Geogiga Seismic Pro 11.0

Release Notes

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Table of Contents

Introduction....1

Feature Updates....2
General Updates....2
Updates to Individual Applications....5

Bug Fixes....14
Common Bug Fixes....14
Bug Fixes in Individual Applications....14

Introduction

This document provides the release notes for **Geogiga Seismic Pro™** 11.0.

Geogiga Seismic Pro™ is a comprehensive software package for near-surface seismic data processing and interpretation. It includes 18 standalone applications, as shown in Figure 1, covering reflection, refraction, surface-wave, and borehole seismic methods, along with utilities for wavefield modeling, velocity-model plotting, and more.

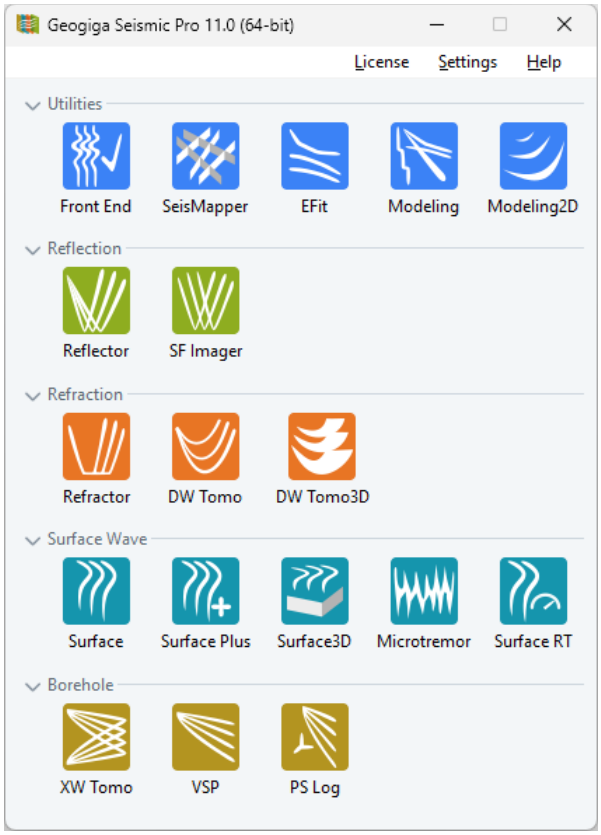


Figure 1: **Seismic Pro** Launchpad with collapsible application categories

Version 11.0 is a major release featuring new functionality, enhancements, and bug fixes.

Key updates include automatic layer assignment for refraction interpretation, surface-wave backscatter analysis, integrated Vp-based dispersion inversion, conversion of SRT velocity models to layered models, powerline interference suppression, and enhanced microtremor analysis.

All applications are now 64-bit, removing practical data-size limitations for large 2D and 3D SRT surveys, long reflection lines, and long-duration passive surface-wave recordings.

These release notes are organized into two sections: **Feature Updates** and **Bug Fixes**.

Feature Updates

This section summarizes general enhancements to **Seismic Pro** 11.0, followed by updates to individual applications.

General Updates

The following enhancements apply to most **Seismic Pro** applications:

- **64-bit applications** – Upgraded all applications from 32-bit to 64-bit to support larger datasets and longer recordings.
- **File commands** – Consolidated the **New** and **Open** commands into a single **Open** command with three options. See Figure 2.

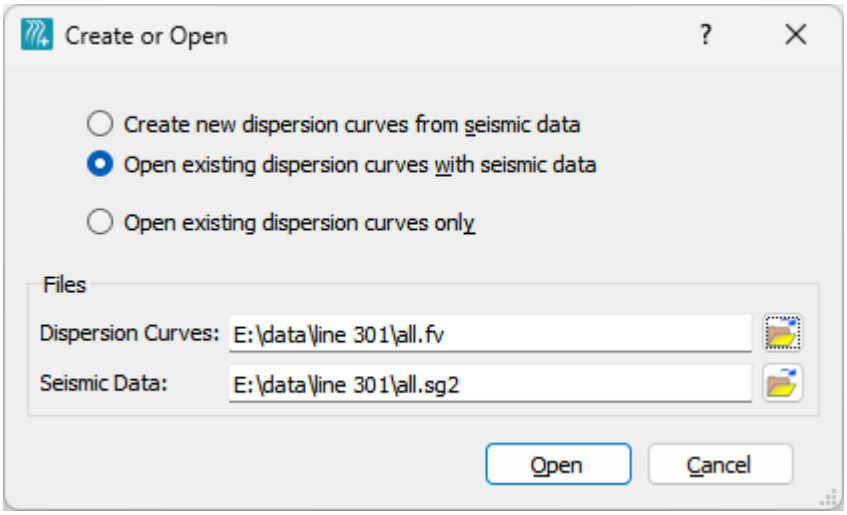


Figure 2: Open command options

- **Recent Files** – Added a menu for reopening previously accessed files.
- **Trigger delay** – Applied consistently to trace display, first-arrival picking, trace muting for dispersion analysis, velocity analysis, and related operations.
- **First-arrival picking** – Improved drag picking with automatic snapping to the first-arrival onset, added continuous picking across traces, and added a help overlay to the trace view. See Figure 3.

