

Canadian Database of Geochemistry

Colloquium Notes

General Notes:

The two computers are configured as a really simple TCP/IP client-server network. The server is a Sparc 10 clone, with a 50 Mhz CPU and 64 Mb RAM. It is running Oracle 7.1/Solaris 2.4. The client is a 133 Mhz Pentium PC, with 32 Mb RAM, running MS-DOS 6.2/Windows 3.1.

The PC can be booted in three different network configurations:

1. Banyan Vines - not an option at the Colloquium, because there is no Banyan server connected.
2. PC-NFSpro - my preferred network software for communicating with a Unix server. Unfortunately, there is some peculiar memory conflict when running DBMS/Copy on this PC which causes the system to hang. My personal PC runs the software OK.
3. PC/TCP 2.3 - the best option for the Colloquium

The middle button on the Logitech mouse is configured to simulate a double click.

The Colloquium program group contains 23 icons, each one of which shows some aspect of our database activities. Each icon is described in the following pages. Several of them are of very specialised interest. The ones most likely to be of general interest are:

18. MapInfo 4
3. Open File Index

The important thing to emphasise with applications like MapInfo, SPSS, DBMS/COPY/Surfer is how easy it is to get at the data in the database.

Applications:

1. **Survview 1.31**
2. **NGR Index**
3. **Open File Index**
4. **Geochemical Archives**
5. **ArcView 2**
6. **ArcView 1**
7. **SQL*Plus 3.1**
8. **Database Manager**
9. **DBMS/Copy**
10. **SPSS 6.1**
11. **FoxPro 2.6**
12. **PowerPoint Viewer**
13. **Asymetrix Infomodeler 1.5**
14. **Doc-to-Help 1.6**
15. **Surfer 6**
16. **Internet Assistant**
17. **Netscape 2.0Beta5**
18. **MapInfo 4**
19. **NGR Open Files**
20. **Open File Report Writer**
21. **Analytical Data Evaluation**

22 Access 2

23 Newfoundland Geochemical Atlas

1. *Surviv*

Objective:

No particular purpose

Procedure:

Notes:

Surviv has an excellent module for displaying proportional dot maps. Surviv's main limitation is the difficulty in creating base maps. This is becoming much less of a problem, now that Surviv can read .SHP files (ArcView 2's data format). The NGR Index, Open File Index and Geochemical Archives all use Surviv as a GIS front-end to their catalogues.

2. *NGR Index*

Objective:

Display all of the summary information about GSC NGR Open Files

Procedure:

The program automatically loads a map of Canada with NGR Survey polygons. Centre the cursor over any polygon, and right-click. Info on the underlying polygon will be displayed. You can zoom into areas of the map (View|Zoom). The level of detail displayed can be controlled by Edit|????

Notes:

This application relies on SurView's ability to read DBF files. The DBF files were created directly from tables in the Oracle database

The Zoom option is unorthodox. Tektronix users will recognize its heritage. Remember to use the right mouse button, once the Zoom window is to your satisfaction.

3. Open File Index

Objective:

Display all of the GSC Circular info on geochemical Open File releases

Procedure:

Very similar to the NGR Index.

Notes:

This application relies on SurView's ability to read WinHelp files. The WinHelp files were created using Doc-to-Help (see #14 below).. The WinHelp file is complete. The polygon info displayed by SurView only covers NGR Open Files. Polygon info for the other open files (biogeochem, till, etc.) still has to be compiled.

The WinHelp file is indexed by authors. Select Search. Enter Authors. Scroll to the one you are interested in.

4. *Geochemical Archives*

Objective:

Display info on archived geochemical datasets.

Procedure:

Identical to the Open File Index.

Notes:

Several of the datasets have only been published in summary form i.e. the raw data have never been released. As we systematically archive the data, we will hopefully release the raw data as digital open files. This project is still in its earliest stages.

5. *ArcView 2*

Objective:

Simply to demonstrate its existence.

Procedure:

There are no ArcView 2 datafiles on the system, so there is nothing to usefully accomplish.

Notes:

6. *ArcView 1*

Objective:

No particular purpose.

Procedure:

As for ArcView 2

Notes:

ArcView 1 is freely available from <http://www.esri.com> (after 5pm, Pacific Time). The Newfoundland geochemical atlas (#23) uses ArcView 1 as its GIS engine.

7. SQL*Plus 3.1

Objective:

Query the Oracle database, using the full power of Oracle SQL

Procedure:

Username: colloq

Password: colloq

Connect: ngr

SQL> select max(Amount) from analyses where AnalyticalCode = 1;

(this query will retrieve the maximum Zn(AAS) value in stream sediments)

Notes:

This application does not rely on ODBC to communicate with the database. Therefore, you can submit far more complex SQL queries than ODBC allows.

