

GLAH07 Product Data Dictionary

File-Level (Global) Attributes

Attribute	Example Value
featureType	timeSeries
ShortName	GLAH07
title	GLAS/ICESat L1B Global Backscatter Data (HDF5)
comment	The product includes full 532 nm and 1064 nm calibrated attenuated backscatter profiles at 5 times per second, and from 10 to -1 km, at 40 times per second. Also the calibration coefficient values and molecular backscatter profiles at once per second.
summary	GLAH07 contains calibrated backscatter profiles that allow heights of planetary boundary layers, aerosol layers, and cloud to be subsequently determined. The level 1B global backscatter data is provided at full instrument resolution. Each GLAH07 file was created from an equivalent GLA07 binary formatted file. The data used to create the GLAH07 values are contained in the equivalent GLAHxx files for the GLAxx files as shown in the provenance metadata for the creation of the GLA07.
license	http://nsidc.org/data/icesat/disclaimer.html
references	https://nsidc.org/data/glah02-glah07-glah08-glah09-glah10-glah11/versions/33/documentation (Guide Document for this product at NSIDC), http://nsidc.org/data/icesat/ (GLAS Product page at NSIDC)
AccessConstraints	Data may not be reproduced or distributed without including the CitationForExternalPublication for this product included in this Metadata. Data may not be distributed in an altered form without the written permission of the GLAS Science Team.
CitationforExternalPublication	The data used in this study were produced by the GLAS Science Team at the ICESat Science Investigator-led Processing System (I-SIPS) at NASA/GSFC. The data archive site is the NSIDC DAAC.
contributor_role	Data Originator, Investigator, Producer, Producer
contributor_name	David W. Hancock (David.W.Hancock@nasa.gov), Bob E Schutz (schutz@utcsr.ae.utexas.edu), Jay Zwally (Jay.Zwally@nasa.gov), John P DiMarzio (John.P.Dimarzio.1@nasa.gov)
creator_name	ICESat Science Investigator-led Processing System (I-SIPS)
creator_email	David.W.Hancock@nasa.gov
publisher_name	NSIDC User Services
publisher_email	nsidc@nsidc.org
publisher_url	http://nsidc.org/data/icesat/
platform	Ice, Cloud, and Land Elevation Satellite (ICESat)
instrument	Geoscience Laser Altimeter System (GLAS)
processing_level	1B

Attribute	Example Value
date_created	2012-12-20T20:16:43
spatial_coverage_type	Horizontal
history	2011-06-20T15:27:20 glas_atm 6.0.1 GLA07_633_2103_002_0407_0_01_0001.DAT, 2012-12-20T20:16:43.000000Z GLA07_h5_convert Version 1.0 (December 2012) out/GLAH07_633_2103_002_0407_0_01_0001.H5
geospatial_lat_min	-90.0
geospatial_lat_max	90.0
geospatial_lon_min	-180.0
geospatial_lon_max	180.0
geospatial_lat_units	degrees_north
geospatial_lon_units	degrees_east
keywords	Earth Science > Atmosphere > Atmospheric Radiation > Scattering > Aerosol Backscatter Cross Section Profile, Earth Science > Atmosphere > Aerosols > Aerosol Backscatter > Aerosol Backscatter Cross Section Profile, Earth Science > Land Surface > Topography > Terrain Elevation
keywords_vocabulary	GCMD Science Keywords Version 6.0
standard_vocabulary_name	CF-1.6
naming_authority	http://dx.doi.org/10.5067/ICESAT/GLAS/DATA107
project	Ice, Cloud, and Land Elevation Satellite (GLAS_HDF)
time_type	UTC
date_type	J2000
time_coverage_start	2003-11-18T01:51:38
time_coverage_end	2003-11-18T05:04:55
time_coverage_duration	11620
source	Satellite Measurements
HDFVersion	HDF5 1.8.9
identifier_file_uuid	599740C3-F062-4F49-A756-8A0DA37BC95B
identifier_product_doi	10.5067/ICESAT/GLAS/DATA107
identifier_product_type	GLAH07
identifier_product_format_version	1.0
Conventions	CF-1.6
institution	National Aeronautics and Space Administration (NASA)

Group: /Data_1HZ

This group contains data with a rate of 1HZ. 1Hz data may be indexed to the 40HZ data using the `i_rec_ndx` parameter in each respective time group.

Dimension Scales

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
DS_UTCTime_1	DOUBLE (UNLIMITED)	Transmit Time of First Shot in frame in J2000 (time)	seconds	The transmit time of the first shot in the 1 second frame measured as 'UTC seconds' elapsed since Jan 1 2000 12:00:00 UTC. This time has been derived from the GPS time accounting for leap seconds.	Rel 33 GLAS Binary Data	NOT_SET
DS_HeightRel_280	DOUBLE (UNLIMITED)	Relative Height (NOT_SET)	NOT_SET	This array contains the height above the DEM, where DEM = DEMmin+HoffMin. This dimension is used for the array <code>r_ir_mbscs</code>	Constants	NOT_SET
DS_HeightRel_548	DOUBLE (UNLIMITED)	Relative Height (NOT_SET)	NOT_SET	This array contains the height above the DEM, where DEM = DEMmin+HoffMin. This dimension is used for the array <code>r_g_mbscs</code>	Constants	NOT_SET
DS_BG_Index	INTEGER (UNLIMITED)	Index for r1_g_BG (NOT_SET)	NOT_SET	This array contains the index for <code>r1_g_BG</code>	Constants	NOT_SET

Group: Data_1HZ/Time

This group contains the 1HZ index and time-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates				
i_rec_ndx	INTEGER (UNLIMITED)	GLAS Record Index (NOT_SET)	NOT_SET	Unique index that relates this record to the corresponding record(s) in each GLAS data product.	Rel 33 GLAS Binary Data	DS_UTCTime_1				
shot_time_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	Shot time;0=shot time is transmit time;1=shot time is ground bounce time <table border="1" data-bbox="781 1423 1232 1612"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>transmit_time ground_bounce_time</td> </tr> </table>	flag values	flag_meanings	0, 1	transmit_time ground_bounce_time	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1	transmit_time ground_bounce_time									
gps_time_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	GPS time;0=no delta gps time correction applied to shot time;1=delta gps time correction applied to shot time <table border="1" data-bbox="781 1764 1179 1896"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>not_applied applied</td> </tr> </table>	flag values	flag_meanings	0, 1	not_applied applied	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1	not_applied applied									

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates				
pl_timing_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	Post-launch timing;0=no post-launch timing bias applied;1=post-launch timing bias applied - see header for value <table border="1" data-bbox="782 298 1180 432"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>not_applied applied</td> </tr> </table>	flag values	flag_meanings	0, 1	not_applied applied	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1	not_applied applied									
ddelay_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	Digitizer turn-on delay;0=digitizer turn-on delay accounted for in shot time - see header;1=digitizer turn-on delay not accounted for in shot time <table border="1" data-bbox="782 581 1180 716"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>applied not_applied</td> </tr> </table>	flag values	flag_meanings	0, 1	applied not_applied	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1	applied not_applied									
peaktp_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	Peak of transmit pulse;0=time to peak of transmit pulse accounted for in shot time;1=time to peak of transmit pulse not accounted for in shot time <table border="1" data-bbox="782 865 1180 999"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>applied not_applied</td> </tr> </table>	flag values	flag_meanings	0, 1	applied not_applied	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1	applied not_applied									

Group: Data_1HZ/Packet_data

This group contains the APID flags.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates				
apid_ADLg_1_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer large wf packet APID availability flag for 1st 10 shots <table border="1" data-bbox="805 1339 1261 1528"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ADLg_2_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer large wf packet APID availability flag for 2nd 10 shots <table border="1" data-bbox="805 1652 1261 1841"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates				
apid_ADLg_3_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer large wf packet APID availability flag for 3rd 10 shots <table border="1" data-bbox="805 273 1261 464"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ADLg_4_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer large wf packet APID availability flag for 4th 10 shots <table border="1" data-bbox="805 585 1261 777"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ADSm_1_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer small wf packet APID availability flag for 1st 10 shots <table border="1" data-bbox="805 898 1261 1089"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ADSm_2_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer small wf packet APID availability flag for 2nd 10 shots <table border="1" data-bbox="805 1211 1261 1402"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ADSm_3_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer small wf packet APID availability flag for 3rd 10 shots <table border="1" data-bbox="805 1524 1261 1715"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates				
apid_ADsm_4_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer small wf packet APID availability flag for 4th 10 shots <table border="1" data-bbox="805 270 1261 464"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_PC532_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	532 Photon counter packet APID availability flag <table border="1" data-bbox="805 556 1261 749"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_CD1064_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	1064 Cloud Digitizer packet APID availability flag <table border="1" data-bbox="805 842 1261 1035"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ADSci_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Ancillary science packet APID availability flag <table border="1" data-bbox="805 1127 1261 1320"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ASAD_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Altimeter Digitizer telemetry data in Ancillary science packet APID availability flag <table border="1" data-bbox="805 1434 1261 1627"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ASPC_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Photon counter telemetry data in Ancillary science packet APID availability flag <table border="1" data-bbox="805 1740 1261 1934"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates				
apid_ASCF_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Cloud Digitizer telemetry data in Ancillary science packet APID availability flag <table border="1" data-bbox="805 273 1261 464"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_ASCT_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Command and Telemetry (C&T) board telem. data in Ancillary science packet APID availability flag <table border="1" data-bbox="805 583 1261 774"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_CT20_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	CT HW telemetry packet #1 (APID 20 - Laser Monitor Board, Temperature Controller Module, Motor Control System & High Voltage Power Supply Housekeeping Telemetry) APID availability flag <table border="1" data-bbox="805 951 1261 1142"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_CT21_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	CT HW telemetry packet #2 (APID 21 - Power Distribution Unit (PDU) Housekeeping Telemetry) APID availability flag <table border="1" data-bbox="805 1289 1261 1480"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_CT22_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	CT HW telemetry packet #3 (APID 22 - Housekeeping Temperatures #1 Telemetry) APID availability flag <table border="1" data-bbox="805 1629 1261 1820"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates				
apid_CT23_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	CT HW telemetry packet #4 (APID 23 - Housekeeping Temperatures #2 Telemetry) APID availability flag <table border="1" data-bbox="805 300 1261 491"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_CT50_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	CT HW telemetry packet #5 (APID 50 - Small Software #2 Telemetry) APID availability flag <table border="1" data-bbox="805 611 1261 802"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_SS24_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Small software telemetry packet #1 (APID 24 - Small Software #1 Telemetry) APID availability flag <table border="1" data-bbox="805 921 1261 1113"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_LS25_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Large software telemetry packet #1 (APID 25 - Large Software Telemetry #1) APID availability flag <table border="1" data-bbox="805 1232 1261 1423"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									
apid_LS55_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Large software telemetry packet #2 (APID 55 - Large Software Telemetry #2) APID availability flag <table border="1" data-bbox="805 1543 1261 1734"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>present filled_at_EDOS never_received_ISIPS_filled</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data	DS_UTCTime_1
flag values	flag_meanings									
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled									

