

THE MOON

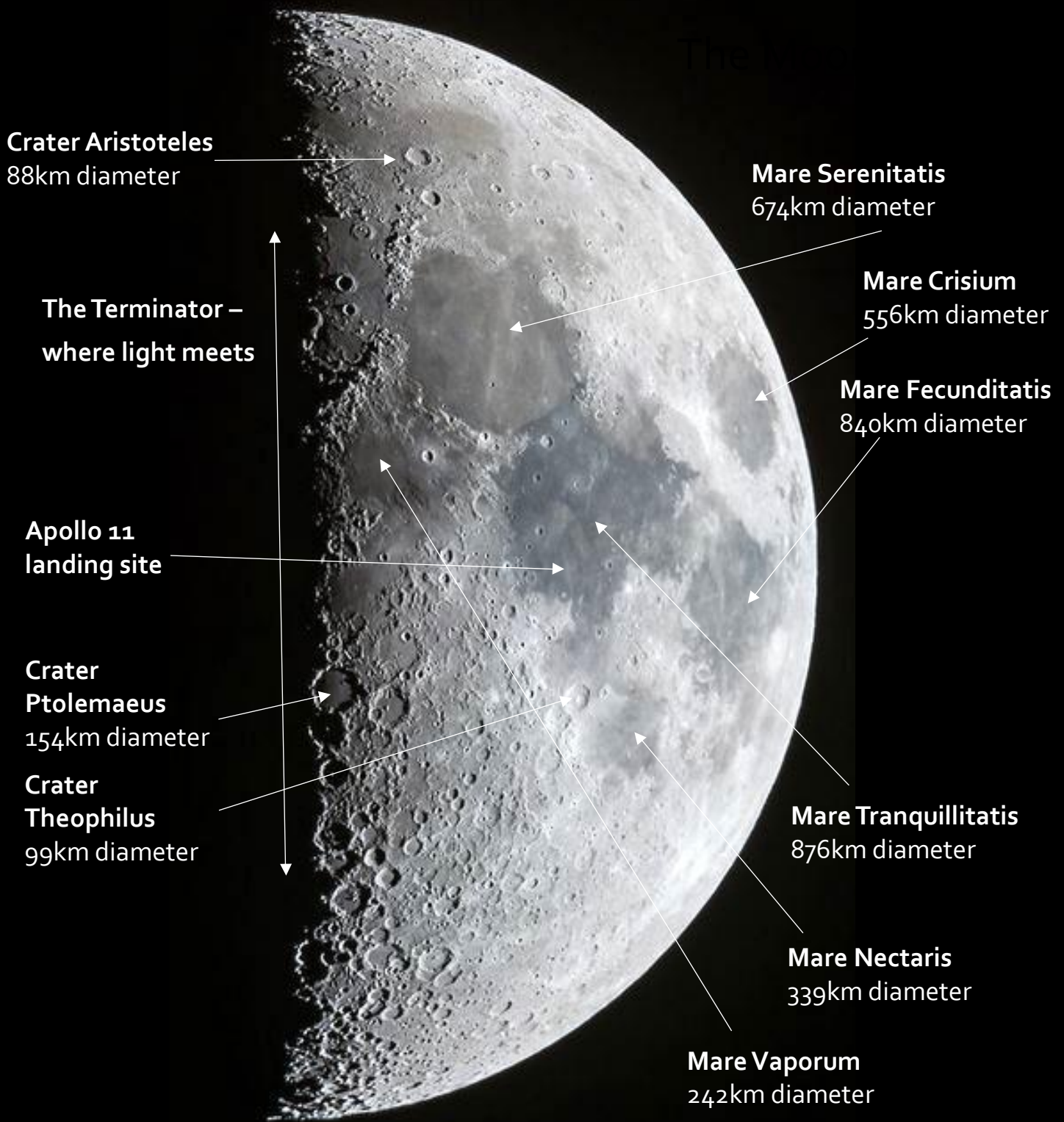


The Moon, as it appears 8 days after New Moon

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 BRISBANE ASTRONOMICAL SOCIETY

