	17 05	20 48	22 35	4 32	6 19	15 40	21 38	.....	2 45	71	14 09.5	- 9 19	5.9
Tue Jun 30/Wed Jul 01	17 09	20 48	22 35	4 32	6 19	15 44	21 42	.....	3 21	81	15 04.3	-14 34	6.0

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.

\*\*\*\*\* 2020 JULY \*\*\*\*\*

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
Wed Jul 01/Thu Jul 02	17 13	20 48	22 35	4 33	6 20	15 48	21 47	.....	4 02	89	16 01.2	-19 02	6.0		
Thu Jul 02/Fri Jul 03	17 17	20 48	22 35	4 34	6 20	15 51	21 51	18 35	4 48	95	17 00.5	-22 23	6.0		
Fri Jul 03/Sat Jul 04	17 21	20 48	22 34	4 34	6 21	15 55	21 56	19 41	5 40	99	18 01.1	-24 22	6.0		
Sat Jul 04/Sun Jul 05	17 25	20 48	22 34	4 35	6 21	15 59	22 01	20 42	.....	100	19 01.9	-24 51	6.0		
Sun Jul 05/Mon Jul 06	17 29	20 48	22 34	4 36	6 22	16 02	22 05	21 36	.....	99	20 01.1	-23 54	6.0		
Mon Jul 06/Tue Jul 07	17 33	20 47	22 33	4 37	6 22	16 06	22 10	22 23	.....	95	20 57.5	-21 41	6.1		
Tue Jul 07/Wed Jul 08	17 37	20 47	22 33	4 37	6 23	16 09	22 15	23 02	.....	90	21 50.4	-18 27	6.1		
Wed Jul 08/Thu Jul 09	17 41	20 47	22 32	4 38	6 23	16 13	22 20	23 37	.....	83	22 39.9	-14 30	6.1		
Thu Jul 09/Fri Jul 10	17 45	20 47	22 32	4 39	6 24	16 16	22 24	0 07	.....	75	23 26.6	-10 03	6.1		
Fri Jul 10/Sat Jul 11	17 49	20 46	22 31	4 40	6 25	16 19	22 29	0 34	.....	66	0 11.2	- 5 20	6.1		
Sat Jul 11/Sun Jul 12	17 52	20 46	22 30	4 41	6 25	16 23	22 34	1 01	.....	57	0 54.6	- 0 31	6.2		
Sun Jul 12/Mon Jul 13	17 56	20 46	22 30	4 42	6 26	16 26	22 39	1 27	.....	47	1 37.8	4 16	6.2		
Mon Jul 13/Tue Jul 14	18 00	20 45	22 29	4 43	6 26	16 29	22 44	1 54	.....	38	2 21.6	8 52	6.2		
Tue Jul 14/Wed Jul 15	18 04	20 45	22 28	4 44	6 27	16 32	22 49	2 24	.....	29	3 07.0	13 09	6.3		
Wed Jul 15/Thu Jul 16	18 08	20 44	22 28	4 44	6 28	16 35	22 54	2 58	.....	21	3 54.6	16 56	6.3		
Thu Jul 16/Fri Jul 17	18 12	20 44	22 27	4 45	6 28	16 39	22 58	3 36	.....	13	4 45.1	20 01	6.3		
Fri Jul 17/Sat Jul 18	18 16	20 43	22 26	4 46	6 29	16 42	23 03	4 21	18 17	7	5 38.6	22 11	6.3		
Sat Jul 18/Sun Jul 19	18 20	20 43	22 25	4 47	6 30	16 45	23 08	5 14	19 16	3	6 34.7	23 12	6.4		
Sun Jul 19/Mon Jul 20	18 24	20 42	22 24	4 49	6 30	16 48	23 13	6 14	20 13	0	7 32.6	22 54	6.4		
