

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:

***** 2018 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 2018, 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 18	0 31	Dec 26	3 20	Jan 01	20 25	Jan 08	16 27
Jan 16	20 18	Jan 24	16 21	Jan 31	7 28	Feb 07	9 56
Feb 15	15 07	Feb 23	2 09	Mar 01	18 52	Mar 09	5 23
Mar 17	8 14	Mar 24	10 36	Mar 31	7 38	Apr 08	2 21
Apr 15	21 00	Apr 22	16 47	Apr 29	19 59	May 07	21 12
May 15	6 50	May 21	22 51	May 29	9 21	Jun 06	13 34
Jun 13	14 45	Jun 20	5 53	Jun 27	23 55	Jul 06	2 53
Jul 12	21 50	Jul 19	14 54	Jul 27	15 22	Aug 04	13 20
Aug 11	4 59	Aug 18	2 50	Aug 26	6 58	Sep 02	21 39
Sep 09	13 03	Sep 16	18 16	Sep 24	21 55	Oct 02	4 47
Oct 08	22 48	Oct 16	13 02	Oct 24	11 48	Oct 31	11 42
Nov 07	10 03	Nov 15	8 54	Nov 22	23 41	Nov 29	18 21
Dec 07	1 22	Dec 15	5 50	Dec 22	11 50	Dec 29	3 37
Jan 05	19 30	Jan 14	0 46	Jan 20	23 17	Jan 27	15 12

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.

***** 2018 JANUARY *****

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 Jan 01/Tue Jan 02	6 18	17 29	18 59	6 08	7 39	1 16	12 26	17 26	8 00	100	7 00.0	19 44	11.1
Tue Jan 02/Wed Jan 03	6 21	17 29	19 00	6 08	7 39	1 21	12 31	18 33	.....	98	8 05.4	18 36	11.1
Wed Jan 03/Thu Jan 04	6 25	17 30	19 01	6 08	7 39	1 25	12 35	19 42	.....	93	9 08.4	16 07	11.1
Thu Jan 04/Fri Jan 05	6 29	17 31	19 02	6 08	7 39	1 30	12 39	20 50	.....	86	10 07.8	12 37	11.1
Fri Jan 05/Sat Jan 06	6 33	17 32	19 02	6 09	7 39	1 35	12 43	21 57	.....	77	11 03.5	8 29	11.1
Sat Jan 06/Sun Jan 07	6 37	17 33	19 03	6 09	7 39	1 39	12 47	23 01	.....	67	11 55.8	4 01	11.1
Sun Jan 07/Mon Jan 08	6 41	17 34	19 04	6 09	7 39	1 44	12 51	0 02	.....	56	12 45.7	- 0 29	11.1
Mon Jan 08/Tue Jan 09	6 45	17 35	19 05	6 09	7 39	1 49	12 55	1 01	.....	46	13 33.9	- 4 49	11.1
Tue Jan 09/Wed Jan 10	6 49	17 35	19 05	6 09	7 39	1 54	12 59	1 58	.....	36	14 21.2	- 8 51	11.1
Wed Jan 10/Thu Jan 11	6 53	17 36	19 06	6 09	7 39	1 58	13 03	2 54	.....	27	15 08.3	-12 25	11.0
Thu Jan 11/Fri Jan 12	6 57	17 37	19 07	6 09	7 38	2 03	13 07	3 49	.....	19	15 55.8	-15 26	11.0
Fri Jan 12/Sat Jan 13	7 01	17 38	19 08	6 09	7 38	2 08	13 11	4 43	.....	12	16 43.9	-17 47	11.0
Sat Jan 13/Sun Jan 14	7 05	17 39	19 09	6 09	7 38	2 13	13 15	5 35	.....	7	17 32.7	-19 24	11.0
Sun Jan 14/Mon Jan 15	7 09	17 40	19 09	6 09	7 38	2 17	13 18	6 25	15 58	3	18 22.2	-20 12	11.0
Mon Jan 15/Tue Jan 16	7 13	17 41	19 10	6 08	7 37	2 22	13 22	7 12	16 45	1	19 12.0	-20 08	11.0
Tue Jan 16/Wed Jan 17	7 17	17 42	19 11	6 08	7 37	2 27	13 26	7 56	17 36	0	20 01.6	-19 13	11.0
Wed Jan 17/Thu Jan 18	7 21	17 43	19 12	6 08	7 37	2 32	13 30	.....	18 29	1	20 50.9	-17 28	10.9
Thu Jan 18/Fri Jan 19	7 25	17 44	19 13	6 08	7 36	2 37	13 33	.....	19 23	4	21 39.5	-14 58	10.9
Fri Jan 19/Sat Jan 20	7 29	17 45	19 14	6 07	7 36	2 41	13 37	.....	20 20	9	22 27.4	-11 49	10.9
Sat Jan 20/Sun Jan 21	7 32	17 46	19 15	6 07	7 36	2 46	13 41	.....	21 16	15	23 14.9	- 8 07	10.9
Sun Jan 21/Mon Jan 22	7 36	17 47	19 15	6 07	7 35	2 51	13 44	.....	22 14	23	0 02.3	- 4 02	10.9
Mon Jan 22/Tue Jan 23	7 40	17 48	19 16	6 06	7 35	2 56	13 48	.....	23 13	32	0 50.3	0 19	10.8
Tue Jan 23/Wed Jan 24	7 44	17 49	19 17	6 06	7 34	3 01	13 51	.....	0 13	42	1 39.6	4 44	10.8
Wed Jan 24/Thu Jan 25	7 48	17 50	19 18	6 06	7 34	3 06	13 55	.....	1 16	53	2 31.0	9 03	10.8
Thu Jan 25/Fri Jan 26	7 52	17 51	19 19	6 05	7 33	3 10	13 58	.....	2 20	64	3 25.3	13 00	10.8
Fri Jan 26/Sat Jan 27	7 56	17 52	19 20	6 05	7 32	3 15	14 02	.....	3 27	74	4 23.0	16 18	10.7
Sat Jan 27/Sun Jan 28	8 00	17 53	19 21	6 04	7 32	3 20	14 05	.....	4 33	84	5 24.0	18 38	10.7
Sun Jan 28/Mon Jan 29	8 04	17 54	19 22	6 04	7 31	3 25	14 09	.....	5 38	92	6 27.8	19 42	10.7
Mon Jan 29/Tue Jan 30	8 08	17 55	19 23	6 03	7 30	3 30	14 12	16 07	6 38	97	7 32.8	19 20	10.7
Tue Jan 30/Wed Jan 31	8 12	17 56	19 23	6 03	7 30	3 35	14 15	17 15	7 32	100	8 37.1	17 31	10.7
Wed Jan 31/Thu Feb 01	8 16	17 57	19 24	6 02	7 29	3 39	14 19	18 24	.....	99	9 39.1	14 27	10.6

