1.0 DATA DICTIONARY

The following subsections list the data content of ATL19. Each subsection corresponds to a HDF5 group on the data product. The ATLAS Standard Data Products are designed to be self-documenting and contain additional descriptive information not presented here. The descriptive information within the data dictionary is limited to preserve readability.

1.1.1 Attributes

short_name	ATL19
title	SET_BY_META
level	L3B
description	The ATL19 product contains Sea Surface Height (SSH) of the mid latitudes, northern and southern polar regions based on 1 month of data coverage (for ATL23 - based on 3 months of data coverage).
Conventions	CF-1.6
citation	SET_BY_META
contributor_name	Thomas A 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	Instrument Engineer, Investigator, Principle Investigator, Data Producer, Data Producer
creator_name	SET_BY_META
date_created	SET_BY_PGE
date_type	UTC
geospatial_lat_max	0.0
geospatial_lat_min	0.0
geospatial_lat_units	degrees_north
geospatial_lon_max	0.0
geospatial_lon_min	0.0
geospatial_lon_units	degrees_east

granule_type	ATL19
hdfversion	SET_BY_PGE
history	SET_BY_PGE
identifier_file_uuid	SET_BY_PGE
identifier_product_doi	10.5067/ATLAS/ATL19.001
identifier_product_doi_authority	http://dx.doi.org
identifier_product_format_version	SET_BY_PGE
identifier_product_type	ATL19
institution	SET_BY_META
instrument	SET_BY_META
keywords	SET_BY_META
keywords_vocabulary	SET_BY_META
license	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	http://dx.doi.org
platform	SET_BY_META
processing_level	L3B
project	SET_BY_META
publisher_email	SET_BY_META
publisher_name	SET_BY_META
publisher_url	SET_BY_META
references	SET_BY_META
source	SET_BY_META
spatial_coverage_type	Horizontal
standard_name_vocabulary	CF-1.6
summary	SET_BY_META

time_coverage_duration	SET_BY_PGE
time_coverage_end	SET_BY_PGE
time_coverage_start	SET_BY_PGE
time_type	CCSDS UTC-A

1.1.2 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
delta_time_beg	DOUBLE(1) INVALID_R8B	seconds	Beginning elapsed GPS seconds Source: Ocean ATBD
delta_time_end	DOUBLE(1) INVALID_R8B	seconds	Ending elapsed GPS seconds Source: Ocean ATBD
ds_bias12rel07_bins	FLOAT(:) -	percent	Bin centers for (h_ice_free - h_atl07_ice_free) histograms, h_bias12rel07, from 0% to 100% in 5% bins. Source: Ocean ATBD
ds_hist_bincenters grid_dot	DOUBLE(:) -	meters	Bin centers for DOT aggregate histograms, dot_hist, from -15m to +15m in 1-cm bins. Source: Ocean ATBD
ds_surf_type surf_type	INTEGER(5) -	1	Dimension scale indexing the surface type array. Index=1 corresponds to Land; index = 2 corresponds to Ocean; Index = 3 corresponds to SeaIce; Index=4 corresponds to LandIce; Index=5 corresponds to InlandWater Source: ATL19 ATBD Flags: 1()=land, 2()=ocean, 3()=seaice, 4()=landice, 5()=inland_water

1.2 Group: /ancillary_data

Contains information ancillary to the data product. This may include product characteristics, instrument characteristics and/or processing constants.

1.2.1 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
atlas_sdp_gps_epoch	DOUBLE(1) -	seconds since 1980-01-06T00:00:00.000000Z	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

Name Standard Name	Type(Dims) FillValue	Units	Description
			(relative to the GPS epoch) for each data point. Source: Operations
control	STRING(1) -	1	PGE-specific control file used to generate this granule. To re-use, replace breaks (BR) with linefeeds. Source: Operations
data_end_utc	STRING(1) -	1	UTC (in CCSDS-A format) of the last data point within the granule. Source: Derived
data_start_utc	STRING(1) -	1	UTC (in CCSDS-A format) of the first data point within the granule. Source: Derived
end_cycle	INTEGER(1) -	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 time	DOUBLE(1) -	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	INTEGER(1) -	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

Name Standard Name	Type(Dims) FillValue	Units	Description
			of their creation. Source: Derived
end_gpssow	DOUBLE(1) -	seconds	GPS seconds-of-week of the last data point in the granule. Source: Derived
end_gpsweek	INTEGER(1) -	weeks from 1980-01-06	GPS week number of the last data point in the granule. Source: Derived
end_orbit	INTEGER(1) -	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	INTEGER(1) -	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	INTEGER(1) -	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	STRING(1) -	1	Requested end time (in UTC CCSDS-A) of this granule. Source: Derived
granule_start_utc	STRING(1) -	1	Requested start time (in UTC CCSDS-A) of this granule. Source: Derived
qa_at_interval	DOUBLE(1) -	1	Statistics time interval for along-track QA data. Source: control
release	STRING(1) -	1	Release number of the granule. The release number is incremented when the software or ancillary data used to create

Name Standard Name	Type(Dims) FillValue	Units	Description
			the granule has been changed. Source: Operations
start_cycle	INTEGER(1) -	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 time	DOUBLE(1) -	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	INTEGER(1) -	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	DOUBLE(1) -	seconds	GPS seconds-of-week of the first data point in the granule. Source: Derived
start_gpsweek	INTEGER(1) -	weeks from 1980-01-06	GPS week number of the first data point in the granule. Source: Derived
start_orbit	INTEGER(1) -	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

Name Standard Name	Type(Dims) FillValue	Units	Description
			Earth. Source: Derived
start_region	INTEGER(1) -	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	INTEGER(1) -	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	STRING(1) -	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

1.3 Group: /ancillary_data/ocean

Contains general ancillary parameters.

