

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:

***** 2015 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 -0.1 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 2015, 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 21 | 20 36 | Dec 28 | 13 33 | Jan 04 | 23 54 | Jan 13 | 4 49 |
| Jan 20 | 8 15 | Jan 26 | 23 50 | Feb 03 | 18 10 | Feb 11 | 22 52 |
| Feb 18 | 18 49 | Feb 25 | 12 15 | Mar 05 | 13 07 | Mar 13 | 13 49 |
| Mar 20 | 5 39 | Mar 27 | 3 44 | Apr 04 | 8 07 | Apr 11 | 23 45 |
| Apr 18 | 14 59 | Apr 25 | 19 57 | May 03 | 23 45 | May 11 | 6 37 |
| May 18 | 0 16 | May 25 | 13 21 | Jun 02 | 12 22 | Jun 09 | 11 43 |
| Jun 16 | 10 08 | Jun 24 | 7 04 | Jul 01 | 22 22 | Jul 08 | 16 26 |
| Jul 15 | 21 26 | Jul 24 | 0 05 | Jul 31 | 6 46 | Aug 06 | 22 06 |
| Aug 14 | 10 55 | Aug 22 | 15 32 | Aug 29 | 14 38 | Sep 05 | 5 57 |
| Sep 13 | 2 43 | Sep 21 | 5 00 | Sep 27 | 22 52 | Oct 04 | 17 08 |
| Oct 12 | 20 07 | Oct 20 | 16 32 | Oct 27 | 8 06 | Nov 03 | 7 26 |
| Nov 11 | 12 48 | Nov 19 | 1 28 | Nov 25 | 17 45 | Dec 03 | 2 42 |
| Dec 11 | 5 30 | Dec 18 | 10 15 | Dec 25 | 6 12 | Jan 02 | 0 32 |

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.

***** 2015 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 | |
| Thu Jan 01/Fri Jan 02 | 7 05 | 16 21 | 18 01 | 5 28 | 7 08 | 1 05 | 12 34 | ..... | 4 31 | 91 | 4 19.1 | 17 05 | 11.4 |
| Fri Jan 02/Sat Jan 03 | 7 09 | 16 22 | 18 02 | 5 28 | 7 08 | 1 10 | 12 38 | ..... | 5 26 | 96 | 5 13.7 | 18 07 | 11.4 |
| Sat Jan 03/Sun Jan 04 | 7 13 | 16 23 | 18 03 | 5 28 | 7 08 | 1 15 | 12 42 | 15 29 | 6 17 | 99 | 6 07.8 | 18 11 | 11.4 |
| Sun Jan 04/Mon Jan 05 | 7 17 | 16 24 | 18 03 | 5 28 | 7 08 | 1 20 | 12 46 | 16 22 | 7 02 | 100 | 7 00.8 | 17 18 | 11.4 |
| Mon Jan 05/Tue Jan 06 | 7 21 | 16 25 | 18 04 | 5 28 | 7 08 | 1 24 | 12 50 | 17 17 | 7 41 | 99 | 7 52.3 | 15 35 | 11.4 |
| Tue Jan 06/Wed Jan 07 | 7 25 | 16 26 | 18 05 | 5 28 | 7 08 | 1 29 | 12 54 | 18 14 | 8 17 | 96 | 8 42.1 | 13 10 | 11.4 |
| Wed Jan 07/Thu Jan 08 | 7 29 | 16 26 | 18 06 | 5 28 | 7 08 | 1 34 | 12 58 | 19 11 | 8 49 | 91 | 9 30.1 | 10 11 | 11.4 |
| Thu Jan 08/Fri Jan 09 | 7 33 | 16 28 | 18 07 | 5 28 | 7 07 | 1 39 | 13 02 | 20 07 | ..... | 85 | 10 16.7 | 6 48 | 11.4 |
| Fri Jan 09/Sat Jan 10 | 7 37 | 16 29 | 18 08 | 5 28 | 7 07 | 1 44 | 13 06 | 21 04 | ..... | 78 | 11 02.3 | 3 10 | 11.3 |
| Sat Jan 10/Sun Jan 11 | 7 41 | 16 30 | 18 09 | 5 28 | 7 07 | 1 48 | 13 10 | 22 00 | ..... | 70 | 11 47.5 | - 0 36 | 11.3 |
| Sun Jan 11/Mon Jan 12 | 7 45 | 16 31 | 18 10 | 5 28 | 7 07 | 1 53 | 13 14 | 22 57 | ..... | 61 | 12 32.9 | - 4 23 | 11.3 |
| Mon Jan 12/Tue Jan 13 | 7 49 | 16 32 | 18 11 | 5 28 | 7 06 | 1 58 | 13 17 | 23 55 | ..... | 51 | 13 19.2 | - 8 03 | 11.3 |
| Tue Jan 13/Wed Jan 14 | 7 53 | 16 33 | 18 11 | 5 28 | 7 06 | 2 03 | 13 21 | 0 54 | ..... | 41 | 14 07.2 | -11 27 | 11.3 |
| Wed Jan 14/Thu Jan 15 | 7 57 | 16 34 | 18 12 | 5 27 | 7 06 | 2 08 | 13 25 | 1 54 | ..... | 32 | 14 57.4 | -14 27 | 11.2 |
| Thu Jan 15/Fri Jan 16 | 8 00 | 16 35 | 18 13 | 5 27 | 7 05 | 2 13 | 13 28 | 2 55 | ..... | 23 | 15 50.3 | -16 50 | 11.2 |
| Fri Jan 16/Sat Jan 17 | 8 04 | 16 36 | 18 14 | 5 27 | 7 05 | 2 18 | 13 32 | 3 57 | ..... | 14 | 16 46.0 | -18 25 | 11.2 |
| Sat Jan 17/Sun Jan 18 | 8 08 | 16 37 | 18 15 | 5 26 | 7 04 | 2 23 | 13 36 | 4 56 | ..... | 8 | 17 44.1 | -19 00 | 11.2 |
| Sun Jan 18/Mon Jan 19 | 8 12 | 16 39 | 18 16 | 5 26 | 7 04 | 2 28 | 13 39 | 5 52 | ..... | 3 | 18 44.0 | -18 27 | 11.2 |
| Mon Jan 19/Tue Jan 20 | 8 16 | 16 40 | 18 17 | 5 25 | 7 03 | 2 33 | 13 43 | 6 42 | 16 05 | 0 | 19 44.6 | -16 43 | 11.1 |
| Tue Jan 20/Wed Jan 21 | 8 20 | 16 41 | 18 18 | 5 25 | 7 02 | 2 38 | 13 46 | 7 28 | 17 15 | 1 | 20 44.6 | -13 53 | 11.1 |
| Wed Jan 21/Thu Jan 22 | 8 24 | 16 42 | 18 20 | 5 25 | 7 02 | 2 43 | 13 50 | 8 09 | 18 28 | 4 | 21 43.5 | -10 10 | 11.1 |
| Thu Jan 22/Fri Jan 23 | 8 28 | 16 43 | 18 21 | 5 24 | 7 01 | 2 48 | 13 53 | ..... | 19 42 | 10 | 22 40.7 | - 5 52 | 11.1 |
| Fri Jan 23/Sat Jan 24 | 8 32 | 16 45 | 18 22 | 5 23 | 7 00 | 2 53 | 13 56 | ..... | 20 55 | 18 | 23 36.5 | - 1 17 | 11.0 |
| Sat Jan 24/Sun Jan 25 | 8 36 | 16 46 | 18 23 | 5 23 | 6 59 | 2 58 | 14 00 | ..... | 22 05 | 28 | 0 31.1 | 3 15 | 11.0 |
| Sun Jan 25/Mon Jan 26 | 8 40 | 16 47 | 18 24 | 5 22 | 6 59 | 3 03 | 14 03 | ..... | 23 14 | 38 | 1 25.0 | 7 30 | 11.0 |
| Mon Jan 26/Tue Jan 27 | 8 44 | 16 48 | 18 25 | 5 22 | 6 58 | 3 08 | 14 06 | ..... | 0 21 | 49 | 2 18.6 | 11 13 | 10.9 |
| Tue Jan 27/Wed Jan 28 | 8 48 | 16 50 | 18 26 | 5 21 | 6 57 | 3 13 | 14 10 | ..... | 1 25 | 60 | 3 12.3 | 14 14 | 10.9 |
| Wed Jan 28/Thu Jan 29 | 8 52 | 16 51 | 18 27 | 5 20 | 6 56 | 3 18 | 14 13 | ..... | 2 25 | 70 | 4 06.1 | 16 26 | 10.9 |
| Thu Jan 29/Fri Jan 30 | 8 56 | 16 52 | 18 28 | 5 19 | 6 55 | 3 23 | 14 16 | ..... | 3 21 | 79 | 4 59.8 | 17 43 | 10.9 |
| Fri Jan 30/Sat Jan 31 | 9 00 | 16 54 | 18 29 | 5 19 | 6 54 | 3 28 | 14 19 | ..... | 4 13 | 87 | 5 53.2 | 18 04 | 10.8 |
| Sat Jan 31/Sun Feb 01 | 9 04 | 16 55 | 18 30 | 5 18 | 6 53 | 3 33 | 14 22 | ..... | 4 59 | 93 | 6 45.7 | 17 30 | 10.8 |

