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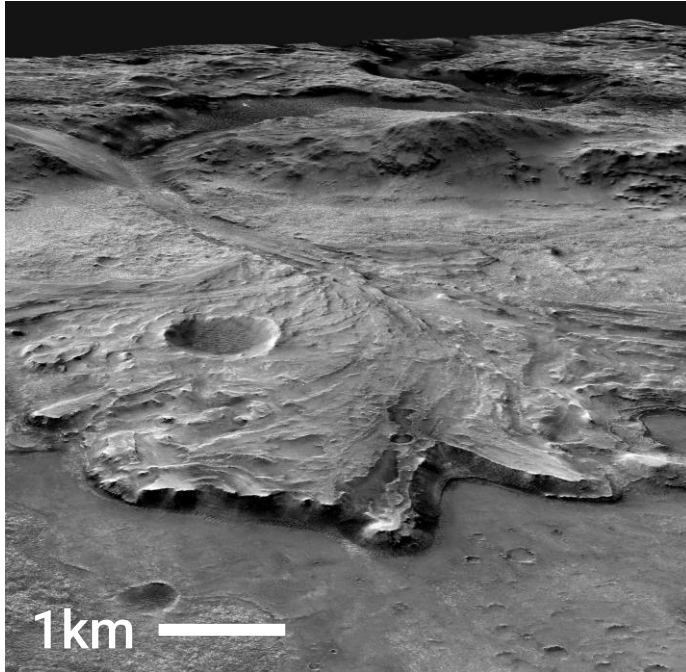
**Clear and present danger:
understanding risks to outstanding
universal geoheritage values on
Mars to guide proactive policy**

UNCOPUOS Legal Subcommittee, 62nd Session, Agenda Item 15, March 27th, 2023

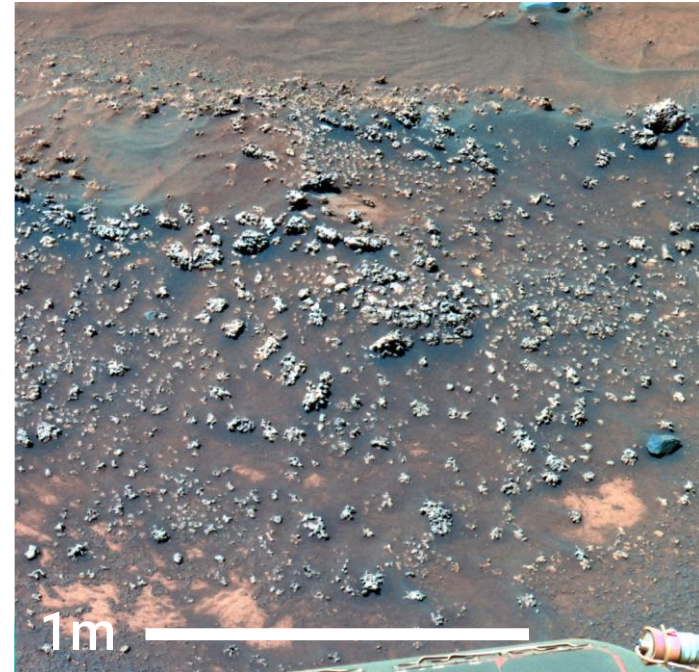
Mars' Geoheritage



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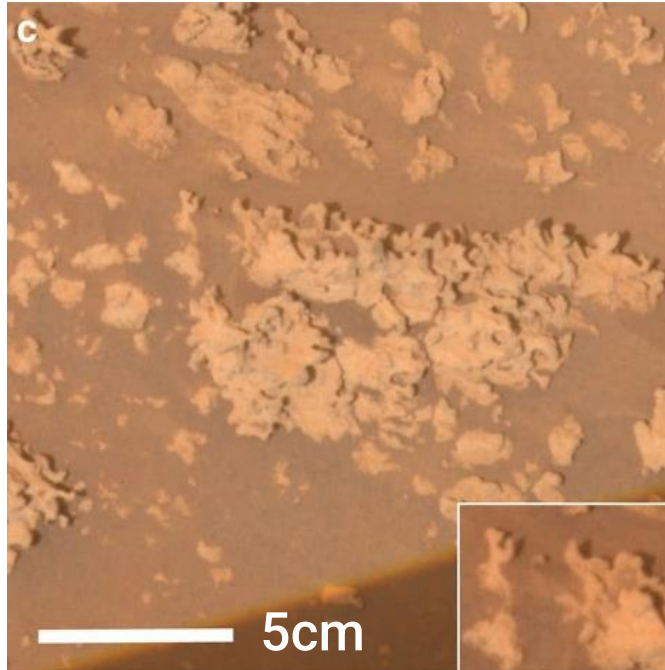
Jezero Crater delta