1.3.1 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
9ctr	INTEGER(1) -	1	Process data within the grid cell and the surrounding 8 grid cells. 1=true (default), 0=false Source: Ocean ATBD Flags: 1()=true, 0()=false
grid_lat_size	DOUBLE(1) -	degrees north	The size, in degrees, of each latitude step. Source: Operations
grid_lon_size	DOUBLE(1) -	degrees east	The size, in degrees, of each longitude step. Source: Operations

Name Standard Name	Type(Dims) FillValue	Units	Description
grid_xy_size	DOUBLE(1) -	meters	The size, in meters, of each x or y step. Source: Operations
hist_bin_size	DOUBLE(1) -	meters	Dot histogram bin size in meters. Source: Operations
hist_bot	DOUBLE(1) -	meters	Bottom (minimum height) of histograms. Source: Operations
hist_nbins	INTEGER(1) -	counts	Number of bins in each histogram. Source: Derived
hist_top	DOUBLE(1) -	meters	Top (maximum height) of histograms. Source: Operations
icc1	FLOAT(1) -	percent	DOT will be set to: (h-geoid-ssb) for ice_conc < icc1; h_ice_free for icc1 <= ice_conc < icc2; or h_atl07_inatl12oc for ice_conc >= icc2. Source: Ocean ATBD
icc2	FLOAT(1) -	percent	DOT will be set to: (h-geoid) for ice_conc < icc1; h_ice_free for icc1 <= ice_conc < icc2; or h_atl07_inatl12oc for ice_conc >= icc2. Source: Ocean ATBD
midlat_max_avgcntr_uncrtn	DOUBLE(1) -	meters	Set midlat_dot_avgcntr and midlat_ssb_avgcntr invalid if midlat_dot_avgcntr_uncrtn is greater than this. Source: Ocean ATBD
midlat_max_dfwcntr_uncrtn	DOUBLE(1) -	meters	Set midlat_dot_dfwcntr and midlat_ssb_avgcntr invalid if midlat_dot_dfwcntr_uncrtn is greater than this. Source: Ocean ATBD
min_n_ocsegs	INTEGER_8(1) -	1	Process data if it contains data from a number of ocean segments greater than or equal to this. Source: Ocean ATBD
min_n_ocsegs4cntr	INTEGER_8(1) -	1	Interpolate data to the center of a grid cell if it contains data from a number of ocean segments greater than or equal to this. Source: Ocean ATBD
min_n_orbits	INTEGER(1) -	1	Process data for center values if it contains data from a number of orbits greater than or equal to this. Source: Ocean ATBD
npolar_max_avgcntr_uncrtn	DOUBLE(1) -	meters	Set npolar_dot_avgcntr and npolar_ssb_avgcntr invalid if npolar_dot_avgcntr_uncrtn is greater than this. Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
npolar_max_dfwcntr_uncrtn	DOUBLE(1) -	meters	Set npolar_dot_dfwcntr and npolar_ssb_dfwcntr invalid if npolar_dot_dfwcntr_uncrtn is greater than this. Source: Ocean ATBD
ocscan_time1	DOUBLE(1) -	seconds	If control podppd_edit =0 then before ocscan_time1 ATL19 uses ATL12 ocean segments with podppd_flag_seg = 0 or 4 and after ocscan_time1 ATL19 uses ATL12 ocean segments with podppd_flag_seg = 0. Ocscan_time1 is in GPS seconds since the ATLAS Standard Data Products (SDP) epoch (same as delta_time). The ATLAS 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 ocscan_time1, the time in gps_seconds relative to the GPS epoch can be computed. Source: Operations
podppd_edit	INTEGER_1(1) -	1	Control to filter use of ATL12 ocean segments based on ATL12 podppd_flag_seg values. 0 - use podppd = 0 and 4 before ATL19_OCSCAN_TIME1, use only podppd = 0 at or after; 1 - use only podppd = 0; 2 - use both podppd = 0 and 4 Source: Control File Override Flags: 0()=use_0_4_before_ocscan_time1, 1()=use_only_0, 2()=use_0_and_4
spolar_max_avgcntr_uncrtn	DOUBLE(1) -	meters	Set spolar_dot_avgcntr and spolar_ssb_avgcntr invalid if spolar_dot_avgcntr_uncrtn is greater than this. Source: Ocean ATBD
spolar_max_dfwcntr_uncrtn	DOUBLE(1) -	meters	Set spolar_dot_dfwcntr and spolar_ssb_dfwcntr invalid if spolar_dot_dfwcntr_uncrtn is greater than this. Source: Ocean ATBD
use_all_beams	INTEGER_1(1) -	1	0 - Use only strong beams; 1 - use all beams. Source: Control File Override Flags: 0()=use_3_strong_beams, 1()=use_all_6_beams

1.4 Group: /mid_latitude

This group contains the mid_latitude grids.

