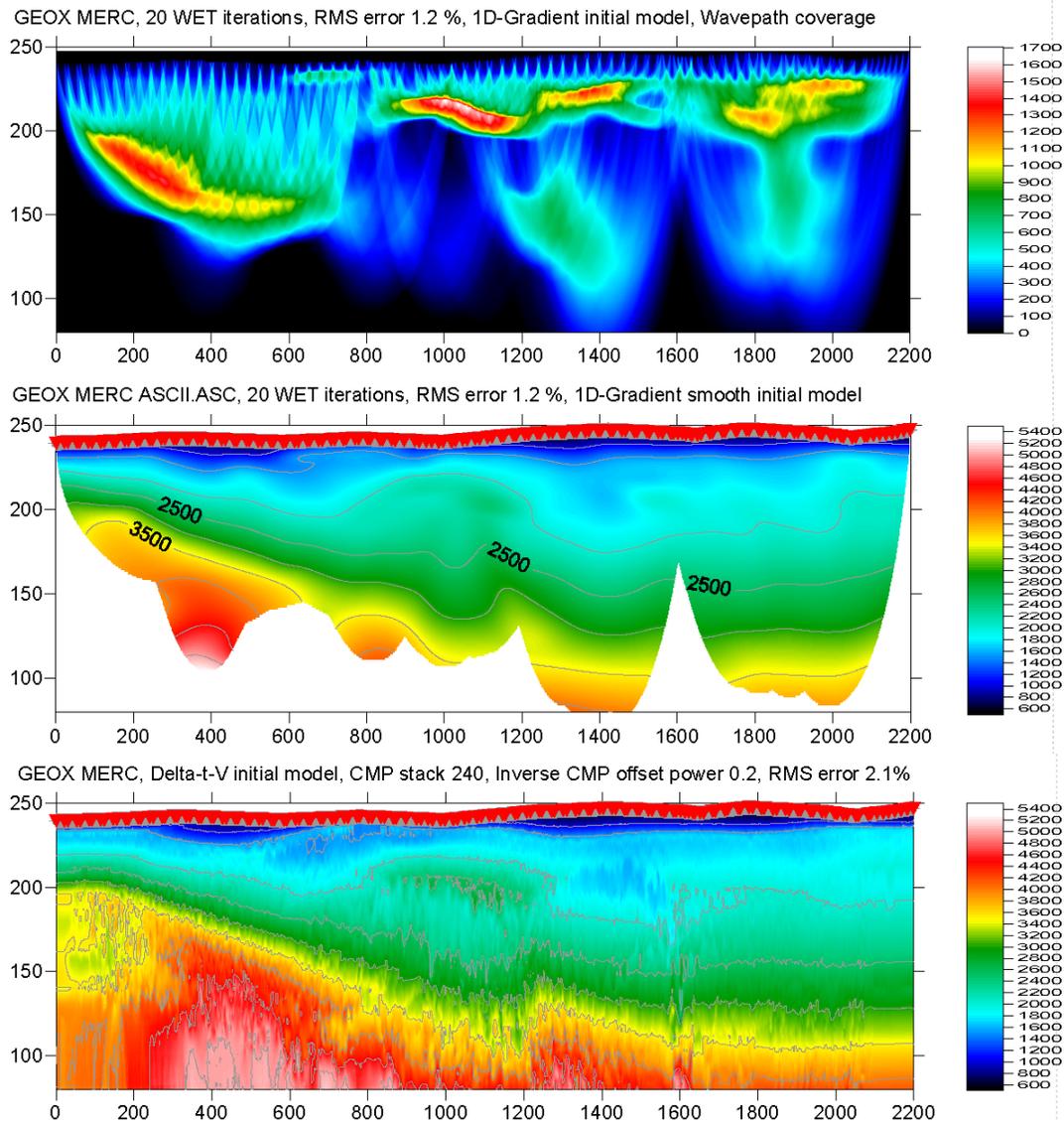


## GeoExpert ag GEOXMERC : Smooth inversion, DeltatV, Wavefront, Plus-Minus :



Above DeltatV output was obtained with following optimized, non-default *DeltatV/Delta-t-V Settings* :