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Some Interesting Lunar Information

- The Moon is Earth's only natural satellite. (Mars has 2 moons, Jupiter 95, and Saturn 145, and likely many more yet to be discovered).
- The Moon formed about 4.4 billion years ago when a Mars-size object crashed into Earth, ejecting material into space and orbit. This material slowly coalesced under its own gravity to form the Moon.
- Much of the surface geology of the Moon has similarities to Earth's geology. This is primarily due to the Moon being created from pulverized and ejected rocks from the upper crust and mantle layers of Earth.
- Australia has a diameter of about 4,000km and the Moon 3,474km.
- The Moon orbits Earth in 27.32 days at a speed of 1km/second.
- Its average distance is 384,500km from Earth, but varies between 363,300km and 405,500km. It moves 3.73cm farther away from Earth each year.
- The Moon rotates once on its axis during each orbit of Earth. This rotation keeps only one side of the Moon facing Earth. This phenomenon, called "synchronous tidal locking," is caused by the gravitational pull of Earth creating tidal friction within the rocks of the Moon and slightly distorting its shape – creating a bulge. Over billions of years the rotation of the Moon has slowed to one revolution per orbit, and the bulge has become locked within the rocks of the side of the Moon that faces Earth.
- The Moon experiences extreme temperature changes. When the Sun shines on its surface temperatures can reach 127°C, but they can drop to -153°C at night.
- The craters were created by asteroid and meteorite impacts, the great majority of which occurred about 4 billion years ago. But small impacts still occur today.
- Telescopes on Earth monitor for current meteorite impacts on the Moon. Based upon this research, there are an estimated 8 meteorite impacts across the Moon per hour, however, these are very small impacts.



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- There are an estimated 1.3million craters with a diameter >1km, and 83,000 >5km.
- The average impact velocity for asteroidal bodies striking the Moon has been estimated to be between about 14 and 20 km/s. The maximum impact speed is believed to be about 72km/s.
- Some of the larger craters have a pyramid-like central mountain peak. These peaks were caused by the rebounding of lunar material under the point-of-impact. In some cases the peak may also be remnant material from the impactor object.
- The largest mountain, Mons Huygens, is about 5,000 meters tall - slightly more than half the height of Mount Everest. The weak gravity of the Moon makes the formation and stability of high mountains and ridges easier than on Earth.
- The Moon has no atmosphere, so there is no weather to erode its surface. Craters remain much as they formed and astronaut footprints are still visible today.
- There is water on the Moon in the form of ice, primarily found in permanently shadowed craters near the poles. This is a valuable resource for lunar and space exploration as it can provide oxygen for astronauts and water can be split into hydrogen and oxygen and used as rocket fuel for visiting spacecraft.
- The Moon's gravity is about one-sixth of Earth's. Astronauts appear to "bounce" when they walk on Moon.
- The gravitational pull of the Moon plays a crucial role in creating tidal flows in Earth's oceans.
- The largest craters visible from Earth are over 100km across.
- The large flat grey areas are called Lunar Maria (or plains), which are basaltic lava flows from massive impacts that occurred between 3.1 and 3.9billion years ago. They are the youngest structural features of the Moon.
- A total of 12 astronauts have walked on the Moon's surface during the USA Apollo missions. The first, in July 1969, were Neil Armstrong and "Buzz" Aldrin. Astronauts may walk again on the moon in the next few years.
- Only five nations have successful landed spacecraft on the Moon - the United States, the Soviet Union/Russia, China, and India. The United States is the only nation to land people on the Moon and return them to Earth.
- Eugene Cernan was last person to set foot on the Moon. He was part of the Apollo 17 mission, which took place from December 7-19, 1972.
- Eugene Cernan and Harrison Schmitt landed on the Moon on December 11, 1972. They spent 3 days, 2 hours, 59 minutes, 40 seconds on the lunar surface and Eugene Cernan was the last to return to the Lunar Module and return to Earth.
- Who will be the next person to set foot on the Moon? It could be you?

