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German scientists lend expertise to NASA's Moon probe

July 21, 2009

Forty years after the first manned landing, the moon is again getting a lot of scientific attention. Two teams of German scientists are contributing research to a NASA probe looking for suitable future landing sites.

The Lunar Reconnaissance Orbiter (LRO) has successfully entered its orbit and made news around the world by sending images of traces left behind by the first human moon landing - the Apollo 11 mission of 1969 - as well as other Apollo missions. The photos, which were taken by the probe's camera, LROC, show scientific instruments and a trail of footprints in the lunar dust.

The LRO mission coincides with the Indian moon mission launched in October 2008 and follows recent lunar ventures made by Japan and China.

"The moon is probably the single most important object for our understanding the entire solar system," said Harald Hiesinger, a professor at the Institute for Planetology at the Westphalian Wilhelm University in Muenster. "It allows us to look back into the very early phases of our solar system because major geological evolution stopped early on the moon. It allows us to develop hypotheses and techniques that can be applied to other planets."



Launched on June 18 from the World Space Station at Cape Canaveral in Florida, the LRO is an unmanned space probe carrying seven high-tech instruments. Its main aims are to provide a more accurate map of the moon's surface, locate suitable landings sites for future manned missions, and research details of the moon's inner and outer structure. The virtually unknown polar areas of the moon and the possibility of finding water ice in very deep craters are of particular interest to researchers who sent the probe.

German scientists lend expertise

The German Aerospace Center is supporting two groups of German researchers who are involved in interpreting and evaluating data sent by NASA's LRO probe, which will orbit the moon for at least one year at an altitude of 50 kilometers (31 miles).

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Professor Harald Hiesinger and his team at the Institute for Planetology at the Westphalian Wilhelm University in Muenster are focusing on data generated by the Lunar

Reconnaissance Orbiter Camera (LROC). This camera, which consists of three separate cameras, is expected to provide very high-resolution images of the lunar surface: around half a meter per pixel.

"This means that from our orbit we will see rocks and other features which are just one meter or less in size," Hiesinger said. "This is an extremely high resolution which hasn't been achieved on this scale before."

Hiesinger's team will assist in calibrating the images, as well as evaluating what the photos show. They will also help to measure the age of different parts of the lunar surface by looking at the amount and size of craters left behind by meteorites and asteroids.

LROC's first images of the former Apollo landing site have excited the scientists and Hiesinger is pleased with the camera's progress so far.

Berlin scientists involved in LOLA

Meanwhile, a team led by professor Juergen Oberst from the German Aerospace Center's Institute of Planetary Research in Berlin and the Technical University in Berlin, is focusing on geophysical and geodetic data interpretation, mainly generated by the Lunar Orbiter Laser Altimeter (LOLA).

The data will give the scientists an idea about the interior structure of the moon as well as the topography of the lunar surface. The altimeter will collect data by sending laser signals and measuring the time they need to return to the sensor after being reflected by a surface, mapping the shape and size of the moon's natural features such as valleys and mountains.

"The altimeter is working correctly so far," said Oberst, adding that like the other instruments onboard the LRO probe, the altimeter is still in its testing phase. "We are really looking forward to the regular mapping phase, where we will get continuous data from the altimeter for every orbit. This should start within the next month."

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