GLAH01 Product Data Dictionary

File-Level (Global) Attributes

Attribute	Example Value
featureType	timeSeries
ShortName	GLAH01
title	GLAS/ICESat L1A Global Altimetry Data (HDF5)
comment	Data granules contain approximately 23 minutes (1/4 orbit) of data and will include pulse travel times, the transmitted and received waveform, transmitted and received energy, echo time offsets, and instrument filter and threshold values.
summary	The waveforms are used by altimetric scientists studying detailed surface characteristics that cannot be fully expressed in the waveform parameterization on GLAH05, especially over ice sheets and land. Instrument scientists used the data to check the health and welfare. The data values were used as input to compute parameters on GLAH05. Each GLAH01 file was created from an equivalent GLA01 binary formatted file. The provenance metadata shows the history that created the GLA01.
license	http://nsidc.org/data/icesat/disclaimer.html
references	https://nsidc.org/data/glah01-glah05-glah06-glah12-glah13-glah14-glah15/versions/34/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	2013-03-13T10:54:04
spatial_coverage_type	Horizontal
history	2011-06-01T19:14:02 glas_l1a 6.0.1 GLA01_033_2113_002_0085_1_01_0001.DAT, 2013-03-13T10:54:04.000000Z GLA01_h5_convert Version 1.0 (May 2012) out/GLAH01_033_2113_002_0085_1_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 > Waveform
keywords_vocabulary	GCMD Science Keywords Version 6.0
standard_vocabulary_name	CF-1.6
naming_authority	http://dx.doi.org/10.5067/ICESAT/GLAS/DATA101
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	2005-11-01T12:04:04
time_coverage_duration	1620
source	Satellite Measurements
HDFVersion	HDF5 1.8.9
identifier_file_uuid	D65E7C2A-7BC1-444F-AE6F-991DAD0B45FF
identifier_product_doi	10.5067/ICESAT/GLAS/DATA101
identifier_product_type	GLAH01
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

Group: Data_1HZ/Time

This group contains the 1Hz index and time-related parameters

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	c
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
i_shot_count	INTEGER (UNLIMITED)	GLAS Pulse Index (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	D
shot_time_flg	INTEGER_1 (UNLIMITED)	time correction flag (NOT_SET)	NOT_SET	Shot time flag; Indicates what shot time is used. flag values: 0, 1 flag_meanings: `transmit_time ground_bounce_time`	Rel 33 GLAS Binary Data	D
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 flag values: 0, 1 flag_meanings: `not_applied applied`	Rel 33 GLAS Binary Data	D
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. flag values: 0, 1 flag_meanings: `not_applied applied`	Rel 33 GLAS Binary Data	D

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	
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. flag values: 0, 1 flag_meanings: applied not_applied	Rel 33 GLAS Binary Data	D
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 flag values: 0, 1 flag_meanings: applied not_applied	Rel 33 GLAS Binary Data	D

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
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
apid_PC532_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	532nm Photon Counter packet APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
apid_CD1064_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	1064 Cloud Digitizer packet APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
apid_ADSci_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Ancillary science packet APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
apid_ASCT_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Command and Telemetry (C&T) board telemetry 40Hz data in Ancillary science packet APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
apid_GPS_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	GPS telemetry packet APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
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 flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
apid_LPA_1_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	Laser Pulse Array (LPA) packet #1 APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
apid_LPA_2_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	LPA packet #2 APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
apid_LPA_3_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	LPA packet #3 APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data
apid_LPA_4_flg	INTEGER_1 (UNLIMITED)	APID Data Availability Flag (NOT_SET)	NOT_SET	LPA packet #4 APID availability flag flag values: 0, 1, 2 flag_meanings: present filled_at_EDOS never_received_ISIPS_filled	Rel 33 GLAS Binary Data

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/Transmit_Energy

This group contains information relating to transmit energy.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d_TxNrg_EU	DOUBLE (UNLIMITED)	1064 nm Laser Transmit Energy (NOT_SET)	joules	The 1064 nm laser pulse transmitted energy in energy units, computed from the digitized outgoing pulse, and the transmit gain.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Instrument_Settings

