

Instructions for Using eqLoclPhaseParser with Basilisk II and EqLOCL on a Windows 7 Platform.

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Version 2.1

This document describes how to use the eqLoclPhaseParser application program to copy and paste phase picks from Waves to eqLocl, and gives detailed explanations of the underlying technology.

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Version control

Date of Release	Edition Number	Comments
August 2020	1.0	The original version.
February 2021	2.0	Fixes bugs and adds station code translation.
February 2021	2.1	Combined the contents of the previous user manual with this instruction manual.

Version Changes

Version 1.0

This was the original version/edition.

Version 2.0

Bugs Fixed

1. V1.0 did not format the list of phase arrival times properly. It did not list arrival times in proper ss.ss format; it left off leading and trailing zeros. V2.0 fixes that.
2. V1.0 did not handle arrival times that straddled the hour properly. The calculated phase arrival times were incorrect. V2.0 fixes that problem.
3. The text file produced by V1.0 had to be manually edited to change the five-character FSDN station codes to a four-character substitute code that could be handled by EqLocl. V2.0 allows for a station code translation file that provides a user defined list of station translation codes used to generate the list of phase arrival times. This file, "stations.alt", must be placed in the same directory/folder in which the eqLoclPhaseParser.exe executable is located.

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Introduction

Basilisk II is a software application that emulates the 680x0-based Apple Macintosh computer on a variety of Windows operating systems. The last version of Mac OS that can be run within Basilisk II is Mac OS 8.1, the last 680x0-compatible version. These operating systems are referred to as Macintosh Classic Operating Systems. You can't run software designed for a Classic OS on a modern Macintosh platform (unless it has a Classic OS emulator running on it).

EqLOCL is a software application written to run on a Classic OS system. It is used to locate seismic events such as earthquakes and blasts. If you want to run eqLOCL on a Windows platform you have to use a Classic OS emulator. The best emulator available to do that is Basilisk II.

There is a lot of information on the WWW about how to install Basilisk II – all of which is very confusing, and difficult to follow. If you want to do some research yourself start at <http://basilisk.cebix.net/>.

The picking of phase arrival times is normally done in seismic analysis software, and that data is then transferred to the seismic event location software by whatever means is suitable. Location of seismic events with eqLOCL normally requires the phase picks to be entered into eqLOCL manually. This process is tedious and error prone. It would be better if you could simply copy and paste the data. Unfortunately the Mac Classic OS clipboard mechanism is not fully compatible with the Windows clipboard mechanism; therefore a two-step process has been worked out as a work-around.

The seismic analysis software used to pick phase arrival times at CQSRG is the Waves program. Waves is made by the Seismology Research Centre in Melbourne, and there is a free copy available at <https://www.src.com.au/downloads/waves/>.

After you have used Waves to pick the phase arrival times it lets you copy the phase arrival time data onto the Windows clipboard. However, you cannot then just paste that data into the eqLOCL program¹.

Mike Turnbull has written a small command-line Windows application program named eqLoclPhaseParser.exe that parses the WAVES phase pick text and generates eqLOCL command text lines that can be pasted into the eqLOCL program. This obviates the manual method of data transfer.

Where to get a Copy of BasiliskNeqLOCL and eqLoclPhaseParser

You need to send an email to Mike Turnbull at mike.turnbull@cqsrq.org, and ask for it. He will ask you to sign a bill of sale for your soul, and then he will either ask you to send him a memory stick with at least 2 GiB capacity onto which he will copy the zip file and mail it to you, or he will make a copy of the software available for download from a web site.

¹ The WAVES program is written in Java and can be executed on Apple Mac computers. It may be that you can directly copy and paste into eqLOCL on that platform. I do not use Apple Macs, so I do not know if that is the case.

Background Information on EqLocl

EqLocl is a computer software application designed, and originally implemented by Gary Gibson at the Seismology Research Centre (SRC) in Melbourne. It only executes on an Apple Macintosh computer running one of the Classic operating systems. To use it on Macintosh computers running the MacX operating system, or on Windows or LINUX computers, there needs to be a Mac Classic emulator installed on which EqLocl can be executed.