- *Suppress velocity artefacts*
- *Process every CMP offset*
- *Smooth CMP traveltim curves*

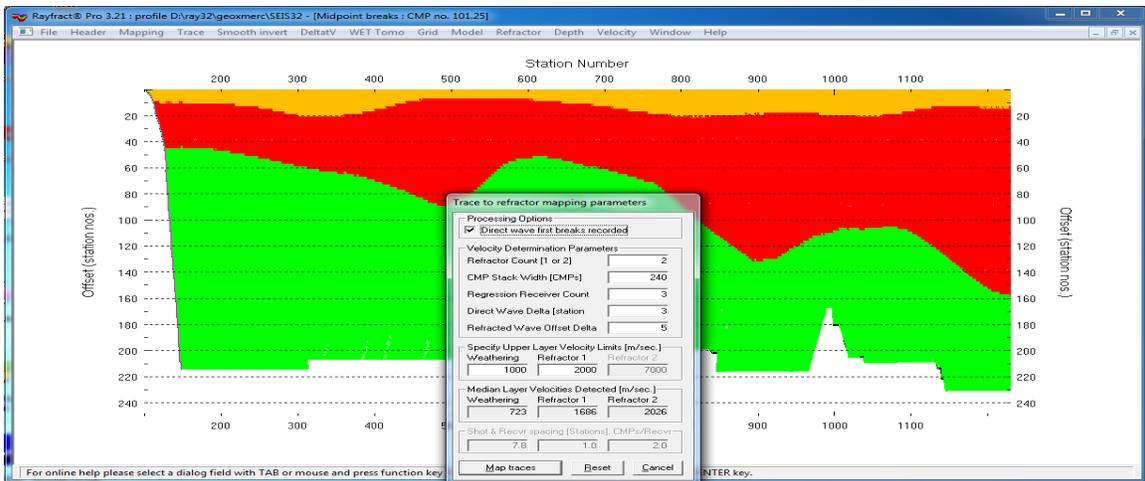
*DeltatV/Interactive Delta-t-V* parameters were edited as follows :

- *CMP curve stack width* : 240 CMP's, changed from default of 26 CMP's
- *Static Corrections/Inverse CMP offset power* : 0.2, changed from default of 0.5

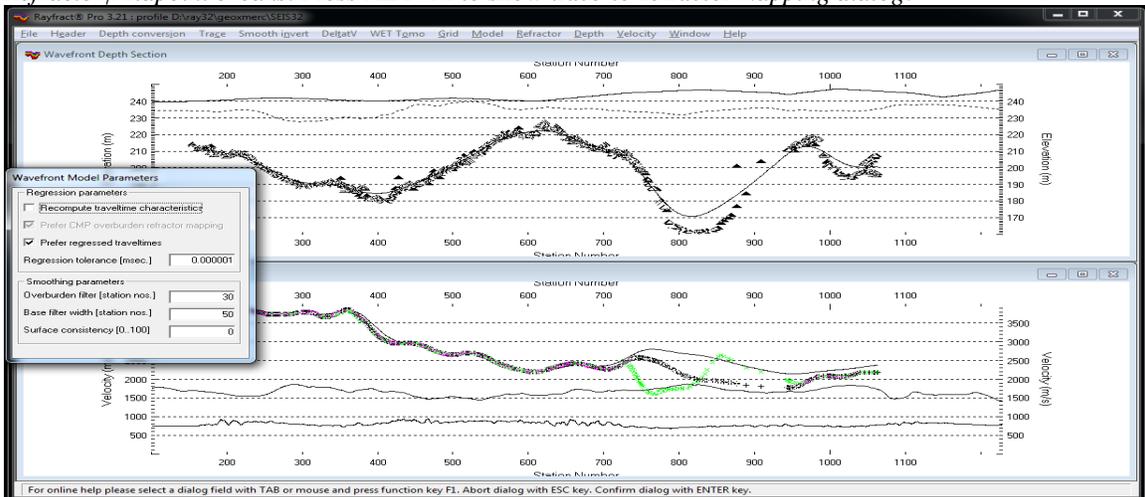
Note the good agreement between *Smooth inversion* (at top) and *Delta-t-V inversion* (at bottom). Smooth inversion run for 2 hours, under Windows 7 64-bit on a Sony Vaio portable with 4 GBytes RAM. Delta-t-V inversion run for just about 5 minutes, including kriging and imaging with Golden Software Surfer® .

