

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 Cape Cod Schmidt Observatory *****

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 Cape Cod Schmidt Observatory

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

Calendar for Cape Cod Schmidt Observatory, west longitude (h.m.s) = 4 40 47, latitude (d.m) = 41 40.7
 Rise/set times in Eastern time (5 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	7 06	16 21	18 01	5 28	7 08	1 07	12 35	16 16	7 23	100	6 56.4	19 39	11.4
Tue Jan 02/Wed Jan 03	7 10	16 22	18 02	5 28	7 08	1 11	12 39	17 22	8 19	98	8 01.9	18 35	11.4
Wed Jan 03/Thu Jan 04	7 14	16 23	18 03	5 28	7 08	1 16	12 43	18 33	.....	93	9 05.1	16 10	11.4
Thu Jan 04/Fri Jan 05	7 18	16 24	18 04	5 28	7 08	1 21	12 47	19 45	.....	86	10 04.7	12 43	11.4
Fri Jan 05/Sat Jan 06	7 22	16 25	18 04	5 28	7 08	1 26	12 51	20 55	.....	77	11 00.7	8 35	11.4
Sat Jan 06/Sun Jan 07	7 26	16 26	18 05	5 28	7 08	1 30	12 55	22 03	.....	67	11 53.3	4 08	11.4
Sun Jan 07/Mon Jan 08	7 30	16 27	18 06	5 28	7 08	1 35	12 59	23 08	.....	57	12 43.3	- 0 23	11.4
Mon Jan 08/Tue Jan 09	7 34	16 28	18 07	5 28	7 07	1 40	13 03	0 11	.....	46	13 31.7	- 4 45	11.4
Tue Jan 09/Wed Jan 10	7 38	16 29	18 08	5 28	7 07	1 45	13 07	1 11	.....	37	14 19.1	- 8 47	11.3
Wed Jan 10/Thu Jan 11	7 42	16 30	18 09	5 28	7 07	1 50	13 11	2 11	.....	28	15 06.4	-12 23	11.3
Thu Jan 11/Fri Jan 12	7 46	16 31	18 10	5 28	7 07	1 55	13 15	3 08	.....	20	15 54.0	-15 26	11.3
Fri Jan 12/Sat Jan 13	7 50	16 32	18 11	5 28	7 06	2 00	13 18	4 05	.....	13	16 42.2	-17 50	11.3
Sat Jan 13/Sun Jan 14	7 54	16 33	18 12	5 27	7 06	2 04	13 22	4 58	.....	7	17 31.1	-19 28	11.3
Sun Jan 14/Mon Jan 15	7 58	16 34	18 13	5 27	7 05	2 09	13 26	5 49	.....	3	18 20.6	-20 18	11.2
Mon Jan 15/Tue Jan 16	8 02	16 35	18 14	5 27	7 05	2 14	13 29	6 36	15 36	1	19 10.5	-20 16	11.2
Tue Jan 16/Wed Jan 17	8 06	16 37	18 15	5 27	7 04	2 19	13 33	7 19	16 27	0	20 00.2	-19 22	11.2
Wed Jan 17/Thu Jan 18	8 09	16 38	18 16	5 26	7 04	2 24	13 37	7 57	17 21	1	20 49.5	-17 38	11.2
Thu Jan 18/Fri Jan 19	8 13	16 39	18 17	5 26	7 03	2 29	13 40	8 32	18 18	4	21 38.1	-15 10	11.2
Fri Jan 19/Sat Jan 20	8 17	16 40	18 18	5 25	7 03	2 34	13 44	.....	19 17	8	22 26.0	-12 01	11.1
Sat Jan 20/Sun Jan 21	8 21	16 41	18 19	5 25	7 02	2 39	13 47	.....	20 17	15	23 13.5	- 8 21	11.1
Sun Jan 21/Mon Jan 22	8 25	16 43	18 20	5 24	7 01	2 44	13 51	.....	21 17	22	0 00.8	- 4 17	11.1
Mon Jan 22/Tue Jan 23	8 29	16 44	18 21	5 24	7 01	2 49	13 54	.....	22 20	31	0 48.7	0 03	11.0
Tue Jan 23/Wed Jan 24	8 33	16 45	18 22	5 23	7 00	2 54	13 57	.....	23 24	41	1 37.9	4 28	11.0
Wed Jan 24/Thu Jan 25	8 37	16 46	18 23	5 23	6 59	2 59	14 01	.....	0 29	52	2 29.0	8 46	11.0
Thu Jan 25/Fri Jan 26	8 41	16 48	18 24	5 22	6 58	3 04	14 04	.....	1 37	63	3 23.0	12 43	11.0
Fri Jan 26/Sat Jan 27	8 45	16 49	18 25	5 21	6 58	3 09	14 07	.....	2 47	74	4 20.4	16 03	10.9
Sat Jan 27/Sun Jan 28	8 49	16 50	18 26	5 21	6 57	3 14	14 10	.....	3 55	84	5 21.2	18 25	10.9
Sun Jan 28/Mon Jan 29	8 53	16 51	18 27	5 20	6 56	3 19	14 14	.....	5 01	92	6 24.7	19 33	10.9
Mon Jan 29/Tue Jan 30	8 57	16 53	18 28	5 19	6 55	3 24	14 17	.....	6 01	97	7 29.5	19 15	10.8
Tue Jan 30/Wed Jan 31	9 01	16 54	18 30	5 18	6 54	3 29	14 20	16 05	6 53	100	8 33.7	17 30	10.8
Wed Jan 31/Thu Feb 01	9 05	16 55	18 31	5 18	6 53	3 34	14 23	17 17	7 38	99	9 35.9	14 30	10.8

