Habitability of Planets in the Solar System

Mercury

The spacecraft MESSENGER found evidence of water ice on Mercury.

Saturn

Like Jupiter, Saturn is not likely to host life. However, Titan and Enceladus have been speculated to have possible habitats supportive of life.

Mars

Current studies on Mars by the Curiosity and Opportunity rovers are searching for evidence of ancient life, including a biosphere based on autotrophic, chemotrophic, chemolithoautotrophic microorganisms, as well as ancient water.

The Moon

3.5 to 4 billion years ago, the Moon could have had a magnetic field, an atmosphere, and liquid water sufficient to sustain life on its surface.

Jupiter system

Scientists have indications that heated subsurface oceans of liquid water may exist deep under the crusts of the three outer Galilean moons: Europa, Ganymede, and Callisto. The EJSM/Laplace mission was planned to determine the habitability of these environments; however, due to lack of funding, the programme was not continued. Similar missions like ESA's JUICE and NASA's Europa Clipper are currently in development and are slated for launch in 2023 and 2024, respectively.

Other bodies

Models of heat retention and heating via radioactive decay in smaller icy Solar System bodies suggest that Rhea, Titania, Oberon, Triton, Pluto, Eris, Sedna, and Orcus may have oceans underneath solid icy crusts approximately 100 km thick.

Small Solar System bodies

Small Solar System bodies have also been speculated to host habitats for extremophiles. Fred Hoyle and Chandra Wickramasinghe have proposed that microbial life might exist on comets and asteroids.

Source: Open Source Research by Extraterrestrial Institute