

Multiscale tomography of tunnel overburden, 36 shots into 24 receivers per shot :

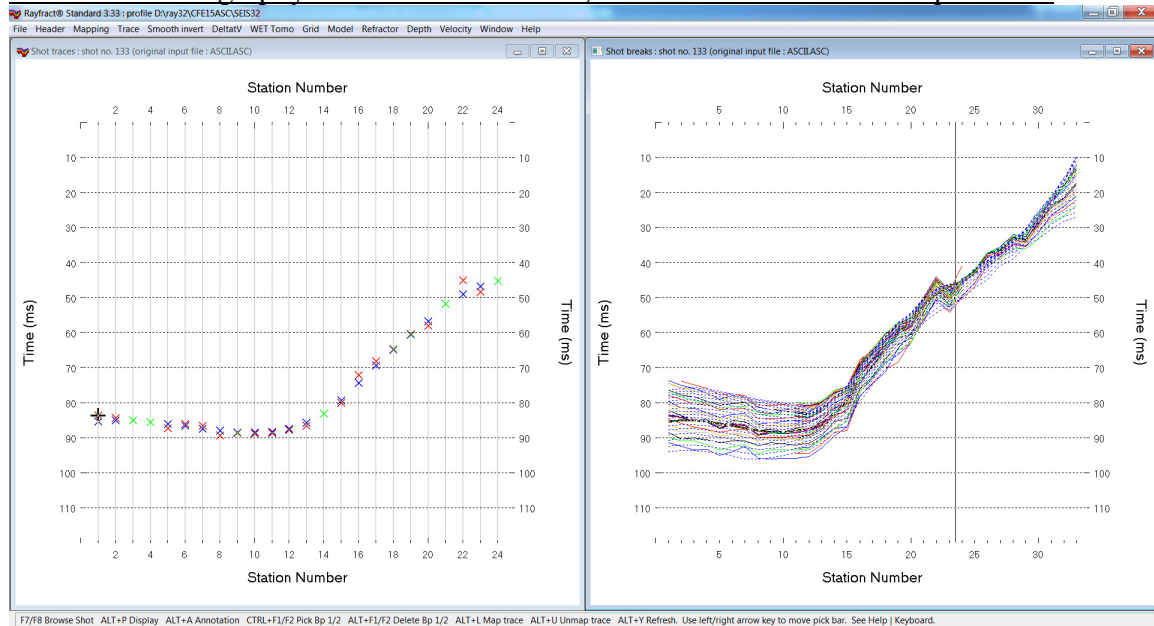


Fig. 1 : left : *Trace|Shot gather*, right : *Refractor|Shot breaks*. Shows fit between picked times (solid colored curves, red crosses) and modeled times (dashed blue curves, blue crosses) obtained with WET output shown in Fig. 3.

- *File|New Profile...*, set *File name* to *CFE15ASC* and click *Save button*
- set *Line type* to **Borehole spread/line** in *Header|Profile...*
- set *Station spacing* to 5m in *Header|Profile...*
- unzip [CFE15.ZIP](#) containing files *ASCII.ASC*, *COORDS.COR* and *SHOTPTS.SHO* in directory *C:\RAY32\CFE15ASC\INPUT*
- check *Smooth invert|Smooth inversion Settings|No shot position checking* (new in version 3.33)
- check *File|Import Data Settings|Import horizontal borehole survey or .3DD refraction survey*
- select *File|Import Data...* and set *Import data type* to *ASCII column format*
- leave *Default spread type* at *10: 360 channels*
- click upper *Select button*, navigate into *C:\RAY32\CFE15ASC\INPUT* and select file *ASCII.ASC*
- click *Open button*, *Import shots button*. The *Import shot dialog* is shown for each shot in the *.ASC* file.
- for each shot leave *Layout start* and *Shot pos.* at shown values and click *Read button*
- *File|Update header data|Update Station Coordinates* with *C:\RAY32\CFE15ASC\INPUT\COORDS.COR*
- *File|Update header data|Update Shotpoint coordinates* with *C:\RAY32\CFE15ASC\INPUT\SHOTPTS.SHO*
- select *Trace|Shot gather* and *Window|Tile* to obtain Fig. 1 .
- for both windows click title bar, press *ALT+P*, set *Maximum time* to 120 ms and hit *ENTER* key.
- check *Grid|Stack shot labels at same offset*.
- select *Smooth invert|WET with constant-velocity initial borehole model* and confirm prompts for default interpretation. Select *Grid|Surfer plot Limits*.
- click button *Reset to grid* and select *C:\RAY32\CFE15ASC\HOLETOMO\CONSTVEL.GRD*. Click *Open*.
- check box *Plot limits active*. Set *Min. velocity* to 1,000 m/s and *Max. velocity* to 5,000 m/s. Click *OK*.
- select *WET Tomo|Interactive WET tomography*. Set *Wavepath width* to 20 % for more robust imaging.
- click button *Start tomography processing* to obtain Fig. 2
- select *WET Tomo|Interactive WET tomography...* and click button *Iterate*
- check box *WET runs active* and click button *OK*. Click button *Edit velocity smoothing*.
- check radio button *Manual specification of smoothing filter*
- set *half smoothing filter width* to 7 columns & set *half smoothing filter height* to 3 rows
- click buttons *Accept parameters* and *Start tomography processing* to obtain Fig. 3
- for our new [multiscale WET](#) see our updated [help file](#) chapter *WET Wavepath Eikonal Tomography*.

