



Tutorial for horizontal to vertical spectral ratio (H/V or HVSR) processing using SeisImager/SW

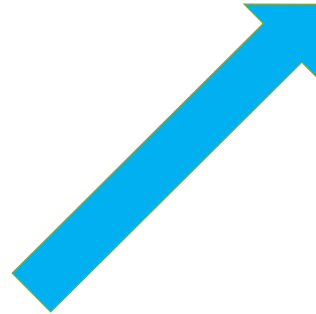
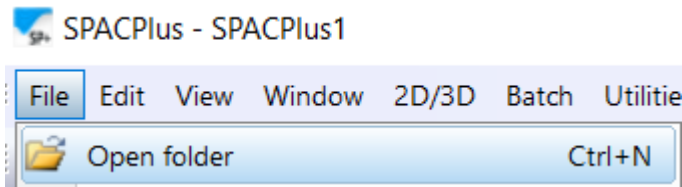
- Processing three component ambient noise data obtained by Atom.
- SeisImager/SW license is required.
- Download the latest installer from :
<https://seisimager.com/download/SeisImager.zip>
- Download the example data from :
<http://seisimager.esy.es/GeophysicalDatabase/hvsr.zip>
- See *“SeisImager/SWTM Manual Addendum (H/V)”* or *“SeisImager/SW-ProTM Manual”* for more details

Import Atom data files

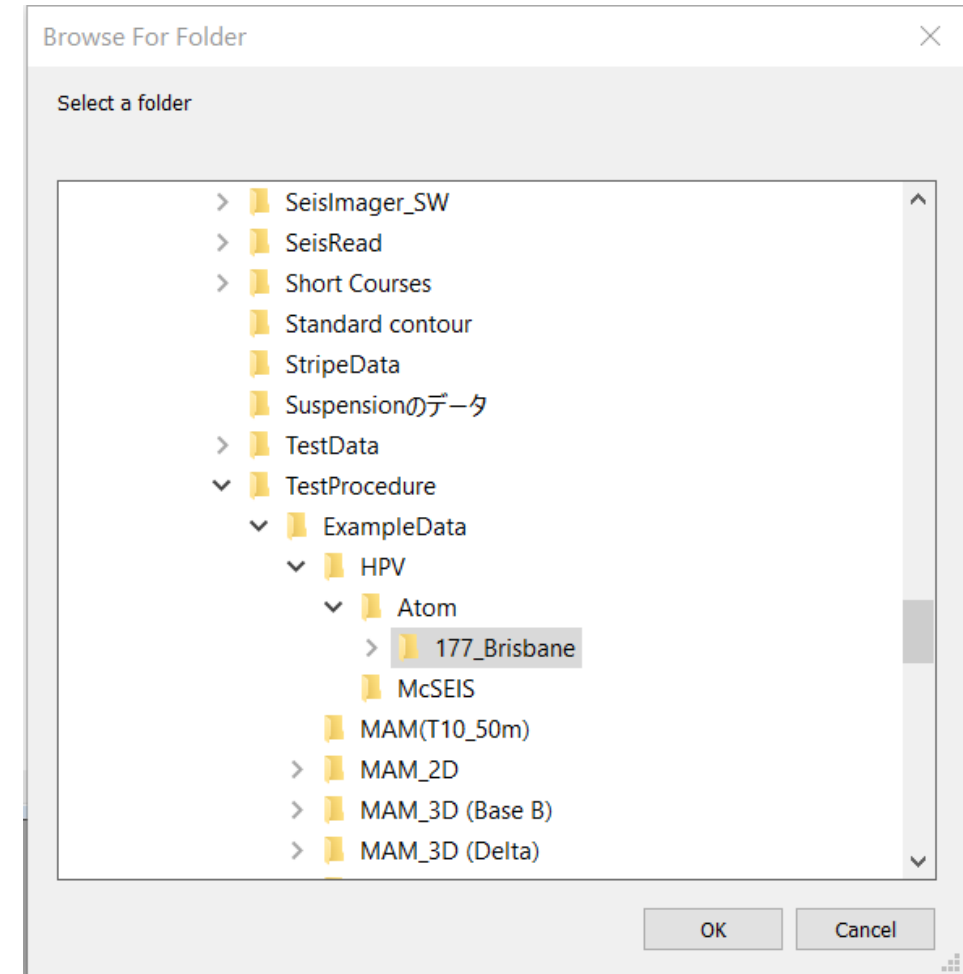
Double click icon to launch SPACPlus



Select "File", "Open folder".



