

## ATL15 Product Data Dictionary

Date Generated : 2021-11-29T13:32:33

description	(Attribute)	This data set (ATL15) contains seasonal, annual, and biennial gridded land ice elevation change.
level	(Attribute)	L3B
short_name	(Attribute)	ATL15
title	(Attribute)	SET_BY_META
<b>Group: 1</b>		
This data set (ATL15) contains seasonal, annual, and biennial gridded land ice elevation change.		
conventions	(Attribute)	CF-1.7
COORDINATE_AXIS_OR_POINT	(Attribute)	Area
NCProjectName	(Attribute)	version=2;netcdf=4.7.4;netcdf=1.10.6
data_release	(Attribute)	SET_BY_PGE
citation	(Attribute)	Cite these data in publications as follows: The data used in this study were produced by the ICESat-2 Science Project Office at NASA/GSFC. The data archive site is the ICESat-2 National Snow and Ice Data Center Distributed Active Archive Center.
contributor_name	(Attribute)	Bernjann Smith (bsmith@uow.edu.au), Tyler Sutterley (sutterl@uow.edu.au), Suzanne Dickinson (sdickins@uow.edu.au), Benjamin Jelley (benjam.jelley@nasa.gov), Denis Felton (denis.felton@nasa.gov), Thomas E Neumann (thomas.neumann@nasa.gov), Helen Fricker (hfricker@ucl.ac.uk), Alex Gardner (alex.gardner@nasa.gov), Laurence Padman (padman@gsr.org), Thorsten Markus (thorsten.markus@nasa.gov), Nathan Kurtz (nathan.kurtz@nasa.gov), Suneel Bhanu (suneel.bhanu@nasa.gov), David W Hancock III (david.w.hancock@nasa.gov), Jeffrey Lee (jlee@nasa.gov)
contributor_role	(Attribute)	Investigator, Investigator, Investigator, Investigator, Algorithm Developer, Algorithm Developer, Algorithm Developer
creator_name	(Attribute)	OSFC-1/SPS > ICESat-2 Science Investigator-led Processing System
date_created	(Attribute)	2021-11-23T19:46:28.239159Z
date_type	(Attribute)	UTC
fileName	(Attribute)	ATL15_CN_0311_40km_001_01.nc
geospatial_lat_max	(Attribute)	84.71672186
geospatial_lat_min	(Attribute)	71.09202548
geospatial_lat_units	(Attribute)	degrees_north
geospatial_lon_max	(Attribute)	163.8868737
geospatial_lon_min	(Attribute)	135.27242148
geospatial_lon_units	(Attribute)	degrees_east
granule_type	(Attribute)	ATL15
hardware	(Attribute)	SET_BY_PGE
history	(Attribute)	SET_BY_PGE
identifier_product_id	(Attribute)	00110567ATLASATL15.001
identifier_product_id_authority	(Attribute)	http://dx.doi.org
identifier_product_format_version	(Attribute)	SET_BY_PGE
identifier_product_type	(Attribute)	ATL15
institution	(Attribute)	National Aeronautics and Space Administration (NASA)
instrument	(Attribute)	ATLAS > Advanced Topographic Laser Altimeter System
keywords	(Attribute)	EARTH SCIENCE > CRYOSPHERE > GLACIER/ICE SHEETS > GLACIER ELEVATION/ICE SHEET ELEVATION > NONE > NONE > NONE
keywords_vocabulary	(Attribute)	NASA/GCMD Science Keywords
license	(Attribute)	Data may not be reproduced or distributed without including the citation for this product included in this metadata. Data may not be distributed in an altered form without the written permission of the ICESat-2 Science Project Office at NASA/GSFC
naming_authority	(Attribute)	http://dx.doi.org
recoVersion	(Attribute)	4.7.4
platform	(Attribute)	ICESat-2 > Ice, Cloud, and Land Elevation Satellite-2
processing_level	(Attribute)	3B
project	(Attribute)	ICESat-2 > Ice, Cloud, and Land Elevation Satellite-2
publisher_email	(Attribute)	isa@nasa.gov
publisher_name	(Attribute)	NESDIS/CIAC > NASA National Snow and Ice Data Center Distributed Active Archive Center
publisher_url	(Attribute)	http://nsidc.org/isaw
reference_frame	(Attribute)	ITRF2014
references	(Attribute)	http://nsidc.org/data/icesat2/data.html
shortName	(Attribute)	ATL15_META
source	(Attribute)	Spacecraft
spatial_coverage_type	(Attribute)	Horizontal
standard_name_vocabulary	(Attribute)	CF-1.6
summary	(Attribute)	The purpose of ATL15 is to provide an IceSat-2 gridded satellite summary of height changes of land-based ice.
time_coverage_duration	(Attribute)	108877.326198807
time_coverage_end	(Attribute)	2023-08-23T05:51:29.097191Z
time_coverage_start	(Attribute)	2019-03-20T11:09:16.298287Z
time_type	(Attribute)	CCSDS UTCA
uid	(Attribute)	60a8246-3967-406a-80a2-33a0caaf4473
vertical_datum	(Attribute)	WGS84
<b>Group: METADATA</b>		
IS019115 Structured Metadata Represented within HDF5		
icc_19130_dataset_xml	(Attribute)	SET_BY_META
icc_19130_series_xml	(Attribute)	SET_BY_META
<b>Group: METADATA/AcquisitionInformation</b>		
Describe the group		
description	(Attribute)	ATLAS on ICESat-2 determines the range between the satellite and the Earth's surface by measuring the two-way time delay of short pulses of laser light that it transmits in six beams. It is different from previous operational ice-sheet altimeters in that it is a photon-counting LIDAR. ATLAS records a set of arrival times for individual photons, which are then analyzed to derive surface, vegetation, and cloud properties. ATLAS has six beams arranged in three pairs, so that it samples each of three reference pair tracks with a pair of beams. ATLAS transmits pulses at 10 kHz, giving approximately one pulse every 0.7 m along track. ATLAS's expected pointing control will be better than 90 m RMS.
identifier	(Attribute)	ATLAS
pulse_rate	(Attribute)	10000 pps
type	(Attribute)	Laser Altimeter
units	(Attribute)	kg
<b>Group: METADATA/AcquisitionInformation/PlatformDocument</b>		
Describe the group		
edition	(Attribute)	Pre-Release
publicationDate	(Attribute)	123117
title	(Attribute)	A document describing the ATLAS instrument will be provided by the ICESat-2 Project Science Office.
