

Sample Data

— From Active, Passive, and Combined MASW Surveys —



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1. Overview

For the practice purpose of generating the shear-wave velocity (V_s) profiles (1-D or 2-D), various types of sample data sets are provided in the "...\\Sample Data\\" folder in the application directory. Three types of data exist in the folder; data sets obtained from active ("...\\Active\\"), passive ("...\\Passive\\"), and combined ("...\\Combined\\") MASW surveys. All sample data sets are provided in PS-format.

1.1 Active Survey Data Set

There are two different types of active data sets; one that is used to generate a 1-D V_s profile ["SampleData(Vs1D).dat"] and another to produce a 2-D V_s cross section ["SampleData(Vs2D).dat"]. The entire procedures of data analysis using these two data sets are explained in separate user guides of "[Generating 1-D Profile \(Working with Sample Data\)](#)" and "[Generating 2-D Cross Section \(Working with Sample Data\)](#)", respectively.

1.2 Passive Survey Data Set

Four (4) passive survey data sets are provided that were recorded using four (4) different types of 2-D receiver arrays (RA's)—circle ["...\\PAS(Circle-RA).dat"], cross ["...\\PAS(Cross-RA).dat"], L-shape ["...\\PAS(L-RA).dat"], and random ["...\\PAS(Random-RA).dat"]. A passive data set recorded using a 1-D (linear) receiver array is considered identical to the data set from the active/passive combined survey described below. The data analysis procedure is demonstrated from source/receiver (SR) setup to dispersion imaging steps, while the remaining steps will be identical to those demonstrated in the active data sets. Because the most common way of utilizing passive data is to provide useful dispersion information at such low frequencies where active data usually does not provide objective dispersion trends, it is also demonstrated to combine the passive and active dispersion images. All passive data sets are synthetic (model) data created by using the reflectivity modeling module included in the main menu [see the user guide "Modeling (Seismic Data)"]. A 48-channel acquisition of relatively short recording time ($T \approx 8$ sec) with a 4-ms sampling interval (dt) was used during the modeling. Although the actual recording time for a passive survey will be usually much longer than this (for example, $T = 30$ sec), the short recording time was due to the limitation in the modeling module. Generation of surface waves (from 5 to 100 Hz) was simulated during the modeling by placing multiple (4) active source points at a certain distance (i.e., approximately the same distance as the dimension of the receiver array) away from the 2-D RA distributed along the full 360-degree azimuth range with an equal interval of 90 degrees as shown in Figures 1-4. Excitation time of each source point was modeled with a 2-sec interval between the two successive points (for example, 1-sec, 3-sec, 5-sec, and 7-sec for source points at 0 degrees, 90 degrees, 180 degrees, and 270 degrees, respectively). This azimuth and source excitation time information is obtained as by-products during the dispersion imaging process by [Park \(2010\)](#) (see the user guide "[Dispersion Image Generation](#)" for more details). How to display this information after generation of the dispersion image from the passive data set is also demonstrated.

1.3 Active/Passive Combined Survey Data Set

A real data set of 24-channel acquisition with 120-sec recording time (4-ms sampling interval) is provided in "...\\Combined\\RDMASW.dat." This data was acquired along the roadside (RD) of a local highway. There are a total of eighteen (18) field records included in the data set. It was acquired during

a roll-along active MASW survey using a land streamer of 4.5-Hz geophones with 4-ft interval spacing (i.e., $dx=4$ ft) that moved over a relatively short surface distance of 18 successive shot points separated by 8-ft (i.e., $dSR=2dx$) for the purpose of experimentation (Figure 1). A sledge hammer (10-lb) was used as the source to deliver an impact at 24-ft (i.e., $X1=6dx$) ahead of the first (1st) channel. All acquisition geometry parameters ($X1$, dx , and dSR) were identical to those used during the active survey. However, recording parameters of $T=120$ sec with $dt=4$ ms were used, which are significantly different from those used during the active survey (i.e., $T=1$ sec with $dt=0.5$ ms). The objective with this combined-survey was to demonstrate the advantage of this longer recording time adopted during an active survey (making it an active/passive combined survey) so the chance of capturing lower frequencies (longer wavelengths) of surface waves from ambient vibrations of cultural (e.g., traffic) and/or natural (e.g., ocean surf activities) origins are increased. This advantage will eventually lead to the generation of a velocity (V_s) profile (1-D or 2-D) with the deepest investigation depth ever possible with a given acquisition configuration and/or a velocity profile with the most accurate bedrock velocity (or velocity at depths in general) as a result of including lower frequencies in the analyzed dispersion curve. In theory, two conditions have to be met to increase the investigation depth (or velocity accuracy at depths)—generation of low frequency (long wavelength) components of surface waves and the use of a long receiver array to capture such low frequencies (long wavelengths). The former is the condition to generate such surface waves responding to subsurface velocity (V_s) at deep depths, whereas the latter is the condition to analyze propagation properties (phase velocities) of such low frequency components as accurately as possible. Increasing the recording time will make the receiver array "listen" to the ambient vibration right after it finishes "listening" to the active surface waves coming from the active source point. In this way, the chance of recording lower-frequency components will be increased. However, in theory, accurate analysis of phase velocity for these components requires the use of a "wide measurement aperture", which is the long receiver array. This indicates that recording low frequency by itself will be limited in increasing the investigation depth (or accuracy of velocity at depths) unless accompanied by the use of an accordingly long receiver array (RA). On the other hand, the use of a long RA decreases lateral resolution in the final output of a 2-D V_s cross section. In reality, therefore, the advantage of the combined survey will be maximized only when a moderately long receiver array (e.g., > 100 -ft) — a trade-off between investigation depth and lateral resolution — is used at the place where relatively strong ambient vibration prevails with frequencies (e.g., ≤ 15 Hz) lower than those expected in active surveys (e.g., ≥ 15 Hz).

The sample data set "RDMASW.dat" was obtained along the roadside of a local highway using a 10-lb sledge hammer source to trigger a 120-sec recording at each place of measurement. To illustrate the advantage of this survey in comparison to the active survey with a short recording time ($T=1$ sec), a set of active data was prepared by selecting only the first 1-sec portion of all 18 field records and then the normal active-data analysis procedure was applied to it. Figure 6a shows the average dispersion image obtained by sacking all (18) individual dispersion images generated from this active data set, and Figure 6b shows the average dispersion image obtained from the combined-survey data set of full 120-sec recording time. The latter dispersion image clearly shows more energy at lower frequencies (e.g., ≤ 15 Hz) than the former dispersion image does. Figures 7a and 7b show the 2-D V_s cross sections obtained by processing individual dispersion images included in each set of dispersion-image data. The same investigation depth of 50 ft, which is considered the optimal depth for the active data set, was used for construction of a combined-survey V_s cross section. Both sections show relatively shallow bedrock (≤ 10 ft) with a mild lateral topographic variation. Overburden velocities are shown less than about 800 ft/sec in both sections. However, bedrock velocities are in a range of 2000-3000 ft/sec in the active section, whereas they are 3000-4000 ft/sec in the combined-survey section. Bedrock velocities in the latter section would be more reliable.

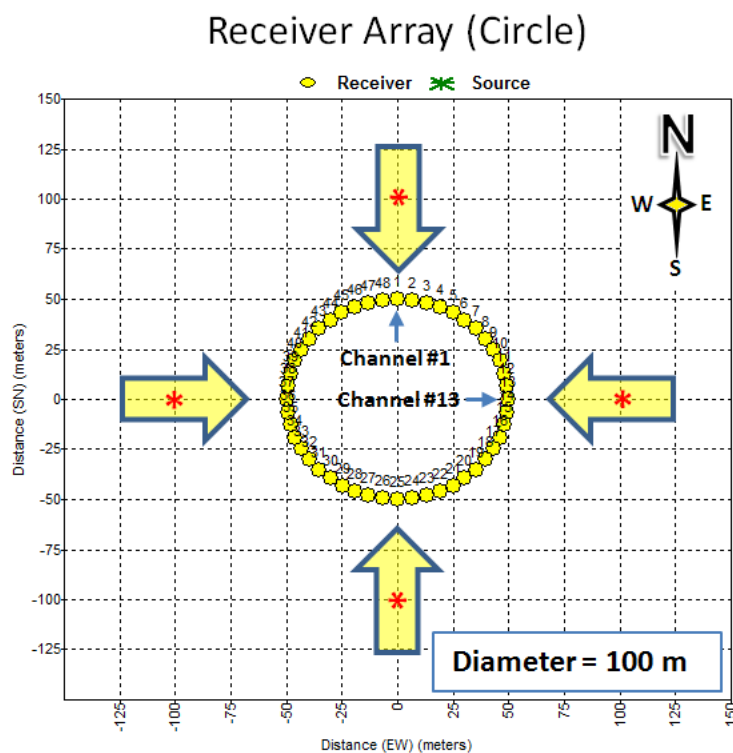


Figure 1. Configuration of circle receiver array and incoming direction of surface waves.

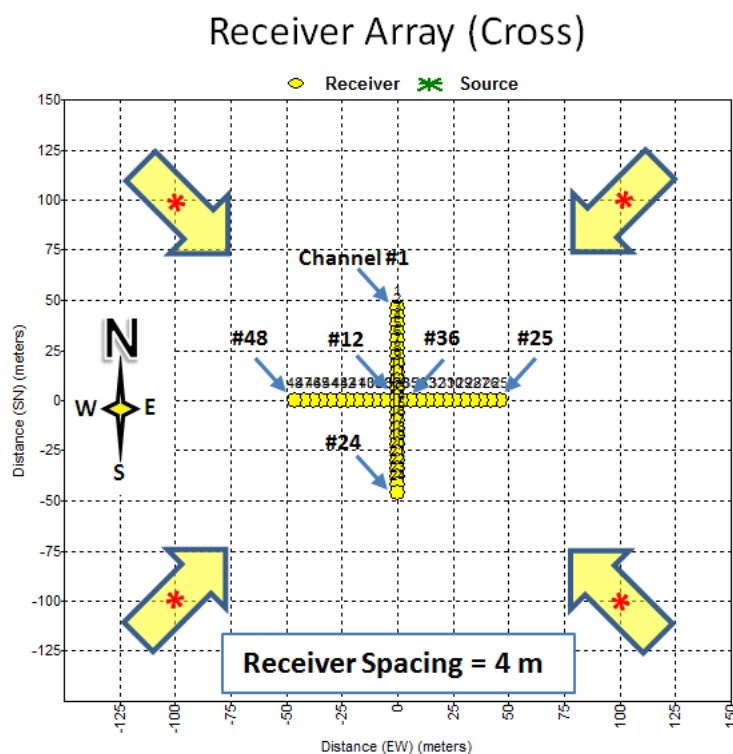


Figure 2. Configuration of cross receiver array and incoming direction of surface waves.

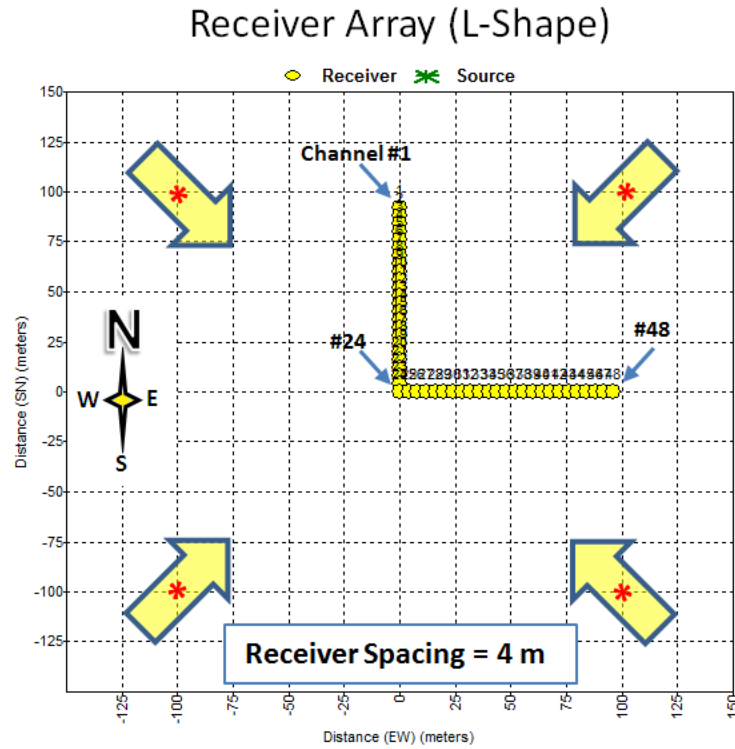


Figure 3. Configuration of L-shape receiver array and incoming direction of surface waves.

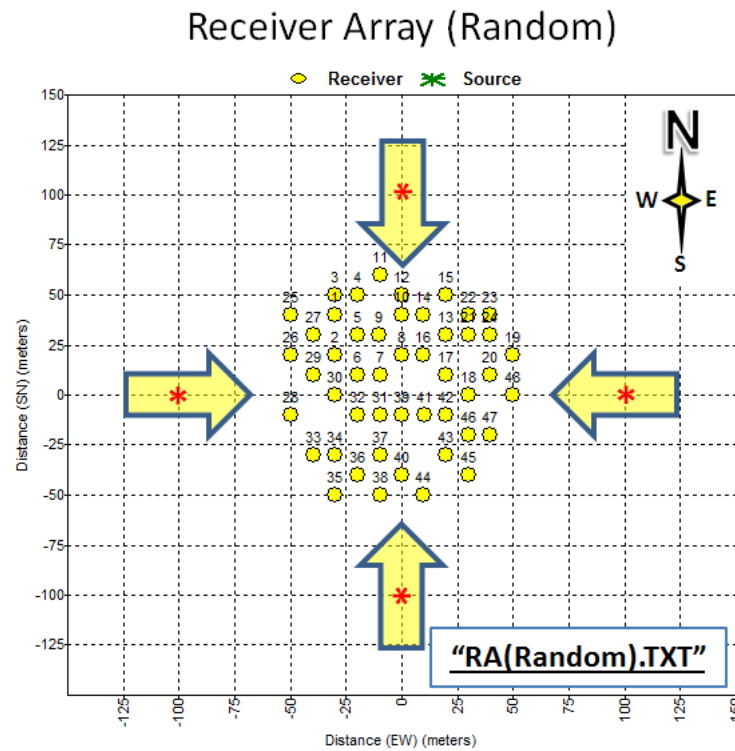


Figure 4. Configuration of random receiver array and incoming direction of surface waves.

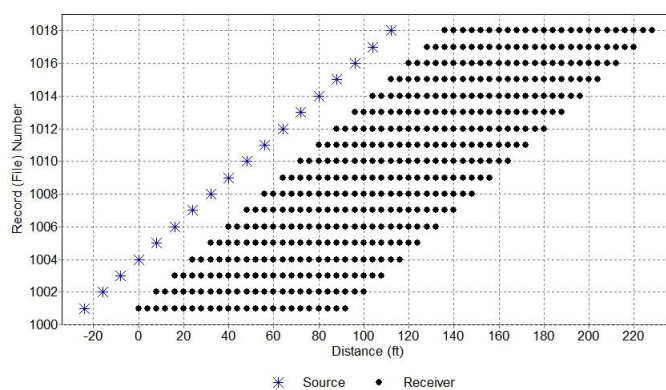
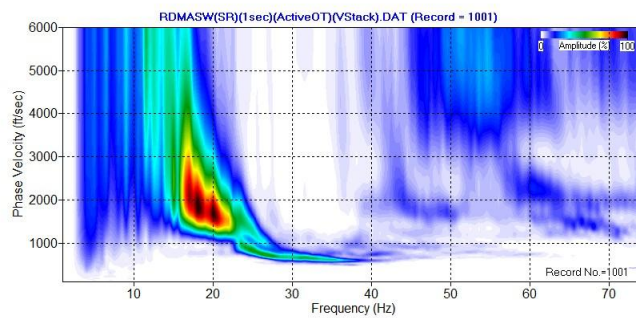


Figure 5. Source/receiver (SR) configuration used during the combined survey.

