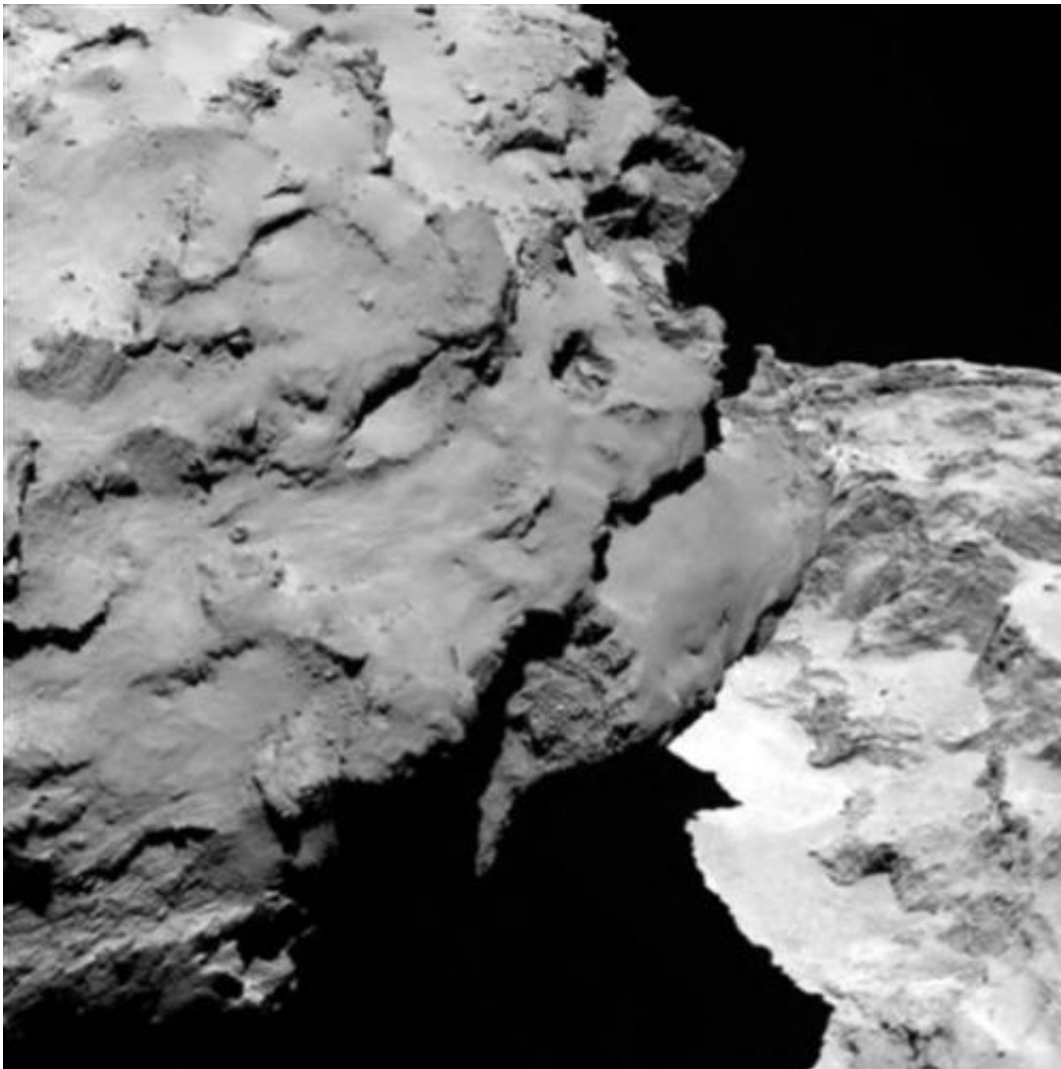


# Comet joined by space probe after 10-year pursuit

August 6 2014, by Frank Jordans

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Close-up detail of comet 67P/Churyumov-Gerasimenko. The image was taken by Rosetta's OSIRIS narrow-angle camera and downloaded Wednesday, Aug. 6, 2014. The image shows the comet's 'head' at the left of the frame, which is casting shadow onto the 'neck' and 'body' to the right. The image was taken from

a distance of 120 km and the image resolution is 2.2 meters per pixel. A mission to land the first space probe on a comet reaches a major milestone when the unmanned Rosetta spacecraft finally catches up with its quarry on Wednesday. It's a hotly anticipated rendezvous: Rosetta flew into space more than a decade ago and had to perform a series of complex maneuvers to gain enough speed to chase down the comet on its orbit around the sun. (AP Photo/ESA/Rosetta/MPS for OSIRIS Team)