***** 2015 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 | |
| Sun Feb 01/Mon Feb 02 | 9 08 | 16 56 | 18 31 | 5 17 | 6 52 | 3 38 | 14 25 | ..... | 5 40 | 97 | 7 37.1 | 16 05 | 10.8 |
| Mon Feb 02/Tue Feb 03 | 9 11 | 16 57 | 18 33 | 5 16 | 6 51 | 3 43 | 14 28 | 16 06 | 6 17 | 99 | 8 27.1 | 13 56 | 10.7 |
| Tue Feb 03/Wed Feb 04 | 9 15 | 16 59 | 18 34 | 5 15 | 6 50 | 3 48 | 14 31 | 17 03 | 6 51 | 100 | 9 15.5 | 11 10 | 10.7 |
| Wed Feb 04/Thu Feb 05 | 9 19 | 17 00 | 18 35 | 5 14 | 6 49 | 3 53 | 14 34 | 17 59 | 7 22 | 98 | 10 02.6 | 7 56 | 10.7 |
| Thu Feb 05/Fri Feb 06 | 9 23 | 17 01 | 18 36 | 5 13 | 6 48 | 3 58 | 14 37 | 18 56 | 7 51 | 95 | 10 48.7 | 4 22 | 10.6 |
| Fri Feb 06/Sat Feb 07 | 9 27 | 17 02 | 18 37 | 5 12 | 6 47 | 4 03 | 14 40 | 19 52 | 8 19 | 91 | 11 34.1 | 0 39 | 10.6 |
| Sat Feb 07/Sun Feb 08 | 9 31 | 17 04 | 18 38 | 5 11 | 6 45 | 4 08 | 14 43 | 20 49 | ..... | 84 | 12 19.5 | - 3 08 | 10.6 |
| Sun Feb 08/Mon Feb 09 | 9 35 | 17 05 | 18 39 | 5 10 | 6 44 | 4 13 | 14 46 | 21 45 | ..... | 77 | 13 05.4 | - 6 49 | 10.5 |
| Mon Feb 09/Tue Feb 10 | 9 39 | 17 06 | 18 40 | 5 09 | 6 43 | 4 19 | 14 49 | 22 43 | ..... | 68 | 13 52.4 | -10 16 | 10.5 |
| Tue Feb 10/Wed Feb 11 | 9 43 | 17 08 | 18 41 | 5 08 | 6 42 | 4 24 | 14 52 | 23 41 | ..... | 59 | 14 41.0 | -13 21 | 10.4 |
| Wed Feb 11/Thu Feb 12 | 9 47 | 17 09 | 18 43 | 5 07 | 6 40 | 4 29 | 14 55 | 0 41 | ..... | 49 | 15 31.8 | -15 55 | 10.4 |
| Thu Feb 12/Fri Feb 13 | 9 51 | 17 10 | 18 44 | 5 06 | 6 39 | 4 34 | 14 57 | 1 40 | ..... | 39 | 16 25.1 | -17 47 | 10.4 |
| Fri Feb 13/Sat Feb 14 | 9 55 | 17 11 | 18 45 | 5 05 | 6 38 | 4 39 | 15 00 | 2 38 | ..... | 29 | 17 20.8 | -18 47 | 10.3 |
| Sat Feb 14/Sun Feb 15 | 9 59 | 17 13 | 18 46 | 5 03 | 6 37 | 4 44 | 15 03 | 3 34 | ..... | 19 | 18 18.7 | -18 45 | 10.3 |
| Sun Feb 15/Mon Feb 16 | 10 03 | 17 14 | 18 47 | 5 02 | 6 35 | 4 49 | 15 06 | 4 27 | ..... | 11 | 19 18.0 | -17 36 | 10.2 |
| Mon Feb 16/Tue Feb 17 | 10 07 | 17 15 | 18 48 | 5 01 | 6 34 | 4 54 | 15 08 | 5 15 | ..... | 5 | 20 18.0 | -15 18 | 10.2 |
| Tue Feb 17/Wed Feb 18 | 10 11 | 17 16 | 18 49 | 5 00 | 6 32 | 4 59 | 15 11 | 5 59 | 16 00 | 1 | 21 17.6 | -12 01 | 10.2 |
| Wed Feb 18/Thu Feb 19 | 10 15 | 17 18 | 18 51 | 4 58 | 6 31 | 5 04 | 15 14 | 6 40 | 17 14 | 0 | 22 16.4 | - 7 56 | 10.1 |
| Thu Feb 19/Fri Feb 20 | 10 18 | 17 19 | 18 52 | 4 57 | 6 30 | 5 09 | 15 16 | 7 18 | 18 29 | 2 | 23 14.1 | - 3 22 | 10.1 |
| Fri Feb 20/Sat Feb 21 | 10 22 | 17 20 | 18 53 | 4 56 | 6 28 | 5 14 | 15 19 | 7 56 | 19 44 | 7 | 0 10.9 | 1 19 | 10.0 |
| Sat Feb 21/Sun Feb 22 | 10 26 | 17 21 | 18 54 | 4 54 | 6 27 | 5 20 | 15 21 | ..... | 20 56 | 14 | 1 06.8 | 5 49 | 10.0 |
| Sun Feb 22/Mon Feb 23 | 10 30 | 17 22 | 18 55 | 4 53 | 6 25 | 5 25 | 15 24 | ..... | 22 06 | 23 | 2 02.2 | 9 50 | 10.0 |
| Mon Feb 23/Tue Feb 24 | 10 34 | 17 24 | 18 56 | 4 51 | 6 24 | 5 30 | 15 26 | ..... | 23 14 | 33 | 2 57.3 | 13 09 | 9.9 |
| Tue Feb 24/Wed Feb 25 | 10 38 | 17 25 | 18 57 | 4 50 | 6 22 | 5 35 | 15 29 | ..... | 0 17 | 44 | 3 52.1 | 15 38 | 9.9 |
| Wed Feb 25/Thu Feb 26 | 10 42 | 17 26 | 18 59 | 4 48 | 6 21 | 5 40 | 15 31 | ..... | 1 16 | 54 | 4 46.4 | 17 11 | 9.8 |
| Thu Feb 26/Fri Feb 27 | 10 46 | 17 27 | 19 00 | 4 47 | 6 19 | 5 45 | 15 34 | ..... | 2 09 | 64 | 5 40.0 | 17 48 | 9.8 |
| Fri Feb 27/Sat Feb 28 | 10 50 | 17 29 | 19 01 | 4 45 | 6 18 | 5 50 | 15 36 | ..... | 2 57 | 74 | 6 32.5 | 17 29 | 9.7 |
| Sat Feb 28/Sun Mar 01 | 10 54 | 17 30 | 19 02 | 4 44 | 6 16 | 5 55 | 15 39 | ..... | 3 40 | 82 | 7 23.8 | 16 19 | 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.

***** 2015 MARCH *****

| Date (eve/morn) | LMST midn | ----- Sun: ----- | | | | LST twilight: | | ----- Moon: ----- | | | | Twi-Twi hours | |
|------------------------|--------------|------------------|---------|---------|------|---------------|-------|-------------------|-------|--------|---------|------------------|-----|
| | | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | |
| Sun Mar 01/Mon Mar 02 | 10 58 | 17 31 | 19 03 | 4 42 | 6 14 | 6 00 | 15 41 | ..... | 4 18 | 89 | 8 13.6 | 14 24 | 9.7 |
| Mon Mar 02/Tue Mar 03 | 11 02 | 17 32 | 19 04 | 4 41 | 6 13 | 6 05 | 15 43 | ..... | 4 53 | 94 | 9 02.1 | 11 50 | 9.6 |
| Tue Mar 03/Wed Mar 04 | 11 06 | 17 33 | 19 06 | 4 39 | 6 11 | 6 11 | 15 46 | ..... | 5 24 | 98 | 9 49.3 | 8 46 | 9.6 |
| Wed Mar 04/Thu Mar 05 | 11 10 | 17 34 | 19 07 | 4 38 | 6 10 | 6 16 | 15 48 | 16 49 | 5 54 | 100 | 10 35.6 | 5 20 | 9.5 |
| Thu Mar 05/Fri Mar 06 | 11 14 | 17 36 | 19 08 | 4 36 | 6 08 | 6 21 | 15 50 | 17 46 | 6 23 | 100 | 11 21.3 | 1 40 | 9.5 |
| Fri Mar 06/Sat Mar 07 | 11 18 | 17 37 | 19 09 | 4 34 | 6 06 | 6 26 | 15 53 | 18 42 | 6 51 | 98 | 12 06.9 | - 2 06 | 9.4 |
| Sat Mar 07/Sun Mar 08* | 11 22 | 17 38 | 19 10 | 5 33 | 7 05 | 6 31 | 15 55 | 19 39 | 8 20 | 95 | 12 52.9 | - 5 49 | 9.4 |
| Sun Mar 08/Mon Mar 09 | 10 25 | 18 39 | 20 11 | 5 31 | 7 03 | 6 36 | 15 57 | 21 36 | ..... | 89 | 13 38.3 | - 9 11 | 9.3 |
| Mon Mar 09/Tue Mar 10 | 10 29 | 18 40 | 20 13 | 5 29 | 7 01 | 6 41 | 15 59 | 22 34 | ..... | 83 | 14 26.3 | -12 23 | 9.3 |
| Tue Mar 10/Wed Mar 11 | 10 33 | 18 41 | 20 14 | 5 27 | 7 00 | 6 46 | 16 02 | 23 32 | ..... | 75 | 15 15.9 | -15 05 | 9.2 |
| Wed Mar 11/Thu Mar 12 | 10 37 | 18 43 | 20 15 | 5 26 | 6 58 | 6 52 | 16 04 | 0 31 | ..... | 65 | 16 07.5 | -17 09 | 9.2 |
| Thu Mar 12/Fri Mar 13 | 10 41 | 18 44 | 20 16 | 5 24 | 6 56 | 6 57 | 16 06 | 1 28 | ..... | 55 | 17 01.1 | -18 26 | 9.1 |
| Fri Mar 13/Sat Mar 14 | 10 45 | 18 45 | 20 17 | 5 22 | 6 55 | 7 02 | 16 08 | 2 23 | ..... | 45 | 17 56.6 | -18 47 | 9.1 |
| Sat Mar 14/Sun Mar 15 | 10 49 | 18 46 | 20 19 | 5 21 | 6 53 | 7 07 | 16 10 | 3 15 | ..... | 34 | 18 53.5 | -18 07 | 9.0 |
| Sun Mar 15/Mon Mar 16 | 10 53 | 18 47 | 20 20 | 5 19 | 6 51 | 7 12 | 16 13 | 4 04 | ..... | 24 | 19 51.3 | -16 24 | 9.0 |
| Mon Mar 16/Tue Mar 17 | 10 57 | 18 48 | 20 21 | 5 17 | 6 50 | 7 17 | 16 15 | 4 48 | ..... | 15 | 20 49.5 | -13 39 | 8.9 |
| Tue Mar 17/Wed Mar 18 | 11 01 | 18 49 | 20 22 | 5 15 | 6 48 | 7 23 | 16 17 | 5 30 | ..... | 7 | 21 47.5 | -10 01 | 8.9 |
| Wed Mar 18/Thu Mar 19 | 11 05 | 18 50 | 20 24 | 5 13 | 6 46 | 7 28 | 16 19 | 6 09 | 17 00 | 2 | 22 45.2 | - 5 45 | 8.8 |
| Thu Mar 19/Fri Mar 20 | 11 09 | 18 52 | 20 25 | 5 12 | 6 45 | 7 33 | 16 21 | 6 47 | 18 15 | 0 | 23 42.5 | - 1 06 | 8.8 |
| Fri Mar 20/Sat Mar 21 | 11 13 | 18 53 | 20 26 | 5 10 | 6 43 | 7 38 | 16 23 | ..... | 19 29 | 1 | 0 39.6 | 3 33 | 8.7 |
| Sat Mar 21/Sun Mar 22 | 11 17 | 18 54 | 20 27 | 5 08 | 6 41 | 7 43 | 16 25 | ..... | 20 42 | 4 | 1 36.5 | 7 54 | 8.7 |
| Sun Mar 22/Mon Mar 23 | 11 21 | 18 55 | 20 29 | 5 06 | 6 40 | 7 49 | 16 27 | ..... | 21 54 | 10 | 2 33.4 | 11 39 | 8.6 |
| Mon Mar 23/Tue Mar 24 | 11 24 | 18 56 | 20 30 | 5 04 | 6 38 | 7 54 | 16 29 | ..... | 23 01 | 18 | 3 30.1 | 14 35 | 8.6 |
| Tue Mar 24/Wed Mar 25 | 11 28 | 18 57 | 20 31 | 5 02 | 6 36 | 7 59 | 16 31 | ..... | 0 04 | 28 | 4 26.2 | 16 34 | 8.5 |
| Wed Mar 25/Thu Mar 26 | 11 32 | 18 58 | 20 32 | 5 00 | 6 34 | 8 04 | 16 34 | ..... | 1 02 | 38 | 5 21.5 | 17 33 | 8.5 |
| Thu Mar 26/Fri Mar 27 | 11 36 | 18 59 | 20 34 | 4 58 | 6 33 | 8 09 | 16 36 | ..... | 1 53 | 48 | 6 15.4 | 17 33 | 8.4 |
| Fri Mar 27/Sat Mar 28 | 11 40 | 19 00 | 20 35 | 4 57 | 6 31 | 8 15 | 16 38 | ..... | 2 38 | 58 | 7 07.7 | 16 39 | 8.4 |
| Sat Mar 28/Sun Mar 29 | 11 44 | 19 02 | 20 36 | 4 55 | 6 29 | 8 20 | 16 40 | ..... | 3 18 | 67 | 7 58.3 | 14 57 | 8.3 |
| Sun Mar 29/Mon Mar 30 | 11 48 | 19 03 | 20 38 | 4 53 | 6 28 | 8 25 | 16 42 | ..... | 3 54 | 76 | 8 47.2 | 12 35 | 8.3 |
| Mon Mar 30/Tue Mar 31 | 11 52 | 19 04 | 20 39 | 4 51 | 6 26 | 8 30 | 16 44 | ..... | 4 26 | 84 | 9 34.7 | 9 41 | 8.2 |
| Tue Mar 31/Wed Apr 01 | 11 56 | 19 05 | 20 40 | 4 49 | 6 24 | 8 36 | 16 46 | ..... | 4 56 | 90 | 10 21.1 | 6 22 | 8.1 |

