7.9: Earth's Moon

Earth rise from Lunar OrbitPublic Domain | Image courtesy of NASA.

The Earth-Moon system is sometimes referred to as a double or twin planet, due to the size of the Moon when compared to Earth. As with all of the planets and other moons, we see the Moon due to reflected sunlight. Lunar temperature varies from 253oF in the day to -387oF at night.

How did the Moon form? There are a number of theories—from capture of the Moon by Earth, formation of the Moon in the same area as Earth, and the blob-spinning-of-early Molten Earth. However, the most widely accepted theory is the **Giant Impact Theory**. This theory posits that a Mars-sized rogue planet that astronomers call Orpheus struck early Earth. The evidence seems to highly favor the giant impact theory over others. Evidence of lava flows and a small iron lunar core are at the heart of this theory.

1st Quarter MoonCC BY-SA 2. 0 | Image courtesy of orrey Pines – San Diego – California – USA.

Perhaps surprisingly, water has been found on the Moon. Water ice deposits have been found in the coldest spots of the Moon's South Pole craters that are not exposed to sunlight. And astronomers have discovered the spectral signal of water and/or hydroxyl (HO-) ion from three different spacecraft. Estimates are that one ton of the lunar surface top layer would hold about 32 ounces of water.

Large Lunar Craters Eratosthenes (upper left) and Copernicus (center right)Image courtesy of Mike Reynolds, Ph. D. of Florida State College at Jacksonville.

Full *Moon*Image courtesy of Mike Reynolds, Ph. D. of Florida State College at Jacksonville.