Mon Jul 20/Tue Jul 21	18 28	20 42	22 23	4 50	6 31	16 51	23 18	.....	21 04	0	8 30.9	21 13	6.4		
Tue Jul 21/Wed Jul 22	18 32	20 41	22 22	4 51	6 32	16 54	23 23	.....	21 50	3	9 28.5	18 12	6.5		
Wed Jul 22/Thu Jul 23	18 36	20 40	22 21	4 52	6 33	16 57	23 28	.....	22 31	8	10 24.6	14 03	6.5		
Thu Jul 23/Fri Jul 24	18 40	20 40	22 20	4 53	6 33	17 00	23 33	.....	23 08	15	11 19.0	9 01	6.5		
Fri Jul 24/Sat Jul 25	18 44	20 39	22 19	4 54	6 34	17 03	23 38	.....	23 42	24	12 11.9	3 26	6.6		
Sat Jul 25/Sun Jul 26	18 48	20 38	22 18	4 55	6 35	17 05	23 43	.....	0 14	35	13 04.1	- 2 23	6.6		
Sun Jul 26/Mon Jul 27	18 52	20 37	22 17	4 56	6 36	17 08	23 48	.....	0 47	46	13 56.6	- 8 06	6.7		
Mon Jul 27/Tue Jul 28	18 56	20 37	22 16	4 57	6 36	17 11	23 53	.....	1 22	57	14 50.1	-13 25	6.7		
Tue Jul 28/Wed Jul 29	18 59	20 36	22 15	4 58	6 37	17 14	23 59	.....	2 00	68	15 45.4	-18 01	6.7		
Wed Jul 29/Thu Jul 30	19 03	20 35	22 13	4 59	6 38	17 17	0 04	.....	2 43	78	16 42.7	-21 36	6.8		
Thu Jul 30/Fri Jul 31	19 07	20 34	22 12	5 00	6 39	17 19	0 09	17 30	3 32	87	17 41.7	-23 57	6.8		
Fri Jul 31/Sat Aug 01	19 11	20 33	22 11	5 02	6 39	17 22	0 14	18 32	4 26	93	18 41.4	-24 54	6.8		

\*\*\*\*\* 2020 AUGUST \*\*\*\*\*

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
Sat Aug 01/Sun Aug 02	19 15	20 32	22 10	5 03	6 40	17 25	0 19	19 28	5 25	98	19 40.4	-24 25	6.9		
Sun Aug 02/Mon Aug 03	19 19	20 31	22 08	5 04	6 41	17 27	0 24	20 17	6 27	100	20 37.4	-22 36	6.9		
Mon Aug 03/Tue Aug 04	19 23	20 31	22 07	5 05	6 42	17 30	0 29	20 59	.....	99	21 31.5	-19 42	7.0		
Tue Aug 04/Wed Aug 05	19 27	20 30	22 06	5 06	6 42	17 33	0 34	21 35	.....	97	22 22.3	-15 56	7.0		
Wed Aug 05/Thu Aug 06	19 31	20 29	22 05	5 07	6 43	17 35	0 39	22 06	.....	93	23 10.3	-11 34	7.0		
Thu Aug 06/Fri Aug 07	19 35	20 28	22 03	5 08	6 44	17 38	0 44	22 35	.....	87	23 56.0	- 6 52	7.1		
Fri Aug 07/Sat Aug 08	19 39	20 27	22 02	5 09	6 45	17 40	0 49	23 02	.....	80	0 40.1	- 2 00	7.1		
Sat Aug 08/Sun Aug 09	19 43	20 26	22 00	5 10	6 45	17 43	0 54	23 28	.....	72	1 23.6	2 52	7.2		
Sun Aug 09/Mon Aug 10	19 47	20 24	21 59	5 12	6 46	17 45	0 59	23 55	.....	64	2 07.3	7 34	7.2		