Select a root folder of data.

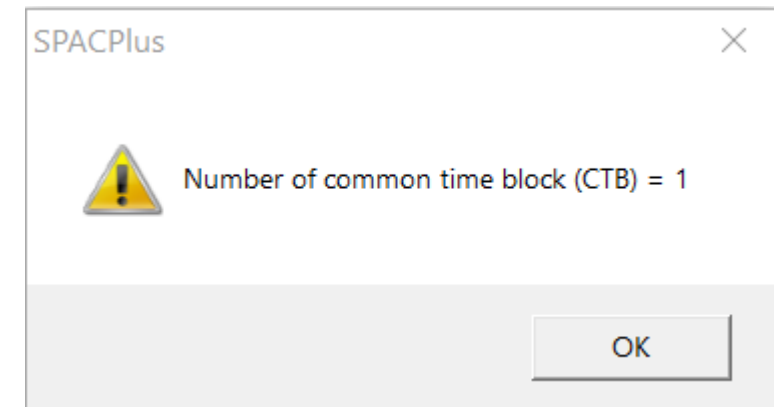
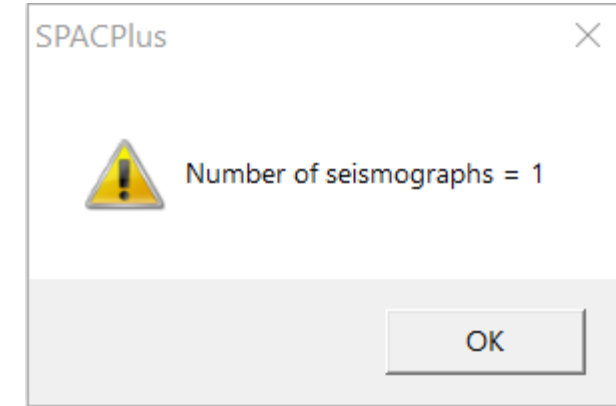


Import Atom data files

Confirm number of seismograph (Atom acquisition units).

