

Antelope User Group Meeting

June 11, 2006

Tucson, AZ

Purpose

The focus of this year's Antelope User Group meeting was designed to pull the users together as a group and address specific requests which individual users had regarding the software and its usage. The workshop was a mixture of talks and discussions addressing the topics of development, system set-up, and analysis & research. The primary goals were to:

- Inform the Antelope community of new developments with Antelope software and contributed programs.
- Share working practices.
- Provide a forum for interaction between developers and users to share problems & solutions.
- Define needs and priorities within the user community.
- Come up with a development plan for the coming year.

Important New User Group Developments

Software can address basic applications, working with the basic applications, and cutting edge technology. Antelope covers all three of these categories. Interfaces to cutting edge work are being developed in Antelope that greatly expand the capabilities within the antelope software environment:

PHP interface (Rob Newman, Kent Lindquist)

Anatomy of a web application involves a) configuration and settings, b) appearance, c) client side function, and d) database & processing. This PHP interface modularizes these anatomical parts and allows parameter file driven web pages and object oriented programming, allowing easy content restructuring within organizational web rules and without affecting the web product delivery. Eventually the capability for a full orb interface will be developed.

Seismic Analysis Library in C++ (Gary Pavlis)

This development allows object oriented programming and includes several packages in the C++ library: seismic data handling and processing library (libseispp), geographical curvilinear grid objects (libgclgrid), lightweight matrix class (dmatrix), general 1D interpolators (part of libseispp). Man pages written in cdoc, can be found at <http://seismo.geology.indiana.edu/~pavlis/software.html>.

SRB interface (Kent Lindquist)

Storage Resource Broker (SRB) is a set of software that creates a virtual server for data. It allows access from shared collections that can be distributed across multiple organizations and heterogeneous storage systems. The SRB can be used as a Data Grid Management System which provides a hierarchical logical namespace to manage the organization of data (usually files), in essence it is the controlled sharing and

management of large amounts of distributed data. The San Diego Supercomputer SRB, comprised of more than 20 institutions worldwide, brokers more than 1.5 petabytes of data, also worldwide. Ultimately this should solve the data access and processing problems currently experienced from outside the office (i.e. at home). From the SRB one should be able to interrogate the orb, view real-time waveform data, query dataloggers, locate seismic events, manage the real-time and archived databases, create products, etc. regardless of their physical location.
<http://www.sdsc.edu/srb>

Needs and Priorities

Over the course of the workshop and in the final discussion it became clear that computing magnitudes was the number one issue for several networks (AK, AU, CN, NN, TA).

- Each agency tends to calculate magnitudes in its own peculiar way due to valid regional and historical reasons. There is a need to match previous catalogue magnitudes within a network as well as magnitudes in adjoining regional catalogues. For networks covering a large spatial area, regional attenuation can differ from region to region requiring, for example, differing regional values of A_0 in M_L calculations.
- While having a magnitude program determine the maximum amplitude can work well, there are situations in which this becomes complicated and user intervention is required. Situations such as earthquake swarms and intense aftershock sequences can create double (or more) events making it difficult for an automatic program to determine the correct amplitude to use for a particular event. Manually moving the amplitude selection to the correct part of the waveform is required in these circumstances.
- Ability for the user to visually see which amplitude was selected for the magnitude calculation substantially speeds up configuration of magnitude pf files, particularly for large networks. It lets the user visually determine the validity of an individual stamag calculation.
- There is a need for users to preview and either include or discard stamag values for determination of the netmag value. Reasons for this vary and it is often required in order to match former catalogue practices.
- Finally, the css3.0 schema origin table only allows entry of three magnitude types: ML, Mb, Ms. In order to obtain another magnitude type assigned to an event a netmag entry for each magnitude type is needed; this can be achieved with an outer join of origin with netmag.

Development Plan

Defining the user group needs and working together to solve them is the power of the Antelope User Group and the contributed software repository. Names in italics identify the individual responsible for ensuring the item listed below is completed and submitted to the software repository. A general note:

- Submit your code to contrib. as soon as possible. Code is often submitted in a well defined, staged process. Start small and produce something which works. Repeat this concept in stages and submit as you complete these stages.

- Write man pages as you program. Submit them to contrib.
- Populate the FAQ section of the BRTT web page with your solutions to problems.
- Write tutorials for things you've figured out how to do.

Magnitudes:

Danny Harvey discussed writing a magnitude engine with a perl interface: input is time window and/or user defined T, A values; output is stamag, netmag. This would generically cover all traditional magnitudes based on a maximum amplitude and/or period measured on the seismic phase of choice. (*Danny Harvey*)

Mw code

- Doug Dreger code (*Roger Hansen*)
- Chuck Ammon code (*Frank Vernon, Kent Lindquist*)

M₀ (*Frank Vernon*)

Mwp (*Mark Leonard & Victor Sardina*)

Magnitudes not discussed: M_m (mantle – Okal, 1989), M_E (energy – ask Glenn Biasi)

Other:

dbgrassoc (*Danny Harvey*)

- option: P's on vertical only, S's on horizontals only

dbloc2 (*Dan Quinlan*)

- fix grassoc

dbpick (*Danny Harvey*)

- create command line to choose every xth trace to display
- create interactive amplitude marks

FAQ & Tutorials (*all users!!*)

- dbdetect/orbdetect gotcha's (*Taimi Mulder, Jennifer Eakins, Danny Harvey*)
- dbgrassoc gotcha's (*Danny Harvey*)
- gap filling procedure (*Frank Vernon*)
- examples of parameter files which work (*all users*)
 - •not an FAQ, where do these examples go?

genloc (*Gary Pavlis*)

- assoc.wgt – normalize (**DONE – 15 June 2006**)
- calculate residuals for non-defining phases

mk_dataless_seed

- add option to create dataless SEED by station (*Frank Vernon*)

predarr table issues (*Dan Quinlan & Gary Pavlis*)

Next User Group Meeting & Format

Discussion of future user group meeting frequency and format elicited several options. The format options are presentations, discussions, and workshop. Frequency ranged from once to twice per year with meeting length varying from one to five days.

The 2006 Antelope Users Group meeting in Tucson, AZ, was a mixture of presentations and discussions. The meeting covered three areas: development, system set-up, and analysis & research. This broad range of topics ensured that there was something in the meeting for everyone, regardless of background or experience level with antelope software. The two topical discussions on magnitudes and analysis tools, as well as the wrap-up discussion, elicited substantial group involvement and ideas that led to the development list summarized in this document. Interest was expressed in a hands-on workshop style format to address specific issues or problems.

It was agreed that a once a year overview meeting tagged on to the end of a large conference or workshop (such as the yearly IRIS workshop) worked well for participants. The idea of a separate several day workshop with a focussed topic, perhaps rotating the location through the member institutions, was enthusiastically discussed; the Pacific Geoscience Centre of the Geological Survey of Canada, in Sidney, BC, volunteered to host the first workshop. Workshop ideas discussed were:

1. Csx3.0 schema
 - Integration with SEED naming convention
 - Is it time to propose modification/additions/changes as a user group?
2. Problem solving and GUI programming
3. Data processing workshop
 - Event location
 - Procedures for scanning waveforms

Send feedback regarding meeting scheduling and format to Taimi Mulder at tmulder@nrcan.gc.ca.

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