Mon Aug 10/Tue Aug 11	19 51	20 23	21 58	5 13	6 47	17 48	1 04	0 23	.....	54	2 52.0	11 58	7.3		
Tue Aug 11/Wed Aug 12	19 55	20 22	21 56	5 14	6 48	17 50	1 09	0 54	.....	45	3 38.6	15 55	7.3		
Wed Aug 12/Thu Aug 13	19 59	20 21	21 55	5 15	6 48	17 53	1 14	1 30	.....	35	4 27.6	19 13	7.3		
Thu Aug 13/Fri Aug 14	20 03	20 20	21 53	5 16	6 49	17 55	1 19	2 12	.....	26	5 19.6	21 41	7.4		
Fri Aug 14/Sat Aug 15	20 07	20 19	21 52	5 17	6 50	17 58	1 24	3 00	.....	18	6 14.3	23 06	7.4		
Sat Aug 15/Sun Aug 16	20 10	20 18	21 50	5 18	6 51	18 00	1 29	3 57	17 59	10	7 11.4	23 16	7.5		
Sun Aug 16/Mon Aug 17	20 14	20 17	21 49	5 19	6 51	18 03	1 34	5 00	18 53	5	8 09.7	22 03	7.5		
Mon Aug 17/Tue Aug 18	20 18	20 15	21 47	5 20	6 52	18 05	1 40	6 08	19 42	1	9 08.1	19 26	7.6		
Tue Aug 18/Wed Aug 19	20 22	20 14	21 46	5 21	6 53	18 08	1 45	.....	20 26	0	10 05.5	15 34	7.6		
Wed Aug 19/Thu Aug 20	20 26	20 13	21 44	5 22	6 54	18 10	1 50	.....	21 05	2	11 01.4	10 40	7.6		
Thu Aug 20/Fri Aug 21	20 30	20 12	21 43	5 23	6 55	18 12	1 55	.....	21 40	6	11 55.9	5 04	7.7		
Fri Aug 21/Sat Aug 22	20 34	20 10	21 41	5 25	6 55	18 15	2 00	.....	22 14	13	12 49.4	- 0 52	7.7		
Sat Aug 22/Sun Aug 23	20 38	20 09	21 40	5 26	6 56	18 17	2 04	.....	22 48	22	13 42.7	- 6 47	7.8		
Sun Aug 23/Mon Aug 24	20 42	20 08	21 38	5 27	6 57	18 20	2 09	.....	23 22	32	14 36.6	-12 19	7.8		
Mon Aug 24/Tue Aug 25	20 46	20 07	21 36	5 28	6 58	18 22	2 14	.....	24 00	43	15 31.8	-17 09	7.9		
Tue Aug 25/Wed Aug 26	20 50	20 05	21 35	5 29	6 58	18 24	2 19	.....	0 42	55	16 28.5	-20 59	7.9		
Wed Aug 26/Thu Aug 27	20 54	20 04	21 33	5 30	6 59	18 27	2 24	.....	1 28	65	17 26.7	-23 37	7.9		
Thu Aug 27/Fri Aug 28	20 58	20 03	21 32	5 31	7 00	18 29	2 29	.....	2 21	75	18 25.6	-24 53	8.0		
Fri Aug 28/Sat Aug 29	21 02	20 01	21 30	5 32	7 01	18 31	2 34	17 23	3 18	84	19 24.0	-24 45	8.0		
Sat Aug 29/Sun Aug 30	21 06	20 00	21 28	5 33	7 01	18 34	2 39	18 14	4 18	91	20 20.7	-23 17	8.1		
Sun Aug 30/Mon Aug 31	21 10	19 59	21 27	5 34	7 02	18 36	2 44	18 57	5 18	96	21 15.0	-20 41	8.1		
Mon Aug 31/Tue Sep 01	21 14	19 57	21 25	5 35	7 03	18 38	2 49	19 34	6 19	99	22 06.3	-17 09	8.2		

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.

