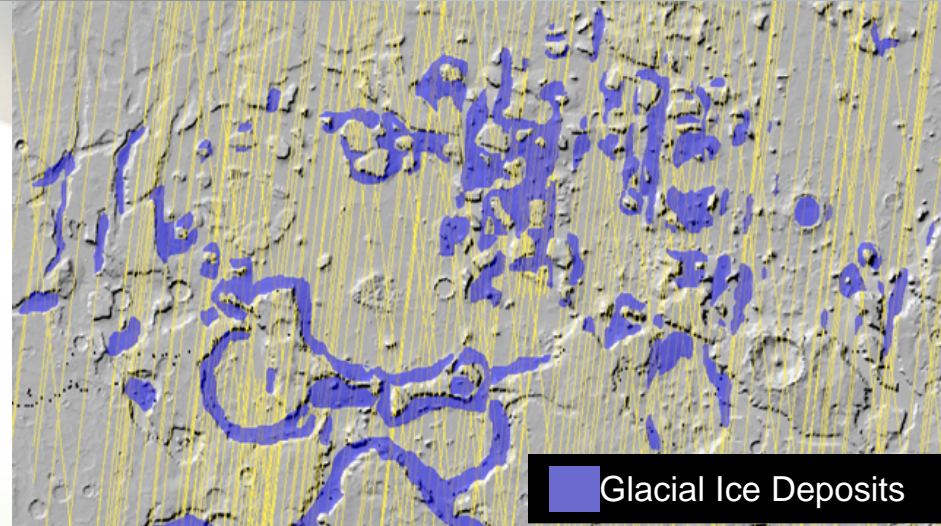


Finding Glycine may be an indicator of past life

The amino acid glycine is one of most basic building blocks of life, and has been found in comet material returned to Earth by the Stardust spacecraft. A new study shows how glycine might survive on planets and celestial bodies other than Earth.

Glycine's ubiquitous presence in space means it may have been delivered to early Earth and other planets by comets or interstellar dust; it was likely an ingredient in first cells on Earth. Additionally, glycine is part of many biomolecules and might survive in the environment after cells die, meaning it also has potential importance to search for signs of past life on other planets, such as Mars.



Dr. Glavin, Dr. Dworkin and Dr. Elsila of NASA's Goddard Space Flight Center measured glycine in lab samples collected during the mission of NASA's Stardust where it encountered Comet Wild 2.

NASA's Mars Reconnaissance Orbiter detected widespread deposits of glacial ice in the mid-latitudes of Mars, which may be prime locations to look for glycine.

To study how long glycine survives in different environments before it is destroyed, scientists blasted glycine-containing ice/rock mixtures with radiation. This mixture simulated icy comets or beneath the Martian surface, and served both to shield the glycine from the direct effects of the radiation and to lower the temperature of the experiments – indeed the survival time was shown to depend both on the temperature and relative percentage of ice.

Although this study is particularly useful for the understanding of delivery of compounds to the early solar system, the data are also relevant for planetary protection and understanding how different molecules survive in space.

Gerakines and Hudson (2013). *Astrobiology*.