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:

***** 2019 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 hemishpheres. Rise/set times are slightly incaccurate 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

MOON PHASES FOR 2019, 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	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
Feb	04	16 05	Feb	12	17 27	Feb	19	10 54	Feb	26	6 30
Mar	06	11 05	Mar	14	6 27	Mar	20	21 43	Mar	28	0 11
Apr	05	4 52	Apr	12	15 06	Apr	19	7 12	Apr	26	18 19
May	04	18 47	May	11	21 13	May	18	17 12	May	26	12 35
Jun	03	6 03	Jun	10	2 01	Jun	17	4 31	Jun	25	5 48
Jul	02	15 17	Jul	09	6 57	Jul	16	17 40	Jul	24	21 20
Jul	31	23 13	Aug	07	13 33	Aug	15	8 31	Aug	23	10 59
Aug	30	6 38	Sep	05	23 12	Sep	14	0 35	Sep	21	22 44
Sep	28	14 28	Oct	05	12 48	Oct	13	17 11	Oct	21	8 42
Oct	27	23 40	Nov	04	5 24	Nov	12	8 37	Nov	19	16 13
Nov	26	10 08	Dec	04	1 59	Dec	12	0 15	Dec	18	23 59
Dec	26	0 16	Jan	02	23 47	Jan	10	14 23	Jan	17	8 01

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.

***** 2019 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
Tue Jan 01/Wed Jan 02	7 05	16 21	18 01	5 28	7 08	1 05	12 34	3 48	.....	14	15 49.0	-15 45	11.4
Wed Jan 02/Thu Jan 03	7 09	16 22	18 02	5 28	7 08	1 10	12 38	4 49	.....	7	16 39.7	-18 39	11.4
Thu Jan 03/Fri Jan 04	7 13	16 23	18 03	5 28	7 08	1 15	12 42	5 47	.....	3	17 31.0	-20 39	11.4
Fri Jan 04/Sat Jan 05	7 17	16 24	18 03	5 28	7 08	1 20	12 46	6 41	15 27	1	18 22.7	-21 42	11.4
Sat Jan 05/Sun Jan 06	7 21	16 25	18 04	5 28	7 08	1 24	12 50	7 29	16 15	0	19 14.1	-21 46	11.4
Sun Jan 06/Mon Jan 07	7 25	16 26	18 05	5 28	7 08	1 29	12 54	8 12	17 07	1	20 04.8	-20 52	11.4
Mon Jan 07/Tue Jan 08	7 29	16 27	18 06	5 28	7 08	1 34	12 58	8 50	18 02	4	20 54.2	-19 05	11.4
Tue Jan 08/Wed Jan 09	7 33	16 28	18 07	5 28	7 07	1 39	13 02	.....	18 59	8	21 42.2	-16 32	11.4
Wed Jan 09/Thu Jan 10	7 37	16 29	18 08	5 28	7 07	1 44	13 06	.....	19 57	14	22 28.7	-13 20	11.3
Thu Jan 10/Fri Jan 11	7 41	16 30	18 09	5 28	7 07	1 49	13 10	.....	20 55	21	23 14.1	- 9 37	11.3
Fri Jan 11/Sat Jan 12	7 45	16 31	18 10	5 28	7 07	1 53	13 14	.....	21 54	30	23 58.9	- 5 30	11.3
Sat Jan 12/Sun Jan 13	7 49	16 32	18 11	5 28	7 06	1 58	13 17	.....	22 53	39	0 43.9	- 1 08	11.3
Sun Jan 13/Mon Jan 14	7 53	16 33	18 11	5 28	7 06	2 03	13 21	.....	23 53	49	1 29.8	3 22	11.3
Mon Jan 14/Tue Jan 15	7 57	16 34	18 12	5 27	7 06	2 08	13 25	.....	0 56	59	2 17.4	7 50	11.2
Tue Jan 15/Wed Jan 16	8 01	16 35	18 13	5 27	7 05	2 13	13 28	.....	2 01	69	3 07.8	12 05	11.2
Wed Jan 16/Thu Jan 17	8 05	16 36	18 14	5 27	7 05	2 18	13 32	.....	3 08	78	4 01.8	15 52	11.2
Thu Jan 17/Fri Jan 18	8 08	16 37	18 15	5 26	7 04	2 23	13 36	.....	4 17	87	4 59.8	18 51	11.2
Fri Jan 18/Sat Jan 19	8 12	16 39	18 16	5 26	7 03	2 28	13 39	.....	5 25	94	6 01.6	20 43	11.2
Sat Jan 19/Sun Jan 20	8 16	16 40	18 17	5 25	7 03	2 33	13 43	.....	6 28	98	7 06.3	21 08	11.1
Sun Jan 20/Mon Jan 21	8 20	16 41	18 19	5 25	7 02	2 38	13 46	16 14	7 23	100	8 11.8	19 59	11.1
Mon Jan 21/Tue Jan 22	8 24	16 42	18 20	5 25	7 02	2 43	13 50	17 27	8 11	98	9 16.3	17 18	11.1
Tue Jan 22/Wed Jan 23	8 28	16 44	18 21	5 24	7 01	2 48	13 53	18 43	.....	94	10 18.1	13 24	11.1
Wed Jan 23/Thu Jan 24	8 32	16 45	18 22	5 23	7 00	2 53	13 56	19 58	.....	87	11 16.7	8 39	11.0
Thu Jan 24/Fri Jan 25	8 36	16 46	18 23	5 23	6 59	2 58	14 00	21 12	.....	78	12 12.1	3 30	11.0
Fri Jan 25/Sat Jan 26	8 40	16 47	18 24	5 22	6 59	3 03	14 03	22 23	.....	67	13 05.2	- 1 42	11.0
Sat Jan 26/Sun Jan 27	8 44	16 48	18 25	5 22	6 58	3 08	14 06	23 31	.....	56	13 56.7	- 6 40	10.9
Sun Jan 27/Mon Jan 28	8 48	16 50	18 26	5 21	6 57	3 13	14 10	0 37	.....	46	14 47.3	-11 10	10.9
Mon Jan 28/Tue Jan 29	8 52	16 51	18 27	5 20	6 56	3 18	14 13	1 41	.....	36	15 37.8	-15 02	10.9
Tue Jan 29/Wed Jan 30	8 56	16 52	18 28	5 19	6 55	3 23	14 16	2 43	.....	26	16 28.6	-18 07	10.9
Wed Jan 30/Thu Jan 31	9 00	16 54	18 29	5 19	6 54	3 28	14 19	3 42	.....	18	17 19.7	-20 20	10.8
Thu Jan 31/Fri Feb 01	9 04	16 55	18 30	5 18	6 53	3 33	14 22	4 37	.....	11	18 11.1	-21 35	10.8