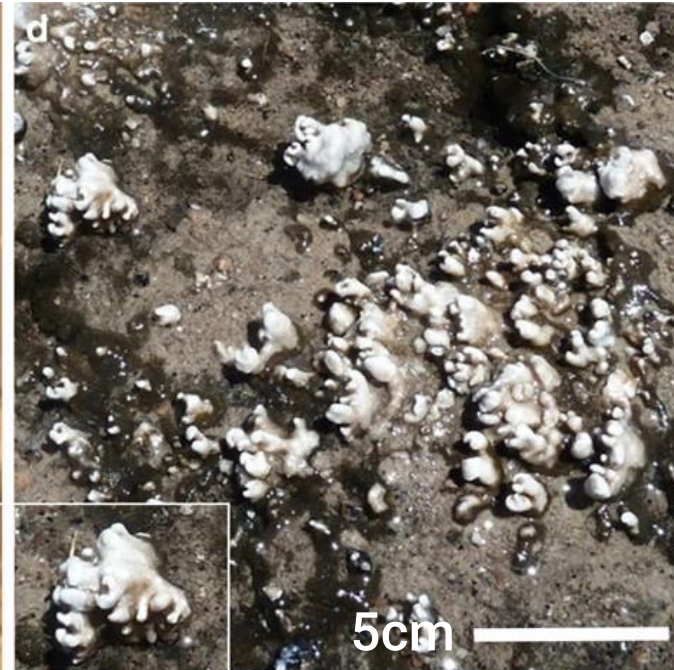
Home Plate digitate
opaline silica



Home Plate



El Tatio, Chile



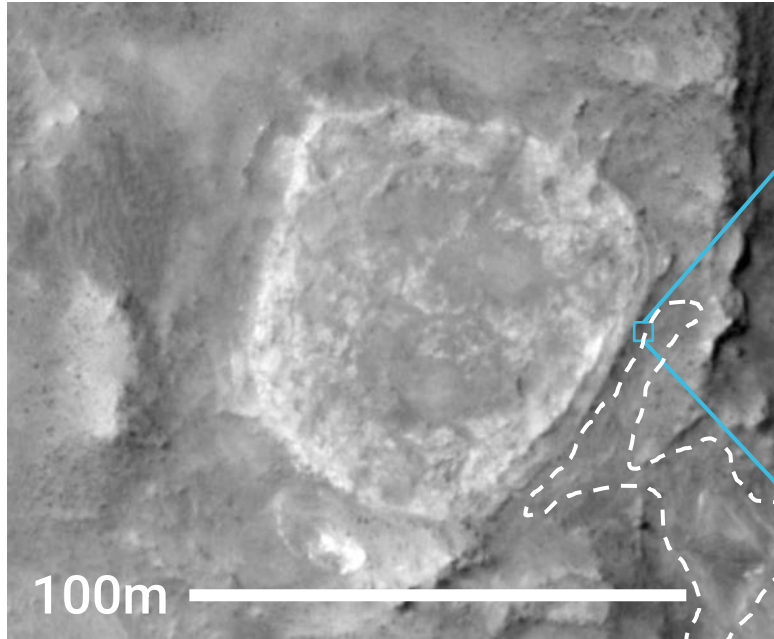
Credit: Ruff &
Farmer, 2016

Scale of Geoheritage

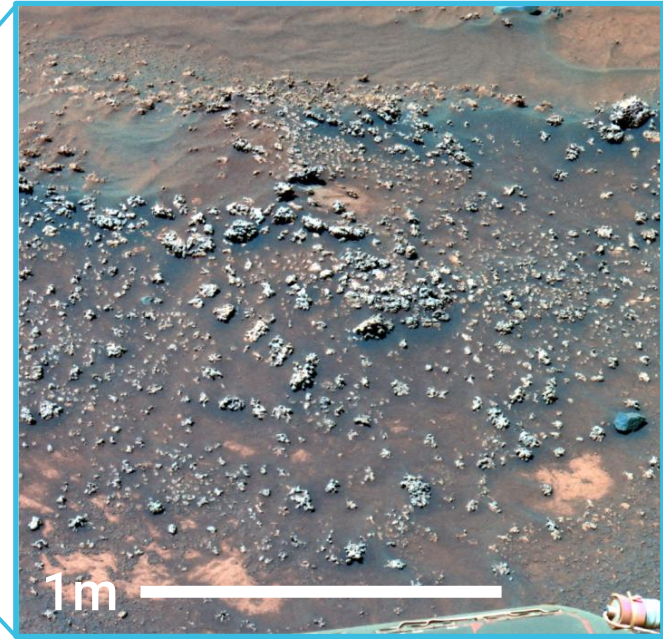


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Key