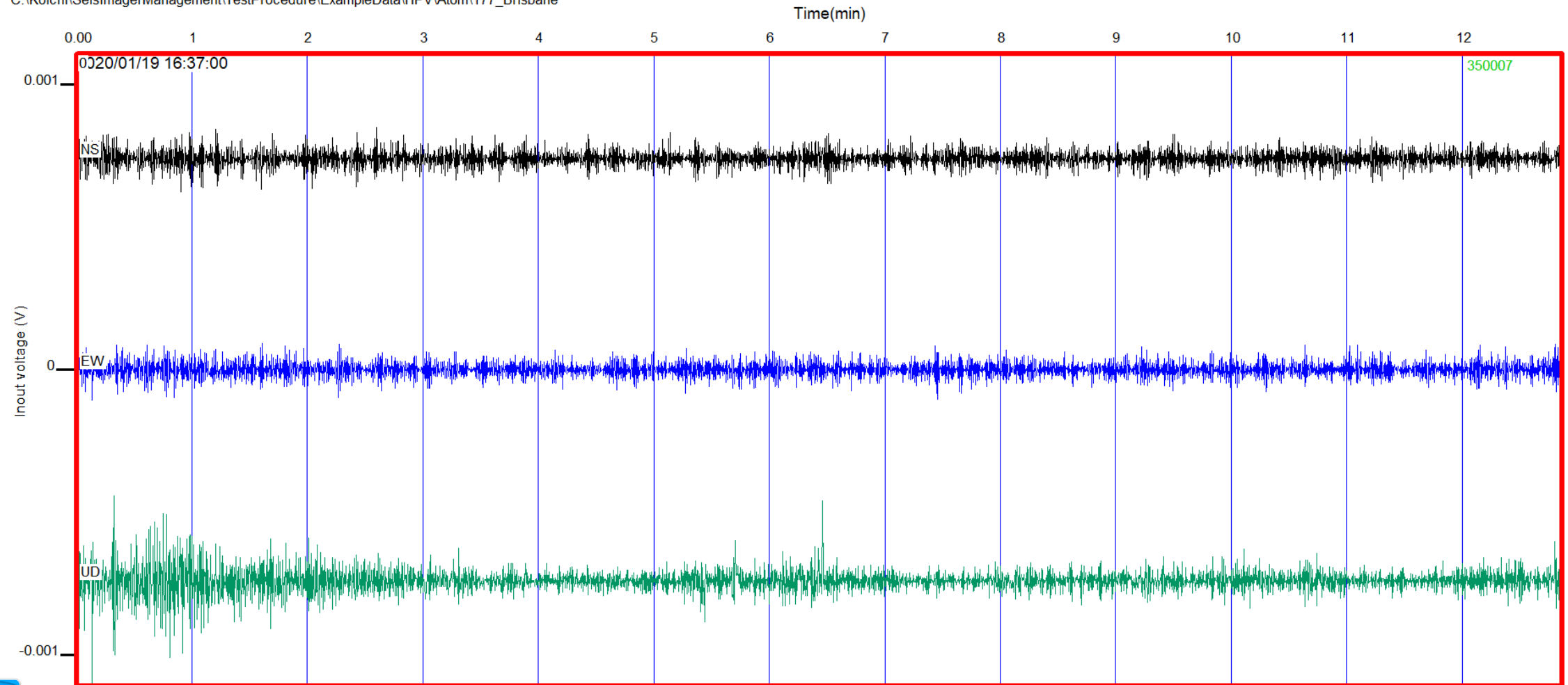


Confirm number common time blocks (CTB).




Raw waveform data

C:\Koichi\SeisImagerManagement\TestProcedure\ExampleData\HPV\Atom\177_Brisbane

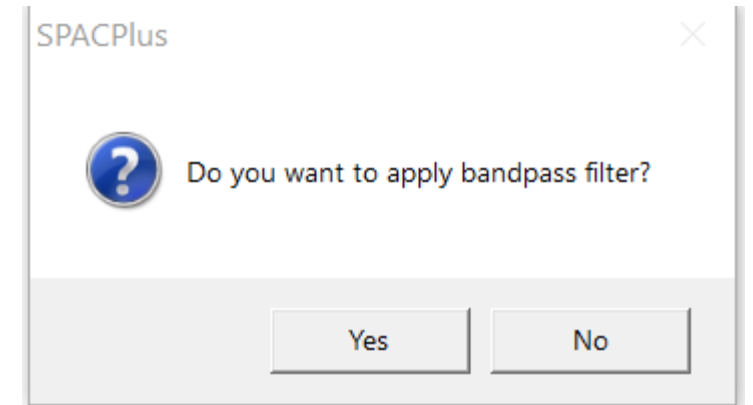


Select a common time block (CTB)

Click  to select a common time block.