***** 2015 APRIL *****

| Date (eve/morn) | LMST midn | ----- Sun: ----- | | | | LST twilight: | | ----- Moon: ----- | | | | Twi-Twi hours | |
|-----------------------|--------------|------------------|---------|---------|------|---------------|-------|-------------------|-------|--------|---------|------------------|-----|
| | | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | |
| Wed Apr 01/Thu Apr 02 | 12 00 | 19 06 | 20 42 | 4 47 | 6 23 | 8 41 | 16 48 | ..... | 5 25 | 95 | 11 06.9 | 2 47 | 8.1 |
| Thu Apr 02/Fri Apr 03 | 12 04 | 19 07 | 20 43 | 4 45 | 6 21 | 8 46 | 16 50 | 17 36 | 5 54 | 98 | 11 52.5 | - 0 58 | 8.0 |
| Fri Apr 03/Sat Apr 04 | 12 08 | 19 08 | 20 44 | 4 43 | 6 19 | 8 52 | 16 52 | 18 33 | 6 23 | 100 | 12 38.5 | - 4 43 | 8.0 |
| Sat Apr 04/Sun Apr 05 | 12 12 | 19 09 | 20 46 | 4 41 | 6 18 | 8 57 | 16 54 | 19 30 | 6 54 | 100 | 13 25.4 | - 8 21 | 7.9 |
| Sun Apr 05/Mon Apr 06 | 12 16 | 19 10 | 20 47 | 4 39 | 6 16 | 9 02 | 16 56 | 20 28 | ..... | 97 | 14 13.5 | -11 40 | 7.9 |
| Mon Apr 06/Tue Apr 07 | 12 20 | 19 11 | 20 49 | 4 37 | 6 14 | 9 08 | 16 58 | 21 27 | ..... | 93 | 15 03.2 | -14 33 | 7.8 |
| Tue Apr 07/Wed Apr 08 | 12 24 | 19 12 | 20 50 | 4 35 | 6 13 | 9 13 | 17 00 | 22 25 | ..... | 87 | 15 54.7 | -16 48 | 7.8 |
| Wed Apr 08/Thu Apr 09 | 12 28 | 19 14 | 20 51 | 4 33 | 6 11 | 9 18 | 17 02 | 23 23 | ..... | 79 | 16 47.9 | -18 18 | 7.7 |
| Thu Apr 09/Fri Apr 10 | 12 32 | 19 15 | 20 53 | 4 31 | 6 09 | 9 24 | 17 03 | 0 18 | ..... | 70 | 17 42.7 | -18 53 | 7.6 |
| Fri Apr 10/Sat Apr 11 | 12 35 | 19 16 | 20 54 | 4 29 | 6 08 | 9 29 | 17 05 | 1 10 | ..... | 60 | 18 38.5 | -18 30 | 7.6 |
| Sat Apr 11/Sun Apr 12 | 12 39 | 19 17 | 20 56 | 4 27 | 6 06 | 9 35 | 17 07 | 1 58 | ..... | 49 | 19 34.9 | -17 05 | 7.5 |
| Sun Apr 12/Mon Apr 13 | 12 43 | 19 18 | 20 57 | 4 25 | 6 04 | 9 40 | 17 09 | 2 43 | ..... | 38 | 20 31.4 | -14 43 | 7.5 |
| Mon Apr 13/Tue Apr 14 | 12 47 | 19 19 | 20 59 | 4 23 | 6 03 | 9 45 | 17 11 | 3 24 | ..... | 28 | 21 27.7 | -11 27 | 7.4 |
| Tue Apr 14/Wed Apr 15 | 12 51 | 19 20 | 21 00 | 4 21 | 6 01 | 9 51 | 17 13 | 4 03 | ..... | 18 | 22 23.7 | - 7 30 | 7.4 |
| Wed Apr 15/Thu Apr 16 | 12 55 | 19 21 | 21 02 | 4 19 | 6 00 | 9 56 | 17 15 | 4 40 | ..... | 10 | 23 19.6 | - 3 05 | 7.3 |
| Thu Apr 16/Fri Apr 17 | 12 59 | 19 22 | 21 03 | 4 17 | 5 58 | 10 02 | 17 17 | 5 17 | ..... | 4 | 0 15.7 | 1 31 | 7.2 |
| Fri Apr 17/Sat Apr 18 | 13 03 | 19 23 | 21 04 | 4 16 | 5 57 | 10 07 | 17 19 | 5 55 | 18 16 | 1 | 1 12.1 | 6 00 | 7.2 |
| Sat Apr 18/Sun Apr 19 | 13 07 | 19 24 | 21 06 | 4 14 | 5 55 | 10 13 | 17 21 | 6 36 | 19 28 | 0 | 2 09.0 | 10 02 | 7.1 |
| Sun Apr 19/Mon Apr 20 | 13 11 | 19 26 | 21 08 | 4 12 | 5 54 | 10 18 | 17 23 | ..... | 20 39 | 3 | 3 06.3 | 13 23 | 7.1 |
| Mon Apr 20/Tue Apr 21 | 13 15 | 19 27 | 21 09 | 4 10 | 5 52 | 10 23 | 17 25 | ..... | 21 46 | 7 | 4 03.7 | 15 48 | 7.0 |
| Tue Apr 21/Wed Apr 22 | 13 19 | 19 28 | 21 11 | 4 08 | 5 51 | 10 29 | 17 27 | ..... | 22 48 | 14 | 5 00.6 | 17 13 | 7.0 |
| Wed Apr 22/Thu Apr 23 | 13 23 | 19 29 | 21 12 | 4 06 | 5 49 | 10 34 | 17 29 | ..... | 23 43 | 22 | 5 56.3 | 17 35 | 6.9 |
| Thu Apr 23/Fri Apr 24 | 13 27 | 19 30 | 21 14 | 4 04 | 5 48 | 10 40 | 17 31 | ..... | 0 32 | 32 | 6 50.2 | 16 59 | 6.8 |
| Fri Apr 24/Sat Apr 25 | 13 31 | 19 31 | 21 15 | 4 02 | 5 46 | 10 45 | 17 33 | ..... | 1 16 | 41 | 7 42.2 | 15 31 | 6.8 |
| Sat Apr 25/Sun Apr 26 | 13 35 | 19 32 | 21 17 | 4 00 | 5 45 | 10 51 | 17 35 | ..... | 1 53 | 51 | 8 32.1 | 13 21 | 6.7 |
| Sun Apr 26/Mon Apr 27 | 13 39 | 19 33 | 21 18 | 3 58 | 5 43 | 10 57 | 17 37 | ..... | 2 27 | 61 | 9 20.2 | 10 35 | 6.7 |
| Mon Apr 27/Tue Apr 28 | 13 42 | 19 34 | 21 20 | 3 56 | 5 42 | 11 02 | 17 39 | ..... | 2 58 | 70 | 10 06.9 | 7 23 | 6.6 |
| Tue Apr 28/Wed Apr 29 | 13 46 | 19 35 | 21 22 | 3 54 | 5 41 | 11 08 | 17 41 | ..... | 3 28 | 78 | 10 52.7 | 3 52 | 6.5 |
| Wed Apr 29/Thu Apr 30 | 13 50 | 19 36 | 21 23 | 3 52 | 5 39 | 11 13 | 17 43 | ..... | 3 56 | 86 | 11 38.2 | 0 09 | 6.5 |
| Thu Apr 30/Fri May 01 | 13 54 | 19 38 | 21 25 | 3 51 | 5 38 | 11 19 | 17 45 | ..... | 4 25 | 92 | 12 24.0 | - 3 38 | 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.

