

For details and timing of this event in the Asheville area, scroll down to the next page.

The Moon Occults Mars

AS THOUGH THE FULL MOON were jealous of all the attention Mars receives this month, it briefly removes the Red Planet from the sky. **On the night of December 7–8**, much of North America, northern Mexico, Greenland, Iceland, northern Africa, and most of Europe get to enjoy a remarkable occultation as the Moon passes in front of Mars. The occultation occurs during the evening hours in the U.S. and promises to be a spectacular and widely observed event. Mars is so bright it should be plainly visible to the naked eye, pinned

▲ The Moon and Mars appear to almost touch moments before the occultation in this simulation of the event for Fargo, North Dakota, on December 7th at 9:01 p.m. local time.

to the lunar limb just before it vanishes from view, and again later when it returns. Unlike a star, which disappears in a wink, it will take many seconds for the Moon to cover Mars — more than a minute as viewed from Dallas, Texas!

For further details, including times of disappearance and reappearance for many cities, go to <https://is.gd/marsoccultation2022>.

A Moon and Mars Close Call

While many locations will enjoy the sight of the full Moon occulting Mars, a swath of the southeastern U.S., including the Atlantic seaboard, lies outside of the occultation zone and instead will be treated to the stunning and rare sight of the planet skimming along the lower edge of the lunar disk. The last time a similar event occurred was during the early morning hours of July 17, 2003. The December 7–8 encounter will instead happen in “prime time” with potentially a much larger viewing audience.

In the table below-left, circumstances are provided for 15 locations. From downtown Boston, for example, where the southern limit of the occultation tracks just 30 km to the north, the separation between the Moon and planet is less than 1’ at 11:01 p.m. EST. In the table, PA indicates the position angle of Mars relative to the Moon’s disk (measured clockwise from the top of the Moon), and Alt is the altitude of the Moon above the horizon.

How often does the Moon eclipse Mars? On a worldwide basis, simulations turn up 61 occultations of the Red Planet between 2010 and 2040. But if we confine our search to a specific location and only include instances when the Sun is below the horizon, such an event occurs on average once every 14 years.

The next favorable occultation of Mars for North America will take place on January 14, 2025, at around 4h UT. The Moon will be a waning gibbous, about 6 hours past full. Mars comes to opposition just two days later.

—JOE RAO

The Moon Meets Mars

Location	Time Zone	Closest	Sep	PA	Alt
New Orleans, LA	CST	9:11 p.m.	3’	141°	54°
Huntsville, AL	CST	9:23 p.m.	1’	148°	59°
Miami, FL	EST	10:16 p.m.	11’	161°	64°
Jacksonville, FL	EST	10:23 p.m.	7’	158°	64°
Atlanta, GA	EST	10:26 p.m.	3’	151°	62°
Columbia, SC	EST	10:31 p.m.	4’	159°	66°
Knoxville, TN	EST	10:31 p.m.	1’	154°	63°
Charlotte, NC	EST	10:36 p.m.	3’	160°	66°
Virginia Beach, VA	EST	10:46 p.m.	4’	170°	69°
Washington, DC	EST	10:46 p.m.	2’	166°	69°
Philadelphia, PA	EST	10:51 p.m.	1’	172°	70°
New York, NY	EST	10:56 p.m.	1’	173°	71°
Boston, MA	EST	11:01 p.m.	1’	180°	71°
San Juan, Puerto Rico	AST	11:51 p.m.	23’	192°	82°
Hamilton, Bermuda	AST	12:06 a.m.*	11’	199°	83°

* Calendar date is December 8th.

Mars' Close Encounter with the Moon

- a December 2022 Sky Event from the [Astronomy Club of Asheville](#)

Although many parts of the United States will see the planet Mars occulted by the Long Night Full Moon (covered up by the closer orbiting Moon) on the **night of December 7th**, Asheville and the southeast will not. That being said, our region will still experience a magical event, as Mars will appear to touch the lunar limb. From our region Mars will not appear close enough to even be partially covered by the Moon. Our view would be best described as a planetary “skimming” along the lower edge of the Moon’s disk – a skimming that brings Mars within just 3 arc minutes of the lunar limb!

This event will occur in the constellation Taurus, the Bull, high in the southeast skies, with a **closest approach of Mars occurring about 10:36 p.m. EST**. View this event with binoculars or a telescope at low power. You should easily be able to observe both the Moon and Mars in the same eyepiece field of view. Using a moon filter or a polarizing filter will help to mitigate the glaring light of the Full Moon. Set up early, and begin to watch the action along the “ecliptic” (the approximate path that the Moon, the Sun, and the planets trace across the sky) during the one-hour window from 10 to 11 p.m. EST.