

ATL11 Product Data Dictionary

Date Generated : 2021-11-12T15:31:24

description	(Attribute)	This data set (ATL06) provides geolocated, land-ice surface heights (above the WGS 84 ellipsoid, ITRF2014 reference frame), plus ancillary parameters that can be used to interpret and assess the quality of the height estimates. The data were acquired by th
level	(Attribute)	L3B
short_name	(Attribute)	ATL11
Group: /		This data set (ATL06) provides geolocated, land-ice surface heights (above the WGS 84 ellipsoid, ITRF2014 reference frame), plus ancillary parameters that can be used to interpret and assess the quality of the height estimates. The data were acquired by th
Conventions	(Attribute)	CF-1.6
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 NASA National Snow and Ice Data Center Distributed Active Archive Center.
contributor_name	(Attribute)	Thomas E Neumann (thomas.neumann@nasa.gov), Thorsten Markus (thorsten.markus@nasa.gov), Suneel Bhardwaj (suneel.bhardwaj@nasa.gov) David W Hancock III (david.w.hancock@nasa.gov)
contributor_role	(Attribute)	Instrument Engineer, Investigator, Principle Investigator, Data Producer, Data Producer
creator_name	(Attribute)	GSFC I-SIPS > ICESat-2 Science Investigator-led Processing System
date_created	(Attribute)	2021-10-03T04:45:00.856400Z
date_type	(Attribute)	UTC
featureType	(Attribute)	trajectory
geospatial_lat_max	(Attribute)	78.57604035181319
geospatial_lat_min	(Attribute)	59.497122782214824
geospatial_lat_units	(Attribute)	degrees_north
geospatial_lon_max	(Attribute)	-101.81846623306524
geospatial_lon_min	(Attribute)	-109.80648914560003
geospatial_lon_units	(Attribute)	degrees_east
granule_type	(Attribute)	ATL11
hdfversion	(Attribute)	HDF5 1.10.3
history	(Attribute)	2021-10-03T04:45:00.859297Z
identifier_file_uuid	(Attribute)	594f5360-67a7-3e21-801a-9c526e38d78b
identifier_product_doi	(Attribute)	doi:10.5067/ATLAS/ATL11.004
identifier_product_doi_authority	(Attribute)	http://dx.doi.org
identifier_product_format_version	(Attribute)	1.0
identifier_product_type	(Attribute)	ATL11
institution	(Attribute)	National Aeronautics and Space Administration (NASA)
instrument	(Attribute)	ATLAS > Advanced Topographic Laser Altimeter System
keywords	(Attribute)	EARTH SCIENCE > CRYOSPHERE > GLACIERS/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

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)	nsidc@nsidc.org
publisher_name	(Attribute)	NSIDC DAAC > NASA National Snow and Ice Data Center Distributed Active Archive Center
publisher_url	(Attribute)	http://nsidc.org/daac/
references	(Attribute)	http://nsidc.org/data/icesat2/data.html
source	(Attribute)	Spacecraft
spatial_coverage_type	(Attribute)	Horizontal
standard_name_vocabulary	(Attribute)	CF-1.6
summary	(Attribute)	The purpose of ATL11 is to provide an IceSat-2 satellite cycle summary of heights and height changes of land-based ice and will be provided as input to ATL15 and ATL16, gridded estimates of heights and height-changes.
time_coverage_duration	(Attribute)	62774603.78586173
time_coverage_end	(Attribute)	2021-03-25T03:36:12.000000Z
time_coverage_start	(Attribute)	2019-03-29T14:12:26.000000Z
time_type	(Attribute)	CCSDS UTC-A
Group: /METADATA		ISO19115 Structured Metadata Represented within HDF5
iso_19139_dataset_xml	(Attribute)	SET_BY_META
iso_19139_series_xml	(Attribute)	SET_BY_META
Group: /METADATA/AcquisitionInformation		
Group: /METADATA/AcquisitionInformation/lidar		
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
wavelength	(Attribute)	532 nm
Group: /METADATA/AcquisitionInformation/lidarDocument		
edition	(Attribute)	Pre-Release
publicationDate	(Attribute)	12/31/17
title	(Attribute)	A document describing the ATLAS instrument will be provided by the ICESat-2 Project Science Office.
Group: /METADATA/AcquisitionInformation/platform		
description	(Attribute)	Ice, Cloud, and land Elevation Satellite-2
identifier	(Attribute)	ICESat-2
type	(Attribute)	Spacecraft
Group: /METADATA/AcquisitionInformation/platformDocument		
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, Waleed Abdalati, Kelly Brunt, Beata Csatho, Sinead Farrell, Helen Fricker, Alex Gardner, David Harding, Michael Jasinski, Ron Kwok, Lori Magruder, Dan Lubin, Scott Luthcke, James Morison, Ross Nelson, Amy Neuenschwander, Stephen Palm, Sorin Popescu, CK Shum, Bob E. Schutz, Benjamin Smith, Yuekui Yang, Jay Zwally. http://dx.doi.org/10.1016/j.rse.2016.12.029
Group: /METADATA/DataQuality		
scope	(Attribute)	NOT_SET
Group: /METADATA/DataQuality/CompletenessOmission		
evaluationMethodType	(Attribute)	directInternal
measureDescription	(Attribute)	TBD
nameOfMeasure	(Attribute)	TBD
unitofMeasure	(Attribute)	TBD
value	(Attribute)	NOT_SET
Group: /METADATA/DataQuality/DomainConsistency		
evaluationMethodType	(Attribute)	directInternal
measureDescription	(Attribute)	TBD
nameOfMeasure	(Attribute)	TBD
unitofMeasure	(Attribute)	TBD
value	(Attribute)	NOT_SET
Group: /METADATA/DatasetIdentification		
VersionID	(Attribute)	1.0
abstract	(Attribute)	The ICESat-2 ATL11 standard data product reports seasonal satellite altimetry heights of land based ice-sheets derived from each cycle including 91 orbits of IceSat-2.
characterSet	(Attribute)	utf8
creationDate	(Attribute)	2021-10-03T04:45:00.859297Z
credit	(Attribute)	The software that generates the ATL11 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)	ATL11_000503_0311_004_01.h5
language	(Attribute)	eng
originatorOrganizationName	(Attribute)	GSFC I-SIPS > ICESat-2 Science Investigator-led Processing System
purpose	(Attribute)	The purpose of ATL11 is to provide an IceSat-2 satellite cycle summary of heights and height changes of land-based ice and will be provided as input to ATL15 and ATL16, gridded estimates of heights and height-changes.
shortName	(Attribute)	ATL11
spatialRepresentationType	(Attribute)	along-track
status	(Attribute)	onGoing
topicCategory	(Attribute)	geoscientificInformation
uuid	(Attribute)	8e73b98f-0278-4335-9907-761f644d137b
Group: /METADATA/Extent		
eastBoundLongitude	(Attribute)	-101.81846623306524
northBoundLatitude	(Attribute)	78.57604035181319
rangeBeginningDateTime	(Attribute)	2019-03-29T14:12:26.007362Z