***** 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	9 09	16 56	18 32	5 17	6 52	3 39	14 26	18 30	8 17	96	10 34.9	10 35	10.8
Fri Feb 02/Sat Feb 03	9 13	16 58	18 33	5 16	6 51	3 44	14 29	19 41	.....	90	11 30.7	6 06	10.7
Sat Feb 03/Sun Feb 04	9 16	16 59	18 34	5 15	6 50	3 50	14 32	20 50	.....	82	12 23.7	1 25	10.7
Sun Feb 04/Mon Feb 05	9 20	17 00	18 35	5 14	6 49	3 55	14 35	21 56	.....	73	13 14.4	- 3 11	10.6
Mon Feb 05/Tue Feb 06	9 24	17 02	18 36	5 13	6 47	4 00	14 38	22 59	.....	64	14 03.7	- 7 30	10.6
Tue Feb 06/Wed Feb 07	9 28	17 03	18 37	5 12	6 46	4 05	14 41	0 01	.....	54	14 52.3	-11 22	10.6
Wed Feb 07/Thu Feb 08	9 32	17 04	18 38	5 11	6 45	4 10	14 44	1 00	.....	44	15 40.6	-14 39	10.5
Thu Feb 08/Fri Feb 09	9 36	17 05	18 40	5 10	6 44	4 15	14 47	1 57	.....	35	16 29.2	-17 16	10.5
Fri Feb 09/Sat Feb 10	9 40	17 07	18 41	5 09	6 43	4 20	14 50	2 52	.....	26	17 18.3	-19 08	10.5
Sat Feb 10/Sun Feb 11	9 44	17 08	18 42	5 08	6 41	4 25	14 53	3 44	.....	18	18 07.9	-20 12	10.4
Sun Feb 11/Mon Feb 12	9 48	17 09	18 43	5 07	6 40	4 30	14 55	4 32	.....	12	18 57.7	-20 23	10.4
Mon Feb 12/Tue Feb 13	9 52	17 10	18 44	5 05	6 39	4 35	14 58	5 17	.....	6	19 47.6	-19 43	10.4
Tue Feb 13/Wed Feb 14	9 56	17 12	18 45	5 04	6 38	4 40	15 01	5 57	.....	3	20 37.3	-18 12	10.3
Wed Feb 14/Thu Feb 15	10 00	17 13	18 46	5 03	6 36	4 45	15 04	6 33	16 10	0	21 26.4	-15 53	10.3
Thu Feb 15/Fri Feb 16	10 04	17 14	18 47	5 02	6 35	4 50	15 06	7 06	17 09	0	22 14.9	-12 52	10.2
Fri Feb 16/Sat Feb 17	10 08	17 15	18 49	5 00	6 33	4 55	15 09	7 37	18 09	2	23 02.9	- 9 17	10.2
Sat Feb 17/Sun Feb 18	10 12	17 17	18 50	4 59	6 32	5 01	15 12	8 07	19 11	5	23 50.6	- 5 15	10.2
Sun Feb 18/Mon Feb 19	10 16	17 18	18 51	4 58	6 31	5 06	15 14	.....	20 13	11	0 38.5	- 0 57	10.1
Mon Feb 19/Tue Feb 20	10 20	17 19	18 52	4 57	6 29	5 11	15 17	.....	21 17	18	1 27.1	3 27	10.1
Tue Feb 20/Wed Feb 21	10 24	17 20	18 53	4 55	6 28	5 16	15 19	.....	22 22	27	2 17.2	7 46	10.0
Wed Feb 21/Thu Feb 22	10 27	17 22	18 54	4 54	6 26	5 21	15 22	.....	23 28	37	3 09.4	11 45	10.0
Thu Feb 22/Fri Feb 23	10 31	17 23	18 55	4 52	6 25	5 26	15 25	.....	0 35	48	4 04.1	15 10	9.9
Fri Feb 23/Sat Feb 24	10 35	17 24	18 57	4 51	6 23	5 31	15 27	.....	1 42	59	5 01.7	17 45	9.9
Sat Feb 24/Sun Feb 25	10 39	17 25	18 58	4 49	6 22	5 36	15 30	.....	2 46	70	6 01.9	19 16	9.9
Sun Feb 25/Mon Feb 26	10 43	17 26	18 59	4 48	6 20	5 41	15 32	.....	3 46	80	7 03.8	19 29	9.8
Mon Feb 26/Tue Feb 27	10 47	17 28	19 00	4 46	6 19	5 46	15 34	.....	4 40	89	8 06.3	18 21	9.8
Tue Feb 27/Wed Feb 28	10 51	17 29	19 01	4 45	6 17	5 52	15 37	.....	5 28	95	9 07.8	15 56	9.7
Wed Feb 28/Thu Mar 01	10 55	17 30	19 02	4 43	6 16	5 57	15 39	.....	6 09	99	10 07.4	12 25	9.7

Calendar for Cape Cod Schmidt Observatory, west longitude (h.m.s) = 4 40 47, latitude (d.m) = 41 40.7
 Rise/set times in Eastern time (5 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 MARCH *****

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 Mar 01/Fri Mar 02	10 59	17 31	19 04	4 42	6 14	6 02	15 42	17 16	6 46	100	11 04.6	8 09	9.6
Fri Mar 02/Sat Mar 03	11 03	17 32	19 05	4 40	6 12	6 07	15 44	18 27	7 19	98	11 59.3	3 28	9.6
Sat Mar 03/Sun Mar 04	11 07	17 34	19 06	4 39	6 11	6 12	15 46	19 35	.....	94	12 52.0	- 1 19	9.5
Sun Mar 04/Mon Mar 05	11 11	17 35	19 07	4 37	6 09	6 17	15 49	20 41	.....	87	13 43.1	- 5 55	9.5
Mon Mar 05/Tue Mar 06	11 15	17 36	19 08	4 35	6 08	6 22	15 51	21 45	.....	80	14 33.3	-10 06	9.5
Tue Mar 06/Wed Mar 07	11 19	17 37	19 09	4 34	6 06	6 27	15 53	22 47	.....	71	15 23.1	-13 44	9.4
Wed Mar 07/Thu Mar 08	11 23	17 38	19 11	4 32	6 04	6 32	15 56	23 47	.....	61	16 12.8	-16 40	9.4
Thu Mar 08/Fri Mar 09	11 27	17 39	19 12	4 30	6 03	6 38	15 58	0 43	.....	52	17 02.6	-18 49	9.3
Fri Mar 09/Sat Mar 10	11 31	17 41	19 13	4 29	6 01	6 43	16 00	1 37	.....	42	17 52.7	-20 09	9.3
Sat Mar 10/Sun Mar 11*	11 34	17 42	19 14	5 27	6 59	6 48	16 02	3 27	.....	33	18 42.9	-20 36	9.2
Sun Mar 11/Mon Mar 12	10 38	18 43	20 15	5 25	6 58	6 53	16 04	4 13	.....	25	19 30.5	-20 10	9.2
Mon Mar 12/Tue Mar 13	10 42	18 44	20 17	5 24	6 56	6 58	16 07	4 54	.....	18	20 20.2	-18 55	9.1
Tue Mar 13/Wed Mar 14	10 46	18 45	20 18	5 22	6 54	7 03	16 09	5 32	.....	11	21 09.5	-16 51	9.1
Wed Mar 14/Thu Mar 15	10 50	18 46	20 19	5 20	6 53	7 08	16 11	6 06	.....	6	21 58.3	-14 03	9.0
Thu Mar 15/Fri Mar 16	10 54	18 47	20 20	5 18	6 51	7 14	16 13	6 38	16 58	2	22 46.7	-10 35	9.0
Fri Mar 16/Sat Mar 17	10 58	18 49	20 21	5 16	6 49	7 19	16 15	7 09	18 00	0	23 35.0	- 6 37	8.9
Sat Mar 17/Sun Mar 18	11 02	18 50	20 23	5 15	6 48	7 24	16 17	.....	19 03	1	0 23.4	- 2 18	8.9
Sun Mar 18/Mon Mar 19	11 06	18 51	20 24	5 13	6 46	7 29	16 20	.....	20 08	3	1 12.6	2 11	8.8
Mon Mar 19/Tue Mar 20	11 10	18 52	20 25	5 11	6 44	7 34	16 22	.....	21 13	8	2 02.9	6 38	8.8
Tue Mar 20/Wed Mar 21	11 14	18 53	20 26	5 09	6 42	7 40	16 24	.....	22 20	14	2 55.0	10 48	8.7
Wed Mar 21/Thu Mar 22	11 18	18 54	20 28	5 07	6 41	7 45	16 26	.....	23 28	23	3 49.3	14 26	8.7
Thu Mar 22/Fri Mar 23	11 22	18 55	20 29	5 05	6 39	7 50	16 28	.....	0 35	33	4 46.0	17 16	8.6
Fri Mar 23/Sat Mar 24	11 26	18 56	20 30	5 04	6 37	7 55	16 30	.....	1 40	44	5 44.8	19 05	8.6
Sat Mar 24/Sun Mar 25	11 29	18 57	20 31	5 02	6 36	8 00	16 32	.....	2 40	55	6 45.0	19 40	8.5
Sun Mar 25/Mon Mar 26	11 33	18 59	20 33	5 00	6 34	8 06	16 34	.....	3 35	67	7 45.7	18 59	8.5
Mon Mar 26/Tue Mar 27	11 37	19 00	20 34	4 58	6 32	8 11	16 36	.....	4 23	77	8 45.7	17 01	8.4
Tue Mar 27/Wed Mar 28	11 41	19 01	20 35	4 56	6 31	8 16	16 38	.....	5 05	86	9 44.2	13 57	8.3
Wed Mar 28/Thu Mar 29	11 45	19 02	20 37	4 54	6 29	8 21	16 40	.....	5 42	93	10 40.8	10 01	8.3
Thu Mar 29/Fri Mar 30	11 49	19 03	20 38	4 52	6 27	8 27	16 42	17 06	6 16	98	11 35.4	5 31	8.2
Fri Mar 30/Sat Mar 31	11 53	19 04	20 39	4 50	6 25	8 32	16 44	18 15	6 48	100	12 28.2	0 45	8.2
Sat Mar 31/Sun Apr 01	11 57	19 05	20 41	4 48	6 24	8 37	16 46	19 22	.....	99	13 19.9	- 3 59	8.1

