

# CloudSat Project

A NASA Earth System Science Pathfinder Mission

## **CloudSat MOD06-AUX Auxiliary Data Process Description and Interface Control Document**

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## Document Revision History

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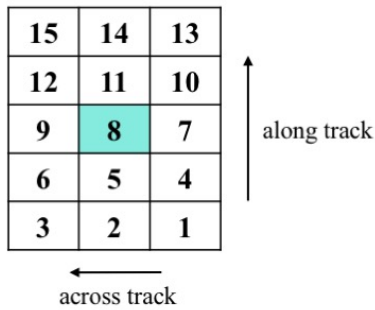
## **1 Introduction**

The MOD06-1KM-AUX and MOD06-5KM-AUX data sets are intermediate products that contain a subset of ancillary MODIS cloud properties that are collocated with each CloudSat cloud profiling radar (CPR) footprint. Input data are obtained from the 1B-CPR and AN-MODIS products, and the MOD06-AUX data are used as input to the 2B-CWC-RVOD algorithm in the CloudSat data processing system. This document describes the input product specifications, the subset process, and the format of the MOD06-1KM-AUX and MOD06-5KM-AUX products.

## **2 Description of the Subset Process**

The AN-MODIS data contain selected Collection 6 MODIS data fields and geolocation at a one-kilometer and five-kilometer resolution (see Section 3.2 for a more detailed description). To produce the MOD06-AUX products, the geolocation data from the 1B-CPR product are used as the reference dataset. Operating one CloudSat ray at a time and using a great-circle nearest-neighbor scheme, the closest AN-MODIS pixel is located. For the 1-km resolution product, a 3-pixel across-track by 5-pixel along-track grid of each AN-MODIS parameter of interest is extracted and stored in a 15-element vector associated with that ray (see Figure 1). For the 5-km resolution product, only the data from the nearest pixel is stored. If the CloudSat geolocation for a particular ray is missing or the closest AN-MODIS pixel is more than 0.95 km from the CloudSat ray, the resulting MODIS geolocation data and the associated data vectors are filled with a missing value flag. Note that this maximum distance threshold was derived empirically and deviates from the idealized value of 0.707 km to ensure that there is the possibility of a matched pixel even as the MODIS viewing geometry changes within the width of the swath.

a) Physical Representation of Subset Data



b) Data Vector in MODIS-AUX Product



Figure 1. Visualization of subset MOD06-1KM-AUX data in physical space (a) and within the data product (b). Pixel 8 (highlighted in teal) is the closest pixel to the CPR footprint.

### 3 Algorithm Inputs

Input data for the MOD06-AUX algorithm includes CloudSat 1B-CPR and AN-MODIS data sets. Each 1B-CPR data file contains data for one orbit of the CloudSat spacecraft, whereas each AN-MODIS file contains 5 minutes of MODIS data. The AN-MODIS data set is provided by the A-Train Data Depot (<http://disc.sci.gsfc.nasa.gov/atdd>) at the Goddard Earth Sciences (GES) DAAC. The swath is 11-km wide, centered on the CloudSat ground track. The data are provided in HDF-EOS2 format

#### 3.1 1B-CPR

Fields available in the 1B-CPR P\_R05 data set used by this algorithm include

**(1) Seconds since the start of the granule.**

<b>Name in file:</b> Profile_time	<b>Range:</b> 0 to 6000
<b>Source:</b> 1B-CPR P_R05	<b>Missing value:</b> N/A
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> N/A
<b>Dimensions:</b> nray	<b>Units:</b> seconds

Seconds since the start of the granule for each profile. The first profile is 0.

**(2) Spacecraft Latitude**

<b>Name in file:</b> Latitude	<b>Range:</b> -90 to 90
<b>Source:</b> 1B-CPR P_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> nray	<b>Units:</b> degrees

Spacecraft Geodetic Latitude.

**(3) Spacecraft Longitude**

**Name in file:** Longitude

**Source:** 1B-CPR P\_R05

**Field type:** REAL(4)

**Dimensions:** nray

**Range:** -180 to 180

**Missing value:** -999

**Missing value operator:** ==

**Units:** degrees

Spacecraft Geodetic Longitude.

**3.2 AN-MODIS**

The AN-MODIS dataset is made up of individual Aqua MODIS products that have been subset by the A-Train Data Depot to an 11-km wide swath around the CloudSat ground track. The HDF-EOS2 format files contain the following fields from the specified products:

- Geodetic 1-kilometer resolution Latitude and Longitude (MAC03S0.002, subset from MYD03).
- Collection 6 cloud properties and associated scale factors and offsets, 1-km and 5-km resolution (MAC06S0.002, subset from MYD06).

The radiance channels for each band are:

<u>Band</u>	<u>WaveLength</u>	<u>IFOV</u>	<u>Bandwidth</u>	<u>Example Usage</u>
1	645nm	250m	50nm	Veg. Chlorophyll Absorp.
2	858nm	250m	35nm	Cloud/Veg. Land Cover
3	469nm	500m	20nm	Soil & Veg. Differences
4	555nm	500m	20nm	Green Vegetation
5	1240nm	500m	20nm	Leaf/Canopy Differences
6*	1640nm	500m	24.6nm	Snow/Cloud Differences
7	2130nm	500m	50nm	Land/Cloud Properties
17	905nm	1000m	30nm	Cloud/Atmos Properties
18	936nm	1000m	10nm	Cloud/Atmos Properties
19	940nm	1000m	50nm	Cloud/Atmos Properties
20	3.75µm	1000m	0.18µm	Sea Surface Temp Fraction
26	1375nm	1000m	30nm	Cinfraredrus Cloud Detect
27	6.72µm	1000m	0.36µm	Mid-Tropospheric Humidity
28	7.33µm	1000m	0.30µm	Upper-Tropospheric Humidity

29	8.55 $\mu\text{m}$	1000m	0.30 $\mu\text{m}$	Surface Temperature
30	9.73 $\mu\text{m}$	1000m	0.30 $\mu\text{m}$	Total Ozone
31	11.03 $\mu\text{m}$	1000m	0.50 $\mu\text{m}$	Cloud/Surface Temp
32	12.02 $\mu\text{m}$	1000m	0.50 $\mu\text{m}$	Cloud Height & Surface Temp
33	13.34 $\mu\text{m}$	1000m	0.30 $\mu\text{m}$	Cloud Height & Fraction
34	13.64 $\mu\text{m}$	1000m	0.30 $\mu\text{m}$	Cloud Height & Fraction
35	13.94 $\mu\text{m}$	1000m	0.30 $\mu\text{m}$	Cloud Height & Fraction
36	14.24 $\mu\text{m}$	1000m	0.30 $\mu\text{m}$	Cloud Height & Fraction

\*Aqua/MODIS Band 6 failed before launch.

More information about the cloud property fields can be found MODIS MOD06/MYD06 Collection 6 product ATBD.

## 4 Data Product Output Specifications

Each HDF-EOS2 product file is built for the orbit specified by the input 1B-CPR data. Within each file, the Geolocation Fields contain the MODIS geolocation of the subset pixels along with the time information for the CloudSat ray. The Data Fields contain the MODIS science data for the subset pixels as well as information tracing back to the input AN-MODIS files. As discussed in Section 2, for the 1-km resolution product, all information for the 3-pixel across-track by 5-pixel along-track grid of subset pixels is stored in the MOD06-1KM-AUX product file as a 15-element vector for each CPR ray and data dimension. As depicted in Figure 1, the first element in the vector corresponds to the lower right corner of the 3x5 pixel grid (assuming the along-track dimension points up). The element count increases across the MODIS track to the left. Element 4 in the vector is the first pixel of the second along-track row in the 3x5 grid. The pixel in the middle of the 3x5 grid (vector element 8) is the closest pixel to the CPR footprint for that grid. In the MOD06-5KM-AUX product file, the MODIS data for the nearest subset pixel is stored. The specifications for the MOD06-AUX products are as follows:

### 4.1 MOD06-1KM-AUX

*Note: The mod\_1km dimension is 15 for the MOD06-1KM-AUX product.*

#### (1) Geodetic latitude of MODIS pixels

<b>Name in file:</b> MODIS_latitude	<b>Range:</b> -90 to 90
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> degrees

This array contains the vector of latitudes for the closest 15 pixels to the CloudSat CPR footprint in a 3x5 (across track x along track) grid.

#### (2) Geodetic longitude of MODIS pixels

<b>Name in file:</b> MODIS_longitude	<b>Range:</b> -180 to 180
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> degrees

This array contains the vector of longitudes for the closest 15 pixels to the CloudSat CPR footprint in a 3x5 (across track x along track) grid.

#### (3) Seconds since the start of the granule

<b>Name in file:</b> Profile_time	<b>Range:</b> 0 to 6000
<b>Source:</b> 1B-CPR P_R05	<b>Missing value:</b> N/A
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> N/A
<b>Dimensions:</b> nray	<b>Units:</b> seconds



Seconds since the start of the granule for each profile. The first profile is 0.

**(4) UTC seconds since 00:00 Z of the first profile**

<b>Name in file:</b> UTC_start	<b>Range:</b> 0 to 86400
<b>Source:</b> 1B-CPR P_R05	<b>Missing value:</b> N/A
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> N/A
<b>Dimensions:</b> <scalar>	<b>Units:</b> seconds

The UTC seconds since 00:00 Z of the first profile in the data file.

**(5) TAI time for the first profile**

<b>Name in file:</b> TAI_start	<b>Range:</b> 0 to 6e+008
<b>Source:</b> 1B-CPR P_R05	<b>Missing value:</b> N/A
<b>Field type:</b> REAL(8)	<b>Missing value operator:</b> N/A
<b>Dimensions:</b> <scalar>	<b>Units:</b> seconds

The TAI timestamp for the first profile in the data file. TAI is International Atomic Time: seconds since 00:00:00 Jan 1, 1993.

