MOD29P1D and MYD29P1D Version 5 Local and Global Sea Ice Attributes

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1 LOCAL ATTRIBUTES

Local attributes describe the data and provide summary information about the results of the sea ice algorithm. Two types of local attributes are reported: Hierarchical Data Format (HDF) predefined local attributes and custom local attributes.

1.1 HDF Predefined Local Attributes

Attribute Name	Reserved Label(s)	Definition	Sample Value
Label	long_name	Long name of the Scientific Data Set (SDS).	Ice surface temperature for daily tile
Unit	units	International System of Units (SI) of the data. This attribute may or may not be used.	degree_Kelvin
Format	format	How the data should be viewed in Fortran format notation	F4.1
Coordinate system	coordsys	Coordinate system to use for the data	cartesian
Range	valid_range	Maximum and minimum values within a selected data range	21000,31320
Fill Value	_FillValue	Data used to fill gaps in the swath	7
Calibration	scale_factor	Value by which each data element is to be multiplied[1]	0.01
	scale_factor_err	Error induced by scaling[1]	0.0
	add_offset	Value to add to each array element[1]	0.0
	add_offset_err	Error induced by offset[1]	0.0
	calibrated_nt	HDF data types of the calibrated data[1]	23

[1]These values are only used for Ice Surface Temperature (IST).

1.2 Custom Local Attributes for the Sea Ice by Reflectance Field

<table>
<tr><th>Attribute Name</th><th>Definition</th><th>Sample Value</th></tr>
<tr><td>Key</td><td>Key to the meaning of the coded integers within the SDS.</td><td>
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0 = missing data</td><td>missing data</td></tr>
<tr><td>1 = no decision</td><td>no decision</td></tr>
<tr><td>11 = night</td><td>darkness, terminator, or polar</td></tr>
<tr><td>25 = land</td><td>land</td></tr>
<tr><td>37 = inland water</td><td>lake or inland water</td></tr>
<tr><td>39 = ocean</td><td>ocean</td></tr>
<tr><td>50 = cloud</td><td>cloud obscured</td></tr>
<tr><td>200 = sea ice</td><td></td></tr>
<tr><td>253 = land mask</td><td></td></tr>
<tr><td>254 = ocean mask</td><td></td></tr>
<tr><td>255 = fill</td><td></td></tr>
</table>
</td></tr>
</table>

1.3 Custom Local Attributes for the Sea Ice by Reflectance Spatial QA Field

Attribute Name	Definition	Sample Value
Key	Explanation of the Quality Assessment (QA) Flag.	0 = good quality 1 = other quality 253 = land mask 254 = ocean mask 255 = fill

1.4 Custom Local Attributes for the Ice Surface Temperature Field

Attribute Name	Definition	Sample Value	
Key	Key to the meaning of the coded integers within the SDS.	**Value (after scaling)**	**Description**
		0.0 = missing	missing data
		1.0 = no decision	no decision
		11.0 = night	darkness, terminator, or polar
		25.0 = land	land
		37.0 = inland water	lake or inland water
		39.0 = open ocean	ocean
		50.0 = cloud	cloud obscured
		243.0 - 273.0 = expected Ice Surface Temperature (IST) range	
		655.35 = fill	fill

1.5 Custom Local Attributes for the Ice Surface Temperature Spatial QA Field

Attribute Name	Definition	Sample Value
Key	Explanation of the Quality Assessment (QA) Flag.	0 = good quality 1 = other quality 253 = land mask 254 = ocean mask 255 = fill

2 GLOBAL ATTRIBUTES

The MOD29P1D and MYD29P1D sea ice product data files 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 (QA) updates are only reflected in the metadata file.

2.1 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 (ESDT), name of product.	MOD29P1D
VersionID	ECS Version	5
ReprocessingActual	There are two sample values for this object: processed and reprocessed. The granule is considered processed if it is the first time the data is processed, and the granule is considered reprocessed if it was previously processed.	reprocessed
ReprocessingPlanned	Expect that products will be reprocessed at least once	further update is anticipated
LocalGranuleID	Name of the granule	MOD29P1D.A2000057.h04v06.005.2006252042343.hdf
DayNightFlag	Can be Day, Night, or Both	Day
ProductionDateTime	Time granule was produced	2006-09-09 04:23:46.0
LocalVersionID	Version of algorithm delivered from the Science Computing Facility (SCF).	SCF 5.0.0
PGEVersion	Version of production generation executable	5.0.2
InputPointer	Input granules used to produce the granule.	MOD29PGD.A2000057.h04v06.005.2006252042230.hdf,

		MODPTPGD.A2000057.h04v06.005.2006252042150.hdf MODMGPGD.A2000057.h04v06.005.2006252042209.hdf
RangeBeginningDate	Beginning date of the first scan line in the swath	2000-02-26
RangeBeginningTime	Beginning time of the first scan line in the swath	18:10:00.000000
RangeEndingDate	Ending date of the last scan line in the swath	2000-02-26
RangeEndingTime	Ending time of the last scan line in the swath	20:00:00.000000
ExclusionGringFlag		N
GringPointLatitude	Geographic latitude bounds of swath coverage	31.6002389831511 39.4935936057757 44.6837779373178 36.2415670165257
GringPointLongitude	Geographic longitude bounds of swath coverage	-122.471192290848 -127.874983651098 -119.054604099077 -114.443954780417
GringPointSequenceNo		[1,2,3,4]
OrbitNumber		1025
EquatorCrossingLongitude		-115.456561180703
EquatorCrossingDate		2000-02-26
EquatorCrossingTime		18:26:36.057974
ParameterName	Parameter for which QA statistics are given. Two containers for QA statistics used.	Sea_Ice_by_Reflectance Ice_Surface_Temperature
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
QAPercentMissingData	0-100	21 for IST, 0 for Sea Ice by Reflectance
QAPercentCloudCover	0-100	17 for IST, 17 for Sea Ice by Reflectance

