

ATL20 Product Data Dictionary

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| | | |
|-----------------------------------|-------------|--|
| description | (Attribute) | This data set (ATL20) contains daily and monthly gridded sea ice freeboards. |
| level | (Attribute) | L3B |
| short_name | (Attribute) | ATL20 |
| title | (Attribute) | SET_BY_META |
| Group: / | | This data set (ATL20) contains daily and monthly gridded sea ice freeboards. |
| Conventions | (Attribute) | CF-1.7 |
| citation | (Attribute) | SET_BY_META |
| contributor_name | (Attribute) | Alek Petty (alek.a.petty@nasa.gov), Ron Kwok (rkwok01@uw.edu), Marco Bagnardi (marco.bagnardi@nasa.gov), Alvaro Ivanoff (alvaro.ivanoff-1@nasa.gov), Nathan Kurtz (nathan.t.kurtz@nasa.gov), Jeff Lee (jeffrey.e.lee@nasa.gov), Jesse Wimert (jesse.wimert@us.kbr.com), David Hancock (david.w.hancock@nasa.gov) |
| contributor_role | (Attribute) | Investigator, Investigator, Investigator, Investigator, Investigator, Algorithm Developer, Algorithm Developer, Algorithm Developer |
| creator_name | (Attribute) | SET_BY_META |
| date_created | (Attribute) | SET_BY_PGE |
| date_type | (Attribute) | UTC |
| geospatial_lat_max | (Attribute) | 0.0 |
| geospatial_lat_min | (Attribute) | 0.0 |
| geospatial_lat_units | (Attribute) | degrees_north |
| geospatial_lon_max | (Attribute) | 0.0 |
| geospatial_lon_min | (Attribute) | 0.0 |
| geospatial_lon_units | (Attribute) | degrees_east |
| granule_type | (Attribute) | ATL20 |
| hdfversion | (Attribute) | SET_BY_PGE |
| history | (Attribute) | SET_BY_PGE |
| identifier_product_doi | (Attribute) | 10.5067/ATLAS/ATL20.001 |
| identifier_product_doi_authority | (Attribute) | http://dx.doi.org |
| identifier_product_format_version | (Attribute) | SET_BY_PGE |
| identifier_product_type | (Attribute) | ATL20 |
| institution | (Attribute) | SET_BY_META |
| instrument | (Attribute) | SET_BY_META |
| keywords | (Attribute) | SET_BY_META |
| keywords_vocabulary | (Attribute) | SET_BY_META |
| 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) | L3B |
| project | (Attribute) | SET_BY_META |
| publisher_email | (Attribute) | SET_BY_META |

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|--------------------------------|-----------------------------|---|---|---|
| publisher_name | (Attribute) | SET_BY_META | | |
| publisher_url | (Attribute) | SET_BY_META | | |
| references | (Attribute) | SET_BY_META | | |
| 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 | | |
| Label (Layout) | Datatype(Dims) Fillvalue | long_name standard_name | units | description |
| grid_lat CHUNKED | DOUBLE(,:) | gridded latitude None | degrees_north | gridded latitude (Source: Sea Ice ATBD) |
| grid_lon CHUNKED | DOUBLE(,:) | gridded longitude None | degrees_east | gridded longitude (Source: Sea Ice ATBD) |
| grid_x CHUNKED | DOUBLE(:) | gridded x projection_x_coordinate | meters | Center of grid cell X values (Source: Sea Ice ATBD) |
| axis | (Attribute) | X | | |
| grid_mapping | (Attribute) | crs | | |
| grid_y CHUNKED | DOUBLE(:) | gridded y projection_y_coordinate | meters | Center of grid cell Y values (Source: Sea Ice ATBD) |
| axis | (Attribute) | Y | | |
| grid_mapping | (Attribute) | crs | | |
| land_mask_map CHUNKED | INTEGER(,:) INVALID_I4B | land mask map None | 1 | Provides a gridded map which describes each grid cell as land (=1) or ocean/sea ice (=0) (Source: Sea Ice ATBD) |
| grid_mapping | (Attribute) | crs: grid_x crs: grid_y | | |
| Group: /ancillary_data | | Contains information ancillary to the data product. This may include product characteristics, instrument characteristics and/or processing constants. | | |
| Label (Layout) | Datatype(Dims) Fillvalue | long_name standard_name | units | description |
| atlas_sdp_gps_epoch COMPACT | DOUBLE(1) | ATLAS Epoch Offset None | 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 (relative to the GPS epoch) for each data point. (Source: Operations) |
| control CONTIGUOUS | STRING(1) | Control File None | 1 | PGE-specific control file used to generate this granule. To re-use, replace breaks (BR) with linefeeds. (Source: Operations) |
| data_end_utc COMPACT | STRING(1) | End UTC Time of Granule (CCSDS-A, Actual) None | 1 | UTC (in CCSDS-A format) of the last data point within the granule. (Source: Derived) |
| data_start_utc COMPACT | STRING(1) | Start UTC Time of Granule (CCSDS-A, Actual) None | 1 | UTC (in CCSDS-A format) of the first data point within the granule. (Source: Derived) |