**(6) MODIS granule index of each pixel**

<b>Name in file:</b> MODIS_granule_index	<b>Range:</b> 1 to 25
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -99
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

Key to the granule index dimension in data fields associating each field with a MODIS granule and corresponding scales and offsets.

**(7) MODIS Along-Track Pixel Index**

<b>Name in file:</b> MODIS_pixel_index_along_track	<b>Range:</b> 1 to 2040
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

Along-track pixel index of the data points in the original AN-MODIS file. This is primarily used for consistency checks between AN-MODIS and MOD06-AUX.

**(8) MODIS Across-Track Pixel Index**

<b>Name in file:</b> MODIS_pixel_index_across_track	<b>Range:</b> 1 to 1354
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type (in file):</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

Across-track pixel index of the data point in the original AN-MODIS file. This is primarily used for consistency checks between AN-MODIS and MOD06-AUX.

**(9) Solar zenith angle at the MODIS pixel**

<b>Name in file:</b> Solar_zenith	<b>Range:</b> 0 to 18000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> degrees

This is the solar zenith angle as measured at the location of the MODIS pixel. It is stored in a 2-byte signed integer and *must be divided by 100* before use.

**(10) Solar azimuth angle at the MODIS pixel**

<b>Name in file:</b> Solar_azimuth	<b>Range:</b> -18000 to 18000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> degrees

This is the solar azimuth angle as measured at the location of the MODIS pixel. It is stored in a 2-byte signed integer and *must be divided by 100* before use.

**(11) Sensor zenith angle at the MODIS pixel**

<b>Name in file:</b> Sensor_zenith	<b>Range:</b> 0 to 18000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> degrees

This is the zenith angle as measured from the MODIS pixel in the direction of the MODIS instrument. It is stored in a 2-byte signed integer and *must be divided by 100* before use.

**(12) Sensor azimuth angle at the MODIS pixel**

<b>Name in file:</b> Sensor_azimuth	<b>Range:</b> -18000 to 18000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> degrees

The sensor azimuth angle as measured at the location of the MODIS pixel. It is stored in a 2-byte signed integer and *must be divided by 100* before use.

**(13) MODIS Band Number**

**Name in file:** Band\_Number **Range:** 1 to 36  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9  
**Field type:** INT(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules,Band\_1KM **Units:** N/A

The MODIS band number is an integer field that contains the band number for data fields that are reported on a per-band basis. For more information on the bands, see Section 3.2.

**(14) Cloud Phase Infrared**

**Name in file:** Cloud\_Phase\_Infrared\_1km **Range:** 0 to 6  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** 127  
**Field type:** INT(1) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

Cloud Phase at 1-km resolution from 8.5- 11 microns BTDs and cloud emissivity ratios (12/11, 8.5/11, and 7.2/11 microns).

The values in this dataset indicate the following cloud phase:

- 0 -- cloud free
- 1 -- water cloud
- 2 -- ice cloud
- 3 -- mixed phase cloud
- 6 -- undetermined phase

**(15) Scales for Cloud Phase Infrared**

**Name in file:** Cloud\_Phase\_Infrared\_1km\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Phase Infrared data to scientific values.

**(16) Offsets for Cloud Phase Infrared**

**Name in file:** Cloud\_Phase\_Infrared\_1km\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Phase Infrared data to scientific values.

**(17) Infrared Path/Cloud Top Height Consistency Flag**

**Name in file:** IRP\_CTH\_Consistency\_Flag\_1km      **Range:** 0 to 1  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** 127  
**Field type:** INT(1)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** N/A

Indicates Cloud\_Phase\_Infrared\_1km results changed to ice from water when cloud\_top\_method\_1km reports valid band 36/35 CO2-slicing result (1=change).

**(18) Scales for Infrared Path/Cloud Top Height Consistency Flag**

**Name in file:** IRP\_CTH\_Consistency\_Flag\_1km\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Infrared Path/Cloud Top Height Consistency Flag data to scientific values.

**(19) Offsets for Infrared Path/Cloud Top Height Consistency Flag**

**Name in file:** IRP\_CTH\_Consistency\_Flag\_1km\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Infrared Path/Cloud Top Height Consistency Flag data to scientific values.

**(20) Upper Tropospheric/Lower Stratospheric Cloud Flag**

**Name in file:** Os\_top\_flag\_1km      **Range:** 0 to 2  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** 127  
**Field type:** INT(1)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** N/A

Upper Tropospheric/Lower Stratospheric (UTLS) Cloud Flag at 1-km resolution - valid from -50 to +50 Degrees Latitude.

The values in this dataset indicate the following:

- 0 -- stratospheric cloud test not performed
- 1 -- stratospheric cloud not indicated
- 2 -- stratospheric cloud indicated (BTD35-33 > 0.5K)

**(21) Scales for Upper Tropospheric/Lower Stratospheric Cloud Flag**

**Name in file:** Os\_top\_flag\_1km\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Upper Tropospheric/Lower Stratospheric Cloud Flag data to scientific values.

**(22) Offsets for Upper Tropospheric/Lower Stratospheric Cloud Flag**

**Name in file:** Os\_top\_flag\_1km\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Upper Tropospheric/Lower Stratospheric Cloud Flag data to scientific values.

**(23) Cloud Top Pressure**

**Name in file:** Cloud\_top\_pressure\_1km      **Range:** 10 to 11000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** hPa

The Cloud Top Pressure at 1-km resolution from LEOCAT, Cloud Top Pressure Level rounded to nearest 5 mb.

**(24) Scales for Cloud Top Pressure**

**Name in file:** Cloud\_top\_pressure\_1km\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Cloud Top Pressure data to scientific values.

**(25) Offsets for Cloud Top Pressure**

**Name in file:** Cloud\_top\_pressure\_1km\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Cloud Top Pressure data to scientific values.

**(26) Cloud Top Height**

**Name in file:** Cloud\_top\_height\_1km **Range:** 0 to 18000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** meters

The Cloud Top Height at 1-km resolution from LEOCAT, Geopotential Height at Retrieved Cloud Top Pressure Level rounded to nearest 50 m

**(27) Scales for Cloud Top Height**

**Name in file:** Cloud\_top\_height\_1km\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Top Height data to scientific values.

**(28) Offsets for Cloud Top Height**

**Name in file:** Cloud\_top\_height\_1km\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Top Height data to scientific values.

**(29) Cloud Top Temperature**

**Name in file:** Cloud\_top\_temperature\_1km **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** K

The Cloud Top Temperature at 1-km resolution from LEOCAT, Temperature from Ancillary Data at Retrieved Cloud Top Pressure Level.

**(30) Scales for Cloud Top Temperature**

**Name in file:** Cloud\_top\_temperature\_1km\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Top Temperature data to scientific values.

**(31) Offsets for Cloud Top Temperature**

**Name in file:** Cloud\_top\_temperature\_1km\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Top Temperature data to scientific values.

**(32) Cloud Emissivity**

**Name in file:** Cloud\_emissivity\_1km **Range:** 0 to 100  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** 127  
**Field type:** INT(1) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

The Cloud Emissivity at 1-km resolution from LEOCAT Cloud Top Pressure Retrieval.

**(33) Scales for Cloud Emissivity**

**Name in file:** Cloud\_emissivity\_1km\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Emissivity data to scientific values.

**(34) Offsets for Cloud Emissivity**

**Name in file:** Cloud\_emissivity\_1km\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Emissivity data to scientific values.

### (35) Cloud Top Method

**Name in file:** Cloud\_top\_method\_1km  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** INT(1)  
**Dimensions:** mod\_1km,nray

**Range:** 0 to 6  
**Missing value:** 127  
**Missing value operator:** ==  
**Units:** N/A

The Index Indicating the MODIS Band(s) Used to Produce the Cloud Top Pressure Result

The values in this dataset are set to mean the following:

- 1 -- CO2-slicing retrieval, bands 36/35
- 2 -- CO2-slicing retrieval, bands 35/34
- 3 -- CO2-slicing retrieval, bands 35/33
- 4 -- CO2-slicing retrieval, bands 34/33
- 6 -- IR-window retrieval, band 31

### (36) Scales for Cloud Top Method

**Name in file:** Cloud\_top\_method\_1km\_scale\_factor  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** REAL(4)  
**Dimensions:** mod\_granules

**Range:** N/A  
**Missing value:** -999  
**Missing value operator:** ==  
**Units:** N/A

The scales needed to convert unscaled Cloud Top Method data to scientific values.

### (37) Offsets for Cloud Top Method

**Name in file:** Cloud\_top\_method\_1km\_add\_offset  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** REAL(4)  
**Dimensions:** mod\_granules

**Range:** N/A  
**Missing value:** -999  
**Missing value operator:** ==  
**Units:** N/A

The offsets needed to convert unscaled Cloud Top Method data to scientific values.

### (38) Surface Temperature

**Name in file:** Surface\_temperature\_1km  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** INT(2)  
**Dimensions:** mod\_1km,nray

**Range:** 0 to 20000  
**Missing value:** -999  
**Missing value operator:** ==  
**Units:** K

The Surface Temperature for Each 1-km MODIS Pixel Interpolated from Ancillary Data.



**(39) Scales for Surface Temperature**

**Name in file:** Surface\_temperature\_1km\_scale\_factor    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The scales needed to convert unscaled Surface Temperature data to scientific values.

**(40) Offsets for Surface Temperature**

**Name in file:** Surface\_temperature\_1km\_add\_offset    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The offsets needed to convert unscaled Surface Temperature data to scientific values.

