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World Glacier Monitoring Service

T GLACIER THICKNESS OVERVIEW

NOTES ON THE COMPLETION OF THE DATA SHEET

This data sheet should be completed in cases of new glacier entries related to available glacier thickness measurements; for glaciers already existing in the WGI database, POLITICAL UNIT (T1), GLACIER NAME (T2), WGI_GLACIER_ID (T3) and Lat/Lon (T4/T5) can be adopted for all sheets T, TT and TTT. For glaciers not yet in the WGI, please provide full information for a corresponding data entry (cf. WGI website). At least POLITICAL UNIT, GLACIER NAME and LAT/LON are mandatory.

The present database with glacier thickness data is linked to the World Glacier Inventory (WGMS and NSIDC 1989, updated 2012) database through the primary key WGI_GLACIER_ID.

The data sheet T stores observed ice thickness summary data for the entire glacier.
The data sheet TT stores ice thickness data averaged over surface elevation bands, e.g. from ice thickness map or DEM.
The data sheet TTT stores observed ice thickness point data along the single survey profile(s).

The example given for every field refers to the PIZOL glacier, Switzerland.

T1   GlaThiDa_ID

GlacierThicknessDatabase ID   *[numeric code]*
Example: 1
No Data Value: Mandatory field

Every glacier stored in the Glacier Thickness Database has to obtain a GlaThiDa_ID. This ID is given by the WGMS.

T2   POLITICAL_UNIT

Political Unit   *[alphabetic code; 2 characters]*
Example: CH
No Data Value: Mandatory field

2-digit abbreviation for the name of the country or territory in which the glacier is located. For a list of codes, see ISO3166 country codes available at http://www.iso.org/iso/support/country_codes/iso_3166_code_lists/iso-3166-1_decoding_table.htm#CH.

T3   GLACIER_NAME

Glacier name   *[alpha-numeric code; up to 30 digits]*
Example: PIZOL
No Data Value: Mandatory field

The name of the glacier. *"If a name is too long a meaningful abbreviation of it should be entered. The spelling of the name must be in the Latin alphabet and may consist only of the following characters: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z"* (Müller et al. 1977).

Note: If necessary, the name can be abbreviated; in this case, please give the full name in the REMARKS field.

T4   SOURCE_ID

Source ID   *[alpha-numeric code; 6 digits]*
Example: WGI
No Data Value: Mandatory field

The source ID of the glacier's coordinates (lat/lon) and/or area. If OTH is chosen, please specify in the field REMARKS.

Index	Continent
RGI3.2	Randolph Glacier Inventory 3.2
WGI	World Glacier Inventory
WGMS	World Glacier Monitoring Service
OTH	Other

T5   ID

Glacier Identity   *[alpha-numeric code; up to 12 digits]*
Example: CH4R0140D001
No Data Value: null

Identity given for the glacier in the source database (RGI, WGI, WGMS). If OTH is chosen in T4, please give the ID from that source if available.

T6   LAT

Latitude   *[decimal degree North or South; up to 7 digits]*
Example: 48.287704
No Data Value: Mandatory field

"The point on the glacier whose coordinates are given should be in the upper part of the ablation area, in the main stream and sufficiently high so as not to be lost if the glacier retreats" (Müller et al. 1977). Latitude is given in decimal degrees, positive values indicating the northern hemisphere and negative values indicating the southern hemisphere. Latitude is given to a maximum precision of 4 decimal places.

T7   LON

Longitude   *[decimal degree East or West; up to 7 digits]*
Example: 7.4787129
No Data Value: Mandatory field

"The point on the glacier whose coordinates are given should be in the upper part of the ablation area, in the main stream and sufficiently high so as not to be lost if the glacier retreats" (Müller et al. 1977). Longitude is given in decimal degrees, positive values indicating east of the zero meridian and negative values indicating west of the zero meridian. Longitude is given to a maximum precision of 4 decimal places.

