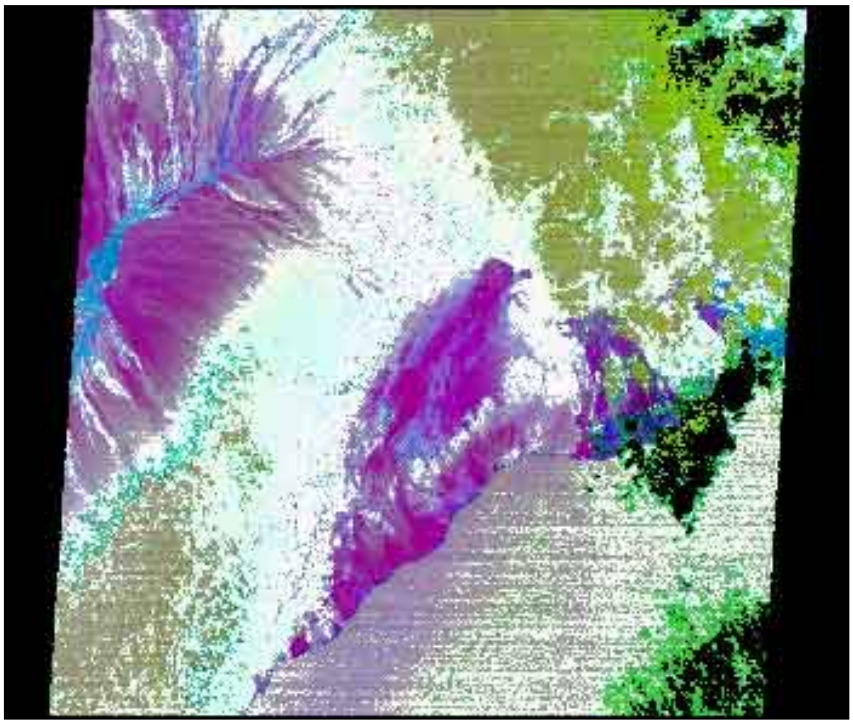

EDG Data Set Name
ASTER On-Demand L2 Emissivity

Granule Shortname
AST_05

Data Set Characteristics
Area: ~60 km x 60 km
Image Dimensions: 700 rows x 830 columns
File Size: ~9 Megabytes
Spatial Resolution: 90 m
Units: None (ε multiplied by 0.001)
Projection: Universal Transverse Mercator (UTM)
Data Format: HDF-EOS
Vgroup Data Fields: 5

Product Description
The ASTER On-Demand L2 Emissivity is an on-demand product generated using the 5 thermal infra-red (TIR) bands (acquired either during the day or night time) between 8 and 12 µm spectral range. It contains surface emissivity over the land at 90 meters spatial resolution. Estimates of surface emissivity have thus far only been derived using surrogates such as land-cover type or vegetation index. The Temperature/Emissivity Separation (TES) algorithm is used to derive both e (emissivity) and T (surface temperature). The main goals of the TES algorithm include: recovering accurate and precise emissivities for mineral substrates, and estimating accurate and precise surface temperatures especially over vegetation, water and snow.

The TES algorithm is executed in the ASTER processing chain following generation of ASTER Level 2 Surface Radiance (TIR). The land-leaving radiance and down-welling irradiance vectors for each pixel are taken in account. Emissivity is estimated using the Normalized Emissivity Method (NEM) and is iteratively compensated for reflected sunlight. The emissivity spectrum is normalized using the average emissivity of each pixel. The minimum-maximum difference (MMD) of the normalized spectrum is calculated and estimates of the minimum emissivity derived through regression analysis. These estimates are used to scale the normalized emissivity and compensate for reflected skylight with the derived refinement of emissivity.

Vgroup Data Fields/ Spectral Range (µm)	Units	Data Type	Valid Range	Telescope Pointing Capability
TIR (90 Meters)				
Band 10 (8.125 - 8.475)	none	16-bit integer	0 - 1000	+/- 8.55°
Band 11 (8.475 - 8.825)	none	16-bit integer	0 - 1000	+/- 8.55°
Band 12 (8.925 - 9.275)	none	16-bit integer	0 - 1000	+/- 8.55°
Band 13 (10.25 - 10.95)	none	16-bit integer	0 - 1000	+/- 8.55°

Band 14 (10.95 - 11.65)	none	16-bit integer	0 - 1000	+/- 8.55°

Ordering ASTER On-Demand L2 Emissivity Product

The process, procedures and instructions for ordering this product are described on the ASTER On-Demand Data Gateway (http://edcdaac.usgs.gov/asterondemand/index.html). As part of that process, it is necessary to first select an ASTER Level 1B granule from the EOS Data Gateway (http://edcimswww.cr.usgs.gov/pub/imswelcome/).

Product Information

Release Notes
(http://asterweb.jpl.nasa.gov/products/release_surface_emissivity_product.htm)

ASTER Standard Data Products Catalog - Download Acrobat Reader
(http://asterweb.jpl.nasa.gov/documents/ASTERHigherLevelUserGuideVer2May01.pdf)

Algorithm Theoretical Basis Document (ATBD)
(http://eospso.gsfc.nasa.gov/atbd/astertables.html)

ASTER JPL Web Page
(http://asterweb.jpl.nasa.gov)

EOS Data Products Handbook
(http://eospso.gsfc.nasa.gov/eos_homepage/misc_html/data_prod.html)

Contact Information

LP DAAC User Services
U.S. Geological Survey
EROS Data Center
47914 252nd Street
Sioux Falls, SD 57198-0001
Phone: 605-594-6116
Toll Free: 866-573-3222
866-LPE-DAAC
Fax: 605-594-6963
Email: edc@eos.nasa.gov
Web: http://edcdaac.usgs.gov

This site is hosted by the USGS - NASA Distributed Active Archive Center
Disclaimers, Statements and Accessibility
URL: http://LPDAAC.usgs.gov/aster/ast_05.html
Technical Contact: edc@eos.nasa.gov
Last Update: Wednesday, 19-Mar-2003 09:17:30 CST
Download Adobe Acrobat Reader