**(41) 11-Micron Cloud Emissivity**

**Name in file:** Cloud\_emiss11\_1km    **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** INT(2)    **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray    **Units:** N/A

The 11-micron Cloud Emissivity at 1-km resolution from LEOCAT for All Clouds.

**(42) Scales for 11-Micron Cloud Emissivity**

**Name in file:** Cloud\_emiss11\_1km\_scale\_factor    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The scales needed to convert unscaled 11-micron Cloud Emissivity data to scientific values.

**(43) Offsets for 11-Micron Cloud Emissivity**

**Name in file:** Cloud\_emiss11\_1km\_add\_offset    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The offsets needed to convert unscaled 11-micron Cloud Emissivity data to scientific values.

**(44) 12-Micron Cloud Emissivity**

<b>Name in file:</b> Cloud_emiss12_1km	<b>Range:</b> 0 to 10000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

The 12-micron Cloud Emissivity at 1-km resolution from LEOCAT for All Clouds.

**(45) Scales for 12-Micron Cloud Emissivity**

<b>Name in file:</b> Cloud_emiss12_1km_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled 12-micron Cloud Emissivity data to scientific values.

**(46) Offsets for 12-Micron Cloud Emissivity**

<b>Name in file:</b> Cloud_emiss12_1km_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled 12-micron Cloud Emissivity data to scientific values.

**(47) 13.3-Micron Cloud Emissivity**

<b>Name in file:</b> Cloud_emiss13_1km	<b>Range:</b> 0 to 10000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

The 13.3-micron Cloud Emissivity at 1-km resolution from LEOCAT for All Clouds.

**(48) Scales for 13.3-Micron Cloud Emissivity**

<b>Name in file:</b> Cloud_emiss13_1km_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled 13.3-micron Cloud Emissivity data to scientific values.

**(49) Offsets for 13.3-Micron Cloud Emissivity**

**Name in file:** Cloud\_emiss13\_1km\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled 13.3-micron Cloud Emissivity data to scientific values.

**(50) 8.5-Micron Cloud Emissivity**

**Name in file:** Cloud\_emiss85\_1km **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

The 8.5-micron Cloud Emissivity at 1-km resolution from LEOCAT for All Clouds.

**(51) Scales for 8.5-Micron Cloud Emissivity**

**Name in file:** Cloud\_emiss85\_1km\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled 8.5-micron Cloud Emissivity data to scientific values.

**(52) Offsets for 8.5-Micron Cloud Emissivity**

**Name in file:** Cloud\_emiss85\_1km\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled 8.5-micron Cloud Emissivity data to scientific values.

**(53) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** micron

The Cloud Particle Effective Radius two-channel retrieval using band 7 (2.1um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoral.

**(54) Scales for Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Cloud Effective Radius data to scientific values.

**(55) Offsets for Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Cloud Effective Radius data to scientific values.

**(56) Partly Cloudy Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_PCL      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** micron

The Cloud Particle Effective Radius two-channel retrieval using band 7 (2.1um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(57) Partly Cloudy Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_PCL\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Cloud Effective Radius data to scientific values.

**(58) Offsets for Partly Cloudy Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_PCL\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Cloud Effective Radius data to scientific values.

**(59) Band 6 (1.6 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_16 **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** micron

The Cloud Particle Effective Radius two-channel retrieval using band 6 (1.6um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoral.

**(60) Scales for Band 6 (1.6 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_16\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 6 Cloud Effective Radius data to scientific values.

**(61) Offsets for Band 6 (1.6 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_16\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 6 Cloud Effective Radius data to scientific values.

**(62) Partly Cloudy Band 6 (1.6 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_16\_PCL      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** micron

The Cloud Particle Effective Radius two-channel retrieval using band 6 (1.6um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(63) Scales for Partly Cloudy Band 6 (1.6 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_16\_PCL\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Band 6 Cloud Effective Radius data to scientific values.

**(64) Offsets for Partly Cloudy Band 6 (1.6 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_16\_PCL\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Band 6 Cloud Effective Radius data to scientific values.

**(65) Band 20 (3.7 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_37      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** micron

The Cloud Particle Effective Radius two-channel retrieval using band 20 (3.7um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoral.

**(66) Scales for Band 20 (3.7 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_37\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 20 Cloud Effective Radius data to scientific values.

**(67) Offsets for Band 20 (3.7 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_37\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 20 Cloud Effective Radius data to scientific values.

**(68) Partly Cloudy Band 20 (3.7 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_37\_PCL **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** micron

The Cloud Particle Effective Radius two-channel retrieval using band 20 (3.7um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(69) Scales for Partly Cloudy Band 20 (3.7 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_37\_PCL\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Band 20 Cloud Effective Radius data to scientific values.

**(70) Offsets for Partly Cloudy Band 20 (3.7 micron) Cloud Effective Radius**

**Name in file:** Cloud\_Effective\_Radius\_37\_PCL\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Band 20 Cloud Effective Radius data to scientific values.

**(71) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

The Cloud Optical Thickness two-channel retrieval using band 7 (2.1um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoration.

**(72) Scales for Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Optical Thickness data to scientific values.

**(73) Offsets for Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Optical Thickness data to scientific values.



**(74) Partly Cloudy Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_PCL **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

The Cloud Optical Thickness two-channel retrieval using band 7 (2.1um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(75) Scales for Partly Cloudy Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_PCL\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Cloud Optical Thickness data to scientific values.

**(76) Offsets for Partly Cloudy Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_PCL\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Cloud Optical Thickness data to scientific values.

**(77) Band 6 (1.6 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_16 **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

The Cloud Optical Thickness two-channel retrieval using band 6 (1.6um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoral.

**(78) Scales for Band 6 (1.6 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_16\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 6 Cloud Optical Thickness data to scientific values.

**(79) Offsets for Band 6 (1.6 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_16\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 6 Cloud Optical Thickness data to scientific values.

**(80) Partly Cloudy Band 6 (1.6 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_16\_PCL **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

The Cloud Optical Thickness two-channel retrieval using band 6 (1.6um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(81) Scales for Partly Cloudy Band 6 (1.6 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_16\_PCL\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Band 6 Cloud Optical Thickness data to scientific values.

**(82) Offsets for Partly Cloudy Band 6 (1.6 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_16\_PCL\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Band 6 Cloud Optical Thickness data to scientific values.

**(83) Band 20 (3.7 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_37 **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

The Cloud Optical Thickness two-channel retrieval using band 20 (3.7um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoration.

**(84) Scales for Band 20 (3.7 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_37\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 20 Cloud Optical Thickness data to scientific values.

**(85) Offsets for Band 20 (3.7 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_37\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 20 Cloud Optical Thickness data to scientific values.

**(86) Partly Cloudy Band 20 (3.7 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_37\_PCL      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** N/A

The Cloud Optical Thickness two-channel retrieval using band 20 (3.7um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(87) Scales for Partly Cloudy Band 20 (3.7 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_37\_PCL\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Band 20 Cloud Optical Thickness data to scientific values.

**(88) Offsets for Partly Cloudy Band 20 (3.7 micron) Cloud Optical Thickness**

**Name in file:** Cloud\_Optical\_Thickness\_37\_PCL\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Band 20 Cloud Optical Thickness data to scientific values.

**(89) Cloud Effective Radius 1621**

**Name in file:** Cloud\_Effective\_Radius\_1621      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** micron

The Cloud Particle Effective Radius two-channel retrieval using band 7 (2.1um) and band 6 (1.6um) from best points: not failed in any way, not marked for clear sky restoral.

**(90) Scales for Cloud Effective Radius 1621**

**Name in file:** Cloud\_Effective\_Radius\_1621\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Effective Radius 1621 data to scientific values.

**(91) Offsets for Cloud Effective Radius 1621**

**Name in file:** Cloud\_Effective\_Radius\_1621\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Effective Radius 1621 data to scientific values.

**(92) Partly Cloudy Cloud Effective Radius 1621**

**Name in file:** Cloud\_Effective\_Radius\_1621\_PCL **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** micron

The Cloud Particle Effective Radius two-channel retrieval using band 7 (2.1um) and band 6 (1.6um) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(93) Scales for Partly Cloudy Cloud Effective Radius 1621**

**Name in file:** Cloud\_Effective\_Radius\_1621\_PCL\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Cloud Effective Radius 1621 data to scientific values.

**(94) Offsets for Partly Cloudy Cloud Effective Radius 1621**

**Name in file:** Cloud\_Effective\_Radius\_1621\_PCL\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Cloud Effective Radius 1621 data to scientific values.

**(95) Cloud Optical Thickness 1621**

**Name in file:** Cloud\_Optical\_Thickness\_1621      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** N/A

The Cloud Optical Thickness two-channel retrieval using band 7 (2.1um) and band 6 (1.6um) from best points: not failed in any way, not marked for clear sky restoral.

**(96) Scales for Cloud Optical Thickness 1621**

**Name in file:** Cloud\_Optical\_Thickness\_1621\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Cloud Optical Thickness 1621 data to scientific values.

**(97) Offsets for Cloud Optical Thickness 1621**

**Name in file:** Cloud\_Optical\_Thickness\_1621\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Cloud Optical Thickness 1621 data to scientific values.

**(98) Partly Cloudy Cloud Optical Thickness 1621**

**Name in file:** Cloud\_Optical\_Thickness\_1621\_PCL      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** N/A

The Cloud Optical Thickness two-channel retrieval using band 7 (2.1um) and band 6 (1.6um) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(99) Scales for Partly Cloudy Cloud Optical Thickness 1621**

**Name in file:** Cloud\_Optical\_Thickness\_1621\_PCL\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Cloud Optical Thickness 1621 data to scientific values.

