

Thaxted Astronomical Society

News

Features

NF0038

Clearest Picture Of The
Moon's Craters

<https://www.dailymail.co.uk/sciencetech/article-8284295/Astrophotographer-captures-detailed-pictures-Moons-craters.html>

World's clearest picture of the moon's craters' is captured by a Californian astrophotographer by combining multiple lunar 'phases' into one spectacular image

Daily Mail 4th May 2020 >

- US photographer creates image of the moon using only the 'lunar terminator'
- Lunar terminator is the boundary of the illuminated hemisphere of the moon
- This creates longer shadows and makes features such as craters seem bigger

A photographer has taken the world's clearest pictures of the moon's craters by combining multiple shots of the lunar line where light meets dark.

Californian-based astrophotographer Andrew McCarthy stacked thousands of pictures together over lunar phases to show the moon's surface in all its glory.

The lunar enthusiast took two weeks' worth of frames of the waxing moon – as the amount of illuminated surface seen from Earth increases.

Due to a quirk of the light caused by the 'lunar terminator' – the line between light and dark sides of the moon – features such as craters look elongated.

In a painstaking process, McCarthy took shots of the lunar surface where the effect is most pronounced and combined them into one detailed composite.

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The spectacular final result reveals a dazzling array of craters, dimples and imperfections on the Earth's 4.5 billion-year-old neighbour.

Posting to his Instagram account, Mr McCarthy described the snap, titled 'All Terminator', as a 'beast of a project'.

'This moon might look a little funny to you, and that's because it is an impossible scene,' he said on his account, @cosmic_background.

From two weeks of images of the waxing moon, I took the section of the picture that has the most contrast (right before the lunar terminator where shadows are the longest), aligned and blended them to show the rich texture across the entire surface,' he said.

'This was exhausting to say the least, namely because the moon doesn't line up day over day, so each image had to be mapped to a 3D sphere and adjusted to make sure each image aligned.

McCarthy, who took the original shots using an ASI1600MM and the Celestron edgeHD 800, might repeat the process for the moon's opposite phase.

'I may or may not try this again for the waning phases depending on feedback,' he said.

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I always wondered what the moon would look like using images of the terminator only,' replied ethan_roberts_astronomer02. 'Very interesting result.'

The lunar terminator or 'twilight zone' is the line between light and dark side of the moon.

The sun is closer to the horizon in the terminator, creating long shadows which give the surface a three-dimensional appearance.

These shadows make the moon's surface clearer and features like craters more noticeable.

According to NASA, many craters appear near the terminator because their height makes them easier to discern there.

This is just like the line of light and dark on Earth, making shadows lengthen when the sun is low in the sky.

But unlike the Moon's well-defined terminators, the ones on Earth appear fuzzy and diffused – leading to dawn and dusk – which is due to the differences in atmosphere.

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The sun's light bounces off of each microscopic molecule of gas on the way down to us, getting scattered in the process,' says the Old Farmers' Almanac.

'It's this scattering of the sun's light that allows us to see some that light prior to sunrise and after sunset each day.

'The Moon has no atmosphere, so the sun's light reaches its surface unhindered.'

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A composite picture of the moon made up from thousands of pictures taken at different moon phases to capture every detail of the craters



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