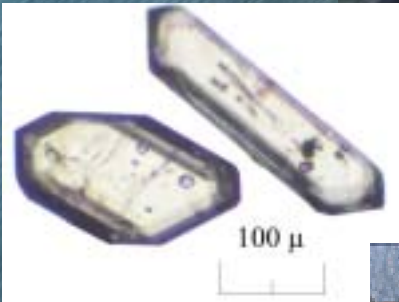
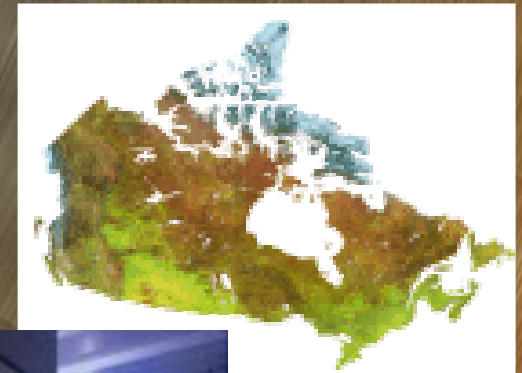




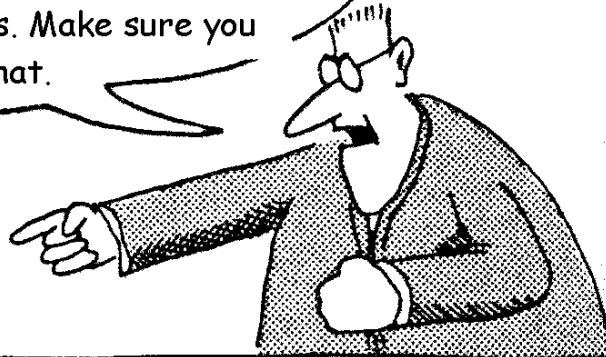
# Canadian Geochronology Knowledge Base



Linda R. Richard – GSC Geochronology Laboratory

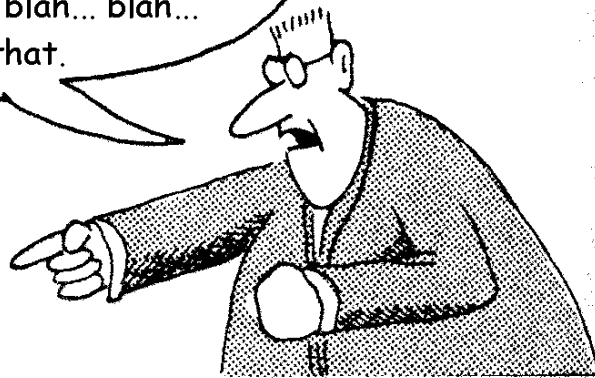
## What we say to Geologists

Whoa! That was one lousy age date.  $1024 \pm 1000$  Ma is absolutely meaningless. Make sure you don't use that.



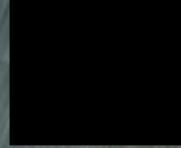
## What they hear

blah... blah... blah.. blah...  
1024 Ma ... blah... blah...  
blah... use that.



