

ASTER DEM ACCURACY VALIDATION

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KEY WORDS: ASTER, DEM, accuracy validation

ABSTRACT

The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER), onboard the National Aeronautics and Space Administration (NASA) Terra spacecraft, provides along-track digital stereo image data at 15-m resolution. As part of ASTER digital elevation model (DEM) accuracy evaluation efforts by the US/Japan ASTER Science Team, stereo image data for four study sites around the world have been employed to validate pre-launch estimates of heighting accuracy. Automated stereocorrelation procedures were implemented using the Desktop Mapping System (DMS) software on a personal computer to derive DEMs with 30 to 150-metre postings. Results indicate that root-mean-square-error (RMSE) values in elevation of between ± 7 and ± 15 m can be achieved with ASTER stereo image data of good quality. An evaluation of an ASTER DEM data product produced at the U.S. Geological Survey (USGS) EROS Data Center (EDC) yielded an RMSE of ± 8.6 m. Overall, the ability to extract elevations from ASTER stereo pairs using stereocorrelation techniques meets expectations.