

**SENIOR PROJECT-GEOP402**

## Refraction Microtremor

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## REMI SURVEY NOISE

- Walking
- Running
- Driving by One Car
- Driving by Two Cars




## Two Subsequent Cars Driven



Position for Cars

Profile of Refraction Survey

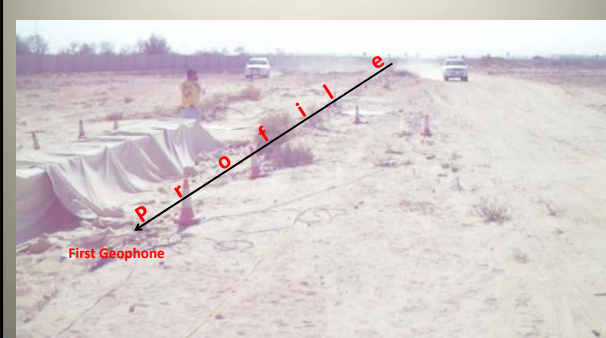
## One Cars Driven



Position for Car

Profile of Refraction Survey

## Two Cars Reverseely Driven



Profile

First Geophone

### Subsequent Two Cars Driven

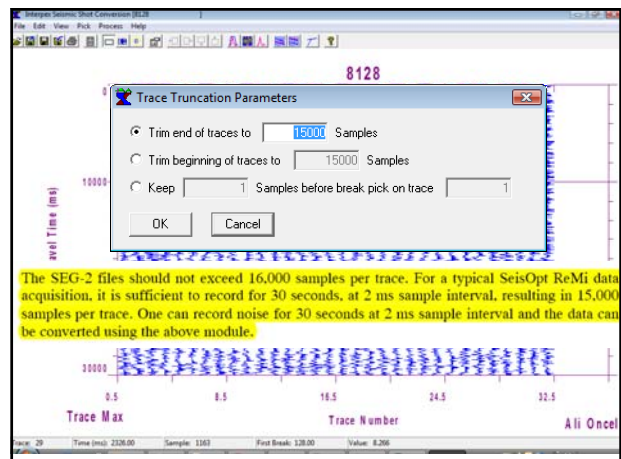
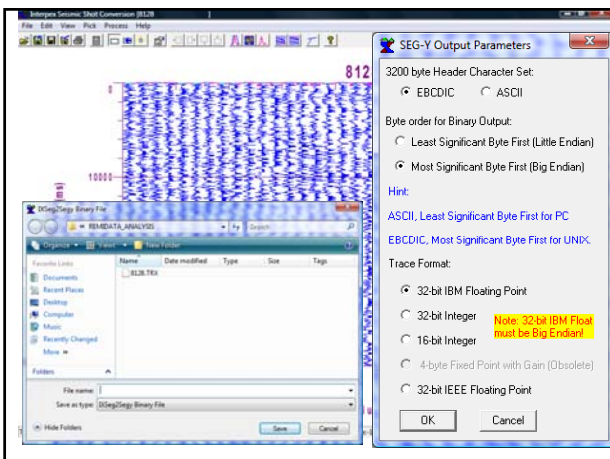
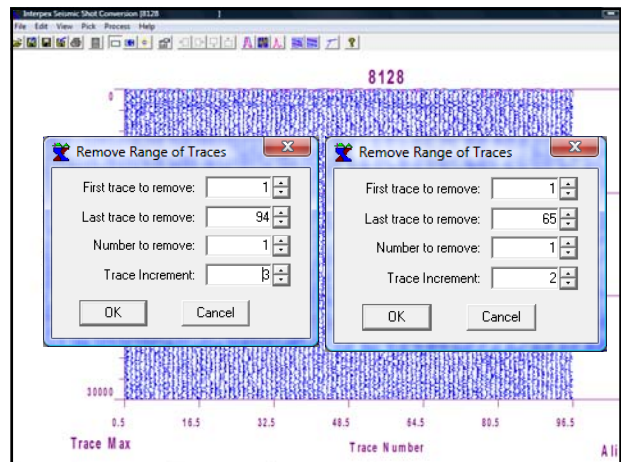


### Cars Driven

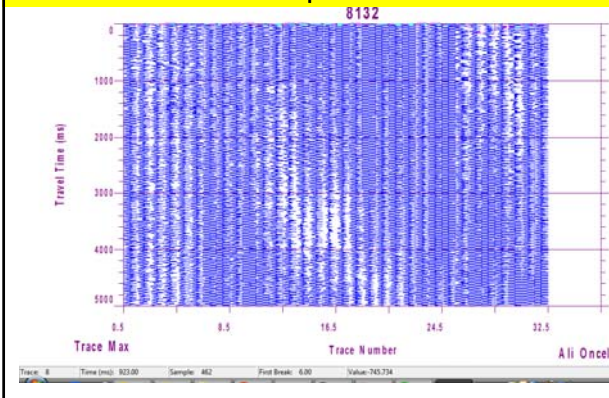


### STEP 1

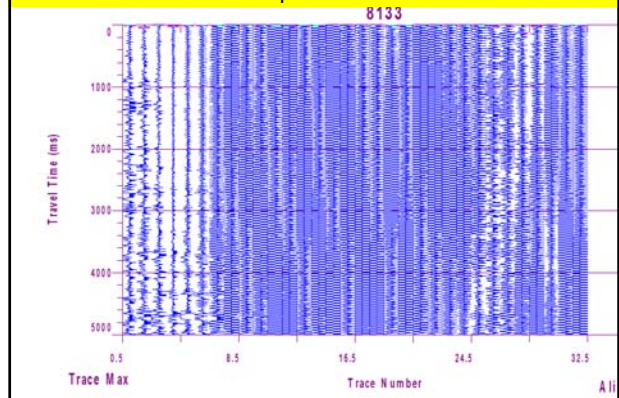
### OPEN SEG-Y SEISMIC RECORDS



You should delete file with a record length of less than 30 second. That is an example.



You should delete file with a record length of less than second. That is an example.



### Reading files

Read SEG-Y Seismic Records Files. Open Binary File...