# Data, Information and Knowledge

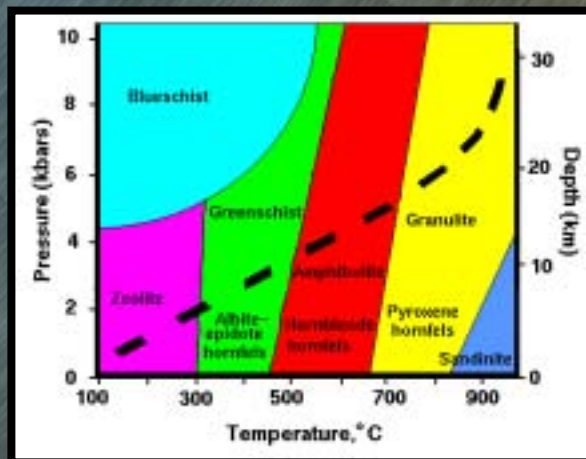
- **Data:** the mineral is black



- **Information:** the mineral is hornblende



- **Knowledge:** Rock is lower amphibolite metamorphic facies



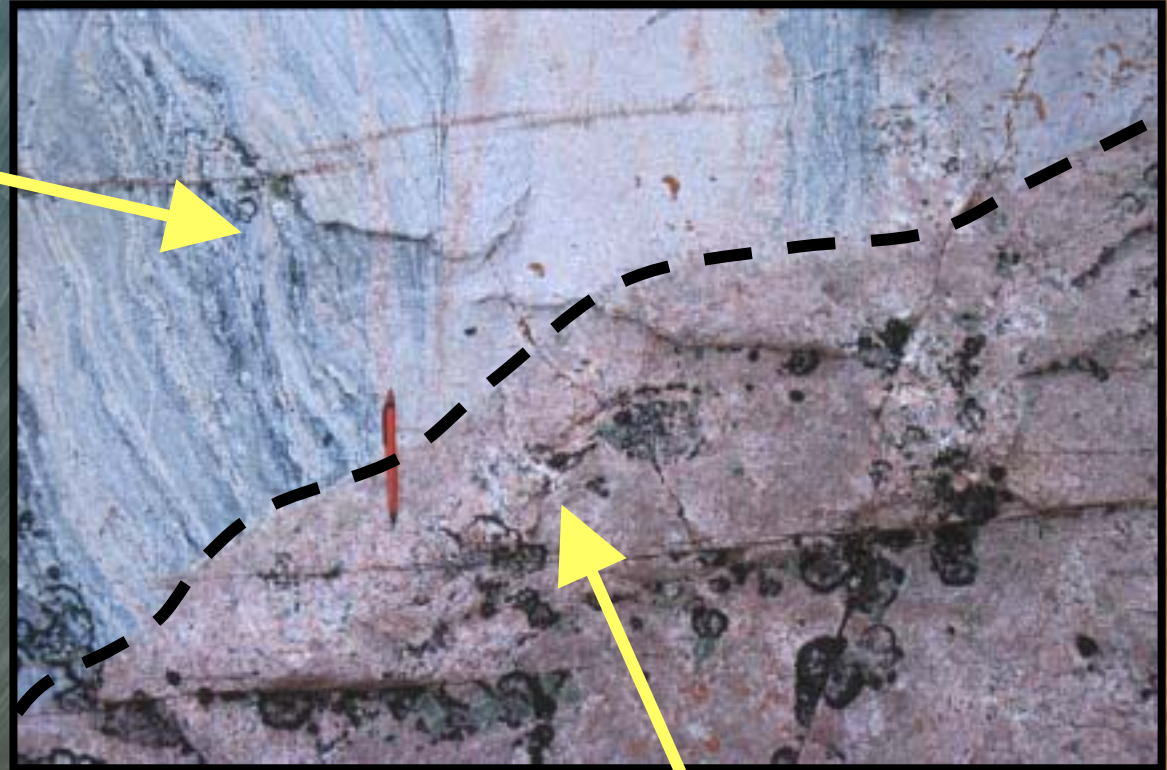
Characterize the  
P/T conditions of  
recrystallization

# What is Geochronological Data?

Deformed  
granite  
 $261.4 \pm 0.3$  Ma

## Date

- Calculated date is an interpretation of the data.
- An interpretation requires knowledge.
- This knowledge must be captured with the data.



Cross-cutting granite  
 $170.1 \pm 1.9$  Ma

# Uncertainties

## Internal Uncertainties

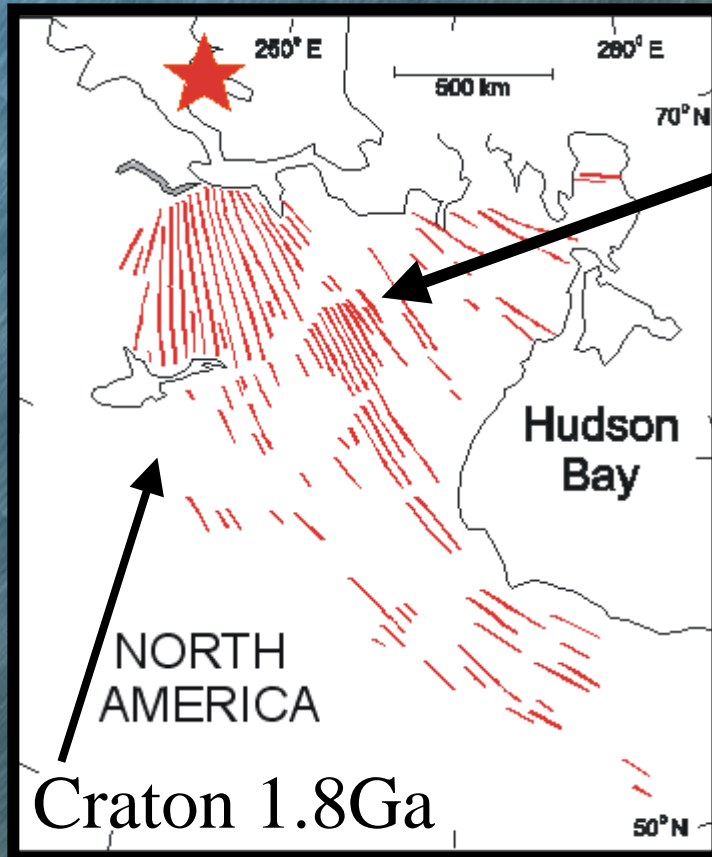
- **Analytical Uncertainty** (typically reported with the age measured in the lab).

## External Uncertainties

- **Decay constants, Reference Standards and Geological Uncertainty.**

Standardization needs to be made to the data. This requires knowledge to insure reporting is in common reference frame.

