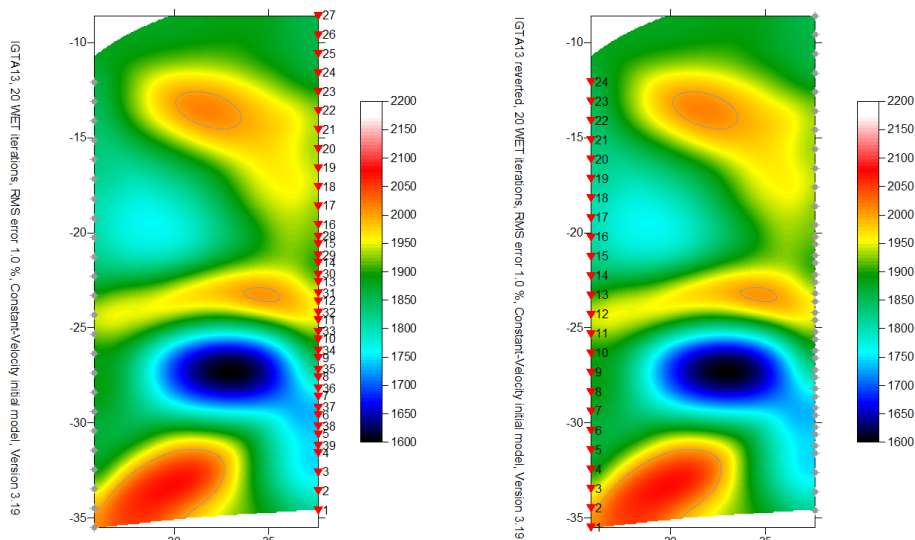Smooth inversion of reverted IGT borehole survey IGTA13.3DD, with constant-velocity initial model

Smooth inversion of borehole traces. Left : see igta13.pdf . Right : gathered by common receiver. See below for instructions.

To **reverse the borehole traces** (exchange source with receiver for each trace), please proceed as follows :

- process the original IGTA13.3DD as described in igta13.pdf , in Rayfract® profile database IGTA13
- open profile database IGTA13, with *File|Open Profile…*
- check *File|Export Data Settings|Gather traces by common receiver station*
- select *File|Export header data|Export Traces to GeoTomCG .3DD*
- in *dialog Export GeoTomCG .3DD picked traces*, click on *yellow Create New Folder icon*
- replace highlighted *New folder* string with folder name exp319, hit enter key
- double-click new *folder exp319* with left mouse key
- click on *Save button*, to write GEOTOMCG.3DD into \RAY32\IGTA13\EXP319 directory
- create a new profile database named A13R1DM with a *Station spacing* of 0.1m. See our manual at http://rayfract.com/help/manual.pdf , chapter 1.1 . Specify *Line type* Borehole spread/line .
- import the \RAY32\IGTA13\EXP319\GEOTOMCG.3DD as described in our manual, chapter 1.2. Specify *Import data type* Tweeton GeoTomCG .3DD . Leave *Default spread type* at 10: 360 channels. Leave all other import parameters at their default settings.
- click on *Import shots button*
- answer *Update profile station spacing ? prompt* with *No button*, to keep *Station spacing* of 0.1m
- click *Read button* to import all reverted crosshole shots. Leave all parameters at shown values.
- review traveltimes with *Refractor|Shot breaks* as usual. See our manual, chapter 1.3.
- select *Smooth invert|WET with constant velocity initial borehole model* to invert the data
- select *WET Tomo|Interactive WET tomography…* and confirm prompt.
- click *button Edit velocity smoothing*. Select *Manual specification of smoothing filter*.
- change *Half smoothing filter width* from 2 to 3, and *Half smoothing filter height* from 4 to 7, as for IGTA13.
- click *buttons Accept parameters* and *Start tomography processing*, to redo WET. Confirm prompts.
- double-click *Image Map* in Surfer VELOIT20.SRF plot with left mouse key, and click on *Colors* color bar. Set *Minimum* to 1600, *Maximum* to 2200, click on OK twice, to use full color spectrum for velocity coding.
- WET output after 20 iterations, for IGTA13 profile and reverted profile A13R1DM is identical. See above.
- to **sort traces by elevation**, *select File|Export header data|Export traces to GeoTomCG .3DD*
- create new *exp319 folder* as above, double-click *exp319 folder* with left mouse key
- click on *Save button*, to write GEOTOMCG.3DD into \RAY32\A13R1DM\EXP319 directory
- open this file GEOTOMCG.3DD e.g. with *Windows Notepad utility*, to review recording geometry