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**Observe the Moon and Beyond: Apollo 11 at 50**

By David Prosper

**Saturn** is at opposition this month, beckoning to future explorers with its beautiful rings and varied, mysterious moons. The **Moon** prominently passes Saturn mid-month, just in time for the 50<sup>th</sup> anniversary of **Apollo 11!**

**Saturn** is in opposition on July 9, rising in the east as the Sun sets in the west. It is visible all night, hovering right above the teapot of Sagittarius. Saturn is not nearly as bright as Jupiter, next door in Scorpius, but both giant planets are easily the brightest objects in their constellations, making them easy to identify. A full **Moon** scrapes by the ringed planet late in the evening of the 15<sup>th</sup> through the early morning of the 16<sup>th</sup>. Some observers in South America will even see the Moon occult, or pass in front of, Saturn. Observe how fast the Moon moves in relation to Saturn throughout the night by recording their positions every half hour or so via sketches or photos.

While observing the Saturn-Moon celestial dance the early morning of the 16<sup>th</sup>, you can also contemplate the 50<sup>th</sup> anniversary of the launch of the **Apollo 11** mission! On June 16, 1969, Apollo 11 blasted off from Cape Canaveral in Florida on a journey of almost a quarter million miles to our nearest celestial neighbor, a mission made possible by the tremendous power of the Saturn V rocket – still the most powerful rocket ever launched. Just a few days later, on July 20, 1969 at 10:56 pm EDT, Neil Armstrong and Buzz Aldrin set foot on the lunar surface and became the first people in history to walk on another world. The astronauts set up equipment including a solar wind sampler, laser ranging retroreflector, and seismometer, and gathered up almost 22 kilograms (48 pounds) of precious lunar rocks and soil samples. After spending less than a day on the Moon's surface, the duo blasted off and returned to the orbiting Columbia Command Module, piloted by Michael Collins. Just a few days later, on July 24, all three astronauts splashed down safely in the Pacific Ocean. You can follow the timeline of the Apollo 11 mission in greater detail at [bit.ly/TimelineApollo11](https://bit.ly/TimelineApollo11) and dig deep into mission history and science on **NASA's Apollo History Site**: [bit.ly/ApolloNASA](https://bit.ly/ApolloNASA).

Have you ever wanted to see the flag on the Moon left behind by the Apollo astronauts? While no telescope on Earth is powerful enough to see any items left behind the landing sites, you can discover how much you **can** observe with **the Flag on the Moon** handout: [bit.ly/MoonFlag](https://bit.ly/MoonFlag)

You can catch up on all of NASA's current and future missions at [nasa.gov](https://nasa.gov)

# The Moon

## Copernicus

This crater (left) is easy to spot. It formed about 800 million years ago, and is 57 miles (92 km) wide. Note central peaks and terraced walls, caused by impact.

## Aristarchus

Young crater. So bright that Sir William Herschel thought it was an active volcano.

## Kepler

Small version of Copernicus

## Grimaldi

Lava-filled crater is one of the darkest spots you can see on the Moon. It's 145 miles wide (233 km).

## Mare Humorum

The Sea of Moisture is about 220 miles (350 km) across. You can spot it with the naked eye. With a telescope, you might notice two craters along its edge.

## Tycho

Young crater best seen during a full Moon. Rays of bright material are ejecta blasted out of the crust when a large asteroid struck about 109 million years ago.

