

## What Is a Blue Moon?

Is there really such a thing? Well, yes, but it's probably not what you [may](#) think, and it's definitely not what it used to be. Calling the moon blue was an obvious absurdity, like saying it was made of green cheese. The phrase, "until a blue moon" developed in the 19th century, meaning never, or at least extremely unlikely. After all, they do occur.

In 1883, an Indonesian volcano named Krakatoa exploded. Scientists liken the blast to a 100-megaton nuclear bomb. Fully 600 km away, people heard the noise as loud as a cannon shot. Plumes of ash rose to the very top of Earth's atmosphere. And the moon turned blue. Krakatoa's ash was the reason. Some of the ash-clouds were filled with particles about 1 micron (one millionth of a meter) wide--the right size to strongly scatter red light, while allowing other colors to pass. White moonbeams shining through the clouds emerged blue, and sometimes green. Blue moons persisted for years after the eruption. People also saw lavender suns and, for the first time, noctilucent clouds. The ash caused "such vivid red sunsets that fire engines were called out in New York, Poughkeepsie, and New Haven to quench the apparent conflagration," according to volcanologist Scott Rowland at the University of Hawaii.

Other less potent volcanos have turned the moon blue, too. People saw blue moons in 1983, for instance, after the eruption of the El Chichon volcano in Mexico. And there are reports of some caused by Mt. St. Helens in 1980 and Mount Pinatubo in 1991. The key to a blue moon is having in the air lots of particles slightly wider than the wavelength of red light (0.7 micron)--and no other sizes present. This is rare, but volcanoes sometimes spit out such clouds, as do forest fires.

The use of the phrase blue moon to indicate an actual astronomical phenomenon first started in 1932 with the Maine Farmer's Almanac. Its definition was a season with four full moons rather than the usual three, where the third of four full moons would be called a "blue moon." That definition mutated into the one most quoted [today](#) when in 1946, an article in an astronomy magazine by amateur astronomer James Hugh Pruett misinterpreted the Maine rule to mean two full moons in one month.

Whether you use the newer definition or the one from the Maine Farmer's Almanac, a blue moon, while not common, happens on a regular basis. Either way, they occur approximately 7 times in a 19 year period.

So, will you ever see a blue moon? In astronomical terms, it is very likely. During this month of [December](#), you [may](#) have seen the full moon on December 2nd. If you missed that, the second full moon will be New Year's Eve, December 31st, when you may be able to see a blue moon, if the weather cooperates.

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