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

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 Apr 01/Mon Apr 02	12 01	19 06	20 42	4 46	6 22	8 43	16 48	20 27	.....	97	14 10.7	- 8 27	8.1
Mon Apr 02/Tue Apr 03	12 05	19 07	20 43	4 44	6 20	8 48	16 50	21 31	.....	92	15 01.3	-12 25	8.0
Tue Apr 03/Wed Apr 04	12 09	19 08	20 45	4 42	6 19	8 53	16 52	22 33	.....	85	15 51.8	-15 45	8.0
Wed Apr 04/Thu Apr 05	12 13	19 09	20 46	4 41	6 17	8 58	16 54	23 32	.....	78	16 42.5	-18 18	7.9
Thu Apr 05/Fri Apr 06	12 17	19 11	20 47	4 39	6 15	9 04	16 56	0 28	.....	69	17 33.2	-19 59	7.9
Fri Apr 06/Sat Apr 07	12 21	19 12	20 49	4 37	6 14	9 09	16 58	1 20	.....	60	18 24.0	-20 48	7.8
Sat Apr 07/Sun Apr 08	12 25	19 13	20 50	4 35	6 12	9 14	17 00	2 08	.....	51	19 14.5	-20 41	7.7
Sun Apr 08/Mon Apr 09	12 29	19 14	20 52	4 33	6 10	9 20	17 02	2 51	.....	41	20 04.5	-19 42	7.7
Mon Apr 09/Tue Apr 10	12 33	19 15	20 53	4 31	6 09	9 25	17 04	3 30	.....	32	20 53.9	-17 53	7.6
Tue Apr 10/Wed Apr 11	12 37	19 16	20 55	4 29	6 07	9 31	17 06	4 05	.....	24	21 42.7	-15 17	7.6
Wed Apr 11/Thu Apr 12	12 40	19 17	20 56	4 27	6 06	9 36	17 08	4 37	.....	16	22 31.0	-12 01	7.5
Thu Apr 12/Fri Apr 13	12 44	19 18	20 57	4 25	6 04	9 41	17 10	5 08	.....	10	23 19.2	- 8 10	7.5
Fri Apr 13/Sat Apr 14	12 48	19 19	20 59	4 23	6 02	9 47	17 12	5 38	.....	4	0 07.6	- 3 53	7.4
Sat Apr 14/Sun Apr 15	12 52	19 20	21 00	4 21	6 01	9 52	17 14	6 08	17 52	1	0 56.9	0 39	7.3
Sun Apr 15/Mon Apr 16	12 56	19 22	21 02	4 19	5 59	9 58	17 16	6 40	18 59	0	1 47.4	5 14	7.3
Mon Apr 16/Tue Apr 17	13 00	19 23	21 03	4 17	5 58	10 03	17 18	.....	20 07	2	2 39.9	9 38	7.2
Tue Apr 17/Wed Apr 18	13 04	19 24	21 05	4 15	5 56	10 09	17 20	.....	21 16	5	3 34.6	13 33	7.2
Wed Apr 18/Thu Apr 19	13 08	19 25	21 06	4 13	5 55	10 14	17 22	.....	22 26	12	4 31.7	16 43	7.1
Thu Apr 19/Fri Apr 20	13 12	19 26	21 08	4 11	5 53	10 19	17 24	.....	23 33	20	5 30.8	18 51	7.1
Fri Apr 20/Sat Apr 21	13 16	19 27	21 09	4 09	5 52	10 25	17 26	.....	0 36	30	6 31.3	19 46	7.0
Sat Apr 21/Sun Apr 22	13 20	19 28	21 11	4 07	5 50	10 30	17 28	.....	1 33	41	7 31.9	19 22	6.9
Sun Apr 22/Mon Apr 23	13 24	19 29	21 13	4 05	5 49	10 36	17 30	.....	2 23	52	8 31.6	17 43	6.9
Mon Apr 23/Tue Apr 24	13 28	19 30	21 14	4 03	5 47	10 41	17 32	.....	3 06	64	9 29.5	14 56	6.8
Tue Apr 24/Wed Apr 25	13 32	19 31	21 16	4 01	5 46	10 47	17 34	.....	3 43	74	10 25.2	11 16	6.8
Wed Apr 25/Thu Apr 26	13 36	19 32	21 17	3 59	5 44	10 53	17 36	.....	4 17	83	11 18.9	6 58	6.7
Thu Apr 26/Fri Apr 27	13 40	19 34	21 19	3 58	5 43	10 58	17 38	.....	4 48	91	12 10.9	2 19	6.6
Fri Apr 27/Sat Apr 28	13 44	19 35	21 21	3 56	5 42	11 04	17 40	.....	5 18	96	13 01.8	- 2 25	6.6
Sat Apr 28/Sun Apr 29	13 47	19 36	21 22	3 54	5 40	11 09	17 42	18 13	5 49	99	13 52.1	- 6 59	6.5
Sun Apr 29/Mon Apr 30	13 51	19 37	21 24	3 52	5 39	11 15	17 44	19 17	6 20	100	14 42.3	-11 12	6.5
Mon Apr 30/Tue May 01	13 55	19 38	21 25	3 50	5 37	11 20	17 46	20 19	.....	98	15 32.9	-14 50	6.4

Calendar for Cape Cod Schmidt Observatory, west longitude (h.m.s) = 4 40 47, latitude (d.m) = 41 40.7
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***** 2018 MAY *****

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 May 01/Wed May 02	13 59	19 39	21 27	3 48	5 36	11 26	17 48	21 20	.....	95	16 23.8	-17 44	6.4
Wed May 02/Thu May 03	14 03	19 40	21 29	3 46	5 35	11 31	17 50	22 18	.....	90	17 15.1	-19 48	6.3
Thu May 03/Fri May 04	14 07	19 41	21 30	3 45	5 34	11 37	17 52	23 12	.....	84	18 06.6	-20 58	6.2
Fri May 04/Sat May 05	14 11	19 42	21 32	3 43	5 32	11 43	17 54	0 02	.....	76	18 57.7	-21 11	6.2
Sat May 05/Sun May 06	14 15	19 43	21 34	3 41	5 31	11 48	17 57	0 47	.....	67	19 48.3	-20 29	6.1
Sun May 06/Mon May 07	14 19	19 44	21 35	3 39	5 30	11 54	17 59	1 28	.....	58	20 38.1	-18 56	6.1
Mon May 07/Tue May 08	14 23	19 45	21 37	3 37	5 29	11 59	18 01	2 04	.....	49	21 27.0	-16 35	6.0
Tue May 08/Wed May 09	14 27	19 46	21 38	3 36	5 28	12 05	18 03	2 37	.....	39	22 15.1	-13 31	6.0
Wed May 09/Thu May 10	14 31	19 48	21 40	3 34	5 26	12 11	18 05	3 08	.....	30	23 02.8	- 9 52	5.9
Thu May 10/Fri May 11	14 35	19 49	21 42	3 32	5 25	12 16	18 08	3 37	.....	21	23 50.5	- 5 44	5.8
Fri May 11/Sat May 12	14 39	19 50	21 43	3 31	5 24	12 22	18 10	4 07	.....	14	0 39.0	- 1 16	5.8
Sat May 12/Sun May 13	14 43	19 51	21 45	3 29	5 23	12 27	18 12	4 37	.....	7	1 28.8	3 22	5.7
Sun May 13/Mon May 14	14 47	19 52	21 47	3 27	5 22	12 33	18 14	5 10	17 47	3	2 20.6	7 56	5.7
Mon May 14/Tue May 15	14 51	19 53	21 48	3 26	5 21	12 38	18 17	5 48	18 57	0	3 15.0	12 10	5.6
Tue May 15/Wed May 16	14 55	19 54	21 50	3 24	5 20	12 44	18 19	.....	20 08	1	4 12.3	15 44	5.6
Wed May 16/Thu May 17	14 58	19 55	21 51	3 23	5 19	12 50	18 22	.....	21 19	4	5 12.2	18 20	5.5
Thu May 17/Fri May 18	15 02	19 56	21 53	3 21	5 18	12 55	18 24	.....	22 27	10	6 13.9	19 43	5.5
Fri May 18/Sat May 19	15 06	19 57	21 55	3 19	5 18	13 01	18 26	.....	23 28	18	7 16.0	19 43	5.4
Sat May 19/Sun May 20	15 10	19 58	21 56	3 18	5 17	13 06	18 29	.....	0 21	27	8 17.2	18 21	5.4
Sun May 20/Mon May 21	15 14	19 59	21 58	3 17	5 16	13 12	18 31	.....	1 07	38	9 16.2	15 49	5.3
Mon May 21/Tue May 22	15 18	20 00	21 59	3 15	5 15	13 17	18 34	.....	1 46	50	10 12.6	12 19	5.3
Tue May 22/Wed May 23	15 22	20 00	22 01	3 14	5 14	13 23	18 36	.....	2 21	61	11 06.4	8 09	5.2
Wed May 23/Thu May 24	15 26	20 01	22 02	3 13	5 14	13 28	18 39	.....	2 52	71	11 58.1	3 36	5.2
Thu May 24/Fri May 25	15 30	20 02	22 04	3 11	5 13	13 34	18 42	.....	3 22	80	12 48.3	- 1 05	5.1
Fri May 25/Sat May 26	15 34	20 03	22 05	3 10	5 12	13 39	18 44	.....	3 51	88	13 37.7	- 5 42	5.1
Sat May 26/Sun May 27	15 38	20 04	22 07	3 09	5 12	13 44	18 47	.....	4 22	94	14 27.1	-10 00	5.0
Sun May 27/Mon May 28	15 42	20 05	22 08	3 08	5 11	13 50	18 50	18 09	4 54	98	15 16.8	-13 50	5.0
Mon May 28/Tue May 29	15 46	20 06	22 10	3 06	5 10	13 55	18 53	19 10	5 29	100	16 07.2	-17 00	4.9
Tue May 29/Wed May 30	15 50	20 07	22 11	3 05	5 10	14 00	18 56	20 09	6 07	100	16 58.3	-19 24	4.9
Wed May 30/Thu May 31	15 54	20 07	22 12	3 04	5 09	14 06	18 58	21 05	.....	98	17 49.8	-20 54	4.9
Thu May 31/Fri Jun 01	15 58	20 08	22 14	3 03	5 09	14 11	19 01	21 57	.....	94	18 41.4	-21 28	4.8

