

MOD10A1 AND MYD10A1 GLOBAL AND LOCAL Snow Cover ATTRIBUTES, VERSION 5

MOD10A1 AND MYD10A1 GLOBAL SNOW COVER ATTRIBUTES, VERSION 5

The MOD10A1 and MYD10A1 snow cover products include three Earth Observing System Data and Information System (EOSDIS) Core System (ECS) global attributes. These global attributes are stored as character strings in [Parameter Value Language](#) (PVL) format. Also, these global attributes as well as other attributes can be found in the associated metadata file, and are formatted as Extensible Markup Language (XML). The metadata file should be examined to determine if post-production changes were made to the metadata. Post-production metadata changes are not updated in the data file. Changes such as Quality Assessment updates are only reflected in the metadata file.

The global attributes described in this document include:

- CoreMetadata.0
- ArchiveMetadata.0
- StructMetadata.0
- Product Specific Attribute

CoreMetadata.0

Also known as inventory metadata, core metadata are used to populate the EOSDIS Core System (ECS) inventory, which allows users to locate granules of interest.

| Object Name | Comments | Sample Value |
|---------------------|---|---|
| ShortName | Earth Science Data Type, name of product. | MOD10A1 |
| VersionID | ECS Version. | 5 |
| ReprocessingActual | Number of times processed. | Reprocessed |
| ReprocessingPlanned | Expect that products will be reprocessed at least once. | Further update is anticipated |
| LocalGranuleID | | MOD10A1.A2000055.h12v03.005.2006182183900.hdf |
| DayNightFlag | Snow will have either day or both. | Day |
| ProductionDateTime | Time granule was produced. | 2006-07-01T18:40:23.000Z |
| LocalVersionID | Version of algorithm delivered from the Science Computing Facility. | SCF V5.0.5 |
| PGEVersion | Version of production generation executable. | 5.0.9 |
| InputPointer | Input data files used to create this product. | MOD10L2G.A2000055.h12v03.005.2006182162007.hdf MODMGGAD.A2000055.h12v03.005.2006182145121.hdf MODPTHKM.A2000055.h12v03.005.2006182144946.hdf MOD09GHK.A2000055.h12v03.005.2006182153902.hdf MOD12Q1.A2001001.h12v03.004.2004358134131.hdf |

| Object Name | Comments | Sample Value |
|--------------------------|--|--|
| RangeBeginningDate | Beginning date of the first scan line in the swath. | 2000-02-24 |
| RangeBeginningTime | Beginning time of the first scan line in the swath. | 16:40:00.000000 |
| RangeEndingDate | Ending date of the last scan line in the swath. | 2000-02-24 |
| RangeEndingTime | Ending time of the last scan line in the swath. | 20:05:00.000000 |
| ExclusionGringFlag | | N |
| GringPointLatitude | Geographic latitude bounds of swath coverage. | 49.6360033343828 59.8511126130763 60.1095769837043 49.7711135593482 |
| GringPointLongitude | Geographic longitude bounds of swath coverage. | -93.9224688010982 -121.690620335033 -100.183793790577 -77.4575168788765 |
| GringPointSequenceNo | | 1,2,3,4 |
| OrbitNumber | | 995 |
| EquatorCrossingLongitude | | -93.8082345793327 |
| EquatorCrossingDate | | 2000-02-24 |
| EquatorCrossingTime | | 18:38:52.375157 |
| ParameterName | Parameter for which QA statistics are given in this metadata object. | Snow_Cover_Daily_Tile |

| Object Name | Comments | Sample Value |
|---------------------------------|--|---|
| AutomaticQualityFlag | Result of automated checks during the run of the algorithm that screens for significant amounts of anomalous data. | Passed |
| AutomaticQualityFlagExplanation | Explanation of result of automated QA checks made during execution. | No automatic quality assessment done in the PGE |
| ScienceQualityFlag | Set by snow investigator after post-production investigation. | Not investigated |
| ScienceQualityFlagExplanation | Explanation of science flag. | Visit http://landweb.nascom.nasa.gov/cgi-bin/QA_WWW/qaFlagPage.cgi?sat=terra for the product Science Quality status. |
| QAPercentMissingData | 0-100 | 0 |
| QAPercentCloudCover | 0-100 | 50 |
| AssociatedPlatformShortName | | Terra |
| AssociatedInstrumentShortName | | MODIS |
| AssociatedSensorShortName | | MODIS |