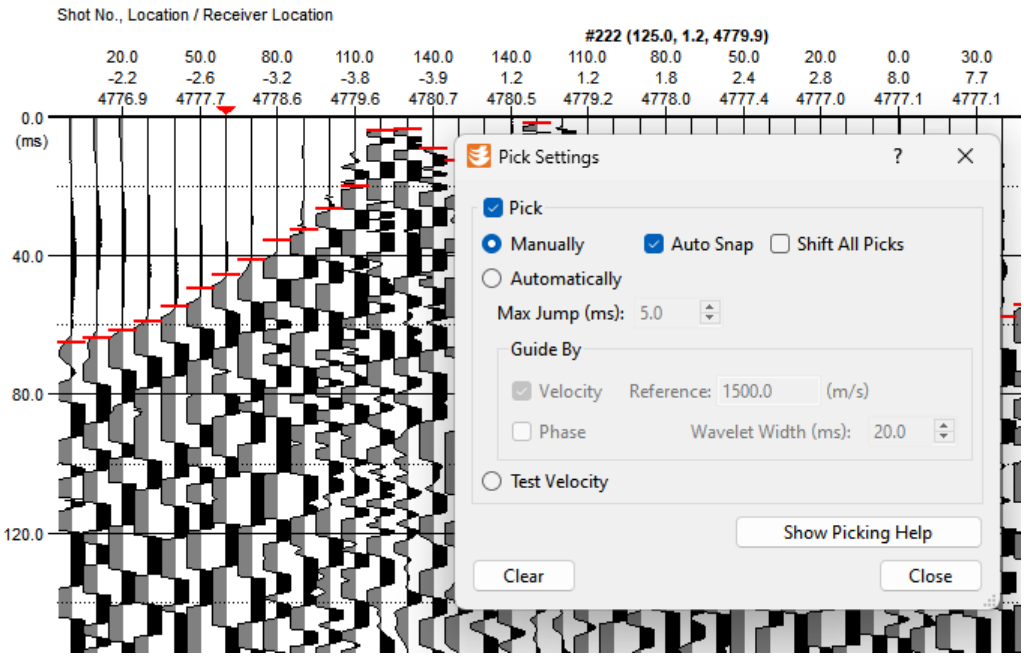


Figure 3: First-arrival picking with automatic snapping

- **Merged seismic file editing** – Added options to remove, replace, insert, or append individual records in merged seismic files. See Figure 4.