1.4.1 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
a_avg	FLOAT(:, :) INVALID_R4B	meters/degree	The a coefficient of the planar fit used to compute dot_avgcntr values. Source: Ocean ATBD
a_dfw	FLOAT(:, :) INVALID_R4B	meters/degree	The a coefficient of the planar fit used to compute dot_dfwcntr values. Source: Ocean ATBD
b_avg	FLOAT(:, :) INVALID_R4B	meters/degree	The b coefficient of the planar fit used to compute dot_avgcntr values. Source: Ocean ATBD
b_dfw	FLOAT(:, :) INVALID_R4B	meters/degree	The b coefficient of the planar fit used to compute dot_dfwcntr values. Source: Ocean ATBD
c_avg	FLOAT(:, :) INVALID_R4B	meters	The c coefficient of the planar fit used to compute dot_avgcntr values. Source: Ocean ATBD
c_dfw	FLOAT(:, :) INVALID_R4B	meters	The c coefficient of the planar fit used to compute dot_dfwcntr values. Source: Ocean ATBD
crs	INTEGER_1 -	1	Coordinate Reference System Source: Ocean ATBD
delta_time_beg	DOUBLE(1) INVALID_R8B	seconds	Beginning elapsed GPS seconds for the month of mid_latitude data Source: Ocean ATBD
delta_time_end	DOUBLE(1) INVALID_R8B	seconds	Ending elapsed GPS seconds for the month of mid_latitude data Source: Ocean ATBD
depth_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam average of ocean segment ocean depth for each grid cell. Source: Ocean ATBD
depth_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam degrees of freedom uncertainty weighted (DFW) average of ocean segment ocean depth for each grid cell. Source: Ocean ATBD
dof_albm	FLOAT(:, :) INVALID_R4B	counts	All beam total of ocean segment degrees of freedom Source: Ocean ATBD
dot_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam average of ATL12 ocean segments dynamic ocean topography (DOT) within each cell grid Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
dot_avg_uncrtn_albm	FLOAT(:, :) INVALID_R4B	meters	All beam uncertainty of mean ocean segment DOT Source: Ocean ATBD
dot_avgcntr	FLOAT(:, :) INVALID_R4B	meters	Simple all-beam average of ATL12 ocean segments dynamic ocean topography interpolated to center of grid cell based on DOT values from the 3x3 cell box surrounding the center cell. Source: Ocean ATBD
dot_avgcntr_uncrtn	FLOAT(:, :) INVALID_R4B	meters	All beam uncertainty of ocean segment dynamic ocean topography (DOT) interpolated to center of grid cell. Source: Ocean ATBD
dot_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ATL12 ocean segments DOT within each grid cell. Source: Ocean ATBD
dot_dfw_uncrtn_albm	FLOAT(:, :) INVALID_R4B	meters	All beam uncertainty of DFW average of ocean segment DOT Source: Ocean ATBD
dot_dfwcntr	FLOAT(:, :) INVALID_R4B	meters	Degree of freedom uncertainty weighted all-beam average dynamic ocean topography interpolated to center of grid cell based on DOT data from the 3x3 cell box surrounding the center cell. Source: Ocean ATBD
dot_dfwcntr_uncrtn	FLOAT(:, :) INVALID_R4B	meters	All beam uncertainty of DFW mean of ocean segment dynamic ocean topography (DOT) interpolated to center of grid cell. Source: Ocean ATBD
dot_hist_albm	FLOAT(:, :, :) INVALID_R4B	1/meter	All beam aggregate probability density function of all surface photon DOT for all the ocean segments in the grid cell. The histogram bin center height values are provided in dimension scale /ds_hist_bincenters. The latitude and longitude of each grid cell are provided in/mid_latitude/gridcntr_lat and /mid_latitude/gridcntr_lon. Source: Ocean ATBD
dot_sigma_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam simple average of ocean segment standard deviation of dynamic ocean topography (DOT). Source: Ocean ATBD
dot_sigma_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment standard deviation of DOT Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
geoid_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam average of ocean segment mean tide system geoid height. Source: Ocean ATBD
geoid_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment mean tide system geoid height. Source: Ocean ATBD
gridcntr_lat	DOUBLE(:, :) -	degrees_north	Defined center latitude for each grid cell. Source: Ocean ATBD
gridcntr_lon	DOUBLE(:, :) -	degrees_east	Defined center longitude for each grid cell. Source: Ocean ATBD
ice_conc_albm	FLOAT(:, :) INVALID_R4B	1	All beam simple average of ocean segment average ice concentration, gtx/ssh_segments/stats/ice_conc, of ATL12. Source: Ocean ATBD
landmask	INTEGER(:, :) -	1	Ocean landmask. 0=land, 1=ocean. Source: Ocean ATBD
lat_avg_albm	DOUBLE(:, :) INVALID_R8B	degrees_north	All beam average of ocean segment latitude. Source: Ocean ATBD
lat_dfw_albm	DOUBLE(:, :) INVALID_R8B	degrees_north	All beam DFW average of ocean segment latitude. Source: Ocean ATBD
latitude latitude	DOUBLE(:) -	degrees_north	Grid cell center latitudes (dimension scale) Source: Ocean ATBD
length_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment lengths. Source: Ocean ATBD
length_sum_albm	FLOAT(:, :) INVALID_R4B	meters	All beam sum of ocean segment lengths. Source: Ocean ATBD
lon_avg_albm	DOUBLE(:, :) INVALID_R8B	degrees_east	All beam average of ocean segment longitude. Source: Ocean ATBD
lon_dfw_albm	DOUBLE(:, :) INVALID_R8B	degrees_east	All beam DFW average of ocean segment longitude. Source: Ocean ATBD
longitude longitude	DOUBLE(:) -	degrees_east	Grid cell center longitudes (dimension scale) Source: Ocean ATBD
n_ph_srfc_albm	INTEGER(:, :) -	counts	All beam sum of ocean segment number of surface reflected photons. Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
n_phs_ttl_albm	INTEGER(:, :) -	counts	All beam sum of ocean segment total number of photons. Source: Ocean ATBD
n_segs_albm	INTEGER(:, :) -	counts	All beam number of ocean segments. Source: Ocean ATBD
podppd_flag_prcnt_albm	FLOAT(:, :) INVALID_R4B	1	All beam percent of ATL12 segments used that had podppd_flag_seg=0 for each grid cell. Source: Ocean ATBD
r_noise_albm	FLOAT(:, :) INVALID_R4B	1/meter	All beam rate of noise photons per meter. Source: Ocean ATBD
r_srfc_albm	FLOAT(:, :) INVALID_R4B	1/meter	All beam rate of surface photons per meter. Source: Ocean ATBD
ssb_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam average of ocean segment sea state bias (SSB). Source: Ocean ATBD
ssb_avgcntr	FLOAT(:, :) INVALID_R4B	meters	All beam estimate of sea state bias (SSB) at center of each grid cell for dot_avgcntr. Source: Ocean ATBD
ssb_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment sea state bias. Source: Ocean ATBD
ssb_dfwcntr	FLOAT(:, :) INVALID_R4B	meters	All beam estimate of sea state bias at center of grid cell for dot_dfwcntr. Source: Ocean ATBD
surf_prcnt_avg_albm	FLOAT(:, :, :) INVALID_R4B	1	All beam average of the percentage of each surface type. Map order: land, ocean, sea ice, ice sheet, inland water. Source: Ocean ATBD
surf_prcnt_dfw_albm	FLOAT(:, :, :) INVALID_R4B	1	All beam DFW average of the percentage of each surface type. Map order: land, ocean, sea ice, ice sheet, inland water. Source: Ocean ATBD
swh_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam mean of the ocean segment significant wave heights. Source: Ocean ATBD
swh_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment significant wave height. Source: Ocean ATBD