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| end_cycle COMPACT | INTEGER(1) | Ending Cycle None | 1 | The ending cycle number associated with the data contained within this granule. The cycle number is the counter of the number of 91-day repeat cycles completed by the mission. (Source: Derived) |
| end_delta_time COMPACT | DOUBLE(1) | ATLAS End Time (Actual) time | seconds since 2018-01-01 | Number of GPS seconds since the ATLAS SDP epoch at the last data point in the file. The ATLAS Standard Data Products (SDP) epoch offset is defined within /ancillary_data/atlas_sdp_gps_epoch as the number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the ATLAS SDP epoch. By adding the offset contained within atlas_sdp_gps_epoch to delta time parameters, the time in gps_seconds relative to the GPS epoch can be computed. (Source: Derived) |
| end_geoseg COMPACT | INTEGER(1) | Ending Geolocation Segment None | 1 | The ending geolocation segment number associated with the data contained within this granule. ICESat granule geographic regions are further refined by geolocation segments. During the geolocation process, a geolocation segment is created approximately every 20m from the start of the orbit to the end. The geolocation segments help align the ATLAS strong a weak beams and provide a common segment length for the L2 and higher products. The geolocation segment indices differ slightly from orbit-to-orbit because of the irregular shape of the Earth. The geolocation segment indices on ATL01 and ATL02 are only approximate because beams have not been aligned at the time of their creation. (Source: Derived) |
| end_gpssow COMPACT | DOUBLE(1) | Ending GPS SOW of Granule (Actual) None | seconds | GPS seconds-of-week of the last data point in the granule. (Source: Derived) |
| end_gpsweek COMPACT | INTEGER(1) | Ending GPSWeek of Granule (Actual) None | weeks from 1980-01-06 | GPS week number of the last data point in the granule. (Source: Derived) |
| end_orbit COMPACT | INTEGER(1) | Ending Orbit Number None | 1 | The ending orbit number associated with the data contained within this granule. The orbit number increments each time the spacecraft completes a full orbit of the Earth. (Source: Derived) |
| end_region COMPACT | INTEGER(1) | Ending Region None | 1 | The ending product-specific region number associated with the data contained within this granule. ICESat-2 data products are separated by geographic regions. The data contained within a specific region are the same for ATL01 and ATL02. ATL03 regions differ slightly because of different geolocation segment locations caused by the irregular shape of the Earth. The region indices for other products are completely independent. (Source: Derived) |
| end_rgt COMPACT | INTEGER(1) | Ending Reference Groundtrack None | 1 | The ending reference groundtrack (RGT) number associated with the data contained within this granule. There are 1387 reference groundtrack in the ICESat-2 repeat orbit. The reference groundtrack increments each time the spacecraft completes a full orbit of the Earth and resets to 1 each time the spacecraft completes a full cycle. (Source: Derived) |
| granule_end_utc COMPACT | STRING(1) | End UTC Time of Granule (CCSDS-A, Requested) | 1 | Requested end time (in UTC CCSDS-A) of this granule. (Source: Derived) |