\*\*\*\*\* 2020 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	
Tue Sep 01/Wed Sep 02	21 17	19 56	21 24	5 36	7 03	18 41	2 54	20 07	.....	100	22 54.9	-12 56	8.2
Wed Sep 02/Thu Sep 03	21 21	19 54	21 22	5 36	7 04	18 43	2 59	20 36	.....	99	23 41.2	- 8 16	8.2
Thu Sep 03/Fri Sep 04	21 25	19 53	21 20	5 37	7 05	18 45	3 04	21 04	.....	96	0 25.9	- 3 22	8.3
Fri Sep 04/Sat Sep 05	21 29	19 52	21 19	5 38	7 06	18 48	3 09	21 30	.....	91	1 09.7	1 34	8.3
Sat Sep 05/Sun Sep 06	21 33	19 50	21 17	5 39	7 06	18 50	3 13	21 56	.....	85	1 53.4	6 24	8.4
Sun Sep 06/Mon Sep 07	21 37	19 49	21 16	5 40	7 07	18 52	3 18	22 24	.....	78	2 37.9	10 56	8.4
Mon Sep 07/Tue Sep 08	21 41	19 47	21 14	5 41	7 08	18 55	3 23	22 53	.....	70	3 23.7	15 03	8.5
Tue Sep 08/Wed Sep 09	21 45	19 46	21 12	5 42	7 09	18 57	3 28	23 27	.....	61	4 11.7	18 34	8.5
Wed Sep 09/Thu Sep 10	21 49	19 44	21 11	5 43	7 09	18 59	3 33	0 05	.....	51	5 02.1	21 18	8.5
Thu Sep 10/Fri Sep 11	21 53	19 43	21 09	5 44	7 10	19 02	3 38	0 49	.....	41	5 55.2	23 03	8.6
Fri Sep 11/Sat Sep 12	21 57	19 42	21 08	5 45	7 11	19 04	3 43	1 41	.....	32	6 50.6	23 39	8.6
Sat Sep 12/Sun Sep 13	22 01	19 40	21 06	5 46	7 12	19 06	3 47	2 40	.....	22	7 47.7	22 56	8.7
Sun Sep 13/Mon Sep 14	22 05	19 39	21 04	5 46	7 12	19 09	3 52	3 45	17 31	14	8 45.4	20 51	8.7
Mon Sep 14/Tue Sep 15	22 09	19 37	21 03	5 47	7 13	19 11	3 57	4 55	18 17	7	9 42.8	17 26	8.7
Tue Sep 15/Wed Sep 16	22 13	19 36	21 01	5 48	7 14	19 13	4 02	6 06	18 58	2	10 39.3	12 51	8.8
Wed Sep 16/Thu Sep 17	22 17	19 34	21 00	5 49	7 14	19 16	4 07	7 18	19 35	0	11 34.7	7 23	8.8
Thu Sep 17/Fri Sep 18	22 21	19 33	20 58	5 50	7 15	19 18	4 11	.....	20 10	1	12 29.3	1 22	8.9
Fri Sep 18/Sat Sep 19	22 24	19 31	20 57	5 51	7 16	19 21	4 16	.....	20 44	5	13 23.8	- 4 47	8.9
Sat Sep 19/Sun Sep 20	22 28	19 30	20 55	5 52	7 17	19 23	4 21	.....	21 19	11	14 18.9	-10 41	8.9
Sun Sep 20/Mon Sep 21	22 32	19 29	20 53	5 52	7 17	19 25	4 26	.....	21 57	19	15 15.1	-15 55	9.0
Mon Sep 21/Tue Sep 22	22 36	19 27	20 52	5 53	7 18	19 28	4 31	.....	22 38	29	16 12.7	-20 11	9.0
Tue Sep 22/Wed Sep 23	22 40	19 26	20 50	5 54	7 19	19 30	4 35	.....	23 24	40	17 11.5	-23 13	9.1
Wed Sep 23/Thu Sep 24	22 44	19 24	20 49	5 55	7 20	19 33	4 40	.....	0 16	51	18 10.9	-24 50	9.1
Thu Sep 24/Fri Sep 25	22 48	19 23	20 47	5 56	7 20	19 35	4 45	.....	1 12	61	19 09.7	-25 02	9.1