Label	Datatype (Dimensions)	long_name (standard_name)	units	description		source	coordinates
apid_GPS_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	GPS telemetry packet APID availability flag		Rel 33 GLAS Binary Data	DS_UTCTime_1
				flag values	flag_meanings		
				0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled		
apid_PRAP_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	S/C position, rate, and attitude telemetry packet (PRAP) APID availability flag		Rel 33 GLAS Binary Data	DS_UTCTime_1
				flag values	flag_meanings		
				0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled		
apid_LPA_1_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Laser Pulse Array (LPA) packet #1 APID availability flag		Rel 33 GLAS Binary Data	DS_UTCTime_1
				flag values	flag_meanings		
				0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled		
apid_LPA_2_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	LPA packet #2 APID availability flag		Rel 33 GLAS Binary Data	DS_UTCTime_1
				flag values	flag_meanings		
				0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled		
apid_LPA_3_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	LPA packet #3 APID availability flag		Rel 33 GLAS Binary Data	DS_UTCTime_1
				flag values	flag_meanings		
				0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled		
apid_LPA_4_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	LPA packet #4 APID availability flag		Rel 33 GLAS Binary Data	DS_UTCTime_1
				flag values	flag_meanings		
				0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled		

Group: Data_1HZ/Quality

This group contains the quality-related flags.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source				
orbit_pred_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	<p>Predicted or precision orbit;0=precision orbit used;1=predicted orbit used;2=on-board orbit used</p> <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2</td> <td>precision_orbit_used predicted_orbit_used onboard_orbit_used</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	precision_orbit_used predicted_orbit_used onboard_orbit_used	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1, 2	precision_orbit_used predicted_orbit_used onboard_orbit_used								
orbit_man_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	<p>Maneuvers;0=no maneuvers;1=maneuvers occurred during this record; orbit degraded</p> <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_maneuvers maneuvers_occurred_during_this_record</td> </tr> </table>	flag values	flag_meanings	0, 1	no_maneuvers maneuvers_occurred_during_this_record	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	no_maneuvers maneuvers_occurred_during_this_record								
orbit_model_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	<p>Model problems;0=no model problems;1=model problems; orbit RMS > 5 cm; required accuracy not met</p> <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_model_problems model_problems</td> </tr> </table>	flag values	flag_meanings	0, 1	no_model_problems model_problems	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	no_model_problems model_problems								
orbit_att_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	<p>Attitude;0=instrument attitude used for orbit;1=modelled attitude used, possible orbit degradation</p> <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>instrument_attitude_used_for_orbit modeled_attitude_used</td> </tr> </table>	flag values	flag_meanings	0, 1	instrument_attitude_used_for_orbit modeled_attitude_used	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	instrument_attitude_used_for_orbit modeled_attitude_used								
orbit_array_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	<p>Solar ray orientation;0=solar ray orientation used from measurement;1=modelled solar ray orientation, possible orbit degradation</p> <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>solar_ray_orientation_used_from_measurement modeled_solar_ray_orientation</td> </tr> </table>	flag values	flag_meanings	0, 1	solar_ray_orientation_used_from_measurement modeled_solar_ray_orientation	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	solar_ray_orientation_used_from_measurement modeled_solar_ray_orientation								

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source				
orbit_gps_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	GPS;0=no GPS data outage;1=GPS data missing from portion of this record, possible degradation <table border="1" data-bbox="886 273 1463 464"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_GPS_data_outage GPS_data_missing</td> </tr> </table>	flag values	flag_meanings	0, 1	no_GPS_data_outage GPS_data_missing	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	no_GPS_data_outage GPS_data_missing								
att_offnadir_flg	INTEGER_1 (UNLIMITED)	Attitude Flag 1 (NOT_SET)	NOT_SET	Off-nadir angle; 0=off-nadir angle within limits;1=large off-nadir angle <table border="1" data-bbox="886 583 1382 716"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>within_limit outside_limits</td> </tr> </table>	flag values	flag_meanings	0, 1	within_limit outside_limits	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	within_limit outside_limits								
att_oceansw_flg	INTEGER_1 (UNLIMITED)	Attitude Flag 1 (NOT_SET)	NOT_SET	Ocean sweep;0=non-ocean sweep, 1=within time frame of ocean sweep <table border="1" data-bbox="886 842 1382 974"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>not_ocean_sweep ocean_sweep</td> </tr> </table>	flag values	flag_meanings	0, 1	not_ocean_sweep ocean_sweep	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	not_ocean_sweep ocean_sweep								
att_pointing_flg	INTEGER_1 (UNLIMITED)	Attitude Flag 1 (NOT_SET)	NOT_SET	Target of opportunity off-pointing;0=not within target of opportunity off-pointing 1=within time of target of opportunity off-pointing <table border="1" data-bbox="886 1100 1308 1232"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>not_pointing pointing</td> </tr> </table>	flag values	flag_meanings	0, 1	not_pointing pointing	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	not_pointing pointing								
att_steering_flg	INTEGER_1 (UNLIMITED)	Attitude Flag 1 (NOT_SET)	NOT_SET	Steering to reference track;0=not within target of opportunity off-pointing 1=within time of target of opportunity off-pointing <table border="1" data-bbox="886 1358 1308 1491"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>not_pointing pointing</td> </tr> </table>	flag values	flag_meanings	0, 1	not_pointing pointing	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	not_pointing pointing								
att_actual_flg	INTEGER_1 (UNLIMITED)	Attitude Flag 1 (NOT_SET)	NOT_SET	0=i_AttFlg_1 through i_AttFlg_3 have been set based on actual data 1=i_AttFlg_1 through i_AttFlg_3 have not been set - IGNORE these flags <table border="1" data-bbox="886 1638 1219 1770"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>actual ignore</td> </tr> </table>	flag values	flag_meanings	0, 1	actual ignore	Rel 3: GLAS Binary Data
flag values	flag_meanings								
0, 1	actual ignore								

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source				
att_ist_flg	INTEGER_1 (UNLIMITED)	Attitude Flag 1 (NOT_SET)	NOT_SET	<p>IST data;0 = IST data is good 1 = Missing IST for at least a portion of the time of this frame 2 = Noisy IST for at least a portion of the time of this frame 3 = Noisy and missing IST for at least a portion of the time of this frame</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2, 3</td> <td>good missing noisy missing_noisy</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2, 3	good missing noisy missing_noisy	Rel 33: GLAS Binary Data
flag values	flag_meanings								
0, 1, 2, 3	good missing noisy missing_noisy								
att_gyro_flg	INTEGER_1 (UNLIMITED)	Attitude Flag 1 (NOT_SET)	NOT_SET	<p>GYRO data;0 = GYRO data is good 1 = Missing GYRO for at least a portion of the time of this frame 2 = Noisy GYRO for at least a portion of the time of this frame 3 = Noisy and missing GYRO for at least a portion of the time of this frame</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2, 3</td> <td>good missing noisy missing_noisy</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2, 3	good missing noisy missing_noisy	Rel 33: GLAS Binary Data
flag values	flag_meanings								
0, 1, 2, 3	good missing noisy missing_noisy								
att_lrs_flg	INTEGER_1 (UNLIMITED)	Attitude Flag 1 (NOT_SET)	NOT_SET	<p>LRS Data;0 = LRS data good, consists of star, laser and CRS 1 = LRS data good, but no star data for at least a portion of this frame 2 = LRS data good, but no laser data for at least a portion of this frame 3 = LRS data good, but no CRS data for at least a portion of this frame 4 = LRS data good, but only CRS data for at least a portion of this frame 5 = LRS data good, but only laser data for at least a portion of this frame 6 = LRS data good, but only star data for at least a portion of this frame 7 = Missing LRS for at least a portion of the time of this frame</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2, 3, 4, 5, 6, 7</td> <td>good no_star no_laser no_crs only_crs only_laser only_star missing_lrs</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2, 3, 4, 5, 6, 7	good no_star no_laser no_crs only_crs only_laser only_star missing_lrs	Rel 33: GLAS Binary Data
flag values	flag_meanings								
0, 1, 2, 3, 4, 5, 6, 7	good no_star no_laser no_crs only_crs only_laser only_star missing_lrs								
i_DitheringEnabledFlag	INTEGER_1 (UNLIMITED)	Dithering Enabled Flag (NOT_SET)	NOT_SET	<p>0=dithering not enabled, 1=dithering enabled</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>false true</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	false true	Rel 33: GLAS Binary Data
flag values	flag_meanings								
0, 1	false true								

