

I slightly modified Thorstensen's code to print out the time between evening twilight and morning twilight. For Okie-Tex site (site code = o) near Kenton OK I used same time zone as for Oklahoma City.

W. Romanishin- August 2013 - email: wromanishin at ou.edu - Here is stuff from John T. intro:

***** 2020 Night-time Astronomical Calendar for 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 2020, 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 26	0 16	Jan 02	23 47	Jan 10	14 23	Jan 17	8 01
Jan 24	16 44	Feb 01	20 43	Feb 09	2 35	Feb 15	17 19
Feb 23	10 34	Mar 02	14 59	Mar 09	13 49	Mar 16	5 36
Mar 24	5 30	Apr 01	6 22	Apr 07	22 36	Apr 14	18 57
Apr 22	22 27	Apr 30	16 39	May 07	6 46	May 14	10 03
May 22	13 40	May 29	23 30	Jun 05	15 13	Jun 13	2 25
Jun 21	2 42	Jun 28	4 17	Jul 05	0 45	Jul 12	19 31
Jul 20	13 34	Jul 27	8 34	Aug 03	12 00	Aug 11	12 48
Aug 18	22 42	Aug 25	13 59	Sep 02	1 23	Sep 10	5 28
Sep 17	7 01	Sep 23	21 57	Oct 01	17 07	Oct 09	20 41
Oct 16	15 32	Oct 23	9 24	Oct 31	10 51	Nov 08	8 48
Nov 15	0 09	Nov 21	23 46	Nov 30	4 32	Dec 07	19 38
Dec 14	11 19	Dec 21	18 43	Dec 29	22 30	Jan 06	4 39

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.

***** 2020 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	
Wed Jan 01/Thu Jan 02	7 04	16 21	18 01	5 28	7 08	1 04	12 33	.....	22 46	40	0 07.5	- 5 11	11.5
Thu Jan 02/Fri Jan 03	7 08	16 22	18 02	5 28	7 08	1 09	12 37	.....	23 44	49	0 51.0	- 0 34	11.4
Fri Jan 03/Sat Jan 04	7 12	16 22	18 02	5 28	7 08	1 14	12 41	.....	0 43	59	1 34.9	4 07	11.4
Sat Jan 04/Sun Jan 05	7 16	16 23	18 03	5 28	7 08	1 18	12 45	.....	1 44	68	2 20.1	8 42	11.4
Sun Jan 05/Mon Jan 06	7 20	16 24	18 04	5 28	7 08	1 23	12 49	.....	2 46	77	3 07.5	13 01	11.4
Mon Jan 06/Tue Jan 07	7 24	16 25	18 05	5 28	7 08	1 28	12 53	.....	3 50	85	3 58.0	16 53	11.4
Tue Jan 07/Wed Jan 08	7 28	16 26	18 06	5 28	7 08	1 33	12 57	.....	4 55	92	4 52.0	20 00	11.4
Wed Jan 08/Thu Jan 09	7 32	16 27	18 07	5 28	7 07	1 38	13 01	.....	5 59	97	5 49.6	22 06	11.4
Thu Jan 09/Fri Jan 10	7 36	16 28	18 08	5 28	7 07	1 43	13 05	15 26	7 00	100	6 50.1	22 54	11.3
Fri Jan 10/Sat Jan 11	7 40	16 29	18 08	5 28	7 07	1 47	13 09	16 26	7 54	100	7 52.1	22 13	11.3
Sat Jan 11/Sun Jan 12	7 44	16 30	18 09	5 28	7 07	1 52	13 13	17 34	8 41	97	8 53.9	20 01	11.3
Sun Jan 12/Mon Jan 13	7 48	16 32	18 10	5 28	7 06	1 57	13 17	18 47	.....	92	9 54.1	16 29	11.3
Mon Jan 13/Tue Jan 14	7 52	16 33	18 11	5 28	7 06	2 02	13 20	20 02	.....	84	10 51.7	11 54	11.3
Tue Jan 14/Wed Jan 15	7 56	16 34	18 12	5 27	7 06	2 07	13 24	21 16	.....	75	11 47.0	6 37	11.3
Wed Jan 15/Thu Jan 16	8 00	16 35	18 13	5 27	7 05	2 12	13 28	22 28	.....	64	12 40.3	1 02	11.2
Thu Jan 16/Fri Jan 17	8 04	16 36	18 14	5 27	7 05	2 17	13 31	23 40	.....	53	13 32.6	- 4 33	11.2
Fri Jan 17/Sat Jan 18	8 08	16 37	18 15	5 26	7 04	2 22	13 35	0 51	.....	42	14 24.7	- 9 49	11.2
Sat Jan 18/Sun Jan 19	8 11	16 38	18 16	5 26	7 04	2 27	13 38	2 00	.....	31	15 17.4	-14 31	11.2
Sun Jan 19/Mon Jan 20	8 15	16 40	18 17	5 26	7 03	2 32	13 42	3 09	.....	22	16 11.2	-18 24	11.1
Mon Jan 20/Tue Jan 21	8 19	16 41	18 18	5 25	7 02	2 37	13 45	4 16	.....	14	17 06.1	-21 17	11.1
Tue Jan 21/Wed Jan 22	8 23	16 42	18 19	5 25	7 02	2 42	13 49	5 17	.....	7	18 01.8	-23 01	11.1
Wed Jan 22/Thu Jan 23	8 27	16 43	18 20	5 24	7 01	2 47	13 52	6 13	.....	3	18 57.5	-23 32	11.1
Thu Jan 23/Fri Jan 24	8 31	16 44	18 21	5 24	7 00	2 52	13 56	7 01	15 34	1	19 52.2	-22 51	11.0
Fri Jan 24/Sat Jan 25	8 35	16 46	18 22	5 23	7 00	2 57	13 59	7 41	16 33	0	20 45.0	-21 04	11.0
Sat Jan 25/Sun Jan 26	8 39	16 47	18 24	5 22	6 59	3 02	14 02	8 16	17 34	2	21 35.5	-18 21	11.0
Sun Jan 26/Mon Jan 27	8 43	16 48	18 25	5 22	6 58	3 07	14 06	.....	18 35	5	22 23.6	-14 54	11.0
Mon Jan 27/Tue Jan 28	8 47	16 49	18 26	5 21	6 57	3 12	14 09	.....	19 35	10	23 09.5	-10 55	10.9
Tue Jan 28/Wed Jan 29	8 51	16 51	18 27	5 20	6 56	3 17	14 12	.....	20 35	16	23 53.8	- 6 34	10.9
Wed Jan 29/Thu Jan 30	8 55	16 52	18 28	5 20	6 55	3 22	14 15	.....	21 33	24	0 37.1	- 2 00	10.9
Thu Jan 30/Fri Jan 31	8 59	16 53	18 29	5 19	6 54	3 27	14 18	.....	22 32	32	1 20.3	2 38	10.8
Fri Jan 31/Sat Feb 01	9 03	16 55	18 30	5 18	6 53	3 32	14 22	.....	23 31	41	2 04.3	7 12	10.8

