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Lunar probe's crash was likely not well observed

18:31 03 March 2009 by Rachel Courtland

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Observers seem to have had little or no warning that China's Chang'e 1 lunar orbiter was going to crash into the Moon on Sunday, meaning little scientific data was likely gleaned from the impact. The lack of information has been a hallmark of the mission, which launched in October 2007.

Chang'e 1 crashed into the Moon on Sunday in a planned decommissioning, according to the state news agency [Xinhua](#).

In doing so, Chang'e 1 joined the ranks of the European Space Agency's SMART-1, which was sent [crashing into the Moon](#) in 2006 after the craft began running low on fuel. The crash was an opportunity to study the physics of lunar impacts, a rare occasion when something of known mass and velocity ploughed into the lunar surface.

SMART-1's demise was well documented. Plans were broadcast in advance, and ground telescopes were able to catch the [flash of its impact](#) and monitor the spread of debris.

But Chang'e was probably not so well observed. Unlike SMART-1, which crashed in nighttime conditions so the glare of light from the Moon's sunlit side would not overwhelm observations, Chang'e seems to have crashed on the day side, Sky & Telescope's Kelly Beatty [notes](#).

That may be in part because it's hard to orchestrate a crash so that it occurs where it can be [observed](#), says SMART-1's project scientist Bernard Foing. "It is indeed very difficult to ensure an accurate time and place for a crash," he told **New Scientist**. "It took operations engineers very delicate manoeuvres to ensure it."

Impact site

Engineering challenges aside, the international community seems to have had little or no warning of the impending smash.

"I do not know of any plans that were prepared to observe the plume when Chang'e impacted," says Carle Pieters of Brown University, a member of both Japan's [Kaguya](#) and India's [Chandrayaan-1](#) missions, which are now orbiting the Moon.

Those orbiters will undoubtedly observe the impact site when viewing conditions are favourable, she says, adding: "Since all spacecraft currently orbiting the Moon will eventually crash into the surface, I hope the next several [impact] events will be planned to allow a broad range of observers."

Without observations of the crash itself, lunar researchers will have to settle for results from Chang'e's 16-month mission itself, although it is unclear what will emerge.

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First image

The last big news from the mission came in November 2007, when researchers released the probe's first [image](#).

Initial reports suggested Chang'e had found a new crater not seen in images taken in 1994 by the US orbiter [Clementine](#). But later analysis showed the crater was actually an artifact of the [way Chang'e's lunar mosaic was assembled](#).

Since then, little has been heard from the mission. "After that was resolved, it was sort of like they picked up their ball and went home," says Paul Spudis, a planetary geologist with the Lunar and Planetary Institute in Houston, Texas. Spudis has worked on instruments for both Chandrayaan-1 and NASA's Lunar Reconnaissance Orbiter, which is set to launch in May 2009.

'Fairly guarded'

"They've been fairly guarded in the release of information," agrees planetary scientist [Bradley Jolliff](#) of Washington University in St Louis.

But Jolliff, who is working on setting up a computing centre with China's Shandong University that might eventually be used to share planetary data internationally, says that may change.

"We're really hoping, as the Chinese become comfortable with their own capabilities and with the open-access data sharing that has been established by many other countries, that they'll be moving down that pathway, and I'm sure they will," Jolliff says.

Global image

Those first steps might not be so far off. A small contingent of Chang'e 1 researchers from the Chinese Academy of Sciences seems to be on track for presenting at the [Lunar and Planetary Science Conference](#) (LPSC) in Texas later this month.

One team plans to present a new global image of the Moon, first [released](#) by China's space agency in November 2008. According to the LPSC abstracts, the probe's stereo camera, one of the orbiter's "most important payloads", seems to be capable of taking images of the Moon with 120-metre resolution.

For comparison, NASA has used the Goldstone radar dish in California to create images of the Moon's south pole with [20-metre accuracy](#) 📷. Kaguya's Terrain Camera has a spatial resolution of just 10 metres.

Soil depth

Chang'e's relatively low-resolution images are not likely to yield new results. But the orbiter also carries a radiometer that operates at microwave frequencies. Although it's not yet clear whether the instrument worked or exactly what its capabilities were, it might produce a global map of the depth of the lunar regolith, the soil-like layer of the Moon's surface, which was created by countless impacts, Jolliff says.

Many estimates of regolith depth are made on a local basis only, by examining ejected material surrounding impact craters, says Jolliff.

And if the news reports are right, Chang'e 1 is just a fledgling step in a larger robotic exploration mission. According to Xinhua, China plans to send more probes to the Moon, including a 2017 rover that will return samples of the Moon to Earth.

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Photo Of Landing Area

Wed Mar 04 01:08:14 GMT 2009 by **Charles Wood**

Monday's Lunar Photo of the Day

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shows the area where Chang-e crashed and laments the lack of opportunity for observing a crash flash.

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Photo Of Landing Area

Wed Mar 04 11:26:54 GMT 2009 by **Jim Bowen**

Where's the proof?

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Trashing The Moon

Wed Mar 04 01:52:27 GMT 2009 by **P. Farley**

So far away and from a distance, beautiful and still able to enthral, so do we really have to turn it into a scrap dump?

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Trashing The Moon

Wed Mar 04 13:17:24 GMT 2009 by (?)

Another fine example of atheist, nihilistic, purposeless science for you. Cherish it.

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Trashing The Moon

Wed Mar 04 13:30:23 GMT 2009 by **Atheist**

And I suppose a bomb would do a better job would it?

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Hoax

Wed Mar 04 11:24:30 GMT 2009 by **Jim Bowen**

In my opinion it seems like a massive hoax in order to gain political advantage over the west.

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Hoax

Wed Mar 04 15:03:47 GMT 2009 by **Ponder**

What? "We deorbited a probe so it hit the moon. We didn't manage to get any pictures of the impact and didn't manage to do any useful science in doing so." Yes, I'm sure NASA and the ESA are really impressed and very upset about not being able to do likewise.

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