



Sun, Planets and Transitions

The **Sun** transits from Cancer, the Crab (*Karka*) to Leo, the Lion (*Simha*) on 11 August.

The angular size of the **Sun** increases from $0^{\circ}31'30.9''$ on 1 August to $0^{\circ}31'41.2''$ on 31 August.

All three terrestrial planets, **Mercury**, **Venus** and **Mars**, are above the western horizon at sunset but are too close to be seen with comfort. Although **Mercury** is climbing above the horizon, it reaches a maximum altitude of about 15° at its maximum eastern elongation on 10 August. **Saturn** is now above the eastern horizon soon after sunset; **Jupiter** rises close to midnight.

Mercury is in Leo this month. But just for one day on 7 August it enters the boundary of Sextantis and then gets back into Leo on 8 August. It later swings through Leo.

Mars is in Leo and moves to Virgo, the Virgin (*Kanya*) on 18 August. It passes close to Beta Virginis (*Zavijava*) between 23 and 24 August.

Jupiter continues to travel in Aries (*Mesha*) and **Saturn** continues to travel in Aquarius, the Water Bearer.

(Disclaimer: we categorically mention here that we do not believe in astrology and believe that the only influence a planet has on us is to give us the viewing pleasure of its beauty. The sole purpose of giving the transition of planets and the Sun is to acquaint the reader with the Indian nomenclature of planets and constellations and also to show that the actual positions of the Sun and planets, which are based on modern computing, are very different from those given in astrology tables.)

List of Events in August 2023

Dt	Dy	Time	Event
02	We	00:01	Full Moon
02	We	11:22	Moon perigee: 357300 km
03	Th	15:51	Moon-Saturn: 2.4° N
05	Sa	04:39	Neptune 1.3° N of Moon
07	Mo	08:16	Moon ascending node
08	Tu	15:11	Moon-Jupiter: 3° S
08	Tu	15:58	Last quarter
09	We	17:46	Moon-Pleiades: 1.6° N
10	Th	07:29	Mercury elongation: 27.4° E
12	Sa	13:09	Moon north declination: 28° N
13	Su	12:32	Mercury-Mars: 4.7° N
13	Su	12:59	Perseid shower: ZHR = 90
13	Su	16:40	Venus inferior conjunction
14	Mo	03:06	Moon-Pollux: 1.9° N
16	We	15:08	New Moon
16	We	17:25	Moon apogee: 406600 km
17	Th	04:24	Regulus 3.8° S of Moon
19	Sa	04:36	Moon-Mars: 2.4° S
21	Mo	14:58	Moon-Spica: 2.8° S
21	Mo	21:53	Moon descending node
24	Th	01:24	Mercury stationary
24	Th	15:27	First quarter
25	Fr	07:00	Moon-Antares: 1.1° S - occultation
27	Su	01:52	Moon south declination: 28.1° S
27	Su	13:22	Saturn opposition
29	Tu	08:07	Uranus stationary
30	We	21:21	Moon perigee: 357200 km
30	We	23:33	Moon-Saturn: 2.4° N
31	Th	07:05	Full Moon

March of the Moon

The month begins with the Full Moon on the night of 1 August, precisely at 00.01 hours IST on 2 August. August is a month with 31 days and a lunar month is about 29.5 days. Hence the second Full Moon takes place in

the same month on 31 August. The second Full Moon in a month is called a Blue Moon. Every country in the world will see this Blue Moon.

The last time a Blue Moon was seen in August was in 2012. However, that year the first Full Moon was on 2 August and therefore places in the Far East like New Zealand experienced the Blue Moon in September. For them, the first Full Moon was on 1 September and the second one, their Blue Moon, was on 30 September.

On 3 August Saturn will be just about 2.4° north of the Moon; the latter will be rise about 10 minutes after Saturn. On 8 August at about 5:30 am Jupiter and the Moon will be nearly overhead with the Moon about 3° west of Jupiter. On 10 August the 35% illuminated Moon will be right below Pleiades (*Kruttika*). It passes through the Gateway of Heaven between 13 and 14 August.

On 18 August soon after dusk, the thin lunar crescent can be seen forming a nearly equilateral triangle with Mars and Mercury. On 21 August the Moon will be less than 3° north of Spica (*Chitra*). It then passes north of Antares (*Jyestha*) on 24 August and is very close to the centre of the Milky Way on 26 August. The next day on 27 August, the nearly 83% illuminated Moon will look as though it is holding the handle of the Tea Pot asterism of Sagittarius.

