

GLAH02 Product Data Dictionary

File-Level (Global) Attributes

Attribute	Example Value
featureType	timeSeries
ShortName	GLAH02
title	GLAS/ICESat L1A Global Atmosphere Data (HDF5)
comment	Data granules contain approximately 190 minutes (2 orbits) of data and will include normalized backscatter, photon counter, cloud digitizer, and timing data that serve as input to higher level atmospheric products.
summary	GLAH02 contains the LIDAR data related to atmospheric measurements. It is a level 1A time-ordered product that has data corrected for instrument effects. The data are at the full 40Hz resolution and geolocated to the sub-satellite location. The data values were used as input data values to compute parameters on GLAH07. Each GLAH02 file was created from an equivalent GLA02 binary formatted file. The provenance metadata shows the history that created the GLA02.
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	1A

Attribute	Example Value
date_created	2013-02-27T12:14:19
spatial_coverage_type	Horizontal
history	2011-06-01T19:14:02 glas_l1a 6.0.1 GLA02_033_2113_002_0085_0_01_0001.DAT, 2013-02-27T12:14:19.000000Z GLA02_h5_convert Version 1.0 (May 2012) out/GLAH02_033_2113_002_0085_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 > Spectral/Engineering > Infrared Wavelengths > Sensor Counts, Earth Science > Spectral/Engineering > Visible Wavelengths > Sensor Counts
keywords_vocabulary	GCMD Science Keywords Version 6.0
standard_vocabulary_name	CF-1.6
naming_authority	http://dx.doi.org/10.5067/ICESAT/GLAS/DATA102
project	Ice, Cloud, and Land Elevation Satellite (GLAS_HDF)
time_type	UTC
date_type	J2000
time_coverage_start	2005-11-01T11:42:39
time_coverage_end	2005-11-01T14:55:57
time_coverage_duration	11620
source	Satellite Measurements
HDFVersion	HDF5 1.8.9
identifier_file_uuid	D65E7C2A-7BC1-444F-AE6F-991DAD0B45FF
identifier_product_doi	10.5067/ICESAT/GLAS/DATA102
identifier_product_type	GLAH02
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_268	DOUBLE (UNLIMITED)	Dimension scale for <code>r1_g_lid</code> and <code>i1_g_sat_f</code> (NOT_SET)	NOT_SET	This array contains the height above the DEM, where $DEM = DEM_{min} + HoffMin$. This dimension is used for the arrays <code>r1_g_lid</code> and <code>i1_g_sat_f</code>	Constants	NOT_SET
DS_Photon_Counter_Index	INTEGER (UNLIMITED)	Index Dimention for the photon counter <code>i_spcm_cts</code> (NOT_SET)	NOT_SET	This array contains the index dimention for the photon counter <code>i_spcm_cts</code>	Constants	NOT_SET
DS_BG_Index	INTEGER (UNLIMITED)	Index for <code>d1_g_BG</code> (NOT_SET)	NOT_SET	This array contains the index for <code>d1_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	cc				
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	D:				
shot_time_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	Shot time flag; Indicates what shot time is used. <table border="1" data-bbox="781 1646 1390 1780"> <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	D:
flag values	flag_meanings									
0, 1	transmit_time ground_bounce_time									

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	cc				
gps_time_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	GPS time flag; Indicates if delta gps time correction is applied to shot time <table border="1" data-bbox="782 268 1390 405"> <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	D:
flag values	flag_meanings									
0, 1	not_applied applied									
pl_timing_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	Post-launch timing; indicates if post-launch timing bias is applied. Data value is stored in the Metadata group. <table border="1" data-bbox="782 527 1390 663"> <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	D:
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 flag; Indicates if digitizer turn-on delay is accounted for in shot time. Data value is stored in the Metadata group. <table border="1" data-bbox="782 785 1390 921"> <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	D:
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 flag; Indicates if time to peak of transmit pulse is accounted for in shot time <table border="1" data-bbox="782 1043 1390 1180"> <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	D:
flag values	flag_meanings									
0, 1	applied not_applied									

Group: Data_1HZ/Geolocation

This group contains geolocation-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d1_pred_lat	DOUBLE (UNLIMITED)	Predicted geodetic Latitude of the laser footprint (latitude)	degrees_north	The geodetic Latitude of the laser footprint; obtained from the predicted orbit; assuming the laser is nadir pointing.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d1_pred_lon	DOUBLE (UNLIMITED)	Predicted geodetic Longitude of the laser footprint (longitude)	degrees_east	The geodetic Longitude of the laser footprint; obtained from the predicted orbit; assuming the laser is nadir pointing.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Packet_Data

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

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
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Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source				
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="805 268 1411 459"> <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
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="805 579 1411 770"> <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
flag values	flag_meanings								
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled								
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="805 890 1411 1081"> <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
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 1201 1411 1392"> <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
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 1512 1411 1703"> <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
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				
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="805 268 1411 459"> <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
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="805 581 1411 772"> <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
flag values	flag meanings								
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled								
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="805 894 1411 1085"> <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
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 1178 1411 1369"> <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
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 packer APID availability flag <table border="1" data-bbox="805 1461 1411 1652"> <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
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 1745 1411 1936"> <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
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				
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="805 268 1411 457"> <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
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="805 579 1411 768"> <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
flag values	flag_meanings								
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled								
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="805 890 1411 1079"> <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
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 1201 1411 1390"> <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
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 1541 1411 1730"> <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
flag values	flag_meanings								
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Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source				
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="805 270 1411 459"> <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
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="805 581 1411 770"> <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
flag values	flag_meanings								
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled								
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="805 892 1411 1081"> <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
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 1203 1411 1392"> <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
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 1514 1411 1703"> <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
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				
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"> <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
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"> <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
flag values	flag_meanings								
0, 1, 2	present filled_at_EDOS never_received_ISIPS_filled								
apid_GPS_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	GPS telemetry packet APID availability flag <table border="1"> <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
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 <table border="1"> <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
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 <table border="1"> <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
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 <table border="1"> <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
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
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
				<table border="1"> <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				
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
				<table border="1"> <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				

