

# GLA13 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. GLA13 Records

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 frame 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	Coordinate data, latitude, specific to sea ice range	176	i4b(40)	160

Name	Short Description	Byte Offset	Data Type	Total Bytes
i_lon	Coordinate data, longitude, specific to sea ice range	336	i4b(40)	160
i_elev	Sea ice surface elevation	496	i4b(40)	160
i_campaign	Campaign	656	i1b(2)	2
i_spare40	i_spare40	658	i2b	2
i_cycTrk	Cycle and Track	660	i4b	4
i_localSolarTime	Local apparent solar time	664	i4b	4
i_spare41	Spare 41	668	i4b(7)	28
i_deltaEllip	Delta Ellipsoid	696	i2b(40)	80
i_beamCoelv	Co-elevation	776	i4b(40)	160
i_beamAzimuth	Azimuth	936	i4b(40)	160
i_d2refTrk	Distance to the reference ground track	1096	i4b(40)	160
i_SigBegOff	Signal Begin Range Increment	1256	i4b(40)	160
i_DEM_hires_src	High Resolution Source Flag	1416	i1b(40)	40
i_DEMhiresArElv	DEMhiresArElv	1456	i2b(9,40)	720
i_ElevBiasCorr	Elevation Bias Correction	2176	i2b(40)	80
i_GmC	GmC	2256	i2b(40)	80
i_spare42	Spare 42	2336	i2b(3,40)	240
i_sigmaatt	Attitude quality indicator	2576	i2b(40)	80
i_Azimuth	Local azimuth	2656	i4b	4
i_SolAng	Solar incidence angle	2660	i4b	4
i_tpintensity_avg	Transmit pulse intensity - frame average	2664	i4b	4
i_tpazimuth_avg	Transmit pulse azimuth - frame average	2668	i2b	2
i_tpeccentricity_avg	Transmit pulse eccentricity - frame average	2670	i2b	2
i_tpmajoraxis_avg	Transmit pulse major axis - frame average	2672	i2b	2
i_poleTide	Pole Tide	2674	i1b(2)	2
i_gdHt	Geoid	2676	i2b(2)	4
i_erElv	Solid earth tide elevation (at first and last shot)	2680	i2b(2)	4
i_spElv	Tide elevations, specific	2684	i2b(4)	8
i_ldElv	Load tide elevation	2692	i2b(4)	8

Name	Short Description	Byte Offset	Data Type	Total Bytes
i_spare12	Spares	2700	i2b(2)	4
i_wTrop	Range correction - wet troposphere	2704	i2b(2)	4
i_dTrop	Range correction - dry troposphere	2708	i2b(40)	80
i_surfType	Region type	2788	i1b	1
i_spare11	Spare 11	2789	i1b (3)	3
i_DEM_elv	DEM elevation	2792	i4b(40)	160
i_refRng	Reference range	2952	i4b(40)	160
i_TrshRngOff	Threshold retracker range offset	3112	i4b(40)	160
i_siRngOff	Sea ice range offset	3272	i4b(40)	160
i_SigEndOff	Signal end range offset	3432	i4b(40)	160
i_cntRngOff	Centroid range offset	3592	i4b(40)	160
i_reflctUC	reflctUC	3752	i4b(40)	160
i_reflCor_atm	Reflectance correction, atmosphere	3912	i4b	4
i_maxSmAmp	Peak amplitude of smoothed received echo	3916	i2b(40)	80
i_ocElv	Ocean tide elevation (at first and last shot)	3996	i2b(40)	80
i_numPk	Number of peaks found in the return	4076	i1b(40)	40
i_kurt2	Kurtosis of the Received Echo (standard)	4116	i2b(40)	80
i_skew2	Skewness	4196	i2b(40)	80
i_spare4	Spares	4276	i1b(160)	160
i_BergElev	Iceberg elevation	4436	i4b(40)	160
i_spare10	Spares	4596	i1b(160)	160
i_SiRngFst	Sea ice range increment to first peak	4756	i4b(40)	160
i_SealceVar	Standard deviation of the sea ice Gaussian fit	4916	i2b(40)	80
i_ElvuseFlg	Elevation use flag	4996	i1b(5)	5
i_atm_avail	Atmosphere availability flag	5001	i1b	1
i_spare16	Spare 16	4842	i1b(4)	4
i_cld1_mswf	Cloud multiple scattering warning flag	5006	i1b	1
i_MRC_af	Medium resolution cloud availability flag	5007	i1b	1
i_spare9	Spares	5008	i1b(40)	40
i_ElvFlg	Elevation definition flag	5048	i1b(40)	40

Name	Short Description	Byte Offset	Data Type	Total Bytes
i_rng_UQF	Range offset quality/use flag	5088	i2b(40)	80
i_spare49	Spare 49	5168	i1b(10)	10
i_timecorflg	Time correction flag	5178	i2b	2
i_APID_AvFlg	APID data availability flag	5180	i1b(8)	8
i_AttFlg2	Attitude flag 2	5188	i1b(20)	20
i_spare5	Spares	5208	i1b	1
i_FrameQF	Altimeter frame quality flag	5209	i1b	1
i_OrbFlg	POD flag (orbit flag)	5210	i1b(2)	2
i_rngCorrFlg	Range correction flag	5212	i1b(2)	2
i_CorrStatFlg	Correction status flag	5214	i1b(2)	2
i_spare15	Spare 15	5056	i1b(8)	8
i_AttFlg1	Attitude flag 1	5224	i2b	2
i_Spare6	Spares	5226	i1b(2)	2
i_spare44	Spare 44	5068	i1b (120)	120
i_satNdx	Saturation Index	5348	i1b (40)	40
i_satElevCorr	Saturation Elevation Correction	5388	i2b (40)	80
i_satCorrFlg	Saturation Correction Flag	5468	i1b (40)	40
i_satNrgCorr	Saturation Energy Correction	5508	i2b (40)	80
i_spare13	Spares	5588	i2b (40)	80
i_gval_rcv	Gain Value used for Received Pulse	5668	i2b (40)	80
i_RecNrgAll	Received Energy signal begin to signal end	5748	i2b (40)	80
i_FRir_cldtop	Full Resolution 1064 Cloud Top	5828	i2b (40)	80
i_FRir_qaFlag	Full Resolution 1064 Quality Flag	5908	i1b (40)	40
i_atm_char_flag	Atmosphere Characterization Flag	6068	i2b	2
i_atm_char_conf	Atmosphere Characterization Flag Confidence	6070	i2b	2
i_spare48	Spare 48	6072	i1b(36)	36
i_FRir_intsig	Full Resolution 1064 Integrated Signal	5988	i2b (40)	80
i_spare14	Spares	6068	i1b (120)	120
i_Surface_temp	Surface Temperature	6188	i2b	2
i_Surface_pres	Surface Pressure	6190	i2b	2
i_Surface_relh	Relative Humidity	6192	i2b	2
i_maxRecAmp	Max Amplitude of Received Echo	6194	i2b (40)	80

<b>Name</b>	<b>Short Description</b>	<b>Byte Offset</b>	<b>Data Type</b>	<b>Total Bytes</b>
i_sDevNsOb1	Standard deviation of 1064 nm background noise (alternate)	6274	i2b (40)	80
i_pctSAT	Percent Saturation	6354	i1b (40)	40
i_TxNrg	1064 nm laser transmit energy	6394	i2b (40)	80
i_eqElv	Equilibrium tide elevation (at first and last shot)	6474	i2b (2)	4
i_spare8	Spares	6478	i1b (282)	282

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