***** 2020 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	
Sat Feb 01/Sun Feb 02	9 07	16 56	18 31	5 17	6 52	3 37	14 25	.....	0 31	51	2 49.8	11 32	10.8
Sun Feb 02/Mon Feb 03	9 11	16 57	18 32	5 16	6 51	3 42	14 28	.....	1 33	60	3 37.8	15 30	10.7
Mon Feb 03/Tue Feb 04	9 15	16 58	18 33	5 15	6 50	3 47	14 31	.....	2 36	70	4 29.0	18 51	10.7
Tue Feb 04/Wed Feb 05	9 19	17 00	18 35	5 14	6 49	3 52	14 34	.....	3 40	79	5 23.8	21 21	10.7
Wed Feb 05/Thu Feb 06	9 22	17 01	18 36	5 13	6 48	3 57	14 37	.....	4 42	87	6 22.2	22 43	10.6
Thu Feb 06/Fri Feb 07	9 26	17 02	18 37	5 12	6 47	4 02	14 40	.....	5 39	94	7 23.3	22 42	10.6
Fri Feb 07/Sat Feb 08	9 30	17 03	18 38	5 11	6 46	4 07	14 43	.....	6 30	98	8 25.7	21 09	10.6
Sat Feb 08/Sun Feb 09	9 34	17 05	18 39	5 10	6 44	4 12	14 46	16 23	7 14	100	9 27.7	18 06	10.5
Sun Feb 09/Mon Feb 10	9 38	17 06	18 40	5 09	6 43	4 17	14 48	17 39	7 52	99	10 28.1	13 46	10.5
Mon Feb 10/Tue Feb 11	9 42	17 07	18 41	5 08	6 42	4 23	14 51	18 56	.....	94	11 26.3	8 30	10.5
Tue Feb 11/Wed Feb 12	9 46	17 09	18 42	5 07	6 41	4 28	14 54	20 12	.....	88	12 22.3	2 44	10.4
Wed Feb 12/Thu Feb 13	9 50	17 10	18 44	5 06	6 39	4 33	14 57	21 27	.....	79	13 16.9	- 3 08	10.4
Thu Feb 13/Fri Feb 14	9 54	17 11	18 45	5 05	6 38	4 38	15 00	22 40	.....	68	14 10.8	- 8 43	10.3
Fri Feb 14/Sat Feb 15	9 58	17 12	18 46	5 04	6 37	4 43	15 02	23 52	.....	57	15 04.7	-13 42	10.3
Sat Feb 15/Sun Feb 16	10 02	17 14	18 47	5 02	6 35	4 48	15 05	1 02	.....	46	15 59.1	-17 51	10.3
Sun Feb 16/Mon Feb 17	10 06	17 15	18 48	5 01	6 34	4 53	15 08	2 09	.....	36	16 54.2	-20 59	10.2
Mon Feb 17/Tue Feb 18	10 10	17 16	18 49	5 00	6 33	4 58	15 10	3 12	.....	26	17 49.7	-22 57	10.2
Tue Feb 18/Wed Feb 19	10 14	17 17	18 50	4 58	6 31	5 03	15 13	4 09	.....	18	18 45.1	-23 42	10.1
Wed Feb 19/Thu Feb 20	10 18	17 19	18 51	4 57	6 30	5 08	15 16	4 58	.....	11	19 39.6	-23 15	10.1
Thu Feb 20/Fri Feb 21	10 22	17 20	18 53	4 56	6 28	5 13	15 18	5 41	.....	6	20 32.4	-21 42	10.1
Fri Feb 21/Sat Feb 22	10 26	17 21	18 54	4 54	6 27	5 18	15 21	6 16	.....	2	21 23.0	-19 12	10.0
Sat Feb 22/Sun Feb 23	10 29	17 22	18 55	4 53	6 25	5 24	15 23	6 47	16 25	0	22 11.3	-15 54	10.0
Sun Feb 23/Mon Feb 24	10 33	17 23	18 56	4 52	6 24	5 29	15 26	7 15	17 26	0	22 57.5	-12 01	9.9
Mon Feb 24/Tue Feb 25	10 37	17 25	18 57	4 50	6 22	5 34	15 28	7 39	18 26	2	23 42.0	- 7 44	9.9
Tue Feb 25/Wed Feb 26	10 41	17 26	18 58	4 49	6 21	5 39	15 31	.....	19 25	6	0 25.4	- 3 11	9.8
Wed Feb 26/Thu Feb 27	10 45	17 27	19 00	4 47	6 19	5 44	15 33	.....	20 23	11	1 08.4	1 27	9.8
Thu Feb 27/Fri Feb 28	10 49	17 28	19 01	4 46	6 18	5 49	15 36	.....	21 22	17	1 51.7	6 02	9.7
Fri Feb 28/Sat Feb 29	10 53	17 29	19 02	4 44	6 16	5 54	15 38	.....	22 21	25	2 36.1	10 25	9.7
Sat Feb 29/Sun Mar 01	10 57	17 31	19 03	4 43	6 15	5 59	15 40	.....	23 21	34	3 22.3	14 26	9.7

Calendar for Cape Cod Schmidt Observatory, west longitude (h.m.s) = 4 40 47, latitude (d.m) = 41 40.7
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 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

***** 2020 MARCH *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sun Mar 01/Mon Mar 02	11 01	17 32	19 04	4 41	6 13	6 04	15 43	.....	0 23	43	4 11.2	17 56	9.6
Mon Mar 02/Tue Mar 03	11 05	17 33	19 05	4 39	6 12	6 09	15 45	.....	1 25	53	5 03.1	20 40	9.6
Tue Mar 03/Wed Mar 04	11 09	17 34	19 07	4 38	6 10	6 15	15 48	.....	2 26	63	5 58.4	22 26	9.5
Wed Mar 04/Thu Mar 05	11 13	17 35	19 08	4 36	6 08	6 20	15 50	.....	3 24	73	6 56.6	22 58	9.5
Thu Mar 05/Fri Mar 06	11 17	17 37	19 09	4 35	6 07	6 25	15 52	.....	4 17	83	7 57.0	22 05	9.4
Fri Mar 06/Sat Mar 07	11 21	17 38	19 10	4 33	6 05	6 30	15 54	.....	5 03	91	8 58.1	19 43	9.4
Sat Mar 07/Sun Mar 08*	11 25	17 39	19 11	5 31	7 03	6 35	15 57	.....	6 44	96	9 58.9	15 56	9.3
Sun Mar 08/Mon Mar 09	10 28	18 40	20 12	5 30	7 02	6 40	15 59	17 26	7 20	99	10 56.8	11 12	9.3
Mon Mar 09/Tue Mar 10	10 32	18 41	20 14	5 28	7 00	6 45	16 01	18 44	.....	100	11 54.8	5 28	9.2
Tue Mar 10/Wed Mar 11	10 36	18 42	20 15	5 26	6 58	6 51	16 03	20 02	.....	97	12 51.6	- 0 37	9.2
Wed Mar 11/Thu Mar 12	10 40	18 43	20 16	5 24	6 57	6 56	16 06	21 19	.....	91	13 47.7	- 6 38	9.1
Thu Mar 12/Fri Mar 13	10 44	18 45	20 17	5 23	6 55	7 01	16 08	22 35	.....	83	14 43.7	-12 08	9.1
Fri Mar 13/Sat Mar 14	10 48	18 46	20 18	5 21	6 53	7 06	16 10	23 49	.....	73	15 40.0	-16 49	9.0
Sat Mar 14/Sun Mar 15	10 52	18 47	20 20	5 19	6 52	7 11	16 12	1 00	.....	63	16 36.7	-20 25	9.0
Sun Mar 15/Mon Mar 16	10 56	18 48	20 21	5 17	6 50	7 16	16 14	2 06	.....	52	17 33.7	-22 48	8.9
Mon Mar 16/Tue Mar 17	11 00	18 49	20 22	5 16	6 48	7 21	16 16	3 06	.....	41	18 30.1	-23 54	8.9
Tue Mar 17/Wed Mar 18	11 04	18 50	20 23	5 14	6 47	7 27	16 19	3 58	.....	32	19 25.4	-23 44	8.8
Wed Mar 18/Thu Mar 19	11 08	18 51	20 25	5 12	6 45	7 32	16 21	4 42	.....	23	20 18.7	-22 26	8.8
Thu Mar 19/Fri Mar 20	11 12	18 52	20 26	5 10	6 43	7 37	16 23	5 19	.....	15	21 09.8	-20 08	8.7
Fri Mar 20/Sat Mar 21	11 16	18 54	20 27	5 08	6 42	7 42	16 25	5 51	.....	9	21 58.4	-17 01	8.7
Sat Mar 21/Sun Mar 22	11 20	18 55	20 28	5 06	6 40	7 47	16 27	6 19	.....	5	22 44.8	-13 15	8.6
Sun Mar 22/Mon Mar 23	11 24	18 56	20 30	5 04	6 38	7 53	16 29	6 44	17 19	2	23 29.4	- 9 02	8.6
Mon Mar 23/Tue Mar 24	11 28	18 57	20 31	5 03	6 36	7 58	16 31	7 07	18 18	0	0 12.9	- 4 31	8.5
Tue Mar 24/Wed Mar 25	11 32	18 58	20 32	5 01	6 35	8 03	16 33	.....	19 17	1	0 55.9	0 09	8.5
Wed Mar 25/Thu Mar 26	11 35	18 59	20 33	4 59	6 33	8 08	16 35	.....	20 15	3	1 39.0	4 49	8.4
Thu Mar 26/Fri Mar 27	11 39	19 00	20 35	4 57	6 31	8 14	16 37	.....	21 14	7	2 22.9	9 18	8.4
Fri Mar 27/Sat Mar 28	11 43	19 01	20 36	4 55	6 30	8 19	16 39	.....	22 14	12	3 08.4	13 28	8.3
Sat Mar 28/Sun Mar 29	11 47	19 02	20 37	4 53	6 28	8 24	16 41	.....	23 15	19	3 56.0	17 09	8.3
Sun Mar 29/Mon Mar 30	11 51	19 03	20 39	4 51	6 26	8 29	16 43	.....	0 17	27	4 46.3	20 07	8.2
Mon Mar 30/Tue Mar 31	11 55	19 05	20 40	4 49	6 25	8 35	16 45	.....	1 17	36	5 39.3	22 11	8.2
Tue Mar 31/Wed Apr 01	11 59	19 06	20 41	4 47	6 23	8 40	16 47	.....	2 15	47	6 35.0	23 09	8.1