Fri Sep 25/Sat Sep 26	22 52	19 21	20 46	5 57	7 21	19 37	4 50	.....	2 11	71	20 06.7	-23 52	9.2
Sat Sep 26/Sun Sep 27	22 56	19 20	20 44	5 57	7 22	19 40	4 54	16 58	3 12	80	21 01.1	-21 31	9.2
Sun Sep 27/Mon Sep 28	23 00	19 18	20 43	5 58	7 23	19 42	4 59	17 36	4 12	87	21 52.7	-18 11	9.3
Mon Sep 28/Tue Sep 29	23 04	19 17	20 41	5 59	7 23	19 45	5 04	18 10	5 11	93	22 41.4	-14 08	9.3
Tue Sep 29/Wed Sep 30	23 08	19 16	20 40	6 00	7 24	19 47	5 09	18 39	6 08	97	23 27.9	- 9 34	9.3
Wed Sep 30/Thu Oct 01	23 12	19 14	20 38	6 01	7 25	19 50	5 13	19 07	7 04	99	0 12.8	- 4 41	9.4

\*\*\*\*\* 2020 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	
Thu Oct 01/Fri Oct 02	23 16	19 13	20 37	6 02	7 26	19 52	5 18	19 33	.....	100	0 56.7	0 19	9.4
Fri Oct 02/Sat Oct 03	23 20	19 11	20 36	6 02	7 27	19 55	5 23	19 59	.....	98	1 40.5	5 15	9.4
Sat Oct 03/Sun Oct 04	23 24	19 10	20 34	6 03	7 27	19 57	5 28	20 26	.....	95	2 24.8	9 57	9.5
Sun Oct 04/Mon Oct 05	23 28	19 09	20 33	6 04	7 28	20 00	5 32	20 54	.....	90	3 10.4	14 16	9.5
Mon Oct 05/Tue Oct 06	23 32	19 07	20 31	6 05	7 29	20 02	5 37	21 26	.....	84	3 57.8	18 00	9.6
Tue Oct 06/Wed Oct 07	23 35	19 06	20 30	6 06	7 30	20 05	5 42	22 02	.....	76	4 47.4	20 59	9.6
Wed Oct 07/Thu Oct 08	23 39	19 04	20 29	6 06	7 31	20 07	5 47	22 43	.....	67	5 39.3	23 03	9.6
Thu Oct 08/Fri Oct 09	23 43	19 03	20 27	6 07	7 31	20 10	5 51	23 31	.....	58	6 33.4	24 00	9.7
Fri Oct 09/Sat Oct 10	23 47	19 02	20 26	6 08	7 32	20 13	5 56	0 26	.....	47	7 28.9	23 42	9.7
Sat Oct 10/Sun Oct 11	23 51	19 00	20 25	6 09	7 33	20 15	6 01	1 27	.....	37	8 25.2	22 06	9.7
Sun Oct 11/Mon Oct 12	23 55	18 59	20 23	6 10	7 34	20 18	6 06	2 32	.....	27	9 21.3	19 13	9.8
Mon Oct 12/Tue Oct 13	23 59	18 58	20 22	6 10	7 35	20 21	6 10	3 41	16 50	18	10 16.9	15 07	9.8
Tue Oct 13/Wed Oct 14	0 03	18 56	20 21	6 11	7 36	20 23	6 15	4 52	17 28	10	11 11.7	10 01	9.8
Wed Oct 14/Thu Oct 15	0 07	18 55	20 20	6 12	7 36	20 26	6 20	6 04	18 03	4	12 06.0	4 12	9.9
Thu Oct 15/Fri Oct 16	0 11	18 54	20 18	6 13	7 37	20 29	6 25	7 16	18 38	1	13 00.4	- 2 01	9.9
Fri Oct 16/Sat Oct 17	0 15	18 53	20 17	6 14	7 38	20 31	6 29	.....	19 12	0	13 55.7	- 8 11	9.9
Sat Oct 17/Sun Oct 18	0 19	18 51	20 16	6 14	7 39	20 34	6 34	.....	19 49	3	14 52.4	-13 55	10.0
Sun Oct 18/Mon Oct 19	0 23	18 50	20 15	6 15	7 40	20 37	6 39	.....	20 30	8	15 50.9	-18 46	10.0
Mon Oct 19/Tue Oct 20	0 27	18 49	20 14	6 16	7 41	20 40	6 44	.....	21 15	16	16 51.1	-22 24	10.0
