# What does Earth look like from Mars?

October 3 2016, by Matt Williams

Image taken by the HiRISE camera on NASA's Mars Reconnaissance Orbiter, showing Earth and the Moon. Credit: NASA/JPL

Modern astronomy and space exploration has blessed us with a plethora of wonderful images. Whether they were images of distant planets, stars and galaxies taken by Earth-based telescopes, or close-ups of planets or moons in our own Solar System by spacecraft, there has been no shortage of inspiring pictures. But what would it look like to behold

planet Earth from another celestial body?

We all remember the breathtaking photos taken by the Apollo astronauts that showed what Earth looked like from the Moon. But what about our next exploration destination, Mars? With all the robotic missions on or in orbit around the Red Planet, you'd think that there would have been a few occasions where they got a good look back at Earth. Well, as it turn out, they did!

## Pictures from Space:

Pictures of Earth have been taken by both orbital missions and surface missions to Mars. The earliest orbiters, which were part of the Soviet Mars and NASA Mariner programs, began arriving in orbit around Mars by 1971. NASA's Mariner 9 probe was the first to establish orbit around the planet's (on Nov. 14, 1971), and was also the first spacecraft to orbit another planet.

The first orbiter to capture a picture of Earth from Mars, however, was the Mars Global Surveyor, which launched in Nov. 7th, 1996, and arrived in orbit around the planet on Sept. 12th, 1997. In the picture (shown above), which was taken in 2003, we see Earth and the Moon appearing closely together.

Earth and the Moon, captured by the Mars Express spacecraft on July 3, 2003. Credit: ESA

At the time the picture was taken, the distance between Mars and Earth was 139.19 million km (86.49 million mi; 0.9304 AU) while the distance between Mars and the Moon was 139.58 million km (86.73 million mi; 0.9330 AU). Interestingly enough, this is what an observer would see from the surface of Mars using a telescope, whereas a naked-eye observer would simply see a single point of light.

Usually, the Earth and Moon are visible as two separate points of light, but at this point in the Moon's orbit they were too close to resolve with the naked eye from Mars. If you look closely at Earth, you can just make out the shape of South America.

The picture above was snapped by the Mars Express's High Resolution Stereo Camera (HRSC) on the ESA's Mars Express probe. It was also

taken in 2003, and is similar in that it shows the Earth and Moon together. However, in this image, we see the two bodies at different points in their orbit – which is why the Moon looks like its farther away. Interestingly enough, this image was actually part of the first data sets to be sent by the spacecraft.

The next orbiter to capture an image of Earth from Mars was the Mars Reconnaissance Orbiter (MRO), which was launched in August of 2005 and attained Martian orbit on March 10th, 2006. When the probe reached Mars, it joined five other active spacecraft that were either in orbit or on the surface, which set a record for the most operational spacecraft in the vicinity of Mars at the same time.


Earth seen from Mars shortly before daybreak. This is the first image of the Earth from the surface of another planet. Credit: NASA/JPL

In the course of its mission – which was to study Mars' surface and weather conditions, as well as scout potential landing sites – the orbiter took many interesting pictures. The one below was taken on Oct. 3rd, 2007, which showed the Earth and the Moon in the same frame.

## Pictures from the Surface:

As noted already, pictures of Earth have also been taken by robotic missions to the surface of Mars. This has been the case for as long as space agencies have been sending rovers or landers that came equipped with mobile cameras. The earliest rovers to reach the surface – Mars 2 and Mars 3– were both sent by the Soviets.

However, it was not until early March of 2004, while taking photographs of the Martian sky, that the Spirit rover became the first to snap a picture of Earth from the surface of another planet. This image was caught while the rover was attempting to observe Mars' moon Deimos making a transit of the Sun (i.e. a partial eclipse).