rangeEndingDateTime	(Attribute)	2021-03-25T03:35:49.793223Z
southBoundLatitude	(Attribute)	59.497122782214824
westBoundLongitude	(Attribute)	-109.80648914560003
Group: /METADATA/Lineage		
Group: /METADATA/Lineage/ANC36-11		
fileName	(Attribute)	DsESDTAtATL11.001.series.xml
shortName	(Attribute)	ANC36-11
uuid	(Attribute)	5BFCCB48-D68E-4897-92C6-389DE6A1C32B
version	(Attribute)	001
Group: /METADATA/Lineage/ANC38-11		
fileName	(Attribute)	DsESDTAtATL11.001.dataset.xml
shortName	(Attribute)	ANC38-11
uuid	(Attribute)	95BF65A6-F1E7-445E-9E94-ADD030917038
version	(Attribute)	001
Group: /METADATA/Lineage/ATL06		
description	(Attribute)	ICESat-2 ATLAS Land Ice
end_cycle	(Attribute)	SET_BY_PGE
end_geoseg	(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
shortName	(Attribute)	SET_BY_PGE
start_cycle	(Attribute)	SET_BY_PGE
start_geoseg	(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
Group: /METADATA/Lineage/Control		
control	(Attribute)	/discover/nobackup/bjolley/python/ATL11/scripts/ATL06_to_ATL11.py 5 3 --cycles 3 11 -d /discover/nobackup/bjolley/ATL06_copy/Arctic/004/cycle_*/-R 4 -V 1 -o /discover/nobackup/bjolley/ATL11_processing/Arctic_004_cycle_03_11/004 -H 1 -G /discover/nobackup/bjolley/tile_processing/tiles/Arctic/004/cycle_*/GeoIndex.h5 --verbose
description	(Attribute)	Exact command line execution of ICESat-2/ATL11 algorithm providing all of the conditions required for each individual run of the software.
shortName	(Attribute)	CNTL
version	(Attribute)	1
Group: /METADATA/ProcessStep		
Group: /METADATA/ProcessStep/Browse		
identifier	(Attribute)	SET_BY_PGE
processDescription	(Attribute)	Browse processing is performed for each granule SIPS produces. 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
stepDateTime	(Attribute)	SET_BY_PGE
Group: /METADATA/ProcessStep/Metadata		
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)	ATL11_000503_0311_004_01.h5ctl
softwareDate	(Attribute)	May 18 2021
softwareTitle	(Attribute)	Creates ATLAS XML metadata files
softwareVersion	(Attribute)	Version 4.5
stepDateTime	(Attribute)	2021-11-03T11:31:54.000000Z
Group: /METADATA/ProcessStep/PGE		
ATBDDate	(Attribute)	12/04/2019
ATBDTitle	(Attribute)	Algorithm Theoretical Basis Document (ATBD) For Land-Ice Along-Track Products Part 2: Land-ice H(t)/ATL11
ATBDVersion	(Attribute)	N/A
documentDate	(Attribute)	Feb 2020
documentation	(Attribute)	ATLAS Science Algorithm Software Design Description (SDD) - Volume 9 (atlas_l3a_is)
identifier	(Attribute)	atlas_l3b_is
processDescription	(Attribute)	Computes surface heights for each beam, along and across-track slopes calculated for beam pairs.
runTimeParameters	(Attribute)	/discover/nobackup/bjolley/python/ATL11/scripts/ATL06_to_ATL11.py 5 3 --cycles 3 11 -d /discover/nobackup/bjolley/ATL06_copy/Arctic/004/cycle_*/-R 4 -V 1 -o /discover/nobackup/bjolley/ATL11_processing/Arctic_004_cycle_03_11/004 -H 1 -G /discover/nobackup/bjolley/tile_processing/tiles/Arctic/004/cycle_*/GeoIndex.h5 --verbose
softwareDate	(Attribute)	Nov 01 2020
softwareTitle	(Attribute)	ASAS L3B Land Ice PGE
softwareVersion	(Attribute)	1.0
stepDateTime	(Attribute)	2021-10-03T04:45:00.859297Z
Group: /METADATA/ProcessStep/QA		
identifier	(Attribute)	atl11_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 data of this report are identified within the QADatasetIdentification metadata
runTimeParameters	(Attribute)	ATL11_000503_0311_004_01.h5ctl
softwareDate	(Attribute)	May 18 2021
softwareTitle	(Attribute)	ATL11 QA Utility
softwareVersion	(Attribute)	Version 1.0

stepDateTime	(Attribute)	2021-11-03T11:46:59.000000Z		
Group: /METADATA/ProductSpecificationDocument				
ShortName	(Attribute)	ATL11_SDP		
characterSet	(Attribute)	utf8		
edition	(Attribute)	v4.3		
language	(Attribute)	eng		
publicationDate	(Attribute)	Feb 2020		
title	(Attribute)	ICESat-2-SIPS-SPEC-4260 - ATLAS Science Algorithm Standard Data Product (SDP) Volume 5 (ATL06).		
Group: /METADATA/QADatasetIdentification				
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)	2021-11-03T11:46:59.000000Z		
fileName	(Attribute)	ATL11_000503_0311_004_01.h5.qa		
Group: /METADATA/SeriesIdentification				
VersionID	(Attribute)	1.0		
abstract	(Attribute)	The ICESat-2 ATL11 standard data product reports seasonal satellite altimetry heights of land based ice-sheets derived from each cycle including 91 orbits of IceSat-2.		
characterSet	(Attribute)	utf8		
credit	(Attribute)	The software that generates the ATL11 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_DOI	(Attribute)	doi:10.5067/ATLAS/ATL11.004		
language	(Attribute)	eng		
longName	(Attribute)	ATLAS/ICESat-2 L3B Annual Land Ice Height		
maintenanceAndUpdateFrequency	(Attribute)	asNeeded		
maintenanceDate	(Attribute)	SET_BY_META		
mission	(Attribute)	ICESat-2 > 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 ATL11 is to provide an IceSat-2 satellite cycle summary of heights and height changes of land-based ice and will be provided as input to ATL15 and ATL16, gridded estimates of heights and height-changes.		
resourceProviderOrganizationName	(Attribute)	National Aeronautics and Space Administration (NASA)		
revisionDate	(Attribute)	2021-11-01		
shortName	(Attribute)	ATL11		
status	(Attribute)	onGoing		
topicCategory	(Attribute)	geoscientificInformation		
Group: /ancillary_data		Contains information ancillary to the data product. This may include product characteristics, instrument characteristics and/or processing constants.		
data_rate	(Attribute)	Data within this group pertain to the granule in its entirety.		
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
atlas_sdp_gps_epoch COMPACT	DOUBLE(1)	ATLAS Epoch Offset	seconds since 1980- 01-	Number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the

		None	06T00:00:00.000000Z	ATLAS Standard Data Product (SDP) epoch (2018-01-01:T00.00.00.000000 UTC). Add this value to delta time parameters to compute full gps_seconds (relative to the GPS epoch) for each data point. (Source: Operations)
control CONTIGUOUS	STRING(1)	Control File None	1	PGE-specific control file used to generate this granule. To re-use, replace breaks (BR) with linefeeds. (Source: Operations)
data_end_utc COMPACT	STRING(1)	End UTC Time of Granule (CCSDS-A, Actual) None	1	UTC (in CCSDS-A format) of the last data point within the granule. (Source: Derived)
data_start_utc COMPACT	STRING(1)	Start UTC Time of Granule (CCSDS-A, Actual) None	1	UTC (in CCSDS-A format) of the first data point within the granule. (Source: Derived)
end_cycle COMPACT	INTEGER(1)	Ending Cycle None	1	The ending cycle number associated with the data contained within this granule. The cycle number is the counter of the number of 91-day repeat cycles completed by the mission. (Source: Derived)
end_delta_time COMPACT	DOUBLE(1)	ATLAS End Time (Actual) time	seconds since 2018-01-01	Number of GPS seconds since the ATLAS SDP epoch at the last data point in the file. The ATLAS Standard Data Products (SDP) epoch offset is defined within /ancillary_data/atlas_sdp_gps_epoch as the number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the ATLAS SDP epoch. By adding the offset contained within atlas_sdp_gps_epoch to delta time parameters, the time in gps_seconds relative to the GPS epoch can be computed. (Source: Derived)
end_geoseg COMPACT	INTEGER(1)	Ending Geolocation Segment None	1	The ending geolocation segment number associated with the data contained within this granule. ICESat granule geographic regions are further refined by geolocation segments. During the geolocation process, a geolocation segment is created approximately every 20m from the start of the orbit to the end. The geolocation segments help align the ATLAS strong a weak beams and provide a common segment length for the L2 and higher products. The geolocation segment indices differ slightly from orbit-to-orbit because of the irregular shape of the Earth. The geolocation segment indices on ATL01 and ATL02 are only approximate because beams have not been aligned at the time of their creation. (Source: Derived)
end_gpssow COMPACT	DOUBLE(1)	Ending GPS SOW of Granule (Actual) None	seconds	GPS seconds-of-week of the last data point in the granule. (Source: Derived)
end_gpsweek COMPACT	INTEGER(1)	Ending GPSWeek of Granule (Actual) None	weeks from 1980-01-06	GPS week number of the last data point in the granule. (Source: Derived)
end_orbit COMPACT	INTEGER(1)	Ending Orbit Number None	1	The ending orbit number associated with the data contained within this granule. The orbit number increments each time the spacecraft completes a full

				orbit of the Earth. (Source: Derived)
end_region COMPACT	INTEGER(1)	Ending Region None	1	The ending product-specific region number associated with the data contained within this granule. ICESat-2 data products are separated by geographic regions. The data contained within a specific region are the same for ATL01 and ATL02. ATL03 regions differ slightly because of different geolocation segment locations caused by the irregular shape of the Earth. The region indices for other products are completely independent. (Source: Derived)
end_rgt COMPACT	INTEGER(1)	Ending Reference Groundtrack None	1	The ending reference groundtrack (RGT) number associated with the data contained within this granule. There are 1387 reference groundtrack in the ICESat-2 repeat orbit. The reference groundtrack increments each time the spacecraft completes a full orbit of the Earth and resets to 1 each time the spacecraft completes a full cycle. (Source: Derived)
granule_end_utc COMPACT	STRING(1)	End UTC Time of Granule (CCSDS-A, Requested) None	1	Requested end time (in UTC CCSDS-A) of this granule. (Source: Derived)
granule_start_utc COMPACT	STRING(1)	Start UTC Time of Granule (CCSDS-A, Requested) None	1	Requested start time (in UTC CCSDS-A) of this granule. (Source: Derived)
qa_at_interval COMPACT	DOUBLE(1)	QA Along-Track Interval None	seconds/cell	Statistics time interval for along-track QA data. (Source: control)
release COMPACT	STRING(1)	Release Number None	1	Release number of the granule. The release number is incremented when the software or ancillary data used to create the granule has been changed. (Source: Operations)
start_cycle COMPACT	INTEGER(1)	Starting Cycle None	1	The starting cycle number associated with the data contained within this granule. The cycle number is the counter of the number of 91-day repeat cycles completed by the mission. (Source: Derived)
start_delta_time COMPACT	DOUBLE(1)	ATLAS Start Time (Actual) time	seconds since 2018-01-01	Number of GPS seconds since the ATLAS SDP epoch at the first data point in the file. The ATLAS Standard Data Products (SDP) epoch offset is defined within /ancillary_data/atlas_sdp_gps_epoch as the number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the ATLAS SDP epoch. By adding the offset contained within atlas_sdp_gps_epoch to delta time parameters, the time in gps_seconds relative to the GPS epoch can be computed. (Source: Derived)
start_geoseg COMPACT	INTEGER(1)	Starting Geolocation Segment None	1	The starting geolocation segment number associated with the data contained within this granule. ICESat granule geographic regions are further refined by geolocation segments. During the geolocation process, a geolocation segment is created approximately every 20m from the start of the orbit to the end. The geolocation segments help align the ATLAS strong a weak beams and provide a common segment length for the L2 and higher products. The geolocation segment indices differ slightly from orbit-

