The Night Sky in December 2024

Monthly guide compiled by Doug Bickley

PERTON LIBRARY ASTRONOMY GROUP

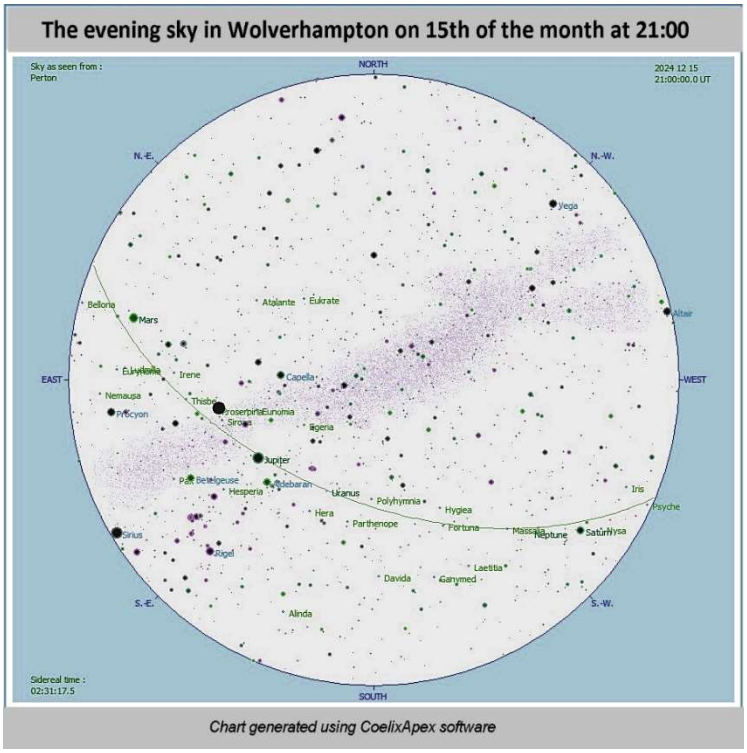


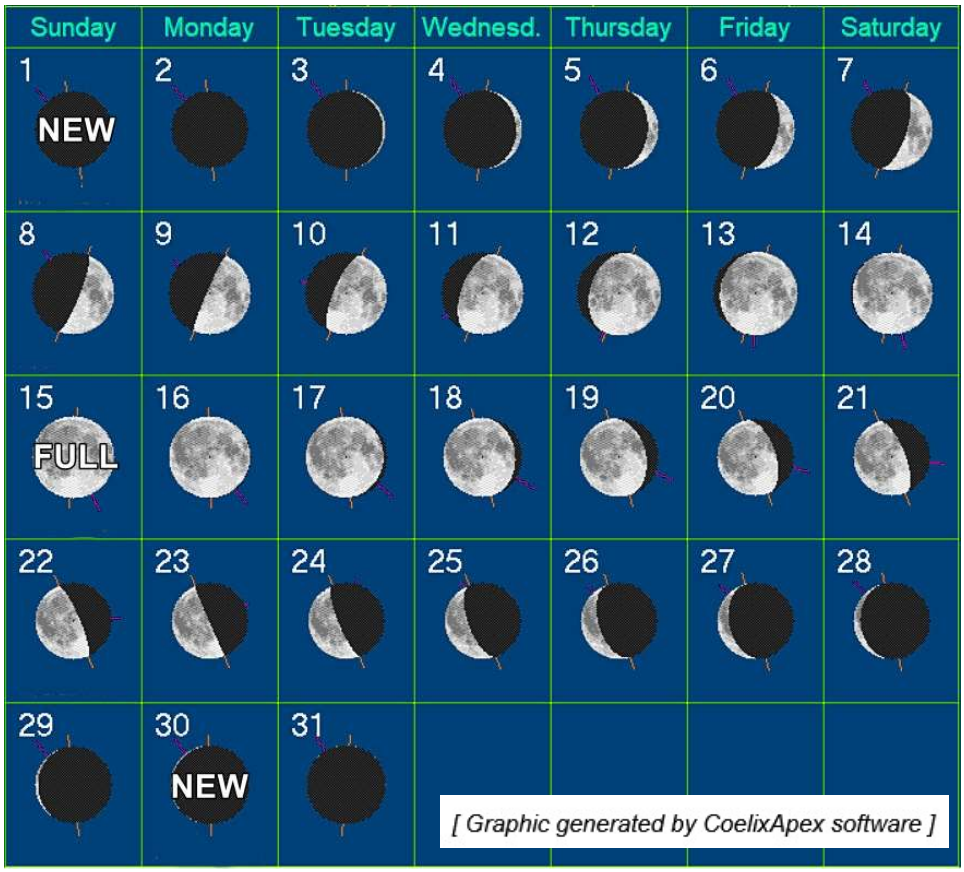
Chart generated using CoelixApex software