Turning what seemed like a science fiction tale into reality, an unmanned probe swung alongside a comet on Wednesday after a 4-billion mile (6.4-billion kilometer) chase through outer space over the course of a decade.

Europe's Rosetta probe will orbit and study the giant ball of dust and ice as it hurtles toward the sun and, if all goes according to plan, drop a lander onto the [comet](#) in the coming months.

Rosetta turned up as planned for its "rendezvous" with comet 67P/Churyumov-Gerasimenko somewhere between the orbits of Mars and Jupiter.

The incredible trip, launched on March 2, 2004, marks a milestone in mankind's effort to understand the mysterious shooting stars that periodically flash past Earth, and which have often been viewed with fear and trepidation.

While the moon, Mars and even asteroids have been visited, no spacecraft has yet gotten so close to a comet. Having achieved this feat, Rosetta will go one step further and drop a lander on 67P's icy surface—a maneuver planned for November.

"You can compare what we've done so far to finding a speck of dust in a

big city," said Gerhard Schwehm, who was lead scientist on the Rosetta mission until his recent retirement.

That's probably an understatement.



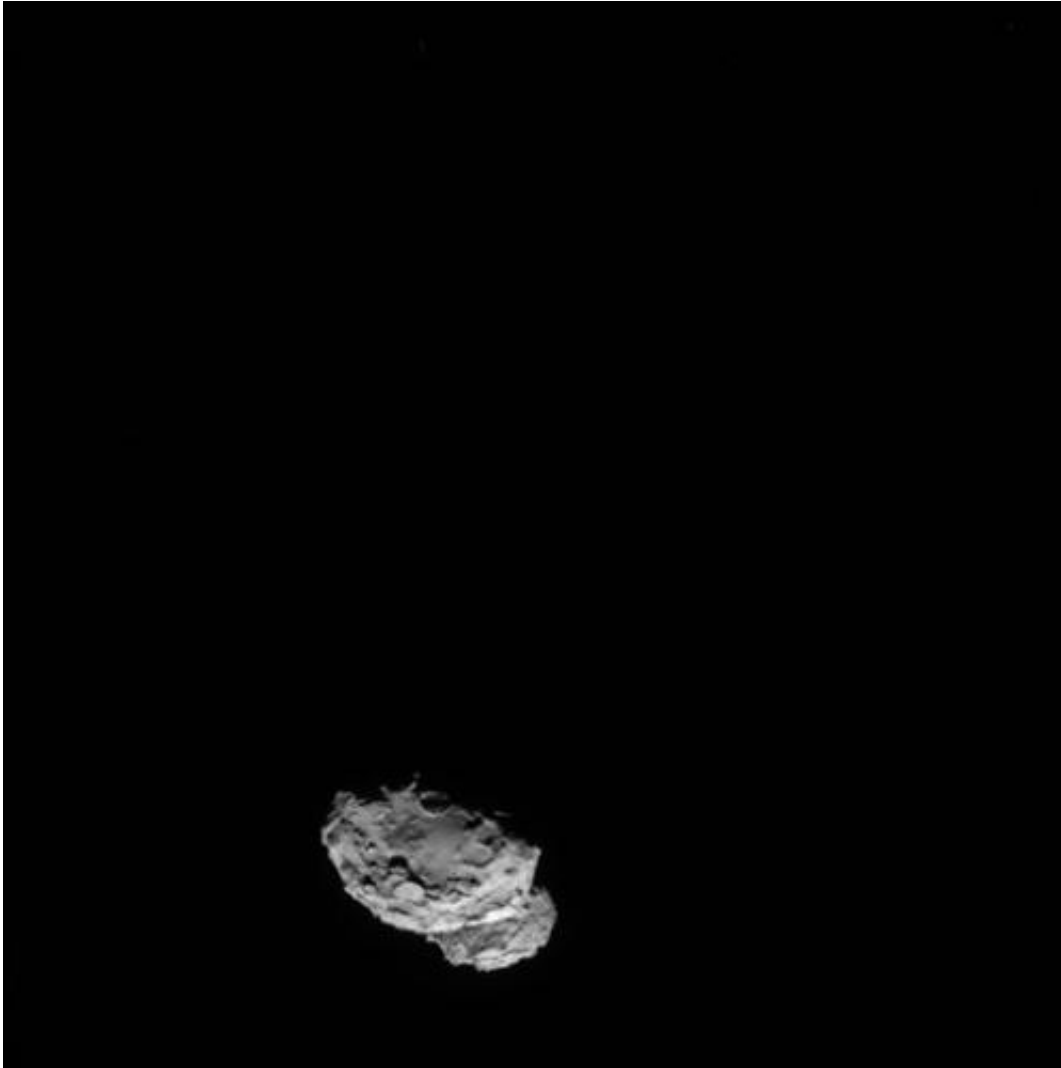
Experts watch their screens at the control center of the European Space Agency, ESA, in Darmstadt, Germany, Wednesday, Aug. 6, 2014. A mission to land the first space probe on a comet reaches a major milestone when the unmanned Rosetta spacecraft finally catches up with its quarry on Wednesday. It's a hotly anticipated rendezvous: Rosetta flew into space more than a decade ago and had to perform a series of complex maneuvers to gain enough speed to chase down comet 67P/Churyumov-Gerasimenko on its orbit around the sun. (AP Photo/dpa, Boris Roessler)

