Thursday, March 10, 2011
POSTER SESSION II: MARS AEOLIAN PROCESSES:
DUST, DEVILS, DUNES, AND ANALOGS
6:00 p.m. Town Center Exhibit Area

Choi D. S. Dundas C. M.
Wind Measurements of Martian Dust Devils from HiRISE **[#2344]**
Martian dust devils / We track their clouds with software / Colorful wind plots.

Statella T. Silva E. A.
Dust Devils Detection and Inference of Their Movement Directions **[#1001]**
The paper shows an application of mathematical morphology to detect dust devils tracks and infer their main directions of movement.

Reiss D. Rossi A. P.
Seasonal Dust Devil Track Observations on Earth and Mars: Relationships to Atmospheric Dust Opacity **[#2186]**
We compared seasonal changes in dust devil track (DDT) density on Earth and Mars (Ténéré desert and Gusev Crater) to seasonal dust opacity values to constrain how the varying atmospheric aerosol content influences the formation and/or obliteration of DDTs on both planets.

Raack J. Reiss D. Hiesinger H.
Bright Dust Devil Tracks on Earth: Implications for their Formation on Mars **[#1754]**
We report on the first observations of bright dust devil tracks on Earth, observed in the Turpan depression in northwestern China, with microscopic *in situ* measurements and present a plausible model for their formation with implications for Mars.

Metzger S. Balme M. Pathare A. Renno N. Towner M. Spiga A. Elliott H.
High-Resolution Dust Devil Sampling for Sediment Loads, Wind Speeds, Temperature and Pressure Excursions **[#2458]**
This interim report on field activities using upgraded high-resolution instruments in Southern Nevada is part of a larger effort to understand dust devil formation, meteorological conditions, and the resultant dust-lifting efficacy they achieve.

Elliott H. Renno N. Williams E. Balme M. Metzger S. Pathare A. Rogacki S.
Gillespie R. Musko S.
Diagnosing the Electrical Structure of Dust Devils **[#2396]**
This study is concerned with the vertical electrical structure of the dust devil, and ultimately with the physical mechanism for their electrification.

Reiss D. Raack J. Rossi A. P.
Formation of Dark Dust Devil Tracks in the Turpan Desert (China): Comparison with Mars **[#2122]**
We present results of the first *in situ* analysis of dust devil tracks in the Turpan desert (China) and compare them with Mars.

Zimmerman M. I. Lewellen D. C.
Surface Marks: Diagnostic Footprints of Atmospheric Vortices **[#1406]**
Patterns of fine debris removal and deposition left behind by a vortex, or surface marks, contain signatures of the winds that created them. We have used large eddy simulations of debris-laden tornadoes to correlate simulated marks with winds aloft.

Fenton L. K. Michaels T. I.
Mesoscale and Large Eddy Simulations of Dust Devils in Amazonis Planitia, Mars **[#2718]**
Mesoscale and large eddy simulations of summer daytime convective activity over Amazonis Planitia, Mars, suggest that the vigorous convection that produces the large number of dust devils observed may be enhanced by mesoscale interactions.

Pendleton Hoffer M. Greeley R. Wagstaff K. L. Ansar A.
Transient Aeolian Features Detected Autonomously in HiRISE Images of El Dorado, Columbia Hills, Gusev Crater, Mars **[#2425]**
An algorithm developed for autonomous detection of albedo change in pairs of images was used to identify alterations to surface features in a small bedform, El Dorado, in Gusev Crater, Mars.

Michaels T. I.
Aeolian Phenomena at Nili and Meroe Paterae **[#2697]**
Active sand transport has recently been observed within Nili Patera by Silvestro et al. (2010). This work uses mesoscale modeling to elucidate the timing and spatial extent of atmospheric forces driving aeolian phenomena in that region.

Bowers L. M. Putzig N. E.
Dune Morphology and its Effects on the Thermal Behavior of Olympia Undae **[#2819]**
We analyzed the morphologic patterns seen in Olympia Undae, Mars' largest dune field, and assessed their effect on the thermal behavior of the region.

Coleman S. J. Hayward R. K.
A Higher Resolution Update to Viking-Based Martian North Polar Dune Slipface Analyses **[#1436]**
We analyze wind directions in the martian north polar region as indicated by dune slipfaces seen in THEMIS–VIS imagery and compare our results to those from initial studies from the late 1970s based on Viking Orbiter 2 images.

Silvestro S. Fenton L. K.
Present-Day Aeolian Activity in Arabia Terra. First Results from a Global Mapping of Active Dune Fields on Mars **[#1482]**
In this work we mapped active dark dune fields in Arabia Terra (Mars), finding evidence of widespread aeolian modifications. This suggests that sand saltation is a widespread process on the martian surface and is not limited to a few isolated cases.

Butcher A. Fenton L.
Latitudinal Trends in Morphology and Classification of Southern Martian Dunes **[#2091]**
By studying dunes, it is possible to gain insight into the climate and sedimentary history of a region. Martian dune fields are likely regulated by many of the same aeolian, climatic, and sedimentary processes as terrestrial dunes.

Hayward R. K. Fenton L. K. Titus T. N.
Mars Global Digital Dune Database: South Polar Region and Global Trends **[#1051]**
The south polar portion of the Mars Global Digital Dune Database will add ~70,000 km^2 of mapped features to the dune database. Global distribution of dune fields is uneven with 75% concentrated between 70°N and 90°N and 15% between 60°S and 80°S.

Cardinale M. Komatsu G.
A Comparison of Sand Corridors on Mars with a Terrestrial Analog **[#1235]**
The aeolian features including sand corridors within the Moreux crater of Mars are likely resulted from wind circulation influenced by the crater topography. The sand corridors in the crater were compared with those in the Badan Jaran Desert, China.

Craddock R. A. Tirsch D. Nanson G. Tooth S. Langhans M.
Analyses of a Large Climbing Dune in the Ka'u Desert, Hawaii and Implications for Understanding Dark Dunes on Mars **[#1441]**
Our objectives are to (1) determine the history of basaltic dunes located in the Ka'u Desert of Hawaii, (2) ascertain changes in the characteristics of basaltic sediments as they are transported, and (3) acquire the VNIR spectra of these materials.

Shockey K. M. Zimbelman J. R.
Transverse Aeolian Ridges as Seen in HiRISE Images Compared to Terrestrial Analogs **[#2081]**
Using HiRISE images with photoclinometry, we quantified characteristics of TARs and compared them to terrestrial analogs. Our study found differences between terrestrial dunes and ripples, and compared them to our martian TAR results.

Scheidt S. P. de Silva S. L. Zimbelman J. R. Bridges N. Viramonte J. G.
The Composition of Puna Gravel Ripple Fields: A Terrestrial Analog from TIR Remote-Sensing and Spectroscopy **[#2706]**
Samples of gravel, sand and bedrock were collected from a terrestrial analog site for Mars granule ripples in the Puna Desert. Analysis was undertaken using remote-sensing and spectroscopy.

de Silva S. L. Zimbelman J. R. Bridges N. T. Scheidt S. Viramonte J. G.
The Coarsest Gravel Ripples on Earth? Preliminary Observations and Interpretations **[#2421]**
Gravel megaripples in the Puna of Argentina are the coarsest yet to be described on Earth. They may be the best terrestrial analogs for martian granule ripples. We present preliminary sedimentological and morphological data and observations.

Lorenz R. D.
Experiments in Timelapse Camera Observations of Dust Devil Activity at Eldorado Playa, Nevada **[#1573]**
Ten thousand pictures / Show dust devils come and go / A new way forward.