Look for: **SEG-Y**

Binary File Type: **SEG-Y**

Traces to Analyze: **1** **32**

File Name: **8128.SGY**

Files of Type: **All Files**

Buttons: Read Binary File, Cancel

```

C:\Windows\system32\cmd.exe - ReMiVspect40.bat
readSEGFile: reading 32 traces of 15000 samples each from C:\Geop402\KFUPM_TEST
\REMI010_ANALYSIS\SEG\8151.SGY
trace 1 of 32 read.
trace 2 of 32 read.
...
readSEGFile Done.
readSEGFile: reading 32 traces of 15000 samples each from C:\Geop402\KFUPM_TEST
\REMI010_ANALYSIS\SEG\8152.SGY
trace 1 of 32 read.
trace 2 of 32 read.
...
readSEGFile Done.
readSEGFile: reading 32 traces of 15000 samples each from C:\Geop402\KFUPM_TEST
\REMI010_ANALYSIS\SEG\8153.SGY
trace 1 of 32 read.
trace 2 of 32 read.
...
readSEGFile Done.
rms: finding root-mean-squared value of 11520000 elements... done.
viewInFrame: displaying 11520000-element volume of 24 planes in new frame...
viewInFrame done.
    
```

### Setting Plot Parameters

SeisOpt(R)ReMi(TM) V4.0 Vspect: untitled.sgy + Step 2, 3

Rows Point Down?  Vert. Exagg.: **0.02**

Ampl. Zero: **0.0** Factor: **1.0** Units: **Amplitude**

Color Table for Image: **Current Colors** Elements: **Zero**

Delta: **0.0** Time, msec

Delta: **1.0** Trace Sequer

Delta: **1.0** Record Index

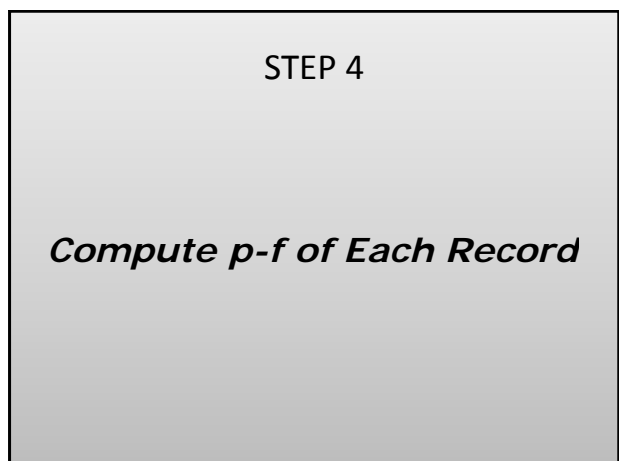
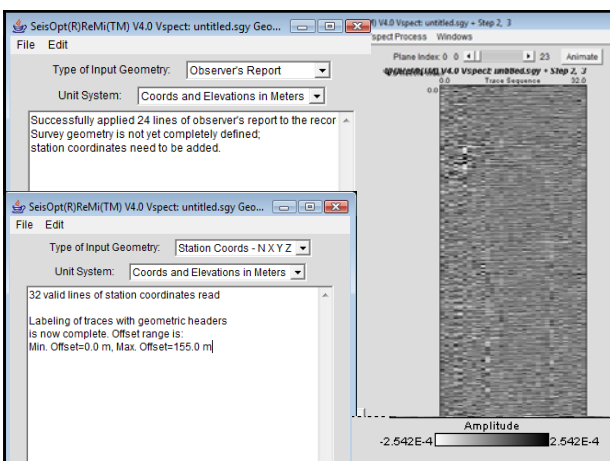
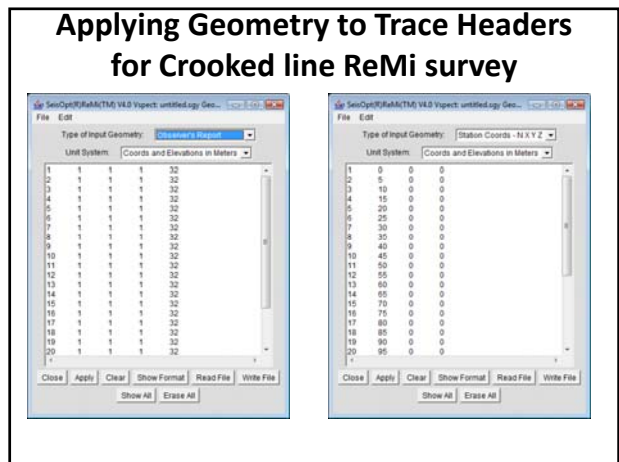
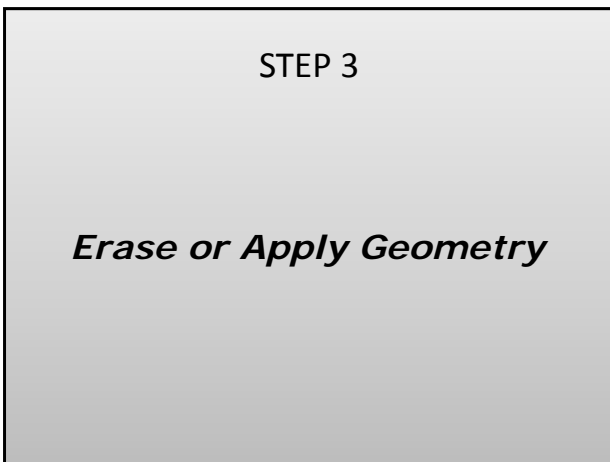
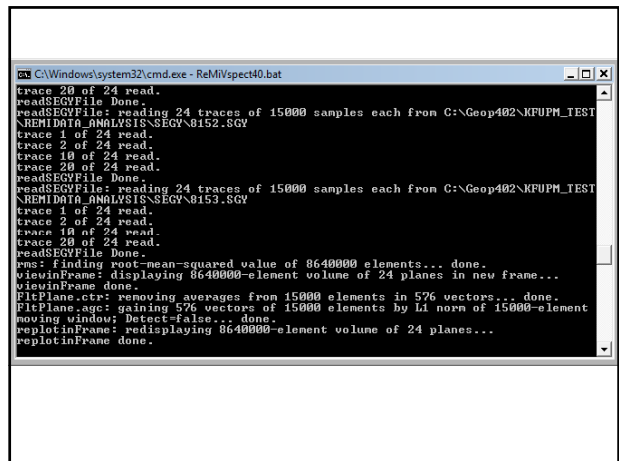
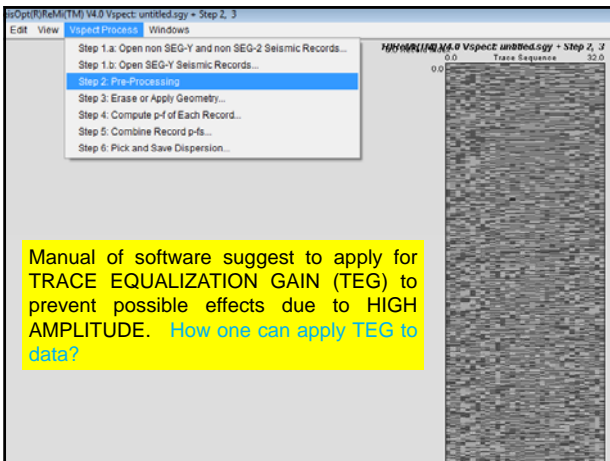
Buttons: Apply Changes, Cancel, Reset Values