CoreMetadata.0 Product Specific Attributes (PSAs)

The CoreMetadata.0 product specific metadata attributes can be found by using most search tools. Also, when using certain interfaces for tile numbers, these attributes may be used as search criteria to restrict searches.

| Object Name | Comments | Sample Value |
|-----------------------|---|--------------|
| QAPercentGoodQuality | Summary quality assessment statistics for data product. | 85 |
| QAPercentOtherQuality | | 15 |
| HorizontalTileNumber | | 12 |
| VerticalTileNumber | | 03 |
| TileID | | 51012003 |
| SnowCoverPercent | Summary percentage of snow-covered land. | 39 |

ArchiveMetadata.0

This attribute contains information relevant to production of the data product. They also contain an alternate bounding of geographic coverage of the swath. These data are useful in determining what version of the algorithm was used to generate the product.

| Object Name | Comment | Sample Value |
|--------------------------------|-----------------------|--|
| CharacteristicBinAngularSize | | 15.0 |
| CharacteristicBinSize | | 463.312716527778 |
| GEOAnyAbnormal | | False |
| GEOEstMaxRMSError | | 50.0 |
| DataColumns | | 2400 |
| DataRows | | 2400 |
| GlobalGridColumns | | 86400 |
| GlobalGridRows | | 43200 |
| AlgorithmPackageAcceptanceDate | Algorithm descriptors | 12-2005 |
| AlgorithmPackageMaturityCode | | Normal |
| AlgorithmPackageName | | MOD_PR10A1 |
| AlgorithmPackageVersion | | 5 |
| InstrumentName | | Moderate Resolution Imaging Spectroradiometer |
| PlatformShortName | | Terra |
| ProcessingDateTime | | 2006-07-01T18:39:00.000Z |
| LongName | | MODIS/Terra Snow Cover Daily L3 Global 500m SIN Grid |
| Processing Center | | MODAPS |
| SPSOParameters | | None |

| Object Name | Comment | Sample Value |
|-------------------------|--|---|
| LocalInputGranuleID | Names of input files. | MOD10L2G.A2000055.h12v03.005.2006182162007.hdf, MODMGGAD.A2000055.h12v03.005.2006182145121.hdf, MODPTHKM.A2000055.h12v03.005.2006182144946.hdf, MOD09GHK.A2000055.h12v03.005.2006182153902.hdf, MOD12Q1.A2001001.h12v03.004.2004358134131.hdf |
| EastBoundingCoordinate | Extent of swath coverage, in latitude and longitude. | -77.7732269635488 |
| WestBoundingCoordinate | | -119.999999969677 |
| NorthBoundingCoordinate | | 59.9999999946118 |
| SouthBoundingCoordinate | | 49.9999999955098 |
| DESCRRevision | Version of MCF used. | 5.2 |
| ProcessingEnvironment | | Linux minion5031 2.6.8.1-26mdksmp #1 SMP Mon Nov 28 12:40:04 MST 2005 i686 |

StructMetadata.0

These attributes specify the content and structure of an HDF-EOS file and are not discussed further here. For more information, please see the 2001 white paper titled [An HDF-EOS and Data Formatting Primer for the ECS Project](#).

Product Specific Global Attributes

These attributes are specific to the MOD10A1 and MYD10A1 snow cover product.

| Attribute Name | Comment | Sample Value |
|------------------------------------|---|--|
| HDFEOSVersion | Version of HDF-EOS Toolkit. | HDFEOS_V2.9 |
| L2GAutomaticQualifyFlag | | Passed |
| L2GAutomaticQualityFlagExplanation | | Output file is created and good |
| L2GCoverageCalculationMethod | | Volume |
| L2GNumberOfOverlapGranules | Number of input granules with data falling in the tile. | 4 |
| L2GFirstLayerSelectionCriteria | | Order of input pointer |
| MOD10InputGranuleNames | Listing of input files used to make the data product. | MOD10_L2.A2000055.1640.005.2006181104401.hdf, MOD10_L2.A2000055.1645.005.2006181104621.hdf, MOD10_L2.A2000055.1820.005.2006181104509.hdf, MOD10_L2.A2000055.1955.005.2006181104242.hdf, MOD10_L2.A2000055.2000.005.2006181104538.hdf |
| SCF Algorithm Version | Internal SCF version. | \$Id: MOD_PR10A1_AAmain... |

MOD10A1 AND MYD10A1 LOCAL SNOW COVER ATTRIBUTES, VERSION 5

Local attributes describe the data and provide summary data on the results of the snow cover algorithm. Two types of local attributes are reported: Hierarchical Data Format (HDF) predefined and custom local attributes.

