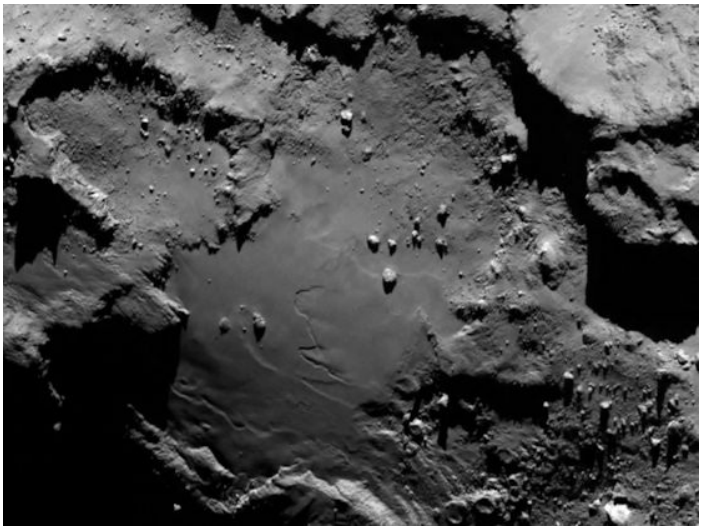
ROSETTA ARRIVES AT TARGET COMET

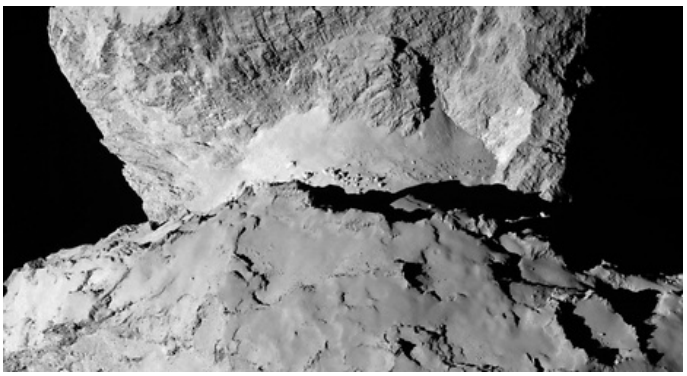


After a decade-long journey chasing its target, the European Space Agency's Rosetta probe, carrying three NASA instruments, became the first spacecraft to rendezvous with a comet. After 10 years, five months and four days travelling towards its destination, looping around the sun five times and clocking up 6.4 billion kilometres, Rosetta has finally caught up with its target: 67P/Churyumov-Gerasimenko. The comet's shape is about 5km x 3.5km, and its mass is estimated at 3.14×10^{12} kg. The acceleration due to gravity on the surface of the comet has been estimated at about one ten-thousandth of that on Earth.

The latest images of the comet taken by Rosetta are available at http://www.nasa.gov/rosetta

Comet Churyumov–Gerasimenko, officially designated 67P/Churyumov–Gerasimenko, is a comet with a current orbital period of 6.45 years and a rotation period of approximately 12.7 hours. The comet will next come to perihelion (closest approach to the Sun) on 13 August 2015. Like all comets, it is named after its discoverers, **Klim Ivanovych Churyumov** and **Svetlana Ivanovna Gerasimenko**, who first observed it on photographic plates in 1969. It is the destination of the **European Space Agency's Rosetta mission, launched on 2 March 2004.** The Rosetta spacecraft rendezvoused with the comet on 6 August 2014, with plans to enter orbit after approaching to within 30km five weeks later. Rosetta will study the comet and identify a suitable landing site for its lander, Philae; the landing is scheduled for November 2014.

Comet 67P/Churyumov-Gerasimenko and Rosetta are 405 million kilometres from Earth, about halfway between the orbits of Jupiter and Mars. The comet's 6.5-year orbit takes it from beyond Jupiter at its farthest point, to between the orbits of Mars and Earth at its closest to the sun. Rosetta will accompany the comet for over a year as it swings around the sun and back out towards Jupiter again.



Rosetta is at the moment 100 kilometres from the comet's surface. Over the next six weeks, it will fly two triangular-shaped trajectories in front of the comet, first at the 100km altitude and then down at 50km. At the same time, the spacecraft's suite of instruments will provide a detailed scientific study of the comet, scanning the surface to **identify a target site for its comet lander, Philae.** Eventually, Rosetta will attempt a close, near-circular orbit at 30km and, depending on the activity of the comet, may come even closer.

Over the next few months, in addition to characterizing the comet nucleus and setting the bar for the rest of the mission, Rosetta will begin final preparations for another space history first: landing on a comet. **As many as five possible landing sites will be identified by late August, before the primary site is identified in mid-September. The final timeline for the sequence of events for deploying Philae (currently expected for Nov. 11) will be confirmed by the middle of October**.

Comets are considered to be primitive left over building blocks of the solar system and may have helped to "seed" Earth with water, perhaps even the ingredients for life. But many fundamental questions about these enigmatic objects remain, and through a comprehensive, in situ study of the comet Rosetta aims to unlock the secrets within. The three U.S. instruments aboard the spacecraft are the Microwave Instrument for Rosetta Orbiter **- MIRO -** designed to provide data on how gas and dust leave the surface of the nucleus to form the coma and tail that give comets their intrinsic beauty, an ultraviolet spectrometer called **- Alice -** to analyse gases in the comet's coma, which is the bright envelope of gas around the nucleus of the comet developed as it approaches the sun, and the Ion and Electron Sensor **- IES -** a group of five instruments to analyse the plasma environment of the comet, particularly the coma and the solar wind, as they interact during the landing.

NASA provided part of the Double Focusing Mass Spectrometer **- ROSINA -** a Swiss-built Analysis Instrument able to distinguish between molecular nitrogen and carbon monoxide. Clear identification of these will help better understand conditions at the time the solar system was formed. From NASA Notes AK