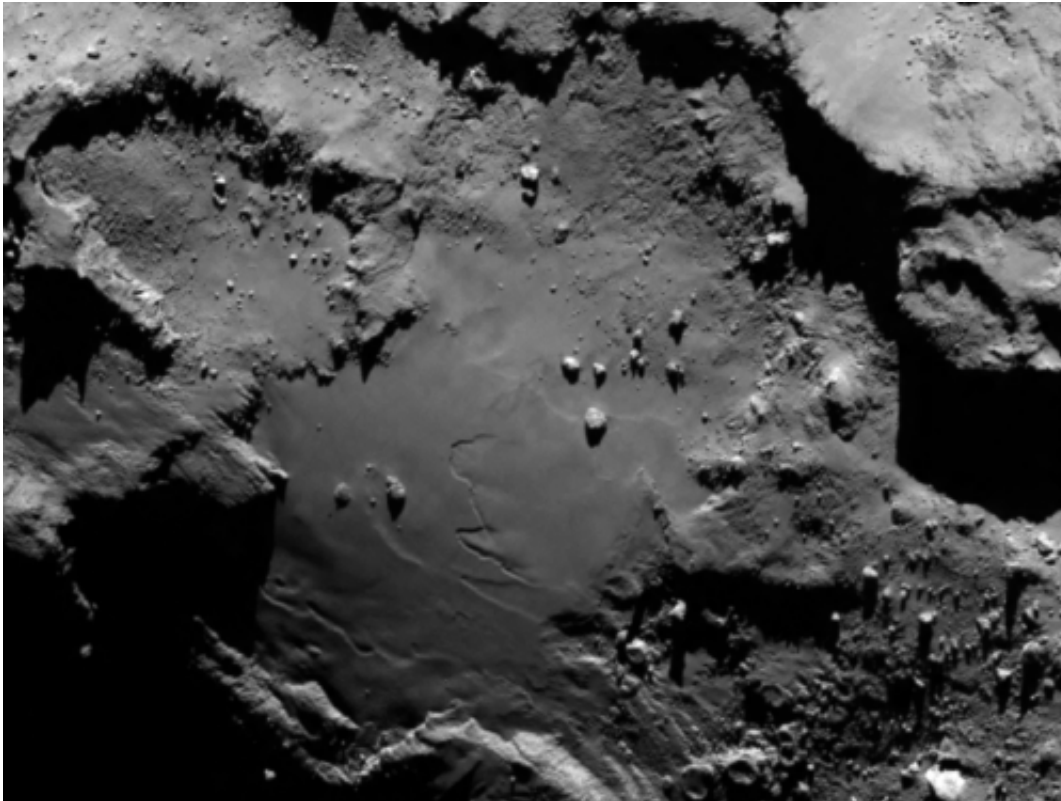


Image: Rosetta's target up close

August 7 2014



Credit: ESA/Rosetta/MPS for OSIRIS Team

(Phys.org) —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 Onboard Scientific Imaging System (OSIRIS) on August 6, 2014. The image clearly shows a range of features, including boulders, craters and steep cliffs. The image was taken from a distance of 80 miles (130 kilometers) and the image resolution is 8 feet (2.4

meters) per pixel.

The three U.S. instruments aboard the spacecraft are the Microwave Instrument for Rosetta Orbiter (MIRO), an [ultraviolet spectrometer](#) called Alice, and the Ion and Electron Sensor (IES). They are part of a suite of 11 science instruments aboard the Rosetta orbiter.

MIRO is designed to provide data on how gas and dust leave the surface of the nucleus to form the coma and tail that gives comets their intrinsic beauty. Studying the surface temperature and evolution of the coma and tail provides information on how the [comet](#) evolves as it approaches and leaves the vicinity of the sun.

Alice will analyze gases in the comet's coma, which is the bright envelope of gas around the nucleus of the comet developed as a comet approaches the sun. Alice also will measure the rate at which the comet produces water, [carbon monoxide](#) and carbon dioxide. These measurements will provide valuable information about the surface composition of the nucleus.

NASA also provided part of the electronics package for the Double Focusing Mass Spectrometer, which is part of the Swiss-built Rosetta Orbiter Spectrometer for Ion and Neutral Analysis (ROSINA) instrument. ROSINA will be the first instrument in space with sufficient resolution to be able to distinguish between molecular nitrogen and carbon monoxide, two molecules with approximately the same mass. Clear identification of nitrogen will help scientists understand conditions at the time the solar system was formed.

U.S. scientists are partnering on several non-U.S. instruments and are involved in seven of the mission's 21 instrument collaborations. NASA's Deep Space Network is supporting ESA's Ground Station Network for spacecraft tracking and navigation.

Launched in March 2004, Rosetta was reactivated in January 2014 after a record 957 days in hibernation. Composed of an orbiter and lander, Rosetta's objectives upon arrival at comet 67P/Churyumov-Gerasimenko in August are to study the celestial object up close in unprecedented detail, prepare for landing a probe on the comet's [nucleus](#) in November, and track its changes as it sweeps past the sun.

Comets are time capsules containing primitive material left over from the epoch when the sun and its planets formed. Rosetta's lander will obtain the first images taken from a comet's surface and will provide the first analysis of a comet's composition by drilling into the surface. Rosetta also will be the first spacecraft to witness at close proximity how a comet changes as it is subjected to the increasing intensity of the sun's radiation. Observations will help scientists learn more about the origin and evolution of our solar system and the role comets may have played in seeding Earth with water, and perhaps even life.

Provided by NASA

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