***** 2015 MAY *****

| Date (eve/morn) | LMST midn | ----- Sun: ----- | | | LST twilight: | | ----- Moon: ----- | | | | | Twi-Twi hours | |
|-----------------------|--------------|------------------|---------|---------|---------------|-------|-------------------|-------|-------|--------|---------|------------------|-----|
| | | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | |
| Fri May 01/Sat May 02 | 13 58 | 19 39 | 21 27 | 3 49 | 5 37 | 11 24 | 17 48 | ..... | 4 55 | 96 | 13 10.6 | - 7 20 | 6.4 |
| Sat May 02/Sun May 03 | 14 02 | 19 40 | 21 28 | 3 47 | 5 35 | 11 30 | 17 50 | 18 20 | 5 27 | 99 | 13 58.6 | -10 49 | 6.3 |
| Sun May 03/Mon May 04 | 14 06 | 19 41 | 21 30 | 3 45 | 5 34 | 11 35 | 17 52 | 19 19 | 6 02 | 100 | 14 48.4 | -13 53 | 6.3 |
| Mon May 04/Tue May 05 | 14 10 | 19 42 | 21 31 | 3 43 | 5 33 | 11 41 | 17 54 | 20 18 | ..... | 99 | 15 40.2 | -16 24 | 6.2 |
| Tue May 05/Wed May 06 | 14 14 | 19 43 | 21 33 | 3 41 | 5 31 | 11 47 | 17 56 | 21 17 | ..... | 96 | 16 33.8 | -18 09 | 6.1 |
| Wed May 06/Thu May 07 | 14 18 | 19 44 | 21 35 | 3 40 | 5 30 | 11 52 | 17 58 | 22 14 | ..... | 90 | 17 29.1 | -19 01 | 6.1 |
| Thu May 07/Fri May 08 | 14 22 | 19 45 | 21 36 | 3 38 | 5 29 | 11 58 | 18 00 | 23 08 | ..... | 83 | 18 25.4 | -18 53 | 6.0 |
| Fri May 08/Sat May 09 | 14 26 | 19 46 | 21 38 | 3 36 | 5 28 | 12 03 | 18 03 | 23 57 | ..... | 74 | 19 22.0 | -17 43 | 6.0 |
| Sat May 09/Sun May 10 | 14 30 | 19 47 | 21 40 | 3 34 | 5 27 | 12 09 | 18 05 | 0 42 | ..... | 64 | 20 18.3 | -15 34 | 5.9 |
| Sun May 10/Mon May 11 | 14 34 | 19 48 | 21 41 | 3 33 | 5 26 | 12 15 | 18 07 | 1 24 | ..... | 53 | 21 14.0 | -12 32 | 5.9 |
| Mon May 11/Tue May 12 | 14 38 | 19 49 | 21 43 | 3 31 | 5 25 | 12 20 | 18 09 | 2 02 | ..... | 41 | 22 09.0 | - 8 49 | 5.8 |
| Tue May 12/Wed May 13 | 14 42 | 19 50 | 21 45 | 3 29 | 5 24 | 12 26 | 18 12 | 2 38 | ..... | 30 | 23 03.5 | - 4 36 | 5.7 |
| Wed May 13/Thu May 14 | 14 46 | 19 51 | 21 46 | 3 28 | 5 22 | 12 31 | 18 14 | 3 14 | ..... | 20 | 23 57.9 | - 0 08 | 5.7 |
| Thu May 14/Fri May 15 | 14 49 | 19 52 | 21 48 | 3 26 | 5 21 | 12 37 | 18 16 | 3 50 | ..... | 12 | 0 52.6 | 4 20 | 5.6 |
| Fri May 15/Sat May 16 | 14 53 | 19 53 | 21 49 | 3 24 | 5 21 | 12 43 | 18 18 | 4 28 | ..... | 5 | 1 48.0 | 8 30 | 5.6 |
| Sat May 16/Sun May 17 | 14 57 | 19 54 | 21 51 | 3 23 | 5 20 | 12 48 | 18 21 | 5 09 | 18 17 | 1 | 2 44.2 | 12 07 | 5.5 |
| Sun May 17/Mon May 18 | 15 01 | 19 55 | 21 53 | 3 21 | 5 19 | 12 54 | 18 23 | 5 54 | 19 25 | 0 | 3 41.1 | 14 55 | 5.5 |
| Mon May 18/Tue May 19 | 15 05 | 19 56 | 21 54 | 3 20 | 5 18 | 12 59 | 18 26 | ..... | 20 30 | 1 | 4 38.3 | 16 46 | 5.4 |
| Tue May 19/Wed May 20 | 15 09 | 19 57 | 21 56 | 3 18 | 5 17 | 13 05 | 18 28 | ..... | 21 30 | 5 | 5 34.9 | 17 35 | 5.4 |
| Wed May 20/Thu May 21 | 15 13 | 19 58 | 21 57 | 3 17 | 5 16 | 13 10 | 18 31 | ..... | 22 23 | 11 | 6 30.3 | 17 22 | 5.3 |
| Thu May 21/Fri May 22 | 15 17 | 19 59 | 21 59 | 3 16 | 5 15 | 13 16 | 18 33 | ..... | 23 10 | 18 | 7 23.8 | 16 12 | 5.3 |
| Fri May 22/Sat May 23 | 15 21 | 20 00 | 22 00 | 3 14 | 5 14 | 13 21 | 18 36 | ..... | 23 51 | 26 | 8 15.1 | 14 15 | 5.2 |
| Sat May 23/Sun May 24 | 15 25 | 20 01 | 22 02 | 3 13 | 5 14 | 13 27 | 18 38 | ..... | 0 27 | 35 | 9 04.3 | 11 39 | 5.2 |
| Sun May 24/Mon May 25 | 15 29 | 20 02 | 22 03 | 3 12 | 5 13 | 13 32 | 18 41 | ..... | 0 59 | 44 | 9 51.7 | 8 34 | 5.1 |
| Mon May 25/Tue May 26 | 15 33 | 20 03 | 22 05 | 3 10 | 5 12 | 13 38 | 18 44 | ..... | 1 29 | 54 | 10 37.8 | 5 08 | 5.1 |
| Tue May 26/Wed May 27 | 15 37 | 20 04 | 22 06 | 3 09 | 5 12 | 13 43 | 18 46 | ..... | 1 58 | 63 | 11 23.2 | 1 29 | 5.0 |
| Wed May 27/Thu May 28 | 15 41 | 20 05 | 22 08 | 3 08 | 5 11 | 13 48 | 18 49 | ..... | 2 26 | 72 | 12 08.5 | - 2 17 | 5.0 |
| Thu May 28/Fri May 29 | 15 45 | 20 05 | 22 09 | 3 07 | 5 10 | 13 54 | 18 52 | ..... | 2 56 | 80 | 12 54.5 | - 6 02 | 5.0 |
| Fri May 29/Sat May 30 | 15 49 | 20 06 | 22 11 | 3 06 | 5 10 | 13 59 | 18 55 | ..... | 3 26 | 88 | 13 41.8 | - 9 37 | 4.9 |
| Sat May 30/Sun May 31 | 15 53 | 20 07 | 22 12 | 3 05 | 5 09 | 14 04 | 18 58 | ..... | 4 00 | 93 | 14 30.9 | -12 54 | 4.9 |
| Sun May 31/Mon Jun 01 | 15 57 | 20 08 | 22 13 | 3 04 | 5 09 | 14 09 | 19 01 | 18 07 | 4 38 | 97 | 15 22.2 | -15 40 | 4.8 |

***** 2015 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 00 | 20 09 | 22 15 | 3 03 | 5 08 | 14 15 | 19 04 | 19 07 | 5 21 | 100 | 16 15.9 | -17 46 | 4.8 |
| Tue Jun 02/Wed Jun 03 | 16 04 | 20 09 | 22 16 | 3 02 | 5 08 | 14 20 | 19 07 | 20 06 | 6 11 | 100 | 17 11.7 | -19 00 | 4.8 |
| Wed Jun 03/Thu Jun 04 | 16 08 | 20 10 | 22 17 | 3 01 | 5 08 | 14 25 | 19 10 | 21 02 | ..... | 97 | 18 09.1 | -19 12 | 4.7 |
| Thu Jun 04/Fri Jun 05 | 16 12 | 20 11 | 22 18 | 3 00 | 5 07 | 14 30 | 19 13 | 21 55 | ..... | 92 | 19 07.0 | -18 20 | 4.7 |
| Fri Jun 05/Sat Jun 06 | 16 16 | 20 12 | 22 19 | 2 59 | 5 07 | 14 35 | 19 16 | 22 42 | ..... | 85 | 20 04.7 | -16 25 | 4.7 |
| Sat Jun 06/Sun Jun 07 | 16 20 | 20 12 | 22 20 | 2 59 | 5 07 | 14 40 | 19 19 | 23 25 | ..... | 77 | 21 01.6 | -13 34 | 4.6 |
| Sun Jun 07/Mon Jun 08 | 16 24 | 20 13 | 22 21 | 2 58 | 5 07 | 14 45 | 19 23 | 0 05 | ..... | 66 | 21 57.2 | - 9 57 | 4.6 |
| Mon Jun 08/Tue Jun 09 | 16 28 | 20 13 | 22 22 | 2 57 | 5 06 | 14 50 | 19 26 | 0 41 | ..... | 55 | 22 51.7 | - 5 49 | 4.6 |
| Tue Jun 09/Wed Jun 10 | 16 32 | 20 14 | 22 23 | 2 57 | 5 06 | 14 55 | 19 29 | 1 16 | ..... | 44 | 23 45.6 | - 1 25 | 4.6 |
| Wed Jun 10/Thu Jun 11 | 16 36 | 20 15 | 22 24 | 2 56 | 5 06 | 15 00 | 19 33 | 1 51 | ..... | 33 | 0 39.2 | 3 01 | 4.5 |
| Thu Jun 11/Fri Jun 12 | 16 40 | 20 15 | 22 25 | 2 56 | 5 06 | 15 05 | 19 36 | 2 27 | ..... | 23 | 1 33.1 | 7 14 | 4.5 |
| Fri Jun 12/Sat Jun 13 | 16 44 | 20 16 | 22 26 | 2 56 | 5 06 | 15 09 | 19 40 | 3 05 | ..... | 14 | 2 27.8 | 10 58 | 4.5 |
| Sat Jun 13/Sun Jun 14 | 16 48 | 20 16 | 22 26 | 2 55 | 5 06 | 15 14 | 19 44 | 3 47 | ..... | 7 | 3 23.2 | 14 02 | 4.5 |
| Sun Jun 14/Mon Jun 15 | 16 52 | 20 16 | 22 27 | 2 55 | 5 06 | 15 18 | 19 47 | 4 34 | 18 15 | 3 | 4 19.3 | 16 13 | 4.5 |
| Mon Jun 15/Tue Jun 16 | 16 56 | 20 17 | 22 28 | 2 55 | 5 06 | 15 23 | 19 51 | 5 24 | 19 17 | 0 | 5 15.5 | 17 25 | 4.5 |
| Tue Jun 16/Wed Jun 17 | 17 00 | 20 17 | 22 28 | 2 55 | 5 06 | 15 27 | 19 55 | 6 18 | 20 13 | 1 | 6 11.1 | 17 36 | 4.4 |
| Wed Jun 17/Thu Jun 18 | 17 04 | 20 18 | 22 29 | 2 55 | 5 06 | 15 32 | 19 59 | ..... | 21 02 | 3 | 7 05.3 | 16 48 | 4.4 |
| Thu Jun 18/Fri Jun 19 | 17 07 | 20 18 | 22 29 | 2 55 | 5 06 | 15 36 | 20 03 | ..... | 21 46 | 7 | 7 57.6 | 15 08 | 4.4 |
| Fri Jun 19/Sat Jun 20 | 17 11 | 20 18 | 22 29 | 2 55 | 5 06 | 15 41 | 20 07 | ..... | 22 25 | 13 | 8 47.9 | 12 46 | 4.4 |
| Sat Jun 20/Sun Jun 21 | 17 15 | 20 18 | 22 30 | 2 55 | 5 06 | 15 45 | 20 11 | ..... | 22 59 | 20 | 9 36.2 | 9 50 | 4.4 |
| Sun Jun 21/Mon Jun 22 | 17 19 | 20 19 | 22 30 | 2 55 | 5 07 | 15 49 | 20 15 | ..... | 23 31 | 29 | 10 22.8 | 6 30 | 4.4 |
| Mon Jun 22/Tue Jun 23 | 17 23 | 20 19 | 22 30 | 2 56 | 5 07 | 15 53 | 20 19 | ..... | 24 00 | 38 | 11 08.3 | 2 55 | 4.4 |
| Tue Jun 23/Wed Jun 24 | 17 27 | 20 19 | 22 30 | 2 56 | 5 07 | 15 57 | 20 24 | ..... | 0 28 | 47 | 11 53.3 | - 0 48 | 4.4 |
| Wed Jun 24/Thu Jun 25 | 17 31 | 20 19 | 22 30 | 2 56 | 5 07 | 16 01 | 20 28 | ..... | 0 57 | 56 | 12 38.6 | - 4 33 | 4.4 |
| Thu Jun 25/Fri Jun 26 | 17 35 | 20 19 | 22 30 | 2 57 | 5 08 | 16 05 | 20 33 | ..... | 1 26 | 66 | 13 24.8 | - 8 11 | 4.4 |
| Fri Jun 26/Sat Jun 27 | 17 39 | 20 19 | 22 30 | 2 57 | 5 08 | 16 09 | 20 37 | ..... | 1 58 | 75 | 14 12.5 | -11 34 | 4.5 |
| Sat Jun 27/Sun Jun 28 | 17 43 | 20 19 | 22 30 | 2 58 | 5 09 | 16 13 | 20 42 | ..... | 2 34 | 83 | 15 02.5 | -14 34 | 4.5 |
| Sun Jun 28/Mon Jun 29 | 17 47 | 20 19 | 22 30 | 2 59 | 5 09 | 16 16 | 20 46 | ..... | 3 14 | 90 | 15 54.9 | -16 59 | 4.5 |
| Mon Jun 29/Tue Jun 30 | 17 51 | 20 19 | 22 29 | 2 59 | 5 10 | 16 20 | 20 51 | 17 53 | 4 01 | 95 | 16 50.0 | -18 37 | 4.5 |
| Tue Jun 30/Wed Jul 01 | 17 55 | 20 19 | 22 29 | 3 00 | 5 10 | 16 24 | 20 55 | 18 51 | 4 54 | 99 | 17 47.4 | -19 17 | 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.