Group: Data_1HZ/Transmit_Energy

This group contains information relating to transmit energy.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d1_g_TxNrg_EU	DOUBLE (UNLIMITED)	532 nm Laser Transmit Energy at 1 Hz (NOT_SET)	Joules	The 532 nm transmitted pulse energy in energy units, converted from the counts from the transmitted energy monitor. Averaged over 40 shots.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/LIDAR_40KMto20KM

This group contains information relating to the 532 lidar 40 to 20 km data.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
r1_g_lid	REAL (UNLIMITED, 268)	532 nm LIDAR Data from 40 KM to 20 KM (NOT_SET)	((pe/sample)*KM^2)/J	The normalized lidar signal from the 532 nm photon counting channel for the 40 KM to 20 KM segment of the atmosphere. Background subtraction, range squared, and dead time correction is applied.	Rel 33 GLAS Binary Data
i1_g_sat_f	INTEGER_1 (UNLIMITED, 268)	532 nm Saturation Flag for 40 to 20 KM Segment (NOT_SET)	NOT_SET	Flag indicating whether the 532 nm signal is saturated or not for the 40 to 20 KM Segment. 0 = not saturated, 1 = saturated. There is one flag per each sample in the profile. There are 268 samples in a profile and the profile is summed over the 40 shots in a second for a total of 268 flags (268 * 1) per second.	Rel 33 GLAS Binary Data
				<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				
d1_g_BG	DOUBLE (UNLIMITED, 4)	532nm Background at 1 Hz (NOT_SET)	photons/sample	The normalized 532 nm background counts from upper (1) and lower (2) integration intervals. (3) is background used to compute NRB (Normalized Relative Backscatter). Averaged over 40 shots.	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
d_g_IntRet	DOUBLE (UNLIMITED)	532 nm Integrated Return, 40 to 20 KM (NOT_SET)	photons	Sum of raw photon counts (after background is subtracted) over the 20 to 40 km samples.	Rel 33 GLAS Binary Data
d_Rng2PCProf	DOUBLE (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.	Rel 33 GLAS Binary Data
d_Rng_PkRt	DOUBLE (UNLIMITED)	Range from spacecraft to peak of return (NOT_SET)	meters	Range calculated from the spacecraft to the location of the peak as returned in the telemetry (ground).	Rel 33 GLAS Binary Data
i_g_shot_ctr	INTEGER_2 (UNLIMITED)	532 nm LIDAR Data Shot Counter (NOT_SET)	NOT_SET	Corresponds to first value of the 40 -1 km to 10 km aerosol science data. From APID15, Offset 14.	Rel 33 GLAS Binary Data
i_ir_shot_ctr	INTEGER_2 (UNLIMITED)	1064 nm Cloud Digitizer Shot Counter (NOT_SET)	NOT_SET	Shot number corresponding to first value of the 40 -1 km to 10 km cloud digitizer data.	Rel 33 GLAS Binary Data

