

Wednesday, June 14, 2017

POSTER SESSION

5:30 p.m. Great Room

Kass D. M. McCleese D. J. Kleinböhl A. Schofield J. T. Heavens N. G.

[*Mars Climate Sounder \(MCS\) Observations of Martian Dust — A Decade-Long Record*](#) [#6030]

We describe the Mars Climate Sounder (MCS) observations of atmospheric dust. The instrument acquires infrared observations to produce a 5.75 Mars Year (>10 earth year) climatology global of dust, including its vertical distribution.

Bell J. F. III Wellington D. F.

[*Local, Regional, and Global Albedo Variations on Mars From Recent Space-Based Observations: Implications for Future Human Explorers*](#) [#6023]

We describe recent as well as historic albedo variations on Mars as observed by space-based telescopes, orbiters, and surface missions, and speculate that some regions might offer fewer dust-related problems for future human explorers than others.

Edgett K. S. Newsom H. E.

[*Dust Deposited from Eolian Suspension on Natural and Spaceflight Hardware Surfaces in Gale Crater as Observed Using Curiosity's Mars Hand Lens Imager \(MAHLI\)*](#) [#6017]

MSL MAHLI images and other observations regarding particles deposited from eolian suspension and potential local dust sources (wind-eroded mudstone) at the Curiosity field site in Gale Crater, Mars.

Ogohara K.

[*Regionality of Dust Haze Transport in the Mars Atmosphere Revealed by Ensemble Simulations*](#) [#6014]

Regionality of dust haze transport in the Mars atmosphere is investigated by ensemble simulations using a GCM. It is turned out that processes of dust haze dispersion by advection are categorized into a few cases.

Vincendon M.

[*Observation of Interannual Variability of Dust Surface/Atmosphere Exchange on Mars*](#) [#6029]

Transfer of Mars dust between surface and atmosphere occurs on Mars with various timescales. Orbital observations of surface albedo change by OMEGA onboard Mars Express are used to assess the timing and extent of dust deposition and removal events.

Montabone L. Forget F.

[*Forecasting Dust Storms on Mars: A Short Review*](#) [#6032]

In this article we provide a short review focusing on the current and future capabilities of forecasting Martian dust storms for robotic and human missions.

Wang A. Yan Y. C. Wu Z. C.

[*Electrochemical Reaction at Surface Induced by Electrostatic Discharge During Mars Dust Storm and Dust Devils*](#) [#6012]

We present the instantaneous formations and high yield of NaClO₃ and NaClO₄ from NaCl through atmosphere-surface electrochemistry stimulated by Electrostatic Discharge (ESD) that could occur during martian dust storm and dust devils.

Kuroda T. Kadowaki M.

[*Simulation of the Small-Scale Dust Activities and Their Mutual Interactions on the Atmospheric Dynamics Using a High-Resolution Mars General Circulation Model*](#) [#6015]

We show the simulation results of our high-resolution Mars general circulation model including the dust lifting processes for the investigations of the meteorological features which invoke dust storms and subsequent enhancement of small-scale waves.

Wadhwa M. Leshin L. Clark B. Jones S. Jurewicz A. McLennan S. Mischna M. Ruff S. Squyres S. Westphal A.

[*A Low-Cost, Low-Risk Mission Concept for the Return of Martian Atmospheric Dust: Relevance to Human Exploration of Mars*](#) [#6028]

We present a low-cost, low-risk mission concept for return of martian atmospheric dust. Such a mission would serve as a scientific, technological and operational pathfinder for future surface sample return and human exploration to Mars.

Carrier B. L. * Beaty D. W. Hecht M. H.

[*The Potential Value of Returning Samples of Martian Dust and Other Granular Materials for Analysis in Earth Laboratories to Preparing for the Human Exploration of Mars*](#) [#6037]

In order to construct quantitative models for the behavior of dust on Mars, we need to understand the geological processes by which dust is created, transported, and deposited.

Rabinovitch J.

[*Characterizing Dust Environments for Mars Missions During Entry, Descent, and Landing*](#) [#6026]

Summary of issues and analyses performed relating to plume/surface interactions for powered descent on Mars, and possible helicopter brownout for a Mars helicopter.

Baker M. M. Lewis K. W. Bridges N. Newman C. Van Beek J. Lapotre M.

[*Aeolian Transport of Coarse Sediment in the Modern Martian Environment*](#) [#6021]

We use Mastcam images from Curiosity's change detection campaigns to trace surface winds and examine seasonal variability of aeolian sediment transport.

Guzewich S. D. Bleacher J. E. Smith M. D. Khayat A. Conrad P.

[*Astronaut-Deployable Geophysical and Environmental Monitoring Stations*](#) [#6011]

Geophysical and environmental monitoring stations could be deployed by astronauts exploring Mars to create a broad network that would collect high-value scientific information while also enhancing astronaut safety.

McClellan J. B. Pike W. T.

[*Estimation of the Saltated Particle Flux at the Mars 2020 In-Situ Resource Utilization Experiment \(MOXIE\) Inlet*](#) [#6025]

Dust is a challenge for filtration prior to Mars atmospheric in-situ resource utilization. Previously, wind tunnel tests simulated suspended dust loading on the Mars 2020 ISRU demonstrator. Initial analysis of the saltated dust loading is presented.

Ashley J. W. Banfield D. Beaty D. W. Bleacher J. E. Carrier B. L. Hamilton V. E. Whitley R. J. Zurek R. W.

[*The Current MEPAG Representation of Potential Dust-related Hazards as They May Relate to the Human Exploration of Mars*](#) [#6022]

The MEPAG Goals Document presents Investigations that may correlate with dust risk to humans and human operations in potential future Mars missions. We list these here, together with their respective priority rankings, and invite community input.

Kamakolanu U. G.

[*The Impact of Mars Atmospheric Dust on Human Health*](#) [#6033]

The martian dust impact can be considered as an exposure to ultra fine particles of martian dust. Direct nose to brain pathway of particulate matter can affect the fine motor skills and gross motor skills, cognition may be affected.

Harrington A. D. McCubbin F. M. Kaur J. Smirnov A. Galdanes K. Schoonen M. A. A. Chen L. C. Tsirka S. E. Gordon T.

[*Acute Meteorite Dust Exposure and Pulmonary Inflammation — Implications for Human Space Exploration*](#) [#6024]

Geochemical and toxicological evaluations performed on six meteorite samples of mixed origin allow for toxicological risk assessments of celestial materials and clarification of important correlations between geochemistry and health.