***** 2018 JUNE *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Jun 01/Sat Jun 02	16 02	20 09	22 15	3 02	5 08	14 16	19 04	22 44	.....	88	19 32.6	-21 05	4.8
Sat Jun 02/Sun Jun 03	16 05	20 10	22 16	3 02	5 08	14 21	19 07	23 26	.....	82	20 23.0	-19 48	4.8
Sun Jun 03/Mon Jun 04	16 09	20 10	22 17	3 01	5 08	14 26	19 11	0 04	.....	74	21 12.2	-17 42	4.7
Mon Jun 04/Tue Jun 05	16 13	20 11	22 18	3 00	5 07	14 31	19 14	0 38	.....	65	22 00.4	-14 52	4.7
Tue Jun 05/Wed Jun 06	16 17	20 12	22 20	2 59	5 07	14 37	19 17	1 09	.....	56	22 47.8	-11 25	4.7
Wed Jun 06/Thu Jun 07	16 21	20 12	22 21	2 58	5 07	14 42	19 20	1 38	.....	46	23 34.8	- 7 28	4.6
Thu Jun 07/Fri Jun 08	16 25	20 13	22 22	2 58	5 06	14 46	19 24	2 07	.....	36	0 22.1	- 3 09	4.6
Fri Jun 08/Sat Jun 09	16 29	20 14	22 23	2 57	5 06	14 51	19 27	2 36	.....	26	1 10.4	1 24	4.6
Sat Jun 09/Sun Jun 10	16 33	20 14	22 23	2 57	5 06	14 56	19 30	3 07	.....	17	2 00.5	5 59	4.6
Sun Jun 10/Mon Jun 11	16 37	20 15	22 24	2 56	5 06	15 01	19 34	3 41	.....	10	2 53.3	10 22	4.5
Mon Jun 11/Tue Jun 12	16 41	20 15	22 25	2 56	5 06	15 06	19 37	4 20	17 44	4	3 49.1	14 17	4.5
Tue Jun 12/Wed Jun 13	16 45	20 16	22 26	2 56	5 06	15 11	19 41	5 06	18 56	1	4 48.3	17 22	4.5
Wed Jun 13/Thu Jun 14	16 49	20 16	22 27	2 55	5 06	15 15	19 45	6 01	20 07	0	5 50.3	19 19	4.5
Thu Jun 14/Fri Jun 15	16 53	20 17	22 27	2 55	5 06	15 20	19 48	.....	21 13	3	6 53.8	19 53	4.5
Fri Jun 15/Sat Jun 16	16 57	20 17	22 28	2 55	5 06	15 24	19 52	.....	22 13	8	7 57.2	19 01	4.5
Sat Jun 16/Sun Jun 17	17 01	20 17	22 28	2 55	5 06	15 29	19 56	.....	23 03	15	8 58.7	16 47	4.4
Sun Jun 17/Mon Jun 18	17 05	20 18	22 29	2 55	5 06	15 33	20 00	.....	23 46	25	9 57.4	13 29	4.4
Mon Jun 18/Tue Jun 19	17 09	20 18	22 29	2 55	5 06	15 37	20 04	.....	0 23	35	10 52.9	9 24	4.4
Tue Jun 19/Wed Jun 20	17 13	20 18	22 29	2 55	5 06	15 42	20 08	.....	0 56	47	11 45.7	4 52	4.4
Wed Jun 20/Thu Jun 21	17 16	20 19	22 30	2 55	5 06	15 46	20 12	.....	1 27	57	12 36.4	0 09	4.4
Thu Jun 21/Fri Jun 22	17 20	20 19	22 30	2 56	5 07	15 50	20 16	.....	1 56	68	13 25.8	- 4 29	4.4
Fri Jun 22/Sat Jun 23	17 24	20 19	22 30	2 56	5 07	15 54	20 21	.....	2 25	77	14 14.7	- 8 53	4.4
Sat Jun 23/Sun Jun 24	17 28	20 19	22 30	2 56	5 07	15 58	20 25	.....	2 56	85	15 03.7	-12 50	4.4
Sun Jun 24/Mon Jun 25	17 32	20 19	22 30	2 57	5 08	16 02	20 29	.....	3 30	91	15 53.3	-16 11	4.4
Mon Jun 25/Tue Jun 26	17 36	20 19	22 30	2 57	5 08	16 06	20 34	18 02	4 07	96	16 43.7	-18 49	4.4
Tue Jun 26/Wed Jun 27	17 40	20 19	22 30	2 58	5 08	16 10	20 38	18 59	4 48	99	17 34.8	-20 37	4.5
Wed Jun 27/Thu Jun 28	17 44	20 19	22 30	2 58	5 09	16 14	20 43	19 52	5 33	100	18 26.3	-21 29	4.5
Thu Jun 28/Fri Jun 29	17 48	20 19	22 30	2 59	5 09	16 17	20 47	20 41	6 23	99	19 17.8	-21 25	4.5
Fri Jun 29/Sat Jun 30	17 52	20 19	22 29	3 00	5 10	16 21	20 52	21 25	.....	96	20 08.6	-20 24	4.5
Sat Jun 30/Sun Jul 01	17 56	20 19	22 29	3 00	5 10	16 25	20 57	22 05	.....	92	20 58.4	-18 32	4.5