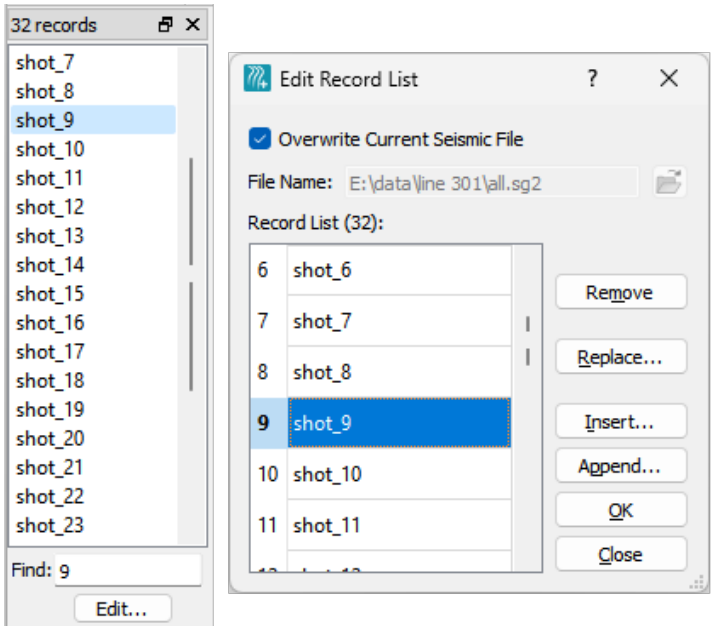


Figure 4: Editing records in a merged seismic file

- **Trace display** – Added **−**, **0**, and **+** buttons beside the horizontal scrollbar, along with **Alt + Left/Right Arrow** keyboard shortcuts for adjusting display gain.
- **2D section display** – Added options to set the X-axis range and reverse the vertical colorbar. Added automatic saving and loading of display settings, and improved blanking file generation when exporting 2D sections.
- **3D views** – Added help overlays to the 3D and 3D Fence views, along with automatic saving and loading of display settings.
- **Curve axes** – Added automatic scientific notation for X- and Y-axis labels when displaying very large or very small values.
- **Shot point coordinates** – Preserved shot point coordinates when applying the current record geometry to all records.
- **SEG-2 keyword handling** – Improved support for user-defined keywords.
- **Windows dialogs** – Switched file open/save, font, and color dialogs to the Windows API to improve compatibility with third-party software.
- **Help menu** – Added the **General Features Guide** command to the **Help** menu in each application.

Updates to Individual Applications

The following updates apply to individual **Seismic Pro** applications:

Front End

- Improved interactive trigger-time correction based on direct-wave or air-wave velocity. See Figure 5.

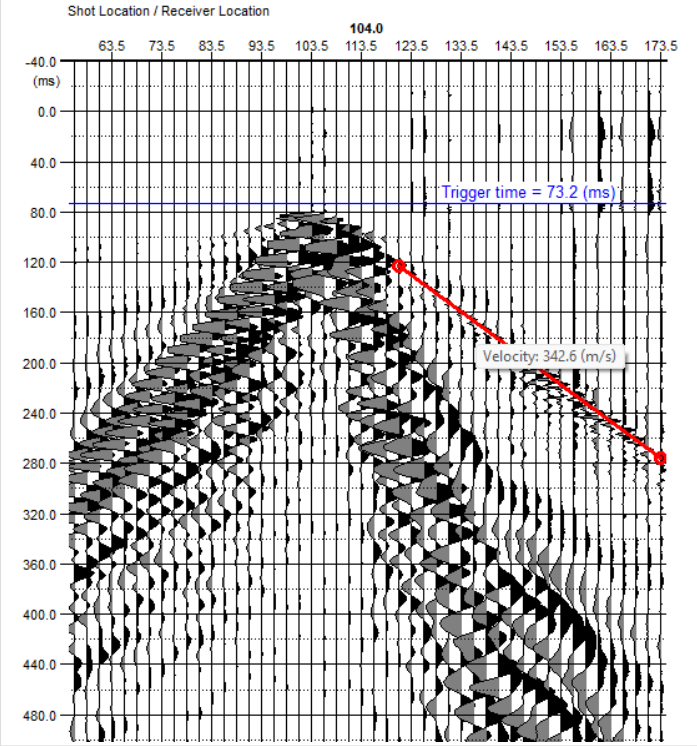


Figure 5: Interactive trigger-time correction based on air-wave velocity

- Added an option to set the trace-header delay (pre-trigger) value for selected files.
- Added a function to calculate and save differences between two seismic data files.
- Added an option to test apparent velocity.
- Added support for flexible file-table formats when assembling nodal seismic traces.
- Added file selection with the **Up/Down Arrow** keys and file loading with **Enter**.
- Added support for saving geometry information from a single seismic file to a text file.
- Added a **Clear Recent Directories** command to the directory drop-down list.

SeisMapper

- Increased the maximum number of horizontal samples to support longer profiles.

Reflector

- Added tomographic static correction for crooked lines using a 2D velocity model exported from **DW Tomo**. See Figure 6.

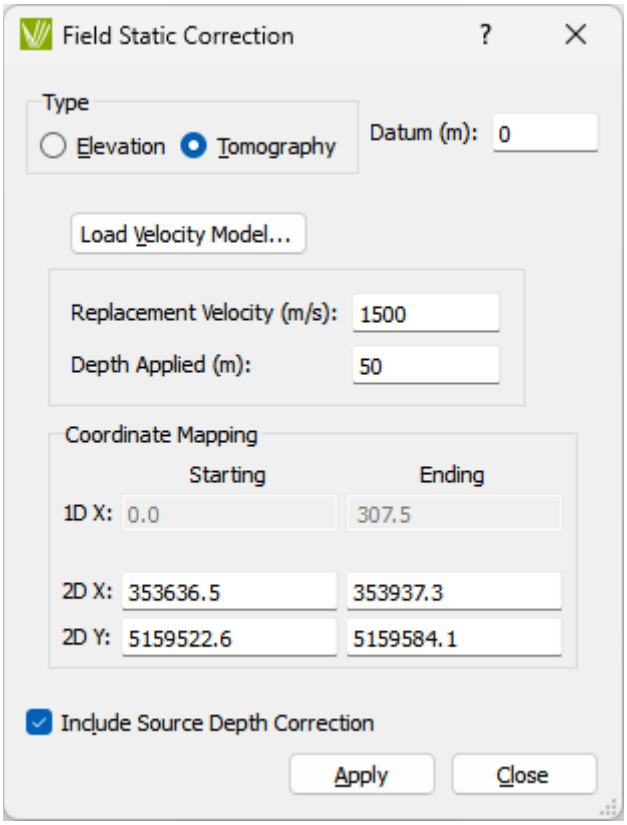


Figure 6: Tomographic static correction for crooked lines

- Added an option to set the maximum frequency for F-K filter plots.
- Added support for resizing the F-K and Tau-p filter views.