# What is Geochronological Data?



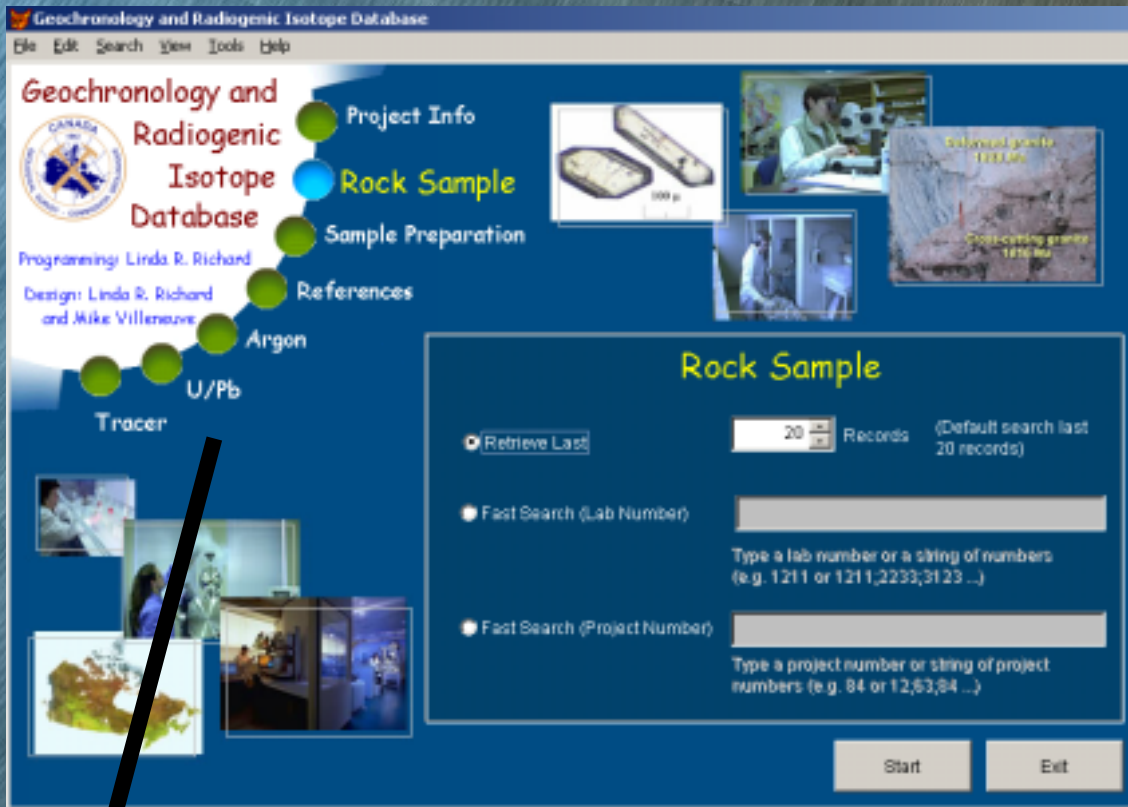
Mackenzie radiating  
dyke swarms

(extent of 2400 km across).

Dykes 1.27 Ga  
(emplaced within 5 Ma)

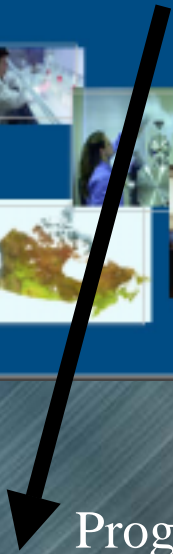
Dates are pertinent  
to geological unit,  
not point in space.

# Radiogenic Isotope Database

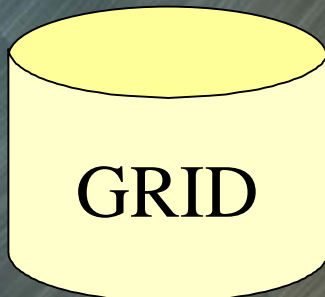


GRID is great starting point for CGKB

- Data structure defined
- Data entry software
- A number of compilations are already completed
- In house expertise to oversee compilations
- National standard for data



