

Thursday, March 22, 2012
POSTER SESSION II: MARS AEOLIAN PROCESSES
6:00 p.m. Town Center Exhibit Area

Rossman B. Wilson R. Schieber J.

[*Eolian Erosion Experiments on Soft Sedimentary Rocks — Measurements of Erosion Rates, Textural Observations, and Implications for Mars Rover Geology*](#) [#2837]

Eolian erosion experiment with various lithologies in a wind-chamber to assess abrasion rates in soft sedimentary rocks.

Howard A. D. Spiga A. Moore J. M.

[*The Deepest Basin on Mars is Formed by Aeolian Erosion*](#) [#1105]

The trough forming NW floor of Hellas Planitia has been deepened by at least 1 km by wind erosion as evidenced by geomorphic evidence and mesoscale atmospheric modeling.

Lang N. P. DeFazio E. Schneider R.

[*Erosional Modification of Apollinaris Mons, Mars*](#) [#2788]

In this contribution we examine erosion that has occurred at Apollinaris Mons, Mars. The goal is to provide additional constraints on the evolution of this volcanic construct.

Statella T. Pina P. Silva E. A.

[*Automated Detection of Martian Dust Devil Tracks*](#) [#1026]

This is a novel method to detect martian dust devil tracks automatically in orbital images. It is mainly based on mathematical morphology and we present the results for 200 NA MOC and HiRISE images. The mean global accuracy was $92.02\% \pm 4.87\%$.

Reiss D. Zanetti M. Neukum G.

[*Multitemporal Observations of Identical Active Dust Devils on Mars with the High Resolution Stereo Camera \(HRSC\) and Mars Orbiter Camera \(MOC\)*](#) [#2015]

We present dust devil lifetimes and dust entrainment calculations based on retraced active dust devils observed by two different orbiter cameras with a time delay of 26 minutes.

Neakrase L. D. V. McHone J. Whelley P. L. Greeley R.

[*Terrestrial Analogs to Mars: East-Central Saharan Dust Devil Tracks*](#) [#2009]

Seen abundantly on Mars, dust devil tracks are rare features on Earth due to the active surface processes. Using the publicly available images from Google Earth, we describe four sites in the east-central Saharan Desert (Libya, Chad, and Egypt).

Sullivan R. Zimbelman J. R. Greeley R.

[*Coarse-Grained Ripples on Earth and Mars: Field Studies and Wind Tunnel Experiments*](#) [#2161]

We report fieldwork and wind tunnel experiments investigating coarse-grained ripples (aeolian bedforms common at VL-2 and at both MER sites), and their sedimentary structures likely to be preserved in martian sedimentary rocks.

Berman D. C. Balme M. R.

[*Investigations of Transverse Aeolian Ridges on Mars*](#) [#1598]

We are examining transverse aeolian ridges on Mars in terms of their morphology/morphometry, mapping surficial deposits, comparing their distribution with local/regional meteorology, topography, and composition, and their age and changes in time.

de Silva S. L. Burr D. M. Ortiz A. Spagnuolo M. Zimbelman J. R. Bridges N. T.

[*Dark Aeolian Megaripples from the Puna of Argentina: Sedimentology and implications for Dark Dunes on Mars*](#) [#2038]

The sedimentology of aeolian dark gravel megaripples in the Argentinean Puna indicate local derivation from volcanoclastic bedrock. Their similarity to aeolian dark dunes on Mars suggests local derivation of dark aeolian sediment in Mars.

Burr D. M. de Silva S. L. Zimbelman J. R. Bridges N. T.

[*Aeolian Dunes from Volcaniclastic Sediments: The Medusae Fossae Formation, Mars, and Andean Ignimbrites, Earth*](#) [#1692]

One hypothesis for the source of dark dune sediments on Mars is volcaniclastic sediments. Comparison between dark dunes in the western Medusae Fossae Formation and dark dunes derived from an Andean ignimbrite supports this hypothesis.

Das S. Amara S. Aclese D. Castany D. Prejean Cole T. Jordan Z. Schuman S.

[*Analysis of Aeolian Processes and Morphological Effects in the Medusa Fossae Region of Mars*](#) [#1673]

We look to measure specific dimensions of yardangs and determine whether the major to minor axis ratio correlates with thermal inertia. We suspect that the unique morphology of yardangs is essential to discover the ancient wind patterns of Mars.

Christian S. Kocurek G.

[*Combining Mesoscale Wind Modeling with Dune Field Analysis to Constrain Modern Wind Regime, Hyperboreae Undae, Mars*](#) [#1450]

Wind modeling of Planum Boreum, Mars has been used to confirm that the unusual dune morphologies of Hyperboreae Undae are consistent with the modern wind regime. Dune orientations in this region can now be used to inform modeling efforts.

Fenton L. K. Michaels T. I. Beyer R. A.

[*Aeolian Sediment Sources and Transport in Ganges Chasma, Mars: Morphology and Atmospheric Modeling*](#) [#2441]

We present first results from aeolian bedform mapping and atmospheric modeling in Ganges Chasma that suggest (1) sand sources are widespread throughout the chasma and (2) saltation threshold friction velocities may be lower than expected.

Chojnacki M. Moersch J. E. Burr D. M. Wray J. J.

[*Valles Marineris Dune Fields: Sediment Pathways and Provenance*](#) [#2444]

We test the hypothesis that Valles Marineris dune fields are derived from multiple local sources. Supporting spectral, thermophysical, and morphological evidence for local provenance argues for a relatively low degree of sediment homogenization.

Cardinale M. Silvestro S. Komatsu G. Vaz D. A. Michaels T. I.

[*Evidences for Sand Motion in the Equatorial Region of Mars*](#) [#2452]

In this work we investigate HiRISE images that allow multi-temporal analysis of an erg in Herschel basin. We observed dune activity suggesting that the dark dunes in the studied area are movable under the present-day wind conditions.

Craddock R. A. Needell Z. A. Rose T. R.

[*Characteristics of Basaltic Sand: Size, Shape, and Composition as a Function of Transport Process and Distance*](#) [#1460]

We document the physical and geochemical changes that take place as basaltic materials are transported by a variety of geologic processes, including wind, water, and ice. We will present results from quantitative, microscopic, and SEM analyses.

Bandeira L. Saraiva J. Pina P. Marques J. S.

[Evaluating Dune Delineation on Images from Mars](#) [#1988]

The results produced by an automated approach to delineate dunes on high-spatial-resolution images of Mars are presented and evaluated by type of dune, showing that the methodology is robust, even for dune types poorly represented in the dataset.

Hayward R. K. Fenton L. K. Titus T. N.

[Mars Global Digital Dune Database: Wind Direction Analysis in South Polar Region \(MC-30\)](#) [#1185]

We discuss and compare wind directions, as derived from dune centroid azimuth, slipface, and wind streak observations in the south polar region of Mars. We also compare those groundbased wind directions to GCM-modeled wind directions.