Refractor

- Added automatic layer assignment. See Figure 7.

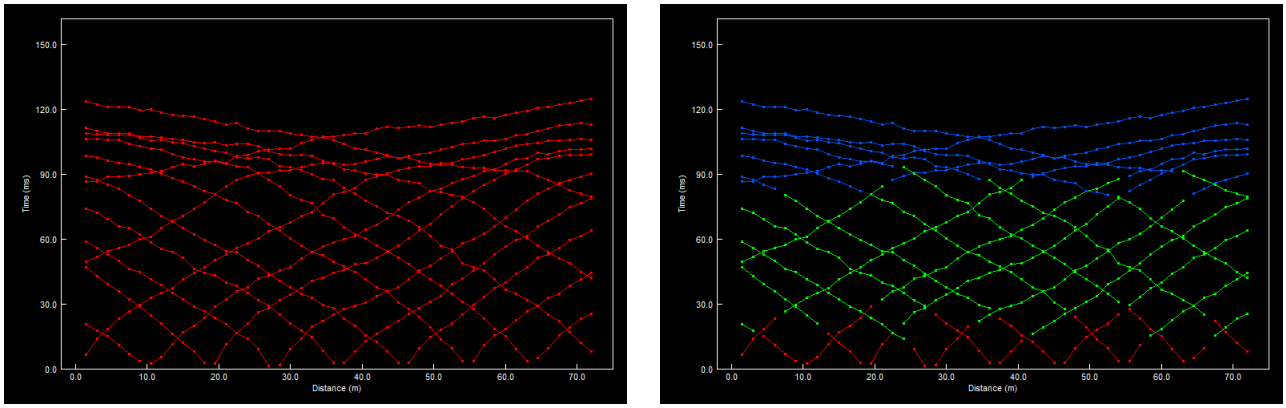


Figure 7: Automatic layer assignment (left: before; right: after)

- Added reduced-traveltime TX curve plots to help verify and adjust layer assignments. See Figure 8.

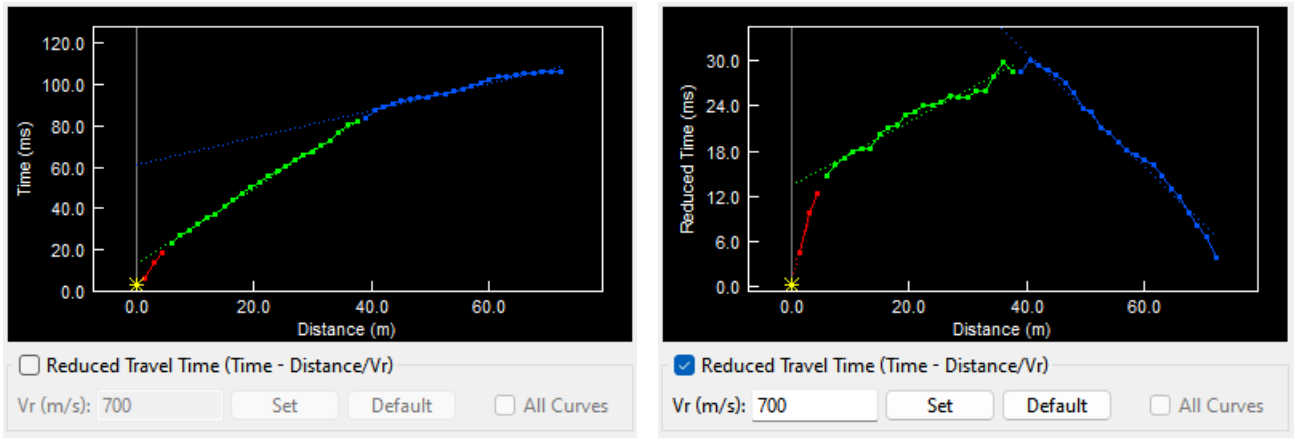


Figure 8: TX curve plots (left: standard; right: reduced traveltime)

- Added powerline interference suppression.

DW Tomo

- Added powerline interference suppression. See Figure 9.