***** 2018 FEBRUARY *****

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 Feb 01/Fri Feb 02	8 20	17 58	19 25	6 01	7 28	3 44	14 22	19 34	.....	96	10 38.0	10 29	10.6
Fri Feb 02/Sat Feb 03	8 24	17 59	19 26	6 01	7 27	3 49	14 25	20 41	.....	90	11 33.7	5 59	10.6
Sat Feb 03/Sun Feb 04	8 28	18 00	19 27	6 00	7 26	3 54	14 29	21 46	.....	82	12 26.4	1 18	10.6
Sun Feb 04/Mon Feb 05	8 32	18 01	19 28	5 59	7 26	3 59	14 32	22 48	.....	73	13 17.0	- 3 17	10.5
Mon Feb 05/Tue Feb 06	8 36	18 02	19 29	5 59	7 25	4 04	14 35	23 48	.....	63	14 06.1	- 7 34	10.5
Tue Feb 06/Wed Feb 07	8 39	18 03	19 30	5 58	7 24	4 08	14 38	0 45	.....	53	14 54.6	-11 24	10.5
Wed Feb 07/Thu Feb 08	8 43	18 04	19 31	5 57	7 23	4 13	14 41	1 42	.....	44	15 42.8	-14 40	10.4
Thu Feb 08/Fri Feb 09	8 47	18 05	19 31	5 56	7 22	4 18	14 45	2 37	.....	34	16 31.3	-17 14	10.4
Fri Feb 09/Sat Feb 10	8 51	18 06	19 32	5 55	7 21	4 23	14 48	3 30	.....	26	17 20.3	-19 04	10.4
Sat Feb 10/Sun Feb 11	8 55	18 07	19 33	5 54	7 20	4 28	14 51	4 20	.....	18	18 09.7	-20 06	10.4
Sun Feb 11/Mon Feb 12	8 59	18 08	19 34	5 54	7 19	4 32	14 54	5 08	.....	11	18 59.5	-20 16	10.3
Mon Feb 12/Tue Feb 13	9 03	18 09	19 35	5 53	7 18	4 37	14 57	5 53	.....	6	19 49.3	-19 33	10.3
Tue Feb 13/Wed Feb 14	9 07	18 10	19 36	5 52	7 17	4 42	15 00	6 35	16 22	2	20 38.8	-18 01	10.3
Wed Feb 14/Thu Feb 15	9 11	18 11	19 37	5 51	7 16	4 47	15 03	7 13	17 17	0	21 27.8	-15 41	10.2
Thu Feb 15/Fri Feb 16	9 15	18 12	19 38	5 50	7 15	4 52	15 06	7 49	18 13	0	22 16.3	-12 39	10.2
Fri Feb 16/Sat Feb 17	9 19	18 13	19 38	5 49	7 14	4 57	15 09	.....	19 10	2	23 04.2	- 9 02	10.2
Sat Feb 17/Sun Feb 18	9 23	18 14	19 39	5 48	7 13	5 01	15 12	.....	20 09	5	23 51.9	- 5 00	10.1
Sun Feb 18/Mon Feb 19	9 27	18 15	19 40	5 47	7 11	5 06	15 14	.....	21 08	11	0 39.8	- 0 41	10.1
Mon Feb 19/Tue Feb 20	9 31	18 16	19 41	5 46	7 10	5 11	15 17	.....	22 08	18	1 28.6	3 44	10.1
Tue Feb 20/Wed Feb 21	9 35	18 17	19 42	5 44	7 09	5 16	15 20	.....	23 09	27	2 18.8	8 02	10.0
Wed Feb 21/Thu Feb 22	9 39	18 18	19 43	5 43	7 08	5 21	15 23	.....	0 12	37	3 11.2	12 01	10.0
Thu Feb 22/Fri Feb 23	9 43	18 19	19 44	5 42	7 07	5 25	15 26	.....	1 16	48	4 06.2	15 25	10.0
Fri Feb 23/Sat Feb 24	9 47	18 20	19 45	5 41	7 06	5 30	15 29	.....	2 20	60	5 04.0	17 59	9.9
Sat Feb 24/Sun Feb 25	9 50	18 21	19 45	5 40	7 04	5 35	15 31	.....	3 23	71	6 04.5	19 26	9.9
Sun Feb 25/Mon Feb 26	9 54	18 22	19 46	5 39	7 03	5 40	15 34	.....	4 23	81	7 06.7	19 37	9.9
Mon Feb 26/Tue Feb 27	9 58	18 23	19 47	5 38	7 02	5 45	15 37	.....	5 18	89	8 09.3	18 25	9.8
Tue Feb 27/Wed Feb 28	10 02	18 24	19 48	5 36	7 01	5 50	15 39	.....	6 08	96	9 10.9	15 55	9.8
Wed Feb 28/Thu Mar 01	10 06	18 24	19 49	5 35	6 59	5 54	15 42	17 10	6 52	99	10 10.5	12 22	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.
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***** 2018 MARCH *****

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
Thu Mar 01/Fri Mar 02	10 10	18 25	19 50	5 34	6 58	5 59	15 45	18 18	7 32	100	11 07.6	8 03	9.7
Fri Mar 02/Sat Mar 03	10 14	18 26	19 51	5 32	6 57	6 04	15 48	19 25	.....	98	12 02.3	3 21	9.7
Sat Mar 03/Sun Mar 04	10 18	18 27	19 51	5 31	6 55	6 09	15 50	20 29	.....	93	12 54.8	- 1 26	9.7
Sun Mar 04/Mon Mar 05	10 22	18 28	19 52	5 30	6 54	6 14	15 53	21 31	.....	87	13 45.9	- 6 00	9.6
Mon Mar 05/Tue Mar 06	10 26	18 29	19 53	5 29	6 53	6 18	15 55	22 32	.....	79	14 36.0	-10 10	9.6
Tue Mar 06/Wed Mar 07	10 30	18 30	19 54	5 27	6 51	6 23	15 58	23 30	.....	70	15 25.6	-13 45	9.6
Wed Mar 07/Thu Mar 08	10 34	18 31	19 55	5 26	6 50	6 28	16 01	0 27	.....	61	16 15.2	-16 39	9.5
Thu Mar 08/Fri Mar 09	10 38	18 32	19 56	5 24	6 49	6 33	16 03	1 21	.....	51	17 05.0	-18 46	9.5
Fri Mar 09/Sat Mar 10	10 42	18 32	19 57	5 23	6 47	6 38	16 06	2 14	.....	42	17 54.9	-20 03	9.4
Sat Mar 10/Sun Mar 11*	10 46	18 33	19 58	6 22	7 46	6 43	16 08	4 03	.....	33	18 45.0	-20 28	9.4
Sun Mar 11/Mon Mar 12	9 49	19 34	20 58	6 20	7 45	6 47	16 11	4 49	.....	25	19 32.2	-20 00	9.4
Mon Mar 12/Tue Mar 13	9 53	19 35	20 59	6 19	7 43	6 52	16 13	5 31	.....	17	20 21.8	-18 44	9.3
Tue Mar 13/Wed Mar 14	9 57	19 36	21 00	6 17	7 42	6 57	16 16	6 11	.....	11	21 11.0	-16 39	9.3
Wed Mar 14/Thu Mar 15	10 01	19 37	21 01	6 16	7 40	7 02	16 18	6 48	17 03	6	21 59.8	-13 49	9.2
Thu Mar 15/Fri Mar 16	10 05	19 37	21 02	6 15	7 39	7 07	16 21	7 23	18 01	2	22 48.1	-10 21	9.2
Fri Mar 16/Sat Mar 17	10 09	19 38	21 03	6 13	7 38	7 12	16 23	.....	18 59	0	23 36.3	- 6 22	9.2
Sat Mar 17/Sun Mar 18	10 13	19 39	21 04	6 12	7 36	7 16	16 26	.....	19 59	1	0 24.8	- 2 02	9.1
Sun Mar 18/Mon Mar 19	10 17	19 40	21 05	6 10	7 35	7 21	16 28	.....	21 00	3	1 14.0	2 28	9.1
Mon Mar 19/Tue Mar 20	10 21	19 41	21 06	6 09	7 33	7 26	16 31	.....	22 02	8	2 04.4	6 55	9.1
Tue Mar 20/Wed Mar 21	10 25	19 42	21 06	6 07	7 32	7 31	16 33	.....	23 05	14	2 56.7	11 04	9.0
Wed Mar 21/Thu Mar 22	10 29	19 42	21 07	6 06	7 31	7 36	16 35	.....	0 10	23	3 51.2	14 41	9.0
Thu Mar 22/Fri Mar 23	10 33	19 43	21 08	6 04	7 29	7 41	16 38	.....	1 14	33	4 48.1	17 30	8.9
Fri Mar 23/Sat Mar 24	10 37	19 44	21 09	6 03	7 28	7 45	16 40	.....	2 17	44	5 47.1	19 16	8.9
Sat Mar 24/Sun Mar 25	10 41	19 45	21 10	6 01	7 26	7 50	16 43	.....	3 17	56	6 47.6	19 49	8.8
Sun Mar 25/Mon Mar 26	10 45	19 46	21 11	6 00	7 25	7 55	16 45	.....	4 12	67	7 48.4	19 04	8.8
Mon Mar 26/Tue Mar 27	10 49	19 46	21 12	5 58	7 23	8 00	16 48	.....	5 02	78	8 48.6	17 03	8.8
Tue Mar 27/Wed Mar 28	10 53	19 47	21 13	5 56	7 22	8 05	16 50	.....	5 46	86	9 47.2	13 55	8.7
Wed Mar 28/Thu Mar 29	10 56	19 48	21 14	5 55	7 21	8 10	16 52	17 00	6 27	93	10 43.7	9 57	8.7
Thu Mar 29/Fri Mar 30	11 00	19 49	21 15	5 53	7 19	8 15	16 55	18 06	7 04	98	11 38.3	5 25	8.6
Fri Mar 30/Sat Mar 31	11 04	19 50	21 16	5 52	7 18	8 20	16 57	19 11	.....	100	12 31.1	0 39	8.6
Sat Mar 31/Sun Apr 01	11 08	19 50	21 17	5 50	7 16	8 25	16 59	20 14	.....	99	13 22.7	- 4 06	8.6