File name: **plot pad** Save as type: **All Files (\*.\*)**

Button: **SAVE**

**STEP 2**

*Pre-Processing*



## Vmin=50 m/s

ReMi p-f AnalysisSeisOpt(R)ReMi(TM) V4.0

vspect of SeisOpt(R)ReMi(TM) V4.0 Vspect u

ReMi Version 3.1, Copyright 24 June 2002 by

The vspect method on class FitPlane data computes Louie's velocity-spectrum analysis (J. Louie, Bull. Seismol. Soc. Amer., Apr. 200 a surface-wave phase-velocity dispersion spectral-ratio image by p-tau and Fourier

dt (sec): 0.0020 Labeled Traces:

Min. Offset=0.0 m, Max. Offset=155.0 m

Fmax (Hz): 35 Vmin (m/s): 50

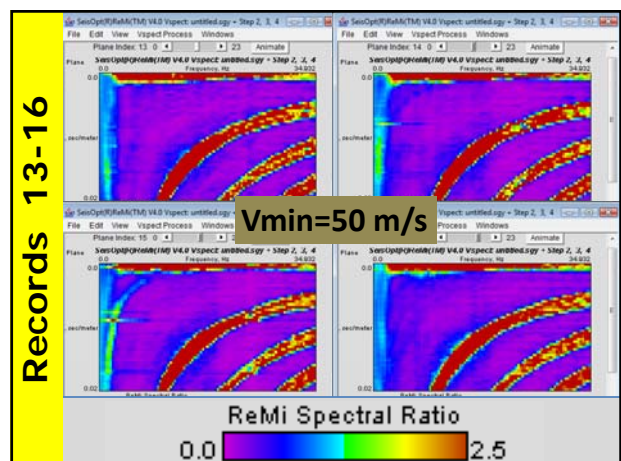
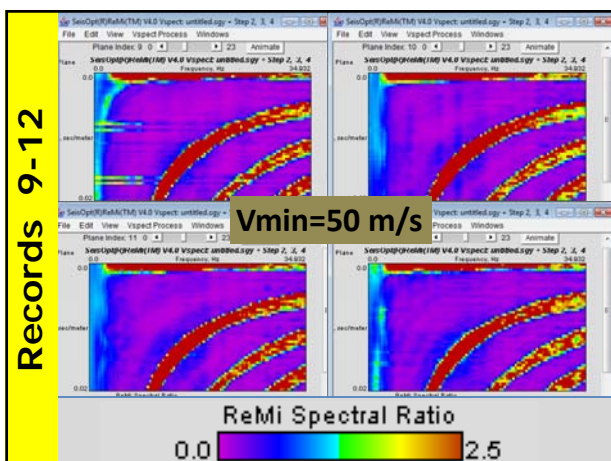
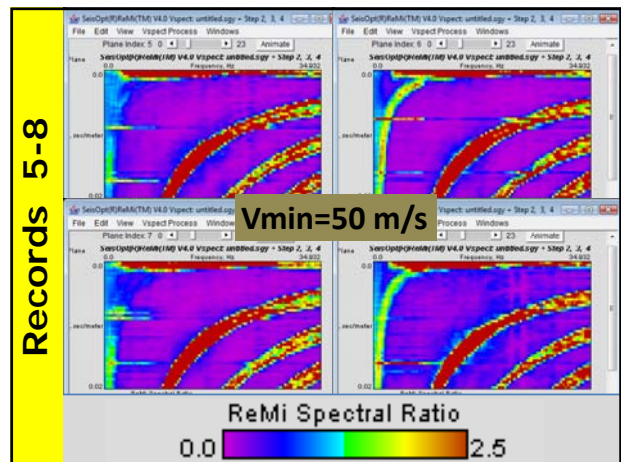
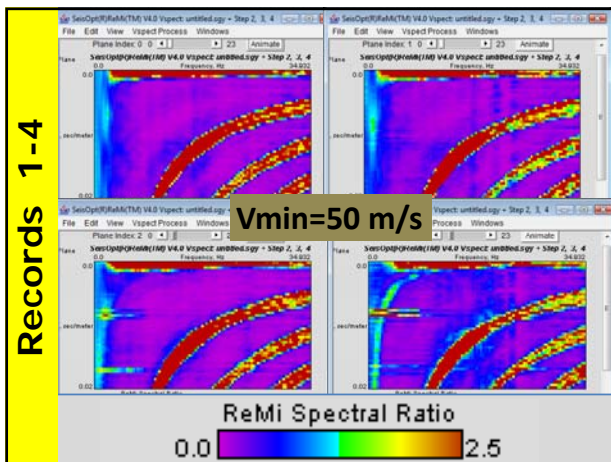
Np (+int): 48

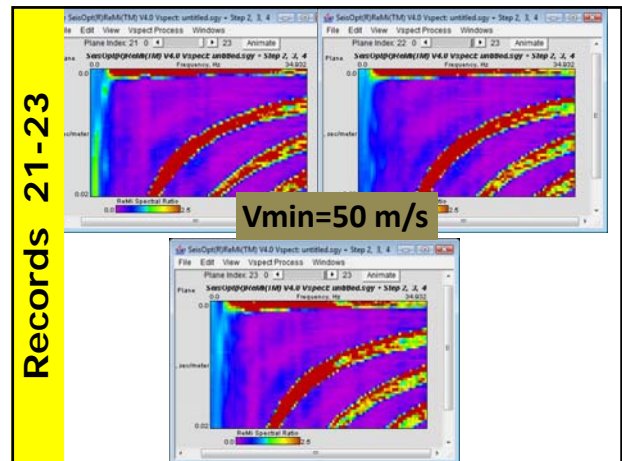
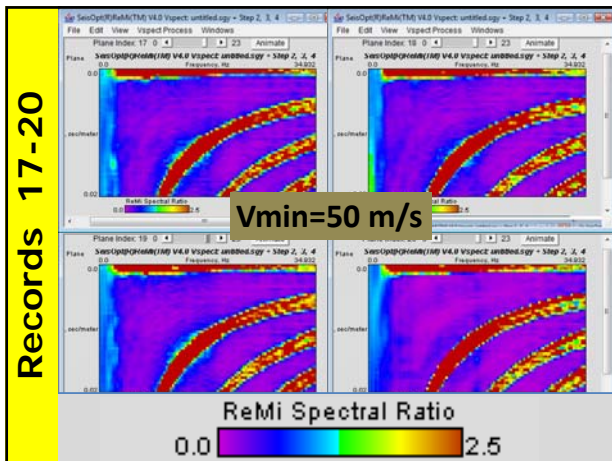
Analyze: **Both Directions**  
Forward Only  
Reverse Only