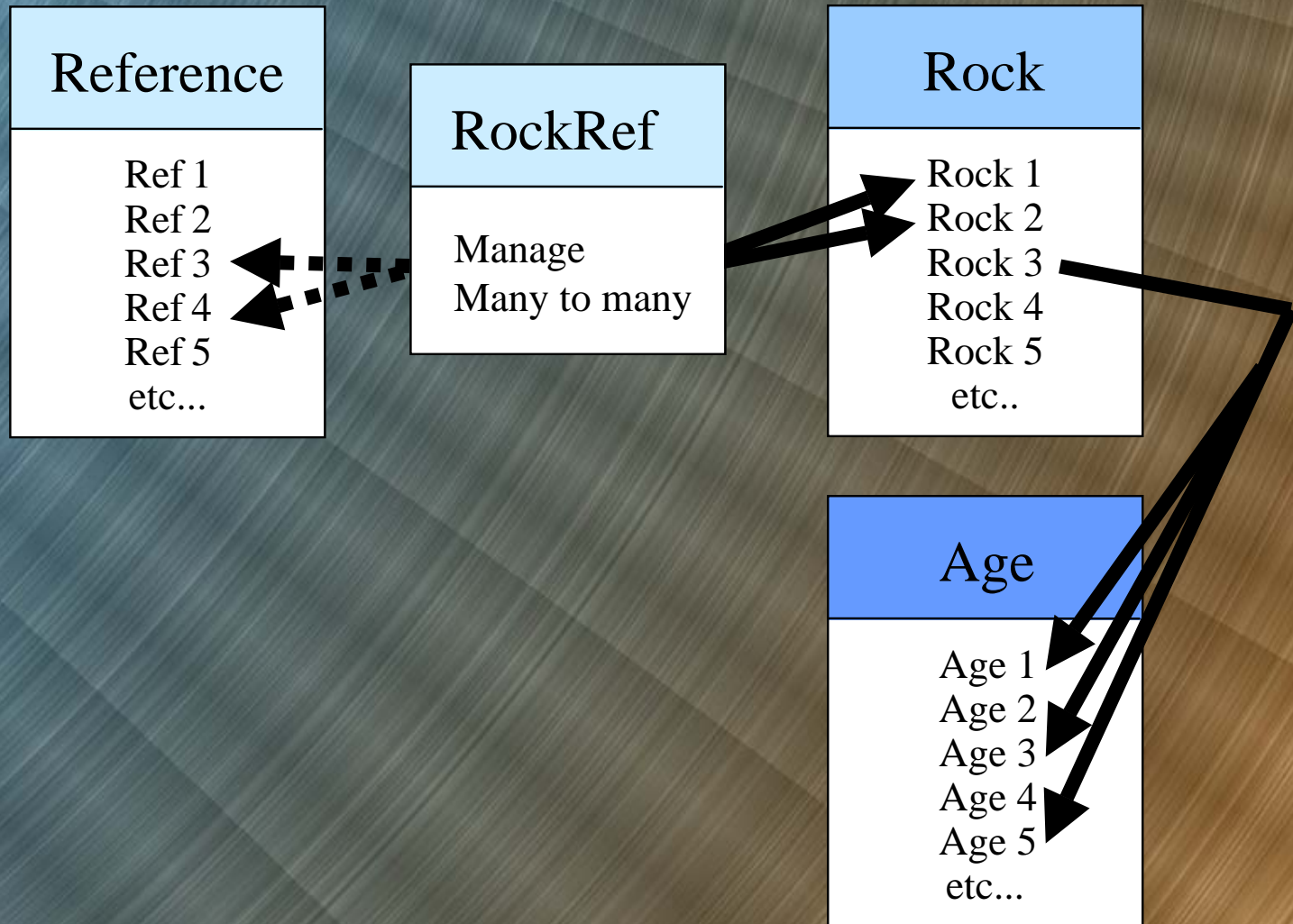
Program Manages



GRID

Geochronological and Radiogenic Isotope Database

# Canadian Geochronology Knowledge Base



# Canadian Geochronology Knowledge Base

Designed for multiple points of entry

- The labs web site:  
[www.gsc-cgd.nrcan.ca/cgd/geochron/index\\_e.html](http://www.gsc-cgd.nrcan.ca/cgd/geochron/index_e.html)
- GDR:  
[www.gdr.nrcan.gc.ca](http://www.gdr.nrcan.gc.ca)
- CGKN ? Provinces/territories and others?

# Canadian Geochronology Knowledge Base

National Geochronology Knowledgebase - Microsoft Internet Explorer

Address: <http://www.inoL.ess.nrcan.gc.ca/geochron/le/viewer.htm>

Canada

Franglais Contact us Help Search Canada Site  
Home Science Products Facilities NRCan

Canadian Geochronology Knowledgebase

Provinces

- Alberta
- British Columbia
- Manitoba
- New Brunswick
- Newfoundland
- Nova Scotia
- Northwest Territories
- Nunavut Territory
- Ontario

Map Control

Select background ...

Select background ...

Provinces

Geological Provinces

1:5M Geology of Canada

Tools

- Hide/Show location map
- Zoom in: Click or click-and-drag
- Zoom out: Click or click-and-drag
- Zoom to Canada
- Zoom to Long, Lat that you specify
- Zoom: Previous extent
- Pan: Click or click-and-drag
- Information: Click on features
- Geochronology Knowledgebase Search
- Select features: Click-and-drag
- Clear selected/highlighted features
- Show this help

2004-01-09

Map: -133.59, 47.82 - Image: 67, 263 - ScaleFactor: 0.1310344627566207

Select  
Background

Map Control

Select background ...

