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Kangaroos On The Moon

by Morris Jones
Sydney, Australia (SPX) Oct 27, 2009

When [Apollo](#) astronauts landed on the [Moon](#), they found it wasn't easy to walk around. The low gravity, uneven ground and bulky spacesuits hindered their movement. To move long distances quickly, the astronauts found it was easier to make small "[kangaroo](#) hops" with both legs. They would literally propel themselves above the surface before they made gentle falls to the ground.



File image: Moon walk.

Machines that travel around on the [Moon](#) use a different approach. They have wheels, and travel steadily across the surface. But even driving on the Moon has its problems. Astronauts who drove the Apollo lunar rovers would sometimes send their vehicles skyward, and the rides were often bumpy.

More rovers are destined to land on the surface of the Moon in the years ahead. China and India have both outlined plans for robot landers that will deploy them. Other nations and private entities are also expected to follow. These will be interesting missions, and they will certainly be productive. But it's also worth considering other ways of moving around to different places on the Moon.

A new type of surface rover could use rockets to propel itself off the surface, making short kangaroo hops to different locations. The "hopper" rover could avoid obstacles, move quickly, and also cover larger distances than a slow-moving surface crawler.

Rovers can cover a small area in great detail, but even over long periods of time, their range is somewhat limited. A hopper rover could be sent to explore several different locations, separated by tens or even hundreds of kilometres.

It would be a cost-effective strategy for exploration, as a single vehicle could explore several different "landing sites". By contrast, static landers or short-range rovers would require one mission launched for each landing site.

The lander would need a reliable, re-startable engine system, and an ample fuel supply. The landing gear would need to be strong, with shock-absorbers capable of supporting multiple descents. It could be possible to store the energy of the landing inside a shock absorber with a spring, then release this energy during the next launch to help kick-start the ascent.

The "kangaroo hop" concept has already been tried on one mission. In 1967, the US Surveyor 6 lander made a short ascent from the Moon by firing its thrusters. It landed only two and a half metres from its

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original landing site. This was still useful. The Surveyor's camera was able to photograph the same terrain from a different angle, and produced stereoscopic images.

One useful area for a kangaroo hop mission would be the polar regions of the Moon. The presence of water ice in these regions has made them a priority target for current and future missions. But as the recent impact of the LCROSS mission demonstrated, conditions at one location could be unexpectedly different from others. A strategy of visiting multiple sites is the only way to properly understand the ice deposits there.

It will take orbiters, landers, impactors and penetrators of various types to carry out a proper survey. A kangaroo hop could be made between various craters that are considered to be ice-laden.

Kangaroos in Australia sometimes inhabit the hottest and driest parts of the country. It would be ironic to see their mechanical cousins exploring the coldest and most water-rich regions of the Moon!

Dr Morris Jones is an Australian space analyst and writer. His latest book, "The New Moon Race", is available from Rosenberg Publishing (www.rosenbergpub.com.au).

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NASA Mission To Study Moon's Fragile Atmosphere

Huntsville AL (SPX) Oct 26, 2009
 Right now, the Moon is a ghost town. Nothing stirs. Here and there, an abandoned Apollo rover - or the dusty base of a lunar lander - linger as silent testimony to past human activity. But these days, only occasional [asteroid](#) impacts disrupt the decades-long spell of profound stillness. And this stillness presents scientists with an important opportunity. Currently, the Moon's ... [read more](#)



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