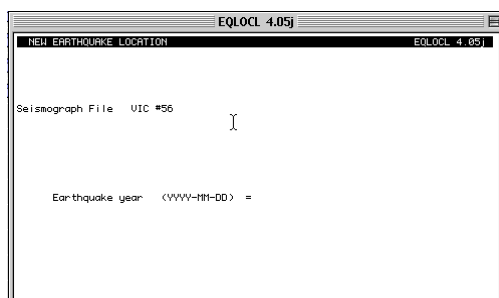


Figure 1: EqLocl opening window.

EqLocl is a text based application. All data is entered either manually from the keyboard or by pasting from the clipboard². The opening window that the user is presented with when EqLocl is executed is shown in Figure 1.

Here the user is being prompted to enter the year, month and day of the event to be processed. As the user enters the prompted information and presses the enter key EqLocl presents subsequent windows that elicit

further information that is required for the location calculation.

Once the initial information such as date, start time, and approximate longitude has been entered EqLocl needs to have the available station phase arrival time picks entered as insertion command lines. It uses this information to perform the location calculation.

Depending on how many stations are providing phase time pick information manual data entry from the keyboard can be tedious and fraught with the possibility of typographical errors.

Operators who are using the SRC EqLocl application to perform event locations almost invariably are also using other SRC software products to analyse the seismographic records from which the phase arrival time picks are sourced. The most recent SRC analysis software is the eqWaves or simply Waves application. This software is available as freeware off the SRC web site at <https://www.src.com.au/downloads/waves/>. The most recent version of Waves is V3.6.

2011 0505 0535 28.7 1.000.0000000.000000.0S xxx000	1
Just arrivals. Not a real event.	1
CTAO AML 0535 28.80 00.0006657378	4
CTAO P 0535 28.80 00.200	4
CTAO S 0535 46.32 00.200	4
EIDS AML 0536 33.65 00.0000096026	4
EIDS P 0536 33.65 00.100	4
EIDS S 0537 40.78 00.100	4
QLP AML 0536 49.13 00.0000050270	4
QLP P 0536 49.13 00.100	4
QLP S 0538 07.07 00.100	4
QIS AML 0536 53.60 00.0000047326	4
QIS P 0536 53.60 00.100	4
QIS S 0538 11.04 00.100	4
MFSU S 0536 41.66 00.100	4
MFSU AML 0536 05.26 00.0000355846	4
MFSU P 0536 05.26 00.100	4

Figure 2: SRC Phase Arrival Time Pick Text.

Once the phase arrival times have been picked in Waves (or older SRC software applications) the information can be copied to the clipboard for transfer to other applications, or for storage in a text file for later usage.

Figure 2 shows the typical format of the text so copied. This text was copied from Waves V3.6 and pasted into a text file.

² When executing EqLocl on a Windows platform with a Mac Classic emulator such as Basilisk there can be some incompatibility between the Windows OS clipboard and the Mac Classic's clipboard that requires a bit of a work-around that will be explained later.

In the absence of any computer software to aid the process, the phase arrival times and other information contained in Figure 2 has to be manually processed and then manually entered into the EqLocl application.

The rest of this paper describes in detail the information contained in Figure 2, and presents a computer software application that will parse the SRC standard phase arrival time pick text and augment it with insertion commands that can be copied and pasted into the EqLocl application without having to do it manually.

This ability to copy and paste the insertion commands reduces the tedium of the process and reduces the likelihood of typographical errors.

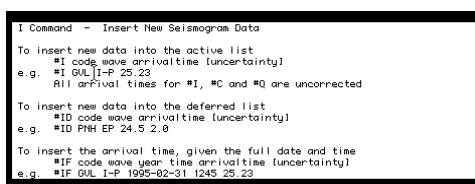
Format of the Standard SRC Phase Arrival Time Pick Text.

It is not immediately obvious what some of the information in Figure 2 is used for, however the following features can be readily identified.