On 30 August Saturn and the Moon can be seen rising together. The other interesting aspect of this day is that at about 9:30 pm the Moon will be closest to the Earth since January this year. It will be 99.6% illuminated and it will be 3,57,180 km from the Earth. Its angular diameter will be 0°33'27.2". This will be a **Super Moon**. Hence the Blue Moon of August will be a **Super Blue Moon**.

The Blue Moon Saga

The idiom 'Once in a Blue Moon' is used to describe something that happens very rarely. The idiom was first used in the early 16th

century to indicate something absurd. Its present form was first used around the first quarter of the 17th century. Astronomically, the term 'Blue Moon' was defined as 'The third Full Moon in a season of four Full Moons.' The earliest reference to this definition is found in the copies of the *Maine Farmer's Almanac*, published in the late 1930s. The almanac is published annually as a reference book for farmers. It carries useful information for farmers, such as weather forecasts, planting charts and other articles of popular interest. Read on to understand what 'The third Full Moon in a season of four Full Moons' means.

A calendar year is divided into four seasons of three months each.* Spring: from the vernal equinox (21 April) to the summer solstice (21 June); summer: from the summer solstice to the autumnal equinox (23 September); autumn: from the autumnal equinox to the winter solstice (21 December) and winter: from the winter solstice to the vernal equinox. Normally there are 12 Full Moons in a year or one Full Moon every month. Therefore, each season has three Full Moons. For the convenience of farmers, each Full Moon is identified by a different name. For example, the Full Moon in June is called the Strawberry Moon, because that is when strawberries ripen. The December Full Moon is simply called the Cold Moon.

However, the duration of the one lunar month is 29.531 days (or 29 days, 12 hours, 44 minutes and 38 seconds); and a year has 365.2422 days (or 365 days, 5 hours, 19 minutes and 30 seconds). There are 12.3681 lunar months in one year. Hence a normal year will have 12 full lunar months with an extra 8.83 hrs. This extra time gets added over the months. After about 30 months there will be one extra Full Moon in the year. This also means that one of the four seasons mentioned above will have four Full Moons instead of the normal three. When that happened, the third Full Moon of that season was called a Blue Moon and the fourth was identified by its designated name. For example, if autumn had four Full Moons, the

third would be the Blue Moon and the fourth the Cold Moon.

This definition of 'Blue Moon' was slightly misinterpreted by amateur astronomer and popular science writer James Hugh Prutt. In an article written for the March 1946 issue of *Sky and Telescope*, Prutt defined 'Blue Moon' as 'the second Full Moon in a calendar month'. Although this was a simpler definition of 'Blue Moon', it caught the attention of the general public much later when it was mentioned during a popular radio show, *Star Date*, aired on 31 January 1980. Since then, popular science communicators and amateur astronomers have used this definition of 'Blue Moon' to draw the attention of the general public.

It may be noted that: a) this definition of 'Blue Moon' has nothing to do with the colour of the Moon; b) there will never be a Blue Moon in February as this month is shorter than a lunar month by about 12 hours; c) it is not too common to have a Blue Moon in a month of 30 days. The last such Blue Moon in was on 30 June 2007 and the next one will be on 30 September 2050; d) there were two Blue Moons in 2018. The first one was on 31 January and the second Blue Moon followed on 31 March; e) The last Blue Moon in August was in 2012.

[*These seasons are as per the Western or English calendar and the terminology is specific for the northern hemisphere. In India

a year is divided into six seasons: *vasant* (spring), *grishma* (summer), *varsha* (monsoon), *sharad* (autumn), *hemant* (pre-winter) and *shishir* (winter)].

Colours of the Moon

The rising Moon appears reddish; but when the Moon is well above the horizon it loses its red hue and looks white with many shades of grey. The reason for this is the scattering of light in the Earth's atmosphere. The Earth's atmosphere is made up of nitrogen (78%), oxygen (21%), and argon (0.9%). The remaining 0.1% of the atmosphere consists of molecules of carbon dioxide, methane, water vapour and dust particles. When a ray of light enters the Earth's atmosphere, it encounters air molecules. These air molecules scatter the light in different directions. The blue part of the light is scattered most and the red the least. Closer to the horizon, that is when the Moon (or for that matter the Sun) is rising or setting, this light has to pass through a thicker layer of atmosphere than when it is well above the horizon. By the time the light reaches us, most of the blue part is scattered away and only red light reaches us. The Moon therefore appears reddish. When the Moon is seen through smoke and dust caused due to a forest fire or a volcanic eruption, most of the red part of the light is blocked and only the blue rays reach us, giving it a bluish hue.