To catch their quarry, scientists at the European Space Agency had to overcome a series of hurdles that included a last-minute change of

destination—after a carrier rocket failure delayed launch—and a tense hibernation period of 31 months during which the probe was out of contact with ground stations.

Before Rosetta swung alongside 67P with a final thrust Wednesday, the spacecraft also had to accelerate to 55,000 kph (34,000 mph)—a speed that required three loops around Earth and one around Mars.

Underlining the singular achievement, ESA's director-general Jean-Jacques Dordain told scientists and spectators at the mission control center in Darmstadt, Germany: "This is your only chance to have a rendezvous with a comet."

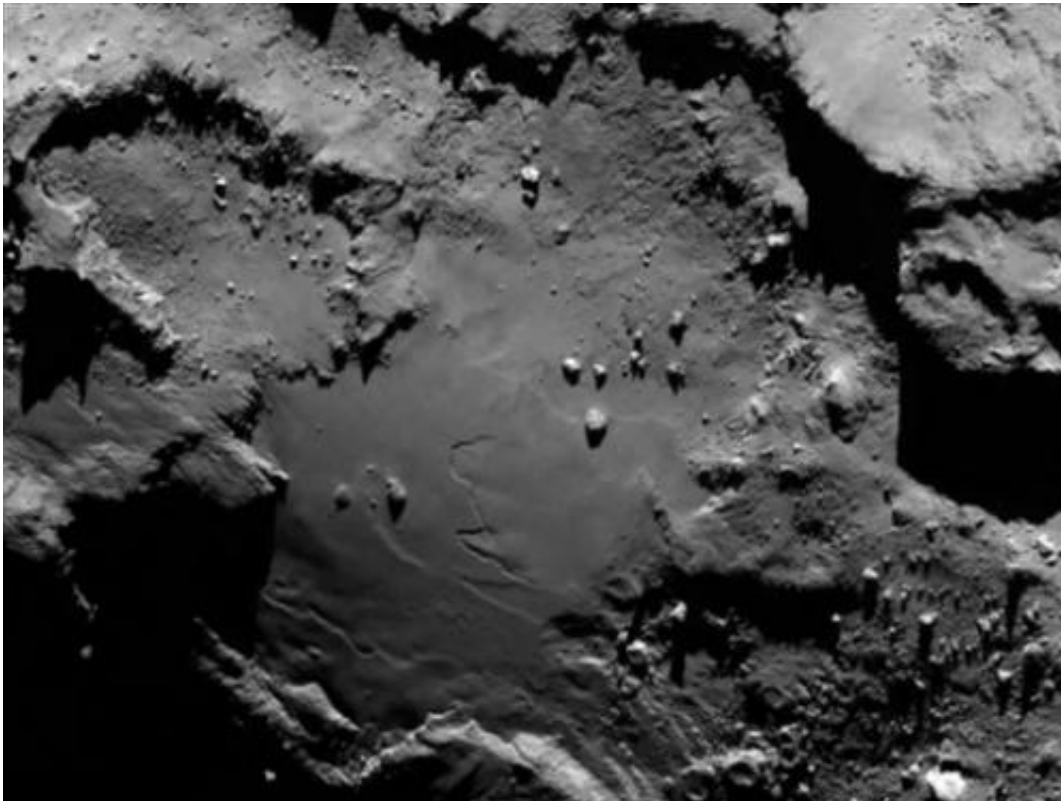


In this picture taken on Aug. 4, 2014 by Rosetta's OSIRIS narrow-angle camera Comet 67P/Churyumov-Gerasimenko is pictured from a distance of 234 kms. A mission to land the first space probe on a comet reaches a major milestone when the unmanned Rosetta spacecraft finally catches up with its quarry on Wednesday Aug 6, 2014. It's a hotly anticipated rendezvous: Rosetta flew into space more than a decade ago and had to perform a series of complex maneuvers to gain enough speed to chase down the comet on its orbit around the sun. The resolution has therefore been increased from 1024 x 1024 to 2048 x 2048 pixels. (AP Photo/ESA/Rosetta/MPS for OSIRIS Team )

Rosetta will now spend several months observing 67P from a safe

distance of up to 100 kilometers (60 miles). This will give scientists time to find a safe place to land Rosetta's sidekick, Philae.

This maneuver will pose an unprecedented challenge because there will be no second shot. Recent pictures of 67P show that its surface is porous, with steep cliffs and house-sized boulders.