- All lines are prefixed by a single space character.
- The first line starts with the year, month/day, hour/minute, and seconds to one decimal place. Comparison with the following information suggests that the date and time is a fiducial time against which the various phase arrival times can be referenced; however, as EqLocl phase arrival times are only required as seconds after the fiducial minute, the fiducial seconds in the first line are redundant.
- The second line contains some text, the purpose of which is unclear. Maybe it was used for some purpose in historical SRC software and has been maintained for backwards compatibility. In any case, it is present in all SRC phase arrival time text, and can be used to verify that the text is valid SRC phase arrival time text.
- Each of the subsequent lines contain phase arrival time information, or waveform amplitude information. The phase arrival time lines contain station name, phase type, arrival hour/minute, arrival second, and two other fields the meanings of which are obscure. The phase amplitude information is not required by EqLocl.
- Following the last phase arrival time, or waveform amplitude line there is a blank line.

Because of the consistency in format of the SRC phase arrival time text it is amenable to parsing by a computer software application to form compatible EqLocl phase arrival time insertion commands. It may be that such software could store the phase arrival time insertion commands in a separate file, in the same file as, and appended to, the SRC phase arrival time text, or make the command text available on the computer's clipboard for pasting into EqLocl.

Format of EqLocl phase arrival time insertion commands.



```
I Command - Insert New Seismogram Data
To insert new data into the active list
#I code wave arrivaltime [uncertainty]
e.g. #I GUL I-P 25.23
All arrival times for #I, #C and #Q are unconnected
To insert new data into the deferred list
#ID code wave arrivaltime [uncertainty]
e.g. #ID PNH EP 24.5 2.0
To insert the arrival time, given the full date and time
#IF code wave year time arrivaltime [uncertainty]
e.g. #IF GUL I-P 1995-02-31 1245 25.23
```

The EqLocl phase arrival time insertion commands are used to manually insert phase arrival time information that is used to calculate the event location.

Figure 3: The EqLocl insertion command help screen.

Instructions for Using eqLoclPhaseParser with Basilisk II and EqLOCL on a Windows 7 Platform.

Figure 3 shows the help information the EqLocl displays for the user; however, that information does not display all of the available phase type options.

The format of the command is as follows.

```
I[M] <stationname> <phasedescriptor> <ff.ff | yyyy-mm-dd hhmm ss.ss> [uncertainty]
```

Where:

I	(required) is a single character used to flag that it is a phase arrival time that is being inserted.
[M]	(optional) is a single character <u>mode</u> selector (D or F). By default the arrival time is inserted into the active time list. The D mode inserts it into the deferred list. The F mode flags that the time information is the full, or absolute time (not referenced to the fiducial time).
<stationname>	(required) is a one to four character name for the station that recorded the seismogram from which the data is derived.
<phasedescriptor>	(required) is a one to three character descriptor that specifies the type of phase the information for which is being inserted.
<ff.ff>	(required alternative) is the time in seconds after the fiducial time that the arrival of the phase was picked.
<yyyy-mm-dd hhmm ss.ss>	(required alternative) is the absolute date and time that the arrival of the phase was picked.
[uncertainty]	(optional) is the uncertainty in seconds in the arrival time.

Options for the phase descriptor are as follows.

P	Generic P phase.
S	Generic S phase.
I-P	Impulsive dilational P phase.
I+P	Impulsive compressive P phase.
EP	Emergent P phase.
ES	Emergent S Phase.
S-P	Difference in time between the arrivals of the S and P phases.

It may be that other phases are accepted (for instance Pn, Pg, and so forth).

The S-P option is used to insert data from stations for which the start time is known to be incorrect but the time difference between the arrivals is accurate.

The S-P option can also be used to insert imputed time differences that have been determined from other events that have occurred at the same location and have been recorded by a station that did not record this particular event for some reason (maybe an outage).

S-P time information is not directly available in the standard SRC phase arrival time pick text, but can be added to that text by editing to include a suitable insertion command. This process is described later in this document.

A Brief Explanation of the Transfer Process

The process of transferring phase pick data from WAVES to eqLOCL involves the following steps.