Group: Data_1HZ/Instrument_Settings

This group contains information relating to GLAS flight paramter settings.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d_rng2CDPProf	DOUBLE (UNLIMITED)	Start Range of the 1064 nm Backscatter Profile (NOT_SET)	meters	The range from the spacecraft to the start of the 1064 nm backscatter profile - the start of the 20 KM segment of Lidar Data.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_DEMmin	DOUBLE (UNLIMITED)	DEM minimum (NOT_SET)	meters	Onboard spacecraft DEM minimum elevation used to calculate hmin. From APID19, Offset 1192.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_DEMmax	DOUBLE (UNLIMITED)	DEM maximum (NOT_SET)	meters	Onboard spacecraft DEM maximum elevation used to calculate hmax. From APID19, Offset 1193.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_HoffMin	DOUBLE (UNLIMITED)	Offset to minimum DEM height (NOT_SET)	meters	Offset to minimum DEM height used in flight algorithm	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_Hsat	DOUBLE (UNLIMITED)	Geodetic altitude of satellite above earth (NOT_SET)	meters	Geodetic altitude of satellite above earth's surface computed in real time by the GLAS flight algorithm.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_spcm_cts	INTEGER (UNLIMITED, 8)	SPCM Raw Counts (NOT_SET)	NOT_SET	The raw counts for each photon counter (1-8) from the Single-Photon Counter Module.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_pc_rbias	DOUBLE (UNLIMITED)	Photon Counter Range Bias (NOT_SET)	NOT_SET	The range bias of the photon counter; always positive.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_SpcmBg2Del	DOUBLE (UNLIMITED)	SPCM Background 2 Delay (NOT_SET)	nanoseconds	The delay for the background #2 as read from the photon counter board. From APID19, Offset 586.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_SpcmRngDel	DOUBLE (UNLIMITED)	SPCM Range Delay (NOT_SET)	nanoseconds	The delay for the range gate as read from the photon counter board. This is the delay from the fire acknowledge to the start of data collection for the 40 KM profile.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_SpcmGateDel	DOUBLE (UNLIMITED)	SPCM Gate Delay (NOT_SET)	nanoseconds	The SPCM Gate Delay from the photon counter board. This is the delay from the fire acknowledge prior to to enabling the SPCMs.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_SpcmBg1Del	DOUBLE (UNLIMITED)	SPCM Background 1 Delay (NOT_SET)	nanoseconds	The Background #1 Delay from the photon counter board.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_Spcm_stat	INTEGER (UNLIMITED)	SPCM Status (NOT_SET)	NOT_SET	The status of the SPCM as read from the photon counter board. The Photon Counter Bd address 0xXX800004.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_cdBg2_De1	DOUBLE (UNLIMITED)	Cloud Digitizer Background 2 Delay (NOT_SET)	counts	The delay for background #2 from the cloud digitizer board.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_RngGate_De1	DOUBLE (UNLIMITED)	Cloud Digitizer Range Gate Delay (NOT_SET)	counts	The delay for range gate from the cloud digitizer board.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_cd_bg1_del	DOUBLE (UNLIMITED)	Cloud Digitizer Background 1 Delay (NOT_SET)	counts	The delay for background #1 from the cloud digitizer board.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_cd_det_stat	INTEGER (UNLIMITED)	Cloud Digitizer Detector Status (NOT_SET)	NOT_SET	Status of the detector from the cloud digitizer board.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_cd_rbias	DOUBLE (UNLIMITED)	Cloud Digitizer Range Bias (NOT_SET)	NOT_SET	The range bias from the cloud digitizer; always positive.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_cd_ad_out	INTEGER_2 (UNLIMITED)	A/D Output (NOT_SET)	NOT_SET	The output from the A/D converter; from the cloud digitizer board. Used for to diagnose problems with the analog path.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_cd_att_set	INTEGER_2 (UNLIMITED)	Attenuation Setting (NOT_SET)	NOT_SET	The attenuation setting from the cloud digitizer board.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_ETsettleTime	DOUBLE (UNLIMITED)	Etalon Temperature Settle Time (NOT_SET)	seconds	The commanded time the software will wait after a temperature setpoint is sent to the etalon heater. Integer units in seconds. Applies only to tracking mode.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Etalon

This group contains information relating to GLAS etalon settings.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	c		
i_et_cal_mode	INTEGER_1 (UNLIMITED)	Etalon Calibration - Current mode (NOT_SET)	NOT_SET	Current mode of Etalon calibration: 0 = Off, 1 = Acquire, 2 = Tracking, 3 = Invalid.	Rel 33 GLAS Binary Data	D		
d_EtHtrC37j_c	DOUBLE (UNLIMITED)	Etalon Heater Current, Ch 37j (NOT_SET)	Amps	Etalon Heater Current, Ch 37j	Rel 33 GLAS Binary Data	D		
d_EtC37d_t	DOUBLE (UNLIMITED)	Etalon Temperature, Ch 37d (NOT_SET)	Celsius	Etalon Temperature, Ch 37d	Rel 33 GLAS Binary Data	D		
i_et_lowTrans_flag	INTEGER_1 (UNLIMITED)	Etalon Flags (NOT_SET)	NOT_SET	Etalon Tracking Low Transmission Flag (= low_tr_on): 0 = GOOD (on-axis transmission is above limit); 1 = LOW (on-axis transmission is below limit)	Rel 33 GLAS Binary Data	D		
				<table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>GOOD LOW</td> </tr> </tbody> </table>			flag values	flag_meanings
flag values	flag_meanings							
0, 1	GOOD LOW							
i_et_active_flag	INTEGER_1 (UNLIMITED)	Etalon Flags (NOT_SET)	NOT_SET	Etalon Tracking Active Flag (= track_ok): 0 = PAUSED (tracking is paused); 1 = ACTIVE (tracking is active)	Rel 33 GLAS Binary Data	D		
				<table border="1"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>PAUSED ACTIVE</td> </tr> </tbody> </table>			flag values	flag_meanings
flag values	flag_meanings							
0, 1	PAUSED ACTIVE							