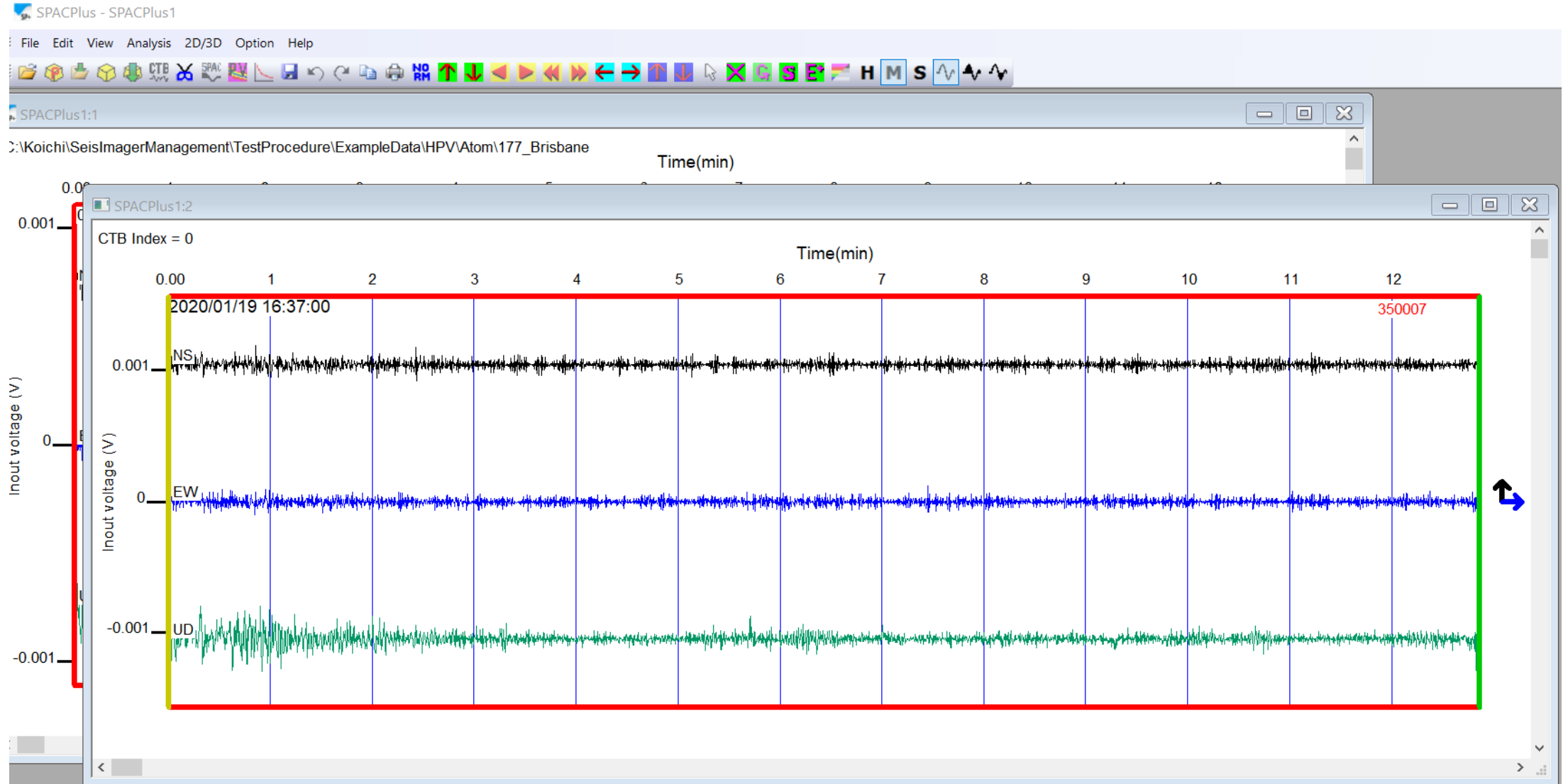


Bandpass filter is usually not necessary using 2Hz geophone.
Click “No” to continue.



Common time block (CTB)

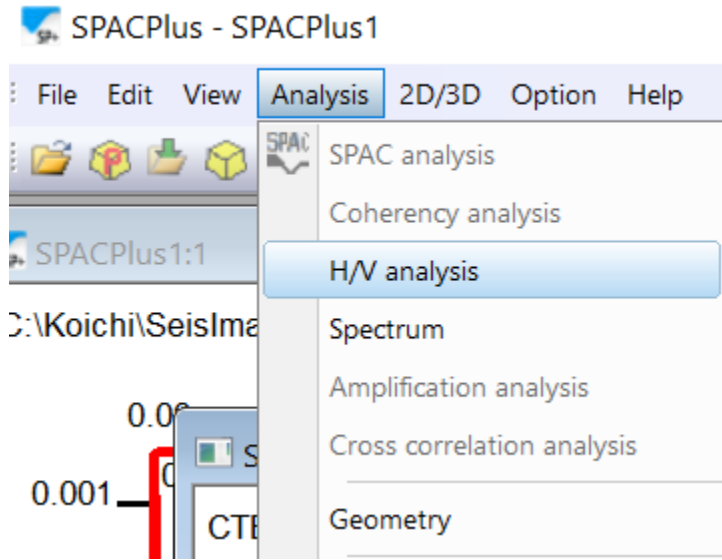
Selected common time block (CTB) appears in different Window.



