

Tuesday, March 16, 2004

**POSTER SESSION I: MARS: HYDROLOGY, DRAINAGE, AND VALLEY SYSTEMS**  
**7:00 p.m. Fitness Center**

Mohan S. Bridges N. T.

*Analysis of Orientation-dependence of Martian Gullies* [#1339]

We investigate the orientation of Martian gullies and the dependence of various parameters on the orientation. In general, there is no strong orientation-dependence, except for gullies being somewhat longer, wider, and having greater drainage density where oriented poleward.

Frey E. L. Sakimoto S. E. H. Frey H. V.

*A Preliminary Relationship Between the Depth of Martian Gullies and the Abundance of Hydrogen on Near-Surface Mars* [#1977]

We have found an apparent inverse linear relationship between the average depth at which gullies form and the abundance of near-surface hydrogen as detected by GRS in four areas on Mars: In drier areas gullies form at greater depths.

Stern J. G. Frey H. V.

*Water Indicators in Sirenum Terra and Around the Argyre Impact Basin, Mars* [#1604]

The relationships between three temporally distinct indicators of water (fluidized craters, gullies inside those craters and near-surface hydrogen abundance) are compared for two different areas on Mars, Sirenum Terra and around Argyre.

Berman D. C. Hartmann W. K. Crown D. A.

*The Distribution of Gullies and Tongue-shaped Ridges and Their Role in the Degradation of Martian Craters* [#1391]

Gullies and tongue-shaped ridges are found together on interior crater walls and appear to be part of a sequence of mid-latitude crater degradation. They have similar latitudinal distributions and are observed in areas with other ice-related landforms.

Leverington D. W. Maxwell T. A.

*A Critical Evaluation of Crater Lake Systems in Memnonia Quadrangle, Mars* [#1439]

Terrace and channel features in western Memnonia have morphologies that are inconsistent with formation as interconnected lacustrine and fluvial elements within a regional drainage system.

Abramov O. Kring D. A.

*Impact-generated Hydrothermal Activity at Gusev Crater: Implications for the Spirit Mission* [#1976]

We use numerical modeling to estimate the extent and duration of an impact-induced hydrothermal system at Spirit's landing site, Gusev crater. Predictions are made about mineralogies indicative of hydrothermal activity that the rover might encounter.

Lewis K. Aharonson O.

*Characterization of the Distributary Fan in Holden NE Crater Using Stereo Analysis* [#2083]

Here we present the results of our analysis of the distributary fan discovered in Holden NE crater by Malin and Edgett in 2003. We used stereopairs of MOC Narrow Angle images to derive topography on the 10-meter scale for this feature.

Stepinski T. F. Collier M. L.

*Computational Analysis of Drainage Basins on Mars: Appraising the Drainage Density* [#1168]

We have extracted 26 Martian drainage basins and delineated their drainage networks. Summary of values for major properties characterizing the basins and networks are given. A typical value of drainage density is  $D = 0.1 \text{ km}^{-1}$ .

Fortezzo C. M. Grant J. A.

*Hypsometric Analyses of Martian Basins: A Comparison to Terrestrial, Lunar and Venusian Hypsometry* [#1647]

Hypsometric analyses of Margaritifer Valles and other selected Martian basins are compared with selected basins from the Earth, Moon and Venus in an effort to better understand the surficial processes shaping basins on Mars.

Bleamaster L. F. III Crown D. A.

*Morphologic Development of Harmakhis Vallis, Mars* [#1825]

Increases in image spatial resolution coupled with MOLA topographic data help to evaluate and refine the geologic history of Harmakhis Vallis, one of three major vallis systems in the eastern Hellas region of Mars.

Ghatan G. J. Head J. W. III Wilson L. Leask H. J.

*Mangala Valles, Mars: Investigations of the Source of Flood Water and Early Stages of Flooding* [#1147]

The source region of Mangala Valles outflow channel is assessed and modeled as a dike-induced graben cracking the cryosphere and permitting release of groundwater under hydrostatic pressure.

Leask H. J. Wilson L. Mitchell K. L.

*The Formation of Aromatum Chaos and the Water Discharge Rate at Ravi Vallis* [#1544]

A sill intrusion into the cryosphere formed Aromatum Chaos. The water flux in the associated Ravi Vallis channel implies that cryosphere disruption allowed water released from a deeper aquifer to elutriate crustal material from Aromatum Chaos.

Burr D. M. Keszthelyi L.

*Inferring Hydraulics from Geomorphology for Athabasca Valles, Mars* [#1440]

Geomorphic mapping, in comparison with terrestrial catastrophic flood terrains, allows us to infer some hydraulics in Athabasca Valles. Sediment deposition appears to have occurred in a zone of stagnant or ponded water in the channel. Expected deposition at the channel mouth is not observed.

Arfstrom J. D.

*The Origin and Evolution of Dao Vallis: Formation and Modification of Martian Channels by Structural Collapse and Glaciation* [#1193]

Formation of Martian channels has been attributed to catastrophic floods 1 or 2 orders of magnitude greater than any known terrestrial flood. I suggest that processes associated with tensional forces and glaciation, acting separately or together, can explain the origin of Martian channels.

Fassett C. I. Head J. W. III

*Snowmelt and the Formation of Valley Networks on Martian Volcanoes* [#1113]

A model for the formation of the valleys observed on several Martian volcanoes is recounted. Basal melting of snowpack via conductive and advective transfer of heat away from a magma reservoir appears to be a plausible source of water to form these valleys.

Woodworth-Lynas C. Guigne J. Y.

*Extent of Floating Ice in an Ancient Echus Chasma/Kasei Valley System, Mars* [#1571]

From images of the Echus Chasma/Kasei Valles valley system we present further, new observations of surficial Martian features that are interpreted to be the result of interactions between the keels of flat-bottomed floating ice floes with a submerged sediment.