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| | | None | | |
| granule_start_utc COMPACT | STRING(1) | Start UTC Time of Granule (CCSDS-A, Requested) None | 1 | Requested start time (in UTC CCSDS-A) of this granule. (Source: Derived) |
| release COMPACT | STRING(1) | Release Number None | 1 | Release number of the granule. The release number is incremented when the software or ancillary data used to create the granule has been changed. (Source: Operations) |
| start_cycle COMPACT | INTEGER(1) | Starting Cycle None | 1 | The starting cycle number associated with the data contained within this granule. The cycle number is the counter of the number of 91-day repeat cycles completed by the mission. (Source: Derived) |
| start_delta_time COMPACT | DOUBLE(1) | ATLAS Start Time (Actual) time | seconds since 2018-01-01 | Number of GPS seconds since the ATLAS SDP epoch at the first data point in the file. The ATLAS Standard Data Products (SDP) epoch offset is defined within /ancillary_data/atlas_sdp_gps_epoch as the number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the ATLAS SDP epoch. By adding the offset contained within atlas_sdp_gps_epoch to delta time parameters, the time in gps_seconds relative to the GPS epoch can be computed. (Source: Derived) |
| start_geoseg COMPACT | INTEGER(1) | Starting Geolocation Segment None | 1 | The starting geolocation segment number associated with the data contained within this granule. ICESat granule geographic regions are further refined by geolocation segments. During the geolocation process, a geolocation segment is created approximately every 20m from the start of the orbit to the end. The geolocation segments help align the ATLAS strong a weak beams and provide a common segment length for the L2 and higher products. The geolocation segment indices differ slightly from orbit-to-orbit because of the irregular shape of the Earth. The geolocation segment indices on ATL01 and ATL02 are only approximate because beams have not been aligned at the time of their creation. (Source: Derived) |
| start_gpsow COMPACT | DOUBLE(1) | Start GPS SOW of Granule (Actual) None | seconds | GPS seconds-of-week of the first data point in the granule. (Source: Derived) |
| start_gpsweek COMPACT | INTEGER(1) | Start GPSWeek of Granule (Actual) None | weeks from 1980-01-06 | GPS week number of the first data point in the granule. (Source: Derived) |
| start_orbit COMPACT | INTEGER(1) | Starting Orbit Number None | 1 | The starting orbit number associated with the data contained within this granule. The orbit number increments each time the spacecraft completes a full orbit of the Earth. (Source: Derived) |
| start_region COMPACT | INTEGER(1) | Starting Region None | 1 | The starting product-specific region number associated with the data contained within this granule. ICESat-2 data products are separated by geographic regions. The data contained within a specific region are the same for ATL01 and ATL02. ATL03 regions differ slightly because of different geolocation segment locations caused by the irregular shape of the Earth. The region indices for other products are completely independent. (Source: Derived) |
| start_rgt COMPACT | INTEGER(1) | Starting Reference Groundtrack | 1 | The starting reference groundtrack (RGT) number associated with the data contained within this |

| | | None | | 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) |
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| version COMPACT | STRING(1) | Version None | 1 | Version number of this granule within the release. It is a sequential number corresponding to the number of times the granule has been reprocessed for the current release. (Source: Operations) |
| Group: /ancillary_data/beam_selection | | These parameters control which beams from ATL10 are included in the output ATL20. Note that beams 1, 3, and 5 are strong beams, and beams 2, 4, and 6 are weak beams. | | |
| Label (Layout) | Datatype(Dims) Fillvalue | long_name standard_name | units | description |
| proc_atl20_spot_1 COMPACT | INTEGER_1(1) | Processing Flag for Spot 1 for ATL20 None | 1 | Indicates if spot 1 is processed for the ATL20 product (Source: Operations); (Meanings: [0 1]) (Values: ['not_processed', 'processed']) |
| proc_atl20_spot_2 COMPACT | INTEGER_1(1) | Processing Flag for Spot 2 for ATL20 None | 1 | Indicates if spot 2 is processed for the ATL20 product (Source: Operations); (Meanings: [0 1]) (Values: ['not_processed', 'processed']) |
| proc_atl20_spot_3 COMPACT | INTEGER_1(1) | Processing Flag for Spot 3 for ATL20 None | 1 | Indicates if spot 3 is processed for the ATL20 product (Source: Operations); (Meanings: [0 1]) (Values: ['not_processed', 'processed']) |
| proc_atl20_spot_4 COMPACT | INTEGER_1(1) | Processing Flag for Spot 4 for ATL20 None | 1 | Indicates if spot 4 is processed for the ATL20 product (Source: Operations); (Meanings: [0 1]) (Values: ['not_processed', 'processed']) |
| proc_atl20_spot_5 COMPACT | INTEGER_1(1) | Processing Flag for Spot 5 for ATL20 None | 1 | Indicates if spot 5 is processed for the ATL20 product (Source: Operations); (Meanings: [0 1]) (Values: ['not_processed', 'processed']) |
| proc_atl20_spot_6 COMPACT | INTEGER_1(1) | Processing Flag for Spot 6 for ATL20 None | 1 | Indicates if spot 6 is processed for the ATL20 product (Source: Operations); (Meanings: [0 1]) (Values: ['not_processed', 'processed']) |
| Group: /daily | | gridded daily averages | | |
| Group: /daily/dayxx | | Gridded daily averages | | |
| Label (Layout) | Datatype(Dims) Fillvalue | long_name standard_name | units | description |
| delta_time_beg COMPACT | DOUBLE(1) | Elapsed GPS seconds time | seconds since 2018-01-01 | Center time of the first freeboard height segment used in this gridded composite 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. (Source: Derived via Time Tagging) |
| delta_time_end COMPACT | DOUBLE(1) | Elapsed GPS seconds time | seconds since 2018-01-01 | Center time of the last freeboard height segment used in this gridded composite 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. |