***** 2020 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
Wed Apr 01/Thu Apr 02	12 03	19 07	20 43	4 45	6 21	8 45	16 49	.....	3 08	57	7 32.8	22 49	8.0
Thu Apr 02/Fri Apr 03	12 07	19 08	20 44	4 43	6 20	8 51	16 51	.....	3 56	68	8 31.7	21 06	8.0
Fri Apr 03/Sat Apr 04	12 11	19 09	20 45	4 41	6 18	8 56	16 53	.....	4 37	78	9 30.7	18 00	7.9
Sat Apr 04/Sun Apr 05	12 15	19 10	20 47	4 40	6 16	9 01	16 55	.....	5 14	87	10 29.2	13 38	7.9
Sun Apr 05/Mon Apr 06	12 19	19 11	20 48	4 38	6 15	9 07	16 57	.....	5 47	94	11 26.8	8 16	7.8
Mon Apr 06/Tue Apr 07	12 23	19 12	20 50	4 36	6 13	9 12	16 59	17 32	6 18	99	12 23.8	2 15	7.8
Tue Apr 07/Wed Apr 08	12 27	19 13	20 51	4 34	6 11	9 17	17 01	18 50	6 49	100	13 20.5	- 3 58	7.7
Wed Apr 08/Thu Apr 09	12 31	19 14	20 52	4 32	6 10	9 23	17 03	20 08	.....	98	14 17.6	- 9 57	7.7
Thu Apr 09/Fri Apr 10	12 35	19 16	20 54	4 30	6 08	9 28	17 05	21 25	.....	93	15 15.5	-15 15	7.6
Fri Apr 10/Sat Apr 11	12 39	19 17	20 55	4 28	6 06	9 33	17 07	22 41	.....	86	16 14.3	-19 31	7.5
Sat Apr 11/Sun Apr 12	12 42	19 18	20 57	4 26	6 05	9 39	17 09	23 52	.....	78	17 13.6	-22 30	7.5
Sun Apr 12/Mon Apr 13	12 46	19 19	20 58	4 24	6 03	9 44	17 11	0 57	.....	68	18 12.7	-24 06	7.4
Mon Apr 13/Tue Apr 14	12 50	19 20	21 00	4 22	6 02	9 50	17 13	1 54	.....	58	19 10.3	-24 18	7.4
Tue Apr 14/Wed Apr 15	12 54	19 21	21 01	4 20	6 00	9 55	17 15	2 42	.....	47	20 05.7	-23 14	7.3
Wed Apr 15/Thu Apr 16	12 58	19 22	21 03	4 18	5 58	10 00	17 17	3 21	.....	38	20 58.2	-21 06	7.3
Thu Apr 16/Fri Apr 17	13 02	19 23	21 04	4 16	5 57	10 06	17 19	3 55	.....	29	21 47.9	-18 06	7.2
Fri Apr 17/Sat Apr 18	13 06	19 24	21 06	4 14	5 55	10 11	17 21	4 24	.....	20	22 34.9	-14 25	7.1
Sat Apr 18/Sun Apr 19	13 10	19 25	21 07	4 12	5 54	10 17	17 23	4 49	.....	13	23 19.9	-10 15	7.1
Sun Apr 19/Mon Apr 20	13 14	19 26	21 09	4 10	5 52	10 22	17 25	5 13	.....	8	0 03.5	- 5 45	7.0
Mon Apr 20/Tue Apr 21	13 18	19 28	21 10	4 08	5 51	10 28	17 27	5 35	.....	4	0 46.3	- 1 04	7.0
Tue Apr 21/Wed Apr 22	13 22	19 29	21 12	4 06	5 49	10 33	17 29	5 58	18 09	1	1 29.3	3 39	6.9
Wed Apr 22/Thu Apr 23	13 26	19 30	21 13	4 04	5 48	10 39	17 31	6 22	19 08	0	2 13.0	8 15	6.8
Thu Apr 23/Fri Apr 24	13 30	19 31	21 15	4 02	5 46	10 44	17 33	.....	20 08	1	2 58.1	12 33	6.8
Fri Apr 24/Sat Apr 25	13 34	19 32	21 17	4 00	5 45	10 50	17 35	.....	21 09	4	3 45.2	16 24	6.7
Sat Apr 25/Sun Apr 26	13 38	19 33	21 18	3 59	5 44	10 55	17 37	.....	22 11	8	4 34.8	19 35	6.7
Sun Apr 26/Mon Apr 27	13 42	19 34	21 20	3 57	5 42	11 01	17 39	.....	23 12	15	5 27.0	21 53	6.6
Mon Apr 27/Tue Apr 28	13 46	19 35	21 21	3 55	5 41	11 06	17 41	.....	0 11	22	6 21.5	23 08	6.6
Tue Apr 28/Wed Apr 29	13 50	19 36	21 23	3 53	5 39	11 12	17 43	.....	1 05	32	7 17.8	23 09	6.5
Wed Apr 29/Thu Apr 30	13 53	19 37	21 25	3 51	5 38	11 18	17 45	.....	1 53	42	8 14.9	21 51	6.4
Thu Apr 30/Fri May 01	13 57	19 38	21 26	3 49	5 37	11 23	17 47	.....	2 35	53	9 12.0	19 14	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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***** 2020 MAY *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----					Twi-Twi hours
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Fri May 01/Sat May 02	14 01	19 40	21 28	3 47	5 36	11 29	17 49	.....	3 12	64	10 08.6	15 23	6.3
Sat May 02/Sun May 03	14 05	19 41	21 29	3 45	5 34	11 34	17 51	.....	3 45	75	11 04.3	10 31	6.3
Sun May 03/Mon May 04	14 09	19 42	21 31	3 44	5 33	11 40	17 53	.....	4 16	84	11 59.4	4 52	6.2
Mon May 04/Tue May 05	14 13	19 43	21 33	3 42	5 32	11 45	17 56	.....	4 45	92	12 54.6	- 1 12	6.2
Tue May 05/Wed May 06	14 17	19 44	21 34	3 40	5 31	11 51	17 58	17 39	5 16	97	13 50.5	- 7 19	6.1
Wed May 06/Thu May 07	14 21	19 45	21 36	3 38	5 29	11 57	18 00	18 56	5 49	100	14 47.7	-13 02	6.0
Thu May 07/Fri May 08	14 25	19 46	21 38	3 37	5 28	12 02	18 02	20 14	6 26	99	15 46.7	-17 55	6.0
Fri May 08/Sat May 09	14 29	19 47	21 39	3 35	5 27	12 08	18 04	21 29	.....	96	16 47.1	-21 38	5.9
Sat May 09/Sun May 10	14 33	19 48	21 41	3 33	5 26	12 13	18 07	22 40	.....	90	17 48.2	-23 55	5.9
Sun May 10/Mon May 11	14 37	19 49	21 43	3 31	5 25	12 19	18 09	23 43	.....	82	18 48.6	-24 43	5.8
Mon May 11/Tue May 12	14 41	19 50	21 44	3 30	5 24	12 25	18 11	0 36	.....	73	19 47.0	-24 05	5.8
Tue May 12/Wed May 13	14 45	19 51	21 46	3 28	5 23	12 30	18 13	1 20	.....	64	20 42.2	-22 13	5.7
Wed May 13/Thu May 14	14 49	19 52	21 47	3 26	5 22	12 36	18 16	1 57	.....	54	21 34.1	-19 23	5.6
Thu May 14/Fri May 15	14 53	19 53	21 49	3 25	5 21	12 41	18 18	2 27	.....	44	22 22.7	-15 47	5.6
Fri May 15/Sat May 16	14 57	19 54	21 51	3 23	5 20	12 47	18 20	2 54	.....	35	23 08.7	-11 39	5.5
Sat May 16/Sun May 17	15 00	19 55	21 52	3 22	5 19	12 52	18 23	3 18	.....	26	23 52.9	- 7 10	5.5
Sun May 17/Mon May 18	15 04	19 56	21 54	3 20	5 18	12 58	18 25	3 40	.....	18	0 35.9	- 2 29	5.4
Mon May 18/Tue May 19	15 08	19 57	21 55	3 19	5 17	13 04	18 28	4 03	.....	12	1 18.8	2 17	5.4
Tue May 19/Wed May 20	15 12	19 58	21 57	3 17	5 16	13 09	18 30	4 26	.....	6	2 02.2	6 58	5.3
Wed May 20/Thu May 21	15 16	19 59	21 59	3 16	5 15	13 15	18 33	4 52	17 59	3	2 47.0	11 24	5.3
Thu May 21/Fri May 22	15 20	20 00	22 00	3 14	5 15	13 20	18 35	5 21	19 01	0	3 33.8	15 26	5.2
Fri May 22/Sat May 23	15 24	20 01	22 02	3 13	5 14	13 25	18 38	5 55	20 03	0	4 23.1	18 50	5.2
Sat May 23/Sun May 24	15 28	20 02	22 03	3 12	5 13	13 31	18 40	.....	21 06	2	5 15.0	21 25	5.1
Sun May 24/Mon May 25	15 32	20 03	22 05	3 11	5 12	13 36	18 43	.....	22 06	6	6 09.4	22 57	5.1
Mon May 25/Tue May 26	15 36	20 04	22 06	3 09	5 12	13 42	18 46	.....	23 03	11	7 05.5	23 16	5.1
Tue May 26/Wed May 27	15 40	20 04	22 08	3 08	5 11	13 47	18 49	.....	23 53	19	8 02.3	22 16	5.0
Wed May 27/Thu May 28	15 44	20 05	22 09	3 07	5 11	13 52	18 51	.....	0 37	28	8 58.9	19 59	5.0
Thu May 28/Fri May 29	15 48	20 06	22 10	3 06	5 10	13 58	18 54	.....	1 14	39	9 54.5	16 30	4.9
Fri May 29/Sat May 30	15 52	20 07	22 12	3 05	5 10	14 03	18 57	.....	1 47	50	10 48.9	11 59	4.9
Sat May 30/Sun May 31	15 56	20 08	22 13	3 04	5 09	14 08	19 00	.....	2 17	61	11 42.4	6 42	4.8
Sun May 31/Mon Jun 01	16 00	20 09	22 14	3 03	5 09	14 14	19 03	.....	2 46	72	12 35.4	0 55	4.8

