EDG Data Set Name

MODIS/Terra Land Surface Temperature/Emissivity Daily 5-Min L2 Swath 1km

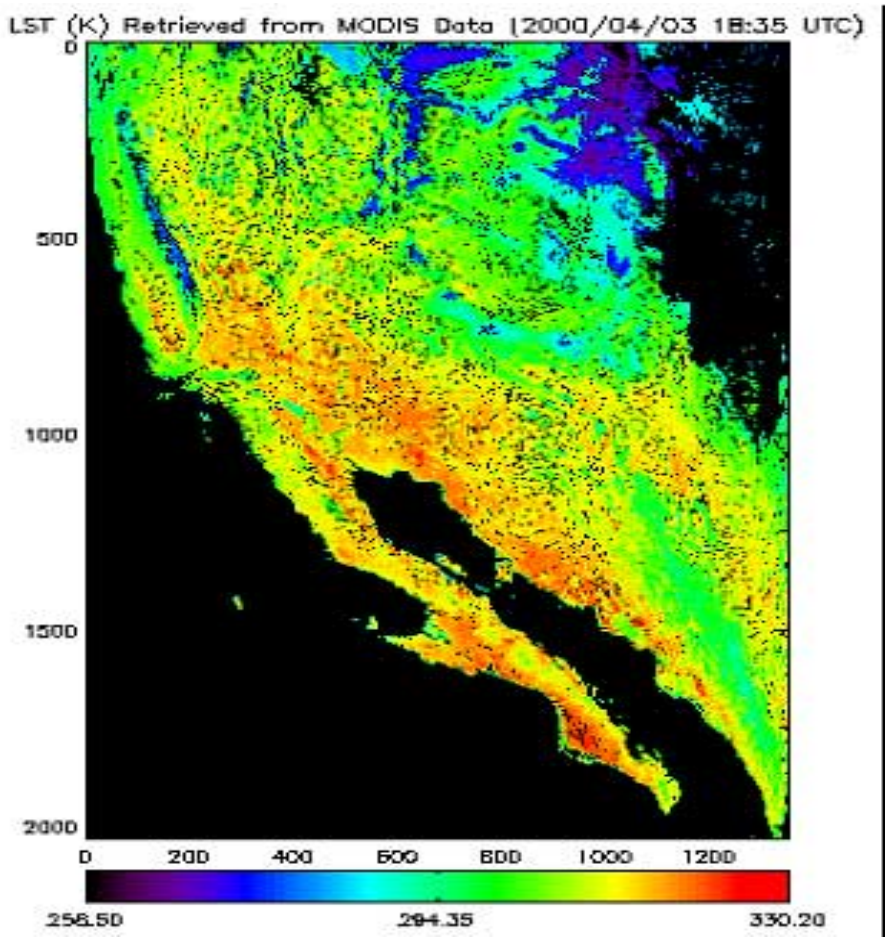
Granule Shortname

MOD11_L2

Version	Acquisition Range	Science Quality Status
V001	June 25, 2000 (2000177) – May 26, 2001 (2001146)	Beta as of Jun 25, 2000
V003	March 21, 2000 (2000081) – December 31, 2002 (2002365)	Provisional as of Nov 1, 2000
V004	February 24, 2000 (2000055)	Provisional Feb 24 2000-May 31 2000 Validated (Stage 1) Jun 1 2000-Feb 2 2003

Data Set Characteristics

Area = ~2330 x 2000 km
Image Dimensions = 2 (~2030x1354 row/column)
Average File Size = 26 MB
Resolution = 1 kilometer at nadir
Projection = None (swath data)
Land Surface Temperature (LST) Data Type = 16-bit Unsigned Integer
Emissivity Data Type = 8-bit Unsigned Integer
Data Format = HDF-EOS
Science Data Sets (SDS) = 9



Product Description

MODIS Land Surface Temperature and Emissivity (LST/E) products provide per-pixel temperature and emissivity values. Temperatures are extracted in Kelvin with a view-angle dependent algorithm applied to direct observations. This method yields 1 K accuracy for materials with known emissivities. The view angle information is included in each LST/E product. Emissivities are estimates derived from applying algorithm output to database information. The LST/E algorithms use MODIS data as input, including geolocation, radiance, cloud masking, atmospheric temperature, water vapor, snow, and land cover. The temperature products in turn are key inputs to many of the high level MODIS products and provide data for global temperature mapping and change observation. On land, soil and canopy temperature are among the main determinants of the rate of growth of vegetation and they govern seasonal start and termination of growth. Hydrologic processes such as evapotranspiration and snow and ice melt are highly sensitive to surface temperature fluctuation, which is also an important discriminating factor in classification of land surface types.