vspect

```

C:\Windows\system32\cmd.exe - ReMiVspect40.bat
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 1 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 2 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 3 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 4 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 5 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 6 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 7 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 8 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 22 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 23 of 24 done.
windowof: windowing 5000 elements and 32 vectors from plane, with v0=0 dv=1 e0=0
de=3... done.
vspectPlanes: plane 24 of 24 done.
vspectPlanes Done.
viewinFrame: displaying 116352-element volume of 24 planes in new frame...
viewinFrame done.
    
```





ReMi p-f AnalysisSeisOpt(R)ReMi(TM) V4.0

vspect of SeisOpt(R)ReMi(TM) V4.0 Vspect u

ReMi Version 3.1, Copyright 24 June 2002 by

The vspect method on class FIPPlane data computes Louie's velocity-spectrum analysis (J. Louie, Bull. Seismol. Soc. Amer., Apr. 200 a surface-wave phase-velocity dispersion spectral-ratio image by p-tau and Fourier

dt (sec): 0.0020 Labeled Traces:

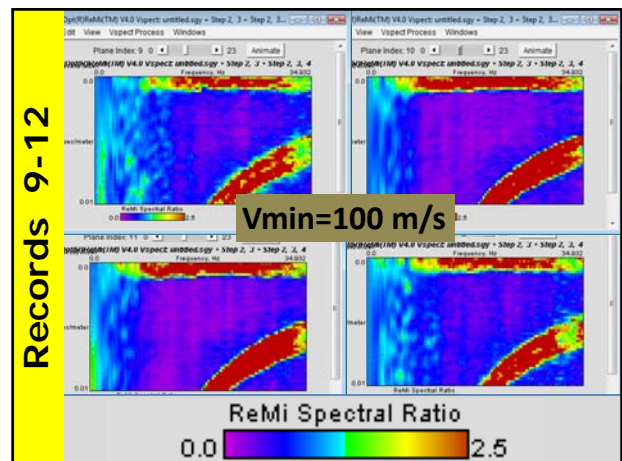
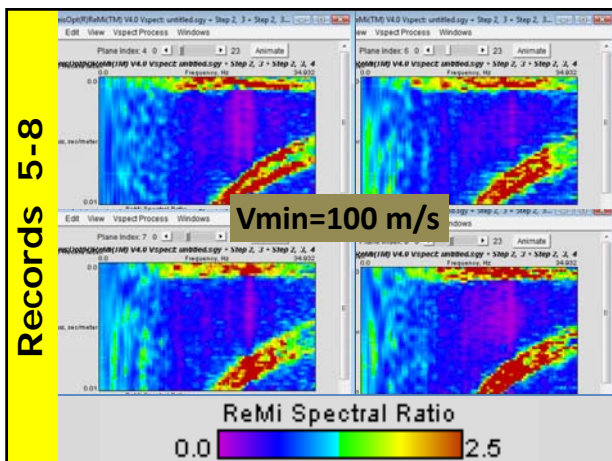
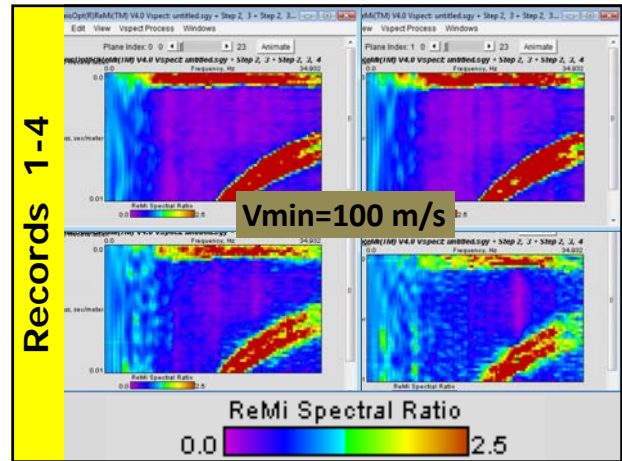
Min. Offset=0.0 m, Max. Offset=155.0 m

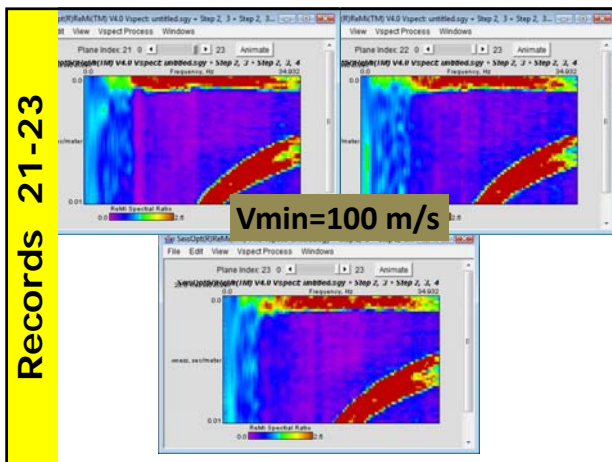
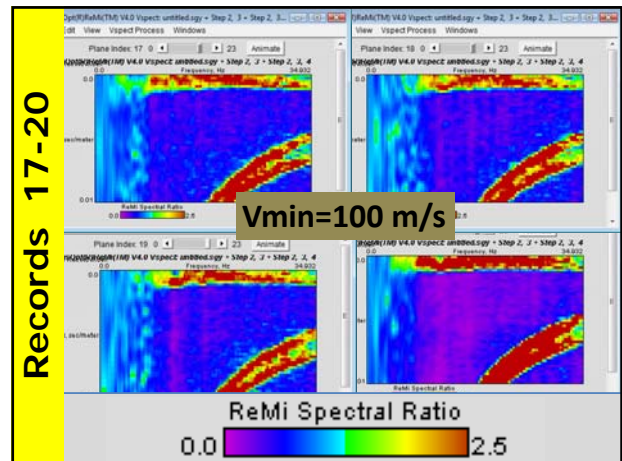
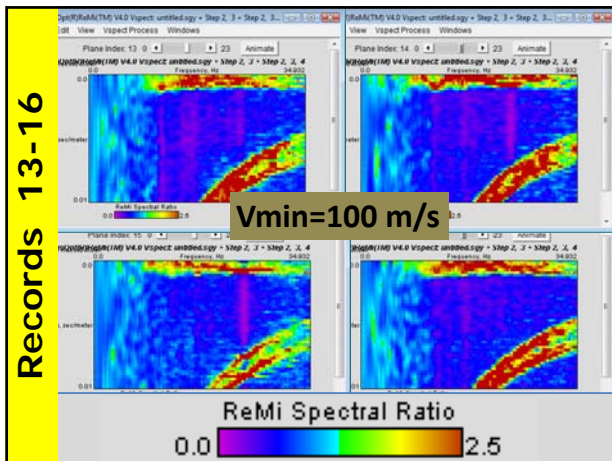
Fmax (Hz): 35 Vmin (m/s): 100

