

Astronomy News Night Sky 2020 - December

Sunrise	Sunset	Mercury	Venus Rises
1 st – 7:53am 10 th – 8:04am 20 th – 8:12am 30 th – 8:15am	1 st – 4:07pm 10 th – 4:04pm 20 th – 4:06pm 30 th – 4:13pm	Not Visible this month.	1 st – 5:19am 10 th – 5:46am 20 th – 6:16am 30 th – 6:43am
Moon Rise	Moon Set	Moon Rise	Moon Set
----- 1 st – 4:52pm 2 nd – 5:36pm 3 rd – 6:31pm 4 th – 7:37pm 5 th – 8:50pm 6 th – 10:07pm (ENE) 7 th – 11:26pm 9 th – 12:46am 10 th – 2:08am (E) 11 th – 3:32am 12 th – 4:58am (ESE) 13 th – 6:26am 14 th – 7:51am 15 th – 9:07am 16 th – 10:09am 17 th – 10:56am 18 th – 11:30am 19 th – 11:56am +4.5	1 st – 8:54am 2 nd – 9:56am 3 rd – 10:50am 4 th – 11:35am 5 th – 12:10pm 6 th – 12:38pm 7 th – 1:01pm (WNW) 8 th – 1:21pm 9 th – 1:39pm (W) 10 th – 1:58pm 11 th – 2:18pm 12 th – 2:42pm (WSW) 13 th – 3:13pm 14 th – 3:53pm 15 th – 4:45pm 16 th – 5:50pm 17 th – 7:03pm 18 th – 8:19pm 19 th – 9:34pm (WSW)	20 th – 12:16pm (ESE) 21 st – 12:33pm 22 nd – 12:48pm (E) 23 rd – 1:03pm 24 th – 1:18pm 25 th – 1:35pm (ENE) 26 th – 1:55pm 27 th – 2:19pm 28 th – 2:50pm 29 th – 3:31pm 30 th – 4:23pm 31 st – 5:27pm ----- All times in notes are set for Somerton unless stated	20 th – 10:46pm 21 st – 11:55pm 23 rd – 1:02am (W) 24 th – 2:09am 25 th – 3:16am 26 th – 4:24am (WNW) 27 th – 5:33am 28 th – 6:41am 29 th – 7:46am 30 th – 8:44am 31 st – 9:33am ----- Moon Phases Last Quarter – 8 th New Moon – 14 th First Quarter – 21 st Full Moon – 30 th
A useful site: www.heavens-above.com	A S Zielonka		

There is a planned launch (no earlier than December) of SpaceX CRS-21 Cargo mission to the International Space Station (ISS). It will launch on a Falcon 9 rocket from Kennedy Space Centre, Florida.

There is a planned launch (no earlier than December) of a Boeing Orbital Test Flight 2. For this second uncrewed flight test, Boeing's CST-100 Starliner will launch atop a United Launch Alliance Atlas V rocket. OFT-2 will fly a new, reusable Starliner crew module providing additional on-orbit experience for the operational teams prior to flying missions with astronauts.

On the 1st at 6:00pm the star Zeta Tauri (2.9 mag) in Taurus is just 2 degrees to the lower right of the Moon.

From the 1st – 4th Mars passes within 1¼ degrees of the star Epsilon Piscium (4.2 mag) in Pisces. On the 1st at 8:30pm Mars is due south.

At 10:00pm on the 2nd the star Meebsta (3rd mag) in Gemini is less than a degree upper left of the Moon. An occultation of Meebsta by the Moon also occurs though this will only be seen from central Africa and the south Middle East.

From the 2nd - 4th Comet C/2020 M3 Atlas (9.5 mag – Nov 17th) is passing close to Elnath (1.6 mag) in Taurus. On the 3rd its less than a degree from the star Elnath. (For details on this comet or others listed please see the “Comet” section in the website above).

From the 2nd - 5th Venus passes close to the star Zubenelgenubi (2.7 mag) in Libra. On the 4th at 6:30am its just 1½ degrees to the right of Venus low in the south east.