				to-orbit because of the irregular shape of the Earth. The geolocation segment indices on ATL01 and ATL02 are only approximate because beams have not been aligned at the time of their creation. (Source: Derived)
start_gpssow COMPACT	DOUBLE(1)	Start GPS SOW of Granule (Actual) None	seconds	GPS seconds-of-week of the first data point in the granule. (Source: Derived)
start_gpsweek COMPACT	INTEGER(1)	Start GPSWeek of Granule (Actual) None	weeks from 1980-01-06	GPS week number of the first data point in the granule. (Source: Derived)
start_orbit COMPACT	INTEGER(1)	Starting Orbit Number None	1	The starting orbit number associated with the data contained within this granule. The orbit number increments each time the spacecraft completes a full orbit of the Earth. (Source: Derived)
start_region COMPACT	INTEGER(1)	Starting Region None	1	The starting product-specific region number associated with the data contained within this granule. ICESat-2 data products are separated by geographic regions. The data contained within a specific region are the same for ATL01 and ATL02. ATL03 regions differ slightly because of different geolocation segment locations caused by the irregular shape of the Earth. The region indices for other products are completely independent. (Source: Derived)
start_rgt COMPACT	INTEGER(1)	Starting Reference Groundtrack None	1	The starting reference groundtrack (RGT) number associated with the data contained within this granule. There are 1387 reference groundtrack in the ICESat-2 repeat orbit. The reference groundtrack increments each time the spacecraft completes a full orbit of the Earth and resets to 1 each time the spacecraft completes a full cycle. (Source: Derived)
version COMPACT	STRING(1)	Version None	1	Version number of this granule within the release. It is a sequential number corresponding to the number of times the granule has been reprocessed for the current release. (Source: Operations)
Group: /orbit_info				
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
bounding_polygon_dim1 CHUNKED	INTEGER(:)	Polygon vertex count None	1	Polygon extent vertex count (Source: model)
bounding_polygon_lat1 CHUNKED	FLOAT(:)	Polygon vertex latitude None	degrees North	Polygon extent vertex latitude (Source: model)
bounding_polygon_lon1 CHUNKED	FLOAT(:)	Polygon vertex longitude None	degrees East	Polygon extent vertex longitude (Source: model)
crossing_time CHUNKED	DOUBLE(:) 0.0	Ascending Node Crossing Time time	seconds since 2018-01-01	The time, in seconds since the ATLAS SDP GPS Epoch, at which the ascending node crosses the equator. The ATLAS Standard Data Products (SDP) epoch offset is defined within /ancillary_data/atlas_sdp_gps_epoch as the number of GPS seconds between the GPS epoch (1980-01-

				06T00:00:00.000000Z UTC) and the ATLAS SDP epoch. By adding the offset contained within atlas_sdp_gps_epoch to delta time parameters, the time in gps_seconds relative to the GPS epoch can be computed. (Source: POD/PPD)
cycle_number CHUNKED	INTEGER_1(:) 0	Cycle Number None	counts	Tracks the number of 91-day cycles in the mission, beginning with 01. A unique orbit number can be determined by subtracting 1 from the cycle_number, multiplying by 1387 and adding the rgt value. (Source: POD/PPD)
lan CHUNKED	DOUBLE(:) 0.0	Ascending Node Longitude None	degrees_east	Longitude at the ascending node crossing. (Source: POD/PPD)
orbit_number CHUNKED	UINT_2_LE(:) 0	Orbit Number None	1	Unique identifying number for each planned ICESat-2 orbit. (Source: Operations)
rgt CHUNKED	INTEGER_2(:) 0	Reference Ground track None	counts	The reference ground track (RGT) is the track on the earth at which a specified unit vector within the observatory is pointed. Under nominal operating conditions, there will be no data collected along the RGT, as the RGT is spanned by GT2L and GT2R. During slews or off-pointing, it is possible that ground tracks may intersect the RGT. The ICESat-2 mission has 1387 RGTs. (Source: POD/PPD)
sc_orient CHUNKED	INTEGER_1(:) 0	Spacecraft Orientation None	1	This parameter tracks the spacecraft orientation between forward, backward and transitional flight modes. ICESat-2 is considered to be flying forward when the weak beams are leading the strong beams; and backward when the strong beams are leading the weak beams. ICESat-2 is considered to be in transition while it is maneuvering between the two orientations. Science quality is potentially degraded while in transition mode. (Source: POD/PPD); (Meanings: [0 1 2]) (Values: ['backward', 'forward', 'transition'])
sc_orient_time CHUNKED	DOUBLE(:) 0.0	Time of Last Spacecraft Orientation Change time	seconds since 2018-01-01	The time of the last spacecraft orientation change between forward, backward and transitional flight modes, expressed in seconds since the ATLAS SDP GPS Epoch. ICESat-2 is considered to be flying forward when the weak beams are leading the strong beams; and backward when the strong beams are leading the weak beams. ICESat-2 is considered to be in transition while it is maneuvering between the two orientations. Science quality is potentially degraded while in transition mode. The ATLAS Standard Data Products (SDP) epoch offset is defined within /ancillary_data/atlas_sdp_gps_epoch as the number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the ATLAS SDP epoch. By adding the offset contained within atlas_sdp_gps_epoch to delta time parameters, the time in gps_seconds relative to the GPS epoch can be computed. (Source: POD/PPD)
Group: /pt1				
ATL06_xover_field_list	(Attribute)	['delta_time', 'h_li', 'h_li_sigma', 'latitude', 'longitude', 'at106_quality_summary', 'segment_id', 'x_atc', 'dh_fit_dx', 'rgt', 'cycle_number', 'BP', 'LR', 'spot', 'sigma_geo_xt', 'sigma_geo_at', 'sigma_geo_h', 'dac', 'tide_ocean']		
L_search_AT	(Attribute)	60		
L_search_XT	(Attribute)	65		

N_coefs	(Attribute)	8		
N_poly_coefs	(Attribute)	8		
N_search	(Attribute)	3.0		
ReferenceGroundTrack	(Attribute)	5.0		
beam_pair	(Attribute)	1		
beam_spacing	(Attribute)	90		
equatorial_radius	(Attribute)	6378137		
first_cycle	(Attribute)	3		
last_cycle	(Attribute)	11		
max_fit_iterations	(Attribute)	20		
pair_yatc_ctr_tol	(Attribute)	1000		
polar_radius	(Attribute)	6356752.3		
poly_max_degree_AT	(Attribute)	3		
poly_max_degree_XT	(Attribute)	2		
seg_atc_spacing	(Attribute)	100		
seg_number_skip	(Attribute)	3.0		
seg_sigma_threshold_min	(Attribute)	0.05		
t_scale	(Attribute)	31557600.0		
xy_scale	(Attribute)	100.0		
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
cycle_number CHUNKED	INTEGER_1(:)	"cycle number" None	counts	"cycle number" (Source: "ATL06")
delta_time CHUNKED	DOUBLE(,:) INVALID_R8B	Elapsed GPS seconds None	seconds since 2018- 01-01	Mean number of GPS seconds since the ATLAS SDP epoch (Source: "ATL06")
h_corr CHUNKED	FLOAT(,:) INVALID_R4B	"mean corrected height" None	meters	"the mean corrected height" (Source: "derived, ATL11 algorithm")
h_corr_sigma CHUNKED	FLOAT(,:) INVALID_R4B	"mean corrected height error" None	meters	"the formal error in the corrected height" (Source: "derived, ATL11 algorithm")
h_corr_sigma_systematic CHUNKED	FLOAT(,:) INVALID_R4B	"corrected height error" None	meters	"the magnitude of all errors that might be correlated at scales larger than a single fit center (e.g. pointing errors, GPS errors, etc)" (Source: "derived, ATL11 algorithm")
latitude CHUNKED	DOUBLE(:) INVALID_R8B	"latitude" None	degrees North	"center latitude based on selected segments" (Source: "ATL06 segments")
longitude CHUNKED	DOUBLE(:) INVALID_R8B	"longitude" None	degrees East	"center longitude based on selected segments" (Source: "ATL06 segments")
quality_summary CHUNKED	INTEGER_1(,:) INVALID_I1B	"quality summary" None	1	"Summary flag: zero indicates high-quality cycles: where min_signal_selection_source <=1 and min_SNR_significance < 0.02, and ATL06_summary_zero_count >0." (Source: "derived, ATL11 algorithm")
ref_pt CHUNKED	INTEGER(:)	"reference point number" None	counts	"The reference point is the segment_id corresponding to the center of the ATL06 data used for each ATL11 point. Segment_id is counted from the equator crossing of the RGT, with one segment