Np (+int): 48

Analyze: Both Directions  
Forward Only  
Reverse Only

vspect

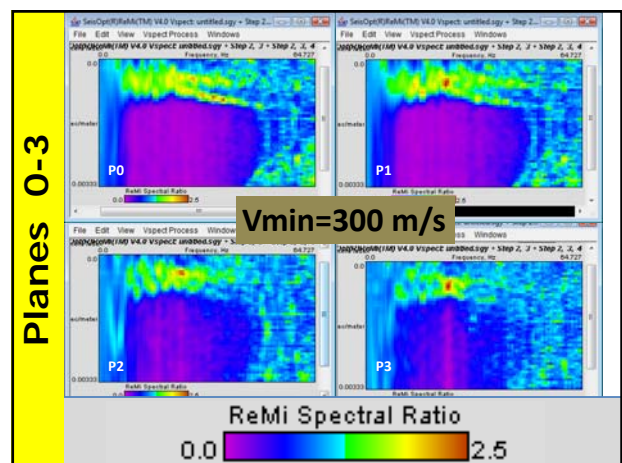


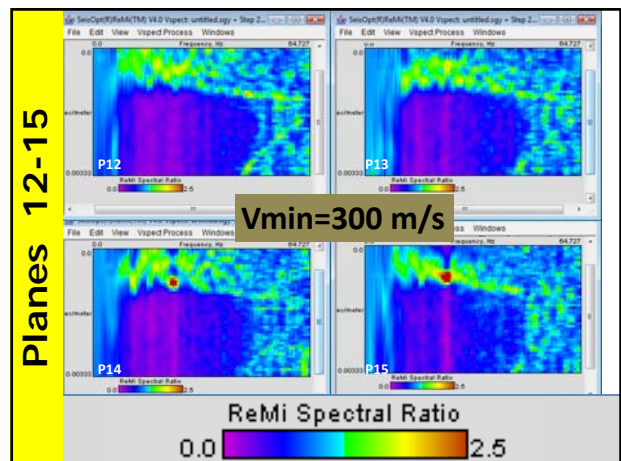
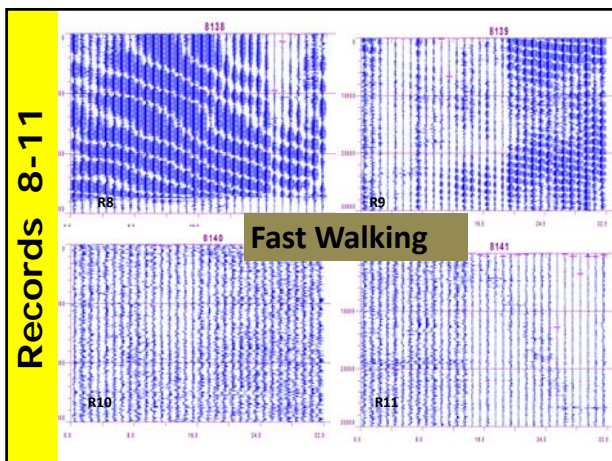
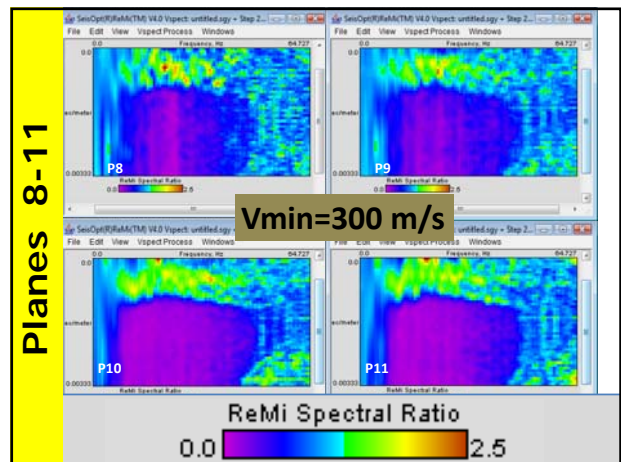
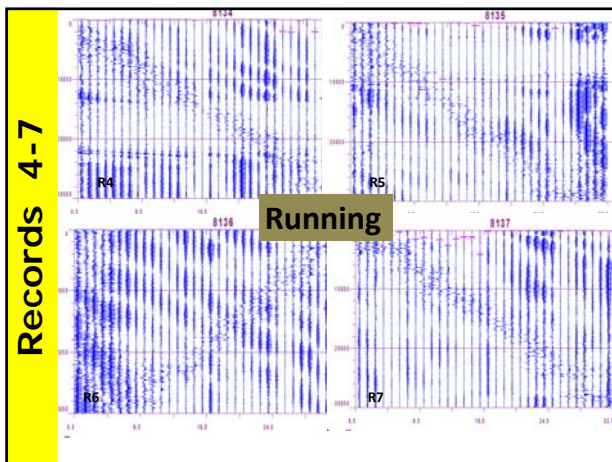
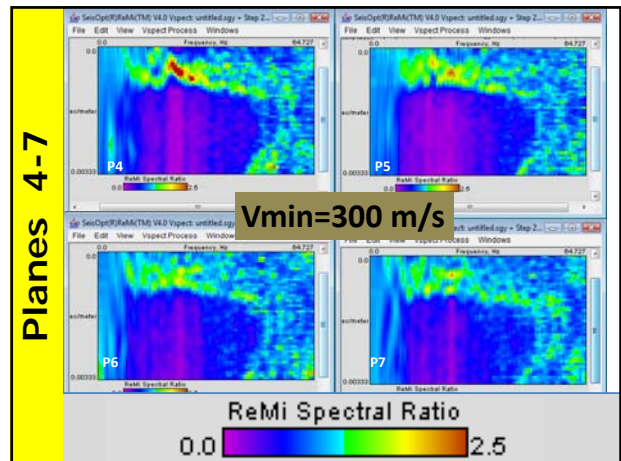
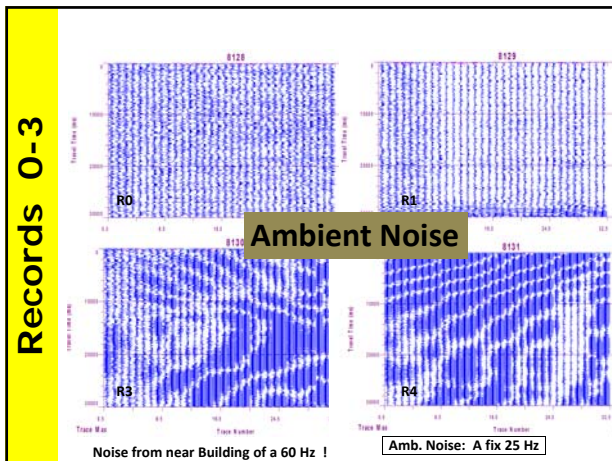