***** 2019 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
Fri Feb 01/Sat Feb 02	9 08	16 56	18 31	5 17	6 52	3 38	14 25	5 26	.....	6	19 02.4	-21 52	10.8
Sat Feb 02/Sun Feb 03	9 12	16 57	18 33	5 16	6 51	3 43	14 29	6 11	.....	2	19 53.0	-21 12	10.7
Sun Feb 03/Mon Feb 04	9 16	16 59	18 34	5 15	6 50	3 48	14 32	6 50	15 56	0	20 42.6	-19 37	10.7
Mon Feb 04/Tue Feb 05	9 19	17 00	18 35	5 14	6 49	3 53	14 35	7 25	16 52	0	21 30.8	-17 14	10.7
Tue Feb 05/Wed Feb 06	9 23	17 01	18 36	5 13	6 48	3 58	14 38	7 55	17 50	2	22 17.7	-14 10	10.6
Wed Feb 06/Thu Feb 07	9 27	17 02	18 37	5 12	6 47	4 03	14 40	.....	18 48	5	23 03.3	-10 33	10.6
Thu Feb 07/Fri Feb 08	9 31	17 04	18 38	5 11	6 45	4 09	14 43	.....	19 47	9	23 48.1	- 6 32	10.6
Fri Feb 08/Sat Feb 09	9 35	17 05	18 39	5 10	6 44	4 14	14 46	.....	20 45	16	0 32.6	- 2 15	10.5
Sat Feb 09/Sun Feb 10	9 39	17 06	18 40	5 09	6 43	4 19	14 49	.....	21 45	23	1 17.4	2 10	10.5
Sun Feb 10/Mon Feb 11	9 43	17 08	18 42	5 08	6 42	4 24	14 52	.....	22 45	32	2 03.4	6 34	10.4
Mon Feb 11/Tue Feb 12	9 47	17 09	18 43	5 07	6 40	4 29	14 55	.....	23 47	42	2 51.4	10 47	10.4
Tue Feb 12/Wed Feb 13	9 51	17 10	18 44	5 06	6 39	4 34	14 58	.....	0 52	52	3 42.2	14 37	10.4
Wed Feb 13/Thu Feb 14	9 55	17 11	18 45	5 04	6 38	4 39	15 00	.....	1 58	63	4 36.5	17 48	10.3
Thu Feb 14/Fri Feb 15	9 59	17 13	18 46	5 03	6 37	4 44	15 03	.....	3 04	73	5 34.5	20 04	10.3
Fri Feb 15/Sat Feb 16	10 03	17 14	18 47	5 02	6 35	4 49	15 06	.....	4 07	83	6 35.9	21 07	10.2
Sat Feb 16/Sun Feb 17	10 07	17 15	18 48	5 01	6 34	4 54	15 08	.....	5 06	91	7 39.6	20 42	10.2
Sun Feb 17/Mon Feb 18	10 11	17 16	18 49	4 59	6 32	4 59	15 11	.....	5 57	97	8 44.0	18 46	10.2
Mon Feb 18/Tue Feb 19	10 15	17 18	18 51	4 58	6 31	5 04	15 14	16 12	6 42	100	9 47.3	15 24	10.1
Tue Feb 19/Wed Feb 20	10 19	17 19	18 52	4 57	6 30	5 10	15 16	17 29	7 21	99	10 48.4	10 55	10.1
Wed Feb 20/Thu Feb 21	10 23	17 20	18 53	4 55	6 28	5 15	15 19	18 46	7 56	96	11 46.8	5 45	10.0
Thu Feb 21/Fri Feb 22	10 26	17 21	18 54	4 54	6 27	5 20	15 21	20 01	.....	90	12 42.9	0 18	10.0
Fri Feb 22/Sat Feb 23	10 30	17 23	18 55	4 53	6 25	5 25	15 24	21 13	.....	82	13 37.1	- 5 02	10.0
Sat Feb 23/Sun Feb 24	10 34	17 24	18 56	4 51	6 24	5 30	15 26	22 23	.....	73	14 30.1	- 9 55	9.9
Sun Feb 24/Mon Feb 25	10 38	17 25	18 58	4 50	6 22	5 35	15 29	23 30	.....	62	15 22.5	-14 09	9.9
Mon Feb 25/Tue Feb 26	10 42	17 26	18 59	4 48	6 21	5 40	15 31	0 35	.....	52	16 14.7	-17 34	9.8
Tue Feb 26/Wed Feb 27	10 46	17 27	19 00	4 47	6 19	5 45	15 34	1 36	.....	42	17 06.8	-20 04	9.8
Wed Feb 27/Thu Feb 28	10 50	17 29	19 01	4 45	6 18	5 50	15 36	2 32	.....	33	17 58.9	-21 34	9.7
Thu Feb 28/Fri Mar 01	10 54	17 30	19 02	4 44	6 16	5 55	15 39	3 24	.....	24	18 50.6	-22 05	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.

***** 2019 MARCH *****

Date (eve/morn)	LMST	Sun:				LST twilight:		Moon:					Twi-Twi
	midn	set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Mar 01/Sat Mar 02	10 58	17 31	19 03	4 42	6 14	6 01	15 41	4 10	.....	16	19 41.6	-21 36	9.6
Sat Mar 02/Sun Mar 03	11 02	17 32	19 04	4 41	6 13	6 06	15 43	4 50	.....	10	20 31.4	-20 12	9.6
Sun Mar 03/Mon Mar 04	11 06	17 33	19 06	4 39	6 11	6 11	15 46	5 26	.....	5	21 19.9	-17 58	9.6
Mon Mar 04/Tue Mar 05	11 10	17 34	19 07	4 37	6 10	6 16	15 48	5 58	.....	2	22 07.1	-15 01	9.5
Tue Mar 05/Wed Mar 06	11 14	17 36	19 08	4 36	6 08	6 21	15 50	6 27	16 41	0	22 53.0	-11 29	9.5
Wed Mar 06/Thu Mar 07	11 18	17 37	19 09	4 34	6 06	6 26	15 53	6 53	17 40	0	23 38.1	- 7 30	9.4
Thu Mar 07/Fri Mar 08	11 22	17 38	19 10	4 33	6 05	6 31	15 55	7 19	18 39	2	0 22.7	- 3 13	9.4
Fri Mar 08/Sat Mar 09	11 26	17 39	19 12	4 31	6 03	6 36	15 57	.....	19 39	6	1 07.4	1 13	9.3
Sat Mar 09/Sun Mar 10*	11 30	17 40	19 13	5 29	7 01	6 41	15 59	.....	20 39	11	1 53.0	5 39	9.3
Sun Mar 10/Mon Mar 11	10 33	18 41	20 14	5 27	7 00	6 47	16 02	.....	22 41	18	2 37.6	9 46	9.2
Mon Mar 11/Tue Mar 12	10 37	18 43	20 15	5 26	6 58	6 52	16 04	.....	23 44	26	3 26.9	13 42	9.2
Tue Mar 12/Wed Mar 13	10 41	18 44	20 16	5 24	6 56	6 57	16 06	.....	0 48	36	4 18.9	17 02	9.1
Wed Mar 13/Thu Mar 14	10 45	18 45	20 18	5 22	6 55	7 02	16 08	.....	1 52	46	5 14.1	19 34	9.1
Thu Mar 14/Fri Mar 15	10 49	18 46	20 19	5 20	6 53	7 07	16 10	.....	2 55	57	6 12.3	21 01	9.0
Fri Mar 15/Sat Mar 16	10 53	18 47	20 20	5 19	6 51	7 12	16 13	.....	3 53	68	7 13.0	21 11	9.0
Sat Mar 16/Sun Mar 17	10 57	18 48	20 21	5 17	6 50	7 18	16 15	.....	4 46	79	8 14.9	19 55	8.9
Sun Mar 17/Mon Mar 18	11 01	18 49	20 22	5 15	6 48	7 23	16 17	.....	5 32	88	9 16.9	17 15	8.9
Mon Mar 18/Tue Mar 19	11 05	18 50	20 24	5 13	6 46	7 28	16 19	.....	6 13	95	10 17.7	13 19	8.8
Tue Mar 19/Wed Mar 20	11 09	18 52	20 25	5 11	6 45	7 33	16 21	17 16	6 49	99	11 16.8	8 26	8.8
Wed Mar 20/Thu Mar 21	11 13	18 53	20 26	5 10	6 43	7 38	16 23	18 32	7 22	100	12 14.1	3 01	8.7
Thu Mar 21/Fri Mar 22	11 17	18 54	20 27	5 08	6 41	7 44	16 25	19 47	.....	98	13 09.8	- 2 33	8.7
Fri Mar 22/Sat Mar 23	11 21	18 55	20 29	5 06	6 39	7 49	16 27	21 00	.....	93	14 04.6	- 7 51	8.6
Sat Mar 23/Sun Mar 24	11 25	18 56	20 30	5 04	6 38	7 54	16 29	22 11	.....	87	14 58.9	-12 36	8.6
Sun Mar 24/Mon Mar 25	11 29	18 57	20 31	5 02	6 36	7 59	16 32	23 19	.....	78	15 52.9	-16 32	8.5
Mon Mar 25/Tue Mar 26	11 32	18 58	20 32	5 00	6 34	8 04	16 34	0 24	.....	69	16 46.9	-19 31	8.5
Tue Mar 26/Wed Mar 27	11 36	18 59	20 34	4 58	6 33	8 10	16 36	1 24	.....	59	17 40.5	-21 26	8.4
Wed Mar 27/Thu Mar 28	11 40	19 00	20 35	4 56	6 31	8 15	16 38	2 19	.....	50	18 33.5	-22 18	8.4
Thu Mar 28/Fri Mar 29	11 44	19 02	20 36	4 55	6 29	8 20	16 40	3 08	.....	40	19 25.6	-22 07	8.3
Fri Mar 29/Sat Mar 30	11 48	19 03	20 38	4 53	6 28	8 25	16 42	3 50	.....	31	20 16.2	-20 58	8.2
Sat Mar 30/Sun Mar 31	11 52	19 04	20 39	4 51	6 26	8 31	16 44	4 28	.....	23	21 05.4	-18 56	8.2
Sun Mar 31/Mon Apr 01	11 56	19 05	20 40	4 49	6 24	8 36	16 46	5 00	.....	15	21 53.0	-16 09	8.1