<b>Group: METADATA/AcquisitionInformation/platforms</b>		
Describe the group		
description	(Attribute)	Ice, Cloud, and Land Elevation Satellite-2
identifier	(Attribute)	ICESat-2
type	(Attribute)	Spacecraft
<b>Group: METADATA/AcquisitionInformation/platformDocument</b>		
Describe the group		
edition	(Attribute)	31-Dec-16
publicationDate	(Attribute)	31-Dec-16
title	(Attribute)	The Ice, Cloud, and Land Elevation Satellite-2 (ICESat-2) Science requirements, concept, and implementation. Thorsten Markus, Tom Neumann, Anthony Martino, Wakeed Abdalati, Kelly Brunt, Beata Casillo, Sinaad Farnel, Helen Fricker, Alex Gardner, David Harding, Michael Jasinski, Ron Kwok, Lori Magruder, Dan Lubin, Scott Luthcke, James Marston, Ross Nelson, Amy Neumann-Schwander, Stephen Palm, Soth Popescu, Ok Shum, Bob E. Schutz, Benjamin Smith, Yankui Yang, Jay Zwally. http://dx.doi.org/10.1016/j.rse.2016.12.020
<b>Group: METADATA/DataQuality</b>		
Describe the group		
scope	(Attribute)	NOT_SET
<b>Group: METADATA/DataQuality/Compliance/Compliance</b>		
Describe the group		
complianceMethodType	(Attribute)	directInternal
measuresDescription	(Attribute)	TBD
nameOfMeasure	(Attribute)	TBD
unitsOfMeasure	(Attribute)	TBD
value	(Attribute)	NOT_SET
<b>Group: METADATA/DataQuality/Domain/Consistency</b>		
Describe the group		
complianceMethodType	(Attribute)	directInternal
measuresDescription	(Attribute)	TBD
nameOfMeasure	(Attribute)	TBD
unitsOfMeasure	(Attribute)	TBD
value	(Attribute)	NOT_SET
<b>Group: METADATA/DatasetIdentification</b>		
Describe the group		
versionID	(Attribute)	SET_BY_PGE
abstract	(Attribute)	The ICESat-2 ATL15 standard data product reports a land ice elevation change as compared to an ice sheet digital elevation model (DEM).
characterSet	(Attribute)	utf8
creatorDate	(Attribute)	2021-11-23
credit	(Attribute)	The software that generates the ATL15 product was designed and implemented within the ICESat-2 Science Investigator-led Processing System at the NASA Goddard Space Flight Center in Greenbelt, Maryland.
fileName	(Attribute)	ATL15_CN_0311_40km_001_01.nc
language	(Attribute)	eng
originalOrganizationName	(Attribute)	OSFC-1/SPS > ICESat-2 Science Investigator-led Processing System
purpose	(Attribute)	The purpose of ATL15 is to provide an IceSat-2 gridded satellite summary of height changes of land-based ice.
shortName	(Attribute)	ATL15

spatialRepresentationType	(Attribute)	along-track
status	(Attribute)	onGoing
topicCategory	(Attribute)	geoscientificInformation
uuid	(Attribute)	21ae060-d873-4c2e-83ff-05c09899
<b>Group: IMETADATAExtent</b> Describe the group		
eastBoundLongitude	(Attribute)	143.89697371
northBoundLatitude	(Attribute)	84.71671866
rangeBeginningDateTime	(Attribute)	2019-03-20T11:09:16.295287Z
rangeEndingDateTime	(Attribute)	2021-06-23T10:59:09.697181Z
southBoundLatitude	(Attribute)	71.09020548
westBoundLongitude	(Attribute)	-125.27242145
<b>Group: IMETADATAImage</b> Describe the group		
<b>Group: IMETADATAImage/ANC19</b> Describe the group		
description	(Attribute)	TAI to UTC leapsecond file retrieved from ftp://maia.usno.navy.mil/ser7/ta1-utc.dat
fileName	(Attribute)	SET_BY_PGE
productName	(Attribute)	SET_BY_PGE
uuid	(Attribute)	SET_BY_PGE
version	(Attribute)	SET_BY_PGE
<b>Group: IMETADATAImage/ANC36-15</b> Describe the group		
description	(Attribute)	ISO 19139 XML file containing Series-level metadata information.
fileName	(Attribute)	DuESDTAATL15.001.series.xml
productName	(Attribute)	ANC36-15
uuid	(Attribute)	8FCC84B-D6BE-4897-62C8-38C0E8A1C3DB
version	(Attribute)	001
<b>Group: IMETADATAImage/ANC38-15</b> Describe the group		
description	(Attribute)	ISO 19139 XML file containing DataSet-level metadata information.