outcrops with possible evidence of life occur over ~50 metres.



Home Plate



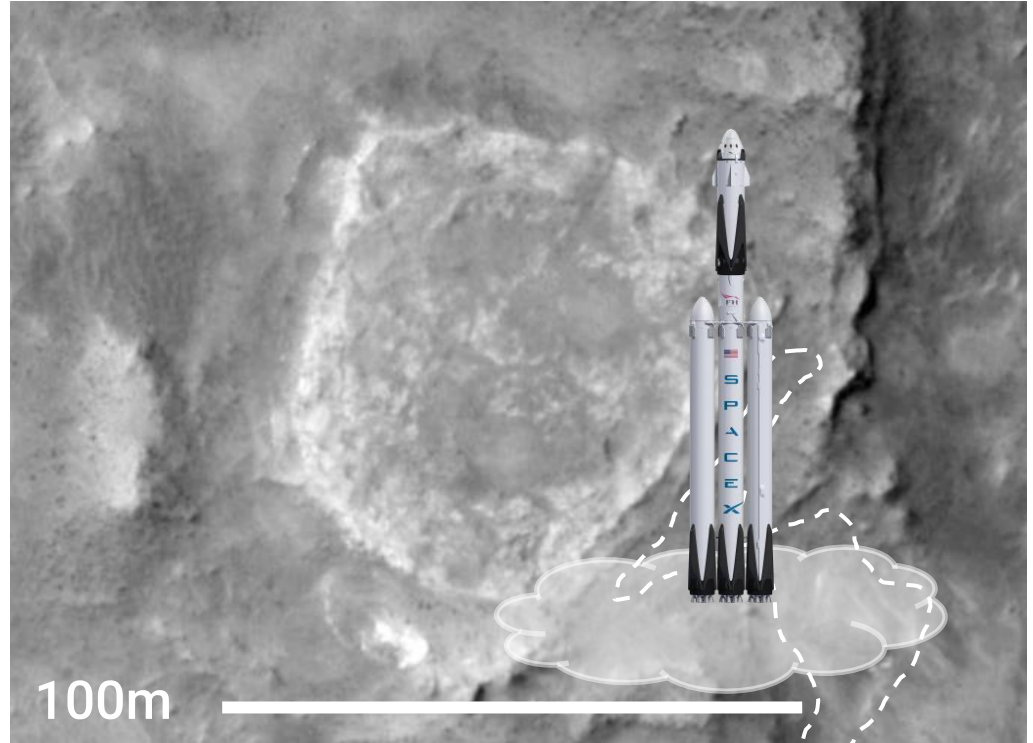
Digitates

What are the risks?

No geoconservation or management in place.

A single rocket landing or launch would **destroy entire outcrops** of geoh heritage significance.