***** 2015 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 | 17 59 | 20 19 | 22 29 | 3 01 | 5 11 | 16 27 | 21 00 | 19 46 | 5 53 | 100 | 18 46.3 | -18 52 | 4.5 |
| Thu Jul 02/Fri Jul 03 | 18 03 | 20 19 | 22 28 | 3 02 | 5 11 | 16 31 | 21 05 | 20 37 | ..... | 98 | 19 45.7 | -17 19 | 4.6 |
| Fri Jul 03/Sat Jul 04 | 18 07 | 20 19 | 22 28 | 3 03 | 5 12 | 16 34 | 21 10 | 21 23 | ..... | 94 | 20 44.6 | -14 42 | 4.6 |
| Sat Jul 04/Sun Jul 05 | 18 11 | 20 19 | 22 27 | 3 04 | 5 12 | 16 37 | 21 15 | 22 05 | ..... | 88 | 21 42.3 | -11 13 | 4.6 |
| Sun Jul 05/Mon Jul 06 | 18 15 | 20 18 | 22 26 | 3 05 | 5 13 | 16 41 | 21 20 | 22 43 | ..... | 79 | 22 38.7 | - 7 07 | 4.6 |
| Mon Jul 06/Tue Jul 07 | 18 18 | 20 18 | 22 26 | 3 06 | 5 13 | 16 44 | 21 25 | 23 19 | ..... | 69 | 23 33.7 | - 2 41 | 4.7 |
| Tue Jul 07/Wed Jul 08 | 18 22 | 20 18 | 22 25 | 3 07 | 5 14 | 16 47 | 21 30 | 23 54 | ..... | 57 | 0 28.0 | 1 50 | 4.7 |
| Wed Jul 08/Thu Jul 09 | 18 26 | 20 17 | 22 24 | 3 08 | 5 15 | 16 50 | 21 35 | 0 30 | ..... | 46 | 1 21.9 | 6 08 | 4.7 |
| Thu Jul 09/Fri Jul 10 | 18 30 | 20 17 | 22 23 | 3 09 | 5 16 | 16 53 | 21 40 | 1 07 | ..... | 35 | 2 16.0 | 10 00 | 4.8 |
| Fri Jul 10/Sat Jul 11 | 18 34 | 20 16 | 22 22 | 3 10 | 5 16 | 16 56 | 21 45 | 1 47 | ..... | 25 | 3 10.5 | 13 13 | 4.8 |
| Sat Jul 11/Sun Jul 12 | 18 38 | 20 16 | 22 21 | 3 12 | 5 17 | 16 59 | 21 50 | 2 30 | ..... | 16 | 4 05.5 | 15 38 | 4.8 |
| Sun Jul 12/Mon Jul 13 | 18 42 | 20 15 | 22 20 | 3 13 | 5 18 | 17 02 | 21 56 | 3 18 | ..... | 9 | 5 00.6 | 17 07 | 4.9 |
| Mon Jul 13/Tue Jul 14 | 18 46 | 20 15 | 22 19 | 3 14 | 5 19 | 17 05 | 22 01 | 4 09 | 18 04 | 4 | 5 55.5 | 17 37 | 4.9 |
| Tue Jul 14/Wed Jul 15 | 18 50 | 20 14 | 22 18 | 3 16 | 5 19 | 17 08 | 22 06 | 5 05 | 18 56 | 1 | 6 49.5 | 17 09 | 5.0 |
| Wed Jul 15/Thu Jul 16 | 18 54 | 20 14 | 22 17 | 3 17 | 5 20 | 17 11 | 22 11 | 6 02 | 19 42 | 0 | 7 42.0 | 15 48 | 5.0 |
| Thu Jul 16/Fri Jul 17 | 18 58 | 20 13 | 22 16 | 3 18 | 5 21 | 17 13 | 22 17 | ..... | 20 23 | 1 | 8 32.7 | 13 40 | 5.0 |
| Fri Jul 17/Sat Jul 18 | 19 02 | 20 12 | 22 15 | 3 20 | 5 22 | 17 16 | 22 22 | ..... | 20 59 | 4 | 9 21.6 | 10 57 | 5.1 |
| Sat Jul 18/Sun Jul 19 | 19 06 | 20 12 | 22 13 | 3 21 | 5 23 | 17 19 | 22 27 | ..... | 21 32 | 9 | 10 08.7 | 7 46 | 5.1 |
| Sun Jul 19/Mon Jul 20 | 19 10 | 20 11 | 22 12 | 3 23 | 5 24 | 17 21 | 22 33 | ..... | 22 02 | 15 | 10 54.5 | 4 16 | 5.2 |
| Mon Jul 20/Tue Jul 21 | 19 14 | 20 10 | 22 11 | 3 24 | 5 24 | 17 24 | 22 38 | ..... | 22 31 | 23 | 11 39.5 | 0 37 | 5.2 |
| Tue Jul 21/Wed Jul 22 | 19 18 | 20 10 | 22 09 | 3 26 | 5 25 | 17 27 | 22 44 | ..... | 22 59 | 31 | 12 24.3 | - 3 06 | 5.3 |
| Wed Jul 22/Thu Jul 23 | 19 22 | 20 09 | 22 08 | 3 27 | 5 26 | 17 29 | 22 49 | ..... | 23 28 | 40 | 13 09.5 | - 6 44 | 5.3 |
| Thu Jul 23/Fri Jul 24 | 19 25 | 20 08 | 22 06 | 3 29 | 5 27 | 17 32 | 22 55 | ..... | 23 58 | 50 | 13 55.9 | -10 10 | 5.4 |
| Fri Jul 24/Sat Jul 25 | 19 29 | 20 07 | 22 05 | 3 30 | 5 28 | 17 34 | 23 00 | ..... | 0 31 | 59 | 14 44.0 | -13 16 | 5.4 |
| Sat Jul 25/Sun Jul 26 | 19 33 | 20 06 | 22 03 | 3 32 | 5 29 | 17 36 | 23 06 | ..... | 1 09 | 69 | 15 34.4 | -15 54 | 5.5 |
| Sun Jul 26/Mon Jul 27 | 19 37 | 20 05 | 22 02 | 3 33 | 5 30 | 17 39 | 23 11 | ..... | 1 51 | 78 | 16 27.4 | -17 51 | 5.5 |
| Mon Jul 27/Tue Jul 28 | 19 41 | 20 04 | 22 00 | 3 35 | 5 31 | 17 41 | 23 17 | ..... | 2 40 | 86 | 17 23.1 | -18 58 | 5.6 |
| Tue Jul 28/Wed Jul 29 | 19 45 | 20 03 | 21 59 | 3 36 | 5 32 | 17 43 | 23 22 | 17 32 | 3 36 | 93 | 18 21.1 | -19 05 | 5.6 |
| Wed Jul 29/Thu Jul 30 | 19 49 | 20 02 | 21 57 | 3 38 | 5 33 | 17 46 | 23 28 | 18 25 | 4 39 | 98 | 19 20.7 | -18 03 | 5.7 |
| Thu Jul 30/Fri Jul 31 | 19 53 | 20 01 | 21 55 | 3 40 | 5 34 | 17 48 | 23 33 | 19 15 | 5 47 | 100 | 20 20.8 | -15 53 | 5.7 |
| Fri Jul 31/Sat Aug 01 | 19 57 | 20 00 | 21 54 | 3 41 | 5 35 | 17 50 | 23 39 | 20 00 | ..... | 99 | 21 20.5 | -12 42 | 5.8 |

