

**Astronomical Events for 2017** (compiled from Astropixels.com and RASC Observer's Handbook)

OCT 7 NOTE: Three events added to November 2017 in RED

Date	Day	EST	Event (hr:min)
Jan	01	Sun	03:00 Mars 0.02° S of Neptune (1.2 minutes separation!)
	02	Mon	04:20 Venus 1.9°S of Moon
	02	Mon	23:00 Neptune 0.4°S of Moon (occultation visible W. coast N. America)
	03	Tue	01:47 Mars 0.2°S of Moon (occultation not visible in N. America)
	03	Tue	09:00 Quadrantid Meteor Shower peak 09:00 EST, moon 27%
	04	Wed	10:00 Earth at Perihelion: 0.98331 AU (147 100 998 km)
	05	Thu	14:47 FQ
	09	Mon	04:00 Mercury 6.7° of Saturn
	09	Mon	09:07 Aldebaran 0.4°S of Moon (occultation not visible in N. America)
	10	Tue	01:07 Moon at Perigee: 363 242 km
	12	Thu	06:34 FM
	12	Thu	08:00 Venus at Greatest Elongation: 47.1°E (50% sunlit)
	12	Thu	20:00 Venus 0.4° N of Neptune (separation about 22 min until pair set 9 pm)
	13	Fri	08:59 Beehive 3.9°N of Moon
	14	Sat	23:07 Regulus 0.9°N of Moon
	14	Sat	Venus at dichotomy (50% illuminated)
	17	Tue	20:00 Vesta at opposition mag 6.1 in Cancer (6° from Pollux)
	19	Thu	00:26 Jupiter 2.7°S of Moon
	19	Thu	05:00 Mercury at Greatest Elongation: 24.1°W
	19	Thu	17:14 LQ
	21	Sat	19:14 Moon at Apogee: 404 913 km
	24	Tue	05:37 Saturn 3.6°S of Moon
	25	Wed	19:46 Mercury 3.7°S of Moon
	27	Fri	07:47 Thin last crescent Moon (11.0 hours before new, elevation 3.3°)
	27	Fri	19:07 NM
	28	Sat	17:27 Thin first crescent Moon (21.8 hours old, elevation 8.3°)
	31	Tue	08:11 Jupiter 3.5°N of Spica
	30	Wed	06:00 Neptune 0.2° S of Moon (occultation not visible in N. America)
	31	Tue	09:34 Venus 4.1°N of Moon
	31	Tue	20:09 Mars 2.3°N of Moon
Feb	02	Thu	21:00 Ceres 1.0° S of Moon (occultation visible in N. Canada)
	03	Fri	23:19 FQ
	05	Sun	16:14 Aldebaran 0.2°S of Moon (occultation not visible in N. America)
	06	Mon	08:59 Moon at Perigee: 368 817 km
	09	Mon	18:46 Beehive 3.9°N of Moon
	10	Fri	19:33 FM
	10	Fri	19:44 Pen. Lunar Eclipse; mag=0.988 (some darkening should be visible)
	11	Sat	09:04 Regulus 0.8°N of Moon (occultation not visible in N. America)
	11	Sat	14:44 Comet 45P/Honda-Mrkos-Pajdusakova closest to Earth, magnitude 6 to 7
	15	Wed	09:55 Jupiter 2.7°S of Moon
	17	Fri	02:00 Venus greatest illuminated extent, -4.63 magnitude
	18	Sat	14:33 LQ
	18	Sat	16:14 Moon at Apogee: 404 376 km
	20	Mon	18:44 Saturn 3.6°S of Moon
	25	Sat	06:48 Thin last crescent Moon (28.5 hours before new, elevation 1.3°)
	26	Sun	09:53 Annular Solar Eclipse; mag=0.992 (S. hemisphere event)
	26	Sun	09:58 NM

**26 Sun 19:00 Mars 0.6° N of Uranus (minimum separation 34 min 7 sec. at 7:00 pm)**

27 Mon 18:39 Thin first crescent Moon (34 hours old, elevation 8.0°)

No Leap Year this February (next one is 2020)