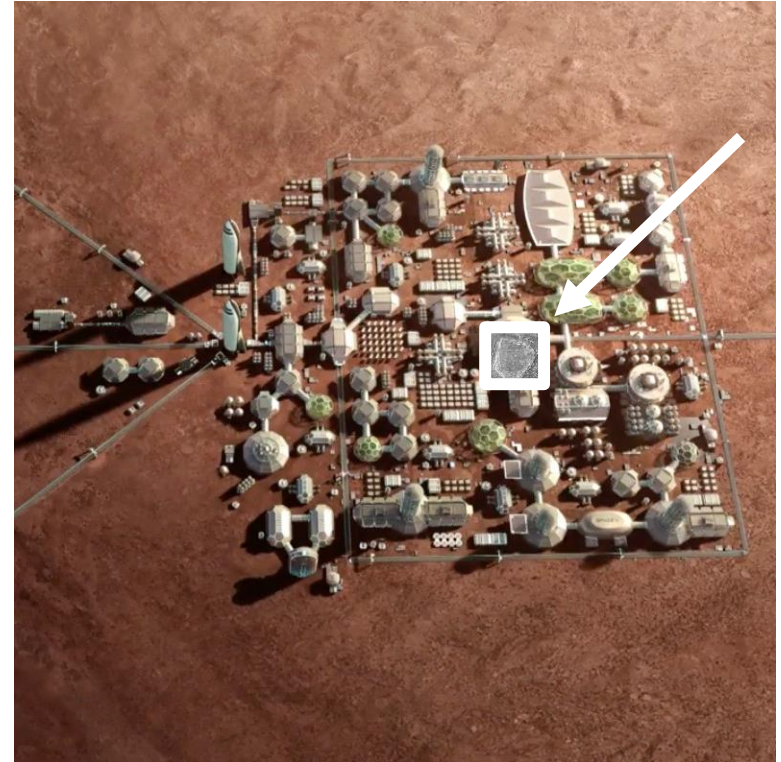
Note: see if I can add a cloud



Home Plate vs SpaceX Falcon Heavy Rocket

What are the risks?

Colonisation, occurring over large areas, could **destroy all** palaeo-environmental context as well as outcrops of geoheritage significance.

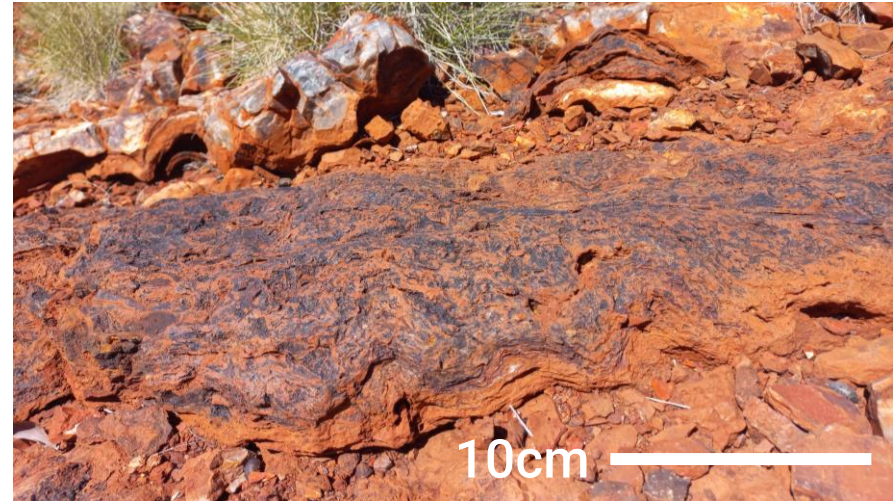
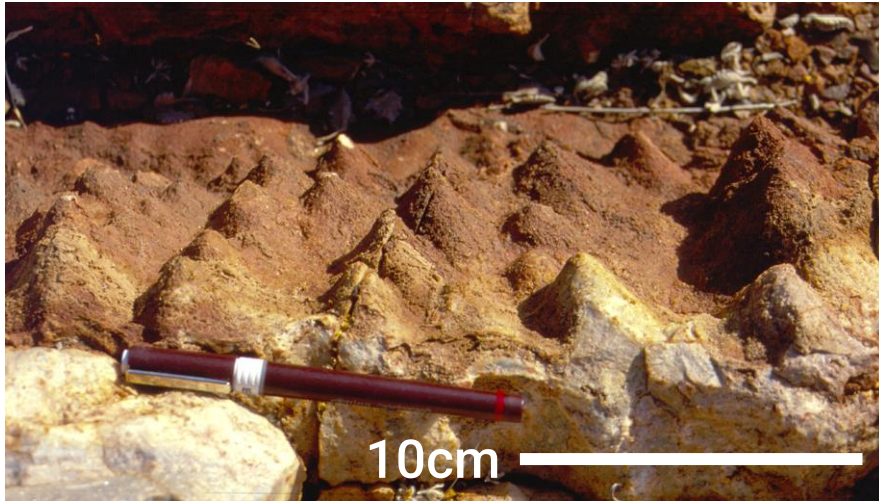


Mars colony vs Home Plate

Earth's Geoheritage



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3.5 billion year old fossil stromatolites, Western Australia.