(a)



(b)

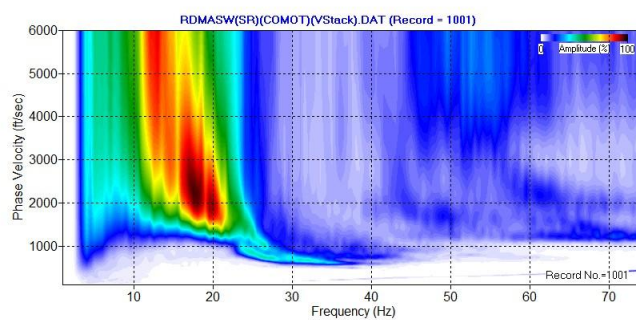


Figure 6. Average dispersion image for the first 1-sec portion (a) and the entire 120-sec portion (b) of the combined survey data set.

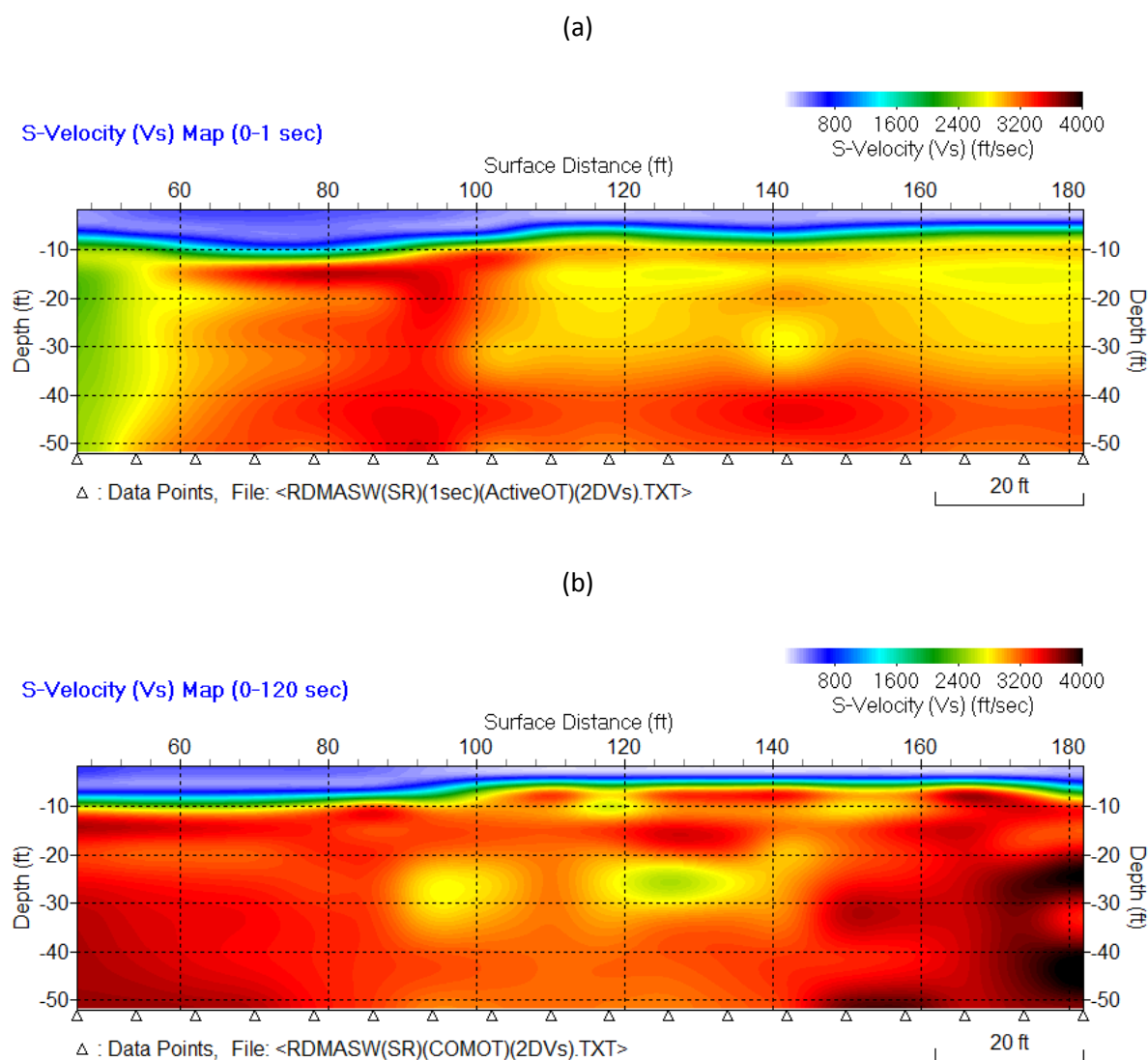


Figure 7. 2-D shear-wave velocity (Vs) cross sections obtained from the first 1-sec portion (a) and the entire 120-sec portion (b) of the combined survey data.

2. Active Survey (1-D and 2-D Vs Profiling)

2.1 1-D Shear-Wave Velocity (Vs) Profiling

See the user guide "[Generating 1-D Profile \(Working with Sample Data\)](#)."

2.2 2-D Shear-Wave Velocity (Vs) Profiling

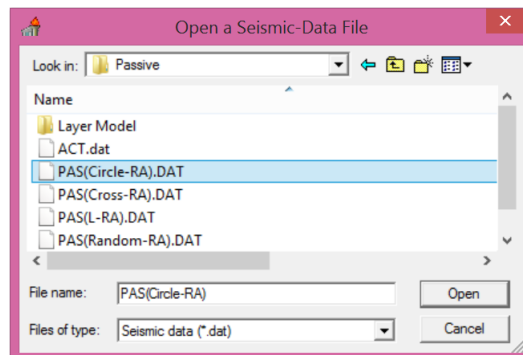
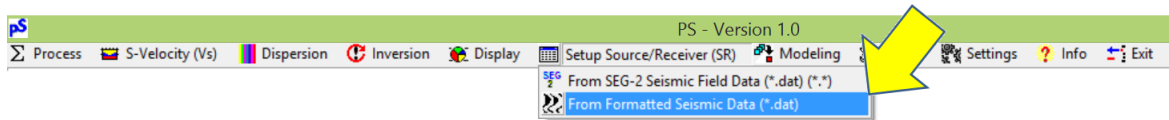
See the user guide "[Generating 2-D Cross Section \(Working with Sample Data\)](#)."

3. Passive Survey

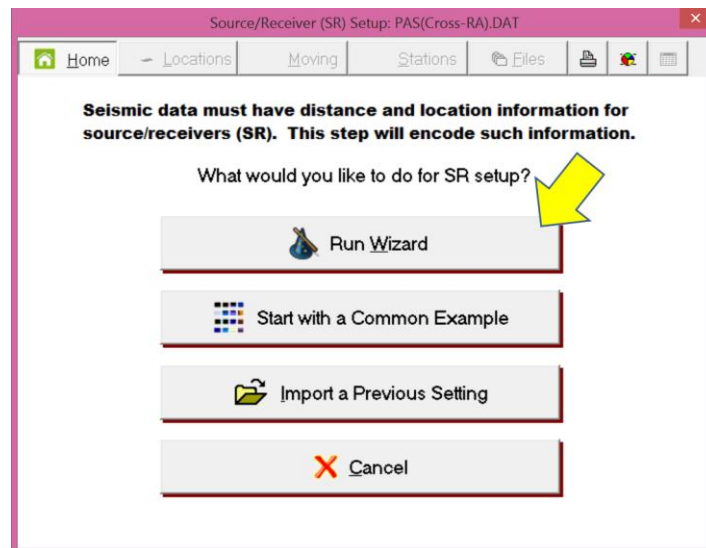
3.1 Using 2-D Receiver Array (RA)

3.1.1 Circle RA

Importing input data "PAS(Circle-RA).dat"



Running Source/Receiver (SR) Setup



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Number of Channels and Files To Set Up

NOTE: Even if some channels might not be active during data acquisition, all active channels used are hereon considered as "consecutive" channels starting from "channel #1."

Number Of Channels Detected: **48**

File Numbers
 Begin: **1000** End: **1000**

Distance Unit
 feet ☐ meter ☒

Geophone

Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

What was survey type?

In each type of survey, surface waves are generated from following mechanism:

- Active:** By using a controlled impact source like a sledge hammer, or
- Passive:** From uncontrolled ambient vibrations like traffic, or
- Combined:** Started with an impact source then recorded ambient vibrations

Active Passive Combined

Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

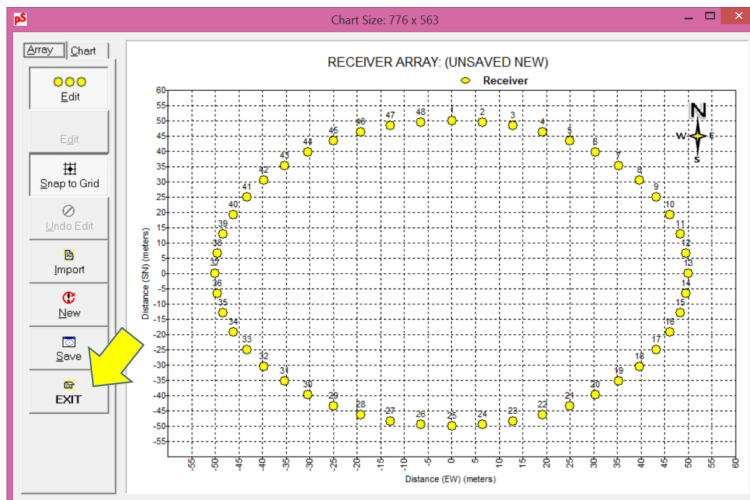
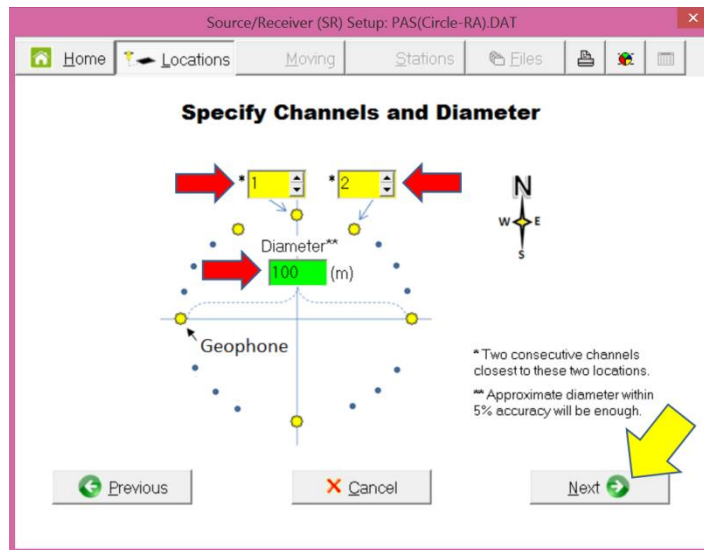
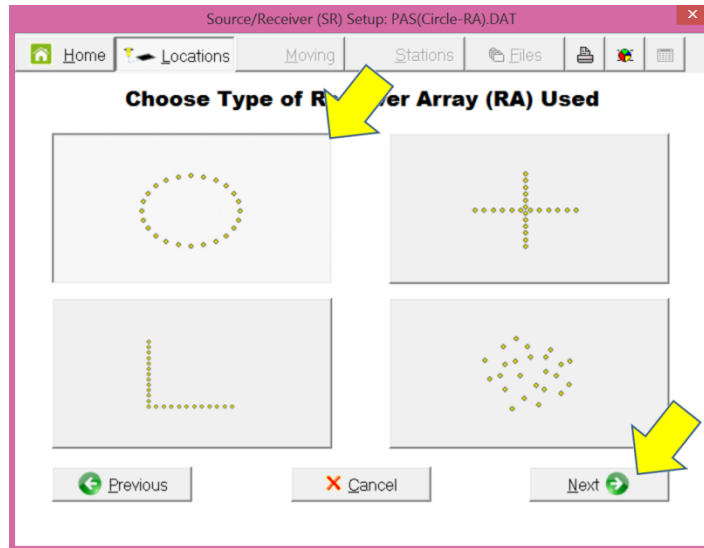
Type of Receiver Array (RA)

In a 1-D receiver array (RA), receivers are placed along a linear (1-D) line with an equal spacing, whereas they may follow any 2-D shape like a circle in a 2-D array.

1-D 2-D

Circle, L-Shape, Cross, Triangle, Random, etc.

Previous Cancel Next



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Specify Surface Coordinates

Assign Distance* and Station* Numbers

***Defaults are same values for all records (i.e., stationary data acquisition).**

Record Number	Distance (m)	Station #
1000	0.0	1000

Records/Location: 1

Use Below:

Begin: 0.0 1001

Interval: 10.0 1

☒ Link distance with receiver station number

*If different records were acquired at different locations, then you can assign distance and surface coordinates to be used for the 2-D mapping purpose. Otherwise, the same arbitrary numbers can be used for all records.

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Confirm and Run

Record Range To Apply (Total: 1)

Begin: 1000 End: 1000

Record List (Total: 1)

1000

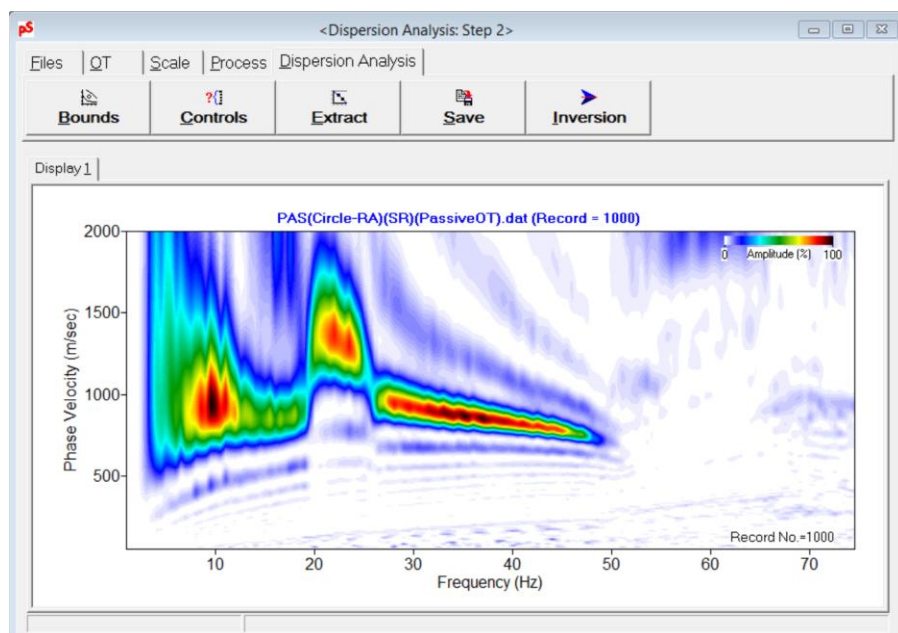
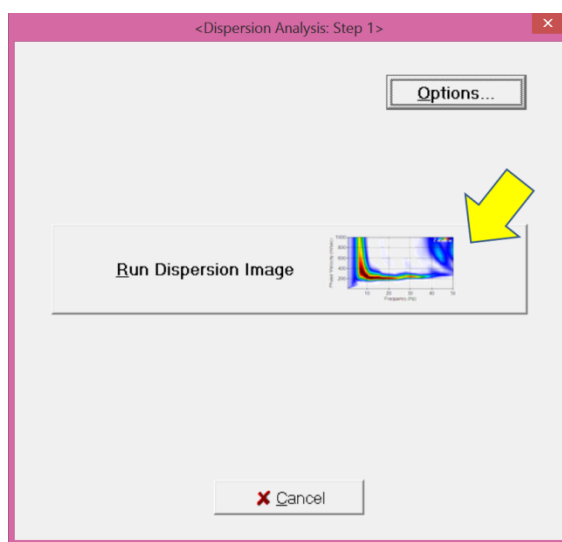
☐ Append To Previous File

ATTENTION!

