Super Moon

Published On: 01-09-2023

Why is in news? The Raksha Bandhan full moon — Rakhi is celebrated on the Purnima of the month of Shravan — on August 30-31 will be unusual: it will be both a “blue moon” and a “super moon” and therefore, a “Super Blue Moon”, a rare trifecta of astronomical events.

What is Super moon?

The orbit of the moon around the earth is **not circular; it is elliptical**, that is, an elongated or stretched-out circle. It takes the moon 27.3 days to orbit the earth.

It is 29.5 days from new moon to new moon, though.

This is because while the **moon is orbiting the earth**, both the earth and the moon are also moving around the sun — and it takes additional time for the sun to light up the moon in the same way as it does at the beginning of every revolution around the earth.

The **new moon is the opposite of the full moon** — it is the darkest part of the moon’s invisible phase, when its illuminated side is facing away from the earth.

The point **closest to earth** in the moon’s elliptical orbit is called **perigee**, and the point that is **farthest** is called **apogee**.

A super moon happens when the **moon is passing through or is close to its perigee**, and is **also a full moon**.

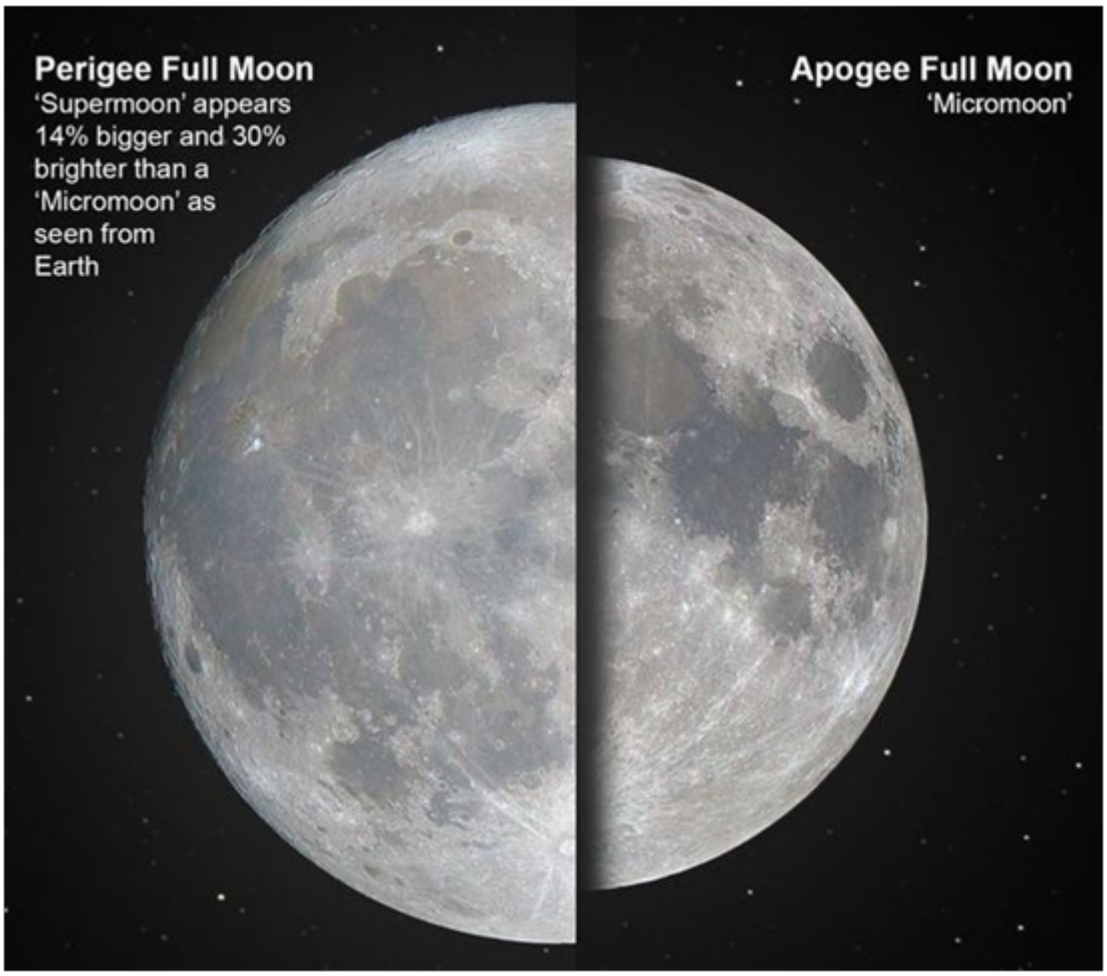
This **happens with a new moon** as well, just that it **is not visible**.

