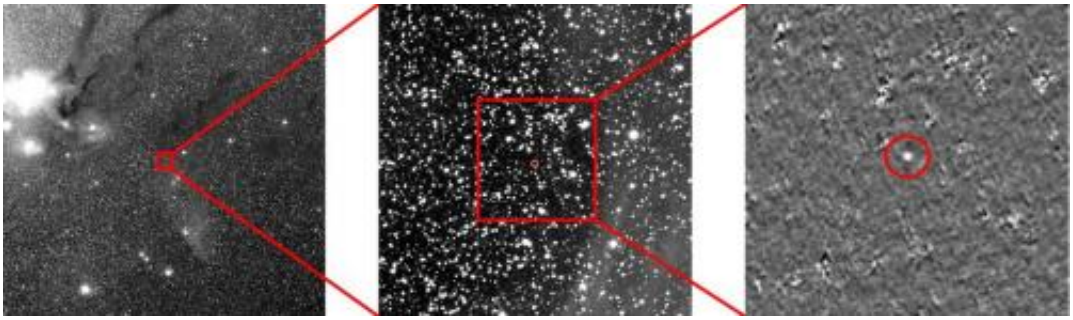
Rosetta's first glimpse of the comet

June 8 2011



Left: Comet Churyumov-Gerasimenko is hidden within this sector of space, a crowded star field in the constellation Scorpius that is towards the center of our galaxy. The image was taken by OSIRIS's wide-angle camera. Middle: The narrow-angle camera allows for a closer look, and shows many background stars. Right: After refined steps of data processing the comet becomes visible. (Credits: ESA 2011 MPS for OSIRIS-Team MPS/UPD/LAM/IAA/RSSD/INTA/UPM/DASP/IDA)

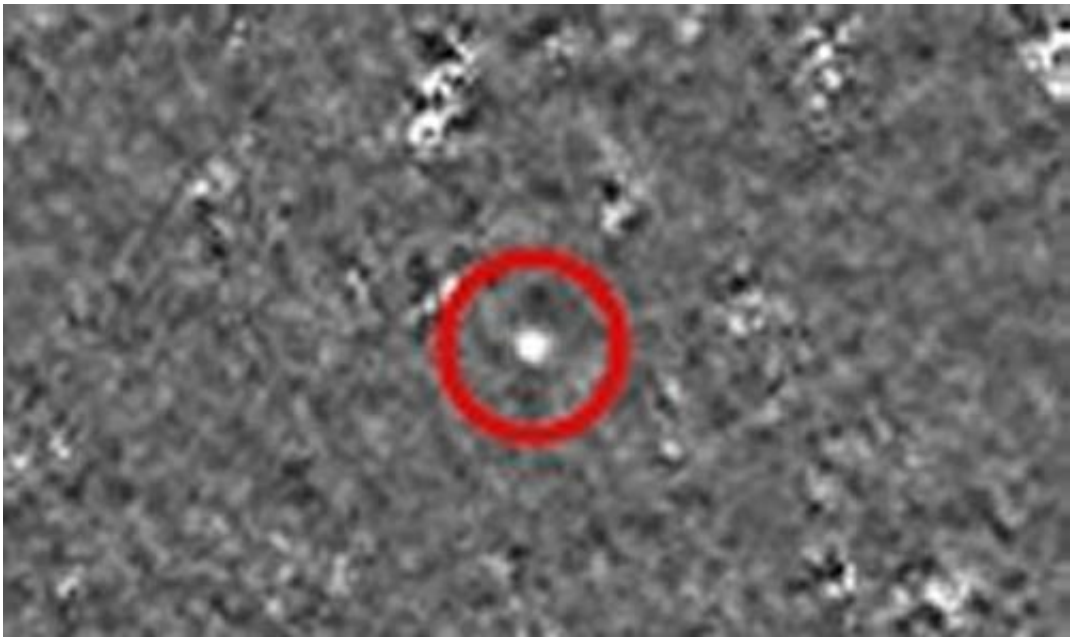
Three years before its arrival the camera system on board the space probe Rosetta renders the first images of its destination.

Approximately 163 million kilometers still separate ESA's spacecraft Rosetta from comet Churyumov-Gerasimenko, its 2014 target. Despite this remarkable distance, scientists from the Max Planck Institute for Solar System Research (MPS) in Germany have succeeded in obtaining the first images of the remote destination using the onboard camera system OSIRIS. These pictures were generated during the tests performed by the team during the last weeks. After the successful

completion of these tests, Rosetta will now start its almost three year hibernation period: In order to save energy on the last part of the way offering only little sunlight, all systems will be powered down.

In these first images comet Churyumov-Gerasimenko appears as a single point of light covering only a few pixels. "But the pictures already give us a good idea of where we are headed", says Dr. Holger Sierks from MPS, OSIRIS Lead Investigator. "In addition, they are a remarkable proof of the camera's performance. We had not expected to be able to create first images from so far away".

Comet Churyumov-Gerasimenko is extremely faint. Its brightness is approximately a million times less then that of the faintest star that can be discerned from Earth with the naked eye. Astronomers studying the comet from Earth use the European Southern Observatory's Very Large Telescope in Chile, one of the world's most powerful telescopes with a main mirror diameter of eight meters. OSIRIS's mirror measures only approximately ten centimeters in diameter.



Credits: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

In order to make the comet visible despite these challenges, an exposure time of 13 hours was necessary. "All in all, we took 52 images with OSIRIS, each exposed for 15 minutes", explains Dr. Colin Snodgrass from MPS, responsible for data processing. Since within a period of a few hours the comet moves relative to the background of fixed stars, the first step was to align all of the images and correct for this motion. After further refined steps of data processing (for example subtracting the fixed stars) the researchers were able to catch a first glimpse of their destination.

Before they get a chance at a second glimpse, it will, however, be a long wait. The systems on board Rosetta will be powered down today for approximately three years. In this way the solar panel powered spacecraft saves energy while it is far from the Sun - until it reawakens in the spring of 2014 and takes a next look at "its" comet.

The spacecraft Rosetta has been en route to comet Churyumov-Gerasimenko since 2004. OSIRIS, the scientific camera system on board, was developed and built under the lead of the MPS in cooperation with a team bringing together members of six European countries. It consists of a wide- and a narrow-angle camera. The camera system is operated by scientists from MPS.

Provided by Max-Planck-Gesellschaft

Citation: Rosetta's first glimpse of the comet (2011, June 8) retrieved 27 April 2024 from https://phys.org/news/2011-06-rosetta-glimpse-comet.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.