

Martian dust size and shape from MSL Engineering Cameras.

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Abstract

Although not designed for this specific purpose, images taken by the Mars Science Laboratory (MSL) rover Engineering Cameras (Navcam and Hazcam) can be used for retrieving the dust aerosol physical properties at Gale Crater by evaluating the sky brightness as a function of the scattering angle. A retrieval scheme based on a radiative transfer model using discrete ordinates is proposed in this poster. Results obtained for dust particle size distribution effective radius values (mostly within 1.0 and 1.9 microns range region) and particle shape (cylindrical, aspect ratios around 1.5) agree with previous studies (McConnochie, T., et al., 2017; Vicente-Retortillo, A., et al., 2017; Tomasko, M., et al., 1999; Smith, M. D., & Wolff, M. J. 2014). This work was supported by the Spanish project AYA2015-65041-P with FEDER support, Grupos Gobierno Vasco IT-765-13, Universidad del País Vasco UPV/EHU programme UFI11/55, and Diputación Foral de Bizkaia-Aula EspaZio Gela. Thanks to Dr Mark Lemmon for the MSL Mastcam optical depth data. (See poster).