Diary of events to look out for this month:

1	New Moon
4	Crescent Moon below Venus (evening twilight)
5	Crescent Moon left of Venus (evening twilight)
6	Mars above Beehive Cluster M44 (evening)
7	Jupiter at opposition
8	First quarter Moon left of Saturn (evening)
13	Moon close to the Pleiades M45 (early evening)
14	Geminid meteor shower peak (unfavourable)
14	(almost) Full Moon above Jupiter
15	Full Moon
16	Moon forms triangle with Castor and Pollux (evening)
16	Coma Berenicids meteor shower peak (unfavourable)
17	Moon above Mars and the Beehive Cluster (late evening)
19	Perton Astronomy Group meeting 7pm
21	December (Winter) Solstice
22	Ursid meteor shower peak (favourable)
24	Strange sleigh like object in the sky in all directions
30	New Moon

THE MOON

Lunar Phases this month



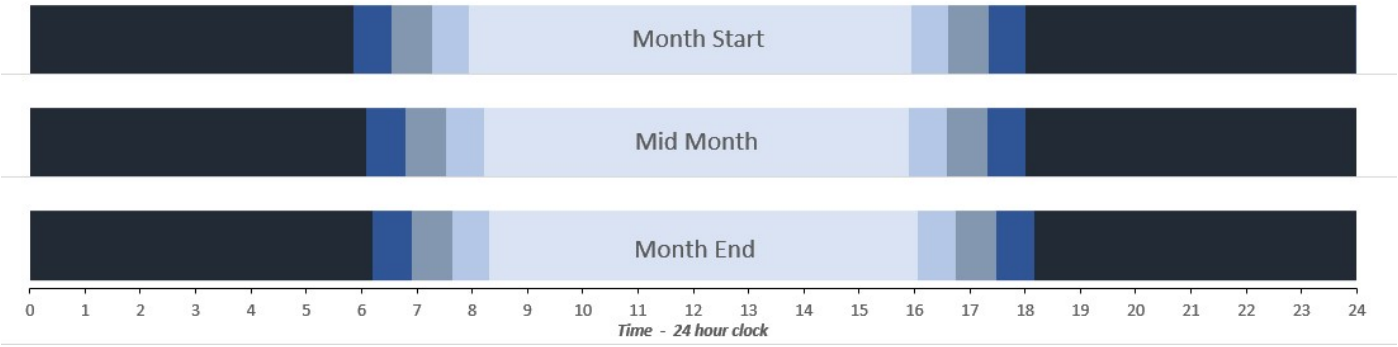
There are two New Moons this month on 1 December and on 30 December. You may see the second New Moon (in a single calendar month) described as a Black Moon, although this not an official astronomical term.

Full Moon is on 15 December.

In December, winter begins for most people in the Northern Hemisphere. The December Full Moon is called the Cold Moon. The Old English and Anglo-Saxon names are the Moon Before Yule or the Long Night Moon, referring to the longest night of the year in the Northern Hemisphere: the December solstice. The Celts called it the Oak Moon or the Full Cold Moon.

THE SUN

Graphical format showing sun rising, setting and twilight linked to an online data source (time-ok.com) to show twilight zones more clearly. Location is set at Wolverhampton UK.



Mid-month is 15 December – Sunrise is 8:13am and Sunset is 3:54pm.

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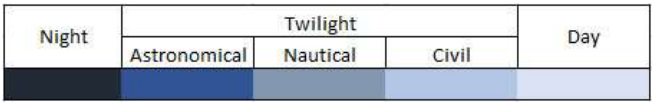
Key:



The 2024 December solstice takes place on December 21, at 9:21 UTC. It marks the Northern Hemisphere's shortest day (first day of winter).

