

GLA05 Records: Release 34

See the [GLAS Altimetry Data Dictionary](#) for details of each record, including units and scaling factors. The GLAS science team created this dictionary. Units and scaling factors with a "d" indicate double-precision constants; for example, a value of "1.0d5" is equivalent to 100,000. Nearly all integers are signed; exceptions are noted below.

The following codes are used to denote data types throughout the remainder of this document.

i1b: 1-byte integer

i2b: 2-byte (short) integer

i4b: 4-byte (long) integer

r4b: 4-byte real

r8b: 8-byte real

Values in parentheses indicate the record size, for example:

i2b(39): 39 records of 2-byte integers

i1b(48,40): 48-record x 40-record array of 1-byte integers

When comparing data from different products, the record index is consistent as long as all products represent the same release of data. If you want to compare different products with different releases, you should update your oldest product to the latest release. For example, if you want to compare data from a GLA05 Release-12 file and GLA12 Release-18 file, you should order a new GLA05 Release-18 file to replace the older release. The [ICESat/GLAS Data Releases](#) page describes characteristics and temporal coverage of each version of data.

Table 1. GLA05 Main Record

Name	Short Description	Byte Offset	Data Type	Total Bytes
i_rec_ndx	GLAS record index	0	i4b	4
i_UTCTime	Transmit time of first shot in J2000	4	i4b(2)	8
I_TRANSTIME	One-way transmit time	12	i2b	2
I_SPARE1	Spares	14	i1b(2)	2
I_DELTAGPSTMCOR	Delta GPS time correction	16	i4b	4
I_DSHOTTIME	Laser shot time deltas (shots 2-40)	20	i4b(39)	156
I_LAT	Spot coordinate data - latitude (uncorrected)	176	i4b(40)	160
I_LON	Spot coordinate data - longitude (uncorrected)	336	i4b(40)	160

Name	Short Description	Byte Offset	Data Type	Total Bytes
i_elev	Spot surface elevation with respect to ITRF ellipsoid (uncorrected)	496	i4b(40)	160
i_GmCns	i_GmCns	656	i4b(40)	160
i_spare43	Spare 43	816	i4b(11,40)	1760
i_sigmaatt	Attitude quality indicator	2576	i2b(40)	80
i_gval_rcv	Gain value used for received pulse	2656	i2b(40)	80
i_wfnoiseOb1	1064-nm background noise (alternative)	2736	i2b(40)	80
i_wfnoiseOb2	1064 nm background noise (standard)	2816	i2b(40)	80
i_sDevNsOb1	Standard deviation of 1064-nm background noise (alternative)	2896	i2b(40)	80
i_sDevNsOb2	Standard deviation of 1064-nm background noise (standard)	2976	i2b(40)	80
i_refRngNs	Reference Range	3056	i4b(40)	160
i_thRtkRngOff1	Threshold retracker range offset (alternative)	3216	i4b(40)	160
i_thRtkRngOff2	Threshold retracker range offset (standard)	3376	i4b(40)	160
i_minRngOff1	Minimum range offset (alternative)	3536	i4b(40)	160
i_minRngOff2	Minimum range offset (standard)	3696	i4b(40)	160
i_preRngOff1	Preliminary uncorrected range offset (alternative)	3856	i4b(40)	160
i_preRngOff2	Preliminary uncorrected range offset (standard)	4016	i4b(40)	160
i_centroid1	Centroid retracker offset (alternative)	4176	i4b(40)	160
i_centroid2	Centroid retracker offset (standard)	4336	i4b(40)	160
i_centroidInstr	Centroid retracker offset using max peak	4496	i4b(40)	160
i_areaRecWF1	Area under received echo (alternative)	4656	i2b(40)	80
i_areaRecWF2	Area under received echo (standard)	4736	i2b(40)	80
i_maxRecAmp	Max amplitude of received echo	4816	i2b(40)	80
i_maxSmAmp	Peak amplitude of smoothed received echo	4896	i2b(40)	80