The false-color MOD11_L2 image shown was retrieved from MODIS data of April 3, 2000 over the Southwest United States and Baja California. It represents the MODIS Level 2 LST product at 1km spatial resolution, as derived from the generalized split-window LST algorithm. In addition to temperature, emissivity, quality, view angle and view time information, geolocation data (latitude and longitude) at 5 km resolution are stored in this product.

NOTE: These products are validated, meaning that product uncertainties are well defined over a range of representative conditions. Although there may be later improved versions, these data are ready for use in scientific publications.

SDS	Units	Data Type-bit	Fill Value	Valid Range	Multiply by Scale Factor	Add ADDITIONAL OFFSET
Land-surface Temperature	Kelvin	16-bit unsigned integer	0	7500 - 65535	0.0200	na
*Quality control for daytime LST and emissivity	na	16-bit unsigned integer	0	0 - 255	na	na
Land-surface Temperature Error	Kelvin	8-bit unsigned integer	0	1 - 255	0.0400	na
Band 31 emissivity	na	8-bit unsigned integer	0	1 - 255	0.0020	0.4900
Band 32 emissivity	na	8-bit unsigned integer	0	1 - 255	0.0020	0.4900
Zenith angle of MODIS viewing at the pixel	Degree	8-bit unsigned integer	0	0 - 180	0.5000	na
Time of Land-surface Temperature observation	Hrs	8-bit unsigned integer	0	0 - 240	0.1000	na
Latitude of every 5 scan lines and 5 pixels	Degree	32-bit floating point	-999.9	-90.0 - 90.0	na	na
Longitude of every 5 scan lines and 5 pixels	Degree	32-bit floating point	-999.9	-180 - 180	na	na

***Quality Control Bit Index**

bit	Long Name	Key
00-01	Mandatory QA flags	00=Pixelproduced, good quality, not necessary to examine more detailed QA 01=Pixel produced, unreliable or unquantifiable quality, recommend examination of more detailed QA 10=Pixel not produced due to cloud effects 11=Pixel not produced primarily due to reasons other than cloud (such as ocean pixel, poor input data)
02-03	Data quality flag	00=good 01=missing pixel 10=fairly calibrated 11=poorly calibrated, LST processing skipped
04-05	Cloud flag	00=cloud free pixel 01=pixel only with thin cirrus 10=fraction of sub-pixel clouds<= 2/16 11=LST affected by nearby clouds
06-07	LST model number	00=generalized split-window method 01=day/night method 10=high LST w/o atmospheric & emis corrections 11=cirrus effects corrected

08-09	LST quality flag	00=no multi-method comparison 01=multi-method comparison done 10=fair consistency 11=good consistency
10-11	Emissivity flag	00=inferred from land cover type 01=MODIS retrieved 10=TBD 11=default value used
12-13	Emis quality flag	00=emis quality not checked 01=emis quality checked with land cover type 10=emis quality checked with NDVI 11=emis view-angle dependence checked
14-15	Emis error flag	00=error in emis_31 emis_32 <= 0.01 01=error in emis_31 emis_32 <= 0.02 10=error in emis_31 emis_32 <= 0.04 11=error in emis_31 emis_32 > 0.04

Order Data through the EOS Data Gateway
(http://edcimswww.cr.usgs.gov/pub/imswelcome/)

EOS Data Gateway Search Tips

Data Center:	EDC-ECS
Sensor:	MODIS
Dataset:	MODIS/Terra Land Surface Temperature/Emissivity Daily 5-Min L2 Swath 1km
Spatial:	HORIZONTALTILENUMBER Max/Min VERTICALTILENUMBER Max/Min
Geographic Extent:	Type Lat/Long Range or Draw on Map
Temporal Extent:	2000-02-24 to present

Retrieve Data through the LP DAAC Data Pool
(http://edcdaac.usgs.gov/tutorial/datapool.html)

Product Information

Product Description
(http://modis-land.gsfc.nasa.gov/products/products.asp?ProdFamID=8)

User Guide
(http://www.icess.ucsb.edu/modis/LstUsrGuide/usrguide.html)

Algorithm Theoretical Basis Document (ATBD)
(http://eospso.gsfc.nasa.gov/eos_homepage/for_scientists/atbd/viewInstrument.php?instrument=MODIS)

MODIS Standard Data Products Catalog
(http://modis.gsfc.nasa.gov/data/dataprod/descchart.html)

EOS Data Products Handbook Volume 1 (2000)
(http://eospso.gsfc.nasa.gov/eos_homepage/misc_html/data_prod.html)

Contact Information

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