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Monday, 20 December 2010

The 'Solstice Eclipse'

By **Ctein**

Yes, mere mortals can photograph [tonight's lunar eclipse](#)—the first time a total eclipse and a Winter Solstice have coincided in 372 years. Though it's not at all obvious that I will get to do so. We've been getting pretty steady rain and while I can see the sun at the moment, it's the first time all day, and tonight is predicted to be 70% chance of showers and 90% cloud cover. I am keeping my fingers crossed but not exactly getting my hopes up.

But if your weather is predicted to be better, go for it.

Don't know if you'll be using film or digital camera, so I'll talk generally.

The full Moon is normally quite bright. At ISO 400, a good exposure is around *f*/8 at 1/500th second. But it gets a lot darker during an eclipse. Even during the early phases of a partial lunar eclipse, you'll want to be going to exposures around 1/125th second. By the time the moon is mostly covered, it will be more like *f*/4 at 1/60th second. Full totality is really, really dark, much darker than it looks to the eye. It varies wildly depending upon the atmospheric conditions on earth, but you're going to be talking about exposure times anywhere between 1 and 20 seconds at *f*/4 at ISO 400. If you've got a digital camera, this is a good time to crank it up to 1600; at least then you have a plausible chance of getting something with exposures no longer than 1 second.

You will either need a tripod or something you can brace the camera on. I make a lot of photographs, ad hoc, at night by just finding a flat surface that I can prop the camera on. If you're worried about jiggling the camera when you press the shutter for the exposure, use the self timer setting. Then you press the button, step back, and after a couple seconds it makes the exposure. Handy simple tricks.

Obviously, make lots and lots and lots of exposures. And bracket like crazy. Film is cheap. Electrons are cheaper.

If you have a zoom lens on your camera, make a bunch of photographs at the normal setting for the lens; the moon will be a very small disk, but you'll have a much higher percentage of reasonably sharp photographs. But also make a bunch zooming the lens out to its maximum telephoto setting. Much harder to get sharp photographs that way, but the moon will be much bigger and you'll probably be able to see some detail in the surface.

For more, see [this article](#) by Chris Lane from the archives.

Totality will last 72 minutes beginning at 2:41 a.m. EST (on Dec. 21st) or 11:41 p.m. PST (on Dec. 20). Good luck and have fun and don't freeze yourself too badly.

Ctein

Featured Comment by Bob: "Bob's Law of Astronomical Events.... Anytime there is something interesting happening in the sky it will be cloudy. The probability of clouds is directly proportional to the rarity of the event. Bonus points are given if I spent \$\$\$ to travel to some location to observe the event. Corollary Bob's Law of Mountains.... Anytime I am near a mountain (or any scenic viewpoint for that matter) it will be cloudy and I usually can't see more than 100 yards. This rule is null and void if I left my camera at home. And then of course there is the law of scaffolding, construction etc. around monuments and buildings. Anyway you get the idea."

Posted on Monday, 20 December 2010 at 05:21 PM in [Shooting techniques](#) | [Permalink](#)

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Comments

I'd like to point out that it happens to be the Summer Solstice for half of the whole world! :-)

Posted by: [Phil Aynsley](#) | [Monday, 20 December 2010 at 06:28 PM](#)

Although it's summer here we have had rain and clouds all week long and the forecast isn't much better. We might be able to see something tonight...

I did take some pictures of the last lunar eclipse. It was quite fun.

Posted by: [Erzy](#) | [Monday, 20 December 2010 at 07:14 PM](#)

Phil,
Sorry to neglect you...but I'm not sure you can quite say "halt" when 90% of the land mass and 90% of the population are in the northern hemisphere...if I'm remembering that number right?

But speaking of your area of the world (I'm assuming you're in Oz or NZ?), I went to a Christmas party yesterday at a house on the north side of Milwaukee where the next-door neighbors AND the across-the-street neighbors were BOTH from New Zealand—and neither were either related or had known each other prior to being neighbors. Frankly I think it would be quite a coincidence to find two sets of New Mexicans in such close proximity on Milwaukee's north side, never mind two families of Kiwis.

All very nice people, too.

Mike

Posted by: [Mike Johnston](#) | [Monday, 20 December 2010 at 08:08 PM](#)

"Frankly I think it would be quite a coincidence to find two sets of New Mexicans in such close proximity on Milwaukee's north side, never mind two families of Kiwis."

I understand why Wisconsinites would want to move to New Mexico, but, e, I dunno why a New Mexican would want to move to Wisconsin.

Dave in Pecos

Posted by: [Dave](#) | [Monday, 20 December 2010 at 09:21 PM](#)

Before and after the eclipse you can photograph the fullest Moon you'll ever see. The moon can be significantly north or south of the ecliptic even when its directly opposite the Sun, so there's often a tiny phase deficit. Not so tonight.

How dark will the Moon be? The 1963 eclipse was famous for not only being very cold but one of the darkest in recent history. Seasoned observers literally could not find the Moon without optical aid. We don't know if this one will be that dark but we're pretty sure of the temperature! As we speak my scope is on the back deck getting acclimated to the cold. Good thing I don't deform with temperature like optical glass.