This group contains information relating to instrument status.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_InstState	INTEGER (UNLIMITED)	Instrument State (NOT_SET)	NOT_SET	Flag defining current configuration of the GLAS instrument. A brief summary follows: bit 0: Laser A, bit 1: Laser B, bit 2: Laser C, bit 3: OTS, bit 4: Primary Altimeter Digitizer, bit 5: secondary altimeter digitizer, bit 6: primary oscillator, bit 7: secondary oscillator, bit 8: SPCM1, bit 9: SPCM2, bit 10: SPCM3, bit 11: SPCM4, bit 12: SPCM5, bit 13: SPCM6, bit 14: SPCM7, bit 15: SPCM8, bit 16: GPS receiver 1, bit 17: GPS receiver 2, bit 18: Primary altimeter detector, but 19: Secondary altimeter detector, bits 20-31: spares	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_FiltNumMask	INTEGER (UNLIMITED)	Filter Selection Mask (NOT_SET)	NOT_SET	The low order 6 bits, bits 0 through 5, indicate which filters were selectable for a shot. The definition of complete failure of the filters means the complete failure of all SELECTABLE filters. Bit 0: 4 nsec filter, bit 1: 8 nsec filter, bit 2: 16 nsec filter, bit 3: 32 nsec filter, bit 4: 64 nsec filter, bit 5: 128 nsec filter. In case of the complete failure of all the filters, the result of the last 'good' shot shall be used, even if this mask proscribes the filter choice. A bit value = 1 =selectable; bit value = 0 = not selectable.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_ObSCHt	DOUBLE (UNLIMITED)	On-board Height of S/C (NOT_SET)	meters	Geodetic altitude of S/C above earth surface (Hsat). From APID19, Offset 1092.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_N_val	INTEGER (UNLIMITED)	Value of N (NOT_SET)	gates	Value of N used for waveform compression for the frame. From APID19, Offset 236.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_compRatio_p	INTEGER (UNLIMITED)	Compression Ratios (NOT_SET)	NOT_SET	Averaging values p and q for frame. First item is p; second is q. From APID19, Offset 232. First N downlink samples are generated by averaging p raw digitized elements and the rest of the allocated samples in the waveform by averaging q elements.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_compRatio_q	INTEGER (UNLIMITED)	Compression Ratios (NOT_SET)	NOT_SET	Averaging values p and q for frame. First item is p; second is q. From APID19, Offset 232. First N downlink samples are generated by averaging p raw digitized elements and the rest of the allocated samples in the waveform by averaging q elements.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_r_val	INTEGER (UNLIMITED)	Value of r (NOT_SET)	NOT_SET	Value of r used for waveform compression for frame. From APID19, Offset 238. Not valid if APID19 is missing.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_ADdetOutGn	INTEGER (UNLIMITED)	Transmitted Gain (NOT_SET)	counts	AD Detector Return Gain readback	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_DEMmin	INTEGER (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
i_DEMmax	INTEGER (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
i_Hoff_min	DOUBLE (UNLIMITED)	DEM Offset Min (NOT_SET)	meters	Offset associated with the minimum height uploaded in the DEM used to define the range window. minimum height offset = DEM uncertainty + bias; default is 1.125 km. From APID19, Offset 1116.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_Hoff_max	DOUBLE (UNLIMITED)	DEM Offset Max (NOT_SET)	meters	Offset associated with the maximum height uploaded in the DEM used to define the range window. Maximum height offset = DEM uncertainty + bias; default is 1.125 km. From APID19, Offset 1116.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_ADBias_min	DOUBLE (UNLIMITED)	Altimeter Digitizer Bias Min (NOT_SET)	kilometers	Altimeter Digitizer bias values added to minimum range. Default value is 0. Used when necessary to correct for off-nadir pointing angles greater than 1 degree. From APID19, Offset 1124.	Rel 33 GLAS Binary Data	DS_UTCTime_1
i_ADBias_max	DOUBLE (UNLIMITED)	Altimeter Digitizer Bias Max (NOT_SET)	kilometers	Altimeter Digitizer bias values added to maximum range. Default value is 0. Used when necessary to correct for off-nadir pointing angles greater than 1 degree. From APID19, Offset 1124.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_Rmin	DOUBLE (UNLIMITED)	Range Window Start Rmin (NOT_SET)	kilometers	Range window start in kilometers. From APID19, Offset 1100.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_Rmax	DOUBLE (UNLIMITED)	Range Window Stop Rmax (NOT_SET)	kilometers	Range window stop in kilometers. From APID19, Offset 1100.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_Wmin	DOUBLE (UNLIMITED)	Window Size Min (NOT_SET)	kilometers	Range window minimum size. Default is 2 km. From APID19, Offset 1108.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_WMax	DOUBLE (UNLIMITED)	Window Size Max (NOT_SET)	kilometers	Range window maximum size. Default is 11 km. From APID19, Offset 1108.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_EchoLandType	INTEGER_1 (UNLIMITED)	Echo Land Type (NOT_SET)	NOT_SET	Surface Echo Land Type for Compression. 0=sea, 1=land, 2=sea/ice, 3=land/ice. From APID19, Offset 231.	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Engineering

This group contains engineering values.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
d_T_detID	DOUBLE (UNLIMITED)	Detector temperature (NOT_SET)	degrees C	Temerature of powered detector.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_T_digID	DOUBLE (UNLIMITED)	Digitizer temberature (NOT_SET)	degrees C	Temperature of powered digitizer.	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_T_relay	DOUBLE (UNLIMITED)	Oscillator board temp (NOT_SET)	degrees C	Temperature of powered oscillator	Rel 33 GLAS Binary Data	DS_UTCTime_1
d_T_fb	DOUBLE (UNLIMITED)	Fiber box temperature (NOT_SET)	degrees C	Temperature of fiber box	Rel 33 GLAS Binary Data	DS_UTCTime_1