***** 2018 APRIL *****

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 Apr 01/Mon Apr 02	11 12	19 51	21 18	5 49	7 15	8 30	17 02	21 15	.....	96	14 13.5	- 8 32	8.5
Mon Apr 02/Tue Apr 03	11 16	19 52	21 19	5 47	7 14	8 34	17 04	22 16	.....	91	15 04.0	-12 29	8.5
Tue Apr 03/Wed Apr 04	11 20	19 53	21 20	5 45	7 12	8 39	17 07	23 14	.....	85	15 54.5	-15 46	8.4
Wed Apr 04/Thu Apr 05	11 24	19 54	21 21	5 44	7 11	8 44	17 09	0 11	.....	77	16 45.0	-18 16	8.4
Thu Apr 05/Fri Apr 06	11 28	19 54	21 22	5 42	7 10	8 49	17 11	1 05	.....	69	17 35.7	-19 55	8.3
Fri Apr 06/Sat Apr 07	11 32	19 55	21 23	5 41	7 08	8 54	17 14	1 56	.....	60	18 26.3	-20 41	8.3
Sat Apr 07/Sun Apr 08	11 36	19 56	21 24	5 39	7 07	8 59	17 16	2 43	.....	50	19 16.6	-20 32	8.3
Sun Apr 08/Mon Apr 09	11 40	19 57	21 25	5 38	7 05	9 04	17 18	3 27	.....	41	20 06.4	-19 31	8.2
Mon Apr 09/Tue Apr 10	11 44	19 58	21 26	5 36	7 04	9 09	17 21	4 08	.....	32	20 55.7	-17 40	8.2
Tue Apr 10/Wed Apr 11	11 48	19 59	21 27	5 34	7 03	9 14	17 23	4 45	.....	23	21 44.4	-15 03	8.1
Wed Apr 11/Thu Apr 12	11 52	19 59	21 28	5 33	7 01	9 19	17 25	5 21	.....	16	22 32.6	-11 46	8.1
Thu Apr 12/Fri Apr 13	11 56	20 00	21 29	5 31	7 00	9 24	17 28	5 54	.....	9	23 20.7	- 7 54	8.0
Fri Apr 13/Sat Apr 14	12 00	20 01	21 30	5 30	6 59	9 29	17 30	6 28	17 45	4	0 09.1	- 3 37	8.0
Sat Apr 14/Sun Apr 15	12 03	20 02	21 31	5 28	6 58	9 34	17 33	.....	18 46	1	0 58.3	0 55	8.0
Sun Apr 15/Mon Apr 16	12 07	20 03	21 32	5 27	6 56	9 39	17 35	.....	19 49	0	1 48.9	5 31	7.9
Mon Apr 16/Tue Apr 17	12 11	20 03	21 33	5 25	6 55	9 44	17 37	.....	20 53	2	2 41.4	9 54	7.9
Tue Apr 17/Wed Apr 18	12 15	20 04	21 34	5 24	6 54	9 49	17 40	.....	21 59	6	3 36.2	13 48	7.8
Wed Apr 18/Thu Apr 19	12 19	20 05	21 35	5 22	6 52	9 54	17 42	.....	23 06	12	4 33.5	16 57	7.8
Thu Apr 19/Fri Apr 20	12 23	20 06	21 37	5 21	6 51	9 59	17 45	.....	0 11	20	5 32.8	19 03	7.7
Fri Apr 20/Sat Apr 21	12 27	20 07	21 38	5 19	6 50	10 04	17 47	.....	1 13	30	6 33.5	19 55	7.7
Sat Apr 21/Sun Apr 22	12 31	20 07	21 39	5 18	6 49	10 09	17 49	.....	2 10	41	7 34.3	19 28	7.6
Sun Apr 22/Mon Apr 23	12 35	20 08	21 40	5 16	6 48	10 14	17 52	.....	3 01	53	8 34.1	17 45	7.6
Mon Apr 23/Tue Apr 24	12 39	20 09	21 41	5 15	6 46	10 20	17 54	.....	3 46	64	9 32.0	14 55	7.6
Tue Apr 24/Wed Apr 25	12 43	20 10	21 42	5 13	6 45	10 25	17 57	.....	4 26	75	10 27.8	11 13	7.5
Wed Apr 25/Thu Apr 26	12 47	20 11	21 43	5 12	6 44	10 30	17 59	.....	5 03	84	11 21.5	6 53	7.5
Thu Apr 26/Fri Apr 27	12 51	20 12	21 44	5 10	6 43	10 35	18 02	.....	5 38	91	12 13.6	2 13	7.4
Fri Apr 27/Sat Apr 28	12 55	20 12	21 46	5 09	6 42	10 40	18 04	18 01	6 12	96	13 04.5	- 2 32	7.4
Sat Apr 28/Sun Apr 29	12 59	20 13	21 47	5 07	6 41	10 45	18 07	19 02	.....	99	13 54.8	- 7 06	7.3
Sun Apr 29/Mon Apr 30	13 03	20 14	21 48	5 06	6 40	10 50	18 09	20 03	.....	100	14 45.1	-11 17	7.3
Mon Apr 30/Tue May 01	13 07	20 15	21 49	5 04	6 39	10 55	18 12	21 02	98	15 35.7	-14 53	7.3

