

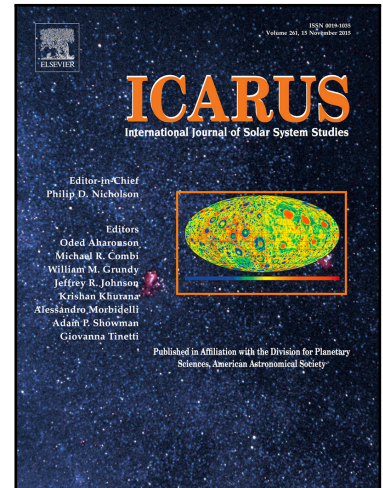
Accepted Manuscript

Low surface gravitational acceleration of Mars results in a thick and weak lithosphere: Implications for topography, volcanism, and hydrology

Michael J. Heap , Paul K. Byrne , Sami Mikhail

PII: S0019-1035(16)30160-9
DOI: [10.1016/j.icarus.2016.09.003](https://doi.org/10.1016/j.icarus.2016.09.003)
Reference: YICAR 12178

To appear in: *Icarus*



Please cite this article as: Michael J. Heap , Paul K. Byrne , Sami Mikhail , Low surface gravitational acceleration of Mars results in a thick and weak lithosphere: Implications for topography, volcanism, and hydrology, *Icarus* (2016), doi: [10.1016/j.icarus.2016.09.003](https://doi.org/10.1016/j.icarus.2016.09.003)

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Highlights

- The Martian lithosphere was thicker but weaker than Earth's throughout its geological history due to differences in surface gravity.
- The lower Martian surface gravity allows fractures to be open at greater depths and wider at a given depth, relative to Earth.
- Dyking—the principal mode of magma migration—is thus more efficient on Mars than Earth, manifest as differences in volcanism and surface topography.
- A porous and fractured Martian lithosphere, relative to Earth, will enhance groundwater storage and circulation.

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