

**THE POTENTIAL IMPACT OF MARS' ATMOSPHERIC DUST ON FUTURE HUMAN EXPLORATION OF THE RED PLANET.** D. Winterhalter<sup>1,2</sup>, J.S. Levine<sup>3</sup>, R. Kerschmann<sup>4</sup>, D.W. Beaty<sup>1</sup>, B.L. Carrier<sup>1</sup>, and J.W. Ashley<sup>1</sup>, <sup>1</sup>Jet Propulsion Laboratory, California Institute of Technology (daniel.winterhalter@jpl.nasa.gov); <sup>2</sup>NASA Engineering and Safety Center; <sup>3</sup>College of William and Mary (ajlevine18@gmail.com); <sup>4</sup>NASA Ames Research Center (ret.)

**Introduction:** With the increasing focus by NASA and other space agencies on a crewed mission to Mars in the 2039 time-frame, many Mars-specific environmental factors are now starting to be considered by NASA and other engineering teams. Learning from NASA's Apollo Missions to the Moon, where lunar dust turned out to be a significant challenge to mission and crew safety, attention is now turning to the dust in Mars' atmosphere and regolith. To start the process of identifying possible dust-caused challenges to the human presence on Mars, and thus aid early engineering and mission design efforts, the NASA Engineering and Safety Center (NESC) Robotic Spacecraft Technical Discipline Team organized and conducted a Workshop on the "Dust in Mars' Atmosphere and Its Impact on the Human Exploration of Mars", held at the Lunar and Planetary Institute (LPI), Houston, TX, June 13-15, 2017. The workshop addressed the following general areas:

1. What is known about Mars' dust in terms of its physical and chemical properties, its local and global abundance and composition, and its variability.
2. What is the impact of Mars atmospheric dust on human health.
3. What is the impact of Mars atmospheric dust on surface mechanical systems (e.g., spacesuits, habitats, mobility systems, etc.).

We present the top priority issues identified in the workshop.