1. After you have picked your phases in WAVES gather all of the individual station seismograms into the one seismogram (I use the SUDS format) and save it with a suitable file name.
2. While you have the merged seismogram on the screen in WAVES, use Ctrl+C to copy the phase pick data into the Windows clipboard.
3. Open your preferred text editor (I use Notepad++), start a new document, and use Ctrl+V to paste a copy of the phase pick data into that text document.
4. Save the text file somewhere (I save it in the same directory as the merged seismogram; and I use the same file name as that seismogram, but with the .eqp filename extension).
5. You need to have the .eqp filename extension associated with the eqLoclPhaseParser.exe program as the default program that opens eqp files when they are double clicked.
6. In Windows Explorer, double click the eqp text file. This will invoke the eqLoclPhaseParser.exe application which will parse the WAVES text and add the eqLOCL insertion commands to the bottom of the text file. If you are using Notepad++ or some other good quality text editor, when you now go back to the text editor it will inform you that the file has been changed and allow you to reload it.
7. Now run BasiliskNeqLocl. Go through the normal process of creating a new seismic event location. When you get to the part where you need to enter the phase arrival time insertion commands:
 - a. Swap to the text editor and Ctrl-C the insertion commands.
 - b. Swap to Basilisk and use the Edit/Paste menu option to paste the insertion commands.
8. Proceed with the location process as you would normally do.

These steps will be fleshed out below.

Installing and Associating the eqLoclPhaseParser Application

To get a copy of the eqLoclPhaseParser.exe application send an email to Mike Turnbull at mike.turnbull@cqsrg.org, and ask for it. He will make a copy of the software available to you. You can download the latest version at <http://cqsrg.org/tools/eqLoclPhaseParser/>; where you can also get the latest version of this document you are currently reading.

The eqLoclPhaseParser program is designed to run on Windows computer platforms, and will work on all Windows Operating Systems from Windows 7 and upwards. It requires access to the Microsoft Visual C++ Redistributable Run-Time Library, which must be installed on the computer; and this can be downloaded off the Microsoft web site at <https://support.microsoft.com/en-us/topic/the-latest-supported-visual-c-downloads-2647da03-1eea-4433-9aff-95f26a218cc0>. If that link does not work then you can search for the redistributable using the keywords "Microsoft Visual C++ Redistributable".

The eqLoclPhaseParser program is a small Windows command-line executable. Although it is written to be used in a Windows command window, in practice it is used as an *associated* application. What this means is that, instead of issuing a command that contains the name of the target file to be parsed in a Windows command-line window, the target files are given a unique filename extension that can be associated with the eqLoclPhaseParser program. That way, whenever the target file is *opened* (say, by double clicking a .eqp file in the Windows Explorer listing) the eqLoclPhaseParser program acts as the default program that *opens* it – this is exactly the same mechanism that associates any file with the .doc or .docx extensions with the Microsoft Word program.

The eqLoclPhaseParser.exe executable file can be stored anywhere that you find convenient – **but it MUST be on the C: drive to be able to use the Windows default file association feature.** If you put the eqLoclPhaseParser.exe executable file on a flash drive or an external USB hard drive you cannot use the Windows default file association feature to invoke it when you open an associated file – Windows will not even allow you to set up file association to executables on flash drives or USB hard drives..

You do need to add the directory in which it is stored to the computer operating system’s PATH environmental variable so that it can be invoked from any other directory on the computer.

Setting the PATH Environmental Variable.

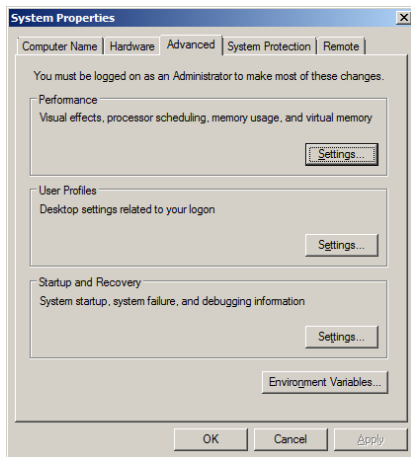


Figure 4: The Windows System Properties dialog box.

and for the Operating System. Scroll down the list of System variables and click on the Path variable. Now click on the Edit button. Insert a semicolon at the end of the current Path text followed by a direct reference (not a relative reference) to the directory in which you saved the eqLoclPhaseParser.exe file.

Now just keep clicking the OK buttons until you get out of the Control Panel.

Press the Windows key + Pause/Break key on the keyboard. This will open the Control Panel/System window. Click on the Advanced Systems Settings link on the left hand side. This will open the System Properties dialogue box (see Figure 4).

Click on the Environmental Variables button.