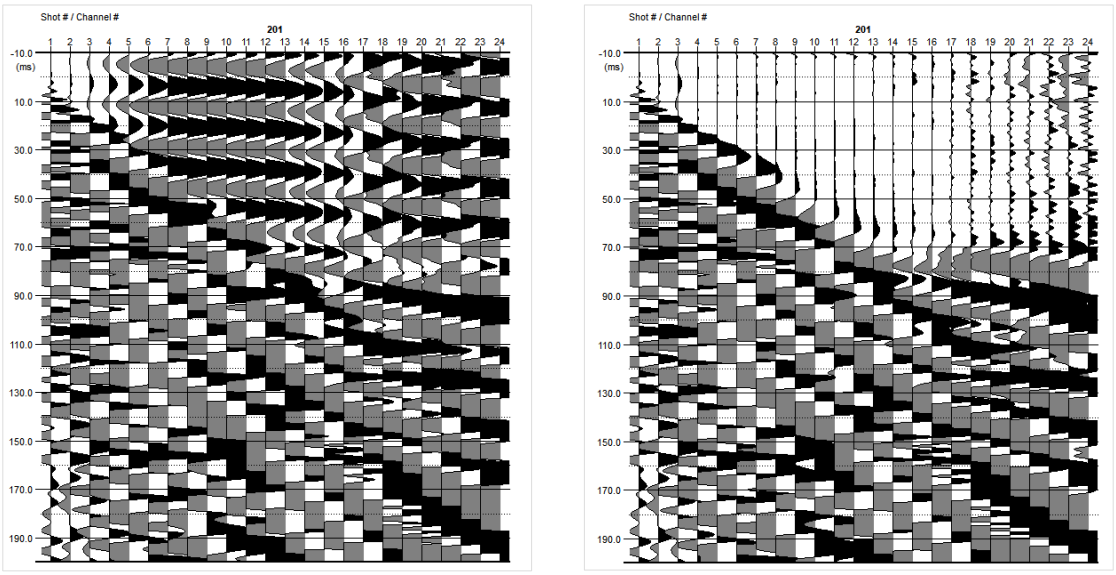


Figure 9: Powerline interference suppression (left: before; right: after)

- Improved building of initial velocity models and setting of tomography velocity limits.
- Added conversion of SRT models to layered models, with the number of layers and layer velocities determined automatically. See Figure 10.

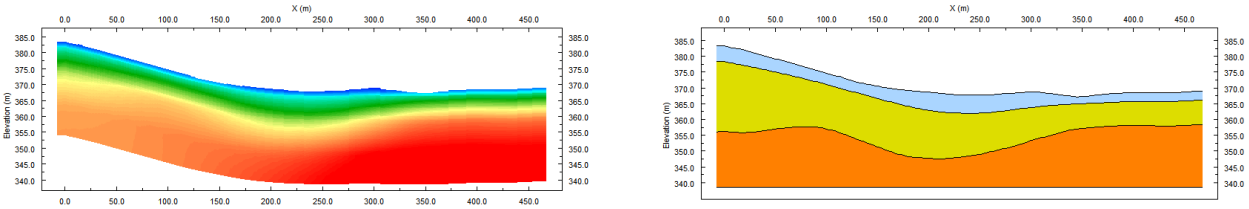


Figure 10: Layered model conversion (left: SRT model; right: layered model)

DW Tomo3D

- Added trigger-time correction.
- Improved building of initial velocity models and setting of tomography velocity limits.

Surface and Surface Plus

- Added support for building initial inversion models using Vp imported from **Refractor**, **DW Tomo**, or **Reflector** results, enabling a more integrated workflow across active and passive MASW, SRT, and conventional refraction and reflection methods.
- Added an option to set the search range, Poisson's ratio, and density to uniform values for the initial models of all dispersion curves.
- Improved the initial Vs model used for inversion when re-iteration is enabled.
- Set the default A value for SPT-N calculations based on the selected measurement units (meters or feet).
- Added calculation of elastic moduli, including shear modulus (Gmax), Young's modulus, and bulk modulus.
- Added simultaneous display of velocity and derived property sections. See Figure 11.

