# *MICRO-NICHES IN THE NEPTUNIAN DIKES OF PALEOZOIC CARBONATE MOUNDS. SUITABLE HABITATS FOR EXTREMOPHILES?*

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Nearly 50 carbonate, conical mounds (locally named Kess-Kess), several tens meters high, crop out in the submarine volcanic complex of the Hamar Laghdad (Anti-Atlas, Morocco), which was active in Early Devonian time. Kess-Kess consist of microcrystalline carbonates and their origin is probably connected to volcanic hydrothermalism (Belka, 1998, Mounji et al., 1998). A complex network of synsedimentary neptunian dikes (fractures) is a typical feature of these mounds. These dikes are important in acting as open conduits for fluids, likely connected to hydrothermal fluid flux associated to the Devonian volcanism, and could represent the preferential routes to the seafloor for the advection of fluids such as hot water and methane. Numerous microbial-derived structures are present along the walls and as filling of the dykes (Cavalazzi et al., 2004). They include microstromatolites and other isolated microbial remains. These microbial structures are associated with early cement carbonate phases that underline their singenetic origin with the Devonian rock unit. The neptunian dikes might therefore represent paleoecological niches in which microbial communities used chemosynthetic pathways to gain energy through the utilization of the migrating fluids. Although there is not yet clear evidence that Mars or other planetary bodies hosts/ed hydrothermal activities/deposits, we propose these dykes as a possible terrestrial analogue for protected (subsurface) environments, not related to some Earth-like ambient conditions (such as light, oxygen-free conditions, etc.), on Mars and other bodies.

**References**

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