To use SQL efficiently requires a good knowledge of the database. Otherwise, you will have to perform multiple joins to retrieve anything. For example, in the above query, I know that an AnalyticalCode of 1 equates to an AAS Zn analysis on stream sediments, and that all of the relevant data will be examined. If I didn't know this in advance, I would have to submit a much more complex query:

SQL> select max(Amount) from Analyses A, Analytical_Code AC, Analytical_Group AG where A.AnalyticalCode = AC.AnalyticalCode and AC.AnalyticalCode = AG.AnalyticalCode and AG.AnalyticalGroupCode="Zn";

8. Database Manager

Objective:

Startup (or shutdown) the PC Oracle database

Procedure:

Start (or stop)

Password: colloq

Notes:

After you have started the PC Oracle database, you can use SQL*Plus to query it (simply leave the Connect field empty). ODBC-enabled applications can retrieve data from it. The PC Oracle database is simply a duplicate of the small tables in the main database.

9. DBMS/Copy

Objective:

Create a DBF file for all of the data in GSC Open File 1648.

Procedure:

Interactives

Copy database

ODBC (SQL) (button to click)

NGR main database

(ignore CTL3DV2 error message)

password: colloq

owner list: double-click ADCOCK

table: double-click FLAT_FILE_STREAM

OK

Conditions: click

Field expression: OpenFileNumber

Value expression: 1648

Insert

Select output database

List files of type: Dbase IV (*.DBF)

c:\

temp

of1648.dbf

Do-it!

Done

Notes:

10. SPSS 6.1

Objective:

Calculate summary statistics for Zn(AAS) in stream sediments across Canada.

Procedure:

```
File
  Open
    ODBC
      NGR main database
      password:      colloq
      Table:         Adcock.Analyses
      Fields to retrieve:  Amount
      Where:
        Select where case satisfies condition
          Analytical Code
          =
          1
  Statistics
    Summarise
      Descriptives
        Variable:      Amount
```

Notes:

11. FoxPro 2.6

Objective:

Display the DBF file created by DBMS/Copy.

Procedure:

File
 Open
 c:\
 temp
 of1648.dbf
Database
 Browse

Notes:

Column names in DBF files are limited to 10 characters. Hence, the Oracle database column names are truncated. If the truncated name is not unique, DBMS/Copy will modify the name to enforce uniqueness.

12. PowerPoint Viewer

Objective:

Display the slides describing the project.

Procedure:

Notes:

There is no real point to this, since the slides already exist on the poster. There is a bug in PowerPoint, which stops the GSC crest from displaying in repeat slide shows (apparent if you launch the slide show from PowerPoint itself, rather than the Viewer, which cannot be configured to endlessly cycle through the slides).

13. *Asymetrix Infomodeler 1.5*

Objective:

Display a design for a generalised geochemical database

Procedure:

Geochem V1.00

Notes:

Infomodeler uses FORML (formalised Object Role Modelling Language) - a recent development in database design theory. FORML is thoroughly developed by Terry Halpin (Conceptual schema and Relational Database Design). The geochemical database design is still in its earliest stages. The long term goal is to store all of our geochemical data in a single generalised database.

14. Doc-to-Help 1.6

Objective:

Nothing in particular

Procedure:

Notes:

Doc-to-Help is the software package being used to develop the WinHelp files for use with SurView (#3 and #4). It consists primarily of some sophisticated macros for MS Word.

15. Surfer 6

Objective:

Contour the Zn data for Open File 1648, using the DBF file created by DBMS/Copy (#9).

Procedure:

1. Create an ASCII file of data for gridding, using DBMS/COPY.

Interactives

Copy database

ODBC (SQL) (button to click)

NGR main database

(ignore CTL3DV2 error message)

password: colloq

owner list: double-click ADCOCK

table: double-click FLAT_FILE_STREAM

OK

Conditions: click

Field expression: OpenFileNumber

Value expression: 1648

Insert

Field expression: ReplicateStatusCode

Operator: <=

Value expression: 1

Insert

OK

Select output database

List files of type: ASCII (*.DAT)

c:\

data

colloq

surfer

of1648.dat

Do-it!

Done

2. Grid the data and display the grid, using Surfer.

Grid

Data

of1648.dat

Data columns

X Easting

Y Northing

Z Amt_Zn

Gridding method

Inverse distance

Map

Contour

of1648.grd

Notes:

16. *Internet Assistant*

Objective:

Nothing in particular

Procedure:

Notes:

Internet Assistant is a free add-on to Word available from <http://www.microsoft.com>. It allows you to very easily create html files using Word (see #17).