T8 YEAR

Year   *[year; 4 digits]*
Example: 2010
No Data Value: null

Year of ice thickness survey.

T9 AREA

Area   *[km^2; up to 6 digits]*
Example: 0.08068
No Data Value: null

Glacier area (in horizontal projection) in the survey YEAR.

T10 MEAN_SLOPE

Mean slope   *[°; up to 2 digits]*
Example: 23
No Data Value: null

Measured mean slope of the galcier in the survey YEAR.

Note: If only horizontal length of the glacier is known, overall slope (ratio of vertical drop height to horizontal distance) should be recorded here together with a corresponding note in the field REMARKS.

T11 MEAN_THICKNESS

Mean thickness   *[meters; up to 6 digits]*
Example: 15
No Data Value: null

Mean ice thickness of the glacier in the survey YEAR.

Note: Please specify in the field REMARKS if the given MEAN_THICKNESS value is based on the interpolated entire glacier area or only on the measured profile points.

T12 ACCURACY_MEAN_THICKNESS

Accuracy Mean thickness   *[meters; up to 6 digits]*
Example: 5
No Data Value: null

Estimated maximum error of reported mean thickness.

T13 MAXIMUM_THICKNESS

Maximum thickness   *[meters; up to 6 digits]*
Example: 36
No Data Value: null

Maximum ice thickness of the glacier in the survey YEAR.

T14 ACCURACY_MAX_THICKNESS

Accuracy Maximum thickness   *[meters; up to 6 digits]*
Example: 5

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No Data Value: null

Estimated maximum error of reported maximum thickness.

T15   SURVEY_DATE

Survey date   *[YYYYMMDD numeric; 8 digits]*
Example: 20100216
No Data Value: null; every missing digit has to be replaced by a 0 ("zero")

Date of the present survey where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of month. For each survey, please indicate the complete date. For unknown day or month, put "00" in the corresponding position(s).

T16   SURVEY_METHOD

Survey method   *[alphabetic code; 3 characters]*
Example: GPRt
No Data Value: null

The survey method used, should be given using the following abbreviations:

Abbr.	Survey Method
DRIh	Hydrothermal Drilling
DRIm	Mechanical Drilling
GPRa	Airborne Ground Penetrating Radar
GPRt	Terrestrial Ground Penetrating Radar
GEL	Geoelectric
HYM	Hydrometric
SEI	Seismic technology
OTH	Other

Note: If you choose OTH (other), please give a corresponding note about the used method in the field REMARKS.

T17   NUMBER_OF_SURVEY_POINTS

Number of survey points   *[numeric; up to 4 digits]*
Example: 5936
No Data Value: null

Number of different survey points taken.

T18   NUMBER_OF_SURVEY_PROFILES

Number of survey profiles   *[numeric; up to 4 digits]*
Example: 34
No Data Value: null

Number of different survey profiles taken.

T19   TOTAL_LENGTH_OF_SURVEY_PROFILES

Total length of survey profiles   *[km; up to 4 digits]*
Example: 4.83
No Data Value: null

Total length of all survey profiles taken.

T20   INTERPOLATION_METHOD

Interpolation method   *[alphabetic code; 3 characters]*
Example: OTH
No Data Value: null

The interpolation method used for extrapolating ice thickness from survey profile(s) to the entire glacier, should be given using the following abbreviations:

Abbr.	Survey Method
IDW	Inverse Distance Weighting
KRG	Kriging
ANU	ANUDEM (=Topogrid)
TRI	Triangulation
OTH	Other

Note: If you choose OTH (other), please give a corresponding note about the used method in the field REMARKS.

T21   INVESTIGATOR

Investigator   *[alpha-numeric; up to 255 digits]*
Example: M. Huss
No Data Value: null

Name(s) of the person(s) or agency doing the field work and/or the name(s) of the person(s) or agency processing the data.

