

IAF SPACE EXPLORATION SYMPOSIUM (A3)  
Space Exploration Overview (1)

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ADVANCING THE COSPAR POLICY PLANETARY PROTECTION MEASURES FOR A SAFE AND  
SUSTAINABLE EXPLORATION**Abstract**

Searching for life in the Solar system and beyond has been one of the drivers for space exploration since its beginnings. These investigations have targeted particular bodies found in what is called the “habitable zone”. Mars, therefore has been and still remains under extensive exploration, but the large moons of the gas giants Jupiter and Saturn, have been revealed as extremely astrobiologically interesting bodies with promising conditions for habitability and the development and/or maintenance of life. In order to ensure a safe and sustainable scientific exploration of such bodies, COSPAR has established planetary protection guidelines which aim to guide compliance with the Outer Space Treaty of 1967, with 114 States parties, to protect against the harmful effects of forward and backward contamination. Although not legally binding under international law, the standards offered by the Policy on Planetary Protection established and promoted by the COSPAR Panel on Planetary Protection (PPP) are internationally endorsed along with implementation guidelines supplied for reference of all stakeholders. The Panel is concerned with biological interchange in the conduct of solar system exploration involving chemical evolution and the origin and evolution of living organisms: possible effects of contamination of planets other than the Earth and of planetary satellites within the solar system by terrestrial organisms and contamination of the Earth by materials returned from outer space carrying potential extraterrestrial organisms ([cosparhq.cnes.fr/scientific-structure/panels/panel-on-planetary-protection-ppp/](https://cosparhq.cnes.fr/scientific-structure/panels/panel-on-planetary-protection-ppp/)). The Policy is based upon the most current scientific knowledge and on the principle that the COSPAR planetary protection guidelines should enable the exploration of the solar system, not prohibit it. The Policy includes five main categories, depending on the target and objective of the specific space mission and requirements with various degrees of rigor in the contamination control applied. The Policy is assessed regularly and updated with new scientific findings in conjunction with the fast-evolving space exploration needs. The Panel’s activities deal with the individual needs of a space mission while exercising swift care and expertise to ensure sustainable exploration of the Solar System. We will present recent activities for the Moon, Mars and the Icy Worlds.

**References**

- Coustenis et al., 2023. *Front. Astron. Space Sci.*, 10:1172546.
- COSPAR 2021. SRT 211, 9-11.
- Doran et al., 2024. *Life Sci. Space Res.*, in press.
- Olsson-Francis et al., 2022. *LSSR*, 36, 27-35.
- Spry et al., (2024). *Astrobiology*, in press.
- Zorzano-Mier, et al., 2022. The COSPAR Planetary Protection Requirements for Space Missions to Venus. *LSSR*, 37:18-24.