The night sky over Edinburgh in December

The Astronomical Sky Above Edinburgh and Lothian in December 2024

Winter is coming for the Solstice occurs on 21 December at 9:21 am and heralds the start of the season of astronomical winter which lasts for the next 88 days, 23 hours and 40 minutes.

On the day of the Solstice, impress your friends by casting your longest shadow of the year.

The Sun leaves Ophiuchus (The Serpent Bearer) on 17 December at 4:34 pm and enters Sagittarius (The Archer). Daylight shortens from 07:23 (7.392 hours) on 1 December to 07:04 (7.075 hours) on 31 December so we gain 19 minutes of night time by month's end. In reality, we gain 26 minutes of night time up to the Solstice (when the days get shorter) and then lose 7 minutes afterwards (when the days get longer). On the Solstice, the Sun's lowest altitude of the year will be 10.7° at 12:11 pm with the Sun some 147,164,044 km distant. This day, the

shortest of the year, lasts 6 hours, 57 minutes and 40 seconds. The earliest sunset of the year is on 14 December at 3:36 pm and the latest sunrise of the year is on 28 December at 8:48 am.

The (first) new Moon appears on 1 December at 6:21 am in Scorpius (The Scorpion) beginning a new Lunar (synodic) month which will last 29 days, 16 hours and 5 minutes. The first quarter of the new cycle shows up on 8 December at 3:27 pm in Aquarius (The Water Bearer). Lunar perigee (closest to Earth) on 12 December at 1:30 pm finds the Moon some 365,384 km away from Earth—around 19,016 km closer than average—subtending an angle of 32.7 arc-minutes. The full Cold Moon makes an appearance on 15 December at 9:02 am in Taurus (The Bull). The Moon enters last quarter on 22 December at 10:18 pm in Virgo (The Maiden). Lunar apogee (furthest from Earth) that occurs on 24 December at 7:28 am and takes the Moon to 404,445 km away from Earth—around 20,045 km further than average—subtending an angle of 29.5 arc-minutes. Finally, a second new moon appears on 30 December at 10:27 pm in Sagittarius (The Archer) beginning another synodic month which will last 29 days, 14 hours and 9 minutes. A second new Moon within the same calendar month is sometimes called a Black Moon.

The waxing gibbous Moon conjuncts with the Pleiades star cluster (M45) on 13 December, being separated by a mere 0.1°. Later in the month, on 20 December, the waning gibbous Moon will conjunct with Regulus in Leo (The Lion) being separated by around 2.5°
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For the inferior planets: Mercury appears in Ophiuchus (The

Serpent Bearer) at the start and end of the month but entertains a sojourn into Scorpius (The Scorpion) mid-month. The ‘Swift Planet’ recedes by 64,682,661 km but, contrarily, increases in brightness from +1.89 to -0.35 magnitudes (7.86× in luminosity). It will be closest to Earth on 5 December, reaches (another) perihelion around inferior conjunction (in front of the Sun) on 6 December, appears to reverse orbital direction on 15 December and reaches dichotomy (exactly half the surface is illuminated by the Sun) on 20 December.
Finally, on Christmas Day, Mercury reaches greatest western elongation (furthest angle from the Sun).
Observers hoping for a glimpse of the Mercury will have to wait until the second half of the month when it re-emerges as a morning planet.

Venus begins the month in Sagittarius (The Archer) and ends in Aquarius (The Water Bearer) but comes closer by 33,406,466 km. The ‘Brightest Planet’ increases in magnitude from -4.20 to -4.45 (1.26× in luminosity) over December and appears as a spectacular ‘evening star’ all month long.
Venus will be within 3° of the waxing crescent Moon as it sets on 4 December.
For the superior planets: Mars remains in Cancer (The Crab) all month but comes closer by 22,337,576 km and increases in brightness from -0.50 to -1.22 magnitudes (1.93× in luminosity). The ‘Red Planet’ crosses a stationary point on 6 December and so appears to reverse direction in orbit. It rises earlier as the month goes on and o□ers excellent visibility for most of the night. On 18 December, conjuncts within 2° of the waning gibbous Moon and will be occulted after it sets.
Jupiter remains in Taurus (The Bull) but recedes by 14,468,727 km and, so, decreases in brightness

from -2.81 to -2.74 magnitudes (0.94× in luminosity) over December. The ‘Gas Giant’ will be closest to Earth on 6 December and at opposition on 7 December making for an excellent view. Being so bright it is easy to find but, handily, it will be within within 4° of waxing gibbous Moon on the evening of 14 December.

Saturn remains in Aquarius (The Water Bearer) all month but recedes by 74,497,144 km and decreases in brightness from 0.94 to 1.05 magnitudes (0.90× in luminosity) over the month. The ‘Ringed Planet’ reaches eastern quadrature (making a right angle between Sun-Earth-Planet) on 4 December. On 8 December, it will be occulted by the first quarter Moon after it sets. Uranus is in Taurus (The Bull) until 28 December when it crosses over into Aries (The Ram) and recedes by 40,225,664 km. Neptune remains in Pisces (The Fishes) all month and recedes by 79,395,283 km. On 8 December, the ‘Blue Giant’ returns to a direct orbit and on 18 December reaches eastern quadrature. Saturn, Uranus and Neptune remain as observable evening objects. As can be seen from our sky map: Mars, Jupiter, Uranus, Neptune and Saturn all in the sky at the same time.