On the 3rd at midnight the star Kappa Geminorum (3.5 mag) in Gemini is ½ a degree above left of the Moon. An occultation of Kappa Geminorum by the Moon also occurs though this will only be seen from central Africa and the south Middle East.

At midnight on the 4th the Beehive star cluster in Cancer is 2¼ degrees below right of the Moon.

On the 5th at 10:30pm the stars Rasalas (3.8 mag) and Epsilon Leonis (2.9 mag) in Leo point the way to the Moon. Six degrees separates Epsilon Leonis from the Moon.

At 10:45pm on the 6th the stars Adhafera (3.4 mag) and Algieba (2nd mag) in Leo point the way to the Moon. The star Regulus (1.3 mag) is 5 degrees to the right of the Moon low in the east. There is an occultation of star Eta Leonis by the Moon which will be seen from east Asia and Hawaii.

On the 7th at midnight the star Chertan (3.3 mag) in Leo is 6 degrees upper left of the Moon. The star Denebola (2.1 mag) is 8½ degrees left of the Moon... ..Then at 6:00am on the 8th all three celestial objects form a near perfect equilateral triangle in the south.

From the 7th - 11th Comet 156P Russell-Linear (10.5 mag – Nov 17th) passes close to the star Algenib (2.8 mag) in Pegasus. On the 8th at 8:00pm Russell-Linear is approximately 1¼ degrees below left of Algenib.

At 6:30am on the 9th the star Zaniah (3.8 mag) in Virgo is 3 degrees below the crescent Moon and 1¼ degrees to the right.

On the 10th at 6:00am the star Spica (0.9 mag) in Virgo is 8 degrees below the crescent Moon.

The Taurids meteor shower reached their peak on the 10th/11th November, though they can be seen till 9th December.

At 6:00am on the 11th the star Kappa Virginis (4.1 mag) in Virgo is 1½ degrees below left of the crescent Moon.

From the 11th – 30th Jupiter and Saturn pass within 1 degree of each other. On the 21st Jupiter and Saturn are in close conjunction and less than ¼ of a degree apart in the south western sky around 5:00pm.

Comet C/2020 S3 Erasmus (7.3 mag – Nov 17th) is at perihelion on the 12th (0.399AU from the Sun). Due to its position its unlikely to be seen this month from the UK.

On the 12th at 6:30am Venus is 7½ degrees below left of the thin crescent Moon. The star Zubenelgenubi (2.7 mag) in Libra is 3½ degrees to the right of the Moon and 1 degree above. The moon is at perigee (361,773km) at 8:43pm. An occultation of Venus by the Moon occurs this day which will be seen from eastern Russia and the western half of north America.

At 7:00am on the 13th Venus is 6½ degrees above right of a very thin crescent Moon which is 3¼ degrees above the horizon at 128 degrees azimuth. The star Acrab (2.5 mag) in Scorpius is less than ½ a degree above the Moon.

There is a Total Eclipse of the Sun on the 14th. This will be visible through the central region of Chile and Argentina. The partial phases will be seen over the lower two thirds of South America and the west side of Southern Africa before the Sun sets. Greatest eclipse occurs at 4:13:22.9pm.

The Geminids meteor shower reach their peak on the 14th/15th, though they can be seen from the 4th – 17th.

On the 15th at 4:25pm a very thin crescent Moon may be seen low in the south west. It will be 1½ degrees above the horizon at 224 degrees azimuth.

At 5:00pm on the 16th a thin crescent Moon will be seen in the south west. Its 4½ degrees above the horizon and at 219 degrees azimuth. Jupiter and Saturn are 8½ degrees above left of the moon.

On the 17th at 5:00pm Jupiter and Saturn (1 degree apart) are 7 degrees right of the crescent Moon. The star Psi Capricorni (4.1 mag) in Capricornus is 2¾ degrees to the left of the Moon and 1 degree below.