Group: Data_1HZ/Flags

This group contains information relating to flags.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source
orbit_pred_flg	INTEGER_1 (UNLIMITED)	Orbit Prediction Flag (NOT_SET)	NOT_SET	Predicted or precision orbit flag values: 0, 1, 2 flag_meanings: `precision_orbit_used predicted_orbit_used on-board_orbit_used`	Rel 33 GLAS Binary Data
orbit_man_flg	INTEGER_1 (UNLIMITED)	Orbit Maneuver Flag (NOT_SET)	NOT_SET	Maneuvers flag values: 0, 1 flag_meanings: `no_maneuvers maneuvers orbit_degraded`	Rel 33 GLAS Binary Data

<table>
<tr><th>Label</th><th>Datatype (Dimensions)</th><th>long_name (standard_name)</th><th>units</th><th>description</th><th>source</th></tr>
<tr><td>orbit_model_flg</td><td>INTEGER_1 (UNLIMITED)</td><td>Orbit Model Problems Flag (NOT_SET)</td><td>NOT_SET</td><td>Model problems, occour when orbit RMS > 5 cm; required accuracy not met<table><tr><td>flag values</td><td>flag_meanings</td></tr><tr><td>0, 1</td><td>no_problems problems</td></tr></table></td><td>Rel 33 GLAS Binary Data</td></tr>
<tr><td>orbit_att_flg</td><td>INTEGER_1 (UNLIMITED)</td><td>Orbit Attitude Flag (NOT_SET)</td><td>NOT_SET</td><td>Attitude; if modeled attitude used, possible orbit degradation<table><tr><td>flag values</td><td>flag_meanings</td></tr><tr><td>0, 1</td><td>instrument_attitude_used modeled_attitude_used</td></tr></table></td><td>Rel 33 GLAS Binary Data</td></tr>
<tr><td>orbit_array_flg</td><td>INTEGER_1 (UNLIMITED)</td><td>Orbit Array Orientation Flag (NOT_SET)</td><td>NOT_SET</td><td>Solar ray orientation; if modeled array orientation used, possible orbit degadation<table><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></td><td>Rel 33 GLAS Binary Data</td></tr>
<tr><td>orbit_gps_flg</td><td>INTEGER_1 (UNLIMITED)</td><td>Orbit GPS Flag (NOT_SET)</td><td>NOT_SET</td><td>GPS; if GPS data missing, possible orbit degradation<table><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></td><td>Rel 33 GLAS Binary Data</td></tr>
<tr><td>i_RngSrc_Flag</td><td>INTEGER_1 (UNLIMITED)</td><td>Range Data Source (NOT_SET)</td><td>NOT_SET</td><td>Source of Range data: 0 = s/c time and position packet; 1 = uplinked DEM bytes; 2 = uplinked Rmin/Rmax. From APID19, Offset 1194.<table><tr><td>flag values</td><td>flag_meanings</td></tr><tr><td>0, 1, 2</td><td>spacecraft uplinked_dem uplinked_rminrmax</td></tr></table></td><td>Rel 33 GLAS Binary Data</td></tr>
</table>

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_Gate_Index_48	INTEGER (UNLIMITED)	Dimension scale for tx gate index (1-48) (NOT_SET)	NOT_SET	This is the dimension scale for the transmit waveform gate index. Values range from 1-48.	Rel 33 GLAS Binary Data	NOT_SET
DS_Gate_Index_544	INTEGER (UNLIMITED)	Dimension scale for rec gate index (1-544) (NOT_SET)	NOT_SET	This is the dimension scale for the receive waveform gate index. Values range from 1-544.	Rel 33 GLAS Binary Data	NOT_SET
DS_wt_fact_filt_index	INTEGER (UNLIMITED)	Dimension scale for filter weights (1-6) (NOT_SET)	NOT_SET	This is the dimension scale corresponding to filter weights. Values range from 1-6.	Rel 33 GLAS Binary Data	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 all other GLAS data product.	Rel 33 GLAS Binary Data	DS_UTCTime_40
i_shot_count	INTEGER (UNLIMITED)	GLAS Pulse Index (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/Waveform/Characteristics

This group contains information relating to the characteristics of the waveforms.