1.5 Group: /mid_latitude/beam_x

This group contains data for beams 1, 3, and 5 (strong beams), and beams 2, 4, and 6 (weak beams).

1.5.1 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
depth_avg	FLOAT(:, :) INVALID_R4B	meters	Average of ocean segment ocean depth for each grid cell. Source: Ocean ATBD
depth_dfw	FLOAT(:, :) INVALID_R4B	meters	Degrees of freedom uncertainty weighted (DFW) average of ocean segment ocean depth. Source: Ocean ATBD
dof	FLOAT(:, :) INVALID_R4B	meters	Beam total of ocean segment degrees of freedom Source: Ocean ATBD
dot_avg	FLOAT(:, :) INVALID_R4B	meters	Average of ATL12 ocean segments dynamic ocean topography (DOT) within each grid cell for one beam. Source: Ocean ATBD
dot_avg_uncrtn	FLOAT(:, :) INVALID_R4B	meters	Uncertainty of mean ocean segment DOT Source: Ocean ATBD
dot_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ATL12 ocean segments DOT within each grid cell for one beam. Source: Ocean ATBD
dot_dfw_uncrtn	FLOAT(:, :) INVALID_R4B	meters	Uncertainty of DFW average of ocean segment DOT Source: Ocean ATBD
dot_kurt_avg	FLOAT(:, :) INVALID_R4B	1	Average of ocean segment excess kurtosis of the dynamic ocean topography (DOT) Source: Ocean ATBD
dot_kurt_dfw	FLOAT(:, :) INVALID_R4B	1	Kurtosis of the dynamic ocean topography (DOT) as a degree-of-freedom-uncertainty weighted average of kurtosis of DOT of ocean segments Source: Ocean ATBD
dot_sigma_avg	FLOAT(:, :) INVALID_R4B	meters	Simple average of ocean segment standard deviation of dynamic ocean topography (DOT) Source: Ocean ATBD
dot_sigma_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment standard deviation of DOT Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
dot_skew_avg	FLOAT(:, :) INVALID_R4B	1	Average of ocean segment skewness of the dynamic ocean topography (DOT) Source: Ocean ATBD
dot_skew_dfw	FLOAT(:, :) INVALID_R4B	1	Skewness of the dynamic ocean topography (DOT) as a degree-of-freedom uncertainty weighted average of skewness of DOT of ocean segments. Source: Ocean ATBD
geoid_avg	FLOAT(:, :) INVALID_R4B	meters	Average of ocean segment mean tide system geoid height Source: Ocean ATBD
geoid_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment mean tide system geoid height Source: Ocean ATBD
ice_conc	FLOAT(:, :) INVALID_R4B	1	Simple average of ocean segment average ice concentration, gtx/ssh_segments/stats/ice_conc, of ATL12. Source: Ocean ATBD
lat_avg	DOUBLE(:, :) INVALID_R8B	degrees_north	Average of ocean segment latitude Source: Ocean ATBD
lat_dfw	DOUBLE(:, :) INVALID_R8B	degrees_north	DFW average of ocean segment latitude Source: Ocean ATBD
length_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment length. Source: Ocean ATBD
length_sum	FLOAT(:, :) INVALID_R4B	meters	Sum of ocean segment lengths for each grid cell. Source: Ocean ATBD
lon_avg	DOUBLE(:, :) INVALID_R8B	degrees_east	Average of ocean segment longitude. Source: Ocean ATBD
lon_dfw	DOUBLE(:, :) INVALID_R8B	degrees_east	DFW average of ocean segment longitude. Source: Ocean ATBD
n_ph_srfc	INTEGER(:, :) -	counts	Sum of ocean segment number of surface reflected photons Source: Ocean ATBD
n_phs_ttl	INTEGER(:, :) -	counts	Sum of ocean segment total number of photons Source: Ocean ATBD
n_segs	INTEGER(:, :) -	counts	Number of ocean segments Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
podppd_flag_prcnt	FLOAT(:, :) INVALID_R4B	1	Percent of ATL12 segments used that had podppd_flag_seg=0 for each grid cell. Source: Ocean ATBD
r_noise	FLOAT(:, :) INVALID_R4B	1/meter	Rate of noise photons per meter Source: Ocean ATBD
r_srfc	FLOAT(:, :) INVALID_R4B	meters	Rate of surface photons per meter Source: Ocean ATBD
ssb_avg	FLOAT(:, :) INVALID_R4B	meters	Average of ocean segment sea state bias Source: Ocean ATBD
ssb_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment sea state bias Source: Ocean ATBD
surf_prcnt_avg	FLOAT(:, :, :) INVALID_R4B	1	Average of the percentage of each surface type. Map order: land, ocean, sea ice, ice sheet, inland water Source: Ocean ATBD
surf_prcnt_dfw	FLOAT(:, :, :) INVALID_R4B	1	DFW average of the percentage of each surface type. Map order: land, ocean, sea ice, ice sheet, inland water Source: Ocean ATBD
swh_avg	FLOAT(:, :) INVALID_R4B	meters	Mean of the ocean segment significant wave height Source: Ocean ATBD
swh_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment significant wave height Source: Ocean ATBD