Group: Data_1HZ/Geolocation

This group contains geolocation-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d_lat	DOUBLE (UNLIMITED)	Spot 1 Coordinate Data, Latitude Corrected (latitude)	degrees_north	Profile coordinate in the IERS Terrestrial Reference Frame: east longitude and north latitude, at the 1 hertz rate.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d_lon	DOUBLE (UNLIMITED)	Spot 1 Coordinate Data, Longitude Corrected (longitude)	degrees_east	Profile coordinate in the IERS Terrestrial Reference Frame: east longitude and north latitude, at the 1 hertz rate.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Background

This group contains information relating to the background noise.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r1_g_BG	REAL (UNLIMITED, 4)	532nm Background at 1 Hz (NOT_SET)	counts	The normalized 532 nm background counts from upper (1) and lower (2) integration intervals. (3) is background used to compute NRB. (1) Upper Background (256 us avg), (2) Lower Background (256 us avg), (3) The one used, (4) Below ground background (from the portion of profile below ground). Averaged over 40 shots.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Flags

This group contains flags indicating the quality or suitability of data.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description				
surf_ld_flg	INTEGER_1 (UNLIMITED)	Region Type (NOT_SET)	NOT_SET	Region type;0=no Land;1=Land <table border="1" data-bbox="771 1033 1088 1165"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_land land</td> </tr> </table>	flag values	flag_meanings	0, 1	no_land land
flag values	flag_meanings							
0, 1	no_land land							
surf_si_flg	INTEGER_1 (UNLIMITED)	Region Type (NOT_SET)	NOT_SET	Region type;0=no Sea Ice;1=Sea Ice <table border="1" data-bbox="771 1264 1156 1396"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_sea_ice sea_ice</td> </tr> </table>	flag values	flag_meanings	0, 1	no_sea_ice sea_ice
flag values	flag_meanings							
0, 1	no_sea_ice sea_ice							
surf_oc_flg	INTEGER_1 (UNLIMITED)	Region Type (NOT_SET)	NOT_SET	Region type;0=no Ocean;1=Ocean <table border="1" data-bbox="771 1495 1107 1627"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_ocean ocean</td> </tr> </table>	flag values	flag_meanings	0, 1	no_ocean ocean
flag values	flag_meanings							
0, 1	no_ocean ocean							
surf_is_flg	INTEGER_1 (UNLIMITED)	Region Type (NOT_SET)	NOT_SET	Region type;0=no Ice Sheet;1=Ice Sheet <table border="1" data-bbox="771 1726 1205 1858"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_ice_sheet ice_sheet</td> </tr> </table>	flag values	flag_meanings	0, 1	no_ice_sheet ice_sheet
flag values	flag_meanings							
0, 1	no_ice_sheet ice_sheet							

Label	Datatype (Dimensions)	long_name (standard_name)	units	description				
i_AttFlg3	INTEGER_1 (UNLIMITED)	Attitude Flag 3 (NOT_SET)	NOT_SET	<p>Attitude Flag 3, 0=PAD used for geolocation, 1=PAD not used for geolocation.</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>pad_used pad_not_used</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	pad_used pad_not_used
flag values	flag_meanings							
0, 1	pad_used pad_not_used							
i_metFlg_src	INTEGER_1 (UNLIMITED)	Met/std atm source/quality flag (NOT_SET)	NOT_SET	<p>Flag indicating if met data or standard atmosphere data are used to fill met profiles. The met data used by the atmospheric processing routines normally consists of 2 global gridded data sets, one before the GLAS observation time and one after. They are both normally within 6 hours of the GLAS observation time. A check is made on the time of the MET files and if either one is > 24 hours from the GLAS observation time, it is not used. If both files are not used, then the standard atmosphere data is according to the latitude and season. 0: use both met files; 1: use first met file; 2: use second met file; 3: use standard atmosphere, arctic summer; 4: use standard atmosphere, arctic winter; 5: use standard atmosphere, midlatitude summer; 6: use standard atmosphere, midlatitude winter; 7: use standard atmosphere, tropical.</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2, 3, 4, 5, 6, 7</td> <td>both_met_files first_met_file second_met_file std_atm_arctic_summer std_atm_arctic_winter std_atm_midlatitude_summer std_atm_midlatitude_winter std_atm_tropical</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2, 3, 4, 5, 6, 7	both_met_files first_met_file second_met_file std_atm_arctic_summer std_atm_arctic_winter std_atm_midlatitude_summer std_atm_midlatitude_winter std_atm_tropical
flag values	flag_meanings							
0, 1, 2, 3, 4, 5, 6, 7	both_met_files first_met_file second_met_file std_atm_arctic_summer std_atm_arctic_winter std_atm_midlatitude_summer std_atm_midlatitude_winter std_atm_tropical							
i_LidarQF	INTEGER_1 (UNLIMITED)	Lidar Frame quality flag (NOT_SET)	NOT_SET	<p>Lidar frame quality flag. 0=good data, 1=data unsuitable for L2 processing due to weak 532 laser energy or high background.</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>good unsuitable</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	good unsuitable
flag values	flag_meanings							
0, 1	good unsuitable							
i1_g_bscs_qf	INTEGER_1 (UNLIMITED)	532 nm Attenuated Backscatter Vertical Profile Flag(1 hz) (NOT_SET)	NOT_SET	<p>Quality flag at 1Hz. 0=good quality; 2=532nm integrated return is bad; 3=ratio of integrated return to molecular integrated return is bad.</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 2, 3</td> <td>good 532_return_bad ratio_integrated_return_to_molecular_integrated_return_bad</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 2, 3	good 532_return_bad ratio_integrated_return_to_molecular_integrated_return_bad
flag values	flag_meanings							
0, 2, 3	good 532_return_bad ratio_integrated_return_to_molecular_integrated_return_bad							
i_g_cal_qf	INTEGER_1 (UNLIMITED)	532 nm Attenuated Backscatter Vertical Profile Flag(1 hz) (NOT_SET)	NOT_SET	<p>Quality flag: value 0 = good quality; value 2 = if no records left after elimination tests, value before elimination tests used instead</p> <table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 2, 3</td> <td>good no_records_left_after_elimination_tests value_before_elimination_tests_used_instead</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 2, 3	good no_records_left_after_elimination_tests value_before_elimination_tests_used_instead
flag values	flag_meanings							
0, 2, 3	good no_records_left_after_elimination_tests value_before_elimination_tests_used_instead							

Label	Datatype (Dimensions)	long_name (standard_name)	units	description				
i_g_cal_dnf	INTEGER_1 (UNLIMITED)	532 nm Attenuated Backscatter Vertical Profile Flag(1 hz) (NOT_SET)	NOT_SET	Day/night flag at 1Hz. 0=indetermanent; 1=night; 2=day. <table border="1" data-bbox="771 241 1214 378"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>indetermanent night day</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	indetermanent night day
flag values	flag_meanings							
0, 1, 2	indetermanent night day							
i_ir_cal_qf	INTEGER_1 (UNLIMITED)	1064 nm Attenuated Backscatter Vertical Profile Flag (NOT_SET)	NOT_SET	Quality flag at 1Hz. 0=good quality; 2=if no records left after elimination tests, value before elimination tests used instead. <table border="1" data-bbox="771 499 1550 688"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 2, 3</td> <td>good no_records_left_after_elimination_tests value_before_elimination_tests_used_instead</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 2, 3	good no_records_left_after_elimination_tests value_before_elimination_tests_used_instead
flag values	flag_meanings							
0, 2, 3	good no_records_left_after_elimination_tests value_before_elimination_tests_used_instead							

Group: Data_1HZ/Geophysical

This group contains geophysical parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r_Surface_pres	REAL (UNLIMITED)	Surface Pressure (surface_temperature)	hPa	Atmospheric pressure at Earth's surface level measured in hPa and derived from the meteorological data files.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_Surface_relh	REAL (UNLIMITED)	Relative Humidity (surface_air_pressure)	percent	Atmospheric relative humidity at Earth's surface level measured as a percentage and derived from the meteorological data files.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_Surface_temp	REAL (UNLIMITED)	Surface Temperature (relative_humidity)	degree Celsius	Atmospheric temperature at Earth's surface level measured in degrees Celsius and derived from the meteorological data files.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_Surface_wdir	REAL (UNLIMITED)	Surface Wind Direction Azimuth from North (NOT_SET)	degrees	Wind direction at Earth's surface level measured in degrees of azimuth from North and derived from the meteorological data files.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_Surface_wind	REAL (UNLIMITED)	Surface Wind Speed (NOT_SET)	meters/second	Wind speed at Earth's surface level measured in km/hour and derived from the meteorological data files.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_atm_dem	REAL (UNLIMITED)	DEM value at current location from 1 km x 1 km grid (NOT_SET)	meters	Surface height value for current location from 1 km x 1 km grid	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_topo_elev	REAL (UNLIMITED)	Topographic elevation of surface above geoid (NOT_SET)	meters	Topographic elevation of surface above geoid based upon POD, PAD, and geoid	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Angle