<table>
<tr><th>Label</th><th>Datatype (Dimensions)</th><th>long_name (standard_name)</th><th>units</th><th>description</th><th>sourc</th></tr>
<tr><td>i_waveformType</td><td>INTEGER (UNLIMITED)</td><td>i_waveformType (NOT_SET)</td><td>NOT_SET</td><td>Indicates number of valid samples in waveform; 0 = missing; 1 = Long waveform (544 samples); 2 =Short waveform (200 samples)
<table><tr><td>flag values</td><td>flag_meanings</td></tr><tr><td>0, 1, 2</td><td>missing long short</td></tr></table></td><td>Rel 33 GLAS Binary Data</td></tr>
<tr><td>i_LastThrXingT</td><td>INTEGER (UNLIMITED)</td><td>Last Threshold Crossing Location for Selected Filter (NOT_SET)</td><td>ns</td><td>Address, in digitizer counts, of the detected last (i.e. last in time) threshold crossing (as measured from the start of Acquisition Memory, i.e. Start of digitization). Also called the trailing edge. Set to 0 if threshold crossing was NOT detected. From APID12/13, Offset 84.</td><td>Rel 33 GLAS Binary Data</td></tr>
</table>

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	sourc
i_NextThrXing	INTEGER (UNLIMITED)	Next to Last Threshold Crossing Location for Selected Filter (NOT_SET)	ns	Address (in dititizer counts) of the detected next to last threshold crossing (as measured from the start of Acquisition Memory, i.e. Start of digitization. Also called the leading edge. Set to 0 if a threshold crossing was NOT detected. From APID12/13 offset 88.	Rel 33 GLAS Binary Data
i_EchoPeakLoc	INTEGER (UNLIMITED)	Echo Peak Location (NOT_SET)	ns	Address (in digitizer counts) of the detected peak value (as measured from the start of Acquisition Memory, i.e. Start of digitization). Set to 0 if a threshold crossing was NOT detected. From APID12/13 offset 100.	Rel 33 GLAS Binary Data
i_EchoPeakVal	DOUBLE (UNLIMITED)	Echo Peak Value (NOT_SET)	volts	Peak value for the selected filter returned by the FIR filter engine. Set to 0 if a threshold crossing was not detected. From APID12/13 offset 96.	Rel 33 GLAS Binary Data
i_filtr_thresh	INTEGER (UNLIMITED)	Selected Filter Threshold Value (NOT_SET)	counts	Threshold values used to find the last and next to last threshold crossings for the selected filter. From APID12/13, Offset 108.	Rel 33 GLAS Binary Data
d_RecNrgAll_EU	DOUBLE (UNLIMITED)	1064 Laser received Energy from all signal above threshold (NOT_SET)	joules	This is calculated from the area under the received waveform (referenced to the observed noise) from all gates between the first and last threshold crossings.	Rel 33 GLAS Binary Data
d_RecNrgLast_EU	DOUBLE (UNLIMITED)	1064 nm Laser Received Energy (max pk) (NOT_SET)	joules	This is the energy in the 1064 nm laser pulse between the threshold crossings before and after the maximum amplitude in energy units.	Rel 33 GLAS Binary Data
i_filtnum	INTEGER (UNLIMITED)	Filter Number (NOT_SET)	NOT_SET	Filter with the highest weight (0 for 4 nsec filter; 1 for 8 nsec filter; 2 for 16 nsec filter; 3 for 32 nsec filter; 4 for 64 nsec filter; 5 for 128 nsec filter). May or may not be selectable! If no selectable filter can be chosen, then the last successful filter, selectable or NOT is chosen. From APID12/13, Offset 104.	Rel 33 GLAS Binary Data
i_shot_ctr	INTEGER (UNLIMITED)	Shot Counter (NOT_SET)	counts	The shot number for each of the 40 shots in this record. The shot count rolls over after reaching 200. From APID12/13, Offset 16.	Rel 33 GLAS Binary Data
i_no1stX_4ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No first crossing found on 4-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no1stX_8ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No first crossing found on 8-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	sourc
i_no1stX_16ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No first crossing found on 16-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no1stX_32ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No first crossing found on 32-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no1stX_64ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No first crossing found on 64-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no1stX_128ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No first crossing found on 128-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no2ndX_4ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No second crossing found on 4-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no2ndX_8ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No second crossing found on 8-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no2ndX_16ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No second crossing found on 16-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no2ndX_32ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No second crossing found on 32-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	sourc
i_no2ndX_64ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No second crossing found on 64-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_no2ndX_128ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No second crossing found on 128-nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_aboveTh_4ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	First sample in range greater than or equal to threshold for 4 nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_aboveTh_8ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	First sample in range >= to threshold for 8 nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_aboveTh_16ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	First sample in range >= threshold for 16 nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_aboveTh_32ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	First sample in range >= threshold for 32 nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_aboveTh_64ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	First sample in range >= threshold for 64 nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_aboveTh_128ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	First sample in range >= threshold for 128 nsec filter flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	sourc
i_allFltrsRej_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	All filters were rejected flag. 0 = FALSE, 1 = TRUE. This flag will be set to true (1) if bits 0 through 5 in Filter Selection Mask (`i_FiltNumMask`) are set flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_noFltrSel_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	No filters were ever selected; all previous selections failed. (happens on DSP reset).0=False, at least one previous selection succeeded, 1=True flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_fltrFail_4ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	4ns filter failed flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_fltrFail_8ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	8ns filter failed flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_fltrFail_16ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	16ns filter failed flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_fltrFail_32ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	32ns filter failed flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_fltrFail_64ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	64ns filter failed flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	sourc
i_fltrFail_128ns_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	128ns filter failed flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_retRngInv_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	Return range is invalid. 0=Range OK, 1=Failure flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_sciPrIncmplt_flg	INTEGER_1 (UNLIMITED)	Range Window Status Word (NOT_SET)	NOT_SET	Science processing is incomplete. 0=Ready, 1=Failure flag values: 0, 1 flag_meanings: false true	Rel 33 GLAS Binary Data
i_gainSet1064	INTEGER (UNLIMITED)	AD Gain Setting (NOT_SET)	counts	The receiver gain; results of the gain algorithm. From APID12/13, Offset 148.	Rel 33 GLAS Binary Data
i_4nsPeakVal	INTEGER (UNLIMITED)	4ns Filter Peak value (NOT_SET)	volts	Received pulse Peak value for the 4ns filter; returned by the FIR engine. From APID12/13, Offset 92.	Rel 33 GLAS Binary Data
i_8nsPeakVal	INTEGER (UNLIMITED)	8ns Filter Peak value (NOT_SET)	volts	Received pulse Peak value for the 8ns filter; returned by the FIR engine. From APID12/13, Offset 94.	Rel 33 GLAS Binary Data
d_4nsBgMean	DOUBLE (UNLIMITED)	Background Mean Value (NOT_SET)	volts	Background Noise Mean Value for the 4 ns filter. From APID12/13, Offset 112.	Rel 33 GLAS Binary Data
d_4nsBgSDEV	DOUBLE (UNLIMITED)	Background Standard Deviation (NOT_SET)	volts	The standard deviation of the background noise for the 4 ns filter. From APID12/13, Offset 116.	Rel 33 GLAS Binary Data
i_samp_pad	INTEGER (UNLIMITED)	Echo Sample Padding (NOT_SET)	gates	Surface echo sample padding. Number of zero bytes used to pad the surface echo data samples after averaging. From APID12/13, Offset 152.	Rel 33 GLAS Binary Data
i_comp_type	INTEGER_1 (UNLIMITED)	Echo Compression Type (NOT_SET)	NOT_SET	Surface echo compression type. Indicates the type of compression performed. 0 = N, p, and q; 1 = r. From APID12/13, Offset 154. flag values: 0, 1 flag_meanings: `npq_compression r_compression`	Rel 33 GLAS Binary Data