We thank our Swiss client GeoExpert ag for making available this high-coverage data set (148 shots into 216 channels).

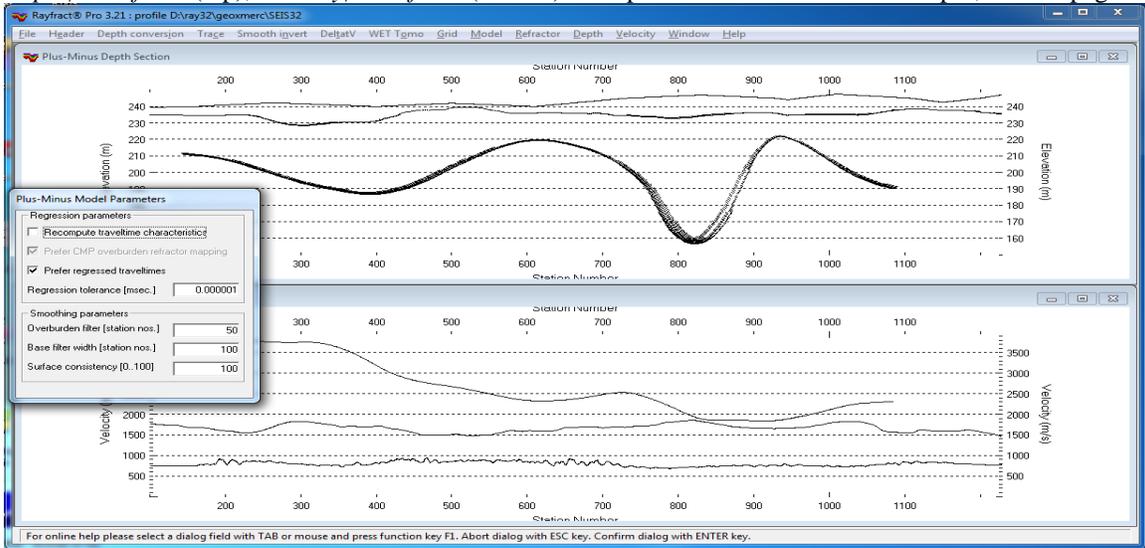
On the following page, we show layer-based *Wavefront refraction* method and *Plus-Minus* method for this data. Note the good match to above WET and DeltatV inversion. For instructions see [ot0608.pdf](#) .



*Refractor/Midpoint breaks. Press ALT+M to show trace-to-refractor mapping dialog.*



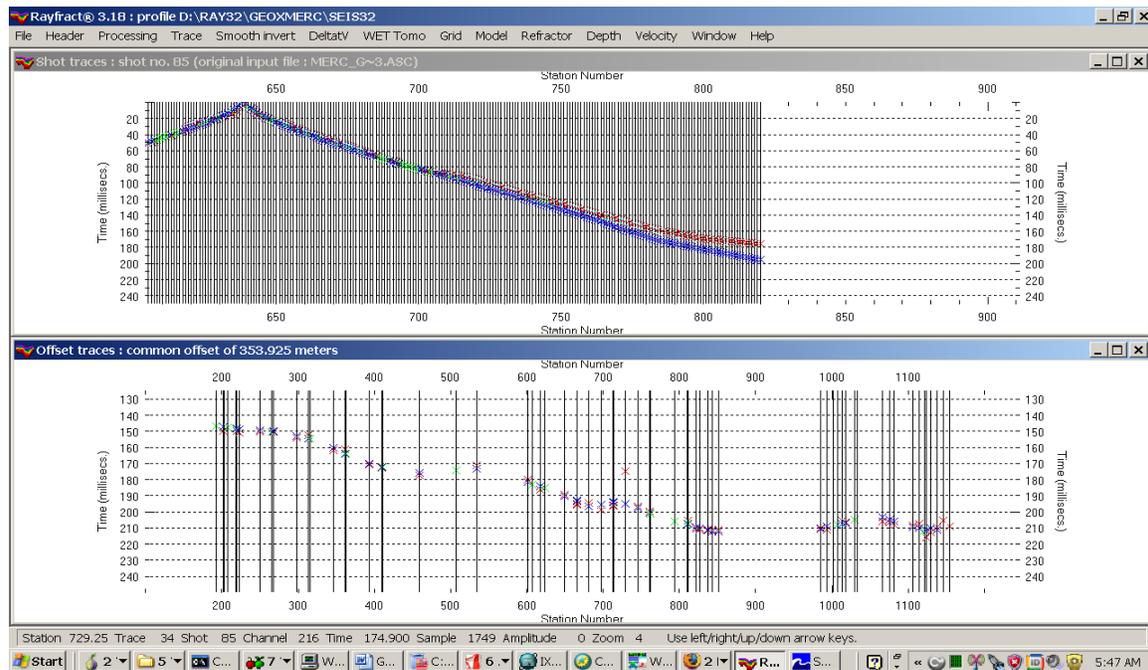
*Depth/Wavefront (top), Velocity/Wavefront (bottom). Compare to WET and DeltatV output, on first page.*



