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

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Mars’ Geoheritage

Jezero Crater delta

Home Plate digitate opaline silica
Outstanding Universal Geoheritage Value

Home Plate

El Tatio, Chile

Credit: Ruff & Farmer, 2016
Key outcrops with possible evidence of life occur over ~50 metres.
What are the risks?

No geoconservation or management in place.

A single rocket landing or launch would destroy entire outcrops of geoheritage 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 palaeoenvironmental context as well as outcrops of geoheritage significance.

Mars colony vs Home Plate
3.5 billion year old fossil stromatolites, Western Australia.
Scale of Geoheritage

Ancient Landscape

Evidence of Life
Geoheritage sites across the world have suffered significant damage.
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
Development of proactive, science-led policy to protect Mars’ outstanding universal geoheritage values
Benefits

- Proactive understanding and planning
- Strengthen the international legal regime
- Enhance international cooperation
- Sustainable development
- Ability to expand
Challenges

1. Growing role of non-State actors in Mars missions
2. Changing understanding of Mars science and exploration
3. Understanding appropriate legal instruments
4. Balancing exogeoconservation 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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