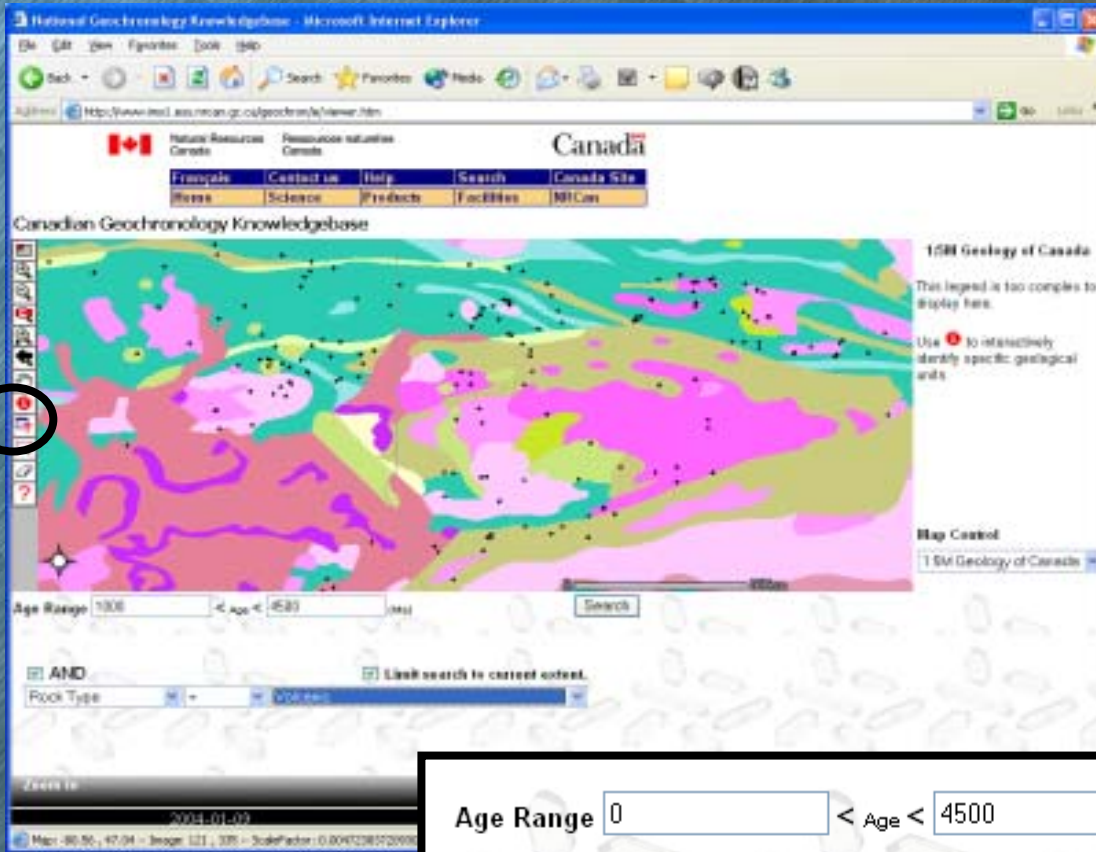
Select background ...

Provinces

Geological Provinces

1:5M Geology of Canada

# Canadian Geochronology Knowledge Base



## Search Tool

- Search using two criteria
- Limit search to Current extent.

Age Range 0 < Age < 4500 (Ma)

AND  Limit search to current extent.

Rock Type = Volcanic

# Canadian Geochronology Knowledge Base

## Search Tool

- Display summary or detailed results
- Show results on map
- Download results

1000 < AGE < 4500  
AND Rock Type LIKE 'Volcanic'

Lab No.	Sample No.	Age	Error Plus	Error Minus	Age Method	Age Interpretation	Authors
2622	Pacaud feldite	2740.0	0.8	0.8	WPb	Igneous Crystallization	Mortensen, J.K.
2608	BC	2720	2	2	WPb	Igneous Crystallization	Corfu, F. and Noble, S.R.
2604	KJ	2701	3	3	WPb	Igneous Crystallization	Corfu, F. and Noble, S.R.
2603	MH	2706	2	2	WPb	Igneous Crystallization	Corfu, F. and Noble, S.R.
2287	SK	2701	3	2	WPb	Igneous Crystallization	Corfu, F., Krogh, T.E., Krook, Y.Y. and Jensen, L.S.

[Download to Excel](#)  
27 records selected

1000 < AGE < 4500  
AND Rock Type LIKE 'Volcanic'

Lab No.	Sample No.	Age	Error Plus	Error Minus	Age Method	Age Interpretation	Authors
-2622	Pacaud feldite	2740.0	0.8	0.8	WPb	Igneous Crystallization	Mortensen, J.K.
-2608	BC	2720	2	2	WPb	Igneous Crystallization	Corfu, F. and Noble, S.R.
-2604	KJ	2701	3	3	WPb	Igneous Crystallization	Corfu, F. and Noble, S.R.
-2603	MH	2706	2	2	WPb	Igneous Crystallization	Corfu, F. and Noble, S.R.
-2287	SK	2701	3	2	WPb	Igneous Crystallization	Corfu, F., Krogh, T.E., Krook, Y.Y. and Jensen, L.S.

Show on Map  
Summary  
Summary  
Detailed

# Canadian Geochronology Knowledge Base

The screenshot shows the National Geochronology Knowledgebase website in Microsoft Internet Explorer. The browser address bar shows the URL: <http://www.ins.lasr.nrcan.gc.ca/geochron/le/viewer.htm>. The page features the Canadian Geochronology Knowledgebase logo and a navigation menu with links for Français, Contact us, Help, Search, Canada Site, Home, Science, Products, Facilities, and NRCan. The main content area displays a geological map with various colored regions. A toolbar on the left includes a red circle icon. Below the map, there are two data tables: 'Geochronology' and 'Geol\_5M'. The 'Geochronology' table has columns for Rec, Age (Ma), Error Plus, Error Minus, Method, Interpretation, and Authors. The 'Geol\_5M' table has columns for Rec, Unit, Era, Period, Age Rock Type, Rock Type, and MAPS\_GEOLOGY\_GEOCHRON.ROX\_POLY.OBJECTID.