## Mare Serenitatis

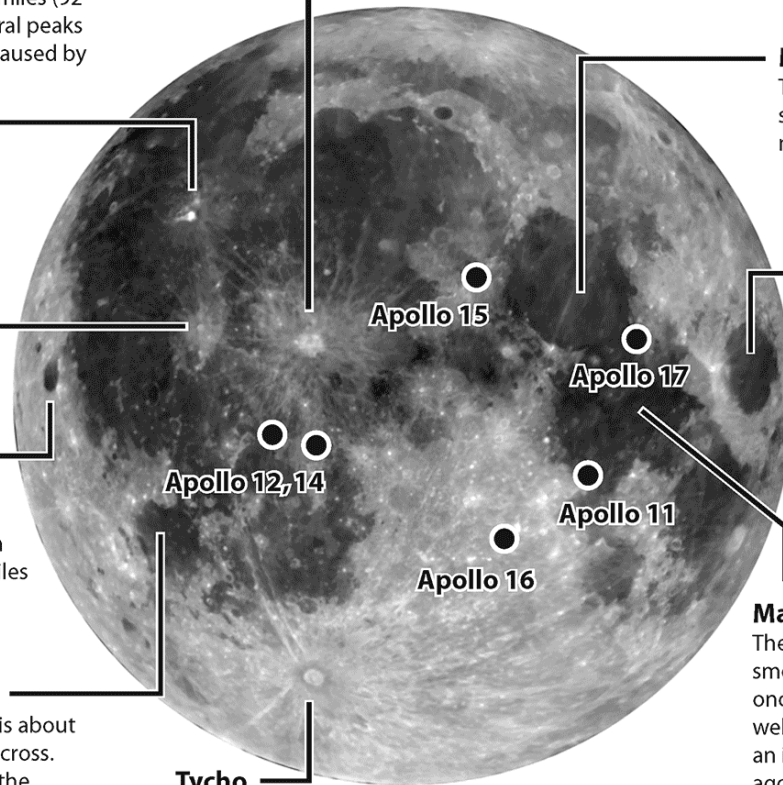
The Sea of Serenity is solid lava, some 380 miles (610 km) across.

## Mare Crisium

The Sea of Crisis is about 340 miles wide (550 km) and visible to the naked eye.

## Mare Tranquillitatis

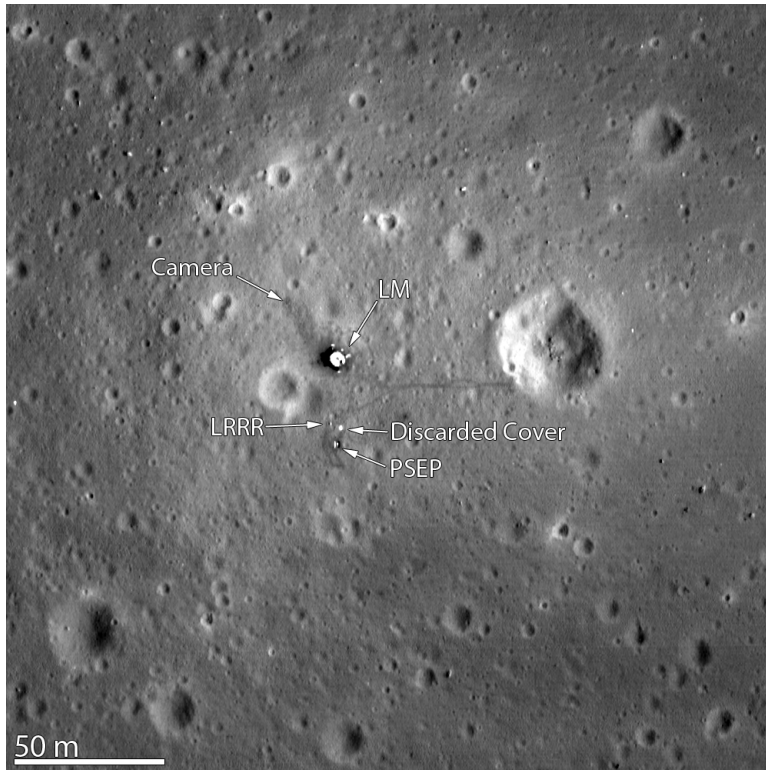
The Sea of Tranquility is a smooth plain filled with once-molten lava that welled up from below after an impact billions of years ago. The first humans to walk on the Moon, Apollo 11 astronauts, landed near the edge.



SOURCES: NASA; ADVANCED SKYWATCHING; CAMBRIDGE ATLAS OF ASTRONOMY; DK VISUAL ENCYCLOPEDIA

**Photos: James Scala. Layout and text for Moon map used with permission: Robert Roy Britt/SPACE.com.**

**Caption:** Observe the larger details on the Moon with help from this map, which also pinpoints the Apollo landing site. Full handout available at [bit.ly/MoonHandout](http://bit.ly/MoonHandout)



**Caption:** Earth-based telescopes can't see any equipment left behind at the Apollo 11 landing site, but the cameras onboard NASA's Lunar Reconnaissance Orbiter (LRO) can. This is Tranquility Base as seen from the LRO, just 24 kilometers (15 miles) above the Moon's surface, with helpful labels added by the imaging team. Image Credit: NASA Goddard/Arizona State University. See more landing sites at: [bit.ly/ApolloLRO](https://bit.ly/ApolloLRO)