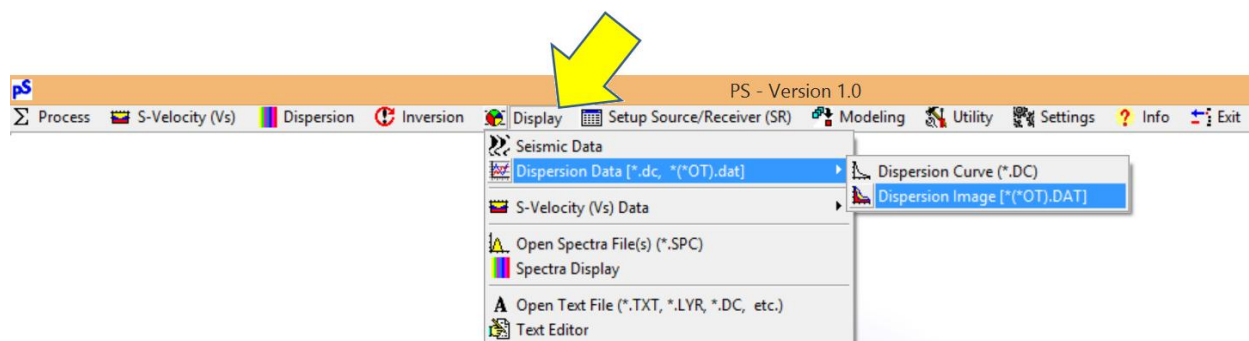
Would you like to proceed to next processing step?

'Dispersion Image Generation'

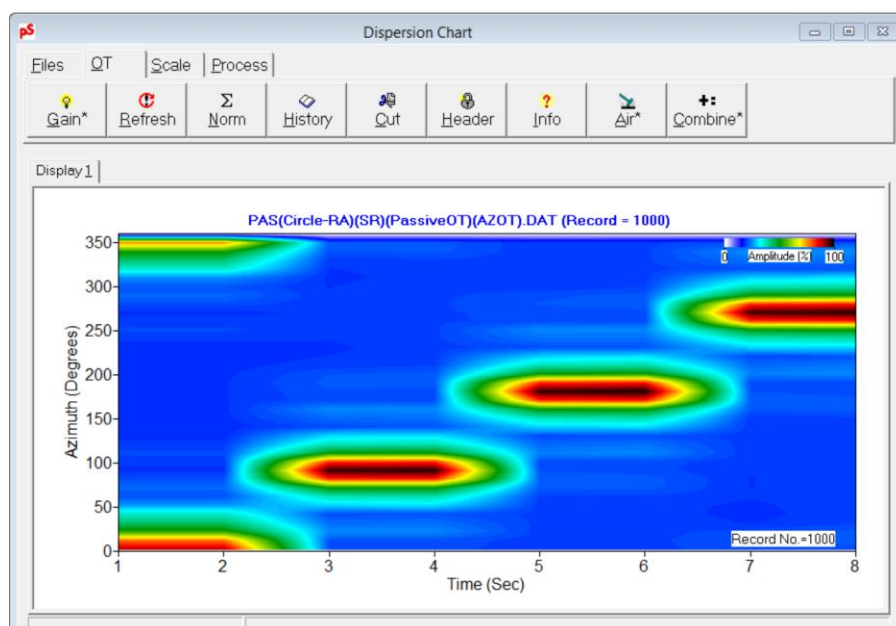
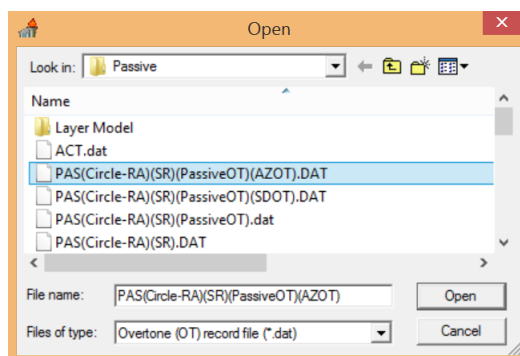
Generation of Dispersion Image



Display of (Passive) Source Information (Azimuth and Excitation Times)

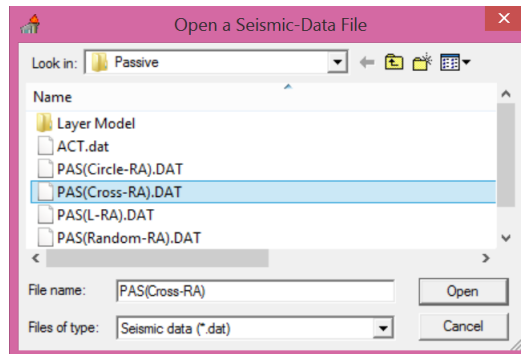


PS - Sample Data

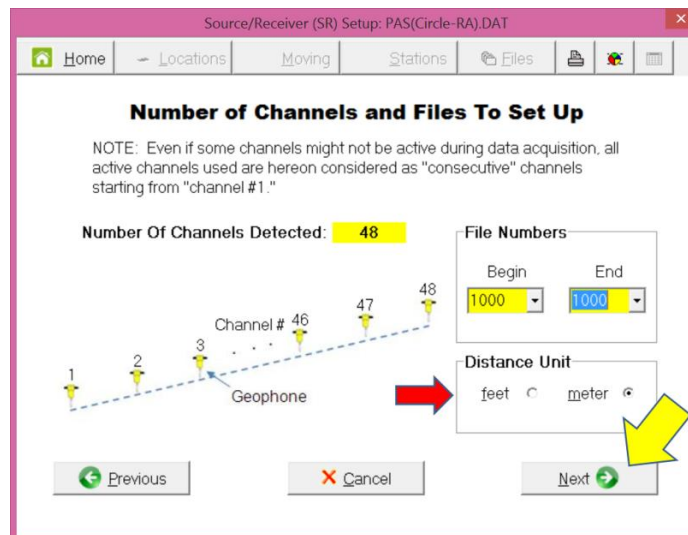
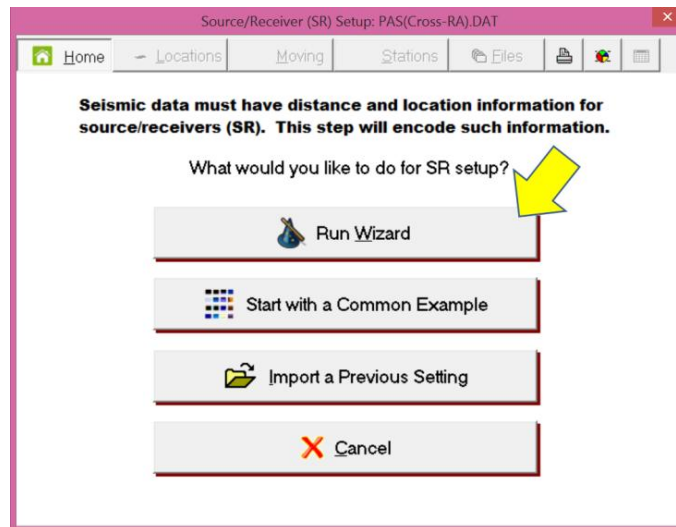


3.1.2 Cross RA

Importing input data "PAS(Cross-RA).dat"



Running Source/Receiver (SR) Setup



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files



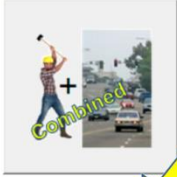
What was survey type?

In each type of survey, surface waves are generated from following mechanism:

Active: By using a controlled impact source like a sledge hammer, or

Passive: From uncontrolled ambient vibrations like traffic, or

Combined: Started with an impact source then recorded ambient vibrations

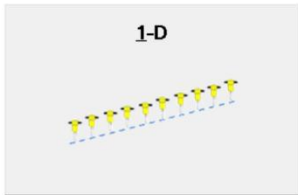
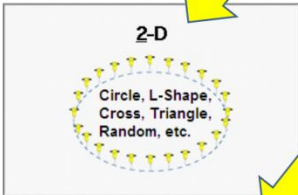
Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Type of Receiver Array (RA)

In a 1-D receiver array (RA), receivers are placed along a linear (1-D) line with an equal spacing, whereas they may follow any 2-D shape like a circle in a 2-D array.

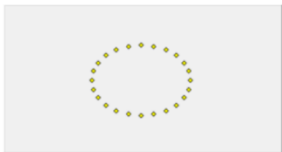

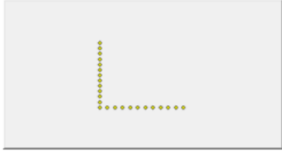




Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Choose Type of Receiver Array (RA) Used

Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Cross-RA).DAT

Home Locations Moving Stations Files

Specify Channels, Geophone Spacing, and Bearing

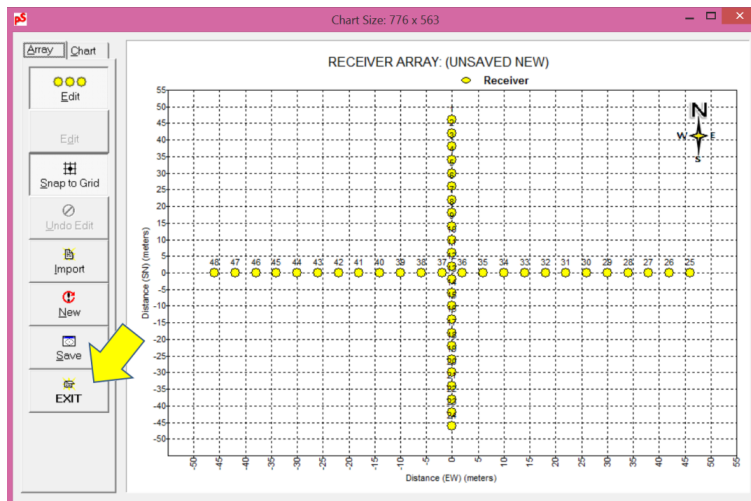
Geophone Spacing: 4 (m)

Geophone

North (N)

*: Channel Numbers

Previous Cancel Next



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Specify Surface Coordinates

Assign Distance* and Station* Numbers

*Defaults are same values for all records (i.e., stationary data acquisition).

Record Number: 1000 Distance (m): 0 Station #: 1000

Records/Location: 1 Use Below Use Below

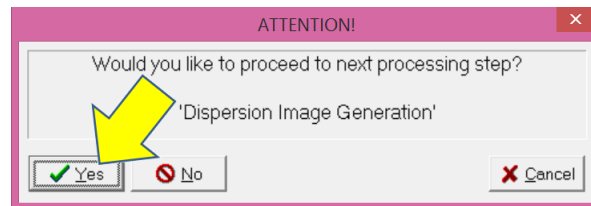
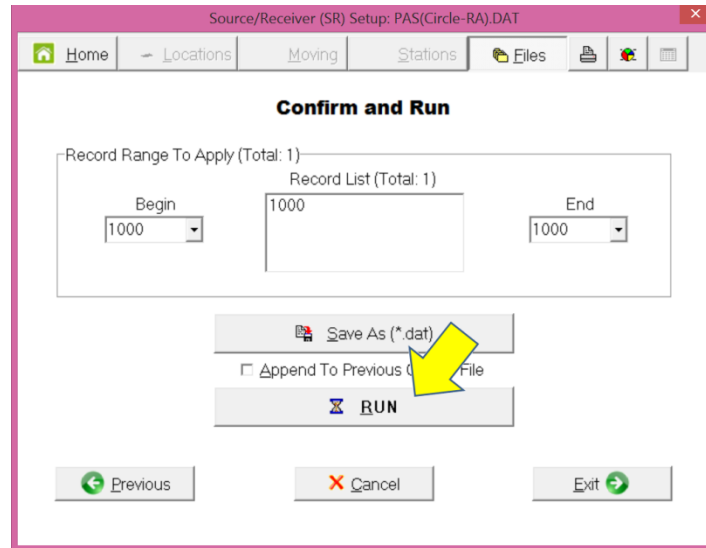
Begin: 0.0 Begin: 1001

Interval: 10.0 Interval: 1

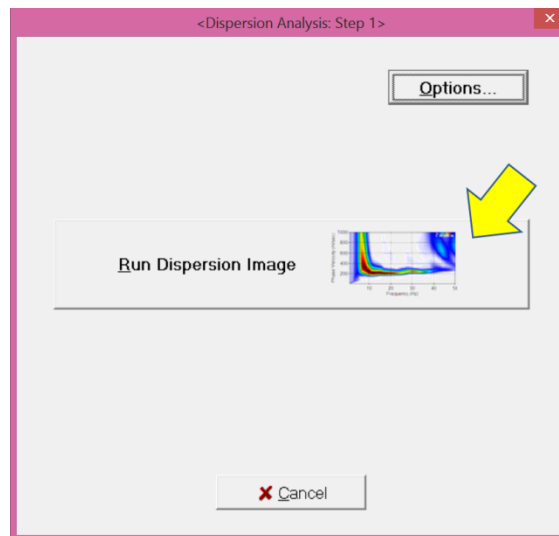
Link distance with receiver station number ☒

*If different records were acquired at different locations, then you can assign distance and surface coordinates to be used for the 2-D mapping purpose. Otherwise, the same arbitrary numbers can be used for all records.