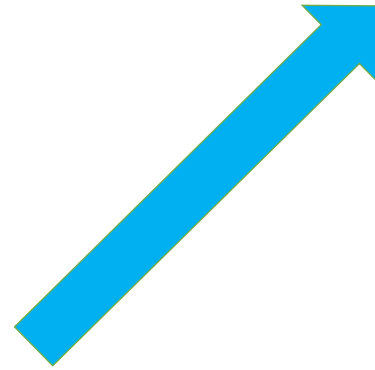
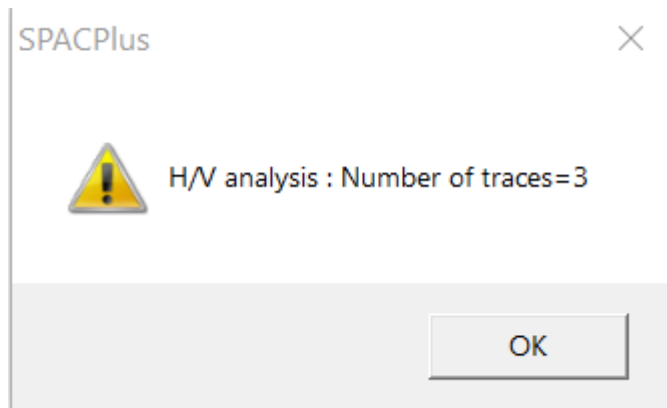
Calculate horizontal to vertical spectral ratio (H/V)

Select "Analysis", "H/V analysis" to calculate H/V spectrum.

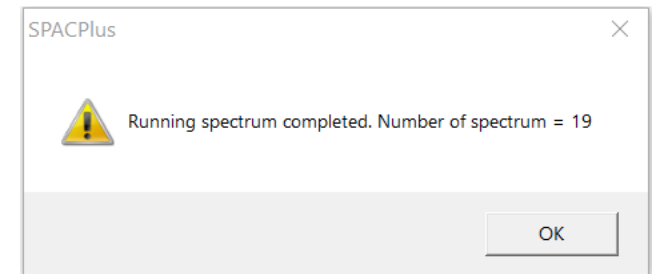
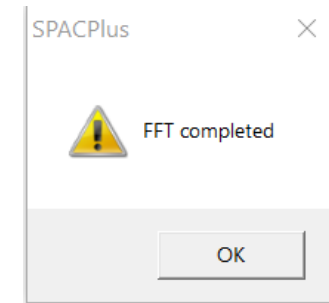
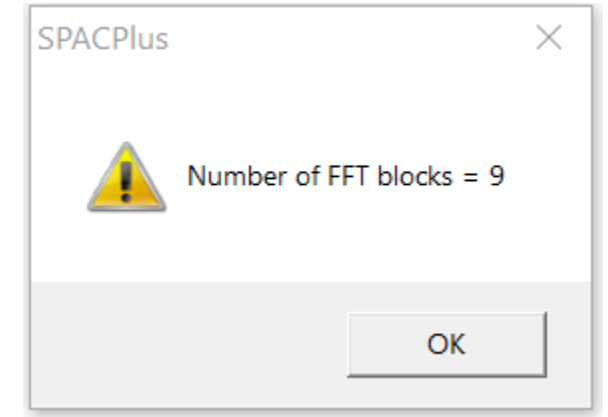
H/V spectra are calculated for each FFT block at first.



Confirm number of traces. It should be three.