1.6 Group: /orbit_info

Contains orbit information.

1.6.1 Attributes

data_rate	Varies. Data are only provided when one of the stored values (besides time) changes.

1.6.2 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
crossing_time time	DOUBLE(:) -	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	INTEGER_1(:) -	1	A count of the number of exact repeats of this reference orbit. Source: Operations
lan	DOUBLE(:) -	degrees_east	Longitude at the ascending node crossing. Source: POD/PPD
orbit_number	UINT_2_LE(:) -	1	Unique identifying number for each planned ICESat-2 orbit. Source: Operations
rgt	INTEGER_2(:) -	1	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. Source: POD/PPD
sc_orient	INTEGER_1(:) -	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 Flags: 0()=backward, 1()=forward, 2()=transition
sc_orient_time time	DOUBLE(:) -	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

Name Standard Name	Type(Dims) FillValue	Units	Description
			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

1.7 Group: /quality_assessment

Contains quality assessment data. This may include QA counters, QA along-track data and/or QA summary data.

1.7.1 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
qa_granule_fail_reason	INTEGER(1) -	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 Flags: 0()=no_failure, 1()=PROCESS_ERROR, 2()=INSUFFICIENT_OUTPUT, 3()=failure_3, 4()=failure_4, 5()=OTHER_FAILURE
qa_granule_pass_fail	INTEGER(1) -	1	Flag indicating granule quality. 0=granule passes automatic QA. 1=granule fails automatic QA. Source: Operations Flags: 0()=PASS, 1()=FAIL

1.8 Group: /x_polar

This group contains the polar grids, and will be instantiated as north_polar and south_polar.

1.8.1 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
a_avg	FLOAT(:, :) INVALID_R4B	meters/meter	The a coefficient of the planar fit used to compute dot_avgcntr. Source: Ocean ATBD
a_dfw	FLOAT(:, :) INVALID_R4B	meters/meter	The a coefficient of the planar fit used to compute dot_dfwcntr. Source: Ocean ATBD
b_avg	FLOAT(:, :) INVALID_R4B	meters/meter	The b coefficient of the planar fit used to compute dot_avgcntr. Source: Ocean ATBD
b_dfw	FLOAT(:, :) INVALID_R4B	meters/meter	The b coefficient of the planar fit used to compute dot_dfwcntr. Source: Ocean ATBD
c_avg	FLOAT(:, :) INVALID_R4B	meters	The c coefficient of the planar fit used to compute dot_avgcntr. Source: Ocean ATBD
c_dfw	FLOAT(:, :) INVALID_R4B	meters	The c coefficient of the planar fit used to compute dot_dfwcntr. Source: Ocean ATBD
crs	INTEGER_1 -	NOT_SET	Coordinate reference system identification for NSIDC Sea Ice Polar Stereographic (Hughes ellipsoid). Source: NetCDF
delta_time_beg	DOUBLE(1) INVALID_R8B	seconds	Beginning elapsed GPS seconds for the month of data Source: Ocean ATBD
delta_time_end	DOUBLE(1) INVALID_R8B	seconds	Ending elapsed GPS seconds for the month of data Source: Ocean ATBD
depth_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam average of ocean segment ocean depth. Source: Ocean ATBD
depth_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam degree-of-freedom-uncertainty weighted (DFW) average of ocean segment ocean depth. Source: Ocean ATBD
dof_albm	FLOAT(:, :) INVALID_R4B	counts	All beam total of degrees of ocean segment freedom in the grid cell Source: Ocean ATBD
dot_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam simple average of dynamic ocean topography. For ice concentration >15%, h_ice_free is substituted for h-