17. Netscape 2.0Beta5

Objective:

Show the embryonic WWW home page describing geochemical datasets.

Procedure:

Notes:

The content of the home page is wholly without substance. The purpose was simply to demonstrate the ease with which html documents and WWW servers can be set up. The Unix server is running the (free) NCSA httpd software.

18. MapInfo 4

Objective:

Create a proportional dot map and a contour map of Zn for Open File 1648.

Procedure:

1. Create a base map using ADC World Map (DCW in MapInfo format)

Quick Start
Cancel
File
Open workspace
c:\
adc
noamrmap.wor
Map
Change View
1cm = 8 km
X -131 deg Y 61.5 deg
Map
Layer Control
make most layers invisible
Map
Options
Projection
UTM (NAD27 for Canada)
Zone 9
File
Save Workspace
c:\
data
colloq
mapinfo
colloq.wor

(to avoid having to repeat this every time, I've saved a workspace as OF1648.WOR)

2. Create a MapInfo table containing the Zn data

Open ODBC Table
MapInfo Win16 Oracle7
password colloq
owner adcock
table Flat_File_Stream
Step 2 of 4
expert
load OF1648ZN.SQL
OK
Step 4 of 4
MapInfo Table OF1648ZN.TAB
Finish
Table
Maintenance
Unlink ODBC Table

Table
 Maintenance
 Table Structure
 OF1648ZN
 Amt_Zn type Decimal
 (Ignore warnings)

File
 Open Table
 OF1648ZN.TAB

Table
 Create Points
 Table OF1648ZN.TAB
 Projection
 UTM (NAD27 for Canada)
 Zone 9

Window
 WLDTITLE map

Map
 Layer Control
 Add Layer
 OF1648ZN

3. Create the dot map

File
 Open Workspace
 OF1648ZN.WOR

File
 Open Table
 OF1648ZN.TAB

Map
 Layer Control
 OF1648ZN invisible

Map
 Create Thematic Map
 Graduated
 Field: Amt_Zn

4. create the contour map, using Vertical Mapper

File
 Open Table
 OF1648ZN.TAB

Vertical Mapper
 Grid Generation
 Create From Points
 Inverse Distance Weighting
 Field to be gridded: Amt_Zn
 cell size: 500
 search radius: 10000
 display radius 10000
 Grid File Name: AMT_ZN.GRD
 (be sure to choose a new name - there is a bug that hangs the
 system if you try to overwrite an existing file)

Window
 ..WLDTITLE

Map
 Layer Control

Add
Amt_Zn
make other areal layers invisible

File
Print
c:\
temp\
ZN.PRN
(At 720dpi, it takes over 6 minutes to create the file.)

Notes:

ADC World Map is a commercial package. The CD-ROM containing the MapInfo coverages for North America costs just over \$1,000.

OF1648.SQL is a simple SQL query, but not simple enough to be created by 'point-and-click'.

Vertical Mapper is a commercial add-on package to MapInfo, costing about \$1,000.

19. NGR Open Files

Objective:

Display summary information on NGR Open Files.

Procedure:

Notes:

This is a Visual Basic application, which reads the information from NGR.MDB (see #22). It shields the user from the SQL commands necessary to extract the data.

20. *Open File Report Writer*

Objective:

Create a report of geochemical data, suitable for publication as a printed open file.

Procedure:

Notes:

The program is another VB application. It requires the data to be stored in a DBF file. Formatting information is stored in a simple ASCII .DEF file

21. *Analytical Data Evaluation*

Objective:

Evaluate the analytical data quality using blind duplicates and control references

Procedure:

Notes:

Another VB application. The analytical data should be stored in Access tables. Critical parameters are stored in a .PAR file.

22. Access 2

Objective:

Create an Access table for all of the data in GSC Open File 1648

Procedure:

File
 Open
 demo.mdb (from list at bottom of menu)

File
 Attach Table
 <SQL Database>
 select data source NGR main database
 User name colloq
 Password colloq
 Attach tables Adcock.Flat_File_Stream

 Query
 New
 Wizard
 Archive Query
 criterion OpenFileNumber = 1648
 new archive table Open File 1648

Notes:

NGR.MDB is an Access database which is a mirror of all the small tables in the Oracle database, created using the File|Import Table menu item. The relationships diagram displayed on the poster is contained within NGR.MDB (Edit|Relationships menu item)

23. *Newfoundland Geochemical Atlas*

Objective:

Demonstrate the Beta release of the Newfoundland digital atlas

Procedure:

Notes:

The atlas is a CD-ROM product. It uses the freely available ArcView 1 software as a GIS engine.