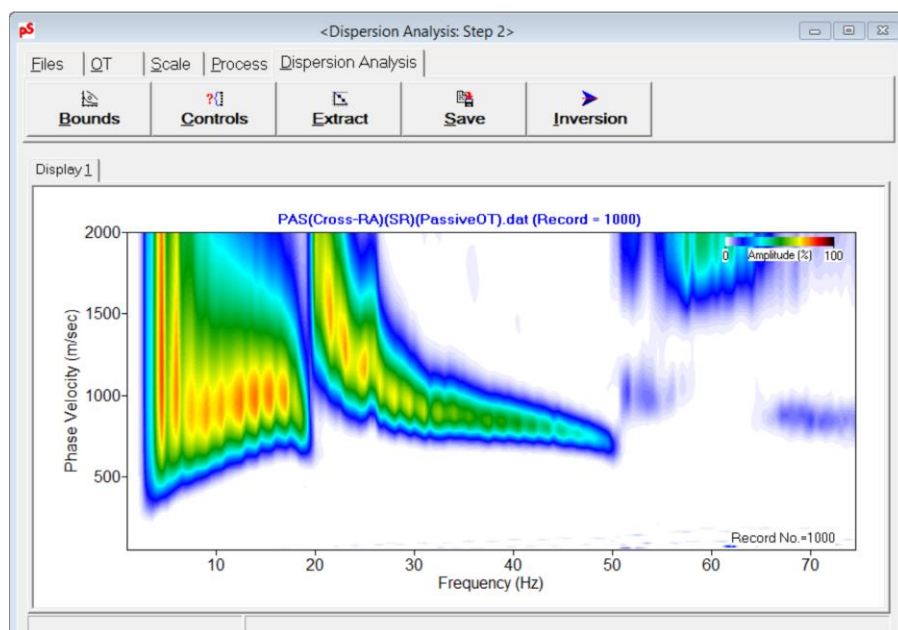
Previous Cancel Next



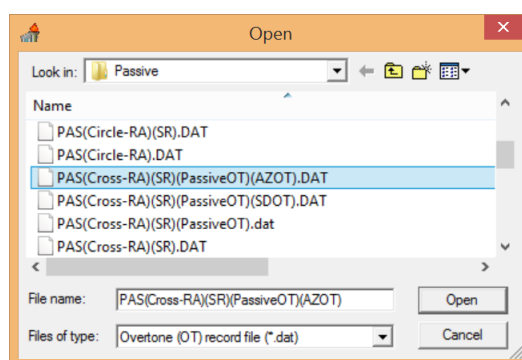
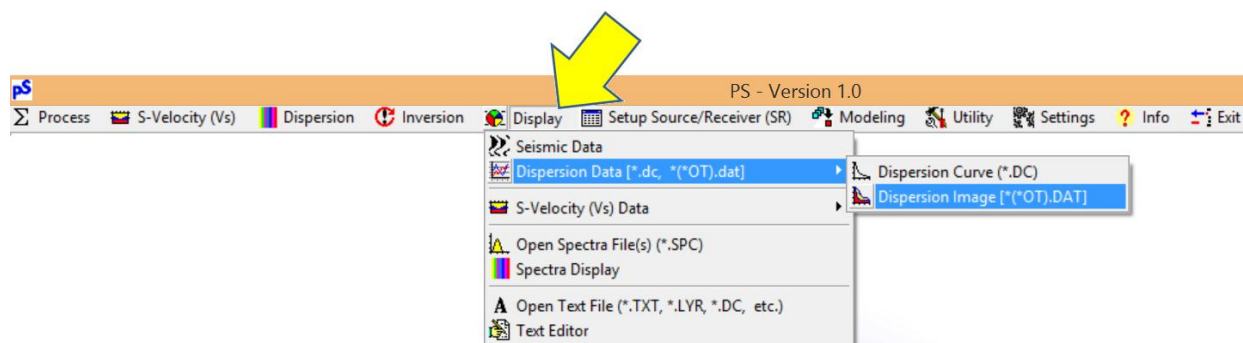
Generating of Dispersion Image

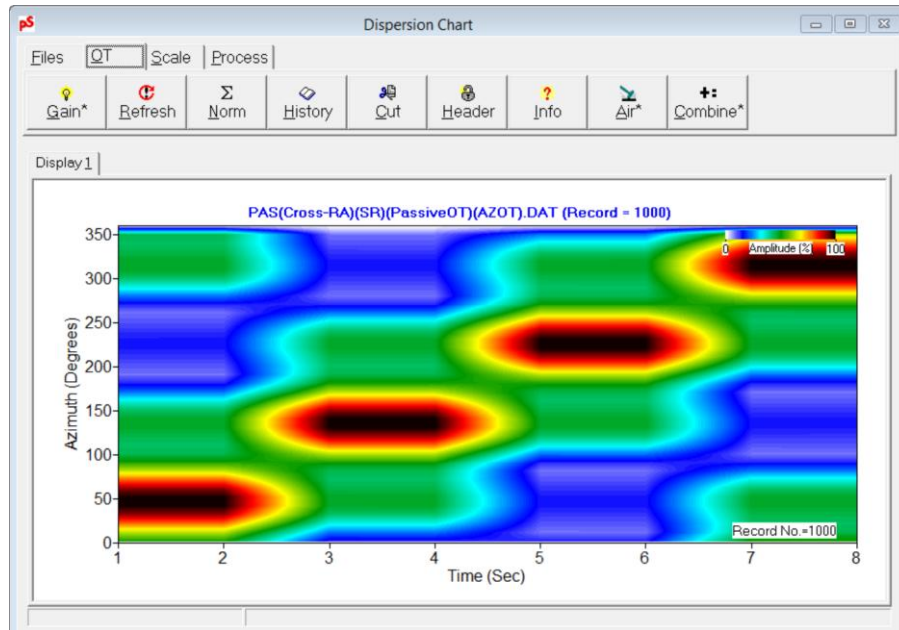


PS - Sample Data



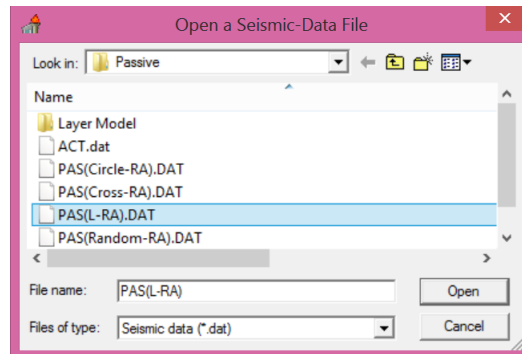
Display of (Passive) Source Information (Azimuth and Excitation Times)



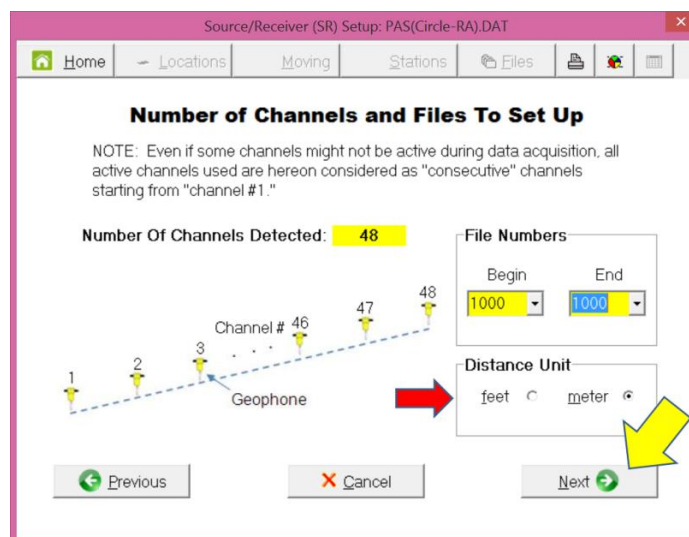
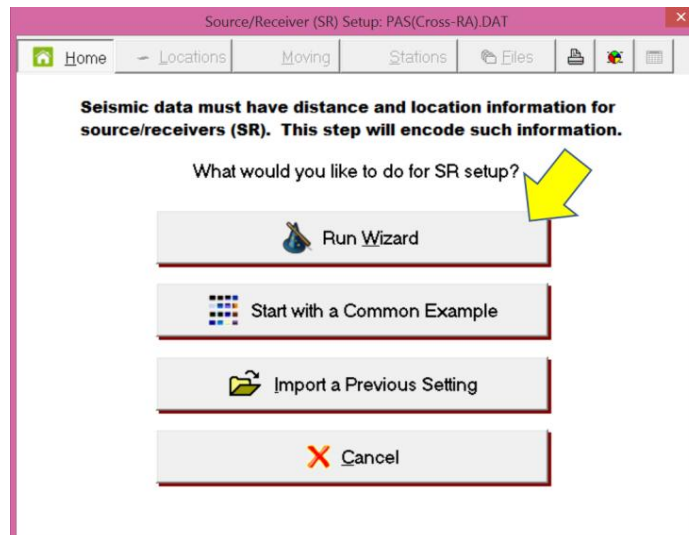


3.1.3 L-Shape RA

Importing input data "PAS(L-RA).dat"



Running Source/Receiver (SR) Setup



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files



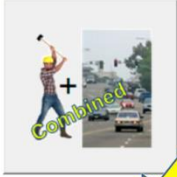
What was survey type?

In each type of survey, surface waves are generated from following mechanism:

Active: By using a controlled impact source like a sledge hammer, or

Passive: From uncontrolled ambient vibrations like traffic, or

Combined: Started with an impact source then recorded ambient vibrations

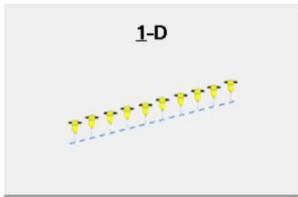
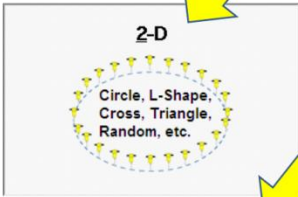
Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Type of Receiver Array (RA)

In a 1-D receiver array (RA), receivers are placed along a linear (1-D) line with an equal spacing, whereas they may follow any 2-D shape like a circle in a 2-D array.

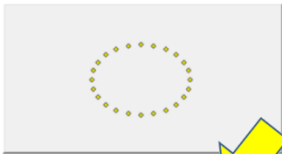

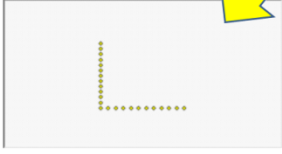




Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Choose Type of Receiver Array (RA) Used

Previous Cancel Next

Source/Receiver (SR) Setup: PAS(L-RA).DAT

Home Locations Moving Stations Files

Specify Channels, Geophone Spacing, and Bearing

*: Channel Numbers

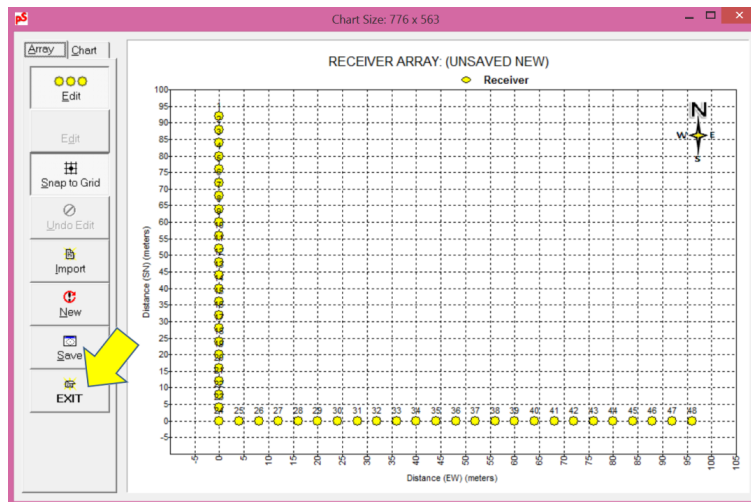
Geophone Spacing (m): 4

Bearing: North (N)

Geophone

Channels: 1, 24, 25, 48

Previous Cancel Next



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Specify Surface Coordinates

Assign Distance* and Station* Numbers

*Defaults are same values for all records (i.e., stationary data acquisition).

Record Number: 1000

Distance (m): 0

Station #: 1000

Records/Location: 1

Use Below

Use Below

Begin: 0.0

Interval: 10.0

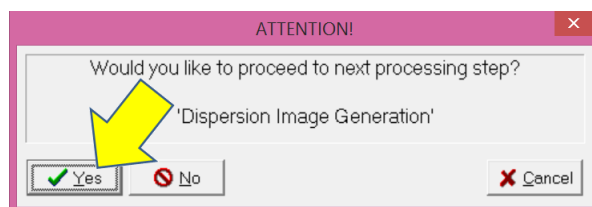
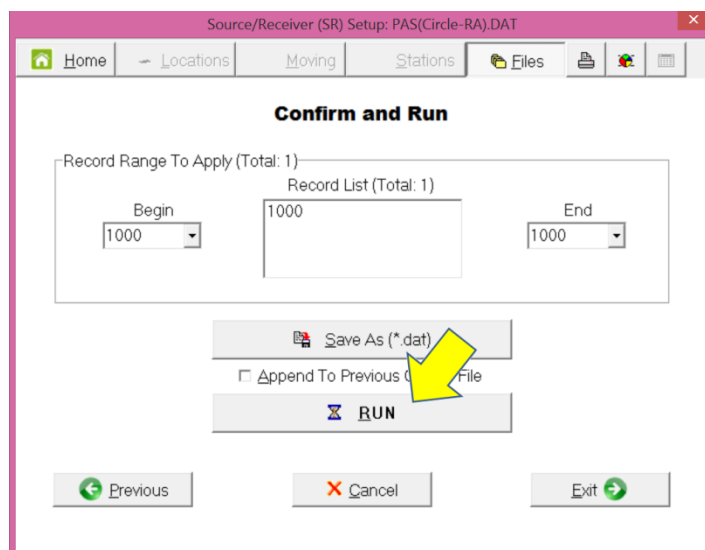
Begin: 1001

Interval: 1

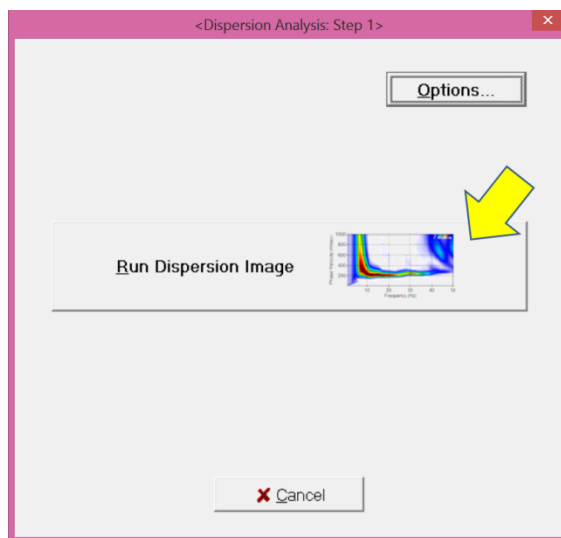
Link distance with receiver station number ☒

*If different records were acquired at different locations, then you can assign distance and surface coordinates to be used for the 2-D mapping purpose. Otherwise, the same arbitrary numbers can be used for all records.