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	sourc
i_gainStatus	INTEGER_1 (UNLIMITED)	Gain Status Bits (NOT_SET)	NOT_SET	Note that these bits are always set to 0 on the first shot of a science run and when auto gain is disabled. bit 0x1: 0 if the gain loop was run for this shot; 1 if the gain loop was bypassed for this shot; bit 0x2: 0 if the gain loop did not time out; 1 if the gain loop timed out and was reset; flag values: 0, 1, 2 flag_meanings: `gain_loop_run_ok gain_loop_bypassed gain_loop_reset`	Rel 33 GLAS Binary Data
i_NumCoinc	INTEGER (UNLIMITED)	Number of Coincidences for Selected Filter (NOT_SET)	NOT_SET	The number of coincidences between the selected filter and all other filters (including itself). This is one of the terms used to calculate the weight of the selected filter. If no filter is selected, this value is 0.	Rel 33 GLAS Binary Data
i_rawPkHt	INTEGER (UNLIMITED)	Height of Peak in Raw Waveform (NOT_SET)	counts	The maximum raw value in a specified range at the end of the return waveform. This value is used as the input to the gain control loop in place of the 8ns peak height.	Rel 33 GLAS Binary Data
i_wt_fact_filt	INTEGER (UNLIMITED, 6)	Filter Weight Factors (NOT_SET)	NOT_SET	Results of weight formulas for all FIR filters. There are a total of 6 filters. From APID12/13, offset 124.	Rel 33 GLAS Binary Data
i_TxFlg	INTEGER (UNLIMITED)	Transmit Pulse Flag (NOT_SET)	NOT_SET	Flag indicating whether the transmit pulse is telemetered (valid) or not telemetered (invalid) for this shot flag values: 0, 1 flag_meanings: `telemetered not_telemetered`	Rel 33 GLAS Binary Data
l_GainShiftFlg	INTEGER_1 (UNLIMITED)	Gain Shift Flag (NOT_SET)	NOT_SET	Flag indicates if the gain has been shifted for the corresponding measurement. 0=Gain has been shifted (valid) or 1=Gain has not been shifted (potentially invalid) in this shot. flag values: 0, 1 flag_meanings: `gain_shifted gain_not_shifted`	Rel 33 GLAS Binary Data

