

Photograph The Moon

A Photography Workshop by Paul D deBerjeois

Workshop Notes

*Special Thanks to Stormtracker 13 Matt Meister
and KRDO Colorado Springs!*

The Moon is a moving target in the sky. It appears to move about half its diameter in 1 min.

There are two general situations involved when taking pictures of the Moon:

- 1) Daylight or conditions when the Moon is as bright as the sky
- 2) Dusk or night conditions when the Moon is (much) brighter than the sky

Daylight moon photography is relatively easy because the same camera settings required for general daylight photos work well when the moon is part of the composition.

Moon photography at dusk or at night is a challenge because the sunlit portion of the Moon, whether a slim crescent or the full circle, can be MUCH brighter than its surroundings. When this happens, you have to make a decision:

- Expose for the brightness of the Moon to reveal surface detail and let everything else go into deep shadow. Use spot metering if available and locate the spot on the brightest portion of the Moon. Shutter speeds at base ISO and medium apertures should be fast enough to capture a sharp image in spite of its motion across the sky. I strongly recommend using a tripod or other camera immobilizing technique when capturing detail. (1/30s-1/100s, f/4-f/8, ISO100-200)
- Expose for the surrounding sky and/or terrain and allow the Moon to be overexposed. Depending on how dark the foreground and sky, the Moon may be so oversaturated ("blown out") that it is no longer recognizable. Use 'average' metering. These shutter speeds may be slow enough that, depending on lens focal length, the Moon's movement will smear detail. But who cares? Its blown out anyway!



DSLRs offer great control over exposure in Aperture Priority or Manual exposure modes. Point & shoot cameras offering only scene modes offer some exposure control using exposure compensation. This control may be found on a button or in a menu setting.



High Dynamic Range (HDR) techniques may be used to capture both dark foreground detail and bright moon detail. There may be a 4+ stop difference between the two, certainly more than the normal 1-2 stop difference. The challenge with HDR is that the Moon moves between captures.

Full Moons can be large, bright and colorful. Surface features appear generally flat because there are no shadows. Shadows along the terminator of crescent and partial Moons reveal terrain detail and can be very interesting.

When thin clouds are present, overexposing the moon can produce a very dramatic effect. The moon will appear much larger, even when its just a thin crescent. Its light will scatter in the clouds. If low on the horizon, orange and red hues may be present.

A turbulent upper atmosphere can make it difficult to get sharp, high-magnification photos through long focal length lenses and telescopes. In warm weather, avoid shooting over nearby concrete or pavement where heated air swirls upward.

Context is an important element in photographic composition. A high-magnification photo of the Moon showing lots of surface detail can be very interesting. So is a wide angle shot that includes an interesting terrestrial foreground.

For sharp images with telescopes or long focal-length lenses, dampen your set up to eliminate 'tuning fork effect'. Shutter speed should equal or exceed reciprocal of focal length. For example, if using a 500mm lens (35mm equivalent), shutter speed should be at least 1/500s

From downtown Colorado Springs, at the corner of N Tejon St and E Kiowa St at 7p MT Wed Feb 1 (when this workshop started) the moon was at 167° compass heading (azimuth) at an elevation (altitude) of 72° above the SSE horizon. It rose at 11:51am at compass heading 63° on the eastern horizon and will set in the general direction of Ute Pass and Rampart Range Rd to the northwest, 297° azimuth at 1:52am Thursday. Moonrise on the night before full moon (2/6) will occur at 4:33p at compass heading 71° on the eastern horizon. This will be 22 minutes before sunset, so the sky will be relatively bright. Even though its a day before full, the Moon will present a 96% complete disk at time of Moon rise.

How do I know all this?

I use and highly recommend 'The Photographer's Ephemeris', available as free for desktop and laptop computers, and as an paid but highly-valuable app for iOS and Android smart phones to help you plan moon photography outings and more.

