

AAS/DPS Abstract 2009

Submitted: 7/8/2009 12:02:18 PM EDT

Harrison, T., M. C. Malin, and K. S. Edgett (2009) Present-day gully activity observed by the Mars Reconnaissance Orbiter (MRO) Context Camera (CTX), 41st American Astronomical Society Division for Planetary Sciences Meeting, Abstract 57.03, *Bulletin of the American Astronomical Society* 41(3), p. 1113.

**Present-Day Gully Activity Observed by the Mars Reconnaissance Orbiter (MRO) Context Camera (CTX)** Tanya Harrison<sup>1</sup>, M. C. Malin<sup>1</sup>, and K. S. Edgett<sup>1</sup>, <sup>1</sup>Malin Space Science Systems.

Martian middle- and high-latitude gullies were first observed in Mars Global Surveyor Mars Orbiter Camera (MOC) images in 1999. Appearing to be geologically young, they were repeatedly imaged by MOC to determine whether they were changing. This led to identification of 2 sites where new flows occurred between 1999 and 2005. Now, CTX routinely monitors 617 gullied locales through re-photography and comparison with previous images obtained by MOC, Mars Odyssey THEMIS, Mars Express HRSC and the MRO cameras. As of July 2009, 5 new light-toned flow features and 1 new dark-toned flow associated with gullies have been found. All formed since 2001. Once identified, the CTX team provides an opportunity for the HiRISE team to image the feature (and they do) to allow examination of geomorphic characteristics as small as 1 m across. Of the 6 new flows, 3 formed within a single Mars year (although not the same year) during autumn/winter/early spring, suggesting a possible seasonal control (albeit not one that involves summer warming). CTX images also show that there is a cluster of gullies with light-toned flows near the Sirenum Fossae. Using HiRISE images, we find that the morphology and inferred emplacement behavior of these features are consistent with those of fluidized debris flows (requiring liquid) and not dry, granular flows. Evidence comes from the patterns of flow around obstacles, ponding in and subsequent overtopping of topographic depressions, super-elevation of deposits on channel banks where the channels change direction, anastomoses in distal reaches, and lobate terminations. Including those documented by MOC, 8 cases in which new gully features formed between 1999 and 2009 have been identified. The observations indicate that some gullies are active today, suggesting that liquid water is present on Mars and does, even now, occasionally appear on the planet's surface.