Acknowledgements:

<http://www.lunar-occultations.com/iota/occult4.htm>

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<https://eclipse.gsfc.nasa.gov/SKYCAL/SKYCAL.html> by Fred Espenak and Sumit Dutta.

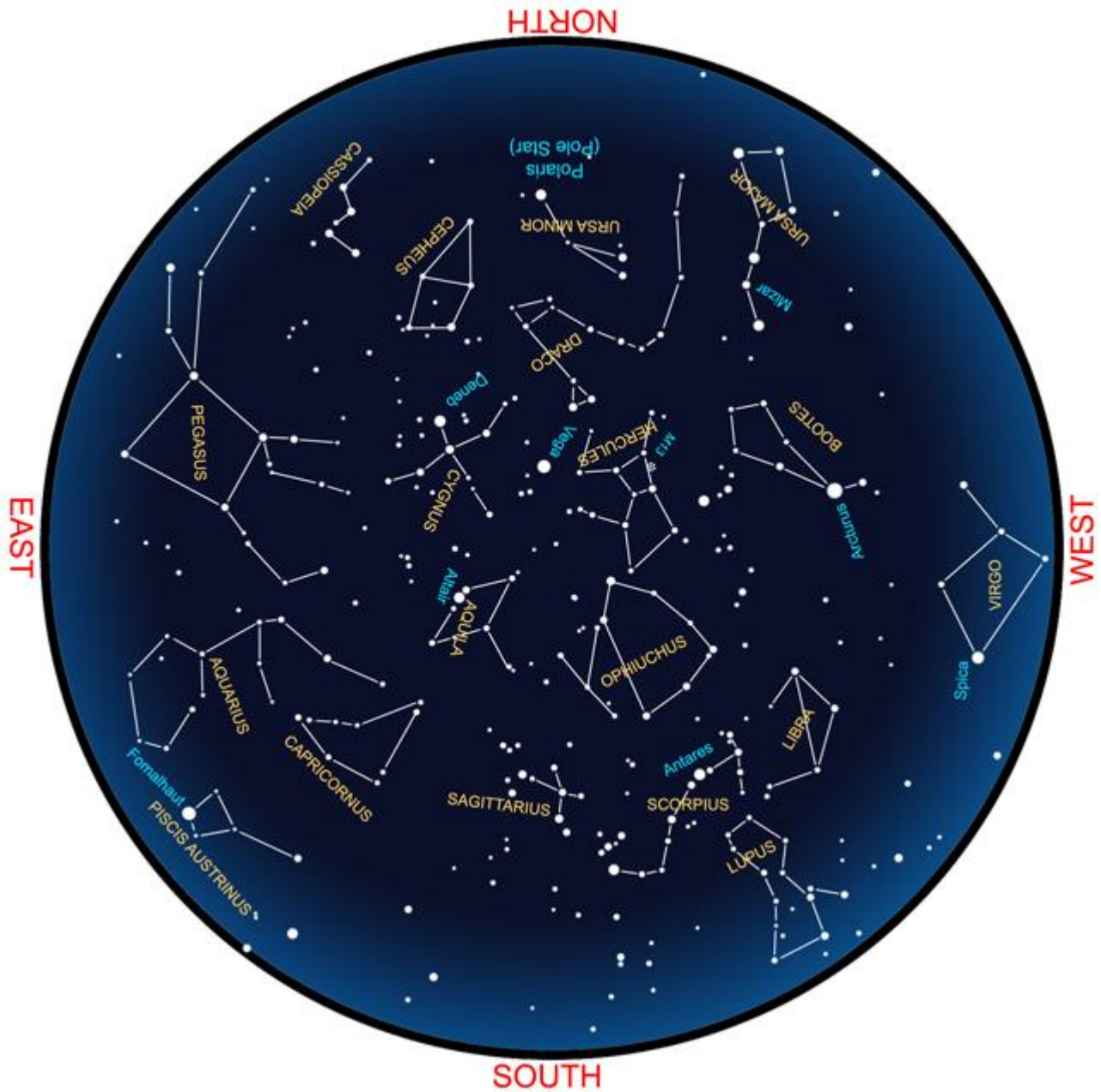
Graphics using GNU Image Manipulation Program (GIMP) a cross-platform image editor, <https://www.gimp.org/>

For star maps of other months please visit <http://astron-soc.in/outreach/resources/sky-maps/>

For notes on stargazing [click here](#).

Or visit <https://skytonight.wordpress.com/monthly-sky-notes-and-links/>

This sky map for August is drawn for mid-northern latitudes, to be used around 9:30 p.m. local time



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