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2
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***** 2018 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	
Tue May 01/Wed May 02	13 10	20 16	21 50	5 03	6 38	11 00	18 14	22 00	.....	95	16 26.6	-17 45	7.2
Wed May 02/Thu May 03	13 14	20 16	21 51	5 02	6 36	11 05	18 17	22 55	.....	90	17 17.9	-19 46	7.2
Thu May 03/Fri May 04	13 18	20 17	21 53	5 00	6 35	11 11	18 19	23 48	.....	83	18 09.2	-20 52	7.1
Fri May 04/Sat May 05	13 22	20 18	21 54	4 59	6 34	11 16	18 22	0 38	.....	75	19 00.3	-21 03	7.1
Sat May 05/Sun May 06	13 26	20 19	21 55	4 58	6 34	11 21	18 25	1 23	.....	67	19 50.7	-20 19	7.0
Sun May 06/Mon May 07	13 30	20 20	21 56	4 56	6 33	11 26	18 27	2 05	.....	58	20 40.3	-18 43	7.0
Mon May 07/Tue May 08	13 34	20 21	21 57	4 55	6 32	11 31	18 30	2 43	.....	48	21 29.0	-16 20	7.0
Tue May 08/Wed May 09	13 38	20 21	21 58	4 54	6 31	11 36	18 33	3 19	.....	39	22 16.9	-13 16	6.9
Wed May 09/Thu May 10	13 42	20 22	22 00	4 52	6 30	11 41	18 35	3 52	.....	30	23 04.5	-9 36	6.9
Thu May 10/Fri May 11	13 46	20 23	22 01	4 51	6 29	11 46	18 38	4 25	.....	21	23 52.2	-5 28	6.8
Fri May 11/Sat May 12	13 50	20 24	22 02	4 50	6 28	11 51	18 41	4 58	.....	13	0 40.6	-0 59	6.8
Sat May 12/Sun May 13	13 54	20 25	22 03	4 49	6 27	11 57	18 44	5 33	17 31	7	1 30.3	3 38	6.8
Sun May 13/Mon May 14	13 58	20 25	22 04	4 48	6 27	12 02	18 46	6 10	18 35	3	2 22.2	8 12	6.7
Mon May 14/Tue May 15	14 02	20 26	22 05	4 47	6 26	12 07	18 49	.....	19 41	0	3 16.6	12 24	6.7
Tue May 15/Wed May 16	14 06	20 27	22 07	4 45	6 25	12 12	18 52	.....	20 49	1	4 14.0	15 57	6.6
Wed May 16/Thu May 17	14 10	20 28	22 08	4 44	6 24	12 17	18 55	.....	21 57	4	5 14.0	18 31	6.6
Thu May 17/Fri May 18	14 14	20 29	22 09	4 43	6 24	12 22	18 58	.....	23 03	10	6 15.8	19 51	6.6
Fri May 18/Sat May 19	14 18	20 29	22 10	4 42	6 23	12 27	19 01	.....	0 04	18	7 18.1	19 48	6.5
Sat May 19/Sun May 20	14 21	20 30	22 11	4 41	6 22	12 32	19 04	.....	0 59	28	8 19.3	18 24	6.5
Sun May 20/Mon May 21	14 25	20 31	22 12	4 40	6 22	12 37	19 07	.....	1 46	39	9 18.4	15 49	6.5
Mon May 21/Tue May 22	14 29	20 32	22 13	4 39	6 21	12 42	19 10	.....	2 28	50	10 14.9	12 16	6.4
Tue May 22/Wed May 23	14 33	20 32	22 14	4 38	6 20	12 47	19 13	.....	3 06	61	11 08.7	8 05	6.4
Wed May 23/Thu May 24	14 37	20 33	22 15	4 38	6 20	12 52	19 16	.....	3 41	72	12 00.5	3 30	6.4
Thu May 24/Fri May 25	14 41	20 34	22 16	4 37	6 19	12 57	19 19	.....	4 14	81	12 50.8	-1 12	6.3
Fri May 25/Sat May 26	14 45	20 34	22 17	4 36	6 19	13 02	19 22	.....	4 47	88	13 40.3	-5 49	6.3
Sat May 26/Sun May 27	14 49	20 35	22 18	4 35	6 18	13 07	19 25	17 54	5 21	94	14 29.7	-10 06	6.3
Sun May 27/Mon May 28	14 53	20 36	22 19	4 34	6 18	13 12	19 28	18 53	5 56	98	15 19.5	-13 55	6.2
Mon May 28/Tue May 29	14 57	20 37	22 20	4 34	6 18	13 17	19 31	19 51	.....	100	16 10.0	-17 03	6.2
Tue May 29/Wed May 30	15 01	20 37	22 21	4 33	6 17	13 22	19 35	20 47	.....	100	17 01.1	-19 24	6.2
Wed May 30/Thu May 31	15 05	20 38	22 22	4 32	6 17	13 27	19 38	21 41	.....	97	17 52.7	-20 51	6.2
Thu May 31/Fri Jun 01	15 09	20 38	22 23	4 32	6 17	13 32	19 41	22 32	.....	93	18 44.2	-21 22	6.1

***** 2018 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	
Fri Jun 01/Sat Jun 02	15 13	20 39	22 24	4 31	6 16	13 37	19 45	23 20	.....	88	19 35.3	-20 56	6.1
Sat Jun 02/Sun Jun 03	15 17	20 40	22 25	4 31	6 16	13 41	19 48	0 03	.....	81	20 25.5	-19 37	6.1
Sun Jun 03/Mon Jun 04	15 21	20 40	22 26	4 30	6 16	13 46	19 52	0 42	.....	73	21 14.6	-17 28	6.1
Mon Jun 04/Tue Jun 05	15 25	20 41	22 27	4 30	6 15	13 51	19 55	1 18	.....	65	22 02.6	-14 37	6.1
Tue Jun 05/Wed Jun 06	15 28	20 41	22 27	4 29	6 15	13 56	19 59	1 52	.....	55	22 49.8	-11 09	6.0
Wed Jun 06/Thu Jun 07	15 32	20 42	22 28	4 29	6 15	14 00	20 02	2 24	.....	45	23 36.7	-7 11	6.0
Thu Jun 07/Fri Jun 08	15 36	20 42	22 29	4 29	6 15	14 05	20 06	2 56	.....	35	0 23.9	-2 52	6.0
Fri Jun 08/Sat Jun 09	15 40	20 43	22 30	4 28	6 15	14 10	20 09	3 29	.....	26	1 12.2	1 40	6.0
Sat Jun 09/Sun Jun 10	15 44	20 43	22 30	4 28	6 15	14 14	20 13	4 04	.....	17	2 02.3	6 14	6.0
Sun Jun 10/Mon Jun 11	15 48	20 44	22 31	4 28	6 15	14 19	20 17	4 42	.....	10	2 55.0	10 37	6.0
Mon Jun 11/Tue Jun 12	15 52	20 44	22 31	4 28	6 15	14 23	20 21	5 25	18 27	4	3 50.9	14 29	5.9
Tue Jun 12/Wed Jun 13	15 56	20 45	22 32	4 28	6 15	14 28	20 24	6 15	19 36	1	4 50.1	17 33	5.9
Wed Jun 13/Thu Jun 14	16 00	20 45	22 32	4 27	6 15	14 32	20 28	.....	20 44	0	5 52.1	19 27	5.9
Thu Jun 14/Fri Jun 15	16 04	20 46	22 33	4 27	6 15	14 37	20 32	.....	21 50	3	6 55.7	19 59	5.9
Fri Jun 15/Sat Jun 16	16 08	20 46	22 33	4 27	6 15	14 41	20 36	.....	22 49	8	7 59.1	19 03	5.9
Sat Jun 16/Sun Jun 17	16 12	20 46	22 34	4 27	6 15	14 45	20 40	.....	23 42	16	9 00.6	16 47	5.9
Sun Jun 17/Mon Jun 18	16 16	20 47	22 34	4 28	6 15	14 50	20 44	.....	0 27	25	9 59.3	13 26	5.9
Mon Jun 18/Tue Jun 19	16 20	20 47	22 35	4 28	6 15	14 54	20 48	.....	1 08	36	10 54.9	9 20	5.9
Tue Jun 19/Wed Jun 20	16 24	20 47	22 35	4 28	6 15	14 58	20 52	.....	1 44	47	11 47.8	4 46	5.9
Wed Jun 20/Thu Jun 21	16 28	20 47	22 35	4 28	6 16	15 02	20 56	.....	2 18	58	12 38.5	0 03	5.9
Thu Jun 21/Fri Jun 22	16 32	20 48	22 35	4 28	6 16	15 07	21 01	.....	2 51	68	13 28.1	-4 37	5.9
Fri Jun 22/Sat Jun 23	16 36	20 48	22 35	4 28	6 16	15 11	21 05	.....	3 24	77	14 17.0	-9 00	5.9
Sat Jun 23/Sun Jun 24	16 39	20 48	22 36	4 29	6 16	15 15	21 09	.....	3 58	85	15 06.2	-12 56	5.9
Sun Jun 24/Mon Jun 25	16 43	20 48	22 36	4 29	6 17	15 19	21 13	17 45	4 34	92	15 55.9	-16 16	5.9
Mon Jun 25/Tue Jun 26	16 47	20 48	22 36	4 30	6 17	15 23	21 18	18 41	5 14	96	16 46.4	-18 52	5.9
Tue Jun 26/Wed Jun 27	16 51	20 48	22 36	4 30	6 17	15 27	21 22	19 36	5 57	99	17 37.6	-20 37	5.9
Wed Jun 27/Thu Jun 28	16 55	20 48	22 36	4 30	6 18	15 31	21 26	20 28	.....	100	18 29.2	-21 26	5.9
Thu Jun 28/Fri Jun 29	16 59	20 48	22 36	4 31	6 18	15 34	21 31	21 16	.....	99	19 20.6	-21 18	5.9
Fri Jun 29/Sat Jun 30	17 03	20 48	22 35	4 31	6 19	15 38	21 35	22 01	.....	96	20 11.4	-20 15	5.9
Sat Jun 30/Sun Jul 01	17 07	20 48	22 35	4 32	6 19	15 42	21 40	22 42	.....	92	21 01.1	-18 20	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.

