ATL07 Product Data Dictionary

Date Generated : 2019-07-23T20:30:09.000000Z
Product Type: ATL07, Format Version : SET_BY_PGE

Group: /		
Conventions	(Attribute)	CF-1.6
citation	(Attribute)	SET_BY_META
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)	SET_BY_META
date_created	(Attribute)	SET_BY_PGE
date_type	(Attribute)	UTC
description	(Attribute)	The data set (ATL07) contains along-track heights for sea ice and open water leads (at varying length scales) relative to the WGS84 ellipsoid (ITRF2014 reference frame) after adjustment for geoidal and tidal variations, and inverted barometer effects. Heig
featureType	(Attribute)	trajectory
geospatial_lat_max	(Attribute)	0.0000000000000000
geospatial_lat_min	(Attribute)	0.0000000000000000
geospatial_lat_units	(Attribute)	degrees_north
geospatial_lon_max	(Attribute)	0.0000000000000000
geospatial_lon_min	(Attribute)	0.0000000000000000
geospatial_lon_units	(Attribute)	degrees_east
granule_type	(Attribute)	ATL07
hdfversion	(Attribute)	SET_BY_PGE
history	(Attribute)	SET_BY_PGE
identifier_product_doi	(Attribute)	10.5067/ATLAS/ATL07.001
identifier_product_doi_authority	(Attribute)	http://dx.doi.org
identifier_product_format_version	(Attribute)	SET_BY_PGE
identifier_product_type	(Attribute)	ATL07
institution	(Attribute)	SET_BY_META
instrument	(Attribute)	SET_BY_META
keywords	(Attribute)	SET_BY_META
keywords_vocabulary	(Attribute)	SET_BY_META
level	(Attribute)	3A
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)	SET_BY_META
processing_level	(Attribute)	L3A
project	(Attribute)	SET_BY_META
publisher_email	(Attribute)	SET_BY_META
publisher_name	(Attribute)	SET_BY_META
publisher_url	(Attribute)	SET_BY_META
references	(Attribute)	SET_BY_META
short_name	(Attribute)	ATL07
source	(Attribute)	SET_BY_META
spatial_coverage_type	(Attribute)	Horizontal
standard_name_vocabulary	(Attribute)	CF-1.6
summary	(Attribute)	SET_BY_META
time_coverage_duration	(Attribute)	SET_BY_PGE
time_coverage_end	(Attribute)	SET_BY_PGE
time_coverage_start	(Attribute)	SET_BY_PGE

time_type	(Attribute)	CCSDS UTC-A		
title	(Attribute)	SET_BY_META		
Group: /ancillary_data				
Description	(Attribute)	Contains information ancillary to the data product. This may include product characteristics, instrument characteristics and/or processing constants.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
atlas_sdp_gps_epoch (Compact Dataset)	DOUBLE (1)	ATLAS Epoch Offset (not_set)	seconds since 1980-01-06T00:00:00.000000Z Operations	Number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the 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.
control (Contiguous Dataset)	STRING:100000 (1)	Control File (not_set)	1 Operations	PGE-specific control file used to generate this granule. To re-use, replace breaks (BR) with linefeeds.
data_end_utc (Compact Dataset)	STRING:27 (1)	End UTC Time of Granule (CCSDS-A, Actual) (not_set)	1 Derived	UTC (in CCSDS-A format) of the last data point within the granule.
data_start_utc (Compact Dataset)	STRING:27 (1)	Start UTC Time of Granule (CCSDS-A, Actual) (not_set)	1 Derived	UTC (in CCSDS-A format) of the first data point within the granule.
end_cycle (Compact Dataset)	INTEGER_4 (1)	Ending Cycle (not_set)	1 Derived	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.
end_delta_time (Compact Dataset)	DOUBLE (1)	ATLAS End Time (Actual) (time)	seconds since 2018-01-01 Derived	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.
end_geoseg (Compact Dataset)	INTEGER_4 (1)	Ending Geolocation Segment (not_set)	1 Derived	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.
end_gpssow (Compact Dataset)	DOUBLE (1)	Ending GPS SOW of Granule (Actual) (not_set)	seconds Derived	GPS seconds-of-week of the last data point in the granule.
end_gpsweek (Compact Dataset)	INTEGER_4 (1)	Ending GPSWeek of Granule (Actual) (not_set)	weeks from 1980-01-06 Derived	GPS week number of the last data point in the granule.
end_orbit (Compact Dataset)	INTEGER_4 (1)	Ending Orbit Number (not_set)	1 Derived	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.
end_region (Compact Dataset)	INTEGER_4 (1)	Ending Region (not_set)	1 Derived	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.
end_rgt (Compact Dataset)	INTEGER_4 (1)	Ending Reference Groundtrack (not_set)	1 Derived	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.
granule_end_utc (Compact Dataset)	STRING:27 (1)	End UTC Time of Granule (CCSDS-A, Requested) (not_set)	1 Derived	Requested end time (in UTC CCSDS-A) of this granule.
granule_start_utc (Compact Dataset)	STRING:27 (1)	Start UTC Time of Granule (CCSDS-A, Requested) (not_set)	1 Derived	Requested start time (in UTC CCSDS-A) of this granule.

Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
qa_at_interval (Compact Dataset)	DOUBLE (1)	QA Along-Track Interval (not_set)	1 control	Statistics time interval for along-track QA data.
release (Compact Dataset)	STRING:80 (1)	Release Number (not_set)	1 Operations	Release number of the granule. The release number is incremented when the software or ancillary data used to create the granule has been changed.
start_cycle (Compact Dataset)	INTEGER_4 (1)	Starting Cycle (not_set)	1 Derived	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.
start_delta_time (Compact Dataset)	DOUBLE (1)	ATLAS Start Time (Actual) (time)	seconds since 2018-01-01 Derived	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.
start_geoseg (Compact Dataset)	INTEGER_4 (1)	Starting Geolocation Segment (not_set)	1 Derived	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.
start_gpssow (Compact Dataset)	DOUBLE (1)	Start GPS SOW of Granule (Actual) (not_set)	seconds Derived	GPS seconds-of-week of the first data point in the granule.
start_gpsweek (Compact Dataset)	INTEGER_4 (1)	Start GPSWeek of Granule (Actual) (not_set)	weeks from 1980-01-06 Derived	GPS week number of the first data point in the granule.
start_orbit (Compact Dataset)	INTEGER_4 (1)	Starting Orbit Number (not_set)	1 Derived	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.
start_region (Compact Dataset)	INTEGER_4 (1)	Starting Region (not_set)	1 Derived	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.
start_rgt (Compact Dataset)	INTEGER_4 (1)	Starting Reference Groundtrack (not_set)	1 Derived	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.
version (Compact Dataset)	STRING:80 (1)	Version (not_set)	1 Operations	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.

Group: /ancillary_data/coarse_surface_finding

Description	(Attribute)	Contains ancillary parameters related to the coarse surface finding algorithm.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
bin_c (Compact Dataset)	FLOAT (1)	bin size coarse histogram (not_set)	meters Sea Ice ATBD	bin size of coarse histogram
coarse_lb_wins (Compact Dataset)	FLOAT (1)	Coarse_LowerrBounds (not_set)	meters Sea Ice ATBD	Lower bound for signal photons when performing coarse tracking
coarse_ub_wins (Compact Dataset)	FLOAT (1)	Coarse_UpperBounds (not_set)	meters Sea Ice ATBD	Upper bound for signal photons when performing coarse tracking
l (Compact Dataset)	FLOAT (1)	segment length coarse (not_set)	meters Sea Ice ATBD	along track segment length coarse
n_ph_min (Compact Dataset)	INTEGER_4 (1)	Minimum Number of Photons (not_set)	1 Sea Ice ATBD	Minimum number of photons required for coarse track segment
si_conc_min (Compact Dataset)	FLOAT (1)	Min SI Concentration Thresh (not_set)	1 Sea Ice ATBD	Minimum sea ice concentration percentage value for which to process data.

Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
th_d_bot (Compact Dataset)	FLOAT (1)	Bottom threshold distance from mode coarse (not_set)	meters Sea Ice ATBD	Bottom distance from mode coarse
th_d_top (Compact Dataset)	FLOAT (1)	Top threshold distance from mode coarse (not_set)	meters Sea Ice ATBD	Top distance from mode coarse
th_fm (Compact Dataset)	FLOAT (1)	threshold fraction of peak coarse (not_set)	1 Sea Ice ATBD	fraction of histogram peak coarse
th_pc (Compact Dataset)	FLOAT (1)	threshold percentage cloud cover coarse (not_set)	1 Sea Ice ATBD	percentage cloud cover coarse
th_tc (Compact Dataset)	FLOAT (1)	Threshold height deviations (not_set)	1 Sea Ice ATBD	height deviations from surface or adjacent strong beam

Group: /ancillary_data/fine_surface_finding

Description	(Attribute)	Contains ancillary parameters related to the fine surface finding algorithm.		

Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
bin_f (Compact Dataset)	FLOAT (1)	bin size of fine histogram (not_set)	meters Sea Ice ATBD	bin size of fine histogram along track segment length
delta_h_tab (Compact Dataset)	FLOAT (1)	h table spacing (not_set)	meters Sea Ice ATBD	the waveform table spacing for the height (h) dimension
delta_w_tab (Compact Dataset)	FLOAT (1)	w table spacing (not_set)	meters Sea Ice ATBD	the waveform table spacing for the width (w) dimension
h_diff_limit (Compact Dataset)	FLOAT (1)	Max Ht Difference (not_set)	meters Sea Ice ATBD	Maximum height difference between the two weighted Gaussian mean from the initial tracked height (units = meters)
lb_h_tab (Compact Dataset)	FLOAT (1)	lower bound of h table (not_set)	meters Sea Ice ATBD	lower bound of h table
lb_oc_switch_strong (Compact Dataset)	FLOAT (1)	Lower bound of overlapping control for strong beam (not_set)	photons/shot ATBD section 4.2.2.4	Lower bound of photon rate overlapping control for strong beam when overlap is turned off
lb_oc_switch_weak (Compact Dataset)	FLOAT (1)	Lower bound of overlapping control for weak beam (not_set)	photons/shot ATBD section 4.2.2.4	Lower bound of photon rate overlapping control for weak beam when overlap is turned off
lb_w_tab (Compact Dataset)	FLOAT (1)	lower bound of w table (not_set)	meters Sea Ice ATBD	lower bound of w table
lb_win_s (Compact Dataset)	FLOAT (1)	lower bound window signal (not_set)	meters Sea Ice ATBD	window (Ws) containing signal photons
n_photon_min (Compact Dataset)	FLOAT (1)	Minimum number of photons (not_set)	1 Sea Ice ATBD	Minimum fraction of photons needed for tracking
n_photon_trim (Compact Dataset)	INTEGER_4 (1)	Min Photons (not_set)	1 Sea Ice ATBD	Minimum number of photons for trimming leading/trailing bins
n_s (Compact Dataset)	INTEGER_4 (1)	number photons in W_s (not_set)	1 Sea Ice ATBD	photons in W_s
n_spec_scale (Compact Dataset)	FLOAT (1)	Specular Scaling Value (not_set)	1 Sea Ice ATBD	Scalling parameter used for scaling value of N_SPECULAR for the weak beam. Specular returns for weak beam are defined as a shot having more photons than (N_SPECULAR/N_SPEC_SCALE)
n_specular (Compact Dataset)	FLOAT (1)	number photons Specular returns (not_set)	1 Sea Ice ATBD	Specular returns limits
n_w (Compact Dataset)	INTEGER_4 (1)	number of standard deviations (not_set)	1 Sea Ice ATBD	number of standard deviations
overlap_switch (Compact Dataset)	INTEGER_4 (1)	Overlap Segments (not_set)	1 Sea Ice ATBD	Use of overlapping height segments (1 = yes, 0 = no) flag_values: 0, 1 flag_meanings : no yes
tep_used_gt1_strong (Compact Dataset)	INTEGER_4 (1)	TEP Table PCE1_Strong (not_set)	1 Sea Ice ATBD	TEP used in table generation for strong beam of ground track 1 (1 or 3)
tep_used_gt1_weak (Compact Dataset)	INTEGER_4 (1)	TEP Table PCE1_Weak (not_set)	1 Sea Ice ATBD	TEP used in table generation for weak beam of ground track 1 (1 or 3)
tep_used_gt2_strong (Compact Dataset)	INTEGER_4 (1)	TEP Table PCE2_Strong (not_set)	1 Sea Ice ATBD	TEP used in table generation for strong beam of ground track 2 (1 or 3)
tep_used_gt2_weak (Compact Dataset)	INTEGER_4 (1)	TEP Table PCE2_Weak (not_set)	1 Sea Ice ATBD	TEP used in table generation for weak beam of ground track 2 (1 or 3)
tep_used_gt3_strong (Compact Dataset)	INTEGER_4 (1)	TEP Table PCE3_Strong (not_set)	1 Sea Ice ATBD	TEP used in table generation for strong beam of ground track 3 (1 or 3)
tep_used_gt3_weak	INTEGER_4	TEP Table PCE3_Weak	1	TEP used in table generation for weak beam of ground track

(Compact Dataset)	(1)	(not_set)	Sea Ice ATBD	3 (1 or 3)
ub_h_tab (Compact Dataset)	FLOAT (1)	upper bound of h table (not_set)	meters Sea Ice ATBD	the waveform upper bound for the height (h) dimension
ub_length_strong (Compact Dataset)	INTEGER_4 (1)	upper bound segment length strong (not_set)	1 Sea Ice ATBD	upper bound of segment length strong beam
ub_length_weak (Compact Dataset)	INTEGER_4 (1)	upper bound segment length weak (not_set)	1 Sea Ice ATBD	upper bound of segment length weak beam
ub_oc_switch_strong (Compact Dataset)	FLOAT (1)	Upper bound of overlapping control for strong beam (not_set)	photons/shot ATBD section 4.2.2.4	Upper bound of photon rate overlapping control for strong beam when overlap is turned off
ub_oc_switch_weak (Compact Dataset)	FLOAT (1)	Upper bound of overlapping control for weak beam (not_set)	photons/shot ATBD section 4.2.2.4	Upper bound of photon rate overlapping control for weak beam when overlap is turned off
ub_w_tab (Compact Dataset)	FLOAT (1)	upper bound of w table (not_set)	meters Sea Ice ATBD	the waveform upper bound for the width (w) dimension
ub_win_s (Compact Dataset)	FLOAT (1)	upper bound window signal (not_set)	meters Sea Ice ATBD	window (Ws) containing signal photons

Group: /ancillary_data/sea_ice

Description	(Attribute)	Contains ancillary parameters related to sea ice.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
geoseg_max (Compact Dataset)	INTEGER_4 (1)	Maximum Segment Id (not_set)	1 Operations	Indicates the maximum segment_id to process (if specified in control). The actual maximum processed may be greater than specified.
geoseg_min (Compact Dataset)	INTEGER_4 (1)	Minimum Segment ID (not_set)	1 Operations	Indicates the minimum segment_id to process (if specified in control)
min_segs_count (Compact Dataset)	INTEGER_4 (1)	Minimum Segments Count (not_set)	1 Sea Ice ATBD	ATL07 granules with less than this number of strong beam sea ice segments will be marked as failed.
proc_beam_pair1 (Compact Dataset)	INTEGER_4 (1)	Processing Flag for Beam Pair 1 (not_set)	1 Operations	Indicates if beam pair 1 was processed. flag_values: 0, 1 flag_meanings : not_processed processed
proc_beam_pair2 (Compact Dataset)	INTEGER_4 (1)	Processing Flag for Beam Pair 2 (not_set)	1 Operations	Indicates if beam pair 2 was processed. flag_values: 0, 1 flag_meanings : not_processed processed
proc_beam_pair3 (Compact Dataset)	INTEGER_4 (1)	Processing Flag for Beam Pair 3 (not_set)	1 Operations	Indicates if beam pair 3 was processed. flag_values: 0, 1 flag_meanings : not_processed processed
proc_interval (Compact Dataset)	INTEGER_4 (1)	Processing interval (not_set)	1 Operations	The number of 20 meter segments of data processed in one chunk
region (Compact Dataset)	INTEGER_4 (1)	Region Index (not_set)	1 Operations	The index to the geographic region covered within this granule (0=no region boundaries enforced).

