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EDG Data Set Name

MODIS/Aqua Land Surface Temperature/Emissivity Daily L3 Global 5km SIN Grid

Granule Shortname

MYD11B1

Version	Acquisition Range	Science Quality Status
V003	March 6 2003 (2003065)	Provisional

Data Set Characteristics

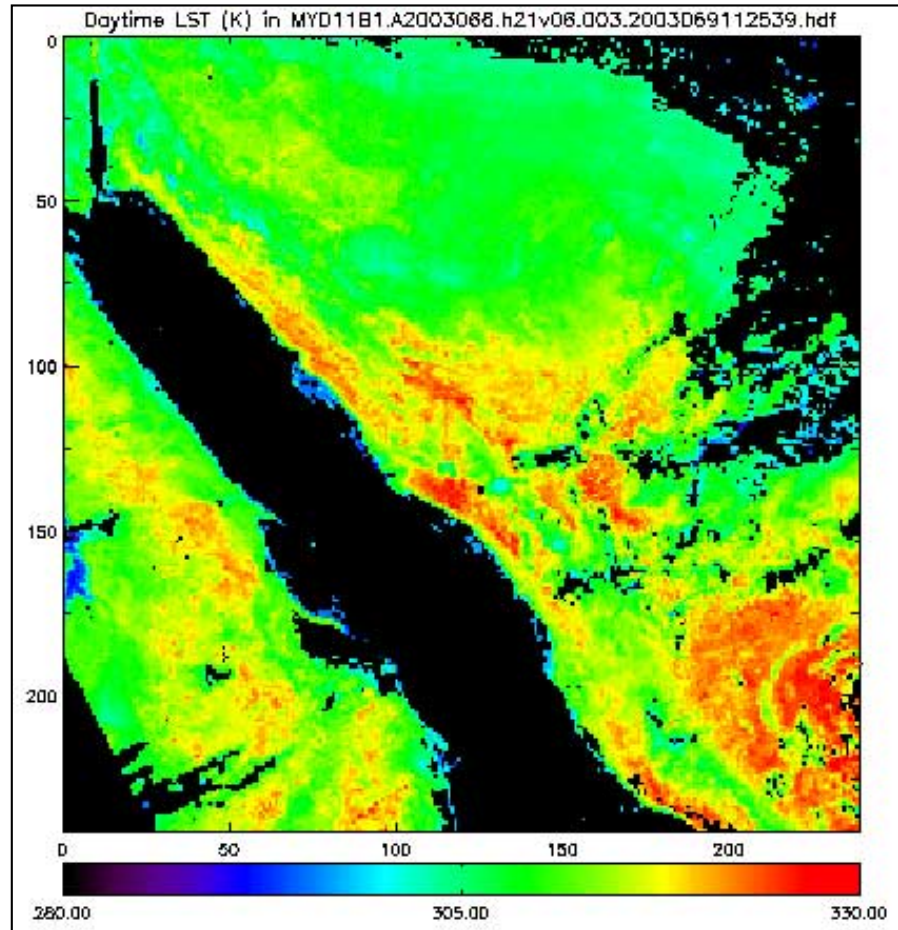
Area = ~1100 x 1100 km
 Image Dimensions = 2 (240x240 row/column)
 Average File Size = 1.9 MB
 Resolution = 5 kilometer (actual 4.63km)
 Projection = Sinusoidal
 LST Data Type = 16-bit Unsigned Integer
 Emissivity Data Type = 8-bit Unsigned Integer
 Data Format = HDF-EOS
 Science Data Sets (SDS) = 17

Product Description

This MODIS Land Surface Temperature and Emissivity (LST/E) product provides per-grid temperature and emissivity values. Temperatures are extracted in Kelvin with a day/night LST algorithm applied to a pair of MODIS daytime and nighttime observations. This method retrieves the land-surface temperature and emissivities in bands 20, 22, 23, 29, and 31-32, simultaneously. This algorithm uses MODIS data as input, including geolocation, radiance, cloud masking, atmospheric temperature and water vapor. The temperature/emissivity 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 image shown was retrieved from MODIS data of March 10, 2003. Saudia Arabia is to the East, and Egypt, Sudan, and Ethiopia line the western border of the Red Sea. The image is an example of the MODIS Level 3 LST daily product at 5 km resolution.



NOTE: These products are provisional, meaning that product quality may not be optimal. Incremental product improvements are still occurring, and users are urged to contact MODIS Science Team representatives prior to use of the data in publications. These data are likely to be replaced when the validated product becomes available.

SDS	Units	Data Type-bit	Fill Value	Valid Range	Multiply by Scale Factor	Add ADDITIONAL OFFSET
Daily daytime 5km 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 - 120	0.2000	na
View zenith angle of daytime Land-surface Temperature	Degree	8-bit unsigned integer	255	0 - 130	1.0000	-65.0000
Daily nighttime 5km 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	0 - 120	0.2000	na
View zenith angle of nighttime Land-surface Temperature	Degree	8-bit unsigned integer	255	0 - 130	1.0000	-65.0000
Band 20 emissivity	na	8-bit unsigned integer	0	1 - 255	0.0020	0.4900
Band 22 emissivity	na	8-bit unsigned integer	0	1 - 255	0.0020	0.4900
Band 23 emissivity	na	8-bit unsigned integer	0	1 - 255	0.0020	0.4900
Band 29 emissivity	na	8-bit unsigned integer	0	1 - 255	0.0020	0.4900
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
Daily daytime 5km grid LST aggregated from 1km	Kelvin	16-bit unsigned integer	0	7500 - 65535	0.0200	na
Daily nighttime 5km grid LST aggregated from 1km	Kelvin	16-bit unsigned integer	0	7500 - 65535	0.0200	na
+Quality control for retrieved emissivities	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=LST affected by nearby clouds and/or sub-grid cloud and/or ocean 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

+ Quality Control Bit Index for Retrieved Emissivities

bit	Long Name	Key (as 4-bit unsigned integer value)
00-03	Nighttime view angle flag	0 – 15 = index of the nighttime view angle sub-range
04-07	Daytime view angle flag	0 – 15 = index of the daytime view angle sub-range

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/Aqua Land Surface Temperature/Emissivity Daily L3 Global 5km SIN Grid
Spatial: HORIZONTALTILENUMBER Max/Min VERTICALTILENUMBER Max/Min
Geographic Extent: Type Lat/Long Range or Draw on Map
Temporal Extent: 2003-03-06 to present

Retrieve Data through the LP DAAC Data Pool

(<http://LPDAAC.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://eospsso.gsfc.nasa.gov/eos_homepage/misc_html/data_prod.html)

Contact Information

[LP DAAC User Services](#)

U.S. Geological Survey

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URL: <http://LPDAAC.usgs.gov/modis/myd11b1v3.html>

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