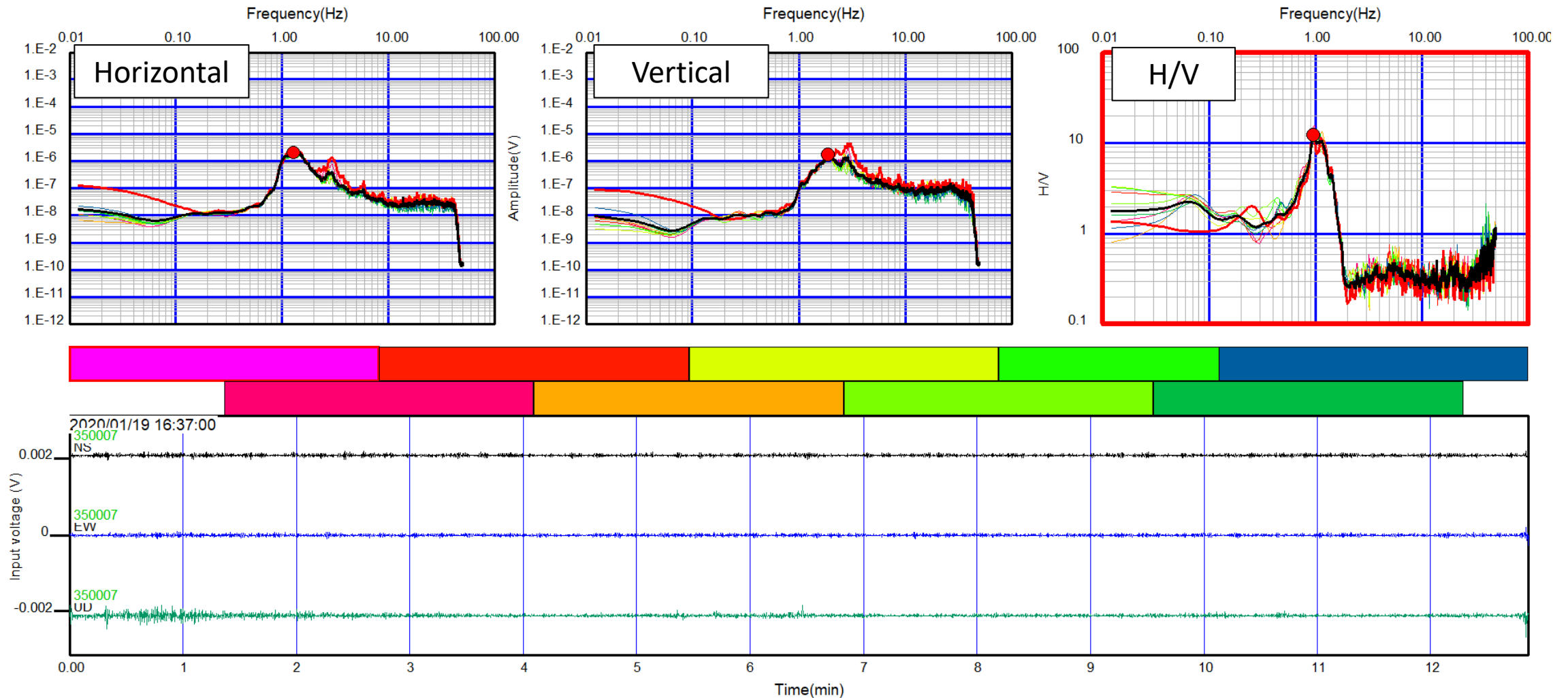


Confirm messages.