				every 20m." (Source: "ATL06")
Group: /pt1/crossing_track_data				
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
along_track_rss CHUNKED	FLOAT(:) INVALID_R4B	"root sum of squared differences in crossover heights" None	meters	"Root sum of the squared differences between the heights of the endpoints for the current segment and the centers of the previous and next segments" (Source: "derived, ATL11 algorithm")
atl06_quality_summary CHUNKED	INTEGER_1(:) INVALID_I1B	"crossover quality flag" None	1	"Quality flag for the crossing data derived from ATL06. 0 indicates no problems detected, 1 indicates potential problems" (Source: "ATL06")
cycle_number CHUNKED	INTEGER_1(:) INVALID_I1B	"crossover cycle number" None	counts	"Cycle number for the crossing data" (Source: "ATL06")
dac CHUNKED	FLOAT(:) INVALID_R4B	"dynamic atmosphere correction" None	meters	"Crossing-track dynamic-atmosphere correction" (Source: "ATL06")
delta_time CHUNKED	DOUBLE(:) INVALID_R8B	Elapsed GPS seconds None	seconds since 2018-01-01	Mean number of GPS seconds since the ATLAS SDP epoch (Source: "derived, ATL11 algorithm")
h_corr CHUNKED	FLOAT(:) INVALID_R4B	"corrected height" None	meters	"WGS-84 height, corrected for the ATL11 surface shape" (Source: "derived, ATL11 algorithm")
h_corr_sigma CHUNKED	FLOAT(:) INVALID_R4B	"corrected height error" None	meters	"Error in the height estimate" (Source: "derived, ATL11 algorithm")
h_corr_sigma_systematic CHUNKED	FLOAT(:) INVALID_R4B	"corrected height error" None	meters	"Error in the height estimate" (Source: "derived, ATL11 algorithm")
latitude CHUNKED	DOUBLE(:) INVALID_R8B	"crossover latitude" None	Degrees North	"latitude of the crossover point" (Source: "derived, ATL11 algorithm")
longitude CHUNKED	DOUBLE(:) INVALID_R8B	"crossover longitude" None	Degrees East	"longitude of the crossover point" (Source: "derived, ATL11 algorithm")
ref_pt CHUNKED	INTEGER(:)	"fit center reference point number, segment_id" None	counts	"The reference-point number of the fit center for the datum track" (Source: "derived, ATL11 algorithm")
rgt CHUNKED	INTEGER(:) INVALID_I4B	"crossover reference ground track" None	counts	"The RGT number for the crossing data" (Source: "ATL06")
spot_crossing CHUNKED	INTEGER_1(:) INVALID_I1B	"crossover spot number" None	counts	"The spot number for the crossing data" (Source: "ATL06")
tide_ocean CHUNKED	FLOAT(:) INVALID_R4B	"ocean tide" None	meters	"Ocean tide estimate" (Source: "ATL06")
Group: /pt1/cycle_stats				
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description

atl06_summary_zero_count CHUNKED	INTEGER_1(,,:) INVALID_I1B	"ATL06 best quality count" None	counts	"Number of segments with ATL06_quality_summary==0 (0 indicates the best-quality data)" (Source: "ATL06")
bsnow_conf CHUNKED	INTEGER_1(,,:) INVALID_I1B	"maximum blowing snow confidence flag" None	1	"Maximum bsnow_conf flag from ATL06: indicates the greatest (among segments) confidence flag for presence of blowing snow for each cycle" (Source: "ATL06")
bsnow_h CHUNKED	FLOAT(,,:) INVALID_R4B	"weighted average blowing snow height" None	meters	"Weighted-average blowing snow layer height for each cycle" (Source: "ATL06")
cloud_flg_asr CHUNKED	INTEGER_1(,,:) INVALID_I1B	"Minimum apparent surface reflectance flag" None	1	"Minimum apparent-surface-reflectance -based cloud flag from ATL06: Flag indicates confidence that clouds with OT > 0.2 are present in the lower 3 km of the atmosphere based on ATL09" (Source: "ATL06")
cloud_flg_atm CHUNKED	INTEGER_1(,,:) INVALID_I1B	"minimum cloud flag" None	1	"Minimum cloud flag from ATL06: Flag indicates confidence that clouds with OT > 0.2 are present in the lower 3 km of the atmosphere based on ATL09" (Source: "ATL06")
dac CHUNKED	FLOAT(,,:) INVALID_R4B	"weighted average dynamic atmosphere correction" None	meters	"Weighted-average dynamic atmosphere correction for each pass" (Source: "ATL06")
h_mean CHUNKED	FLOAT(,,:) INVALID_R4B	"weighted average uncorrected surface heights" None	meters	"Weighted-average of surface heights, not including the correction for the reference surface" (Source: "ATL06")
h_rms_misfit CHUNKED	FLOAT(,,:) INVALID_R4B	"weighted average RMS fit error" None	meters	"Weighted-average RMS misfit between PE heights and along-track land-ice segment fit" (Source: "derived, ATL11 algorithm")
min_signal_selection_source CHUNKED	INTEGER_1(,,:) INVALID_I1B	"minimum signal selection source" None	1	"Minimum of the ATL06 signal_selection_source value (indicates the highest-quality segment in the cycle)" (Source: "ATL06")
min_snr_significance CHUNKED	FLOAT(,,:) INVALID_R4B	"minimum signal-noise ration significance" None	1	"Minimum of SNR_significance (indicates the quality of the best segment in the cycle)" (Source: "ATL06")
r_eff CHUNKED	FLOAT(,,:) INVALID_R4B	"weighted average reflectance" None	1	"Weighted-average effective, uncorrected reflectance for each pass." (Source: "derived, ATL11 algorithm")
seg_count CHUNKED	INTEGER(,,:) INVALID_I4B	"number valid segments" None	counts	"Number of segments marked as valid for each cycle. Equal to 0 for those cycles not included in the reference-surface shape fit." (Source: "ATL06")
sigma_geo_at CHUNKED	FLOAT(,,:) INVALID_R4B	"average horizontal x-coordinate geolocation"	meters	"Root-mean-weighted-square-average local-coordinate x horizontal geolocation error for each cycle due to PPD and POD" (Source: "ATL06")

		error" None		
sigma_geo_h CHUNKED	FLOAT(,,:) INVALID_R4B	"average vertical geolocation error" None	meters	"Root-mean-weighted-square-average total vertical geolocation error due to PPD and POD" (Source: "ATL06")
sigma_geo_xt CHUNKED	FLOAT(,,:) INVALID_R4B	"average horizontal y- coordinate geolocation error" None	meters	"Root-mean-weighted-square-average local-coordinate y horizontal geolocation error for each cycle due to PPD and POD" (Source: "ATL06")
tide_ocean CHUNKED	FLOAT(,,:) INVALID_R4B	"weighted average ocean tide" None	meters	"Weighted-average ocean tide for each pass" (Source: "ATL06")
x_atc CHUNKED	DOUBLE(,,:) INVALID_R8B	"weighted average rgt x- coordinates" None	meters	"weighted average of pair-center RGT x coordinates for each cycle " (Source: "ATL06")
y_atc CHUNKED	DOUBLE(,,:) INVALID_R8B	"weighted average rgt y- coordinates" None	meters	"weighted mean of pair-center RGT y coordinates for each cycle" (Source: "ATL06")
Group: /pt1/ref_surf				
poly_exponent_x	(Attribute)	[1 0 2 1 0 3 2 1]		
poly_exponent_y	(Attribute)	[0 1 0 1 2 0 1 2]		
slope_change_t0	(Attribute)	29548800		
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
at_slope CHUNKED	FLOAT(:) INVALID_R4B	"along-track slope" None	1	"Mean along-track component of the slope of the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
complex_surface_flag CHUNKED	INTEGER_1(:) INVALID_I1B	"complex surface flag" None	1	"0 indicates that normal fitting was attempted, 1 indicates that the signal selection algorithm rejected too many repeats, and only a linear fit was attempted" (Source: "derived, ATL11 algorithm")
curvature CHUNKED	FLOAT(:) INVALID_R4B	"curvature" None	1	"the RMS of the slope of the fit polynomial within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
deg_x CHUNKED	INTEGER_1(:) INVALID_I1B	"max-degree x polynomial" None	counts	"Maximum degree of non-zero polynomial components in x" (Source: "derived, ATL11 algorithm")
deg_y CHUNKED	INTEGER_1(:) INVALID_I1B	"max-degree y polynomial" None	counts	"Maximum degree of non-zero polynomial components in y" (Source: "derived, ATL11 algorithm")
dem_h CHUNKED	FLOAT(:) INVALID_R4B	"DEM elevation" None	meters	"DEM elevation, derived from ATL06 /gtxx/atl06_segments/dem/dem_h" (Source: "ATL06")
e_slope CHUNKED	FLOAT(:) INVALID_R4B	"east- component slope" None	1	"the mean East-component slope for the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
fit_quality CHUNKED	INTEGER_1(:) INVALID_I1B	"fit quality summary" None	1	"Indicates quality of the fit: 0: no problem identified, 1: One or more polynomial coefficients has an error of 10 or larger, 2: One or more surface slope

