



## What is a Blue Moon?

We often use the phrase 'once in a blue moon' to refer to 'a rare event', but did you know that the blue moon phenomenon has nothing to do with the color of the Moon.

“The Blue Moon phenomenon occurs once every 2 or 3 years, but that doesn't bring about a drastic change in the appearance or any other physical characteristic of the Moon. And as for the bluish appearance, it can happen at any time of the year, and there are some scientific explanations for the same.”

If you think you will see a bright blue Moon in the sky tonight, you are in for a big surprise because what you will get to see is the same old full moon that you see every month. The day does mark the blue moon phenomenon, but it has nothing to do with the color of the Moon. You won't get to see a moon which is radically different from other full moons that you get to see all along the year.



While the term 'Blue Moon' is used in several contexts, right from literature to the actual bluish appearance of the Moon, in modern folklore it actually refers to the second full moon of a particular month. This use of the term can be traced to James Hugh Pruett's article titled '*Once in a Blue Moon*', which was published in the *Sky and Telescope* magazine in 1946.

### What is a Blue Moon and How Often Does it Occur?

According to the modern folklore, the second full moon in a particular calendar month is referred to as the 'Blue Moon'. While a calendar month usually has 30 or 31 days, the lunar cycle lasts for 29.53 days. As the extra period accumulates, it eventually contributes to the 13th full moon every once in a while. Usually there are 12 full moons in a year, each occurring on a monthly basis. In case of the 13th full moon, one of the months has 2 full moons, and the second full moon becomes the 'Blue Moon'. This phenomenon generally happens once in 2-3 years, but in rare cases, it may even occur twice in a single year. In 1999, for instance, there were two blue moon months - January and March - and that will be only seen again in 2018.

The 12 full moons are divided into 3 full moons each season. The lunar year, based on the 12 lunations, is around 11 days shorter than the solar calendar year. Owing to these extra days in the solar year, an extra full moon occurs once in 2-3 years. In other words, there are 13 full moons once in every 2-3 years. This, in turn, means that one of the seasons has 4 full moons instead of 3 full moons per season. During such a year, the third full moon in the season of 4 is referred to as the blue moon.

While January and March had two full moons each, there was no full moon in February in 1999, and that is not quite surprising as the month usually has 28 days. In fact, it is impossible to witness the second full moon - or the blue moon - in the month of February, as the month has 28 days which is one short of 29.53 days required to complete a single lunar cycle. If the full moon occurs on 1st February, the next will follow on 1st March (in case of leap year) or 2nd March.

## Blue Moon: A Visual Illusion

While the blue moon, i.e. the second full moon of the month, is not actually blue in color, there are times wherein you get to see the Moon with a distinct blue glow. In such cases, it is referred to as the blue moon as its color appears to be unusually bluish. This bluish appearance of the Moon is not restricted to full moon though; instead you may even see a blue half moon or blue crescent at times.

The bluish appearance of the Moon can be attributed to the Tyndall effect - an optical phenomenon, wherein light gets scattered by small particles in its path. This can be caused as a result of a forest fire, volcanic eruptions - or basically any phenomenon which releases smoke and dust particles in the atmosphere. These particles have to be slightly wider than the wavelength of red light, so that they cause the light to scatter, as it is this scattering of light which eventually gives the Moon its distinct blue color.

This rare event has been reported from various parts of the world over the last century. Most popular examples being the sighting of blue moon in Indonesia in 1883, in Canada in 1951 and in Mexico in 1983. In fact, the sightings of blue moon in Indonesia (1883) lasted for a couple of days as the smoke from Krakatoa (an active volcano) filled the skies. Similarly, the sightings in Canada and Mexico were caused as a result of smoke from a forest fire and smoke from El Chichon volcano in 1983.

As we said earlier, it may be disheartening for many to know that the color of a 'Blue Moon' is not blue in true sense, and when you do see a moon with bluish glow in the sky, it is a visual illusion - and not because of some change in the characteristic features of the Moon. Nevertheless, a full moon, regardless of whether it is the first full moon of the month or second, is a celestial treat that you can't afford to miss. So on 31st August, you can just step out of your house and see the full moon.... or the blue moon, illuminate the sky.

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