

The U.S. ASTER Science Team Activities

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The U.S. ASTER Science Team is currently engaged in numerous ASTER-related activities, many of them jointly with our Japanese colleagues. These include vicarious instrument calibration, algorithm development and validation for higher level data products, cooperation with ERSDAC (Japan) for scheduling activities (primarily for U.S. users), and assistance to data users other than Science Team members.

All standard higher level data products for ASTER, namely decorrelation stretch, brightness temperature, surface radiance in the VNIR, SWIR, and TIR, surface reflectance, surface kinetic temperature and emissivity, digital elevation models, and polar cloud and surface classification are now available to the public in beta, provisional, or validated, form.

Science applications of ASTER data are underway. New ASTER VNIR, SWIR, and TIR observations of over 1000 volcanoes around the world significantly increases our ability to monitor volcanic activity and to map the products of eruptions. Of key importance is the ability to compile time-series data on volcanic precursor activity, as well as to make sequential observations during an eruption. In particular, ASTER's dynamic range allows collection from high temperature targets (e.g., lava flows, summit craters, and domes), and ASTER stereo photogrammetric capability for the first time permits acquisition of systematic topographic data. In the area of glacial monitoring, the Global Land Ice Measurements from Space project (GLIMS) is progressing well. GLIMS objectives are to establish a global inventory of land ice, including surface topography, to measure the changes in extent of glaciers and, where possible, their surface velocities. This project is designed to use primarily data from ASTER, and the monitoring activities are expected to continue through the life of the ASTER mission. This work will also establish a digital baseline inventory of ice extent for comparison with inventories at later times. Other uses of ASTER data include mapping of urban development, hazard monitoring, land-use change detection and mineral exploration.

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