Name Standard Name	Type(Dims) FillValue	Units	Description
			geoidseg - bin_ssbias Source: Ocean ATBD
dot_avg_uncrtn_albm	FLOAT(:, :) INVALID_R4B	meters	All beam average of ocean segment height uncertainties dependent on waves in open water an variability in and among bright-lead 10-m bins if IC>15% Source: Ocean ATBD
dot_avgcntr	FLOAT(:, :) INVALID_R4B	meters	Simple all-beam average of ATL12 ocean segments dynamic ocean topography interpolated to center of grid cell based on DOT values from the 3x3 cell box surrounding the center cell. For ice concentration >15%, h_ice_free is substituted for h-geoidseg - bin_ssbias. Source: Ocean ATBD
dot_avgcntr_uncrtn	FLOAT(:, :) INVALID_R4B	meters	Uncertainty of simple all-beam average of dynamic ocean topography interpolated to center of grid cell equal to the standard deviation of ocean segment DOT about planar fit. Source: Ocean ATBD
dot_avginice_07_albm	FLOAT(:, :) INVALID_R4B	meters	All-beam simple average of ocean segment, h_atl07_ice_free DOT uncertainties, h_atl07_ice_free_uncrtn from ATL07 bright-lead segments in common with ATL12 10-m bins for IC> or = 15% Source: Ocean ATBD
dot_avginice_07_uncrtn_albm	FLOAT(:, :) INVALID_R4B	meters	All-beam simple average of ocean segment, h_atl07_ice_free DOT uncertainties, h_atl07_ice_free_uncrtn from ATL07 bright-lead segments in common with ATL12 10-m bins for IC> or = 15% Source: Ocean ATBD
dot_avginice_7in12_albm	FLOAT(:, :) INVALID_R4B	meters	All-beam simple average of ocean segment, h_atl07_inatl12oc DOT in all bright-lead ATL07 sea ice segments in the ATL12 ocean segments for IC> or = 15% Source: Ocean ATBD
dot_avginice_7in12_uncrtn_albm	FLOAT(:, :) INVALID_R4B	meters	All-beam simple average of ocean segment, h_atl07_inatl12oc DOT uncertainties, h_atl07_inatl12oc_uncrtn, dependent variability in ATL07 bright-lead ATL07 sea ice segments defined for IC> or = 15% Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
dot_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	Degree-of-freedom-uncertainty weighted by the uncertainty of the ocean segment dynamic ocean topography weighted by h_unctn for IC<15%, and h_ice_free_uncrtn for IC>15%. Source: Ocean ATBD
dot_dfw_uncrtn_albm	FLOAT(:, :) INVALID_R4B	meters	All beam uncertainty of degree-of-freedom-uncertainty weighted average of dynamic ocean topography weighted by h_unctn for IC<15%, and h_ice_free_uncrtn for IC>15%. Source: Ocean ATBD
dot_dfwcntr	FLOAT(:, :) INVALID_R4B	meters	Degree-of-freedom-uncertainty weighted all-beam average dynamic ocean topography interpolated to center of grid cell weighted by h_unctn for IC<15%, and h_ice_free_uncrtn for IC>15%. Source: Ocean ATBD
dot_dfwcntr_uncrtn	FLOAT(:, :) INVALID_R4B	meters	All beam uncertainty in DFW all-beam average DOT interpolated to center of grid cell. Source: Ocean ATBD
dot_hist_albm	FLOAT(:, :, :) INVALID_R4B	1/meter	All beam aggregate probability density function of all surface photon DOT for all the ocean segments in the grid cell. The histogram bin center height values are provided in dimension scale /ds_hist_bincenters. The x and y are provided in dimension scale /north or south_polar/ds_grid_x and ds_grid_y. The latitude and longitude of each grid cell are provided in/north or south _polar/gridcntr_lat and /north or south _polar/gridcntr_lon. Source: Ocean ATBD
dot_icefree_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All-beam simple average of ocean segment, h_ice_free DOT in all bright-lead 10-m bins in the ATL12 ocean segments for IC> or = 15% Source: Ocean ATBD
dot_icefree_uncrtn_albm	FLOAT(:, :) INVALID_R4B	meters	All-beam simple average of ocean segment, h_ice_free_uncrtn DOT uncertainties in all bright-lead 10-m bins in the ATL12 ocean segments for IC> or = 15% Source: Ocean ATBD
dot_sigma_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam simple average of ocean segment standard deviation of dynamic