PLANETS THIS MONTH

Here's my usual summary table showing planetary observation opportunities based on mid-month data:

	Planetrise/Planetset, Sun, 15 Dec 2024			
Planet	Rise	Set	Meridian	Comment
Mercury	Mon 06:27	Mon 15:05	Mon 10:46	Slightly difficult to see
Venus	Sun 11:09	Sun 19:31	Sun 15:20	Good visibility
Mars	Sun 18:52	Mon 11:13	Mon 03:02	Perfect visibility
Jupiter	Sun 15:13	Mon 07:34	Sun 23:23	Perfect visibility
Saturn	Sun 12:12	Sun 22:50	Sun 17:31	Average visibility
Uranus	Sun 14:08	Mon 05:42	Sun 21:55	Average visibility
Neptune	Sun 12:29	Mon 00:11	Sun 18:20	Difficult to see

Data from timeanddate.com

And a run-down of planetary movements for the month of December:

Mercury is in the SE in Ophiuchus at a maximum altitude of 6°, shining at maximum mag -0.2 at month end. It is an evening planet at the start of the month but then emerging in the morning skies after inferior conjunction on 6 December and observing opportunities will improve just slightly.

Venus is in the SSW in Aquarius at a maximum altitude of 20° shining at mag -4.0 and brightening slightly towards month end and is well placed for observations. On 4 and 5 December a 12%-lit waxing crescent Moon will be close by.

Mars is still in the S in Cancer at a maximum altitude of 60° shining at about mag -0.5 at the start of the month. On 6 December it will be close to the Beehive Cluster M44. On 18 December at 9:24 in the morning the planet will be occulted (pass behind) the Moon, you will need binoculars at least to see this.

Saturn is still in Aquarius in the S at a maximum altitude of 28°, shining at mag +0.9. The planet moves to the west with falling altitude during the month but visibility remains good.

Jupiter is still in Taurus in the S at a high maximum altitude of 59°, shining at mag -2.8 at opposition on 7 December, second only to Venus and is visible all night long. The full Moon is close to Jupiter on the evening of 14 December, and on 31 December the planet sits close to the NE of Aldebaran, with the Hyades and Pleiades open clusters also nearby. Jupiter's high altitude translates into steady views through a telescope because the planet's light traverses less of Earth's turbulent atmosphere.

Uranus is still in Taurus in the S at a maximum altitude of 56°, shining at mag +5.6 and remains an evening planet.

Neptune is still in the S in Pisces at a maximum altitude of 35°, and evening planet shining at mag +7.9 for most of the month.

Goodbye to comet C/2023 A3 Tsuchinshan-ATLAS

I hope that many of you managed to see the comet despite our run of cloudy nights.

On 12 October it passed the closest point to the Earth and was at a distance of 0.47 AU (71 million km or 44 million miles) from our planet. This is when the comet reached its maximum brightness and became visible to the naked eye. In November it gradually lost brightness (from 5 to 9 mag) as it moved away from Earth. By the end of the month the distance between the comet and our planet increased to 1.94 AU, about three times farther away than Mars.

In December (dimming from 11 to 12 mag) it gradually moves closer to the Sun in our sky, rising lower above the horizon, then leaves the inner Solar System, and over the next 20 years will be moving toward the edge of the Solar System. It will not return for another 80,660 years, and perhaps not at all - according to NASA, the comet's path may take it out of the Solar System altogether.

Images taken by the author

METEOR SHOWERS

We haven't had much luck recently observing in Wolverhampton, clouds seem to have dominated our skies. The following table shows meteor showers possibly visible during December, so let's hope for some clear nights.

Meteor showers December 2024

Name	Begin	End	Max date	Max time	Moon Days	radiant RA at T max	radiant DE at T max	ZHR max	V km/s	Rising time	Transit time	Setting time
Geminids	05-Dec	17-Dec	14-Dec	01:00	12.8	7h 28m	33.0°	150	35	16:01	02:04	12:03
Coma Berenicids	12-Dec	23-Dec	16-Dec	00:00	14.7	10h 32m	30.0°	3	65	19:34	04:59	14:20
Ursids	17-Dec	26-Dec	22-Dec	10:00	21.2	14h 28m	76.0°	10	33		08:31	

Moon Days - age of the Moon calculated from the new moon. e.g. Full moon: 14.766 days
radiant RA and Dec - right ascension and declination coords of the radiant at maximum
ZHR - Zenithal hourly rate: number of meteors per hour you could see at the zenith on a clear night without Moon or light pollution
V km/s - Speed with which the shower's particles penetrate the atmosphere and burn up leaving streaks of light

Geminids

The main event in December should be the Geminids meteor shower which will be active from 5 December to 17 December, producing its peak rate of meteors around 14 December. As this is around the time of the Full Moon the latter will interfere, a solution might be to find a position perhaps behind a building or tree and observe looking away from the Moon.