## Identify Tool

- Displays Geochron dates etc... at a specific point
- Displays geological information

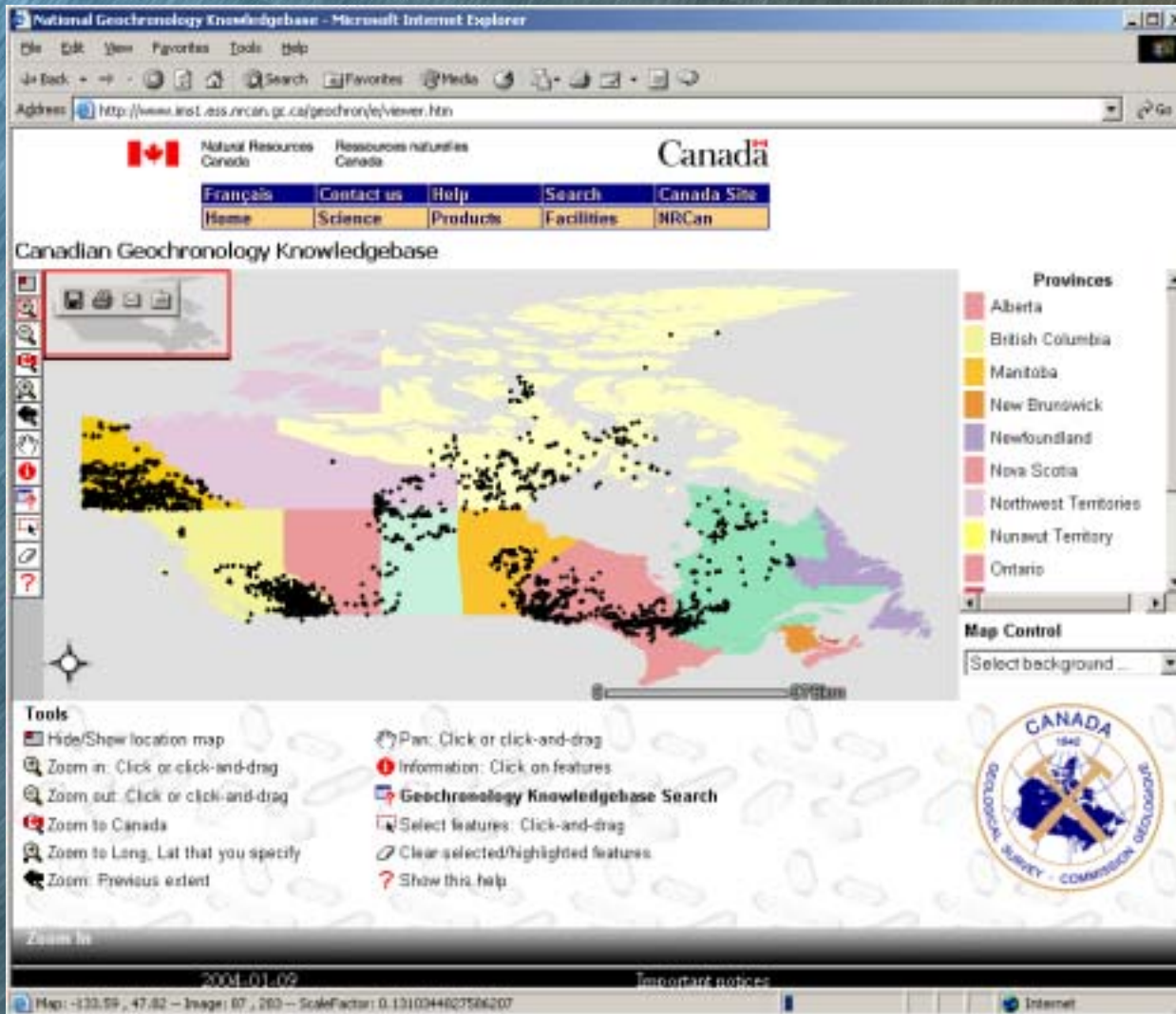
**Geochronology**

Rec	Age (Ma)	Error Plus	Error Minus	Method	Interpretation	Authors
1	2676	2	2	U/Pb	Cooling	Mortensen, J.K. and Card, K.D.
2	2680	1	1	U/Pb	Igneous Crystallization	Mortensen, J.K. and Card, K.D.

**Geol\_5M**

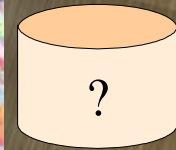
Rec	Unit	Era	Period	Age Rock Type	Rock Type	MAPS_GEOLOGY_GEOCHRON.ROX_POLY.OBJECTID
1	Wg	Precambrian	Neoproterozoic	Archean intrusive rocks	undivided granitoid rocks	1309

# Canadian Geochronology Knowledge Base - Compilations



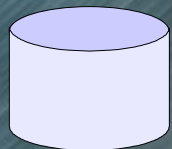
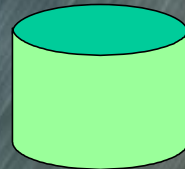
- Web application helps identify the gaps in data.
- Data sharing agreements are being discussed with the provinces and territories.