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| | | | | (Source: Derived via Time Tagging) |
| length_sum CHUNKED | FLOAT(,;) INVALID_R4B | daily accumulated freeboard lengths None | meters | sum of freeboard height segment lengths for each daily grid cell (Source: sea ice atbbd) |
| grid_mapping | (Attribute) | ../crs: ../grid_x ../crs: ../grid_y | | |
| mean_fb CHUNKED | FLOAT(,;) INVALID_R4B | daily mean freeboard None | meters | Mean sea ice freeboard for each daily grid cell, calculated using the raw beam freeboards from the given beams (ancillary_data/beam_selection) weighted by segment length. (Source: Sea Ice ATBD) |
| grid_mapping | (Attribute) | ../crs: ../grid_x ../crs: ../grid_y | | |
| n_segs CHUNKED | INTEGER(,;) INVALID_I4B | daily population count None | 1 | Number of sea ice segments for each daily grid cell (Source: Sea Ice ATBD) |
| grid_mapping | (Attribute) | ../crs: ../grid_x ../crs: ../grid_y | | |
| sigma CHUNKED | FLOAT(,;) INVALID_R4B | daily standard deviation None | meters | Standard deviation of daily gridded freeboard height, computed following ATBD section 6.2. (Source: Sea Ice ATBD) |
| grid_mapping | (Attribute) | ../crs: ../grid_x ../crs: ../grid_y | | |
| Group: /monthly | | Gridded Monthly averages | | |
| Label (Layout) | Datatype(Dims) Fillvalue | long_name standard_name | units | description |
| delta_time_beg COMPACT | DOUBLE(1) | Elapsed GPS seconds time | seconds since 2018- 01-01 | Center time of the first freeboard height segment used in this gridded composite 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. (Source: Derived via Time Tagging) |
| delta_time_end COMPACT | DOUBLE(1) | Elapsed GPS seconds time | seconds since 2018- 01-01 | Center time of the last freeboard height segment used in this gridded composite 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. (Source: Derived via Time Tagging) |
| length_sum CHUNKED | FLOAT(,;) INVALID_R4B | monthly accumulated freeboard lengths None | meters | Sum of freeboard height segment lengths for each monthly grid cell (Source: Sea Ice ATBD) |
| grid_mapping | (Attribute) | ../crs: ../grid_x ../crs: ../grid_y | | |
| mean_fb CHUNKED | FLOAT(,;) INVALID_R4B | Monthly mean freeboard None | meters | Mean sea ice freeboard for each monthly grid cell, calculated using all available daily mean freeboards and weighted by mean segment length. (Source: Sea Ice ATBD) |
| grid_mapping | (Attribute) | ../crs: ../grid_x ../crs: ../grid_y | | |
| n_segs CHUNKED | INTEGER(,;) INVALID_I4B | Monthly population count None | 1 | number of sea ice segments for each monthly grid cell (Source: Sea Ice ATBD) |
| grid_mapping | (Attribute) | ../crs: ../grid_x ../crs: ../grid_y | | |