Group: /ancillary_data/surface_classification

Description	(Attribute)	Contains ancillary parameters related to the surface classification algorithm.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
b1 (Compact Dataset)	FLOAT (1)	max backgr (gray ice) (not_set)	1 Sea Ice ATBD	max backgr (gray ice)
beam_gain (Compact Dataset)	FLOAT (6)	relative beam gain for beams 1 through 6 (not_set)	1 Sea Ice ATBD	Relative gains for beams 1 through 6 where N is the beam number (Note: Beams 1, 3, and 5 are the strong beams)
height_pct (Compact Dataset)	FLOAT (1)	Percentile Hts (not_set)	percentile Sea Ice ATBD	Percentile of sorted heights
p1 (Compact Dataset)	FLOAT (1)	pr (clouds) (not_set)	1 Sea Ice ATBD	photon rate (clouds)
p2 (Compact Dataset)	FLOAT (1)	pr (snow) (not_set)	1 Sea Ice ATBD	photon rate (snow)
p3 (Compact Dataset)	FLOAT (1)	pr (shadow) (not_set)	1 Sea Ice ATBD	photon rate (shadow)
p4 (Compact Dataset)	FLOAT (1)	pr (specular) (not_set)	1 Sea Ice ATBD	photon rate (specular)
theta_cntl (Compact Dataset)	FLOAT (1)	Solar elevation for use of background rate (not_set)	1 Sea Ice ATBD	Solar elevation for controlling use of background rate
theta_nlb (Compact Dataset)	FLOAT (1)	Solar elevation normalization lower bound	degrees ATBD section 4.3.1.4	Solar elevation normalization lower bound for use of normalized background rate

		(not_set)		
theta_ref (Compact Dataset)	FLOAT (1)	Solar elevation normalization angle (not_set)	degrees ATBD section 4.3.1.4	Solar elevation normalization angle for use of normalized background rate
w1 (Compact Dataset)	FLOAT (1)	max width (dark smooth lead) (not_set)	meters Sea Ice ATBD	max width (dark smooth lead)
w2 (Compact Dataset)	FLOAT (1)	max width (dark rough lead) (not_set)	meters Sea Ice ATBD	max width (dark rough lead)

Group: /atlas_impulse_response

Description	(Attribute)	Contains parameters to characterize the ATLAS pulse shape, derived from the Transmitter Echo Pulse (TEP) data for the two PCEs that contain TEP events.		

Group: /atlas_impulse_response/pcex_spotx

Description	(Attribute)	Contains parameters to characterize the ATLAS pulse shape, derived from the Transmitter Echo Pulse data for a single PCE.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
tep_bckgrd (Chunked Dataset)	INTEGER_4 (:)	TEP Background (not_set)	counts ATL03	The average number of counts in the TEP histogram bins, after excluding bins that likely contain the transmit pulse.
tep_duration (Chunked Dataset)	DOUBLE (:)	TEP Duration (not_set)	seconds ATL03	The duration (or width) of data in the TEP histogram. Will generally be greater than 10 seconds.
tep_hist (Chunked Dataset)	DOUBLE (:)	TEP Histogram (not_set)	counts ATL03	The normalized number of counts in each bin of the TEP histogram.
tep_hist_sum (Chunked Dataset)	INTEGER_8 (:)	TEP Histogram Sum (not_set)	counts ATL03	The total number of counts in the TEP histogram, after removing the background.
tep_hist_time (Chunked Dataset)	DOUBLE (:)	TEP Histogram Time (not_set)	seconds ATL03	The times associated with the TEP histogram bin centers, measured from the laser transmit time.
tep_tod (Chunked Dataset)	DOUBLE (:)	TEP Time Of Day (time)	seconds since 2018-01-01 ATL03	The time of day at of the start of the data within the TEP histogram, in seconds since the ATLAS SDP GPS Epoch. 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.

Group: /gtx

Description	(Attribute)	This ground contains parameters and subgroups related a specific groundtrack.		
data_rate	(Attribute)	Each subgroup identifies its particular data rate.		

Group: /gtx/sea_ice_segments

Description	(Attribute)	Top group for sea ice segments as computed by the ATBD aglorithm		
data_rate	(Attribute)	Data within this group are stored at the variable segment rate.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
delta_time (Chunked Dataset)	DOUBLE (:)	Elapsed GPS seconds (time)	seconds since 2018-01-01 telemetry	Number of GPS seconds since the ATLAS SDP epoch. 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.
geoseg_beg (Chunked Dataset)	INTEGER_4 (:)	Beginning GEOSEG (not_set)	1 Sea Ice ATBD	Geolocation segment (geoseg) ID associated with the first photon used in this sea ice segment
geoseg_end (Chunked Dataset)	INTEGER_4 (:)	Ending GEOSEG (not_set)	1 Sea Ice ATBD	Geolocation segment (geoseg) ID associated with the last photon used in this sea ice segment
height_segment_id (Chunked Dataset)	INTEGER_4 (:)	Identifier of each height segment (not_set)	1 ATBD, section 5.2	Identifier of each height segment
latitude (Chunked Dataset)	DOUBLE (:)	Latitude (latitude)	degrees_north ATBD, section 4.4	Latitude, WGS84, North=+, Lat of segment center
longitude (Chunked Dataset)	DOUBLE (:)	Longitude (longitude)	degrees_east ATBD, section 4.4	Longitude, WGS84, East=+,Lon of segment center
seg_dist_x (Chunked Dataset)	DOUBLE (:)	Along track distance (not_set)	meters Sea Ice ATBD	Along-track distance from the equator crossing to the segment center.