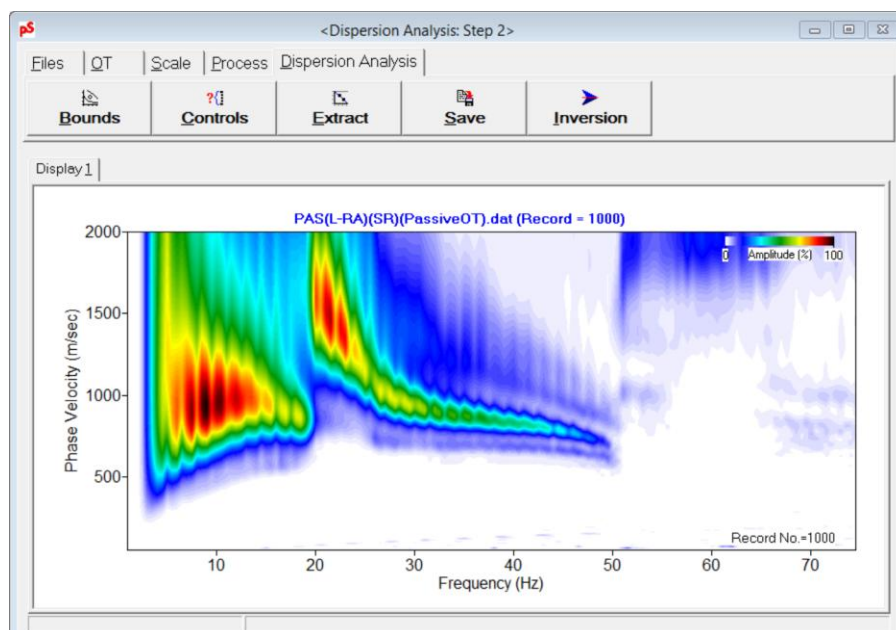
Previous Cancel Next



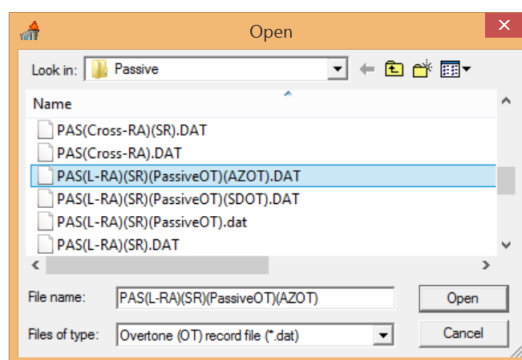
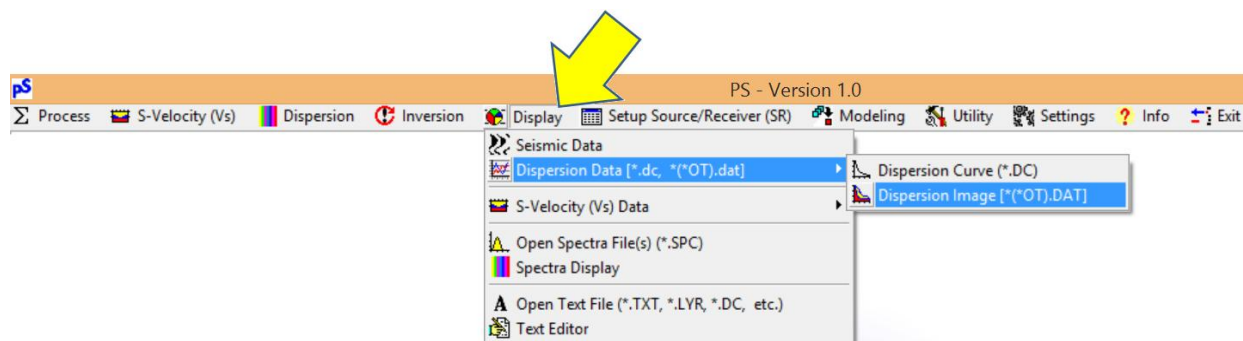
Generation of Dispersion Image

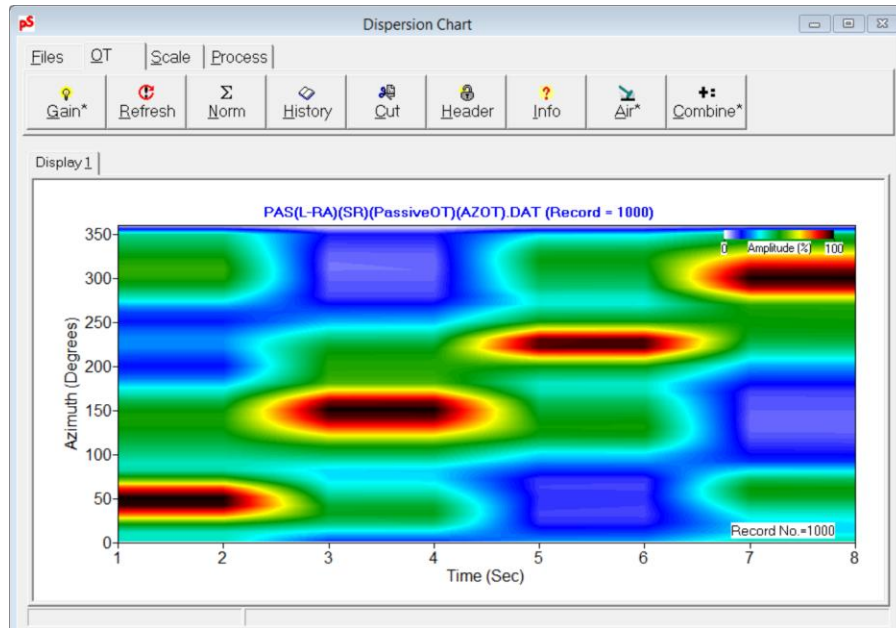


PS - Sample Data



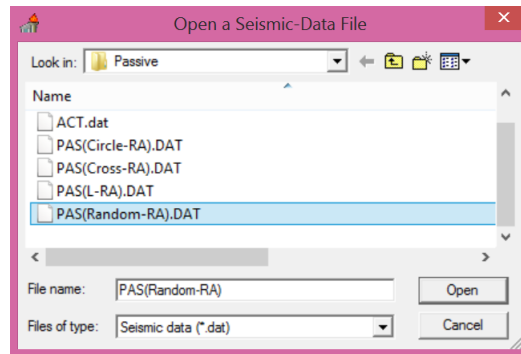
Display of (Passive) Source Information (Azimuth and Excitation Times)



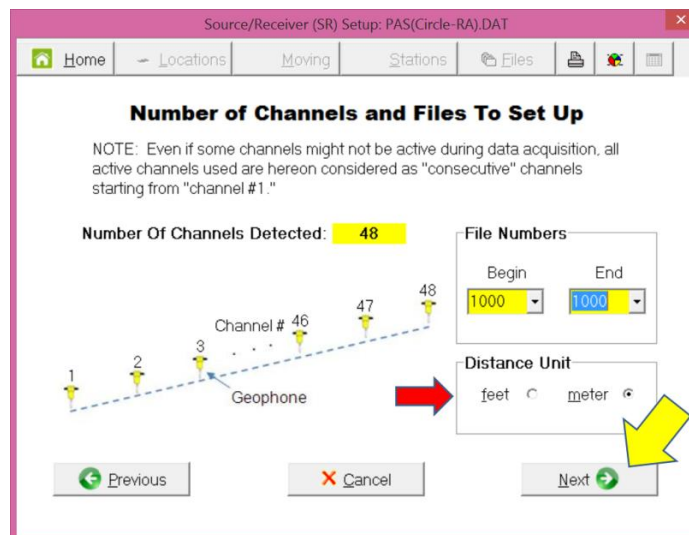
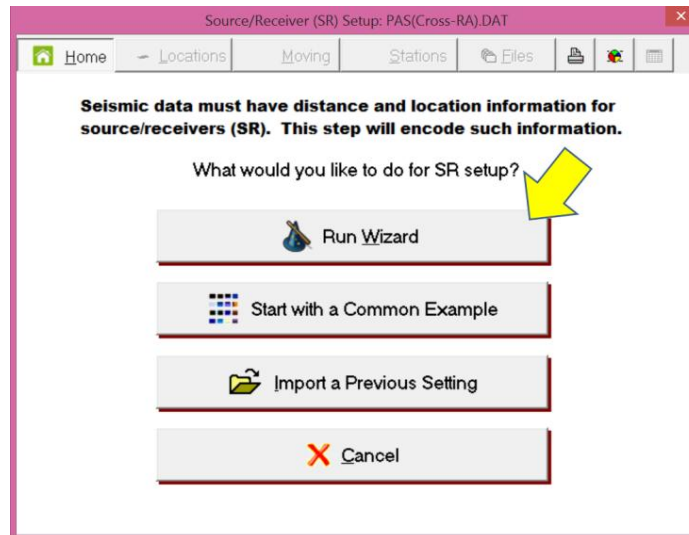


3.1.4 Random RA

Importing input data "PAS(Random-RA).dat"



Running Source/Receiver (SR) Setup



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files



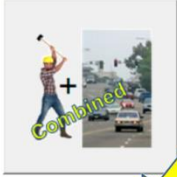
What was survey type?

In each type of survey, surface waves are generated from following mechanism:

Active: By using a controlled impact source like a sledge hammer, or

Passive: From uncontrolled ambient vibrations like traffic, or

Combined: Started with an impact source then recorded ambient vibrations

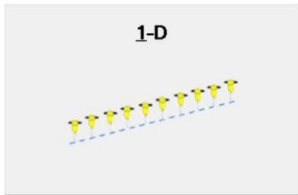
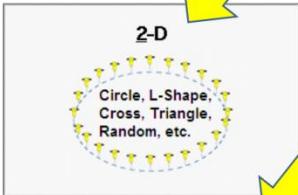
Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Type of Receiver Array (RA)

In a 1-D receiver array (RA), receivers are placed along a linear (1-D) line with an equal spacing, whereas they may follow any 2-D shape like a circle in a 2-D array.

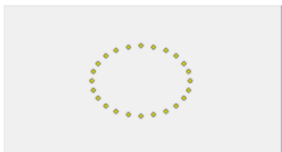

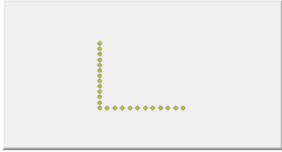




Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

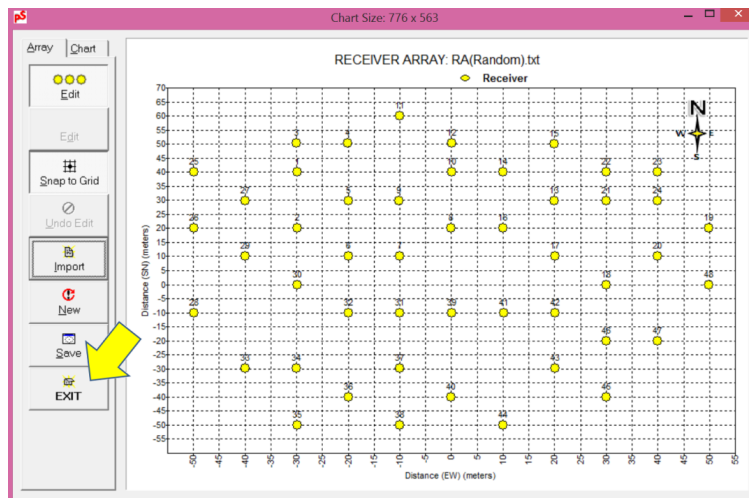
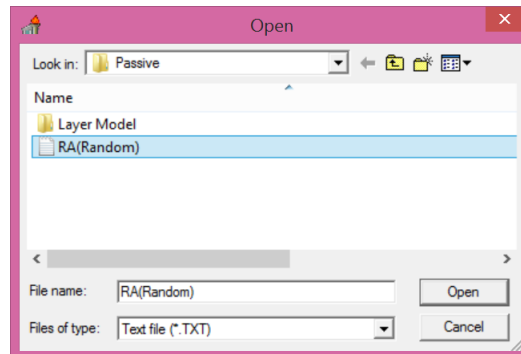
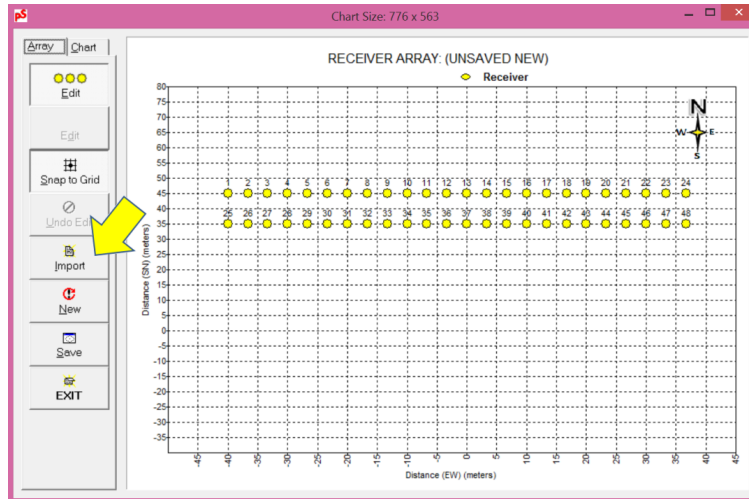
Home Locations Moving Stations Files

Choose Type of Receiver Array (RA) Used

Previous Cancel Next

Importing Receiver Array (RA) Coordinates ["RA(Random).TXT"]



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Specify Surface Coordinates

Assign Distance* and Station* Numbers

***Defaults are same values for all records (i.e., stationary data acquisition).**

Record Number 1000	Distance (m) 0	Station # 1000
Records/Location 1	Use Below Begin: 0.0 Interval: 10.0	Use Below Begin: 1001 Interval: 1

☒ Link distance with receiver station number

*If different records were acquired at different locations, then you can assign distance and surface coordinates to be used for the 2-D mapping purpose. Otherwise, the same arbitrary numbers can be used for all records.

Previous Cancel Next

Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Confirm and Run

Record Range To Apply (Total: 1)

Begin 1000	Record List (Total: 1) 1000	End 1000
---------------	--------------------------------	-------------

Save As (*.dat)

☐ Append To Previous File

RUN

Previous Cancel Exit

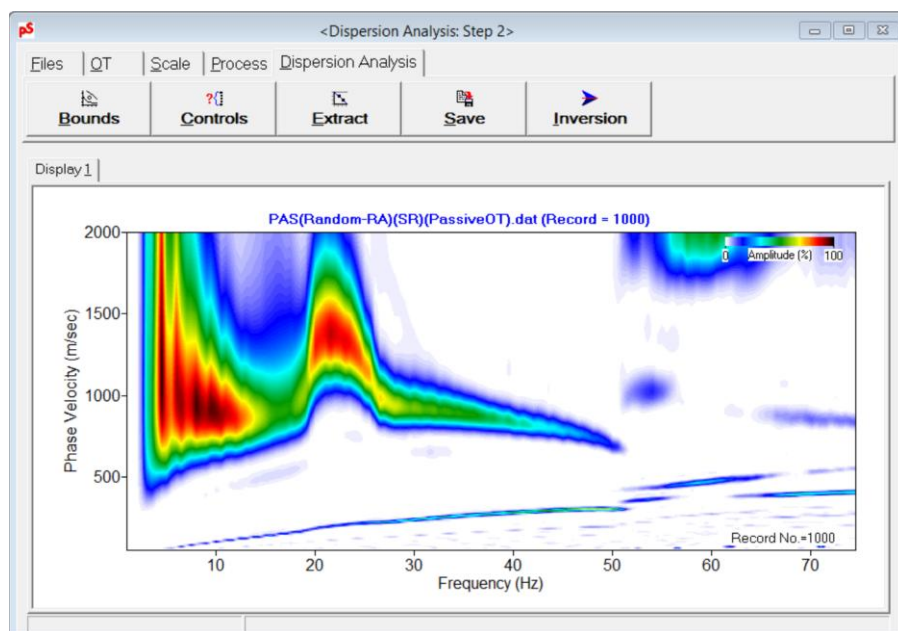
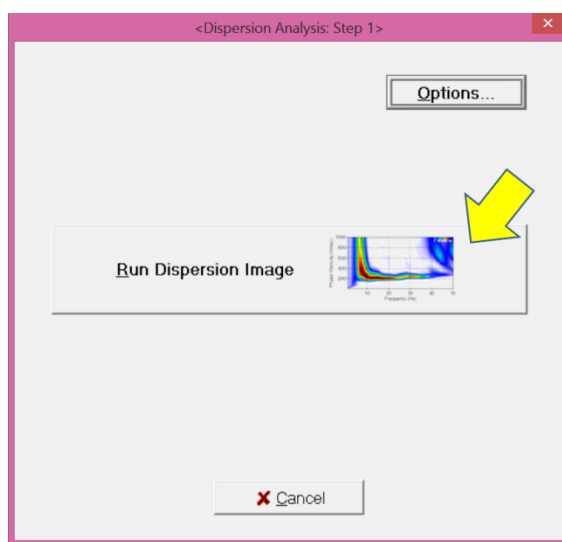
ATTENTION!