The Wolverhampton Astronomical Society will be organising a viewing event for members so check out the Wolvas member's forum for more details.

PHENOMENA OF THE MONTH

(Table generated using Coelix Apex software):

Times are given in UT for Perton (2° 11' 0" W, 52° 35' 0" N, zone R).

	Date	Hour	Description of the phenomenon
	yyyy mm dd	hh:mm	
1	2024 12 01	00:00	Meteor shower : Dec. Phoenicids (duration = 11.0 days)
2	2024 12 01	06:21	NEW MOON
3	2024 12 04	00:00	Meteor shower : Puppids-Velids (10 meteors/hour at zenith; duration = 14.0 days)
4	2024 12 05	01:53	Close encounter between the Moon and Venus (topocentric dist. center to center = 1.9°)
5	2024 12 06	02:18	INFERIOR CONJUNCTION of Mercury with the Sun (geoc. dist. center to center = 1.4°)
6	2024 12 07	13:53	Close encounter between Venus and Pluto (topocentric dist. center to center = 0.9°)
7	2024 12 08	15:27	FIRST QUARTER OF THE MOON
8	2024 12 09	00:00	Meteor shower : Sigma Hydrids (7 meteors/hour at zenith; duration = 12.0 days)
9	2024 12 09	00:00	Meteor shower : Monocerotids (3 meteors/hour at zenith; duration = 20.0 days)
10	2024 12 12	13:18	Moon at perigee (geocentric dist. = 365361 km)
11	2024 12 14	01:00	Meteor shower : Geminids (150 meteors/hour at zenith; duration = 12.0 days)
12	2024 12 15	09:02	FULL MOON
13	2024 12 16	00:00	Meteor shower : Coma Berenicids (3 meteors/hour at zenith; duration = 11.0 days)
14	2024 12 22	10:00	Meteor shower : Ursids (10 meteors/hour at zenith; duration = 9.0 days)
15	2024 12 22	22:18	LAST QUARTER OF THE MOON
16	2024 12 24	07:25	Moon at apogee (geocentric dist. = 404485 km)
17	2024 12 30	22:27	NEW MOON

International Space Station (ISS)

Date	Mag	Transit time	Start			High point	End		
			Time	Alt.degs.	Az.		Time	Alt.degs.	Az.
14-Dec	-0.7	04:20	06:56	10°	S	16°	07:01	10°	ESE
15-Dec	-0.4	01:58	06:09	10°	SSE	11°	06:11	10°	ESE
16-Dec	-1.7	05:54	06:54	10°	SSW	29°	07:00	10°	E
17-Dec	-1.3	05:14	06:05	10°	SSW	21°	06:11	10°	E
18-Dec	-1.0	02:45	05:18	14°	SSE	15°	05:21	10°	ESE
18-Dec	-2.8	06:29	06:52	10°	SW	48°	06:59	10°	E
19-Dec	-2.4	04:43	06:05	22°	SSW	36°	06:09	10°	E
20-Dec	-1.7	02:17	05:18	25°	SE	25°	05:20	10°	E
20-Dec	-3.5	06:14	06:51	13°	WSW	68°	06:57	10°	E
21-Dec	-3.3	04:04	06:04	44°	SW	57°	06:08	10°	E
22-Dec	-1.7	01:55	05:17	29°	ESE	29°	05:19	10°	E
22-Dec	-3.7	05:46	06:50	18°	W	77°	06:56	10°	E
23-Dec	-3.8	03:42	06:03	64°	SW	74°	06:06	10°	E
23-Dec	-3.4	06:37	07:36	10°	W	60°	07:43	10°	ESE
24-Dec	-1.6	01:43	05:15	27°	E	27°	05:17	10°	E
24-Dec	-3.6	05:30	06:48	20°	W	71°	06:54	10°	ESE
25-Dec	-3.9	03:32	06:01	72°	SW	76°	06:05	10°	E
25-Dec	-2.8	06:19	07:35	10°	W	40°	07:41	10°	SE
26-Dec	-1.5	01:36	05:14	26°	E	26°	05:15	10°	E
26-Dec	-3.3	05:15	06:47	21°	W	51°	06:52	10°	ESE
27-Dec	-3.7	03:23	05:59	63°	SSW	63°	06:03	10°	ESE
27-Dec	-2.0	05:27	07:33	10°	W	23°	07:38	10°	SSE
28-Dec	-1.4	01:27	05:12	24°	ESE	24°	05:13	10°	ESE
28-Dec	-2.6	04:44	06:45	20°	WSW	32°	06:50	10°	SE
29-Dec	-3.0	03:01	05:58	42°	S	42°	06:01	10°	SE
29-Dec	-1.3	03:04	07:32	10°	WSW	13°	07:35	10°	SSW
30-Dec	-1.2	01:08	05:10	19°	SE	19°	05:11	10°	ESE
30-Dec	-1.8	03:36	06:43	15°	WSW	18°	06:47	10°	S
31-Dec	-2.1	02:09	05:56	24°	S	24°	05:58	10°	SSE