Mar 01 Wed 13:58 Mars 4.3°N of Moon  
01 Wed 21:00 Neptune in Conjunction with Sun (not visible)  
03 Fri 02:24 Moon at Perigee: 369 065 km  
**04 Sat 21:38 Aldebaran 0.2°S of Moon (Graze near Teeswater)**  
05 Sun 06:32 FQ  
06 Mon 19:00 Mercury at Superior Conjunction (not visible)  
09 Thu 02:12 Beehive 3.9°N of Moon  
10 Fri 17:20 Regulus 0.8°N of Moon  
**12 Sun 02:00 Daylight Saving Time begins (set clocks forward 1 hr)**  
12 Sun 10:54 FM (times in DST until Nov 5)  
14 Tue 16:04 Jupiter 2.5°S of Moon  
18 Sat 13:25 Moon at Apogee: 404651 km  
20 Mon 06:29 Vernal Equinox  
20 Mon 06:49 Saturn 3.4°S of Moon  
20 Mon 11:58 LQ  
25 Sat 07:00 Venus at Inferior Conjunction (not visible)  
27 Mon 22:57 NM  
30 Thu 08:39 Moon at Perigee: 363 855 km  
30 Thu 09:03 Mars 5.5°N of Moon

Apr 01 Sat 04:50 Aldebaran 0.3°S of Moon  
01 Sat 06:00 Mercury at Greatest Elongation: 19.0°E  
03 Mon 14:39 FQ  
05 Wed 08:45 Beehive 3.8°N of Moon  
07 Fri 00:30 Regulus 0.7°N of Moon  
**07 Fri 17:00 Jupiter at Opposition (mag -2.46, 44 arc-sec diameter)**  
10 Mon 17:20 Jupiter 2.2°S of Moon  
11 Tue 02:08 FM  
14 Fri 02:00 Uranus in Conjunction with Sun (not visible)  
15 Sat 06:05 Moon at Apogee: 405 478 km  
16 Sun 14:39 Saturn 3.2°S of Moon  
19 Wed 05:57 LQ  
20 Thu 02:00 Mercury at Inferior Conjunction (not visible)  
**21 Fri 04:16 Mars 3.4°S of Pleiades**  
22 Sat 08:00 Lyrid Meteor Shower (20 per hour, Moon 20%)  
23 Sun 13:59 Venus 5.2°N of Moon  
26 Wed 08:16 NM  
27 Thu 12:18 Moon at Perigee: 359 325 km  
**28 Fri 13:19 Aldebaran 0.5°S of Moon (Mars and M45 nearby)**

May 02 Tue 14:23 Beehive 3.6°N of Moon  
02 Tue 22:47 FQ  
04 Thu 05:49 Regulus 0.5°N of Moon (occultation miss and below our horizon)  
05 Fri 09:51 Mars 6.1°N of Aldebaran  
05 Fri 22:00 Eta-Aquarid Meteor Shower (60 per hour, Moon 79%)  
07 Sun 17:24 Jupiter 2.1°S of Moon  
10 Wed 17:43 FM  
12 Fri 15:51 Moon at Apogee: 406 212 km  
13 Sat 19:07 Saturn 3.1°S of Moon