STEP 5

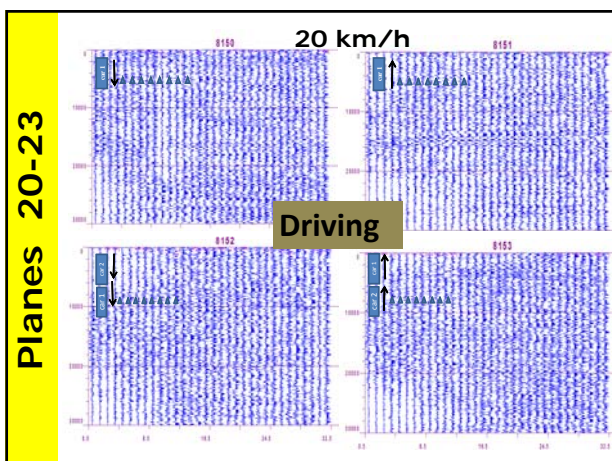
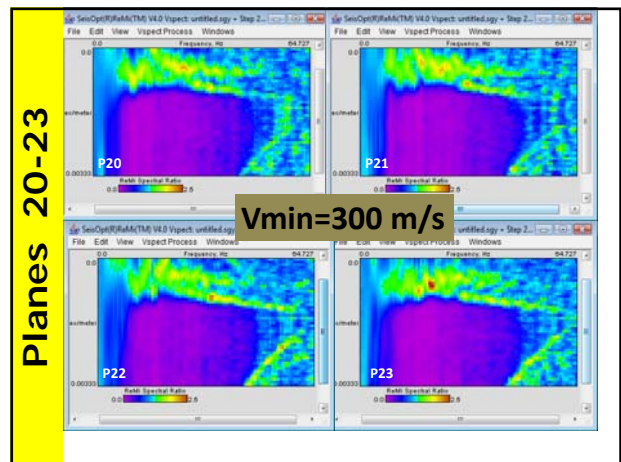
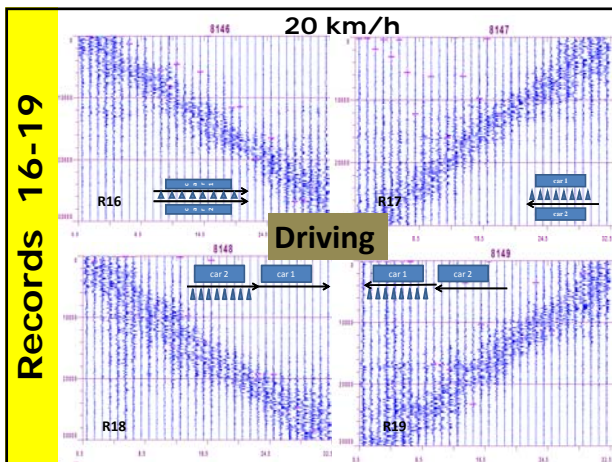
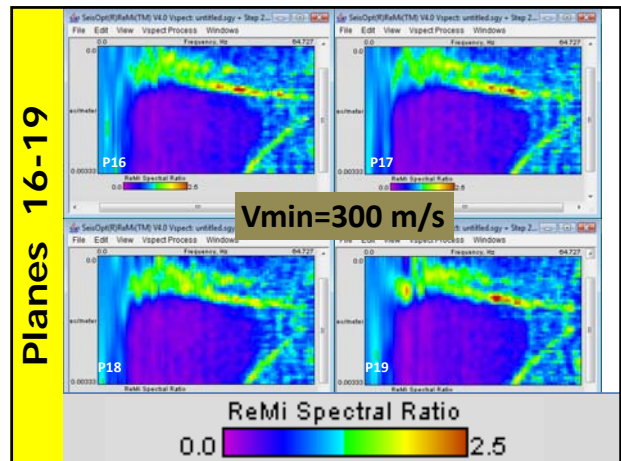
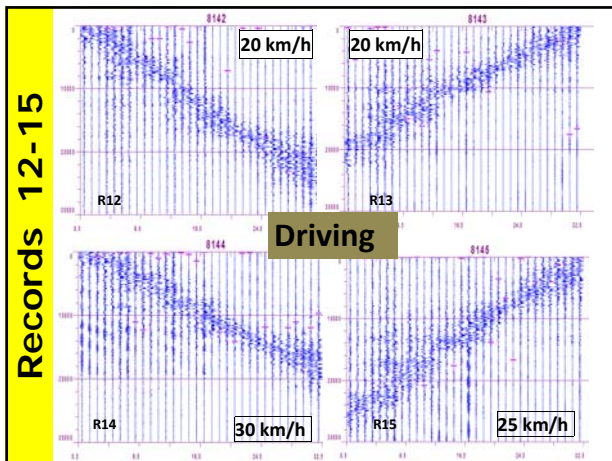
*Understanding Threshold Value of Minimum Velocity*

