

Thursday, March 26, 2009  
POSTER SESSION II: MARS: DUNES, DUST, AND WIND  
6:30 p.m. Town Center Exhibit Area

Ellehøj M. D. Johnsen S. J. Madsen M. B.

[\*D/H Fractionation in the Atmosphere-Ground Ice System on Mars\*](#) [#1561]

The solid-vapor fractionation processes of Deuterium/Hydrogen (D/H) in the ground ice-atmosphere system on Mars are investigated through experiments and modeling. Preliminary results mainly from the experimental work are presented.

Segura T. L. Colaprete A.

[\*Global Modeling of Impact-induced Greenhouse Warming on Early Mars\*](#) [#1056]

We have modeled the climate effects of impacts on early Mars. The model includes evaporation/precipitation of water, water and CO<sub>2</sub> cloud microphysics, the radiative and latent heating effects of water and CO<sub>2</sub> clouds, and water cloud coalescence.

Metzger S. Balme M. Pathare A.

[\*Meteorologic Conditions and the Formation of Terrestrial Dust Devils\*](#) [#1229]

We examine the relationship between ground surface solar heating, ambient meteorologic conditions and the formation of terrestrial dust devils.

Wurm G. Teiser J. Reiss D. Kelling T.

[\*Lifting Dust on Mars by Greenhouse Effects and Thermophoresis\*](#) [#1516]

The GT-effect, a combination of a (solid state) greenhouse effect and thermophoresis can efficiently lift dust from a surface at low pressure. We discuss how this effect might lift dust from the martian surface.

Hayward R. K. Titus T. N. Michaels T. I. Colaprete A. Verba C. A. Christensen P. R.

[\*Aeolian Dunes as Ground Truth for GCM and Mesoscale Modeling on Mars\*](#) [#1212]

Aeolian dunes preserve a record of atmosphere/surface interaction, serving as ground truth for atmospheric models. We compare dune centroid azimuth and slipface orientation to a General Circulation Model and a mesoscale model.

Gardin E. Allemand P. Quantin C.

[\*A Global Morphological Study at High Resolution on the Dune Fields on Mars\*](#) [#2510]

Dune fields are possible recorders of paleoclimat. The high available resolution images permit to complete the GIS of the MD3.

Bandeira L. Marques J. S. Pina P.

[\*Automatic Delimitation of Regions with Aeolian Features on Mars\*](#) [#1288]

This text describes an adaptive approach based on HOG features and SVM classifier to detect automatically regions with dune fields on Mars.

Toyota T. Kurita K.

[\*Dark Halo: Enigmatic Features of Dark Streaks at Martian Volcanoes\*](#) [#1597]

Interactions between the atmosphere and the ground surface cause observable changes in the surface patterns. Here we report a new kind of time-variable surface pattern called "Dark Halo" near the top of high altitude volcanoes in Tharsis region.

Chuang F. C. Beyer R. A.

[\*Modification of Martian Slope Streaks\*](#) [#2104]

This study focuses on features that were not identified or were uncommon in previous studies of slope streaks including ridge-like structures, terminal deposits, and mantle deposits.

Grant J. A. Wilson S. A. Noe Dobrea E. Ferguson R. L. Griffes J. L. Moore J. M. Howard A. D.  
[HiRISE Views an Enigmatic Deposit in the Electris Region of Mars](#) [#1871]

The Electris region of Mars defines a broadly distributed, unconformable deposit whose characteristics appear most consistent with emplacement as loess.

Tirsch D. Jaumann R. Pacifici A. Poulet F. Roach L. H. Mustard J. L. Bibring J.-P. Neukum G.  
[Dark Layers as Local Sources for the Dark Intra-Crater Dunes on Mars](#) [#1004]

We present morphological indications and mineralogical evidence for dark layers acting as local sources for the dark dune material on Mars.

Szynkiewicz A. Ewing R. C. Fishbaugh K. E. Bourke M. C. Bustos D. Pratt L. M.  
[Geomorphological Evidence of Plausible Water Activity and Evaporative Deposition in Interdune Areas of the Gypsum-rich Olympia Undae Dune Field](#) [#2038]

New morphological features (e.g., cross-bedding strata, bright patches), revealed by HiRISE for the gypsum-rich Olympia Undae Dune Field, appear to indicate the change(s) in paleoenvironmental conditions likely controlled by climate fluctuations in the North Pole of Mars.

Horgan B. H. N. Bell J. F. III  
[Insights from Ferrous Mineralogy into the Transport of Martian North Polar Materials](#) [#2457]

NIR spectra of the north polar region of Mars indicate the presence of various pyroxenes and olivine. The distribution of these minerals suggests a complex relationship between the regional sedimentary units, and that saltation affects composition.

Lahtela H. Titus T. N. Geissler P. E. Roach L. H. Verba C. A. Mustard J. F. Murchie S. L. Brown A. J. Seelos F. Seelos K. Calvin W. M. Parente M. Cornwall C.  
[Coordinated HiRISE/CRISM Observation on Gypsum Signature in Martian Polar Dunes](#) [#2254]

Our independent HiRISE/CRISM study conformed that the source for gypsum signature in Mars north polar dunes is in the dark dunes themselves, not in the bright bedrock.

Diniega S. Byrne S. Glasner K.  
[Controls on the Spacing and Size of Martian Polar Dunes from a Buried Ice Table](#) [#1434]

Dune fields often exhibit a stable characteristic dune size and spacing. We consider the possible effect of topography on dune scaling during dune formation and evolution, and consider the effect of an evolving ice table under martian polar dunes.

Necsoiu M. Leprince S. Dinwiddie C. Hooper D. Walter G.  
[Recent Migration Rates of the Great Kobuk Sand Dunes, Alaska: Technologic and Scientific Implications for Planetary Dune Systems](#) [#2074]

A novel method based on correlation of optical satellite imagery was applied to dune migration rates in Kobuk Valley, AK. This method could be applied to monitor other morphological processes on planetary surfaces and remote terrestrial locales.

Howald T. V. Schieber J.  
[Preparing for MSL — Experimental Eolian Erosion of Soft Sedimentary Rocks](#) [#1872]

An eolian erosion device was constructed to explore long-term eolian abrasion of soft sediments with wind velocities and sediment types that are more likely to be encountered on the martian surface.

Durham W. B. Pathare A. V. Stern L. A. Lenferink H.  
[Does the Brittle-to-Ductile \(Mobility\) Transition of Icy Sand Packs Coincide with the Maximum Packing Density?](#) [#1703]

We present preliminary experimental data indicating a correspondence between the brittle-to-ductile transition of icy sand packs and the maximum packing density of sand in such packs.