Group: /gtx/sea_ice_segments/geolocation

Description	(Attribute)	Contains parameters related to geolocation.		
data_rate	(Attribute)	Data within this group are stored at the sea_ice_height segment rate.		

Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
beam_azimuth (Chunked Dataset)	FLOAT (:)	beam azimuth (not_set)	degrees_east Sea Ice ATBD	The direction, eastwards from north, of the laser beam vector as seen by an observer at the laser ground spot viewing toward the spacecraft (i.e., the vector from the ground to the spacecraft). When the spacecraft is precisely at the geodetic zenith, the value will be 99999 degrees.
beam_coelev (Chunked Dataset)	FLOAT (:)	beam co-elevation (not_set)	degrees Sea Ice ATBD	Co-elevation (CE) is direction from vertical of the laser beam as seen by an observer located at the laser ground spot.
ref_atm_delay (Chunked Dataset)	FLOAT (:)	Reference Photon Atm. Path Delay (not_set)	meters Sea Ice ATBD	Atmospheric path delay, in range, for the reference photon.
ref_atm_delay_derivative (Chunked Dataset)	FLOAT (:)	Derivative of Atm. Path Delay (not_set)	meters/meter Sea Ice ATBD	Atmospheric path delay derivative with respect to ellipsoid for the reference photon, in meters per meter.
rgt (Chunked Dataset)	INTEGER_2 (:)	Reference Ground track (not_set)	1 Sea Ice ATBD	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 GT3 and GT4. During slews or off-pointing, it is possible that ground tracks may intersect the RGT. The ICESat-2 mission has 1387 RGTs.
sigma_h (Chunked Dataset)	FLOAT (:)	height uncertainty (not_set)	1 Sea Ice ATBD	Estimated uncertainty for the reference photon bounce point ellipsoid height: 1- sigma (m). Error estimates for all other photons in the group are computed with the scale defined below.
sigma_lat (Chunked Dataset)	FLOAT (:)	latitude uncertainty (not_set)	1 Sea Ice ATBD	Estimated uncertainty for the reference photon bounce point geodetic latitude: 1- sigma (degrees). Applies to all other photons in the group
sigma_lon (Chunked Dataset)	FLOAT (:)	longitude uncertainty (not_set)	degrees Sea Ice ATBD	Estimated uncertainty for the reference photon bounce point east longitude: 1- sigma (degrees). Applies to all other photons in the group.
solar_azimuth (Chunked Dataset)	FLOAT (:)	solar azimuth (not_set)	degrees_east Sea Ice ATBD	The direction, eastwards from north, of the sun vector as seen by an observer at the laser ground spot.
solar_elevation (Chunked Dataset)	FLOAT (:)	solar elevation (not_set)	degrees Sea Ice ATBD	Solar Angle above or below the plane tangent to the ellipsoid surface at the laser spot. Positive values mean the sun is above the horizon, while negative values mean it is below the horizon. The effect of atmospheric refraction is not included. This is a low precision value, with approximately TBD degree accuracy.
Group: /gtx/sea_ice_segments/geophysical				
Description	(Attribute)	Contains geophysical parameters and corrections used to correct photon heights for geophysical effects, such as tides.		
data_rate	(Attribute)	Data within this group are stored at the sea_ice_height segment rate.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
height_segment_dac (Chunked Dataset)	FLOAT (:)	Dynamic Atmosphere Correction (not_set)	meters Sea Ice ATBD	Dynamic Atmospheric Correction (DAC) includes inverted barometer (IB) effect.
height_segment_earth (Chunked Dataset)	FLOAT (:)	Earth Tide (not_set)	meters Sea Ice ATBD	Solid Earth Tide
height_segment_geoid (Chunked Dataset)	FLOAT (:)	EGM2008 Geoid (not_set)	meters Sea Ice ATBD	Geoid height above WGS-84 reference ellipsoid (range -107 to 86m), based on the EGM2008 model.
height_segment_ib (Chunked Dataset)	FLOAT (:)	Inverted barometer effect (not_set)	meters ATBD, section 4.2	Inverted barometer effect calculated from surface pressure
height_segment_load (Chunked Dataset)	FLOAT (:)	Load Tide (not_set)	meters Sea Ice ATBD	Load Tide - Local displacement due to Ocean Loading (-6 to 0 cm).
height_segment_lpe (Chunked Dataset)	FLOAT (:)	Equilibrium Tide (not_set)	meters Sea Ice ATBD	Long period equilibrium tide self-consistent with ocean tide model (+-0.04m). (dependent only on time and latitude)
height_segment_mss (Chunked Dataset)	FLOAT (:)	DTU13 Mean Sea Surface (not_set)	meters Sea Ice ATBD	Mean sea surface height above WGS-84 reference ellipsoid (range: -105 to 87m), based on the DTU13 model.
height_segment_ocean (Chunked Dataset)	FLOAT (:)	Ocean Tide (not_set)	meters Sea Ice ATBD	Ocean Tides including diurnal and semi-diurnal (harmonic analysis), and longer period tides (dynamic and self-consistent equilibrium)
height_segment_pole (Chunked Dataset)	FLOAT (:)	Pole Tide (not_set)	meters Sea Ice ATBD	Pole Tide -Rotational deformation due to polar motion (-1.5 to 1.5 cm).
height_segment_ps (Chunked Dataset)	FLOAT (:)	sea level pressure (pressure)	Pa ATL09	Sea Level Pressure (Pa)
height_segment_t2m (Chunked Dataset)	FLOAT (:)	temperature_at_2m (temperature)	K ATL09	Temperature at 2m above the displacement height (K)
height_segment_u2m	FLOAT	Eastward_wind_at_2m	m s-1	Eastward wind at 2m above the displacement height (m/s-1)