***** 2015 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 01 | 19 59 | 21 52 | 3 43 | 5 36 | 17 53 | 23 44 | 20 41 | ..... | 96 | 22 19.2 | - 8 44 | 5.8 |
| Sun Aug 02/Mon Aug 03 | 20 05 | 19 58 | 21 50 | 3 44 | 5 37 | 17 55 | 23 50 | 21 19 | ..... | 89 | 23 16.6 | - 4 15 | 5.9 |
| Mon Aug 03/Tue Aug 04 | 20 09 | 19 57 | 21 48 | 3 46 | 5 38 | 17 57 | 23 55 | 21 56 | ..... | 81 | 0 13.0 | 0 24 | 6.0 |
| Tue Aug 04/Wed Aug 05 | 20 13 | 19 55 | 21 47 | 3 47 | 5 39 | 17 59 | 0 01 | 22 32 | ..... | 71 | 1 08.6 | 4 54 | 6.0 |
| Wed Aug 05/Thu Aug 06 | 20 17 | 19 54 | 21 45 | 3 49 | 5 40 | 18 01 | 0 06 | 23 09 | ..... | 60 | 2 03.8 | 8 59 | 6.1 |
| Thu Aug 06/Fri Aug 07 | 20 21 | 19 53 | 21 43 | 3 51 | 5 41 | 18 03 | 0 12 | 23 48 | ..... | 49 | 2 59.0 | 12 25 | 6.1 |
| Fri Aug 07/Sat Aug 08 | 20 25 | 19 52 | 21 41 | 3 52 | 5 42 | 18 06 | 0 17 | 0 30 | ..... | 38 | 3 54.1 | 15 02 | 6.2 |
| Sat Aug 08/Sun Aug 09 | 20 29 | 19 50 | 21 39 | 3 54 | 5 43 | 18 08 | 0 23 | 1 16 | ..... | 28 | 4 49.0 | 16 45 | 6.2 |
| Sun Aug 09/Mon Aug 10 | 20 32 | 19 49 | 21 38 | 3 55 | 5 44 | 18 10 | 0 28 | 2 06 | ..... | 19 | 5 43.5 | 17 30 | 6.3 |
| Mon Aug 10/Tue Aug 11 | 20 36 | 19 48 | 21 36 | 3 57 | 5 45 | 18 12 | 0 34 | 2 59 | ..... | 12 | 6 37.1 | 17 17 | 6.4 |
| Tue Aug 11/Wed Aug 12 | 20 40 | 19 46 | 21 34 | 3 58 | 5 46 | 18 14 | 0 39 | 3 55 | 17 39 | 6 | 7 29.4 | 16 11 | 6.4 |
| Wed Aug 12/Thu Aug 13 | 20 44 | 19 45 | 21 32 | 4 00 | 5 47 | 18 16 | 0 45 | 4 52 | 18 21 | 2 | 8 20.1 | 14 19 | 6.5 |
| Thu Aug 13/Fri Aug 14 | 20 48 | 19 44 | 21 30 | 4 02 | 5 48 | 18 18 | 0 50 | 5 49 | 18 59 | 0 | 9 09.0 | 11 47 | 6.5 |
| Fri Aug 14/Sat Aug 15 | 20 52 | 19 42 | 21 28 | 4 03 | 5 49 | 18 20 | 0 56 | ..... | 19 33 | 0 | 9 56.4 | 8 46 | 6.6 |
| Sat Aug 15/Sun Aug 16 | 20 56 | 19 41 | 21 26 | 4 05 | 5 50 | 18 22 | 1 01 | ..... | 20 04 | 2 | 10 42.4 | 5 23 | 6.6 |
| Sun Aug 16/Mon Aug 17 | 21 00 | 19 39 | 21 24 | 4 06 | 5 51 | 18 24 | 1 07 | ..... | 20 33 | 6 | 11 27.5 | 1 48 | 6.7 |
| Mon Aug 17/Tue Aug 18 | 21 04 | 19 38 | 21 22 | 4 08 | 5 52 | 18 26 | 1 12 | ..... | 21 02 | 11 | 12 12.1 | - 1 52 | 6.8 |
| Tue Aug 18/Wed Aug 19 | 21 08 | 19 37 | 21 20 | 4 09 | 5 53 | 18 28 | 1 18 | ..... | 21 30 | 17 | 12 56.8 | - 5 29 | 6.8 |
| Wed Aug 19/Thu Aug 20 | 21 12 | 19 35 | 21 18 | 4 11 | 5 54 | 18 30 | 1 23 | ..... | 22 00 | 25 | 13 42.3 | - 8 56 | 6.9 |
| Thu Aug 20/Fri Aug 21 | 21 16 | 19 34 | 21 17 | 4 12 | 5 55 | 18 32 | 1 29 | ..... | 22 32 | 34 | 14 28.9 | -12 05 | 6.9 |
| Fri Aug 21/Sat Aug 22 | 21 20 | 19 32 | 21 15 | 4 14 | 5 56 | 18 34 | 1 34 | ..... | 23 06 | 43 | 15 17.4 | -14 49 | 7.0 |
| Sat Aug 22/Sun Aug 23 | 21 24 | 19 30 | 21 13 | 4 15 | 5 57 | 18 36 | 1 40 | ..... | 23 46 | 53 | 16 08.0 | -16 59 | 7.0 |
| Sun Aug 23/Mon Aug 24 | 21 28 | 19 29 | 21 11 | 4 17 | 5 58 | 18 38 | 1 45 | ..... | 0 30 | 63 | 17 01.2 | -18 25 | 7.1 |
| Mon Aug 24/Tue Aug 25 | 21 32 | 19 27 | 21 09 | 4 18 | 5 59 | 18 40 | 1 50 | ..... | 1 22 | 73 | 17 56.7 | -18 57 | 7.2 |
| Tue Aug 25/Wed Aug 26 | 21 36 | 19 26 | 21 07 | 4 19 | 6 00 | 18 42 | 1 56 | ..... | 2 20 | 82 | 18 54.3 | -18 27 | 7.2 |
| Wed Aug 26/Thu Aug 27 | 21 40 | 19 24 | 21 05 | 4 21 | 6 01 | 18 44 | 2 01 | ..... | 3 24 | 90 | 19 53.4 | -16 52 | 7.3 |
| Thu Aug 27/Fri Aug 28 | 21 43 | 19 23 | 21 03 | 4 22 | 6 02 | 18 46 | 2 06 | 17 49 | 4 33 | 96 | 20 53.0 | -14 11 | 7.3 |
| Fri Aug 28/Sat Aug 29 | 21 47 | 19 21 | 21 01 | 4 24 | 6 03 | 18 48 | 2 12 | 18 32 | 5 46 | 99 | 21 52.7 | -10 33 | 7.4 |
| Sat Aug 29/Sun Aug 30 | 21 51 | 19 19 | 20 59 | 4 25 | 6 04 | 18 50 | 2 17 | 19 13 | ..... | 100 | 22 51.9 | - 6 12 | 7.4 |
| Sun Aug 30/Mon Aug 31 | 21 55 | 19 18 | 20 57 | 4 26 | 6 05 | 18 51 | 2 22 | 19 51 | ..... | 97 | 23 50.4 | - 1 30 | 7.5 |
| Mon Aug 31/Tue Sep 01 | 21 59 | 19 16 | 20 55 | 4 28 | 6 06 | 18 53 | 2 28 | 20 29 | ..... | 91 | 0 48.3 | 3 14 | 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.

***** 2015 SEPTEMBER *****

| Date (eve/morn) | LMST midn | ----- Sun: ----- | | | | LST twilight: | | ----- Moon: ----- | | | | Twi-Twi hours | |
|-----------------------|--------------|------------------|---------|---------|------|---------------|------|-------------------|-------|--------|---------|------------------|-----|
| | | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | |
| Tue Sep 01/Wed Sep 02 | 22 03 | 19 14 | 20 53 | 4 29 | 6 07 | 18 55 | 2 33 | 21 07 | ..... | 83 | 1 45.9 | 7 38 | 7.6 |
| Wed Sep 02/Thu Sep 03 | 22 07 | 19 13 | 20 51 | 4 31 | 6 08 | 18 57 | 2 38 | 21 47 | ..... | 74 | 2 43.1 | 11 25 | 7.7 |
| Thu Sep 03/Fri Sep 04 | 22 11 | 19 11 | 20 49 | 4 32 | 6 10 | 18 59 | 2 44 | 22 29 | ..... | 63 | 3 39.9 | 14 22 | 7.7 |
| Fri Sep 04/Sat Sep 05 | 22 15 | 19 09 | 20 47 | 4 33 | 6 11 | 19 01 | 2 49 | 23 14 | ..... | 52 | 4 36.2 | 16 22 | 7.8 |
| Sat Sep 05/Sun Sep 06 | 22 19 | 19 08 | 20 45 | 4 35 | 6 12 | 19 03 | 2 54 | 0 03 | ..... | 41 | 5 31.7 | 17 21 | 7.8 |
| Sun Sep 06/Mon Sep 07 | 22 23 | 19 06 | 20 43 | 4 36 | 6 13 | 19 05 | 2 59 | 0 56 | ..... | 31 | 6 25.8 | 17 22 | 7.9 |
| Mon Sep 07/Tue Sep 08 | 22 27 | 19 04 | 20 41 | 4 37 | 6 14 | 19 07 | 3 05 | 1 50 | ..... | 22 | 7 18.4 | 16 28 | 7.9 |
| Tue Sep 08/Wed Sep 09 | 22 31 | 19 03 | 20 39 | 4 38 | 6 15 | 19 09 | 3 10 | 2 46 | ..... | 15 | 8 09.3 | 14 47 | 8.0 |
| Wed Sep 09/Thu Sep 10 | 22 35 | 19 01 | 20 37 | 4 40 | 6 16 | 19 11 | 3 15 | 3 43 | 17 00 | 9 | 8 58.3 | 12 26 | 8.0 |
| Thu Sep 10/Fri Sep 11 | 22 39 | 18 59 | 20 35 | 4 41 | 6 17 | 19 13 | 3 20 | 4 41 | 17 34 | 4 | 9 45.7 | 9 33 | 8.1 |
| Fri Sep 11/Sat Sep 12 | 22 43 | 18 58 | 20 33 | 4 42 | 6 18 | 19 15 | 3 26 | 5 37 | 18 06 | 1 | 10 31.8 | 6 17 | 8.2 |
| Sat Sep 12/Sun Sep 13 | 22 47 | 18 56 | 20 31 | 4 43 | 6 19 | 19 17 | 3 31 | 6 34 | 18 36 | 0 | 11 16.9 | 2 46 | 8.2 |
| Sun Sep 13/Mon Sep 14 | 22 50 | 18 54 | 20 29 | 4 45 | 6 20 | 19 19 | 3 36 | ..... | 19 05 | 1 | 12 01.5 | - 0 52 | 8.3 |
| Mon Sep 14/Tue Sep 15 | 22 54 | 18 52 | 20 27 | 4 46 | 6 21 | 19 21 | 3 41 | ..... | 19 33 | 3 | 12 46.1 | - 4 29 | 8.3 |
| Tue Sep 15/Wed Sep 16 | 22 58 | 18 51 | 20 25 | 4 47 | 6 22 | 19 23 | 3 46 | ..... | 20 03 | 7 | 13 31.1 | - 7 57 | 8.4 |
| Wed Sep 16/Thu Sep 17 | 23 02 | 18 49 | 20 23 | 4 48 | 6 23 | 19 25 | 3 52 | ..... | 20 33 | 13 | 14 17.1 | -11 10 | 8.4 |
| Thu Sep 17/Fri Sep 18 | 23 06 | 18 47 | 20 21 | 4 50 | 6 24 | 19 27 | 3 57 | ..... | 21 07 | 20 | 15 04.5 | -13 59 | 8.5 |
| Fri Sep 18/Sat Sep 19 | 23 10 | 18 45 | 20 19 | 4 51 | 6 25 | 19 29 | 4 02 | ..... | 21 44 | 28 | 15 53.6 | -16 16 | 8.5 |
| Sat Sep 19/Sun Sep 20 | 23 14 | 18 44 | 20 17 | 4 52 | 6 26 | 19 31 | 4 07 | ..... | 22 26 | 37 | 16 44.6 | -17 53 | 8.6 |
| Sun Sep 20/Mon Sep 21 | 23 18 | 18 42 | 20 15 | 4 53 | 6 27 | 19 33 | 4 12 | ..... | 23 13 | 47 | 17 37.7 | -18 42 | 8.6 |
| Mon Sep 21/Tue Sep 22 | 23 22 | 18 40 | 20 14 | 4 54 | 6 28 | 19 35 | 4 17 | ..... | 0 06 | 58 | 18 32.7 | -18 35 | 8.7 |
| Tue Sep 22/Wed Sep 23 | 23 26 | 18 38 | 20 12 | 4 56 | 6 29 | 19 37 | 4 22 | ..... | 1 06 | 68 | 19 29.1 | -17 29 | 8.7 |
| Wed Sep 23/Thu Sep 24 | 23 30 | 18 37 | 20 10 | 4 57 | 6 30 | 19 39 | 4 27 | ..... | 2 10 | 78 | 20 26.7 | -15 20 | 8.8 |
| Thu Sep 24/Fri Sep 25 | 23 34 | 18 35 | 20 08 | 4 58 | 6 31 | 19 41 | 4 33 | ..... | 3 20 | 87 | 21 24.9 | -12 12 | 8.8 |
| Fri Sep 25/Sat Sep 26 | 23 38 | 18 33 | 20 06 | 4 59 | 6 32 | 19 43 | 4 38 | ..... | 17 03 | 94 | 22 23.5 | - 8 14 | 8.9 |
| Sat Sep 26/Sun Sep 27 | 23 42 | 18 32 | 20 04 | 5 00 | 6 33 | 19 45 | 4 43 | ..... | 17 42 | 99 | 23 22.1 | - 3 41 | 8.9 |
| Sun Sep 27/Mon Sep 28 | 23 46 | 18 30 | 20 02 | 5 01 | 6 34 | 19 48 | 4 48 | ..... | 18 21 | 100 | 0 21.0 | 1 07 | 9.0 |
| Mon Sep 28/Tue Sep 29 | 23 50 | 18 28 | 20 01 | 5 02 | 6 35 | 19 50 | 4 53 | ..... | 18 59 | 98 | 1 20.0 | 5 48 | 9.0 |
| Tue Sep 29/Wed Sep 30 | 23 54 | 18 26 | 19 59 | 5 04 | 6 36 | 19 52 | 4 58 | ..... | 19 39 | 94 | 2 19.3 | 10 00 | 9.1 |
| Wed Sep 30/Thu Oct 01 | 23 58 | 18 25 | 19 57 | 5 05 | 6 37 | 19 54 | 5 03 | ..... | 20 22 | 86 | 3 18.5 | 13 25 | 9.1 |

