

**Thursday, March 13, 2008**  
**POSTER SESSION II: MARTIAN GULLIES AND SLOPE STREAKS**  
**6:30 p.m. Fitness Center**

Dixon J. C. Coleman K. A.

*Martian "Gullies": Unfortunate Use of a Terrestrial Term* [#2022]

It is unfortunate that the hillslope forms identified on Mars are referred to as "gullies" as they bear little resemblance to their namesake in the terrestrial realm. It is necessary to identify more appropriate terrestrial analogs of the forms.

Howe K. L. Coleman K. A. Dixon J. C.

*Understanding Martian Gullies* [#2189]

Simulations run in a flume filled with medium size sand successfully produced gully forms with three parts resembling gullies observed on the martian surface. Gully length parameters were inversely related to slope and directly related to flow rate.

Carlsson E. Johansson H. Johnsson A. Heldmann J. L. McKay C. P. Olvmo M.

Fredriksson S. Schmidt H. T.

*An Evaluation of Models for Martian Gully Formation Using Remote Sensing and In Situ Measurements of Svalbard Analogs* [#1852]

Models for martian gully formation are evaluated by studying Svalbard analogs with a similar remote sensing methodology as previously used on Mars, complemented with *in situ* measurements on Svalbard.

Howard A. D. Moore J. M. Dietrich W. E. Perron J. T.

*Martian Gullies: Morphometric Properties and Flow Characteristics* [#1629]

Flows through martian gullies inferred to occur as debris flows with discharges exceeding  $10^3$  m<sup>3</sup>/s and velocities about 4 m/s. Deposited material is derived primarily from pasted-on terrain.

Welty C. B. Crown D. A. Balme M. R.

*Small-Scale Morphologic Properties of Martian Gullies: Insights from Analysis of HiRISE Images* [#2295]

Analyses of small-scale gully morphologies, including boulder distributions and upslope initiation points, are used to explore the potential diversity of gully formation processes and mechanisms.

Allen T. L. Wilhelm M. B. Heldmann J. L. Allen S. J.

*Correlation of Regional Topography and Martian Gully Orientation* [#2060]

A possible correlation between the direction of regional down slope topography and gully orientation angle was investigated. A positive correlation could suggest that regional topography, rather than insolation, affects the location of gullies.

Williams R. M. E.

*An Update on Orientation Assessment for Southern Hemisphere Gullies* [#1958]

The purpose of this study is to use THEMIS VIS (18 m/pix) data to characterize the orientation of martian gullies. This abstract provides an update on prior results based on new data acquired over southern hemisphere craters with gullies.

Reiss D. Hiesinger H. Gwinner K.

*Regional Differences in Gully Occurrence on Mars: A Comparison between the Hale and Bond Craters* [#1865]

We compared the Hale and Bond craters and considered the thermophysical properties, slopes, and morphologies to investigate why the occurrence of gullies in neighboring craters is so different.

Ulrich R. Chevrier V. F. Coleman K. A. Dixon J. C.

*Drag Forces on Boulders in Martian Gullies from Flow of Viscous Concentrated Salt Solutions* [#1336]

Concentrated solutions of salts known to exist on the martian surface have viscosities far in excess of pure water. We estimate the flow velocity and the drag forces on boulders for these fluids in a representative martian gully.

Kereszturi Á. Möhlmann D. Bérczi Sz. Ganti T. Horvath A. Kuti A. Pocs T. Szathmary E.  
*Analysis of Possible Interfacial Water Driven Seepages on Mars* [#1555]

Based on observations and theoretical considerations, seepage-like structures on polar dunes emanate from Dark Dune Spots are probably caused by interfacial water at subzero temperatures.

Kreslavsky M. A. Head J. W. III  
*“Wet” Mechanism for Slope Streak Formation on Mars* [#1411]

We propose that slope streaks are formed by seasonally occurring concentrated  $\text{CaCl}_2$  brines in the soil. This mechanism explains some observations better than the traditional “dry” mechanism. We also report some new supporting observations.

Sherman S. R. Kreslavsky M. A.  
*Slope Streak Formation Rate on Mars: Investigation Using Overlapping THEMIS Images* [#2427]

We report preliminary results of a survey of slope streak formation rates on Mars. The rate is highly uneven both in space and in time.

Mushkin A. Gillespie A. R. Montgomery D. R. Schreiber C. Arvidson R. E.  
*New Observational Constraints on the Nature of Slope Streaks on Mars* [#2388]

New HiRISE, HRSC and CRISM observations indicate slope streaks are compositionally distinct depositional features void of  $\text{H}_2\text{O}$  (liquid or ice). We propose a new diagenetic model for slope streaks as precipitates from short-term seeps of brines.

Bulmer M. H. Beller D. Griswold J. McGovern P. J.  
*Granular Materials in the Disrupted Terrain of Olympus Mons Aureoles* [#1971]

The rugged aureoles that surround Olympus Mons contain one of the two major global concentrations of slope streaks. Streaks appear to be granular, derived from weathered basaltic lavas that form aureole units.

Lucas A. Mangeney A. Mège D. Bouchut F.  
*On the Simulation of Large Martian Landslides* [#1818]

A new mobility parameter for large martian landslides is defined and has been used for 3D numerical simulations. Our work makes it possible to characterize the dynamics of the flow regardless of the geometry of the released mass and of the underlying topography.

Costard F. Védie E. Font M. Lagarde J. L.  
*Laboratory Simulations of Martian Debris Flows Over Sand Dunes* [#1268]

The Russell crater exhibits linear gullies of unknown origin justifying the use of laboratory experiments to understand their morphology. Our experiments suggest the presence of ice-rich permafrost with a relatively thin active layer.