Clear skies!

Posted by: [Kevin Bourne](#) | [Monday, 20 December 2010 at 09:36 PM](#)

If it's summer in the Southern Hemisphere, how come it snowed over the weekend in the Snowy Mountains? That's like having flood water running through the Los Angeles River. Oh, wait...

Posted by: [Chuck Albertson](#) | [Monday, 20 December 2010 at 09:52 PM](#)

A tip for lunar exposures from The Nikon School (circa 1975): "It's always high noon on the moon", so the Sunny Sixteen Rule applies: *f*/16 and 1/ISO second exposure for a properly exposed lunar surface.

Posted by: [Preston Earle](#) | [Monday, 20 December 2010 at 10:05 PM](#)

Mike,

Seeing that the Solstices are an astronomical event I think it correct to consider phenomena from the point of view of Earth as a whole planet - after all it matters not whether there is anyone on the surface aiming their cameras at the moon or not from that perspective!

Of course the "proper" way to look at things is obviously: <http://www.odt.org/Pictures/sideb.jpg> :-)

Based in Sydney... which is why I can say what are the odds indeed for your friends to have two sets of Kiwis so close. Talk about bad luck! :-)

Posted by: [Phil Aynsley](#) | [Monday, 20 December 2010 at 10:52 PM](#)

Dear Preston,

That rule doesn't work.

First off, the moon is about half a stop darker than the ISO exposure aim point (13% equivalent reflectance), so that would make it the "Sunny 13" rule. But that would give you a moon rendered as middle grey, which would look most unnatural to most people.

Furthermore, the surface reflectance varies considerably with phase. During the full moon, there's a coherent backscatter that boosts the brightness by nearly a stop, but that disappears only a few days either side of full. The brightness then drops off rapidly with phase, not only due to the incident angle of the sunlight becoming shallower, but the increasing predominance of shadowing on the surface.

IOW, it's a rule of thumb that starts off leaving photos mildly underexposed under the best of conditions, and it produces serious underexposure most of the time.

pax / Ctein

Posted by: [ctein](#) | [Monday, 20 December 2010 at 11:33 PM](#)

Plus, as a practical matter, Sunny 16 is a push with most B&W films, for technical reasons far too involved to go into here. With a K2 filter, I always preferred the Sunny 8 1/2 rule. [g]

And doesn't the exposure of the moon also vary with its height above the horizon? I.e., how much atmosphere the light has to travel through?

Mike

Posted by: [Mike Johnston](#) | [Monday, 20 December 2010 at 11:35 PM](#)

What 'atmosphere' would that be Mike?

Posted by: [Dennis Hutson](#) | [Tuesday, 21 December 2010 at 12:38 AM](#)

When I looked out of the window this morning I had no doubts about the exposure. The sky was a perfectly even mid grey.

Posted by: [Roger Bradbury](#) | [Tuesday, 21 December 2010 at 01:05 AM](#)

Dennis,

That would be earth's atmosphere (what else?), which is getting rather goopy these days. At low angles the light from the moon must struggle through rather more of it to reach you than when the moon is high overhead.

Mike

Posted by: [Mike Johnston](#) | [Tuesday, 21 December 2010 at 05:46 AM](#)

Welcome to the longest night of the year and of course the Lunar Eclipse. I am somehow hesitant to share this, as I don't think it's best, but my longest lens (until in a couple days :)) is the -150mm zoom (on the E-3, so 300mm for you 35mm users). But we use what we have. I hope you enjoy them.

<http://www.5pmlight.com/PICS/LE2010/>

Added: I just have to say, I was watching the slideshow to make sure it's working right, and I was also playing the music here:

http://www.youtube.com/watch?v=rv_WACFd8Ds

and it works well together!

Pass forward to the middle where the music starts. Amazing singing and amazing song!

Posted by: [Richard Man](#) | [Tuesday, 21 December 2010 at 06:17 AM](#)

The eclipse happened here just before and during dawn so exposure was constantly changing. We also had snow during the night and the temperature had dropped to -13.5C when I was going out to setup, thats pretty extreme for here, anyway I got this one just after full totality, the lights lower down are brave folks heading to work on the snow covered roads.

<http://www.flickr.com/photos/cilldara/5279875848/>

Posted by: [John](#) | [Tuesday, 21 December 2010 at 07:11 AM](#)

My wife dragged me from a deep sleep around 3:45 this morning to see the eclipse. Where did all those damn clouds come from? Our trusty local weatherman didn't seem to mention them in his earlier evening forecast. The clouds broke twice so we did manage to see it, but all in all a cold experiment resulting in sleep deprivation.

Posted by: [John Brewton](#) | [Tuesday, 21 December 2010 at 08:43 AM](#)

Well, "sunny 16" is a rule of thumb, not a law of nature. Coming close enough to nail it on the next try is good enough for digital :-)

.

The fact that we've been systematically depicting the moon as much lighter-colored than it really is is just one of those things, I guess. It's too late to change now (especially when other subjects are also in the frame).

Posted by: [David Dyer-Bennet](#) | [Tuesday, 21 December 2010 at 12:50 PM](#)

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