This will open the environmental variables dialogue box (see Figure 5). This box contains sections for environmental variables for the individual user,

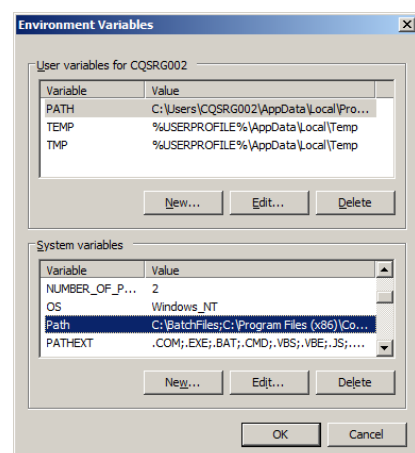


Figure 5: Environmental Variables Dialogue Box.

It is a good idea to restart the computer at this point.

Associating Target files with the eqLoclPhaseParser.exe Application.

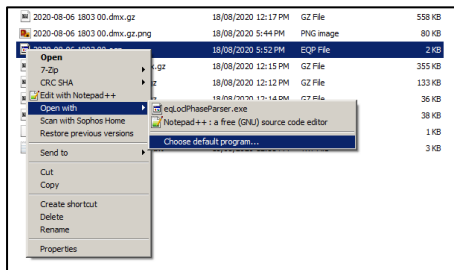


Figure 6: Associating the .eqp file extension with eqPhaseParser.

Open the Windows Explorer window (Windows key + e) and navigate to the directory in which you saved the Waves phase arrival time text file (the file that you named with the .eqp extension).

Right click on the file (see Figure 6) and choose Open with/Choose default program.

Brows to the folder in which you installed the eqLoclPhaseParser.exe file, and choose it as the default program.

Now, whenever you double click any file that has the .eqp filename extension, the system will automatically open it with the eqLoclPhaseParser application.

The Station Code Translation File.

EqLOCL was written at a time when only up to four-character station codes were used to name seismic monitoring stations around the world. Since then five-character codes have been introduced.

```
# Lightning Ridge High School.
AULRC:LRHS
# Toowoomba State High School.
AUTOO:TSHS
# Peel High School Armadale.
AUPHS:PSHS
# Aramac airstrip.
AXCOZ:ARAM
# North Rockhampton State High School.
AUNRC:NRHS
# Beerwah State High School.
AUBSH:BSHS
# Ayr State High School.
AUAYR:ASHS
# Dubbo College Senior Campus
AUDCS:DCSC
# Wavell State High School
AUWSH:WSHS
```

Figure 7: Typical station code translation file contents.

For instance, Figure 7 shows the contents of the translation file that I use. Here it can be seen that the code translations are listed as colon connected code pairs; the first code is the FSDN published station code, and the second code is the substitute code I use in eqLocl.

Any line beginning with a '#' character, and any blank lines, will be ignored by eqLoclPhaseParser; and this provides a mechanism for imbedding comments.

The translation file **MUST** be named "stations.alt", and **MUST** be stored in the same directory in which the eqLoclPhaseParser .exe file has been placed.

The contents of the translation file can be edited by the user to list their own preferred eqLocl station codes (there is no standard four-character translations for the FSDN five-character station codes).

The station translation file is optional. If eqLoclPhaseParser cannot find it, it will be silently ignored, and (of course) there will be no station code translation performed.

Invoking eqLoclPhaseParser by Double Clicking

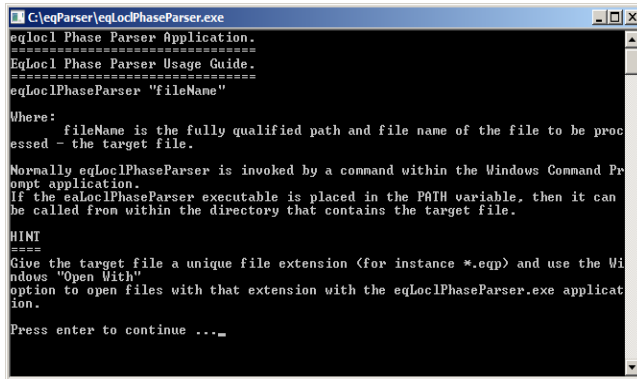


Figure 8: The eqLoclPhaseParser help screen.