Would you like to proceed to next processing step?

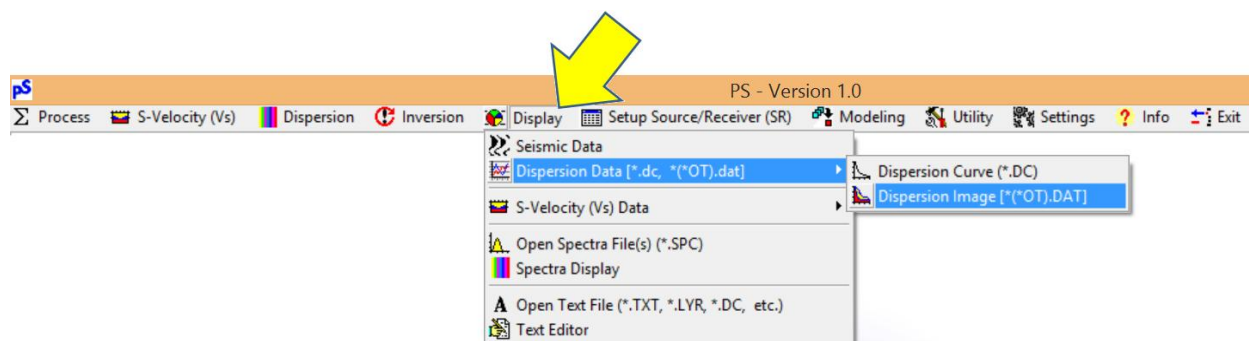
'Dispersion Image Generation'

Yes No Cancel

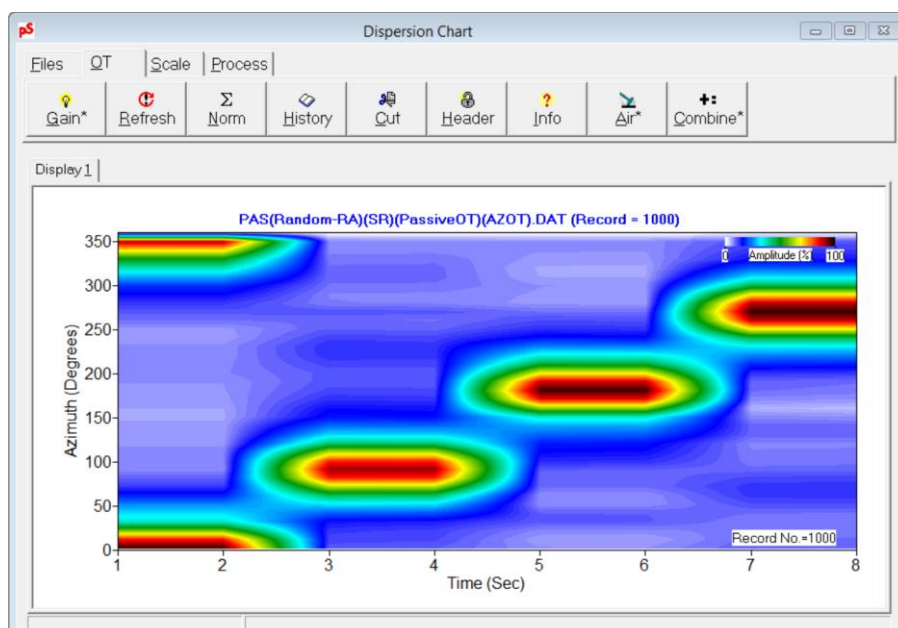
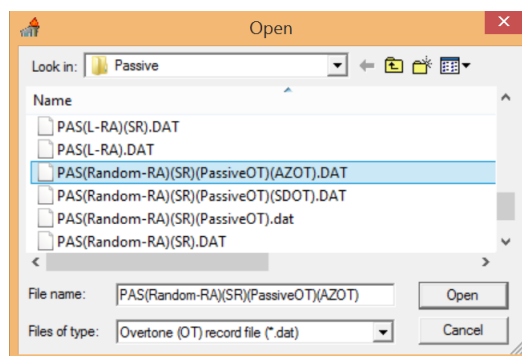
Generation of Dispersion Image



Display of (Passive) Source Information (Azimuth and Excitation Times)



PS - Sample Data



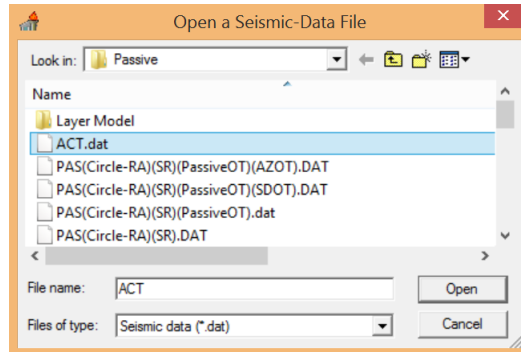
3.2 Using 1-D Receiver Array (RA)

A passive survey using a 1-D linear receiver array is considered identical to the active/passive combined survey. See section "4. [Active/Passive Combined Survey](#)."

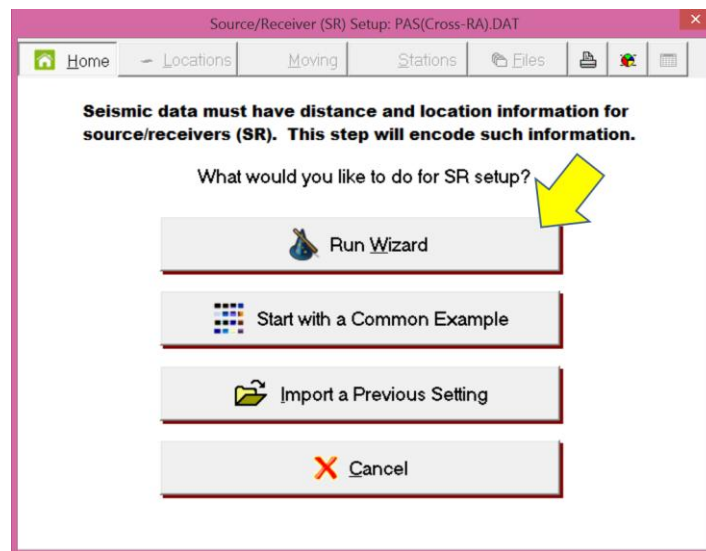
3.3 Combining Active and Passive Dispersion Images

3.3.1 Generating Active Dispersion Image

Importing and Processing Active Data For Combining Purpose



Running Source/Receiver (SR) Setup



Source/Receiver (SR) Setup: PAS(Circle-RA).DAT

Home Locations Moving Stations Files

Number of Channels and Files To Set Up

NOTE: Even if some channels might not be active during data acquisition, all active channels used are hereon considered as "consecutive" channels starting from "channel #1."

Number Of Channels Detected: **48**

File Numbers
 Begin: **1000** End: **1000**

Distance Unit
 feet ☐ meter ☒

1 2 3 Channel # 46 47 48
 Geophone

Previous Cancel Next

Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files

What was survey type?

In each type of survey, surface waves are generated from following mechanism:

- Active:** By using a controlled impact source like a sledge hammer, or
- Passive:** From uncontrolled ambient vibrations like traffic, or
- Combined:** Started with an impact source then recorded ambient vibrations

Active Passive Combined

Previous Cancel Next

Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files

Type of Receiver Array (RA)

In a 1-D receiver array (RA), receivers are placed along a linear (1-D) line with an equal spacing, whereas they may follow any 2-D shape like a circle in a 2-D array.

1-D 2-D
 Circle, L-Shape, Cross, Triangle, Random, etc.

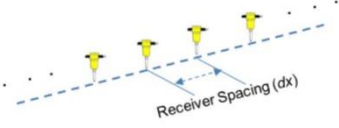
Previous Cancel Next

Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files

Receiver Spacing (dx)

Receiver Spacing (dx): (m)



Receiver Spacing (dx)

Previous Cancel Next

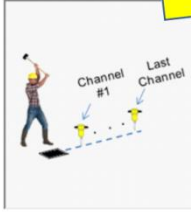
Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files


Source Location?

[For Begin Record in Input List (1000)]

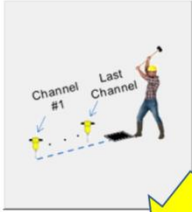
Off the 1st Channel



On or Between Channels



Off the Last Channel



Previous Cancel Next

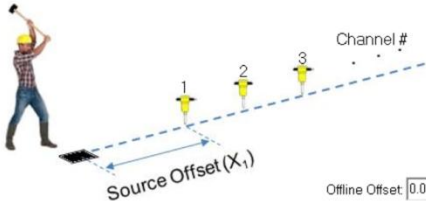
Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files

What was Source Offset (X1)?

[For Begin Record in Input List (1000)]

Source Offset (X1): (m)



Source Offset (X₁)

Channel #

Offline Offset:

Previous Cancel Next

Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files

Confirm and Click Next if Correct
[For Begin Record in Input List (1000)]

Channel # 3 2 1

1 (m)

Previous Cancel Next

Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files

Confirm and Enter Surface Coordinates
[For Begin Record in Input List (1000)]

Ref. Distance 1 0.0

Distance 1003 1002

Station # 45 46 47 48

1046 1047 1048 1049

Channel # 3 2 1

Move Interval (stations)
source: 0
receivers:

Previous Cancel Next

Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files

Review Settings
[Some may only apply to begin record in input list (1000)]

General Survey		Source/Receivers Move	
Survey Type:	Active MASW	Source Side:	Off First Channel
Number of Channels:	48	Move Type:	Fixed Source/Receivers
Type of Receiver Array:	1-D (Linear)	Source Direction:	Not Moved
Distance Unit:	meter	Receivers Direction:	Not Moved
Station Numbers		Distance Parameters	
Increasing:	To First Channel	Receiver Spacing (dx):	1 (m)
Source:	1049	Source Offset (X1):	1 (m)
First Channel:	1048	Ref. Distance (at STA=1001):	0.0 (m)
Last Channel:	1001		

Save Settings

Previous Cancel Next

PS - Sample Data

Source/Receiver (SR) Setup: ACT.dat

Home Locations Moving Stations Files

Confirm and Run

Record Range To Apply (Total: 1)

Begin 1000 End 1000

Record List (Total: 1)

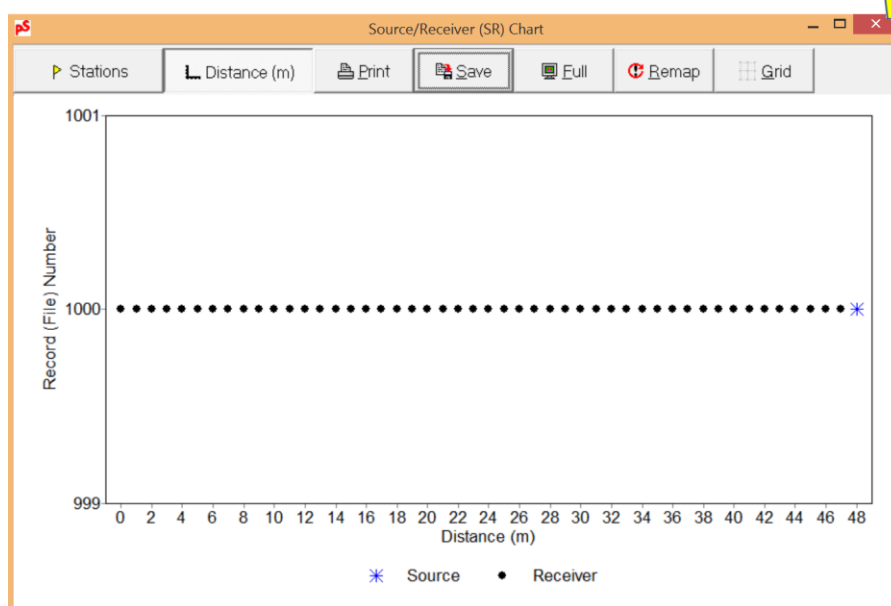

1000

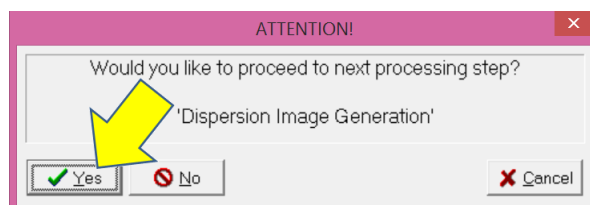
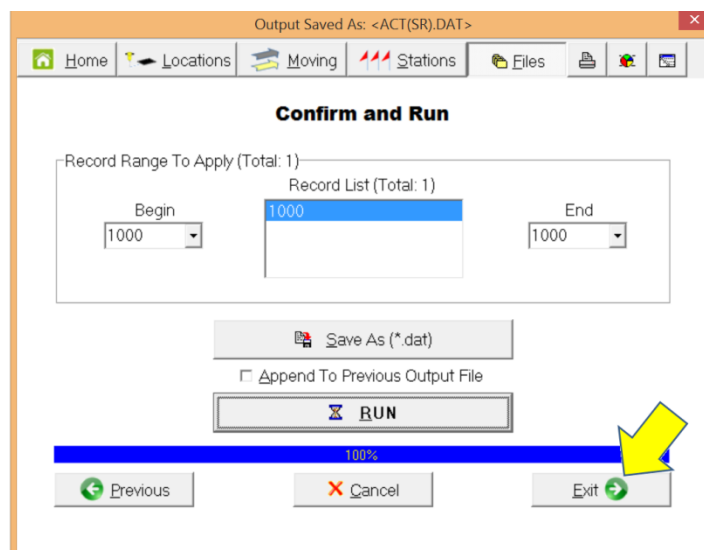
Save As (*.dat)

☐ Append To Previous Output File

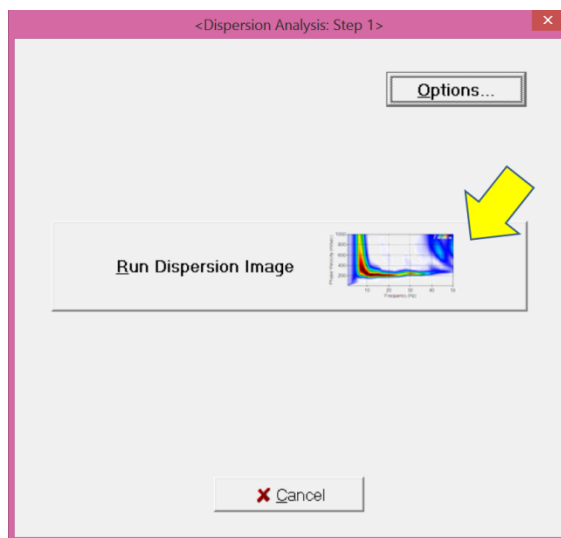
RUN

Previous Cancel Exit



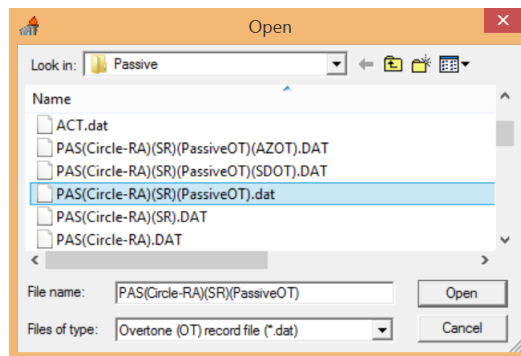
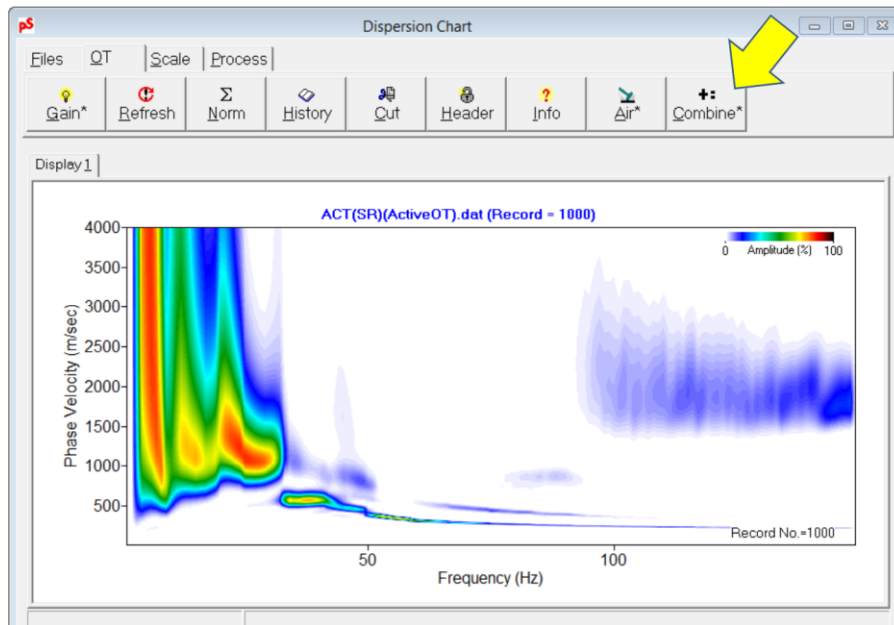


