Tuesday, June 13, 2017
MARS DUST: MECHANICAL SYSTEMS AND SURFACE OPERATIONS
Hess Room

All participants, regardless of their assigned method of presentation, are encouraged to contribute during the breakout sessions, as all community input is essential to a positive outcome.

Moderator: Daniel Winterhalter
Recorder: James Ashley

Rucker M. A. *
Dust Storm Impacts on Human Mars Mission Equipment and Operations **[#6013]**
NASA has accumulated a wealth of experience between the Apollo program and robotic Mars rover programs, but key differences between those missions and a human Mars mission that will require unique approaches to mitigate potential dust storm concerns.

Hoffman S. J. *
Human Mars Mission Overview and Dust Storm Impacts on Site Selection **[#6031]**
This presentation briefly reviews NASA's current approach to human exploration of Mars and key features placed on locations (referred to as Exploration Zones) for these activities. Impacts of dust and dust storms on selecting an EZ are discussed.

Hecht M. H. * McClean J. B. Pike W. T. Smith P. H. Madsen M. B. Rapp D. MOXIE Team
MOXIE, ISRU, and the History of In Situ Studies of the Hazards of Dust in Human Exploration of Mars **[#6036]**
The upcoming MOXIE experiment will be the first to ingest large volumes of dust-laden martian atmosphere for processing, and will serve as a test case for translating our understanding into mitigation practices.

Yun P. Y. *
Martian Dust Impact on Human Exploration **[#6018]**
Understanding Martian atmospheric electricity, and dust impact on human health, surface mechanical systems and surface operations are critical to reduce the risks of the human exploration on Mars.

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.

O'Hara W. J. IV *
Summary of Martian Dust Filtering Challenges and Current Filter Development **[#6016]**
Precursor and manned mission ISRU systems, habitat and rover ECLS systems, and airlock systems will include dust filtering in their design. This paper summarizes the challenges of filter development, and the status of the progress made in this area.

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.

McClean 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.