Image: ESA's SMART-1 revealing unknown regions of the moon

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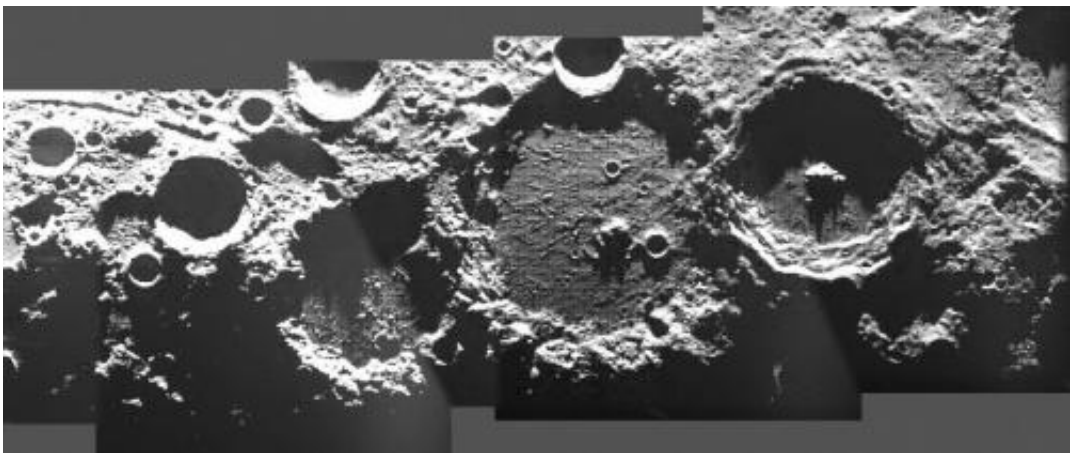

Credit: ESA/SMART-1/AMIE camera team/Space Exploration Institute

(Phys.org) —The greyscale pattern of dark and light blotches on the Moon is a familiar sight to stargazers. However, there are regions that remained relatively mysterious to us until surprisingly recently – most notably the Moon's polar regions, which astronomers have dubbed 'Luna Incognita', or 'the unknown Moon'.

In recent years, missions including ESA's SMART-1 have shed light on these regions of the lunar surface, and they are now better known.

This mosaic covers about 700 km by 220 km and was taken by the Advanced Moon Imaging Experiment on SMART-1. It shows a trio of

craters very near to the Moon's north pole, on the edge of the Luna Incognita. From right to left, these craters are named Plaskett, Rozhdestvenskiy and Hermite.

Hermite (104 km diameter) is perched right on the edge of the Moon's northern limb, while Plaskett (109 km diameter) and Rozhdestvenskiy (177 km diameter) overlap the lunar far side.

We only ever see the same hemisphere of the Moon due to 'tidal locking' – this causes the Moon to orbit Earth once in the same time it takes to spin once about its axis. However, we actually see around 59% of the lunar surface owing to factors such as the eccentricity of the Moon's orbit, its orientation with respect to Earth, and the rotation of Earth. Over time, these little variations add up and the Moon appears to oscillate slowly, allowing us to peer a bit further around the lunar surface at its edges. This effect is known as libration.

Plaskett's location is within one of the zones that seems to oscillate. For just a few days during a few months each year, Earth can be seen from Plaskett's northern rim – one of the key reasons it may make a suitable lunar outpost for simulating a mission to Mars. This infrequent contact would be ideal to test how astronauts cope with being isolated from Earth, without requiring the additional separation or risk involved in actually travelling to the Red

Provided by European Space Agency