Tue Oct 20/Wed Oct 21	0 31	18 48	20 12	6 17	7 42	20 42	6 48	.....	22 06	25	17 52.2	-24 35	10.1
Wed Oct 21/Thu Oct 22	0 35	18 47	20 11	6 18	7 42	20 45	6 53	.....	23 03	35	18 52.7	-25 14	10.1
Thu Oct 22/Fri Oct 23	0 39	18 45	20 10	6 18	7 43	20 48	6 58	.....	0 03	46	19 51.3	-24 25	10.1
Fri Oct 23/Sat Oct 24	0 42	18 44	20 09	6 19	7 44	20 51	7 03	.....	1 04	56	20 47.1	-22 19	10.2
Sat Oct 24/Sun Oct 25	0 46	18 43	20 08	6 20	7 45	20 54	7 07	.....	2 05	66	21 39.6	-19 12	10.2
Sun Oct 25/Mon Oct 26	0 50	18 42	20 07	6 21	7 46	20 57	7 12	16 13	3 05	75	22 28.9	-15 17	10.2
Mon Oct 26/Tue Oct 27	0 54	18 41	20 06	6 22	7 47	21 00	7 17	16 44	4 02	83	23 15.7	-10 49	10.3
Tue Oct 27/Wed Oct 28	0 58	18 40	20 05	6 22	7 48	21 03	7 22	17 11	4 58	89	0 00.6	- 6 00	10.3
Wed Oct 28/Thu Oct 29	1 02	18 39	20 04	6 23	7 49	21 06	7 26	17 37	5 54	95	0 44.4	- 1 00	10.3
Thu Oct 29/Fri Oct 30	1 06	18 38	20 03	6 24	7 50	21 09	7 31	18 03	6 49	98	1 28.0	4 00	10.3
Fri Oct 30/Sat Oct 31	1 10	18 37	20 02	6 25	7 51	21 12	7 36	18 29	7 45	100	2 12.2	8 51	10.4
Sat Oct 31/Sun Nov 01*	1 14	18 36	20 01	5 26	6 52	21 15	7 41	18 57	.....	100	2 57.6	13 21	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.

\*\*\*\*\* 2020 NOVEMBER \*\*\*\*\*

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	
Sun Nov 01/Mon Nov 02	2 18	17 35	19 01	5 27	6 53	21 18	7 46	18 27	.....	98	3 46.1	17 30	10.4
Mon Nov 02/Tue Nov 03	2 22	17 34	19 00	5 27	6 54	21 21	7 50	19 02	.....	94	4 35.7	20 45	10.5
Tue Nov 03/Wed Nov 04	2 26	17 33	18 59	5 28	6 55	21 24	7 55	19 41	.....	88	5 27.5	23 04	10.5
Wed Nov 04/Thu Nov 05	2 30	17 32	18 58	5 29	6 55	21 27	8 00	20 27	.....	81	6 21.4	24 18	10.5
Thu Nov 05/Fri Nov 06	2 34	17 31	18 57	5 30	6 56	21 30	8 05	21 18	.....	73	7 16.5	24 19	10.5
Fri Nov 06/Sat Nov 07	2 38	17 30	18 57	5 31	6 57	21 34	8 09	22 16	.....	63	8 12.1	23 02	10.6
Sat Nov 07/Sun Nov 08	2 42	17 29	18 56	5 32	6 58	21 37	8 14	23 18	.....	53	9 07.4	20 30	10.6
Sun Nov 08/Mon Nov 09	2 46	17 28	18 55	5 32	6 59	21 40	8 19	0 24	.....	42	10 01.8	16 48	10.6
Mon Nov 09/Tue Nov 10	2 50	17 28	18 55	5 33	7 00	21 43	8 24	1 31	.....	31	10 55.2	12 05	10.6
Tue Nov 10/Wed Nov 11	2 54	17 27	18 54	5 34	7 01	21 47	8 29	2 40	.....	21	11 48.1	6 35	10.7
Wed Nov 11/Thu Nov 12	2 58	17 26	18 53	5 35	7 02	21 50	8 33	3 50	.....	12	12 41.0	0 36	10.7
Thu Nov 12/Fri Nov 13	3 01	17 25	18 53	5 36	7 03	21 53	8 38	5 02	16 06	6	13 34.7	- 5 34	10.7