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.
AssociatedPlatformShortName		Terra
AssociatedInstrumentShortName		MODIS
AssociatedSensorShortName		MODIS

2.1.1 CoreMetadata.0 Product Specific Attributes (PSAs)

The CoreMetadata.0 product specific metadata attributes can be found by using most search tools.

Object Name	Comments	Sample Value
QAPercentGoodQuality	Summary quality assessment statistic based on the thermal data. Range is 0-100.	17
QAPercentOtherQuality		83
HorizontalTileNumber	See the following documents for bounding coordinate information for each tile: EASE-Grid Tile Locations and Bounding Coordinates for MODIS Sea Ice Products MODIS MODLAND Tile Calculator: converts between MODIS tile numbers and latitude/longitude coordinates.	4
VerticalTileNumber	See the following documents for bounding coordinate information for each tile: EASE-Grid Tile Locations and Bounding Coordinates for MODIS Sea Ice Products MODIS MODLAND Tile Calculator: converts between MODIS tile numbers and latitude/longitude coordinates.	6
TileID		31004006

SeaIcePercent	Summary percentage of sea ice detected (0-100), or not a number (nan).	0

2.2 ArchiveMetadata.0

This attribute contains information relevant to production of the data product. It also contains 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		71.7250539598207
CharacteristicBinSize	Meters per cell.	1.00270100e+03
GEOAnyAbnormal		False
GEOEstMaxRMSError		50.0
DataColumns		951
DataRows		951
GlobalGridColumns		18069
GlobalGridRows		18069
NumberOfOverlapGranules	Number of staged granules that were mapped into this tile	3
NumberOfInputGranules	Total number of MOD29 input granules staged	3
CoverageCalculationMethod		volume
AlgorithmPackageAcceptanceDate	Algorithm descriptors	10-2004
AlgorithmPackageMaturityCode		normal
AlgorithmPackageName		MOD_PR29A1
AlgorithmPackageVersion		5
InstrumentName		Moderate Resolution Imaging Spectroradiometer
PlatformShortName		Terra
LongName		MODIS/Terra Sea Ice Extent Daily L3 Global 1km EASE-Grid Day
ProcessingDateTime		2006-09-09T04:23:43.000Z
ProcessingCenter		MODAPS

ProcessingEnvironment		Linux minion5055 2.6.8.1-26mdksmp #1 SMP Mon Nov 28 12:40:04 MST 2005 i686 Intel(R) Xeon(TM) CPU 2.80GHz unknown GNU/Linux
DescrRevision		5.0
SPSOParameters		none
LocalInputGranuleID	Names of input files	MOD29PGD.A2000057.h04v06.005.2006252042230.hdf MODMGPGD.A2000057.h04v06.005.2006252042209.hdf MODPTPGD.A2000057.h04v06.005.2006252042150.hdf
EastBoundingCoordinate	Extent of swath coverage, in latitude and longitude	-114.443954780417
WestBoundingCoordinate		-127.874983651098
NorthBounding Coordinate		44.6837779373178
SouthBounding Coordinate		31.6002389831511

2.3 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.

2.4 Product-Specific Attributes

These attributes are specific to the MOD29P1D and MYD29P1D sea ice product.

Attribute Name	Comment	Sample Value
HDFEOSVersion	Version of HDF-EOS toolkit	HDFEOS_V2.9
MOD29InputGranuleNames	Listing of input files used to make the data product	MOD29.A2000057.1810.005.2006251055903.hdf MOD29.A2000057.1815.005.2006251075814.hdf MOD29.A2000057.1950.005.2006251062618.hdf
SCF_Algorithm_Version	SCF version tracking information	$Id: MOD_PR29A1_AAmain.c,v 1.10 2002/10/16 13:17:14 powell Exp $ $Id:

		MOD_PR29A1_ActionMessages.h,v 1.5 2002/08/08 19:33:37 powell Exp $ $Id: MOD_PR29A1.h,v 1.15 2002/10/16 13:58:10 powell Exp $ $Id: MOD_PR29A1_InputFiles.c,v 1.11 2002/12/11 20:56:04 powell Exp $ $Id: MOD_PR29A1_ComputeReflectance.c,v 1.8 2002/10/25 16:16:15 powell Exp $ $Id: MOD_PR29A1_ComputeSurfTemp.c,v 1.6 2002/10/16 13:20:27 powell Exp $ $Id: MOD_PR29A1_ProcessOutput.c,v 1.7 2002/10/09 12:57:53 powell Exp $ $Id: MOD_PR29A1_CopyInputMeta.c,v 1.9 2002/10/09 12:52:25 powell Exp $ $Id: MOD_PR29A1_CopySpatialDomainMeta.c,v 1.7 2002/10/09 12:53:22 powell Exp $ $Id: MOD_PR29A1_CodeMetaData.c,v 1.17 2002/10/09 12:09:11 powell Exp $