# Current Data Submission

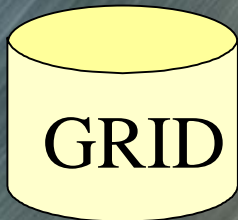


Data compiled and produced within the GSC

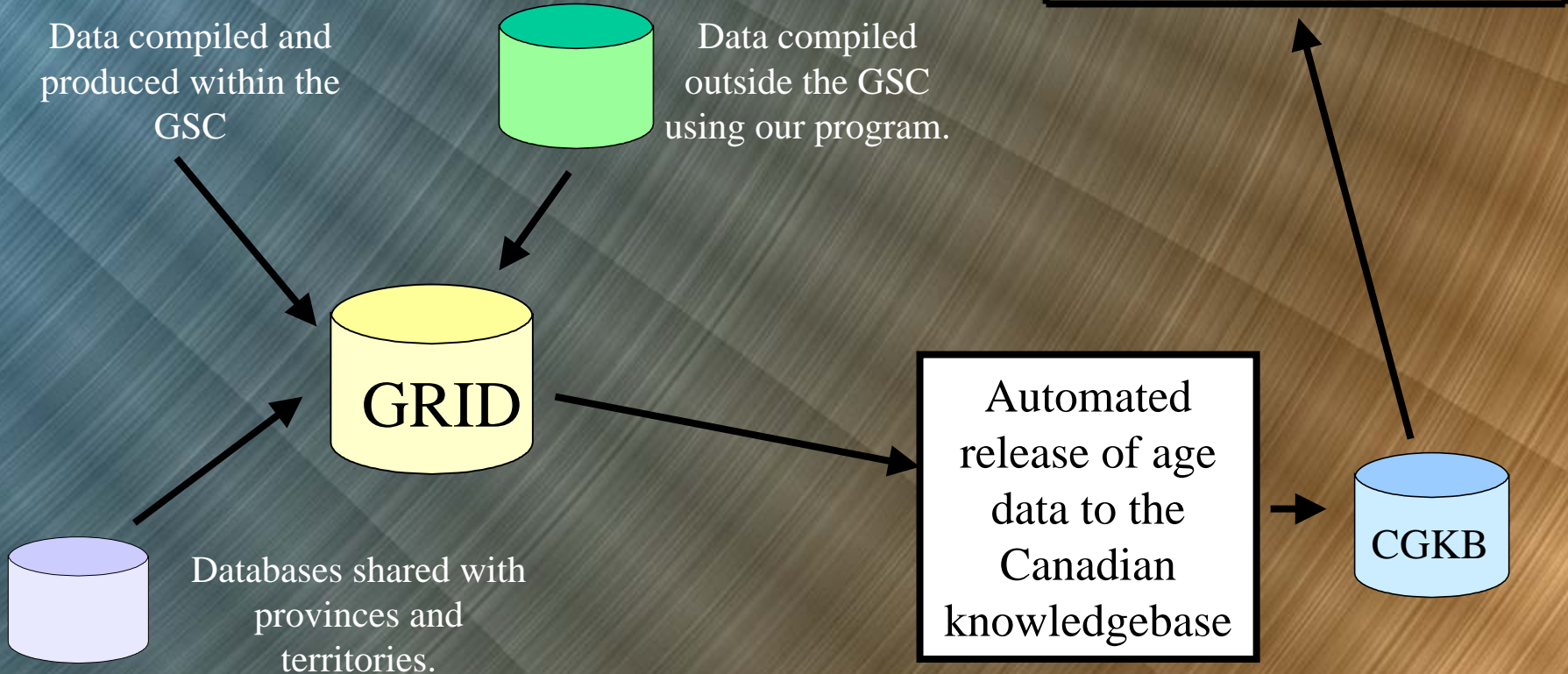
Data compiled outside the GSC using our program.



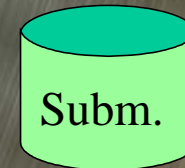
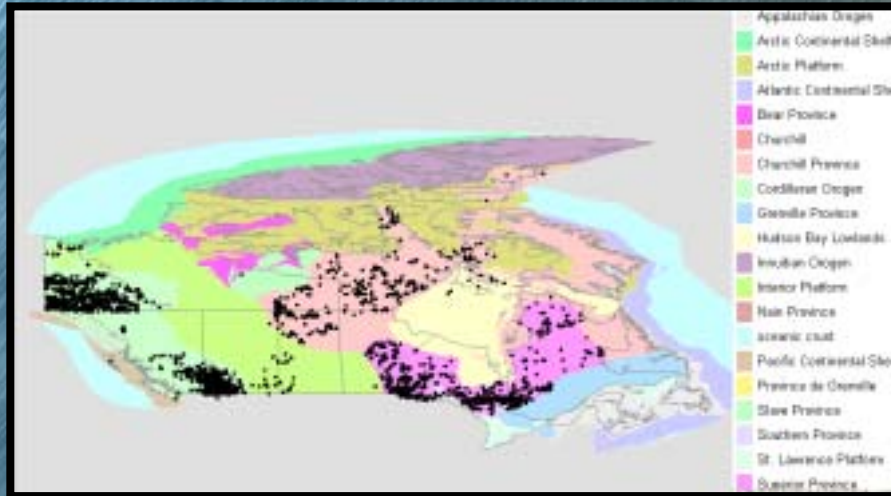
Databases shared with provinces and territories.