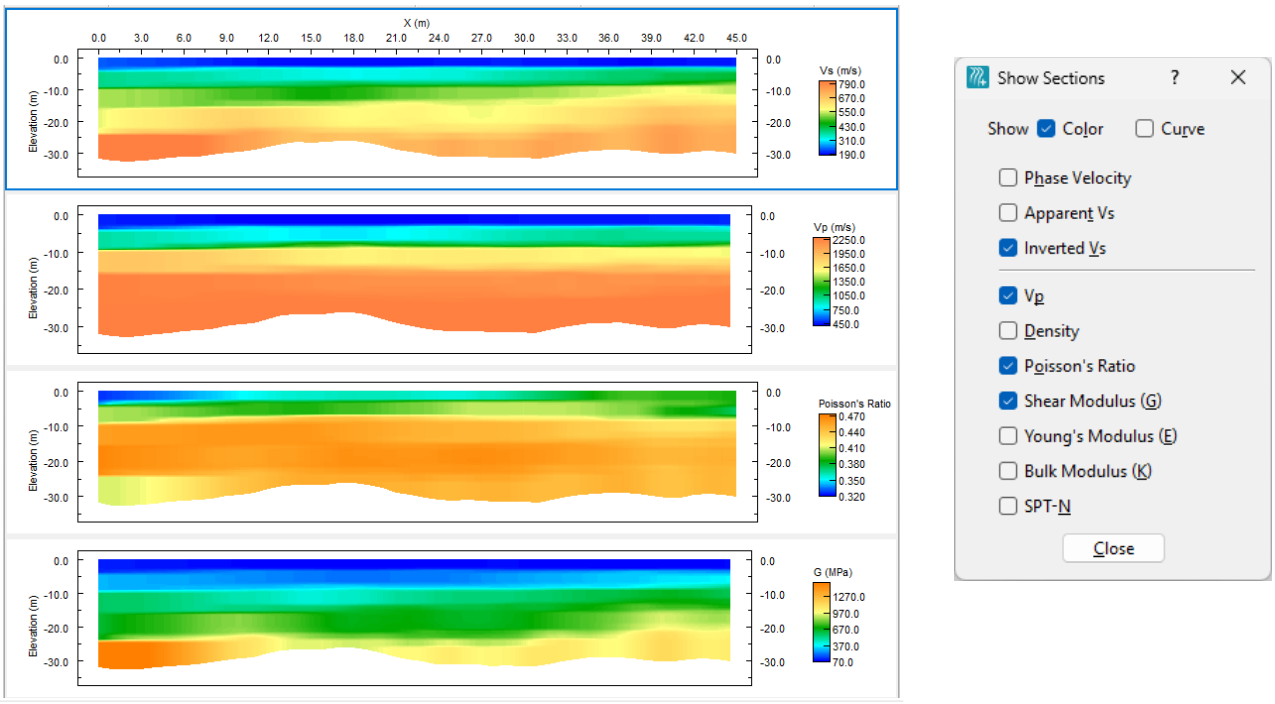


Figure 11: Simultaneous display of Vs, Vp, Poisson's ratio, and shear modulus sections

- Added muting for mid-shot records. See Figure 12.

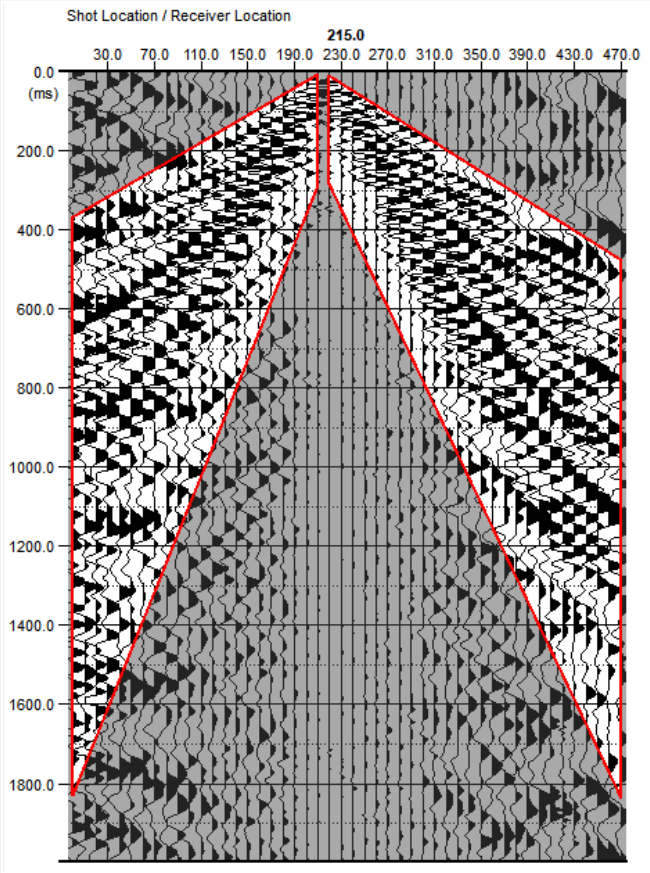


Figure 12: Mid-shot muting

- Added options to customize the color and line width of the dispersion-curve picking search box, along with a help overlay.