fileName	(Attribute)	DuESDTAATL15.001_dataset.xml
productName	(Attribute)	ANC38-15
uuid	(Attribute)	96F6A6-F1E7-445E-9E94-ADD030917038
version	(Attribute)	001
<b>Group: IMETADATAImage/ATL11</b> Describe the group		
description	(Attribute)	ATLAS15B Land Ice Height
end_cycle	(Attribute)	SET_BY_PGE
end_geosag	(Attribute)	SET_BY_PGE
end_orbit	(Attribute)	SET_BY_PGE
end_region	(Attribute)	SET_BY_PGE
end_rgt	(Attribute)	SET_BY_PGE
fileName	(Attribute)	SET_BY_PGE
productName	(Attribute)	SET_BY_PGE
start_cycle	(Attribute)	SET_BY_PGE
start_geosag	(Attribute)	SET_BY_PGE
start_orbit	(Attribute)	SET_BY_PGE
start_region	(Attribute)	SET_BY_PGE
start_rgt	(Attribute)	SET_BY_PGE
uuid	(Attribute)	SET_BY_PGE
version	(Attribute)	SET_BY_PGE
<b>Group: IMETADATAImage/Control</b> Describe the group		
description	(Attribute)	Text-based keyword/invoke file generated automatically within the ICESat-2 data system that specifies all of the conditions required for each individual run of the software.
fileName	(Attribute)	SET_BY_PGE
productName	(Attribute)	SET_BY_PGE
version	(Attribute)	SET_BY_PGE
<b>Group: IMETADATAProcessStep</b> Describe the group		
<b>Group: IMETADATAProcessStep/Browse</b> Describe the group		
identifier	(Attribute)	SET_BY_PGE
processDescription	(Attribute)	Browse processing is performed for each granule SIPS products. The browse utility reads data from the granule and produces browse images as defined in the respective product ATBD. The utility then embeds each browse image into the product within the /Browse group.
runTimeParameters	(Attribute)	SET_BY_PGE
softwareDate	(Attribute)	SET_BY_PGE
softwareTitle	(Attribute)	SET_BY_PGE
softwareVersion	(Attribute)	SET_BY_PGE
stopDateTime	(Attribute)	SET_BY_PGE
<b>Group: IMETADATAProcessStep/Metadata</b> Describe the group		
identifier	(Attribute)	atlas_meta
processDescription	(Attribute)	Metadata information is processed by the metadata utility for each granule produced by SIPS. During PGE processing, dynamic metadata are written to the product. Additional static information is provided with the metadata template. The metadata utility reads ISO Dataset and Series metadata files and updates the product with static information from within those files. The utility then merges the static and dynamic metadata to creates output ISO19139 Dataset and Series XML files. Finally the utility reads the ISO19139 Dataset and Series XML files into memory and stores the textual representations as attributes attached to the METADATA group.
runTimeParameters	(Attribute)	ATL15_CN_0311_40km_001_01.cd
softwareDate	(Attribute)	Nov 18 2021
softwareTitle	(Attribute)	Creates ATLAS XML metadata files
softwareVersion	(Attribute)	Version 5.0
stopDateTime	(Attribute)	2021-11-20T13:43:38.000000Z
<b>Group: IMETADATAProcessStep/PGE</b> Describe the group		
ATBDtitle	(Attribute)	ATBD019
ATBDTitle	(Attribute)	Algorithm Theoretical Basis Document (ATBD) For Sea Ice Products
ATBDVersion	(Attribute)	NA
documentDate	(Attribute)	Feb 2020
documentation	(Attribute)	ATLAS Science Algorithm Software Design Description (SDD) - Volume 14 (atlas_ldb_14)
identifier	(Attribute)	SET_BY_PGE
processDescription	(Attribute)	Computes seasonal, annual, biennial land ice elevation change.
runTimeParameters	(Attribute)	SET_BY_PGE
softwareDate	(Attribute)	SET_BY_PGE
softwareTitle	(Attribute)	SET_BY_PGE
softwareVersion	(Attribute)	SET_BY_PGE
stopDateTime	(Attribute)	SET_BY_PGE
<b>Group: IMETADATAProcessStep/QA</b> Describe the group		
identifier	(Attribute)	at15_qa_util
processDescription	(Attribute)	QA processing is performed by an external utility on each granule produced by SIPS. The utility reads the granule, performs both generic and product-specific quality-assessment calculations, and writes a text-based quality assessment report. The name and creation date of this report are identified within the QADatasetIdentification metadata.
runTimeParameters	(Attribute)	ATL15_CN_0311_40km_001_01.cd
softwareDate	(Attribute)	Nov 23 2021
softwareTitle	(Attribute)	ATL15 QA Utility
softwareVersion	(Attribute)	Version 1.0
stopDateTime	(Attribute)	2021-11-20T13:43:38.000000Z
<b>Group: IMETADATAProductSpecification/Document</b> Describe the group		
shortName	(Attribute)	ATL15_SDP
characterSet	(Attribute)	utf8
edition	(Attribute)	v1.0
language	(Attribute)	eng
publicationDate	(Attribute)	Feb 2020
title	(Attribute)	ICESat-2 SIPS-SPEC-4269 - ATLAS Science Algorithm Standard Data Product (SDP) Volume 14 (ATL15) - Revision -
<b>Group: IMETADATAQADatasetIdentification</b> Describe the group		
abstract	(Attribute)	An ASCII product that contains statistical information on data product results. These statistics enable data producers and users to assess the quality of the data in the data product granule
creationDate	(Attribute)	2021-11-20T13:43:38.000000Z
fileName	(Attribute)	ATL15_CN_0311_40km_001_01.nc.qa
<b>Group: IMETADATASeriesIdentification</b> Describe the group		
versionID	(Attribute)	SET_BY_PGE
abstract	(Attribute)	The ICESat-2 ATL15 standard data product reports a land ice elevation change as compared to an ice sheet digital elevation model (DEM).
characterSet	(Attribute)	utf8
credit	(Attribute)	The software that generates the ATL15 product was designed and implemented within the ICESat-2 Science Investigator-led Processing System at the NASA Goddard Space Flight Center in Greenbelt, Maryland.