***** 2018 JULY *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sun Jul 01/Mon Jul 02	17 11	20 48	22 35	4 33	6 19	15 46	21 44	23 19	.....	86	21 49.6	-15 40	6.0
Mon Jul 02/Tue Jul 03	17 15	20 48	22 35	4 33	6 20	15 50	21 49	23 53	.....	79	22 37.0	-12 23	6.0
Tue Jul 03/Wed Jul 04	17 19	20 48	22 35	4 34	6 20	15 53	21 54	0 26	.....	70	23 23.7	- 8 34	6.0
Wed Jul 04/Thu Jul 05	17 23	20 48	22 34	4 35	6 21	15 57	21 58	0 57	.....	61	0 10.1	- 4 24	6.0
Thu Jul 05/Fri Jul 06	17 27	20 48	22 34	4 35	6 21	16 00	22 03	1 28	.....	51	0 57.1	0 01	6.0
Fri Jul 06/Sat Jul 07	17 31	20 48	22 33	4 36	6 22	16 04	22 08	2 01	.....	40	1 45.4	4 31	6.0
Sat Jul 07/Sun Jul 08	17 35	20 47	22 33	4 37	6 22	16 07	22 12	2 36	.....	30	2 35.8	8 54	6.1
Sun Jul 08/Mon Jul 09	17 39	20 47	22 32	4 38	6 23	16 11	22 17	3 16	.....	21	3 29.1	12 55	6.1
Mon Jul 09/Tue Jul 10	17 43	20 47	22 32	4 39	6 24	16 14	22 22	4 01	.....	12	4 25.9	16 18	6.1
Tue Jul 10/Wed Jul 11	17 46	20 47	22 31	4 39	6 24	16 18	22 27	4 53	18 21	6	5 26.1	18 43	6.1
Wed Jul 11/Thu Jul 12	17 50	20 46	22 31	4 40	6 25	16 21	22 31	5 53	19 28	1	6 29.0	19 52	6.2
Thu Jul 12/Fri Jul 13	17 54	20 46	22 30	4 41	6 25	16 24	22 36	.....	20 32	0	7 33.1	19 34	6.2
Fri Jul 13/Sat Jul 14	17 58	20 45	22 29	4 42	6 26	16 27	22 41	.....	21 29	2	8 36.5	17 50	6.2
Sat Jul 14/Sun Jul 15	18 02	20 45	22 29	4 43	6 27	16 31	22 46	.....	22 19	6	9 37.8	14 49	6.2
Sun Jul 15/Mon Jul 16	18 06	20 45	22 28	4 44	6 27	16 34	22 51	.....	23 03	13	10 36.0	10 51	6.3
Mon Jul 16/Tue Jul 17	18 10	20 44	22 27	4 45	6 28	16 37	22 56	.....	23 43	22	11 31.2	6 18	6.3
Tue Jul 17/Wed Jul 18	18 14	20 44	22 26	4 46	6 29	16 40	23 01	.....	0 18	32	12 23.7	1 30	6.3
Wed Jul 18/Thu Jul 19	18 18	20 43	22 25	4 47	6 29	16 43	23 06	.....	0 52	43	13 14.4	- 3 17	6.4
Thu Jul 19/Fri Jul 20	18 22	20 42	22 25	4 48	6 30	16 46	23 11	.....	1 26	54	14 04.0	- 7 48	6.4
Fri Jul 20/Sat Jul 21	18 26	20 42	22 24	4 49	6 31	16 49	23 16	.....	2 00	64	14 53.3	-11 54	6.4
Sat Jul 21/Sun Jul 22	18 30	20 41	22 23	4 50	6 31	16 52	23 21	.....	2 36	73	15 42.8	-15 25	6.5
Sun Jul 22/Mon Jul 23	18 34	20 41	22 22	4 51	6 32	16 55	23 26	.....	3 14	81	16 32.8	-18 13	6.5
Mon Jul 23/Tue Jul 24	18 38	20 40	22 21	4 52	6 33	16 58	23 31	17 31	3 55	88	17 23.6	-20 13	6.5
Tue Jul 24/Wed Jul 25	18 42	20 39	22 20	4 53	6 34	17 01	23 36	18 24	4 41	94	18 14.8	-21 18	6.6
Wed Jul 25/Thu Jul 26	18 46	20 39	22 19	4 54	6 34	17 04	23 41	19 13	5 29	98	19 06.3	-21 27	6.6
Thu Jul 26/Fri Jul 27	18 50	20 38	22 17	4 55	6 35	17 07	23 46	19 59	6 21	100	19 57.3	-20 40	6.6
Fri Jul 27/Sat Jul 28	18 54	20 37	22 16	4 57	6 36	17 10	23 51	20 42	.....	100	20 47.6	-18 59	6.7
Sat Jul 28/Sun Jul 29	18 57	20 36	22 15	4 58	6 37	17 12	23 56	21 20	.....	98	21 36.7	-16 30	6.7
Sun Jul 29/Mon Jul 30	19 01	20 35	22 14	4 59	6 37	17 15	0 01	21 55	.....	95	22 24.8	-13 20	6.7
Mon Jul 30/Tue Jul 31	19 05	20 35	22 13	5 00	6 38	17 18	0 06	22 28	.....	90	23 11.8	- 9 38	6.8
Tue Jul 31/Wed Aug 01	19 09	20 34	22 12	5 01	6 39	17 21	0 11	22 59	.....	83	23 58.4	- 5 32	6.8

