

[Astronomy Things To See During December 2016 \(For UK Observers\)](#)

Winter Solstice occurs at 10:44am on 21st December

Moon:

First Quarter: 7th December 9:03am
Full: 14th December 12:05am
Last Quarter: 21st December 1:55am
New: 29th December 6:53am

The Lunar “X” and “V” are visible at 4:36pm GMT on 6th December, just over 4 hours after moonrise. Look at the lower part of the terminator with binoculars or a telescope to spot the obvious X and V shapes made by sunlight illuminating the edges of craters on the shadow side

Lunar conjunctions & occultations:

Note: When the Moon is waxing it is visible in the western sky after sunset. When near Full Moon it is visible most of the night. When it is waning, it is visible in the eastern sky before sunrise

2 nd & 3 rd December	Waxing Crescent Moon lies above Venus
5 th December	Waxing Crescent Moon lies close to Mars and Delta Capricorni
6 th December	Thick Waxing Crescent Moon lies to lower right of Neptune, before being occulted (see below)
9 th December	Waxing Gibbous Moon lies in between Uranus & Ceres
12 th /13 th December	Waxing Gibbous Moon occults several stars in The Hyades Cluster (see below)
18 th December	Waning Gibbous Moon lies close to Regulus
22 nd December	Thick Waning Crescent Moon lies close to Porrima
23 rd December	Waning Crescent Moon lies close to Jupiter and Spica
26 th December	Waning Crescent Moon lies close to Garffias
27 th December	Thin Waning Crescent Moon lies close to Saturn
31 st December	Waxing Crescent Moon lies close to Venus again

Planetary Observations:

Mercury – look to the western horizon after sunset this month and see if you can spot Mercury. Setting at around 5pm, it will be well below and to the right of Venus. It reaches greatest eastern elongation on 11th December, when it will be at mag -0.4. Binoculars will definitely help you to spot it

Venus – visible in the evening sky in the west after sunset, you can't fail to spot Venus as it blazes at mag -4.1. By the end of December it will be visible until about 8pm. On 28th December Venus lies close to Deneb Algedi (Delta Capricorni)

Mars – look to the upper left of Venus and see if you can spot the red planet Mars. It is much fainter than its companions this month at mag +0.7, but it doesn't set until around 9pm so there is lots of time to see it after sunset. On 2nd December Mars lies close to Iota Capricorni. On 5th December, it lies close to the Waxing Crescent Moon. On 26th December Mars lies close to Sigma Aquarii. On 31st December Mars will lie less than 20 arc minutes away from Neptune. You will need binoculars or a telescope to view this close conjunction

Jupiter – located in Virgo, Jupiter now rises at around 2am and blazes at mag -1.7. During December it moves ever closer to Spica, the brightest star in Virgo. On 13th December it is in conjunction with Theta Virginis and on 23rd December the Waning Crescent Moon lies close to Jupiter

Saturn – is not observable this month

Neptune – lying in Aquarius this month, Neptune is visible until around 10pm in the south west. At mag +7.9 you will need binoculars or a telescope to spot it. On 6th December, there is a rare occultation of Neptune by the Moon (see below for more details). On 31st December Mars will lie less than 20 arc minutes away from Neptune. You will need binoculars or a telescope to view this close conjunction

Uranus – lying in Pisces this month, Uranus is visible high in the south west until around 2am. At mag +5.8 you will need a telescope to spot it. On 9th December, Uranus lies close to the Waxing Gibbous Moon

Pluto – located in Sagittarius, you may catch a glimpse of Pluto very low in the south west after sunset, before it sets at around 5:30pm. It is located to the lower right of Venus and below the mag +2.8 star 41 sgr. At mag +14.2 you will need a large telescope to spot it

Ceres – located on the border of Cetus and Pisces this month, Ceres becomes visible in the south after sunset and remains visible until around 1:30am. At mag +7.7 you will need binoculars to spot it. On 9th December it lies close to the Waxing Gibbous Moon