**(100) Offsets for Partly Cloudy Cloud Optical Thickness 1621**

**Name in file:** Cloud\_Optical\_Thickness\_1621\_PCL\_add\_offset   **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05   **Missing value:** -999  
**Field type:** REAL(4)   **Missing value operator:** ==  
**Dimensions:** mod\_granules   **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Cloud Optical Thickness 1621 data to scientific values.

**(101) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path   **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05   **Missing value:** -9999  
**Field type:** INT(2)   **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray   **Units:** g/m<sup>2</sup>

The Column Water Path two-channel retrieval using band 7 (2.1um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoral.

**(102) Scales for Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_scale\_factor   **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05   **Missing value:** -999  
**Field type:** REAL(4)   **Missing value operator:** ==  
**Dimensions:** mod\_granules   **Units:** N/A

The scales needed to convert unscaled Cloud Water Path data to scientific values

**(103) Offsets for Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_add\_offset   **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05   **Missing value:** -999  
**Field type:** REAL(4)   **Missing value operator:** ==  
**Dimensions:** mod\_granules   **Units:** N/A

The offsets needed to convert unscaled Cloud Water Path data to scientific values.

**(104) Partly Cloudy Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_PCL  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** INT(2)  
**Dimensions:** mod\_1km,nray

**Range:** 0 to 10000  
**Missing value:** -9999  
**Missing value operator:** ==  
**Units:** g/m<sup>2</sup>

The Column Water Path two-channel retrieval using band 7 (2.1um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(105) Scales for Partly Cloudy Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_PCL\_scale\_factor  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** REAL(4)  
**Dimensions:** mod\_granules

**Range:** N/A  
**Missing value:** -999  
**Missing value operator:** ==  
**Units:** N/A

The scales needed to convert unscaled Cloud Water Path data to scientific values.

**(106) Offsets for Partly Cloudy Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_PCL\_add\_offset  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** REAL(4)  
**Dimensions:** mod\_granules

**Range:** N/A  
**Missing value:** -999  
**Missing value operator:** ==  
**Units:** N/A

The offsets needed to convert unscaled Cloud Water Path data to scientific values.

**(107) Cloud Water Path 1621**

**Name in file:** Cloud\_Water\_Path\_1621  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** INT(2)  
**Dimensions:** mod\_1km,nray

**Range:** 0 to 10000  
**Missing value:** -9999  
**Missing value operator:** ==  
**Units:** g/m<sup>2</sup>

The Column Water Path two-channel retrieval using band 7 (2.1um) and band 6 (1.6um) from best points: not failed in any way, not marked for clear sky restoral.

**(108) Scales for Cloud Water Path 1621**

**Name in file:** Cloud\_Water\_Path\_1621\_scale\_factor  
**Source:** MOD06-1KM-AUX P1\_R05  
**Field type:** REAL(4)  
**Dimensions:** mod\_granules

**Range:** N/A  
**Missing value:** -999  
**Missing value operator:** ==  
**Units:** N/A

The scales needed to convert unscaled Cloud Water Path 1621 data to scientific values.



**(109) Offsets for Cloud Water Path 1621**

**Name in file:** Cloud\_Water\_Path\_1621\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Cloud Water Path 1621 data to scientific values.

**(110) Partly Cloudy Cloud Water Path 1621**

**Name in file:** Cloud\_Water\_Path\_1621\_PCL      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** g/m<sup>2</sup>

The Column Water Path two-channel retrieval using band 7 (2.1um) and band 6 (1.6um) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(111) Scales for Partly Cloudy Cloud Water Path 1621**

**Name in file:** Cloud\_Water\_Path\_1621\_PCL\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Cloud Water Path 1621 data to scientific values.

**(112) Offsets for Partly Cloudy Cloud Water Path 1621**

**Name in file:** Cloud\_Water\_Path\_1621\_PCL\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Cloud Water Path 1621 data to scientific values.

**(113) Band 6 (1.6 micron) Cloud Water Path**

<b>Name in file:</b> Cloud_Water_Path_16	<b>Range:</b> 0 to 10000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -9999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> g/m <sup>2</sup>

The Column Water Path two-channel retrieval using band 6 (1.6um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoral.

**(114) Scales for Band 6 (1.6 micron) Cloud Water Path**

<b>Name in file:</b> Cloud_Water_Path_16_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Band 6 Cloud Water Path data to scientific values.

**(115) Offsets for Band 6 (1.6 micron) Cloud Water Path**

<b>Name in file:</b> Cloud_Water_Path_16_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Band 6 Cloud Water Path data to scientific values.

**(116) Partly Cloudy Band 6 (1.6 micron) Cloud Water Path**

<b>Name in file:</b> Cloud_Water_Path_16_PCL	<b>Range:</b> 0 to 10000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -9999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> g/m <sup>2</sup>

The Column Water Path two-channel retrieval using band 6 (1.6um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(117) Scales for Partly Cloudy Band 6 (1.6 micron) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_16\_PCL\_scale\_factor    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Band 6 Cloud Water Path data to scientific values.

**(118) Offsets for Partly Cloudy Band 6 (1.6 micron) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_16\_PCL\_add\_offset    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Band 6 Cloud Water Path data to scientific values.

**(119) Band 20 (3.7 micron) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_37    **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -9999  
**Field type:** INT(2)    **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray    **Units:** g/m<sup>2</sup>

The Column Water Path two-channel retrieval using band 20 (3.7um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from best points: not failed in any way, not marked for clear sky restoration.

**(120) Scales for Band 20 (3.7 micron) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_37\_scale\_factor    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The scales needed to convert unscaled Band 20 Cloud Water Path data to scientific values.

**(121) Offsets for Band 20 (3.7 micron) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_37\_add\_offset    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The offsets needed to convert unscaled Band 20 Cloud Water Path data to scientific values.

**(122) Partly Cloudy Band 20 (3.7 micron) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_37\_PCL                      **Range:** 0 to 10000  
**Source:** MOD06-1KM-AUX P1\_R05                                **Missing value:** -9999  
**Field type:** INT(2)    **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray                                      **Units:** g/m<sup>2</sup>

The Column Water Path two-channel retrieval using band 20 (3.7um) and either band 1 (0.65um), 2 (0.86um), or 5 (1.2um) (specified in Quality\_Assurance\_1km) from points identified as either partly cloudy from 250m cloud mask test or 1km cloud edges.

**(123) Scales for Partly Cloudy Band 20 (3.7 micron) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_37\_PCL\_scale\_factor    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05                                **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules                                        **Units:** N/A

The scales needed to convert unscaled Partly Cloudy Band 20 Cloud Water Path data to scientific values.

**(124) Offsets for Partly Cloudy Band 20 (3.7 micron) Cloud Water Path**

**Name in file:** Cloud\_Water\_Path\_37\_PCL\_add\_offset    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05                                **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules                                        **Units:** N/A

The offsets needed to convert unscaled Partly Cloudy Band 20 Cloud Water Path data to scientific values.

**(125) Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty    **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05                                **Missing value:** -9999  
**Field type:** INT(2)    **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray                                      **Units:** Percent

Cloud Effective Particle Radius (from band 7 (2.1um)) Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m.

**(126) Scales for Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Effective Radius Uncertainty data to scientific values.

**(127) Offsets for Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Effective Radius Uncertainty data to scientific values.

**(128) Band 6 (1.6 micron) Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_16 **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** Percent

The Cloud Effective Particle Radius (from band 6 (1.6um) Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m.

**(128) Scales for Band 6 (1.6 micron) Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_16\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 6 Cloud Effective Radius Uncertainty data to scientific values.

**(129) Offsets for Band 6 (1.6 micron) Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_16\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 6 Cloud Effective Radius Uncertainty data to scientific values.

**(130) Band 20 (3.7 micron) Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_37    **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -9999  
**Field type:** INT(2)    **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray    **Units:** Percent

The Cloud Effective Particle Radius (from band 20 (3.7um)) Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m.

**(131) Scales for Band 20 (3.7 micron) Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_37\_scale\_factor    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The scales needed to convert unscaled Band 20 Cloud Effective Radius Uncertainty data to scientific values.

**(132) Offsets for Band 20 (3.7 micron) Cloud Effective Radius Uncertainty**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_37\_add\_offset    **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The offsets needed to convert unscaled Band 20 Cloud Effective Radius Uncertainty data to scientific values.

**(133) Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty    **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05    **Missing value:** -9999  
**Field type:** INT(2)    **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray    **Units:** Percent

The Cloud Optical Thickness Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m based on the Cloud\_Optical\_Thickness and Cloud\_Effective\_Radius results.

**(134) Scales for Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Optical Thickness Uncertainty data to scientific values

**(135) Offsets for Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Optical Thickness Uncertainty data to scientific values.

**(136) Band 6 (1.6 micron) Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_16 **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** Percent

The Cloud Optical Thickness Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m based on the Cloud\_Optical\_Thickness\_16 and Cloud\_Effective\_Radius\_16 results.

**(137) Scales for Band 6 Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_16\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 6 Cloud Optical Thickness Uncertainty data to scientific values.

**(138) Offsets for Band 6 Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_16\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 6 Cloud Optical Thickness Uncertainty data to scientific values.

**(139) Band 20 Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_37 **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** Percent

The Cloud Optical Thickness Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m based on the Cloud\_Optical\_Thickness\_37 and Cloud\_Effective\_Radius\_37 results.

**(140) Scales for Band 20 Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_37\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 20 Cloud Optical Thickness Uncertainty data to scientific values.

**(141) Offsets for Band 20 Cloud Optical Thickness Uncertainty**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_37\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 20 Cloud Optical Thickness Uncertainty data to scientific values.

**(142) Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** Percent

The Cloud Water Path Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m based on the Cloud\_Water\_Path result.



**(143) Scales for Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_scale\_factor   **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05   **Missing value:** -999  
**Field type:** REAL(4)   **Missing value operator:** ==  
**Dimensions:** mod\_granules   **Units:** N/A

The scales needed to convert unscaled Cloud Water Path Uncertainty data to scientific values.

