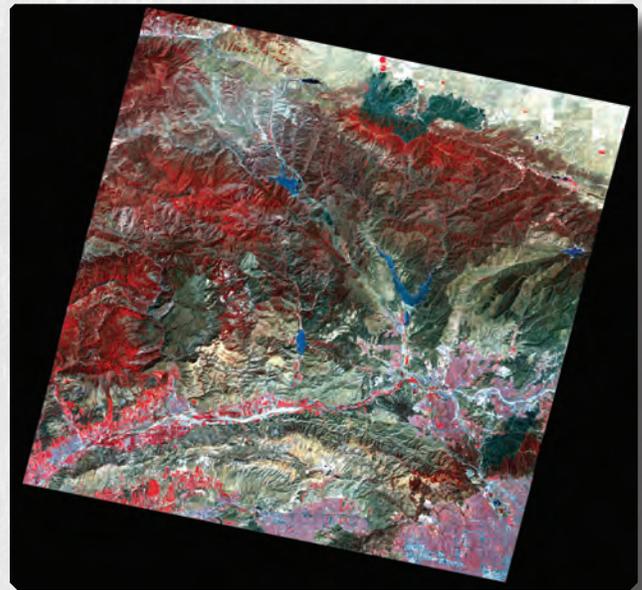


Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Overview

The National Aeronautics and Space Administration (NASA) launched Terra, the Earth Observing System's (EOS) flagship satellite platform on December 18, 1999. The polar-orbiting Terra contains five remote sensing instruments, which enable the scientific study and analyses of global terrestrial processes and manifestations of global change. One of the five instruments is the multispectral Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER), which is built in Japan by a consortium of government, industry, and research groups. It has three spectral bands in the visible near-infrared region (VNIR), six bands in the shortwave infrared region (SWIR), and five bands in the thermal infrared region (TIR), with 15-, 30-, and 90-meter ground resolutions, respectively. This combination of wide spectral coverage and high spatial resolution allows ASTER to discriminate among a wide variety of surface materials. The VNIR subsystem also has a backward-viewing telescope for high-resolution (15-meter) stereoscopic observation in the along-track direction, which facilitates the generation of digital elevation models (DEM).

The ASTER instrument is unique in two respects: it provides the highest spatial resolution surface spectral reflectance, temperature, and emissivity data of all the Terra sensors, and it is capable of being scheduled to fulfill on-demand data acquisition requests. The ASTER data products include surface reflectance, surface radiance, surface kinetic temperature, surface emissivity, brightness temperature at sensor, DEM, and orthorectified data. ASTER data contribute to a wide array of application areas, including geology and soils, vegetation and ecosystem dynamics, carbon cycling, hazards monitoring (volcanoes, wildfires, floods, landslides, and coastal erosion), land surface climatology, hydrology, and glaciology.

The ASTER Level-1B product is the staple input used to produce all on-demand geophysical products except the ASTER DEM. It offers the same number of bands at the same resolution as the Level-1A product and is created by applying the radiometric-calibration and geometric-correction coefficients to the Level-1A data. The Land Processes Distributed Active Archive Center (LP DAAC) archives and maintains ASTER Level-1A data received from the Ground Data System (GDS) in Japan. All higher-level ASTER data products are produced on-demand



This is an ASTER orthorectified visible near-infrared image, which shows the northwestern part of Los Angeles County with a backdrop of the Tehachapi Mountains. The scene center coordinates are 34.5° N. latitude and 118.7° W. longitude. In the lower right is the northwestern end of the San Fernando Valley and Santa Clarita to its north. In the middle right is the V-shaped Castaic Lake and Interstate 5, which trends northwest-southeast. Healthy vegetation appears in red in contrast to a couple of burn scars (indicated by the darkened areas): one in the middle left (north of Simi Valley), the other in the north in the Angeles National Forest.

at the LP DAAC. A similar suite of products is produced at the GDS facility in Tokyo, Japan.

ASTER data and products are registered to the Universal Transverse Mercator (UTM) map projection and coordinate system. The majority of the data and products are provided in a specific implementation of the Hierarchical Data Format called HDF-EOS. For more details on ASTER data and its product suite, please visit https://lpdaac.usgs.gov/lpdaac/products/aster_products_table.

Data Set Characteristics:

Area:	Approximately 60 x 60 kilometers	SWIR (4–9) = 31,374,000 bytes
Acquisition date and time:	2004–08–07, 18:51:31	TIR (10–14) = 5,810,000 bytes
Image dimensions:	VNIR: 4,200 rows x 4,980 columns	Total = 118 megabytes
	VNIR (3B): 4,600 rows x 4,980 columns	Spatial resolution:
	SWIR: 2,100 rows x 2,490 columns	VNIR = 15 meters
	TIR: 700 rows x 830 columns	SWIR = 30 meters
File size:	VNIR (1,2,3N) = 62,748,000 bytes	TIR = 90 meters
	VNIR (3B) = 22,908,000 bytes	Projection:
		Universal Transverse Mercator (UTM)
		Data format:
		HDF–EOS

The following table provides a list of all the ASTER Routine and On-Demand products available from the LP DAAC:

Short name	Long name	Level	Spatial resolution (meters)
ASTER Routine Products			
AST_L1A	ASTER L1A Reconstructed Unprocessed Instrument Data	L1A	15, 30, 90
AST_L1AE	ASTER Expedited L1A Reconstructed Unprocessed Instrument Data	L1A	15, 30, 90
AST_L1BE	ASTER Expedited L1B Registered Radiance at the Sensor	L1B	15, 30, 90
ASTER On-Demand Products			
AST_L1B	ASTER L1B Registered Radiance at the Sensor	L1B	15, 30, 90
AST_04	ASTER On-Demand L2 Brightness Temperature at Sensor	L2	90
AST_05	ASTER On-Demand L2 Surface Emissivity	L2	90
AST_07	ASTER On-Demand L2 Surface Reflectance VNIR and SWIR	L2	15, 30
AST_07XT	ASTER On-Demand L2 Surface Reflectance SWIR Crosstalk-Corrected	L2	15, 30
AST_08	ASTER On-Demand L2 Surface Kinetic Temperature	L2	90
AST_09	ASTER On-Demand L2 Surface Radiance VNIR and SWIR	L2	15, 30
AST_09XT	ASTER On-Demand L2 Surface Radiance SWIR Crosstalk-Corrected	L2	15, 30
AST_09T	ASTER On-Demand L2 Surface Radiance TIR	L2	90
AST14DEM	ASTER On-Demand L3 Digital Elevation Model	L3	30
AST14OTH	ASTER On-Demand L3 Orthorectified Images	L3	15, 30, 90
AST14DMO	ASTER On-Demand L3 DEM (30 meter) and Orthorectified Images	L3	15, 30, 90

Resources on ASTER:

LP DAAC URL:
<https://lpdaac.usgs.gov>
 Warehouse Inventory Search Tool URL:
<https://wist.echo.nasa.gov/~wist/api/imswelcome/index.html>
 Jet Propulsion Laboratory (JPL) ASTER URL:
<http://asterweb.jpl.nasa.gov>
 LPDAAC–JPL ASTER User Handbook URL:
http://asterweb.jpl.nasa.gov/content/03_data/04_Documents/aster_user_guide_v2.pdf
 Ground Data System (GDS) in Japan URL:
http://www.gds.aster.ersdac.or.jp/gds_www2002/index_e.html

Contact Information:

LP DAAC User Services
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 Web: <https://LPDAAC.usgs.gov>