Surface Plus only

- Extended CMZ gather generation to 3D active or passive surface-wave surveys. See Figure 13.

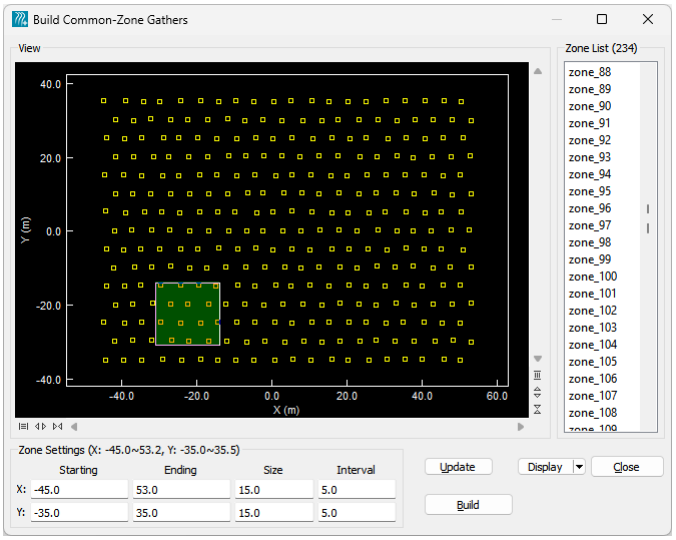


Figure 13: CMZ gather generation for 3D surveys

- Added backscatter analysis of surface waves (BASW). See Figure 14.

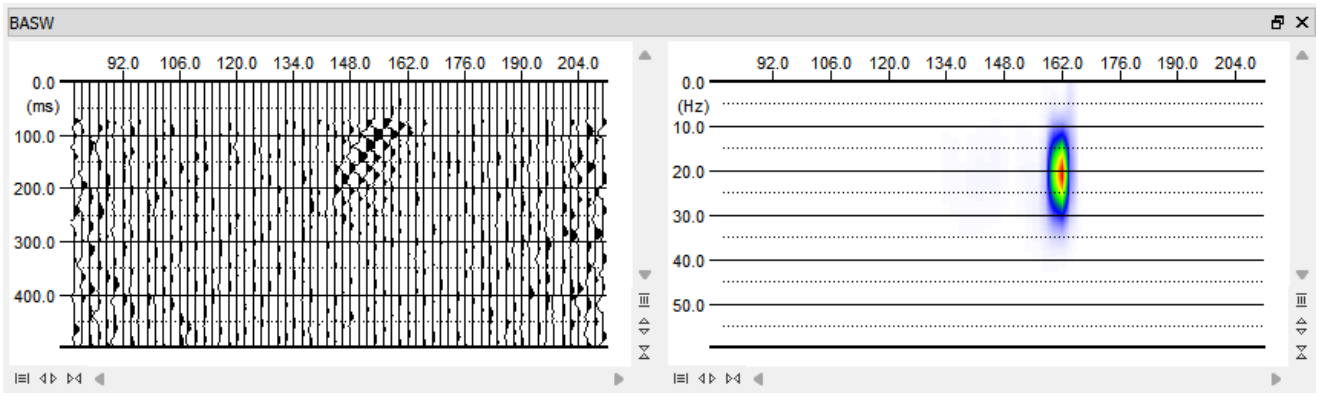


Figure 14: BASW (left) and BASW amplitude (right) sections

Microtremor

- Replaced the **Open** button with an integrated file list for loading data.
- Added automatic rejection of noisy time windows.
- Added Konno–Ohmachi smoothing and options to combine horizontal components using RMS or the geometric mean.
- Added automatic peak detection, result evaluation, and detailed result displays.
- Added mean, upper, and lower HVSR curves, with estimates of F_0, σ_F, A_0, and σ_A. See Figure 15.