Forecast time for visible passes this month

You can also install an app on your phone to check for ISS passes

Android:
ISS Detector
Satellite Tracker

IOS:
ISS Spotter

All visible passes this month are shown in the table.
As always check the Heavens-Above website also if you want to see the latest forecasts.
[source: https://www.heavens-above.com/]

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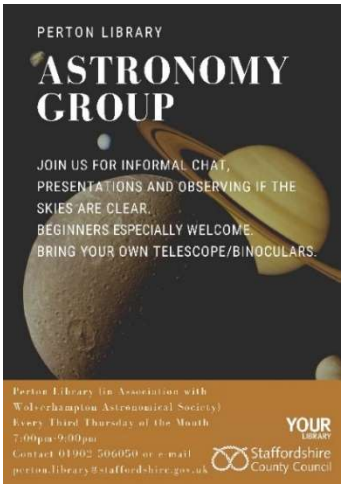

The group meets on the third Thursday of every month of the year at Perton Library from 7pm to 9pm. No subscription, no need to book, all free, just drop in at any time during the evening.
(Location WV6 7QU or on what3words ///saints.empty.stands)
The group is a relaxed and friendly gathering with the occasional talk.

We are particularly suited to beginners who very often bring their telescopes along for advice on how to set up, and we have experienced members who can help with this. If the skies are clear we do try to do some observing with library and member equipment.

WOLVERHAMPTON ASTRONOMICAL SOCIETY LECTURE PROGRAMME

The host location for our live talks remains the University of Wolverhampton in the city centre. Access and facilities are excellent - details are available on the Wolvas website. Lectures in person or online will only be available to paid-up members of the Society. Members will receive regular emails with invitations to the Zoom sessions and reminders of the in-person lectures.

The lectures for the current year are shown in the table below, some dates have yet to be finalised, so may be subject to change – keep an eye on our website for updates.

Date	Speaker	Title of Talk
02-Dec	Gary Palmer	Deep Sky Observing
06-Jan	Dr Julian Onions	TBC
20-Jan	George Seabrook	The Gaia Revolution
03-Feb	Dr Lucie Green	The Sun and Solar Orbiter
17-Feb	John Thatcher	The Beagle 2 Mars Lander
03-Mar	Dr Smoker *[live from Chile !]*	A day in the life of an astronomer in Chile
17-Mar	Mark Hardaker	An Introduction to Observing Variable Stars
14-Apr	TBA	
12-May	Phillip Price	TBC
09-Jun	Dr Helen Mason OBE	The A-X of Solar Flares

The Wolvas annual subscription remains a bargain at £10 per annum and you can still sign up now our website www.wolvas.org.uk and pay your subscription, preferably by bank transfer.

We put together a yearly 16 lecture programme, so more details of these talks and others will follow.

As well as our webpage we will be posting details of events on social media, so keep an eye on our Facebook (https://www.facebook.com/wolvasuk) and X *[Twitter]* (https://twitter.com/wolvasuk) pages for the latest news.