	17 Wed	19:00 Mercury at Greatest Elongation: 25.8°W
	18 Thu	20:33 LQ
	<b>22 Mon</b>	<b>08:32 Venus 2.4°N of Moon</b>
	23 Tue	21:20 Mercury 1.6°N of Moon
	25 Thu	15:44 NM
	25 Thu	21:23 Moon at Perigee: 357 210 km
	29 Mon	21:50 Beehive 3.4°N of Moon
	31 Wed	12:08 Regulus 0.3°N of Moon (occultation miss, daytime and below our horizon)
Jun	01 Thu	08:42 FQ
	03 Sat	07:00 Venus at Greatest Elongation: 45.9°W
	03 Sat	19:57 Jupiter 2.3°S of Moon
	06 Tue	23:19 Mercury 5.3°S of Pleiades
	08 Thu	18:21 Moon at Apogee: 406 402 km
	09 Fri	09:10 FM
	09 Fri	21:25 Saturn 3.1°S of Moon
	<b>15 Thu</b>	<b>05:00 Saturn at Opposition</b> (mag -0.1, disc is 18.4 arc-sec across, ring tilt 26°)
	17 Sat	07:33 LQ
	20 Tue	18:13 Venus 2.4°N of Moon
	21 Wed	00:25 Summer Solstice
	21 Wed	10:00 Mercury at Superior Conjunction (not visible)
	<b>22 Thu</b>	<b>10:23 Aldebaran 0.5°S of Moon (daytime occultation)</b>
	23 Fri	06:49 Moon at Perigee: 357 938 km
	23 Fri	22:31 NM
	26 Mon	07:18 Beehive 3.2°N of Moon
	27 Tue	20:26 Regulus 0.1°N of Moon (occultation miss locally)
	30 Fri	20:51 FQ
Jul	01 Sat	03:28 Jupiter 2.7°S of Moon
	03 Mon	16:00 Earth at Aphelion: 1.01668 AU (152 092 504 km)
	<b>04 Tue</b>	<b>20:21 Venus 6.5°S of Pleiades (Venus between M45 &amp; Hyades in morning sky)</b>
	05 Wed	00:27 Moon at Apogee: 405 934 km
	06 Thu	23:34 Saturn 3.2°S of Moon
	09 Sun	00:07 FM
	09 Sun	21:33 Mercury 0.1°N of Beehive (close to Sun)
	13 Thu	14:03 Venus 3.1°N of Aldebaran
	16 Sun	15:26 LQ
	<b>19 Wed</b>	<b>19:37 Aldebaran 0.4°S of Moon</b>
	<b>20 Thu</b>	<b>07:13 Venus 2.7°N of Moon (beautiful in am sky)</b>
	21 Fri	13:09 Moon at Perigee: 361 238 km
	23 Sun	05:46 NM
	25 Tue	04:49 Mercury 0.9°S of Moon: (occultation miss locally)
	25 Tue	06:14 Regulus 0.0°S of Moon (occultation below our horizon)
	25 Tue	13:03 Mercury 0.8°S of Regulus
	26 Wed	20:00 Mars in Conjunction with Sun (not visible)
	28 Fri	16:15 Jupiter 3.1°S of Moon
	29 Sat	00:00 Delta-Aquarid Meteor Shower (20 per hour, moon 35%)
	30 Sun	00:00 Mercury at Greatest Elongation: 27.2°E
	30 Sun	11:23 FQ
Aug	02 Wed	13:55 Moon at Apogee: 405 026 km
	03 Thu	03:31 Saturn 3.5°S of Moon

07 Mon 14:11 FM  
**07 Mon 14:20 Partial Lunar Eclipse; mag=0.246 (vis. in Eastern hemisphere only)**  
**12 Sat 15:00 Perseid Meteor Shower** (90 per hour, moon 75%)  
 14 Mon 21:15 LQ  
 16 Wed 02:39 Aldebaran 0.4°S of Moon (occultation miss locally)  
 18 Fri 09:14 Moon at Perigee: 366 129 km  
**19 Sat 00:45 Venus 2.2°N of Moon (nicest on 19th in morning)**  
 20 Sun 03:15 Beehive 3.2°N of Moon  
 20 Sun 14:08 Venus 7.2°S of Pollux  
**21 Mon 14:26 Total Solar Eclipse; mag=1.031**  
 21 Mon 14:30 NM  
 25 Fri 09:00 Jupiter 3.5°S of Moon  
 26 Sat 17:00 Mercury at Inferior Conjunction (not visible)  
 29 Tue 04:13 FQ  
 30 Wed 07:25 Moon at Apogee: 404 307 km  
 30 Wed 10:23 Saturn 3.6°S of Moon

Sep **01 Fri 02:08 Venus 1.4°S of Beehive**  
 04 Mon 20:00 Mercury 3.2° of Mars  
 05 Tue 01:00 Neptune at Opposition  
 06 Wed 01:00 Neptune 0.8° N of Moon (occultation visible Antarctica)  
 06 Wed 03:03 FM  
 10 Sun 08:00 Mercury 0.7°S of Regulus  
 10 Sun 17:44 Jupiter 2.9°N of Spica  
 12 Tue 06:00 Mercury at Greatest Elongation: 17.9°W  
**12 Tue 08:45 Aldebaran 0.4°S of Moon** (daytime occultation visible locally)  
 13 Wed 02:25 LQ  
 13 Wed 12:04 Moon at Perigee: 369 856 km  
 16 Sat 10:50 Beehive 3.1°N of Moon  
**16 Sat 14:00 Mercury 0.1° of Mars (18 min. sep'n at rise shrinks to 3 min. at 2:45 pm)**  
 17 Sun 21:00 Venus 0.5° N of Moon (occultation in S. hemisphere)  
**18 Mon 01:00 Regulus 0.1° S of Moon (occultation visible in E. Hemisphere)**  
**18 Mon 16:00 Mars 0.1° S of Moon (occultation visible in Central and S. Pacific)**  
**18 Mon 19:00 Mercury 0.03° N of Moon (occultation visible in Polynesia)**  
**19 Tue 19:00 Venus 0.5° N of Regulus**  
 20 Wed 01:30 NM  
 22 Fri 03:51 Jupiter 3.7°S of Moon  
 22 Fri 16:02 Autumnal Equinox  
 26 Tue 20:09 Saturn 3.5°S of Moon  
 27 Wed 02:49 Moon at Apogee: 404 342 km  
 27 Wed 22:54 FQ