HDF Predefined Local Attributes

| Attribute Name | Reserved Label(s) | Definition | Sample Value |
|-------------------|---|---|--|
| Label | long_name | Long name of the Scientific Data Set (SDS). | Snow cover extent by best observation of the day |
| Unit | units | International System of Units (SI) of the data. | None |
| Format | format | How the data should be viewed in Fortran format notation. | I3 |
| Coordinate system | coordsys | Coordinate system to use for the data. | Cartesian |
| Range | valid_range | Maximum and minimum values within a selected data range. | 0, 254 |
| Fill Value | _FillValue | Data used to fill gaps in the grid. | 255 |
| Calibration | scale_factor scale_factor_err add_offset add_offset_err calibrated_nt | Not used | Not used |

Custom Local Attributes for the Snow_Cover_Daily_Tile Field

| Attribute Name | Definition | Sample Value | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|--|--|--|-------|-------------|------------------|--------------|-----------------|-------------|------------|--------------------------------------|--------------|----------------|-----------|----------------------|------------|------------|------------|----------------|----------------|-----------------------|------------|-------------------|--------------------------|--------------------|------------|------|
| missing_value | Coded integer used to indicate missing data. | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Key | Key to the meaning of the coded integers within the SDS. | <table border="1"> <thead> <tr> <th data-bbox="1146 461 1461 509">Value</th> <th data-bbox="1461 461 1890 509">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="1146 509 1461 558">0 = missing data</td> <td data-bbox="1461 509 1890 558">data missing</td> </tr> <tr> <td data-bbox="1146 558 1461 607">1 = no decision</td> <td data-bbox="1461 558 1890 607">no decision</td> </tr> <tr> <td data-bbox="1146 607 1461 688">11 = night</td> <td data-bbox="1461 607 1890 688">darkness, terminator, or polar night</td> </tr> <tr> <td data-bbox="1146 688 1461 737">25 = no snow</td> <td data-bbox="1461 688 1890 737">snow-free land</td> </tr> <tr> <td data-bbox="1146 737 1461 786">37 = lake</td> <td data-bbox="1461 737 1890 786">lake or inland water</td> </tr> <tr> <td data-bbox="1146 786 1461 834">39 = ocean</td> <td data-bbox="1461 786 1890 834">open water</td> </tr> <tr> <td data-bbox="1146 834 1461 883">50 = cloud</td> <td data-bbox="1461 834 1890 883">cloud obscured</td> </tr> <tr> <td data-bbox="1146 883 1461 932">100 = lake ice</td> <td data-bbox="1461 883 1890 932">snow-covered lake ice</td> </tr> <tr> <td data-bbox="1146 932 1461 980">200 = snow</td> <td data-bbox="1461 932 1890 980">snow-covered land</td> </tr> <tr> <td data-bbox="1146 980 1461 1062">254 = detector saturated</td> <td data-bbox="1461 980 1890 1062">detector saturated</td> </tr> <tr> <td data-bbox="1146 1062 1461 1110">255 = fill</td> <td data-bbox="1461 1062 1890 1110">fill</td> </tr> </tbody> </table> | | Value | Description | 0 = missing data | data missing | 1 = no decision | no decision | 11 = night | darkness, terminator, or polar night | 25 = no snow | snow-free land | 37 = lake | lake or inland water | 39 = ocean | open water | 50 = cloud | cloud obscured | 100 = lake ice | snow-covered lake ice | 200 = snow | snow-covered land | 254 = detector saturated | detector saturated | 255 = fill | fill |
| Value | Description | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 = missing data | data missing | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 = no decision | no decision | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 = night | darkness, terminator, or polar night | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 = no snow | snow-free land | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 = lake | lake or inland water | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 = ocean | open water | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 = cloud | cloud obscured | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 = lake ice | snow-covered lake ice | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 = snow | snow-covered land | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 254 = detector saturated | detector saturated | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 255 = fill | fill | | | | | | | | | | | | | | | | | | | | | | | | | | |

