

SurfSeis[®]

Surface Wave Processing Software

for use with Microsoft[®] Windows[™]

SurfSeis[®] software was 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 fifth generation (SurfSeis[®] 5.0 – 5.3) provides industry-leading features and capabilities.

Active and Passive MASW

Dispersion Curve Imaging

- Phase-shift method
- Advanced
- HRLRT

Inversion of the surface waves for V_s

- Fundamental mode
- Higher modes

2-D V_s Imaging

Research Tools

- Multi-mode Monte-Carlo (a.k.a. “effective/apparent” mode) Inversion
 - Maximum-energy multi-mode models
- Modeling
 - Dispersion-curve estimations from layer models (check if V_p matters)
 - Comparison of calculated dispersion-curve values to dispersion-curve images (“effective/apparent” mode)

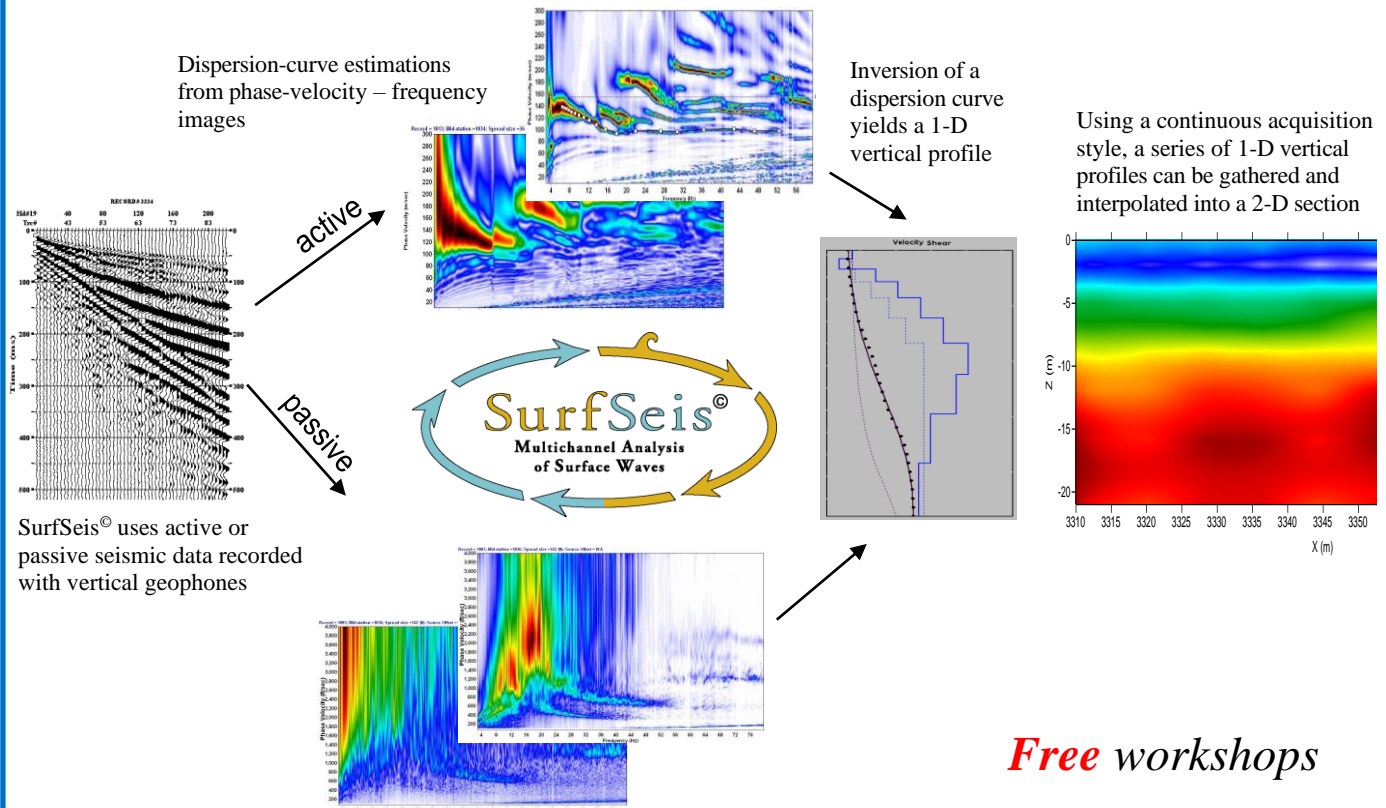
Seismic Data General Processing

- Bandpass filter
- Fk filter

SurfSeis[®] Capabilities

- Mute
 - AGC
 - Trace-by-trace frequency spectra
- #### 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 and color)