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	c				
i_et_testMode_flag	INTEGER_1 (UNLIMITED)	Etalon Flags (NOT_SET)	NOT_SET	Etalon Test Mode Flag: 0 = NORMAL (reading data from LMB sensors); 1 = TEST (using test data values) <table border="1" data-bbox="873 268 1393 403"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>NORMAL TEST</td> </tr> </table>	flag values	flag_meanings	0, 1	NORMAL TEST	Rel 33 GLAS Binary Data	D
flag values	flag_meanings									
0, 1	NORMAL TEST									
i_et_nonstandard_flag	INTEGER_1 (UNLIMITED)	Etalon Flags (NOT_SET)	NOT_SET	Etalon Nonstandard Tracking Mode Flag: 0 = ORIGINAL (original tracking mode); 1 = MODIFIED (open-loop or modified closed-loop mode) <table border="1" data-bbox="873 554 1393 688"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>ORIGINAL MODIFIED</td> </tr> </table>	flag values	flag_meanings	0, 1	ORIGINAL MODIFIED	Rel 33 GLAS Binary Data	D
flag values	flag_meanings									
0, 1	ORIGINAL MODIFIED									
i_et_openLoop_flag	INTEGER_1 (UNLIMITED)	Etalon Flags (NOT_SET)	NOT_SET	Etalon Open-Loop Cycle Update Flag (= o1_updates): 0,1 = toggles each time an open-loop cycle starts <table border="1" data-bbox="873 810 1393 945"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>toggle_0 toggle_1</td> </tr> </table>	flag values	flag_meanings	0, 1	toggle_0 toggle_1	Rel 33 GLAS Binary Data	D
flag values	flag_meanings									
0, 1	toggle_0 toggle_1									
i_et_update_ctr	INTEGER_2 (UNLIMITED)	Etalon Averaging Update Counter (NOT_SET)	NOT_SET	Etalon averaging update counter.	Rel 33 GLAS Binary Data	D				
d_et_StartTemp	DOUBLE (UNLIMITED)	Start Temperature (NOT_SET)	Celsius	Start Temperature	Rel 33 GLAS Binary Data	D				
d_et_StopTemp	DOUBLE (UNLIMITED)	Stop Temperature (NOT_SET)	Celsius	Stop Temperature.	Rel 33 GLAS Binary Data	D				
d_et_TempStep	DOUBLE (UNLIMITED)	Temperature Step (NOT_SET)	Celsius	Temperature Step	Rel 33 GLAS Binary Data	D				
d_et_acqavg_tm	DOUBLE (UNLIMITED)	Etalon Averaging time for acquire command (NOT_SET)	seconds	Etalon Averaging Time for Acquire Command.	Rel 33 GLAS Binary Data	D				
d_et_temperr	DOUBLE (UNLIMITED)	Etalon Temperature Error (NOT_SET)	NOT_SET	Etalon Temperature Error.	Rel 33 GLAS Binary Data	D				

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	c				
i_ET_state	INTEGER_1 (UNLIMITED)	Etalon State (NOT_SET)	NOT_SET	State of the etalon: 0 = Init, 1 = Set Temp, 2 = Wait, 3 = Average <table border="1" data-bbox="873 268 1393 403"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2, 3</td> <td>init set_temp wait average</td> </tr> </table>	flag values	flag_meanings	0, 1, 2, 3	init set_temp wait average	Rel 33 GLAS Binary Data	D
flag values	flag_meanings									
0, 1, 2, 3	init set_temp wait average									
d_et_acqset_tm	DOUBLE (UNLIMITED)	Etalon Temperature Settle time for acquire cmd (NOT_SET)	seconds	Etalon Temperature Settle Time for acquire cmd.	Rel 33 GLAS Binary Data	D				
d_et_onax_xmit	DOUBLE (UNLIMITED)	Etalon Averaged on-axis Transmission (NOT_SET)	NOT_SET	Etalon Averaged on-axis Transmission.	Rel 33 GLAS Binary Data	D				
d_et_offax_xmit	DOUBLE (UNLIMITED)	Etalon Averaged off-axis Transmission (NOT_SET)	NOT_SET	Etalon Averaged off-axis Transmission.	Rel 33 GLAS Binary Data	D				
d_et_trkfltout	DOUBLE (UNLIMITED)	Etalon Tracking Loop Filter output (NOT_SET)	NOT_SET	Etalon Tracking Loop Filter output.	Rel 33 GLAS Binary Data	D				
d_et_trkfltavg	DOUBLE (UNLIMITED)	Etalon Tracking Failure Average (NOT_SET)	NOT_SET	Etalon Tracking Failure Average	Rel 33 GLAS Binary Data	D				

Group: Data_1HZ/Flags

This group contains information relating to flag settings.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source				
i_g_IntRet_qf	INTEGER_1 (UNLIMITED)	Integrated Return Quality Flag (NOT_SET)	NOT_SET	Assessment of the integrated return value; indicator of boresight accuracy and signal strength. 0 = unused, 1 = excellent, 2 = good, 3 = marginal, 4 = poor, 5 = bad data. <table border="1" data-bbox="885 1549 1453 1738"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1, 2, 3, 4, 5</td> <td>unused excellent good marginal poor bad_data</td> </tr> </table>	flag values	flag_meanings	0, 1, 2, 3, 4, 5	unused excellent good marginal poor bad_data	Rel 33 GLAS Binary Data
flag values	flag_meanings								
0, 1, 2, 3, 4, 5	unused excellent good marginal poor bad_data								