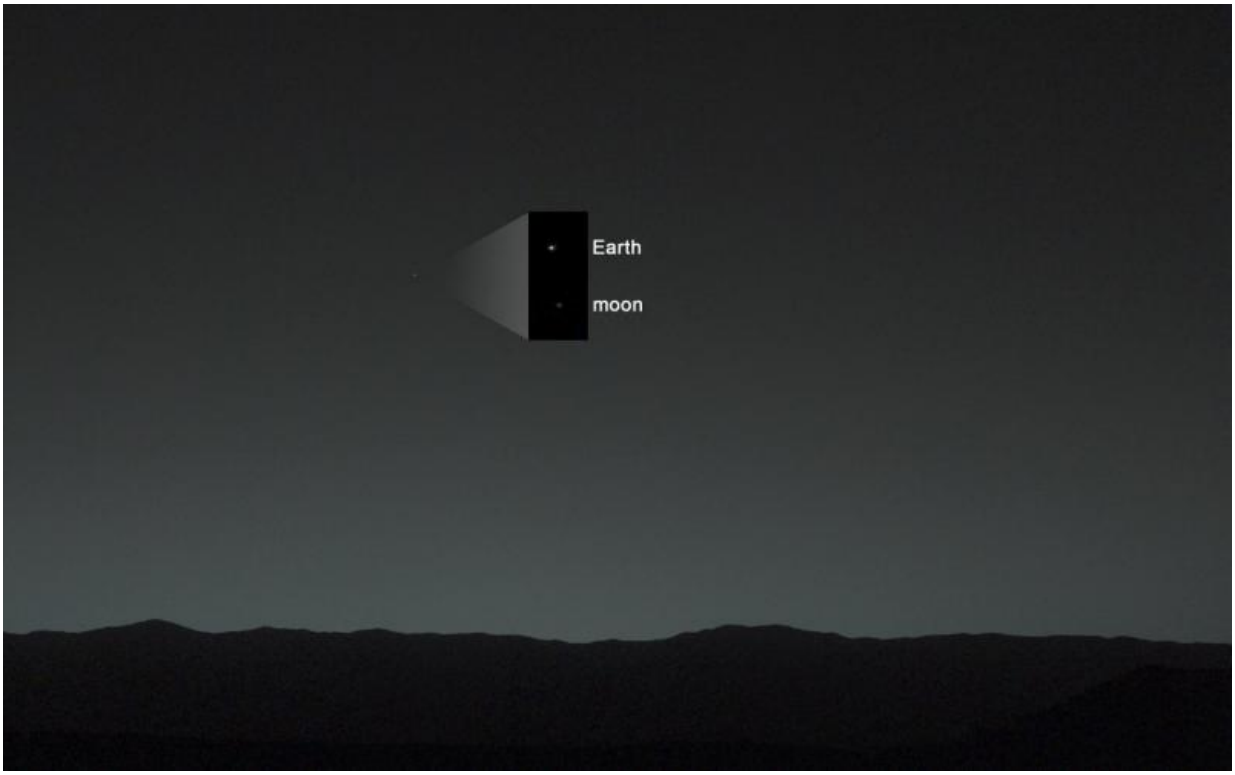


Image taken by NASA's Curiosity Mars rover, showing Earth and the Moon shining in the night sky. Credit: NASA/JPL

This is something which happens quite often given the moon's orbital period of about 30 hours. However, on this occasion, the rover managed to also capture a picture of distant Earth, which appeared as little more than a particularly bright star in the night sky.

The next rover to snap an image of Earth from the Martian surface was Curiosity, which began sending back many breathtaking photos even before it landed on Aug. 6th, 2012. And on Jan. 31st, 2014 – almost a year and a half into its mission – the rover managed to capture an image of both Earth and the Moon in the night sky.

In the image (seen below), Earth and the Moon are just visible as tiny dots to the naked eye – hence the inset that shows them blown up for greater clarity. The distance between Earth and Mars when Curiosity took the photo was about 160 million km (99 million mi).

Earth has been photographed from Mars several times now over the course of the past few decades. Each picture has been a reminder of just how far we've come as a species. It also provides us with a preview of what future generations may see when looking out their cabin window, or up at the night sky from other planets.

Source: Universe Today

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