Liquids and habitability in the subsurface of Mars

Diedrich Moehlmann
DLR, DLR Institut für Planetenforschung, Berlin, Germany (dirk.moehlmann@dlr.de, +49 30 67055-3)

Liquids and habitability in the subsurface of Mars

D. Möhlmann, Institut für Planetenforschung, Berlin

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.