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source				
orbit_pred_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	Predicted or precision orbit; 0=precision orbit used; 1=predicted orbit used; 2=on-board orbit used <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 on-board_orbit_used</td> </tr> </table>	flag values	flag_meanings	0, 1, 2	precision_orbit_used predicted_orbit_used on-board_orbit_used	Rel : GLA Bina Data
flag values	flag_meanings								
0, 1, 2	precision_orbit_used predicted_orbit_used on-board_orbit_used								
orbit_man_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	Maneuvers;0=no maneuvers;1=maneuvers occurred during this record; orbit degraded <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_maneuvers maneuvers orbit_degraded</td> </tr> </table>	flag values	flag_meanings	0, 1	no_maneuvers maneuvers orbit_degraded	Rel : GLA Bina Data
flag values	flag_meanings								
0, 1	no_maneuvers maneuvers orbit_degraded								
orbit_model_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	Model problems;0=no model problems;1=model problems; orbit RMS > 5 cm; required accuracy not met <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>no_problems problems</td> </tr> </table>	flag values	flag_meanings	0, 1	no_problems problems	Rel : GLA Bina Data
flag values	flag_meanings								
0, 1	no_problems problems								
orbit_att_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	Attitude;0=instrument attitude used for orbit;1=modelled attitude used, possible orbit degradation <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>instrument_attitude_used modeled_attitude_used possible_orbit_degradation</td> </tr> </table>	flag values	flag_meanings	0, 1	instrument_attitude_used modeled_attitude_used possible_orbit_degradation	Rel : GLA Bina Data
flag values	flag_meanings								
0, 1	instrument_attitude_used modeled_attitude_used possible_orbit_degradation								
orbit_array_flg	INTEGER_1 (UNLIMITED)	POD flag (Orbit Flag) (NOT_SET)	NOT_SET	Solar ray orientation;0=solar ray orientation used from measurement;1=modelled solar ray orientation, possible orbit degradation <table border="1"> <tr> <td>flag values</td> <td>flag_meanings</td> </tr> <tr> <td>0, 1</td> <td>solar_ray_orientation_from_measurement modeled_solar_ray_orientation</td> </tr> </table>	flag values	flag_meanings	0, 1	solar_ray_orientation_from_measurement modeled_solar_ray_orientation	Rel : GLA Bina Data
flag values	flag_meanings								
0, 1	solar_ray_orientation_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"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1</td> <td>no_GPS_data_outage GPS_data_missing</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1	no_GPS_data_outage GPS_data_missing	Rel : GLA Bina Data
flag values	flag_meanings								
0, 1	no_GPS_data_outage GPS_data_missing								
i_DitheringEnabledFlag	INTEGER_1 (UNLIMITED)	Dithering Enabled Flag (NOT_SET)	NOT_SET	0=FALSE, 1=TRUE <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 : GLA Bina Data
flag values	flag_meanings								
0, 1	FALSE TRUE								

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
DS_UTCTime_5	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
DS_HeightRel_132	DOUBLE (UNLIMITED)	Dimension scale for <code>r5_g_lid</code> , <code>i5_g_sat_f</code> and <code>r5_ir_lid</code> (NOT_SET)	NOT_SET	This array contains the height above the DEM, where DEM = DEMmin+HoffMin. This dimension is used for the arrays <code>r5_g_lid</code> , <code>i5_g_sat_f</code> and <code>r5_ir_lid</code>	Constants	NOT_SET
DS_BG_Index	INTEGER (UNLIMITED)	Index for <code>d5_g_BG</code> (NOT_SET)	NOT_SET	This array contains the index for <code>d5_g_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
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_5

Group: Data_5HZ/Geolocation

This group contains geolocation-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d5_pred_lat	DOUBLE (UNLIMITED)	Predicted geodetic Latitude of the laser footprint (latitude)	degrees_north	The geodetic Latitude of the laser footprint; obtained from the predicted orbit; assuming the laser is nadir pointing.	Rel 33 GLAS Binary Data	DS_UTCTime_5
d5_pred_lon	DOUBLE (UNLIMITED)	Predicted geodetic Longitude of the laser footprint (longitude)	degrees_east	The geodetic Longitude of the laser footprint; obtained from the predicted orbit; assuming the laser is nadir pointing.	Rel 33 GLAS Binary Data	DS_UTCTime_5

Group: Data_5HZ/Transmit_Energy

This group contains information relating to transmit energy.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d5_g_TxNrg_EU	DOUBLE (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
d5_ir_TxNrgEU	DOUBLE (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_5HZ/LIDAR_20KMto10KM

This group contains information relating to GLAS lidar 20 to 10 km data.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source					
r5_g_lid	REAL (UNLIMITED, 132)	532 nm LIDAR Data from 20 KM to 10 KM (NOT_SET)	((pe/sample)*KM^2)/J	The normalized lidar signal from the 532 nm photon counting channel for the 20 KM to 10 KM segment of the atmosphere. Background subtraction, range squared, and dead time correction is applied. Sums of 8 samples.	Rel 33 GLAS Binary Data					
i5_g_sat_f	INTEGER_1 (UNLIMITED, 132)	532 nm Saturation Flag for 20 to 10 KM Segment (NOT_SET)	NOT_SET	Flag indicating whether the 532 nm signal is saturated or not for the 20 to 10 KM Profile. 0 = not saturated, 1 = saturated. There is one flag per each sample in the profile. There are 132 samples in a profile and the profiles are summed over 8 shots for a total of 660 flags (132 * 5) per second. Flags 0-131 are the flags for shots 1-8, Flags 132-263 are the flags for shots 9-16, etc.	Rel 33 GLAS Binary Data					
				<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									
d_gPredCldTop	DOUBLE (UNLIMITED)	532 nm Predicted Cloud Top Height at 5Hz (NOT_SET)	meters	The predicted height of the first cloud above local ground, predicted from the 532 nm lidar signal.	Rel 33 GLAS Binary Data					

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
r5_ir_lid	REAL (UNLIMITED, 132)	1064 nm LIDAR Data from 20 KM to 10 KM (NOT_SET)	(W*KM^2)/J	The normalized lidar signal from the 1064 nm cloud digitizer data for the 20 KM to 10 KM atmospheric segment. Background subtraction, and range squared correction is applied.	Rel 33 GLAS Binary Data