Record	Vmin (m/s)	Np (vint)
Record 13	100	48
Record 14	100	48
Record 15	100	48
Record 16	100	48
Record 17	100	48
Record 18	100	48
Record 19	100	48
Record 20	100	48
Record 21	100	48
Record 22	100	48
Record 23	100	48



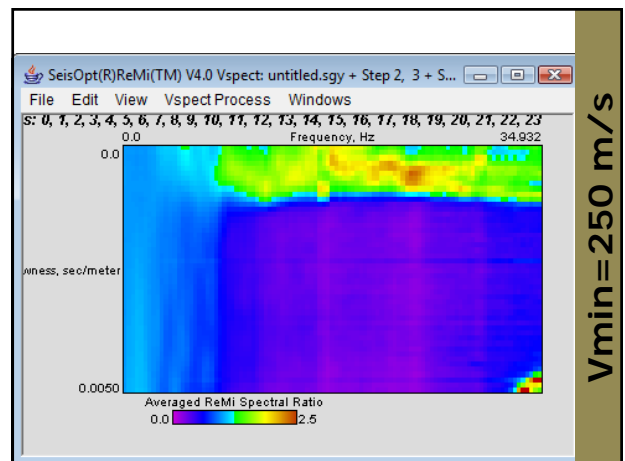
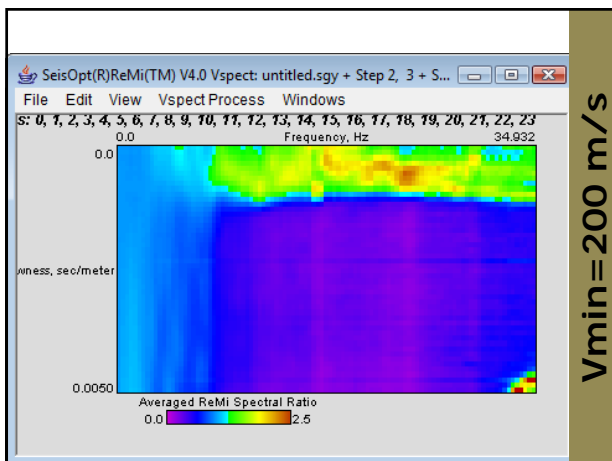
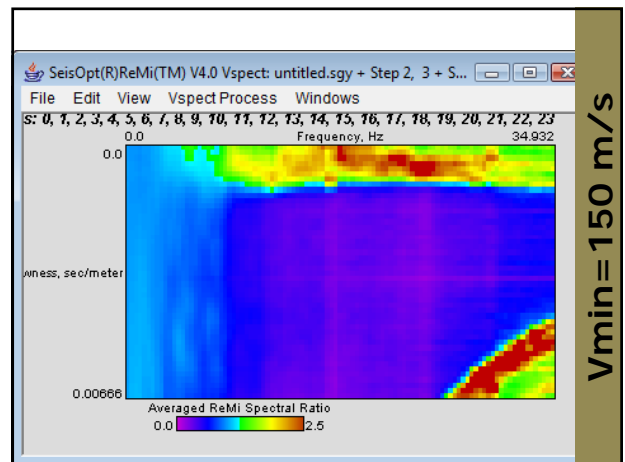
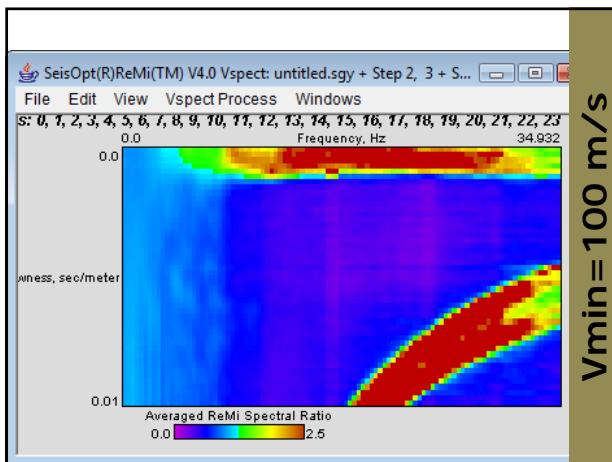
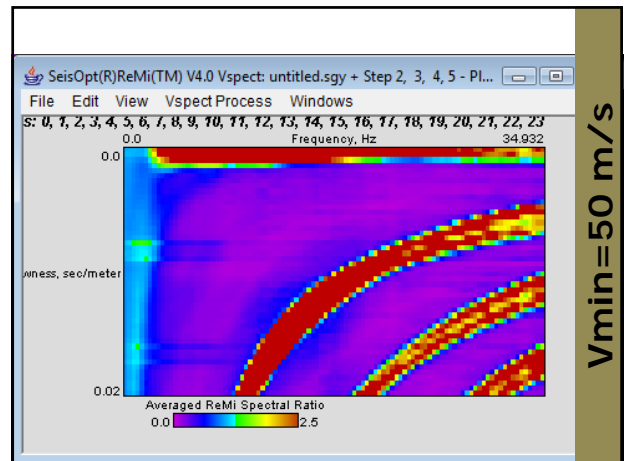
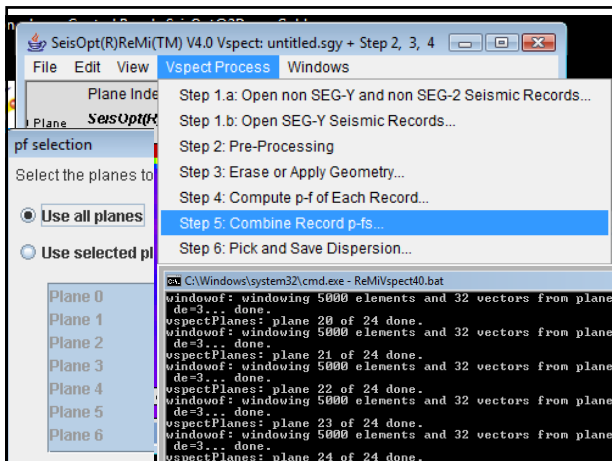