<http://photoephemeris.com>

Take advantage of the nearly full Moon the day before 'full' to capture its rise with city or mountain landscape still lit by the sun in the foreground. Select a medium lens aperture (f/5.6-f/8) to improve depth of field and maintain decent shutter speed. (The moon is a moving target, remember?). Point & shoot cameras should use the 'Landscape' or 'Night Landscape' scene modes. With the help of a \$10 compass or free compass app and location data from The Photographer's Ephemeris, you can position yourself so that the moon rises exactly where you want it in your composition!



Who says magicians never reveal their secrets?

Daylight Photos



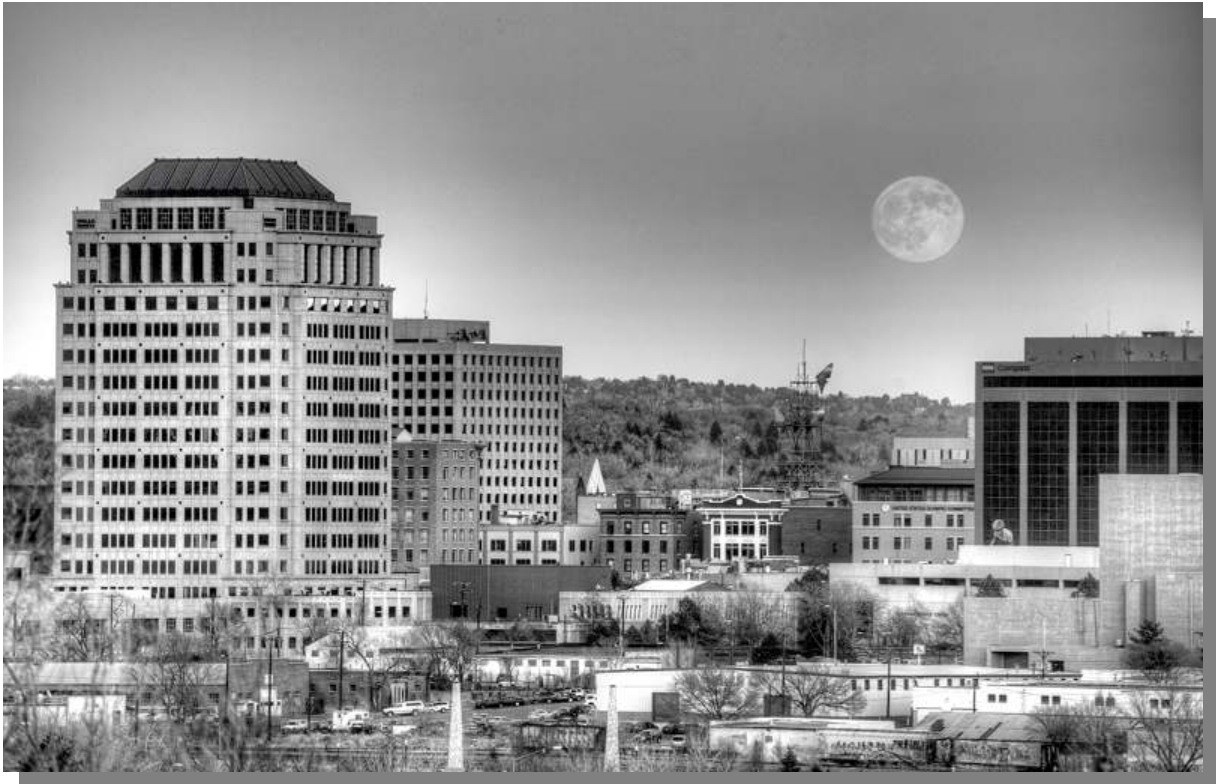
More Daylight Photos



High Dynamic Range



Conversion to B&W to de-emphasize an otherwise flat, hazy sky



12 MP full frame digital camera mounted directly to a 2000mm f/10 telescope
ISO 3200, shutter speed 1/2000s



450mm (35mm equiv)

Pikes Peak Summit
House in silhouette



You don't need a high-power zoom to take Moon photos!

35mm



50mm



120 mm



Moon & Venus at 200mm

Longer exposure on a very thin crescent can reveal detail in the 'dark side'.



Lunar Eclipse





Thanks for joining!

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