Name Standard Name	Type(Dims) FillValue	Units	Description
			ocean topography (DOT). Source: Ocean ATBD
dot_sigma_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment standard deviation of DOT. Source: Ocean ATBD
ds_grid_x projection_x_coordinate	DOUBLE(:) -	meters	Center of grid cell X values Source: Ocean ATBD
ds_grid_y projection_y_coordinate	DOUBLE(:) -	meters	Center of grid cell Y values Source: Ocean ATBD
geoid_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam average of ocean segment mean tide system geoid height. Source: Ocean ATBD
geoid_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment mean tide system geoid height. Source: Ocean ATBD
gridcntr_lat	DOUBLE(:, :) INVALID_R8B	degrees_north	Defined center latitude for each grid cell. Source: Ocean ATBD
gridcntr_lon	DOUBLE(:, :) INVALID_R8B	degrees_east	Defined center longitude for each grid cell. Source: Ocean ATBD
h_bias12rel07	FLOAT(:, :, :) -	meters	Mean difference between h_ice_free and h_atl07_ice_free in 5% ice concentration bins starting at 0-5% bin. Source: Ocean ATBD
h_bias12rel07_nsegs	INTEGER(:, :, :) -	counts	Number of segments used for h_bias12rel07 in 5% ice concentration bins starting at 0-5% bin. Source: Ocean ATBD
h_bias12rel07_ttl	FLOAT(:) -	meters	Region mean difference between h_ice_free and h_atl07_ice_free in 5% ice concentration bins starting at 0-5% bin. Source: Ocean ATBD
h_bias12rel07_ttl_nsegs	INTEGER(:) -	counts	Number of segments used for h_bias12rel07_ttl in 5% ice concentration bins starting at 0-5% bin. Source: Ocean ATBD
h_icetop_geoid_avg_albm	FLOAT(:, :) INVALID_R4B	meters	Average height of the top of the ice taken from (h-geoid_seg-bin_ssbias) in ice-covered waters. Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
h_icetop_geoid_avg_uncrtn_albm	FLOAT(:, :) INVALID_R4B	meters	Average uncertainty in height of the top of the ice taken from (h-geoid_seg-bin_ssbias) in ice-covered waters. Source: Ocean ATBD
ice_conc_albm	FLOAT(:, :) INVALID_R4B	1	All beam simple average of ocean segment average ice concentration, gtx/ssh_segments/stats/ice_conc, of ATL12. Source: Ocean ATBD
landmask	INTEGER(:, :) -	1	A land mask to indicate if a center point for a 9-cell centered average is on land 1=ocean, 0=land), for example an island. While one would not use the centered DOT value, the a, b, and c coefficients are from ocean data only and can be used to interpolate DOT in the water region of the grid cell. Source: Ocean ATBD
lat_avg_albm	DOUBLE(:, :) INVALID_R8B	degrees_north	All beam average of ocean segment latitudes. Source: Ocean ATBD
lat_dfw_albm	DOUBLE(:, :) INVALID_R8B	degrees_north	All beam DFW average of ocean segment latitude. Source: Ocean ATBD
length_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment lengths. Source: Ocean ATBD
length_sum_albm	FLOAT(:, :) INVALID_R4B	meters	All beam sum of ocean segment lengths. Source: Ocean ATBD
lon_avg_albm	DOUBLE(:, :) INVALID_R8B	degrees_east	All beam average of ocean segment longitude. Source: Ocean ATBD
lon_dfw_albm	DOUBLE(:, :) INVALID_R8B	degrees_east	All beam DFW average of ocean segment longitude. Source: Ocean ATBD
n_ph_srfc_albm	INTEGER(:, :) -	counts	All beam sum of ocean segment number of surface reflected photons. Source: Ocean ATBD
n_phs_ttl_albm	INTEGER(:, :) -	counts	All beam sum of ocean segment total number of photons. Source: Ocean ATBD
n_segs_albm	INTEGER(:, :) -	counts	All beam number of ocean segments for each grid cell. Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
podppd_flag_prcnt_albm	FLOAT(:, :) INVALID_R4B	1	All beam percent of ATL12 segments used that had podppd_flag_seg=0 for each grid cell. Source: Ocean ATBD
r_noise_albm	FLOAT(:, :) INVALID_R4B	1/meter	All beam rate of noise photons per meter Source: Ocean ATBD
r_srfc_albm	FLOAT(:, :) INVALID_R4B	meters	All beam rate of surface photons per meter Source: Ocean ATBD
ssb_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam simple average of ocean segment sea state bias. Source: Ocean ATBD
ssb_avgcntr	FLOAT(:, :) INVALID_R4B	meters	All beam estimate of sea state bias at center of each grid cell for dot_avgcntr. Source: Ocean ATBD
ssb_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment sea state bias Source: Ocean ATBD
ssb_dfwcntr	FLOAT(:, :) INVALID_R4B	meters	All beam estimate of sea state bias at center of grid cell for dot_dfwcntr. Source: Ocean ATBD
surf_prcnt_avg_albm	FLOAT(:, :, :) INVALID_R4B	1	All beam average of the percentage of each surface type. Map order: land, ocean, sea ice, ice sheet, inland water. Source: Ocean ATBD
surf_prcnt_dfw_albm	FLOAT(:, :, :) INVALID_R4B	1	All beam DFW average of the percentage of each surface type. Map order: land, ocean, sea ice, ice sheet, inland water. Source: Ocean ATBD
swh_avg_albm	FLOAT(:, :) INVALID_R4B	meters	All beam average of the ocean segment significant wave height. Source: Ocean ATBD
swh_dfw_albm	FLOAT(:, :) INVALID_R4B	meters	All beam DFW average of ocean segment significant wave height. Source: Ocean ATBD
x_avg_albm	DOUBLE(:, :) INVALID_R8B	meters	All beam average of ocean segment x Source: Ocean ATBD
x_dfw_albm	DOUBLE(:, :) INVALID_R8B	meters	All beam DFW average of ocean segment x Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
y_avg_albm	DOUBLE(:, :) INVALID_R8B	meters	All beam average of ocean segment y Source: Ocean ATBD
y_dfw_albm	DOUBLE(:, :) INVALID_R8B	meters	All beam DFW average of ocean segment y Source: Ocean ATBD

1.9 Group: /x_polar/beam_x

This group contains data for beams 1, 3, and 5 (strong beams), and beams 2, 4, and 6 (weak beams).