Group: Data_40HZ/Waveform/TransmitWaveform

This group contains information relating to transmit waveforms.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_time_txWfPk	INTEGER (UNLIMITED)	Transmit Pulse Peak Location (NOT_SET)	ns	Address in digitizer counts of the Transmit Pulse Peak as measured from the start of Acquisition Memory, i.e. start of digitization. From APID12/13, Offset 68.	Rel 33 GLAS Binary Data	DS_UTCTime_40

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_txWfPk_Flag	INTEGER_1 (UNLIMITED)	Transmit Waveform Peak Status Flag (NOT_SET)	NOT_SET	Transmit_Peak_Status. Status Word: Bit 0: If bit is set to 1 (true), then internal software failure. Bit 1: If bit is set to 1 (true), then peak is below threshold. Bit 2: If bit is set to 1 (true), peak was not found. Note: once set to true, Bit 2 is latched and is only cleared by a DSP board reset or by a ground command. From APID12/13, Offset 72.	Rel 33 GLAS Binary Data	DS_UTCTime_40
i_TxWfStart	INTEGER (UNLIMITED)	Starting Address of Transmit Pulse Sample (NOT_SET)	ns	Starting Address in digitizer counts of the Transmit Pulse sample relative to the start of digitization. From APID12/13, Offset 76.	Rel 33 GLAS Binary Data	DS_UTCTime_40
r_tx_wf	REAL (UNLIMITED, 48)	Sampled Transmit Pulse Waveform (NOT_SET)	volts	Transmit Pulse 48 waveform samples in calibrated volts. The delta times for transmit waveform sample j is provided in the attribute array `tx_wf_sample_location_table` (j).	Rel 33 GLAS Binary Data	DS_UTCTime_40

Group: Data_40HZ/Waveform/RecWaveform

This group contains all received (return) waveforms.

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
i_RespEndTime	INTEGER (UNLIMITED)	Ending Address of Range Reponse (NOT_SET)	ns	Address (in digitizer counts) of the 2000-byte surface echo data dump (as measured from the start of Acquisition Memory, i.e. Start of digitization). Closest to ground. From APID12/13 offset 80.	Rel 33 GLAS Binary Data	DS_UTCTime_40
i_rec_wf_location_index	INTEGER_1 (UNLIMITED)	Waveform sample index (NOT_SET)	counts	This is an index into the array of 544 times within the `rec_wf_sample_location_table` (found in the ANCILLARY_DATA group) that contains the delta time for each sample to be added to the ending address of range (`i_RespEndTime`) in order to provide the range in ns for each range waveform sample.	Rel 33 GLAS Binary Data	DS_UTCTime_40

Label	Datatype (Dimensions)	long_name (standard_name)	units	description	source	coordinates
r_rng_wf	REAL (UNLIMITED, 544)	1064 nm Range Waveform (NOT_SET)	volts	The 1064 nm echo waveform digitizer sample output, at 544 samples per shot over land and ice sheet and 200 samples per shot over sea ice and ocean. The sample values are in volts. The surface type is determined by the instrument from the on-board DEM. The digitized data was averaged according to the echo compression type (`i_comp_type`) and the compression ratio (`i_N_val`, `i_compRatio_p`, `i_compRatio_q`, and `i_r_val`). The delta times for each echo of the 544 waveform samples is provided within the 544 times stored in rec_wf_sample_location_table (an attribute in the /ANCILLARY_DATA group) and indexed by `i_rec_wf_location_index`.	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	0.99999998854809
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
internal_range_delay_date	2005-10-21
internal_range_delay_time	00:00:00
Additional_Attribute	Track, Track_Segment, ReferenceOrbit, 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.

Attribute	Example Value
gain_table	array (256)
volt_table_1	array (256)
volt_table_2	array (256)
tx_wf_sample_location_table	array (48)
rec_wf_sample_location_table	array (544 , 5)

/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=gla01_test.ctl`

/METADATA/COLLECTIONMETADATA

Attribute	Example Value
DLLName	`libDsESDTSyBASIC.001Sh.so`
GranuleTimeDuration	1620
SpatialSearchType	NotSupported
DataFileFormat	HDF5
ScienceMimeType	application/x-hdfeos
BrowseMimeType	application/x-hdfeos
BrowseOnlineMimeType	image/jpeg
ShortName	GLAH01
LongName	GLAS/ICESat L1A Global Altimetry Data (HDF5)
CollectionDescription	Data granules contain approximately 23 minutes (1/4 orbit) of data and will include pulse travel times, the transmitted and received waveform, transmitted and received energy, echo time offsets, and instrument filter and threshold values.
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
Track_Segment	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

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

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

Attribute	Example Value
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/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/Track_Segment

Attribute	Example Value
AdditionalAttributeDatatype	int
AdditionalAttributeDescription	Number assigned for the specific latitude segment (1 = +50 to +50, 2 = +50 to -50, 3 = -50 to -50, 4 = -50 to +50) of the track for the data.
AdditionalAttributeName	Track_Segment
ParameterUnitsofMeasurement	counts
ParameterRangeBegin	1
ParameterRangeEnd	4

/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/DATA101

/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/DATA101

/METADATA/COLLECTIONMETADATA/CSDTDescription

Attribute	Example Value
PrimaryCSDT	n-Dim Array of Records
IndirectReference	tracks/orbits
Implementation	HDF
CSDTComments	Data for each orbit is divided into four granules, Lat +50 to Lat +50, Lat +50 to Lat -50, Lat -50 to Lat -50, Lat -50 to Lat +50.