This group contains reflectivity information.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r_beam_azimuth	REAL (UNLIMITED)	Azimuth (NOT_SET)	degrees	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.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_beam_coelev	REAL (UNLIMITED)	Co-elevation (NOT_SET)	degrees	Co-elevation (CE) is direction from vertical of the laser beam as seen by an observer located at the laser ground spot.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_pad_angle	REAL (UNLIMITED)	PAD Angle (NOT_SET)	degrees	Attitude angle calculated from PAD and POD.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Surface

This group contains surface related information.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r_rng_geoid	REAL (UNLIMITED)	Range of satellite above geoid (NOT_SET)	meters	Range of satellite above geoid based upon POD, PAD, and geoid	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_Rng2CDPProf_Cor	REAL (UNLIMITED)	Start Range of 1064 nm Backscatter Profile (NOT_SET)	kilometers	The range from the spacecraft to the start of the 1064 nm backscatter profile - the start of the 20 KM segment of Lidar Data. This variable has a slight correction applied to it.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_Rng2PCProf_Cor	REAL (UNLIMITED)	Start Range of 532 nm Backscatter Profile (NOT_SET)	meters	The range from the spacecraft to the start of the 532 nm backscatter profile - the start of the 40 KM segment of Lidar Data. This variable has a slight correction applied to it.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_ir_bin_shift	INTEGER (UNLIMITED)	1064 vertical alignment offset (NOT_SET)	NOT_SET	Number of bins that 1064 nm surface return bin is shifted to align with 532 nm surface return bin.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Reflectivity

This group contains reflectivity information.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
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Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r_SolAng	REAL (UNLIMITED)	Solar Angle (NOT_SET)	Degrees	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 one degree accuracy.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Backscatter

This group contains information related to backscatter.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r_g_cal_cof_high	REAL (UNLIMITED)	532 nm Backscatter Calibration Coefficient high (NOT_SET)	(counts) (km ³ /J)sr	The calibration value applied to the 532 nm lidar data to get the backscatter (high cal ht).	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_g_cal_cof_low	REAL (UNLIMITED)	532 nm Backscatter Calibration Coefficient low (NOT_SET)	(counts) (km ³ /J)sr	The calibration value applied to the 532 nm lidar data to get the backscatter (low cal ht).	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_g_cal_cof_used	REAL (UNLIMITED)	532 nm Backscatter Calibration Coefficient used (NOT_SET)	(counts) (km ³ /J)sr	The calibration value applied to the 532 nm lidar data to get the backscatter (used).	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_ir_cal_cof_low	REAL (UNLIMITED)	1064 nm Backscatter Calibration Coefficienthigh (NOT_SET)	(Watts) (km ³ /J)sr	The calibration value applied to the 1064 nm lidar data to get the backscatter (low cal ht).	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_ir_cal_cof_used	REAL (UNLIMITED)	1064 nm Backscatter Calibration Coefficient used (NOT_SET)	(Watts) (km ³ /J)sr	The calibration value applied to the 1064 nm lidar data to get the backscatter (used).	Rel 33 GLAS Binary Data	DS_UTCTime_1
r1_int_ret	REAL (UNLIMITED)	532 nm integrated return from 40 to 20 km (NOT_SET)	1/(m-sr)	The integrated or summed 532 attenuated backscatter profile from 40 to 20 km. When normalized by the sum of the molecular backscatter for the same interval, gives an indication of data quality	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_g_mbscs	REAL (UNLIMITED, 548)	532 nm molecular backscatter cross section profile 40 to -1 km (NOT_SET)	1/(m-sr)	532 nm molecular backscatter profile computed from MET data interpolated in space and time to profile location.	Rel 33 GLAS Binary Data	DS_UTCTime_1
r_ir_mbscs	REAL (UNLIMITED, 280)	1064 nm molecular backscatter cross section profile 20 to -1 km (NOT_SET)	1/(m-sr)	1064 nm molecular backscatter profile computed from MET data interpolated in space and time to profile location.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: /Data_5HZ/

This group contains data with a rate of 5HZ. 5HZ data may be indexed to the 1HZ data using the `i_rec_ndx` parameter in each respective time group.

Dimension Scales

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
<code>DS_UTCTime_5</code>	DOUBLE (UNLIMITED)	Transmit Time of First Shot in frame in J2000 (time)	seconds	The transmit time of five shots in the 1 second frame measured as 'UTC seconds' elapsed since Jan 1 2000 12:00:00 UTC. This time has been derived from the GPS time accounting for leap seconds.	Rel 33 GLAS Binary Data	NOT_SET
<code>DS_HeightRel_280</code>	DOUBLE (UNLIMITED)	Relative Height (NOT_SET)	NOT_SET	This array contains the height above the DEM, where $DEM = DEM_{min} + Hoff_{min}$. This dimension is used for the array <code>r5_ir_bscs</code>	Constants	NOT_SET
<code>DS_HeightRel_548</code>	DOUBLE (UNLIMITED)	Relative Height (NOT_SET)	NOT_SET	This array contains the height above the DEM, where $DEM = DEM_{min} + Hoff_{min}$. This dimension is used for the arrays <code>r5_g_bscs</code> and <code>i5_g_sat_prof</code>	Constants	NOT_SET
<code>DS_BG_Index</code>	INTEGER (UNLIMITED)	Index for <code>r5_g_BG</code> and <code>r5_ir_BG</code> (NOT_SET)	NOT_SET	This array contains the index for <code>r5_g_BG</code> and <code>r5_ir_BG</code>	Constants	NOT_SET

Group: Data_5HZ/Time

This group contains the 5HZ index and time-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
<code>i_rec_ndx</code>	INTEGER (UNLIMITED)	GLAS Record Index (NOT_SET)	NOT_SET	Unique index that relates this record to the corresponding record(s) in each GLAS data product.	Rel 33 GLAS Binary Data	<code>DS_UTCTime_5</code>
<code>i_shot_count</code>	INTEGER (UNLIMITED)	GLAS shot counter (NOT_SET)	NOT_SET	Identifies each laser shot within a record index. A combination of <code>i_rec_ndx</code> and <code>i_shot_count</code> can be used to uniquely identify each GLAS laser shot.	Rel 33 GLAS Binary Data	<code>DS_UTCTime_5</code>

Group: Data_5HZ/Geolocation

This group contains geolocation-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
<code>d_lat</code>	DOUBLE (UNLIMITED)	Coordinate Data, Latitude Corrected (latitude)	degrees_north	Profile coordinate in the IERS Terrestrial Reference Frame: east longitude and north latitude, at the 5 hertz rate.	Rel 33 GLAS Binary Data	<code>DS_UTCTime_5</code>

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d_lon	DOUBLE (UNLIMITED)	Coordinate Data, Longitude Corrected (longitude)	degrees_east	Profile coordinate in the IERS Terrestrial Reference Frame: east longitude and north latitude, at the 5 hertz rate.	Rel 33 GLAS Binary Data	DS_UTCTime_5

Group: Data_5HZ/Backscatter

This group contains the 5HZ backscatter-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r5_g_bscs	REAL (UNLIMITED, 548)	532 nm Merged Attenuated Backscatter Profile 40 to -1 km (NOT_SET)	1/(m-sr)	For the full vertical atmospheric profile (-1 to 41 km), the atmosphere 532 nm calibrated, attenuated backscatter profile at the rate of 5 per 1 second. When the 532 nm data becomes saturated the 1064 nm data is converted and merged into the data set. The Level 1A data that occurs at 5/second, every 8 shots are averaged and stored in the profile and the 1/second is replicated to get the full 5 Hz rate on this product.	Rel 33 GLAS Binary Data	DS_UTCTime_5
r5_ir_bscs	REAL (UNLIMITED, 280)	1064 nm Attenuated Backscatter Profile 20 to -1 km (NOT_SET)	1/(m-sr)	Atmosphere 1064 nm calibrated, attenuated backscatter profile (-1 to 20 km) at the rate of 5 per 1 second. Averages of 8 shots are used for the Level 1A data that occurs at 5/second rate.	Rel 33 GLAS Binary Data	DS_UTCTime_5

Group: Data_5HZ/Flags

This group contains flags indicating the quality or suitability of data.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description				
i5_g_bscs_uf	INTEGER_1 (UNLIMITED)	532 nm Attenuated Backscatter Vertical Profile Flag(5hz) (NOT_SET)	NOT_SET	Use flag at 5 Hz. 0=no, saturated bins were not replaced; 1=yes, saturated bins were repl <table border="1" data-bbox="782 1268 1552 1402"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>saturated_bins_not_replaced saturated_bins_replaced</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	saturated_bins_not_replaced saturated_bins_replaced
flag values	flag_meanings							
0, 1	saturated_bins_not_replaced saturated_bins_replaced							
i5_g_bscs_qf	INTEGER_1 (UNLIMITED)	532 nm Attenuated Backscatter Vertical Profile Flag(5hz) (NOT_SET)	NOT_SET	Quality flag at 5Hz: value 0 = good data; value 1 = if 532 nm laser energy flag equals 3; v; 1064 nm backscatter value replaced 532 nm backscatter value <table border="1" data-bbox="782 1524 1552 1713"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>good 532nm_laser_energy_flag_equals_3 1064nm_quality_flag_equals_1_and_1064nm_backscatter_valu</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	good 532nm_laser_energy_flag_equals_3 1064nm_quality_flag_equals_1_and_1064nm_backscatter_valu
flag values	flag_meanings							
0, 1, 2	good 532nm_laser_energy_flag_equals_3 1064nm_quality_flag_equals_1_and_1064nm_backscatter_valu							
i5_ir_bscs_qf	INTEGER_1 (UNLIMITED)	1064 nm Attenuated Backscatter Vertical Profile Flag (NOT_SET)	NOT_SET	Quality flag at 5Hz. 0=good data; 1=1064 nm laser energy flag equals 3 <table border="1" data-bbox="782 1806 1333 1940"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>good 1064_laser_energy_flag_is_3</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	good 1064_laser_energy_flag_is_3
flag values	flag_meanings							
0, 1	good 1064_laser_energy_flag_is_3							

Label	Datatype (Dimensions)	long_name (standard_name)	units	description				
i5_g_sat_prof	INTEGER_1 (UNLIMITED, 548)	532 nm Saturation Flag Profile 40 to -1 km (NOT_SET)	NOT_SET	532 nm Saturation Flag Profile from 41 to -1 km. Indicates whether the 532 data were saturated converted from the 1064 data. 1 bit per each shot(5) per bin (548); 0 = not saturated, 1 = : <table border="1" data-bbox="782 268 1239 403"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>not_saturated saturated.</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	not_saturated saturated.
flag values	flag_meanings							
0, 1	not_saturated saturated.							