(Chunked Dataset)	(:)	(eastward_wind)	ATL09	
height_segment_v2m (Chunked Dataset)	FLOAT (:)	Northward_wind_at_2m (northward_wind)	m s-1 ATL09	Northward wind at 2m above the displacement height (m/s-1)

Group: /gtx/sea_ice_segments/heights				
Description	(Attribute)	Contains parameters relating to the calculated surface height for one Ground Track. As ICESat-2 orbits the earth, sequential transmit pulses illuminate six ground tracks on the surface of the earth.		
data_rate	(Attribute)	Data within this group are stored at the sea_ice_height segment rate.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
across_track_distance (Chunked Dataset)	FLOAT (:)	Across Track Distance (not_set)	meters ATBD, section 4.2.4	Across track distance of photons averaged over the sea ice height segment.
height_segment_asr_calc (Chunked Dataset)	FLOAT (:)	Calculated Apparent Surface Reflectivity (not_set)	1 Sea Ice ATBD	Computed apparent surface reflectance for the sea ice segment.
height_segment_confidence (Chunked Dataset)	FLOAT (:)	Surface height confidence (not_set)	1 ATBD, section 4.2.4.2	Confidence level in the surface height estimate based on the number of photons; the background noise rate; and the error analysis
height_segment_fit_quality_flag (Chunked Dataset)	INTEGER_1 (:)	height Quality Flag (not_set)	1 ATBD, section 4.2.4.2	Flag describing the quality of the results of the along-track fit. (-1=height value is invalid; 1=ngrid_w < wlength/2; 2=ngrid_w >= wlength/2; 3=ngrid_dt < dtlength/2; 4=ngrid_dt >= dtlength/2; 5=ngrid_dt >= (dtlength-2): where 1 is best and 5 is poor). Heights are reported even if this flag indicates the height is invalid. flag_values: -1, 1, 2, 3, 4, 5 flag_meanings : invalid best high med low poor
height_segment_height (Chunked Dataset)	FLOAT (:)	height of segment surface (not_set)	meters ATBD, section 4.2.2.4	Mean height from along-track segment fit detremined by the sea ice algorithm
height_segment_htcorr_skew (Chunked Dataset)	FLOAT (:)	Height Correction for Skew (not_set)	meters ATBD, section 4.2.6	height corection for skew
height_segment_length_seg (Chunked Dataset)	FLOAT (:)	length of segment (not_set)	meters ATBD, section 4.2.2.4	along-track length of segment containing n_photons_actual
height_segment_n_pulse_seg (Chunked Dataset)	INTEGER_4 (:)	number of laser pulses (not_set)	1 ATBD, section 4.2.2.4	number of laser pulses
height_segment_quality (Chunked Dataset)	INTEGER_1 (:)	Height Segment Quality Flag (not_set)	1 ATBD, section 4.2.4	Height segment quality flag, 1 is good quality, 0 is bad depending on fit, wguassian, or layer flag flag_values: 0, 1 flag_meanings : bad_quality good_quality
height_segment_rms (Chunked Dataset)	FLOAT (:)	height rms (not_set)	meters ATBD, section 4.2.2.4	RMS difference between sea ice modeled and observed photon height distribution
height_segment_ssh_flag (Chunked Dataset)	INTEGER_1 (:)	Sea Surface Flag (not_set)	1 ATBD, section 4.3	Identifies the height segments that are candidates for use as sea surface reference in freeboard calculations in ATL10. 0 = sea ice; 1 = sea surface flag_values: 0, 1 flag_meanings : sea_ice sea_surface
height_segment_surface_error_est (Chunked Dataset)	FLOAT (:)	h surface error est (not_set)	meters ATBD, section 4.2.2.4	Error estimate of the surface height
height_segment_type (Chunked Dataset)	INTEGER_1 (:)	Segment surface type (not_set)	1 ATBD, section 4.3	Value that indicates segment surface type as sea ice or different types of sea surface. 0=cloud covered: rsurf flag_values: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 flag_meanings : cloud_covered other specular_lead_low_w_bkg specular_lead_low specular_lead_high_w_bkg specular_lead_high dark_lead_smooth_w_bkg dark_lead_smooth dark_lead_rough_w_bkg dark_lead_rough
height_segment_w_gaussian (Chunked Dataset)	FLOAT (:)	width of best fit gaussian (not_set)	meters ATBD, section 4.2.4	width of best fit gaussian

Group: /gtx/sea_ice_segments/stats				
Description	(Attribute)	Contains parameters related to quality and corrections on the sea ice height paramters		
data_rate	(Attribute)	Data within this group are stored at the sea_ice_height segment rate.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
asr_25 (Chunked Dataset)	FLOAT (:)	Apparent Surface Reflectance 25hz (not_set)	1 Sea Ice ATBD	Apparent surface reflectance at 25 hz, averaged to the sea ice segment.
backgr_calc (Chunked Dataset)	FLOAT (:)	background count rate calculated (not_set)	hz ATBD, section 4.2.3	Calculated background count rate based on sun angle, surface slope, unit reflectance
backgr_r_200 (Chunked Dataset)	FLOAT (:)	Background rate 200 hz (not_set)	hz ATL09	Background count rate, averaged over the segment based on ATLAS 50 pulse counts
backgr_r_25	FLOAT	Background rate 25hz	hz	Background count rate, averaged over the segment based

