

THAT FIRST STEP SHOULD RESONATE FOR MILLENNIA TO COME A.A. Westenberg, M.A.¹, R.A. Zucker, J.D.²

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Introduction: The selection of the first human landing site on the planet Mars should be based not only on technological capabilities and the potential for scientific research, but also on its intrinsic historical significance. That first step will be history in the making, one that should not only be meaningful to those who witness it first-hand, but also to future generations. Moreover, the choice should serve to honor past generations of scientists, whose thirst for knowledge and passion for exploration formed the cornerstone of humanity's efforts to move off our home world and out into the solar system.

The ancient crust of Mars contains clues to a distant geological past. From a geological standpoint, areas containing ancient crust are very interesting, as this type of crust might not only reveal secrets about the geological history of Mars but also about the geological history of Earth. Furthermore, ancient crust of 3 to 3 ½ billion years old is a prime candidate for having retained remnants of Martian life.

For these reasons, Explore Mars, Inc. proposes Copernicus Crater.

Selecting a landing site that has scientifically interesting features is part of the selection process as a matter of course.

In addition, as indicated in the Abstract above, historical significance should also be considered.

In deciding where humans land on Mars for the first time, we have the opportunity to link this landing not only to the present, but also to the past and to the future: Those who came before us investigated the heavens from the confines of our home planet; we are building upon their work by taking the first small steps on a new world; and those who come after us, who will talk proudly about those 21st Century explorers who dared to go to Mars, will continue to develop and expand that beachhead so that humanity can truly become a multi-planet species.

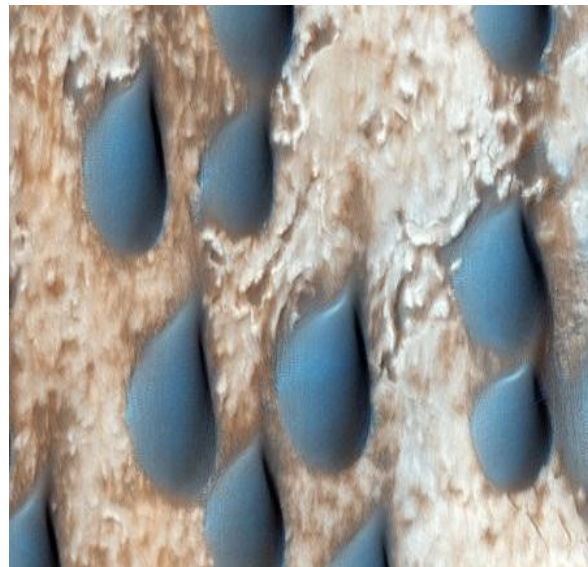
Copernicus Crater which by its very name provides a link between past, present, and future, appears to satisfy the above criteria. The name gives honor to an important astronomer.

The crater lies in the region of the 3 billion-year old ancient crust of Mars. Copernicus Crater has interesting gullies that might point to recent flows on Mars, now thought to be the product of dry ice, a feature that is not found on Earth. Also Copernicus Crater contains olivine dunes. These three geological features combined make this crater a good choice for landing as it contains several 'Regions of Interest' as set out by this workshop. Copernicus also has a diameter of almost 300 kilometers, which makes it large enough for the first landing as well as large enough as the exploration zone for several landings.

Copernicus Crater is located south of the planet's equator in the heavily cratered highlands of Terra Sirenum in the Phaethontis quadrangle at 49.2°S and 169.2°W.

It is respectfully submitted that further research should be conducted about other possible landing sites that fit the above criteria.

Olivine dunes in Copernicus Crater
PIA17879



[Mars Reconnaissance Orbiter \(MRO\); High Resolution Imaging Science Experiment \(HiRISE\)](#)

Image credit: NASA/JPL-Caltech/Univ. of Arizona

Gullies on Two Different Levels in Crater Within Copernicus Crater
ESP_039621_1315



[Mars Reconnaissance Orbiter \(MRO\)](#)
[High Resolution Imaging Science Experiment \(HiRISE\)](#)

Image credit: NASA/JPL-Caltech/Univ. of Arizona

Context map of gullies on crater within Copernicus Crater

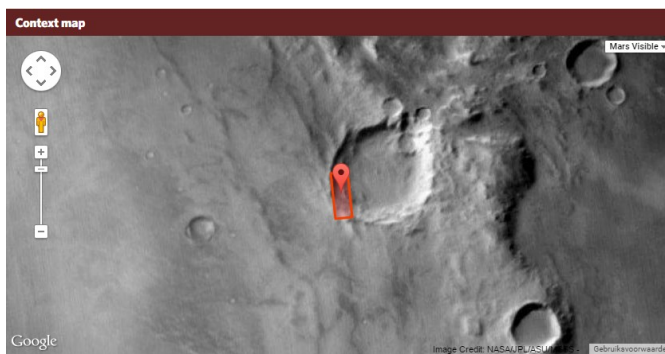


Image credit: Google Maps Mars

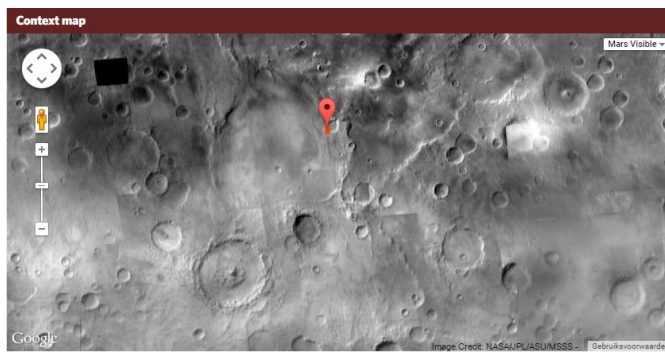


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