Group: Data_5HZ/Background

This group contains information relating to the background noise.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r5_g_BG	REAL (UNLIMITED, 4)	532 nm Background at 5 Hz (NOT_SET)	counts	The normalized 532 nm background counts from upper (1) and lower (2) integration intervals. (3) is background used to compute NRB. (1) Upper Background (256 us avg), (2) Lower Background (256 us avg), (3) The one used, (4) Below ground background (from the portion of profile below ground). Averaged over 8 shots.	Rel 33 GLAS Binary Data	DS_UTCTime_5
r5_ir_BG	REAL (UNLIMITED, 4)	1064 nm Background at 5 Hz (NOT_SET)	W	The normalized 1064 nm background counts from upper (1) and lower (2) integration intervals. (3) is background used to compute NRB. (1) Upper Background (256 us avg), (2) Lower Background (256 us avg), (3) The one used, (4) Below ground background (from the portion of profile below ground). Averaged over 8 shots.	Rel 33 GLAS Binary Data	DS_UTCTime_5

Group: Data_5HZ/Transmit_Energy

This group contains transmit energy parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r5_g_TxNrg_EU	REAL (UNLIMITED)	532 nm Laser Transmit Energy at 5 Hz (NOT_SET)	Joules	The 532 nm transmitted pulse energy in energy units, converted from the counts from the transmitted energy monitor. Averaged over 8 shots.	Rel 33 GLAS Binary Data	DS_UTCTime_5
r5_ir_TxNrgEU	REAL (UNLIMITED)	1064 nm Laser Transmit Energy at 5 Hz (NOT_SET)	Joules	The 1064 nm laser pulse energy, computed from the digitized outgoing pulse and the detector temperature. Averaged over 8 shots.	Rel 33 GLAS Binary Data	DS_UTCTime_5

Group: /Data_40HZ/

This group contains data with a rate of 40HZ. 40Hz data may be indexed to the 1HZ data using the i_rec_ndx parameter in each respective time group.

Dimension Scales

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
DS_UTCTime_40	DOUBLE (UNLIMITED)	Transmit Time of First Shot in frame in J2000 (time)	seconds	The transmit time of each shot in the 1 second frame measured as 'UTC seconds' elapsed since Jan 1 2000 12:00:00 UTC. This time has been derived from the GPS time accounting for leap seconds.	Rel 33 GLAS Binary Data	NOT_SET
DS_HeightRel_148	DOUBLE (UNLIMITED)	Relative Height (NOT_SET)	NOT_SET	This array contains the height above the DEM, where DEM = DEMmin+HoffMin. This dimension is used for the arrays r40_g_bscs r40_ir_bscs and i40_g_sat_prof	Constants	NOT_SET
DS_BG_Index	INTEGER (UNLIMITED)	Index for r40_g_BG and r40_ir_BG (NOT_SET)	NOT_SET	This array contains the index for r40_g_BG and r40_ir_BG	Constants	NOT_SET

Group: Data_40HZ/Time

This group contains the 40HZ index and time-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_rec_ndx	INTEGER (UNLIMITED)	GLAS Record Index (NOT_SET)	NOT_SET	Unique index that relates this record to the corresponding record(s) in each GLAS data product.	Rel 33 GLAS Binary Data	DS_UTCTime_40
i_shot_count	INTEGER (UNLIMITED)	GLAS shot counter (NOT_SET)	NOT_SET	Identifies each laser shot within a record index. A combination of i_rec_ndx and i_shot_count can be used to uniquely identify each GLAS laser shot.	Rel 33 GLAS Binary Data	DS_UTCTime_40

Group: Data_40HZ/Geolocation

This group contains geolocation-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d_lat	DOUBLE (UNLIMITED)	Coordinate Data, Latitude, specific to ice sheet range (NOT_SET)	degrees_north	Profile coordinate in the IERS Terrestrial Reference Frame: east longitude and north latitude, at the 40 hertz rate.	Rel 33 GLAS Binary Data	DS_UTCTime_40
d_lon	DOUBLE (UNLIMITED)	Coordinate Data, Longitude, specific to ice sheet range (NOT_SET)	degrees_east	Profile coordinate in the IERS Terrestrial Reference Frame: east longitude and north latitude, at the 40 hertz rate.	Rel 33 GLAS Binary Data	DS_UTCTime_40

Group: Data_40HZ/Backscatter

This group contains the 40HZ backscatter-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
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Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r40_g_bscs	REAL (UNLIMITED, 148)	532 nm Merged Attenuated Backscatter Profile 10 to -1 km (NOT_SET)	1/(m-sr)	For the 10 KM to -1 KM vertical segment, the atmosphere 532 nm calibrated, attenuated backscatter profile at the 40 per 1 second rate. When the 532 nm data becomes saturated the 1064 nm data is converted to 532 data and merged into the data set.	Rel 33 GLAS Binary Data	DS_UTCTime_40
r40_ir_bscs	REAL (UNLIMITED, 148)	1064 nm Attenuated Backscatter Profile 10 to -1 km (NOT_SET)	1/(m-sr)	Atmosphere 1064 nm calibrated, attenuated backscatter profile (-1 to 10 km) at the rate of 40 per 1 second.	Rel 33 GLAS Binary Data	DS_UTCTime_40
r40_g_BG	REAL (UNLIMITED, 4)	532 nm Background at 40 Hz (NOT_SET)	counts	The normalized 532 nm background counts from upper (1) and lower (2) integration intervals. (3) is background used to compute NRB. (1) Upper Background (256 us avg), (2) Lower Background (256 us avg), (3) The one used, (4) Below ground background (from the portion of profile below ground).	Rel 33 GLAS Binary Data	DS_UTCTime_40
r40_ir_BG	REAL (UNLIMITED, 4)	1064 nm Background at 40 Hz (NOT_SET)	W	The normalized 1064 nm background counts from upper (1) and lower (2) integration intervals. (3) is background used to compute NRB. (1) Upper Background (256 us avg), (2) Lower Background (256 us avg), (3) The one used, (4) Below ground background (from the portion of profile below ground).	Rel 33 GLAS Binary Data	DS_UTCTime_40

Group: Data_40HZ/Flags

This group contains flags indicating the quality or suitability of data.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description				
i40_g_bscs_uf	INTEGER_1 (UNLIMITED)	532 nm Attenuated Backscatter Vertical Profile Flag(40hz) (NOT_SET)	NOT_SET	Use flag at 40Hz. 0=no, saturated bins were not replaced; 1=yes, saturated bins were replaced <table border="1" data-bbox="792 1283 1552 1415"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>saturated_bins_not_replaced saturated_bins_replaced</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	saturated_bins_not_replaced saturated_bins_replaced
flag values	flag_meanings							
0, 1	saturated_bins_not_replaced saturated_bins_replaced							
i40_g_bscs_qf	INTEGER_1 (UNLIMITED)	532 nm Attenuated Backscatter Vertical Profile Flag(40hz) (NOT_SET)	NOT_SET	Quality flag at 40Hz. 0=good data; 1=532 nm laser energy flag equals 3; 2=1064 nm quality value replaced the 532 nm backscatter value. <table border="1" data-bbox="792 1541 1552 1730"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2</td> <td>good 532nm_laser_energy_flag_equals_3 1064nm_quality_flag_equals_1_and_1064nm_backscatter_val</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2	good 532nm_laser_energy_flag_equals_3 1064nm_quality_flag_equals_1_and_1064nm_backscatter_val
flag values	flag_meanings							
0, 1, 2	good 532nm_laser_energy_flag_equals_3 1064nm_quality_flag_equals_1_and_1064nm_backscatter_val							
i40_ir_bscs_qf	INTEGER_1 (UNLIMITED)	1064 nm Attenuated Backscatter Vertical Profile Flag (NOT_SET)	NOT_SET	Quality flag at 40Hz. 0=good data; 1=1064 nm laser energy flag equals 3 <table border="1" data-bbox="792 1822 1343 1955"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>good 1064_laser_energy_flag_is_3</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	good 1064_laser_energy_flag_is_3
flag values	flag_meanings							
0, 1	good 1064_laser_energy_flag_is_3							