**(144) Offsets for Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_add\_offset   **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05   **Missing value:** -999  
**Field type:** REAL(4)   **Missing value operator:** ==  
**Dimensions:** mod\_granules   **Units:** N/A

The offsets needed to convert unscaled Cloud Water Path Uncertainty data to scientific values.

**(145) Cloud Effective Radius Uncertainty 1621**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_1621   **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05   **Missing value:** -9999  
**Field type:** INT(2)   **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray   **Units:** Percent

The Cloud Effective Particle Radius Relative Uncertainty (Percent) using band 7 (2.1um) and band 6 (1.6um) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m.

**(146) Scales for Cloud Effective Radius Uncertainty 1621**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_1621\_scale\_factor  
**Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05   **Missing value:** -999  
**Field type:** REAL(4)   **Missing value operator:** ==  
**Dimensions:** mod\_granules   **Units:** N/A

The scales needed to convert unscaled Cloud Effective Radius Uncertainty 1621 data to scientific values.

**(147) Offsets for Cloud Effective Radius Uncertainty 1621**

**Name in file:** Cloud\_Effective\_Radius\_Uncertainty\_1621\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Effective Radius Uncertainty 1621 data to scientific values.

**(148) Cloud Optical Thickness Uncertainty 1621**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_1621 **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** Percent

The Cloud Optical Thickness Relative Uncertainty (Percent) using band 7 (2.1um) and band 6 (1.6um) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m.

**(149) Scales for Cloud Optical Thickness Uncertainty 1621**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_1621\_scale\_factor  
**Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Optical Thickness Uncertainty 1621 data to scientific values.

**(150) Offsets for Cloud Optical Thickness Uncertainty 1621**

**Name in file:** Cloud\_Optical\_Thickness\_Uncertainty\_1621\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Optical Thickness Uncertainty 1621 data to scientific values.

**(151) Cloud Water Path Uncertainty 1621**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_1621      **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** Percent

The Cloud Water Path Relative Uncertainty (Percent) using band 7 (2.1um) and band 6 (1.6um) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m

**(152) Scales for Cloud Water Path Uncertainty 1621**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_1621\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Cloud Water Path Uncertainty 1621 data to scientific values.

**(153) Offsets for Cloud Water Path Uncertainty 1621**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_1621\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Cloud Water Path Uncertainty 1621 data to scientific values.

**(154) Band 6 (1.6 micron) Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_16      **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** Percent

The Cloud Water Path Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m using the VNSWIR-1.6um retrieval.

**(155) Scales for Band 6 (1.6 micron) Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_16\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 6 Cloud Water Path Uncertainty data to scientific values.

**(156) Offsets for Band 6 (1.6 micron) Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_16\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 6 Cloud Water Path Uncertainty data to scientific values.

**(157) Band 20 (3.7 micron) Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_37 **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** Percent

The Cloud Water Path Relative Uncertainty (Percent) from both best points and points identified as cloud edge at 1km resolution or partly cloudy at 250m using the VNSWIR-3.7um retrieval.

**(158) Scales for Band 20 (3.7 micron) Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_37\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Band 20 Cloud Water Path Uncertainty data to scientific values.

**(159) Offsets for Band 20 (3.7 micron) Cloud Water Path Uncertainty**

**Name in file:** Cloud\_Water\_Path\_Uncertainty\_37\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Band 20 Cloud Water Path Uncertainty data to scientific values.

**(160) Above Cloud Water Vapor at 0.94 micron**

**Name in file:** Above\_Cloud\_Water\_Vapor\_094      **Range:** 0 to 1500  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -9999  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** cm

The Above-cloud water vapor amount from 0.94um channel, ocean only, tau > 5.

**(161) Scales for Above Cloud Water Vapor at 0.94 micron**

**Name in file:** Above\_Cloud\_Water\_Vapor\_094\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Above Cloud Water Vapor data to scientific values.

**(162) Offsets for Above Cloud Water Vapor at 0.94 micron**

**Name in file:** Above\_Cloud\_Water\_Vapor\_094\_add\_offset      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Above Cloud Water Vapor data to scientific values.

**(163) Low Cloud Temperature from Infrared Window**

**Name in file:** IRW\_Low\_Cloud\_Temperature\_From\_COP      **Range:** 0 to 20000  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -32768  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** K

Low Cloud Temperature from IR Window retrieval using cloud emissivity based on cloud optical thickness.

**(164) Scales for Low Cloud Temperature from Infrared Window**

**Name in file:** IRW\_Low\_Cloud\_Temperature\_From\_COP\_scale\_factor      **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Low Cloud Temperature data to scientific values.

**(165) Offsets for Low Cloud Temperature from Infrared Window**

**Name in file:** IRW\_Low\_Cloud\_Temperature\_From\_COP\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Low Cloud Temperature data to scientific values.

**(166) Cloud Phase Optical Properties**

**Name in file:** Cloud\_Phase\_Optical\_Properties **Range:** 0 to 4  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** 0  
**Field type:** INT(1) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

Cloud Phase Determination Used in Optical Thickness/Effective Radius Retrieval.

The values in this dataset are set to mean the following:

- 0 -- cloud mask undetermined
- 1 -- clear sky
- 2 -- liquid water cloud
- 3 -- ice cloud
- 4 -- undetermined phase cloud (but retrieval is attempted as liquid water)

**(167) Scales for Cloud Phase Optical Properties**

**Name in file:** Cloud\_Phase\_Optical\_Properties\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Phase Optical Properties data to scientific values.

**(168) Offsets for Cloud Phase Optical Properties**

**Name in file:** Cloud\_Phase\_Optical\_Properties\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Phase Optical Properties data to scientific values.

**(169) Cloud Multi-Layer Flag**

**Name in file:** Cloud\_Multi\_Layer\_Flag **Range:** 0 to 9  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** 0  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

Identification flag for multi-layer multi-phase cloud situations. Values 2 through 9 indicate the success of various multi-layer cloud tests. Value of 0 indicates no retrieval, value of 1 indicates single layer cloud. The other values are of increasing confidence level.

**(170) Scales for Cloud Multi-Layer Flag**

**Name in file:** Cloud\_Multi\_Layer\_Flag\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Multi-Layer Flag data to scientific values

**(171) Offsets for Cloud Multi-Layer Flag**

**Name in file:** Cloud\_Multi\_Layer\_Flag\_add\_offset **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Multi-Layer Flag data to scientific values.

**(172) Cirrus Reflectance**

**Name in file:** Cirrus\_Reflectance **Range:** 0 to 8000  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -9999  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

Cirrus cloud reflectance values.

**(173) Scales for Cirrus Reflectance**

**Name in file:** Cirrus\_Reflectance\_scale\_factor **Range:** N/A  
**Source:** MOD06-1KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cirrus Reflectance data to scientific values.

**(174) Offsets for Cirrus Reflectance**

<b>Name in file:</b> Cirrus_Reflectance_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cirrus Reflectance data to scientific values.

**(175) Cirrus Reflectance Flag**

<b>Name in file:</b> Cirrus_Reflectance_Flag	<b>Range:</b> 0 to 3
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -99
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

Flag indicating the presence of cirrus clouds.

- 0: bad data
- 1: non-cirrus pixel
- 2: cirrus pixel
- 3: contrail pixel

**(176) Scales for Cirrus Reflectance Flag**

<b>Name in file:</b> Cirrus_Reflectance_Flag_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cirrus Reflectance Flag data to scientific values.

**(177) Offsets for Cirrus Reflectance Flag**

<b>Name in file:</b> Cirrus_Reflectance_Flag_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cirrus Reflectance Flag data to scientific values.



**(178) Cloud Mask**

<b>Name in file:</b> Cloud_Mask_1km	<b>Range:</b> 0 to 1
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> 0
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,Byte_Segment	<b>Units:</b> N/A

MODIS cloud mask at a 1-km resolution. See MODIS atmosphere QA plan for bit details.

**(179) Scales for Cloud Mask**

<b>Name in file:</b> Cloud_Mask_1km_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cloud Mask data to scientific values.

**(180) Offsets for Cloud Mask**

<b>Name in file:</b> Cloud_Mask_1km_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cloud Mask data to scientific values.

**(181) Sub-pixel Heterogeneity Index**

<b>Name in file:</b> Cloud_Mask_SPI	<b>Range:</b> 0 to 20000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -9999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,Byte_Segment	<b>Units:</b> Percent

Dispersion in bands 1 (plane 1) and 2 (plane 2) from 250m reflectance statistics of cloud mask.

**(182) Scales for Sub-pixel Heterogeneity Index**

<b>Name in file:</b> Cloud_Mask_SPI_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Sub-pixel Heterogeneity Index data to scientific values.



**(187) Band 6 (1.6 micron) Retrieval Failure Metric**

<b>Name in file:</b> Retrieval_Failure_Metric_16	<b>Range:</b> 0 to 20000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -9999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,plane	<b>Units:</b> By plane in order: 1-none 2-micron 3-percent

Retrievals and other information for points that failed to retrieve via standard solution logic for retrieval using band 6 and either band 1, 2, or 5 (specified in Quality\_Assurance\_1km).

The individual planes in this dataset are set to contain the following:

- 1 -- Cloud Optical Thickness
- 2 -- Cloud Effective Radius
- 3 -- Relative distance of failed retrieval from the library space as percentage of reflectance

**(188) Scales for Band 6 (1.6 micron) Retrieval Failure Metric**

<b>Name in file:</b> Retrieval_Failure_Metric_16_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Band 6 Retrieval Failure Metric data to scientific values.