***** 2019 APRIL *****

Date (eve/morn)	LMST	Sun:				LST twilight:		Moon:					Twi-Twi
	midn	set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Mon Apr 01/Tue Apr 02	12 00	19 06	20 42	4 47	6 22	8 41	16 48	5 30	.....	9	22 39.2	-12 45	8.1
Tue Apr 02/Wed Apr 03	12 04	19 07	20 43	4 45	6 21	8 47	16 50	5 57	.....	5	23 24.5	- 8 50	8.0
Wed Apr 03/Thu Apr 04	12 08	19 08	20 44	4 43	6 19	8 52	16 52	6 23	17 31	2	0 09.3	- 4 34	8.0
Thu Apr 04/Fri Apr 05	12 12	19 09	20 46	4 41	6 17	8 57	16 54	6 49	18 31	0	0 54.3	- 0 05	7.9
Fri Apr 05/Sat Apr 06	12 16	19 10	20 47	4 39	6 16	9 02	16 56	.....	19 32	1	1 39.9	4 27	7.9
Sat Apr 06/Sun Apr 07	12 20	19 11	20 49	4 37	6 14	9 08	16 58	.....	20 34	3	2 26.9	8 52	7.8
Sun Apr 07/Mon Apr 08	12 24	19 12	20 50	4 35	6 13	9 13	17 00	.....	21 37	8	3 15.8	12 56	7.8
Mon Apr 08/Tue Apr 09	12 28	19 14	20 51	4 33	6 11	9 19	17 02	.....	22 42	14	4 07.2	16 28	7.7
Tue Apr 09/Wed Apr 10	12 32	19 15	20 53	4 31	6 09	9 24	17 04	.....	23 46	22	5 01.4	19 13	7.6
Wed Apr 10/Thu Apr 11	12 36	19 16	20 54	4 29	6 08	9 29	17 06	.....	0 49	32	5 58.1	20 56	7.6
Thu Apr 11/Fri Apr 12	12 40	19 17	20 56	4 27	6 06	9 35	17 08	.....	1 48	42	6 56.9	21 25	7.5
Fri Apr 12/Sat Apr 13	12 43	19 18	20 57	4 25	6 04	9 40	17 09	.....	2 41	54	7 56.8	20 34	7.5
Sat Apr 13/Sun Apr 14	12 47	19 19	20 59	4 23	6 03	9 45	17 11	.....	3 28	65	8 56.7	18 22	7.4
Sun Apr 14/Mon Apr 15	12 51	19 20	21 00	4 21	6 01	9 51	17 13	.....	4 09	76	9 55.8	14 56	7.4
Mon Apr 15/Tue Apr 16	12 55	19 21	21 02	4 19	6 00	9 56	17 15	.....	4 45	85	10 53.4	10 29	7.3
Tue Apr 16/Wed Apr 17	12 59	19 22	21 03	4 17	5 58	10 02	17 17	.....	5 19	93	11 49.7	5 20	7.2
Wed Apr 17/Thu Apr 18	13 03	19 23	21 05	4 15	5 57	10 07	17 19	17 22	5 50	98	12 44.9	- 0 11	7.2
Thu Apr 18/Fri Apr 19	13 07	19 25	21 06	4 14	5 55	10 13	17 21	18 35	6 22	100	13 39.6	- 5 40	7.1
Fri Apr 19/Sat Apr 20	13 11	19 26	21 08	4 12	5 53	10 18	17 23	19 47	.....	99	14 34.2	-10 47	7.1
Sat Apr 20/Sun Apr 21	13 15	19 27	21 09	4 10	5 52	10 24	17 25	20 58	.....	96	15 29.1	-15 13	7.0
Sun Apr 21/Mon Apr 22	13 19	19 28	21 11	4 08	5 50	10 29	17 27	22 06	.....	91	16 24.4	-18 44	7.0
Mon Apr 22/Tue Apr 23	13 23	19 29	21 12	4 06	5 49	10 35	17 29	23 11	.....	84	17 19.7	-21 11	6.9
Tue Apr 23/Wed Apr 24	13 27	19 30	21 14	4 04	5 48	10 40	17 31	0 10	.....	75	18 14.6	-22 30	6.8
Wed Apr 24/Thu Apr 25	13 31	19 31	21 15	4 02	5 46	10 46	17 33	1 02	.....	66	19 08.5	-22 40	6.8
Thu Apr 25/Fri Apr 26	13 35	19 32	21 17	4 00	5 45	10 51	17 35	1 48	.....	57	20 00.7	-21 48	6.7
Fri Apr 26/Sat Apr 27	13 39	19 33	21 19	3 58	5 43	10 57	17 37	2 27	.....	47	20 51.1	-20 00	6.7
Sat Apr 27/Sun Apr 28	13 43	19 34	21 20	3 56	5 42	11 02	17 39	3 02	.....	38	21 39.6	-17 23	6.6
Sun Apr 28/Mon Apr 29	13 47	19 35	21 22	3 54	5 40	11 08	17 41	3 32	.....	29	22 26.5	-14 06	6.5
Mon Apr 29/Tue Apr 30	13 50	19 37	21 23	3 52	5 39	11 13	17 43	4 00	.....	21	23 12.0	-10 17	6.5
Tue Apr 30/Wed May 01	13 54	19 38	21 25	3 51	5 38	11 19	17 46	4 26	.....	14	23 56.9	- 6 03	6.4

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.