				components is greater than 0.02, 3: both 1 and 2" (Source: "derived, ATL11 algorithm")
geoid_h CHUNKED	FLOAT(:) INVALID_R4B	"Geoid Height" None	meters	"Geoid height above WGS-84 reference ellipsoid, derived from ATL06 /gtxx/atl06_segments/dem/geoid_h" (Source: "ATL06")
misfit_RMS CHUNKED	FLOAT(:) INVALID_R4B	"misfit RMS" None	meters	"RMS misfit for the surface-polynomial fit" (Source: "derived, ATL11 algorithm")
misfit_chi2r CHUNKED	FLOAT(:) INVALID_R4B	"misfit chi square" None	meters	"misfit chi square, divided by the number of degrees in the solution" (Source: "derived, ATL11 algorithm")
n_slope CHUNKED	FLOAT(:) INVALID_R4B	"north- component slope" None	1	"the mean North-component slope for the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
poly_coeffs CHUNKED	FLOAT(:,:) INVALID_R4B	"polynomial coefficients" None	1	"polynomial coefficients (up to degree 3), for polynomial components scaled by 100 m" (Source: "derived, ATL11 algorithm")
poly_coeffs_sigma CHUNKED	FLOAT(:,:) INVALID_R4B	"polynomial coefficients error" None	1	"formal errors for the polynomial coefficients" (Source: "derived, ATL11 algorithm")
poly_exponent_x CHUNKED	INTEGER_1(:)	"polynomial x exponents" None	counts	"exponents for the x factors in the surface polynomial" (Source: "derived, ATL11 algorithm")
poly_exponent_y CHUNKED	INTEGER_1(:)	"polynomial y exponents" None	counts	"exponents for the y factors in the surface polynomial" (Source: "derived, ATL11 algorithm")
rgt_azimuth CHUNKED	FLOAT(:) INVALID_R4B	"RGT azimuth" None	degrees	"Reference track azimuth, in degrees east of local north" (Source: "ATL06")
slope_change_rate_x CHUNKED	FLOAT(:) INVALID_R4B	"x component of slope chnage rate" None	years^-1	"rate of change of the x component of the surface slope" (Source: "derived, ATL11 algorithm")
slope_change_rate_x_sigma CHUNKED	FLOAT(:) INVALID_R4B	"error of x component slope change rate" None	years^-1	"Formal error in the rate of change of the x component of the surface slope" (Source: "derived, ATL11 algorithm")
slope_change_rate_y CHUNKED	FLOAT(:) INVALID_R4B	"y component of slope change rate" None	years^-1	"rate of change of the y component of the surface slope" (Source: "derived, ATL11 algorithm")
slope_change_rate_y_sigma CHUNKED	FLOAT(:) INVALID_R4B	"error of y component slope change rate" None	years^-1	"Formal error in the rate of change of the y component of the surface slope" (Source: "derived, ATL11 algorithm")
x_atc CHUNKED	DOUBLE(:) INVALID_R8B	"Along track distance" None	meters	"Along-track coordinate of the reference point, measured along the RGT from its first equator crossing." (Source: "ATL06")
xt_slope CHUNKED	FLOAT(:) INVALID_R4B	"across-track slope" None	1	"Mean cross-track component of the slope of the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
y_atc CHUNKED	DOUBLE(:) INVALID_R8B	"Across track distance" None	meters	"Across-track coordinate of the reference point, measured along the RGT from its first equator crossing."

		(Source: "ATL06")		
Group: /pt2				
ATL06_xover_field_list	(Attribute)	['delta_time', 'h_li', 'h_li_sigma', 'latitude', 'longitude', 'atl06_quality_summary', 'segment_id', 'x_atc', 'dh_fit_dx', 'rgt', 'cycle_number', 'BP', 'LR', 'spot', 'sigma_geo_xt', 'sigma_geo_at', 'sigma_geo_h', 'dac', 'tide_ocean']		
L_search_AT	(Attribute)	60		
L_search_XT	(Attribute)	65		
N_coefs	(Attribute)	8		
N_poly_coefs	(Attribute)	8		
N_search	(Attribute)	3.0		
ReferenceGroundTrack	(Attribute)	5.0		
beam_pair	(Attribute)	2		
beam_spacing	(Attribute)	90		
equatorial_radius	(Attribute)	6378137		
first_cycle	(Attribute)	3		
last_cycle	(Attribute)	11		
max_fit_iterations	(Attribute)	20		
pair_yatc_ctr_tol	(Attribute)	1000		
polar_radius	(Attribute)	6356752.3		
poly_max_degree_AT	(Attribute)	3		
poly_max_degree_XT	(Attribute)	2		
seg_atc_spacing	(Attribute)	100		
seg_number_skip	(Attribute)	3.0		
seg_sigma_threshold_min	(Attribute)	0.05		
t_scale	(Attribute)	31557600.0		
xy_scale	(Attribute)	100.0		
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
cycle_number CHUNKED	INTEGER_1(:) None	"cycle number" None	counts	"cycle number" (Source: "ATL06")
delta_time CHUNKED	DOUBLE(:, :) INVALID_R8B	Elapsed GPS seconds None	seconds since 2018- 01-01	Mean number of GPS seconds since the ATLAS SDP epoch (Source: "ATL06")
h_corr CHUNKED	FLOAT(:, :) INVALID_R4B	"mean corrected height" None	meters	"the mean corrected height" (Source: "derived, ATL11 algorithm")
h_corr_sigma CHUNKED	FLOAT(:, :) INVALID_R4B	"mean corrected height error" None	meters	"the formal error in the corrected height" (Source: "derived, ATL11 algorithm")
h_corr_sigma_systematic CHUNKED	FLOAT(:, :) INVALID_R4B	"corrected height error" None	meters	"the magnitude of all errors that might be correlated at scales larger than a single fit center (e.g. pointing errors, GPS errors, etc)" (Source: "derived, ATL11 algorithm")
latitude CHUNKED	DOUBLE(:) INVALID_R8B	"latitude" None	degrees North	"center latitude based on selected segments" (Source: "ATL06 segments")
longitude CHUNKED	DOUBLE(:) INVALID_R8B	"longitude" None	degrees East	"center longitude based on selected segments" (Source: "ATL06 segments")

quality_summary CHUNKED	INTEGER_1(:) INVALID_I1B	"quality summary" None	1	"Summary flag: zero indicates high-quality cycles: where min_signal_selection_source <=1 and min_SNR_significance < 0.02, and ATL06_summary_zero_count >0." (Source: "derived, ATL11 algorithm")
ref_pt CHUNKED	INTEGER(:)	"reference point number" None	counts	"The reference point is the segment_id corresponding to the center of the ATL06 data used for each ATL11 point. Segment_id is counted from the equator crossing of the RGT, with one segment every 20m." (Source: "ATL06")
Group: /pt2/crossing_track_data				
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
along_track_rss CHUNKED	FLOAT(:) INVALID_R4B	"root sum of squared differences in crossover heights" None	meters	"Root sum of the squared differences between the heights of the endpoints for the current segment and the centers of the previous and next segments" (Source: "derived, ATL11 algorithm")
atl06_quality_summary CHUNKED	INTEGER_1(:) INVALID_I1B	"crossover quality flag" None	1	"Quality flag for the crossing data derived from ATL06. 0 indicates no problems detected, 1 indicates potential problems" (Source: "ATL06")
cycle_number CHUNKED	INTEGER_1(:) INVALID_I1B	"crossover cycle number" None	counts	"Cycle number for the crossing data" (Source: "ATL06")
dac CHUNKED	FLOAT(:) INVALID_R4B	"dynamic atmosphere correction" None	meters	"Crossing-track dynamic-atmosphere correction" (Source: "ATL06")
delta_time CHUNKED	DOUBLE(:) INVALID_R8B	Elapsed GPS seconds None	seconds since 2018- 01-01	Mean number of GPS seconds since the ATLAS SDP epoch (Source: "derived, ATL11 algorithm")
h_corr CHUNKED	FLOAT(:) INVALID_R4B	"corrected height" None	meters	"WGS-84 height, corrected for the ATL11 surface shape" (Source: "derived, ATL11 algorithm")
h_corr_sigma CHUNKED	FLOAT(:) INVALID_R4B	"corrected height error" None	meters	"Error in the height estimate" (Source: "derived, ATL11 algorithm")
h_corr_sigma_systematic CHUNKED	FLOAT(:) INVALID_R4B	"corrected height error" None	meters	"Error in the height estimate" (Source: "derived, ATL11 algorithm")
latitude CHUNKED	DOUBLE(:) INVALID_R8B	"crossover latitude" None	Degrees North	"latitude of the crossover point" (Source: "derived, ATL11 algorithm")
longitude CHUNKED	DOUBLE(:) INVALID_R8B	"crossover longitude" None	Degrees East	"longitude of the crossover point" (Source: "derived, ATL11 algorithm")
ref_pt CHUNKED	INTEGER(:)	"fit center reference point number, segment_id" None	counts	"The reference-point number of the fit center for the datum track" (Source: "derived, ATL11 algorithm")
rgt CHUNKED	INTEGER(:) INVALID_I4B	"crossover reference ground track" None	counts	"The RGT number for the crossing data" (Source: "ATL06")
spot_crossing	INTEGER_1(:)	"crossover spot	counts	"The spot number for the crossing data"