Generation of Dispersion Image



3.3.2 Combining with Passive (Circle-RA) Dispersion Image

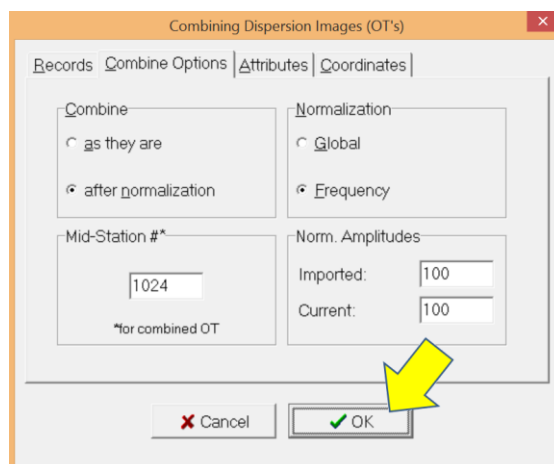
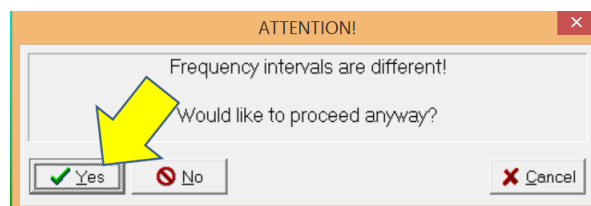
Importing the Passive Dispersion Image ["PAS(Circle-RA)(PassiveOT).dat"]



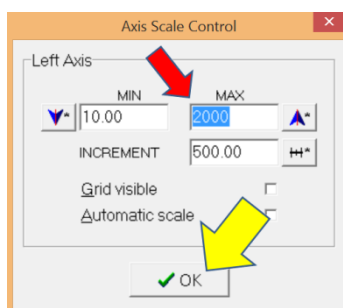
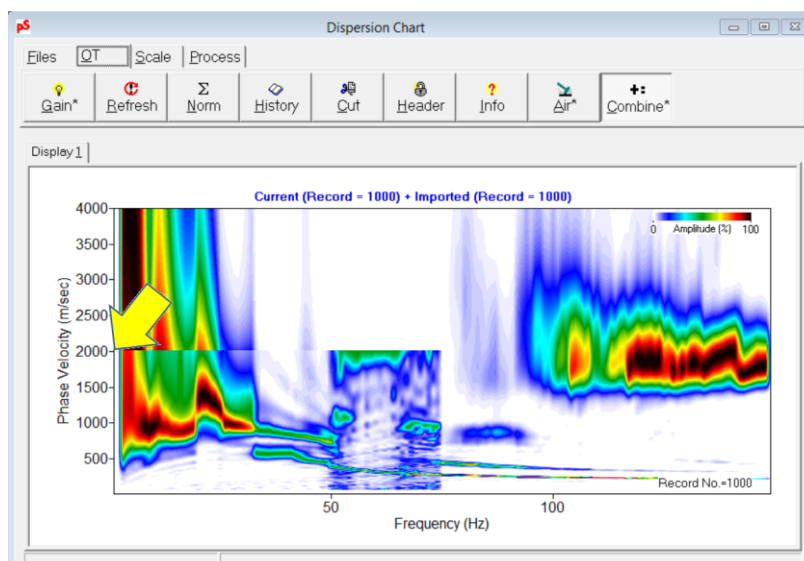
	MIN	MAX	INC
Frequency (Hz):	1	75	5
Phase Velocity (m/sec):	50	2000	10

	Begin	End	List
Records (Total of 1):	1000	1000	All List
Mid-Station (STA):	1000	1000	All List
Mid-Distance (X):	0	0	All List

PS - Sample Data

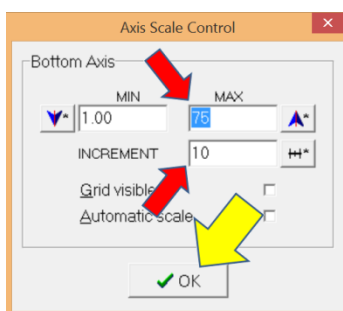
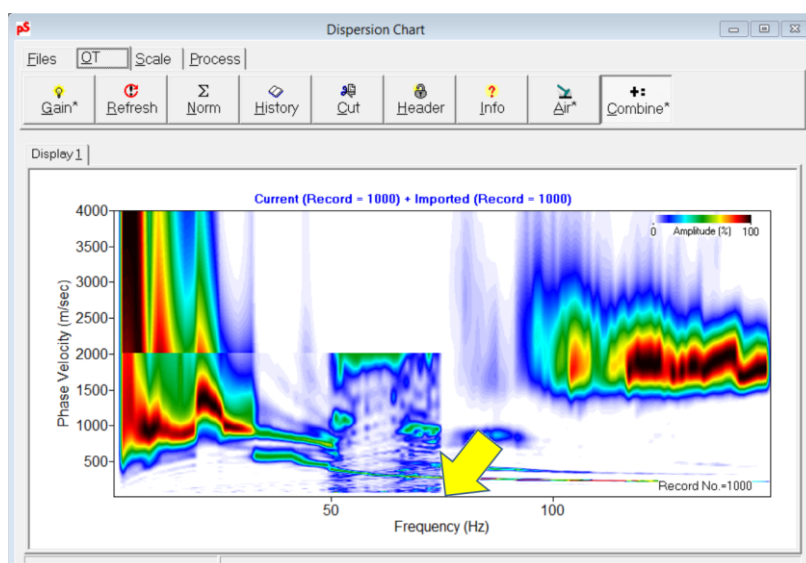


Click the vertical axis to change display scale.

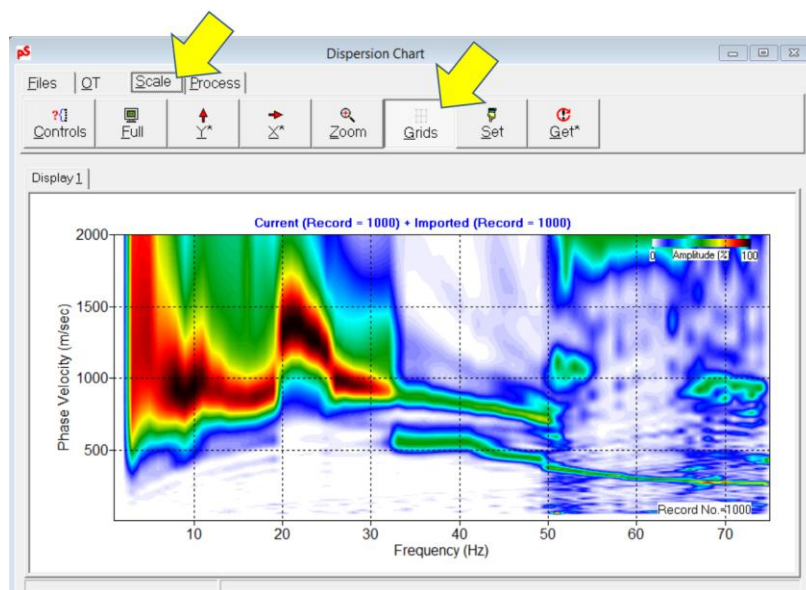


PS - Sample Data

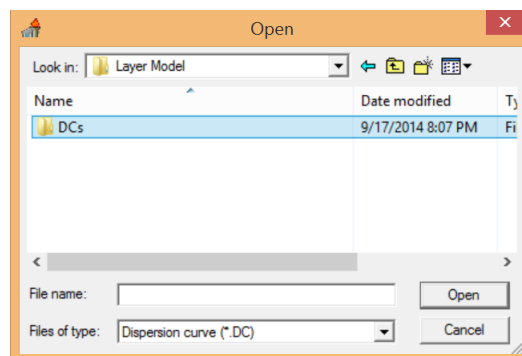
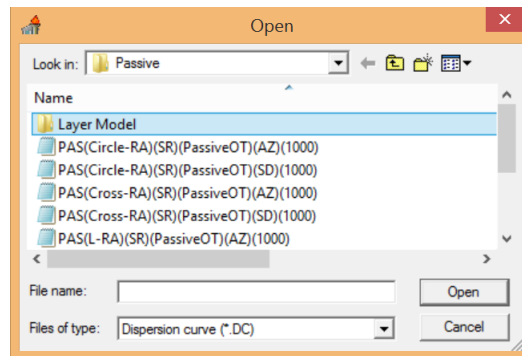
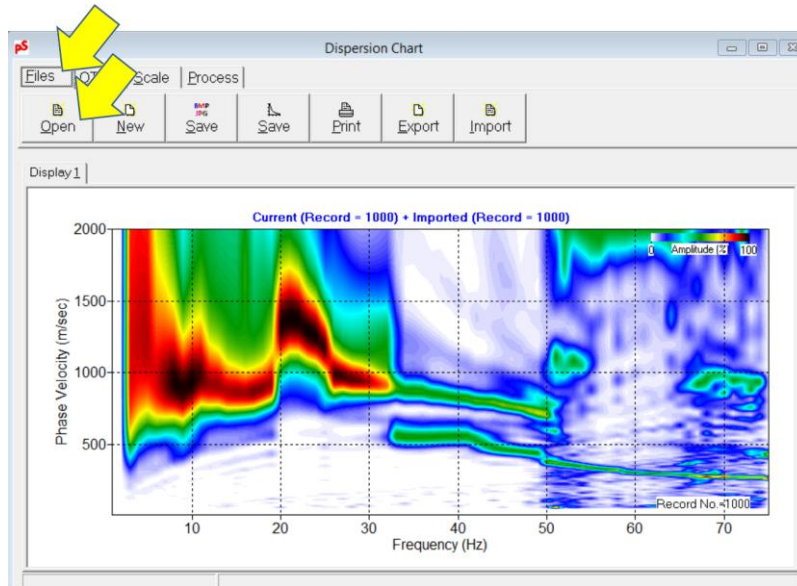
Click horizontal axis to change display scale.



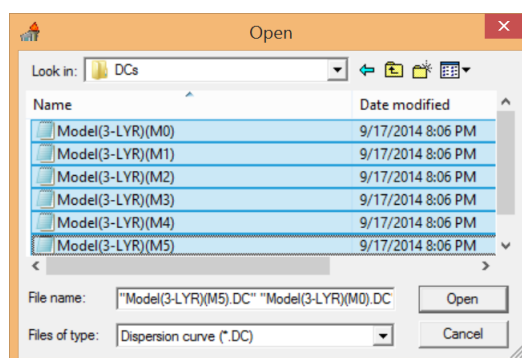
To display grids, depress the "Grids" button in the "Scale" tab.



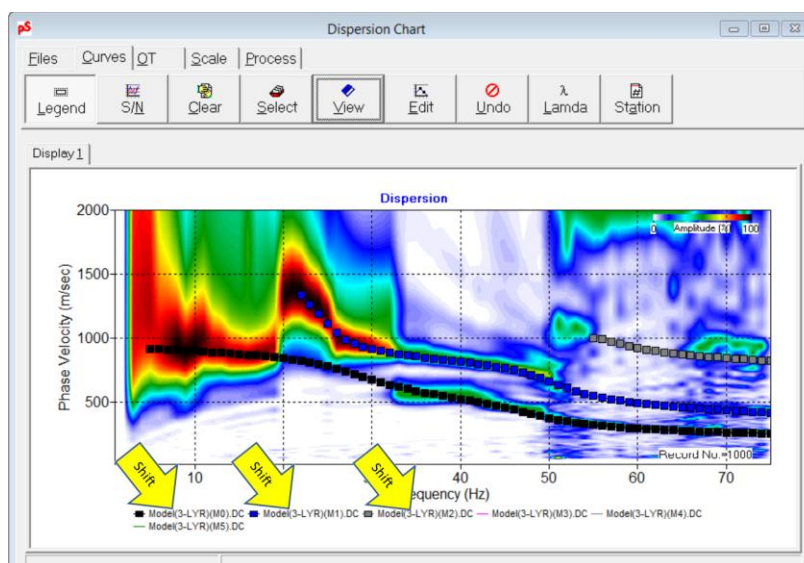
Importing Theoretical Dispersion Curves to Display on top of Combined Dispersion Image (For Interpretation Purposes)



Select All Modes (M0-M5)



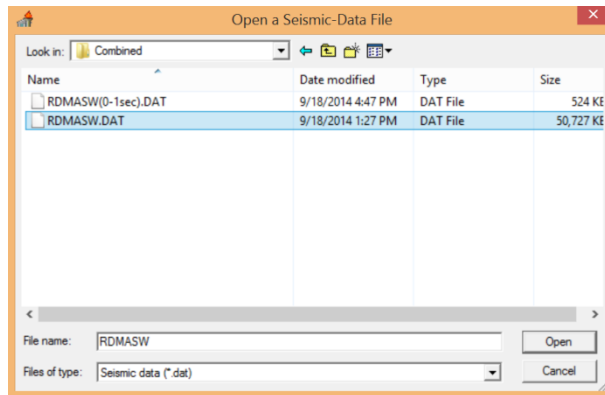
Shift-Click Each Legend to Mark Each Curve



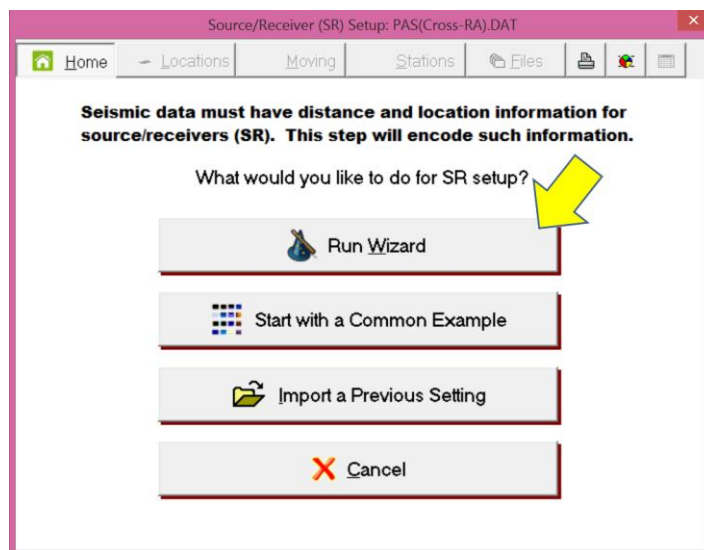
4. Active/Passive Combined Survey

4.1 Processing Roadside Data ("RDMASW.dat") from Combined Survey

Importing Input Data "RDMASW.dat"



Running Source/Receiver (SR) Setup



Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Number of Channels and Files To Set Up

NOTE: Even if some channels might not be active during data acquisition, all active channels used are hereon considered as "consecutive" channels starting from "channel #1."