***** 2020 JUNE *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----					Twi-Twi hours
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Mon Jun 01/Tue Jun 02	16 04	20 09	22 15	3 02	5 08	14 19	19 06	.....	3 15	82	13 29.0	- 5 02	4.8
Tue Jun 02/Wed Jun 03	16 08	20 10	22 17	3 01	5 08	14 24	19 09	.....	3 45	90	14 23.9	-10 48	4.7
Wed Jun 03/Thu Jun 04	16 11	20 11	22 18	3 00	5 07	14 29	19 12	17 48	4 20	96	15 20.8	-16 01	4.7
Thu Jun 04/Fri Jun 05	16 15	20 11	22 19	3 00	5 07	14 34	19 15	19 04	4 59	99	16 20.0	-20 16	4.7
Fri Jun 05/Sat Jun 06	16 19	20 12	22 20	2 59	5 07	14 39	19 19	20 17	5 45	100	17 21.0	-23 14	4.6
Sat Jun 06/Sun Jun 07	16 23	20 13	22 21	2 58	5 07	14 44	19 22	21 25	.....	97	18 22.5	-24 44	4.6
Sun Jun 07/Mon Jun 08	16 27	20 13	22 22	2 58	5 06	14 49	19 25	22 24	.....	93	19 23.1	-24 42	4.6
Mon Jun 08/Tue Jun 09	16 31	20 14	22 23	2 57	5 06	14 54	19 29	23 13	.....	86	20 21.1	-23 17	4.6
Tue Jun 09/Wed Jun 10	16 35	20 14	22 24	2 57	5 06	14 59	19 32	23 54	.....	78	21 15.7	-20 43	4.5
Wed Jun 10/Thu Jun 11	16 39	20 15	22 25	2 56	5 06	15 04	19 36	0 28	.....	70	22 06.7	-17 17	4.5
Thu Jun 11/Fri Jun 12	16 43	20 15	22 26	2 56	5 06	15 08	19 39	0 56	.....	60	22 54.5	-13 13	4.5
Fri Jun 12/Sat Jun 13	16 47	20 16	22 26	2 56	5 06	15 13	19 43	1 21	.....	51	23 39.8	- 8 44	4.5
Sat Jun 13/Sun Jun 14	16 51	20 16	22 27	2 55	5 06	15 18	19 47	1 45	.....	41	0 23.5	- 4 02	4.5
Sun Jun 14/Mon Jun 15	16 55	20 17	22 27	2 55	5 06	15 22	19 50	2 07	.....	32	1 06.6	0 45	4.5
Mon Jun 15/Tue Jun 16	16 59	20 17	22 28	2 55	5 06	15 27	19 54	2 30	.....	24	1 49.8	5 30	4.4
Tue Jun 16/Wed Jun 17	17 03	20 18	22 29	2 55	5 06	15 31	19 58	2 54	.....	16	2 34.1	10 02	4.4
Wed Jun 17/Thu Jun 18	17 07	20 18	22 29	2 55	5 06	15 35	20 02	3 22	.....	10	3 20.3	14 13	4.4
Thu Jun 18/Fri Jun 19	17 11	20 18	22 29	2 55	5 06	15 40	20 06	3 54	17 52	5	4 09.0	17 51	4.4
Fri Jun 19/Sat Jun 20	17 15	20 18	22 30	2 55	5 06	15 44	20 10	4 32	18 55	1	5 00.5	20 43	4.4
Sat Jun 20/Sun Jun 21	17 18	20 19	22 30	2 55	5 07	15 48	20 14	5 17	19 57	0	5 54.8	22 34	4.4
Sun Jun 21/Mon Jun 22	17 22	20 19	22 30	2 56	5 07	15 52	20 19	6 11	20 56	1	6 51.2	23 14	4.4
Mon Jun 22/Tue Jun 23	17 26	20 19	22 30	2 56	5 07	15 56	20 23	.....	21 49	4	7 48.7	22 34	4.4
Tue Jun 23/Wed Jun 24	17 30	20 19	22 30	2 56	5 07	16 00	20 27	.....	22 36	9	8 46.1	20 34	4.4
Wed Jun 24/Thu Jun 25	17 34	20 19	22 30	2 57	5 08	16 04	20 32	.....	23 16	17	9 42.3	17 19	4.4
Thu Jun 25/Fri Jun 26	17 38	20 19	22 30	2 57	5 08	16 08	20 36	.....	23 51	26	10 36.9	13 02	4.5
Fri Jun 26/Sat Jun 27	17 42	20 19	22 30	2 58	5 09	16 12	20 41	.....	0 21	36	11 30.1	7 57	4.5
Sat Jun 27/Sun Jun 28	17 46	20 19	22 30	2 59	5 09	16 16	20 45	.....	0 50	48	12 22.2	2 21	4.5
Sun Jun 28/Mon Jun 29	17 50	20 19	22 29	2 59	5 09	16 19	20 50	.....	1 18	59	13 14.3	- 3 27	4.5
Mon Jun 29/Tue Jun 30	17 54	20 19	22 29	3 00	5 10	16 23	20 54	.....	1 47	70	14 07.1	- 9 08	4.5
Tue Jun 30/Wed Jul 01	17 58	20 19	22 29	3 01	5 10	16 26	20 59	.....	2 18	80	15 01.6	-14 24	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.