Group: Data_5HZ/Background

This group contains information relating to 5 hz background.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d5_g_BG	DOUBLE (UNLIMITED, 4)	532 nm Background at 5 Hz (NOT_SET)	photons/sample	The normalized 532 nm background counts from upper (1) and lower (2) integration intervals.(3) is background used to compute NRB (Normalized Relative Backscatter). Averaged over 8 shots.	Rel 33 GLAS Binary Data	DS_UTCTime_5
d5_ir_BG	DOUBLE (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 (Normalized Relative Backscatter). Averaged over 8 shots.	Rel 33 GLAS Binary Data	DS_UTCTime_5
i_cldPkSig	INTEGER_1 (UNLIMITED)	Cloud Return Peak Signal (NOT_SET)	photons / sample	Peak photon count in the 532 nm backscatter data within the range for cloud returns; at the 5 Hz rate.	Rel 33 GLAS Binary Data	DS_UTCTime_5
i_gndret_pkSig	INTEGER_1 (UNLIMITED)	Ground Return Peak Signal (NOT_SET)	photons / sample	Peak photon count in the 532 nm backscatter data. It is assumed that a ground return causes the maximum signal; at the 5 Hz rate.	Rel 33 GLAS Binary Data	DS_UTCTime_5
i_gnd_ret_loc	INTEGER_1 (UNLIMITED)	Ground Return Location (NOT_SET)	sample number	Sample number (from the end of the profile) of the estimated ground return peak signal; at the 5 Hz rate.	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
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

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
DS_HeightRel_148	DOUBLE (UNLIMITED)	Dimension scale for r40_g_lid, i40_g_sat_f and r40_ir_lid (NOT_SET)	NOT_SET	This array contains the height above the DEM, where DEM = DEMmin+HofffMin. This dimension is used for the arrays r40_g_lid i40_g_sat_f and r40_ir_lid	Constants	NOT_SET
DS_BG_Index	INTEGER (UNLIMITED)	Index for d40_g_BG (NOT_SET)	NOT_SET	This array contains the index for d40_g_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

Group: Data_40HZ/Geolocation

This group contains geolocation-related parameters.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d40_pred_lat	DOUBLE (UNLIMITED)	Predicted geodetic Latitude of the laser footprint (latitude)	degrees_north	The geodetic Latitude of the laser footprint; obtained from the predicted orbit; assuming the laser is nadir pointing.	Rel 33 GLAS Binary Data	DS_UTCTime_40
d40_pred_lon	DOUBLE (UNLIMITED)	Predicted geodetic Longitude of the laser footprint (longitude)	degrees_east	The geodetic Longitude of the laser footprint; obtained from the predicted orbit; assuming the laser is nadir pointing.	Rel 33 GLAS Binary Data	DS_UTCTime_40

Group: Data_40HZ/Transmit_Energy

This group contains information relating to transmit energy.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coord
d40_g_TxNrg_EU	DOUBLE (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_
d40_ir_TxNrgEU	DOUBLE (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_
i_g_TxNrg_Cts	INTEGER_2 (UNLIMITED)	532 nm Laser Transmit Energy, counts (NOT_SET)	counts	The 532 nm transmitted pulse energy, in raw counts from the transmitted pulse energy monitor.	Rel 33 GLAS Binary Data	DS_

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coord				
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; 1 = full laser energy, 2 = marginal laser energy, 3 = deficient laser energy, 0 = not used. <table border="1" data-bbox="792 300 1365 520"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2, 3</td> <td>not_used full_laser_energy marginal_laser_energy deficient_laser_energy</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2, 3	not_used full_laser_energy marginal_laser_energy deficient_laser_energy	Rel 33 GLAS Binary Data	DS_1
flag values	flag_meanings									
0, 1, 2, 3	not_used full_laser_energy marginal_laser_energy deficient_laser_energy									
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; 1 = full laser energy, 2 = marginal laser energy, 3 = deficient laser energy, 0 = not used. <table border="1" data-bbox="792 667 1365 888"> <thead> <tr> <th>flag values</th> <th>flag_meanings</th> </tr> </thead> <tbody> <tr> <td>0, 1, 2, 3</td> <td>not_used full_laser_energy marginal_laser_energy deficient_laser_energy</td> </tr> </tbody> </table>	flag values	flag_meanings	0, 1, 2, 3	not_used full_laser_energy marginal_laser_energy deficient_laser_energy	Rel 33 GLAS Binary Data	DS_1
flag values	flag_meanings									
0, 1, 2, 3	not_used full_laser_energy marginal_laser_energy deficient_laser_energy									