Name	Type	Description	Units / Source	Long Description
(Chunked Dataset)	(:)	(not_set)	ATL09	on 25 hz atmosphere
background_int_height (Chunked Dataset)	FLOAT (:)	Height of column used in background calculation (not_set)	meters ATBD, section 7.3	The height of the altimetric range window after subtracting the height span of the signal photon events in the 50-shot span
background_r_norm (Chunked Dataset)	FLOAT (:)	Normalized background (50-shot) (not_set)	hz ATBD section 4.3.1.3	Background rate normalized to a fixed solar elevation angle
bsnow_con (Chunked Dataset)	INTEGER_1 (:)	Blowing snow confidence (not_set)	1 ATL09	Blowing snow confidence
bsnow_h (Chunked Dataset)	FLOAT (:)	Blowing snow top h (not_set)	meters ATL09	Blowing snow layer top height
cloud_flag_asr (Chunked Dataset)	INTEGER_2 (:)	Cloud Flag ASR (not_set)	1 Atmosphere ATBD	Cloud flag (probability) from apparent surface reflectance. 0=clear with high confidence; 1=clear with medium confidence; 2=clear with low confidence; 3=cloudy with low confidence; 4=cloudy with medium confidence; 5=cloudy with high confidence; 6=unknown flag_values: 0, 1, 2, 3, 4, 5, 6 flag_meanings : clear_with_high_confidence clear_with_medium_confidence clear_with_low_confidence cloudy_with_low_confidence cloudy_with_medium_confidence cloudy_with_high_confidence unknown
cloud_flag_atm (Chunked Dataset)	INTEGER_1 (:)	Cloud Flag Atm (not_set)	1 Atmosphere ATBD	Number of layers found from the backscatter profile using the DDA layer finder.
ds_si_hist_bins (Chunked Dataset)	INTEGER_4 (:)	Sea Ice Histogram Bins Dimension Scale (not_set)	1 SeaIce ATBD	Dimension scale indexing the sea ice histogram bins. The bin heights must be computed from information contained within the same group as the histogram.
exmax_mean_1 (Chunked Dataset)	FLOAT (:)	Exmax Mean 1 (not_set)	meters sea ice ATBD Appendix E	exmax height mean 1
exmax_mean_2 (Chunked Dataset)	FLOAT (:)	Exmax Mean 2 (not_set)	meters sea ice ATBD Appendix E	exmax height mean 2
exmax_mix (Chunked Dataset)	FLOAT (:)	Exmax Mix (not_set)	meters sea ice ATBD Appendix E	exmax height mix ratio
exmax_stdev_1 (Chunked Dataset)	FLOAT (:)	Exmax Stdev 1 (not_set)	meters sea ice ATBD Appendix E	exmax height standard deviation 1
exmax_stdev_2 (Chunked Dataset)	FLOAT (:)	Exmax Stdev 2 (not_set)	meters sea ice ATBD Appendix E	exmax height standard deviation 2
fpb_avg_dt (Chunked Dataset)	FLOAT (:)	fpb correction average deadtime (not_set)	ns Sea Ice ATBD	FPB correction average dead time
fpb_corr (Chunked Dataset)	FLOAT (:)	first photon bias correction (not_set)	meters Sea Ice ATBD	Estimated first-photon bias(fpb) correction to mean segment height
fpb_corr_width (Chunked Dataset)	FLOAT (:)	fpb correction width (not_set)	ns Sea Ice ATBD	FPB correction width
fpb_strength (Chunked Dataset)	FLOAT (:)	fpb correction strength (not_set)	photons/shot Sea Ice ATBD	FPB correction strength
height_coarse_mn (Chunked Dataset)	FLOAT (:)	Coarse Track Height Mean (not_set)	meters sea ice ATBD , sect 4.2.1.2	height mean of coarse tracker
height_coarse_stdev (Chunked Dataset)	FLOAT (:)	Coarse Height Sdev (not_set)	meters sea ice ATBD , sect 4.2.1.2	height standard deviation of coarse tracker
height_filter_05 (Chunked Dataset)	FLOAT (:)	Height Filter 5th Percentile (not_set)	meters sea ice ATBD , sect 4.2.1.2	height fifth percentile used in the ssh height filter
height_filter_min (Chunked Dataset)	FLOAT (:)	Height Filter Min (not_set)	meters sea ice ATBD , sect 4.2.1.2	height minimum used in the ssh height filter
hist_mean_h (Chunked Dataset)	FLOAT (:)	photon heights mean (not_set)	meters ATBD, section 4.2.2.4	Mean of the n_fit_photons heights
hist_median_h (Chunked Dataset)	FLOAT (:)	trimmed photon heights median (not_set)	meters ATBD, section 4.2.3.1	Median of the n_fit_photons heights
hist_photon_bin_size (Chunked Dataset)	FLOAT (:)	height histogram bin size (not_set)	meters ATBD, section 4.2.2.4	bin size of photon height histogram
hist_photon_bottom (Chunked Dataset)	FLOAT (:)	height histogram minimum (not_set)	meters ATBD, section 4.2.2.4	lower bound of height histogram

Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
hist_photon_heights (Chunked Dataset)	INTEGER_2 (:, :)	photon heights histogram (not_set)	1 ATBD, section 4.2.2.4	Histogram of the n_fit_photons heights
hist_photon_top (Chunked Dataset)	FLOAT (:)	height histogram maximum (not_set)	meters ATBD, section 4.2.2.4	upper bound of height histogram
hist_w (Chunked Dataset)	FLOAT (:)	Segment histogram width estimate (not_set)	meters ATBD, section 4.2.2.4	Segment histogram width estimate
ice_conc (Chunked Dataset)	FLOAT (:)	sea ice concentration (not_set)	1 ATBD, section 3.1.4	sea ice concentration
layer_flag (Chunked Dataset)	INTEGER_2 (:)	Consolidated cloud flag (not_set)	1 Atmosphere ATBD	This flag is a combination of multiple flags (cloud_flag_atm, cloud_flag_asr, and bsnow_con) and takes daytime/nighttime into consideration. A value of 1 means clouds or blowing snow are likely present. A value of 0 indicates the likely absence of clouds or blowing snow. flag_values: 0, 1 flag_meanings : likely_clear likely_cloudy
msw_flag (Chunked Dataset)	INTEGER_1 (:)	Multiple Scattering Warning Flag (not_set)	1 Atmosphere ATBD	Multiple Scattering warning flag. The multiple scattering warning flag (ATL09 parameter msw_flag) has values from -1 to 5 where zero means no multiple scattering and 5 the greatest. If no layers were detected, then msw_flag = 0. If blowing snow is detected and its estimated optical depth is greater than or equal to 0.5, then msw_flag = 5. If the blowing snow optical depth is less than 0.5, then msw_flag = 4. If no blowing snow is detected but there are cloud or aerosol layers detected, the msw_flag assumes values of 1 to 3 based on the height of the bottom of the lowest layer: < 1 km, msw_flag = 3; 1-3 km, msw_flag = 2; > 3km, msw_flag = 1. A value of -1 indicates that the signal to noise of the data was too low to reliably ascertain the presence of cloud or blowing snow. We expect values of -1 to occur only during daylight. flag_values: -1, 0, 1, 2, 3, 4, 5 flag_meanings : cannot_determine no_layers layer_gt_3km layer_between_1_and_3_km layer_lt_1km blow_snow_od_lt_0.5 blow_snow_od_gt_0.5
n_photons_actual (Chunked Dataset)	INTEGER_2 (:)	Number of photons found for the segment (not_set)	1 ATBD, section 4.2.2.4	Number of photons gathered
n_photons_define (Chunked Dataset)	INTEGER_2 (:)	Number of photons defining the segment (not_set)	1 ATBD, section 4.2.2.4	Number of photons to gather.
n_photons_used (Chunked Dataset)	INTEGER_2 (:)	Number of photons used for fit (not_set)	1 ATBD, section 4.2.2.4	Number of photons in the trimmed histogram.
photon_rate (Chunked Dataset)	FLOAT (:)	photon rate (not_set)	photons/shot ATBD, section 4.2.2.4	photon count rate, averaged over segment
trim_height_bottom (Chunked Dataset)	FLOAT (:)	minimum height of trimmed photons (not_set)	meters ATBD, section 4.2.2.4	minimum height of trimmed photons used in the surface calculation procedure
trim_height_top (Chunked Dataset)	FLOAT (:)	maximum height of trimmed photons (not_set)	meters ATBD, section 4.2.2.4	maximum height of trimmed photons used in the surface calculation procedure
Group: /orbit_info				
Description	(Attribute)	Contains orbit information.		
data_rate	(Attribute)	Varies. Data are only provided when one of the stored values (besides time) changes.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
crossing_time (Chunked Dataset)	DOUBLE (:)	Ascending Node Crossing Time (time)	seconds since 2018-01-01 POD/PPD	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.
cycle_number (Chunked Dataset)	INTEGER_1 (:)	Cycle Number (not_set)	1 Operations	A count of the number of exact repeats of this reference orbit.
lan (Chunked Dataset)	DOUBLE (:)	Ascending Node Longitude (not_set)	degrees_east POD/PPD	Longitude at the ascending node crossing.
orbit_number (Chunked Dataset)	UINT_2_LE (:)	Orbit Number (not_set)	1 Operations	Unique identifying number for each planned ICESat-2 orbit.
rgt (Chunked Dataset)	INTEGER_2 (:)	Reference Ground track (not_set)	1 POD/PPD	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

Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
				data collected along the RGT, as the RGT is spanned by GT3 and GT4. During slews or off-pointing, it is possible that ground tracks may intersect the RGT. The ICESat-2 mission has 1387 RGTs.
sc_orient (Chunked Dataset)	INTEGER_1 (:)	Spacecraft Orientation (not_set)	1 POD/PPD	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. flag_values: 0, 1, 2 flag_meanings : backward forward transition
sc_orient_time (Chunked Dataset)	DOUBLE (:)	Time of Last Spacecraft Orientation Change (time)	seconds since 2018-01-01 POD/PPD	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.
Group: /quality_assessment				
Description	(Attribute)	Contains quality assessment data. This may include QA counters, QA along-track data and/or QA summary data.		
Label (Layout)	Datatype (Dimensions)	long_name (standard_name)	units source	description
qa_granule_fail_reason (Compact Dataset)	INTEGER_4 (1)	Granule Failure Reason (not_set)	1 Operations	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. flag_values: 0, 1, 2, 3, 4, 5 flag_meanings : no_failure PROCESS_ERROR INSUFFICIENT_OUTPUT failure_3 failure_4 OTHER_FAILURE
qa_granule_pass_fail (Compact Dataset)	INTEGER_4 (1)	Granule Pass Flag (not_set)	1 Operations	Flag indicating granule quality. 0=granule passes automatic QA. 1=granule fails automatic QA. flag_values: 0, 1 flag_meanings : PASS FAIL