format	(Attribute)	HDF

formatVersion	(Attribute)	5		
identifier_product_DDI	(Attribute)	doi:10.5067/ATLASATL15.001		
language	(Attribute)	enq		
longName	(Attribute)	ATLASICE6x2 L3B Seasonal, Annual, and Biennial Land Ice Height Change		
maintenanceAndUpdateFrequency	(Attribute)	asNeeded		
maintenanceDate	(Attribute)	BET_BY_META		
mission	(Attribute)	ICE6x2 > Ice, Cloud, and Land Elevation Satellite-2		
pointOfContact	(Attribute)	NSIDC DAAC > NASA National Snow and Ice Data Center Distributed Active Archive Center		
purpose	(Attribute)	The purpose of ATL15 is to provide an IceSat-2 gridded satellite summary of height changes of land-based ice		
resourceProviderOrganizationName	(Attribute)	National Aeronautics and Space Administration (NASA)		
revisionDate	(Attribute)	2021-06-07		
shortName	(Attribute)	ATL15		
status	(Attribute)	archiving		
topicCategory	(Attribute)	geoscienceInformation		
<b>Group: delta_h</b>				
description	(Attribute)	delta_h group includes variables describing height differences between the model surface at any time and the DEM surface at a resolution of 40 km.		
Label	(Attribute)	long_name	units	description
Label	(Attribute)	standard_name		
Polar_Stereographic CONTIGUOUS	(Attribute)	None	None	None (Source: None)
GeoTransform	(Attribute)	[-1520000, 40000, 0, -520000, 0, -40000]		
crs_wkt	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS_1984",SPHEROID["WGS 84",6378137,298.257223563,AUTHORITY["EPSG":"7030"]],AUTHORITY["EPSG":"6326"]],PRIMEM["Greenwich"],AUTHORITY["EPSG":"560"],UNIT["degree",0.0175446872847,AUTHORITY["EPSG":"9122"]],AUTHORITY["EPSG":"4326"]],PROJECTION["Polar_Stereographic"],PARAMETER["latitude_of_origin",70],PARAMETER["central_meridian",-45],PARAMETER["scale_factor",1],PARAMETER["false_easting",0],PARAMETER["false_northing",0],UNIT["metre",1],AUTHORITY["EPSG":"5601"]],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG":"5413"]]		
false_easting	(Attribute)	[0]		
false_northing	(Attribute)	[0]		
grid_mapping_name	(Attribute)	polar_stereographic		
inverse_flattening	(Attribute)	[298.25722356]		
latitude_of_projection_origin	(Attribute)	[90.]		
scale_factor_at_projection_origin	(Attribute)	[1.]		
semi_major_axis	(Attribute)	[6378.137]		
semi_minor_axis	(Attribute)	[6356.752]		
spheroid_name	(Attribute)	WGS 84		
spheroid_semi	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS_1984",SPHEROID["WGS 84",6378137,298.257223563,AUTHORITY["EPSG":"7030"]],AUTHORITY["EPSG":"6326"]],PRIMEM["Greenwich"],AUTHORITY["EPSG":"560"],UNIT["degree",0.0175446872847,AUTHORITY["EPSG":"9122"]],AUTHORITY["EPSG":"4326"]],PROJECTION["Polar_Stereographic"],PARAMETER["latitude_of_origin",70],PARAMETER["central_meridian",-45],PARAMETER["scale_factor",1],PARAMETER["false_easting",0],PARAMETER["false_northing",0],UNIT["metre",1],AUTHORITY["EPSG":"5601"]],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG":"5413"]]		
standard_parallel	(Attribute)	[70.]		
straight_vertical_longitude_from_pole	(Attribute)	[45]		
cell_area_CHUNKED	(Attribute)	float, :3	meters^2	Ice-covered area of each 40x40 km grid cell, accounting for the area distort in the polar-stereographic projections (Source: ATBD section 3.4)
NetCDFCoordinates	(Attribute)	[3 2]		
NetCDFDim0	(Attribute)	3		
data_type	(Attribute)	float32		
dimensions	(Attribute)	y,x		
grid_mapping	(Attribute)	Polar_Stereographic		
least_significant_digit	(Attribute)	4		
delta_h_CHUNKED	(Attribute)	float, :3	meters	40x40 km average height change relative to the datum (Jan 1, 40x0) surface (Source: ATBD section 3.4)
NetCDFCoordinates	(Attribute)	[4 3 2]		
NetCDFDim0	(Attribute)	4		
data_type	(Attribute)	float32		
dimensions	(Attribute)	time,y,x		
grid_mapping	(Attribute)	Polar_Stereographic		
least_significant_digit	(Attribute)	4		
delta_h_sigma_CHUNKED	(Attribute)	float, :3	meters	Uncertainty in the 40x40 km average height change relative to the datum (Jan 1, 40x0) surface (Source: ATBD section 3.4)
NetCDFCoordinates	(Attribute)	[4 3 2]		
NetCDFDim0	(Attribute)	4		
data_type	(Attribute)	float32		
dimensions	(Attribute)	time,y,x		
grid_mapping	(Attribute)	Polar_Stereographic		
least_significant_digit	(Attribute)	4		
time_CHUNKED	(Attribute)	DOUBLE, :3	days since 2018-01-01	Time for each node, in days since 2018-01-01: 00:00:00 UTC (Source: ATBD section 4.2)
NetCDFCoordinates	(Attribute)	[4 3 2]		
NetCDFDim0	(Attribute)	4		
data_type	(Attribute)	float64		
dimensions	(Attribute)	time		
x_CHUNKED	(Attribute)	DOUBLE, :3	meters	x coordinate of the 40-km cell centers, in projected coordinates (Source: ATBD section 3.2)
NetCDFCoordinates	(Attribute)	[2]		
data_type	(Attribute)	float64		
dimensions	(Attribute)	x		
grid_mapping	(Attribute)	Polar_Stereographic		
y_CHUNKED	(Attribute)	DOUBLE, :3	meters	y coordinate of the 40-km cell centers, in projected coordinates (Source: ATBD section 3.2)
NetCDFCoordinates	(Attribute)	[3]		
data_type	(Attribute)	float64		
dimensions	(Attribute)	y		
grid_mapping	(Attribute)	Polar_Stereographic		
<b>Group: delta_h_ag1</b>				
description	(Attribute)	delta_h_ag1 group includes variables describing height difference rates, at a resolution of 40 km, between subsequent quarterly height-difference surfaces.		