***** 2020 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	
Wed Jul 01/Thu Jul 02	18 02	20 19 22 28	3 02 5 11	16 30	21 04	.....	2 54	89	15 58.3	-18 54	4.6			
Thu Jul 02/Fri Jul 03	18 06	20 19 22 28	3 03 5 12	16 33	21 09	17 58	3 36	95	16 57.3	-22 18	4.6				
Fri Jul 03/Sat Jul 04	18 10	20 19 22 27	3 04 5 12	16 37	21 14	19 07	4 26	99	17 57.9	-24 22	4.6				
Sat Jul 04/Sun Jul 05	18 14	20 18 22 27	3 05 5 13	16 40	21 19	20 10	5 23	100	18 58.6	-24 56	4.6				
Sun Jul 05/Mon Jul 06	18 18	20 18 22 26	3 06 5 13	16 43	21 24	21 04	6 25	99	19 57.9	-24 03	4.7				
Mon Jul 06/Tue Jul 07	18 22	20 18 22 25	3 07 5 14	16 46	21 29	21 49	.....	95	20 54.5	-21 54	4.7			
Tue Jul 07/Wed Jul 08	18 26	20 17 22 24	3 08 5 15	16 50	21 34	22 26	.....	90	21 47.7	-18 43	4.7			
Wed Jul 08/Thu Jul 09	18 29	20 17 22 23	3 09 5 15	16 53	21 39	22 56	.....	83	22 37.4	-14 47	4.8			
Thu Jul 09/Fri Jul 10	18 33	20 17 22 23	3 10 5 16	16 56	21 44	23 23	.....	75	23 24.3	-10 21	4.8			
Fri Jul 10/Sat Jul 11	18 37	20 16 22 22	3 11 5 17	16 59	21 49	23 47	.....	67	0 09.1	- 5 38	4.8			
Sat Jul 11/Sun Jul 12	18 41	20 16 22 21	3 13 5 18	17 02	21 54	0 10	.....	57	0 52.7	- 0 48	4.9			
Sun Jul 12/Mon Jul 13	18 45	20 15 22 20	3 14 5 18	17 04	22 00	0 33	.....	48	1 35.9	4 00	4.9			
Mon Jul 13/Tue Jul 14	18 49	20 15 22 18	3 15 5 19	17 07	22 05	0 56	.....	38	2 19.9	8 37	4.9			
Tue Jul 14/Wed Jul 15	18 53	20 14 22 17	3 17 5 20	17 10	22 10	1 22	.....	29	3 05.3	12 56	5.0			
Wed Jul 15/Thu Jul 16	18 57	20 13 22 16	3 18 5 21	17 13	22 16	1 52	.....	21	3 52.9	16 45	5.0			
Thu Jul 16/Fri Jul 17	19 01	20 13 22 15	3 19 5 22	17 16	22 21	2 27	.....	13	4 43.4	19 52	5.1			
Fri Jul 17/Sat Jul 18	19 05	20 12 22 14	3 21 5 22	17 18	22 26	3 09	17 43	7	5 36.9	22 05	5.1				
Sat Jul 18/Sun Jul 19	19 09	20 11 22 12	3 22 5 23	17 21	22 32	4 00	18 44	3	6 33.0	23 08	5.2				
Sun Jul 19/Mon Jul 20	19 13	20 10 22 11	3 24 5 24	17 23	22 37	4 59	19 40	0	7 30.9	22 53	5.2				
Mon Jul 20/Tue Jul 21	19 17	20 10 22 10	3 25 5 25	17 26	22 43	6 06	20 31	0	8 29.3	21 14	5.3				
Tue Jul 21/Wed Jul 22	19 21	20 09 22 08	3 27 5 26	17 29	22 48	.....	21 14	3	9 26.9	18 16	5.3			
Wed Jul 22/Thu Jul 23	19 25	20 08 22 07	3 28 5 27	17 31	22 53	.....	21 51	8	10 23.0	14 08	5.4			
Thu Jul 23/Fri Jul 24	19 29	20 07 22 05	3 30 5 28	17 33	22 59	.....	22 24	15	11 17.3	9 08	5.4			
Fri Jul 24/Sat Jul 25	19 33	20 06 22 04	3 31 5 29	17 36	23 04	.....	22 53	24	12 10.1	3 35	5.5			
Sat Jul 25/Sun Jul 26	19 36	20 05 22 02	3 33 5 30	17 38	23 10	.....	23 22	34	13 02.3	- 2 13	5.5			
Sun Jul 26/Mon Jul 27	19 40	20 04 22 01	3 34 5 31	17 41	23 15	.....	23 50	46	13 54.5	- 7 56	5.6			
Mon Jul 27/Tue Jul 28	19 44	20 03 21 59	3 36 5 32	17 43	23 21	.....	0 20	57	14 47.8	-13 15	5.6			
Tue Jul 28/Wed Jul 29	19 48	20 02 21 57	3 38 5 33	17 45	23 27	.....	0 54	68	15 42.9	-17 52	5.7			
Wed Jul 29/Thu Jul 30	19 52	20 01 21 56	3 39 5 34	17 48	23 32	.....	1 33	78	16 39.9	-21 30	5.7			
Thu Jul 30/Fri Jul 31	19 56	20 00 21 54	3 41 5 35	17 50	23 38	.....	2 19	86	17 38.7	-23 54	5.8			
Fri Jul 31/Sat Aug 01	20 00	19 59 21 52	3 42 5 36	17 52	23 43	17 59	3 12	93	18 38.3	-24 55	5.8				