**(189) Offsets for Band 6 (1.6 micron) Retrieval Failure Metric**

<b>Name in file:</b> Retrieval_Failure_Metric_16_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Band 6 Retrieval Failure Metric data to scientific values.

**(190) Band 20 (3.7 micron) Retrieval Failure Metric**

<b>Name in file:</b> Retrieval_Failure_Metric_37	<b>Range:</b> 0 to 20000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -9999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,plane	<b>Units:</b> By plane in order: 1-none 2-micron 3-percent

Retrievals and other information for points that failed to retrieve via standard solution logic for retrieval using band 20 and either band 1, 2, or 5 (specified in Quality\_Assurance\_1km).

The individual planes in this dataset are set to contain the following:

- 1 -- Cloud Optical Thickness
- 2 -- Cloud Effective Radius
- 3 -- Relative distance of failed retrieval from the library space as percentage of reflectance

**(191) Scales for Band 20 (3.7 micron) Retrieval Failure Metric**

<b>Name in file:</b> Retrieval_Failure_Metric_37_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Band 20 Retrieval Failure Metric data to scientific values.

**(192) Offsets for Band 20 (3.7 micron) Retrieval Failure Metric**

<b>Name in file:</b> Retrieval_Failure_Metric_37_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Band 20 Retrieval Failure Metric data to scientific values.

**(193) Retrieval Failure Metric 1621**

<b>Name in file:</b> Retrieval_Failure_Metric_1621	<b>Range:</b> 0 to 20000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -9999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,plane	<b>Units:</b> By plane in order: 1-none 2-micron 3-percent

Retrievals and other information for points that failed to retrieve via standard solution logic for retrieval using band 6 and band 7

The individual planes in this dataset are set to contain the following:

- 1 -- Cloud Optical Thickness
- 2 -- Cloud Effective Radius
- 3 -- Relative distance of failed retrieval from the library space as percentage of reflectance

**(194) Scales for Retrieval Failure Metric 1621**

<b>Name in file:</b> Retrieval_Failure_Metric_1621_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Retrieval Failure Metric 1621 data to scientific values

**(195) Offsets for Retrieval Failure Metric 1621**

<b>Name in file:</b> Retrieval_Failure_Metric_1621_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Retrieval Failure Metric 1621 data to scientific values.

**(196) Atmospherically Corrected Reflectance**

<b>Name in file:</b> Atm_Corr_Refl	<b>Range:</b> 0 to 16000
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -9999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,corr_plane	<b>Units:</b> N/A

Atmospherically corrected reflectance used during cloud optical and microphysical properties retrieval.

The individual planes in this dataset are set to contain the following:

- 1 -- 0.65um (Rayleigh correction amount is based on 2.1um cloud effective radius retrieval)
- 2 -- 0.86um
- 3 -- 1.2um
- 4 -- 1.6um
- 5 -- 2.1um
- 6 -- 3.7um

**(197) Scales for Atmospherically Corrected Reflectance**

<b>Name in file:</b> Atm_Corr_Refl_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Atmospherically Corrected Reflectance data to scientific values.

**(198) Offsets for Atmospheric Correct**

<b>Name in file:</b> Atm_Corr_Refl_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Atmospherically Corrected Reflectance data to scientific values.

**(199) Quality Assurance**

<b>Name in file:</b> Quality_Assurance_1km	<b>Range:</b> 0 to 1
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> 0
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,Byte_Segment	<b>Units:</b> N/A

MODIS Quality Assurance 1km reports on Cloud Optical Properties algorithm performance. Refer to MOD\_PR06OD User Documentation and the MODIS atmosphere QA plan for complete descriptions and coding examples.

### (200) Scales for Quality Assurance

<b>Name in file:</b> Quality_Assurance_1km_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Quality Assurance data to scientific values.

### (201) Offsets for Quality Assurance

<b>Name in file:</b> Quality_Assurance_1km_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-1KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Quality Assurance data to scientific values.

## 4.2 MOD06-5KM-AUX

*Note: The mod\_1km dimension is 1 for the MOD06-5KM-AUX product.*

### (1) Geodetic latitude of MODIS pixels

<b>Name in file:</b> MODIS_latitude	<b>Range:</b> -90 to 90
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> nray	<b>Units:</b> degrees

This array contains the latitudes for the closest MODIS pixel to the CloudSat CPR footprint.

### (2) Geodetic longitude of MODIS pixels

<b>Name in file:</b> MODIS_longitude	<b>Range:</b> -180 to 180
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> nray	<b>Units:</b> degrees

This array contains the longitudes for the closest MODIS pixel to the CloudSat CPR footprint.

**(3) Seconds since the start of the granule**

<b>Name in file:</b> Profile_time	<b>Range:</b> 0 to 6000
<b>Source:</b> 1B-CPR P_R05	<b>Missing value:</b> N/A
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> N/A
<b>Dimensions:</b> nray	<b>Units:</b> seconds

Seconds since the start of the granule for each profile. The first profile is 0.

**(4) UTC seconds since 00:00 Z of the first profile**

<b>Name in file:</b> UTC_start	<b>Range:</b> 0 to 86400
<b>Source:</b> 1B-CPR P_R05	<b>Missing value:</b> N/A
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> N/A
<b>Dimensions:</b> <scalar>	<b>Units:</b> seconds

The UTC seconds since 00:00 Z of the first profile in the data file.

**(5) TAI time for the first profile**

<b>Name in file:</b> TAI_start	<b>Range:</b> 0 to 6e+008
<b>Source:</b> 1B-CPR P_R05	<b>Missing value:</b> N/A
<b>Field type:</b> REAL(8)	<b>Missing value operator:</b> N/A
<b>Dimensions:</b> <scalar>	<b>Units:</b> seconds

The TAI timestamp for the first profile in the data file. TAI is International Atomic Time: seconds since 00:00:00 Jan 1 1993.

**(6) MODIS granule index of each pixel**

<b>Name in file:</b> MODIS_granule_index	<b>Range:</b> 1 to 25
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -99
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> nray	<b>Units:</b> N/A

Key to the granule index dimension in data fields associating each field with a MODIS granule and corresponding scales and offsets.

**(7) MODIS Across-Track Pixel Index**

<b>Name in file:</b> MODIS_pixel_index_across_track	<b>Range:</b> 1 to 1354
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type (in file):</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> nray	<b>Units:</b> N/A

Across-track pixel index of the data point in the original AN-MODIS file. This is primarily used for consistency checks between AN-MODIS and MOD06-AUX.



**(8) MODIS Along-Track Pixel Index**

<b>Name in file:</b> MODIS_pixel_index_along_track	<b>Range:</b> 1 to 2040
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> nray	<b>Units:</b> N/A

Along-track pixel index of the data points in the original AN-MODIS file. This is primarily used for consistency checks between AN-MODIS and MOD06-AUX.

**(9) MODIS Band Number**

<b>Name in file:</b> Band_Number	<b>Range:</b> 1 to 36
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -9
<b>Field type:</b> INT(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules,Band_5KM	<b>Units:</b> N/A

The MODIS band number is an integer field that contains the band number for data fields that are reported on a per-band basis. For more information on the bands, see Section 3.2.

**(10) MODIS Scan Start Time**

<b>Name in file:</b> Scan_Start_Time	<b>Range:</b> 0 to 3.155800064E9
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(8)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> seconds

The TAI time of the start of the scan.

**(11) Scales for Scan Start Time**

<b>Name in file:</b> Scan_Start_Time_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> seconds

The scales needed to convert unscaled Scan Start Time data to scientific values.

**(12) Offsets for Scan Start Time**

<b>Name in file:</b> Scan_Start_Time_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> seconds

The offsets needed to convert unscaled Scan Start Time data to scientific values.

**(13) Solar Zenith Angle at the MODIS pixel**

**Name in file:** Solar\_Zenith **Range:** 0 to 18000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32767  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** degrees

This is the solar zenith angle (cell to sun) as measured at the location of the MODIS pixel.

**(14) Scales for Solar Zenith Angle**

**Name in file:** Solar\_Zenith\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Solar Zenith Angle data to scientific values.

**(15) Offsets for Solar Zenith Angle**

**Name in file:** Solar\_Zenith\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Solar Zenith Angle data to scientific values.

**(16) Solar Azimuth Angle at the MODIS pixel**

**Name in file:** Solar\_Azimuth **Range:** -18000 to 18000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32767  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** degrees

This is the solar azimuth angle as measured at the location of the MODIS pixel.

**(17) Scales for Solar Azimuth Angle**

**Name in file:** Solar\_Azimuth\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Solar Azimuth Angle data to scientific values.

**(18) Offsets for Solar Azimuth Angle**

<b>Name in file:</b> Solar_Azimuth_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Solar Azimuth Angle data to scientific values.

**(19) Sensor Zenith Angle at the MODIS pixel**

<b>Name in file:</b> Sensor_Zenith	<b>Range:</b> 0 to 18000
<b>Source:</b> MOD06-5KM-AUX P1_R055	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> degrees

The sensor zenith angle (cell to sensor) as measured at the location of the MODIS pixel.

**(20) Scales for Sensor Zenith Angle**

<b>Name in file:</b> Sensor_Zenith_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Sensor Zenith Angle data to scientific values

**(21) Offsets for Sensor Zenith Angle**

<b>Name in file:</b> Sensor_Zenith_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Sensor Zenith Angle data to scientific values

**(22) Sensor Azimuth Angle at the MODIS pixel**

<b>Name in file:</b> Sensor_Azimuth	<b>Range:</b> -18000 to 18000
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> degrees

The sensor azimuth angle as measured at the location of the MODIS pixel.

**(23) Scales for Sensor Azimuth Angle**

<b>Name in file:</b> Sensor_Azimuth_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Sensor Azimuth Angle data to scientific values.