/METADATA/COLLECTIONMETADATA/CollectionAssociation

Attribute	Example Value
GLAH06	CollectionAssociationContainer
GLAH05	CollectionAssociationContainer
GLA00	CollectionAssociationContainer
GLAH12	CollectionAssociationContainer
GLAH13	CollectionAssociationContainer

Attribute	Example Value
GLAH14	CollectionAssociationContainer
GLAH15	CollectionAssociationContainer

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLA00

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

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH05

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 1B file containing: the range, corrections to the range from the waveform retracking algorithms, and the reflectance. GLAH05 provides the range corrections and waveform analysis results needed to compute the elevation.
ShortName	GLAH05
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH06

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 1B file containing: elevations, elevation corrections, reflectance, and associated timing and data quality information.
ShortName	GLAH06
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH12

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 2 file containing: corrected ice sheet elevations above the reference ellipsoid, reflectance, and the corrections that were used. The product parameters are the result of product-specialized waveform fitting.
ShortName	GLAH12
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH13

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 2 file containing: Sea Ice Elevation, Reflectance, and Ice Berg Elevations. The product parameters are the result of product-specialized waveform fitting.
ShortName	GLAH13
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH14

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 2 file containing: corrected surface elevations above the reference ellipsoid, reflectance, and the corrections that were used. The product parameters are the result of product-specialized waveform fitting.
ShortName	GLAH14
VersionID	33

/METADATA/COLLECTIONMETADATA/CollectionAssociation/GLAH15

Attribute	Example Value
CollectionType	Dependent
CollectionUse	Level 2 file containing: corrected Ocean elevations above the reference ellipsoid, reflectance, and the corrections that were used. The product parameters are the result of product-specialized waveform fitting.
ShortName	GLAH15
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

Attribute	Example Value
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
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

Attribute	Example Value
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
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

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

/METADATA/COLLECTIONMETADATA/DisciplineTopicParameters/Spectral/Engineering/ECSParameter

Attribute	Example Value
ECSParameterKeyword	Waveform

/METADATA/COLLECTIONMETADATA/ECSCollection

Attribute	Example Value
RevisionDate	2012-06-25

Attribute	Example Value
SuggestedUsage	The waveforms are used by altimetric scientists studying detailed surface characteristics that cannot be fully expressed in the waveform parameterization on GLAH05, especially over ice sheets and land. Instrument scientists used the data to check the health and welfare. The data values were used as input to compute parameters on GLAH05. Each GLAH01 file was created from an equivalent GLA01 binary formatted file. The provenance metadata shows the history that created the GLA01.
ProcessingCenter	GSFC I-SIPS
ArchiveCenter	NSIDC
VersionDescription	Initial Version
DatasetDisclaimerPointer	http://nsidc.org/data/icesat/disclaimer.html
ECSCollectionGuidePointer	https://nsidc.org/data/glah01-glah05-glah06-glah12-glah13-glah14-glah15/versions/1/documentation#overlay-context=data/glas/data-dictionary-glah01
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/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

Attribute	Example Value
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
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
ProcessingLevelDescription	Sensor Measurements
ProcessingLevelID	1A

/METADATA/COLLECTIONMETADATA/Spatial

Attribute	Example Value
SpatialCoverageType	Horizontal

Attribute	Example Value
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	GLAH01
VersionID	33
RangeBeginningTime	11:42:39
RangeEndingTime	12:04:04
RangeBeginningDate	2005-11-01
RangeEndingDate	2005-11-01

/METADATA/INVENTORYMETADATA/ECSDataGranule

Attribute	Example Value
ReprocessingPlanned	no further update anticipated
ReprocessingActual	reprocessed
LocalGranuleID	GLAH01_033_2113_002_0085_1_01_0001.H5
ProductionDateTime	2013-03-13T10:54:04
LocalVersionID	33

/METADATA/INVENTORYMETADATA/InputGranule

Attribute	Example Value
InputPointer	gla01_test.ctl, tai-utc.dat, GLA01_033_2113_002_0085_1_01_0001.DAT, DsESDTGlGLAH01.033.desc

/METADATA/INVENTORYMETADATA/OrbitCalculatedSpatialDomain

Attribute	Example Value
OrbitNumber	15247
StartOrbitNumber	15247
StopOrbitNumber	15247
EquatorCrossingLongitude	127.56265
EquatorCrossingTime	11:29:14
EquatorCrossingDate	2005-11-01

