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EXAMINING THE POTENTIAL OF LIQUID WATER ON MARS

Abstract

Over the past 30 years, water-generated landforms, groundwater processes and temporal arrangement of the water-related activities on Mars had the highest share of interest of the planetary scientists in order to evaluate the possibility of old or recent life on Mars. The recently discovered recurring slope lineae (RSL) indicate the potential of seasonal water flow at present on the Martian surface. RSL emanate from bedrock outcrops and progressively lengthen during warm seasons, many of which occur on equatorial- and west-facing slopes, but fade during cooler seasons. RSL occurrences have been hypothesized to originate from snow melting, deliquescence, dry granular flow or shallow groundwater. The dry flow hypothesis does not explain the abundant RSL occurrences below the angle of repose still as most of the morphological characteristics reported within the RSL sites. In this paper, we are mapping the RSL globally on Mars, whereas taking the detailed analysis of Asimov crater and Hale crater, where we are characterizing the physical environment and nature of RSL. we also want to investigate whether structures play a major role in channeling deep groundwater to the surface of Mars and to identify the conditions/settings under which this phenomenon could occur. The findings from this study will have broad significance in the assessment of habitability on Mars and further implications on future missions to Mars.

Keywords- Mars, Recurring slope lineae, Martian Surface, Atmosphere and Satellites.

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