

Field Testing Guidelines and Processing Tools

In support of QuakeCoRE research, this page provides guidelines and processing tools to conduct field testing and develop high-quality datasets in line with Tech Platform 2 objectives. These guidelines and processing tools are organized by testing method.

Ambient Vibration H/V Spectral Ratio (HVSr) Testing

The horizontal-to-vertical spectral ratio (also called H/V, or HVSr) testing method is a simple seismic geophysical testing method aimed at the characterization of site period, using the passive measurement of ambient vibrations. This method is well suited for testing at sites with a strong impedance contrast(s) (e.g., a soft soil deposit overlying a stiff rock) and sites with limited space/access needed for more extensive testing. The test involves the placement of a single three-component sensor and data logger, which allows for rapid deployment and a quick, first level assessment of site characteristics.

Guideline Documents:

Procedure HVSr Fieldwork ([Download PDF](#))

- Guidelines and recommendations to conduct H/V field testing using Nanometrics Trillium Compact Sensors and Centaur Data Loggers.

Procedure HVSr Processing ([Download PDF](#))

- Guidelines and recommendations for H/V spectral ratio analysis using the Geopsy software package and the archival of data and interpreted results.

Datasheet HVSr ([Download PDF](#))

- Recommended HVSr datasheet for use in the field to record and track important testing details and aid in the development of metadata descriptions.

Processing Tools and Software:

Miniseed Data File Pre-processing Scripts

- Python scripts to prepare raw miniseed data files from Nanometrics Centaur data loggers for HVSr analysis are available at https://github.com/ucgmsim/TechPlatform2/tree/master/ProcessingScripts/HVSr_PreprocessingMiniseedFiles

HVSr Processing and Analysis

- Geopsy is an open-source geophysical analysis software package, which can be used for quick HVSr analysis and is available at [geopsy.org](https://www.geopsy.org).

Active Source Surface Wave Testing

The multi-channel analysis of surface waves (MASW) is a non-invasive seismic geophysical method aimed at the characterization of the small strain stiffness of the near surface (i.e., shear wave velocity), using the disperse nature of surface waves to drive an inversion analysis.

Guideline Documents:

Procedure Active Source Surface Wave Testing Fieldwork ([Download PDF](#))

- Guidelines and recommendations to conduct MASW field testing using Geometrics Geode data acquisition systems and a linear array of 4.5 Hz geophones.

Procedure HVSr Processing ([To Be Added](#))

- Guidelines and recommendations for surface wave testing dispersion analysis.

Datasheet HVSr ([To Be Added](#))

- Recommended HVSr datasheet for use in the field to record and track important testing details and aid in the development of metadata descriptions.

Processing Tools and Software:

To be added.