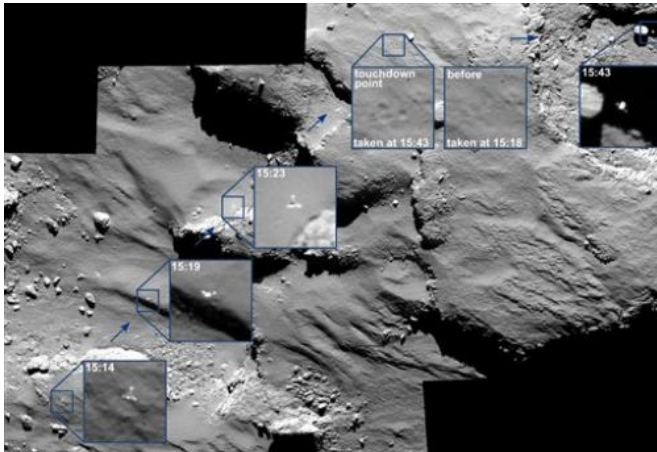


Scientists 'confident' comet lander will wake up (Update)

17 November 2014, by Frank Jordans



The combination image of several partially enlarged photographs released by the European Space Agency, ESA, Monday Nov. 17, 2014 shows the journey of Rosetta's Philae lander as it approached and then rebounded from its first touchdown on Comet 67P/Churyumov-Gerasimenko on Nov. 12, 2014. The series of images was captured by Rosetta's OSIRIS camera from a distance of 15.5km (9.6 miles) from the comet surface over a 30 minute period spanning the first touchdown. The time of each of image has marked been marked by source on the corresponding insets and is in GMT. A comparison of the touchdown area shortly before and after first contact with the surface is also provided. From left to right, the images show Philae descending towards and across the comet before touchdown. (AP Photo/ESA)

A burst of sunshine in the spring could be just the wakeup call for Europe's comet lander.

Scientists raised hopes Monday that as the Philae lander nears the sun its solar panel-powered battery will recharge, and the first spacecraft to touch down on a comet will send a second round of scientific data back to Earth.

Since landing with a bounce on the comet Wednesday, Philae has already sent back reams

of data that scientists are eagerly examining. But there were fears its mission would be cut short because it came to rest in the shadow of a cliff. Its signal went silent Saturday after its primary battery ran out.

Shortly before that happened, the European Space Agency decided to attempt to tilt the lander's biggest solar panel toward the sun—a last-ditch maneuver that scientists believe may have paid off.

"We are very confident at some stage it will wake up again and we can achieve contact," Stephan Ulamec, the lander manager, told The Associated Press.

That should happen next spring, when Philae and the comet it's riding on—called 67P/Churyumov-Gerasimenko—get closer to the sun, warming up a secondary battery on board and bringing it out of its unplanned hibernation. A few days of sunshine on the solar panels should be enough to charge the battery sufficiently to resume collecting scientific data, Ulamec said.

Philae's position in the shadows may even prove to be a blessing in disguise. Shielded from the sun's rays, the lander could survive for longer as the comet approaches perihelion—its closest point to the sun—in August.

Before they can say for certain if they'll be able to restore contact with Philae, scientists first need to find out where on the 2.5-mile (4-kilometer)-wide comet the washing machine-sized lander is, he added.

New pictures released Monday offered very good clues.

The high-resolution images taken from Philae's mother ship Rosetta show the lander descending toward the comet, then bouncing off when the thrusters and harpoons meant to anchor it to the

surface failed. It drifted through the void for two hours before touching down again—after a second, smaller bounce—then coming to rest in a shallow crater.

Scientists at the German Aerospace Center said Monday that an initial review of data the lander sent back 311 million miles to Earth showed the comet's surface is much tougher than previously assumed. There's also evidence of large amounts of ice beneath the lander.

Scientists had speculated the comet's surface could be quite soft, but that has turned out not to be the case. "The strength of the ice found under a layer of dust on the first landing site is surprisingly high," said Klaus Seidensticker of the German Aerospace Center.

Scientists are still waiting to find out whether Philae managed to drill into the comet and extract a sample for analysis.

Material beneath the surface of the comet has remained almost unchanged for 4.5 billion years, so the samples would be a cosmic time capsule that scientists are eager to study.

One of the things they are most excited about is the possibility that the mission might help confirm that comets brought the building blocks of life—including water—to Earth.

Tantalizingly, one of Philae's instruments was able to "sniff" the presence of organic molecules on the comet, the space center said. A full analysis of the molecules is still underway.

The European Space Agency has stressed that even if the lander fails to awaken again, Rosetta will be able to collect about 80 percent of the data scientists are hoping to glean from the \$1.6 billion mission.

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