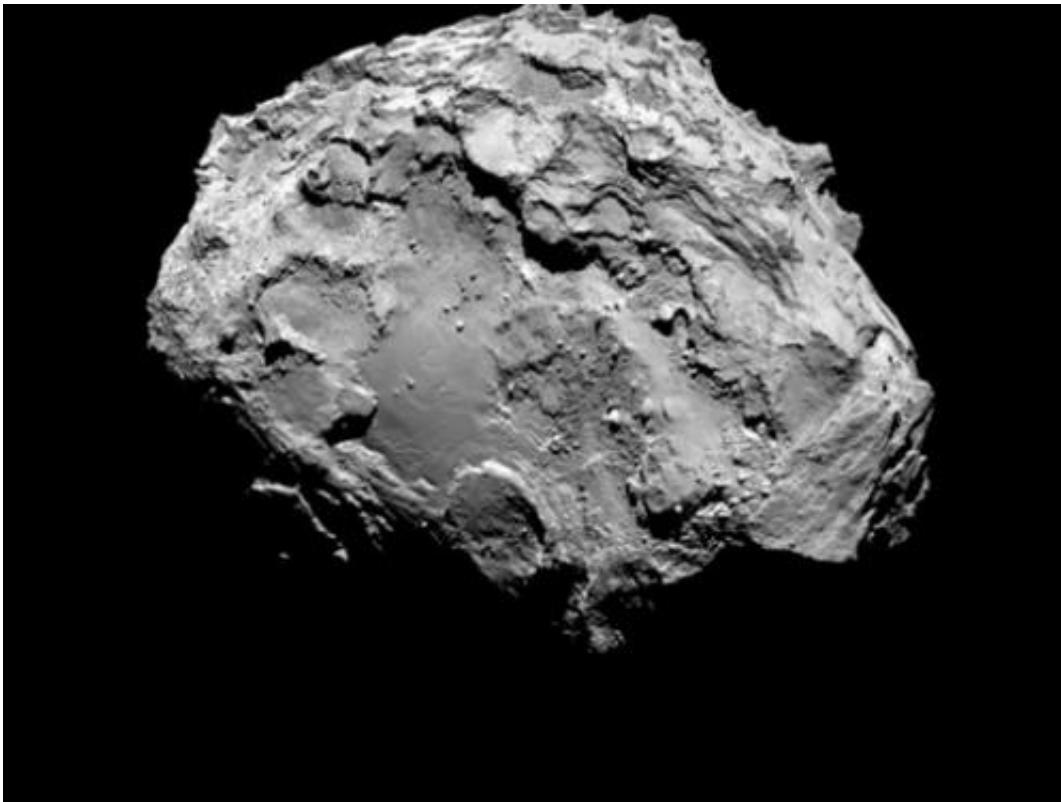


Close up detail focusing on a smooth region on the 'base' of the 'body' section of comet 67P/Churyumov-Gerasimenko. The image was taken by Rosetta's OSIRIS narrow-angle camera and downloaded Wednesday, Aug. 6, 2014. The image clearly shows a range of features, including boulders, craters and steep cliffs. The image was taken from a distance of 130 km and the image resolution is 2.4 meters per pixel. A mission to land the first space probe on a comet reaches a major milestone when the unmanned Rosetta spacecraft finally catches up with its quarry on Wednesday. It's a hotly anticipated rendezvous: Rosetta flew into space more than a decade ago and had to perform a series of complex maneuvers to gain enough speed to chase down the comet on its orbit around the sun. (AP

Photo/ESA/Rosetta/MPS for OSIRIS Team )

One person involved with Rosetta from the start told The Associated Press that the landing was "mission impossible" with only a slim chance of success. He spoke on condition of anonymity to avoid harming his employer.

Even if the landing fails, Rosetta itself will remain in the comet's orbit until at least the end of 2015, gathering reams of data with its 11 on-board sensors. As 67P gets closer to the sun it will begin to fizz and release the cloud of dust and ice that most people associate with comets.



