

# **Distribution and classification of possible pseudocraters at Elysium and Utopia Planitiae, Mars.**

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Potential pseudocraters (or volcanic rootless cones) have been located and described in various locations of the martian lowlands, including Elysium Planitia and Utopia Planitia. As pseudocraters form as a result of lava-water (or lava-ice) interaction, their existence has important implications for the local hydrological history of Mars and their presence may indicate potential niches for life. We have conducted an exhaustive review of THEMIS and high resolution MOC images (including images not available in previous publications) in order to locate circular structures that may represent potential pseudocraters. Our target areas are Elysium, where they were previously described, and Utopia Planitia. Our identification of pseudocraters is based both on morphology and spatial distribution, as previous authors have shown that terrestrial pseudocraters have a non-random distribution that can be quantified by nearest-neighbor statistics. Here, we present the preliminary results of our analysis: (1) an increase in the number of images where possible pseudocraters are visible in Elysium Planitia; (2) the identification of new potential pseudocrater fields in Utopia Planitia; (3) a preliminary classification of these circular structures; (4) a preliminary geostatistical analysis of spatial distribution based on nearest neighbour statistics; and (5) a possible explanation into their geologic context.