***** 2018 AUGUST *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Aug 01/Thu Aug 02	19 13	20 33	22 10	5 02	6 40	17 23	0 16	23 30	.....	75	0 44.9	- 1 11	6.9
Thu Aug 02/Fri Aug 03	19 17	20 32	22 09	5 03	6 40	17 26	0 21	0 02	.....	66	1 32.2	3 16	6.9
Fri Aug 03/Sat Aug 04	19 21	20 31	22 08	5 04	6 41	17 29	0 26	0 35	.....	55	2 21.0	7 37	6.9
Sat Aug 04/Sun Aug 05	19 25	20 30	22 07	5 05	6 42	17 31	0 31	1 11	.....	45	3 12.1	11 42	7.0
Sun Aug 05/Mon Aug 06	19 29	20 29	22 05	5 07	6 43	17 34	0 36	1 52	.....	34	4 06.2	15 14	7.0
Mon Aug 06/Tue Aug 07	19 33	20 28	22 04	5 08	6 43	17 36	0 41	2 40	.....	24	5 03.6	17 57	7.1
Tue Aug 07/Wed Aug 08	19 37	20 27	22 02	5 09	6 44	17 39	0 47	3 34	.....	15	6 04.0	19 35	7.1
Wed Aug 08/Thu Aug 09	19 41	20 26	22 01	5 10	6 45	17 42	0 52	4 36	18 12	7	7 06.5	19 53	7.1
Thu Aug 09/Fri Aug 10	19 45	20 25	22 00	5 11	6 46	17 44	0 57	5 44	19 12	2	8 09.8	18 44	7.2
Fri Aug 10/Sat Aug 11	19 49	20 24	21 58	5 12	6 47	17 47	1 02	.....	20 06	0	9 12.0	16 14	7.2
Sat Aug 11/Sun Aug 12	19 53	20 23	21 57	5 13	6 47	17 49	1 07	.....	20 53	1	10 12.1	12 36	7.3
Sun Aug 12/Mon Aug 13	19 57	20 22	21 55	5 14	6 48	17 52	1 12	.....	21 36	5	11 09.4	8 10	7.3
Mon Aug 13/Tue Aug 14	20 01	20 21	21 54	5 15	6 49	17 54	1 17	.....	22 14	11	12 04.1	3 19	7.4
Tue Aug 14/Wed Aug 15	20 04	20 19	21 53	5 17	6 50	17 57	1 22	.....	22 50	19	12 56.6	- 1 37	7.4
Wed Aug 15/Thu Aug 16	20 08	20 18	21 51	5 18	6 50	17 59	1 27	.....	23 24	28	13 47.7	- 6 22	7.4
Thu Aug 16/Fri Aug 17	20 12	20 17	21 50	5 19	6 51	18 02	1 32	.....	23 59	38	14 38.0	-10 42	7.5
Fri Aug 17/Sat Aug 18	20 16	20 16	21 48	5 20	6 52	18 04	1 37	.....	0 35	48	15 28.1	-14 27	7.5
Sat Aug 18/Sun Aug 19	20 20	20 15	21 47	5 21	6 53	18 06	1 42	.....	1 13	58	16 18.4	-17 30	7.6
Sun Aug 19/Mon Aug 20	20 24	20 14	21 45	5 22	6 53	18 09	1 47	.....	1 54	68	17 09.1	-19 44	7.6
Mon Aug 20/Tue Aug 21	20 28	20 12	21 43	5 23	6 54	18 11	1 52	.....	2 38	76	18 00.2	-21 05	7.7
Tue Aug 21/Wed Aug 22	20 32	20 11	21 42	5 24	6 55	18 14	1 57	17 10	3 25	84	18 51.5	-21 30	7.7
Wed Aug 22/Thu Aug 23	20 36	20 10	21 40	5 25	6 56	18 16	2 02	17 57	4 16	90	19 42.6	-20 58	7.7
Thu Aug 23/Fri Aug 24	20 40	20 08	21 39	5 26	6 56	18 18	2 07	18 40	5 09	95	20 33.2	-19 31	7.8
Fri Aug 24/Sat Aug 25	20 44	20 07	21 37	5 27	6 57	18 21	2 12	19 20	6 03	98	21 22.8	-17 15	7.8
Sat Aug 25/Sun Aug 26	20 48	20 06	21 36	5 28	6 58	18 23	2 17	19 56	.....	100	22 11.5	-14 14	7.9
Sun Aug 26/Mon Aug 27	20 52	20 05	21 34	5 29	6 59	18 25	2 22	20 30	.....	99	22 59.2	-10 37	7.9
Mon Aug 27/Tue Aug 28	20 56	20 03	21 32	5 30	6 59	18 28	2 27	21 02	.....	97	23 46.4	- 6 32	8.0
Tue Aug 28/Wed Aug 29	21 00	20 02	21 31	5 31	7 00	18 30	2 32	21 33	.....	93	0 33.3	- 2 10	8.0
Wed Aug 29/Thu Aug 30	21 04	20 01	21 29	5 32	7 01	18 33	2 37	22 04	.....	87	1 20.7	2 19	8.0
Thu Aug 30/Fri Aug 31	21 08	19 59	21 28	5 33	7 02	18 35	2 42	22 37	.....	79	2 09.1	6 44	8.1
Fri Aug 31/Sat Sep 01	21 11	19 58	21 26	5 34	7 02	18 37	2 46	23 11	.....	70	2 59.3	10 53	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.

***** 2018 SEPTEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sat Sep 01/Sun Sep 02	21 15	19 56	21 25	5 35	7 03	18 40	2 51	23 50	.....	59	3 51.9	14 32	8.2
Sun Sep 02/Mon Sep 03	21 19	19 55	21 23	5 36	7 04	18 42	2 56	0 33	.....	48	4 47.1	17 27	8.2
Mon Sep 03/Tue Sep 04	21 23	19 54	21 21	5 37	7 05	18 44	3 01	1 23	.....	37	5 45.2	19 22	8.3
Tue Sep 04/Wed Sep 05	21 27	19 52	21 20	5 38	7 05	18 47	3 06	2 20	.....	27	6 45.4	20 05	8.3
Wed Sep 05/Thu Sep 06	21 31	19 51	21 18	5 39	7 06	18 49	3 11	3 24	16 57	17	7 46.8	19 27	8.3
Thu Sep 06/Fri Sep 07	21 35	19 50	21 16	5 40	7 07	18 51	3 16	4 32	17 52	9	8 48.0	17 28	8.4
Fri Sep 07/Sat Sep 08	21 39	19 48	21 15	5 41	7 07	18 54	3 21	5 42	18 42	3	9 47.9	14 17	8.4
Sat Sep 08/Sun Sep 09	21 43	19 47	21 13	5 42	7 08	18 56	3 26	6 53	19 26	0	10 45.8	10 09	8.5
Sun Sep 09/Mon Sep 10	21 47	19 45	21 12	5 42	7 09	18 58	3 30	.....	20 06	0	11 41.6	5 24	8.5
Mon Sep 10/Tue Sep 11	21 51	19 44	21 10	5 43	7 10	19 01	3 35	.....	20 44	3	12 35.3	0 24	8.6
Tue Sep 11/Wed Sep 12	21 55	19 42	21 08	5 44	7 10	19 03	3 40	.....	21 19	8	13 27.7	- 4 33	8.6
Wed Sep 12/Thu Sep 13	21 59	19 41	21 07	5 45	7 11	19 05	3 45	.....	21 55	15	14 19.1	- 9 11	8.6
Thu Sep 13/Fri Sep 14	22 03	19 39	21 05	5 46	7 12	19 08	3 50	.....	22 31	23	15 10.2	-13 16	8.7
Fri Sep 14/Sat Sep 15	22 07	19 38	21 04	5 47	7 13	19 10	3 55	.....	23 09	32	16 01.3	-16 38	8.7
Sat Sep 15/Sun Sep 16	22 11	19 37	21 02	5 48	7 13	19 12	3 59	.....	23 49	42	16 52.5	-19 11	8.8
Sun Sep 16/Mon Sep 17	22 15	19 35	21 01	5 49	7 14	19 15	4 04	.....	0 33	52	17 44.0	-20 50	8.8
Mon Sep 17/Tue Sep 18	22 19	19 34	20 59	5 50	7 15	19 17	4 09	.....	1 19	61	18 35.5	-21 32	8.8
Tue Sep 18/Wed Sep 19	22 22	19 32	20 57	5 50	7 16	19 19	4 14	.....	2 09	70	19 26.7	-21 17	8.9
Wed Sep 19/Thu Sep 20	22 26	19 31	20 56	5 51	7 16	19 22	4 19	16 38	3 01	79	20 17.4	-20 06	8.9
Thu Sep 20/Fri Sep 21	22 30	19 29	20 54	5 52	7 17	19 24	4 23	17 19	3 55	86	21 07.2	-18 03	9.0
Fri Sep 21/Sat Sep 22	22 34	19 28	20 53	5 53	7 18	19 26	4 28	17 56	4 51	92	21 56.2	-15 13	9.0
Sat Sep 22/Sun Sep 23	22 38	19 26	20 51	5 54	7 19	19 29	4 33	18 31	5 47	96	22 44.4	-11 44	9.0
Sun Sep 23/Mon Sep 24	22 42	19 25	20 50	5 55	7 19	19 31	4 38	19 03	6 44	99	23 32.0	- 7 43	9.1
Mon Sep 24/Tue Sep 25	22 46	19 24	20 48	5 55	7 20	19 34	4 42	19 35	.....	100	0 19.6	- 3 19	9.1
Tue Sep 25/Wed Sep 26	22 50	19 22	20 47	5 56	7 21	19 36	4 47	20 06	.....	99	1 07.5	1 16	9.2
Wed Sep 26/Thu Sep 27	22 54	19 21	20 45	5 57	7 22	19 39	4 52	20 38	.....	95	1 56.4	5 50	9.2
Thu Sep 27/Fri Sep 28	22 58	19 19	20 44	5 58	7 22	19 41	4 57	21 12	.....	90	2 46.9	10 10	9.2
Fri Sep 28/Sat Sep 29	23 02	19 18	20 42	5 59	7 23	19 43	5 02	21 50	.....	82	3 39.4	14 02	9.3
Sat Sep 29/Sun Sep 30	23 06	19 16	20 41	5 59	7 24	19 46	5 06	22 31	.....	73	4 34.3	17 10	9.3
Sun Sep 30/Mon Oct 01	23 10	19 15	20 39	6 00	7 25	19 48	5 11	23 19	.....	63	5 31.5	19 20	9.4