Label	Datatype (Dimensions)	long_name (standard_name)	units	description				
i40_g_sat_prof	INTEGER_1 (UNLIMITED, 148)	532 nm Saturation Flag Profile 10 to -1 km (NOT_SET)	NOT_SET	532 nm Saturation Flag Profile from 10 to -1 km. Indicates whether the 532 data were converted from the 1064 data. 0 = not saturated, 1 = saturated. <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>not_saturated saturated</td> </tr> </table>	flag values	flag_meanings	0, 1	not_saturated saturated
flag values	flag_meanings							
0, 1	not_saturated saturated							
i_g_TxNrg_qf	INTEGER_1 (UNLIMITED)	532 nm Laser Transmit Energy Quality Flag (NOT_SET)	NOT_SET	Evaluation of the 532 nm laser transmit energy which is an indication of the laser health; laser energy, 2 = marginal laser energy, 3 = deficient laser energy. <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2, 3</td> <td>not_used full_laser_energy marginal_laser_energy def</td> </tr> </table>	flag values	flag_meanings	0, 1, 2, 3	not_used full_laser_energy marginal_laser_energy def
flag values	flag_meanings							
0, 1, 2, 3	not_used full_laser_energy marginal_laser_energy def							
i_ir_TxNrg_qf	INTEGER_1 (UNLIMITED)	1064 nm Laser Transmit Energy Quality Flag (NOT_SET)	NOT_SET	Evaluation of the 1064 nm laser transmit energy which is an indication of the laser health; 2 = marginal laser energy, 3 = deficient laser energy, 0 = not used. <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2, 3</td> <td>not_used full_laser_energy marginal_laser_energy def</td> </tr> </table>	flag values	flag_meanings	0, 1, 2, 3	not_used full_laser_energy marginal_laser_energy def
flag values	flag_meanings							
0, 1, 2, 3	not_used full_laser_energy marginal_laser_energy def							

Group: Data_40HZ/Transmit_Energy

This group contains transmit energy parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r40_g_TxNrg_EU	REAL (UNLIMITED)	532 nm Laser Transmit Energy at 40 Hz (NOT_SET)	Joules	The 532 nm transmitted pulse energy in energy units, converted from the counts from the transmitted energy monitor.	Rel 33 GLAS Binary Data	DS_UTCTime_40
r40_ir_TxNrgEU	REAL (UNLIMITED)	1064 nm Laser Transmit Energy at 40 Hz (NOT_SET)	Joules	The 1064 nm laser pulse energy, computed from the digitized outgoing pulse and the detector temperature.	Rel 33 GLAS Binary Data	DS_UTCTime_40

/ANCILLARY_DATA

/ANCILLARY_DATA

Attribute	Example Value
glas_osc_rate	1.000000023
glas_osc_rate_date	2003-10-30
glas_osc_rate_time	00:00:00
sc_osc_rate	0.99999998854809
sc_osc_rate_date	2003-10-30

Attribute	Example Value
sc_osc_rate_time	00:00:00
internal_time_delay	0.0000151100
internal_time_delay_date	2003-10-30
internal_time_delay_time	00:00:00
internal_range_delay	9.5560
internal_range_delay_date	2003-10-30
internal_range_delay_time	00:00:00
Additional_Attribute	SP_ICE_PATH_NO, SP_ICE_GLAS_StartBlock, SP_ICE_GLAS_EndBlock, ReferenceOrbit, Track, PercentGroundHit, Percent1064to532, Cycle, Instance
internal_range_delay_desc	Internal range calibration bias determined during GLAS instrument integration testing and validated in-flight, meters.
internal_time_delay_desc	Internal time calibration bias determined during GLAS instrument integration testing and validated in-flight, seconds.

/METADATA

/METADATA

Attribute	Example Value
description	This group contains structured, computer-parseable ECHO-style collection and inventory-level metadata.
HDFVersion	HDF5 1.8.9
ControlFile	cf_name=gla07_test.ct1

/METADATA/COLLECTIONMETADATA

Attribute	Example Value
DLLName	libDsESDTG1GLASPoly.001Sh.so
GranuleTimeDuration	11620
SpatialSearchType	Orbit
DataFileFormat	HDF5
ScienceMimeType	application/x-hdfeos
BrowseMimeType	application/x-hdfeos
BrowseOnlineMimeType	image/jpeg
ShortName	GLAH07
LongName	GLAS/ICESat L1B Global Backscatter Data (HDF5)

Attribute	Example Value
CollectionDescription	The product includes full 532 nm and 1064 nm calibrated attenuated backscatter profiles at 5 times per second, and from 10 to -1 km, at 40 times per second. Also the calibration coefficient values and molecular backscatter profiles at once per second.
VersionID	33
CitationforExternalPublication	The data used in this study were produced by the GLAS Science Team at the ICESat Science Investigator-led Processing System (I-SIPS) at NASA/GSFC. The data archive site is the NSIDC DAAC.
CollectionState	In Work
MaintenanceandUpdateFrequency	Daily
AccessConstraints	Data may not be reproduced or distributed without including the CitationForExternalPublication for this product included in this Metadata. Data may not be distributed in an altered form without the written permission of the GLAS Science Team.
TemporalKeyword	Day
SpatialKeyword	Global

/METADATA/COLLECTIONMETADATA/AdditionalAttributes

Attribute	Example Value
PercentGroundHit	AdditionalAttributesContainer
Percent1064to532	AdditionalAttributesContainer
Track	AdditionalAttributesContainer
Instrument_State	AdditionalAttributesContainer
ReferenceOrbit	AdditionalAttributesContainer
Cycle	AdditionalAttributesContainer
SP_ICE_PATH_NO	AdditionalAttributesContainer
SP_ICE_GLAS_StartBlock	AdditionalAttributesContainer
SP_ICE_GLAS_EndBlock	AdditionalAttributesContainer
Instance	AdditionalAttributesContainer
Instrument_State_Date	AdditionalAttributesContainer
Instrument_State_Time	AdditionalAttributesContainer
Timing_Bias	AdditionalAttributesContainer
Timing_Bias_Date	AdditionalAttributesContainer
Timing_Bias_Time	AdditionalAttributesContainer
identifier_product_doi	AdditionalAttributesContainer

Attribute	Example Value
identifier_file_uuid	AdditionalAttributesContainer
identifier_product_doi_authority	AdditionalAttributesContainer

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Cycle

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	A count of the number of exact repeats of this reference orbit.
AdditionalAttributeName	Cycle
ParameterUnitsofMeasurement	counts
ParameterRangeBegin	0
ParameterRangeEnd	250

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Instance

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	The number of times that we have returned to a specific reference orbit.
AdditionalAttributeName	Instance
ParameterUnitsofMeasurement	counts
ParameterRangeBegin	1
ParameterRangeEnd	99

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Instrument_State

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	Flag word that indicates which redundant units (laser, detector, oscillator) of the GLAS instrument are in operation.
AdditionalAttributeName	Instrument_State
ParameterUnitsofMeasurement	Flag word
ParameterRangeBegin	0
ParameterRangeEnd	5

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Instrument_State_Date

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Attribute	Example Value
AdditionalAttributeDatatype	date
AdditionalAttributeDescription	The date that corresponds to the first valid Instrument_State. There is a maximum of two per granule.
AdditionalAttributeName	Instrument_State_Date

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Instrument_State_Time

Attribute	Example Value
AdditionalAttributeDatatype	time
AdditionalAttributeDescription	The time that corresponds to the first valid Instrument_State. There is a maximum of two per granule.
AdditionalAttributeName	Instrument_State_Time

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Percent1064to532

Attribute	Example Value
AdditionalAttributeDatatype	float
AdditionalAttributeDescription	Percent atmospheric profiles that use the 1064 nm profile data to provide estimated values for the saturated 532nm profiles.
AdditionalAttributeName	Percent1064to532
ParameterUnitsofMeasurement	Percent
ParameterRangeBegin	0.0
ParameterRangeEnd	100.0
ParameterValueAccuracy	1
ParameterMeasurementResolution	1

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/PercentGroundHit

Attribute	Example Value
AdditionalAttributeDatatype	float
AdditionalAttributeDescription	Percent of data for this granule that had a detected ground return of the transmitted laser pulse.
AdditionalAttributeName	PercentGroundHit
ParameterUnitsofMeasurement	Percent
ParameterRangeBegin	0.0
ParameterRangeEnd	100.0
ParameterValueAccuracy	1

Attribute	Example Value
ParameterMeasurementResolution	1

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/ReferenceOrbit

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	Assigned number for which exact orbital elements describe the exact repeat orbit pattern.
AdditionalAttributeName	ReferenceOrbit
ParameterUnitsofMeasurement	Assigned number
ParameterRangeBegin	1
ParameterRangeEnd	30000

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/SP_ICE_GLAS_EndBlock

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	Integer number within GLAS coverage scheme in which granule data ends.
AdditionalAttributeName	SP_ICE_GLAS_EndBlock
ParameterRangeBegin	1
ParameterRangeEnd	360

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/SP_ICE_GLAS_StartBlock

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	Integer number within GLAS coverage scheme in which granule data starts.
AdditionalAttributeName	SP_ICE_GLAS_StartBlock
ParameterRangeBegin	1
ParameterRangeEnd	360

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/SP_ICE_PATH_NO

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	Number which represents the GLAS path number.