CHUNKED	INVALID_I1B	number" None		(Source: "ATL06")
tide_ocean CHUNKED	FLOAT(:) INVALID_R4B	"ocean tide" None	meters	"Ocean tide estimate" (Source: "ATL06")
Group: /pt2/cycle_stats				
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
atl06_summary_zero_count CHUNKED	INTEGER_1(:,) INVALID_I1B	"ATL06 best quality count" None	counts	"Number of segments with ATL06_quality_summary==0 (0 indicates the best- quality data)" (Source: "ATL06")
bsnow_conf CHUNKED	INTEGER_1(:,) INVALID_I1B	"maximum blowing snow confidence flag" None	1	"Maximum bsnow_conf flag from ATL06: indicates the greatest (among segments) confidence flag for presence of blowing snow for each cycle" (Source: "ATL06")
bsnow_h CHUNKED	FLOAT(:,) INVALID_R4B	"weighted average blowing snow height" None	meters	"Weighted-average blowing snow layer height for each cycle" (Source: "ATL06")
cloud_flg_asr CHUNKED	INTEGER_1(:,) INVALID_I1B	"Minimum apparent surface reflectance flag" None	1	"Minimum apparent-surface-reflectance -based cloud flag from ATL06: Flag indicates confidence that clouds with OT > 0.2 are present in the lower 3 km of the atmosphere based on ATL09" (Source: "ATL06")
cloud_flg_atm CHUNKED	INTEGER_1(:,) INVALID_I1B	"minimum cloud flag" None	1	"Minimum cloud flag from ATL06: Flag indicates confidence that clouds with OT > 0.2 are present in the lower 3 km of the atmosphere based on ATL09" (Source: "ATL06")
dac CHUNKED	FLOAT(:,) INVALID_R4B	"weighted average dynamic atmosphere correction" None	meters	"Weighted-average dynamic atmosphere correction for each pass" (Source: "ATL06")
h_mean CHUNKED	FLOAT(:,) INVALID_R4B	"weighted average uncorrected surface heights" None	meters	"Weighted-average of surface heights, not including the correction for the reference surface" (Source: "ATL06")
h_rms_misfit CHUNKED	FLOAT(:,) INVALID_R4B	"weighted average RMS fit error" None	meters	"Weighted-average RMS misfit between PE heights and along-track land-ice segment fit" (Source: "derived, ATL11 algorithm")
min_signal_selection_source CHUNKED	INTEGER_1(:,) INVALID_I1B	"minimum signal selection source" None	1	"Minimum of the ATL06 signal_selection_source value (indicates the highest-quality segment in the cycle)" (Source: "ATL06")
min_snr_significance CHUNKED	FLOAT(:,) INVALID_R4B	"minumum signal-noise ration significance" None	1	"Minimum of SNR_significance (indicates the quality of the best segment in the cycle)" (Source: "ATL06")
r_eff CHUNKED	FLOAT(:,) INVALID_R4B	"weighted average reflectance" None	1	"Weighted-average effective, uncorrected reflectance for each pass." (Source: "derived, ATL11 algorithm")

seg_count CHUNKED	INTEGER(,;) INVALID_I4B	"number valid segments" None	counts	"Number of segments marked as valid for each cycle. Equal to 0 for those cycles not included in the reference-surface shape fit." (Source: "ATL06")
sigma_geo_at CHUNKED	FLOAT(,;) INVALID_R4B	"average horizontal x-coordinate geolocation error" None	meters	"Root-mean-weighted-square-average local-coordinate x horizontal geolocation error for each cycle due to PPD and POD" (Source: "ATL06")
sigma_geo_h CHUNKED	FLOAT(,;) INVALID_R4B	"average vertical geolocation error" None	meters	"Root-mean-weighted-square-average total vertical geolocation error due to PPD and POD" (Source: "ATL06")
sigma_geo_xt CHUNKED	FLOAT(,;) INVALID_R4B	"average horizontal y-coordinate geolocation error" None	meters	"Root-mean-weighted-square-average local-coordinate y horizontal geolocation error for each cycle due to PPD and POD" (Source: "ATL06")
tide_ocean CHUNKED	FLOAT(,;) INVALID_R4B	"weighted average ocean tide" None	meters	"Weighted-average ocean tide for each pass" (Source: "ATL06")
x_atc CHUNKED	DOUBLE(,;) INVALID_R8B	"weighted average rgt x-coordinates" None	meters	"weighted average of pair-center RGT x coordinates for each cycle " (Source: "ATL06")
y_atc CHUNKED	DOUBLE(,;) INVALID_R8B	"weighted average rgt y-coordinates" None	meters	"weighted mean of pair-center RGT y coordinates for each cycle" (Source: "ATL06")
Group: /pt2/ref_surf				
poly_exponent_x	(Attribute)	[1 0 2 1 0 3 2 1]		
poly_exponent_y	(Attribute)	[0 1 0 1 2 0 1 2]		
slope_change_t0	(Attribute)	29548800		
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
at_slope CHUNKED	FLOAT(,) INVALID_R4B	"along-track slope" None	1	"Mean along-track component of the slope of the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
complex_surface_flag CHUNKED	INTEGER_1(,) INVALID_I1B	"complex surface flag" None	1	"0 indicates that normal fitting was attempted, 1 indicates that the signal selection algorithm rejected too many repeats, and only a linear fit was attempted" (Source: "derived, ATL11 algorithm")
curvature CHUNKED	FLOAT(,) INVALID_R4B	"curvature" None	1	"the RMS of the slope of the fit polynomial within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
deg_x CHUNKED	INTEGER_1(,) INVALID_I1B	"max-degree x polynomial" None	counts	"Maximum degree of non-zero polynomial components in x" (Source: "derived, ATL11 algorithm")
deg_y CHUNKED	INTEGER_1(,) INVALID_I1B	"max-degree y polynomial" None	counts	"Maximum degree of non-zero polynomial components in y" (Source: "derived, ATL11 algorithm")
dem_h CHUNKED	FLOAT(,) INVALID_R4B	"DEM elevation"	meters	"DEM elevation, derived from ATL06 /gtxx/atl06_segments/dem/dem_h"

		None		(Source: "ATL06")
e_slope CHUNKED	FLOAT(:) INVALID_R4B	"east- component slope" None	1	"the mean East-component slope for the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
fit_quality CHUNKED	INTEGER_1(:) INVALID_I1B	"fit quality summary" None	1	"Indicates quality of the fit: 0: no problem identified, 1: One or more polynomial coefficients has an error of 10 or larger, 2: One or more surface slope components is greater than 0.02, 3: both 1 and 2" (Source: "derived, ATL11 algorithm")
geoid_h CHUNKED	FLOAT(:) INVALID_R4B	"Geoid Height" None	meters	"Geoid height above WGS-84 reference ellipsoid, derived from ATL06 /gtxx/atl06_segments/dem/geoid_h" (Source: "ATL06")
misfit_RMS CHUNKED	FLOAT(:) INVALID_R4B	"misfit RMS" None	meters	"RMS misfit for the surface-polynomial fit" (Source: "derived, ATL11 algorithm")
misfit_chi2r CHUNKED	FLOAT(:) INVALID_R4B	"misfit chi square" None	meters	"misfit chi square, divided by the number of degrees in the solution" (Source: "derived, ATL11 algorithm")
n_slope CHUNKED	FLOAT(:) INVALID_R4B	"north- component slope" None	1	"the mean North-component slope for the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
poly_coefs CHUNKED	FLOAT(,:) INVALID_R4B	"polynomial coefficients" None	1	"polynomial coefficients (up to degree 3), for polynomial components scaled by 100 m" (Source: "derived, ATL11 algorithm")
poly_coefs_sigma CHUNKED	FLOAT(,:) INVALID_R4B	"polynomial coefficients error" None	1	"formal errors for the polynomial coefficients" (Source: "derived, ATL11 algorithm")
poly_exponent_x CHUNKED	INTEGER_1(:)	"polynomial x exponents" None	counts	"exponents for the x factors in the surface polynomial" (Source: "derived, ATL11 algorithm")
poly_exponent_y CHUNKED	INTEGER_1(:)	"polynomial y exponents" None	counts	"exponents for the y factors in the surface polynomial" (Source: "derived, ATL11 algorithm")
rgt_azimuth CHUNKED	FLOAT(:) INVALID_R4B	"RGT azimuth" None	degrees	"Reference track azimuth, in degrees east of local north" (Source: "ATL06")
slope_change_rate_x CHUNKED	FLOAT(:) INVALID_R4B	"x component of slope chnage rate" None	years^-1	"rate of change of the x component of the surface slope" (Source: "derived, ATL11 algorithm")
slope_change_rate_x_sigma CHUNKED	FLOAT(:) INVALID_R4B	"error of x component slope change rate" None	years^-1	"Formal error in the rate of change of the x component of the surface slope" (Source: "derived, ATL11 algorithm")
slope_change_rate_y CHUNKED	FLOAT(:) INVALID_R4B	"y component of slope change rate" None	years^-1	"rate of change of the y component of the surface slope" (Source: "derived, ATL11 algorithm")
slope_change_rate_y_sigma CHUNKED	FLOAT(:) INVALID_R4B	"error of y component slope change rate" None	years^-1	"Formal error in the rate of change of the y component of the surface slope" (Source: "derived, ATL11 algorithm")
x_atc CHUNKED	DOUBLE(:) INVALID_R8B	"Along track distance"	meters	"Along-track coordinate of the reference point, measured along the RGT from its first equator