***** 2019 MAY *****

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 May 01/Thu May 02	13 58	19 39	21 27	3 49	5 36	11 25	17 48	4 51	.....	8	0 41.7	- 1 34	6.4
Thu May 02/Fri May 03	14 02	19 40	21 28	3 47	5 35	11 30	17 50	5 18	.....	4	1 27.2	3 02	6.3
Fri May 03/Sat May 04	14 06	19 41	21 30	3 45	5 34	11 36	17 52	5 45	18 23	1	2 14.0	7 35	6.3
Sat May 04/Sun May 05	14 10	19 42	21 31	3 43	5 33	11 41	17 54	6 16	19 27	0	3 02.8	11 52	6.2
Sun May 05/Mon May 06	14 14	19 43	21 33	3 41	5 31	11 47	17 56	.....	20 32	2	3 54.2	15 39	6.1
Mon May 06/Tue May 07	14 18	19 44	21 35	3 40	5 30	11 52	17 58	.....	21 38	5	4 48.3	18 41	6.1
Tue May 07/Wed May 08	14 22	19 45	21 36	3 38	5 29	11 58	18 00	.....	22 43	11	5 45.1	20 43	6.0
Wed May 08/Thu May 09	14 26	19 46	21 38	3 36	5 28	12 04	18 03	.....	23 45	19	6 43.9	21 32	6.0
Thu May 09/Fri May 10	14 30	19 47	21 40	3 34	5 27	12 09	18 05	.....	0 40	29	7 43.6	21 00	5.9
Fri May 10/Sat May 11	14 34	19 48	21 41	3 33	5 26	12 15	18 07	.....	1 28	39	8 42.9	19 08	5.9
Sat May 11/Sun May 12	14 38	19 49	21 43	3 31	5 25	12 20	18 09	.....	2 10	51	9 41.1	16 02	5.8
Sun May 12/Mon May 13	14 42	19 50	21 45	3 29	5 24	12 26	18 12	.....	2 47	62	10 37.6	11 55	5.7
Mon May 13/Tue May 14	14 46	19 51	21 46	3 28	5 22	12 32	18 14	.....	3 20	73	11 32.4	7 03	5.7
Tue May 14/Wed May 15	14 50	19 52	21 48	3 26	5 21	12 37	18 16	.....	3 51	83	12 26.2	1 45	5.6
Wed May 15/Thu May 16	14 54	19 53	21 49	3 24	5 20	12 43	18 19	.....	4 21	91	13 19.3	- 3 41	5.6
Thu May 16/Fri May 17	14 58	19 54	21 51	3 23	5 20	12 48	18 21	.....	4 52	96	14 12.6	- 8 55	5.5
Fri May 17/Sat May 18	15 01	19 55	21 53	3 21	5 19	12 54	18 23	18 38	5 25	99	15 06.6	-13 39	5.5
Sat May 18/Sun May 19	15 05	19 56	21 54	3 20	5 18	12 59	18 26	19 47	6 02	100	16 01.4	-17 36	5.4
Sun May 19/Mon May 20	15 09	19 57	21 56	3 18	5 17	13 05	18 28	20 54	.....	98	16 57.1	-20 34	5.4
Mon May 20/Tue May 21	15 13	19 58	21 57	3 17	5 16	13 10	18 31	21 56	.....	94	17 52.9	-22 23	5.3
Tue May 21/Wed May 22	15 17	19 59	21 59	3 16	5 15	13 16	18 33	22 53	.....	88	18 48.2	-23 02	5.3
Wed May 22/Thu May 23	15 21	20 00	22 01	3 14	5 14	13 21	18 36	23 42	.....	81	19 42.2	-22 33	5.2
Thu May 23/Fri May 24	15 25	20 01	22 02	3 13	5 14	13 27	18 38	0 25	.....	73	20 34.3	-21 02	5.2
Fri May 24/Sat May 25	15 29	20 02	22 04	3 12	5 13	13 32	18 41	1 02	.....	64	21 24.2	-18 39	5.1
Sat May 25/Sun May 26	15 33	20 03	22 05	3 10	5 12	13 38	18 44	1 34	.....	55	22 12.0	-15 32	5.1
Sun May 26/Mon May 27	15 37	20 04	22 06	3 09	5 12	13 43	18 46	2 02	.....	45	22 58.1	-11 50	5.0
Mon May 27/Tue May 28	15 41	20 05	22 08	3 08	5 11	13 48	18 49	2 29	.....	36	23 43.0	- 7 43	5.0
Tue May 28/Wed May 29	15 45	20 06	22 09	3 07	5 10	13 54	18 52	2 54	.....	27	0 27.6	- 3 17	5.0
Wed May 29/Thu May 30	15 49	20 06	22 11	3 06	5 10	13 59	18 55	3 19	.....	19	1 12.6	1 19	4.9
Thu May 30/Fri May 31	15 53	20 07	22 12	3 05	5 09	14 04	18 58	3 46	.....	12	1 58.8	5 55	4.9
Fri May 31/Sat Jun 01	15 57	20 08	22 13	3 04	5 09	14 10	19 01	4 15	.....	6	2 46.9	10 21	4.8

***** 2019 JUNE *****

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 Jun 01/Sun Jun 02	16 01	20 09	22 15	3 03	5 08	14 15	19 04	4 49	18 17	2	3 37.6	14 24	4.8
Sun Jun 02/Mon Jun 03	16 05	20 09	22 16	3 02	5 08	14 20	19 07	5 28	19 24	0	4 31.5	17 46	4.8
Mon Jun 03/Tue Jun 04	16 08	20 10	22 17	3 01	5 08	14 25	19 10	6 14	20 31	1	5 28.4	20 12	4.7
Tue Jun 04/Wed Jun 05	16 12	20 11	22 18	3 00	5 07	14 30	19 13	.....	21 36	4	6 27.8	21 26	4.7
Wed Jun 05/Thu Jun 06	16 16	20 12	22 19	2 59	5 07	14 35	19 16	.....	22 35	9	7 28.5	21 18	4.7
Thu Jun 06/Fri Jun 07	16 20	20 12	22 20	2 59	5 07	14 40	19 19	.....	23 27	17	8 29.0	19 45	4.6
Fri Jun 07/Sat Jun 08	16 24	20 13	22 21	2 58	5 07	14 45	19 23	.....	0 12	26	9 28.1	16 54	4.6
Sat Jun 08/Sun Jun 09	16 28	20 13	22 22	2 57	5 06	14 50	19 26	.....	0 50	37	10 25.0	13 00	4.6
Sun Jun 09/Mon Jun 10	16 32	20 14	22 23	2 57	5 06	14 55	19 30	.....	1 24	49	11 19.8	8 19	4.6
Mon Jun 10/Tue Jun 11	16 36	20 15	22 24	2 56	5 06	15 00	19 33	.....	1 55	60	12 12.9	3 09	4.5
Tue Jun 11/Wed Jun 12	16 40	20 15	22 25	2 56	5 06	15 05	19 37	.....	2 24	71	13 05.0	- 2 10	4.5
Wed Jun 12/Thu Jun 13	16 44	20 16	22 26	2 56	5 06	15 09	19 40	.....	2 54	81	13 56.8	- 7 23	4.5
Thu Jun 13/Fri Jun 14	16 48	20 16	22 26	2 55	5 06	15 14	19 44	.....	3 25	89	14 49.2	-12 13	4.5
Fri Jun 14/Sat Jun 15	16 52	20 16	22 27	2 55	5 06	15 19	19 48	17 33	3 59	95	15 42.6	-16 23	4.5
Sat Jun 15/Sun Jun 16	16 56	20 17	22 28	2 55	5 06	15 23	19 51	18 39	4 38	98	16 37.1	-19 42	4.5
Sun Jun 16/Mon Jun 17	17 00	20 17	22 28	2 55	5 06	15 28	19 55	19 43	5 21	100	17 32.5	-21 58	4.4
Mon Jun 17/Tue Jun 18	17 04	20 18	22 29	2 55	5 06	15 32	19 59	20 42	6 10	99	18 28.0	-23 04	4.4
Tue Jun 18/Wed Jun 19	17 08	20 18	22 29	2 55	5 06	15 36	20 03	21 35	.....	97	19 22.9	-23 01	4.4
Wed Jun 19/Thu Jun 20	17 12	20 18	22 29	2 55	5 06	15 41	20 07	22 21	.....	92	20 16.2	-21 52	4.4
Thu Jun 20/Fri Jun 21	17 15	20 18	22 30	2 55	5 06	15 45	20 11	23 00	.....	86	21 07.4	-19 45	4.4
Fri Jun 21/Sat Jun 22	17 19	20 19	22 30	2 55	5 07	15 49	20 15	23 34	.....	79	21 56.4	-16 50	4.4
Sat Jun 22/Sun Jun 23	17 23	20 19	22 30	2 56	5 07	15 53	20 20	0 04	.....	70	22 43.3	-13 18	4.4
Sun Jun 23/Mon Jun 24	17 27	20 19	22 30	2 56	5 07	15 57	20 24	0 31	.....	61	23 28.7	- 9 17	4.4
Mon Jun 24/Tue Jun 25	17 31	20 19	22 30	2 57	5 08	16 01	20 28	0 56	.....	52	0 13.2	- 4 56	4.4
Tue Jun 25/Wed Jun 26	17 35	20 19	22 30	2 57	5 08	16 05	20 33	1 21	.....	42	0 57.7	- 0 24	4.4
Wed Jun 26/Thu Jun 27	17 39	20 19	22 30	2 58	5 08	16 09	20 37	1 47	.....	33	1 42.9	4 11	4.5
Thu Jun 27/Fri Jun 28	17 43	20 19	22 30	2 58	5 09	16 13	20 42	2 14	.....	24	2 29.7	8 41	4.5
Fri Jun 28/Sat Jun 29	17 47	20 19	22 30	2 59	5 09	16 16	20 46	2 45	.....	16	3 19.0	12 52	4.5
Sat Jun 29/Sun Jun 30	17 51	20 19	22 29	2 59	5 10	16 20	20 51	3 21	.....	9	4 11.5	16 32	4.5
Sun Jun 30/Mon Jul 01	17 55	20 19	22 29	3 00	5 10	16 24	20 56	4 04	18 12	4	5 07.4	19 22	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.

