

# Yukon Geochronology Database

*May 2020 update*

## **Release notes**

The Yukon Geochronology database is a compilation of >2340 isotopic age determinations for rock units in Yukon. It builds upon the previous digital compilation of geochronological data by Breitsprecher and Mortensen (2004) and includes new dates that were acquired since. This database includes mainly crystallization ages for igneous rocks and cooling ages of igneous and metamorphic rocks. A smaller number of age determinations (~10%) date metamorphism, hydrothermal alteration, mineralization, or the depositional age of sedimentary strata. Dating methods include mainly U/Pb (>43%, mostly of zircon), K/Ar (33%) and  $^{40}\text{Ar}/^{39}\text{Ar}$  (~17%), with fewer samples dated using Rb/Sr, Re/Os, fission track and other techniques.

Not included in this database are the growing number of U-Pb detrital zircon analyses, mainly acquired by laser ablation inductively coupled mass spectrometry (LA-ICPMS) and typically reporting >100 dates per sample; these data will be compiled in a future, separate database. The few exceptions are for samples where a maximum depositional age was precisely determined by U/Pb dating of syn-depositional zircon using the chemical abrasion, isotope dilution, thermal ionization mass spectrometry (CA-TIMS) technique.

The “database” is presented here as a “flat file” (in shapefile, geodatabase and text formats) as opposed to the previous relational Access database (Breitsprecher and Mortensen, 2004). This allows for easier integration into the user’s GIS platform and for greater spatial querying of the data.

The Yukon Geochronology database will be subject to periodic updates as new age determinations are acquired with ongoing mapping, exploration and other research activities. Any errors, omissions or new data known to the user should be reported to the Yukon Geological Survey. Your feedbacks contribute to improving the accuracy of the geoscience databases for Yukon.

Contact: [Maurice.Colpron@gov.yk.ca](mailto:Maurice.Colpron@gov.yk.ca)

## **Reference:**

Breitsprecher, K. and Mortensen, J.K., (comps.) 2004. YukonAge 2004: A database of isotopic age determinations for rock units from Yukon Territory. Yukon Geological Survey, CD-ROM.

## Yukon Geochronology Database - metadata

Field	Alias	Description	Type	Length
SAMPLE_NUM	Sample Number	Sample number	TEXT	50
AGE	Age	Radiometric age	DOUBLE	float
ERR_PLUS	Error (+)	Error (older than age determination)	DOUBLE	float
ERR_MINUS	Error (-)	Error (younger than age determination)	DOUBLE	float
METHOD	Isotopic Method	Isotopic method (Ar/Ar, Fission Track, K/Ar, Lu/Hf, Rb/Sr, Re/Os, Sm/Nd, U-Th/He, U/Pb)	TEXT	25
TECHNIQUE	Analytical Technique	Analytical technique (e.g., CA-TIMS, TIMS, LA-ICPMS, SHRIMP, and other)	TEXT	50
MINERAL	Mineral	Mineral(s) analyzed	TEXT	70
MIN_SHORT	Mineral Abbrev.	Abbreviation for mineral(s) (following Kretz, 1983 - Am. Mineralogist, 68, 277-279)	TEXT	25
LAB	Laboratory	Laboratory where analyses were performed	TEXT	50
GEOCHRONO	Geochronologist	Geochronologist who performed the analyses	TEXT	100
INTERP	Interpretation	Age interpretation	TEXT	254
AGE_NOTE	Notes on Age Determination	Additional notes about this age determination	TEXT	254
GEOLOGIST	Geologist	Geologist who submitted the sample	TEXT	100
YEAR	Year	Year sample was collected	DOUBLE	float
GEOL_UNIT	Geological Unit	Geological unit sampled for geochronology	TEXT	254
ROCK_CLASS	Rock Classification	Rock classification – sedimentary, metamorphic, plutonic, volcanic, hydrothermal	TEXT	50
ROCK_TYPE	Lithology	Lithology sampled for analysis	TEXT	254
LOCATION	Location	Brief description of geographic location	TEXT	254
LATITUDE	Latitude	Geographic coordinate in decimal degree (WGS84)	DOUBLE	DD
LONGITUDE	Longitude	Geographic coordinate in decimal degree (WGS84)	DOUBLE	DD
SOURCE	Source of Data	Source for this age determination	TEXT	254
FILENAME	Plot Filename	Filename for data plot (when available)	TEXT	50
COMMENTS	Comments	Additional comments about this sample or age interpretation	TEXT	254
PUBLIC	Public Data	Y = open access; N = internal YGS use	TEXT	5
INHERITANCE	Inheritance	Inherited zircon components documented in this sample	TEXT	254
DATAFILE	Data Filename	Filename for data table .XLS; when available)	TEXT	50

### Notes:

#### Abbreviations for techniques:

CA-TIMS – chemical abrasion, isotope dilution thermal ionization mass spectrometry

ICPMS – inductively-coupled mass spectrometry (MC – multi-collector)

ID-TIMS – isotope dilution thermal ionization mass spectrometry (usually with air abrasion)

LA-ICPMS – laser-ablation inductively-coupled mass spectrometry (MC – multi-collector)

SHRIMP – sensitive high-resolution ion microprobe

TIMS – thermal ionization mass spectrometry

#### Abbreviations for laboratories:

GSC – Geological Survey of Canada, Ottawa

MUN – Memorial University of Newfoundland

PCIGR-UBC – Pacific Centre for Isotopic and Geochemical Research, University of British Columbia

UBC – University of British Columbia

UCLA – University of California, Los Angeles