Oct 05 Thu 14:40 FM  
**05 Thu 19:00 Venus 0.2° N of Mars (16 min at rise, shrinking to 12.5 min.)**  
 08 Sun 17:00 Mercury at Superior Conjunction (not visible)  
 09 Mon 01:51 Moon at Perigee: 366 858 km  
 09 Mon 14:05 Aldebaran 0.6°S of Moon  
 12 Thu 08:25 LQ  
 13 Fri 16:29 Beehive 3.0°N of Moon  
**15 Sun 06:54 Regulus 0.2°S of Moon** (occultation from 5:48 am EDT to 6:30 am)  
**17 Tue 06:04 Mars 1.8°S of Moon**  
**17 Tue 20:21 Venus 2.0°S of Moon**  
 19 Thu 13:00 Uranus at Opposition

	19 Thu	14:12 NM
	<b>21 Sat</b>	<b>07:00 Orionid Meteor Shower (20/h) Moon only 3% illuminated</b>
	24 Tue	07:54 Saturn 3.3°S of Moon
	24 Tue	22:25 Moon at Apogee: 405 151 km
	26 Thu	14:00 Jupiter in Conjunction with Sun (not visible)
	27 Fri	18:22 FQ
Nov	02 Thu	09:58 Venus 3.3°N of Spica
	04 Sat	01:23 FM
	<b>05 Sun</b>	<b>02:00 Eastern Standard Time begins</b> (clocks back 1 hr; times in EST to Dec 31)
	05 Sun	06:00 S Taurid Meteor Shower (10 per hour, moon 98%)
	05 Sun	19:09 Moon at Perigee: 361 438 km
	<b>05 Sun</b>	<b>21:19 Aldebaran 0.8°S of Moon</b> (occultation visible 8:05 pm to 9 pm EDT)
	09 Thu	20:58 Beehive 2.7°N of Moon
	10 Fri	15:37 LQ
	11 Sat	11:07 Regulus 0.4°S of Moon (no occultation visible locally)
	12 Sun	06:00 N Taurid Meteor Shower (15 per hour, moon 32%)
	12 Sun	12:50 Mercury 2.2°N of Antares
	<b>13 Mon</b>	<b>01:00 Venus 0.3° N of Jupiter</b>
	14 Tue	19:40 Mars 3.2°S of Moon
	<b>16 Thu</b>	<b>1600 Jupiter 4° S of Moon</b>
	17 Fri	12:00 Leonid Meteor Shower (20/hour, moon 1% -a GOOD year for Leonids!)
	18 Sat	06:42 NM
	20 Mon	19:34 Saturn 3.0°S of Moon
	21 Tue	13:52 Moon at Apogee: 406 132 km
	23 Thu	19:00 Mercury at Greatest Elongation: 22.0°E
	26 Sun	12:03 FQ
	<b>28 Tue</b>	<b>0400 Mercury 3° S of Saturn</b>
	29 Wed	09:30 Mars 2.9°N of Spica
Dec	03 Sun	08:00 Aldebaran 0.8°S of Moon (occultation below local horizon but see Dec 30)
	03 Sun	10:47 FM
	04 Mon	03:42 Moon at Perigee: 357 496 km
	06 Wed	19:00 Mercury 1.3° of Saturn
	07 Thu	04:30 Beehive 2.5°N of Moon
	08 Fri	17:25 Regulus 0.7°S of Moon
	10 Sun	02:51 LQ
	12 Tue	21:00 Mercury at Inferior Conjunction (not visible)
	13 Wed	11:27 Mars 4.2°S of Moon
	<b>14 Thu</b>	<b>01:00 Geminid Meteor Shower (120/h) Moon only 14% illuminated</b>
	14 Thu	09:26 Jupiter 4.2°S of Moon
	18 Mon	01:31 NM
	18 Mon	20:27 Moon at Apogee: 406 605 km
	21 Thu	11:29 Winter Solstice
	21 Thu	15:00 Saturn in Conjunction with Sun (not visible)
	22 Fri	10:00 Ursid Meteor Shower (10 per hour, Moon 13%)
	26 Tue	04:20 FQ
	<b>30 Sat</b>	<b>19:25 Aldebaran 0.7°S of Moon (disapp. 6:20 pm, reapp. 7:19 pm, moon 93%)</b>