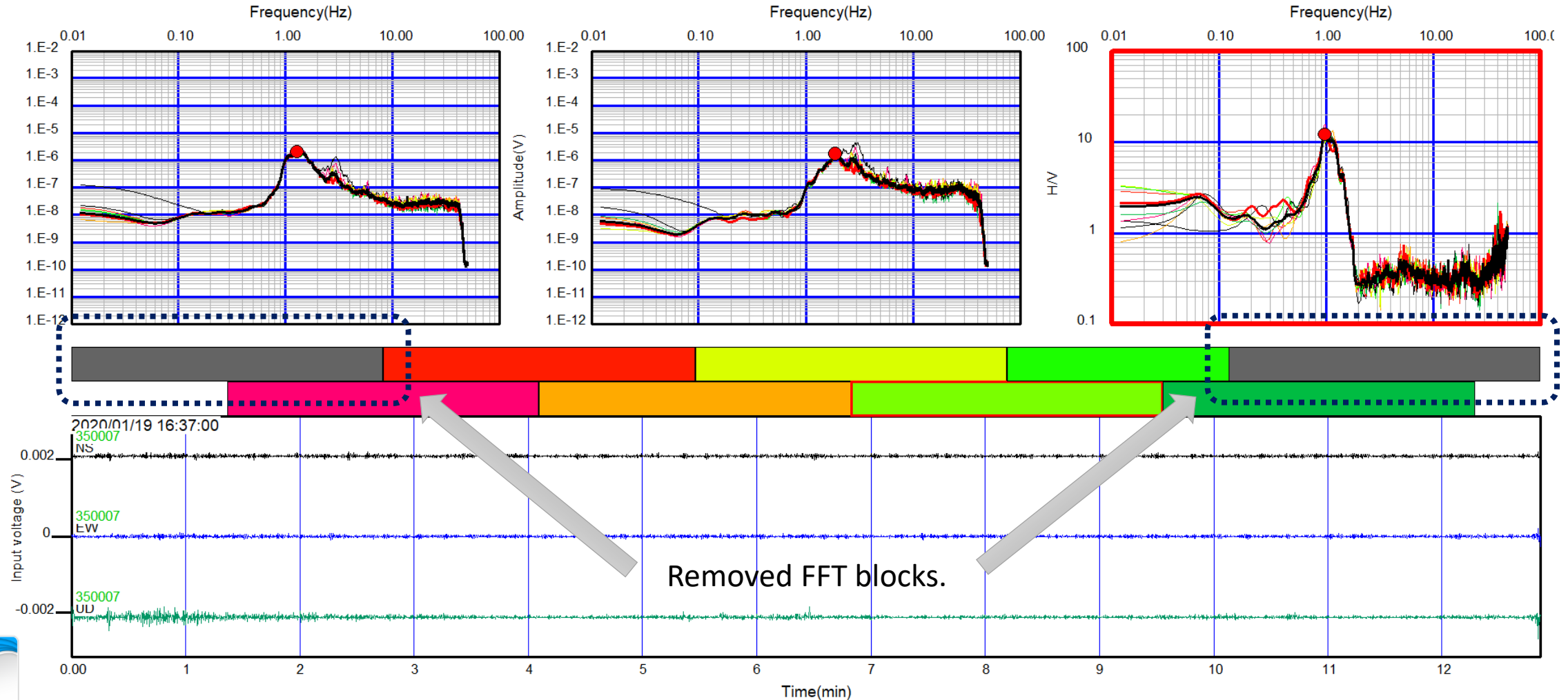
Show horizontal to vertical spectral ratio (H/V)

Horizontal, vertical, and H/V spectra are shown in new window. Color rectangles at the middle of the window indicates FFT blocks. Rectangle colors correspond to thin lines in the spectra. Bold black lines in the spectra indicate averaged spectra. Blocks including irregular noises can be removed by delete key. Deleted blocks are shown as gray.



Edit horizontal to vertical spectral ratio (H/V)

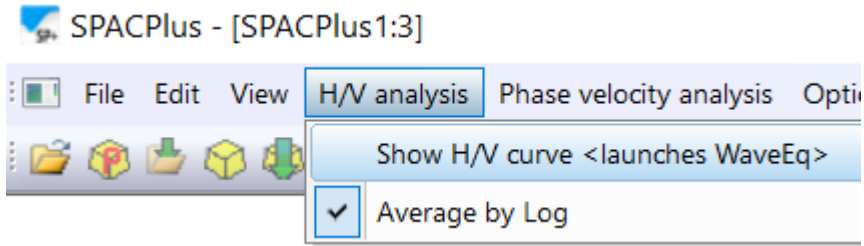
The first and last FFT blocks were removed from average.