***** 2019 JULY *****

Date (eve/morn)	LMST midn	Sun: set	twi.end	twi.beg	rise	LST twilight: eve	morn	Moon: rise	set	%illum	RA	Dec	Twi-Twi hours
Mon Jul 01/Tue Jul 02	17 59	20 19	22 29	3 01	5 11	16 27	21 00	4 56	19 19	1	6 06.6	21 05	4.5
Tue Jul 02/Wed Jul 03	18 03	20 19	22 28	3 02	5 11	16 31	21 05	5 56	20 22	0	7 07.9	21 27	4.6
Wed Jul 03/Thu Jul 04	18 07	20 19	22 28	3 03	5 12	16 34	21 10	.....	21 19	3	8 09.9	20 22	4.6
Thu Jul 04/Fri Jul 05	18 11	20 19	22 27	3 04	5 12	16 37	21 15	.....	22 08	8	9 11.0	17 51	4.6
Fri Jul 05/Sat Jul 06	18 15	20 18	22 26	3 05	5 13	16 41	21 20	.....	22 50	15	10 09.9	14 09	4.6
Sat Jul 06/Sun Jul 07	18 19	20 18	22 26	3 06	5 13	16 44	21 25	.....	23 26	24	11 06.3	9 33	4.7
Sun Jul 07/Mon Jul 08	18 23	20 18	22 25	3 07	5 14	16 47	21 30	.....	23 58	35	12 00.4	4 26	4.7
Mon Jul 08/Tue Jul 09	18 26	20 17	22 24	3 08	5 15	16 50	21 35	.....	0 28	46	12 52.9	- 0 54	4.7
Tue Jul 09/Wed Jul 10	18 30	20 17	22 23	3 09	5 16	16 53	21 40	.....	0 58	58	13 44.5	- 6 09	4.8
Wed Jul 10/Thu Jul 11	18 34	20 16	22 22	3 10	5 16	16 56	21 45	.....	1 28	68	14 36.1	-11 02	4.8
Thu Jul 11/Fri Jul 12	18 38	20 16	22 21	3 12	5 17	16 59	21 50	.....	2 01	78	15 28.3	-15 21	4.8
Fri Jul 12/Sat Jul 13	18 42	20 15	22 20	3 13	5 18	17 02	21 56	.....	2 37	86	16 21.6	-18 52	4.9
Sat Jul 13/Sun Jul 14	18 46	20 15	22 19	3 14	5 19	17 05	22 01	17 34	3 18	93	17 15.8	-21 25	4.9
Sun Jul 14/Mon Jul 15	18 50	20 14	22 18	3 16	5 19	17 08	22 06	18 34	4 04	97	18 10.6	-22 52	5.0
Mon Jul 15/Tue Jul 16	18 54	20 14	22 17	3 17	5 20	17 11	22 12	19 28	4 55	99	19 05.3	-23 11	5.0
Tue Jul 16/Wed Jul 17	18 58	20 13	22 16	3 18	5 21	17 13	22 17	20 16	5 51	100	19 59.0	-22 23	5.0
Wed Jul 17/Thu Jul 18	19 02	20 12	22 15	3 20	5 22	17 16	22 22	20 58	.....	98	20 51.0	-20 34	5.1
Thu Jul 18/Fri Jul 19	19 06	20 12	22 13	3 21	5 23	17 19	22 28	21 34	.....	95	21 40.9	-17 53	5.1
Fri Jul 19/Sat Jul 20	19 10	20 11	22 12	3 23	5 24	17 21	22 33	22 05	.....	90	22 28.7	-14 30	5.2
Sat Jul 20/Sun Jul 21	19 14	20 10	22 11	3 24	5 24	17 24	22 38	22 33	.....	84	23 14.7	-10 36	5.2
Sun Jul 21/Mon Jul 22	19 18	20 09	22 09	3 26	5 25	17 27	22 44	22 59	.....	76	23 59.5	- 6 20	5.3
Mon Jul 22/Tue Jul 23	19 22	20 09	22 08	3 27	5 26	17 29	22 49	23 24	.....	68	0 43.7	- 1 51	5.3
Tue Jul 23/Wed Jul 24	19 26	20 08	22 06	3 29	5 27	17 32	22 55	23 48	.....	58	1 28.2	2 42	5.4
Wed Jul 24/Thu Jul 25	19 30	20 07	22 05	3 30	5 28	17 34	23 00	0 14	.....	49	2 13.8	7 12	5.4
Thu Jul 25/Fri Jul 26	19 33	20 06	22 03	3 32	5 29	17 36	23 06	0 43	.....	39	3 01.4	11 27	5.5
Fri Jul 26/Sat Jul 27	19 37	20 05	22 02	3 33	5 30	17 39	23 11	1 15	.....	29	3 51.8	15 16	5.5
Sat Jul 27/Sun Jul 28	19 41	20 04	22 00	3 35	5 31	17 41	23 17	1 54	.....	20	4 45.5	18 24	5.6
Sun Jul 28/Mon Jul 29	19 45	20 03	21 59	3 36	5 32	17 44	23 22	2 41	.....	12	5 42.8	20 34	5.6
Mon Jul 29/Tue Jul 30	19 49	20 02	21 57	3 38	5 33	17 46	23 28	3 37	18 03	5	6 43.2	21 29	5.7
Tue Jul 30/Wed Jul 31	19 53	20 01	21 55	3 40	5 34	17 48	23 33	4 42	19 03	1	7 45.3	20 58	5.7
Wed Jul 31/Thu Aug 01	19 57	20 00	21 54	3 41	5 35	17 50	23 39	5 55	19 57	0	8 47.7	18 58	5.8