Rayleigh waves – Love waves – Scholte waves

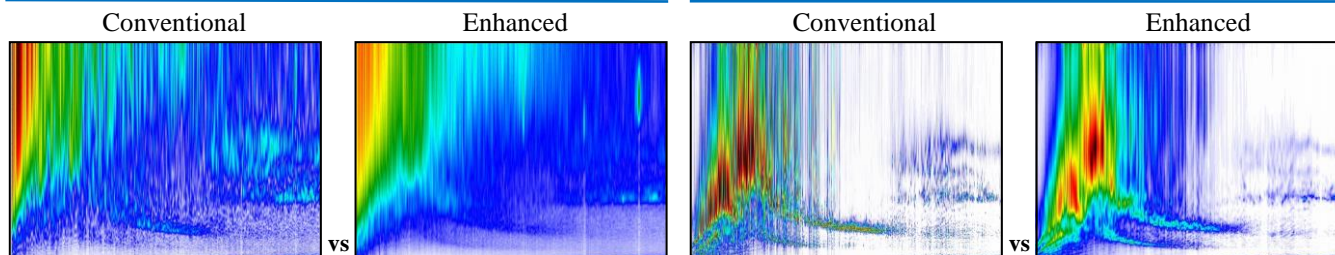


Free workshops

SurfSeis[®] 5

Enhanced **passive** data dispersion-curve imaging
(Introduced in SurfSeis 4.0)

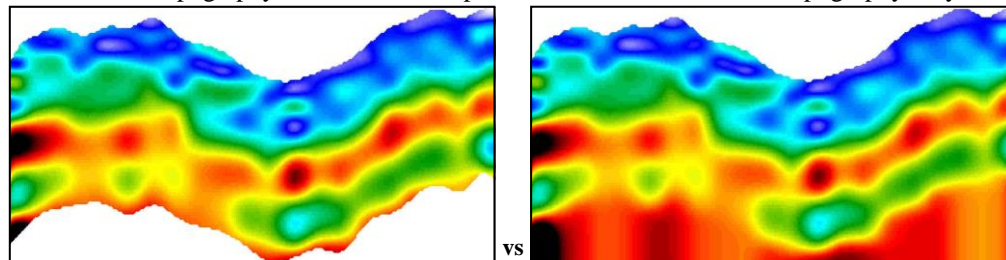
HRLRT applied to **passive** data
(New with SurfSeis 5.2)



Initial models and final 2-D results displayed with or without variable **topography**
and maximum-depth inversion (New with SurfSeis 5.0)

With variable topography and maximum depth

With variable topography only



Rayleigh-
Love- waves
Scholte-



HRLRT Multi-mode
inversion

New to SurfSeis[®] 5

- 2-D initial model and final results displayed with or without varying topography or maximum depth.
- Maximum-depth inversion based on each dispersion-curve data set.
- Love-wave modeling and inversion (optional, new in v5.1).
- HRLRT's better (sharper) dispersion-curve imaging and mode separation (and interpretation), can be useful with multi-mode inversion (accessible since v.3.0); it is now available for use with passive data and works jointly with enhanced passive imaging (optional in v5.2).
- Display data in Standard Penetration Test (SPT) N-values instead of Vs.
- Scholte-wave (i.e., underwater MASW) modeling and inversion.
- Expanded modeling and random inversion on dispersion-curve images (a.k.a., "effective/apparent" mode).
- Display old 2-D results with elevations and other improvements.

surfSeis 6

expected release – March 2017

Check for **free** workshops,
publications, and new exciting
features at our web site

©2000, 2006, 2010 Kansas Geological Survey, The University of Kansas, all rights reserved.

®Registered to Microsoft Corp., Redmond, WA.

™Trademark registered to Microsoft Corp.

SurfSeis[®] 5.0 – SurfSeis[®] 5.3

Released March 2016

Contact us for pricing and visit our webpage for more information (email and web address below).
Upgrade pricing available with current serial number.



Kansas Geological Survey
1930 Constant Avenue
Lawrence, Kansas 66047-3726 USA
Ph. (785) 864-3965 / Fax (785) 864-7728
SurfSeis Office (785) 864-2176
E-mail: SurfSeis@ku.edu

When you ask for a quote, please tell us which
version suits you best—

SurfSeis 5.0 is our standard software (no modules)
SurfSeis 5.1 includes the Love-wave module
SurfSeis 5.2 includes the HRLRT module
SurfSeis 5.3 includes both modules

To read about our successful application
of both modules, see Ivanov et al., 2015, at
www.kgs.ku.edu/software/surfSeis/publications.html.