A full moon occurs when the moon is directly opposite the sun (as seen from earth), and therefore, has its entire day side lit up.

The full moon appears as a brilliant circle in the sky that rises around sunset and sets around sunrise.

The moon appears ‘full’ not just on Purnima, but also on the night before and after the full moon night.

The real association of the Moon with both oceanic and crustal tides has led to claims that the supermoon phenomenon **may be associated with increased risk of events** like earthquakes and volcanic eruptions, but **no such link has been found**.



How rare the occurrence of super moon?

According to NASA, astrologer **Richard Nolle** in 1979 **coined the term supermoon**.

In a **typical year**, of the possible **12 or 13 full (or new) moons each year,** there may be **two to four full supermoons** and **two to four new supermoons** in a row.

The most recent full supermoon occurred on August 31, 2023, and the next one will be on September 29, 2023.

The supermoon of November 14, 2016, was the **closest full occurrence since January 26, 1948**, and will not be surpassed until November 25, 2034.

The **closest full supermoon** of the 21st century will occur on December 6, 2052

Occasionally, a supermoon coincides with a total lunar eclipse. The most recent occurrence of this by any definition was in May 2022, and the next occurrence will be in October 2032.

Effects on Earth:

Claims that supermoons can cause natural disasters, and the claim of Nolle that supermoons cause "geophysical stress" have been refuted by scientists.

Despite lack of scientific evidence, there has been media speculation that natural disasters, such as the 2011 Tohoku earthquake and tsunami and the 2004 Indian Ocean earthquake and tsunami, are causally linked with the 1–2-week period surrounding a supermoon.

A large, 7.5 magnitude earthquake centred 15 km north-east of Culverden, New Zealand on November 14, 2016, also coincided with a supermoon. Tehran earthquake on May 8, 2020, also coincided with a supermoon.

Scientists have confirmed that the combined effect of the Sun and Moon on the Earth's oceans, the tide, is greatest when the Moon is either new or full and that during lunar perigee, the tidal force is somewhat stronger, resulting in perigean spring tides.

How the super moon is different from regular moon?

Supermoons appear **brighter and bigger than regular full moons**.

According to NASA, the **apparent size increase is 14 percent**, which is about the difference between a nickel and a quarter.

Supermoons are generally seen every three or four months. This one was the third this year and the second this August.

What is a blue moon?

Though the expression “once in a blue moon” implies a rare or unusual occurrence, a **blue moon is not that rare an astronomical phenomenon**.

When there are **two full moons within a month**, the **second full moon is called a Blue Moon**.

The interval between two full moons is **approximately 29.53 days**. The same applies for two new moons.

According to NASA, this **happens every two or three years**.

Now, the first full moon of August 2023 occurred on August 1. That was also a super moon, but the super moon of August 30-31 will be bigger because the moon is now closer to the perigee.

So will the moon actually appear blue?

No. Sometimes, **smoke or dust in the air can scatter** red wavelengths of light, as a result of which the moon may, in certain places, **appear more blue than usual**. But this has nothing to do with the name “blue” moon.

Speaking of colours, you may have noticed that the moon **appears more yellow/ orange when it is lower in the sky** (closer to the horizon).

This is because moonlight travels for longer through the atmosphere at this stage, and along the way, more of the shorter, bluer wavelengths of light are scattered, leaving more of the longer, redder wavelengths.

The NASA explainer points out that dust or pollution can end up deepening the reddish colour of the moon.

And will the super moon be bigger in size?

According to NASA, a full moon at perigee (super moon) is about 14% bigger and 30% brighter than a full moon at apogee (called a “micro moon”).

However, it is unlikely the difference in size will be noticeable by most people.

The moon could appear somewhat brighter, though — but whether you are able to make out the difference will depend on factors such as the so-called ‘**Moon illusion’**, and how cloudy or polluted it is at your location.