Anomalous modifications of a Martian crater in Arabia Terra.

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This study discusses the characteristics of an enigmatic ∼25 km crater. It is located at 36,0N°/351,8E°, in Arabia Terra on the highland side of the dichotomy boundary. It has a slightly elliptical shape and it exhibits almost no raised rim and no traceable ejecta field. Earlier mappings show that the region is of Noachian age.

We use a multitude of datasets (HRSC, OMEGA, THEMIS, MOC and MOLA) to characterize the crater and its immediate surroundings. Five distinct terrain units are identified: 1) Layered crater wall, 2) smooth crater floor, 3) crater floor unit cracked by severe fissuring, 4) low albedo depression in the crater center and 5) two prominent central bulges inside the depression. Additionally, there are two fluvial channels entering the crater.

With the current data, the origin of the crater can not be explained unambiguously. However, the characteristics of the crater indicate that volcanic processes and water has been involved in its evolution.