**(24) Offsets for Sensor Azimuth Angle**

<b>Name in file:</b> Sensor_Azimuth_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Sensor Azimuth Angle data to scientific values.

**(25) Brightness Temperature**

<b>Name in file:</b> Brightness_Temperature	<b>Range:</b> 0 to 20000
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,Band_5KM	<b>Units:</b> K

Observed Brightness Temperature from Cloudy Averaged Radiances in a 5x5 1-km Pixel Region for each band (see MODIS Band Number field and Section 3.2 for more information).

**(26) Scales for Brightness Temperature**

<b>Name in file:</b> Brightness_Temperature_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Brightness Temperature data to scientific values.

**(27) Offsets for Brightness Temperature**

<b>Name in file:</b> Brightness_Temperature_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Brightness Temperature data to scientific values.

**(28) Surface Temperature**

<b>Name in file:</b> Surface_Temperature	<b>Range:</b> 0 to 20000
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> K

Surface temperature from ancillary data.

**(29) Scales for Surface Temperature**

<b>Name in file:</b> Surface_Temperature_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Surface Temperature data to scientific values.

**(30) Offsets for Surface Temperature**

<b>Name in file:</b> Surface_Temperature_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Surface Temperature data to scientific values.

**(31) Surface Pressure**

<b>Name in file:</b> Surface_Pressure	<b>Range:</b> 8000 to 11000
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -32767
<b>Field type:</b> INT(2)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> hPa

Surface Pressure from ancillary data.

**(32) Scales for Surface Pressure**

<b>Name in file:</b> Surface_Pressure_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Surface Pressure data to scientific values.

**(33) Offsets for Surface Pressure**

<b>Name in file:</b> Surface_Pressure_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Surface Pressure data to scientific values.

**(34) Cloud Height Method**

<b>Name in file:</b> Cloud_Height_Method	<b>Range:</b> 1 to 6
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> 127
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

Index Indicating MODIS Bands Used for Cloud Top Pressure Retrieval.

The values in this dataset are set to mean the following:

- 1 -- CO2-slicing retrieval, bands 36/35
- 2 -- CO2-slicing retrieval, bands 35/34
- 3 -- CO2-slicing retrieval, bands 35/33
- 4 -- CO2-slicing retrieval, bands 34/33
- 6 -- IR-window retrieval, band 31

**(35) Scales for Cloud Height Method**

<b>Name in file:</b> Cloud_Height_Method_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cloud Height Method data to scientific values.

**(36) Offsets for Cloud Height Method**

<b>Name in file:</b> Cloud_Height_Method_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cloud Height Method data to scientific values.

**(37) Cloud Top Pressure**

**Name in file:** Cloud\_Top\_Pressure **Range:** 10 to 11000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32768  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** hPa

Cloud Top Pressure Level (rounded to nearest 5 mb)

**(38) Scales for Cloud Top Pressure**

**Name in file:** Cloud\_Top\_Pressure\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Top Pressure data to scientific values.

**(39) Offsets for Cloud Top Pressure**

**Name in file:** Cloud\_Top\_Pressure\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Top Pressure data to scientific values.

**(40) Cloud Top Pressure Night**

**Name in file:** Cloud\_Top\_Pressure\_Night **Range:** 10 to 11000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32768  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** hPa

Cloud Top Pressure Level, Night Data Only (rounded to nearest 5 mb)

**(41) Scales for Cloud Top Pressure Night**

**Name in file:** Cloud\_Top\_Pressure\_Night\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Top Pressure Night data to scientific values.

**(42) Offsets for Cloud Top Pressure Night**

**Name in file:** Cloud\_Top\_Pressure\_Night\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Top Pressure Night data to scientific values.

**(43) Cloud Top Pressure Day**

**Name in file:** Cloud\_Top\_Pressure\_Day **Range:** 10 to 11000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32768  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** hPa

Cloud Top Pressure Level, Day Only (rounded to nearest 5 mb)

**(44) Scales for Cloud Top Pressure Day**

**Name in file:** Cloud\_Top\_Pressure\_Day\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Top Pressure Day data to scientific values.

**(45) Offsets for Cloud Top Pressure Day**

**Name in file:** Cloud\_Top\_Pressure\_Day\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Top Pressure Day data to scientific values.

**(46) Cloud Top Temperature**

**Name in file:** Cloud\_Top\_Temperature **Range:** 0 to 20000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32768  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** K

Temperature from Ancillary Data at Retrieved Cloud Top Pressure Level.



**(47) Scales for Cloud Top Temperature**

**Name in file:** Cloud\_Top\_Temperature\_scale\_factor    **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The scales needed to convert unscaled Cloud Top Temperature data to scientific values.

**(48) Offsets for Cloud Top Temperature**

**Name in file:** Cloud\_Top\_Temperature\_add\_offset    **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The offsets needed to convert unscaled Cloud Top Temperature data to scientific values.

**(49) Cloud Top Temperature Night**

**Name in file:** Cloud\_Top\_Temperature\_Night    **Range:** 0 to 20000  
**Source:** MOD06-5KM-AUX P1\_R05    **Missing value:** -32768  
**Field type:** INT(2)    **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray    **Units:** K

Temperature from Ancillary Data at Retrieved Cloud Top Pressure Level, night data only

**(50) Scales for Cloud Top Temperature Night**

**Name in file:** Cloud\_Top\_Temperature\_Night\_scale\_factor    **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The scales needed to convert unscaled Cloud Top Temperature Night data to scientific values.

**(51) Offsets for Cloud Top Temperature Night**

**Name in file:** Cloud\_Top\_Temperature\_Night\_add\_offset    **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05    **Missing value:** -999  
**Field type:** REAL(4)    **Missing value operator:** ==  
**Dimensions:** mod\_granules    **Units:** N/A

The offsets needed to convert unscaled Cloud Top Temperature Night data to scientific values.

**(52) Cloud Top Temperature Day**

**Name in file:** Cloud\_Top\_Temperature\_Day **Range:** 0 to 20000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32768  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** K

Cloud Temperature from Ancillary Data at Retrieved Cloud Top Pressure Level, day data only

**(53) Scales for Cloud Top Temperature Day**

**Name in file:** Cloud\_Top\_Temperature\_Day\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Top Temperature Day data to scientific values.

**(54) Offsets for Cloud Top Temperature Day**

**Name in file:** Cloud\_Top\_Temperature\_Day\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Top Temperature Day data to scientific values.

**(55) Tropopause Height**

**Name in file:** Tropopause\_Height **Range:** 10 to 11000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32768  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** hPa

Tropopause pressure level from ancillary data.

**(56) Scales for Tropopause Height**

**Name in file:** Tropopause\_Height\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Tropopause Height data to scientific values.

**(57) Offsets for Tropopause Height**

<b>Name in file:</b> Tropopause_Height_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Tropopause Height data to scientific values.

**(58) Cloud Fraction**

<b>Name in file:</b> Cloud_Fraction	<b>Range:</b> 0 to 100
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> 127
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

Cloud Fraction in Retrieval Region (5x5 1-km Pixels) from 1-km Cloud Mask.

**(59) Scales for Cloud Fraction**

<b>Name in file:</b> Cloud_Fraction_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cloud Fraction data to scientific values.

**(60) Offsets for Cloud Fraction**

<b>Name in file:</b> Cloud_Fraction_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cloud Fraction data to scientific values.

**(61) Cloud Fraction Night**

<b>Name in file:</b> Cloud_Fraction_Night	<b>Range:</b> 0 to 100
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> 127
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

Cloud Fraction in Retrieval Region (5x5 1-km Pixels) from 1-km Cloud Mask, night data only.

**(62) Scales for Cloud Fraction Night**

<b>Name in file:</b> Cloud_Fraction_Night_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cloud Fraction Night data to scientific values.

**(63) Offsets for Cloud Fraction Night**

<b>Name in file:</b> Cloud_Fraction_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cloud Fraction Night data to scientific values.

**(64) Cloud Fraction Day**

<b>Name in file:</b> Cloud_Fraction_Day	<b>Range:</b> 0 to 100
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> 127
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> hPa

Cloud Fraction in Retrieval Region (5x5 1-km Pixels) from 1-km Cloud Mask, day data only.

**(65) Scales for Cloud Fraction Day**

<b>Name in file:</b> Cloud_Fraction_Day_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cloud Fraction Day data to scientific values.

**(66) Offsets for Cloud Fraction Day**

<b>Name in file:</b> Cloud_Fraction_Day_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cloud Fraction Day data to scientific values.

**(67) Cloud Effective Emissivity**

**Name in file:** Cloud\_Effective\_Emissivity **Range:** 0 to 100  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** 127  
**Field type:** INT(1) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

Cloud Effective Emissivity from Cloud Top Pressure Retrieval

**(68) Scales for Cloud Effective Emissivity**

**Name in file:** Cloud\_Effective\_Emissivity\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Effective Emissivity data to scientific values.

**(69) Offsets for Cloud Effective Emissivity**

**Name in file:** Cloud\_Effective\_Emissivity\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Effective Emissivity data to scientific values.

**(70) Cloud Effective Emissivity Night**

**Name in file:** Cloud\_Effective\_Emissivity\_Night **Range:** 0 to 100  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** 127  
**Field type:** INT(1) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** N/A

Cloud Effective Emissivity from Cloud Top Pressure Retrieval, night data only

**(71) Scales for Cloud Effective Emissivity Night**

**Name in file:** Cloud\_Effective\_Emissivity\_Night\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Effective Emissivity Night data to scientific values.

**(72) Offsets for Cloud Effective Emissivity Night**

**Name in file:** Cloud\_Effective\_Emissivity\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Effective Emissivity Night data to scientific values.

