

ROSETTA LANDING SITES IDENTIFIED

The European Space Agency's Rosetta mission has chosen five candidate landing sites on comet 67P/Churyumov-Gerasimenko for its Philae lander. Philae's descent to the comet's nucleus, scheduled for this November, will be the first such landing ever attempted.

The sites are thought to be technically feasible on the basis of a preliminary analysis of flight dynamics and other key issues – for example, they all provide at least six hours of daylight per comet rotation and offer some flat terrain. Of course, every site has the potential for unique scientific discoveries.

For each possible zone, important questions must be asked: Will the lander be able to maintain regular communications with Rosetta? How common are surface hazards such as large boulders, deep crevasses or steep slopes? Is there sufficient illumination for scientific operations and enough sunlight to recharge the lander's batteries beyond its initial 64-hour lifetime?

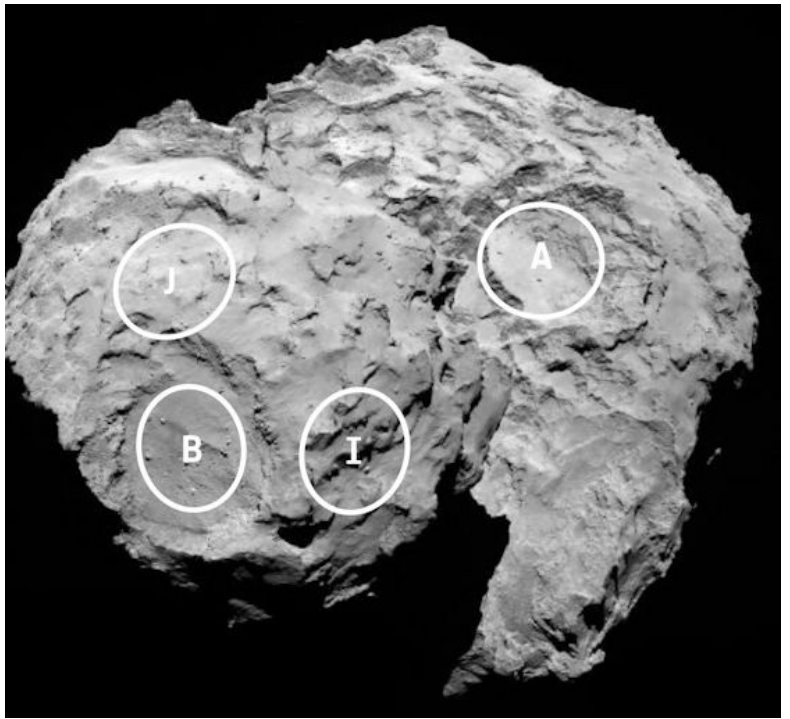
The landing sites were assigned a letter from an original pre-selection of 10 possible sites, which does not signify any ranking. **Three sites (B, I and J) are located on the smaller of the two lobes of the comet and two sites (A and C) are located on the larger lobe.**

The process of selecting a landing site is extremely complex and dynamic; as we get closer to the comet, we will see more and more details, which will influence the final decision on where and when the landing will take place. The group has a few more weeks to determine the primary landing site.

The next step in preparation for landing operations is a comprehensive analysis of each of the candidate sites, to determine possible orbital and operational strategies that could be used for Rosetta to deliver the lander to any of them. At the same time, Rosetta will move to within 50 kilometres of the comet, allowing a more detailed study of the proposed landing sites. By September 14, the five candidate sites will have been assessed and ranked, leading to the selection of a primary landing site. A fully detailed strategy for the landing operations at the selected site will be developed, along with a backup.

The landing of Philae is expected to take place in mid-November when the comet is about 450 million kilometres from the Sun. This will be before activity on the comet reaches levels that might jeopardize the safe and accurate deployment of Philae to the comet's surface, and before surface material is modified by this cometary activity.

Comets are considered 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 comprehensive analysis of the comet's possible primordial 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. AK



This annotated image depicts four of the five potential landing sites for Rosetta's Philae lander.



This image depicts two of the five potential landing sites for Rosetta's Philae lander, including one ("C") not shown in the image above.