

Land Processes Distributed Active Archive Center



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EDG Data Set Name

MODIS/Terra Land Surface Temperature/Emissivity 8-Day L3 Global 1km SIN Grid

Granule Shortname

MOD11A2

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 = ~ 1100 x 1100 km

Image Dimensions= 2 (1200x1200
row/column)

Average File Size = 24 MB

Resolution = 1 kilometer (actual 0.93km)

Projection = Sinusoidal

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) = 12

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 land cover 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-colored MOD11A2 image shown was retrieved from MODIS data between June 1-8, 2000 over the Western

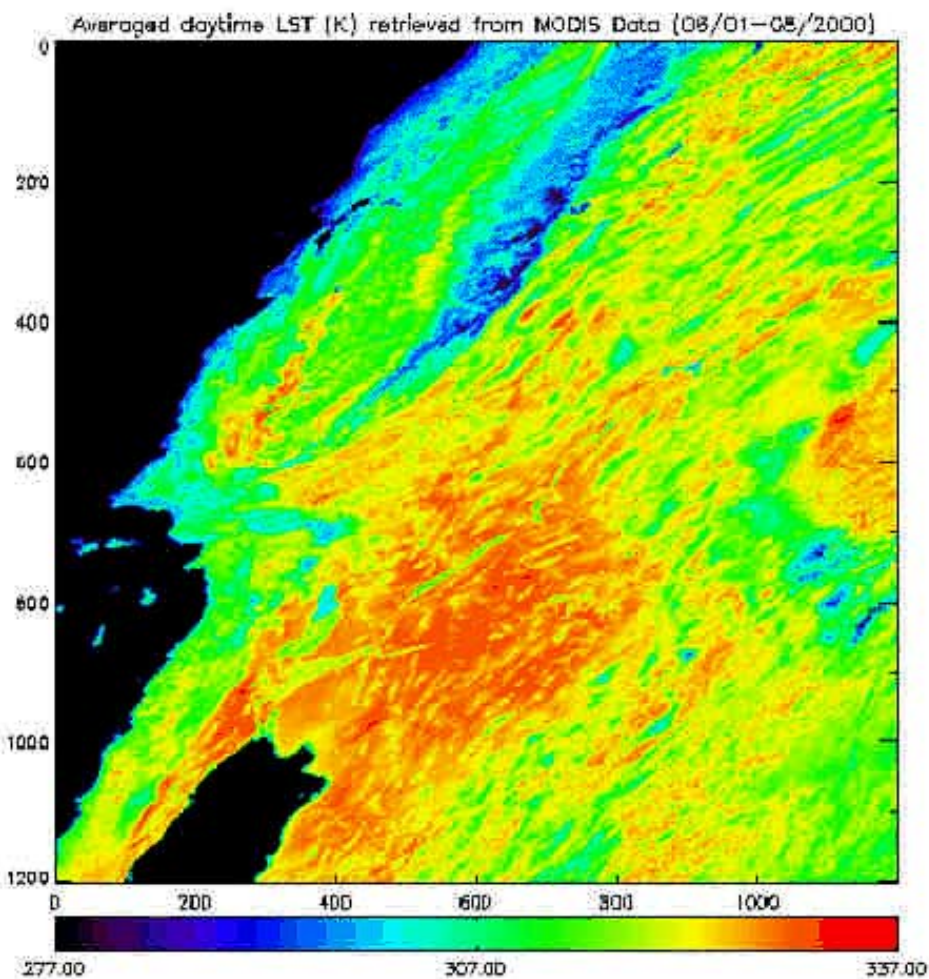


Image Developer: MODIS Science Team / MODLAND / Zhengming Wan, UCSE.

Coast of the United States. It is an example of the MODIS Level 3 LST 8-Day product at 1 km resolution. MOD11A2 is a composited version of the [Level 3 daily LST 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
Daily daytime 1km grid Land-surface Temperature	Kelvin	16-bit unsigned integer	0	7500 - 65535	0.0200	na
*Quality control for daytime LST and emissivity	na	8-bit unsigned integer	0	0 - 255	na	na
Time of daytime Land-surface Temperature observation	Hrs	8-bit unsigned integer	0	0 - 240	0.1000	na
View zenith angle of daytime Land-surface Temperature	Degree	8-bit unsigned integer	255	0 - 130	1.0000	-65.0000
Daily nighttime 1km grid Land-surface Temperature	Kelvin	16-bit unsigned integer	0	7500 - 65535	0.0200	na
Quality control for nighttime LST and emissivity	na	8-bit unsigned integer	0	0 - 255	na	na
Time of nighttime Land-surface Temperature observation	Hrs	8-bit unsigned integer	0	1 - 240	0.1000	na
View zenith angle of nighttime Land-surface Temperature	Degree	8-bit unsigned integer	255	0 - 130	1.0000	-65.0000
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
Clear-sky Days	na	8-bit unsigned integer	0	0 - 255	na	na
Clear-sky Nights	na	8-bit unsigned integer	0	0 - 255	na	na

***Quality Control Bit Index:**

bit	Long Name	Key

00-01	Mandatory QA flags	00=Pixel produced, good quality, not necessary to examine more detailed QA 01=Pixel produced, other 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 grid, grid not covered by all processed granules)
02-03	Data quality flag	00=good data quality 01=other quality data 10=TBD 11=TBD
04-05	Emis Error flag	00=average emissivity error <= 0.01 01=average emissivity error <= 0.02 10=average emissivity error <= 0.04 11=average emissivity error > 0.04
06-07	LST Error flag	00=average LST error <= 1K 01=average LST error <= 2K 10=average LST error <= 3K 11=average LST error > 3K

Order Data through the EOS Data Gateway

(<http://edcimswww.cr.usgs.gov/pub/ims/welcome/>)

EOS Data Gateway Search Tips

Data Center: EDC-ECS
Sensor: MODIS
Dataset: MODIS/Terra Land Surface Temperature/Emissivity 8-Day L3 Global 1km SIN Grid
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://eosps0.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://eosps0.gsfc.nasa.gov/eos_homepage/misc_html/data_prod.html)

Contact Information

[LP DAAC User Services](#)

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URL: <http://LPDAAC.usgs.gov/modis/mod11a2v4.html>

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