***** 2019 AUGUST *****

Date (eve/morn)	LMST midn	Sun: set	twi.end	twi.beg	rise	LST twilight: eve	morn	Moon: rise	set	%illum	RA	Dec	Twi-Twi hours
Thu Aug 01/Fri Aug 02	20 01	19 59	21 52	3 43	5 36	17 53	23 44	.....	20 43	2	9 48.7	15 36	5.8
Fri Aug 02/Sat Aug 03	20 05	19 58	21 50	3 44	5 37	17 55	23 50	.....	21 23	6	10 47.4	11 10	5.9
Sat Aug 03/Sun Aug 04	20 09	19 57	21 48	3 46	5 38	17 57	23 55	.....	21 58	13	11 43.7	6 02	6.0
Sun Aug 04/Mon Aug 05	20 13	19 55	21 47	3 47	5 39	17 59	0 01	.....	22 29	22	12 38.0	0 35	6.0
Mon Aug 05/Tue Aug 06	20 17	19 54	21 45	3 49	5 40	18 01	0 07	.....	23 00	32	13 30.8	- 4 50	6.1
Tue Aug 06/Wed Aug 07	20 21	19 53	21 43	3 51	5 41	18 03	0 12	.....	23 30	43	14 23.1	- 9 54	6.1
Wed Aug 07/Thu Aug 08	20 25	19 52	21 41	3 52	5 42	18 06	0 18	.....	0 03	54	15 15.4	-14 24	6.2
Thu Aug 08/Fri Aug 09	20 29	19 50	21 39	3 54	5 43	18 08	0 23	.....	0 38	65	16 08.4	-18 07	6.2
Fri Aug 09/Sat Aug 10	20 33	19 49	21 38	3 55	5 44	18 10	0 29	.....	1 17	74	17 02.0	-20 53	6.3
Sat Aug 10/Sun Aug 11	20 37	19 48	21 36	3 57	5 45	18 12	0 34	.....	2 01	83	17 56.2	-22 36	6.4
Sun Aug 11/Mon Aug 12	20 41	19 46	21 34	3 59	5 46	18 14	0 40	.....	2 51	90	18 50.4	-23 12	6.4
Mon Aug 12/Tue Aug 13	20 44	19 45	21 32	4 00	5 47	18 16	0 45	18 14	3 44	95	19 43.9	-22 41	6.5
Tue Aug 13/Wed Aug 14	20 48	19 44	21 30	4 02	5 48	18 18	0 51	18 57	4 41	98	20 36.1	-21 09	6.5
Wed Aug 14/Thu Aug 15	20 52	19 42	21 28	4 03	5 49	18 20	0 56	19 35	5 40	100	21 26.4	-18 41	6.6
Thu Aug 15/Fri Aug 16	20 56	19 41	21 26	4 05	5 50	18 22	1 02	20 07	.....	99	22 14.8	-15 29	6.6
Fri Aug 16/Sat Aug 17	21 00	19 39	21 24	4 06	5 51	18 24	1 07	20 36	.....	97	23 01.4	-11 41	6.7
Sat Aug 17/Sun Aug 18	21 04	19 38	21 22	4 08	5 52	18 26	1 13	21 02	.....	94	23 46.6	- 7 28	6.8
Sun Aug 18/Mon Aug 19	21 08	19 36	21 20	4 09	5 53	18 28	1 18	21 27	.....	88	0 31.0	- 3 01	6.8
Mon Aug 19/Tue Aug 20	21 12	19 35	21 18	4 11	5 54	18 30	1 23	21 51	.....	81	1 15.3	1 33	6.9
Tue Aug 20/Wed Aug 21	21 16	19 33	21 16	4 12	5 55	18 32	1 29	22 16	.....	73	2 00.2	6 04	6.9
Wed Aug 21/Thu Aug 22	21 20	19 32	21 14	4 14	5 56	18 34	1 34	22 43	.....	64	2 46.6	10 23	7.0
Thu Aug 22/Fri Aug 23	21 24	19 30	21 13	4 15	5 57	18 36	1 40	23 13	.....	54	3 35.2	14 18	7.0
Fri Aug 23/Sat Aug 24	21 28	19 29	21 11	4 17	5 58	18 38	1 45	23 48	.....	44	4 26.8	17 37	7.1
Sat Aug 24/Sun Aug 25	21 32	19 27	21 09	4 18	5 59	18 40	1 51	0 30	.....	34	5 21.6	20 05	7.2
Sun Aug 25/Mon Aug 26	21 36	19 26	21 07	4 19	6 00	18 42	1 56	1 20	.....	24	6 19.5	21 28	7.2
Mon Aug 26/Tue Aug 27	21 40	19 24	21 05	4 21	6 01	18 44	2 01	2 20	.....	15	7 20.0	21 30	7.3
Tue Aug 27/Wed Aug 28	21 44	19 23	21 03	4 22	6 02	18 46	2 07	3 28	17 43	7	8 21.7	20 06	7.3
Wed Aug 28/Thu Aug 29	21 48	19 21	21 01	4 24	6 03	18 48	2 12	4 43	18 32	2	9 23.1	17 15	7.4
Thu Aug 29/Fri Aug 30	21 51	19 19	20 59	4 25	6 04	18 50	2 17	6 00	19 15	0	10 23.2	13 10	7.4
Fri Aug 30/Sat Aug 31	21 55	19 18	20 57	4 26	6 05	18 52	2 23	.....	19 52	1	11 21.3	8 09	7.5
Sat Aug 31/Sun Sep 01	21 59	19 16	20 55	4 28	6 06	18 53	2 28	.....	20 26	5	12 17.5	2 38	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.

***** 2019 SEPTEMBER *****

Date (eve/morn)	LMST midn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	%illum	Moon: RA	Moon: Dec	Twi-Twi hours
Sun Sep 01/Mon Sep 02	22 03	19 14	20 53	4 29	6 08	18 55	2 33	.....	20 58	11	13 12.2	- 3 00	7.6
Mon Sep 02/Tue Sep 03	22 07	19 13	20 51	4 31	6 09	18 57	2 39	.....	21 29	19	14 06.0	- 8 23	7.7
Tue Sep 03/Wed Sep 04	22 11	19 11	20 49	4 32	6 10	18 59	2 44	.....	22 02	29	14 59.7	-13 14	7.7
Wed Sep 04/Thu Sep 05	22 15	19 09	20 47	4 33	6 11	19 01	2 49	.....	22 37	39	15 53.5	-17 16	7.8
Thu Sep 05/Fri Sep 06	22 19	19 08	20 45	4 35	6 12	19 03	2 54	.....	23 15	50	16 47.7	-20 21	7.8
Fri Sep 06/Sat Sep 07	22 23	19 06	20 43	4 36	6 13	19 05	3 00	.....	23 58	60	17 42.2	-22 21	7.9
Sat Sep 07/Sun Sep 08	22 27	19 04	20 41	4 37	6 14	19 07	3 05	.....	0 47	70	18 36.6	-23 13	7.9
Sun Sep 08/Mon Sep 09	22 31	19 03	20 39	4 38	6 15	19 09	3 10	.....	1 39	78	19 30.1	-22 58	8.0
Mon Sep 09/Tue Sep 10	22 35	19 01	20 37	4 40	6 16	19 11	3 15	16 57	2 35	86	20 22.4	-21 40	8.1
Tue Sep 10/Wed Sep 11	22 39	18 59	20 35	4 41	6 17	19 13	3 21	17 36	3 33	92	21 12.9	-19 25	8.1
Wed Sep 11/Thu Sep 12	22 43	18 57	20 33	4 42	6 18	19 15	3 26	18 10	4 32	96	22 01.5	-16 22	8.2
Thu Sep 12/Fri Sep 13	22 47	18 56	20 31	4 44	6 19	19 17	3 31	18 40	5 31	99	22 48.5	-12 41	8.2
Fri Sep 13/Sat Sep 14	22 51	18 54	20 29	4 45	6 20	19 19	3 36	19 06	6 30	100	23 34.0	- 8 32	8.3
Sat Sep 14/Sun Sep 15	22 55	18 52	20 27	4 46	6 21	19 21	3 41	19 31	.....	99	0 18.8	- 4 04	8.3
Sun Sep 15/Mon Sep 16	22 58	18 51	20 25	4 47	6 22	19 23	3 47	19 56	.....	96	1 03.2	0 33	8.4
Mon Sep 16/Tue Sep 17	23 02	18 49	20 23	4 48	6 23	19 25	3 52	20 20	.....	92	1 48.1	5 09	8.4
Tue Sep 17/Wed Sep 18	23 06	18 47	20 21	4 50	6 24	19 27	3 57	20 46	.....	86	2 34.1	9 34	8.5
Wed Sep 18/Thu Sep 19	23 10	18 45	20 19	4 51	6 25	19 29	4 02	21 14	.....	78	3 21.9	13 38	8.5
Thu Sep 19/Fri Sep 20	23 14	18 44	20 17	4 52	6 26	19 31	4 07	21 47	.....	69	4 12.2	17 07	8.6
Fri Sep 20/Sat Sep 21	23 18	18 42	20 15	4 53	6 27	19 33	4 12	22 25	.....	59	5 05.2	19 49	8.6
Sat Sep 21/Sun Sep 22	23 22	18 40	20 14	4 54	6 28	19 35	4 17	23 10	.....	49	6 01.1	21 30	8.7
Sun Sep 22/Mon Sep 23	23 26	18 38	20 12	4 56	6 29	19 37	4 23	0 04	.....	38	6 59.3	21 58	8.7
Mon Sep 23/Tue Sep 24	23 30	18 37	20 10	4 57	6 30	19 39	4 28	1 07	.....	27	7 59.1	21 05	8.8
Tue Sep 24/Wed Sep 25	23 34	18 35	20 08	4 58	6 31	19 41	4 33	2 17	.....	18	8 59.2	18 48	8.8
Wed Sep 25/Thu Sep 26	23 38	18 33	20 06	4 59	6 32	19 43	4 38	3 32	17 06	10	9 58.6	15 12	8.9
Thu Sep 26/Fri Sep 27	23 42	18 31	20 04	5 00	6 33	19 45	4 43	4 49	17 45	4	10 56.7	10 33	8.9
Fri Sep 27/Sat Sep 28	23 46	18 30	20 02	5 01	6 34	19 48	4 48	6 06	18 20	1	11 53.4	5 10	9.0
Sat Sep 28/Sun Sep 29	23 50	18 28	20 01	5 03	6 35	19 50	4 53	7 23	18 53	0	12 49.0	- 0 34	9.0
Sun Sep 29/Mon Sep 30	23 54	18 26	19 59	5 04	6 36	19 52	4 58	.....	19 24	3	13 43.9	- 6 15	9.1
Mon Sep 30/Tue Oct 01	23 58	18 25	19 57	5 05	6 37	19 54	5 03	.....	19 57	8	14 38.8	-11 30	9.1