Number Of Channels Detected: **24**

File Numbers
 Begin: **1001** End: **1018**

Distance Unit
 feet ☒ meter ☐

1 2 3 ... 22 23 24
 Channel #
 Geophone

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

What was survey type?

In each type of survey, surface waves are generated from following mechanism:

- Active:** By using a controlled impact source like a sledge hammer, or
- Passive:** From uncontrolled ambient vibrations like traffic, or
- Combined:** Started with an impact source then recorded ambient vibrations.

Active Passive Combined

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Type of Receiver Array (RA)

In a 1-D receiver array (RA), receivers are placed along a linear (1-D) line with an equal spacing, whereas they may follow any 2-D shape like a circle in a 2-D array.

1-D 2-D
 Circle, L-Shape, Cross, Triangle, Random, etc.

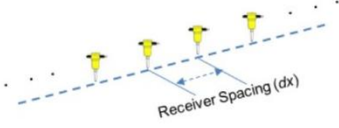
Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Receiver Spacing (dx)

Receiver Spacing (dx): (ft)



Receiver Spacing (dx)

Previous Cancel Next

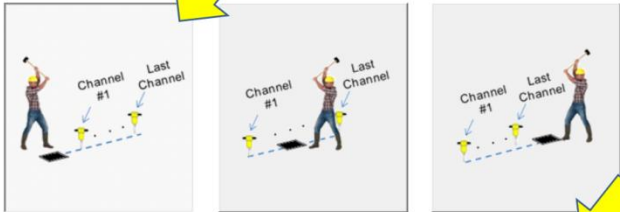
Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Source Location?

[For Begin Record in Input List (1001)]

Off the 1st Channel On or Between Channels Off the Last Channel



Previous Cancel Next

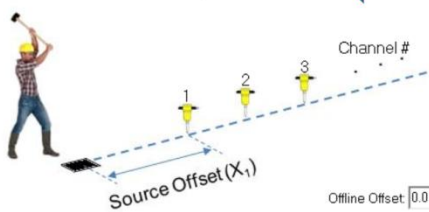
Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

What was Source Offset (X1)?

[For Begin Record in Input List (1001)]

Source Offset (X1): (ft)



Source Offset (X₁)

Channel #

Offline Offset:

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Confirm and Click Next if Correct
[For Begin Record in Input List (1001)]

Channel # 3 2 1

24 23 22 3 2 1

4 (ft) 24 (ft)

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

How did source and receiver array (RA) move?
[After Begin Record in Input List (1001)]

Source and RA did NOT move ☐

Both Source and RA Moved: OR Source Moved (RA did NOT): RA Moved (Source did NOT): A yellow arrow points to the Next button.

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

How did SOURCE and RECEIVERS move?

To RECEIVERS To SOURCE A yellow arrow points to the Next button.

Move Interval: (in ft): 8 (in stations): 2

Before Move: # of recording: 1

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Confirm and Enter Surface Coordinates

[For Begin Record in Input List (1001)]

Ref. Distance: 4
Distance: 8
Station #: 1007, 1008, 1027, 1028, 1029
Channel #: 22
Move Interval (stations): source: receivers: 2

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Review Settings

[Some may only apply to begin record in input list (1001)]

General Survey		Source/Receivers Move	
Survey Type:	Active/Passive Combined	Source Side:	Off First Channel
Number of Channels:	24	Move Type:	Source/Receivers Moved
Type of Receiver Array:	1-D (Linear)	Source Direction:	To Receivers
Distance Unit:	ft	Receivers Direction:	To Last Channel
Station Numbers		Distance Parameters	
Increasing:	To Last Channel	Receiver Spacing (dx):	4 (ft)
Source:	1000	Source Offset (x1):	24 (ft)
First Channel:	1006	Ref. Distance (at STA=1006):	0.0 (ft)
Last Channel:	1029	Save Settings	

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Confirm and Run

Record Range To Apply (Total: 18)

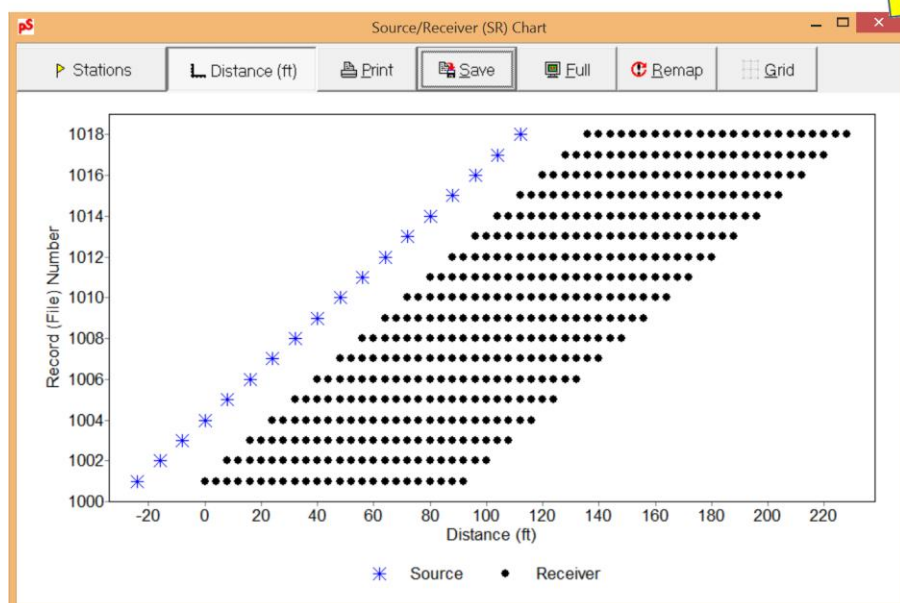
Begin: 1001 End: 1018

Record List (Total: 18): 1001, 1002, 1003, 1004

Save As (*.dat)
☐ Append To Previous Output File
RUN

Previous Cancel Exit

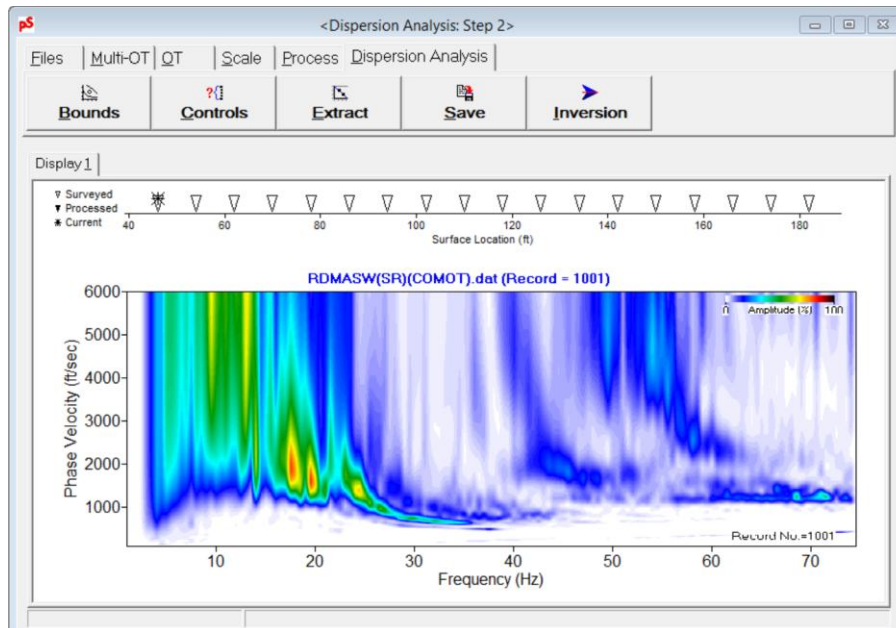
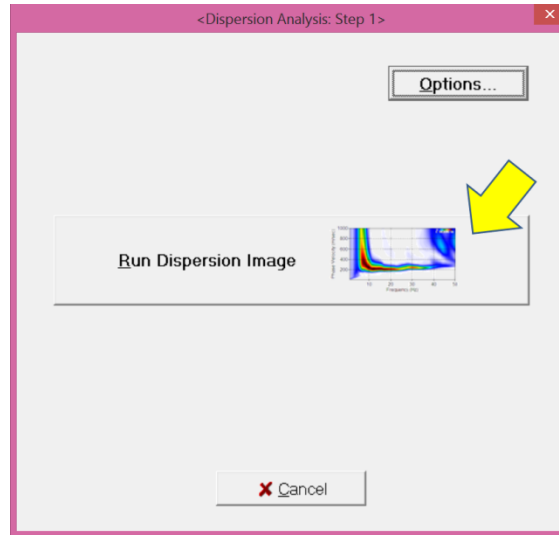
PS - Sample Data



The dialog box is titled "Confirm and Run" and shows the output file path as "<RDMASW(SR).DAT>". It includes a "Record Range To Apply (Total: 18)" section with a "Begin" dropdown set to 1018 and an "End" dropdown set to 1018. A "Record List (Total: 18)" list box shows the range 1016 to 1018, with 1018 selected. The "Save As (*.dat)" button is highlighted, and the "Append To Previous Output File" checkbox is unchecked. The "RUN" button is also visible. A progress bar at the bottom shows 100% completion. At the bottom right, there are "Previous", "Cancel", and "Exit" buttons. A yellow arrow points to the "Exit" button.

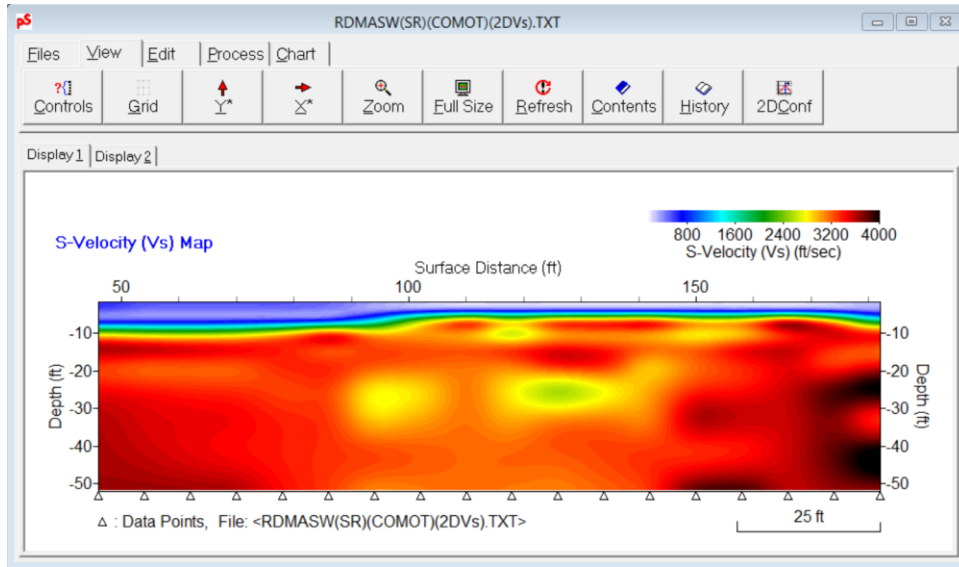
The dialog box is titled "ATTENTION!" and asks: "Would you like to proceed to next processing step? 'Dispersion Image Generation'". It has three buttons: "Yes" (with a green checkmark), "No" (with a red X), and "Cancel" (with a red X). A yellow arrow points to the "Yes" button.

Generation of Dispersion Image



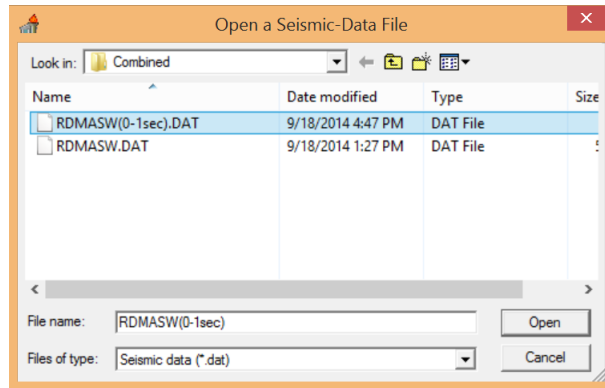
For the remaining procedures, "Dispersion Curve Extraction" and "Inversion", see the corresponding sections in the user guide of "[Generating a 2-D Cross Section \(Working with Sample Data\)](#)."

The following cross section is obtained by following the remaining procedures.

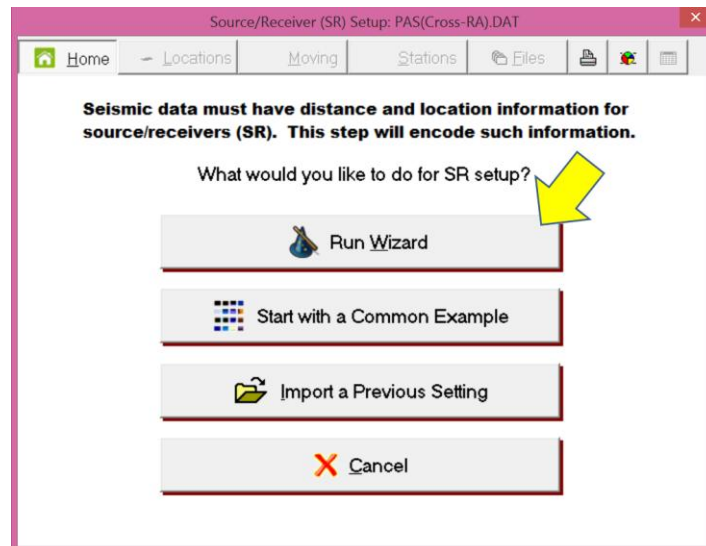


4.2 Processing Active Portion (1-Sec) of "RDMASW.dat"

Importing Input Data "RDMASW(0-1sec).DAT"



Running Source/Receiver (SR) Setup



Source/Receiver (SR) Setup: RDMASW.DAT

Home Locations Moving Stations Files

Number of Channels and Files To Set Up

NOTE: Even if some channels might not be active during data acquisition, all active channels used are hereon considered as "consecutive" channels starting from "channel #1."

Number Of Channels Detected: 24

File Numbers
Begin: 1001 End: 1018

Distance Unit
feet meter

Previous Cancel Next

Source/Receiver (SR) Setup: RDMASW(0-1sec).DAT

Home Locations Moving Stations Files

What was survey type?

In each type of survey, surface waves are generated from following mechanism:

- Active:** By using a controlled impact source like a sledge hammer, or
- Passive:** From uncontrolled ambient vibrations like traffic, or
- Combined:** Started with an impact source then recorded ambient vibrations

Active Passive Combined

Previous Cancel Next

The remaining procedure will be identical to that of the "RDMASW.dat" described in [section 4.1](#).

The 2-D Vs cross section below is obtained by following the remaining procedures.