The eqLoclPhaseParser.exe file can be executed by double clicking on a shortcut icon or from within the Windows Explorer folder listing. However, just doing this will not provide eqLoclPhaseParser with the information it needs to locate the file containing the standard SRC phase arrival time pick text that it is to parse. Consequently invoking eqLoclPhaseParser by this method will simply result in the display of some help information in a command window (see Figure 8).

The program has been written so that the help text will be displayed until the user presses the Enter key to dismiss it.

Invoking eqLoclPhaseParser with the "Open With" Feature.

All Windows® operating systems provide a feature whereby double clicking on a file listing in the Windows Explorer will *open* that file with a designated default application program. For instance, when you double click on a file with the name MyDocument.docx (for instance) it will be opened by the Microsoft® Word® application. This feature can be applied to, not only Microsoft files, but to any file the type of which can be uniquely identified.

So, for instance, if the standard SRC phase arrival time pick text is stored in a text file with a uniquely identifiable file name extension, then the Open With feature can be used to ensure that it is opened by the eqLoclPhaseParser.exe application. How to set up this file association feature between the Waves phase arrival time text file (the file that you named with the .eqp extension), and the eqLoclPhaseParser.exe application was previously described [above](#).

```
2011 0421 1233 51.7 L 000.00000000.000000.0S xxx000 1
Just arrivals. Not a real event. 1
BOW4 P 1233 51.72 00.200 4
BOW4 S 1233 58.47 00.200 4
BOW4 AML 1233 51.72 00.000000000000 4
BOW3 P 1233 45.73 00.200 4
BOW3 S 1233 48.29 00.200 4
BOW3 AML 1233 45.73 00.000000000000 4
BOW1 P 1233 48.38 00.200 4
BOW1 S 1233 52.77 00.200 4
BOW1 AML 1233 48.38 00.000000000000 4
```

Figure 9: The eqp file contents before parsing.

Once you have done that you can test the operation by double clicking on an eqp file in Windows Explorer. When you do so you should see a Windows command window briefly flash up on the screen, and then close.

```
2011 0421 1233 51.7 L 000.00000000.000000.0S xxx000 1
Just arrivals. Not a real event. 1
BOW4 P 1233 51.72 00.200 4
BOW4 S 1233 58.47 00.200 4
BOW4 AML 1233 51.72 00.000000000000 4
BOW3 P 1233 45.73 00.200 4
BOW3 S 1233 48.29 00.200 4
BOW3 AML 1233 45.73 00.000000000000 4
BOW1 P 1233 48.38 00.200 4
BOW1 S 1233 52.77 00.200 4
BOW1 AML 1233 48.38 00.000000000000 4

# List of phase arrival times follows. Do not remove this line.
I BOW4 P 51.72
I BOW4 S 58.47
I BOW3 P 45.73
I BOW3 S 48.29
I BOW1 P 48.38
I BOW1 S 52.77
## Append imputed phase arrivals or S-P times after this line. Do not remove this line.
```

Figure 10: The eqp file contents after parsing.

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Before you double click on the eqp file, just inspect its contents using a text editor (I always use Notepad++). I open the eqp file in Notepad++ by right clicking on it and choosing the Notepad++ option.

An example of an eqp file contents before being parsed by eqLoclPhaseParser is shown in Figure 9.

An example of the file contents after being parsed is shown in Figure 10.

As can be seen the EqLocl insertion commands for each of the phase arrival times have been appended to the file contents. A single # comment has been placed before the actual command line list, and a ## comment has been placed at the bottom. The # and ## comments are used by the eqLoclPhaseParser program to identify the extra appended information during subsequent parsing so that the correct information is maintained and not overwritten.

Invoking eqLoclPhaseParser in a DOS® Command Window.

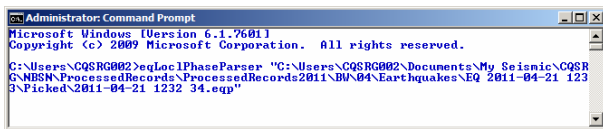


Figure 11: Invocation of from a command line window.