T22   SPONSORING_AGENCY

Sponsoring agency   *[alpha-numeric; up to 255 digits]*
Example: University of Fribourg
No Data Value: null

Full name, abbreviation and address of the agency sponsoring the survey and/or where the data are held.

T23   REFERENCES

Reference(s)   *[alpha-numeric; up to 255 digits]*
Example: Huss, M., (2010). Geogr. Hel.
No Data Value: null

Any published literature directly corresponding with the data reported should be given here.

T24   REMARKS

Remarks   *[alpha-numeric; up to 255 digits]*
Example: Interpolation Method: Minimum Curvature; ATTENTION: Lat/Lon need to be corrected!
No Data Value: null

Any important information or comments not included above may be given here.

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TT GLACIER THICKNESS DATA DERIVED FROM MAP or DEM

NOTES ON THE COMPLETION OF THE DATA SHEET

This data sheet should be completed in addition to datasheet T in order to report glacier thickness data averaged over surface elevation bands, e.g. from ice thickness map or DEM.

The example given for every field refers to the PIZOL glacier, Switzerland.

TT1   GlaThiDa_ID

GlacierThicknessDatabase ID   *[numeric code]*
Example: 1
No Data Value: Mandatory field

Every glacier stored in the Glacier Thickness Database has to obtain a GlaThiDa_ID. This ID is given by the WGMS.

TT2   POLITICAL_UNIT

Political Unit   *[alphabetic code; 2 characters]*
Example: CH
No Data Value: Mandatory field

2-digit abbreviation for the name of the country or territory in which the glacier is located. For a list of codes, see ISO3166 country codes available at http://www.iso.org/iso/support/country_codes/iso_3166_code_lists/iso-3166-1_decoding_table.htm#CH.

TT3   GLACIER_NAME

Glacier name   *[alpha-numeric code; up to 30 digits]*
Example: PIZOL
No Data Value: Null

The name of the glacier. *"If a name is too long a meaningful abbreviation of it should be entered. The spelling of the name must be in the Latin alphabet and may consist only of the following characters: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z"* (Müller et al. 1977).

Note: If necessary, the name can be abbreviated; in this case, please give the full name in the REMARKS field.

TT4   YEAR

Year   *[year; 4 digits]*
Example: 2006
No Data Value: null

Year of present survey (cf. "T4 YEAR").

TT5   LOWER_BOUND

Lower boundary *[m.a.s.l.; up to 4 digits]*
Example: 2600
No Data Value: Mandatory field

Lower boundary of altitude interval of the glacier surface.

TT6   UPPER_BOUND

Upper boundary *[m.a.s.l.; up to 4 digits]*
Example: 2650
No Data Value: Mandatory field

Upper boundary of altitude interval of the glacier surface.

TT7   AREA

Area *[km^2; up to 6 digits]*
Example: 0.01985
No Data Value: null

Glacier area of each altitude interval (in horizontal projection) in the survey YEAR.

TT8   MEAN_SLOPE

Mean slope *[°; up to 2 digits]*
Example: 24
No Data Value: null

Measured mean slope of the galcier in the survey YEAR.

Note: If only horizontal length of the glacier is known, overall slope (ratio of vertical drop height to horizontal distance) should be recorded here together with a corresponding note in the field REMARKS.

TT9   MEAN_THICKNESS

Mean thickness *[meters; up to 6 digits]*
Example: 14
No Data Value: null

Mean ice thickness of each altitude interval of the glacier in the survey YEAR.

Note: Please specify in the field REMARKS if the given MEAN_THICKNESS value is based on the interpolated entire glacier area or only on the measured profile points.

TT10   ACCURACY_MEAN_THICKNESS

Accuracy Mean thickness *[meters; up to 6 digits]*
Example: 5
No Data Value: null

Estimated maximum error of reported mean thickness.

TT11   MAXIMUM_THICKNESS

Maximum thickness *[meters; up to 6 digits]*
Example: 29
No Data Value: null

Maximum ice thickness of each altitude interval of the glacier in the survey YEAR.