Scale of Geoheritage



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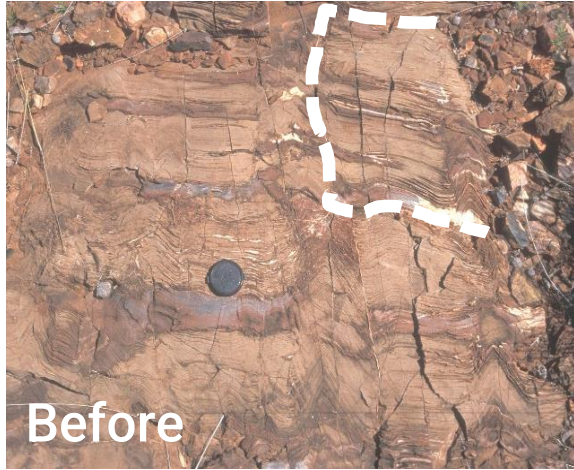
Ancient Landscape



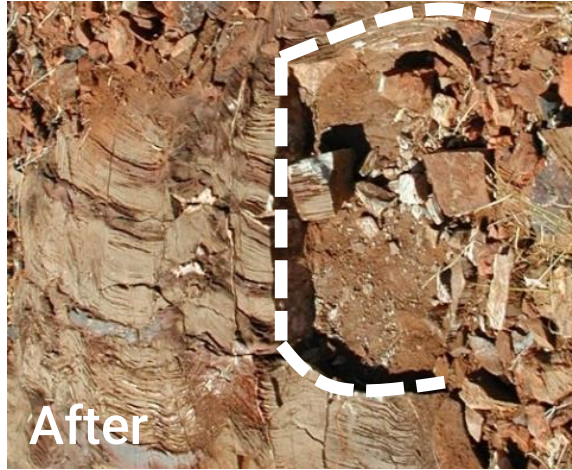
Evidence of Life

Damage

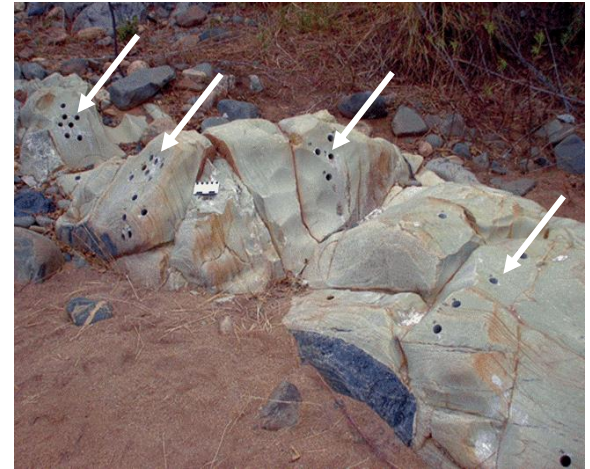
Geoheritage sites across the world have suffered significant damage.



Pilbara, Australia



Pilbara, Australia



Barberton, South Africa

Legal Regime



Geoheritage protection measures - e.g., World Heritage Convention - do not apply to outer space.



Heritage is not included in any space-related instruments, except Cultural Heritage in the Artemis Accords.



No legal instruments specific to Mars.



Protection is currently limited to preventing biological contamination through voluntary adoption of COSPAR policy.

Proposed New Item



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Development of proactive, science-led policy to protect Mars' outstanding universal geoheritage values



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Benefits



Proactive
understanding
and planning



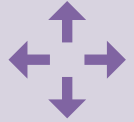
Strengthen
the
international
legal regime



Enhance
international
cooperation



Sustainable
development

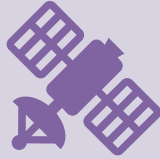


Ability to
expand

Challenges



Growing role of
non-State actors
in Mars missions



Changing
understanding of
Mars science
and exploration



Understanding
appropriate
legal
instruments



Balancing
exogeococonservation
with continued
science and
exploration

To Summarise



- There is clear and present danger to Mars' sites of outstanding universal geoheritage value.
- Significant damage to sites of outstanding universal geoheritage value can occur easily, as seen on Earth.
- The present legal regime will not protect Mars' outstanding universal geoheritage value.
- Therefore, this Subcommittee is invited to consider a new item:
Development of proactive, science-led policy to protect Mars' outstanding universal geoheritage values

THANK YOU

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