Group: Data_40HZ/LIDAR_10KMtoNeg1KM

This group contains information relating to lidar 10 to -1 km data.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source				
r40_g_lid	REAL (UNLIMITED, 148)	532 nm LIDAR Data from 10 KM to -1 KM (NOT_SET)	((pe/sample)*KM^2)/J	The normalized lidar signal from the 532 nm photon counting channel for the 10 KM to -1 segment of the atmosphere. Background subtraction, range squared, and dead time correction is applied. NOTES: pe = photons; J = Joules.	Rel 33 GLAS Binary Data				
i40_g_sat_f	INTEGER_1 (UNLIMITED, 148)	532 nm Saturation Flag for 10 to -1 KM Segment (NOT_SET)	NOT_SET	Flag indicating whether the 532 nm signal is saturated or not for the 10 to -1 KM profile. 0 = not saturated, 1 = saturated. 1 flag per each sample in the profile. There are 148 samples in the profile and the profiles occur at 40 per second for a total of 5920 flags (148 * 40) per second. Flags 0-147 are the flags for shot 1, flags 148-295 are the flags for shot 2, etc. <table border="1" data-bbox="862 1486 1446 1619"> <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	Rel 33 GLAS Binary Data
flag values	flag_meanings								
0, 1	not_saturated saturated								
r40_ir_lid	REAL (UNLIMITED, 148)	1064 nm LIDAR Data from 10 KM to -1 KM (NOT_SET)	(W*KM^2)/J	The normalized lidar signal from the 1064 nm cloud digitizer data for the 10 KM to -1 KM atmospheric segment. Background subtraction, and range squared correction is applied.	Rel 33 GLAS Binary Data				

Group: Data_40HZ/Background

This group contains information relating to background data.

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

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d40_g_BG	DOUBLE (UNLIMITED, 4)	532 nm Background at 40 Hz (NOT_SET)	photons/sample	The normalized 532 nm background counts from upper (1) and lower (2) integration intervals.(3) is background used to compute NRB (Normalized Relative Backscatter).	Rel 33 GLAS Binary Data	DS_UTCTime_40
d40_ir_BG	DOUBLE (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 (Normalized Relative Backscatter).	Rel 33 GLAS Binary Data	DS_UTCTime_40
d_4nsBgMean	DOUBLE (UNLIMITED)	4ns Background Mean Value (NOT_SET)	counts	4ns Filter Background mean	Rel 33 GLAS Binary Data	DS_UTCTime_40
d_4nsBgSDev	DOUBLE (UNLIMITED)	4ns Background Standard Deviation (NOT_SET)	counts	4ns filter background standard deviation.	Rel 33 GLAS Binary Data	DS_UTCTime_40
i_DualPinA	INTEGER_2 (UNLIMITED)	Dual Pin A data (NOT_SET)	counts	Dual Pin A data (from APID19, offset 1248)	Rel 33 GLAS Binary Data	DS_UTCTime_40
i_DualPinB	INTEGER_2 (UNLIMITED)	Dual Pin B Data (NOT_SET)	counts	Dual Pin B data from APID19, Offset 1288	Rel 33 GLAS Binary Data	DS_UTCTime_40

/ANCILLARY_DATA

/ANCILLARY_DATA

Attribute	Example Value
glas_osc_rate	1.000000026
glas_osc_rate_date	2005-10-21
glas_osc_rate_time	00:00:00
sc_osc_rate	0.9999998854809
sc_osc_rate_date	2005-10-21
sc_osc_rate_time	00:00:00
internal_time_delay	0.0000151100
internal_time_delay_date	2005-10-21
internal_time_delay_time	00:00:00
internal_range_delay	9.5560

Attribute	Example Value
internal_range_delay_date	2005-10-21
internal_range_delay_time	00:00:00
Additional_Attribute	ReferenceOrbit, Track, 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=gla02_test.ct1

/METADATA/COLLECTIONMETADATA

Attribute	Example Value
DLLName	libDsESDTSyBASIC.001Sh.so
GranuleTimeDuration	11620
SpatialSearchType	NotSupported
DataFileFormat	HDF5
ScienceMimeType	application/x-hdfeos
BrowseMimeType	application/x-hdfeos
BrowseOnlineMimeType	image/jpeg
ShortName	GLAH02
LongName	GLAS/ICESat L1A Global Atmosphere Data (HDF5)
CollectionDescription	Data granules contain approximately 190 minutes (2 orbits) of data and will include normalized backscatter, photon counter, cloud digitizer, and timing data that serve as input to higher level atmospheric products.
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

Attribute	Example Value
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
Track	AdditionalAttributesContainer
Instrument_State	AdditionalAttributesContainer
ReferenceOrbit	AdditionalAttributesContainer
Cycle	AdditionalAttributesContainer
Instance	AdditionalAttributesContainer
Instrument_State_Date	AdditionalAttributesContainer
Instrument_State_Time	AdditionalAttributesContainer
identifier_product_doi	AdditionalAttributesContainer
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

Attribute	Example Value
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

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/ReferenceOrbit

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	Assigned number for which exact orbital elements describe the exact repeat orbit pattern.

Attribute	Example Value
AdditionalAttributeName	ReferenceOrbit
ParameterUnitsofMeasurement	Assigned number
ParameterRangeBegin	1
ParameterRangeEnd	30000

/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
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/DATA102

/METADATA/COLLECTIONMETADATA/AdditionalAttributes/identifier_product_doi_authority

Attribute	Example Value
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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/DATA102

/METADATA/COLLECTIONMETADATA/CSDTDescription

Attribute	Example Value
PrimaryCSDT	n-Dim Array of Records
IndirectReference	tracks/orbits
Implementation	HDF
CSDTComments	Each file contains two orbits of data.