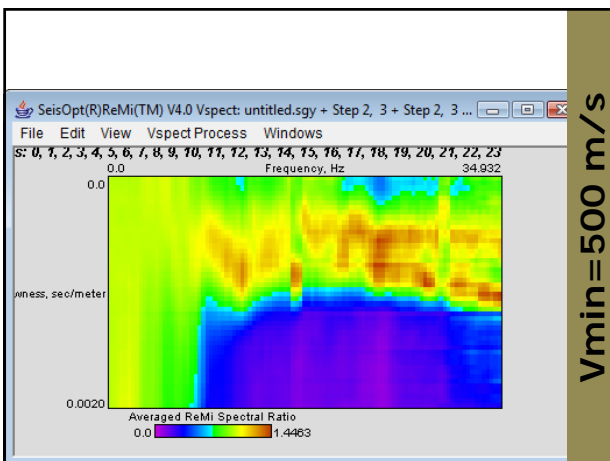
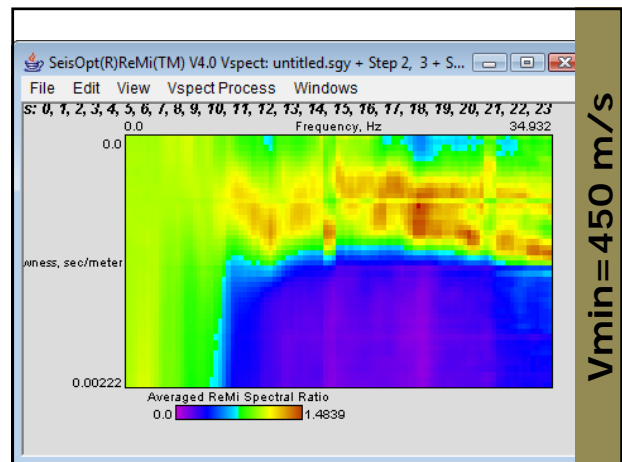
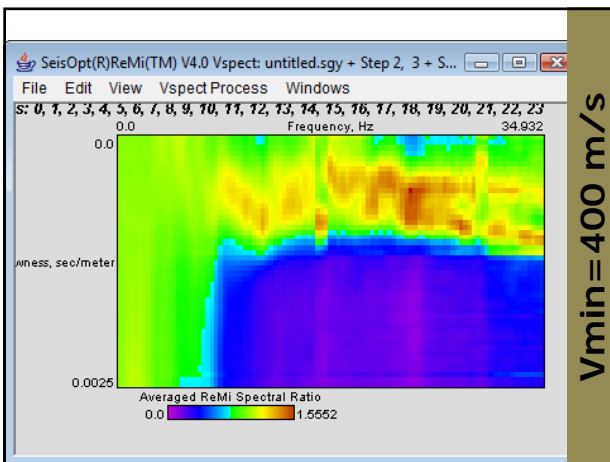
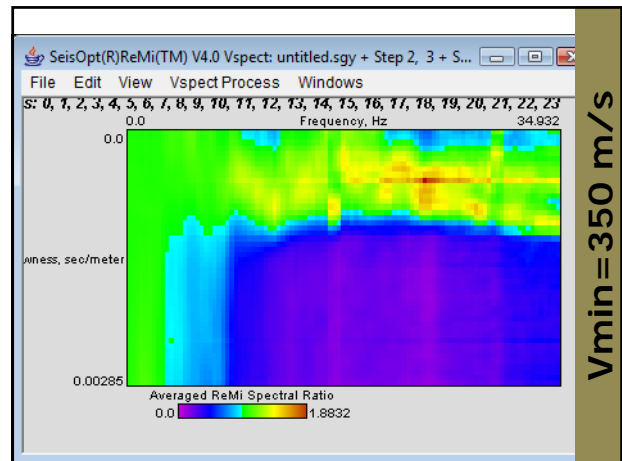
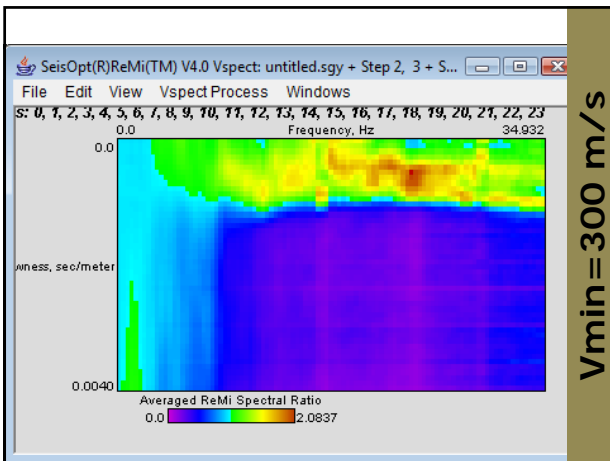




STEP 6

*Combine Records P-F*





**STEP 7**

*Pick and Save Dispersion*

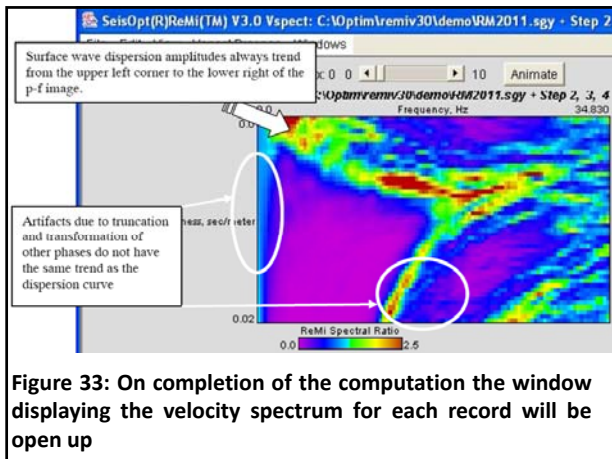


Figure 33: On completion of the computation the window displaying the velocity spectrum for each record will be open up

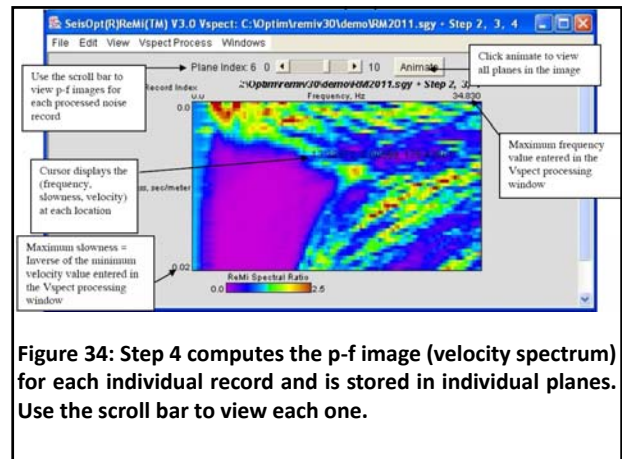


Figure 34: Step 4 computes the p-f image (velocity spectrum) for each individual record and is stored in individual planes. Use the scroll bar to view each one.