***** 2018 OCTOBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Mon Oct 01/Tue Oct 02	23 14	19 14	20 38	6 01	7 25	19 51	5 16	0 12	.....	52	6 30.6	20 21	9.4
Tue Oct 02/Wed Oct 03	23 18	19 12	20 36	6 02	7 26	19 53	5 21	1 12	.....	40	7 30.5	20 03	9.4
Wed Oct 03/Thu Oct 04	23 22	19 11	20 35	6 03	7 27	19 56	5 25	2 16	.....	29	8 30.4	18 28	9.5
Thu Oct 04/Fri Oct 05	23 26	19 09	20 33	6 04	7 28	19 58	5 30	3 24	16 35	19	9 29.1	15 40	9.5
Fri Oct 05/Sat Oct 06	23 29	19 08	20 32	6 04	7 29	20 01	5 35	4 33	17 20	11	10 26.1	11 53	9.5
Sat Oct 06/Sun Oct 07	23 33	19 07	20 31	6 05	7 29	20 04	5 40	5 41	18 00	5	11 21.2	7 23	9.6
Sun Oct 07/Mon Oct 08	23 37	19 05	20 29	6 06	7 30	20 06	5 44	6 48	18 38	1	12 14.8	2 27	9.6
Mon Oct 08/Tue Oct 09	23 41	19 04	20 28	6 07	7 31	20 09	5 49	.....	19 14	0	13 07.1	- 2 34	9.6
Tue Oct 09/Wed Oct 10	23 45	19 02	20 27	6 08	7 32	20 11	5 54	.....	19 49	2	13 58.8	- 7 24	9.7
Wed Oct 10/Thu Oct 11	23 49	19 01	20 25	6 08	7 33	20 14	5 59	.....	20 25	5	14 50.3	-11 47	9.7
Thu Oct 11/Fri Oct 12	23 53	19 00	20 24	6 09	7 33	20 17	6 03	.....	21 02	11	15 41.9	-15 32	9.8
Fri Oct 12/Sat Oct 13	23 57	18 58	20 23	6 10	7 34	20 19	6 08	.....	21 42	18	16 33.8	-18 28	9.8
Sat Oct 13/Sun Oct 14	0 01	18 57	20 21	6 11	7 35	20 22	6 13	.....	22 25	26	17 25.8	-20 29	9.8
Sun Oct 14/Mon Oct 15	0 05	18 56	20 20	6 11	7 36	20 25	6 17	.....	23 11	35	18 17.8	-21 32	9.9
Mon Oct 15/Tue Oct 16	0 09	18 55	20 19	6 12	7 37	20 27	6 22	.....	0 00	44	19 09.5	-21 36	9.9
Tue Oct 16/Wed Oct 17	0 13	18 53	20 18	6 13	7 38	20 30	6 27	.....	0 52	54	20 00.3	-20 43	9.9
Wed Oct 17/Thu Oct 18	0 17	18 52	20 16	6 14	7 39	20 33	6 32	.....	1 45	63	20 50.3	-18 57	10.0
Thu Oct 18/Fri Oct 19	0 21	18 51	20 15	6 15	7 39	20 35	6 36	.....	2 40	72	21 39.3	-16 22	10.0
Fri Oct 19/Sat Oct 20	0 25	18 50	20 14	6 16	7 40	20 38	6 41	16 30	3 36	80	22 27.4	-13 05	10.0
Sat Oct 20/Sun Oct 21	0 29	18 48	20 13	6 16	7 41	20 41	6 46	17 03	4 33	87	23 15.0	- 9 12	10.1
Sun Oct 21/Mon Oct 22	0 33	18 47	20 12	6 17	7 42	20 44	6 51	17 35	5 31	93	0 02.5	- 4 52	10.1
Mon Oct 22/Tue Oct 23	0 37	18 46	20 11	6 18	7 43	20 47	6 55	18 06	6 30	97	0 50.6	- 0 15	10.1
Tue Oct 23/Wed Oct 24	0 40	18 45	20 10	6 19	7 44	20 49	7 00	18 38	7 30	99	1 39.8	4 28	10.2
Wed Oct 24/Thu Oct 25	0 44	18 44	20 09	6 20	7 45	20 52	7 05	19 12	.....	99	2 30.7	9 03	10.2
Thu Oct 25/Fri Oct 26	0 48	18 42	20 08	6 20	7 46	20 55	7 10	19 48	.....	97	3 23.8	13 14	10.2
Fri Oct 26/Sat Oct 27	0 52	18 41	20 07	6 21	7 47	20 58	7 14	20 29	.....	92	4 19.5	16 44	10.2
Sat Oct 27/Sun Oct 28	0 56	18 40	20 06	6 22	7 47	21 01	7 19	21 15	.....	85	5 17.5	19 16	10.3
Sun Oct 28/Mon Oct 29	1 00	18 39	20 05	6 23	7 48	21 04	7 24	22 07	.....	76	6 17.3	20 36	10.3
Mon Oct 29/Tue Oct 30	1 04	18 38	20 04	6 24	7 49	21 07	7 29	23 05	.....	66	7 17.8	20 37	10.3
Tue Oct 30/Wed Oct 31	1 08	18 37	20 03	6 24	7 50	21 10	7 34	0 08	.....	55	8 17.7	19 18	10.4
Wed Oct 31/Thu Nov 01	1 12	18 36	20 02	6 25	7 51	21 13	7 38	1 14	.....	43	9 16.1	16 47	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.

