

# YXX Release Numbers

NASA ICESat/GLAS data products use only two digits of a three-digit release number slot (0XX) in the file names, with the first digit always being zero. For example, files in Release-34 contain **034** in their name, such as the following:

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GLA15_034_2113_002_0407_0_01_0001.H5
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Beginning with Release-28, a YXX pattern for release numbers is used in file names. The Y portion (known as the Y-code) of this new three-digit naming convention ensures that similar Precision Orbit Determination (POD) and Precision Attitude Determination (PAD) procedures are completed for similarly-named elevation data products. The Y-code in the three-digit release number indicates the calibration level; the higher the Y-code, the greater the level of calibration. For each new release, the Y-code is assigned by the University of Texas Center for Space Research (UTCSR).

This change mostly concerns elevation products GLAH06 and GLAH12-15. Although present in other file names, the Y-code is not relevant for other data because the POD and PAD only affect the geolocation of the laser spot. Elevation data from different campaigns having the same Y-code may not necessarily have the same elevation quality (due to spacecraft instrumentation, orientation, and other factors affecting geolocation) but should be of reasonably similar quality.

## Y-Code Interpretation

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The following table describes how to interpret the various Y-code values.

Y-code	Description
0	Predicted orbit; no PAD (for Level-1A products GLAH01-GLAH04)
1	POD calibration Level 1; PAD calibration Level 1
2	POD calibration Level 2; PAD calibration Level 2
3	POD calibration Level 2; PAD calibration Level 3
4	POD calibration Level 2; PAD calibration Level 4
5	POD calibration Level 2; PAD calibration Level 4 (quality indicator duplicated to account for reprocessing of Y-code = 4 data)
6	POD calibration Level 3; PAD calibration Level 5 (2011 reprocessing)
7-9	Reserved for future improvements

PAD quality of Release of 529 data is equivalent to 429 data, and is used to designate reprocessing of early Release 428 data.

Generally speaking, data with a higher Y-code are better than data with a lower Y-code. For example, data with Y-code = 4 are better than Y-code = 3 data.

## Key

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Predicted orbit (forecast): The satellite ephemeris is predicted 1.5 to 2.5 days in advance for ingestion into I-SIPS processing of Level 1A products. Calibrated POD is never ingested. For example, waveform products are always Y-code = 0. Positions found on Level 1A data products (e.g. on the waveform plots) are the predicted sub-satellite nadir point and have no bearing on the true spot location.

The POD and PAD calibration levels are described in the following table.

Calibration Level	Meaning
POD calibration Level 1 (near-real-time)	Initial solution determined using rapid GPS solutions from IGS, rapid NOAA solar flux and geomagnetic indices, and preliminary IERS Earth orientation parameters.
POD calibration Level 2	Solution incorporating final GPS, solar flux, geomagnetic, and Earth orientation products.
POD calibration Level 3 (2011 reprocessing)	Solution incorporating various updates and changes applied consistently for the entire mission, including reprocessed IGS GPS orbits and gravity field model.
PAD calibration Level 1 (near-real-time)	EKF solution using IST and gyro data, but without post-campaign-analysis compensation for IST bracket motion.
PAD calibration Level 2	Includes interim pointing corrections. This is an intermediate step that was used during Laser 1A and is reserved for future testing and analysis.
PAD calibration Level 3	Includes a correction for IST bracket motion (LRS observations, modeled LRS, or an EKF-batch solution model), laser biases, and any other identified corrections.
PAD calibration Level 4	Includes calibration corrections using ocean and RTW scans.
PAD calibration Level 5 (2011 reprocessing)	Solution incorporating updated and consistent processing for the entire mission.

See the [CSR SCF Release Notes for Orbit and Attitude Determination V3](#) document for a complete description of POD and PAD procedures, the calibration levels, and corresponding Y-codes for each release of each laser campaign.

## Release Number Translation

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**NOTE:** Following references to GLAS binary product names GLA01 to GLA15 refer to original GLAS binary data, and are retained here for informational and provenance purposes. Access to GLAS binary data was removed 01 August, 2017. All GLAS data are available in HDF5 format, products GLAH01 to GLAH15.

The file names for GLA*nn* Level-1B and Level-2 data products generated prior to Release-28 will not be changed because they have been or will be replaced. Elevation products affected are GLA06 (Level-1B) and GLA12-15 (Level-2). The table below lists elevation products along with their equivalent YXX release number.

Release	YXX Number
12	112
13	113
14	214
17	217
18	318
19	319
21	421
22	322
24	424
26	426
28	428
29	429 & 529
31	531
33	633
34	634

## PAD Quality Equivalency for Release 429 and 529 Data Products

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While ICESat/GLAS data continue to follow the YXX format convention for naming data products, the methods for PAD have evolved since launch in 2003. Procedural details for PAD calibration level 4 (Y-code = 4) were revised and end results improved. Therefore, campaigns that were processed to that level early in the mission were re-examined in conjunction with the GSAS (XX-code = 29) software change. This change in PAD procedures necessitated an increment in the Y-code (to Y-code = 5) for certain campaigns. In summary: Release 428 products were fully-

calibrated using the PAD procedures available at the time of each campaign's processing. Data from latter ICESat campaigns were regenerated into Release 429 products without any change in PAD procedures. PAD procedures were re-examined and Release 529 data generated for L2a (Sep-Nov 2003), L2b (Feb-Mar 2004), L3a (Oct-Nov 2004), and L3b (Feb-Mar 2005). Release 429 and 529 data have equivalent PAD calibration.