**SurfSeis©**

Surface Wave Processing Software
for use with Microsoft® Windows™

**SurfSeis©** software has developed as a product of our research at the Kansas Geological Survey (KGS). It was written to process both active and passive seismic data to obtain shear-wave velocity \((V_s)\) models, using the multichannel analysis of surface waves (MASW) method, which was also originally conceived and developed at the KGS.

Surface waves have historically been the bane of near-surface reflection seismologists. With the development of MASW has come a global explosion in research and use of the MASW method for application to engineering, groundwater, and environmental problems. Our fourth generation (**SurfSeis© 4.0 / 4.2**) provides industry-leading features and capabilities.

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**SurfSeis© Capabilities**

**SurfSeis©** uses active or passive seismic data recorded with vertical geophones.

**Active and Passive MASW**

**Dispersion Curve Imaging**
- Phase-shift method
- Advanced
- HLRT

**Inversion** of the surface waves for \(V_s\)
- Fundamental mode
- Higher modes

**2-D Vs Imaging**

**Research Tools**
- Modeling
  - Dispersion-curve estimations from layer models (check if \(V_p\) matters)
  - Comparison of calculated dispersion-curve values to dispersion-curve images
- Monte-Carlo Inversion
  - Maximum energy models

**Seismic Data Utilities**
- Data conversion
  - SEG2 to KGS
  - SEGY to KGS
  - KGS to SEGY
- Geometry Assignment
- Extract/Resample records/traces
  - Roll-along from a fixed spread
- Assemble walkaway records into one
- Seismic data display (b/w & color)

**Seismic Data General Processing**
- Bandpass filter
- Fk filter
- Mute
- AGC
- Trace-by-trace frequency spectra

Dispersion-curve estimations are phase velocity plotted against frequency.

Inversion of dispersion curve yields a 1-D vertical profile.

Using a continuous acquisition style, a series of 1-D vertical profiles can be gathered and interpolated.
Enhanced **passive** data dispersion-curve imaging
(New with SurfSeis 4.0)

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Friendly MASW **a-priori information** input
(New with SurfSeis 4.0)

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**High-resolution Linear Radon Transform (HLRT)**
(New with SurfSeis 4.2)

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**New to SurfSeis® 4**
- Enhanced passive MASW data dispersion-curve imaging in the presence of passive multi-source environments such as road traffic and trains.
- Inversion using friendly 1-D and 2-D *a priori* information input.
- HLRT better (sharper) dispersion-curve imaging and mode separation (and interpretation) (optional in v4.2), can be useful with multi-mode inversion (available since v.3.0).
- Ongoing-inversion 2-D Vs monitoring and 2-D imaging of final derivable from *a priori* information and Vs results (such as Vp or Poisson’s ratio).
- New menus and friendly dialogs complementing existing interface; smoother operation; faster code.
- Improved compatibility with other KGS seismic software (i.e., WinSeis, SeisUtil, seismodeler).

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**SurfSeis® 4.0 / SurfSeis® 4.2**
Contact us for pricing and visit our webpage for more information (email and web address below).
Upgrade pricing available with current serial number.

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**SurfSeis® 5 (coming soon)**
- varying Topography,
- passive-data HRLRT,
- Love-wave inversion,
- Scholte-wave inversion, and more

*scheduled release — March 1, 2016*