**(73) Cloud Effective Emissivity Day**

**Name in file:** Cloud\_Effective\_Emissivity\_Day **Range:** 0 to 100  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** 127  
**Field type:** INT(1) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** hPa

Cloud Effective Emissivity from Cloud Top Pressure Retrieval, day data only

**(74) Scales for Cloud Effective Emissivity Day**

**Name in file:** Cloud\_Effective\_Emissivity\_Day\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Effective Emissivity Day data to scientific values.

**(75) Offsets for Cloud Effective Emissivity Day**

**Name in file:** Cloud\_Effective\_Emissivity\_Day\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Effective Emissivity Day data to scientific values.

**(76) Cloud Top Pressure Infrared**

**Name in file:** Cloud\_Top\_Pressure\_Infrared **Range:** 10 to 11000  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -32768  
**Field type:** INT(2) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** hPa

Cloud top pressure from the infrared window.

**(77) Scales for Cloud Top Pressure Infrared**

**Name in file:** Cloud\_Top\_Pressure\_Infrared\_scale\_factor   **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05                           **Missing value:** -999  
**Field type:** REAL(4)                                       **Missing value operator:** ==  
**Dimensions:** mod\_granules                               **Units:** N/A

The scales needed to convert unscaled Cloud Top Pressure Infrared data to scientific values.

**(78) Offsets for Cloud Top Pressure Infrared**

**Name in file:** Cloud\_Top\_Pressure\_Infrared\_add\_offset   **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05                           **Missing value:** -999  
**Field type:** REAL(4)                                       **Missing value operator:** ==  
**Dimensions:** mod\_granules                               **Units:** N/A

The offsets needed to convert unscaled Cloud Top Pressure Infrared data to scientific values.

**(79) Spectral Cloud Forcing**

**Name in file:** Spectral\_Cloud\_Forcing                   **Range:** -2000 to 2000  
**Source:** MOD06-5KM-AUX P1\_R05                           **Missing value:** -32768  
**Field type:** INT(2)   **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray,Byte\_Segment               **Units:** W/m<sup>2</sup>/steradian/micron

Spectral Cloud Forcing (cloud minus clear radiance), each channel in order:  
36, 35, 34, 33 and 31 for Band\_Forcing dimension reference

**(80) Scales for Spectral Cloud Forcing**

**Name in file:** Spectral\_Cloud\_Forcing\_scale\_factor   **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05                           **Missing value:** -999  
**Field type:** REAL(4)                                       **Missing value operator:** ==  
**Dimensions:** mod\_granules                               **Units:** N/A

The scales needed to convert unscaled Spectral Cloud Forcing data to scientific values.

**(81) Offsets for Spectral Cloud Forcing**

**Name in file:** Spectral\_Cloud\_Forcing\_add\_offset   **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05                           **Missing value:** -999  
**Field type:** REAL(4)                                       **Missing value operator:** ==  
**Dimensions:** mod\_granules                               **Units:** N/A

The offsets needed to convert unscaled Spectral Cloud Forcing data to scientific values.

**(82) Cloud Top Pressure from Ratios**

**Name in file:** Cloud\_Top\_Pressure\_From\_Ratios      **Range:** 10 to 11000  
**Source:** MOD06-5KM-AUX P1\_R05      **Missing value:** -32768  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray,Byte\_Segment      **Units:** hPa

Cloud Top Pressure Levels from Ratios of Bands 36/35, 35/34, 35/33, 34/33 from the CO2-slicing Algorithm

**(83) Scales for Cloud Top Pressure from Ratios**

**Name in file:** Cloud\_Top\_Pressure\_From\_Ratios\_scale\_factor      **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Cloud Top Pressure from Ratios data to scientific values.

**(84) Offsets for Cloud Top Pressure from Ratios**

**Name in file:** Cloud\_Top\_Pressure\_From\_Ratios\_add\_offset      **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Cloud Top Pressure from Ratios data to scientific values.

**(85) Radiance Variance**

**Name in file:** Radiance\_Variance      **Range:** 0 to 20  
**Source:** MOD06-5KM-AUX P1\_R05      **Missing value:** -32768  
**Field type:** INT(2)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** W/m<sup>2</sup>/steradian/micron

Band 31 Radiance Standard Deviation.

**(86) Scales for Radiance Variance**

**Name in file:** Radiance\_Variance\_scale\_factor      **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Radiance Variance data to scientific values.



**(87) Offsets for Radiance Variance**

<b>Name in file:</b> Radiance_Variance_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Radiance Variance data to scientific values.

**(88) Cloud Phase Infrared**

<b>Name in file:</b> Cloud_Phase_Infrared	<b>Range:</b> 0 to 6
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> 127
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray	<b>Units:</b> N/A

Cloud Phase from 8.5 and 11 um Bands

The values in this dataset indicate the following cloud phase:

- 0 -- cloud free
- 1 -- water cloud
- 2 -- ice cloud
- 3 -- mixed phase cloud
- 6 -- undetermined phase

**(89) Scales for Cloud Phase Infrared**

<b>Name in file:</b> Cloud_Phase_Infrared_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cloud Phase Infrared data to scientific values.

**(90) Offsets for Cloud Phase Infrared**

<b>Name in file:</b> Cloud_Phase_Infrared_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cloud Phase Infrared data to scientific values.

**(91) Cloud Phase Infrared Night**

**Name in file:** Cloud\_Phase\_Infrared\_Night      **Range:** 0 to 6  
**Source:** MOD06-5KM-AUX P1\_R05      **Missing value:** 127  
**Field type:** INT(1)      **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray      **Units:** N/A

Cloud Phase from 8.5 and 11 um Bands, night data only

The values in this dataset indicate the following cloud phase:

- 0 -- cloud free
- 1 -- water cloud
- 2 -- ice cloud
- 3 -- mixed phase cloud
- 6 -- undetermined phase

**(92) Scales for Cloud Phase Infrared Night**

**Name in file:** Cloud\_Phase\_Infrared\_Night\_scale\_factor      **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The scales needed to convert unscaled Cloud Phase Infrared Night data to scientific values.

**(93) Offsets for Cloud Phase Infrared Night**

**Name in file:** Cloud\_Phase\_Infrared\_add\_offset      **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05      **Missing value:** -999  
**Field type:** REAL(4)      **Missing value operator:** ==  
**Dimensions:** mod\_granules      **Units:** N/A

The offsets needed to convert unscaled Cloud Phase Infrared Night data to scientific values.

**(94) Cloud Phase Infrared Day**

**Name in file:** Cloud\_Phase\_Infrared\_Day **Range:** 0 to 6  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** 127  
**Field type:** INT(1) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray **Units:** hPa

Cloud Phase from 8.5 and 11 um Bands, day data only

The values in this dataset indicate the following cloud phase:

- 0 -- cloud free
- 1 -- water cloud
- 2 -- ice cloud
- 3 -- mixed phase cloud
- 6 -- undetermined phase

**(95) Scales for Cloud Phase Infrared Day**

**Name in file:** Cloud\_Phase\_Infrared\_Day\_scale\_factor **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The scales needed to convert unscaled Cloud Phase Infrared Day data to scientific values.

**(96) Offsets for Cloud Phase Infrared Day**

**Name in file:** Cloud\_Phase\_Infrared\_Day\_add\_offset **Range:** N/A  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** -999  
**Field type:** REAL(4) **Missing value operator:** ==  
**Dimensions:** mod\_granules **Units:** N/A

The offsets needed to convert unscaled Cloud Phase Infrared Day data to scientific values.

**(97) Cloud Mask**

**Name in file:** Cloud\_Mask\_5km **Range:** 0 to 1  
**Source:** MOD06-5KM-AUX P1\_R05 **Missing value:** 0  
**Field type:** INT(1) **Missing value operator:** ==  
**Dimensions:** mod\_1km,nray,Byte\_Segment **Units:** N/A

First byte of the MODIS cloud mask at 5-km resolution. See MODIS atmosphere QA plan for bit details.

**(98) Scales for Cloud Mask**

<b>Name in file:</b> Cloud_Mask_5km_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cloud Mask data to scientific values.

**(99) Offsets for Cloud Mask**

<b>Name in file:</b> Cloud_Mask_5km_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Cloud Mask data to scientific values.

**(100) Quality Assurance**

<b>Name in file:</b> Quality_Assurance_5km	<b>Range:</b> 0 to 1
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> 0
<b>Field type:</b> INT(1)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_1km,nray,Byte_Segment	<b>Units:</b> N/A

Quality assurance at a 5-km resolution. See MODIS atmosphere QA plan for details.

**(101) Scales for Quality Assurance**

<b>Name in file:</b> Cloud_Mask_5km_scale_factor	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The scales needed to convert unscaled Cloud Mask data to scientific values.

**(102) Offsets for Quality Assurance**

<b>Name in file:</b> Quality_Assurance_5km_add_offset	<b>Range:</b> N/A
<b>Source:</b> MOD06-5KM-AUX P1_R05	<b>Missing value:</b> -999
<b>Field type:</b> REAL(4)	<b>Missing value operator:</b> ==
<b>Dimensions:</b> mod_granules	<b>Units:</b> N/A

The offsets needed to convert unscaled Quality Assurance data to scientific values.

## **5 Changes Since Version P\_R05**

### **5.1 MOD06-1KM-AUX**

- A bug in the P\_R05 algorithm caused three-dimensional fields in the output product to be filled with only missing values.

### **5.2 MOD06-5KM-AUX**

- Same as above.

## **7 Acronym List**

ATBD	Algorithm Theoretical Basis Document
CPR	Cloud Profiling Radar
DAAC	Distributive Active Archive Center
EOS	Earth Observing System
GES	Goddard Earth Sciences (DAAC)
HDF	Hierarchical Data Format
MODIS	MOderate-Resolution Imaging Spectrometer