Label	(Attribute)	long_name	units	description
Label	(Attribute)	standard_name		
Polar_Stereographic CONTIGUOUS	(Attribute)	None	None	None (Source: None)
GeoTransform	(Attribute)	[-1520000, 40000, 0, -520000, 0, -40000]		
crs_wkt	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS_1984",SPHEROID["WGS 84",6378137,298.257223563,AUTHORITY["EPSG":"7030"]],AUTHORITY["EPSG":"6326"]],PRIMEM["Greenwich"],AUTHORITY["EPSG":"560"],UNIT["degree",0.0175446872847,AUTHORITY["EPSG":"9122"]],AUTHORITY["EPSG":"4326"]],PROJECTION["Polar_Stereographic"],PARAMETER["latitude_of_origin",70],PARAMETER["central_meridian",-45],PARAMETER["scale_factor",1],PARAMETER["false_easting",0],PARAMETER["false_northing",0],UNIT["metre",1],AUTHORITY["EPSG":"5601"]],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG":"5413"]]		
false_easting	(Attribute)	[0]		
false_northing	(Attribute)	[0]		
grid_mapping_name	(Attribute)	polar_stereographic		
inverse_flattening	(Attribute)	[298.25722356]		
latitude_of_projection_origin	(Attribute)	[90.]		
scale_factor_at_projection_origin	(Attribute)	[1.]		
semi_major_axis	(Attribute)	[6378.137]		
semi_minor_axis	(Attribute)	[6356.752]		
spheroid_name	(Attribute)	WGS 84		
spheroid_semi	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS_1984",SPHEROID["WGS 84",6378137,298.257223563,AUTHORITY["EPSG":"7030"]],AUTHORITY["EPSG":"6326"]],PRIMEM["Greenwich"],AUTHORITY["EPSG":"560"],UNIT["degree",0.0175446872847,AUTHORITY["EPSG":"9122"]],AUTHORITY["EPSG":"4326"]],PROJECTION["Polar_Stereographic"],PARAMETER["latitude_of_origin",70],PARAMETER["central_meridian",-45],PARAMETER["scale_factor",1],PARAMETER["false_easting",0],PARAMETER["false_northing",0],UNIT["metre",1],AUTHORITY["EPSG":"5601"]],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG":"5413"]]		
standard_parallel	(Attribute)	[70.]		
straight_vertical_longitude_from_pole	(Attribute)	[45]		
delta_h_CHUNKED	(Attribute)	float, :3	meters years^-1	40x40 km average quarterly height change rate (Source: ATBD section 3.4)
NetCDFCoordinates	(Attribute)	[7 6 5]		
NetCDFDim0	(Attribute)	7		
data_type	(Attribute)	float32		
dimensions	(Attribute)	time_ag1,y,x		
grid_mapping	(Attribute)	Polar_Stereographic		
least_significant_digit	(Attribute)	4		
delta_h_sigma_CHUNKED	(Attribute)	float, :3	meters years^-1	Uncertainty in the 40x40 km average quarterly height change rate (Source: ATBD section 3.4)
NetCDFCoordinates	(Attribute)	[7 6 5]		
NetCDFDim0	(Attribute)	7		
data_type	(Attribute)	float32		
dimensions	(Attribute)	time_ag1,y,x		

grid_mapping	(Attribute)	Polar_Stereographic		
least_significant_digit	(Attribute)	4		
time	CHUNKED	DOUBLE   INVALID_RBB	yearly dt=8 time None	days since 2018-01-01
				Time for the midpoint of each quarterly height-change rate. In days since 2018-01-01T00:00:00 UTC (Source: ATBD section 4.2)
_NetCDFDimid	(Attribute)	7		
date_type	(Attribute)	float64		
dimensions	(Attribute)	time, lag1		
time_lag1	CONTINUOUS	None(1)	None None	None (Source: None)
_NetCDFDimid	(Attribute)	7		
x	CHUNKED	DOUBLE   INVALID_RBB	polar stereographic x at 40 km projection_x_coordinate	meters
				x coordinate of the 40-km cell centers, in projected coordinates (Source: ATBD section 3.2)
_NetCDFDimid	(Attribute)	8		
date_type	(Attribute)	float64		
dimensions	(Attribute)	x		
grid_mapping	(Attribute)	Polar_Stereographic		
y	CHUNKED	DOUBLE   INVALID_RBB	polar stereographic y at 40 km projection_y_coordinate	meters
				y coordinate of the 40-km cell centers, in projected coordinates (Source: ATBD section 3.2)
_NetCDFDimid	(Attribute)	9		
date_type	(Attribute)	float64		
dimensions	(Attribute)	y		
grid_mapping	(Attribute)	Polar_Stereographic		
<b>Group: nhdt_lag4</b>				
description	(Attribute)	dhdt_lag4 group includes variables describing annual height-change-rate estimates, at a resolution of 40 km.		