The Blaze Star (T CrB) has yet to live up to billing: providing another jewel in Corona Borealis (The Northern Crown) of similar lustre to Polaris. This recurrent nova had been predicted to flare again between last August through October but has yet to appear. There is still time as T CrB rises after 2:30 am at the start of the month but gets earlier as December progresses. By Hogmanay, it will rise around 12:30 am.

December entertains 7 meteor showers as detailed in the

ephemeris but only 2 stand out. Feel free to try and observe the others, though, but beware the large number of Starlink satellites that may give a false positive for shooting stars!

The highly anticipated Geminid meteor shower, radiant from Gemini (The Twins), peak on the night of 13–14 December for Edinburgh and Lothian. The radiant point is near the star Castor, one of the heads of the Gemini twins. They are viewable after astronomical twilight ends (around 6 pm) for the next 12 hours and reach high altitude so observability is excellent and they can produce up to 150 meteors per hour. The parent body is not a comet but the asteroid 3200 Phaethon and was the first asteroid discovered in IRAS satellite data in 1983. However, the waxing gibbous, almost full, Moon will attempt to spoil the show.

The Ursids, radiant from Ursa Minor (The Little Bear), are a poorer show compared to the Geminids but will peak on 21–22 December and are circumpolar so viewable all night. The waning gibbous Moon is illuminated to 58%. Look near the star Kochab and expect, maybe, 10 shooting stars per hour. The parent comet is 8P/Tuttle discovered in 1858.

At the time of our sky map, some constellations visible are Perseus (The Hero) at zenith, Draco (The Dragon) in the north, Cancer (The Crab) in the east, Pegasus (The Winged Horse) in the west, and Eridanus (The River) in the south. The ecliptic hosts Leo (The Lion), Cancer (the Crab), Gemini (The Twins), Taurus (The Bull), Aries (The Ram), Pisces (The Fishes) and Aquarius (The Water Bearer).

The ‘Winter Hexagon’–Rigel in Orion (The Hunter), Aldebaran in Taurus (The Bull), Capella in Auriga (The Charioteer), Pollux in Gemini (The Twins),

Procyon in Canis Minor (The Lesser Dog) and Sirius in Canis Major (The Great Dog)—rises in the south-east. This superstructure also contains the ‘Winter Triangle’ comprising the stars Procyon and Sirius but joined by Betelgeuse in Orion (The Hunter). Circumpolar constellations—always above the horizon—include Cepheus (The King), Camelopardalis (The Gira□e), Cassiopeia (The Seated Queen) and Ursa Minor (The Lesser Bear).

1 December 6:21 am	New Moon, Meeus lunation 308	Scorpio
4 December 4:18 pm	Saturn at eastern quadrature	Aquarius
4 December 6:00 pm	Venus within 3° of waxing crescent Moon	Sagittarius
5 December 9:00 pm	ϕ Cassiopeiids meteors peak, ZHR=3	Cassiopeia
5 December 10:49 pm	Earth Mercury closest at 101,481,085 km	Ophiuchus
6 December 2:18 am	Mercury at inferior conjunction	Ophiuchus
6 December 10:01 am	Earth Jupiter closest at 611,759,728 km	Taurus
6 December 2:26 pm	Mercury perihelion 46,000,700 km (0.307AU)	Ophiuchus
6 December 11:03 pm	Mars reverses to retrograde orbit	Cancer
7 December 8:58 pm	Jupiter at opposition	Taurus
8 December 11:05 am	Neptune returns to direct orbit	Pisces
8 December 3:27 pm	Moon at first quarter	Aquarius
9 December 6:00 pm	Monocerotids (019 MON) meteors peak, ZHR=3	Monoceros
9 December 7:36 pm	Moon crosses ascending node	Pisces
12 December 3:00 am	σ Hydrids (016 HYD) meteors peak, ZHR=7	Hydra
12 December 1:30 pm	Lunar perigee 365,384 km	Aries
13 December 5:13 pm	Pleiades (M45) within 0.1° of waxing gibbous Moon	Taurus
14 December 6:00 pm	Geminid (004 GEM) meteors peak, ZHR=150	Gemini
14 December 7:00 pm	Jupiter within 4° of waxing gibbous Moon	Taurus
15 December 9:02 am	Full (Cold) Moon	Taurus
15 December 9:14 pm	Mercury returns to direct orbit	Ophiuchus
16 December 3:00 am	Comae Berenicid (020 COM) meteors peak, ZHR=3	Coma Berenices
17 December 4:34 pm	Sun leaves Ophiuchus, enters Sagittarius at 0.984 AU	Sagittarius
18 December 2:29 pm	Neptune at eastern quadrature	Pisces
18 December 7:00 am	Mars within 2° of waning gibbous Moon	Cancer
20 December 5:00 am	Leonis Minorid (032 DLM) meteors peak, ZHR=10	Leo
20 December 5:37 am	Regulus within 2.5° of waning gibbous Moon	Leo
20 December 2:51 pm	Mercury at dichotomy	Ophiuchus
21 December 9:21 am	Winter (December) Solstice	Sagittarius
22 December 6:00 pm	Ursid (015 URS) meteors peak, ZHR=10	Ursa Minor
22 December 10:18 pm	Moon at last quarter	Virgo
22 December 11:22 pm	Moon crosses descending node	Virgo
24 December 7:28 am	Lunar apogee 404,445 km	Virgo
25 December 2:31 am	Mercury at greatest western elongation, −22°	Ophiuchus
30 December 10:27 pm	New (Black) Moon, Meeus lunation 309	Sagittarius

Edinburgh and Lothian

(55.95°, -3.19°, 10.00m for 15 December 2024 10:00 pm)