***** 2020 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	
Sat Aug 01/Sun Aug 02	20 04	19 58 21 51	3 44 5 37	17 54	23 49	18 56	4 11	97	19 37.3	-24 31	5.9				
Sun Aug 02/Mon Aug 03	20 08	19 57 21 49	3 46 5 38	17 56	23 54	19 43	5 15	100	20 34.3	-22 46	5.9				
Mon Aug 03/Tue Aug 04	20 12	19 56 21 47	3 47 5 39	17 59	24 00	20 23	6 19	100	21 28.5	-19 55	6.0				
Tue Aug 04/Wed Aug 05	20 16	19 54 21 45	3 49 5 40	18 01	0 05	20 56	.....	97	22 19.6	-16 11	6.1			
Wed Aug 05/Thu Aug 06	20 20	19 53 21 43	3 50 5 41	18 03	0 11	21 24	.....	93	23 07.7	-11 52	6.1			
Thu Aug 06/Fri Aug 07	20 24	19 52 21 42	3 52 5 42	18 05	0 16	21 49	.....	88	23 53.6	- 7 09	6.2			
Fri Aug 07/Sat Aug 08	20 28	19 51 21 40	3 53 5 43	18 07	0 22	22 12	.....	81	0 37.8	- 2 17	6.2			
Sat Aug 08/Sun Aug 09	20 32	19 49 21 38	3 55 5 44	18 09	0 27	22 35	.....	73	1 21.4	2 35	6.3			
Sun Aug 09/Mon Aug 10	20 36	19 48 21 36	3 57 5 45	18 11	0 33	22 58	.....	64	2 05.2	7 19	6.3			
Mon Aug 10/Tue Aug 11	20 40	19 47 21 34	3 58 5 46	18 13	0 38	23 22	.....	55	2 49.9	11 45	6.4			
Tue Aug 11/Wed Aug 12	20 43	19 45 21 32	4 00 5 47	18 15	0 44	23 50	.....	45	3 36.5	15 43	6.5			
Wed Aug 12/Thu Aug 13	20 47	19 44 21 30	4 01 5 48	18 18	0 49	0 22	.....	36	4 25.6	19 04	6.5			
Thu Aug 13/Fri Aug 14	20 51	19 43 21 29	4 03 5 49	18 20	0 55	1 00	.....	26	5 17.6	21 35	6.6			
Fri Aug 14/Sat Aug 15	20 55	19 41 21 27	4 04 5 50	18 22	1 00	1 47	.....	18	6 12.4	23 03	6.6			
Sat Aug 15/Sun Aug 16	20 59	19 40 21 25	4 06 5 51	18 24	1 06	2 42	17 27	11	7 09.5	23 15	6.7				
Sun Aug 16/Mon Aug 17	21 03	19 38 21 23	4 07 5 52	18 26	1 11	3 46	18 20	5	8 08.0	22 05	6.7				
Mon Aug 17/Tue Aug 18	21 07	19 37 21 21	4 09 5 53	18 28	1 17	4 57	19 07	1	9 06.4	19 31	6.8				
Tue Aug 18/Wed Aug 19	21 11	19 35 21 19	4 10 5 54	18 30	1 22	6 12	19 47	0	10 03.9	15 40	6.9				
Wed Aug 19/Thu Aug 20	21 15	19 34 21 17	4 12 5 55	18 32	1 28	.....	20 22	2	10 59.8	10 48	6.9			
Thu Aug 20/Fri Aug 21	21 19	19 32 21 15	4 13 5 56	18 33	1 33	.....	20 54	6	11 54.3	5 13	7.0			
Fri Aug 21/Sat Aug 22	21 23	19 31 21 13	4 15 5 57	18 35	1 38	.....	21 23	13	12 47.8	- 0 43	7.0			
Sat Aug 22/Sun Aug 23	21 27	19 29 21 11	4 16 5 58	18 37	1 44	.....	21 52	22	13 41.0	- 6 37	7.1			
Sun Aug 23/Mon Aug 24	21 31	19 28 21 09	4 18 5 59	18 39	1 49	.....	22 22	32	14 34.7	-12 09	7.1			
Mon Aug 24/Tue Aug 25	21 35	19 26 21 07	4 19 6 00	18 41	1 55	.....	22 55	43	15 29.7	-17 00	7.2			
Tue Aug 25/Wed Aug 26	21 39	19 25 21 05	4 21 6 01	18 43	2 00	.....	23 32	54	16 26.2	-20 52	7.3			
Wed Aug 26/Thu Aug 27	21 43	19 23 21 03	4 22 6 02	18 45	2 05	.....	0 16	65	17 24.2	-23 32	7.3			
Thu Aug 27/Fri Aug 28	21 47	19 21 21 01	4 23 6 03	18 47	2 11	.....	1 06	75	18 22.8	-24 52	7.4			
Fri Aug 28/Sat Aug 29	21 51	19 20 20 59	4 25 6 04	18 49	2 16	.....	2 03	83	19 21.1	-24 48	7.4			
Sat Aug 29/Sun Aug 30	21 54	19 18 20 57	4 26 6 05	18 51	2 21	17 41	3 05	90	20 17.8	-23 25	7.5				
Sun Aug 30/Mon Aug 31	21 58	19 16 20 55	4 28 6 06	18 53	2 27	18 22	4 09	96	21 12.1	-20 51	7.5				
Mon Aug 31/Tue Sep 01	22 02	19 15 20 53	4 29 6 07	18 55	2 32	18 57	5 12	99	22 03.6	-17 22	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.

***** 2020 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
Tue Sep 01/Wed Sep 02	22 06	19 13	20 51	4 30	6 08	18 57	2 37	19 26	6 15	100	22 52.3	-13 11	7.7
Wed Sep 02/Thu Sep 03	22 10	19 11	20 49	4 32	6 09	18 59	2 43	19 52	.....	99	23 38.7	- 8 33	7.7
Thu Sep 03/Fri Sep 04	22 14	19 10	20 47	4 33	6 10	19 01	2 48	20 15	.....	96	0 23.4	- 3 40	7.8
Fri Sep 04/Sat Sep 05	22 18	19 08	20 45	4 34	6 11	19 03	2 53	20 38	.....	92	1 07.3	1 17	7.8
Sat Sep 05/Sun Sep 06	22 22	19 06	20 43	4 36	6 12	19 05	2 58	21 00	.....	86	1 51.1	6 08	7.9
Sun Sep 06/Mon Sep 07	22 26	19 05	20 41	4 37	6 13	19 07	3 04	21 24	.....	79	2 35.5	10 42	7.9
Mon Sep 07/Tue Sep 08	22 30	19 03	20 39	4 38	6 14	19 09	3 09	21 50	.....	70	3 21.4	14 51	8.0
Tue Sep 08/Wed Sep 09	22 34	19 01	20 37	4 39	6 15	19 11	3 14	22 20	.....	61	4 09.3	18 25	8.0
Wed Sep 09/Thu Sep 10	22 38	19 00	20 35	4 41	6 16	19 13	3 19	22 55	.....	52	4 59.8	21 11	8.1
Thu Sep 10/Fri Sep 11	22 42	18 58	20 33	4 42	6 17	19 14	3 25	23 36	.....	42	5 52.9	23 00	8.1
Fri Sep 11/Sat Sep 12	22 46	18 56	20 31	4 43	6 18	19 16	3 30	0 27	.....	32	6 48.4	23 38	8.2
Sat Sep 12/Sun Sep 13	22 50	18 54	20 29	4 44	6 19	19 18	3 35	1 26	.....	23	7 45.6	22 58	8.3
Sun Sep 13/Mon Sep 14	22 54	18 53	20 27	4 46	6 21	19 20	3 40	2 33	16 58	14	8 43.5	20 56	8.3
Mon Sep 14/Tue Sep 15	22 58	18 51	20 25	4 47	6 22	19 22	3 45	3 46	17 40	7	9 41.0	17 33	8.4
Tue Sep 15/Wed Sep 16	23 01	18 49	20 24	4 48	6 23	19 24	3 50	5 01	18 17	2	10 37.6	12 59	8.4
Wed Sep 16/Thu Sep 17	23 05	18 48	20 22	4 49	6 24	19 26	3 56	6 18	18 50	0	11 33.1	7 32	8.5
Thu Sep 17/Fri Sep 18	23 09	18 46	20 20	4 51	6 25	19 28	4 01	.....	19 21	1	12 27.8	1 32	8.5
Fri Sep 18/Sat Sep 19	23 13	18 44	20 18	4 52	6 26	19 30	4 06	.....	19 50	4	13 22.3	- 4 37	8.6
Sat Sep 19/Sun Sep 20	23 17	18 42	20 16	4 53	6 27	19 33	4 11	.....	20 21	11	14 17.2	-10 31	8.6
Sun Sep 20/Mon Sep 21	23 21	18 41	20 14	4 54	6 28	19 35	4 16	.....	20 53	19	15 13.3	-15 47	8.7
Mon Sep 21/Tue Sep 22	23 25	18 39	20 12	4 55	6 29	19 37	4 21	.....	21 30	29	16 10.7	-20 04	8.7
Tue Sep 22/Wed Sep 23	23 29	18 37	20 10	4 57	6 30	19 39	4 26	.....	22 12	39	17 09.4	-23 08	8.8
Wed Sep 23/Thu Sep 24	23 33	18 35	20 08	4 58	6 31	19 41	4 32	.....	23 01	50	18 08.5	-24 48	8.8
Thu Sep 24/Fri Sep 25	23 37	18 34	20 07	4 59	6 32	19 43	4 37	.....	23 57	61	19 07.2	-25 03	8.9
Fri Sep 25/Sat Sep 26	23 41	18 32	20 05	5 00	6 33	19 45	4 42	.....	0 58	71	20 04.1	-23 57	8.9
Sat Sep 26/Sun Sep 27	23 45	18 30	20 03	5 01	6 34	19 47	4 47	.....	2 01	80	20 58.5	-21 39	9.0
Sun Sep 27/Mon Sep 28	23 49	18 28	20 01	5 02	6 35	19 49	4 52	17 00	3 04	87	21 50.1	-18 23	9.0
Mon Sep 28/Tue Sep 29	23 53	18 27	19 59	5 03	6 36	19 51	4 57	17 30	4 07	93	22 38.9	-14 22	9.1
Tue Sep 29/Wed Sep 30	23 57	18 25	19 57	5 05	6 37	19 53	5 02	17 56	5 08	97	23 25.4	- 9 49	9.1
Wed Sep 30/Thu Oct 01	0 01	18 23	19 56	5 06	6 38	19 56	5 07	18 20	6 08	99	0 10.3	- 4 58	9.2

