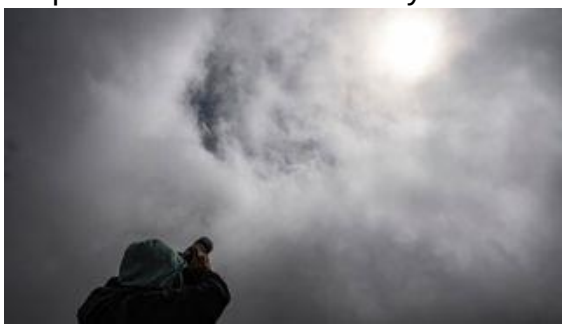
What happens if it's cloudy for the April 8 solar eclipse?

By Joe Rao ***Space.com***

Though everyone is hoping for clear skies, here's what might happen if an eclipse-chaser's worst enemy — clouds — decides to make an appearance.



A photographer takes a picture of the Sun through the clouds at the Villarica volcano sky center refuge, in Pucon, Chile on December 13, 2020. (Image credit: MARTIN BERNETTI/AFP via Getty Images)

For the ***total solar eclipse on April 8***, many people will strive to be within the ***path of totality*** where the Sun's face will be completely blocked by the Moon's shadow. But even if you're within this path, it doesn't guarantee you'll have clear skies on eclipse day. So what happens if it's cloudy where you are on April 8? Will you notice anything as the Moon's shadow sweeps over you? That depends on how thick and how extensive the clouds are. Regardless, you will certainly notice some ***very unusual effects*** when the Moon's shadow passes by.

If you cannot watch the eclipse in person or the weather is unfavorable, you can watch the total solar eclipse live here on Space.com. And keep up with all the actions with our total solar eclipse 2024 live updates blog.

Passage of the Moon's shadow

Should there be considerable cloud cover on "E-Day," the clouds may actually have an advantage: They will provide a projection screen of sorts to view the rapid approach and departure of the Moon's dark umbral shadow. Isabel Martin Lewis described the effect in her 1924 book "A Handbook of Solar Eclipses."

"At the time of eclipse when the shadow of the Moon sweeps over us we are brought into direct contact with a tangible presence from space beyond and we feel the immensity of forces over which we have no control," Lewis wrote. "The effect is awe-inspiring in the extreme. In fact, the passing of the Moon's shadow, if one is fortunate to observe it, will be one of the most impressive features of the eclipse."

Mid-to-high-level clouds

A partial solar eclipse viewed through the clouds in Winnemucca, Nevada, United States on October 14, 2023. (Image credit: Tayfun Coskun/Anadolu via Getty Images)

If your sky is covered with mid-to-high-level clouds — cirrostratus, altostratus and/or cirrocumulus — you will likely be able to see the forward edge of the elliptical shadow move rapidly toward you and then over you just prior to and at the onset of totality. And with its passage may come a remarkable change in the overall quality of light on the surrounding landscape and a dramatic change in the clouds' color.

On July 10, 1972, at my very first total solar eclipse, my family and I were located just outside Cap-Chat, Quebec, a sleepy Canadian community of 2,000 whose population swelled to nearly 30,000 on eclipse day. The eclipse began under bright Sunshine, mixed with some wispy high clouds. But as more and more of the Sun became covered, the high cloudiness quickly increased and began to lower so that, at the onset of totality, virtually the whole sky was covered by a swath of battleship-gray clouds. But upon the arrival of the Moon's shadow, we saw its distinctly sharp edge move in. For those of a certain age who might remember the long-running television soap opera "The Edge of Night," whose opening showed an animation with a line of darkness sweeping over a city, that's exactly what I was reminded of as we were enveloped by the Moon's umbral shadow. Once you actually experience it for yourself, it becomes easy to understand why this sight was so terrifying to ancient people.
Along with the sudden darkness came a change in the clouds' color. Behind the forward-moving edge of the Moon's shadow were strange and exotic colors. The dull gray suddenly became yellow-orange and tints you'd see while looking through [an] iodine bottle. Indeed, along the very edge of the disappearing Sun at the start and end of totality, an ***arc of ruby red or fuchsia*** associated with the ***solar chromosphere*** appeared. It looked bright red because the hydrogen in the Sun was emitting a reddish light at high temperatures, and some of this light may become evident in the clouds at the beginning and end of totality. Despite the heavy cloud cover, we managed to catch sight of the totally eclipsed Sun through a fortuitous opening in the overcast sky, some 30 seconds after totality began. As totality was ending, we saw the back edge of the shadow distinctly, projected on the clouds, racing away to the northeast. I remember my grandfather calling out to my grandmother, "Inez! Look, look! It's going that way."

"Incredible sight!"

Interestingly, in March 1970, during special coverage of the total solar eclipse on CBS TV , correspondent Bill Plante (1938-2022) was stationed in Halifax, Nova Scotia, under cloudy skies. Yet he was quite attentive to the changes taking place as the lunar shadow swept in.

"In the last 30 seconds we have witnessed the most incredible sight — in spite of the fact that we cannot see the Sun — for it has become as dark as night!" he said. "The light has fallen so quickly, from an acceptable twilight or reading level or cloud-cover level, to virtual night. And just off to the north and to the east, beneath this layer of dark, dark sky, there is a lovely pink and orange horizon; an orange and gold color. We say again, it was just an incredible and fascinating phenomenon, to have the skies go so suddenly dark, in less than 30 seconds, and now we have this totality of an eclipse!"It sounds like Plante was impressed, despite the clouds.

Just a few clouds

A total solar eclipse sequence visible against a mostly clear sky. (Image credit: Crimson Cat Studios via Getty Images)

Sometimes, you're lucky enough to get a mainly clear sky. But even then, unfortunately, one of the few clouds in the sky might happen to be in front of the Sun during the total phase of the eclipse. Should something like that happen to you, the best you can do is look around the darkened sky for some of the brighter stars and planets and try to watch for the passage of the Moon's shadow. But as you can see, unless the clouds are low and thick with some rain or snow falling, the ***Moon's shadow*** racing by and the ***eerie colors*** accompanying it ***should still make for quite a show!***