1.9.1 Datasets

Name Standard Name	Type(Dims) FillValue	Units	Description
depth_avg	FLOAT(:, :) INVALID_R4B	meters	Average of ocean segment ocean depth. Source: Ocean ATBD
depth_dfw	FLOAT(:, :) INVALID_R4B	meters	Degrees of freedom uncertainty weighted (DFW) average of ocean segment ocean depth. Source: Ocean ATBD
dof	FLOAT(:, :) INVALID_R4B	counts	Beam total of ocean segment degrees of freedom Source: Ocean ATBD
dot_avg	FLOAT(:, :) INVALID_R4B	meters	Simple average of dynamic ocean topography. For ice concentration >15%, h_ice_free is substituted for h-geoidseg - bin_ssbias. Source: Ocean ATBD
dot_avg_uncrtn	FLOAT(:, :) INVALID_R4B	meters	Average of ocean segment height uncertainties dependent on waves in open water an variability in and among bright-lead 10-m bins if IC>15% Source: Ocean ATBD
dot_dfw	FLOAT(:, :) INVALID_R4B	meters	Degree-of-freedom-uncertainty weighted by the uncertainty of the ocean segment dynamic ocean topography weighted by h_unctn for IC<15%, and h_ice_free_uncrtn for IC>15%. Source: Ocean ATBD
dot_dfw_uncrtn	FLOAT(:, :) INVALID_R4B	meters	Uncertainty of degree-of-freedom-uncertainty weighted average of dynamic ocean topography weighted by h_unctn for IC<15%, and h_ice_free_uncrtn for IC>15%. Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
dot_kurt_avg	FLOAT(:, :) INVALID_R4B	1	Simple average of excess kurtosis of the dynamic ocean topography (DOT). Source: Ocean ATBD
dot_kurt_dfw	FLOAT(:, :) INVALID_R4B	1	Degree of freedom weighted average of excess kurtosis of the dynamic ocean topography. Source: Ocean ATBD
dot_sigma_avg	FLOAT(:, :) INVALID_R4B	meters	Simple average of the standard deviation of dynamic ocean topography (DOT). Source: Ocean ATBD
dot_sigma_dfw	FLOAT(:, :) INVALID_R4B	meters	Degree-of-freedom-uncertainty weighted average of the standard deviation of the dynamic ocean topography. Source: Ocean ATBD
dot_skew_avg	FLOAT(:, :) INVALID_R4B	1	Simple average of the skewness of dynamic ocean topography. Source: Ocean ATBD
dot_skew_dfw	FLOAT(:, :) INVALID_R4B	1	Degree-of-freedom-uncertainty weighted average of the skewness of dynamic ocean topography. Source: Ocean ATBD
geoid_avg	FLOAT(:, :) INVALID_R4B	meters	Average of ocean segment mean tide system geoid height for each grid cell. Source: Ocean ATBD
geoid_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment mean tide system geoid height. Source: Ocean ATBD
ice_conc	FLOAT(:, :) INVALID_R4B	1	Simple average of ocean segment average ice concentration, gtx/ssh_segments/stats/ice_conc, of ATL12. Source: Ocean ATBD
lat_avg	DOUBLE(:, :) INVALID_R8B	degrees_north	Average of ocean segment latitude Source: Ocean ATBD
lat_dfw	DOUBLE(:, :) INVALID_R8B	degrees_north	DFW average of ocean segment latitude. Source: Ocean ATBD
length_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment length. Source: Ocean ATBD
length_sum	FLOAT(:, :) INVALID_R4B	meters	Sum of ocean segment lengths for each grid cell. Source: Ocean ATBD
lon_avg	DOUBLE(:, :) INVALID_R8B	degrees_east	Average of ocean segment longitude. Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
lon_dfw	DOUBLE(:, :) INVALID_R8B	degrees_east	DFW average of ocean segment longitude. Source: Ocean ATBD
n_ph_srfc	INTEGER(:, :) -	counts	Sum of ocean segment number of surface reflected photons. Source: Ocean ATBD
n_phs_ttl	INTEGER(:, :) -	counts	Sum of ocean segment total number of photons. Source: Ocean ATBD
n_segs	INTEGER(:, :) -	counts	Number of ocean segments for each grid cell. Source: Ocean ATBD
podppd_flag_prcnt	FLOAT(:, :) INVALID_R4B	1	Percent of ATL12 segments used that had podppd_flag_seg=0 for each grid cell. Source: Ocean ATBD
r_noise	FLOAT(:, :) INVALID_R4B	1/meter	Rate of noise photons per meter Source: Ocean ATBD
r_srfc	FLOAT(:, :) INVALID_R4B	meters	Rate of surface photons per meter Source: Ocean ATBD
ssb_avg	FLOAT(:, :) INVALID_R4B	meters	Average of ocean segment sea state bias Source: Ocean ATBD
ssb_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment sea state bias Source: Ocean ATBD
surf_prcnt_avg	FLOAT(:, :, :) INVALID_R4B	1	Simple averages of the percentages of each surface type for each grid cell. Map order: land, ocean, sea ice, ice sheet, inland water Source: Ocean ATBD
surf_prcnt_dfw	FLOAT(:, :, :) INVALID_R4B	1	DFW average of the percentages of each surface type for each grid cell. Map order: land, ocean, sea ice, ice sheet, inland water Source: Ocean ATBD
swh_avg	FLOAT(:, :) INVALID_R4B	meters	Mean of the ocean segment significant wave height Source: Ocean ATBD
swh_dfw	FLOAT(:, :) INVALID_R4B	meters	DFW average of ocean segment significant wave height Source: Ocean ATBD
x_avg	DOUBLE(:, :) INVALID_R8B	meters	Average of ocean segment x Source: Ocean ATBD
x_dfw	DOUBLE(:, :) INVALID_R8B	meters	Degrees of freedom uncertainty weighted (DFW) average of ocean segment x Source: Ocean ATBD

Name Standard Name	Type(Dims) FillValue	Units	Description
y_avg	DOUBLE(:, :) INVALID_R8B	meters	Average of ocean segment y Source: Ocean ATBD
y_dfw	DOUBLE(:, :) INVALID_R8B	meters	Degrees of freedom uncertainty weighted (DFW) average of ocean segment y Source: Ocean ATBD