

Friday, March 27, 2009
MARS: DUNES, DUST, AND WIND
8:30 a.m. Waterway Ballroom 1

Chairs: **Lori Fenton**
Steve Metzger

- 8:30 a.m. Chojnacki M. * Moersch J. E.
[Valles Marineris Dune Fields: Thermophysical Properties, Morphology, and Provenance](#) [#2486]
 We examined 25 dune fields in Valles Marineris to identify significant trends in thermophysical properties, morphology and origin. Many dunes have high thermal inertia values (>350) implying fossilized dune surfaces or large grain sizes (1–1.7 mm).
- 8:45 a.m. Berman D. C. * Balme M. R. Bourke M. C. Rafkin S. Zimbelman J. R.
[Transverse Aeolian Ridges on Mars: Distribution, Orientations, and Ages](#) [#1973]
 We have conducted a survey of all high-resolution MOC images in a pole-to-pole swath between 0° and 45°E longitude to identify and classify Transverse Aeolian Ridges (TARs) on Mars and determine their distribution, orientations and age.
- 9:00 a.m. Silvestro S. * Fenton L. K. Michaels T. I. Ori G. G.
[Complex Dark Dune Fields in Noachis Terra, Mars. Relationship Between Morphologies and Wind Regimes](#) [#1862]
 We analyzed three dark dune fields in Noachis Terra. The comparison between the observed morphologies and the atmospheric models suggest that these features could be in equilibrium with present day atmospheric conditions.
- 9:15 a.m. Bourke M. C. * Philippoff A. Bridges N.
[Studies of Dune Change on Mars Combining MOC and HiRISE Images](#) [#1748]
 Another example is shown where a dome dune in the North Polar region of Mars is completely eroded. This confirms that there is active sand transport on Mars. Domes dunes <30 m wide are the most likely to show change over short time periods.
- 9:30 a.m. Fenton L. K. *
[Small Scale Features Reveal Aeolian Inactivity Poleward of 60°S in HiRISE Images of Southern Hemisphere Dune Fields on Mars](#) [#1425]
 HiRISE images reveal several types of small scale (2–30 m) features on southern hemisphere high-latitude dunes. The occurrence of these features indicates varying levels of aeolian activity and their spatial distribution corresponds with ground ice.
- 9:45 a.m. Ewing R. C. * Bourke M. Kocurek G.
[Transport Conditions and Stages of Dune Development in the Olympia Undae Dune Field](#) [#2426]
 Dune patterns analyzed in Olympia Undae indicate two generations of dune construction and a change in wind regime. Flow fields inferred from wind ripple orientations indicate transport from the ENE, which aligns with the youngest dunes.
- 10:00 a.m. Bridges N. T. * Keszthelyi L. P. Thomson B. J. Wray J. J. Banks M. E. Chuang F. C. Herkenhoff K. E. Fishbaugh K. E. McEwen A. S. Michaels T. I.
[Characteristics and Possible Genetic Link Between Dust Aggregate Bedforms and Yardangs as Seen by the HiRISE Camera](#) [#2099]
 We propose that bedforms in Tharsis are dust aggregates. These may eventually lithify into abradable yardangs and indurated surfaces, a “duststone” that appears to be a common martian rock with no known terrestrial analog.

- 10:15 a.m. Geissler P. E. * Arvidson R. Bell J. Bridges N. Desouza P. Golombek M. Greenberger R. Greeley R. Herkenhoff K. Lahtela H. Johnson J. R. Landis G. Li R. Moersch J. Richter L. Sims M. Soderblom J. Sullivan R. Thompson B. Verba C. Waller D. Wang A. HiRISE Team MER Team
[Constraints on Aeolian Degradation Rates on Mars from Erasure of Rover Tracks](#) [#2257]
 Surface and orbital observations of the erasure of the wheel tracks made by the MER rovers Spirit and Opportunity provide insights into the mechanisms and timescales of aeolian degradation on Mars.
- 10:30 a.m. Metzger S. * Balme M. Towner M. Bos B. Pathare A.
[Direct In-Situ Measurement of Natural Dust Devil Sediment Loading and Flux](#) [#1220]
In situ sampling of dust devils reveals total suspended particle (TSP; 296 mgm^{-3}) and fine dust loadings (PM10; 15.1 to 43.8 mgm^{-3}), 12.3 ms^{-1} rotation and 2.7 ms^{-1} uplift, mean TSP flux of $1689 \text{ mgm}^{-3}\text{s}^{-1}$ and dust flux of ~ 1.0 to $\sim 50.0 \text{ mgm}^{-3}\text{s}^{-1}$.
- 10:45 a.m. Hall N. W. * Lemmon M. T.
[Mass Ejected from Martian Dust Devils as a Function of Height and Dust Devil Morphology](#) [#2409]
 An investigation of morphology, density, vertical velocities, and mass flux characteristics of martian dust devils observed by MER. The conservation of mass is utilized to estimate quantity and height of dust ejected into the martian atmosphere by dust devils.
- 11:00 a.m. Reiss D. * Lüsebrink D. Hiesinger H. Kelling T. Wurm G. Teiser J.
[High Altitude Dust Devils on Arsia Mons, Mars: Testing the Greenhouse and Thermophoresis Hypothesis of Dust Lifting](#) [#1961]
 We investigated high altitude dust devils on Arsia Mons. Their occurrence in these low pressure ($\sim 1 \text{ mbar}$) environments might be possible to a Greenhouse and Thermophoresis (GT) effect which lowers the threshold for dust entrainment by wind stress.
- 11:15 a.m. Verba C. A. * Geissler P. E. HiRISE Team
[Comparative Analysis of Martian Dust Devil Track Morphologies in Gusev and Russell Craters](#) [#1979]
 Seasonal variations of dust devil activity in Russell and Gusev craters are influenced by topography, sediment supply, and altitude, as well as latitudinal variations in the atmospheric dust cycle and local winds.
- 11:30 a.m. Masse M. * Bourgeois O. Le Mouelic S. Verpoorter C. Le Deit L. Combe J.-Ph.
[Dust Deposits Within and Around the North Polar Ice Cap of Mars: What are Their Mineralogical Compositions, Their Sources and Their Accumulation Processes?](#) [#1841]
 We have performed an integrated morphological, structural and compositional analyses of selected areas along the contact between the North Polar Cap and the surrounding superficial sediments.