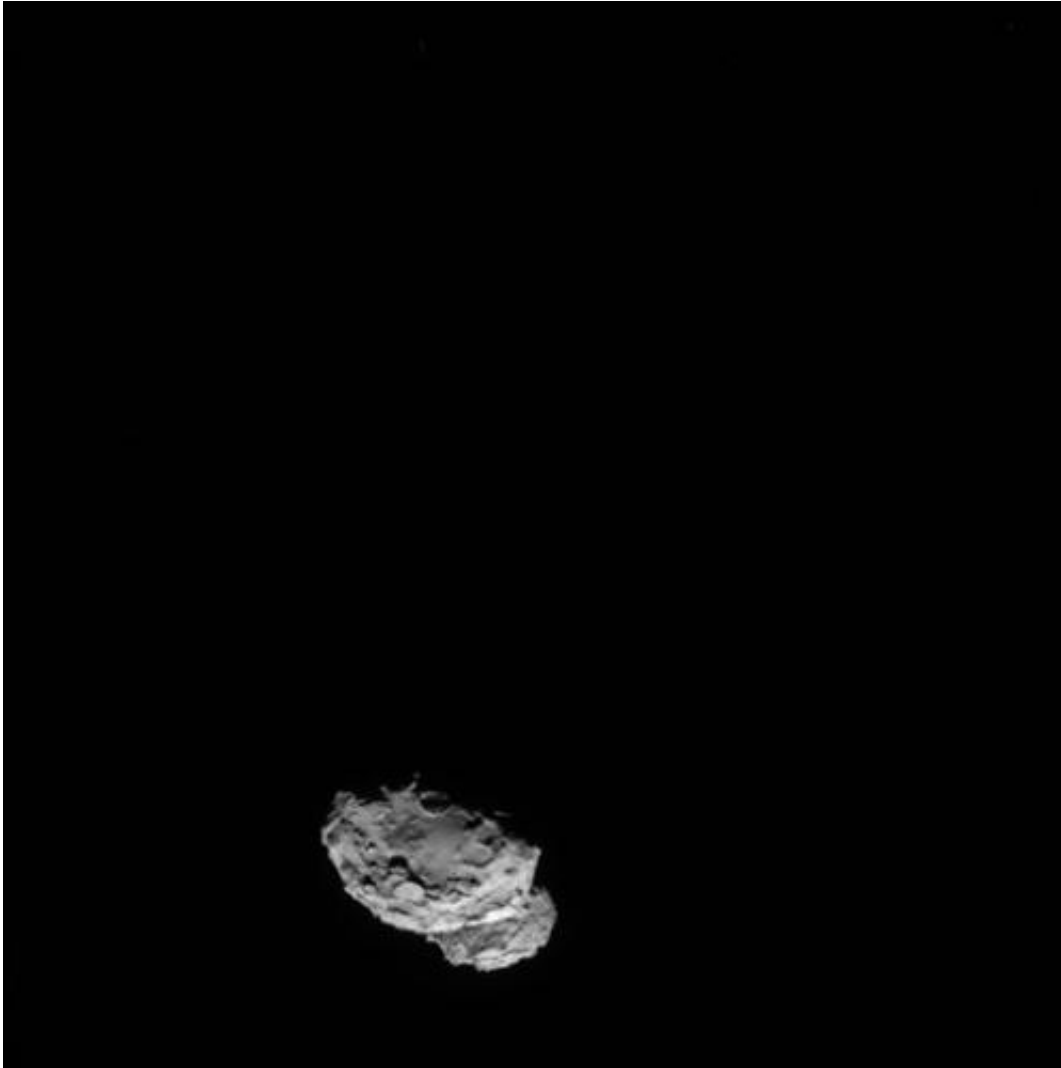
In this picture taken on Aug. 3, 2014 by Rosetta's OSIRIS narrow-angle camera Comet 67P/Churyumov-Gerasimenko is pictured from a distance of 285 kms. A

mission to land the first space probe on a comet reaches a major milestone when the unmanned Rosetta spacecraft finally catches up with its quarry on Wednesday, Aug 6, 2014. It's a hotly anticipated rendezvous: Rosetta flew into space more than a decade ago and had to perform a series of complex maneuvers to gain enough speed to chase down the comet on its orbit around the sun. The image resolution is 5.3 metres/pixel. (AP Photo/ESA/Rosetta/MPS for OSIRIS Team )

"We're going to have a ringside seat to see, for the first time, a comet turn into a comet, to develop its tail and explain what for centuries mankind has been puzzled by," said David Southwood, a former president of the Royal Astronomical Society who was involved with the Rosetta mission from the start.

Overall, scientists hope the €1.3 billion (\$1.74 billion) mission will help them learn more about the origins of comets, stars, planets and maybe even life on Earth, he said.





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Mark McCaughrean, a senior scientific advisor at ESA, predicted plenty

of surprises ahead.



In this picture taken on Aug. 3, 2014 by Rosetta's OSIRIS narrow-angle camera Comet 67P/Churyumov-Gerasimenko is pictured from a distance of 285 kms. A mission to land the first space probe on a comet reaches a major milestone when the unmanned Rosetta spacecraft finally catches up with its quarry on Wednesday Aug 6, 2014. It's a hotly anticipated rendezvous: Rosetta flew into space more than a decade ago and had to perform a series of complex maneuvers to gain enough speed to chase down the comet on its orbit around the sun. The image resolution is 5.3 metres/pixel. (AP Photo/ESA/Rosetta/MPS for OSIRIS Team )

"With this comet, every time we see a new image the jaws drop," he said. "Everybody just can't believe how lucky we have been."

**More information:** [www.esa.int/rosetta](http://www.esa.int/rosetta)

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Citation: Comet joined by space probe after 10-year pursuit (2014, August 6) retrieved 18 April 2024 from <https://phys.org/news/2014-08-comet-space-probe-year-pursuit.html>

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