***** 2015 OCTOBER *****

| Date (eve/morn) | LMST midn | ----- Sun: ----- | | | | LST twilight: | | ----- Moon: ----- | | | | Twi-Twi hours | |
|------------------------|--------------|------------------|---------|---------|------|---------------|------|-------------------|-------|--------|---------|------------------|------|
| | | set | twi.end | twi.beg | rise | eve | morn | rise | set | %illum | RA | Dec | |
| Thu Oct 01/Fri Oct 02 | 0 01 | 18 23 | 19 55 | 5 06 | 6 38 | 19 56 | 5 08 | 21 08 | ..... | 77 | 4 17.3 | 15 52 | 9.2 |
| Fri Oct 02/Sat Oct 03 | 0 05 | 18 21 | 19 54 | 5 07 | 6 39 | 19 58 | 5 13 | 21 57 | ..... | 67 | 5 15.1 | 17 14 | 9.2 |
| Sat Oct 03/Sun Oct 04 | 0 09 | 18 20 | 19 52 | 5 08 | 6 41 | 20 00 | 5 18 | 22 49 | ..... | 57 | 6 11.4 | 17 32 | 9.3 |
| Sun Oct 04/Mon Oct 05 | 0 13 | 18 18 | 19 50 | 5 09 | 6 42 | 20 03 | 5 23 | 23 44 | ..... | 46 | 7 05.7 | 16 51 | 9.3 |
| Mon Oct 05/Tue Oct 06 | 0 17 | 18 16 | 19 48 | 5 10 | 6 43 | 20 05 | 5 28 | 0 41 | ..... | 36 | 7 57.7 | 15 19 | 9.4 |
| Tue Oct 06/Wed Oct 07 | 0 21 | 18 15 | 19 47 | 5 11 | 6 44 | 20 07 | 5 33 | 1 38 | ..... | 27 | 8 47.5 | 13 05 | 9.4 |
| Wed Oct 07/Thu Oct 08 | 0 25 | 18 13 | 19 45 | 5 13 | 6 45 | 20 09 | 5 39 | 2 35 | ..... | 19 | 9 35.4 | 10 19 | 9.5 |
| Thu Oct 08/Fri Oct 09 | 0 29 | 18 11 | 19 43 | 5 14 | 6 46 | 20 12 | 5 44 | 3 32 | ..... | 12 | 10 21.7 | 7 07 | 9.5 |
| Fri Oct 09/Sat Oct 10 | 0 33 | 18 10 | 19 42 | 5 15 | 6 47 | 20 14 | 5 49 | 4 28 | 16 39 | 7 | 11 06.9 | 3 39 | 9.6 |
| Sat Oct 10/Sun Oct 11 | 0 37 | 18 08 | 19 40 | 5 16 | 6 48 | 20 16 | 5 54 | 5 24 | 17 08 | 3 | 11 51.5 | 0 03 | 9.6 |
| Sun Oct 11/Mon Oct 12 | 0 41 | 18 06 | 19 38 | 5 17 | 6 49 | 20 19 | 5 59 | 6 21 | 17 36 | 1 | 12 36.0 | - 3 35 | 9.6 |
| Mon Oct 12/Tue Oct 13 | 0 45 | 18 05 | 19 37 | 5 18 | 6 50 | 20 21 | 6 04 | 7 17 | 18 05 | 0 | 13 20.9 | - 7 07 | 9.7 |
| Tue Oct 13/Wed Oct 14 | 0 49 | 18 03 | 19 35 | 5 19 | 6 52 | 20 23 | 6 09 | ..... | 18 36 | 1 | 14 06.7 | -10 24 | 9.7 |
| Wed Oct 14/Thu Oct 15 | 0 53 | 18 02 | 19 34 | 5 20 | 6 53 | 20 26 | 6 14 | ..... | 19 08 | 4 | 14 53.8 | -13 19 | 9.8 |
| Thu Oct 15/Fri Oct 16 | 0 57 | 18 00 | 19 32 | 5 21 | 6 54 | 20 28 | 6 19 | ..... | 19 44 | 9 | 15 42.3 | -15 44 | 9.8 |
| Fri Oct 16/Sat Oct 17 | 1 01 | 17 58 | 19 31 | 5 22 | 6 55 | 20 31 | 6 24 | ..... | 20 24 | 15 | 16 32.5 | -17 30 | 9.9 |
| Sat Oct 17/Sun Oct 18 | 1 05 | 17 57 | 19 29 | 5 23 | 6 56 | 20 33 | 6 29 | ..... | 21 09 | 23 | 17 24.3 | -18 31 | 9.9 |
| Sun Oct 18/Mon Oct 19 | 1 08 | 17 55 | 19 28 | 5 25 | 6 57 | 20 35 | 6 34 | ..... | 21 59 | 32 | 18 17.6 | -18 40 | 9.9 |
| Mon Oct 19/Tue Oct 20 | 1 12 | 17 54 | 19 26 | 5 26 | 6 58 | 20 38 | 6 39 | ..... | 22 55 | 42 | 19 12.0 | -17 52 | 10.0 |
| Tue Oct 20/Wed Oct 21 | 1 16 | 17 52 | 19 25 | 5 27 | 6 59 | 20 40 | 6 44 | ..... | 23 56 | 53 | 20 07.3 | -16 07 | 10.0 |
| Wed Oct 21/Thu Oct 22 | 1 20 | 17 51 | 19 23 | 5 28 | 7 01 | 20 43 | 6 49 | ..... | 1 01 | 64 | 21 03.0 | -13 25 | 10.1 |
| Thu Oct 22/Fri Oct 23 | 1 24 | 17 49 | 19 22 | 5 29 | 7 02 | 20 46 | 6 54 | ..... | 2 09 | 74 | 21 59.2 | - 9 54 | 10.1 |
| Fri Oct 23/Sat Oct 24 | 1 28 | 17 48 | 19 21 | 5 30 | 7 03 | 20 48 | 6 59 | ..... | 3 20 | 84 | 22 55.8 | - 5 42 | 10.2 |
| Sat Oct 24/Sun Oct 25 | 1 32 | 17 46 | 19 19 | 5 31 | 7 04 | 20 51 | 7 04 | ..... | 16 13 | 92 | 23 53.0 | - 1 05 | 10.2 |
| Sun Oct 25/Mon Oct 26 | 1 36 | 17 45 | 19 18 | 5 32 | 7 05 | 20 53 | 7 09 | ..... | 16 50 | 97 | 0 51.1 | 3 39 | 10.2 |
| Mon Oct 26/Tue Oct 27 | 1 40 | 17 44 | 19 17 | 5 33 | 7 07 | 20 56 | 7 14 | ..... | 17 29 | 100 | 1 50.2 | 8 09 | 10.3 |
| Tue Oct 27/Wed Oct 28 | 1 44 | 17 42 | 19 16 | 5 34 | 7 08 | 20 59 | 7 19 | ..... | 18 10 | 99 | 2 50.3 | 12 03 | 10.3 |
| Wed Oct 28/Thu Oct 29 | 1 48 | 17 41 | 19 14 | 5 35 | 7 09 | 21 01 | 7 24 | ..... | 18 55 | 96 | 3 50.8 | 15 03 | 10.3 |
| Thu Oct 29/Fri Oct 30 | 1 52 | 17 40 | 19 13 | 5 36 | 7 10 | 21 04 | 7 29 | ..... | 19 44 | 90 | 4 51.1 | 16 58 | 10.4 |
| Fri Oct 30/Sat Oct 31 | 1 56 | 17 38 | 19 12 | 5 37 | 7 11 | 21 07 | 7 34 | ..... | 20 37 | 82 | 5 50.2 | 17 43 | 10.4 |
| Sat Oct 31/Sun Nov 01* | 2 00 | 17 37 | 19 11 | 4 39 | 6 13 | 21 10 | 7 39 | ..... | 21 33 | 73 | 6 47.3 | 17 23 | 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.

