

Thursday, March 22, 2012
POSTER SESSION II: MARS GLACIAL, PERIGLACIAL, AND GROUNDWATER/ICE
6:00 p.m. Town Center Exhibit Area

Komatsu G. Okubo C. H. Wray J. J. Gallagher R. Orosei R. Cardinale M. Chan M. A. Ormo J.
[*Small Mounds in Chryse Planitia, Mars: Testing a Mud Volcano Hypothesis*](#) [#1103]

Our ongoing investigation of small mound features in Chryse Planitia, Mars, using imaging and spectral data is in general agreement with a mud volcano hypothesis but some notable characteristics uncommon in terrestrial counterparts are identified.

Ivanov M. A. Hiesinger H. Erkeling G. Reiss D.
[*Evidence for Effusive Mud Volcanism in Utopia Planitia on Mars*](#) [#1490]

In Utopia Planitia we have found features strongly resembling extensive flows of mud.

Nunes D. C.
[*A Survey of Southeastern Utopia Planitia with SHARAD Data*](#) [#2233]

Presented is a survey of SHARAD data over Utopia Planitia, Mars. Numerous subsurface reflectors are detected, and they likely reflect the interface between Elysium volcanic flows and the underlying Vastitas Borealis Formation.

Séjourné A. Costard F. Gargani J. Soare R. J. Fedorov A. Marmo C.
[*Degradation of the Periglacial Landscape of Utopia Planitia Under Global Warming: Comparison Earth-Mars*](#) [#1881]

Our results show that the assemblage of landforms in UP indicates the presence of an ice-rich permafrost like on Earth. This permafrost was degraded during a relatively recent (< 10 Ma) high-obliquity periods of Mars inducing a major climate change.

Kerrigan M. C. Osinski G. R. Capitan R. D. Barry N. Blain S. Van De Wiel M.
[*The Distribution and Stratigraphy of Periglacial Landforms in Western Utopia Planitia, Mars*](#) [#2716]

This study focuses on the largest periglacial unit identified in Western Utopia Planitia and aims to introduce a clearer understanding of the large-scale geographical context of the multiple episodes of periglacial activity on Mars.

Johnsson A. Reiss D. Hauber E. Zanetti M. Hiesinger H. Johansson L. Olvmo M.
[*Periglacial Mass-Wasting Landforms on Mars Suggestive of Transient Liquid Water in the Recent Past: Insights from Solifluction Lobes on Svalbard*](#) [#2073]

Superposition relationships of landforms suggest a young age for the lobes. Morphometric relationships and morphology suggest a solifluction origin that may indicate transient liquid water within the regolith in the recent past.

El Maarry M. R. Kodikara J. Markiewicz W. J. Wijessoriya S. Thomas N.
[*Modeling the Formation of Large Desiccation Polygons on Earth: Possible Relation to Intermediate-Sized Polygons on Mars and Implications to Mars Hydrology*](#) [#1063]

We present a pre-fracture model to constrain the models of formation of giant desiccation cracks on Earth as a possible analog to intermediate-sized (70–350 m large) polygons located in many impact craters on Mars.

Hecht M. H. Head J. W.
[*Stability of Shallow Buried Ice on Mars*](#) [#2260]

Measured column water abundances and the measured vertical distribution of the column are consistent with humidity measured by Phoenix, subsurface ice temperature at the Phoenix site, and a 40° latitudinal limit of ice stability.

Sizemore H. G. Zent A. P. Rempel A. W.

[Ice Lens Formation and Unfrozen Water at the Phoenix Landing Site](#) [#2397]

We employ numerical simulations of climate and soil-ice interactions to place quantitative constraints on the growth of segregated ice lenses at the Phoenix landing site, Mars.

Beach M. J. Head J. W. III

[Debris-Covered Glacier Deposits in a Trio of Impact Craters in the Southern Mid-Latitudes of Mars: Evidence for Ice Accumulation and Intercrater Flow in Connected Concentric Crater Fill](#) [#1140]

Three closely spaced craters offer a unique opportunity to study Amazonian intracrater and intercrater ice-related deposits and their evolution within adjacent and overlapping crater interiors in a narrow latitude band.

Souness C. J. Hubbard B.

[Crevasse-Like Openings as Indicators of Flow in Martian Glacier-Like Forms](#) [#1070]

Crevasse-like openings occur on some martian mid-latitude glacier-like forms. On Earth, the position and morphology of crevasses reflects a glaciers basal and flow characteristics. We extend this model to Mars to better understand martian ice flow.

Bernhardt H. Hiesinger H. Reiss D. Ivanov M. Erkeling G.

[Possible Glacio-Fluvial Landforms in Southern Argyre Planitia, Mars: Implications for Glacier Thickness and Depositional Settings](#) [#1830]

We conducted a detailed geomorphologic mapping and analysis of the southern rim of the Argyre basin, Mars. We reconstructed the glacial load potentially associated with esker-like ridges and propose new formation mechanisms for their surroundings.