Label (Layout)	(Attribute)	long_name standard_name	units	description
Polar_Stereographic CONTINUOUS	(Attribute)	INTEGER_1   127	None	None (Source: None)
GeoTransform	(Attribute)	[-1520000, 40000, 0, -520000, 0, -40000]		
crs_wkt	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS 1984",SPHEROID["WGS 84",6378137,298.257222568,AUTHORITY["EPSG","70307"],AUTHORITY["EPSG","70307"],PRIMEM["Greenwich"],AUTHORITY["EPSG","9102"],UNITS["degree"],0,14302205198433,AUTHORITY["EPSG","9122"],AUTHORITY["EPSG","4326"],PROJECTION["Polar_Stereographic"],PARAMETER["latitude_of_origin",70],PARAMETER["central_meridian",-45],PARAMETER["scale_factor",1],PARAMETER["false_easting",0],PARAMETER["false_northing",0],UNITS["metre"],1,AUTHORITY["EPSG","9001"],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG","31412"]]		
false_easting	(Attribute)	0.]		
false_northing	(Attribute)	0.]		
grid_mapping_name	(Attribute)	polar_stereographic		
inverse_flattening	(Attribute)	[298.25722356]		
latitude_of_projection_origin	(Attribute)	[90.]		
scale_factor_at_projection_origin	(Attribute)	[1.]		
semi_major_axis	(Attribute)	[6378137]		
semi_minor_axis	(Attribute)	[6356752]		
spatial_spp	(Attribute)	[3413]		
spatial_ref	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS 1984",SPHEROID["WGS 84",6378137,298.257222568,AUTHORITY["EPSG","70307"],AUTHORITY["EPSG","70307"],PRIMEM["Greenwich"],AUTHORITY["EPSG","9102"],UNITS["degree"],0,14302205198433,AUTHORITY["EPSG","9122"],AUTHORITY["EPSG","4326"],PROJECTION["Polar_Stereographic"],PARAMETER["latitude_of_origin",70],PARAMETER["central_meridian",-45],PARAMETER["scale_factor",1],PARAMETER["false_easting",0],PARAMETER["false_northing",0],UNITS["metre"],1,AUTHORITY["EPSG","9001"],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG","31412"]]		
standard_parallel	(Attribute)	[70.]		
straight_vertical_longitude_from_pole	(Attribute)	[-45]		
time	CHUNKED	DOUBLE   INVALID_RBB	annual height-change rate at 40 km None	meters years^-1
				40x40 km average annual height change rate (Source: ATBD section 3.4)
_NetCDFCoordinates	(Attribute)	[10 9 8]		
_NetCDFDimid	(Attribute)	10		
date_type	(Attribute)	float32		
dimensions	(Attribute)	time, lag1,y,x		
grid_mapping	(Attribute)	Polar_Stereographic		
least_significant_digit	(Attribute)	4		
time	CHUNKED	DOUBLE   INVALID_RBB	annual height-change rate uncertainty at 40 km None	meters years^-1
				Uncertainty in the 40x40 km average annual height change rate (Source: ATBD section 3.4)
_NetCDFCoordinates	(Attribute)	[10 9 8]		
_NetCDFDimid	(Attribute)	10		
date_type	(Attribute)	float32		
dimensions	(Attribute)	time, lag1,y,x		
grid_mapping	(Attribute)	Polar_Stereographic		
least_significant_digit	(Attribute)	4		
time	CHUNKED	DOUBLE   INVALID_RBB	annual dt=8 time None	days since 2018-01-01
				Time for the midpoint of each annual height-change rate. In days since 2018-01-01T00:00:00 UTC (Source: ATBD section 4.2)
_NetCDFDimid	(Attribute)	10		
date_type	(Attribute)	float64		
dimensions	(Attribute)	time, lag4		
time_lag4	CONTINUOUS	None(8)	None None	None (Source: None)
_NetCDFDimid	(Attribute)	10		
x	CHUNKED	DOUBLE   INVALID_RBB	polar stereographic x at 40 km projection_x_coordinate	meters
				x coordinate of the 40-km cell centers, in projected coordinates (Source: ATBD section 3.2)
_NetCDFDimid	(Attribute)	8		
date_type	(Attribute)	float64		
dimensions	(Attribute)	x		
grid_mapping	(Attribute)	Polar_Stereographic		
y	CHUNKED	DOUBLE   INVALID_RBB	polar stereographic y at 40 km projection_y_coordinate	meters
				y coordinate of the 40-km cell centers, in projected coordinates (Source: ATBD section 3.2)
_NetCDFDimid	(Attribute)	9		
date_type	(Attribute)	float64		
dimensions	(Attribute)	y		
grid_mapping	(Attribute)	Polar_Stereographic		
<b>Group: nhdt_lag8</b>				
description	(Attribute)	dhdt_lag8 group includes variables describing biennial height-change-rate estimates, at a resolution of 40 km.		
Label (Layout)	(Attribute)	long_name standard_name	units	description
Polar_Stereographic CONTINUOUS	(Attribute)	INTEGER_1   127	None	None (Source: None)
GeoTransform	(Attribute)	[-1520000, 40000, 0, -520000, 0, -40000]		
crs_wkt	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS 1984",SPHEROID["WGS 84",6378137,298.257222568,AUTHORITY["EPSG","70307"],AUTHORITY["EPSG","70307"],PRIMEM["Greenwich"],AUTHORITY["EPSG","9102"],UNITS["degree"],0,14302205198433,AUTHORITY["EPSG","9122"],AUTHORITY["EPSG","4326"],PROJECTION["Polar_Stereographic"],PARAMETER["latitude_of_origin",70],PARAMETER["central_meridian",-45],PARAMETER["scale_factor",1],PARAMETER["false_easting",0],PARAMETER["false_northing",0],UNITS["metre"],1,AUTHORITY["EPSG","9001"],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG","31412"]]		
false_easting	(Attribute)	0.]		
false_northing	(Attribute)	0.]		
