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Liquids and habitability in the subsurface of Mars

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It is shown that, at least temporarily, liquid water must exist in different types in the upper surface of Mars, also at temperatures below 0° C. Thus, there must evolve liquid brines in case of a presence of soluble salt grains in the soil. The resulting liquid aqueous salty solutions ("cryobrines") can have their eutectic temperatures far below 0° C. Liquid cryobrines are therefore expected to exist at appropriate sites in the subsurface of Mars. These sites are characterized.
This presence of a liquid in the subsurface soil may give conditions, which could permit life processes to proceed on present Mars, in analogy to e.g. terrestrial halophilic bacteria. Related current challenges to "cryobrine-microbiology" are discussed.