***** 2015 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 04 | 16 36 | 18 10 | 4 40 | 6 14 | 21 13 | 7 44 | 21 31 | ..... | 62 | 7 43.9 | 16 03 | 10.5 |
| Mon Nov 02/Tue Nov 03 | 3 08 | 16 34 | 18 09 | 4 41 | 6 15 | 21 15 | 7 49 | 22 29 | ..... | 52 | 8 35.8 | 13 56 | 10.5 |
| Tue Nov 03/Wed Nov 04 | 3 12 | 16 33 | 18 07 | 4 42 | 6 16 | 21 18 | 7 54 | 23 27 | ..... | 43 | 9 25.1 | 11 12 | 10.6 |
| Wed Nov 04/Thu Nov 05 | 3 16 | 16 32 | 18 06 | 4 43 | 6 17 | 21 21 | 7 59 | 0 24 | ..... | 33 | 10 12.4 | 8 02 | 10.6 |
| Thu Nov 05/Fri Nov 06 | 3 20 | 16 31 | 18 05 | 4 44 | 6 19 | 21 24 | 8 04 | 1 21 | ..... | 25 | 10 58.2 | 4 34 | 10.6 |
| Fri Nov 06/Sat Nov 07 | 3 24 | 16 30 | 18 04 | 4 45 | 6 20 | 21 27 | 8 09 | 2 17 | ..... | 17 | 11 43.0 | 0 57 | 10.7 |
| Sat Nov 07/Sun Nov 08 | 3 27 | 16 29 | 18 03 | 4 46 | 6 21 | 21 30 | 8 14 | 3 14 | ..... | 11 | 12 27.6 | - 2 43 | 10.7 |
| Sun Nov 08/Mon Nov 09 | 3 31 | 16 28 | 18 03 | 4 47 | 6 22 | 21 33 | 8 19 | 4 10 | ..... | 6 | 13 12.5 | - 6 19 | 10.7 |
| Mon Nov 09/Tue Nov 10 | 3 35 | 16 26 | 18 02 | 4 48 | 6 24 | 21 36 | 8 24 | 5 07 | 15 38 | 2 | 13 58.3 | - 9 42 | 10.8 |
| Tue Nov 10/Wed Nov 11 | 3 39 | 16 25 | 18 01 | 4 49 | 6 25 | 21 39 | 8 29 | 6 04 | 16 09 | 0 | 14 45.3 | -12 44 | 10.8 |
| Wed Nov 11/Thu Nov 12 | 3 43 | 16 24 | 18 00 | 4 50 | 6 26 | 21 42 | 8 34 | 7 02 | 16 44 | 0 | 15 33.8 | -15 18 | 10.8 |
| Thu Nov 12/Fri Nov 13 | 3 47 | 16 23 | 17 59 | 4 51 | 6 27 | 21 45 | 8 39 | 7 58 | 17 23 | 2 | 16 24.1 | -17 14 | 10.9 |
| Fri Nov 13/Sat Nov 14 | 3 51 | 16 22 | 17 58 | 4 52 | 6 28 | 21 49 | 8 44 | ..... | 18 07 | 6 | 17 15.8 | -18 24 | 10.9 |
| Sat Nov 14/Sun Nov 15 | 3 55 | 16 22 | 17 58 | 4 53 | 6 30 | 21 52 | 8 49 | ..... | 18 56 | 12 | 18 08.8 | -18 43 | 10.9 |
| Sun Nov 15/Mon Nov 16 | 3 59 | 16 21 | 17 57 | 4 54 | 6 31 | 21 55 | 8 54 | ..... | 19 50 | 19 | 19 02.7 | -18 06 | 11.0 |
| Mon Nov 16/Tue Nov 17 | 4 03 | 16 20 | 17 56 | 4 55 | 6 32 | 21 58 | 8 59 | ..... | 20 49 | 28 | 19 56.8 | -16 34 | 11.0 |
| Tue Nov 17/Wed Nov 18 | 4 07 | 16 19 | 17 56 | 4 56 | 6 33 | 22 02 | 9 04 | ..... | 21 51 | 38 | 20 51.1 | -14 08 | 11.0 |
| Wed Nov 18/Thu Nov 19 | 4 11 | 16 18 | 17 55 | 4 57 | 6 34 | 22 05 | 9 09 | ..... | 22 57 | 49 | 21 45.2 | -10 54 | 11.0 |
| Thu Nov 19/Fri Nov 20 | 4 15 | 16 17 | 17 54 | 4 58 | 6 36 | 22 08 | 9 14 | ..... | 0 04 | 60 | 22 39.4 | - 7 00 | 11.1 |
| Fri Nov 20/Sat Nov 21 | 4 19 | 16 17 | 17 54 | 4 59 | 6 37 | 22 12 | 9 19 | ..... | 1 13 | 71 | 23 34.0 | - 2 39 | 11.1 |
| Sat Nov 21/Sun Nov 22 | 4 23 | 16 16 | 17 53 | 5 00 | 6 38 | 22 15 | 9 24 | ..... | 2 24 | 81 | 0 29.3 | 1 55 | 11.1 |
| Sun Nov 22/Mon Nov 23 | 4 27 | 16 15 | 17 53 | 5 01 | 6 39 | 22 19 | 9 29 | ..... | 3 36 | 89 | 1 26.0 | 6 25 | 11.1 |
| Mon Nov 23/Tue Nov 24 | 4 31 | 16 15 | 17 52 | 5 02 | 6 40 | 22 22 | 9 34 | ..... | 4 48 | 95 | 2 24.1 | 10 33 | 11.2 |
| Tue Nov 24/Wed Nov 25 | 4 35 | 16 14 | 17 52 | 5 03 | 6 41 | 22 26 | 9 39 | ..... | 5 59 | 99 | 3 23.7 | 13 59 | 11.2 |
| Wed Nov 25/Thu Nov 26 | 4 38 | 16 14 | 17 52 | 5 04 | 6 43 | 22 29 | 9 44 | ..... | 7 06 | 100 | 4 24.4 | 16 26 | 11.2 |
| Thu Nov 26/Fri Nov 27 | 4 42 | 16 13 | 17 51 | 5 05 | 6 44 | 22 33 | 9 49 | ..... | 8 09 | 98 | 5 25.0 | 17 46 | 11.2 |
| Fri Nov 27/Sat Nov 28 | 4 46 | 16 13 | 17 51 | 5 06 | 6 45 | 22 36 | 9 53 | ..... | 18 16 | 93 | 6 24.5 | 17 54 | 11.3 |
| Sat Nov 28/Sun Nov 29 | 4 50 | 16 12 | 17 51 | 5 07 | 6 46 | 22 40 | 9 58 | ..... | 19 14 | 86 | 7 21.9 | 16 57 | 11.3 |
| Sun Nov 29/Mon Nov 30 | 4 54 | 16 12 | 17 51 | 5 08 | 6 47 | 22 44 | 10 03 | ..... | 20 14 | 78 | 8 16.5 | 15 04 | 11.3 |
| Mon Nov 30/Tue Dec 01 | 4 58 | 16 12 | 17 50 | 5 09 | 6 48 | 22 48 | 10 08 | ..... | 21 14 | 69 | 9 08.3 | 12 29 | 11.3 |

***** 2015 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 02 | 16 11 | 17 50 | 5 10 | 6 49 | 22 51 | 10 13 | 22 13 | ..... | 60 | 9 57.4 | 9 22 | 11.3 |
| Wed Dec 02/Thu Dec 03 | 5 06 | 16 11 | 17 50 | 5 11 | 6 50 | 22 55 | 10 18 | 23 11 | ..... | 50 | 10 44.4 | 5 55 | 11.3 |
| Thu Dec 03/Fri Dec 04 | 5 10 | 16 11 | 17 50 | 5 12 | 6 51 | 22 59 | 10 23 | 0 08 | ..... | 41 | 11 30.1 | 2 17 | 11.4 |
| Fri Dec 04/Sat Dec 05 | 5 14 | 16 11 | 17 50 | 5 13 | 6 52 | 23 03 | 10 27 | 1 04 | ..... | 32 | 12 14.9 | - 1 26 | 11.4 |
| Sat Dec 05/Sun Dec 06 | 5 18 | 16 10 | 17 50 | 5 13 | 6 53 | 23 07 | 10 32 | 2 01 | ..... | 24 | 12 59.8 | - 5 06 | 11.4 |
| Sun Dec 06/Mon Dec 07 | 5 22 | 16 10 | 17 50 | 5 14 | 6 54 | 23 11 | 10 37 | 2 57 | ..... | 16 | 13 45.3 | - 8 35 | 11.4 |
| Mon Dec 07/Tue Dec 08 | 5 26 | 16 10 | 17 50 | 5 15 | 6 55 | 23 15 | 10 42 | 3 55 | ..... | 10 | 14 31.9 | -11 47 | 11.4 |
| Tue Dec 08/Wed Dec 09 | 5 30 | 16 10 | 17 50 | 5 16 | 6 56 | 23 19 | 10 46 | 4 52 | ..... | 5 | 15 20.2 | -14 33 | 11.4 |
| Wed Dec 09/Thu Dec 10 | 5 34 | 16 10 | 17 50 | 5 17 | 6 57 | 23 23 | 10 51 | 5 50 | 15 20 | 2 | 16 10.3 | -16 45 | 11.4 |
| Thu Dec 10/Fri Dec 11 | 5 38 | 16 10 | 17 50 | 5 17 | 6 57 | 23 27 | 10 56 | 6 46 | 16 02 | 0 | 17 02.3 | -18 12 | 11.5 |
| Fri Dec 11/Sat Dec 12 | 5 42 | 16 10 | 17 50 | 5 18 | 6 58 | 23 31 | 11 01 | 7 40 | 16 50 | 1 | 17 55.8 | -18 48 | 11.5 |
| Sat Dec 12/Sun Dec 13 | 5 45 | 16 10 | 17 51 | 5 19 | 6 59 | 23 35 | 11 05 | 8 31 | 17 43 | 3 | 18 50.3 | -18 27 | 11.5 |
| Sun Dec 13/Mon Dec 14 | 5 49 | 16 11 | 17 51 | 5 20 | 7 00 | 23 39 | 11 10 | ..... | 18 41 | 8 | 19 45.2 | -17 08 | 11.5 |
| Mon Dec 14/Tue Dec 15 | 5 53 | 16 11 | 17 51 | 5 20 | 7 01 | 23 43 | 11 14 | ..... | 19 44 | 15 | 20 39.9 | -14 54 | 11.5 |
| Tue Dec 15/Wed Dec 16 | 5 57 | 16 11 | 17 51 | 5 21 | 7 01 | 23 48 | 11 19 | ..... | 20 49 | 24 | 21 34.1 | -11 51 | 11.5 |
| Wed Dec 16/Thu Dec 17 | 6 01 | 16 11 | 17 52 | 5 21 | 7 02 | 23 52 | 11 24 | ..... | 21 56 | 33 | 22 27.7 | - 8 08 | 11.5 |
| Thu Dec 17/Fri Dec 18 | 6 05 | 16 12 | 17 52 | 5 22 | 7 03 | 23 56 | 11 28 | ..... | 23 03 | 44 | 23 21.0 | - 3 58 | 11.5 |
| Fri Dec 18/Sat Dec 19 | 6 09 | 16 12 | 17 53 | 5 23 | 7 03 | 0 01 | 11 33 | ..... | 0 12 | 56 | 0 14.5 | 0 28 | 11.5 |
| Sat Dec 19/Sun Dec 20 | 6 13 | 16 12 | 17 53 | 5 23 | 7 04 | 0 05 | 11 37 | ..... | 1 21 | 67 | 1 08.6 | 4 53 | 11.5 |
| Sun Dec 20/Mon Dec 21 | 6 17 | 16 13 | 17 53 | 5 24 | 7 04 | 0 09 | 11 42 | ..... | 2 31 | 77 | 2 04.1 | 9 03 | 11.5 |
| Mon Dec 21/Tue Dec 22 | 6 21 | 16 13 | 17 54 | 5 24 | 7 05 | 0 14 | 11 46 | ..... | 3 40 | 86 | 3 01.0 | 12 41 | 11.5 |
| Tue Dec 22/Wed Dec 23 | 6 25 | 16 14 | 17 54 | 5 25 | 7 05 | 0 18 | 11 51 | ..... | 4 47 | 93 | 3 59.5 | 15 31 | 11.5 |
| Wed Dec 23/Thu Dec 24 | 6 29 | 16 14 | 17 55 | 5 25 | 7 06 | 0 23 | 11 55 | ..... | 5 51 | 98 | 4 58.9 | 17 21 | 11.5 |
| Thu Dec 24/Fri Dec 25 | 6 33 | 16 15 | 17 55 | 5 26 | 7 06 | 0 27 | 11 59 | ..... | 6 50 | 100 | 5 58.5 | 18 03 | 11.5 |
| Fri Dec 25/Sat Dec 26 | 6 37 | 16 16 | 17 56 | 5 26 | 7 06 | 0 32 | 12 04 | ..... | 7 42 | 99 | 6 57.0 | 17 37 | 11.5 |
| Sat Dec 26/Sun Dec 27 | 6 41 | 16 16 | 17 57 | 5 26 | 7 07 | 0 36 | 12 08 | ..... | 8 27 | 96 | 7 53.5 | 16 09 | 11.5 |
| Sun Dec 27/Mon Dec 28 | 6 45 | 16 17 | 17 57 | 5 27 | 7 07 | 0 41 | 12 12 | ..... | 9 14 | 91 | 8 47.5 | 13 50 | 11.5 |
| Mon Dec 28/Tue Dec 29 | 6 49 | 16 18 | 17 58 | 5 27 | 7 07 | 0 46 | 12 16 | ..... | 10 02 | 85 | 9 38.7 | 10 53 | 11.5 |
| Tue Dec 29/Wed Dec 30 | 6 53 | 16 18 | 17 59 | 5 27 | 7 08 | 0 50 | 12 21 | ..... | 10 57 | 77 | 10 27.6 | 7 29 | 11.5 |
| Wed Dec 30/Thu Dec 31 | 6 56 | 16 19 | 17 59 | 5 28 | 7 08 | 0 55 | 12 25 | ..... | 11 55 | 68 | 11 14.5 | 3 50 | 11.5 |
| Thu Dec 31/Fri Jan 01 | 7 00 | 16 20 | 18 00 | 5 28 | 7 08 | 0 59 | 12 29 | ..... | 12 53 | 59 | 12 00.2 | 0 05 | 11.5 |