grid_mapping_name	(Attribute)	polar_stereographic		
inverse_flattening	(Attribute)	[298.25722356]		
latitude_of_projection_origin	(Attribute)	[90.]		
scale_factor_at_projection_origin	(Attribute)	[1.]		
semi_major_axis	(Attribute)	[6378137]		
semi_minor_axis	(Attribute)	[6356752]		
spatial_spp	(Attribute)	[3413]		
spatial_ref	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS 1984",SPHEROID["WGS 84",6378137,298.257222568,AUTHORITY["EPSG","70307"],AUTHORITY["EPSG","70307"],PRIMEM["Greenwich"],AUTHORITY["EPSG","9102"],UNITS["degree"],0,14302205198433,AUTHORITY["EPSG","9122"],AUTHORITY["EPSG","4326"],PROJECTION["Polar_Stereographic"],PARAMETER["latitude_of_origin",70],PARAMETER["central_meridian",-45],PARAMETER["scale_factor",1],PARAMETER["false_easting",0],PARAMETER["false_northing",0],UNITS["metre"],1,AUTHORITY["EPSG","9001"],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG","31412"]]		
standard_parallel	(Attribute)	[70.]		
straight_vertical_longitude_from_pole	(Attribute)	[-45]		
time	CHUNKED	DOUBLE   INVALID_RBB	biennial height-change rate at 40 km None	meters years^-1
				40x40 km average biennial height change rate (Source: ATBD section 3.4)
_NetCDFCoordinates	(Attribute)	[13 12 11]		
_NetCDFDimid	(Attribute)	13		
date_type	(Attribute)	float32		
dimensions	(Attribute)	time, lag8,y,x		
grid_mapping	(Attribute)	Polar_Stereographic		
least_significant_digit	(Attribute)	4		
time	CHUNKED	DOUBLE   INVALID_RBB	biennial height-change rate uncertainty at 40 km None	meters years^-1
				Uncertainty in the 40x40 km average biennial height change rate (Source: ATBD section 3.4)
_NetCDFCoordinates	(Attribute)	[13 12 11]		
_NetCDFDimid	(Attribute)	13		
date_type	(Attribute)	float32		

dimensions	(Attribute)	time, length, y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
label	(Attribute)	4		
label	(Attribute)			
CHUNKED	(Attribute)	INVALID_R8B		
mean	(Attribute)	days since 2018-01-01		Time for the midpoint of each biennial height-change rate, in days since 2018-01-01: 100.00.00 UTC (Source: ATBD section 4.2)
NetCDFDimid	(Attribute)	13		
datatype	(Attribute)	float64		
dimensions	(Attribute)	None(4)	None	None (Source: None)
grid_mapping	(Attribute)	Polar_Stereographic		
label	(Attribute)	13		
CHUNKED	(Attribute)	DOUBLE( ) INVALID_R8B	meters	x coordinate of the 40-km cell centers, in projected coordinates (Source: ATBD section 3.2)
NetCDFDimid	(Attribute)	11		
datatype	(Attribute)	float64		
dimensions	(Attribute)	x		
grid_mapping	(Attribute)	Polar_Stereographic		
label	(Attribute)	11		
CHUNKED	(Attribute)	DOUBLE( ) INVALID_R8B	meters	y coordinate of the 40-km cell centers, in projected coordinates (Source: ATBD section 3.2)
NetCDFDimid	(Attribute)	12		
datatype	(Attribute)	float64		
dimensions	(Attribute)	y		
grid_mapping	(Attribute)	Polar_Stereographic		
<b>Group: orbit_info</b>				
Label	(Attribute)	long_name	units	description
Label	(Attribute)	standard_name		
bounding_polygon_dmi	(Attribute)	None	None	None (Source: None)
CONTIGUOUS	(Attribute)	2.147483647		
NetCDFDimid	(Attribute)	15		
bounding_polygon_bmi	(Attribute)	None	None	None (Source: None)
CONTIGUOUS	(Attribute)	9.99999999388969e-36		
NetCDFDimid	(Attribute)	15		
bounding_polygon_bmi	(Attribute)	None	None	None (Source: None)
CONTIGUOUS	(Attribute)	9.99999999388969e-36		
NetCDFDimid	(Attribute)	15		
<b>Group: quality_assessment</b>				
Label	(Attribute)	long_name	units	description
Label	(Attribute)	standard_name		
phony_dim_1	(Attribute)	None(1)	None	None (Source: None)
CONTIGUOUS	(Attribute)	2.147483647		
NetCDFDimid	(Attribute)	14		
ca_granule_fail_reason	(Attribute)	None	None	None (Source: None)
CONTIGUOUS	(Attribute)	2.147483647		
NetCDFDimid	(Attribute)	14		
ca_granule_fail_val	(Attribute)	None	None	None (Source: None)
CONTIGUOUS	(Attribute)	2.147483647		
NetCDFDimid	(Attribute)	14		
<b>Group: file_stats</b>				
Label	(Attribute)	long_name	units	description
Label	(Attribute)	standard_name		
N_bas	(Attribute)	N_bas	counts	number of bias values solved for (Source: 4.1.2.1)
CHUNKED	(Attribute)	INVALID_HB		
NetCDFCoordinates	(Attribute)	[0 1]		
NetCDFDimid	(Attribute)	0		
datatype	(Attribute)	HEX		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
N_data	(Attribute)	N_data	counts	number of data used in fit (Source: 4.1.2.1)
CHUNKED	(Attribute)	INVALID_HB		
NetCDFCoordinates	(Attribute)	[0 1]		
NetCDFDimid	(Attribute)	0		
datatype	(Attribute)	HEX		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
Polar_Stereographic	(Attribute)	None	None	None (Source: None)