| sigma CHUNKED | FLOAT(;;) INVALID_R4B | Monthly standard deviation None | meters | Standard deviation of monthly gridded freeboard height, computed following ATBD section 6.2. (Source: Sea Ice ATBD) |
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| grid_mapping | (Attribute) | ../crs: ../grid_x ../crs: ../grid_y | | |
| Group: /orbit_info | | Contains orbit information. | | |
| data_rate | (Attribute) | Varies. Data are only provided when one of the stored values (besides time) changes. | | |
| Label (Layout) | Datatype(Dims) Fillvalue | long_name standard_name | units | description |
| crossing_time CHUNKED | DOUBLE(:) | Ascending Node Crossing Time time | seconds since 2018- 01-01 | The time, in seconds since the ATLAS SDP GPS Epoch, at which the ascending node crosses the equator. The ATLAS Standard Data Products (SDP) epoch offset is defined within /ancillary_data/atlas_sdp_gps_epoch as the number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the ATLAS SDP epoch. By adding the offset contained within atlas_sdp_gps_epoch to delta time parameters, the time in gps_seconds relative to the GPS epoch can be computed. (Source: POD/PPD) |
| cycle_number CHUNKED | INTEGER_1(:) | Cycle Number None | 1 | A count of the number of exact repeats of this reference orbit. (Source: Operations) |
| lan CHUNKED | DOUBLE(:) | Ascending Node Longitude None | degrees_east | Longitude at the ascending node crossing. (Source: POD/PPD) |
| orbit_number CHUNKED | UINT_2_LE(:) | Orbit Number None | 1 | Unique identifying number for each planned ICESat-2 orbit. (Source: Operations) |
| rgt CHUNKED | INTEGER_2(:) | Reference Ground track None | 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 CHUNKED | INTEGER_1(:) | Spacecraft Orientation None | 1 | This parameter tracks the spacecraft orientation between forward, backward and transitional flight modes. ICESat-2 is considered to be flying forward when the weak beams are leading the strong beams; and backward when the strong beams are leading the weak beams. ICESat-2 is considered to be in transition while it is maneuvering between the two orientations. Science quality is potentially degraded while in transition mode. (Source: POD/PPD); (Meanings: [0 1 2]) (Values: ['backward', 'forward', 'transition']) |
| sc_orient_time CHUNKED | DOUBLE(:) | Time of Last Spacecraft Orientation Change time | seconds since 2018- 01-01 | The time of the last spacecraft orientation change between forward, backward and transitional flight modes, expressed in seconds since the ATLAS SDP GPS Epoch. ICESat-2 is considered to be flying forward when the weak beams are leading the strong beams; and backward when the strong beams are leading the weak beams. ICESat-2 is considered to be in transition while it is maneuvering between the two orientations. Science quality is potentially degraded while in transition mode. The ATLAS Standard Data Products (SDP) epoch offset is defined within /ancillary_data/atlas_sdp_gps_epoch |

| | | | | as the number of GPS seconds between the GPS epoch (1980-01-06T00:00:00.000000Z UTC) and the ATLAS SDP epoch. By adding the offset contained within atlas_sdp_gps_epoch to delta time parameters, the time in gps_seconds relative to the GPS epoch can be computed. (Source: POD/PPD) |
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| Group: /quality_assessment | | Contains quality assessment data. This may include QA counters, QA along-track data and/or QA summary data. | | |
| Label (Layout) | Datatype(Dims) Fillvalue | long_name standard_name | units | description |
| qa_granule_fail_reason COMPACT | INTEGER(1) | Granule Failure Reason None | 1 | Flag indicating granule failure reason. 0=no failure; 1=processing error; 2=Insufficient output data was generated; 3=TBD Failure; 4=TBD_Failure; 5=other failure. (Source: Operations); (Meanings: [0 1 2 3 4 5]) (Values: ['no_failure', 'PROCESS_ERROR', 'INSUFFICIENT_OUTPUT', 'failure_3', 'failure_4', 'OTHER_FAILURE']) |
| qa_granule_pass_fail COMPACT | INTEGER(1) | Granule Pass Flag None | 1 | Flag indicating granule quality. 0=granule passes automatic QA. 1=granule fails automatic QA. (Source: Operations); (Meanings: [0 1]) (Values: ['PASS', 'FAIL']) |