Fastook J. L. Head J. W. III

[Mid-Latitude Amazonian Glaciation on Mars: Controls on Accumulation and Glacial Flow Patterns](#) [#1296]

A model of flow into a crater from episodic layering events driven by obliquity demonstrates that even at Amazonian temperatures, concentric crater fill can be formed in as little as 50 m.y., whereas flow from a single persistent layer takes 450 m.y.

Franchi F. Rossi A. P. Pondrelli M. Barbieri R.

[Ancient Fluid Escape and Conical Mound Fields in Firsoff Crater, Arabia Terra \(Mars\)](#) [#1062]

In this study we report the occurrence of a mounds field in the southern Arabia Terra and present data from the Firsoff crater and its neighborhood where the mounds are exposed within the hydrothermal equatorial layered deposits (ELDs).

Chuang F. C. Crown D. A.

[Surface Textures on Martian Lobate Debris Aprons: Comparison of Regional Populations Using CTX Images](#) [#2235]

Using CTX images, we are in the process of reevaluating surface textures identified and characterized in earlier studies of the major lobate debris apron populations on Mars.

Scanlon K. E. Head J. W.

[Volcano-Ice Interactions Recorded in the Arsia Mons Fan-Shaped Glacial Deposits: Synthesis and Astrobiological Importance](#) [#2183]

We have mapped the glaciovolcanic features in the Arsia Mons fan-shaped glacial deposit and assessed the astrobiological implications of their type and their distribution in time and space.

Berman D. C. Crown D. A. Joseph E. C. S.

[Constraints on the Formation and Modification of Lobate Debris Aprons Through Categorized Crater Counts](#) [#1593]

Compilation of crater counts using CTX images and analysis of SFD, coupled with categorization of crater morphologies, provides important insights into interpretation of the formation and modification of lobate debris aprons.

Atkins C. M. Barlow N. G.

[*Impact Crater Morphologies as Indicators of Volatiles in Northeastern Arabia Terra, Mars*](#) [#2122]

We are investigating the influence of volatiles on impact craters in the northeastern quadrant of Arabia Terra, Mars. Preliminary results show high concentrations of morphologies indicative of subsurface volatiles at high latitudes.

Schon S. C. Head J. W.

[*Decameter-Scale Pedestal Craters in the Tropics of Mars: Evidence for the Recent Presence of Very Young Regional Ice Deposits in Tharsis*](#) [#1669]

We document very small pedestal craters in the tropics of Mars. The characteristics of these small pedestal craters provide evidence that meters-thick ice accumulations existed in the tropical Tharsis region of Mars in the last few million years.

Skinner J. A. Jr.

[*Constraining the Origin of Pitted Cones in Chryse and Acidalia Planitiae, Mars, Based on Their Statistical Distributions and Marginal Relationships*](#) [#2905]

Despite the fact that pitted cones are common landforms in the martian northern plains, there is still ambiguity regarding their origin. This study addresses these ambiguities by assessing their spatial variations and marginal relationships.

Cull S. C. Dundas C. Mellon M. T. Byrne S.

[*CRISM Observations of Fresh Icy Craters in Mid- to High-Latitudes on Mars*](#) [#2145]

Byrne et al. (2009) reported exposed ice in five new mid-latitude impact craters that had formed between HiRISE observations taken a few months to a few years apart. Here, we report on analyses of CRISM observations taken over these 13 fresh craters.

Bapst J. Wood S. E.

[*The Long-Term Effects of Surface Frosts, Seasonal Atmospheric Water Variation and Ice Fraction-Dependent Thermal Conductivity on Martian Ground Ice*](#) [#2808]

We use a 1-D time-dependent model to simulate martian ground ice evolution over the past ~1 Myr. Our goal is to quantify and understand the effects of some known processes (see title) on ground ice growth/retreat rates.

Saper L. M. Mustard J. F.

[*Orientations and Morphology of Linear Ridges in Nili Fossae: Mineralized Fracture Zones and Implications for Crustal Fluid Transport*](#) [#1119]

A total of 2283 ridges were mapped in Nili Fossae bedrock at CTX resolution. We propose that the ridges represent impact-generated fracture zones that facilitated fluid flow, were preferentially hardened, and exhumed by differential erosion.

Schon S. C. Head J. W. Fassett C. I.

[*Recent High-Latitude Resurfacing by a Climate-Related Latitude-Dependent Mantle: Constraining Age of Emplacement from Counts of Small Craters*](#) [#1811]

A chronology for the deposition of the latitude-dependent mantle is revealed by superposed crater densities, which show that the overall age and age trend of mantling deposits is consistent with first-order control by obliquity variations.