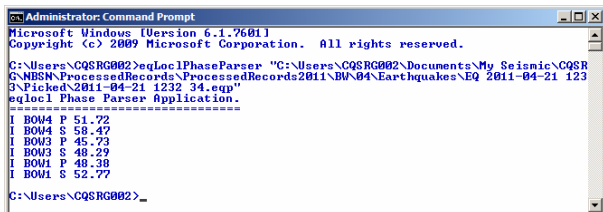


Figure 12: Console display after invocation.

The addition of the eqLoclPhaseParser's location to the environmental path variable ensures that it can be invoked from within the computer's environment – including from a command line in a DOS command window.

Figure 11 shows the command that is issued to invoke eqLoclPhaseParser on a typical eqp file. The format of the command is as follows.

```
eqLoclPhaseParser [path to target file]
```

The optional path to the target file can either be the full absolute path, or a suitable relative path, and must include the name and extension of the eqp target file.

If the path to the target file is omitted, or if a non-existent file is provided, then eqLoclPhaseParser will simply display the help screen.

Although it is not necessary in general to enclose the path to the target file in double quotes, it is highly recommended to do so. Leaving the quotes out is ok as long as there are no spaces in the path – which cannot be guaranteed! So, if you put the path in without quotes and just get the help screen, it is probably because you either typed it in incorrectly, or there are spaces in the path.

I highly recommend that you use copy and paste – can you imagine the potential for mistakes if you were to manually type the command shown in Figure 11 and Figure 12.

Using the Parsed eqp file in conjunction with EqLocl

Once you have parsed an eqp file it is a simple task to:

1. Open the eqp file in a text editor (I suggest Notepad++).
2. Open the Basilisk Mac Classic emulator and run the EqLocl program.
3. Enter the pre-requisite information into EqLocl, up to the stage where the insertion commands are needed.
4. Go to the text editor, select the lines that contain the insertion commands and copy them to the clipboard.
5. Go back to EqLocl and paste the commands onto the command line³.
6. Continue with the location process as if you had manually typed the insertion commands.

³ When pasting into the EqLocl program DO NOT USE THE WINDOWS PASTE SHORTCUT KEYS. Use the Mac OS Edit ... Paste menu option.

Gathering the Phase Pick Data with Waves.

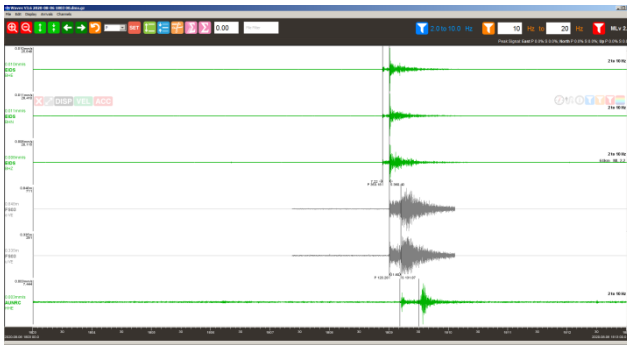


Figure 13: Merged seismogram as seen on the WAVES screen.

Figure 13 shows an example of a merged seismogram with phases picked, in the WAVES main window.

To get a copy of the phase pick data into the Windows clipboard, click anywhere within the WAVES main window, and then use Ctrl-C.

This gathers all of the phase pick information into a proprietary text format, a copy of which is transferred to the Windows clipboard

memory area.

This text may now be pasted into your text editor, and Figure 14 shows what it looks like.

```

2020 0806 1808 29.7 L 000.0000000.000000.0S XXX000      1
Just arrivals. Not a real event.                          1
NRHS S 1809 29.72 00.020                                  4
NRHS AML 1809 10.98 00.0000544149                          4
NRHS P 1809 10.98 00.020                                  4
FS03 S 1809 11.87 00.020                                  4
FS03 P 1809 00.28 00.020                                  4
FS03 AML 1809 00.28 90.6162796021                          4
EIDS AML 1808 53.18 00.0001593252                          4
EIDS P 1808 53.18 00.100                                  4
EIDS S 1809 00.40 00.100                                  4
RMQ AML 1809 27.36 00.0000000000                          4
RMQ P 1809 27.36 00.200                                  4
RMQ S 1809 56.70 00.200                                  4
    
```

Figure 14: The WAVES phase arrival times in proprietary format.