*Depth/Plus-Minus (top), Velocity/Plus-Minus (bottom). Compare to above Wavefront method output.*

When you are prompted during depth conversion to generate extrapolated refractor branches, click *Cancel* button and retry the depth conversion, with *Depth/Wavefront...* or *Depth/Plus-Minus...*

## Identify travelttime picking errors with reciprocity principle, in *Trace/Offset gather display* :



- Create new *profile database* GEOXMERC. See <http://rayfract.com/help/manual.pdf> , chapter 1.1 .
- Select *Header/Profile* and set *Station spacing* to 1.95m . Hit ENTER key to confirm dialog.
- Select *File/ASCII column format...* and set *Header lines to skip* to 0
- Unzip <http://rayfract.com/samples/GEOXMERC.zip> in \RAY32\GEOXMERC\INPUT directory
- Import the 4 .ASC files as in manual.pdf chapter 1.11, with *Default spread type* “10: 360 channels”
- *File/Update header data/Update Station Coordinates* , \RAY32\GEOXMERC\INPUT\MERC.COR
- Run our *Smooth inversion* as usual. See <http://rayfract.com/help/manual.pdf> , chapter 1.14 .
- Select \RAY32\GEOXMERC\GRADTOMO\VELOIT20.GRD (final tomogram grid)
- Select *Trace/Shot gather* . Picked times are shown as red crosses, modeled times as blue crosses.
- Close *Shot breaks* (all travelttime curves) (reopen later with *Refractor/Shot breaks*, if desired)
- Select *Trace/Offset gather* . Select *Window/Tile horizontal* .
- Use F1 to zoom vertical time scale, F2 to unzoom, in both gather windows
- Click title bar of *offset gather window* (shown at bottom)
- Browse with F8 to common offset of 353.925 meters (indicated in top window’s title bar)
- Zoom time axis of *offset gather window* once with F1
- Use *left/right arrow keys* to navigate along first break picks of individual traces composing gathers
- *Pick cursor* is a + symbol, and is positioned at time picked for each trace
- Attributes for currently selected trace are displayed in *status bar*, at bottom of your screen
- Browse station 729.25, trace 34, pick time 174.9 msec. for shot 85 at channel 216 (see status bar)
- Picked time 195.8 ms for trace 33 (shot 63/channel 19), at station 713.75
- Picked time 196.1 ms for trace 35 (shot 61/channel 3), at station 745.75
- Pick 174.9 msec. at trace 34 (shot 85/channel 216) is 20 msec. too early, compared to other shots
- Click title bar of *shot gather window* (shown at top)
- Browse with F8 to shot 85, and with arrow keys to channel 216 (right-most channel of shot 85)

Apparently picks for shot 85 are too early (compared to other shots), to right of about station number 750. Review the original amplitude data for this shot and repick these traces, moving down the first break picks by up to 20 msec. Reimport regenerated .ASC or repick in our *Trace gather displays*. Then redo *Smooth invert/WET with 1D-gradient initial model* or *DeltatV/Interactive Delta-t-V* with above settings.