Custom Local Attributes for the Snow_Spatial_QA Field

| Attribute Name | Definition | Value |
|----------------|-----------------------------|---|
| Key | Explanation of the QA Flag. | 0 = good quality 1 = other quality 252 = Antarctica mask 253 = land mask 254 = ocean mask 255 = fill |

Custom Local Attributes for the Snow_Albedo_Daily_Tile Field

| Attribute Name | Definition | Sample Value | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|--|---|-------|-------------|---------------------|------------|-------------------|-------------|-------------|--------------------------------------|------------|----------------|--------------------|----------------------|-------------|------------|-------------|----------------|---------------|--------------|----------------------|----------------|--------------------------|--------------------|
| missing_value | Coded integer used to indicate missing data | -6 | | | | | | | | | | | | | | | | | | | | | | |
| Key | Key to the meaning of the coded integers within the SDS. | <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0-100 = snow albedo</td> <td>in percent</td> </tr> <tr> <td>101 = no decision</td> <td>no decision</td> </tr> <tr> <td>111 = night</td> <td>darkness, terminator, or polar night</td> </tr> <tr> <td>125 = land</td> <td>snow-free land</td> </tr> <tr> <td>137 = inland water</td> <td>lake or inland water</td> </tr> <tr> <td>139 = ocean</td> <td>open water</td> </tr> <tr> <td>150 = cloud</td> <td>cloud obscured</td> </tr> <tr> <td>250 = missing</td> <td>data missing</td> </tr> <tr> <td>251 = self_shadowing</td> <td>self-shadowing</td> </tr> <tr> <td>252 = land mask mismatch</td> <td>land mask mismatch</td> </tr> </tbody> </table> | Value | Description | 0-100 = snow albedo | in percent | 101 = no decision | no decision | 111 = night | darkness, terminator, or polar night | 125 = land | snow-free land | 137 = inland water | lake or inland water | 139 = ocean | open water | 150 = cloud | cloud obscured | 250 = missing | data missing | 251 = self_shadowing | self-shadowing | 252 = land mask mismatch | land mask mismatch |
| Value | Description | | | | | | | | | | | | | | | | | | | | | | | |
| 0-100 = snow albedo | in percent | | | | | | | | | | | | | | | | | | | | | | | |
| 101 = no decision | no decision | | | | | | | | | | | | | | | | | | | | | | | |
| 111 = night | darkness, terminator, or polar night | | | | | | | | | | | | | | | | | | | | | | | |
| 125 = land | snow-free land | | | | | | | | | | | | | | | | | | | | | | | |
| 137 = inland water | lake or inland water | | | | | | | | | | | | | | | | | | | | | | | |
| 139 = ocean | open water | | | | | | | | | | | | | | | | | | | | | | | |
| 150 = cloud | cloud obscured | | | | | | | | | | | | | | | | | | | | | | | |
| 250 = missing | data missing | | | | | | | | | | | | | | | | | | | | | | | |
| 251 = self_shadowing | self-shadowing | | | | | | | | | | | | | | | | | | | | | | | |
| 252 = land mask mismatch | land mask mismatch | | | | | | | | | | | | | | | | | | | | | | | |

| Attribute Name | Definition | Sample Value | |
|----------------|------------|---------------------------|---|
| | | Value | Description |
| | | 253 = BRDF_failure | Bidirectional Reflectance Distribution Function failure |
| | | 254 = non-production_mask | non-production mask |

Custom Local Attributes for the Fractional_Snow_Cover Field

| Attribute Name | Definition | Value | Description |
|----------------|--|--------------------------|--------------------------------------|
| Key | Key to the meaning of the coded integers within the SDS. | 0-100 = fractional snow | in percent |
| | | 200 = missing data | data missing |
| | | 201 = no decision | no decision |
| | | 211 = night | darkness, terminator, or polar night |
| | | 225 = land | snow-free land |
| | | 237 = inland water | lake or inland water |
| | | 239 = ocean | open water |
| | | 250 = cloud | cloud obscured |
| | | 254 = detector saturated | detector saturated |
| | | 255 = fill | fill |