***** 2020 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
Thu Oct 01/Fri Oct 02	0 05	18 22	19 54	5 07	6 39	19 58	5 12	18 42	7 08	100	0 54.2	0 02	9.2
Fri Oct 02/Sat Oct 03	0 09	18 20	19 52	5 08	6 40	20 00	5 17	19 05	.....	98	1 38.0	4 58	9.3
Sat Oct 03/Sun Oct 04	0 12	18 18	19 50	5 09	6 41	20 02	5 22	19 28	.....	95	2 22.3	9 42	9.3
Sun Oct 04/Mon Oct 05	0 16	18 17	19 49	5 10	6 42	20 04	5 27	19 52	.....	90	3 07.9	14 02	9.4
Mon Oct 05/Tue Oct 06	0 20	18 15	19 47	5 11	6 44	20 07	5 32	20 20	.....	84	3 55.2	17 49	9.4
Tue Oct 06/Wed Oct 07	0 24	18 13	19 45	5 12	6 45	20 09	5 37	20 53	.....	76	4 44.8	20 51	9.4
Wed Oct 07/Thu Oct 08	0 28	18 12	19 44	5 13	6 46	20 11	5 43	21 31	.....	68	5 36.8	22 58	9.5
Thu Oct 08/Fri Oct 09	0 32	18 10	19 42	5 15	6 47	20 13	5 48	22 17	.....	58	6 30.9	23 58	9.5
Fri Oct 09/Sat Oct 10	0 36	18 08	19 40	5 16	6 48	20 16	5 53	23 11	.....	48	7 26.5	23 44	9.6
Sat Oct 10/Sun Oct 11	0 40	18 07	19 39	5 17	6 49	20 18	5 58	0 13	.....	38	8 22.9	22 11	9.6
Sun Oct 11/Mon Oct 12	0 44	18 05	19 37	5 18	6 50	20 20	6 03	1 22	.....	27	9 19.3	19 20	9.7
Mon Oct 12/Tue Oct 13	0 48	18 03	19 36	5 19	6 51	20 23	6 08	2 34	16 13	18	10 15.0	15 16	9.7
Tue Oct 13/Wed Oct 14	0 52	18 02	19 34	5 20	6 52	20 25	6 13	3 50	16 46	10	11 09.9	10 11	9.8
Wed Oct 14/Thu Oct 15	0 56	18 00	19 33	5 21	6 54	20 28	6 18	5 06	17 17	4	12 04.4	4 22	9.8
Thu Oct 15/Fri Oct 16	1 00	17 59	19 31	5 22	6 55	20 30	6 23	6 24	17 46	1	12 58.8	- 1 50	9.9
Fri Oct 16/Sat Oct 17	1 04	17 57	19 30	5 23	6 56	20 32	6 28	7 43	18 16	0	13 54.1	- 8 02	9.9
Sat Oct 17/Sun Oct 18	1 08	17 56	19 28	5 24	6 57	20 35	6 33	.....	18 48	3	14 50.7	-13 46	9.9
Sun Oct 18/Mon Oct 19	1 12	17 54	19 27	5 25	6 58	20 37	6 38	.....	19 23	8	15 49.2	-18 39	10.0
Mon Oct 19/Tue Oct 20	1 16	17 53	19 25	5 26	6 59	20 40	6 43	.....	20 04	16	16 49.2	-22 19	10.0
Tue Oct 20/Wed Oct 21	1 19	17 51	19 24	5 28	7 00	20 42	6 48	.....	20 52	25	17 50.1	-24 33	10.1
Wed Oct 21/Thu Oct 22	1 23	17 50	19 22	5 29	7 02	20 45	6 53	.....	21 48	35	18 50.5	-25 14	10.1
Thu Oct 22/Fri Oct 23	1 27	17 48	19 21	5 30	7 03	20 48	6 58	.....	22 48	45	19 49.1	-24 29	10.1
Fri Oct 23/Sat Oct 24	1 31	17 47	19 20	5 31	7 04	20 50	7 03	.....	23 52	56	20 44.8	-22 27	10.2
Sat Oct 24/Sun Oct 25	1 35	17 45	19 18	5 32	7 05	20 53	7 08	.....	0 56	65	21 37.3	-19 22	10.2
Sun Oct 25/Mon Oct 26	1 39	17 44	19 17	5 33	7 06	20 55	7 13	.....	2 00	75	22 26.6	-15 30	10.3
Mon Oct 26/Tue Oct 27	1 43	17 43	19 16	5 34	7 07	20 58	7 18	16 02	3 01	82	23 13.3	-11 04	10.3
Tue Oct 27/Wed Oct 28	1 47	17 41	19 15	5 35	7 09	21 01	7 23	16 26	4 02	89	23 58.2	- 6 16	10.3
Wed Oct 28/Thu Oct 29	1 51	17 40	19 13	5 36	7 10	21 04	7 28	16 48	5 01	94	0 42.0	- 1 17	10.4
Thu Oct 29/Fri Oct 30	1 55	17 39	19 12	5 37	7 11	21 06	7 33	17 10	6 00	98	1 25.6	3 43	10.4
Fri Oct 30/Sat Oct 31	1 59	17 37	19 11	5 38	7 12	21 09	7 38	17 32	7 00	100	2 09.7	8 34	10.5
Sat Oct 31/Sun Nov 01*	2 03	17 36	19 10	4 39	6 13	21 12	7 43	17 56	7 00	100	2 55.0	13 05	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.