From the 17th – 21st the asteroid Vesta passes close to the star Iota Leonis (4th mag) in Leo. On the 19th at 6:00am its ¾ of a degree below Iota Leonis in the south.

From the 17th - 23rd Comet 88P Howell (9.1 mag – Nov 16th) passes close to the stars Nashira (3.6 mag) and Delta Capricorni (2.8 mag). On the 18th at 6:00pm Howell will be just 1 degree below right of Nashira and 2¼ degrees above the crescent Moon.

At 7:50pm on the 18th the star Delta Capricorni (2.8 mag) in Capricornus is 4¼ degrees above the crescent Moon.

On the 19th at 9:00pm the star Skat (3.2 mag) in Aquarius is 5 degrees to the left of the crescent Moon and 3 degrees above.

Mercury is at superior conjunction on the 20th.

From the 20th – 25th the asteroid Ceres is passing close to the star Skat (3.2 mag) in Aquarius. On the 22nd / 23rd at 7:00pm it will be 1 degree to the lower left of Skat.

At 9:00pm on the 20th the star Psi Aquarii (4.4 mag) in Aquarius is 1¾ degrees upper right of the Moon. Its the middle one of the three stars, which is slightly higher than the other two. Neptune is 4½ degrees above the Moon and 2½ degrees to the right.

On the 21st at 9:00pm the star Iota Ceti (3.5 mag) in Cetus is 5 degrees to the left of the Moon.

The Ursids meteor shower reach their peak on the 21st/22nd, though they can be seen from the 16th – 25th.

At midnight on the 23rd Mars is 5½ degrees to the upper right of the Moon.

The moon is at apogee (405,012km) on the 24th at 4:32pm. At midnight Uranus is 2¾ degrees to the upper right of the Moon.

On the 26th at midnight the Pleiades star cluster is 6 degrees above right of the Moon.

Solar Orbiter has a gravity assist manoeuvre with the planet Venus on the 26th. (See “News: Solar Orbiter” below for further details).

At 7:00pm on the 27th the star Ain (3.5 mag) in Taurus is 2 degrees to the right of the Moon.

On the 28th at midnight the star Zeta Tauri (2.9 mag) in Taurus is 2¼ degrees to the lower left of the Moon.

At 7:00pm on the 29th the star Mu Geminorum (2.8 mag) in Gemini is just 1½ degrees to the lower right of the Moon.

On the 30th at 8:00pm the star Wasat (3.5 mag) in Gemini is 2 degrees to the lower right of the Moon.

At midnight on the 31st the Beehive star cluster in Cancer is 4 degrees below the Moon and 2 degrees to the left. There is an occultation of Kappa Geminorum earlier today which will be seen from Mexico, central America and north west South America.

* = Dates and times are subject to change.

News: It was announced on the 17th November that the world's largest radio telescope is on the brink of collapse. A crucial cable at the Arecibo Observatory in Puerto Rico recently broke-the second such cable to snap in three months

News: **Solar Orbiter:** The science payload is composed of 10 instruments.

9/10) METIS (Multi Element Telescope for Imaging and Spectroscopy) – Coronagraph (Italy): Simultaneously images the visible, ultraviolet and extreme ultraviolet emissions of the solar and diagnoses, with unprecedented temporal coverage and spatial resolution, the structure and dynamics of the full corona in the range from 1.4 to 3.0 (from 1.7 to 4.1) solar radii from Sun centre, at minimum (maximum) perihelion during the nominal mission. This is a region that is crucial in linking the solar atmospheric phenomena to their evolution in the inner heliosphere.

Facts: The last time a conjunction between Jupiter and Saturn, was on the 28th May 2000. On the 17th May in the same year the Sun and the naked eye planets were massed close together – an event that occurs about six times in every 1000 years. This is depicted on the Bude Light 2000 slender cone made in concrete with colours of sand, sea and sky which is over 9 metres high. As the name suggests it is in Bude, Cornwall.