CONTIGUOUS	(Attribute)	INVALID_HB		
ors_wkt	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS 1984"],SPHEROID["WGS 84",6378137,298.257223563,AUTHORITY["EPSG":"7030"]],AUTHORITY["EPSG":"4326"]],AUTHORITY["EPSG":"7030"],PRIMEM["Greenwich"],AUTHORITY["EPSG":"7030"],UNIT["degree",0.0174532925199433,AUTHORITY["EPSG":"7030"]],UNIT["meter",1],AUTHORITY["EPSG":"7030"]],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG":"7030"]]		
false_easting	(Attribute)	[0]		
false_northing	(Attribute)	[0]		
grid_mapping_name	(Attribute)	Polar_Stereographic		
inverse_spheroid	(Attribute)	[298.257223563]		
latitude_of_projection_origin	(Attribute)	[0]		
scale_factor_at_projection_origin	(Attribute)	[1]		
semi_major_axis	(Attribute)	[6378.137]		
semi_minor_axis	(Attribute)	[6356.752]		
spatial_offset	(Attribute)	[413]		
spatial_ref	(Attribute)	PROJCS["WGS 84 / NSIDC Sea Ice Polar Stereographic North",GEOGCS["WGS 84",DATUM["WGS 1984"],SPHEROID["WGS 84",6378137,298.257223563,AUTHORITY["EPSG":"7030"]],AUTHORITY["EPSG":"4326"]],AUTHORITY["EPSG":"7030"],PRIMEM["Greenwich"],AUTHORITY["EPSG":"7030"],UNIT["degree",0.0174532925199433,AUTHORITY["EPSG":"7030"]],UNIT["meter",1],AUTHORITY["EPSG":"7030"]],AXIS["X",EAST],AXIS["Y",NORTH],AUTHORITY["EPSG":"7030"]]		
standard_parallel	(Attribute)	[70]		
straight_vertical_longitude_from_pole	(Attribute)	[-45]		
RMS_bas	(Attribute)	RMS_bas	meters	root mean of squared, scaled bias values (Source: 4.1.2.1)
CHUNKED	(Attribute)	INVALID_R8B		
NetCDFCoordinates	(Attribute)	[0 1]		
NetCDFDimid	(Attribute)	0		
datatype	(Attribute)	float32		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
RMS_d2b2d2	(Attribute)	RMS_d2b2d2	meters^-1	root mean square of the constraint equation residuals for the second spatial derivative of dD (Source: 4.1.2.1)
CHUNKED	(Attribute)	INVALID_R8B		
NetCDFCoordinates	(Attribute)	[0 1]		
NetCDFDimid	(Attribute)	0		
datatype	(Attribute)	float32		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
RMS_d2t2d2	(Attribute)	RMS_d2t2d2	meters years^2	root mean square of the constraint equation residuals for the second temporal derivative of dz (Source: 4.1.2.1)
CHUNKED	(Attribute)	INVALID_R8B		
NetCDFCoordinates	(Attribute)	[0 1]		
NetCDFDimid	(Attribute)	0		
datatype	(Attribute)	float32		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
RMS_d2z2d2	(Attribute)	RMS_d2z2d2	meters^-1 years^-1	root mean square of the constraint equation residuals for the second temporal derivative of dzdt (Source: 4.1.2.1)
CHUNKED	(Attribute)	INVALID_R8B		
NetCDFCoordinates	(Attribute)	[0 1]		
NetCDFDimid	(Attribute)	0		
datatype	(Attribute)	float32		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
RMS_data	(Attribute)	RMS_data	meters	root mean of squared, scaled data misfits (Source: 4.1.2.1)
CHUNKED	(Attribute)	INVALID_R8B		
NetCDFCoordinates	(Attribute)	[0 1]		
NetCDFDimid	(Attribute)	0		
datatype	(Attribute)	float32		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		

sigma_t	FLAATL_1	sigma_t		
CHUNKED	INVALID_R4B	None	meters years <sup>-2</sup>	weighting values for the constraint equations on the second temporal derivatives of the surface height (Source: 4.1.2.1)
_NetCDFCoordinates	(Attribute)	[0 1]		
_NetCDFDimid	(Attribute)	0		
calatypc	(Attribute)	float32		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
sigma_x0	FLAATL_1	sigma_x0		
CHUNKED	INVALID_R4B	None	meters <sup>-1</sup>	weighting values for the constraint equations on the second spatial derivatives of the DEM (Source: 4.1.2.1)
_NetCDFCoordinates	(Attribute)	[0 1]		
_NetCDFDimid	(Attribute)	0		
calatypc	(Attribute)	float32		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
sigma_x0t	FLAATL_1	sigma_x0t		
CHUNKED	INVALID_R4B	None	meters <sup>-1</sup> years <sup>-1</sup>	weighting values for the constraint equations on the second spatial derivatives of the height-change rate (Source: 4.1.2.1)
_NetCDFCoordinates	(Attribute)	[0 1]		
_NetCDFDimid	(Attribute)	0		
calatypc	(Attribute)	float32		
dimensions	(Attribute)	y, x		
grid_mapping	(Attribute)	Polar_Stereographic		
x	DOUBLE	x	meters	file-center x-coordinate, in projected coordinates (Source: 4.1.2.1)
CHUNKED	INVALID_R8B	None		
_NetCDFDimid	(Attribute)	1		
calatypc	(Attribute)	float64		
dimensions	(Attribute)	x		
grid_mapping	(Attribute)	Polar_Stereographic		
y	DOUBLE	y	meters	file-center y-coordinate, in projected coordinates (Source: 4.1.2.1)
CHUNKED	INVALID_R8B	None		
_NetCDFDimid	(Attribute)	0		
calatypc	(Attribute)	float64		
dimensions	(Attribute)	y		
grid_mapping	(Attribute)	Polar_Stereographic		