		None		crossing." (Source: "ATL06")
xt_slope CHUNKED	FLOAT(:) INVALID_R4B	"across-track slope" None	1	"Mean cross-track component of the slope of the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
y_atc CHUNKED	DOUBLE(:) INVALID_R8B	"Across track distance" None	meters	"Across-track coordinate of the reference point, measured along the RGT from its first equator crossing." (Source: "ATL06")
Group: /pt3				
ATL06_xover_field_list	(Attribute)	['delta_time', 'h_li', 'h_li_sigma', 'latitude', 'longitude', 'atl06_quality_summary', 'segment_id', 'x_atc', 'dh_fit_dx', 'rgt', 'cycle_number', 'BP', 'LR', 'spot', 'sigma_geo_xt', 'sigma_geo_at', 'sigma_geo_h', 'dac', 'tide_ocean']		
L_search_AT	(Attribute)	60		
L_search_XT	(Attribute)	65		
N_coefs	(Attribute)	8		
N_poly_coefs	(Attribute)	8		
N_search	(Attribute)	3.0		
ReferenceGroundTrack	(Attribute)	5.0		
beam_pair	(Attribute)	3		
beam_spacing	(Attribute)	90		
equatorial_radius	(Attribute)	6378137		
first_cycle	(Attribute)	3		
last_cycle	(Attribute)	11		
max_fit_iterations	(Attribute)	20		
pair_yatc_ctr_tol	(Attribute)	1000		
polar_radius	(Attribute)	6356752.3		
poly_max_degree_AT	(Attribute)	3		
poly_max_degree_XT	(Attribute)	2		
seg_atc_spacing	(Attribute)	100		
seg_number_skip	(Attribute)	3.0		
seg_sigma_threshold_min	(Attribute)	0.05		
t_scale	(Attribute)	31557600.0		
xy_scale	(Attribute)	100.0		
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
cycle_number CHUNKED	INTEGER_1(:)	"cycle number" None	counts	"cycle number" (Source: "ATL06")
delta_time CHUNKED	DOUBLE(,:) INVALID_R8B	Elapsed GPS seconds None	seconds since 2018- 01-01	Mean number of GPS seconds since the ATLAS SDP epoch (Source: "ATL06")
h_corr CHUNKED	FLOAT(,:) INVALID_R4B	"mean corrected height" None	meters	"the mean corrected height" (Source: "derived, ATL11 algorithm")
h_corr_sigma CHUNKED	FLOAT(,:) INVALID_R4B	"mean corrected height error" None	meters	"the formal error in the corrected height" (Source: "derived, ATL11 algorithm")

h_corr_sigma_systematic CHUNKED	FLOAT(,:) INVALID_R4B	"corrected height error" None	meters	"the magnitude of all errors that might be correlated at scales larger than a single fit center (e.g. pointing errors, GPS errors, etc)" (Source: "derived, ATL11 algorithm")
latitude CHUNKED	DOUBLE(,:) INVALID_R8B	"latitude" None	degrees North	"center latitude based on selected segments" (Source: "ATL06 segments")
longitude CHUNKED	DOUBLE(,:) INVALID_R8B	"longitude" None	degrees East	"center longitude based on selected segments" (Source: "ATL06 segments")
quality_summary CHUNKED	INTEGER_1(,:) INVALID_I1B	"quality summary" None	1	"Summary flag: zero indicates high-quality cycles: where min_signal_selection_source <=1 and min_SNR_significance < 0.02, and ATL06_summary_zero_count >0." (Source: "derived, ATL11 algorithm")
ref_pt CHUNKED	INTEGER(:	"reference point number" None	counts	"The reference point is the segment_id corresponding to the center of the ATL06 data used for each ATL11 point. Segment_id is counted from the equator crossing of the RGT, with one segment every 20m." (Source: "ATL06")
Group: /pt3/crossing_track_data				
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
along_track_rss CHUNKED	FLOAT(:	"root sum of squared differences in crossover heights" None	meters	"Root sum of the squared differences between the heights of the endpoints for the current segment and the centers of the previous and next segments" (Source: "derived, ATL11 algorithm")
atl06_quality_summary CHUNKED	INTEGER_1(:	"crossover quality flag" None	1	"Quality flag for the crossing data derived from ATL06. 0 indicates no problems detected, 1 indicates potential problems" (Source: "ATL06")
cycle_number CHUNKED	INTEGER_1(:	"crossover cycle number" None	counts	"Cycle number for the crossing data" (Source: "ATL06")
dac CHUNKED	FLOAT(:	"dynamic atmosphere correction" None	meters	"Crossing-track dynamic-atmosphere correction" (Source: "ATL06")
delta_time CHUNKED	DOUBLE(:	Elapsed GPS seconds None	seconds since 2018- 01-01	Mean number of GPS seconds since the ATLAS SDP epoch (Source: "derived, ATL11 algorithm")
h_corr CHUNKED	FLOAT(:	"corrected height" None	meters	"WGS-84 height, corrected for the ATL11 surface shape" (Source: "derived, ATL11 algorithm")
h_corr_sigma CHUNKED	FLOAT(:	"corrected height error" None	meters	"Error in the height estimate" (Source: "derived, ATL11 algorithm")
h_corr_sigma_systematic CHUNKED	FLOAT(:	"corrected height error" None	meters	"Error in the height estimate" (Source: "derived, ATL11 algorithm")
latitude CHUNKED	DOUBLE(:	"crossover latitude" None	Degrees North	"latitude of the crossover point" (Source: "derived, ATL11 algorithm")
longitude CHUNKED	DOUBLE(:	"crossover longitude" None	Degrees East	"longitude of the crossover point" (Source: "derived, ATL11 algorithm")
ref_pt	INTEGER(:	"fit center	counts	"The reference-point number of the fit center for the

CHUNKED		reference point number, segment_id" None		datum track" (Source: "derived, ATL11 algorithm")
rgt CHUNKED	INTEGER(:) INVALID_I4B	"crossover reference ground track" None	counts	"The RGT number for the crossing data" (Source: "ATL06")
spot_crossing CHUNKED	INTEGER_1(:) INVALID_I1B	"crossover spot number" None	counts	"The spot number for the crossing data" (Source: "ATL06")
tide_ocean CHUNKED	FLOAT(:) INVALID_R4B	"ocean tide" None	meters	"Ocean tide estimate" (Source: "ATL06")
Group: /pt3/cycle_stats				
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
atl06_summary_zero_count CHUNKED	INTEGER_1(:,:) INVALID_I1B	"ATL06 best quality count" None	counts	"Number of segments with ATL06_quality_summary==0 (0 indicates the best-quality data)" (Source: "ATL06")
bsnow_conf CHUNKED	INTEGER_1(:,:) INVALID_I1B	"maximum blowing snow confidence flag" None	1	"Maximum bsnow_conf flag from ATL06: indicates the greatest (among segments) confidence flag for presence of blowing snow for each cycle" (Source: "ATL06")
bsnow_h CHUNKED	FLOAT(:,:) INVALID_R4B	"weighted average blowing snow height" None	meters	"Weighted-average blowing snow layer height for each cycle" (Source: "ATL06")
cloud_flg_asr CHUNKED	INTEGER_1(:,:) INVALID_I1B	"Minimum apparent surface reflectance flag" None	1	"Minimum apparent-surface-reflectance-based cloud flag from ATL06: Flag indicates confidence that clouds with OT > 0.2 are present in the lower 3 km of the atmosphere based on ATL09" (Source: "ATL06")
cloud_flg_atm CHUNKED	INTEGER_1(:,:) INVALID_I1B	"minimum cloud flag" None	1	"Minimum cloud flag from ATL06: Flag indicates confidence that clouds with OT > 0.2 are present in the lower 3 km of the atmosphere based on ATL09" (Source: "ATL06")
dac CHUNKED	FLOAT(:,:) INVALID_R4B	"weighted average dynamic atmosphere correction" None	meters	"Weighted-average dynamic atmosphere correction for each pass" (Source: "ATL06")
h_mean CHUNKED	FLOAT(:,:) INVALID_R4B	"weighted average uncorrected surface heights" None	meters	"Weighted-average of surface heights, not including the correction for the reference surface" (Source: "ATL06")
h_rms_misfit CHUNKED	FLOAT(:,:) INVALID_R4B	"weighted average RMS fit error" None	meters	"Weighted-average RMS misfit between PE heights and along-track land-ice segment fit" (Source: "derived, ATL11 algorithm")
min_signal_selection_source CHUNKED	INTEGER_1(:,:) INVALID_I1B	"minimum signal selection source" None	1	"Minimum of the ATL06 signal_selection_source value (indicates the highest-quality segment in the cycle)" (Source: "ATL06")