/METADATA/INVENTORYMETADATA/ProductSpecificMetadata

Attribute	Example Value
Track	85
Track_Segment	1
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/DATA101
identifier_file_uuid	D65E7C2A-7BC1-444F-AE6F-991DAD0B45FF

Attribute	Example Value
identifier_product_doi_authority	http://dx.doi.org/10.5067/ICESAT/GLAS/DATA101

/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_l1a
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
Name	GLA00_003_20051101_060000_01_0012.DAT, GLA00_003_20051101_120000_01_0012.DAT, GLA00_003_20051101_060004_01_0013.DAT, GLA00_003_20051101_120021_01_0013.DAT, GLA00_003_20051101_060000_01_0015.DAT, GLA00_003_20051101_120000_01_0015.DAT, GLA00_003_20051101_060000_01_0017.DAT, GLA00_003_20051101_120000_01_0017.DAT, GLA00_003_20051101_060000_01_0019.DAT, GLA00_003_20051101_120000_01_0019.DAT, GLA00_003_20051101_060003_01_0020.DAT, GLA00_003_20051101_120003_01_0020.DAT, GLA00_003_20051101_060003_01_0021.DAT, GLA00_003_20051101_120003_01_0021.DAT, GLA00_003_20051101_060015_01_0022.DAT, GLA00_003_20051101_120015_01_0022.DAT, GLA00_003_20051101_060015_01_0023.DAT, GLA00_003_20051101_120015_01_0023.DAT, GLA00_003_20051101_060003_01_0024.DAT, GLA00_003_20051101_120003_01_0024.DAT, GLA00_003_20051101_060003_01_0025.DAT, GLA00_003_20051101_120003_01_0025.DAT, GLA00_003_20051101_060000_01_0026.DAT, GLA00_003_20051101_120000_01_0026.DAT, GLA00_003_20051101_060031_01_0050.DAT, GLA00_003_20051101_120031_01_0050.DAT, GLA00_003_20051101_060003_01_0055.DAT, GLA00_003_20051101_120003_01_0055.DAT, GLA00_003_20051101_060000_01_1984.DAT, GLA00_003_20051101_120000_01_1984.DAT, anc07_033_02_0000.dat, anc07_033_02_0001.dat, anc07_033_02_0002.dat, anc07_033_02_0003.dat, anc07_033_02_0004.dat, anc07_033_02_0005.dat, anc07_033_02_0006.dat, ANC20_005_20051031_235947_01_0001.DAT, anc25_005_20090101_000000_01_0000.dat, ANC29_033_20051101_060000_01_0001.DAT, ANC29_033_20051101_120000_01_0001.DAT, ANC32_033_20051101_060000_01_0001.DAT, ANC32_033_20051101_120000_01_0001.DAT, ANC33_001_20100406_000000_01_0000.DAT, anc45_033_03_0001.dat, anc45_033_03_0002.dat, anc45_033_03_0003.dat, anc45_033_03_0004.dat
Type	GLA00, anc07, anc07, anc07, anc07, anc07, anc07, anc07, ANC20, anc25, ANC29, ANC29, ANC32, ANC32, ANC33, anc45, anc45, anc45, anc45
Version	003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 003, 033, 033, 033, 033, 033, 033, 033, 005, 005, 033, 033, 033, 033, 001, 033, 033, 033, 033

/METADATA/PROVENANCE/STEP_1/ProcessOutput

Attribute	Example Value
Name	GLA01_033_2113_002_0085_1_01_0001.DAT
Type	GLA01
Version	33

/METADATA/PROVENANCE/STEP_2

Attribute	Example Value
ProcessDateTime	2013-03-13T10:54:04.000000Z

/METADATA/PROVENANCE/STEP_2/ProcessAgent

Attribute	Example Value
Name	GLA01_h5_convert
Type	Data_Reformat
Version	Version 1.0 (May 2012)
Description	GLA01 Conversion PGE

/METADATA/PROVENANCE/STEP_2/ProcessInput

Attribute	Example Value
Name	./gla01_test.ctl, ../../data/tai-utc.dat, in/GLA01_033_2113_002_0085_1_01_0001.DAT, ../../glas_hdf/data/esdts/DsESDTGlGLAH01.033.desc
Type	IN_CNTL, IN_ANC_TAIUTC, IN_GLA01, IN_ESDT
Version	0, 0, 1, 1

/METADATA/PROVENANCE/STEP_2/ProcessOutput

Attribute	Example Value
Name	out/GLAH01_033_2113_002_0085_1_01_0001.H5
Type	OUT_GLAH01
Version	1
UUID	D65E7C2A-7BC1-444F-AE6F-991DAD0B45FF
DOI	10.5067/ICESAT/GLAS/DATA101

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