Vesta – located in Cancer, Vesta rises in the east at around 8pm and remains visible all night long. At mag +6.4 you will need binoculars to spot it. On 17th December Vesta lies close to the Waning Gibbous Moon

Other Observations:

Lunar Occultation of Neptune – On 6th December we have a rare occultation of Neptune by the Moon. The occultation will occur when the Moon is low above the west-south-western horizon. All parts of the UK will see the disappearance of Neptune but they will both have set before Neptune reappears again. The exact time of the occultation will vary depending on your latitude. People in northern UK should observe from 10:15pm, and watch as Neptune disappears behind the shadow side of the Moon. If you are in the south of the UK, you need to observe at around 10:30pm. If you watch this event through a telescope, you will also see 2 mag +9 stars close to Neptune which will also be occulted

Lunar Occultation of Hyades – On the night of 12th/13th December, the Moon occults several stars in The Hyades Cluster in Taurus, ending with Aldebaran, which from the very north of Scotland will be a grazing occultation. The exact times of the occultations will vary depending on your latitude.. A brief summary of the times of the brighter star occultations is listed below:

Gamma Tauri	Northern UK: Disappears 9:40pm	Reappears 10:47pm
	Southern UK: Disappears 9:33pm	Reappears 10:38pm
Theta ¹ Tauri	Northern UK: Disappears 1:54am	Reappears 2:55am
	Southern UK: Disappears 2:08am	Reappears 2:57am
Theta ² Tauri	Northern UK: Disappears 2:00am	Reappears 2:51am
	Southern UK: Disappears 2:27am	Reappears 2:40am
Aldebaran	Southern UK: Disappears 5:22am	Reappears 5:58am

Geminids Meteor Shower – this shower is active from 4th – 17th December, with the peak this year overnight on 14th December, which coincides with the Full Moon. The Moon will severely hamper observations, leaving only the very brightest meteors visible, however, the Geminids can often produce bright meteors so it is still worth observing; but wrap up warm!

Ursids Meteor Shower – this shower active from 17th – 26th December, with the peak overnight on 22nd/23rd December. On that night the Waning Crescent Moon doesn't rise until 2:30pm, so there are many hours of darkness to observe the shower without any interference from the Moon. The Ursids has a much lower hourly rate than the Geminids but often produces attractive slow moving meteors so is worth observing

Orion at its Best – one of the most recognisable constellations in our sky, Orion is well placed for observation this month as it reaches its highest point as viewed from the UK on 17th December. As well as the famous Great Orion Nebula M42, there are lots of other interesting objects to observe and photograph in this constellation

Binocular Tour – This month's Sky at Night Binocular Tour by Stephen Tonkin is focused on the sky around Andromeda. If you have 10 x 50 binoculars, first look for NGC 752, the mag +5.7 open cluster. Next is a challenging target, but if you allow your eyes to become dark adapted and have transparent skies, see if you can spot M33 the Triangulum Galaxy. It has a low surface brightness so it will appear as a slightly brighter patch against the background sky. Next is a much easier target, M31 the Andromeda Galaxy, which is actually naked eye visible from a dark sky location. Even from urban locations you can see the bright core of this galaxy through binoculars, but from a dark sky site you may be able to spot the satellite galaxies M32 and M110. The last target for 10 x 50 binoculars is the open cluster NGC 7686. Not many stars are resolved in binoculars, but you should see 3 or 4 stars together with the background glow of the cluster. Moving on to 15 x 70 binoculars, see if you can spot NGC 7662, a planetary nebula. It appears as a mag +8 star with a blue/green tint. Finally is the open cluster M52. Large binoculars will resolve around 10 stars against an arrowhead shaped background which should be obvious against the

background Milky Way stars. For full details on how to find these objects, look at the December edition of Sky at Night Magazine