min_snr_significance CHUNKED	FLOAT(;;) INVALID_R4B	"minimum signal-noise ration significance" None	1	"Minimum of SNR_significance (indicates the quality of the best segment in the cycle)" (Source: "ATL06")
r_eff CHUNKED	FLOAT(;;) INVALID_R4B	"weighted average reflectance" None	1	"Weighted-average effective, uncorrected reflectance for each pass." (Source: "derived, ATL11 algorithm")
seg_count CHUNKED	INTEGER(;;) INVALID_I4B	"number valid segments" None	counts	"Number of segments marked as valid for each cycle. Equal to 0 for those cycles not included in the reference-surface shape fit." (Source: "ATL06")
sigma_geo_at CHUNKED	FLOAT(;;) INVALID_R4B	"average horizontal x- coordinate geolocation error" None	meters	"Root-mean-weighted-square-average local-coordinate x horizontal geolocation error for each cycle due to PPD and POD" (Source: "ATL06")
sigma_geo_h CHUNKED	FLOAT(;;) INVALID_R4B	"average vertical geolocation error" None	meters	"Root-mean-weighted-square-average total vertical geolocation error due to PPD and POD" (Source: "ATL06")
sigma_geo_xt CHUNKED	FLOAT(;;) INVALID_R4B	"average horizontal y- coordinate geolocation error" None	meters	"Root-mean-weighted-square-average local-coordinate y horizontal geolocation error for each cycle due to PPD and POD" (Source: "ATL06")
tide_ocean CHUNKED	FLOAT(;;) INVALID_R4B	"weighted average ocean tide" None	meters	"Weighted-average ocean tide for each pass" (Source: "ATL06")
x_atc CHUNKED	DOUBLE(;;) INVALID_R8B	"weighted average rgt x- coordinates" None	meters	"weighted average of pair-center RGT x coordinates for each cycle " (Source: "ATL06")
y_atc CHUNKED	DOUBLE(;;) INVALID_R8B	"weighted average rgt y- coordinates" None	meters	"weighted mean of pair-center RGT y coordinates for each cycle" (Source: "ATL06")
Group: /pt3/ref_surf				
poly_exponent_x	(Attribute)	[1 0 2 1 0 3 2 1]		
poly_exponent_y	(Attribute)	[0 1 0 1 2 0 1 2]		
slope_change_t0	(Attribute)	29548800		
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
at_slope CHUNKED	FLOAT(:) INVALID_R4B	"along-track slope" None	1	"Mean along-track component of the slope of the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
complex_surface_flag CHUNKED	INTEGER_1(:) INVALID_I1B	"complex surface flag" None	1	"0 indicates that normal fitting was attempted, 1 indicates that the signal selection algorithm rejected too many repeats, and only a linear fit was attempted" (Source: "derived, ATL11 algorithm")
curvature CHUNKED	FLOAT(:) INVALID_R4B	"curvature" None	1	"the RMS of the slope of the fit polynomial within 50 m of the fit center" (Source: "derived, ATL11 algorithm")

deg_x CHUNKED	INTEGER_1(:) INVALID_I1B	"max-degree x polynomial" None	counts	"Maximum degree of non-zero polynomial components in x" (Source: "derived, ATL11 algorithm")
deg_y CHUNKED	INTEGER_1(:) INVALID_I1B	"max-degree y polynomial" None	counts	"Maximum degree of non-zero polynomial components in y" (Source: "derived, ATL11 algorithm")
dem_h CHUNKED	FLOAT(:) INVALID_R4B	"DEM elevation" None	meters	"DEM elevation, derived from ATL06 /gtxx/atl06_segments/dem/dem_h" (Source: "ATL06")
e_slope CHUNKED	FLOAT(:) INVALID_R4B	"east- component slope" None	1	"the mean East-component slope for the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
fit_quality CHUNKED	INTEGER_1(:) INVALID_I1B	"fit quality summary" None	1	"Indicates quality of the fit: 0: no problem identified, 1: One or more polynomial coefficients has an error of 10 or larger, 2: One or more surface slope components is greater than 0.02, 3: both 1 and 2" (Source: "derived, ATL11 algorithm")
geoid_h CHUNKED	FLOAT(:) INVALID_R4B	"Geoid Height" None	meters	"Geoid height above WGS-84 reference ellipsoid, derived from ATL06 /gtxx/atl06_segments/dem/geoid_h" (Source: "ATL06")
misfit_RMS CHUNKED	FLOAT(:) INVALID_R4B	"misfit RMS" None	meters	"RMS misfit for the surface-polynomial fit" (Source: "derived, ATL11 algorithm")
misfit_chi2r CHUNKED	FLOAT(:) INVALID_R4B	"misfit chi square" None	meters	"misfit chi square, divided by the number of degrees in the solution" (Source: "derived, ATL11 algorithm")
n_slope CHUNKED	FLOAT(:) INVALID_R4B	"north- component slope" None	1	"the mean North-component slope for the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
poly_coefs CHUNKED	FLOAT(:, :) INVALID_R4B	"polynomial coefficients" None	1	"polynomial coefficients (up to degree 3), for polynomial components scaled by 100 m" (Source: "derived, ATL11 algorithm")
poly_coefs_sigma CHUNKED	FLOAT(:, :) INVALID_R4B	"polynomial coefficients error" None	1	"formal errors for the polynomial coefficients" (Source: "derived, ATL11 algorithm")
poly_exponent_x CHUNKED	INTEGER_1(:)	"polynomial x exponents" None	counts	"exponents for the x factors in the surface polynomial" (Source: "derived, ATL11 algorithm")
poly_exponent_y CHUNKED	INTEGER_1(:)	"polynomial y exponents" None	counts	"exponents for the y factors in the surface polynomial" (Source: "derived, ATL11 algorithm")
rgt_azimuth CHUNKED	FLOAT(:) INVALID_R4B	"RGT azimuth" None	degrees	"Reference track azimuth, in degrees east of local north" (Source: "ATL06")
slope_change_rate_x CHUNKED	FLOAT(:) INVALID_R4B	"x component of slope chnage rate" None	years ⁻¹	"rate of change of the x component of the surface slope" (Source: "derived, ATL11 algorithm")
slope_change_rate_x_sigma CHUNKED	FLOAT(:) INVALID_R4B	"error of x component slope change rate" None	years ⁻¹	"Formal error in the rate of change of the x component of the surface slope" (Source: "derived, ATL11 algorithm")
slope_change_rate_y CHUNKED	FLOAT(:) INVALID_R4B	"y component of slope"	years ⁻¹	"rate of change of the y component of the surface slope"

		change rate" None		(Source: "derived, ATL11 algorithm")
slope_change_rate_y_sigma CHUNKED	FLOAT(:) INVALID_R4B	"error of y component slope change rate" None	years^-1	"Formal error in the rate of change of the y component of the surface slope" (Source: "derived, ATL11 algorithm")
x_atc CHUNKED	DOUBLE(:) INVALID_R8B	"Along track distance" None	meters	"Along-track coordinate of the reference point, measured along the RGT from its first equator crossing." (Source: "ATL06")
xt_slope CHUNKED	FLOAT(:) INVALID_R4B	"across-track slope" None	1	"Mean cross-track component of the slope of the reference surface within 50 m of the fit center" (Source: "derived, ATL11 algorithm")
y_atc CHUNKED	DOUBLE(:) INVALID_R8B	"Across track distance" None	meters	"Across-track coordinate of the reference point, measured along the RGT from its first equator crossing." (Source: "ATL06")
Group: /quality_assessment				
Label (Layout)	Datatype(Dims) Fillvalue	long_name standard_name	units	description
qa_granule_fail_reason COMPACT	INTEGER(1)	Granule Failure Reason None	1	Flag indicating granule failure reason. 0=no failure; 1=processing error; 2=Insufficient output data was generated; 3=TBD Failure; 4=TBD_Failure; 5=other failure. (Source: Operations); (Meanings: [0 1 2 3 4 5]) (Values: ['no_failure', 'PROCESS_ERROR', 'INSUFFICIENT_OUTPUT', 'failure_3', 'failure_4', 'OTHER_FAILURE'])
qa_granule_pass_fail COMPACT	INTEGER(1)	Granule Pass Flag None	1	Flag indicating granule quality. 0=granule passes automatic QA. 1=granule fails automatic QA. (Source: Operations); (Meanings: [0 1]) (Values: ['PASS', 'FAIL'])