TT12   ACCURACY_MAX_THICKNESS

Accuracy Maximum thickness	*[meters; up to 6 digits]*

Example: 5

No Data Value: null

Estimated maximum error of reported maximum thickness.

TT13   REMARKS

Remarks	*[alpha-numeric; up to 255 digits]*

Example: Year: date of DEM

No Data Value: null

Any important information or comments not included above may be given here.

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TTT GLACIER THICKNESS POINT DATA

NOTES ON THE COMPLETION OF THE DATA SHEET

This data sheet should be completed in addition to datasheet T in order to report glacier thickness point data along the single survey profile(s).

The example given for every field refers to the PIZOL glacier, Switzerland.

TTT1   GlaThiDa_ID

GlacierThicknessDatabase ID   *[numeric code]*
Example: 1
No Data Value: Mandatory field

Every glacier stored in the Glacier Thickness Database has to obtain a GlaThiDa_ID. This ID is given by the WGMS.

TTT2   POLITICAL_UNIT

Political Unit   *[alphabetic code; 2 characters]*
Example: CH
No Data Value: Mandatory field

Name of country or territory in which glacier is located (cf. "T1 POLITICAL UNIT").

TTT3   GLACIER_NAME

Glacier name   *[alpha-numeric code; up to 30 digits]*
Example: PIZOL
No Data Value: Null

The name of the glacier, written in CAPITAL letters. Use the same spelling as in "T2 GLACIER NAME".

TTT4   YEAR

Year   *[year; 4 digits]*
Example: 2010
No Data Value: null

Year of present survey (cf. "T4 YEAR").

TTT5   POINT_ID

Point Id   *[alpha-numeric code; 6 digits]*
Example: 1
No Data Value: null/Mandatory field

Each point should be given an POINT_ID according to its number along the profile or the point routing scheme.

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TTT6   POINT_LAT

Latitude   *[decimal degree North or South; up to 10 digits]*
Example: 48.28673797
No Data Value: null/Mandatory field

Latitude is given in decimal degrees, positive values indicating the northern hemisphere and negative values indicating the southern hemisphere. Latitude is given to a maximum precision of 4 decimal places.

TTT7   POINT_LON

Longitude   *[decimal degree East or West; up to 10 digits]*
Example: 7.478128872
No Data Value: null/Mandatory field

Longitude is given in decimal degrees, positive values indicating east of the zero meridian and negative values indicating west of the zero meridian. Longitude is given to a maximum precision of 4 decimal places.

TTT8 ELEVATION

Elevation   *[m a.s.l.; up to 6 digits]*
Example: 2624.46
No Data Value: Null

Altitude of this measurement point of the glacier in meters above sea level.

TTT9   THICKNESS

Thickness   *[meters; up to 4 digits]*
Example: 14.78
No Data Value: Null

Ice thickness at this measurement point of the glacier in meters.

TTT10 ACCURACY_THICKNESS

Accuracy thickness   *[meters; up to 6 digits]*
Example: 3.7
No Data Value: null

Estimated maximum error of reported maximum thickness.

TTT11 REMARKS

Remarks   *[alpha-numeric; up to 255 digits]*
Example: ATTENTION: Lat/Lon need to be corrected!
No Data Value: Null

Any important information or comments not included above may be given here.

References

Müller, F., Caflisch, T. and Müller, G. (eds.). 1977. Instructions for the compilation and assemblage of data for a world glacier inventory. IAHS(ICSI)/UNESCO report, *Temporal Technical Secretariat for the World Glacier Inventory* (TTS/WGI), ETH Zurich, Switzerland.

WGMS and NSIDC. 1989, updated 2012. World Glacier Inventory. Compiled and made available by the World Glacier Monitoring Service, Zurich, Switzerland, and the National Snow and Ice Data Center, Boulder CO, U.S.A. Digital Media.