***** 2020 NOVEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Sun Nov 01/Mon Nov 02	3 07	16 35	18 09	4 40	6 15	21 15	7 48	17 23	8 01	98	3 43.4	17 16	10.5
Mon Nov 02/Tue Nov 03	3 11	16 33	18 08	4 41	6 16	21 18	7 53	17 53	.....	94	4 32.8	20 34	10.6
Tue Nov 03/Wed Nov 04	3 15	16 32	18 07	4 43	6 17	21 21	7 58	18 30	.....	89	5 24.6	22 56	10.6
Wed Nov 04/Thu Nov 05	3 19	16 31	18 06	4 44	6 18	21 23	8 03	19 13	.....	81	6 18.4	24 14	10.6
Thu Nov 05/Fri Nov 06	3 23	16 30	18 05	4 45	6 20	21 26	8 08	20 03	.....	73	7 13.7	24 19	10.7
Fri Nov 06/Sat Nov 07	3 27	16 29	18 04	4 46	6 21	21 29	8 13	21 02	.....	64	8 09.4	23 06	10.7
Sat Nov 07/Sun Nov 08	3 31	16 28	18 03	4 47	6 22	21 32	8 18	22 06	.....	53	9 04.8	20 36	10.7
Sun Nov 08/Mon Nov 09	3 35	16 27	18 02	4 48	6 23	21 35	8 23	23 15	.....	42	9 59.4	16 56	10.8
Mon Nov 09/Tue Nov 10	3 38	16 26	18 01	4 49	6 24	21 38	8 28	0 27	.....	32	10 53.0	12 15	10.8
Tue Nov 10/Wed Nov 11	3 42	16 25	18 00	4 50	6 26	21 42	8 33	1 40	.....	22	11 46.0	6 46	10.8
Wed Nov 11/Thu Nov 12	3 46	16 24	17 59	4 51	6 27	21 45	8 38	2 55	.....	13	12 39.1	0 46	10.9
Thu Nov 12/Fri Nov 13	3 50	16 23	17 59	4 52	6 28	21 48	8 43	4 12	.....	6	13 32.9	- 5 25	10.9
Fri Nov 13/Sat Nov 14	3 54	16 22	17 58	4 53	6 29	21 51	8 48	5 31	15 42	2	14 28.4	-11 23	10.9
Sat Nov 14/Sun Nov 15	3 58	16 21	17 57	4 54	6 31	21 54	8 53	6 51	16 15	0	15 26.2	-16 43	11.0
Sun Nov 15/Mon Nov 16	4 02	16 20	17 56	4 55	6 32	21 58	8 58	8 09	16 53	1	16 26.5	-20 59	11.0
Mon Nov 16/Tue Nov 17	4 06	16 19	17 56	4 56	6 33	22 01	9 03	.....	17 38	6	17 28.4	-23 51	11.0
Tue Nov 17/Wed Nov 18	4 10	16 18	17 55	4 57	6 34	22 04	9 08	.....	18 32	12	18 30.7	-25 08	11.0
Wed Nov 18/Thu Nov 19	4 14	16 18	17 55	4 58	6 35	22 08	9 13	.....	19 32	20	19 31.6	-24 50	11.1
Thu Nov 19/Fri Nov 20	4 18	16 17	17 54	4 59	6 37	22 11	9 18	.....	20 37	29	20 29.6	-23 07	11.1
Fri Nov 20/Sat Nov 21	4 22	16 16	17 53	5 00	6 38	22 14	9 23	.....	21 44	39	21 23.9	-20 15	11.1
Sat Nov 21/Sun Nov 22	4 26	16 16	17 53	5 01	6 39	22 18	9 28	.....	22 49	49	22 14.6	-16 31	11.1
Sun Nov 22/Mon Nov 23	4 30	16 15	17 53	5 02	6 40	22 21	9 33	.....	23 52	59	23 02.1	-12 10	11.2
Mon Nov 23/Tue Nov 24	4 34	16 14	17 52	5 03	6 41	22 25	9 38	.....	0 54	68	23 47.3	- 7 26	11.2
Tue Nov 24/Wed Nov 25	4 38	16 14	17 52	5 04	6 42	22 28	9 43	.....	1 53	77	0 31.0	- 2 29	11.2
Wed Nov 25/Thu Nov 26	4 42	16 13	17 51	5 05	6 43	22 32	9 48	.....	2 52	84	1 14.3	2 31	11.2
Thu Nov 26/Fri Nov 27	4 46	16 13	17 51	5 06	6 45	22 36	9 52	.....	3 52	91	1 57.9	7 25	11.2
Fri Nov 27/Sat Nov 28	4 49	16 12	17 51	5 07	6 46	22 39	9 57	.....	4 52	95	2 42.7	12 04	11.3
Sat Nov 28/Sun Nov 29	4 53	16 12	17 51	5 08	6 47	22 43	10 02	15 26	5 53	99	3 29.4	16 16	11.3
Sun Nov 29/Mon Nov 30	4 57	16 12	17 50	5 09	6 48	22 47	10 07	15 55	6 54	100	4 18.5	19 49	11.3
Mon Nov 30/Tue Dec 01	5 01	16 11	17 50	5 10	6 49	22 51	10 12	16 30	7 55	99	5 10.1	22 31	11.3

***** 2020 DECEMBER *****

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi hours	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	
Tue Dec 01/Wed Dec 02	5 05	16 11	17 50	5 11	6 50	22 54	10 17	17 11	.....	97	6 04.1	24 09	11.3
Wed Dec 02/Thu Dec 03	5 09	16 11	17 50	5 12	6 51	22 58	10 22	17 59	.....	92	6 59.6	24 34	11.4
Thu Dec 03/Fri Dec 04	5 13	16 11	17 50	5 12	6 52	23 02	10 26	18 55	.....	86	7 55.7	23 41	11.4
Fri Dec 04/Sat Dec 05	5 17	16 10	17 50	5 13	6 53	23 06	10 31	19 58	.....	78	8 51.3	21 30	11.4
Sat Dec 05/Sun Dec 06	5 21	16 10	17 50	5 14	6 54	23 10	10 36	21 05	.....	69	9 45.8	18 09	11.4
Sun Dec 06/Mon Dec 07	5 25	16 10	17 50	5 15	6 55	23 14	10 41	22 14	.....	58	10 38.7	13 47	11.4
Mon Dec 07/Tue Dec 08	5 29	16 10	17 50	5 16	6 56	23 18	10 45	23 25	.....	47	11 30.6	8 37	11.4
Tue Dec 08/Wed Dec 09	5 33	16 10	17 50	5 16	6 56	23 22	10 50	0 36	.....	36	12 21.9	2 54	11.4
Wed Dec 09/Thu Dec 10	5 37	16 10	17 50	5 17	6 57	23 26	10 55	1 49	.....	25	13 13.6	- 3 04	11.5
Thu Dec 10/Fri Dec 11	5 41	16 10	17 50	5 18	6 58	23 30	11 00	3 04	.....	16	14 06.7	- 9 00	11.5
Fri Dec 11/Sat Dec 12	5 45	16 10	17 51	5 19	6 59	23 34	11 04	4 21	.....	8	15 02.1	-14 31	11.5
Sat Dec 12/Sun Dec 13	5 49	16 11	17 51	5 19	7 00	23 38	11 09	5 39	.....	3	16 00.3	-19 13	11.5
Sun Dec 13/Mon Dec 14	5 53	16 11	17 51	5 20	7 00	23 43	11 13	6 55	15 25	0	17 01.1	-22 43	11.5
Mon Dec 14/Tue Dec 15	5 56	16 11	17 51	5 21	7 01	23 47	11 18	8 05	16 14	0	18 03.7	-24 44	11.5
Tue Dec 15/Wed Dec 16	6 00	16 11	17 52	5 21	7 02	23 51	11 23	.....	17 11	3	19 06.2	-25 07	11.5
Wed Dec 16/Thu Dec 17	6 04	16 12	17 52	5 22	7 02	23 55	11 27	.....	18 16	8	20 06.7	-23 56	11.5
Thu Dec 17/Fri Dec 18	6 08	16 12	17 52	5 23	7 03	24 00	11 32	.....	19 24	15	21 03.8	-21 26	11.5
Fri Dec 18/Sat Dec 19	6 12	16 12	17 53	5 23	7 04	0 04	11 36	.....	20 32	23	21 57.0	-17 54	11.5
Sat Dec 19/Sun Dec 20	6 16	16 13	17 53	5 24	7 04	0 08	11 41	.....	21 38	32	22 46.5	-13 39	11.5
Sun Dec 20/Mon Dec 21	6 20	16 13	17 54	5 24	7 05	0 13	11 45	.....	22 42	42	23 33.0	- 8 58	11.5
Mon Dec 21/Tue Dec 22	6 24	16 14	17 54	5 25	7 05	0 17	11 50	.....	23 43	51	0 17.4	- 4 01	11.5
Tue Dec 22/Wed Dec 23	6 28	16 14	17 55	5 25	7 06	0 22	11 54	.....	0 42	61	1 00.8	0 59	11.5
Wed Dec 23/Thu Dec 24	6 32	16 15	17 55	5 26	7 06	0 26	11 58	.....	1 42	70	1 44.1	5 56	11.5
Thu Dec 24/Fri Dec 25	6 36	16 15	17 56	5 26	7 06	0 31	12 03	.....	2 41	78	2 28.2	10 39	11.5
Fri Dec 25/Sat Dec 26	6 40	16 16	17 56	5 26	7 07	0 35	12 07	.....	3 42	85	3 14.0	14 59	11.5
Sat Dec 26/Sun Dec 27	6 44	16 17	17 57	5 27	7 07	0 40	12 11	.....	4 43	92	4 02.1	18 46	11.5
Sun Dec 27/Mon Dec 28	6 48	16 17	17 58	5 27	7 07	0 45	12 16	.....	5 45	96	4 53.1	21 46	11.5
Mon Dec 28/Tue Dec 29	6 52	16 18	17 58	5 27	7 07	0 49	12 20	15 07	6 45	99	5 46.7	23 47	11.5
Tue Dec 29/Wed Dec 30	6 56	16 19	17 59	5 27	7 08	0 54	12 24	15 53	7 41	100	6 42.6	24 35	11.5
Wed Dec 30/Thu Dec 31	7 00	16 20	18 00	5 28	7 08	0 58	12 28	16 48	8 30	99	7 39.6	24 04	11.5
Thu Dec 31/Fri Jan 01	7 04	16 21	18 01	5 28	7 08	1 03	12 32	17 50	.....	95	8 36.5	22 12	11.5