Fri Nov 13/Sat Nov 14	3 05	17 25	18 52	5 37	7 04	21 57	8 43	6 15	16 41	1	14 30.2	-11 31	10.7
Sat Nov 14/Sun Nov 15	3 09	17 24	18 52	5 37	7 05	22 00	8 48	7 30	17 19	0	15 28.0	-16 48	10.8
Sun Nov 15/Mon Nov 16	3 13	17 23	18 51	5 38	7 06	22 04	8 53	.....	18 02	2	16 28.2	-21 02	10.8
Mon Nov 16/Tue Nov 17	3 17	17 23	18 51	5 39	7 07	22 07	8 57	.....	18 51	6	17 30.2	-23 52	10.8
Tue Nov 17/Wed Nov 18	3 21	17 22	18 50	5 40	7 08	22 11	9 02	.....	19 47	12	18 32.5	-25 06	10.8
Wed Nov 18/Thu Nov 19	3 25	17 22	18 50	5 41	7 09	22 14	9 07	.....	20 48	20	19 33.4	-24 45	10.8
Thu Nov 19/Fri Nov 20	3 29	17 21	18 50	5 42	7 10	22 18	9 12	.....	21 51	30	20 31.4	-22 59	10.9
Fri Nov 20/Sat Nov 21	3 33	17 21	18 49	5 42	7 11	22 21	9 16	.....	22 54	40	21 25.7	-20 05	10.9
Sat Nov 21/Sun Nov 22	3 37	17 20	18 49	5 43	7 12	22 25	9 21	.....	23 56	50	22 16.4	-16 19	10.9
Sun Nov 22/Mon Nov 23	3 41	17 20	18 49	5 44	7 13	22 29	9 26	.....	0 55	60	23 03.9	-11 56	10.9
Mon Nov 23/Tue Nov 24	3 45	17 19	18 48	5 45	7 14	22 32	9 31	.....	1 52	69	23 49.2	- 7 10	10.9
Tue Nov 24/Wed Nov 25	3 49	17 19	18 48	5 46	7 15	22 36	9 35	.....	2 48	77	0 33.0	- 2 12	11.0
Wed Nov 25/Thu Nov 26	3 53	17 19	18 48	5 47	7 16	22 40	9 40	.....	3 43	85	1 16.3	2 49	11.0
Thu Nov 26/Fri Nov 27	3 57	17 18	18 48	5 47	7 17	22 44	9 45	15 33	4 38	91	2 00.1	7 43	11.0
Fri Nov 27/Sat Nov 28	4 01	17 18	18 48	5 48	7 18	22 47	9 50	16 00	5 34	96	2 45.1	12 21	11.0
Sat Nov 28/Sun Nov 29	4 05	17 18	18 48	5 49	7 19	22 51	9 54	16 29	6 32	99	3 32.0	16 32	11.0
Sun Nov 29/Mon Nov 30	4 09	17 18	18 47	5 50	7 20	22 55	9 59	17 02	7 30	100	4 21.2	20 03	11.0
Mon Nov 30/Tue Dec 01	4 12	17 18	18 47	5 51	7 20	22 59	10 04	17 40	8 28	99	5 13.0	22 42	11.1

\*\*\*\*\* 2020 DECEMBER \*\*\*\*\*

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 Dec 01/Wed Dec 02	4 16	17 18	18 47	5 51	7 21	23 03	10 09	18 24	.....	97	6 07.1	24 16	11.1
Wed Dec 02/Thu Dec 03	4 20	17 17	18 47	5 52	7 22	23 07	10 13	19 14	.....	92	7 02.7	24 37	11.1
Thu Dec 03/Fri Dec 04	4 24	17 17	18 47	5 53	7 23	23 11	10 18	20 10	.....	86	7 58.7	23 40	11.1
Fri Dec 04/Sat Dec 05	4 28	17 17	18 48	5 54	7 24	23 15	10 23	21 11	.....	78	8 54.2	21 26	11.1
Sat Dec 05/Sun Dec 06	4 32	17 17	18 48	5 54	7 25	23 19	10 27	22 15	.....	68	9 48.5	18 01	11.1
Sun Dec 06/Mon Dec 07	4 36	17 17	18 48	5 55	7 25	23 23	10 32	23 20	.....	58	10 41.3	13 37	11.1
