The Astronomical Sky Over Edinburgh For 2025

What does the astronomical sky over Edinburgh and Lothian look like in 2025?

Edinburgh will experience one partial solar eclipse on 29 March lasting just under two hours. The eclipse magnitude will be 0.51 which is the fraction of the Sun's diameter covered by the Moon. Always remember, though, to wear suitable eye protection when viewing any type of solar eclipse.

There will be two total lunar eclipses viewable from Edinburgh and Lothian. The first is on 14 March and lasts 2 hours and 40 minutes before sunrise and the Moon sets. The second is on 7 September and lasts 2 hours and 7 minutes after sunset when the eclipsed Moon rises. A total lunar eclipse is sometimes called a 'Blood Moon' because the lunar surface takes on a deep red/copper colouring.

The Moon will have 13 first quarter phases but 12 last quarter, full and new phases. There is no 'Blue Moon' in 2025 but there is an astronomical 'Black Moon'—defined as the 3rd new moon within an astronomical season—and occurs on 23 August. The longest Synodic month—the time between new consecutive new

Moons—lasts 29 days, 18 hours and 56 minutes in Meeus lunation 320 during the November's Beaver Moon. The shortest, during May's Flower Moon in Meeus lunation 314, lasts 29 days, 7 hours and 29 minutes.

The Moon can be at apogee (furthest from Earth) or perigee (closest to earth). When these points coincide with a full Moon, we give them special names: a full Moon at perigee is referred to as a 'Full Supermoon' and a full Moon at apogee is called a 'Full Micromoon'. Full Supermoons will occur in October, November and December with the 5 November Supermoon being the closest 'full moon perigee syzygy' (to give it the scientific name) all year at 356,980 km. Full Micromoons will occur in March, April and May with the furthest 'full moon apogee syzygy' occurring on 13 April at 406,006 km. The March full Micromoon, however, will also coincide with the total lunar eclipse mentioned above. There are New Micromoons and New Supermoons, too, but because the Moon is not illuminated, they cannot be seen!

The astronomical seasons are defined by the equinoxes and solstices and are not to be confused with civil or meteorological seasons. For 2025, the equinox and solstices are as follows: the Vernal (spring) Equinox falls on 20 March at 9:01 am, the Summer Solstice on 21 June at 3:42 am (BST), the Autumnal Equinox on 22 September at 7:19 pm (BST) and the Winter Solstice on 21

December at 3:03 pm.
From these interstitial points, we can deduce that astronomical winter 2024,
from the December 2024 Solstice to the March 2025 Equinox, will last 88 days,
23 hours and 40 minutes. Spring lasts 92 days, 17 hours and 40 minutes. Summer
lasts 93 days, 15 hours and 37 minutes. Autumn lasts 89 days, 20 hours and 43
minutes. Winter 2025, from the December 2025 Solstice to the March 2026 Equinox,
lasts 88 days, 23 hours and 43 minutes.

Earth will be at perihelion (closest to the Sun) on 4 January at 147,103,682 km
and at aphelion (furthest from the Sun) on 3 July at 152,087,740 km.

A rare 6-planet parade will occur starting after sunset around 10 January and
will last for several weeks. Planets visible (from east to west) are Mars,
Jupiter, Uranus, Neptune, Venus and Saturn. The middle planets in the parade,
Uranus and Neptune, will require binoculars or a telescope to see but all the
others will have naked-eye visibility. The reason it is called a parade instead
of an alignment, is that the planets will be spread along the Ecliptic (a curve)
across 35 degrees of altitude and a whopping 150 degrees of azimuth. In late
February, Saturn will set earlier and be replaced, briefly, by Mercury. To help
you find your way, on 10 January, around 8 pm or so, the waxing gibbous Moon
will be 5 degrees north of a bright Jupiter.

Perhaps, the most spectacular conjunction of 2025, though, will be Venus and Jupiter, the two brightest planets, rising side-by-side on 11 August around 3 am.

For the inferior planets: Mercury will be closest to Earth in July and Venus in March. They will be furthest away in February and December. For the superior planets: Mars and Jupiter will be closest in January, Saturn and Neptune in September and Uranus in November. Pay particular attention to Mars, Saturn, Uranus and Neptune during their closest approaches as this will also coincide with opposition where the Sun-Earth-Planet orbital geometry is a perfectly straight line. This makes for the best view. Mars will be furthest from Earth in November, Jupiter in June, Saturn and Neptune in March and Uranus in May.

The moon over Edinburgh © 2024 Martin McAdam

That said, don’t be surprised when observing Saturn that he appears to have lost his famous rings! Every 15 years or so, the ‘Ringed Planet’ appears edge-on from Earth and the rings—barely a few miles thick—seem to disappear. So it is between March and November 2025.

Planetary transits are simple in 2025: there are none visible from Earth. If you happen to visit Uranus, though, you will see both Earth and Moon transit the solar disk in November!

For occultations, where a nearby object completely obscures a background object, the waxing crescent Moon, only 25% illuminated, will occult Saturn on 4 January deep into astronomical (evening) twilight. On 14 January in the wee, small hours

the waning gibbous Moon, just past full and 99% illuminated, will occult Mars.
The ‘Red Planet’ will be occulted again on the evening of 9 February when the
waxing gibbous Moon will be 91% illuminated.