***** 2019 OCTOBER *****

Date (eve/morn)	LMST midn	Sun: set	Sun: twi.end	Sun: twi.beg	Sun: rise	LST twilight: eve	LST twilight: morn	Moon: rise	Moon: set	%illum	Moon: RA	Moon: Dec	Twi-Twi hours
Tue Oct 01/Wed Oct 02	0 02	18 23	19 55	5 06	6 38	19 56	5 08	.....	20 32	16	15 33.9	-16 01	9.2
Wed Oct 02/Thu Oct 03	0 06	18 21	19 53	5 07	6 39	19 58	5 13	.....	21 10	24	16 29.5	-19 34	9.2
Thu Oct 03/Fri Oct 04	0 09	18 20	19 52	5 08	6 41	20 01	5 18	.....	21 52	34	17 25.2	-21 59	9.3
Fri Oct 04/Sat Oct 05	0 13	18 18	19 50	5 09	6 42	20 03	5 24	.....	22 40	44	18 20.6	-23 13	9.3
Sat Oct 05/Sun Oct 06	0 17	18 16	19 48	5 10	6 43	20 05	5 29	.....	23 32	54	19 15.1	-23 17	9.4
Sun Oct 06/Mon Oct 07	0 21	18 14	19 47	5 11	6 44	20 07	5 34	.....	0 28	64	20 08.1	-22 14	9.4
Mon Oct 07/Tue Oct 08	0 25	18 13	19 45	5 13	6 45	20 09	5 39	.....	1 26	73	20 59.1	-20 12	9.5
Tue Oct 08/Wed Oct 09	0 29	18 11	19 43	5 14	6 46	20 12	5 44	16 13	2 24	81	21 48.2	-17 20	9.5
Wed Oct 09/Thu Oct 10	0 33	18 10	19 42	5 15	6 47	20 14	5 49	16 43	3 24	87	22 35.3	-13 47	9.6
Thu Oct 10/Fri Oct 11	0 37	18 08	19 40	5 16	6 48	20 16	5 54	17 11	4 22	93	23 21.1	- 9 43	9.6
Fri Oct 11/Sat Oct 12	0 41	18 06	19 38	5 17	6 49	20 19	5 59	17 36	5 21	97	0 06.0	- 5 16	9.6
Sat Oct 12/Sun Oct 13	0 45	18 05	19 37	5 18	6 50	20 21	6 04	18 00	6 20	99	0 50.6	- 0 37	9.7
Sun Oct 13/Mon Oct 14	0 49	18 03	19 35	5 19	6 52	20 23	6 09	18 24	7 20	100	1 35.6	4 06	9.7
Mon Oct 14/Tue Oct 15	0 53	18 01	19 34	5 20	6 53	20 26	6 14	18 50	.....	98	2 21.7	8 41	9.8
Tue Oct 15/Wed Oct 16	0 57	18 00	19 32	5 21	6 54	20 28	6 19	19 17	.....	95	3 09.4	12 56	9.8
Wed Oct 16/Thu Oct 17	1 01	17 58	19 31	5 22	6 55	20 31	6 24	19 48	.....	89	3 59.5	16 39	9.9
Thu Oct 17/Fri Oct 18	1 05	17 57	19 29	5 23	6 56	20 33	6 29	20 24	.....	82	4 52.1	19 37	9.9
Fri Oct 18/Sat Oct 19	1 09	17 55	19 28	5 25	6 57	20 36	6 34	21 06	.....	74	5 47.2	21 35	9.9
Sat Oct 19/Sun Oct 20	1 13	17 54	19 26	5 26	6 58	20 38	6 39	21 57	.....	64	6 44.3	22 23	10.0
Sun Oct 20/Mon Oct 21	1 16	17 52	19 25	5 27	7 00	20 41	6 44	22 55	.....	53	7 42.8	21 52	10.0
Mon Oct 21/Tue Oct 22	1 20	17 51	19 23	5 28	7 01	20 43	6 49	0 00	.....	42	8 41.4	20 00	10.1
Tue Oct 22/Wed Oct 23	1 24	17 49	19 22	5 29	7 02	20 46	6 54	1 11	.....	31	9 39.4	16 52	10.1
Wed Oct 23/Thu Oct 24	1 28	17 48	19 21	5 30	7 03	20 48	6 59	2 25	.....	21	10 36.2	12 39	10.2
Thu Oct 24/Fri Oct 25	1 32	17 46	19 19	5 31	7 04	20 51	7 04	3 40	16 17	12	11 31.8	7 35	10.2
Fri Oct 25/Sat Oct 26	1 36	17 45	19 18	5 32	7 05	20 53	7 09	4 55	16 49	6	12 26.4	2 00	10.2
Sat Oct 26/Sun Oct 27	1 40	17 44	19 17	5 33	7 07	20 56	7 14	6 11	17 20	2	13 20.8	- 3 44	10.3
Sun Oct 27/Mon Oct 28	1 44	17 42	19 15	5 34	7 08	20 59	7 19	7 26	17 51	0	14 15.3	- 9 15	10.3
Mon Oct 28/Tue Oct 29	1 48	17 41	19 14	5 35	7 09	21 02	7 24	.....	18 25	2	15 10.6	-14 13	10.4
Tue Oct 29/Wed Oct 30	1 52	17 40	19 13	5 36	7 10	21 04	7 29	.....	19 01	5	16 06.8	-18 18	10.4
Wed Oct 30/Thu Oct 31	1 56	17 38	19 12	5 37	7 11	21 07	7 34	.....	19 42	11	17 03.7	-21 17	10.4
Thu Oct 31/Fri Nov 01	2 00	17 37	19 11	5 39	7 13	21 10	7 39	.....	20 29	19	18 00.6	-23 02	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.

