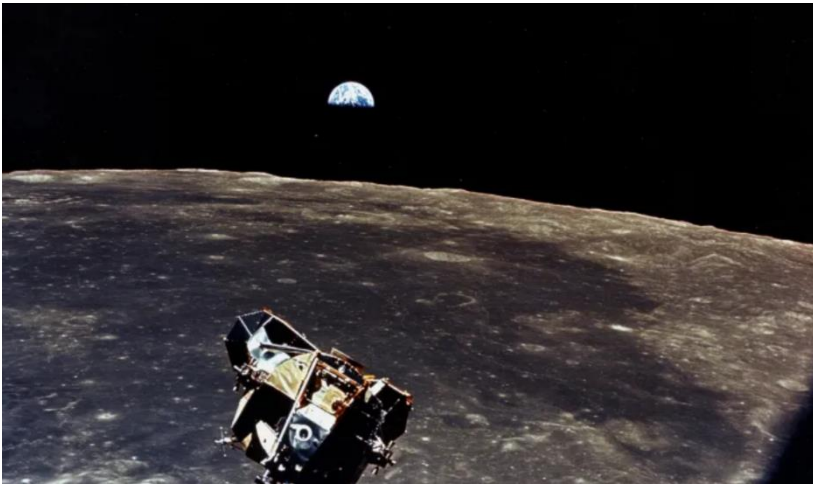


## The February 2024 Chippewa Valley Astronomy Update



**Figure caption:** Apollo 11's Lunar Module is seen above the moon with the half-Earth in the sky. It is approaching the Apollo Command Module before returning to Earth in 1969. We are now in a new era of moon landings, with a lot of work by private companies, and a lot of crash landings. **Photo credit:** NASA

### Somewhat Successful Moon Missions By Lauren Likkel

A Japanese spacecraft landed on the moon last month. Except that it tipped over, it was a beautiful, precise landing within a few yards of the target. The lunar lander (the "Moon Sniper") and two little rovers that were successfully ejected just before it landed are part of the "Smart Lander for Investigating the Moon" mission (SLIM). SLIM has already sent back data on moon geology.

One rover is a hopper, and the other a crawler (size of a baseball and design input from a toy company). The hopper has successfully been hopping. The wobbly two wheeled crawler ("SORA-Q") has been crawling and was able to send back an image of the lander. The image revealed that the Moon Sniper was tipped over onto its side and the solar panels were not pointing to the sun. This explained why the battery wasn't charging. It was put in standby until ten days later, when it was able to solar-charge after the sunlight shifted (one "night/day" on the moon takes about a month). When the sun set on the lander at the end of January, it was put in standby mode. This month when the sun shines on the solar panels again, they will try to wake it up.

Also last month, an American moon lander was hoping to make the first American moon landing since 1972. The Peregrine Mission One carried experiments through NASA's "Commercial Lunar Payloads Services" program, but was operated by the private US company Astrobiotic Technology. Peregrine One successfully launched and headed toward the moon, although you may have read that it crashed into the Pacific Ocean. It made it all the way to the moon's orbit, allowing spaceflight instruments to be fully tested - but a propellant leak rendered it unable to soft land. There was enough fuel to bring it home to burn up on re-entry above Earth's South Pacific. Yes, they sent it all the way to the moon's orbit, then brought it back to Earth.

Only the USA, the USSR, India, China and now Japan have managed soft landings on the moon. And each country also crash-landed on the moon in the past (along with Israel and Russia). Check the news this month to see if the NOVA-C moon lander by another American company, Intuitive Machines, launched successfully.

The US is still the only country that landed people onto the moon, with the Apollo program. No one has walked on the moon since 1972. NASA's Artemis mission is underway, and it will take people to the moon once again. Artemis 2 will have a crew to go to space and back, and Artemis 3 will land a crew on the moon possibly in 2025! The stakes are a lot higher with people on-board, and landing on the moon is a dangerous business.

--Lauren Likkel is a member of the Chippewa Valley Astronomical Society