Attribute	Example Value
AdditionalAttributeName	SP_ICE_PATH_NO
ParameterRangeBegin	1
ParameterRangeEnd	32768

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Timing_Bias

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	The time tag error determined by the calibration team that was added to the time tags to compute the true time of data as provided on the granule.
AdditionalAttributeName	Timing_Bias
ParameterUnitsofMeasurement	Microseconds
ParameterRangeBegin	-1000000
ParameterRangeEnd	+1000000

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Timing_Bias_Date

Attribute	Example Value
AdditionalAttributeDatatype	date
AdditionalAttributeDescription	The date that corresponds to the first valid Timing_Bias. There are a maximum of two per granule.
AdditionalAttributeName	Timing_Bias_Date

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Timing_Bias_Time

Attribute	Example Value
AdditionalAttributeDatatype	time
AdditionalAttributeDescription	The time that corresponds to the first valid Timing_Bias. There are a maximum of two per granule.
AdditionalAttributeName	Timing_Bias_Time

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/Track

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	The unique number assigned for each repeat ground track (one orbit) of the reference orbit.
AdditionalAttributeName	Track
ParameterUnitsofMeasurement	counts

Attribute	Example Value
ParameterRangeBegin	0
ParameterRangeEnd	3000

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/identifier_file_uuid

Attribute	Example Value
AdditionalAttributeDatatype	varchar
AdditionalAttributeDescription	Universally unique identifier for this data product's files
AdditionalAttributeName	identifier_file_uuid

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/identifier_product_doi

Attribute	Example Value
AdditionalAttributeDatatype	varchar
AdditionalAttributeDescription	Digital object identifier that uniquely identifies this data product
AdditionalAttributeName	identifier_product_doi

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/identifier_product_doi/InformationContent

Attribute	Example Value
ParameterValue	10.5067/ICESAT/GLAS/DATA107

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/identifier_product_doi_authority

Attribute	Example Value
AdditionalAttributeDatatype	varchar
AdditionalAttributeDescription	URL of the digital object identifier resolving authority
AdditionalAttributeName	identifier_product_doi_authority

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/identifier_product_doi_authority/InformationContent

Attribute	Example Value
ParameterValue	http://dx.doi.org/10.5067/ICESAT/GLAS/DATA107

/METADATA/COLLECTIONMETADATA/CollectionAssociation

Attribute	Example Value
GLA00	CollectionAssociationContainer
GLAH02	CollectionAssociationContainer

Attribute	Example Value
GLAH08	CollectionAssociationContainer
GLAH09	CollectionAssociationContainer
GLAH10	CollectionAssociationContainer
GLAH11	CollectionAssociationContainer

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLA00

Attribute	Example Value
CollectionType	Science Associated
CollectionUse	The initial collection of GLAS instrument data downlinked from the spacecraft.
ShortName	GLA00
VersionID	1

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH02

Attribute	Example Value
CollectionType	Input
CollectionUse	Level 1A atmospheric data product file containing: normalized lidar signals.
ShortName	GLAH02
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH08

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 2 file containing: planetary boundary layer heights and aerosol layer top and bottom.
ShortName	GLAH08
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH09

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 2 file containing: cloud layer top and bottom heights.
ShortName	GLAH09

Attribute	Example Value
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH10

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 2 file containing: cloud- and aerosol- attenuation corrected backscatter and extinction profiles.
ShortName	GLAH10
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH11

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 2 file containing: cloud and aerosol layer optical depths.
ShortName	GLAH11
VersionID	33

/METADATA/COLLECTIONMETADATA/ContactOrganization

Attribute	Example Value
Data_Originator	ContactOrganizationContainer
Archive	ContactOrganizationContainer

/METADATA/COLLECTIONMETADATA/ContactOrganization/Archive

Attribute	Example Value
Role	Archive
HoursofService	M-F, 8:00am to 5:00pm, Mountain Time
ContactInstructions	For inquiries, contact NSIDC User Services. Primary first level contact.
ContactOrganizationName	NSIDC User Services
StreetAddress	CIRES/NSIDC University of Colorado Campus, Box 449
City	Boulder
StateProvince	Colorado
PostalCode	80309-0449

Attribute	Example Value
Country	USA
TelephoneNumber	303-492-2468
TelephoneNumberType	Facsimile
ElectronicMailAddress	nsidc@nsidc.org

/METADATA/COLLECTIONMETADATA/ContactOrganization/Data_Originator

Attribute	Example Value
Role	Data Originator
HoursofService	M-F, 8:00am to 4:30pm Eastern Time
ContactInstructions	Contact by e-mail first
ContactOrganizationName	ICESat Science Investigator-led Processing System (I-SIPS)
StreetAddress	Building 33, NASA Goddard Space Flight Center
City	Greenbelt
StateProvince	Maryland
PostalCode	20771
Country	USA
TelephoneNumber	757-864-1238
TelephoneNumberType	Voice
ElectronicMailAddress	David.W.Hancock@nasa.gov

/METADATA/COLLECTIONMETADATA/ContactPerson

Attribute	Example Value
Hancock	ContactPersonContainer
Schutz	ContactPersonContainer
Zwally	ContactPersonContainer
DiMarzio	ContactPersonContainer

/METADATA/COLLECTIONMETADATA/ContactPerson/DiMarzio

Attribute	Example Value
Role	Producer
HoursofService	M-F, 8:00am to 4:30pm Eastern Time

Attribute	Example Value
ContactInstructions	None
ContactJobPosition	Deputy Science Software Development Manager
ContactFirstName	John
ContactMiddleName	P
ContactLastName	DiMarzio
StreetAddress	Building 33, Rm. B-209D, NASA/GSFC
City	Greenbelt
StateProvince	Maryland
PostalCode	20771
Country	USA
TelephoneNumber	301-614-5893
TelephoneNumberType	Voice
ElectronicMailAddress	John.P.Dimarzio.1@nasa.gov

/METADATA/COLLECTIONMETADATA/ContactPerson/Hancock

Attribute	Example Value
Role	Data Originator
HoursofService	M-F, 8:00am to 4:30pm. Eastern Time.
ContactInstructions	None
ContactJobPosition	Science Software Development Manager.
ContactFirstName	David
ContactMiddleName	W.
ContactLastName	Hancock
StreetAddress	Building N-159, NASA/GSFC Wallops Flight Facility.
City	Wallops Island
StateProvince	Virginia
PostalCode	23337
Country	USA
TelephoneNumber	757-824-1238

Attribute	Example Value
TelephoneNumberType	Voice
ElectronicMailAddress	David.W.Hancock@nasa.gov

/METADATA/COLLECTIONMETADATA/ContactPerson/Schutz

Attribute	Example Value
Role	Investigator
HoursofService	M-F, 8:00am to 4:30pm Central Time
ContactInstructions	None
ContactJobPosition	GLAS Science Team Leader
ContactFirstName	Bob
ContactMiddleName	E
ContactLastName	Schutz
StreetAddress	3925 W. Braker Lane, Center for Space Research
City	Austin
StateProvince	Texas
PostalCode	78759-5321
Country	USA
TelephoneNumber	512-471-4267
TelephoneNumberType	Voice
ElectronicMailAddress	schutz@utcsr.ae.utexas.edu

/METADATA/COLLECTIONMETADATA/ContactPerson/Zwally

Attribute	Example Value
Role	Producer
HoursofService	M-F, 8:00am to 4:30pm Eastern Time
ContactInstructions	None.
ContactJobPosition	ICESat Project Scientist
ContactFirstName	Jay
ContactLastName	Zwally
StreetAddress	Building 33, Rm A-217

Attribute	Example Value
City	Greenbelt
StateProvince	Maryland
PostalCode	20771
Country	USA
TelephoneNumber	301-614-5643
TelephoneNumberType	Voice
ElectronicMailAddress	Jay.Zwally@nasa.gov

/METADATA/COLLECTIONMETADATA/DisciplineTopicParameters

Attribute	Example Value
Atmosphere	DisciplineTopicParametersContainer
Land_Surface	DisciplineTopicParametersContainer

/METADATA/COLLECTIONMETADATA/DisciplineTopicParameters/Atmosphere

Attribute	Example Value
ECSDisciplineKeyword	Earth Science
ECSTopicKeyword	Atmosphere
ECSTermKeyword	Aerosols
ECSVariableKeyword	Aerosol Backscatter

/METADATA/COLLECTIONMETADATA/DisciplineTopicParameters/Atmosphere/ECSPParameter

Attribute	Example Value
ECSPParameterKeyword	Aerosol Backscatter Cross Section Profile

/METADATA/COLLECTIONMETADATA/DisciplineTopicParameters/Land_Surface

Attribute	Example Value
ECSDisciplineKeyword	Earth Science
ECSTopicKeyword	Land Surface
ECSTermKeyword	Topography
ECSVariableKeyword	Terrain Elevation

/METADATA/COLLECTIONMETADATA/ECSCollection

Attribute	Example Value
RevisionDate	2012-06-25
SuggestedUsage	GLAH07 contains calibrated backscatter profiles that allow heights of planetary boundary layers, aerosol layers, and cloud to be subsequently determined. The level 1B global backscatter data is provided at full instrument resolution. Each GLAH07 file was created from an equivalent GLA07 binary formatted file. The data used to create the GLAH07 values are contained in the equivalent GLAHxx files for the GLAxx files as shown in the provenance metadata for the creation of the GLA07.
ProcessingCenter	GSFC I-SIPS
ArchiveCenter	NSIDC
VersionDescription	Initial Version
DatasetDisclaimerPointer	http://nsidc.org/data/icesat/disclaimer.html
ECSCollectionGuidePointer	https://nsidc.org/data/glah02-glah07-glah08-glah09-glah10-glah11/versions/33/documentation
ECSCollectionGuidePointerComment	Guide Document for this product at NSIDC
MiscellaneousInformationPointer	http://nsidc.org/data/icesat/
MiscellaneousInformationPointerComment	GLAS Product page at NSIDC

/METADATA/COLLECTIONMETADATA/Platform

Attribute	Example Value
ICESat	PlatformContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat

Attribute	Example Value
PlatformShortName	ICESat
PlatformLongName	Ice, Cloud, and Land Elevation Satellite
PlatformType	Spacecraft

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument

Attribute	Example Value
GLAS	InstrumentContainer
GPS	InstrumentContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS

Attribute	Example Value
InstrumentShortName	GLAS

Attribute	Example Value
InstrumentLongName	Geoscience Laser Altimeter System
InstrumentTechnique	Laser Altimetry and Light Detection and Radar
NumberofSensors	3

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/InstrumentCharacteristic

Attribute	Example Value
SwathWidth	InstrumentCharacteristicContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/InstrumentCharacteristic/SwathWidth

Attribute	Example Value
InstrumentCharacteristicName	SwathWidth
InstrumentCharacteristicDescription	The width of the sensor scan as the satellite moves along the ground track.
InstrumentCharacteristicDataType	int
InstrumentCharacteristicUnit	kilometers
InstrumentCharacteristicValue	2

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor

Attribute	Example Value
LA	SensorContainer
PC	SensorContainer
CD	SensorContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/CD

Attribute	Example Value
SensorShortName	CD
SensorLongName	Cloud LIDAR
SensorTechnique	Measure of 1064nm return energy in 75m bins from 20km to surface

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/CD/SensorCharacteristic

Attribute	Example Value
wavelength	SensorCharacteristicContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/CD/SensorCharacteristic/wavelength

Attribute	Example Value
SensorCharacteristicName	wavelength
SensorCharacteristicDescription	detector
SensorCharacteristicDataType	varchar
SensorCharacteristicUnit	nanometer
SensorCharacteristicValue	1064 nm

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/LA

Attribute	Example Value
SensorShortName	LA
SensorLongName	Laser Altimeter
SensorTechnique	Exact Measurement of Time between Transmit Pulse and receive ground return

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/LA/SensorCharacteristic

Attribute	Example Value
wavelength	SensorCharacteristicContainer
waveform	SensorCharacteristicContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/LA/SensorCharacteristic/waveform

Attribute	Example Value
SensorCharacteristicName	waveform
SensorCharacteristicDescription	digitizer
SensorCharacteristicDataType	varchar
SensorCharacteristicUnit	counts
SensorCharacteristicValue	0-255

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/LA/SensorCharacteristic/wavelength

Attribute	Example Value
SensorCharacteristicName	wavelength
SensorCharacteristicDescription	transmission
SensorCharacteristicDataType	varchar
SensorCharacteristicUnit	nanometer

Attribute	Example Value
SensorCharacteristicValue	1064 nm

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/PC

Attribute	Example Value
SensorShortName	PC
SensorLongName	Photon Counter for the 532 nm Aerosol Returns
SensorTechnique	Counting of 532nm photon return in 75m bins 40km to surface

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/PC/SensorCharacteristic

Attribute	Example Value
wavelength	SensorCharacteristicContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GLAS/Sensor/PC/SensorCharacteristic/wavelength

Attribute	Example Value
SensorCharacteristicName	wavelength
SensorCharacteristicDescription	detector
SensorCharacteristicDataType	varchar
SensorCharacteristicUnit	nanometer
SensorCharacteristicValue	532nm

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GPS

Attribute	Example Value
InstrumentShortName	GPS
InstrumentLongName	Global Positioning System Receiver
InstrumentTechnique	Radionavigation
NumberOfSensors	1

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GPS/Sensor

Attribute	Example Value
GPS_Receiver	SensorContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat/Instrument/GPS/Sensor/GPS_Receiver

Attribute	Example Value
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Attribute	Example Value
SensorShortName	GPS Receiver
SensorLongName	Dual frequency GPS receiver
SensorTechnique	Pseudorange and carrier phase

/METADATA/COLLECTIONMETADATA/Platform/ICESat/PlatformCharacteristic

Attribute	Example Value
OrbitInclination	PlatformCharacteristicContainer
OrbitalPeriod	PlatformCharacteristicContainer

/METADATA/COLLECTIONMETADATA/Platform/ICESat/PlatformCharacteristic/OrbitInclination

Attribute	Example Value
PlatformCharacteristicName	OrbitInclination
PlatformCharacteristicDescription	Angle between the orbit plane and the Earth's equatorial plane
PlatformCharacteristicDataType	float
PlatformCharacteristicUnit	Degrees
PlatformCharacteristicValue	94.0

/METADATA/COLLECTIONMETADATA/Platform/ICESat/PlatformCharacteristic/OrbitalPeriod

Attribute	Example Value
PlatformCharacteristicName	OrbitalPeriod
PlatformCharacteristicDescription	Orbital period in decimal minutes.
PlatformCharacteristicDataType	float
PlatformCharacteristicUnit	Minutes
PlatformCharacteristicValue	96.7

/METADATA/COLLECTIONMETADATA/ProcessingLevel

Attribute	Example Value
ProcessingLevelDescription	Geophysical Quantities at the sensor resolution or geolocated
ProcessingLevelID	1B

/METADATA/COLLECTIONMETADATA/Spatial

Attribute	Example Value

Attribute	Example Value
SpatialCoverageType	Horizontal
WestBoundingCoordinate	-180.0
NorthBoundingCoordinate	90.0
EastBoundingCoordinate	180.0
SouthBoundingCoordinate	-90.0

/METADATA/COLLECTIONMETADATA/StorageMediumClass

Attribute	Example Value
StorageMedium	Online

/METADATA/COLLECTIONMETADATA/Temporal

Attribute	Example Value
TimeType	UTC
DateType	J2000
TemporalRangeType	Continuous Range
PrecisionofSeconds	2
EndsatPresentFlag	Y
RangeBeginningDate	2003-01-13
RangeBeginningTime	00:00:00
RangeEndingDate	2010-01-13
RangeEndingTime	00:00:00

/METADATA/INVENTORYMETADATA

Attribute	Example Value
PGEVersion	Version 1.0
ShortName	GLAH07
VersionID	33
RangeBeginningTime	01:51:38
RangeEndingTime	05:04:55
RangeBeginningDate	2003-11-18
RangeEndingDate	2003-11-18

/METADATA/INVENTORYMETADATA/ECSDataGranule

Attribute	Example Value
ReprocessingPlanned	no further update anticipated
ReprocessingActual	reprocessed
LocalGranuleID	GLAH07_633_2103_002_0407_0_01_0001.H5
ProductionDateTime	2012-12-20T20:16:43
LocalVersionID	33

/METADATA/INVENTORYMETADATA/InputGranule

Attribute	Example Value
InputPointer	gla07_test.ct1, tai-utc.dat, GLA07_633_2103_002_0407_0_01_0001.P0310, DsESDTG1GLAH07.033.desc

/METADATA/INVENTORYMETADATA/MeasuredParameter

Attribute	Example Value
ParameterName	532nm_Attenuated_Backscatter, 1064nm_Attenuated_Backscatter

/METADATA/INVENTORYMETADATA/OrbitCalculatedSpatialDomain

Attribute	Example Value
OrbitNumber	4604, 4605, 4606
StartOrbitNumber	4604
StopOrbitNumber	4606
EquatorCrossingLongitude	-103.22287, -127.41792, -151.61336
EquatorCrossingTime	01:38:10, 03:14:50, 04:51:29
EquatorCrossingDate	2003-11-18, 2003-11-18, 2003-11-18

/METADATA/INVENTORYMETADATA/ProductSpecificMetadata

Attribute	Example Value
PercentGroundHit	0
Percent1064to532	0
Track	407, 408, 409
Instrument_State	373338
ReferenceOrbit	1
Cycle	2

Attribute	Example Value
SP_ICE_PATH_NO	3429, 3430, 3431
SP_ICE_GLAS_StartBlock	NOT SET
SP_ICE_GLAS_EndBlock	NOT SET
Instance	3
Instrument_State_Date	2003-10-30
Instrument_State_Time	00:00:00
identifier_product_doi	10.5067/ICESAT/GLAS/DATA107
identifier_file_uuid	599740C3-F062-4F49-A756-8A0DA37BC95B
identifier_product_doi_authority	http://dx.doi.org/10.5067/ICESAT/GLAS/DATA107

/METADATA/PROVENANCE

/METADATA/PROVENANCE/STEP_1

Attribute	Example Value
ProcessDateTime	2011-06-20T15:27:20

/METADATA/PROVENANCE/STEP_1/ProcessAgent

Attribute	Example Value
Name	glas_atm
Type	1B
Version	6.0.1
Description	This process is an instantiation of the GLAS Science Algorithm Software (GSAS) 1B ATBDs.

/METADATA/PROVENANCE/STEP_1/ProcessInput

Attribute	Example Value
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Attribute	Example Value
Name	GLA07_h5_convert
Type	Data_Reformat
Version	Version 1.0 (December 2012)
Description	GLA07 Conversion PGE

/METADATA/PROVENANCE/STEP_2/ProcessInput

Attribute	Example Value
Name	./gla07_test.ct1, ../../data/tai-utc.dat, in/GLA07_633_2103_002_0407_0_01_0001.P0310, ../../glas_hdf/data/esdts/DsESDTG1GLAH07.033.desc
Type	IN_CNTL, IN_ANC_TAIUTC, IN_GLA07, IN_ESDT
Version	0, 0, 1, 1

/METADATA/PROVENANCE/STEP_2/ProcessOutput

Attribute	Example Value
Name	out/GLAH07_633_2103_002_0407_0_01_0001.H5
Type	OUT_GLAH07
Version	1
UUID	599740C3-F062-4F49-A756-8A0DA37BC95B
DOI	10.5067/ICESAT/GLAS/DATA107

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