***** 2019 NOVEMBER *****

Date (eve/morn)	LMST	Sun:				LST twilight:		Moon:					Twi-Twi
	midn	set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Nov 01/Sat Nov 02	2 04	17 36	19 10	5 40	7 14	21 13	7 44	.....	21 20	28	18 56.7	-23 31	10.5
Sat Nov 02/Sun Nov 03*	2 08	17 34	19 08	4 41	6 15	21 15	7 49	.....	22 16	37	19 51.1	-22 50	10.5
Sun Nov 03/Mon Nov 04	3 12	16 33	18 07	4 42	6 16	21 18	7 54	.....	22 15	47	20 45.5	-20 55	10.6
Mon Nov 04/Tue Nov 05	3 16	16 32	18 06	4 43	6 17	21 21	7 59	.....	23 14	57	21 35.2	-18 14	10.6
Tue Nov 05/Wed Nov 06	3 20	16 31	18 05	4 44	6 19	21 24	8 04	.....	0 14	66	22 22.8	-14 51	10.6
Wed Nov 06/Thu Nov 07	3 24	16 30	18 04	4 45	6 20	21 27	8 09	.....	1 13	74	23 08.6	-10 53	10.7
Thu Nov 07/Fri Nov 08	3 28	16 29	18 03	4 46	6 21	21 30	8 14	.....	2 12	82	23 53.3	- 6 31	10.7
Fri Nov 08/Sat Nov 09	3 32	16 27	18 03	4 47	6 22	21 33	8 19	.....	3 11	89	0 37.7	- 1 53	10.7
Sat Nov 09/Sun Nov 10	3 36	16 26	18 02	4 48	6 24	21 36	8 24	.....	4 10	94	1 22.4	2 52	10.8
Sun Nov 10/Mon Nov 11	3 39	16 25	18 01	4 49	6 25	21 39	8 29	15 53	5 11	98	2 08.3	7 34	10.8
Mon Nov 11/Tue Nov 12	3 43	16 24	18 00	4 50	6 26	21 42	8 34	16 19	6 14	100	2 56.0	12 02	10.8
Tue Nov 12/Wed Nov 13	3 47	16 23	17 59	4 51	6 27	21 45	8 39	16 49	7 18	99	3 46.2	16 01	10.9
Wed Nov 13/Thu Nov 14	3 51	16 22	17 58	4 52	6 28	21 49	8 44	17 24	8 22	97	4 39.1	19 17	10.9
Thu Nov 14/Fri Nov 15	3 55	16 22	17 58	4 53	6 30	21 52	8 49	18 04	.....	93	5 34.7	21 35	10.9
Fri Nov 15/Sat Nov 16	3 59	16 21	17 57	4 54	6 31	21 55	8 54	18 52	.....	86	6 32.6	22 42	11.0
Sat Nov 16/Sun Nov 17	4 03	16 20	17 56	4 55	6 32	21 58	8 59	19 48	.....	78	7 31.5	22 28	11.0
Sun Nov 17/Mon Nov 18	4 07	16 19	17 56	4 56	6 33	22 02	9 04	20 52	.....	68	8 30.4	20 52	11.0
Mon Nov 18/Tue Nov 19	4 11	16 18	17 55	4 57	6 34	22 05	9 09	22 00	.....	57	9 28.2	18 00	11.0
Tue Nov 19/Wed Nov 20	4 15	16 17	17 54	4 58	6 36	22 08	9 14	23 11	.....	45	10 24.4	14 01	11.1
Wed Nov 20/Thu Nov 21	4 19	16 17	17 54	4 59	6 37	22 12	9 19	0 23	.....	34	11 19.0	9 13	11.1
Thu Nov 21/Fri Nov 22	4 23	16 16	17 53	5 00	6 38	22 15	9 24	1 36	.....	24	12 12.3	3 51	11.1
Fri Nov 22/Sat Nov 23	4 27	16 15	17 53	5 01	6 39	22 19	9 29	2 49	.....	15	13 05.1	- 1 46	11.1
Sat Nov 23/Sun Nov 24	4 31	16 15	17 52	5 02	6 40	22 22	9 34	4 02	.....	8	13 58.2	- 7 18	11.2
Sun Nov 24/Mon Nov 25	4 35	16 14	17 52	5 03	6 41	22 26	9 39	5 16	15 20	3	14 52.1	-12 27	11.2
Mon Nov 25/Tue Nov 26	4 39	16 14	17 52	5 04	6 43	22 29	9 44	6 28	15 54	0	15 47.3	-16 52	11.2
Tue Nov 26/Wed Nov 27	4 43	16 13	17 51	5 05	6 44	22 33	9 49	7 38	16 32	0	16 43.8	-20 17	11.2
Wed Nov 27/Thu Nov 28	4 46	16 13	17 51	5 06	6 45	22 37	9 54	8 43	17 16	3	17 41.1	-22 32	11.3
Thu Nov 28/Fri Nov 29	4 50	16 12	17 51	5 07	6 46	22 40	9 58	.....	18 06	8	18 38.1	-23 29	11.3
Fri Nov 29/Sat Nov 30	4 54	16 12	17 51	5 08	6 47	22 44	10 03	.....	19 01	14	19 33.9	-23 12	11.3
Sat Nov 30/Sun Dec 01	4 58	16 12	17 50	5 09	6 48	22 48	10 08	.....	20 00	22	20 27.6	-21 45	11.3

***** 2019 DECEMBER *****

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
Sun Dec 01/Mon Dec 02	5 02	16 11	17 50	5 10	6 49	22 51	10 13	.....	21 01	30	21 18.7	-19 20	11.3
Mon Dec 02/Tue Dec 03	5 06	16 11	17 50	5 11	6 50	22 55	10 18	.....	22 01	39	22 07.3	-16 09	11.3
Tue Dec 03/Wed Dec 04	5 10	16 11	17 50	5 12	6 51	22 59	10 23	.....	23 01	48	22 53.7	-12 21	11.4
Wed Dec 04/Thu Dec 05	5 14	16 11	17 50	5 13	6 52	23 03	10 28	.....	24 00	58	23 38.5	- 8 07	11.4
Thu Dec 05/Fri Dec 06	5 18	16 10	17 50	5 13	6 53	23 07	10 32	.....	0 58	67	0 22.6	- 3 34	11.4
Fri Dec 06/Sat Dec 07	5 22	16 10	17 50	5 14	6 54	23 11	10 37	.....	1 58	76	1 06.6	1 08	11.4
Sat Dec 07/Sun Dec 08	5 26	16 10	17 50	5 15	6 55	23 15	10 42	.....	2 58	83	1 51.6	5 52	11.4
Sun Dec 08/Mon Dec 09	5 30	16 10	17 50	5 16	6 56	23 19	10 47	.....	4 00	90	2 38.4	10 27	11.4
Mon Dec 09/Tue Dec 10	5 34	16 10	17 50	5 17	6 57	23 23	10 51	.....	5 03	95	3 27.6	14 40	11.4
Tue Dec 10/Wed Dec 11	5 38	16 10	17 50	5 17	6 57	23 27	10 56	15 21	6 09	99	4 20.0	18 17	11.5
Wed Dec 11/Thu Dec 12	5 42	16 10	17 50	5 18	6 58	23 31	11 01	16 00	7 14	100	5 15.6	21 02	11.5
Thu Dec 12/Fri Dec 13	5 46	16 10	17 51	5 19	6 59	23 35	11 05	16 46	8 16	99	6 14.1	22 36	11.5
Fri Dec 13/Sat Dec 14	5 50	16 11	17 51	5 20	7 00	23 39	11 10	17 40	.....	95	7 14.4	22 49	11.5
Sat Dec 14/Sun Dec 15	5 53	16 11	17 51	5 20	7 01	23 44	11 15	18 42	.....	89	8 15.0	21 35	11.5
Sun Dec 15/Mon Dec 16	5 57	16 11	17 51	5 21	7 01	23 48	11 19	19 51	.....	81	9 14.4	18 59	11.5
Mon Dec 16/Tue Dec 17	6 01	16 11	17 52	5 21	7 02	23 52	11 24	21 02	.....	71	10 11.9	15 12	11.5
Tue Dec 17/Wed Dec 18	6 05	16 12	17 52	5 22	7 03	23 56	11 28	22 14	.....	61	11 07.0	10 32	11.5
Wed Dec 18/Thu Dec 19	6 09	16 12	17 53	5 23	7 03	0 01	11 33	23 26	.....	49	12 00.2	5 17	11.5
Thu Dec 19/Fri Dec 20	6 13	16 12	17 53	5 23	7 04	0 05	11 37	0 37	.....	38	12 52.3	- 0 14	11.5
Fri Dec 20/Sat Dec 21	6 17	16 13	17 53	5 24	7 04	0 10	11 42	1 48	.....	27	13 44.1	- 5 43	11.5
Sat Dec 21/Sun Dec 22	6 21	16 13	17 54	5 24	7 05	0 14	11 46	2 59	.....	18	14 36.3	-10 53	11.5
Sun Dec 22/Mon Dec 23	6 25	16 14	17 54	5 25	7 05	0 18	11 51	4 10	.....	10	15 29.8	-15 28	11.5
Mon Dec 23/Tue Dec 24	6 29	16 14	17 55	5 25	7 06	0 23	11 55	5 20	.....	5	16 24.7	-19 11	11.5
Tue Dec 24/Wed Dec 25	6 33	16 15	17 55	5 26	7 06	0 27	11 59	6 27	15 08	1	17 20.9	-21 50	11.5
Wed Dec 25/Thu Dec 26	6 37	16 16	17 56	5 26	7 06	0 32	12 04	7 27	15 55	0	18 17.6	-23 16	11.5
Thu Dec 26/Fri Dec 27	6 41	16 16	17 57	5 26	7 07	0 36	12 08	8 21	16 47	1	19 13.9	-23 26	11.5
Fri Dec 27/Sat Dec 28	6 45	16 17	17 57	5 27	7 07	0 41	12 12	.....	17 45	4	20 08.7	-22 24	11.5
Sat Dec 28/Sun Dec 29	6 49	16 18	17 58	5 27	7 07	0 46	12 17	.....	18 45	9	21 01.1	-20 18	11.5
Sun Dec 29/Mon Dec 30	6 53	16 18	17 59	5 27	7 08	0 50	12 21	.....	19 47	15	21 50.9	-17 21	11.5
Mon Dec 30/Tue Dec 31	6 57	16 19	17 59	5 28	7 08	0 55	12 25	.....	20 47	23	22 38.2	-13 44	11.5
Tue Dec 31/Wed Jan 01	7 01	16 20	18 00	5 28	7 08	1 00	12 29	.....	21 47	31	23 23.5	- 9 37	11.5