

Planetary Data System Release of HiRISE Digital Terrain Models

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The High Resolution Imaging Science Experiment (HiRISE) flying on the Mars Reconnaissance Orbiter (MRO) since 2005, is returning the highest resolution orbital imagery of Mars to date (up to 25 cm pixel scale). HiRISE acquires stereo by rolling MRO off-nadir on two different orbits to re-image a target. Digital Terrain Models (DTMs) derived from such stereo, primarily (to date) by the U.S. Geological Survey Astrogeology Science Center and the University of Arizona Lunar and Planetary Lab, HiRISE Operations Center, are being released to the NASA Planetary Data System (PDS) for the first time in 2010. The HiRISE team is pleased to provide these products, which will enable quantitative studies of a wide variety of geologic features, to the science community via the PDS at <http://hirise.lpl.arizona.edu/dtm/>.

DTMs are produced as a gridded elevation map with 1 or 2 m grid spacing stored in PDS image format, and have sub-meter vertical resolution. DTMs are accompanied by orthoimages of the input images at both the DTM grid spacing and the image pixel scale. Browse products are also produced in jpeg format, including the orthoimages, a shaded relief map, and grayscale and color-coded images of the elevations. The map projection definitions are consistent with those of the HiRISE Reduced Data Records already released to the PDS.

Our DTM production process is not fully automated, and requires technical skill and intensive computational resources. More than 1600 stereo pairs have been acquired by HiRISE, but fewer than 100 DTMs have been produced (via a variety of methods) to date and fewer than 50 of those have been released to the PDS so far. DTMs produced to support research within the HiRISE team will continue to be released at the one-year anniversary of their production, and DTMs made for certification of candidate future landing sites are being made available as soon as possible.