Deep Sky Tour – This month's Sky at Night Deep Sky Tour is centred on the area around Gemini & Auriga. First is the brightest star in Auriga, Capella. This is actually a tight double star, and a large telescope is needed to resolve the pair. Collinder 62 is an open cluster in Auriga, but it is weak cluster which is difficult to resolve. Next look for IC 2149, which is a mag +10.6 planetary nebula. It looks like a blue star which lies at the centre of an "M" shaped asterism. NGC 2281 is a mag +5.4 open cluster, which is bright and easy to spot with a small telescope. A 6" telescope will resolve about 30 stars. Next look for the mag +10.4 globular cluster NGC 2419. This glob is small, but lies at the northern end of a lovely chain of stars which increase in magnitude as they get nearer to the cluster. It is a gorgeous photo opportunity. Finally is another planetary nebula, Jones 1. You will need a large telescope of 12" or more to really get the best of this one. For full details of where to find these objects and how best to see them, pick up the December issue of Sky at Night magazine

Hubble's Variable Nebula – Astronomy Now's object of the month is Hubble's variable nebula, NGC 2261. As the name suggests, variable nebulae are reflection nebulae which unlike most deep sky objects, show changes in their shape and magnitude. These changes occur over several weeks rather than hours, but it makes them a fascinating target for repeat observation. Because this is a reflection nebula, there is no benefit from using nebula filters, but a dark sky site and moonless night are essential. For more information on how to observe, image or sketch this object, take a look at the December edition of Astronomy Now magazine

Constellation Auriga – Astronomy Now's constellation of the month is Auriga. Auriga is packed with interesting objects, including the open clusters M36, M37 & M38 amongst others. There are a few planetary nebulae located here, along with several double and variable stars. For more information about this constellation and all of its treasures, take a look at the December edition of Astronomy Now magazine

International Space Station – The ISS returns for a series of bright evening passes during the first 3 weeks of December. Unfortunately there will be no "Santa's Sleigh" ISS passes on Christmas Eve this year. For the exact timings of the passes from your location, visit www.heavens-above.com You can also check the Iridium flare times for your location at Heavens Above

Comets Visible This Month:

Comet 45P/Honda-Mrkos-Padjusakova – this comet is currently at mag +12 but is predicted to brighten to +6 by early January so it is worth keeping an eye on it. It is currently in Sagittarius but will move rapidly towards Capricornus during December. It becomes visible low in the south west after sunset, not far from Venus, then sets at around 6:30pm. On 15th December it passes close to M75, the mag +8.6 open cluster, by which time the comet is predicted to be at mag +9.6.

Click here to view the finder chart: <http://bit.ly/2g2cwrP>

Comet C/2015 V2 Johnson – currently located in Cannes Venatici and moving towards Bootes during December, this comet becomes visible soon after 1:30am in the north eastern sky. It is then visible until dawn. It is currently at mag +10.3 and brightening. You will need binoculars or a telescope to spot it. Click here to view the finder chart: <http://bit.ly/2gRUGQ2>

Comet C/2015 ER61 (PanSTARRS) – located on the border between Libra & Virgo, and moving into Libra during the month, this comet rises at around 5am and will be visible low in the south east until dawn breaks at around 6:30am. It is currently at mag +10.7 and brightening. You will need binoculars or a telescope to spot it. Click here to view the finder chart: <http://bit.ly/2gFlsrY>

There are several other comets in the mag +11 to +15 range. Details of these can be found in the links below.

For up to date information about the fainter comets which are visible, please visit:

<https://in-the-sky.org/data/comets.php>, the BAA Comets Section: <https://www.ast.cam.ac.uk/~jds/> or Seiichi Yoshida's home page: <http://www.aerith.net/index.html>

NB: All of the information in this sky guide is taken from Night Scenes 2016 by Paul L Money, Philips Stargazing 2016 by Heather Couper and Nigel Henbest, Astronomy Now Magazine, Sky at Night Magazine, Stellarium, the BAA Comets Section website <https://www.ast.cam.ac.uk/~jds/>, www.inthesky.org, Seiichi Yoshida's home page:

<http://www.aerith.net/index.html> and www.heavens-above.com Information collated by Mary McIntyre.

For regular updates about the events happening in the sky this month, follow the Nightscenes Monthly Night Sky Facebook page at www.facebook.com/AstrospacePublications