How to Submit Data to GLIMS

Bruce Raup and the GLIMS Core Team
(http://www.glims.org/About/glims_core_team.html)
Revision date: 2020-02-06

What is this?

This document summarizes steps for submitting glacier data to the GLIMS (Global Land Ice Measurements from Space) database. See http://www.glims.org/ . This document supersedes the information in the GLIMS Data Transfer Specification [1], though the file formats described in [1] are still used, so following those formats is helpful.

A Typical Data Submission

When someone submits glacier outlines to GLIMS, we need:

1. (REQUIRED) **Glacier outlines** (as closed polygons) in shapefile format. Geographic coordinate system (in lon/lat) and WGS84 datum is preferred (though image analysis should be done in the imagery's original projection). Rock outcrops internal to the glacier (nunataks) should be represented as "holes" in the polygons. The outer boundary of the polygon should enclose all parts of the glacier, including debris-covered parts, parts with supraglacial lakes, etc.
    a. attributes SHOULD include (see [1] for attribute names and formats):
        i. "local" uncertainty in x and y (precision of vertex digitization)
        ii. "global" uncertainty in x and y (geolocation accuracy of the polygons)
    b. attributes CAN include
        i. glacier name
        ii. WGMS glacier classifications
        iii. glacier length
        iv. WGMS glacier IDs
        v. image IDs or map IDs that are specific to each glacier (see [1] for attribute names)
2. (OPTIONAL) **Additional feature types:** optional features can be mapped and submitted, in shapefiles. In these cases, an analyst-supplied glacier ID (not necessarily a GLIMS ID) should be used to tie these features together with the glacier outlines. In the following, "line type" refers to the attribute in the shapefile labelled "line_type".
    a. Debris cover (polygons: line type "debris_cov"; polygons should outline the debris cover only)
    b. Supraglacial lakes and proglacial lakes (polygons: line type "supra_lake" or "pro_lake")
    c. Center lines of glaciers (poly-lines: line type "centerline")
    d. Transient snow lines (poly-lines: line type "snow_line")
3. (REQUIRED if based on images) **Image (granule) IDs** from the image provider; acquisition dates, instrument and platform name (see 1. b. v. above in case the image IDs are known specifically for each glacier)

4. (REQUIRED if based on maps) **Topographic map information** if used instead of imagery: map projection; publication date; identification number if known; publisher. (see 1.b.v. above in case the map IDs are known specifically for each glacier)
5. (REQUIRED) **Information on analysts and processing methods**: names of the analysts; approximate date of the analysis; as much detail as possible on method(s) used; percent manual editing; description of any collaboration with other GLIMS institutions (Regional Centers)

What is NOT needed:

1. GLIMS glacier IDs (we assign these at ingest time)
2. glacier areas (we calculate these at ingest time)

The above fields are not needed, but will not hurt anything if present. If GLIMS IDs are included in the submission, they will likely be changed at ingest time in order to match glacier IDs already in GLIMS.

Extra Credit

Other glacier data we like to receive includes:

1. glacier hypsometry (area distribution with elevation). Please use the RGI hypsometry format.
2. rock glacier outlines

Examples

Glacier outlines shapefile

Geometry: outlines of glaciers that are closed polygons. Nunataks represented as holes.
Attributes (one record (row) per outline):

Attribute name	**Required?**	**Unit**	**Comment**
loc_unc_x	Yes	m	“Local” positional uncertainty in X of vertex positions
loc_unc_y	Yes	m	“Local” positional uncertainty in Y of vertex positions
glob_unc_x	Yes	m	“Global” positional uncertainty in X of vertex positions; basically geolocation uncertainty
glob_unc_y	Yes	m	“Global” positional uncertainty in Y of vertex positions; basically geolocation uncertainty
name	No	(text)	Glacier name. Include Romanized spelling in parentheses if local spelling or characters are generally unreadable for English speakers.

Image information shapefile

Geometry: Can be image footprints (polygons) or center point locations
Attributes (one record (row) per image):

Attribute name	Required?	Unit	Comment
orig_id	Yes	(text)	ID from original image provider, e.g. “AST_L1B_00308282005153304_20060607222405”
acq_time	Yes	ISO date/time	Time of image acquisition, in 'YYYY-MM-DD' or 'YYYY-MM-DD hh:mm:ss' format. E.g. “2005-06-02”
inst_name	Yes	(text)	E.g. “ASTER”

Session Information

Information on analysts and processing methods can be listed in a simple text file, or a shapefile as described in [1] for the “session” shapefile.

More Information

For guidance on how to derive glacier outlines from imagery, see [2]. For general information about GLIMS, see http://www.glims.org or write NSIDC User Services at nsidc@nsidc.org.

References:

[1] GLIMS Data Transfer Specification
(http://www.glims.org/MapsAndDocs/datatransfer/data_transfer_specification.html)

[2] GLIMS Analysis Tutorial
(http://www.glims.org/MapsAndDocs/assets/GLIMS_Analysis_Tutorial_a4.pdf)