Calendar for Cape Cod Schmidt Observatory, west longitude (h.m.s) = 4 40 47, latitude (d.m) = 41 40.7
 Rise/set times in Eastern time (5 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: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Sun Jul 01/Mon Jul 02	18 00	20 19	22 28	3 01	5 11	16 28	21 02	22 40	.....	86	21 47.1	-15 54	4.5
Mon Jul 02/Tue Jul 03	18 04	20 19	22 28	3 02	5 11	16 32	21 06	23 11	.....	79	22 34.6	-12 38	4.6
Tue Jul 03/Wed Jul 04	18 08	20 19	22 27	3 03	5 12	16 35	21 11	23 41	.....	71	23 21.4	- 8 50	4.6
Wed Jul 04/Thu Jul 05	18 12	20 18	22 27	3 04	5 12	16 38	21 16	0 09	.....	61	0 08.0	- 4 40	4.6
Thu Jul 05/Fri Jul 06	18 16	20 18	22 26	3 05	5 13	16 42	21 21	0 37	.....	51	0 55.0	- 0 15	4.6
Fri Jul 06/Sat Jul 07	18 20	20 18	22 25	3 06	5 14	16 45	21 26	1 06	.....	41	1 43.4	4 16	4.7
Sat Jul 07/Sun Jul 08	18 23	20 18	22 25	3 07	5 14	16 48	21 31	1 37	.....	31	2 33.8	8 40	4.7
Sun Jul 08/Mon Jul 09	18 27	20 17	22 24	3 08	5 15	16 51	21 36	2 13	.....	21	3 27.2	12 43	4.7
Mon Jul 09/Tue Jul 10	18 31	20 17	22 23	3 09	5 16	16 54	21 41	2 54	.....	12	4 23.9	16 08	4.8
Tue Jul 10/Wed Jul 11	18 35	20 16	22 22	3 11	5 16	16 57	21 47	3 44	17 43	6	5 24.2	18 35	4.8
Wed Jul 11/Thu Jul 12	18 39	20 16	22 21	3 12	5 17	17 00	21 52	4 42	18 51	1	6 27.1	19 47	4.8
Thu Jul 12/Fri Jul 13	18 43	20 15	22 20	3 13	5 18	17 03	21 57	5 48	19 55	0	7 31.2	19 32	4.9
Fri Jul 13/Sat Jul 14	18 47	20 15	22 19	3 15	5 19	17 06	22 02	.....	20 51	2	8 34.7	17 50	4.9
Sat Jul 14/Sun Jul 15	18 51	20 14	22 18	3 16	5 20	17 09	22 08	.....	21 40	6	9 36.0	14 51	5.0
Sun Jul 15/Mon Jul 16	18 55	20 14	22 17	3 17	5 20	17 11	22 13	.....	22 21	13	10 34.2	10 55	5.0
Mon Jul 16/Tue Jul 17	18 59	20 13	22 15	3 19	5 21	17 14	22 18	.....	22 56	22	11 29.4	6 24	5.1
Tue Jul 17/Wed Jul 18	19 03	20 12	22 14	3 20	5 22	17 17	22 24	.....	23 28	32	12 21.9	1 37	5.1
Wed Jul 18/Thu Jul 19	19 07	20 12	22 13	3 22	5 23	17 19	22 29	.....	23 59	43	13 12.5	- 3 10	5.1
Thu Jul 19/Fri Jul 20	19 11	20 11	22 12	3 23	5 24	17 22	22 34	.....	0 29	53	14 02.0	- 7 41	5.2
Fri Jul 20/Sat Jul 21	19 15	20 10	22 10	3 24	5 25	17 25	22 40	.....	0 59	63	14 51.1	-11 47	5.2
Sat Jul 21/Sun Jul 22	19 19	20 09	22 09	3 26	5 26	17 27	22 45	.....	1 32	73	15 40.5	-15 19	5.3
Sun Jul 22/Mon Jul 23	19 23	20 08	22 07	3 27	5 26	17 30	22 51	.....	2 08	81	16 30.4	-18 09	5.3
Mon Jul 23/Tue Jul 24	19 27	20 08	22 06	3 29	5 27	17 32	22 56	.....	2 47	88	17 21.0	-20 11	5.4
Tue Jul 24/Wed Jul 25	19 30	20 07	22 04	3 31	5 28	17 35	23 02	17 48	3 31	94	18 12.1	-21 19	5.4
Wed Jul 25/Thu Jul 26	19 34	20 06	22 03	3 32	5 29	17 37	23 07	18 38	4 19	97	19 03.5	-21 31	5.5
Thu Jul 26/Fri Jul 27	19 38	20 05	22 01	3 34	5 30	17 39	23 13	19 24	5 11	100	19 54.5	-20 46	5.5
Fri Jul 27/Sat Jul 28	19 42	20 04	22 00	3 35	5 31	17 42	23 18	20 05	6 06	100	20 44.8	-19 08	5.6
Sat Jul 28/Sun Jul 29	19 46	20 03	21 58	3 37	5 32	17 44	23 24	20 41	.....	98	21 34.0	-16 42	5.6
Sun Jul 29/Mon Jul 30	19 50	20 02	21 57	3 38	5 33	17 46	23 29	21 14	.....	95	22 22.2	-13 35	5.7
Mon Jul 30/Tue Jul 31	19 54	20 01	21 55	3 40	5 34	17 49	23 35	21 44	.....	90	23 09.3	- 9 54	5.8
Tue Jul 31/Wed Aug 01	19 58	20 00	21 53	3 42	5 35	17 51	23 40	22 12	.....	83	23 55.9	- 5 48	5.8

***** 2018 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	
Wed Aug 01/Thu Aug 02	20 02	19 59	21 51	3 43	5 36	17 53	23 46	22 40	.....	75	0 42.6	- 1 27	5.9
Thu Aug 02/Fri Aug 03	20 06	19 57	21 50	3 45	5 37	17 55	23 51	23 08	.....	66	1 29.9	3 00	5.9
Fri Aug 03/Sat Aug 04	20 10	19 56	21 48	3 46	5 38	17 58	23 57	23 37	.....	56	2 18.8	7 23	6.0
Sat Aug 04/Sun Aug 05	20 14	19 55	21 46	3 48	5 39	18 00	0 02	0 10	.....	45	3 09.9	11 29	6.0
Sun Aug 05/Mon Aug 06	20 18	19 54	21 44	3 49	5 40	18 02	0 08	0 47	.....	34	4 04.0	15 03	6.1
Mon Aug 06/Tue Aug 07	20 22	19 53	21 43	3 51	5 41	18 04	0 13	1 31	.....	24	5 01.4	17 49	6.1
Tue Aug 07/Wed Aug 08	20 26	19 51	21 41	3 53	5 42	18 06	0 19	2 24	.....	15	6 01.9	19 30	6.2
Wed Aug 08/Thu Aug 09	20 30	19 50	21 39	3 54	5 43	18 08	0 24	3 25	17 35	7	7 04.5	19 51	6.3
Thu Aug 09/Fri Aug 10	20 34	19 49	21 37	3 56	5 44	18 10	0 30	4 34	18 35	2	8 07.8	18 45	6.3
Fri Aug 10/Sat Aug 11	20 38	19 47	21 35	3 57	5 45	18 12	0 35	5 48	19 27	0	9 10.2	16 17	6.4
Sat Aug 11/Sun Aug 12	20 41	19 46	21 33	3 59	5 46	18 14	0 41	.....	20 12	1	10 10.4	12 41	6.4
Sun Aug 12/Mon Aug 13	20 45	19 45	21 31	4 00	5 47	18 16	0 46	.....	20 51	5	11 07.8	8 16	6.5
Mon Aug 13/Tue Aug 14	20 49	19 43	21 30	4 02	5 48	18 18	0 52	.....	21 26	11	12 02.5	3 26	6.5
Tue Aug 14/Wed Aug 15	20 53	19 42	21 28	4 04	5 49	18 21	0 57	.....	21 58	19	12 55.0	- 1 30	6.6
Wed Aug 15/Thu Aug 16	20 57	19 40	21 26	4 05	5 50	18 23	1 03	.....	22 29	28	13 46.0	- 6 14	6.7
Thu Aug 16/Fri Aug 17	21 01	19 39	21 24	4 07	5 51	18 25	1 08	.....	23 00	38	14 36.2	-10 35	6.7
Fri Aug 17/Sat Aug 18	21 05	19 38	21 22	4 08	5 52	18 27	1 14	.....	23 32	48	15 26.1	-14 21	6.8
Sat Aug 18/Sun Aug 19	21 09	19 36	21 20	4 10	5 53	18 29	1 19	.....	0 07	58	16 16.2	-17 25	6.8
Sun Aug 19/Mon Aug 20	21 13	19 35	21 18	4 11	5 54	18 31	1 25	.....	0 46	67	17 06.8	-19 41	6.9
Mon Aug 20/Tue Aug 21	21 17	19 33	21 16	4 13	5 55	18 32	1 30	.....	1 28	76	17 57.8	-21 04	6.9
Tue Aug 21/Wed Aug 22	21 21	19 32	21 14	4 14	5 56	18 34	1 36	.....	2 15	84	18 49.0	-21 31	7.0
Wed Aug 22/Thu Aug 23	21 25	19 30	21 12	4 15	5 58	18 36	1 41	17 22	3 06	90	19 40.0	-21 02	7.1
Thu Aug 23/Fri Aug 24	21 29	19 29	21 10	4 17	5 59	18 38	1 46	18 04	4 00	95	20 30.5	-19 39	7.1
Fri Aug 24/Sat Aug 25	21 33	19 27	21 08	4 18	6 00	18 40	1 52	18 42	4 57	98	21 20.1	-17 25	7.2
Sat Aug 25/Sun Aug 26	21 37	19 25	21 06	4 20	6 01	18 42	1 57	19 16	5 55	100	22 08.8	-14 26	7.2
Sun Aug 26/Mon Aug 27	21 41	19 24	21 04	4 21	6 02	18 44	2 03	19 47	.....	99	22 56.6	-10 51	7.3
Mon Aug 27/Tue Aug 28	21 45	19 22	21 02	4 23	6 03	18 46	2 08	20 16	.....	97	23 43.8	- 6 48	7.3
Tue Aug 28/Wed Aug 29	21 48	19 21	21 00	4 24	6 04	18 48	2 13	20 44	.....	93	0 30.7	- 2 26	7.4
Wed Aug 29/Thu Aug 30	21 52	19 19	20 58	4 25	6 05	18 50	2 19	21 11	.....	87	1 18.1	2 03	7.5
Thu Aug 30/Fri Aug 31	21 56	19 17	20 56	4 27	6 06	18 52	2 24	21 40	.....	79	2 06.6	6 29	7.5
Fri Aug 31/Sat Sep 01	22 00	19 16	20 54	4 28	6 07	18 54	2 29	22 11	.....	70	2 56.8	10 40	7.6