Automated release of age data to the Canadian knowledgebase

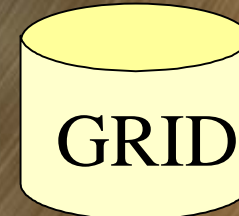


# Internet Based Data Submission



Submitted ages and associated information stored in a separate database.

Data submitted via the web and reviewed by regional editors.



Geochronological and Radiogenic Isotope Database

Automated release of age data to the Canadian knowledgebase



# Web Services

- Web services will be used to manage the data flow
- 40 services will be available shortly

## Services Returning Data in XML Format

Methods are located at

[http://www.ims1.ess.nrcan.gc.ca/geochron/web\\_services/TableAsXML.aspx](http://www.ims1.ess.nrcan.gc.ca/geochron/web_services/TableAsXML.aspx)

XML	unfiltered	by Province	by Project	by NTS
<b>all tables</b>	allAsXML	allAsXMLByProv	allAsXMLby Proj	allAsXMLbyNTS
<b>Rockfile</b>	rockfileAsXML	rockfileAsXMLByProv	rockfileAsXMLby Proj	rockfileAsXMLbyNTS
<b>Refs</b>	refsAsXML	refsAsXMLByProv	refsAsXMLby Proj	refsAsXMLbyNTS
<b>RockRef</b>	rockrefAsXML	rockrefAsXMLByProv	rockrefAsXMLby Proj	rockrefAsXMLbyNTS
<b>GSC_Age</b>	gsc_ageAsXML	gsc_ageAsXMLByProv	gsc_ageAsXMLby Proj	gsc_ageAsXMLbyNTS

# Web Services

## Services Returning Data in Comma-Delimited Text Format

Methods are located at  
[http://www.ims1.ess.nrcan.gc.ca/geochron/web\\_services/TableAsCSV.aspx](http://www.ims1.ess.nrcan.gc.ca/geochron/web_services/TableAsCSV.aspx)

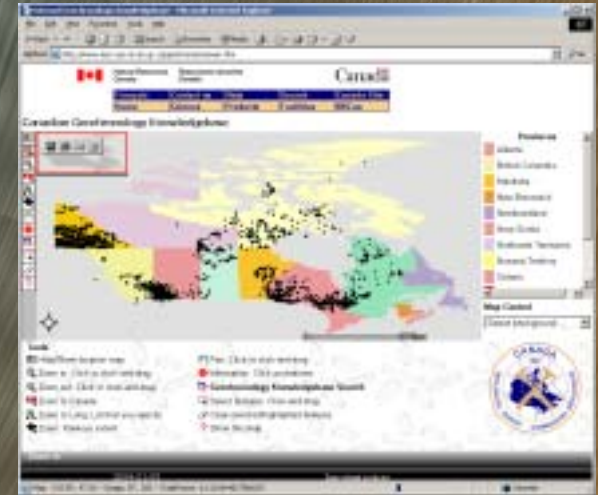
CSV	unfiltered	by Province	by Project	by NTS
<b>all tables</b>	allAsCSV	allAsCSVByProv	allAsCSVby Proj	allAsCSVbyNTS
<b>Rockfile</b>	rockfileAsCSV	rockfileAsCSVByProv	rockfileAsCSVby Proj	rockfileAsCSVbyNTS
<b>Refs</b>	refsAsCSV	refsAsCSVByProv	refsAsCSVby Proj	refsAsCSVbyNTS
<b>RockRef</b>	rockrefAsCSV	rockrefAsCSVByProv	rockrefAsCSVByProj	rockrefAsCSVByNTS
<b>GSC_Age</b>	gsc_ageAsCSV	gsc_ageAsCSVByProv	gsc_ageAsCSVByProj	gsc_ageAsCSVByNTS

## Web Service Method Parameters

parameter name	description	values
pr	two-letter abbreviation for province or territory	AB, BC, MB, NB, NF, NS, NU, NT, ON, PE, QC, SK, YT
project	project name	Churchill 1999, Churchill-Y12, Grenville 2003, Yukon 2002
nts	National Topographic System sheet number	e.g. 64 or 64A or 64A04

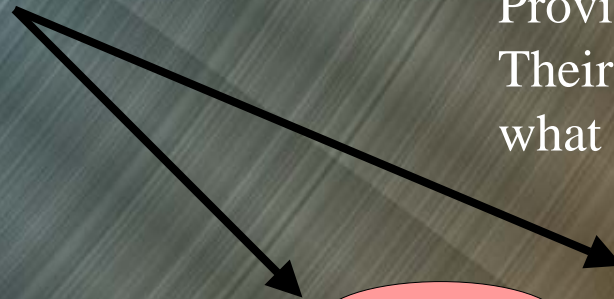
# 2 Year Commitment by the GSC

In cooperation with the provinces and territories complete compilation of the CGKB



Provinces and territories will decide: Their own level of participation and what their own needs are.

On track to Complete compilation By March 2005 !



Etc...