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EDG Data Set Name

MODIS/Terra+Aqua BRDF/Albedo Model-1 16-Day L3 Global 1km SIN Grid

Granule Shortname

MCD43B1

Version	Acquisition Range	Science Quality Status
V004	July 4 2002 (2002185)	Validated

Data Set Characteristics

Area = ~10° X 10° latitude/longitude

Image Dimensions = 4 (1200 x 1200 X 10 X 3 row/column/band/parameter)

Average File Size = ~112 MB

Resolution = 1 kilometer

Projection = Sinusoidal

Data Format = HDF-EOS

Science Data Sets (SDSs) = 4

Product Description

MCD43B1 contains four dimensional data sets of Bidirectional Reflectance Distribution Function (BRDF) and Albedo parameters: x, y, and parameter values are stored for each wavelength band of data. Note in the table below that the "BRDF Albedo Parameters Dimensions" cell reflects the use of all 7 MODIS Land Bands (459-2155 nm) in addition to 3 broad bands compiled from 300-700 nm, 700-5000 nm, and 300-5000 nm. This 4D combination provides users with spatial orientation as well as the weighting parameters associated with the models best describing the differences in radiation due to scattering (anisotropy) of each pixel. MODLAND's Level 3 BRDF/Albedo products (MCD43Bs) are provided globally as discrete 1200 by 1200 element tiles in a Sinusoidal Grid projection in a HDF-EOS format. MCD43B1 provides the primary BRDF model parameters. [MCD43B3](#) provides the black-sky albedo (at the mean solar zenith angle at local solar noon) and the white-sky albedo. [MCD43B4](#) provides two NBAR values, one at the mean solar zenith angle of Terra overpasses during the 16-day period and the other at the mean solar zenith angle of the Aqua overpasses. Quality information is replicated and available with each quantity.

Every 16 days, the MODIS BRDF/Albedo Product (MCD43B) algorithm relies on multirate, atmospherically corrected, cloud-cleared data and a semiempirical kernel-driven bidirectional reflectance model to determine a global set of parameters describing the BRDF of the land surface. These one kilometer gridded parameters are then used to determine directional hemispherical reflectance ("black-sky albedo"), bihemispherical reflectance ("white-sky albedo"), and nadir BRDF-adjusted reflectance (NBAR) for seven spectral bands and (in the case of albedo) three broad bands. Since the parameters of the simple kernel-based BRDF model ([RossThickLiSparseR](#)) are also provided, along with extensive quality information, the MODIS BRDF/Albedo Product offers members of the global remote sensing and modeling community the additional flexibility to derive reflectance and albedo measures particularly suited to their specific applications.

MCD products are generated using a combination of Terra and Aqua acquisitions to optimize data quality.

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	Additional Offset	Dimensions
BRDF Albedo Parameters	Reflectance	16-bit signed integer	32767	0 - 32766	0.001	na	1D X-Dim 2D Y-Dim 3D#Land Bands+3 4D #Parameters
BRDF Shape Indicators	Ratio or coefficient	8-bit unsigned integer	255	0 - 254	0.040	25.0	1D X-Dim 2D Y-Dim 3D # Shape Fields
*BRDF Quality	Concatenated flags	32-bit unsigned integer	4294967295	0 - 4294967295	na	na	1D X-Dim 2D Y-Dim 3D # QC Words
BRDF Type	Model or Type number	8-bit unsigned integer	255	0 - 254	na	na	1D X-Dim 2D Y-Dim 3D # Type Fields

QC Word One (band independent)	Description
00-01 Mandatory QA	0 = processed, good quality 1 = processed, see other QA 2 = not processed due to cloud effects 3 = not processed due to other effects
02-03 Period used	0 = 16 days 1 = 32 days
04-07 Land/Water	0 = Shallow ocean 1 = Land (Nothing else but land) 2 = Ocean and lake shorelines 3 = Shallow inland water 4 = Ephemeral water 5 = Deep inland water 6 = Moderate or continental ocean 7 = Deep ocean
08-10 AM/MISR/PM	0 = AM 1 = AM/PM 2 = AM/PM/MISR 3 = AM/MISR 4 = PM 5 = PM/MISR 6 = MISR

11-15 Mean Solar Angle of the Overpass Time	0 = 0-5 degrees 1 = 5-10 degrees 2 = 10-15 degrees 3 = 15-20 degrees 4 = 20-25 degrees 5 = 25-30 degrees 6 = 30-35 degrees 7 = 35-40 degrees 8 = 40-45 degrees 9 = 45-50 degrees 10= 50-55 degrees 11= 55-60 degrees 12= 60-65 degrees 13= 65-70 degrees 14= 70-75 degree 15= 75-80 degrees 16= 80-90 degrees
16-17 Snow	0 = no Snow 1 = Snow present
18-30 TBD	
31 QAfill	0 = not fill-value 1 = fill-value
QC Word Two (band dependent)	Description
00-03 Band 1 Quality	0 = RMSE good, WoD(NBAR) good, WoD(WSA) good 1 = RMSE good, WoD(NBAR) good, WoD(WSA) moderate 2 = RMSE good, WoD(NBAR) moderate, WoD(WSA) good 3 = RMSE good, WoD(NBAR) moderate, WoD(WSA) moderate 4 = RMSE moderate, WoD(NBAR) good, WoD(WSA) good 5 = RMSE moderate, WoD(NBAR) good, WoD(WSA) moderate 6 = RMSE moderate, WoD(NBAR) moderate, WoD(WSA) good 7 = RMSE moderate, WoD(NBAR) moderate, WoD(WSA) moderate 9 = magnitude inversion (numobs >3&<7) 10= magnitude inversion (numobs <=3) 11= Bus-in DB parameters 15= Fill value
04-07 Band 2 Quality (see explanation for band 1)	
08-11 Band 3 Quality (see explanation for band 1)	
12-15 Band 4 Quality (see explanation for band 1)	
16-19 Band 5 Quality (see explanation for band 1)	
20-23 Band 6 Quality (see explanation for band 1)	
24-27 Band 7 Quality (see explanation for band 1)	
28-30 TBD	
31 QAfill	0 = not fill-value 1 = fill value

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NEW Retrieve the MCD43B1v4 MODIS product through the [LP DAAC Data Pool](#)

Via Search Tool: <http://e0dps01u.ecs.nasa.gov:22000/OPS/drill?attrib=esdt&esdt=MCD43B1.4&group=MOTA>

Via FTP Directory: <ftp://e0dps01u.ecs.nasa.gov/MOTA/MCD43B1.004/>

Order Data through the EOS Data Gateway

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

EOS Data Gateway Search Tips

Source: Terra or Aqua
Sensor: MODIS
Dataset: MODIS/Terra+Aqua BRDF/Albedo Model-1 16-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: 2002-07-04 to present

Product Information

[Product Description](#)

(<http://modis-land.gsfc.nasa.gov/products/products.asp?ProdFamID=13>)

[User Guide](#)

(<http://geography.bu.edu/brdf/userguide/albedo.html>)

[Algorithm Theoretical Basis Document \(ATBD\)](#)

(http://modis.gsfc.nasa.gov/data/atbd/land_atbd.html)

[MODIS Standard Data Products Catalog](#)

(<http://modis.gsfc.nasa.gov/data/dataproducts.html>)

[EOS Data Products Handbook Volume 2 \(2000\)](#)

(http://eosps0.gsfc.nasa.gov/eos_homepage/for_scientists/data_products/vol2.php)

Contact Information

[LP DAAC User Services](#)

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URL: <http://LPDAAC.usgs.gov/modis/mcd43b1v4.asp>

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