Calendar for Cape Cod Schmidt Observatory, west longitude (h.m.s) = 4 40 47, latitude (d.m) = 41 40.7
 Rise/set times in Eastern time (5 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	22 04	19 14	20 52	4 30	6 08	18 56	2 35	22 46	.....	60	3 49.4	14 21	7.6
Sun Sep 02/Mon Sep 03	22 08	19 12	20 50	4 31	6 09	18 58	2 40	23 26	.....	49	4 44.7	17 19	7.7
Mon Sep 03/Tue Sep 04	22 12	19 11	20 48	4 32	6 10	19 00	2 45	0 14	.....	38	5 42.8	19 17	7.7
Tue Sep 04/Wed Sep 05	22 16	19 09	20 46	4 34	6 11	19 02	2 50	1 09	.....	27	6 43.1	20 03	7.8
Wed Sep 05/Thu Sep 06	22 20	19 07	20 44	4 35	6 12	19 04	2 56	2 13	.....	17	7 44.6	19 28	7.8
Thu Sep 06/Fri Sep 07	22 24	19 06	20 42	4 36	6 13	19 06	3 01	3 23	17 15	9	8 46.0	17 32	7.9
Fri Sep 07/Sat Sep 08	22 28	19 04	20 40	4 37	6 14	19 08	3 06	4 36	18 02	4	9 46.1	14 22	8.0
Sat Sep 08/Sun Sep 09	22 32	19 02	20 38	4 39	6 15	19 10	3 11	5 51	18 43	0	10 44.2	10 15	8.0
Sun Sep 09/Mon Sep 10	22 36	19 00	20 36	4 40	6 16	19 11	3 17	7 04	19 20	0	11 40.0	5 31	8.1
Mon Sep 10/Tue Sep 11	22 40	18 59	20 34	4 41	6 17	19 13	3 22	.....	19 53	3	12 33.8	0 31	8.1
Tue Sep 11/Wed Sep 12	22 44	18 57	20 32	4 43	6 18	19 15	3 27	.....	20 25	8	13 26.2	- 4 26	8.2
Wed Sep 12/Thu Sep 13	22 48	18 55	20 30	4 44	6 19	19 17	3 32	.....	20 57	15	14 17.6	- 9 04	8.2
Thu Sep 13/Fri Sep 14	22 52	18 54	20 28	4 45	6 20	19 19	3 37	.....	21 30	23	15 08.5	-13 09	8.3
Fri Sep 14/Sat Sep 15	22 56	18 52	20 26	4 46	6 21	19 21	3 43	.....	22 04	32	15 59.5	-16 33	8.3
Sat Sep 15/Sun Sep 16	22 59	18 50	20 25	4 48	6 22	19 23	3 48	.....	22 42	42	16 50.6	-19 07	8.4
Sun Sep 16/Mon Sep 17	23 03	18 48	20 23	4 49	6 23	19 25	3 53	.....	23 23	51	17 41.9	-20 48	8.4
Mon Sep 17/Tue Sep 18	23 07	18 47	20 21	4 50	6 24	19 27	3 58	.....	0 09	61	18 33.3	-21 32	8.5
Tue Sep 18/Wed Sep 19	23 11	18 45	20 19	4 51	6 25	19 29	4 03	.....	0 59	70	19 24.4	-21 20	8.5
Wed Sep 19/Thu Sep 20	23 15	18 43	20 17	4 52	6 26	19 31	4 08	.....	1 52	78	20 14.9	-20 11	8.6
Thu Sep 20/Fri Sep 21	23 19	18 41	20 15	4 54	6 27	19 34	4 14	16 42	2 48	85	21 04.7	-18 11	8.6
Fri Sep 21/Sat Sep 22	23 23	18 40	20 13	4 55	6 28	19 36	4 19	17 17	3 46	91	21 53.6	-15 24	8.7
Sat Sep 22/Sun Sep 23	23 27	18 38	20 11	4 56	6 29	19 38	4 24	17 49	4 46	96	22 41.8	-11 57	8.7
Sun Sep 23/Mon Sep 24	23 31	18 36	20 09	4 57	6 30	19 40	4 29	18 18	5 46	99	23 29.4	- 7 58	8.8
Mon Sep 24/Tue Sep 25	23 35	18 35	20 07	4 58	6 31	19 42	4 34	18 46	6 47	100	0 16.9	- 3 35	8.8
Tue Sep 25/Wed Sep 26	23 39	18 33	20 06	4 59	6 32	19 44	4 39	19 14	.....	99	1 04.8	0 59	8.9
Wed Sep 26/Thu Sep 27	23 43	18 31	20 04	5 01	6 33	19 46	4 44	19 43	.....	95	1 53.7	5 34	8.9
Thu Sep 27/Fri Sep 28	23 47	18 29	20 02	5 02	6 34	19 48	4 49	20 13	.....	90	2 44.1	9 56	9.0
Fri Sep 28/Sat Sep 29	23 51	18 28	20 00	5 03	6 36	19 50	4 54	20 47	.....	83	3 36.6	13 50	9.0
Sat Sep 29/Sun Sep 30	23 55	18 26	19 58	5 04	6 37	19 52	4 59	21 25	.....	73	4 31.6	17 01	9.1
Sun Sep 30/Mon Oct 01	23 59	18 24	19 57	5 05	6 38	19 55	5 04	22 10	.....	63	5 28.8	19 15	9.1