Show H/V spectrum by WaveEq

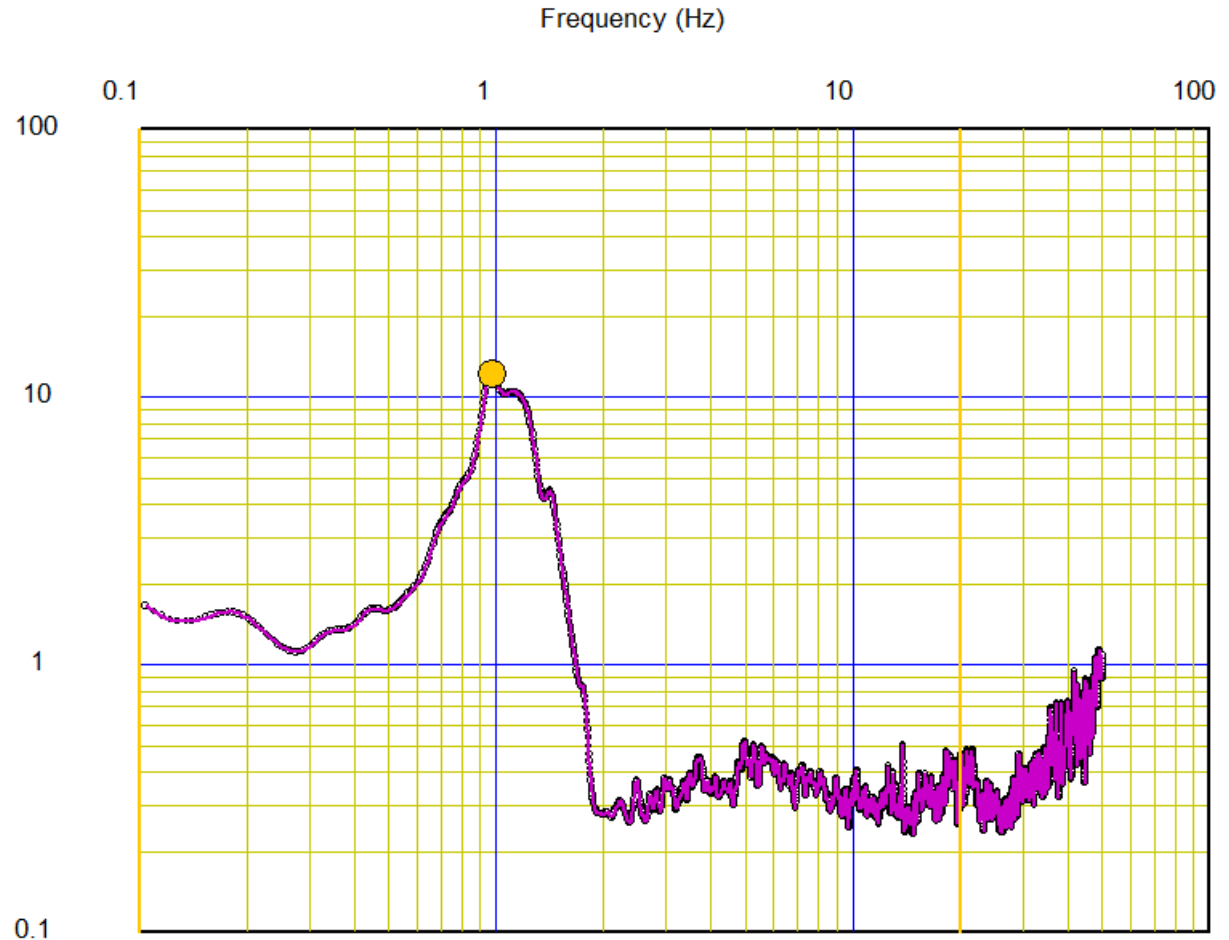
WaveEq is automatically launched and H/V spectrum appears.

Select “H/V analysis”, “Show H/V curve <launches WaveEq>” for further processing.



See “*SeisImager/SW™ Manual Addendum (H/V)*” or “*SeisImager/SW-Pro™ Manual*” for further processing.

H/V



H/V spectrum :

H/V peak frequency = 0.977 Hz