**Glossary:** Some selected terms for full glossary consult an astronomical dictionary or google the term.

**Aphelion/Perihelion:** Earth's orbit is elliptical so the planet is farthest from the Sun at aphelion (July 3) and closest at perihelion (Jan 4) in 2017.

**Apogee/Perigee:** Since orbits around the Sun or Earth are usually ellipses, the farthest and nearest distances use "apo" (far) and "peri" (near) to describe the maximum and minimum values. For Earth and its satellites, apogee is the farthest point and perigee is the nearest. The same prefixes are applied to orbits around the Moon -"luna" (apolune and perilune) Sun -"helios" (aphelion/perihelion), etc.

**Appulse:** A close approach of two astronomical objects. i.e. minimum separation expressed in minutes and seconds of arc.

**Conjunction:** The point in time when two stellar objects have the same Right Ascension. This is usually close to the minimum separation of the two objects but see also appulse above. When a planet is at **Inferior Conjunction** with the Sun it is between Earth and Sun and in **Superior Conjunction** it is on the opposite side of the sun. At neither time are they easy to see since they are near the Sun.

**Dichotomy:** The point when a planet or moon is exactly 50% illuminated by sunlight. For Earth's Moon, synonymous with FQ and LQ phase.

**Elongation (E or W):** The time of farthest apparent separation in the sky between two celestial objects, one usually the Sun. For ex. a Greatest Elongation East for Mercury means it is best seen in the evening sky, east of the Sun after sunset.

**Graze (or grazing occultation):** When the Moon moving in its orbit passes a star so that it appears to skim along the top or bottom edge of the Moon. The Moon's profile may cause the star to blink on and off a number of times as it passes behind mountains on the Moon's edge. See also occultation.

**Meteor Shower:** An occasion when a larger than average number (more than 7 or 8 per hour) appear to radiate from a specific point in a constellation. The constellation determines the name of the shower, for ex. the Perseids radiate from Perseus. **Meteors** are commonly called **shooting stars**, but they are usually tiny bits of space debris that are entering our atmosphere and not stellar in any way. Larger fragments that survive the journey to land on Earth are called **meteorites**.

**Occultation (or total occultation):** When the Moon passes in front of a bright star or planet so that it occults the object. A star will wink out virtually instantly while planets may take several minutes. Total occultations on the leading edge of the Moon are followed some time later by a reappearance on the opposite limb of the Moon.

**Opposition:** A planet in opposition is located opposite the Sun from Earth (imagine looking down from above the solar system -the alignment is Sun-Earth-planet. The planet is on the same side of the solar system as Earth and so appears in our "midnight" sky. From Earth, the planet appears to rise in the east when the Sun sets in the west. Consequently, it is highest in our sky at midnight and then sets on the western horizon when the Sun is rising in the east. A month either side of opposition is the best time to view planets as they are in dark sky for the longest period.

**Perigee:** The closest distance between the Moon (or other Earth satellite) and the Earth since the Moon's orbit around Earth is an ellipse. See also apogee.

**Radiant:** The point in space from which meteors appear to radiate. This is purely a perspective effect like snowflakes appearing to come from a point ahead as you drive into falling snow or the appearance of road appearing to narrow in the distance.

**Sporadic:** A meteor that is not part of a shower, i.e., a random shooting star. Usually 7 or 8 per hour.

**Transit:** The passage of an object like a planet across the disk of another celestial object. Most common are transits of Mercury and Venus across the Sun. The ISS can be seen to transit the Moon or Sun and more rarely other planets like Jupiter or Saturn. Transits of planets across planets can happen but are extremely rare.

can be seen as the Earth is constantly colliding with space debris.