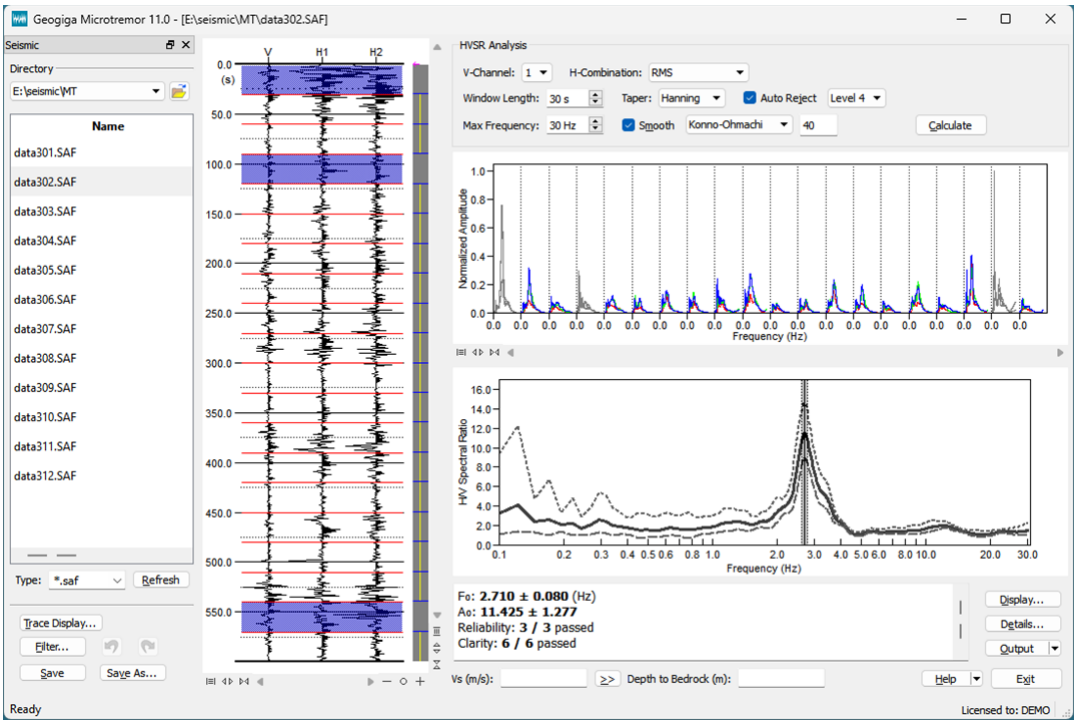


Figure 15: HVSR curves and peak estimates

- Added options to customize curve displays and export HVSR curves.
- Added conversion of SAF data files to SEG-2 format.

XW Tomo

- Added powerline interference suppression.

VSP

- Changed pick deletion from **Ctrl+left-click** to **right-click** and added a help overlay.

PS Log

- Changed pick deletion from **Ctrl+left-click** to **right-click** and added a help overlay.
- Added conversion from ft/s to m/s for modulus calculations.
- Changed the units of shear, Young's, and bulk moduli from GPa to MPa.

Bug Fixes

This section summarizes common bug fixes in **Seismic Pro** 11.0, followed by fixes specific to individual applications.

Common Bug Fixes

The following fixes apply to most **Seismic Pro** applications:

- Fixed single-trace display to center the trace in the display window.
- Fixed the enabled/disabled states of **All Records** and **Current Record** in the first-arrival picking view to reflect the number of records displayed.
- Fixed truncation of vertical colorbar labels in 2D section displays when changing the font size.
- Fixed crashes when opening or saving files on some computers due to conflicts with third-party software.

Bug Fixes in Individual Applications

The following fixes apply to individual **Seismic Pro** applications:

Front End

- Fixed an issue where the selected component was ignored when assembling three-component nodal seismic records and saving them in SEG-2 format.

SeisMapper

- Fixed an issue where the start and end coordinates became editable when selecting 2D sections.

Modeling2D

- Fixed an issue that prevented saving seismograms with more than 64K samples.

Reflector

- Fixed missing CMP coordinate assignments for straight survey lines in the **CMP Binning** dialog box.
- Fixed incorrect trace order in frequency-spectrum plots when seismic coordinates decreased along the survey line.

SF Imager

- Fixed an issue where imported velocity-profile locations were always set to 0 and could not be changed.

Refractor

- Fixed an issue where first-arrival picking in the **Trace Magnifier** window did not work for some shot records.
- Corrected receiver plotting to use downward-pointing arrows.
- Corrected plotting of shot points and receivers along non-flat survey lines.

DW Tomo

- Fixed an issue where a node was incorrectly added when the mouse cursor moved outside the time-offset plot while adjusting the initial velocity profile.
- Corrected receiver plotting to use downward-pointing arrows.

Surface and Surface Plus

- Fixed an issue where elevation was not included in apparent-velocity calculations.
- Fixed an issue that reset the starting display frequency of dispersion images to zero when selecting a different record.
- Fixed incorrect dispersion curve locations when loading certain files saved in versions earlier than V10.0.

Surface Plus only

- Fixed incorrect default geophone spacing value calculated from common-zone gathers instead of common-shot gathers.
- Fixed an issue that incorrectly enabled the **Save** and **Save As** commands when common-zone gathers were plotted.
- Fixed an incorrect default frequency range when combining spectra from multiple records for some seismic data.

XW Tomo

- Fixed a crash when automatically extending the velocity model to include all sources and receivers for certain geometry configurations.