The text in the text editor should now be saved in a suitable location using a suitable file name with the extension .eqp.

Parsing the WAVES Phase Arrival Text.

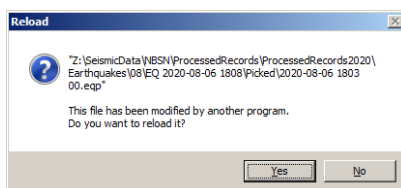


Figure 15: The Notepad++ Reload message.

Double click on the file.

Now go back to your text editor. If you are using Notepad++ you will see a message like that in Figure 15. Just click the Yes button, and that will reload the .eqp text file.

Now you will see the eqLOCL insertion commands that have been appended to the text (see Figure 16).

Open the Windows Explorer window (Windows key + e) and navigate to the directory in which you saved the Waves phase arrival time text (the file that you named with the .eqp extension).

```

2020 0806 1808 29.7 L 000.0000000.000000.0S XXX000      1
Just arrivals. Not a real event.                          1
NRHS S 1809 29.72 00.020                                  4
NRHS AML 1809 10.98 00.0000544149                          4
NRHS P 1809 10.98 00.020                                  4
FS03 S 1809 11.87 00.020                                  4
FS03 P 1809 00.28 00.020                                  4
FS03 AML 1809 00.28 90.6162796021                          4
EIDS AML 1808 53.18 00.0001593252                          4
EIDS P 1808 53.18 00.100                                  4
EIDS S 1809 00.40 00.100                                  4
RMQ AML 1809 27.36 00.0000000000                          4
RMQ P 1809 27.36 00.200                                  4
RMQ S 1809 56.70 00.200                                  4

# List of phase arrival times follows. Do not remove this line.
I NRHS S 89.72
I NRHS P 70.98
I FS03 S 71.87
I FS03 P 60.28
I EIDS P 53.18
I EIDS S 60.4
I RMQ P 87.36
I RMQ S 116.7

## Append imputed phase arrivals or S-P times after this line. Do not remove this line.
    
```

Figure 16: The updated eqp file text.

Instructions for Using eqLoclPhaseParser with Basilisk II and EqLOCL on a Windows 7 Platform.

It is these insertion command lines that you will copy and paste into the eqLOCL program. The eqLOCL program will only accept station names with up to four characters. It may be necessary to manually edit the WAVES text to change any five character names to suitable four character names. It is best to do this before invoking the eqLoclPhaseParser.

Version 2.0 of eqLoclPhaseParser fixes this problem by allowing the user to provide a station code translation file that eqLoclPhaseParser uses to automatically change the station codes to something that eqLOCL recognises.

Transferring the Data to eqLOCL

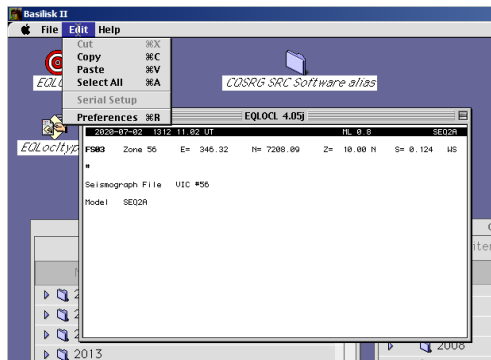


Figure 17: Pasting into eqLOCL.

After you have started the Basilisk emulator and have worked through the eqLOCL steps up to where you need to start inserting the phase arrival times, swap over to your text editor and grab a copy of the insertion commands. Make sure that you copy down to the start of the line after the last insertion command.

Swap back to the Basilisk emulator.

Use the Basilisk Edit/Paste menu option to paste all of the insertion commands into eqLOCL (see Figure 17). **DO NOT USE THE WINDOWS EDIT/PASTE MENU OR THE**

WINDOWS Ctrl-V KEY COMBINATION!

Now continue to process the data as you would normally do in eqLOCL. That is a separate exercise, and will not be explained here.

Conclusion

If you get stuck with the installation I don't mind if you contact me, and we'll try to work it out together. However, I'd prefer it if you have a genuine attempt yourself first. That way you will gain a much better understanding of how it works – not that I am an expert, but I have been up a fair few blind canyons with Basilisk and Windows over the past years.