

The multichannel analysis of surface waves (MASW) method was originally developed at the Kansas Geological Survey (KGS) during the mid-1990s. Each new version of our software includes components used in our most current research. SurfSeis is a living group of code that we are proud to provide as a product of our research. **The following are the most significant new features we bring to you in SurfSeis 5** (the standard software—without any of the optional modules—is known as v5.0):

## Main

- 1) Varying elevations and maximum-depth 2-D imaging
  - a) For initial models and inversion results
    - i) Varying maximum-depth
    - ii) Varying elevations
  - b) From \*.LST files produced by inversions with or without elevation information.
    - i) Import elevation information to new and old processed data (i.e., list files) and obtain new look at 2-D images and information.
    - ii) Using information from \*.LST files a 2-D image will be displayed on a separate tab for the Vs, Vp, Poisson's ratio (Pois), Density, Vp/Vs ratio, Shear modulus, Vs30, and Standard Penetration Test number (SPT N) parameters.
  - c) From 3-column .txt and .grd files with varying elevation and depth.
- 2) High-resolution Linear Radon Transform (HRLRT) (if chosen as an optional module), now available for
  - a) Single record processing (useful for initial testing) and
  - b) Passive-data dispersion curve imaging.
- 3) Expanded Modeling and Random Inversion on dispersion curve images (a.k.a. frequency - velocity spectrum) using up to 20 layers and input from .lst results. Applicable for Rayleigh and optional for Love waves.
- 4) Scholte-wave (a.k.a., underwater MASW). Scholte-wave modeling on dispersion curve images, random and deterministic (i.e., regular) inversion offered for beta testing.
- 5) Improvements based on input of previous versions, including:
  - a) More flexible coordinate input for passive data.
  - b) Save all dispersion-curve images at once.

- c) Constant maximum-depth model estimated from average maximum-depth with each dispersion curve.
  - d) Full-spread and half-spread line guides displayed during dispersion-curve picking.
  - e) Show 2-trace spread aliasing velocities (useful with SASW approach).
- 6) Love-wave modeling and inversion (if chosen as an optional module). Love-wave developments include dispersion-curve values modeling on dispersion-curve images, random and deterministic (i.e., regular) inversion.

### Optional versions of SurfSeis 5

- a) **SurfSeis 5.1. Includes Love-wave modeling and inversion.** Love-wave developments include dispersion-curve values modeling on dispersion-curve images, random and deterministic (i.e., regular) inversion. *This module is new in SurfSeis 5.*
- b) **SurfSeis 5.2. Includes the HRLRT module.**
- c) **SurfSeis 5.3. Includes both the HRLRT and Love Wave modules.**  
Check our successful application of both (Ivanov et al., 2015).

Visit <http://www.kgs.ku.edu/software/surfseis/publications.html> for the Ivanov citation and a listing by topic of some of our other publications.