/METADATA/COLLECTIONMETADATA/CollectionAssociation

Attribute	Example Value
GLA00	CollectionAssociationContainer
GLAH07	CollectionAssociationContainer
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/GLAH07

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Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 1B file containing: calibrated backscatter profiles.
ShortName	GLAH07
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
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

Attribute	Example Value
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
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

Attribute	Example Value
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
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
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

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

/METADATA/COLLECTIONMETADATA/DisciplineTopicParameters

/METADATA/COLLECTIONMETADATA/DisciplineTopicParameters/Spectral

Attribute	Example Value
Engineering	DisciplineTopicParametersContainer

/METADATA/COLLECTIONMETADATA/DisciplineTopicParameters/Spectral/Engineering

Attribute	Example Value
ECSDisciplineKeyword	Earth Science

Attribute	Example Value
ECSTopicKeyword	Spectral/Engineering
ECSTermKeyword	Visible Wavelengths
ECSVariableKeyword	Sensor Counts

/METADATA/COLLECTIONMETADATA/ECSCollection

Attribute	Example Value
RevisionDate	2012-06-25
SuggestedUsage	GLAH02 contains the LIDAR data related to atmospheric measurements. It is a level 1A time-ordered product that has data corrected for instrument effects. The data are at the full 40Hz resolution and geolocated to the sub-satellite location. The data values were used as input data values to compute parameters on GLAH07. Each GLAH02 file was created from an equivalent GLA02 binary formatted file. The provenance metadata shows the history that created the GLA02.
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
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Attribute	Example Value
GLAS	InstrumentContainer
GPS	InstrumentContainer

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

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

/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

Attribute	Example Value
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
SensorCharacteristicValue	1064 nm

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

Attribute	Example Value
SensorShortName	PC

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

/METADATA/COLLECTIONMETADATA/ProcessingLevel

Attribute	Example Value
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Attribute	Example Value
ProcessingLevelDescription	Sensor Measurements
ProcessingLevelID	1A

/METADATA/COLLECTIONMETADATA/Review

Attribute	Example Value
ScienceReviewDate	2001-03-04
ScienceReviewStatus	QA at DAACs
FutureReviewDate	2001-09-04

/METADATA/COLLECTIONMETADATA/Spatial

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

Attribute	Example Value
RangeEndingTime	00:00:00

/METADATA/INVENTORYMETADATA

Attribute	Example Value
PGEVersion	Version 1.0
ShortName	GLAH02
VersionID	33
RangeBeginningTime	11:42:39
RangeEndingTime	14:55:57
RangeBeginningDate	2005-11-01
RangeEndingDate	2005-11-01

/METADATA/INVENTORYMETADATA/ECSDDataGranule

Attribute	Example Value
ReprocessingPlanned	no further update anticipated
ReprocessingActual	reprocessed
LocalGranuleID	GLAH02_033_2113_002_0085_0_01_0001.H5
ProductionDateTime	2013-02-27T12:14:19
LocalVersionID	33

/METADATA/INVENTORYMETADATA/InputGranule

Attribute	Example Value
InputPointer	gla02_test.ct1, tai-utc.dat, GLA02_033_2113_002_0085_0_01_0001.DAT, DsESDTG1GLAH02.033.desc

/METADATA/INVENTORYMETADATA/MeasuredParameter

Attribute	Example Value
ParameterName	PC_Profile, CD_Profile

/METADATA/INVENTORYMETADATA/OrbitCalculatedSpatialDomain

Attribute	Example Value
OrbitNumber	15247, 15248, 15249
StartOrbitNumber	15247

Attribute	Example Value
StopOrbitNumber	15249
EquatorCrossingLongitude	127.56265, 103.366974, 79.17059
EquatorCrossingTime	11:29:14, 13:05:53, 14:42:32
EquatorCrossingDate	2005-11-01, 2005-11-01, 2005-11-01

/METADATA/INVENTORYMETADATA/ProductSpecificMetadata

Attribute	Example Value
Track	85, 86, 87
Instrument_State	373340
ReferenceOrbit	1
Cycle	2
Instance	13
Instrument_State_Date	2005-10-21
Instrument_State_Time	00:00:00
identifier_product_doi	10.5067/ICESAT/GLAS/DATA102
identifier_file_uuid	D65E7C2A-7BC1-444F-AE6F-991DAD0B45FF
identifier_product_doi_authority	http://dx.doi.org/10.5067/ICESAT/GLAS/DATA102

/METADATA/PROVENANCE

/METADATA/PROVENANCE/STEP_1

Attribute	Example Value
ProcessDateTime	2011-06-01T19:14:02

/METADATA/PROVENANCE/STEP_1/ProcessAgent

Attribute	Example Value
Name	glas_11a
Type	1A
Version	6.0.1
Description	This process is an instantiation of the GLAS Science Algorithm Software (GSAS) 1A ATBDs.

/METADATA/PROVENANCE/STEP_1/ProcessInput

Attribute	Example Value
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/METADATA/PROVENANCE/STEP_2/ProcessInput

Attribute	Example Value
Name	./gla02_test.ct1, ../../data/tai-utc.dat, in/GLA02_033_2113_002_0085_0_01_0001.DAT, ../../glas_hdf/data/esdts/DsESDTGLGLAH02.033.desc
Type	IN_CNTL, IN_ANC_TAIUTC, IN_GLA02, IN_ESDT
Version	0, 0, 1, 1

/METADATA/PROVENANCE/STEP_2/ProcessOutput

Attribute	Example Value
Name	out/GLAH02_033_2113_002_0085_0_01_0001.H5
Type	OUT_GLAH02
Version	1
UUID	D65E7C2A-7BC1-444F-AE6F-991DAD0B45FF
DOI	10.5067/ICESAT/GLAS/DATA102

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