

Thursday, March 26, 2009
POSTER SESSION II: MARTIAN GULLIES: MORPHOLOGY AND ORIGINS
6:30 p.m. Town Center Exhibit Area

Schon S. C. Head J. W.

[*Terraced Cutbanks and Longitudinal Bars in Gully Channels on Mars: Evidence for Multiple Episodes of Fluvial Transport*](#) [#1691]

Longitudinal bars and multiple terraced cutbanks suggest distinct episodes of fluvial transport in gully channels. The low preservation potential of these high-slope, steep-sided, non-lithified features implies that they are latest Amazonian in age.

Kneissl T. Reiss D. van Gasselt S. Neukum G.

[*Northern-Hemisphere Gullies on Mars — Distribution and Orientation from the Evaluation of HRSC and MOC-NA Data*](#) [#1590]

We evaluated HRSC and MOC-NA data covering the northern hemisphere in order to analyse geographical and latitudinal distribution, geological context and orientation of gullied slopes.

Bryson K. L. Sears D. W. G.

[*Evaporation Effects on the Formation of Martian Gullies*](#) [#1368]

We analyze HiRISE images of martian gullies and adjacent dunes to evaluate the hypothesis that evaporation is a limiting factor in gully formation.

Johnsson A. Olvmo M. Reiss D. Hiesinger H.

[*Latitudinal Survey of Periglacial Landforms and Gullies of Eastern Argyre and Poleward on Mars*](#) [#2405]

We perform an investigation of periglacial landforms and gullies of eastern Argyre and poleward. Aim of study is to characterize the environment with a focus on landform zonation and its linkage to topography, geology, surface conditions and climate.

Dove A. R. Toon O. B. Heldmann J. L.

[*Observations and Modeling of the Mass and Energy Balance of Terrestrial Snowpacks to Constrain Martian Snowpack Models*](#) [#1730]

In order to improve martian snowpack models, we utilize numerical modeling and observations of terrestrial snowpacks to gain a better understanding of the physical processes that drive snowpack metamorphosis.

Rivera-Valentin E. G. Gavin P. Coleman K. A. Dixon J.

[*Liquid Water and Water-Ice Slush Flume Simulations of Gully Synthesis Varying Exit Aperture Diameter*](#) [#1355]

In an attempt to better understand the proposed wet gully synthesis hypothesis, this project undertakes the task of simulating liquid water and water-ice slush flows within a flume. We specifically study the effects of varying exit aperture diameter.

Dickson J. L. Head J. W.

[*The Formation and Evolution of Youthful Gullies on Mars: Gullies as a Late-Stage Product of Mars' Most Recent Ice Age*](#) [#1768]

We place new data of gullies from MRO in the context of data from MGS to explain the formation and evolution of gullies within the last several million years from the repeated melting of cold-trapped wind-blown snow.

Roehm C. L. Soare R. J. Osinski G. R. Costard C.

[*Crater-Rim Gully Formation in Utopia Planitia: Hydrological Support of the Periglacial Origin Hypothesis*](#) [#2245]

In this study, we present preliminary data derived from MOC imagery comparing the volumetric capacity of ejecta-based depressions with the volumetric dimensions of nearby crater-rim gullies.

Reiss D. Hiesinger H. Hauber E. Zanetti M. Preusker F. Trauthan F. Reimann G. M. Raack J. Carlsson A. E. Johnsson A. Olvmo M. Jaumann R. Johansson H. A. B. Johansson L. McDaniel S.
[Morphologic and Morphometric Comparison of Gullies on Svalbard and Mars](#) [#2362]

We compare terrestrial analogs on Svalbard morphologically and morphometrically with martian gullies in order to constrain the formation process (fluvial and/or debris flow).

Araki S. Williams R. M. E. Dombard A. J.

[Examining Formation Mechanisms of Martian Gullies Using Mars Reconnaissance Orbiter Context Imagery](#) [#2497]

We surveyed Context imagery to construct a database of gully features and used image-based observations to test gully formation mechanisms. Thus far we find that no one formation mechanism can explain the gully features observed.

Gulick V. C. Davatzes A. E. K.

[MRO's HiRISE Coverage of Fluvial Landforms on Mars During its Primary Science Phase](#) [#2562]

MRO HiRISE imaging of fluvial features is summarized, with a focus on gully forms.

Hart S. D. Gulick V. C. Parsons R. A. Barnhart C. J.

[Gully Slopes and Discharges on Lyot Crater's Central Peak](#) [#2349]

This study focuses on two large gullies present on the local topographic high of the central peak of Lyot crater. We use HiRISE stereo images to create high resolution gully profiles and cross sections, and calculate discharge estimates based on these measurements.

Kolb K. J. McEwen A. S. Pelletier J. D. HiRISE Science Team

[Measuring Slopes of Gully Fan Apices Using Digital Elevation Models](#) [#2268]

We measure channel gradients above the highest observable extent of deposition in gullies to assess the involvement of liquid water in gully-carving flows.

Conway S. J. Balme M. R. Murray J. B. Towner M. C.

[Debris Flow as a Mechanism for Forming Martian Gullies](#) [#1950]

Recently active gullies presents an apparent paradox, as the conditions on Mars prevent the survival of surface water. We compare the morphology of these gullies to those on Earth and tentatively suggest debris flow as forming the martian gullies.

Lucas A. Mangeney A. Mangold N. Mège D. Bouchut F.

[New Insights into the Dynamics of Martian Gullies](#) [#1784]

Numerical simulations have been performed so as to figure out the dynamics of dry granular media. Comparisons with bright deposits gully show that a pure dry granular media could not explain their bright deposits.

Costard F. Védie E. Font M. Lagarde J. L.

[Laboratory Simulations of Martian Gullies over Sand Dunes: Impact of the Permafrost Table](#) [#1289]

Some unusual linear gullies over sand dunes (Russell crater, Mars) are characterized by their long and narrow channels. This study focuses on the formation of these gullies by means of laboratory simulations within a cold room.

Chevrier V. F. Ulrich R. Altheide T. S.

[Viscosity of Liquid Ferric Sulfate Solutions and Application to the Formation of Gullies on Mars](#) [#1424]

Viscosity of ferric sulfate solutions has been experimentally measured and used in a numerical model of gully flow. Results show that boulders up to four meters can be moved in the channel, explaining size segregation observed by MRO-HiRISE.