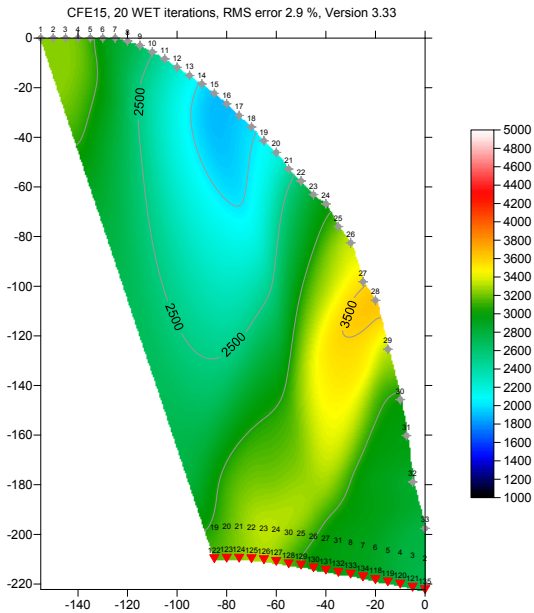


Fig. 2a : Smooth inversion, 20 WET iterations in one run. Default WET settings, wavepath width 20%, adapted smoothing filter size. P-wave velocity in m/s

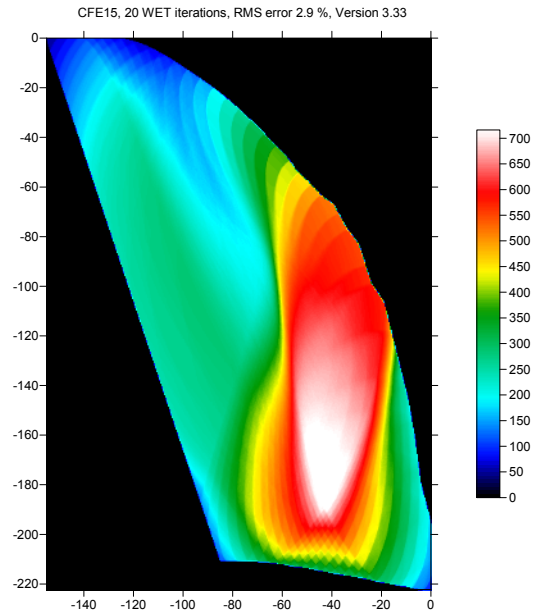


Fig. 2b : WET wavepath (aka Fresnel volume) coverage plot obtained with Fig. 2a. Shows number of wavepaths covering each pixel.

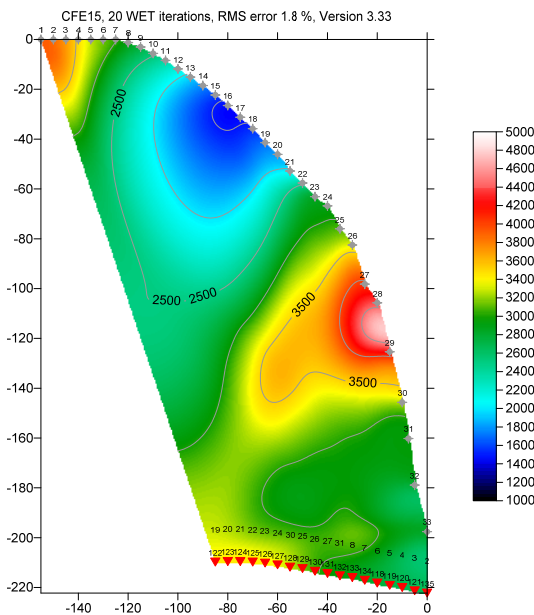


Fig. 3a : Multiscale tomography, WET tomogram obtained with last run of 8 runs using decreasing wavepath width. Default WET settings except adapted smoothing filter size. P-wave velocity in m/s

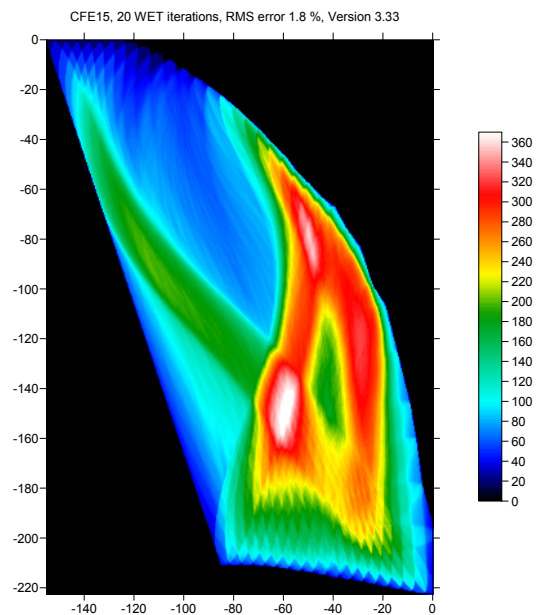


Fig. 3b : WET wavepath (aka Fresnel volume) coverage plot obtained with Fig. 3a. Shows number of wavepaths covering each pixel.

We thank our client CFE for making available this high-quality data set including the [SEG-2 trace files](#).

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