***** 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	0 03	18 22	19 55	5 06	6 39	19 57	5 10	23 01	.....	52	6 28.0	20 18	9.2
Tue Oct 02/Wed Oct 03	0 06	18 21	19 53	5 07	6 40	19 59	5 15	0 01	.....	41	7 28.1	20 05	9.2
Wed Oct 03/Thu Oct 04	0 10	18 19	19 51	5 08	6 41	20 01	5 20	1 06	.....	30	8 28.1	18 32	9.3
Thu Oct 04/Fri Oct 05	0 14	18 17	19 50	5 10	6 42	20 03	5 25	2 17	.....	20	9 27.0	15 46	9.3
Fri Oct 05/Sat Oct 06	0 18	18 16	19 48	5 11	6 43	20 06	5 30	3 29	16 39	11	10 24.2	12 00	9.4
Sat Oct 06/Sun Oct 07	0 22	18 14	19 46	5 12	6 44	20 08	5 35	4 41	17 16	5	11 19.6	7 30	9.4
Sun Oct 07/Mon Oct 08	0 26	18 12	19 45	5 13	6 45	20 10	5 40	5 53	17 50	1	12 13.2	2 35	9.5
Mon Oct 08/Tue Oct 09	0 30	18 11	19 43	5 14	6 46	20 12	5 45	7 03	18 21	0	13 05.7	- 2 27	9.5
Tue Oct 09/Wed Oct 10	0 34	18 09	19 41	5 15	6 47	20 15	5 50	.....	18 53	1	13 57.4	- 7 17	9.6
Wed Oct 10/Thu Oct 11	0 38	18 07	19 40	5 16	6 48	20 17	5 55	.....	19 25	5	14 48.9	-11 41	9.6
Thu Oct 11/Fri Oct 12	0 42	18 06	19 38	5 17	6 50	20 19	6 00	.....	19 59	11	15 40.4	-15 27	9.7
Fri Oct 12/Sat Oct 13	0 46	18 04	19 36	5 18	6 51	20 22	6 05	.....	20 36	18	16 32.2	-18 24	9.7
Sat Oct 13/Sun Oct 14	0 50	18 03	19 35	5 19	6 52	20 24	6 10	.....	21 16	26	17 24.1	-20 27	9.7
Sun Oct 14/Mon Oct 15	0 54	18 01	19 33	5 21	6 53	20 26	6 15	.....	22 01	35	18 16.0	-21 31	9.8
Mon Oct 15/Tue Oct 16	0 58	17 59	19 32	5 22	6 54	20 29	6 20	.....	22 50	44	19 07.5	-21 38	9.8
Tue Oct 16/Wed Oct 17	1 02	17 58	19 30	5 23	6 55	20 31	6 25	.....	23 42	53	19 58.3	-20 47	9.9
Wed Oct 17/Thu Oct 18	1 06	17 56	19 29	5 24	6 56	20 34	6 30	.....	0 37	63	20 48.1	-19 03	9.9
Thu Oct 18/Fri Oct 19	1 10	17 55	19 27	5 25	6 57	20 36	6 35	.....	1 34	71	21 37.0	-16 31	10.0
Fri Oct 19/Sat Oct 20	1 14	17 53	19 26	5 26	6 59	20 39	6 40	.....	2 33	80	22 25.1	-13 16	10.0
Sat Oct 20/Sun Oct 21	1 17	17 52	19 24	5 27	7 00	20 41	6 45	16 19	3 33	87	23 12.6	- 9 26	10.0
Sun Oct 21/Mon Oct 22	1 21	17 50	19 23	5 28	7 01	20 44	6 50	16 48	4 34	93	0 00.0	- 5 08	10.1
Mon Oct 22/Tue Oct 23	1 25	17 49	19 22	5 29	7 02	20 46	6 55	17 16	5 37	97	0 48.0	- 0 32	10.1
Tue Oct 23/Wed Oct 24	1 29	17 47	19 20	5 30	7 03	20 49	7 00	17 44	6 41	99	1 37.0	4 11	10.2
Wed Oct 24/Thu Oct 25	1 33	17 46	19 19	5 31	7 04	20 51	7 05	18 14	7 47	100	2 27.8	8 47	10.2
Thu Oct 25/Fri Oct 26	1 37	17 45	19 18	5 32	7 06	20 54	7 10	18 46	.....	97	3 20.8	13 00	10.2
Fri Oct 26/Sat Oct 27	1 41	17 43	19 16	5 33	7 07	20 57	7 15	19 24	.....	92	4 16.4	16 32	10.3
Sat Oct 27/Sun Oct 28	1 45	17 42	19 15	5 35	7 08	20 59	7 20	20 07	.....	86	5 14.4	19 08	10.3
Sun Oct 28/Mon Oct 29	1 49	17 41	19 14	5 36	7 09	21 02	7 25	20 57	.....	77	6 14.3	20 32	10.4
Mon Oct 29/Tue Oct 30	1 53	17 39	19 13	5 37	7 10	21 05	7 31	21 54	.....	66	7 14.9	20 37	10.4
Tue Oct 30/Wed Oct 31	1 57	17 38	19 12	5 38	7 12	21 08	7 36	22 58	.....	55	8 15.1	19 22	10.4
Wed Oct 31/Thu Nov 01	2 01	17 37	19 10	5 39	7 13	21 10	7 41	0 06	.....	44	9 13.8	16 52	10.5

Calendar for Cape Cod Schmidt Observatory, west longitude (h.m.s) = 4 40 47, latitude (d.m) = 41 40.7
 Rise/set times in Eastern time (5 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	2 05	17 35	19 09	5 40	7 14	21 13	7 46	1 16	.....	33	10 10.4	13 22	10.5
Fri Nov 02/Sat Nov 03	2 09	17 34	19 08	5 41	7 15	21 16	7 51	2 26	.....	23	11 04.9	9 05	10.5
Sat Nov 03/Sun Nov 04*	2 13	17 33	19 07	4 42	6 17	21 19	7 56	2 36	15 50	14	11 57.6	4 19	10.6
Sun Nov 04/Mon Nov 05	3 17	16 32	18 06	4 43	6 18	21 22	8 01	3 45	.....	7	12 51.9	- 0 51	10.6
Mon Nov 05/Tue Nov 06	3 21	16 31	18 05	4 44	6 19	21 25	8 06	4 53	15 52	3	13 42.8	- 5 44	10.6
Tue Nov 06/Wed Nov 07	3 25	16 29	18 04	4 45	6 20	21 28	8 11	6 00	16 22	0	14 33.6	-10 18	10.7
Wed Nov 07/Thu Nov 08	3 29	16 28	18 03	4 46	6 21	21 31	8 16	7 06	16 55	0	15 24.8	-14 18	10.7
Thu Nov 08/Fri Nov 09	3 33	16 27	18 02	4 47	6 23	21 34	8 21	8 09	17 30	3	16 16.4	-17 34	10.8
Fri Nov 09/Sat Nov 10	3 36	16 26	18 01	4 48	6 24	21 37	8 26	.....	18 09	7	17 08.5	-19 57	10.8
Sat Nov 10/Sun Nov 11	3 40	16 25	18 01	4 49	6 25	21 40	8 31	.....	18 52	13	18 00.7	-21 22	10.8
Sun Nov 11/Mon Nov 12	3 44	16 24	18 00	4 50	6 26	21 43	8 36	.....	19 40	20	18 52.6	-21 47	10.8
Mon Nov 12/Tue Nov 13	3 48	16 23	17 59	4 52	6 27	21 46	8 41	.....	20 31	28	19 43.7	-21 13	10.9
Tue Nov 13/Wed Nov 14	3 52	16 22	17 58	4 53	6 29	21 49	8 46	.....	21 25	36	20 33.6	-19 45	10.9
Wed Nov 14/Thu Nov 15	3 56	16 21	17 57	4 54	6 30	21 53	8 51	.....	22 22	45	21 22.4	-17 28	10.9
Thu Nov 15/Fri Nov 16	4 00	16 20	17 57	4 55	6 31	21 56	8 56	.....	23 20	55	22 10.0	-14 28	11.0
Fri Nov 16/Sat Nov 17	4 04	16 20	17 56	4 56	6 32	21 59	9 01	.....	0 19	64	22 56.8	-10 50	11.0
Sat Nov 17/Sun Nov 18	4 08	16 19	17 55	4 57	6 34	22 02	9 05	.....	1 19	73	23 43.4	- 6 43	11.0
Sun Nov 18/Mon Nov 19	4 12	16 18	17 55	4 58	6 35	22 06	9 10	.....	2 20	82	0 30.3	- 2 14	11.0
Mon Nov 19/Tue Nov 20	4 16	16 17	17 54	4 59	6 36	22 09	9 15	.....	3 24	89	1 18.4	2 28	11.1
Tue Nov 20/Wed Nov 21	4 20	16 17	17 54	5 00	6 37	22 13	9 20	.....	4 29	95	2 08.4	7 11	11.1
Wed Nov 21/Thu Nov 22	4 24	16 16	17 53	5 01	6 38	22 16	9 25	15 43	5 37	98	3 01.0	11 40	11.1
Thu Nov 22/Fri Nov 23	4 28	16 15	17 53	5 02	6 39	22 20	9 30	16 19	6 47	100	3 56.7	15 36	11.1
Fri Nov 23/Sat Nov 24	4 32	16 15	17 52	5 03	6 41	22 23	9 35	17 00	7 56	99	4 55.5	18 41	11.2
Sat Nov 24/Sun Nov 25	4 36	16 14	17 52	5 04	6 42	22 27	9 40	17 48	.....	95	5 57.0	20 35	11.2
Sun Nov 25/Mon Nov 26	4 40	16 14	17 52	5 05	6 43	22 30	9 45	18 45	.....	88	6 59.7	21 05	11.2
Mon Nov 26/Tue Nov 27	4 43	16 13	17 51	5 06	6 44	22 34	9 50	19 48	.....	80	8 02.2	20 07	11.2
Tue Nov 27/Wed Nov 28	4 47	16 13	17 51	5 07	6 45	22 37	9 55	20 56	.....	69	9 02.9	17 49	11.3
Wed Nov 28/Thu Nov 29	4 51	16 12	17 51	5 07	6 46	22 41	10 00	22 07	.....	58	10 01.0	14 25	11.3
Thu Nov 29/Fri Nov 30	4 55	16 12	17 51	5 08	6 47	22 45	10 05	23 17	.....	47	10 56.2	10 13	11.3
Fri Nov 30/Sat Dec 01	4 59	16 12	17 50	5 09	6 48	22 49	10 09	0 27	.....	36	11 49.0	5 31	11.3