The Moon will also occult several bright stars many times over the coming year. Alcyone, the brightest star in the Pleiades cluster (M45 also known as the ‘Seven Sisters’) in Taurus (The Bull), will be occulted nine times. Antares, the brightest star in Scorpius (The Scorpion) will be occulted ten times. Regulus in Leo (The Lion) twice and Spica in Virgo (The Maiden) five times.

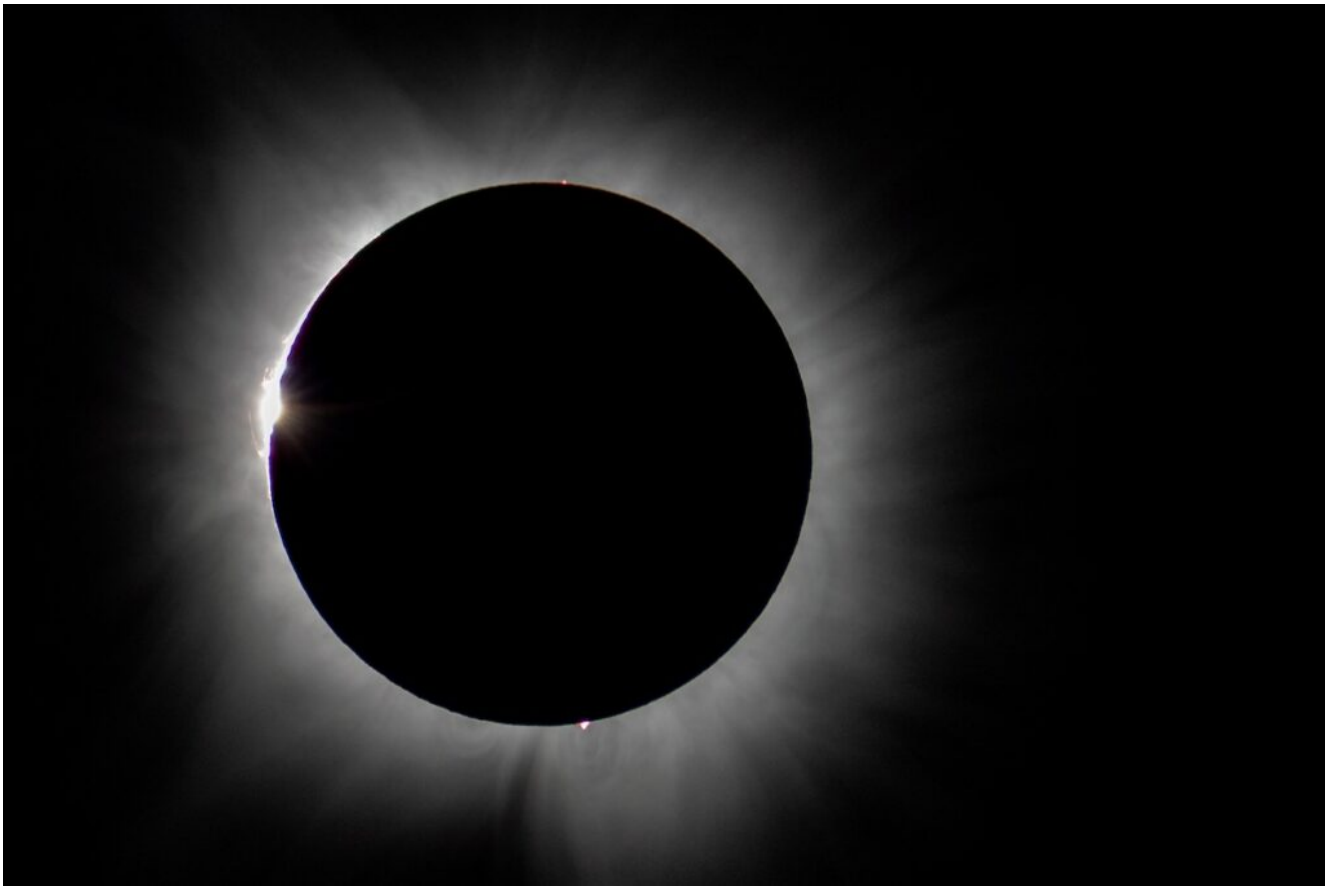
The most propitious date for completing the ‘Messier Marathon’—observing all known Messier objects in a single night—is 29 March since the Moon is new. A week earlier, on 22 March, would make a good test run. A week before that, close to the Vernal Equinox, is also the best time to look west after sunset and see the zodiacal light. This is light reflected off dust within the solar system.

Latest calculations suggest 37 meteor showers will have naked-eye visibility in 2025. If we restrict ourselves to those that have a ZHR above 20, so producing the most shooting stars or fireballs, we should be ready to observe the peak of the Quadrantids on 3-4 January, the eta-Aquariids on 5-6 May, the spectacular Perseids on 12-13 August, the Orionids on 21-22 October and the equally spectacular Geminids on 14 December. However, with nearly 7,000 Starlink satellites in orbit, be wary of false positives!

There are no known naked-eye comets visible in 2025 but two periodic comets, 24P/Schumasse and 210P/Christensen, may peak near 8th magnitude in the last two months of the year and be amenable to binocular or telescopic observation.

Each month a more detailed ephemeris is provided in the

‘Astronomical Sky Over Edinburgh and Lothian’ series of articles.



Total solar eclipse over the US in 2023 © 2024 Martin McAdam