***** 2018 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	
Thu Nov 01/Fri Nov 02	1 16	18 35	20 01	6 26	7 52	21 16	7 43	2 21	.....	32	10 12.5	13 14	10.4
Fri Nov 02/Sat Nov 03	1 20	18 34	20 00	6 27	7 53	21 19	7 48	3 28	15 59	22	11 06.8	8 57	10.4
Sat Nov 03/Sun Nov 04*	1 24	18 33	19 59	5 28	6 54	21 22	7 53	3 33	16 37	14	11 59.3	4 12	10.5
Sun Nov 04/Mon Nov 05	2 28	17 32	18 58	5 29	6 55	21 26	7 57	4 38	16 12	7	12 53.6	- 0 58	10.5
Mon Nov 05/Tue Nov 06	2 32	17 31	18 58	5 29	6 56	21 29	8 02	5 42	16 46	2	13 44.4	- 5 51	10.5
Tue Nov 06/Wed Nov 07	2 36	17 30	18 57	5 30	6 57	21 32	8 07	6 45	17 21	0	14 35.1	-10 23	10.6
Wed Nov 07/Thu Nov 08	2 40	17 30	18 56	5 31	6 58	21 35	8 12	7 48	17 57	1	15 26.2	-14 22	10.6
Thu Nov 08/Fri Nov 09	2 44	17 29	18 56	5 32	6 59	21 38	8 17	.....	18 35	3	16 17.9	-17 36	10.6
Fri Nov 09/Sat Nov 10	2 48	17 28	18 55	5 33	7 00	21 42	8 21	.....	19 17	7	17 10.0	-19 58	10.6
Sat Nov 10/Sun Nov 11	2 52	17 27	18 54	5 34	7 01	21 45	8 26	.....	20 02	13	18 02.2	-21 21	10.7
Sun Nov 11/Mon Nov 12	2 56	17 26	18 54	5 34	7 02	21 48	8 31	.....	20 50	20	18 54.1	-21 44	10.7
Mon Nov 12/Tue Nov 13	2 59	17 26	18 53	5 35	7 03	21 52	8 36	.....	21 42	28	19 45.3	-21 09	10.7
Tue Nov 13/Wed Nov 14	3 03	17 25	18 52	5 36	7 04	21 55	8 40	.....	22 35	37	20 35.3	-19 39	10.7
Wed Nov 14/Thu Nov 15	3 07	17 24	18 52	5 37	7 05	21 58	8 45	.....	23 29	46	21 24.1	-17 20	10.8
Thu Nov 15/Fri Nov 16	3 11	17 24	18 51	5 38	7 06	22 02	8 50	.....	0 24	55	22 11.8	-14 17	10.8
Fri Nov 16/Sat Nov 17	3 15	17 23	18 51	5 39	7 07	22 05	8 55	.....	1 20	65	22 58.7	-10 38	10.8
Sat Nov 17/Sun Nov 18	3 19	17 23	18 51	5 39	7 08	22 09	9 00	.....	2 17	74	23 45.4	- 6 29	10.8
Sun Nov 18/Mon Nov 19	3 23	17 22	18 50	5 40	7 09	22 12	9 04	.....	3 15	82	0 32.5	- 1 58	10.8
Mon Nov 19/Tue Nov 20	3 27	17 21	18 50	5 41	7 10	22 16	9 09	.....	4 14	89	1 20.8	2 45	10.9
Tue Nov 20/Wed Nov 21	3 31	17 21	18 49	5 42	7 11	22 20	9 14	16 08	5 16	95	2 11.0	7 29	10.9
Wed Nov 21/Thu Nov 22	3 35	17 20	18 49	5 43	7 12	22 23	9 19	16 43	6 21	99	3 03.8	11 57	10.9
Thu Nov 22/Fri Nov 23	3 39	17 20	18 49	5 44	7 13	22 27	9 23	17 23	7 27	100	3 59.7	15 52	10.9
Fri Nov 23/Sat Nov 24	3 43	17 20	18 49	5 44	7 13	22 30	9 28	18 07	.....	98	4 58.8	18 53	10.9
Sat Nov 24/Sun Nov 25	3 47	17 19	18 48	5 45	7 14	22 34	9 33	18 59	.....	94	6 00.3	20 42	11.0
Sun Nov 25/Mon Nov 26	3 51	17 19	18 48	5 46	7 15	22 38	9 38	19 56	.....	88	7 03.1	21 08	11.0
Mon Nov 26/Tue Nov 27	3 55	17 19	18 48	5 47	7 16	22 42	9 43	21 00	.....	79	8 05.4	20 06	11.0
Tue Nov 27/Wed Nov 28	3 59	17 18	18 48	5 48	7 17	22 45	9 47	22 06	.....	69	9 05.9	17 45	11.0
Wed Nov 28/Thu Nov 29	4 03	17 18	18 48	5 49	7 18	22 49	9 52	23 13	.....	58	10 03.7	14 18	11.0
Thu Nov 29/Fri Nov 30	4 06	17 18	18 48	5 49	7 19	22 53	9 57	0 20	.....	46	10 58.6	10 05	11.0
Fri Nov 30/Sat Dec 01	4 10	17 18	18 47	5 50	7 20	22 57	10 01	1 25	.....	36	11 51.2	5 23	11.0

***** 2018 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	
Sat Dec 01/Sun Dec 02	4 14	17 18	18 47	5 51	7 21	23 01	10 06	2 29	.....	25	12 42.1	0 28	11.1
Sun Dec 02/Mon Dec 03	4 18	17 17	18 47	5 52	7 22	23 05	10 11	3 32	.....	17	13 31.9	- 4 25	11.1
Mon Dec 03/Tue Dec 04	4 22	17 17	18 47	5 52	7 23	23 09	10 16	4 34	.....	10	14 21.6	- 9 01	11.1
Tue Dec 04/Wed Dec 05	4 26	17 17	18 48	5 53	7 23	23 13	10 20	5 36	15 55	4	15 11.7	-13 09	11.1
Wed Dec 05/Thu Dec 06	4 30	17 17	18 48	5 54	7 24	23 17	10 25	6 36	16 32	1	16 02.4	-16 37	11.1
Thu Dec 06/Fri Dec 07	4 34	17 17	18 48	5 55	7 25	23 21	10 30	7 34	17 12	0	16 53.9	-19 17	11.1
Fri Dec 07/Sat Dec 08	4 38	17 17	18 48	5 55	7 26	23 25	10 34	8 30	17 55	1	17 45.8	-21 01	11.1
Sat Dec 08/Sun Dec 09	4 42	17 18	18 48	5 56	7 27	23 29	10 39	.....	18 42	4	18 37.9	-21 46	11.1
Sun Dec 09/Mon Dec 10	4 46	17 18	18 48	5 57	7 27	23 33	10 44	.....	19 32	8	19 29.4	-21 30	11.1
Mon Dec 10/Tue Dec 11	4 50	17 18	18 48	5 57	7 28	23 37	10 48	.....	20 25	14	20 19.8	-20 19	11.2
Tue Dec 11/Wed Dec 12	4 54	17 18	18 49	5 58	7 29	23 42	10 53	.....	21 19	21	21 08.8	-18 16	11.2
Wed Dec 12/Thu Dec 13	4 58	17 18	18 49	5 59	7 30	23 46	10 57	.....	22 14	29	21 56.5	-15 28	11.2
Thu Dec 13/Fri Dec 14	5 02	17 18	18 49	5 59	7 30	23 50	11 02	.....	23 09	38	22 43.0	-12 03	11.2
Fri Dec 14/Sat Dec 15	5 06	17 19	18 50	6 00	7 31	23 54	11 07	.....	0 04	47	23 28.8	- 8 08	11.2
Sat Dec 15/Sun Dec 16	5 10	17 19	18 50	6 01	7 32	23 59	11 11	.....	1 00	57	0 14.6	- 3 50	11.2
Sun Dec 16/Mon Dec 17	5 14	17 19	18 50	6 01	7 32	0 03	11 16	.....	1 58	66	1 01.1	0 44	11.2
Mon Dec 17/Tue Dec 18	5 17	17 20	18 51	6 02	7 33	0 07	11 20	.....	2 57	76	1 49.2	5 24	11.2
Tue Dec 18/Wed Dec 19	5 21	17 20	18 51	6 02	7 33	0 12	11 25	.....	4 00	84	2 39.8	9 58	11.2
Wed Dec 19/Thu Dec 20	5 25	17 21	18 52	6 03	7 34	0 16	11 29	.....	5 05	91	3 33.7	14 10	11.2
Thu Dec 20/Fri Dec 21	5 29	17 21	18 52	6 03	7 34	0 20	11 34	15 56	6 12	97	4 31.4	17 41	11.2
Fri Dec 21/Sat Dec 22	5 33	17 21	18 53	6 04	7 35	0 25	11 38	16 44	7 19	100	5 32.7	20 09	11.2
Sat Dec 22/Sun Dec 23	5 37	17 22	18 53	6 04	7 35	0 29	11 43	17 40	8 23	100	6 36.8	21 15	11.2
Sun Dec 23/Mon Dec 24	5 41	17 23	18 54	6 05	7 36	0 34	11 47	18 43	.....	97	7 41.7	20 49	11.2
Mon Dec 24/Tue Dec 25	5 45	17 23	18 54	6 05	7 36	0 38	11 51	19 50	.....	91	8 45.5	18 53	11.2
Tue Dec 25/Wed Dec 26	5 49	17 24	18 55	6 06	7 37	0 43	11 56	21 00	.....	83	9 46.7	15 39	11.2
Wed Dec 26/Thu Dec 27	5 53	17 24	18 55	6 06	7 37	0 47	12 00	22 10	.....	73	10 44.6	11 29	11.2
Thu Dec 27/Fri Dec 28	5 57	17 25	18 56	6 06	7 37	0 52	12 04	23 17	.....	62	11 39.2	6 44	11.2
Fri Dec 28/Sat Dec 29	6 01	17 26	18 57	6 07	7 38	0 56	12 09	0 23	.....	51	12 31.4	1 44	11.2
Sat Dec 29/Sun Dec 30	6 05	17 26	18 57	6 07	7 38	1 01	12 13	1 26	.....	40	13 21.8	- 3 13	11.2
Sun Dec 30/Mon Dec 31	6 09	17 27	18 58	6 07	7 38	1 06	12 17	2 28	.....	30	14 11.4	- 7 55	11.2
Mon Dec 31/Tue Jan 01	6 13	17 28	18 58	6 08	7 38	1 10	12 21	3 29	.....	21	15 00.9	-12 09	11.2