***** 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	5 03	16 11	17 50	5 10	6 49	22 52	10 14	1 35	.....	26	12 40.1	0 35	11.3
Sun Dec 02/Mon Dec 03	5 07	16 11	17 50	5 11	6 50	22 56	10 19	2 42	.....	17	13 30.1	- 4 18	11.4
Mon Dec 03/Tue Dec 04	5 11	16 11	17 50	5 12	6 51	23 00	10 24	3 48	.....	10	14 19.9	- 8 56	11.4
Tue Dec 04/Wed Dec 05	5 15	16 11	17 50	5 13	6 52	23 04	10 29	4 53	.....	5	15 10.0	-13 06	11.4
Wed Dec 05/Thu Dec 06	5 19	16 10	17 50	5 14	6 53	23 08	10 33	5 56	15 28	1	16 00.8	-16 36	11.4
Thu Dec 06/Fri Dec 07	5 23	16 10	17 50	5 14	6 54	23 12	10 38	6 57	16 05	0	16 52.3	-19 18	11.4
Fri Dec 07/Sat Dec 08	5 27	16 10	17 50	5 15	6 55	23 16	10 43	7 55	16 46	1	17 44.4	-21 03	11.4
Sat Dec 08/Sun Dec 09	5 31	16 10	17 50	5 16	6 56	23 20	10 48	8 47	17 31	3	18 36.4	-21 49	11.4
Sun Dec 09/Mon Dec 10	5 35	16 10	17 50	5 17	6 57	23 24	10 52	.....	18 21	8	19 27.9	-21 36	11.4
Mon Dec 10/Tue Dec 11	5 39	16 10	17 50	5 18	6 58	23 28	10 57	.....	19 15	13	20 18.3	-20 26	11.5
Tue Dec 11/Wed Dec 12	5 43	16 10	17 50	5 18	6 58	23 32	11 02	.....	20 11	20	21 07.4	-18 24	11.5
Wed Dec 12/Thu Dec 13	5 47	16 11	17 51	5 19	6 59	23 36	11 06	.....	21 08	28	21 55.0	-15 39	11.5
Thu Dec 13/Fri Dec 14	5 51	16 11	17 51	5 20	7 00	23 40	11 11	.....	22 06	37	22 41.5	-12 15	11.5
Fri Dec 14/Sat Dec 15	5 54	16 11	17 51	5 20	7 01	23 45	11 16	.....	23 05	47	23 27.2	- 8 22	11.5
Sat Dec 15/Sun Dec 16	5 58	16 11	17 52	5 21	7 01	23 49	11 20	.....	0 04	56	0 12.8	- 4 05	11.5
Sun Dec 16/Mon Dec 17	6 02	16 11	17 52	5 22	7 02	23 53	11 25	.....	1 05	66	0 59.1	0 27	11.5
Mon Dec 17/Tue Dec 18	6 06	16 12	17 52	5 22	7 03	23 57	11 29	.....	2 09	75	1 47.0	5 06	11.5
Tue Dec 18/Wed Dec 19	6 10	16 12	17 53	5 23	7 03	0 02	11 34	.....	3 14	84	2 37.4	9 40	11.5
Wed Dec 19/Thu Dec 20	6 14	16 13	17 53	5 23	7 04	0 06	11 38	.....	4 23	91	3 31.0	13 53	11.5
Thu Dec 20/Fri Dec 21	6 18	16 13	17 53	5 24	7 04	0 11	11 43	.....	5 33	97	4 28.3	17 26	11.5
Fri Dec 21/Sat Dec 22	6 22	16 13	17 54	5 24	7 05	0 15	11 47	15 35	6 42	99	5 29.4	19 57	11.5
Sat Dec 22/Sun Dec 23	6 26	16 14	17 54	5 25	7 05	0 19	11 52	16 28	7 48	100	6 33.3	21 08	11.5
Sun Dec 23/Mon Dec 24	6 30	16 15	17 55	5 25	7 06	0 24	11 56	17 31	8 47	97	7 38.2	20 47	11.5
Mon Dec 24/Tue Dec 25	6 34	16 15	17 56	5 26	7 06	0 28	12 00	18 40	.....	91	8 42.2	18 55	11.5
Tue Dec 25/Wed Dec 26	6 38	16 16	17 56	5 26	7 07	0 33	12 05	19 52	.....	83	9 43.6	15 45	11.5
Wed Dec 26/Thu Dec 27	6 42	16 16	17 57	5 26	7 07	0 38	12 09	21 06	.....	73	10 41.7	11 36	11.5
Thu Dec 27/Fri Dec 28	6 46	16 17	17 57	5 27	7 07	0 42	12 13	22 17	.....	62	11 36.6	6 52	11.5
Fri Dec 28/Sat Dec 29	6 50	16 18	17 58	5 27	7 07	0 47	12 18	23 27	.....	51	12 29.0	1 52	11.5
Sat Dec 29/Sun Dec 30	6 54	16 19	17 59	5 27	7 08	0 51	12 22	0 34	.....	40	13 19.6	- 3 07	11.5
Sun Dec 30/Mon Dec 31	6 58	16 19	18 00	5 28	7 08	0 56	12 26	1 40	.....	30	14 09.3	- 7 50	11.5
Mon Dec 31/Tue Jan 01	7 01	16 20	18 00	5 28	7 08	1 01	12 30	2 45	.....	21	14 58.9	-12 06	11.5