Name	Short Description	Byte Offset	Data Type	Total Bytes
i_reflctUncorr	Reflectivity not corrected for atmospheric effects	4976	i4b(40)	160
i_reflctuncmxpk	Reflectivity not corrected for atmospheric effects from max peak	5136	i4b(40)	160
i_tpCentX	LPA Centroid X	5296	i2b(40)	80
i_tpCentY	LPA Centroid Y	5376	i2b(40)	80
i_nPeaks1	Initial number of peaks in received echo (alternative)	5456	i1b(40)	40
i_nPeaks2	Initial number of peaks in received echo (standard)	5496	i1b(40)	40
i_parm1	Parameters from the Gaussian fit to the received echo (alternative)	5536	i4b(19,40)	3040
i_parm2	Parameters from the Gaussian fit to the received echo (standard)	8576	i4b(19,40)	3040
i_solnSigmas1	Sigmas of fit parameters (alternative)	11616	i2b(19,40)	1520
i_solnSigmas2	Sigmas of fit parameters (standard)	13136	i2b(19,40)	1520
i_wfFitSDev_1	Received echo fit standard deviation (alternative)	14656	i2b(40)	80
i_wfFitSDev_2	Received echo fit standard deviation (standard)	14736	i2b(40)	80
i_tpintensity	Transmit pulse intensity	14816	i4b(40)	160
i_tpazimuth	Transmit pulse azimuth	14976	i2b(40)	80
i_tpeccentricity	Transmit pulse eccentricity	15056	i2b(40)	80
i_tpmajoraxis	Transmit pulse major axis	15136	i2b(40)	80
i_skew1	Skewness of received echo (alternative)	15216	i2b(40)	80
i_kurt1	Kurtosis of received echo (alternative)	15296	i2b(40)	80
i_skew2	Skewness	15376	i2b(40)	80
i_kurt2	Kurtosis of received echo (standard)	15456	i2b(40)	80
i_WFqual	Received echo quality flag	15536	i4b(40)	160
i_TxNrg	1064 nm laser transmit energy	15696	i2b(40)	80
i_tpOrX	Pulse orientation	15776	i2b(40)	80
i_locTr	Centroid of transmitted pulse in time relative to gate 1 of transmitted waveform	15856	i4b(40)	160

Name	Short Description	Byte Offset	Data Type	Total Bytes
i_parmTr	Parameters of the Gaussian fit to the transmitted pulse	16016	i4b(4,40)	640
i_sDevFitTr	Standard deviation of fit of transmitted pulse	16656	i2b(40)	80
i_skewTr	Skewness of transmitted pulse	16736	i4b(40)	160
i_maxTrAmp	Maximum amp of transmitted pulse	16896	i2b(40)	80
i_gval_tx	Gain value used for transmitted pulse - uncalibrated	16976	i2b	2
i_compRatio	Compression ratios	16978	i2b(2)	4
i_N_val	Value of N	16982	i2b	2
i_r_val	Value of r	16984	i2b	2
i_ElvuseFlg	Elevation use flag	16986	i1b(5)	5
i_spare3	Spares	16991	i1b	1
i_ElvFlg	Elevation definition flag	16992	i1b(40)	40
i_spare49	Spare 49	17032	i1b(10)	10
i_timecorflg	Time correction flag	17042	i2b	2
i_APID_AvFlg	APID data availability flag	17044	i1b(8)	8
i_AttFlg2	Attitude flag 2	17052	i1b(20)	20
i_spare4	Spares	17072	i1b	1
i_FrameQF	Altimeter frame quality flag	17073	i1b	1
i_OrbFlg	POD flag (orbit flag)	17074	i1b(2)	2
i_rngCorrFlg	Range correction flag	17076	i1b(2)	2
i_spare5	Spares	17078	i1b(2)	2
i_beam_coelev	Co-elevation	17080	i4b	4
i_beam_azimuth	Azimuth	17084	i4b	4
i_AttFlg1	Attitude flag 1	17088	i2b	2
i_RMSpulseWd	RMS pulse width	17090	i2b(40)	80
i_satNdx	Saturation index	17170	i1b(40)	40
i_RecNrgAll	Received Energy signal begin to signal end	17210	i2b (40)	80
i_numIters	Number of iterations performed during fit	17290	i1b (40)	40
i_Spare6	Spare 6	17330	i1b(70)	70

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