



Mars Science Laboratory Navcam/Hazcam Early Results

Justin Maki, Amy Culver, Oleg Pariser, Mark Powell, Nick Ruoff, Robert Murdock, and The MSL Science Team
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States (Justin.N.Maki@jpl.nasa.gov)

On August 6th, 2012 (UTC), the Mars Science Laboratory (MSL) Curiosity rover successfully touched down onto the surface of Mars and began sending back Hazcam images within 30 seconds of touchdown on Mars. Front/Rear Hazcam images were acquired with the transparent covers in the closed position and show dust/soil adhesion on the front surface of the covers, indicating that dust and soil were elevated to height of at least 0.8 meters above the ground by the landing thruster exhaust. Additionally, both the left and right Rear Hazcam images showed a dark plume on the horizon at a local azimuth of approximately 300 degrees (north-westward). The direction of this plume is consistent with the location of the descent stage impact site approximately 650 meters away. The plume is approximately 6 degrees high by 6 degrees wide, which corresponds to a height of approximately 65 meters high by 65 meters wide. The plume is not visible in Rear Hazcam images acquired 45 minutes later. After the camera covers were opened, a set of full-resolution Hazcam images were acquired and showed the terrain in more detail, including Mt. Sharp at a local azimuth of approximately 130 degrees (southeastward). Both sets of Hazcam images show that the rover had landed on a flat surface covered with small, millimeter-sized rocks. The Remote Sensing Mast (RSM) was deployed on Sol 2 and Navcam images of the sun were used to determine the orientation of the rover on the Martian surface. A 360-degree Navcam panorama was acquired shortly afterwards and showed millimeter-sized rocks on top of the 1.1-meter high rover deck. Stereo Hazcam and Navcam images are regularly acquired during surface operations to conduct robotic arm planning, assess target reachability, characterize arm performance, and document the placement of contact instruments on the surface. Navcam and Hazcam images are also used for standalone scientific studies of the surface and atmosphere.