Mon Dec 07/Tue Dec 08	4 40	17 17	18 48	5 56	7 26	23 27	10 37	0 26	.....	47	11 32.9	8 27	11.1
Tue Dec 08/Wed Dec 09	4 44	17 18	18 48	5 56	7 27	23 31	10 41	1 33	.....	36	12 24.1	2 44	11.1
Wed Dec 09/Thu Dec 10	4 48	17 18	18 48	5 57	7 28	23 35	10 46	2 41	.....	25	13 15.7	- 3 14	11.1
Thu Dec 10/Fri Dec 11	4 52	17 18	18 49	5 58	7 29	23 40	10 51	3 51	.....	16	14 08.7	- 9 08	11.2
Fri Dec 11/Sat Dec 12	4 56	17 18	18 49	5 58	7 29	23 44	10 55	5 03	.....	8	15 04.0	-14 36	11.2
Sat Dec 12/Sun Dec 13	5 00	17 18	18 49	5 59	7 30	23 48	11 00	6 17	15 50	3	16 02.2	-19 16	11.2
Sun Dec 13/Mon Dec 14	5 04	17 19	18 49	6 00	7 31	23 52	11 04	7 29	16 35	0	17 03.0	-22 43	11.2
Mon Dec 14/Tue Dec 15	5 08	17 19	18 50	6 00	7 31	23 57	11 09	.....	17 28	0	18 05.6	-24 41	11.2
Tue Dec 15/Wed Dec 16	5 12	17 19	18 50	6 01	7 32	0 01	11 14	.....	18 27	3	19 08.0	-25 01	11.2
Wed Dec 16/Thu Dec 17	5 16	17 20	18 50	6 02	7 33	0 05	11 18	.....	19 31	8	20 08.4	-23 48	11.2
Thu Dec 17/Fri Dec 18	5 19	17 20	18 51	6 02	7 33	0 10	11 23	.....	20 37	15	21 05.4	-21 15	11.2
Fri Dec 18/Sat Dec 19	5 23	17 20	18 51	6 03	7 34	0 14	11 27	.....	21 41	23	21 58.6	-17 41	11.2
Sat Dec 19/Sun Dec 20	5 27	17 21	18 52	6 03	7 34	0 18	11 32	.....	22 43	33	22 48.0	-13 25	11.2
Sun Dec 20/Mon Dec 21	5 31	17 21	18 52	6 04	7 35	0 23	11 36	.....	23 42	42	23 34.5	- 8 42	11.2
Mon Dec 21/Tue Dec 22	5 35	17 22	18 53	6 04	7 35	0 27	11 40	.....	0 39	52	0 19.0	- 3 45	11.2
Tue Dec 22/Wed Dec 23	5 39	17 22	18 53	6 05	7 36	0 32	11 45	.....	1 34	61	1 02.5	1 17	11.2
Wed Dec 23/Thu Dec 24	5 43	17 23	18 54	6 05	7 36	0 36	11 49	.....	2 30	70	1 45.9	6 14	11.2
Thu Dec 24/Fri Dec 25	5 47	17 23	18 54	6 05	7 36	0 41	11 54	.....	3 25	79	2 30.2	10 57	11.2
Fri Dec 25/Sat Dec 26	5 51	17 24	18 55	6 06	7 37	0 45	11 58	.....	4 22	86	3 16.2	15 17	11.2
Sat Dec 26/Sun Dec 27	5 55	17 25	18 56	6 06	7 37	0 50	12 02	.....	5 20	92	4 04.6	19 02	11.2
Sun Dec 27/Mon Dec 28	5 59	17 25	18 56	6 07	7 37	0 54	12 07	15 38	6 19	96	4 55.8	22 00	11.2
Mon Dec 28/Tue Dec 29	6 03	17 26	18 57	6 07	7 38	0 59	12 11	16 20	7 17	99	5 49.7	23 57	11.2
Tue Dec 29/Wed Dec 30	6 07	17 27	18 57	6 07	7 38	1 03	12 15	17 08	8 12	100	6 45.7	24 41	11.2
Wed Dec 30/Thu Dec 31	6 11	17 27	18 58	6 08	7 38	1 08	12 19	18 03	.....	99	7 42.8	24 06	11.2
Thu Dec 31/Fri Jan 01	6 15	17 28	18 59	6 08	7 38	1 13	12 23	19 03	.....	95	8 39.6	22 10	11.1